

# Data Catalog of Satellite Experiments

Supplement No. 1 to NSSDC 71-20

OCTOBER 1973

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NATIONAL SPACE SCIENCE DATA CENTER

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION • GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

NSSDC 73-11

NATIONAL SPACE SCIENCE DATA CENTER

DATA CATALOG

OF

SATELLITE EXPERIMENTS

SUPPLEMENT NO. 1 to NSSDC 71-20

)  
  
National Space Science Data Center  
Goddard Space Flight Center  
National Aeronautics and Space Administration  
Greenbelt, Maryland 20771

October 1973

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## INTRODUCTION

### Purposes and Organization of Supplement Number 1

The purposes of the Supplement to the Data Catalog of Satellite Experiments are to announce the availability of experimental space science data, to describe these data, and to inform potential data users of the services provided by the National Space Science Data Center (NSSDC). This is the first Supplement to the Data Catalog of Satellite Experiments, published in December 1971 (NSSDC 71-20).

This Supplement is divided into two sections, each of which is described briefly in introductory paragraphs immediately preceding the section. Readers are urged to consult these introductory paragraphs since they provide information regarding the organization and contents of the sections that is necessary for the effective use of this document. Section 1, Data Description, contains descriptions of data available at or through NSSDC as well as descriptions of the experiments and spacecraft from which the data originated. Section 2 is a series of cumulative indexes that reference the data descriptions contained in both this Supplement and in the December 1971 Catalog. These indexes contain: (1) a chronological listing of all spacecraft, experiment, and data descriptions presented in Section 1; (2) an index of all spacecraft described, identified by common names and alternate names; (3) a listing of the original experiment institutions for all experiments described; (4) a listing of the investigators associated with the experiments and their current affiliations; and (5) two displays of information about experiment data coverage oriented by phenomenon measured - one a series of bar graphs depicting time intervals of experiment data coverage for fields and particles data and the other a listing of all experiments sorted by phenomenon measured. This phenomenon measured index provides an indication of the areas for which data are available through NSSDC. Because it is felt that this index will be the most helpful for users of this Supplement in locating descriptions of specific types of data, it has been placed at the end of the Supplement beginning on page 1527.

### Data Availability, Costs, and Ordering Procedures

The purpose of the National Space Science Data Center (NSSDC) is to provide data and information from space science experiments in support of additional studies beyond those performed by the principal investigators. Therefore, NSSDC will provide data and information upon request

to any individual or organization resident in the United States. In addition, the same services are available to scientists outside the United States through the World Data Center A (WDC-A) for Rockets and Satellites. Normally, a charge is made for the requested data to cover the cost of reproduction and the processing of the request. The requester will be notified of the cost, and payment must be received prior to processing the request. The Director of NSSDC may waive, as resources permit, the charge for modest amounts of data when they are to be used for scientific studies, or for specific educational purposes, and when they are requested by an individual affiliated with:

1. NASA installations, NASA contractors, or NASA grantees
2. Other U.S. Government agencies, their contractors, or their grantees
3. Universities and colleges
4. State and local governments
5. Nonprofit organizations.

A user may obtain data in any of the following ways:

1. Letter request
2. Data Request Form (contained at the end of this Supplement)
3. Telephone request
4. On-site request.

Anyone who wishes to obtain data for a scientific study should specify the NSSDC identification number, the common name and/or number of the satellite and the experiment, the form of data, and the time span (or location, when appropriate) of data requested. A requester should also specify why the data are needed, the subject of his work, the name of the organization with which he is affiliated, and any Government contracts he may have for performing his study. It should be noted that hardcopies or microfilmed portions of data sets on magnetic tapes can be produced on request. The Data Center will provide the requester with an estimate of the time and cost that will be incurred.

When requesting data on magnetic tape, the user should specify whether he will supply new tapes prior to the processing, return the original NSSDC tapes after the data have been copied, or pay for new tapes.

The Data Center's official address for requests is:

National Space Science Data Center  
Code 601.4  
Goddard Space Flight Center  
Greenbelt, Maryland 20771

Phone: 301 982-6695

Users who reside outside the U.S. should direct requests for data to:

World Data Center A for Rockets and Satellites  
Code 601  
Goddard Space Flight Center  
Greenbelt, Maryland 20771 U.S.A.

Phone: 301 982-6695

Since WDC-A also maintains listings of rocket experiments, requests for information concerning rocket launchings and the experiments flown may be directed to this institution.

#### NSSDC Facilities and Services

NSSDC provides facilities for reproduction of data and for on-site data use. Resident and visiting scientists are invited to study the data while at the Data Center. The Data Center staff will assist users with additional data searches and with the use of equipment. In addition to satellite and space probe data, the Data Center maintains some correlative data and information on other correlative data that may be related to a specific request. These correlative data are described in the NSSDC Handbook of Correlative Data, NSSDC 71-05, which is available from the Data Center.

## Participation

The National Space Science Data Center (NSSDC) invites members of the scientific community to contribute data from satellite experiments. NSSDC assigns a specialist in the appropriate scientific discipline for each experiment to arrange for data acquisition with the principal investigator and to help solve related problems. Acquired data are cataloged and made available to users according to established procedures. Scientists who have not been contacted by one of the subject specialists and who have analyzed or reduced data available for contribution are requested to contact NSSDC so that transfer of the data may be arranged.

As a part of its information system, NSSDC collects publications that relate to the satellite data in its holdings. These documents are cataloged and keyworded for computer sort purposes in a Technical Reference File. NSSDC seeks, in particular, copies of published papers resulting from a user's study of data provided by NSSDC. Information from the Technical Reference File may be furnished to a user on a special request basis; however, NSSDC is not a document distribution center.

The Data Center is continually striving to increase the usefulness of the Data Catalog by improving the data descriptions and including all pertinent information. Scientists are invited to submit their comments or recommendations to NSSDC regarding the data available, the services provided, and the contents and format of the Catalog. The Data Center is attempting to distribute this Supplement to all interested scientific personnel. Recipients are urged to inform potential data users of its availability. Anyone wishing to receive a copy of this publication can have his name added to this distribution list by phone or letter request.

## Abbreviations and Acronyms

The abbreviations and acronyms used in this Supplement are listed in the following pages. All abbreviations are given in upper case letters to correspond to the computer produced entries in Section 1, Data Description. Note that the same abbreviation is used for both the singular and plural forms.

A	angstrom
ABMA	Army Ballistic Missile Agency
ACIC	Aeronautical Chart and Information Center
ACS	attitude control system
A/D	analog to digital
AE	Aeronomy Explorer
AFB	Air Force Base
AFCRL	Air Force Cambridge Research Laboratories
AFSC	Air Force Systems Command
AGC	automatic gain control
AIMP	Anchored Interplanetary Monitoring Platform
ALOSYN	Alouette topside sounder synoptic (data)
ALSEP	Apollo Lunar Surface Experiments Package
ALT	altitude
AM	amplitude modulation
AMP	ampere
AMU	atomic mass unit; astronaut maneuvering unit
AP	magnetic activity index $A_p$
APL	Applied Physics Laboratory
APT	automatic picture transmission
A/R	acquisition/reference
ARC	Ames Research Center
ARC-MIN	arc-minute
ARC-SEC	arc-second
ARDC	Air Research and Development Command (now AFSC)
ARPA	Advanced Research Projects Agency
ASOS	antimony-sulfide oxy-sulfide
ATM	atmosphere
ATS	Applications Technology Satellite
AU	astronomical unit
AVCS	advanced vidicon camera system
AVG	average
AVHRR	advanced very high resolution radiometer
BCD	binary coded decimal
BE	Beacon Explorer
BERK	Berkeley
BEV	billion electron volts
BPI	bits per inch
BPS	bits per second
BTL	Bell Telephone Laboratories
BUV	backscatter ultraviolet
BV	billion volts
B/W	black and white

CAL	calorie
CAL TECH	California Institute of Technology
CAS	Cooperative Applications Satellite (more commonly referred to as EOLE)
CAV	composite analog video
CDA	command and data acquisition (station)
CDC	Control Data Corporation
CDS	cadmium sulfide
CM	command module
COSPAR	Committee on Space Research
CPKF	Cape Kennedy (also referred to as Eastern Test Range)
CPS	cycles per second
CPU	central processing unit
CRC	Communications Research Centre
CRPL	Central Radio Propagation Laboratories (later ITSA; formerly part of ESSA, and now a subdivision of NOAA)
CRT	cathode ray tube
CSI	cesium iodide
CSM	Command Service Module
DATS	Despun Antenna Test Satellite (DOD)
DB	decibel
DCP	data collection platform(s)
DCS	direct couple system
DEG K	Degree Kelvin
DOD	Department of Defense
DODGE	Department of Defense Gravity Experiment (satellite)
DRID	direct readout image dissector
DRIR	direct readout infrared radiometer
DRTE	Defence Research Telecommunications Establishment (now CRC)
DSIR	Department of Science and Industrial Research (now Science Research Council)
DV	digital video
E	energy
EASEP	Early Apollo Scientific Experiment Package
EGO	Eccentric (Orbiting) Geophysical Observatory
E.GT.	energy greater than
EL	electric
E.LT.	energy less than
EME	environmental measurement experiment
EOF	end-of-file



EOGO	Eccentric Orbiting Geophysical Observatory
EOLE	French meteorological satellite
EPE	Energetic Particle Explorer
E/Q	energy per unit charge
ERB	earth radiation budget (experiment)
ERDC	Earth Resources Data Center
ERS	Environmental Research Satellite
ERTS	Earth Resources Technology Satellite
ESMR	electrically scanning microwave radiometer
ESOC	European Space Operations Centre
ESRO	European Space Research Organization
ESSA	Environmental Science Services Administration (now NOAA)
ETR	Eastern Test Range (also referred to as CPKF, Cape Kennedy)
EUV	extreme ultraviolet
EV	electron volt
EVA	extravehicular activity
EVM	earth viewing (equipment) module
FM	frequency modulation
FMRT	final meteorological radiation tape(s)
FPR	flat plate radiometer
FR	French Research (satellite)
FSK	frequency shift key
FWS	filter wedge spectrometer
GARP	Global Atmospheric Research Program
GE	General Electric (Company)
.GE.	greater than or equal to
GEMS	Geostationary European Meteorological Satellite (ESRO)
G.E.T.	ground elapsed time
GHZ	gigahertz
GISS	Goddard Institute for Space Studies
GM	Geiger-Mueller; gram
GMT	Greenwich Mean Time
GOES	Geosynchronous Operational Environmental Satellite (also called SMS)
GRE	ground reconstruction equipment
GREB	Galactic Radiation Experiment Background (Navy transit satellite)
GSFC	Goddard Space Flight Center
GSM	geocentric solar magnetosphere
GV	gigavolt
GVHRR	geosynchronous very high resolution radiometer

HDRSS	high data rate storage system
HE	helium
HFE	heat-flow experiment
HR	high resolution
HRIR	high-resolution infrared radiometer
HRIRS	high-resolution infrared radiation sounder
HZ	hertz (cycles per second)
IBM	International Business Machines
ICBM	intercontinental ballistic missile
ICSU	International Council of Scientific Unions
ID	identification
IDC	image dissector camera
IDCS	image dissector camera system
IDCSP	Initial Defense Communication Satellite Program (DOD)
IE	Ionospheric Explorer
IGRF	International Geomagnetic Reference Field
IMP	Interplanetary Monitoring Platform
IPA	Institute for Physics of the Atmosphere (SAS)
IQSY	International Years of the Quiet Sun
IR	infrared
IRBM	intermediate range ballistic missile
IRIG	Inter-Range Instrumentation Group
IRIS	infrared interferometer spectrometer
IRLS	interrogation, recording, and location system
IRR	infrared radiometry
IRTRN	infrared transmission
ISIS	International Satellite for Ionospheric Studies
ITCZ	intertropical convergence zone
ITOS	Improved Tiros Operational Satellite
ITPR	infrared temperature profile radiometer
ITR	incremental tape recorder
ITSA	Institute for Telecommunication Sciences and Aeronomy (formerly a subdivision of ESSA; now NOAA)
IU	instrument unit
JOB	Johannesburg, South Africa
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center (formerly Manned Spacecraft Center)

K	Kelvin
KBS	kilobits per second
KEV	kiloelectron volt
KG	kilogram
KHZ	kilohertz
KM	kilometer
KP	magnetic activity index $K_p$
LA	Los Angeles
LARC	Langley Research Center
.LE.	less than or equal to
LEPEDEA	low-energy proton and electron differential energy analyzer
LES	Lincoln Experimental Satellite (DOD)
LM	lunar module
LRC	Lewis Research Center
LRIR	limb radiance inversion radiometer; low-resolution infrared radiometer
LRL	Lunar Receiving Laboratory
LRV	Lunar Roving Vehicle
MAD	Madrid, Spain
MASC	magnetic attitude-spin coil
MC	megacycle
MEV	million electron volts
MG	milligram
MHZ	megahertz
MIN	minute
MIT	Massachusetts Institute of Technology
MM	millimeter
MR	medium resolution
MRIR	medium-resolution infrared radiometer
MS	microsecond
MSC	Manned Spacecraft Center (now Johnson Space Center)
MSEC	millisecond
MSFC	Marshall Space Flight Center
MSS	multispectral scanner
MSSCC	multicolor spin-scan cloudcover camera
MUSE	monitor of ultraviolet solar energy
MW	milliwatt

NADUC	Nimbus/ATS Data Utilization Center
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NCC	National Climatic Center (formerly NWRC)
NEMS	Nimbus-E microwave spectrometer
NESC	National Environmental Satellite Center (now NESS)
NESS	National Environmental Satellite Service
N.M.	nautical mile
NMRT	Nimbus meteorological radiation tape
NOAA	National Oceanographic and Atmospheric Administration (formerly ESSA)
NORAD	North American Air Defense Command
NRC	National Research Council
NRL	Naval Research Laboratory
NSDF	Nonsatellite Data File
NSSDC	National Space Science Data Center
NWRC	National Weather Records Center (presently NCC)
OCC	OPLE Command Center
OGO	Orbiting Geophysical Observatory
OMNI	low-resolution omnidirectional radiometer (on Explorer 7)
OMSF	Office of Manned Space Flight
ONR	Office of Naval Research
OPEP	orbital-plane experiment package
OPLE	Omega position and location experiment
ORS	Orbiting Research Satellite
OSO	Orbiting Solar Observatory
OSSA	Office of Space Science and Applications (now two separate offices: Office of Space Science; Office of Applications)
OV	Orbiting Vehicle
P	probe
PAM	pulse amplitude modulation
PCM	pulse coded modulation
PEOLE	Preliminary EOLE
PEP	platform electronic packages
PFM	pulse frequency modulation
PIXEL	picture element
PM	pulse modulation; photomultiplier
PMR	pressure modulated radiometer
PMT	photomultiplier tube
P-N	positive-negative (junction)
POGO	Polar Orbiting Geophysical Observatory
PPS	pulse per second
PSE	passive seismograph experiment
PTL	Photographic Technology Laboratory

QOMAC	quarter-orbit magnetic attitude control (system)
QUI	Quito, Ecuador
R&D	research and development
RA	Ranger
RAD	radian
RAE	Radio Astronomy Explorer
RAM	random access measurement (system)
RBV	return beam vidicon (camera)
RC	resistance capacitor
RES	research
RF	radio frequency
RMS	root mean square
ROS	Rosman, North Carolina
RPM	revolutions per minute
RPS	revolutions per second
RRL	Radio Research Laboratories
RSRS	Radio and Space Research Station
RTG	radioisotope thermoelectric generator
RTTS	real-time transmission system
SA	Saturn
SAO	Smithsonian Astrophysical Observatory
SATAR	OVI-2
SC	spacecraft
SCAMS	scanning microwave spectrometer
SCEL	Signal Corps Engineering Laboratories
SCMR	surface composition mapping radiometer
SCR	selective chopper radiometer
SE	Solar Explorer
SEC	second
SEM	space environment monitor
SIM	scientific instrument module
SIRS	satellite infrared spectrometer
SIRS	System for Information Retrieval and Storage
SKA	Fairbanks, Alaska
SMS	Synchronous Meteorological Satellite (also called GOES)
SN	Snap (satellite payload)
SNAP	systems for nuclear auxiliary power
SNT	Santiago, Chile
SOEP	solar-oriented experiment package
SOLRAD	Solar Radiation (satellite)
SPM	Solar Proton Monitor
SR	Solar Radiation (satellite); scanning radiometer
SRI	Stanford Research Institute

SSCC spin-scan cloudcover camera  
 SSD Space Sciences Division (Jet Propulsion Laboratory)  
 STADAN Space Tracking and Data Acquisition Network  
 STER steradian  
 STL Space Technology Laboratories (now TRW Systems Group)  
 SUI State University of Iowa (now University of Iowa)  
 SWRF Sine Wave Response Filter (program)

T&DR tracking and data relay  
 TAC Technology Application Center  
 TDP Tracking Data Processor (program)  
 TEC telemetry and command  
 TEI transearth injection  
 THIR temperature-humidity infrared radiometer  
 THORAD-  
 AGE Thor Augmented Delta Agena  
 TIROS Television and Infrared Observation Satellite  
 TOPSI topside (sounder)  
 TOS Tiros Operational Satellite  
 TOVS Tiros operational vertical sounder  
 TRF Technical Reference File  
 TRS Tetrahedral Research Satellite  
 TRW TRW Systems Group  
 TWERLE tropical wind energy conversion and reference level  
 experiment

U university  
 UCLA University of California at Los Angeles  
 UCSD University of California at San Diego  
 UHF ultra-high frequency  
 UK United Kingdom  
 USAF United States Air Force  
 USC University of Southern California  
 USSR  
 U.S.S.R. Union of Soviet Socialist Republics  
 UT universal time  
 UV ultraviolet  
 UVS ultraviolet spectrometer  
 UW University of Wisconsin

V volt  
 VHF very high frequency  
 VHRR very high resolution radiometer  
 VISSR visible infrared spin-scan radiometer  
 VLF very low frequency

VNBC Vandenberg AFB (also referred to as WTR, Western Test Range)  
VTPR vertical temperature profile radiometer

W watt  
WALI Wallops Island  
WBVTR wideband video tape recorder  
WDC World Data Center  
WEFAX weather facsimile  
WMO World Meteorological Organization  
WNK Winkfield, England  
WPM words per minute  
WSMR White Sands Missile Range  
WTR Western Test Range (also referred to as VNBC, Vandenberg AFB)  
WWW World Weather Watch

Z atomic number

## SECTION I - DATA DESCRIPTION

### General

This section of the Supplement was produced from the computerized NSSDC information system, which provides the Data Center with an efficient means for maintaining up-to-date descriptions of available data and for announcing the acquisition of new data. For each data set\* description contained in the information system, descriptions of the experiment and spacecraft from which the data originated are also included as background information. This section is organized by NSSDC ID No.

### Identification of Spacecraft, Experiments, and Data Sets

In the NSSDC information system, each spacecraft, experiment, and data set is assigned an identification number, the NSSDC ID No., that is based on the launch sequence of the spacecraft. Subsequent to 1962, the NSSDC ID No. for a spacecraft (e.g., 65-042A for Explorer 28) corresponds to the COSPAR (Committee on Space Research) international designation. The Data Center has provided corresponding numbers for satellites that were launched during the years 1957 to 1962. (For example, Explorer 1, which carries COSPAR designation 1958 Alpha 1, was the first spacecraft launched in 1958; therefore, it has been assigned an NSSDC ID No. of 58-001A.) The experiment and data set ID numbers are based on the spacecraft number. For example, the experiments carried aboard spacecraft 67-031A (ATS-2) are numbered 67-031A-01, 67-031A-02, etc. Data sets derived from experiment 67-031A-01 are designated 67-031A-01A, 67-031A-01B, etc. All descriptions contained in this section are ordered chronologically by the NSSDC ID No., which appears in the upper righthand corner of the description.

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\*A data set is defined as (1) a body of data that is the result of the reduction or analysis of data from a given experiment or (2) supporting information (catalogs, ephemeris, etc.) that is uniquely related to a given experiment or spacecraft. The content, characteristics, form, format, or organization of this body of data is different from that of any other body of data or supporting information associated with the given experiment or spacecraft.



## Spacecraft, Experiment, and Data Set Descriptions

Each entry in this section is composed of two parts -- a heading and a brief description. Each type of entry (i.e., spacecraft, experiment, and data set) contains its own heading. The headings list generic characteristics of satellites, experiments, and data sets. Details on the contents of the three kinds of entries are described in the following paragraphs.

### Contents of Spacecraft Entries

The heading for each spacecraft description in the Supplement contains the following information about the spacecraft: launch date, spacecraft weight in orbit, funding agency, spacecraft status of operation, and for inoperable or operationally off satellites, the date last spacecraft data were recorded or, if available, the date last usable spacecraft data were recorded. Orbiting spacecraft also have the following orbital parameters included in the heading: epoch date, orbit type, orbit period, apoapsis and periapsis (distance from the surface of the reference body to the furthest and nearest orbit points, respectively), and inclination (the angle between the satellite orbital plane and the equatorial plane of the primary gravitational body). For satellites with heliocentric orbits, the ecliptic plane is used in lieu of the equatorial plane.

Each spacecraft brief description contains a concise summary of the spacecraft mission, specifically outlining the overall objectives of the mission and the scientific studies being performed. Information about the operational performance and status of the spacecraft during a given period of time also is included and is frequently updated. In some cases the performance and status information reflected in the description may disagree with information found in the heading under "Status of Operation." When there are disagreements, consider the information in the heading as more up-to-date.

### Contents of Experiment Entries

Each experiment entry heading lists the name of the original experiment institution and the name and address of the principal investigator for the experiment. The names and addresses of other investigators associated with the experiment are also listed. The heading then shows either the "date last usable experiment data recorded" or "date last experiment data recorded." The status of operation of the experiment is then listed as "normal," "partial," "operational off," or "inoperable." If the experiment is functioning in other than a "normal" mode, the brief description explains the circumstances of, and periods affected by, the change.

The experiment brief description contains a concise summary of the experiment purpose and instrument characteristics, emphasizing those relevant to the scientific use of the resulting data. Information about the operational performance and status of the experiment during a given period of time also is included and is frequently updated. In some cases the performance and status information reflected in the description may disagree with information found in the heading under "status of operation." When there are disagreements, consider the information in the heading as more up-to-date.

### Contents of Data Set Entries

Each data set entry in this Supplement contains three elements in the heading: the time period covered by the data, the quantity of data and medium on which the data are stored, and an indicator describing the availability of the data. The time period covered is annotated with one of two additional comments (1) "as verified by NSSDC" - identifying that portion of the data set for which the period of data coverage has been verified, and (2) "as reported by the experimenter" - identifying the period of coverage provided by the experimenter, regardless of the amount held or verified by NSSDC. Several indicators are used to describe status of data availability to requesters:

- . Data at NSSDC Ready for Distribution - designates a data set for which cataloging, verification, and documentation are sufficient to provide a comprehensible set of data to satisfy requests.
- . Data in Published Reports - indicates either that all or a significant portion of the data are contained in a published report or journal, or that the only accessible source of any reduced data from an experiment is the published document. The publications cited in the brief descriptions for spacecraft, experiment, or data set entries normally are available through scientific libraries or document distribution centers. NSSDC provides copies of publications only if they cannot be obtained through such libraries or centers.
- . Data at NSSDC Being Processed - identifies data sets for which documentation and verification activities are in process. These data are usually sufficiently documented and verified to satisfy routine requests.

- . Data at NSSDC Processing Deferred - indicates that the verifying, documenting, or cataloging the data set is not complete, and that no additional work will be performed unless specifically requested. NSSDC may be able to supply the data from such a data set in a suitable form, depending upon the completeness of the processing and documentation and the particular requirements of the user. The completeness of the data set is indicated in its brief description.
- . Data Available from Experimenter - is used for data sets that NSSDC does not plan to acquire, and that the experimenter is willing to make available to other scientists, usually in limited amount. These data sets are not feasible for storing at NSSDC, either because they are large in volume or because they require special equipment to process. Requests for data sets carrying this indicator should be addressed directly to the experimenter. The experimenter's name and address and the expected date that the data will be ready for processing are given in the brief description of such a data set.
- . Data at Another Center - is used for data sets stored and distributed by any other data center. Requests for data sets with this indicator should be made directly to the organization identified in the brief description.
- . Data at Another Center that NSSDC can Process - denotes a data set held by another data center but to which NSSDC has access for limited processing. Requests for this type of data set should be submitted to NSSDC.

For information on the procedures for ordering the data described herein, please refer to page vii in the Introduction of the Supplement. Upon special request, data may be provided in media other than that noted in the heading. For example, computer or microfilm listings could be produced from magnetic tape data sets. Enlarged paper prints are available from data sets on photographic film and microfilm. The Data Center will provide the requester with an estimate of the response time and cost that will be incurred for such requests.

NATIONAL SPACE SCIENCE DATA CENTER  
DATA CATALOG OF SATELLITE EXPERIMENTS  
SUPPLEMENT NO. 1 TO NSSDC 71-20

SPACECRAFT COMMON NAME- EXPLORER 6 NSSDC ID 59-004A  
ALTERNATE NAMES- ABLE 3, 1959 DELTA 1  
LAUNCH DATE- 08/07/59 SPACECRAFT WEIGHT IN ORBIT- 64. KG  
FUNDING AGENCY- DOD-USAF  
FUNDING AGENCY- NASA  
DATE LAST USABLE SPACECRAFT DATA RECORDED-100659  
SPACECRAFT STATUS OF OPERATION- INOPERABLE  
EPOCH DATE- 12/19/59 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 754. MIN  
APDAPSIS- 41900.0 KM ALT PERIAPSIS- 237.000 KM ALT INCLINATION- 47.0 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 6 WAS A SMALL, SPHEROIDAL SATELLITE DESIGNED TO STUDY TRAPPED RADIATION OF VARIOUS ENERGIES, GALACTIC COSMIC RAYS, GEOMAGNETISM, RADIO PROPAGATION IN THE UPPER ATMOSPHERE, AND THE FLUX OF MICROMETEORITES. IT ALSO TESTED A SCANNING DEVICE DESIGNED FOR PHOTOGRAPHING THE EARTH'S CLOUD COVER, THESE STUDIES WERE CARRIED OUT IN INTERPLANETARY SPACE AND WITHIN THE MAGNETOSPHERE. THE SATELLITE WAS LAUNCHED INTO A HIGHLY ELLIPTICAL ORBIT WITH AN INITIAL LOCAL TIME OF APOGEE OF 2100 HR. THE SATELLITE WAS SPIN STABILIZED AT 2.8 RPS, WITH THE DIRECTION OF THE SPIN AXIS HAVING A RIGHT ASCENSION OF 217 DEG AND A DECLINATION OF 23 DEG. FOUR SOLAR CELL PADDLES MOUNTED NEAR ITS EQUATOR RECHARGED THE STORAGE BATTERIES WHILE IN ORBIT. EACH EXPERIMENT EXCEPT THE TELEVISION SCANNER HAD TWO OUTPUTS, DIGITAL AND ANALOG. A UHF TRANSMITTER WAS USED FOR THE DIGITAL TELEMETRY AND THE TV SIGNAL, TWO VHF TRANSMITTERS WERE USED TO TRANSMIT THE ANALOG SIGNAL. THE VHF TRANSMITTERS WERE OPERATED CONTINUOUSLY. THE UHF TRANSMITTER WAS OPERATED FOR ONLY A FEW HOURS EACH DAY. ONLY THREE OF THE SOLAR CELL PADDLES FULLY ERECTED, AND THIS OCCURRED DURING SPIN UP RATHER THAN PRIOR TO SPIN UP AS PLANNED. CONSEQUENTLY, INITIAL OPERATION OF THE PAYLOAD POWER SUPPLY WAS 63 PERCENT NOMINAL, AND THIS DECREASED WITH TIME. THE DECREASED POWER CAUSED A LOWER SIGNAL TO NOISE RATIO AFFECTING MOST OF THE DATA, ESPECIALLY NEAR APOGEE. ONE VHF TRANSMITTER FAILED ON SEPTEMBER 11, 1959, AND THE LAST CONTACT WITH THE PAYLOAD WAS MADE ON OCTOBER 6, 1959, AT WHICH TIME THE SOLAR CELL CHARGING CURRENT HAD FALLEN BELOW THAT REQUIRED TO MAINTAIN THE SATELLITE EQUIPMENT. A TOTAL OF 827 HR OF ANALOG AND 23 HR OF DIGITAL DATA WAS OBTAINED.

EXPERIMENT NAME- SCINTILLATION COUNTER NSSDC ID 59-004A-02

ORIGINAL EXPERIMENT INSTITUTION- SPACE TECHNOLOGY LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.P. SONETT NASA-ARC MOFFETT FIELD, CA  
OI - A. ROSEN TRW SYSTEMS GROUP REDONDO BEACH, CA  
OI - T.A. FARLEY U OF CALIFORNIA, LA LOS ANGELES, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-091059  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

**EXPERIMENT BRIEF DESCRIPTION**

THE SCINTILLATION COUNTER EXPERIMENT WAS DESIGNED TO MAKE DIRECT OBSERVATIONS OF ELECTRONS IN THE EARTH'S RADIATION BELTS WITH A DETECTOR INSENSITIVE TO BREMSSTRAHLUNG. THIS EXPERIMENT CONSISTED OF A CYLINDRICAL PLASTIC SCINTILLATOR CEMENTED TO A PHOTOMULTIPLIER TUBE. THE INSTRUMENT VIEWED SPACE THROUGH A FOIL-COVERED WINDOW IN THE PAYLOAD SHELL, BUT THE INSTRUMENT ALSO RESPONDED TO MORE ENERGETIC PARTICLES PASSING THROUGH THE PAYLOAD SHELL. THE MINIMUM ENERGIES DETECTABLE WERE 200 KEV FOR ELECTRONS AND 2 MEV FOR PROTONS. FOR ELECTRONS BETWEEN 200 AND 500 KEV, THE DETECTOR EFFICIENCY TIMES THE OMNIDIRECTIONAL GEOMETRIC FACTOR WAS 0.0008 SQ CM COUNT PER ELECTRON WHEREAS, FOR ELECTRONS OF ENERGY GREATER THAN 500 KEV, IT WAS 0.16 SQ CM COUNT PER ELECTRON. FOR VERY PENETRATING PARTICLES, THE GEOMETRICAL FACTOR ROSE TO ITS MAXIMUM VALUE OF 3.5 SQ CM. THE SCINTILLATION COUNTER WAS SAMPLED CONTINUOUSLY FOR ANALOG TRANSMISSION AND INTERMITTENTLY (EVERY 2 MIN, 15 SEC, OR 1.9 SEC, DEPENDING UPON THE SATELLITE BIT RATE) FOR DIGITAL TRANSMISSION. THE TRANSMITTER BROADCASTING THE ANALOG DATA FOR THIS EXPERIMENT FAILED ON SEPTEMBER 11, 1959. DATA WERE RECEIVED ON A LIMITED DUTY CYCLE FROM THE DIGITAL TRANSMITTER UNTIL OCTOBER 6, 1959.

DATA SET NAME- L-INTERPOLATED COUNT RATES ON MAGNETIC TAPE      NSSDC ID 59-004A-02F

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 080859 TO 090459 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET WAS DERIVED AT NSSDC FROM DATA SETS 59-004A-02A AND 59-004A-00D BY INTERPOLATION TO THE FOLLOWING L VALUES - L = 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0. THE DATA ARE L-ORDERED (THE SECONDARY ORDERING PARAMETER IS TIME) AND CONSIST OF THE FOLLOWING INFORMATION -- COUNT RATE, 0/80, LOCAL TIME, SOLAR ROTATION TIME (IN DAYS STARTING WITH THE FIRST DAY OF THE CURRENT SOLAR ROTATION), UNIVERSAL TIME, MONTH, DAY, YEAR, GEOGRAPHIC LONGITUDE, AND GEOGRAPHIC LATITUDE. THE DATA ARE CONTAINED IN THE FIRST FILE IN CARD IMAGE ON THE 7-TRACK, 556-BPI, BCD TAPE WITH EVEN PARITY.

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SPACECRAFT COMMON NAME- VANGUARD 3      NSSDC ID 59-007A  
ALTERNATE NAMES- 1959 ETA 1

LAUNCH DATE- 09/18/59      SPACECRAFT WEIGHT IN ORBIT- 22.7 KG

FUNDING AGENCY- NASA

DATE LAST USABLE SPACECRAFT DATA RECORDED-121159  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 09/21/59      ORBIT TYPE- GEOCENTRIC      ORBIT PERIOD- 130.12 MIN

APOAPSIS- 3734.4 KM ALT PERIAPSIS- 520.1 KM ALT INCLINATION- 33.34 DEG

SPACECRAFT BRIEF DESCRIPTION

VANGUARD 3 WAS LAUNCHED BY A VANGUARD ROCKET FROM THE EASTERN TEST RANGE INTO A GEOCENTRIC ORBIT. THE OBJECTIVES OF THE FLIGHT WERE TO MEASURE THE EARTH'S MAGNETIC FIELD, THE SOLAR X-RAY RADIATION AND ITS EFFECTS ON THE EARTH'S ATMOSPHERE, AND THE NEAR-EARTH MICROMETEOROID ENVIRONMENT. INSTRUMENTATION INCLUDED A PROTON MAGNETOMETER, X-RAY IONIZATION CHAMBERS, AND VARIOUS MICROMETEOROID DETECTORS. THE SPACECRAFT WAS A 50.8-CM-DIAMETER MAGNESIUM SPHERE. THE MAGNETOMETER WAS HOUSED IN A GLASS FIBER PHENOLIC RESIN CONICAL TUBE ATTACHED TO THE SPHERE. DATA TRANSMISSION STOPPED ON DECEMBER 11, 1959, AFTER 84 DAYS OF OPERATION. THE DATA OBTAINED PROVIDED A COMPREHENSIVE SURVEY OF THE EARTH'S MAGNETIC FIELD OVER THE AREA COVERED, DEFINED THE LOWER EDGE OF THE VAN ALLEN RADIATION BELT, AND PROVIDED A COUNT OF MICROMETEOROID IMPACTS. THE SPACECRAFT IS STILL IN ORBIT WITH AN EXPECTED LIFETIME OF 300 YEARS.

EXPERIMENT NAME- PROTON PRECESSIONAL MAGNETOMETER

NSSDC ID 59-007A-01

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.P. HEPPNER

NASA-GSFC

GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-121159

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT EMPLOYED A PROTON PRECESSIONAL MAGNETOMETER TO MEASURE THE EARTH'S MAGNETIC FIELD AT ALTITUDES RANGING FROM 510 TO 3750 KM AND AT LATITUDES BETWEEN PLUS OR MINUS 33.4 DEG. THE MEASUREMENTS WERE MADE ON COMMAND AS THE SPACECRAFT PASSED SEVEN MINITRACK STATIONS IN NORTH AND SOUTH AMERICA AND ONE EACH IN AUSTRALIA AND SOUTH AFRICA. WHEN SWITCHED ON BY COMMAND, THE POLARIZATION COIL AROUND THE PROTON SAMPLE (NORMAL HEXANE) WAS TURNED ON FOR 2 SEC FOLLOWED BY A 2-SEC READOUT OF THE PRECESSION SIGNAL. SEVERAL READINGS WERE TAKEN DURING EACH PASS OVER A STATION. THE EXPERIMENT WORKED WELL DURING ITS 85-DAY ACTIVE LIFE, AND APPROXIMATELY 4300 READINGS WERE RECORDED. THE EXPERIMENT IS DESCRIBED IN NASA TN D-1418, "MEASUREMENTS OF THE GEOMAGNETIC FIELD BY THE VANGUARD 3 SATELLITE," BY J. C. CAIN ET AL., OCTOBER 1962. THE OVERALL ACCURACY OF THE FIELD MEASUREMENTS IS ABOUT 10 GAMMAS.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD VALUES ON  
MAGNETIC TAPE

NSSDC ID 59-007A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 091859 TO 121159 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET SUPPLIED BY THE EXPERIMENTER, IS ON A 7-TRACK BCD MAGNETIC TAPE THAT CONTAINS THE COMPLETE SET OF FINAL REDUCED DATA FROM THE PROTON PRECESSIONAL MAGNETOMETER. EACH RECORD IS 84 CHARACTERS LONG AND

CONTAINS (1) STATION NUMBER, (2) DATE AND TIME TO 1 SEC, (3) THE MEASURED FIELD STRENGTH IN GAMMAS, (4) THE STANDARD DEVIATION OF THE MEASUREMENT, (5) THE POSITION OF THE SATELLITE, (6) THE FIELD STRENGTH COMPUTED FOR SEVERAL REFERENCED MODELS, AND (7) DATA QUALITY FLAGS. THE TAPE CONTAINS ABOUT 4000 RECORDS. IT IS DESCRIBED IN 'MAGNETIC FIELD MEASUREMENTS DATA USER'S MANUAL', NSSDC, JUNE 1964, WHICH INCLUDES A DESCRIPTION OF THE EXPERIMENT AND TAPE FORMAT.

DATA SET NAME- REDUCED SCALAR MAGNETIC FIELD VALUES IN PUBLISHED DOCUMENT NSSDC ID 59-007A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 091859 TO 121159 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE PUBLISHED REPORT, 'MEASUREMENTS OF THE GEOMAGNETIC FIELD BY THE VANGUARD 3 SATELLITE', J. C. CAIN ET AL., NASA TND-1418, OCTOBER 1962. THE REPORT INCLUDES A DESCRIPTION OF THE EXPERIMENT, THE DATA PROCESSING, AND THE APPROXIMATELY 4000 FIELD MEASUREMENTS OBTAINED ALONG WITH STATION, TIME, SATELLITE LOCATION, AND REFERENCE FIELD MODEL VALUES. THE REPORT IS ABOUT 140 PAGES LONG.

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SPACECRAFT COMMON NAME- EXPLORER 11 NSSDC ID 61-013A  
ALTERNATE NAMES- 1961 NU 1, S 15

LAUNCH DATE- 04/27/61 SPACECRAFT WEIGHT IN ORBIT- 37. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-111761  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 04/27/61 ORBIT TYPE- GEDCENTRIC ORBIT PERIOD- 108.1 MIN  
APOAPSIS- 1786.00 KM ALT PERIAPSIS- 486.000 KM ALT INCLINATION- 28.9 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 11 WAS LAUNCHED FOR THE PURPOSE OF MAPPING THE SOURCES OF HIGH-ENERGY GAMMA RAYS. THE SATELLITE WAS A SPIN-STABILIZED OCTAGONAL ALUMINUM BOX (30.5 BY 30.5 BY 58.5 CM) ON A CYLINDER (15.2 CM IN DIAMETER AND 52.2 CM LONG). TELEMETRY WAS PROVIDED ONLY IN REAL TIME BY TWO PM TRANSMITTERS, SINCE THE ONBOARD TAPE RECORDER FAILED AT LAUNCH.

EXPERIMENT NAME- PHOSWICH-CERENKOV COUNTER TELESCOPE NSSDC ID 61-013A-01

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.L. KRAUSHAAR U OF WISCONSIN MADISON, WI  
OI - G.W. CLARK MIT CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-111761  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO SEARCH FOR HIGH-ENERGY GAMMA RAYS (GREATER THAN 50 MEV) IN THE CELESTIAL SPHERE. THE DETECTOR SYSTEM CONSISTED OF ONE ANTICOINCIDENCE PLASTIC SCINTILLATION COUNTER 1500 CM SQ IN AREA, A SANDWICH CRYSTAL SCINTILLATOR 7.6 CM IN DIAMETER AND 3 CM THICK, AND A CYLINDRICAL LUCITE CERENKOV DETECTOR 7.6 CM IN DIAMETER AND 7.6 CM THICK. THE ARRIVAL OF A GAMMA RAY WAS SIGNALLED BY A COINCIDENCE BETWEEN THE SANDWICH SCINTILLATION COUNTER AND THE CERENKOV COUNTER, PROVIDED THAT NO PULSE WAS RECEIVED FROM THE LARGE CONE-SHAPED PLASTIC ANTICOINCIDENCE COUNTER. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL NOVEMBER 17, 1961.

DATA SET NAME- REDUCED DIRECTIONAL GAMMA-RAY FLUX DATA NSSDC ID 61-013A-01A  
ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 042761 TO 111761 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET SUPPLIED BY THE EXPERIMENTER, IS CONTAINED ON TWO FORTRAN, IBM 7094, 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES. ONE TAPE CONTAINS THE DIRECTION PARAMETERS OF 1012 EVENTS THAT WERE ACCEPTED AS TRUE GAMMA EVENTS BY THE INSTRUMENT CIRCUIT LOGIC AND SUBSEQUENT DATA REDUCTION. THE SECOND TAPE CONTAINS DIRECTION PARAMETERS FOR RANDOM EVENTS GENERATED BY THE EXPERIMENTER AT A RATE 25 TIMES THAT OF THE REAL EVENTS. THE NUMBER OF THESE EVENTS IS PROPORTIONAL TO THE TIME THAT THE TELESCOPE LOOKED IN A GIVEN DIRECTION, SO THAT THE RATIO OF REAL TO RANDOM EVENTS FOR ONE DIRECTION IS PROPORTIONAL TO THE DIRECTIONAL GAMMA-RAY FLUX. THE DATA INCLUDE TIME OF OBSERVATION (DECIMAL JULIAN DATE), GEOGRAPHIC POSITION OF SATELLITE, GEOMAGNETIC POSITION, TELESCOPE ORIENTATION IN GALACTIC COORDINATES, AND ADDITIONAL POSITION AND ORIENTATION INFORMATION.

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SPACECRAFT COMMON NAME- INJUN 1 NSSDC ID 61-0158  
ALTERNATE NAMES- 1961 OMICRON 2, INJUN-SR-3

LAUNCH DATE- 06/29/61 SPACECRAFT WEIGHT IN ORBIT- 16. KG

FUNDING AGENCY- IDWA-NRL

DATE LAST USABLE SPACECRAFT DATA RECORDED-030663



SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/29/61 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 103.9 MIN  
APOAPSIS- 999.000 KM ALT PERIAPSIS- 882.000 KM ALT INCLINATION- 66.82 DEG

SPACECRAFT BRIEF DESCRIPTION

THE SATELLITE INJUN 1 WAS THE FIRST OF A SERIES OF SPACECRAFT DESIGNED AND BUILT BY THE UNIVERSITY OF IOWA TO STUDY THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS, AURORAE AND AIRGLOW, AND OTHER GEOPHYSICAL PHENOMENA. INJUN 1 WAS LAUNCHED SIMULTANEOUSLY WITH TRANSIT 4A AND GREB 3. TRANSIT 4A SUCCESSFULLY SEPARATED FROM INJUN 1, BUT GREB 3 DID NOT. INJUN 1 WAS DESIGNED TO BE MAGNETICALLY ALIGNED. HOWEVER, DUE TO THE PRESENCE OF GREB 3 (WHICH BLOCKED THE VIEW OF THE PHOTOMETER), IT WAS IMPOSSIBLE TO KEEP THE SATELLITE CONSTANTLY ORIENTED ON THE TERRESTRIAL MAGNETIC FIELD THROUGHOUT AN ORBIT. A SINGLE AXIS FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. INJUN 1 HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH AN ILL DEFINED AND VARIABLE PERIOD OF SEVERAL MINUTES. THE SATELLITE SENT BACK RADIATION DATA UNTIL MARCH 6, 1963, AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 900 YR.

EXPERIMENT NAME- GM COUNTER

NSSDC ID 61-0158-01

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - L.A.	FRANK	U OF IOWA	IOWA CITY, IA
OI - J.A.	VAN ALLEN	U OF IOWA	IOWA CITY, IA

DATE LAST USABLE EXPERIMENT DATA RECORDED-083162

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

AN ANTON TYPE 213 DIRECTIONAL GEIGER TUBE DETECTOR WAS USED TO DETECT SOLAR X RAYS IN THE 2- TO 12-A RANGE, ELECTRONS (E.GE. 40 KEV), AND PROTONS (E.GE. 0.5 MEV). THE DETECTOR WAS SAMPLED EVERY SECOND, AND THE ACCUMULATION TIME FOR THE DETECTOR WAS 61/64 SEC. THE SPACECRAFT HAD A COMPLEX SPIN-AND-TUMBLE MOTION WITH A POORLY DEFINED PERIOD OF SEVERAL MINUTES. THE SOFT X-RAY OBSERVATIONS WERE MADE AT SPORADIC INTERVALS FROM JUNE 29, 1961 THROUGH AUGUST 12, 1962 (ABOUT 7% MIN OF DATA). THE EXPERIMENT PERFORMED NOMINALLY THROUGHOUT THE LIFE OF THE SPACECRAFT.

DATA SET NAME- TABULATION OF 2- TO 12-A SOLAR X-RAY DATA NSSDC ID 61-0158-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 062961 TO 081262 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS IS A REDUCED DATA SET ON ONE SHEET OF PAPER IN THE FORM OF A TABLE OF GM TUBE COUNTING RATES (IN CPS) DUE TO SOLAR X RAYS IN THE 2- TO 12-A RANGE WITH DATE (MONTH, DAY, YR), AND TIME (UT) CHRONOLOGICALLY ORDERED. THE X-RAY COUNTING RATES WERE DISTINGUISHED FROM PARTICLE COUNTING

RATES BY OBSERVING WHEN THE CDS OPTICAL MONITOR DETECTOR (NSSDC EXPERIMENT NUMBER 61-0158-02) POINTED TOWARD THE SUN. THIS LATTER DETECTOR WAS ALIGNED PARALLEL TO THE GM TUBE. DATA ARE AVAILABLE FROM JUNE 29, 1961 TO AUGUST 12, 1962.

EXPERIMENT NAME- 2- TO 8-A AND 8- TO 20-A X-RAY DETECTORS NSSDC ID 61-0158-07

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

DATE LAST EXPERIMENT DATA RECORDED-030663  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF TWO IONIZATION CHAMBERS MOUNTED 60 DEG APART ON THE EQUATOR OF THE GREB 3 SATELLITE ALONG WITH A SUN ASPECT SENSOR AND TELEMETRY ANTENNAS. THESE DETECTORS WERE DESIGNED TO MEASURE SOLAR X RAYS IN THE 2- TO 8-A AND 8- TO 20-A BANDS AND WERE MOUNTED BEHIND PERMANENT MAGNETS TO SHIELD THEM FROM PENETRATION BY ENERGETIC PROTONS (LESS THAN 1 MEV) AND ELECTRONS (LESS THAN 1 MEV) IN THE VAN ALLEN RADIATION BELTS. EACH MAGNET AND ITS ALUMINUM RETAINING COVER EFFECTIVELY LIMITED THE DETECTOR LOOK CONE TO AN ANGULAR DIAMETER OF APPROXIMATELY 60 DEG. THE SPECTRAL SENSITIVITY OF THE X-RAY DETECTORS WAS DETERMINED BY THEIR ALUMINUM WINDOWS AND NITROGEN GAS FILLER. THE SOLAR ASPECT SENSOR WAS A VACUUM PHOTOCCELL BEHIND A SPECIALLY DESIGNED APERTURE AND WAS DESIGNED TO MEASURE THE ANGLE BETWEEN THE SUN AND THE SATELLITE'S EQUATORIAL PLANE. DATA HANDLING WAS ESSENTIALLY THE SAME AS THAT USED FOR THE GREB 1 X-RAY EXPERIMENT. CURRENT FROM THE IONIZATION CHAMBERS WAS MEASURED BY A FEEDBACK-STABILIZED ELECTROMETER AMPLIFIER. DATA WERE THEN TELEMETERED TO THE GROUND USING REAL-TIME FM/AM TELEMETRY AND WERE RECORDED BY NASA MINITRACK STATIONS ON MAGNETIC TAPE. THE FAILURE OF THE GREB 3 SATELLITE TO SEPARATE FROM INJUN 1 RESULTED IN A COMPLICATED TUMBLING MOTION OF THE COMPOSITE SATELLITE, WHICH MADE IT GENERALLY IMPOSSIBLE TO IDENTIFY UNAMBIGUOUSLY AN X-RAY RESPONSE FROM ONE OR THE OTHER ION CHAMBER. THEREFORE, NO DATA FROM THE 2- TO 8-A DETECTOR WERE OBTAINED. DATA FROM THE 8- TO 20-A DETECTOR, HOWEVER, WERE OBTAINED FROM FAVORABLE ION CHAMBER-ASPECT SENSOR GEOMETRY CONFIGURATIONS (69 OBSERVATIONS) AND FROM CLOSE COINCIDENCES BETWEEN THE 8- TO 20-A DETECTOR AND SOLAR ASPECT SENSOR RESPONSES (32 OBSERVATIONS). THE ION CHAMBERS ALSO SUFFERED FROM THREE TYPES OF ENERGETIC PARTICLE INTERFERENCE -- (1) INNER ZONE PROTONS WITH ENERGIES GREATER THAN 1 MEV, (2) HIGH-ENERGY SOLAR PROTONS ASSOCIATED WITH SOLAR PROTON EVENTS, AND (3) HIGH-ENERGY OUTER ZONE ELECTRONS (THE STRONGEST SOURCE OF PARTICLE CONTAMINATION). DATA WERE OBTAINED FOR THE PERIOD JUNE 29 TO NOVEMBER 26, 1961.

DATA SET NAME- REDUCED 8- TO 20-A X-RAY FLUXES IN PUBLISHED REPORTS NSSDC ID 61-0158-07A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 062961 TO 112661 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)



SYSTEM. GOOD DATA WERE RECORDED FOR APPROXIMATELY 90 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE INITIAL SPIN RATE WAS 28.0 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 48 DEG, DECLINATION -28 DEG. THE DIRECTION WAS NEARLY CONSTANT WITH TIME, AND THE SPIN RATE SLOWLY INCREASED WITH TIME TO 34.3 RPM. APOGEE DIRECTION VARIED FROM ABOUT 1200 TO 0600 LOCAL TIME.

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR NSSDC ID 61-020A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - L.R. DAVIS	NASA-GSFC	GREENBELT, MD
OI - J.M. WILLIAMSON	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-120661

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-Å ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 100, 135, 186, 251, 512, 971, AND 1668 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 15, 26, AND 31 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. EXCEPT FOR SATURATION OF SOME OF THE PROTON CHANNELS IN THE HEART OF THE OUTER BELT, THE EXPERIMENT WORKED PROPERLY THROUGHOUT THE LIFE OF THE SPACECRAFT.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES NSSDC ID 61-020A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081661 TO 120661 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 20 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN

GEOCENTRIC INERTIAL AND B,L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETRY FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE FIVE ORBITS, WHICH AMOUNT TO ABOUT 5.2 DAYS. OF DATA ON EACH TAPE.

DATA SET NAME- ORBIT PLOTS OF PEAK COUNT RATE AND CURRENT READINGS ON MICROFILM NSSDC ID 61-020A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081661 TO 120661 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16 MM MICROFILM SUBMITTED BY THE EXPERIMENTER. IT CONTAINS 101 PLOTS AND SHOWS THE PEAK DETECTOR OUTPUT FOR EACH SPIN PERIOD AS A FUNCTION OF TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B,L COORDINATES. EACH PLOT CONTAINS ONE ORBIT OF DATA. INCLUDED ARE DATA FOR THE FULL LIFE OF THE SATELLITE, AUGUST 16 TO DECEMBER 6, 1961, WITH ABOUT 80 PERCENT COVERAGE.

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SPACECRAFT COMMON NAME- OSO 1 NSSDC ID 62-006A  
ALTERNATE NAMES- 1962 ZETA 1, S 16, OSO-A

LAUNCH DATE- 03/07/62 SPACECRAFT WEIGHT IN ORBIT- 208. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-050064  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 03/07/62 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 96.15 MIN  
APDAPSIS- 370.000 KM ALT PERIAPSIS- 343.000 KM ALT INCLINATION- 32.851 DEG

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES WERE TO PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X RAYS, AND GAMMA RADIATION. THE OSO 1 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY FM/FM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 10 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND ONBOARD TAPE RECORDER FAILED MAY 15, 1962. THE SPACECRAFT PROVIDED REAL-TIME DATA UNTIL MAY 1964, WHEN ITS POWER CELLS FAILED.



COUNT RATE IN EACH 20-SEC FRAME (THERE WERE EIGHT RATES RECORDED PER FRAME AND THESE WERE ALSO LISTED). THESE DATA APPEAR ON PLOTS IN DATA SET 62-006A-02A.

EXPERIMENT NAME- 0.1- TO 0.7-MEV SOLAR GAMMA-RAY MONITOR NSSDC ID 62-006A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.J. FROST NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-051562  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE SOLAR GAMMA-RAY FLUX IN THE 0.1- TO 0.7-MEV RANGE, WITH PARTICULAR EMPHASIS ON THE 0.511-MEV POSITRON-ELECTRON ANNIHILATION LINE AND ITS TEMPORAL VARIATION. THREE SCINTILLATION COUNTER DETECTORS WERE USED. TWO NAI (TL) DETECTORS (3.8 CM IN DIAMETER BY 3.8 CM HIGH) WERE PLACED IN THE WHEEL SECTION OF THE OBSERVATORY, AND CSI (TL) CRYSTAL (3.8 CM IN DIAMETER BY 5.08 CM HIGH) WAS PLACED IN THE POINTED SECTION. ONE OF THE SPINNING DETECTORS WAS COLLIMATED WITH A TUNGSTEN SHIELD TO PROVIDE A 20-DEG FIELD OF VIEW. THE OTHER WAS UNSHIELDED TO PROVIDE NEARLY ISOTROPIC DETECTION AND TO PROVIDE A BACKGROUND CONTROL FOR THE SHIELDED DETECTOR. THE OUTPUT FROM EACH OF THE THREE SCINTILLATORS WAS SAMPLED SEQUENTIALLY THROUGH A 16-LEVEL PULSE HEIGHT ANALYZER. EXCEPT FOR A SHIFT IN AMPLIFIER GAIN NOTED BY A CORRESPONDING SHIFT IN THE 0.511-MEV LINE, THE EXPERIMENT PERFORMED NORMALLY DURING THE LIFE OF THE SATELLITE.

DATA SET NAME- REDUCED GAMMA-RAY COUNTS PER ENERGY CHANNEL VS TIME ON MICROFILM NSSDC ID 62-006A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030762 TO 051562 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THE REDUCED DATA FROM THE GAMMA-RAY MONITOR EXPERIMENT CONSIST OF COMPUTER PRINTOUT ON NINE REELS OF 35-MM MICROFILM. TWO-DIMENSIONAL ARRAYS OF THE 16 PULSE HEIGHT CHANNEL OUTPUTS ARE PRINTED VS UNIVERSAL TIME. THE DATA COVER ORBITS 1 TO 1039 (MARCH 7 TO MAY 15, 1962). THE DATA LISTED ARE (1) TIME OF OBSERVATION, (2) PASS NUMBER, (3) DETECTOR, (4) AVERAGE NUMBER OF GAMMA EVENTS PER CHANNEL, AND (5) ENERGY CHANNEL.

EXPERIMENT NAME- 1- TO 8-A SOLAR X-RAY FLUX

NSSDC ID 62-006A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.A. WHITE NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-051562  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY TEMPORAL VARIATIONS IN 1- TO 8-A SOLAR X-RAY FLUX IN SUPPORT OF THE 10- TO 400-A SOLAR SPECTROMETER EXPERIMENT (62-006A-01). THE DETECTOR CONSISTED OF A PAIR OF XENON-FILLED ION CHAMBERS WITH 0.015-CM-THICK BERYLLIUM WINDOWS, OF 3.38 CM SQ AREA EACH. THE DETECTORS WERE CONNECTED IN PARALLEL, AND MOUNTED IN THE POINTED PORTION OF THE OSO PLATFORM SO THAT THEY MONITORED THE SUN. THE SAMPLING RATE WAS APPROXIMATELY ONCE EVERY 10 SEC. GAS PRESSURE WAS 760 MM HG, AND CHAMBER DEPTH AT NORMAL INCIDENCE WAS 2.19 CM. THE EXPERIMENT OPERATED NORMALLY FROM LAUNCH THROUGH MAY 15, 1962. ADDITIONAL DATA WERE COLLECTED THROUGH MAY 1964 ON A REAL-TIME BASIS WHENEVER THE SPACECRAFT WAS WITHIN RANGE OF A RECEIVING STATION.

DATA SET NAME- REDUCED PLOTS OF 1-MIN AVERAGED X-RAY FLUX VALUES ON MICROFILM NSSDC ID 62-006A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030762 TO 051562 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, AS SUPPLIED BY THE PRINCIPAL INVESTIGATOR, CONSIST OF PLOTS OF 1-MIN AVERAGED X-RAY FLUX VALUES (IN ERGS/CM SQ-SEC ASSUMING A 2.8 BY 10 TO THE 6 POWER DEG K BLACKBODY DISTRIBUTION) VS UT. THE DATA ARE ON ONE REEL OF 35-MM MICROFILM. EACH FRAME CONTAINS ONE ORBIT OF DATA ALONG WITH SATELLITE GEOCENTRIC LATITUDE AND LONGITUDE PLOTS, EXCEPT FOR DATA LOST AS A RESULT OF PARTICLE INTERFERENCE IN THE SOUTH ATLANTIC ANOMALY AND AS A RESULT OF NIGHTTIME INTERRUPTIONS. ALL DATA FOR ORBITS 1 TO 1039 (MARCH 7 TO MAY 15, 1962) ARE PRESENT.

EXPERIMENT NAME- 3800- TO 4800-A SOLAR FLUX MONITOR NSSDC ID 62-006A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.L. HALLAM NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-051562  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MONITOR THE 3800- TO 4800-A BAND OF SOLAR RADIANT FLUX WITH SENSITIVITY SUFFICIENT TO DETECT 0.1 PERCENT VARIATION. THE DETECTOR WAS A HIGH-CURRENT PHOTODIODE WITH A TWO-LAYER FILTER. AN OUTER FILTER WAS AN EVAPORATED PLATINUM FILM ON A 2-MM-THICK FUSED SILICA SUBSTRATE. AN INNER FILTER WAS MADE OF SCOTTS-JENS BLUE GLASS. THE DETECTOR WAS MOUNTED ON THE WHEEL SECTION OF THE OSO PLATFORM SO THAT IT



PRODUCED A READING ONCE EVERY REVOLUTION (APPROXIMATELY EVERY 2 SEC).  
ALTHOUGH THE DATA INDICATED A RAPID DECREASE IN THE SENSITIVITY OF THE  
PHOTODIODE, USEFUL DATA WERE RECORDED FROM MARCH 7 TO MAY 15, 1962.

DATA SET NAME- REDUCED TABULATIONS OF PHOTODIODE OUTPUT      NSSDC ID 62-006A-06A  
                  CURRENT VS TIME ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030762 TO 051562 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      9 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, PROVIDED BY THE EXPERIMENTER, IS CONTAINED ON  
NINE REELS OF 35-MM MICROFILM. THE DATA CONSIST OF TABULATIONS OF PHOTODIODE  
CURRENT IN MICROAMPS VS UT. A MEASUREMENT IS GIVEN FOR EACH OSO WHEEL  
ROTATION PERIOD (APPROXIMATELY 2 SEC), ORBIT START TIME, ORBIT NUMBER, AND  
SPIN AXIS ORIENTATION ARE INDICATED FOR EACH ORBIT. THE DATA ARE INCLUSIVE  
FOR ORBITS 1 THROUGH 1039 (MARCH 7 TO MAY 15, 1962).

EXPERIMENT NAME- SOLAR HYDROGEN LYMAN-ALPHA FLUX MONITOR      NSSDC ID 62-006A-07

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.L. HALLAM                              NASA-GSFC                              GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-051562

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, WHICH MONITORED SOLAR HYDROGEN LYMAN-ALPHA FLUX, WAS  
MOUNTED IN THE WHEEL SECTION OF THE SPACECRAFT SO THAT IT SCANNED THE SUN  
ONCE DURING EVERY 2-SEC ROTATION. THE DETECTOR WAS A CARBON DISULFIDE-FILLED  
ION CHAMBER WITH A LITHIUM FLUORIDE WINDOW THAT PROVIDED A BANDPASS OF 1050  
TO 1230 A. THE OVERALL SENSITIVITY OF THE DETECTOR DECLINED BY 80 PERCENT  
AFTER 230 ORBITS, BUT THIS DECLINE DID NOT AFFECT SHORT-TERM RELATIVE  
MEASUREMENTS. EXCEPT FOR DEGRADATION OF SENSITIVITY, THE EXPERIMENT  
PERFORMED NORMALLY DURING THE LIFE OF THE SPACECRAFT.

DATA SET NAME- REDUCED PEAK FLUX DATA ON MICROFILM              NSSDC ID 62-006A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030762 TO 051562 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      9 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER SUPPLIED REDUCED DATA, ON NINE REELS OF 35-MM  
MICROFILM, CONSIST OF TABLES LISTING PEAK FLUX READING (V) AND CORRECTED

UNIVERSAL TIME. THERE IS ONE TABLE PER ORBIT. ORBIT NUMBER, START TIME, AND SPIN AXIS ATTITUDE AVERAGED OVER THE ORBIT ARE ALSO TABULATED. THE DATA COVER ORBITS 1 THROUGH 1039 (MARCH 7 TO MAY 15, 1962).

EXPERIMENT NAME- HIGH-ENERGY GAMMA-RAY

NSSDC ID 62-006A-09

ORIGINAL EXPERIMENT INSTITUTION- U OF ROCHESTER

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G.G. FAZIO SAO CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-070362  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO OBSERVE SOLAR FLARES IN THE REGION ABOVE 100 MEV OF THE ELECTROMAGNETIC SPECTRUM. THE DETECTOR CONSISTED OF A LEAD SHEET (TO CONVERT GAMMA RAYS INTO ELECTRON-POSITRON PAIRS) THAT COVERED A CERENKOV DETECTOR (A PLASTIC CYLINDER COUPLED TO A PHOTOMULTIPLIER). AN ANTICOINCIDENCE SCINTILLATOR WAS PLACED BETWEEN THE LEAD SHEET AND THE CERENKOV DETECTOR TO SUPPRESS COUNTS PRODUCED BY RELATIVISTIC CHARGED PARTICLES. THE DETECTOR MONITORED THE SUN ONCE EVERY REVOLUTION OF THE SATELLITE WHEEL FOR AN .11-SEC VIEW EVERY 1.9 SEC. THE EXPERIMENT PERFORMED NORMALLY UNTIL JULY 3, 1962. MORE COMPLETE INFORMATION CAN BE FOUND IN 'THE OSO HIGH-ENERGY GAMMA-RAY EXPERIMENT,' G. G. FAZIN AND E. M. HAFNER, J. GEOPHYS. RES., 72, 2452-2455, 1967.

DATA SET NAME- SKY EVENT, EARTH EVENT, AND ASPECT DATA ON MICROFILM  
NSSDC ID 62-006A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 031762 TO 092262 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 13 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16,000 COMPUTER PRINTOUT SHEETS ON 13 REELS OF 16-MM MICROFILM. THE PRINTOUT WAS PROVIDED BY THE EXPERIMENTER. THE DATA INCLUDE TIME OF OBSERVATION (UT), ORBIT NUMBER, SPIN AXIS ORIENTATION, COUNTS OF SKY-ORIENTED EVENTS, AND COUNTS OF EARTH-ORIENTED EVENTS. THIS IS THE COMPLETE SET OF REDUCED DATA FROM THE HIGH-ENERGY GAMMA-RAY EXPERIMENT.

EXPERIMENT NAME- BF-3 PROPORTIONAL COUNTER NEUTRON DETECTOR

NSSDC ID 62-006A-10

ORIGINAL EXPERIMENT INSTITUTION- LAWRENCE RADIATION LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.N. HESS NOAA BOULDER, CO

DATE LAST USABLE EXPERIMENT DATA RECORDED-051562

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE DETECTOR WAS COMPRISED OF A PAIR OF MODERATED BF-3 PROPORTIONAL COUNTERS WITH ONE ENRICHED IN BORON 10 AND ONE DEPLETED IN BORON 10. THE EPOXY MODERATOR WAS ABOUT 3.8 CM THICK. THE EFFICIENCY OF THE COUNTER FOR DETECTING NEUTRONS WAS ROUGHLY 2 COUNTS PER NEUTRON PER CM SQUARED AND WAS ESSENTIALLY INDEPENDENT OF ENERGY IN THE RANGE 10 KEV TO 10 MEV. THE DETECTOR WORKED WELL, BUT THE DATA ARE NOT ESPECIALLY USEFUL FOR PRODUCING INFORMATION ABOUT THE TERRESTRIAL NEUTRON FLUX BECAUSE OF THE SIGNIFICANT NUMBER OF LOCALLY PRODUCED NEUTRONS. THE INSTRUMENTATION IS NOT VERY WELL DOCUMENTED.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM

NSSDC ID 62-006A-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 030762 TO 071463 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 21 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET CONSISTS OF 21 REELS OF MICROFILMED PLOTS RECEIVED FROM THE EXPERIMENTER. THE GRAPHS INCLUDE ONE-ORBIT PLOTS OF ENRICHED AND DEPLETED COUNTER RATES VS UT, AND OF ENRICHED COUNTER RATES (1) VS L DURING DAY, (2) VS L DURING NIGHT, AND (3) VS ANGLE OF SUN ELEVATION. THERE ARE APPROXIMATELY TWO MEASUREMENTS PER MINUTE. THE MICROFILM ALSO INCLUDES GRAPHS OF PROTONS AND ELECTRONS FOR DATA SET 62-006A-11C AND PLOTS OF GM TIME VS SATELLITE ALTITUDE, LATITUDE, AND LONGITUDE. THE DATA SET CONTAINS PLOTS FOR MOST ORBITS UP TO ORBIT NUMBER 1040.

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SPACECRAFT COMMON NAME- MARINER 2

NSSDC ID 62-041A

ALTERNATE NAMES- 1962 ALPHA RHO 1, P 38, MARINER R-2

LAUNCH DATE- 08/27/62

SPACECRAFT WEIGHT IN ORBIT-

203. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-010363

SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPDCH DATE- 08/27/62 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 292. DAYS

APDAPSIS- 1.0 AU RAD PERIAPSIS- 0.72 AU RAD INCLINATION- 0. DEG

SPACECRAFT BRIEF DESCRIPTION

THE MARINER 2 SPACECRAFT WAS THE SECOND OF A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 2 WAS A BACKUP FOR THE MARINER 1 MISSION WHICH FAILED SHORTLY AFTER LAUNCH TO VENUS. THE SPACECRAFT WAS ATTITUDE STABILIZED USING THE SUN AND EARTH AS REFERENCES. THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY OPERATION. THE SPACECRAFT OBTAINED DATA ON THE INTERPLANETARY

MEDIUM DURING THE FLIGHT TO VENUS AND BEYOND AND OBTAINED PLANETARY DATA DURING THE ENCOUNTER OF VENUS. THE SPACECRAFT PASSED 41,000 KM FROM VENUS ON DECEMBER 14, 1962.

EXPERIMENT NAME- COSMIC-RAY IONIZATION

NSSDC ID 62-041A-04

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)			
PI - H.R. ANDERSON	RICE U		HOUSTON, TX
OI - J.A. VAN ALLEN	U OF IOWA		IOWA CITY, IA
OI - V.H. NEHER	CAL TECH		PASADENA, CALIF.

DATE LAST USABLE EXPERIMENT DATA RECORDED-010263  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PARTICLE EXPERIMENT WAS DESIGNED TO INVESTIGATE (1) THE DEPENDENCE OF THE INTENSITY OF IONIZING PARTICLES IN SPACE UPON DISTANCE FROM THE SUN, (2) TEMPORAL VARIATIONS OF THE PARTICLES AND THEIR CORRELATION WITH VARIATIONS OF THE MAGNETIC FIELD AND PLASMA FLUX AT THE LOCATION OF THE SPACECRAFT AND WITH SOLAR-TERRESTRIAL DISTURBANCES, AND (3) THE INTENSITY AND EXTENT OF MAGNETICALLY TRAPPED PARTICLES, IF ANY, AROUND VENUS. THE INSTRUMENTATION CONSISTED OF THREE DETECTORS -- (1) A GAS-FILLED INTEGRATING IONIZATION CHAMBER WITH A WALL OF STAINLESS STEEL, (2) AN OMNIDIRECTIONAL THIN-WALLED CYLINDRICAL GLASS GM TUBE SHIELDED WITH STAINLESS STEEL, AND (3) AN IDENTICAL GLASS GM TUBE SHIELDED WITH BERYLLIUM. THE TWO GM TUBES DIFFERED IN THE EFFICIENCY WITH WHICH THEY DETECTED NONPENETRATING ELECTRONS BY THE BREMSSTRAHLUNG PROCESS. ALL THREE DETECTORS WERE SENSITIVE TO ELECTRONS OF ENERGIES GREATER THAN 500 KEV AND PROTONS OF ENERGIES GREATER THAN 10 MEV. THE IONIZATION CHAMBER WAS SAMPLED FOR 221.76 SEC ONCE EVERY 443.52 SEC. THE COUNT ACCUMULATION OF THE GM TUBE SHIELDED WITH STAINLESS STEEL WAS SAMPLED ONCE FOR 0.828 SEC AND ONCE FOR 9.6 SEC EVERY 443.52 SEC, AND THE COUNT ACCUMULATION OF THE BERYLLIUM-SHIELD GM TUBE WAS SAMPLED ONCE FOR 0.828 SEC AND ONCE FOR 9.6 SEC EVERY 887.04 SEC. THE DETECTORS WERE MOUNTED CLOSE TOGETHER WITH THE AXES OF THE GM TUBES PERPENDICULAR TO THE ROLL AXIS OF THE SPACECRAFT AND HENCE TO THE RADIUS VECTOR FROM THE SUN. THE GM TUBES SHIELDED WITH STAINLESS STEEL AND BERYLLIUM HAD OMNIDIRECTIONAL GEOMETRIC FACTORS OF 6.97 AND 6.91 CM SQUARED, RESPECTIVELY. THE EXPERIMENT OPERATED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- QUARTER DAY AND DAILY AVERAGED  
OMNIDIRECTIONAL FLUXES ON MICROFILM

NSSDC ID 62-041A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082862 TO 123062 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS SUPPLIED BY THE EXPERIMENTER, CONSISTS OF A COMPUTER LISTING OF 6-HR AND 24-HR AVERAGED OMNIDIRECTIONAL FLUXES FROM THE ION CHAMBER, STAINLESS STEEL SHIELDED GM TUBE, AND BERYLLIUM SHIELDED GM TUBE IN A TIME-ORDERED FORMAT. THE STAINLESS STEEL GM TUBE FLUXES ARE

SEPARATELY CALCULATED BASED ON THE 0.828-SEC ACCUMULATIONS AND ON THE 9.6-SEC ACCUMULATIONS. THIS WAS ALSO DONE FOR THE BERYLLIUM SHIELDED GM TUBE FLUXES. HENCE, THERE ARE FIVE FLUXES CALCULATED FOR A GIVEN 6-HR TIME PERIOD -- FOUR FOR THE GM TUBES AND ONE FOR THE ION CHAMBER. THE FORMAT ALSO INCLUDES TIME AND VARIOUS STATISTICAL PARAMETERS. A DETAILED FORMAT DESCRIPTION PRECEDES THE COMPUTER LISTING OF THESE DATA.

EXPERIMENT NAME- SOLAR PLASMA ANALYZER

NSSDC ID 62-041A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - M.M.	NEUGEBAUER	NASA-JPL	PASADENA, CA
OI - C.W.	SNYDER	NASA-JPL	PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-123062

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY THE FLUX AND ENERGY SPECTRUM OF THE POSITIVE ION COMPONENT OF THE SOLAR WIND PLASMA. THE EXPERIMENT CONSISTED OF A CYLINDRICAL ELECTROSTATIC ANALYZER WITH A FARADAY CUP DETECTOR. THIS SYSTEM SEPARATED POSITIVELY CHARGED IONS ACCORDING TO THEIR ENERGY PER UNIT CHARGE. THE ENTRANCE APERTURE WAS 5 SQ CM AND RECTANGULAR. THE APERTURE POINTED TO WITHIN 0.1 DEG OF THE SUN THROUGHOUT THE FLIGHT. THE VOLTAGE ON THE ANALYZER PLATES WAS CHANGED AT INTERVALS OF ABOUT 18 SEC IN AN ASCENDING SEQUENCE OF 10 VALUES FROM 231 V TO 8824 V. A ZERO CURRENT READING AND A CALIBRATION READING WERE THEN TAKEN. THE COMPLETE SEQUENCE OF 12 MEASUREMENTS WAS REPEATED EVERY 3.696 MIN (EVERY 2.016 MIN NEAR VENUS). THE INSTRUMENT FUNCTIONED NORMALLY OVER THE ENTIRE FLIGHT AND PROVIDED DATA ESSENTIALLY CONTINUOUSLY UNTIL DECEMBER 30, 1962.

DATA SET NAME- ONE-HR AVERAGED PLASMA BULK VELOCITY  
DATA ON MAGNETIC TAPE

NSSDC ID 62-041A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082962 TO 123062 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA CONSIST OF 1-HR AVERAGES OF PLASMA BULK SPEED COMPUTED BY THE EXPERIMENTER FROM HER UNAVERAGED PARAMETERS (DATA SET 62-041A-06B). WHERE UPPER AND LOWER LIMITS OF THE VELOCITY WERE GIVEN, THE UPPER LIMIT WAS USED IN THE CALCULATION. THE DATA ARE CONTAINED IN ONE FILE ON ONE 7-TRACK, 556-8PI, BCD MAGNETIC TAPE. EACH PHYSICAL RECORD OF 84 CHARACTERS CONTAINS THE TIME, BULK SPEED, THE NUMBER OF VALUES USED TO GENERATE THE AVERAGE, AND DAY OF YEAR. DATA COVERAGE IS 90 PERCENT OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PLASMA

NSSDC ID 62-041A-06E

PARAMETERS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082962 TO 122962 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA ARE 16-MM MICROFILMED LISTINGS (ABOUT 10 FEET OF FILM) FILMED AT NSSDC OF THE 3-HR AVERAGED PLASMA PARAMETERS ON MAGNETIC TAPE (DATA SET 62-041A-06D). CONTAINED ON THE FILM ARE DAY NUMBER AND TIME OF DAY, SOLAR WIND SPEED, THE NUMBER OF SPECTRA USED TO GENERATE THE AVERAGE, THE UPPER AND LOWER LIMITS OF THE TEMPERATURE ESTIMATE, THE DENSITY ESTIMATE, THE RATIO OF ALPHA TO PROTON DENSITY, AND A PARAMETER THAT DESCRIBES THE HIGH-ENERGY TAIL.

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SPACECRAFT COMMON NAME- ALOUETTE 1 NSSDC ID 62-049A  
ALTERNATE NAMES- 1962 BETA ALPHA 1, S 27, ALOUETTE-A

LAUNCH DATE- 09/29/62 SPACECRAFT WEIGHT IN ORBIT- 145.7 KG

FUNDING AGENCY- CRC  
FUNDING AGENCY- NASA-OSS

DATE LAST USABLE SPACECRAFT DATA RECORDED-090072  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF

EPOCH DATE- 10/07/62 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 105.4 MIN  
APDAPSIS- 1031.00 KM ALT PERIAPSIS- 996.000 KM ALT INCLINATION- 80.46 DEG

SPACECRAFT BRIEF DESCRIPTION

ALOUETTE 1 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH AN IONOSPHERIC SOUNDER, A VLF RECEIVER, AN ENERGETIC PARTICLE DETECTOR, AND A COSMIC NOISE EXPERIMENT. EXTENDED FROM THE SATELLITE SHELL WERE TWO DIPOLE ANTENNAS (45.7- AND 22.8-M LONG, RESPECTIVELY) WHICH WERE SHARED BY THREE OF THE EXPERIMENTS ON-BOARD THE SPACECRAFT. THE SATELLITE WAS SPIN STABILIZED AT ABOUT 1.4 RPM AFTER ANTENNA EXTENSION. AFTER ABOUT 500 DAYS, THE SPIN SLOWED MORE RAPIDLY THAN EXPECTED, TO ABOUT 0.6 RPM WHEN SATELLITE SPIN STABILIZATION FAILED. IT IS BELIEVED THAT THE SATELLITE GRADUALLY PROGRESSED TOWARD A GRAVITY GRADIENT STABILIZATION WITH THE LONGER ANTENNA POINTING EARTHWARD. ATTITUDE INFORMATION WAS DEDUCED ONLY FROM A SINGLE MAGNETOMETER, AND TEMPERATURE MEASUREMENTS ON THE UPPER AND LOWER HEAT SHIELDS. (ATTITUDE DETERMINATION MAY BE IN ERROR BY AS MUCH AS 10 DEG). THERE WAS NO TAPE RECORDER SO THAT DATA WERE AVAILABLE ONLY FROM THE VICINITY OF TELEMETRY STATIONS. TELEMETRY STATIONS WERE LOCATED TO PROVIDE PRIMARY DATA COVERAGE NEAR THE 80 DEG W MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, EUROPE, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 6 HR PER DAY. THE SPACECRAFT WAS PLACED ON STANDBY STATUS DUE TO BATTERY DEGRADATION IN FEBRUARY 1972, AND HAS SINCE BEEN OPERATED OCCASIONALLY.

EXPERIMENT NAME- COSMIC RADIO NOISE

NSSDC ID 62-049A-04

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - T.R. HARTZ COMM RESEARCH CENTRE OTTAWA, ONTARIO, CANADA

DATE LAST USABLE EXPERIMENT DATA RECORDED-01 68  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED THE IONOSONDE RECEIVER AUTOMATIC GAIN CONTROL (AGC) VOLTAGE TO MEASURE THE GALACTIC AND SOLAR RADIO NOISE LEVELS. THE SWEEP FREQUENCY RECEIVER COVERED THE RANGE FROM 0.5 TO 12 MHZ IN 18 SEC, BUT BELOW 1.5 MHZ THE SYSTEM RESPONSE DROPPED OFF RAPIDLY. THE RECEIVER HAD A NOISE FIGURE OF 15 DB, A BANDWIDTH OF 33 KHZ, AND A DYNAMIC RANGE OF 50 DB. THE ANTENNAS WERE TWO ORTHOGONAL DIPOLES, 46 AND 23 M LONG, LOCATED ORTHOGONAL TO THE SPACECRAFT SPIN AXIS. THE EXPERIMENT FUNCTIONED SATISFACTORILY, PROVIDING RELATIVELY GOOD FREQUENCY RESOLUTION WITH RELATIVELY POOR FLUX RESOLUTION.

DATA SET NAME- COSMIC RADIO NOISE - AGC LEVELS PLOTTED NSSDC ID 62-049A-04A  
ON 35-MM MICROFILM, MERGED WITH IONOGRAMS

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 010067 TO 031870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5065 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS MICROFILM DATA SET IS INCLUDED AS PLOT LINES ON THE IONOGRAMS OF DATA SET 62-049A-01A. IT CONSISTS OF THE AUTOMATIC GAIN CONTROL LEVEL PLOTTED VS TIME (FREQUENCY, AS THE RECEIVER IS A SWEEP FREQUENCY RECEIVER). THE FREQUENCY RESOLUTION IS RELATIVELY GOOD, BUT THE FLUX RESOLUTION IS VERY POOR DUE TO THE RESTRICTED PLOT HEIGHT. THESE DATA ARE ALSO AVAILABLE, WITH THE FLUX DISPLAYED ON AN EXPANDED SCALE, FROM THE EXPERIMENTER. THIS DATA SET INCLUDES DATA SINCE 1967.

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SPACECRAFT COMMON NAME- EXPLORER 14 NSSDC ID 62-051A  
ALTERNATE NAMES- 1962 BETA GAMMA 1, EPE-B, S 3A

LAUNCH DATE- 10/02/62 SPACECRAFT WEIGHT IN ORBIT- 40.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-081163  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/02/62 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 2184. MIN

APOAPSIS- 98517. KM ALT PERIAPSIS- 267.000 KM ALT INCLINATION- 33. DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 14 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE COSMIC-RAY PARTICLES, TRAPPED PARTICLES, SOLAR WIND PROTONS, AND MAGNETOSPHERIC AND INTERPLANETARY MAGNETIC FIELDS. IT WAS THE SECOND OF THE S 3 SERIES OF SPACECRAFT, WHICH ALSO INCLUDED EXPLORERS 12, 15, AND 26. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT FUNCTIONED WELL EXCEPT FOR THE PERIOD FROM JANUARY 10 TO 24, 1963, AND AFTER AUGUST 11, 1963, WHEN THE ENCODER MALFUNCTIONED TERMINATING THE TRANSMISSION OF USABLE DATA. GOOD DATA WERE RECORDED FOR APPROXIMATELY 85 PERCENT OF THE ACTIVE LIFETIME OF THE SPACECRAFT. THE SPACECRAFT WAS CONING (37-DEG MAXIMUM HALF ANGLE) UNTIL JANUARY 10, 1963. AFTER JANUARY 24, 1963, IT WAS SPIN-STABILIZED AT A RATE OF 10 RPM. THIS RATE SLOWLY DECREASED TO 1 RPM ON JULY 8, 1963. INITIALLY, THE LOCAL TIME OF APOGEE WAS 0700 HOURS.

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR NSSDC ID 62-051A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.R. DAVIS NASA-GSFC GREENBELT, MD  
OI - J.M. WILLIAMSON NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-081163  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-Å ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH-ENERGY LIMIT WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 97, 125, 168, 295, 495, 970, AND 1700 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 13, 21, AND 25 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE ELECTRON MEASUREMENTS WORKED THROUGHOUT THE LIFE OF THE SATELLITE. THE PROTON CHANNEL SLOWLY BECAME INTERMITTENT AND BY



MID-DECEMBER 1962 WAS INOPERATIVE. DUE TO THE SPACECRAFT CONING, IT IS DIFFICULT TO OBTAIN THE DIRECTIONAL INTENSITIES.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND NSSDC ID 62-051A-05A  
ELECTRON DATA ON MAGNETIC TAPES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 100262 TO 081063 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 69 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES AT 800 BPI IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETER FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE THREE ORBITS, WHICH AMOUNT TO ABOUT 4.6 DAYS OF DATA ON EACH TAPE.

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SPACECRAFT COMMON NAME- EXPLORER 15 NSSDC ID 62-059A  
ALTERNATE NAMES- 1962 BETA LAMBDA 1. S 3B, EPE-C

LAUNCH DATE- 10/27/62 SPACECRAFT WEIGHT IN ORBIT- 45. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-013063  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/27/62 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 317. MIN  
APOAPSIS- 17629.0 KM ALT PERIAPSIS- 309.000 KM ALT INCLINATION- 18. DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 15 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO STUDY THE ARTIFICIAL RADIATION BELT PRODUCED BY THE STARFISH HIGH-ALTITUDE NUCLEAR BURST OF JULY 1962. THE BACKUP PAYLOAD FOR EXPLORER 14 WAS MODIFIED AND USED FOR EXPLORER 15. THE INSTRUMENTATION INCLUDED THREE SETS OF PARTICLE DETECTORS TO STUDY BOTH ELECTRONS AND PROTONS, AND A TWO-AXIS FLUXGATE MAGNETOMETER TO DETERMINE MAGNETIC ASPECT. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.323 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION, AND THE OTHERS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING OF THE TELEMETERED DATA, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/100 OF FULL SCALE. ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A PATTERN 16 FRAMES LONG AND WAS USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM

VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.041 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND THE SUN DIRECTION TO ABOUT 3-DEG INTERVALS. DURING LAUNCH THE SPACECRAFT FAILED TO DESPIN. THE SPIN RATE RANGED FROM 72.9 TO 73.2 RPM DURING THE LIFE OF THE SPACECRAFT. THE SPIN AXIS POINTED AT RIGHT ASCENSION 80.97 DEG AND DECLINATION 20.9 DEG. EXCEPT FOR THE DESPIN FAILURE AND SOME OTHER MINOR, SHORT-PERIOD ENCODER MALFUNCTIONS, THE PAYLOAD FUNCTIONED WELL FROM LAUNCH UNTIL JANUARY 27, 1963 WHEN AN UNDERVOLTAGE TURNOFF OCCURRED. ON RECOVERY THE SPACECRAFT CONTINUED TO PROVIDE SOME DATA UNTIL JANUARY 30, 1963 WHEN THE SECOND UNDERVOLTAGE TURNOFF OCCURRED, AFTER WHICH TIME THE ENCODER PERMANENTLY MALFUNCTIONED.

EXPERIMENT NAME- ELECTRON AND PROTON SOLID STATE  
DETECTORS

NSSDC ID 62-059A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.L. BROWN BELL TELEPHONE LAB MURRAY HILL, NJ  
OI - U.D. DESAI NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-122362  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

SIX DIFFUSED SILICON P-N JUNCTION SEMICONDUCTOR DIODES WERE USED TO MEASURE THE ENERGY SPECTRUM OF ELECTRONS AND PROTONS IN THE ARTIFICIAL RADIATION BELT. DETECTOR A WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE 0.5 TO 2.8 MEV AND TO PROTONS IN THE RANGE 2.1 TO 4.0 MEV. DETECTORS B THROUGH F WERE SENSITIVE TO ELECTRONS IN THE RANGE 0.5 TO 2.9 MEV AND TO PROTONS IN THE RANGE 2.1 TO 22 MEV. THE DETECTORS WERE OPERATED IN HIGH AND LOW BIAS MODES, ENABLING DISCRIMINATION OF PROTONS FROM ELECTRONS. DETECTORS B AND C WERE LOCATED ON PROTRUDING OMNIDIRECTIONAL MOUNTS WITH A LOOK ANGLE OF ABOUT 2 PI STER. THE OTHER FOUR DETECTORS LOOKED PERPENDICULAR TO THE SPIN AXIS OF THE SATELLITE. THE DETECTORS FED THROUGH PRESCALERS AND LOG RATE METERS TO 16 ANALOG TELEMETRY CHANNELS. COUNTS WERE ACCUMULATED FOR 0.15 SEC EVERY 0.3 SEC. ALL DATA TRANSMISSION WAS IN REAL TIME. USEFUL DATA WERE OBTAINED FROM THE EXPERIMENT FROM LAUNCH THROUGH DECEMBER 23, 1962.

DATA SET NAME- REDUCED L-ORDERED PROTON-ELECTRON DATA  
FOR L FROM 1.1 TO 4.8 ON MAGNETIC TAPE

NSSDC ID 62-059A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102762 TO 010163 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA GENERATED AT BELL TELEPHONE LABORATORIES ARE ON ONE BESYS, IBM 7094, 7-TRACK, 800-BPI, ODD PARITY MAGNETIC TAPE WITH A BLOCK SIZE OF ONE HUNDRED AND SIXTY-SIX 36-BIT WORDS. DATA ARE INTERPOLATED TO 62 MCILWAIN L VALUES RANGING FROM 1.10 TO 4.8 AND ORDERED FIRST BY L AND THEN BY TIME. DATA FROM THE TWO OMNIDIRECTIONAL AND THE TWO MEDIUM-APERTURE (HALF-ANGLE OF 20 DEG) DETECTORS ARE PRESENTED FOR HIGH AND LOW BIAS MODES OF OPERATION. DATA FROM THE 2.9-MEV ELECTRON MODE ARE NOT VALID BEYOND

DECEMBER 23, 1962. AN IBM FORTRAN IV PROGRAM WRITTEN FOR THE IBM 7094 IS AVAILABLE TO READ OUT THE DATA ON THE TAPE AND DETERMINE THE MAXIMUM AND MINIMUM FLUX VALUES FOR EACH DETECTOR FOR EACH FILE.

EXPERIMENT NAME- DIRECTIONAL AND OMNIDIRECTIONAL NSSDC ID 62-059A-02  
ENERGETIC PROTONS AND ELECTRONS

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, SD

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.E. MCILWAIN U OF CALIFORNIA, SD SAN DIEGO, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-013063  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE UCSD PARTICLE EXPERIMENT CONSISTED OF TWO PLASTIC SCINTILLATOR DETECTORS. THERE WAS A TWO-LEVEL PULSE HEIGHT DISCRIMINATOR ASSOCIATED WITH EACH DETECTOR. ONE DETECTOR WAS ORIENTED PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND HAD A 16-DEG FULL-ANGLE APERTURE. COUNTING RATES FROM THE TWO DISCRIMINATION LEVELS OF THIS DETECTOR YIELDED INFORMATION ON DIRECTIONAL FLUXES OF ELECTRONS WITH ENERGIES ABOVE 0.5 MEV. THE SECOND DETECTOR WAS OMNIDIRECTIONAL, AND IT SEPARABLY MEASURED FLUXES OF PROTONS WITH ENERGIES FROM 40 MEV TO 110 MEV AND OF ELECTRONS WITH ENERGIES ABOVE ABOUT 4 MEV. COUNTS IN EACH OF THE FOUR DISCRIMINATION STATES WERE ACCUMULATED FOR 9.3 SEC ONCE EACH 69-SEC TELEMETRY SEQUENCE. IN CONNECTION WITH THE DIRECTIONAL FLUXES, IT IS SIGNIFICANT THAT 9.3 SEC IS ABOUT 7.6 TIMES THE SPACECRAFT SPIN PERIOD. THE DETECTORS FUNCTIONED NORMALLY FROM OCTOBER 27, 1962 UNTIL JANUARY 30, 1963, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DATA SET NAME- REDUCED COUNT RATES ON TAPE NSSDC ID 62-059A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102762 TO 013063 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX REELS OF 7-TRACK, 556-BPI, CDC/3600, BINARY MAGNETIC TAPES THAT WERE SUPPLIED BY THE EXPERIMENTER. THERE ARE TWELVE 48-BIT WORDS PER LOGICAL RECORD AND 10 LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES ARE TIME ORDERED, COVERING ABOUT 75 PERCENT OF THE INTERVAL OCTOBER 27, 1962, TO JANUARY 30, 1963. EACH LOGICAL RECORD CONTAINS TIME, A DEAD-TIME CORRECTED COUNT RATE, A FLAG INDICATING WHICH OF THE FOUR DISCRIMINATION STATES IS INVOLVED, SPACECRAFT LATITUDE, LONGITUDE, AND ALTITUDE, COMPUTED MAGNETIC FIELD MAGNITUDE AND DIRECTION, COMPUTED L VALUE, AND OTHER HOUSEKEEPING DATA.

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR NSSDC ID 62-059A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - L.R. DAVIS	NASA-GSFC	GREENBELT, MD
OI - J.M. WILLIAMSON	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-013063

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR COVERED WITH A 1000-A ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY LIMIT WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 105, 140, 177, 254, 512, 971, AND 1668 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 15, 21, AND 27 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE EXPERIMENT WORKED WELL THROUGHOUT THE LIFE OF THE SPACECRAFT. HOWEVER, THE DIRECTIONAL RESOLUTION WAS POOR BECAUSE THE SPIN RATE WAS HIGHER THAN PLANNED.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES

NSSDC ID 62-059A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102862 TO 012763 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 18 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 90 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETER FRAMES. THE CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE 24 ORBITS, WHICH AMOUNT TO ABOUT 5.2 DAYS OF DATA ON EACH TAPE.

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DATA SET NAME- ANALYZED MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER FLUX PLOTS ON MICROFILM      NSSDC ID 62-067B-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 010163 TO 051563 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET CONSISTS OF MACHINE GENERATED PARTICLE FLUX PLOTS ON ONE 16-MM REEL OF MICROFILM FOR TWO OF THE 213 GM COUNTERS (SPL AND SPH) OF THE MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER ORIENTED AT 90 DEG TO THE LOCAL MAGNETIC FIELD. DETECTOR SPL WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE FROM 40 TO 60 KEV, AND SPH WAS SENSITIVE TO ELECTRONS IN THE ENERGY RANGE 80 TO 110 KEV. THE DETECTORS WERE NOT SENSITIVE TO PROTONS. THE DATA WERE GENERATED FROM THE UNIVERSITY OF IOWA MASTER FILE MAGNETIC TAPES (DATA SET 62-067B-03A). EACH PAGE OF THE DATA INCLUDES A PLOT FOR EACH OF THE TWO DETECTORS OF PARTICLE FLUX (1/CM SQ-SEC-STER) VS INVARIANT LATITUDE. (THE FLUX IS ALSO PLOTTED AGAINST UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD MAGNITUDE IN THE SAME GRAPH.) EACH PAGE ALSO SHOWS A PLOT OF THE EXPONENTIAL SPECTRAL PARAMETER, EO, AND THE POWER LAW SPECTRAL PARAMETER, GAMMA, VS INVARIANT LATITUDE, AS WELL AS UT, MAGNETIC LOCAL TIME, AND MODEL MAGNETIC FIELD. THE PLOTS ARE TIME ORDERED AND PROVIDE TIME COVERAGE FOR MOST OF THE LIFE OF THE EXPERIMENT FOR INVARIANT LATITUDES FROM 55 TO 90 DEG. EACH PLOT COVERS ONE SATELLITE PASS. THE FLUXES ARE BASED ON 8-SEC SUMS IN A TELEMETRY MODE IN WHICH THE DETECTORS WERE SAMPLED ONCE PER SECOND, AND THE FLUXES HAVE BEEN CORRECTED FOR GEOMETRIC FACTORS AND GM COUNTER SATURATION. THE SPH DETECTOR MALFUNCTIONED AFTER MAY 15, 1963.

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SPACECRAFT COMMON NAME- EXPLORER 16      NSSDC ID 62-070A  
ALTERNATE NAMES-      1962 BETA CHI 1, S 55B

LAUNCH DATE- 12/16/62      SPACECRAFT WEIGHT IN ORBIT-      100.8 KG

FUNDING AGENCY- NASA-OAST

DATE LAST USABLE SPACECRAFT DATA RECORDED-070263  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 12/16/62      ORBIT TYPE- GEOCENTRIC      ORBIT PERIOD- 104.3 MIN  
APOAPSIS- 1181.00 KM ALT      PERIAPSIS- 750.000 KM ALT      INCLINATION- 52.01 DEG

SPACECRAFT BRIEF DESCRIPTION

THE EXPLORER 16 MICROMETEOROID SATELLITE WAS THE SECOND IN THE SERIES OF S-55 MICROMETEOROID SATELLITES ORBITED BY NASA. ITS PURPOSE WAS TO OBTAIN DATA ON THE NEAR-EARTH METEOROID ENVIRONMENT, THUS PROVIDING AN ACCURATE ESTIMATE OF THE PROBABILITY OF PENETRATION IN SPACECRAFT STRUCTURES BY METEORIODS AND ALLOWING A MORE CONFIDENT DEFINITION OF THE RELATIONSHIP BETWEEN PENETRATION FLUX AND MATERIAL THICKNESS TO BE DERIVED. THE CYLINDRICALLY SHAPED SPACECRAFT, ABOUT 61 CM IN DIAMETER AND 192 CM LONG, WAS BUILT AROUND THE BURNED-OUT FOURTH STAGE OF THE SCOUT LAUNCH VEHICLE THAT REMAINED AS PART OF THE ORBITING SATELLITE. EXPLORER 16 CARRIED STAINLESS STEEL PRESSURIZED-CELL PENETRATION DETECTORS, IMPACT DETECTORS,

CAPACITOR DETECTORS, AND CADMIUM SULFIDE CELL DETECTORS TO OBTAIN DATA ON THE SIZE, NUMBER, DISTRIBUTION, AND MOMENTUM OF DUST PARTICLES IN THE NEAR-EARTH ENVIRONMENT. THE SPACECRAFT OPERATED SATISFACTORILY DURING ITS 7-MONTH LIFE (DECEMBER 16, 1962 TO JULY 1963), AND ALL MISSION OBJECTIVES WERE ACCOMPLISHED.

EXPERIMENT NAME- PRESSURIZED CELL MICROMETEORITE DETECTOR NSSDC ID 62-070A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.A. GURTLER NASA-LARC HAMPTON, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-070263  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS ONE OF FIVE MICROMETEORITE DETECTORS ABOARD EXPLORER 16. IT UTILIZED PRESSURIZED CELLS SHAPED LIKE HALF CYLINDERS WITH WALLS OF 25-, 51- AND 127-MICRON THICK BERYLLIUM COPPER TO RECORD MICROMETEOROID IMPACTS. THE CELLS CONTAINED HELIUM GAS HELD UNDER PRESSURE. AS A MICROMETEOROID PUNCTURED THE CELL WALL, IT RELEASED THE GAS AND DROPPED THE PRESSURE. THIS DROP IN PRESSURE ACTIVATED AN ELECTRONIC CIRCUIT AND TRANSMITTED THIS INFORMATION TO EARTH. THE PRESSURIZED-CELL SENSORS WERE DIVIDED INTO TWO IDENTICAL GROUPS THAT WERE TELEMETERED SEPARATELY ON THE TWO TELEMETERS. DURING THE 7-1/2 MONTHS IN WHICH THE EXPERIMENT TRANSMITTED USEFUL DATA, 44 PUNCTURES WERE INDICATED IN THE ONE HUNDRED 25-MICRON BERYLLIUM COPPER WALLS, AND NONE OF THE TWENTY 127-MICRON BERYLLIUM COPPER SENSORS WAS PUNCTURED. THE PUNCTURE RATE FOR THE 25-MICRON MATERIAL WAS 0.32 PUNCTURE PER SQ M PER DAY, AND THE PUNCTURE RATE FOR THE 51-MICRON MATERIAL WAS 0.19 PUNCTURE PER SQ M PER DAY.

DATA SET NAME- PRESSURE CELL CUMULATIVE PENETRATION PLOTS NSSDC ID 62-070A-01A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 070263 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE GRAPH SHOWING CUMULATIVE NUMBERS OF CELL PENETRATIONS VS TIME. CURVES FOR ALL THREE CELL WALL THICKNESSES ARE ON ONE GRAPH. TRACES OF LEAST SQUARES FIT FOR THE DATA AND THEORETICAL SCATTER ARE INCLUDED. DOCUMENTATION AND DATA ARE ON PAGE 54 OF ALVAREZ, J. M., 'STATISTICAL ANALYSIS OF METEOROID PENETRATION DATA INCLUDING EFFECTS OF CUTOFF,' NASA-LRC L5944.

DATA SET NAME- PRESSURE CELL CUMULATIVE PENETRATION TABULATIONS NSSDC ID 62-070A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 072263 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOUR TABLES SHOWING CUMULATIVE CELL PUNCTURE COUNTS (BY WALL THICKNESS) FOR EACH SATELLITE INTERROGATION TIME, THREE OTHER TABLES LIST ONLY INTERROGATION TIMES AT WHICH A NEW PUNCTURE OCCURS, AND NOTE TIME SINCE LAST INTERROGATION. OTHER DESCRIPTIVE INFORMATION ABOUT THE EXPERIMENT OPERATION IS INCLUDED. DATA ARE IN HASTINGS, E. C., 'THE EXPLORER XVI MICROMETEOROID SATELLITE' AND 3 SUPPLEMENTS, NASA TM X810 PAGE 9, TM X824 PAGE 3, TM X899 PAGE 7, TM X949 PAGE 4.

EXPERIMENT NAME- GRID DETECTORS OF MICROMETEORITES

NSSDC ID 62-070A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-LERC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E.H. DAVISON NASA-LERC CLEVELAND, OH

DATE LAST USABLE EXPERIMENT DATA RECORDED-053063

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS ONE OF FIVE MICROMETEORITE DETECTORS ABOARD THE SPACECRAFT. IT UTILIZED THIN GRIDS OF CONDUCTING GOLD DEPOSITED ON THE BOTTOM SURFACE OF TWO STAINLESS STEEL SHEETS OF DIFFERENT THICKNESS TO RECORD MICROMETEOROID PENETRATION. THE GRID DETECTORS WERE MOUNTED NEAR THE END OF THE CYLINDRICAL SATELLITE CASING OPPOSITE THE END WHERE THE ANTENNAS WERE MOUNTED. THE PROTECTIVE STAINLESS STEEL SHEETS WERE 25 MICRONS AND 152 MICRONS THICK. A PARTICLE PENETRATING THE STEEL SHEET WOULD ALMOST INVARIABLY BREAK ONE OF THE CURRENT CHANNELS UNDERNEATH, LOWERING ITS RESISTANCE LEVEL AND RECORDING THE PENETRATION. SIX PENETRATIONS WERE RECORDED IN THE 25-MICRON STAINLESS STEEL SHEET, AND NO PENETRATIONS WERE INDICATED IN THE 152-MICRON STAINLESS STEEL SHEET. THE EXPERIMENT FUNCTIONED WELL IN THE 7-1/2 MONTHS IN WHICH THE SATELLITE TRANSMITTED USEFUL MICROMETEOROID DATA.

DATA SET NAME- GRID DETECTOR PENETRATION PLOTS

NSSDC ID 62-070A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 053063 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE GRAPH SHOWING CUMULATIVE NUMBERS OF RECORDED PENETRATIONS VS TIME, PLOTS FOR BOTH WALL THICKNESSES ALONG WITH LEAST SQUARES FIT, AND THEORETICAL SCATTER ARE INCLUDED ON THE GRAPH. DOCUMENTATION AND DATA ARE IN ALVAREZ, J. M., 'STATISTICAL ANALYSIS OF METEOROID PENETRATION DATA INCLUDING EFFECTS OF CUTOFF,' NASA-LRC L5944.



PAGE 57.

EXPERIMENT NAME- COPPER WIRE MICROMETEORITE DETECTOR NSSDC ID 62-070A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L. SECRETAN NASA-LARC HAMPTON, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-072263  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS ONE OF FIVE MICROMETEORITE DETECTORS ABOARD EXPLORER 16. IT USED WIRE GRIDS CONSISTING OF COPPER WIRE 52 AND 76 MICRONS THICK, MOUNTED ON RECTANGULAR MELAMINE CARDS, TO OBTAIN MEASUREMENTS OF MICROMETEOROID IMPACT. WHEN A MICROMETEOROID BROKE THE WIRES, THE LOWERED RESISTANCE LEVEL OF AN ELECTRONIC CIRCUIT WAS RECORDED. IMPACTS WERE MEASURED SEPARATELY ON THE SATELLITE'S TWO TELEMETERS AND WERE THEN RELAYED FOR TRANSMISSION TO EARTH. DURING THE 7-1/2 MONTHS IN WHICH THE EXPERIMENT TRANSMITTED USEFUL DATA, TELEMETER A GAVE NO INDICATION OF A BREAK IN EITHER THE 52-MICRON OR THE 76-MICRON COPPER WIRES ON THE CARD DETECTORS. TELEMETER B RECORDED ONE BREAK IN THE 52-MICRON AND 76-MICRON WIRE ON JUNE 28, 1963, AND ONE IN THE 76-MICRON WIRE ON JULY 13, 1963. MORE DETAILS ON THIS EXPERIMENT ARE CONTAINED IN HASTINGS, E. C., 'THE EXPLORER XVI MICROMETEOROID SATELLITE DESCRIPTION AND PRELIMINARY RESULTS', NASA TMX-810.

DATA SET NAME- GSFC WIRE CARD MICROMETEOROID DETECTOR NSSDC ID 62-070A-03A  
PLOT

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 072263 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THE RECORD OF DATA FROM THIS EXPERIMENT IS CONTAINED ON PAGE 58 OF ALVAREZ, J. M., 'STATISTICAL ANALYSIS OF METEOROID PENETRATION DATA INCLUDING EFFECTS OF CUTOFF,' AND ON PAGE 8 OF HASTINGS, E. C., 'THE EXPLORER XVI MICROMETEOROID SATELLITE SUPPLEMENT III,' NASA TM X-949, MARCH 1964. HASTINGS GIVES ONLY A STATEMENT OF THE PENETRATIONS AS NOTED IN THE EXPERIMENT BRIEF DESCRIPTION. ALVAREZ PRESENTS ONE GRAPH OF PENETRATIONS VS TIME WITH THEORETICAL SCATTER BOUNDARIES ADDED.

EXPERIMENT NAME- MICROMETEORITE DETECTOR NSSDC ID 62-070A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)



DESCRIPTION MAY BE FOUND IN SECRETAN, L., 'MEASUREMENTS OF INTERPLANETARY DUST PARTICLE FLUX FROM EXPLORER XVI CDS AND WIRE GRID DUST PARTICLES DETECTORS,' NASA-GSFC X-613-66-451.

DATA SET NAME- CADMIUM-SULFIDE CELL MICROMETEORITE NSSDC ID 62-070A-05A  
DETECTOR DATA TABULATIONS

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 020963 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THESE DATA LIST CUMULATIVE PERFORATION AREAS OF THE OPAQUE (CDS) CELL COVER FOR EACH TIME FOR WHICH DATA COULD BE READ. THE READOUT TIME DEPENDED UPON THE SOLAR ASPECT OF THE SATELLITE WHEN THE SATELLITE WAS IN RANGE OF A READOUT STATION. SINCE THE DESIRED MINIMUM CELL RESISTANCE (FOR A GIVEN HOLE AREA) OCCURS ONLY WHEN THE SUN IS NORMAL TO THE CELL SURFACE. SEVEN LINES OF DATA ARE LISTED FOR THE 20-DAY OPERATION OF CELL A, AND EIGHT LINES OF DATA FOR THE 55-DAY OPERATION OF CELL B. THE DATA ARE ON PAGE 10 OF SECRETAN, L., 'MEASUREMENTS OF INTERPLANETARY DUST PARTICLE FLUX FROM EXPLORER XVI CDS AND WIRE GRID DUST PARTICLE DETECTORS,' NASA-GSFC X-613-66-451.

DATA SET NAME- CADMIUM-SULFIDE CELL MICROMETEORITE NSSDC ID 62-070A-05B  
DETECTOR DATA PLOTS

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121662 TO 020963 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE GRAPH SHOWING PLOTS (FOR EACH OF TWO CELLS) OF TIME VS HOLE AREA IN THE OPAQUE MYLAR SHIELD. THE TIME PLOTTED IS READOUT TIME AND DEPENDED UPON THE SOLAR ASPECT OF THE SATELLITE WHEN THE SATELLITE WAS IN RANGE OF A READOUT STATION, SINCE THE DESIRED MINIMUM CELL RESISTANCE (FOR A GIVEN HOLE AREA) OCCURS ONLY WHEN THE SUN IS NORMAL TO THE CELL SURFACE. THE DATA ARE ON PAGE 61 OF ALVAREZ, J. M., 'STATISTICAL ANALYSIS OF METEOROID PENETRATION DATA INCLUDING EFFECTS OF CUTOFF,' NASA-LRC L5944.

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SPACECRAFT COMMON NAME- EXPLORER 18 NSSDC ID 63-046A  
ALTERNATE NAMES- IMP-A, IMP 1

LAUNCH DATE- 11/27/63 SPACECRAFT WEIGHT IN ORBIT- 62.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-051065  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 11/27/63 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 5583. MIN  
APODAPSIS- 195552. KM ALT PERIAPSIS- 197.000 KM ALT INCLINATION- 33.34 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 18 (IMP 1) WAS A SOLAR CELL AND CHEMICAL BATTERY-POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 1020, A SPIN RATE OF 22 RPM, AND A SPIN DIRECTION OF 115 DEG RIGHT ASCENSION AND -25 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. THE SPACECRAFT PERFORMED NORMALLY UNTIL MAY 30, 1964, THEN INTERMITTENTLY UNTIL MAY 10, 1965 WHEN IT WAS ABANDONED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON NSSDC ID 63-046A-00G  
TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 122163 TO 123064 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE GENERATED AT NSSDC FROM UNBLOCKED TAPES (63-046A-00F) SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT.

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS NSSDC ID 63-046A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - C.Y.	FAN	U OF ARIZONA	TUCSON, AZ
OI - G.	GLOECKLER	U OF MARYLAND	COLLEGE PARK, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-101564  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED



DURING ONE 39.36-SEC INTERVAL EVERY 5.46 MIN. THE RELATIVE CONTRIBUTION TO THE COUNT RATE OF VARIOUS SPECIES (ELECTRONS BETWEEN 3 AND 12 MEV, IONS WITH CHARGE = 1, 2, ATOMIC MASS = 1, 2, 3, 4, AND ENERGY BETWEEN 18.7 AND 81.6 MEV/NUCLEON) AND ENERGY SPECTRAL INFORMATION WERE DETERMINED BY 512-CHANNEL PULSE HEIGHT ANALYSIS PERFORMED SIMULTANEOUSLY ON THE OUTPUT OF BOTH CSI SCINTILLATORS SIX TIMES EVERY 5.46 MIN. THE SECOND DETECTOR SYSTEM CONSISTED OF TWO GEIGER-MUELLER (GM) TUBE TELESCOPES ORIENTED PARALLEL TO AND PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. EACH TELESCOPE CONSISTED OF TWO COLINEAR GM TUBES. THE PARALLEL AND PERPENDICULAR TELESCOPES MEASURED THE SUM OF COUNTS DUE TO PROTONS ABOVE 70 MEV AND ELECTRONS ABOVE 6.5 MEV AND THE SUM OF COUNTS DUE TO PROTONS ABOVE 65 MEV AND ELECTRONS ABOVE 6 MEV, RESPECTIVELY. COUNTS REGISTERED IN ANY ONE OF THE FOUR GM TUBES WERE ALSO ACCUMULATED. THESE OMNIDIRECTIONAL COUNTS WERE DUE TO PROTONS ABOVE 50 MEV PLUS ELECTRONS ABOVE 4 MEV. THE PARALLEL, PERPENDICULAR, AND OMNIDIRECTIONAL COUNT RATES WERE OBTAINED FOR ONE 40-SEC ACCUMULATION INTERVAL DURING SUCCESSIVE NORMAL 81.9-SEC TELEMETRY SEQUENCES. THUS, ANY ONE COUNT RATE WAS MEASURED FOR 40 SEC ONCE EACH 5.46 MIN. BOTH DETECTOR SYSTEMS WORKED WELL FROM LAUNCH UNTIL MAY 26, 1964.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON TAPE NSSDC ID 63-046A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112763 TO 052664 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 556-BPI, BINARY MAGNETIC TAPE GENERATED BY THE EXPERIMENTER ON AN IBM 7040/7094 DIRECT COUPLED SYSTEM. EACH LOGICAL RECORD CONTAINS DATA FROM 1 DAY IN 652 WORDS (CONTROL WORDS NOT INCLUDED). HOURLY AVERAGED COUNT RATES FOR THE SCINTILLATOR TELESCOPE AND FOR THE TWO GM TELESCOPES (DIRECTIONAL AND OMNIDIRECTIONAL MODES) ARE GIVEN.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON MICROFILM NSSDC ID 63-046A-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112763 TO 031864 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04C AND -04D. THE DATA CONSIST OF TABULAR LISTINGS OF TIME, SPACECRAFT ALTITUDE, AND HOURLY AVERAGED COUNT RATES FOR ALL THE COUNTING MODES OF THE SCINTILLATOR TELESCOPE AND OF THE GEIGER MUELLER TUBES. THERE ARE NO SIGNIFICANT DATA GAPS BETWEEN NOVEMBER 27, 1963 AND FEBRUARY 29, 1964. THERE ARE NO DATA FOR THE FIRST 15 DAYS OF MARCH, BUT THERE ARE DATA FOR MARCH 16-18, 1964.

DATA SET NAME- 5-MINUTE COUNT RATES ON MICROFILM

NSSDC ID 63-046A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112763 TO 031864 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04B AND -04D. THE DATA CONSIST OF TABULAR LISTINGS OF TIME, SPACECRAFT ALTITUDE, AND ALL COUNT RATES (5-MIN RESOLUTION) FOR ALL THE COUNTING MODES OF THE SCINTILLATOR TELESCOPE AND OF THE GEIGER MUELLER TUBES. THERE ARE NO SIGNIFICANT DATA GAPS BETWEEN NOVEMBER 27, 1963 AND FEBRUARY 29, 1964. THERE ARE NO DATA FOR MARCH 1-15, 1964, BUT THERE ARE DATA FOR MARCH 16-18, 1964.

DATA SET NAME- DE/DX VS E MATRICES ON MICROFILM

NSSDC ID 63-046A-04D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112763 TO 031464 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE REEL OF 16-MM MICROFILM WHICH ALSO CONTAINS DATA SETS 63-046A-04B AND -04C. THE DATA CONSIST OF DE/DX VS E MATRICES FOR THE SCINTILLATOR TELESCOPE. EACH MATRIX WAS CONSTRUCTED USING DATA TAKEN DURING ONE FULL SPACECRAFT ORBIT (3.8 DAYS), EXCEPT THAT DATA TAKEN BELOW ABOUT 11 EARTH RADII WERE EXCLUDED. DATA FOR THE FIRST 28 ORBITS ARE PRESENTED (NOVEMBER 27, 1963 TO MARCH 14, 1964).

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SPACECRAFT COMMON NAME- ERS 13

NSSDC ID 64-040C

ALTERNATE NAMES- TRS 6, TRS 2(B)

LAUNCH DATE- 07/17/64

SPACECRAFT WEIGHT IN ORBIT-

2.1 KG

FUNDING AGENCY- DOD-USAF

DATE LAST USABLE SPACECRAFT DATA RECORDED-010465

SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/16/64 ORBIT TYPE- GEOCENTRIC

ORBIT PERIOD- 2366.2 MIN

APOAPSIS- 110012. KM ALT PERIAPSIS-

219. KM ALT INCLINATION- 36.7310 DEG

SPACECRAFT BRIEF DESCRIPTION

ERS 13 WAS A SPIN-STABILIZED TETRAHEDRON THAT WEIGHED 2.1 KG AND MEASURED 22.86 CM ALONG EACH TRIANGULAR EDGE. THE SPIN RATE WAS APPROXIMATELY 10 RPM, AND POWER WAS OBTAINED BY SOLAR CELLS. THE SATELLITE

CARRIED A SCINTILLATION COUNTER AND A SOLID-STATE DETECTOR TO MEASURE ELECTRONS AND PROTONS IN THE RADIATION BELTS. BECAUSE OF THE LOW (100 MW) TRANSMITTER POWER AT 136 MHZ, NO DATA WERE OBTAINED BEYOND 6 EARTH RADII (40,280 KM). THE TRANSMISSION WAS NORMAL FROM LAUNCH UNTIL OCTOBER 20, 1964 WHEN THE TRANSMITTER BECAME INTERMITTENT. FROM THIS TIME UNTIL JANUARY 4, 1965, SOME TRANSMISSIONS WERE RECEIVED. A PAM/FM/PM TELEMETRY SYSTEM USING IRIG CHANNEL 5 WAS EMPLOYED.

EXPERIMENT NAME- CHARGED PARTICLE DETECTORS

NSSDC ID 64-040C-01

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.I. VETTE	NASA-GSFC	GREENBELT, MD
OI - J.B. GARDNER	TRW SYSTEMS GROUP	REDONDO BEACH, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-120864

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT CONSISTED OF (1) A LITHIUM DRIFTED SILICON DETECTOR TO MEASURE SEPARATELY ELECTRONS ABOVE 700 KEV AND PROTONS BETWEEN 12 AND 23 MEV, AND (2) A PLASTIC SCINTILLATION COUNTER TO MEASURE SEPARATELY ELECTRONS ABOVE 3.5 MEV AND PROTONS BETWEEN 39 AND 50 MEV IN THE RADIATION BELTS. THE PHOTOMULTIPLIER TUBE USED WITH THE SCINTILLATION COUNTER SHOWED A CHANGE IN GAIN AROUND SEPTEMBER 27, 1964. BOTH DETECTOR SYSTEMS WERE OMNIDIRECTIONAL AND USED LOGARITHMIC COUNT RATE METERS TO CONVERT RATES INTO ANALOG SIGNALS. TWO PULSE HEIGHT DISCRIMINATORS WERE USED WITH EACH DETECTOR TO PROVIDE THE FOUR MEASUREMENTS.

DATA SET NAME- 10-SEC AVERAGED, L-ORDERED ELECTRON FLUX DATA ABOVE 700 KEV ON TAPE

NSSDC ID 64-040C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 071864 TO 112964 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE COUNT RATES FROM THE LITHIUM DRIFTED SILICON DETECTOR ELECTRON CHANNEL WERE INTERPOLATED TO THE FIXED L VALUES 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, AND 8.0 BY TRW AND CONVERTED TO FLUX GREATER THAN 700 KEV USING A MULTIPLICATIVE FACTOR EQUAL TO 300. BESIDES THE FLUX, LOCAL TIME (HR), SOLAR ROTATION TIME (DAYS), UT (HR), MONTH, DAY OF MONTH, YEAR (MINUS 1900), GEOGRAPHIC LATITUDE (DEG), EAST LONGITUDE (DEG), ORBIT NUMBER, AND L VALUE (EARTH RADII) ARE GIVEN. THE DATA ARE ORDERED BY L VALUE. THE CARD IMAGES ARE ON A SINGLE 7-TRACK, 556-BPI, IBM 7094, BCD, EVEN PARITY MAGNETIC TAPE. THE DATA SET WAS USED IN CONSTRUCTING THE AE-4 MODEL ELECTRON ENVIRONMENT. THIS DATA SET APPEARS AS FILE 4 ON THE SAME TAPE AS THAT WHICH CONTAINS DATA SET 65-058C-01D.





OI - R.B. NORTON NOAA-ERL BOULDER, CO  
OI - J.M. WARNOCK NOAA BOULDER, CO

DATE LAST USABLE EXPERIMENT DATA RECORDED-122965  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

**EXPERIMENT BRIEF DESCRIPTION**

THE FIXED-FREQUENCY IONOSONDE IS A RADIO TRANSMITTER-RECEIVER THAT RECORDS THE TIME DELAY BETWEEN A TRANSMITTED AND A RETURNED RADIO PULSE. SIX SPECIFIC FREQUENCIES FROM 1.5 TO 7.22 MHZ WERE SAMPLED IN SEQUENCE ONCE EVERY 0.105 SEC. SEVERAL DELAY TIMES WERE OFTEN OBSERVED FOR EACH FREQUENCY DUE TO PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC. DELAY TIME WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE SIGNAL PATH, AND THE MODE OF PROPAGATION. A TOTAL OF 1450 HR OF DATA WAS ACQUIRED. MOST OF THESE DATA WERE OF ADEQUATE QUALITY TO PREPARE IONOGRAMS. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND OTHER RELATED INFORMATION MUST BE OBTAINED FROM WORLD MAPS. (SEE DATA SET 64-051A-00B.)

DATA SET NAME- SINGAPORE AND WINKFIELD TIME-ORDERED, NSSDC ID 64-051A-01C  
FIXED FREQUENCY IONOGRAMS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082764 TO 122265 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 110 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET WAS PREPARED BY RECORDING ALL REFLECTIONS FOR EACH FREQUENCY DURING A GIVEN PASS SEQUENTIALLY IN ONE IONOGRAM. DATA FOR EACH PASS, THEREFORE, CONSIST OF SIX 'IONOGRAMS,' ONE FOR EACH OF THE SIX FIXED FREQUENCIES. THE RESOLUTION ON ANY ONE IONOGRAM IS BETTER THAN 1 KM. THESE DATA ARE A STANDARD ORIGINAL FORM OF THE REDUCED DATA PREPARED BY COOPERATING INVESTIGATORS IN ENGLAND. THE DATA CONSIST OF 35-MM MICROFILMED 'IONOGRAMS' OBSERVED BETWEEN AUGUST 27, 1964 AND DECEMBER 22, 1965. DATA WERE OBSERVED NEAR SINGAPORE AND WINKFIELD, ENGLAND. MOST OF THESE DATA ARE INCLUDED IN DATA SET 64-051A-01A. TIME TICKS AND DIGITAL TIME DATA APPEAR ON THE EDGE OF THE IONOGRAMS. INDEXING INFORMATION FOR THESE DATA IS AVAILABLE IN DATA SET 64-051A-01D.

DATA SET NAME- IONOGRAM INVENTORY ON TAPE NSSDC ID 64-051A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082564 TO 122265 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

**DATA SET BRIEF DESCRIPTION**

THIS FILE INDEXES THE EXPLORER 20 FIXED-FREQUENCY IONOSONDE DATA (DATA SETS 64-051A-01A AND 64-051A-01C) BY STATION PASS. INFORMATION IN THE DATA SET FOR WHICH FIXED-FREQUENCY IONOSONDE DATA CAN BE IDENTIFIED INCLUDES PASS START AND STOP TIME, ORBIT NUMBER, AND TELEMETRY STATION. THE INVENTORY, WHICH WAS PREPARED FROM PHYSICAL INSPECTION OF THE FILM AND SPACECRAFT

EPHEMERIDES, IS MAINTAINED ON ONE 556-BPI, 7-TRACK, BCD MAGNETIC TAPE.

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SPACECRAFT COMMON NAME- OGO 1  
ALTERNATE NAMES- EOGO 1, OGO-A  
NSSDC ID 64-054A  
LAUNCH DATE- 09/05/64 SPACECRAFT WEIGHT IN ORBIT- 487. KG  
FUNDING AGENCY- NASA-OSSA  
DATE LAST USABLE SPACECRAFT DATA RECORDED-112569  
SPACECRAFT STATUS OF OPERATION- INOPERABLE  
EPOCH DATE- 09/07/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3839. MIN  
APOAPSIS- 149385. KM ALT PERIAPSIS- 281.000 KM ALT INCLINATION- 31.2 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 1 SPACECRAFT, THE FIRST OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SPACECRAFT. OGO 1 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS DESIGNED TO BE EARTH POINTING (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON, AND COULD ROTATE ABOUT, AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A BOOM DEPLOYMENT FAILURE SHORTLY AFTER ORBITAL INJECTION, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE OF 5 RPM ABOUT THE Z AXIS. THIS SPIN AXIS REMAINED FIXED WITH A DECLINATION OF ABOUT -10 DEG AND RIGHT ASCENSION OF ABOUT 40 DEG AT LAUNCH, THE LOCAL TIME OF APOGEE WAS 2100 HR. OGO 1 CARRIED 20 EXPERIMENTS. TWELVE OF THESE WERE PARTICLE STUDIES AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EXPERIMENT FOR EACH OF THE FOLLOWING TYPES OF STUDIES -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHNEIN, ATMOSPHERIC MASS, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE OF THE SPACECRAFT FROM THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDEBAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDEBAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BECAUSE OF THE BOOM DEPLOYMENT FAILURE, THE BEST OPERATING MODE FOR THE DATA HANDLING SYSTEM WAS THE USE OF ONE OF THE WIDEBAND TRANSMITTERS AND THE DIRECTIONAL ANTENNA. ALL DATA RECEIVED FROM THE OMNIDIRECTIONAL ANTENNA WERE NOISY. DURING SEPTEMBER 1964, ACCEPTABLE DATA WERE RECEIVED OVER 70 PERCENT OF THE ORBITAL PATH. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 10 PERCENT OF THE ORBITAL PATH. ON NOVEMBER 25, 1969, OGO 1 WAS PLACED IN A SAFE-STANDBY MODE.

EXPERIMENT NAME- TRIAXIAL SEARCH COIL MAGNETOMETER

NSSDC ID 64-054A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - E.J. SMITH	NASA-JPL	PASADENA, CA
OI - R.E. HOLZER	U OF CALIFORNIA, LA	LOS ANGELES, CA

DATE LAST EXPERIMENT DATA RECORDED-112569

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE OGO 1 TRIAXIAL SEARCH COIL MAGNETOMETER WAS DESIGNED TO MEASURE THE MAGNETIC FIELD FLUCTUATIONS FROM 0.01 TO 1 KHZ. DUE TO A SPACECRAFT MALFUNCTION, THE OGO SATELLITE ASSUMED A SPIN-STABILIZED MODE WITH A 12-SEC PERIOD. THIS MEANT THE MAGNETOMETER OUTPUT WAS MODULATED WITH AN APPROXIMATELY SINUSOIDAL SIGNAL, PROVIDING A MEASURE OF THE DC COMPONENT OF THE MAGNETIC FIELD PERPENDICULAR TO THE SPIN AXIS AS WELL AS THE AC DATA. THE MAGNETOMETER ASSEMBLY WAS ON A 6.1-M BOOM, AND THE ELECTRONICS WERE IN THE BODY OF THE SPACECRAFT. THE SENSITIVITY WAS 10 MICROVOLTS PER GAMMA-SEC. THE LOW-FREQUENCY CHANNEL WAS SAMPLED FIVE TIMES EVERY 1.152 SEC BY THE TELEMETRY SYSTEM WHEN THE DATA RATE WAS 1 KBS, AND PROPORTIONALLY FASTER FOR THE HIGHER TELEMETRY RATES OF 8 AND 64 KBS. HOWEVER, DUE TO THE SPACECRAFT SPIN, THE HIGHEST BIT RATE COULD NOT BE USED WHEN THE SATELLITE WAS MORE THAN 10 EARTH RADII AWAY. THE UPPER FREQUENCY CUTOFF (TO AVOID ALIASING IN THE DATA) WAS 2 HZ FOR THE 1- AND 8-KBS TELEMETRY RATES, AND 130 HZ FOR THE 64-KBS RATE. THE HIGH-FREQUENCY CHANNEL PROVIDED SPECTRA ANALYSIS INFORMATION FOR FREQUENCIES FROM 1 TO 10 KHZ IN FIVE STEPS. THE EXPERIMENT OPERATED SATISFACTORILY, AVERAGING ABOUT 4000 HR OF DATA PER YEAR.

DATA SET NAME- 36.864-SEC AVERAGED SEARCH COIL  
MAGNETOMETER DATA ON TAPE

NSSDC ID 64-054A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 092364 TO 111767 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 29 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THESE 29 EXPERIMENTER-GENERATED 7-TRACK, 556-BPI, BCD MAGNETIC TAPES CONTAIN 36.864-SEC AVERAGED SEARCH COIL MAGNETOMETER DATA FROM ALL EXPERIMENT MODES. EACH FILE CONTAINS DATA FROM ONE ORBIT, WITH THE POSSIBILITY OF SOME OVERLAP AT THE END OF EACH FILE THAT HAS ABOUT 1600 RECORDS. AN INDEX TO EACH FILE IS CONTAINED ON MICROFILM IN DATA SET 64-054A-01D. IN EACH RECORD ARE TIME AND THE AVERAGED VECTOR FIELD NOISE AMPLITUDES FOR THE 10-, 30-, 100-, 300-, AND 800-HZ CENTER FREQUENCY CHANNELS. REAL-TIME DATA AND TAPE RECORDED PLAYBACK DATA WERE PROCESSED SEPARATELY. THOUGH THE TAPES CONTAIN CONSECUTIVE DATA, MERGING OF THESE TWO TYPES OF DATA WAS NOT PERFORMED. AS THE INSTRUMENT RESPONDED DIFFERENTLY TO BROADBAND AND MONOTONE SIGNALS, IT WAS NOT POSSIBLE TO CALIBRATE THE MEASURED FIELD SIGNAL MAGNITUDES WITHOUT INDEPENDENT KNOWLEDGE OF THE NATURE OF THE MEASURED SIGNAL. IN ANY CASE, THESE DATA ARE USEFUL AS INDICATORS OF THE TIMES AND PLACES OF MAGNETIC ACTIVITY, AND MAY BE USED TO IDENTIFY SHOCK FRONTS, MAGNETOPAUSE CROSSINGS, PLASMAPAUSE CROSSINGS, THE NATURE OF MAGNETOSPHERIC WAVES, ETC., TO THE NEAREST MINUTE.

DATA SET NAME- SEARCH COIL MAGNETOMETER SQUISH PLOTS ON NSSDC ID 64-054A-01B  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 092364 TO 031067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REEL OF EXPERIMENTER-GENERATED 35-MM MICROFILM HAS 13 SEPARATE  
ABSCISSA-ORDINATE COMBINATIONS PLOTTED AGAINST COMMON TIME. THE REEL  
CONTAINS THE MAGNITUDE OF THE VECTOR -- 10-, 30-, 100-, AND 800-HZ DATA,  
AVERAGED OVER 147.45 SEC. THE 36.864-SEC AVERAGED 10-HZ Z CHANNEL IN  
SPACECRAFT COORDINATES (COMPONENT ALONG SPIN AXIS) AND AN INDICATOR OF THE  
DATA QUALITY ARE ALSO INCLUDED, AS WELL AS DATA FROM THIS INSTRUMENT,  
PROCESSED INTO TWO BANDS. VECTOR DATA (IN SPINNING SPACECRAFT COORDINATES)  
FOR FREQUENCIES GREATER THAN 0.2 HZ, AND VECTOR DATA FOR FREQUENCIES BETWEEN  
0.15 AND 0.1 HZ ARE AVERAGED OVER 36.864 SEC. THESE DATA WERE RECEIVED IN AN  
EXTREMELY COMPRESSED FORMAT, AND BLOWN BACK TO A FULL-SIZE PLOT 6 FT IN  
LENGTH AND 1 FT IN WIDTH. THE SCALE OF THE HORIZONTAL TIME AXIS IS 30 SEC  
PER 0.01 IN., OR 1.2 IN./HR. THESE DATA CAN BE USED TO LOCATE REGIONS OF  
MAGNETIC ACTIVITY SUCH AS SHOCK FRONTS, MAGNETOPAUSE CROSSINGS, ETC., TO A  
CRUDE TIME OR SPATIAL SCALE. UNFORTUNATELY, MUCH OF THE FILM IS OF POOR  
QUALITY AND MAY BE DIFFICULT TO USE.

DATA SET NAME- MAGNETIC FIELD MAGNITUDE AND DIRECTION NSSDC ID 64-054A-01C  
NORMAL TO THE SPACECRAFT SPIN AXIS ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 090564 TO 092966 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM MADE BY NSSDC  
FROM EXPERIMENTER-GENERATED CALCOMP PLOTS CONTAINING MEASUREMENTS OF THE  
AMPLITUDE AND DIRECTION OF THE MAGNETIC FIELD COMPONENT IN THE PLANE NORMAL  
TO THE OGO SPACECRAFT SPIN AXIS. THE TIME RESOLUTION RETRIEVABLE FROM THESE  
PLOTS IS LIMITED TO ABOUT 10 MINUTES.

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SPACECRAFT COMMON NAME- EXPLORER 21  
ALTERNATE NAMES- IMP 2, IMP-B, S 74A

NSSDC ID 64-060A

LAUNCH DATE- 10/04/64 SPACECRAFT WEIGHT IN ORBIT-

61.24 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-101365  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/04/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 2097. MIN  
APOAPSIS- 95400. KM ALT PERIAPSIS- 193.000 KM ALT INCLINATION- 33.5 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 21 (IMP 2) WAS A SOLAR CELL AND CHEMICAL BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. EACH NORMAL PFM TELEMETRY SEQUENCE OF 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE AT NOON, A SPIN RATE OF 14.6 RPM, AND A SPIN DIRECTION OF 41.4 DEG RIGHT ASCENSION AND 47.4 DEG DECLINATION. THE SIGNIFICANT DEVIATION OF THE SPIN RATE AND DIRECTION FROM THEIR PLANNED VALUES AND THE ACHIEVEMENT OF AN APOGEE LESS THAN HALF THE PLANNED VALUE ADVERSELY AFFECTED DATA USEFULNESS. OTHERWISE, SPACECRAFT SYSTEMS PERFORMED WELL, WITH NEARLY COMPLETE DATA TRANSMISSION FOR THE FIRST 4 MONTHS AND FOR THE SIXTH MONTH AFTER LAUNCH. DATA TRANSMISSION WAS INTERMITTENT FOR OTHER TIMES, AND THE FINAL TRANSMISSION OCCURRED ON OCTOBER 13, 1965.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON NSSDC ID 64-060A-00G  
TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 100564 TO 093065 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPE GENERATED AT NSSDC FROM UNBLOCKED TAPES (64-060A-00F) SUBMITTED BY N. F. NESS. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD. THE TAPES CONTAIN THE FOLLOWING INFORMATION AT 5-MIN INTERVALS - (1) GEODETIC AND GEOMAGNETIC LATITUDE AND LONGITUDE AND RADIAL DISTANCE OF THE SPACECRAFT, (2) CARTESIAN REPRESENTATIONS OF THE SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, (3) GEOMAGNETIC LATITUDE AND LONGITUDE OF THE SUBSOLAR POINT, (4) THE ANGLE BETWEEN THE SPACECRAFT SPIN AXIS AND THE SATELLITE-SUN LINE, AND (5) MODEL MAGNETIC FIELD INFORMATION. THE COVERAGE IS GREATER THAN 80 PERCENT.

EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS NSSDC ID 64-060A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - C.Y.	FAN	U OF ARIZONA	TUCSON, AZ
OI - G.	GLOECKLER	U OF MARYLAND	COLLEGE PARK, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-040965

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID-STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z SQUARED/A FOR PROTONS 0.9 TO 190 MEV, 6.5 TO 19 MEV, 19 TO 90 MEV, AND 90 TO 190 MEV) AND CHARGE SPECTRA (Z.LE.6). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MIN. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 4.1 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND READ OUT ALONG WITH THE DETECTOR ACCUMULATIONS. USEFUL DATA WERE OBTAINED FROM LAUNCH UNTIL APRIL 9, 1965. DATA COVERAGE WAS INTERMITTENT THROUGHOUT THE LIFE OF THE SPACECRAFT DUE TO FREQUENT SPACECRAFT SHUTOFFS AND SPORADIC FAILURE OF SOME DETECTORS.

DATA SET NAME- FIVE-MINUTE AVERAGED COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 64-060A-03F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 100564 TO 040265 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 4 CHICAGO SEQUENCE COUNTS (APPROXIMATELY 328 SEC). THE DATA ARE CONTAINED ON ONE 7-TRACK, BLOCKED 8CD MAGNETIC TAPE WRITTEN AT 800 BPI IN A TIME ORDERED FORMAT USING AN XDS 930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. THERE ARE 134 FILES ON THE TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 57 LOGICAL RECORDS PER PHYSICAL RECORD AND 33 WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE RATES -- D1, D102 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190 MEV, AND ABOUT 1 MEV, RESPECTIVELY. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION, CHICAGO SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, AE INDEX, KP INDEX, AND DATA QUALITY INFORMATION.

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SPACECRAFT COMMON NAME- COSMOS 49  
ALTERNATE NAMES-

NSSDC ID 64-069A

LAUNCH DATE- 10/24/64

SPACECRAFT WEIGHT IN ORBIT-

400. KG

FUNDING AGENCY- UNKNOWN

DATE LAST USABLE SPACECRAFT DATA RECORDED-110664  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/24/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 91.78 MIN  
APOAPSIS- 466.000 KM ALT PERIAPSIS- 264.000 KM ALT INCLINATION- 48.99 DEG

SPACECRAFT BRIEF DESCRIPTION

COSMOS 49 WAS INSTRUMENTED WITH PROTON MAGNETOMETERS TO MAP THE EARTH'S MAGNETIC FIELD. THIS SPACECRAFT, ALONG WITH COSMOS 26, REPRESENTED THE U.S.S.R. CONTRIBUTION TO THE IQSY WORLD MAGNETIC SURVEY. THE CORRESPONDING U.S. MEASUREMENTS WERE PERFORMED ON OGO 2 AND OGO 4. COSMOS 49 WAS AN ELLIPSOID ABOUT 1.8 M LONG AND 1.2 M IN DIAMETER. IT APPEARS TO HAVE BEEN BATTERY POWERED FOR ABOUT 30 DAYS OF OPERATION. A BOOM 3.3 M LONG WAS ATTACHED TO ONE END OF THE SPACECRAFT TO CARRY THE MAGNETOMETERS. THE PERFORMANCE OF THE SPACECRAFT WAS SATISFACTORY.

EXPERIMENT NAME- PROTON PRECESSIONAL MAGNETOMETERS NSSDC ID 64-069A-01

ORIGINAL EXPERIMENT INSTITUTION- IZMIRAN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - S. DOLGINOV IZMIRAN P-O AKADEMGORODOK, MOSCOW REGION, USSR  
OI - V.I. NALIVAYKO IZMIRAN MOSCOW, USSR

DATE LAST USABLE EXPERIMENT DATA RECORDED-110664  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE COSMOS 49 SPACECRAFT CARRIED TWO PROTON MAGNETOMETERS WITH THE AXES OF THEIR POLARIZED-SENSE COILS ORIENTED AT AN ANGLE OF 90 DEG TO EACH OTHER. AN ONBOARD TIMER TURNED ON THE TWO MAGNETOMETERS ALTERNATELY, AND ONE OR THE OTHER WAS SAMPLED ONCE EVERY 32.76 SEC. THE MAGNETOMETER SIGNALS WERE DIGITIZED BY MEASURING THE NUMBER OF CYCLES FROM A 100-KHZ REFERENCE QUARTZ OSCILLATOR WHICH OCCURRED DURING 512 CYCLES OF THE PROTON PRECESSION SIGNAL. THE MEASURED SCALAR TOTAL FIELD VALUES ALONG WITH TIME SIGNALS WERE STORED IN A MEMORY DEVICE WHICH COULD HOLD UP TO 800 MIN OF DATA. THE DATA WERE THEN READ OUT AS THE SPACECRAFT FLEW OVER THE RECEIVING STATIONS. THE EXPERIMENT PERFORMED SATISFACTORILY, AND THE REPORTED ACCURACY OF THE DATA IS WITHIN 2 GAMMAS.

DATA SET NAME- COMPRESSED REDUCED SCALAR MAGNETIC FIELD NSSDC ID 64-069A-01D  
DATA TABLES ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102464 TO 110364 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE COMPLETE SET OF REDUCED SCALAR MAGNETIC FIELD DATA ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH EVEN PARITY. THE TAPE WAS CREATED ON AN IBM 360 COMPUTER, WITH EACH PHYSICAL RECORD CONTAINING 2400 CHARACTERS, COMPRISING 30 LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS 80 CHARACTERS REPRESENTING ONE FIELD MEASUREMENT. THE PARAMETERS GIVEN FOR EACH MEASUREMENT ARE AS FOLLOWS -- MAGNETOMETER NUMBER, MEASUREMENT NUMBER, DAY (UT), MONTH (UT), HOUR (UT), MINUTE (UT), ALTITUDE



(KM), LATITUDE (DEG), LONGITUDE (DEG), MEASURED FIELD (GAMMAS), COMPUTED FIELD FOR GSFC COSMOS 49 MODEL, AND THE DIFFERENCE BETWEEN THE MEASURED AND COMPUTED FIELDS. THE DATA ARE TIME ORDERED. THE TAPE WAS PROVIDED BY J. CAIN, GSFC, AS A REPLACEMENT FOR DATA SETS 64-069A-01B AND 64-069A-01C.

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SPACECRAFT COMMON NAME- EXPLORER 25  
ALTERNATE NAMES- INJUN 4  
LAUNCH DATE- 11/21/64 SPACECRAFT WEIGHT IN ORBIT- 40. KG  
FUNDING AGENCY- IDWA-GSFC  
DATE LAST USABLE SPACECRAFT DATA RECORDED-071966  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF  
EPOCH DATE- 11/21/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 116.3 MIN  
APOAPSIS- 2494.00 KM ALT PERIAPSIS- 522.000 KM ALT INCLINATION- 81.36 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 25 WAS A MAGNETICALLY ALIGNED SATELLITE LAUNCHED SIMULTANEOUSLY WITH EXPLORER 24 (AIR DENSITY EXPERIMENT) USING A SCOUT ROCKET. THE SATELLITE'S PRIMARY MISSION WAS TO MAKE MEASUREMENTS OF THE INFLUX OF ENERGETIC PARTICLES INTO THE EARTH'S ATMOSPHERE AND TO STUDY ATMOSPHERIC HEATING AND THE INCREASE IN SCALE HEIGHT WHICH HAVE BEEN CORRELATED WITH GEOMAGNETIC ACTIVITY. STUDIES OF THE NATURAL AND ARTIFICIAL TRAPPED RADIATION BELTS WERE ALSO CONDUCTED. A BIAxIAL FLUXGATE MAGNETOMETER WAS USED TO MONITOR THE ORIENTATION OF THE SPACECRAFT WITH RESPECT TO THE LOCAL MAGNETIC FIELD. EXPLORER 25 WAS EQUIPPED WITH A TAPE RECORDER AND ANALOG-TO-DIGITAL CONVERTERS. THE SATELLITE POWER WAS DERIVED FROM RECHARGEABLE BATTERIES AND SOLAR CELLS. A TRANSMITTER OPERATING IN AN AM MODE AT CARRIER FREQUENCY 136.29 MHZ WAS USED TO TRANSMIT REAL-TIME DATA, AND ONE OPERATING IN A PM MODE AT 136.86 MHZ WAS USED TO TRANSMIT TAPE RECORDER DATA. STABLE MAGNETIC ALIGNMENT WAS NOT ACHIEVED UNTIL LATE FEBRUARY 1965. THE SATELLITE SENT RADIATION DATA UNTIL DECEMBER 1966 AND IS EXPECTED TO BE IN ORBIT FOR ABOUT 200 YR.

EXPERIMENT NAME- SOLID-STATE DETECTOR NSSDC ID 64-076B-04

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. VAN ALLEN U OF IOWA IOWA CITY, IA  
OI - S.M. KRIMIGIS APPLIED PHYSICS LAB SILVER SPRING, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-071966  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETECT PROTONS AND ALPHA PARTICLES IN THE OUTER ZONE AND IN SOLAR COSMIC-RAY EVENTS AT LOW ALTITUDES AND HIGH LATITUDES. THE EXPERIMENT USED A TOTALLY DEPLETED DIRECTIONAL SILICON

SURFACE BARRIER DETECTOR IN THE FORM OF A THIN CIRCULAR DISC. THE DETECTOR WAS LOCATED INSIDE A CONICAL COLLIMATOR WITH FULL VERTEX ANGLE OF 40 DEG AND WAS ORIENTED AT 90 DEG TO THE SATELLITE SYMMETRY AXIS. SEPARATE DETERMINATIONS OF PROTON AND ALPHA PARTICLE FLUXES WERE MADE IN THE ENERGY RANGE 0.52 TO 4 MEV/NUCLEON AND 0.9 TO 1.8 MEV/NUCLEON. THE DETECTOR WAS INSENSITIVE TO ELECTRON FLUXES IN THE RADIATION ZONES. THE DETECTOR ACCUMULATORS WERE SAMPLED SEQUENTIALLY EVERY 4 SEC. AND THE DETECTOR PERFORMED NORMALLY THROUGH JULY 19, 1966.

DATA SET NAME- PROTON COUNT RATE PLOTS ON MICROFILM                      NSSDC ID 64-0768-04B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112364 TO 071966 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        11 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF COUNT RATE PLOTS (COUNTS/SEC VS UT, MAGNETIC LOCAL TIME, B (GAUSS), MCILWAIN'S L PARAMETER AND INVARIANT LATITUDE) OF PROTONS IN TWO ENERGY CHANNELS, 0.52 TO 4 MEV (PNA) AND 0.90 TO 1.8 MEV (PNB). THE UPPER LIMITS OF THE ENERGY RANGES ARE FOR AXIALLY INCIDENT PROTONS. THE PLOTS ARE CHRONOLOGICALLY ORDERED ON 11 REELS OF 35-MM MICROFILM AND COVER THE TIME INTERVAL FROM NOVEMBER 23, 1964, TO JULY 19, 1966. NOTE THAT FOR SOME TIME INTERVALS THERE IS OVERLAPPING TIME COVERAGE DUE TO THE USE OF TWO SLIGHTLY DIFFERENT PLOT FORMATS.

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SPACECRAFT COMMON NAME- MARINER 4    NSSDC ID 64-077A  
ALTERNATE NAMES-

LAUNCH DATE- 11/28/64                      SPACECRAFT WEIGHT IN ORBIT-                      262. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-122067

SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/15/65    ORBIT TYPE- HELIOCENTRIC                      ORBIT PERIOD-    567. DAYS  
APOAPSIS-    1.58 AU RAD    PERIAPSIS-                      1.1 AU RAD    INCLINATION-                      0. DEG

SPACECRAFT BRIEF DESCRIPTION

MARINER 4 WAS THE FOURTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN A FLYBY MODE. IT WAS DESIGNED TO CONDUCT CLOSEUP SCIENTIFIC OBSERVATIONS OF THE PLANET MARS AND TO TRANSMIT THESE OBSERVATIONS TO EARTH. OTHER MISSION OBJECTIVES WERE TO PERFORM FIELD AND PARTICLE MEASUREMENTS IN INTERPLANETARY SPACE AND IN THE VICINITY OF MARS AND TO PROVIDE EXPERIENCE IN AND KNOWLEDGE OF THE ENGINEERING CAPABILITIES FOR INTERPLANETARY FLIGHTS OF LONG DURATION. AFTER 7.5 MONTHS OF FLIGHT, THE SPACECRAFT FLEW BY MARS ON JULY 14, 1965, AND RETURNED 21 AND A PORTION PHOTOGRAPHS. THE CLOSEST APPROACH WAS 9846 KM FROM THE MARTIAN SURFACE. THE SPACECRAFT PERFORMED ALL PROGRAMMED ACTIVITIES SUCCESSFULLY AT THE PROPER TIMES AND RETURNED USEFUL

DATA FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE DISTANCE FROM EARTH AND ITS ANTENNA ORIENTATION TEMPORARILY HALTED THE SIGNAL ACQUISITION. DATA ACQUISITION RESUMED IN LATE 1967 AND CONTINUED UNTIL DECEMBER 20, 1967.

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID 64-077A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. SIMPSON U OF CHICAGO CHICAGO, IL  
OI - J.J. O'GALLAGHER U OF CHICAGO CHICAGO, IL

DATE LAST USABLE EXPERIMENT DATA RECORDED-100165  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A SET OF THREE SILICON SURFACE BARRIER DETECTORS WAS USED IN THE FORM OF A DE/DX VS RANGE TELESCOPE TO DETERMINE THE FLUX OF PROTONS IN THE ENERGY INTERVALS 15 TO 70 MEV AND 70 TO 170 MEV, ALPHA PARTICLES IN THE ENERGY RANGE 15 TO 70 MEV/NUCLEON AND E.GT. 70 MEV/NUCLEON, AND PROTONS AND ALPHA PARTICLES IN THE ENERGY INTERVAL 1.2 TO 15 MEV/NUCLEON. THE DETECTOR WAS MOUNTED ON THE SPACECRAFT SO AS TO POINT ALWAYS IN THE ANTISOLAR DIRECTION. A 128-CHANNEL PULSE HEIGHT ANALYZER WAS USED TO SAMPLE THE ENERGY LOSS IN THE TOP DETECTOR ELEMENT OF THE TELESCOPE. IT WAS POSSIBLE TO PULSE HEIGHT ANALYZE PROTONS AND ALPHA PARTICLES FROM 15 TO 70 MEV/NUCLEON, PROTONS FROM 70 TO 170 MEV, AND ALPHA PARTICLES WITH ENERGIES E.GT. 70 MEV/NUCLEON. TWO COUNT RATES AND TWO PULSE HEIGHT ANALYSES WERE OBTAINED EVERY 72 OR 18 SEC ACCORDING TO WHETHER THE SPACECRAFT TRANSMISSION RATE WAS 8-1/3 OR 33-1/3 BPS. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL OCTOBER 1965, WHEN THE SPACECRAFT WAS TURNED OFF TO CONSERVE POWER. WHEN THE SPACECRAFT WAS TURNED ON AGAIN AT A LATER TIME, THE DETECTOR DID NOT RESPOND.

DATA SET NAME- COSMIC-RAY TELESCOPE RAW COUNT  
ACCUMULATIONS ON MAGNETIC TAPE

NSSDC ID 64-077A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 112864 TO 100165 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF EDITED, UNCORRECTED, REAL-TIME COUNTING RATE DATA IN A TIME-ORDERED FORMAT. THE DATA ARE ON ONE 7-TRACK BCD MAGNETIC TAPE WRITTEN AT 800 BPI WITH 36 CHARACTERS PER LOGICAL RECORD, 50 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE PER TAPE. EACH LOGICAL RECORD CONTAINS (1) TIME (UT OF THE RECEIPT OF DATA BY EARTH TRACKING STATIONS), (2) DATE, (3) SATELLITE TELEMETRY BIT RATE, (4) CALIBRATION INFORMATION, AND (5) ACCUMULATOR OUTPUTS FROM SEVERAL COINCIDENCE MODES OF THE COSMIC-RAY TELESCOPE -- D1 NOT D2 (ELECTRONS E.GT. 200 KEV AND PROTONS AND HEAVIER NUCLEI 1.2 TO 15 MEV/NUCLEON), D1D2 NOT D3 (PROTONS AND HELIUM NUCLEI 15 TO 70 MEV/NUCLEON), AND D1D2D3 (PROTONS FROM 70 TO 170 MEV AND HELIUM NUCLEI E.GT. 70 MEV/NUCLEON). THERE WERE TWO READOUTS PER SPACECRAFT TELEMETRY FRAME, ALLOWING TWO SAMPLINGS EVERY 72 OR 18 SEC ACCORDING TO WHETHER THE SPACECRAFT TRANSMISSION RATE WAS 8-1/3 OR



QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO MAGNETIC TAPES OF COMPRESSED, EDITED MARINER 4 TRACKING DATA RECORDED AT 556 BPI, BINARY MODE, ON AN IBM 7094 COMPUTER. ONE TAPE CONTAINS DATA FROM LAUNCH TO DECEMBER 5, 1964 (FIRST MIDCOURSE MANEUVER). THE DATA ON THE SECOND TAPE COVERS THE PERIOD FROM DECEMBER 5, 1964 TO DECEMBER 8, 1967 (END OF MARINER 4 MISSION). THE INFORMATION CONTAINED ON THE TAPE IS RANGE, RANGE RATE, ELEVATION, AZIMUTH, DECLINATION, HOUR ANGLE, ONE-, TWO-, AND THREE-WAY DOPPLER SHIFT, TIME RESOLVER, RANGE UNITS, AND PLANETARY RANGE UNITS. THE SAMPLING RATE WAS ONCE EVERY 10 MINUTES EXCEPT WHEN THE SPACECRAFT WAS WITHIN 24 HR OF MARS APPROACHING AND LEAVING. THEN, THE SAMPLING RATE WAS ONCE EVERY MINUTE.

DATA SET NAME- CELESTIAL MECHANICS LISTING (2-WAY DOPPLER SHIFT VS. TIME) ON 16-MM MICROFILM NSSDC ID 64-077A-098

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120564 TO 120867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET SUPPLIED BY THE EXPERIMENTER CONSISTS OF A LISTING OF THE TWO-WAY DOPPLER SHIFT, CONTAINED ON 16-MM MICROFILM. GIVEN ON THE LISTING ARE -- STATION NUMBER, TIME (GMT), DAY, NUMBER, YEAR, TRANSMITTER FREQUENCY, AND DOPPLER SHIFT, ALL ORDERED BY STATION, AND THEN ORDERED CHRONOLOGICALLY. MEASUREMENTS ARE GIVEN IN 10-MIN INTERVALS, AND THE DATA PRESENTED ARE PRIMARILY SCATTERED THROUGH THE YEARS 1965 AND 1967.

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SPACECRAFT COMMON NAME- EXPLORER 26 NSSDC ID 64-086A  
ALTERNATE NAMES- EPE-D, S 3C

LAUNCH DATE- 12/21/64 SPACECRAFT WEIGHT IN ORBIT- 46.0 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-052667  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 12/21/64 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 456. MIN  
APOAPSIS- 27192.0 KM ALT PERIAPSIS- 305.000 KM ALT INCLINATION- 20.1 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 26 WAS A SPIN-STABILIZED, SOLAR-CELL-POWERED SPACECRAFT INSTRUMENTED TO MEASURE TRAPPED PARTICLES AND THE GEOMAGNETIC FIELD. A 16-CHANNEL PFM/PM TIME-DIVISION MULTIPLEXED TELEMETER WAS USED. THE TIME REQUIRED TO SAMPLE THE 16 CHANNELS (ONE FRAME PERIOD) WAS 0.29 SEC. HALF OF THE CHANNELS WERE USED TO CONVEY EIGHT-LEVEL DIGITAL INFORMATION. THE OTHER CHANNELS WERE USED FOR ANALOG INFORMATION. DURING GROUND PROCESSING, THE ANALOG INFORMATION WAS DIGITIZED WITH AN ACCURACY OF 1/800 OF FULL SCALE.

ONE ANALOG CHANNEL WAS SUBCOMMUTATED IN A 16-FRAME-LONG PATTERN AND USED TO TELEMETER SPACECRAFT TEMPERATURES, POWER SYSTEM VOLTAGES, CURRENTS, ETC. A DIGITAL SOLAR ASPECT SENSOR MEASURED THE SPIN PERIOD AND PHASE, DIGITIZED TO 0.036 SEC, AND THE ANGLE BETWEEN THE SPIN AXIS AND SUN DIRECTION TO ABOUT 3-DEG INTERVALS. THE SPACECRAFT SYSTEMS FUNCTIONED WELL, EXCEPT FOR SOME UNDERVOLTAGE TURNS OFFS, UNTIL MAY 26, 1967 WHEN THE TELEMETER FAILED. THE INITIAL SPIN RATE WAS 33 RPM, AND THE SPIN AXIS DIRECTION WAS RIGHT ASCENSION 272.8 DEG, AND THE DECLINATION 21.5 DEG. THE SPIN RATE DECREASED WITH TIME TO 2 RPM ON SEPTEMBER 9, 1965. FOR THE BALANCE OF ITS LIFE, THE SPACECRAFT WAS CONING OR TUMBLING AT A RATE OF ABOUT 1 RPM.

EXPERIMENT NAME- SOLID-STATE ELECTRON DETECTOR

NSSDC ID 64-086A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.L. BROWN	BELL TELEPHONE LAB	MURRAY HILL, NJ
OI - L.J. LANZERTTI	BELL TELEPHONE LAB	MURRAY HILL, NJ
OI - L. MEDFORD	BELL TELEPHONE LAB	MURRAY HILL, NJ

DATE LAST USABLE EXPERIMENT DATA RECORDED-052267

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

TRAPPED ELECTRONS AND PROTONS IN THE EARTH'S VAN ALLEN BELTS WERE MEASURED USING A COMBINATION OF SIX OMNIDIRECTIONAL AND DIRECTIONAL SOLID-STATE PARTICLE DETECTORS (SILICON P-N JUNCTIONS). ELECTRONS WERE ANALYZED IN THE ENERGY RANGES E.GT. 1 MEV, E.GT. 3.5 MEV, AND E.GT. 2.5 MEV WITH THE THREE OMNIDIRECTIONAL DETECTORS (E1, E2, E3), AND IN THE RANGES E.GT. 0.3 MEV AND E.GT. 0.45 MEV WITH THE THREE DIRECTIONAL DETECTORS (E5, E6, E7). PROTONS WERE ANALYZED IN THE ENERGY RANGES E.GT. 10 MEV, E.GT. 27 MEV, AND E.GT. 21 MEV WITH THE OMNIDIRECTIONAL DETECTORS, AND IN THE RANGES E.GT. 1.7 MEV, E.GT. 2.2 MEV, AND E.GT. 16 MEV WITH THE DIRECTIONAL DETECTORS. SPECIES DISCRIMINATION WAS NOT ALWAYS POSSIBLE. OMNIDIRECTIONAL DATA WERE ACCUMULATED AND TELEMETERED EVERY 1.43 SEC. DIRECTIONAL DATA WERE ACCUMULATED FOR 0.145 SEC AND TELEMETERED EVERY 0.29 SEC. THE SPACECRAFT SPIN PERIOD INCREASED FROM 0.03 SEC TO 0.5 SEC DURING THE SPACECRAFT LIFE. PROTON DATA ARE PRIMARILY USEFUL IN IDENTIFYING PROTON CONTAMINATION OF ELECTRON COUNTING RATES. THE INSTRUMENT BEHAVED WELL THROUGHOUT THE SPACECRAFT LIFE.

DATA SET NAME- L-INTERPOLATED OUTER ZONE ELECTRON DATA  
ON MAGNETIC TAPES

NSSDC ID 64-086A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 122164 TO 052367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THESE DATA CONSIST OF SIX 556-BPI, 7-TRACK, EVEN PARITY, BCD TAPES, ONE FOR EACH OF THE SIX DETECTORS OF EXPERIMENT 64-086A-01, GENERATED AT NSSDC FROM DATA SET 64-086A-01A. EACH TAPE CONTAINS L-INTERPOLATED ELECTRON COUNT RATES, MAGNETIC FIELD, TIME, AND POSITIONAL INFORMATION. DATA WERE

INTERPOLATED TO L-VALUES FROM 3.5 TO 7.5 EARTH RADII IN INCREMENTS OF 0.5 EARTH RADII. THE DATA WERE SORTED ON L, AND ORDERED CHRONOLOGICALLY WITHIN EACH L-SET.

EXPERIMENT NAME- PROTON-ELECTRON SCINTILLATION DETECTOR NSSDC ID 64-086A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.R. DAVIS NASA-GSFC GREENBELT, MD  
OI - J.M. WILLIAMSON NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-062366  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE DIRECTIONAL FLUXES AND SPECTRA OF LOW-ENERGY TRAPPED AND AURORAL PROTONS AND ELECTRONS. IT EMPLOYED A 5-MG-THICK POWDER PHOSPHOR SCINTILLATOR WITH A 1000-Å ALUMINUM COATING. ADDITIONAL ABSORBERS WERE INSERTED IN THE DETECTOR APERTURE BY A 16-POSITION STEPPED WHEEL. THE APERTURE WAS POINTED AT 45 DEG TO THE SPIN AXIS. DUE TO THE THINNESS AND TYPE OF PHOSPHOR, THE DETECTOR IN THE PULSE MODE WOULD RESPOND ONLY TO LOW-ENERGY IONS, AND, THEREFORE, ESSENTIALLY MEASURED THE FLUX OF PROTONS THAT PENETRATED THE ABSORBERS AND STOPPED IN THE PHOSPHOR. BOTH THE PULSE COUNTING RATE AND THE PHOTOTUBE CURRENT WERE TELEMETERED ONCE EACH FRAME PERIOD. SIXTEEN READINGS WERE TELEMETERED IN EACH WHEEL POSITION, AND THUS ONE COMPLETE SET OF DATA WAS OBTAINED EVERY 256 FRAMES (ONE WHEEL REVOLUTION = 80 SEC). PROTONS IN SEVEN ENERGY RANGES WERE MEASURED. THE HIGH ENERGY LIMIT WAS ABOUT 10 MEV FOR ALL RANGES, AND THE LOW-ENERGY CUTOFFS WERE 97, 125, 168, 295, 495, 970, AND 1700 KEV. THE ENERGY FLUXES OF ELECTRONS IN THREE RANGES WERE MEASURED SEPARATELY USING SCATTER GEOMETRY, ABSORBERS, AND THE PHOTOTUBE CURRENT. THE LOW-ENERGY CUTOFFS WERE 17, 33, AND 75 KEV, AND THE HIGH-ENERGY CUTOFF WAS ABOUT 100 KEV FOR ALL THREE RANGES. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL JUNE 23, 1966, AT WHICH TIME THE WHEEL STOPPED. THE DATA OBTAINED AFTER SEPTEMBER 9, 1965 ARE DIFFICULT TO ANALYZE DUE TO THE CONING OF THE SPACECRAFT.

DATA SET NAME- COMPLETE SET OF REDUCED PROTON AND ELECTRON DATA ON MAGNETIC TAPES NSSDC ID 64-086A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120064 TO 060065 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 146 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS 146 MAGNETIC TAPE DATA SET, SUBMITTED BY THE EXPERIMENTER, CONTAINS A COMPLETE SET OF REDUCED DATA FOR THE LIFE OF THE EXPERIMENT WITH ABOUT 80 PERCENT TIME COVERAGE. THE DATA ARE WRITTEN ON 7-TRACK TAPES IN IBM 7094 BINARY FORMAT. EACH RECORD IS 460 WORDS LONG AND CONTAINS ONE ABSORBER WHEEL REVOLUTION OF DATA. THE DATA INCLUDE TIME (UT), SATELLITE POSITION PARAMETERS IN GEOCENTRIC INERTIAL AND B, L COORDINATES, ATTITUDE PARAMETERS, ETC., STORED IN FLOATING POINT FORMAT. ALSO INCLUDED ARE CURRENT, COUNT RATES, AND HOUSEKEEPING CHANNEL READINGS FOR 256 TELEMETER FRAMES. THE

CHANNEL READINGS FOR EACH FRAME ARE PACKED TOGETHER AS BINARY INTEGERS IN ONE 36-BIT WORD. THERE ARE 12 ORBITS, WHICH AMOUNT TO ABOUT 3.8 DAYS OF DATA ON EACH TAPE.

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SPACECRAFT COMMON NAME- GEMINI 3  
ALTERNATE NAMES-

NSSDC ID 65-024A

LAUNCH DATE- 03/23/65 SPACECRAFT WEIGHT IN ORBIT- 3220. KG

FUNDING AGENCY- NASA-QMSF

DATE LAST SPACECRAFT DATA RECORDED-032365  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 03/23/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 88.37 MIN  
APOAPSIS- 240.000 KM ALT PERIAPSIS- 160.000 KM ALT INCLINATION- 33.0 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 3 WAS THE FIRST MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. ITS PRIMARY OBJECTIVE WAS TO DEMONSTRATE THE MANNED QUALIFICATIONS OF THE GEMINI SPACECRAFT. A SYNERGISTIC EFFECT OF ZERO-G AND RADIATION ON WHITE BLOOD CELLS EXPERIMENT, A SEA URCHIN EGG GROWTH UNDER ZERO-G EXPERIMENT, AND ONE TECHNOLOGICAL EXPERIMENT WERE CONDUCTED. SEVERAL OF THE PHOTOGRAPHS TAKEN BY THE ASTRONAUTS WERE LATER CONSIDERED SUITABLE FOR SYNOPTIC TERRAIN STUDIES. AFTER 5 HOURS, THE SPACECRAFT SUCCESSFULLY REENTERED THE ATMOSPHERE AND LANDED 60 N.M. (111 KM) FROM THE TARGET AREA.

EXPERIMENT NAME- 70-MM HASSELBLAD EARTH PHOTOGRAPHY

NSSDC ID 65-024A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-032365  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO TAKE PHOTOGRAPHS OF THE EARTH FROM THE SPACECRAFT. A HAND-HELD 70-MM HASSELBLAD 500-C CAMERA WITH AN 80-MM F/2.8 LENS WAS USED TO OBTAIN THE PHOTOGRAPHS. IT WAS LOADED WITH 70-MM EKTACHROME FILM. OF THE 25 PICTURES TAKEN, SEVEN WERE USABLE FOR TERRAIN STUDIES. THESE WERE OF NORTHWEST SONORA, THE RIO GRANDE VALLEY, AND BERMUDA.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN  
PHOTOS

NSSDC ID 65-024A-03A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER



TIME PERIOD COVERED- 032365 TO 032365 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 24 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 3 PHOTOGRAPHY, OF THE 25 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM. SEVEN WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 3, 4, AND 5' (NASA SP-129) OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- EXPLORER 28 NSSDC ID 65-042A  
ALTERNATE NAMES- IMP-C, IMP 3, S 74B

LAUNCH DATE- 05/29/65 SPACECRAFT WEIGHT IN ORBIT- 51.8 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-051267  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/29/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 8550. MIN  
APOAPSIS- 264000. KM ALT PERIAPSIS- 200.000 KM ALT INCLINATION- 34.0 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 28 (IMP 3) WAS A SOLAR-CELL AND CHEMICAL-BATTERY POWERED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY AND DISTANT MAGNETOSPHERIC STUDIES OF ENERGETIC PARTICLES, COSMIC RAYS, MAGNETIC FIELDS, AND PLASMAS. INITIAL SPACECRAFT PARAMETERS INCLUDED A LOCAL TIME OF APOGEE OF 2020 HR, A SPIN RATE OF 23.7 RPM, AND A SPIN DIRECTION OF 64.9 DEG RIGHT ASCENSION AND -10.9 DEG DECLINATION. EACH NORMAL PFM TELEMETRY SEQUENCE 81.9 SEC IN DURATION CONSISTED OF 795 DATA BITS. AFTER EVERY THIRD NORMAL TELEMETRY SEQUENCE WAS AN 81.9-SEC INTERVAL OF RUBIDIUM VAPOR MAGNETOMETER ANALOG DATA TRANSMISSION. PERFORMANCE WAS ESSENTIALLY NORMAL UNTIL LATE APRIL 1967, THEN INTERMITTENT UNTIL MAY 12, 1967, AFTER WHICH NO FURTHER DATA WERE ACQUIRED.

DATA SET NAME- MULTICOORDINATE SYSTEM EPHEMERIS DATA ON NSSDC ID 65-042A-00G  
TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 052965 TO 051167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF BLOCKED, 7-TRACK, 800-BPI, IBM 7094 BINARY MAGNETIC TAPES GENERATED AT NSSDC FROM UNBLOCKED TAPES (65-042A-00F)



EXPERIMENT NAME- COSMIC-RAY RANGE VS ENERGY LOSS

NSSDC ID 65-042A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - C.Y.	FAN	U OF ARIZONA	TUCSON, AZ
OI - G.	GLOECKLER	U OF MARYLAND	COLLEGE PARK, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-042967

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A CHARGED PARTICLE SOLID STATE TELESCOPE WAS USED TO MEASURE RANGE AND ENERGY LOSS OF GALACTIC AND SOLAR COSMIC RAYS. THE EXPERIMENT WAS DESIGNED TO STUDY PARTICLE ENERGIES (ENERGY PER NUCLEON INTERVALS APPROXIMATELY PROPORTIONAL TO Z SQUARED 2/A, FOR PROTONS 2.6-190 MEV, 13.3-26 MEV, 26-94 MEV, AND 94-190 MEV) AND CHARGE SPECTRA (Z.LE.6). THE DETECTOR WAS ORIENTED NORMAL TO THE SPACECRAFT SPIN AXIS. THE DETECTOR ACCUMULATORS FOR EACH ENERGY INTERVAL WERE TELEMETERED SIX TIMES EVERY 5.46 MINUTES. EACH ACCUMULATION WAS ABOUT 40 SEC LONG (INITIAL SPACECRAFT SPIN PERIOD WAS ABOUT 3.3 SEC). THE OUTPUT FROM TWO 128-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 41 SEC AND WAS READ OUT ALONG WITH THE DETECTOR ACCUMULATORS. THE EXPERIMENT PERFORMED NORMALLY UNTIL APRIL 21, 1966, AFTER WHICH SEVERAL PROBLEMS WITH THE INSTRUMENTATION DEVELOPED, CAUSING SPIKES IN THE COUNT RATE DATA, ESPECIALLY IN THE LOWEST ENERGY CHANNEL. THE DATE OF TRANSMISSION OF LAST USEFUL INFORMATION WAS APRIL 29, 1967.

DATA SET NAME- FIVE-MINUTE AVERAGE COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 65-042A-03E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052965 TO 042967 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 4 CHICAGO SEQUENCE COUNTS (APPROXIMATELY 328 SEC). THE DATA ARE CONTAINED ON TWO 7-TRACK, BLOCKED BCD MAGNETIC TAPES WRITTEN AT 800 BPI IN A TIME-ORDERED FORMAT USING AN XDS 930 COMPUTER. AN END-OF-FILE MARK TERMINATES EACH SPACECRAFT ORBIT OF DATA, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF THE TAPE. THERE ARE 90 FILES ON THE FIRST TAPE AND 30 FILES ON THE SECOND TAPE. AN ORBIT OF DATA CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS WITH 57 LOGICAL RECORDS PER PHYSICAL RECORD AND 33 WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS THE FOLLOWING COSMIC-RAY TELESCOPE COINCIDENCE RATES -- D1, D1D2 NOT D3, D1D2D3 NOT D4, D1D2D3D4, AND D5 CORRESPONDING TO PROTON ENERGY INTERVALS 0.9 TO 190, 6.5 TO 19, 19 TO 90, 90 TO 190 MEV, AND ABOUT 1 MEV, RESPECTIVELY. ALSO INCLUDED IN THE FORMAT ARE THE TIME OF OBSERVATION, CHICAGO SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, AE INDEX, KP INDEX, AND DATA QUALITY INFORMATION.

EXPERIMENT NAME- ION CHAMBER AND GM COUNTERS

NSSDC ID 65-042A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.A. ANDERSON U OF CALIFORNIA, BERK BERKELEY, CA  
OI - G.H. PITT U OF CALIFORNIA, BERK BERKELEY, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-051167

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, DESIGNED TO MEASURE FLUXES OF GEOMAGNETICALLY TRAPPED PARTICLES, CONSISTED OF A 7.6-CM-DIAMETER NEHER-TYPE IONIZATION CHAMBER AND TWO ANTON 223 GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 1 AND 17 MEV, RESPECTIVELY. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS GREATER THAN 45 KEV SCATTERED OFF A GOLD FGIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A FULL ANGLE OF 61 DEG, AND ITS SPIN AXIS OF SYMMETRY MADE AN ANGLE OF 59.5 DEG WITH THE SPACECRAFT SPIN AXIS. GM TUBE A RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. GM TUBE B LOOKED DIRECTLY INTO SPACE THROUGH A HOLE IN THE SPACECRAFT SKIN. THE ACCEPTANCE CONE FOR GM TUBE B HAD A FULL ANGLE OF 38 DEG, AND ITS AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT SPIN AXIS. OMNIDIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 6 AND 52 MEV, RESPECTIVELY. DIRECTIONALLY, GM TUBE B RESPONDED TO ELECTRONS AND PROTONS WITH ENERGIES GREATER THAN 40 AND 500 KEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER WERE ACCUMULATED FOR 326.08 SEC AND READ OUT ONCE EVERY 327.68 SEC. COUNTS FROM GM TUBE A WERE ACCUMULATED FOR 39.36 SEC AND READ OUT SIX TIMES EVERY 327.68 SEC. COUNTS FROM GM TUBE B WERE ACCUMULATED FOR 39.36 SEC AND READ OUT FIVE TIMES EVERY 327.68 SEC. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH MAY 11, 1967, THE DATE OF THE LAST USEFUL DATA TRANSMISSION.

DATA SET NAME- ION CHAMBER AND GEIGER TUBE ACCUMULATIONS NSSDC ID 65-042A-05C  
ORDERED BY DAY OF YEAR ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052965 TO 010367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 7-TRACK, BCD, 800-BPI MAGNETIC TAPES THAT WERE GENERATED AT NSSDC FROM DATA SET 65-042A-05A. EACH TAPE HAS ONE FILE WITH A VARIABLE NUMBER OF 1028-CHARACTER PHYSICAL RECORDS, EACH CONSISTING OF EIGHTEEN 56-CHARACTER LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS THE TIME (UT DAY, HOUR, MINUTE, AND MSEC), ONE ACCUMULATION EACH FROM THE ION CHAMBER AND GM TUBE B, TWO ACCUMULATIONS FROM GM TUBE A, THE AZIMUTHAL ANGLE (SUN, SPACECRAFT, OPTICAL SENSOR ANGLE), THE POLAR SOLAR ANGLES (SPIN AXIS, SPACECRAFT, SUN ANGLE), THE SATELLITE SPIN PERIOD, AND A NUMBER OF PROCESSING ERROR FLAGS. THE DATA ARE ORDERED BY DAY OF YEAR. HOWEVER, ALTHOUGH THE YEAR NUMBER APPEARS IN THE FORMAT, THE DATA ARE NOT ORDERED BY YEAR. THE DATA COVER APPROXIMATELY 80 PERCENT OF THE PERIOD FROM MAY 29, 1965 TO JANUARY 3, 1967. THIS DATA SET DIFFERS FROM 65-042A-05A IN FORMAT AND IN ORDERING, AND CERTAIN NONSCIENTIFIC FIELDS HAVE BEEN DELETED.

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SPACECRAFT COMMON NAME- GEMINI 4  
ALTERNATE NAMES- NSSDC ID 65-043A

LAUNCH DATE- 06/03/65 SPACECRAFT WEIGHT IN ORBIT- 3180. KG

FUNDING AGENCY- NASA-DMSF

DATE LAST SPACECRAFT DATA RECORDED-060765  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/04/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 88.82 MIN  
APOAPSIS- 281.000 KM ALT PERIAPSIS- 162.000 KM ALT INCLINATION- 32.63 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 4 WAS THE SECOND MANNED MISSION OF THE GEMINI SERIES AND CARRIED J. A. MCDIVITT AND E. H. WHITE ON A 4-DAY, 62-ORBIT, 98-HR FLIGHT FROM JUNE 3 TO JUNE 7, 1965. THE SPACECRAFT WAS CONICAL AND HAD A DIAMETER OF 3.05 M AT THE LARGE END, WHICH WAS THE REAR OF THE SPACECRAFT AND WHICH WAS COVERED BY A FIBERGLASS HEAT SHIELD TO PROTECT THE CRAFT DURING REENTRY. THE OBJECTIVE OF THE MISSION WAS TO TEST THE PERFORMANCE OF THE ASTRONAUTS AND CAPSULE FOR AN EXTENDED LENGTH OF TIME IN SPACE. THE SPACECRAFT WAS TRANSPORTED TO SPACE WITH A TITAN ROCKET. WHITE PERFORMED A 23-MIN EVA (WALK) IN SPACE ATTACHED TO THE SPACECRAFT BY AN 8-M TETHER. MEDICAL AND ENGINEERING EXPERIMENTS WERE PERFORMED. THE SCIENTIFIC EXPERIMENTS PERFORMED WERE VISUAL AND PHOTOGRAPHIC. THE EXPERIMENTS PERFORMED WERE ELECTROSTATIC CHARGE (MSC-1), PROTON-ELECTRON SPECTROMETER (MSC-2), TRIAXIAL MAGNETOMETER (MSC-3), TWO-COLOR EARTH LIMB PHOTOS (MSC-10), INFLIGHT EXERCISER (M-3), INFLIGHT PHONOCARDIOGRAM (M-4), BONE DEMINERALIZATION (M-6), SYNOPTIC TERRAIN PHOTOS (S-5), SYNOPTIC WEATHER PHOTOS (S-6), DIM AND TWILIGHT PHENOMENA (S-28), RADIATION (D-8), AND SIMPLE NAVIGATION (D-9). THE MISSION WAS SUCCESSFUL, AND THE SPACECRAFT LANDED IN THE PACIFIC ON JUNE 7, 1965.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN  
PHOTOGRAPHS NSSDC ID 65-043A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-060765  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO TAKE HIGH-QUALITY COLOR PHOTOGRAPHS OF SELECTED LAND AND NEAR-SHORE AREAS OF THE EARTH FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. A HAND-HELD 70-MM HASSELBLAD 500-C CAMERA WITH A ZEISS PLANAR 80-MM F/2.8 LENS WAS USED TO OBTAIN THE PHOTOGRAPHS. A HAZE FILTER WAS ALSO USED TO REDUCE THE INTENSITY OF BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. FIVE MAGAZINES OF 70-MM EKTACHROME MS SO-217 FILM WERE CARRIED ON BOARD FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. OF THE 207

PHOTOGRAPHS OBTAINED DURING THE FLIGHT, 100 WERE OF EXCELLENT QUALITY AND WERE USEFUL FOR TERRAIN STUDIES. THESE WERE OF NORTHWEST MEXICO, THE SOUTHWEST UNITED STATES, NORTH AFRICA, THE BAHAMA ISLANDS, AND THE ARABIAN PENINSULA.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN PHOTOS NSSDC ID 65-043A-01A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 060365 TO 060765 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 219 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 4 PHOTOGRAPHY. OF THE 207 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 100 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN "EARTH PHOTOGRAPHS FROM GEMINI 3, 4, AND 5" (NASA SP-129) OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY NSSDC ID 65-043A-02

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K. NAGLER NAT. METEORO. CENTER SILVER SPRING, MD

DATE LAST EXPERIMENT DATA RECORDED-060765  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SYNOPTIC WEATHER PHOTOGRAPHY EXPERIMENT WAS DESIGNED TO PROVIDE A SET OF HIGH-RESOLUTION PICTURES OF A BROAD RANGE OF METEOROLOGICAL PHENOMENA, ESPECIALLY VIEWS OF A NUMBER OF SPECIFIC CLOUD SYSTEMS OF INTEREST TO INVESTIGATORS. BECAUSE THE SPACECRAFT HAD A 90-MIN ORBIT, THE EXPERIMENT COULD SHOW CHANGES IN THE SAME CLOUD PATTERN DURING THIS INTERVAL. A HASSELBLAD 500-C CAMERA WITH 70-MM EKTACHROME MS 50-217 FILM WAS USED. FIVE MAGAZINES, EACH CAPABLE OF 55 EXPOSURES, WERE CARRIED ON BOARD FOR THIS AND THE OTHER PHOTOGRAPHIC EXPERIMENTS. A HAZE FILTER WAS ATTACHED TO THE STANDARD ZEISS PLANAR 80-MM F/2.8 LENS TO REDUCE THE INTENSITY OF THE BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. PHOTOGRAPHS TAKEN WHEN THE SPACECRAFT WAS IN A NEARLY VERTICAL POSITION COVER AN AREA APPROXIMATELY 161 KM SQ. FROM OBLIQUE ANGLES, LARGER AREAS WERE CLEARLY VISIBLE, BUT THERE WAS DISTORTION, RESOLUTION LOSS, AND COLOR FIDELITY LOSS IN THE IMAGES. OF THE TWO HUNDRED AND SEVEN 70-MM COLOR PHOTOGRAPHS RETURNED FOR ALL PHOTOGRAPHIC EXPERIMENTS, APPROXIMATELY 50 PERCENT DISPLAYED CLOUD FORMATIONS OR OTHER INFORMATION OF METEOROLOGICAL INTEREST.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER PHOTOS NSSDC ID 65-043A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 060365 TO 060765 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 207 FRAMES

DATA SET BRIEF DESCRIPTION

OF THE 207 FIRST GENERATION 70-MM COLOR TRANSPARENCIES IN THE COMPLETE SET OF GEMINI 4 PHOTOGRAPHY, HALF WERE DESIGNATED AS SYNOPTIC WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND PHOTO REPRODUCTIONS, THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN "EARTH PHOTOGRAPHS FROM GEMINI 3, 4, 5" (NASA SP-129), WHICH IS AVAILABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- VELA 3A NSSDC ID 65-058A  
ALTERNATE NAMES- VELA 3 (USAF), VELA 5 (TRW)

LAUNCH DATE- 07/20/65 SPACECRAFT WEIGHT IN ORBIT- 150. KG

FUNDING AGENCY- DOD-USAF

DATE LAST USABLE SPACECRAFT DATA RECORDED-050070  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/20/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 5148. MIN  
APOAPSIS- 96238. KM ALT PERIAPSIS- 88524.0 KM ALT INCLINATION- 35.27 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 3A WAS ONE OF TWO POLYHEDRAL SATELLITES COMPRISING THE THIRD IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT A RADIAL DISTANCE OF ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THE SATELLITES WERE SPIN STABILIZED AT ABOUT 2 RPS AND HAD THEIR SPIN AXES INCLINED AT ABOUT 60 DEG TO THE ECLIPTIC. DATA ACQUISITION WAS MAINLY REAL TIME AND AVERAGED 25 PERCENT (1 OUT OF EVERY 4 HR) COVERAGE PER DAY. DATA COVERAGE WAS INCREASED FOR SPECIAL EVENTS. THE SATELLITE OPERATED WELL DURING THE PERIOD OF MAJOR DATA COVERAGE - FROM LAUNCH UNTIL THE APRIL 1967 LAUNCH OF THE VELA 4 SATELLITES. AFTER THIS TIME, DATA ACQUISITION FROM THE VELA 3 SATELLITES BECAME INCREASINGLY SPORADIC.

EXPERIMENT NAME- ELECTROSTATIC ANALYZER AND GM TUBES NSSDC ID 65-058A-04

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - S.J. BAME

LOS ALAMOS SCI LAB

LOS ALAMOS, NM

DATE LAST USABLE EXPERIMENT DATA RECORDED-052170

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF TWO GEIGER COUNTERS AND A HEMISPHERICAL ELECTROSTATIC ANALYZER. THE INSTRUMENTS WERE DESIGNED TO STUDY THE INTENSITY ENERGY SPECTRUM AND ANGULAR DISTRIBUTIONS OF SOLAR WIND AND MAGNETOSPHERIC PARTICLES. THE GEIGER COUNTERS MEASURED ELECTRONS WITH ENERGIES GREATER THAN 45 KEV. PARTICLES WERE ACCEPTED FROM A CONE OF 35 DEG HALF-ANGLE. ONE COUNTER WAS MOUNTED SO THAT THE AXIS OF THE ACCEPTANCE CONE WAS PERPENDICULAR TO THE SPIN AXIS. THE OTHER COUNTER HAD THE FIELD OF VIEW SHIFTED 60 DEG RELATIVE TO THE FIRST. THE COUNTERS WERE OPERATED ONLY IN REAL TIME (I.E., ONLY 25 PERCENT OF THE TIME), AND A MEASUREMENT WAS TAKEN ONCE EACH SECOND. THE ELECTROSTATIC ANALYZER WAS MOUNTED ON THE SPACECRAFT EQUATORIAL PLANE AND HAD A FIELD OF VIEW OF ABOUT 5 DEG IN SPACECRAFT LONGITUDE AND ABOUT 90 DEG IN SPACECRAFT LATITUDE. IN THE REAL-TIME MODE, THE ELECTROSTATIC ANALYZER MEASURED THE ION OR ELECTRON (POLARITY WAS SELECTED BY GROUND COMMAND) FLUX IN 64 LOGARITHMICALLY SPACED ENERGY PER CHARGE CHANNELS COVERING THE RANGE 0.2 TO 18 KEV. A COMPLETE 64-POINT ENERGY SPECTRUM WAS TAKEN CENTERED ON EACH OF THE FOLLOWING DIRECTIONS IN THE SPACECRAFT EQUATORIAL PLANE AND RELATIVE TO THE SPACECRAFT SUN LINE -- -11, -5, 1, 7, 14, 89, 190, AND 291 DEG (MINUS SIGNS INDICATE ANGLES TO THE LEFT (EAST) OF THE SUN). THIS SET OF ANGLES COULD BE ROTATED (BY GROUND COMMAND) BY +30 DEG FOR VELA 3A AND -30 DEG FOR VELA 3B. IN THE REAL-TIME MODE, A COMPLETE SET OF MEASUREMENTS (64-POINT SPECTRA IN EACH OF EIGHT DIRECTIONS) WAS TAKEN EVERY 256 SEC AND REPEATED CONTINUOUSLY. IN THE STORE MODE, THE ANALYZER TOOK A 16-POINT ENERGY SPECTRUM AT THE ANGLES 1 AND 190 DEG EVERY 512 SEC. THE INSTRUMENTS WORKED WELL OVER THE PERIOD OF MAJOR COVERAGE OF THE SPACECRAFT.

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND  
PARAMETERS

NSSDC ID 65-058A-04A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 010169 TO 052170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 25 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE VELA 3A, 3B, 5A, AND 5B SATELLITES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT IDENTIFICATION, BULK VELOCITY, AND DENSITY. THE VELOCITY IS ACCURATE TO 3 PERCENT, AND THE DENSITY IS BELIEVED TO BE ACCURATE TO 50 PERCENT. HOWEVER, RELATIVE CHANGES IN THE DENSITY MEASURED OVER A SHORT TIME SPAN ARE ACCURATE TO 20 PERCENT. TYPICALLY, THERE ARE TWO OR THREE SETS OF PARAMETERS GIVEN FOR A PARTICULAR INSTRUMENT PER DAY, AND ON ABOUT 30 PERCENT OF THE DAYS THERE ARE NO DATA.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND  
PARAMETERS ON MICROFILM

NSSDC ID 65-058A-04B



AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 072665 TO 120667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA WERE SUPPLIED BY THE EXPERIMENTER AS A PUBLISHED DOCUMENT, 'A COMPILATION OF VELA 3 SOLAR WIND OBSERVATIONS 1965 TO 1967,' LOS ALAMOS SCIENTIFIC LABORATORY, LA-4536, VOL. 1, OCT. 1970, BY S. J. BAME, H. E. FELTHAUSER, A. J. MUNDHAUSEN, I. B. STRONG, J. R. ASBRIDGE, H. E. GILBERT, D. M. SMITH, AND S. J. SYDORIAK. THE DOCUMENT WAS MICROFILMED BY NSSDC AND IS CONTAINED ON ONE 35-MM REEL. THE DATA CONSIST OF 3-HR AVERAGES OF THE SOLAR WIND PROTON DENSITY, FLOW SPEED, FLOW DIRECTION, AND PROTON TEMPERATURE. THESE PARAMETERS WERE DERIVED BY LEAST SQUARES TECHNIQUES ASSUMING BI-MAXWELLIAN DISTRIBUTION FUNCTIONS. THE DATA ARE DISPLAYED BOTH AS PLOTS AND AS LISTINGS. THERE IS A NEARLY UNIFORM 25 PERCENT COVERAGE OVER THE TIME PERIOD INDICATED.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND  
PARAMETERS ON TAPE

NSSDC ID 65-058A-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072665 TO 120667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA WERE SUPPLIED BY DR. PAUL FOUGERE OF THE AIR FORCE CAMBRIDGE RESEARCH LABORATORIES AND CONSIST OF A CARD IMAGE MAGNETIC TAPE VERSION OF DATA SET 65-058A-04B. THE ONE-FILE TAPE IS BCD, HAS 7 TRACKS, HAS A DENSITY OF 556 BPI, AND WAS MADE ON AN IBM 7094. DATA FOR DATA SET 65-058B-04C ARE ALSO ON THIS TAPE.

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SPACECRAFT COMMON NAME- VELA 3B

NSSDC ID 65-058B

ALTERNATE NAMES- VELA 3 (USAF), VELA 6 (TRW)

LAUNCH DATE- 07/20/65 SPACECRAFT WEIGHT IN ORBIT- 150. KG

FUNDING AGENCY- DOD-USAF

DATE LAST USABLE SPACECRAFT DATA RECORDED-050070

SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/20/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6726. MIN

APOAPSIS- 121453. KM ALT PERIAPSIS- 101859. KM ALT INCLINATION- 34.99 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 3B WAS ONE OF TWO POLYHEDRAL SATELLITES COMPRISING THE THIRD IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH

WERE BASICALLY CIRCULAR AT A RADIAL DISTANCE OF ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THE SATELLITES WERE SPIN STABILIZED AT ABOUT 2 RPS AND HAD THEIR SPIN AXES INCLINED AT ABOUT 60 DEG TO THE ECLIPTIC. DATA ACQUISITION WAS MAINLY REAL TIME AND AVERAGED 25 PERCENT (1 OUT OF EVERY 4 HR) COVERAGE PER DAY. DATA COVERAGE WAS INCREASED FOR SPECIAL EVENTS. THE SATELLITE OPERATED WELL DURING THE PERIOD OF MAJOR DATA COVERAGE - FROM LAUNCH UNTIL THE APRIL 1967 LAUNCH OF THE VELA 4 SATELLITES. AFTER THIS TIME, DATA ACQUISITION FROM THE VELA 3 SATELLITES BECAME INCREASINGLY SPORADIC.

EXPERIMENT NAME- HEMISPHERICAL ELECTROSTATIC ANALYZER AND GEIGER COUNTERS NSSDC ID 65-058B-04

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - S.J. BAME LOS ALAMOS SCI LAB LOS ALAMOS, NM

DATE LAST USABLE EXPERIMENT DATA RECORDED--052170  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF TWO GEIGER COUNTERS AND A HEMISPHERICAL ELECTROSTATIC ANALYZER. THE INSTRUMENTS WERE DESIGNED TO STUDY THE INTENSITY ENERGY SPECTRUM AND ANGULAR DISTRIBUTIONS OF SOLAR WIND AND MAGNETOSPHERIC PARTICLES. THE GEIGER COUNTERS MEASURED ELECTRONS WITH ENERGIES GREATER THAN 45 KEV. PARTICLES WERE ACCEPTED FROM A CONE OF 35 DEG HALF-ANGLE. ONE COUNTER WAS MOUNTED SO THAT THE AXIS OF THE ACCEPTANCE CONE WAS PERPENDICULAR TO THE SPIN AXIS. THE OTHER COUNTER HAD THE FIELD OF VIEW SHIFTED 60 DEG RELATIVE TO THE FIRST. THE COUNTERS WERE OPERATED ONLY IN REAL TIME (I.E., ONLY 25 PERCENT OF THE TIME), AND A MEASUREMENT WAS TAKEN ONCE EACH SECOND. THE ELECTROSTATIC ANALYZER WAS MOUNTED ON THE SPACECRAFT EQUATORIAL PLANE AND HAD A FIELD OF VIEW OF ABOUT 5 DEG IN SPACECRAFT LONGITUDE AND ABOUT 90 DEG IN SPACECRAFT LATITUDE. IN THE REAL-TIME MODE, THE ELECTROSTATIC ANALYZER MEASURED THE ION OR ELECTRON (POLARITY WAS SELECTED BY GROUND COMMAND) FLUX IN 64 LOGARITHMICALLY SPACED ENERGY PER CHARGE CHANNELS COVERING THE RANGE 0.2 TO 18 KEV. A COMPLETE 64-POINT ENERGY SPECTRUM WAS TAKEN CENTERED ON EACH OF THE FOLLOWING DIRECTIONS IN THE SPACECRAFT EQUATORIAL PLANE AND RELATIVE TO THE SPACECRAFT SUN LINE -- -11, -5, 1, 7, 14, 89, 190, AND 291 DEG (MINUS SIGNS INDICATE ANGLES TO THE LEFT (EAST) OF THE SUN). THIS SET OF ANGLES COULD BE ROTATED (BY GROUND COMMAND) BY +30 DEG FOR VELA 3A AND -30 FOR VELA 3B. IN THE REAL-TIME MODE, A COMPLETE SET OF MEASUREMENTS (64-POINT SPECTRA IN EACH OF EIGHT DIRECTIONS) WAS TAKEN EVERY 256 SEC AND REPEATED CONTINUOUSLY. IN THE STORE MODE, THE ANALYZER TOOK A 16-POINT ENERGY SPECTRUM AT THE ANGLES 1 AND 190 DEG EVERY 512 SEC. THE INSTRUMENTS WORKED WELL OVER THE PERIOD OF MAJOR COVERAGE OF THE SPACECRAFT.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON MICROFILM NSSDC ID 65-058B-04A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 072665 TO 120667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA WERE SUPPLIED BY THE EXPERIMENTER AS A PUBLISHED DOCUMENT, 'A COMPILATION OF VELA 3 SOLAR WIND OBSERVATIONS 1965 TO 1967.' LOS ALAMOS SCIENTIFIC LABORATORY, LA-4536. VOL. 1, OCT. 1970. BY S. J. BAME, H. E. FELTHAUSER, A. J. HUNDHAUSEN, I. B. STRONG, J. R. ASBRIDGE, H. E. GILBERT, D. M. SMITH, AND S. J. SYDORIAK. THE DOCUMENT WAS MICROFILMED BY NSSDC AND IS CONTAINED ON ONE 35-MM REEL. THE DATA CONSIST OF 3-HR AVERAGES OF SOLAR WIND PROTON DENSITY, FLOW SPEED, FLOW DIRECTION, AND PROTON TEMPERATURE. THESE PARAMETERS WERE DERIVED BY LEAST SQUARES TECHNIQUES ASSUMING BI-MAXWELLIAN DISTRIBUTION FUNCTIONS. THE DATA ARE DISPLAYED BOTH AS PLOTS AND AS LISTINGS. THERE IS A NEARLY UNIFORM 25 PERCENT COVERAGE OVER THE TIME PERIOD INDICATED.

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND PARAMETERS NSSDC ID 65-0588-04B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 010169 TO 052170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 25 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE VELA 3A, 3B, 5A, AND 5B SATELLITES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT IDENTIFICATION, BULK VELOCITY, AND DENSITY. THE VELOCITY IS ACCURATE TO 3 PERCENT, AND THE DENSITY IS BELIEVED TO BE ACCURATE TO 50 PERCENT. HOWEVER, RELATIVE CHANGES IN THE DENSITY MEASURED OVER A SHORT TIME SPAN ARE ACCURATE TO 20 PERCENT. TYPICALLY, THERE ARE TWO OR THREE SETS OF PARAMETERS GIVEN FOR A PARTICULAR INSTRUMENT PER DAY, AND ON ABOUT 30 PERCENT OF THE DAYS THERE ARE NO DATA. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.

DATA SET NAME- THREE-HOUR AVERAGES OF SOLAR WIND PARAMETERS ON TAPE NSSDC ID 65-0588-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072665 TO 120667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA WERE SUPPLIED BY DR. PAUL FOUGERE OF THE AIR FORCE CAMBRIDGE RESEARCH LABORATORIES AND CONSIST OF A CARD IMAGE MAGNETIC TAPE VERSION OF DATA SET 65-058A-04B. THIS TAPE WAS MADE ON AN IBM 7094. THE TAPE WAS WRITTEN IN BCD AT A DENSITY OF 556 BPI. THE TAPE HAS ONE FILE AND 7 TRACKS. DATA FOR DATA SET 65-058A-04C ARE ALSO ON THIS TAPE.



ELECTRONS GREATER THAN 3.2 MEV FAILED ON JULY 23, 1965. ALL OTHER CHANNELS OF THIS EXPERIMENT OPERATED UNTIL THE CESSATION OF TELEMTRY. ALL OF THESE DETECTOR SYSTEMS WERE OMNIDIRECTIONAL EXCEPT FOR THE PLASTIC SCINTILLATION COUNTER, WHICH HAD A CONICAL FIELD OF VIEW WITH A 45-DEG HALF ANGLE.

DATA SET NAME- L-ORDERED ELECTRON AND PROTON COUNT RATES NSSDC ID 65-058C-01D  
ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072065 TO 103165 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE COUNT RATES FROM THE LITHIUM DRIFTED SILICON DETECTOR (SSD) ELECTRON CHANNEL, AND THE TWO CHANNELS OF THE PLASTIC SCINTILLATION COUNTER (LEPM) WERE INTERPOLATED TO THE FOLLOWING L VALUES -- 2.0, 2.2, 2.4, 2.6, 2.8, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 8.0, 9.0, 10.0, 11.0, AND 12.0. THE DATA ARE ORGANIZED INTO SEPARATE FILES FOR EACH ENERGY THRESHOLD. WITHIN EACH FILE THE DATA ARE ORDERED BY L VALUE. THE LEPM RESPONDED TO ELECTRONS ABOVE 100 KEV IN ONE CHANNEL AND ELECTRONS ABOVE 600 KEV AND PROTONS BETWEEN 3.5 AND 27 MEV IN THE OTHER. THE SSD ELECTRON CHANNEL RESPONDED TO ELECTRONS ABOVE 320 KEV. THE 100 KEV AND 320 KEV DATA WERE USED IN THE CONSTRUCTION OF THE AE-4 MODEL ELECTRON ENVIRONMENT. THE DATA HAVE BEEN CORRECTED FOR DETECTOR DEAD TIMES. THE CORRECTED COUNT RATE, B/BO, LOCAL TIME (HR), SOLAR ROTATION TIME (DAYS), UT (HR), MONTH, DAY OF MONTH, YEAR (-1900), GEOMAGNETIC LATITUDE (DEG), GEOGRAPHIC EAST LONGITUDE, GEOGRAPHIC LATITUDE, AND L VALUE APPEAR AS CARD IMAGES ON A 556-BPI, 8CD, 7-TRACK, EVEN PARITY, IBM 7094 MAGNETIC TAPE. THE THREE FILES FOR THIS DATA SET AND THE DATA SET 64-040C-018 ARE INCLUDED ON THE SAME TAPE.

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SPACECRAFT COMMON NAME- GEMINI 5 NSSDC ID 65-068A  
ALTERNATE NAMES-

LAUNCH DATE- 08/21/65 SPACECRAFT WEIGHT IN ORBIT- 3180. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-082965  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 08/24/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.4 MIN  
APOAPSIS- 303.000 KM ALT PERIAPSIS- 197.000 KM ALT INCLINATION- 32.6 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 5, MANNED WITH TWO ASTRONAUTS, WAS THE THIRD EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE CONE-SHAPED SPACECRAFT WAS 3.05 M IN DIAMETER AT THE LARGEST END, WHICH WAS THE REAR OF THE CRAFT. THE MAJOR OBJECTIVES OF THIS MISSION WERE TO DEMONSTRATE (1) A LONG-DURATION MANNED FLIGHT USING A FUEL CELL POWER SYSTEM, (2) RENDEZVOUS CAPABILITIES, AND (3) RENDEZVOUS MANEUVERS. SCIENTIFIC STUDIES INCLUDED ZODIACAL LIGHT, SYNOPTIC

TERRAIN, SYNOPTIC WEATHER PHOTOGRAPHY, AND A CLOUDTOP SPECTROMETER EXPERIMENT. IN ADDITION, FIVE MEDICAL AND SEVEN TECHNOLOGICAL EXPERIMENTS WERE PERFORMED DURING THE MISSION. THE 120-ORBIT FLIGHT LASTED 8 DAYS, RETURNING TO EARTH ON AUGUST 29, 1965. THE MISSION WAS CONSIDERED SUCCESSFUL.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS NSSDC ID 65-068A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR; OI=OTHER INVESTIGATOR)  
PI - P.O. LOWMAN, JR NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-082965  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO TAKE HIGH-QUALITY COLOR PHOTOGRAPHS OF SELECTED LAND AND NEAR-SHORE AREAS OF THE EARTH FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. A HAND-HELD 70-MM HASSELBLAD 500-C CAMERA WITH A ZEISS PLANAR 80-MM F/2.8 LENS WAS USED TO OBTAIN THE PHOTOGRAPHS. A HAZE FILTER WAS ALSO USED TO REDUCE THE INTENSITY OF BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. EKTACHROME MS SO-217 FILM AND SUPER ANSCOCHROME D-50 WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. OF THE 253 PICTURES TAKEN, 175 WERE USABLE FOR TERRAIN STUDIES. THESE INCLUDED HIGH-QUALITY PHOTOGRAPHS OF THE SOUTHWESTERN UNITED STATES, THE BAHAMA ISLANDS, SOUTHWESTERN AFRICA, TIBET, INDIA, CHINA, AND AUSTRALIA.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN PHOTOS NSSDC ID 65-068A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 082165 TO 082965 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 253 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 5 PHOTOGRAPHY. OF THE 253 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 175 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 3, 4, AND 5' (NASA SP-129) OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY NSSDC ID 65-068A-03

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K. NAGLER NAT. METEORO. CENTER SILVER SPRING, MD

DATE LAST EXPERIMENT DATA RECORDED-082965  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SYNOPTIC WEATHER PHOTOGRAPHY EXPERIMENT WAS DESIGNED TO PROVIDE A SET OF HIGH-RESOLUTION PICTURES OF A BROAD RANGE OF METEOROLOGICAL PHENOMENA, ESPECIALLY VIEWS OF SPECIFIC CLOUD SYSTEMS. BECAUSE IT HAD A 90-MIN ORBIT, THE EXPERIMENT COULD SHOW CHANGES IN THE SAME CLOUD PATTERN DURING THIS INTERVAL. A HASSELBLAD 500-C CAMERA, THREE MAGAZINES OF 70-MM EKTACHROME MS SO-217 FILM, AND ONE MAGAZINE OF 70-MM ANSCOCHROME D-50 FILM WERE CARRIED ON BOARD FOR THIS AND THE OTHER PHOTOGRAPHIC EXPERIMENTS. A HAZE FILTER WAS ATTACHED TO THE STANDARD ZEISS PLANAR 80-MM F/2.8 LENS TO REDUCE THE INTENSITY OF THE BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. PHOTOGRAPHS TAKEN WHEN THE SPACECRAFT WAS IN A NEARLY VERTICAL POSITION COVER AN AREA APPROXIMATELY 161 KM SQ. FROM OBLIQUE ANGLES, LARGER AREAS WERE VISIBLE, BUT THERE WAS DISTORTION, RESOLUTION LOSS, AND COLOR FIDELITY LOSS IN THE IMAGES. OF THE 253 HIGH-QUALITY COLOR PHOTOGRAPHS RETURNED FOR ALL PHOTOGRAPHIC EXPERIMENTS, OVER 100 DISPLAYED CLOUD FORMATIONS OR OTHER INFORMATION OF METEOROLOGICAL INTEREST.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER NSSDC ID 65-068A-03A  
PHOTOS

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 082165 TO 082965 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 253 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 5 PHOTOGRAPHY. OF THE 253 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, OVER 100 WERE DESIGNATED AS SYNOPTIC WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 3, 4, 5' (NASA SP-129) OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- OVI- 2 NSSDC ID 65-078A  
ALTERNATE NAMES- SATAR

LAUNCH DATE- 10/05/65 SPACECRAFT WEIGHT IN ORBIT- 88. KG

FUNDING AGENCY- DOD-USAF

DATE LAST USABLE SPACECRAFT DATA RECORDED-040067  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/06/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 125.6 MIN  
APOAPSIS- 3462.00 KM ALT PERIAPSIS- 403.000 KM ALT INCLINATION- 144.3 DEG

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT CARRIED INSTRUMENTATION FOR THE STUDY OF ENERGETIC PARTICLE FLUXES AND SPECTRA AND THE RESULTING DOSE RATES. A MAJOR OBJECTIVE OF THE EXPERIMENT PACKAGE WAS TO OBTAIN DATA WITH WHICH TO CHECK APPROXIMATIONS MADE IN THEORETICAL DOSE CALCULATIONS. THE SPACECRAFT HAD A SLOWLY VARYING TUMBLE PERIOD OF TENS OF SECONDS. SPACECRAFT PERFORMANCE INITIALLY WAS NORMAL. HOWEVER, THE ONBOARD CLOCK AND THE TAPE RECORDER FAILED ON DECEMBER 1, 1965, AND ON JANUARY 13, 1966, RESPECTIVELY. LIMITED REAL-TIME OPERATIONS WERE CARRIED OUT UNTIL TOTAL SPACECRAFT FAILURE IN APRIL 1967.

EXPERIMENT NAME- ELECTRON AND PROTON DETECTORS NSSDC ID 65-078A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - T.A. FARLEY U OF CALIFORNIA, LA LOS ANGELES, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-120165  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

DIRECTIONAL FLUXES OF ELECTRONS WERE MEASURED BY A CSI SCINTILLATOR ATTACHED TO AN RCA 4439 PHOTOMULTIPLIER TUBE. A PLASTIC ANTICOINCIDENCE SCINTILLATOR SURROUNDED THIS DETECTOR. THE ANODE OUTPUT YIELDED COUNT RATES OF ELECTRONS ABOVE 560 KEV. EIGHT-CHANNEL PULSE HEIGHT ANALYSIS WAS APPLIED TO THE LAST DYNODE PULSE FOR EACH APPROPRIATE INCIDENT PARTICLE. A DYNODE OUTPUT GAIN LOSS SHIFTED THE MEASURABLE ELECTRON ENERGIES UPWARD SO THAT ONLY THE LOWEST FIVE CHANNELS YIELDED USEFUL INFORMATION. THE ELECTRON ENERGY RANGE 1.2 TO 4.7 MEV WAS COVERED BY THESE FIVE CHANNELS. ALL LOCAL PITCH ANGLES WERE SAMPLED DURING EACH SPACECRAFT SPIN PERIOD. EXCEPT FOR THE DYNODE GAIN LOSS, THE DETECTOR WORKED WELL FROM LAUNCH UNTIL DECEMBER 1, 1965, WHEN THE ONBOARD CLOCK MALFUNCTIONED. TWO PLASTIC SCINTILLATORS MEASURED THE DIRECTIONAL FLUXES OF PROTONS WITH ALL LOCAL PITCH ANGLES AND IN THE ENERGY INTERVALS 10 TO 23 MEV AND 22 TO 50 MEV. THE DETECTORS FUNCTIONED NORMALLY OVER THE 18-MONTH PERIOD OF DATA TRANSMISSION ALTHOUGH DATA AND EPHEMERIS ARE AVAILABLE ONLY BETWEEN OCTOBER 5, 1965, AND DECEMBER 1, 1965. THE EXPERIMENT PACKAGE ALSO CONTAINED A FOUR-CHANNEL PROTON SPECTRUM ANALYZER THAT PRODUCED NO USEFUL INFORMATION. A COMPLETE DATA SAMPLING SEQUENCE REQUIRED 2 SEC. THIS SEQUENCE INCLUDED FOUR READINGS EACH OF THE FLUXES OF ELECTRONS ABOVE 560 KEV AND OF PROTONS BETWEEN 10 AND 23 MEV AND BETWEEN 22 AND 50 MEV AND ONE READING OF EACH ELECTRON AND PROTON PULSE HEIGHT ANALYSIS CHANNEL. THE DATA WERE TRANSMITTED OVER TELEMETRY CHANNELS 15 AND 16 (ELECTRON AND PROTON DATA, EACH TYPE IN BOTH CHANNELS).

DATA SET NAME- PROTON FLUX LISTING ON MICROFILM NSSDC ID 65-078A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION



TIME PERIOD COVERED- 110165 TO 113065 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF AN EXPERIMENTER SUPPLIED LISTING OF PERPENDICULAR AND OMNIDIRECTIONAL FLUXES OF 10- TO 23-MEV AND 22- TO 50-MEV PROTONS AND OF POWER LAW SPECTRAL PARAMETERS FOR BOTH TYPES OF FLUXES. THE DATA ARE LISTED VS  $\theta$  AND VS EQUATORIAL PITCH ANGLE (EQUIVALENT) FOR 13 DISCRETE L VALUES BETWEEN 1.2 AND 2.1. THESE DATA ARE CONTAINED ON ONE REEL OF 16-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-078A-02B.

EXPERIMENT NAME- X-RAY CSI CRYSTAL DOSIMETER

NSSDC ID 65-078A-03

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R. FORTNEY TRW SYSTEMS GROUP REDONDO BEACH, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-120165  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT CONSISTED OF SIX DOSIMETERS THAT WERE USED TO OBTAIN DOSE RATE DATA IN THE TRAPPED PARTICLE ENVIRONMENT. THREE OF THE DOSIMETERS WERE MOUNTED ON OR WITHIN AN ALUMINUM SPHERE, DEPENDING ON THE AMOUNT OF SHIELDING REQUIRED. THESE DETECTORS, DESIGNATED THE SURFACE PROTON, MIDDLE PROTON, AND CENTER PROTON DOSIMETERS, WERE LITHIUM-DRIFTED SILICON DETECTORS WITH A MINIMUM ALUMINUM SHIELDING OF 0 GM/SQ CM, 4 GM/SQ CM, AND 16 GM/SQ CM, RESPECTIVELY. THEY HAD A NOMINAL ENERGY THRESHOLD OF 0.5 MEV AND AN ENERGY RESOLUTION OF 6 PERCENT. SATISFACTORY DOSE RATE DATA (RADS/HR) WERE OBTAINED FROM THESE DETECTORS THROUGH 658 ORBITS (OCTOBER 5 TO DECEMBER 1, 1965). EVEN THROUGH THE REGION OF PEAK PROTON FLUX, THE RESPONSE OF THE SURFACE DOSIMETER, HOWEVER, DECREASED WITH TIME. THE FOURTH DOSIMETER WAS AN X-RAY DETECTOR COMPOSED OF A 0.64-CM-DIAMETER CSI CRYSTAL (0.05 CM THICK) THAT HAD A MINIMUM ALUMINUM SHIELDING OF 5 GM/SQ CM. IT MEASURED THE DOSE RATE (RADS/HR) FROM HARD X RAYS INCIDENT ON THE CRYSTAL AND OBTAINED EXCELLENT DATA DURING THE PERIOD OCTOBER 5, TO DECEMBER 1, 1965. THE DOSE RATES AND REGION OF  $\theta$ , L SAMPLED CORRESPOND CLOSELY TO THOSE OF THE MIDDLE PROTON DOSIMETER. THE X-RAY DETECTOR HAD A DYNAMIC RANGE OF 0.3 TO 30 RADS/HR, WAS ACCURATE TO PLUS/MINUS 10 PERCENT, AND HAD A COUNTING ACCURACY OF BETTER THAN 0.1 PERCENT. THE FIFTH AND SIXTH DOSIMETERS WERE THE AIR FORCE WEAPONS LABORATORY (AFWS) TISSUE EQUIVALENT ION CHAMBERS (TEIC) WITH MINIMUM AMOUNTS OF EQUIVALENT ALUMINUM SHIELDING OF 0.19 AND 1.2 GM/SQ CM. THEY ALSO MEASURED DOSE RATES IN RADS/HR, DURING THE PERIOD OCTOBER 5 TO DECEMBER 1, 1965. MORE DETAILS ON THE INSTRUMENTS, THEIR CALIBRATION, AND THE DATA REDUCTION CAN BE FOUND IN 'A SPACE FLIGHT EXPERIMENT TO ASSESS RADIATION SHIELDING CALCULATIONS' BY W. H. COOP AND M. C. CHAPMAN, AMRL-TR-66-34, 1966, AND 'GENERAL RESULTS FROM THE OVI-2 SATELLITE' BY R. FORTNEY, AEROSPACE MEDICINE, 1476-1485, DECEMBER 1969.

DATA SET NAME- REDUCED DOSIMETER DATA ON MAGNETIC TAPE

NSSDC ID 65-078A-03B



ROTATE ABOUT THIS X AXIS IN ORDER TO OBTAIN MAXIMUM RADIATION FOR THE SOLAR CELLS AND CONCURRENTLY ORIENT THE SOEP PROPERLY. THE OPEP'S WERE REORIENTED ON EITHER END OF AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE FORWARD END OF THE MAIN BODY. THESE OPEP SENSORS NORMALLY WERE MAINTAINED LOOKING FORWARD IN THE ORBITAL PLANE OF THE SATELLITE. IN ORDER TO MAINTAIN THIS ORIENTATION, THE OPEP AXIS COULD ROTATE OVER 90 DEG. IN ADDITION, AN ANGULAR DIFFERENCE OF OVER 90 DEG WAS POSSIBLE BETWEEN THE ORIENTATION OF THE UPPER AND LOWER OPEP PACKAGES. THE SOEP CONTAINED FOUR EXPERIMENTS, AND THE OPEP, FIVE EXPERIMENTS. NEWTON'S PARTICLE EXPERIMENT FAILED ON LAUNCH, AND KREPLIN'S SOLAR X-RAY EXPERIMENT SHORTLY THEREAFTER. SOON AFTER ACHIEVING ORBIT, DIFFICULTIES IN MAINTAINING EARTH LOCK WITH HORIZON SCANNERS CAUSED EXHAUSTION OF ATTITUDE CONTROL GAS BY OCTOBER 23, 10 DAYS AFTER LAUNCH. AT THIS TIME, THE SPACECRAFT ENTERED A SPIN MODE (ABOUT 0.11 RPM) WITH A LARGE CONING ANGLE ABOUT THE PREVIOUSLY VERTICAL AXIS. FIVE EXPERIMENTS BECAME USELESS WHEN THE SATELLITE WENT INTO THIS SPIN MODE. SIX ADDITIONAL EXPERIMENTS WERE DEGRADED BY THIS LOSS OF ATTITUDE CONTROL. BY APRIL 1966, BOTH BATTERIES HAD FAILED SO THAT OBSERVATIONS WERE LIMITED TO SUNLIT PORTIONS OF THE ORBIT. BY DECEMBER 1966, ONLY EIGHT EXPERIMENTS WERE OPERATIONAL, FIVE OF WHICH WERE NOT DEGRADED BY THE SPIN MODE OPERATION. BY APRIL 1967, THE TAPE RECORDERS HAD MALFUNCTIONED SO THAT ONLY ONE THIRD OF THE RECORDED DATA COULD BE PROCESSED. THE SPACECRAFT WAS SHUT DOWN ON NOVEMBER 1, 1967, WITH EIGHT EXPERIMENTS STILL OPERATIONAL. IT WAS REACTIVATED FOR TWO WEEKS IN FEBRUARY 1968 TO OPERATE EXPERIMENT 6 (J. CAIN).

EXPERIMENT NAME- RUBIDIUM VAPOR MAGNETOMETER

NSSDC ID 65-081A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.C. CAIN	NASA-GSFC	GREENBELT, MD
OI - R.A. LANGE	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-100267

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE PRIMARY OBJECTIVES OF THIS EXPERIMENT WERE TO REFINE THE THEN AVAILABLE ANALYTICAL DESCRIPTION OF THE MAIN GEOMAGNETIC FIELD (AS PART OF THE U.S. CONTRIBUTION TO THE WORLD MAGNETIC SURVEY) AND TO MEASURE THE SECULAR CHANGE IN THE MAIN FIELD. THE DETECTOR SYSTEM CONSISTED OF TWO DUAL-CELL, OPTICALLY PUMPED, SELF-OSCILLATING, RUBIDIUM (85) VAPOR MAGNETOMETERS. THE OSCILLATION FREQUENCY OF THE SYSTEM WAS DIRECTLY PROPORTIONAL TO THE MAGNITUDE OF THE AMBIENT MAGNETIC FIELD. THIS FREQUENCY WAS COUNTED BY TWO ELECTRONIC SCALERS FOR ALTERNATE HALF SECONDS. EACH SCALER WAS READ OUT ONCE IN EACH MAIN FRAME (ONE ABOUT HALFWAY THROUGH AND THE OTHER TOWARDS THE END). SINCE THE SPACECRAFT OPERATED AT 4 KBS, 16 KBS, OR 64 KBS, THE MAIN FRAME WAS READ OUT IN 0.288, 0.072, OR 0.018 SEC. BECAUSE OF THE RATE DIFFERENCE BETWEEN THE HALF-SECOND SAMPLING TIMES AND THE TIMES BETWEEN READOUTS, THE SAME DATA POINT WAS OFTEN READ OUT MORE THAN ONCE. IN ADDITION TO THE DIGITIZED FIELD DATA, VARIOUS ENGINEERING DATA WERE TELEMETERED TO THE GROUND BY THE EXPERIMENT. THE OSCILLATION FREQUENCY OF THE MAGNETOMETER WAS ALSO TRANSMITTED IN REAL TIME ON ONE CHANNEL OF THE SPACECRAFT'S SPECIAL PURPOSE TELEMETER TO PROVIDE INFORMATION ON FIELD FLUCTUATIONS. THIS MAGNETOMETER SYSTEM MADE SCALAR MEASUREMENTS OVER A RANGE OF 15,000 TO 64,000 GAMMAS AND HAD AN ACCURACY OF 0.5 TO 1.5 GAMMAS OVER THIS RANGE. IN SPITE OF THE SPACECRAFT ATTITUDE CONTROL SYSTEM PROBLEMS, THE

MAGNETOMETER FUNCTIONED WELL. THE INSTRUMENT OPERATION WAS NOMINAL FOR THE FIRST 6 MONTHS OF THE SATELLITE LIFETIME, AFTER WHICH A FAILURE OF ONE SCALAR POWER SUPPLY CAUSED LOSS OF THE SPECIAL PURPOSE TELEMETRY SIGNAL AND HALF OF THE DIGITAL DATA. THE REDUCTION IN THE SCIENTIFIC USEFULNESS OF THE DATA RECEIVED FROM THE REMAINING SCALER WAS MINOR, HOWEVER, BECAUSE OF THE REDUNDANCIES BUILT INTO THE SYSTEM. THE REST OF THE DATA FROM THE MAGNETOMETER WERE OBTAINED WITH THE REMAINING SCALER UNTIL MAY 1967 AND THEN FROM THE INTERVAL SEPTEMBER 19 TO OCTOBER 2, 1967, DURING WHICH TIME DATA COLLECTION WAS VERY INTERMITTENT.

DATA SET NAME- 0.5-SEC MAGNETIC FIELD AVERAGES ON NSSDC ID 65-081A-05E  
COMPRESSED TAPES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 101465 TO 122266 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET SUPPLIED BY THE EXPERIMENTER CONSISTS OF 0.5 SEC AVERAGES OF THE MAGNETIC FIELD MAGNITUDE EVERY 1 SEC. THE INFORMATION IS CONTAINED ON FOUR 7-TRACK 800-BPI BINARY MAGNETIC TAPES GENERATED ON THE IBM 7094 COMPUTER. EACH TAPE CONTAINS ONE FILE, WITH VARIABLE LENGTH RECORDS. ALSO INCLUDED ARE JULIAN DAY AND FRACTIONS OF A DAY FOR EACH RECORD. NO EPHEMERIS DATA ARE INCLUDED. EACH RECORD BEGINS WITH FIVE INTEGER CONTROL WORDS REPRESENTING TIME, AND SOME RECORD PARAMETERS. FOLLOWING EACH RECORD HEADER ARE THE DATA WORDS THAT ARE FLOATING POINT 7094 WORDS PACKED TWO-TO-ONE IN EACH 36-BIT BINARY WORD. TYPICAL RECORD LENGTH IS 300 36-BIT WORDS. THESE DATA ARE A COMPRESSED VERSION OF 65-081A-05B.

EXPERIMENT NAME- COSMIC-RAY IONIZATION NSSDC ID 65-081A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.R.	ANDERSON	RICE U	HOUSTON, TX
OI - V.H.	NEHER	CAL TECH	PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-040266

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE COSMIC-RAY AND SOLAR FLARE PARTICLE INTENSITIES (PROTONS ABOVE 10 MEV, ELECTRONS ABOVE 0.5 MEV) USING AN ION CHAMBER. THE ION CHAMBER WAS MOUNTED AT THE END OF A SPACECRAFT BOOM ABOUT 2.5 M FROM THE MAIN BODY OF THE SPACECRAFT. THE INTENDED ATTITUDE OF OGO 2 WAS MAINTAINED ONLY DURING THE FIRST 10 DAYS OF THE MISSION. THEREAFTER, A FAILURE RESULTED IN PARTIAL ORIENTATION ON THE SUN ONLY. THE SPACECRAFT ROTATED SLOWLY WITH A PERIOD OF SEVERAL MINUTES. BECAUSE THE ION CHAMBER HAD OMNIDIRECTIONAL SENSITIVITY, EXCEPT FOR NEGLIGIBLE SHADOWING BY THE SPACECRAFT, THE SLOW ROLLING OF THE SPACECRAFT DID NOT ADVERSELY AFFECT THE INSTRUMENT. HOWEVER, BY REDUCING THE AVERAGE POWER CONVERTED BY THE SOLAR PANELS, THIS ROLLING LIMITED THE AMOUNT OF TIME THAT THE SPACECRAFT COULD BE OPERATED. THIS LIMITATION WAS MOST SEVERE WHEN THE ORBITAL PLANE

LAY OVER THE NOON-MIDNIGHT MERIDIAN, PLACING THE SATELLITE IN ECLIPSE A MAXIMUM FRACTION OF EACH ORBIT. THE EXPERIMENT OPERATED NORMALLY FROM OCTOBER 14, 1965, TO APRIL 2, 1966. A DETAILED DESCRIPTION OF THE INSTRUMENTATION APPEARS IN H. R. ANDERSON, 'NUCLEAR INSTRUMENTATION AND METHODS,' VOL. 47, PAGE 1, 1967.

DATA SET NAME- MICROFILM PLOTS OF TOTAL IONIZATION RATES NSSDC ID 65-081A-06A  
AND SATELLITE ALT VS INVARIANT LAT

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 101465 TO 040266 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF IONIZATION CHAMBER TOTAL IONIZATION RATES (ION PAIRS/SEC-CM CUBED, STP AIR) AND SATELLITE ALTITUDE (KM) VS INVARIANT LATITUDE (-90 TO +90 DEG) ON FIVE REELS OF 35-MM MICROFILM. THE CORRESPONDING MCILWAIN L PARAMETER, GEOGRAPHIC LONGITUDE, AND LOCAL TIME OF THE SATELLITE ARE INDICATED ALONG THE INVARIANT LATITUDE AXIS. THE ORBIT NUMBER AND DAY NUMBER APPEAR AT THE TOP OF EACH PLOT ALONG WITH THE UT OF THE FIRST POINT PLOTTED ON THE GRAPH AND AN INSTRUMENT-SENSITIVITY MODE INDICATOR (H FOR HIGH, L FOR LOW). THE ALTITUDE PLOTS ARE GENERATED USING THE X SYMBOL, AND THE IONIZATION PLOTS ARE GENERATED USING DOTS. THE DIRECTION OF THE SPACECRAFT IN ITS ORBIT IS INDICATED IN THE LOWER LEFT MARGIN FOR A GIVEN PLOT, E.G., 'N-S' MEANS THE SPACECRAFT WAS TRAVELING FROM THE NORTHERN HEMISPHERE TOWARD THE SOUTHERN HEMISPHERE. THE OMNIDIRECTIONAL IONIZATION CHAMBER MEASURED THE TOTAL IONIZATION PRODUCED BY PROTONS (E GREATER THAN 10 MEV) AND ELECTRONS (E GREATER THAN 1 MEV). TIME COVERAGE WAS LESS THAN 50 PERCENT FROM INSTRUMENT TURNON (OCTOBER 14, 1965) UNTIL THE INSTRUMENT CEASED OPERATING (APRIL 2, 1966). FURTHER DESCRIPTION OF THE EXPERIMENT AND THIS DATA SET, INCLUDING A DETAILED TIME COVERAGE CHART FOR THE ENTIRE LIFETIME OF THE EXPERIMENT, APPEAR ON THE MICROFILM ALONG WITH THE DATA.

EXPERIMENT NAME- LOW-ENERGY PROTON, ALPHA PARTICLE  
MEASUREMENT

NSSDC ID 65-081A-07

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. SIMPSON U OF CHICAGO CHICAGO, IL  
OI - E.C. STONE CAL TECH PASADENA, CA  
OI - C.Y. FAN U OF ARIZONA TUCSON, AZ

DATE LAST USABLE EXPERIMENT DATA RECORDED-110167  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

TWO SOLID-STATE PARTICLE TELESCOPES WERE USED TO STUDY LOW-ENERGY COSMIC-RAY PROTONS AND ALPHA PARTICLES. ONE OF THESE DETECTORS WAS A THREE-ELEMENT RANGE TELESCOPE ('VERTICAL') THAT WAS CAPABLE OF IDENTIFYING PROTONS AND ALPHA PARTICLES (1.22 TO 39.2 AND 9.32 TO 39.2 MEV/NUCLEON) AND ELECTRONS (E.GT. 400 KEV AND E.GT. 700 KEV). THE OTHER DETECTOR WAS A ONE-ELEMENT TELESCOPE ('HORIZONTAL') SENSITIVE TO PROTONS AND ALPHA

PARTICLES IN THE ENERGY RANGE FROM 0.72 TO ABOUT 11 MEV/NUCLEON. THE VERTICAL TELESCOPE AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT Z AXIS, WHICH LATER UNINTENTIONALLY BECAME THE SPIN AXIS. THE HORIZONTAL TELESCOPE SYMMETRY AXIS WAS NEARLY PARALLEL TO THE SPACECRAFT Y AXIS (PERPENDICULAR TO THE Z AXIS). PULSE HEIGHT INFORMATION WAS SENT BACK FROM THE VERTICAL TELESCOPE ALLOWING PULSE HEIGHT ANALYSES OF PROTONS (ENERGIES FROM 1.22 TO 39.2 MEV), ALPHA PARTICLES (ENERGIES FROM 4.88 TO 156.8 MEV), AND ELECTRONS (E.G. 400 KEV) USING A 256-CHANNEL PULSE HEIGHT ANALYZER. COUNT RATE INFORMATION WAS SENT BACK FROM BOTH TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 0.3 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE UNINTENDED SPIN PERIOD OF THE SPACECRAFT 10 DAYS AFTER LAUNCH WAS ABOUT 10 MIN. THE EXPERIMENT WAS PERFORMING NORMALLY AT THE TIME THE SPACECRAFT SYSTEMS WERE DEACTIVATED (NOVEMBER 1, 1967). HOWEVER, THE SPINNING OF THE SPACECRAFT CAUSED DIFFICULTY IN INTERPRETING THE DATA AFTER OCTOBER 23, 1965.

DATA SET NAME- REDUCED COSMIC-RAY COUNT RATE AND ORBITAL DATA MERGED ON MAGNETIC TAPE NSSDC ID 65-081A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 101465 TO 110365 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY COUNT RATE DATA MERGED WITH ORBITAL DATA ON ABOUT 1400 MAGNETIC 'ABSTRACT' TAPES. NSSDC HOLDS COPIES OF 22 TAPES CORRESPONDING TO THE TIME PERIOD BEFORE THE SPACECRAFT WAS PUT INTO A SPIN MODE. ALTHOUGH DATA IN THE TIME INTERVAL AFTER OCTOBER 23 ARE MORE DIFFICULT TO INTERPRET, THEY ARE AVAILABLE FROM THE EXPERIMENTER THROUGH NSSDC. THE MAJORITY OF THE DATA, INCLUDING THAT HELD AT NSSDC, ARE RECORDED ON 7-TRACK TAPES WRITTEN AT 800 BPI USING AN IBM 7094 COMPUTER, AND SOME OF THE DATA ARE RECORDED ON 9-TRACK TAPES WRITTEN AT 800 BPI USING AN IBM 360/75 COMPUTER. ALL OF THE DATA ARE IN BINARY FORMAT. THE DATA ON THE 7-TRACK TAPES ARE FORMATTED AS FOLLOWS--EACH TAPE HAS A VARIABLE NUMBER OF FILES, AND EACH FILE HAS A 20-WORD FILE HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH HAVING A SIX-WORD RECORD HEADER). THERE ARE A VARIABLE NUMBER OF LOGICAL RECORDS PER PHYSICAL RECORD, SINCE THE 52-WORD ORBITAL DATA LOGICAL RECORD WAS INSERTED INTO THE STREAM OF FOUR-WORD COUNT RATE DATA LOGICAL RECORDS ONCE EVERY MINUTE IN GENERATING THIS SET OF 'ABSTRACT' TAPES. THIS INSERTION DID NOT NECESSARILY OCCUR AT THE BEGINNING OR END OF A GIVEN PHYSICAL RECORD. EACH FILE CONTAINS ABOUT 5 MIN OF DATA. THE DATA ON THE 9-TRACK TAPES ARE FORMATTED IN A SIMILAR MANNER EXCEPT THAT THE ORBITAL DATA LOGICAL RECORD LENGTH IS 98 WORDS. THE TAPES CONTAIN COUNTING RATES CORRESPONDING TO THE PROTON AND ALPHA PARTICLE ENERGY RANGES 1.22 TO 39.2 MEV/NUCLEON (VERTICAL TELESCOPE COINCIDENCE V(1) NOT V(3)), 9.32 TO 39.2 MEV/NUCLEON (VERTICAL TELESCOPE COINCIDENCES V(2) NOT V(3), V(1)V(2) NOT V(3)), AND E.G. 0.72 MEV/NUCLEON (HORIZONTAL TELESCOPE RATE). ADDITIONAL INFORMATION ON THE TAPES INCLUDE -- TIME (UT), TELESCOPE TEMPERATURES, LATITUDE, LONGITUDE, HEIGHT, SUN-EARTH-SATELLITE ANGLE, GEOMAGNETIC COORDINATES, AND VARIOUS DATA QUALITY FLAGS. THE DATA WITHIN A FILE ARE ALWAYS MONOTONICALLY INCREASING IN TIME. HOWEVER, THE SET OF FILES COMPRISING A DATA TAPE ARE NOT NECESSARILY TIME ORDERED. REDUNDANCIES IN THE DATA HAVE BEEN DELETED. SINCE OGO 2 TUMBLED, THE USER OF THESE DATA SHOULD CONSULT 'OGO-C ORIENTATION STUDY,' BY P. D. DIMOTAKIS (CAL TECH SPACE RADIATION LAB. INTERNAL REPORT NO. 9) FOR HELP IN OBTAINING THE CORRECT ATTITUDE OF THE INSTRUMENT.

EXPERIMENT NAME- SOLAR X-RAYS

NSSDC ID 65-081A-16

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC  
OI - T.A. CHUBB NAVAL RESEARCH LAB WASHINGTON, DC  
OI - H.D. FRIEDMAN NAVAL RESEARCH LAB WASHINGTON, DC

DATE LAST USABLE EXPERIMENT DATA RECORDED-110068  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED FOUR ION CHAMBER TO OBSERVE BROADBAND SOLAR EMISSIONS IN THE WAVELENGTH RANGES OF 0.5 TO 3 A, 2 TO 8 A, 8 TO 16 A, AND 44 TO 60 A. TO MINIMIZE CONTAMINATION FROM CHARGED PARTICLES, THE FIELD OF VIEW OF EACH ION CHAMBER WAS LIMITED TO 0.1 STER, AND THE EXPERIMENT PACKAGE WAS MOUNTED IN A COMPARTMENT LOCATED ON ONE OF THE SOLAR PANELS, WHICH WAS POINTED TOWARD THE SUN TO AN ACCURACY OF PLUS OR MINUS 5 DEG. THE INSTRUMENT CYCLED EACH DETECTOR THROUGH A ZERO CURRENT CALIBRATION CHECK ONCE EACH 640 SEC. EACH DETECTOR EXCEPT THE 44- TO 60-A INCORPORATED AUTOMATIC RANGE CHANGING IN ORDER TO AVOID SATURATION. HOWEVER, THIS FEATURE COULD BE OVERRIDDEN BY A COMMAND FROM THE GROUND. BECAUSE OF ELECTROMETER FAILURES, THE EXPERIMENT FAILED IN NOVEMBER 1965, A MONTH AFTER LAUNCH.

DATA SET NAME- SOLAR X-RAY PLOTS

NSSDC ID 65-081A-16A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 101465 TO 102365 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED DATA SUBMITTED TO NSSDC BY THE EXPERIMENTER AND IS CONTAINED ON ONE REEL OF 35-MM MICROFILM. THE DATA ARE PLOTS OF TELEMETRY COUNTS (RELATED TO THE X-RAY FLUX BY A SCALE FACTOR) VS UNIVERSAL TIME. THE COUNTS FROM THE 0.5- TO 3-A, 2- TO 8-A, AND 8- TO 16-A (ALSO CALLED 8- TO 20-A) DETECTORS, ALONG WITH THE AMPLIFIER RANGE IN USE AT THAT TIME, AND THE COUNT FROM THE 44- TO 60-A DETECTOR ARE GIVEN. A BACKGROUND RATE IS ALSO INDICATED. THE DATA COVER THE PERIOD OF OCTOBER 14 TO OCTOBER 23, 1965, AND ARE TIME ORDERED.

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SPACECRAFT COMMON NAME- EXPLORER 30  
ALTERNATE NAMES- SE-A, SOLRAD 8

NSSDC ID 65-093A

LAUNCH DATE- 11/19/65 SPACECRAFT WEIGHT IN ORBIT- 57. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-080067  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 11/19/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 100.8 MIN  
APOAPSIS- 891.000 KM ALT PERIAPSIS- 704.000 KM ALT INCLINATION- 59.72 DEG

SPACECRAFT BRIEF DESCRIPTION

THE NRL SOLRAD 8 SATELLITE WAS ONE OF A SERIES OF SATELLITES THAT BEGAN IN 1960 TO PROVIDE CONTINUOUS COVERAGE OF SOLAR RADIATION WITH A SET OF STANDARD PHOTOMETERS. SOLRAD 8 WAS A SPIN-STABILIZED SATELLITE ORIENTED WITH ITS SPIN AXIS PERPENDICULAR TO THE SUN-SATELLITE LINE SO THAT THE 14 SOLAR X-RAY AND ULTRAVIOLET PHOTOMETERS POINTING RADIALY OUTWARD FROM ITS EQUATORIAL BELT VIEWED THE SUN WITH EACH REVOLUTION. DATA WERE TRANSMITTED IN REAL TIME BY MEANS OF AN FM/FM TELEMETRY SYSTEM AND WERE RECORDED BY THE STATIONS ON THE STADAN TRACKING NETWORK. THE SATELLITE PERFORMED NORMALLY EXCEPT FOR THE SPIN SYSTEM, WHICH FAILED TO MAINTAIN 60 RPM. (AT SPIN RATES BELOW 10 RPM, DATA REDUCTION BECOMES DIFFICULT.) THE SPIN RATE GRADUALLY DECREASED TO 4 RPM ON SEPTEMBER 12, 1966. AT THAT TIME, GROUND COMMAND SUCCEEDED IN REACTIVATING SPINUP TO 78 RPM, WHICH EXHAUSTED THE GAS SUPPLY. FROM THIS POINT, THE SPIN RATE GRADUALLY DECREASED TO 10 RPM IN AUGUST 1967, WHEN DATA COLLECTION WAS SUBSTANTIALLY DECREASED.

EXPERIMENT NAME- SOLAR X-RAY AND ULTRAVIOLET MONITOR NSSDC ID 65-093A-01

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC

DATE LAST USABLE EXPERIMENT DATA RECORDED-082467  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MONITOR SOLAR X-RAY AND ULTRAVIOLET EMISSIONS WITH A SET OF STANDARDIZED DETECTORS SO THAT THE DATA COULD BE COMPARED DIRECTLY WITH THAT PRODUCED BY OTHER EXPERIMENTS IN THE SOLRAD SERIES. EIGHT ION CHAMBERS AND TWO GEIGER COUNTERS COVERING THE SPECTRAL REGIONS FROM 0.5 A TO 60 A AND 1080 A TO 1350 A WERE MOUNTED PERPENDICULAR TO THE SATELLITE SPIN AXIS. ANALOG OUTPUTS FROM THE DETECTORS WERE TRANSMITTED CONTINUOUSLY ON SIX IRIG TELEMETRY CHANNELS. THE EXPERIMENT PROVIDED GOOD DATA FOR ALL DETECTORS FROM NOVEMBER 27, 1965, TO AUGUST 24, 1967, WITH THE FOLLOWING EXCEPTIONS -- (1) THE LYMAN-ALPHA DETECTOR AND THE UV DETECTORS WERE SATURATED FOR NORMAL ASPECT ANGLES, (2) THE CORE MEMORY FAILED AT LAUNCH SO THAT THE DATA WERE COLLECTED IN REAL-TIME TELEMETRY ONLY, AND (3) A GRADUAL DECREASE IN SPIN RATE CAUSED THE ASPECT ANGLE TO DRIFT AWAY FROM NORMAL IN THE SECOND YEAR OF OPERATION.

DATA SET NAME- CATALOG OF TRACKING STATION PASSES THAT NSSDC ID 65-093A-01C  
RESULTED IN SOLAR X-RAY DATA ON TAPE



AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 111965 TO 082467 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, GENERATED AT NSSDC FROM EXPERIMENTER SUPPLIED DATA, IS CONTAINED ON 7-TRACK, BCD, 556-BPI MAGNETIC TAPE. IT CATALOGS EACH PASS OVER A TRACKING STATION THAT RESULTED IN SOLAR X-RAY DATA BEING OBTAINED. LISTED ARE -- THE YEAR, START AND STOP TIMES OF EACH PASS, THE STATION ID AND PASS NUMBER, AND AN ASSORTMENT OF FLAGS INDICATING THE QUALITY OF THE DATA RECEIVED. THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, INDEXES DATA IN DATA SET 65-093A-01B.

DATA SET NAME- CATALOG OF SOLAR X-RAY OBSERVATIONS ON NSSDC ID 65-093A-01D  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112765 TO 082367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, GENERATED AT NSSDC FROM EXPERIMENTER SUPPLIED DATA, IS CONTAINED ON 7-TRACK, BCD, 556-BPI MAGNETIC TAPE. IT CATALOGS, IN ASCENDING ORDER OF TIME, THE DATA ACQUIRED FROM THIS EXPERIMENT. LISTED ON THE TAPE FOR EACH OBSERVATION ARE -- THE DATE, THE PASS NUMBER, THE STATION ID, THE SOLAR ASPECT ANGLE, THE NUMBER OF 1 MIN AVERAGES OBTAINED, AND THE START AND STOP TIMES OF EACH PASS. THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, INDEXES DATA IN DATA SET 65-093A-01B.

DATA SET NAME- THREE-CHANNEL TABULATED DAILY X-RAY NSSDC ID 65-093A-01E  
FLUXES IN PUBLISHED REPORT

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 120165 TO 113067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUPPLIED BY THE ARCETRI ASTROPHYSICAL OBSERVATORY IN ITALY, WHICH HAS RECEIVED TELEMETERED DATA DIRECT FROM SOLRAD SATELLITES SINCE 1964. THE DATA SET IS PUBLISHED IN HARDCOPY FORM AS 'X-RAY FLUXES FROM THE SOLRAD 8 SATELLITE FROM DECEMBER 1965 TO NOVEMBER 1967.' BY M. LANDINI, B. MONSIGNORI FOSSI, D. RUSSO, AND G. L. TAGLIAFERRI, FASCICOLO 91, OSSERVAZIONI E MEMORIE DELL' OSSERVATORIO ASTROFISICO DI ARCETRI, SEPTEMBER 1968, BOLOGNA, ITALY. THE DOCUMENT CONSISTS OF TABULATED DAILY X-RAY FLUXES IN THE 44- TO 60-A, 8- TO 20-A, AND 0- TO 8-A CHANNELS IN UNITS OF 10 TO THE -1 POWER, 10 TO THE -3 POWER, AND 10 TO THE -4 POWER ERG/SQ CM-SEC, RESPECTIVELY. THESE DAILY FLUXES WERE OBTAINED BY SELECTING FLUXES THAT RANGED BETWEEN THE MINIMUM VALUE FOR THAT DAY AND 1.25 TIMES THAT MINIMUM VALUE AND THEN TAKING THE ARITHMETIC MEAN. THE DATA WERE REDUCED FROM COUNTS TO FLUXES BY ASSUMING THAT THE 44- TO 60-A SPECTRUM COULD BE REPRESENTED BY

A ONE-HALF MILLION DEG K GRAYBODY AND THE 8- TO 20-A AND 0- TO 8-A SPECTRA BY A TWO MILLION DEG K GRAYBODY. THE MAXIMUM ERROR IN THE FLUX VALUES IS PLUS OR MINUS 20 PERCENT, MAINLY DUE TO READING ERRORS. BLANKS IN THE DATA MEAN (1) ASPECT ANGLES GREATER THAN 30 DEG, (2) MALFUNCTIONS IN THE RECEIVING STATION, (3) EXTREMELY QUIET DAYS, (4) VERY HIGH ACTIVITY, AND (5) SATELLITE IN THE EARTH'S SHADOW. THE DATA WERE PROCESSED WITH AN IBM 1620 COMPUTER AND COVER THE PERIOD DECEMBER 1, 1965, THROUGH NOVEMBER 30, 1967.

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SPACECRAFT COMMON NAME- ALOUETTE 2 NSSDC ID 65-098A  
 ALTERNATE NAMES- ALOUETTE-B, S 27A, ISIS-X

LAUNCH DATE- 11/29/65 SPACECRAFT WEIGHT IN ORBIT- 145. KG

FUNDING AGENCY- CRC  
 FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 11/29/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 121. MIN  
 APOAPSIS- 2956.00 KM ALT PERIAPSIS- 529.000 KM ALT INCLINATION- 79.724 DEG

SPACECRAFT BRIEF DESCRIPTION

ALOUETTE 2 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED WITH A SWEEP FREQUENCY IONOSPHERIC SOUNDER, A VLF RECEIVER, TWO ENERGETIC PARTICLE EXPERIMENTS, A COSMIC NOISE EXPERIMENT, AND AN ELECTROSTATIC PROBE. THE SOUNDER USED TWO LONG DIPOLE ANTENNAS (78.9 M AND 22.8 M LONG, RESPECTIVELY) FOR THE SOUNDER, VLF, AND COSMIC NOISE EXPERIMENTS. THE SATELLITE WAS SPIN-STABILIZED AT ABOUT 2.25 RPM AFTER ANTENNA DEPLOYMENT. BY JANUARY 1970, THE SPIN HAD DECAYED TO 1.84 RPM. END PLATES ON THE LONG ALOUETTE 2 ANTENNA SEEM TO HAVE CORRECTED THE RAPID DESPIN OCCURRING ON ALOUETTE 1, WHICH WAS BELIEVED TO RESULT FROM THERMAL DISTORTION OF THE ANTENNA AND RADIATION PRESSURE. THERE WAS NO TAPE RECORDER SO THAT DATA ARE AVAILABLE ONLY AT THE SATELLITE AND FOR THE SUB-SATELLITE REGIONS WHEN THE SPACECRAFT IS IN LINE OF SIGHT OF TELEMETRY STATIONS. TELEMETRY STATIONS ARE LOCATED SO THAT PRIMARY DATA COVERAGE IS NEAR THE 80 DEG W MERIDIAN PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, INDIA, NORWAY, AND CENTRAL AFRICA. INITIALLY, DATA WERE RECORDED FOR ABOUT 7-1/2 HR PER DAY. IN 1972, OBSERVATIONS WERE MADE FOR ABOUT 2 HR PER DAY.

EXPERIMENT NAME- SWEEP FREQUENCY SOUNDER NSSDC ID 65-098A-01

ORIGINAL EXPERIMENT INSTITUTION- DRTE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - E.S.	WARREN	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.L.	NELMS	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - J.E.	JACKSON	NASA-GSFC	GREENBELT, MD
OI - J.W.	KING	RSRS	SLOUGH, BUCKS, ENGLAND
OI - L.	COLIN	NASA-ARC	MOFFETT FIELD, CA
OI - J.	TURNER	DEPARTMENT OF INTERIOR	SYDNEY, AUSTRALIA
OI - C.	TAIEB	CNET	PARIS, FRANCE

OI - O.	HOLT	THE AURORAL OBS.	TROMSO, NORWAY
OI - J.H.	WHITTEKER	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - Y.	OGATA	RRL	TOKYO, JAPAN
OI - R.	RAGHAVARAO	PHYSICAL RESEARCH LAB	AHMEDABAD, INDIA
OI - G.E.K.	LOCKWOOD	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE SWEEP FREQUENCY IONOSONDE WAS A RADIO TRANSMITTER/RECEIVER THAT RECORDS THE TIME DELAY BETWEEN A TRANSMITTED AND RETURNED RADIO FREQUENCY PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .12 AND 14.5 MHZ ARE SAMPLED ONCE EVERY 32 SEC. A MULTIPLICITY OF DELAY TIMES IS USUALLY OBSERVED DUE TO BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, GROUND ECHOES, PLASMA RESONANCES, ETC. DELAY TIME IS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND MODE OF PROPAGATION. THE STANDARD DATA FORM IS AN IONOGRAM (GRAPH) SHOWING DELAY TIME (VIRTUAL DISTANCE OF SIGNAL REFLECTION FROM THE SATELLITE) VERSUS FREQUENCY. TWO OTHER COMMON FORMS OF DATA ARE PREPARED FROM THE IONOGRAMS. THEY ARE DIGITAL FREQUENCY AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES, AND COMPUTATIONS OF ELECTRON DENSITY PROFILES. PERFORMANCE HAS BEEN EXCELLENT. INITIALLY, ABOUT 7-1/2 HR OF OBSERVATIONS PER DAY WERE RECORDED. IN APRIL 1973 ABOUT 1 HR PER DAY WAS BEING RECORDED. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SET 65-098A-00E.

DATA SET NAME- IONOGRAM INVENTORY ON TAPE NSSDC ID 65-098A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112965 TO 101372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS FILE INDEXES THE ALQUETTE 2 IONOGRAMS (DATA SET 65-098A-01A) IN UNITS BY STATION PASS. THE INDEX CAN BE SORTED BY STATION, BY TIME, OR BY OTHER METHODS, AS DESIRED. INFORMATION IN THE DATA SET INCLUDES TELEMETRY STATION AND START AND STOP TIME FOR THE PASSES AND ORBIT NUMBER. THE INDEX, WHICH IS BEING PREPARED FROM A PHYSICAL INVENTORY OF FILM RECEIVED AND SATELLITE EPHEMERIDES, IS MAINTAINED ON 556-BPI, 7-TRACK, BCD MAGNETIC TAPES AND IS UPDATED MONTHLY UNLESS FEW DATA ARE RECEIVED.

DATA SET NAME- NASA-ARC ELECTRON DENSITIES INTERPOLATED NSSDC ID 65-098A-01J  
TO 100 KM INTERVALS ON (PACKED) TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112965 TO 031170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA ON ONE MAGNETIC TAPE, SUPPLIED BY THE EXPERIMENTER, WERE COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL

RANGE THAT WERE SCALED FROM IONOGRAMS. DIGITAL ELECTRON DENSITY VALUES WERE LISTED FOR THE SATELLITE LOCATION AND FOR EACH 100 KM FROM 3500 KM ALTITUDE DOWN TO THE LOWEST HEIGHT OF SIGNAL REFLECTIONS (NORMALLY NEAR 300 KM). THERE ARE 17,315 PROFILES LISTED FOR TIMES BETWEEN NOVEMBER 1965 AND APRIL 1970, FROM THE VICINITY OF 18 DIFFERENT GROUND STATIONS. THESE DATA ARE A SMALL BLOCK OF THE TOTAL ALOUETTE 2 IONOGRAM DATA (LESS THAN 1 PERCENT) BUT FORM ONE OF THE LARGEST BLOCKS OF REDUCED SATELLITE IONOGRAMS AVAILABLE. THESE REDUCTIONS ARE OF OPTIMUM QUALITY BECAUSE BOTH X AND Y TRACE VALUES WERE CHECKED AGAINST ONE ANOTHER DURING COMPUTATION OF THE DENSITY VALUES. THESE DATA ARE PACKED ON ONE TAPE WRITTEN IN EXTENDED BCD INTERCHANGE (EBCDIC) CODE IN ODD PARITY. THE TAPE IS 800-BPI, 7-TRACK, AND AN UNPACKING ROUTINE (CALLED 'TAPE') IS AVAILABLE FOR THIS DATA SET. DATA SET 65-098A-01K CONTAINS THE SAME DATA ON MICROFILM.

DATA SET NAME- AMES INTERPOLATED ELECTRON NUMBER DENSITY NSSDC ID 65-098A-01K  
VERSUS REAL HEIGHT PROFILES ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112965 TO 031170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE COMPUTED FROM DIGITAL VALUES OF FREQUENCY AND VIRTUAL RANGE THAT WERE SCALED FROM IONOGRAMS. DIGITAL ELECTRON DENSITY VALUES WERE LISTED AT THE SATELLITE AND FOR EACH 100 KM FROM 3500 KM ALTITUDE DOWN TO THE LOWEST HEIGHT OF SIGNAL REFLECTIONS (NORMALLY NEAR 300 KM). THERE ARE 17,315 PROFILES LISTED FOR TIMES BETWEEN NOVEMBER 1965 AND APRIL 1970, FROM THE VICINITY OF 18 DIFFERENT GROUND STATIONS. THESE DATA ARE A SMALL BLOCK OF THE TOTAL ALOUETTE 2 IONOGRAM DATA (LESS THAN 1 PERCENT) BUT FORM ONE OF THE LARGEST BLOCKS OF REDUCED SATELLITE IONOGRAMS AVAILABLE. THESE REDUCTIONS ARE OF OPTIMUM QUALITY BECAUSE BOTH X AND Y TRACE VALUES WERE CHECKED AGAINST ONE ANOTHER DURING COMPUTATION OF THE DENSITY VALUES. THIS DATA SET, ON EIGHT REELS OF 35-MM MICROFILM, IS A MICROFILM VERSION OF DATA SET 65-098A-01J.

EXPERIMENT NAME- COSMIC RADIO NOISE

NSSDC ID 65-098A-03

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - T.R. HARTZ COMM RESEARCH CENTRE OTTAWA, ONTARIO, CANADA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED THE IONOSONDE RECEIVER AUTOMATIC GAIN CONTROL (AGC) VOLTAGE TO MEASURE BACKGROUND RADIO NOISE FROM THE IONOSPHERE, GALAXY, AND THE SUN. THE ANTENNAS WERE DIPOLES 23- AND 73-M LONG. THE RECEIVER SWEEP THE RANGE 0.1 TO 15 MHZ EVERY 32 SEC. THE RECEIVER BANDWIDTH WAS 40 KHZ, AND THE DYNAMIC RANGE WAS 80 DB. THE RECEIVER SENSITIVITY PERMITTED GALACTIC RADIO EMISSION OBSERVATIONS AT FREQUENCIES GREATER THAN 0.6 MHZ. THE EXPERIMENT FUNCTIONED SATISFACTORILY, PROVIDING GOOD FREQUENCY RESOLUTION WITH RELATIVELY POOR FLUX RESOLUTION.

DATA SET NAME- COSMIC RADIO NOISE - AGC LEVELS PLOTTED      NSSDC ID 65-098A-03A  
ON 35-MM MICROFILM, MERGED WITH IONOGRAMS

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 112965 TO 101372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2265 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS MICROFILM DATA SET IS INCLUDED AS PLOT LINES ON THE IONOGRAMS OF DATA SETS 65-098A-01 AND -01A. IT CONSISTS OF THE AGC LEVEL PLOTTED VS TIME (FREQUENCY, AS THE RECEIVER IS A SWEEP FREQUENCY RECEIVER). THE FREQUENCY RESOLUTION IS RELATIVELY GOOD, BUT THE FLUX RESOLUTION IS VERY POOR DUE TO THE RESTRICTED PLOT HEIGHT.

EXPERIMENT NAME- CYLINDRICAL ELECTROSTATIC PROBE      NSSDC ID 65-098A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.H. BRACE      NASA-GSFC      GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS CYLINDRICAL ELECTROSTATIC PROBE OBSERVED ELECTRON DENSITY IN THE IONOSPHERE. IT WAS A TYPE OF LANGMUIR PROBE CONSISTING OF A COLLECTOR ELECTRODE EXTENDING FROM THE CENTRAL AXIS OF A CYLINDRICAL GUARD RING. THE GUARD RING EXTENDED 23 CM FROM THE SPACECRAFT AND THE COLLECTOR ELECTRODE EXTENDED 46 CM. TWO SENSORS WERE MOUNTED OPPOSITELY ON THE LOWER PORTION OF THE SATELLITE, AND BOTH EXTENDED DOWNWARD AT AN ANGLE OF 45 DEG TO THE SPACECRAFT SPIN AXIS WHICH WAS ORIENTED IN A NORTHWARD DIRECTION IN THE ORBITAL PLANE. THE SENSORS WERE OPERATED SEQUENTIALLY. THIS EXPERIMENT OPERATED NOMINALLY FROM LAUNCH. AN INDEX OF OPERATION TIMES AND LOCATIONS FOR THIS EXPERIMENT IS AVAILABLE IN DATA SET 65-098A-00E (TAPE) OR 65-098A-00F (HARDCOPY).

DATA SET NAME- ELECTRON DENSITY AND TEMPERATURE ON TAPE      NSSDC ID 65-098A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 022166 TO 111367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, PREPARED BY THE EXPERIMENTER, LIST ABOUT 21 MONTHS OF ELECTRON NUMBER DENSITIES AND ELECTRON TEMPERATURES OBSERVED AT THE SATELLITE. THE DATA HAVE BEEN CALCULATED FROM THE TELEMETERED RETARDING POTENTIAL CURVES. INCLUDED IN THE LISTINGS FOR EACH DATA POINT ARE TELEMETRY

STATION, ORBIT NUMBER, DATA AND TIME (UT AND LOCAL), GEOGRAPHIC AND MAGNETIC (MCILWAIN, DIP, INVARIANT, AND DIPOLE MODEL) LOCATIONS, HEIGHT ABOVE THE REFERENCE ELLIPSOID, SOLAR ZENITH ANGLE, SOLAR (F10.7) AND PLANETARY (AP) INDEXES, SATELLITE POTENTIAL, AND RECORD COUNT. TEMPERATURE DATA ARE AVAILABLE FOR ONLY ABOUT 5 PERCENT OF THE DATA POINTS AND ARE SCATTERED THROUGHOUT THE OBSERVING PERIOD. ELECTRON DENSITY VALUES ARE PRESENT AT NEARLY ALL DATA POINTS. GAPS IN TIME COVERAGE ARE USUALLY A FEW ORBITS OR LESS. THE DATA HAVE GAPS IN COVERAGE CAUSED PRIMARILY BY LACK OF A TAPE RECORDER ON THE SATELLITE AND LIMITATIONS OF EXPERIMENT SCHEDULING. THESE SAME DATA ARE AVAILABLE ON MICROFILM AS DATA SET 65-098A-05B. THIS DATA SET IS IN ONE FILE, ON A BCD, 800-BPI, 7-TRACK, MAGNETIC TAPE.

DATA SET NAME- ELECTRON DENSITY AND TEMPERATURE ON MICROFILM NSSDC ID 65-098A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 022166 TO 111367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, ON 35-MM MICROFILM, WERE PREPARED BY THE EXPERIMENTER AND LIST ABOUT 21 MONTHS OF ELECTRON NUMBER DENSITIES AND ELECTRON TEMPERATURES OBSERVED AT THE SATELLITE. THE DATA HAVE BEEN CALCULATED FROM THE TELEMETERED RETARDING POTENTIAL CURVES. INCLUDED IN THE LISTING FOR EACH DATA POINT ARE TELEMETRY STATION, ORBIT NUMBER, DATE AND TIME (UT AND LOCAL), GEOGRAPHIC AND MAGNETIC (MCILWAIN, DIP, DIPOLE, AND INVARIANT) LOCATIONS, HEIGHT ABOVE THE REFERENCE ELLIPSOID, SOLAR ZENITH ANGLE, SOLAR (F10.7) AND PLANETARY (AP) INDEXES, SATELLITE POTENTIAL, AND RECORD COUNT. TEMPERATURE DATA ARE AVAILABLE FOR ONLY ABOUT 5 PERCENT OF THE DATA POINTS AND ARE SCATTERED THROUGHOUT THE OBSERVING PERIOD. ELECTRON DENSITY VALUES ARE PRESENT AT NEARLY ALL DATA POINTS. GAPS IN TIME COVERAGE ARE USUALLY A FEW ORBITS OR LESS. THE DATA GAPS IN COVERAGE ARE CAUSED PRIMARILY BY LACK OF A TAPE RECORDER ON THE SATELLITE AND LIMITATIONS OF EXPERIMENT SCHEDULING. THESE SAME DATA ARE AVAILABLE ON MAGNETIC TAPE AS DATA SET 65-098A-05A.

DATA SET NAME- ELECTRON DENSITY AND TEMPERATURE PLOTS ON MICROFILM NSSDC ID 65-098A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 022166 TO 030167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA PLOTS ON 35-MM MICROFILM WERE PREPARED BY THE EXPERIMENTER FROM THE DATA CONTAINED IN DATA SET 65-098A-05A (OR -05B). EACH PLOT SHOWS ABOUT 1 WEEK OF ELECTRON DENSITY OBSERVATIONS. THE ELECTRON NUMBER DENSITY (LOG SCALE) ORDINATE IS PLOTTED AGAINST AN ABCISSA OF LINEARLY SPACED DIP LATITUDE. THE FULL RANGE OF DIP FROM -90 TO +90 AND BACK TO -90 DEG IS SHOWN ON THE ABCISSA IN ORDER THAT THE OBSERVATIONS FROM OPPOSITE SIDES OF THE ORBIT ARE NOT MIXED. PRECESSION OF PERIGEE PROGRESSES SLOWLY ENOUGH (-1.89 DEG/DAY) SO THAT SATELLITE ALTITUDE CHANGES OVER THE 1 WEEK PERIOD (FOR A

GIVEN LOCATION) CAN BE CONSIDERED TO BE ONLY A MINOR CAUSE OF ELECTRON DENSITY VARIATION. THE ORBIT PLANE PRECESSION IS ALSO SLOW ENOUGH (-0.79 DEG/DAY) THAT, FOR MOST PRACTICAL PURPOSES, THE LOCAL TIME OF DAY FOR OBSERVATIONS AT EACH LATITUDE AS PLOTTED WOULD NOT CHANGE SIGNIFICANTLY OVER THE 1 WEEK PERIOD.

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SPACECRAFT COMMON NAME- EXPLORER 31 NSSDC ID 65-098B  
ALTERNATE NAMES- OME-A, ISIS-X

LAUNCH DATE- 11/29/65 SPACECRAFT WEIGHT IN ORBIT- 100.0 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-100169  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 11/29/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 121. MIN  
APOAPSIS- 2956.00 KM ALT PERIAPSIS- 529.000 KM ALT INCLINATION- 79.724 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 31 WAS A SMALL IONOSPHERIC OBSERVATORY INSTRUMENTED TO MAKE DIRECT MEASUREMENTS OF SELECTED IONOSPHERIC PARAMETERS AT THE SPACECRAFT. IT CARRIED SEVEN EXPERIMENTS -- A THERMAL ION EXPERIMENT, A THERMAL ELECTRON EXPERIMENT, AN ELECTROSTATIC PROBE, AN ELECTRON TEMPERATURE PROBE, A SPHERICAL MASS SPECTROMETER, AN ENERGETIC ELECTRON CURRENT MONITOR, AND AN ION-MASS SPECTROMETER. THE SPACECRAFT HAD NO TAPE RECORDER SO THAT DATA COULD BE OBSERVED AT THE SPACECRAFT ONLY WHEN THE SPACECRAFT WAS IN SIGHT OF THE TELEMETRY STATION AND WHEN COMMANDED ON. EXPERIMENTS WERE OPERATED EITHER SIMULTANEOUSLY OR SEQUENTIALLY, AS DESIRED. THE SATELLITE WAS SPIN-STABILIZED WITH THE SPIN AXIS PERPENDICULAR TO THE ORBIT PLANE. THE SPIN RATE AND SPIN AXIS WERE CONTROLLED BY AN ONBOARD MAGNETIC TORQUING SYSTEM. THE ATTITUDE AND SPIN RATE INFORMATION WAS OBSERVED BY A SUN SENSOR AND A THREE-AXIS MAGNETOMETER. SATELLITE PERFORMANCE WAS SATISFACTORY EXCEPT FOR A PARTIAL POWER FAILURE IN MAY 1966, WHICH REDUCED DATA ACQUISITION TIME TO ABOUT HALF THE NOMINAL AMOUNT. SOME DIFFICULTIES WERE ENCOUNTERED IN OBTAINING ATTITUDE INFORMATION THAT WAS NECESSARY TO REDUCTION OF THE EXPERIMENT OBSERVATIONS. ON JULY 1, 1969, THE SATELLITE DATA OBSERVATIONS WERE TERMINATED DUE TO FISCAL RESTRAINTS WITH FIVE OF THE SEVEN EXPERIMENTS OPERATING. RESPONSIBILITY FOR STANDBY MONITORING OF THE SATELLITE WAS GIVEN TO THE ESSA TELEMETRY STATION AT BOULDER, COLORADO ON JULY 8, 1969. DURING THIS STANDBY OPERATION, EXPERIMENT DATA WERE COLLECTED ONLY ONCE ON OCTOBER 1, 1969, FOR 9 MIN FROM THE ELECTROSTATIC PROBE FOR USE IN STUDYING A RED ARC EVENT. ON JANUARY 15, 1971, NO RESPONSE WAS RECEIVED FROM A VARIETY OF SATELLITE COMMANDS AND THE SATELLITE WAS ABANDONED.

EXPERIMENT NAME- MAGNETIC ION MASS SPECTROMETER NSSDC ID 65-098B-05

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.H. HOFFMAN

U OF TEXAS

DALLAS, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-030368  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A MAGNETIC SECTOR FIELD MASS SPECTROMETER WAS USED TO MEASURE THE ABUNDANCES OF THE IONOSPHERIC POSITIVE ION SPECIES IN THE MASS RANGE 1- TO 20-AMU. THE MASS RANGE WAS SWEEPED EVERY 3 SEC BY AN EXPONENTIALLY DECREASING ACCELERATING VOLTAGE, WHICH VARIED FROM -4000 TO -150 VOLTS. THE IONS WERE SEPARATED ACCORDING TO MASS-TO-CHARGE RATIO IN THE MAGNETIC ANALYZER SECTION OF THE SPECTROMETER. A PARTICULAR ION SPECIES, DEPENDING ON THE ACCELERATING VOLTAGE, WAS THEN PASSED THROUGH THE ANALYZER INTO AN ELECTRON MULTIPLIER. THE OUTPUT ION CURRENT FROM THE MULTIPLIER WAS MEASURED BY A LOGARITHMIC ELECTROMETER AMPLIFIER AND CONVERTED TO A VOLTAGE. THE EXPERIMENT OPERATED NORMALLY AND YIELDED USEFUL DATA FROM LAUNCH ON NOVEMBER 29, 1965, UNTIL ABOUT APRIL 1967, THEN LOW BATTERY VOLTAGE RESULTED IN A VOLTAGE REGULATOR PROBLEM. THE EFFECT WAS THAT THE EXPERIMENT PROVIDED USEFUL DATA ONLY INTERMITTENTLY AFTER THAT. THE EXPERIMENT FAILED IN MARCH 1968.

DATA SET NAME- ION DENSITY PLOTS ON MICROFILM

NSSDC ID 65-098B-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120165 TO 030368 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 38 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, SUPPLIED BY THE EXPERIMENTER, IS CONTAINED ON 38 REELS OF 35-MM MICROFILM PRODUCED BY A STROMBERG CARLSON SC-4020 PLOTTER. A NORMAL COMPLETE PASS OVER A TELEMETRY STATION PRODUCED FIVE GRAPHS, EACH GRAPH, A SEMI-LOG PLOT WITH A LINEAR TIME SCALE AS ABSCISSA, COVERED A 120-SEC INTERVAL. THE ORDINATE, A 6-DECADE LOG SCALE FOR ION CONCENTRATIONS IN UNITS OF NUMBER OF IONS PER CUBIC CENTIMETER, RANGED FROM 0.1 TO 100,000. THE CONCENTRATIONS OF 10 POSITIVE ION SPECIES CAN BE REPRESENTED ON THE PLOTS. THE RATIOS OF MASS TO CHARGE MEASURED VARIED FROM 1 FOR THE HYDROGEN ION TO 20 FOR THE NEON ION. THE SPIN-MODULATED SIGNALS PERMITTED THE MEASUREMENT OF PHASE SHIFTS BETWEEN TIMES OF MAXIMUM VALUES FOR DIFFERENT SPECIES. IN ADDITION TO THE TEMPORAL IDENTIFICATION OF THE MEASUREMENTS AS GIVEN BY THE PRINTED MONTH, DAY, YEAR, UT IN HOURS AND MINUTES, AND ORBIT NUMBER, THE FOLLOWING INFORMATION IS PRINTED ON EACH FRAME -- THE NAME OF THE TELEMETRY STATION RECEIVING THE DATA, LOCAL SUN AND LOCAL MAGNETIC TIMES, GEOGRAPHIC AND GEOMAGNETIC LATITUDE AND LONGITUDE, HEIGHT, MCILWAIN'S L PARAMETER, AND SPACECRAFT VELOCITY. THE MEASUREMENTS WERE TAKEN FROM DECEMBER 1965 TO MARCH 1968. NO DATA WERE OBTAINED DURING THE FOLLOWING TIME INTERVALS. DURING 1966, ON JANUARY 1 TO 7 AND 14 TO 24, FEBRUARY 1 TO 4, MARCH 17 TO 22, 29, AND 31, APRIL 8 TO 13, MAY 8 TO JUNE 8, JUNE 10 TO JUNE 20, JULY 5 AND 22, OCTOBER 4 TO 14 AND 21 TO 23, NOVEMBER 10, AND DECEMBER 31. DURING 1967, ON JANUARY 1 TO 3 AND 12 TO 20, FEBRUARY 9 AND 10, AND 12 TO 14, MARCH 1 AND 2, MAY 8, 12 TO 15, 17, 29, JUNE 12, JULY 21 TO 24, SEPTEMBER 8 TO 14 AND 16 AND 17, NOVEMBER 5 TO 7 AND 17, AND DECEMBER 7 TO 26. DURING 1968 ON JANUARY 31 AND FEBRUARY 1 AND 2, AND 28. THERE WAS AT LEAST ONE AND AS MANY AS 14 DATA-PRODUCING TURNONS DURING EACH OF THE REMAINING DAYS.



DATA SET NAME- ION DENSITY MEASUREMENTS ON MAGNETIC TAPE NSSDC ID 65-098B-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120165 TO 042367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 68 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, PRESENTLY 70 PERCENT COMPLETE, IS BEING COPIED FROM THE ORIGINAL TAPES BY THE EXPERIMENTER FOR NSSDC AND WILL CONTAIN ABOUT ONE HUNDRED 7-TRACK, 800-BPI, BCD, EVEN PARITY, IBM 360/50 PRINT FORMAT TAPES. THERE ARE 34 FILES PER RUN AND A MAXIMUM OF 2 RUNS PER TAPE. THESE TIME-ORDERED TAPES WILL CONTAIN DATA OBTAINED FROM DECEMBER 1965 TO MARCH 1968, WITH SEVERAL TIME INTERVALS IN WHICH NO MEASUREMENTS WERE TAKEN. INCLUDED ON THE TAPE ARE THE FOLLOWING PARAMETERS -- THE DATE AND UT OF THE MEASUREMENTS, THE GROUND STATION THAT RECEIVED THE DATA AND THE PASS NUMBER, THE MASS NUMBERS OF THE ION SPECIES BEING MEASURED, THEIR CONCENTRATIONS EXPRESSED IN UNITS OF NUMBER PER CUBIC CENTIMETER, AND THE LOCATION OF THE MEASUREMENTS (THE LATITUDE AND LONGITUDE, BOTH GEOGRAPHIC AND MAGNETIC, THE ALTITUDE IN KILOMETERS, AND THE MCILWAIN \*L\* VALUE IN EARTH RADII). THE SPECIES CONCENTRATIONS ARE DISPLAYED GRAPHICALLY IN DATA SET 65-098B-05A.

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SPACECRAFT COMMON NAME- GEMINI 7 NSSDC ID 65-100A  
ALTERNATE NAMES-

LAUNCH DATE- 12/04/65 SPACECRAFT WEIGHT IN ORBIT- 3200. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-121865  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 12/05/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.75 MIN  
APOAPSIS- 321.000 KM ALT PERIAPSIS- 215.000 KM ALT INCLINATION- 28.87 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 7 WAS THE FOURTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. ITS MISSION PRIORITIES WERE (1) TO DEMONSTRATE A 2-WEEK FLIGHT, (2) TO PERFORM STATIONKEEPING WITH THE GEMINI LAUNCH VEHICLE STAGE 2, (3) TO EVALUATE THE 'SHIRT SLEEVE' ENVIRONMENT, (4) TO ACT AS A RENDEZVOUS TARGET FOR GEMINI 6, AND (5) TO DEMONSTRATE CONTROLLED REENTRY TO WITHIN 11 KM OF THE LANDING POINT. THE CREW MEMBERS HAD FOUR SCIENTIFIC EXPERIMENTS TO PERFORM. THESE WERE SYNOPTIC TERRAIN, SYNOPTIC WEATHER, DIM LIGHT PHOTOGRAPHY, AND VISUAL ACUITY IN THE SPACE ENVIRONMENT. FOUR TECHNOLOGICAL AND EIGHT MEDICAL EXPERIMENTS WERE ALSO CONDUCTED. ALL EXPERIMENTS AND MISSION OBJECTIVES WERE SUCCESSFULLY COMPLETED. THE SPACECRAFT REENTERED THE ATMOSPHERE AFTER 15 DAYS IN SPACE AND LANDED WITHIN 11 KM OF THE TARGET POINT.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN  
PHOTOGRAPHS

NSSDC ID 65-100A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, DI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR                      NASA-GSFC                      GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-121865  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO TAKE HIGH-QUALITY COLOR PHOTOGRAPHS FROM THE SPACECRAFT OF SELECTED LAND AND NEAR-SHORE AREAS OF THE EARTH FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. A HAND-HELD 70-MM HASSELBLAD 500-C CAMERA, WITH BOTH ZEISS PLANAR 80-MM F/2.8 AND ZEISS SONNAR 250-MM F/4.5 LENSES, WAS USED TO OBTAIN THE PHOTOGRAPHS. A HAZE FILTER WAS ALSO USED TO REDUCE THE INTENSITY OF BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. EKTACHROME MS 50-217, EKTACHROME INFRARED TYPE-8443, AND PANATOMIC-X TYPE-2475 FILMS WERE USED FOR THIS AND THE OTHER PHOTOGRAPHIC EXPERIMENTS. ALTHOUGH A DEPOSIT ON THE SPACECRAFT WINDOWS DEGRADED A NUMBER OF PICTURES, 250 OF 522 PICTURES WERE USABLE FOR TERRAIN STUDIES. THESE WERE OF NORTHERN AFRICA, THE ARABIAN PENINSULA, INDIA, THE CARIBBEAN SEA, BRAZIL, AND MEXICO. PHOTOGRAPHS FROM THE INFRARED FILM INCLUDED THE GULF COAST, THE UNITED STATES, AND NORTHEASTERN BRAZIL.

DATA SET NAME- COLDR POSITIVE 70-MM SYNOPTIC TERRAIN  
PHOTOS

NSSDC ID 65-100A-01A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 120465 TO 121865 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 429 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 7 PHOTOGRAPHY. OF THE 522 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 250 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY

NSSDC ID 65-100A-02

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, DI=OTHER INVESTIGATOR)  
PI - K. NAGLER                      NAT. METEORO. CENTER                      SILVER SPRING, MD



EPOCH DATE- 12/15/65 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.64 MIN  
APOAPSIS- 271.000 KM ALT PERIAPSIS- 258.000 KM ALT INCLINATION- 28.89 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 6 WAS THE FIFTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES, HAVING BEEN LAUNCHED AFTER GEMINI 7. THE MISSION PRIORITIES WERE TO DEMONSTRATE ON-TIME LAUNCH PROCEDURES, CLOSED-LOOP RENDEVOUS CAPABILITIES, AND STATIONKEEPING TECHNIQUES WITH GEMINI 7. THE CREW CONDUCTED THREE SCIENTIFIC EXPERIMENTS -- (1) SYNOPTIC TERRAIN PHOTOGRAPHY, (2) SYNOPTIC WEATHER PHOTOGRAPHY, AND (3) DIM LIGHT PHOTOGRAPHY. THE MISSION WAS SUCCESSFULLY COMPLETED AFTER 25 HOURS OF FLIGHT. THE SPACECRAFT LANDED WITHIN 11 KM OF THE TARGET POINT ON DECEMBER 16, 1965.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS NSSDC ID 65-104A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.O. LOWMAN, JR NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-121665  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO TAKE HIGH-QUALITY COLOR PHOTOGRAPHS OF SELECTED LAND AND NEAR-SHORE AREAS OF THE EARTH FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. A HAND-HELD 70-MM HASSELBLAD 500-C CAMERA WITH A ZEISS PLANAR 80-MM F/2.8 LENS WAS USED TO OBTAIN THE PHOTOGRAPHS. A HAZE FILTER WAS ALSO USED TO REDUCE THE INTENSITY OF BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. EKTACHROME MS SO-217 FILM WAS USED FOR THIS AND THE OTHER PHOTOGRAPHIC EXPERIMENTS. OF THE 192 PICTURES TAKEN, 60 WERE USABLE FOR TERRAIN STUDIES. THEY INCLUDED VIEWS OF NORTHWEST, CENTRAL, AND EASTERN AFRICA, AUSTRALIA, AND THE CANARY ISLANDS.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN PHOTOS NSSDC ID 65-104A-01A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 121565 TO 121665 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 192 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 6 PHOTOGRAPHY. OF THE 192 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 60 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY

NSSDC ID 65-104A-02

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K. NAGLER NAT. METEORO. CENTER SILVER SPRING, MD

DATE LAST EXPERIMENT DATA RECORDED-121665  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SYNOPTIC WEATHER PHOTOGRAPHY EXPERIMENT WAS DESIGNED TO PROVIDE A SET OF HIGH-RESOLUTION PICTURES OF A BROAD RANGE OF METEOROLOGICAL PHENOMENA, ESPECIALLY VIEWS OF SPECIFIC CLOUD SYSTEMS. BECAUSE IT HAD A 90-MIN ORBIT, THE EXPERIMENT COULD SHOW CHANGES IN THE SAME CLOUD PATTERN DURING THE ORBITAL INTERVAL. A HASSELBLAD 500-C CAMERA WITH 70-MM EKTACHROME MS 50-217 FILM WAS USED FOR THIS AND THE OTHER PHOTOGRAPHIC EXPERIMENTS. A HAZE FILTER WAS ATTACHED TO THE STANDARD ZEISS PLANAR 80-MM F/2.8 LENS TO REDUCE THE INTENSITY OF THE BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. PHOTOGRAPHS TAKEN WHEN THE SPACECRAFT WAS IN A NEARLY VERTICAL POSITION COVER AN AREA APPROXIMATELY 161 KM SQ. FROM OBLIQUE ANGLES, LARGER AREAS WERE CLEARLY VISIBLE, BUT THERE WAS SHAPE DISTORTION, RESOLUTION LOSS, AND COLOR FIDELITY LOSS IN THE IMAGES. THE PICTURES RETURNED DISPLAY CLOUD FORMATIONS OR OTHER INFORMATION OF METEOROLOGICAL INTEREST.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER  
PHOTOS

NSSDC ID 65-104A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 121565 TO 121665 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 192 FRAMES

DATA SET BRIEF DESCRIPTION

OF THE 192 FIRST GENERATION 70-MM COLOR TRANSPARENCIES IN THE COMPLETE SET OF GEMINI 6 PHOTOGRAPHY, MANY WERE DESIGNATED AS SYNOPTIC WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- PIONEER 6  
ALTERNATE NAMES- PIONEER-A

NSSDC ID 65-105A

LAUNCH DATE- 12/16/65

SPACECRAFT WEIGHT IN ORBIT-

63.4 KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 12/16/65 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 311.3 DAYS  
APOAPSIS- .936 AU RAD PERIAPSIS- .8143 AU RAD INCLINATION- .1639 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 6 WAS THE FIRST IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL, AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE, ON A CONTINUING BASIS. ITS EXPERIMENTS STUDIED THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF THIRTY-TWO 7-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS FOR USE AT THE TWO HIGHEST BIT RATES. ANOTHER WAS FOR USE AT THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR. AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE WAS 512 BPS FROM DECEMBER 16, 1965 TO FEBRUARY 28, 1966. 256 BPS FROM MARCH 1, 1966 TO MARCH 17, 1966. 64 BPS FROM MARCH 18, 1966 TO APRIL 13, 1966. 16 BPS FROM APRIL 14, 1966 TO MAY 9, 1966. 8 BPS FROM MAY 10, 1966 TO DECEMBER 1970, AND 16 BPS FROM DECEMBER 1970 TO JULY 1971. THE SPACECRAFT WAS IN THE VICINITY OF THE EARTH UNTIL MID-1972, WHICH ALLOWED HIGHER BIT RATES TO BE UTILIZED. THE REAL-TIME TRANSMISSION MODE WAS USED PREDOMINANTLY THROUGHOUT THE FLIGHT WHEN TRACKING STATIONS WERE AVAILABLE. BETWEEN TRACKING PERIODS, THE DUTY CYCLE STORE MODE WAS GENERALLY USED. DATA COVERAGE AMOUNTED TO ALMOST 100 PERCENT FOR THE FIRST 23 WEEKS AFTER LAUNCH. THEN THE COVERAGE DROPPED TO BETWEEN 10 AND 20 PERCENT UNTIL JULY 1970, AT WHICH TIME THE SPACECRAFT WAS AGAIN ABLE TO BE RECEIVED ON THE SMALLER ANTENNAS SO THAT DATA COVERAGE ROSE TO BETWEEN 20 AND 50 PERCENT. PIONEER 6 LEFT THE VICINITY OF THE EARTH PASSING THROUGH THE BOW SHOCK AT A LOCAL TIME NEAR 6 P.M. THE SPACECRAFT SPIN RATE HAS REMAINED CLOSE TO NOMINAL AS OF JULY 1971. A LEAK IN THE ATTITUDE GAS SYSTEM PREVENTED FURTHER ATTITUDE CORRECTIONS FOLLOWING AN ADJUSTMENT MADE ON JUNE 9, 1966. HOWEVER, THE SENSORS THAT DETERMINED THE SPIN AXIS DIRECTION CONTINUED TO WORK AND INDICATED THAT THE SPIN AXIS DIRECTION REMAINED CLOSE TO NOMINAL AS OF JULY 1971. AS OF MARCH 15, 1973, FOUR EXPERIMENTS WERE STILL OPERATING NORMALLY (SOLAR WIND, COSMIC-RAY TELESCOPE, TWO-FREQUENCY BEACON RECEIVER, AND COSMIC-RAY ANISOTROPY). THE MAGNETOMETER EXPERIMENT HAS BEEN INOPERABLE SINCE JULY 1970. ALL OTHER EXPERIMENTS WERE OPERATIONALLY OFF AS OF MARCH 15, 1973.



AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120165 TO 050172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS DERIVED FROM PART OF DATA SET 65-105A-00F BY PRINTING OUT TIME, THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER DISTANCE, AND THE EARTH-SUN DISTANCE. USING THIS INFORMATION, THE COROTATION DELAY TIMES FOR SOLAR WIND VELOCITIES OF 200, 400, AND 600 KM/SEC WERE DERIVED AND PRINTED OUT FOR EACH TIME. THIS DATA SET INCLUDES LISTINGS OF THE ABOVE AS WELL AS PLOTS OF THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER RANGE, AND THE COROTATION DELAY TIMES (FOR A SOLAR WIND VELOCITY OF 400 KM/SEC) FOR EACH OF THE PIONEERS. AT LEAST ONE POINT IS GIVEN PER WEEK, WITH MORE FREQUENT COVERAGE FOR MOST OF THE TIME.

EXPERIMENT NAME- UNIAXIAL FLUXGATE MAGNETOMETER

NSSDC ID 65-105A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - N.F. NESS NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-070670

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A SINGLE, BOOM-MOUNTED UNIAXIAL FLUXGATE MAGNETOMETER, WITH A DYNAMIC RANGE OF PLUS OR MINUS 64 GAMMAS AND PLUS OR MINUS 0.25-GAMMA RESOLUTION, OBTAINED A COMPLETE VECTOR MAGNETIC FIELD MEASUREMENT BY MEANS OF THREE MEASUREMENTS TAKEN AT EQUAL TIME INTERVALS DURING EACH SPACECRAFT SPIN PERIOD (APPROXIMATELY 1 SEC). AT TELEMETRY BIT RATES LESS THAN OR EQUAL TO 16 BPS, AVERAGES WERE COMPUTED ON BOARD FOR TRANSMISSION TO EARTH. THE INSTRUMENT WORKED WELL FROM LAUNCH TO JULY 6, 1970. NO USEFUL DATA WERE OBTAINED AFTER THAT DATE.

DATA SET NAME- HOURLY AVERAGED VECTOR MAGNETIC FIELD  
DATA ON MICROFILM

NSSDC ID 65-105A-01B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 121765 TO 090567 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED (ONE 35-MM REEL) VERSION OF GODDARD X DOCUMENT 'MAGNETIC FIELD MEASUREMENTS BY PIONEER 6. 1-HOURLY AVERAGES' (X-690-71-449) BY N. F. NESS AND F. W. OTTENS. DATA PRESENTED IN THE DOCUMENT INCLUDE HOURLY AVERAGED MAGNETIC FIELD PLOTS (MAGNITUDE, LATITUDE, LONGITUDE) IN SPACECRAFT-CENTERED SOLAR ECLIPTIC COORDINATES. TIME COVERAGE IS NEARLY COMPLETE FROM LAUNCH UNTIL MAY 22, 1966, AFTER WHICH THE COVERAGE, AS LIMITED BY SPACECRAFT TELEMETRY, IS VERY SPOTTY. EACH OF 21 FRAMES CONTAINS PLOTS FOR ONE SOLAR ROTATION COVERING THE INTERVAL DECEMBER



17, 1965 THROUGH SEPTEMBER 5, 1967.

EXPERIMENT NAME- SOLAR WIND PLASMA FARADAY CUP

NSSDC ID 65-105A-02

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.S. BRIDGE	MIT	CAMBRIDGE, MA
OI - A.J. LAZARUS	MIT	CAMBRIDGE, MA

DATE LAST EXPERIMENT DATA RECORDED-

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

A MULTIGRID FARADAY CUP WITH TWO SEMICIRCULAR, COPLANAR COLLECTORS WAS USED TO STUDY SOLAR WIND IONS AND ELECTRONS. THE INSTRUMENT HAD 14 CONTIGUOUS, ENERGY-PER-CHARGE (E/Q) CHANNELS BETWEEN 75 AND 9485 V FOR POSITIVE IONS AND FOUR ENERGY-PER-CHARGE CHANNELS BETWEEN 90 AND 1580 V FOR ELECTRONS. THE INSTRUMENT VIEW AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS AND PARALLEL TO THE ECLIPTIC PLANE. THE LINE SEPARATING THE TWO COLLECTORS LAY IN THE ECLIPTIC PLANE, ENABLING A ROUGH DETERMINATION OF SOLAR WIND BULK FLOW PERPENDICULAR TO THE ECLIPTIC PLANE. DURING EVERY SECOND SPACECRAFT ROTATION AND AT ONE VOLTAGE LEVEL, THE SUM OF THE CURRENTS FROM THE COLLECTORS WAS OBTAINED IN 28 CONTIGUOUS 11.25-DEG ANGULAR SECTORS (FROM -45 DEG TO 270 DEG, WITH 0 DEG BEING THE SPACECRAFT-SUN LINE). THE EIGHT MEASUREMENTS ABOUT THE SUN-EARTH LINE (-45 DEG TO +45 DEG) WERE TELEMETERED, BUT ONLY THE LARGEST MEASUREMENT IN EACH SUCCEEDING 45-DEG INTERVAL (45 DEG TO 270 DEG) WAS TELEMETERED. IN ADDITION, DURING THIS ROTATION, THE CURRENT FROM ONE OF THE COLLECTORS WAS MEASURED IN ALL TWENTY-EIGHT 11.25-DEG SECTORS, AND THE LARGEST WAS IDENTIFIED AND TELEMETERED (BOTH MAGNITUDE AND SECTOR). A COMPLETE SET OF POSITIVE ION MEASUREMENTS AND ONE ENERGY CHANNEL OF ELECTRON MEASUREMENTS WERE COMPLETED EVERY 32 SEC. THE TIME BETWEEN EACH 32-SEC GROUP OF MEASUREMENTS VARIED WITH THE BIT RATE. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL THE SPACECRAFT WAS TURNED OFF ON MARCH 15, 1973. FOR A MORE COMPLETE DESCRIPTION, SEE J. GEOPHYS. RES., 71, 3787-3791, AUGUST 1966.

DATA SET NAME- HOURLY AVERAGED VELOCITY AND DENSITY  
VALUES ON HARDCOPY

NSSDC ID 65-105A-02B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 030169 TO 022870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 12 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

IN THIS DATA SET SOLAR WIND, HOURLY AVERAGED VELOCITY AND DENSITY ARE PRESENTED AS LISTINGS AGAINST TIME. THESE DATA ARE IN CERTAIN ISSUES OF THE SOLAR GEOPHYSICAL DATA BULLETINS PUBLISHED BY ESSA, BOULDER, COLORADO.

EXPERIMENT NAME- TWO-FREQUENCY RADIO RECEIVER

NSSDC ID 65-105A-04

ORIGINAL EXPERIMENT INSTITUTION- STANFORD U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - V.R. ESHLEMAN STANFORD U STANFORD, CA  
OI - T.A. CROFT STANFORD U STANFORD, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

BOTH 423.3-MHZ AND ITS 2/17 SUBHARMONIC 49.8-MHZ SIGNALS WERE TRANSMITTED FROM A 46-M STEERABLE PARABOLIC ANTENNA AT STANFORD UNIVERSITY TO THE TWO-FREQUENCY RADIO RECEIVER ON THE SPACECRAFT. THE HIGH-FREQUENCY SIGNAL SERVED AS A REFERENCE SIGNAL SINCE ITS PROPAGATION TIME WAS NOT APPRECIABLY LENGTHENED BY ELECTRONS ALONG THE PATH. THE LOW-FREQUENCY SIGNAL WAS DELAYED IN PROPORTION TO THE TOTAL ELECTRON CONTENT IN THE PROPAGATION PATH. ON THE SPACECRAFT, A PHASE-LOCKED RECEIVER COUNTED THE BEAT FREQUENCY ZERO CROSSINGS OF THE RECEIVED SIGNALS TO OBTAIN MEASUREMENTS OF PHASE-PATH DIFFERENCES. DIFFERENTIAL DELAY OF THE GROUP VELOCITY WAS ALSO OBSERVED, AND THESE VALUES WERE TELEMETERED TO THE GROUND STATION. FROM CALCULATED TOTAL ELECTRON CONTENT VALUES, THE IONOSPHERIC EFFECT (UP TO A SELECTED ALTITUDE OBTAINED FROM OTHER EXPERIMENTAL TECHNIQUES) CAN BE SUBTRACTED TO PRODUCE DATA DESCRIBING THE INTERPLANETARY ELECTRON CONTENT OF THE SOLAR WIND AND ITS VARIATIONS. THE EXPERIMENT OPERATED NOMINALLY FROM LAUNCH TO AUGUST 1966. FOR SIMILAR EXPERIMENTS COVERING OTHER TIME PERIODS SEE 68-100A-03, 67-123A-03, 66-075A-04, AND 67-060A-02. A MORE DETAILED DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN JOURNAL OF GEOPHYSICAL RESEARCH, VOL. 71, P. 3325-3327, AND IN RADIO SCIENCE, VOL. 6, P. 55-63.

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON NSSDC ID 65-105A-04A  
CONTENT DATA ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121665 TO 071166 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY OF SIGNALS FROM EARTH TO THE SPACECRAFT. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE 556-BPI, 7-TRACK, BCD MAGNETIC TAPE GENERATED AT NSSDC FROM PUNCHED CARDS SUPPLIED BY THE EXPERIMENTER. THE TAPE ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEERS 7 (66-075A-04A), 8 (67-123A-03A), AND 9 (68-100A-03A), AND MARINER 5 (67-060A-02A).

DATA SET NAME- HOURLY VALUES OF REDUCED TOTAL ELECTRON NSSDC ID 65-105A-04B  
CONTENT DATA ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121665 TO 071166 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DIGITIZED AND PLOTTED HOURLY VALUES OF TOTAL ELECTRON CONTENT THROUGH THE IONOSPHERE AND THE SOLAR WIND. THESE ARE REDUCED DATA CALCULATED FROM MEASUREMENTS OF THE DIFFERENTIAL DELAY OF THE GROUP VELOCITY OF SIGNALS FROM EARTH TO THE SPACECRAFT. THE HOURLY DATA ARE REPRESENTATIVE VALUES MANUALLY SELECTED FROM ANALOG RECORDS. EACH SET OF HOURLY VALUES IS FOR THE PORTION OF THE DAY (ABOUT 12 HR PER DAY) WHEN THE SPACECRAFT WAS IN VIEW FROM THE STANFORD TRANSMITTER. THIS DATA SET IS ON ONE REEL OF 35-MM MICROFILM GENERATED AT NSSDC FROM DATA SUPPLIED BY THE EXPERIMENTER. THIS REEL OF MICROFILM ALSO CONTAINS IDENTICAL DATA FOR OTHER TIME PERIODS FROM PIONEER 7 (66-075A-04B), 8 (67-123A-03B), 9 (68-100A-03B), AND MARINER 5 (67-060A-02B) AND SOLAR WIND ELECTRON DENSITY PLOTS FROM PIONEERS 6 (65-105A-04E), 7 (66-075A-04E), 8 (67-123A-03D), AND 9 (68-100A-03D).

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY DETECTION

NSSDC ID 65-105A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.G.	MCCRACKEN	U OF ADELAIDE	ADELAIDE, AUSTRALIA
OI - W.C.	BARTLEY	U OF TEXAS	DALLAS, TX
OI - U.R.	RAO	U OF TEXAS	DALLAS, TEXAS

DATE LAST EXPERIMENT DATA RECORDED-

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED PRIMARILY TO MEASURE THE DIRECTIONAL CHARACTERISTICS OF GALACTIC AND SOLAR COSMIC-RAY FLUXES. THE PARTICLE DETECTOR WAS A CSI (TL) SCINTILLATOR CRYSTAL THAT WAS SET INTO AN ANTICOINCIDENCE PLASTIC SCINTILLATOR COLLIMATOR CUP. SEPARATE PHOTOMULTIPLIER TUBES VIEWED THE TWO SCINTILLATORS. PULSES FROM THE CSI CRYSTAL UNACCOMPANIED BY PULSES FROM THE PLASTIC SCINTILLATOR WERE SORTED BY A THREE-WINDOW PULSE HEIGHT ANALYZER. THE WINDOWS CORRESPONDING TO ENERGY DEPOSITIONS OF 7.4 TO 44.0, 44.0 TO 77.1, AND 123.8 TO 303.8 MEV. COUNTS IN THE TWO LOWER ENERGY WINDOWS WERE DUE MAINLY TO PROTONS WITH THE WINDOW ENERGIES, WHILE ONLY PARTICLES OF Z GREATER THAN OR EQUAL TO 2 CONTRIBUTED TO THE HIGHEST ENERGY WINDOW COUNT RATE. (PROTONS ABOVE 90 MEV GAVE ANTICOINCIDENCE PULSES.) FOR EACH ENERGY WINDOW, COUNTS WERE SEPARATELY ACCUMULATED IN EACH OF FOUR ANGULAR SECTORS AS THE SPACECRAFT SPUN. EACH ANGULAR SECTOR WAS NORMALLY 89.5 DEG IN WIDTH, WITH THE SUN IN THE MIDDLE OF ONE SECTOR. HOWEVER, WHEN LARGE FLUXES WERE ENCOUNTERED, EACH ANGULAR SECTOR WAS REDUCED TO 11.2 DEG, WITH THE SUN NEAR THE MIDPOINT BETWEEN TWO SECTORS. A SPIN-INTEGRATED (ISOTROPIC) MODE, IN WHICH ALL PARTICLES DEPOSITING 7.4 MEV IN THE CSI CRYSTAL (NO ANTICOINCIDENCE REQUIREMENT) WERE COUNTED, WAS ALSO USED. ACCUMULATION TIMES FOR EACH OF THE 12 DIRECTIONAL MODES AND FOR THE OMNIDIRECTIONAL MODE VARIED BETWEEN 14 SEC AND 112 SEC (SPACECRAFT SPIN PERIOD WAS ABOUT 1 SEC) DEPENDING ON THE TELEMETRY BIT RATE. THE EXPERIMENT CONTINUED TO WORK NORMALLY UNTIL IT WAS TURNED OFF ON MARCH 15, 1973. SEE THE SPACECRAFT BRIEF DESCRIPTION (65-105A) FOR INFORMATION ON PERCENT TIME

COVERAGE VS TIME. SEE BARTLEY ET AL., REV. SCI. INSTRUM., 38, PAGE 266, 1967, FOR A MORE DETAILED EXPERIMENT DESCRIPTION.

DATA SET NAME- COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 65-105A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121665 TO 020667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF A HARDCOPY DATA LISTING SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONSISTS OF DATA FOR 1 DAY. DATA PRESENTED INCLUDE HOURLY AVERAGED COUNT RATES FOR EACH OF FOUR ANGULAR SECTORS AND EACH OF THREE ENERGY WINDOWS, FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE. HOURLY AVERAGED, OMNIDIRECTIONAL (I.E., SUMMED OVER SECTOR COUNTS), ENERGY-WINDOW COUNT RATES ARE PRESENTED, AS ARE MEASURES OF THE AMOUNT OF FINER TIME SCALE DATA CONTRIBUTING TO EACH HOURLY AVERAGE. DAILY AVERAGES OF ALL THE COUNT RATES ARE GIVEN, AND 3-, 6-, AND 12-HR AVERAGES ARE GIVEN FOR THE LOWEST ENERGY WINDOW OMNIDIRECTIONAL MODE, FOR THE INTEGRAL-ENERGY OMNIDIRECTIONAL MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE. DAILY MEASURES OF TEMPORAL PERCENT COVERAGES ARE ALSO GIVEN WITH CONSIDERABLE VARIATION (FROM 0 TO 100) IN THE PERCENTAGES. DAYS FOR WHICH NO DATA EXIST ARE NOT FOUND ON THE MICROFILM. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-105A-05B.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM

NSSDC ID 65-105A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121665 TO 012567 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF HARDCOPY COUNT RATE PLOTS SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONSISTS OF DATA FOR 7 DAYS. HOURLY AVERAGED COUNT RATES FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY AND ENERGY-WINDOW MODES ARE PRESENTED, AS ARE RELATIVE COUNT RATES FROM THE DEEP RIVER NEUTRON MONITOR. THE DECREASING PERCENT COVERAGE WITH TIME IS READILY APPARENT. THIS DATA SET IS CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 65-105A-05A.

EXPERIMENT NAME- ELECTROSTATIC ANALYZER

NSSDC ID 65-105A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC



**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE PIONEER 6 AND 7 SPACE PROBES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT, PASS NUMBER, BULK VELOCITY, AND COROTATION DELAY TIME. THE BULK VELOCITY IS ACCURATE TO 10 PERCENT. THE COROTATION DELAY TIME IS THE NUMBER OF DAYS BETWEEN THE OBSERVATION AT THE SPACECRAFT AND THE SUBSEQUENT OBSERVATION AT THE EARTH OF THE COROTATING INTERPLANETARY MAGNETIC FLUX TUBE (ASSUMING THAT THE SOLAR WIND SPEED REPORTED REMAINS CONSTANT). TYPICALLY, THERE IS ONE VELOCITY VALUE GIVEN FOR EACH SATELLITE PER DAY. ON ABOUT 30 PERCENT OF THE DAYS, NO DATA ARE GIVEN. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON                   NSSDC ID 65-105A-06C  
                  MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121865 TO 030466 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        2 REEL(S) OF MAGNETIC TAPE

**DATA SET BRIEF DESCRIPTION**

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED HOURLY AVERAGES OF THE FOLLOWING SOLAR WIND PARAMETERS - THE ALPHA/PROTON NUMBER DENSITY RATIO, THE PROTON NUMBER DENSITY, THE ALPHA PARTICLE TEMPERATURE (DEG K), THE PROTON TEMPERATURE (DEG K), THE BULK VELOCITY (KM/SEC), THE AZIMUTHAL ANGLE (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX (DEG), AND THE POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG). THE ABOVE PLASMA PARAMETERS ARE GOOD TO 10 PERCENT. THE DATA WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). THE DATA ARE CONTAINED ON TWO 9-TRACK, IBM 360, BINARY MAGNETIC TAPES WRITTEN AT A DENSITY OF 800 BPI. THEY WERE WRITTEN WITH VARIABLE LENGTH UNBLOCKED RECORDS. THE DATA CONSIST OF ALL THE HIGH BIT RATE DATA AND HAVE A 90 PERCENT COVERAGE OVER THE PERIOD INDICATED.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON                   NSSDC ID 65-105A-06D  
                  MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121865 TO 030466 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        1 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET WAS MICROFILMED BY NSSDC FROM A COMPUTER PRINTOUT OF DATA SET 65-105A-06C.

EXPERIMENT NAME- CELESTIAL MECHANICS

NSSDC ID 65-105A-07

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.D. ANDERSON                      NASA-JPL                      PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO USE THE TRACKING DATA FROM THE MISSION TO OBTAIN PRIMARY DETERMINATIONS OF THE MASSES OF THE EARTH AND MOON, THE ASTRONOMICAL UNIT, AND THE OSCILLATING ELEMENTS OF THE ORBIT OF THE EARTH. THIS WAS APPROPRIATE BECAUSE OF THE ABSENCE OF MIDCOURSE ORBIT CORRECTIONS AND NEAR-PLANETARY ENCOUNTERS. ALSO, SOLAR RADIATION PRESSURE EFFECTS WERE SMALL. THE EXPERIMENT USED THE ONBOARD RECEIVER AND TRANSMITTER EQUIPMENT IN CONJUNCTION WITH DEEP SPACE STATION EQUIPMENT TO OBTAIN DOPPLER MEASUREMENTS.

DATA SET NAME- DOPPLER RADIO TRACKING DATA ON TAPE                      NSSDC ID 65-105A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121865 TO 092467 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-                      2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF TWO 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES THAT WERE PRODUCED ON AN IBM 7094 COMPUTER SYSTEM AND USED TO RECORD THE DOPPLER RADIO TRACKING DATA FROM PIONEER 6. THE INFORMATION CONTAINED ON THESE TAPES IS RANGE, RANGE RATE, ELEVATION, AZIMUTH, DECLINATION, RIGHT ASCENSION, ONE-, TWO-, AND THREE-WAY DOPPLER IN CYCLES PER SEC, TIME RESOLVER, RANGE UNITS, AND PLANETARY RANGE UNITS. THE FREQUENCY OF THE DATA POINTS APPEARING ON THE TAPE VARIES FROM ONE POINT PER MIN TO ONE POINT EVERY 10 MIN.

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SPACECRAFT COMMON NAME- GEMINI 8    NSSDC ID 66-020A  
ALTERNATE NAMES-

LAUNCH DATE- 03/16/66                      SPACECRAFT WEIGHT IN ORBIT-                      3789. KG

FUNDING AGENCY- NASA-QMSF

DATE LAST SPACECRAFT DATA RECORDED-031766  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 03/16/66    ORBIT TYPE- GEOCENTRIC                      ORBIT PERIOD- 88.60 MIN  
APOAPSIS- 265.000 KM ALT    PERIAPSIS- 159.000 KM ALT    INCLINATION- 2891. DEG

**SPACECRAFT BRIEF DESCRIPTION**

GEMINI 8 WAS THE SIXTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE PRIMARY MISSION OBJECTIVES WERE TO PERFORM RENDEZVOUS AND FOUR DOCKING TESTS WITH THE AGENA TARGET VEHICLE AND TO EXECUTE AN EXTRAVEHICULAR ACTIVITY (EVA) EXPERIMENT. TEN TECHNOLOGICAL, MEDICAL, AND SCIENTIFIC EXPERIMENTS WERE CARRIED ON BOARD. OF THE SIX SCIENTIFIC EXPERIMENTS ONLY THE AGENA MICROMETEORITE COLLECTION WAS SUCCESSFUL. THE OTHERS -- (1) ZODIACAL LIGHT PHOTOGRAPHY, (2) FROG EGG GROWTH, (3) SYNOPTIC TERRAIN PHOTOGRAPHY, (4) NUCLEAR EMULSIONS, AND (5) SPECTROPHOTOGRAPHY OF CLOUDS -- WERE INCOMPLETE, OWING TO A LARGE LOSS OF FUEL AND EARLY TERMINATION OF THE MISSION. THE EVA DOCKING AND OTHER MANEUVERS WERE CANCELED. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE AFTER 6.5 ORBITS AND LANDED IN THE PACIFIC OCEAN ON MARCH 16, 1966.

EXPERIMENT NAME- SYNOPTIC TERRAIN PHOTOGRAPHY

NSSDC ID 66-020A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR. NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-031666  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

**EXPERIMENT BRIEF DESCRIPTION**

THIS EXPERIMENT WAS DESIGNED TO OBTAIN HIGH-QUALITY, SMALL-SCALE PICTURES OF SELECTED AREAS OF THE EARTH'S SURFACE FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. A 70-MM HASSELBLAD 500-C CAMERA, WITH A ZEISS PLANAR 80-MM F/2.8 LENS AND A HAZE FILTER, WAS USED WITH EKTACHROME MS SO-217 FILM. OWING TO THE SHORT DURATION OF THE FLIGHT, ONLY 18 PHOTOGRAPHS WERE OBTAINED. THESE PHOTOGRAPHS WERE DESIGNATED AS WEATHER PHOTOGRAPHY AND WERE NOT SUITABLE TO SATISFY OBJECTIVES OF THE SYNOPTIC TERRAIN PHOTOGRAPHY EXPERIMENT.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER  
PHOTOS

NSSDC ID 66-020A-01A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 031666 TO 031666 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 19 FRAMES

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET IS THE COMPLETE SET OF GEMINI 8 PHOTOGRAPHY. OF THE 18 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, NONE WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. ALL WERE DESIGNATED AS WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI PHOTOGRAPHS CAN BE FOUND IN "EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12" (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.



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SPACECRAFT COMMON NAME- NIMBUS 2  
ALTERNATE NAMES-

NSSDC ID 66-040A

LAUNCH DATE- 05/15/66 SPACECRAFT WEIGHT IN ORBIT- 414. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-011769  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/15/66 ORBIT TYPE- GECENTRIC ORBIT PERIOD- 108. MIN  
APOAPSIS- 1179.00 KM ALT PERIAPSIS- 1109.00 KM ALT INCLINATION- 100.311 DEG

SPACECRAFT BRIEF DESCRIPTION

NIMBUS 2, THE SECOND IN A SERIES OF SECOND-GENERATION METEOROLOGICAL R AND D SATELLITES, WAS DESIGNED TO SERVE AS A STABILIZED, EARTH-ORIENTED PLATFORM FOR THE TESTING OF ADVANCED SYSTEMS FOR SENSING AND COLLECTING METEOROLOGICAL DATA. THE POLAR-ORBITING SPACECRAFT CONSISTED OF THREE MAJOR ELEMENTS -- (1) A SENSORY RING, (2) SOLAR PADDLES, AND (3) THE CONTROL HOUSING UNIT, WHICH WAS CONNECTED TO THE SENSORY RING BY A TRUSS STRUCTURE. SHAPED SOMEWHAT LIKE AN OCEAN BUDY, NIMBUS 2 WAS NEARLY 3.7 M TALL, 1.5 M IN DIAMETER AT THE BASE, AND ABOUT 3 M ACROSS WITH SOLAR PADDLES EXTENDED. THE SENSORY RING, WHICH FORMED THE SATELLITE BASE, HOUSED THE ELECTRONICS EQUIPMENT AND BATTERY MODULES. THE LOWER SURFACE OF THE TORUS-SHAPED SENSORY RING PROVIDED A MOUNTING SPACE FOR SENSORS AND TELEMETRY ANTENNAS. AN H-FRAME STRUCTURE MOUNTED WITHIN THE CENTER OF THE TORUS PROVIDED SUPPORT FOR THE LARGER EXPERIMENTS AND TAPE RECORDERS. MOUNTED ON THE CONTROL HOUSING UNIT, WHICH WAS LOCATED ON TOP OF THE SPACECRAFT, WERE SUN SENSORS, HORIZON SCANNERS, GAS NOZZLES FOR ATTITUDE CONTROL, AND A COMMAND ANTENNA. USE OF A STABILIZATION AND CONTROL SYSTEM PERMITTED THE SPACECRAFT'S ORIENTATION TO BE CONTROLLED TO WITHIN PLUS OR MINUS 1 DEG FOR ALL THREE AXES (PITCH, ROLL, AND YAW). THE SPACECRAFT CARRIED (1) AN ADVANCED VIDICON CAMERA SYSTEM (AVCS) FOR RECORDING AND STORING REMOTE CLOUDCOVER PICTURES, (2) AN AUTOMATIC PICTURE TRANSMISSION (APT) CAMERA FOR PROVIDING REAL-TIME CLOUDCOVER PICTURES, AND (3) BOTH HIGH- AND MEDIUM-RESOLUTION INFRARED RADIOMETERS (HRIR AND MRIR) FOR MEASURING THE INTENSITY AND DISTRIBUTION OF ELECTROMAGNETIC RADIATION EMITTED BY AND REFLECTED FROM THE EARTH AND ITS ATMOSPHERE. THE SPACECRAFT AND EXPERIMENTS PERFORMED NORMALLY AFTER LAUNCH UNTIL JULY 26, 1966, WHEN THE SPACECRAFT TAPE RECORDER FAILED. ITS FUNCTION WAS TAKEN OVER BY THE HRIR TAPE RECORDER UNTIL NOVEMBER 15, 1966, WHEN IT ALSO FAILED. SOME REAL-TIME DATA WERE COLLECTED UNTIL JANUARY 17, 1969, WHEN THE SPACECRAFT MISSION WAS TERMINATED OWING TO DETERIORATION OF THE HORIZON SCANNER USED FOR EARTH REFERENCE.

DATA SET NAME- NIMBUS 2 DATA CATALOG

NSSDC ID 66-040A-00D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 051566 TO 072866 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THE 'NIMBUS II DATA CATALOG' WAS PUBLISHED TO DOCUMENT METEOROLOGICAL DATA ACQUIRED BY THE NIMBUS 2 METEOROLOGICAL SATELLITE. THE CATALOG PRESENTS GEOGRAPHIC LOCATION AND TIME COVERAGE OF TAPE AND/OR PHOTOGRAPHIC FORMS OF THE DATA FROM THE ADVANCED VIDICON CAMERA SYSTEM (AVCS), THE HIGH-RESOLUTION INFRARED RADIOMETER (HRIR), AND THE MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR). THIS CATALOG DOES NOT CONTAIN BACKGROUND INFORMATION CONCERNING THE SATELLITE, NOR IS THERE A DESCRIPTION OF THE EXPERIMENTS OR DATA FORMATS. SUCH INFORMATION IS CONTAINED IN THE 'NIMBUS II USERS GUIDE', WHICH IS A NECESSARY ADJUNCT TO EACH CATALOG VOLUME. THE CATALOG CONSISTS OF FIVE VOLUMES -- VOLUME 1 - MAY 15 TO JUNE 30, 1966, VOLUME 2 - JULY 1966, VOLUME 3 - AUGUST 1966, VOLUME 4 - SEPTEMBER 1966, AND VOLUME 5 - OCTOBER 1 TO NOVEMBER 15, 1966.

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SPACECRAFT COMMON NAME- GEMINI 9 NSSDC ID 66-047A  
ALTERNATE NAMES- GEMINI 9A

LAUNCH DATE- 06/03/66 SPACECRAFT WEIGHT IN ORBIT- 3750. KG

FUNDING AGENCY- NASA-DMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-060666  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/06/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.8 MIN  
APOAPSIS- 272.000 KM ALT PERIAPSIS- 270.000 KM ALT INCLINATION- 28.9 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 9, MANNED WITH TWO ASTRONAUTS, WAS THE SEVENTH EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE BLUNT, CONE-SHAPED SPACECRAFT WAS 3.048 CM IN DIAMETER AT THE REAR OF THE CRAFT. PRIMARY MISSION OBJECTIVES WERE TO DEMONSTRATE (1) THREE RENDEZVOUS TECHNIQUES, (2) AN EXTRAVEHICULAR ACTIVITY (EVA) TO TEST THE ASTRONAUT MANEUVERING UNIT (AMU), AND (3) PRECISION LANDING CAPABILITY. SCIENTIFIC OBJECTIVES INCLUDED OBTAINING ZODIACAL LIGHT AND AIRGLOW HORIZON PHOTOGRAPHS. TWO MICROMETEORITE STUDIES WERE TO BE CARRIED OUT, AND THERE WERE ALSO ONE MEDICAL AND TWO TECHNOLOGICAL EXPERIMENTS. THE AGENA TARGET VEHICLE FAILED TO ACHIEVE ORBIT, AND THE AGENA MICROMETEORITE EXPERIMENT HARDWARE WAS LOST. OTHER EXPERIMENTS FUNCTIONED NORMALLY. THE THREE RENDEZVOUS TECHNIQUES WERE DEMONSTRATED, ALTHOUGH DOCKING COULD NOT BE ACHIEVED DUE TO A FAILURE OF THE AUGMENTED TARGET-DOCKING SHROUD TO JETTISON. THE EVA WAS CURTAILED DUE TO FOGGING OF THE VISOR AND ENERGY EXPENDED BY THE ASTRONAUT. REENTRY WAS ROUTINELY ACCOMPLISHED AFTER 47 ORBITS ON JUNE 6, 1966, WITHIN 3.2 KM OF THE TARGET POINT.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS NSSDC ID 66-047A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR. NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-060666  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

AN EXPERIMENT FOR TERRAIN PHOTOGRAPHY WAS NOT SCHEDULED FOR THIS FLIGHT. FROM THE 355 PICTURES OBTAINED, HOWEVER, 160 PHOTOGRAPHS WERE USABLE FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC STUDIES. THE CAMERAS USED WERE (1) A HASSELBLAD 500-C WITH A ZEISS PLANAR 80-MM F/2.8 LENS, (2) A HASSELBLAD SWC WITH A ZEISS BIOGON 38-MM F/4.5 LENS, AND (3) A MAURER 70-MM SPACE CAMERA WITH AN XENOTAR 80-MM F/2.8 LENS. EKTACHROME MS SO-217 FILM AND HAZE FILTERS WERE USED WITH THESE CAMERAS. THESE COVER THE AREAS OF SOUTH AMERICA, WITH GOOD PHOTOGRAPHS OF THE ANDES MOUNTAINS, NORTH AFRICA, AND THE SOUTHERN UNITED STATES.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN PHOTOS NSSDC ID 66-047A-05A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 060366 TO 060666 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 362 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 9 PHOTOGRAPHY. OF THE 355 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 160 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- OGO 3 NSSDC ID 66-049A  
ALTERNATE NAMES- OGO-B, EOGO 3

LAUNCH DATE- 06/07/66 SPACECRAFT WEIGHT IN ORBIT- 515. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-120169  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/19/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 2915. MIN  
APOAPSIS- 128511. KM ALT PERIAPSIS- 319.000 KM ALT INCLINATION- 31.4 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 3 SPACECRAFT, THE THIRD OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET. OGO 3 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS DESIGNED TO BE EARTH POINTING (+Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS INTENDED TO BE PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON, AND COULD ROTATE ABOUT, AN AXIS WHICH WAS PARALLEL TO THE Z AXIS AND ATTACHED TO THE MAIN BODY. DUE TO A FAILURE IN THE ATTITUDE CONTROL SUBSYSTEM ON JULY 23, 1966, THE SPACECRAFT WAS PUT INTO A PERMANENT SPIN MODE ABOUT THE Z AXIS. BOTH THE ORIENTATION OF THE SPIN AXIS AND THE SPIN PERIOD WERE VARIABLE, THE LATTER USUALLY IN THE RANGE 90 SEC TO 125 SEC. AT LAUNCH, THE LOCAL TIME OF APOGEE WAS 2300 HR. OGO 3 CARRIED 21 EXPERIMENTS. THIRTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS -- INTERPLANETARY DUST, VLF, LYMAN-ALPHA, GEGENSCHNITT, ATMOSPHERIC COMPOSITION, AND RADIO ASTRONOMY. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. BY JUNE 1969, DATA ACQUISITION WAS LIMITED TO 50 PERCENT OF THE ORBITAL PATH. ON DECEMBER 1, 1969, OGO 3 WAS PLACED IN A SAFE-STANDBY MODE.

EXPERIMENT NAME- MAGNETIC SURVEY USING TWO MAGNETOMETERS NSSDC ID 66-049A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.P.	HEPPNER	NASA-GSFC	GREENBELT, MD
OI - B.G.	LEDLEY	NASA-GSFC	GREENBELT, MD
OI - R.W.	CAMPBELL	NASA-GSFC	GREENBELT, MD
OI - T.L.	SKILLMAN	NASA-GSFC	GREENBELT, MD
OI - M.	SUGIURA	NASA-GSFC	GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-120169

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE PRIMARY OBJECTIVE OF THIS EXPERIMENT WAS TO STUDY THE GEOMAGNETIC FIELD AND ITS INTERACTIONS WITH THE ENVIRONMENT. THE DETECTOR SYSTEM CONSISTED OF A BOOM-MOUNTED, TRIAXIAL, DUAL RANGE, FLUXGATE MAGNETOMETER AND TWO BOOM-MOUNTED, DUAL-CELL, OPTICALLY PUMPED, SELF-OSCILLATING RUBIDIUM VAPOR MAGNETOMETERS. THE TRIAXIAL FLUXGATE MAGNETOMETER PROVIDED SIMULTANEOUS MEASUREMENTS OF THE THREE MAGNETIC FIELD VECTOR COMPONENTS IN TWO DIFFERENT RANGES, PLUS OR MINUS 30 GAMMAS AND PLUS OR MINUS 300 GAMMAS. THE SAMPLING RATES, WHICH WERE DEPENDENT ON TELEMETRY BIT RATE, FOR THE 30-GAMMA RANGE WERE 1.7, 14, AND 110 SAMPLES PER SEC PER AXIS. THE SAMPLING RATES FOR THE 300-GAMMA RANGE WERE 0.85, 7, AND 55 SAMPLES PER SEC PER AXIS. THE ACCURACY FOR THE FLUXGATE WAS PLUS OR MINUS 2 GAMMAS IN FIELD INTENSITIES UP TO 30 GAMMAS AND REACHED A MAXIMUM OF 10 GAMMAS IN FIELD



EXPERIMENT NAME- TRIAXIAL SEARCH COIL MAGNETOMETER

NSSDC ID 66-049A-12

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - E.J. SMITH	NASA-JPL	PASADENA, CA
OI - R.E. HOLZER	U OF CALIFORNIA, LA	LOS ANGELES, CA

DATE LAST EXPERIMENT DATA RECORDED-120169

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT, MAGNETIC FIELD VARIATIONS WERE MEASURED TRIAXIALLY FROM 0.01 TO 800 HZ BY A BOOM-MOUNTED HIGH-PERMEABILITY CORE, SEARCH COIL MAGNETOMETER IN TWO MODES. TWO DIGITALLY SAMPLED AND ONE ANALOG BROADBAND CHANNELS MAPPED THE VECTOR WAVE DATA. THE TWO DIGITAL CHANNELS COVERED FREQUENCIES FROM 0.01 TO 0.8 HZ OR 0.01 TO 75 HZ, DEPENDING ON TELEMETRY RATE. THE ANALOG CHANNEL, TRANSMITTED VIA THE FM SPECIAL PURPOSE TELEMETRY, COVERED FROM 1 TO 1000 HZ. ALSO INCLUDED WAS A FIVE-CHANNEL SPECTRUM ANALYZER WITH CENTER FREQUENCIES AT 10, 32, 100, 320, AND 800 HZ. THESE CHANNELS OVERLAPPED AT THE -12 DB POINTS. TIME REQUIRED FOR A TRIAXIAL SPECTRUM ANALYSIS VARIED WITH TELEMETRY RATE FROM 147 TO 18.4 SEC TO 2.3 SEC FOR THE 1, 8, AND 64 KBS RATES. THE INSTRUMENT PERFORMED THROUGHOUT THE OPERATIONAL LIFE OF THE SPACECRAFT, BUT THE USEFULNESS OF THE THREE BROADBAND CHANNELS WAS REDUCED BY SPACECRAFT INTERFERENCE.

DATA SET NAME- 36.864-SEC AVERAGED SEARCH COIL  
MAGNETOMETER DATA ON MAGNETIC TAPE

NSSDC ID 66-049A-12A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 060966 TO 042768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 41 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE 41 EXPERIMENTER-GENERATED 7-TRACK, 556-BPI, BCD MAGNETIC TAPES CONTAIN 36.864-SEC AVG SEARCH COIL MAGNETOMETER DATA FROM ALL EXPERIMENT MODES. EACH FILE CONTAINS DATA FROM ONE SPACECRAFT ORBIT, WITH THE POSSIBILITY OF SOME OVERLAP AT THE END OF THOSE FILES THAT CONTAIN APPROXIMATELY 1200 RECORDS. AN INDEX TO EACH FILE IS CONTAINED ON MICROFILM IN DATA SET 66-049A-12C. IN EACH RECORD ARE TIME AND THE AVERAGED VECTOR FIELD AMPLITUDES FOR THE 10-, 30-, 100-, 300-, AND 800-HZ CENTER FREQUENCY CHANNELS. REAL-TIME DATA AND TAPE RECORDED DATA WERE PROCESSED SEPARATELY. THOUGH THE TAPES CONTAIN CONSECUTIVE DATA, MERGING OF THESE TWO TYPES OF DATA WAS NOT PERFORMED. AS THE INSTRUMENT RESPONDS DIFFERENTLY TO BROADBAND AND MONOTONE SIGNALS, IT WAS NOT POSSIBLE TO CALIBRATE THE MEASURED FIELD SIGNAL MAGNITUDES WITHOUT INDEPENDENT KNOWLEDGE OF THE NATURE OF THE MEASURED SIGNAL. IN ANY CASE, THESE DATA ARE USEFUL AS INDICATORS OF THE TIMES AND PLACES OF MAGNETIC ACTIVITY, AND MAY BE USED TO IDENTIFY SHOCK FRONTS, MAGNETOPAUSE CROSSING, PLASMA-PAUSE CROSSINGS, THE NATURE OF MAGNETOSPHERIC WAVES, ETC, TO THE NEAREST MIN.

DATA SET NAME- SEARCH COIL MAGNETOMETER SQUISH PLOTS ON NSSDC ID 66-049A-12B  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 060966 TO 021268 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REEL OF EXPERIMENTER-GENERATED 35-MM MICROFILM HAS 13 SEPARATE  
ABSCISSA-ORDINATE COMBINATIONS PLOTTED AGAINST COMMON TIME. THE PLOTS  
CONTAIN THE MAGNITUDE OF THE VECTOR 10-, 30-, 100-, AND 800-HZ DATA,  
AVERAGED OVER 147.45 SEC. ALSO PRESENTED ARE (1) 36.864-SEC AVERAGED DATA  
FROM THE 10-HZ Z-CHANNEL IN SPACECRAFT COORDINATES (COMPONENT ALONG SPIN  
AXIS), (2) AN INDICATOR OF THE DATA QUALITY, AND (3) DIGITIZED WAVEFORM DATA  
FROM THE SEARCH-COIL MAGNETOMETER, PROCESSED INTO TWO BANDS. VECTOR DATA (IN  
SPINNING SPACECRAFT COORDINATES) FOR FREQUENCIES GREATER THAN 0.2 HZ, AND  
VECTOR DATA FOR FREQUENCIES BETWEEN 0.15 AND 0.1 HZ ARE AVERAGED OVER 36.864  
SEC. THESE DATA WERE RECEIVED IN AN EXTREMELY COMPRESSED FORMAT, AND BLOWN  
BACK TO A FULL-SIZE PLOT 6 FT IN LENGTH AND 1 FT IN WIDTH. THE HORIZONTAL  
TIME AXIS IS 30 SEC PER 0.01 IN. OR 1.2 IN./HR. THESE DATA MAY BE USED TO  
LOCATE REGIONS OF MAGNETIC ACTIVITY SUCH AS SHOCK FRONTS, MAGNETOPAUSE  
CROSSINGS, PLASMAPAUSE CROSSINGS, ETC., TO A CRUDE TIME OR SPATIAL SCALE.  
UNFORTUNATELY, MUCH OF THE FILM IS OF POOR QUALITY AND MAY BE DIFFICULT TO  
USE.

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SPACECRAFT COMMON NAME- EXPLORER 33  
ALTERNATE NAMES- IIMP-D, AIMP 1

NSSDC ID 66-058A

LAUNCH DATE- 07/01/66 SPACECRAFT WEIGHT IN ORBIT- 94. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-091571  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/08/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 23148. MIN  
APOAPSIS- 494230. KM ALT PERIAPSIS- 30532.0 KM ALT INCLINATION- 29.0 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 33 WAS A SPIN-STABILIZED (SPIN AXIS PARALLEL TO THE ECLIPTIC  
PLANE, SPIN PERIOD VARYING BETWEEN 2.2 AND 3.6 SEC) SPACECRAFT INSTRUMENTED  
FOR STUDIES OF INTERPLANETARY PLASMA, ENERGETIC CHARGED PARTICLES  
(ELECTRONS, PROTONS, AND ALPHAS), MAGNETIC FIELDS, AND SOLAR X RAYS AT LUNAR  
DISTANCES. THE SPACECRAFT FAILED TO ACHIEVE LUNAR ORBIT BUT DID ACHIEVE  
MISSION OBJECTIVES. THE INITIAL APOGEE OCCURRED AT ABOUT 1600 HR LOCAL TIME.  
OVER THE FIRST 3-YR PERIOD, PERIGEE VARIED BETWEEN 6 AND 44 EARTH RADII  
GEOCENTRIC. APOGEE VARIED BETWEEN 70 AND 135 EARTH RADII, AND THE  
INCLINATION WITH RESPECT TO THE EQUATOR OF THE EARTH VARIED BETWEEN 7 AND 60  
DEG. PERIODS OF PRINCIPAL DATA COVERAGE (ESSENTIALLY 100 PERCENT) ARE JULY  
1, 1966 (LAUNCH) TO JANUARY 14, 1970, FEBRUARY 21, 1970 TO MARCH 6, 1970,  
JULY 31, 1970 TO SEPTEMBER 14, 1970, JANUARY 15, 1971 TO FEBRUARY 28, 1971,  
MARCH 23, 1971 TO MAY 31, 1971, AND AUGUST 23, 1971, TO SEPTEMBER 15, 1971.

NO DATA WERE OBTAINED AFTER SEPTEMBER 21, 1971.

EXPERIMENT NAME- GSFC MAGNETOMETER

NSSDC ID 66-058A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
OI - K.W.	BEHANNON	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-101068

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER. EACH OF THE THREE SENSORS HAD A RANGE OF MINUS TO PLUS 64 GAMMAS AND A DIGITIZATION RESOLUTION OF MINUS TO PLUS 0.25 GAMMA. ZERO-LEVEL DRIFT WAS CHECKED BY PERIODIC REORIENTATION OF THE SENSORS. SPACECRAFT FIELDS AT THE SENSORS WERE NOT GREATER THAN THE DIGITIZATION UNCERTAINTY. ONE VECTOR MEASUREMENT WAS OBTAINED EACH 5.12 SEC. THE BANDPASS OF THE MAGNETOMETER WAS 0 TO 5 HZ, WITH A 20-DB PER DECADE FALLOFF FOR HIGHER FREQUENCIES. THE DETECTOR FUNCTIONED WELL BETWEEN LAUNCH AND OCTOBER 10, 1968, WHEN THE DC POWER CONVERTER FAILED. NO USEFUL DATA WERE OBTAINED AFTER THAT DATE.

DATA SET NAME- 5.12-SEC VECTOR MAGNETIC FIELD DATA ON TAPE

NSSDC ID 66-058A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 070166 TO 100568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 59 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 59 EXPERIMENTER-SUPPLIED, 9-TRACK, 800-BPI, IBM 360 BINARY MAGNETIC TAPES. EACH PHYSICAL RECORD CONTAINS FOUR LOGICAL RECORDS OF 1080 BYTES EACH. EACH LOGICAL RECORD CONTAINS DATA TAKEN DURING ONE 81.92-SEC TELEMETRY SEQUENCE. INCLUDED IN EACH LOGICAL RECORD ARE TIME (WITH JANUARY 1 AS DAY 0) AND 16 VECTOR MAGNETIC FIELD MEASUREMENTS, WITH CARTESIAN COMPONENTS GIVEN IN FOUR COORDINATE SYSTEMS -- A PAYLOAD SYSTEM CORDOTATING WITH THE SPACECRAFT, A SYSTEM WITH ITS Z AXIS ALONG THE SPACECRAFT SPIN AXIS AND ITS X AXIS IN THE PLANE DEFINED BY THE SPIN AXIS AND THE SATELLITE-SUN LINE, SOLAR ECLIPTIC COORDINATES, AND SOLAR MAGNETOSPHERIC COORDINATES. FOR THE LATTER THREE COORDINATE SYSTEMS, SEQUENCE AVERAGES AND RMS DEVIATIONS ARE GIVEN FOR THE COMPONENTS. IN ADDITION, 16 FIELD MAGNITUDES AND THE SEQUENCE-AVERAGED MAGNITUDE AND ITS RMS DEVIATIONS ARE GIVEN. THE LATITUDE AND AZIMUTH ANGLES OF THE SEQUENCE-AVERAGED FIELD VECTOR ARE GIVEN IN THE PAYLOAD AND SOLAR ECLIPTIC COORDINATE SYSTEMS. SUPPORTING INFORMATION FOUND IN EACH LOGICAL RECORD INCLUDES TIMES FOR THE 16 FIELD MEASUREMENTS, SPIN PERIOD, SPIN AXIS DIRECTION AND SPACECRAFT POSITION IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES. ALL DATA EXCEPT THE THIRTEEN 16-ELEMENT ARRAYS OF 5.12-SEC DATA HAVE BEEN TRANSFERRED TO DATA SET 66-058A-01C. THE DATA COVER THE TIME PERIOD JULY 1, 1966 THROUGH OCTOBER 5, 1968, WITH AT LEAST 90 PERCENT





DATE LAST USABLE EXPERIMENT DATA RECORDED-053171  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE AMES MAGNETOMETER EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER AND AN ELECTRONICS PACKAGE. THE SENSORS WERE ORTHOGONALLY MOUNTED WITH ONE SENSOR ORIENTED ALONG THE SPIN AXIS OF THE SPACECRAFT. A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS EVERY 24 HR, ALLOWING INFLIGHT CALIBRATION. THE INSTRUMENT PACKAGE INCLUDED A CIRCUIT FOR SPIN-DEMODULATING THE OUTPUTS FROM THE SENSORS IN THE SPIN PLANE. THE NOISE THRESHOLD WAS ABOUT 0.2 GAMMA. THE INSTRUMENT HAD THREE RANGES COVERING PLUS OR MINUS 20, 60, AND 200 GAMMAS FULL SCALE FOR EACH VECTOR COMPONENT. THE DIGITIZATION ACCURACY FOR EACH RANGE WAS 1 PERCENT OF THE ENTIRE RANGE COVERED. THE MAGNETIC FIELD VECTOR WAS MEASURED INSTANTANEOUSLY, AND THE INSTRUMENT RANGE WAS CHANGED AFTER EACH MEASUREMENT. A PERIOD OF 2.05 SEC ELAPSED BETWEEN ADJACENT MEASUREMENTS AND 6.14 SEC BETWEEN MEASUREMENTS USING THE SAME RANGE. THE INSTRUMENT CEASED OPERATIONS ON MAY 31, 1971.

DATA SET NAME- AVERAGED MAGNETIC FIELD VECTOR PLOTS ON NSSDC ID 66-058A-03A  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 063066 TO 071169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC FIELD VECTOR PLOTS ARE CONTAINED ON TWO REELS OF 16-MM AND ONE REEL OF 35-MM MICROFILM. THESE REELS CONTAIN PLOTTED 81.8-SEC SCALAR AVERAGES IN EITHER SOLAR MAGNETOSPHERIC OR SOLAR EQUATORIAL COORDINATES (Z AXIS NORTHWARD IN A PLANE CONTAINING THE SOLAR DIRECTION AND THE SOLAR SPIN AXIS) OF THE MAGNITUDE, THE LONGITUDE, AND THE LATITUDE OF THE MAGNETIC FIELD B. GENERALLY, DATA ARE PLOTTED IN SOLAR MAGNETOSPHERIC COORDINATES FOR TIMES WHEN THE SPACECRAFT WAS INSIDE THE MAGNETOSPHERE OR GEOMAGNETIC TAIL, AND IN SOLAR EQUATORIAL COORDINATES WHEN THE SPACECRAFT WAS OUTSIDE THESE REGIONS. ABOUT 4 HR OF DATA ARE PLOTTED ON EACH FRAME. SEQUENCE NUMBER, TIME, AND THE COORDINATE SYSTEM USED ARE INDICATED ON EACH PLOT. DRIFTS IN ZERO LEVELS OF THE SENSORS HAVE BEEN CORRECTED BY THE EXPERIMENTER. DATA ARE AVAILABLE OVER THE TIME PERIOD SPECIFIED WITH 95 PERCENT COVERAGE.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC NSSDC ID 66-058A-03B  
FIELD DATA ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 010167 TO 010169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE CDC 6600, BCD, 800-BPI, 7-TRACK MAGNETIC TAPE. THIS TAPE WAS MADE BY DR. PAUL FOUGERE OF AFCL FROM DIGITAL LISTINGS SUPPLIED TO HIM BY DR. CHARLES SONETT. THESE LISTINGS PREVIOUSLY HAD BEEN

MANUALLY EDITED BY DR. SONETT'S STAFF AT AMES RESEARCH CENTER. THE DATA CONSIST OF HOURLY AVERAGED, INTERPLANETARY MAGNETIC FIELD DATA. THE FOLLOWING INFORMATION IS GIVEN - TIME, MAGNETIC FIELD MAGNITUDE, LATITUDE, LONGITUDE, AND Y AND Z COMPONENTS IN THE ORTHOGONAL SOLAR EQUATORIAL COORDINATE SYSTEM (X AXIS POINTS TOWARD THE SUN, Z AXIS NORTHWARD IN A PLANE CONTAINING THE SOLAR DIRECTION AND THE SOLAR SPIN AXIS), MAGNETIC FIELD LATITUDE, LONGITUDE, AND X, Y, AND Z COMPONENTS IN THE SOLAR MAGNETOSPHERIC COORDINATE SYSTEM, THE NUMBER OF INDIVIDUAL VECTOR SAMPLES AVAILABLE DURING THE HOUR, THE MAGNETIC FIELD COMPONENT NORMAL TO THE EARTH-SUN LINE, AND A FLAG TO INDICATE DATA FROM EITHER EXPLORER 33 OR 35.

EXPERIMENT NAME- PLASMA PROBE

NSSDC ID 66-058A-06

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - H.S. BRIDGE MIT CAMBRIDGE, MA

DATE LAST EXPERIMENT DATA RECORDED-092171  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A SPLIT-COLLECTOR FARADAY CUP MOUNTED ON THE SPACECRAFT EQUATOR WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF SOLAR WIND IONS AND ELECTRONS. THE FOLLOWING 25-SEC SEQUENCE WAS EXECUTED THREE TIMES FOR IONS AND ONCE FOR ELECTRONS EACH 328 SEC. TWENTY-SEVEN DIRECTIONAL CURRENT SAMPLES FROM THE TWO COLLECTORS WERE TAKEN IN THE ENERGY PER CHARGE (E/Q) WINDOW FROM 80 TO 2850 V. THE CURRENTS IN THE TWO COLLECTORS WERE THEN SAMPLED IN EIGHT E/Q WINDOWS BETWEEN 50 AND 5400 V AT THE AZIMUTH, AT WHICH PEAK CURRENT APPEARED IN THE PREVIOUS 27 MEASUREMENTS. DUE TO TELEMETRY LIMITATIONS, ONLY THE FOLLOWING DATA WERE RETURNED TO EARTH EVERY 328 SEC -- FOR IONS, THE SUMS OF CURRENTS MEASURED ON THE TWO COLLECTOR PLATES TWICE AND THE DIFFERENCE ONCE -- FOR ELECTRONS, THE SUMS ONCE. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL THE FINAL SPACECRAFT DATA TRANSMISSION.

DATA SET NAME- 3-MIN INTERPLANETARY PLASMA PARAMETERS NSSDC ID 66-058A-06B  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 070666 TO 092369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A 7-TRACK, BLOCKED EVEN-PARITY, BCD, 556-BPI DATA TAPE THAT WAS GENERATED BY THE EXPERIMENTER ON AN IBM 360. THE BLOCK SIZE IS 1000 CHARACTERS, WITH A LOGICAL RECORD SIZE OF 100 CHARACTERS. EACH LOGICAL RECORD CONTAINS ONE SOLAR WIND MEASUREMENT. THE TAPE CONTAINS ONLY ION SOLAR WIND DATA INCLUDING THE THERMAL SPEED, THE NUMBER DENSITY, THE FLOW SPEED, AND THE SOLAR ECLIPTIC LONGITUDE AND LATITUDE OF THE FLOW DIRECTION. THESE PARAMETERS ARE TIME ORDERED. THEY WERE DERIVED USING A GAMMA DISTRIBUTION FUNCTION, WHICH IN THE SOLAR WIND IS ESSENTIALLY EQUIVALENT TO A CONVECTED ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION. THE PARAMETER SET WAS CALCULATED BASED ON A 2.7-MIN SPECTRUM, AND CHANGES IN THE

SOLAR WIND ON TIME SCALES SHORTER THAN THAT PERIOD, E.G., THE PASSAGE OF AN INTERPLANETARY SHOCK FRONT, WILL INVALIDATE THE PARAMETER SET CALCULATED FROM DATA TAKEN DURING THAT INTERVAL.

DATA SET NAME- PLOTS OF HOURLY AVERAGED PLASMA PARAMETERS  
NSSDC ID 66-058A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 070666 TO 092369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THESE HARDCOPY, EXPERIMENTER-GENERATED PLOTS CONTAIN HOURLY AVERAGED, INTERPLANETARY SOLAR WIND THERMAL SPEED, BULK SPEED, AND DENSITY PLOTTED AGAINST TIME, WITH ONE SOLAR ROTATION PER HORIZONTAL AXIS. THE DATA ARE CONTAINED ON ELEVEN 8- BY 11-IN. PAGES, WITH TWO SETS OF PLOTS PER PAGE.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY PLASMA  
DATA ON TAPE WITH BLOCKS OF ZEROES REMOVED  
NSSDC ID 66-058A-06D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 070666 TO 092369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS NSSDC REFORMATTED TAPE (GENERATED FROM DATA SET 66-058A-06A) CONTAINS HOURLY AVERAGED, INTERPLANETARY PLASMA PARAMETERS ONLY. INCLUDED ARE THE AVERAGED THERMAL SPEED, THE AVERAGED NUMBER DENSITY, THE AVERAGED FLOW SPEED, THE AVERAGED SOLAR ECLIPTIC LATITUDE AND LONGITUDE OF THE FLOW DIRECTION, AND THE CORRESPONDING STANDARD DEVIATIONS. THESE DATA ARE ON A 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH 84 CHARACTERS PER LOGICAL RECORD AND ONE LOGICAL RECORD PER PHYSICAL RECORD. EACH RECORD CONTAINS ONE SET OF PLASMA PARAMETERS, AND NO RECORD CONTAINS ALL ZERO OR BLOCK ZERO DATA (AS WERE CONTAINED ON THE ORIGINAL MIT-GENERATED TAPE).

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SPACECRAFT COMMON NAME- GEMINI 10  
ALTERNATE NAMES-  
NSSDC ID 66-066A

LAUNCH DATE- 07/18/66 SPACECRAFT WEIGHT IN ORBIT- 3750. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-072166  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/18/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 88.64 MIN  
APOAPSIS- 268.000 KM ALT PERIAPSIS- 160.000 KM ALT INCLINATION- 28.85 DEG

**SPACECRAFT BRIEF DESCRIPTION**

GEMINI 10 WAS THE EIGHTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE CONICAL VEHICLE CONSISTED OF A REENTRY MODULE AND AN ADAPTER MODULE. ITS PRIMARY PURPOSE WAS TO CONDUCT RENDEZVOUS AND DOCKING TESTS WITH THE AGENA TARGET VEHICLE. THE MISSION PLAN INCLUDED A RENDEZVOUS WITH THE GEMINI 8 AGENA TARGET, TWO EVA EXCURSIONS, AND THE PERFORMANCE OF 15 SCIENTIFIC, TECHNOLOGICAL, AND MEDICAL EXPERIMENTS. THE SCIENTIFIC EXPERIMENTS WERE RELATED TO (1) ZODIACAL LIGHT, SYNOPTIC TERRAIN, AND SYNOPTIC WEATHER PHOTOGRAPHY, (2) MICROMETEORITE COLLECTIONS, (3) UV ASTRONOMICAL CAMERA, (4) ION WAKE MEASUREMENTS, AND (5) METEOROID EROSION. ALL EXPERIMENTS OBTAINED DATA EXCEPT FOR THE MICROMETEORITE COLLECTOR. THE FIRST RENDEZVOUS AND DOCKING MANEUVERS WERE SUCCESSFULLY ACCOMPLISHED. HOWEVER, FUEL CONSUMPTION WAS LARGER THAN EXPECTED DUE TO A LARGE OUT-OF-PLANE ERROR. THIS RESULTED IN MISSION REVISION. THE FIRST EVA EXCURSION WAS NORMAL FOR 30 MIN BUT WAS THEN TERMINATED BECAUSE BOTH CREW MEMBERS DEVELOPED EYE IRRITATION. A SECOND RENDEZVOUS AND EVA WERE SUCCESSFUL. THE SPACECRAFT REENTERED THE EARTH'S ATMOSPHERE AFTER 43 ORBITS AND LANDED WITHIN 5 KM OF THE TARGET AREA ON JULY 21, 1966.

EXPERIMENT NAME- 70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS NSSDC ID 66-066A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR. NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-072166  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

**EXPERIMENT BRIEF DESCRIPTION**

THIS EXPERIMENT WAS DESIGNED TO OBTAIN HIGH-QUALITY, SMALL-SCALE COLOR PHOTOGRAPHS OF SELECTED AREAS OF THE EARTH'S SURFACE FOR USE IN GEOLOGY, GEOPHYSICS, GEOGRAPHY, AND OCEANOGRAPHY AND FOR USE IN PLANNING PHOTOGRAPHY FROM FUTURE MANNED SPACECRAFT. A MAURER 70-MM CAMERA WITH A XENOTAR 80-MM F/2.8 LENS, AND A HASSELBLAD SWC 70-MM CAMERA WITH A ZEISS BIOGON 38-MM F/4.5 LENS WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. THE FILM USED WAS EKTACHROME MS SO-217. OF THE 362 PICTURES TAKEN, 75 WERE USABLE FOR TERRAIN STUDIES. THESE COVER THE AREAS OF NORTH AFRICA, CHINA, TAIWAN, AND NORTHEASTERN SOUTH AMERICA.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN PHOTOS NSSDC ID 66-066A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 071866 TO 072166 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 371 FRAMES

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET IS THE COMPLETE SET OF GEMINI 10 PHOTOGRAPHY. OF THE 362 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 75 WERE DESIGNATED AS





THAN 10. ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 080466 TO 090667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 800-BPI, 7-TRACK, CDC-6600 BINARY MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. DATA ON THE FLUXES OF ELECTRONS MIRRORING AT L VALUES LESS THAN OR EQUAL TO 10 HAVE BEEN EXTRACTED FROM DATA SET 66-070A-05B FOR PRESENTATION IN THIS DATA SET. THE TAPE CONTAINS 183 DATA FILES, WITH EACH FILE CONTAINING DATA TAKEN DURING ONE ORBIT. EACH PHYSICAL RECORD HAS 33 LOGICAL RECORDS OF 15 WORDS EACH. THESE WORDS INCLUDE TIME, ELECTRON FLUXES FOR EACH OF THE NINE CHANNELS, PROTON BACKGROUND COUNT RATE, MODEL B AND L, AND SPACECRAFT LONGITUDE. THE 183 ORBITS REPRESENTED ON THE TAPE OCCURRED BETWEEN LAUNCH AND SEPTEMBER 6, 1967 (ORBIT 4194).

DATA SET NAME- PERPENDICULAR EQUATORIAL ELECTRON FLUX ON MAGNETIC TAPE NSSDC ID 66-070A-05D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 080466 TO 090667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 800-BPI, 7-TRACK, CDC-6600 BINARY MAGNETIC TAPE PROVIDED BY THE EXPERIMENTER. THE TAPE IS SIMILAR TO THAT OF DATA SET 66-070A-05C IN BOTH FORM AND CONTENT. HOWEVER, IN PLACE OF THE PROTON COUNT RATE, A FLAG IS USED TO INDICATE WHETHER THE ELECTRON FLUXES HAVE BEEN BACKGROUND CORRECTED AND REDUCED TO EQUIVALENT EQUATORIAL VALUES. IT IS PRESENTLY UNKNOWN WHAT FRACTION OF THE DATA HAS BEEN ALTERED IN THIS WAY.

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SPACECRAFT COMMON NAME- LUNAR ORBITER 1 NSSDC ID 66-073A  
ALTERNATE NAMES- LUNAR ORBITER-A, ORBITER I, ORBITER-A

LAUNCH DATE- 08/10/66 SPACECRAFT WEIGHT IN ORBIT- 387. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-102966  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 08/21/66 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 210. MIN  
APOAPSIS- 3588. KM ALT PERIAPSIS- 1784. KM ALT INCLINATION- 12. DEG

SPACECRAFT BRIEF DESCRIPTION



THE LUNAR ORBITER 1 SPACECRAFT WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISLUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM AUGUST 18 TO 29, 1966, AND READOUT OCCURRED THROUGH SEPTEMBER 14, 1966. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS TRACKED UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 7 DEG N LATITUDE, 161 DEG E LONGITUDE (SELENOGRAPHIC COORDINATES) ON OCTOBER 29, 1966.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 66-073A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.J. KOSOFKY                      NASA HEADQUARTERS                      WASHINGTON, DC

DATE LAST USABLE EXPERIMENT DATA RECORDED-082966

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 510-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS WERE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. AT APOLUNE, WHICH OCCURRED ON THE FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMAT PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEP 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES OBTAINED, 206 MR PHOTOS AND 13 HR PHOTOS WERE CONSIDERED USABLE. A SHUTTER MALFUNCTION PREVENTED NORMAL EXPOSURE OF MOST OF THE HR IMAGERY. EIGHT EACH OF THE USABLE MR AND HR PHOTOS ARE OF THE LUNAR FAR SIDE, AND TWO OF THESE INCLUDE THE EARTH'S IMAGE. EXCEPT FOR THE SHUTTER MALFUNCTION, EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON SEPTEMBER 14, 1966. A DETAILED DESCRIPTION OF THE

EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- COMPLETE SET OF LUNAR PHOTOGRAPHY ON B/W POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 66-073A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 081866 TO 082966 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 1 PHOTOGRAPHY ON 15 SHEETS OF 4- BY 6-IN. POSITIVE MICROFICHE. THESE SHEETS WERE PREPARED BY MAPPING SCIENCES BRANCH, MANNED SPACECRAFT CENTER, FROM THE NSSDC 35-MM REEL IN DATA SET -01D. THE QUALITY OF THE MICROFICHE COPIES IS SUITABLE FOR STUDIES OF MINIMUM PRECISION ONLY, AND THEREFORE THESE COPIES ARE INTENDED FOR ONSITE SELECTION OF PHOTOGRAPHS FOR WHICH HIGH QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- NSSDC PHOTOGRAPHIC SUPPORT DATA ON 16-MM MICROFILM NSSDC ID 66-073A-01J

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081866 TO 082966 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHIC SUPPORTING DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 1 PHOTOGRAPHS. THE DATA WERE SELECTED AND COMPILED BY NSSDC FROM THE MOST RECENT (1970) VERSION OF SUPPORTING DATA PROVIDED BY THE BOEING COMPANY. THE DATA (INCLUDING SIMILAR DATA FOR LUNAR ORBITERS 2 THROUGH 5) ARE CONTAINED IN 'LUNAR ORBITER PHOTOGRAPHIC SUPPORTING DATA,' NSSDC 71-13, MAY 1971, AND ARE IN THREE LISTINGS -- FULL LIST, POSITION PARAMETERS, AND ILLUMINATION PARAMETERS. EACH LISTING IS ORDERED BY MISSION AND FRAME NUMBERS. THE FULL LIST CONTAINS THE TIME OF EACH EXPOSURE, THE SPACECRAFT POSITION AND ORIENTATION PARAMETERS, THE PHOTO ILLUMINATION PARAMETERS, LATITUDE AND LONGITUDE OF THE PRINCIPAL GROUND POINT, CORNER COORDINATES AND SIDE LENGTHS OF EACH IMAGE AREA, AND THE TILT DISTANCE. THIS PUBLICATION IS MAINTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC.

DATA SET NAME- INTERIM PHOTO SITE ACCURACY ANALYSIS CALCULATIONS ON MICROFILM NSSDC ID 66-073A-01K

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 081866 TO 082966 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE RESULTS OF INTERIM CALCULATIONS (BY THE BOEING CO.) MADE TO PRODUCE FINAL REPORT DOCUMENTS OF PHOTO SITE ACCURACY ANALYSIS. THE DATA ARE MAINTAINED ON NINE REELS OF 16-MM FILM. THE CALCULATIONS ON 10-HARMONICS ANALYSIS WERE MADE FOR VARIOUS MODELS, USING DATA REPORTED FROM VARIOUS STATIONS, PASSES, AND ITERATIONS. SOME OF THE REELS CONTAIN PLOTS OF RESIDUALS VS TIME FOR VARIOUS STATIONS, PASSES, ITERATIONS, SEQUENCES, AND MODELS.

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SPACECRAFT COMMON NAME- PIONEER 7 NSSDC ID 66-075A  
ALTERNATE NAMES- PIONEER-B

LAUNCH DATE- 08/17/66 SPACECRAFT WEIGHT IN ORBIT- 63.4 KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 08/17/66 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 402.9 DAYS  
APOAPSIS- 1.1250 AU RAD PERIAPSIS- 1.0100 AU RAD INCLINATION- .09767 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 7 WAS THE SECOND IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, AND THE INTERPLANETARY MAGNETIC FIELD. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED APPROXIMATELY TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED FOR THE TWO HIGHEST BIT RATES. ANOTHER WAS USED FOR THE THREE LOWEST BIT RATES. THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM AUGUST 17, 1966, TO OCTOBER 23, 1966, 256 BPS FROM OCTOBER 25, 1966, TO NOVEMBER 6, 1966, 64 BPS FROM

NOVEMBER 9, 1966, TO DECEMBER 16, 1966, 16 BPS FROM DECEMBER 16, 1966, TO MAY 15, 1967, AND 8 BPS FROM MAY 15, 1967, AND THEREAFTER. HIGHER BIT RATES WERE POSSIBLE WHEN THE SPACECRAFT WAS BEING TRACKED BY THE 64-M ANTENNA, BUT THE DATA COVERAGE AT THESE TIMES WAS LOW. BY FEBRUARY 1968, ALL REAL-TIME DATA WERE BEING RECEIVED AT 8 BPS. DATA COVERAGE AVERAGED BETWEEN 50 AND 100 PERCENT COVERAGE FOR THE FIRST 30 WEEKS AFTER LAUNCH. THE DATA COVERAGE THEN FELL TO BETWEEN 20 AND 30 PERCENT UNTIL SEPTEMBER 1968. AFTER THIS TIME, IT DROPPED TO BETWEEN 0 AND 20 PERCENT THROUGH JULY 1971. REAL-TIME TRANSMISSION WAS GENERALLY USED WHEN TRACKING STATIONS WERE AVAILABLE. OTHERWISE, THE DUTY CYCLE STORE MODE WAS USED. SOMETIME BETWEEN FEBRUARY 9, 1969, AND FEBRUARY 16, 1969, THE SUN SENSOR THAT GENERATED THE SPACECRAFT SUN PULSES FOR ONBOARD SECTORING OF EXPERIMENTS FAILED. HOWEVER, THE REMAINING SUN SENSORS CONTINUED TO FUNCTION, THUS PERMITTING DETERMINATION OF THE SPIN AXIS DIRECTION UNTIL ABOUT JANUARY 1972. PIONEER 7 LEFT THE VICINITY OF THE EARTH PASSING THROUGH THE LUNAR DISTANCE AT A LOCAL TIME OF ABOUT 3 A.M. THE MAGNETOMETER EXPERIMENT HAS BEEN INOPERABLE SINCE JANUARY 1969. THE TWO-FREQUENCY BEACON WAS PUT IN AN OPERATIONAL OFF MODE ON APRIL 1, 1967. THE CELESTIAL MECHANICS EXPERIMENT WAS PUT IN AN OPERATIONAL OFF MODE IN JULY 1970. THE SUPERIOR CONJUNCTION FARADAY ROTATION EXPERIMENT WAS PUT IN AN OPERATIONAL OFF MODE IN NOVEMBER 1971, AND THE FARADAY CUP EXPERIMENT BECAME INOPERABLE IN NOVEMBER 1972. THE REMAINING THREE EXPERIMENTS (ELECTROSTATIC ANALYZER, COSMIC-RAY ANISOTROPY, AND COSMIC-RAY TELESCOPE) WERE OPERATIONAL AS OF MARCH 15, 1973. HOWEVER, DUE TO SPARSE TRACK COVERAGE, VERY LITTLE DATA HAVE BEEN RETRIEVED SINCE JANUARY 1972.

DATA SET NAME- COMPRESSED EPHEMERIS DATA BASED ON DATA      NSSDC ID 66-075A-00F  
SET 66-075A-00E ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081766 TO 010272 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS GENERATED AT NSSDC FROM DATA SET 66-075A-00E, CONTAINING COMPLETE TRAJECTORY INFORMATION PROVIDED BY JPL, BY TAKING THE MOST ACCURATE INFORMATION FROM EACH EPHEMERIS TAPE AND ELIMINATING OVERLAP. THE DATA SET CONSISTS OF ONE FILE OF A 7-TRACK, IBM 7094, 800-BPI, BINARY MAGNETIC TAPE. EACH LOGICAL RECORD CONTAINS 89 WORDS AND EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH, WHEN THE INTERVAL MAY BE SHORTER) -- (1) DATE, (2) TIME, (3) DISTANCE FROM THE EARTH TO PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN, (5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LIMB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMI-DIAMETER OF EARTH WHERE THE ANGULAR SEMI-DIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN-TO-PROBE VECTOR AND THE ECLIPTIC PLANE OF DATE, (18) X, Y, Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN-TO-EARTH VECTOR, Z AXIS IS TOWARD ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X, Y, Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC







SCAN MODE WAS THE SAME AS THE FULL SCAN EXCEPT THAT ONLY THE PEAK FLUX IN EACH OF THE EIGHT 5-5/8-DEG-WIDE AZIMUTHAL SECTORS WAS RECORDED. THUS, THIS CYCLE ALSO TOOK 400 SPACECRAFT REVOLUTIONS. AT THE LOW BIT RATES (64, 16, AND 8 BPS), THE MAXIMUM FLUX MODE ALONE WAS USED. THUS, NO AZIMUTHAL DISTRIBUTIONS WERE MEASURED. AT THE LOW BIT RATES, IT TOOK 32 SEC FOR A COMPLETE SET OF ION MEASUREMENTS AND 16 SEC FOR A COMPLETE SET OF ELECTRON MEASUREMENTS. AT 64 BPS, THE ION AND ELECTRON MEASUREMENTS WERE TAKEN AND TELEMETERED EVERY 84 SEC. AT 16 BPS, THEY WERE TAKEN AND TELEMETERED EVERY 336 SEC. AT 8 BPS, THEY WERE TAKEN AND TELEMETERED EVERY 672 SEC. THE INSTRUMENT HAS WORKED WELL FROM LAUNCH TO PRESENT (MARCH 15, 1973).

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND  
PARAMETERS

NSSDC ID 66-075A-03B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 081766 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 40 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE PIONEER 6 AND 7 SPACE PROBES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT, PASS NUMBER, BULK VELOCITY, AND COROTATION DELAY TIME. THE BULK VELOCITY IS ACCURATE TO 10 PERCENT. THE COROTATION DELAY TIME IS THE NUMBER OF DAYS BETWEEN THE OBSERVATION AT THE SPACECRAFT AND THE SUBSEQUENT OBSERVATION AT THE EARTH OF THE COROTATING INTERPLANETARY MAGNETIC FLUX TUBE (ASSUMING THAT THE SOLAR WIND SPEED REPORTED REMAINS CONSTANT). TYPICALLY, THERE IS ONE VELOCITY VALUE GIVEN FOR EACH SATELLITE PER DAY. ON ABOUT 30 PERCENT OF THE DAYS, NO DATA ARE GIVEN. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON  
MAGNETIC TAPE

NSSDC ID 66-075A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081966 TO 112866 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE ANALYZED DATA WERE SUPPLIED BY THE EXPERIMENTER AND CONSIST OF TIME-ORDERED HOURLY AVERAGES OF THE FOLLOWING SOLAR WIND PARAMETERS - THE ALPHA/PROTON NUMBER DENSITY RATIO, THE PROTON NUMBER DENSITY, THE ALPHA PARTICLE TEMPERATURE (DEG K), THE PROTON TEMPERATURE (DEG K), THE BULK VELOCITY (KM/SEC), THE AZIMUTHAL ANGLE (SOLAR ECLIPTIC LONGITUDE) OF THE PEAK PARTICLE FLUX (DEG), AND THE POLAR ANGLE (SOLAR ECLIPTIC LATITUDE) OF THE PEAK PARTICLE FLUX (DEG). THE ABOVE PLASMA PARAMETERS ARE GOOD TO 10 PERCENT. THE DATA WERE DERIVED BY THE EXPERIMENTER BASED ON THE ASSUMPTION OF AN ISOTROPIC MAXWELLIAN DISTRIBUTION FUNCTION (IN THE FRAME MOVING WITH THE BULK SOLAR WIND VELOCITY). THE DATA ARE CONTAINED ON ONE 9-TRACK, IBM 360, BINARY MAGNETIC TAPE WRITTEN AT A DENSITY OF 800 BPI. THE TAPE IS



WRITTEN WITH VARIABLE LENGTH UNBLOCKED RECORDS. THE DATA CONSIST OF ALL THE HIGH BIT RATE DATA AND HAVE A 90 PERCENT COVERAGE OVER THE PERIOD INDICATED.

DATA SET NAME- HOURLY AVERAGED PLASMA PARAMETERS ON NSSDC ID 66-075A-03D  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081966 TO 112866 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS MICROFILMED BY NSSDC FROM A COMPUTER PRINTOUT OF DATA SET 66-075A-03C.

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY NSSDC ID 66-075A-05

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.G. MCCracken	U OF ADELAIDE	ADELAIDE, AUSTRALIA
OI - W.C. BARTLEY	U OF TEXAS	DALLAS, TX
OI - U.R. RAD	U OF TEXAS	DALLAS, TEXAS

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED PRIMARILY TO MEASURE THE DIRECTIONAL CHARACTERISTICS OF GALACTIC AND SOLAR COSMIC RAY FLUXES. THE PARTICLE DETECTOR WAS A CSI (TL) SCINTILLATOR CRYSTAL THAT WAS SET INTO AN ANTICINCIDENCE PLASTIC SCINTILLATOR COLLIMATOR CUP. SEPARATE PHOTOMULTIPLIER TUBES VIEWED THE TWO SCINTILLATORS. PULSES FROM THE CSI CRYSTAL THAT WERE NOT ACCOMPANIED BY PULSES FROM THE PLASTIC SCINTILLATOR WERE SORTED BY A THREE-WINDOW PULSE HEIGHT ANALYZER. THE WINDOWS CORRESPONDING TO ENERGY DEPOSITIONS OF 7.2 TO 47.4, 47.4 TO 64.5, AND 64.5 TO 81.2 MEV. NO POSITIVE SPECIES IDENTIFICATION WAS MADE ALTHOUGH MOST OF THE COUNTS IN EACH WINDOW WERE USUALLY DUE TO PROTONS WITH THE WINDOW ENERGIES. FOR EACH ENERGY WINDOW, COUNTS WERE SEPARATELY ACCUMULATED IN EACH OF FOUR ANGULAR SECTORS AS THE SPACECRAFT SPUN. EACH ANGULAR SECTOR WAS NORMALLY 89.5 DEG IN WIDTH, WITH THE SUN EITHER NEAR A SECTOR BOUNDARY OR IN THE MIDDLE OF A SECTOR, DEPENDING ON THE OPERATING MODE. HOWEVER, WHEN LARGE FLUXES WERE ENCOUNTERED, EACH ANGULAR SECTOR WAS REDUCED TO 11.2 DEG, WITH THE SUN EITHER IN A SECTOR OR NEAR THE MIDPOINT BETWEEN TWO SECTORS. A SPIN-INTEGRATED (ISOTROPIC) MODE, IN WHICH ALL PARTICLES DEPOSITING 7.2 MEV IN THE CSI CRYSTAL (NO ANTICINCIDENCE REQUIREMENT) WERE COUNTED, WAS ALSO USED. ACCUMULATION TIMES FOR EACH OF THE 12 DIRECTIONAL MODES AND FOR THE OMNIDIRECTIONAL MODE VARIED BETWEEN 14 AND 112 SEC (SPACECRAFT SPIN PERIOD WAS ABOUT 1 SEC) DEPENDING ON THE TELEMETRY BIT RATE. DIRECTIONAL FLUX DATA RELIABILITY WAS REDUCED BY THE MALFUNCTION OF THE SUN PULSE MECHANISM BETWEEN FEBRUARY 9 AND FEBRUARY 16, 1969. OTHERWISE, THE INSTRUMENT FUNCTIONED NORMALLY, OBTAINING USEFUL OMNIDIRECTIONAL DATA, UNTIL SPACECRAFT TRACKING WAS REDUCED TO A NEGLIGIBLE AMOUNT ON JULY 15, 1972. SEE THE SPACECRAFT BRIEF DESCRIPTION (66-075A) FOR INFORMATION ON PERCENT TIME COVERAGE VS TIME. SEE BARTLEY ET AL., REV. SCI. INSTRUM., 38, PAGE 266,

1967, FOR A MORE DETAILED EXPERIMENT DESCRIPTION.

DATA SET NAME- COUNT RATE LISTINGS ON MICROFILM

NSSDC ID 66-075A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081866 TO 013167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF A HARDCOPY DATA LISTING SUPPLIED BY THE EXPERIMENTER. THERE ARE TWO FRAMES OF MICROFILM FOR EACH FULL DAY OF EXPERIMENT OPERATION, ONE FRAME FOR THE MODE WITH THE SUN NEAR THE MIDDLE OF AN ANGULAR SECTOR AND THE OTHER FRAME FOR THE MODE WITH THE SUN NEAR A SECTOR BOUNDARY. DATA PRESENTED INCLUDE HOURLY AVERAGED COUNT RATES FOR EACH OF FOUR ANGULAR SECTORS AND EACH OF THREE ENERGY WINDOWS, FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE. HOURLY AVERAGED, OMNIDIRECTIONAL (I.E., SUMMED OVER SECTOR COUNTS), ENERGY-WINDOW COUNT RATES ARE PRESENTED, AS ARE MEASURES OF THE AMOUNT OF FINER TIME SCALE DATA CONTRIBUTING TO EACH HOURLY AVERAGE. DAILY AVERAGES OF ALL THE COUNT RATES ARE GIVEN, AND 3-, 6-, AND 12-HR AVERAGES ARE GIVEN FOR THE LOWEST ENERGY WINDOW OMNIDIRECTIONAL MODE, FOR THE INTEGRAL-ENERGY OMNIDIRECTIONAL MODE, AND FOR THE ESTIMATED GALACTIC COMPONENT OF THIS MODE. DAILY MEASURES OF TEMPORAL PERCENT COVERAGES ARE ALSO GIVEN, WITH CONSIDERABLE VARIATION (FROM 0 TO 100) IN THE PERCENTAGES. DAYS FOR WHICH NO DATA EXIST ARE NOT FOUND ON THE MICROFILM. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 66-075A-05B.

DATA SET NAME- COUNT RATE PLOTS ON MICROFILM

NSSDC ID 66-075A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081766 TO 012867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A MICROFILMED COPY, GENERATED AT NSSDC, OF HARDCOPY COUNT RATE PLOTS SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONSISTS OF DATA FOR 7 DAYS. HOURLY AVERAGED COUNT RATES FOR THE OMNIDIRECTIONAL INTEGRAL-ENERGY AND ENERGY-WINDOW MODES ARE PRESENTED, AS ARE RELATIVE COUNT RATES FROM THE DEEP RIVER NEUTRON MONITOR. THE DATA ARE CONTAINED ON ONE REEL OF 35-MM MICROFILM THAT ALSO CONTAINS DATA SET 66-075A-05A.

EXPERIMENT NAME- COSMIC-RAY TELESCOPE

NSSDC ID 66-075A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. SIMPSON U OF CHICAGO CHICAGO, IL  
OI - C.Y. FAN U OF ARIZONA TUCSON, AZ

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED A CHARGED PARTICLE TELESCOPE COMPOSED OF FOUR SILICON SOLID-STATE DETECTORS TO STUDY THE ANISOTROPY AND FLUCTUATIONS OF SOLAR PROTONS AND ALPHA PARTICLES. THE PROTON ENERGY RANGES SAMPLED WERE 0.6 TO 12.7 MEV, 12.7 TO 73.0 MEV, 73.0 TO 165 MEV, AND E.GT. 165 MEV (CORRESPONDING TO DETECTOR COINCIDENCES D1D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4, AND NOT D1D2D3 NOT D4). THE ALPHA PARTICLE ENERGY RANGES SAMPLED WERE 2.5 TO 52 MEV, 52 TO 280 MEV, AND E.GT. 280 MEV (CORRESPONDING TO THE FIRST THREE DETECTOR COINCIDENCES). THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 SEC TO ABOUT ONE MEASUREMENT PER 28 SEC DEPENDING ON THE TELEMETRY BIT RATE. THE DETECTOR WAS MOUNTED TO MAKE A 360-DEG SCAN IN THE ECLIPTIC PLANE ABOUT ONCE PER SECOND. THE D3 DETECTOR FAILED MAY 26, 1969.

DATA SET NAME- REDUCED COUNT RATE AND PULSE HEIGHT ANALYZER DATA ON MAGNETIC TAPE NSSDC ID 66-075A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 081766 TO 122270 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PROTON AND ALPHA PARTICLE COUNT AND PULSE HEIGHT ANALYZER ACCUMULATOR READINGS IN A TIME-ORDERED FORMAT ON 7-TRACK, BINARY, IBM 7094 COMPATIBLE MAGNETIC TAPES WRITTEN AT 800 BPI. THE TIME RESOLUTION FOR THE COUNT ACCUMULATOR DATA RANGED FROM ABOUT ONE MEASUREMENT PER 0.4 TO 28 SEC DEPENDING ON THE SPACECRAFT TELEMETRY RATE. THE TAPE FORMAT CONSISTS OF PHYSICAL RECORDS EACH 6000, 6-BIT BYTES IN LENGTH. EACH PHYSICAL RECORD CONSISTS OF 500 LOGICAL RECORDS OF 12 BYTES EACH. THE LOGICAL RECORDS INCLUDE HEADER AND DATA LOGICAL RECORDS. A GIVEN HEADER LOGICAL RECORD IS FOLLOWED BY FROM 1 TO 64 DATA LOGICAL RECORDS OF THE SAME SPACECRAFT SUBCOM SEQUENCE. EACH TAPE TERMINATES WITH AN EOF FLAG IN THE LAST GOOD DATA RECORD. EACH HEADER LOGICAL RECORD INCLUDES VARIOUS SPACECRAFT TEMPERATURES, SPIN RATE, TELEMETRY BIT RATE, AND OTHER HOUSEKEEPING PARAMETERS. EACH DATA LOGICAL RECORD INCLUDES TIME, PULSE HEIGHT ANALYZER OUTPUT (D1 AND D3 ELEMENTS OF THE COSMIC-RAY TELESCOPE USING A 128 AND A 32 CHANNEL ANALYZER, RESPECTIVELY), FOUR PROTON AND ALPHA PARTICLE TELESCOPE COINCIDENCE OUTPUTS IN THE FORM OF SELECTED ONE-BIT SCALES, AND DATA QUALITY INFORMATION. THE FOUR PARTICLE COINCIDENCE COMBINATIONS ARE D1 NOT D2 NOT D4, D1D2 NOT D3 NOT D4, D1D2D3 NOT D4 AND NOT D1D2D3 NOT D4 CORRESPONDING TO PROTON AND ALPHA PARTICLE ENERGIES OF 0.6 TO 12.7 MEV/NUCLEON, 12.7 TO 73.0 MEV/NUCLEON, 73.0 TO 165 MEV (.GT. 292 MEV FOR ALPHA PARTICLES), AND .GT. 165 MEV (INSENSITIVE TO ALPHA PARTICLES), RESPECTIVELY. THE DATA ARE UNCORRECTED BUT HAVE BEEN EDITED TO THE EXTENT THAT DOUBTFUL INFORMATION HAS BEEN FLAGGED AND UNUSABLE DATA HAS BEEN DELETED. THE PULSE HEIGHT ANALYZER ACCUMULATORS WERE SAMPLED FOR THE LAST EVENT PRIOR TO EACH SPACECRAFT TELEMETRY READOUT FOR THE EXPERIMENT. AN AVERAGE OF A PARTICULAR RATE, 'R', MAY BE FOUND FROM THE FORMULA  $R=CN/T$ , WHERE N=NUMBER OF COUNTS PER STATE CHANGE OF A BIT, AND T=TIME REQUIRED TO PRODUCE C STATE CHANGES IN THE SELECTED BIT. THE BIT SELECTED IS USUALLY THE

LOWEST ORDER BIT, WHICH CHANGES STATE IN A TIME LONGER THAN THE CURRENT READOUT PERIOD. IN CALCULATING RATE AVERAGES FROM THE ONE-BIT SCALES, THE USER SHOULD DETERMINE THE SCALE BIT TO BE USED BY CHECKING FOR CONSISTENCY BETWEEN TWO SUCCESSIVE SCALE BITS. FOR EXAMPLE, IF THE 2\*\*4 SCALE BIT IS CHANGING STATE 20 TIMES FOR EACH STATE CHANGE OF THE 2\*\*9 SCALE BIT, THE 2\*\*4 SCALE BIT IS CLEARLY SATURATED, SINCE IT SHOULD CHANGE STATE 32 TIMES FOR EVERY STATE CHANGE OF THE 2\*\*9 BIT.

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SPACECRAFT COMMON NAME- GEMINI 11  
ALTERNATE NAMES-

NSSDC ID 66-081A

LAUNCH DATE- 09/12/66      SPACECRAFT WEIGHT IN ORBIT-      3630. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-091566  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 09/12/66      ORBIT TYPE- GEOCENTRIC      ORBIT PERIOD- 88.78 MIN  
APOAPSIS- 190.000 KM ALT      PERIAPSIS- 144.000 KM ALT      INCLINATION- 28.80 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 11 WAS THE NINTH MANNED EARTH-ORBITING SPACECRAFT OF THE GEMINI SERIES. THE 3-DAY MISSION WAS DESIGNED TO ACHIEVE A FIRST ORBIT RENDEZVOUS AND DOCKING WITH THE AGENA TARGET VEHICLE, TO ACCOMPLISH TWO EXTRAVEHICULAR ACTIVITY (EVA) TESTS, AND TO PERFORM SPACECRAFT MANEUVERS. THERE WERE ALSO EIGHT SCIENTIFIC AND FOUR TECHNOLOGICAL EXPERIMENTS ON BOARD. THE SCIENTIFIC EXPERIMENTS WERE (1) SYNERGISTIC EFFECT OF ZERO-G AND RADIATION ON WHITE BLOOD CELLS, (2) SYNOPTIC TERRAIN PHOTOGRAPHY, (3) SYNOPTIC WEATHER PHOTOGRAPHY, (4) NUCLEAR EMULSIONS, (5) AIRGLOW HORIZON PHOTOGRAPHY, (6) ULTRAVIOLET ASTRONOMICAL PHOTOGRAPHY, (7) GEMINI ION WAKE MEASUREMENT, AND (8) DIM SKY PHOTOGRAPHY. THE EXPERIMENTS AND THE OTHER MISSION OBJECTIVES WERE SUCCESSFULLY COMPLETED. REENTRY OCCURRED AFTER 44 ORBITS USING THE FIRST CLOSED-LOOP AUTOMATIC REENTRY MODE. THE SPACECRAFT LANDED WITHIN 4.8 KM OF THE PLANNED IMPACT POINT ON SEPTEMBER 15, 1966.

EXPERIMENT NAME- 70-MM SYNOPTIC TERRAIN  
PHOTOGRAPHS

NSSDC ID 66-081A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR.      NASA-GSFC      GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-091566  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO OBTAIN HIGH-QUALITY SMALL-SCALE COLOR PHOTOGRAPHS OF SELECTED AREAS OF THE EARTH'S SURFACE FOR USE IN GEOLOGY, GEOPHYSICS, GEOGRAPHY, AND OCEANOGRAPHY AND FOR PLANNING OF FUTURE PHOTOGRAPHY FROM MANNED SPACECRAFT. A MAURER 70-MM CAMERA WITH AN XENOTAR

80-MM F/2.8 LENS AND A HASSELBLAD SWC 70-MM CAMERA WITH A ZEISS BIOGON 38-MM F/4.5 LENS WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. THE FILM USED WAS EKTACHROME MS SO-368. OF THE 223 PICTURES TAKEN, 102 WERE USABLE FOR TERRAIN STUDIES. THESE COVER THE AREAS OF NORTH AFRICA, THE ARABIAN PENINSULA, SOUTH INDIA, SOUTHWEST SOUTH AMERICA, AND THE GULF COAST OF THE UNITED STATES.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN                   NSSDC ID 66-081A-06A  
                  PHOTOS

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 091266 TO 091566 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 238 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 11 PHOTOGRAPHY. OF THE 223 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 102 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY                        NSSDC ID 66-081A-07

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.           NAGLER    NAT. METEORO. CENTER   SILVER SPRING, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-091566

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SYNOPTIC WEATHER PHOTOGRAPHY EXPERIMENT WAS DESIGNED TO OBTAIN A SERIES OF COLOR PHOTOGRAPHS OF THE EARTH'S CLOUD COVER FOR THE ANALYSIS OF WEATHER SYSTEMS AND TO AID IN THE INTERPRETATION OF WEATHER SATELLITE PHOTOGRAPHS. A HASSELBLAD SWC 70-MM CAMERA WITH A ZEISS BIOGON 38-MM F/4.5 LENS AND A MAURER 70-MM CAMERA WITH AN XENOTAR 80-MM F/2.8 LENS WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. OF THE 223 PICTURES TAKEN DURING THE MISSION, APPROXIMATELY 180 GOOD QUALITY COLOR PHOTOGRAPHS SHOW CLOUD FORMATIONS.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER                   NSSDC ID 66-081A-07A  
                  PHOTOS

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 091266 TO 091566 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 223 FRAMES

DATA SET BRIEF DESCRIPTION

OF THE 223 FIRST GENERATION 70-MM COLOR TRANSPARENCIES IN THE COMPLETE SET OF GEMINI 11 PHOTOGRAPHY, APPROXIMATELY 80 WERE DESIGNATED AS SYNOPTIC WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN 'EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12' (NASA SP-171), WHICH IS AVAILABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- ESSA 3  
ALTERNATE NAMES- TOS-A

NSSDC ID 66-087A

LAUNCH DATE- 10/02/66 SPACECRAFT WEIGHT IN ORBIT- 144. KG

FUNDING AGENCY- ESSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-100968  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/03/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 114.5 MIN  
APOAPSIS- 1475.00 KM ALT PERIAPSIS- 1378.00 KM ALT INCLINATION- 101.0 DEG

SPACECRAFT BRIEF DESCRIPTION

ESSA 3 WAS A SUN-SYNCHRONOUS OPERATIONAL METEOROLOGICAL SATELLITE DESIGNED TO TAKE AND RECORD DAYTIME EARTH CLOUDCOVER PICTURES ON A GLOBAL BASIS FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION FACILITY. THE SPACECRAFT WAS ALSO CAPABLE OF PROVIDING WORLDWIDE MEASUREMENTS OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE SPACECRAFT HAD ESSENTIALLY THE SAME CONFIGURATION AS THAT OF A TIROS SATELLITE, I.E., AN 18-SIDED RIGHT PRISM, 107 CM ACROSS OPPOSITE CORNERS AND 56 CM HIGH, WITH A REINFORCED BASEPLATE CARRYING MOST OF THE SUBSYSTEMS AND A COVER ASSEMBLY (HAT). ELECTRICAL POWER WAS PROVIDED BY APPROXIMATELY 10,000 1- BY 2-CM SOLAR CELLS THAT WERE MOUNTED ON THE COVER ASSEMBLY AND BY 21 NICKEL-CADMIUM BATTERIES. TWO REDUNDANT ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT, WITH THEIR OPTICAL AXES PERPENDICULAR TO THE SPIN AXIS. TWO SETS OF FLAT PLATE RADIOMETERS WERE ALSO SUSPENDED ON OPPOSITE SIDES OF THE SATELLITE BENEATH THE EDGE OF THE BASEPLATE. A PAIR OF CROSSED-DIPLOLE COMMAND RECEIVER ANTENNAS PROJECTED OUT AND DOWN FROM THE BASEPLATE. A MONOPOLE TELEMETRY AND TRACKING ANTENNA EXTENDED OUT FROM THE TOP OF THE COVER ASSEMBLY. THE SATELLITE SPIN RATE WAS CONTROLLED BY MEANS OF A MAGNETIC ATTITUDE SPIN COIL (MASC), WITH THE SPIN AXIS MAINTAINED NORMAL TO THE ORBITAL PLANE (CARTWHEEL ORBIT MODE) TO WITHIN PLUS OR MINUS 1 DEG. THE MASC WAS A CURRENT-CARRYING COIL MOUNTED IN THE COVER ASSEMBLY. THE MAGNETIC FIELD INDUCED BY THE CURRENT INTERACTED WITH THE EARTH'S MAGNETIC FIELD TO PROVIDE THE TORQUE NECESSARY TO MAINTAIN A DESIRED SPIN RATE OF 9.225 RPM. ESSA 3 PERFORMED NORMALLY UNTIL JANUARY 20, 1967, WHEN THE RADIOMETER EXPERIMENT FAILED. THE FIRST AVCS CAMERA FAILED ON SEPTEMBER 29, 1967, THE REMAINING CAMERA FAILED ON OCTOBER 9, 1968, AND THE SATELLITE WAS DEACTIVATED ON DECEMBER 2, 1968.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR)

NSSDC ID 66-087A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - V.E.	SUOMI	U OF WISCONSIN	MADISON, WI
OI - R.J.	PARENT	U OF WISCONSIN	MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-012067

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE ESSA 3 FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM WAS COMPRISED OF FOUR INFRARED SENSORS, AN ANALOG-TO-DIGITAL CONVERTER, A COMMUTATOR, AND A TAPE RECORDER. TWO PAIRS OF RADIOMETERS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT, WITH THEIR AXES PERPENDICULAR TO THE SPIN AXIS. A CONE SHIELD WAS EMPLOYED ON TWO OF THE RADIOMETERS TO ISOLATE OR REDUCE ANY RESPONSE DUE TO DIRECT SOLAR RADIATION. THE FIELD OF VIEW ON THE OTHER TWO INSTRUMENTS WAS UNRESTRICTED. BOTH TYPES OF RADIOMETERS USED A COATED (EITHER BLACK OR WHITE) ALUMINUM DISK AS THE SENSING ELEMENT. THE DISK TEMPERATURE WAS MEASURED BY TWO THERMISTORS MOUNTED ON THE BACK SURFACE OF THE DISK. THE BLACK-COATED DISK RESPONDED TO THE SUM OF THE REFLECTED SOLAR, DIRECT SOLAR, AND EMITTED LONG-WAVE RADIATION. THE WHITE DISK REFLECTED IN THE VISUAL RANGE BUT ABSORBED IN THE INFRARED (7 TO 30 MICRON) RANGE. IDENTICAL EXPERIMENTS WERE FLOWN ON THE ESSA 5, 7, AND 9 SPACECRAFT. FOR A FULL DESCRIPTION OF THE ESSA FPR, SEE "STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1966," UNIVERSITY OF WISCONSIN, 111-129, MARCH 1967. THE RADIOMETER PERFORMED NORMALLY, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL THE TAPE RECORDER FAILED ON JANUARY 20, 1967. DATA FROM THIS EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE FROM NOAA-NESS, SUITLAND, MARYLAND.

DATA SET NAME- LOW-RESOLUTION INFRARED (LRIR) DATA TAPES NSSDC ID 66-087A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 103166 TO 011967 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 10 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

LOW-RESOLUTION INFRARED (LRIR) DATA FROM THE ESSA 3 FLAT PLATE RADIOMETER EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK, 556-BPI, BINARY TAPES WERE PREPARED ON A CDC 6600 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, ORBITAL DATA, AND SPACECRAFT ATTITUDE PARAMETERS. ADDITIONAL DATA ON THE LRIR TAPES CONSIST OF INSTRUMENT HOUSING TEMPERATURES AND DIAGNOSTIC AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT OF THE LRIR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN ESSA TECHNICAL REPORT NO. 42, "OPERATIONAL PROCESSING OF LOW RESOLUTION INFRARED (LRIR)





IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8 M, RESPECTIVELY. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMAT PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEP 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES, 209 MR AND 202 HR WERE COMPLETELY READ OUT. THE LOSS OF TWO FRAMES WAS DUE TO THE FAILURE OF THE TRAVELING-WAVE-TUBE AMPLIFIER DURING FINAL READOUT OPERATIONS. ALL RECOVERED PHOTOGRAPHY IS CONSIDERED USABLE. EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON DECEMBER 7, 1966. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- COMPLETE SET OF LUNAR PHOTOGRAPHY ON B/W NSSDC ID 66-100A-01I  
POSITIVE 4- BY 6-IN. MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111866 TO 112566 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 2 PHOTOGRAPHY ON 15 SHEETS OF 4-BY 6-IN. POSITIVE MICROFICHE. THESE SHEETS WERE PREPARED BY MAPPING SCIENCES BRANCH, MANNED SPACECRAFT CENTER, FROM THE NSSDC 35-MM REEL IN DATA SET -01D. THE QUALITY OF THE MICROFICHE COPIES IS SUITABLE FOR STUDIES OF MINIMUM PRECISION ONLY, AND THEREFORE THESE COPIES ARE INTENDED FOR ONSITE SELECTION OF PHOTOGRAPHS FOR WHICH HIGH-QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- NSSDC PHOTOGRAPHIC SUPPORT DATA ON 16-MM NSSDC ID 66-100A-01J  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111866 TO 112566 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHIC SUPPORTING DATA NECESSARY FOR THE ANALYSIS OF THE LUNAR ORBITER 2 PHOTOGRAPHS. THE DATA WERE SELECTED AND

COMPILED BY NSSDC FROM THE MOST RECENT (1970) VERSION OF SUPPORTING DATA PROVIDED BY THE BOEING COMPANY. THE DATA (INCLUDING SIMILAR DATA FOR LUNAR ORBITERS 1, 3, 4, AND 5) ARE CONTAINED IN 'LUNAR ORBITER PHOTOGRAPHIC SUPPORTING DATA,' NSSDC 71-13, MAY 1971, AND ARE IN THREE LISTINGS - FULL LIST, POSITION PARAMETERS, AND ILLUMINATION PARAMETERS. EACH LISTING IS ORDERED BY MISSION AND FRAME NUMBERS. THE FULL LIST CONTAINS THE TIME OF EACH EXPOSURE, THE SPACECRAFT POSITION AND ORIENTATION PARAMETERS, THE PHOTO ILLUMINATION PARAMETERS, LATITUDE AND LONGITUDE OF THE PRINCIPAL GROUND POINT, THE CORNER COORDINATES AND SIDE LENGTHS OF EACH IMAGE AREA, AND THE TILT DISTANCE. THIS PUBLICATION IS MAINTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC.

DATA SET NAME- INTERIM PHOTO SITE ACCURACY ANALYSIS                      NSSDC ID 66-100A-01K  
CALCULATIONS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 111066 TO 112566 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-     12 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE RESULTS OF INTERIM CALCULATIONS (BY THE BOEING CO.) MADE IN ORDER TO PRODUCE FINAL REPORT DOCUMENTS OF PHOTO SITE ACCURACY ANALYSIS. THE DATA ARE MAINTAINED ON TWELVE REELS OF 16-MM FILM. THE CALCULATIONS ON 10-HARMONICS ANALYSIS WERE MADE FOR VARIOUS MODELS, USING DATA REPORTED FROM VARIOUS STATIONS, PASSES, AND ITERATIONS. SOME OF THE REELS CONTAIN PLOTS OF RESIDUALS VS TIME FOR VARIOUS STATIONS, PASSES, ITERATIONS, SEQUENCES, AND MODELS.

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SPACECRAFT COMMON NAME- GEMINI 12    NSSDC ID 66-104A  
ALTERNATE NAMES-

LAUNCH DATE- 11/11/66            SPACECRAFT WEIGHT IN ORBIT-     3630. KG

FUNDING AGENCY- NASA-DMSF

DATE LAST SPACECRAFT DATA RECORDED-111566  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 11/12/66    ORBIT TYPE- GEOCENTRIC                      ORBIT PERIOD- 89.93 MIN  
APOAPSIS- 310.000 KM ALT    PERIAPSIS- 243.000 KM ALT    INCLINATION- 28.78 DEG

SPACECRAFT BRIEF DESCRIPTION

GEMINI 12 WAS THE TENTH AND FINAL FLIGHT OF THE GEMINI SERIES, WHICH BRIDGED THE MERCURY AND APOLLO PROGRAMS. THIS MISSION WAS SCHEDULED TO PERFORM RENDEZVOUS AND DOCKING WITH THE AGENA TARGET VEHICLE, TO CONDUCT THREE EXTRAVEHICULAR ACTIVITY (EVA) OPERATIONS, AND TO CONDUCT A TETHERED STATION-KEEPING EXERCISE. THERE WERE ALSO 14 SCIENTIFIC, MEDICAL, AND TECHNOLOGICAL EXPERIMENTS ON BOARD. THE SUCCESSFULLY PERFORMED SCIENTIFIC EXPERIMENTS WERE (1) FROG EGG GROWTH UNDER ZERO-G, (2) SYNOPTIC TERRAIN PHOTOGRAPHY, (3) SYNOPTIC WEATHER PHOTOGRAPHY, (4) NUCLEAR EMULSIONS, (5)

AIRGLOW HORIZON PHOTOGRAPHY, (6) ULTRAVIOLET ASTRONOMICAL PHOTOGRAPHY, AND (7) DIM SKY PHOTOGRAPHY. TWO MICROMETEORITE COLLECTION EXPERIMENTS, AS WELL AS THREE SPACE PHENOMENA PHOTOGRAPHY EXPERIMENTS, WERE NOT FULLY COMPLETED. THERE WERE FUEL CELL AND ATTITUDE CONTROL THRUSTER PROBLEMS DURING THE MISSION, WHICH WAS OTHERWISE HIGHLY SUCCESSFUL. REENTRY WAS ACCOMPLISHED AFTER 59 ORBITS, WITH THE SPACECRAFT UNDER AUTOMATIC CONTROL. IT LANDED WITHIN 4.8 KM OF THE INTENDED IMPACT POINT ON NOVEMBER 15, 1966.

EXPERIMENT NAME- 70-MM SYNOPTIC TERRAIN  
PHOTOGRAPHS

NSSDC ID 66-104A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.D. LOWMAN, JR. NASA-GSFC GREENBELT, MD

DATE LAST EXPERIMENT DATA RECORDED-111566  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO OBTAIN HIGH-QUALITY SMALL-SCALE COLOR PHOTOGRAPHS OF SELECTED LAND AND OCEAN AREAS FOR GEOLOGIC, GEOGRAPHIC, AND OCEANOGRAPHIC RESEARCH. A MAURER 70-MM CAMERA WITH AN XENOTAR 80-MM F/2.8 LENS AND A HASSELBLAD SWC CAMERA WITH A ZEISS BIODON 38-MM F/4.5 LENS WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. EKTACHROME MS 50-368 FILM WAS USED. OF THE 401 PICTURES TAKEN, 160 WERE USABLE FOR TERRAIN STUDIES. THEY COVER THE AREA OF THE SOUTHERN UNITED STATES, NORTHERN MEXICO, NORTHERN AFRICA, SOUTHWEST ASIA, AND THE ARABIAN PENINSULA.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC TERRAIN  
PHOTOS

NSSDC ID 66-104A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 111166 TO 111567 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 415 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS THE COMPLETE SET OF GEMINI 12 PHOTOGRAPHY, OF THE 401 FIRST GENERATION COLOR TRANSPARENCIES ON 70-MM FILM, 160 WERE DESIGNATED AS SYNOPTIC TERRAIN PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN "EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12" (NASA SP-171), OBTAINABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

EXPERIMENT NAME- SYNOPTIC WEATHER PHOTOGRAPHY

NSSDC ID 66-104A-03

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K. NAGLER NAT. METEORO. CENTER SILVER SPRING, MD

DATE LAST EXPERIMENT DATA RECORDED-111566  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SYNOPTIC WEATHER PHOTOGRAPHY EXPERIMENT WAS DESIGNED TO PROVIDE A SET OF HIGH-RESOLUTION PICTURES OF A BROAD RANGE OF METEOROLOGICAL PHENOMENA, ESPECIALLY VIEWS OF A NUMBER OF SPECIFIC CLOUD SYSTEMS. THESE WERE TO BE USED IN STUDIES OF THE EARTH'S WEATHER SYSTEM AND TO AID IN INTERPRETING WEATHER SATELLITE PHOTOGRAPHY. ANOTHER OBJECTIVE WAS TO OBTAIN VIEWS OF THE SAME CLOUD PATTERN ON TWO OR MORE PASSES DURING THE SAME DAY. A MAURER CAMERA AND A HASSELBLAD SWC, WITH XENOTAR 80-MM F/2.8 AND ZEISS BIOGON 38-MM F/4.5 LENSES, RESPECTIVELY, WERE USED FOR THIS AND OTHER PHOTOGRAPHIC EXPERIMENTS. THE FILM USED WITH BOTH CAMERAS WAS 70-MM EKTACHROME MS SD-368. HAZE FILTERS WERE USED TO REDUCE THE INTENSITY OF THE BLUE LIGHT SCATTERING FROM THE ATMOSPHERE. PHOTOGRAPHS TAKEN FROM A NEAR-VERTICAL POSITION COVER AN AREA APPROXIMATELY 161 KM SQ. FROM OBLIQUE ANGLES. LARGER AREAS WERE CLEARLY VISIBLE, BUT THERE WAS DISTORTION, RESOLUTION LOSS, AND COLOR FIDELITY LOSS IN THE IMAGE. THE OVER 200 PHOTOGRAPHS RETURNED WERE OF EXCELLENT QUALITY AND SHOW CLOUD FORMATIONS OR OTHER INFORMATION OF METEOROLOGICAL INTEREST. THE EXPERIMENT WAS CONSIDERED HIGHLY SUCCESSFUL.

DATA SET NAME- COLOR POSITIVE 70-MM SYNOPTIC WEATHER NSSDC ID 66-104A-03A  
PHOTOS

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 111166 TO 111566 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 200 FRAMES

DATA SET BRIEF DESCRIPTION

OF THE 401 FIRST GENERATION 70-MM COLOR TRANSPARENCIES IN THE COMPLETE SET OF GEMINI 12 PHOTOGRAPHY, 200 WERE DESIGNATED AS SYNOPTIC WEATHER PHOTOGRAPHY. AN INVENTORY LIST OF AVAILABLE PHOTOGRAPHS, AND THE PHOTO REPRODUCTIONS THEMSELVES, ARE AVAILABLE FROM THE TECHNOLOGY APPLICATION CENTER (TAC), UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106. SELECTED GEMINI COLOR PHOTOGRAPHS CAN BE FOUND IN "EARTH PHOTOGRAPHS FROM GEMINI 6 THROUGH 12" (NASA SP-171), WHICH IS AVAILABLE FROM THE U.S. GOVERNMENT PRINTING OFFICE.

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SPACECRAFT COMMON NAME- ATS 1 NSSDC ID 66-110A  
ALTERNATE NAMES- ATS-B

LAUNCH DATE- 12/07/66 SPACECRAFT WEIGHT IN ORBIT- 352. KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 12/07/66 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1466. MIN  
APOAPSIS- 36887.0 KM ALT PERIAPSIS- 35852.0 KM ALT INCLINATION- 0.23 DEG

SPACECRAFT BRIEF DESCRIPTION

ATS 1 (APPLICATIONS TECHNOLOGY SATELLITE) WAS DESIGNED AND LAUNCHED FOR THE PURPOSE OF (1) TESTING NEW CONCEPTS IN SPACECRAFT DESIGN, PROPULSION, AND STABILIZATION, (2) COLLECTING HIGH-QUALITY CLOUDCOVER PICTURES AND RELAYING PROCESSED METEOROLOGICAL DATA VIA AN EARTH-SYNCHRONOUS SATELLITE, (3) PROVIDING IN SITU MEASUREMENTS OF THE AEROSPACE ENVIRONMENT, AND (4) TESTING IMPROVED COMMUNICATION SYSTEMS. THE SPIN-STABILIZED SPACECRAFT WAS CYLINDRICALLY SHAPED AND MEASURED 135 CM LONG AND 142 CM IN DIAMETER. THE PRIMARY STRUCTURAL MEMBERS WERE A HONEYCOMBED EQUIPMENT SHELF AND THRUST TUBE. SUPPORT RODS EXTENDED RADially OUTWARD FROM THE THRUST TUBE AND WERE AFFIXED TO SOLAR PANELS THAT FORMED THE OUTER WALLS OF THE SPACECRAFT. EQUIPMENT COMPONENTS AND PAYLOAD WERE MOUNTED IN THE ANNULAR SPACE BETWEEN THE THRUST TUBE AND SOLAR PANELS. IN ADDITION TO SOLAR PANELS, THE SPACECRAFT WAS EQUIPPED WITH TWO RECHARGEABLE NICKEL-CADMIUM BATTERIES TO PROVIDE ELECTRICAL POWER. EIGHT 150-CM-LONG VHF EXPERIMENT WHIP ANTENNAS WERE MOUNTED AROUND THE AFT END OF THE SPACECRAFT, WHILE EIGHT TELEMETRY AND COMMAND ANTENNAS WERE PLACED ON THE FORWARD END. SPACECRAFT GUIDANCE AND ORBITAL CORRECTIONS WERE ACCOMPLISHED BY 2.3-KG HYDROGEN PEROXIDE AND HYDRAZINE THRUSTERS, WHICH WERE ACTIVATED BY GROUND COMMAND. THE SATELLITE WAS INITIALLY PLACED AT 151.16 DEG W LONGITUDE OVER THE PACIFIC OCEAN IN A GEOSTATIONARY EQUATORIAL ORBIT. IN GENERAL, MOST OF THE EXPERIMENTS WERE SUCCESSFUL. AS OF MARCH 1973, GOOD DATA WERE STILL BEING RECEIVED FROM SOME OF THE EXPERIMENTS.

EXPERIMENT NAME- SUPRATHERMAL ION DETECTOR

NSSDC ID 66-110A-01

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.W. FREEMAN RICE U HOUSTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-021867  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE ATS 1 SUPRATHERMAL ION DETECTOR WAS DESIGNED TO SEARCH FOR CONVECTIVE FLUXES OF LOW-ENERGY IONS IN THE MAGNETOSPHERE. THE DETECTOR SYSTEM CONSISTED OF A PLANAR RETARDING POTENTIAL ANALYZER, WHICH FED INTO A CHANNELTRON. THE ANALYZER OPERATED IN THE DIFFERENTIAL MODE FOR 20 ENERGY WINDOWS FROM 0 TO 50 EV AND IN AN INTEGRAL MODE FOR TWO WINDOWS, GREATER THAN 0 AND GREATER THAN 50 EV. THE SYSTEM WAS SENSITIVE TO IONS FROM 0 TO 50 EV, ELECTRONS GREATER THAN 3 KEV, AND ULTRAVIOLET RADIATION. THE SATELLITE SPIN RATE WAS ABOUT 97 RPM. THE ACCUMULATED COUNTS FROM THE CHANNELTRON WERE SEGMENTED IN TIME SO THE DIRECTION OF ARRIVAL OF INCOMING PARTICLES WERE DIVIDED INTO 30 DISCRETE 12-DEG (BY 25-DEG WIDE) ANGULAR SECTORS. THE TIME REQUIRED FOR A COMPLETE SET OF ENERGY-ANGULAR SCAN DATA WAS 112.6 SEC, WITH 0.64 SEC EVERY 5.120 SEC REQUIRED FOR EACH ENERGY WINDOW SCAN, AND 0.02 SEC REQUIRED FOR EACH ANGULAR WINDOW PER ENERGY WINDOW SCAN. THE DETECTOR WAS POINTED IN A DIRECTION NORMAL TO THE SPACECRAFT SPIN AXIS. CHANNELTRONS SUFFERED DEGRADATION BY HIGH COUNTING FLUXES. BECAUSE OF THE NATURE OF ITS MISSION, THE INSTRUMENT WAS DESIGNED TO ACCEPT LARGE FLUXES OF PARTICLES, THEREBY SACRIFICING LONGEVITY. THE EXPERIMENT WAS SUCCESSFUL, HAVING

DETECTED FLUXES OF IONS ON SEVERAL OCCASIONS DURING ITS 50 DAYS OF CONTINUOUS OPERATION. FOR FURTHER DETAILS OF THIS EXPERIMENT, SEE 'EXTRAIT DES ANNALES DE GEOPHYSIQUE,' TOME 24, 1968, BY FREEMAN ET. AL. 'ON THE VARIETY OF PARTICLE PHENOMENA DISCERNABLE AT GEOSTATIONARY ORBIT VIA THE ATS 1 SATELLITE'.

DATA SET NAME- SUPRATHERMAL ION DATA FROM THE ATS-1                   NSSDC ID 66-110A-01A  
                  SPECTROMETER ON BCD MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121066 TO 021867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-   55 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER-SUPPLIED 7-TRACK, 556-BPI, BCD MAGNETIC TAPES. THERE IS ONE SHORT HEADER FILE AND ONE DATA FILE PER TAPE. THE DATA FILE CONTAINS SIX CHARACTERS PER WORD, 10 WORDS PER LOGICAL RECORD, 22 LOGICAL RECORDS PER PHYSICAL RECORD, AND APPROXIMATELY 140 PHYSICAL RECORDS PER FILE. TWENTY-TWO LOGICAL RECORDS INCLUDE THE DATA FROM ONE COMPLETE SPECTRAL AND ANGULAR SCAN, APPROXIMATELY 660 DATA POINTS. ALSO INCLUDED IN EACH LOGICAL RECORD ARE TIME AND DATA QUALITY FLAGS. THE COUNTS PER ENERGY ANGULAR WINDOW (COUNTS PER 0.02 SEC) MUST BE CORRECTED BY THE USER FOR TELEMETRY ERRORS AND A PRESCALER. THE ALGORITHM FOR THIS CORRECTION IS PROVIDED IN THE DOCUMENTATION.

EXPERIMENT NAME- BIAxIAL FLUXGATE MAGNETOMETER                   NSSDC ID 66-110A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.J. COLEMAN, JR.                   U OF CALIFORNIA, LA   LOS ANGELES, CA

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THIS BIAxIAL FLUXGATE MAGNETOMETER MEASURED VECTOR MAGNETIC FIELDS AT SYNCHRONOUS ALTITUDE. ONE SENSOR WAS MOUNTED IN THE SPIN PLANE OF THE SPACECRAFT AND ONE ALONG THE SPIN AXIS. USING THE ONBOARD SUN SENSOR, TRIAXIAL VECTOR MEASUREMENTS WERE DEDUCED. AS THE SENSOR WAS MOUNTED ON ONLY A 15-CM BOOM, IT HAS SUFFERED FROM SERIOUS SPACECRAFT INTERFERENCE. THOUGH MEASUREMENT PRECISION WAS ABOUT 0.5 GAMMA, INTERFERENCE FIELDS WERE OF THE ORDER OF THE AMBIENT FIELDS. PROCEDURES FOR OFFSET CORRECTIONS HAVE BEEN DEVELOPED AND IMPLEMENTED FOR ABOUT 95 PERCENT OF THE INTERFERENCE SOURCES TO A 15-SEC TIME RESOLUTION. ALSO SPECTRAL ANALYSES OF WAVE MODES PRESENT WERE POSSIBLE TO A 0.32-SEC TIME RESOLUTION. THUS DC FIELDS WERE OBTAINABLE FROM THIS DATA UP TO 15-SEC TIME RESOLUTION, AND WAVE DATA UP TO 1.5 HZ. CERTAIN NONMACHINE CORRECTABLE OFFSETS STILL PLAGUE REDUCED DATA FROM THIS EXPERIMENT, BUT THESE ARE IDENTIFIABLE AND HAND CORRECTABLE. THE ONBOARD SUN SENSOR FAILED NOVEMBER 2, 1969. HOWEVER, THE SUN CAUSED A NOISE MODULATION OF THE SPINNING SPACECRAFT SO THAT EVEN AFTER THIS TIME, WITH SOME EFFORT, VECTOR DATA WERE EXTRACTABLE FROM THE TELEMETERED DATA. DATA COVERAGE WAS ABOUT 90 PERCENT THROUGH AUGUST 1968. DURING AUGUST 1968 TO NOVEMBER 1969, COVERAGE DROPPED TO 40 PERCENT. DATA WERE RECORDED BY NOAA, BOULDER,

STARTING IN OCTOBER 1970. COVERAGE WAS ABOUT 80 PERCENT.

DATA SET NAME- 2.5-MIN AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02B  
SYNCHRONOUS ALTITUDE ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111767 TO 122968 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE 16-MM REELS OF MICROFILM MADE AT NSSDC FROM CALCOMP PLOTS GENERATED AT UCLA ARE OF 2.5 MIN AVERAGED MACHINE-CORRECTED REDUCED MAGNETOMETER DATA PRESENTED IN THE UCLA V-D-H COORDINATE SYSTEM WHERE (1) THE H AXIS IS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS, (2) THE V AXIS IS RADially OUTWARD IN THE MAGNETIC EQUATORIAL PLANE, AND (3) THE D AXIS IS AZIMUTHALLY EASTWARD. PLOTTED AGAINST COMMON TIME ARE THE 3 MAGNETIC FIELD CARTESIAN COMPONENTS AND AN INDICATOR OF THE SATELLITE STATE VECTOR, WHICH IS USEFUL IN IDENTIFYING OFFSET CHANGES THAT ARE NOT CORRECTED BY MACHINE IN THE PLOTTED DATA.

DATA SET NAME- 2.5-MIN AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02C  
SYNCHRONOUS ALTITUDE ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120766 TO 122968 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE THREE EXPERIMENTER GENERATED 7-TRACK, 800-BPI, MAGNETIC TAPES CONTAIN DATA FROM DECEMBER 7, 1966, TO DECEMBER 29, 1968, WRITTEN IN A BCD FORMAT WITH 80 CHARACTERS PER LOGICAL RECORD, AND 3204 CHARACTERS PER PHYSICAL RECORD. THESE TAPES CONTAIN TIME, THE SPACECRAFT STATE VECTOR, AND 2.5 MIN AVERAGED CARTESIAN MAGNETIC FIELD IN V-D-H COORDINATES. THE H AXIS IS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS, THE V AXIS IS RADially OUTWARD IN THE MAGNETIC EQUATORIAL PLANE, AND THE D AXIS IS AZIMUTHALLY EASTWARD. EACH TAPE CONTAINS ONE FILE. THESE DATA HAVE BEEN CORRECTED FOR OFFSETS BY MACHINE AS MUCH AS POSSIBLE. THEY STILL CONTAIN SOME OFFSET ERRORS, BUT CONSIDERATION OF THE SPACECRAFT STATE VECTOR ALLOWS CORRECTION FOR THESE BY HAND.

DATA SET NAME- 15-SEC AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02D  
SYNCHRONOUS ALTITUDE ON FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121066 TO 092867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THESE 35-MM MICROFILM WERE MADE AT NSSDC FROM CALCOMP PLOTS GENERATED AT UCLA OF 15-SEC AVERAGED MACHINE CORRECTED REDUCED MAGNETOMETER DATA PRESENTED IN THE UCLA V-D-H COORDINATE SYSTEM. THE H AXIS IS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS, THE V AXIS IS RADially OUTWARD IN THE MAGNETIC EQUATORIAL PLANE AND THE D AXIS IS AZIMUTHALLY EASTWARD. PLOTTED AGAINST COMMON TIME ARE THE THREE MAGNETIC FIELD CARTESIAN COMPONENTS AND AN INDICATOR OF THE SATELLITE STATE VECTOR, WHICH IS USEFUL IN IDENTIFYING OFFSET CHANGES THAT COULD NOT BE CORRECTED BY MACHINE IN THE PLOTTED DATA.

DATA SET NAME- 15-SEC AVG VECTOR MAGNETOMETER DATA FROM NSSDC ID 66-110A-02E  
SYNCHRONOUS ALTITUDE ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120766 TO 122968 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22 REEL(S) OF MAGNETIC TAPE

**DATA SET BRIEF DESCRIPTION**

THESE 22 EXPERIMENTER GENERATED 7-TRACK 800-BPI MAGNETIC TAPES CONTAIN DATA FROM DECEMBER 7, 1966, TO DECEMBER 29, 1968, WRITTEN IN A BCD FORMAT WITH 80 CHARACTERS PER LOGICAL RECORD, AND 3204 CHARACTERS PER PHYSICAL RECORD. THESE TAPES CONTAIN TIME, THE SPACECRAFT STATE VECTOR, AND 15 SEC AVERAGED DATA IN BOTH GEOCENTRIC SOLAR ECLIPTIC COORDINATES AND THE UCLA V-D-H COORDINATES WITH THE H AXIS ANTIPARALLEL TO THE EARTH'S MAGNETIC DIPOLE AXIS, THE V AXIS RADially OUTWARD IN THE MAGNETIC EQUATORIAL PLANE, AND THE D AXIS AZIMUTHALLY EASTWARD. EACH TAPE CONTAINS ONE FILE, AND ABOUT 40 DAYS OF DATA. THESE DATA HAVE BEEN CORRECTED FOR OFFSETS BY MACHINE AS MUCH AS POSSIBLE. THEY STILL CONTAIN SOME OFFSET ERRORS, BUT CONSIDERATION OF THE SPACECRAFT STATE VECTOR ALLOWS CORRECTION FOR THESE BY HAND.

DATA SET NAME- ATS-1 COMMAND LOG ON FILM NSSDC ID 66-110A-02F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120766 TO 123068 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THIS REEL OF 16-MM MICROFILM GENERATED AT NSSDC FROM EXPERIMENTER-SUPPLIED LISTINGS OF THE TAPE IN DATA SET 66-110A-02G CONTAINS LISTINGS OF THE OCTAL COMMANDS SENT TO THE ATS 1 SATELLITE FROM DECEMBER 7, 1966, TO DECEMBER 31, 1968. THESE LOGS WERE REQUIRED TO MAKE THE MACHINE CORRECTIONS APPLIED TO THE MAGNETOMETER DATA FROM THIS SPACECRAFT.

DATA SET NAME- SPACECRAFT AND EXPERIMENT COMMAND LOG AS NSSDC ID 66-110A-02G  
A MULTI-DIMENSIONAL VECTOR ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED



TIME PERIOD COVERED- 120766 TO 123168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS MAGNETIC TAPE GENERATED BY THE EXPERIMENTER CONTAINS THREE FILES, REPRESENTING OPERATION IN 1966, 1967, AND 1968. THE 9-TRACK ODD PARITY 800-BPI TAPE HAS EBCDIC LOGICAL RECORDS OF 133 BYTES BLOCKED TO 7182 BYTES PER PHYSICAL RECORD. THE DATA CONTAINED ARE THE LISTINGS OF THE OCTAL COMMANDS SENT TO THE ATS SATELLITE FROM DECEMBER 7, 1966 TO DECEMBER 31, 1968. THESE COMMAND LOGS WERE REQUIRED TO MAKE THE MACHINE CORRECTIONS APPLIED TO THE MAGNETOMETER DATA FROM THIS SPACECRAFT.

EXPERIMENT NAME- OMNIDIRECTIONAL SPECTROMETER

NSSDC ID 66-110A-03

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.B.	PAULIKAS	AEROSPACE CORP	EL SEGUNDO, CA
OI - B.	BLAKE	AEROSPACE CORP	EL SEGUNDO, CA
OI - S.C.	FREDEN	NASA-GSFC	GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE CHARGED PARTICLE EXPERIMENT DESIGNED FOR ATS 1 BY AEROSPACE CORPORATION PERSONNEL CONSISTED OF AN ARRAY OF THREE OMNIDIRECTIONAL DETECTORS. THESE SHIELDED, SOLID-STATE DETECTORS MEASURED ELECTRONS WITH THRESHOLDS OF 0.30, 0.45, 1.05, AND 1.90 MEV, AND PROTONS IN THE ENERGY RANGES 5 TO 21 MEV AND 21 TO 70 MEV. GOOD ELECTRON DATA WERE OBTAINED ONLY UNTIL JULY 1, 1970. AS OF JUNE 1973, PROTON DATA WERE STILL BEING OBTAINED BY NOAA FOR OPERATIONAL PURPOSES, ALTHOUGH ITS QUALITY HAD DEGRADED GRADUALLY SINCE PREVIOUS DATA WERE RECORDED.

DATA SET NAME- HOURLY AVERAGED PROTON FLUXES PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA'  
NSSDC ID 66-110A-03D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 110170 TO 083172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MONTHLY TABULAR LISTINGS OF HOURLY AVERAGED FLUXES OF OMNIDIRECTIONAL, GEOSYNCHRONOUS PROTONS WITH ENERGIES IN THE INTERVALS 5 TO 21 MEV AND 21 TO 70 MEV. DATA OBTAINED DURING A GIVEN MONTH WERE PUBLISHED (UNTIL SEPTEMBER 1972) IN 'SOLAR-GEOPHYSICAL DATA (PROMPT REPORTS)' WITH A 1-MONTH LAG.

EXPERIMENT NAME- ELECTRON SPECTROMETER

NSSDC ID 66-110A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.R. WINCKLER U OF MINNESOTA MINNEAPOLIS, MN

DATE LAST USABLE EXPERIMENT DATA RECORDED-060068  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE TRAPPED ELECTRON COMPONENT AT ABOUT 6.6 EARTH RADII IN THE ENERGY RANGE FROM 50 TO 1000 KEV. THE INSTRUMENT WAS A HIGH-TIME RESOLUTION MAGNETIC SPECTROMETER, WHERE THE ELECTROMAGNET STEPPED REPEATEDLY THROUGH FOUR FIELD VALUES ALLOWING DETERMINATION OF BACKGROUND-CORRECTED ELECTRON FLUX MEASUREMENTS IN EACH OF THREE CHANNELS 50 TO 150 KEV, 150 TO 500 KEV, 500 TO 1000 KEV. THE FLUX IN EACH CHANNEL WAS SAMPLED FOR 40 MS ONCE EVERY 160 MS. THE DETECTOR SYSTEM CONSISTED OF A SHIELDED PLASTIC SCINTILLATOR COUPLED TO A PHOTOMULTIPLIER, WHOSE SIGNAL PASSED THROUGH A PULSE HEIGHT ANALYZER TO AN APPROPRIATE SCALING CIRCUIT. THE LOOK DIRECTION MADE AN ANGLE OF 74 DEG TO THE SPACECRAFT SPIN AXIS. THE STORED DIGITAL COUNTS WERE CONVERTED TO ANALOG SIGNALS PRIOR TO TELEMETRY INTERROGATION. THE INSTRUMENT MEASURED ELECTRON FLUXES FROM 0.4 TO 1,000,000.0 PARTICLES PER CM SQ PER SEC PER STER PER KEV. TYPICALLY THE BACKGROUND CORRECTION TO THE DATA WAS LESS THAN 10 PERCENT. THE EXPERIMENT FUNCTIONED WELL THROUGH MOST OF THE TIME INTERVAL DECEMBER 17, 1966 TO JANUARY 23, 1968. DURING SOME SHORT SUBINTERVALS, HOWEVER, IT WAS NOT OPERATING PROPERLY. FROM JANUARY 23, 1968, UNTIL THE END OF JUNE 1968, ONLY THE 50 TO 150 KEV AND 150 TO 500 KEV CHANNELS FUNCTIONED PROPERLY. AFTER JUNE 1968, THE SPECTROMETER FAILED COMPLETELY AND NEVER RECOVERED.

DATA SET NAME- 6-MINUTE AVERAGED COUNT RATES ON MAGNETIC NSSDC ID 66-110A-04A  
TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121966 TO 123067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONSISTS OF ONE 7-TRACK, 800-BPI BCD (EVEN PARITY) MAGNETIC TAPE. THERE ARE FIVE LOGICAL RECORDS PER PHYSICAL RECORD (400 CHARACTERS) CONTAINING 6-MIN AVERAGE COUNT RATES FOR THE TIME PERIOD FROM DECEMBER 19, 1966 TO DECEMBER 30, 1967. EACH CARD IMAGE CONTAINS INFORMATION AS TO TIME, COUNT RATE, AND BACKGROUND RATE FOR ALL THREE CHANNELS, PLUS THEIR STATISTICAL ERRORS. NOTE -- ALTHOUGH TAPE ENTRIES START AT DECEMBER 9, 1966, NO DATA ARE CONTAINED IN THE FIRST TEN LOGICAL RECORDS. FIRST DATA ENTRY OCCURS ON DECEMBER 19, 1966.

DATA SET NAME- 6-MINUTE AVERAGED COUNT RATE PLOTS ON NSSDC ID 66-110A-04B  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121966 TO 123067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS COMPLETE DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM PLOTS SUBMITTED BY THE EXPERIMENTER, COVERING THE TIME PERIOD FROM DECEMBER 19, 1966 TO DECEMBER 30, 1967. PRESENTED ARE 6-MIN AVERAGE COUNT RATES VS TIME, EACH PLOT GIVING ONE DAY FOR ALL THREE CHANNELS. NO BACKGROUND INFORMATION IS CONTAINED ON PLOTS.

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SPACECRAFT COMMON NAME- LUNAR ORBITER 3 NSSDC ID 67-008A  
ALTERNATE NAMES- LUNAR ORBITER-C, ORBITER III, ORBITER-C

LAUNCH DATE- 02/05/67 SPACECRAFT WEIGHT IN ORBIT- 387. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-100967  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 02/12/67 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 210. MIN  
APOAPSIS- 1847. KM ALT PERIAPSIS- 55. KM ALT INCLINATION- 20.9 DEG

SPACECRAFT BRIEF DESCRIPTION

THE LUNAR ORBITER 3 SPACECRAFT WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISELUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM FEBRUARY 15 TO 23, 1967, AND READOUT OCCURRED THROUGH MARCH 2, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 14.3 DEG N LATITUDE, 97.7 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES) ON OCTOBER 9, 1967.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES NSSDC ID 67-008A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.J. KOSOFKY NASA HEADQUARTERS WASHINGTON, DC  
OI - I.G. RECANT NASA-LARC HAMPTON, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-022367  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON THE SPACECRAFT'S 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 55 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON THE 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8-M, RESPECTIVELY. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMAT PROCESSED ON BOARD, OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE FLYING SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS ARE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 211 SIMULTANEOUS EXPOSURES, ONLY 151 WERE READ OUT DUE TO A FAILURE OF THE FILM ADVANCE MOTOR. OTHERWISE, THE PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON MARCH 2, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT "LUNAR ORBITER PHOTOGRAPHIC DATA," NSSDC 69-05, JUNE 1969.

DATA SET NAME- COMPLETE SET OF LUNAR PHOTOGRAPHY ON B/W NSSDC ID 67-008A-01I  
POSITIVE 4- BY 6-IN. MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 021567 TO 022367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 3 PHOTOGRAPHY ON 15 SHEETS OF 4- BY 6-IN. POSITIVE MICROFICHE. THESE SHEETS WERE PREPARED BY MAPPING SCIENCES BRANCH, MANNED SPACECRAFT CENTER, FROM THE NSSDC 35-MM REEL IN DATA SET -01D. THE QUALITY OF THE MICROFICHE COPIES IS SUITABLE FOR STUDIES OF MINIMUM PRECISION ONLY, AND THEREFORE THESE COPIES ARE INTENDED FOR ONSITE SELECTION OF PHOTOGRAPHS FOR WHICH HIGH-QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- NSSDC PHOTOGRAPHIC SUPPORT DATA ON 16-MM NSSDC ID 67-008A-01J  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 021567 TO 022367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHIC SUPPORTING DATA NECESSARY FOR THE ANALYSIS OF THE LUNAR ORBITER 3 PHOTOGRAPHS. THE DATA WERE SELECTED AND COMPILED BY NSSDC FROM THE MOST RECENT (1970) VERSION OF SUPPORTING DATA PROVIDED BY THE BOEING COMPANY. THE DATA (INCLUDING SIMILAR DATA FOR LUNAR ORBITERS 1, 2, 4, AND 5) ARE CONTAINED IN 'LUNAR ORBITER PHOTOGRAPHIC SUPPORTING DATA,' NSSDC 71-13, MAY 1971, AND ARE IN THREE LISTINGS -- FULL LIST, POSITION PARAMETERS, AND ILLUMINATION PARAMETERS. EACH LISTING IS ORDERED BY MISSION AND FRAME NUMBERS. THE FULL LIST CONTAINS THE TIME OF EACH EXPOSURE, THE SPACECRAFT POSITION AND ORIENTATION PARAMETERS, THE PHOTO ILLUMINATION PARAMETERS, THE LATITUDE AND LONGITUDE OF THE PRINCIPAL GROUND POINT, THE CORNER COORDINATES AND SIDE LENGTHS OF EACH IMAGE AREA, AND THE TILT DISTANCE. THIS PUBLICATION IS MAINTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC.

DATA SET NAME- INTERIM PHOTO SITE ACCURACY ANALYSIS                      NSSDC ID 67-008A-01K  
CALCULATIONS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 021567 TO 022367 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE RESULTS OF INTERIM CALCULATIONS (BY THE BOEING CO.) MADE IN ORDER TO PRODUCE FINAL REPORT DOCUMENTS OF PHOTO SITE ACCURACY ANALYSIS. THE DATA ARE MAINTAINED ON FIFTEEN REELS OF 16-MM FILM. THE CALCULATIONS ON 10-HARMONICS ANALYSIS WERE MADE FOR VARIOUS MODELS, USING DATA REPORTED FROM VARIOUS STATIONS, PASSES, AND ITERATIONS. SOME OF THE REELS CONTAIN PLOTS OF RESIDUALS OF RV, C3, AND CC3 VS TIME FOR VARIOUS STATIONS, PASSES, ITERATIONS, SEQUENCES, AND MODELS.

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SPACECRAFT COMMON NAME- OSO 3    NSSDC ID 67-020A  
ALTERNATE NAMES-                      OSO-E

LAUNCH DATE- 03/08/67                      SPACECRAFT WEIGHT IN ORBIT-                      1368. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST SPACECRAFT DATA RECORDED-110069  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 01/09/67    ORBIT TYPE- GECENTRIC                      ORBIT PERIOD- 95.76    MIN

APDAPSIS- 558.000 KM ALT PERIAPSIS- 533.000 KM ALT INCLINATION- 32.863 DEG

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES ARE TO PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X-RAY, AND GAMMA RADIATION. THE OSO 3 PLATFORM CONSISTED OF A SAIL SECTION, WHICH POINTED TWO EXPERIMENTS CONTINUALLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPUN ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIED SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT WAS PERFORMED BY GAS JETS AND A MAGNETIC TORQUING COIL. DATA WERE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY PCM/PM TELEMETRY. A COMMAND SYSTEM PROVIDED FOR 94 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND ONBOARD TAPE RECORDER FAILED IN JULY 1968. THE SPACECRAFT WAS PUT IN STANDBY CONDITION ON NOVEMBER 10, 1969, AND BECAME INOPERABLE SHORTLY THEREAFTER.

EXPERIMENT NAME- HIGH ENERGY GAMMA RAY

NSSDC ID 67-020A-01

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.W. CLARK	MIT	CAMBRIDGE, MA
OI - W.L. KRAUSHAAR	U OF WISCONSIN	MADISON, WI
OI - G.P. GARMIRE	CAL TECH	PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-110069

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

AN ARRAY OF 15 PHOTOMULTIPLIER TUBES WITH ORGANIC AND INORGANIC CRYSTAL SCINTILLATORS WAS CONNECTED TO THE APPROPRIATE ANTICOINCIDENCE CIRCUITRY TO DETECT SOLAR AND EXTRA-SOLAR GAMMA RAYS WITH ENERGIES GREATER THAN 50 MEV AND A HALF-ANGLE SPATIAL RESOLUTION OF 15 DEG (10 PERCENT EFFICIENCY). THE DETECTOR SYSTEM PERFORMED WITH NO APPRECIABLE LOSS OF FUNCTION FROM TURNON TO LOSS OF ONBOARD TAPE RECORDING IN JULY 1968.

DATA SET NAME- REDUCED DIRECTIONAL GAMMA-RAY FLUX DATA  
ON TAPE

NSSDC ID 67-020A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030867 TO 062868 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 19 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NINETEEN 7-TRACK, 556-BPI, IBM 7094, BCD MAGNETIC TAPES. THE DATA, WHICH COVER THE PERIOD FROM LAUNCH UNTIL THE SECOND TAPE RECORDER FAILED (JUNE 1968), REPRESENT THE COMPLETE SET OF REDUCED DATA FROM THE MIT CELESTIAL GAMMA-RAY EXPERIMENT. THE DATA WERE PROVIDED TO NSSDC BY THE EXPERIMENTER. THE INFORMATION RECORDED CONSISTS OF DIRECTIONAL PARAMETERS IN CELESTIAL COORDINATES FOR REAL AND ARTIFICIAL GAMMA-RAY EVENTS ALONG WITH SOME DATA QUALITY FLAGS. THE REAL EVENTS WERE THOSE SEEN BY THE ANTICOINCIDENCE DETECTOR ARRAY ABOARD THE SATELLITE, AND THE ARTIFICIAL EVENTS WERE THOSE GENERATED BY A COMPUTER AT A CONSTANT

RANDOM RATE AND PROPORTIONAL TO THE LOOK TIME IN EACH PORTION OF THE CELESTIAL SPHERE. THE RATIO OF REAL TO ARTIFICIAL EVENTS IS THE DIRECTIONAL GAMMA-RAY FLUX.

EXPERIMENT NAME- 8- TO 12-A SOLAR X-RAY ION CHAMBER NSSDC ID 67-020A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MICHIGAN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.G. TESKE U OF MICHIGAN ANN ARBOR, MI

DATE LAST EXPERIMENT DATA RECORDED-110069  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

AN ALUMINUM WINDOW ION CHAMBER WAS MOUNTED IN THE OSO WHEEL SECTION. THE DETECTOR MEASURED SOLAR X RAYS IN THE 8 TO 12 A RANGE WITH ABOUT 2-SEC TIME RESOLUTION. OPERATION WAS NOMINAL FROM LAUNCH, MARCH 8, 1967, UNTIL TAPE RECORDER LOSS IN JULY 1968.

DATA SET NAME- SOLAR X-RAY FLUX, 8- TO 12-A, ON MAGNETIC TAPE NSSDC ID 67-020A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030967 TO 071668 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 20 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE DATA SET, WHICH CONSISTS OF SIXTEEN 7-TRACK, 556-BPI, MIXED MODE MAGNETIC TAPES AND FOUR 7-TRACK, 800-BPI BINARY MAGNETIC TAPES PRODUCED ON AN IBM 7094 COMPUTER, CONTAINS FIRST GENERATION REDUCED DATA. THE DATA SET INCLUDES A SEQUENCE OF SOLAR FLUX DATA WORDS (IN ERGS/SQ-CM SECOND, ASSUMING A 2 BY 10 TO THE 6K BLACKBODY ENERGY DISTRIBUTION) WITH BACKGROUND SUBTRACTED, ALTERNATING WITH A FLAG CONTAINING UNIVERSAL TIME, SENSITIVITY LEVEL, AND DATA QUALITY. ALL VALID DATA ARE INCLUDED IN THIS DATA SET.

EXPERIMENT NAME- SOLAR AND CELESTIAL GAMMA-RAY TELESCOPE NSSDC ID 67-020A-07

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, SD

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.E. PETERSON U OF CALIFORNIA, SD LA JOLLA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-051569  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT WAS DESIGNED TO INVESTIGATE THE EMISSION OF X RAYS IN THE 7.7- TO 200-KEV RANGE FROM COSMIC AND SOLAR SOURCES WITH APPROXIMATELY 50 PERCENT FULL WIDTH HALF MAXIMUM SPECTRAL RESOLUTION AND 15-SEC TIME

RESOLUTION. THE DETECTOR, MOUNTED ON THE WHEEL SECTION OF THE SPACECRAFT, CONSISTED OF A 0.5-CM THICK NAI CRYSTAL SURROUNDED BY A 4.8-KG CYLINDRICAL CUP-SHAPED CSI (TL) SHIELD CRYSTAL POINTED RADially OUTWARD. THE ANTICOINCIDENCE SHIELD HAD A 5-CM WALL AND DEFINED A 13-DEG HALF-ANGLE FIELD OF VIEW FOR THE INNER NAI DETECTOR, WHICH HAD A 0.5-MM BERYLLIUM FOIL WINDOW 9.2 CM SQ IN AREA AND HAVING A GEOMETRIC FACTOR OF 1.5 CM SQ-STER. THE OUTPUT PULSE WAS PULSE HEIGHT ANALYZED INTO SIX LOGARITHMICALLY SPACED CHANNELS AND TWO INTEGRAL CHANNELS. THE EXPERIMENT PERFORMED NORMALLY DURING THE LIFETIME OF THE SATELLITE.

DATA SET NAME- REDUCED SOLAR AND COSMIC SOURCE DATA PER NSSDC ID 67-020A-07A  
ENERGY CHANNEL VS TIME ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030967 TO 040868 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 100 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET PROVIDED BY THE EXPERIMENTER, CONSISTS OF 100 7-TRACK, 800-BPI, CDC 3600 TAPES. EACH PHYSICAL RECORD OF THE TAPES CONSISTS OF 960 BCD CHARACTERS. THESE TAPES CONTAIN THE COMPLETE SET OF REDUCED SOLAR AND COSMIC SOURCE DATA. THE SOLAR DATA INCLUDE COUNTS PER ENERGY CHANNEL, CHANNEL NUMBER, AND UNIVERSAL TIME. THE COSMIC SOURCE DATA INCLUDE THE DIRECTION, IN CELESTIAL COORDINATES, OF AN X-RAY EVENT AND THE ENERGY CHANNEL IN WHICH IT FELL. EXCEPT FOR NIGHTTIME GAPS, DATA COVERAGE IS CONTINUOUS FROM LAUNCH THROUGH APRIL 8, 1968.

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SPACECRAFT COMMON NAME- ATS 2 NSSDC ID 67-031A  
ALTERNATE NAMES- ATS-A

LAUNCH DATE- 04/06/67 SPACECRAFT WEIGHT IN ORBIT- 319.11 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-090068  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 04/07/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 219.7 MIN  
APOAPSIS- 11180.0 KM ALT PERIAPSIS- 186.000 KM ALT INCLINATION- 28.32 DEG

SPACECRAFT BRIEF DESCRIPTION

ATS 2 (APPLICATIONS TECHNOLOGY SATELLITE) WAS A MEDIUM ALTITUDE, GRAVITY-GRADIENT-STABILIZED SPACECRAFT DESIGNED TO (1) TEST NEW CONCEPTS IN SPACECRAFT DESIGN, PROPULSION, AND STABILIZATION, (2) TAKE HIGH-QUALITY CLOUDCOVER PICTURES, (3) PROVIDE IN SITU MEASUREMENTS OF THE AEROSPACE ENVIRONMENT, AND (4) TEST IMPROVED COMMUNICATION SYSTEMS. THE CYLINDRICALLY-SHAPED SPACECRAFT MEASURED 142 CM IN DIAMETER AND 183 CM IN LENGTH. THE SPACECRAFT STRUCTURE CONSISTED PRIMARILY OF A CORRUGATED THRUST TUBE WITH HONEYCOMBED BULKHEADS SECURED TO EACH END. EQUIPMENT COMPONENTS AND PAYLOAD WERE EXTERNALLY MOUNTED ON THE OUTER SURFACE OF THE THRUST TUBE





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SPACECRAFT COMMON NAME- ESSA 5  
ALTERNATE NAMES- TOS-C  
NSSDC ID 67-036A  
LAUNCH DATE- 04/20/67 SPACECRAFT WEIGHT IN ORBIT- 144. KG  
FUNDING AGENCY- ESSA-NESC  
DATE LAST USABLE SPACECRAFT DATA RECORDED-100869  
SPACECRAFT STATUS OF OPERATION- INOPERABLE  
EPOCH DATE- 04/21/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 113.6 MIN  
APOAPSIS- 1423. KM ALT PERIAPSIS- 1361. KM ALT INCLINATION- 101.97 DEG

SPACECRAFT BRIEF DESCRIPTION

ESSA 5 WAS A SUN-SYNCHRONOUS OPERATIONAL METEOROLOGICAL SATELLITE DESIGNED TO TAKE AND RECORD DAYTIME EARTH CLOUDCOVER PICTURES ON A GLOBAL BASIS FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION FACILITY. THE SPACECRAFT WAS ALSO CAPABLE OF PROVIDING WORLDWIDE MEASUREMENTS OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE SPACECRAFT HAD ESSENTIALLY THE SAME CONFIGURATION AS THAT OF A TIROS SATELLITE, I.E., AN 18-SIDED RIGHT PRISM, 107 CM ACROSS OPPOSITE CORNERS AND 56 CM HIGH, WITH A REINFORCED BASEPLATE CARRYING MOST OF THE SUBSYSTEMS AND A COVER ASSEMBLY (HAT). ELECTRIC POWER WAS PROVIDED BY APPROXIMATELY 10,000 1- BY 2-CM SOLAR CELLS THAT WERE MOUNTED ON THE COVER ASSEMBLY AND BY 21 NICKEL-CADMIUM BATTERIES. TWO REDUNDANT ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT, WITH THEIR OPTICAL AXES PERPENDICULAR TO THE SPIN AXIS. TWO SETS OF FLAT PLATE RADIOMETERS WERE ALSO SUSPENDED ON OPPOSITE SIDES OF THE SATELLITE, BENEATH THE EDGE OF THE BASEPLATE. A PAIR OF CROSSED-DIPOLE COMMAND RECEIVER ANTENNAS PROJECTED OUT AND DOWN FROM THE BASEPLATE. A MONOPOLE TELEMETRY AND TRACKING ANTENNA EXTENDED OUT FROM THE TOP OF THE COVER ASSEMBLY. THE SATELLITE SPIN RATE WAS CONTROLLED BY MEANS OF A MAGNETIC ATTITUDE SPIN COIL (MASC), WITH THE SPIN AXIS MAINTAINED NORMAL TO THE ORBITAL PLANE (CARTWHEEL ORBIT MODE) TO WITHIN PLUS OR MINUS 1 DEG. THE MASC WAS A CURRENT-CARRYING COIL MOUNTED IN THE COVER ASSEMBLY. THE MAGNETIC FIELD INDUCED BY THE CURRENT INTERACTED WITH THE EARTH'S MAGNETIC FIELD TO PROVIDE THE TORQUE NECESSARY TO MAINTAIN A DESIRED SPIN RATE OF 9.225 RPM. THE SPACECRAFT PERFORMED NORMALLY AFTER LAUNCH UNTIL SEPTEMBER 22, 1967, WHEN THE RADIOMETER EXPERIMENT FAILED. THE AVCS FUNCTIONED UNTIL OCTOBER 8, 1969, WHEN THE SATELLITE WAS PLACED IN A STANDBY MODE. ESSA 5 WAS DEACTIVATED ON FEBRUARY 20, 1970.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR) NSSDC ID 67-036A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - V.E. SUOMI U OF WISCONSIN MADISON, WI  
OI - R.J. PARENT U OF WISCONSIN MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-092267

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE ESSA 5 FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM WAS COMPRISED OF FOUR INFRARED SENSORS, AN ANALOG-TO-DIGITAL CONVERTER, A COMMUTATOR, AND A TAPE RECORDER. TWO PAIRS OF RADIOMETERS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT WITH THEIR AXES PERPENDICULAR TO THE SPIN AXIS. A CONE SHIELD WAS EMPLOYED ON TWO OF THE RADIOMETERS TO ISOLATE OR REDUCE ANY RESPONSE DUE TO DIRECT SOLAR RADIATION. THE FIELD OF VIEW ON THE OTHER TWO INSTRUMENTS WAS UNRESTRICTED. BOTH TYPES OF RADIOMETERS USED A COATED (EITHER BLACK OR WHITE) ALUMINUM DISK AS THE SENSING ELEMENT. THE DISK TEMPERATURE WAS MEASURED BY TWO THERMISTORS MOUNTED ON THE BACK SURFACE OF THE DISK. THE BLACK-COATED DISK RESPONDED TO THE SUM OF THE REFLECTED SOLAR, DIRECT SOLAR, AND EMITTED LONG-WAVE RADIATION. THE WHITE DISK REFLECTED IN THE VISUAL RANGE BUT ABSORBED IN THE INFRARED (7-TO 30-MICRON) RANGE. IDENTICAL EXPERIMENTS WERE FLOWN ON THE ESSA 3, 7, AND 9 SPACECRAFT. FOR A FULL DESCRIPTION OF THE ESSA FPR, SEE 'STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1966,' UNIVERSITY OF WISCONSIN, 111-129, MARCH 1967. THE EXPERIMENT PERFORMED NORMALLY, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL SEPTEMBER 22, 1967, WHEN THE RADIOMETER FAILED. DATA FROM THE EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE FROM NOAA-NESS, SUITLAND, MARYLAND.

DATA SET NAME- LOW-RESOLUTION INFRARED (LRIR) DATA TAPES NSSDC ID 67-036A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 050967 TO 092267 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 0 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

LOW-RESOLUTION INFRARED (LRIR) DATA FROM THE ESSA 5 FLAT PLATE RADIOMETER EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK, 556-BPI, BINARY TAPES WERE PREPARED ON A CDC 6600 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, ORBITAL DATA, AND SPACECRAFT ATTITUDE PARAMETERS. ADDITIONAL DATA ON THE LRIR TAPES CONSIST OF INSTRUMENT HOUSING TEMPERATURES AND DIAGNOSTIC AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT OF THE LRIR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN ESSA TECHNICAL REPORT NO. 42, 'OPERATIONAL PROCESSING OF LOW RESOLUTION INFRARED (LRIR) DATA FROM ESSA SATELLITES,' FEBRUARY 1968.

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SPACECRAFT COMMON NAME- VELA 4A NSSDC ID 67-040A  
ALTERNATE NAMES- VELA 4 (USAF), VELA 7 (TRW)  
LAUNCH DATE- 04/28/67 SPACECRAFT WEIGHT IN ORBIT- 231. KG

FUNDING AGENCY- DOD-USAF

DATE LAST SPACECRAFT DATA RECORDED-080172  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/01/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6672. MIN  
APOAPSIS- 114612. KM ALT PERIAPSIS- 107337. KM ALT INCLINATION- 33.06 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 4A WAS ONE OF TWO SPIN-STABILIZED SATELLITES WHICH COMPRISED THE FOURTH LAUNCH IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THEIR OBJECTIVES WERE TO STUDY X RAYS, GAMMA RAYS, EUV, MAGNETIC FIELDS, AND PARTICLES OVER A WIDE RANGE OF ENERGIES FROM SOLAR WIND TO COSMIC RAY AS THE SATELLITES PASSED THROUGH INTERPLANETARY SPACE, THE BOW SHOCK, MAGNETOSHEATH AND MAGNETOTAIL. VELA 4A OPERATED WELL FROM LAUNCH UNTIL AUGUST 1, 1972, WHEN TRACKING OPERATIONS CEASED.

DATA SET NAME- COMPUTER LISTINGS OF SOLAR ECLIPTIC NSSDC ID 67-040A-00F  
EPHEMERIS (R, THETA, PHI) ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 050167 TO 063070 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS (SATELLITE PERIOD IS ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT -- MONTH, DAY, YEAR, TIME OF DAY (IN SEC), GEOCENTRIC DISTANCE (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG PLUS OR MINUS 90), AND SOLAR ECLIPTIC LONGITUDE (IN DEG PLUS OR MINUS 360).

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SPACECRAFT COMMON NAME- VELA 4B NSSDC ID 67-040B

ALTERNATE NAMES- VELA 4 (USAF), VELA 8 (TRW)

LAUNCH DATE- 04/28/67 SPACECRAFT WEIGHT IN ORBIT- 231. KG

FUNDING AGENCY- DOD-USAF

DATE LAST SPACECRAFT DATA RECORDED-080172  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/01/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6672. MIN  
APOAPSIS- 114612. KM ALT PERIAPSIS- 107337. KM ALT INCLINATION- 33.06 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 4B WAS ONE OF TWO SPIN-STABILIZED SATELLITES WHICH COMPRISED THE FOURTH LAUNCH IN A SERIES OF SIX VELA LAUNCHES. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT ABOUT 17 EARTH RADII AND SPACED 180 DEG APART. THEIR OBJECTIVES WERE TO STUDY X RAYS, GAMMA RAYS, EUV, MAGNETIC FIELDS, AND PARTICLES OVER A WIDE RANGE OF ENERGIES FROM SOLAR WIND TO COSMIC RAY AS THE SATELLITES PASSED THROUGH INTERPLANETARY SPACE, THE BOW SHOCK, MAGNETOSHEATH AND MAGNETOTAIL. VELA 4B OPERATED WELL FROM LAUNCH UNTIL AUGUST 1, 1972, WHEN TRACKING OPERATIONS CEASED.

DATA SET NAME- COMPUTER LISTINGS OF SOLAR ECLIPTIC EPHEMERIS (R, THETA, PHI) ON MICROFILM NSSDC ID 67-0408-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 050167 TO 083170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS (SATELLITE PERIOD IS ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT -- MONTH, DAY, YEAR, TIME OF DAY (IN SEC), GEOCENTRIC DISTANCE (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG PLUS OR MINUS 90), AND SOLAR ECLIPTIC LONGITUDE (IN DEG PLUS OR MINUS 360).

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SPACECRAFT COMMON NAME- LUNAR ORBITER 4 NSSDC ID 67-041A  
ALTERNATE NAMES- LUNAR ORBITER-D, ORBITER IV, ORBITER-O

LAUNCH DATE- 05/04/67 SPACECRAFT WEIGHT IN ORBIT- 387. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-103167  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/11/67 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 720. MIN  
APOAPSIS- 6110. KM ALT PERIAPSIS- 2700. KM ALT INCLINATION- 85. DEG

SPACECRAFT BRIEF DESCRIPTION

LUNAR ORBITER 4 WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR THE SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISLUNAR TRAJECTORY AND INJECTED INTO AN ELLIPTICAL HIGHLY INCLINED LUNAR ORBIT FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM, WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED

PHOTOGRAPHIC DATA FROM MAY 11 TO 26, 1967, AND READOUT OCCURRED THROUGH JUNE 1, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS USED FOR TRACKING PURPOSES UNTIL IT IMPACTED THE LUNAR SURFACE DUE TO NATURAL DECAY OF THE ORBIT NO LATER THAN OCTOBER 31, 1967, AT APPROXIMATELY 22 DEG TO 30 DEG W LONGITUDE.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 67-041A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - L.J. KOSOFSKY	NASA HEADQUARTERS	WASHINGTON, DC
OI - I.G. RECENT	NASA-LARC	HAMPTON, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-052667

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR MAPPING AND FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. CONTINUAL AUTOMATIC SEQUENCES OF PHOTOS WERE OBTAINED. AT AN ALTITUDE OF 2700 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE SYSTEM PHOTOGRAPHED OVER 85 PERCENT OF THE LUNAR SURFACE. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 6110-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMATEL PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 196 SIMULTANEOUS EXPOSURES, ONLY 123 MR AND 137 HR WERE COMPLETELY READ OUT. PROBLEMS WITH THE READOUT LOOPER AND THE THERMAL DOOR CAUSED THE LOSS OF PHOTOGRAPHS, AND FOGGING OF THE WINDOW RENDERED SOME PHOTOGRAPHS UNUSABLE. OTHERWISE, EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON JUNE 1, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT, 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- COMPLETE SET OF LUNAR PHOTOGRAPHY ON B/W POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 67-041A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 051167 TO 052667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 4 PHOTOGRAPHY ON 14 SHEETS OF 4- BY 6-IN. POSITIVE MICROFICHE. THESE SHEETS WERE PREPARED BY MAPPING SCIENCES BRANCH, MANNED SPACECRAFT CENTER, FROM THE NSSDC 35-MM REEL IN DATA SET -01C. THE QUALITY OF THE MICROFICHE COPIES IS SUITABLE FOR STUDIES OF MINIMUM PRECISION ONLY, AND THEREFORE THESE COPIES ARE INTENDED FOR ONSITE SELECTION OF PHOTOGRAPHS FOR WHICH HIGH-QUALITY REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- NSSDC PHOTOGRAPHIC SUPPORT DATA ON 16-MM MICROFILM NSSDC ID 67-041A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 051167 TO 052667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHIC SUPPORTING DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 4 PHOTOGRAPHS. THE DATA WERE SELECTED AND COMPILED BY NSSDC FROM THE MOST RECENT (1970) VERSION OF SUPPORTING DATA PROVIDED BY THE BOEING COMPANY. THE DATA (INCLUDING SIMILAR DATA FOR LUNAR ORBITERS 1, 2, 3, AND 5) ARE CONTAINED IN "LUNAR ORBITER PHOTOGRAPHIC SUPPORTING DATA," NSSDC 71-13, MAY 1971, AND ARE IN THREE LISTINGS -- FULL LIST, POSITION PARAMETERS, AND ILLUMINATION PARAMETERS. EACH LISTING IS ORDERED BY MISSION AND FRAME NUMBERS. THE FULL LIST CONTAINS THE TIME OF EACH EXPOSURE, THE SPACECRAFT POSITION AND ORIENTATION PARAMETERS, THE PHOTO ILLUMINATION PARAMETERS, THE LATITUDE AND LONGITUDE OF THE PRINCIPAL GROUND POINT, THE CORNER COORDINATES AND SIDE LENGTHS OF EACH IMAGE AREA, AND THE TILT DISTANCE. THIS PUBLICATION IS MAINTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC.

DATA SET NAME- INTERIM PHOTO SITE ACCURACY ANALYSIS CALCULATIONS ON MICROFILM NSSDC ID 67-041A-01J

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 051167 TO 052667 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE RESULTS OF INTERIM CALCULATIONS (BY THE BOEING CO.) MADE IN ORDER TO PRODUCE FINAL REPORT DOCUMENTS OF PHOTO SITE ACCURACY ANALYSIS. THE DATA ARE MAINTAINED ON SIX REELS OF 16-MM FILM. THE CALCULATIONS ON 10-HARMONICS ANALYSIS WERE MADE FOR VARIOUS MODELS, USING DATA REPORTED FROM VARIOUS STATIONS, PASSES, AND ITERATIONS. SOME OF THE REELS CONTAIN PLOTS OF RESIDUALS OF RV, C3, CC3, VS TIME FOR VARIOUS STATIONS, PASSES, ITERATIONS, SEQUENCES, AND MODELS.









AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 050369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE 7-TRACK, 800-BPI, BINARY TAPES USING XDS 930 INTEGER FORMAT. THE TAPES WERE GENERATED BY PERSONNEL AT THE UNIVERSITY OF CHICAGO. EACH PHYSICAL RECORD CONSISTS OF 40 LOGICAL RECORDS OF 25 WORDS EACH. END-OF-FILE MARKS SEPARATE ORBITS, AND A DOUBLE END-OF-FILE MARK ENDS EACH TAPE. EPHEMERIS POINTS (LOGICAL RECORDS) ARE GIVEN AT 61.44-SEC INTERVALS. DATA PRESENTED INCLUDE TIME, PSEUDO SEQUENCE COUNT, SATELLITE RADIAL DISTANCE, SATELLITE AND SUN GEOCENTRIC AND GEOMAGNETIC LATITUDE AND LONGITUDE, SATELLITE SOLAR-MAGNETOSPHERIC COORDINATES, SATELLITE-EARTH-SUN ANGLE, SATELLITE SPEED, B AND L, B/BO, AND THE SOLAR ECLIPTIC COMPONENTS OF THE GSFC (12/66) MODEL GEOMAGNETIC FIELD AS UPDATED TO 1965.0. THERE ARE NO KNOWN SIGNIFICANT DATA GAPS.

DATA SET NAME- INTERPLANETARY TIME INTERVALS, BY NSSDC ID 67-051A-00G  
MAGNETIC SECTOR POLARITY, ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052567 TO 122467 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 16-MM REEL OF MICROFILM GENERATED AT NSSDC FROM A CARD LISTING THAT WAS GENERATED FROM TWO DECKS OF PUNCHED CARDS. DATA SET 67-051A-00H IS ALSO ON THIS REEL OF MICROFILM. EACH CARD IMAGE FROM THE FIRST DECK OF PUNCHED CARDS GIVES, TO THE NEAREST MINUTE, THE START AND STOP TIME (JANUARY 1 = DAY 0) OF EACH INTERVAL DURING WHICH THE IMP 4 SPACECRAFT WAS BEYOND THE EARTH'S BOW SHOCK IN A REGION OF POSITIVE (AWAY FROM THE SUN) INTERPLANETARY MAGNETIC FIELD POLARITY. IF, ON THE INBOUND OR OUTBOUND LEG OF ONE ORBIT, MULTIPLE BOW SHOCK CROSSINGS OCCURRED DURING TO BOW SHOCK MOTION, THEN AN APPROPRIATE NUMBER OF CARDS ARE INCLUDED TO DESCRIBE EACH INTERPLANETARY INTERVAL. THE CARD IMAGES FROM THE SECOND DECK OF PUNCHED CARDS ARE SIMILAR TO THOSE FROM THE FIRST EXCEPT THAT TIME INTERVALS SPENT IN NEGATIVE MAGNETIC SECTORS ARE GIVEN. THE CARD IMAGES FROM THE TWO DECKS ARE SEPARATELY TIME ORDERED AND COVER THE FIRST 50 SPACECRAFT ORBITS (MAY 25 TO DECEMBER 24, 1967). THE INFORMATION IN THIS DATA SET IS BASED ON ANALYSIS OF DATA FROM THE GSFC IMP 4 MAGNETOMETER (67-051A-11) AND WAS PROVIDED BY DR. D.H. FAIRFIELD.

DATA SET NAME- INTERPLANETARY TIME INTERVALS, FULLY NSSDC ID 67-051A-00H  
TIME ORDERED, ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052567 TO 122467 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 16-MM REEL OF MICROFILM GENERATED AT NSSDC FROM A CARD LISTING. THE SOURCE DECK WAS ITSELF GENERATED AT NSSDC AS A TIME-ORDERED COMPOSITE OF THE TWO DECKS THAT CONSTITUTE DATA SET 67-051A-00G. DATA SET 67-051A-00G IS ALSO ON THIS REEL OF MICROFILM. THE DATA CONTAIN AN INDICATOR ON EACH CARD IMAGE FOR POSITIVE OR NEGATIVE MAGNETIC FIELD. NOTE THAT THE TIME INTERVAL GIVEN ON ONE CARD IMAGE IS THE INTERVAL OF BOW SHOCK TO BOW SHOCK ONLY IF AN INTERPLANETARY MAGNETIC SECTOR BOUNDARY WAS NOT ENCOUNTERED WHILE THE SPACECRAFT WAS BEYOND THE BOW SHOCK.

EXPERIMENT NAME- LOW-ENERGY SOLID-STATE TELESCOPE NSSDC ID 67-051A-01

ORIGINAL EXPERIMENT INSTITUTION- BELL TELEPHONE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.L. BROWN	BELL TELEPHONE LAB	MURRAY HILL, NJ
OI - G.L. MILLER	BELL TELEPHONE LAB	MURRAY HILL, NJ
OI - C.S. ROBERTS	BELL TELEPHONE LAB	MURRAY HILL, NJ

DATE LAST USABLE EXPERIMENT DATA RECORDED-050369

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A FOUR-ELEMENT SOLID-STATE TELESCOPE WITH AN ACCEPTANCE CONE HALF ANGLE OF 20 DEG WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS. DURING EACH 2.73-MIN INTERVAL, 9.82-SEC ACCUMULATIONS WERE OBTAINED IN EACH OF 16 DISTINCT COUNTING MODES. THESE MODES INVOLVED PROTONS IN FIVE ENERGY INTERVALS COVERING 0.6 TO 18 MEV, ALPHA PARTICLES IN FOUR INTERVALS COVERING 1.7 TO 80 MEV, AND ELECTRONS, DEUTERONS, TRITONS, AND HELIUM-3 NUCLEI IN THE INTERVALS 0.3 TO 3, 5 TO 20, 5.5 TO 25, AND 11 TO 72 MEV, RESPECTIVELY. ONBOARD CALIBRATION CHECKS WERE PERFORMED EVERY 6 HR. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH TO THE SPACECRAFT REENTRY DATE MAY 3, 1969. FOR FURTHER DETAILS, SEE LANZEROTTI, JGR, 74, PAGE 2851, 1969, AND REFERENCES CONTAINED THEREIN.

DATA SET NAME- REDUCED COUNT RATE PLOTS ON MICROFILM NSSDC ID 67-051A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 022769 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 90 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM MICROFILM SUBMITTED BY THE EXPERIMENTER. PLOTTED ARE COUNTS OBTAINED IN INDIVIDUAL ACCUMULATION INTERVALS AND FLAGGED AS GOOD DATA. CALIBRATION MODE COUNTS AND OCCASIONAL DATA POINTS THAT ARE OBVIOUSLY BAD BUT ARE FLAGGED AS GOOD DUE TO THE CLEANLINESS OF THEIR SPACECRAFT-TO-EARTH TRANSMISSION ARE VISIBLE. EACH MICROFILM REEL CONTAINS ABOUT 8 DAYS OF DATA. EACH FRAME CONTAINS 8 HR OF DATA. THERE ARE 24 DATA FRAMES COVERING EACH 8 HR INTERVAL. THESE FRAMES COVER ALL THE EXPERIMENT COUNTING MODES. EVERY 25TH FRAME CONTAINS 8 HR OF

EPHEMERIS DATA (RADIAL DISTANCE AND SOLAR MAGNETOSPHERIC AND SOLAR ECLIPTIC LATITUDE AND LONGITUDE). ALL THE DATA OBTAINED BY THIS EXPERIMENT OVER THE LIFE OF THE SPACECRAFT WILL EVENTUALLY BE AVAILABLE FROM NSSDC IN THIS FORM.

EXPERIMENT NAME- ION CHAMBER

NSSDC ID 67-051A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.A. ANDERSON U OF CALIFORNIA, BERK BERKELEY, CA  
OI - G.H. PITT U OF CALIFORNIA, BERK BERKELEY, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-110567  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE INSTRUMENTATION FOR THIS EXPERIMENT CONSISTED OF A 4-IN. NEHER TYPE IONIZATION CHAMBER AND TWO LIONEL TYPE 205 HT GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS ABOVE 0.7 MEV AND PROTONS ABOVE 12 MEV. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE A DETECTED ELECTRONS ABOVE 45 KEV THAT WERE SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A 70-DEG FULL ANGLE AND AN AXIS OF SYMMETRY THAT WAS 20 DEG OFF THE SPACECRAFT SPIN AXIS. GM TUBE B RESPONDED TO ELECTRONS AND PROTONS ABOVE 22 AND 300 KEV, RESPECTIVELY. IN AN ACCEPTANCE CONE OF 70-DEG FULL ANGLE CENTERED AT THE SPIN DIRECTION. BOTH GM TUBES RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS OF ENERGIES ABOVE 2.5 AND 50 MEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER AND COUNTS FROM EACH GM TUBE WERE ACCUMULATED FOR 9.92 SEC AND READ OUT EVERY 10.24 SEC. THE TIME BETWEEN THE FIRST TWO ION CHAMBER PULSES IN AN ACCUMULATION PERIOD WAS ALSO TELEMETERED. THIS EXPERIMENT PERFORMED NORMALLY FROM LAUNCH THROUGH SEPTEMBER 8, 1967, WHEN GM TUBE A FAILED. ON NOVEMBER 5, 1967, GM TUBE B FAILED AND THE EXPERIMENT WAS TERMINATED.

DATA SET NAME- ION CHAMBER AND GM TUBE COUNT RATES ON NSSDC ID 67-051A-02A  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 091567 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF COUNT RATE PLOTS (COUNTS/SEC VS UT, EARTH-SPACECRAFT DISTANCE, MAGNETOSPHERIC LATITUDE, AND ECLIPTIC LONGITUDE) FOR THE ION CHAMBER AND TWO GM TUBES OF THE EXPERIMENT. THE PLOTS ARE CHRONOLOGICALLY ORDERED ON ONE REEL OF 35-MM MICROFILM. THE GM COUNT RATES ARE DEAD TIME CORRECTED. EACH PLOT COVERS A 24-HR TIME PERIOD AND CONTAINS THREE TRACES -- (1) ELECTRONS ABOVE 45 KEV FOR GM TUBE A (DESIGNATED 'SCATTER' PARTICLES IN THE PLOTS), (2) ELECTRONS ABOVE 22 KEV AND PROTONS ABOVE 300 KEV FOR GM TUBE B (DESIGNATED 'OPEN' PARTICLES IN THE PLOTS), AND (3) ELECTRONS ABOVE 0.7 MEV AND PROTONS ABOVE 12 MEV FOR THE ION CHAMBER. THE PLOTS ARE ANNOTATED WITH DATA QUALITY FLAGS. HOWEVER, THESE FLAGS DENOTE THE NOISINESS OF DATA TRANSMISSION AND NOT NECESSARILY THE INTRINSIC QUALITY OF THE DATA. THE SCALING FACTORS FOR EACH

OF THE THREE TRACES APPEAR AT THE TOP OF EACH PLOT.

EXPERIMENT NAME- COSMIC-RAY ANISOTROPY

NSSDC ID 67-051A-05

ORIGINAL EXPERIMENT INSTITUTION- SW CNTR AD STUDIES

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.G. MCCracken U OF ADELAIDE ADELAIDE, AUSTRALIA  
OI - U.R. RAO PHYSICAL RESEARCH LAB AHMEDABAD, INDIA  
OI - W.C. BARTLEY U OF TEXAS DALLAS, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-050369

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY SOLAR PARTICLE ANISOTROPY AND ITS VARIATION WITH TIME. A TELESCOPE, CONSISTING OF THREE ALIGNED DETECTORS (A, SOLID STATE, B, PLASTIC SCINTILLATOR, C, CSI SCINTILLATOR) AND A PLASTIC SCINTILLATOR ANTICOINCIDENCE SHIELD (D), WAS USED TO MEASURE PROTONS FROM 0.8 TO 7.0 MEV (COUNTS IN A BUT NOT IN B) AND FROM 35 TO 110 MEV (COINCIDENT COUNTS IN B (DE/CX) AND C (TOTAL E) BUT NOT IN D). PULSE HEIGHT ANALYSIS YIELDED SIX-POINT SPECTRA WITHIN EACH OF THESE TWO ENERGY INTERVALS. PROTONS FROM 7 TO 55 MEV (COUNTS IN A AND B) WERE ALSO RECORDED WITHOUT SPECTRAL INFORMATION. IN ADDITION, A PROPORTIONAL COUNTER PROVIDED DIRECTIONAL MEASUREMENTS OF X RAYS WITH ENERGIES ABOVE 2 KEV AND ELECTRONS ABOVE 70 KEV. COUNTS IN EACH PARTICLE COUNTING MODE WERE OBTAINED IN EACH OF EIGHT OCTANTS IN THE ECLIPTIC PLANE. X-RAY COUNTS WERE OBTAINED IN THE SOLAR OCTANT. A COMPLETE SET OF COUNT RATES AND SPECTRAL DATA WAS OBTAINED EVERY 81.9 SEC. THE PROPORTIONAL COUNTER AND TELESCOPE WORKED WELL FROM LAUNCH UNTIL MARCH 27, 1968, AND MAY 3, 1969 (SPACECRAFT REENTRY DATE), RESPECTIVELY. FOR A MORE DETAILED DESCRIPTION, SEE SOLAR PHYSICS, 17, PAGE 218 (1971).

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON TAPE

NSSDC ID 67-051A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 050269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 7-TRACK, 800-BPI, BCD MAGNETIC TAPE SUBMITTED BY THE EXPERIMENTER. EACH PHYSICAL RECORD CONSISTS OF 240 CARD IMAGE LOGICAL RECORDS. EACH LOGICAL RECORD CONTAINS TIME AND HOURLY AVERAGED COUNT RATES. IN THE FIRST OF THREE FILES, COUNT RATES FOR EACH OF THE FOUR SENSORS MAKING UP THE COMPOSITION TELESCOPE ARE GIVEN. THESE ARE OF SOMEWHAT LIMITED UTILITY BECAUSE GEOMETRICAL FACTORS ARE SIGNIFICANTLY ENERGY DEPENDENT. IN THE SECOND FILE, 0.7- TO 7.6-MEV PROTON COUNT RATES FOR EACH OF EIGHT AZIMUTHAL OCTANTS ARE GIVEN. THESE ARE READILY CONVERTIBLE TO FLUXES. IN THE LAST FILE, COUNT RATES FOR EACH OF EIGHT AZIMUTHAL OCTANTS OBTAINED FROM THE PROPORTIONAL COUNTER (OF KNOWN GEOMETRICAL FACTOR) ARE GIVEN. THE DATA IN EACH FILE ARE COMPLETE FROM LAUNCH THROUGH MAY 2, 1969 (FILE 1), MARCH 16, 1969 (FILE 2), AND FEBRUARY 15, 1968 (FILE 3), RESPECTIVELY.

EXPERIMENT NAME- SOLAR PROTON MONITOR

NSSDC ID 67-051A-07

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.O. BOSTROM APPLIED PHYSICS LAB SILVER SPRING, MD  
OI - D.J. WILLIAMS NOAA-ERL BOULDER, CO  
OI - D.E. HAGGE NASA-JSC HOUSTON, TX  
OI - F.B. MCDONALD NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-050369

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SOLAR PROTON MONITORING EXPERIMENT USED FOUR SEPARATE DETECTORS, EACH OF WHICH USED ONE OR MORE SOLID-STATE SENSORS. THREE DETECTORS MEASURED THE OMNIDIRECTIONAL FLUXES OF PROTONS AND ALPHA PARTICLES WITH ENERGY PER NUCLEON VALUES ABOVE 10, 30, AND 60 MEV. ALPHA PARTICLE CONTRIBUTIONS TO THE TOTAL COUNT RATES WERE GENERALLY LESS THAN 10 PERCENT. THE 10-MEV CHANNEL WAS SAMPLED FOR TWO 19.2 SEC INTERVALS EVERY 163.8 SEC AND THE 30- AND 60-MEV CHANNELS FOR ONE 19.2 SEC INTERVAL EVERY 163.8 SEC. RESULTANT HOURLY AVERAGED FLUXES HAVE BEEN PUBLISHED IN SOLAR-GEOPHYSICAL DATA (NOAA, BOULDER) ON A RAPID BASIS. THE FOURTH DETECTOR HAD A 60-DEG FULL LOOK ANGLE NORMAL TO THE SPACECRAFT SPIN AXIS AND MEASURED FLUXES OF 1- TO 10-MEV PROTONS FOR TWO 19.2 SEC INTERVALS EVERY 163.8 SEC. DATA WERE OBTAINED FROM THE FIRST THREE DETECTORS BETWEEN LAUNCH AND MAY 3, 1969. DATA FROM THE FOURTH DETECTOR WERE OBTAINED BETWEEN LAUNCH AND JUNE 12, 1968.

DATA SET NAME- DAILY AVERAGED COUNT RATES, 10, 30, 60  
MEV CHANNELS

NSSDC ID 67-051A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 050269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM WHICH CONTAINS COPIES OF EXPERIMENTER-SUPPLIED PLOTS OF DAILY AVERAGED COUNT RATES VERSUS TIME TAKEN IN THE 10-, 30-, AND 60-MEV PROTON CHANNELS.

DATA SET NAME- HOURLY AVERAGED SOLAR PROTON FLUXES  
PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA'

NSSDC ID 67-051A-07B

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 052467 TO 043069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 25 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS PUBLISHED DATA SET CONSISTS OF MONTHLY PLOTS AND TABULAR LISTINGS OF HOURLY AVERAGED OMNIDIRECTIONAL FLUXES OF PROTONS WITH ENERGIES ABOVE 10, 30, AND 60 MEV. DATA OBTAINED DURING A GIVEN MONTH WERE PUBLISHED IN 'SOLAR-GEOPHYSICAL DATA (COMPREHENSIVE REPORTS)' WITH A 6-MONTH LAG.

DATA SET NAME- COUNT RATES ON ENCYCLOPEDIA TAPES

NSSDC ID 67-051A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 050369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 22 IBM 360 BINARY, 800-BPI, 9-TRACK TAPES AS SUBMITTED BY THE EXPERIMENTER. SEVEN-TRACK COPIES EXIST. EACH TAPE HAS ONE FILE AND IS BLOCKED WITH 20 LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD HAS 176 32-BIT WORDS. THERE ARE INTERSPERSED ON THE TAPES BOTH ID RECORDS AND DATA RECORDS. THERE IS ONE ID RECORD FOR A GIVEN SEGMENT OF DATA OBTAINED BY ONE TRACKING STATION DURING ONE SPACECRAFT PASS OVER THAT STATION. THE DATA LOGICAL RECORDS CONTAIN TIME, DATA QUALITY INDICATORS, DEAD-TIME CORRECTED COUNT RATES (CPS) OBTAINED FROM ALL THE DETECTOR READINGS TAKEN DURING ONE 2.73-MIN INTERVAL, ORBIT DATA, AND OTHER MISCELLANEOUS INFORMATION. DATA COVERAGE BETWEEN MAY 24, 1967, AND MAY 3, 1969, IS VIRTUALLY COMPLETE.

DATA SET NAME- EDITED HOURLY AVERAGED COUNT RATES ON  
MAGNETIC TAPE

NSSDC ID 67-051A-07D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 050369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE EXPERIMENTER-SUPPLIED TAPE, WHICH IS OF 7-TRACK, 800 BPI, IBM/360 BINARY FORMAT. EACH LOGICAL RECORD CONSISTS OF 3120 8-BIT BYTES AND CONTAINS DATA FOR 1 DAY. THERE ARE SIX LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE FOR EACH CALENDAR YR OF DATA ON THE TAPE. DATA GIVEN ON AN HR-BY-HR BASIS WITHIN EACH LOGICAL RECORD INCLUDE TIME, EPHEMERIS DATA, AND HOURLY AVERAGED COUNT RATES FOR EACH OF THE FIVE EXPERIMENT COUNTING MODES. THESE RATES WERE THOROUGHLY EDITED, IN THAT NOISE POINTS AND MAGNETOSPHERIC COUNTING HAVE BEEN REMOVED. RECOGNIZABLY INTERPOLATED INTERPLANETARY COUNT RATE VALUES HAVE BEEN INSERTED FOR MAGNETOSPHERIC TRAVERSAL PERIODS. THE TIME COVERAGE IS ESSENTIALLY COMPLETE BETWEEN MAY 24, 1967 AND MAY 3, 1969. WHEN TAKEN TOGETHER WITH THE CORRESPONDING DATA SET FROM IMP 5 (69-053A-07C), THESE DATA PROVIDE A NEARLY CONTINUOUS RECORD OF 1 TO 100 MEV INTERPLANETARY PROTON FLUXES FROM MAY 1967 TO DECEMBER 1972.



EXPERIMENT NAME- ELECTROSTATIC ANALYZER

NSSDC ID 67-051A-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.	OGILVIE	NASA-GSFC	GREENBELT, MD
OI - T.D.	WILKERSON	U OF MARYLAND	COLLEGE PARK, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-013068

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

AN ELECTROSTATIC ANALYZER AND AN E CROSS 8 VELOCITY SELECTOR NORMAL TO THE SPACECRAFT SPIN AXIS WERE USED TO SEPARATELY DETERMINE PROTON AND ALPHA PARTICLE SPECTRA IN THE SOLAR WIND. FOR EACH SPECIES, MEASUREMENTS IN THE ENERGY PER CHARGE RANGE 310 TO 5100 EV WERE MADE AT 14 POINTS LOGARITHMICALLY EQUISPACED IN ENERGY. DURING INDIVIDUAL SPACECRAFT ROTATIONS, COUNTS WERE OBTAINED IN EACH OF SIXTEEN 22.5-DEG SECTORS FOR A GIVEN SPECIES AND ENERGY. THE SUM OF THESE COUNTS, THE SUM OF THE SQUARES OF THESE COUNTS, AND THE SECTOR NUMBER OF MAXIMUM COUNTING WERE TELEMETERED TO EARTH. AFTER SUCCESSIVE 61.44-SEC SPECTRAL DETERMINATIONS FOR PROTONS AND ALPHA PARTICLES, 15 CONSECUTIVE READINGS FOR PROTONS AT 1408 EV WERE OBTAINED. A PERIOD OF 3.07 MIN SEPARATED TWO SPECTRA OF THE SAME SPECIES. THE INSTRUMENT OPERATED NORMALLY UNTIL JANUARY 30, 1968. AT THAT TIME, IT WAS TURNED OFF SINCE IT WAS SPENDING ALL ITS TIME IN THE MAGNETOSPHERE. LATER, ATTEMPTS TO REACTIVATE THE SENSOR FAILED.

DATA SET NAME- PLASMA PARAMETERS MERGED WITH MAGNETIC  
FIELD DATA ON TAPE

NSSDC ID 67-051A-08B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 020868 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUPPLIED BY THE EXPERIMENTER, CONSIST OF 3.07-MIN VALUES OF THE BULK PLASMA PARAMETERS ON MAGNETIC TAPE. MERGED WITH A 20.45-SEC MAGNETIC FIELD DATA SET (67-051A-11A), THE PLASMA PARAMETER DATA ARE ON SIX 9-TRACK, 800-BPI, IBM 360, BINARY MAGNETIC TAPES. EACH PHYSICAL RECORD CONTAINS 280 LOGICAL RECORDS. AND EACH LOGICAL RECORD CONTAINS 27 FOUR-BYTE DATA WORDS. EACH TAPE CONTAINS DATA FOR 10 ORBITS (43 DAYS). DENSITY, TEMPERATURE, BULK VELOCITY, THE RATIO OF BULK VELOCITY TO THERMAL SPEED, AND FLOW DIRECTION ARE INCLUDED FOR BOTH THE PROTON AND ALPHA PARTICLES COMPONENTS OF THE SOLAR WIND AND SHEATH PLASMA. THESE PARAMETERS WERE COMPUTED BY FITTING AN APPROPRIATE SMOOTH CURVE THROUGH ALL THE MEASURED SPECTRAL POINTS SUFFICIENTLY ABOVE THRESHOLD AND THEN TAKING MOVEMENTS OF THIS EMPIRICAL DISTRIBUTION FUNCTION.

EXPERIMENT NAME- TRIAXIAL FLUXGATE MAGNETOMETER

NSSDC ID 67-051A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC



MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 030769 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF THREE REELS OF 35-MM MICROFILM CONTAINING 6 HR OF DATA PER FRAME. POINTS REPRESENTING FIELD MAGNITUDE AND FIELD VECTOR POLAR AND AZIMUTHAL ANGLES IN SOLAR ECLIPTIC OR SOLAR MAGNETOSPHERIC COORDINATES ARE GIVEN EACH 20 SEC. SPACECRAFT EPHEMERIS DATA ARE PLOTTED ONCE EACH HOUR. THE DATA COVERAGE IS COMPLETE BETWEEN LAUNCH AND THE LOSS OF SOLAR ASPECT ON MARCH 4, 1969.

DATA SET NAME- MULTI-SPACECRAFT HOURLY AVERAGED INTER- PLANETARY MAGNETIC FIELD VECTORS ON TAPE NSSDC ID 67-051A-11C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052467 TO 122768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, WAS GENERATED FROM EXPLORER 28, 34, 33, AND 35 (IMP 3 AND 4, AIMP 1 AND 2) DATA IN ORDER TO HAVE AS NEARLY COMPLETE AS POSSIBLE A RECORD OF THE INTERPLANETARY MAGNETIC FIELD, WITH 1-HR TIME RESOLUTION, OVER THE PERIOD JUNE 1965 THROUGH DECEMBER 1968. THE DATA WERE SUBMITTED ON ONE 9-TRACK, 800-BPI, 8CD CARD IMAGE MAGNETIC TAPE. EACH CARD IMAGE CONTAINS DATA FOR 1 HR AS OBTAINED ON ONE SPACECRAFT. NO HOUR IS COVERED BY MORE THAN ONE SPACECRAFT. EACH RECORD CONTAINS TIME, SPACECRAFT IDENTIFICATION AND LOCATION (RADIAL DISTANCE AND SOLAR ECLIPTIC CARTESIAN COORDINATES), AND HOURLY AVERAGED MAGNETIC FIELD VECTOR MAGNITUDE, SOLAR ECLIPTIC LATITUDE AND LONGITUDE ANGLES, AND CARTESIAN COMPONENTS WITH THEIR STANDARD DEVIATIONS.

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SPACECRAFT COMMON NAME- MARINER 5 NSSDC ID 67-060A  
ALTERNATE NAMES- VENUS, MARINER VENUS 67

LAUNCH DATE- 06/14/67 SPACECRAFT WEIGHT IN ORBIT- 245. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-112167  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/14/67 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 292. DAYS  
APOAPSIS- 1.0 AU RAD PERIAPSIS- .72 AU RAD INCLINATION- 0. DEG

**SPACECRAFT BRIEF DESCRIPTION**

THE MARINER 5 SPACECRAFT WAS THE FIFTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY, OR NON-LANDING, MODE. MARINER 5 WAS A REFURBISHED BACKUP SPACECRAFT FOR THE MARINER 4 MISSION AND WAS CONVERTED FROM A MARS MISSION TO A VENUS MISSION. THE SPACECRAFT WAS FULLY ATTITUDE STABILIZED, USING THE SUN AND THE STAR CANOPUS AS REFERENCES. A CENTRAL COMPUTER AND SEQUENCER SUBSYSTEM SUPPLIED TIMING SEQUENCES AND COMPUTING SERVICES FOR OTHER SPACECRAFT SUBSYSTEMS. THE SPACECRAFT PASSED 4000 KM FROM VENUS ON NOVEMBER 21, 1967. THE SPACECRAFT INSTRUMENTS MEASURED BOTH INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS, CHARGED PARTICLES, AND PLASMAS, AS WELL AS THE RADIO REFRACTIVITY AND UV EMISSIONS OF THE VENUSIAN ATMOSPHERE. THE MISSION WAS TERMED A SUCCESS.

EXPERIMENT NAME- INTERPLANETARY ION PLASMA PROBE FOR NSSDC ID 67-060A-03  
E/Q OF 40 TO 9400 VOLTS

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - H.S. BRIDGE MIT CAMBRIDGE, MA

DATE LAST EXPERIMENT DATA RECORDED-112167  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

**EXPERIMENT BRIEF DESCRIPTION**

THIS THREE-SECTIONAL-COLLECTOR MODULATED-GRID FARADAY CUP MEASURED POSITIVE IONS FROM 40 TO 9400 EV/Q IN EIGHT APPROXIMATELY LOGARITHMICALLY EQUISPACED ENERGY WINDOWS. AS THE INSTRUMENT ALWAYS POINTED TOWARD THE SUN, VECTOR DATA WERE OBTAINED BY COMPARING THE RELATIVE SIGNALS FROM THE THREE 120 DEG PIE-SHAPED COLLECTOR SECTIONS. DURING EACH TELEMETRY SEQUENCE, THE INSTRUMENT WAS STEPPED FORWARD AND BACKWARD THROUGH THE EIGHT WINDOWS TO MEASURE THE SUM OF THE CURRENTS FROM THE THREE PLATES. THEN IT WAS STEPPED FORWARD AND BACKWARD TO MEASURE, FOR EACH VOLTAGE SETTING, THE CURRENTS TO THE THREE PLATES IN SUCCESSION. THE ENTIRE 32 STEPS IN VOLTAGE WINDOW PER TELEMETRY SEQUENCE PRODUCED 64 CURRENT MEASUREMENTS. THESE MEASUREMENTS WERE REPEATED EVERY 5 MIN. THE INSTRUMENT OPERATED NOMINALLY THROUGHOUT ITS MISSION.

DATA SET NAME- HOURLY AVERAGED PROTON PLASMA PARAMETERS NSSDC ID 67-060A-03A  
ON 16-MM MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THESE DATA CONSIST OF ONE REEL OF 16-MM MICROFILM MADE BY NSSDC FROM EXPERIMENTER-GENERATED COMPUTER LISTINGS OF 1-HR AVERAGED INTERPLANETARY PLASMA PARAMETERS FROM MARINER 5. THE PRINTOUT CONTAINS THE BULK VELOCITY VECTOR IN BOTH SOLAR ECLIPTIC AND SOLAR EQUATORIAL COORDINATES AND CORRESPONDING STANDARD DEVIATIONS.

DATA SET NAME- HOURLY AVERAGED PROTON PLASMA PARAMETERS      NSSDC ID 67-060A-03B  
ON 7-TRACK BCD MAGNETIC TAPE.

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUPPLIED BY THE EXPERIMENTER, ARE ON A SINGLE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE WITH 402 CHARACTERS PER PHYSICAL RECORD. THE TAPE CONTAINS ONE FILE, WHICH INCLUDE THE HOURLY AVERAGED VECTOR BULK PROTON VELOCITY IN SOLAR ECLIPTIC AND SOLAR EQUATORIAL COORDINATES, THE NUMBER DENSITY, THE MOST PROBABLE THERMAL SPEED, AND THE FLUX (BULK SPEED TIMES NUMBER DENSITY) MERGED WITH THE HOURLY VECTOR MAGNETIC FIELD DATA FROM THE TRIAXIAL LOW-FIELD MAGNETOMETER EXPERIMENT (67-060A-05). THE CORRESPONDING STANDARD DEVIATIONS ARE ALSO INCLUDED.

EXPERIMENT NAME- TRIAXIAL LOW FIELD HELIUM MAGNETOMETER      NSSDC ID 67-060A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E.J. SMITH      NASA-JPL      PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-112167

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

FOR THIS EXPERIMENT A LOW-FIELD HELIUM MAGNETOMETER WAS USED TO OBTAIN TRIAXIAL MEASUREMENTS OF INTERPLANETARY AND VENUSIAN MAGNETIC FIELDS. NOT TO BE CONFUSED WITH RUBIDIUM VAPOR OR PROTON PRECESSION INSTRUMENTS, ITS OPERATION DEPENDED ON THE VARIATION IN ABSORBTIVITY OF EXCITED HELIUM TO CIRCULARLY POLARIZED INFRARED LIGHT WITH APPLIED FIELD. SWEEPED HELMHOLTZ COILS NULLED THE AMBIENT FIELD BY USE OF FEEDBACK CIRCUITS. MOUNTED ON A 1.5-M BOOM, THE INSTRUMENT'S DYNAMIC RANGE WAS PLUS OR MINUS 204 GAMMAS PER AXIS, WITH A MEASUREMENT PRECISION DETERMINED BY TELEMETRY CONSTRAINTS OF PLUS OR MINUS 0.2 GAMMA. OFFSET FIELDS WERE CORRECTABLE TO WITHIN 0.25 GAMMA PER COMPONENT. THE EXPERIMENT OPERATED IN A HIGH (LOW) BIT-RATE MODE OF 3 VECTOR SAMPLES SPACED 1/7, 2/7, AND 4/7 OF THE SEQUENCE EVERY 12.6 (50.4) SEC. THUS THE NYQUIST FREQUENCIES WERE ABOUT 0.12 AND 0.03 HZ RESPECTIVELY. HIGH-RATE DATA WERE OBTAINED FROM JUNE 14 TO JULY 24, 1967, AND FOR 4 HOURS ON OCTOBER 25, 1967. LOW BIT-RATE DATA WERE OBTAINED FOR THE REMAINDER OF THE EXPERIMENT'S USEFUL LIFETIME. QUALITY OF DATA WAS HIGH EXCEPT DURING SEPTEMBER 23 TO OCTOBER 1, 1967, WHEN TELEMETERED DATA WERE OF POOR QUALITY. DURING THAT PERIOD DATA VALUES WERE UNCERTAIN BY AN INTEGRAL MULTIPLE OF 128.

DATA SET NAME- FINE-TIME SCALE MAGNETOMETER DATA ON  
TAPE

NSSDC ID 67-060A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS EXPERIMENTER SUPPLIED DATA SET ON BINARY 556-BPI, 7-TRACK IBM 7094 MAGNETIC TAPE HAS A PHYSICAL RECORD SIZE OF 330 WORDS, AND A NOMINAL LOGICAL RECORD SIZE OF 652 WORDS. NOMINALLY THERE ARE 128 FRAMES OF DATA PER LOGICAL RECORD. EACH FRAME CONTAINS FIVE PACKED DATA WORDS, CORRESPONDING TO ONE TIME WORD AND CARTESIAN COMPONENTS OF THREE VECTOR READINGS OF THE MAGNETIC FIELD. THE TIME COVERED BY EACH FRAME IS 12.6 SEC FOR THE HIGH SATELLITE BIT RATE AND 50.4 SEC FOR THE LOW RATE. AT THE END OF EACH LOGICAL RECORD ARE CONTAINED EPHEMERIS INFORMATION AND DATA REQUIRED TO GENERATE THE ORIGINAL TELEMETERED DATA IN SPACECRAFT COORDINATES. THESE DATA ARE IN THE JPL VERSION OF SPACECRAFT-CENTERED SOLAR ECLIPTIC COORDINATES WITH THE X AXIS POINTING RADially AWAY FROM THE SUN, THE Y AXIS POINTING IN THE DIRECTION OF PLANETARY MOTION, AND THE Z AXIS NORMAL TO THE ECLIPTIC (POSITIVE NORTH). ALL AVAILABLE GOOD QUALITY DATA POINTS ARE CONTAINED ON THIS TAPE -- ABOUT 300,000 VECTOR VALUES.

DATA SET NAME- ONE, THREE, AND 24 HOUR AVERAGES OF INTERPLANETARY MAGNETIC FIELD VECTORS NSSDC ID 67-060A-05B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS 9-TRACK, 800-BPI, IBM 360, BINARY TAPE, SUPPLIED BY THE EXPERIMENTER, CONTAINS AVERAGED DATA FROM THE JPL HELIUM MAGNETOMETER EXPERIMENT ON MARINER 5. THERE ARE TWO LOGICAL RECORDS PER 24 HR OF DATA. THE FIRST LOGICAL RECORD SPANS 20 PHYSICAL RECORDS OF 257 WORDS AND ONE PHYSICAL RECORD OF 173 WORDS. THIS RECORD CONTAINS TIME, EPHEMERIS, 168.75-SEC, 22.5-MIN, 3-HR, AND 1-DAY AVERAGES OF THE MAGNETIC FIELD VECTOR COMPONENTS IN GSE COORDINATES, AND THE FIELD MAGNITUDE, VARIANCE, AND NUMBER OF VECTOR READINGS IN EACH AVERAGE. THE SECOND LOGICAL RECORD SPANS SIX PHYSICAL RECORDS OF 255 WORDS AND ONE PHYSICAL RECORD OF 227 WORDS. IT CONTAINS THE CROSS VARIANCES FOR EACH OF THE ABOVE SETS OF AVERAGES.

DATA SET NAME- ONE-DAY, THREE-HR, AND ONE-HR AVG PLOTS OF TRIAXIAL MAGNETOMETER DATA ON MICROFILM NSSDC ID 67-060A-05C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM EXPERIMENTER-GENERATED MICROFILM, AS FOLLOWS -- (1) 1 HR AVERAGES FROM JUNE 14, 1967, TO JULY 23, 1967, (2) 3 HR AVERAGES FROM JULY 24, 1967, TO NOVEMBER 21, 1967, AND (3) 1 DAY AVERAGES FROM JUNE 14, 1967, TO NOVEMBER 21, 1967. THE MAGNETIC FIELD

MAGNITUDE AVERAGE AND AVERAGES OF THE VECTOR COMPONENTS IN THE JPL VERSION OF SPACECRAFT CENTERED SOLAR ECLIPTIC COORDINATES ARE PLOTTED. DATA COVERAGE IS NEARLY COMPLETE.

EXPERIMENT NAME- CELESTIAL MECHANICS

NSSDC ID 67-060A-07

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.O. ANDERSON NASA-JPL PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-112067  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

DEEP SPACE NETWORK TRACKING DATA ON MARINER 5 WERE USED TO OBTAIN IMPROVED DETERMINATIONS OF THE MASSES OF VENUS AND THE MOON, OF THE ASTRONOMICAL UNIT, AND IMPROVED EPHEMERIDES OF EARTH AND VENUS. THE EXPERIMENT USED THE ONBOARD RECEIVER AND TRANSMITTER EQUIPMENT IN CONJUNCTION WITH DEEP SPACE STATION EQUIPMENT TO OBTAIN DOPPLER MEASUREMENTS.

DATA SET NAME- DOPPLER RADIO TRACKING DATA ON TAPE

NSSDC ID 67-060A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061467 TO 112067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, PROVIDED BY THE EXPERIMENTER, CONSISTS OF TWO 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES THAT WERE PRODUCED ON AN IBM 7094 COMPUTER SYSTEM AND USED TO RECORD THE DOPPLER RADIO TRACKING DATA FROM MARINER 5. ONE TAPE COVERS PRE-MIDCOURSE DATA, AND THE SECOND TAPE COVERS DATA FROM MIDCOURSE TO THE END OF THE MISSION. THE INFORMATION CONTAINED ON THESE TAPES INCLUDES RANGE, RANGE RATE, ELEVATION, AZIMUTH, DECLINATION, RIGHT ASCENSION, ONE-, TWO-, AND THREE-WAY DOPPLER IN CYCLES PER SEC, TIME RESOLVER, RANGE UNITS, AND PLANETARY RANGE UNITS. THE FREQUENCY OF THE DATA POINTS APPEARING ON THE TAPE VARIES FROM ONE POINT EVERY 10 SEC TO ONE POINT EVERY 10 MIN.

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SPACECRAFT COMMON NAME- EXPLORER 35

NSSDC ID 67-070A

ALTERNATE NAMES- IMP-E, AIMP 2, AIMP-E

LAUNCH DATE- 07/19/67

SPACECRAFT WEIGHT IN ORBIT-

67.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST SPACECRAFT DATA RECORDED-  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF

EPOCH DATE- 07/22/67 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 691.8 MIN  
APOAPSIS- 9388. KM ALT PERIAPSIS- 2568. KM ALT INCLINATION- 169. DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 35 WAS A SPIN-STABILIZED SPACECRAFT INSTRUMENTED FOR INTERPLANETARY STUDIES AT LUNAR DISTANCES OF THE INTERPLANETARY PLASMA, MAGNETIC FIELD, ENERGETIC PARTICLES, AND SOLAR X RAYS. IT WAS LAUNCHED INTO AN ELLIPTICAL LUNAR ORBIT. THE SPIN AXIS DIRECTION WAS NEARLY PERPENDICULAR TO THE ECLIPTIC PLANE, AND THE SPIN RATE WAS 25.6 RPM. MISSION OBJECTIVES WERE ACHIEVED. AFTER SUCCESSFUL OPERATION FOR SIX YEARS, THE SPACECRAFT WAS TURNED OFF ON JUNE 24, 1973.

EXPERIMENT NAME- ENERGETIC PARTICLE

NSSDC ID 67-070A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - K.A. ANDERSON U OF CALIFORNIA, BERK BERKELEY, CA  
OI - G.H. PITT U OF CALIFORNIA, BERK BERKELEY, CA

DATE LAST EXPERIMENT DATA RECORDED-  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A 12-CM NEHER TYPE IONIZATION CHAMBER AND TWO LIONEL TYPE 205 HT GEIGER-MUELLER TUBES. THE ION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS ABOVE 0.7 MEV AND PROTONS ABOVE 12 MEV. BOTH GM TUBES WERE MOUNTED PARALLEL TO THE SPACECRAFT SPIN AXIS. GM TUBE 1 DETECTED ELECTRONS ABOVE 45 KEV THAT WERE SCATTERED OFF A GOLD FOIL. THE ACCEPTANCE CONE FOR THESE ELECTRONS HAD A 70-DEG FULL ANGLE AND AXIS OF SYMMETRY THAT WAS 20 DEG OFF THE SPACECRAFT SPIN AXIS. GM TUBE 2 RESPONDED TO ELECTRONS AND PROTONS ABOVE 22 AND 300 KEV, RESPECTIVELY. IN AN ACCEPTANCE CONE OF 70-DEG FULL ANGLE CENTERED AT THE SPACECRAFT SPIN AXIS. BOTH GM TUBES RESPONDED OMNIDIRECTIONALLY TO ELECTRONS AND PROTONS OF ENERGIES ABOVE 2.5 AND 50 MEV, RESPECTIVELY. PULSES FROM THE ION CHAMBER AND COUNTS FROM EACH GM TUBE WERE ACCUMULATED FOR 39.72 SEC AND READ OUT EVERY 40.96 SEC. IN ADDITION, THE TIME BETWEEN THE FIRST ION CHAMBER PULSES IN AN ACCUMULATION PERIOD WAS ALSO TELEMETERED. THIS EXPERIMENT PERFORMED WELL INITIALLY. ON NOVEMBER 20, 1968, THE ION CHAMBER FAILED. ON MAY 9, 1969, GM TUBE 2 FAILED. GM TUBE 1 OPERATED NORMALLY UP TO MAY 14, 1970, AFTER WHICH THE DATA COVERAGE WAS INTERMITTENT UNTIL THE SPACECRAFT WAS TURNED OFF ON JUNE 24, 1973.

DATA SET NAME- ORIGINAL REDUCED ION CHAMBER AND GM  
COUNTS ON TAPE

NSSDC ID 67-070A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 071967 TO 072468 (AS VERIFIED BY NSSDC)



QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ION CHAMBER OBSERVATIONS AND ACCUMULATED COUNTS FROM TWO GM TUBES IN A TIME-ORDERED FORMAT SUBMITTED BY THE EXPERIMENTER ON 7-TRACK, BCD MAGNETIC TAPES WRITTEN AT 800 BPI USING AN IBM 360/40 COMPUTER. EACH TAPE WAS GENERATED BY STACKING SEVEN SHORT GSFC DATA TAPES. THE FIRST FILE ON EACH STACKED TAPE IS A ONE-RECORD FILE WHICH SERVES AS AN INDEX TO THAT SHORT TAPE. EACH PHYSICAL RECORD IS 865 CHARACTERS LONG AND CAN CONTAIN SEVENTY-TWO 12-CHARACTER LOGICAL RECORDS. THE INDEX FILE PRECEDES THE STACKED EXPERIMENT DATA, IN WHICH EACH PHYSICAL RECORD CONTAINS FOUR DATA SEQUENCES. A SEQUENCE CONTAINS THE UT (DAY AND MSEC) OF THE OBSERVATION, TWO ACCUMULATIONS EACH FROM GM TUBES A AND B AND THE ION CHAMBER, THE SUN ANGLE, SATELLITE SPIN PERIOD, SUN TIME, MOON TIME, AND A NUMBER OF PROCESSING ERROR FLAGS.

EXPERIMENT NAME- AMES MAGNETIC FIELDS

NSSDC ID 67-070A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.P.	SONETT	NASA-ARC	MOFFETT FIELD, CA
OI - J.H.	WOLFE	NASA-ARC	MOFFETT FIELD, CA
OI - R.W.	SILVA	NASA-ARC	MOFFETT FIELD, CA
OI - W.J.	KERWIN	NASA-ARC	MOFFETT FIELD, CA

DATE LAST EXPERIMENT DATA RECORDED-

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE AMES MAGNETOMETER EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER AND AN ELECTRONICS PACKAGE. THE SENSORS WERE ORTHOGONALLY MOUNTED, WITH ONE SENSOR ORIENTED ALONG THE SPIN AXIS OF THE SPACECRAFT. A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS EVERY 24 HR, ALLOWING INFLIGHT CALIBRATION. THE INSTRUMENT PACKAGE INCLUDED A CIRCUIT FOR SPIN DEMODULATING THE OUTPUTS FROM THE SENSORS IN THE SPIN PLANE. THE NOISE THRESHOLD WAS ABOUT 0.2 GAMMA. THE INSTRUMENT HAD THREE RANGES COVERING PLUS OR MINUS 20, 60, AND 200 GAMMAS FULL SCALE FOR EACH VECTOR COMPONENT. THE DIGITIZATION ACCURACY FOR EACH RANGE WAS ONE PERCENT OF THE ENTIRE RANGE COVERED. THE MAGNETIC FIELD VECTOR WAS MEASURED INSTANTANEOUSLY, AND THE INSTRUMENT RANGE WAS CHANGED AFTER EACH MEASUREMENT. A PERIOD OF 2.05 SEC ELAPSED BETWEEN ADJACENT MEASUREMENTS AND 6.14 SEC BETWEEN MEASUREMENTS USING THE SAME RANGE. THE INSTRUMENT PERFORMANCE WAS NORMAL UNTIL SPACECRAFT TURNOFF ON JUNE 24, 1973.

DATA SET NAME- AVERAGED MAGNETIC FIELD VECTOR PLOTS ON MICROFILM

NSSDC ID 67-070A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 071967 TO 122370 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION:

THESE MAGNETIC FIELD VECTOR PLOTS ARE CONTAINED ON THREE REELS OF 35-MM MICROFILM AND ONE REEL OF 16-MM MICROFILM. THESE REELS CONTAIN PLOTTED 81.8-SEC SCALAR AVERAGES IN EITHER SOLAR MAGNETOSPHERIC OR SOLAR EQUATORIAL COORDINATES (Z AXIS NORTHWARD ON A PLANE CONTAINING THE SOLAR DIRECTION AND THE SOLAR SPIN AXIS) OF THE MAGNITUDE, THE LONGITUDE, AND THE LATITUDE OF THE MAGNETIC FIELD B. GENERALLY, DATA ARE PLOTTED IN SOLAR MAGNETOSPHERIC COORDINATES FOR TIMES WHEN THE SPACECRAFT WAS INSIDE THE MAGNETOSPHERE OR GEOMAGNETIC TAIL AND IN SOLAR EQUATORIAL COORDINATES WHEN THE SPACECRAFT WAS OUTSIDE THIS REGION. ABOUT 4 HR OF DATA ARE PLOTTED ON EACH FRAME. SEQUENCE NUMBER, TIME, AND THE COORDINATE SYSTEM USED ARE INDICATED ON EACH PLOT. TEMPERATURE VARIATIONS AND DRIFTS IN ZERO LEVELS OF THE SENSORS HAVE BEEN CORRECTED BY THE EXPERIMENTER. DATA ARE AVAILABLE OVER THE TIME PERIOD SPECIFIED WITH A 95 PERCENT COVERAGE.

DATA SET NAME- HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD DATA ON TAPE      NSSDC ID 67-070A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072367 TO 121568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE CDC 6600, BCD, 800-BPI, 7-TRACK MAGNETIC TAPE. THIS TAPE WAS MADE BY DR. PAUL FOUGERE FROM DIGITAL LISTINGS SUPPLIED TO HIM BY DR. CHARLES SONETT. THESE LISTINGS PREVIOUSLY HAD BEEN MANUALLY EDITED BY DR. SONETT'S STAFF AT AMES RESEARCH CENTER. THE DATA CONSIST OF HOURLY AVERAGED INTERPLANETARY MAGNETIC FIELD DATA. THE FOLLOWING INFORMATION IS GIVEN - TIME, MAGNETIC FIELD MAGNITUDE, LATITUDE, LONGITUDE, AND Y AND Z COMPONENTS IN THE ORTHOGONAL SOLAR EQUATORIAL COORDINATE SYSTEM (X AXIS POINTS TOWARD THE SUN, Z AXIS NORTHWARD IN A PLANE CONTAINING THE SOLAR DIRECTION AND THE SOLAR SPIN AXIS). MAGNETIC FIELD LATITUDE, LONGITUDE, AND X, Y, AND Z COMPONENTS IN THE SOLAR MAGNETOSPHERIC COORDINATE SYSTEM. THE NUMBER OF INDIVIDUAL VECTOR SAMPLES AVAILABLE DURING THE HOUR, THE MAGNETIC FIELD COMPONENT NORMAL TO THE EARTH-SUN LINE, AND A FLAG TO INDICATE DATA FROM EITHER EXPLORER 33 OR 35.

EXPERIMENT NAME- GSFC MAGNETOMETER

NSSDC ID 67-070A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
OI - K.W.	BEHANNON	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-062473

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE EXPERIMENT CONSISTED OF A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER. EACH SENSOR HAD DUAL RANGES OF MINUS TO PLUS 24 GAMMAS AND 64 GAMMAS, WITH DIGITIZATION RESOLUTIONS OF MINUS TO PLUS 0.094 GAMMA AND 0.25



DATA POINTS. THUS, WHETHER A USER NEEDS DATA SET -04A OR -04B IS DETERMINED BY THE REQUIREMENTS OF TEMPORAL RESOLUTION, AS THERE ARE 5.12-SEC DATA IN -04A AND ONLY 81.92-SEC AVERAGES IN -04B. TEMPORAL COVERAGE, AS OPPOSED TO RESOLUTION, IS THE SAME FOR DATA SETS -04A AND -04B.

DATA SET NAME- MULTI-SPACECRAFT HOURLY AVERAGED INTER- NSSDC ID 67-070A-04C  
PLANETARY MAGNETIC FIELD VECTORS ON TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 071967 TO 122768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, WAS GENERATED FROM EXPLORER 28, 34, 33, AND 35 (IMP 3 AND 4, AIMP 1 AND 2) DATA TO HAVE AS NEARLY COMPLETE AS POSSIBLE A RECORD OF THE INTERPLANETARY MAGNETIC FIELD, WITH 1-HR TIME RESOLUTION, OVER THE PERIOD JUNE 1965 THROUGH DECEMBER 1968. THE DATA WERE SUBMITTED ON ONE 9-TRACK, 800-BPI, BCD CARD IMAGE MAGNETIC TAPE. EACH CARD IMAGE CONTAINS DATA FOR 1 HR AS OBTAINED ON ONE SPACECRAFT. NO HOUR IS COVERED BY MORE THAN ONE SPACECRAFT. EACH RECORD CONTAINS TIME, SPACECRAFT IDENTIFICATION AND LOCATION (RADIAL DISTANCE AND SOLAR ECLIPTIC CARTESIAN COORDINATES), AND HOURLY AVERAGED MAGNETIC FIELD VECTOR MAGNITUDE, SOLAR ECLIPTIC LATITUDE AND LONGITUDE ANGLES, AND CARTESIAN COMPONENTS WITH THEIR STANDARD DEVIATIONS.

EXPERIMENT NAME- PLASMA PROBE

NSSDC ID 67-070A-06

ORIGINAL EXPERIMENT INSTITUTION- MIT

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - H.S. BRIDGE MIT CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-070468  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A MULTIGRID, SPLIT-COLLECTOR FARADAY CUP MOUNTED ON THE EQUATOR OF THE SPACECRAFT WAS USED TO STUDY THE DIRECTIONAL INTENSITY OF SOLAR WIND POSITIVE IONS AND ELECTRONS WITH PARTICULAR EMPHASIS ON THE INTERACTION OF THE SOLAR WIND WITH THE MOON. TWENTY-SEVEN INTEGRAL CURRENT SAMPLES (REQUIRING ABOUT 4.3 SEC) WERE TAKEN IN AN ENERGY PER CHARGE WINDOW FROM 80 TO 2850 V. THEN THE CURRENT WAS SAMPLED IN EIGHT DIFFERENTIAL ENERGY PER CHARGE WINDOWS BETWEEN 50 AND 5400 V AT THE AZIMUTH WHERE THE PEAK CURRENT APPEARED IN THE PREVIOUS SERIES OF INTEGRAL MEASUREMENTS. THESE MEASUREMENTS (INTEGRAL AND DIFFERENTIAL) TOOK ABOUT 25 SEC. BOTH SUM AND DIFFERENCE OF COLLECTOR CURRENTS WERE OBTAINED FOR POSITIVE IONS. ONLY THE SUM WAS OBTAINED FOR ELECTRONS. A COMPLETE SET OF MEASUREMENTS (TWO COLLECTOR PLATE SUMS AND ONE DIFFERENCE FOR PROTONS AND ONE COLLECTOR PLATE SUM FOR ELECTRONS) REQUIRED 328 SEC. THE EXPERIMENT WORKED WELL FROM LAUNCH UNTIL ITS FAILURE IN JULY 1968.





ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - H.R. ANDERSON RICE U HOUSTON, TX  
OI - V.H. NEHER CAL TECH PASADENA, CA.

DATE LAST USABLE EXPERIMENT DATA RECORDED-080267  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE COSMIC-RAY AND SOLAR FLARE PARTICLE INTENSITIES (PROTONS ABOVE 10 MEV, ELECTRONS ABOVE 0.5 MEV) USING AN ION CHAMBER. THE ION CHAMBER WAS MOUNTED AT THE END OF A SPACECRAFT BOOM ABOUT 2.5 M FROM THE MAIN BODY OF THE SPACECRAFT. THE ION CHAMBER OPERATED SUCCESSFULLY FOR ONLY THE FIRST 160 ORBITS OF THE SATELLITE. THE REASON FOR THE FAILURE IS NOT KNOWN.

DATA SET NAME- MICROFILM PLOTS OF TOTAL IONIZATION RATES NSSDC ID 67-073A-07A  
AND SATELLITE ALT. VS INVARIANT LAT.

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 081167 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF IONIZATION CHAMBER TOTAL IONIZATION RATES (ION PAIRS/SEC-CM CUBED, STP AIR) AND SATELLITE ALTITUDE (KM) VS INVARIANT LATITUDE (-90 TO +90 DEG) ON ONE REEL OF 35-MM MICROFILM. THE CORRESPONDING MCILWAIN L PARAMETER, GEOGRAPHIC LONGITUDE, AND LOCAL TIME OF THE SATELLITE ARE INDICATED ALONG THE INVARIANT LATITUDE AXIS. THE ORBIT NUMBER AND DAY NUMBER APPEAR AT THE TOP OF EACH PLOT ALONG WITH THE UT OF THE FIRST POINT PLOTTED ON THE GRAPH AND AN INSTRUMENT SENSITIVITY MODE INDICATOR (H FOR HIGH, L FOR LOW). THE ALTITUDE PLOTS ARE GENERATED USING THE X SYMBOL, AND THE IONIZATION PLOTS ARE GENERATED USING DOTS. THE DIRECTION OF THE SPACECRAFT IN ITS ORBIT IS INDICATED IN THE LOWER LEFT MARGIN FOR A GIVEN PLOT. E.G., 'N-S' MEANS THE SPACECRAFT WAS TRAVELING FROM THE NORTHERN HEMISPHERE TOWARD THE SOUTHERN HEMISPHERE. THE OMNIDIRECTIONAL IONIZATION CHAMBER MEASURED THE TOTAL IONIZATION PRODUCED BY PROTONS (E GREATER THAN 10 MEV) AND ELECTRONS (E GREATER THAN 1 MEV). THE PERCENT TIME COVERAGE WAS LESS THAN 50 PERCENT FROM LAUNCH (JULY 28, 1967) UNTIL THE INSTRUMENT'S PREMATURE FAILURE (AUGUST 8, 1967). FURTHER DESCRIPTION OF THE EXPERIMENT AND THIS DATA SET, INCLUDING A DETAILED TIME COVERAGE CHART FOR THE ENTIRE LIFETIME OF THE EXPERIMENT, APPEAR ON THE MICROFILM ALONG WITH THE DATA.

EXPERIMENT NAME- LOW-ENERGY PROTON, ALPHA PARTICLE NSSDC ID 67-073A-08  
MEASUREMENT

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.A.	SIMPSON	U OF CHICAGO	CHICAGO, IL
OI - C.Y.	FAN	U OF ARIZONA	TUCSON, AZ
OI - E.C.	STONE	CAL TECH	PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-011869  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

#### EXPERIMENT BRIEF DESCRIPTION

TWO SOLID-STATE PARTICLE TELESCOPES WERE USED TO STUDY LOW-ENERGY COSMIC-RAY PROTONS AND ALPHA PARTICLES. ONE OF THESE WAS A THREE-ELEMENT RANGE TELESCOPE ('VERTICAL' TELESCOPE) THAT WAS CAPABLE OF IDENTIFYING PROTONS AND ALPHA PARTICLES (1.22 TO 39.2 AND 9.32 TO 39.2 MEV/NUCLEON) AND ELECTRONS (E.GT. 400 KEV AND E.GT. 620 KEV). THE OTHER DETECTOR WAS A ONE-ELEMENT TELESCOPE ('HORIZONTAL' TELESCOPE) SENSITIVE TO PROTONS AND ALPHA PARTICLES IN THE ENERGY RANGE E.GT 720 KEV/NUCLEON. THE VERTICAL TELESCOPE AXIS OF SYMMETRY WAS PARALLEL TO THE SPACECRAFT Z AXIS WHICH LATER UNINTENTIONALLY BECAME THE SPIN AXIS. THE HORIZONTAL TELESCOPE SYMMETRY AXIS WAS NEARLY PARALLEL TO THE SPACECRAFT Y AXIS (PERPENDICULAR TO THE Z AXIS). PULSE HEIGHT INFORMATION WAS SENT BACK FROM THE VERTICAL TELESCOPE ALLOWING PULSE HEIGHT ANALYSES OF PROTONS (ENERGIES FROM 1.22 TO 39.2 MEV), ALPHA PARTICLES (ENERGIES FROM 4.88 TO 156.8 MEV), AND ELECTRONS (E.GT. 400 KEV) USING A 256-CHANNEL PULSE HEIGHT ANALYZER. COUNT RATE INFORMATION WAS SENT BACK FROM BOTH TELESCOPES. THE TIME RESOLUTION RANGED FROM ABOUT ONE MEASUREMENT PER 0.02 SEC TO ABOUT ONE MEASUREMENT PER 0.3 SEC DEPENDING ON THE COUNTING MODE AND THE TELEMETRY BIT RATE. THE UNINTENDED SPIN PERIOD OF THE SPACECRAFT ON JANUARY 23, 1969 WAS ABOUT 3 MIN. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL THE SATELLITE WAS PUT IN AN OPERATIONAL OFF MODE ON OCTOBER 23, 1969. HOWEVER, THE SPINNING OF THE SPACECRAFT MADE IT DIFFICULT TO INTERPRET DATA AFTER MID-JANUARY 1969.

DATA SET NAME- REDUCED COSMIC-RAY COUNT RATE AND ORBITAL DATA MERGED ON MAGNETIC TAPE NSSDC ID 67-073A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072867 TO 020269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 291 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY COUNT RATE DATA MERGED WITH ORBITAL DATA ON ABOUT 1500 MAGNETIC 'ABSTRACT' TAPES. NSSDC WILL HOLD COPIES OF ABOUT 300 TAPES CORRESPONDING TO THE TIME PERIOD BEFORE THE SPACECRAFT WAS PUT INTO A SPIN MODE (LAUNCH TO MID-JANUARY 1969). ALTHOUGH DATA IN THE TIME INTERVAL AFTER SPIN UP ARE MORE DIFFICULT TO INTERPRET, THEY ARE AVAILABLE FROM THE EXPERIMENTER THROUGH NSSDC. DATA OBTAINED DURING THE EARLY PORTION OF THE MISSION ARE RECORDED ON 7-TRACK TAPES WRITTEN AT 556 BPI USING AN IBM 7094 COMPUTER. ALTHOUGH THE MAJORITY OF THE DATA ARE RECORDED ON 9-TRACK TAPES WRITTEN AT 800 BPI USING AN IBM 360/75 COMPUTER. ALL OF THE DATA ARE IN A MIXED BINARY-BCD FORMAT. THE DATA ON THE 7-TRACK TAPES ARE FORMATTED AS FOLLOWS--EACH TAPE HAS A VARIABLE NUMBER OF FILES, AND EACH FILE HAS A 20-WORD FILE HEADER RECORD FOLLOWED BY A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH HAVING A 6-WORD RECORD HEADER). THERE ARE A VARIABLE NUMBER OF LOGICAL RECORDS PER PHYSICAL RECORD, SINCE THE 52-WORD ORBITAL DATA LOGICAL RECORD WAS INSERTED INTO THE STREAM OF FOUR-WORD COUNT RATE DATA LOGICAL RECORDS ONCE EVERY MINUTE IN GENERATING THIS SET OF 'ABSTRACT' TAPES. THIS INSERTION DID NOT NECESSARILY OCCUR AT THE BEGINNING OR END OF A GIVEN PHYSICAL RECORD. EACH FILE CONTAINS ABOUT 5 MIN OF DATA.



THE DATA ON THE 9-TRACK TAPES ARE FORMATTED IN A SIMILAR MANNER EXCEPT THAT THE ORBITAL DATA LOGICAL RECORD LENGTH IS 98 WORDS. THE TAPES CONTAIN COUNTING RATES CORRESPONDING TO THE PROTON AND ALPHA PARTICLE ENERGY RANGES 1.22 TO 39.2 MEV/NUCLEON (VERTICAL TELESCOPE COINCIDENCE V(1) NOT V(3)), 9.32 TO 39.2 MEV/NUCLEON (VERTICAL TELESCOPE COINCIDENCES V(2) NOT V(3), V(1)V(2) NOT V(3), AND E.GT. 0.72 MEV/NUCLEON (HORIZONTAL TELESCOPE RATE). ADDITIONAL INFORMATION ON THE TAPES INCLUDE -- TIME (UT), TELESCOPE TEMPERATURES, LATITUDE, LONGITUDE, HEIGHT, SUN-EARTH-SATELLITE ANGLE, GEOMAGNETIC COORDINATES, AND VARIOUS DATA QUALITY FLAGS. THE DATA WITHIN A FILE ARE ALWAYS MONOTONICALLY INCREASING IN TIME. HOWEVER, THE SET OF FILES COMPRISING A DATA TAPE ARE NOT NECESSARILY TIME ORDERED. REDUNDANCIES IN THE DATA HAVE BEEN DELETED.

DATA SET NAME- COUNT RATE PLOTS (R VS ENERGY LOSS) AND ORBITAL DATA ON MICROFILM NSSDC ID 67-073A-088

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072967 TO 120768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIFTEEN 35-MM MICROFILM REELS OF REDUCED DATA IN THE FORM OF COUNT RATE (BOTH SINGLE AND COINCIDENCE RATES) PLOTS. EACH PLOT COVERS ONE OGO 4 ORBIT AND CONTAINS SEVERAL DIFFERENT COUNTING RATES AS WELL AS SATELLITE ORBIT DATA, INVARIANT LATITUDE, ALTITUDE, SCALAR MAGNETIC FIELD, MCILWAIN'S L PARAMETER, AND EITHER DIPOLE LOCAL TIME OR MAGNETIC LOCAL TIME. THROUGHOUT THE MICROFILM, THE RELEVANT SCALES ARE INCLUDED APPROXIMATELY EVERY 100 FRAMES. EACH PLOT CONTAINS THE FOLLOWING COINCIDENCE COUNT RATES FROM THE VERTICAL TELESCOPE -- V3 (PROTON AND ALPHA PARTICLE E .GT. 39.2 MEV/NUCLEON OR E .GT. 1 MEV), V1 NOT V3 (CORRESPONDS TO PROTON AND ALPHA PARTICLE ENERGIES FROM 1.22 TO 39.2 MEV/NUCLEON OR ELECTRONS FROM 0.4 TO 1 MEV), AND V2 NOT V3 AND V1V2 NOT V3 (BOTH OF WHICH CORRESPOND TO PROTON AND ALPHA PARTICLE ENERGIES FROM 9.32 TO 39.2 MEV/NUCLEON BUT WITH ONLY THE FORMER CORRESPONDING TO ELECTRON ENERGIES FROM 0.7 TO 1 MEV). THE ONE HORIZONTAL TELESCOPE COUNTING RATE IN THE FORMAT CORRESPONDS TO A PROTON AND ALPHA PARTICLE ENERGY THRESHOLD OF 720 KEV/NUCLEON. THE V3 COUNT RATE PLOTTED IS AN AVERAGE RATE OBTAINED OVER FIVE READOUTS, WHEREAS THE OTHER THREE RATES, AS CALCULATED FOR THESE PLOTS, HAVE A NOMINAL ACCUMULATION TIME OF 15 SEC. THE DATA SET PROVIDES A COMPACT SAMPLE OF THE DATA FROM THIS EXPERIMENT.

EXPERIMENT NAME- LOW-ENERGY AURORAL PARTICLE DETECTOR NSSDC ID 67-073A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.A. HOFFMAN NASA-GSFC GREENBELT, MD  
OI - D.S. EVANS NOAA BOULDER, CO

DATE LAST USABLE EXPERIMENT DATA RECORDED-012569  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE AURORAL PARTICLES EXPERIMENT CONTAINED EIGHT DETECTORS, EACH COMPRISED OF A CYLINDRICAL ELECTROSTATIC ANALYZER WITH A CHANNEL ELECTRON MULTIPLIER. SEVEN OF THESE DETECTORS WERE CAPABLE OF MEASURING PROTONS OR ELECTRONS AS SELECTED BY GROUND COMMAND, AND THE EIGHTH DETECTOR MEASURED BACKGROUND. FIVE OF THE DETECTORS LOOKED ALONG A VECTOR POINTING RADially AWAY FROM THE EARTH, WHILE THREE OTHERS LOOKED OUT AT 30 DEG, 60 DEG, AND 90 DEG TO THE RADIUS VECTOR POINTING AWAY FROM THE EARTH. THE LOOK DIRECTIONS OF ALL THE DETECTORS LAY IN A SINGLE PLANE. FOUR OF THE DETECTORS THAT LOOKED DIRECTLY AWAY FROM THE EARTH MEASURED ELECTRONS OR PROTONS AT EITHER 0.7, 2.3, 7.4, OR 23.8 KEV, AND THE FIFTH MEASURED THE BACKGROUND. THOSE DETECTORS AT OTHER ANGLES MEASURED ELECTRONS OR PROTONS AT 2.3 KEV. MOST OF THE DATA WERE TAKEN OVER THE NORTH AND SOUTH AURORAL ZONES AND POLAR CAPS, BUT A SMALL AMOUNT OF LOWER LATITUDE DATA WERE TAKEN. THE DATA TAKEN OVER THE SOUTH AURORAL ZONE AMOUNTED TO LESS THAN 5 PERCENT OF THE DATA. SINCE THE EARTH'S MAGNETIC FIELD IS NEARLY VERTICAL IN THE AURORAL ZONE, THE DETECTORS THAT POINTED AWAY FROM THE EARTH MEASURED PRECIPITATING PARTICLES, AND THE ANGLED DETECTORS MEASURED PARTICLES HAVING PITCH ANGLES NEARLY COMPARABLE TO THEIR RESPECTIVE SPACECRAFT ANGLES. THE OUTPUTS OF FOUR OF THE DETECTORS THAT POINTED DIRECTLY AWAY FROM THE EARTH WERE ACCUMULATED SIMULTANEOUSLY INTO FOUR LOGARITHMIC ACCUMULATORS OVER PRECISELY THE SAME TIME INTERVAL, ONE HALF OF A TELEMETRY MAIN FRAME. THIS WAS FOLLOWED BY THE STORAGE OF THE OUTPUTS OF THE FOUR 2.3-KEV ANGLE DETECTORS FOR PRECISELY THE SAME DURATION, ONE HALF OF A TELEMETRY MAIN FRAME. THIS RESULTED IN SAMPLING RATES FOR EACH DETECTOR INCLUDING THE BACKGROUND DETECTOR OF 55.56 SAMPLES PER SEC AT 64 KBS, 13.89 SAMPLES PER SEC AT 16 KBS, AND 3.47 SAMPLES PER SEC AT 4 KBS. ALL DETECTORS, EXCEPT FOR THE 6-KEV AND THE 90-DEG, 2-KEV, DEVELOPED SOME NOISE PROBLEMS PREVENTING THE MEASUREMENT OF SMALL FLUXES. OTHER THAN THIS, THE DETECTORS FUNCTIONED NORMALLY FROM INSTRUMENT TURN ON (JULY 30, 1967, AT 0012 UT) UNTIL JANUARY 25, 1969, WHEN THE EXPERIMENT WAS TURNED OFF. THE EXPERIMENT WAS OPERATED IN THE ELECTRON MODE CONTINUOUSLY FOR ABOUT 6 DAYS OUT OF EVERY SEVEN.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE NSSDC ID 67-073A-11A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 012569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 77 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF 9-TRACK, 800-BPI, IBM 360, BINARY MAGNETIC TAPES. THERE ARE FIVE POSSIBLE LOGICAL RECORD LENGTHS CORRESPONDING TO EACH OF THE FORMATS USED IN SAMPLING AND TELEMETERING THE DATA, WITH THE MAXIMUM LOGICAL RECORD BEING 9002 BYTES. THE PHYSICAL RECORD CORRESPONDS TO 3114 CHARACTERS. ALL TAPES CONTAIN A SINGLE FILE OF TIME-ORDERED DATA. THE FOLLOWING INFORMATION IS CONTAINED ON EACH TAPE -- TIME, EXPERIMENT MODE (ELECTRONS, PROTONS, OR UNDETERMINED -- LESS THAN 5 PERCENT OF THE DATA WERE IN AN UNDETERMINED MODE), EXPERIMENT TEMPERATURE, CALIBRATION VOLTAGES, BACKGROUND READOUTS, DATA RATE (4 KBS, 16 KBS, 64 KBS, OR 4 KBS RECORDED), DATA FORMAT (MAIN FRAME DATA FORMAT OR ANY OF THE FOUR FLEXIBLE FORMATS USED TO SAMPLE AND TELEMETER DATA), AND COUNT RATES FOR ALL DETECTORS. THERE ARE AT LEAST SOME DATA FOR 95 PERCENT OF THE ORBITS OVER THE TIME PERIOD INDICATED. NINETY PERCENT OF THESE DATA WERE OBTAINED OVER THE NORTH AURORAL ZONE AND POLAR CAPS. THE REMAINING DATA WERE OBTAINED AT LOWER LATITUDES AND OVER THE SOUTH AURORAL ZONE. OF THESE DATA,

80 PERCENT ARE IN THE ELECTRON MODE AND THE REMAINDER (EXCLUDING THE SMALL AMOUNT WITH MODE UNDETERMINED) ARE IN THE PROTON MODE.

DATA SET NAME- REDUCED COUNT RATE DATA ON MAGNETIC TAPE NSSDC ID 67-073A-11D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 012569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 101 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS GENERATED BY NSSDC FROM DATA SET 67-073A-11A, CONSISTS OF 7-TRACK, 800-BPI, IBM 360, BINARY TAPES. THE TAPES ARE BLOCKED THE SAME AS IN DATA SET 67-073A-11A, AND THE SAME INFORMATION IS CONTAINED IN BOTH DATA SETS.

DATA SET NAME- LISTINGS OF DATA ACQUISITION TIMES ON MICROFILM NSSDC ID 67-073A-11E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 012569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM GENERATED AT NSSDC FROM COMPUTER PRINTOUT SUPPLIED BY THE EXPERIMENTER. DATA FOR EACH ENTRY OF VARYING TIME PERIOD INCLUDE CALENDAR DATE, DAY COUNT OF YEAR, ORBIT NUMBER, START AND STOP TIME, FORMAT NUMBER, BIT RATE, TYPE OF PARTICLES (ELECTRONS OR PROTONS), START AND STOP L VALUES, HEMISPHERE, PASS DIRECTION, AVAILABILITY OF SUMMARY AND/OR ANALYSIS AND/OR POLAR PLOTS, AND AVAILABILITY OF PRINTOUT OF THE DATA. OWING TO THE INCLUSION OF A 13-MIN TIMER ON THE HIGH-VOLTAGE POWER SUPPLY THAT POWERED THE EXPERIMENT DETECTORS, DATA ACQUISITION WAS NOT CONTINUOUS. ACQUISITION WAS INITIATED VIA GROUND COMMAND USUALLY AS THE SATELLITE APPROACHED THE AURORAL ZONE. THIRTEEN MIN WAS NOMINALLY SUFFICIENT TIME FOR THE SATELLITE TO TRAVERSE THE AURORAL ZONE, PASS OVER THE POLAR CAP, AND AGAIN CROSS THE AURORAL ZONE BEFORE THE DETECTOR POWER WAS TURNED OFF. AT OTHER TIMES, THE HIGH VOLTAGE WAS COMMANDED OFF BY GROUND COMMAND. DATA ACQUISITION FOR THE EXPERIMENT WAS FURTHER COMPLICATED BY ORBITAL OPERATIONS REQUIREMENTS OF THE SPACECRAFT, ESPECIALLY PERTAINING TO SPACECRAFT ATTITUDE CONTROL AND ONBOARD TAPE RECORDER USE.

DATA SET NAME- PLOTS OF .576-MIN AVERAGED COUNT RATE DATA FROM THREE DETECTORS ON MICROFILM NSSDC ID 67-073A-11F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052768 TO 100168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM MICROFILM THAT WERE PROVIDED BY THE EXPERIMENTER. THE MICROFILM CONTAINS PLOTS OF THE COUNT RATES (AVERAGED OVER 0.576 MIN) OF THE 30-DEG, 2.3-KEV DETECTOR, THE 0- DEG, 0.7-KEV DETECTOR AND THE 0- DEG, 7.4-KEV DETECTOR VS TIME. NO CORRECTIONS FOR NOISE HAVE BEEN MADE. THE FOLLOWING INFORMATION IS CONTAINED ON EACH PLOT -- TIME, L PARAMETER, B FIELD (CALCULATED FROM A SPHERICAL HARMONIC EXPANSION), ALTITUDE, SUN-EARTH-SATELLITE ANGLE, GEOGRAPHIC LOCAL TIME, INVARIANT LATITUDE, AND THE FORMAT IN WHICH THE DATA WERE TELEMETERED. THERE ARE AT LEAST SOME DATA FOR 95 PERCENT OF THE ORBITS OVER THE TIME PERIOD INDICATED. NINETY PERCENT OF THESE DATA OBTAINED ARE OVER THE NORTH AURORAL ZONE AND POLAR CAPS, AND THE REMAINING DATA WERE OBTAINED AT LOWER LATITUDES AND OVER THE SOUTH AURORAL ZONE. OF THESE DATA, 80 PERCENT ARE IN THE ELECTRON MODE, AND THE REMAINDER ARE IN THE PROTON MODE.

DATA SET NAME- MICROFILMED PLOTS OF PORTIONS OF THE NSSDC ID 67-073A-11G  
SATELLITE ORBIT WHERE DATA WERE TAKEN

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 012569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE MICROFILMED PLOTS, SUPPLIED BY THE EXPERIMENTER, SHOW THOSE PORTIONS OF THE OGO 4 TRAJECTORY WHERE DATA FROM THE LOW ENERGY AURORAL PARTICLES EXPERIMENT (SEE DATA SET 67-073A-11) WERE TAKEN. THERE ARE POLAR PLOTS WHICH SHOW THE SATELLITE GEOMAGNETIC LOCAL TIME (INDICATED IN DEGREES FROM 0 TO 360) VS THE SATELLITE INVARIANT GEOMAGNETIC LATITUDE (INDICATED IN DEGREES FROM 85 TO 60). THERE IS ONE PLOT PER PASS OVER THE AURORAL ZONE. ON EACH PLOT, THE FOLLOWING ARE INDICATED -- PASS NUMBER, DATE, THE MAGNITUDE OF THE 3-HR GEOMAGNETIC FIELD INDEX (KP) DURING THE PASS, THE START TIME OF THE PASS, AND THE STOP TIME OF THE PASS. THE DATA ARE CONTAINED ON 9 REELS OF 16-MM MICROFILM.

EXPERIMENT NAME- AIRGLOW PHOTOMETER NSSDC ID 67-073A-12

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E.I. REED NASA-GSFC GREENBELT, MD  
OI - J.E. BLAMONT CNES BRETIGNY, FRANCE

DATE LAST USABLE EXPERIMENT DATA RECORDED-102369

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THE MAIN BODY EXPERIMENT WAS TO STUDY THE CHARACTERISTICS AND DISTRIBUTION OF AIRGLOW AND AURORAL ACTIVITY BY OBTAINING PHOTOMETRIC MEASUREMENTS OF SEVERAL PROMINENT EMISSION LINES. AN EMR 541E PHOTOMULTIPLIER (TRI-ALKALI CATHODE AND SAPPHIRE WINDOW) WAS USED WITH SEVEN INTERFERENCE FILTERS. WITH THE TWO EXCEPTIONS NOTED BELOW, ALL

THE EMISSIONS IN THE VISIBLE AND ULTRAVIOLET WAVELENGTHS WERE VIEWED IN THE NADIR DIRECTION, I.E., DIRECTLY BELOW THE SPACECRAFT. EIGHT CHANNELS OR MODES OF OPERATION WERE USED AND WERE ESSENTIALLY GENERATED BY ROTATING MIRRORS. FOR EACH POSITION OF THE MIRRORS, THE LIGHT INTENSITY FOR A PARTICULAR LIGHT PATH THROUGH A DIFFERENT FILTER WAS RECORDED. THE MIRRORS SWITCHED AT 1-SEC INTERVALS. IN THE 8-SEC INTERVAL NEEDED TO COMPLETE A MEASUREMENT CYCLE, THE SATELLITE MOVED 0.5 DEG LATITUDE. IN THE FIRST MIRROR POSITION, THE FIELD OF VIEW WAS BLANKED, AND THE NOISE LEVEL OF THE SENSOR WAS MEASURED. THE NEXT MIRROR POSITION PRESENTED THE NADIR EMISSION INTENSITY THROUGH AN INTERFERENCE FILTER CENTERED AT 2630 A. THE THIRD POSITION MEASURED ZENITH EMISSION INTENSITY THROUGH THE 6300-A FILTER. THIS WAS THE ONLY UPWARD-LOOKING MEASUREMENT TAKEN. THE NEXT MIRROR POSITION ALSO PASSED THE RADIATION THROUGH A 6300-A FILTER, EXCEPT HERE THE INCOMING LIGHT WAS FROM BELOW. THE FIFTH MIRROR POSITION ENABLED RADIATION FROM THE NADIR AT 6225 A TO BE MEASURED. SUBSEQUENT MIRROR POSITIONS PERMITTED MEASUREMENT OF NADIR INTENSITIES AT THE FOLLOWING WAVELENGTHS -- 5892, 5577, AND 3914 A. THE FIELD OF VIEW WAS 10 DEG ACROSS IN DOWNWARD DIRECTION AND 7 DEG ACROSS LOOKING UPWARD. AN ASSESSMENT OF THE STABILITY OF THE EXPERIMENT'S RESPONSE WAS OBTAINED BY COMPARING MEASURED MOONLIT EARTH RADIANCE OVER OCEANS ON REPEATED PASSES. ABSOLUTE 'RESPONSIVITY' WAS DETERMINED FROM THE OVERHEAD TRANSIT OF SATURN AND JUPITER. THE SATELLITE WAS DEACTIVATED ON OCTOBER 23, 1969. AT THAT TIME, THIS EXPERIMENT WAS OPERATIONAL, AFTER HAVING FUNCTIONED FOR MORE THAN 12,000 HOURS.

DATA SET NAME- AIRGLOW DATA MAPS AS COLOR TRANSPARENCIES NSSDC ID 67-073A-12A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 083067 TO 011068 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 19 FRAMES

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF NINETEEN 8-IN. BY 10-IN. COLOR TRANSPARENCIES THAT CONTAIN A SELECTION OF THE OGO 4 PHOTOMETER DATA. EACH TRANSPARENCY IS A MAP GIVING VALUES FOR THE NIGHT AIRGLOW EMISSION RATE OF THE ATOMIC OXYGEN LINE AT 6300 A AS A FUNCTION OF LATITUDE BETWEEN 40 DEG S AND 40 DEG N AND AS A FUNCTION OF LONGITUDE. THE MONTH, DAY, YEAR, AND LOCAL TIME OF THESE MEASUREMENTS, TO WITHIN 20 MIN, ARE PRINTED ON EACH MAP. MOST OF THE FIGURES ARE CENTERED ON 2-DAY PERIODS FOR WHICH THERE WERE DATA FROM AT LEAST 10 ORBITS PER DAY, WITH SOME ADDITIONAL MEASUREMENTS FROM THE DAY PRECEDING AND FOLLOWING THIS PERIOD ALSO INCLUDED. THIS SET CONTAINS DATA TAKEN FROM AUGUST 30, 1967 TO JANUARY 10, 1968, AND WITHIN A LOCAL TIME INTERVAL OF 18 HR 38 MIN TO 3 HR 36 MIN. ON THESE MAPS THE CONTOURS OF THE AIRGLOW ARE INDICATED AS THE BOUNDARIES OF THE DIFFERENT COLORS. THERE ARE SEVEN EMISSION RATE RANGES IDENTIFIED AND ONE 'NO DATA' CATEGORY. EXPRESSED IN RAYLEIGHS AND DISPLAYED IN DIFFERENT COLORS, THE RANGES ARE DIVIDED AS FOLLOWS -- GREATER THAN 800, 800 TO 400, 400 TO 200, 200 TO 100, 100 TO 50, 50 TO 25, AND LESS THAN 25. THE MINIMUM B (MAGNETIC FIELD STRENGTH) EQUATOR AT 300 KM IS PLOTTED AS A HEAVY BLUE LINE. THE LONGITUDES OF THE ORBITS FROM WHICH DATA WERE USED ARE INDICATED BY THE LOCATION OF THE ORBIT NUMBERS ON THE TOP ABSCISSA SCALE.

DATA SET NAME- AIRGLOW DATA MAPS AS COLOR NEGATIVES

NSSDC ID 67-073A-12B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 083067 TO 011068 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 19 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF NINETEEN 4-IN. BY 5-IN. COLOR NEGATIVES THAT CONTAIN A SELECTION OF THE OGO 4 PHOTOMETER DATA. EACH NEGATIVE IS A MAP GIVING VALUES FOR THE NIGHT AIRGLOW EMISSION RATE OF THE ATOMIC OXYGEN LINE AT 6300 A AS A FUNCTION OF LATITUDE BETWEEN 40 DEG S AND 40 DEG N AND AS A FUNCTION OF LONGITUDE. THE MONTH, DAY, YEAR, AND LOCAL TIME OF THESE MEASUREMENTS, TO WITHIN 20 MIN, ARE PRINTED ON EACH MAP. MOST OF THE FIGURES ARE CENTERED ON 2-DAY PERIODS FOR WHICH THERE WERE DATA FROM AT LEAST 10 ORBITS PER DAY, WITH SOME ADDITIONAL MEASUREMENTS FROM THE DAY PRECEDING AND FOLLOWING THIS INTERVAL ALSO INCLUDED. THIS SET CONTAINS DATA TAKEN FROM AUGUST 30, 1967 TO JANUARY 10, 1968, AND WITHIN A LOCAL TIME INTERVAL OF 18 HR 38 MIN TO 3 HR 36 MIN. ON THESE MAPS THE CONTOURS OF THE AIRGLOW ARE INDICATED AS THE BOUNDARIES OF THE DIFFERENT COLORS. THERE ARE SEVEN EMISSION RATE RANGES IDENTIFIED AND ONE 'NO DATA' CATEGORY. EXPRESSED IN RAYLEIGHS AND DISPLAYED IN DIFFERENT COLORS, THE RANGES ARE DIVIDED AS FOLLOWS -- GREATER THAN 800, 800 TO 400, 400 TO 200, 200 TO 100, 100 TO 50, 50 TO 25, AND LESS THAN 25. THE MINIMUM B (MAGNETIC FIELD STRENGTH) EQUATOR AT 300 KM IS PLOTTED AS A HEAVY BLUE LINE. THE LONGITUDES OF THE ORBITS FROM WHICH THE MEASUREMENTS WERE USED ARE INDICATED BY THE LOCATION OF THE ORBIT NUMBERS ON THE TOP ABSCISSA SCALE.

DATA SET NAME- AIRGLOW INTENSITIES ON MAGNETIC TAPES NSSDC ID 67-073A-12C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 083167 TO 011968 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS COPIED AT THE NATIONAL SPACE SCIENCE DATA CENTER FROM THE EXPERIMENTER'S TAPES, CONSISTS OF 800-BPI, 9-TRACK MAGNETIC TAPES. THE NUMBER OF FILES PER TAPE DOES NOT EXCEED 250, AND CONSECUTIVE FILES MAY NOT BE CHRONOLOGICALLY ORDERED. ALL EIGHT PHOTOMETER OUTPUTS ARE GIVEN IN VOLTS, WHICH CAN BE MULTIPLIED BY THE AVAILABLE CONVERSION FACTORS TO OBTAIN THE MEASUREMENTS IN RAYLEIGHS. INCLUDED WITH THE SENSOR DATA ARE TEMPORAL AND SPATIAL PARAMETERS SUCH AS DAY AND SECONDS OF DAY OF BOTH START AND END OF MEASUREMENTS, LOCAL AND UNIVERSAL TIMES, AND LATITUDE AND LONGITUDE OF THE MEASUREMENTS.

DATA SET NAME- AIRGLOW DATA MAPS BY ORBIT ON MICROFILM NSSDC ID 67-073A-12D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081967 TO 012968 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS SET OF REDUCED DATA WAS SUPPLIED BY THE EXPERIMENTER AND CONSISTS OF 11 REELS OF 16-MM MICROFILM. EACH REEL CONTAINS THE PHOTOMETER DATA FOR A SPECIFIC TIME PERIOD WITHIN THE TIME RANGE FROM AUGUST 19, 1967 TO JANUARY 29, 1968, WITH NO DATA SHOWN FOR SOME INTERVALS AS LONG AS 1 WEEK. THE SEQUENCING OF THE MEASUREMENTS ON EACH REEL IS THE SAME, WITH ALL CHANNEL 1 DATA GIVEN FIRST, FOLLOWED BY CHANNEL 2 OUTPUTS, THEN BY CHANNEL 3, ETC. EACH FRAME IS A MAP WITH THE LONGITUDE SCALE RANGING FROM -180 TO +180 DEG. AND THE LATITUDE SCALE COVERING A 30-DEG INCREMENT OF THE PLUS OR MINUS 90 DEGREE RANGE OBSERVED. MEASUREMENTS TAKEN OVER A 24-HR PERIOD ARE ON ONE FRAME. THE DATA ARE DISPLAYED AS A SEQUENCE OF DECIMAL NUMBERS WHICH ARE THE VALUES OF THE PHOTOMETER OUTPUTS EXPRESSED IN VOLTS, AND REPRESENT 1-SEC MEASUREMENTS. THE PRINTED VALUES ARE POSITIONED AT THE LOCATIONS OF THEIR RESPECTIVE SUBSATELLITE POINTS ON THE MAP. HENCE, EACH SEQUENCE OF NUMBERS CORRESPONDS TO A PARTICULAR ORBIT PASS, WHICH IS IDENTIFIED BY THE ORBIT NUMBERS PRINTED ALONG THE TOP OF THE MAP. SEVERAL PARAMETERS ARE PRINTED ON EACH FRAME INCLUDING CHANNEL NUMBERS BEING DISPLAYED, DATES AT START AND END OF MEASUREMENTS, ECLIPSE LATITUDES, AND LOCAL TIME.

EXPERIMENT NAME- SOLAR X-RAY EMISSIONS

NSSDC ID 67-073A-21

ORIGINAL EXPERIMENT INSTITUTION- NAVAL RESEARCH LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.W. KREPLIN NAVAL RESEARCH LAB WASHINGTON, DC  
OI - T.A. CHUBB NAVAL RESEARCH LAB WASHINGTON, DC  
OI - H.D. FRIEDMAN NAVAL RESEARCH LAB WASHINGTON, DC

DATE LAST USABLE EXPERIMENT DATA RECORDED-102369  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS COMPOSED OF FOUR IONIZATION CHAMBERS THAT WERE SENSITIVE IN NOMINAL 0.5- TO 3.0-A, 1- TO 8-A, 8- TO 16-A (OR 8- TO 20-A), AND 44- TO 60-A PASSBANDS. THE DETECTORS WERE MOUNTED IN THE SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP) OF THE SPACECRAFT AND WERE POINTED CONTINUOUSLY AT THE SUN. THE CURRENTS GENERATED IN THE IONIZATION CHAMBERS WERE AMPLIFIED BY LINEAR ELECTROMETERS, THREE OF WHICH CHANGED RANGES AUTOMATICALLY TO PROVIDE THE APPROPRIATE SENSITIVITY FOR OBSERVATIONS DURING BOTH INTENSE SOLAR FLARES AND SOLAR QUIET PERIODS. THE OUTPUTS FROM THE ELECTROMETERS WERE DIGITIZED AND EITHER TRANSMITTED DIRECTLY TO THE GROUND OR STORED IN THE SPACECRAFT TAPE RECORDERS FOR LATER TRANSMISSION. THE WORST TIME RESOLUTION, OBTAINED WITH THE SPACECRAFT MULTIPLEXER OPERATING AT 4 KBS, WAS 4.6 SEC FOR THE 8-A TO 16-A AND 44-A TO 60-A DETECTORS. THE TIME RESOLUTION WAS CONSIDERABLY BETTER FOR THE 0.5-A TO 3-A AND 1-A TO 8-A DETECTORS. THE 44-A TO 60-A DETECTOR FAILED IN NOVEMBER 1967, BUT THE OTHER THREE DETECTORS PRODUCED USEFUL DATA UNTIL THE SPACECRAFT TAPE RECORDER WAS DISABLED IN JANUARY 1969.

DATA SET NAME- SOLAR X-RAY PLOTS ON MICROFILM

NSSDC ID 67-073A-21A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072967 TO 071668 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 19 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS OF SOLAR X-RAY FLUXES VS TIME ON 19 REELS OF 35-MM MICROFILM. THE ABSCISSA OF THE PLOTS ARE SCALED IN HOURS AND MINUTES OF UNIVERSAL TIME, AND THE ORDINATES ARE LOGARITHMICALLY SCALED IN FLUX UNITS OF ERGS/SQ CM-SEC. DATA FOR THE 0.5-A TO 3.0-A, 1-A TO 8-A, 8-A TO 20-A, AND 44-A TO 60-A PASSBANDS ARE GIVEN. THESE DATA ARE ANALYZED DATA FROM THE EXPERIMENTER. SIGNIFICANT DATA GAPS (ABOUT 30-MIN LONG) OCCURRED DURING EACH ORBIT WHEN THE EARTH OCCULTED THE SUN.

DATA SET NAME- HOURLY AVERAGED SOLAR X-RAY FLUXES ON MAGNETIC TAPE NSSDC ID 67-073A-21B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072967 TO 071568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, SUPPLIED BY THE EXPERIMENTER, IS ON ONE 7-TRACK, BCD MAGNETIC TAPE, WRITTEN AT 556 8PI. THESE DATA CONSIST OF HOURLY AVERAGED SOLAR X-RAY FLUXES OBTAINED USING TWO DIFFERENT FILTERING TECHNIQUES IDENTIFIED AS METHOD H AND METHOD D. THE DATA ARE DIVIDED INTO TWO SUBSETS, ONE CORRESPONDING TO EACH FILTER. THE DATA FILTERED USING METHOD H WERE CONSIDERED IN HOURLY BLOCKS. THE MEANS AND STANDARD DEVIATIONS OF THE FLUXES OBSERVED FOR EACH DETECTOR WERE CALCULATED FOR EACH 1-HR INTERVAL. DATA POINTS DIFFERING FROM THE MEAN BY MORE THAN +2.5 OR -3 SIGMA WERE DELETED, AND THE MEANS AND STANDARD DEVIATIONS WERE AGAIN CALCULATED. THIS PROCESS WAS ITERATED WITH THE LIMITS BEING REDUCED UNTIL, FOR THE FOURTH PASS, THE LIMITS WERE +1 AND -1.5 SIGMA. THE REMAINING POINTS WERE USED TO CALCULATE THE HOURLY AVERAGES AND STANDARD DEVIATIONS APPEARING ON THE TAPE. THIS METHOD ELIMINATED DATA FOR SMALL FLARES AND TRAPPED PARTICLE CONTAMINATION FROM THE RADIATION BELTS BUT DID NOT ELIMINATE DATA FROM LARGE FLARES OR TRAPPED PARTICLE CONTAMINATION FROM THE SOUTH ATLANTIC ANOMALY. METHOD D WAS SIMILAR TO METHOD H EXCEPT THAT THE DATA WERE TREATED IN DAILY INTERVALS RATHER THAN HOURLY INTERVALS. THE DAILY AVERAGE FLUXES AND STANDARD DEVIATIONS WERE CALCULATED AND USED IN THE FILTERING PROCESS DESCRIBED ABOVE TO ELIMINATE FLARE DATA AND PARTICLE CONTAMINATION. THIS METHOD ELIMINATED ALMOST ALL DATA FROM FLARES AND TRAPPED PARTICLES, INCLUDING THOSE IN THE SOUTH ATLANTIC ANOMALY. THE TAPE LISTS THE YEAR, MONTH, DAY, AND THE STARTING HOUR OF THE DATA SAMPLE AVERAGED (AN HOUR VALUE OF 25 INDICATES A DAILY AVERAGE). THE HOURLY AVERAGE FLUXES (IN ERGS/SQ CM-SEC) AND STANDARD DEVIATIONS FOR THE 0.5-A TO 3-A, 1-A TO 8-A, 8-A TO 20-A, AND 44-A TO 60-A DETECTORS.

DATA SET NAME- HOURLY AVERAGED SOLAR X-RAY FLUXES ON MICROFILM NSSDC ID 67-073A-21C



AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072967 TO 071568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS ANALYZED DATA SET, ON ONE REEL OF 16-MM MICROFILM GENERATED AT NSSDC FROM DATA SET 67-073A-21B, CONTAINS HOURLY AVERAGED SOLAR X-RAY FLUXES OBTAINED USING TWO DIFFERENT FILTERING TECHNIQUES IDENTIFIED AS METHOD H AND METHOD D. THE DATA ARE DIVIDED INTO TWO SUBSETS, ONE CORRESPONDING TO EACH FILTER. THE DATA FILTERED USING METHOD H WERE CONSIDERED IN HOURLY BLOCKS. THE MEANS AND STANDARD DEVIATIONS OF THE FLUXES OBSERVED FOR EACH DETECTOR WERE CALCULATED FOR EACH 1-HR INTERVAL. DATA POINTS DIFFERING FROM THE MEAN BY MORE THAN +2.5 OR -3 SIGMA WERE DELETED, AND THE MEANS AND STANDARD DEVIATIONS WERE AGAIN CALCULATED. THIS PROCESS WAS ITERATED WITH THE LIMITS BEING REDUCED UNTIL, FOR THE FOURTH PASS, THE LIMITS WERE +1 AND -1.5 SIGMA. THE REMAINING POINTS WERE USED TO CALCULATE THE HOURLY AVERAGES AND STANDARD DEVIATIONS APPEARING ON THE TAPE. THIS METHOD ELIMINATED DATA FOR SMALL FLARES AND TRAPPED PARTICLE CONTAMINATION FROM THE RADIATION BELTS BUT DID NOT ELIMINATE DATA FROM LARGE FLARES OR TRAPPED PARTICLE CONTAMINATION FROM THE SOUTH ATLANTIC ANOMALY. METHOD D WAS SIMILAR TO METHOD H EXCEPT THAT THE DATA WERE TREATED IN DAILY INTERVALS RATHER THAN HOURLY INTERVALS. THE DAILY AVERAGE FLUXES AND STANDARD DEVIATIONS WERE CALCULATED AND USED IN THE FILTERING PROCESS DESCRIBED ABOVE TO ELIMINATE FLARE DATA AND PARTICLE CONTAMINATION. THIS METHOD ELIMINATED ALMOST ALL DATA FROM FLARES AND TRAPPED PARTICLES, INCLUDING THOSE IN THE SOUTH ATLANTIC ANOMALY. THE LISTING CONTAINS THE YEAR, MONTH, DAY, AND THE STARTING HOUR OF THE DATA SAMPLE AVERAGED (AN HOUR VALUE OF 25 INDICATES A DAILY AVERAGE). THE HOURLY AVERAGE FLUXES (IN ERGS/SQ CM-SEC) AND STANDARD DEVIATIONS FOR THE 0.5-A TO 3-A, 1-A TO 8-A, 8-A TO 20-A, AND 44-A TO 60-A DETECTORS.

DATA SET NAME- PLOTS OF X-RAY FLUXES DURING SOLAR  
FLARES ON MICROFILM

NSSDC ID 67-073A-21D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073067 TO 122067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PLOTS OF SOLAR X-RAY FLUXES VERSUS TIME ON ONE REEL OF 35-MM MICROFILM. THIS DATA SET INCLUDES ONLY THOSE DATA OBTAINED DURING SOLAR FLARES. THE ABSCISSA OF THE PLOTS ARE SCALED IN HOURS AND MINUTES OF UNIVERSAL TIME, AND THE ORDINATES ARE LOGARITHMICALLY SCALED IN FLUX UNITS OF ERGS/SQ CM-SEC. DATA FOR THE 0.5-A TO 3.0-A, 1-A TO 8-A, 8-A TO 20-A, AND 44-A TO 60-A PASSBANDS ARE GIVEN. THESE DATA ARE ANALYZED DATA FROM THE EXPERIMENTER. SIGNIFICANT DATA GAPS (ABOUT 30-MIN LONG) OCCURRED DURING EACH ORBIT WHEN THE EARTH OCCULTED THE SUN. THIS DATA SET IS A SUBSET OF DATA SET 67-073A-21A.

DATA SET NAME- SOLAR X-RAY FLUXES - FOUR BANDS ON  
MAGNETIC TAPE

NSSDC ID 67-073A-21E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 100267 TO 071568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS GENERATED ON MAGNETIC TAPE AT NSSDC FROM THE PUNCHED CARDS USED BY THE EXPERIMENT TO GENERATE THE PLOTS OF DATA SET 67-073A-21A. THE DATA SET INCLUDES THE DATE (MONTH, DAY, YEAR), AND TIME (HOUR, MINUTE, SECOND) OF EACH POINT SHOWN ON THE PLOTS FOR THE PERIOD COVERED. THE AVERAGE FLUX VALUE, IN ERGS PER SQ CM-SEC, THE NUMBER OF POINTS IN EACH AVERAGE, AND THE AMPLIFIER RANGE ARE GIVEN FOR THE 0.5-A TO 3-A, 1-A TO 8-A, AND 8-A TO 20-A DETECTORS. THE AVERAGE FLUX VALUE AND THE NUMBER OF POINTS USED IN EACH AVERAGE ARE GIVEN FOR THE 44-A TO 60-A DETECTOR. THE DATA ARE CONTAINED ON FOUR 7-TRACK, 800-BPI TAPES AND ARE BLOCKED BCD CARD IMAGES. THESE DATA WERE GENERATED ON AN IBM 7094.

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SPACECRAFT COMMON NAME- LUNAR ORBITER 5 NSSDC ID 67-075A  
ALTERNATE NAMES- ORBITER V, ORBITER-E, LUNAR ORBITER-E

LAUNCH DATE- 08/01/67 SPACECRAFT WEIGHT IN ORBIT- 390. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-013168  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 08/09/67 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 192. MIN  
APOAPSIS- 3238. KM ALT PERIAPSIS- 1838. KM ALT INCLINATION- 85. DEG

SPACECRAFT BRIEF DESCRIPTION

LUNAR ORBITER 5 WAS DESIGNED PRIMARILY TO PHOTOGRAPH SMOOTH AREAS OF THE LUNAR SURFACE FOR SELECTION AND VERIFICATION OF SAFE LANDING SITES FOR THE SURVEYOR AND APOLLO MISSIONS. IT WAS ALSO EQUIPPED TO COLLECT SELENODETTIC, RADIATION INTENSITY, AND MICROMETEOROID IMPACT DATA. THE SPACECRAFT WAS PLACED IN A CISLUNAR TRAJECTORY AND INJECTED INTO THREE ELLIPTICAL LUNAR ORBITS (APOLUNES 7830, 7830, AND 3238 KM, PERILUNES 1938, 1838, AND 1838 KM) FOR DATA ACQUISITION. IT WAS STABILIZED IN A THREE-AXIS ORIENTATION BY USING THE SUN AND THE STAR CANOPUS AS PRIMARY ANGULAR REFERENCES. A THREE-AXIS INERTIAL SYSTEM PROVIDED STABILIZATION DURING MANEUVERS AND WHEN THE SUN AND CANOPUS WERE OCCULTED BY THE MOON. COMMUNICATIONS WERE MAINTAINED BY AN S-BAND SYSTEM, WHICH UTILIZED A DIRECTIONAL AND AN OMNIDIRECTIONAL ANTENNA. THE SPACECRAFT ACQUIRED PHOTOGRAPHIC DATA FROM AUGUST 6 TO 18, 1967, AND READOUT OCCURRED UNTIL AUGUST 27, 1967. ACCURATE DATA WERE ACQUIRED FROM ALL OTHER EXPERIMENTS THROUGHOUT THE MISSION. THE SPACECRAFT WAS TRACKED UNTIL IT IMPACTED THE LUNAR SURFACE ON COMMAND AT 2.79 DEG S LATITUDE, 83 DEG W LONGITUDE (SELENOGRAPHIC COORDINATES) ON JANUARY 31, 1968.

EXPERIMENT NAME- LUNAR PHOTOGRAPHIC STUDIES

NSSDC ID 67-075A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-LARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.J. KOSOFSKY NASA HEADQUARTERS WASHINGTON, DC  
OI - J.G. RECANI NASA-LARC HAMPTON, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-081867  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A DUAL-LENS CAMERA SYSTEM DESIGNED TO SATISFY THE PRIMARY MISSION OBJECTIVE OF PROVIDING PHOTOGRAPHIC INFORMATION FOR THE EVALUATION OF APOLLO AND SURVEYOR LANDING SITES. AN 80-MM LENS SYSTEM WAS USED TO OBTAIN MEDIUM-RESOLUTION (MR) PHOTOS, AND A 610-MM LENS SYSTEM WAS USED FOR HIGH-RESOLUTION (HR) PHOTOS. THE TWO SEPARATE LENS, SHUTTER, AND PLATEN SYSTEMS UTILIZED THE SAME FILM SUPPLY AND RECORDED IMAGERY SIMULTANEOUSLY IN ADJACENT AREAS ON 70-MM FILM. AUTOMATIC SEQUENCES OF 1, 4, 8, OR 16 PHOTOS COULD BE OBTAINED. AT AN ALTITUDE OF 46 KM, WHICH WAS APPROXIMATELY THE PERILUNE HEIGHT, THE HR SYSTEM PHOTOGRAPHED A 4.15- BY 16.6-KM AREA OF THE LUNAR SURFACE WHICH WAS CENTERED ON A 31.6- BY 37.4-KM AREA PHOTOGRAPHED BY THE MR SYSTEM. RESOLUTIONS WERE 1 AND 8 M, RESPECTIVELY. AT APOLUNE, ON THE MOON'S FAR SIDE AT ABOUT 1850-KM ALTITUDE, THE AREAS PHOTOGRAPHED WERE CORRESPONDINGLY LARGER. THE FILM WAS BIMATEL PROCESSED ON BOARD AND OPTICALLY SCANNED, AND THE RESULTING VIDEO SIGNAL WAS TELEMETERED TO GROUND STATIONS. FILM DENSITY READOUT WAS ACCOMPLISHED BY A HIGH-INTENSITY LIGHT BEAM FOCUSED TO A 6.5-MICRON-DIAMETER SPOT ON THE SPACECRAFT FILM. THE SPOT SCANNER SWEEPED 2.67 MM IN THE LONG DIMENSION OF THE SPACECRAFT FILM. THIS PROCESS WAS REPEATED 286 TIMES FOR EACH MILLIMETER OF FILM SCANNED. THE RASTER WAS COMPOSED OF 2.67- BY 65-MM SCAN LINES ALONG THE FILM. THE VIDEO SIGNAL RECEIVED AT THE GROUND STATION WAS RECORDED ON MAGNETIC TAPE AND ALSO FED TO GROUND RECONSTRUCTION EQUIPMENT (GRE), WHICH REPRODUCED THE PORTION OF THE IMAGE CONTAINED IN ONE RASTER ON A 35-MM FILM POSITIVE FRAMELET. OVER 26 FRAMELETS WERE REQUIRED FOR A COMPLETE MR PHOTOGRAPH AND 86 FOR A COMPLETE HR IMAGE. OF THE 213 SIMULTANEOUS EXPOSURES OBTAINED, ALL WERE READ OUT SATISFACTORILY. EXPERIMENT PERFORMANCE WAS NOMINAL UNTIL THE FINAL READOUT ON AUGUST 27, 1967. A DETAILED DESCRIPTION OF THE EXPERIMENT, A BIBLIOGRAPHY, AND INDEXES OF ALL THE AVAILABLE LUNAR ORBITER 1 THROUGH 5 PHOTOS ARE CONTAINED IN THE REPORT, 'LUNAR ORBITER PHOTOGRAPHIC DATA,' NSSDC 69-05, JUNE 1969.

DATA SET NAME- COMPLETE SET OF LUNAR PHOTOGRAPHY ON B/W POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 67-075A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 080667 TO 081867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A COMPLETE SET OF LUNAR ORBITER 5 PHOTOGRAPHY ON SHEETS OF 4- BY 6-IN. POSITIVE MICROFICHE. THESE SHEETS WERE PREPARED BY MAPPING SCIENCES BRANCH, MANNED SPACECRAFT CENTER, FROM THE NSSDC 35-MM REEL IN DATA SET -01C. THE QUALITY OF THE MICROFICHE COPIES IS SUITABLE FOR STUDIES OF MINIMUM PRECISION ONLY, AND THEREFORE THESE COPIES ARE INTENDED FOR ON SITE SELECTION OF PHOTOGRAPHS FOR WHICH HIGH QUALITY

REPRODUCTIONS ARE AVAILABLE.

DATA SET NAME- NSSDC PHOTOGRAPHIC SUPPORT DATA ON 16-MM NSSDC ID 67-075A-01I  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 080667 TO 081867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHIC SUPPORTING DATA NECESSARY FOR ANALYSIS OF THE LUNAR ORBITER 5 PHOTOGRAPHS. THE DATA WERE SELECTED AND COMPILED BY NSSDC FROM THE MOST RECENT (1970) VERSION OF SUPPORTING DATA PROVIDED BY THE BOEING COMPANY. THE DATA (INCLUDING SIMILAR DATA FOR LUNAR ORBITERS 1 THROUGH 4) ARE CONTAINED IN 'LUNAR ORBITER PHOTOGRAPHIC SUPPORTING DATA,' NSSDC 71-13, MAY 1971, AND ARE IN THREE LISTINGS - FULL LIST, POSITION PARAMETERS, AND ILLUMINATION PARAMETERS. EACH LISTING IS ORDERED BY MISSION AND FRAME NUMBERS. THE FULL LIST CONTAINS THE TIME OF EACH EXPOSURE, THE SPACECRAFT POSITION AND ORIENTATION PARAMETERS, THE PHOTO ILLUMINATION PARAMETERS, THE LATITUDE AND LONGITUDE OF THE PRINCIPAL GROUND POINT, THE CORNER COORDINATES AND SIDE LENGTHS OF EACH IMAGE AREA, AND THE TILT DISTANCE. THIS PUBLICATION IS MAINTAINED ON ONE REEL OF 16-MM MICROFILM AT NSSDC.

DATA SET NAME- INTERIM PHOTO SITE ACCURACY ANALYSIS NSSDC ID 67-075A-01J  
CALCULATIONS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 080667 TO 081867 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE RESULTS OF INTERIM CALCULATIONS (BY THE BOEING CO.) MADE IN ORDER TO PRODUCE FINAL REPORT DOCUMENTS OF PHOTO SITE ACCURACY ANALYSIS. THE DATA ARE MAINTAINED ON EIGHT REELS OF 16-MM FILM. THE CALCULATIONS ON 10-HARMONICS ANALYSIS WERE MADE FOR VARIOUS MODELS USING DATA REPORTED FROM VARIOUS STATIONS, PASSES, AND ITERATIONS. SOME OF THE REELS CONTAIN PLOTS OF RESIDUALS OF RV, C3, AND CC3 VS TIME FOR VARIOUS STATIONS, PASSES, ITERATIONS, SEQUENCES, AND MODELS.

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SPACECRAFT COMMON NAME- OSO 4 NSSDC ID 67-100A

ALTERNATE NAMES- OSO-D

LAUNCH DATE- 10/18/67 SPACECRAFT WEIGHT IN ORBIT- 272.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-030770  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 10/19/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 95.85 MIN  
APOAPSIS- 560.000 KM ALT PERIAPSIS- 546.000 KM ALT INCLINATION- 32.992 DEG

SPACECRAFT BRIEF DESCRIPTION

THE OBJECTIVES OF THE OSO SATELLITE SERIES ARE TO PERFORM SOLAR PHYSICS EXPERIMENTS ABOVE THE ATMOSPHERE DURING A COMPLETE SOLAR CYCLE AND TO MAP THE ENTIRE CELESTIAL SPHERE FOR DIRECTION AND INTENSITY OF UV LIGHT, X-RAY, AND GAMMA RADIATION. THE OSO 4 PLATFORM CONSISTS OF A SAIL SECTION, WHICH POINTS TWO EXPERIMENTS CONTINUOUSLY TOWARD THE SUN, AND A WHEEL SECTION, WHICH SPINS ABOUT AN AXIS PERPENDICULAR TO THE POINTING DIRECTION OF THE SAIL AND CARRIES SEVEN EXPERIMENTS. ATTITUDE ADJUSTMENT IS PERFORMED BY GAS JETS AND A MAGNETIC TORQUING COIL. A POINTING CONTROL SYSTEM PERMITS THE POINTED EXPERIMENTS TO SCAN THE REGION OF THE SUN IN A 40- BY 40-ARC-MIN RASTER PATTERN. DATA ARE SIMULTANEOUSLY RECORDED ON TAPE AND TRANSMITTED BY PCM/PM TELEMETRY. A COMMAND SYSTEM PROVIDES FOR 140 GROUND-BASED COMMANDS. THE SPACECRAFT PERFORMED NORMALLY UNTIL THE SECOND TAPE RECORDER FAILED IN MAY 1968. THE SPACECRAFT WAS PUT IN STANDBY CONDITION IN NOVEMBER 1969, AND WILL BE TURNED ON NOW ONLY FOR RECORDING SPECIAL EVENTS IN REAL TIME. SUCH AN EVENT OCCURRED ON MARCH 7, 1970, WHEN OSO 4 RECORDED DATA DURING THE SOLAR ECLIPSE.

EXPERIMENT NAME- PROTON ELECTRON DETECTOR

NSSDC ID 67-100A-04

ORIGINAL EXPERIMENT INSTITUTION- LAWRENCE LIVERMORE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. WAGGONER LAWRENCE LIVERMORE LAB LIVERMORE, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-120068  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO INVESTIGATE THE ENERGY SPECTRA AND ANGULAR DISTRIBUTIONS OF PROTONS AND ELECTRONS IN THE EARTH'S MAGNETOSPHERE. THE INSTRUMENT CONSISTED OF A SINGLE SCINTILLATOR-PHOTOMULTIPLIER ASSEMBLY HAVING A LOOK DIRECTION NORMAL TO THE SATELLITE SPIN AXIS. PARTICLE IDENTIFICATION WAS ACCOMPLISHED BY PULSE SHAPE DISCRIMINATION. SPIN-INTEGRATED DIFFERENTIAL PROTON SPECTRA IN EIGHT INTERVALS BETWEEN 1.73 AND 36.7 MEV AND DIFFERENTIAL ELECTRON SPECTRA IN EIGHT INTERVALS BETWEEN 80 KEV AND 5 MEV WERE OBTAINED BY PULSE HEIGHT DISCRIMINATION. ENERGY-INTEGRATED ANGULAR DISTRIBUTIONS WERE OBTAINED IN 16 INTERVALS OF 22.5 DEG EACH. EIGHT DATA REGISTERS AND SUBCOMMUTATION TECHNIQUES WERE USED IN THE TRANSMISSION OF ONE FULL SET OF DATA EVERY 15.36 SEC. THE INSTRUMENT PROVIDED GOOD DATA FROM LAUNCH TO DECEMBER 1968. HOWEVER, ONLY REAL-TIME DATA WERE OBTAINED AFTER MAY 12, 1968, WHEN THE ONBOARD TAPE RECORDER FAILED.

DATA SET NAME- COUNT RATE DATA ON MAGNETIC TAPE

NSSDC ID 67-100A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102367 TO 123067 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 11 EXPERIMENTER-GENERATED 7-TRACK 556-BPI BINARY MULTI-FILE TAPES GENERATED ON A CDC 3600 COMPUTER. DATA FROM ONE ORBIT FILLS ONE TAPE FILE WHICH ITSELF HAS A MAXIMUM OF 18 PHYSICAL RECORDS. FULL TEMPORAL, SPECTRAL, AND ANGULAR RESOLUTION OF THE MEASURED FLUXES WAS PRESERVED IN THE GENERATION OF THESE TAPES. EPHEMERIS INFORMATION IS ALSO INCLUDED. THE TIME PERIOD OCTOBER 23, 1967 TO DECEMBER 30, 1967 IS COVERED BY THESE TAPES WITH ESSENTIALLY 100 PERCENT COMPLETENESS. VERY LITTLE DATA WERE REDUCED BY THE EXPERIMENTER FOR 1968.

EXPERIMENT NAME- SOLAR X-RAY TELESCOPE

NSSDC ID 67-100A-08

ORIGINAL EXPERIMENT INSTITUTION- AS+E

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - R.	GIACCONI	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI - A.	KRIEGER	AS+E	CAMBRIDGE, MA
OI - F.R.	PAOLINI	AS+E	CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-120771

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO OBTAIN X-RAY SPECTROHELIOGRAPHS OF GOOD SPATIAL RESOLUTION (1 ARC-MIN) IN FOUR WAVELENGTH BANDS (3 TO 13 A, 3 TO 21 A, 3 TO 20 A, AND 44 TO 70 A) OVER PERIODS OF SOLAR QUIESCENCE AND SOLAR ACTIVITY. THE INSTRUMENT CONSISTED OF A TWO-MIRROR IMAGE-FORMING TELESCOPE WITH A TWO-POSITION APERTURE WHEEL AND A FOUR-POSITION FILTER WHEEL. THE DETECTOR CONSISTED OF A PHOTOCATHODE FROM WHICH PHOTOELECTRONS WERE FOCUSED AND ACCELERATED BY AN ELECTROSTATIC LENS ONTO AN ANTHRACENE CRYSTAL SCINTILLATION DETECTOR. A COMPLETE RASTER SCAN PRODUCING A 48 BY 40 ARRAY OF COUNT-RATE VALUES WAS PERFORMED EVERY 307 SEC. EXCEPT FOR SLIGHT DEGRADATION OF DATA DUE TO INTERNAL NOISE, THE EXPERIMENT PERFORMED WELL DURING THE LIFE OF THE ONBOARD TAPE RECORDERS.

DATA SET NAME- X-RAY HELIOGRAPH RASTER SCANS ON  
MAGNETIC TAPE

NSSDC ID 67-100A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102067 TO 051268 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 7 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, PROVIDED BY THE EXPERIMENTER, CONSISTS OF SEVEN 9-TRACK, 800-BPI, IBM 360, BINARY MAGNETIC TAPES WITH VARIABLE LENGTH RECORDS CODED IN PL/I LANGUAGE. IT CONSISTS OF A SEQUENCE OF 48- BY 40-WORD

ARRAYS OF PHOTOEMISSION - SCINTILLATION X-RAY DETECTOR COUNT RATES (COUNTS/0.14 SEC) AS A FUNCTION OF RASTER POSITION AND UNIVERSAL TIME. ALSO INCLUDED ARE FLAGS INDICATING FILTER AND APERTURE WHEEL POSITIONS AND DATA QUALITY. REDUCED RASTER DATA ARE OBTAINED BY SUBTRACTING THE CORRESPONDING BACKGROUND RASTER VALUES DESCRIBED IN DATA SET 67-100A-08B. PROGRAMMING SUPPORT TO PRODUCE THE REDUCED DATA IS AVAILABLE AT NSSDC AND CAN BE PROVIDED UPON REQUEST.

DATA SET NAME- BACKGROUND RASTER SCANS ON MAGNETIC TAPE NSSDC ID 67-100A-08B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 102667 TO 051268 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, PROVIDES BACKGROUND CORRECTION FOR THE RAW RASTER DATA IN DATA SET 67-100A-08A. IT CONSISTS OF TWO 9-TRACK, 800-BPI, IBM 360, BINARY MAGNETIC TAPES WITH VARIABLE LENGTH RECORDS CODED IN PL/I LANGUAGE. IT IS MADE UP OF 48- BY 40-WORD ARRAYS GENERATED BY SUMMING ALL CALIBRATION RASTERS WHICH WERE MADE BY SCANNING IN A DIRECTION AWAY FROM THE SUN AND SUBTRACTING THE COUNTING RATE DUE TO THE IRON-55 CALIBRATION SOURCE. FLAG WORDS INDICATING DETECTOR CALIBRATION AND COUNT RATE STATISTICS ARE ALSO INCLUDED.

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SPACECRAFT COMMON NAME- ATS 3  
ALTERNATE NAMES- ATS-C

NSSDC ID 67-111A

LAUNCH DATE- 11/05/67 SPACECRAFT WEIGHT IN ORBIT- 365.0 KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 11/06/67 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1422. MIN  
APOAPSIS- 35705.0 KM ALT PERIAPSIS- 35330.0 KM ALT INCLINATION- 0.536 DEG

SPACECRAFT BRIEF DESCRIPTION

ATS 3 (APPLICATIONS TECHNOLOGY SATELLITE) WAS ONE OF A SERIES OF SPACECRAFT DESIGNED TO DEMONSTRATE THE UTILITY AND FEASIBILITY OF A VARIETY OF TECHNOLOGICAL AND SCIENTIFIC ACTIVITIES THAT COULD BE CARRIED OUT BY AN EARTH-SYNCHRONOUS SPACECRAFT. OF THE 12 EXPERIMENTS ON BOARD, NINE WERE TECHNOLOGICAL ENGINEERING EXPERIMENTS CONCERNED WITH NAVIGATION, COMMUNICATIONS, AND SPACECRAFT OPERATION AND EQUIPMENT. TWO OF THE REMAINING EXPERIMENTS WERE PHOTOGRAPHIC IMAGING EXPERIMENTS THAT COULD PRODUCE NEAR REAL-TIME DAYLIGHT PICTURES OF THE EARTH-ATMOSPHERE SYSTEM. THE REMAINING EXPERIMENT WAS AN IONOSPHERIC BEACON. THE SPIN-STABILIZED SPACECRAFT WAS CYLINDRICALLY SHAPED AND MEASURED 180 CM IN LENGTH AND 142 CM IN DIAMETER. THE PRIMARY STRUCTURAL MEMBERS WERE A HONEYCOMBED EQUIPMENT SHELF AND THRUST TUBE. SUPPORT RODS EXTENDED RADIALLY OUTWARD FROM THE THRUST TUBE AND WERE

AFFIXED TO SOLAR PANELS WHICH FORMED THE OUTER WALLS OF THE SPACECRAFT. EQUIPMENT COMPONENTS AND PAYLOAD WERE MOUNTED IN THE ANNULAR SPACE BETWEEN THE THRUST TUBE AND SOLAR PANELS. IN ADDITION TO SOLAR PANELS, THE SPACECRAFT WAS EQUIPPED WITH TWO RECHARGEABLE NICKEL-CADMIUM BATTERIES TO PROVIDE ELECTRICAL POWER. EIGHT 150-CM VHF EXPERIMENT WHIP ANTENNAS WERE MOUNTED AROUND THE AFT END OF THE SPACECRAFT, WHILE EIGHT TELEMETRY AND COMMAND WHIP ANTENNAS WERE PLACED ON THE FORWARD END. SPACECRAFT GUIDANCE AND ORBITAL CORRECTIONS WERE ACCOMPLISHED BY 2.3-KG HYDROGEN PEROXIDE AND HYDRAZINE THRUSTERS, WHICH WERE ACTIVATED BY GROUND COMMAND. INITIALLY PLACED AT 48 DEG W LONGITUDE OVER THE ATLANTIC OCEAN IN A GEOSTATIONARY EQUATORIAL ORBIT, THE SATELLITE POSITION HAS BEEN VARIED BETWEEN 45 AND 95 DEG W LONGITUDE IN SUPPORT OF METEOROLOGICAL OPERATIONS. IN GENERAL, THE VARIOUS EXPERIMENTS HAVE BEEN SUCCESSFUL AND, AS OF APRIL 1972, GOOD DATA WERE STILL BEING RECEIVED FROM MANY OF THE EXPERIMENTS.

EXPERIMENT NAME- MULTICOLOR SPIN-SCAN CLOUDCOVER CAMERA NSSDC ID 67-111A-01  
(MSSCC)

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - V.E. SUOMI U OF WISCONSIN MADISON, WI  
OI - R.J. PARENT U OF WISCONSIN MADISON, WI

EXPERIMENT STATUS OF OPERATION- PARTIAL

#### EXPERIMENT BRIEF DESCRIPTION

THE ATS 3 MULTICOLOR SPIN-SCAN CLOUDCOVER CAMERA (MSSCC) REPRESENTED A SIGNIFICANT ADVANCE OVER A SIMILAR BUT MONOCHROMATIC SPIN-SCAN CAMERA ON ATS 1. THE MSSCC WAS MOUNTED WITH ITS OPTICAL AXIS PERPENDICULAR TO THE SPACECRAFT'S SPIN AXIS AND VIEWED THE EARTH THROUGH A SPECIAL APERTURE IN THE SPACECRAFT'S SIDE. THE CAMERA CONSISTED OF A HIGH-RESOLUTION TELESCOPE, THREE PHOTOMULTIPLIER LIGHT DETECTORS (RED, BLUE, AND GREEN), AND A PRECISION LATITUDE STEP MECHANISM. LIGHT ENTERING THE SYSTEM WAS FOCUSED ALTERNATELY ON A SET OF THREE 0.038-MM APERTURE PLATES AND THEN PASSED THROUGH VARIOUS FILTERS TO IMPINGE ON THE APPROPRIATE PHOTODETECTOR. THE TELESCOPE MULTIPLIER ASSEMBLY COULD BE TILTED IN DISCRETE STEPS TO PROVIDE POLE-TO-POLE COVERAGE IN 2400 SCAN LINES. EAST-TO-WEST SCAN WAS PROVIDED BY THE SPIN OF THE SATELLITE ITSELF. A TOTAL TIME OF 24 MIN WAS REQUIRED TO SCAN ONE FRAME AND 4 MIN TO RETRACE WITH A NOMINAL SATELLITE ROTATION OF 100 RPM. FROM ITS GEOSTATIONARY EQUATORIAL ORBIT (APPROXIMATELY 36,000 KM ABOVE THE EARTH), THE CAMERA HAD A GROUND RESOLUTION OF BETTER THAN 4 KM AT NADIR. THE EXPERIMENT WAS SUCCESSFUL, WITH ATS 3 BEING THE FIRST SPACECRAFT TO TRANSMIT OPERATIONAL MULTICOLOR EARTH-CLOUD PHOTOGRAPHS. APPROXIMATELY 3 MONTHS AFTER LAUNCH, HOWEVER, THE RED CHANNEL FAILED, AND THE SYSTEM SUBSEQUENTLY HAS BEEN LIMITED TO PRODUCING BLACK AND WHITE PICTURES. FOR A LISTING AND DESCRIPTION OF THE DIFFERENT FORMS OF PHOTOGRAPHIC DATA AVAILABLE FROM THIS EXPERIMENT, SEE THE 'METEOROLOGICAL DATA CATALOG FOR THE APPLICATIONS TECHNOLOGY SATELLITES' AVAILABLE THROUGH NSSDC, NASA-GSFC, GREENBELT, MD. AS OF MAY 1972, GOOD QUALITY BLACK AND WHITE PICTURES WERE STILL BEING RECEIVED.

DATA SET NAME- METEOROLOGICAL DATA CATALOG FOR THE  
APPLICATIONS TECHNOLOGY SATELLITES

NSSDC ID 67-111A-01C



AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 010167 TO 052570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE VOLUMES, 'THE ATS METEOROLOGICAL DATA CATALOG', PUBLISHED BY NASA-GSFC THAT DESCRIBE AND INDEX THE DATA FROM THE ATS 1 SPIN SCAN CLOUD CAMERA (SSCC), THE ATS 3 MULTICOLOR SPIN SCAN CLOUD CAMERA (MSSCC), AND THE ATS 3 IMAGE DISSECTOR CAMERA SYSTEM (IDCS). THE CATALOG ALSO CONTAINS ORBITAL INFORMATION AND USUALLY ONE PICTURE PER DAY (NORMALLY FULL DISC TAKEN NEAR LOCAL NOON) AS ACQUIRED FROM THE THREE EXPERIMENTS. THE FIRST TWO VOLUMES OF THIS SET SERVE AS A DATA USERS GUIDE FOR EACH OF THE THREE EXPERIMENTS. IN ADDITION TO DESCRIBING EACH EXPERIMENT, THEY ALSO CONTAIN EXPLANATIONS OF THE ACQUISITION, CATEGORIZATION, CATALOGING, AND DATA ARCHIVING PROCESSES. THE FIVE VOLUMES COVER THE FOLLOWING TIME PERIODS -- JANUARY 1 TO JUNE 30, 1967 (VOLUME 1), JULY 1, 1967 TO JANUARY 31, 1968 (VOLUME 2), FEBRUARY 1 TO DECEMBER 31, 1968 (VOLUME 3), JANUARY 1 TO JULY 31, 1969 (VOLUME 4), AND AUGUST 1, 1969 TO MAY 25, 1970 (VOLUME 5).

EXPERIMENT NAME- IMAGE DISSECTOR CAMERA (IDC)

NSSDC ID 67-111A-03

ORIGINAL EXPERIMENT INSTITUTION- ESSA-NESC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G.A. BRANCHFLOWER NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-053069  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE ATS 3 IMAGE DISSECTOR CAMERA (IDC) WAS A CAMERA SYSTEM DESIGNED TO (1) TEST THE FEASIBILITY OF USING ELECTRICAL SCANNING TECHNIQUES IN AN EARTH-CLOUD CAMERA AND (2) PROVIDE DAYLIGHT CLOUDCOVER DATA ON A REAL-TIME BASIS WITH FULL EARTH COVERAGE. THE CAMERA WAS MOUNTED WITH ITS OPTICAL AXIS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS IN SUCH A MANNER THAT THE CAMERA PRODUCED A SCAN LINE WITH EACH REVOLUTION OF THE SPACECRAFT. THE DIRECTION OF THE SCAN, NORTH TO SOUTH OR EAST TO WEST, WAS DETERMINED BY GROUND COMMAND. THE IMAGE DISSECTOR TUBE CONSISTED OF A VISIBLE ELECTRICALLY SCANNING PHOTOCATHODE, A 0.018-MM SCANNING APERTURE, AND A 12-STAGE ELECTRON MULTIPLIER. LIGHT ENTERING THE CAMERA WAS FOCUSED ON THE FACE OF THE PHOTOCATHODE, CAUSING PHOTOELECTRONS TO BE EMITTED FROM THE SURFACE IN PROPORTION TO THE NUMBER OF IMPINGING LIGHT PHOTONS. THE EMITTED PHOTOELECTRONS WERE PROPELLED PAST THE APERTURE BY MEANS OF AN EXTERNAL MAGNETIC DEFLECTION COIL. AFTER PASSING THROUGH THE APERTURE, THE SIGNAL CURRENT WAS AMPLIFIED BY THE 12-STAGE MULTIPLIER. THE SIGNAL WAS FURTHER AMPLIFIED AND THEN TRANSMITTED AT 28 KHZ TO A GROUND ACQUISITION STATION. THE 2.54-CM IMAGE DISSECTOR TUBE HAD A RESOLUTION CAPABILITY OF 1300 TV LINES, WHICH, AT NOMINAL SPACECRAFT ALTITUDE, CORRESPONDED TO A GROUND RESOLUTION OF ABOUT 7 KM AT NADIR. SUCCESSFULLY FLOWN FOR THE FIRST TIME, THE IDC SYSTEM ON ATS 3 SERVED AS A PROTOTYPE FOR SIMILAR EXPERIMENTS ON NIMBUS 3 AND 4. THE CAMERA PERFORMED NORMALLY UNTIL MAY 1969, WHEN THE IDC SYSTEM WAS BESET BY ERRATIC SPACECRAFT ANTENNA PERFORMANCE. ROUTINE DATA ACQUISITION CEASED AFTER MAY 30, 1969. THE IDC SYSTEM, ALTHOUGH STILL CAPABLE OF OPERATION, HAS BEEN LEFT IN AN OPERATIONALLY OFF MODE SINCE THAT

TIME EXCEPT FOR PERIODIC ENGINEERING TESTS. FOR A LISTING AND DESCRIPTION OF THE DIFFERENT FORMS OF PHOTOGRAPHIC DATA AVAILABLE FROM THIS EXPERIMENT, SEE THE 'METEOROLOGICAL DATA CATALOG FOR THE APPLICATIONS TECHNOLOGY SATELLITES' AVAILABLE THROUGH NSSDC, NASA-GSFC, GREENBELT, MD.

DATA SET NAME- METEOROLOGICAL DATA CATALOG FOR THE APPLICATIONS TECHNOLOGY SATELLITES NSSDC ID 67-111A-03A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 010167 TO 052570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE VOLUMES, 'THE ATS METEOROLOGICAL DATA CATALOG', PUBLISHED BY NASA-GSFC THAT DESCRIBE AND INDEX THE DATA FROM THE ATS 1 SPIN SCAN CLOUD CAMERA (SSCC), THE ATS 3 MULTICOLOR SPIN SCAN CLOUD CAMERA (MSSCC), AND THE ATS 3 IMAGE DISSECTOR CAMERA SYSTEM (IDCS). THE CATALOG ALSO CONTAINS ORBITAL INFORMATION AND USUALLY ONE PICTURE PER DAY (NORMALLY FULL DISC TAKEN NEAR LOCAL NOON) AS ACQUIRED FROM THE THREE EXPERIMENTS. THE FIRST TWO VOLUMES OF THIS SET SERVE AS A DATA USERS GUIDE FOR EACH OF THE THREE EXPERIMENTS. IN ADDITION TO DESCRIBING EACH EXPERIMENT, THEY ALSO CONTAIN EXPLANATIONS OF THE ACQUISITION, CATEGORIZATION, CATALOGING, AND DATA ARCHIVING PROCESSES. THE FIVE VOLUMES COVER THE FOLLOWING TIME PERIODS -- JANUARY 1 TO JUNE 30, 1967 (VOLUME 1), JULY 1, 1967 TO JANUARY 31, 1968 (VOLUME 2), FEBRUARY 1 TO DECEMBER 31, 1968 (VOLUME 3), JANUARY 1 TO JULY 31, 1969 (VOLUME 4), AND AUGUST 1, 1969 TO MAY 25, 1970 (VOLUME 5).

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SPACECRAFT COMMON NAME- PIONEER 8 NSSDC ID 67-123A  
ALTERNATE NAMES- PIONEER-C

LAUNCH DATE- 12/13/67 SPACECRAFT WEIGHT IN ORBIT- 63.43 KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 12/13/67 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 386.6 DAYS  
APOAPSIS- 1.0880 AU RAD PERIAPSIS- .9892 AU RAD INCLINATION- .0578 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 8 WAS THE THIRD IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, THE INTERPLANETARY MAGNETIC FIELD, COSMIC DUST, AND ELECTRIC FIELDS. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 50 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE

ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS WERE USED PRIMARILY FOR SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED AT THE TWO HIGHER BIT RATES. ANOTHER WAS USED AT THE THREE LOWER BIT RATES. THE THIRD WAS USED FOR DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT WAS USED MAINLY FOR ENGINEERING DATA. THE FOUR OPERATING MODES WERE (1) REAL TIME, (2) TELEMETRY STORE, (3) DUTY CYCLE STORE, AND (4) MEMORY READOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME INTERVAL BETWEEN THE COLLECTION AND STORAGE OF SUCCESSIVE FRAMES COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM DECEMBER 13, 1967, TO MARCH 20, 1968, 256 BPS FROM MARCH 20, 1968, TO MAY 6, 1968, 64 BPS FROM MAY 6, 1968 TO AUGUST 29, 1968, 16 BPS FROM AUGUST 29, 1968 TO JANUARY 1, 1970, AND 8 BPS FROM JANUARY 1, 1970, AND THEREAFTER. HIGHER BIT RATES WERE USED WHEN THE SPACECRAFT WAS TRACKED BY THE 64-CM ANTENNA, BUT THE DATA COVERAGE BY THIS ANTENNA WAS LOW. DATA COVERAGE AVERAGED CLOSE TO 100 PERCENT FOR THE FIRST YEAR AFTER LAUNCH. AFTER THAT, THE DATA COVERAGE AVERAGED BETWEEN 50 AND 80 PERCENT UNTIL NOVEMBER 1970. COVERAGE THEN DROPPED TO BETWEEN 50 AND 0 PERCENT. PIONEER 8 LEFT THE VICINITY OF THE EARTH PASSING THROUGH THE LUNAR DISTANCE AT A LOCAL TIME OF ABOUT 3 A.M. DURING A REORIENTATION MANEUVER IN MARCH 1968. ONE OF THE FOUR SUN SENSORS (WHICH WAS CONNECTED TO THE ATTITUDE GAS SYSTEM USED TO KEEP THE SPIN AXIS POINTED) WAS FOUND TO BE INOPERATIVE. IT WAS NOTED AT THIS TIME THAT THE SPACECRAFT ATTITUDE WAS OFF 4 DEG. ANOTHER ORIENTATION WAS ATTEMPTED IN JUNE 1968, AND IT WAS FOUND THAT THREE OF THE FOUR ATTITUDE SUN SENSORS WERE INOPERATIVE. EXCEPT FOR THE PLASMA WAVE AND CELESTIAL MECHANICS EXPERIMENTS, WHICH WERE PUT IN AN OPERATIONAL OFF MODE IN JULY 1972 AND JULY 1970, RESPECTIVELY, ALL EXPERIMENTS WERE OPERATING NORMALLY AS OF MARCH 15, 1973.

DATA SET NAME- MULTI-COORDINATE SYSTEM EPHEMERIS TAPES      NSSDC ID 67-123A-000

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121367 TO 111571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

COMPLETE TRAJECTORY INFORMATION WAS SUPPLIED BY THE PIONEER PROJECT OFFICE AT AMES RESEARCH CENTER AND IS CONTAINED ON SIX 7-TRACK, 800-BPI, IBM 7094, BINARY MAGNETIC TAPES. EACH TAPE HAS ONE FILE. A FORTRAN IV PROGRAM WHICH READS THE TAPES AND PRINTS OUT THE DATA IS AVAILABLE. EACH TAPE WAS GENERATED BY JPL. THE TAPES CONSIST OF TRAJECTORY INFORMATION, DESCRIBED BELOW, PREDICTED FROM ORBIT ELEMENTS WHICH WERE THEMSELVES DETERMINED FROM OBSERVED TRAJECTORY DATA. THUS THE TAPES OVERLAP IN TIME PERIOD COVERED. FOR THE MOST ACCURATE TRAJECTORY INFORMATION THE TAPE WHOSE START TIME IS CLOSEST TO THE DATE REQUIRED SHOULD BE USED. THE PIONEER 8 TRAJECTORY TAPES

COVER THE FOLLOWING TIME PERIODS -- DECEMBER 13, 1967, TO JUNE 30, 1968, DECEMBER 16, 1967, TO JULY 3, 1968, MARCH 15, 1968, TO MARCH 15, 1969, JULY 25, 1968, TO JULY 25, 1969, JULY 20, 1969 TO JULY 20, 1971, NOVEMBER 15, 1969, TO NOVEMBER 15, 1971. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH WHEN THE INTERVAL MAY BE SHORTER) ON EACH OF THE TRAJECTORY TAPES -- (1) DATE, (2) TIME, (3) DISTANCE FROM EARTH TO PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN, (5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LIMB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMIDIAMETER OF EARTH WHERE THE ANGULAR SEMIDIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN TO PROBE VECTOR AND THE ECLIPTIC PLANE-OF-DATE, (18) X,Y,Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN TO EARTH VECTOR, Z AXIS IS TOWARD THE ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X,Y,Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC, VENUS-CENTERED, MARS-CENTERED, SATURN-CENTERED, AND JUPITER-CENTERED INERTIAL COORDINATES (X POINTS TO VERNAL EQUINOX, Z POINTS ALONG THE NORTH POLE VECTOR WITH THE REFERENCE PLANE BEING THE EARTH'S TRUE EQUATOR OF DATE), (21) MAGNITUDE OF THE VELOCITY VECTOR AND X,Y,Z COMPONENTS OF THE VELOCITY VECTOR IN GEOCENTRIC INERTIAL COORDINATES, (22) GEOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY PROBE VELOCITY VECTOR AND PLANE NORMAL TO EARTH TO PROBE VECTOR), (23) GEOCENTRIC INERTIAL AZIMUTH ANGLE (ANGLE BETWEEN THE PLANE DEFINED BY THE VECTOR ALONG THE EARTH'S SPIN AXIS AND THE EARTH-TO-PROBE VECTOR AND THE PLANE DEFINED BY THE EARTH-TO-PROBE VECTOR AND THE GEOCENTRIC INERTIAL VELOCITY VECTOR), (24) HELIOCENTRIC INERTIAL VELOCITY, (25) HELIOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY THE HELIOCENTRIC VELOCITY VECTOR AND THE PLANE NORMAL TO THE SUN-TO-PROBE VECTOR), (26) CELESTIAL LONGITUDE OF PROBE (ANGULAR DISTANCE MEASURED COUNTERCLOCKWISE ALONG THE ECLIPTIC PLANE-OF-DATE FROM THE VERNAL EQUINOX TO THE PROJECTION OF THE SUN-PROBE VECTOR ON A PLANE AS VIEWED FROM THE ECLIPTIC NORTH POLE), (27) CELESTIAL LONGITUDE OF EARTH, (28) CELESTIAL LATITUDE OF EARTH, AND (29) AND VARIOUS CLOCK ANGLES AND HINGE AND SWIVEL ANGLES WHICH ARE DESCRIBED IN THE DOCUMENTATION.

DATA SET NAME- COMPRESSED EPHEMERIS DATA BASED ON DATA NSSDC ID 67-123A-00E  
SET 67-123A-00D ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121367 TO 111571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS GENERATED AT NSSDC FROM DATA SET 67-123A-00D, CONTAINING COMPLETE TRAJECTORY INFORMATION PROVIDED BY JPL, BY TAKING THE MOST ACCURATE INFORMATION FROM EACH EPHEMERIS TAPE AND ELIMINATING OVERLAP. THE DATA SET CONSISTS OF ONE FILE OF A 7-TRACK, IBM 7094, 800-BPI, BINARY MAGNETIC TAPE. EACH LOGICAL RECORD CONTAINS 89 WORDS AND EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH, WHEN THE INTERVAL MAY BE SHORTER -- (1) DATE, (2) TIME, (3)

DISTANCE FROM THE EARTH TO PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN, (5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LIMB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMI-DIAMETER OF EARTH WHERE THE ANGULAR SEMI-DIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN TO PROBE VECTOR AND THE ECLIPTIC PLANE OF DATE, (18) X, Y, Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN-TO-EARTH VECTOR, Z AXIS IS TOWARD ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X, Y, Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC VENUS-CENTERED, MARS-CENTERED, SATURN-CENTERED, AND JUPITER-CENTERED INERTIAL COORDINATES (X POINTS TO VERNAL EQUINOX, Z POINTS ALONG THE NORTH POLE VECTOR WITH THE REFERENCE PLANE BEING THE EARTH'S TRUE EQUATOR OF DATE, (21) MAGNITUDE OF THE VELOCITY VECTOR AND X, Y, Z COMPONENTS OF THE VELOCITY VECTOR IN GEOCENTRIC INERTIAL COORDINATES, (22) GEOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY PROBE VELOCITY VECTOR AND PLANE NORMAL TO EARTH-TO-PROBE VECTOR), (23) GEOCENTRIC INERTIAL AZIMUTH ANGLE (ANGLE BETWEEN THE PLANE DEFINED BY THE EARTH-TO-PROBE VECTOR AND THE GEOCENTRIC INERTIAL VELOCITY VECTOR), (24) HELIOCENTRIC INERTIAL VELOCITY, (25) HELIOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY THE HELIOCENTRIC VELOCITY VECTOR AND THE PLANE NORMAL TO THE SUN-TO-PROBE VECTOR), (26) CELESTIAL LONGITUDE OF PROBE (ANGULAR DISTANCE MEASURED COUNTERCLOCKWISE ALONG THE ECLIPTIC PLANE OF DATE FROM THE VERNAL EQUINOX TO THE PROJECTION OF THE SUN-PROBE VECTOR ON A PLANE AS VIEWED FROM THE ECLIPTIC NORTH POLE), (27) CELESTIAL LONGITUDE OF EARTH, (28) CELESTIAL LATITUDE OF EARTH, AND (29) VARIOUS CLOCK ANGLES AND HINGE AND SWIVEL ANGLES WHICH ARE DESCRIBED IN THE DOCUMENTATION.

DATA SET NAME- COROTATION DELAY TIME PLOTS AND LISTINGS NSSDC ID 67-123A-00F  
ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121357 TO 110171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS DERIVED FROM PART OF DATA SET 67-123A-00E BY PRINTING OUT TIME, THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER DISTANCE, AND THE EARTH-SUN DISTANCE. USING THIS INFORMATION, THE COROTATION DELAY TIMES FOR SOLAR WIND VELOCITIES OF 200, 400, AND 600 KM/SEC WERE DERIVED FOR EACH TIME. THIS DATA SET INCLUDES LISTINGS OF THE ABOVE AS WELL AS PLOTS OF THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER RANGE, AND THE COROTATION DELAY TIMES (FOR A SOLAR WIND VELOCITY OF 400 KM/SEC) FOR EACH OF THE PIONEERS. AT LEAST ONE POINT IS GIVEN PER WEEK, WITH MORE FREQUENT COVERAGE FOR MOST OF THE TIME.

EXPERIMENT NAME- SINGLE AXIS MAGNETOMETER

NSSDC ID 67-123A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F.	NESS	NASA-GSFC	GREENBELT, MD
OI - S.C.	CANTARANO	MARCONI INSTITUTE	ROME, ITALY
OI - F.	MARIANI	U OF AQUILA	AQUILA, ITALY

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

A SINGLE, BOOM-MOUNTED UNIAXIAL FLUXGATE MAGNETOMETER, WITH MODE-DEPENDENT RANGES OF PLUS OR MINUS 32 GAMMAS AND PLUS OR MINUS 96 GAMMAS AND CORRESPONDING RESOLUTIONS OF PLUS OR MINUS 0.125 GAMMA AND PLUS OR MINUS 0.375 GAMMA, OBTAINS A VECTOR MAGNETIC FIELD MEASUREMENT BY MEANS OF THREE MEASUREMENTS TAKEN AT EQUAL TIME INTERVALS DURING EACH SPACECRAFT SPIN PERIOD (APPROXIMATELY 1 SECOND). AT TELEMETRY BIT RATES LESS THAN OR EQUAL TO 16 BPS, AVERAGES ARE COMPUTED ON BOARD FOR TRANSMISSION TO EARTH. THE DETECTOR HAS PERFORMED WELL FROM LAUNCH TO THE PRESENT (MARCH 1973).

DATA SET NAME- HOURLY AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MICROFILM      NSSDC ID 67-123A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 122367 TO 120768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM CONTAINING ANALOG PLOTS OF HOURLY AVERAGED MAGNETIC FIELD COMPONENTS (MAGNITUDE, LATITUDE, LONGITUDE) IN A SPACECRAFT-CENTERED SOLAR ECLIPTIC COORDINATE SYSTEM. EACH OF THE 13 DATA FRAMES CONTAINS DATA FOR ONE SOLAR ROTATION. THE TIME COVERAGE IS NEARLY COMPLETE FOR MOST OF THE INTERVAL COVERED. THE DATA AND DOCUMENTATION ARE AS FOUND IN "MAGNETIC FIELD MEASUREMENTS BY PIONEER 8 I. HOURLY AVERAGES OF THE FIELD ELEMENTS FROM DECEMBER 23, 1967 TO DECEMBER 7, 1968 (BARTELS' SOLAR ROTATION 1839 TO 1851)" BY F. MARIANI, N. F. NESS, AND B. BAVASSANO, LABORATORIO DI RICERCA E TECNOLOGIA PER LO STUDIO DEL PLASMA NELLO SPAZIO, LPS-71-22, JULY 1971.

DATA SET NAME- MAGNETIC FIELD VECTOR 30-SEC AVERAGES ON TAPE      NSSDC ID 67-123A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121367 TO 120368 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE 7-TRACK, 800 BPI, MULTIFILE UNIVAC 1108 BINARY TAPES SUBMITTED BY THE EXPERIMENTER. EACH FILE CONTAINS DATA FOR ABOUT ONE DAY. EACH PHYSICAL RECORD CONTAINS, IN 726 WORDS, PACKED DATA FOR ONE HR. THE DATA CONSIST OF TIME AND 30 SEC AVERAGES OF MAGNETIC FIELD MAGNITUDE, SOLAR ECLIPTIC CARTESIAN COMPONENTS, AUTOCORRELATION FUNCTIONS,

AND CROSS-CORRELATION FUNCTIONS. THE DATA COVERAGE IS NEARLY COMPLETE BETWEEN DECEMBER 13, 1967 AND DECEMBER 3, 1968, ALTHOUGH OVER THE LAST MONTH OR SO THERE ARE SEVERAL DATA GAPS OF ABOUT A DAY'S DURATION. AN UNPACKING ROUTINE THAT WAS SUBMITTED TO NSSDC BY THE EXPERIMENTER AND WHICH RESULTS IN A PRINTOUT DESIGNED BY HIM IS AVAILABLE. THIS IS A FORTRAN PROGRAM THAT RUNS ON THE UNIVAC 1108. A SLIGHTLY MODIFIED IBM 7094 VERSION IS ALSO AVAILABLE. ALTERNATIVELY, A DETAILED FORMAT STATEMENT IS AVAILABLE FOR USERS WISHING TO UNPACK THE DATA IN A DIFFERENT WAY.

EXPERIMENT NAME- COSMIC RAY GRADIENT DETECTOR

NSSDC ID 67-123A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.R. WEBBER U OF NEW HAMPSHIRE DURHAM, NH

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED A TELESCOPE COMPRISED OF FIVE SOLID-STATE SENSORS, A CERENKOV DETECTOR, AND AN ANTICOINCIDENCE SHIELD. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. AS DETERMINED BY TWO COINCIDENCE MODES AND ELECTRONIC DISCRIMINATION OF SENSOR OUTPUT PULSES, PARTICLES MEASURED WERE ELECTRONS IN THREE CONTIGUOUS ENERGY INTERVALS BETWEEN 0.34 AND 8.4 MEV, PROTONS IN SIX CONTIGUOUS ENERGY INTERVALS BETWEEN 3.49 AND 64.3 MEV (ONE OF FIVE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS), AND ALPHA PARTICLES IN FOUR CONTIGUOUS ENERGY INTERVALS BETWEEN 6.64 AND 64.1 MEV/NUCLEON (ONE OF THREE COUNT RATES WAS DUE TO THE SUM OF COUNTS IN TWO NONCONTIGUOUS ENERGY INTERVALS). A THIRD COINCIDENCE MODE MEASURED THE SUM OF COUNTS DUE TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/NUCLEON. A FOURTH COINCIDENCE MODE MEASURED THE SUM OF NUCLEI ABOVE 42 MEV/NUCLEON AND ELECTRONS ABOVE 5.1 MEV. SPACECRAFT SPIN-INTEGRATED DIRECTIONAL FLUXES WERE MEASURED IN THE VARIOUS MODES. ACCUMULATION TIMES AND READOUT INTERVALS WERE DEPENDENT ON THE TELEMETRY BIT RATE AND WERE TYPICALLY IN TENS OF SECONDS. IN ALL CASES, THEY WERE LONGER THAN THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT FUNCTIONED WELL FROM LAUNCH THROUGH JANUARY 1973, ALTHOUGH, AT THE PRESENT LOW TELEMETRY BIT RATES, ACCUMULATOR SATURATION HAS RENDERED SOME COUNTING MODES TO BE OF NO VALUE. FOR FURTHER DETAILS, SEE J. GEOPHYS. RES., VOL. 76, PAGE 1605, 1971.

DATA SET NAME- PROTON COUNT RATES PUBLISHED IN  
'SOLAR-GEOPHYSICAL DATA'

NSSDC ID 67-123A-06C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 120169 TO 013173 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 13 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MONTHLY TABULAR LISTINGS OF COUNT RATES OF PROTONS WITH ENERGIES ABOVE 13.9 AND 64 MEV. TYPICALLY, FOUR COUNT RATES PER ENERGY CHANNEL PER DAY WERE GIVEN IN THE EARLY LIFE OF THE SPACECRAFT. IN LATE 1971, ONLY A FEW COUNT RATES PER MONTH WERE GIVEN, AND FOR JANUARY 1973, ONE COUNT RATE WAS GIVEN. DATA OBTAINED DURING A GIVEN MONTH WERE

PUBLISHED (AS OF NOVEMBER 1971) IN 'SOLAR-GEOPHYSICAL DATA (PROMPT REPORTS)'  
WITH A 1-MONTH LAG.

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SPACECRAFT COMMON NAME- OGO 5  
ALTERNATE NAMES- OGO-E, EGO 5, EOGO 5  
LAUNCH DATE- 03/04/68 SPACECRAFT WEIGHT IN ORBIT- 611. KG  
FUNDING AGENCY- NASA-OSSA  
DATE LAST USABLE SPACECRAFT DATA RECORDED-071372  
SPACECRAFT STATUS OF OPERATION- INOPERABLE  
EPOCH DATE- 03/04/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 3796. MIN  
APOAPSIS- 148228. KM ALT PERIAPSIS- 232.000 KM ALT INCLINATION- 31.1 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PURPOSE OF THE OGO 5 SPACECRAFT, THE FIFTH OF A SERIES OF SIX ORBITING GEOPHYSICAL OBSERVATORIES, WAS TO CONDUCT MANY DIVERSIFIED GEOPHYSICAL EXPERIMENTS IN ORDER TO OBTAIN A BETTER UNDERSTANDING OF THE EARTH AS A PLANET AND TO DEVELOP AND OPERATE A STANDARDIZED OBSERVATORY-TYPE SPACECRAFT. OGO 5 CONSISTED OF A MAIN BODY THAT WAS PARALLELEPIPED IN FORM, TWO SOLAR PANELS, EACH WITH A SOLAR-ORIENTED EXPERIMENT PACKAGE (SOEP), AND TWO ORBITAL PLANE EXPERIMENT PACKAGES (OPEP). ONE FACE OF THE MAIN BODY WAS EARTH POINTING (Z AXIS), AND THE LINE CONNECTING THE TWO SOLAR PANELS (X AXIS) WAS PERPENDICULAR TO THE EARTH-SUN-SPACECRAFT PLANE. THE SOLAR PANELS WERE ABLE TO ROTATE ABOUT THE X AXIS. THE OPEP'S WERE MOUNTED ON AND COULD ROTATE ABOUT AN AXIS THAT WAS PARALLEL TO THE Z AXIS AND THAT WAS ATTACHED TO THE MAIN BODY. AT LAUNCH, THE INITIAL LOCAL TIME OF APOGEE WAS 0944 HR. OGO 5 CARRIED 25 EXPERIMENTS. SEVENTEEN OF THESE WERE PARTICLE STUDIES, AND TWO WERE MAGNETIC FIELD STUDIES. IN ADDITION, THERE WAS ONE EACH OF THE FOLLOWING TYPES OF EXPERIMENTS -- RADIO ASTRONOMY, UV SPECTRUM, LYMAN-ALPHA, SOLAR X RAY, PLASMA WAVES, AND ELECTRIC FIELD. REAL-TIME DATA WERE TRANSMITTED AT 1, 8, AND 64 KBS DEPENDING ON THE DISTANCE FROM THE SPACECRAFT TO THE EARTH. PLAYBACK DATA WERE TAPE RECORDED AT 1 KBS AND TRANSMITTED AT 64 KBS. TWO WIDE-BAND TRANSMITTERS, ONE FEEDING INTO AN OMNIDIRECTIONAL ANTENNA AND THE OTHER FEEDING INTO A DIRECTIONAL ANTENNA, WERE USED TO TRANSMIT DATA. A SPECIAL PURPOSE TELEMETRY SYSTEM, FEEDING INTO EITHER ANTENNA, WAS ALSO USED TO TRANSMIT WIDE-BAND DATA IN REAL TIME ONLY. TRACKING WAS ACCOMPLISHED BY USING RADIO BEACONS AND A RANGE AND RANGE-RATE S-BAND TRANSPONDER. THE SPACECRAFT ATTITUDE CONTROL FAILED ON AUGUST 6, 1971, AFTER 41 MONTHS OF NORMAL OPERATION. THE SPACECRAFT WAS PUT IN A LOW POWER MODE ON SEPTEMBER 27, 1971. THE PLAYBACK MODE BECAME INOPERABLE ON AUGUST 26, 1971, AND THE SPACECRAFT WAS PUT IN AN OPERATIONAL OFF MODE ON OCTOBER 8, 1971. THREE EXPERIMENTS WERE REACTIVATED FOR THE PERIOD JUNE 1 TO JULY 13, 1972 (68-014A-09, 68-014A-22, AND 68-014A-27).

DATA SET NAME- TABLE OF EPHEMERIS PARAMETERS ON MICROFILM  
NSSDC ID 68-014A-00E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION



TIME PERIOD COVERED- 030468 TO 052670 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 12 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 12 REELS OF 35-MM MICROFILM THAT CONTAIN OGO 5 EPHEMERIS INFORMATION GIVEN AT VARIABLE TIME INTERVALS (5 SEC NEAR PERIGEE, 10 MIN NEAR APOGEE). EPHEMERIS PARAMETERS INCLUDE RADIAL DISTANCE, GEOMAGNETIC LATITUDE (NOT INVARIANT LATITUDE, DERIVED FROM THE SUBSATELLITE POINT), L, B/BO, SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC LATITUDE AND LONGITUDE, AND GEOGRAPHIC AND GEOMAGNETIC LOCAL TIME. THESE REELS OF MICROFILM, SUPPLIED TO NSSDC BY DR. H. WEST OF THE THE LAWRENCE RADIATION LABORATORY, COVER THE FIRST 301 OGO 5 ORBITS (MARCH 4, 1968 TO MAY 26, 1970).

EXPERIMENT NAME- ENERGETIC RADIATIONS FROM SOLAR FLARES NSSDC ID 68-014A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFCRNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=CTHER INVESTIGATOR)  
PI - K.A. ANDERSON U OF CALIFORNIA, BERK BEREKLEY, CA  
OI - S.R. KANE U OF CALIFORNIA, BERK BERKELEY, CA  
OI - H. MARK NASA-ARC MOFFETT FIELD, CA

DATE LAST EXPERIMENT DATA RECORDED-071372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY THE TIME VARIATION OF THE SPECTRUM OF ENERGETIC X RAYS, PROTONS, ALPHA PARTICLES, AND ELECTRONS EMITTED BY THE SUN IN ASSOCIATION WITH SOLAR FLARES. THE EXPERIMENT USED THREE SEPARATE DETECTING SYSTEMS. FIRST, AN OMNIDIRECTIONAL SODIUM IODIDE (THALLIUM) SCINTILLATION COUNTER MEASURED SOLAR X RAYS IN EIGHT ENERGY CHANNELS 9.6 TO 19.2, 19.2 TO 32, 32 TO 48, 48 TO 64, 64 TO 80, 80 TO 104, 104 TO 128, AND GREATER THAN 128 KEV, WHICH DATA WERE SAMPLED FOR 1.152 SEC ONCE EVERY 2.304 SEC. SECOND, A PARTICLE TELESCOPE COMPOSED OF SEVEN SOLID-STATE DETECTORS -- D1, D2, D3, D4, D5, D6, D7, AND AN ANTICINCIDENCE SHIELD, MEASURED PROTONS IN THE SIX ENERGY CHANNELS FROM 7 TO 20, 20 TO 45, 45 TO 80, 80 TO 130, 130 TO 200, AND GREATER THAN 200 MEV. THESE CHANNELS HAD A NONSEPARABLE ALPHA PARTICLE COMPONENT. THE LOWEST ENERGY CHANNEL WAS SAMPLED ONCE EVERY 147 SEC, WHILE ALL OTHER CHANNELS WERE SAMPLED ONCE EVERY 9.216 SEC. THE THIRD SYSTEM CONSISTED OF A DIRECTIONAL GM TUBE MAGNETIC SPECTROMETER THAT MEASURED ELECTRONS IN TWO CHANNELS 22 TO 27 AND 50 TO 90 KEV. THESE DATA WERE SAMPLED ONCE EVERY 147 SEC. IN ORDER TO REDUCE THE POSSIBLE CONTRIBUTION OF MAGNETOSPHERIC RADIATION TO THE BACKGROUND COUNTING RATES OF THE DETECTORS, THE EXPERIMENT ONLY OPERATED AT SPACECRAFT ALTITUDES ABOVE 80,000 KM, I.E., ABOUT 48 HR OR 67 PERCENT OF EACH ORBIT. THE X RAY DETECTOR OPERATED SATISFACTORILY THROUGHOUT THE MISSION. THE D7 DETECTOR ELEMENT IN THE PROTON ALPHA TELESCOPE WAS FOUND TO BE VERY NOISY JUST PRIOR TO LAUNCH. IT WAS THEREFORE DISABLED ELECTRONICALLY, HENCE NO DATA WERE AVAILABLE FOR PROTONS OR ALPHA PARTICLES ABOVE 200 MEV PER NUCLEON. THE REST OF THIS TELESCOPE PERFORMED NORMALLY THROUGHOUT THE MISSION. THE ELECTRON SPECTROMETER PERFORMED NORMALLY FROM LAUNCH UNTIL SEPTEMBER 23, 1969, WHEN THE 22 TO 27 KEV CHANNEL BECAME ERRATIC AND LATER STOPPED COUNTING COMPLETELY. THE OTHER ELECTRON CHANNEL PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- 147-SEC AVERAGED ELECTRON COUNT RATES ON NSSDC ID 68-014A-04A  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 053168 TO 100469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER ON 7-TRACK MAGNETIC TAPES WRITTEN AT 556 BPI IN A BCD CARD IMAGE FORMAT WHICH WAS CREATED ON A CDC 6000 SERIES COMPUTER. EACH CARD IMAGE INCLUDES THE DAY OF YEAR, TIME (SEC, UT), 147.456 SEC AVERAGED ELECTRON COUNT RATES FROM THE TWO ENERGY CHANNELS 22 TO 27 KEV, AND 50 TO 90 KEV, AND 40 SEC AVERAGES FROM CHANNELS 1 AND 8 OF THE X-RAY DETECTOR CORRESPONDING TO ENERGIES FROM 9.6 TO 19.2 KEV AND GREATER THAN 128 KEV. EACH PHYSICAL RECORD (2960 CHARACTERS) CONTAINS 37 LOGICAL RECORDS (80 CHARACTERS). DATA COVERAGE IS LIMITED TO SPACECRAFT ALTITUDES GREATER THAN 80,000 KM, I.E., ABOUT 67 PERCENT OF EACH ORBIT.

DATA SET NAME- 40-SEC AVERAGED X-RAY COUNT RATES ON NSSDC ID 68-014A-04B  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030868 TO 100469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 10 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER ON 7-TRACK MAGNETIC TAPES WRITTEN AT 556 BPI IN A BCD CARD IMAGE FORMAT WHICH WAS CREATED ON A CDC 6000 SERIES COMPUTER. EACH CARD IMAGE INCLUDES THE DAY OF YEAR, TIME (SEC, UT), AND EIGHT CHANNELS OF UNNORMALIZED 39.864 SEC AVERAGED X-RAY COUNT RATES CORRESPONDING TO ENERGY INTERVALS 9.6 TO 19.2 KEV, 19.2 TO 32 KEV, 32 TO 48 KEV, 48 TO 64 KEV, 64 TO 80 KEV, 80 TO 104 KEV, 104 TO 128 KEV, AND GREATER THAN 128 KEV. EACH PHYSICAL RECORD (2960 CHARACTERS) CONTAINS 37 LOGICAL RECORDS (80 CHARACTERS). DATA COVERAGE WAS LIMITED TO SPACECRAFT ALTITUDES GREATER THAN 80,000 KM, I.E., ABOUT 67 PERCENT OF EACH ORBIT.

EXPERIMENT NAME- ELECTRON AND PROTON SPECTROMETER NSSDC ID 68-014A-06

ORIGINAL EXPERIMENT INSTITUTION- LAWRENCE LIVERMORE LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.I.	WEST, JR.	LAWRENCE LIVERMORE LAB LIVERMORE, CA
OI - R.G.	D'ARCY, JR.	BARTOL RESEARCH FOUND SWATHMORE, PA
OI - L.	MANN	LAWRENCE RADIATION LAB LIVERMORE, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-090071

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE SPECTRA, FLUXES, AND DIRECTIONAL PROPERTIES OF ELECTRONS, PROTONS, AND ALPHA PARTICLES. ELECTRONS WERE SENSED BY SOLID-STATE DETECTORS FOUND WITHIN EACH OF TWO PERMANENT MAGNET SPECTROMETERS. THESE SPECTROMETERS MEASURED ELECTRONS IN NARROW ENERGY WINDOWS CENTERED AT 79, 158, 266, 479, 822, 1530, AND 2820 KEV. PROTONS IN SIX CONTIGUOUS ENERGY INTERVALS (AT 0.23, 0.57, 1.35, 5.60, 14.0, AND 43 MEV), ALPHA PARTICLES IN THREE CONTIGUOUS INTERVALS (AT 5.9, 22.7, AND 56.4 MEV), AND ELECTRONS ABOVE 4 MEV WERE SEPARATELY MEASURED BY A FOUR-SENSOR SOLID-STATE TELESCOPE. THIS TELESCOPE WAS PHYSICALLY LOCATED INSIDE THE LARGER OF THE TWO ELECTRON SPECTROMETER MAGNETS AND IN LINE WITH THE SPECTROMETER ENTRANCE APERTURE. PROTONS BETWEEN 100 AND 150 KEV WERE ALSO MEASURED BY A SINGLE SOLID-STATE DETECTOR ADJACENT TO THE TELESCOPE. THE INSTRUMENTS WERE MOUNTED ON OPEP-2 AND HAD THEIR APERTURES LOOKING PERPENDICULAR TO THE EARTH'S RADIUS VECTOR. THE OPEP 2 WAS ROTATED BACK AND FORTH ABOUT THE EARTH'S RADIUS VECTOR THROUGH 230 DEG AT 3 DEG/SEC, THUS PERMITTING THE DETERMINATION OF PARTICLE DIRECTIONAL DISTRIBUTIONS. FOR A GIVEN SPECIES-ENERGY CHANNEL, DETECTOR ACCUMULATIONS WERE TELEMETERED ONCE EACH 4, 8, OR 16 MAIN FRAMES (ONE MAIN FRAME = 1.152, .144, OR .018 SEC FOR TELEMETRY RATES OF 1, 8, OR 64 KBS) DEPENDING ON THE CHANNEL. THE EXPERIMENT WORKED NORMALLY AS LONG AS DATA WERE TELEMETERED FROM OGO 5. THUS, NEARLY 100 PERCENT COVERAGE WAS OBTAINED BETWEEN MARCH 1968 AND AUGUST 1971.

DATA SET NAME- 20 MINUTE COUNT RATE PLOTS ON MICROFILM      NSSDC ID 68-014A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030468 TO 061368 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      30 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 30 REELS OF 35-MM MICROFILMED PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS COUNT RATES FOR 20 MIN TAKEN IN ONE SPECIES -- ENERGY CHANNEL AND THE BACKGROUND COUNT RATES FOR THAT CHANNEL VS TIME. THE DETECTOR LOOK DIRECTION RELATIVE TO THE LOCAL MAGNETIC FIELD HAS BEEN DETERMINED WITH THE AID OF THE UCLA FLUXGATE MAGNETOMETER DATA AND HAS ALSO BEEN PLOTTED VS TIME. LIMITED EPHEMERIS INFORMATION APPEARS ON SOME BUT NOT ALL FRAMES. AS OF FEBRUARY 1972, DATA FOR THE PERIOD MARCH 4, 1968 TO JUNE 13, 1968, ARE HELD AT NSSDC. DATA FOR OTHER TIME PERIODS WILL BE FOUND IN OTHER DATA SETS ASSOCIATED WITH THIS EXPERIMENT.

DATA SET NAME- 2 HOUR COUNT RATE PLOTS ON MICROFILM      NSSDC ID 68-014A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 031268 TO 060668 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      39 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONSISTS OF MICROFILMED PLOTS OF 4.6-SEC AVERAGED COUNT RATES FOR ALL THE COUNTING MODES OF THIS EXPERIMENT. EACH FRAME CONTAINS APPROXIMATELY 2 HR OF DATA FOR ONE MODE (PRINCIPAL AND BACKGROUND DETECTOR COUNT RATES). VALUES OF RADIAL DISTANCE, MCILWAIN L, MAGNETIC LATITUDE, AND SOLAR ECLIPTIC AND SOLAR MAGNETIC LATITUDE AND LONGITUDE OF THE SPACECRAFT ARE LISTED AT 12-MIN INTERVALS ON EACH OF THE DATA FRAMES. NO EFFORT WAS MADE TO SELECT PARTICLES WITH SPECIFIC PITCH ANGLES, WHICH LEADS TO SOME SCATTER IN THE DATA. PLOTS OF DETECTOR APERTURE DIRECTION ANGLE VS TIME ARE PROVIDED IN EACH SET OF PLOTS COVERING A GIVEN 2-HR PERIOD. LISTINGS OF 10-MIN AVERAGED COUNT RATES FOR EACH OF THE COUNTING MODES ARE ALSO GIVEN FOR 2-HR BLOCKS. THESE COUNT RATES INVOLVE AVERAGES OVER ALL PITCH ANGLES ENCOUNTERED DURING THE 10-MIN AVERAGING INTERVAL. THE EXPERIMENTER EXPECTS TO SUPPLY DATA IN THIS FORMAT FOR ALL OF 1968 PAST LAUNCH AND FOR REPRESENTATIVE PORTIONS OF 1969, 1970, AND 1971. EMPHASIS WILL BE ON MAGNETOSPHERIC DATA, WITH EXTRA-MAGNETOSPHERIC DATA BEING GIVEN ONLY FOR INTERESTING PERIODS.

DATA SET NAME- PARTICLE COUNT RATE, EPHEMERIS, AND NSSDC ID 68-014A-06C  
MAGNETIC FIELD DATA ON MAGNETIC TAPES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052368 TO 050169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 35 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS EXPERIMENTER-SUPPLIED DATA SET CONSISTS OF 7-TRACK, 800-BPI, CDC 6600 BINARY MAGNETIC TAPES. EACH TAPE CONTAINS UP TO 2,000 RECORDS OF 724 60-BIT WORDS EACH. SEVERAL OF THESE COMPUTER WORDS CONTAIN MORE THAN ONE LOGICAL WORD. THERE ARE ABOUT 4 DAYS OF DATA ON EACH TAPE. EACH RECORD CONTAINS DATA TAKEN FROM (1) THE ATTITUDE-ORBIT TAPES SUPPLIED BY GSFC TO THE EXPERIMENTER, (2) THE EXPERIMENTER'S PARTICLE DETECTOR DATA TAPES, AND (3) MAGNETOMETER DATA TAPES PROVIDED TO H. WEST BY P. COLEMAN AND C. RUSSELL AT UCLA. ATTITUDE-ORBIT DATA INCLUDE TIME, SPACECRAFT RADIAL DISTANCE, MCILWAIN L PARAMETER, B, MAGNETIC LATITUDE, POLAR AND AZIMUTHAL ANGLES IN GEOCENTRIC SOLAR ECLIPTIC AND MAGNETOSPHERIC COORDINATES, AND CARTESIAN GEOCENTRIC EQUATORIAL INERTIAL (GEI) COORDINATES. CARTESIAN GEI COORDINATES OF THE SUN, AND CARTESIAN GEI COMPONENTS OF THE MODEL MAGNETIC VECTOR ARE ALSO GIVEN. THE PARTICLE DATA IN A GIVEN RECORD CONSIST OF INDIVIDUAL ACCUMULATOR READINGS OR THEIR AVERAGES, AS OBTAINED OVER 2.5 MIN (AT TELEMETRY BIT RATE OF 1 KBS) OR 1.25 MIN (AT TELEMETRY BIT RATES OF 8 AND 64 KBS). THERE ARE 32 SUCCESSIVE VALUES FOR EACH OF THE MAIN ELECTRON AND PROTON MODES, WITH SMALLER NUMBERS FOR OTHER MODES, OVER THE 2.5- OR 1.25-MIN INTERVAL. DEAD TIME CORRECTIONS HAVE NOT BEEN MADE, AND ARE SELDOM NEEDED. THE MAGNETOMETER DATA CONSIST OF CARTESIAN MAGNETIC FIELD COMPONENTS (IN GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES) AT 128 EQUISPACED TIME POINTS WITHIN THE 2.5- OR 1.25-MIN INTERVAL COVERED BY THE RECORD. THESE VALUES ARE OBTAINED BY VECTOR INTERPOLATION OF 4.608 SEC-AVERAGED UCLA MAGNETOMETER DATA. INFORMATION ON INSTRUMENT LOOK DIRECTION AS A FUNCTION OF TIME WITHIN INDIVIDUAL RECORDS IS ALSO GIVEN. THE INITIAL DATA SUBMISSION CONSISTED OF 35 TAPES COVERING THE TIME PERIODS MAY 23 TO JUNE 5, 1968, AUG. 4 TO OCT. 2, 1968, AND APRIL 10 TO MAY 1, 1969. ADDITIONAL TAPES WILL BE ADDED TO THIS DATA SET AS THEY BECOME AVAILABLE.

EXPERIMENT NAME- COSMIC RAY ELECTRONS

NSSDC ID 68-014A-09

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P. MEYER U OF CHICAGO CHICAGO, IL  
OI - C.Y. FAN U OF ARIZONA TUCSON, AZ  
OI - J.J. L'HEUREUX U OF ARIZONA TUCSON, AZ

DATE LAST EXPERIMENT DATA RECORDED-071372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT IS TO MEASURE THE FLUX AND ENERGY SPECTRUM OF ELECTRONS WITH ENERGIES BETWEEN 15 AND 45 MEV, AND FLUX AND ENERGY SPECTRUM OF PROTONS WITH ENERGIES BETWEEN 143 AND 169 MEV, AND BELOW 16 BEV. THE DETECTOR USED WAS A PARTICLE TELESCOPE, FORMED BY A SCINTILLATION COUNTER, A GAS CERENKOV COUNTER, A SOLID STATE DETECTOR, AND A CSI SCINTILLATION COUNTER SURROUNDED BY TWO PLASTIC SCINTILLATORS. THE EXPERIMENT WAS TURNED ON ONLY WHEN THE SATELLITE'S MCILWAIN PARAMETER, L, WAS GREATER THAN 12. THE EXPERIMENT WAS FULLY OPERATIONAL WHEN THE SPACECRAFT WAS PUT IN AN OPERATIONAL OFF MODE ON SEPTEMBER 22, 1971.

DATA SET NAME- SELECTION OF VARIOUS PLOTS FOR PROTONS  
AND FOR ELECTRONS ON MICROFILM

NSSDC ID 68-014A-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 071372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS FOUR SETS OF PLOTS SUPPLIED BY THE EXPERIMENTER ON ONE REEL OF 35-MM MICROFILM -- (1) PROTON FLUX VS TIME (90 TO 110 MEV), (2) PROTON FLUX VS TIME (143 TO 169 MEV), (3) ELECTRON FLUX VS TIME (12 TO 45 MEV), AND (4) A SET OF 19 SPECIAL ELECTRON (12 TO 45 MEV) AND PROTON (90 TO 110 MEV) FLUX PLOTS COVERING ELECTRON FLARE EVENTS FROM JULY 6, 1968 TO JANUARY 19, 1970. THE DATA ARE IN CHRONOLOGICAL ORDER WITHIN EACH SECTION. MOST OF THE 114 PLOTS UP TO ORBIT 456 COVER FOUR ORBITS EACH, GIVING THE AVERAGE RATES OVER 4-HR PERIODS. AFTER ORBIT 458, THE OGO 5 DATA ACQUISITION WAS REDUCED TO 25 PERCENT, AND THE AVERAGING INTERVAL WAS 1 OR 2 HR DEPENDING ON THE ORBIT NUMBER EXCEPT FOR THE PERIOD FROM ORBIT 597 (JUNE 3, 1972) TO ORBIT 613 (JULY 14, 1972) WHERE THE FLUXES (CORRESPONDING TO (1), (2), AND (3) ABOVE) WERE AVERAGED OVER 4-HR PERIODS. THE PARTICLE ENERGY RANGE, ORBIT NUMBER, AND AVERAGING INTERVAL APPEAR AT THE TOP OF EACH PLOT.

EXPERIMENT NAME- MEASUREMENT OF THE ABSOLUTE FLUX AND  
ENERGY SPECTRUM OF ELECTRONS

NSSDC ID 68-014A-12

ORIGINAL EXPERIMENT INSTITUTION- NETHERLANDS INSTITUTE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.C. VAN DE MULST NETHERLANDS INSTITUTE LEIDEN, THE NETHERLANDS  
OI - D. TANKA NETHERLANDS INSTITUTE LEIDEN, NETHERLANDS  
OI - M.N. LIND NETHERLANDS INSTITUTE LEIDEN, NETHERLANDS

DATE LAST EXPERIMENT DATA RECORDED-071372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT MEASURED THE ABSOLUTE FLUX AND ENERGY SPECTRUM OF ENERGETIC GALACTIC COSMIC RAY ELECTRONS (0.5 TO 10 BEV) WHICH ARE BELIEVED TO BE THE SOURCE OF SYNCHROTRON RADIATION WHICH CAUSES THE NONTHERMAL GALACTIC RADIO NOISE. PROTONS (20 TO 100 BEV) AND GAMMA RAYS ABOVE 500 MEV WERE ALSO MEASURED. THE EXPERIMENT HAS FUNCTIONED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- 0.5 TO 10 BEV COSMIC-RAY ELECTRON COUNT NSSDC ID 68-014A-12A  
RATES ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 083171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TIME-ORDERED ELECTRON COUNT RATES AND PROTON COUNT RATES IN A 7-TRACK, 556 BPI, BCD MAGNETIC TAPE FORMAT GENERATED ON AN IBM 7094 COMPUTER AT NSSDC FROM DATA SUBMITTED BY THE EXPERIMENTER ON COMPUTER CARDS. THERE IS ONE FILE ON THE TAPE, AND EACH PHYSICAL RECORD IS THE IMAGE OF ONE CARD AND IS 84 CHARACTERS IN LENGTH. THE FIRST 91 PHYSICAL RECORDS OF THE TAPE CONTAIN A DESCRIPTION OF THE EXPERIMENT AND ALSO OF THE DATA SET. THE DATA FORMAT INCLUDES THE YEAR OF OBSERVATION, JULIAN DAY OF YEAR, MONTH AND DAY OF MONTH, AND DAILY COUNT RATES (CPS) FOR EIGHT ELECTRON CHANNELS (COUNTS/100,000 SEC) AND ONE PROTON CHANNEL (COUNTS/100 SEC). THE DATA ARE ALSO AVAILABLE IN TABULAR FORM ON MICROFILM IN DATA SET 68-014A-12B.

DATA SET NAME- 0.5 TO 10 BEV COSMIC-RAY ELECTRON COUNT NSSDC ID 68-014A-12B  
RATES ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 083171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TIME-ORDERED TABLES OF ELECTRON COUNT RATES AND PROTON COUNT RATES SUBMITTED BY THE EXPERIMENTER AND STORED ON 35-MM MICROFILM BY NSSDC. THE DATA FORMAT INCLUDES A HEADER DESCRIPTION OF THE EXPERIMENT AND DATA SET FOLLOWED BY TABLES INCLUDING THE YEAR OF OBSERVATION, JULIAN DAY OF YEAR, MONTH, AND DAY OF MONTH AND DAILY COUNT RATES FOR EIGHT ELECTRON CHANNELS (COUNTS/100,000 SEC) AND ONE PROTON CHANNEL (COUNTS/100 SEC). THE DATA ARE ALSO AVAILABLE ON MAGNETIC TAPE IN DATA SET 68-014A-12A.

EXPERIMENT NAME- PARTICLE WAVE STUDY

NSSDC ID 68-014A-13

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P.J. COLEMAN, JR. U OF CALIFORNIA, LA LOS ANGELES, CA  
OI - T.A. FARLEY U OF CALIFORNIA, LA LOS ANGELES, CA  
OI - D.L. JUDGE USC LOS ANGELES, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-100971  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF SIX PLASTIC SCINTILLATOR DETECTORS TO MEASURE THE UNIDIRECTIONAL FLUX OF ELECTRONS IN EIGHT ENERGY INTERVALS BETWEEN 50 KEV AND 1.2 MEV. TWO OF THE DETECTORS POINTED IN OPPOSITE DIRECTIONS WHILE THE REMAINDER POINTED IN VARIOUS OTHER DIRECTIONS. THE EXPERIMENT WAS DESIGNED TO DETERMINE THE MAGNETOHYDRODYNAMIC PROPERTIES OF THE DISTURBANCES IN THE MAGNETOSPHERE AND BEYOND. IT WAS CONDUCTED IN CONJUNCTION WITH THE UCLA FLUXGATE MAGNETOMETER EXPERIMENT (68-014A-14). A THERMAL PROBLEM ADVERSELY AFFECTED THE DATA QUALITY FOR THE SECOND HALF OF 1969. HOWEVER, PRIOR TO THAT TIME AND UNTIL OCTOBER 9, 1971, WHEN IT WAS TURNED OPERATIONALLY OFF, THE EXPERIMENT WAS PERFORMING NORMALLY.

DATA SET NAME- REAL TIME TELEMETERED ELECTRON DATA, 0.05 NSSDC ID 68-014A-13A  
TO 1.2 MEV ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030868 TO 121269 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 58 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE 92 REELS OF EXPERIMENTER GENERATED, 9-TRACK OR 7-TRACK MAGNETIC TAPES WITH IBM 360 EIGHT-BIT BYTES, CONTAIN ALL AVAILABLE SIGNIFICANT REAL-TIME TELEMETERED DATA FROM THIS EXPERIMENT FOR THE INCLUSIVE TIME PERIOD. WITH THE EXPERIMENTER PROVIDED PROGRAM, FLUXES OF PARTICLES ARE AVAILABLE. THE PROGRAM IN ITS CURRENT FORM IS NOT INEXPENSIVE TO RUN, BUT CONTAINS CALIBRATION TABLES, ETC., NECESSARY TO REDUCE THE DATA. THE PHYSICAL RECORD SIZE OF THESE TAPES IS 4088 BYTES. FOR EACH PHYSICAL RECORD, THE FIRST EIGHT BYTES ARE SENSOR CALIBRATION DATA, FOLLOWED NOMINALLY BY UP TO 255 LOGICAL RECORDS OF 16 BYTES EACH CONTAINING DATA QUALITY FLAGS, TIME DATA FLAGS, MODE DATA QUALITY FLAGS, FLAGS, AND THE ELECTRON COUNT RATES. TIME WHEN NO CHANGE IN COUNT RATE WAS DETECTED DO NOT APPEAR ON THESE TAPES. NSSDC HAS FOUND PHYSICAL RECORDS WHERE THE FIRST SEVEN DATA RECORDS ARE FILLED WITH IRREGULAR LOOKING DATA THAT DOES NOT FIT THIS FORMAT, FOLLOWED BY APPARENTLY GOOD DATA FOR THE REST OF THE PHYSICAL RECORD. PHYSICAL RECORDS CONTAINING LESS THAN 255 LOGICAL DATA RECORDS ARE PADDED OUT WITH BLANKS.

DATA SET NAME- TAPE PLAYBACK ELECTRON DATA, 0.05 TO 1.2 NSSDC ID 68-014A-13B  
MEV ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 033068 TO 021471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE SIX REELS OF EXPERIMENTER GENERATED 9-TRACK OR 7-TRACK MAGNETIC TAPES WITH IBM 360 EIGHT-BIT BYTES CONTAIN ALL AVAILABLE SIGNIFICANT DATA FROM THIS EXPERIMENT FOR THE INCLUSIVE TIME PERIOD. WITH THE EXPERIMENTER PROVIDED PROGRAM, FLUXES OF PARTICLES ARE AVAILABLE. THE PROGRAM IN ITS CURRENT FORM IS EXPENSIVE TO RUN, BUT CONTAINS CALIBRATION TABLES, ETC., NECESSARY TO REDUCE THE DATA. THE PHYSICAL RECORD SIZE OF THESE TAPES IS 4088 BYTES. FOR EACH PHYSICAL RECORD, THE FIRST EIGHT BYTES ARE SENSOR CALIBRATION DATA, FOLLOWED BY UP TO 255 LOGICAL RECORDS OF 16 BYTES EACH CONTAINING DATA QUALITY FLAGS, TIME DATA FLAGS, MODE FLAGS, AND THE ELECTRON COUNT RATES. TIME WHEN NO CHANGE IN COUNT RATE WAS DETECTED DO NOT APPEAR ON THESE TAPES. NSSDC HAS FOUND PHYSICAL RECORDS WHERE THE FIRST SEVEN DATA RECORDS ARE FILLED WITH IRREGULAR LOOKING DATA WHICH DOES NOT FIT THIS FORMAT, FOLLOWED BY APPARENTLY GOOD DATA FOR THE REST OF THE PHYSICAL RECORD. PHYSICAL RECORDS CONTAINING LESS THAN 255 LOGICAL DATA RECORDS ARE PADDED OUT WITH BLANKS.

EXPERIMENT NAME- UCLA TRIAXIAL FLUXGATE MAGNETOMETER NSSDC ID 68-014A-14

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, LA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - P.J. COLEMAN, JR.	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - T.A. FARLEY	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - D.L. JUDGE	USC	LOS ANGELES, LA
OI - C.T. RUSSELL	U OF CALIFORNIA, LA	LOS ANGELES, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-092071

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A TRIAXIAL FLUXGATE MAGNETOMETER MOUNTED ON A 6.1-M BOOM. THE RANGE OF EACH SENSOR WAS MINUS TO PLUS 16 GAMMAS, WITH .125-GAMMA DIGITIZATION WINDOWS. FOR A GIVEN AMBIENT FIELD, A KNOWN OFFSET FIELD COULD BE APPLIED TO THE SENSOR BY A SURROUNDING CURRENT-CARRYING COIL. IN THIS WAY, AMBIENT FIELDS OF MINUS TO PLUS 64,000 GAMMAS PER AXIS WERE MEASURABLE WITH .125-GAMMA DIGITIZATION ACCURACY. THE SENSOR OUTPUT SIGNALS WERE PASSED THROUGH A FILTER THAT REMOVED FREQUENCY COMPONENTS HIGHER THAN THE SAMPLING FREQUENCY. THE FILTERED SIGNALS WERE THEN SAMPLED IN REAL TIME AT 0.87, 6.96, OR 55.5 VECTOR MEASUREMENTS PER SECOND, DEPENDING ON THE SATELLITE BIT RATE. AND AT 0.87 VECTOR MEASUREMENTS PER SECOND IN THE TAPE RECORDED CHANNEL. AS THE INSTRUMENT SHIFTED OFFSET FIELD RANGES, THE FIRST SIX DATA POINTS TAKEN AFTER THE SHIFT WERE AFFECTED IN AN UNDERSTOOD, AND THEREFORE CORRECTABLE, WAY. ALSO, THE INSTRUMENT HOUSING WAS EQUIPPED WITH AN ELECTRIC HEATER THAT INTRODUCED A CORRECTABLE OFFSET FIELD WHEN IT CAME ON. FURTHER, THE ZERO OFFSET ON EACH SENSOR DRIFTED SLOWLY. BY USING SIMULTANEOUS FLUXGATE AND RUBIDIUM MAGNETOMETER DATA FROM THE GSFC EXPERIMENT, THIS OFFSET CORRECTION COULD BE DETERMINED WITHIN PLUS OR MINUS



0.5 GAMMA. DATA WERE RECEIVED UP UNTIL SEPTEMBER 20, 1971, WHEN THE EXPERIMENT WAS TURNED OFF. AS OF JUNE 6, 1973, OFFSET ERRORS STILL EXIST IN ALL THE DATA FROM THIS EXPERIMENT. FOR MOST OF THE DATA, THESE ERRORS ARE WITHIN THREE GAMMAS PER AXIS. WORK IS CONTINUING AT UCLA AND NSSDC TO REDUCE THESE ERRORS TO THE OPTIMAL LEVEL OF ONE GAMMA PER AXIS.

DATA SET NAME- ONE-MIN AVG VECTOR MAGNETIC FIELD AND RMS NOISE AMPLITUDE DATA TAPES IN S/C COORD. NSSDC ID 68-014A-14B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 090168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 16 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUPPLIED BY THE EXPERIMENTER, CONSIST OF TIME-ORDERED 1-MIN AVERAGED VECTOR MAGNETIC FIELD CARTESIAN COMPONENTS IN SPACECRAFT COORDINATES, THE MAGNETIC FIELD MAGNITUDE, THE RMS DEVIATIONS OF EACH COMPONENT AND OF THE TOTAL FIELD, AND A DATA QUALITY INDICATOR. THE DATA ARE ON IBM 360 UCLA STANDARD LABELED BINARY 7- AND 9-TRACK 800 BPI MAGNETIC TAPES, WITH FIVE DATA FILES PER TAPE, EACH FILE CORRESPONDS TO ONE ORBIT. THERE ARE HEADER AND TRAILER FILES BETWEEN EACH DATA FILE, TOTALING 15 FILES PER TAPE, 1128 LOGICAL RECORDS PER PHYSICAL RECORD, AND A BLOCKSIZE OF 5132 WORDS. THERE ARE NO EPHEMERIS DATA ON THESE TAPES.

DATA SET NAME- 4.608-SEC AVERAGED FLUXGATE MAGNETOMETER DATA IN SPACECRAFT COORDINATES ON TAPE NSSDC ID 68-014A-14C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 090168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 16 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF AN EXPANDING SET OF EXPERIMENTER-SUPPLIED 9-TRACK, 800-BPI, BINARY MAGNETIC TAPES GENERATED ON AN IBM 360/91 COMPUTER. EACH TAPE CONTAINS DATA FILES WITH A HEADER AND TRAILER FILE FOR EACH DATA FILE. EACH FILE CONTAINS OVERLAPPING DATA INTO THE NEXT ORBIT AT PERIGEE. AS OFFSET CORRECTIONS ARE INTRODUCED AT APOGEE AND EXTRAPOLATED BACKWARD AND FORWARD IN TIME THROUGHOUT EACH ORBIT, THESE OVERLAPPING PERIODS IN GENERAL WILL NOT EXACTLY AGREE. EACH PHYSICAL RECORD CONTAINS 128 LOGICAL RECORDS OF SIX WORDS EACH. EACH LOGICAL RECORD CONTAINS TIME, THE VECTOR FIELD AS AVERAGED OVER 4.608 SEC IN SPACECRAFT COORDINATES TAPES IN DATA SET, AND A QUALITY INDICATOR.

DATA SET NAME- FLUXGATE MAGNETOMETER DATA ON FILM, 4.608 -SEC AVG IN SPACECRAFT COORDINATES NSSDC ID 68-014A-14D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 080669 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 40 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE 4.608-SEC AVERAGES OF THE FLUXGATE MAGNETOMETER DATA ARE PLOTTED ON 40 REELS OF 35-MM MICROFILM SUPPLIED BY THE EXPERIMENTER. EACH FRAME CONTAINS 20 MIN OF DATA. THE THREE VECTOR CARTESIAN COMPONENTS IN SPACECRAFT COORDINATES AND THE MAGNETIC FIELD MAGNITUDE ARE PLOTTED ON A LINEAR SCALE AGAINST COMMON TIME. ALSO INCLUDED ARE INITIAL AND FINAL EPHEMERIS INFORMATION FOR EACH FRAME. BECAUSE OF COARSENESS OF SCALE AND ACCURACY OF THESE PLOTS, THE MAGNETIC TAPE DATA 68-014A-14C SHOULD BE USED WHERE ACCURATE ABSOLUTE AND FIELD VALUES ARE REQUIRED, ESPECIALLY WHEN THE AMBIENT FIELD IS SMALL. THE FIRST 37 ORBITS OF DATA WERE PLOTTED FROM PRELIMINARY VERSIONS OF THE DATA TAPES IN DATA SET 68-014A-14C AND, UNFORTUNATELY, CONTAIN OFFSET ERRORS OF UP TO 12 GAMMAS. THE CORRECTIONS ARE INCLUDED IN THE DOCUMENTATION THAT WILL BE SENT WITH REQUESTS FOR THESE DATA.

DATA SET NAME- ONE-MIN AVG VECTOR MAGNETIC FIELD DATA ON NSSDC ID 68-014A-14E  
TAPE IN GSE COORDINATES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 090168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUPPLIED BY THE EXPERIMENTER, ARE THE TIME-ORDERED 1-MIN AVERAGED VECTOR MAGNETIC FIELD CARTESIAN COMPONENTS AND FIELD MAGNITUDES (68-014A-14B), WHICH THE EXPERIMENTER HAS ROTATED INTO GEOCENTRIC SOLAR ECLIPTIC (GSE) COORDINATES. ALSO INCLUDED IS THE SPACECRAFT POSITION IN GSE. THE DATA ARE ON 7- AND 9-TRACK 800-BPI UCLA STANDARD LABELED 360 (BINARY TAPES), WITH FIVE DATA FILES PER TAPE AND ONE ORBIT PER FILE. THERE ARE HEADER AND TRAILER FILES FOR EACH DATA FILE, TOTALING 15 FILES PER TAPE. THE BLOCKSIZE IS 1232 CHARACTERS.

DATA SET NAME- ONE-MIN AVG VECTOR MAGNETIC FIELD DATA ON NSSDC ID 68-014A-14F  
TAPE IN GSM COORDINATES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 090168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 16 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUPPLIED BY THE EXPERIMENTER, CONSIST OF TIME-ORDERED 1-MIN AVERAGED VECTOR MAGNETIC FIELD CARTESIAN COMPONENTS AND FIELD MAGNITUDE, WHICH THE EXPERIMENTER HAS ROTATED INTO GEOCENTRIC SOLAR MAGNETOSPHERIC COORDINATES (GSM). ALSO INCLUDED IS THE SPACECRAFT POSITION IN GSM. THE DATA ARE ON IBM-360 BINARY 7- AND 9-TRACK 800-BPI UCLA STANDARD LABELED TAPES, WITH FIVE DATA FILES PER TAPE AND ONE ORBIT PER DATA FILE. THERE IS A HEADER AND TRAILER FILE FOR EACH DATA FILE, TOTALING 15 FILES PER TAPE. THE BLOCKSIZE IS 1232 CHARACTERS.



DATA SET NAME- SEARCH COIL MAGNETOMETER SUMMARY TAPES, NSSDC ID 68-014A-16B  
36.9-SEC TIME RESOLUTION

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030768 TO 010171 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 47 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE EXPERIMENTER-SUPPLIED DIGITAL TAPES REPRESENT SUMMARIES OF ABOUT 2000 FINE-TIME SCALE DATA TAPES, WHICH THE EXPERIMENTER CURRENTLY HOLDS. THESE TAPES ARE 9-TRACK MULTIPLE-FILE EBCDIC CODED DIGITAL MAGNETIC TAPES PRODUCED ON AN IBM 360/91 COMPUTER. RECORDED AT 800 BPI, THEY HAVE 420 CHARACTERS PER RECORD AND ABOUT 1500 RECORDS PER FILE, WHICH REPRESENTS ONE SPACECRAFT ORBIT OR ABOUT 2.7 DAYS. THESE DATA ARE TIME ORDERED EXCEPT FOR OCCASIONAL OVERLAPPING DATA AT THE END OF A FILE. AN INDEX TO THE FILES ON EACH TAPE IS PROVIDED IN DATA SET 68-014A-16C. EACH DATA RECORD CONTAINS 36.9-SEC AVERAGED VALUES FOR TRIAXIAL SPECTRUM ANALYZER OUTPUTS AT 10, 22, 47, 100, 216, 467, AND 1000 HZ (21 VALUES), TRIAXIAL BROADBAND DATA FROM 0.03 TO 0.1 HZ, 0.1 TO 0.3 HZ, AND 0.3 HZ TO INSTRUMENT NYQUIST FREQUENCY THAT IS DETERMINED BY BIT RATE (9 VALUES). ALIASING DOES NOT OCCUR EXCEPT DURING THE TAPE RECORDER PLAYBACK MODE. HOWEVER THIS QUESTION OF ALIASING, IS ACADEMIC FOR THE OGO 5 INSTRUMENTS OPERATING IN THE WAVEFORM MODE, AS INTERFERENCE OCCURS BETWEEN THE SEVEN SPECTRUM ANALYZER CHANNELS AND THESE THREE BROADBAND MODES, SERIOUSLY DEGRADING THE BROADBAND CHANNELS. ALSO ON THE TAPES IS A DATA QUALITY INDICATOR.

DATA SET NAME- INDEX TO THE MAGNETIC TAPES CONTAINING NSSDC ID 68-014A-16C  
SEARCH COIL 37 SEC. AVERAGED DATA

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030768 TO 042568 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REEL OF EXPERIMENTER-GENERATED MICROFILM CONTAINS NECESSARY INFORMATION TO INTERPRET AND USE DATA SET 68-014A-16B. IT CONTAINS THE NUMBER OF FILES FOR EACH OF THE MAGNETIC TAPES IN THAT SET. IN ADDITION THERE ARE FOR EACH FILE ON EACH TAPE THE ORBIT NUMBER, FILE NUMBER, DATE, TIME, AND A SERIES OF STATUS WORDS RELATING TO WAVEFORM CHANNEL GAIN, BANDWIDTH, AND THE ANALOG CHANNEL.

EXPERIMENT NAME- LIGHT ION MASS MAGNETIC SPECTROMETER NSSDC ID 68-014A-18

ORIGINAL EXPERIMENT INSTITUTION- LOCKHEED

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.W.	SHARP	LOCKHEED	PALO ALTO, CA
OI - T.J.	CROWTHER	LOCKHEED	PALO ALTO, CA
OI - K.K.	HARRIS	LOCKHEED	PALO ALTO, CA

DATE LAST EXPERIMENT DATA RECORDED-071372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETERMINE THE CONCENTRATION OF LIGHT ION SPECIES IN THE TOPSIDE IONOSPHERE AND EXOSPHERE AND TO MEASURE THESE CONCENTRATIONS THROUGHOUT THE PLASMASPHERE. THE EXPERIMENT WAS ALSO DESIGNED TO MONITOR THE LOCATIONS OF THE PLASMAPAUSE, MAGNETCPAUSE AND BOW SHOCK. THE INSTRUMENT CONSISTED OF AN AUTOMATIC MULTIRANGED MAGNETIC FOCUS ION MASS SPECTROMETER. THE INSTRUMENT IS CAPABLE OF MEASURING SINGLY IONIZED ATOMIC OXYGEN, HYDROGEN, AND HELIUM CONCENTRATIONS. A COMPLETE MEASUREMENT OF THESE CONCENTRATIONS PLUS A CALIBRATION WAS COMPLETED IN 4.6 SEC. THE ACCURACY OF THE MEASURED DATA WAS ESTIMATED TO BE 10 PERCENT. THE INSTRUMENT WAS MOUNTED ON THE SPACECRAFT SUCH THAT THE VELOCITY VECTOR WAS ESSENTIALLY NORMAL TO THE INSTRUMENT APERTURE. THE INSTRUMENT ACQUIRED USEFUL DATA FROM LAUNCH UNTIL MAY 31, 1969. IN EARLY JULY 1969 THE INSTRUMENT WAS TURNED OFF DUE TO DEGRADATION OF THE EXPERIMENT SENSING ELEMENT. AT THAT TIME THE EXPERIMENT HAD OPERATED FOR MORE THAN 14,000 HR.

DATA SET NAME- O, HE, AND H ION CONCENTRATION ON  
MAGNETIC TAPE

NSSDC ID 68-014A-18A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030768 TO 053169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF BINARY, 7-TRACK, 800-BPI UNIVAC 1108 MAGNETIC TAPES. THERE ARE 7 TO 12 FILES PER TAPE. THE TAPES CONTAIN HEADER RECORDS IN BCD FORMAT. THE FOLLOWING INFORMATION IS CONTAINED ON EACH TAPE - TIME, ION CONCENTRATION, GEODETIC LONGITUDE, LATITUDE AND ALTITUDE, MCILWAIN L, GEOCENTRIC DISTANCE, LOCAL TIME, MAGNETIC LATITUDE, EGRESS LATITUDE, AND INGRESS LATITUDE. WITH THE EXCEPTION OF THE TIME SPAN FROM APRIL 24, 1968 TO JUNE 12, 1968, THERE IS COMPLETE COVERAGE OVER THE TIME PERIOD INDICATED ABOVE.

EXPERIMENT NAME- ULTRAVIOLET AIRGLOW

NSSDC ID 68-014A-21

ORIGINAL EXPERIMENT INSTITUTION- U OF COLORADO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.E.	THOMAS	U OF COLORADO	BOULDER, CO
OI - C.A.	BARTH	U OF COLORADO	BOULDER, CO
OI - J.B.	PEARCE	U OF COLORADO	BOULDER, CO
OI - E.F.	MACKEY	PACKARD-BELL	UNKNOWN

DATE LAST USABLE EXPERIMENT DATA RECORDED-090071  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE ULTRAVIOLET PHOTOMETER EXPERIMENT ON OGO 5 WAS FLOWN TO MEASURE THE DISTRIBUTION OF TERRESTRIAL AIRGLOW IN THE HYDROGEN LINE AT 1216 A AND

THE ATOMIC OXYGEN LINE AT 1304 A. THREE-AXIS EARTH STABILIZATION OF THE MAIN SPACECRAFT BODY DURING NORMAL OPERATION PERMITTED THE PHOTOMETER TO VIEW THE AIRGLOW IN THE LOCAL ZENITH. THE FIELD OF VIEW WAS 3 DEG AT HALF MAXIMUM. RADIATION MEASUREMENTS BETWEEN 1050 AND 1800 A WERE OBTAINED WITH THIS TWO-CHANNEL PHOTOMETER EXPERIMENT. 'B' CHANNEL DATA (FROM 1250 TO 1800 A) WERE USED TO REMOVE THE CONTRIBUTION OF NON-LYMAN ALPHA RADIATION FROM THE 'A' CHANNEL (1050 TO 1800 A) DATA. EACH PHOTOMETER HAD ITS OWN AMPLIFIER AND HIGH-VOLTAGE SERVO CONTROL SYSTEM. THE HIGH VOLTAGE ACROSS THE PHOTOMULTIPLIER TUBE WAS LOGARITHMICALLY PROPORTIONAL TO THE UV SOURCE INTENSITY. INFIGHT CALIBRATION CHECKS AND AUTOMATIC DRIFT CORRECTIONS WERE INCORPORATED IN THE FLIGHT EXPERIMENT. A LENS COVER, MOUNTED AT THE EDGE OF THE PHOTOMETER APERTURE AND OPERATED ON GROUND COMMAND, NOT ONLY FULFILLED THE ORIGINAL DESIGN OBJECTIVE OF PROVIDING INCREASED PROTECTION OF THE PHOTOMULTIPLIER SURFACES FROM INCIDENT SUNLIGHT, BUT ON SEVERAL OCCASIONS IT ENABLED THE EXPERIMENTER TO IDENTIFY SPURIOUS SIGNALS SUCH AS THOSE RECEIVED WHEN THE SPACECRAFT PASSED THROUGH THE RADIATION BELT. BOTH CHANNELS HAD A NOMINAL SENSITIVITY OF 10 RAYLEIGHS. IN THIS EXPERIMENT, THE EARTH'S 1216-A AIRGLOW WAS MEASURED AGAINST THE EXTRATERRESTRIAL BACKGROUND RADIATION. THEREFORE, THE SPATIAL VARIATION OF THIS LYMAN-ALPHA BACKGROUND NEEDED TO BE DETERMINED IN ORDER TO OBTAIN A DESCRIPTION OF THE ALTITUDE DISTRIBUTION OF THE 1216-A EMISSION. TO ACHIEVE THIS SURVEY OF THE BACKGROUND RADIATION, THE OGO 5 SPACECRAFT WAS PUT INTO A SPINNING MODE WHEN IT WAS AT DISTANCES BEYOND THE GEODORONAL SCATTERING REGION, I.E., AT ALTITUDES GREATER THAN 80,000 KM. TIME INTERVALS IN WHICH THE SPACECRAFT WAS SPINNING TO OBTAIN BACKGROUND MEASUREMENTS INCLUDED SEPTEMBER 12 TO 14 AND DECEMBER 15 TO 17, 1969, APRIL 1 TO 3 AND SEPTEMBER 1 TO 6, 1970, AND MARCH 18 TO 22, 1971. WHEN IT WAS COMMANDED OFF IN SEPTEMBER 1971, THE EXPERIMENT HAD OPERATED FOR MORE THAN 29,000 HR.

DATA SET NAME- AIRGLOW INTENSITIES AT 1304 A AND 1216 A NSSDC ID 68-014A-21A  
ON MAGNETIC TAPES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030468 TO 121471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 352 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS REDUCED DATA SET, WHICH WAS GENERATED AT NSSDC FROM TAPES SUPPLIED BY THE EXPERIMENTER, CONSISTS OF REFORMATTED 7-TRACK, ODD PARITY, MAGNETIC TAPES RECORDED AT 556-BPI AND GENERATED IN IBM 7094 FORMAT. EACH TAPE CONTAINS ONE ORBIT OF EXPERIMENT DATA AND CONSISTS OF ONE FILE OF INFORMATION COMPOSED OF ONE 22-WORD ORBIT INFORMATION RECORD, ONE 78-WORD ATTITUDE/ORBIT DATA RECORD AND APPROXIMATELY THIRTY-SEVEN HUNDRED AND FIFTY 438-WORD RECORDS EACH CONTAINING 78 WORDS OF ATTITUDE/ORBIT DATA AT 1 MIN INTERVALS, AND 360 WORDS OF EXPERIMENT DATA AT 1- SEC INTERVALS. ALL WORDS ARE 36 BITS LONG. THE CHANNEL A AND B OUTPUTS ARE PRESENTED AS DATA NUMBERS THAT RANGE IN MAGNITUDE FROM 0 TO 255. CONVERSION VALUES ARE AVAILABLE TO TRANSFORM THESE DATA NUMBERS INTO KILDORAYLEIGHS. PARAMETERS PROVIDED INCLUDE (1) TIME AND (2) POSITION RELATIVE TO THE EARTH, THE SUN, AND THE EARTH'S MAGNETIC FIELD.

DATA SET NAME- CALCOMP PLOTS OF AIRGLOW AT 1216 A AND NSSDC ID 68-014A-21B  
1304 A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 032768 TO 052069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 21 PAGE(S) OR ROLL(S) OF COMPUTER GRAPHIC PRINTOUT

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, PRESENTLY CONTAINS 21 OF AN EXPECTED TOTAL OF 50 CALCOMP PLOTS OF SOME OF THE REDUCED OGO 5 TWO-CHANNEL PHOTOMETER EXPERIMENT DATA. EACH PLOT CONTAINS ONE ORBIT OF DATA DISPLAYED ON THREE GRAPHS. ALL THREE GRAPHS, EACH CONTAINING TWO CURVES, SHARE A COMMON LINEAR ABSCISSA SCALE. TRUE ANOMALY, SOLAR ZENITH ANGLE AND MAGNETIC LATITUDE VALUES ARE PLOTTED ON THE TOP GRAPH, SPACECRAFT RIGHT ASCENSION AND DECLINATION VALUES ARE SHOWN ON THE MIDDLE GRAPH AND THE EXPERIMENT OUTPUT IN KILOBAYLEIGH'S AT WAVELENGTHS OF 1216 AND 1304 Å COMPRISES THE BOTTOM GRAPH. ALSO DISPLAYED ARE THE BEGINNING AND END VALUES FOR THE FOLLOWING PARAMETERS - GEOCENTRIC RADIAL DISTANCE, CALENDAR DATE, AND UT. MORE EXPERIMENT DATA ARE CONTAINED IN DATA SET 68-014A-21A.

EXPERIMENT NAME- PLASMA WAVE DETECTOR

NSSDC ID 68-014A-24

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.M.	CROOK	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - F.L.	SCARF	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - R.W.	FREDERICKS	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - I.M.	GREEN	TRW SYSTEMS GROUP	REDONDO BEACH, CA

DATE LAST EXPERIMENT DATA RECORDED-071372

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PLASMA WAVE DETECTOR INCLUDED FIVE ELECTRIC DIPOLES AND THREE ORTHOGONAL SEARCH-COIL MAGNETOMETERS MOUNTED ON A 6.7-M BOOM. THE THREE 0.5-M-LONG ORTHOGONAL ELECTRIC DIPOLES WERE NORMAL TO THE PLANES OF THE MAGNETOMETERS. EACH OF THE ORTHOGONAL COMPONENTS OF THE DIPOLE AND MAGNETOMETER WAS SAMPLED SIMULTANEOUSLY FOR 9.2 SEC THROUGH 15-PERCENT BANDPASS FILTERS IN THE FOLLOWING SEQUENCE -- 0.56, 1.3, 3.0, 7.35, 14.5, 30.0, AND 70.0 KHZ FOR EACH DIPOLE CONCURRENT WITH 0.56, 0.56, 0.56, 0.56, 70.0, 70.0, AND 70.0 KHZ FOR EACH MAGNETOMETER. REPEAT TIME FOR THIS SEQUENCE WAS 3.26 MIN. ONBOARD AUTOCORRELATION WAS PERFORMED BETWEEN EACH ELECTRIC FIELD AND MAGNETIC FIELD MEASUREMENT. THE REMAINING TWO BOOM-MOUNTED DIPOLES WERE COLINEAR, DIFFERING ONLY IN LENGTH. EACH DIPOLE WAS MONITORED THROUGH A 200-HZ 10-PERCENT FILTER FOR 2 SEC ONCE EVERY 9.2 SEC. IN ADDITION TO THE DIGITAL DATA, 1- TO 22-KHZ ELECTRIC FIELD DATA TAKEN FROM ONE MAIN DIPOLE AND YIELDING POWER SPECTRUM INFORMATION FOR THAT AXIS WERE CONTINUOUSLY MONITORED BY A SPECIAL PURPOSE ANALOG TELEMETRY SYSTEM. THRESHOLD SENSITIVITY OF THESE MEASUREMENTS WAS TELEMETERED WITH THE DIGITAL DATA. INTENSE EMISSIONS BELOW 1 KHZ AND ABOVE 22 KHZ MAY STILL BE DETECTABLE. THE EXPERIMENT OPERATED NORMALLY, BUT MUCH OF THE DATA RETURNED AFTER APRIL 1968 WERE OF POOR QUALITY DUE TO A TRANSMITTER FAILURE.

DATA SET NAME- DIGITAL 3.26-MIN AVERAGED SPECTRUM                   NSSDC ID 68-014A-24D  
                  ANALYSES ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 010069 TO 030070 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET-        5 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE FIVE 7-TRACK, 800-BPI, BCD MAGNETIC PRINT TAPES OF THIS DATA SET WERE GENERATED AT TRW BY THE EXPERIMENTER. THEY CONTAIN THE MAGNETIC TAPE FORM OF DATA SET 68-014A-24C. THEY CONTAIN NO DATA OF QUESTIONABLE VALIDITY. THE MAXIMUM, MINIMUM, AVERAGE, AND STANDARD DEVIATIONS OF ALL THE ELECTRIC AND MAGNETIC FIELD DIGITAL DATA (SCALAR SUM OVER THREE AXES OF FIELD COMPONENT MAGNITUDE) ARE GIVEN FOR EACH FREQUENCY CHANNEL AND FOR EACH 3.26-MIN EXPERIMENT CYCLE AS FUNCTIONS OF TIME. THESE DATA INDICATE THE OMNIDIRECTIONAL NOISE AMPLITUDE IN VARIOUS DISCRETE FREQUENCY CHANNELS. THE NUMBER OF POINTS USED IN EACH CALCULATION IS INCLUDED, AND THIS NUMBER CAN BE USED TO INDICATE THE DATA QUALITY.

EXPERIMENT NAME- LOW-ENERGY HEAVY COSMIC-RAY PARTICLES            NSSDC ID 68-014A-27  
                  (HIGH-Z LOW E EXPERIMENT)

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. SIMPSON    U OF CHICAGO    CHICAGO, IL

DATE LAST EXPERIMENT DATA RECORDED-071372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETECT PARTICLES IN THE ENERGY RANGE 2 TO 50 MEV/NUCLEON AND TO ACCOMPLISH THE FOLLOWING -- (1) EXAMINE THE SHAPE OF THE DIFFERENTIAL ENERGY SPECTRUM, (2) EXTEND THE MEASUREMENT OF RELATIVE ABUNDANCE OF THE ELEMENTS UP THROUGH IRON, (3) SEARCH FOR NUCLEI OF VERY HIGH CHARGE (Z EQUALS 5 TO 50), AND (4) EXTEND OBSERVATIONS OF VERY HEAVY NUCLEI FROM SOLAR FLARES TO 2 MEV/NUCLEON. THE DETECTOR (A SOLID-STATE, WINDOWLESS, LITHIUM-DRIFTED DEVICE SURROUNDED BY AN ANTICOINCIDENCE CUP) WAS USED IN CONJUNCTION WITH A 500-CHANNEL AND A 1000-CHANNEL ANALYZER. THE EXPERIMENT WAS CONSIDERED 'OPERATIONAL' AND TRANSMITTING DATA WHEN THE SPACECRAFT WAS TURNED OFF.

DATA SET NAME- HIGH Z PARTICLE COUNT RATES AND PULSE                NSSDC ID 68-014A-27A  
                  HEIGHT ANALYSIS ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 030568 TO 092471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        5 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AND PULSE HEIGHT ANALYZER DATA ON FIVE 7-TRACK BINARY MAGNETIC TAPES WRITTEN





(REAL-TIME DATA WERE RECORDED FOR AT LEAST 10 MIN PER ORBIT.) THE UV AND 20- TO 80-KEV DETECTORS FAILED SHORTLY AFTER LAUNCH. THE REMAINING DETECTORS CONTINUE TO PERFORM NORMALLY AS OF FEBRUARY 1973.

DATA SET NAME- PLOTS OF REDUCED SOLAR X-RAY FLUX VS           NSSDC ID 68-017A-01A  
                  TIME ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 031468 TO 123171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16-MM MICROFILMED PLOTS OF THE DETECTOR OUTPUTS, IN X-RAY FLUX UNITS OF ERGS/CM SQ SEC, FOR THE 0.5- TO 3-A, 1- TO 8-A, AND 8- TO 20-A PHOTOMETERS (ASSUMING A 2 TIMES 10 TO THE 6 POWER DEG K 'GRAY BODY' TEMPERATURE DISTRIBUTION FOR THE 1- TO 8-A AND 8- TO 20-A DETECTORS AND A 10 TIMES 10 TO THE 6 POWER DEG K 'GRAY BODY' DISTRIBUTION FOR THE 0.5- TO 3-A DETECTOR). EACH FRAME PRESENTS DATA COVERING 24 HR, WITH 1-MIN TIME RESOLUTION, ON A LOG BASE 10 SEMILOG GRID. THE DATA GAPS THAT OCCUR INDICATE SATELLITE NIGHT. PARTICLE INTERFERENCE IS INDICATED BY A BACKGROUND COUNT PLOT THAT WAS PRODUCED BY THE 0.5- TO 3-A PHOTOMETER WHEN IT WAS FACING AWAY FROM THE SUN. THE DATA, WHICH COVER THE PERIOD MARCH 14, 1968 TO DECEMBER 31, 1971, WERE PROVIDED BY THE EXPERIMENTER. A COMPLETE DESCRIPTION OF THE SOLRAD 9 SATELLITE CAN BE FOUND IN NRL REPORT NO. 6800. \*THE NRL SOLRAD 9 SATELLITE, SOLAR EXPLORER 8, 1968-17A.\*

DATA SET NAME- X-RAY FLUX PLOTS AND HOURLY AVERAGES IN        NSSDC ID 68-017A-01B  
                  PUBLISHED REPORT

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 120168 TO 123170 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET-        25 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THESE DATA ARE CONTAINED IN THE BULLETIN 'SOLAR-GEOPHYSICAL DATA', PUBLISHED MONTHLY BY THE U.S. DEPARTMENT OF COMMERCE. THE PROMPT REPORTS SECTION OF THIS BULLETIN CONTAINS SOLAR X-RAY FLUXES FOR 1 TO 8 A AND 8 TO 20 A PASS BANDS AND AVERAGED IN 1-HR INTERVALS. THESE AVERAGES ARE USUALLY FOR THE THIRD MONTH PRIOR TO THE DATE OF PUBLICATION (E.G., OCTOBER 1972 AVERAGES ARE FOUND IN THE DECEMBER 1972 ISSUE). THE COMPREHENSIVE REPORTS SECTION OF THIS BULLETIN CONTAINS PLOTS OF SOLAR X-RAY FLUX (0.5 TO 3 A, 1 TO 8 A, AND 8 TO 20 A) AS WELL AS A BACKGROUND PARTICLE COUNT RATE, ALL VS TIME OF DAY. THE PLOTS ARE SEMILOGARITHMIC, WITH TIME BEING THE LINEAR DIMENSION, AND EACH PLOT CONTAINS ALL THE DATA FROM 1 DAY. THESE PLOTS GENERALLY ARE FOR THE MONTH 6 MONTHS PRIOR TO PUBLICATION (E.G., PLOTS FOR JUNE 1972 ARE FOUND IN THE DECEMBER 1972 ISSUE). AS THE EXPLORER 37 (SOLRAD 9) EXPERIMENT DEGRADES, IT WILL BE SUPPLANTED WITH DATA FROM EXPLORER 44 (SOLRAD 10). THESE PUBLICATIONS ARE AVAILABLE FROM THE NATIONAL CLIMATIC CENTER, DEPARTMENT OF COMMERCE, NOAA, FEDERAL BUILDING, ASHEVILLE, N.C. 28801, ATTN -- PUBLICATIONS.

DATA SET NAME- THREE-CHANNEL TABULATED X-RAY FLUXES IN NSSDC ID 68-017A-01C  
PUBLISHED REPORT

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 030868 TO 123168 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUPPLIED BY THE ARCETRI ASTROPHYSICAL OBSERVATORY IN ITALY, WHICH HAS RECEIVED TELEMETERED DATA DIRECT FROM SOLRAD SATELLITES SINCE 1964. THE DATA SET IS PUBLISHED IN HARDCOPY FORM AS 'X-RAY FLUXES FROM THE SOLRAD 9 SATELLITE (1968-17A) FROM MARCH 1968 TO DECEMBER 1968,' BY M. LANDINI, B. MONSIGNORI FOSSI, G. POLETTI, D. RUSSO, AND G. L. TAGLIAFERRI, FASCICOLA 92, OSSERVAZIONI E MEMORIE DELL' OSSERVATORIO ASTROFISICO DI ARCETRI, MARCH 1969. THE DOCUMENT CONSISTS OF TABULATED X-RAY FLUXES IN THE 44- TO 60-A, 8- TO 16-A, AND 1- TO 8-A CHANNELS IN UNITS OF 10 TO THE -1, 10 TO THE -3, AND 10 TO THE -4 ERG/SQ CM-SEC, RESPECTIVELY, ALONG WITH THE START AND END TIMES (UT) OF THE PASS. THESE FLUXES WERE DERIVED FROM COUNTS BY ASSUMING THAT THE 44- TO 60-A SPECTRUM COULD BE REPRESENTED BY A ONE-HALF MILLION DEG K GRAYBODY AND THE 8- TO 20-A, 8- TO 16-A, AND 1- TO 8-A SPECTRA BY A TWO MILLION DEG K GRAYBODY. SOME 700 PASSES WERE RECORDED BETWEEN MARCH AND DECEMBER 1968. ON THE AVERAGE, THREE PASSES, EACH APPROXIMATELY 8 MIN IN DURATION, WERE MADE EACH DAY. THE TABULATED FLUXES ARE FOR 636 PASSES MONITORED DURING THE PERIOD (THE RECORDS OBTAINED WHEN THE SATELLITE WAS IN THE EARTH'S SHADOW WERE EXCLUDED). THE MAXIMUM ERROR IN THE FLUXES IS PLUS OR MINUS 20 PERCENT MAINLY DUE TO READING ERRORS, APART FROM THE ERRORS IN ABSOLUTE VALUES INVOLVED IN THE GRAYBODY ASSUMPTION. THE DATA WERE PROCESSED WITH AN IBM 7090 COMPUTER AND COVER THE PERIOD MARCH 8 THROUGH DECEMBER 31, 1968.

DATA SET NAME- FIVE-CHANNEL TABULATED X-RAY FLUXES IN NSSDC ID 68-017A-01D  
PUBLISHED REPORT

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 010169 TO 110269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 PAGE(S) OF UNBOUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUPPLIED BY THE ARCETRI ASTROPHYSICAL OBSERVATORY IN ITALY, WHICH HAS RECEIVED TELEMETERED DATA DIRECT FROM SOLRAD SATELLITES SINCE 1964. THE DATA SET IS PUBLISHED IN HARDCOPY FORM AS 'X-RAY FLUXES FROM THE SOLRAD 9 SATELLITE (1968-17A) FROM JANUARY 1969 TO OCTOBER 1969,' BY M. LANDINI, B. C. MONSIGNORI FOSSI, G. POLETTI, D. RUSSO, AND G. L. TAGLIAFERRI, FASCICOLA 94, OSSERVAZIONI E MEMORIE DELL' OSSERVATORIO ASTROFISICO DI ARCETRI, APRIL 1970. THE DOCUMENT CONSISTS OF TABULATED X-RAY FLUXES IN THE 1- TO 8-A, 8- TO 16-A, 0.5- TO 3-A, 44- TO 60-A, AND 1- TO 20-A BANDS IN UNITS OF 10 TO THE -3, 10 TO THE -2, 10 TO THE -4, 10 TO THE -1, AND 10 TO THE -2 ERG/SQ CM-SEC, RESPECTIVELY, ALONG WITH THE START AND STOP TIMES (UT) OF EACH PASS. THESE DATA WERE REDUCED FROM ION CHAMBER CURRENTS OR GM COUNTS TO FLUXES BY ASSUMING THAT THE 44- TO 60-A CHANNEL SPECTRUM COULD BE REPRESENTED BY A ONE-HALF MILLION DEG K GRAYBODY AND THE 8- TO 16-A, 1- TO 20-A, 1- TO 8-A, AND 0.5- TO 3-A CHANNELS BY A TWO MILLION

DEG K GRAYBODY. DATA FROM 619 PASSES MONITORED IN THE PERIOD JANUARY TO OCTOBER 1969 WERE PROCESSED WITH AN IBM 7090 COMPUTER. THE DATA FROM THE 44- TO 60-A PHOTOMETER AFTER FEBRUARY 11, 1969, ARE NOT RELIABLE OWING TO DETECTOR MALFUNCTION. ON THE AVERAGE, THREE PASSES, EACH APPROXIMATELY 8 MIN IN DURATION, WERE MADE EACH DAY. DATA OBTAINED WHEN THE SATELLITE WAS IN THE EARTH'S SHADOW ARE EXCLUDED. THE MAXIMUM ERROR IN THE FLUXES IS PLUS OR MINUS 20 PERCENT OWING MAINLY TO READING ERRORS, APART FROM THE ERRORS IN ABSOLUTE VALUES INVOLVED IN THE GRAYBODY ASSUMPTION. THE DATA SET COVERS THE PERIOD JANUARY 1 TO NOVEMBER 2, 1969.

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SPACECRAFT COMMON NAME- OVI-13  
ALTERNATE NAMES- PL-682D

NSSDC ID 68-026A

LAUNCH DATE- 04/06/68 SPACECRAFT WEIGHT IN ORBIT- 107. KG

FUNDING AGENCY- DOD-USAF

DATE LAST USABLE SPACECRAFT DATA RECORDED-110369  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 04/06/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 199.7 MIN  
APOAPSIS- 9316.00 KM ALT PERIAPSIS- 558.000 KM ALT INCLINATION- 100.05 DEG

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS PLACED INTO A POLAR ORBIT TO STUDY ENERGETIC PARTICLE PHENOMENA ALONG ITS ORBIT. THE SPACECRAFT WAS SPIN-STABILIZED, WITH A SPIN PERIOD OF ABOUT 7.5 SEC AND A SPIN AXIS DIRECTION NORMAL TO THE SPACECRAFT ORBITAL PLANE. THE SPACECRAFT PROVIDED USEFUL DATA FROM ITS LAUNCH UNTIL NOVEMBER 3, 1969.

EXPERIMENT NAME- ELECTRON SPECTROMETER

NSSDC ID 68-026A-02

ORIGINAL EXPERIMENT INSTITUTION- AFRL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L. KATZ AFRL BEDFORD, MA  
OI - P.L. ROTHWELL AFRL BEDFORD, MA  
OI - J.G. KELLEY AFRL BEDFORD, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-081568  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE ELECTRONS IN EIGHT ENERGY WINDOWS BETWEEN 0.1 AND 1.0 MEV. A MAGNETIC ANALYZER FOCUSED PARTICLES ONTO EIGHT SEPARATE SOLID-STATE DETECTORS ACCORDING TO PARTICLE ENERGY. UPPER LEVEL DISCRIMINATION WAS USED TO REJECT MOST COUNTS DUE TO PENETRATING PROTONS. THE INSTRUMENT LOOK DIRECTION WAS NORMAL TO THE SPACECRAFT SPIN AXIS WHICH WAS ITSELF NORMAL TO THE SPACECRAFT POLAR ORBITAL PLANE. COUNTING IN A GIVEN SOLID-STATE DETECTOR WAS MEASURED 24 TIMES IN 1 SEC. AFTER WHICH THE NEXT DETECTOR WAS SAMPLED. THUS THE FULL EXPERIMENT CYCLE REQUIRED 8

SEC. APPROXIMATELY THE SAME AS THE SPACECRAFT SPIN PERIOD. THE INSTRUMENT PROVIDED USEFUL ELECTRON DATA IN FIVE ENERGY WINDOWS (AT 160, 210, 503, 685, AND 930 KEV) FOR THE PERIOD APRIL 6, 1968 TO AUGUST 15, 1968.

DATA SET NAME- HIGH-TIME RESOLUTION ELECTRON COUNT RATES NSSDC ID 68-026A-02A  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 051368 TO 071068 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 12 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS AT PRESENT OF ELEVEN EXPERIMENTER-SUPPLIED MAGNETIC TAPES OF 7-TRACK, 556-BPI, CDC 6600 BINARY FORMAT. THE PACKED DATA FOUND ON THE TAPES CONTAIN TIME, EPHEMERIS INFORMATION, AND ALL THE COUNT RATES FOR THE LOWER ENERGY (0.1 TO 1 MEV) ELECTRON INSTRUMENT AND THE HIGHER ENERGY (1 TO 10 MEV) ELECTRON INSTRUMENT. THE HIGHER ENERGY DATA, SEPARATELY IDENTIFIED AS DATA SET 68-026A-04A, IS NOT READILY USABLE. EACH TAPE CONTAINS DATA TAKEN DURING ONE SPACECRAFT ORBIT. THERE IS QUIET TIME DATA FOR FIVE ORBITS IN MAY AND FOR SIX ORBITS IN JULY 1968. THESE TAPES ARE BEING USED AT NSSDC IN THE GENERATION OF A QUIET TIME MODEL INNER ZONE ELECTRON ENVIRONMENT. IT IS EXPECTED THAT AS A RESULT OF THIS EFFORT, MORE READILY USABLE TAPES CONTAINING PROTON-BACKGROUND-SUBTRACTED, 1-SEC AVERAGED, LOW-ENERGY ELECTRON FLUXES, POSSIBLY ORDERED BY L RATHER THAN BY TIME, WILL BECOME AVAILABLE.

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SPACECRAFT COMMON NAME- EXPLORER 40 NSSDC ID 68-066B  
ALTERNATE NAMES- INJUN 5, INJUN-C, INJUN IE-C

LAUNCH DATE- 08/08/68 SPACECRAFT WEIGHT IN ORBIT- 71.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-060771  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 08/11/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 118.3 MIN  
APOAPSIS- 2533.00 KM ALT PERIAPSIS- 631.000 KM ALT INCLINATION- 80.67 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 40 (INJUN 5) WAS A 71 KG, MAGNETICALLY ORIENTED SPACECRAFT LAUNCHED TOGETHER WITH A 3.65M INFLATABLE BALLOON (EXPLORER 39, 1968-66A, USED FOR AIR DENSITY MEASUREMENTS) USING A SINGLE SCOUT VEHICLE. EXPLORER 40 WAS DESIGNED TO ACCOMPLISH THE FOLLOWING OBJECTIVES -- (1) COMPREHENSIVE STUDY OF THE DOWNWARD FLUX OF CHARGED PARTICLES, (2) STUDY OF VLF RADIO EMISSION IN THE IONOSPHERE ASSOCIATED WITH THE DOWNWARD FLUX, (3) STUDY OF GEOMAGNETICALLY TRAPPED PROTONS, ALPHA PARTICLES, AND ELECTRONS, (4) OBSERVATION OF SOLAR COSMIC RAYS, (5) OBSERVATION OF THE CONTINUING DECAY OF THE STARFISH ARTIFICIAL RADIATION BELT, AND (6) STUDY OF THE TEMPERATURE AND DENSITY OF ELECTRONS AND POSITIVE IONS OF THERMAL AND NEAR THERMAL ENERGY.



DECLINATION AND MAGNITUDE OF THE SATELLITE VELOCITY, MAGNETIC FIELD RIGHT ASCENSION AND DECLINATION, AND CELESTIAL RIGHT ASCENSION AND DECLINATION OF THE SUN), GEOMAGNETIC COORDINATES (LONGITUDE, LATITUDE, EQUATORIAL DISTANCE TO LINE OF FORCE, AND LOCAL TIME OF SATELLITE), REAL FIELD VALUES (L, B, B/BO, AND INVARIANT LATITUDE), SUN ECLIPSE TIME (TIMES TO NEXT SUNRISE AND SUNSET), AND ATTITUDE OF THE SATELLITE (MAGNETOMETER MEASUREMENTS IN THE X, Y, AND Z DIRECTIONS). THIS SET OF TAPES CONTAINS DATA SETS 68-066B-01A, -02A, -03A, AND -04A.

EXPERIMENT NAME- VLF RECEIVER

NSSDC ID 68-066B-02

ORIGINAL EXPERIMENT INSTITUTION- U OF IOWA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - D.A. GURNETT	U OF IOWA	IOWA CITY, IA
OI - L.A. FRANK	U OF IOWA	IOWA CITY, IA

DATE LAST USABLE EXPERIMENT DATA RECORDED-060771

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS VERY LOW FREQUENCY (VLF) RECEIVER WAS DESIGNED TO STUDY BOTH ELECTRIC AND MAGNETIC COMPONENTS (BOTH PHASE AND AMPLITUDE) OF VLF SIGNALS. THE DIRECTION OF SIGNAL PROPAGATION COULD BE DETERMINED AND USED TO ASSIST IN IDENTIFYING THE ORIGINS OF VARIOUS VLF SIGNALS. THE OBSERVATIONS OF ANTENNA IMPEDANCE FOR THE ELECTRIC ANTENNA (ECA) WERE NEEDED TO STUDY CHARACTERISTICS OF SUCH AN ANTENNA OPERATING IN A PLASMA. THERE WERE TWO ANTENNAS, ONE DRIVING A MAGNETIC-FIELD COMPONENT RECEIVER (MCR), AND THE OTHER DRIVING TWO ELECTRIC-FIELD COMPONENT RECEIVERS (ECR). THE MCR OPERATED FROM A 55.9-CM-DIAM LOOP ANTENNA (MCA), AND THE ECRS OPERATED FROM AN ANTENNA CONSISTING OF TWO 20.3-CM-DIAM ALUMINUM SPHERES MOUNTED 2.85 M APART ON OPPOSITE SIDES OF THE SPACECRAFT (SC). BOTH THE MCA AND ECA WERE MOUNTED ON BOOMS TO REDUCE INTERFERENCE FROM THE SC. WITHIN A FEW WEEKS AFTER LAUNCH, THE SC WAS DESPUN AND MAGNETICALLY STABILIZED SO THAT NOMINALLY, THE ANTENNA AXES AND THE MAGNETIC FIELD LINE THROUGH THE SC WERE ORTHOGONAL. IN THE NORTHERN HEMISPHERE, THE MCA SUPPORTING BOOM WAS INCLINED EARTHWARD. BOTH THE MCR AND ECR OPERATED FROM 10 TO 30E3 HZ. ALSO OPERATING FROM THE ECA WAS A NARROW-BAND STEP FREQUENCY RECEIVER (ECR 2) WHICH WAS RECEIVING THROUGH FILTERS WITH CENTER FREQUENCIES AT 7.5, 10.5, 22, 52.5, 70, AND 105 (PLUS OR MINUS 7.5 PERCENT) KHZ. SUPPLEMENTARY TO THESE THREE RECEIVERS AND TWO ANTENNAS WERE (1) A SPECIAL CIRCUIT THAT COULD MEASURE PHASE AND AMPLITUDE OF THE IMPEDANCE ON THE ECA BETWEEN 20 AND 20E3 HZ AND (2) AN ELECTRON GUN USED TO BIAS THE ECA. THE MCR AND ECR1 OBSERVED AND TELEMETERED (ON A 0.8-W, 400-MHZ CHANNEL) ANALOG, BROADBAND DATA IN REAL TIME, WHEN THE SC WAS IN TELEMETRY RANGE OF A GROUND STATION. WHEN LATER ANALYZED, THE NORMAL DATA FORM FOR THESE BROADBAND DATA WERE PHOTOGRAPHICALLY PRODUCED FREQUENCY VS TIME PLOTS, (SPECTROGRAMS) PREPARED BY USE OF A SPECTRUM ANALYZER. SEPARATE PLOTS WERE REQUIRED TO SHOW THE DATA FROM EACH RECEIVER. THE IMPEDANCE OBSERVATIONS APPEAR ON THE ECR SPECTROGRAMS. WHEN OBSERVING WITH THE IMPEDANCE CIRCUIT ON, IMPEDANCE MEASUREMENTS REQUIRED 8 OF EACH 30 SEC OF WIDEBAND OBSERVING TIME, THE SIGNAL STRENGTH VALUES FROM THE ECR2, AND SEPARATELY FROM BOTH THE LOW (0.03 TO 0.65 KHZ) AND HIGH (0.3 TO 10 KHZ) RANGES OF THE ECR1 AND MCR, WERE RECORDED ON THE SC TAPE RECORDER AND COMPRISED THE DIGITAL DATA FOR THIS EXPERIMENT. THE RESOLUTION OF WIDEBAND DATA IS LARGELY DEPENDENT UPON THE SPECTRUM ANALYZER (AND ITS FILM TRANSPORT SPEED) USED FOR DATA PROCESSING. IN THIS EXPERIMENT, THE DIGITAL DATA WERE OBSERVED AND RECORDED OVER A 30-SEC CYCLE WITHIN WHICH THE SIGNAL AMPLITUDES





THIS EXPERIMENT WAS DESIGNED TO CONDUCT AN INVESTIGATION OF THE SPATIAL AND TEMPORAL DISTRIBUTIONS AND ENERGY SPECTRA OF LOW-ENERGY ALPHA PARTICLES, PROTONS, AND ELECTRONS. A SET OF SOLID-STATE DETECTORS (TOTALLY DEPLETED SILICON SURFACE BARRIER TYPE) WAS USED TO FORM A PROTON-TELESCOPE CAPABLE OF DETECTING PROTONS FROM 0.304 TO 74 MEV USING 10 ENERGY CHANNELS AND ELECTRONS WITH ENERGIES GREATER THAN 262, 264, 267, 269, 405, 407, 427, 428, 616, 646, 800, AND 833 KEV. ALSO INCLUDED IN THE EXPERIMENT WAS AN ALPHA PARTICLE DETECTOR, COMPOSED OF SIMILAR SOLID-STATE DETECTORS, CAPABLE OF DETECTING ALPHAS IN THE RANGE 1.25 TO 8.0, 1.65 TO 4.5, AND 2.03 TO 3.35 MEV. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL THE SPACECRAFT WAS PUT IN AN OPERATIONAL OFF MODE IN EARLY JUNE 1971, EXCEPT FOR A BACKGROUND NOISE PROBLEM IN ONE OF THE DETECTORS, WHICH DEVELOPED IN FEBRUARY 1969.

DATA SET NAME- MASTER FILE ON MAGNETIC TAPE, PROTON AND NSSDC ID 68-066B-03A  
ALPHA PARTICLE COUNT RATES

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 080968 TO 052970 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 949 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF A TIME-ORDERED MASTER FILE FOR EXPLORER 40 (INJUN 5) OF SATELLITE TELEMETRY DATA ON 949 7-TRACK, UNIVAC 418, BINARY MAGNETIC TAPES WRITTEN AT 800 BPI WITH 696 CHARACTERS PER LOGICAL RECORD, 10 LOGICAL RECORDS PER PHYSICAL RECORD, A VARIABLE NUMBER OF PHYSICAL RECORDS PER FILE, AND ONE FILE PER TAPE. THE DATA ON THIS SET OF TAPES CONSIST OF THE SOLID-STATE TELESCOPE TELEMETRY OUTPUT IN MILLIVOLTS (DOCUMENTATION AS TO CONVERSION TO COUNTS/SEC IS AVAILABLE), AS WELL AS THE EXPERIMENTAL DATA FROM THE REST OF THE EXPLORER 40 DETECTORS. IN ADDITION, THE FOLLOWING DATA ARE GIVEN -- TIME (UT), ORBIT NUMBER, GEOGRAPHIC COORDINATES (LONGITUDE, LATITUDE, AND RADIAL DISTANCE PLUS LOCAL TIME OF THE SATELLITE), GEOCENTRIC EQUATORIAL INERTIAL COORDINATES (RIGHT ASCENSION OF SATELLITE, VELOCITY VECTOR RIGHT ASCENSION, DECLINATION AND MAGNITUDE OF THE SATELLITE VELOCITY, MAGNETIC FIELD RIGHT ASCENSION AND DECLINATION, AND CELESTIAL RIGHT ASCENSION AND DECLINATION OF THE SUN), GEOMAGNETIC COORDINATES (LONGITUDE, LATITUDE, EQUATORIAL DISTANCE TO LINE OF FORCE, AND LOCAL TIME OF SATELLITE), REAL FIELD VALUES (L, B, B/BO, AND INVARIANT LATITUDE), SUN ECLIPSE TIME (TIMES TO NEXT SUNRISE AND SUNSET), AND ATTITUDE OF THE SATELLITE (MAGNETOMETER MEASUREMENTS IN THE X, Y, AND Z DIRECTIONS). THIS SET OF TAPES CONTAINS DATA SETS 68-066B-01A, -02A, -03A, AND -04A.

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SPACECRAFT COMMON NAME- ESSA 7 NSSDC ID 68-069A  
ALTERNATE NAMES- PL-683B, TOS-E  
LAUNCH DATE- 08/16/68 SPACECRAFT WEIGHT IN ORBIT- 144. KG  
FUNDING AGENCY- ESSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-071969  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 08/16/68 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 114.9 MIN  
APOAPSIS- 1476. KM ALT PERIAPSIS- 1432. KM ALT INCLINATION- 101.826 DEG

SPACECRAFT BRIEF DESCRIPTION

ESSA 7 WAS A SUN-SYNCHRONOUS OPERATIONAL METEOROLOGICAL SATELLITE DESIGNED TO TAKE AND RECORD DAYTIME EARTH-CLOUD PICTURES ON A GLOBAL BASIS FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION FACILITY. THE SPACECRAFT WAS ALSO CAPABLE OF PROVIDING WORLDWIDE MEASUREMENTS OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE SPACECRAFT HAD ESSENTIALLY THE SAME CONFIGURATION AS THAT OF A TIROS SATELLITE, I.E., AN 18-SIDED RIGHT PRISM, 107 CM ACROSS OPPOSITE CORNERS AND 56 CM HIGH, WITH A REINFORCED BASEPLATE CARRYING MOST OF THE SUBSYSTEMS AND A COVER ASSEMBLY (HAT). ELECTRICAL POWER WAS PROVIDED BY APPROXIMATELY 10,000, 1- BY 2-CM SOLAR CELLS THAT WERE MOUNTED ON THE COVER ASSEMBLY AND BY 21 NICKEL-CADMIUM BATTERIES. TWO REDUNDANT ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT, WITH THEIR OPTICAL AXES PERPENDICULAR TO THE SPIN AXIS. TWO SETS OF FLAT PLATE RADIOMETERS WERE ALSO SUSPENDED ON OPPOSITE SIDES OF THE SATELLITE, BENEATH THE EDGE OF THE BASEPLATE. A PAIR OF CROSSED-DIPOLE COMMAND RECEIVER ANTENNAS PROJECTED OUT AND DOWNWARD FROM THE BASEPLATE. A MONOPOLE TELEMETRY AND TRACKING ANTENNA EXTENDED OUTWARD FROM THE TOP OF THE COVER ASSEMBLY. THE SATELLITE SPIN RATE WAS CONTROLLED BY MEANS OF A MAGNETIC ATTITUDE SPIN COIL (MASC), WITH THE SPIN AXIS MAINTAINED NORMAL TO THE ORBITAL PLANE (CARTWHEEL ORBIT MODE) TO WITHIN PLUS OR MINUS 1 DEG. THE MASC WAS A CURRENT-CARRYING COIL MOUNTED IN THE COVER ASSEMBLY. THE INTERNAL MAGNETIC FIELD INDUCED BY THE CURRENT INTERACTED WITH THE EARTH'S MAGNETIC FIELD TO PROVIDE THE TORQUE NECESSARY TO MAINTAIN A DESIRED SPIN RATE OF 9.225 RPM. ONE AVCS CAMERA FAILED ALMOST IMMEDIATELY AFTER LAUNCH. THE RADIOMETER EXPERIMENT FAILED ON JUNE 23, 1969, AND THE REMAINING CAMERA SYSTEM FAILED ON JULY 19, 1969. THE SPACECRAFT WAS DEACTIVATED ON MARCH 10, 1970, AFTER BEING LEFT ON FOR AN ADDITIONAL TIME PERIOD FOR ENGINEERING PURPOSES.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR)

NSSDC ID 68-069A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - V.E. SUOMI	U OF WISCONSIN	MADISON, WI
OI - R.J. PARENT	U OF WISCONSIN	MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-062369  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE ESSA 7 FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM WAS COMPRISED OF FOUR INFRARED SENSORS, AN ANALOG-TO-DIGITAL CONVERTER, A COMMUTATOR, AND A TAPE RECORDER. TWO PAIRS OF RADIOMETERS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT WITH THEIR AXES PERPENDICULAR TO THE SPIN AXIS. A CONE SHIELD WAS EMPLOYED ON TWO OF THE RADIOMETERS TO ISOLATE OR REDUCE ANY RESPONSE DUE TO DIRECT SOLAR RADIATION. THE FIELD OF VIEW ON THE OTHER TWO INSTRUMENTS WAS UNRESTRICTED. BOTH TYPES OF RADIOMETERS USED A COATED (EITHER BLACK OR WHITE) ALUMINUM DISC AS THE SENSING ELEMENT. THE DISC TEMPERATURE WAS

MEASURED BY TWO THERMISTORS MOUNTED ON THE BACK SURFACE OF THE DISC. THE BLACK-COATED DISC RESPONDED TO THE SUM OF THE REFLECTED SOLAR, DIRECT SOLAR, AND EMITTED LONG-WAVE RADIATION. THE WHITE DISC REFLECTED IN THE VISUAL RANGE BUT ABSORBED IN THE INFRARED (7 TO 30 MICRON) RANGE. IDENTICAL EXPERIMENTS WERE FLOWN ON THE ESSA 3, 5, AND 9 SPACECRAFT. FOR A FULL DESCRIPTION OF THE ESSA FPR, SEE 'STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1966,' UNIVERSITY OF WISCONSIN, 111-129, MARCH 1967. THE RADIOMETER PERFORMED NORMALLY, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL JUNE 23, 1969, WHEN THE RADIOMETER FAILED. DATA FROM THIS EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE FROM NOAA-NESS, SUITLAND, MARYLAND.

DATA SET NAME- LOW-RESOLUTION INFRARED (LRIR) DATA TAPES NSSDC ID 68-069A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 090468 TO 062269 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

LOW-RESOLUTION INFRARED (LRIR) DATA FROM THE ESSA 7 FLAT PLATE RADIOMETER EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK, 556-BPI, BINARY TAPES WERE PREPARED ON A CDC 6600 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, ORBITAL DATA, AND SPACECRAFT ATTITUDE PARAMETERS. ADDITIONAL DATA ON THE LRIR TAPES CONSIST OF INSTRUMENT HOUSING TEMPERATURES AND DIAGNOSTIC AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT OF THE LRIR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN ESSA TECHNICAL REPORT NO. 42, 'OPERATIONAL PROCESSING OF LOW RESOLUTION INFRARED (LRIR) DATA FROM ESSA SATELLITES,' FEBRUARY 1968.

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SPACECRAFT COMMON NAME- PIONEER 9 NSSDC ID 68-100A  
ALTERNATE NAMES- PIONEER-D, PL-684K

LAUNCH DATE- 11/08/68 SPACECRAFT WEIGHT IN ORBIT- 63.4 KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 11/08/68 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 297.6 DAYS  
APOAPSIS- .9905 AU RAD PERIAPSIS- .7542 AU RAD INCLINATION- .086509 DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 9 WAS THE FOURTH IN A SERIES OF SOLAR-ORBITING, SPIN-STABILIZED, SOLAR-CELL AND BATTERY-POWERED SATELLITES DESIGNED TO OBTAIN MEASUREMENTS OF INTERPLANETARY PHENOMENA FROM WIDELY SEPARATED POINTS IN SPACE ON A CONTINUING BASIS. THE SPACECRAFT CARRIED EXPERIMENTS TO STUDY THE POSITIVE IONS AND ELECTRONS IN THE SOLAR WIND, THE INTERPLANETARY

ELECTRON DENSITY (RADIO PROPAGATION EXPERIMENT), SOLAR AND GALACTIC COSMIC RAYS, THE INTERPLANETARY MAGNETIC FIELD, COSMIC DUST, AND ELECTRIC FIELDS. ALSO, A NEW CODING PROCESS WAS IMPLEMENTED FOR PIONEER 9. ITS MAIN ANTENNA WAS A HIGH-GAIN DIRECTIONAL ANTENNA. THE SPACECRAFT WAS SPIN-STABILIZED AT ABOUT 60 RPM, AND THE SPIN AXIS WAS PERPENDICULAR TO THE ECLIPTIC PLANE AND POINTED TOWARD THE SOUTH ECLIPTIC POLE. BY GROUND COMMAND, ONE OF FIVE BIT RATES, ONE OF FOUR DATA FORMATS, AND ONE OF FOUR OPERATING MODES COULD BE SELECTED. THE FIVE BIT RATES WERE 512, 256, 64, 16, AND 8 BPS. THREE OF THE FOUR DATA FORMATS CONTAINED PRIMARILY SCIENTIFIC DATA AND CONSISTED OF 32 SEVEN-BIT WORDS PER FRAME. ONE SCIENTIFIC DATA FORMAT WAS USED AT THE TWO HIGHEST BIT RATES, ANOTHER WAS USED AT THE THREE LOWEST BIT RATES, AND THE THIRD CONTAINED DATA FROM ONLY THE RADIO PROPAGATION EXPERIMENT. THE FOURTH DATA FORMAT CONTAINED MAINLY ENGINEERING DATA. THE FOUR OPERATING MODES WERE REAL TIME, TELEMETRY STORE, DUTY CYCLE STORE, AND MEMORY READDOUT. IN THE REAL-TIME MODE, DATA WERE SAMPLED AND TRANSMITTED DIRECTLY (WITHOUT STORAGE) AS SPECIFIED BY THE DATA FORMAT AND BIT RATE SELECTED. IN THE TELEMETRY STORE MODE, DATA WERE STORED AND TRANSMITTED SIMULTANEOUSLY IN THE FORMAT AND AT THE BIT RATE SELECTED. IN THE DUTY CYCLE STORE MODE, A SINGLE FRAME OF SCIENTIFIC DATA WAS COLLECTED AND STORED AT A RATE OF 512 BPS. THE TIME PERIOD BETWEEN WHICH SUCCESSIVE FRAMES WERE COLLECTED AND STORED COULD BE VARIED BY GROUND COMMAND BETWEEN 2 AND 17 MIN TO PROVIDE PARTIAL DATA COVERAGE FOR PERIODS OF UP TO 19 HR, AS LIMITED BY THE BIT STORAGE CAPACITY. IN THE MEMORY READDOUT MODE, DATA WERE READ OUT AT WHATEVER BIT RATE WAS APPROPRIATE TO THE SATELLITE DISTANCE FROM THE EARTH. THE BIT RATE FOR THE MAJORITY OF THE DATA WAS 512 BPS FROM NOVEMBER 8, 1968 TO JANUARY 13, 1969, 256 BPS FROM JANUARY 16, 1969 TO JANUARY 29, 1969, 64 BPS FROM JANUARY 30, 1969 TO MARCH 27, 1969, 16 BPS FROM MARCH 28, 1969 TO MAY 3, 1969, AND 8 BPS FROM MAY 3, 1969, AND THEREAFTER. HIGHER BIT RATES WERE USED WHEN THE SPACECRAFT WAS TRACKED BY THE 64-CM ANTENNA, BUT THE DATA COVERAGE BY THIS ANTENNA WAS LOW. THE DATA COVERAGE AVERAGED CLOSE TO 100 PERCENT FOR THE FIRST 29 WEEKS AFTER LAUNCH. AFTER THIS, DATA COVERAGE DROPPED TO CLOSE TO 50 PERCENT UNTIL DECEMBER AND IT HAS AVERAGED LESS THAN 30 PERCENT THROUGH JULY 1971. PIONEER 9 LEFT THE VICINITY OF THE EARTH PASSING THROUGH THE BOW SHOCK AT A LOCAL TIME OF 7 P.M. THE NEW CODING PROCESS HAS INCREASED THE COMMUNICATIONS RANGE OF THE SATELLITE AT EACH BIT RATE. EXCEPT FOR THE CELESTIAL MECHANICS EXPERIMENT, WHICH WAS PUT INTO AN OPERATIONALLY OFF MODE IN FEBRUARY 1971, ALL EXPERIMENTS WERE OPERATING NORMALLY AS OF MARCH 15, 1973.

DATA SET NAME- COMPRESSED EPHEMERIS DATA BASED ON DATA NSSDC ID 68-100A-00E  
SET 68-100A-00D ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110868 TO 041672 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS GENERATED AT NSSDC FROM DATA SET 68-100A-00D, CONTAINING COMPLETE TRAJECTORY INFORMATION PROVIDED BY JPL, BY TAKING THE MOST ACCURATE INFORMATION FROM EACH EPHEMERIS TAPE AND ELIMINATING OVERLAP. THE DATA SET CONSISTS OF ONE FILE OF A 7-TRACK, IBM 7094, 800-BPI, BINARY MAGNETIC TAPE. EACH LOGICAL RECORD CONTAINS 89 WORDS AND EACH PHYSICAL RECORD CONTAINS 20 LOGICAL RECORDS. THE FOLLOWING INFORMATION IS AVAILABLE IN INTERVALS OF ONE DAY (EXCEPT FOR PERIODS WHEN THE SPACECRAFT IS CLOSE TO THE EARTH, WHEN THE INTERVAL MAY BE SHORTER) -- (1) DATE, (2) TIME, (3) DISTANCE FROM THE EARTH TO PROBE, (4) DISTANCE FROM THE EARTH TO THE SUN,

(5) DISTANCE FROM THE EARTH TO THE MOON, (6) DISTANCE FROM THE SUN TO THE PROBE, (7) GEOCENTRIC RIGHT ASCENSION AND DECLINATION OF PROBE, SUN, MOON, (8) GEOCENTRIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE THE EARTH, (9) EARTH-SUN-PROBE ANGLE, (10) EARTH-PROBE-SUN ANGLE, (11) SUN-PROBE-NEAR LIMB OF EARTH ANGLE (SUN-PROBE-EARTH ANGLE MINUS THE ANGULAR SEMI-DIAMETER OF EARTH WHERE THE ANGULAR SEMI-DIAMETER WOULD BE THE PROBE-CENTERED ANGLE BETWEEN EARTH LIMB AND CENTER OF EARTH), (12) MOON-EARTH-PROBE ANGLE, (13) MOON-PROBE-SUN ANGLE, (14) EARTH-PROBE-MOON ANGLE, (15) CANOPUS-PROBE-EARTH ANGLE, (16) CANOPUS-PROBE-SUN ANGLE, (17) ANGLE MADE BY THE SUN TO PROBE VECTOR AND THE ECLIPTIC PLANE OF DATE, (18) X, Y, Z COMPONENTS OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM (SUN-CENTERED SYSTEM, X AXIS IS ALONG THE SUN-TO-EARTH VECTOR, Z AXIS IS TOWARD ECLIPTIC NORTH POLE), (19) LONGITUDE OF SPACECRAFT IN THE SUN-EARTH LINE COORDINATE SYSTEM, (20) X, Y, Z COMPONENTS OF SPACECRAFT IN GEOCENTRIC, SELENOCENTRIC, HELIOCENTRIC VENUS-CENTERED, MARS-CENTERED, SATURN-CENTERED, AND JUPITER-CENTERED INERTIAL COORDINATE (X POINTS TO VERNAL EQUINOX, Z POINTS ALONG THE NORTH POLE VECTOR WITH THE REFERENCE PLANE BEING THE EARTH'S TRUE EQUATOR OF DATE), (21) MAGNITUDE OF THE VELOCITY VECTOR AND X, Y, Z COMPONENTS OF THE VELOCITY VECTOR IN GEOCENTRIC INERTIAL COORDINATES, (22) GEOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY PROBE VELOCITY VECTOR AND PLANE NORMAL TO EARTH-TO-PROBE VECTOR), (23) GEOCENTRIC INERTIAL AZIMUTH ANGLE (ANGLE BETWEEN THE PLANE DEFINED BY THE EARTH-TO-PROBE VECTOR AND THE GEOCENTRIC INERTIAL VELOCITY VECTOR), (24) HELIOCENTRIC INERTIAL VELOCITY, (25) HELIOCENTRIC INERTIAL PATH ANGLE (ANGLE MADE BY THE HELIOCENTRIC VELOCITY VECTOR AND THE PLANE NORMAL TO THE SUN-TO-PROBE VECTOR), (26) CELESTIAL LONGITUDE OF PROBE (ANGULAR DISTANCE MEASURED COUNTERCLOCKWISE ALONG THE ECLIPTIC PLANE OF DATE FROM THE VERNAL EQUINOX TO THE PROJECTION OF THE SUN-PROBE VECTOR ON A PLANE AS VIEWED FROM THE ECLIPTIC NORTH POLE), (27) CELESTIAL LONGITUDE OF EARTH, (28) CELESTIAL LATITUDE OF EARTH, AND (29) VARIOUS CLOCK ANGLES AND HINGE AND SWIVEL ANGLES WHICH ARE DESCRIBED IN THE DOCUMENTATION.

DATA SET NAME- COROTATION DELAY TIME PLOTS AND LISTINGS      NSSDC ID 68-100A-00F  
ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110058 TO 040172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS DERIVED FROM PART OF DATA SET 68-100A-00E BY PRINTING OUT TIME, THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER DISTANCE, AND THE EARTH-SUN DISTANCE. USING THIS INFORMATION, THE COROTATION DELAY TIMES FOR SOLAR WIND VELOCITIES OF 200, 400, AND 600 KM/SEC WERE DERIVED FOR EACH TIME. THIS DATA SET INCLUDES LISTINGS OF THE ABOVE AS WELL AS PLOTS OF THE EARTH-SUN-PIONEER ANGLE, THE SUN-PIONEER RANGE, AND THE COROTATION DELAY TIMES (FOR A SOLAR WIND VELOCITY OF 400 KM/SEC) FOR EACH OF THE PIONEERS. AT LEAST ONE POINT IS GIVEN PER WEEK, WITH MORE FREQUENT COVERAGE FOR MOST OF THE TIME.

EXPERIMENT NAME- THREE AXIS MAGNETOMETER

NSSDC ID 68-100A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.P. SONETT NASA-ARC MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

A BOOM-MOUNTED, TRIAXIAL FLUXGATE MAGNETOMETER WAS USED TO STUDY THE INTERPLANETARY MAGNETIC FIELD AND ITS FLUCTUATIONS. THE SENSORS WERE ORTHOGONALLY MOUNTED WITH ONE AXIS PARALLEL TO THE SPACECRAFT SPIN AXIS. UPON COMMAND, A MOTOR INTERCHANGED A SENSOR IN THE SPIN PLANE WITH THE SENSOR ALONG THE SPIN AXIS, ENABLING INFLIGHT DETERMINATION OF ZERO LEVELS. EVERY 24 HR, THE INSTRUMENT WAS COMMANDED INTO A SELF-CALIBRATE SEQUENCE, AND THIS WAS OFTEN REPEATED AFTER THE SENSORS WERE FLIPPED. THE INSTRUMENT, WHICH HAD A DYNAMIC RANGE OF PLUS OR MINUS 200 GAMMAS WITH A RESOLUTION OF PLUS OR MINUS 0.2 GAMMA, WAS CAPABLE OF INFLIGHT DEMODULATION OF THE SIGNALS RECEIVED FROM THE TWO SENSORS IN THE SPIN PLANE. EACH MAGNETIC FIELD COMPONENT WAS DIGITIZED INTO A 10-BIT TELEMETRY WORD. NINE MAGNETIC FIELD COMPONENTS, COMPRISING THREE MAGNETIC FIELD VECTORS, WERE TRANSMITTED IN EACH SPACECRAFT TELEMETRY FRAME. THE INSTRUMENT HAS OPERATED NORMALLY THROUGH MARCH 1973.

DATA SET NAME- 30-SEC AVERAGED VECTOR MAGNETIC FIELD PLOTS ON MICROFILM NSSDC ID 68-100A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110868 TO 061369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM MICROFILM GENERATED AT NSSDC FROM HARDCOPY PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 70 MIN OF DATA. THIRTY-SEC AVERAGED VALUES OF MAGNETIC FIELD MAGNITUDE, WITH STANDARD DEVIATIONS, AND FIELD VECTOR POLAR AND AZIMUTHAL ANGLES IN SOLAR ECLIPTIC COORDINATES ARE GIVEN.

EXPERIMENT NAME- COSMIC-RAY TELESCOPE NSSDC ID 68-100A-06

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.R. WEBBER U OF NEW HAMPSHIRE DURHAM, NH

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT UTILIZED A TELESCOPE COMPRISED OF FIVE SOLID-STATE SENSORS, A CERENKOV DETECTOR, AND AN ANTICOINCIDENCE SHIELD. THE TELESCOPE AXIS WAS PERPENDICULAR TO THE SPACECRAFT SPIN AXIS. AS DETERMINED BY TWO COINCIDENCE MODES AND ELECTRONIC DISCRIMINATION OF SENSOR OUTPUT PULSES, PARTICLES MEASURED WERE ELECTRONS IN THREE CONTIGUOUS ENERGY INTERVALS BETWEEN 0.31 AND 5.1 MEV, PROTONS IN FIVE CONTIGUCUS ENERGY INTERVALS

BETWEEN 2.2 AND 42 MEV, AND ALPHA PARTICLES IN THESE CONTIGUOUS ENERGY INTERVALS BETWEEN 5.8 AND 42 MEV/NUCLEON. A THIRD COINCIDENCE MODE MEASURED THE SUM OF COUNTS DUE TO ELECTRONS ABOVE 0.6 MEV AND NUCLEI ABOVE 14 MEV/NUCLEON. A FOURTH COINCIDENCE MODE MEASURED THE SUM OF NUCLEI ABOVE 42 MEV/NUCLEON AND ELECTRONS ABOVE 5.1 MEV. SPACECRAFT SPIN-INTEGRATED DIRECTIONAL FLUXES WERE MEASURED IN THE VARIOUS MODES. ACCUMULATION TIMES AND READOUT INTERVALS WERE DEPENDENT ON THE TELEMETRY BIT RATE AND WERE TYPICALLY IN TENS OF SECONDS. IN ALL CASES, THEY WERE LONGER THAN THE SPACECRAFT SPIN PERIOD. THE EXPERIMENT HAS FUNCTIONED WELL FROM LAUNCH THROUGH MARCH 1973, ALTHOUGH, AT THE PRESENT LOW TELEMETRY BIT RATES, THE DATA ARE RATHER SPARSE.

DATA SET NAME- PROTON COUNT RATES PUBLISHED IN NSSDC ID 68-100A-06A  
\*SOLAR-GEOPHYSICAL DATA\*

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 120169 TO 033173 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 12 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MONTHLY TABULAR LISTINGS OF COUNT RATES OF PROTONS WITH ENERGIES ABOVE 13.9 AND 40 MEV. TYPICALLY, ONE OR TWO COUNT RATES PER ENERGY CHANNEL PER DAY WERE GIVEN IN THE EARLY LIFE OF THE SPACECRAFT. BY LATE 1971, ONLY A FEW COUNT RATES PER MONTH WERE GIVEN. DATA OBTAINED DURING A GIVEN MONTH ARE PUBLISHED (AS OF APRIL 1973) IN \*SOLAR-GEOPHYSICAL DATA (PROMPT REPORTS)\* WITH A 1-MONTH LAG.

EXPERIMENT NAME- PLASMA WAVE DETECTOR

NSSDC ID 68-100A-07

ORIGINAL EXPERIMENT INSTITUTION- TRW SYSTEMS GROUP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.L.	SCARF	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - I.M.	GREEN	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - G.M.	CROOK	TRW SYSTEMS GROUP	REDONDO BEACH, CA
OI - R.W.	FREDERICKS	TRW SYSTEMS GROUP	REDONDO BEACH, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

ELECTROSTATIC AND ELECTROMAGNETIC PLASMA WAVES WERE MEASURED IN THE SOLAR WIND NEAR 1 AU USING AN UNBALANCED ELECTRIC DIPOLE ANTENNA. THE 423-MHZ STANFORD UNIVERSITY ANTENNA, WHICH SERVED AS THE SENSOR, WAS CAPACITIVELY COUPLED TO THREE TELEMETRY CHANNELS. CHANNEL 1 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 400 HZ. CHANNEL 2 WAS A 15-PERCENT BANDPASS FILTER CENTERED AT 30 KHZ. THESE CHANNELS WERE EACH SAMPLED 64 TIMES PER TELEMETRY SEQUENCE. CHANNEL 3 WAS A BROADBAND 100-HZ TO 100-KHZ CHANNEL. THE BROADBAND CHANNEL WAS FED INTO A COUNT RATE METER THAT MEASURED THE NUMBER OF POSITIVE GOING PULSES PER UNIT TIME HAVING AMPLITUDES LARGE ENOUGH TO CROSS THE PRESENT TRIGGER LEVEL. THE TRIGGER LEVEL WAS VARIED THROUGH EIGHT STEPS EIGHT TIMES PER TELEMETRY SEQUENCE. THE TRIGGER LEVELS, TOGETHER WITH THE COUNT RATE AT EACH LEVEL, GAVE A MEASURE OF THE BROADBAND POWER SPECTRUM. THE TELEMETRY SEQUENCE WAS REPEATED OVER TIME INTERVALS FROM 7 MIN

28 SEC TO 472 MIN 52 SEC, WITH MOST OF THE DATA OBTAINED AT 59 MIN 44 SEC PER TELEMETRY SEQUENCE DURING THE FIRST YEAR OF ACQUISITION. THIS IMPLIES THAT ONE 8-STEP PULSE HEIGHT ANALYSIS AND EIGHT 400-HZ AND 30-KHZ MEASUREMENTS WERE MADE EVERY 7 MIN 28 SEC. THE EXPERIMENT CONTINUES TO RETURN USEFUL DATA AS OF MARCH 1973.

DATA SET NAME- FRAME SUMMARY PLOTS OF 100 HZ, 400 HZ, AND 30 KHZ E-FIELD AMPLITUDES ON FILM      NSSDC ID 68-100A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120368 TO 090669 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA REPRESENT SUMMARIES OF DATA PRESENTED IN DATA SET 68-100A-07B. PLOTTED AGAINST COMMON TIME ARE THE 100-HZ AMPLITUDE IN MILLIVOLTS FOR EACH FRAME, AND MAX AND MIN 400-HZ AND 30-KHZ AMPLITUDES IN MILLIVOLTS FOR EACH FRAME. THESE DATA ARE ON EXPERIMENTER GENERATED 35-MM MICROFILM.

DATA SET NAME- FINE-TIME SCALE 100 HZ, 400 HZ, AND 30 KHZ ELECTRIC FIELD AMPLITUDES ON TAPE      NSSDC ID 68-100A-07D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110868 TO 070369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE MAGNETIC TAPES MADE AT NSSDC FROM EXPERIMENTER-SUPPLIED DATA TAPES CONTAIN ALL PROBABLY CORRECT DATA FROM THE PIONEER 9 EXPERIMENT IN BOTH REDUCED AND PACKED RAW FORM. LOGICAL TESTS WERE MADE ON THE TIME WORDS DURING TAPE COPYING TO ASSURE THAT SCRAMBLED, AND THUS UNINTELLIGIBLE DATA RECORDS, WERE NOT RETAINED. (THESE RECORDS WERE RETAINED ON A FOURTH TAPE ALSO AVAILABLE FROM NSSDC.) RECORDS CONTAINING ALL ZEROS WERE NOT DELETED, AND SOME FILES MAY CONTAIN NO DATA RECORDS. THE DATA ARE ON 800-BPI BINARY, 7-TRACK TAPES WITH NUMEROUS FILES PER TAPE. EACH FILE CONTAINS A 648 CHARACTER BCD HEADER RECORD FOLLOWED BY 450 BINARY 36-BIT WORD DATA RECORDS (2700 CHARACTERS). EACH PHYSICAL RECORD CONTAINS ONE LOGICAL RECORD. EACH LOGICAL RECORD INCLUDES EIGHT SETS OF EIGHT 100-HZ MEASUREMENTS, SIXTY-FOUR 400-HZ AND 30-KHZ AMPLITUDE MEASUREMENTS, TIMES FOR EACH MEASUREMENT, AND SATELLITE EPHEMERIS.

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SPACECRAFT COMMON NAME- HEOS 1  
ALTERNATE NAMES- HEOS-A1, HEOS-A

NSSDC ID 68-109A



LAUNCH DATE- 12/05/68 SPACECRAFT WEIGHT IN ORBIT- 4000. KG

FUNDING AGENCY- ESRO

DATE LAST SPACECRAFT DATA RECORDED-110072  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF

EPOCH DATE- 12/24/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 89.34 MIN  
APOAPSIS- 280.000 KM ALT PERIAPSIS- 205.000 KM ALT INCLINATION- 65.41 DEG

SPACECRAFT BRIEF DESCRIPTION

HEOS 1 WAS AN EARTH ORBITING, SPIN-STABILIZED SATELLITE THAT WAS LAUNCHED BY THE EUROPEAN SPACE RESEARCH ORGANIZATION. IT WAS BASICALLY CYLINDRICAL WITH AN AXIAL BOOM SUPPORTING THE ANTENNA AND THE MAGNETOMETERS. THE SPIN AXIS ATTITUDE AND SPIN RATE WERE CHANGED BY ONBOARD GAS JETS. THE SPACECRAFT OBJECTIVES WERE TO STUDY THE INTERPLANETARY MAGNETIC FIELDS, COSMIC RAYS, THE SOLAR WIND, AND THE MAGNETOSHEATH. THE SATELLITE OPERATED SUCCESSFULLY FOR MORE THAN TWO YEARS. HOWEVER, ONLY INTERMITTENT COVERAGE HAS BEEN AVAILABLE SINCE MAY 1972 WHEN A LOSS OF CORRELATION BETWEEN THE SPACECRAFT TIME REFERENCE AND ATTITUDE INFORMATION OCCURRED. THE SPACECRAFT WAS STILL BEING TRACKED AS OF JUNE 1973.

DATA SET NAME- GEOCENTRIC INERTIAL, GEOGRAPHIC, AND NSSDC ID 68-109A-00E  
SOLAR ECLIPTIC EPHEMERIS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 120568 TO 090670 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF EPHEMERIS POINTS OF THE SATELLITE AT 4-HR INTERVALS (SATELLITE PERIOD ABOUT 4 DAYS) IN THE FOLLOWING COORDINATE SYSTEMS-GEOCENTRIC, CELESTIAL, INERTIAL (X, Y, Z IN KM), GEOGRAPHIC (ALTITUDE IN KM, LONG (GREENWICH=0) IN DEG, AND LAT IN DEG), AND SOLAR ECLIPTIC (X, Y, Z IN EARTH RADII). THE MICROFILM WAS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. THE SOLAR ECLIPTIC COORDINATES ARE ON A SEPARATE PRINTOUT FROM THE FIRST TWO COORDINATE SYSTEMS.

EXPERIMENT NAME- COSMIC-RAY PARTICLE FLUX NSSDC ID 68-109A-06

ORIGINAL EXPERIMENT INSTITUTION- CEN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J. LABEYRIE CEN GIF-SUR-YVETTE, FRANCE  
OI - L. KOCH CEN GIF-SUR-YVETTE, FRANCE  
OI - J. ENGELMANN CEN GIF-SUR-YVETTE, FRANCE

DATE LAST EXPERIMENT DATA RECORDED-110072  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION



EXPERIMENT NAME- HIGH-RESOLUTION TELESCOPES

NSSDC ID 68-110A-01

ORIGINAL EXPERIMENT INSTITUTION- SAO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - F.L. WHIPPLE	SAO	CAMBRIDGE, MA
OI - J.T. MCNALLY	U OF WISCONSIN	MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-043070

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, REFERRED TO AS THE CELESCOPE EXPERIMENT, CONSISTED OF TWO MAJOR SUBASSEMBLIES -- AN OPTICAL PACKAGE CONTAINING FOUR 12-IN. SCHWARZCHILD TELESCOPES THAT USED UVICONS TO PRODUCE TELEVISION PICTURES OF STAR FIELDS AND AN ELECTRONIC PACKAGE. THE UVICONS WERE FITTED WITH FILTERS CONSTRUCTED BY COMBINING HALVES OF FILTER BLANKS. THUS, REDUNDANT DATA WERE OBTAINED OVER FOUR DIFFERENT PASSBANDS. THESE PASSBANDS WERE 1200 TO 1500A, 1375 TO 1800A, 1800 TO 2800A, AND 3250 TO 2850A. THE ONLY SIGNIFICANT FAILURE DURING THE 16 MONTHS OF OPERATION WAS THAT OF ONE OF THE FOUR UVICONS CAUSED BY OVEREXPOSURE TO SUNLIGHT. THE SENSITIVITY OF THE OTHER UVICONS DECREASED SIGNIFICANTLY BUT IN A CORRECTABLE MANNER. ALTHOUGH THIS DECREASE WAS THE PRIMARY REASON THAT THE OPERATION OF THIS EXPERIMENT CEASED IN APRIL 1970, OVER 8500 2-DEG BY 2-DEG STAR FIELDS WERE OBSERVED, COVERING ABOUT 10 PERCENT OF THE SKY AND YIELDING OBSERVATIONS OF SOME 5000 OBJECTS.

DATA SET NAME- REDUCED OBSERVATIONS OF UV OBJECTS IN  
CATALOG FORM ON MAGNETIC TAPE

NSSDC ID 68-110A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120868 TO 043070 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, CONTAINED ON ONE MAGNETIC TAPE, IS THE COMPLETE CELESCOPE CATALOG OF OBJECTS OBSERVED IN THE ULTRAVIOLET REGION. THESE ARE REDUCED DATA SUPPLIED BY THE EXPERIMENTER. THIS CATALOG IS A TABULAR LISTING INCLUDING, FOR EACH OBJECT OBSERVED, (1) THE HENRY DRAPER NUMBER, (2) THE RIGHT ASCENSION/DECLINATION (EPOCH 1950), (3) THE VISUAL MAGNITUDE, (4) THE PHOTOELECTRIC B-V AND U-B COLORS, (5) THE SPECTRUM AND LUMINOSITY CLASS (INCLUDING A PECULIARITY FLAG), (6) THE OBSERVED ULTRAVIOLET MAGNITUDES (FOR THE FOUR PASSBANDS) AND STANDARD DEVIATIONS, (7) THE RIGHT ASCENSION/DECLINATION (EPOCH 2000), (8) THE WEIGHTING VALUES USED TO OBTAIN THE AVERAGE ULTRAVIOLET MAGNITUDES REPORTED, (9) A CODE REFERRING TO THE GENERAL TYPE OF OBJECT OBSERVED (E.G., GALACTIC CLUSTER, RADIO SOURCE, ETC.), (10) CODE(S) INDICATING PHOTOMETRIC PROPERTIES OF THE OBJECT (E.G., VISUAL BINARY, CLASSICAL CEPHEID VARIABLE, NOVA-LIKE VARIABLE), (11) CODES INDICATING SPECTRAL CHARACTERISTICS OF THE STAR (E.G., SPECTROSCOPIC BINARY, PECULIAR A-TYPE SPECTRUM, MAGNETIC FIELD), (12) A REMARKS COLUMN, AND (13) A LISTING OF BIBLIOGRAPHIC REFERENCES. INCLUDED WITH THE DATA SET IS A SET OF PROGRAMS THAT ENABLE THE USER TO SEARCH THE TAPE FOR VARIOUS TYPES OF STARS, AS WELL AS FOR SPECIFIC OBJECTS. THIS TAPE WAS GENERATED ON A CDC 6000 SERIES COMPUTER AND IS WRITTEN IN BINARY AT 556 BPI ON A 7-TRACK TAPE.

DATA SET NAME- CELESCOPE CATALOG REORDERED BY VARIOUS      NSSDC ID 68-110A-01B  
PARAMETERS ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120868 TO 043070 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET INCLUDES THE COMPLETE CATALOG TO THE CELESCOPE DATA AND IS CONTAINED ON ONE REEL OF 16-MM MICROFILM. IT WAS GENERATED AT NSSDC FROM DATA SET 68-110A-01A AND INCLUDES ALL DATA CONTAINED THEREIN. THESE CATALOG DATA ARE DIVIDED INTO FIVE SEGMENTS, EACH ORDERED IN A DIFFERENT MANNER. THE FIRST ORDERING IS BY RIGHT ASCENSION/DECLINATION. THIS ORDERING IS A LONGITUDE SORT, WITH ALL SOURCES APPEARING AT THE SAME RIGHT ASCENSION THEN BEING ORDERED BY DECLINATION (NORTH TO SOUTH, OR +90 DEG TO -90 DEG). THE COORDINATES USED ARE EPOCH 1950. THIS ORDERING IS THE FORM IN WHICH THE CELESCOPE CATALOG IS ORDERED ON THE MAGNETIC TAPE. THE SECOND ORDERING IS BY HENRY DRAPER (HD) NUMBER. THIS ORDERING IS BASED ON THE SERIAL NUMBERS ASSIGNED SOURCES IN THE HENRY DRAPER STAR CATALOG. SOURCES NOT ASSIGNED HD NUMBERS APPEAR AT THE END OF THE LISTING. THE THIRD ORDERING IS BY DURCHMUSTERUNG NUMBER. THIS ORDERING IS SORTED ON DECLINATION (NORTH TO SOUTH, OR +90 DEG TO -90 DEG). THE FOURTH ORDERING IS BY VISUAL MAGNITUDE. THIS ORDERING LISTS THE SOURCES IN ORDER BY ASCENDING MAGNITUDE. THE FIFTH ORDERING IS BY SPECTRAL CLASS AND SUBCLASS AND, WITHIN EACH SUBCLASS, LISTS SOURCES BY ASCENDING LUMINOSITY. IN THE LAST TWO SORTS, OBJECTS WITH THE SAME SORT PARAMETER (E.G., VISUAL MAGNITUDE) ARE ORDERED BY R.A. AND THEN, IF NECESSARY, BY DECLINATION.

DATA SET NAME- BIBLIOGRAPHY, ON MAGNETIC TAPE, FOR USE      NSSDC ID 68-110A-01C  
WITH THE CELESCOPE CATALOG

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED-      TO      (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET-      2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS FULL CITATIONS FOR THE BIBLIOGRAPHIC ENTRIES THAT ARE LISTED BY SERIAL NUMBER IN DATA SETS 68-110A-01A AND 68-110A-01B. THESE ENTRIES ARE ORDERED BOTH BY THE ASSIGNED SERIAL NUMBER AND BY AUTHOR. THIS DATA SET, WHICH IS SUPPLEMENTAL INFORMATION FOR DATA SETS 68-110A-01A AND 68-110A-01B, IS CONTAINED ON TWO REELS OF 7-TRACK, 556-BPI, BCD MAGNETIC TAPES SUPPLIED BY THE EXPERIMENTER.

DATA SET NAME- BIBLIOGRAPHY ON MICROFILM FOR USE WITH      NSSDC ID 68-110A-01D  
THE CELESCOPE CATALOG

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- TO (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS FULL CITATIONS FOR THE BIBLIOGRAPHIC ENTRIES THAT ARE LISTED BY SERIAL NUMBER IN DATA SETS 68-110A-01A AND 68-110A-01B. THESE ENTRIES ARE ORDERED BOTH BY THE ASSIGNED SERIAL NUMBER AND BY AUTHOR. THIS DATA SET, WHICH IS SUPPLEMENTAL INFORMATION FOR DATA SETS 68-110A-01A AND 68-110A-01B, IS CONTAINED ON ONE REEL OF 16-MM MICROFILM THAT WAS GENERATED AT NSSDC FROM DATA SET 68-110A-01C.

EXPERIMENT NAME- WISCONSIN EXPERIMENT PACKAGE

NSSDC ID 68-110A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - A.D.	CODE	U OF WISCONSIN	MADISON, WI
OI - R.J.	DAVIS	SAO	CAMBRIDGE, MA

DATE LAST EXPERIMENT DATA RECORDED-020073

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF FOUR PARTS -- A SET OF FOUR STELLAR PHOTOELECTRIC PHOTOMETERS LOCATED BEHIND 8-IN. TELESCOPES, A NEBULAR PHOTOELECTRIC PHOTOMETER LOCATED AT THE PRIME FOCUS OF A 16-IN. TELESCOPE, AND A SET OF TWO OBJECTIVE GRATING SPECTROMETERS. THE STELLAR PHOTOMETERS WERE EACH LOCATED BEHIND A FILTER WHEEL CONTAINING THREE FILTER PASSBANDS, A CALIBRATION SLIDE (STRONTIUM 90), AND A DARK SLIDE. THE FILTER PASSBANDS RANGED FROM 1185 TO 1370 A (STELLAR 4, FILTER 4, EFFECTIVE WAVELENGTH 1330 A) TO 3810 TO 4670 A (STELLAR 1, FILTER 3, EFFECTIVE WAVELENGTH 4250 A), AND THE FILTER PASSBANDS WERE ARRANGED TO PROVIDE REDUNDANT COVERAGE SO THAT THE TELESCOPE RESPONSES COULD BE CROSS-CORRELATED. TWO FIELD STOPS WERE PROVIDED WITH ANGULAR DIAMETERS OF 2 ARC-MIN AND 10 ARC-MIN. PHOTONS WERE DETECTED BY PHOTOMULTIPLIERS. THESE PHOTOMULTIPLIERS DROVE BOTH PULSE COUNTERS AND DC AMPLIFIERS, THUS PROVIDING REDUNDANT OUTPUT. UNFORTUNATELY, THE ANALOG (DC) CHANNEL OF STELLAR 4 FAILED SHORTLY AFTER LAUNCH AND HAS PROVIDED NO USEFUL DATA. THE FILTERS HAVE EXPERIENCED SOME DEGRADATION IN ORBIT, AND CORRECTIONS TO BE APPLIED TO THE STELLAR PHOTOMETER DATA ARE BECOMING AVAILABLE. THE NEBULAR PHOTOMETER WAS LOCATED BEHIND A SIX-POSITION FILTER WHEEL PROVIDING PASSBANDS FROM 1930 TO 2230 A (EFFECTIVE WAVELENGTH 2130 A) TO 3050 TO 3570 A (EFFECTIVE WAVELENGTH 3330 A), AS WELL AS A CALIBRATION SLIDE AND A DARK SLIDE. A PULSE COUNTER AND DC AMPLIFIER SIMILAR TO THOSE USED WITH THE STELLAR PHOTOMETERS WERE USED WITH THIS PHOTOMETER. ABOUT 2-1/2 MONTHS AFTER LAUNCH, A FAILURE LEFT THE CALIBRATION SOURCE PERMANENTLY IN PLACE, AND NO FURTHER DATA HAVE RESULTED FROM THIS DETECTOR. SPECTROMETER 1 COVERED THE WAVELENGTH RANGE FROM 3800 TO 1800 A IN 100 STEPS WITH RESOLUTIONS OF 20 OR 200 A (SWITCHABLE). THE SLIT WIDTH OF 20 A CORRESPONDED TO 2 ARC-MIN PROJECTED ON THE SKY, AND THE SLIT HEIGHT CORRESPONDED TO 8 MIN OF ARC. SPECTROMETER 2 COVERED THE WAVELENGTH RANGE FROM 2000 TO 1050 A IN 100 STEPS WITH RESOLUTIONS OF 10 OR 100 A. THE SLIT WIDTH OF 10 A CORRESPONDED TO 2 ARC MIN PROJECTED ONTO THE SKY, AND THE SLIT HEIGHT CORRESPONDED TO 8 MIN OF ARC. THREE BASIC MODES OF OPERATION WERE USED -- (1) IN MODE A, THE FOUR STELLAR PHOTOMETERS WERE OPERATED TOGETHER, (2) IN MODE B, THE NEBULAR PHOTOMETER WAS OPERATED, AND (3) MODE C, ONE OF THE TWO SCANNING SPECTROMETERS WAS SCANNED (BOTH COULD NOT BE SCANNED

SIMULTANEOUSLY). DURING ANY MODE OF OPERATION, DATA WERE COLLECTED FROM ALL INSTRUMENTS ALTHOUGH, BECAUSE OF OFFSET PROBLEMS, THE PHOTOMETERS AND SPECTROMETERS DID NOT VIEW THE SAME AREA OF THE SKY. SPECIAL PURPOSE MODES WERE ALSO AVAILABLE. ASIDE FROM THE FAILURES OF THE NEBULAR PHOTOMETER, THE ANALOG CHANNEL OF STELLAR PHOTOMETER 4, AND THE DEGRADATION OF THE FILTERS, THE INSTRUMENT OPERATED NORMALLY FROM LAUNCH TO SPACECRAFT SHUTOFF IN FEBRUARY 1973. GOOD REFERENCES DESCRIBING THE EXPERIMENT CAN BE FOUND IN 'ULTRAVIOLET PHOTOMETRY FROM THE ORBITING ASTRONOMICAL OBSERVATORY, I, INSTRUMENTATION AND OPERATION,' BY A. D. CODE, T. E. HOUCK, J. F. MCNALL, R. C. BLESS, AND C. F. LILLIE, ASTROPHYS. J., VOL 161, PP. 377-388, AUGUST 1970, AND 'THE SCIENTIFIC RESULTS FROM THE ORBITING ASTRONOMICAL OBSERVATORY (OAO-2), NASA SP-310, FROM NTIS (LIBRARY OF CONGRESS CARD NO. 72-600185).

DATA SET NAME- REDUCED PHOTOMETER DATA ON MAGNETIC TAPE   NSSDC ID 68-110A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121168 TO 112971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-   275 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, RECEIVED FROM THE EXPERIMENTER, ARE CONTAINED ON 7-TRACK, 556-BPI, BCD MAGNETIC TAPE. EACH REEL CONTAINS DATA COVERING 2 TO 3 DAYS OF OPERATION. THE DATA INCLUDE RAW DATA FROM ALL OF THE INSTRUMENTS, AS WELL AS REDUCED DATA FROM THE STELLAR PHOTOMETERS, ORDERED BY THE DATE AND TIME OF OBSERVATION. SUFFICIENT INFORMATION IS ALSO INCLUDED ON EACH TAPE TO ALLOW HAND REDUCTION OF THE RAW STELLAR PHOTOMETER DATA. TO FIND OBSERVATIONS OF A PARTICULAR OBJECT OR LOCATION, THE USER MUST FIRST REFER TO THE CATALOGS AVAILABLE ON MICROFILM (DATA SET 68-110A-02C) OR ON MAGNETIC TAPE (DATA SET 68-110A-02G), FIND THE ORBITS CONTAINING THE DATA DESIRED, AND THEN REQUEST THOSE TAPES CONTAINING THE DESIRED ORBIT(S).

DATA SET NAME- REDUCED PHOTOMETER DATA ON MICROFILM       NSSDC ID 68-110A-02B  
PLUS SUPPLEMENTAL OPERATIONAL INFORMATION

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121168 TO 051970 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET-   22 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED PRINTOUTS OF THE DATA CONTAINED IN DATA SET 68-110A-02A, TOGETHER WITH SUPPLEMENTAL OPERATIONAL DATA THAT MIGHT AFFECT THE INTERPRETATION OF THE DATA. ALTHOUGH RAW DATA FROM ALL INSTRUMENTS ARE INCLUDED IN THIS DATA SET, THE PRINCIPAL DATA ARE THE RAW AND REDUCED STELLAR PHOTOMETER DATA. THESE DATA ARE ORDERED BY THE DATE AND TIME OF OBSERVATION. TO FIND OBSERVATIONS OF A PARTICULAR OBJECT OR LOCATION, THE USER MUST FIRST REFER TO THE CATALOGS AVAILABLE ON MICROFILM (DATA SET 68-110A-02C) OR ON MAGNETIC TAPE (DATA SET 68-110A-02G), FIND THE ORBITS CONTAINING THE DATA DESIRED, AND THEN ORDER ONLY THE REELS OF MICROFILM CONTAINING THOSE ORBITS.

DATA SET NAME- CATALOG OF OBSERVATIONS, ON MAGNETIC TAPE, ORDERED BY VARIOUS PARAMETERS NSSDC ID 68-110A-02G

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121168 TO 022472 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE DATA, SUBMITTED BY THE EXPERIMENTER AND CONTAINED ON 7-TRACK, 556-8PI, BCD MAGNETIC TAPE, ARE A CATALOG OF THE DATA CONTAINED ON DATA SETS 68-110A-02A AND 68-110A-02B. THE CATALOG DATA ARE LISTED IN THREE WAYS -- (1) BY THE DATES OF OBSERVATIONS, WHICH CORRESPOND TO THE ORDERING OF THE DATA SETS, (2) BY THE RIGHT ASCENSION/DECLINATION OF THE OBSERVED OBJECT, AND (3) ALPHABETICALLY BY THE NAME OF THE OBSERVED OBJECT. ALL CATALOG LISTINGS PROVIDE THE USER WITH THE ORBIT NUMBERS OF THE TIMES WHEN A PARTICULAR OBJECT WAS OBSERVED, THUS ENABLING HIM TO FIND THE APPROPRIATE DATA ON THE TAPE OR MICROFILM DATA SETS.

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SPACECRAFT COMMON NAME- APOLLO 8 NSSDC ID 68-118A  
ALTERNATE NAMES- PL-684M

LAUNCH DATE- 12/21/68 SPACECRAFT WEIGHT IN ORBIT- 9979. KG

FUNDING AGENCY- NASA-DMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-122768  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 12/24/68 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 88. MIN  
APOAPSIS- 1851. KM ALT PERIAPSIS- 1848. KM ALT INCLINATION- 12. DEG

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE FIRST OF THE APOLLO SERIES TO SUCCESSFULLY ORBIT THE MOON. THE MISSION ACHIEVED OPERATIONAL EXPERIENCE AND TESTED THE APOLLO COMMAND MODULE SYSTEMS. THE CREW PHOTOGRAPHED THE LUNAR SURFACE, BOTH FAR SIDE AND NEAR SIDE, OBTAINING INFORMATION ON TOPOGRAPHY AND LANDMARKS AS WELL AS OTHER SCIENTIFIC INFORMATION NECESSARY FOR FUTURE APOLLO LANDINGS. THE SPACECRAFT WAS LAUNCHED ON DECEMBER 21, 1968, AND WAS PLACED IN AN ELLIPTICAL LUNAR ORBIT AT 69 HR 8 MIN GROUND ELAPSED TIME (G.E.T.) FOR TWO ORBITS. IT WAS LATER PLACED IN A NEAR-CIRCULAR LUNAR ORBIT OF 110.4 BY 112.3 KM FOR EIGHT ORBITS. THE MISSION WAS CONSIDERED NOMINAL AND WAS COMPLETED ON DECEMBER 27, 1968, AT 147 HOURS AFTER LAUNCH.

EXPERIMENT NAME- APOLLO 8 PHOTOGRAPHIC STUDIES NSSDC ID 68-118A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA HEADQUARTERS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.J. ALLENBY, JR. NASA HEADQUARTERS WASHINGTON, DC

DATE LAST USABLE EXPERIMENT DATA RECORDED-122768  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE APOLLO 8 MISSION UTILIZED TWO 70-MM HASSELBLAD CAMERAS WITH TWO 80-MM LENSES, A 250-MM LENS, AND ASSOCIATED EQUIPMENT SUCH AS FILTERS, RINGSIGHT, SPOTMETER, AND AN INTERVALOMETER FOR STEREO STRIP PHOTOGRAPHY. IT ALSO CARRIED A 16-MM MAURER CAMERA WITH 200-, 75-, 18-, AND 5-MM LENSES, A RIGHT-ANGLE MIRROR, AND A BORESIGHT BRACKET. THE PURPOSE OF THIS PHOTOGRAPHIC EQUIPMENT WAS (1) TO ACQUIRE VERTICAL AND OBLIQUE OVERLAPPING PHOTOGRAPHS OF THE LUNAR FAR SIDE, (2) TO PHOTOGRAPH "TARGETS OF OPPORTUNITY," AND (3) TO RECORD OPERATIONAL ACTIVITIES. SEVEN MAGAZINES OF 70-MM FILM AND FIVE MAGAZINES OF 16-MM FILM WERE USED FOR LUNAR PHOTOGRAPHY. A COMPLETE DESCRIPTION OF THE EXPERIMENT CAN BE FOUND IN A DATA ANNOUNCEMENT BULLETIN, NSSDC 69-06, AVAILABLE AT NSSDC BY REQUEST.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON B/W POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 68-118A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 122168 TO 122768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 563 PHOTOGRAPHS REPRODUCED FROM BLACK AND WHITE MICROFICHE. EACH MICROFICHE CARD CONTAINS FROM NINE TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. BLANK FRAMES ARE NUMBERED. THESE MICROFICHE CARDS INCLUDE COVERAGE OF TSIOLKOVSKY, THE EARTH, MARE SMYTHII, MARE FECUNDITATIS, MARE CRISIUM, MARE AUSTRALE, CRATERS KASTNER AND COLOMBO, THE PYRENEES MOUNTAINS, AND THE LUNAR FAR SIDE.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON COLOR POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 68-118A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 122168 TO 122768 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 255 PHOTOGRAPHS REPRODUCED FROM IN COLOR THREE 70-MM MAGAZINES ON FIVE 4- BY 6-IN. MICROFICHE CARDS. EACH MICROFICHE CARD CONTAINS FROM 41 TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR





#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MONITOR THE SOLAR X-RAY FLUX IN FOUR BROAD BANDS BETWEEN 0.5 AND 60 Å (0.5 TO 3 Å, 1 TO 8 Å, 8 TO 16 Å, AND 44 TO 60 Å) AS PART OF A LONG-TERM PROJECT TO OBSERVE SOLAR X-RAY ACTIVITY WITH SETS OF STANDARDIZED X-RAY ION CHAMBER PHOTOMETERS OVER AN ENTIRE SOLAR CYCLE. THE INSTRUMENTATION, MOUNTED IN THE WHEEL SECTION OF THE OSO 5 SPACECRAFT, CONSISTED OF FOUR X-RAY ION CHAMBER PHOTOMETERS. THE 0.5- TO 3-Å ION CHAMBER HAD A 50-MIL-THICK BE WINDOW AND KRYPTON FILLER GAS, THE 1- TO 8-Å ION CHAMBER HAD A 5-MIL-THICK BE WINDOW AND ARGON FILLER GAS, THE 8- TO 16-Å ION CHAMBER HAD A 0.33-MIL-THICK ALUMINUM WINDOW AND NITROGEN FILLER GAS, AND THE 44- TO 60-Å ION CHAMBER HAD A 0.25-MIL-THICK MYLAR WINDOW AND NITROGEN FILLER GAS. EACH ION CHAMBER PHOTOMETER HAD AN ELECTROMETER AMPLIFIER AND ANALOG-TO-DIGITAL CONVERTER. THE FIRST THREE BANDS HAD AUTOMATIC RANGE CHANGING CAPABILITIES THAT ENABLED THEM TO ALTER THEIR SENSITIVITY IN THE EVENT OF SOLAR FLARE. THE 0.5- TO 0-Å AND 1- TO 8-Å PHOTOMETER AMPLIFIERS HAD THREE SENSITIVITY RANGES, AND THE 8- TO 16-Å PHOTOMETER AMPLIFIER HAD TWO RANGES. THE ION CHAMBER PHOTOMETERS CONTINUOUSLY MONITORED THE INCIDENT RADIATION WHILE A DIGITAL SAMPLE WAS TAKEN. THE DIGITIZING OPERATION WAS CONTROLLED BY TWO SOLAR CELLS MOUNTED 90 DEG FROM EACH OTHER, WITH ONE CELL FACING IN THE SAME DIRECTION AS THE FOUR ION CHAMBERS. AS THE SATELLITE WHEEL ROTATED, THE CELL NOT ALIGNED WITH THE DETECTORS CAME INTO VIEW OF THE SUN FIRST AND INITIATED THE TAKING OF A SEVEN-BIT DIGITAL SAMPLE OF THE X-RAY BACKGROUND. WHEN THE OTHER CELL AND THE X-RAY DETECTORS CAME INTO VIEW OF THE SUN, THE DIGITAL SAMPLING OF THE SOLAR X-RAY FLUX WAS INITIATED. THE BACKGROUND X-RAY READING WAS SUBTRACTED FROM THE SOLAR X-RAY READING BEFORE READOUT. AN AUTOMATIC CALIBRATION CYCLE OCCURRED AFTER EVERY 48 READOUT CYCLES AND CONSISTED OF OPENING THE INPUTS TO THE AMPLIFIERS AND PERFORMING A NORMAL DIGITIZED OPERATION WITHOUT SUBTRACTING THE BACKGROUND READING. THE EXPERIMENT FUNCTIONED PROPERLY FOR OVER A YEAR FROM JANUARY 1969 TO JULY 1970. AFTER THIS TIME, HOWEVER, THE EXPERIMENT FAILED DUE TO UNDETERMINED CAUSES AND WAS PLACED IN AN INOPERABLE STATUS ON SEPTEMBER 8, 1971. THE DATA FROM THIS EXPERIMENT WERE COMBINED WITH DATA FROM A SIMILAR EXPERIMENT ON SOLRAD 9 TO PROVIDE OBSERVATIONAL COVERAGE OF A MAJOR PORTION OF EVERY X-RAY SOLAR EVENT THAT OCCURRED DURING THE PERIOD.

DATA SET NAME-- PLOTS OF REDUCED SOLAR X-RAY FLUX VS. NSSDC ID 69-006A-04A  
TIME ON MICROFILM

AVAILABILITY OF DATA SET-- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED-- 012369 TO 080270 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-- 13 REEL(S) OF MICROFILM

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF PLOTS OF REDUCED X-RAY FLUXES IN FOUR SPECTRAL CHANNELS RECORDED ON 13 REELS OF 35-MM FIRST GENERATION MICROFILM. THE PLOTS WERE GENERATED FROM DIGITIZED TELEMETERED INFORMATION CONTAINED ON THE ORIGINAL EXPERIMENT DATA TAPES. THE X-RAY FLUXES (ERGS/SQ-CM-SEC) WERE PLOTTED VS TIME. THE BEGINNING OF EACH PLOT STARTS AT THE SAME EARTH LONGITUDINAL POINT. THIS WAS DONE IN ORDER TO DISTINGUISH THE PHOTOMETER RESPONSE TO THE ENERGETIC PARTICLES OF THE SOUTH ATLANTIC ANOMALY FROM ITS RESPONSE TO SOLAR X RAYS. THE PHOTOMETER OUTPUTS WERE CONVERTED TO FLUXES BY ASSUMING THAT THE SUN EMITS (1) AS A 10-MILLION DEG GREY BODY IN THE 0.5- TO 3-Å REGION, (2) AS A 2-MILLION DEG GREY BODY IN THE 1- TO 8-Å AND 8- TO 16-Å REGIONS, AND (3) AS A .5-MILLION DEG GREY BODY IN THE 44- TO 60-Å REGION. WITH THE EXCEPTION OF A FEW SMALL GAPS, THE DATA

SET COVERS THE PERIOD JANUARY 23, 1969, TO AUGUST 2, 1970. HOWEVER, THE 44- TO 60-A DETECTOR OUTPUT BECAME INTERMITTENT ON JUNE 9, 1969, AND BY JUNE 20, 1969, IT WAS COMPLETELY OFF. THE COVERAGE FOR THE OTHER THREE CHANNELS BEGAN TO DETERIORATE IN APRIL 1970, AND BY JULY 1970 THE USEFULNESS OF THE DATA OBTAINED WAS MINIMAL.

EXPERIMENT NAME- ZODIACAL LIGHT MONITOR

NSSDC ID 69-006A-07

ORIGINAL EXPERIMENT INSTITUTION- U OF MINNESOTA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E. NEY U OF MINNESOTA MINNEAPOLIS, MN

DATE LAST EXPERIMENT DATA RECORDED-123172  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT, A MODIFIED VERSION OF AN OSO 2 EXPERIMENT (65-007A-04), WAS DESIGNED TO MEASURE THE INTENSITY AND DEGREE OF POLARIZATION OF ZODIACAL LIGHT AS A FUNCTION OF ECLIPTIC LATITUDE AND TO SEARCH FOR CHANGES IN ZODIACAL LIGHT RESULTING FROM SOLAR DISTURBANCES. IT WAS ALSO INTENDED TO STUDY THE INTENSITY OF THE AIRGLOW CONTINUUM LAYER AND TO STUDY THE DISTRIBUTION OF NIGHTTIME LIGHTNING STORMS. SIX PHOTOMULTIPLIER/FILTER PHOTOMETERS WERE USED WITH VARIOUS APERTURES AND ORIENTATIONS. THESE PHOTOMETERS WERE PM-1, PM-2, PM-3, PM-4, PM-5, AND PM-6. PM-1 WAS ORIENTED PARALLEL TO THE SPIN AXIS WITH A 9.25- BY 57-DEG FIELD OF VIEW AND A RED/VISUAL PASSBAND. PM-2 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS WITH A 9.25- BY 57-DEG FIELD OF VIEW AND A BLUE (3500 TO 5000 A) PASSBAND. PM-3 WAS ORIENTED PARALLEL TO THE SPIN AXIS WITH AN 11-DEG-DIAMETER CONICAL FIELD OF VIEW AND A BLUE (3500 TO 5000 A) PASSBAND. PM-4 WAS ORIENTED PARALLEL TO THE SPIN AXIS WITH A 10.5-DEG OFFSET, A 9.5-DEG-DIAMETER CONICAL FIELD OF VIEW, AND A BLUE (3500 TO 5000 A) PASSBAND. PM-5 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS WITH A 9-DEG-DIAMETER CONICAL FIELD OF VIEW AND A RED (6000 TO 8500 A) PASSBAND. PM-6 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS WITH A 9-DEG OFFSET, A 9.5-DEG-DIAMETER FIELD OF VIEW AND A VISUAL/RED PASSBAND. PM-1, PM-2, AND PM-3 WERE READ OUT THREE TIMES DURING EACH SPACECRAFT MAIN FRAME (TELEMETRY), AND PM-4, PM-5, AND PM-6 WERE READ OUT TWICE DURING EACH SPACECRAFT MAIN FRAME. THESE PHOTOMETERS MEASURED LIGHT INTENSITY UP TO ABOUT 1000 TIMES THAT OF A TENTH MAGNITUDE STAR, ON A SCALE FROM 0 TO 4096. PM-3, PM-4, AND PM-5 WERE EQUIPPED WITH FIXED POLAROID FILTERS. IN ADDITION, TWO PHOTODIODES, EACH WITH A SENSITIVITY ABOUT ONE-SIXTEENTH THAT OF THE PHOTOMETERS, FUNCTIONED AS MONITOR EYES AND WERE SAMPLED ONCE EVERY 5 SEC. EYE-1 WAS ORIENTED PARALLEL TO THE SPIN AXIS WITH A 10.5-DEG OFFSET AND HAD A 21-DEG-DIAMETER CONICAL FIELD OF VIEW. EYE-2 WAS ORIENTED ANTIPARALLEL TO THE SPIN AXIS, OFFSET BY 5 DEG, AND HAD A 17.5-DEG DIAMETER FIELD OF VIEW.

DATA SET NAME- ZODIACAL LIGHT AND AIRGLOW PLOTS ON  
MICROFILM

NSSDC ID 69-006A-07A

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 012769 TO 031571 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 400 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SETS OF PLOTS OF 20-SEC MAX/MIN VALUES FOR FOUR OF THE SIX PHOTOMETERS AND TWO MONITOR EYES (PHOTODIODES) PLOTTED VS TIME. THIS DATA SET IS A SUBSET OF 69-006A-07A. APPROXIMATELY 40 MIN OF DATA ARE ON EACH PLOT, AND A SET OF FOUR PLOTS COVERS A GIVEN TIME PERIOD. ONE PLOT CONTAINS THE INTENSITIES MEASURED BY PHOTOMETERS 3 AND 5, ANOTHER CONTAINS THE INTENSITIES MEASURED BY PHOTOMETERS 4 AND 6, AND THE LAST CONTAINS THE INTENSITIES MEASURED BY THE PHOTODIODES. THE INTENSITY SCALES ARE 0 TO 4000 FOR THE PHOTOMETERS, AND 0 TO 256 FOR THE PHOTODIODES. THE DATE OF OBSERVATION IS GIVEN ON THE PLOTS. THE DATA ARE PARTLY REDUCED DATA SUPPLIED BY THE EXPERIMENTER AND ARE CONTAINED ON 16-MM MICROFILM.

DATA SET NAME- ZODIACAL LIGHT AND AIRGLOW TABLES ON MICROFILM NSSDC ID 69-006A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 012769 TO 031571 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 300 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOMETER AND MONITOR EYE DATA IN TABULAR FORM ON MICROFILM. ALL PHOTOMETER OUTPUTS ARE LISTED AS A FUNCTION OF MAIN-FRAME TIME FOR EACH PERIOD OF SPACECRAFT NIGHT. EACH PAGE CONTAINS DATA FROM 15.36 SEC OF TIME. AT THE TOP OF EACH PAGE, IN THE HEADER, THE OUTPUTS FROM THE MONITOR EYES, SUNRISE/SUNSET TIMES, SPACECRAFT POSITION, AND SPACECRAFT ORIENTATIONS ARE GIVEN. THESE DATA ARE PARTLY REDUCED DATA SUPPLIED BY THE EXPERIMENTER AND ARE CONTAINED ON 16-MM MICROFILM. A SUBSET OF THESE DATA APPEARS ON PLOTS AS DATA SET 69-006A-07A. THE DATA IN THIS DATA SET ARE READABLE BUT ARE NOT REPRODUCIBLE. USERS MAY HAVE ACCESS TO THE DATA ON THE PREMISES OF NSSDC.

DATA SET NAME- REDUCED PHOTOMETER DATA ON MAGNETIC TAPE NSSDC ID 69-006A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 012769 TO 031571 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 78 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, RECEIVED FROM THE EXPERIMENTER, IS CONTAINED ON ODD-PARITY 7-TRACK, 800 BPI, BINARY MAGNETIC TAPES WRITTEN ON A CDC 6600. DATA COVER ONLY NIGHTTIME OPERATION OF THE SPACECRAFT, AND EACH NIGHTTIME PERIOD COVERED INCLUDES COMPLETE SPACECRAFT ALTITUDE, ASPECT, AND EPHEMERIS INFORMATION ALONG WITH RELEVANT HOUSEKEEPING INFORMATION, AND THE COUNT RATES OF THE SIX TELESCOPES. THE DATA FROM THE INDIVIDUAL TELESCOPES ARE PACKED AS 12-BIT WORDS, YIELDING A COUNT RATE RANGE OF FROM ZERO TO 4095. THE THIRD WORD OF TELESCOPE 3 IS INCOMPLETE, CONTAINING ONLY 8 BITS, AND SHOULD NOT BE USED FOR DETAILED ANALYSIS. QUESTIONABLE OR MISSING DATA WERE SET TO ZERO. WHEN TURNED OFF BECAUSE OF EXCESSIVE LIGHT, THE TELESCOPES READ A SMALL NUMBER OF COUNTS (LESS THAN 20).

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SPACECRAFT COMMON NAME- ISIS 1 NSSDC ID 69-009A  
ALTERNATE NAMES- ISIS-A

LAUNCH DATE- 01/30/69 SPACECRAFT WEIGHT IN ORBIT- 389. KG

FUNDING AGENCY- CRC  
FUNDING AGENCY- NASA-OSS

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 01/30/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 128. MIN  
APOAPSIS- 3522.00 KM ALT PERIAPSIS- 574.000 KM ALT INCLINATION- 88.425 DEG

SPACECRAFT BRIEF DESCRIPTION

ISIS 1 WAS AN IONOSPHERIC OBSERVATORY INSTRUMENTED WITH SWEEP FREQUENCY AND FIXED FREQUENCY IONOSONDES, A VLF RECEIVER, ENERGETIC AND SOFT PARTICLE DETECTORS, AN ION MASS SPECTROMETER, AN ELECTROSTATIC PROBE, AN ELECTROSTATIC ANALYZER, A BEACON TRANSMITTER, AND A COSMIC NOISE EXPERIMENT. THE SOUNDER USED TWO LONG DIPOLE ANTENNAS (78.9 M AND 20.2 M LONG, RESPECTIVELY). THE SATELLITE WAS SPIN STABILIZED AT ABOUT 2.9 RPM AFTER ANTENNA DEPLOYMENT. SOME CONTROL COULD BE EXERCISED OVER THE SPIN RATE AND ATTITUDE BY USING MAGNETICALLY INDUCED TORQUES TO CHANGE THE SPIN RATE AND TO PRECESS THE SPIN AXIS. A TAPE RECORDER WITH 1-HR CAPACITY WAS INCLUDED ON THE SATELLITE. THE SATELLITE COULD BE PROGRAMMED TO TAKE RECORDED OBSERVATIONS FOR FOUR DIFFERENT TIME PERIODS FOR EACH FULL RECORDING PERIOD. THE RECORDER WAS DUMPED ONLY AT OTTAWA. FOR NON-TAPE-RECORDED OBSERVATIONS, DATA FOR THE SATELLITE AND SUBSATELLITE REGIONS COULD BE OBSERVED AND TELEMETERED WHEN THE SPACECRAFT WAS IN THE LINE OF SIGHT OF TELEMETRY STATIONS. THE SELECTED TELEMETRY STATIONS WERE IN AREAS THAT PROVIDED PRIMARY DATA COVERAGE NEAR THE 80-DEG W MERIDIAN, PLUS AREAS NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, NORWAY, INDIA, JAPAN, ANTARCTICA, NEW ZEALAND AND CENTRAL AFRICA. NO TAPE RECORDED DATA ARE AVAILABLE AFTER JANUARY 30, 1970, BECAUSE OF FAILURE OF THE RECORDER. THE ION MASS SPECTROMETER FAILED ABOUT 3 DAYS AFTER LAUNCH. OTHER THAN THESE TWO FAILURES, DATA HAVE BEEN RECEIVED NOMINALLY SINCE LAUNCH. INITIALLY, 6 TO 9 HRS OF OBSERVATIONS WERE MADE DAILY, BUT BY THE SPRING OF 1973, ONLY 4 TO 5 HOURS OF OBSERVATIONS PER DAY WERE BEING MADE. THE DECREASE IN OBSERVATION TIME IS DUE TO A COMBINATION OF FUNDING AND POWER LIMITATIONS, AND SCHEDULING.

EXPERIMENT NAME- SWEEP FREQUENCY SOUNDER NSSDC ID 69-009A-01

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.H. WHITTEKER	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.E.K. LOCKWOOD	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.L. NELMS	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - J.E. JACKSON	NASA-GSFC	GREENBELT, MD
OI - J.W. KING	RSRS	SLOUGH, BUCKS, ENGLAND
OI - J. TURNER	DEPARTMENT OF INTERIOR	SYDNEY, AUSTRALIA

OI - C.	TAIES	CNET	PARIS, FRANCE
OI - O.	HOLT	THE AURORAL OBS.	TROMSO, NORWAY
OI - Y.	OGATA	RRL	TOKYO, JAPAN
OI - R.	RAGHAVARAO	PHYSICAL RESEARCH LAB	AHMEDABAD, INDIA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE ISIS 1 IONOSONDE WAS A RADIO TRANSMITTER/RECEIVER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND A RETURNED RADIO FREQUENCY PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .1 AND 20 MHZ WAS SAMPLED ONCE EVERY 19 OR 29 SEC. AND ONE OF SIX SELECTED FREQUENCIES WAS ALSO SOUNDED FOR A PERIOD OF 3 TO 5 SEC DURING THIS 19- OR 29-SEC PERIOD. IN ADDITION TO THE SWEEP AND FIXED FREQUENCY MODES OF OPERATION, A MIXED MODE WAS POSSIBLE WHERE THE TRANSMITTER FREQUENCY WAS FIXED AT 0.82 MHZ WHILE THE RECEIVER SWEEP. SEVERAL VIRTUAL HEIGHT (DELAY TIME) TRACES WERE NORMALLY OBSERVED DUE TO GROUND REFLECTIONS, PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC. VIRTUAL HEIGHT AT A GIVEN FREQUENCY WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND MODE OF PROPAGATION. THE STANDARD DATA FORM WAS AN IONOGRAM SHOWING VIRTUAL HEIGHT AS A FUNCTION OF FREQUENCY. TWO OTHER FORMS OF DATA WERE COMMONLY PREPARED FROM THE IONOGRAMS. THEY WERE DIGITAL FREQUENCY AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES AND COMPUTATIONS OF ELECTRON DENSITY PROFILES. PERFORMANCE TO DATE (JUNE 1973) HAS BEEN NOMINAL.

DATA SET NAME- IONOGRAM INVENTORY ON TAPE

NSSDC ID 69-009A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 013069 TO 042071 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS FILE INDEXES THE ISIS-1 IONOGRAMS (DATA SET 69-009A-01A) BY STATION PASS. IONOGRAMS CAN BE IDENTIFIED FROM THE FOLLOWING INFORMATION, WHICH IS CONTAINED IN THE FILE -- IONOGRAM QUALITY, TELEMETRY STATION, STOP AND START DATE FOR THE PASS (TIME AND LOCATION INCLUDING ALTITUDE), LOCATION AT WHICH THE ORIGINAL TELEMETRY TAPES ARE STORED AND AT WHICH THE IONOGRAMS WERE PREPARED, EXPERIMENT MODE OF OPERATION, AND ORBIT NUMBER. SOME INFORMATION RELATING TO EXPERIMENTS 69-009A-02, -03, AND -10 IS ALSO INCLUDED SINCE THESE EXPERIMENTS ARE CLOSELY RELATED TO THE SOUNDER OPERATION. FOR EXAMPLE, THE OPERATING FREQUENCY OF EXPERIMENT -02 (FIXED FREQUENCY) IS GIVEN, THE PRESENCE OF AGC TRACE (EXPERIMENT -10 DATA) IS NOTED, AND VLF OPERATION (EXPERIMENT -03) IS INDICATED. THIS INDEX, WHICH IS PREPARED FROM PHYSICAL INVENTORY OF FILM RECEIVED AND SATELLITE EPHEMERIDES IS ON ONE 7-TRACK, 556-BPI, BCD MAGNETIC TAPE AND IS UPDATED MONTHLY UNLESS LITTLE DATA ARE RECEIVED.

EXPERIMENT NAME- CYLINDRICAL ELECTROSTATIC PROBE

NSSDC ID 69-009A-07

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - L.H. BRACE NASA-GSFC GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO STUDY THE GLOBAL VARIATIONS OF ELECTRON TEMPERATURE AND ELECTRON CONCENTRATION AT SPACECRAFT (SC) ALTITUDES DURING SOLAR MAXIMUM, AND TO STUDY CHARACTERISTICS OF THE SC ION SHEATH. THIS CYLINDRICAL PROBE WAS A TYPE OF LANGMUIR PROBE THAT OBSERVED CURRENT FLOW TO THE PROBE FOR A GIVEN VOLTAGE PROFILE PLACED ON THE COLLECTOR. FROM THIS CURRENT-VOLTAGE PROFILE, THE ELECTRON DENSITY AND ELECTRON TEMPERATURE COULD BE CALCULATED. THERE WAS A BOOM PROBE AND AN AXIAL PROBE EXTENDING FROM THE SC. THE AXIAL PROBE EXTENDED 48.3 CM FROM THE SC, ALONG THE SPIN AXIS, AND WAS CENTERED AMONG THE FOUR TELEMETRY ANTENNAS ON THE UNDERSIDE OF THE SC. THIS PROBE WAS CAPABLE OF MEASUREMENTS UNDISTURBED BY THE SATELLITE MOTION ONLY WHEN THE PROBE PRECEDED THE SC IN ITS MOTION THROUGH THE PLASMA. THE BOOM PROBE EXTENDED HORIZONTALLY AND OUTWARD (IN SC FRAME OF REFERENCE) FROM A BOOM 1 M LONG, WHICH IN TURN EXTENDED FROM AN UPPER SURFACE OF THE SATELLITE AT AN ANGLE OF ABOUT 45 DEG TO THE SPIN AXIS. THIS PROBE PROVIDED SOME OBSERVATIONS DURING EACH SC SPIN CYCLE THAT WAS FREE OF SC WAKE EFFECTS. THE PROBES CONSISTED OF THREE CONCENTRIC, ELECTRICALLY ISOLATED, STAINLESS STEEL TUBES. THE OUTER (0.24-CM DIAM AND 23 CM LONG) TUBE FLOATED AT ITS OWN EQUILIBRIUM POTENTIAL AND SERVED TO PLACE THE COLLECTOR WELL AWAY FROM THE SC PLASMA SHEATH. THE CENTER TUBE (0.165-CM DIAM) EXTENDING 23 CM OUTWARD FROM THE OUTER TUBE ACTED AS AN ELECTRICAL GUARD FOR THE COLLECTOR. ITS ELECTRICAL POTENTIAL WAS CONTROLLED. THE COLLECTOR (0.058-CM DIAM) EXTENDED 23 CM OUTWARD FROM THE DRIVEN GUARD. DURING EACH 2-MIN SEQUENCE, A ONE VOLT-AMPERE CURVE WAS OBTAINED THAT CAN BE INTERPRETED IN ELECTRON DENSITIES OVER A RANGE FROM 100 TO 400,000 ELECTRONS PER CM SQ. THIS EXPERIMENT HAS OPERATED NOMINALLY SINCE LAUNCH.

DATA SET NAME- AVERAGED VALUES OF ELECTRON DENSITY AND NSSDC ID 69-009A-07A  
TEMPERATURE ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 013069 TO 013170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, PREPARED BY THE EXPERIMENTER, LIST ABOUT 12 MONTHS OF DENSITIES AND ELECTRON TEMPERATURES OBSERVED AT THE SATELLITE. THE DATA HAVE BEEN CALCULATED FROM THE TELEMETERED RETARDING POTENTIAL CURVES. INCLUDED IN THE LISTING FOR EACH DATA POINT ARE TELEMETRY STATION, ORBIT NUMBER, DATE AND TIME (UT AND LOCAL), GEOGRAPHIC AND MAGNETIC (MCILWAIN, DIP, INVARIANT, AND DIPOLE MODEL) LOCATIONS, HEIGHT ABOVE THE REFERENCE ELLIPSOID, SOLAR ZENITH ANGLE, SOLAR (F10.7) AND PLANETARY (AP) INDEXES, SATELLITE POTENTIAL, AND RECORD COUNT. TEMPERATURE DATA OCCUR ABOUT EVERY OTHER DATA POINT, ALTERNATING WITH ELECTRON DENSITY VALUES. GAPS IN TIME COVERAGE ARE USUALLY A FEW ORBITS OR LESS. THE DATA HAVE GAPS IN COVERAGE CAUSED PRIMARILY BY LACK OF A TAPE RECORDER ON THE SATELLITE AND LIMITATIONS OF EXPERIMENT SCHEDULING. THESE SAME DATA ARE AVAILABLE ON MICROFILM AS DATA SET 65-098A-07B. THIS DATA SET IS ON ONE FILE, OF 9-TRACK BCD, 800-BPI, MAGNETIC TAPE.

DATA SET NAME- AVERAGED VALUES OF ELECTRON DENSITY AND       NSSDC ID 69-009A-07B  
                  TEMPERATURE ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 013069 TO 013170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA, ON 16-MM MICROFILM, WERE PREPARED BY THE EXPERIMENTER AND LIST ABOUT 12 MONTHS WORTH OF DENSITIES AND ELECTRON TEMPERATURES OBSERVED AT THE SATELLITE. THE DATA HAVE BEEN CALCULATED FROM THE TELEMETERED RETARDING POTENTIAL CURVES. EACH DATA POINT REPRESENTS AVERAGED VALUES FROM ABOUT 15 RETARDING POTENTIAL CURVES. INCLUDED IN THE LISTINGS FOR EACH DATA POINT ARE TELEMETRY STATION, ORBIT NUMBER, DATE AND TIME (UT AND LOCAL), GEOGRAPHIC AND MAGNETIC (MCILWAIN, DIP, INVARIANT, AND DIPOLE MODEL) LOCATIONS, HEIGHT ABOVE THE REFERENCE ELLIPSOID, SOLAR ZENITH ANGLE, SOLAR (F10.7) AND PLANETARY (AP) INDEXES, SATELLITE POTENTIAL, AND RECORD COUNT. TEMPERATURE DATA OCCUR ABOUT EVERY OTHER DATA POINT, ALTERNATING WITH ELECTRON DENSITY VALUES. GAPS IN TIME COVERAGE ARE USUALLY A FEW ORBITS OR LESS. THE DATA GAPS IN COVERAGE ARE CAUSED PRIMARILY BY LIMITATIONS OF EXPERIMENT SCHEDULING. THESE SAME DATA ARE AVAILABLE ON TAPE AS DATA SET 69-009A-07A.

DATA SET NAME- ELECTRON DENSITY AND TEMPERATURE PLOTS IN       NSSDC ID 69-009A-07D  
                  BOOKS

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 013069 TO 060570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THESE REDUCED DATA PREPARED BY THE EXPERIMENTER SHOW PLOTS OF ABOUT 18 MONTHS OF OBSERVATION OF ELECTRON DENSITIES AND ELECTRON TEMPERATURE RECORDED AT THE SATELLITE. THE DATA HAVE BEEN CALCULATED FROM THE TELEMETERED RETARDING POTENTIAL CURVES, PRIMARILY FROM THE BOOM PROBE. FOUR SEPARATE GRAPHS SHOWING DIP LATITUDE APPEAR ON EACH PAGE, AND EACH PAGE CONTAINS 1 WEEK OF DATA. THE PLOTS (ONE PER GRAPH) ARE OF ELECTRON NUMBER DENSITY, ELECTRON TEMPERATURE, SATELLITE ALTITUDE, AND SATELLITE LOCAL TIME. GAPS IN TIME COVERAGE ARE USUALLY NOT NOTICEABLE, GENERALLY BEING A FEW ORBITS OR LESS. SUCH GAPS WERE CAUSED BY FAILURE OF THE TAPE RECORDER, WHICH OCCURRED ABOUT 1 YEAR AFTER LAUNCH, AND BY LIMITATIONS OF EXPERIMENT/SATELLITE SCHEDULING. A CONSIDERABLE AMOUNT OF THESE DATA ARE INCLUDED ON ANOTHER FORM IN DATA SETS 69-009A-07A AND 69-009A-07B.

EXPERIMENT NAME- COSMIC RADIO NOISE

NSSDC ID 69-009A-10

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE





AUTOMATIC IN OPERATION ALTHOUGH IT COULD BE REPROGRAMMED FROM EARTH DURING THE MISSION. THE SPACECRAFT WAS ORIENTED ENTIRELY TO PLANETARY DATA ACQUISITION, AND NO DATA WERE OBTAINED DURING THE TRIP TO MARS OR BEYOND MARS. MARINER 6 PASSED 3431 KM FROM MARS ON JULY 31, 1969. THE SPACECRAFT INSTRUMENTS TOOK TV IMAGES OF MARS AND MEASURED THE RADIO REFRACTIVITY AND UV AND IR EMISSIONS OF THE MARTIAN ATMOSPHERE. THE MISSION WAS A SUCCESS, AND DATA FROM IT WERE USED TO PROGRAM MARINER 7.

EXPERIMENT NAME- UV SPECTROMETER

NSSDC ID 69-014A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF COLORADO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.A.	BARTH	U OF COLORADO	BOULDER, CO
OI - C.W.	HORD	U OF COLORADO	BOULDER, CO
OI - J.B.	PEARCE	U OF COLORADO	BOULDER, CO

DATE LAST USABLE EXPERIMENT DATA RECORDED-073169

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

SPECTRAL MEASUREMENTS WERE MADE OF THE ULTRAVIOLET RADIATION EMITTED FROM THE MARTIAN ATMOSPHERE THROUGH RESONANCE SCATTERING OF SOLAR RADIATION FROM THE UPPER ATMOSPHERE AND THROUGH RESONANCE RERADIATION, FLUORESCENCE, AND PHOTOELECTRON EXCITATION OF NEUTRAL AND IONIC CONSTITUENTS FOUND IN THE LOWER PART OF THE ATMOSPHERE, SUCH AS CARBON MONOXIDE, MOLECULAR NITROGEN, AND IONIZED CARBON DIOXIDE. THE FOLLOWING PARAMETERS WERE DETERMINED -- THE PRESENCE OF CERTAIN ATOMS, IONS, AND MOLECULES IN THE UPPER AND LOWER ATMOSPHERE, THEIR RESPECTIVE SCALE HEIGHTS, THE DEGREE OF ATMOSPHERIC RAYLEIGH SCATTERING DUE TO CARBON DIOXIDE, AND THE SURFACE REFLECTIVITY IN THE UV. THE EXPERIMENT, LOCATED ON THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT, USED AN EBERT SCANNING SPECTROMETER WITH AN OCCULTING SLIT TELESCOPE AND A BAFFLING SYSTEM FOR THE ELIMINATION OF STRAY LIGHT. THE SPECTRAL RANGE, 1100 TO 4300 Å, WAS COVERED BY TWO CHANNELS -- A SHORT-WAVELENGTH PHOTOMETER SENSITIVE OVER THE 1100- TO 2150-Å BAND AND A LONG-WAVELENGTH PHOTOMETER WHICH DETECTED RADIATION IN THE 1900- TO 4300-Å RANGE. IN ADDITION, THE DESIGN OF THE ELECTRONIC SUBSYSTEM ALLOWED MEASUREMENTS OF THE LYMAN-ALPHA RADIATION (1216 Å) TO BE OBTAINED BEFORE NEAR ENCOUNTER. THE SPECTROMETER SCANNED ITS RANGE WITH A 3-SEC PERIOD AND GAVE A SPECTRUM WITH A 20-Å RESOLUTION. SOMEWHAT LESS THAN 30 MIN OF DATA WERE OBTAINED FROM BOTH CHANNELS DURING THE MARINER 6 NEAR-ENCOUNTER EQUATORIAL SCAN ON JULY 31, 1969. THE QUALITY OF THE DATA IS COMPARABLE TO THE BEST OBTAINED BY SOUNDING ROCKETS IN THE 130-KM AND ABOVE REGION OF THE EARTH'S ATMOSPHERE.

DATA SET NAME- UPPER ATMOSPHERE FAR UV, MIDDLE UV, AND  
LYMAN-ALPHA SPECTRA

NSSDC ID 69-014A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073169 TO 073169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE



QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, OBTAINED FROM THE EXPERIMENTER, IS CONTAINED ON 556-BPI, BINARY, 7-TRACK MAGNETIC TAPE GENERATED ON AN IBM 7094 COMPUTER. RANGE AND RANGE-RATE DATA ARE LISTED AS A FUNCTION OF TIME. ALSO INCLUDED ARE OTHER USEFUL PARAMETERS, SUCH AS THE STATION BEING USED. THE DATA, WHICH ARE AVAILABLE IN SINGLE PRECISION OR DOUBLE PRECISION FORM, COVER THE TIME PERIOD FROM MIDCOURSE MANEUVER THROUGH THE 30TH DAY AFTER THE MARS ENCOUNTER.

EXPERIMENT NAME- S-BAND OCCULTATION

NSSDC ID 69-014A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - A.J. KLIORÉ NASA-JPL PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-100069  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT THE CHANGES IN THE FREQUENCY, PHASE AND AMPLITUDE OF THE S-BAND (2300 MHZ) TRACKING AND TELEMETRY SIGNAL, IMMEDIATELY PRIOR TO AND FOLLOWING THE OCCULTATION OF THE SPACECRAFT BY THE PLANET, WERE USED TO DERIVE THE TEMPERATURE, PRESSURE, AND DENSITY OF THE LOWER GASEOUS ATMOSPHERE OF MARS, AND THE DENSITY OF CHARGED PARTICLES IN THE MARTIAN IONOSPHERE.

DATA SET NAME- S-BAND DOPPLER RESIDUALS/REFRACTIVITY  
DATA ON MAGNETIC TAPE

NSSDC ID 69-014A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 070069 TO 080069 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF DOPPLER RESIDUALS AND REFRACTIVITY DATA ON TWO 7-TRACK, 800-BPI, UNIVAC 1108, BINARY MAGNETIC TAPES. DATA ON BOTH ENTRANCE AND EXIT OCCULTATIONS FROM MARINER 6 (69-014A) AND MARINER 7 (69-030A) ARE INCLUDED ON THE TAPES. THE DATA ARE REDUCED DATA SUPPLIED TO NSSDC BY THE EXPERIMENTER.

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SPACECRAFT COMMON NAME- ESSA 9

NSSDC ID 69-016A

ALTERNATE NAMES- PL-691L, TOS-G

LAUNCH DATE- 02/26/69      SPACECRAFT WEIGHT IN ORBIT-      144.0 KG

FUNDING AGENCY- ESSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-110072  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF

EPDCH DATE- 02/26/69    ORBIT TYPE- GEOCENTRIC      ORBIT PERIOD- 115.2 MIN  
APOAPSIS- 1504. KM ALT    PERIAPSIS- 1423. KM ALT    INCLINATION- 101.790 DEG

SPACECRAFT BRIEF DESCRIPTION

ESSA 9 WAS A SUN-SYNCHRONOUS METEOROLOGICAL SATELLITE DESIGNED TO TAKE AND RECORD DAYTIME EARTH-CLOUD PICTURES ON A GLOBAL BASIS FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION FACILITY. THE SPACECRAFT WAS ALSO CAPABLE OF PROVIDING WORLDWIDE MEASUREMENTS OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE SPACECRAFT HAD ESSENTIALLY THE SAME CONFIGURATION AS THAT OF A TIROS SATELLITE, I.E., AN 18-SIDED RIGHT PRISM, 107 CM ACROSS OPPOSITE CORNERS AND 56 CM HIGH, WITH A REINFORCED BASEPLATE CARRYING MOST OF THE SUBSYSTEMS AND A COVER ASSEMBLY (HAT). ELECTRICAL POWER WAS PROVIDED FROM APPROXIMATELY 10,000 1- BY 2-CM SOLAR CELLS THAT WERE MOUNTED ON THE COVER ASSEMBLY AND BY 21 NICKEL-CADMIUM BATTERIES. TWO REDUNDANT ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT, WITH THEIR OPTICAL AXES PERPENDICULAR TO THE SPIN AXIS. TWO SETS OF FLAT PLATE RADIOMETERS WERE ALSO SUSPENDED ON OPPOSITE SIDES OF THE SATELLITE, BENEATH THE EDGE OF THE BASEPLATE. A PAIR OF CROSSED-DIPOLE COMMAND RECEIVER ANTENNAS PROJECTED OUT AND DOWN FROM THE BASEPLATE. A MONOPOLE TELEMETRY AND TRACKING ANTENNA EXTENDED OUTWARD FROM THE TOP OF THE COVER ASSEMBLY. THE SATELLITE SPIN RATE WAS CONTROLLED BY MEANS OF A MAGNETIC ATTITUDE SPIN COIL (MASC), WITH THE SPIN AXIS MAINTAINED NORMAL TO THE ORBITAL PLANE (CARTWHEEL ORBIT MODE) TO WITHIN PLUS OR MINUS 1 DEG. THE MASC WAS A CURRENT-CARRYING COIL MOUNTED IN THE COVER ASSEMBLY. THE MAGNETIC FIELD INDUCED BY THE CURRENT INTERACTED WITH THE EARTH'S MAGNETIC FIELD TO PROVIDE THE TORQUE NECESSARY TO MAINTAIN A DESIRED SPIN RATE OF 9.225 RPM. THE SPACECRAFT PERFORMED NORMALLY AFTER LAUNCH. THE RADIOMETER EXPERIMENT WAS TERMINATED IN MAY 1970. FOLLOWING THE SUCCESSFUL LAUNCH OF ITOS 1, ESSA 9 WAS TEMPORARILY DEACTIVATED. IT WAS REACTIVATED AFTER ITOS 1 ENDED ITS OPERATIONS. ESSA 9 WAS AGAIN TURNED OFF IN NOVEMBER 1972, WITH THE LAUNCHING OF NOAA 2.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR)

NSSDC ID 69-016A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - V.E. SUDMI	U OF WISCONSIN	MADISON, WI
OI - R.J. PARENT	U OF WISCONSIN	MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-040470  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONG-WAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM WAS COMPRISED OF FOUR INFRARED SENSORS, AN ANALOG-TO-DIGITAL CONVERTER, A COMMUTATOR, AND A TAPE RECORDER. TWO PAIRS OF RADIOMETERS WERE MOUNTED ON OPPOSITE SIDES OF THE SPACECRAFT. A CONE SHIELD WAS EMPLOYED ON TWO OF THE RADIOMETERS TO ISOLATE OR REDUCE ANY

RESPONSE DUE TO DIRECT SOLAR RADIATION. THE FIELD OF VIEW ON THE OTHER TWO INSTRUMENTS WAS UNRESTRICTED. BOTH TYPES OF RADIOMETERS USED A COATED (EITHER BLACK OR WHITE) ALUMINUM DISK AS THE SENSING ELEMENT. THE DISK TEMPERATURE WAS MEASURED BY TWO THERMISTORS HUNG ON THE BLACK SURFACE OF THE DISK. THE BLACK SURFACE RESPONDED TO THE SUM OF THE REFLECTED SOLAR, DIRECT SOLAR, AND EMITTED LONG-WAVE RADIATION. THE WHITE DISK REFLECTED IN THE VISUAL RANGE BUT ABSORBED IN THE INFRARED (7 TO 30 MICRON) RANGE. IDENTICAL EXPERIMENTS WERE FLOWN ON THE ESSA 3, 5, AND 7 SPACECRAFT. FOR A FULL DESCRIPTION OF THE ESSA FLAT PLATE RADIOMETER, SEE 'STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1966,' UNIVERSITY OF WISCONSIN, 111-129, MAR. 1967. THE RADIOMETER PERFORMED NORMALLY, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL APRIL 4, 1970. WHEN AN ELECTRONIC FAILURE OCCURRED IN THE TEMPERATURE CALIBRATION CIRCUITRY. THE EXPERIMENT WAS TURNED OFF ON MAY 21, 1970.

DATA SET NAME- LOW-RESOLUTION INFRARED (LRIR) DATA TAPES NSSDC ID 69-016A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 022569 TO 031370 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

LOW-RESOLUTION INFRARED (LRIR) DATA FROM THE ESSA 9 FLAT PLATE RADIOMETER EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK, 556-BPI, BINARY TAPES WERE PREPARED ON A CDC 6600 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, ORBITAL DATA, AND SPACECRAFT ATTITUDE PARAMETERS. ADDITIONAL DATA ON THE LRIR TAPES CONSISTS OF INSTRUMENT HOUSING TEMPERATURES AND DIAGNOSTIC AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT OF THE LRIR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN ESSA TECHNICAL REPORT NO. 42, 'OPERATIONAL PROCESSING OF LOW RESOLUTION INFRARED (LRIR) DATA FROM ESSA SATELLITES,' FEBRUARY 1968.

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SPACECRAFT COMMON NAME- APOLLO 9 NSSDC ID 69-018A  
ALTERNATE NAMES- PL-691M, SA-504

LAUNCH DATE- 03/03/69 SPACECRAFT WEIGHT IN ORBIT- 11205. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-031369  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 03/03/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 88.49 MIN  
APOAPSIS- 166. KM ALT PERIAPSIS- 166. KM ALT INCLINATION- 33.63 DEG

SPACECRAFT BRIEF DESCRIPTION

APOLLO 9, WHICH WAS COMPOSED OF A COMMAND MODULE (CM), THE COMMAND SERVICE MODULE (CSM), A LUNAR MODULE (LM), AND AN INSTRUMENT UNIT (IU), WAS LAUNCHED BY A SATURN V ROCKET ON MARCH 3, 1969, FROM CAPE KENNEDY INTO A NOMINAL ORBIT OF 102.3 BY 103.9 N.M. (166 BY 166 KM). MEMBERS OF THE CREW WERE J.R. MCDIVITT, COMMANDER, D. R. SCOTT, COMMAND MODULE PILOT, AND R. L. SCHWEIKART LUNAR MODULE PILOT. THE VEHICLE ROCKET HAD THREE STAGES, S-IC, S-II, AND S-IVB. THE COMMAND MODULE, A CONE-SHAPED CRAFT ABOUT 390 CM IN DIAMETER AT THE LARGE END, SERVED AS A COMMAND, CONTROL, AND COMMUNICATIONS CENTER. SUPPLEMENTED BY THE SM, IT PROVIDED ALL LIFE SUPPORT ELEMENTS FOR THE THREE CREWMEN. THE CM WAS CAPABLE OF ATTITUDE CONTROL ABOUT THREE AXES AND SOME LATERAL LIFT TRANSLATION. IT PERMITTED LM ATTACHMENT AND CM/LM INGRESS AND EGRESS AND SERVED AS A BUOYANT VESSEL AT SEA. THE CSM PROVIDED THE MAIN PROPULSION AND MANEUVERING CAPABILITY. IT WAS JETTISONED JUST BEFORE CM ENTRY. THE CSM WAS A CYLINDER 390 CM IN DIAMETER. THE LUNAR MODULE WAS A TWO-STAGE VEHICLE THAT ACCOMMODATED TWO MEN AND COULD TRANSPORT THEM TO THE LUNAR SURFACE. ON APOLLO 9 THE CM AND LM WERE SEPARATED AND SOME MANEUVERS, INCLUDING DOCKING WERE COMPLETED, BUT THE LM DID NOT LAND BECAUSE THIS WAS AN EARTH-CIRCLING MISSION. THE LM HAD ITS OWN PROPULSION, COMMUNICATION, AND LIFE SUPPORT SYSTEMS. ALL SYSTEMS WORKED NEARLY NORMALLY.

EXPERIMENT NAME- 70-MM HASSELBLAD SPECTRAL TERRAIN  
PHOTOGRAPHS

NSSDC ID 69-018A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA HEADQUARTERS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.J. ALLENBY, JR. NASA HEADQUARTERS WASHINGTON, DC

DATE LAST EXPERIMENT DATA RECORDED-031369  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE 3065 MULTISPECTRAL TERRAIN PHOTOGRAPHY EXPERIMENT WAS DESIGNED (1) TO OBTAIN MULTISPECTRAL PHOTOGRAPHS FROM SPACE OVER SELECTED LAND AND OCEAN AREAS, (2) TO DETERMINE THE USEFULNESS OF THIS TYPE OF PHOTOGRAPHY FOR EARTH RESOURCES, AND (3) TO DEFINE FUTURE MULTISPECTRAL PHOTOGRAPHIC SYSTEMS. A TOTAL OF 584 PICTURES WERE OBTAINED BY FOUR ELECTRICALLY DRIVEN MODEL 500-EL HASSELBLAD CAMERAS. EACH WITH DIFFERENT FILM-FILTER COMBINATIONS AND FITTED WITH ZEISS F/2.8 80-MM PLANAR LENSES. THE CAMERAS WERE OPERATED SIMULTANEOUSLY, AND A MANUAL INTRAVOLOMETER WAS USED TO OBTAIN SYSTEMATIC OVERLAPPING (STEREO) PHOTOGRAPHS. THE CAMERAS WERE MOUNTED COAXIALLY ON A METAL BRACKET DESIGNED TO FIT THE CIRCULAR COMMAND MODULE HATCH WINDOW. THE CAMERAS WERE PRESET, AND THUS NO ADJUSTMENTS WERE MADE BY THE CREW. THE SHUTTERS WERE TRIGGERED SIMULTANEOUSLY AT PREDETERMINED INTERVALS (BETWEEN 5 AND 10 SEC) BY A MANUAL ELECTRIC SWITCH CONTROLLED BY AN ASTRONAUT. FILM-FILTER COMBINATIONS (AND NUMBER OF PHOTOS OBTAINED) WERE AS FOLLOWS - (1) INFRARED EKTACHROME TYPE SO-180 COLOR INFRARED FILM - PHOTAR 15 FILTER SENSITIVE TO 510 TO 900 MU (139), (2) PANATOMIC-X TYPE 3400 BLACK AND WHITE PANCHROMATIC FILM - PHOTAR 58 FILTER SENSITIVE TO 460 TO 610 MU (159), (3) INFRARED AEROGRAPHIC TYPE SO-246 BLACK AND WHITE INFRARED FILM - PHOTAR 89B FILTER SENSITIVE TO 700 TO 900 MU (127), AND (4) PANATOMIC-X TYPE 3400 BLACK AND WHITE PANCHROMATIC FILM - PHOTAR 25A FILTER SENSITIVE TO 580 MU INTO THE IR REGION (159). THE REGIONS PHOTOGRAPHED INCLUDED THE SOUTHWESTERN UNITED STATES (SOUTH OF 34 DEG N LAT), NORTHWESTERN MEXICO, THE SOUTH CENTRAL AND SOUTHEASTERN UNITED STATES, SOUTHERN MEXICO, AND THE CARIBBEAN-ATLANTIC REGION. THE HANDHELD PHOTOGRAPHY WAS OBTAINED SIMULTANEOUSLY WITH THE FOUR-CAMERA MULTISPECTRAL PHOTOGRAPHY. THE EXPERIMENT WAS VERY SUCCESSFUL AS TO QUANTITY AND QUALITY OF PHOTOGRAPHS OBTAINED. A MORE COMPLETE DESCRIPTION

OF THIS EXPERIMENT IS AVAILABLE IN 'APOLLO 9 MULTISPECTRAL PHOTOGRAPHIC INFORMATION,' NASA TM X-1957, APRIL 1970.

DATA SET NAME- COMPLETE SET OF COLOR POSITIVE 70-MM PHOTOS NSSDC ID 69-018A-01A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 030369 TO 031369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 786 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 786 FRAMES FROM SIX MAGAZINES OF PHOTOGRAPHS TAKEN DURING THE FLIGHT OF APOLLO 9. THE PHOTOS WERE TAKEN USING A HANDHELD HASSELBLAD 500C CAMERA LOADED WITH EKTACHROME SO-368 FILM. THESE MAGAZINES CONTAIN TERRAIN PHOTOS TAKEN SIMULTANEOUSLY WITH THE FOUR-CAMERA MULTISPECTRAL PHOTOGRAPHY EXPERIMENT. ALSO ON THE FILM ARE PHOTOS OF DOCKING AND EVA MANEUVERS, THE CM AND LM, AND CLOUD FORMATIONS. REQUESTS FOR THE PHOTOGRAPHY MAY BE MADE TO TECHNOLOGY APPLICATION CENTER, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO 87106.

DATA SET NAME- COLOR MULTISPECTRAL POSITIVE 70-MM INFRARED PHOTOS NSSDC ID 69-018A-01B

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 030369 TO 031369 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 584 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS ONE MAGAZINE (139 PHOTOS) OF INFRARED EKTACHROME TYPE SO-180 COLOR POSITIVE FILM, ONE MAGAZINE (127 PHOTOS) OF INFRARED AEROGRAPHIC TYPE SO-246 BLACK AND WHITE POSITIVE FILM, AND TWO MAGAZINES (318 PHOTOS) OF PANATOMIC-X TYPE 3400 BLACK AND WHITE POSITIVE FILM MAINTAINED ON ONE 70-MM REEL. THESE MAGAZINES CONTAIN ALL THE DATA RETURNED BY THE MULTISPECTRAL PHOTOGRAPHY EXPERIMENT - 127 FOUR-CAMERA SETS OF PHOTOGRAPHS SHOWING A SIGNIFICANT PORTION OF CLOUD-FREE LAND MASS AREAS. THE MAGAZINES INCLUDE FRAMES OF NORTHERN MEXICO, THE COLORADO, YUMA, CHIHUAHUA, AND SONORA DESERTS, THE FORESTED MOUNTAINS, THE GREAT PLAINS, THE MISSISSIPPI VALLEY, THE SOUTHERN APPALACHIANS AND THE ADJACENT PIEDMONT, AND THE SOUTH EASTERN COASTAL PLAIN. THE QUALITY OF THESE PHOTOGRAPHS RANGES FROM VERY GOOD TO EXCELLENT. THESE DATA ARE AVAILABLE TO INVESTIGATORS IN THE NASA EARTH RESOURCES PROGRAM FROM THE EARTH RESOURCES DIVISION, NASA-JSC, HOUSTON, TEXAS. OTHER REQUESTS SHOULD BE MADE TO TECHNOLOGY APPLICATION CENTER, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NEW MEXICO, 87106.

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SPACECRAFT COMMON NAME- MARINER 7  
ALTERNATE NAMES- PL-691F, MARINER MARS 69B

NSSDC ID 69-030A

LAUNCH DATE- 03/27/69 SPACECRAFT WEIGHT IN ORBIT- 380. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-10069  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 03/27/69 ORBIT TYPE- HELIOCENTRIC ORBIT PERIOD- 517. DAYS  
APOAPSIS- 1.52 AU RAD PERIAPSIS- 1.0 AU RAD INCLINATION- 0. DEG

#### SPACECRAFT BRIEF DESCRIPTION

MARINER 7 WAS THE SEVENTH IN A SERIES OF SPACECRAFT USED FOR PLANETARY EXPLORATION IN THE FLYBY MODE. IT WAS IDENTICAL TO THE MARINER 5 SPACECRAFT. MARINER 7 WAS ATTITUDE STABILIZED IN THREE AXES (REFERENCED TO THE SUN AND THE STAR CANOPUS). THE SPACECRAFT WAS SOLAR POWERED AND CAPABLE OF CONTINUOUS TELEMETRY TRANSMISSION, AND IT WAS FULLY AUTOMATIC IN OPERATION ALTHOUGH IT COULD BE REPROGRAMMED FROM EARTH DURING THE MISSION. THE SPACECRAFT WAS ORIENTED ENTIRELY TO PLANETARY DATA ACQUISITION, AND NO DATA WERE OBTAINED DURING THE TRIP TO MARS OR BEYOND MARS. MARINER 7 PASSED 3430 KM FROM MARS ON AUGUST 5, 1969. THE SPACECRAFT INSTRUMENTS TOOK TV IMAGES OF MARS AND MEASURED THE RADIO REFRACTIVITY AND UV AND IR EMISSIONS OF THE MARTIAN ATMOSPHERE. THE MISSION WAS A SUCCESS.

EXPERIMENT NAME- MARS TV CAMERA

NSSDC ID 69-030A-01

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.B. LEIGHTON CAL TECH PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-080569  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

TWO TELEVISION VIDICON CAMERAS, ONE OF MEDIUM RESOLUTION (WIDE ANGLE) AND THE OTHER OF HIGH RESOLUTION (NARROW ANGLE), WERE PART OF THE MARINER 7 SCIENTIFIC INSTRUMENTATION. THE WIDE-ANGLE CAMERA, WHICH HAD A FIELD OF VIEW OF 11 DEG BY 14 DEG AND A FOCAL LENGTH OF 50 MM, ENCOMPASSED 100 TIMES MORE SURFACE AREA THAN THE NARROW-ANGLE CAMERA AND WAS USED ONLY FOR NEAR-ENCOUNTER PICTURES. THE NARROW-ANGLE CAMERA, WHICH WAS USED FOR BOTH NEAR- AND FAR-ENCOUNTER PICTURES, HAD A FOCAL LENGTH OF 508 MM AND PROVIDED 10 TIMES THE LINEAR RESOLUTION OF THE WIDE-ANGLE CAMERA. CAMERA SHUTTERS WERE ALTERNATED AND TIMED TO PROVIDE OVERLAPPING OF THE WIDE-ANGLE AND NARROW-ANGLE PICTURES, PROVIDING 126 PICTURES FROM THE TWO SYSTEMS -- 33 NEAR-ENCOUNTER AND 93 FAR-ENCOUNTER. THE NEAR-ENCOUNTER PICTURES WERE TAKEN BETWEEN 20 MIN 26 SEC BEFORE CLOSEST APPROACH AND 2 MIN 6 SEC AFTER CLOSEST APPROACH ALONG A ROUGHLY NORTH-SOUTH COURSE THAT INTERSECTED THE MARINER 6 TRACK AND INCLUDED THE MARTIAN SOUTH POLAR CAP. THE FAR-ENCOUNTER PICTURES WERE OBTAINED IN THREE SERIES OF OPERATIONS BETWEEN 68 HR AND 5 HR BEFORE CLOSEST APPROACH. TWO FRACTIONAL PICTURES WERE OBTAINED AT THE END OF THE FIRST TWO SERIES. THE PICTURE DATA WERE ENCODED AND RECORDED WITHIN THE ONBOARD TELEVISION AND DATA STORAGE SUBSYSTEMS. FOR EACH PICTURE PRODUCED BY THE CAMERAS THREE SEPARATE ENCODED VERSIONS WERE TRANSMITTED TO EARTH -- A COMPOSITE ANALOG VIDEO (CAV) PICTURE, A DIGITAL VIDEO (DV) PICTURE, AND AN

EVERY TWENTY-EIGHTH (ETE) DIGITAL PICTURE. VIDEO RECONSTRUCTION CONSISTED OF COMBINING THE THREE DATA STREAMS (CAV, DV, AND ETE). THIS GENERATED VIDEO DATA AS THEY EXISTED COMING OUT OF THE CAMERA HEADS. THE TELEMETERED VIDEO MAGNETIC TAPES WERE DISPLAYED ON A CRT AND PHOTOGRAPHED ON 70-MM FILM TO PRODUCE THE RAW IMAGES. THEY WERE ALSO DIGITALLY PROCESSED BY AN IBM 360/44 COMPUTER FOR ENHANCEMENT AND BY AN IBM 360/75 FOR NOISE REMOVAL TO OBTAIN THE VERSIONS CONTAINED IN DATA SETS -01C THROUGH -01H. DETAILED INFORMATION ON THE DIGITAL PROCESSING PROCEDURES CAN BE FOUND IN 'DIGITAL PROCESSING OF THE MARINER 6 AND 7 PICTURES,' T. C. RINDFLEISH ET AL., J. GEOPHYS. RES., 76, 394-417, JANUARY 1971. ACCURATE TRAJECTORY AND RELATED GEOMETRICAL DATA CAN BE FOUND IN 'MARINER MARS 1969 SIMULATED TV PICTURES (FINAL),' J. K. CAMPBELL 1970, WHICH WAS ISSUED BY JPL.

DATA SET NAME- NEAR-ENCOUNTER PHOTOGRAPHIC MOSAICS                   NSSDC ID 69-030A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 080569 TO 080569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-           5 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE MOSAICS ASSEMBLED FROM THE NEAR-ENCOUNTER PHOTOGRAPHS OF MARINER 7. THE FIRST MOSAIC IS COMPRISED OF FRAMES 1 TO 3 AND SHOWS THE LIMB. THE SECOND MOSAIC INCLUDES FRAMES 4 TO 9 AND SHOWS THE MERIDIANI SINUS AREA. THE THIRD MOSAIC, FRAMES 11 TO 19, SHOWS THE POLAR CAP (PHOTOMETRIC VERSION), THE FOURTH MOSAIC, FRAMES 10 TO 20, COVERS THE POLAR CAP (MAXIMUM DISCRIMINABILITY VERSION), AND THE LAST MOSAIC, FRAMES 21 TO 31, COVERS NOACHIS-HELLAS. COLLECTIVELY, THESE MOSAICS CONTAIN ALL THE MARINER 7 NEAR-ENCOUNTER PICTURES EXCEPT THOSE TAKEN RIGHT AT THE TERMINATOR.

EXPERIMENT NAME- UV SPECTROMETER                                   NSSDC ID 69-030A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF COLORADO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.A.	BARTH	U OF COLORADO	BOULDER, CO
OI - C.W.	HORD	U OF COLORADO	BOULDER, CO
OI - J.B.	PEARCE	U OF COLORADO	BOULDER, CO

DATE LAST USABLE EXPERIMENT DATA RECORDED-080569

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

SPECTRAL MEASUREMENTS WERE MADE OF THE ULTRAVIOLET RADIATION EMITTED FROM THE MARTIAN ATMOSPHERE THROUGH RESONANCE SCATTERING AND THROUGH RESONANCE RERADIATION, FLUORESCENCE, AND PHOTOELECTRON EXCITATION OF NEUTRAL AND IONIC CONSTITUENTS (SUCH AS CARBON MONOXIDE, MOLECULAR NITROGEN, AND IONIZED CARBON DIOXIDE), FOUND IN THE LOWER PART OF THE ATMOSPHERE. THE FOLLOWING PARAMETERS WERE DETERMINED - THE PRESENCE OF CERTAIN ATOMS, IONS, AND MOLECULES IN THE UPPER AND LOWER ATMOSPHERE, THEIR RESPECTIVE SCALE HEIGHTS, THE DEGREE OF ATMOSPHERIC RAYLEIGH SCATTERING DUE TO CARBON DIOXIDE, AND THE SURFACE REFLECTIVITY IN THE UV. THE EXPERIMENT, LOCATED ON

THE BOTTOM OF THE OCTAGONAL SCAN PLATFORM OF THE SPACECRAFT, USED AN EBERT SCANNING SPECTROMETER WITH AN OCCULTING SLIT TELESCOPE AND A BAFFLING SYSTEM FOR THE ELIMINATION OF STRAY LIGHT. THE SPECTRAL RANGE, 1100 TO 4300 Å, WAS COVERED BY TWO CHANNELS--A SHORT-WAVELENGTH PHOTOMETER SENSITIVE OVER THE 1100 TO 2150 Å BAND AND A LONG-WAVELENGTH PHOTOMETER WHICH DETECTED RADIATION IN THE 1900 TO 4300 Å RANGE. IN ADDITION, THE DESIGN OF THE ELECTRONIC SUBSYSTEM ALLOWED MEASUREMENTS OF THE LYMAN-ALPHA RADIATION (1216 Å) TO BE OBTAINED BEFORE THE NEAR-ENCOUNTER MODE. THE SPECTROMETER SCANNED ITS RANGE WITH A 3-SEC PERIOD AND GAVE A SPECTRUM WITH A 20-Å RESOLUTION. SOMEWHAT LESS THAN 30 MIN OF DATA WERE OBTAINED FROM BOTH CHANNELS DURING THE MARINER 7 NEAR-ENCOUNTER SCAN OF HIGH LATITUDE AND POLAR REGIONS IN THE MARTIAN SOUTHERN HEMISPHERE ON AUGUST 5, 1969. THE QUALITY OF THE DATA IS COMPARABLE TO THE BEST OBTAINED BY SOUNDING ROCKETS IN THE 130 KM AND ABOVE REGION OF THE EARTH'S ATMOSPHERE.

DATA SET NAME- UPPER ATMOSPHERE FAR UV, MIDDLE UV, AND LYMAN-ALPHA SPECTRA      NSSDC ID 69-030A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 080569 TO 080569 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF TWO REFORMATTED 7-TRACK, 800-BPI, BINARY (ODD PARITY) MAGNETIC TAPES GENERATED ON A CDC 6400 COMPUTER. THESE TAPES WERE DERIVED FROM THE EXPERIMENTER'S ORIGINAL DATA TAPE, WHICH CONTAINED BOTH THE MARINER 6 AND 7 ULTRAVIOLET SPECTRA (UVS) DATA. THE DATA SET CONTAINS LESS THAN 30 MIN OF UV SPECTRA OBTAINED BY THE MARINER 7 UV SPECTROMETER EXPERIMENT ON AUGUST 5, 1969. THE FIRST TAPE CONTAINS FOUR FILES OF UV SPECTRA. FILE 1 CONTAINS UNPROCESSED DATA BETWEEN 1900 AND 4000 Å. FILE 2 CONTAINS THE SAME DATA AS FILE 1 CALIBRATED IN RAYLEIGHS/Å. FILE 3 CONTAINS UNPROCESSED DATA BETWEEN 1100 AND 1800 Å. FILE 4 CONTAINS THE SAME DATA AS FILE 3 CALIBRATED IN RAYLEIGHS/Å. THESE SPECTRA REPRESENT ATMOSPHERIC EMISSIONS FROM THE 90- TO 240-KM ALTITUDE REGION. THE FORMATS FOR THE FOUR FILES ARE IDENTICAL. THE FIRST RECORD OF EACH FILE PROVIDES A 6-WORD DESCRIPTION OF THE FILE CONTENTS INCLUDING INFORMATION ON WHETHER THE DATA ARE PROCESSED OR UNPROCESSED, WHETHER THE SPECTRA ARE MIDDLE UV (1900 TO 4000 Å) OR FAR UV (1100 TO 1800 Å), WHAT UNITS THE DATA ARE IN, AND THE RECORD SIZE. THE SUBSEQUENT RECORDS CONSIST OF A 10-WORD DESCRIPTION OF ONE SPECTRUM (THE SPECTRAL NUMBER, SPACECRAFT ID, ALTITUDE AT FIRST WAVELENGTH, ALTITUDE AT LAST WAVELENGTH, SLIT HEIGHT, SOLAR INCIDENT ANGLE, SOLAR EMISSION ANGLE, AND PHASE ANGLE) AND THE DATA FROM THAT SPECTRUM. EACH SPECTRUM IS PRESENTED AS ALTERNATING WORDS OF WAVELENGTH AND RELATIVE AMPLITUDE. THESE FOUR FILES OF DATA ARE UNIQUE IN THAT NO TIMES OF OBSERVATION ARE GIVEN. THE SECOND TAPE IN THIS DATA SET CONTAINS ONE FILE OF LYMAN-ALPHA (1216 Å) DATA DERIVED FROM EMISSIONS OBSERVED NEAR THE PLANETARY SURFACE TO 30,000 KM ALTITUDE. THE FILE CONSISTS OF A SERIES OF 3-WORD SEQUENCES THAT GIVE (1) THE INTEGRATED VALUE OF THE LYMAN-ALPHA SIGNAL IN RAYLEIGHS, (2) THE DISTANCE OF THAT SIGNAL IN KM, AND (3) THE ACTUAL TIME THE SIGNAL WAS TAKEN EXPRESSED IN UNITS OF GMT (IN DECIMAL FORM) TIMES 10 TO THE 4 POWER. THE QUALITY OF THE DATA IS EXCELLENT.

EXPERIMENT NAME- CELESTIAL MECHANICS

NSSDC ID 69-030A-05

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.D. ANDERSON                      NASA-JPL                      PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT, THE SPACECRAFT RANGE AND RANGE-RATE DATA WERE OBTAINED USING AN ONBOARD TRANSPONDER (ROUND TRIP DELAY TIME YIELDING SPACECRAFT RANGE FROM EARTH) AND THE SPACECRAFT TELEMETRY SIGNAL (DOPPLER SHIFT YIELDING THE RANGE RATE). THESE DATA WERE IN TURN USED TO PROVIDE ACCURATE DETERMINATIONS OF A VARIETY OF ASTRONOMICAL QUANTITIES SUCH AS THE MASS OF MARS, EPHEMERIDES OF MARS AND EARTH, AND THE SYMMETRY OF THE GRAVITY FIELD OF MARS.

DATA SET NAME- CELESTIAL MECHANICS RANGE AND RANGE-RATE    NSSDC ID 69-030A-05A  
LISTING ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 041269 TO 090769 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-    2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET OBTAINED FROM THE EXPERIMENTER, IS CONTAINED ON 556-BPI, BINARY, 7-TRACK MAGNETIC TAPE GENERATED ON AN IBM 7094 COMPUTER. RANGE AND RANGE-RATE DATA ARE LISTED AS A FUNCTION OF TIME. ALSO INCLUDED ARE OTHER USEFUL PARAMETERS, SUCH AS THE STATION BEING USED. THE DATA, WHICH ARE AVAILABLE IN SINGLE PRECISION OR DOUBLE PRECISION FORM, COVER THE TIME PERIOD FROM MIDCOURSE MANEUVER THROUGH THE 30TH DAY AFTER THE MARS ENCOUNTER.

EXPERIMENT NAME- S-BAND OCCULTATION

NSSDC ID 69-030A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - A.J. KLIORÉ                      NASA-JPL                      PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT, THE CHANGES IN THE FREQUENCY, PHASE, AND AMPLITUDE OF THE S-BAND (2300 MHZ) TRACKING AND TELEMETRY SIGNAL (IMMEDIATELY PRIOR TO AND FOLLOWING THE OCCULTATION OF THE SPACECRAFT BY THE PLANE) WERE USED TO DERIVE THE TEMPERATURE, PRESSURE, AND DENSITY OF THE LOWER GASEOUS ATMOSPHERE OF MARS, AND THE DENSITY OF CHARGED PARTICLES IN THE MARTIAN IONOSPHERE.



EARTH-ATMOSPHERE SYSTEM, (3) BOTH HIGH- AND MEDIUM-RESOLUTION INFRARED RADIOMETERS (HRIR AND MRIR) FOR YIELDING INFORMATION ON THE DISTRIBUTION AND INTENSITY OF INFRARED RADIATION EMITTED AND REFLECTED BY THE EARTH AND ITS ATMOSPHERE, (4) A MONITOR OF ULTRAVIOLET SOLAR ENERGY (MUSE) FOR DETECTING SOLAR UV RADIATION, (5) AN IMAGE DISSECTOR CAMERA SYSTEM (IDCS) FOR PROVIDING DAYTIME CLOUDCOVER PICTURES IN BOTH REAL-TIME MODE, USING THE REAL TIME TRANSMISSION SYSTEM (RTTS), AND TAPE RECORDER MODE, USING THE HIGH DATA RATE STORAGE SYSTEM, (6) A RADIOISOTOPE THERMOELECTRIC GENERATOR (RTG), SNAP-19, TO ASSESS THE OPERATIONAL CAPABILITY OF RADIOISOTOPE POWER FOR SPACE APPLICATIONS, AND (7) AN INTERROGATION, RECORDING, AND LOCATION SYSTEM (IRLS) EXPERIMENT DESIGNED TO LOCATE, INTERROGATE, RECORD, AND RETRANSMIT METEOROLOGICAL AND GEOPHYSICAL DATA FROM REMOTE COLLECTION STATIONS. NIMBUS 3 WAS SUCCESSFUL AND PERFORMED NORMALLY UNTIL SEPTEMBER 25, 1970, WHEN THE REAR HORIZON SCANNER FAILED. WITHOUT THIS HORIZON SCANNER, IT WAS IMPOSSIBLE TO MAINTAIN PROPER SPACECRAFT ATTITUDE, THUS MAKING MOST EXPERIMENTAL OBSERVATIONS USELESS. ALL SPACECRAFT OPERATIONS WERE TERMINATED ON JANUARY 22, 1972.

EXPERIMENT NAME- SATELLITE INFRARED SPECTROMETER (SIRS) NSSDC ID 69-037A-04

ORIGINAL EXPERIMENT INSTITUTION- NOAA-NESS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - D.Q.	MARK	NOAA-NESS	SUITLAND, MD
OI - D.T.	HILLEARY	NOAA-NESS	SUITLAND, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-062170

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 3 SATELLITE INFRARED SPECTROMETER (SIRS) EXPERIMENT WAS DESIGNED TO INDIRECTLY DETERMINE THE VERTICAL TEMPERATURE PROFILES OF THE ATMOSPHERE BY MEASURING THE INFRARED RADIATION EMITTED FROM THE EARTH AND ITS ATMOSPHERE IN SEVEN SPECTRAL INTERVALS IN THE CARBON DIOXIDE BAND (13 TO 15 MICRONS) AND ONE INTERVAL IN THE ATMOSPHERIC WINDOW CENTERED AT 11.1 MICRONS. THE MAIN COMPONENTS OF THE FASTIE-EBERT FIXED-GRATING SPECTROMETER CONSISTED OF (1) A PLANE, LIGHT-COLLECTING MIRROR TO PROVIDE A SINGLE EARTH-VIEWING BEAM FIXED IN THE VERTICAL, (2) A ROTATING CHOPPER MIRROR, (3) A SPHERICAL MIRROR, (4) A 12.7-CM DIFFRACTION GRATING WITH 1250 LINES PER INCH, (5) A SET OF EIGHT EXIT SLITS WITH A SINGLE INTERFERENCE FILTER, (6) EIGHT WEDGE-IMMERSED THERMISTOR BOLOMETERS, (7) A BLACKBODY RADIATION SOURCE FOR CALIBRATION, AND (8) EIGHT PREAMPLIFIERS AND EIGHT OPERATIONAL AMPLIFIERS. THE INCOMING RADIATION WAS CHOPPED, SPECTRALLY DISPERSED BY THE DIFFRACTION GRATING, FOCUSED ON THE EXIT SLITS AS A SPECTRUM BY THE SPHERICAL MIRROR, AND CONVERTED TO ELECTRICAL SIGNALS. THE SIGNALS WERE THEN AMPLIFIED AND STORED ON MAGNETIC TAPE FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION STATION. THE INSTRUMENT FIELD OF VIEW WAS 11.5 BY 11.5 DEG CENTERED ON NADIR. THIS PROVIDED DATA OVER AN AREA ROUGHLY 120 KM ON A SIDE AT A SATELLITE HEIGHT OF 1100 KM. DATA FROM THE 11.1-MICRON CHANNEL YIELDED SURFACE AND/OR CLOUDTOP TEMPERATURES. DATA FROM THE CARBON DIOXIDE BAND COULD BE USED TO GENERATE TEMPERATURE-PRESSURE PROFILES BY A MATHEMATICAL INVERSION TECHNIQUE. THE RESULTING TEMPERATURES HAD RMS ERRORS SLIGHTLY LESS THAN 1 DEG C. THE SIRS EXPERIMENT WAS SUCCESSFUL, AND GOOD DATA WERE OBTAINED FROM LAUNCH THROUGH JUNE 21, 1970, WHEN THE EXPERIMENT WAS TURNED OFF AND ALL DATA ACQUISITION EFFORT WAS TRANSFERRED TO THE SIRS EXPERIMENT ON NIMBUS 4.

DATA SET NAME- SIRS RADIANCE VALUES ON TAPE

NSSDC ID 69-037A-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 041469 TO 062170 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 60 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 7-TRACK, BINARY, 556-BPI MAGNETIC TAPES AT NSSDC CONTAINING REDUCED RADIANCE VALUES. (DERIVED TEMPERATURE PROFILES FROM THESE VALUES, WHICH HAVE BEEN USED IN NATIONAL METEOROLOGICAL PRODUCTS, ARE ARCHIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, N.C.). THE TAPES WERE PRODUCED ON A CDC 6600 COMPUTER. AN IDENTICAL SET OF 556-BPI TAPES GENERATED ON AN IBM 7094 IS ALSO AVAILABLE. THE FIRST RECORD OF EACH ORBIT CONTAINS INFORMATION IDENTIFYING THE ORBIT AND A SUMMARY OF THE INSTRUMENT STATUS THROUGHOUT THE ORBIT. THE FOLLOWING RECORDS CONTAIN THE RADIANCE VALUES ALONG WITH CALIBRATION DATA, LATITUDE, LONGITUDE, AND TIME OF EACH OBSERVATION. FOR A MORE COMPLETE DESCRIPTION OF THE TAPE FORMAT AND A DISCUSSION OF THE DATA QUALITY, SEE 'THE NIMBUS III USER'S GUIDE,' AND 'THE NIMBUS III DATA CATALOG,' VOLUME 1, RESPECTIVELY.

EXPERIMENT NAME- IMAGE DISSECTOR CAMERA SYSTEM (IDCS)

NSSDC ID 69-037A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G.A. BRANCHFLOWER NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-092570  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 3 IMAGE DISSECTOR CAMERA SYSTEM (IDCS) WAS DESIGNED TO TAKE DAYTIME CLOUDCOVER PHOTOGRAPHS. THE PICTURES COULD BE TRANSMITTED TO APT STATIONS USING THE REAL-TIME TRANSMISSION SYSTEM (RTTS) OR STORED ON MAGNETIC TAPE FOR SUBSEQUENT PLAYBACK TO GROUND ACQUISITION STATIONS. THE CAMERA WAS MOUNTED ON THE BOTTOM OF THE SATELLITE SENSORY RING AND POINTED VERTICALLY DOWN TOWARD THE EARTH AT ALL TIMES. THE IMAGE DISSECTOR WAS A SHUTTERLESS ELECTRONIC SCAN AND STEP TUBE MOUNTED BEHIND A WIDE-ANGLE (108 DEG) 5.7-MM FOCAL LENGTH LENS. SCANNING AND STEPPING FUNCTIONS OCCURRED CONTINUOUSLY WHILE THE SATELLITE PROGRESSED ALONG ITS ORBITAL PATH. THE FIELD OF VIEW OF THE OPTICS WAS 73.6 DEG IN THE DIRECTION OF FLIGHT AND 98.2 DEG IN A PLANE NORMAL TO THE DIRECTION OF FLIGHT. THE IMAGE WAS FOCUSED BY THE OPTICS ON A PHOTSENSITIVE SURFACE OF THE IMAGE DISSECTOR TUBE. A LINE-SCANNING BEAM SCANNED THE PHOTSENSITIVE SURFACE AT 4 HZ WITH A FRAME PERIOD OF 200 SEC. AT THE NOMINAL SPACECRAFT ALTITUDE OF 1100 KM, EACH RESULTING PICTURE WAS APPROXIMATELY 1400 KM ON A SIDE WITH A GROUND RESOLUTION OF 3 KM AT NADIR. THE EXPERIMENT WAS A SUCCESS AND PRODUCED GOOD DATA UNTIL SEPTEMBER 25, 1970, WHEN OPERATIONS WERE TERMINATED OWING TO SPACECRAFT YAW PROBLEMS. DATA FROM THIS EXPERIMENT ARE AVAILABLE THROUGH THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA.

DATA SET NAME- NIMBUS 3 DATA CATALOG

NSSDC ID 69-037A-06A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 041469 TO 053170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS CATALOG CONTAINS BLACK AND WHITE PICTORIAL MONTAGES FROM THE NIMBUS 3 IMAGE DISSECTOR CAMERA SYSTEM (IDCS). THESE MONTAGES CONSIST OF MINIATURE REPRODUCTIONS OF DAILY, DAYTIME PICTURES AND ARE MADE UP OF ADJACENT SWATHS OF DATA FROM SUCCESSIVE ORBITS. THE SATELLITE ORBIT NUMBER IS PRINTED BELOW EACH SWATH. A TRANSPARENT GRID OVERLAY PROVIDES GEOGRAPHIC REFERENCE. THESE MONTAGES MAY ASSIST A USER TO IDENTIFY HIS SPECIFIC IDCS FILM DATA REQUIREMENTS AND MAY BE DIRECTLY USEFUL FOR SOME RESEARCH. THE CATALOG CONSISTS OF 6 VOLUMES -- VOLUME 1 - APRIL 14 TO MAY 31, 1969, VOLUME 2 - JUNE 1969, VOLUME 3 - JULY 1969, VOLUME 4 - AUGUST 1969, VOLUME 5 - SEPTEMBER 1 TO DECEMBER 31, 1969, AND VOLUME 6 - JANUARY 1 TO MAY 1, 1970. HOWEVER, IDCS MONTAGES ARE ONLY CONTAINED IN THE FIRST FIVE VOLUMES. THIS CATALOG DOES NOT CONTAIN BACKGROUND INFORMATION ON THE SPACECRAFT OR EXPERIMENT, NOR IS THERE A DESCRIPTION OF THE TECHNIQUES USED IN PROCESSING THE DATA. SUCH INFORMATION IS CONTAINED IN THE 'NIMBUS 3 USERS GUIDE,' WHICH SHOULD BE USED WITH THIS CATALOG WHEN ORDERING DATA.

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SPACECRAFT COMMON NAME- APOLLO 10  
ALTERNATE NAMES- PL-692F

NSSDC ID 69-043A

LAUNCH DATE- 05/18/69 SPACECRAFT WEIGHT IN ORBIT- 9979. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-052669  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 05/22/69 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 88. MIN  
APOAPSIS- 123. KM ALT PERIAPSIS- 100. KM ALT INCLINATION- 12. DEG

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE SECOND APOLLO MISSION TO ORBIT THE MOON, CHECK OUT THE APOLLO SYSTEMS IN THE VICINITY OF THE MOON, AND OBTAIN NUMEROUS PHOTOGRAPHS OF THE LUNAR SURFACE. APOLLO 10 ACCOMPLISHED LUNAR ORBIT 4 DAYS AFTER THE MAY 18, 1969 LAUNCH. BOTH THE COMMAND SERVICE MODULE (CSM) AND THE LUNAR MODULE (LM), WHICH UNDOCKED AND CAME WITHIN 50,000 FT OF THE LUNAR SURFACE, PERFORMED SUCCESSFULLY. THE COMMAND MODULE (CM) AND CREW RETURNED TO EARTH ON MAY 26, 1969.



EXPERIMENT NAME- APOLLO 10 PHOTOGRAPHIC STUDIES

NSSDC ID 69-043A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - R.J. ALLENBY, JR. NASA HEADQUARTERS WASHINGTON, DC  
OI - J.H. SASSER NASA-JSC HOUSTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-052669

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

APOLLO 10 CARRIED PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AN LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF LANDING SITE NO. 2 FROM THE LOW POINT OF THE LM FLIGHT PATH, (3) RECORD OPERATIONAL ACTIVITIES OF THE CREW, AND (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS. CAMERA EQUIPMENT CARRIED ABOARD APOLLO 10 CONSISTED OF TWO 70-MM HASSELBLAD CAMERAS, EACH FITTED WITH 80-MM F/2.8 ZEISS PLANAR LENSES, A 250-MM TELEPHOTO LENS STOWED ABOARD THE COMMAND MODULE, AND ASSOCIATED EQUIPMENT (FILTERS, RINGSIGHT, SPOTMETER, AND AN INTERVALOMETER FOR STEREO STRIP PHOTOGRAPHY). FOR MOTION PICTURES, TWO 16-MM MAURER DATA ACQUISITION CAMERAS (ONE IN THE CSM AND ONE IN THE LM), WITH VARIABLE FRAME SPEED SELECTION, WERE USED. MOTION PICTURE CAMERA ACCESSORIES INCLUDED BAYONET-MOUNTED LENSES OF 75-, 18-, AND 5-MM FOCAL LENGTHS, A RIGHT-ANGLE MIRROR, A COMMAND MODULE BORESIGHT BRACKET, A POWER CABLE, AND AN ADAPTER FOR SHOOTING THROUGH THE SEXTANT. A DATA ANNOUNCEMENT BULLETIN PRESENTING THE PHOTOGRAPHIC COVERAGE AND FORMAT OF AVAILABLE DATA CAN BE OBTAINED FROM NSSDC BY REQUESTING NSSDC PUBLICATION 69-14.

DATA SET NAME- COMPLETE 70-MM HASSELBLAD PHOTOGRAPHY ON NSSDC ID 69-043A-01E  
4- BY 6-IN. B/W POSITIVE MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 052269 TO 052669 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 19 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 960 PHOTOGRAPHS REPRODUCED FROM SIX BLACK AND WHITE MAGAZINES ON 4- BY 6-IN. BLACK AND WHITE MICROFICHE. EACH MICROFICHE CARD CONTAINS 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. THESE MICROFICHE CARDS INCLUDE COVERAGE OF SEVERAL TARGETS OF OPPORTUNITY, THE SEA OF FERTILITY, THE FOAMING SEA, THE SEA OF TRANQUILITY, CRATUS CENSORINUS, MASKELYNE, SABINE, DELAMBRE, AND TARUNTIUS G AND K, AND THE LUNAR FAR SIDE.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON COLOR NSSDC ID 69-043A-01F  
POSITIVE 4- BY 6-IN. MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 051869 TO 052669 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 357 PHOTOGRAPHS REPRODUCED FROM TWO COLOR 70-MM MAGAZINES ON 4- BY 6-IN COLOR MICROFICHE. EACH MICROFICHE CARD CONTAINS FROM FIVE TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. WHEN ONE PHOTOGRAPH HAS BEEN LEFT OFF THE MICROFICHE CARD, THIS IS INDICATED IN THE SPACE WHERE THE PHOTOGRAPH NORMALLY WOULD HAVE APPEARED. OCCASIONALLY, A FEW BLACK AND WHITE FRAMES FOLLOW EACH OTHER IN CONSECUTIVE ORDER. THESE MICROFICHE CARDS INCLUDE COVERAGE OF THE EARTH, THE LM IN FREE FLIGHT, LM APPROACH AND RENDEZVOUS WITH THE CSM, AND SEVERAL TARGETS OF OPPORTUNITY.

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SPACECRAFT COMMON NAME- VELA 5A NSSDC ID 69-046D

ALTERNATE NAMES- VELA 5A (USAF), VELA 9 (TRW)

LAUNCH DATE- 05/23/69 SPACECRAFT WEIGHT IN ORBIT- 259.01 KG

FUNDING AGENCY- DDD-USAF

SPACECRAFT STATUS OF OPERATION- NORMAL

EPOCH DATE- 05/23/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6720. MIN  
APOAPSIS- 112000. KM ALT PERIAPSIS- 111000. KM ALT INCLINATION- 32.3 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 5A WAS ONE OF TWO SPIN-STABILIZED, ICOSAHEDRAL SATELLITES THAT COMPRISED THE FIFTH LAUNCH IN THE VELA PROGRAM. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT ABOUT 17 EARTH RADII, INCLINED AT 60 DEG TO THE ECLIPTIC, AND SPACED 180 DEG APART, THUS PROVIDING A MONITORING CAPABILITY OF OPPOSITE SIDES OF THE EARTH. THE OBJECTIVES OF THE SATELLITES WERE (1) TO STUDY SOLAR AND COSMIC X RAYS, EUV, SOLAR PROTONS, SOLAR WIND, AND NEUTRONS, (2) TO CARRY OUT RESEARCH AND DEVELOPMENT ON METHODS OF DETECTING NUCLEAR EXPLOSIONS BY MEANS OF SATELLITE-BORNE INSTRUMENTATION, AND (3) TO PROVIDE SOLAR FLARE DATA IN SUPPORT OF MANNED SPACE MISSIONS. VELA 5A, AN IMPROVED VERSION OF THE EARLIER VELA SERIES SATELLITES, HAD BETTER COMMAND CAPABILITIES, INCREASED DATA STORAGE, IMPROVED POWER REQUIREMENTS, BETTER THERMAL CONTROL OF OPTICAL SENSORS, AND GREATER EXPERIMENTATION WEIGHT. POWER SUPPLIES OF 120 W WERE PROVIDED BY 22,500 SOLAR CELLS MOUNTED ON THE SPACECRAFT'S 20 FACES. A ROTATION RATE OF 78 RPM DURING TRANSFER ORBITS AND 1 RPM AFTER FINAL ORBIT INSERTION MAINTAINED NOMINAL ATTITUDE CONTROL. EIGHT WHIP ANTENNAS AND FOUR STUB ANTENNA ARRAYS AT OPPOSITE ENDS OF THE SPACECRAFT STRUCTURE WERE USED FOR GROUND COMMANDS AND TELEMETRY. THE SATELLITE REMAINED ACTIVE IN ORBIT ALONG WITH THREE OTHER VELAS (5B, 6A AND B) AS OF OCTOBER 1972. HOWEVER, DETAILS ON THE CURRENT OPERATING STATUS OF VELA 5A ARE CLASSIFIED CONFIDENTIAL.

DATA SET NAME- COMPUTER LISTINGS OF SOLAR ECLIPTIC EPHEMERIS (R, THETA, PHI) ON MICROFILM NSSDC ID 69-046D-00F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052369 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS (SATELLITE PERIOD ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT - MONTH, DAY, YEAR, TIME OF DAY (IN SECONDS), GEOCENTRIC DISTANCE (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG), AND SOLAR ECLIPTIC LONGITUDE (IN DEG).

EXPERIMENT NAME- SOLAR X-RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A NSSDC ID 69-046D-02

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.H.	CHAMBERS	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.C.	FULLER	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - W.E.	KUNZ	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT, TWO IDENTICAL X-RAY DETECTORS OCCUPIED DIAMETRICALLY OPPOSED APEX POSITIONS TO MONITOR SOLAR X-RAYS IN SELECTED BANDS FROM 0.5 TO 60 A. EACH DETECTOR CONTAINED FOUR SENSORS -- THREE ION CHAMBERS AND ONE SCINTILLATOR-PHOTOMULTIPLIER. THE THREE ION CHAMBERS HAD A 1- TO 8-A WAVELENGTH RANGE, A 1- TO 16-A RANGE, AND A 1- TO 16-A AND 44- TO 60-A RANGE, RESPECTIVELY. THE ION CHAMBERS WERE HEMISPHERICAL SO THAT THE TWO DETECTORS AFFORDED NEARLY 4 PI STERADIAN COVERAGE. THE FOURTH SENSOR WAS COMPOSED OF SODIUM IODIDE CRYSTALS COUPLED TO PHOTOMULTIPLIERS. THE WAVELENGTH RANGE WAS 0.5 TO 3.0 A, AND THE SOLAR ASPECT ANGLES WERE APPROXIMATELY +70 TO -70 DEG.

DATA SET NAME- HARDCOPY PLOTS OF REDUCED SOLAR X-RAY FLUX VS TIME NSSDC ID 69-046D-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 052769 TO 051570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF VOLUMES OF INCIDENT SOLAR X-RAY FLUX PLOTTED (ON A LCG-LINEAR ARRAY) AS A FUNCTION OF

UNIVERSAL TIME (HOURS) IN HARDCOPY FORM AND IS PUBLISHED AS LASL REPORT LA 4454, VOLS. I, II, AND III. ONE DAY OF EQUIVALENT GRAY BODY FLUX (ERGS/SQ CM-SEC) FOR EACH OF THE THREE X-RAY CHANNELS ON VELA 5A AND 5B IS PLOTTED PER PAGE. THE UPPER CURVE ON EACH GRAPH IS THE EQUIVALENT FLUX IN THE 1- TO 16-A BAND DERIVED FROM THE ALUMINUM-MYLAR WINDOW ION CHAMBERS, THE MIDDLE CURVE IS THE EQUIVALENT FLUX IN THE 1- TO 8-A BAND DERIVED FROM THE BE WINDOW ION CHAMBERS, AND THE LOWER CURVE IS THE EQUIVALENT FLUX IN THE 0.3- TO 3.0-A BAND DERIVED FROM THE NAI SCINTILLATOR DATA. THIS FORMAT, HOWEVER, DOES REDUCE SOME OF THE DATA'S INHERENT TIME RESOLUTION. IN ADDITION, OWING TO THE COMPUTER PROCESSING OF THE DATA, THE COLLECTION OF PLOTS INCLUDES SOME UNRELIABLE ANOMALOUS PORTIONS. THESE ARE THE RESULT OF (1) SIGNIFICANT CONTRIBUTIONS TO OR SATURATION OF THE DETECTORS BY CHARGED PARTICLES, (2) ASYMMETRY IN THE RESPONSE OF A PAIR OF ION CHAMBERS GENERATING DOUBLE SETS OF POINTS, OR (3) BIT ERRORS. THE DATA COVER THE PERIOD MAY 27, 1969 TO MAY 15, 1970.

EXPERIMENT NAME- SOLAR WIND EXPERIMENT

NSSDC ID 69-0460-05

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - S.J.	BAME	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.R.	ASBRIDGE	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - H.E.	FELTHAUSER	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

TWO ELECTROSTATIC ANALYZER-ELECTRON MULTIPLIER UNITS WERE USED TO STUDY THE INTERPLANETARY SOLAR WIND (INCLUDING HEAVY IONS) AND PROTONS AND ELECTRONS IN THE MAGNETOTAIL. ENERGY ANALYSIS WAS ACCOMPLISHED BY CHARGING THE PLATES TO KNOWN VOLTAGE LEVELS AND ALLOWING THEM TO DISCHARGE WITH KNOWN RESISTANCE CAPACITOR (RC) TIME CONSTANTS. PARTICLES IN A 6-DEG BY 100-DEG FAN-SHAPED ANGULAR RANGE WERE ACCEPTED FOR ANALYSIS DURING A DECAYING VOLTAGE CYCLE. THE 100-DEG DIMENSION WAS PARALLEL TO THE SPACECRAFT SPIN AXIS FOR BOTH DETECTORS. ONE ANALYZER-MULTIPLIER UNIT STUDIED SOLAR WIND ELECTRONS IN THE ENERGY RANGE FROM 7.5 EV TO 18.5 KEV AND SOLAR WIND POSITIVE IONS (MAINLY PROTONS AND ALPHA PARTICLES) IN AN ENERGY PER CHARGE RANGE FROM 120 V TO 5 KV. THE OTHER UNIT STUDIED MAGNETOTAIL PROTONS OR ELECTRONS BETWEEN 20 EV AND 33 KEV AND SOLAR WIND HEAVY IONS IN THE ENERGY PER CHARGE RANGE BETWEEN 1 KV AND 8.3 KV.

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND  
PARAMETERS

NSSDC ID 69-0460-05A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 110769 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY

MEASUREMENTS ON THE VELA 3A, 3B, 5A, AND 5B SATELLITES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT, BULK VELOCITY, AND DENSITY. THE VELOCITY IS ACCURATE TO 3 PERCENT, AND THE DENSITY IS BELIEVED TO BE ACCURATE TO 50 PERCENT. HOWEVER, RELATIVE CHANGES IN THE DENSITY MEASURED OVER A SHORT TIME SPAN ARE ACCURATE TO 20 PERCENT. TYPICALLY, THERE ARE TWO OR THREE SETS OF PARAMETERS GIVEN FOR A PARTICULAR INSTRUMENT PER DAY, AND ON ABOUT 30 PERCENT OF THE DAYS THERE ARE NO DATA. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.

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SPACECRAFT COMMON NAME- VELA 5B NSSDC ID 69-046E  
ALTERNATE NAMES- VELA 5B (USAF), VELA 10 (TRW)

LAUNCH DATE- 05/23/69 SPACECRAFT WEIGHT IN ORBIT- 259.01 KG

FUNDING AGENCY- DOD-USAF

SPACECRAFT STATUS OF OPERATION- NORMAL

EPOCH DATE- 05/23/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6720. MIN  
APDAPSIS- 112000. KM ALT PERIAPSIS- 111000. KM ALT INCLINATION- 32.8 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 5B WAS ONE OF TWO SPIN-STABILIZED, ICOSAHEDRAL SATELLITES THAT COMPRISED THE SIXTH LAUNCH IN THE VELA PROGRAM. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT ABOUT 17 EARTH RADII, INCLINED AT 60 DEG TO THE ECLIPTIC, AND SPACED 180 DEG APART, THUS PROVIDING A MONITORING CAPABILITY OF OPPOSITE SIDES OF THE EARTH. THE OBJECTIVES OF THE SATELLITES WERE (1) TO STUDY SOLAR AND COSMIC X RAYS, EUV, SOLAR PROTONS, SOLAR WIND, AND NEUTRONS, (2) TO CARRY OUT RESEARCH AND DEVELOPMENT ON METHODS OF DETECTING NUCLEAR EXPLOSIONS BY MEANS OF SATELLITE-BORNE INSTRUMENTATION, AND (3) TO PROVIDE SOLAR FLARE DATA IN SUPPORT OF MANNED SPACE MISSIONS. VELA 5B, AN IMPROVED VERSION OF THE EARLIER VELA SERIES SATELLITES, HAD BETTER COMMAND CAPABILITIES, INCREASED DATA STORAGE, IMPROVED POWER REQUIREMENTS, BETTER THERMAL CONTROL OF OPTICAL SENSORS, AND GREATER EXPERIMENTATION WEIGHT. POWER SUPPLIES OF 120 W WERE PROVIDED BY 22,500 SOLAR CELLS MOUNTED ON THE SPACECRAFT'S 20 FACES. A ROTATION RATE OF 78 RPM DURING TRANSFER ORBITS AND 1 RPM AFTER FINAL ORBIT INSERTION MAINTAINED NOMINAL ATTITUDE CONTROL. EIGHT WHIP ANTENNAS AND FOUR STUB ANTENNA ARRAYS AT OPPOSITE ENDS OF THE SPACECRAFT STRUCTURE WERE USED FOR GROUND COMMANDS AND TELEMETRY. THE SATELLITE REMAINED ACTIVE IN ORBIT ALONG WITH THREE OTHER VELAS (5A, 6A AND 6B) AS OF OCTOBER 1972. HOWEVER, DETAILS ON THE CURRENT OPERATING STATUS OF VELA 5B ARE CLASSIFIED CONFIDENTIAL.

DATA SET NAME- COMPUTER LISTINGS OF SOLAR ECLIPTIC NSSDC ID 69-046E-00F  
EPHEMERIS (R, THETA, PHI) ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 052469 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS (SATELLITE PERIOD ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT--MONTH, DAY, YEAR, TIME OF DAY (IN SEC), GEOCENTRIC DISTANCE, (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG), AND SOLAR ECLIPTIC LONGITUDE (IN DEG).

EXPERIMENT NAME- SOLAR X-RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A , 44 TO 60 A NSSDC ID 69-046E-02

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.H. CHAMBERS	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.C. FULLER	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - W.E. KUNZ	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- NORMAL

**EXPERIMENT BRIEF DESCRIPTION**

TWO IDENTICAL X-RAY DETECTORS OCCUPIED DIAMETRICALLY OPPOSED APEX POSITIONS TO MONITOR SOLAR X-RAYS IN SELECTED BANDS FROM 0.5 TO 60 A. EACH DETECTOR CONTAINED FOUR SENSORS -- THREE ION CHAMBERS AND ONE SCINTILLATOR-PHOTOMULTIPLIER. THE THREE ION CHAMBER HAD A 1- TO 8-A WAVELENGTH RANGES, A 1- TO 16-A RANGE, AND A 1- TO 16-A AND A 44- TO 60-A RANGE, RESPECTIVELY. THE 44- TO 60-A SIGNAL WAS THE DIFFERENCE BETWEEN THE LAST TWO ION CHAMBERS. THE ION CHAMBERS WERE HEMISPHERICAL SO THAT THE TWO DETECTORS AFFORDED NEARLY 4 PI STERADIAN COVERAGE. THE FOURTH SENSOR WAS COMPOSED OF SODIUM IODIDE CRYSTALS COUPLED TO PHOTOMULTIPLIERS. THE WAVELENGTH RANGE WAS 0.5 TO 3.0 A, AND THE SOLAR ASPECT ANGLES WERE APPROXIMATELY +70 TO -70 DEG.

DATA SET NAME- HARD COPY PLOTS OF REDUCED SOLAR X-RAY FLUX VS. TIME NSSDC ID 69-046E-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 052769 TO 051570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 5 BOOK(S) OR BOUND VOLUME(S)

**DATA SET BRIEF DESCRIPTION**

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF VOLUMES OF INCIDENT SOLAR X-RAY FLUX PLOTTED (ON A LOG-LINEAR ARRAY) AS A FUNCTION OF UNIVERSAL TIME (HOURS) IN HARDCOPY FORM AND IS PUBLISHED AS LASL REPORT LA 4454, VOLS. I, II, AND III. ONE DAY OF EQUIVALENT GRAY BODY FLUX (ERTS/SQ CM-SEC) FOR EACH OF THE THREE X-RAY CHANNELS OF VELA 5A AND 5B IS PLOTTED PER PAGE. THE UPPER CURVE ON EACH GRAPH IS THE EQUIVALENT FLUX IN THE 1- TO 16-A BAND DERIVED FROM THE ALUMINUM-MYLAR WINDOW ION CHAMBERS, THE MIDDLE CURVE IS THE EQUIVALENT FLUX IN THE 1- TO 8-A BAND DERIVED FROM THE BE WINDOW ION CHAMBERS, AND THE LOWER CURVE IS THE EQUIVALENT FLUX IN THE 0.3- TO 3.0-A BAND DERIVED FROM THE NAI SCINTILLATOR DATA. THIS FORMAT, HOWEVER, DOES REDUCE SOME OF THE DATA'S INHERENT TIME RESOLUTION. IN ADDITION, OWING TO THE COMPUTER PROCESSING OF THE DATA, THE COLLECTION OF PLOTS INCLUDES

SOME UNRELIABLE ANOMALOUS PORTIONS. THESE ARE THE RESULT OF (1) SIGNIFICANT CONTRIBUTIONS TO OR SATURATION OF THE DETECTORS BY CHARGED PARTICLES, (2) ASYMMETRY IN THE RESPONSE OF A PAIR OF ION CHAMBERS GENERATING DOUBLE SETS OF POINTS, OR (3) BIT ERRORS. THE DATA COVER THE PERIOD MAY 27, 1969 TO MAY 15, 1970.

EXPERIMENT NAME- SOLAR WIND EXPERIMENT

NSSDC ID 69-046E-05

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - S.J. BAME LOS ALAMOS SCI LAB LOS ALAMOS, NM  
OI - J.R. ASBRIDGE LOS ALAMOS SCI LAB LOS ALAMOS, NM  
OI - H.E. FELTHAUSER LOS ALAMOS SCI LAB LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

TWO ELECTROSTATIC ANALYZER-ELECTRON MULTIPLIER UNITS WERE USED TO STUDY THE INTERPLANETARY SOLAR WIND (INCLUDING HEAVY IONS) AND PROTONS AND ELECTRONS IN THE MAGNETOTAIL. ENERGY ANALYSIS WAS ACCOMPLISHED BY CHARGING THE PLATES TO KNOWN VOLTAGE LEVELS AND ALLOWING THEM TO DISCHARGE WITH KNOWN RESISTANCE CAPACITOR (RC) TIME CONSTANTS. PARTICLES IN A 6-DEG BY 100-DEG FAN-SHAPED ANGULAR RANGE WERE ACCEPTED FOR ANALYSIS DURING A DECAYING VOLTAGE CYCLE. THE 100-DEG DIMENSION WAS PARALLEL TO THE SPACECRAFT SPIN AXIS FOR BOTH DETECTORS. ONE DETECTOR UNIT WAS USED TO STUDY MAGNETOTAIL PROTONS OR ELECTRONS BETWEEN 20 EV AND 33 KEV AND SOLAR WIND HEAVY IONS IN THE ENERGY PER CHARGE RANGE BETWEEN 1 KV AND 8.3 KV. THE OTHER DETECTOR UNIT, WHICH FAILED, WAS DESIGNED TO STUDY SOLAR WIND ELECTRONS IN THE ENERGY RANGE FROM 7.5 EV TO 18.5 KEV AND SOLAR WIND POSITIVE IONS (MAINLY PROTONS AND ALPHA PARTICLES) IN AN ENERGY PER CHARGE RANGE FROM 120 V TO 5 KV.

DATA SET NAME- PUBLISHED PRELIMINARY SOLAR WIND  
PARAMETERS

NSSDC ID 69-046E-05A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 110769 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PRELIMINARY SOLAR WIND PARAMETERS PRESENTED IN THE MONTHLY PUBLICATION 'SOLAR-GEOPHYSICAL DATA' ISSUED BY THE NOAA ENVIRONMENTAL RESEARCH LABORATORIES. THESE PARAMETERS ARE DETERMINED BY MEASUREMENTS ON THE VELA 3A, 3B, 5A, AND 5B SATELLITES. THE INFORMATION GIVEN CONSISTS OF DATE, TIME, SPACECRAFT, BULK VELOCITY, AND DENSITY. THE VELOCITY IS ACCURATE TO 3 PERCENT, AND THE DENSITY IS BELIEVED TO BE ACCURATE TO 50 PERCENT. HOWEVER, RELATIVE CHANGES IN THE DENSITY MEASURED OVER A SHORT TIME SPAN ARE ACCURATE TO 20 PERCENT. TYPICALLY, THERE ARE TWO OR THREE SETS OF PARAMETERS GIVEN FOR A PARTICULAR INSTRUMENT PER DAY, AND ON ABOUT 30 PERCENT OF THE DAYS THERE ARE NO DATA. THERE IS A 1-MONTH LAG BETWEEN THE TIME THE DATA ARE ACQUIRED AND THE TIME THE DATA ARE PUBLISHED.





ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G.W. SHARP LOCKHEED PALO ALTO, CA  
OI - T.J. CROWTHER LOCKHEED PALO ALTO, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-062871  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE MICROPHONE ATMOSPHERIC NEUTRAL DENSITY GAUGE EXPERIMENT MEASURED THE SPATIAL AND TEMPORAL VARIATIONS OF DENSITY IN THE ALTITUDE RANGE 250 TO 700 KM. THE INSTRUMENTATION CONSISTED OF A THIN METAL RIBBON SUSPENDED IN A MAGNETIC FIELD LOOKING ALONG THE SPACECRAFT'S VELOCITY VECTOR AND EXPOSED TO THE MOVING AIR STREAM. THE AIR ENTERING THE APPARATUS WAS MECHANICALLY CHOPPED SO THAT THE RIBBON WAS FORCED TO OSCILLATE IN THE MAGNETIC FIELD, THE AMPLITUDE OF THE OSCILLATIONS BEING PROPORTIONAL TO THE APPLIED PRESSURE. THE ELECTRICAL VOLTAGE GENERATED BY THE MOTION OF THE RIBBON THROUGH THE MAGNETIC FIELD WAS AMPLIFIED AND RECTIFIED TO PROVIDE A DC SIGNAL FOR TELEMETRY. FROM THE PRESSURE VALUES AND FROM KNOWLEDGE OF THE VELOCITY OF THE AIR STREAM (EFFECTIVE SPACECRAFT VELOCITY), ATMOSPHERIC DENSITY COULD BE DEDUCED. ONCE EVERY 2 MIN, THE AIR FLOW WAS STOPPED FOR 20 SEC TO ESTABLISH A ZERO REFERENCE VALUE FOR INFLIGHT CALIBRATION. FOR MORE DETAILS OF EXPERIMENT OPERATION, SEE J. GEOPHYS. RES., 67, 1375-1382. THE EXPERIMENT WAS A SUCCESS, AND GOOD DATA WERE OBTAINED FROM LAUNCH UNTIL JUNE 28, 1971, WHEN THE SPACECRAFT WAS DEACTIVATED.

DATA SET NAME- MICROPHONE DENSITY GAUGE DATA TAPES

NSSDC ID 69-051A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061169 TO 013170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE DGO 6 MICROPHONE DENSITY GAUGE DATA ARE AVAILABLE ON 7-TRACK, 800-BPI, ODD PARITY AND BINARY MAGNETIC TAPES. EACH WORD IS A 36-BIT WORD FLOATING POINT, THE LEFT NINE BITS FORMING THE CHARACTERISTIC. THE TAPES, SUBMITTED BY THE EXPERIMENTER, CONTAIN NEUTRAL DENSITY MEASUREMENTS TAKEN AT SATELLITE PERIGEE (APPROXIMATELY 400 KM), EXPRESSED IN UNITS OF TEN TO THE -15 GRAMS PER CUBIC CENTIMETER. DATA WERE OBSERVED CONTINUOUSLY AND TAPE RECORDED. FILES ON THE TAPE WERE ORDERED BY DAY OF MONTH, WITH OCCASIONAL DAYS OF DATA OMITTED DUE TO DATA REDUCTION PROBLEMS. THE NUMBER OF RECORDS PER FILE CORRESPOND TO THE NUMBER OF ORBITS PER DAY (AGAIN SOME ORBITS ARE MISSING). EACH RECORD CONSISTS OF AN 8 BY X MATRIX, (X EQUAL TO OR LESS THAN 200) WHOSE ELEMENTS IN ORDER ARE -- (1) DAY, (2) ORBIT NUMBER, (3) TIME -- UT, (4) ATMOSPHERIC DENSITY, (5) ALTITUDE -- KM, (6) GEODETIC LATITUDE, (7) GEODETIC LONGITUDE, AND (8) LOCAL TIME. THE DATA SET CONSISTS OF EIGHT TAPES, AND COVERS THE PERIOD FROM JUNE 11, 1969 TO JANUARY 31, 1970.

EXPERIMENT NAME- LYMAN-ALPHA PHOTOMETER

NSSDC ID 69-051A-12

ORIGINAL EXPERIMENT INSTITUTION- AEROSPACE CORP

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - M.A.	CLARK	AEROSPACE CORP	EL SEGUNDO, CA
OI - D.D.	ELLIOTT	AEROSPACE CORP	EL SEGUNDO, CA
OI - P.H.	METZGER	AEROSPACE CORP	EL SEGUNDO, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-062871

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO OBSERVE FROM WITHIN THE GEORONA WEAK EXTERNAL ENHANCEMENTS OF CELESTIAL LYMAN-ALPHA SKY. THE INSTRUMENTATION CONSISTED OF A SKY-SCANNING HYDROGEN LYMAN-ALPHA PHOTOMETER WITH A 3-A BANDWIDTH. THE INSTRUMENT WAS EQUIPPED WITH (1) AN INSERTABLE SRF2 SCATTERED LIGHT TESTING FILTER, (2) A HYDROGEN-FILLED TYPE 304 STAINLESS STEEL CELL RESONANCE FILTER (WHICH SUPPRESSED THE STRONG LYMAN-ALPHA AIRGLOW), (3) AN OXYGEN BANDWIDTH DETERMINING FILTER, (4) AN EMR TYPE 543-T PHOTOMULTIPLIER WITH AN NACL CATHODE, (5) A ROTATING PLANE MIRROR OPTIMIZED FOR REFLECTION AT 1216 A, AND (6) A PLATINUM-FOIL SECONDARY STANDARD INFLIGHT CALIBRATOR. THE PHOTOMETER WAS MOUNTED EXTERNAL TO THE SPACECRAFT ABOVE THE Z- AXIS DOOR, ALLOWING A CLEAR VIEW OF BOTH HORIZONS. THE SCANNER PLANE WAS CANTED 20 DEG FROM THE SPACECRAFT AXIS TO AVOID DIRECT OBSERVATION OF THE SUN, AND THEREFORE THE INSTRUMENT SCANNED MOST OF THE CELESTIAL SPHERE EXCLUSIVE OF A CONE OF 20 DEG HALF-ANGLE AROUND THE SOLAR AND ANTISOLAR POINTS. ZENITH OBSERVATIONS WERE MADE ONCE PER SCAN AND WERE TAKEN ALTERNATELY WITH THE RESONANCE CELL ON AND OFF. THE AUTOMATIC FUNCTIONS OF THE PHOTOMETER, WHICH HAD A FIELD OF VIEW OF 5 DEG (FWHM), WERE PROGRAMMED TO OPERATE FROM A CLOCK PULSE GENERATED BY THE ROTATING SCANNER MIRROR. THE CALIBRATION SIGNAL WAS GENERATED FOR FOUR OF EACH 32 TURNS OF THE SCANNER, WHICH TURNED ONCE EVERY 40 SEC, AND THE SRF2 FILTER WAS INSERTED FOR TWO OF EACH 16 TURNS. THE PHOTOMETER SENSITIVITY WAS ABOUT 1 RAYLEIGH (R) DURING EARLY OPERATIONS BUT DECAYED TO APPROXIMATELY 10 R AFTER A FEW DAYS. COUNT RATE DATA WERE OBTAINED DURING THE PERIOD JUNE 6 TO 18, 1969, AND WERE OF EXCELLENT QUALITY.

DATA SET NAME- REDUCED PHOTOMETER CURRENTS, ATTITUDE AND NSSDC ID 69-051A-12A  
EPHEMERIS DATA ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 060869 TO 060869 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET, OBTAINED FROM THE EXPERIMENTER, IS CONTAINED ON 800-BPI, BCD, 7-TRACK MAGNETIC TAPE. IT CONSISTS OF AN ID RECORD (CONTAINING THE SPACECRAFT AND EXPERIMENT NAME, THE ORBIT NUMBER IN WHICH DATA STARTS, THE DAY NUMBER, AND THE DATE OF THE BACKGROUND CORRECTION DATA USED) FOLLOWED BY ONE OR MORE DATA RECORDS. EACH DATA RECORD CONTAINS 40 DATA FRAMES. EACH DATA FRAME INCLUDES THE TIME (IN MSEC), THE SCANNER ANGLE (IN DEG), BOTH UNCORRECTED AND BACKGROUND CORRECTED COUNT RATES (IN COUNTS PER SEC), DATA ELECTROMETER CURRENT (IN AMP), AN EXPERIMENT STATUS FLAG, THE RIGHT ASCENSION/DECLINATION OF THE LOOK DIRECTION (IN DEG), THE ECLIPTIC LONGITUDE/LATITUDE OF THE LOOK DIRECTION (IN DEG), THE ALTITUDE OF THE SPACECRAFT (IN KM), THE GEODETIC LATITUDE/LONGITUDE OF THE SPACECRAFT (IN DEG), AND THE SUN-EARTH-SATELLITE ANGLE (IN DEG). THE DATA ARE NOT

CONTINUOUS BECAUSE EITHER (1) AT THE START OF EACH INPUT FILE SEVERAL SEC OF DATA ARE NEEDED TO INITIALIZE THE ROUTINE THAT ESTABLISHES THE SCANNER ANGLE, (2) THE COUNT RATE DATA FOR SCANNER ANGLES BETWEEN 300 AND 60 DEG ARE USELESS AND HAVE BEEN EDITED OUT, OR (3) DROPOUTS IN THE DATA STILL APPEAR IN THE FINAL TAPE.

EXPERIMENT NAME- UV PHOTOMETER

NSSDC ID 69-051A-13

ORIGINAL EXPERIMENT INSTITUTION- U OF COLORADO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.A.	BARTH	U OF COLORADO	BOULDER, CO
OI - J.B.	PEARCE	U OF COLORADO	BOULDER, CO
OI - E.F.	MACKEY	PACKARD-BELL	UNKNOWN

DATE LAST EXPERIMENT DATA RECORDED-030072  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE SCIENTIFIC OBJECTIVES OF THIS EXPERIMENT WERE (1) TO MEASURE THE INTENSITY OF THE HYDROGEN LYMAN-ALPHA EMISSION AT 1216 A AND OF THE ATOMIC OXYGEN EMISSION AT 1304 A IN THE AIRGLOW, (2) TO MEASURE THE COLUMNAR DENSITIES OF THE NEUTRAL ATOMIC HYDROGEN AND OXYGEN SPECIES ABOVE THE ORBIT, AND (3) TO MEASURE THE SPATIAL DISTRIBUTION (IN LOCAL TIME AND LATITUDE) AND THE TEMPORAL CHANGES (WITH SOLAR AND GEOPHYSICAL ACTIVITY) OF THE ABOVE MENTIONED DENSITIES AND EMISSION INTENSITIES. THREE-AXIS EARTH STABILIZATION OF THE MAIN SPACECRAFT BODY DURING NORMAL OPERATION PERMITTED THE PHOTOMETERS TO VIEW THE AIRGLOW IN THE LOCAL ZENITH. THE FIELD OF VIEW WAS 3 DEG AT HALF MAXIMUM. RADIATION MEASUREMENTS MADE WITH THIS TWO-CHANNEL PHOTOMETER EXPERIMENT COVERED THE WAVELENGTH INTERVAL FROM 1050 A TO 1800 A. CHANNEL 'B' DATA, IN THE WAVELENGTH INTERVAL FROM 1250 TO 1800 A, WERE USED TO REMOVE THE CONTRIBUTION OF THE NON-LYMAN-ALPHA RADIATION FROM THE CHANNEL 'A' DATA, WHICH RANGED FROM 1050 A TO 1800 A. THUS, THE INTENSITY OF THE AIRGLOW EMISSIONS AT 1216 AND 1304 A COULD BE INFERRED DIRECTLY FROM THE QUANTITIES CHANNEL A OUTPUT MINUS CHANNEL B, AND CHANNEL B OUTPUT, RESPECTIVELY. THE PHOTOMULTIPLIER TUBE ANODE CURRENT WAS DETECTED WITH A DC COUPLED STABILIZED ELECTROMETER. BOTH CHANNELS HAD A DYNAMIC RANGE OF 10 RAYLEIGHS TO 100 KILORAYLEIGHS. A COMMANDABLE SHUTTER WAS INCLUDED TO ALLOW MEASUREMENTS OF BACKGROUND. SINCE SCATTERED SUNLIGHT AFFECTED THE MEASUREMENTS WHEN THE SUN WAS WITHIN 34 DEG OF THE -Z AXIS, SUITABLE SHIELDING WAS PROVIDED. THE RADIATION BELT ABOVE 1000 KM (OR IN THE ANOMALY ABOVE 600 KM) CAUSED SPURIOUS SIGNALS THAT WERE PRESENT IN BOTH CHANNELS. THE TELEMETERED DATA ARE APPROXIMATELY PROPORTIONAL TO THE LOGARITHM OF THE ULTRAVIOLET SOURCE INTENSITY. INFIGHT CALIBRATION CHECKS AND AUTOMATIC DRIFT CORRECTIONS WERE INCORPORATED IN THE EXPERIMENT. REDUCED DATA INCLUDED EXPERIMENT OUTPUTS OF BOTH PHOTOMULTIPLIER CHANNELS AT 1-SEC INTERVALS. SPACECRAFT OPERATIONS WERE TERMINATED ON JUNE 28, 1971. AT THAT TIME, THIS EXPERIMENT WAS STILL OPERATIONAL, HAVING FUNCTIONED FOR MORE THAN 14,000 HR.

DATA SET NAME- AIRGLOW INTENSITIES AT 1304 A AND 1216 A NSSDC ID 69-051A-13A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 061269 TO 072470 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 110 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS REFORMATTED DATA SET SUPPLIED BY THE EXPERIMENTER, CONTAINS 7-TRACK, ODD PARITY MAGNETIC TAPES IN IBM 7094 FORMAT, WRITTEN AT 556 BPI. ALL TAPES CONTAIN 50 FILES OF INFORMATION, I.E., 50 ORBITS OF EXPERIMENT DATA AND SELECTED ATTITUDE-ORBIT PARAMETERS. EACH FILE IS COMPOSED OF ONE 22-WORD ORBIT INFORMATION RECORD, ONE 78-WORD ATTITUDE-ORBIT DATA RECORD, AND APPROXIMATELY ONE HUNDRED 438-WORD RECORDS, EACH CONTAINING 78 WORDS OF ATTITUDE ORBIT DATA AT 1-MIN INTERVALS AND 360 WORDS OF EXPERIMENT DATA AT 1-SEC INTERVALS. ALL WORDS ARE 36 BITS LONG. THE DATA CHANNELS A AND B OUTPUTS ARE IN DATA NUMBERS, WHICH RANGE IN MAGNITUDE FROM 0 TO 255. CONSTANTS ARE AVAILABLE TO CONVERT THESE DATA NUMBERS INTO KILORAYLEIGHS. THE PARAMETERS PROVIDED INCLUDE DATE AND TIME OF THE MEASUREMENTS AND THE SPACECRAFT POSITION RELATIVE TO THE EARTH, SUN, AND EARTH'S MAGNETIC FIELD.

EXPERIMENT NAME- COSMIC RAY EXPERIMENT

NSSDC ID 59-051A-20

ORIGINAL EXPERIMENT INSTITUTION- CAL TECH

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - E.C. STONE	CAL TECH	PASADENA, CA
OI - R.E. VOGT	CAL TECH	PASADENA, CA

DATE LAST EXPERIMENT DATA RECORDED-030072

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE ENERGY SPECTRA AND CHEMICAL COMPOSITION OF COSMIC-RAY PARTICLES OF BOTH SOLAR AND GALACTIC ORIGIN OVER SELECTED ENERGY INTERVALS USING THREE CHARGE PARTICLE TELESCOPES. FIRST A RANGE TELESCOPE WAS USED, COMPOSED OF SEVEN SOLID-STATE DETECTORS, D1 THROUGH D7, AND AN ANTICOINCIDENCE SHIELD DETECTOR, D8, WITH THRESHOLD ENERGIES FOR PROTONS AND ALPHA PARTICLES OF 1.0, 3.3, 18.5, 46.6, 156, 235, 315, AND 1 MEV/NUCLEON, RESPECTIVELY. THE OUTPUT OF EACH OF THE EIGHT DETECTORS WAS MONITORED SEPARATELY IN ADDITION TO THE COINCIDENCE MODES D1, NOT D8, D12 NOT D8 AND D2 NOT D8 (THIS MODE COULD BE CHANGED BACK AND FORTH ON COMMAND TO D23 NOT D8). THE TELESCOPE GEOMETRIC FACTOR VARIED AS A FUNCTION OF PARTICLE RANGE FROM 1.5 TO 0.19 CM SQ STER. SECOND A CERENKOV TELESCOPE WAS USED, COMPOSED OF TWO THIN SOLID-STATE DETECTORS, D1\* AND D2\*, A CERENKOV DETECTOR, D3\*, AND AN ANTICOINCIDENCE CUP, D4\*. THIS TELESCOPE WAS TO TRIGGER ONLY ON PARTICLES WITH Z FROM 1 THROUGH 12 WITH ENERGIES NO LESS THAN 400 MEV/NUCLEON. HOWEVER, IN ADDITION TO THIS COINCIDENCE D1\*, D2\*, D3\* NOT D4\*, THE INDIVIDUAL DETECTOR RATES D1\*, D2\*, D3\*, AN D4\* WERE ALSO MONITORED FOR USE IN DELETING ACCIDENTAL COINCIDENCES FROM THE D1\*, D2\*, D3\*, NOT D4\* MODE. THE TELESCOPE GEOMETRIC FACTOR WAS 2.8 CM SQ STER. THIRD, A FLARE TELESCOPE COMPOSED OF TWO SOLID-STATE DETECTORS, D5\*, AND D6\* WITH THRESHOLD ENERGIES FOR PROTONS AND ALPHA PARTICLES OF 3.3 AND 8.5 MEV/NUCLEON, RESPECTIVELY, WAS USED. THE OUTPUT FROM EACH DETECTOR WAS MONITORED AS WELL AS THE COINCIDENCE MODE D5\* AND D6\*, THE TELESCOPE GEOMETRIC FACTOR WAS 0.02 CM SQ STER. THREE 256-CHANNEL PULSE HEIGHT ANALYZERS WERE USED TO ANALYZE THE OUTPUT OF D1, D2, D3 OF THE RANGE TELESCOPE OR D1\*, D2\*, D3\* OF THE CERENKOV TELESCOPE, OR D5\*, D6\* (FOR D5\* D6\* EVENTS ONLY) OF THE FLARE TELESCOPE ONCE PER COUNTING RATE ACCUMULATION PERIOD. IN GENERAL, THE ACCUMULATION PERIOD RANGED FROM 0.02 TO 3.4 SEC



EXPERIMENT NAME- WHISTLER AND AUDIOFREQUENCY  
ELECTROMAGNETIC WAVES (F-25)

NSSDC ID 69-051A-25

ORIGINAL EXPERIMENT INSTITUTION- DARTMOUTH COLLEGE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - T. LAASPERE DARTMOUTH COLLEGE HANOVER, NH  
OI - M.G. MORGAN DARTMOUTH COLLEGE HANOVER, NH

DATE LAST USABLE EXPERIMENT DATA RECORDED-030072  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

TWO 60-FT ELECTRIC DIPOLE ANTENNAS WERE USED TO STUDY THE PROPAGATION AND CHARACTERISTICS OF WHISTLER-MODE WAVES IN THE IONOSPHERE OVER AN EXTENDED RANGE OF FREQUENCIES. FOUR 15-KHZ BROAD BANDS (0.02 TO 15 KHZ, 15 TO 30 KHZ, 92.5 TO 107.5 KHZ, AND 280 TO 295 KHZ) COULD BE RECEIVED IN REAL TIME, TWO 0.2-KHZ NARROW BANDS (AT 200 AND 540 KHZ) COULD BE TAPE RECORDED, AND A 0.02- TO 1000-KHZ BROADBAND SIGNAL COULD BE RECORDED. THE TAPE RECORDED DATA CONSISTED OF DIGITAL VALUES OF SIGNAL INTENSITIES. THE REAL-TIME DATA WERE NORMALLY CYCLED THROUGH EACH OF THE FOUR BANDS AT A GIVEN GAIN, RECYCLED AT A SECOND OVERLAPPING GAIN, AND FINALLY CYCLED AT A THIRD OVERLAPPING GAIN. THIS WHOLE 12-CYCLE STEP WAS THEN REPEATED. EACH OF THE STEPS IN THE CYCLE REQUIRED 18.4 SEC WHICH MEANS ALL BANDS WERE OBSERVED IN 1.26 MIN, AND ALL BANDS AT ALL GAINS WERE OBSERVED IN 3.7 MIN. THE AUTOMATIC CYCLING COULD BE INTERRUPTED FOR MANUAL CONTROL. THESE REAL-TIME DATA WERE TRANSMITTED ON SPECIAL PURPOSE TELEMETRY TO, AND OBSERVED NEAR, EIGHT LOCATIONS -- QUITO (QUI), ROSSMAN DR DGO CONTROL CENTER (RDS OR OCC), FAIRBANKS (SKA), MADAGASCAR (MAD), WINKFIELD (WNK), JOHANNESBURG (JOB), ORRORAL DR ACTON (ORR OR ACT), AND SANTIAGO (SNT). EVERY 0.144 SEC, THE NARROW-BAND (NB) RECEIVERS RECORDED SIGNAL INTENSITIES OF 200 KHZ SIGNALS FROM BBC ENGLAND, AND OF 540 KHZ SIGNALS FROM NEW MEXICO, OR FROM OTHER EMITTERS AT THOSE FREQUENCIES. THE TAPE RECORDED BROADBAND DETECTOR RECORDED SIGNAL INTENSITY EVERY 18.9 SEC, I.E., ONCE FOR EACH 123 NB OBSERVATIONS AT A GIVEN FREQUENCY. DIGITAL TAPE RECORDED DATA WERE OBSERVED ALMOST CONTINUOUSLY FROM LAUNCH UNTIL SPACECRAFT TURNOFF ON JUNE 28, 1971. REAL-TIME DATA WERE OBTAINED FROM TELEMETRY STATIONS ON ALL SCHEDULED DAYS (2 DAYS OUT OF 6 SINCE THIS WAS ONE OF THREE DIFFERENT EXPERIMENTS SHARING THE SAME SPECIAL PURPOSE TELEMETRY SYSTEM) OVER THE SAME TIME PERIOD. A SPECIAL OPERATION OF THE REAL-TIME BROADBAND RECEIVERS WAS MADE BY RRL, JAPAN, WITH OBSERVATIONS NEAR SIPLE STATION, ANTARCTICA, AND KASHIMA, JAPAN, FROM OCTOBER 1, 1971 TO MARCH 1972.

DATA SET NAME- VLF SPECTROGRAMS

NSSDC ID 69-051A-25A

AVAILABILITY OF DATA SET- DATA AVAILABLE FROM EXPERIMENTER

TIME PERIOD COVERED- 061069 TO 030470 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 2032 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF STANDARD SPECTROGRAMS RUN AT 15 IN. OF FILM PER MIN ON 2032 ROLLS OF 35-MM PAPER. EACH ROLL CONTAINS ONE STATION PASS

AND IS APPROXIMATELY 10 FT LONG. A SPECTROGRAM IS A GRAPH OF FREQUENCY (ORDINATE) VS TIME, WITH INTENSITY OF THE GRAPH TRACINGS RELATED TO SIGNAL INTENSITY. MOST PASSES CONSIST OF SPECTROGRAMS COVERING THE FOUR FREQUENCY BANDS OF .02 TO 15, 15 TO 30, 92.5 TO 107.5, AND 280 TO 295 KHZ IN TIME SEQUENCE. THE SAMPLING TIME IS 18.4 SEC FOR EACH BAND. THESE RECORDS WERE PREPARED BY THE EXPERIMENTER FROM ANALOG DATA ON MAGNETIC TAPE THAT WERE RECORDED AT TELEMETRY STATIONS IN REAL TIME. IDENTIFICATION INFORMATION IS NOTED ON THE HEADER OF EACH ROLL, AND STANDARD 'DOT' TIME CODES APPEAR ON THE EDGE OF THE SPECTROGRAMS. THE DATA WERE OBSERVED FROM REGIONS NEAR EIGHT TELEMETRY STATIONS BETWEEN JUNE 10, 1969 AND MARCH 4, 1970. SPECIFIC TIME PERIODS FOR WHICH DATA ARE AVAILABLE CAN BE IDENTIFIED FROM RECORDS AT NSSDC OR AT THE EXPERIMENTERS OFFICE. ALL ANALOG DATA (SEE DATA SET 69-051A-25C) HAVE BEEN MADE INTO SPECTROGRAMS. THESE SPECTROGRAMS ARE AVAILABLE ON 30-DAY LOAN IN SMALL QUANTITIES (UP TO FIVE ROLLS) AT NO COST, AND ARRANGEMENTS CAN BE MADE TO PROVIDE LARGER QUANTITIES OR TO PROVIDE SPECTROGRAMS PREPARED AT FILM TRANSPORT SPEEDS OTHER THAN 15 IN. PER MIN. 'ON LOAN' DATA IF NOT IN USE, CAN BE PROVIDED PROMPTLY. SPECIALLY PREPARED SPECTROGRAMS CANNOT NORMALLY BE PROVIDED IN LESS THAN 2 WEEKS, AND THEIR AVAILABILITY DEPENDS ON THE QUANTITY REQUIRED AND ON THE EXPERIMENTER'S TIME. THESE DATA ARE AVAILABLE FROM THE EXPERIMENTER, PROFESSOR T. LAASPERE, RADIO PHYSICS LABORATORY, THAYER SCHOOL OF ENGINEERING, DARTMOUTH COLLEGE, HANOVER, NEW HAMPSHIRE, 03755. (PHONE 603-646-2232).

DATA SET NAME- SUMMARY PRINTOUTS OF 0.2-1000 KHZ WB                   NSSDC ID 69-051A-25B  
                  AND NB (200 + 500 KHZ) VLF NOISE INTENSITY

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 123069 TO 123170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       8 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET SUPPLIED BY THE EXPERIMENTER CONSISTS OF TIME ORDERED, CALIBRATED LISTINGS OF ALL TAPE RECORDED NOISE INTENSITY DATA FROM THIS EXPERIMENT. DATA INTERVALS ARE AT 0.31 MIN (18.4 SEC). NARROW-BAND (NB) INTENSITIES AT 200 AND 540 KHZ ARE GIVEN IN VOLTS TIMES 10 TO THE -7, AND WIDE-BAND (WB) INTENSITIES IN VOLTS TIMES 10 TO THE -4. THE LISTING CONTAINS (1) SPACECRAFT ATTITUDE POWER CODES, (2) TIME, (3) AVERAGED (OR INSTANTANEOUS) INTENSITY VALUES FOR NB AND WB RECEIVERS, (4) EXPERIMENT STATUS CODES (COLUMNS PHI, L, AND Z, CONTAIN DATA PERTINENT ONLY TO THE IMPEDANCE OBSERVING PORTION OF THE EXPERIMENT), AND (5) MINIMUM AND MAXIMUM INTENSITY VALUES OF 128 OBSERVATIONS BY EACH NB RECEIVER. TO THE RIGHT OF THESE LISTINGS THE DATA ARE MACHINE PLOTTED WITH A LINEAR HORIZONTAL SCALE OF INTENSITY AND A VERTICAL LINEAR SCALE OF TIME. WHEN A SAWTOOTH PATTERN HEADS THIS GRAPH, THEN THE AVERAGED NB DATA LISTED AND PLOTTED RESULT FROM THE 128 OBSERVATIONS TAKEN DURING THE 18.4-SEC SUBCOMMUTATOR INTERVAL. WHEN THE SAWTOOTH IS MISSING, THE NB DATA ARE INSTANTANEOUS VALUES RATHER THAN AVERAGE VALUES. THERE WERE 261 PASSES FROM JANUARY THROUGH MAY 1969 WITH INSTANTANEOUS DATA VALUES. SINCE ONLY THE OBSERVATION TIMES ARE LISTED, LOCATIONS REQUIRE REFERENCE TO WORLD MAP DATA IN DATA SET 69-051A-00C.

DATA SET NAME- VLF AURAL RECORDING (.02 TO 30,                   NSSDC ID 69-051A-25C  
                  92 TO 107, AND 280 TO 295 KHZ) ON TAPE

AVAILABILITY OF DATA SET- DATA AVAILABLE FROM EXPERIMENTER

TIME PERIOD COVERED- 061069 TO 030470 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1376 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 1376 ANALOG MAGNETIC TAPES THAT CONTAIN RECORDED VLF SIGNALS RECEIVED IN FOUR FREQUENCY BANDS, 0.02 TO 15, 15 TO 30, 92.2 TO 107.5 AND 280 TO 295 KHZ. FOR MOST TAPES ALL FREQUENCY BANDS APPEAR IN THE RANGE 0.02 TO 15 KHZ AND MUST BE PLAYED THROUGH A 70 KHZ DISCRIMINATOR. MOST OF THE TAPES ARE STANDARD TAPE, BUT A FEW OF THE TAPES ARE QUARTER-INCH AND CAN BE USED DIRECTLY ON AN ORDINARY OPEN REEL TAPE RECORDER. IF A LIMITED QUANTITY OF DATA IS NEEDED, THE QUARTER INCH TAPES CAN BE PREPARED BY THE EXPERIMENTER. THESE DATA ARE RECORDINGS OF THE ORIGINAL VLF SPACECRAFT RECEIVER OUTPUT. THE DATA WERE OBSERVED IN THE VICINITY OF EIGHT TELEMETRY STATIONS BETWEEN JUNE 10, 1969 AND MARCH 4, 1970. SPECIFIC TIME PERIODS FOR WHICH DATA ARE AVAILABLE CAN BE IDENTIFIED FROM RECORDS AT NSSDC, OR AT THE EXPERIMENTER'S OFFICE. ALL THE DATA ARE ALSO AVAILABLE AS SPECTROGRAMS (SEE DATA SET 69-051A-25A). THE TAPES ARE AVAILABLE, FOR NO MORE THAN THE COST OF THE TAPE AND COPYING, FROM THE EXPERIMENTER, PROFESSOR T. LAASPERE, RADIO PHYSICS LABORATORY, THAYER SCHOOL OF ENGINEERING, DARTMOUTH COLLEGE, HANOVER, NEW HAMPSHIRE, 03755, (PHONE 603-646-2232).

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SPACECRAFT COMMON NAME- EXPLORER 41

NSSDC ID 69-053A

ALTERNATE NAMES- PL-691K, IMP 5, IMP-G

LAUNCH DATE- 06/21/69

SPACECRAFT WEIGHT IN ORBIT-

79.4 KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-122372

SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 06/21/69 ORBIT TYPE- GEOCENTRIC

ORBIT PERIOD- 4843. MIN

APOAPSIS- 176434. KM ALT

PERIAPSIS- 378.000 KM ALT

INCLINATION- 86.78 DEG

SPACECRAFT BRIEF DESCRIPTION

EXPLORER 41 (IMP-G) WAS A SPIN-STABILIZED SPACECRAFT PLACED INTO A HIGH-INCLINATION, HIGHLY ELLIPTIC ORBIT TO MEASURE ENERGETIC PARTICLES, MAGNETIC FIELDS, AND PLASMA IN CISELUNAR SPACE. THE LINE OF APSIDES AND THE SATELLITE SPIN VECTOR WERE WITHIN A FEW DEGREES OF BEING IN AND NORMAL TO, RESPECTIVELY, THE ECLIPTIC PLANE. INITIAL LOCAL TIME OF APOGEE WAS ABOUT 1300 HR. INITIAL SATELLITE SPIN RATE WAS 27.5 RPM. THE BASIC TELEMETRY SEQUENCE WAS 20.48 SEC. THE SPACECRAFT FUNCTIONED VERY WELL FROM LAUNCH UNTIL IT DECAYED FROM ORBIT ON DECEMBER 23, 1972. DATA TRANSMISSION WAS NEARLY 100 PERCENT FOR THE SPACECRAFT LIFE EXCEPT FOR THE INTERVAL NOVEMBER 15, 1971, TO FEBRUARY 1, 1972, WHEN DATA ACQUISITION WAS LIMITED TO THE VICINITY OF THE MAGNETOTAIL NEUTRAL SHEET.





DATE LAST USABLE EXPERIMENT DATA RECORDED-122372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

IN THIS EXPERIMENT, A FOUR-ELEMENT SOLID-STATE TELESCOPE WITH AN ACCEPTANCE CONE HALF ANGLE OF 20 DEG WAS MOUNTED NORMAL TO THE SPACECRAFT SPIN AXIS. DURING EACH 2.73-MIN INTERVAL, 9.82-SEC ACCUMULATIONS WERE OBTAINED IN EACH OF 16 DISTINCT COUNTING MODES. THESE MODES INVOLVED PROTONS IN TEN ENERGY INTERVALS COVERING 0.5 TO 20 MEV, ALPHA PARTICLES IN SIX INTERVALS COVERING 4 TO 70 MEV, AND ELECTRONS, DEUTERONS, TRITONS, AND HELIUM-3 NUCLEI IN THE INTERVALS 0.3 TO 3, 5 TO 20, 5.5 TO 25, AND 11 TO 72 MEV, RESPECTIVELY. ONBOARD CALIBRATION CHECKS WERE PERFORMED EVERY 6 HR. THE EXPERIMENT PERFORMED NORMALLY UNTIL JANUARY 30, 1970. WHEN A GSFC POWER SUPPLY FAILURE LIMITED THE USEFUL DATA GATHERED TO PROTONS BETWEEN 0.5 AND 5 MEV, ALPHA PARTICLES BETWEEN 4 AND 18 MEV, AND ELECTRONS BETWEEN 0.3 AND 3 MEV. NO FURTHER EXPERIMENT DEGRADATION OCCURRED UNTIL THE SPACECRAFT DECAYED FROM ORBIT ON DECEMBER 23, 1972. THIS INSTRUMENT WAS ESSENTIALLY THE SAME AS THAT FLOWN BY THE BELL LAB GROUP ON EXPLORER 34, AND IS DESCRIBED FURTHER IN JGR, 74, PAGE 2851, 1969, BY LANZEROTTI AND THE REFERENCES CONTAINED THEREIN.

DATA SET NAME- PARTICLE COUNT RATE DATA ON MAGNETIC TAPE NSSDC ID 69-053A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 081570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 23 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWENTY-THREE 7-TRACK, 800-BPI, GE/635 BINARY MAGNETIC TAPES SUBMITTED BY THE EXPERIMENTER. EXPERIMENT DATA RECORDS AND EPHEMERIS RECORDS ARE INTERSPERSED ON THE TAPES. THE DATA RECORDS CONSIST OF TEN 36-BIT COMPUTER WORDS, WITH EACH WORD BEING FURTHER BROKEN DOWN INTO INTEGER NUMBERS OF SPECIFIED MEANINGS. DATA FOR ONE EXPERIMENT SEQUENCE (10.23 SEC) ARE FOUND IN ONE RECORD AND INCLUDE (1) TIME (UT) CLOCK DATA, (2) COUNTS FOR EACH OF THE FIVE REGISTERS FOR ONE SENSOR COINCIDENCE MODE, AND (3) DATA QUALITY FLAGS RELATED TO THE NOISINESS OF BIT TRANSMISSION. THE EPHEMERIS RECORDS CONSIST OF TWENTY 36-BIT WORDS, 19 OF WHICH ARE FLOATING POINT. EPHEMERIS RECORDS OCCUR ONCE EACH 1 OR 10 MIN ACCORDING TO WHETHER THE SPACECRAFT RADIAL DISTANCE IS LESS THAN OR GREATER THAN 42,000 KM. EPHEMERIS DATA INCLUDE SPACECRAFT RADIAL DISTANCE, GEOCENTRIC LATITUDE AND LONGITUDE, INERTIAL ECLIPTIC DECLINATION AND RIGHT ASCENSION, SOLAR ECLIPTIC AND MAGNETOSPHERIC CARTESIAN COORDINATES, AND B AND L. FROM JUNE 21, 1969 TO AUGUST 15, 1970, THERE ARE NO DATA GAPS GREATER THAN 24 HOURS. THERE IS ONE GAP GREATER THAN 6 HOURS AND 7 GAPS GREATER THAN 2 HOURS. DATA FOR LATER TIME PERIODS ARE EXPECTED TO BE SUBMITTED TO NSSDC EVENTUALLY.

EXPERIMENT NAME- ION CHAMBER

NSSDC ID 69-053A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - K.A. ANDERSON U OF CALIFORNIA, BERK BERKELEY, CA  
OI - G.H. PITT U OF CALIFORNIA, BERK BERKELEY, CA  
OI - R.P. LIN U OF CALIFORNIA, BERK BERKELEY, CA

DATE LAST EXPERIMENT DATA RECORDED-122372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE ENERGETIC CHARGED PETER NEHER-POPULATIONS IN AND BEYOND THE EARTH'S OUTER MAGNETOSPHERE AND THE DYNAMIC PROCESSES THAT INFLUENCE THESE POPULATIONS AS RELATED TO SOLAR PHENOMENA. THE INSTRUMENTATION CONSISTED OF A 4-IN-DIAM NEHER-TYPE INTEGRATING IONIZATION CHAMBER AND THREE PAIRS OF GM TUBES. THE IONIZATION CHAMBER RESPONDED OMNIDIRECTIONALLY TO ELECTRONS ABOVE 700 KEV, PROTONS ABOVE 12 MEV, AND X RAYS ABOVE 20 KEV. THE MEMBERS OF ONE PAIR OF GM TUBES (LND 7041 WITH ALUMINUM FOIL), WHICH RESPONDED TO ELECTRONS ABOVE 80 KEV AND PROTONS ABOVE 1.5 MEV, HAD 70-DEG FULL-WIDTH ACCEPTANCE CONES. ONE TUBE, WHICH WAS ORIENTED AT 90 DEG TO THE SPACECRAFT SPIN AXIS, HAD A GEOMETRIC FACTOR OF 0.86 CM SQ STER, AND ALSO RESPONDED TO X RAYS FROM 1 TO 20 KEV (0.1 PERCENT EFFICIENCY). THE OTHER GM TUBE WAS ORIENTED AT ZERO DEG TO THE SPIN AXIS AND HAD A GEOMETRIC FACTOR OF 0.75 CM SQ STER. THE SECOND PAIR OF GM TUBES (LND 7041), WHICH RESPONDED TO ELECTRONS ABOVE 45 KEV SCATTERED FROM GOLD FOILS, HAD FULL WIDTH ACCEPTANCE CONES OF 70 DEG. ONE TUBE WAS ORIENTED 90 DEG TO THE SPIN AXIS WITH A GEOMETRIC FACTOR OF 0.065 CM SQ STER. THE OTHER TUBE WAS ORIENTED ZERO DEG TO THE SPIN AXIS AND HAD A GEOMETRIC FACTOR OF 0.063 CM SQ STER. ONE MEMBER OF THE THIRD SET OF GM TUBES (LND 7041 THICK WINDOW), WHICH RESPONDED TO ELECTRONS ABOVE 120 KEV, PROTONS ABOVE 2.3 MEV, AND X RAYS FROM 3 TO 20 KEV (0.1 PERCENT EFFICIENCY), HAD A FULL-WIDTH ACCEPTANCE CONE OF 70 DEG, A GEOMETRIC FACTOR OF 1.03 CM SQ STER, AND WAS ORIENTED AT 90 DEG TO THE SPIN AXIS. THE OTHER MEMBER OF THE THIRD SET OF GM TUBES (LND 705), WHICH RESPONDED TO ELECTRONS ABOVE 18 KEV AND PROTONS ABOVE 250 KEV, HAD A 40-DEG FULL-WIDTH ACCEPTANCE CONE, A GEOMETRIC FACTOR OF 0.027 CM SQ STER, AND WAS ORIENTED AT ZERO DEG TO THE SPIN AXIS. PULSES FROM THE IONIZATION CHAMBER AND COUNTS FROM EACH OF THE GM TUBES WERE ACCUMULATED FOR 9.92 SEC AND READ OUT FOUR TIMES EACH 40.96 SEC. THE EXPERIMENT PERFORMED NORMALLY FROM LAUNCH UNTIL THE SPACECRAFT DECAYED FROM ORBIT ON DECEMBER 23, 1972, EXCEPT FOR THE IONIZATION CHAMBER THAT OPERATED INTERMITTENTLY THROUGHOUT THE MISSION.

DATA SET NAME- IONIZATION CHAMBER AND DIRECTIONAL GEIGER NSSDC ID 69-053A-02A  
MUELLER TUBE COUNT RATES ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 021872 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 54 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS SUBMITTED BY THE EXPERIMENTER AND CONSISTS OF IONIZATION CHAMBER PULSE RATES AND SIX GM TUBE COUNT RATES ON 7-TRACK, BINARY, ODD-PARITY MAGNETIC TAPES WRITTEN AT 556 BPI USING A CDC 6600 COMPUTER. THERE ARE A VARIABLE NUMBER OF FILES PER TAPE WITH AN END-OF-FILE MARK AT THE END OF EACH FILE AND AN END-OF-FILE MARK AT THE END OF EACH TAPE. EACH TAPE CONTAINS FIVE ORBITS OF DATA. EACH FILE CONTAINS A VARIABLE NUMBER OF PHYSICAL RECORDS AND COVERS A 24-HR PERIOD. EACH PHYSICAL RECORD IS 121 WORDS IN LENGTH AND CONTAINS 12 SETS OF SAMPLINGS OF THE 40.96 SEC AVERAGED (COUNT/SEC) IONIZATION CHAMBER PULSE RATES AND GM TUBE COUNT RATES.

THE DAY, AND TIME (UT IN MSEC OF A DAY). EACH PHYSICAL RECORD ENDS WITH THE FOLLOWING ADDITIONAL INFORMATION -- ORBIT DAY, TIME (UT IN MSEC OF A DAY), GEOMAGNETIC LATITUDE, SATELLITE ALTITUDE (KM), THE POSITION OF THE SATELLITE IN SOLAR ECLIPTIC AND SOLAR MAGNETOSPHERIC COORDINATES, MCILWAIN'S L PARAMETER, ECLIPTIC LONGITUDE, AND SOLAR MAGNETOSPHERIC LATITUDE. THE DATA WERE CHECKED BY THE EXPERIMENTER FOR TIMING CONSISTENCY, AND REDUNDANT DATA DUE TO RECEIVING STATION OVERLAPS THAT WERE DELETED. ALL RATES HAVE BEEN DEAD-TIME CORRECTED. THIS DATA SET CONTAINS ALL THE EXPERIMENTER'S NONREDUNDANT REDUCED DATA FOR THE TIME PERIOD INDICATED, AND REPRESENTS ALMOST 100 PERCENT TIME COVERAGE EXCEPT FOR THE PERIOD NOVEMBER 12, 1971 TO FEBRUARY 1, 1972.

EXPERIMENT NAME- COSMIC-RAY PROTON (R VS DE/DX)

NSSDC ID 69-053A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF CHICAGO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.A. SIMPSON U OF CHICAGO CHICAGO, IL

DATE LAST EXPERIMENT DATA RECORDED-122372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE SEPARATELY THE CONTRIBUTIONS OF SOLAR NUCLEI AND GALACTIC NUCLEI ( $Z \leq 14$ ) USING A COMBINATION SOLID-STATE AND CERENKOV COUNTER COSMIC-RAY-TELESCOPE DETECTOR. THE DETECTOR WAS DESIGNED FOR ENERGY LOSS VS RANGE OR TOTAL ENERGY MEASUREMENTS FOR PROTONS (DIFFERENTIAL MEASUREMENTS BETWEEN 0.8 TO 119 MEV AND AN INTEGRAL MEASUREMENT BETWEEN 119 MEV AND 1 BEV). SIMILAR DIFFERENTIAL ENERGY MEASUREMENTS OF HE AND HIGHER Z NUCLEI WERE MADE BETWEEN 3 MEV/NUCLEON AND 1 BEV/NUCLEON. THE DETECTOR WAS ORIENTED PERPENDICULAR TO THE SATELLITE SPIN AXIS. THE DETECTOR ACCUMULATORS WERE TELEMETERED FOUR TIMES EVERY 20.48 SEC. EACH ACCUMULATION WAS 4.8 SEC LONG (SPACECRAFT INITIAL SPIN PERIOD WAS ABOUT 2.2 SEC). THE OUTPUT FROM THE THREE 256-CHANNEL PULSE HEIGHT ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVERY 5.12 SEC AND WAS TELEMETERED ALONG WITH THE DETECTOR ACCUMULATORS. THE D3 ELEMENT OF THE TELESCOPE BECAME NOISY ON SEPTEMBER 29, 1969, AND THE CONDITION CONTINUED UNTIL THE SPACECRAFT EMERGED FROM FIRST SHADOW ON JANUARY 5, 1970. THE EXPERIMENT PERFORMED NORMALLY UNTIL THE SPACECRAFT DECAYED FROM ORBIT ON DECEMBER 23, 1972.

DATA SET NAME- TELESCOPE ACCUMULATOR READINGS ON  
MAGNETIC TAPE

NSSDC ID 69-053A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 090571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ACCUMULATOR READINGS FOR EACH TELEMETERED FRAME (5.12 SEC) FOR ALL NONOVERLAPPED SEQUENCES (20.4545 SEC) WHICH CONTAIN AT LEAST ONE FRAME WHOSE DATA QUALITY IS CONSIDERED GOOD OR FAIR. THE DATA ARE CONTAINED ON 7-TRACK, BINARY, MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS 930 COMPUTER. THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER

WITH 30 FILES PER TAPE. EACH FILE CONTAINS ACCUMULATOR COUNT DATA FOR ONE ORBIT. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS (CONTAINING 316 BINARY WORDS EACH) PER FILE, AND THERE ARE EIGHT WORDS (24 BITS EACH) PER SEQUENCE AND 102 SEQUENCES (LOGICAL RECORDS) PER PHYSICAL RECORD. AN END-OF-FILE MARK TERMINATES EACH FILE, AND A DOUBLE END-OF-FILE MARK TERMINATES THE LAST ORBIT OF EACH TAPE. EACH SEQUENCE CONTAINS DETECTOR ACCUMULATOR COUNTS, DISTANCE OF THE SATELLITE FROM THE EARTH, SEQUENCE NUMBER, AND VARIOUS DATA QUALITY FLAGS.

DATA SET NAME- PULSE HEIGHT ANALYZER EVENT SUMMARIES ON NSSDC ID 69-053A-03B  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 090571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 12 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE DATA SET CONSISTS OF COSMIC-RAY TELESCOPE PULSE HEIGHT ANALYZER DATA ON 7-TRACK, BINARY, MAGNETIC TAPES WRITTEN AT 800 BPI USING AN XDS 930 COMPUTER (24 BIT WORDS). THE DATA SET CONTAINS ALL NONOVERLAPPED GOOD OR FAIR QUALITY NONDUPLICATE PULSE HEIGHT ANALYSIS EVENTS FROM TWO 256-CHANNEL AND ONE 512-CHANNEL PULSE HEIGHT ANALYZER. THE OUTPUT FROM THESE ANALYZERS WAS OBTAINED FOR ONE INCIDENT PARTICLE EVENT EVERY 5.12 SEC. THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER WITH 20 FILES PER TAPE. EACH FILE ON THE TAPE CONTAINS PULSE HEIGHT ANALYSIS FOR ONE ORBIT. THERE IS A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH CONTAINING 600 BINARY WORDS) PER FILE. THERE ARE THREE BINARY WORDS PER EVENT AND 200 EVENTS (LOGICAL RECORDS) PER PHYSICAL RECORD. EACH LOGICAL RECORD CONTAINS THE PULSE HEIGHT ANALYSIS FROM ANALYZERS ON DETECTOR ELEMENTS D1, D2, AND D4 FOR THE TELESCOPE COINCIDENCE COMBINATIONS CORRESPONDING TO PROTON ENERGIES OF 0.8 TO 8.45 MEV, 8.45 TO 18.7 MEV, 18.7 TO 30.9 MEV, 30.9 TO 94.8 MEV, 94.8 TO 119 MEV, AND E .GT. 119 MEV (D1 NOT D2 NOT D6, D1D2 NOT D3 NOT D6, D1D2D3 NOT D4 NOT D6, D1D2D3D4 NOT D5 NOT D6, D1D2D3D4D5 NOT CK NOT D6, AND D1D2D3D4D5 CK NOT D6). IN ADDITION, THE FORMAT INCLUDES THE ORBIT NUMBER, ANGULAR SECTOR AND RANGE IDENTIFICATIONS, SEQUENCE NUMBER (SEQUENCE IS 20.4545 SEC), AND DATA QUALITY FLAGS.

DATA SET NAME- FIVE-MINUTE AVERAGE COUNT RATES ON NSSDC ID 69-053A-03C  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 042571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF REDUCED COSMIC-RAY TELESCOPE COUNTING RATES AVERAGED OVER 15 SEQUENCES (ABOUT 5 MIN) AND BASED ON NONOVERLAPPED GOOD DATA. THE DATA ARE CONTAINED ON 7-TRACK, BLOCKED BCD MAGNETIC TAPE WRITTEN AT 800 BPI USING AN XDS 930 COMPUTER (24 BIT WORDS). THE DATA ARE ORDERED BY SATELLITE ORBIT REVOLUTION NUMBER WITH 100 FILES PER TAPE. EACH FILE ON THE TAPE CONTAINS COUNTING RATE DATA FOR ONE ORBIT. THERE IS A VARIABLE NUMBER OF PHYSICAL RECORDS (EACH CONTAINING FIFTY-SEVEN 33-WORD BCD LOGICAL

RECORDS) PER FILE. EACH LOGICAL RECORD CONTAINS THE COUNTING RATES FOR THE COSMIC-RAY TELESCOPE COINCIDENCE COMBINATIONS WHICH CORRESPOND TO THE FOLLOWING ENERGY INTERVALS FOR PROTONS -- 0.8 TO 8.45 MEV, 8.45 TO 18.7 MEV, 30.9 TO 94.8 MEV, 94.8 TO 119 MEV, AND E.GT. 119 MEV. (D1 NOT D2 NOT D6, D1 D2 NOT D3 NOT D6, D1D2D3D4 NOT D5 NOT D6, D1D2D3D4 D5 NOT CK NOT D6, D1D2D3D4D5CK NOT D6). IN ADDITION, THE FORMAT INCLUDES THE TIME, CHICAGO SEQUENCE COUNT, SATELLITE GEOCENTRIC DISTANCE, ANALOG RATE METER OUTPUT (D5/D6), TEMPERATURE OF THE TELESCOPE, AND DATA QUALITY FLAGS.

EXPERIMENT NAME- SOLAR PROTON MONITORING EXPERIMENT NSSDC ID 69-053A-07

ORIGINAL EXPERIMENT INSTITUTION- APPLIED PHYSICS LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.O. BOSTROM APPLIED PHYSICS LAB SILVER SPRING, MD  
OI - D.J. WILLIAMS NOAA-ERL BOULDER, CO  
OI - D.E. HAGGE NASA-JSC HCUSTON, TX  
OI - F.B. MCDONALD NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-122372

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SOLAR PROTON MONITORING EXPERIMENT UTILIZED FOUR SEPARATE DETECTORS, EACH OF WHICH USED ONE OR MORE SOLID-STATE SENSORS. THREE DETECTORS MEASURED THE OMNIDIRECTIONAL FLUXES OF PROTONS AND ALPHA PARTICLES WITH ENERGY PER NUCLEON VALUES ABOVE 10, 30, AND 60 MEV. ALPHA PARTICLE CONTRIBUTIONS TO THE TOTAL COUNT RATES WERE GENERALLY LESS THAN 10 PERCENT. THE 10-MEV CHANNEL WAS SAMPLED FOR TWO 19.2 SEC INTERVALS EVERY 163.8 SEC AND THE 30- AND 60-MEV CHANNELS FOR ONE 19.2 SEC INTERVAL EVERY 163.8 SEC. RESULTANT HOURLY AVERAGED FLUXES HAVE BEEN PUBLISHED IN SOLAR-GEOPHYSICAL DATA (NOAA, BOULDER) ON A RAPID BASIS. THE FOURTH DETECTOR HAD A 60-DEG FULL LOOK ANGLE NORMAL TO THE SPACECRAFT SPIN AXIS. EACH OF TWO DISCRIMINATION LEVELS WAS SAMPLED FOR TWO 19.2 SEC INTERVALS EVERY 163.8 SEC. FLUXES OF 1- TO 10-MEV/NUCLEON PROTONS AND ALPHA PARTICLES WERE MEASURED IN THE LOWER AND UPPER DISCRIMINATION STATES, RESPECTIVELY. ALL DETECTORS FUNCTIONED NORMALLY FROM LAUNCH UNTIL THE SPACECRAFT DECAYED FROM ORBIT (JUNE 21, 1969 - DECEMBER 23, 1972).

DATA SET NAME- HOURLY AVERAGED SOLAR PROTON FLUXES NSSDC ID 69-053A-07A  
PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 062169 TO 083172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS PUBLISHED DATA SET CONSISTS OF MONTHLY PLOTS AND TABULAR LISTINGS OF HOURLY AVERAGED OMNIDIRECTIONAL FLUXES OF PROTONS WITH ENERGIES ABOVE 10, 30, AND 60 MEV. DATA OBTAINED DURING A GIVEN MONTH THROUGH AUGUST 1972 WERE PUBLISHED IN "SOLAR-GEOPHYSICAL DATA (COMPREHENSIVE REPORTS)" WITH A 6-MONTH LAG. FOR THE PERIOD BEGINNING SEPTEMBER 1, 1972, EQUIVALENT EXPLORER 43 DATA HAVE BEEN PUBLISHED.

DATA SET NAME- COUNT RATES ON ENCYCLOPEDIA TAPES

NSSDC ID 69-053A-07B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 122372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 37 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF IBM 360 BINARY, 800-BPI, 9-TRACK TAPES AS SUBMITTED BY THE EXPERIMENTER. SEVEN-TRACK COPIES EXIST. EACH TAPE HAS ONE FILE AND IS BLOCKED WITH 20 LOGICAL RECORDS PER PHYSICAL RECORD. EACH LOGICAL RECORD HAS 176 32-BIT WORDS. ID RECORDS AND DATA RECORDS ARE INTERSPERSED ON THE TAPES. THERE IS ONE ID RECORD FOR A GIVEN SEGMENT OF DATA AS OBTAINED BY ONE TRACKING STATION DURING ONE SPACECRAFT PASS OVER THAT STATION. THE DATA LOGICAL RECORDS CONTAIN TIME, DATA QUALITY INDICATORS, DEAD-TIME CORRECTED COUNT RATES (CPS) OBTAINED FROM ALL THE DETECTOR READINGS TAKEN DURING ONE 2.73-MIN INTERVAL, ORBIT DATA, AND OTHER MISCELLANEOUS INFORMATION. DATA FOR THE ENTIRE LIFE OF THE MISSION ARE CONTAINED ON 37 TAPES.

DATA SET NAME- HOURLY AVERAGED COUNT RATES ON TAPE

NSSDC ID 69-053A-07C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 122372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE EXPERIMENTER-SUPPLIED TAPE, WHICH IS OF 7-TRACK, 800 BPI, IBM/360 BINARY FORMAT. EACH LOGICAL RECORD CONSISTS OF 3120 8-BIT BYTES AND CONTAINS DATA FOR 1 DAY. THERE ARE SIX LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE FILE FOR EACH CALENDAR YR OF DATA ON THE TAPE. DATA GIVEN ON AN HR-BY-HR BASIS WITHIN EACH LOGICAL RECORD INCLUDE TIME, EPHEMERIS DATA, AND HOURLY AVERAGED COUNT RATES FOR EACH OF THE FIVE EXPERIMENT COUNTING MODES. THESE RATES HAVE BEEN THOROUGHLY EDITED IN THAT NOISE POINTS AND MAGNETOSPHERIC COUNTING HAVE BEEN REMOVED. RECOGNIZABLY INTERPOLATED INTERPLANETARY COUNT RATE VALUES HAVE BEEN INSERTED FOR MAGNETOSPHERIC TRAVERSAL PERIODS. THE TIME COVERAGE IS ESSENTIALLY COMPLETE FROM JUNE 21, 1969 TO DECEMBER 23, 1972 EXCEPT FOR THE PERIOD OF RESTRICTED SPACECRAFT OPERATION (NOVEMBER 15, 1971 THROUGH FEBRUARY 1, 1972). WHEN TAKEN TOGETHER WITH THE CORRESPONDING DATA SET FROM IMP 4 (67-051A-07D), A NEARLY CONTINUOUS RECORD OF 1 TO 100 MEV INTERPLANETARY PROTON FLUXES FROM MAY 1967 TO DECEMBER 1972 WAS OBTAINED.

EXPERIMENT NAME- MAGNETIC FIELD EXPERIMENT

NSSDC ID 69-053A-11

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - N.F. NESS NASA-GSFC GREENBELT, MD  
OI - D.H. FAIRFIELD NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-122372  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A BOOM-MOUNTED TRIAXIAL FLUXGATE MAGNETOMETER MEASURED MAGNETIC FIELDS IN THE INTERPLANETARY MEDIUM, IN THE MAGNETOSHEATH, AND IN THE GEOMAGNETIC TAIL. THE MAGNETOMETER HAD DYNAMIC RANGES OF PLUS OR MINUS 40 GAMMAS AND PLUS OR MINUS 200 GAMMAS WITH RESPECTIVE SENSITIVITIES OF PLUS OR MINUS 0.2 GAMMA AND PLUS OR MINUS 1.0 GAMMA. AUTOMATIC ONBOARD RANGE SELECTION WAS INCLUDED. MEASUREMENT OF THE ENERGY SPECTRA OF MAGNETIC FIELD FLUCTUATIONS WILL BE ACCOMPLISHED THROUGH A COMPUTATION OF THE AUTOCORRELATION FUNCTION IN AN ONBOARD DIGITAL PROCESSOR. THE EXPERIMENT FUNCTION MONTHLY FROM LAUNCH UNTIL THE SPACECRAFT DECAYED FROM ORBIT (JUNE 21, 1969 - DECEMBER 23, 1972).

DATA SET NAME- 20 SEC AVERAGED VECTOR MAGNETIC FIELD NSSDC ID 69-053A-11A  
DATA ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 062169 TO 082772 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 7 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF MICROFILM CONTAINING 6 HOURS OF DATA PER FRAME. POINTS REPRESENTING FIELD MAGNITUDE AND FIELD VECTOR POLAR AND AZIMUTHAL ANGLES IN SOLAR ECLIPTIC OR SOLAR MAGNETOSPHERIC COORDINATES ARE GIVEN EACH 20 SEC. SPACECRAFT EPHEMERIS DATA ARE PLOTTED ONCE EACH HOUR. THE DATA COVERAGE IS COMPLETE BETWEEN JUNE 21, 1969, AND AUGUST 27, 1972, EXCEPT FOR A GAP FROM NOVEMBER 15, 1971, TO JANUARY 31, 1972.

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SPACECRAFT COMMON NAME- APOLLO 11 CSM NSSDC ID 69-059A  
ALTERNATE NAMES- PL-693H, SA-506

LAUNCH DATE- 07/16/69 SPACECRAFT WEIGHT IN ORBIT- 28860. KG

FUNDING AGENCY- NASA-DMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-072469  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/20/69 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 88. MIN  
APOAPSIS- 123. KM ALT PERIAPSIS- 100. KM ALT INCLINATION- 32. DEG

SPACECRAFT BRIEF DESCRIPTION



THE APOLLO 11 SPACECRAFT WAS PART OF THE FIRST MISSION IN WHICH MEN LANDED ON THE LUNAR SURFACE AND RETURNED TO EARTH. THE SPACECRAFT CONSISTED OF THREE MODULES -- A COMMAND MODULE (CM), A LUNAR MODULE (LM), AND A COMMAND SERVICE MODULE (CSM). AFTER THE SPACECRAFT ORBITED THE MOON, THE LM AND CSM SEPARATED. TWO ASTRONAUTS IN THE LM LANDED ON THE LUNAR SURFACE AT THE SEA OF TRANQUILITY (0.67 DEG N LATITUDE AND 23.49 DEG E LONGITUDE), WHILE ONE REMAINED IN LUNAR ORBIT IN THE COMMAND MODULE. SCIENTIFIC STUDIES WERE PERFORMED AND SOIL AND ROCK SAMPLES WERE ACQUIRED BY THE ASTRONAUTS DURING A MOONWALK. THE MEN RETURNED TO THE LM, DOCKED THE LM AND THE CSM, AND RETURNED TO EARTH. A LASER RANGING RETROREFLECTOR AND A PASSIVE SEISMOGRAPH EXPERIMENT WERE LEFT ON THE MOON. THE PERFORMANCE OF THE SPACECRAFT WAS EXCELLENT THROUGHOUT THE MISSION.

EXPERIMENT NAME- APOLLO 11 PHOTOGRAPHIC STUDIES

NSSDC ID 69-059A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - MAPPING SCIENCES LAB NASA-JSC HOUSTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-072469

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

APOLLO 11 CARRIED PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AND THE LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF THE LANDING SITE FROM THE LOW POINT OF THE LM'S FLIGHT PATH, (3) RECORD THE OPERATIONAL ACTIVITIES OF THE CREW, (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS WITH 70-MM STILL CAMERAS, AND (5) OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND OF THE ACTIVITIES OF THE TWO ASTRONAUTS WHO LANDED ON THE MOON. THE CAMERA EQUIPMENT CARRIED BY APOLLO 11 CONSISTED OF ONE 70-MM HASSELBLAD ELECTRIC CAMERA, TWO HASSELBLAD 70-MM LUNAR SURFACE SUPERWIDE-ANGLE CAMERAS, ONE HASSELBLAD EL DATA CAMERA, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, AND ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY. THE PHOTOGRAPHS TAKEN INCLUDED 1359 FRAMES OF 70-MM FORMAT, 58,134 FRAMES OF 16-MM PHOTOGRAPHY, AND 17 STEREOSCOPIC PAIRS. A USERS' PACKAGE THAT CONTAINS DETAILED INFORMATION ABOUT THE PHOTOGRAPHIC EQUIPMENT AND COVERAGE, AVAILABILITY OF AND ORDERING PROCEDURES FOR PHOTOGRAPHY AND PROOF PRINTS FOR THE APOLLO 11 PHOTOGRAPHY IS AVAILABLE FROM NSSDC. REQUESTERS SHOULD ASK FOR NSSDC 70-06.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON 8/W  
POSITIVE 4- BY 6-IN. MICROFICHE

NSSDC ID 69-059A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 071669 TO 072469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 13 SHEET(S) OF 8/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 692 PHOTOGRAPHS REPRODUCED FROM FIVE BLACK AND WHITE 70-MM MAGAZINES ON THIRTEEN 4- BY 6-IN BLACK AND WHITE MICROFICHE. EACH MICROFICHE CONTAINS FROM 21 TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. WHEN ONE PHOTOGRAPH HAS BEEN LEFT OFF OF THE MICROFICHE, THIS IS INDICATED IN THE SPACE WHERE THE PHOTOGRAPH NORMALLY WOULD HAVE APPEARED. THESE MICROFICHE INCLUDE COVERAGE OF MARE FECUNDITATIS, THE NEARSIDE TERMINATOR, TRANQUILITY BASE, THE DEPLOYMENT OF THE ALSEP, THE SOLAR CORONA, THE LUNAR FAR SIDE, AND SEVERAL TARGETS OF OPPORTUNITY.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON COLOR POSITIVE 4- BY 6-IN. MICROFICHE NSSDC ID 69-059A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 071669 TO 072469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 588 PHOTOGRAPHS REPRODUCED FROM FOUR COLOR 70-MM MAGAZINES ON ELEVEN 4- BY 6-IN COLOR MICROFICHE. EACH MICROFICHE CONTAINS FROM 29 TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. WHEN ONE PHOTOGRAPH HAS BEEN LEFT OFF OF THE MICROFICHE, THIS IS INDICATED IN THE SPACE WHERE THE PHOTOGRAPH NORMALLY WOULD HAVE APPEARED. OCCASIONALLY, A FEW BLACK AND WHITE FRAMES MAY APPEAR ON THE SAME MICROFICHE WITH THE COLOR. THIS OCCURS WHEN THE FRAMES FOLLOW EACH OTHER IN CONSECUTIVE ORDER. THESE MICROFICHE INCLUDE COVERAGE OF THE LUNAR SURFACE TAKEN BEFORE SEPARATION OF THE LM AND CSM, DURING DOCKING AND IMMEDIATELY AFTER TRANSEARTH INSERTION, TARGETS OF OPPORTUNITY, AND THE EARTH PRIOR TO SPLASHDOWN OF THE SPACECRAFT.

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SPACECRAFT COMMON NAME- APOLLO 11 LM NSSDC ID 69-059C  
ALTERNATE NAMES-

LAUNCH DATE- 07/16/69 SPACECRAFT WEIGHT IN ORBIT- 4240. KG

FUNDING AGENCY- NASA-QMSF

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 07/20/69 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 88. MIN  
APOAPSIS- 1821. KM ALT PERIAPSIS- 1755. KM ALT INCLINATION- 32. DEG

SPACECRAFT BRIEF DESCRIPTION

THE LUNAR MODULE (LM) WAS A TWO-STAGE VEHICLE DESIGNED FOR SPACE OPERATIONS NEAR AND ON THE MOON. THE LM STOOD 7 M HIGH AND WAS 9.4 M WIDE (DIAGONALLY ACROSS THE LANDING GEAR). THE ASCENT AND DESCENT STAGES OF THE LM OPERATED AS A UNIT UNTIL STAGING, WHEN THE ASCENT STAGE FUNCTIONED AS A SINGLE SPACECRAFT FOR RENDEZVOUS AND DOCKING WITH THE COMMAND MODULE (CM). INCLUDED IN THE DESCENT STAGE WERE THE TWO EARLY APOLLO SCIENTIFIC EXPERIMENT PACKAGE (EASEP) EXPERIMENTS, WHICH WERE SELF CONTAINED, AND THE LUNAR SURFACE SOLAR WIND COMPOSITION EXPERIMENT. THE EASEP EXPERIMENTS INCLUDED THE PASSIVE SEISMOGRAPH, WHICH WAS DESIGNED TO MEASURE SEISMIC ACTIVITY AND THE PHYSICAL PROPERTIES OF THE LUNAR CRUST AND INTERIOR, AND THE LASER RANGING RETROREFLECTOR, WHICH WAS DESIGNED FOR PRECISE MEASUREMENTS OF EARTH-MOON DISTANCES, THE MOTION OF THE MOON'S CENTER OF MASS, THE LUNAR RADIUS, AND EARTH GEOPHYSICAL INFORMATION. THE LM LANDED ON THE LUNAR SURFACE ON JULY 20, 1969. THE SEISMOGRAPH PERFORMED ONLY 21 DAYS WHEREAS THE LASER RETROREFLECTOR HAS OPERATED OPTIMALLY TO DATE (JUNE 1973).

EXPERIMENT NAME- LUNAR FIELD GEOLOGY

NSSDC ID 69-059C-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E.M. SHOEMAKER CAL TECH PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-072069  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT ENTAILED THE COLLECTION AND DOCUMENTATION OF GEOLOGIC ROCK SAMPLES. THE SAMPLES WERE COLLECTED USING TONGS, SCOOPS, A HAMMER, AND CORE TUBES. A CLOSEUP STEREOSCOPIC SURFACE CAMERA, THE MODIFIED 70-MM HASSELBLADS, AND A 16-MM CAMERA USED IN EXPERIMENT 69-059A-01 (PHOTOGRAPHY) WERE ALSO USED TO DOCUMENT THE FINDINGS OF THE ASTRONAUTS AND THEIR TRAVERSE OF 10 M FROM THE LANDING SITE. ALL SAMPLES WERE PLACED IN VACUUM TIGHT CONTAINERS, AND THE 21 KG OF ROCK SAMPLES FROM THE CONTINGENCY AND THE BULK AND DOCUMENTED CONTAINERS WERE BROUGHT BACK TO EARTH FOR USE IN EXTENSIVE SCIENTIFIC INVESTIGATIONS OF THE COMPOSITION OF THE MOON AND ITS ORIGIN.

DATA SET NAME- B/W POSITIVE AND NEGATIVE 35-MM PHOTOS OF NSSDC ID 69-059C-01A  
GEOLOGIC SAMPLES

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072069 TO 072069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 716 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 716 35-MM B/W TRANSPARENCIES OF GEOLOGIC ROCK SAMPLES RETURNED FROM THE MARE TRANQUILLITATIS REGION OF THE MOON. SOME PHOTOS SHOW THIN SECTIONS OR SLICES, AND OTHERS SHOW COARSE FINES SAMPLES WITH NO IDENTIFICATIONS. SOME FRAMES SHOW THE ROCK SAMPLES WITH THEIR ASSIGNED NUMBERS.

DATA SET NAME- COLOR POSITIVE 35-MM PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 69-059C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072069 TO 072069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM COLOR TRANSPARENCIES OF THE LUNAR GEOLOGIC SAMPLES. THESE PHOTOGRAPHS WERE TAKEN WITH A BESSELER TOPCON SUPER 'D' CAMERA. THE FRAMES SHOW THE SAMPLES IN VARIOUS ORIENTATIONS FROM ARBITRARILY CHOSEN FACES OF EACH OF THE SAMPLES.

DATA SET NAME- B/W POSITIVE AND NEGATIVE 70-MM PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 69-059C-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072069 TO 072069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 335 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 335 70-MM B/W TRANSPARENCIES OF GEOLOGIC ROCK SAMPLES RETURNED FROM MARE TRANQUILLITATIS ON THE APOLLO 11 MISSION. SOME PHOTOS SHOW SAMPLES STILL IN THEIR CONTAINERS WITH ASSIGNED SAMPLE NUMBER. AND OTHERS SHOW SAMPLES BESIDE A CENTIMETER SCALE.

DATA SET NAME- B/W POSITIVE AND NEGATIVE 4- BY 5-IN. SHEET FILM OF GEOLOGIC SAMPLES NSSDC ID 69-059C-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072069 TO 072069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 164 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 164 4- BY 5-IN B/W TRANSPARENCIES OF GEOLOGIC ROCK SAMPLES RETURNED FROM THE MARE TRANQUILLITATIS REGION OF THE MOON. SOME PHOTOS SHOW THIN SECTIONS OF ROCK SAMPLES BESIDE A CENTIMETER SCALE AND THEIR ASSIGNED SAMPLE NUMBERS AND OTHERS SHOW THE ROCK SAMPLES WITH ONLY THE ASSIGNED NUMBERS.

DATA SET NAME- 4- BY 5-IN. COLOR PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 69-059C-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072069 TO 072069 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOUR 4- BY 5-IN. COLOR POSITIVE TRANSPARENCIES OF GEOLOGIC ROCK SAMPLES RETURNED FROM MARE TRANQUILLITATIS ON APOLLO 11 MISSION. THE PHOTOS SHOW THE ROCK SAMPLES IN ONE ORIENTATION WITH THEIR ASSIGNED SAMPLE NUMBER AND CENTIMETER SCALE.

EXPERIMENT NAME- PASSIVE SEISMIC

NSSDC ID 69-059C-03

ORIGINAL EXPERIMENT INSTITUTION- LAMONT-DOHERTY GEO OBS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G.V. LATHAM U OF TEXAS GALVESTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-081169  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE PASSIVE SEISMOGRAPH EXPERIMENT (PSE) (S-031) WAS TO MONITOR LUNAR SEISMIC ACTIVITY AND TO DETECT METEOROID IMPACTS AND FREE OSCILLATIONS OF THE MOON. LUNAR CRUSTAL TIDAL DEFORMATIONS COULD ALSO BE DETECTED. THE EXPERIMENT CONSISTED OF TWO SEISMIC ASSEMBLIES -- (1) A LONG-PERIOD (LN) SEISMOMETER (TRIAxIAL, ORTHOGONAL) WITH A SEISMIC FREQUENCY RESPONSE OF 0.004 TO 3 HZ (80 DB DYNAMIC RANGE) AND (2) A SHORT-PERIOD (SP) SEISMOMETER (UNIAXIAL, VERTICAL MOTION) WITH A SEISMIC FREQUENCY RESPONSE OF 0.05 TO 20 HZ (80 DB DYNAMIC RANGE). THE MINIMUM DETECTABLE SIGNALS OF THE PSE WERE 10 MICRONS FOR THE SP AND ALL LP SEISMIC SIGNALS, 0.4 ARC-SEC FOR THE LP HORIZONTAL TIDAL OUTPUT SIGNAL, AND 320 MICROGALS FOR THE LP VERTICAL TIDAL OUTPUT SIGNAL. THE PSE ELECTRONICS PACKAGE, LOCATED IN THE CENTRAL STATION, WAS CONNECTED BY CABLE TO THE SEISMOMETERS.

DATA SET NAME- PASSIVE SEISMOGRAMS ON MICROFILM

NSSDC ID 69-059C-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072169 TO 081169 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THE APOLLO 11 PASSIVE SEISMOGRAPH EXPERIMENT (PSE) DATA ARE CONTAINED ON TWO REELS OF 35-MM MICROFILM. THE MICROFILM RECORDS WERE MADE FROM HARD-COPY SEISMOGRAMS OBTAINED AT LAMONT-DOHERTY GEOLOGICAL OBSERVATORY AND FROM THE EASEP-PSE ANALOG TAPES RECEIVED BY NSSDC FROM NASA-MSC. EACH SEISMOGRAM CONTAINS APPROXIMATELY 6 HR OF DATA. THE SEISMOGRAMS ARE NUMBERED IN CHRONOLOGICAL ORDER, WITH THE FIRST LUNAR DAY NUMBERED FROM 1 TO 52 AND THE SECOND LUNAR DAY NUMBERED FROM 53 TO 78. THE ORIGINAL SEISMOGRAMS ARE 90 CM WIDE AND APPROXIMATELY 25 CM IN HEIGHT. ON THE MICROFILM, MINUTE MARKS APPEAR APPROXIMATELY 12 CM APART, I.E., 1 HR OF DATA IS CONTAINED IN EIGHT LINES. THE CALIBRATION OF THE RECORDS WAS DETERMINED BY USING THE WIDTH OF THE SEISMOGRAMS AS AN EXACT SCALE AND A FULL SCALE AMPLITUDE DEVIATION OF PLUS OR MINUS 3 CM EQUAL TO PLUS OR MINUS 512 DIGITAL UNITS AT X 1 RECORDER

MAGNIFICATION. CHANGES IN RECORDER MAGNIFICATION ARE MARKED AT THE TOP OF EACH SEISMOGRAM. ACCOMPANYING DOCUMENTATION INDICATES CHANGES IN SHORT PERIOD SEISMOMETER GAIN, AND THE SEISMOMETER MAGNIFICATION CURVE IS IN DIGITAL UNITS PER CM OF GROUND DISPLACEMENT. TIME ON THE RECORDS IS SHOWN IN GMT. OCCASIONAL DATA DROPOUTS VISIBLE ON THE SEISMOGRAMS WERE PRESENT ON THE ORIGINAL DIGITAL TAPES. THERE HAS BEEN NO FILTERING PERFORMED ON THESE DATA.

EXPERIMENT NAME- LASER RANGING RETRO REFLECTOR

NSSDC ID 69-059C-04

ORIGINAL EXPERIMENT INSTITUTION- U OF MARYLAND

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.O. ALLEY U OF MARYLAND COLLEGE PARK, MD

EXPERIMENT STATUS OF OPERATION- NORMAL

#### EXPERIMENT BRIEF DESCRIPTION

THE LUNAR RANGING RETROREFLECTION (LRRR) EXPERIMENT WHICH WAS LEFT ON THE LUNAR SURFACE BY THE APOLLO 11 CREW WAS A RETROREFLECTOR ARRAY WITH A FOLDING SUPPORT STRUCTURE FOR AIMING AND ALIGNING THE ARRAY TOWARD EARTH. THE ARRAY WAS BUILT OF CUBES OF FUSED SILICA. LASER RANGING BEAMS FROM EARTH WERE REFLECTED BACK TO THEIR POINT OF ORIGIN FOR PRECISE MEASUREMENT OF EARTH-MOON DISTANCES, MOTION OF THE MOON'S CENTER OF MASS, LUNAR RADIUS, AND EARTH GEOPHYSICAL INFORMATION. THIS REFLECTOR HAS OPERATED FOR A NUMBER OF YEARS, AND HAS RETURNED GOOD RESULTS TO DATE (JANUARY 1973).

DATA SET NAME- FILTERED AND UNFILTERED LASER PHOTON  
DETECTIONS ON MAGNETIC TAPE

NSSDC ID 69-059C-04C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072169 TO 123071 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 800-BPI, BINARY, 7-TRACK TAPE CONTAINING DATA ON THE CURRENT DEPOSITION FROM THE APOLLO LUNAR LASER RANGING EXPERIMENT FROM APOLLOS 11 AND 14. THERE ARE FIVE FILES OF DATA -- (1) FILTERED DATA FROM AUGUST 1969 THROUGH DECEMBER 1970, (2) UNFILTERED DETECTIONS FOR 1969, (3) UNFILTERED DETECTIONS FOR JANUARY TO JUNE 1970, (4) UNFILTERED DETECTIONS FOR JULY TO DECEMBER 1970, AND (5) UNFILTERED DETECTIONS FROM JANUARY TO DECEMBER 1971. THE DATA WERE WRITTEN ORIGINALLY ON A CDC 6600 COMPUTER. THERE ARE TWO DIFFERENT KINDS OF DATA -- RUN DATA, WHICH ARE DESIGNATED BY A 'Z' IN THE BEGINNING OF EVERY 80-CHARACTER LOGICAL RECORD, AND SHOT DATA, WHICH ARE DESIGNATED BY A 'P' IN THE BEGINNING OF EVERY 80-CHARACTER LOGICAL RECORD. THIS TAPE IS BLOCKED AT 64 LOGICAL RECORDS PER PHYSICAL RECORD. EACH PHYSICAL RECORD HAS FOUR CHARACTERS THAT WERE APPENDED AFTER THE TAPE WAS DUPLICATED ON THE IBM 7094 COMPUTER. THE FILTERED DATA CONSIST OF PHOTON DETECTIONS SUBMITTED TO A DATA FILTERING PROCEDURE ASSUMING LINEARITY OF C RESIDUALS OVER A RELATIVELY SHORT TIME INTERVAL AND RELYING ON POISSON STATISTICS FOR THE LEVEL OF CONFIDENCE IN A COLLECTION IDENTIFIED BY THE FILTER. UNFILTERED DATA ARE REAL DATA HEAVILY INTERSPERSED WITH NOISE PHOTONS FROM ANY OF THE VARIOUS SOURCES OF STRAY LIGHT. AN ATTEMPT TO USE THE DATA IN A SIMPLE GAUSSIAN APPLICATION WOULD



31, 1972.

EXPERIMENT NAME- SOLAR UV SCANNING SPECTROMETER,  
SPECTROHELIO METER (300 TO 1400 A)

NSSDC ID 69-068A-01

ORIGINAL EXPERIMENT INSTITUTION- HARVARD COLLEGE OBS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - L.	GOLDBERG	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI - E.M.	REEVES	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI - W.H.	PARKINSON	HARVARD COLLEGE OBS	CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-051270

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THIS EXPERIMENT WAS TO MAP SOLAR UV RADIATION INTENSITIES IN THE 300- TO 1400-A REGION IN ORDER TO DETERMINE SPATIAL AND SPECTRAL INFORMATION AND THE VARIATION WITH TIME OF A VARIETY OF SOLAR PHENOMENA. THE INSTRUMENT CONSISTED OF A NORMAL INCIDENCE TELESCOPE AND SPECTROMETER COVERING THE SPECTRAL RANGE FROM 280 TO 1380 A. THE INSTRUMENT WAS USED AS A SPECTROMETER-SPECTROHELIO METER IN THREE OPERATING MODES. FIRST, SPECTRAL SCANS WERE MADE AT FIXED POSITIONS ON OR OFF THE SOLAR DISK. BY MOVING THE SPACECRAFT, THE OPTICAL AXIS OF THE INSTRUMENT WAS POINTED AT ONE OF THE POSITIONS IN A 128- BY 128- POINTING REFERENCE GRID CENTERED IN THE SOLAR DISK. THE GRATING OF THE INSTRUMENT WAS STEPPED IN STEPS OF 0.1 A. THE FIELD OF VIEW FOR OBSERVATIONS MADE ON THE SOLAR DISK WAS 35 ARC-SEC-SQ. FOR OBSERVATIONS MADE ABOVE THE LIMB, SCATTERED LIGHT FROM THE DISK SHOULD BE SUBTRACTED FROM THE OBSERVED INTENSITY. A COMPLETE SPECTRAL SCAN REQUIRED ABOUT 16 MIN. SECONDLY, THE INSTRUMENT WAS COMMANDED TO A SELECTED WAVELENGTH, AND THE SPACECRAFT WAS OPERATED IN A RASTER PATTERN TO OBTAIN FULL DISK SPECTROHELIOGRAMS. THESE LARGE RASTERS CONTAINED 64 ROWS (LINES OF CONSTANT ELEVATION) SPACED AT 42 ARC-SEC, WITH 96 POINTS IN EACH ROW, AND REQUIRED ABOUT 8 MIN TO COMPLETE. THE SPATIAL RESOLUTION WAS ABOUT 35 ARC-SEC. THIRD, THE INSTRUMENT WAS COMMANDED TO A SELECTED WAVELENGTH, AND THE OPTICAL AXIS OF THE INSTRUMENT WAS POINTED TO ONE OF THE REFERENCE GRID POINTS. THE SPACECRAFT WAS OPERATED IN THE SMALL RASTER PATTERN TO OBTAIN SPECTROHELIOGRAMS OF AN AREA 7 ARC-MIN IN AZIMUTH AND 7.5 ARC-MIN IN ELEVATION. THE PATTERN CONSISTED OF 16 ROWS SPACED 28 ARC-SEC APART WITH 24 POINTS IN EACH ROW. THE TIME FOR A SMALL RASTER WAS ABOUT 31 SEC. COUNTS WERE ACCUMULATED FOR THE FIRST 40-MSEC INTERVAL OF AN 80-MSEC CYCLE TIME AND WERE READ INTO THE TELEMETRY RECORD DURING THE LAST 20 MSEC OF THE CYCLE. THE EXPERIMENT OPERATED FROM AUGUST 12, 1969 UNTIL TERMINATION, ON MAY 12, 1970, DUE TO LOW SENSITIVITY. THE EXPERIMENT PRODUCED OVER 120,000 SMALL SPECTROHELIOGRAMS, 6500 FULL DISK SPECTROHELIOGRAMS, AND 1500 SPECTRA.

DATA SET NAME- EUV RASTER SCANS ON MAGNETIC TAPE

NSSDC ID 69-068A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 081269 TO 051270 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 51 REEL(S) OF MAGNETIC TAPE



DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE PRINCIPAL INVESTIGATOR, CONSISTS OF ALL RECORDED FULL-DISK (LARGE) AND SMALL SPECTROHELIOGRAMS THAT WERE OBTAINED WHILE THE SPACECRAFT OPERATED IN A RASTER PATTERN. THE DATA ARE CONTAINED ON 51 800-BPI, 9-TRACK, BINARY MAGNETIC TAPES GENERATED ON AN IBM 360/65 COMPUTER. THE TAPES CONTAIN FOR EACH SPECTROHELIOGRAM THE TIME EACH WAS OBTAINED, AND THE INTENSITY MEASUREMENTS AS A FUNCTION OF POSITION IN THE SPECTROHELIOGRAM.

DATA SET NAME- 300- TO 1400-A POINTED SPECTRAL SCANS ON NSSDC ID 69-068A-01B  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 081269 TO 051170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE PRINCIPLE INVESTIGATOR, CONSISTS OF ALL SPECTRAL SCAN DATA OBTAINED BY POINTING THE SPECTROMETER AT THE CENTER OF THE SOLAR DISK, OR AT ONE OF THE POINTING POSITIONS. THE DATA ARE CONTAINED ON 15 800-BPI, 9-TRACK, BINARY MAGNETIC TAPES GENERATED ON AN IBM 360/65 COMPUTER. THE TAPES CONTAIN FOR EACH SCAN THE TIME OF SCAN AND INTENSITY MEASUREMENTS IN A SERIAL LIST. THE PROCEDURE FOR RELATING POSITION IN THE SERIAL LIST WITH WAVELENGTH AND TIME IS GIVEN IN THE DOCUMENTATION FURNISHED WITH THE DATA.

DATA SET NAME- EXPERIMENT COMMAND LOGS ON MAGNETIC TAPE NSSDC ID 69-068A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 081269 TO 051270 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS THE HARVARD COLLEGE OBSERVATORY (HCO) OSO 6 EXPERIMENT OBSERVING LOG, AVAILABLE AS ONE FILE ON A 556-BPI, BCD, 7-TRACK TAPE. THE INFORMATION, WHICH INCLUDES UT, THE SPACECRAFT AND EXPERIMENT OPERATING MODES, ALL OF THE HCO COMMANDS SENT TO THE SPACECRAFT, ETC., IS GIVEN FOR EACH ORBIT. THIS LOG ALSO CONTAINS INDEX INFORMATION THAT PERMITS RAPID COMPUTER SEARCHING FOR GIVEN TYPES OF OBSERVATIONS TO SATISFY A PARTICULAR CRITERION.

DATA SET NAME- MARCH 7, 1970 SOLAR ECLIPSE DATA ON NSSDC ID 69-068A-01D  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 030770 TO 030870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS SOLAR ECLIPSE DATA SET CONTAINS DATA TAKEN FROM THE TAPES DESCRIBED UNDER DATA SET 69-068A-01A AND COPIED ON ONE 800-BPI, 9-TRACK BINARY TAPE BY NSSDC. DURING THE PERIOD FROM 0246 UT ON MARCH 7 TO 2213 UT ON MARCH 8, 1970, THE SPACECRAFT WAS OPERATED PRIMARILY IN THE RASTER MODE. A NUMBER OF LARGE RASTER SCANS WERE MADE AT WAVELENGTHS OF 625 A (MG X), 630 A (O V), 897 A (LY C), 977 A (C III), 1026 A (LY B), 1032 (C VI), AND 1216 A (LY A).

DATA SET NAME- SEARCH PROGRAM FOR DATA ON MAGNETIC TAPE NSSDC ID 69-068A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- TO (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS A FORTRAN IV PROGRAM AVAILABLE AS ONE FILE ON A 556-BPI, BCD, 7-TRACK MAGNETIC TAPE GENERATED ON AN IBM 7094 COMPUTER BY NSSDC. IT IS DESIGNED TO SEARCH THE LOG DESCRIBED UNDER DATA SET 69-068A-01C FOR ALL BLOCKS OF DATA SATISFYING THE CRITERIA CHOSEN BY THE USER. THE INPUT DATA FOR A SEARCH MUST BE PROVIDED ON TWO CARDS. INSTRUCTIONS FOR PREPARING THE CARDS ARE CONTAINED IN THE DOCUMENTATION FURNISHED WITH THE DATA.

DATA SET NAME- CALIBRATION FACTOR ON MAGNETIC TAPE NSSDC ID 69-068A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- TO (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMPOSED OF A PROGRAM WRITTEN IN FORTRAN IV CONTAINED AS TWO FILES ON 556-BPI, BCD, 7-TRACK MAGNETIC TAPE GENERATED ON AN IBM 7094 COMPUTER BY NSSDC. THE PROGRAM CAN BE USED TO CALCULATE THE CALIBRATION FACTOR THAT CONVERTS THE OBSERVED INTENSITIES FROM ENGINEERING TO ABSOLUTE UNITS. ALSO INCLUDED ARE THE STANDARD DATA REQUIRED IN THE CALCULATION.

EXPERIMENT NAME- X-RAY SPECTROMETER NSSDC ID 69-068A-04

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.V.	ARGO	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - B.L.	HENKE	LOS ALAMOS SCI LAB	LOS ALAMOS, N.M.
OI - J.A.	BERGEY	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - W.D.	EVANS	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

DATE LAST USABLE EXPERIMENT DATA RECORDED-110169  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT MONITORED PHOTON FLUX IN SEVEN WAVELENGTH CHANNELS, 16 A, 18 A, 18.1 A, 18.9 A, 21.6 A, 33.7 A, AND 40.3 A. THE 18.1-A CHANNEL WAS FREE OF LINE RADIATION AND THUS PROVIDED BACKGROUND CONTINUUM AND INTERESTING FLUX MEASUREMENTS DURING SO-CALLED BREMSSTRAHLUNG FLARES. THE INSTRUMENTS CONSISTED OF SIX NONSCANNING CURVED CRYSTAL SPECTROMETERS THAT WERE ACTIVATED BY A SUN SENSOR DURING THE 22 MSEC WHEN THE INSTRUMENT AXIS WAS SWEEPING THE 4 DEG OF THE CENTER OF THE SUN. CRYSTALS USED IN THE SPECTROMETERS WERE OF TWO TYPES -- BENT MICA FOR WAVELENGTHS LESS THAN 19 A AND A LEAD STEARATE CRYSTAL FORMED ON MICA FOR WAVELENGTHS GREATER THAN 19 A. OPEN WINDOW PHOTOELECTRIC COUNTERS WERE USED. THE BENDIX M310 PHOTOMULTIPLIERS HAVE GRADUALLY DETERIORATED SINCE LAUNCH. GOOD DATA WERE RECEIVED IN AUGUST AND OCTOBER 1969. NO USEFUL DATA HAVE BEEN OBTAINED SINCE NOVEMBER 1, 1969. THE EXPERIMENT HAS BEEN IN AN INOPERABLE STATUS SINCE APRIL 22, 1970.

DATA SET NAME- REDUCED SOLAR X-RAY LINE EMISSIONS ON           NSSDC ID 69-068A-04A  
                  MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081469 TO 012070 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF ONE FILE OF REDUCED X-RAY COUNT RATES RECORDED ON ONE 7-TRACK, 556-BPI, IBM 7094, BINARY (ODD PARITY) MAGNETIC TAPE. THE TAPE WAS DERIVED FROM 62 REELS OF NASA OSO 6 7-TRACK, 800-BPI, BINARY DATA TAPES, WHICH CONTAINED THE ORIGINAL DATA OBTAINED FROM THE X-RAY SPECTROMETER EXPERIMENT DURING THE PERIOD AUGUST 14, 1969, TO JANUARY 20, 1970. DATA CONTAINED ON THE TAPE INCLUDE (1) THE SUM OF COUNTS, (2) THE AVERAGE COUNT RATE PER SECOND, AND (3) THE STANDARD DEVIATION FOR THAT RATE FOR EACH SPECTRAL CHANNEL FOR EACH ORBIT. THESE PARAMETERS ARE LISTED IN TABULAR FORM BY RECORD NUMBER FOR BOTH THE 'SUN' (SOLAR-CENTERED) AND 'SHADE' (60 DEG AWAY FROM THE SUN) SPECTROMETER SWEEP MODES. EACH RECORD CONTAINS THE ABOVE THREE PARAMETERS FOR EACH OF THE SIX CHANNELS IN ADDITION TO THE DATE AND TIME (UT) OF OBSERVATION. THE FIRST 30 SEC OF DATA AFTER SUN ACQUISITION AND THE LAST 30 SEC AT SUNSET HAVE BEEN REMOVED ARBITRARILY FROM THE COUNT SUMMATIONS TO ELIMINATE ATMOSPHERIC TRANSMISSION ERRORS. THE COUNT RATES CAN BE CONVERTED TO ABSOLUTE FLUXES BY USE OF THE CALIBRATION FACTORS GIVEN IN TABLES 1 AND 2 OF 'THE OSO 6 X-RAY SPECTROMETER EXPERIMENT AND DATA DESCRIPTION' BY DR. HAROLD V. ARGO, AUGUST 4, 1971 (UNPUBLISHED). THE DATA SET COVERS THE PERIOD AUGUST 14, 1969 TO JANUARY 20, 1970. HOWEVER, THE DATA AFTER THE FIRST 60 DAYS ARE PROBABLY NOT USEFUL BECAUSE THE DETECTORS SUFFERED SEVERE GAIN DEGRADATION.

EXPERIMENT NAME- STUDY OF SOLAR HELIUM I, HELIUM II,           NSSDC ID 69-068A-06  
                  OXYGEN, AND NITROGEN RADIATION

ORIGINAL EXPERIMENT INSTITUTION- U COLLEGE, LONDON

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - R.L.F. BOYD U COLLEGE, LONDON LONDON, ENGLAND  
OI - B.E. WOODGATE U COLLEGE, LONDON LONDON, ENGLAND

DATE LAST EXPERIMENT DATA RECORDED-012172  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT SIMULTANEOUSLY MEASURED THE SOLAR EUV FLUX IN SEVERAL SPECTRAL LINES -- (FE XI AT 180 A, HE II AT 256 A, HE II AT 304 A, HE I AT 537 A, O II, III AT 835 A, N III, AT 991 A, C III AT 1175 A, AND H I AT 1216 A) (1) TO DETERMINE FLUX CHANGES AND DENSITY VARIATIONS IN ACTIVE REGIONS AT VARIOUS HEIGHTS ABOVE THE PHOTOSPHERE, (2) TO DETERMINE THE RADIATION INPUT HEATING THE EARTH'S ATMOSPHERE, AND (3) TO MEASURE THE DENSITY OF THE EARTH'S THERMOSPHERE BY THE ABSORPTION OF THE SOLAR EUV AT SATELLITE DUSK AND DAWN. THE INSTRUMENT CONSISTED OF A GRAZING INCIDENCE GRATING SPECTROMETER UTILIZING CHANNEL PHOTOMULTIPLIERS AS DETECTORS. THE INSTRUMENTAL FIELD OF VIEW WAS PLUS OR MINUS 2 DEG IN PITCH AND PLUS OR MINUS 1/2 DEG IN SPIN. IN-FLIGHT X-RAY CALIBRATION OF THE DETECTORS WAS ACCOMPLISHED USING AN IRON 55 RADIOACTIVE SOURCE. IN-FLIGHT GRATING CALIBRATION WAS ACCOMPLISHED BY SIMULTANEOUS MEASUREMENT OF THE SOLAR LYMAN-ALPHA FLUX AT 1216 A. THE BACKGROUND NOISE OF EACH DETECTOR WAS LESS THAN 0.5 COUNTS PER SECOND. COUNTS FROM EACH DETECTOR WERE STORED IN 8-BIT SCALERS WITH PRESCALERS WHICH DIVIDED BY FOUR TO EXTEND THE RANGE TO 636 COUNTS. EACH DETECTOR WAS READ OUT SUCCESSIVELY DURING A ROTATION OF THE SPACECRAFT. THE THREE HIGH-VOLTAGE SUPPLIES AND THE X-RAY CALIBRATION SOURCE COULD BE COMMANDED ON OR OFF INDEPENDENTLY. DURING THE FIRST MONTH OF OPERATION (AUGUST 1969), THE SPACECRAFT PITCH ANGLE OF MINUS 2 DEG COMPROMISED THE FLUX ACCURACY, BUT AFTER THE FIRST MONTH THE PITCH ANGLE WAS KEPT WITHIN PLUS OR MINUS 1 DEG. THE EXPERIMENT WAS OPERATED ONLY DURING SATELLITE DAYTIME (60 MIN OF EACH 96 MIN ORBIT). DATA TAKEN WITHIN THE SOUTH ATLANTIC ANOMALY WAS INVALID DUE TO ADDITIONAL NOISE. THIS NOISE WAS MONITORED ON A BACKGROUND DETECTOR. THE SENSIVITY OF THE EXPERIMENT WAS DEGRADED BY A FACTOR OF 3 IN 9 MONTHS, ALTHOUGH THE EXPERIMENT WAS STILL OPERABLE AT THAT TIME. HIGH-VOLTAGE SUPPLY PROBLEMS DEVELOPED IN MAY TO AUGUST, 1970. DATA HAD BEEN ACQUIRED THROUGH APRIL 1971, ALTHOUGH BY THAT TIME THE EXPERIMENT WAS ONLY PARTIALLY OPERATIONAL DUE TO GRATING DEGRADATION AND HIGH-VOLTAGE SUPPLY ABNORMALITIES. AT THAT TIME OPERATION WAS CONTINUED SOLELY TO GAIN TECHNICAL DATA ON THE DETECTORS AND THE GRATING. THE EXPERIMENT WAS TURNED OFF ON JANUARY 21, 1972.

DATA SET NAME- EXPERIMENT ASPECT TAPES

NSSDC ID 69-068A-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081169 TO 080870 (AS VERIFIED BY NSSOC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, RECEIVED FROM THE EXPERIMENTER, IS ON 800-BPI, 9-TRACK, BINARY MAGNETIC TAPES CREATED ON AN IBM SERIES 360 COMPUTER, AND CONTAINS THE ASPECT INFORMATION NEEDED TO INTERPRET DATA SETS 69-068A-06B AND 69-068A-06C. LISTED ARE -- DAY, HR (IN SEC OF GMT), THE SPACECRAFT GEODETIC LATITUDE AND LONGITUDE, SPACECRAFT ALTITUDE IN KM, THE DECLINATION OF THE SOLAR VECTOR, MCILWAIN'S L PARAMETER, THE MAGNETIC FIELD STRENGTH (GAMMAS),

AND THE SPACECRAFT SPIN RATE (IN ROTATIONS PER SEC).

DATA SET NAME- LISTING OF SOLAR EUV FLUXES ON MAGNETIC TAPE (4 SECOND FRAMES) NSSDC ID 69-068A-06B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081469 TO 100370 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 9 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, OBTAINED FROM THE EXPERIMENTER, IS ON 800-BPI, 9-TRACK, BINARY MAGNETIC TAPE CREATED ON AN IBM SERIES 360 COMPUTER, AND INCORPORATES THE FLUXES OBSERVED BY EACH DETECTOR DURING EACH FRAME WITH RELEVANT HOUSEKEEPING DATA. LISTED ARE -- THE FLUXES OBSERVED AT 304, 180, 256, 835, 584, 537, 991, 1175 A, AND LYMAN-ALPHA (1216 A), AND FLUXES FROM A CONTINUUM CHANNEL, AN ELECTRON DETECTOR, A SCATTERED LIGHT DETECTOR, DATE, TIME (GMT), SPACECRAFT PITCH, SPIN RATE, TEMPERATURE, AND VARIOUS VOLTAGES, ALSO GIVEN IS INFORMATION ALLOWING THE DATA TO BE PLACED WITH REGARD TO ITS LOCATION IN THE SPACECRAFT MAIN-FRAME DATA STREAM. DATA ARE PROVIDED FOR ABOUT 60 MIN OF EACH 96-MIN ORBIT. PITCH AND SPIN RATES ARE INCORRECT FOR SATELLITE DUSK OR DAWN CONDITIONS, WHEN THE ASPECT TAPES (DATA SET 69-068A-06A) MUST BE USED INSTEAD.

DATA SET NAME- 2-MIN AVERAGES OF SOLAR EUV FLUXES ON MAGNETIC TAPE NSSDC ID 69-068A-06C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 081569 TO 092970 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, OBTAINED FROM THE EXPERIMENTER, IS ON 800-BPI, 9-TRACK, BINARY MAGNETIC TAPE GENERATED ON AN IBM SERIES 360 COMPUTER AND CONTAINS 2 MIN AVERAGES OF THE DATA LISTED IN DATA SET 69-068A-06B. LISTED ARE -- THE DAY NUMBER, A DAWN/DUSK FLAG, THE SATELLITE PITCH AND SPIN RATE, AND THE AVERAGE COUNTS PER LOOK, AVERAGED OVER 2-MIN INTERVALS, FOR THE 304, 180, 256, 835, 584, 537, 991, 1175 A, AND LYMAN ALPHA CHANNELS, AND FLUXES FROM A CONTINUUM CHANNEL, AN ELECTRON DETECTOR, A SCATTERED LIGHT DETECTOR, THE SPACECRAFT SPIN RATE, PITCH ANGLE, AND THE HR AND MIN. DATA OVER 60 MIN OF EACH 96-MIN ORBIT. EACH VARIABLE IS AVERAGED OVER AN ENTIRE SUNLIT PASS, AND THIS AVERAGE AND ITS STANDARD DEVIATION ARE ALSO GIVEN. HIGH COUNT RATES DUE TO THE SOUTH ATLANTIC ANOMALY, AS DETECTED BY THE SCATTERED LIGHT DETECTOR, ARE NOT INCLUDED IN THE PASS LONG AVERAGES. FOLLOWING THE ABOVE INFORMATION, THE SAME DATA ARE REPORTED, BUT THE COUNT RATES ARE CONVERTED TO A 'COUNTS PER SECOND' SCALE.

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SPACECRAFT COMMON NAME- ATS 5 NSSDC ID 69-069A  
ALTERNATE NAMES- PL-692B, ATS-E, GGSE

LAUNCH DATE- 08/12/69 SPACECRAFT WEIGHT IN ORBIT- 821. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-060173  
SPACECRAFT STATUS OF OPERATION- OPERATIONAL OFF

EPOCH DATE- 08/23/69 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 1463. MIN  
APOAPSIS- 36894.0 KM ALT PERIAPSIS- 35760.0 KM ALT INCLINATION- 2.6 DEG

SPACECRAFT BRIEF DESCRIPTION

ATS 5 WAS AN EQUATORIAL-ORBITING, SYNCHRONOUS-ALTITUDE TECHNOLOGY SATELLITE INTENDED TO TEST VARIOUS COMMUNICATIONS AND EARTH OBSERVATIONAL SYSTEMS. ALSO INCLUDED ONBOARD WERE PARTICLE, ELECTRIC FIELD, AND MAGNETIC FIELD EXPERIMENTS. BECAUSE OF A MALFUNCTION, THE INTENDED GRAVITY GRADIENT STABILIZATION MECHANISM COULD NOT BE DEPLOYED, AND ATS 5 WAS STABILIZED IN A SPINNING MODE ABOUT SPACECRAFT Z AXIS AT APPROXIMATELY 71 RPM. ALL EXPERIMENTS WHICH DEPENDED ON THE PLANNED GRAVITY GRADIENT STABILIZATION WERE ADVERSELY AFFECTED TO VARYING DEGREES, AND THE MISSION WAS DECLARED A FAILURE. HOWEVER, SOME OF THE SCIENCE EXPERIMENTS, INCLUDING THE MAGNETIC FIELD MONITOR AND THE PARTICLE EXPERIMENTS, RETURNED USABLE DATA DURING THE OPERATIONAL LIFETIME OF THE MISSION. ATS 5 WAS POSITIONED AT ABOUT 105 DEG W LONGITUDE OVER THE PACIFIC OCEAN. DATA WERE RECORDED ABOUT 60 PERCENT OF THE TIME THROUGH MOST OF THE SPACECRAFT'S OPERATIONAL LIFETIME, WHICH EXTENDED TO JUNE 1, 1973. AFTER THAT DATE PRACTICALLY NO DATA WERE RECORDED.

EXPERIMENT NAME- TRI-DIRECTIONAL MEDIUM ENERGY PARTICLE DETECTOR NSSDC ID 69-069A-04

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F. MOZER U OF CALIFORNIA, BERK BERKELEY, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF THREE ESSENTIALLY IDENTICAL SCINTILLATION PHOTOMULTIPLIER DETECTORS, EACH INTENDED TO MEASURE (SEPARATELY) ELECTRONS AND PROTONS IN THREE ENERGY WINDOWS CENTERED RESPECTIVELY AT 40, 75, 120 KEV AND 60, 120, 165 KEV. TWO DETECTORS, LOOKING IN OPPOSITE DIRECTIONS, WERE TILTED BY 12 DEG FROM THE SATELLITE Z AXIS AND ONE WAS ORIENTED PERPENDICULAR TO THIS CONFIGURATION. OVER MOST OF ITS DATA COLLECTING LIFETIME, THE SATELLITE WAS SPINNING ABOUT ITS Z AXIS, WITH A SPIN PERIOD OF 0.78 SEC. DUE TO AN UNPLANNED SPACECRAFT SPIN SOON AFTER LAUNCH A SHUTTER SYSTEM WAS ACTIVATED THAT RENDERED THE PERPENDICULAR DETECTOR INEFFECTIVE. THEREFORE, MEASUREMENTS WERE MADE ONLY IN DIRECTIONS APPROXIMATELY PARALLEL AND ANTI PARALLEL TO THE LOCAL MAGNETIC FIELD. THE SPECIES ANALYSIS WAS PERFORMED BY A THREE-CHANNEL PULSE HEIGHT ANALYZER, AND PARTICLE COUNTS WERE TELEMETERED IN BOTH ANALOG AND DIGITAL MODES. THE INTEGRATION TIME FOR EACH CHANNEL WAS 0.01 SEC WHILE THE READOUT RATE FOR ANY ONE CHANNEL VARIED FROM 0.2 TO 5.12 SEC, DEPENDING ON A COMMANDABLE READOUT MODE. FOR FURTHER INFORMATION CONSULT -- 'DEVELOPMENT OF A DOUBLE LAYERED SCINTILLATOR FOR SEPARATING AND DETECTING LOW ENERGY PROTONS AND ELECTRONS,' BY F. S. MOZER,

F. H. BOGOTT, AND C. W. BATES, JR., IEEE TRANS. ON NUCL. SCI., NS-15 (3),  
144, 1965.

DATA SET NAME- 40 TO 120 KEV ELECTRON AND 60 TO 165 KEV NSSDC ID 69-069A-04A  
PROTON DATA ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 091669 TO 040971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 319 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONTAINS 317 INTERMEDIATE DATA TAPES AND TAPE SUMMARY SHEETS. THESE ARE ALL CDC 6600 GENERATED, 7-TRACK, 800-BPI, BINARY TAPES WITH A VARIABLE NUMBER OF FILES. THIS ENTRY IS TEMPORARY (03-13-73), PENDING FURTHER CLARIFICATION OF TAPE CONTENTS. UNTIL ADDITIONAL DOCUMENTATION IS RECEIVED FROM THE EXPERIMENTER, NO INFORMATION AS TO PARTICLE SPECIES, TYPES OF MEASUREMENTS, TIME RANGE, ENERGY, RATE, ETC. CAN BE GIVEN.

DATA SET NAME- 40 TO 120 KEV ELECTRON AND 60 TO 165 KEV NSSDC ID 69-069A-04B  
PROTON DATA ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 091769 TO 100170 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS EXPERIMENTER-SUPPLIED DATA SET CONSISTS OF THREE REELS OF 35-MM MICROFILM CONTAINING MACHINE PLOTS DEPICTING TIME-ORDERED PARTICLE FLUXES, ENERGY DENSITIES, E-FOLDING ENERGIES, AND MAGNETOMETER DATA, EXTENDING FROM SEPTEMBER 17, 1969 TO OCTOBER 1, 1970. ALL PLOTS ARE 8 HR LONG AND CAN BE READ WITH ABOUT 5-MIN TIME RESOLUTION. THERE ARE FOUR FRAMES FOR EVERY 8-HR TIME INTERVAL CONTAINING, RESPECTIVELY -- (1) THE SOUTH ENERGY DENSITY AND FLUXES, (2) THE NORTH ENERGY DENSITY AND FLUXES, (3) THE RADIAL ENERGY DENSITY AND FLUXES, AND (4) THE MAGNETIC FIELD COMPONENTS, MEASURED BY ONBOARD MAGNETOMETER ANTICOINCIDENCE CHANNEL DATA, AND E-FOLDING ENERGIES. SUNLIGHT CONTAMINATION OCCURS DURING PART OF EACH SPIN IN THE SOUTH ENERGY DENSITY, SOMETIMES IN THE SOUTH PROTON CHANNELS, AND IN ALL NORTH CHANNELS. THIS CONTAMINATION IS OBVIOUS ON THE PLOTS. FOR INFORMATION REGARDING THE MAGNETIC FIELD DETECTOR USED IN THIS EXPERIMENT CONSULT 'ATS-E MAGNETIC FIELD MONITOR INSTRUMENTATION,' BY T. L. SKILLMAN REPORT NO. X-645-70-54, GSFC, GREENBELT, MD.

EXPERIMENT NAME- MAGNETIC FIELD MONITOR

NSSDC ID 69-069A-13

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - T.L. SKILLMAN

NASA-GSFC

GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO STUDY THE PROCESSES TAKING PLACE ON THE AURORAL MAGNETIC SHELLS. IT WAS ALSO INTENDED TO PROVIDE CORRELATIVE DATA FOR THE OTHER EXPERIMENTS ON THE SATELLITE. THE EXPERIMENT WAS PART OF THE MAGNETIC STABILIZATION SYSTEM THAT WAS THE BACKUP FOR THE GRAVITY-GRADIENT STABILIZATION SYSTEM. THE SENSOR SYSTEM CONSISTED OF A TRIAXIAL FLUXGATE MAGNETOMETER. THE SYSTEM MEASURED THE MAGNETIC FIELD ALONG THREE AXES BY COMBINING A FINE RANGE (PLUS AND MINUS 25 GAMMAS) AND A COARSE RANGE OF 32 INCREMENTS (32.8 GAMMAS EACH) TO GIVE THE TOTAL RANGE OF PLUS AND MINUS 500 GAMMAS. THE FINE AND COARSE READINGS WERE SAMPLED ON THE PFM TELEMETRY AT 5.12-SEC INTERVALS. THE FINE READINGS ONLY WERE RECORDED ON THE PGM TELEMETRY AT 2.97-SEC INTERVALS. THE PGM COARSE READINGS WERE SUBCOMMUTATED AT A 95-SEC INTERVAL. A 10-GAMMA CALIBRATION PULSE WAS INITIATED TWICE A DAY FOR 5.6 MIN. THE FAST SPIN RATE OF THE SATELLITE, THE SLOW SAMPLE RATE OF THE DATA, AND THE RESULTING ALIASING PROBLEMS DEGRADED THE DATA IN THE SPIN PLANE. THE MAGNETOMETER ITSELF HAD OPERATED SATISFACTORILY SINCE LAUNCH AND HAD ABOUT A 50 PERCENT COVERAGE UP TO THE TIME WHEN THE SPACECRAFT WAS TURNED OFF.

DATA SET NAME- TRIAXIAL 1.5-MIN AVG MAGNETIC FIELD DATA   NSSDC ID 69-069A-13A  
UNCORRECTED FOR SPACECRAFT INTERFERENCE

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 120469 TO 050970 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS REEL OF EXPERIMENTER-GENERATED 35-MM MICROFILM CONTAINS 1.5-MIN-AVERAGED VECTOR MAGNETIC FIELD PLOTTED 12 HR PER FRAME. UNCORRECTED FOR OFFSET DRIFT OR SPACECRAFT INTERFERENCE, THE DATA ARE INTENDED FOR USE WITH GROUND-BASED MAGNETOGRAMS AND OTHER SATELLITE MEASUREMENTS TO CORRELATE CHANGES DUE TO PRECIPITATION OF TRAPPED PARTICLES RELATED TO AURORAL AND OTHER IONOSPHERIC DISTURBANCES. THE DATA ARE BELIEVED TO BE ACCURATE FOR RELATIVE CHANGES TO PLUS OR MINUS 10 OR 20 GAMMAS FOR HIGH OR LOW SATELLITE BIT RATE, RESPECTIVELY. THE TELEMETRY COVERAGE FROM WHICH THESE DATA ARE DERIVED HAS BEEN ABOUT 50 PERCENT, RELATED TO THE OPERATION OF ATS 5 APPLICATIONS EXPERIMENTS.

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SPACECRAFT COMMON NAME- GRS-A

NSSDC ID 69-097A

ALTERNATE NAMES-

PL-6940, AZUR, GERMAN RESEARCH SAT, GRS-A1

LAUNCH DATE- 11/08/69

SPACECRAFT WEIGHT IN ORBIT-

70.7 KG

FUNDING AGENCY- DFVLR

FUNDING AGENCY- NASA-OSS



DATE LAST USABLE SPACECRAFT DATA RECORDED-070170  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 01/19/70 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 121.8 MIN  
APOAPSIS- 3139.00 KM ALT PERIAPSIS- 385.000 KM ALT INCLINATION- 102.976 DEG

SPACECRAFT BRIEF DESCRIPTION

THE MAGNETICALLY ALIGNED SPACECRAFT WAS LAUNCHED INTO A NEAR POLAR ORBIT. THE SPACECRAFT WAS A PRODUCT OF A JOINT EFFORT BY NASA-GSFC AND THE GERMAN BUNDESMINISTERIUM FUR WISSENSCHAFTLICHE FORSCHUNG (BMWF) AND HAD AS ITS PRIMARY PURPOSE THE ACQUISITION OF TERRESTRIAL RADIATION BELT DATA. SPECIFICALLY, THE SCIENTIFIC MISSION OF THE SPACECRAFT WAS AS FOLLOWS - 1) TO SCAN THE ENERGY SPECTRA OF INNER ZONE PROTONS AND ELECTRONS, 2) TO MEASURE THE FLUXES OF ELECTRONS OF ENERGY GREATER THAN 40 KEV THAT ARE PARALLEL, ANTIPARALLEL, AND PERPENDICULAR TO THE MAGNETIC LINES OF FORCE OVER THE AURORAL ZONE AND TO MEASURE ASSOCIATED OPTICAL EMISSION, AND 3) TO RECORD SOLAR PROTONS ON ALERT. AFTER ABOUT 24 HOURS IN ORBIT, A COMMAND SYSTEM INSTABILITY DEVELOPED AND PERSISTED INTERMITTENTLY THROUGHOUT THE FLIGHT. THE TAPE RECORDER FAILED ON DECEMBER 8, 1969. PRIOR TO THIS FAILURE, THE GERMAN PROJECT OFFICE ESTIMATED 85-90 PERCENT OF THE EXPECTED DATA HAD BEEN OBTAINED. ALL EXPERIMENTS WERE OPERATING NORMALLY UNTIL THE SPACECRAFT TELEMETRY SYSTEM MALFUNCTIONED IN EARLY JULY 1970.

EXPERIMENT NAME- FLUXGATE MAGNETOMETER

NSSDC ID 69-097A-01

ORIGINAL EXPERIMENT INSTITUTION- BRAUNSCHWEIG TECH U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G. MUSMANN BRAUNSCHWEIG TECH U BRAUNSCHWEIG, W. GERMANY

DATE LAST EXPERIMENT DATA RECORDED-070170  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

A TWO-COMPONENT FLUXGATE MAGNETOMETER WITH TWO IDENTICAL ELECTRICALLY INDEPENDENT MEASURING UNITS WAS USED AS AN ATTITUDE SENSOR AND AS AN EXPERIMENT FOR DETECTING TRANSVERSE HYDROMAGNETIC WAVES. IT WAS ORIENTED PERPENDICULAR TO THE MAGNETIC FIELD. IN ORDER TO ELIMINATE MAGNETIC FIELDS FROM THE SATELLITE, THE MAGNETOMETER WAS PLACED ON A BOOM ABOUT 80 CM LONG. THE SENSOR WAS TO BE THERMALLY SHIELDED BY A CYLINDRICAL METAL CAP. FLUCTUATIONS ( $\Delta B$ ) IN MAGNETIC INDUCTION ( $B$ ) GREATER THAN PLUS OR MINUS 5 GAMMA WERE MEASURED. EACH COMPONENT OF THE MAGNETOMETER WAS SAMPLED FOR 125 MSEC ONCE EVERY 5 SEC. THE EXPERIMENT WORKED NORMALLY UNTIL THE SPACECRAFT TELEMETRY SYSTEM MALFUNCTIONED IN EARLY JULY 1970.

DATA SET NAME- 9.875-SEC AVERAGED VECTOR MAGNETIC FIELD  
OBSERVATIONS ON TAPE

NSSDC ID 69-097A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110869 TO 062870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 30 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUBMITTED BY THE EXPERIMENTER, CONSISTS OF TAPE RECORDER AND REAL-TIME TELEMETRY 9.875-SEC AVERAGED MAGNETIC FIELD DATA FROM A BIAxIAL FLUXGATE MAGNETOMETER. THE DATA ARE ON 7-TRACK, 556-BPI, BINARY MAGNETIC TAPES GENERATED ON A CDC 3800 COMPUTER. THERE ARE A VARIABLE NUMBER OF FILES PER TAPE. THE DATA WITHIN ONE FILE ARE CONTINUOUS WITH RESPECT TO THE TIME. THE FIRST PHYSICAL RECORD IN A FILE IS A FILE LABEL RECORD GIVING THE ORBIT NUMBER AND TIME. THIS RECORD IS FOLLOWED BY A VARIABLE NUMBER OF DATA PHYSICAL RECORDS. EACH PHYSICAL RECORD IS THREE HUNDRED AND THIRTY 48-BIT COMPUTER WORDS IN LENGTH AND IS FURTHER DIVIDED INTO SIX LOGICAL RECORDS OF 55 WORDS EACH. THE DATA WITHIN ONE LOGICAL RECORD COVER THE TIME OF ONE SUBCOMMUTATED DATA FRAME, I.E., 9.875 SEC, AND CONTAIN THE TIME OF OBSERVATION (UT YEAR, DAY OF THE YEAR, MSEC OF DAY), THE MAGNETIC FIELD COMPONENTS ALONG THE TWO SENSORS, SPACECRAFT LATITUDE, LONGITUDE, AND GEOCENTRIC RADIAL DISTANCE AND SOLAR SENSOR OUTPUT.

EXPERIMENT NAME- PROTON TELESCOPE

NSSDC ID 69-097A-03

ORIGINAL EXPERIMENT INSTITUTION- U OF KIEL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J. MORITZ U OF KIEL KIEL, W. GERMANY

DATE LAST USABLE EXPERIMENT DATA RECORDED-062870

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

TWO SOLID-STATE DEVICES WERE USED IN CONJUNCTION WITH FOUR PULSE HEIGHT DISCRIMINATORS TO DETECT TRAPPED AND SOLAR PROTONS USING COINCIDENCE TECHNIQUES. THE DETECTOR HAD SIX ENERGY CHANNELS - PROTONS 0.25-1.65, 0.25-12.5, 0.5-1.65, 1.0-1.65, 1.65-13.5 MEV AND ALPHA PARTICLES 2.0-6.4 MEV. ELECTRONS WERE ELIMINATED FROM THE INCIDENT BEAM USING A BROOM MAGNET. THE ACCEPTANCE CONE WAS 20.4 DEG FULL ANGLE. THE EXPERIMENT WORKED NORMALLY UNTIL THE SPACECRAFT TELEMETRY SYSTEM MALFUNCTIONED IN EARLY JULY 1970.

DATA SET NAME- PROTON AND ALPHA PARTICLE COUNT RATES  
ORDERED BY INVARIANT LATITUDE ON TAPE

NSSDC ID 69-097A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111069 TO 062870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SEPARATE PROTON AND ALPHA PARTICLE COUNT RATES (COUNTS PER 9.875-SEC INTERVAL) ON TWO 7-TRACK, BINARY, ODD PARITY, 800-BPI, CDC 3400 FORMATTED MAGNETIC TAPES. THE DATA ARE ORDERED BY INVARIANT LATITUDE INTERVALS OF A FEW DEGREES EACH, AND THE DATA WITHIN A GIVEN INTERVAL ARE CHRONOLOGICALLY ORDERED. EACH TAPE HAS A VARIABLE NUMBER OF PHYSICAL RECORDS. EACH PHYSICAL RECORD CONTAINS 79 LOGICAL RECORDS, WITH EVERY 79TH LOGICAL RECORD CONTAINING BOOKKEEPING INFORMATION. EACH OF THE OTHER 78 DATA LOGICAL RECORDS CONTAINS SIX CDC 3400 COMPUTER WORDS (ONE DATA SAMPLE) GIVING THE INVARIANT LATITUDE, TIME (UT IN DAYS SINCE YEAR OF LAUNCH

AND FRACTIONS OF A DAY), MAGNETIC FIELD STRENGTH (GSFC 12/66), MAGNETIC LOCAL TIME, THE HEMISPHERE (NORTH OR SOUTH) IN WHICH THE DATA WERE OBTAINED, AND THE COUNT RATES. EACH TAPE HAS AN END-OF-FILE MARK AT THE END OF THE TAPE.

DATA SET NAME- SELECTION OF VARIOUS PLOTS FOR PROTONS AND FOR ALPHA PARTICLES ON MICROFILM NSSDC ID 69-097A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110969 TO 062870 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS FOUR SETS OF PLOTS SUPPLIED BY THE EXPERIMENTER ON ONE REEL OF 35-MM MICROFILM -- (1) PROTON (AND ALPHA PARTICLE SEPARATELY) COUNT RATE VS TIME IN THE INVARIANT LATITUDE INTERVALS 70 TO 74 DEG AND 75 TO 87 DEG, (2) PROTON FLUX VS TIME (SAME LATITUDE INTERVALS AS ABOVE BUT FOR DIFFERENT ENERGY CHANNELS), (3) PROTON FLUX VS TIME AT SEVERAL B, L POINTS, AND (4) SPACECRAFT ORBIT PASSES ACROSS THE NORTH POLE REGION. ALTHOUGH THE PLOTS OF COUNT RATE AND PARTICLE FLUX AS A FUNCTION OF INVARIANT LATITUDE ONLY COVER THE RANGE 70 TO 87 DEG, SIMILAR PLOTS FOR OTHER INVARIANT LATITUDES INTERVALS MAY BE GENERATED FROM THE MAGNETIC TAPE DATA SET 69-097A-03A. THE PARTICLE ENERGY CHANNELS ARE AS FOLLOWS -- PROTONS - 0.25 TO 0.50, 0.50 TO 1.00, 1.00 TO 1.65, AND 1.65 TO 13.5 MEV AND ALPHA PARTICLES - 2.00 TO 6.40 MEV. THE SIGMA KP INDEX IS GIVEN AT THE TOP OF EACH PAGE OF SECTIONS (1), (2), AND (3). THE DATA SET COVERS THE ENTIRE TIME INTERVAL FOR WHICH THE SPACECRAFT WAS OPERATIONAL, AND MOST OF THE PLOTS IN SECTIONS (1), (2), AND (3) EACH COVER THAT OPERATIONAL PERIOD ALTHOUGH SOME PLOTS COVER A 15-DAY INTERVAL.

DATA SET NAME- TABLE OF PROTON AND ALPHA PARTICLE COUNT RATES AND FLUXES ON MICROFILM NSSDC ID 69-097A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 110869 TO 063070 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS SUBMITTED BY THE EXPERIMENTER, CONSISTS OF LISTINGS OF (1) PROTON AND ALPHA PARTICLE COUNT RATES SEPARATELY (PROTONS CHANNELS K1 THROUGH K5 CORRESPONDING TO THE ENERGY INTERVALS 1.65 TO 13.5 MEV, 0.25 TO 12.5 MEV, 0.25 TO 1.65 MEV, 0.50 TO 1.65 MEV, AND 1.0 TO 1.65 MEV, RESPECTIVELY, AND ALPHA PARTICLE CHANNEL K6 CORRESPONDING TO 2.0 TO 6.4 MEV) AND (2) PROTON FLUXES (PARTICLES/CM SQ-SEC-STER FROM 0.25 TO 12.5 MEV, 0.50 TO 1.65 MEV, 1.0 TO 1.65 MEV, AND 1.65 TO 13.5 MEV) FOR THE INVARIANT LATITUDE INTERVALS 55 PLUS OR MINUS 0.5 DEG AND 75 PLUS OR MINUS 0.5 DEG ON 35-MM MICROFILM. THE DATA WITHIN EACH OF THESE INTERVALS ARE TIME ORDERED, AND FOR EACH COUNT RATE (COUNTS/9.875 SEC) AND FLUX ARE GIVEN THE INVARIANT LATITUDE LAMBDA, UNIVERSAL TIME (DAY, HOUR, MINUTE, AND SECOND), MAGNETIC LATITUDE (DEG), GEOGRAPHIC LATITUDE (DEG), B AND L (GSFC 12/66), PITCH ANGLE ALPHA, B/BO, RADIAL DISTANCE (MEASURED FROM THE CENTER OF THE EARTH'S DIPOLE IN KM), LATITUDE OF THE SATELLITE IN DIPOLE COORDINATES, AND AN INDICATOR TO



CREW. (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS WITH 70-MM STILL CAMERAS, AND (5) OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND OF THE ACTIVITIES OF THE ASTRONAUTS WHO LANDED ON THE MOON. THE CAMERA EQUIPMENT CARRIED BY APOLLO 12 CONSISTED OF ONE 70-MM HASSELBLAD ELECTRIC CAMERA, TWO HASSELBLAD DATA CAMERAS, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA, AND A FOUR-CAMERA, MULTISPECTRAL, S-158 EXPERIMENT. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY. THE PHOTOGRAPHS INCLUDED 1584 FRAMES OF 70-MM FORMAT, 69,519 FRAMES OF 16-MM FORMAT, 15 STEREOSCOPIC PAIRS, AND 564 FRAMES OF PHOTOGRAPHY FROM THE S-158 EXPERIMENT. A USERS' PACKAGE CONTAINING DETAILED INFORMATION ABOUT THE PHOTOGRAPHIC EQUIPMENT AND COVERAGE, AVAILABILITY OF PHOTOGRAPHS, ORDERING PROCEDURES, AND PROOF PRINTS FOR THE APOLLO 12 PHOTOGRAPHY IS AVAILABLE FROM NSSDC. REQUESTER SHOULD ASK FOR NSSDC 70-09, 70-10, AND 70-11.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON B/W POSITIVE 4- BY 6-IN. MICROFICHE CARDS NSSDC ID 69-099A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111869 TO 112469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 950 PHOTOGRAPHS REPRODUCED FROM SIX 70-MM BLACK AND WHITE MAGAZINES ON SIXTEEN 4- BY 6-IN BLACK AND WHITE MICROFICHE CARDS. EACH MICROFICHE CARD CONTAINS FROM 47 TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. WHEN ONE PHOTOGRAPH HAS BEEN LEFT OFF THE MICROFICHE CARD, THIS IS INDICATED IN THE SPACE WHERE THE PHOTOGRAPH NORMALLY WOULD HAVE APPEARED. THE PHOTOGRAPHS CONTAINED IN THESE MICROFICHE CARDS SHOW CRATERS FRA MAURO, COPERNICUS, DESCARTES, KAPTEYN, LANGRENUS A, MAGELHAENS, AND LAPEYROUSE, THE SURVEYOR 3 SPACECRAFT, ALSEP EQUIPMENT, THE SOLAR ECLIPSE, THE SECOND EVA, AND SEVERAL TARGETS OF OPPORTUNITY.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON COLOR POSITIVE 4- BY 6-IN. MICROFICHE CARDS NSSDC ID 69-099A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111869 TO 112469 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 605 PHOTOGRAPHS REPRODUCED FROM FOUR COLOR 70-MM MAGAZINES ON ELEVEN 4- BY 6-IN COLOR MICROFICHE CARDS. EACH MICROFICHE CARD CONTAINS FROM 44 TO 60 PHOTOGRAPHS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE

ORDER. WHEN ONE PHOTOGRAPH HAS BEEN LEFT OFF THE MICROFICHE CARD, THIS IS INDICATED IN THE SPACE WHERE THE PHOTOGRAPH NORMALLY WOULD HAVE APPEARED. OCCASIONALLY, A FEW BLACK AND WHITE FRAMES MAY APPEAR ON THE SAME MICROFICHE CARD WITH THE COLOR. THIS OCCURS WHEN THE FRAMES FOLLOW EACH OTHER IN CONSECUTIVE ORDER. THESE MICROFICHE CARDS INCLUDE COVERAGE OF THE EARTH, CRATERS HUMBOLDT, ERASTOSTHENES, AND PETAVIUS B, ALSEP DEPLOYMENT, THE SURVEYOR CRATER, AND SEVERAL TARGETS OF OPPORTUNITY.

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SPACECRAFT COMMON NAME- APOLLO 12 LM  
ALTERNATE NAMES-

NSSDC ID 69-099C

LAUNCH DATE- 11/18/69      SPACECRAFT WEIGHT IN ORBIT-      4379. KG

FUNDING AGENCY- NASA-DMSF

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION

THE LUNAR MODULE (LM) WAS A TWO-STAGE VEHICLE DESIGNED FOR SPACE OPERATIONS NEAR AND ON THE MOON. THE LM STOOD 7 M HIGH AND WAS 9.4 M WIDE (DIAGONALLY ACROSS THE LANDING GEAR). THE ASCENT AND DESCENT STAGES OF THE LM OPERATED AS A UNIT UNTIL STAGING, WHEN THE ASCENT STAGE FUNCTIONED AS A SINGLE SPACECRAFT FOR RENDEZVOUS AND DOCKING WITH THE COMMAND MODULE (CM). INCLUDED IN THE DESCENT STAGE WERE THE SIX APOLLO LUNAR SCIENTIFIC EXPERIMENT PACKAGE (ALSEP) EXPERIMENTS AND THE LUNAR SURFACE EXPERIMENT. THE ALSEP EXPERIMENTS INCLUDED (1) THE PASSIVE SEISMOGRAPH, WHICH WAS DESIGNED TO MEASURE SEISMIC ACTIVITY AND PHYSICAL PROPERTIES OF THE LUNAR CRUST AND INTERIOR, (2) THE SUPRATHERMAL ION DETECTOR, DESIGNED TO MEASURE THE FLUX COMPOSITION, ENERGY, AND VELOCITY OF LOW-ENERGY POSITIVE IONS, (3) THE COLD CATHODE ION GAUGE, DESIGNED TO MEASURE THE ATMOSPHERE AND ANY VARIATIONS WITH TIME OR SOLAR ACTIVITY SUCH ATMOSPHERE MAY HAVE, (4) THE CHARGED PARTICLE LUNAR ENVIRONMENT, DESIGNED TO MEASURE PARTICLE ENERGIES OF SOLAR PROTONS AND ELECTRONS THAT REACH THE LUNAR SURFACE AND TO PROVIDE DATA ON ENERGY DISTRIBUTION OF THESE SOLAR PARTICLES, (5) THE LUNAR SURFACE MAGNETOMETER (LSM) DESIGNED TO MEASURE THE MAGNETIC FIELD AT THE LUNAR SURFACE, AND (6) THE SOLAR WIND SPECTROMETER, WHICH MEASURED THE STRENGTH, VELOCITY, AND DIRECTIONS OF THE ELECTRONS AND PROTONS THAT EMANATE FROM THE SUN AND REACH THE LUNAR SURFACE. EXPERIMENTS HAVE WORKED WELL, AND ARE STILL RETURNING USEFUL DATA AS OF MARCH 1973.

EXPERIMENT NAME- LUNAR FIELD GEOLOGY

NSSDC ID 69-099C-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - E.M. SHOEMAKER                      CAL TECH                      PASADENA, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-112069  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT ENTAILED THE COLLECTION AND DOCUMENTATION OF GEOLOGIC ROCK SAMPLES. THE SAMPLES WERE COLLECTED USING TONGS, SCOOPS, A HAMMER, AND CORE TUBES. A CLOSEUP STEREOSCOPIC SURFACE CAMERA, THE MODIFIED 70-MM HASSELBLADS, AND A 16-MM CAMERA USED IN EXPERIMENT 69-099A-01 (PHOTOGRAPHY) WERE ALSO USED TO DOCUMENT THE FINDINGS OF THE ASTRONAUTS AND THEIR TRAVERSE OF 1.5 KM FROM THE LANDING SITE. ALL SAMPLES WERE PLACED IN VACUUM TIGHT CONTAINERS, AND THE 34 KG OF ROCK SAMPLES FROM THE CONTINGENCY AND BOTH THE BULK AND DOCUMENTED CONTAINERS WERE BROUGHT BACK TO EARTH FOR USE IN EXTENSIVE SCIENTIFIC INVESTIGATIONS OF THE COMPOSITION OF THE MOON AND ITS ORIGIN.

DATA SET NAME- PHOTOS OF GEOLOGIC SAMPLES ON 35-MM BLACK AND WHITE FILM NSSDC ID 69-099C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112169 TO 112269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 63 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 25 NEGATIVE AND 38 POSITIVE 35-MM BLACK AND WHITE FILM TRANSPARENCIES OF THE GEOLOGIC SAMPLES FROM THE APOLLO 12 MISSION. A BESSELER TOPCON SUPER D CAMERA WAS USED FOR THIS PHOTOGRAPHY. THE PHOTOS SHOW LUNAR ROCK SAMPLES IN CONTAINERS LOCATED IN THE LUNAR RECEIVING LABORATORY (LRL). SOME SAMPLES HAVE THEIR ASSIGNED NUMBERS DISPLAYED, SOME ARE ILLUSTRATED BESIDE A CM RULER, AND OTHERS SHOW THIN SECTIONS OF LUNAR ROCK. THE QUALITY OF THE PHOTOS IS GENERALLY VERY GOOD.

DATA SET NAME- PHOTOS OF GEOLOGIC SAMPLES ON 70-MM BLACK AND WHITE FILM NSSDC ID 69-099C-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 112169 TO 112269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1825 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NEGATIVE AND POSITIVE 70-MM BLACK AND WHITE FILM TRANSPARENCIES OF THE GEOLOGIC SAMPLES FROM THE APOLLO 12 MISSION. THE BEATTIC AND THE HASSELBLAD 500C CAMERAS WERE USED FOR THIS PHOTOGRAPHY. THESE PHOTOS INCLUDE SAMPLES IN CONTAINERS, SAMPLES WITH THEIR ASSIGNED NUMBERS DISPLAYED, OTHERS ILLUSTRATED BESIDE A CM RULER, AND SOME SHOW THIN SECTIONS OF LUNAR ROCK. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY VERY GOOD.

DATA SET NAME- PHOTOS OF GEOLOGIC SAMPLES ON 70-MM COLOR FILM NSSDC ID 69-099C-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112169 TO 112269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 68 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NEGATIVE AND POSITIVE 70-MM COLOR FILM TRANSPARENCIES OF THE GEOLOGIC SAMPLES FROM THE APOLLO 12 MISSION. THE BEATTIC AND THE HASSELBLAD 500C CAMERAS WERE USED FOR THIS PHOTOGRAPHY. THESE PHOTOS SHOW THE SAMPLES TOGETHER WITH THEIR ASSIGNED NUMBERS. SOME ARE ILLUSTRATED BESIDE A CM RULER, AND OTHERS SHOW THIN SECTIONS OF LUNAR ROCK. THE QUALITY OF THE PHOTOGRAPHY IS GENERALLY GOOD.

DATA SET NAME- PHOTOS OF GEOLOGIC SAMPLES ON BLACK AND WHITE SHEET FILM NSSDC ID 69-099C-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112169 TO 112269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2000 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF POSITIVE AND NEGATIVE 4- BY 5- IN. BLACK AND WHITE FILM TRANSPARENCIES OF THE GEOLOGICAL SAMPLES FROM THE APOLLO 12 MISSION. THE CALUMET VIEW CAMERA WITH A ZEISS-ULTRAPHOT LENS WAS USED FOR THIS PHOTOGRAPHY. THESE PHOTOS SHOW THE SAMPLES TOGETHER WITH THEIR ASSIGNED NUMBERS. SOME ARE ILLUSTRATED BESIDE A CM RULER, AND OTHERS SHOW THIN SECTIONS OF LUNAR ROCK. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY VERY GOOD.

DATA SET NAME- PHOTOS OF GEOLOGIC SAMPLES ON COLOR SHEET FILM NSSDC ID 69-099C-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 112169 TO 112269 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 516 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF POSITIVE AND NEGATIVE COLOR FILM TRANSPARENCIES OF THE GEOLOGIC SAMPLES FROM THE APOLLO 12 MISSION. THE CALUMET VIEW CAMERA WITH A ZEISS-ULTRAPHOT LENS WAS USED FOR THIS PHOTOGRAPHY. THESE PHOTOS SHOW THE SAMPLES DISPLAYED BY THEIR ASSIGNED NUMBERS. OTHERS ARE ILLUSTRATED BESIDE A CM RULER, AND SOME PHOTOS SHOW THIN SECTIONS OF LUNAR ROCK. THE QUALITY OF THE PHOTOGRAPHY IS GENERALLY VERY GOOD.

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER NSSDC ID 69-099C-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC



EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.P. SONETT NASA-ARC MOFFETT FIELD, CA  
OI - P. DYAL NASA-ARC MOFFETT FIELD, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-030570  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE LUNAR SURFACE MAGNETOMETER IS PART OF THE ALSEP PACKAGE AND CONSISTS OF THREE FLUXGATE SENSORS LOCATED ON ORTHOGONAL 5-FT BOOMS. THE SENSORS ARE MOUNTED ON GIMBALS ALLOWING THEIR MEASUREMENT AXES TO BE INTERCHANGED FOR PURPOSES OF CALIBRATION AND SITE SURVEY. THE INSTRUMENT WAS DESIGNED TO MEASURE THE MOON'S MAGNETIC FIELD, AND OPERATED IN THE RANGES MINUS TO PLUS 100, 200, OR 400 GAMMAS. IT SHOULD ALSO YIELD INFORMATION ABOUT THE LUNAR GROSS ELECTRICAL DIFFUSIVITY, THE EXISTENCE OF A MOLTEN CORE, THE EARTH'S MAGNETIC TAIL, AND LOCAL MAGNETIC ANOMALIES. THE INSTRUMENT MEASURED THE MAGNETIC FIELD VECTOR AND ITS TIME VARIATION AND SPATIAL GRADIENT. THE EXPERIMENT FUNCTIONED NORMALLY UNTIL MARCH 5, 1970, AFTER WHICH NO FURTHER DATA WERE OBTAINED.

DATA SET NAME- TOTAL MAGNETIC FIELD MAGNITUDE AND COMPONENTS ON MICROFILM NSSDC ID 69-099C-04A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111969 TO 030570 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 16-MM MICROFILM REEL GENERATED AT NSSDC FROM HARD-COPY ORIGINAL PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 30 OR 60 MIN OF DATA. THREE- OR 6-SEC AVERAGE VALUES OF MAGNETIC FIELD MAGNITUDE AND OF EACH OF THREE CARTESIAN COMPONENTS ARE PLOTTED PER FRAME. THERE ARE VERY FEW DATA GAPS.

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SPACECRAFT COMMON NAME- ITOS 1 NSSDC ID 70-008A  
ALTERNATE NAMES- TIROS-M

LAUNCH DATE- 01/23/70 SPACECRAFT WEIGHT IN ORBIT- 306.9 KG

FUNDING AGENCY- ESSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-061871  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 02/13/70 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 115.0 MIN  
APODAPSIS- 1478.50 KM ALT PERIAPSIS- 1432.79 KM ALT INCLINATION- 101.991 DEG

SPACECRAFT BRIEF DESCRIPTION

ITDS 1 (TIROS-M) WAS THE PROTOTYPE SPACECRAFT FOR THE SECOND GENERATION OF OPERATIONAL SUN-SYNCHRONOUS METEOROLOGICAL SPACECRAFT. THE PRIMARY OBJECTIVE OF ITDS 1 WAS TO PROVIDE IMPROVED OPERATIONAL INFRARED AND VISUAL OBSERVATIONS OF EARTH CLOUD COVER FOR USE IN WEATHER ANALYSIS AND FORECASTING. SECONDARY OBJECTIVES INCLUDED PROVIDING BOTH SOLAR PROTON AND GLOBAL HEAT BALANCE DATA ON A REGULAR DAILY BASIS. TO ACCOMPLISH THESE TASKS, THE SPACECRAFT CARRIED FOUR CAMERAS, TWO TELEVISION CAMERAS FOR AUTOMATIC PICTURE TRANSMISSION (APT) AND TWO ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS. IT ALSO CARRIED A LOW-RESOLUTION FLAT PLATE RADIOMETER (FPR), A SOLAR PROTON MONITOR (SPM), AND TWO SCANNING RADIOMETERS THAT NOT ONLY MEASURED EMITTED INFRARED RADIATION BUT ALSO SERVED AS A BACKUP SYSTEM FOR THE APT AND AVCS CAMERAS. THE NEARLY CUBICAL SPACECRAFT MEASURED 1 BY 1 BY 1.2 M. THE TV CAMERAS AND INFRARED SENSORS WERE MOUNTED ON THE SATELLITE BASEPLATE WITH THEIR OPTICAL AXES DIRECTED VERTICALLY EARTHWARD. THE SATELLITE WAS EQUIPPED WITH THREE CURVED SOLAR PANELS THAT WERE FOLDED DURING LAUNCH AND DEPLOYED AFTER ORBIT WAS ACHIEVED. EACH PANEL MEASURED OVER 4.2 M IN LENGTH WHEN UNFOLDED AND WAS COVERED WITH 3420 SOLAR CELLS, EACH MEASURING 2 BY 2 CM. THE ITDS 1 DYNAMICS AND ATTITUDE CONTROL SYSTEM MAINTAINED DESIRED SPACECRAFT ORIENTATION THROUGH GYROSCOPIC PRINCIPLES INCORPORATED INTO THE SATELLITE DESIGN. EARTH ORIENTATION OF THE SATELLITE BODY WAS MAINTAINED BY TAKING ADVANTAGE OF THE PRECESSION INDUCED FROM A MOMENTUM FLYWHEEL SO THAT THE SATELLITE BODY PRECESSION RATE OF ONE REVOLUTION PER ORBIT PROVIDED THE DESIRED "EARTH LOOKING" ATTITUDE. MINOR ADJUSTMENTS IN ATTITUDE AND ORIENTATION WERE MADE BY MEANS OF MAGNETIC COILS AND BY VARYING THE SPEED OF THE MOMENTUM FLYWHEEL. LAUNCHED INTO A NEAR-POLAR ORBIT, THE SPACECRAFT AND EXPERIMENTS PERFORMED NORMALLY UNTIL THE INCREMENTAL TAPE RECORDER (IR) FAILED ON NOVEMBER 16, 1970, RESULTING IN PARTIAL LOSS OF SPM AND FPR DATA. OVERHEATING DEVELOPED IN THE SATELLITE ATTITUDE CONTROL SYSTEM DURING MARCH 1971. ATTEMPTS TO CORRECT THE PROBLEM WERE UNSUCCESSFUL, AND THE SPACECRAFT WAS DEACTIVATED ON JUNE 18, 1971.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR)

NSSDC ID 70-008A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - V.E. SUOMI U OF WISCONSIN MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-061871

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE ITDS 1 FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONGWAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM CONSISTED OF FOUR DETECTORS, AN ANALOG-TO-DIGITAL CONVERTER, AND A TAPE RECORDER. THE DETECTORS HAD A HEMISPHERIC FIELD OF VIEW OF 2 PI STER AND WERE MOUNTED ON THE SATELLITE BASEPLATE FACING EARTHWARD. THE DETECTORS USED COATED ALUMINUM DISCS AS A SENSING ELEMENT. TWO OF THE DISCS WERE WHITE AND RESPONDED ONLY TO INFRARED ENERGY (7 TO 30 MICRONS) RADIATED FROM THE EARTH AND ITS ATMOSPHERE. THE OTHER TWO DISCS WERE PAINTED BLACK AND HAD A BROADER BAND SENSITIVITY (0.3 TO 30 MICRONS). TWO DISCS (ONE OF EACH TYPE) HAD A THERMISTOR BOLMETER MOUNTED ON THE BACK SURFACE TO MEASURE THE DISC TEMPERATURE. THE OTHER TWO DISCS USED THERMOPILES. AN IDENTICAL EXPERIMENT WAS FLOWN ON ESSA 3, 5, 7, AND 9. FOR A FULL DESCRIPTION OF THE FPR SYSTEM, SEE "STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1967," PAGES 179 TO 189, DEPT. OF METEOROLOGY, UNIVERSITY OF WISCONSIN, MARCH 1968. THE

EXPERIMENT WAS A SUCCESS, AND GOOD DATA WERE OBTAINED UNTIL NOVEMBER 16, 1970, WHEN THE INCREMENTAL TAPE RECORDER ON BOARD FAILED. HOWEVER, LIMITED REAL-TIME DATA WERE OBTAINED UNTIL JUNE 18, 1971. DATA FROM THIS EXPERIMENT ARE MAINTAINED ON MAGNETIC TAPE AT NOAA-NESS, SUITLAND, MD.

DATA SET NAME- FLAT PLATE RADIOMETER DATA TAPES

NSSDC ID 70-008A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 012370 TO 061871 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

DATA FROM THE ITOS-1 FLAT PLATE RADIOMETER (FPR) EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK 556-BPI, BINARY TAPES WERE PREPARED ON A EMR 6050 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, SPACECRAFT ORBITAL PARAMETERS, AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT FOR THE FPR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN NOAA TECHNICAL MEMORANDUM NESS 29, 'THE OPERATIONAL PROCESSING OF SOLAR PROTON MONITOR AND FLAT PLATE RADIOMETER DATA.'

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SPACECRAFT COMMON NAME- NIMBUS 4

NSSDC ID 70-025A

ALTERNATE NAMES- NIMBUS-D, PL-701E

LAUNCH DATE- 04/08/70

SPACECRAFT WEIGHT IN ORBIT-

585. KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 05/04/70 ORBIT TYPE- GEOCENTRIC

ORBIT PERIOD- 107.1 MIN

APOAPSIS- 1097.00 KM ALT

PERIAPSIS- 1090.00 KM ALT

INCLINATION- 99.9007 DEG

SPACECRAFT BRIEF DESCRIPTION

NIMBUS 4, THE FOURTH IN A SERIES OF SECOND-GENERATION METEOROLOGICAL R AND D SATELLITES, WAS DESIGNED TO SERVE AS A STABILIZED, EARTH-ORIENTED PLATFORM FOR THE TESTING OF ADVANCED SYSTEMS FOR SENSING AND COLLECTING METEOROLOGICAL DATA. THE POLAR-ORBITING SPACECRAFT CONSISTED OF THREE MAJOR STRUCTURES -- (1) A RING-SHAPED SENSOR MOUNT, (2) SOLAR PADDLES, AND (3) THE CONTROL HOUSING UNIT, WHICH WAS CONNECTED TO THE SENSOR MOUNT BY A TRUSS STRUCTURE. SHAPED SOMEWHAT LIKE AN OCEAN BUOY, NIMBUS 4 WAS NEARLY 3.7 M TALL, 1.5 M IN DIAMETER AT THE BASE, AND ABOUT 3 M ACROSS WITH SOLAR PADDLES EXTENDED. THE TORUS-SHAPED SENSOR MOUNT, WHICH FORMED THE SATELLITE BASE, HOUSED THE ELECTRONICS EQUIPMENT AND BATTERY MODULES. THE LOWER SURFACE OF THE TORUS RING PROVIDED A MOUNTING SPACE FOR SENSORS AND TELEMETRY ANTENNAS. AN H-FRAME STRUCTURE MOUNTED WITHIN THE CENTER OF THE TORUS PROVIDED SUPPORT FOR THE LARGER EXPERIMENTS AND TAPE RECORDERS, MOUNTED ON THE CONTROL HOUSING UNIT, WHICH WAS LOCATED ON TOP OF THE SPACECRAFT. WERE SUN SENSORS,

HORIZON SCANNERS, GAS NOZZLES FOR ATTITUDE CONTROL, AND A COMMAND ANTENNA. USE OF AN ADVANCED ATTITUDE CONTROL SUBSYSTEM PERMITTED THE SPACECRAFT'S ORIENTATION TO BE CONTROLLED TO WITHIN PLUS OR MINUS 1 DEG FOR ALL THREE AXES (PITCH, ROLL, AND YAW). PRIMARY EXPERIMENTS CONSISTED OF (1) AN IMAGE DISSECTOR CAMERA SYSTEM (IDCS) FOR PROVIDING DAYTIME CLOUDCOVER PICTURES BOTH IN REAL-TIME AND RECORDED MODES, (2) A TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) FOR MEASURING DAYTIME AND NIGHTTIME SURFACE AND CLOUDTOP TEMPERATURES AS WELL AS THE WATER VAPOR CONTENT OF THE UPPER ATMOSPHERE, (3) AN INFRARED INTERFEROMETER SPECTROMETER (IRIS) FOR MEASURING THE EMISSION SPECTRA OF THE EARTH-ATMOSPHERE SYSTEM, (4) A SATELLITE INFRARED SPECTROMETER (SIRS) FOR DETERMINING THE VERTICAL PROFILES OF TEMPERATURE AND WATER VAPOR IN THE ATMOSPHERE, (5) A MONITOR OF ULTRAVIOLET SOLAR ENERGY (MUSE) FOR DETECTING SOLAR UV RADIATION, (6) A BACKSCATTER ULTRAVIOLET (BUV) SPECTROMETER FOR MONITORING THE VERTICAL DISTRIBUTION AND TOTAL AMOUNT OF ATMOSPHERIC OZONE ON A GLOBAL SCALE, (7) A FILTER WEDGE SPECTROMETER (FWS) FOR ACCURATE MEASUREMENT OF IR RADIANCE AS A FUNCTION OF WAVELENGTH FROM THE EARTH-ATMOSPHERE SYSTEM, (8) A SELECTIVE CHOPPER RADIOMETER (SCR) FOR DETERMINING THE TEMPERATURES OF SIX SUCCESSIVE 10-KM-THICK LAYERS IN THE ATMOSPHERE FROM ABSORPTION MEASUREMENTS IN THE 15-MICRON CARBON DIOXIDE BAND, AND (9) AN INTERROGATION, RECORDING, AND LOCATION SYSTEM (IRLS) FOR LOCATING, INTERROGATING, RECORDING, AND RETRANSMITTING METEOROLOGICAL AND GEOPHYSICAL DATA FROM REMOTE COLLECTION STATIONS. THE SPACECRAFT OPERATION WAS A SUCCESS, AND IT PERFORMED NORMALLY UNTIL APRIL 8, 1971, WHEN THE YAW GYRO FAILED CAUSING THE SPACECRAFT TO FACE BACKWARDS IN ORBIT. IT WAS SUCCESSFULLY TURNED AROUND ON MAY 12, 1971. YAW PROBLEMS CONTINUED TO EXIST AS OF MARCH 1973, THE ONLY OPERATING EXPERIMENTS ARE THE MUSE, BUV, IRLS, AND SCR.

DATA SET NAME- NIMBUS 4 DATA CATALOG

NSSDC ID 70-025A-00D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 041870 TO 043072 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 15 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A SERIES OF VOLUMES. THE 'NIMBUS 4 DATA CATALOG' PUBLISHED BY GSFC, THAT DOCUMENT DATA ACQUIRED BY THE NIMBUS 4 METEOROLOGICAL SATELLITE. BRIEF SUMMARIES OF EXPERIMENT OPERATIONS ARE PRESENTED IN SECTION 1 OF EACH VOLUME. SECTION 2 OF EACH VOLUME CONTAINS A LISTING OF SATELLITE EQUATORIAL CROSSING TIMES AND ON-OFF TIMES FOR THE VARIOUS EXPERIMENTS. VOLUME 1 COVERS THE TIME PERIOD APRIL 18 TO MAY 22, 1970, VOLUME 2 - MAY 23 TO JUNE 30, 1970, VOLUME 3 - JULY 1 TO AUGUST 31, 1970, VOLUME 4 - SEPTEMBER 1 TO OCTOBER 31, 1970, VOLUME 5 - NOVEMBER 1 TO DECEMBER 31, 1970, VOLUME 6 - JANUARY 1 TO FEBRUARY 28, 1971, AND VOLUME 7 - MARCH 1 TO APRIL 30, 1971, VOLUME 8 - MAY 1, 1971 TO APRIL 30, 1972.

EXPERIMENT NAME- TEMPERATURE-HUMIDITY INFRARED RADIOMETER NSSDC ID 70-025A-02  
(THIR)

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - A.W. MCCULLOCH  
OI - I.L. GOLDBERG

NASA-GSFC  
NASA-GSFC

GREENBELT, MD  
GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-041371  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 4 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) WAS DESIGNED TO DETECT EMITTED THERMAL RADIATION IN BOTH THE 10.5- TO 12.5-MICRON REGION (IR WINDOW) AND THE 6.5- TO 7.0-MICRON REGION (WATER VAPOR). THE WINDOW CHANNEL MEASURED CLOUDTOP TEMPERATURES AND WAS CAPABLE OF PRODUCING HIGH-RESOLUTION PICTURES OF CLOUD COVER AND THERMAL GRADIENTS ON LAND AND WATER SURFACES IN CLOUD-FREE AREAS DURING BOTH THE DAY AND NIGHT PORTIONS OF THE ORBIT. THE OTHER CHANNEL OPERATED PRIMARILY AT NIGHT TO MAP THE WATER VAPOR DISTRIBUTION IN THE UPPER TROPOSPHERE AND STRATOSPHERE. THE INSTRUMENT CONSISTED OF A 12.7-CM CASSEGRAIN SYSTEM, A SCANNING MIRROR COMMON TO BOTH CHANNELS, A BEAM SPLITTER, FILTERS, AND TWO GERMANIUM-IMMERSED THERMISTOR BOLOMETERS. IN CONTRAST TO TV, NO IMAGE WAS FORMED WITHIN THE RADIOMETER. INCOMING RADIANT ENERGY WAS COLLECTED BY A FLAT SCANNING MIRROR INCLINED AT 45 DEG TO THE OPTICAL AXIS. THE MIRROR ROTATED THROUGH 360 DEG AT 48 RPM AND SCANNED IN A PLANE NORMAL TO THE SPACECRAFT VELOCITY VECTOR. THE ENERGY WAS THEN FOCUSED INTO A DICHROMATIC BEAM SPLITTER, WHICH DIVIDED THE ENERGY SPECTRALLY AND SPATIALLY INTO TWO CHANNELS. BOTH CHANNELS OF THE THIR SENSOR TRANSFORMED THE RECEIVED RADIATION INTO AN ELECTRICAL (VOLTAGE) OUTPUT WITH AN INFORMATION BANDWIDTH OF 0.5 TO 360 HZ FOR THE 10.5 TO 12.5 MICRON CHANNEL AND 0.5 TO 120 HZ FOR THE WATER VAPOR CHANNEL. THE THIR SENSOR DATA WERE NORMALLY RECORDED ON TAPE FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION STATION. HOWEVER, DIRECT READOUT INFRARED RADIOMETER (DRIR) DATA COULD BE TRANSMITTED TO APT GROUND STATIONS FOR BOTH DAY AND NIGHT PORTIONS OF THE ORBIT USING THE NIMBUS 4 REAL-TIME TRANSMISSION SYSTEM (RTTS). AT A NOMINAL SPACECRAFT ALTITUDE, THE WINDOW CHANNEL HAD A GROUND RESOLUTION OF ABOUT 7 KM AND THE WATER VAPOR CHANNEL ABOUT 22 KM AT NADIR. THE THIR WAS INITIALLY SUCCESSFUL BUT FAILED ON JANUARY 11, 1971 (ORBIT 3731). IT WAS RESTARTED SEVERAL TIMES THEREAFTER FOR VERY SHORT PERIODS OF TIME BEFORE IT FINALLY CEASED ALL OPERATIONS IN APRIL 1971. A SIMILAR EXPERIMENT WILL BE FLOWN ON NIMBUS-E AND -F.

DATA SET NAME- 11.5-MICRON THIR RADIATION TAPES

NSSDC ID 70-025A-02D

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER THAT NSSDC PROCESSES

TIME PERIOD COVERED- 041070 TO 071770 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 691 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE 11.5-MICRON THIR DATA ARE AVAILABLE ON 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES. THESE TAPES, ALSO REFERRED TO AS NIMBUS METEOROLOGICAL RADIATION TAPES (NMRT-THIR), ARE PRODUCED ON AN IBM 360 COMPUTER AND CONTAIN ONE ORBIT OF DATA PER FILE. THE FIRST RECORD OF EACH FILE CONTAINS DOCUMENTATION AND INFORMATION DESCRIBING THE ORBIT. THE FOLLOWING RECORDS CONTAIN RADIATION VALUES ALONG WITH THE LOCATION AND TIME OF EACH OBSERVATION. THE NMRT-THIR FORMAT IS PRESENTED IN SECTION 3 OF THE 'NIMBUS IV USER'S GUIDE', ALONG WITH INSTRUCTIONS FOR ORDERING THE DATA. THESE DATA ARE HELD BY THE EXPERIMENTER BUT CAN BE ORDERED THROUGH NSSDC. BECAUSE OF THE VOLUME OF DATA OBTAINED AND THE LONG COMPUTER RUNNING TIME REQUIRED FOR PROCESSING, THE MAJORITY OF THE DATA ARE IN DIGITAL FORM. ONLY THOSE DATA

SPECIFICALLY REQUESTED ARE REDUCED TO FINAL NMRT FORMAT. CONSEQUENTLY, THERE WILL BE A LONGER THAN NORMAL TIME REQUIRED FOR NSSDC TO RESPOND TO A REQUEST.

DATA SET NAME- 6.7-MICRON THIR RADIATION TAPES

NSSDC ID 70-025A-02E

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER THAT NSSDC PROCESSES

TIME PERIOD COVERED- 041470 TO 071870 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 650 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE 6.7-MICRON THIR DATA ARE AVAILABLE ON 7-TRACK, 800-BPI, BINARY MAGNETIC TAPES. THESE TAPES, ALSO REFERRED TO AS NIMBUS METEOROLOGICAL RADIATION TAPES (NMRT-THIR), ARE PRODUCED ON AN IBM 360 COMPUTER AND CONTAIN ONE ORBIT OF DATA PER FILE. THE FIRST RECORD OF EACH FILE CONTAINS DOCUMENTATION AND INFORMATION DESCRIBING THE ORBIT. THE FOLLOWING RECORDS CONTAIN RADIATION VALUES ALONG WITH THE LOCATION AND TIME OF EACH OBSERVATION. THE NMRT-THIR FORMAT IS PRESENTED IN SECTION 3 OF THE 'NIMBUS IV USER'S GUIDE', ALONG WITH INSTRUCTIONS FOR ORDERING THE DATA. THESE DATA ARE HELD BY THE EXPERIMENTER, BUT CAN BE ORDERED THROUGH NSSDC, BECAUSE OF THE QUANTITY OF DATA AND THE COMPUTER TIME INVOLVED FOR PROCESSING INTO NMRT FORMAT. THE MAJORITY OF THE DATA ARE IN DIGITAL FORM. ONLY THOSE DATA SPECIFICALLY REQUESTED ARE REDUCED TO FINAL NMRT FORMAT. CONSEQUENTLY, THERE WILL BE A LONGER THAN NORMAL TIME REQUIRED FOR NSSDC TO RESPOND TO A REQUEST.

EXPERIMENT NAME- SATELLITE INFRARED SPECTROMETER (SIRS) NSSDC ID 70-025A-04

ORIGINAL EXPERIMENT INSTITUTION- ESSA-NESC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - D.Q.	WARK	NOAA-NESS	SUITLAND, MD
OI - D.T.	HILLEARY	NOAA-NESS	SUITLAND, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-030673

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 4 SATELLITE INFRARED SPECTROMETER (SIRS) EXPERIMENT WAS DESIGNED TO INDIRECTLY DETERMINE THE VERTICAL TEMPERATURE AND WATER VAPOR PROFILES OF THE ATMOSPHERE BY USING A FASTIE-EBERT FIXED-GRATING SPECTROMETER TO MEASURE THE INFRARED RADIATION (11 TO 36 MICRONS) EMITTED FROM THE EARTH AND ITS ATMOSPHERE IN 13 SELECTED SPECTRAL INTERVALS IN THE CARBON DIOXIDE AND WATER VAPOR BANDS AND ALSO ONE CHANNEL IN THE 11-MICRON ATMOSPHERIC WINDOW. THE MAIN COMPONENTS OF THE SPECTROMETER CONSISTED OF (1) A PLANE, LIGHT-COLLECTING MIRROR TO PROVIDE ONE FIXED AND TWO VARIABLE EARTH VIEWING ANGLES, (2) A ROTATING CHOPPING MIRROR THAT SERVED ALTERNATELY TO COLLECT SPACE RADIATION AND EARTH RADIATION, (3) A 2.5-IN. DIFFRACTION GRATING WITH 1250 LINES PER IN., (4) 14 SLITS WITH ASSOCIATED INTERFERENCE FILTERS, (5) 14 THERMISTOR BOLOMETERS, AND (6) A BLACKBODY SOURCE FOR CALIBRATION PURPOSES. THE SIRS USED A SCAN MIRROR TO OBSERVE 12.5 DEG TO EITHER SIDE OF THE SUBSATELLITE TRACK. THE FIELD OF VIEW DIRECTLY BELOW THE

SIRS WAS APPROXIMATELY 215 SQUARE KM. THE CARBON DIOXIDE BAND RADIATION DATA WERE TRANSFORMED TO A TEMPERATURE PROFILE BY A MATHEMATICAL INVERSION TECHNIQUE. BY A SIMILAR TECHNIQUE, THIS INFORMATION COULD THEN BE COMBINED WITH THE WATER VAPOR BAND DATA TO OBTAIN A WATER VAPOR PROFILE. THE 11-MICRON ATMOSPHERIC WINDOW DATA YIELDED SURFACE AND/OR CLOUDTOP TEMPERATURES. FOR A COMPLETE DESCRIPTION OF THE SIRS EXPERIMENT, SEE SECTION 5 OF 'THE NIMBUS IV USER'S GUIDE.' THE SIRS EXPERIMENT PERFORMED NORMALLY FOR SEVERAL MONTHS AFTER LAUNCH BUT BEGAN TO DETERIORATE IN EARLY 1971. PROBLEMS IN THE SIRS INSTRUMENT CALIBRATION AFTER APRIL 1971, IN ADDITION TO SPACECRAFT YAW PROBLEMS, SIGNIFICANTLY REDUCED THE NUMBER OF USEFUL SOUNDINGS BEING OBTAINED. STORAGE OF THE DATA AT NSSDC FILES WAS TERMINATED ON APRIL 8, 1971. THE EXPERIMENT OPERATED ON A LIMITED TIME BASIS UNTIL MARCH 6, 1973 WHEN IT WAS PLACED OPERATIONALLY OFF.

DATA SET NAME- SATELLITE INFRARED SPECTROMETER RADIANCE NSSDC ID 70-025A-04A  
TAPES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 040870 TO 040871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 20 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 7-TRACK, BINARY, 556-BPI MAGNETIC TAPES CONTAINING REDUCED RADIANCE VALUES (DERIVED TEMPERATURE PROFILES FROM THESE VALUES, WHICH HAVE BEEN USED IN NATIONAL METEOROLOGICAL PRODUCTS, ARE ARCHIVED AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, N. C.). THE TAPES WERE PRODUCED ON A CDC 6600 COMPUTER. AN IDENTICAL SET OF 556-BPI TAPES GENERATED ON AN IBM 7094 IS ALSO AVAILABLE. EACH TAPE RECORD CONTAINS 85 SETS OF DATA, AND EACH DAY COMPRISES ONE FILE OF DATA. A DOUBLE END-OF-FILE IS WRITTEN AT THE END OF EACH TAPE. DATA CONTAINED ON THE TAPES HAVE BEEN SCREENED TO ELIMINATE UNUSABLE OR ERRONEOUS VALUES, WHICH INCLUDED ANY DATA THAT WERE NOT PROPERLY SEQUENCED. THIS SCREENING PROCESS CAUSED FREQUENT INTERRUPTIONS BETWEEN DATA SETS. FOR A MORE COMPLETE DESCRIPTION OF THE TAPE FORMAT, SEE SECTION 1.5.3, VOLUME 1, 'THE NIMBUS 4 DATA CATALOG,' AVAILABLE THROUGH NSSDC.

EXPERIMENT NAME- IMAGE DISSECTOR CAMERA SYSTEM (IDCS) NSSDC ID 70-025A-06

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - G.A. BRANCHFLOWER NASA-GSFC GREENBELT, MD  
OI - E.J. WERNER NASA-GSFC GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-040871

EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 4 IMAGE DISSECTOR CAMERA SYSTEM (IDCS) EXPERIMENT WAS DESIGNED TO TAKE DAYTIME CLOUDCOVER PICTURES. THE PICTURES COULD BE TRANSMITTED TO APT STATIONS USING THE REAL-TIME TRANSMISSION SYSTEM (RTTS) OR STORED ON MAGNETIC TAPE FOR SUBSEQUENT PLAYBACK TO GROUND ACQUISITION STATIONS. THIS EXPERIMENT WAS SIMILAR TO THOSE FLOWN ON NIMBUS 3 AND ATS 3.

THE CAMERA WAS MOUNTED ON THE BOTTOM OF THE SENSORY RING OF THE SATELLITE AND POINTED VERTICALLY DOWN TOWARD THE EARTH AT ALL TIMES. THE IMAGE DISSECTOR WAS A SHUTTERLESS ELECTRONIC SCAN AND STEP TUBE MOUNTED BEHIND A WIDE-ANGLE (108 DEG), 5.7-MM FOCAL LENGTH LENS. SCANNING AND STEPPING FUNCTIONS OCCURRED CONTINUOUSLY WHILE THE SATELLITE PROGRESSED ALONG ITS ORBITAL PATH. THE FIELD OF VIEW OF THE OPTICS WAS 73.6 DEG IN THE DIRECTION OF FLIGHT AND 98.2 DEG IN THE DIRECTION PERPENDICULAR TO THE DIRECTION OF FLIGHT. THE IMAGE WAS FOCUSED BY THE CAMERA OPTICS ON A PHOTSENSITIVE SURFACE OF THE IMAGE DISSECTOR TUBE. A LINE-SCANNING BEAM SCANNED THE PHOTSENSITIVE SURFACE AT 4 HZ WITH A FRAME PERIOD OF 200 SEC. AT THE NOMINAL SPACECRAFT ALTITUDE (APPROXIMATELY 1100 KM), EACH RESULTING PICTURE WAS APPROXIMATELY 1400 KM ON A SIDE WITH A GROUND RESOLUTION OF 3 KM AT NADIR. THE EXPERIMENT WAS A SUCCESS. HOWEVER, OWING TO SPACECRAFT YAW PROBLEMS, THE ARCHIVING OF IDCS DATA WAS TERMINATED IN APRIL 1971. DATA FROM THIS EXPERIMENT (OTHER THAN THE CATALOG INDEXING THE DATA - 70-025A-06A) ARE AVAILABLE THROUGH THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA.

DATA SET NAME- NIMBUS 4 DATA CATALOG

NSSDC ID 70-025A-06A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 041870 TO 043072 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS CATALOG CONTAINS BLACK AND WHITE PICTORIAL MONTAGES FROM THE NIMBUS 4 IMAGE DISSECTOR CAMERA SYSTEM (IDCS). THESE MONTAGES CONSIST OF MINIATURE REPRODUCTIONS OF DAILY, DAYTIME PICTURES AND ARE MADE UP OF ADJACENT SWATHS OF DATA FROM SUCCESSIVE ORBITS. THE SATELLITE ORBIT NUMBER IS PRINTED BELOW EACH SWATH. A TRANSPARENT GRID OVERLAY PROVIDES GEOGRAPHIC REFERENCE. THESE MONTAGES MAY ASSIST A USER TO IDENTIFY HIS SPECIFIC IDCS FILM DATA REQUIREMENTS AND MAY BE DIRECTLY USEFUL FOR SOME RESEARCH. THE CATALOG CONSISTS OF EIGHT VOLUMES -- VOLUME 1 - APRIL 18 TO MAY 22, 1970, VOLUME 2 - MAY 23 TO JUNE 30, 1970, VOLUME 3 - JULY 1 TO AUGUST 31, 1970, VOLUME 4 - SEPTEMBER 1 TO OCTOBER 31, 1970, VOLUME 5 - NOVEMBER 1 TO DECEMBER 31, 1970, VOLUME 6 - JANUARY 1 TO FEBRUARY 28, 1971, VOLUME 7 - MARCH 1 TO APRIL 30, 1971 AND VOLUME 8 - MAY 1, 1971, TO APRIL 30, 1972. HOWEVER, IDCS MONTAGES ARE ONLY CONTAINED IN THE FIRST SEVEN VOLUMES. THIS CATALOG DOES NOT CONTAIN BACKGROUND INFORMATION ON THE SPACECRAFT OR EXPERIMENT, NOR IS THERE A DESCRIPTION OF THE TECHNIQUES USED IN PROCESSING THE DATA. SUCH INFORMATION IS CONTAINED IN THE 'NIMBUS 4 USERS GUIDE,' WHICH SHOULD BE USED WITH THIS CATALOG WHEN ORDERING DATA.

EXPERIMENT NAME- SELECTIVE CHOPPER RADIOMETER (SCR)

NSSDC ID 70-025A-10

ORIGINAL EXPERIMENT INSTITUTION- OXFORD U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.T. HOUGHTON

OXFORD U

OXFORD, ENGLAND

OI - S.D. SMITH

HERIOT-WATT U

EDINBOURGH, SCOTLAND

EXPERIMENT STATUS OF OPERATION- PARTIAL



#### EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 4 SELECTIVE CHOPPER RADIOMETER (SCR) OBSERVED THE EMITTED INFRARED RADIATION IN THE 15-MICRON ABSORPTION BAND OF CARBON DIOXIDE. FROM THESE MEASUREMENTS THE TEMPERATURE OF SIX SUCCESSIVE 10-KM LAYERS OF THE ATMOSPHERE WERE DETERMINED FROM EARTH OR CLOUDTOP LEVEL TO 60-KM HEIGHT. HEIGHT RESOLUTION WAS OBTAINED BY A COMBINATION OF OPTICAL MULTI-LAYER FILTERS AND SELECTIVE ABSORPTION OF RADIATION USING CARBON DIOXIDE-FILLED CELLS WITHIN THE EXPERIMENT. THE SCR HAD SIX CHANNELS, WHICH WERE ARRANGED IN THREE UNITS OF TWO. THE FOUR LOWER CHANNELS WERE CALLED SINGLE CELL CHANNELS. THE OPTICS OF EACH CHANNEL CONSISTED OF A CANTILEVER-MOUNTED BLADE SHUTTER THAT OSCILLATED AT 10 HZ AND SUCCESSIVELY CHOPPED THE FIELD OF VIEW BETWEEN EARTH AND SPACE. THE CHOPPED RADIATION WAS THEN PASSED THROUGH A 10-CM PATH LENGTH OF CARBON DIOXIDE, THE PRESSURE BEING SET FOR EACH CHANNEL TO DEFINE THE VIEWING DEPTH OF THE ATMOSPHERE. BEHIND THE CARBON DIOXIDE PATH WAS A NARROW-BAND FILTER, THE CENTERS OF WHICH WERE DIFFERENT FOR EACH CHANNEL, AND A LIGHT PIPE WHICH CONVERGED THE RADIATION ON A THERMISTOR BOLOMETER DETECTOR. TO OBTAIN ADEQUATE HEIGHT RESOLUTION IN THE UPPER LAYERS OF THE ATMOSPHERE, THE UPPER TWO CHANNELS OPERATED ON A SLIGHTLY DIFFERENT PRINCIPLE AND WERE KNOWN AS DOUBLE CELL CHANNELS. THE TECHNIQUE CONSISTED OF SWITCHING THE RADIATION BETWEEN TWO HALF-CELLS, SEMICIRCULAR IN SHAPE AND OF 1-CM PATH LENGTH, CONTAINING DIFFERENT PRESSURES OF CARBON DIOXIDE. A MOVABLE 45-DEG MIRROR WAS USED IN PLACE OF THE OSCILLATING SHUTTER USED IN THE LOWER FOUR CHANNELS. DURING ONE HALF-PERIOD, EARTH RADIATION PASSED THROUGH ONE HALF-CELL AND SPACE RADIATION THROUGH THE OTHER. THE SITUATION WAS REVERSED DURING THE OTHER HALF-PERIOD. THE RADIATION THEN PASSED THROUGH A LIGHT PIPE ONTO A THERMISTOR BOLOMETER DETECTOR. INFIGHT CALIBRATION WAS CARRIED OUT BY VIEWING OF AN INTERNAL REFERENCE BLACKBODY OF KNOWN TEMPERATURE PRIOR TO THE VIEW OF SPACE. THE OUTPUT OF EACH CHANNEL WAS SAMPLED ONCE EVERY SECOND. FOR A COMPLETE DESCRIPTION OF THE SCR, SEE SECTION 9 IN 'THE NIMBUS IV USER'S GUIDE.' THE SCR EXPERIMENT WAS SUCCESSFUL. THE CHANNEL 1 TEMPERATURE MONITORING SYSTEM FAILED ON JUNE 15, 1970, THEREBY REDUCING THE ACCURACY OF THE SCR DATA. HOWEVER, THE EXPERIMENT IS CONTINUING TO PRODUCE USABLE DATA AS OF APRIL 1972.

DATA SET NAME- SCR GLOBAL STRATOSPHERIC ANALYSES                      NSSDC ID 70-025A-10B

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 050871 TO 053172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-        6 BOOK(S) OR BOUND VOLUME(S)

#### DATA SET BRIEF DESCRIPTION

GLOBAL STRATOSPHERIC ANALYSES DERIVED FROM THE NIMBUS 4 SELECTIVE CHOPPER RADIOMETER (SCR) DATA ARE AVAILABLE AT COST FROM THE DEPARTMENT OF ATMOSPHERIC PHYSICS, CLARENDON LABORATORY, OXFORD, ENGLAND, OXL3PU. THESE DATA ARE CONTAINED IN A COLLECTION OF SIX BOUND VOLUMES. MOST OF THE DATA IN EACH VOLUME CONSISTS OF SETS OF FOUR POLAR STEREOGRAPHIC MAPS FOR THE 1- TO 10- AND 10- TO 100-MB THICKNESS (MEAN TEMPERATURE) FIELDS. THESE MAPS ARE FOR ALTERNATE NUMBERED DAYS, WHERE DAY 1 IS DEFINED AS THE FIRST DAY OF THE YEAR. INCLUDED WITH EACH MAP SET IS A PLOT OF THE SATELLITE'S ORBITAL PATH, INDICATING WHERE OBSERVATIONS WERE OBTAINED. FOR EACH THIRTY DAYS OF DATA (APPROXIMATELY), A SERIES OF TEMPERATURE MAPS FROM A SELECTED SINGLE DAY IS INCLUDED. THIS SERIES CONSISTS OF EIGHT MAPS OF RADIANCES (PLOTTED AS TEMPERATURE) FROM CHANNELS 1, 2, 3, AND 4 OF THE SCR, REPRESENTING EMISSIONS FROM HEIGHTS NEAR 2, 20, 70, AND 90 MB, RESPECTIVELY. ONE MAP IS GIVEN OF



AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 040170 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS(SATELLITE PERIOD ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT--MONTH, DAY, YEAR, TIME OF DAY (IN SEC), GEOCENTRIC DISTANCE (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG), AND SOLAR ECLIPTIC LONGITUDE (IN DEG).

EXPERIMENT NAME- SOLAR X RAY DETECTORS, .5 TO 3.0 A ,1 TO NSSDC ID 70-027A-02  
8 A ,1 TO 16 A , 44 TO 60 A

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.H. CHAMBERS	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.C. FULLER	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - W.E. KUNZ	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

TWO IDENTICAL X-RAY DETECTORS OCCUPIED DIAMETRICALLY OPPOSED APEX POSITIONS TO MONITOR SOLAR X RAYS IN SELECTED BANDS FROM 0.5 TO 60 A. EACH DETECTOR CONTAINED FOUR SENSORS -- THREE ION CHAMBERS AND ONE SCINTILLATOR-PHOTOMULTIPLIER. THE THREE ION CHAMBERS HAD A 1- TO 8-A WAVELENGTH RANGE, A 1- TO 16-A RANGE, AND A 1- TO 16-A AND 44- TO 60-A RANGE, RESPECTIVELY. THE 44- TO 60-A SIGNAL WAS THE DIFFERENCE BETWEEN THE LAST TWO ION CHAMBERS. THE ION CHAMBERS WERE HEMISPHERICAL SO THAT THE TWO DETECTORS AFFORDED NEARLY 4 PI COVERAGE. THE FOURTH SENSOR WAS COMPOSED OF SODIUM IODIDE CRYSTALS COUPLED TO PHOTOMULTIPLIERS. THE WAVELENGTH RANGE WAS 0.5 TO 3.0 A, AND THE SOLAR ASPECT ANGLES WERE APPROXIMATELY +70 TO -70 DEG.

DATA SET NAME- REDUCED SOLAR X-RAY FLUXES PLOTTED VS. NSSDC ID 70-027A-02A  
TIME IN HARDCOPY FORM

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 041170 TO 010171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF TWO VOLUMES OF INCIDENT SOLAR X-RAY FLUX PLOTTED (ON A LOG-LINEAR ARRAY) AS A FUNCTION OF UNIVERSAL TIME (HOURS) IN HARD-COPY FORM AND IS PUBLISHED AS LASL REPORT LA 4454, VOLS. IV AND V. ONE DAY OF EQUIVALENT GRAY BODY FLUX (ERTS/SQ, CM-SEC) FOR EACH OF THE THREE X-RAY CHANNELS ON VELA 6A AND 6B IS PLOTTED PER PAGE. THE UPPER CURVE ON EACH GRAPH IS THE EQUIVALENT FLUX IN THE 1- TO 16-A BAND, DERIVED FROM THE ALUMINUM-MYLAR WINDOW ION CHAMBER. THE MIDDLE CURVE IS THE EQUIVALENT FLUX IN THE 1- TO 8-A BAND, DERIVED FROM THE BE

WINDOW ION CHAMBERS. THE LOWER CURVE IS THE EQUIVALENT FLUX IN THE 0.3- TO 3.0-A BAND, DERIVED FROM THE NAI SCINTILLATOR DATA. THIS FORMAT, HOWEVER, DOES REDUCE SOME OF THE DATA'S INHERENT TIME RESOLUTION. IN ADDITION, OWING TO THE COMPUTER PROCESSING OF THE DATA, THE COLLECTION OF PLOTS INCLUDES SOME UNRELIABLE ANOMALOUS PORTIONS. THESE ARE THE RESULT OF (1) SIGNIFICANT CONTRIBUTIONS TO OR SATURATION OF THE DETECTORS BY CHARGED PARTICLES, (2) ASYMMETRY IN THE RESPONSE OF AN ION CHAMBER PAIR GIVING DOUBLE SETS OF POINTS, OR (3) BIT ERRORS. THE DATA COVER THE PERIOD APRIL 11, 1970 TO JANUARY 1, 1971.

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SPACECRAFT COMMON NAME- VELA 6B NSSDC ID 70-027B  
ALTERNATE NAMES- PL-702C, VELA 5B (USAF), VELA 12 (TRW)

LAUNCH DATE- 04/08/70 SPACECRAFT WEIGHT IN ORBIT- 259.01 KG

FUNDING AGENCY- DOD-USAF

SPACECRAFT STATUS OF OPERATION- NORMAL

EPOCH DATE- 04/11/70 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 6745. MIN  
APOAPSIS- 112160. KM ALT PERIAPSIS- 111500. KM ALT INCLINATION- 32.52 DEG

SPACECRAFT BRIEF DESCRIPTION

VELA 6B WAS ONE OF TWO SPIN-STABILIZED, ICOSAHEDRAL SATELLITES THAT COMPRISED THE SIXTH LAUNCH IN THE VELA PROGRAM. THE ORBITS OF THE TWO SATELLITES ON EACH LAUNCH WERE BASICALLY CIRCULAR AT ABOUT 17 EARTH RADII, INCLINED AT 60 DEG TO THE ECLIPTIC, AND SPACED 180 DEG APART, THUS PROVIDING A MONITORING CAPABILITY OF OPPOSITE SIDES OF THE EARTH. THE OBJECTIVES OF THE SATELLITES WERE (1) TO STUDY SOLAR AND COSMIC X RAYS, EUV, SOLAR PROTONS, SOLAR WIND, AND NEUTRONS, (2) TO CARRY OUT RESEARCH AND DEVELOPMENT ON METHODS OF DETECTING NUCLEAR EXPLOSIONS BY MEANS OF SATELLITE-BORNE INSTRUMENTATION, AND (3) TO PROVIDE SOLAR FLARE DATA IN SUPPORT OF MANNED SPACE MISSIONS. VELA 6B WAS AN IMPROVED VERSION OF THE EARLIER VELA SERIES SATELLITES HAVING BETTER COMMAND CAPABILITIES, INCREASED DATA STORAGE, IMPROVED POWER REQUIREMENTS, BETTER THERMAL CONTROL OF OPTICAL SENSORS, AND GREATER EXPERIMENTATION WEIGHT. POWER SUPPLIES OF 120 W WERE PROVIDED BY 22,500 SOLAR CELLS MOUNTED ON THE SPACECRAFT'S 20 FACES. A ROTATION RATE OF 78 RPM DURING TRANSFER ORBITS AND 1 RPM AFTER FINAL ORBIT INSERTION MAINTAINED NOMINAL ATTITUDE CONTROL. EIGHT WHIP ANTENNAS AND FOUR STUB ANTENNA ARRAYS AT OPPOSITE ENDS OF THE SPACECRAFT STRUCTURE WERE USED FOR GROUND COMMANDS AND TELEMETRY. THE LAUNCH OF VELA 6A AND 6B, PLUS THE TWO ACTIVE VELAS STILL IN ORBIT (VELA 5A AND B), COMPLETED THE OBJECTIVES OF THE VELA PROGRAM. DETAILS ON THE CURRENT OPERATING STATUS OF VELA 6B ARE CLASSIFIED CONFIDENTIAL.

DATA SET NAME- COMPUTER LISTINGS OF SOLAR ECLIPTIC NSSDC ID 70-027B-00F  
EPHEMERIS (R, THETA, PHI) ON MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 040170 TO 022871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF MICROFILMED COMPUTER LISTINGS OF THE SATELLITE EPHEMERIS GENERATED AT NSSDC FROM LISTINGS SUBMITTED BY THE EXPERIMENTER. POINTS ARE GIVEN AT 4-HR INTERVALS (SATELLITE PERIOD IS ABOUT 4 DAYS), AND THE FOLLOWING INFORMATION IS GIVEN FOR EACH POINT--MONTH, DAY, YEAR, TIME OF DAY (IN SECONDS), GEOCENTRIC DISTANCE (IN EARTH RADII), SOLAR ECLIPTIC LATITUDE (IN DEG), AND SOLAR ECLIPTIC LONGITUDE (IN DEG).

EXPERIMENT NAME- SOLAR X RAY DETECTORS, .5 TO 3.0 A , 1 TO NSSDC ID 70-027B-02  
8 A , 1 TO 16 A , 44 TO 60 A

ORIGINAL EXPERIMENT INSTITUTION- LOS ALAMOS SCI LAB

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.H. CHAMBERS	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - J.C. FULLER	LOS ALAMOS SCI LAB	LOS ALAMOS, NM
OI - W.E. KUNZ	LOS ALAMOS SCI LAB	LOS ALAMOS, NM

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

TWO IDENTICAL X-RAY DETECTORS OCCUPIED DIAMETRICALLY OPPOSED APEX POSITIONS TO MONITOR SOLAR X RAYS IN SELECTED BANDS FROM 0.5 TO 60 A. EACH DETECTOR CONTAINED FOUR SENSORS -- THREE ION CHAMBERS AND ONE SCINTILLATOR-PHOTOMULTIPLIER. THE THREE ION CHAMBERS HAD A 1- TO 8-A WAVELENGTH RANGE, A 1- TO 16-A RANGE, AND 1- TO 16-A AND 44- TO 60-A RANGE, RESPECTIVELY. THE 44- TO 60-A SIGNAL WAS THE DIFFERENCE BETWEEN THE LAST TWO ION CHAMBERS. THE ION CHAMBERS WERE HEMISPHERICAL SO THAT THE TWO DETECTORS AFFORDED NEARLY 4 PI COVERAGE. THE FOURTH SENSOR WAS COMPOSED OF SODIUM IODIDE CRYSTALS COUPLED TO PHOTOMULTIPLIERS. THE WAVELENGTH RANGE WAS 0.5 TO 3.0 A, AND THE SOLAR ASPECT ANGLES WERE APPROXIMATELY +70 TO -70 DEG.

DATA SET NAME- REDUCED SOLAR X-RAY FLUXES PLOTTED VS NSSDC ID 70-027B-02A  
TIME IN HARDCOPY FORM

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 041170 TO 010171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET, SUPPLIED BY THE EXPERIMENTER, CONSISTS OF TWO VOLUMES OF INCIDENT SOLAR X-RAY FLUX PLOTTED (ON A LOG-LINEAR ARRAY) AS A FUNCTION OF UNIVERSAL TIME (HOURS) IN HARD-COPY FORM AND IS PUBLISHED AS LASL REPORT LA 4454, VOLS. IV AND V. ONE DAY OF EQUIVALENT GRAY BODY FLUX (ERGS/SQ CM-SEC) FOR EACH OF THE THREE X-RAY CHANNELS ON VELA 6A AND 6B IS PLOTTED PER PAGE. THE UPPER CURVE ON EACH GRAPH IS THE EQUIVALENT FLUX IN THE 1- TO 16-A BAND DERIVED FROM THE ALUMINUM-MYLAR WINDOW ION CHAMBER. THE MIDDLE CURVE IS THE EQUIVALENT FLUX IN THE 1- TO 8-A BAND DERIVED FROM THE BE WINDOW IN CHAMBERS. THE LOWER CURVE IS THE EQUIVALENT FLUX IN THE 0.3- TO 3.0-A BAND DERIVED FROM THE NAI SCINTILLATOR DATA. THIS FORMAT, HOWEVER, DOES REDUCE SOME OF THE DATA'S INHERENT TIME RESOLUTION. IN ADDITION, OWING

TO THE COMPUTER PROCESSING OF THE DATA, THE COLLECTION OF PLOTS INCLUDES SOME UNRELIABLE ANOMALOUS PORTIONS. THESE ARE THE RESULT OF (1) SIGNIFICANT CONTRIBUTIONS TO OR SATURATION OF THE DETECTORS BY CHARGED PARTICLES, (2) ASYMMETRY IN THE RESPONSE OF AN ION CHAMBER PAIR GENERATING DOUBLE SETS OF POINTS, OR (3) BIT ERRORS. THE DATA COVER THE PERIOD APRIL 11, 1970, TO JANUARY 1, 1971.

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SPACECRAFT COMMON NAME- APOLLO 13 CSM NSSDC ID 70-029A  
ALTERNATE NAMES- PL-7010, SA-508

LAUNCH DATE- 04/11/70 SPACECRAFT WEIGHT IN ORBIT- 9979. KG

FUNDING AGENCY- NASA-GMSF

DATE LAST USABLE SPACECRAFT DATA RECORDED-041770  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 04/14/70 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 88. MIN  
APDAPIS- 389. KM ALT PERIAPSIS- 106. KM ALT INCLINATION- 1.25 DEG

SPACECRAFT BRIEF DESCRIPTION

APOLLO 13 WAS LAUNCHED ON APRIL 11, 1970, ON A SCHEDULED 10-DAY LUNAR LANDING MISSION. THE PURPOSES OF THE MISSION WERE (1) TO EXPLORE THE HILLY UPLAND FRA MAURO REGION OF THE MOON, (2) TO PERFORM SELENOLOGICAL INSPECTION, SURVEY, AND SAMPLING OF MATERIAL IN THE FRA MAURO FORMATION, (3) TO DEPLOY AND ACTIVATE AN APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP), (4) TO FURTHER DEVELOP MAN'S CAPABILITY TO WORK IN THE LUNAR ENVIRONMENT, AND (5) TO OBTAIN PHOTOGRAPHS OF CANDIDATE LUNAR EXPLORATION SITES. THESE GOALS WERE TO BE CARRIED OUT FROM A NEAR-CIRCULAR LUNAR ORBIT AND ON THE LUNAR SURFACE AT 3 DEG S LATITUDE, 17 DEG W LONGITUDE. BECAUSE OF A MALFUNCTION IN THE COMMAND SERVICE MODULE, WHICH MADE THE COMMAND MODULE (CM) UNUSABLE FOR THE MISSION, THE MISSION HAD TO BE ABORTED. THE CREW TRANSFERRED TO THE LUNAR MODULE AND PERFORMED A FREE-RETURN TRAJECTORY, RETURNING TO THE CM ONLY PRIOR TO ENTERING THE EARTH'S ATMOSPHERE. ALTHOUGH THE PLANNED MISSION OBJECTIVES WERE NOT REALIZED, A LIMITED AMOUNT OF PHOTOGRAPHIC DATA WAS OBTAINED.

EXPERIMENT NAME- APOLLO 13 PHOTOGRAPHIC STUDIES NSSDC ID 70-029A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - MAPPING SCIENCES LAB NASA-JSC HOUSTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-041770  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PHOTOGRAPHIC OBJECTIVES OF THE APOLLO 13 MISSION WERE (1) TO PHOTOGRAPH TARGETS OF OPPORTUNITY (SCIENTIFICALLY INTERESTING SITES AND POTENTIAL APOLLO LANDING SITES), (2) TO OBTAIN VERTICAL AND OBLIQUE STEREO

STRIPS OF NEARSIDE AND FAR SIDE REGIONS OF SCIENTIFIC INTEREST, (3) TO RECORD MISSION OPERATIONAL ACTIVITIES, INCLUDING THE OPERATIONS AND MANEUVERS OF THE COMMAND SERVICE MODULE, THE COMMAND MODULE, AND LUNAR MODULE, AND (4) TO OBTAIN PHOTOS OF LUNAR SURFACE FEATURES, BEFORE AND AFTER LANDING, AND LONG-DISTANCE EARTH PHOTOS. THE CAMERA EQUIPMENT CARRIED ONBOARD THE SPACECRAFT CONSISTED OF TWO 70-MM HASSELBLAD ELECTRIC CAMERAS, TWO 70-MM HASSELBLAD DATA CAMERAS, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, ONE 35-MM LUNAR SURFACE STEREOSCOPIC CLOSEUP CAMERA, AND ONE HYCON TOPOGRAPHIC CAMERA. BECAUSE THE MISSION WAS ABORTED, ONLY THE TWO HASSELBLAD 70-MM ELECTRIC CAMERAS AND THE TWO MAURER DATA ACQUISITION CAMERAS WERE USED, AND PHOTOGRAPHIC COVERAGE INCLUDED ONLY A LIMITED AMOUNT OF LUNAR SURFACE PHOTOS AND PHOTOGRAPHS OF MISSION OPERATIONAL ACTIVITIES. THIS PHOTOGRAPHIC COVERAGE, WHICH IS OF GOOD TO FAIR QUALITY, INCLUDES 534 FRAMES OF 70-MM PHOTOGRAPHY AND 22,073 FRAMES OF 16-MM PHOTOGRAPHY.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON COLOR POSITIVE 4- BY 6-IN. MICROFICHE CARDS NSSDC ID 70-029A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041170 TO 041770 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 11 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 584 PHOTOGRAPHS REPRODUCED FROM FIVE 70-MM MAGAZINES ON ELEVEN 4- BY 6-IN COLOR MICROFICHE CARDS. EACH MICROFICHE CARD CONTAINS FROM FOUR TO 60 PHOTOS. THE FRAME IDENTIFICATION IS LOCATED IN THE UPPER LEFT-HAND CORNER OF EACH PHOTOGRAPH. THE FIRST TWO DIGITS INDICATE THE MISSION NUMBER, THE SECOND TWO THE MAGAZINE NUMBER, AND THE LAST FOUR THE FRAME NUMBER. WHEN CHANGES FROM ONE MAGAZINE TO ANOTHER OCCUR ON THE SAME MICROFICHE CARD, FRAME NUMBERS ARE CONTINUED IN CONSECUTIVE ORDER. THESE MICROFICHE CARDS SHOW COVERAGE OF THE EARTH, TRANSEARTH INJECTION, FRONTSIDE MARES, BASIN IX, MARE MOSCOVIENSE, SEPARATION OF THE LM AND CSM, LUNAR MODULE JETTISON, AND THE EARTH AND LUNAR DISCS.

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SPACECRAFT COMMON NAME- NOAA 1 NSSDC ID 70-106A  
ALTERNATE NAMES- ITOS-A

LAUNCH DATE- 12/11/70 SPACECRAFT WEIGHT IN ORBIT- 306. KG

FUNDING AGENCY- NOAA

DATE LAST USABLE SPACECRAFT DATA RECORDED-081971  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 12/25/70 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 114.8 MIN  
APOAPSIS- 1472.00 KM ALT PERIAPSIS- 1423.00 KM ALT INCLINATION- 101.948 DEG

SPACECRAFT BRIEF DESCRIPTION

THE PRIMARY OBJECTIVE OF THE NOAA 1 SUN-SYNCHRONOUS METEOROLOGICAL SATELLITE WAS TO PROVIDE IMPROVED OPERATIONAL INFRARED AND VISUAL

OBSERVATIONS OF EARTH CLOUD COVER FOR USE IN WEATHER ANALYSIS AND FORECASTING. SECONDARY OBJECTIVES INCLUDED PROVIDING SOLAR PROTON AND GLOBAL HEAT BALANCE DATA ON A REGULAR DAILY BASIS. TO ACCOMPLISH THESE TASKS, THE SPACECRAFT CARRIED FOUR CAMERAS -- TWO TELEVISION CAMERAS FOR AUTOMATIC PICTURE TRANSMISSION (APT) AND TWO ADVANCED VIDICON CAMERA SYSTEM (AVCS) CAMERAS. THE SATELLITE ALSO CARRIED A LOW-RESOLUTION FLAT PLATE RADIOMETER, A SOLAR PROTON MONITOR, AND TWO SCANNING RADIOMETERS THAT NOT ONLY MEASURED EMITTED IR RADIATION BUT ALSO SERVED AS A BACKUP SYSTEM FOR THE APT AND AVCS CAMERAS. THE NEARLY CUBICAL SPACECRAFT MEASURED 1 BY 1 BY 1.2 M. THE TV CAMERAS AND INFRARED SENSORS WERE MOUNTED ON THE SATELLITE BASEPLATE WITH THEIR OPTICAL AXES DIRECTED VERTICALLY EARTHWARD. THE SPACECRAFT WAS EQUIPPED WITH THREE CURVED SOLAR PANELS THAT WERE FOLDED DURING LAUNCH AND DEPLOYED AFTER ORBIT WAS ACHIEVED. EACH PANEL MEASURED OVER 4.2 M IN LENGTH WHEN UNFOLDED AND WAS COVERED WITH 3420 SOLAR CELLS, EACH MEASURING 2 BY 2 CM. THE NOAA 1 ATTITUDE CONTROL SYSTEM MAINTAINED DESIRED SPACECRAFT ORIENTATION THROUGH GYROSCOPIC PRINCIPLES INCORPORATED INTO THE SATELLITE DESIGN. EARTH ORIENTATION OF THE SATELLITE BODY WAS MAINTAINED BY TAKING ADVANTAGE OF THE PRECESSION INDUCED FROM A MOMENTUM FLYWHEEL SO THAT THE SATELLITE BODY PRECESSION RATE OF ONE REVOLUTION PER ORBIT PROVIDED THE DESIRED 'EARTH LOOKING' ATTITUDE. MINOR ADJUSTMENTS IN ATTITUDE AND ORIENTATION WERE MADE BY MEANS OF MAGNETIC COILS AND BY VARYING THE SPEED OF THE MOMENTUM FLYWHEEL. LAUNCHED INTO A NEAR-POLAR ORBIT, THE SPACECRAFT AND ITS SUBSYSTEMS PERFORMED NORMALLY UNTIL MAY 29, 1971 WHEN THE INCREMENTAL TAPE RECORDER FAILED, RESULTING IN PARTIAL LOSS OF SOLAR PROTON DATA AND TOTAL LOSS OF FLAT PLATE RADIOMETER DATA. THE APT AND DIRECT READOUT INFRARED (DRIR) SUBSYSTEMS WERE TURNED OFF ON JUNE 20, 1971 IN AN ATTEMPT TO REDUCE THE ABOVE NORMAL TEMPERATURE DUE TO OVERHEATING IN THE ATTITUDE CONTROL SYSTEM. THE AVCS WAS TURNED OFF SHORTLY THEREAFTER, AND THE SCANNING RADIOMETER CONTINUED PARTIAL OPERATIONS UNTIL THE SPACECRAFT WAS DEACTIVATED ON AUGUST 19, 1971.

EXPERIMENT NAME- FLAT PLATE RADIOMETER (FPR)

NSSDC ID 70-106A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF WISCONSIN

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - V.E. SUOMI U OF WISCONSIN MADISON, WI

DATE LAST USABLE EXPERIMENT DATA RECORDED-052971  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE FLAT PLATE RADIOMETER (FPR) SYSTEM WAS DESIGNED TO PROVIDE A MEASUREMENT OF THE GLOBAL DISTRIBUTION OF REFLECTED SOLAR AND LONGWAVE RADIATION LEAVING THE EARTH. THE FPR SYSTEM CONSISTED OF FOUR DETECTORS, AN ANALOG-TO-DIGITAL CONVERTER, AND A TAPE RECORDER. THE DETECTORS HAD A HEMISPHERIC FIELD OF VIEW OF 2 PI STER AND WERE MOUNTED ON THE SATELLITE BASEPLATE FACING EARTH. THE DETECTORS USED COATED ALUMINUM DISCS AS A SENSING ELEMENT. TWO OF THE DISCS WERE WHITE AND RESPONDED ONLY TO INFRARED ENERGY (7 TO 30 MICRONS) RADIATED FROM THE EARTH AND ITS ATMOSPHERE. THE OTHER TWO DISCS WERE PAINTED BLACK AND HAD A BROADER BAND SENSITIVITY (0.3 TO 30 MICRONS). TWO DISCS (ONE OF EACH TYPE) HAD A THERMISTOR BOLOMETER MOUNTED ON THE BACK SURFACE TO MEASURE THE DISC TEMPERATURE. THE OTHER TWO DISCS USED THERMOPILES. AN IDENTICAL EXPERIMENT WAS FLOWN ON ITOS 1, AND SIMILAR EXPERIMENTS WERE FLOWN ON ESSA 3, 5, 7, AND 9. FOR A FULL DESCRIPTION OF THE FPR SYSTEM, SEE 'STUDIES IN ATMOSPHERIC ENERGETICS BASED ON AEROSPACE PROBINGS, ANNUAL REPORT - 1967,' PAGES 179 TO 189, DEPT. OF



METEOROLOGY, UNIVERSITY OF WISCONSIN, MARCH 1968. THE FPR FUNCTIONED NORMALLY FROM LAUNCH UNTIL MAY 29, 1971 WHEN THE INCREMENTAL TAPE RECORDER FAILED, RESULTING IN TOTAL DATA LOSS.

DATA SET NAME- FLAT PLATE RADIOMETER DATA TAPE NSSDC ID 70-106A-02A

AVAILABILITY OF DATA SET- DATA AT ANOTHER CENTER

TIME PERIOD COVERED- 121170 TO 052971 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 65 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

DATA FROM THE NOAA-1 FLAT PLATE RADIOMETER (FPR) EXPERIMENT ARE AVAILABLE ON MAGNETIC TAPE THROUGH THE NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS), SUITLAND, MARYLAND. THESE 7-TRACK, 556-BPI, BINARY TAPES WERE PREPARED ON A EMR 6050 COMPUTER USING AS INPUT THE DIGITIZED RADIATION MEASUREMENTS FROM THE FOUR SENSING ELEMENTS, SPACECRAFT ORBITAL PARAMETERS, AND SOLAR EPHEMERIS INFORMATION. THE EXACT FORMAT FOR THE FPR TAPES AND A COMPLETE DESCRIPTION OF THE PROCESSING PROCEDURES CAN BE FOUND IN NOAA TECHNICAL MEMORANDUM NESS 29, "THE OPERATIONAL PROCESSING OF SOLAR PROTON MONITOR AND FLAT PLATE RADIOMETER DATA."

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SPACECRAFT COMMON NAME- APOLLO 14 CSM NSSDC ID 71-008A  
ALTERNATE NAMES- PL-704A

LAUNCH DATE- 01/31/71 SPACECRAFT WEIGHT IN ORBIT- 29290. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-020971  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 02/03/71 ORBIT TYPE- SELENCENTRIC ORBIT PERIOD- 117. MIN  
APOAPSIS- 123. KM ALT PERIAPSIS- 100. KM ALT INCLINATION- 33. DEG

SPACECRAFT BRIEF DESCRIPTION

THIS SPACECRAFT WAS THE THIRD APOLLO MISSION TO LAND MEN ON THE MOON. ON FEBRUARY 5, 1971, THE LUNAR MODULE (LM) LANDED TWO MEN IN THE HILLY UPLAND REGION 24 KM NORTH OF THE RIM OF FRA MAURO CRATER. WHILE THE PILOTED COMMAND MODULE (CM) CONTINUED IN A LUNAR EQUATORIAL ORBIT. THE APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP) WAS PLACED ON THE SURFACE OF THE MOON, AND SAMPLES OF THE LUNAR SURFACE WERE ACQUIRED. VARIOUS FRAMES OF 16-MM, 35-MM, 70-MM, AND 5-IN. MAPPING FILM WERE EXPOSED BY THE ASTRONAUTS FROM THE LM AND CM AND ON THE LUNAR SURFACE. AFTER LIFTOFF FROM THE MOON, THE LM REJOINED THE CM FOR THE RETURN TO EARTH. PERFORMANCE WAS GOOD FOR MOST ASPECTS OF THE MISSION. FOR FURTHER DESCRIPTION OF THE LUNAR MODULE, SEE SPACECRAFT 71-008C.

EXPERIMENT NAME- ORBITAL AND SURFACE PHOTOGRAPHY

NSSDC ID 71-008A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - UNKNOWN NASA-JSC HOUSTON, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-020971

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

APOLLO 14 WAS EQUIPPED WITH PHOTOGRAPHIC EQUIPMENT AND MATERIALS TO (1) OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE (LM) EJECTION MANEUVER, AND THE LM RENDEZVOUS SEQUENCE FROM THE COMMAND AND LUNAR MODULES, (2) OBTAIN MAPPING TYPE PHOTOS OF THE LUNAR GROUND TRACK AND OF POTENTIAL LANDING SITES FROM THE LOW POINT OF THE LM'S FLIGHT PATH, (3) RECORD THE OPERATIONAL ACTIVITIES OF THE CREW, (4) OBTAIN LONG-DISTANCE EARTH AND LUNAR TERRAIN PHOTOGRAPHS WITH 70-MM STILL CAMERAS, AND (5) OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND ACTIVITIES AFTER LANDING. THE CAMERA EQUIPMENT CARRIED BY APOLLO 14 CONSISTED OF TWO 70-MM HASSELBLAD ELECTRIC CAMERAS, TWO HASSELBLAD DATA CAMERAS, THREE 16-MM MAURER DATA ACQUISITION CAMERAS, ONE 35-MM LUNAR SURFACE STEREOSCOPIC CAMERA, AND ONE HYCON TOPOGRAPHIC MAPPING CAMERA. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY. THE PERFORMANCE FOR ALL THE CAMERAS WAS GOOD EXCEPT FOR THE HYCON CAMERA, WHICH EXPERIENCED A SHUTTER PROBLEM THAT RESULTED IN OVER-EXPOSED FILM.

DATA SET NAME- COLOR STEREO POSITIVE 35-MM PHOTOS

NSSDC ID 71-008A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 020571 TO 020671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 16 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMPOSED OF THE 16 USABLE HIGH-RESOLUTION STEREOSCOPIC FRAMES FROM THE 18 EXPOSED DURING EVA USING THE 35-MM CAMERA WITH SO-368 COLOR FILM. THE PHOTOS PROVIDE CLOSEUP VIEWS OF THE LUNAR SURFACE, AND EACH FRAME COVERS AN AREA 72 BY 83 MM ON THE SURFACE. THESE FRAMES ARE AS14-77-10357 THROUGH 10374.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 71-008A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 815 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 1300 POSITIVE PHOTOGRAPHS IN 70-MM FORMAT PRODUCED FROM THE ORIGINAL SO-368 AND SO-168 COLOR AND 3400, 3414, SO-267, AND POSITIVE 2485 B/W FILM USED WITH THE HASSELBLAD CAMERAS CARRIED ON THE APOLLO 14 MISSION. REPRODUCTION WAS MADE WITH QUALITY CONTROL AND DODGING TECHNIQUES. AREAS PHOTOGRAPHED FROM ORBIT INCLUDE THE DESCARTES REGION (SITE OF APOLLO 16 LANDING), THE FRA MAURO REGION (SITE OF APOLLO 14 LANDING), THE FAR SIDE CRATERS PASTEUR, TSIOLKOVSKY, AND ANSGARIUS, AND THE FRONTSIDE CRATERS LANGRENUS, THEOPHILUS, HERSCHEL, AND LANSBERG, WHICH LIE BETWEEN 135 DEG E AND 30 DEG W LONGITUDE AND PLUS OR MINUS 12 DEG. EXCEPT FOR SOME OBLIQUE VIEWS AS FAR AS 32 DEG NORTH OR SOUTH. MARIA FECUNDITATIS, TRANQUILLITATIS, AND SERENITATIS, VAPORUM, AND SINUS MEDII WERE ALSO PHOTOGRAPHED FROM ORBIT. SURFACE PHOTOGRAPHY INCLUDED PANORAMIC VIEWS OF ALSEP EQUIPMENT, SMALL CRATERS, BOULDERS, THE CORE TUBE, THE LM, CONE CRATER, A FOOTPRINT TRENCH, THE TRACKS OF THE MODULARIZED EQUIPMENT TRANSPORTER, THE ASTRONAUTS, THE EARTH CRESCENT, AND HORIZON PANS.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS           NSSDC ID 71-008A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 815 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 815 POSITIVE PHOTOGRAPHS IN 70-MM FORMAT PRODUCED FROM THE ORIGINAL 2485, 3400, 3414, AND SO-267 B/W FILM COPIED ON A NIAGARA PRINTER TO PRESERVE ALBEDO (REFLECTING PROPERTIES) DIFFERENCES FAITHFULLY FOR PHOTOMETRIC AND PHOTOGRAMMETRIC STUDIES. THE AREAS PHOTOGRAPHED ARE THE SAME AS IN THE LOGETRONIC VERSION, VIZ. (FROM ORBIT) THE DESCARTES REGION (APOLLO 16 LANDING SITE), THE FRA MAURO REGION (APOLLO 14 LANDING SITE), THE CRATERS AND AREAS FROM 135 DEG E TO 30 DEG W LONGITUDE AND PLUS OR MINUS 12 DEG LATITUDE, EXCEPT FOR SOME OBLIQUE VIEWS EXTENDING AS FAR AS PLUS OR MINUS 32 DEG LATITUDE. MARIA FECUNDITATIS, TRANQUILLITATIS, SERENITATIS, VAPORUM, AND SINUS MEDII WERE PHOTOGRAPHED, AND PICTURES OF LARGE CRATERS SUCH AS PASTEUR, TSIOLKOVSKY, AND ANSGARIUS ON THE FAR SIDE AND LANGRENUS, THEOPHILUS, HERSCHEL, AND LANSBERG ON THE FRONTSIDE WERE OBTAINED. SURFACE PHOTOGRAPHY INCLUDED PHOTOGRAPHS OF THE ALSEP INSTRUMENTS, CRATERS, BOULDERS, THE CORE TUBE, THE LM, CONE CRATER, A FOOTPRINT TRENCH, MODULARIZED EQUIPMENT TRANSPORTER TRACKS, THE ASTRONAUTS, THE EARTH CRESCENT, AND PANS OF THE LUNAR HORIZON.

DATA SET NAME- COMPLETE MAURER COLOR PHOTOGRAPHY ON           NSSDC ID 71-008A-01D  
16-MM MOVIE FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020871 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22941 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS OF 16-MM FILM PREPARED FROM SO-168 AND SO-368 COLOR FILM. THESE REELS CONTAIN THE USABLE FILM FROM 11 MAGAZINES EXPOSED DURING THE MISSION, FOUR MAGAZINES OF CABIN AND EARTH PHOTOGRAPHY

ARE NOT INCLUDED. THE REMAINING MAGAZINES HAVE COVERAGE OF TRANSPOSITION AND DOCKING MANEUVERS, LDMK TRACK, LM DOCKING WITH CSM, REENTRY, LM DESCENT, LM ASCENT, FLAG PLACEMENT, AND SETTING UP ALSEP.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS                   NSSDC ID 71-008A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 519 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 70-MM COLOR FILM PRODUCED DIRECTLY FROM THE ORIGINAL SO-368 AND SO-168 COLOR FILM USED WITH THE HASSELBLAD CAMERA. THESE CAMERAS WERE EQUIPPED WITH LENSES OF FOCAL LENGTHS OF 500, 250, 80, AND 60 MM. COVERAGE INCLUDES SURFACE CLOSEUPS, VIEWS OF THE EARTH, LUNAR HORIZON PANS, THE LM AND FOOTPADS, AND THE ASTRONAUTS. FROM ORBIT, PHOTOGRAPHS INCLUDE DOCKING MANEUVERS, EARTHRISE, LM DESCENT, FAR SIDE CRATERS SUCH AS CHAPYLGIN, KING, MOROZOV, AND SAHA, MARE SMYTHII, NEARSIDE FEATURES SUCH AS MARIA CRISIUM, FECUNDITATIS, TRANQUILLITATIS, SERENITATIS, NECTARIS, NUBIUM, AND COGNITUM, AND CRATERS LANGRENUS, THEOPHILUS, DESCARTES (REGION OF APOLLO 16 LANDING SITE), ALPHONSUS, PTOLEMA,S, ABULFED,A AND FRA MAURO (REGION OF APOLLO 14 LANDING SITE).

DATA SET NAME- HYCON B/W PHOTOMETRIC 5-IN. PHOTOS                   NSSDC ID 71-008A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 469 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONTAINS 433 FRAMES OF USABLE B/W 3400 FILM PHOTOGRAPHY OUT OF 469 TOTAL FRAMES TAKEN WITH THE 127-MM (5-IN. WIDE FILM) HYCON TOPOGRAPHIC CAMERA WITH A 457-MM (18-IN.) FOCAL LENGTH LENS. THE ORIGINALS WERE REPRODUCED ON A NIAGARA PRINTER TO PRESERVE THE ALBEDO VARIATIONS MORE FAITHFULLY. THUS, THESE PICTURES CAN BE USED FOR PHOTOMETRIC AND PHOTO-GRAMMETRIC STUDIES. THE PHOTOGRAPHS INCLUDE VERTICAL STEREO COVERAGE (ON REVOLUTION 4) OF THE DESCARTES HIGHLAND REGION FROM 30 DEG E TO 9.5 DEG E, THE APOLLO 16 LANDING AREA. COVERAGE BEYOND 17.4 DEG E, 9.3 DEG S WAS NOT USABLE OWING TO A CAMERA MALFUNCTION. THE STEREO COVERAGE FROM 28.1 DEG E TO 17.4 DEG E IS OF GOOD QUALITY. THE FRAMES COVER AREAS ABOUT 5 BY 280 KM (3 BY 170 MM), AND COVERAGE EXTENDS FROM THE EASTERN (IAU) RIM OF THEOPHILUS TO DOLLAND MA. THE ALTITUDE OF THE SPACECRAFT ON THIS PASS VARIED FROM 12.5 TO 20 KM (10 TO 12 N.M.) DEPENDING ON GROUND ELEVATION. RESOLUTION LIMITS THE RANGE FROM 2 TO 3 M. ALTHOUGH THE OVERALL QUALITY IS GOOD SOME FRAMES APPEAR BLURRED ON THE EDGES. THESE FRAMES ARE ON MAGAZINES V AND W FROM AS14-80-10400 THROUGH 10642.

DATA SET NAME- HYCON 8/W LOGETRONIC 5-IN. PHOTOS

NSSDC ID 71-008A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020571 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 469 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE 469 FRAMES FROM THE HYCON TOPOGRAPHIC CAMERA, REPRODUCED FROM THE ORIGINALS, WITH QUALITY CONTROL ON THE DENSITY THROUGH EXPOSURE CONTROL AND DODGING TECHNIQUES. THE HYCON CAMERA PROVIDED VERTICAL STEREO COVERAGE, ON THE FOURTH REVOLUTION PASS, OF THE DESCARTES HIGHLAND REGION WHERE APOLLO 16 WILL LAND. COVERAGE OF THE LUNAR SURFACE IS FROM 28 DEG E TO 17 DEG E, WHICH INCLUDES THE AREA FROM THE EAST RIM OF THEOPHILUS TO DOLLAND MA. THE ALTITUDE OF THE SPACECRAFT OVER THIS REGION RANGED FROM 12.5 TO 20 KM DEPENDING ON THE GROUND ELEVATION. RESOLUTION RANGES FROM 2 TO 3 M. THE OVERALL QUALITY OF THE PHOTOGRAPHY IS GOOD, BUT SOME FRAMES APPEAR BLURRED AT THE EDGES. THE FRAMES ARE ON MAGAZINES V AND W FROM AS12-80-10400 THROUGH 10642.

DATA SET NAME- COLOR POSITIVE 4- BY 6-IN MICROFICHE

NSSDC ID 71-008A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 013171 TO 020971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 10 SHEET(S) OF COLOR MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 10 MICROFICHE CARDS OF 60 FRAMES PER CARD FORMAT, REPRODUCED FROM THE 70-MM HASSELBLAD COLOR PHOTOGRAPHY TAKEN ON THE APOLLO 14 MISSION. THESE ARE NOT SUITABLE FOR SCIENTIFIC PURPOSES BUT INSTEAD AS A CATALOG FOR SELECTION AND ORDERING OF SPECIFIC FRAMES DESIRED FOR STUDY.

DATA SET NAME- B/W PANORAMIC POSITIVE 4- BY 5-IN.  
PHOTOS

NSSDC ID 71-008A-01I

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 020571 TO 020671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 7 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 11 PHOTOMOSAICS OF PANORAMIC VIEWS OF THE LUNAR SURFACE AT THE FRA MAURO LANDING SITE, REPRODUCED IN 4- BY 5-IN. FORMAT ON BLACK AND WHITE FILM. VIEWS SHOW HORIZON PANS, VERY LARGE BOULDERS, AN ASTRONAUT PUSHING THE MODULARIZED EQUIPMENT TRANSPORTER, THE LOWER PART OF THE LM, AND A BOULDER FIELD ON THE FLANKS OF CONE CRATER. CARDINAL POINT DIRECTIONS ARE SHOWN, AND FRAME NUMBERS ARE INCLUDED IN THE MOSAICS.

DATA SET NAME- COLOR PANORAMIC POSITIVE 4- BY 5-IN. NSSDC ID 71-008A-01K  
PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 020571 TO 020671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE COLOR PANORAMIC MOSAICS IN 4- BY 5-IN. FORMAT. THE VIEWS IN THESE THREE PANORAMAS ARE OF (1) PANORAMA 6, COMPLETE LUNAR HORIZON FROM WEST THROUGH NORTH, EAST, AND SOUTH INCLUDING THE LM (ON FRAMES AS14-64-9167 THROUGH 9187), (2) PANORAMA 7, COMPLETE HORIZON PAN (FRAMES AS14-64-9294 THROUGH 9316), AND (3) PANORAMA 8, LUNAR SURFACE AT THE FRA MAURO SITE SHOWING FOOTPADS AND THE LOWER PART OF THE LM AND THE DEFORMATION OF THE RIM OF A SMALL CRATER ON WHICH ONE OF THE FOOTPADS RESTED.

DATA SET NAME- COMPLETE SET OF 70-MM PHOTOS ON B/W NSSDC ID 71-008A-01L  
POSITIVE 4- BY 6-IN. MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 020171 TO 020971 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 16 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIXTEEN 4- BY 6-IN. B/W MICROFICHE CARDS ON WHICH THE 70-MM HASSELBLAD PHOTOGRAPHY IS RECORDED. FOUR OF THE CARDS ARE PRIMARILY COLOR PHOTOGRAPHY BUT ALSO CONTAIN SOME B/W PHOTOGRAPHY. ON THESE FOUR CARDS, DESIGNATED GR, THE B/W MAGAZINES ARE 65, 68, 71, AND 75. THE FRAME NUMBER APPEARS IN THE UPPER LEFT CORNER OF THE MARGIN. THE MAGAZINES IN COLOR SHOW THE ASTRONAUTS AT WORK ON THE SURFACE AT FRA MAURO, THE SURROUNDING TERRAIN, THE ALSEP EXPERIMENTS, THE CM AS THE LM APPROACHED, AND THE MOON (PHOTOGRAPHED FROM THE CM DURING TEI). SOME FRAMES HAVE SUN FLARE. THE B/W FRAMES SHOW SIMILAR PHENOMENA. VIEWS OF VERY LARGE BULDERS ARE ESPECIALLY GOOD. BOTH THE B/W AND COLOR MICROFICHE INCLUDE A LARGE NUMBER OF FRAMES OF THE LUNAR SURFACE FROM ORBIT. THE QUALITY OF THE MICROFICHE IS GENERALLY GOOD BUT DIRT SPECKS WERE NOT COMPLETELY REMOVED.

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SPACECRAFT COMMON NAME- APOLLO 14 LM NSSDC ID 71-008C  
ALTERNATE NAMES- ALSEP 14, LEM 14, LUNAR MODULE 14

LAUNCH DATE- 01/31/71 SPACECRAFT WEIGHT IN ORBIT- 124.2 KG

FUNDING AGENCY- NASA-DMSF

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 14 LUNAR MODULE (LM) CONSISTED OF A LUNAR LANDING CRAFT, AND AN APOLLO LUNAR SURFACE EXPERIMENT PACKAGE (ALSEP) THAT CONTAINED SCIENTIFIC EXPERIMENTS TO BE LEFT ON THE LUNAR SURFACE AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE LUNAR HIGHLANDS (3 DEG 39 MIN 1 SEC S LATITUDE, 17 DEG 27 MIN 55 SEC W LONGITUDE). THE NUCLEAR POWERED ALSEP WAS DEPLOYED AT THE LANDING SITE, AND INCLUDED EXPERIMENTS TO STUDY THE SEISMIC WAVES, MAGNETIC FIELDS, SOLAR WIND COMPOSITION AND INTERACTION WITH THE MOON, LUNAR ATMOSPHERE, IONIC ENVIRONMENT, HIGH ENERGY RADIATION DAMAGE TO SOLAR CELLS, LUNAR MOTION, AND THE LUNAR SOIL.

EXPERIMENT NAME- LUNAR FIELD GEOLOGY

NSSDC ID 71-008C-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G. SWANN US GEOLOGICAL SURVEY FLAGSTAFF, AZ  
OI - J. MUEHLBERGER UNKNOWN UNKNOWN

DATE LAST USABLE EXPERIMENT DATA RECORDED-020671  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE LUNAR SURFACE FIELD GEOLOGY EXPERIMENT WAS DESIGNED TO GATHER DATA FOR USE IN INTERPRETING GEOLOGICAL HISTORY OF THE FRA MAURO LANDING SITE, INCLUDING THE NATURE OF THE ORIGIN OF THE DEBRIS LAYER OR REGOLITH AND THE LAND FORMS SUPERIMPOSED AT LATER DATES ON THE MARIA AND HIGHLANDS. THE LUNAR BEDROCK AND OTHER TYPES OF MATERIALS FOUND AT THIS SITE WERE COLLECTED TO YIELD AN INSIGHT INTO THE INTERNAL PROCESSES OF THE MOON'S FORMATION. ONE LARGE ROCK, SEVERAL SMALLER FRAGMENTS, AND FINE-GRAINED MATERIAL TYPICAL OF THE FRA MAURO SITE WERE COLLECTED DURING THE FIRST EXTRA VEHICULAR ACTIVITY (EVA) TO ENSURE THE RETURN OF SAMPLES IN THE EVENT THAT EVA 2 HAD TO BE CANCELLED. THE SELECTED SAMPLES WERE STOWED IN SAMPLE RETURN CONTAINER NO. 1 AND TAKEN INTO THE LM AT THE END OF EVA 1. IN ADDITION TO THE SAMPLES GATHERED DURING THE TWO EVA PERIODS AND RETURNED TO EARTH FOR ANALYSIS, SUBJECTIVE CREW COMMENTS IN REAL TIME AND PHOTOGRAPHS (BOTH STEREO AND REGULAR COLOR), AND POSTFLIGHT CREW DEBRIEFING WERE PRIMARY MEANS OF DATA GATHERING. SPECIFIC TYPES OF LUNAR SURFACE SAMPLES COLLECTED DURING THE FIELD GEOLOGY TRAVERSE INCLUDED SIX CORE-TUBE SOIL SAMPLES, A LUNAR ENVIRONMENT (FROM BENEATH THE SURFACE) SOIL SAMPLE, AND A SAMPLE OF EXHAUST CONTAMINATED SOIL FROM BENEATH THE LM. THE TOOLS USED WERE EXTENSION HANDLE SCOOPS, TONGS, A CORE TUBE BORER, AND A HAMMER. A TOTAL OF 36 KG OF SAMPLES WAS RETURNED IN FEBRUARY 1971.

DATA SET NAME- B/W POSITIVE 8- BY 10-IN. PHOTOS OF  
GEOLOGIC SAMPLES

NSSDC ID 71-008C-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1782 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 1782 B/W, 8- BY 10-IN. TRANSPARENCIES OF ROCK SAMPLES RETURNED FROM THE FRA MAURO LANDING SITE OF THE APOLLO 14 MISSION. THE SAMPLES ARE SHOWN IN VARIOUS POSITIONS WITH RESPECT TO THE COMPASS AND EACH OF THE ROCK FACES. EACH SAMPLE IS PHOTOGRAPHED BESIDE A CENTIMETER RULER TO SHOW DIMENSIONS. FOR SAMPLES THAT WERE BROKEN UP, EACH PIECE HAS BEEN PHOTOGRAPHED IN ALL THESE ASPECTS.

DATA SET NAME- B/W POSITIVE 70-MM PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-008C-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 50 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 70-MM BLACK AND WHITE (B/W) POSITIVE TRANSPARENCIES OF GEOLOGIC SAMPLES RETURNED FROM THE APOLLO 14 MISSION TO THE FRA MAURO REGION OF THE MOON. THE PHOTOS SHOW THE LUNAR ROCK SAMPLES IN VARIOUS ORIENTATIONS DESIGNATED BY COMPASS POINTS, WITH REFERENCE TO THE DOCUMENTED ORIENTATION OF THE ROCK ON THE LUNAR SURFACE. THE SAMPLES ARE ALSO SHOWN BESIDE A CENTIMETER RULER AND BENEATH THE DESIGNATED SAMPLE NUMBER. THE QUALITY OF THE PHOTOS IS GENERALLY GOOD.

DATA SET NAME- B/W POSITIVE 4- BY 5-IN. PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-008C-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1587 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 1587 B/W 4- BY 5-IN. POSITIVE TRANSPARENCIES OF LUNAR ROCK SAMPLES RETURNED FROM THE FRA MAURO REGION OF THE MOON ON THE APOLLO 14 MISSION. THE PHOTOGRAPHS SHOW THE ROCKS IN VARIOUS POSITIONS WITH RESPECT TO THE COMPASS AND EACH OF THE ROCK FACES. THE SAMPLES ARE SHOWN BESIDE A CENTIMETER RULER FOR DIMENSIONS. IF SAMPLES WERE SUBSEQUENTLY BROKEN UP, EACH PIECE IS PRESENTED IN EACH OF THE ASPECTS AS THE ORIGINAL SAMPLE.

DATA SET NAME- GEOLOGIC SAMPLES, 35-MM B/W POSITIVE PHOTOS NSSDC ID 71-008C-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020471 (AS VERIFIED BY NSSDC)



QUANTITY OF DATA IN THIS DATA SET- 38 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 38 BLACK AND WHITE 35-MM POSITIVE TRANSPARENCIES MOUNTED ON 8- BY 10-IN. FILM. THESE PHOTOGRAPHS SHOW THE ROCKS RETURNED FROM THE FRA MAURO LANDING REGION OF THE MOON ON THE APOLLO 14 MISSION.

DATA SET NAME- COLOR POSITIVE 4- BY 5-IN. SHEET FILM OF GEOLOGIC SAMPLES NSSDC ID 71-008C-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 14 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FOURTEEN 4- BY 5-IN COLOR POSITIVE TRANSPARENCIES OF LUNAR GEOLOGIC ROCK SAMPLES RETURNED FROM THE FRA MAURO REGION OF THE MOON ON THE APOLLO 14 MISSION. THE SAMPLES ARE SHOWN BESIDE A CENTIMETER SCALE AND THE ASSIGNED ROCK SAMPLE NUMBER. COMPASS DIRECTIONS REFER TO VIEWING ASPECTS OF THE SAMPLE RELATIVE TO AN ARBITRARILY CHOSEN FACE OF THE ROCK.

DATA SET NAME- COLOR POSITIVE 8- BY 10-IN. PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-008C-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020371 TO 020471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 243 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 8- BY 10-IN. COLOR POSITIVE TRANSPARENCIES OF APPROXIMATELY SIX ROCK SAMPLES WHICH WERE BROUGHT BACK FROM THE FRA MAURO REGION OF THE MOON ON THE APOLLO 14 MISSION, SEEN FROM SEVERAL ANGLES DESIGNATED AS COMPASS DIRECTIONS WITH RESPECT TO THE LIGHT SOURCE. EACH FACE OF THE ROCK IS ALSO SHOWN. THE DIMENSIONS OF THE ROCKS ARE REVEALED BY A CENTIMETER SCALE BESIDE THE SPECIMEN. IF SAMPLES WERE BROKEN UP, EACH OF THE PIECES IS PRESENTED IN VARIOUS ANGLES AND SURFACES, AS WAS THE ORIGINAL SAMPLE.

EXPERIMENT NAME- CHARGED PARTICLE LUNAR ENVIRONMENT NSSDC ID 71-008C-08

ORIGINAL EXPERIMENT INSTITUTION- RICE U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - B.J. O'BRIEN DEPT OF ENVIRON PROT PERTH, AUSTRALIA  
OI - D.L. REASONER RICE U HOUSTON, TX

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO MEASURE THE ENERGY SPECTRUM OF LOW-ENERGY CHARGED PARTICLES STRIKING THE LUNAR SURFACE. THE MAIN PART OF THE INSTRUMENTATION CONSISTED OF TWO ELECTROSTATIC ANALYZERS. ONE OF THESE POINTED TOWARD LOCAL LUNAR VERTICAL, AND THE OTHER TO A POINT 60 DEG FROM VERTICAL TOWARD LUNAR WEST. AS A FIRST APPROXIMATION, BOTH DETECTORS COULD BE CONSIDERED TO POINT IN THE ECLIPTIC PLANE. EACH ANALYZER CONSISTED OF A SET OF DIRECTION-DEFINING SLITS, DEFLECTION PLATES, FIVE SMALL APERTURE, C-SHAPED CHANNEL ELECTRON MULTIPLIERS, AND ONE LARGER APERTURE CHANNEL ELECTRON MULTIPLIER. FOR A GIVEN APPLIED DEFLECTION VOLTAGE, THE FIVE MULTIPLIERS WERE ARRANGED SO AS TO COUNT PARTICLES OF ONE POLARITY WITH DIFFERING ENERGIES, WHILE THE LARGER APERTURE MULTIPLIER MADE A WIDE-BAND MEASUREMENT OF PARTICLES OF THE OPPOSITE POLARITY. DURING EACH 19.2-SEC INTERVAL IN THE AUTOMATIC MODE OF EXPERIMENT OPERATION, DEFLECTION VOLTAGES OF ZERO VOLTS (TWICE) AND PLUS AND MINUS 35, 350, AND 3500 VOLTS WERE APPLIED TO THE DEFLECTION PLATES OF BOTH ANALYZERS FOR 2.4 SEC EACH VOLTAGE. THE LITTLE-USED MANUAL MODE PERMITTED THE CONTINUOUS APPLICATION OF A SINGLE DEFLECTION VOLTAGE, THUS INCREASING TEMPORAL RESOLUTION FOR PARTICLES IN A LIMITED PORTION OF THE SPECTRUM. USEFUL DATA OBTAINED DURING EACH 19.2-SEC INTERVAL (AUTOMATIC MODE) WERE, FOR EACH ANALYZER, 1.2-SEC ACCUMULATED COUNTS OF ELECTRONS IN 18 ENERGY WINDOWS BETWEEN 40 EV AND 20 KEV, AND IONS IN 12 ENERGY WINDOWS BETWEEN 0.17 AND 20 KEV. THE EXPERIMENT WORKED NORMALLY FROM DEPLOYMENT (FEB. 5, 1971) UNTIL APRIL 8, 1971 WHEN THE ANALYZER POINTING AWAY FROM LUNAR VERTICAL FAILED. THE OTHER ANALYZER CONTINUED TO FUNCTION NORMALLY UNTIL JUNE 6, 1971, WHEN A PARTIAL FAILURE OCCURRED. OPERATION OF THIS ANALYZER WAS INTERMITTENT FOR THE REST OF 1971. DURING MOST OF 1972, OPERATION WAS CONTINUOUS DURING LUNAR NIGHT AND INTERMITTENT DURING LUNAR DAY. FROM DECEMBER 1972 TO FEBRUARY 1973 OPERATION WAS CONTINUOUS. THEN HIGH VOLTAGE PROBLEMS OCCURRED AGAIN, AND OPERATION HAS BEEN INTERMITTENT TO THE PRESENT (APRIL 1973).

DATA SET NAME- COUNT RATE DATA ON MAGNETIC TAPE NSSDC ID 71-008C-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020571 TO 060771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 31 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF EXPERIMENTER SUPPLIED MAGNETIC TAPES. EACH TAPE IS 7-TRACK, 556-BPI, SDS 92 BINARY, WITH 10 LOGICAL RECORDS PER PHYSICAL RECORD, AND ONE HUNDRED AND ELEVEN 36-BIT WORDS PER LOGICAL RECORD. EACH LOGICAL RECORD CONTAINS ALL THE PARTICLE COUNTING DATA TAKEN OVER ONE 19.2-SEC SEQUENCE, IN ADDITION TO THE NECESSARY TIME AND MODE IDENTIFICATION INFORMATION.

DATA SET NAME- 200 EV ELECTRON COUNT RATE PLOTS ON MICROFILM NSSDC ID 71-008C-08C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 020671 TO 031271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 35-MM MICROFILM GENERATED AT NSSDC FROM 18 HARDCOPY PLOTS SUBMITTED BY THE EXPERIMENTER. EACH PLOT CONTAINS 2 DAYS OF 5-MINUTE-AVERAGED, 200-EV ELECTRON COUNT RATES (COUNTS PER 1.2 SEC - CONVERSION TO FLUX (PER SQ CM STER EV) EFFECTED BY MULTIPLICATION BY 100). THIS MODE WAS CHOSEN BECAUSE IT INCLUDES THE PEAK IN THE PLASMA SHEET ELECTRON SPECTRUM AND PORTIONS OF THE PHOTOELECTRON AND MAGNETOSHEATH ELECTRON SPECTRUMS. THE PLOTS INCLUDE THE TIME PERIOD FEBRUARY 6 TO MARCH 12, 1971 WHICH CONTAINS THE FIRST ORBIT OF THE MOON ABOUT THE EARTH AFTER THE PLACEMENT OF THE INSTRUMENT ON THE MOON. THE EXPERIMENT HAS MARKED ON THE PLOTS PHYSICALLY SIGNIFICANT TRANSITIONS (E.G., FROM THE MAGNETOTAIL TO THE MAGNETOSHEATH) AND THE MONTHLY 18-HR PERIOD OF SOLAR ULTRAVIOLET-INDUCED PHOTOELECTRON CONTAMINATION. THE EXPERIMENTER ALSO HAS GENERATED SIMILAR PLOTS FOR OTHER TIMES AND OTHER MODES THAT WERE SCIENTIFICALLY INTERESTING TO HIM, BUT NOT ON A ROUTINE BASIS. ALL HIS DATA ARE TO BE FOUND IN MAGNETIC TAPE DATA SET 71-008C-08A.

EXPERIMENT NAME- LASER RANGING RETROREFLECTOR

NSSDC ID 71-008C-09

ORIGINAL EXPERIMENT INSTITUTION- CONN. WESLEYAN U

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J. FALLER CONN. WESLEYAN U MIDDLETOWN, CT

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO PERMIT GROUND-BASED STATIONS TO CONDUCT SHORT-PULSE LASER RANGING TO A CORNER REFLECTOR ARRAY ON THE LUNAR SURFACE AT THE FRA MAURD SITE. THIS INSTRUMENT AND THOSE AT APOLLO 11 (TRANQUILITY BASE) AND AT THE APOLLO 15 SITE IN THE HADLEY/APENNINE REGION PROVIDED A NETWORK (WELL-SEPARATED IN LONGITUDE AND LATITUDE) OF STATIONS TO PERMIT A COMPLETE GEOMETRICAL SEPARATION OF THE LUNAR LIBRATIONS. THE REFLECTORS PERMITTED A DISCRIMINATION OF THE 3-YR PHYSICAL LIBRATIONS. THEY ALSO PROVIDED INFORMATION ABOUT THE EARTH AND ITS CONTINENTAL DRIFT MOTIONS AS WELL AS VERY ACCURATE DETERMINATIONS OF THE EARTH-MOON DISTANCE AND THE MOON'S ORBITAL MOTIONS. THE NORTH POLE POSITION CAN BE DETERMINED TO PLUS OR MINUS 15 CM. THE INSTRUMENT IS AN ARRAY OF 100 SMALL FUSED-SILICA CORNER CUBES EACH 3.8 CM IN DIAMETER. IT WAS DEPLOYED ON THE FIRST EVA, 30 M WEST OF THE CENTRAL STATION (200 M WEST OF THE LM), WAS LEVELED, AND WAS FACED TOWARD THE EARTH. EACH CORNER CUBE REFLECTS LIGHT PARALLEL TO THE INCIDENT DIRECTION, WHICH INSURES THAT THE REFLECTED LASER PULSE WILL RETURN TO ITS PLACE OF ORIGIN ON THE EARTH. SUCCESSFUL RANGE MEASURES WERE FIRST OBTAINED FROM THE MCDONALD OBSERVATORY IN TEXAS ON FEBRUARY 5, 1971, THE DAY ON WHICH THE EXPERIMENT WAS DEPLOYED. NO DEGRADATION WAS SUFFERED FROM THE LM LIFTOFF.

DATA SET NAME- FILTERED AND UNFILTERED LASER PHOTON  
DETECTIONS ON MAGNETIC TAPE

NSSDC ID 71-008C-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 010971 TO 123071 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 800-BPI, BINARY, 7-TRACK TAPES CONTAINING DATA ON THE CURRENT DEPOSITION FROM THE APOLLO LUNAR LASER RANGING EXPERIMENT FROM APOLLOS 11 AND 14. THERE ARE FIVE FILES OF DATA -- (1) FILTERED DATA FROM NOVEMBER 1969 THROUGH DECEMBER 1970, (2) UNFILTERED DETECTIONS FOR NOVEMBER-DECEMBER 1969, (3) UNFILTERED DETECTIONS FOR JANUARY TO JUNE 1970, (4) UNFILTERED DETECTIONS FOR JULY TO DECEMBER 1970, AND (5) UNFILTERED DETECTIONS FROM JANUARY TO DECEMBER 1971. THE DATA WERE WRITTEN ORIGINALLY ON A CDC 6600 COMPUTER. THERE ARE TWO DIFFERENT KINDS OF DATA -- RUN DATA, WHICH ARE DESIGNATED BY A 'Z' IN THE BEGINNING OF EVERY 80-CHARACTER LOGICAL RECORD, AND SHOT DATA, WHICH ARE DESIGNATED BY A 'P' IN THE BEGINNING OF EVERY 80-CHARACTER LOGICAL RECORD. THIS TAPE IS BLOCKED AT 64 LOGICAL RECORDS PER PHYSICAL RECORD. EACH PHYSICAL RECORD HAS FOUR CHARACTERS THAT WERE APPENDED AFTER THE TAPE WAS DUPLICATED ON THE IBM 7094 COMPUTER. FILTERED DATA CONSIST OF PHOTON DETECTIONS SUBMITTED TO A DATA FILTERING PROCEDURE ASSUMING LINEARITY OF C RESIDUALS OVER A RELATIVELY SHORT TIME INTERVAL AND RELYING ON POISSON STATISTICS FOR THE LEVEL OF CONFIDENCE IN A COLLECTION IDENTIFIED BY THE FILTER. UNFILTERED DATA ARE REAL DATA HEAVILY INTERSPERSED WITH NOISE PHOTONS FROM ANY OF THE VARIOUS SOURCES OF STRAY LIGHT. AN ATTEMPT TO USE THE DATA IN A SIMPLE GAUSSIAN APPLICATION WOULD RESULT IN A SOLUTION CLOSELY ADHERING TO THE PREDICTION EPHEMERIS USED TO CONTROL THE DETECTOR RANGE GATING. SOME FILTERING PROCESS MUST BE APPLIED TO THE DATA FOR EFFECTIVE USE. THE DATA RECORDED ARE JULIAN DATE, CLOCK ERROR, AMBIENT TEMPERATURE, AMBIENT RELATIVE HUMIDITY AND PERCENT OF SATURATION, WIND SPEED, LASER ENERGY IN JOULES X10, LASER FREQUENCY IN HZ X10 TO THE TENTH POWER, PULSE LENGTH IN SECX10 TO THE TENTH POWER, OBSERVATIONAL RESOLUTION, PHOTOMULTIPLIER DARK COUNT, MOON COUNT RATE, STAR COUNT RATE, CALIBRATION STAR IDENTIFICATION, FILTER SPECTRAL WIDTH, FILTER SPATIAL WIDTH, NUMBER OF SHOTS FIRED THIS RUN, YEAR, MONTH, AND DAY.

EXPERIMENT NAME- LUNAR PORTABLE MAGNETOMETER EXPERIMENT NSSDC ID 71-008C-10

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P. DYAL NASA-ARC MOFFETT FIELD, CA  
OI - C.P. SONETT NASA-ARC MOFFETT FIELD, CA  
OI - R.L. DUBOIS EARTH SCIENCES OBS NORMAN, OK  
OI - M.G. SIMMONS UNKNOWN

DATE LAST USABLE EXPERIMENT DATA RECORDED-020671

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THIS EXPERIMENT WAS TO OBTAIN MORE SCIENTIFIC INFORMATION ON THE LOCATION, STRENGTH, AND DIMENSIONS OF LOCAL MAGNETIC SOURCES. THE LUNAR PORTABLE MAGNETOMETER WAS DEPLOYED BY THE ASTRONAUTS, WHO THEN TOOK MEASUREMENTS AT VARIOUS POSITIONS NEAR THE LANDING SITE. THE INSTRUMENT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETIC SENSORS. AFTER

MEASUREMENTS WERE COMPLETE, THE ASTRONAUTS TURNED THE EXPERIMENT OFF AND LEFT THE HARDWARE ON THE LUNAR SURFACE.

DATA SET NAME- REMANENT MAGNETIC FIELD MAGNITUDE AND COMPONENTS NSSDC ID 71-008C-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 020671 TO 020671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF VALUES OF THE LUNAR SURFACE REMANENT MAGNETIC FIELD MAGNITUDE AND CARTESIAN COMPONENTS TAKEN AT TWO IDENTIFIED LUNAR SURFACE SITES AT FRA MAURO BY THE APOLLO 14 ASTRONAUTS. THE DATA ARE FOUND IN AN UNPUBLISHED NASA-ARC REPORT, 'LUNAR PORTABLE MAGNETOMETER DATA.'

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SPACECRAFT COMMON NAME- ISIS 2 NSSDC ID 71-024A  
ALTERNATE NAMES- ISIS-B, PL-701F

LAUNCH DATE- 04/01/71 SPACECRAFT WEIGHT IN ORBIT- 248.6 KG

FUNDING AGENCY- CRC  
FUNDING AGENCY- NASA-OSS

SPACECRAFT STATUS OF OPERATION- NORMAL

EPOCH DATE- 04/09/71 ORBIT TYPE- GEDCENTRIC ORBIT PERIOD- 113.6 MIN  
APOAPSIS- 1429.00 KM ALT PERIAPSIS- 1358.00 KM ALT INCLINATION- 88.15 DEG

SPACECRAFT BRIEF DESCRIPTION

ISIS 2 WAS AN IONOSPHERIC OBSERVATORY INSTRUMENTED WITH A SWEEP FREQUENCY AND A FIXED FREQUENCY IONOSONDE, A VLF RECEIVER, ENERGETIC AND SOFT PARTICLE DETECTORS, AN ION MASS SPECTROMETER, AN ELECTROSTATIC PROBE, A RETARDING POTENTIAL ANALYZER, A BEACON TRANSMITTER, A COSMIC NOISE EXPERIMENT, AND TWO PHOTOMETERS. THE SOUNDER USED TWO LONG CROSSED-DIPOLE ANTENNAS (78.9 M AND 20.2 M LONG, RESPECTIVELY) FOR THE SOUNDING, VLF, AND COSMIC NOISE EXPERIMENTS. THE SPACECRAFT WAS SPIN STABILIZED TO ABOUT 2 RPM AFTER ANTENNA DEPLOYMENT. ATTITUDE AND SPIN INFORMATION WAS OBTAINED FROM A THREE-AXIS MAGNETOMETER AND A SUN SENSOR. SOME CONTROL OF ATTITUDE AND SPIN WERE POSSIBLE BY MEANS OF MAGNETIC TORQUING. THE EXPERIMENT PACKAGE ALSO INCLUDED A PROGRAMMABLE TAPE RECORDER WITH A 1-HR CAPACITY. FOR NON-RECORDED OBSERVATIONS, DATA FROM SATELLITE AND SUBSATELLITE LOCATIONS WERE TELEMETERED WHEN THE SPACECRAFT WAS IN SIGHT OF A TELEMETRY STATION. TELEMETRY STATIONS ARE LOCATED SO THAT PRIMARY DATA COVERAGE IS NEAR THE 80 DEG W MERIDIAN AND NEAR HAWAII, SINGAPORE, AUSTRALIA, ENGLAND, INDIA, JAPAN, ANTARCTICA, NEW ZEALAND, AND CENTRAL AFRICA.

DATA SET NAME- REFINED WORLD MAPS ON MICROFILM

NSSDC ID 71-024A-00B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 091571 TO 010373 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 8 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE 16-MM MICROFILMED DATA, PREPARED AT GSFC, ARE LISTINGS OF SATELLITE POSITIONS FOR EACH MINUTE OF GMT. POSITION IS DESCRIBED BY GEOGRAPHIC LATITUDE, LONGITUDE, AND ALTITUDE ABOVE AN ELLIPSOID OF REVOLUTION CLOSELY APPROXIMATING THE MEAN EARTH SURFACE. POSITION DATA FOR SPECIAL TIMES (EQUATOR CROSSING, THE NORTHERNMOST AND SOUTHERNMOST POINTS, AND SUN ENTRANCE/EXIT) ARE ALSO LISTED. THE LISTINGS ARE ORGANIZED INTO BOOKS OF ABOUT 2 WEEKS OF POSITION/TIME DATA HEADED BY ORBIT ELEMENTS AND CONSTANTS USED IN THE COMPUTATION OF THE POSITIONS. AS EXTENDED WORLD MAPS ARE PREPARED, THE REFINED MAPS DUPLICATING PART OF THIS INFORMATION ARE NORMALLY DISCARDED. HENCE, IF TIMES REQUIRED ARE NOT FOUND IN THIS DATA SET, SEE DATA SET 71-024A-00C.

DATA SET NAME- EXTENDED WORLD MAPS ON MICROFILM

NSSDC ID 71-024A-00C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 041771 TO 021473 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 10 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE DATA, PREPARED AT GSFC ON 35-MM MICROFILM, ARE LISTINGS OF SATELLITE POSITION AND SUPPORTING INFORMATION FOR EACH MINUTE OF GMT. THE INFORMATION IN THE LISTINGS INCLUDES LOCAL SOLAR TIME, GEODETIC LOCATION, SEVERAL VARIETIES OF MAGNETIC FIELD REFERENCED LOCATION, AND SUN POSITION. DATA ARE ALSO GIVEN FOR SPECIAL TIMES (EQUATOR CROSSINGS, NORTHERNMOST AND SOUTHERNMOST POINTS, SUNLIGHT ENTRANCE AND EXIT, ETC.). IF TIMES REQUIRED ARE NOT YET AVAILABLE IN THIS DATA SET, SEE DATA SET 71-024A-00B.

EXPERIMENT NAME- SWEEP FREQUENCY SOUNDER

NSSDC ID 71-024A-01

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.H.	WHITTEKER	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.E.K.	LOCKWOOD	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.L.	NELMS	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - J.	TURNER	DEPARTMENT OF INTERIOR	SYDNEY, AUSTRALIA
OI - C.	TAIEB	CNET	PARIS, FRANCE
OI - O.	HOLT	THE AURORAL OBS	TROMSO, NORWAY
OI - Y.	OGATA	RRL	TOKYO, JAPAN
OI - R.	RAGHAVARAO	PHYSICAL RESEARCH LAB	AHMEDABAD, INDIA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE ISIS 2 IONOSONDE WAS A RADIO TRANSMITTER THAT RECORDED THE TIME DELAY BETWEEN A TRANSMITTED AND RETURNED RADIO FREQUENCY PULSE. A CONTINUUM OF FREQUENCIES BETWEEN .1 AND 20 MHZ WERE SAMPLED EVERY 14 OR 21 SEC, AND ONE OF SIX SELECTED FREQUENCIES WAS ALSO USED FOR SOUNDING FOR A FEW SECONDS DURING THE 14- OR 21-SEC PERIOD. IN ADDITION TO THE SWEEP- AND FIXED-FREQUENCY MODES OF OPERATION, A MIXED MODE WAS AVAILABLE IN WHICH THE TRANSMITTER FREQUENCY WAS FIXED AT ONE OF SIX POSSIBLE FREQUENCIES WHILE THE RECEIVER SWEEPED. SEVERAL VIRTUAL RANGE (DELAY TIME) TRACES RESULTING FROM GROUND REFLECTIONS, PLASMA RESONANCES, BIREFRINGENCE OF THE IONOSPHERE, NON-VERTICAL PROPAGATION, ETC., WERE NORMALLY OBSERVED. VIRTUAL RANGE AT A GIVEN FREQUENCY WAS PRIMARILY A FUNCTION OF DISTANCE TRAVERSED BY THE SIGNAL, ELECTRON DENSITY ALONG THE PROPAGATION PATH, AND MODE OF PROPAGATION. THE STANDARD DATA FORM WAS AN IONOGRAM (GRAPH) SHOWING VIRTUAL RANGE AS A FUNCTION OF RADIO FREQUENCY. TWO OTHER FORMS OF DATA ARE COMMONLY PREPARED FROM THE IONOGRAMS. THEY ARE DIGITAL FREQUENCY AND/OR VIRTUAL HEIGHT VALUES OF CHARACTERISTIC IONOSPHERIC FEATURES AND COMPUTATIONS OF ELECTRON DENSITY PROFILES.

DATA SET NAME- SWEEP FREQUENCY IONOGRAMS ON MICROFILM      NSSDC ID 71-024A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 040871 TO 010573 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 842 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THESE IONOGRAMS ARE REDUCED DATA PLOTS OF VIRTUAL RANGE VS FREQUENCY. VIRTUAL RANGE IS A FUNCTION OF TIME DELAY OF THE REFLECTED PULSE OF EACH FREQUENCY TRANSMITTED. THESE ARE FIRST GENERATION DATA PREPARED DIRECTLY FROM THE TELEMETRY TAPES. PROCESSING IS SCHEDULED AT EITHER CRC IN OTTAWA, CANADA, OR RSRS IN SLOUGH, BUCKINGHAMSHIRE, ENGLAND. PROCESSING ALSO OCCURRED AT BOULDER, COLORADO (NOAA), BETWEEN LAUNCH AND MAY 1972, AND IN INDIA, JAPAN, AUSTRALIA AND NEW ZEALAND BEGINNING IN THE FALL OF 1972. TIME CODES ARE ENTERED IN THE MARGIN OF THE MICROFILM, AND VIRTUAL RANGE AND FREQUENCY MARKERS HAVE BEEN PLACED ON EACH IONOGRAM. THE DATA ARE AVAILABLE TO THE EXTENT PERMITTED BY TELEMETRY STATION SCHEDULING, LOCATION OF TELEMETRY STATIONS, AND TAPE RECORDER OPERATION AND SCHEDULING. SPACECRAFT POWER, WHICH WAS ALSO AN IMPORTANT FACTOR IN DATA OBSERVATION, LIMITED SOUNDER OPERATION TO ABOUT 7 HR PER DAY, ABOUT 1 HR PER ORBIT OF WHICH COULD BE FOR RECORDED DATA (THE TAPE RECORDER FAILED ON FEBRUARY 4, 1972). PROCESSING LIMITATIONS RESULTED IN A DELAY OF ABOUT 6 MONTHS FROM OBSERVATION TIME TO IONOGRAM PREPARATION. THE DATA COVERAGE IS PRIMARILY NEAR THE 80 DEG W MERIDIAN FOR PERIODS UP TO 8 HR PER DAY. SINCE ONLY TIME IS NOTED ON EACH IONOGRAM, SATELLITE POSITION AND OTHER RELATED DATA MUST BE OBTAINED FROM ANOTHER SOURCE (SEE DATA SET 71-024A-00C).

EXPERIMENT NAME- FIXED FREQUENCY SOUNDER

NSSDC ID 71-024A-02

ORIGINAL EXPERIMENT INSTITUTION- NOAA

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.	CALVERT	NOAA	BOULDER, CO
OI - T.E.	VAN ZANDT	NOAA	BOULDER, CO
OI - G.L.	NELMS	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - C.E.	PETRIE	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - G.E.K.	LOCKWOOD	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
OI - J.H.	WHITTEKER	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE FIXED FREQUENCY SOUNDER OPERATED FROM THE SAME ANTENNA, TRANSMITTER, AND RECEIVER USED FOR THE SWEEP FREQUENCY EXPERIMENT. IT NORMALLY OPERATED FOR 3 TO 5 SEC DURING THE FREQUENCY FLY-BACK PERIOD OF THE SWEEP FREQUENCY OPERATION WHICH WAS EVERY 14 OR 21 SEC. ONE OF SIX FREQUENCIES (0.12, 0.48, 1.00, 1.95, 4.00, OR 9.303 MHZ) WAS CHOSEN FOR USE BY THE EXPERIMENTER, AS DESIRED. OTHER MODES OF OPERATION WERE AVAILABLE INCLUDING CONTINUOUS OBSERVATION AT A SELECTED FREQUENCY AND A SPECIAL MIXED MODE WITH TRANSMISSION AT A SELECTED ONE OF THE SIX FIXED FREQUENCIES AND SWEEP RECEPTION. THIS EXPERIMENT WAS DESIGNED TO STUDY IONOSPHERIC FEATURES OF A SMALLER SCALE THAN COULD BE DETECTED BY THE SWEEP SOUNDER, AND TO STUDY PLASMA RESONANCES. PARAMETERS MEASURED WERE VIRTUAL RANGE (A FUNCTION OF PROPAGATION TIME OF THE REFLECTED PULSE) AND TIME (A FUNCTION OF GEOGRAPHICAL POSITION). THESE DATA WERE NORMALLY OBSERVED ONLY WHEN THE SPACECRAFT WAS IN RANGE OF THE TELEMETRY STATION. A LIMITED AMOUNT OF DATA WAS TAPE RECORDED DURING THE FIRST YEAR AFTER LAUNCH. EXPERIMENT OPERATION HAS BEEN NOMINAL SINCE LAUNCH.

DATA SET NAME- FIXED FREQUENCY IONOGRAMS ON MICROFILM      NSSDC ID 71-024A-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 040871 TO 061071 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      28 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THE FIXED FREQUENCY IONOGRAMS APPEAR IMMEDIATELY BEFORE EACH SWEEP FREQUENCY IONOGRAM (DATA SET 71-024A-01A) ON 35-MM MICROFILM. THESE ARE REDUCED DATA PREPARED FROM THE TELEMETRY TAPE AT CRC IN OTTAWA, CANADA, OR RSRs IN SLOUGH, BUCKINGHAMSHIRE, ENGLAND. A SMALL QUANTITY OF 1971 OBSERVATIONS WERE PROCESSED BY NOAA IN BOULDER, COLORADO. FREQUENCY AND VIRTUAL HEIGHT GRIDS APPEAR ON EACH FRAME. TIME IDENTIFICATION IS INCLUDED ALONG THE EDGE OF THE FILM. TO DETERMINE SATELLITE LOCATION AND ALTITUDE, EPHEMERIDES (DATA SET 71-024A-00C) ARE NEEDED.

EXPERIMENT NAME- COSMIC RADIO NOISE      NSSDC ID 71-024A-10

ORIGINAL EXPERIMENT INSTITUTION- COMM RESEARCH CENTRE

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - T.R.	HARTZ	COMM RESEARCH CENTRE	OTTAWA, ONTARIO, CANADA
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EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT USED THE SWEEP FREQUENCY IONOSONDE RECEIVER AGC VOLTAGES AUTOMATIC GAIN CONTROL VOLTAGE TO MEASURE GALACTIC AND SOLAR RADIO NOISE LEVELS. THE RECEIVER SWEEPED FROM 0.1 TO 20 MHZ. THE DYNAMIC RANGE WAS 50 DB, AND THE BANDWIDTH WAS 55 KHZ. THE ANTENNAS USED WERE 20.2M AND 78.9 M DIPOLLES.

DATA SET NAME- COSMIC RADIO NOISE, AGC LEVEL PLOTS                   NSSDC ID 71-024A-10A  
ON 35-MM MICROFILM, MERGED WITH IONOGRAMS

AVAILABILITY OF DATA SET- DATA AT NSSDC PROCESSING DEFERRED

TIME PERIOD COVERED- 040871 TO 010573 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 702 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS MICROFILM DATA SET IS INCLUDED AS PLOT LINES ON THE IONOGRAMS OF DATA SET 71-024A-01A. IT CONSISTS OF THE AUTOMATIC GAIN CONTROL LEVEL PLOTTED VS TIME (FREQUENCY, AS THE RECEIVER IS A SWEEP FREQUENCY RECEIVER). THE FREQUENCY RESOLUTION IS RELATIVELY GOOD, BUT THE FLUX RESOLUTION IS VERY POOR DUE TO THE RESTRICTED PLOT HEIGHT. THESE DATA ARE ALSO AVAILABLE, WITH THE FLUX DISPLAYED ON AN EXPANDED SCALE, FROM THE EXPERIMENTER. TEMPORAL COVERAGE IS LIMITED TO LESS THAN 7 HRS PER DAY. AN INDEX TO THE IONOGRAMS WHICH LISTS TIMES WHEN THE AGC VOLTAGE WAS RECOVERED IS AVAILABLE AS DATA SET 71-024A-01B (ON 7-TRACK, 556-BPI, BCD MAGNETIC TAPE). MOST OF THESE DATA WERE SUPPLIED BY THE OFFICE OF THE PRINCIPAL EXPERIMENTER AT CRC, OTTAWA, CANADA.

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SPACECRAFT COMMON NAME- MARINER 9   NSSDC ID 71-051A  
ALTERNATE NAMES-                   MARINER-I, MARINER MARS 71, MARIN-I, PL-712B

LAUNCH DATE- 05/30/71                   SPACECRAFT WEIGHT IN ORBIT-                   907. KG

FUNDING AGENCY- NASA-OSSA

DATE LAST USABLE SPACECRAFT DATA RECORDED-102772  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 11/16/71   ORBIT TYPE- MARS-CENTRIC                   ORBIT PERIOD- 719. MIN  
APOAPSIS- 17168. KM ALT   PERIAPSIS- 1455. KM ALT   INCLINATION- 64.37 DEG

SPACECRAFT BRIEF DESCRIPTION

THE MARINER MARS 71 MISSION WAS PLANNED TO CONSIST OF TWO SPACECRAFT ON COMPLEMENTARY MISSIONS, BUT DUE TO THE FAILURE OF MARINER 8 TO LAUNCH PROPERLY, ONLY ONE SPACECRAFT WAS AVAILABLE. MARINER 9 COMBINED MISSION OBJECTIVES OF BOTH MARINER 8 (MAPPING 70 PERCENT OF THE MARTIAN SURFACE) AND MARINER 9 (A STUDY OF TEMPORAL CHANGES IN THE MARTIAN ATMOSPHERE AND ON THE MARTIAN SURFACE). FOR THE SURVEY PORTION OF THE MISSION, THE PLANETARY

SURFACE WAS TO BE MAPPED WITH THE SAME RESOLUTION AS PLANNED FOR THE ORIGINAL MISSION, ALTHOUGH THE RESOLUTION OF PICTURES OF THE POLAR REGIONS WOULD BE DECREASED DUE TO THE INCREASED SLANT RANGE. THE VARIABLE FEATURES EXPERIMENTS WERE CHANGED FROM STUDIES OF SIX GIVEN AREAS EVERY 5 DAYS TO STUDIES OF SMALLER REGIONS EVERY 17 DAYS. MARINER 9 ARRIVED AT MARS ON NOVEMBER 14, 1971. THE SPACECRAFT GATHERED DATA ON THE ATMOSPHERIC COMPOSITION, DENSITY, PRESSURE, AND TEMPERATURE AND ON THE SURFACE COMPOSITION, TEMPERATURE, AND TOPOGRAPHY OF MARS. AFTER DEPLETING ITS SUPPLY OF ATTITUDE CONTROL GAS, THE SPACECRAFT WAS TURNED OFF ON OCTOBER 27, 1972.

EXPERIMENT NAME- ULTRAVIOLET SPECTROMETER (UVS)

NSSDC ID 71-051A-02

ORIGINAL EXPERIMENT INSTITUTION- U OF COLORADO

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - C.A. BARTH	U OF COLORADO	BOULDER, CO
OI - J.B. PEARCE	U OF COLORADO	BOULDER, CO
OI - C.W. HORD	U OF COLORADO	BOULDER, CO

DATE LAST EXPERIMENT DATA RECORDED-102772

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE MARINER 9 ULTRAVIOLET SPECTROMETER (UVS) EXPERIMENT WAS DESIGNED TO RECEIVE UV RADIATION (1100 TO 3520 Å) FROM THE SURFACE AND ATMOSPHERE OF MARS. SCAN SELECTED BANDS OF THIS RADIATION, AND PROVIDE AN INTENSITY VALUE AS A FUNCTION OF WAVELENGTH ON THE BASIS OF SCAN-CYCLE TIME. THE SCIENTIFIC OBJECTIVES OF THIS EXPERIMENT FELL INTO TWO BROAD CATEGORIES -- UV CARTOGRAPHY AND UV AERONOMY. THE UV CARTOGRAPHY INVOLVED MEASUREMENTS IN THE UV OF THE (1) LOCAL ATMOSPHERIC PRESSURE OVER THE MAJOR PORTION OF THE PLANET, (2) LOCAL OZONE CONCENTRATION, (3) WAVE OF DARKENING, (4) VARIABILITY OF SURFACE FEATURES, (5) YELLOW CLOUDS, BLUE HAZE, AND BLUE CLEARING, AND (6) LOCAL VARIATIONS IN THE OXYGEN-OZONE ABUNDANCES FOR DETECTING SIGNS OF BIOLOGICAL ACTIVITY. THE UV AERONOMY INVOLVED MEASUREMENTS IN THE UV OF THE (1) COMPOSITION AND STRUCTURE OF THE UPPER ATMOSPHERE AS A FUNCTION OF LATITUDE, LONGITUDE, AND TIME, (2) VARIABILITY OF THE RATE OF ESCAPE OF ATOMIC HYDROGEN FROM THE EXOSPHERE, AND (3) DISTRIBUTION AND VARIABILITY OF THE UV AURORA AND DETERMINATION OF THE INDUCED PLANETARY MAGNETIC FIELD. IN ADDITION, WHEN MARS WAS OCCULTED FROM THE INSTRUMENT FIELD OF VIEW, OBSERVATIONS OF STRONG STELLAR SOURCES OF UV WERE MADE. THE OPTICS AND SENSING PORTION OF THE UVS CONSISTED OF AN EBERT GRATING SPECTROMETER WITH TWO EXIT SLITS, A LIGHT BAFFLE, AN OCCULTING SLIT TELESCOPE, AND TWO PHOTOMULTIPLIER TUBE (PMT) LIGHT SENSORS. THE INCIDENT UV RADIATION PASSED THROUGH THE BAFFLING SYSTEM, WHICH ELIMINATED ANY STRAY LIGHT, AND ENTERED INTO THE TELESCOPE. THE TELESCOPE PRIMARY MIRROR REFLECTED THE RADIATION TO A SECONDARY MIRROR THROUGH A PRE-SLIT WHERE IT WAS FOCUSED ONTO THE ENTRANCE SLIT OF THE EBERT SPECTROMETER, WHICH ISOLATED MONOCHROMATIC RADIATION FROM THE INCOMING RADIATION. THE RADIATION FROM THE ENTRANCE SLIT FILLED HALF THE EBERT MIRROR WHERE IT WAS COLLIMATED AND REFLECTED ONTO THE GRATING (2160 LINES/MM) SO THAT THE RADIATION FILLED THE GRATING. THE GRATING ROTATED OVER A SMALL ANGLE BY MEANS OF A CAM-FOLLOWER DRIVE AND DIFFRACTED THE RADIATION. DIFFRACTED RADIATION OF DIFFERENT WAVELENGTHS, DEPENDING ON THE GRATING ANGLE, FELL ON THE OTHER HALF OF THE EBERT MIRROR, WHICH FOCUSED IT ONTO THE TWO EXIT SLITS, THUS PROVIDING THE WAVELENGTH SCAN. THE TWO PHOTOMULTIPLIER TUBES SENSED RADIATION FROM THEIR RESPECTIVE EXIT SLIT AND WERE SENSITIVE ONLY TO SELECTED BANDS IN THE UV SPECTRUM -- 1100 TO 2000 Å (CHANNEL 1) AND 1450 TO

3520 A (CHANNEL 2). CHANNEL 1 WAS DETECTED BY THE PMT WITH A CESIUM IODIDE PHOTOCATHODE AND LITHIUM FLUORIDE WINDOW AND INCLUDED THE DATA USED IN THE UV AERONOMY STUDY. CHANNEL 2 WAS DETECTED BY THE PMT WITH A CESIUM TELLURIDE PHOTOCATHODE AND SAPPHIRE WINDOW AND INCLUDED THE DATA USED IN THE UV CARTOGRAPHY STUDY. THE UVS SCANNED THE WAVELENGTH RANGE WITH A 3-SEC PERIOD AND A SPECTRAL RESOLUTION FOR FIRST-ORDER SPECTRA OF 15 Å. THE WAVELENGTH OF ANY GIVEN PHOTOMETRIC SAMPLE IN THE UV SPECTRUM WAS KNOWN TO PLUS OR MINUS 5 Å OR BETTER. THE MARINER 9 DATA AUTOMATION SUBSYSTEM (DAS) CAUSED EACH CHANNEL TO BE SAMPLED EVERY 5 MSEC. CHANNEL 2 WAS SAMPLED 2.5 MSEC AFTER CHANNEL 1. THERE WERE 200 SAMPLES/SEC/CHANNEL. A TOTAL OF 400 UVS SAMPLES/SEC. EACH SAMPLE WAS DIGITIZED TO EIGHT BITS AND ONE SIGN BIT IN THE DAS. THE INSTRUMENT HAD A DYNAMIC RANGE OF 200 RAYLEIGHS PER 20-Å INTERVAL TO 50 KILDRAYLEIGHS PER 20-Å INTERVAL FOR CHANNEL 1 AND 200 RAYLEIGHS PER 20-Å INTERVAL TO 50 MEGARAYLEIGHS PER 20-Å INTERVAL FOR CHANNEL 2. CHANNEL 1 HAD A FIELD OF VIEW SUFFICIENT TO PERMIT IMAGING A PORTION OF THE MARTIAN SURFACE SUBTENDING 0.19 BY 1.9 DEG OF ARC, WHILE CHANNEL 2 WAS LIMITED TO A 0.19- BY 0.55-DEG FIELD OF VIEW. CHANNEL 1, AT A SLANT RANGE OF 5700 KM, VIEWED A COLUMN OF SPACE 100 KM ABOVE THE MARTIAN SURFACE THAT WAS 24 BY 240 KM. CHANNEL 2, ON THE OTHER HAND, AT A VERTICAL DISTANCE OF 1250 KM, VIEWED A 2.25- BY 6.5-KM AREA AT THE SUBSPACECRAFT POINT ON THE PLANET'S SURFACE, WHILE AT A VERTICAL DISTANCE OF 850 KM THE AREA VIEWED WAS 1.5 BY 4.5 KM. THE UVS HAD FOUR FUNDAMENTAL MEASURING GEOMETRIES DURING AN ORBIT -- (1) BRIGHT LIMB, (2) ILLUMINATED DISC, (3) TERMINATOR, AND (4) DARK LIMB. IN ADDITION TO TAKING COMPLETE UV SPECTRA, THE INSTRUMENT DESIGN ALSO ALLOWED FOR SAMPLING AT 1216 Å (LYMAN-ALPHA) IN ORDER TO UTILIZE A LOWER DATA RATE MODE. THIS ALLOWED LYMAN-ALPHA DATA TO BE TAKEN FOR A LARGE PERCENTAGE OF EACH ORBIT. THE EXPERIMENT BEGAN COLLECTING EXCELLENT DATA SOON AFTER ORBITAL INSERTION ON NOVEMBER 13, 1971, AND CONTINUED UNTIL APRIL 2, 1972, WHEN THE EXPERIMENT WAS SHUT OFF TO CONSERVE SPACECRAFT POWER DURING SOLAR OCCULTATION. THE EXPERIMENT WAS REACTIVATED ON JUNE 8, 1972, AFTER THE SPACECRAFT EMERGED FROM SOLAR OCCULTATION. IT CONTINUED TO OPERATE NORMALLY UNTIL 2200 GMT ON OCTOBER 27, 1972, WHEN THE EXPERIMENT WAS SHUT OFF ALONG WITH THE REST OF THE MARINER 9 SPACECRAFT.

DATA SET NAME- PUBLISHED DATA ON MARS' LOWER ATMOSPHERE NSSDC ID 71-051A-02A

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 112771 TO 012172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 BOOK(S) OR BOUND VOLUME(S)

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE PUBLISHED REPORTS SUPPLIED BY THE EXPERIMENTER -- 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 2, DECEMBER 22, 1971,' 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 4, FEBRUARY 2, 1972,' AND 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 12, MARCH 22, 1972.' THESE REPORTS WERE PUBLISHED IN HARDCOPY BY THE LABORATORY FOR ATMOSPHERIC AND SPACE PHYSICS, UNIVERSITY OF COLORADO, BOULDER, COLO. REPORT NUMBER TWO COVERS THE PERIOD NOVEMBER 27 TO DECEMBER 15, 1971, WHICH COINCIDES WITH THE PLANETWIDE DUST STORM CONDITIONS IN THE LOWER ATMOSPHERE. IT PRESENTS THE UV SPECTROMETER DATA AND SEVERAL APPROPRIATE OBSERVATIONAL PARAMETERS GROUPED ACCORDING TO ORBITAL PASS AND PLOTTED AS A FUNCTION OF TIME. THE FIRST FIGURE OF EACH GROUP SHOWS THE PATH OF OBSERVATION ON A 1- TO 50,000,000-SCALE MERCATOR PROJECTION. THE SUBSEQUENT FIGURES OF EACH GROUP COME IN PAIRS AND INCLUDE (1) A FIGURE SHOWING THE COSINE OF THE

ILLUMINATION ANGLE, THE COSINE OF THE INSTRUMENT VIEWING ANGLE, AND THE SCATTERING ANGLE, (2) THE UV DATA SHOWING THE REFLECTANCE OF THE 3050 A BAND, THE BLUE COLOR REFLECTANCE RATIO (2580 A/3050 A), AND THE RED COLOR REFLECTANCE RATIO (3380 A/3050 A). USUALLY THERE WILL BE TWO SETS OF FIGURES FOR THE MORNING MAPPING SEQUENCE AND ONE FOR THE AFTERNOON SEQUENCE. REPORT NUMBER FOUR COVERS THE PERIOD DECEMBER 16, 1971 TO JANUARY 1, 1972. THIS WAS A PERIOD WHEN THE LOWER ATMOSPHERE OF MARS BEGAN TO CLEAR. AS IN THE FIRST REPORT THE DATA HAVE BEEN GROUPED ACCORDING TO ORBITAL PASS AND PLOTTED AS A FUNCTION OF TIME, WITH THE FIRST FIGURE IN EACH GROUP BEING THE MERCATOR CHART SHOWING THE GENERAL LATITUDE AND LONGITUDE REGIONS COVERED DURING THE PASS. HOWEVER, FOLLOWING THIS FIGURE THE DATA ARRANGEMENT IS SOMEWHAT DIFFERENT. ALL THE 3050 A AND 2630 A DATA OBTAINED ON THAT PASS ARE PLOTTED IN TIME SEQUENCE. EACH SECTION OF DATA IS SUBDIVIDED INTO TWO PARTS AND ARRANGED ON OPPOSITE PAGES COVERING THE SAME TIME INTERVAL. FOUR CURVES BASED ON THE VIEWING AND ILLUMINATION GEOMETRIES HAVE BEEN INCLUDED TO FACILITATE AN UNDERSTANDING OF THE GEOMETRY OF THE MEASUREMENTS -- (1) THE SCATTERING ANGLE IS PLOTTED ALONG WITH THE 2630 A TO 3050 A REFLECTANCE RATIO AND (2) THE COSINES OF THE SOLAR INCIDENCE AND VIEWING EMISSION ANGLES AND A REPRESENTATIVE PHOTOMETRIC FUNCTION ARE PLOTTED ALONG WITH THE 3050 A REFLECTANCE. REPORT NUMBER 12 COVERS THE PERIOD JANUARY 3 TO JANUARY 21, 1972. AS BEFORE, THE DATA ARE PRESENTED IN ORBITAL SEQUENCE AND THE COVERAGE IS INDICATED ON THE MERCATOR PROJECTION. ALSO INDICATED ON THIS MAP IS THE SCATTERING ANGLE FOR EACH OF THREE TIME INTERVALS OF OBSERVATION. THE SECOND FIGURE SHOWS THE 3050 A REFLECTANCE AND THE RED COLOR RATIO PLOTTED AS A FUNCTION OF TIME. THESE REPORTS ARE AVAILABLE THROUGH THE EXPERIMENTER.

DATA SET NAME-- PUBLISHED DATA ON MARS' UPPER ATMOSPHERE AIRGLOW NSSDC ID 71-051A-02B

AVAILABILITY OF DATA SET-- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED-- 111471 TO 020872 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-- 6 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF SIX PUBLISHED REPORTS SUPPLIED BY THE EXPERIMENTER -- 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 1, DECEMBER 8, 1971,' 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 3, DECEMBER 15, 1971,' 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 5, DECEMBER 29, 1971,' 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 7, JANUARY 5, 1972,' 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 9, JANUARY 26, 1972,' AND 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 11, FEBRUARY 16, 1972.' THESE REPORTS WERE PUBLISHED IN HARDCOPY BY THE LABORATORY FOR ATMOSPHERIC AND SPACE PHYSICS, UNIVERSITY OF COLORADO, BOULDER, COLO. REPORT NUMBER ONE PROVIDES MARS UPPER ATMOSPHERE AIRGLOW DATA THAT WERE OBTAINED ON NOVEMBER 14, 1971, DURING THE FIRST ORBIT IN WHICH HIGH DATA RATE COMMUNICATION WAS POSSIBLE WITH MARINER 9 FOLLOWING ORBIT INSERTION. THE REPORT ALSO INCLUDES DATA OBTAINED DURING A SYSTEMATIC UPPER ATMOSPHERE STUDY FROM NOVEMBER 27 TO DECEMBER 3, 1971. THE AIRGLOW EMISSIONS ARE GROUPED AS -- (1) THE CO FOURTH POSITIVE BANDS AND THE CI 1561 AND 1657 A LINES IN THE 1418 TO 1758 A SPECTRAL REGION, (2) THE CO CAMERON BANDS IN THE 1910 TO 2458 A SPECTRAL REGION, (3) THE OI 1304 A LINE, AND (4) THE HI 1216 A LINES. THE DATA ARE PRESENTED IN SUCCESSIVE GROUPS OF EIGHT FIGURES CONTAINING THE LOG EMISSION RATE VS ALTITUDE FOR EACH OF THE ABOVE FOUR SPECTRAL RANGES FOR THE EIGHT ORBITS REPORTED. THE ORBITAL PASS NUMBER IS INDICATED ON EACH FIGURE. A

TABLE IS ALSO INCLUDED GIVING THE ORBITAL PARAMETERS ASSOCIATED WITH EACH BRIGHT LIMB CROSSING. REPORT NUMBER THREE COVERS THE PERIOD NOVEMBER 20 THROUGH DECEMBER 13, 1971, REPORT NUMBER FIVE COVERS THE PERIOD DECEMBER 15 TO DECEMBER 21, 1971, NUMBER SEVEN COVERS THE PERIOD DECEMBER 23, 1971 TO JANUARY 2, 1972, REPORT NUMBER NINE COVERS THE PERIOD JANUARY 3 TO JANUARY 21, 1972, AND REPORT NUMBER 11 COVERS THE PERIOD JANUARY 23 TO FEBRUARY 8, 1972. ALL THESE REPORTS PRESENT THE SAME DATA IN THE SAME FORMAT WITH ONE EXCEPTION. AN ANOMALY APPEARED IN THE LONG WAVELENGTH CHANNEL ON ORBIT 114 AND AFFECTED THE ACQUISITION OF AIRGLOW DATA IN THAT REGION. CONSEQUENTLY, NO DATA FOR THE CO CAMERON BANDS ARE PRESENTED AFTER THIS DATE. THE OTHER DATA, HOWEVER, ARE UNAFFECTED. THESE REPORTS ARE AVAILABLE THROUGH THE EXPERIMENTER.

DATA SET NAME- PUBLISHED DATA ON 1216- AND 1304-A LIMB AND DISC AREAS OF MARS NSSDC ID 71-051A-02C

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 111271 TO 120671 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 BOOK(S) OR BOUND VOLUME(S)

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO PUBLISHED REPORTS SUPPLIED BY THE EXPERIMENTER 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 8, MARCH 8, 1972,' AND 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 10, MARCH 15, 1972.' THESE REPORTS WERE PUBLISHED IN HARDCOPY BY THE LABORATORY FOR ATMOSPHERIC AND SPACE PHYSICS, UNIVERSITY OF COLORADO, BOULDER, COLO. REPORT NUMBER EIGHT PROVIDES OI 1304 A DATA FROM BOTH THE BRIGHT LIMB AND DISC OF MARS. THE 1304 A DATA HAVE BEEN PREVIOUSLY REPORTED IN DATA REPORTS 1 AND 3 (71-051A-02B). PRESENTED IN REPORT NUMBER EIGHT ARE DATA FOR NOVEMBER 12, 1971, AND FOR NOVEMBER 27 TO DECEMBER 4 AND 6, 1971. EACH PASS SHOWN REPRESENTS APPROXIMATELY 30 MIN OF VIEWING TIME AS THE FIELD OF VIEW CROSSED THE BRIGHT LIMB, MOVED ONTO THE DISC, AND CONTINUED PAST THE EVENING TERMINATOR. THE DATA ARE DIVIDED INTO TWO PARTS -- PREORBITAL AND ORBITAL. FIGURES 1 AND 2 DEAL WITH THE PREORBITAL DATA. FIGURE 1 SHOWS FIRST ORDER SPECTRUM BETWEEN 1270 AND 1370 A OBTAINED BY AVERAGING 511 SUCCESSIVE SPECTRA OF THE DISC OF MARS VIEWED FROM APPROXIMATELY 300,000 KM. THE RELATIVE INTENSITY OF OI 1304 AND OI 1356 ARE DEPICTED ON AN INTENSITY VS WAVELENGTH PLOT WITH A DISC IN THE UPPER RIGHT HAND CORNER SHOWING THE ILLUMINATION OF THE DISC AND THE FIELD OF VIEW. FIGURE 2 SHOWS THEORETICAL INTENSITY CONTOURS OF THESE FEATURES FOR THE SAME VIEWING CONDITIONS. FIGURES 3 TO 11 DEAL WITH THE ORBITAL DATA. EACH FIGURE IS COMPOSED OF TWO PARTS. THE UPPER HALF SHOWS THE ORBITAL PARAMETERS (COSINE OF ANGLE AT INTERSECTION POINT BETWEEN LOOK DIRECTION AND LOCAL ZENITH, COSINE OF SOLAR ZENITH ANGLE, AND SCATTERING ANGLE) NEEDED TO SPECIFY THE LINE OF SIGHT AND SOLAR ZENITH ANGLE ALONG THAT LINE. THE LOWER HALF OF EACH FIGURE SHOWS THE 1304 A INTENSITY, A THEORETICAL 1304 A INTENSITY, AND THE CO (A-X) INTENSITY ON A RELATIVE SCALE. ALSO INDICATED IS THE APPROXIMATE TIME THE FIELD OF VIEW MOVED FROM THE LIMB ONTO THE DISC. REPORT NUMBER 10 PROVIDES HI 1216 A LYMAN ALPHA DATA FROM BOTH THE BRIGHT LIMB AND DISC OF MARS. THE DATA FORMAT IS IDENTICAL TO THAT OF THE FIRST REPORT EXCEPT THAT THERE ARE NO PREORBITAL DATA AND THERE ARE NO THEORETICAL 1216 A INTENSITY AND CO (A-X) PLOTS INCLUDED. THIS REPORT COVERS THE SAME PERIOD AS THE FIRST REPORT. THESE REPORTS ARE AVAILABLE THROUGH THE EXPERIMENTER.

DATA SET NAME- STELLAR UV SPECTRA

NSSDC ID 71-051A-02D

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 111471 TO 011672 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE PUBLISHED REPORT, IN HARDCOPY FORM, PROVIDED BY THE EXPERIMENTER -- 'MARINER 9 MARS ORBITER ULTRAVIOLET SPECTROMETER EXPERIMENT DATA REPORT 6, JANUARY 19, 1972.' THE REPORT COVERS THE PERIOD NOVEMBER 14, 1971 TO JANUARY 16, 1972. THE DATA CONSIST OF STELLAR SPECTRA OBSERVED BY THE UV SPECTROMETER RANGING IN SPECTRAL TYPE FROM O7 TO A2. THE DATA ARE PRESENTED IN PLOTS OF INSTRUMENTAL RESPONSE IN DATA NUMBERS VS WAVELENGTH IN ANGSTROMS FOR BOTH THE 1400 TO 3400 A AND 1100 TO 2000 A CHANNELS OF THE INSTRUMENT. THE SKY BACKGROUND LYMAN-ALPHA EMISSION HAS NOT BEEN REMOVED FROM THESE PLOTS. THE DATA FOR EACH OF THE PLOTS HAVE BEEN MULTIPLIED BY AN ARBITRARY CONSTANT TO MAKE THE PEAK INTENSITY FALL BETWEEN 200 AND 250 DATA NUMBERS. NOISE PULSES WERE SUPPRESSED BY IGNORING SIGNALS GREATER THAN A FIXED LEVEL AND THE SPECTRA HAVE BEEN SMOOTHED WITH A RUNNING THREE-POINT AVERAGE. HEADINGS FOR THE PLOTS GIVE THE STAR NAME, ORBIT NUMBER, AND SCALING FACTOR. THE QUALITY OF THE 1400 TO 3400 A CHANNEL DATA IS NOT AS HIGH AS THAT OF THE 100 TO 2000 A CHANNEL BECAUSE OF A HIGHER NOISE LEVEL AND A SMALLER FIELD OF VIEW, WHICH REDUCED THE EFFECTIVE OBSERVING TIME FOR THE STAR. STELLAR MEASUREMENTS WERE BY MARINER 9 WHEN THE PLANET COULD NOT BE VIEWED, I.E., A 20-MIN PERIOD AFTER EARTH OCCULTATION AND A PERIOD OF AN HOUR OR TWO AT APOAPSIS BETWEEN THE END OF TAPE RECORDER PLAYBACK AND THE TIME MARS SETS AT GOLDSTONE. THE REGION OF THE SKY THAT WAS OBSERVABLE WITH THE INSTRUMENT WAS LIMITED BY SPACECRAFT DESIGN TO THE AREA NORTH OF THE ECLIPTIC BETWEEN 96 DEG AND 165 DEG FROM THE SUN. EACH ORBIT GENERATED ABOUT ONE MILLION STELLAR DATA POINTS. GOOD DATA WERE OBTAINED FOR 29 STARS. THESE STARS ARE LISTED IN A TABLE PRESENTED IN THE REPORT ALONG WITH THE SPECTRAL TYPE, THE VISUAL MAGNITUDE, THE BLUE TO VISUAL INTENSITY MAGNITUDE RATIO, THE UV TO BLUE INTENSITY MAGNITUDE RATIO, THE NUMBER OF SCANS SUMMED. INDICATIONS IF ANY 1400 TO 3400 A CHANNEL PLOTS WERE OBTAINED, AND THE PASS NUMBER. ALSO INCLUDED WERE (1) A TABLE GIVING THE STRONGEST UV LINES IN THE MARINER 9 STELLAR DATA, (2) A PICTURE GIVING THE SEQUENCE OF SPACECRAFT EVENTS FOR A TYPICAL ZENITH (GOLDSTONE) PASS, (3) A CELESTIAL MAP SHOWING THE AREA OF THE SKY THAT COULD BE OBSERVED WITH THE INSTRUMENT ON NOVEMBER 15, 1971, AND (4) A PLOT SHOWING THE AVERAGE SIGNAL IN THE 100 TO 1200 A CHANNEL DURING ORBIT 72. THIS REPORT IS AVAILABLE THROUGH THE EXPERIMENTER.

EXPERIMENT NAME- TELEVISION PHOTOGRAPHY

NSSDC ID 71-051A-04

ORIGINAL EXPERIMENT INSTITUTION- NASA-JPL

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - H.	MASURSKY	US GEOLOGICAL SURVEY	FLAGSTAFF, AZ
OI - G.	DE VAULCOULEURS	U OF TEXAS	AUSTIN, TX
OI - J.	LEDERBERG	STANFORD U	STANFORD, CA
OI - W.	THOMPSON	BELLCOMM, INC.	WASHINGTON, DC

DATE LAST EXPERIMENT DATA RECORDED-102772  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A 2-IN. VIDICON TELEVISION CAMERA WHICH TRANSMITTED PHOTOGRAPHY FROM MARS. IT WAS A PHOTOMETRICALLY CALIBRATED INSTRUMENT PROVIDING OVERLAPPING, SELECTIVELY FILTERED, LOW-RESOLUTION PICTURES AND BROADBAND (UNFILTERED) HIGH-RESOLUTION PICTURES, EACH NESTED IN A LOW-RESOLUTION OVERLAP. BOTH TYPES OF PICTURES HAD APPROXIMATELY A 700 BY 830 ELEMENT FORMAT, AND A FACTOR OF 10 DIFFERENCE IN RESOLUTION BETWEEN THEM. RESOLUTION OF 500 M/TV LINE AND 50 M/TV LINE RESULTED FROM LOW (11 DEG BY 14 DEG) AND HIGH (1.1 DEG BY 1.4 DEG) RESOLUTION PICTURES TAKEN AT A PERIAPSIS ALTITUDE OF 2000 KM.

DATA SET NAME- MTVS RAW PHOTOS ON B/W POSITIVE 70-MM NSSDC ID 71-051A-04A  
FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6321 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET WHICH CONSISTS OF 14 ROLLS OF 70-MM B/W FILM, IS ONE OF THREE VERSIONS REPRODUCED FROM THE DIGITIZED IMAGES TRANSMITTED FROM CAMERAS ON MARINER 9. THESE PHOTOGRAPHS, REPRODUCED BY THE MTVS LABORATORY HAVE HAD NO ENHANCEMENT, STRETCHING, OR FILTERING, AND HENCE ARE RAW DATA. THE OTHER TWO VERSIONS APPEAR NEXT TO THE RAW VERSION, FOLLOWED BY A DATA BLOCK CONTAINING THE FOLLOWING INFORMATION -MISSION DESIGNATION, PLAYBACK NUMBER, ORBIT (OFTEN NOT GIVEN), SET (OFTEN NOT GIVEN), TIME FROM PERIAPSIS, SLANT RANGE, VIEWING ANGLE, PHASE ANGLE, LIGHTING ANGLE, LATITUDE AND LONGITUDE OF CORNERS AND CENTER OF FRAME, PICTURE NUMBER, CAMERA, FILTER, EXPOSURE TIME, DAS NUMBER, RATE, PN ERRORS, PIX SPIKES, FRAME NUMBER, STRETCH CONTROL, TRANSLATION, AND PICTURE VERSION. BELOW THE PICTURE ARE TWO GRAPH CHARTS, ONE SHOWING DATA OUTPUT AND THE OTHER SHOWING FILM OUTPUT.

DATA SET NAME- MTVS ALBEDO PHOTOS ON B/W POSITIVE 70-MM NSSDC ID 71-051A-04B  
FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6321 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS CONTAINED ON THE SAME 14 MTVS ROLLS OF 70-MM B/W FILM AS 71-051A-4A AND IS THE SECOND VERSION OF DATA FROM THAT LABORATORY. THESE FRAMES APPEAR NEXT TO THE 2 ROW (-04A) VERSION. IN THESE FRAMES, THE ORIGINAL DATA HAVE BEEN COMPUTER-ENHANCED (SHADING CORRECTED) AND STRETCHED TO BRING OUT THE RANGE OF BRIGHTNESS OF DETAILS THAT ARE CONTAINED IN THE ORIGINALS. THIS VERSION MAY BE USED FOR MORE MAGNIFIED DATA ON RANGE OF ALBEDOS OR THE LIGHT REFLECTANCE RANGE OF THE MARTIAN SURFACE. THE ACCOMPANYING DATA BLOCK CONTAINS THE FOLLOWING INFORMATION -- MISSION

DESIGNATION, PLAYBACK NUMBER, ORBIT (OFTEN NOT GIVEN), SET (OFTEN NOT GIVEN), TIME FROM PERIAPSIS, SLANT RANGE, VIEWING ANGLE, PHASE ANGLE, LIGHTING ANGLE, LATITUDE AND LONGITUDE OF CORNERS AND CENTER OF PHOTO, PICTURE NUMBER, CAMERA FILTER, EXPOSURE TIME, DAS NUMBER, RATE, PN ERRORS, PIX SPIKES, FRAME NUMBER, STRETCH CONTROL, TRANSLATION, AND PICTURE VERSION. BELOW THE PICTURE ARE TWO GRAPH CHARTS, ONE SHOWING THE DATA OUTPUT AND THE OTHER SHOWING FILM OUTPUT, THE QUALITY IS GENERALLY GOOD AFTER THE FIRST 40 REVOLUTIONS. IN THE FIRST FEW WEEKS OF PHOTOGRAPHY, A PLANET-WIDE DUST STORM OBSCURED NEARLY ALL SURFACE DETAIL. AFTER THE DUST SETTLED, EXCELLENT DETAIL WAS RECORDED.

DATA SET NAME- MTVS MAXIMUM DISCRIMINATION PHOTOS ON B/W NSSDC ID 71-051A-04C  
POSITIVE 70-MM FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6321 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS CONTAINED ON THE SAME 14 MTVS ROLLS OF 70-MM POSITIVE FILM AS 71-051A-04A AND 04B. THESE FRAMES ARE ADJACENT TO THE ALBEDO (04B) FRAMES AND ARE THE THIRD VERSION OF THE ORIGINAL DATA AS PROCESSED BY THE MTVS LABORATORY. THIS VERSION CONTAINS THE PHOTOS, THAT RESULTED AFTER THE DIGITAL DATA HAD BEEN PASSED THROUGH A FILTERING PROCESS THAT GIVES MAXIMUM DISCRIMINATION OF DETAILS BUT IN WHICH THE ALBEDO IS NOT AS APPARENT AS IN THE ALBEDO VERSION. EACH FRAME IS ACCOMPANIED BY A DATA BLOCK THAT GIVES THE FOLLOWING INFORMATION - MISSION DESIGNATION, PLAYBACK NUMBER, ORBIT (OFTEN NOT GIVEN), SET (OFTEN NOT GIVEN), TIME FROM PERIAPSIS, SLANT RANGE, VIEWING ANGLE, PHASE ANGLE, LIGHTING ANGLE, LATITUDE AND LONGITUDE OF CORNERS AND CENTER OF PHOTO, PICTURE NUMBER, CAMERA FILTER, EXPOSURE TIME, DAS NUMBER, RATE, PN ERRORS, PIX SPIKES, FRAME NUMBER, STRETCH CONTROL, TRANSLATION, AND PICTURE VERSION. BELOW THE PICTURE ARE TWO GRAPH CHARTS, ONE SHOWING DATA OUTPUT AND THE OTHER SHOWING FILM OUTPUT. THE QUALITY IS GENERALLY GOOD AFTER ABOUT REVOLUTION 40. BEFORE THAT TIME THE CAMERA WAS OPERATING DURING A PLANET-WIDE DUST STORM WHICH OBSCURED NEARLY ALL DETAIL. AFTER ABOUT THE FIRST 3 WEEKS OF THE MISSION, THE DUST SETTLED AND EXCELLENT DETAIL WAS RECORDED.

DATA SET NAME- JPL ALBEDO PHOTOS ON B/W POSITIVE 70-MM NSSDC ID 71-051A-04D  
FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4928 FRAMES

DATA SET BRIEF DESCRIPTION

AS OF NOVEMBER 1, 1972 THIS DATA SET CONSISTS OF ROLLS OF 70-MM B/W FRAMES OF PHOTOGRAPHY OF THE MARTIAN SURFACE FEATURES TRANSMITTED BY MARINER 9. THESE ROLLS ARE VERSIONS OF THE ORIGINAL FRAMES FURTHER PROCESSED BY THE JPL LABORATORY TO PRODUCE AN ALBEDO VERSION. THIS ALBEDO VERSION HAS BEEN ENHANCED BY STRETCHING OUT ALBEDOS FOR CONTRAST, THUS ENCOMPASSING THE ENTIRE BRIGHTNESS RANGE OF THE EXPOSED REGIONS. A DATA BLOCK INCLUDED ON THE



FRAME GIVES THE FOLLOWING DATA -- MISSION DESIGNATION, DATE, TIME, DAS NUMBER, PICTURE NUMBER, EXPOSURE TIME (IN MILLISECONDS), FILTER USED, ALTITUDE OF SPACECRAFT, VIEW ZENITH ANGLE, LONGITUDE AND LATITUDE OF CENTER OF PHOTO, APPROXIMATE HORIZONTAL DISTANCE (WIDTH) ON SURFACE, VERTICAL DISTANCE (HEIGHT) ON SURFACE, SOLAR ZENITH ANGLE, FRAME CORNER COORDINATES, CORRECTION FOR RESIDUAL IMAGE, CONVERSION FACTOR FOR LUMINOSITY (TO FT-L), AND STRETCH FACTOR. THIS VERSION HAS HAD FIRST-ORDER CORRECTION FOR ERROR AND ORTHOGRAPHIC CORRECTION. THIS VERSION'S FRAMES ARE ADJACENT TO THE MAXIMUM DISCRIMINATION VERSION OF THE SAME FRAMES. THE QUALITY OF THE FRAMES IS GENERALLY GOOD. VERY LITTLE DETAIL IS FOUND ON THE FRAMES TAKEN EARLY IN THE MISSION (NOVEMBER-DECEMBER, 1971) OWING TO THE PLANET-WIDE DUST STORM IN PROGRESS AT THAT TIME.

DATA SET NAME- JPL MAXIMUM DISCRIMINATION PHOTOS ON B/W NSSDC ID 71-051A-04E  
POSITIVE 70-MM FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 4928 FRAMES

DATA SET BRIEF DESCRIPTION

AS OF NOVEMBER 1, 1972, THIS DATA SET CONSISTS OF ROLLS OF 70-MM B/W FRAMES OF PHOTOGRAPHY OF MARTIAN SURFACE FEATURES TRANSMITTED BY MARINER 9. THESE ARE VERSIONS OF THE ORIGINAL FRAMES THAT HAVE BEEN FURTHER PROCESSED BY THE JPL LABORATORY. IN THIS VERSION THE ORIGINAL HAS BEEN FILTERED TO PRODUCE MAXIMUM DISCRIMINATION FOR SURFACE DETAIL AND HAS HAD SOME FIRST-ORDER ERROR CORRECTION AND ORTHOGRAPHIC CORRECTION. INCLUDED ON EACH FRAME (THAT IS ADJACENT TO THE ALBEDO VERSION) IS A DATA BLOCK CONTAINING THE FOLLOWING INFORMATION - MISSION DESIGNATION, DATE, TIME, DAS NO., PICTURE, EXPOSURE TIME (IN MILLISECONDS), FILTER USED, ALTITUDE OF SPACECRAFT, VIEW ZENITH ANGLE, LONGITUDE AND LATITUDE OF PHOTO CENTER, APPROXIMATE HORIZONTAL DISTANCE COVERED ON THE MARTIAN SURFACE IN THE FRAME (WIDTH), VERTICAL DISTANCE ON SURFACE COVERED BY THE FRAME (HEIGHT), SOLAR ZENITH ANGLE, CORNER COORDINATES OF THE FRAME, CORRECTION FOR RESIDUAL IMAGE, CONVERSION FACTOR FOR LUMINOSITY (TO FT-L), AND STRETCH FACTOR. THE QUALITY IS GENERALLY GOOD. VERY LITTLE DETAIL IS SEEN ON THOSE FRAMES TAKEN EARLY IN THE MISSION (NOVEMBER-DECEMBER 1971) OWING TO THE PLANET-WIDE DUST STORM IN PROGRESS AT THAT TIME.

DATA SET NAME- COMPLETE 70-MM PHOTOGRAPHY ON 4- BY 6-IN. NSSDC ID 71-051A-04F  
B/W MICROFICHE

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 111371 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 900 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF APPROXIMATELY 900 4- X 6- IN. B/W MICROFICHE ON 500 FT OF ROLL FILM CONTAINING ALL VERSIONS OF THE MARINER 9 TV IMAGERY REPRODUCED BY THE MTVS LABORATORY. THE VERSIONS ARE (1) RAW, (2) ALBEDO, (3) MAXIMUM DISCRIMINATION (HORIZONTALLY FILTERED) AND, IN SOME CASES, (4) MAXIMUM DISCRIMINATION VERTICALLY FILTERED. THESE VERSIONS APPEAR SIDE BY

SIDE, FOLLOWED BY THE DATA BLOCK WITH THE DATA COMMON TO ALL VERSIONS. UP TO 60 FRAMES APPEAR ON EACH CARD. THREE SUCCESSIVE CARDS CONSTITUTE THE IMAGERY FROM ONE ORBIT. THE THIRD CARD CONTAINS ADDITIONAL SUPPORT DATA. THE CARDS ARE ORDERED BY ROLL AND FILE NUMBERS AND ARE ALSO DAS-SEQUENTIAL. (THE DAS NUMBER IS THE COMMON DATUM TO ALL VERSIONS OF THE SAME PICTURE.) EACH CARD IS HEADED BY THE IDENTIFICATION OF THE MISSION PHOTO LABORATORY AND ROLL NUMBER. THE LAST CARD FOR EACH ROLL CONTAINS UPDATING OF SOME OF THE PARAMETERS CONTAINED IN THE DATA BLOCKS THAT CONTAIN PREDICTED VALUES THAT MAY BE IN ERROR. THESE MICROFICHE CONSTITUTE THE NSSDC CATALOG OF MARINER 9 MTVS PHOTOGRAPHY. INCLUDED AT THE END ARE 15 CARDS CONTAINING THE ADDITIONAL AND COMPLETE SUPPORTING DATA FOR EACH OF THE FRAMES OF THE PHOTOGRAPHY.

DATA SET NAME- PANORAMIC MOSAIC PHOTOGRAPHS ON 4- 8Y NSSDC ID 71-051A-04G  
5-IN. 8/W FILM SHEETS

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 111071 TO 102772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 96 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF NINETY-SIX 4 X 5-IN. BLACK AND WHITE NEGATIVES OF PANORAMIC MOSAICS OF THE MARTIAN SURFACE ASSEMBLED FROM INDIVIDUAL TV FRAMES. THE MOSAICS COVER MUCH OF THE SURFACE OF MARS.

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SPACECRAFT COMMON NAME- APOLLO 15 CSM NSSDC ID 71-063A  
ALTERNATE NAMES-

LAUNCH DATE- 07/26/71 SPACECRAFT WEIGHT IN ORBIT- 57760. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-080771  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 07/31/71 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 118.8 MIN  
APOAPSIS- 120. KM ALT PERIAPSIS- 93. KM ALT INCLINATION- 154.1 DEG

SPACECRAFT BRIEF DESCRIPTION

APOLLO 15 WAS THE FIFTH SPACECRAFT (FOURTH ACCOMPLISHED) AND THE FIRST OF THE J-SERIES APOLLO MISSIONS DESIGNED TO LAND MEN ON THE MOON. THE LUNAR LANDING SITE FOR THE 12-DAY SCIENTIFIC MISSION WAS THE HADLEY RILLE-APENNINE MOUNTAIN REGION AT 26 DEG 06 MIN 54 SEC N, 3 DEG 39 MIN, 30 SEC E ON THE LUNAR SURFACE. THE DATE OF LAUNCH WAS JULY 26, 1971. THE LUNAR MODULE (LM) CARRYING ASTRONAUTS DAVID SCOTT AND JAMES IRWIN AND THE LUNAR ROVING VEHICLE (LRV) LANDED ON THE MOON ON JULY 31, 1971. THE COMMAND MODULE (CM) PILOTED BY ALFRED WORDEN REMAINED IN A SLIGHTLY ELLIPTICAL ORBIT AT AN ALTITUDE OF 97 BY 115 KM WITH AN INCLINATION OF 23 DEG. THE PROJECTS CARRIED OUT ON THE SURFACE INCLUDED THE DEPLOYMENT OF THE APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP), GEOLOGICAL FIELD EXPLORATION IN THREE EVA EXCURSIONS, DOCUMENTING PHOTOGRAPHY, AND ACQUISITION OF SAMPLES OF THE LUNAR TERRAIN.

PHOTOGRAPHS USING 16- AND 70-MM FILM WERE OBTAINED BOTH FROM THE SURFACE AND FROM ORBIT, AND 35-MM AND TWO KINDS OF 5-IN. FILM PHOTOGRAPHS WERE OBTAINED FROM ORBIT. SPECIAL UV AND DIMLIGHT PHOTOGRAPHIC EXPERIMENTS WERE PERFORMED DURING ORBIT, AND, BEFORE LEAVING THE LUNAR ENVIRONMENT, A SUBSATELLITE WITH AN EXPERIMENTS PACKAGE WAS RELEASED FROM THE COMMAND SERVICE MODULE (CSM) ON AUGUST 4, 1971 INTO AN ORBIT 135 BY 97 KM. THE LRV WAS USED TO EXPLORE REGIONS WITHIN 5 KM OF THE LM LANDING SITE. THIS WAS THE FIRST TIME A VEHICLE OF THIS TYPE HAD BEEN USED, AND ITS PERFORMANCE ON THE LUNAR TERRAIN WAS VERY SUCCESSFUL. THE CM AND LM VEHICLES REJOINED ON AUGUST 2, 1971, PERFORMED FURTHER PHOTOGRAPHIC EXPERIMENTS IN ORBIT AROUND THE MOON FOR 2 DAYS. THE LM WAS SEPARATED FOR LUNAR IMPACT AND THE CSM WAS PLACED IN EARTHBOUND TRAJECTORY. ENROUTE THE SM WAS SEPARATED AND CM RETURNED TO EARTH ON AUGUST 7, 1971. MORE INFORMATION ON THE LM MAY BE FOUND UNDER SPACECRAFT 71-063C.

EXPERIMENT NAME- HAND-HELD PHOTOGRAPHY

NSSDC ID 71-063A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST EXPERIMENT DATA RECORDED-080771  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PHOTOGRAPHIC EQUIPMENT FOR APOLLO 15 INCLUDED HASSELBLAD AND MAURER CAMERAS THAT WERE USED (1) TO OBTAIN PHOTOGRAPHS OF THE TRANSPOSITION, DOCKING, LUNAR MODULE EJECTION MANEUVER, AND LM RENDEZVOUS SEQUENCE FROM BOTH THE COMMAND AND LUNAR MODULES, (2) TO OBTAIN PHOTOS OF THE LUNAR GROUND TRACK AND OF FUTURE LANDING SITES, (3) TO RECORD THE OPERATIONAL ACTIVITIES OF THE CREW, (4) TO OBTAIN LONG-DISTANCE EARTH AND LUNAR PHOTOGRAPHS FOR AREAS OF SCIENTIFIC INTEREST, AND (5) TO OBTAIN PHOTOS OF LUNAR SURFACE FEATURES AND OF THE ACTIVITIES OF THE ASTRONAUTS AFTER THEIR LANDING ON THE MOON. THE CAMERA EQUIPMENT CONSISTED OF ONE 70-MM HASSELBLAD ELECTRIC CAMERA, TWO HASSELBLAD DATA CAMERAS, TWO 16-MM MAURER DATA ACQUISITION CAMERAS, AND TWO TV CAMERAS. VARIOUS LENSES WERE USED WITH THESE CAMERAS FOR SPECIFIC TYPES OF PHOTOGRAPHY.

DATA SET NAME- B/W LOGETRONIC POSITIVE 70-MM PHOTOS

NSSDC ID 71-063A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2410 FRAMES

DATA SET BRIEF DESCRIPTION

THIS LOGETRONIC DATA SET CONSISTS OF ONE MASTER POSITIVE BLACK AND WHITE ROLL OF NINE MAGAZINES (2410 FRAMES) ON 70-MM FILM. THE PICTURES WERE PRODUCED, WITH QUALITY CONTROL ON THE DENSITY ON THE ORIGINAL FILM BY EXPOSURE CONTROL AND DODGING TECHNIQUES, FROM THE ORIGINAL 70-MM 2485, 3400, 3401, AND 3414 BLACK AND WHITE FILM AND THE SO-168, SO-174 AND SO-368 COLOR FILM USED ON THE 70-MM HASSELBLAD CAMERAS. THE CONTRAST IN THESE PHOTOGRAPHS

IS BETTER THAN IN THE PHOTOMETRIC VERSION, BUT THERE IS A SLIGHT REDUCTION IN RESOLUTION. THESE CAMERAS WERE EQUIPPED WITH LENSES WITH FOCAL LENGTHS OF 60, 80, 250, AND 500 MM. OF THE TOTAL 2410 FRAMES, 1010 ARE BLACK AND WHITE REPRODUCTIONS FROM SEVEN MAGAZINES OF EKTACHROME ES AND EKTACHROME MS COLOR FILM. THE QUALITY OF THE PHOTOGRAPHY IS GENERALLY GOOD. THE PHOTOGRAPHS FROM ORBIT COVER SUCH FEATURES AS TSIOLKOVSKY AND THE SURROUNDING AREA ON THE FAR SIDE, MARE SMYTHII ON THE EASTERN (IAU) LIMB, MARIA CRISIUM, SERENITATIS, AND IMBRIUM, AND OCEANUS PROCELLARUM. THESE PHOTOGRAPHS ALSO COVER INDIVIDUAL FEATURES SUCH AS MESSIER, ARCHIMEDES, AND ARISTARCHUS AND THE SURROUNDING AREA, AS WELL AS THE HADLEY RILL, INCLUDING THE LM LANDING SITE. SURFACE PHOTOGRAPHY INCLUDES THE LM TRACKS, THE LUNAR ROVER (LRV), SPUR, HADLEY DELTA, MT. HADLEY MOUNTAINS, AND THE HADLEY RILL. THESE AREAS WERE IN THE SUNLIT PORTIONS OF THE MOON, AT THAT TIME BETWEEN 180 DEG E AND 70 DEG W, AND WERE RESTRICTED TO PLUS OR MINUS 25 DEG BY ORBITAL CONSTRAINTS.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 70-MM PHOTOS                   NSSDC ID 71-063A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2410 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE MASTER POSITIVE BLACK AND WHITE ROLL OF NINE MAGAZINES (2410 FRAMES) ON 70-MM FILM. THE PICTURES WERE PRODUCED ON A NIAGARA PRINTER FROM THE ORIGINAL 70-MM 2485, 3400, 3401, AND 3414 BLACK AND WHITE FILM AND THE SO-168, SO-174, AND SO-368 COLOR FILM USED WITH THE 70-MM HASSELBLAD CAMERAS TO PRODUCE A SET OF PHOTOGRAPHY SUITABLE FOR DETAILED PHOTOMETRIC AND PHOTOGRAMMETRIC INVESTIGATIONS. THESE CAMERAS WERE EQUIPPED WITH LENSES WITH FOCAL LENGTHS OF 60, 80, 250, AND 500 MM. OF THE TOTAL 2410 FRAMES, 1010 ARE BLACK AND WHITE REPRODUCTIONS FROM SEVEN MAGAZINES OF THE EKTACHROME ES AND EKTACHROME MS COLOR FILM. THE QUALITY OF THE PHOTOGRAPHY IS GENERALLY GOOD. THE ORBITAL COVERAGE INCLUDES THE CRATER TSIOLKOVSKY AND THE SURROUNDING AREA, MARIA SMYTHII, CRISIUM, SERENITATIS, AND IMBRIUM, OCEANUS PROCELLARUM, CRATERS SUCH AS MESSIER, ARCHIMEDES, ARISTARCHUS AND ITS NEARBY COMPANIONS HERODOTUS AND SCHROTER'S VALLEY, AND THE APENNINE MOUNTAINS AND HADLEY RILL, INCLUDING THE LM LANDING SITE. SURFACE PHOTOGRAPHS SHOW THE LRV TRACKS, ROCKS, HADLEY RILL AND THE MOUNTAINS SPUR, HADLEY DELTA, AND HADLEY.

DATA SET NAME- COLOR MASTER POSITIVE 70-MM PHOTOS                   NSSDC ID 71-063A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1117 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE MASTER POSITIVE COLOR ROLL OF SEVEN MAGAZINES (1010 FRAMES) ON 70 MM FILM. THE PICTURES WERE REPRODUCED FROM THE ORIGINAL 70-MM SO-168, SO-174, AND SO-368 EKTACHROME ES AND EKTACHROME MS COLOR FILM TYPES. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY GOOD. AREAS

COVERED ARE BETWEEN LONGITUDES 180 DEG E AND 70 DEG W AND LATITUDES PLUS OR MINUS 25 DEG. THE FAR SIDE ORBITAL COVERAGE INCLUDES TSIOLKOVSKY AND ITS ENVIRONS AND OTHER LARGE CRATERS. THE FRONTSIDE ORBITAL COVERAGE INCLUDE MARE SERENITATIS, THE APENNINE MOUNTAINS, HADLEY RILL (INCLUDING THE LM LANDING SITE), W. HUMBOLDT, AND ARISTARCHUS AND THE SURROUNDING AREA, ESPECIALLY SCHROTER'S VALLEY, PLINIUS, MESSIER, MESSIER A, AND THE RUMKER HILLS. PHOTOGRAPHS OF THE MOON TAKEN AFTER TAKEOFF AND OF THE SUBSATELLITE AFTER RELEASE ARE INCLUDED. THE SURFACE PHOTOGRAPHY INCLUDES VIEWS OF THE LRV AND ITS TRACKS, THE LM, HADLEY DELTA MOUNTAIN, SPUR MOUNTAIN, MT, HADLEY, ROCKS, AND THE FALLEN ASTRONAUT DOLL WITH A CARD SHOWING THE NAMES OF THE ASTRONAUTS AND COSMONAUTS WHO HAVE DIED IN THE SPACE PROGRAMS.

DATA SET NAME- COLOR \*B\* WIND MASTER POSITIVE 16-MM           NSSDC ID 71-063A-01D  
                  PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 70400 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE 1600-FT REEL OF 16-MM COLOR POSITIVE MOVIES OF THE APOLLO 15 FLIGHT. THE FILM RECORDED THE EARTH LAUNCH, CIRCUMTERRESTRIAL DOCKING, LUNAR UNDOCKING, LM/CM SEPARATION, LUNAR LANDING, SURFACE ACTIVITIES, SUBSATELLITE LAUNCH, INFLIGHT EVA OF CASSETTE RETRIEVAL, REENTRY, AND PARACHUTE DEPLOYMENTS. THE QUALITY IS GENERALLY GOOD.

DATA SET NAME- COLOR PANORAMIC POSITIVE 4- BY 5-IN.           NSSDC ID 71-063A-01E  
                  PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-     21 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 21 FRAMES OF 4- BY 5 IN. POSITIVE MOSAICS TAKEN FROM THE LUNAR SURFACE DURING EVA'S IN THE HADLEY/APENNINE REGION OF THE MOON. THESE PANORAMIC SCENES OF THE SURFACE WERE PRODUCED FROM THE ADJOINING PHOTOGRAPHS IN A PANORAMIC SWEEP OF THE TERRAIN AT VARIOUS POINTS IN THE TRAVERSES. INDIVIDUAL FRAME NUMBERS COMPRISING THE MOSAIC ARE NOT GIVEN. INFORMATION ON THE MOSAIC INDICATES THE LOCATION FROM WHICH THE PANORAMIC SWEEP WAS TAKEN, THE COMPASS DIRECTION IN WHICH THE CAMERA WAS FACING, AND THE EVA STOP NUMBER. LOCATIONS, E.G., RILL STOPS, ARE SOMETIMES GIVEN.

DATA SET NAME- B/W PANORAMIC POSITIVE 4- BY 5-IN. PHOTOS   NSSDC ID 71-063A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 58 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 58 FRAMES OF 4 BY 5 IN. B/W POSITIVE PHOTO MOSAICS OF THE LUNAR SURFACE AT THE HADLEY-APENNINE SITE OF THE APOLLO 15 MISSION. THE MOSAICS ARE COMPOSED OF TWO OR MORE INDIVIDUAL FRAMES (FRAME NUMBERS ARE NOT INDICATED) OF PHOTOS OF ADJOINING SURFACE COVERAGE GIVING PANORAMIC SWEEPS OF THE SURFACE. THE INFORMATION GIVEN INCLUDES THE STOP NUMBER ON THE EVA ROUTE, THE SURFACE LOCATION VICINITY, AND THE COMPASS DIRECTION THAT THE CAMERA IS FACING DURING THE PLANNING SEQUENCE.

DATA SET NAME- COMPLETE SURFACE TELEVISION PHOTOGRAPHY NSSDC ID 71-063A-01G  
ON 16-MM B/W POSITIVE FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072971 TO 080171 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 22 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE ENTIRE TELEVISION COVERAGE TRANSFERRED TO 16-MM FILM OF THE SURFACE EXPLORATION OF THE HADLEY APENNINE REGION OF THE MOON DURING THE APOLLO 15 MISSION. THERE ARE APPROXIMATELY 20 HR OF 16-MM MOVIE FILM. IT IS ASSEMBLED CHRONOLOGICALLY WITH ACTIVITIES DESIGNATED. ANY DESIRED SEGMENTS CAN BE ORDERED (SEE NSSDC-72-07 APOLLO 15 DATA USERS NOTE).

DATA SET NAME- COMPLETE INDEX OF 70-MM HASSELBLAD PHOTOGRAPHY ON MICROFILM NSSDC ID 71-063A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A HARDCOPY DOCUMENT AND A 16-MM MICROFILM COPY OF THE INDEX TO THE 70-MM HASSELBLAD PHOTOGRAPHY FROM THE APOLLO 15 MISSION. THE DOCUMENT CONTAINS (1) SUMMARY INFORMATION FROM THE 70-MM CAMERAS, (2) A SUMMARY OF 70-MM FILM MAGAZINES GIVING THE MAGAZINE DESIGNATION, THE NASA PHOTO NUMBER, THE LENS, THE NUMBER OF PHOTOS FOR EACH MAGAZINE ON THE SURFACE, IN ORBIT, AND OTHER, THE TOTAL NUMBER OF PHOTOGRAPHS, AND THE FILM TYPE. FILM TYPES ARE DESCRIBED. THE INDEX IS ORDERED IN THREE WAYS -- (1) BY MAGAZINE NUMBER AND CHRONOLOGICALLY WITHIN IT, (2) ORBITAL PHOTOGRAPHY BY LONGITUDE, AND (3) SURFACE PHOTOGRAPHY CHRONOLOGICALLY WITHIN EACH EVA. THE INFORMATION INCLUDED IS THE NASA PHOTO NUMBER, THE REVOLUTION (PASS), THE LENS, THE ALTITUDE, THE PRINCIPAL POINT LATITUDE AND LONGITUDE, THE CAMERA TILT AND AZIMUTH, THE SUN ELEVATION ANGLE, AND A DESCRIPTION.

DATA SET NAME- INDEX TO 'B' WIND COLOR MASTER POSITIVE NSSDC ID 71-063A-01I  
16-MM PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF A 3-PAGE, HARDCOPY INDEX OF THE 1600 FEET OF MAURER 16-MM FILM TAKEN DURING THE APOLLO 15 MISSION. THE DATA SET IS ALSO AVAILABLE ON MICROFILM TOGETHER WITH THE INDEXES FOR THE 70-MM PAN CAMERA AND THE MAPPING CAMERA. THE MAURER INDEX COLUMNS GIVE THE FOLLOWING DATA -- (1) MAGAZINE DESIGNATION, (2) FILM TYPE, (3) FOCAL LENGTH OF LENS, (4) NUMBER OF FRAMES PER SECOND, AND (5) BRIEF DESCRIPTION OF SUBJECT MATTER.

DATA SET NAME- COMPLETE HASSELBLAD 70-MM PHOTOGRAPHY ON NSSDC ID 71-063A-01K  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 080771 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 16-MM MICROFILM THAT CONTAINS THE COMPLETE SET OF 2624 FRAMES OF 70-MM HASSELBLAD PHOTOGRAPHY FROM APOLLO 15 IN 16-MM FORMAT FOR CATALOG PURPOSES. THIS REEL SERVES AS THE MASTER COPY FROM WHICH NSSDC MAKES COPIES TO BE DISTRIBUTED ON REQUEST AS A CATALOG OF THE 70-MM HASSELBLAD PHOTOGRAPHY.

DATA SET NAME- COMPLETE 70-MM HASSELBLAD PHOTOGRAPHY ON NSSDC ID 71-063A-01L  
MICROFICHE CARDS FOR CATALOG PURPOSES

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 081271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 50 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE COMPLETE SET OF 70-MM HASSELBLAD PHOTOGRAPHY ON FIFTY 4- BY 6-IN MICROFICHE, REPRODUCED BY NSSDC FOR CATALOG USE, (DIFFERENT FROM DATA SET 71-063A-01J). THE QUALITY IS GENERALLY GOOD, AND THE IMAGES CAN BE USED DIRECTLY FOR SOME SCIENTIFIC PURPOSES. IN THE NSSDC MICROFICHE, FRAME NUMBERS MAY BE READ ON ALL FRAMES.

DATA SET NAME- COMPLETE HASSELBLAD MOSAICS PHOTOGRAPHY NSSDC ID 71-053A-01M  
ON MICROFICHE CARDS FOR CATALOG PURPOSES

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 072671 TO 081271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE COMPLETE SET OF 70-MM HASSELBLAD PHOTOGRAPHY MOSAICS ON THREE 4- BY 6-IN MICROFICHE, REPRODUCED BY NSSDC FOR CATALOG PURPOSES. THESE MOSAICS ARE FROM THE SURFACE PHOTOGRAPHY AND ARE OF GENERALLY GOOD QUALITY.

EXPERIMENT NAME- PANORAMIC PHOTOGRAPHY

NSSDC ID 71-063A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST EXPERIMENT DATA RECORDED-080771  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE SCIENTIFIC INSTRUMENT MODULE (SIM) ITEK PANORAMIC CAMERA EXPERIMENT WAS DESIGNED TO OBTAIN HIGH-RESOLUTION PANORAMIC PHOTOGRAPHS WITH STEREOSCOPIC AND MONOSCOPIC COVERAGE OF THE LUNAR SURFACE. THE PANORAMIC CAMERA, WHICH WAS HOUSED IN THE COMMAND SERVICE MODULE (CSM) AND SCANNED THE LUNAR SURFACE FROM LUNAR ORBIT, ALSO PROVIDED SUPPORTING PHOTOGRAPHIC DATA FOR THE OTHER CSM CAMERAS AND EXPERIMENTS. THE CAMERA PROVIDED PHOTOGRAPHS OF 1- TO 2-M RESOLUTION FROM AN ORBITAL ALTITUDE OF 111 KM. THE RANGES FOR THIS CAMERA WERE (1) FOCAL LENGTH, 24 IN., (2) FIELD OF VIEW, 108-DEG CROSS-TRACK BY 10.4 DEG ALONG THE TRACK SCANNED, (3) IMAGE COVERAGE (FROM 111 KM) 337 KM BY 21.6 KM, (4) IMAGE SIZE, 45.24 IN. BY 4.5 IN., AND (5) FILM CAPACITY, 6500 FT FOR 1600 FRAMES. THE PANORAMIC CAMERA WAS COMPOSED OF FOUR MAIN COMPONENTS -- (1) A ROLL FRAME ASSEMBLY THAT ROTATED CONTINUOUSLY IN THE CROSS-TRACK SCAN DIRECTION DURING CAMERA OPERATION (PANORAMIC SCANNING), (2) A GIMBAL ASSEMBLY THAT TILTED FORE AND AFT TO PROVIDE STEREO COVERAGE AS WELL AS FORWARD MOTION COMPENSATION, (3) THE MAIN FRAME, AND (4) A GASEOUS NITROGEN PRESSURE VESSEL ASSEMBLY REQUIRED FOR CERTAIN FILM ROLLER GAS BEARINGS. THE PRESSURE VESSEL ASSEMBLY ALSO WAS USED BY THE FAIRCHILD MAPPING CAMERA EXPERIMENT (APOLLO 15A-03). THE CAMERA OPTICS SYSTEM, A CAMERA/FILM DRIVE AND CONTROL SYSTEM, AND A FILM CASSETTE COMPLETED THE PANORAMIC CAMERA SYSTEM. THE FILM CASSETTE WAS RETRIEVED BY A CREWMAN DURING EXTRAVEHICULAR ACTIVITY (EVA) IN THE TRANSEARTH PORTION OF THE MISSION. THE PANORAMIC CAMERA WAS MOUNTED ON STRUCTURAL BEAMS IN THE CSM SIM BAY BETWEEN THE TWO SIM SHELVES. IT WAS DESIGNED TO OPERATE IN ITS SIM-INSTALLED POSITION WITHOUT THE USE OF A DEPLOYMENT SUBSYSTEM. THE CAMERA LENS WAS STOWED FACE-INWARD TO THE SIM TO PROTECT IT FROM CSM CONTAMINATION SOURCES. THE CAMERA AUTOMATICALLY STOWED ITS LENS WHEN OFF-NOMINAL LENS THERMAL CONDITIONS WERE EXPERIENCED. COMMAND MODULE CAMERA CONTROLS WERE AVAILABLE FOR THE CREW (1) TO ACTIVATE AND DEACTIVATE CAMERA HEATERS, (2) TO SUPPLY OR REMOVE PRIMARY CAMERA POWER, (3) TO SELECT AN OPERATE OR STANDBY OPERATION MODE, (4) TO SUPPLY FILM ROLLER TORQUE TO PREVENT FILM SLACK DURING THE LAUNCH, TRANSLUNAR INJECTION, AND SERVICE PROPULSION SYSTEM POWERED FLIGHT PHASES, (5) TO ACTIVATE THE FIVE-FILM FRAME ADVANCE CYCLE REQUIRED DAILY (IF CAMERA WAS NOT OPERATED IN A 24-HR PERIOD) TO PREVENT FILM SET AFTER FILM LOADING, (6) TO INCREASE OR DECREASE THE WIDTH OF THE CAMERA EXPOSURE SLIT, AND (7) TO SELECT A STEREOSCOPIC OR MONOSCOPIC MODE OF OPERATION. A CM



DISPLAY OF THE BARBER POLE/GRAY TALKBACK TYPE WAS PROVIDED TO ENABLE THE CREW TO VERIFY CAMERA OPERATIONAL STATUS.

DATA SET NAME- B/W PHOTOMETRIC MASTER POSITIVE. 5- BY NSSDC ID 71-063A-02A  
48-IN. PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1572 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM BLACK AND WHITE MASTER POSITIVES PRODUCED ON A NIAGARA PRINTER ON 5- BY 48-IN. FILM. EACH ROLL CONTAINS APPROXIMATELY 85 FRAMES OF 4.5-BY 45-IN. FORMAT THAT ARE REPRODUCED FROM THE ORIGINAL 5- BY 48-IN. 3414 BLACK AND WHITE FILM USED WITH THE PANORAMIC 24-IN. CAMERA IN THE SIM BAY OF THE CSM. THESE PHOTOGRAPHS ARE SUITABLE FOR PHOTOMETRIC AND PHOTOGRAMMETRIC INVESTIGATIONS. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY VERY GOOD AND INCLUDES SOME GOOD NEAR-TERMINATOR COVERAGE. THE PHOTOGRAPHS COVER AREAS ON THE MOON FROM 180 DEG E LONGITUDE TO 70 DEG W AND PLUS OR MINUS 25 DEG LATITUDE. CRATERS AND SURROUNDING AREAS PHOTOGRAPHED ON THE FAR SIDE ARE -- NASSAU, VAN DE GRAEFF, PARACELTUS, GAGARIN, DENNING, PIRQUET, TSIOLKOVSKY, LANGEMAK, MEITNER, WYLD, PURKYNE, HIRAYAMA, AND BABCOCK. SOME OF THOSE ON THE FRONTSIDE INCLUDE -- MARE SMYTHII, MARE CRISIUM, MARE SERENITATIS, THE LITTRON AREA, LINNE, HAEMUS MOUNTAINS, APENNINE MOUNTAINS, HADLEY RILL AND LM LANDING SITE, MARE IMBRIUM, ARISTARCHUS AND THE SURROUNDING AREA INCLUDING SCHROTER'S VALLEY, AND LICHTENBERG.

DATA SET NAME- B/W PANORAMIC LOGETRONIC MASTER POSITIVE NSSDC ID 71-063A-02B  
5- BY 48-IN.

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1572 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET WAS PREPARED FROM BLACK AND WHITE MASTER POSITIVE 5- BY 48-IN. FILM WITH DENSITY QUALITY CONTROL (LOGETRONIC) USING EXPOSURE CONTROL AND DODGING TECHNIQUES. EACH ROLL CONTAINS APPROXIMATELY 85 FRAMES OF 4.5-BY 45-IN. FORMAT THAT WERE REPRODUCED FROM THE ORIGINAL 5- BY 48-IN. 3414 BLACK AND WHITE FILM USED WITH THE PANORAMA 24-IN. CAMERA IN THE SIM BAY OF THE CSM. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY VERY GOOD AND INCLUDES SOME NEAR-TERMINATOR COVERAGE. SOME OTHER AREAS COVERED BY THESE PHOTOGRAPHS ARE HADLEY RILL, THE APENNINES MOUNTAINS, THE LM LANDING SITE, THE ARISTARCHUS REGION, THE LITTRON REGION INCLUDING THE NOTED VOLCANIC CONES AND TSIOLKOVSKY AND THE SURROUNDING AREA ON THE FAR SIDE OF THE MOON.

DATA SET NAME- B/W PANORAMIC NEGATIVE 5- BY 48-IN. NSSDC ID 71-063A-02C  
PHOTOS

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 149 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF BLACK AND WHITE 5- BY 48 IN. NEGATIVE FILM CONTAINING 149 FRAMES REPRODUCED ON KODAK 2420 FILM FROM THE ORIGINAL 5 BY 48 IN. 3414 BLACK AND WHITE FILM USED ON THE 24-IN. ITEK PANORAMIC CAMERA MOUNTED IN THE SIM BAY ON THE CSM. THIS PHOTOGRAPHY IS OF THE LUNAR TERRAIN AT THE TERMINATOR AREA OF THE MOON, SHOWING EVEN SMALL CHANGES IN RELIEF IN THE TOPOGRAPHY AT RELATIVELY HIGH RESOLUTION. COVERAGE ON THE FRONTSIDE INCLUDES THE AREAS OF VITRUVIUS E-LITTEW, DAWES, MT. ARGAEUS, PLINIUS AND ITS RILLS, HADLEY RILL, THE APENNINE MOUNTAINS, ARCHIMEDES AND ITS RILLS, TIMOCHARIS, AND ARISTARCHUS AND THE SURROUNDING AREA INCLUDING SCHROTER'S VALLEY TO WESTERN OCEANUS PROCELLARUM. THE FAR SIDE COVERAGE INCLUDES TSIOLKOVSKY AND THE SURROUNDING AREA, SCALIGER, AND PERELMAN.

DATA SET NAME- PANORAMIC CAMERA SUPPORT DATA ON MICROFILM NSSDC ID 71-063A-02D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THREE REELS OF 16-MM MICROFILM THAT CONTAIN THE SUPPORTING DATA FOR THE PANORAMIC CAMERA PHOTOGRAPHY. INCLUDED IN THE SUPPORT DATA ARE EXPLANATIONS OF EACH OF THE PARAMETERS GIVEN - LATITUDE AND LONGITUDE, TRANSFORMATION MATRIX FROM SELENOCENTRIC TO CAMERA DIRECTION COSINES, LOCAL HORIZONTAL TO CAMERA TRANSFORMATION MATRIX, STATE VECTORS, DATE, TIME, LONGITUDE AND LATITUDE OF NADIR POINT AND THEIR SIGMAS, SPACECRAFT RADIUS AND ITS SIGMA, ALTITUDE, LONGITUDE OF CAMERA AXIS INTERSECT AND AZIMUTH OF VELOCITY VECTOR, MEAN ALTITUDE RATE, TILT AZIMUTH AND ITS SIGMA, SUN ELEVATION AT PRINCIPAL POINT, LONGITUDE AND LATITUDE OF SUBSOLAR POINT, ALPHA, EMISSION ANGLE, PHASE ANGLE, PHI AND ITS SIGMA, KAPPA AND ITS SIGMA, OMEGA AND ITS SIGMA, SCALE FACTOR, LASER ALTITUDE, SUN AZIMUTH AT PRINCIPAL POINT, SWING ANGLE AND ITS SIGMA, NORTH DEVIATION ANGLE, X AND Y TILTS AND THEIR SIGMAS, LASER SLANT RANGE, AND ALTITUDE DISTANCE.

DATA SET NAME- PANORAMIC CAMERA PHOTOGRAPHY INDEX ON MICROFILM NSSDC ID 71-063A-02E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 081271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WHICH CONSISTS OF ONE REEL OF 16-MM MICROFILM CONTAINING THE INDEX TO THE PANORAMIC CAMERA PHOTOGRAPHY, IS CONTAINED ON THE SAME REEL AS THE INDEX DATA FOR THE METRIC CAMERA PHOTOGRAPHY. FOR EACH FRAME THE FOLLOWING INFORMATION IS GIVEN—FRAME NUMBER, CAMERA LOOK DIRECTION, STEREO COMPANION FRAME NUMBER, PRINCIPAL POINT LATITUDE AND LONGITUDE, ALTITUDE, REVOLUTION (PASS) NUMBER, SUN'S ELEVATION, AND A BRIEF DESCRIPTION OF FEATURES CONTAINED. ADDITIONAL INFORMATION PROVIDED AT THE BEGINNING OF THE REEL IS A TABULAR SUMMARY OF THE PANORAMIC CAMERA PHOTOGRAPHY, THE CAMERA CHARACTERISTICS, AND AN ORBITAL COVERAGE FOOTPRINT ON A LUNAR MAP.

DATA SET NAME— COMPLETE PANORAMIC CAMERA PHOTOGRAPHY ON NSSDC ID 71-063A-02F  
MICROFILM

AVAILABILITY OF DATA SET— DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED— 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET— 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 35-MM B/W NEGATIVE FILM AND CONTAINS THE COMPLETE SET OF MORE THAN 1500 USABLE PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN BY THE PANORAMIC CAMERA ON APOLLO 15. PAPER PRINTS OF THE PAN CAMERA PHOTOGRAPHY WERE MOUNTED FOUR TO A BOARD AND THEN WERE PHOTOGRAPHED ON 35-MM MICROFILM SO THAT ONE 35-MM FRAME CONTAINS FOUR PAN CAMERA FRAMES. THE FRAME NUMBER FOR EACH PICTURE APPEARS AT THE CENTER OF THE LOWER MARGIN OF THE FRAME. THE SURFACE PHOTOGRAPHY IS PRECEDED BY THREE FRAMES CONTAINING A BRIEF DESCRIPTION OF (1) THE PAN PHOTOGRAPHY, (2) USE AS A CATALOG, (3) TECHNICAL SUPPORTING DATA, AND (4) NSSDC ORDERING PROCEDURES. THIS MICROFILM CONSTITUTES THE NSSDC CATALOG FOR THE PANORAMIC CAMERA PHOTOGRAPHY.

DATA SET NAME— PANORAMIC CAMERA RECTIFIED PHOTOGRAPHS ON NSSDC ID 71-063A-02G  
9-IN. B/W FILM NEGATIVES

AVAILABILITY OF DATA SET— DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED— 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET— 1465 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 18 ROLLS OF PANORAMIC CAMERA PHOTOGRAPHY RECTIFIED ON 9 3/8 BY 80-IN. B/W NEGATIVE FILM. THE MAJOR PART OF EACH OF THE ORIGINAL PAN CAMERA PHOTOGRAPHY FRAMES WAS RECTIFIED SO THAT THE RECTIFIED FRAME FORMAT IS 9 3/8 BY 80-IN., ALMOST TWICE THE 5 BY 48-IN. FRAME FORMAT OF THE ORIGINAL FRAMES. IN THESE RECTIFIED VERSIONS THE CAMERA AND VIEWING DISTORTIONS HAVE BEEN CORRECTED TO GIVE A VERTICAL PROJECTION OF THE LUNAR SURFACE. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY GOOD, PROVIDING USEFUL SCIENTIFIC INFORMATION WITHOUT FURTHER AMPLIFICATION.

EXPERIMENT NAME— METRIC PHOTOGRAPHY

NSSDC ID 71-063A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, CI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-080471  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE FAIRCHILD MAPPING CAMERA EXPERIMENT WAS DESIGNED TO OBTAIN HIGH-QUALITY METRIC PHOTOGRAPHS OF THE LUNAR SURFACE AND STELLAR PHOTOGRAPHS EXPOSED SIMULTANEOUSLY WITH THE METRIC PHOTOGRAPHS. THE METRIC PHOTOGRAPHS WERE OBTAINED USING A 3-IN. CARTOGRAPHIC LENS, AND PHCTOGRAPHS OF THE STAR FIELD WERE OBTAINED USING AN 85-MM STELLAR CAMERA LENS. THE MAPPING CAMERA ALSO PROVIDED SUPPORTING PHOTOGRAPHIC DATA FOR THE SCIENTIFIC INSTRUMENT MODULE (SIM) PANORAMIC CAMERA AND FOR OTHER COMMAND SERVICE MODULE (CSM) PHOTOGRAPHIC EXPERIMENTS. THE CAMERA SCANNED THE LUNAR SURFACE FROM THE CSM DURING LUNAR ORBIT. THE STELLAR CAMERA WAS OPERATED ON THE LUNAR DARK-SIDE IN CONJUNCTION WITH A LASER ALTIMETER AS THE FILM BUDGET PERMITTED. THE TIME-CORRELATED STELLAR PHOTOGRAPHS WERE USED TO PROVIDE A REFERENCE FOR THE DETERMINATION OF THE LASER ALTIMETER POINTING VECTOR AND FOR THE CARTOGRAPHIC LENS POINTING VECTOR FOR METRIC CAMERA LIGHT-SIDE PHOTOGRAPHY. THE METRIC CAMERA PROVIDED 20-M RESOLUTION PHOTOGRAPHY FROM AN ORBITAL ALTITUDE OF 111 KM. THE RANGES FOR THE METRIC CAMERA WERE (1) FOCAL LENGTH, 3 IN., (2) FIELD OF VIEW, 74 DEG BY 74 DEG, (3) IMAGE COVERAGE (FROM 111.12 KM) A 166 KM SQ AREA, (4) IMAGE SIZE, 4.5 BY 4.5 IN., AND (5) FILM CAPACITY, 1500 FT OF 5-IN. FILM TOTALING 2100 FRAMES (OF A MAXIMUM POSSIBLE 3500 FRAMES). THE MAPPING CAMERA SYSTEM WAS COMPOSED OF TWO INDIVIDUAL CAMERA SUBSYSTEMS -- THE METRIC (TERRAIN MAPPING) CAMERA, WHICH PERFORMED THE CARTOGRAPHIC FUNCTION, AND THE STELLAR CAMERA. THESE SUBSYSTEMS WERE INTEGRATED INTO A SINGLE UNIT THAT HAD THE OPTICAL AXIS RELATIONSHIP NECESSARY TO SATISFY THE PRECISION MAPPING CAMERA AND THE LASER ALTIMETER ATTITUDE (POINTING) DETERMINATION REQUIREMENT. THIS SYSTEM SHARED A GASEOUS NITROGEN PRESSURE VESSEL ASSEMBLY WITH THE SIM PANORAMIC CAMERA TO PROVIDE AN INERT AND PRESSURIZED ATMOSPHERE WITHIN THE CAMERA. THE CAMERA OPTICS SYSTEM, FILM DRIVE/EXPOSURE/TAKEUP SYSTEM, AND A REMOVABLE CASSETTE (CONTAINING BOTH METRIC AND STELLAR CAMERA FILM) COMPLETED THE CAMERA SYSTEM. THE FILM CASSETTE WAS RETRIEVED BY A CREWMAN DURING EVA AFTER PHOTOGRAPHIC OPERATIONS WERE COMPLETED. THE MAPPING CAMERA SYSTEM WAS MOUNTED ON THE TOP SHELF IN THE CSM SIM BAY AND WAS DEPLOYED ON A RAIL-TYPE MECHANISM IN ORDER TO PROVIDE AN UNOBSTRUCTED FIELD OF VIEW FOR THE STELLAR CAMERA. (THIS MECHANISM ENSURED THAT THE STAR FIELD PHOTOGRAPHED WAS NOT OBSCURED BY EITHER THE LUNAR HORIZON OR THE SIM MOLD LINE.) A COVER ATTACHED TO THE SIM SHELF PROTECTED THE METRIC CAMERA LENS AND LASER ALTIMETER OPTICS FROM SPACECRAFT CONTAMINATION SOURCES DURING REACTION CONTROL SYSTEM FIRINGS AND EFFLUENT DUMPS. THIS COVER PROVIDED FOR MULTIPLE OPENING AND CLOSING CYCLES. CAMERA CONTROLS IN THE COMMAND MODULE ALLOWED THE CREW TO ACTIVATE OR DEACTIVATE CAMERA HEATERS AND CAMERA FUNCTIONS, TO ACTIVATE OR DEACTIVATE THE IMAGE MOTION COMPENSATION SWITCH AND INCREMENT THE CAMERA VELOCITY-TO-HEIGHT CONTROL SIGNAL (FIVE INCREMENTAL STEPS WERE POSSIBLE BEFORE RECYCLING), AND TO ACTIVATE AND EXTEND OR RETRACT THE CAMERA SYSTEM ON ITS DEPLOYMENT RAILS.

DATA SET NAME- B/W LCGETRONIC POSITIVE 5-IN. PHOTOS

NSSDC ID 71-063A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3375 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE ROLLS (3375 FRAMES) OF 5-IN. BLACK AND WHITE FILM WITH A FRAME FORMAT OF 4.5 BY 4.5 IN. THE FILMS WERE REPRODUCED FROM THE ORIGINAL B/W 3400 TYPE FILMS TAKEN BY THE 3-IN. METRIC (MAPPING) CAMERA LOCATED IN THE SIM BAY ON THE COMMAND SERVICE MODULE. THE REPRODUCTION WAS MADE WITH QUALITY CONTROL ON THE DENSITY USING EXPOSURE CONTROL AND DODGING TECHNIQUES. COVERAGE INCLUDES PARTS OF THE MOON FROM ABOUT 180 DEG E TO 70 DEG W LONGITUDE AND PLUS OR MINUS 25 DEG LATITUDE. THE FILMS COVER SUCH FEATURES AS TSIOLKOVSKY AND ITS ENVIRONS ON THE FAR SIDE AND, ON THE FRONTSIDE, THE MARIA CRISIUM, SERENITATIS, AND IMBRIUM, THE HAEMUS AND APENNINE MOUNTAINS, AND INDIVIDUAL FEATURES SUCH AS THE LITTRON CONES AREA, HADLEY RILL (INCLUDING THE LM LANDING SITE), ARISTARCHUS AND THE SURROUNDING AREA, AND A LAVA FLOW ON MARE IMBRIUM.

DATA SET NAME- B/W PHOTOMETRIC POSITIVE 5-IN. PHOTOS NSSDC ID 71-063A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3375 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE ROLLS (3375 FRAMES) OF 5-IN. BLACK AND WHITE FILM PROCESSED ON A NIAGARA PRINTER FROM THE ORIGINAL 3400 TYPE FILM TO PRODUCE A SET OF PHOTOGRAPHY SUITABLE FOR PHOTOMETRIC AND PHOTOGRAMMETRIC INVESTIGATIONS. THE FRAME FORMATS ARE 4.5 BY 4.5 IN. AREAS COVERED ARE THE SAME AS IN THE LOGETRONIC VERSION, I.E., TSIOLKOVSKY ON THE FAR SIDE, THE MARIA CRISIUM, SERENITATIS, AND IMBRIUM, THE HAEMUS AND APENNINE MOUNTAINS, AND INDIVIDUAL FEATURES SUCH AS THE HADLEY RILL (INCLUDING THE LM LANDING SITE), ARISTARCHUS AND THE SURROUNDING AREA AND A LAVA FLOW IN MARE IMBRIUM.

DATA SET NAME- B/W METRIC CAMERA TERMINATOR 5- BY 5-IN. PHOTOS NSSDC ID 71-063A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1515 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF PHOTOGRAPHS OF NEAR-TERMINATOR AREAS EXTRACTED FROM THE ORIGINAL COMPLETE PHOTOGRAPHY FROM THE METRIC (MAPPING) CAMERA AND COMBINED INTO ONE ROLL OF BLACK AND WHITE FILM. THESE PHOTOS SHOW LUNAR TERRAIN IN STRONG RELIEF OWING TO THE VERY LOW SUN ANGLES AS THE TERMINATOR (SUNRISE AND SUNSET LINE) IS APPROACHED. LAVA FLOWS AND LOW RIDGES AND DEPRESSIONS ARE VISIBLE, AND THE ARISTARCHUS AREA CAN BE SEEN IN BOLD RELIEF. OTHER AREAS ARE ON THE LM LANDING SITE NEAR THE HADLEY RILL.

THE APENNINE MOUNTAINS, ARCHIMEDES AND ITS NEARBY RILLS, PLINIUS AND ITS RILLS, DAWES ON THE FRONTSIDE OF THE MOON, AND TSIOLKOVSKY AND THE SURROUNDING AREA ON THE FAR SIDE.

DATA SET NAME- MAPPING CAMERA SUPPORT DATA ON MICROFILM      NSSDC ID 71-063A-03D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      3 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH CONTAINS THE SUPPORTING DATA FOR THE MAPPING (METRIC) CAMERA PHOTOGRAPHY FROM THE APOLLO 15 MISSION, IS ON THREE REELS OF 16-MM FILM. FOR EACH PHOTOGRAPH THE FOLLOWING DATA ARE SUPPLIED -- DATE, TIME, STATE VECTORS, LONGITUDE AND LATITUDE OF NADIR POINT, SIGMAS OF LONGITUDE AND LATITUDE OF NADIR POINT, LONGITUDE AZIMUTH AND LATITUDE OF CAMERA AXIS INTERSECT, SPACECRAFT RADIUS AND ALTITUDES, SIGMA OF SPACECRAFT RADIUS, AZIMUTH OF VELOCITY VECTOR, HORIZONTAL VELOCITY, MEAN ALTITUDE RATE, TILT AZIMUTH AND TILT ANGLE AND THEIR SIGMAS, SUN ELEVATION AND AZIMUTH AT PRINCIPAL GROUND POINT, LONGITUDE AND LATITUDE OF SUBSOLAR POINT, ALPHA, SWING ANGLE AND ITS SIGMA, EMISSION ANGLE, NORTH DEVIATION ANGLE, PHASE ANGLE, PHI AND ITS SIGMA, X-TILT, Y-TILT, AND ITS SIGMA, KAPPA AND ITS SIGMA, HEADING AND ITS SIGMA, OMEGA AND ITS SIGMA, SCALE FACTOR, LASER SLANT RANGE, LASER SPACECRAFT ALTITUDE, AND ALTITUDE DIFFERENCE. IN ADDITION, PHYSICAL CONSTANTS SUCH AS LOCAL LUNAR RADIUS, GRAVITATIONAL CONSTANT, AND EPHEMERIS-UNIVERSAL TIME SCALE FACTOR ARE GIVEN.

DATA SET NAME- MAPPING CAMERA PHOTOGRAPHY INDEX ON      NSSDC ID 71-063A-03E  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET WHICH CONSISTS OF ONE REEL OF 16-MM MICROFILM CONTAINING THE INDEX TO THE MAPPING (METRIC) CAMERA PHOTOGRAPHY, IS CONTAINED ON THE SAME REEL AS THE INDEX TO THE PANORAMIC CAMERA PHOTOGRAPHY. FOR EACH FRAME THE FOLLOWING INFORMATION IS GIVEN -- NUMBER, REVOLUTION (PASS) NUMBER, APPROXIMATE ALTITUDE, PRINCIPAL POINT LATITUDE AND LONGITUDE, CAMERA TILT AND AZIMUTH, FORWARD OVERLAP, SUN ELEVATION, AND A BRIEF DESCRIPTION OF FEATURES TO BE SEEN. ADDITIONAL INFORMATION GIVEN AT THE BEGINNING OF THE REEL INCLUDES A SUMMARY TABLE OF MAPPING CAMERA COVERAGE, THE MAPPING CAMERA CHARACTERISTICS, AND AN ORBITAL COVERAGE FOOTPRINT ON A LUNAR MAP.

DATA SET NAME- COMPLETE METRIC CAMERA PHOTOGRAPHY ON      NSSDC ID 71-063A-03G  
16-MM FILM FOR CATALOG PURPOSES

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS REPORTED BY THE EXPERIMENTER)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO ROLLS OF 16-MM FILM OF THE COMPLETE SET OF APOLLO 15 METRIC (MAPPING) CAMERA PHOTOGRAPHY FOR CATALOG PURPOSES. THIS FILM WILL BE USED FOR MAKING COPIES FOR USERS FROM WHICH THEY CAN ORDER INDIVIDUAL FRAMES. FROM THIS MISSION THROUGH APOLLO 17 THE MISSION PHOTOGRAPHY CATALOGS WILL BE IN MICROFILM FORM.

DATA SET NAME- COMPLETE MAPPING CAMERA PHOTOGRAPHY ON NSSDC ID 71-063A-03H  
MICROFICHE CARDS FOR CATALOG PURPOSES

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 59 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF THE COMPLETE METRIC (MAPPING) CAMERA PHOTOGRAPHY ON FIFTY-NINE 4- BY 6-IN MICROFICHE, REPRODUCED BY NSSDC (DIFFERENT FROM THE CALTECH MICROFICHE, DATA SET 71-063A-03F). IN THE NSSDC MICROFICHE, ALL FRAME NUMBERS CAN BE READ, WHEREAS THE CALTECH MICROFICHE HAD MANY FRAME NUMBERS CUT OFF BECAUSE OF POOR REGISTRATION. THE QUALITY IS GENERALLY VERY GOOD AND THE IMAGES CAN BE USED DIRECTLY FOR SOME SCIENTIFIC PURPOSES. THESE MICROFICHE ARE FOR CATALOG USE.

EXPERIMENT NAME- ALPHA PARTICLE SPECTROMETER NSSDC ID 71-063A-10

ORIGINAL EXPERIMENT INSTITUTION- AS+E

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - P.	GORENSTEIN	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI - I.	ADLER	NASA-GSFC	GREENBELT, MD
OI - J.R.	ARNOLD	U OF CALIFORNIA, SD	SAN DIEGO, CA
OI - H.	GURSKY	HARVARD COLLEGE OBS	CAMBRIDGE, MA
OI - A.E.	METZGER	NASA-JPL	PASADENA, CA
OI - J.I.	TROMBKA	NASA-GSFC	GREENBELT, MD

DATE LAST USABLE EXPERIMENT DATA RECORDED-080471

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETERMINE THE LUNAR SURFACE RADON EVOLUTION AND, IN SO DOING, TO COMBINE WITH THE OTHER GEOCHEMICAL EXPERIMENTS (GAMMA-RAY SPECTROMETER, 71-063A-08, AND X-RAY FLUORESCENCE, 71-063A-09) IN DETERMINING LUNAR SURFACE COMPOSITION AND IDENTIFYING LOCALIZED SOURCES OF ENHANCED RADON EMISSION THAT MAY CORRESPOND TO REGIONS OF ENHANCED LUNAR OUTGASSING. THE DATA OBTAINED ON THE GROSS RATE OF SURFACE RADON EVOLUTION AND ON LOCALIZED SOURCES OF ENHANCED RADON EMISSION ARE TO BE USED IN CONSTRUCTING RADIATION MAPS SHOWING LUNAR SURFACE

INHOMOGENEITIES. MEASUREMENTS OF ALPHA PARTICLE EMISSION FROM DEEP SPACE BACKGROUND WERE MADE DURING LUNAR ORBIT AND TRANSEARTH COAST. THE SPECTROMETER USED IN THIS EXPERIMENT WAS COMPOSED OF A 2 BY 5 ARRAY OF 10 SILICON SURFACE BARRIER DETECTORS HOUSED IN THE SAME ENCLOSURE AS THE X-RAY FLUORESCENCE EXPERIMENT. EACH OF THE 10 SENSORS LOOKED TOWARD THE MOON WITH A 90-DEG FULL-ANGLE FIELD OF VIEW. EACH SENSOR HAD ITS OWN PREAMPLIFIER, THE OUTPUTS OF WHICH FED INTO A COMMON ANALOG-TO-DIGITAL CONVERTER THAT IN TURN SORTED THE PULSES INTO 256 ENERGY CHANNELS IN THE RANGE 4.5 TO 9.0 MEV. THE INSTRUMENTATION WAS DESIGNED TO TURN OFF THE OTHER NINE DETECTORS ONCE AN EVENT WAS REGISTERED IN ONE OF THE DETECTORS UNTIL THE EVENT HAD BEEN ANALYZED. PULSE HEIGHT CHANNEL INFORMATION FOR UP TO A BIT RATE LIMITED VALUE OF 10 EVENTS PER SECOND WAS TELEMETERED. THE AVERAGE ALPHA PARTICLE RATE ENCOUNTERED WAS ABOUT 1 COUNT/SEC. CONTROLS WERE AVAILABLE IN THE COMMAND MODULE TO ACTIVATE OR DEACTIVATE THE EXPERIMENT. THE EXPERIMENT PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- 256 CHANNEL PULSE HEIGHT ANALYZER DATA ON NSSDC ID 71-063A-10A  
MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 072971 TO 080471 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS SUBMITTED BY THE EXPERIMENTER, CONTAINS REDUCED PULSE HEIGHT ANALYZER DATA FROM THE 256-CHANNEL PULSE HEIGHT ANALYZER, ALPHA PARTICLE SPECTROMETER IN CHRONOLOGICAL ORDER. THE DATA ARE ON TWO 9-TRACK, 800-BPI, BINARY MAGNETIC TAPES GENERATED ON AN IBM 360 COMPUTER. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS PER TAPE WITH 20 LOGICAL RECORDS PER PHYSICAL RECORD, AND EACH LOGICAL RECORD IS 48 8-BIT BYTES IN LENGTH. EACH LOGICAL RECORD CORRESPONDS TO ONE SEC OF SPACECRAFT TELEMETRY, I.E., TO ONE OF THE GOOD RECORDS IN THE UNREDUCED TELEMETRY TAPE. A 'GOOD' UNREDUCED TELEMETRY RECORD IS ONE THAT HAS NO MORE THAN 19 'BAD' DATA FLAGS SET. EACH RECORD CONTAINS THE TIME, THREE TEMPERATURE MEASUREMENTS, DATA FLAGS, 10 PULSE HEIGHT CHANNEL NUMBERS AND DETECTOR IDENTIFICATION FOR EACH AND SEVERAL HOUSEKEEPING PARAMETERS.

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SPACECRAFT COMMON NAME- APOLLO 15 LM NSSDC ID 71-053C  
ALTERNATE NAMES- APOLLO 15C, ALSEP 15, LEM 15, ROVER 15, LUNAR MODULE 15

LAUNCH DATE- 07/26/71 SPACECRAFT WEIGHT IN ORBIT- 12700. KG

FUNDING AGENCY- NASA-OMSF

SPACECRAFT STATUS OF OPERATION- PARTIAL

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 15 LUNAR MODULE (LM) CONSISTED OF A LUNAR LANDING CRAFT, A LUNAR ROVING VEHICLE (LRV), AND AN APOLLO LUNAR SURFACE EXPERIMENT PACKAGE



(ALSEP) THAT CONTAINED SCIENTIFIC EXPERIMENTS TO BE LEFT ON THE MOON AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE NORTH CENTRAL PART OF THE MOON (26 DEG 4 MIN 54 SEC N LATITUDE, 3 DEG 39 MIN 30 SEC E LONGITUDE), AT THE FOOT OF THE APENNINE MOUNTAIN RANGE. THE ALSEP WAS DEPLOYED AT THE LANDING SITE. THE LRV WAS USED DURING THE EXTRAVEHICULAR ACTIVITIES (EVA) TO EXTEND THE RANGE OF MANNED LUNAR EXPLORATION. THE NUCLEAR POWERED ALSEP CONTAINED SEISMIC, MAGNETIC FIELDS, LUNAR ATMOSPHERE COMPOSITION, ION COMPOSITION, LUNAR DUST, SOLAR WIND COMPOSITION, HEAT LOSS, AND SOLAR CELL RADIATION DAMAGE EXPERIMENTS.

EXPERIMENT NAME- SOIL MECHANICS

NSSDC ID 71-063C-02

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - J.K.	MITCHELL	U OF CALIFORNIA, BERK	BERKELEY, CA
OI - D.	CARRIER	NASA-JSC	HOUSTON, TX
OI - N.	COSTES	NASA-MSFC	HUNTSVILLE, AL
OI - L.G.	BROMWELL	MIT	BOSTON, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-080271

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE SOIL MECHANICS EXPERIMENT WAS DESIGNED TO OBTAIN DATA ON (1) THE CHARACTERISTICS AND MECHANICAL BEHAVIOR OF THE LUNAR SOIL AT THE SURFACE AND SUBSURFACE AND (2) THE VARIATION OF THESE PROPERTIES IN A LATERAL DIRECTION. THE EQUIPMENT FOR THE EXPERIMENT INCLUDED A SAMPLING SCOOP AND A SELF-RECORDING PENETROMETER WITH INTERCHANGEABLE LOAD PLATE AND THREE CONES OF VARIOUS DIAMETERS. FROM LUNAR SAMPLES (SUCH AS CORE TUBE SAMPLES AND OTHER GEOLOGICAL SAMPLES, ESPECIALLY THE FINE-GRAINED SOIL SAMPLES) OBTAINED BY TESTING IN THE LUNAR GEOLOGY EXPERIMENT, FURTHER SOIL MECHANICS DATA WILL BE DERIVED BY TESTING IN THE LUNAR RECEIVING LABORATORY (LRL). THE PHOTOGRAPHIC EQUIPMENT USED FOR THIS EXPERIMENT INCLUDED A BATTERY-OPERATED 16-MM MAURER DATA ACQUISITION CAMERA (10-MM LENS) AND A HASSELBLAD ELECTRIC DATA CAMERA (60-MM LENS). TELEVISION WAS ALSO USED IN A REAL-TIME SUPPORT ROLE. THE ASTRONAUTS PERFORMED THE REQUIRED TRENCHING ACTIVITIES, PENETROMETER LOAD PLATE AND CONE TESTS, AND SOIL BEHAVIOR CHARACTERISTICS OBSERVATIONS IN THE HADLEY-APENNINE AREA.

DATA SET NAME- SOIL MECHANICS DATA DOCUMENTATION ON MICROFILM

NSSDC ID 71-063C-02A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

#### DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35 MM MICROFILM THAT CONTAINS TABLES AND GRAPHS, WITH NOTES AND CORRECTIONS TO THE RAW DATA, ON THE CHARACTERISTICS OF THE SOIL SITES IN THE HADLEY-APENNINE AREA OF THE MOON. THE DATA ARE DIVIDED INTO FIVE SECTIONS A THROUGH E. SECTION A CONTAINS 6 GRAPHS, ONE EACH FOR INDEXES (STATIONS) LABELED 2 THROUGH 7. FOR EACH INDEX,

THE GRAPHS SHOW THE PENETRATION DEPTH (IN CM) AS A FUNCTION OF THE STRESS (IN NEWTONS/SQ CM). THE MINIMUM PENETRATION IS 3.0 CM, AT A STRESS OF APPROXIMATELY 1.0 NEWTONS/SQ CM (AT INDEX 4). THE MAXIMUM PENETRATION IS 15.8 CM, AT A STRESS VARYING FROM 1.6 TO 34.8 NEWTONS/SQ CM (AT INDEX 5). IN SECTION B, WHICH COVERS RAW AND REDUCED DATA, THE TABLES INCLUDE INFORMATION ON LUNAR PENETRATION DATA REDUCTION FOR THE LUNAR DRUM, AT EACH INDEX. THE COLUMNS TABULATE DRUM LOAD ANGLE, DRUM CIRCUMFERENCE, LOAD, STRESS, RATIO OF INITIAL DRUM DEPTH, DRUM DEPTH READING, PENETRATION DEPTH, AND CORRECTION APPLIED. THE NOTES INCLUDE TIMES AND LOCATIONS OF SAMPLINGS, WEIGHT OF THE PACKAGE, AND CONDITION AND PERFORMANCE OF THE EQUIPMENT. SECTIONS C AND D CONTAIN POSTFLIGHT NOTES AND CORRECTIONS FACTORS, INCLUDING LOAD CALIBRATION GRAPHS DEPICTING LOAD (IN NEWTONS) VS CIRCUMFERENTIAL DEFLECTION (IN MM), A PENETRATION AND LOAD, PENETRATION CORRECTIONS FACTORS, AND WEIGHTS. SECTION E CONTAINS PREFLIGHT CALIBRATION GRAPHS FOR THE DRUM AND FOR THE ACTUAL/RECORDED PENETRATION RATIO. THESE DATA PERTAIN TO A PENETRATING CONE WITH A 30-DEG APEX ANGLE, A BASE AREA OF 3.22 SQ CM, AND A BEARING PLATE WITH A 2.54- BY 12.7-CM AREA. THE SIX MEASUREMENTS (INDEXES) WERE MADE AT STATION A (8). THE SRP (SELF-RECORDING PENETROMETER) THAT WAS USED WEIGHED 2.3 KG, COULD PENETRATE TO A MAXIMUM OF 76 CM, AND COULD MEASURE A PENETRATION FORCE OF A MAXIMUM OF 111 NEWTONS. THE RECORD OF EACH PENETRATION IS INSCRIBED ON A RECORDING DRUM THAT WAS RETURNED TO THE EARTH. A LUNAR REFERENCE PLANE RESTED ON THE SURFACE DURING A MEASUREMENT AND SERVED AS A REFERENCE DATUM FOR MEASUREMENT OF THE PENETRATION DEPTH.

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER

NSSDC ID 71-063C-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P. DYAL NASA-ARC MOFFETT FIELD, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-090072

EXPERIMENT STATUS OF OPERATION- INOPERABLE

#### EXPERIMENT BRIEF DESCRIPTION

THE LUNAR SURFACE MAGNETOMETER WAS DESIGNED TO MEASURE THE MAGNITUDE AND TEMPORAL VARIATIONS OF THE LUNAR SURFACE MAGNETIC FIELD IN ORDER TO DETERMINE THE INTERNAL ELECTRICAL PROPERTIES OF THE MOON. THE DETECTOR PACKAGE CONSISTED OF THREE BOOM-MOUNTED FLUXGATE MAGNETOMETERS CAPABLE OF MEASURING MAGNETIC FIELDS IN THE THREE RANGES OF PLUS TO MINUS 50, 100, OR 200 GAMMAS AS SELECTED BY EARTH COMMAND. THE RESOLUTION WAS 0.5 PERCENT OF FULL SCALE. A FLIP-CALIBRATE SEQUENCE DESIGNED TO DETERMINE THE ABSOLUTE ACCURACY OF THE FLUXGATE SENSORS, AND TO DETECT DRIFTS IN ZERO LEVELS WAS PERFORMED AUTOMATICALLY AT 18-HR INTERVALS, AT A TIME SPECIFIED BY THE PRINCIPAL INVESTIGATOR (BUT AFTER THE ASTRONAUTS HAD LEFT THE LUNAR SURFACE). A MAGNETIC FIELD SITE SURVEY WAS PERFORMED BY ROTATING EACH OF THE SENSORS. THE PURPOSE OF THE SURVEY WAS TO LOCATE ANY MAGNETIC INFLUENCES INHERENT IN THE DEPLOYMENT SITE. THE SITE SURVEY WAS PERFORMED ONLY ONCE. THE EXPERIMENT PROVIDED USEFUL DATA UNTIL SEPTEMBER 1972 .

DATA SET NAME- TOTAL MAGNETIC FIELD MAGNITUDE AND COMPONENTS ON MICROFILM

NSSDC ID 71-063C-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 092072 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 6 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16-MM MICROFILM GENERATED AT NSSDC FROM HARD-COPY ORIGINAL PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 30 OR 60 MIN OF DATA. THREE- OR 6-SEC AVERAGED VALUES OF MAGNETIC FIELD MAGNITUDE AND OF EACH OF THREE CARTESIAN COMPONENTS ARE PLOTTED PER FRAME. THERE ARE VERY FEW DATA GAPS.

EXPERIMENT NAME- HEAT FLOW

NSSDC ID 71-063C-06

ORIGINAL EXPERIMENT INSTITUTION- LAMONT-DOHERTY GEO OBS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - M.G.	LANGSETH	LAMONT-DOHERTY GEO OBS	PALISADES, NY
OI - S.	CLARK	YALE U	NEW HAVEN, CT
OI - M.G.	SIMMONS	UNKNOWN	

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE HEAT FLOW EXPERIMENT (HFE), WHICH WAS PART OF THE ALSEP, WAS DESIGNED TO DETERMINE THE RATE OF HEAT LOSS FROM THE LUNAR INTERIOR. THE EXPERIMENT DETECTED LUNAR TEMPERATURES OF THE FOLLOWING TYPES AND RANGES, WITH CORRESPONDING ACCURACIES NOTED IN PARENTHESES -- HIGH-SENSITIVITY MEASUREMENTS OF PLUS OR MINUS 2 DEG C (0.003 DEG C) TEMPERATURE DIFFERENCE, LOW-SENSITIVITY MEASUREMENTS OF PLUS OR MINUS 20 DEG C (0.03 DEG C) TEMPERATURE DIFFERENCE, PROBE AMBIENT TEMPERATURES FROM 200 DEG K TO 250 DEG K (0.1 DEG K), THERMOCOUPLE REFERENCE TEMPERATURE FROM -20 DEG C TO -60 DEG C (0.1 DEG C), AND PROBE CABLE AMBIENT TEMPERATURES FROM 90 DEG K TO 250 DEG K (0.3 DEG K). THE INSTRUMENTATION CONSISTED OF TWO 1.2-M PROBES THAT WERE INSERTED INTO THE LUNAR SURFACE, A SPECIAL TOOL FOR PROBE INSERTION, AND AN ELECTRONICS PACKAGE THAT WAS CABLE-CONNECTED TO THE PROBES AND THE CENTRAL STATION. TO ENABLE PLACEMENT OF THE PROBES INTO THE LUNAR SURFACE, TWO 3-M HOLES WERE DRILLED IN THE SURFACE BY ASTRONAUT SCOTT USING THE APOLLO LUNAR SURFACE DRILL (ALSD). THE ALSD WAS EQUIPPED WITH CORE STEM CAPS AND RETAINERS, CORE STEMS, CORE BITS, A BORE BIT/DRILL ADAPTER, A TREADLE, AND A BORE STEM/CORE STEM WRENCH. THE BORE STEM ASSEMBLIES USED IN DRILLING REMAINED IN THE HOLES TO PROVIDE A CASING TO PREVENT COLLAPSE OF THE HOLE WALLS DURING INSERTION OF THE PROBES. PRELIMINARY RESULTS OF THE EXPERIMENT INDICATE A LUNAR HEAT FLOW OF 3.3 TIMES  $10^{-6}$  W/CM<sup>2</sup>, WHICH IS ONE-HALF THAT OF THE EARTH. THE RATE OF TEMPERATURE INCREASE AS A FUNCTION OF DEPTH IS 1.75 DEG K PER M. TEMPERATURE MEASUREMENTS WERE ALSO OBTAINED DURING LUNAR NIGHT AND DURING A TOTAL ECLIPSE ON AUGUST 6, 1971.

DATA SET NAME- HEAT FLOW - THERMAL CONDUCTIVITY ON  
MAGNETIC TAPE

NSSDC ID 71-063C-06A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 073172 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO 600-FT REELS OF 7-TRACK, 800-BPI, MAGNETIC TAPES IN BINARY CODE GENERATED ON AN IBM 1130, CONTAINING THE THERMAL CONDUCTIVITY MEASUREMENTS FROM THE HEAT-FLOW EXPERIMENT (S-037) AT THE HADLEY/APENNINE REGION OF THE MOON. THE DATA CONSIST OF A CHRONOLOGICAL SEQUENCE OF TIME POINTS, WITH EACH OF WHICH ARE ASSOCIATED SEVERAL TEMPERATURES AND TEMPERATURE DIFFERENCES. THE TIME IS MEASURED IN MILLISEC SINCE THE BEGINNING OF 1971 AND THE TEMPERATURE DATA ARE IN DEG K. THE DATA HAVE BEEN ORGANIZED INTO FIVE GROUPS WHICH ARE A COMBINATION OF FOUR PARAMETERS, AS FOLLOWS -- (T) TEMPERATURE, (DT) TEMPERATURE DIFFERENCE, (G) GRADIENT BRIDGE, AND (R) RING BRIDGE. TWO NUMBERS ARE GIVEN. THE FIRST NUMBER REFERS TO THE PROBE (1 OR 2) AND THE SECOND NUMBER DESIGNATES THE PROBE SECTION (UPPER -- 1, LOWER -- 2) OR THE THERMOCOUPLE NUMBER (1 OR 4). FOR EXAMPLE DTG 11 REFERS TO A TEMPERATURE DIFFERENCE MEASUREMENT FROM THE GRADIENT BRIDGE IN THE UPPER SECTION OF PROBE 1. TREF REFERS TO THE TEMPERATURE OF THE THERMOCOUPLE REFERENCE BRIDGE, AND TC REFERS TO A THERMOCOUPLE TEMPERATURE.

EXPERIMENT NAME- FIELD GEOLOGY

NSSDC ID 71-063C-10

ORIGINAL EXPERIMENT INSTITUTION- US GEOLOGICAL SURVEY

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G. SWANN US GEOLOGICAL SURVEY FLAGSTAFF, AZ  
OI - W.R. MUEHLBERGER U OF TEXAS AUSTIN, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-080271

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE LUNAR FIELD GEOLOGY INVESTIGATION EXPERIMENT WAS DESIGNED TO PROVIDE DATA ON THE NATURE AND DEVELOPMENT OF THE APENNINE MOUNTAIN AREA AND OF THE PROCESSES THAT HAVE MODIFIED THE MARE AND HIGHLAND SURFACE THROUGH THE STUDY OF DOCUMENTED LUNAR GEOLOGICAL FEATURES AND THE ANALYSIS OF RETURNED LUNAR SAMPLES. THIS EXPERIMENT WAS CONDUCTED BY THE APOLLO LUNAR GEOLOGY EXPERIMENT TEAM, IN CONSULTATION WITH THE MANNED SPACECRAFT CENTER (MSC) SCIENCE WORKING PANEL (REPRESENTING THE PRINCIPAL INVESTIGATOR). THE EQUIPMENT USED FOR THIS EXPERIMENT WAS A HAMMER, TONGS, AN EXTENSION HANDLE, A SMALL SAMPLING SCOOP, A GNOMON/COLOR PATCH, A SPRING SCALE, SAMPLE COLLECTION BAGS, SPECIAL ENVIRONMENTAL SAMPLE CONTAINERS, AND SAMPLE RETURN CONTAINERS. GEOLOGY CORE SAMPLES WERE ALSO OBTAINED WITH THE APOLLO LUNAR SURFACE DRILL (ALSD) CORE STEMS, BITS, AND CAPS (SEE APOL15C-06). THE HAND TOOLS (HAMMER, TONGS, ETC.) USED FOR THIS EXPERIMENT WERE THE STANDARD APOLLO LUNAR HAND TOOLS AND WERE CARRIED ON THE APOLLO LUNAR HAND TOOL CARRIER ON THE AFT PALLET OF THE LUNAR ROVER VEHICLE (LRV).

DATA SET NAME- B/W POSITIVE 8- BY 10-IN. PHOTOS OF  
GEOLOGIC SAMPLES

NSSDC ID 71-063C-10A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 100 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMPOSED OF 1824 SEPARATE 8- BY 10-IN. BLACK AND WHITE FILM POSITIVES OF THE GEOLOGIC SAMPLES BROUGHT BACK FROM THE APOLLO 15 MISSION. THE PHOTOGRAPHS SHOW THE SAMPLES IN SEVERAL CARDINAL POINT DIRECTIONS AND SHOW ALL FACES OF THE ROCKS. SOME SAMPLES ARE BROKEN UP, AND EACH SUCCEEDING FRAGMENT IS ALSO PHOTOGRAPHED IN VARIOUS ASPECTS. THE SIZE OF THE SAMPLE IS INDICATED BY A CENTIMETER RULE.

DATA SET NAME- COLOR POSITIVE 8- BY 10-IN. PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-063C-10B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 100 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 119 SEPARATE 8- BY 10-IN. COLOR POSITIVE TRANSPARENCIES, MADE AT LRL, OF THE GEOLOGIC SAMPLES RETURNED FROM THE HADLEY/APENNINE REGION OF THE MOON ON THE APOLLO 15 MISSION. EACH TRANSPARENCY SHOWS A SAMPLE AS VIEWED FROM A CARDINAL POINT OF THE COMPASS WITH RESPECT TO THE LIGHT SOURCE. EACH FACE OF THE SAMPLE IS SHOWN BESIDE A CENTIMETER RULER FOR DIMENSIONS.

DATA SET NAME- B/W POSITIVE 4- BY 5-IN. PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-063C-10C

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 7 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 170 BLACK AND WHITE POSITIVES, MADE AT LRL, OF THE FIELD GEOLOGY ROCK SAMPLES RETURNED FROM THE HADLEY/APENNINE REGION OF THE MOON ON THE APOLLO 15 MISSION. THESE PHOTOGRAPHS SHOW THE SAMPLES IN VARIOUS ORIENTATIONS AT CARDINAL POINTS OF THE COMPASS WITH RESPECT TO THE LIGHT SOURCE. THE SEVERAL SURFACES OF THE ROCKS ARE ALSO SHOWN AND ARE PHOTOGRAPHED BESIDE A CENTIMETER RULER FOR DIMENSIONS. THE WHOLE SAMPLE AND EACH FRAGMENT OF ANY BROKEN UP SAMPLES ARE PHOTOGRAPHED SEPARATELY.

DATA SET NAME- COLOR NEGATIVE 70-MM PHOTOS OF GEOLOGIC SAMPLES NSSDC ID 71-063C-10D

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 581 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF COLOR NEGATIVES IN 70-MM FORMAT, TAKEN AT LRL, OF THE FIELD GEOLOGY ROCK SAMPLES RETURNED FROM THE HADLEY/APENNINE REGION OF THE MOON ON THE APOLLO 15 MISSION. THE PHOTOGRAPHS SHOW THE VARIOUS ROCK SAMPLES AND EACH PART OF ANY BROKEN UP SAMPLES IN VARIOUS ORIENTATIONS OF THE COMPASS WITH RESPECT TO THE LIGHT SOURCE. EACH FACE OR SURFACE OF THE ROCK IS SHOWN AND PHOTOGRAPHED BESIDE A CENTIMETER RULER TO SHOW THE DIMENSIONS.

DATA SET NAME- COLOR NEGATIVE 4- BY 5-IN. PHOTOS OF NSSDC ID 71-063C-10E  
GEOLOGIC SAMPLES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 073171 TO 080271 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 51 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF FIVE COLOR NEGATIVE PHOTOGRAPHS, TAKEN AT THE LRL, OF THE FIELD GEOLOGY ROCK SAMPLES RETURNED FROM THE HADLEY/APENNINE REGION OF THE MOON ON THE APOLLO 15 MISSION. THE PHOTOGRAPHS ARE IN 4- BY 5-IN. FORMAT. THE PHOTOGRAPHS SHOW SEVERAL SAMPLES IN CIRCULAR ENCLOSURES, OR BINS, PROBABLY AS REMOVED FROM THE ORIGINAL CONTAINER BAGS BROUGHT BACK FROM THE MOON. NO IDENTIFICATION OR INFORMATION OTHER THAN THE SAMPLE NUMBER AND FRAME NUMBER IS CONTAINED IN THE PHOTOGRAPHS.

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SPACECRAFT COMMON NAME- EDLE NSSDC ID 71-071A  
ALTERNATE NAMES- CAS-A

LAUNCH DATE- 08/16/71 SPACECRAFT WEIGHT IN ORBIT- 84.7 KG

FUNDING AGENCY- CNES  
FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 08/16/71 ORBIT TYPE- GEOCENTRIC ORBIT PERIOD- 100.7 MIN  
APOAPSIS- 906.000 KM ALT PERIAPSIS- 678.000 KM ALT INCLINATION- 50.153 DEG

SPACECRAFT BRIEF DESCRIPTION

EDLE 1, THE SECOND FRENCH EXPERIMENTAL METEOROLOGICAL SATELLITE AND THE FIRST LAUNCHED BY NASA UNDER A COOPERATIVE AGREEMENT WITH THE CENTRE NATIONAL D'ETUDES SPATIALES (CNES), WAS DESIGNED TO FUNCTION PRIMARILY AS A COMMUNICATIONS SATELLITE TO ACQUIRE AND RELAY TELEMETERED DATA ON ALTITUDE, PRESSURE, TEMPERATURE, MOISTURE, AND UPPER ATMOSPHERIC WIND VELOCITIES FROM INSTRUMENTED EARTH-CIRCLING CONSTANT DENSITY METEOROLOGICAL BALLOONS. THE OCTAGONALLY SHAPED SATELLITE MEASURED 0.71 M ACROSS OPPOSITE CORNERS AND WAS 0.58 M LONG. ELECTRICAL POWER (20 W AVERAGE) WAS SUPPLIED BY EIGHT

RECTANGULAR SOLAR PANELS DEPLOYED 45 DEG FROM THE ECLE 1 UPPER OCTAGONAL STRUCTURE AFTER ORBITAL INSERTION AND BY 15 RECHARGEABLE SILVER-CADMIUM BATTERIES. CONSTANT EARTH ORIENTATION WAS MAINTAINED BY A DEPLOYABLE 10.06-M GRAVITY GRADIENT BOOM. SATELLITE SPIN WAS EXPECTED TO BE NEAR ZERO RPM IN ORBIT, AND THE ATTITUDE WAS PROGRAMMED TO REMAIN STABLE WITHIN 9 DEG OF LOCAL VERTICAL. THE DATA WERE STORED ON BOARD THE SPACECRAFT AND UNLOADED ON COMMAND WHEN THE SPACECRAFT WAS IN RANGE OF THE GROUND STATION. THE ONBOARD TELEMETRY CONSISTED OF (1) A 136.350-MHZ DOWNLINK TRANSMITTER (250 MW) FOR RELAYING BALLOON TELEMETRY TO GROUND STATIONS AND ALSO SERVING AS A TRACKING BEACON, (2) A 148.25-MHZ RECEIVER FOR RECEIVING SPACECRAFT COMMANDS AND TELEMETRY PROGRAMS FOR BALLOON OPERATIONS, AND (3) A SPACECRAFT-TO-BALLOON TRANSMITTER (464.84 MHZ) AND RECEIVER (401.7196 MHZ). THE SATELLITE OPERATION WAS SUCCESSFUL WITH THE EXCEPTION OF THE INADVERTENT DESTRUCTION OF 71 BALLOONS BY AN ERRONEOUS GROUND COMMAND. THE LAST BALLOON CEASED TRANSMITTING IN JANUARY 1973. HOWEVER, THE SPACECRAFT IS STILL BEING USED TO TRACK AND RECEIVE DATA FROM OCEAN BUOYS, ICEBERGS, SHIPS, ETC.

EXPERIMENT NAME- UPPER ATMOSPHERE WINDS AND WEATHER DATA NSSOC ID 71-071A-01  
RELAY SYSTEM

ORIGINAL EXPERIMENT INSTITUTION- CNES

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - W.R.	BANDEEN	NASA-GSFC	GREENBELT, MD
OI - A.	KASAHARA	NCAR	BOULDER, CO
OI - J.	ANGELL	NDAA	SUITLAND, MD
OI - Y.	MINTZ	U OF CALIFORNIA, LA	LOS ANGELES, CA
OI - P.	MOREL	CNES-LMD	PARIS, FRANCE
OI - P.	MOREL	CNES-LMD	PARIS, FRANCE

EXPERIMENT STATUS OF OPERATION- PARTIAL

EXPERIMENT BRIEF DESCRIPTION

THE ECLE 1 UPPER ATMOSPHERIC WINDS AND WEATHER DATA RELAY SYSTEM CONSISTED OF EQUIPMENT DESIGNED PRIMARILY TO COLLECT VARIOUS METEOROLOGICAL DATA FROM BALLOONS IN THE SOUTHERN HEMISPHERE FLOATING AT PRESSURE ALTITUDES OF ABOUT 200 MB. A SECONDARY OBJECTIVE WAS TO DEVELOP TECHNIQUES FOR ACCURATELY DETERMINING BALLOON POSITIONS FROM AN ORBITING SPACECRAFT. THE SATELLITE CARRIED A MODIFIED DOPPLER SYSTEM ON BOARD, WHICH, WHEN COMBINED WITH SATELLITE-ACQUIRED RANGE MEASUREMENTS, COULD LOCATE A BALLOON'S HORIZONTAL POSITION TO WITHIN PLUS OR MINUS 3 KM. AS MANY AS 500 3.66-M, HELIUM-FILLED, 30-DAY-LIFETIME CONSTANT DENSITY BALLOONS WERE LAUNCHED AT THE RATE OF THREE PER DAY FROM THREE SITES IN ARGENTINA, WITH AN ADDITIONAL 250 HELD IN RESERVE TO REPLACE THOSE THAT FAILED. EACH BALLOON HAD A FRANGIBLE 9.75-M INSTRUMENTATION LINE CARRYING TEMPERATURE AND PRESSURE SENSORS, SOLAR CELLS AND BATTERIES FOR POWER SUPPLIES, A TELEMETRY RECEIVER OPERATING AT 464.4864 MHZ, AND A 4-W, 401.71796-MHZ TRANSMITTER USING A LINEAR SLEEVE ANTENNA. THE SPACECRAFT INTERROGATED THE BALLOONS BOTH DAY AND NIGHT, INDIVIDUALLY, IN SEQUENCE, OR IN A PROGRAMMED GROUP (UP TO 64 AT A TIME). THE BALLOON POSITION AND SENSOR DATA WERE RELAYED TO THE GROUND AND WERE FED INTO A COMPUTER PROGRAM THAT PROVIDED, FOR OPERATIONAL USE, WIND SPEED AND DIRECTION, AMBIENT TEMPERATURE AND PRESSURE, AND BALLOON SUPERPRESSURE. EACH BALLOON WAS ALSO EQUIPPED WITH AN EXPLOSIVE CHARGE FOR SELF-DESTRUCTION, WHICH COULD BE TRIGGERED BY GROUND COMMAND IF THE BALLOON DRIFTED BEYOND THE EXPERIMENT'S LATITUDINAL LIMITS (30 DEG S TO 60 DEG S). ON SEPTEMBER 11, 1971, 72 OF THE 115 BALLOONS IN OPERATION WERE ACCIDENTALLY DESTROYED WHEN GROUND PERSONNEL INADVERTENTLY SENT UP A GENERAL DESTRUCT COMMAND INSTEAD OF THE INTERROGATION COMMAND. THE NUMBER OF BALLOONS

GRADUALLY DECREASED DURING THE EXPERIMENT LIFETIME (I.E., DUE TO ICING, LEAKAGE ETC). THE LAST BALLOONS WERE INTENTIONALLY DESTROYED IN JANUARY 1973. THE EXPERIMENT IS STILL BEING USED FOR TRACKING AND DATA COLLECTION FROM OCEAN BUOYS, ICEBERGS, SHIPS, ETC.

DATA SET NAME- RAW TEMPERATURE, PRESSURE AND LOCATION           NSSDC ID 71-071A-01A  
DATA NEAR 200 MB

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 082771 TO 070472 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-       1 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THE EQLE RAW TEMPERATURE, PRESSURE, AND LOCATION DATA SET WAS OBTAINED FROM THE EXPERIMENTER AND CONSISTS OF ONE 800-BPI, 7-TRACK, BCD TAPE GENERATED ON A CDC 6600 COMPUTER. THE DATA ARE ARRANGED SEQUENTIALLY BY ORBIT. DATA FROM EACH ORBIT IS CONTAINED IN A SINGLE RECORD AND CONSISTS OF A HEADING GIVING THE ORBIT NUMBER, THE NUMBER OF BALLOONS CONTACTED AND A CONTROL NUMBER. FOLLOWING THE HEADING ARE LISTED -- BALLOON NUMBER, DATE OF OBSERVATION, LOCATION, AND THE AMBIENT TEMPERATURE AND PRESSURE. A MAXIMUM OF 25 BALLOON CONTACTS MAY APPEAR IN A SINGLE RECORD, EMPTY RECORDS WITH NO BALLOON CONTACTS HAVE BEEN OMITTED. THESE DATA WERE OBTAINED FROM BALLOONS NEAR 200 MB AND ARE FOR THE REGION BETWEEN 30 DEG S TO 60 DEG S. THE UPPER LEVEL WIND SPEED AND DIRECTION CAN BE GENERATED FROM THESE DATA BY COMPARING INDIVIDUAL BALLOON LOCATIONS OBTAINED FROM SUCCESSIVE ORBITS. DUE TO ERRORS IN LOCATION DATA, A FEW OF WHICH ARE EXTREMELY LARGE, ABOUT ONE PERCENT OF SUCH DERIVED WIND VALUES COULD BE ERRONEOUS. EXTREMELY HIGH WIND SPEEDS SHOULD BE DISCARDED OR OTHERWISE CLOSELY EXAMINED BY THE USER. HIGH WIND VALUES ON NOVEMBER 4, 1971 ARE PARTICULARLY QUESTIONABLE.

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SPACECRAFT COMMON NAME- PIONEER 10                               NSSDC ID 72-012A  
ALTERNATE NAMES-           PIONEER-F, PIONR-F, PL-723D

LAUNCH DATE- 03/03/72       SPACECRAFT WEIGHT IN ORBIT-       231. KG

FUNDING AGENCY- NASA-OSSA

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- 03/03/72   ORBIT TYPE- HELIOCENTRIC       ORBIT PERIOD-       DAYS  
APOAPSIS-            AU RAD   PERIAPSIS-       1. AU RAD   INCLINATION-       0. DEG

SPACECRAFT BRIEF DESCRIPTION

PIONEER 10 WAS THE FIRST OF TWO 231-KG, SPIN STABILIZED, EARTH-POINTING SPACECRAFT DESIGNED TO PROVIDE INFORMATION ON THE INTERPLANETARY MEDIUM, THE ASTEROID BELT, AND THE NEAR JUPITER ENVIRONMENT. THIS JUPITER FLYBY SPACECRAFT WAS POWERED BY A RADIOISOTOPE THERMOELECTRIC GENERATOR AND A BATTERY. THE SATELLITE INSTRUMENTATION STUDIED IN THE INTERPLANETARY AND POSSIBLE JOVIAN MAGNETIC FIELDS, THE SOLAR WIND AND POSSIBLE JOVIAN BOW SHOCK AND MAGNETOPAUSE BOUNDARIES, SOLAR AND GALACTIC



COSMIC RAY, INTERPLANETARY CHARGED PARTICLES AND POSSIBLE JOVIAN TRAPPED RADIATION, AND JOVIAN THERMAL ENERGY FLUX, ZODIACAL LIGHT, ASTEROIDS AND METEORIDS, AND INTERPLANETARY AND JOVIAN ULTRAVIOLET RADIATION. AN S-BAND OCCULTATION EXPERIMENT AND A JUPITER IMAGING AND PHOTOPOLARIZATION EXPERIMENT WAS PERFORMED. THE SPACECRAFT IS EXPECTED TO REACH JUPITER BETWEEN 600 AND 750 DAYS AFTER LAUNCH. AFTER FLYBY, IT WILL HAVE A TRAJECTORY OF ESCAPE FROM THE SOLAR SYSTEM, EXCEPT FOR THE CELESTIAL MECHANICS, THERMOPILE RADIOMETERS, AND S-BAND OCCULTATION EXPERIMENTS, WHICH WERE IN AN OPERATIONAL OFF MODE AS OF MARCH 15, 1973, ALL EXPERIMENTS WERE OPERATING NORMALLY AS OF THAT DATE. THE SPACECRAFT APPARENTLY SUFFERED NO ILL EFFECTS IN PASSING THROUGH THE ASTEROID BELT.

DATA SET NAME- PRELIMINARY TRAJECTORY CHART ON HARDCOPY NSSDC ID 72-012A-000

AVAILABILITY OF DATA SET- DATA IN PUBLISHED REPORT(S)

TIME PERIOD COVERED- 030372 TO 050074 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 PAGE(S) OF UNBCUND HARDCOPY

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO SETS OF CHARTS OF PRELIMINARY TRAJECTORIES PROVIDED BY JPL. ONE SET OF CHARTS IS FOR THE SPACECRAFT PIONEER E (69-075X LAUNCHED AUGUST 27, 1969, BUT FAILED TO ATTAIN ORBIT), PIONEER F (PIONEER 10 -- 72-012A), AND PIONEER G (PIONEER 11 -- 73-019A). THIS SET CAN BE USED TO DETERMINE THE POSITION OF THE SPACECRAFT WITH RESPECT TO THE EARTH-SUN LINE AT VARIOUS TIMES INTO THE MISSIONS. A USER CAN ALSO DETERMINE THE ESTIMATED TELEMETRY BIT RATE THAT WILL BE USED AS A FUNCTION OF POSITION OF THE SPACECRAFT WITH RESPECT TO THE SUN, AND AS A FUNCTION OF THE VARIOUS COMMUNICATION ANTENNAS AVAILABLE TO RECEIVE THE DATA. THE REVERSE SIDE OF THE CHART CONTAINS SIMILAR INFORMATION FOR MARINER 71 (MARINER 9 -- 71-051A), MARINER J (MARINER VENUS-MERCURY TO BE LAUNCHED IN 1973), HELIOS (TO BE LAUNCHED IN 1974), AND PIONEER 9 (69-100A) SUPERIMPOSED ON THE PIONEER E, F, AND G TRAJECTORIES. THE SECOND SET OF CHARTS IS SIMILAR TO THE FIRST BUT CONTAINS MARINER 9, PIONEER 10, PIONEER G, MARINER J, AND HELIOS A ON ONE SIDE, AND PIONEER 10 AND PIONEER 11 ON THE OTHER SIDE. BOTH SETS OF CHARTS CAN BE USED TO DETERMINE THE DIRECT LINE OF SIGHT VIEWING PERIOD.

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SPACECRAFT COMMON NAME- APOLLO 16 CSM NSSDC ID 72-031A  
ALTERNATE NAMES-

LAUNCH DATE- 04/16/72 SPACECRAFT WEIGHT IN ORBIT- 48606. KG

FUNDING AGENCY- NASA-OMSF

DATE LAST SPACECRAFT DATA RECORDED-042772  
SPACECRAFT STATUS OF OPERATION- INOPERABLE

EPOCH DATE- 04/20/72 ORBIT TYPE- SELENOCENTRIC ORBIT PERIOD- 120. MIN

APOAPSIS- 120. KM ALT PERIAPSIS- 94. KM ALT INCLINATION- 12. DEG

SPACECRAFT BRIEF DESCRIPTION

APOLLO 16 WAS THE FIFTH MISSION IN THE APOLLO SERIES IN WHICH MEN LANDED ON THE MOON. THE 11-DAY SCIENTIFIC MISSION BEGAN ON APRIL 16, 1972, AT 1754 UT. (THE LAUNCH WAS POSTPONED FROM THE ORIGINALLY SCHEDULED DATE, MARCH 17, OWING TO A DOCKING RING JETTISON MALFUNCTION.) NAVY CAPTAIN JOHN W. YOUNG AND AIR FORCE LIEUTENANT CHARLES W. DUKE LANDED ON THE LUNAR SURFACE IN THE LUNAR MODULE (LM) ON APRIL 21. NAVY LIEUTENANT THOMAS K. MATTINGLY REMAINED IN THE COMMAND MODULE (CM) PERFORMING SCIENTIFIC EXPERIMENTS WHILE THE CM WAS IN AN EQUATORIAL ORBIT ABOUT THE MOON. THE LM LANDED IN THE DESCARTES REGION OF THE MOON AT APPROXIMATELY 16 DEG E, 9 DEG S. AN APOLLO LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP) WAS DEPLOYED ON THE SURFACE, TERRAIN SAMPLES WERE ACQUIRED, AND PHOTOGRAPHS WERE OBTAINED BY THE SURFACE ASTRONAUTS AND FROM THE CM USING 16-, 35-, AND 70-MM FILM, 5-BY 5-IN. PANORAMIC FILM, AND 5-IN. MAPPING FILM. THE SURFACE ASTRONAUTS ALSO TESTED THE SECOND LUNAR ROVING VEHICLE TO BE TAKEN TO THE MOON BY EXPLORING REGIONS WITHIN 4 KM OF THE LM LANDING SITE. A SUBSATELLITE CARRYING AN EXPERIMENT PACKAGE WAS LAUNCHED INTO LUNAR ORBIT ON APRIL 24, 1972 AND IMPACTED WITH THE MOON AFTER 425 REVOLUTIONS ON MAY 29, 1972. THE CM AND LM REJOINED AND THE CM RETURNED TO EARTH, LANDING IN THE PACIFIC OCEAN ON APRIL 27, 1972.

EXPERIMENT NAME- HANDHELD PHOTOGRAPHY

NSSDC ID 72-031A-01

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST EXPERIMENT DATA RECORDED-042772  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE HANDHELD PHOTOGRAPHY EXPERIMENT INCLUDED 3 CAMERAS EACH ON THE COMMAND MODULE AND ON THE LUNAR MODULE. ON THE CM THERE WAS A 70-MM HASSELBLAD ELECTRIC CAMERA (HEC), A 16-MM DATA ACQUISITION CAMERA (DAC), AND A 35-MM NIKON CAMERA. FOR THE LUNAR SURFACE, THERE WAS A 16-MM DATA ACQUISITION CAMERA (LDAC), AND TWO 70-MM HASSELBLAD ELECTRIC CAMERAS (HEC), ONE WITH A 500-MM TELEPHOTO LENS, AND THE OTHER WITH A 60-MM LENS. THE TYPES OF FILM USED IN THESE CAMERAS WERE II A-0 (SPECTROSCOPIC) FOR THE S-177 UV PHOTOGRAPHY EXPERIMENT, 50-368 AND 50-168 COLOR FILMS, AND 3414 (LBW), 2485 (VHBW), AND 3401 BLACK AND WHITE FILMS. PHOTOGRAPHIC TARGETS ON THE SURFACE OF THE MOON WERE -- CORE TUBE SAMPLES, IN SITU ROCK SAMPLES (SOME STEREOSCOPIC), PANORAMAS OF THE LANDING SITE AREA AND SURROUNDINGS, ALSEP INSTRUMENTS AFTER DEPLOYMENT, TRENCHES, INTERESTING CRATERS, OTHER SURFACE FEATURES, AND FIELD RELATIONSHIPS. FROM ORBIT, THE PHOTOGRAPHIC TARGETS WERE THE EARTH AND MOON IN UV (EXPERIMENT S-177), THE LUNAR FAR SIDE AND EASTERN LIMB REGIONS, THE SOLAR CORONA AT SUNSET AND SUNRISE TIMES, THE EARTH'S LIMB DURING SOLAR ECLIPSE, A COMET IF AVAILABLE, THE LUNAR LIBRATION REGION, ZODIACAL LIGHT, THE NEAR TERMINATOR REGIONS OF THE LUNAR SURFACE, AND THE LUNAR SURFACE IN EARTHSHINE. THE VARIOUS CAMERAS HAD SEVERAL DIFFERENT LENSES WITH DIFFERENT FOCAL LENGTHS. THE HEC HAD LENSES WITH FOCAL LENGTHS OF 60, 80, 105, AND 250 MM. THE 35-MM CAMERA HAD A 55-MM FOCAL LENGTH, AND THE 16-MM DAC HAD LENSES OF 18- AND 10-MM FOCAL LENGTH. SIXTY-THREE HR OF X-RAY AND ALPHA PARTICLE DATA AND 56 HR OF GAMMA-RAY DATA WERE ACQUIRED. SEVENTY-FIVE PERCENT OF THE LOW-LIGHT LEVEL TARGETS WERE ACQUIRED.

DATA SET NAME- LUNAR SURFACE 70-MM HASSELBLAD  
PHOTOGRAPHY ON B/W POSITIVE FILM

NSSDC ID 72-031A-01A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 480 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 480 FRAMES OF 70-MM B/W POSITIVES OF THE MOON FROM THE APOLLO 16 MISSION. THE PHOTOS WERE TAKEN PRIMARILY FROM THE LUNAR SURFACE. THE QUALITY IS GENERALLY VERY GOOD. A FEW FRAMES HAVE VERTICAL STREAKS RESULTING FROM FOGGING BY LIGHT LEAKAGE.

DATA SET NAME- DIM LIGHT PHOTOGRAPHY ON 35-MM B/W  
NEGATIVE FILM

NSSDC ID 72-031A-01B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041672 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 100 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 35-MM FILM USED FOR DIM-LIGHT PHOTOGRAPHY ON THE APOLLO 16 MISSION. THE FOLLOWING OBJECTS WERE PHOTOGRAPHED -- SKYLAB CONTAMINATION, ZODIACAL LIGHT, EARTHSHINE ON THE MOON, GUM NEBULA, GALACTIC STAR CLUSTERS, GEGENSCHNEIN/ MOUTON POINT, GEGENSCHNEIN CALIBRATION, WATER DROPLET IN THE CABIN, AND CALIBRATION FRAMES. STAR IMAGES ARE TRAILED, AS SPACECRAFT MOTION WAS NOT COMPENSATED.

DATA SET NAME- COMPLETE MOVIE PHOTOGRAPHY ON 16-MM COLOR  
POSITIVE FILM

NSSDC ID 72-031A-01C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041672 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 63800 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 16-MM COLOR POSITIVE FILM SHOWING THE APOLLO 16 SPACECRAFT DOCKING, LANDING SEQUENCES, AND SURFACE ACTIVITIES. THE MAGAZINES HAVE BEEN SPLICED INTO SEQUENTIAL ORDER AND SHOW UNDOCKING AT THE MOON, SEPARATION OF THE LM FROM THE CM, LUNAR SURFACE FROM ORBIT, LANDING, SURFACE EVA ACTIVITIES, LIFTOFF FROM THE MOON, APPROACH FOR REDOCKING, SUBSATELLITE RELEASE, TRANSEARTH EVA ACTIVITY, AND RETROFIRE. ONE MAGAZINE SHOWS CABIN ACTIVITY, AND ZERO-G EFFECTS ON OBJECTS. THE QUALITY OF THE FILMS IS GENERALLY EXCELLENT.

DATA SET NAME- ORBITAL CABIN PHOTOGRAPHY ON 70-MM B/W POSITIVE FILM      NSSDC ID 72-031A-01D

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041772 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 930 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 70-MM B/W POSITIVE FILM TAKEN DURING LUNAR ORBIT. THIS PHOTOGRAPHY SHOWS THE BEHAVIOR OF PARTICLES IN A FLUID UNDER ORBITAL CONDITIONS, THE TEMPERATURE (IN FAHRENHEIT), AND THE TIME RECORDED FOR THE ELECTROPHORESIS DEMONSTRATION EXPERIMENT. THE QUALITY OF THE FILM IS GOOD.

DATA SET NAME- MOVIE PHOTOGRAPHY ON 16-MM B/W NEGATIVE FILM      NSSDC ID 72-031A-01E

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041672 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1320 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL (THREE MAGAZINES ) OF 16-MM B/W FILM TAKEN DURING THE APOLLO 16 MISSION. THE THREE MAGAZINES SHOW DETAILS FROM MOON ORBIT, ASTRONAUTS ON THE SURFACE WHILE THE CAMERA WAS MOUNTED ON THE LM, AND GRAY SCALES. THE QUALITY OF THE LATTER MAGAZINE IS VERY POOR, THE QUALITY OF THE MIDDLE MAGAZINE IS POOR, AND THE QUALITY OF THE FIRST MAGAZINE IS FAIR.

DATA SET NAME- ORBITAL AND SURFACE PHOTOGRAPHY ON 70-MM COLOR POSITIVE FILM      NSSDC ID 72-031A-01F

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041672 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1499 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 11 ROLLS (1499 FRAMES) OF 70-MM COLOR POSITIVE TRANSPARENCIES. THE MAJORITY OF THE COVERAGE IS OF THE LUNAR SURFACE TAKEN ON THE SURFACE, BUT A FEW FRAMES TAKEN FROM LUNAR ORBIT ARE INCLUDED. THE QUALITY OF THE TRANSPARENCIES IS GENERALLY GOOD, BUT A FEW FRAMES HAVE BEEN FOGGED OR LIGHT STRUCK.

DATA SET NAME- TELEVISION PHOTOGRAPHY ON 16-MM KINESCOPIC FILM      NSSDC ID 72-031A-01G

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 34 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF APPROXIMATELY 21 HR RUNNING TIME TELEVISION COVERAGE OF THE SURFACE ACTIVITIES AT THE DESCARTES HIGHLANDS AREA ON THE MOON DURING THE APOLLO 16 MISSION. THE DATA HAVE BEEN TRANSFERRED TO 16-MM KINESCOPIC FILM.

DATA SET NAME- COMPLETE HASSELBLAD PHOTOGRAPHY ON  
MICROFICHE

NSSDC ID 72-031A-01H

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 041672 TO 042772 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 119 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH CONSISTS OF THE COMPLETE SET OF APOLLO 16 HASSELBLAD PHOTOGRAPHY, IS RECORDED ON BLACK AND WHITE MICROFICHE TOGETHER WITH THE METRIC PHOTOGRAPHY FROM APOLLOS 15 AND 16 AND THE HASSELBLAD PHOTOGRAPHY FROM APOLLO 15. THE IMAGERY CONSISTS MAINLY OF VIEWS OF THE LUNAR SURFACE FROM ORBIT, INCLUDING BOTH NEARSIDE AND FAR SIDE FEATURES. THE PHOTOGRAPHY HAS BEEN REDUCED TO MICROFICHE FORMAT. THIS DATA SET IS INTENDED PRIMARILY FOR USE AS AN INDEX TO BETTER QUALITY COPIES WHICH ARE AVAILABLE. MOST OF THE FRAME NUMBERS ARE HANDWRITTEN AND APPEAR AT THE LEFT MARGIN OF EACH FRAME. SOME NUMBERS HAVE BEEN CUT OFF IN THE REPRODUCTION PROCESS AND ARE ILLEGIBLE.

EXPERIMENT NAME- PANORAMIC PHOTOGRAPHY

NSSDC ID 72-031A-02

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, DI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-042572

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS A PHOTOGRAPHIC TASK ACCOMPLISHED ABOARD THE COMMAND SERVICE MODULE (CSM) IN THE SCIENTIFIC INSTRUMENT MODULE BAY (SIM BAY). THE ITEK PANORAMIC CAMERA HAD A 610-MM (24 IN.) FOCAL LENGTH LENS AND USED 127- BY 1219-MM (5- BY 48-IN.) B/W 3414 AND 3404 FILM. THE CAMERA WAS OPERATED AUTOMATICALLY AND PROVIDED STEREOSCOPIC COVERAGE BY TILTING FORWARD AND AFT ON A GIMBAL. THIS MOTION WAS COMPENSATED BY THE FORWARD MOTION OF THE SPACECRAFT. THE PURPOSE OF THE EXPERIMENT WAS TO OBTAIN HIGH-RESOLUTION (1 TO 2 M) PANORAMIC PHOTOGRAPHS OF THE LUNAR SURFACE AT 100-KM ALTITUDE WITH STEREOSCOPIC AND MONOSCOPIC COVERAGE. THE EXPERIMENT WILL HELP THE PRINCIPAL INVESTIGATORS FOR THE OTHER SIM EXPERIMENTS TO CORRELATE THEIR EXPERIMENTAL DATA WITH LUNAR SURFACE TERRAIN FEATURES. TARGETS INCLUDED

FARSIDE FEATURES, EASTERN LIMB AREAS, NEARSIDE MARIA, THE LM LANDING SITE IN THE DESCARTES REGION, NEAR-TERMINATOR REGIONS (UNDER VERY LOW ANGLE ILLUMINATION PROVIDING HIGH RELIEF OF THE TERRAIN), AND POSSIBLE APOLLO 17 LANDING AREAS.

DATA SET NAME- COMPLETE PANORAMIC CAMERA PHOTOGRAPHY ON NSSDC ID 72-031A-02A  
5- BY 47.5-IN. B/W POSITIVE FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1586 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET IS COMPOSED OF 23 ROLLS OF FILM THAT CONTAIN 1586 B/W MASTER POSITIVE REPRODUCTIONS, PRODUCED FROM THE ORIGINAL NEGATIVES, FROM THE APOLLO 16 PANORAMIC CAMERA. THE PHOTOGRAPHS WERE OBTAINED DURING EIGHT PASSES, ALL IN THE STEREO MODE, FROM ALTITUDES BETWEEN 103 AND 125 KM ABOVE THE LUNAR SURFACE AND FOR APPROXIMATELY 34 MIN DURING TRANSEARTH COAST. STEREO PAIR NUMBERS ARE SEPARATED BY FIVE DIGITS, E.G., FRAMES 4618 AND 4623 MAKE UP ONE STEREO PAIR. IN GENERAL, THE PANORAMIC CAMERA PHOTOGRAPHS SUFFER FROM OVEREXPOSURE, BUT THOSE TAKEN NEAR THE TERMINATOR AND AT LOW LIGHT LEVELS ARE EXCELLENT.

DATA SET NAME- PANORAMIC CAMERA INDEX ON MICROFILM NSSDC ID 72-031A-02B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS CONTAINED ON ONE ROLL OF 16-MM MICROFILM, IS AN INDEX TO THE 1586 PANORAMIC CAMERA PHOTOGRAPHS. THE INDEX INCLUDES INFORMATION ON THE NUMBER AND IDENTITY OF PASSES ON WHICH THESE PHOTOS WERE TAKEN AND THE NUMBER OF PHOTOS TAKEN ON EACH PASS. THE PHOTOS ARE ALSO INDEXED IN CHRONOLOGICAL ORDER AND BY LONGITUDE, IN 10-DEG INCREMENTS. IN THE LONGITUDE LISTING, WITHIN THE 10-DEG INCREMENTS, THE PHOTOS ARE LISTED CHRONOLOGICALLY SO THAT ALL PHOTOS TAKEN ON A SINGLE REVOLUTION WITHIN THAT 10-DEG SEGMENT ARE LISTED TOGETHER. THE INDEX INCLUDES THE FOLLOWING PARAMETERS -- (1) NASA PHOTO NUMBER, (2) CAMERA LOCKING DIRECTION, (3) STEREO FRAME NUMBER, (4) DESCRIPTION, (5) LATITUDE AND LONGITUDE OF PRINCIPAL POINT, (6) ALTITUDE, (7) REVOLUTION NUMBER, AND (8) SUN ELEVATION ANGLE.

DATA SET NAME- PANORAMIC CAMERA SUPPORT DATA ON NSSDC ID 72-031A-02C  
MICROFILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 16-MM MICROFILM OF SUPPORTING DATA FOR THE PANORAMIC CAMERA PHOTOGRAPHY. DEFINITIONS AND EXPLANATIONS OF THE PARAMETERS ARE GIVEN. THE PARAMETERS AND INFORMATION GIVEN ARE -- DATE, TIME, STATE VECTORS, LONGITUDE AND LATITUDE OF THE NADIR POINT, LONGITUDE AND LATITUDE OF CAMERA AXIS INTERSECT, SPACECRAFT ALTITUDE AND RADIUS, SCALE FACTOR, MEAN ALTITUDE RATE, AZIMUTH AND VELOCITY VECTOR, HORIZONTAL VELOCITY, TILT AZIMUTH AND ITS SIGMA, TILT ANGLE AND ITS SIGMA, SUN AZIMUTH AND ELEVATION AT PRINCIPAL GROUND POINT, LONGITUDE AND LATITUDE OF SUBSOLAR POINT, ALPHA (ONE-HALF PHASE ANGLE), SWING ANGLE AND ITS SIGMA, SPACECRAFT ALTITUDE (LASER), NORTH DEVIATION ANGLE, X-TILT AND ITS SIGMA, Y-TILT AND ITS SIGMA, HEADING AND ITS SIGMA, AND LASER SLANT ANGLE. IN ADDITION, THE TRANSFORMATION MATRIX FROM SELENOCENTRIC TO CAMERA, DIRECTION COSINES, TRANSFORMATION MATRIX FROM LOCAL HORIZONTAL TO CAMERA, PHOTOGRAPHIC FOOTPRINT LONGITUDE AND LATITUDE, AND DIRECTION TO STELLAR PHOTO CENTER ARE GIVEN.

EXPERIMENT NAME- METRIC PHOTOGRAPHY

NSSDC ID 72-031A-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-JSC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST USABLE EXPERIMENT DATA RECORDED-042572  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO OBTAIN HIGH-QUALITY METRIC PHOTOGRAPHS OF THE LUNAR SURFACE TAKEN SIMULTANEOUSLY WITH PHOTOGRAPHS FROM THE STELLAR CAMERA. A LASER ALTIMETER, WHICH WAS USED IN CONJUNCTION WITH THE MAPPING CAMERA, ACCURATELY MEASURED THE DISTANCE TO THE TERRAIN BEING PHOTOGRAPHED FOR SELENODETTIC PURPOSES. THE STELLAR PHOTOGRAPHS PROVIDED ACCURATE SPACECRAFT ORIENTATION (ATTITUDE) DATA. THE METRIC CAMERA WAS CAPABLE OF 20-M RESOLUTION FROM AN ORBITAL ALTITUDE OF 100 KM. THE METRIC CAMERA HAD A 76-MM (3-IN) FOCAL LENGTH AND USED 3400 B/W FILM. AND THE F2.8 STELLAR CAMERA USED 3401 B/W FILM. THE CAMERA SYSTEM WAS MOUNTED IN THE SIM BAY OF THE CSM AND OPERATED AUTOMATICALLY. THE TARGETS WERE THE SAME AS THOSE FOR THE PANORAMIC CAMERA--FAR SIDE FEATURES, EASTERN LIMB AREAS, NEAR SIDE MARIA, THE LM LANDING SITE, NEAR-TERMINATOR REGIONS OF THE LOW-ANGLE ILLUMINATION, AND POSSIBLE APOLLO 17 LANDING AREAS. THE PHOTOGRAPHS HAD 78 PERCENT OVERLAP FOR EACH FRAME AND 55 PERCENT SIDE OVERLAP BETWEEN CONSECUTIVE REVOLUTIONS.

DATA SET NAME- COMPLETE MAPPING CAMERA PHOTOGRAPHY ON  
5-IN. B/W FILM

NSSDC ID 72-031A-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 3480 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF B/W POSITIVE SECOND-GENERATION TRANSPARENCIES OF THE LUNAR SURFACE TAKEN BY THE MAPPING (METRIC) CAMERA MOUNTED IN THE SIM BAY DURING THE APOLLO 16 MISSION. THE FRAME FORMAT IS 4.5 BY 4.5 IN. SUCCESSIVE FRAMES PROVIDE 78 PERCENT OVERLAP FOR STEREO COVERAGE. THE QUALITY IS GENERALLY VERY GOOD.

DATA SET NAME- MAPPING CAMERA PHOTOGRAPHY INDEX ON MICROFILM NSSDC ID 72-031A-03B

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH IS CONTAINED ON ONE ROLL OF 16-MM MICROFILM, IS AN INDEX TO THE 29.41 METRIC (MAPPING) CAMERA PHOTOGRAPHS. THE INDEX INCLUDES INFORMATION ON THE NUMBER AND IDENTITY OF PASSES ON WHICH THE PHOTOS WERE TAKEN AND THE NUMBER OF FRAMES ON EACH REVOLUTION. THE INDEX OF PHOTOS IS LISTED CHRONOLOGICALLY AND BY LONGITUDE, IN 10-DEG INCREMENTS. WITHIN THE 10-DEG-INCREMENTS INDEX, THE PHOTOS ARE LISTED CHRONOLOGICALLY SO THAT ALL PHOTOS TAKEN ON A SINGLE REVOLUTION WITHIN A 10-DEG SEGMENT ARE LISTED TOGETHER. THE INDEX INCLUDES THE FOLLOWING PARAMETERS -- (1) NASA PHOTO NUMBER, (2) REVOLUTION NUMBER, (3) ALTITUDE, (4) LATITUDE AND LONGITUDE OF PRINCIPAL POINT, (5) CAMERA TILT, (6) AZIMUTH, (7) SUN ELEVATION ANGLE, AND (8) DESCRIPTION.

DATA SET NAME- MAPPING CAMERA SUPPORT DATA ON MICROFILM NSSDC ID 72-031A-03C

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE ROLL OF 16-MM MICROFILM OF SUPPORTING DATA FOR THE METRIC (MAPPING) CAMERA PHOTOGRAPHY. THE INFORMATION FOR EACH FRAME CONSISTS OF DATE, TIME, STATE VECTORS, LONGITUDE AND LATITUDE OF NADIR POINT, LONGITUDE AND LATITUDE OF CAMERA AXIS INTERSECT, SPACECRAFT ALTITUDE AND RADIUS, SCALE FACTOR, MEAN ALTITUDE RATIO, AZIMUTH VELOCITY VECTOR, HORIZONTAL VELOCITY, CAMERA ORIENTATION INFORMATION, LONGITUDE AND LATITUDE OF SUBSOLAR POINT, SPACECRAFT ALTITUDE (LASER), SPACECRAFT HEADING AND ITS SIGMA, AND LASER SLANT ANGLE. IN ADDITION, THE TRANSFORMATION MATRIX FROM SELENCENTRIC TO CAMERA, DIRECTION COSINES, TRANSFORMATION MATRIX FROM LOCAL HORIZON TO CAMERA, PHOTOGRAPHIC FOOT PRINT LONGITUDE AND LATITUDE, AND DIRECTION TO STELLAR PHOTO CENTER ARE GIVEN. EXPLANATION AND DEFINITIONS OF THE PARAMETERS ARE GIVEN WITH THE SAME KIND OF DATA GIVEN FOR THE PANORAMIC CAMERA (SEE DATA SET FOR 72-031A-02C).



DATA SET NAME- COMPLETE MAPPING CAMERA PHOTOGRAPHY ON NSSDC ID 72-031A-03D  
4- BY 6-IN. B/W POSITIVE FILM

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 118 SHEET(S) OF B/W MICROFICHE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH CONSISTS OF THE COMPLETE SET OF APOLLO 16 MAPPING (METRIC) CAMERA PHOTOGRAPHY, IS RECORDED ON BLACK AND WHITE MICROFICHE TOGETHER WITH THE METRIC PHOTOGRAPHY FOR APOLLO 15 AND THE HASSELBLAD 70-MM PHOTOGRAPHY FROM APOLLOS 15 AND 16. THE IMAGERY CONSISTS OF LUNAR FEATURES ALONG THE ORBITAL PATH OF THE COMMAND MODULE, INCLUDING BOTH NEARSIDE AND FAR SIDE FEATURES. THE PHOTOGRAPHY HAS BEEN REDUCED TO MICROFICHE FORMAT. THIS DATA SET IS INTENDED PRIMARILY FOR USE AS AN INDEX TO BETTER QUALITY COPIES WHICH WILL BE AVAILABLE SOON. THE FRAME NUMBERS APPEAR IN THE UPPER MARGIN OF EACH PHOTO. THE QUALITY OF THE PHOTOGRAPHS IS GENERALLY VERY GOOD EXCEPT FOR OCCASIONAL DIRT SPECKS AND SCRATCHES.

EXPERIMENT NAME- ALPHA PARTICLE SPECTROMETER NSSDC ID 72-031A-09

ORIGINAL EXPERIMENT INSTITUTION- AS+E

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P. GORENSTEIN HARVARD COLLEGE OBS CAMBRIDGE, MA

DATE LAST USABLE EXPERIMENT DATA RECORDED-042572  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT WAS DESIGNED TO DETERMINE THE LUNAR SURFACE RADON EVOLUTION USING ALPHA PARTICLE MEASUREMENT TECHNIQUES AND, IN SO DOING, TO ASSIST THE OTHER GEOCHEMICAL EXPERIMENTS (GAMMA RAY SPECTROMETER, 72-031A-07, AND X-RAY FLUORESCENCE, 72-031A-08) IN DETERMINING LUNAR SURFACE COMPOSITION AND IN IDENTIFYING LOCALIZED SOURCES OF ENHANCED RADON EMISSION THAT MAY CORRESPOND TO REGIONS OF ENHANCED LUNAR OUTGASSING. THE EXPERIMENT WAS INTENDED TO OBTAIN DATA ON THE GROSS RATE OF THE LUNAR SURFACE RADON EVOLUTION AND ON LOCALIZED SOURCES OF ENHANCED RADON EMISSION FOR USE IN CONSTRUCTING A RADIATION MAP SHOWING LUNAR SURFACE INHOMOGENEITIES. MEASUREMENTS OF DEEP SPACE BACKGROUND ALPHA PARTICLES WERE ALSO MADE DURING LUNAR ORBIT AND TRANSEARTH COAST CONCURRENT WITH THE X-RAY FLUORESCENCE EXPERIMENT. THE SPECTROMETER WAS COMPOSED OF A 2 BY 5 ARRAY OF 10 SILICON, SURFACE BARRIER DETECTORS HOUSED IN THE SAME ENCLOSURE AS THE X-RAY FLUORESCENCE EXPERIMENT. EACH OF THE 10 SENSORS LOOKED TOWARD THE MOON WITH A 90-DEG FULL-ANGLE FIELD OF VIEW. EACH SENSOR HAD ITS OWN PREAMPLIFIER. THE OUTPUTS OF WHICH FED INTO A COMMON ANALOG-TO-DIGITAL CONVERTER WHICH, IN TURN, SORTED THE PULSES INTO 256 ENERGY CHANNELS IN THE RANGE 4.5 TO 9.0 MEV. THE INSTRUMENTATION WAS DESIGNED TO TURN OFF THE OTHER NINE DETECTORS ONCE AN EVENT WAS REGISTERED IN ONE OF THE DETECTORS UNTIL THE EVENT HAD BEEN ANALYZED. PULSE HEIGHT CHANNEL INFORMATION FOR A BIT RATE LIMITED VALUE OF UP TO 10 EVENTS PER SECOND WAS TELEMETERED. THE AVERAGE ALPHA PARTICLE RATE ENCOUNTERED WAS ABOUT 1 COUNT/SEC. THE CM CONTROLLED THE

ACTIVATION/DEACTIVATION OF THE EXPERIMENT. ALL 10 DETECTORS PERFORMED NORMALLY THROUGHOUT THE MISSION.

DATA SET NAME- 256-CHANNEL PULSE HEIGHT ANALYZER DATA      NSSDC ID 72-031A-09A  
ON MAGNETIC TAPE

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 041972 TO 042572 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET-      2 REEL(S) OF MAGNETIC TAPE

DATA SET BRIEF DESCRIPTION

THIS DATA SET, WHICH WAS SUBMITTED BY THE EXPERIMENTER, CONTAINS REDUCED PULSE HEIGHT ANALYZER DATA FROM THE 256-CHANNEL PULSE HEIGHT ANALYZER, ALPHA PARTICLE SPECTROMETER IN CHRONOLOGICAL ORDER. THE DATA ARE ON TWO 9-TRACK, 800-BPI, BINARY MAGNETIC TAPES GENERATED ON AN IBM 360 COMPUTER. THERE ARE A VARIABLE NUMBER OF PHYSICAL RECORDS PER TAPE, WITH 20 LOGICAL RECORDS PER PHYSICAL RECORD, AND EACH LOGICAL RECORD IS FORTY-EIGHT 8-BIT BYTES IN LENGTH. EACH LOGICAL RECORD CORRESPONDS TO ONE SEC OF SPACECRAFT TELEMETRY, I.E., TO ONE OF THE GOOD RECORDS IN THE UNREDUCED TELEMETRY TAPE. A 'GOOD' UNREDUCED TELEMETRY RECORD IS ONE THAT HAS NO MORE THAN 19 'BAD' DATA FLAGS SET. EACH RECORD CONTAINS THE TIME, THREE TEMPERATURE MEASUREMENTS, DATA FLAGS, 10 PULSE HEIGHT CHANNEL NUMBERS AND DETECTOR IDENTIFICATION FOR EACH, AND SEVERAL HOUSEKEEPING PARAMETERS.

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SPACECRAFT COMMON NAME- APOLLO 16 LM      NSSDC ID 72-031C  
ALTERNATE NAMES-      ALSEP 16, LEM 16, ROVER 16, LUNAR MODULE 16

LAUNCH DATE- 04/16/72      SPACECRAFT WEIGHT IN ORBIT-      16400. KG

FUNDING AGENCY- NASA-DMSF

SPACECRAFT STATUS OF OPERATION- NORMAL

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 16 LUNAR MODULE (LM) CONSISTED OF A LUNAR LANDING CRAFT, A LUNAR ROVING VEHICLE, (LRV) AND AN APOLLO LUNAR SURFACE EXPERIMENT PACKAGE (ALSEP), THAT CONTAINED SCIENTIFIC EXPERIMENTS TO BE LEFT ON THE LUNAR SURFACE AFTER COMPLETION OF THE MANNED PORTION OF THE MISSION. THE LM LANDED IN THE DESCARTES HIGHLAND REGION JUST NORTH OF THE CRATER DOLLAND AT 8 DEG 59 MIN 55 SEC S LATITUDE, AND 15 DEG 31 MIN 12 SEC E LONGITUDE. THE ALSEP WAS DEPLOYED AT THE LANDING SITE. THE LRV WAS USED DURING EXTRA VEHICULAR ACTIVITIES (EVA) TO EXTEND THE RANGE OF MANNED LUNAR EXPLORATION. THE NUCLEAR POWERED ALSEP PACKAGE CONTAINED SEISMIC, MAGNETIC FIELD, HEAT FLOW, LUNAR SOIL COMPOSITION, SOLAR WIND, AND COSMIC-RAY EXPERIMENTS.

EXPERIMENT NAME- LUNAR SURFACE MAGNETOMETER      NSSDC ID 72-031C-03

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - C.P. SONETT NASA-ARC MOFFETT FIELD, CA  
OI - P. DYAL NASA-ARC MOFFETT FIELD, CA

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THIS EXPERIMENT CONSISTED OF A TRIAXIAL FLUXGATE MAGNETOMETER INTENDED TO MEASURE THE LOCAL MAGNETIC FIELD AT THE SURFACE OF THE MOON. IT WAS INTENDED TO YIELD INFORMATION ON THE MOON'S INTERNAL ELECTRICAL CHARACTERISTICS. THE EXPERIMENT CONTINUED TO FUNCTION NORMALLY AS OF FEBRUARY 1973.

DATA SET NAME- TOTAL MAGNETIC FIELD MAGNITUDE AND COMPONENTS ON MICROFILM NSSDC ID 72-031C-03A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 042172 TO 042472 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 16-MM MICROFILM GENERATED AT NSSDC FROM HARDCOPY ORIGINAL PLOTS SUBMITTED BY THE EXPERIMENTER. EACH FRAME CONTAINS 30 OR 60 MIN OF DATA. THREE- OR SIX-SEC AVERAGE VALUES OF MAGNETIC FIELD MAGNITUDE AND OF EACH OF THREE CARTESIAN COMPONENTS ARE PLOTTED PER FRAME. THERE ARE VERY FEW DATA GAPS.

EXPERIMENT NAME- FIELD GEOLOGY

NSSDC ID 72-031C-05

ORIGINAL EXPERIMENT INSTITUTION- U OF TEXAS

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - W.R. MUEHLBERGER U OF TEXAS AUSTIN, TX

DATE LAST USABLE EXPERIMENT DATA RECORDED-042472  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE LUNAR FIELD GEOLOGY INVESTIGATION WAS TO OBTAIN DATA THAT WILL PROVIDE A BETTER UNDERSTANDING OF THE DESCARTES HIGHLANDS AREA AND THE PROCESSES WHICH HAVE FORMED AND MODIFIED THIS SURFACE THROUGH THE STUDY OF DOCUMENTED GEOLOGICAL FEATURES AND RETURNED LUNAR SAMPLES. THE MAJOR EQUIPMENT THAT WAS USED INCLUDED HAMMER, TONGS, EXTENSION HANDLE, ADJUSTABLE SAMPLING SCOOP, RAKE, GNOMON/COLOR PATCH, SPRING SCALE, CORE TUBES/CAPS, SAMPLE BAGS--BOTH DOCUMENTED AND GENERAL COLLECTION, SPECIAL ENVIRONMENTAL CONTAINERS, AND SAMPLE RETURN CONTAINERS. THE HAND TOOLS WERE LOCATED ON THE APOLLO LUNAR HAND TOOL CARRIER (ALHTC) ATTACHED TO THE LUNAR ROVER'S AFT PALLET. ATTACHMENT OF TOOLS AND COLLECTION BAGS COULD BE MADE ON THE ASTRONAUTS' PORTABLE LIFE SUPPORT SYSTEM (PLSS). PHOTOGRAPHY

REQUIREMENTS FOR THIS EXPERIMENT WERE SATISFIED BY THE HASSELBLAD ELECTRIC DATA CAMERA WITH A 60-MM FOCAL LENGTH LENS AND BY REAL-TIME TV TRANSMISSIONS. SELECTION OF EXPERIMENT SITES WAS MADE BY THE ASTRONAUTS.

DATA SET NAME- GEOLOGIC SAMPLE PHOTOGRAPHY ON 4- BY 5-IN. COLOR POSITIVE FILM  
NSSDC ID 72-031C-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 042172 TO 042472 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 652 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF 652 4- BY 5-IN. COLOR TRANSPARENCIES OF GEOLOGIC SAMPLES COLLECTED AT THE DESCARTES REGION OF THE MOON ON THE APOLLO 16 MISSION. THE PHOTOS SHOW THE LUNAR ROCK SAMPLES IN VARIOUS ORIENTATIONS DESIGNATED BY COMPASS DIRECTIONS RELATED TO THE ORIENTATION OF THE SAMPLE IN SITU ON THE LUNAR SURFACE. ALSO, ON SOME FRAMES, TOP AND BOTTOM SURFACES ARE DESIGNATED. THE SAMPLES ARE SHOWN BENEATH THE DESIGNATED SAMPLE NUMBERS AND BESIDE A CM RULER. THE PHOTOGRAPHY IS GENERALLY VERY GOOD.

EXPERIMENT NAME- LUNAR PORTABLE MAGNETOMETER  
NSSDC ID 72-031C-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-ARC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - P. DYAL NASA-ARC MOFFETT FIELD, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-042372

EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE OBJECTIVE OF THIS EXPERIMENT WAS TO OBTAIN MORE SCIENTIFIC INFORMATION ON THE LOCATION, STRENGTH, AND DIMENSIONS OF LOCAL MAGNETIC SOURCES. THE LUNAR PORTABLE MAGNETOMETER WAS DEPLOYED BY THE ASTRONAUTS, WHO THEN TOOK MEASUREMENTS AT VARIOUS POSITIONS NEAR THE LANDING SITE. THE INSTRUMENT CONSISTED OF THREE ORTHOGONAL FLUXGATE MAGNETIC SENSORS. AFTER MEASUREMENTS WERE COMPLETED, THE ASTRONAUTS TURNED THE EXPERIMENT OFF AND LEFT THE HARDWARE ON THE LUNAR SURFACE.

DATA SET NAME- TOTAL MAGNETIC FIELD MAGNITUDE AND COMPONENTS  
NSSDC ID 72-031C-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042372 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 BOOK(S) OR BOUND VOLUME(S)

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF VALUES OF THE OBSERVED MAGNETIC FIELD MAGNITUDE AND COMPONENTS TAKEN AT FOUR IDENTIFIED LUNAR SURFACE SITES BY THE

APOLLO 16 ASTRONAUTS. THE DATA ARE FOUND IN AN UNPUBLISHED NASA-ARC REPORT,  
'LUNAR PORTABLE MAGNETOMETER DATA.'

EXPERIMENT NAME- SOIL MECHANICS

NSSDC ID 72-031C-09

ORIGINAL EXPERIMENT INSTITUTION- U OF CALIFORNIA, BERK

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - J.K. MITCHELL U OF CALIFORNIA, BERK BERKELEY, CA

DATE LAST USABLE EXPERIMENT DATA RECORDED-042472  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE SOIL MECHANICS EXPERIMENT (S-200) WAS TO OBTAIN DATA ON THE CHARACTERISTICS AND MECHANICAL BEHAVIOR OF THE LUNAR SOIL AT THE SURFACE AND SUBSURFACE AND THE VARIATION OF ITS PROPERTIES IN LATERAL AND VERTICAL DIRECTIONS. THE EQUIPMENT TO BE USED INCLUDED (1) AN ADJUSTABLE SAMPLING SCOOP AND SELF-RECORDING PENETROMETER WITH INTERCHANGEABLE LOAD PLATE AND (2) THREE CONES OF VARIOUS DIAMETERS. FURTHER SOIL TESTING COULD BE DONE AT LRL IN HOUSTON ON RETURNED SOIL SAMPLES, INCLUDING THE CORE TUBE AND OTHER GEOLOGIC SAMPLES, ESPECIALLY THE FINE-GRAINED SOIL SAMPLES. PHOTOGRAPHY REQUIREMENTS OF THIS EXPERIMENT WERE MET WITH A BATTERY-OPERATED 16-MM DATA ACQUISITION CAMERA (DAC) WITH A 10-MM FOCAL LENGTH LENS, A HASSELBLAD ELECTRIC DATA CAMERA (HEDC) WITH A 60-MM FOCAL LENGTH LENS, AND REAL-TIME TV TRANSMISSIONS. THE ASTRONAUTS PERFORMED THE REQUIRED TRENCHING ACTIVITY, PENETROMETER LOAD PLATE AND CONE TESTS, AND SOIL BEHAVIOR/CHARACTERISTIC OBSERVATIONS SUCH AS THE LRV WHEEL/LUNAR SOIL INTERACTION AND LM FOOTPAD/SOIL INTERACTION. AFTER TESTS WERE COMPLETED, AN ASTRONAUT REMOVED THE HEAD FROM THE PENETROMETER AND STOWED IT FOR RETURN TO EARTH. THIS HEAD CONTAINED THE RECORDING DRUM THAT INDICATED THE PENETROMETER TEST RESULTS.

DATA SET NAME- SOIL MECHANICS DATA DOCUMENTATION IN HARD COPY NSSDC ID 72-031C-09A

AVAILABILITY OF DATA SET- DATA AT NSSDC READY FOR DISTRIBUTION

TIME PERIOD COVERED- 042172 TO 042472 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 REEL(S) OF MICROFILM

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF ONE REEL OF 35-MM MICROFILM THAT CONTAINS TABLES AND GRAPHS WITH NOTES AND CORRECTIONS TO THE RAW DATA ON THE CHARACTERISTICS OF THE SOIL SITES IN THE DESCARTES REGION OF THE MOON. THE DATA ARE DIVIDED INTO FOUR SECTIONS, A THROUGH D. SECTION A CONTAINS 10 GRAPHS, ONE EACH FOR LOCATION DESIGNATED AS ON INDEX. THE GRAPHS DEPICT PENETRATION (IN CENTIMETERS) VS STRESS (IN NEWTON/CM SQUARED). THE PENETRATION VARIES FROM 1.8 CM (AT INDEX 16) AT A STRESS OF 1-6.5 NEWTON/CM SQUARED TO 74 CM AT A STRESS OF 3-120 NEWTON/CM SQUARED (AT INDEX 6). SECTION B CONTAINS, FOR EACH INDEX, CALIBRATION RATIOS OR FACTORS FOR APOLLO 16 DATA REDUCTION FOR PENETRATION AND LOAD PARAMETERS, A LOAD CALIBRATION CURVE FOR LOAD (NEWTONS) VS DRUM CIRCUMFERENTIAL DEFLECTION (MILLIMETERS), TABLES OF LUNAR PENETRATION DATA REDUCTION WITH COLUMNS GIVING THE DRUM LOAD



ORBIT AND DURING TRANSLUNAR COAST AND (2) TO OBTAIN LOW-BRIGHTNESS PHOTOGRAPHS OF ASTRONOMICAL AND TERRESTRIAL SOURCES. THE LUNAR SURFACE TARGET PHOTOGRAPHS INCLUDED SPECIFIC SEGMENTS TAKEN IN EARTHSHINE AND LOW LIGHT LEVELS NEAR THE TERMINATOR TO COMPLEMENT THE PHOTOGRAPHS OBTAINED BY THE PANORAMIC AND METRIC (MAPPING) CAMERAS. PHOTOGRAPHS OF DIMLIGHT PHENOMENA SUCH AS THE DIFFUSE GALACTIC LIGHT FROM SELECTED CELESTIAL SUBJECTS, THE SOLAR CORONA, AND THE ZODIACAL LIGHT WERE ACQUIRED FROM ORBIT. COMETS IN THE APPROPRIATE COMBINATION OF TRAJECTORY AND CELESTIAL CONDITIONS WERE ALSO PHOTOGRAPHED. THE EQUIPMENT USED INCLUDED A 16-MM DATA ACQUISITION CAMERA (DAC) WITH AN 18-MM FOCAL LENGTH LENS (A SEXTANT WAS USED WITH THIS CAMERA FOR COMET PHOTOGRAPHY), A 70-MM HASSELBLAD ELECTRIC CAMERA WITH 80-MM AND 25-MM FOCAL LENGTH LENSES, AND A 35-MM NIKON CAMERA WITH A 55-MM FOCAL LENGTH LENS.

DATA SET NAME- COMPLETE MAURER CAMERA PHOTOGRAPHY ON 16-MM COLOR FILM NSSDC ID 72-096A-05A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 120772 TO 121972 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 1 FRAMES

DATA SET BRIEF DESCRIPTION

THIS DATA SET CONSISTS OF TWO REELS (2200 FT) OF 16-MM COLOR PHOTOGRAPHY FROM THE APOLLO 17 MISSION. THERE ARE 12 MAGAZINES OF PHOTOGRAPHS. THE COVERAGE INCLUDES (1) DOCKING NEAR EARTH AFTER BLAST-OFF, INSTRUMENTS, AND EXPERIMENTS, E.G., FLUID FLOW AFTER INJECTION OF A FLUID, OTHER CABIN SHOTS DEMONSTRATING ZERO-G EFFECTS AND ASTRONAUT ACTIVITIES, AND CRESCENT EARTH FROM THE MOON MAGNIFIED BY USE OF VARIOUS LENSES, (2) UNDOCKING OF LUNAR MODULE (LM) FROM COMMAND MODULE (CM), LUNAR SURFACE FROM ORBIT, COMMAND MODULE (CM) -- SERVICE MODULE (SM) FROM LUNAR SURFACE, INCLUDING THE LANDING SITE, LUNAR LANDING, GROUND FROM THE LM, AND PACKAGE DEPLOYMENT, AND (3) LIFT-OFF FROM THE MOON, THE SURFACE DURING ASCENT, TRANSEARTH COAST (TEC) -- EXTRAVEHICULAR ACTIVITY (EVA) AND REENTRY TO EARTH. THE CABIN SCENES WILL BE DELETED WHEN MAGAZINES ARE SPLICED TOGETHER IN CHRONOLOGICAL ORDER AND WILL BE DEPOSITED AT THE TECHNOLOGY APPLICATION CENTER (TAC). THE QUALITY IS GENERALLY EXCELLENT ALTHOUGH SOME FLARE, OVER OR UNDER EXPOSURES, AND UNCONTROLLED CAMERA SEQUENCES OCCUR. COLOR FIDELITY SEEMS TO BE VERY GOOD.

EXPERIMENT NAME- METRIC PHOTOGRAPHY

NSSDC ID 72-096A-07

ORIGINAL EXPERIMENT INSTITUTION- US GEOLOGICAL SURVEY

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - F.J. DOYLE US GEOLOGICAL SURVEY MCLEAN, VA

DATE LAST EXPERIMENT DATA RECORDED-121972  
EXPERIMENT STATUS OF OPERATION- OPERATIONAL OFF

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THIS EXPERIMENT WAS TO OBTAIN FROM ORBIT HIGH-RESOLUTION PHOTOGRAPHS WITH STEREOSCOPIC AND MONOSCOPIC COVERAGE OF THE LUNAR SURFACE. THESE PHOTOS WERE TO HELP OTHER EXPERIMENTERS CORRELATE





FUNDING AGENCY- NASA-OMSF

SPACECRAFT STATUS OF OPERATION- PARTIAL

EPOCH DATE- / / ORBIT TYPE- ORBIT PERIOD-  
APOAPSIS- PERIAPSIS- INCLINATION- DEG

SPACECRAFT BRIEF DESCRIPTION

THE APOLLO 17 LUNAR SURFACE EXPERIMENTS PACKAGE (ALSEP) WAS DEPLOYED BY THE ASTRONAUTS IN THE NORTHEASTERN PORTION OF THE MOON (LATITUDE 20 DEG 10 MIN N, LONGITUDE 30 DEG 48 MIN E) ON THE SOUTHEASTERN RIM OF MARE SERENITATIS IN A DARK DEPOSIT BETWEEN MASS UNITS OF THE SOUTHWESTERN TAURUS MOUNTAINS SOUTH OF LITTRON CRATER. THE ALSEP EXPERIMENTS WERE POWERED BY A NUCLEAR POWER SOURCE AND INCLUDE PASSIVE LUNAR SOIL MECHANICS OBSERVATIONS, STUDY OF THE ATMOSPHERIC AND IONIC ENVIRONMENT OF THE MOON, HEAT LOSS FROM THE LUNAR INTERIOR, FAR UV SPECTROMETER, IR SCANNING RADIOMETER, LUNAR SOUNDER, TRAVERSE GRAVIMETER, LUNAR EJECTA AND METEORITES, LUNAR SEISMIC PROFILING, SURFACE ELECTRICAL PROPERTIES, AND LUNAR SURFACE GRAVITOMETER.

EXPERIMENT NAME- LUNAR FIELD GEOLOGY

NSSDC ID 72-096C-02

ORIGINAL EXPERIMENT INSTITUTION- US GEOLOGICAL SURVEY

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)  
PI - G. SWANN US GEOLOGICAL SURVEY FLAGSTAFF, AZ

DATE LAST EXPERIMENT DATA RECORDED-  
EXPERIMENT STATUS OF OPERATION- INOPERABLE

EXPERIMENT BRIEF DESCRIPTION

THE PURPOSE OF THE LUNAR GEOLOGY INVESTIGATION EXPERIMENT (S-059) WAS TO OBTAIN A BETTER UNDERSTANDING OF THE TAURUS-LITTRON HIGHLANDS AND THE PROCESSES THAT HAVE MODIFIED THE HIGHLAND SURFACE THROUGH THE STUDY OF DOCUMENTED LUNAR GEOLOGICAL FEATURES AND RETURNED LUNAR SAMPLES. THE EQUIPMENT FOR THIS EXPERIMENT INCLUDED A HAMMER, TONGS, AN EXTENSION HANDLE, A LARGE SAMPLING SCOOP, A RAKE, A GNOMON/PHOTOMETRIC CHART, A SAMPLE SCALE (LOCATED IN THE LM ASCENT STAGE), CORE TUBES AND CAPS WITH A FOLLOWER TOOL, DOCUMENTED SAMPLE BAGS, AN LRV SAMPLER, SAMPLE COLLECTION BAGS, SPECIAL SAMPLE CONTAINERS, SAMPLE RETURN BAGS, AND SAMPLE RETURN CONTAINERS. THE USE OF A POWER HEAD AND SPINDLE, A CORE STEM ADAPTER, A TREADLE, A CORE STEM RACK, A CORE STEM EXTRACTOR, A CORE STEM DISPENSER, AN 0.82-M CORE STEM SECTIONS OPEN CORE BIT, A CORE STEM WRENCH, AND A CORE STEM VISE MOUNTED ON THE LRV AFT PALLET MADE IT POSSIBLE TO OBTAIN A DEEP CORE (3.3 M) SAMPLE. HASSELBLAD ELECTRIC CAMERAS (70 MM), WITH 60-MM FOCAL LENGTH LENSES, WERE USED FOR PHOTOGRAPHIC DOCUMENTATION OF THE EXPERIMENT.

DATA SET NAME- PHOTOGRAPHS OF GEOLOGIC SAMPLES ON FOUR- NSSDC ID 72-096C-02A  
BY FIVE-IN. COLOR TRANSPARENCIES

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121072 TO 121372 (AS VERIFIED BY NSSDC)



THE SPACECRAFT AND EXPERIMENTS ARE OPERATING NORMALLY AS OF JANUARY 1973.

EXPERIMENT NAME- TEMPERATURE-HUMIDITY INFRARED  
RADIOMETER (THIR)

NSSDC ID 72-097A-08

ORIGINAL EXPERIMENT INSTITUTION- NASA-GSFC

EXPERIMENT PERSONNEL (PI=PRINCIPAL INVESTIGATOR, OI=OTHER INVESTIGATOR)

PI - A.W. MCCULLOCH

NASA-GSFC

GREENBELT, MD

EXPERIMENT STATUS OF OPERATION- NORMAL

EXPERIMENT BRIEF DESCRIPTION

THE NIMBUS 5 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) WAS DESIGNED TO DETECT EMITTED THERMAL RADIATION IN BOTH THE 10.5- TO 12.5-MICRON REGION (IR WINDOW) AND THE 6.5- TO 7.0-MICRON REGION (WATER VAPOR). THE WINDOW CHANNEL MEASURED CLOUDTOP TEMPERATURES AND WAS CAPABLE OF PRODUCING CLOUD-COVER AND THERMAL GRADIENTS ON LAND AND WATER SURFACES IN CLOUD-FREE AREAS DURING BOTH THE DAY AND NIGHT PORTIONS OF THE ORBIT. THE OTHER CHANNEL OPERATED PRIMARILY AT NIGHT TO MAP THE WATER VAPOR DISTRIBUTION IN THE UPPER TROPOSPHERE AND STRATOSPHERE. SENSOR DATA FROM THESE TWO CHANNELS WERE PRIMARILY USED TO SUPPORT THE OTHER, MORE SOPHISTICATED METEOROLOGICAL EXPERIMENTS ON BOARD NIMBUS 5. THE INSTRUMENT CONSISTED OF A 12.7-CM CASSEGRAIN SYSTEM, A SCANNING MIRROR COMMON TO BOTH CHANNELS, A BEAM SPLITTER, FILTERS, AND TWO GERMANIUM-IMMERSED THERMISTOR BOLOMETERS. IN CONTRAST TO TV, NO IMAGE WAS FORMED WITHIN THE RADIOMETER. INCOMING RADIANT ENERGY WAS COLLECTED BY A FLAT SCANNING MIRROR INCLINED AT 45 DEG TO THE OPTICAL AXIS. THE MIRROR ROTATED AT 48 RPM AND SCANNED IN A PLANE PERPENDICULAR TO THE SPACECRAFT VELOCITY. THE ENERGY WAS FOCUSED ON A DICHROMATIC BEAM SPLITTER, WHICH DIVIDED THE ENERGY SPECTRALLY AND SPATIALLY INTO THE TWO CHANNELS. BOTH CHANNELS OF THE THIR SENSOR TRANSFORMED THE RECEIVED RADIATION INTO AN ELECTRIC OUTPUT (VOLTAGES), WHICH WAS RECORDED ON MAGNETIC TAPE FOR SUBSEQUENT PLAYBACK TO A GROUND ACQUISITION STATION. A SIMILAR EXPERIMENT IS PLANNED FOR NIMBUS-F. THE EXPERIMENT PERFORMED NORMALLY AFTER LAUNCH AND, AS OF JANUARY 1973, REMAINS OPERABLE.

DATA SET NAME- 11.5-MICRON THIR PHOTOFACSIMILE FILM

NSSDC ID 72-097A-08A

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121972 TO 040973 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 42 FRAMES

DATA SET BRIEF DESCRIPTION

ALL THE NIMBUS 5 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR) 11.5-MICRON (WINDOW) DATA PROCESSED TO DATE ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. POSITIVE OR NEGATIVE COPIES OF THE FILM STRIPS ARE AVAILABLE IN UNIFORM DENSITY EXPOSURE IN EITHER TRANSPARENCIES OR PAPER PRINTS. EACH ORBIT IS SEPARATED INTO DAYTIME OR NIGHTTIME SWATHS. ONE STRIP CORRESPONDING TO A FULL SWATH COVERS A DISTANCE APPROXIMATELY FROM POLE TO POLE. THE WIDTH OF EACH SWATH IS FROM HORIZON TO HORIZON AS THE THIR SCANNED NORMAL TO THE SUBSATELLITE PATH. RESOLUTION DECREASED AS THE DISTANCE FROM THE SUBSATELLITE POINT INCREASED. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER, TIME, AND AN INDICATION OF

WHETHER IT IS DAYTIME (D) OR NIGHTTIME (N). THE STRIPS ARE ARRANGED CHRONOLOGICALLY ON 100 TO 500 FT ROLLS OF FILM. FOR A COMPLETE DESCRIPTION OF THE THIR PHOTOFACSIMILE FILM STRIPS, SEE SECTION 2.4.1 IN THE 'NIMBUS V USERS GUIDE,' WHICH CAN BE OBTAINED ON REQUEST FROM NSSDC.

DATA SET NAME- 6.7-MICRON THIR PHOTOFACSIMILE FILM

NSSDC ID 72-097A-08B

AVAILABILITY OF DATA SET- DATA AT NSSDC BEING PROCESSED

TIME PERIOD COVERED- 121972 TO 040973 (AS VERIFIED BY NSSDC)

QUANTITY OF DATA IN THIS DATA SET- 24 FRAMES

DATA SET BRIEF DESCRIPTION

THE NIMBUS 5 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR), 6.7-MICRON WATER VAPOR CHANNEL DATA ARE AVAILABLE ON 70-MM PHOTOFACSIMILE FILM STRIPS. THE FILM STRIPS ARE AVAILABLE IN UNIFORM DENSITY EXPOSURE POSITIVE OR NEGATIVE COPIES IN EITHER TRANSPARENCIES OR PAPER PRINTS. EACH ORBIT IS SEPARATED INTO DAYTIME AND NIGHTTIME SWATHS. HOWEVER, THE 6.7-MICRON CHANNEL OPERATED MOSTLY AT NIGHT. ONE STRIP CORRESPONDS TO A FULL SWATH AND COVERS A DISTANCE APPROXIMATELY FROM POLE TO POLE. THE WIDTH OF EACH SWATH IS FROM HORIZON TO HORIZON AS THE THIR SCANNED NORMAL TO THE SUBSATELLITE PATH. RESOLUTION DECREASED AS THE DISTANCE FROM THE SUBSATELLITE POINT INCREASED. EACH FILM STRIP IS GRIDDED WITH GEOGRAPHIC COORDINATES AND IS IDENTIFIED BY ORBIT NUMBER, TIME, AND AN INDICATION OF WHETHER IT IS DAYTIME (D) OR NIGHTTIME (N). THE STRIPS ARE ARRANGED CHRONOLOGICALLY ON 100 TO 500 FT ROLLS OF FILM. FOR A COMPLETE DESCRIPTION OF THE THIR PHOTOFACSIMILE FILM STRIPS, SEE SECTION 2.4.1 IN THE 'NIMBUS 5 USER'S GUIDE.'

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## Phenomenon Measured Indexes

### I. General

The bar graphs and the listing of experiments by phenomenon measured found in this Supplement were produced with the aid of an NSSDC automated set of experiment-level phenomenon measured keywords. Because the data search capability made possible by these keywords is available to the space science community and because this capability is fairly new and has not been discussed in any prior NSSDC publication, a brief description of the keyword scheme follows.

Keywords are assigned to a maximum of 10 separate modes of operation for each satellite experiment. These keywords (identified in the following paragraphs) describe (A) what is measured by a given experiment mode, (B) where the measurement is made (or for remote sensors, what objects are sensed), (C) when the measurement is made, and (D) the numerical ranges for a maximum of four characteristics of the measurement (e.g., particle energy).

- A. What: A given experiment mode is considered to measure one of five basically different phenomena: (1) electromagnetic fields, (2) charged particles, (3) microscopic neutral particles, (4) macroscopic bodies, and (5) "other."
1. Electromagnetic fields: in this category electric fields, magnetic fields, and electromagnetic radiation are separately identifiable. For electric and magnetic fields, the number of orthogonal components measured is specifiable; while for electromagnetic radiation (waves), the type (gamma rays through radio waves) and numerical frequency range of the measurement can be specified.
  2. Charged particles: for charged particles, species (e.g., protons, electrons) and an indication of the extent of species resolution can be specified. An indicator of spectral resolution, the numerical energy range, and flux directionality characteristics can all be specified.
  3. Microscopic neutral particles: microscopic neutral particles may be molecules, atoms, or neutrons. Mass range and species resolution are specifiable, as is the measured characteristic (e.g., flux, density, pressure).

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4. Macroscopic bodies: these keywords identify the body, the characteristic being measured (e.g., temperature, gravitational field), and the measurement technique (e.g., photography, seismic experiment).
5. Other: no hierarchy exists in this category since it has not yet been used.

B. Where: For the earth's vicinity, space is subdivided as follows:

1. Earth and its lower atmosphere.
2. Altitude between 65 and 3000 km. In this range space is categorized in three separate latitude intervals.
3. The magnetosphere above 3000 km in six regions:
  - a.  $L < 2 R_E$
  - b.  $2 R_E < L < 6 R_E$
  - c.  $6 R_E < L < 10 R_E$
  - d. high polar ( $L > 10 R_E$ ,  $R < 10 R_E$ )
  - e. magnetotail ( $L > 10 R_E$ ,  $R > 10 R_E$ , nightside)
  - f. dayside magnetosheath and its boundaries

Interplanetary space is subdivided into cislunar and distant regions.

Major macroscopic bodies (sun, moon, individual planets) are specifiable as the location of measurements or as the source of remotely sensed electromagnetic radiation.

C. When: In describing when data are obtained in individual experiment modes, a series of up to five dates may be specified for a given experiment. Then for each of the four time intervals thus defined, the extent of data usefulness (nominal, less than nominal, useless) is specifiable for each mode. Note that this capability was not used in the production of the bar graphs appearing in this Supplement.

This discussion of the experiment keyword scheme has been brief, but most of the capabilities have been mentioned. Further information on the capabilities and use of this system is available at NSSDC.

## II. Bar Graphs of Fields and Particles Experiment Data Coverage

The time coverages for charged particle and field experiments for data sets announced in both the 1971 Data Catalog and this Supplement are indexed by means of a series of bar graphs generated using the NSSDC automated file and Stromberg-Datagraphix 4060 plotter. The plots allow the user to determine quickly what announced data sets are available in a given energy range and/or in a given time interval. These announced data sets include some of those published in such documents as Solar Geophysical Data as well as data sets available through NSSDC.

The charged particle experiments are divided into three groups based on the region in which the observations were made:

1. Near-earth (65- to 3000-km altitude)
2. Magnetosphere (above 3000 km altitude, including magnetosheath and magnetotail)
3. Interplanetary.

The magnetic field experiments are divided into two groups based on the region in which the observations were made:

1. Near-earth - magnetosphere (a combination of one and two above)
2. Interplanetary.

The electric field experiments are indexed together.

A title at the top of each plot indicates the type of observation made and the region of observation indexed. For charged particle index plots, the threshold energy (eV/nucleon) of the energy channel of observation of an experiment is plotted as a function of the data coverage time (years). The data coverage time is that time interval that starts with the earliest start time of any data set and ends with the latest stop time of any data set associated with a specific experiment. A given experiment may measure one or more particle species over one or more energy channels. Note that although this scheme for indicating the data coverage time provides the widest possible data coverage, it may erroneously show a longer coverage for a given energy channel than exists at NSSDC. Performance information regarding individual energy channels appears in the appropriate brief description which is located in either the 1971 Catalog or in this Supplement. Note also that the threshold energy scale may be distorted to accommodate the information plotted. The energy tick marks are merely approximate indicators of threshold energy.

The caption above each plotted time period for a given charged particle experiment threshold energy channel shows the spacecraft common name (sometimes abbreviated, e.g., APOL = Apollo, EXPL = Explorer, MARIN = Mariner, and PION = Pioneer), the experiment number in parentheses, the energy threshold of the energy channel in FORTRAN E format, e.g., 200. = 2.E2, and the species measured. The following code is used to describe the species measured:

A = alpha particle  
E = electron  
P = proton  
Z = other particles including deuterons, tritons, positrons,  
Z=2 nuclei (not alpha particles), particles with Z > 2,  
and ions.

For example, the caption "EXPL34(3) 9.6E6, PZ" means that spacecraft Explorer 34, experiment number 3, has a proton and higher Z energy channel with threshold of 9.6 MeV/nucleon. Reference to the Spacecraft Name Index reveals this spacecraft has NSSDC identification number 67-051A; therefore, the experiment has NSSDC identification number 67-051A-03.

No attempt is made in this index to distinguish whether the observation is directional or omnidirectional, to present the upper bound of the energy measurement, to identify the species of charged particles, or to indicate the quality or percent time coverage of data within the given time interval. The appropriate brief descriptions include this information. Note that some experiment energy thresholds may not appear in the graphs because of the manner in which the energy ranges were keyworded in the NSSDC automated file. Note also that some thermal energy long baseline electron measurements, e.g., experiment number 3 on Pioneers 8 and 9, appear under "Near Earth" as well as "Interplanetary" because of assumptions made in analyzing the data.

The time coverages of magnetic and electric field experiment data sets are displayed on indexing plots similar to those of the charged particles except that the experiments are ordered alphabetically along the vertical axis by spacecraft common name. Also, the caption above each plotted time period for a given experiment indicates only the spacecraft common name and experiment number. Note that the magnetic field plots include VLF experiments which measured the magnetic field component of electromagnetic radiation. Similarly, for the electric field plot, VLF experiments which measured the electric field component of electromagnetic radiation are included.

### III. Listing of Experiments by Phenomenon Measured

The outline used for listing experiments according to the phenomenon measured is presented below.

#### Outline

1. Electromagnetic Radiation Measurements
  - 1.1 Electric Field Measurements
  - 1.2 Magnetic Field Measurements
  - 1.3 Electromagnetic Radiation (see section 4 for photography)
    - 1.3.1 Sensing sources below 65 km
    - 1.3.2 Sensing sources from 65 to 3000 km
    - 1.3.3 Sensing magnetospheric sources above 3000 km
    - 1.3.4 Sensing interplanetary space
    - 1.3.5 Sensing cold (planetary) sources
    - 1.3.6 Sensing the sun
    - 1.3.7 Sensing hot (star) sources
2. Charged Particle Measurements
  - 2.1 Sensing Electrons
    - 2.1.1 Of thermal energies (< 1 kev)
    - 2.1.2 Of energies greater than thermal (> 1 kev)
  - 2.2 Sensing Protons or Hydrogen Ions
  - 2.3 Sensing Helium Nuclei
  - 2.4 Sensing Other Particle Species
3. Microscopic Neutral Measurements
  - 3.1 Sensing Neutrons
  - 3.2 Sensing Atoms and/or Molecules
4. Observations of Macroscopic Bodies
  - 4.1 Sensing Mercury<sup>+</sup>
  - 4.2 Sensing Venus
  - 4.3 Sensing Earth
  - 4.4 Sensing Earth's Moon
    - 4.4.1 Geographic features
    - 4.4.2 Non-geographic features
  - 4.5 Sensing Mars
  - 4.6 Sensing Jupiter<sup>+</sup>
  - 4.7 Sensing the Sun (see section 1.3.6)
  - 4.8 Sensing Comets, Stars, and Galactic Regions (see section 1.3.7)
  - 4.9 Sensing Micrometeorites, Meteors, etc.
  - 4.10 Sensing Other Bodies<sup>+</sup>
5. Other<sup>+</sup>

<sup>+</sup> Indicates no data presently on file at NSSDC.

The information contained under each of the major headings in the outline is uniquely sorted. For example, under Electromagnetic Radiation Measurements, the units and range of measurement are listed. The first sort is by order of minimum observable value of the measured phenomenon (one exception is that wavelengths (in section 1.3) are sorted from longest to shortest of the maximum observable values); the second sort is by order of maximum observable value of the measured phenomenon; the last sort is by earliest date of available data.

For Charged Particle Measurements, the sort is by order of the minimum observable value of the measured phenomenon.

For Microscopic Neutral Measurements, the listing is sorted in order of characteristic, then by earliest date of available data. The keywords applicable to define "characteristic" are as follows:

- Area (columnar) Density
- Energy Flux
- Particle Flux
- Pressure
- Temperature
- Volume Density

The listing for Observations of Macroscopic Bodies is sorted alphabetically in order of "characteristic," then alphabetically in order of "technique," and finally by "earliest date" of available data. Keywords applicable to define "characteristic" and "technique" are as follows:

Characteristic

- Atmospheric Feature
- Distance
- Feature, Geographic
- Gravity Field
- Interior Characteristic
- Particle Flux
- Size
- Surface Characteristic
- Temperature

Technique

- Orbit Analysis
- Other Techniques
- Photo, High Resolution (> 100 M)
- Photo, Low Resolution (< 1 M)
- Photo, Med Resolution
- Returned Samples
- Seismic Technique
- Visual Observation

Information is presented in the form of tables with a variety of column headings. It should be noted that the following column headings are common to all the items in the outline.

Principal investigator name  
NSSDC experiment title  
NSSDC experiment ID number  
Satellite common name  
Time span of data on-hand (earliest date and latest date of data from any available data set from that experiment)  
Region of observation  
Pertinent Catalog page number where the complete experiment entry is located

The remaining column headings are self-explanatory except for (1) Planets, (2) Region, (3) \*, and (4) RES. Abbreviated explanations of these column headings follow.

1. Planets: These are indicated in numerical order from the sun. The sun is designated as zero (0); numbers 1 through 5 indicate Mercury, Venus, Earth, Mars, and Jupiter, respectively. Letter M indicates the Earth's Moon.
2. Region: For finer specification of locations near the Earth, entries under the heading "Region" are used. The two exceptions are designations for Interplanetary (H) and Celestial (I) regions. Letters A through G indicate specific regions as follows:  
  
A = < 65 km  
B = > 65 km; < 3000 km; Lat < 65°  
C = > 65 km; < 3000 km; Lat 65°-90°  
D = Magnetospheric; L < 2 R<sub>E</sub>  
E = Magnetospheric; 2 R<sub>E</sub> < L < 6 R<sub>E</sub>  
F = Magnetospheric; 6 R<sub>E</sub> < L < 10 R<sub>E</sub>  
G = Magnetospheric; L > 10 R<sub>E</sub>

3. \*: This indicates ambient or remote sensor:

A = Ambient  
R = Remote



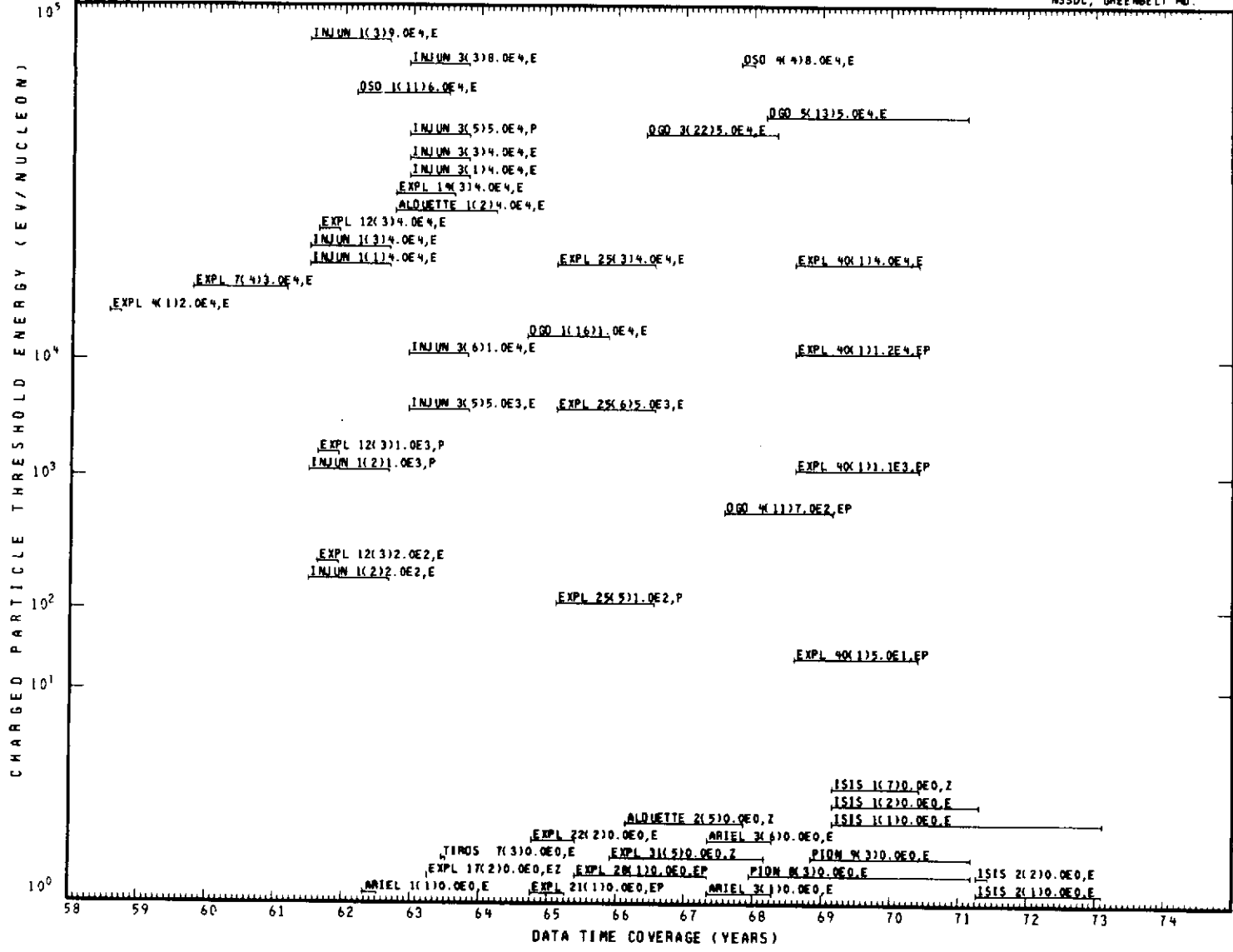
4. RES: This indicates species resolution:

R = Resolved  
P = Partially resolved  
N = Unresolved  
U = Unknown resolution

"Species" here refers to the separation of phenomena at the second level of outline divisions, i.e., "resolved" species would observe the difference between protons (outline section 2.2) and electrons (outline section 2.1).

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**BAR GRAPHS**



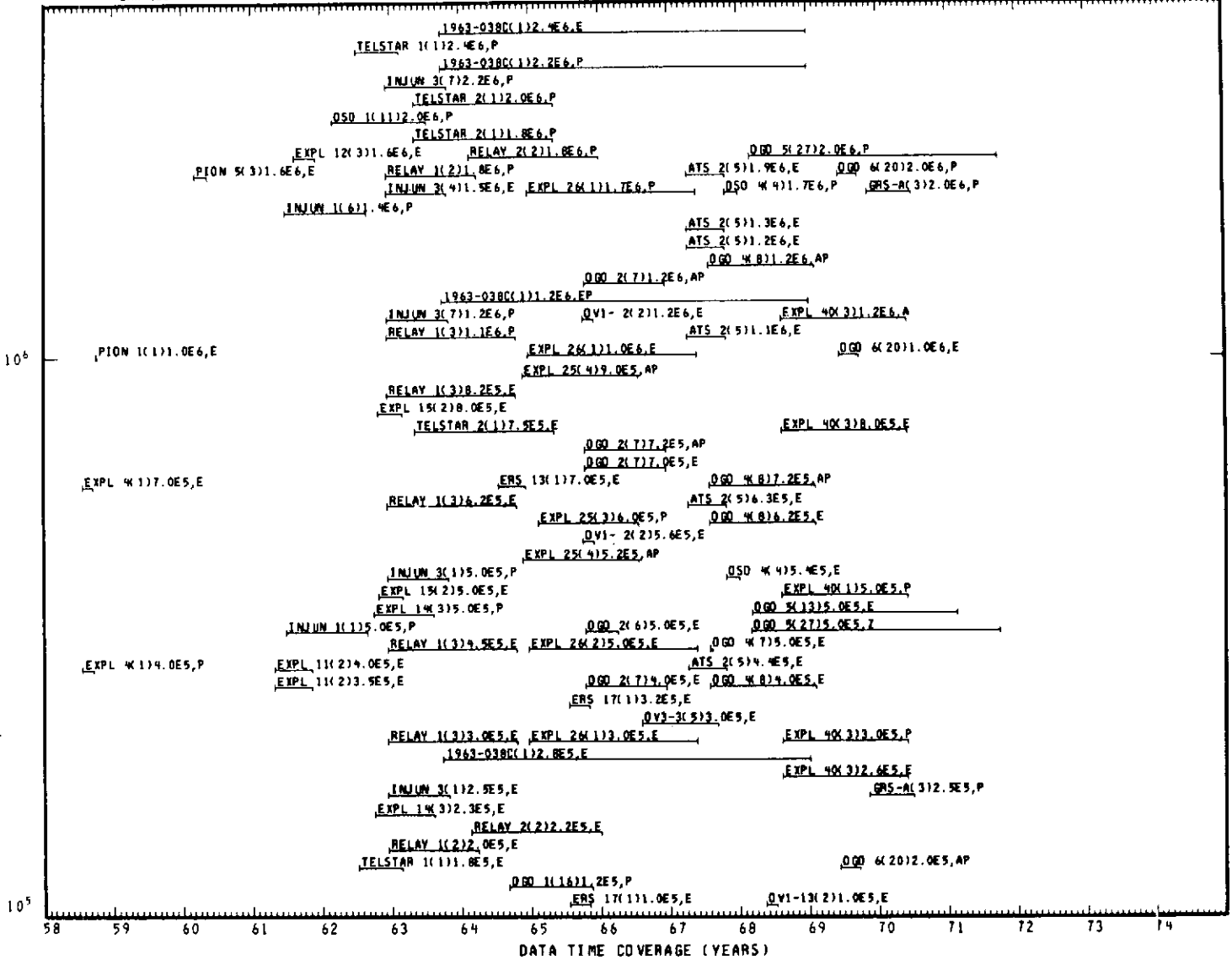
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CHARGED PARTICLES - NEAR EARTH (65 TO 3000 KM ALTITUDE)

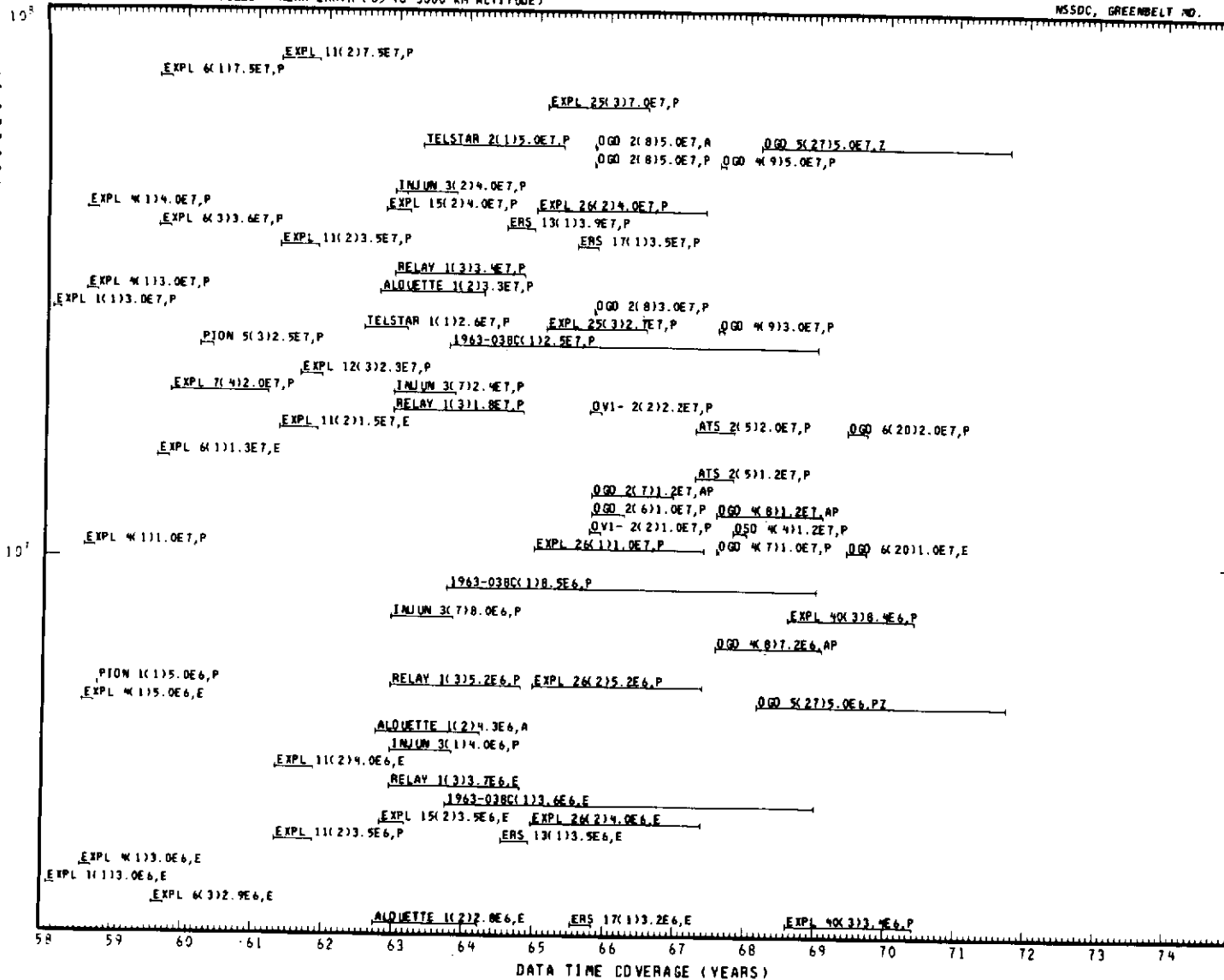
NSSDC, GREENBELT MD.

CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

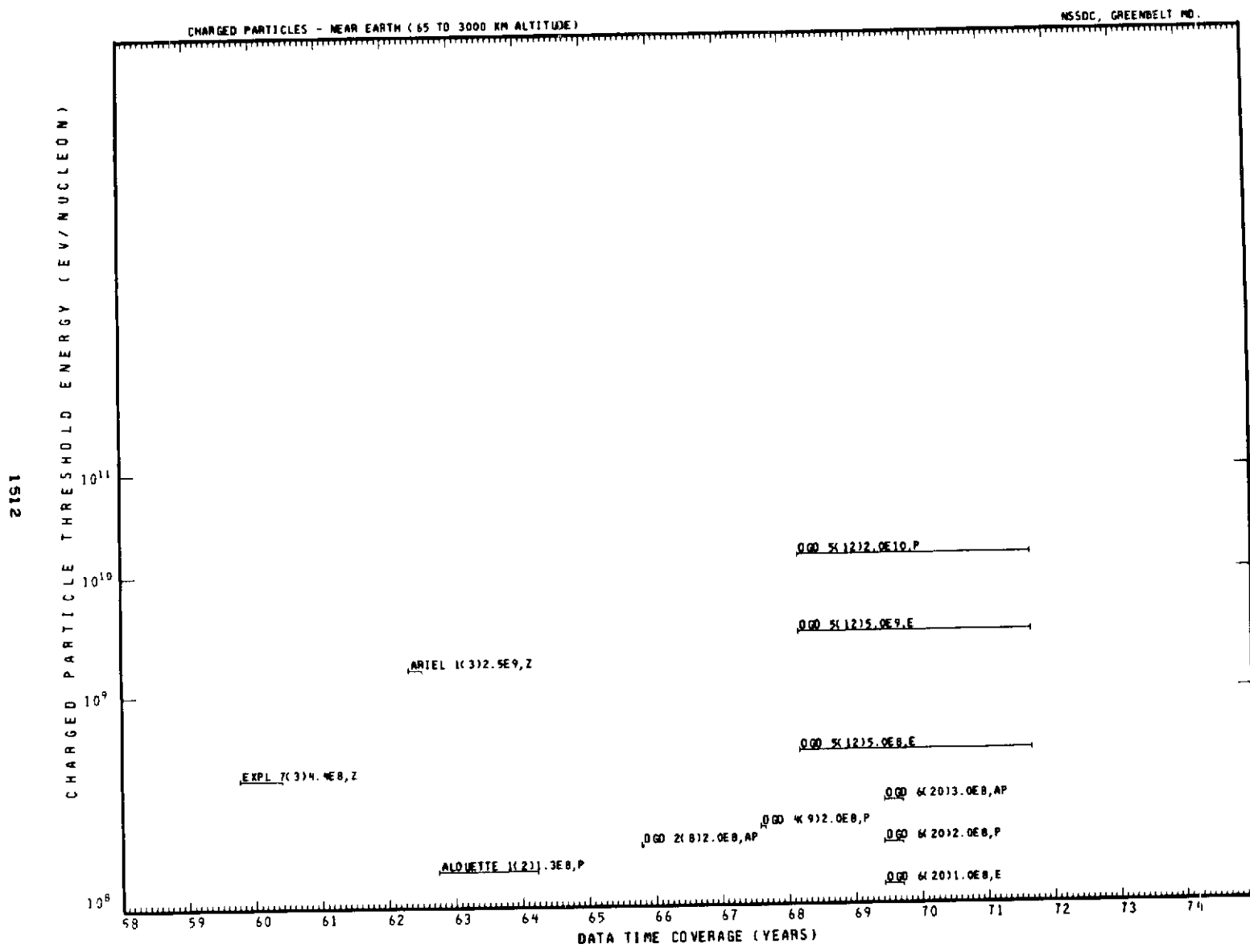
1510



CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

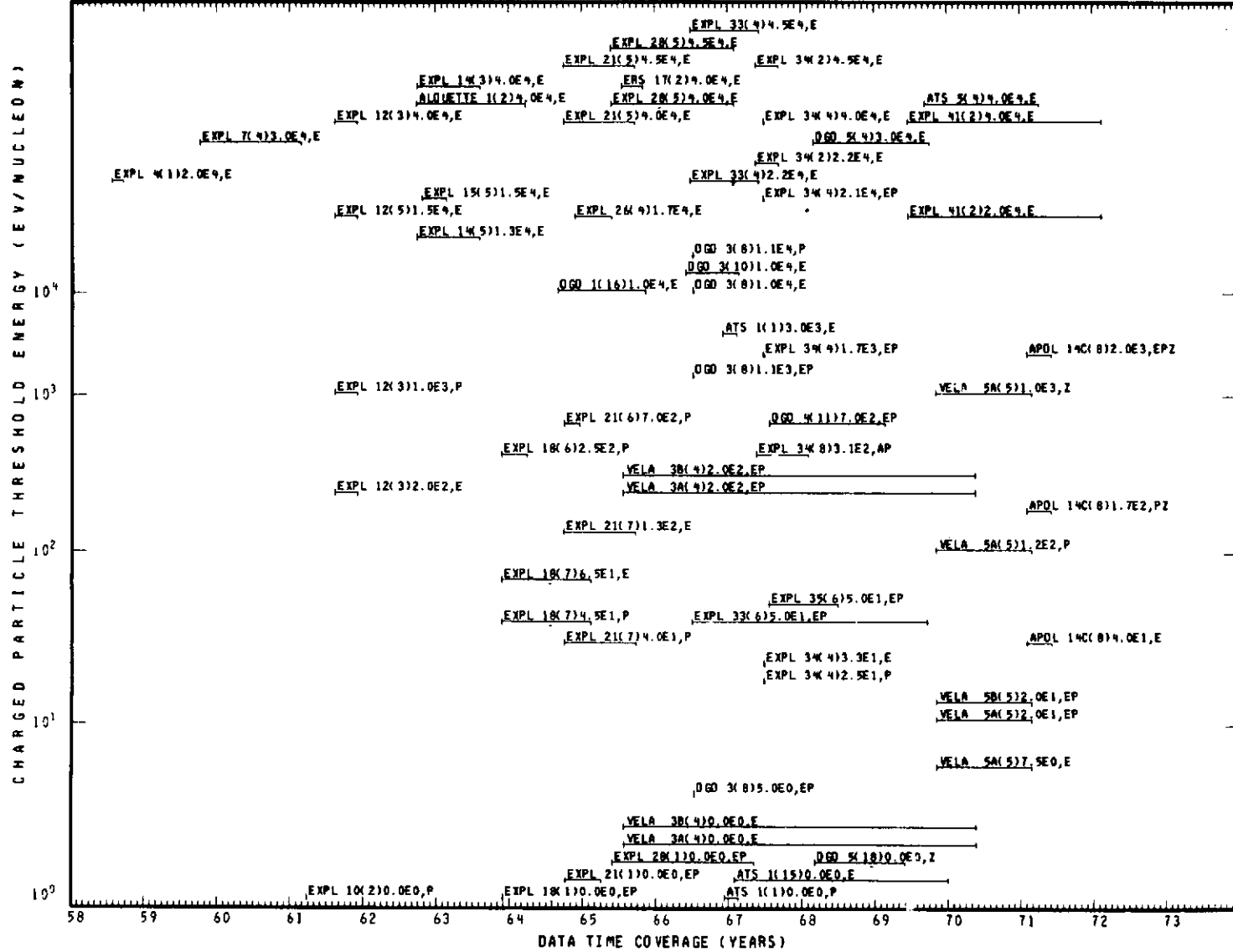


PHENOMENON MEASURED INDEXES

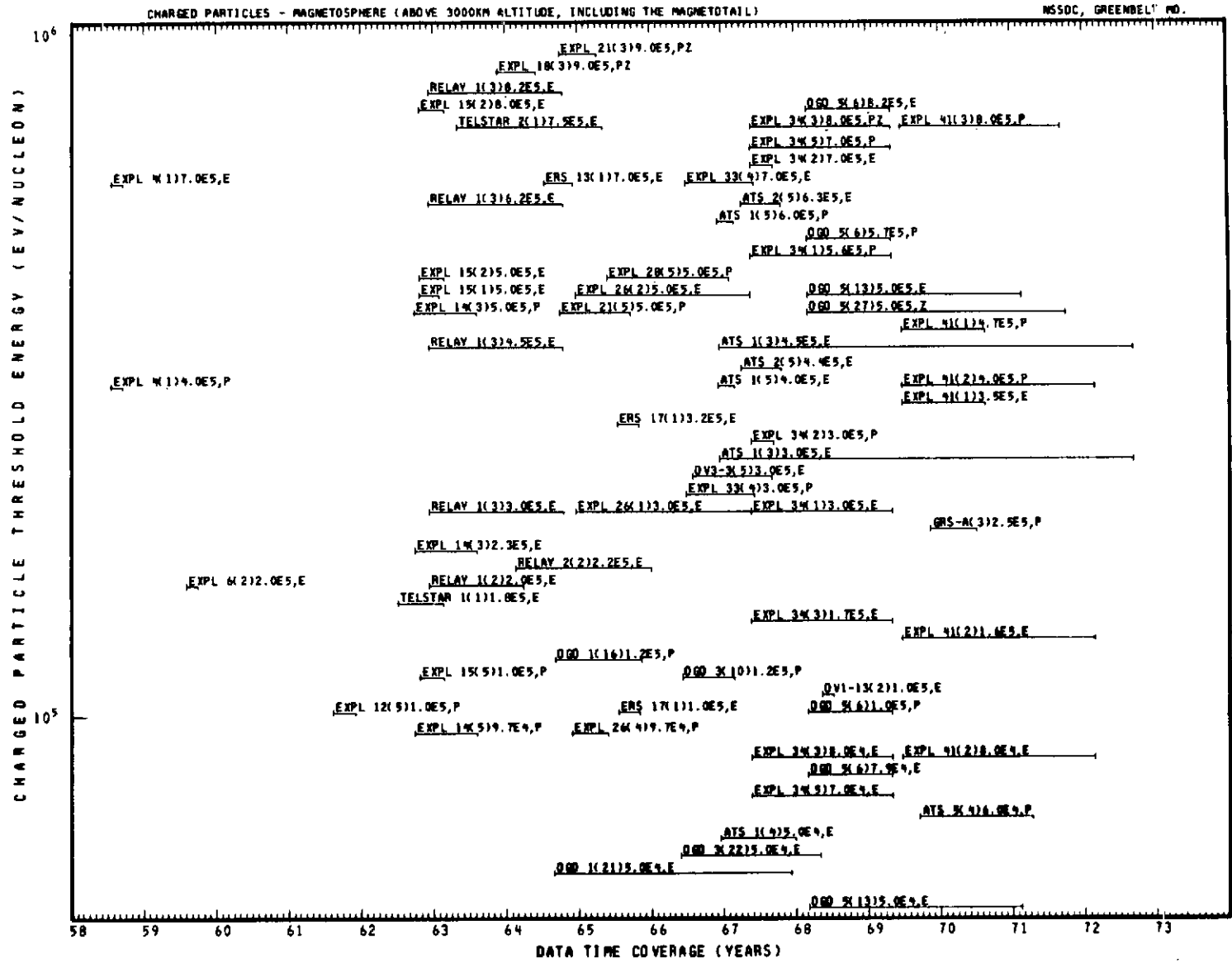


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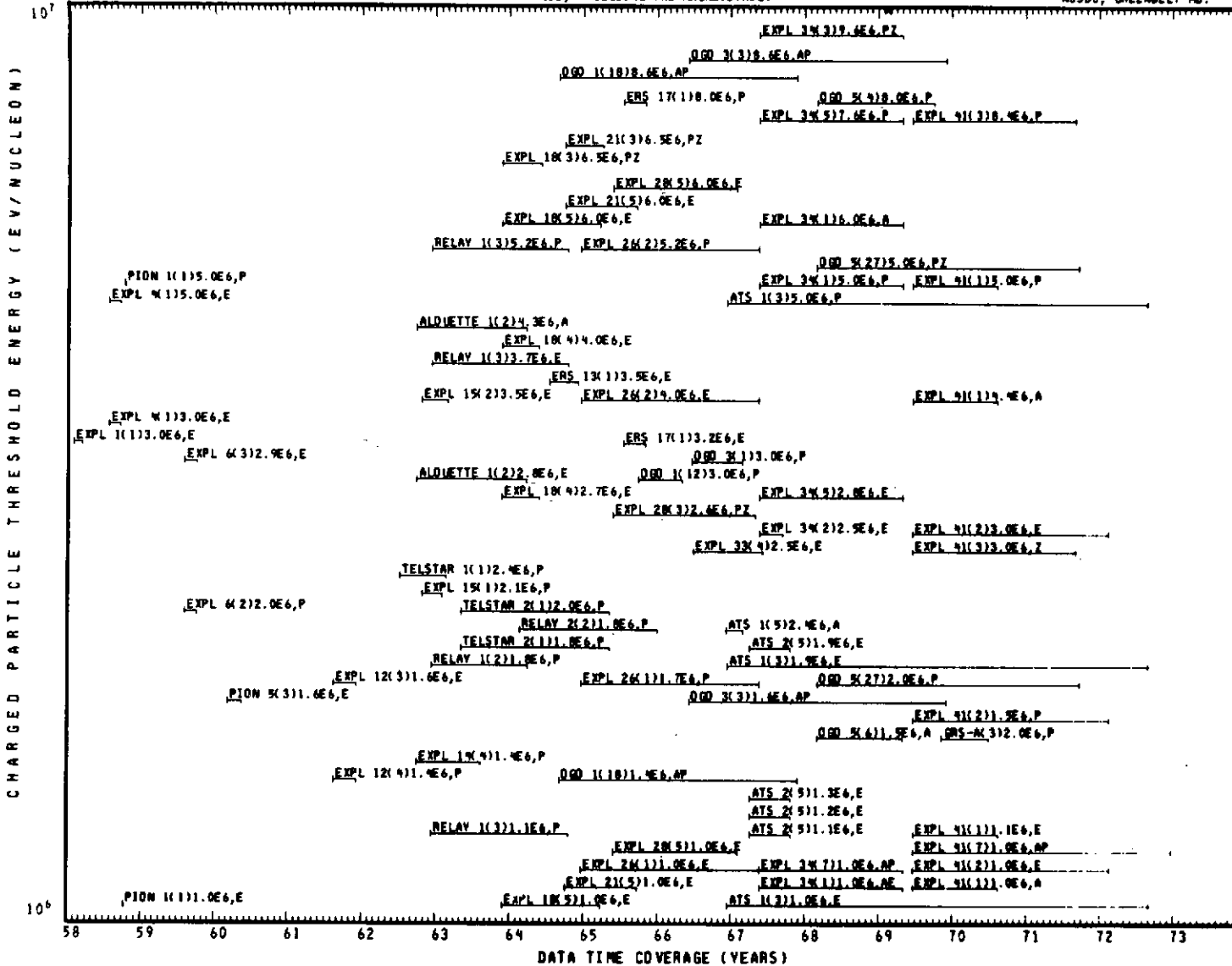
1813



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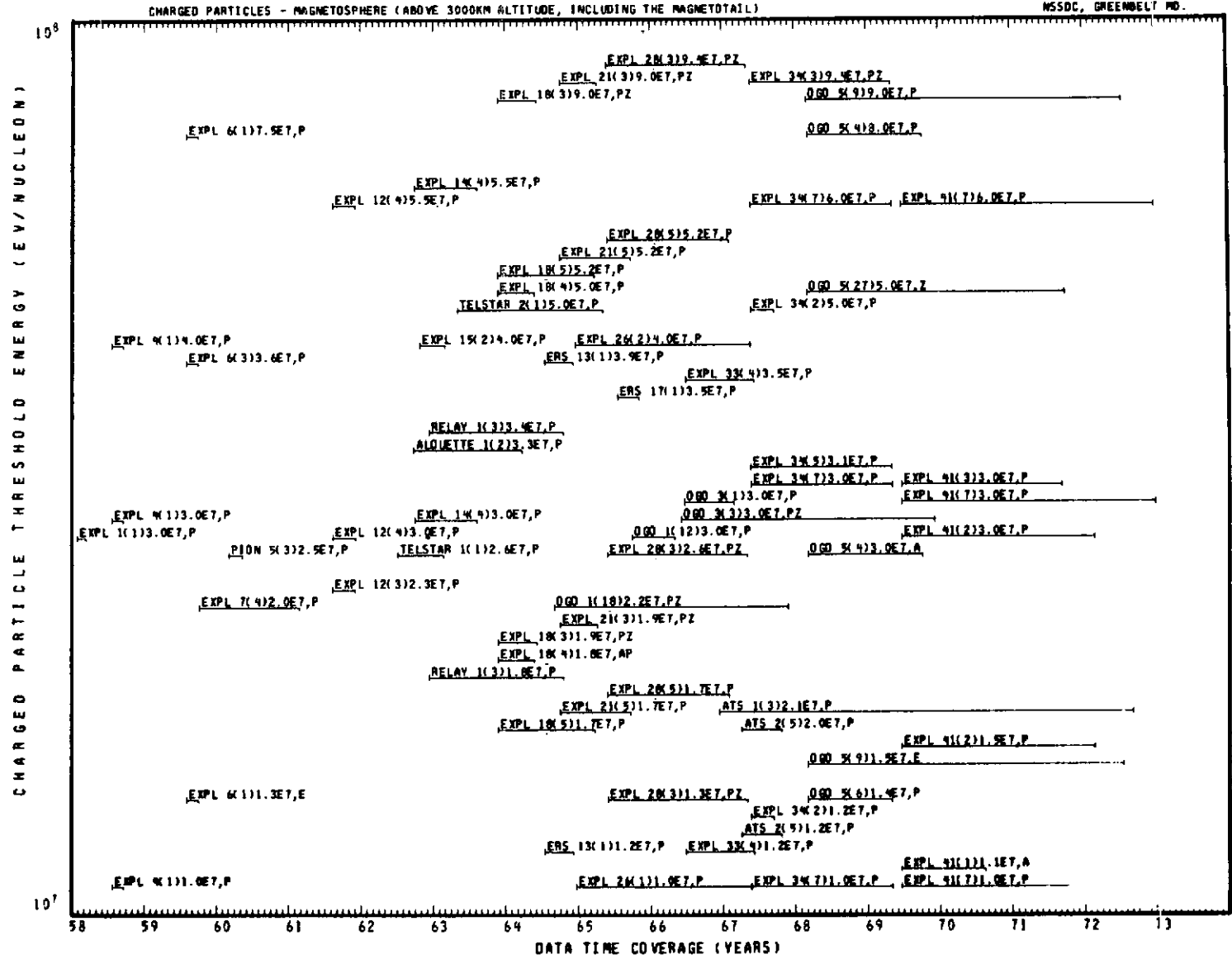






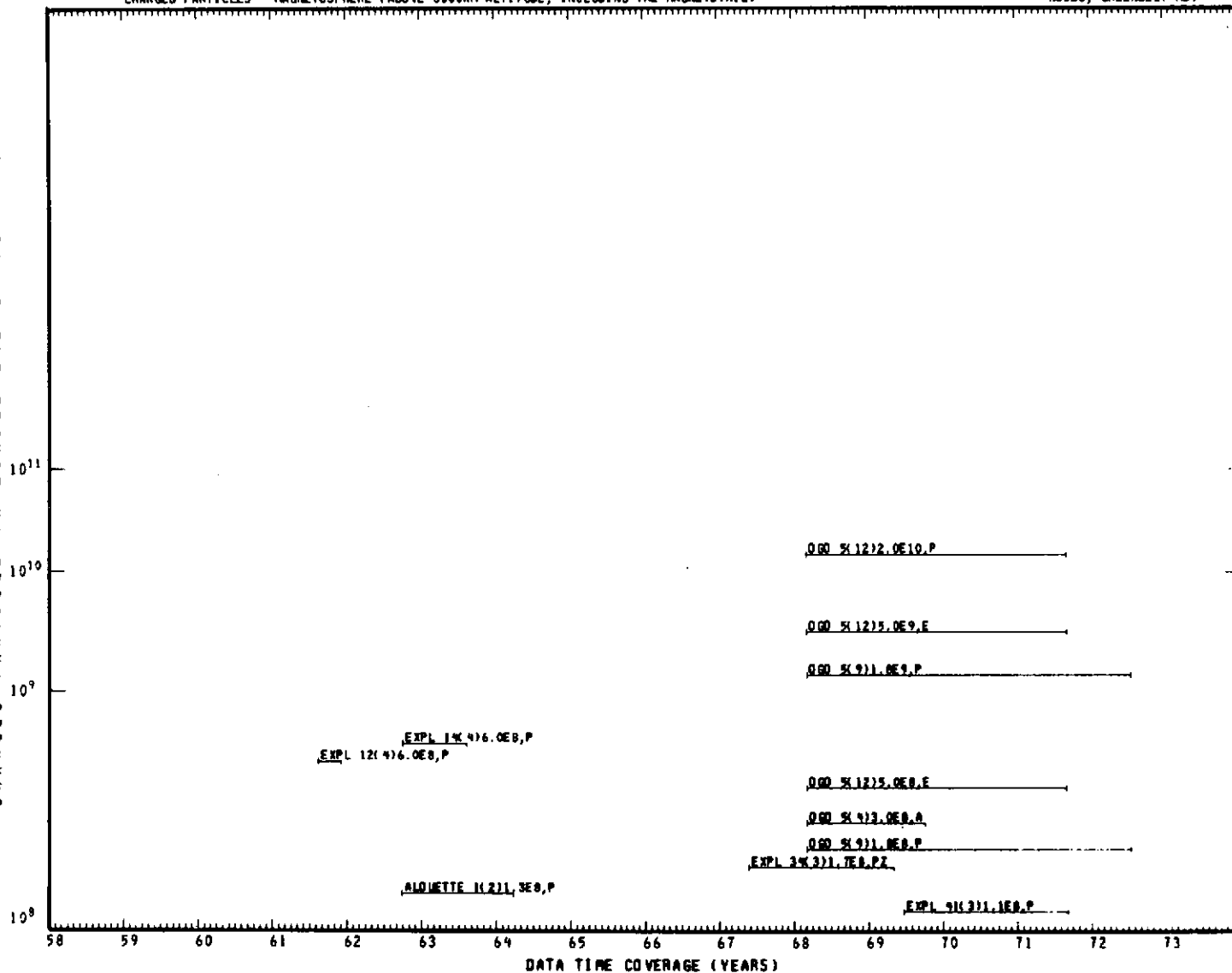
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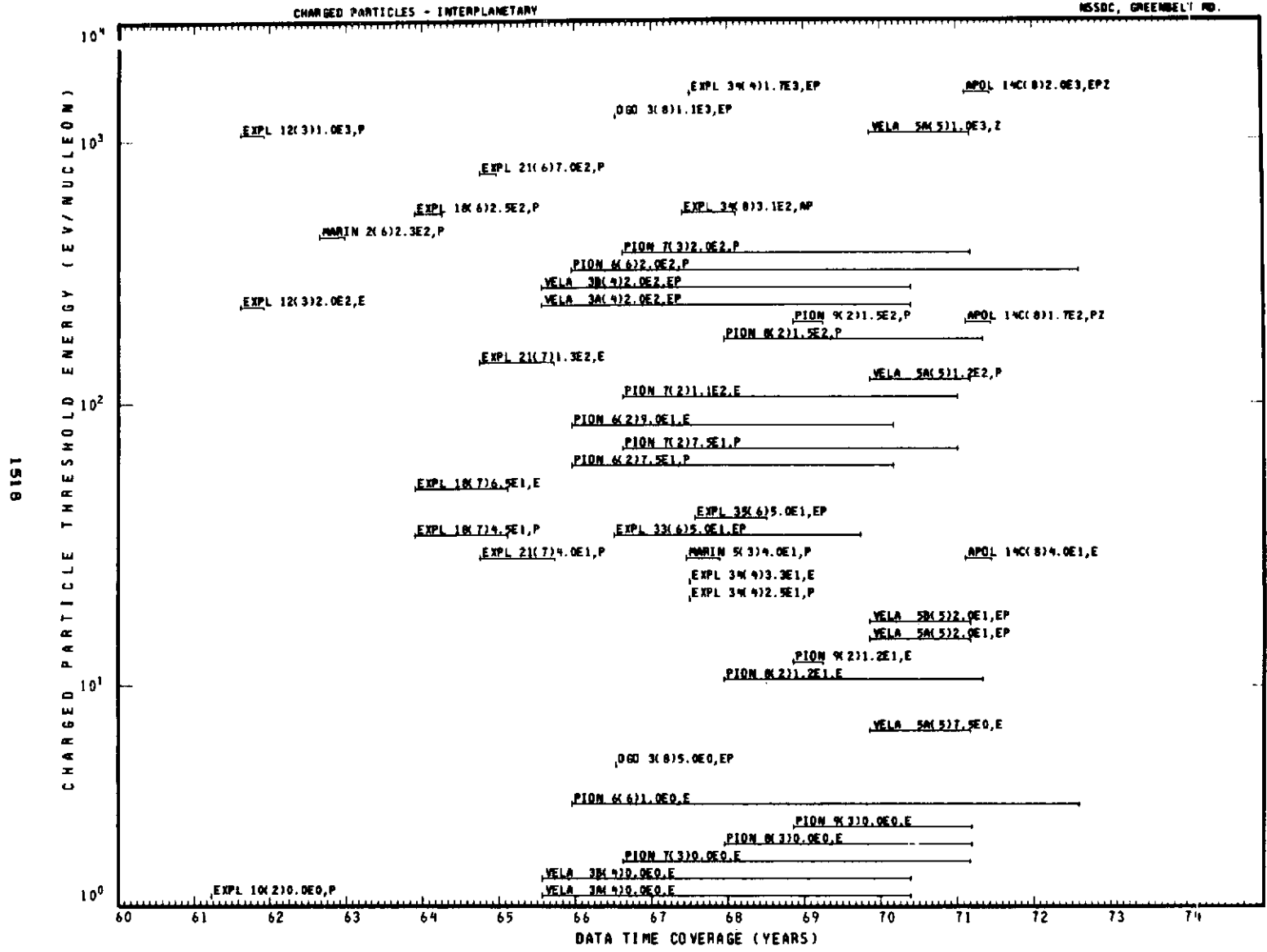


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1517  
CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)



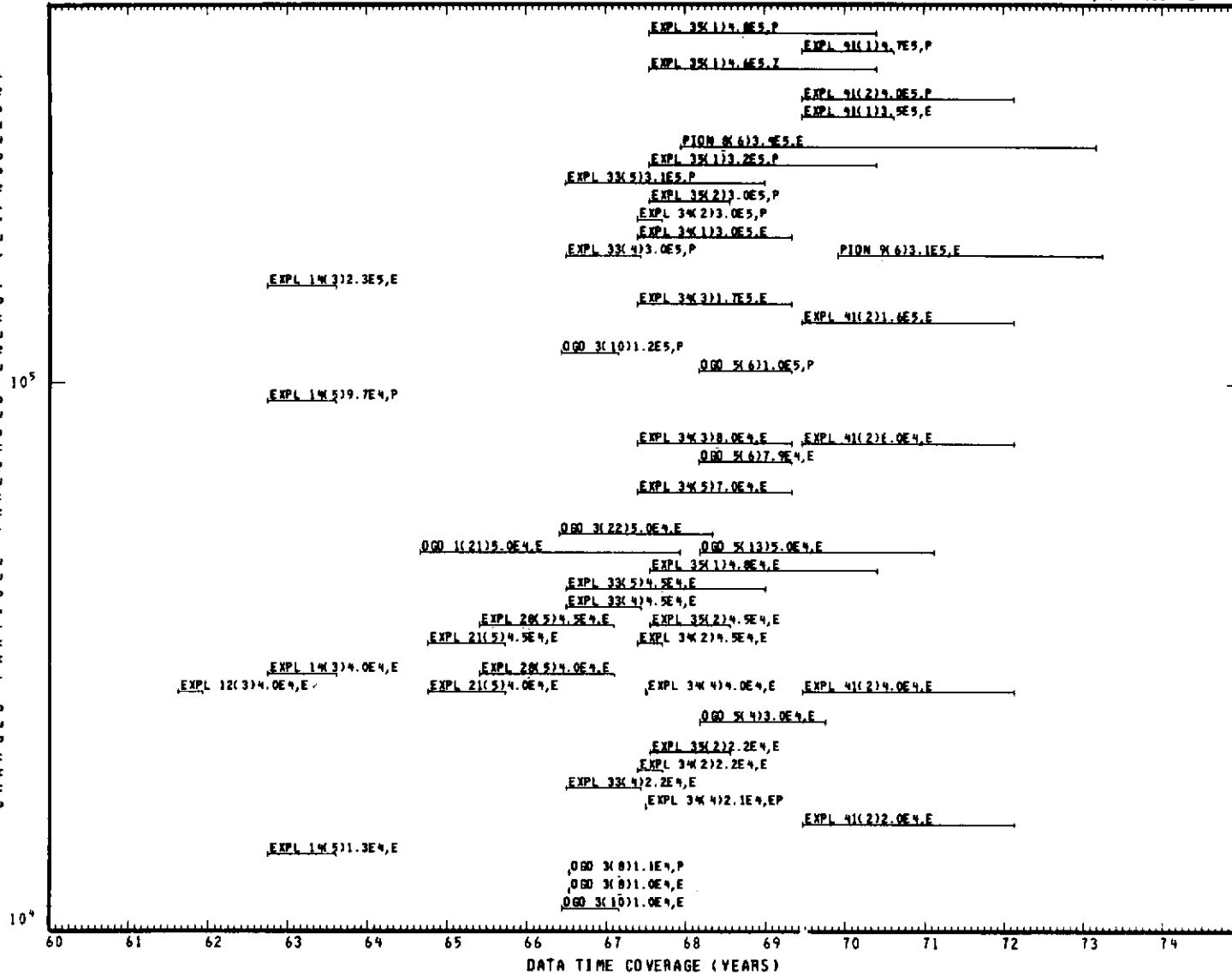
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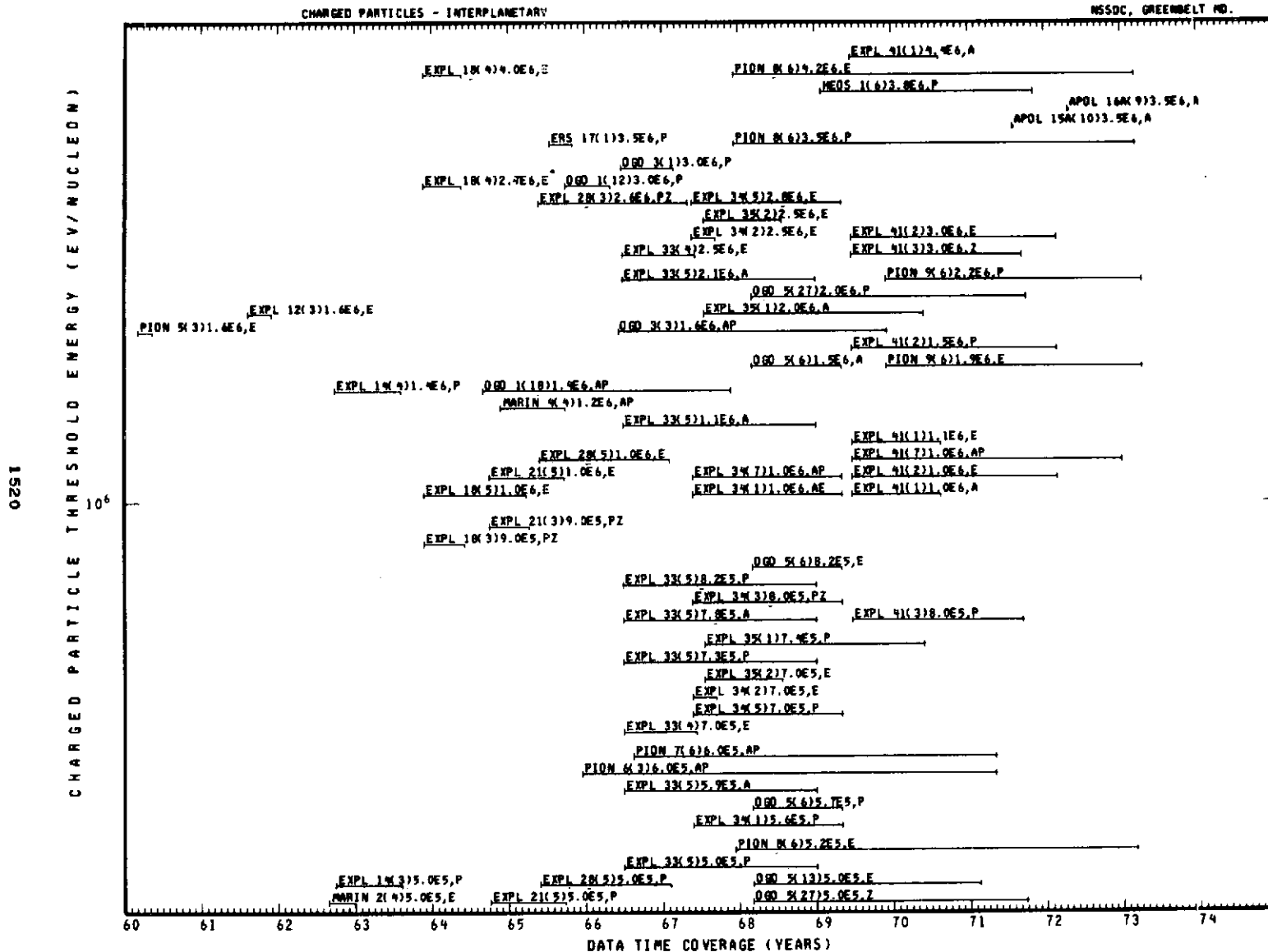
1511

CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

151

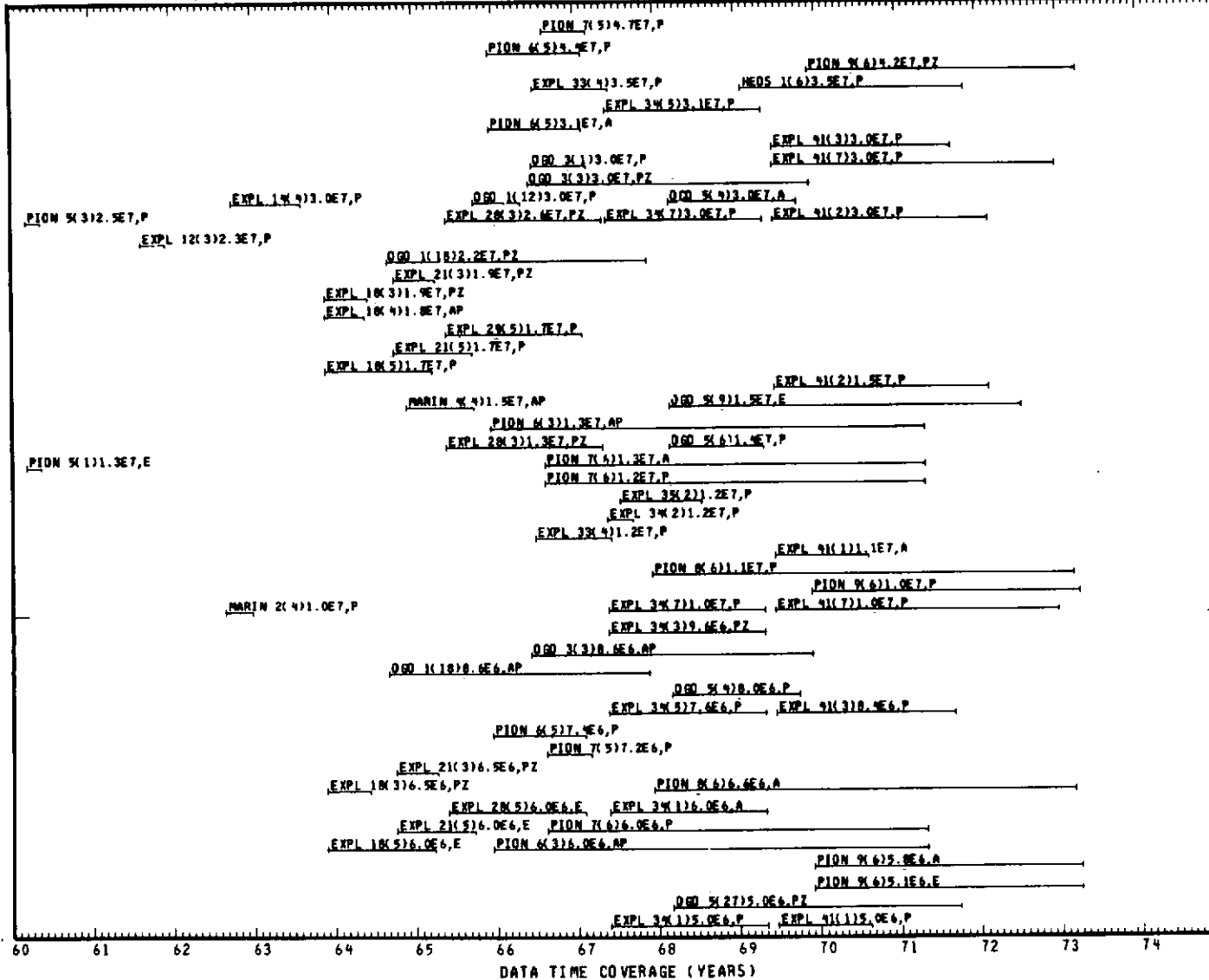


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CHARGED PARTICLE THRESHOLD ENERGY (EV/NUCLEON)

1521

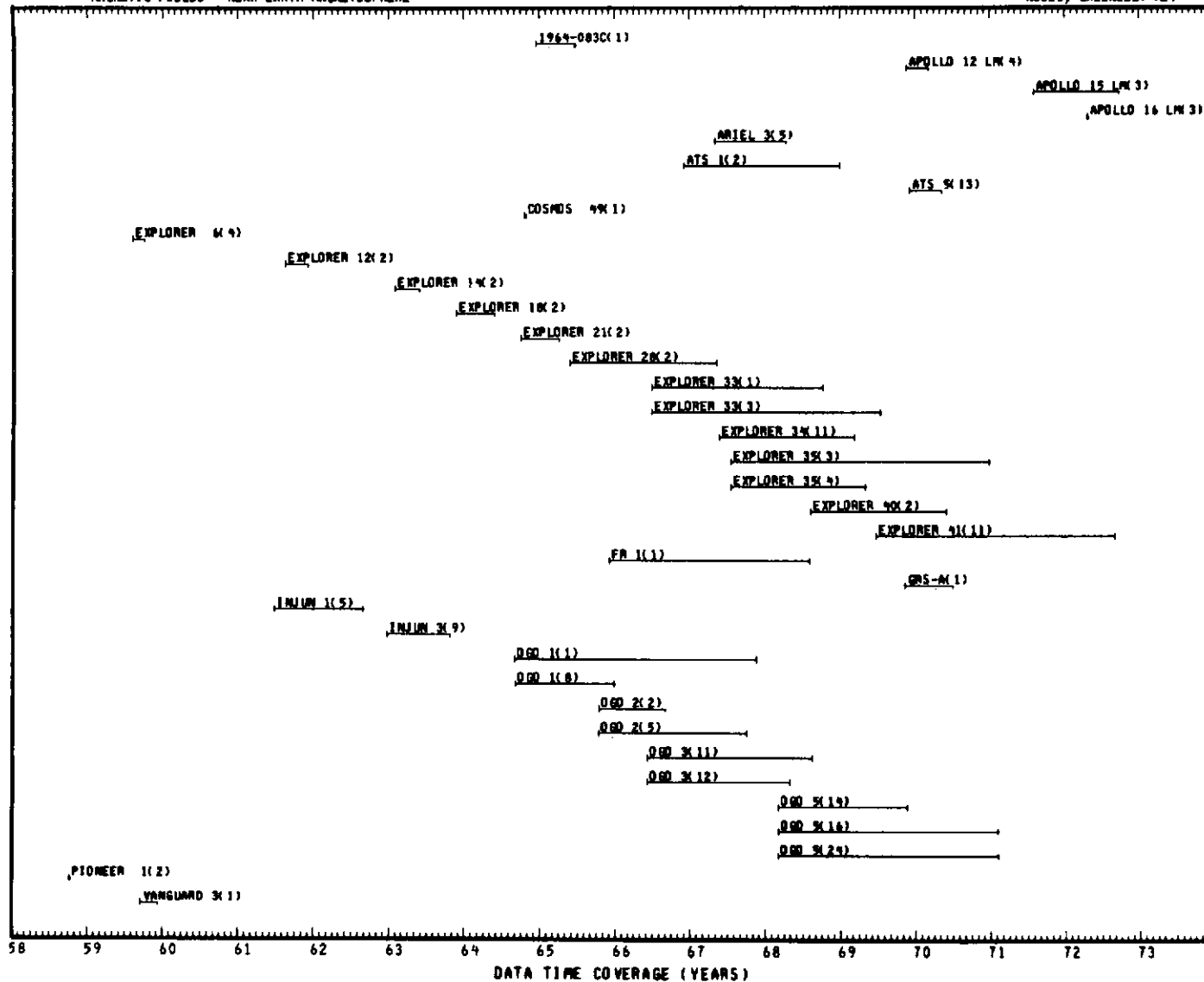


PHENOMENON MEASURED INDEXES





EXPERIMENT (ALPHABETICAL ORDER BY SATELLITE COMMON NAME)



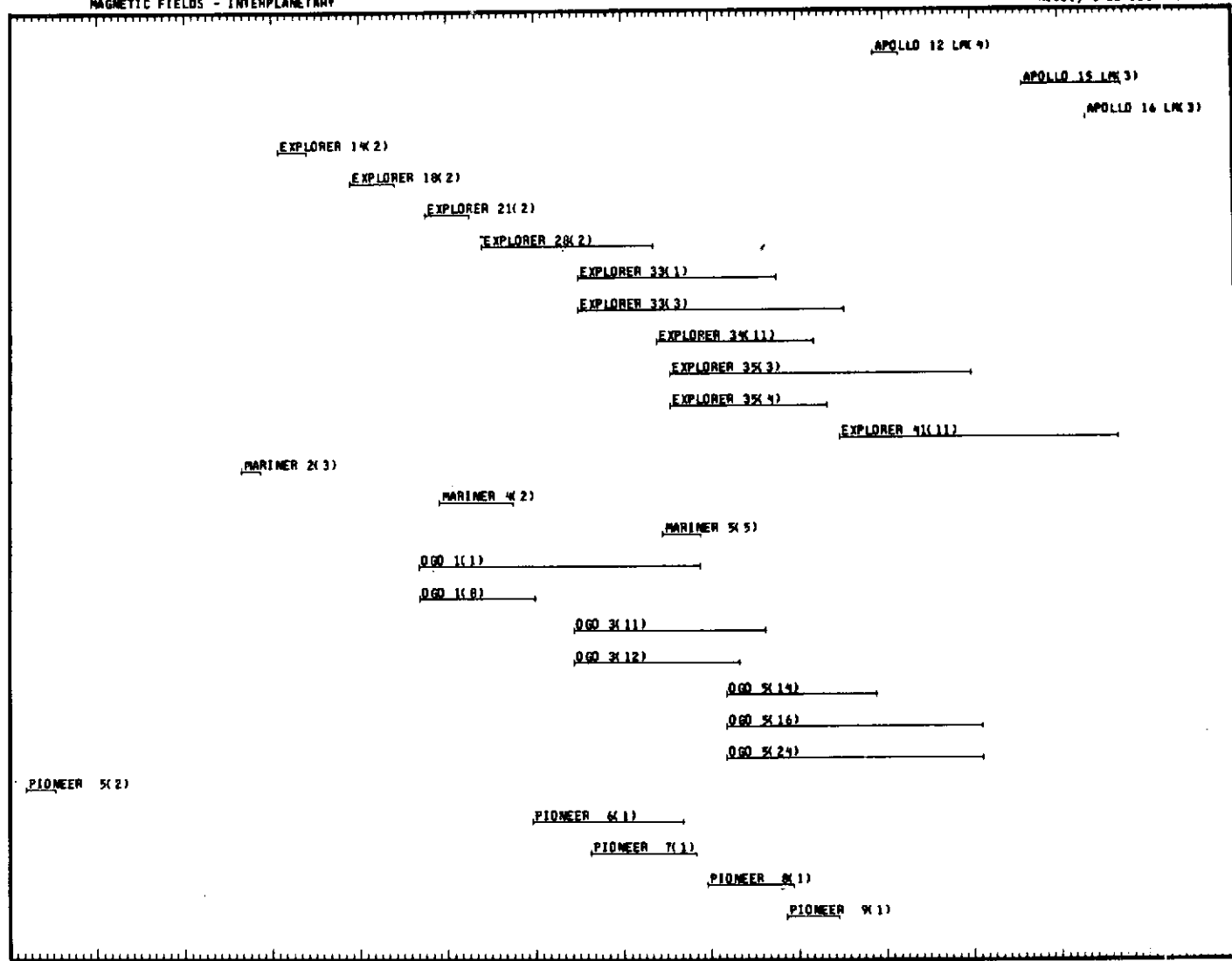
1523

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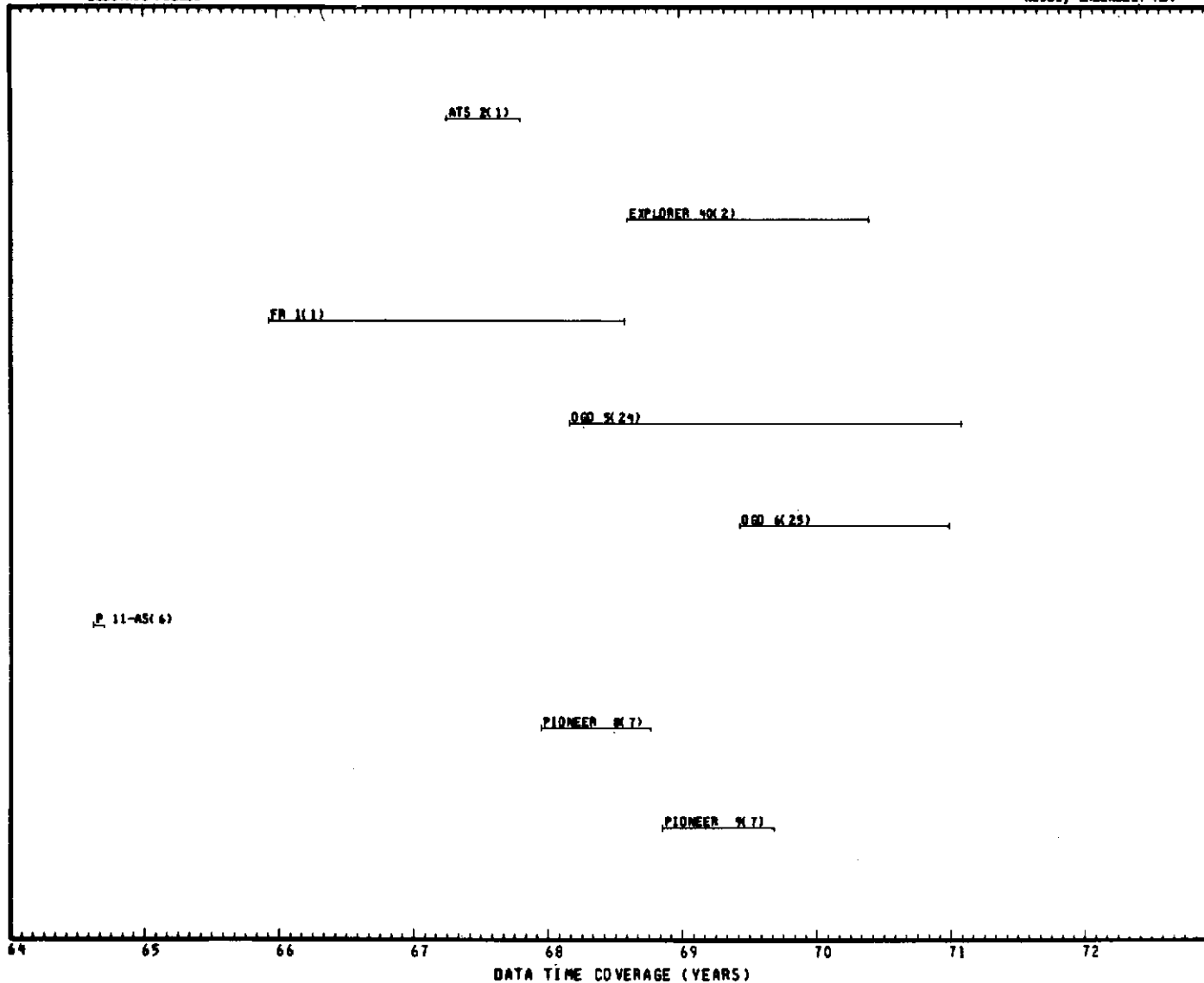
MAGNETIC FIELDS - INTERPLANETARY

NSSDC, GREENBELT MD.

EXPERIMENT (ALPHABETICAL ORDER BY SATELLITE COMMON NAME)



EXPERIMENT ( ALPHABETICAL ORDER BY SATELLITE COMMON NAME )



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PHENOMENON MEASURED INDEXES

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SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)			
1. ELECTROMAGNETIC RADIATION MEASUREMENTS									
1.1 ELECTRIC FIELD MEASUREMENTS									
OGO 6	(69-051A-25)	LAASPERE							
WHISTLER AND AUDIOFREQUENCY									
ELECTROMAGNETIC WAVES (F-25)..... 06/10/69 TO 12/31/70 R 1.000E 01 TO 5.400E 05 HZ C 1287									
EXPLORER 40	(68-066B-02)	GURNETT							
VLF RECEIVER..... 08/09/68 TO 05/29/70 R 3.000E 01 TO 1.600E 04 HZ C 1232									
PIONEER 8	(67-123A-07)	SCARF							
PLASMA WAVE MEASUREMENT..... 12/13/67 TO 10/07/68 A 1.000E 02 TO 1.000E 05 HZ H 369									
PIONEER 9	(68-100A-07)	SCARF							
PLASMA WAVE DETECTOR..... 11/08/68 TO 09/07/69 A 1.000E 02 TO 1.000E 05 HZ H 1240									
PIONEER 8	(67-123A-07)	SCARF							
PLASMA WAVE MEASUREMENT..... 12/13/67 TO 10/07/68 A 3.700E 02 TO 4.300E 02 HZ H 369									
PIONEER 9	(68-100A-07)	SCARF							
PLASMA WAVE DETECTOR..... 11/08/68 TO 09/07/69 A 3.850E 02 TO 4.150E 02 HZ H 1240									
OGO 5	(68-014A-24)	CROOK							
PLASMA WAVE DETECTOR..... 03/05/68 TO 01/03/71 A 5.600E 02 TO 7.000E 04 HZ B DEFGH 1224									
OGO 5	(68-014A-24)	CROOK							
PLASMA WAVE DETECTOR..... 03/05/68 TO 01/03/71 A 1.000E 03 TO 2.200E 04 HZ B DEFGH 1224									
P 11-AS	(64-045B-06)	SCARF							
VLF ELECTRIC FIELD DETECTOR..... 08/15/64 TO 09/13/64 A 1.700E 03 TO 1.450E 04 HZ CDEF 129									
FR 1	(65-101A-01)	STOREY							
VLF RECEIVER..... 12/07/65 TO 08/01/68 R 1.680E 04 TO 1.680E 04 HZ C 230									
PIONEER 8	(67-123A-07)	SCARF							
PLASMA WAVE MEASUREMENT..... 12/13/67 TO 10/07/68 A 2.035E 04 TO 2.365E 04 HZ H 369									
FR 1	(65-101A-01)	STOREY							
VLF RECEIVER..... 12/07/65 TO 08/01/68 R 2.400E 04 TO 2.400E 04 HZ C 230									
PIONEER 9	(68-100A-07)	SCARF							
PLASMA WAVE DETECTOR..... 11/08/68 TO 09/07/69 A 2.775E 04 TO 3.225E 04 HZ H 1240									
ATS 2	(67-031A-01)	STONE							
RADIO ASTRONOMY..... 04/06/67 TO 10/23/67 R 4.500E 05 TO 3.000E 06 HZ 0 1154									

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY .	LATEST MM/DD/YY	MIN VALUE MAX VALUE	(F OR E) (LAMBDA)			
1.2 MAGNETIC FIELD MEASUREMENTS									
PIONEER 1 SINGLE AXIS SEARCH COIL MAGNETOMETER.....	(58-007A-02)	SONETT	10/11/58	TO 10/13/58	A	0.000E-39 TO 1.000E-03 HZ	EF		11
EXPLORER 6 SEARCH COIL MAGNETOMETER.....	(59-004A-04)	SONETT	08/07/59	TO 10/03/59	A	0.000E-39 TO 1.000E-03 HZ	DEF		17
PIONEER 5 SEARCH COIL MAGNETOMETER.....	(60-001A-02)	GREENSTADT	03/11/60	TO 07/11/60	A	0.000E-39 TO 1.000E-03 HZ	H		25
OGO 3 MAGNETIC SURVEY USING TWO MAGNETOMETERS.....	(66-049A-11)	HEPPNER	06/09/66	TO 08/14/68	A	0.000E-39 TO 1.700E-03 HZ	B DEFGH		1109
MARINER 2 FLUXGATE MAGNETOMETER.....	(62-041A-03)	COLEMAN, JR.	08/29/62	TO 11/15/62	A	0.000E-39 TO 1.200E-02 HZ	H		61
EXPLORER 18 FLUXGATE MAGNETOMETER.....	(63-046A-02)	NESS	11/27/63	TO 05/30/64	A	0.000E-39 TO 1.250E-02 HZ	FGH		110
EXPLORER 21 FLUXGATE MAGNETOMETER.....	(64-060A-02)	NESS	10/04/64	TO 04/05/65	A	0.000E-39 TO 1.250E-02 HZ	FGH		154
EXPLORER 28 FLUXGATE MAGNETOMETER.....	(65-042A-02)	NESS	05/29/65	TO 05/11/67	A	0.000E-39 TO 1.250E-02 HZ	FGH		1059
MARINER 4 HELIUM MAGNETOMETER.....	(64-077A-02)	SMITH	11/28/64	TO 10/01/65	A	0.000E-39 TO 1.330E-02 HZ	H		178
COSMOS 49 PROTON PRECESSIONAL MAGNETOMETERS.....	(64-069A-01)	DOLGINOV	10/24/64	TO 11/03/64	A	0.000E-39 TO 1.700E-02 HZ	B		1049
MARINER 2 FLUXGATE MAGNETOMETER.....	(62-041A-03)	COLEMAN, JR.	08/29/62	TO 11/15/62	A	0.000E-39 TO 2.500E-02 HZ		2	61
MARINER 5 TRIAXIAL LOW FIELD HELIUM MAGNETOMETER.....	(67-060A-05)	SMITH	06/14/67	TO 11/21/67	A	0.000E-39 TO 2.780E-02 HZ	H		1174
MARINER 5 TRIAXIAL LOW FIELD HELIUM MAGNETOMETER.....	(67-060A-05)	SMITH	06/14/67	TO 11/21/67	A	0.000E-39 TO 3.000E-02 HZ	H	2	1174
OGO 1 TRIAXIAL SEARCH COIL MAGNETOMETER.....	(64-054A-01)	SMITH	09/05/64	TO 11/17/67	A	0.000E-39 TO 4.170E-02 HZ	B DEFGH		1045
VANGUARD 3 PROTON PRECESSIONAL MAGNETOMETER.....	(59-007A-01)	HEPPNER	09/18/59	TO 12/11/59	A	0.000E-39 TO 5.000E-02 HZ	B		1007
APOLLO 14 LM LUNAR PORTABLE MAGNETOMETER EXPERIMENT.....	(71-008C-10)	DYAL	02/06/71	TO 02/06/71	A	0.000E-39 TO 5.000E-02 HZ		M	1349
APOLLO 16 LM LUNAR PORTABLE MAGNETOMETER.....	(72-031C-08)	DYAL	04/21/72	TO 04/23/72	A	0.000E-39 TO 5.000E-02 HZ		M	1397
EXPLORER 33	(66-058A-03)	SONETT							

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI /012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)			
1.2 MAGNETIC FIELD MEASUREMENTS									
AMES MAGNETIC FIELDS.....			06/30/66	TD 07/11/69	A	0.000E-39 TO 8.000E-02 HZ	GH		1114
EXPLORER 35 AMES MAGNETIC FIELDS.....	(67-070A-03)	SONETT	07/19/67	TD 12/23/70	A	0.000E-39 TO 8.000E-02 HZ	GH	M	1178
EXPLORER 33 GSFC MAGNETOMETER.....	(66-058A-01)	NESS	07/01/66	TD 10/05/68	A	0.000E-39 TO 9.700E-02 HZ	FGH		1113
EXPLORER 35 GSFC MAGNETOMETER.....	(67-070A-04)	NESS	07/19/67	TD 05/01/69	A	0.000E-39 TO 9.700E-02 HZ	GH	M	1179
ATS 5 MAGNETIC FIELD MONITOR.....	(69-069A-13)	SKILLMAN	12/04/69	TD 05/09/70	A	0.000E-39 TO 9.800E-02 HZ	F		1312
GRS-A FLUXGATE MAGNETOMETER.....	(69-097A-01)	MUSMANN	11/08/69	TD 06/28/70	A	0.000E-39 TO 1.000E-01 HZ	CD		1314
MARINER 5 TRIAXIAL LOW FIELD HELIUM MAGNETOMETER.....	(67-060A-05)	SMITH	06/14/67	TD 11/21/67	A	0.000E-39 TO 1.190E-01 HZ	H		1174
MARINER 5 TRIAXIAL LOW FIELD HELIUM MAGNETOMETER.....	(67-060A-05)	SMITH	06/14/67	TD 11/21/67	A	0.000E-39 TO 1.200E-01 HZ	H	2	1174
EXPLORER 34 TRIAXIAL FLUXGATE MAGNETOMETER.....	(67-051A-11)	NESS	05/24/67	TD 03/07/69	A	0.000E-39 TO 1.950E-01 HZ	FGH		1170
EXPLORER 41 MAGNETIC FIELD EXPERIMENT.....	(69-053A-11)	NESS	06/21/69	TD 08/27/72	A	0.000E-39 TO 1.950E-01 HZ	FGH		1296
INJUN 1 FLUXGATE MAGNETOMETER.....	(61-015B-05)	VAN ALLEN	06/30/61	TD 08/31/62	A	0.000E-39 TO 5.000E-01 HZ	C		38
PIONEER 6 UNIAXIAL FLUXGATE MAGNETOMETER.....	(65-105A-01)	NESS	12/17/65	TD 09/05/67	A	0.000E-39 TO 5.000E-01 HZ	H		1097
PIONEER 7 SINGLE AXIS MAGNETOMETER.....	(66-075A-01)	NESS	08/17/66	TD 10/29/67	A	0.000E-39 TO 5.000E-01 HZ	G		1126
PIONEER 8 SINGLE AXIS MAGNETOMETER.....	(67-123A-01)	NESS	12/13/67	TD 12/07/68	A	0.000E-39 TO 5.000E-01 HZ	G		1206
PIONEER 7 SINGLE AXIS MAGNETOMETER.....	(66-075A-01)	NESS	08/17/66	TD 10/29/67	A	0.000E-39 TO 5.000E-01 HZ	H		1126
PIONEER 8 SINGLE AXIS MAGNETOMETER.....	(67-123A-01)	NESS	12/13/67	TD 12/07/68	A	0.000E-39 TO 5.000E-01 HZ	H		1206
PIONEER 9 THREE AXIS MAGNETOMETER.....	(68-100A-01)	SONETT	11/08/68	TD 06/13/69	A	0.000E-39 TO 5.000E-01 HZ	H		1238
1964-083C RUBIDIUM VAPOR MAGNETOMETER.....	(64-083C-01)	ZMUDA	12/17/64	TD 06/26/65	A	0.000E-39 TO 7.500E-01 HZ	B		182

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PHENOMENON MEASURED INDEXES



SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)			
1.2 MAGNETIC FIELD MEASUREMENTS									
OGO 2 RUBIDIUM VAPOR MAGNETOMETER.....	(65-081A-05)	CAIN	10/14/65	TO 10/02/67	A	0.000E-39 TO 1.000E 00 HZ	C		1076
PIONEER 9 THREE AXIS MAGNETOMETER.....	(68-100A-01)	SONETT	11/08/68	TO 06/13/69	A	0.000E-39 TO 1.000E 00 HZ	H		1238
EXPLORER 12 FLUXGATE MAGNETOMETERS.....	(61-020A-02)	CAHILL, JR.	08/16/61	TO 12/05/61	A	0.000E-39 TO 1.500E 00 HZ	EFG		43
EXPLORER 14 FLUXGATE MAGNETOMETERS.....	(62-051A-02)	CAHILL, JR.	01/01/63	TO 05/30/63	A	0.000E-39 TO 1.500E 00 HZ	EFGH		77
APOLLO 12 LM LUNAR SURFACE MAGNETOMETER.....	(69-099C-04)	SONETT	11/19/69	TO 03/05/70	A	0.000E-39 TO 1.600E 00 HZ	GH	M	1321
APOLLO 15 LM LUNAR SURFACE MAGNETOMETER.....	(71-063C-03)	DYAL	07/31/71	TO 09/20/72	A	0.000E-39 TO 1.600E 00 HZ	GH	M	1379
APOLLO 16 LM LUNAR SURFACE MAGNETOMETER.....	(72-031C-03)	SONETT	04/21/72	TO 04/24/72	A	0.000E-39 TO 1.600E 00 HZ	GH	M	1396
OGO 5 UCLA TRIAXIAL FLUXGATE MAGNETOMETER.....	(68-014A-14)	COLEMAN, JR.	03/05/68	TO 11/18/69	A	0.000E-39 TO 3.470E 00 HZ	B DEFGH		1217
OGO 3 MAGNETIC SURVEY USING TWO MAGNETOMETERS.....	(66-049A-11)	HEPPNER	06/09/66	TO 08/14/68	A	0.000E-39 TO 3.500E 00 HZ	B DEFGH		1109
OGO 3 MAGNETIC SURVEY USING TWO MAGNETOMETERS.....	(66-049A-11)	HEPPNER	06/09/66	TO 08/14/68	A	0.000E-39 TO 3.500E 00 HZ	B DEFGH		1109
ATS 1 BIAXIAL FLUXGATE MAGNETOMETER.....	(66-110A-02)	COLEMAN, JR.	12/07/66	TO 12/31/68	A	0.000E-39 TO 5.600E 02 HZ	I		1143
OGO 3 TRIAXIAL SEARCH COIL MAGNETOMETER.....	(66-049A-12)	SMITH	06/09/66	TO 04/27/68	A	1.000E-02 TO 8.000E 02 HZ	B EFGH		1111
OGO 5 TRIAXIAL SEARCH COIL MAGNETOMETER.....	(68-014A-16)	SMITH	03/07/68	TO 01/01/71	A	3.000E-02 TO 5.500E 01 HZ	B DEFGH		1220
OGO 1 TRIAXIAL SEARCH COIL MAGNETOMETER.....	(64-054A-01)	SMITH	09/05/64	TO 11/17/67	A	1.000E 01 TO 1.000E 03 HZ	B DEFGH		1045
OGO 5 TRIAXIAL SEARCH COIL MAGNETOMETER.....	(68-014A-16)	SMITH	03/07/68	TO 01/01/71	A	1.000E 01 TO 1.000E 03 HZ	B DEFGH		1220
EXPLORER 40 VLF RECEIVER.....	(68-066B-02)	GURNETT	08/09/68	TO 05/29/70	R	3.000E 01 TO 1.000E 04 HZ	C		1232
INJUN 3 VLF RECEIVER SIGNAL STRENGTH.....	(62-067B-09)	GURNETT	12/25/62	TO 10/25/63	A	7.000E 01 TO 8.800E 03 HZ	C		91

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION M I N A B C D E F G H I / 0 1 2 3 4 5 M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY *	MIN VALUE M I N V A L U E	MAX VALUE ( F O R E ) ( L A M B D A )			
1.2 MAGNETIC FIELD MEASUREMENTS									
OGO 1 WIDE-BAND AND NARROW-BAND STEP FREQUENCY VLF RECEIVERS.....	(64-054A-08)	HELLIWELL	09/07/64	TD 12/29/65	A	2.000E 02 TO 1.000E 05 HZ	B H		136
OGO 2 VLF RECEIVERS, WIDE BAND, NARROW BAND, STEP FREQUENCY, AND TUNABLE.....	(65-081A-02)	HELLIWELL	10/16/65	TD 09/02/66	R	2.000E 02 TO 1.000E 05 HZ	C		214
OGO 5 PLASMA WAVE DETECTOR.....	(68-014A-24)	CROOK	03/05/68	TD 01/03/71	A	4.180E 02 TO 6.020E 02 HZ	B DEFGH		1224
FR 1 VLF RECEIVER.....	(65-101A-01)	STOREY	12/07/65	TD 08/01/68	R	1.680E 04 TO 1.680E 04 HZ	C		230
FR 1 VLF RECEIVER.....	(65-101A-01)	STOREY	12/07/65	TD 08/01/68	R	2.400E 04 TO 2.400E 04 HZ	C		230
OGO 5 PLASMA WAVE DETECTOR.....	(68-014A-24)	CROOK	03/05/68	TD 01/03/71	A	6.475E 04 TO 7.525E 04 HZ	B DEFGH		1224
ARIEL 3 VLF RECEIVER, FIXED FREQUENCY SIGNAL STRENGTH.....	(67-042A-05)	KAISER	05/05/67	TD 04/14/68	A	3.200E 06 TO 1.600E 07 HZ	C		325

M  
C  
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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F O R E) (LAMBDA)			
1.3 ELECTROMAGNETIC RADIATION [SEE SECTION 4 FOR PHOTOGRAPHY]									
1.3.1 SENSING SOURCES BELOW 65 KM									
EXPLORER 7 THERMAL RADIATION.....	(59-009A-01)	SUOMI	10/19/59	TO 06/04/60	R 5.000E 08	TO 1.000E 11	HZ A	3	20
TIROS 2 SCANNING RADIOMETER.....	(60-016A-02)	BARKSDALE	11/23/60	TO 04/13/61	R 9.231E 08	TO 1.200E 15	HZ A	3	30
TIROS 3 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(61-017A-01)	SUOMI	07/12/61	TO 10/20/61	R 6.000E 01	TO 3.000E-01	MIC A	3	40
TIROS 4 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(62-002A-01)	SUOMI	02/08/62	TO 06/28/62	R 6.000E 01	TO 3.000E-01	MIC A	3	49
TIROS 7 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(63-024A-01)	SUOMI	06/19/63	TO 08/29/63	R 6.000E 01	TO 3.000E-01	MIC A	3	101
TIROS 3 SCANNING RADIOMETER.....	(61-017A-03)	RADOS	07/12/61	TO 10/01/61	R 3.250E 01	TO 2.500E-01	MIC A	3	41
ESSA 3 FLAT PLATE RADIOMETER (FPR).....	(66-087A-02)	SUOMI	10/31/66	TO 01/19/67	R 3.000E 01	TO 3.000E-01	MIC A	3	1136
ESSA 5 FLAT PLATE RADIOMETER (FPR).....	(67-036A-02)	SUOMI	05/09/67	TO 09/22/67	R 3.000E 01	TO 3.000E-01	MIC A	3	1155
ESSA 7 FLAT PLATE RADIOMETER (FPR).....	(68-069A-02)	SUOMI	09/04/68	TO 06/22/69	R 3.000E 01	TO 3.000E-01	MIC A	3	1235
ESSA 9 FLAT PLATE RADIOMETER (FPR).....	(69-016A-02)	SUOMI	02/25/69	TO 03/13/70	R 3.000E 01	TO 3.000E-01	MIC A	3	1262
ITOS 1 FLAT PLATE RADIOMETER (FPR).....	(70-008A-02)	SUOMI	01/23/70	TO 06/18/71	R 3.000E 01	TO 3.000E-01	MIC A	3	1323
NOAA 1 FLAT PLATE RADIOMETER (FPR).....	(70-106A-02)	SUOMI	12/11/70	TO 05/29/71	R 3.000E 01	TO 3.000E-01	MIC A	3	1337
TIROS 7 SCANNING RADIOMETER.....	(63-024A-02)	BARKSDALE	06/19/63	TO 06/25/65	R 3.000E 01	TO 2.500E-01	MIC A	3	102
NIMBUS 2 MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR).....	(66-040A-04)	MCCULLOCH	05/15/66	TO 07/28/66	R 3.000E 01	TO 2.000E-01	MIC A	3	243
NIMBUS 3 MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR).....	(69-037A-05)	MCCULLOCH	04/14/69	TO 05/31/70	R 2.300E 01	TO 2.000E-01	MIC A	3	412

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION (MIN ABCDEFGHI/012345M)	PLANET PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LANBDA)		

1.3 ELECTROMAGNETIC RADIATION (SEE SECTION 4 FOR PHOTOGRAPHY)

1.3.1 SENSING SOURCES BELOW 65 KM

NIMBUS 3 INFRARED INTERFEROMETER SPECTROMETER (IRIS).....	(69-037A-03)	HANEL	04/15/69	07/22/69	R	2.000E 01	TO 5.000E 00	MIC A	3	499
NIMBUS 4 SATELLITE INFRARED SPECTROMETER (SIRS).....	(70-025A-04)	WARK	04/08/70	04/08/71	R	2.000E 01	TO 5.000E 00	MIC A	3	1327
NIMBUS 4 SELECTIVE CHOPPER RADIOMETER (SCR).....	(70-025A-10)	HOUGHTON	05/08/71	05/31/72	R	1.500E 01	TO 1.450E 01	MIC A	3	1329
NIMBUS 3 SATELLITE INFRARED SPECTROMETER (SIRS).....	(69-037A-04)	WARK	04/14/69	06/21/70	R	1.500E 01	TO 1.110E 01	MIC A	3	1271
NIMBUS 4 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR).....	(70-025A-02)	MCCULLDCH	04/10/70	04/30/72	R	1.250E 01	TO 6.500E 00	MIC A	3	1325
NIMBUS 5 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR).....	(72-097A-08)	MCCULLOCH	12/19/72	04/09/73	R	1.250E 01	TO 6.500E 00	MIC A	3	1404
TIROS 4 SCANNING RADIOMETER.....	(62-002A-03)	BARKSDALE	02/08/62	06/30/62	R	1.200E 01	TO 2.500E-01	MIC A	3	51
NIMBUS 1 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(64-052A-03)	FOSHEE	08/28/64	09/22/64	R	4.200E 00	TO 3.400E 00	MIC A	3	133
NIMBUS 2 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(66-040A-03)	FOSHEE	05/15/66	11/15/66	R	4.200E 00	TO 3.400E 00	MIC A	3	241
NIMBUS 3 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(69-037A-02)	CHERRIX	04/14/69	01/31/70	R	4.200E 00	TO 7.000E-01	MIC A	3	407
NIMBUS 3 IMAGE DISSECTOR CAMERA SYSTEM (IDCS).....	(69-037A-06)	BRANCHFLOWER	04/14/69	05/31/70	R	7.000E-01	TO 4.000E-01	MIC A	3	1272
NIMBUS 4 IMAGE DISSECTOR CAMERA SYSTEM (IDCS).....	(70-025A-06)	BRANCHFLOWER	04/18/70	04/30/72	R	7.000E-01	TO 4.000E-01	MIC A	3	1328
ATS 3 MULTICOLOR SPIN-SCAN CLOUDCOVER CAMERA (MSSCC).....	(67-111A-01)	SUOMI	01/01/67	05/25/70	R	7.000E-01	TO 3.900E-01	MIC A	3	1201
ATS 3 IMAGE DISSECTOR CAMERA (IOC).....	(67-111A-03)	BRANCHFLOWER	01/01/67	05/25/70	R	1.000E-01	TO 4.000E-01	MIC A	3	1202

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)			
1.3.2 SENSING SOURCES FROM 65 TO 3000 KM									
ISIS 1 SWEEP FREQUENCY SOUNDER	(69-009A-01)	WHITTEKER	01/30/69	TO 02/07/73	R 1.000E 05	TO 2.000E 07 HZ	C		1254
ISIS 2 SWEEP FREQUENCY SOUNDER	(71-024A-01)	WHITTEKER	04/08/71	TO 01/05/73	R 1.000E 05	TO 2.000E 07 HZ	C		1351
ISIS 2 FIXED FREQUENCY SOUNDER	(71-024A-02)	CALVERT	04/08/71	TO 06/10/71	R 1.200E 05	TO 9.300E 06 HZ	C		1352
ALQUETTE 2 SWEEP FREQUENCY SOUNDER	(65-098A-01)	WARREN	11/29/65	TO 11/27/72	R 1.200E 05	TO 1.450E 07 HZ	C		1043
ISIS 1 FIXED FREQUENCY SOUNDER	(69-009A-02)	CALVERT	01/30/69	TO 04/20/71	R 2.500E 05	TO 9.300E 06 HZ	C		390
ALQUETTE 1 SWEEP FREQUENCY SOUNDER	(62-049A-01)	NELMS	04/28/62	TO 11/30/70	R 5.000E 05	TO 1.200E 07 HZ	C		67
EXPLORER 20 FIXED-FREQUENCY IONOMSONDE	(64-051A-01)	KNECHT	08/25/64	TO 12/29/65	R 1.700E 06	TO 7.220E 06 HZ	C		1042
ARIEL 3 TERRESTRIAL RADIO (THUNDERSTORM) NOISE	(67-042A-04)	MURPHY	05/05/67	TO 04/14/68	R 4.998E 06	TO 1.500E 07 HZ	C		323
GEMINI 5 CLOUDTOP SPECTROMETER	(65-068A-04)	SAIEDY	08/21/65	TO 08/29/65	R 7.800E-01	TO 4.000E-01 MIC	B		210
OGO 4 AIRGLOW PHOTOMETER	(67-073A-12)	REED	08/19/67	TO 01/29/68	R 6.300E-01	TO 2.630E-01 MIC	BC		1189
INJUN 3 AURORAL AND AIRGLOW PHOTOMETERS	(62-067B-08)	O'BRIEN	12/14/62	TO 10/28/63	R 5.577E-01	TO 3.914E-01 MIC	BC		90
OGO 5 ULTRAVIOLET AIRGLOW	(68-014A-21)	THOMAS	03/04/68	TO 12/14/71	R 1.800E-01	TO 1.050E-01 MIC	B		1222
OGO 6 UV PHOTOMETER	(69-051A-13)	BARTH	06/12/69	TO 07/24/70	R 1.800E-01	TO 1.050E-01 MIC	BC		1264
OGO 4 LYMAN-ALPHA AND UV AIRGLOW STUDY	(67-073A-13)	MANGE	07/29/67	TO 02/12/68	R 1.550E-01	TO 1.050E-01 MIC	BC		344
ARIEL 3 MOLECULAR OXYGEN DISTRIBUTION	(67-042A-03)	STEWART	05/05/67	TO 01/12/68	R 1.490E-01	TO 1.425E-01 MIC	C		1161
OSO 6 STUDY OF SOLAR HELIUM I, HELIUM II, OXYGEN, AND NITROGEN RADIATION	(69-068A-06)	BOYD	08/11/69	TO 10/03/70	R 1.216E-01	TO 3.040E-02 MIC	B	0	1308
OSO 1 GAMMA-RAY SCINTILLATION DETECTOR	(62-006A-08)	PETERSON	03/07/62	TO 05/15/62	A 2.482E-05	TO 4.136E-07 MIC	B		53

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF		RANGE OF MEASUREMENTS			PLANET	
			DATA AT NSSDC EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)	MAX REGION MIN		
1.3.2 SENSING SOURCES FROM 65 TO 3000 KM									
OSO 1	(62-005A-08)	PETERSON	03/07/62	TO 05/15/62	A	2.482E-05	TO 4.136E-07	MIC B	53
GAMMA-RAY SCINTILLATION DETECTOR.....									

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERINENTER E X P E R I N E N T E R	LIMITING DATES OF DATA AT NSSDC		RANGE OF MIN VALUE * MAX VALUE	OF (F OR E) (LAMBDA)	MEASUREMENTS MAX REGION MIN	PLANET ABCDEFGHI/012345H	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY					
1.3.4 SENSING INTERPLANETARY SPACE									
PIONEER 6 TWO-FREQUENCY RADIO RECEIVER.....	(65-105A-04)	ESHLEMAN	12/16/65	TO 07/11/66	R 4.980E 07	TO 4.230E 08	HZ	H	1099
PIONEER 7 TWO-FREQUENCY BEACON RECEIVER.....	(66-075A-04)	ESHLEMAN	08/15/66	TO 05/20/69	R 4.980E 07	TO 4.230E 08	HZ	H	289
MARINER 5 TWO-FREQUENCY BEACON RECEIVER.....	(67-060A-02)	ESHLEMAN	06/14/67	TO 11/21/67	R 4.980E 07	TO 4.230E 08	HZ	H	335
DSD 5 ZODIACAL LIGHT MONITOR.....	(69-006A-07)	NEY	01/27/69	TO 03/15/71	R 8.500E-01	TO 3.500E-01	MIC	H	1252
ERS 17 GAMMA-RAY DETECTOR.....	(65-058C-03)	VETTE	07/20/65	TO 11/03/65	A 4.136E-05	TO 1.241E-06	MIC	H	206
ERS 17 GAMMA-RAY DETECTOR.....	(65-058C-03)	VETTE	07/20/65	TO 11/03/65	A 1.241E-06	TO 4.136E-07	MIC	H	206

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY *	MIN VALUE (F OR E)	MAX VALUE (LAMBDA)			
1.3.5 SENSING COLD (PLANETARY) SOURCES									
EXPLORER 7 THERMAL RADIATION.....	(59-009A-01)	SUOMI	10/19/59	TO 06/04/60	R 5.000E 08	TO 1.000E 11 HZ	A	3	20
TIROS 2 SCANNING RADIOMETER.....	(60-016A-02)	BARKSDALE	11/23/60	TO 04/13/61	R 9.231E 08	TO 1.200E 15 HZ	A	3	30
TIROS 3 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(61-017A-01)	SUOMI	07/12/61	TO 10/20/61	R 6.000E 01	TO 3.000E-01 MIC	A	3	40
TIROS 4 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(62-002A-01)	SUOMI	02/08/62	TO 06/28/62	R 6.000E 01	TO 3.000E-01 MIC	A	3	49
TIROS 7 LOW-RESOLUTION OMNIDIRECTIONAL RADIOMETER.....	(63-024A-01)	SUOMI	06/19/63	TO 08/29/63	R 6.000E 01	TO 3.000E-01 MIC	A	3	101
TIROS 3 SCANNING RADIOMETER.....	(61-017A-03)	RADOS	07/12/61	TO 10/01/61	R 3.250E 01	TO 2.500E-01 MIC	A	3	41
ESSA 3 FLAT PLATE RADIOMETER (FPR).....	(66-087A-02)	SUOMI	10/31/66	TO 01/19/67	R 3.000E 01	TO 3.000E-01 MIC	A	3	1136
ESSA 5 FLAT PLATE RADIOMETER (FPR).....	(67-036A-02)	SUOMI	05/09/67	TO 09/22/67	R 3.000E 01	TO 3.000E-01 MIC	A	3	1155
ESSA 7 FLAT PLATE RADIOMETER (FPR).....	(68-069A-02)	SUOMI	09/04/68	TO 06/22/69	R 3.000E 01	TO 3.000E-01 MIC	A	3	1235
ESSA 9 FLAT PLATE RADIOMETER (FPR).....	(69-016A-02)	SUOMI	02/25/69	TO 03/13/70	R 3.000E 01	TO 3.000E-01 MIC	A	3	1262
ITDS 1 FLAT PLATE RADIOMETER (FPR).....	(70-008A-02)	SUOMI	01/23/70	TO 06/18/71	R 3.000E 01	TO 3.000E-01 MIC	A	3	1323
NOAA 1 FLAT PLATE RADIOMETER (FPR).....	(70-106A-02)	SUOMI	12/11/70	TO 05/29/71	R 3.000E 01	TO 3.000E-01 MIC	A	3	1337
TIROS 7 SCANNING RADIOMETER.....	(63-024A-02)	BARKSDALE	06/19/63	TO 06/25/65	R 3.000E 01	TO 2.500E-01 MIC	A	3	102
NIMBUS 2 MEDIUM-RESOLUTION INFRARED RADIOMETER (NRIR).....	(66-040A-04)	MCCULLOCH	05/15/66	TO 07/28/66	R 3.000E 01	TO 2.000E-01 MIC	A	3	243
MARINER 6 TWO-CHANNEL IR RADIOMETER MARS SURFACE TEMPERATURE.....	(69-014A-03)	NEUGEBAUER	07/31/69	TO 07/31/69	R 2.500E 01	TO 8.000E 00 MIC		4	397
MARINER 7 TWO-CHANNEL IR RADIOMETER MARS SURFACE	(69-030A-03)	NEUGEBAUER							

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PHENOMENON MEASURED INDEXES



SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS MIN VALUE (F OR E) MAX VALUE (LAMBDA)	MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
1.3.5 SENSING COLD (PLANETARY) SOURCES								
TEMPERATURE.....			08/05/69	TO 08/05/69	R 2.500E 01 TO 8.000E 00	MIC		4 405
NIMBUS 3 MEDIUM-RESOLUTION INFRARED RADIOMETER (MRIR).....	(69-037A-05)	MCCULLOCH	04/14/69	TO 05/31/70	R 2.300E 01 TO 2.000E-01	MIC A		3 412
NIMBUS 3 INFRARED INTERFEROMETER SPECTROMETER (IRIS).....	(69-037A-03)	HANEL	04/15/69	TO 07/22/69	R 2.000E 01 TO 5.000E 00	MIC A		3 409
NIMBUS 4 SATELLITE INFRARED SPECTROMETER (SIRS).....	(70-025A-04)	MARK	04/08/70	TO 04/08/71	R 2.000E 01 TO 5.000E 00	MIC A		3 1327
NIMBUS 4 SELECTIVE CHOPPER RADIOMETER (SCR).....	(70-025A-10)	HOUGHTON	05/08/71	TO 05/31/72	R 1.500E 01 TO 1.450E 01	MIC A		3 1329
NIMBUS 3 SATELLITE INFRARED SPECTROMETER (SIRS).....	(69-037A-04)	MARK	04/14/69	TO 06/21/70	R 1.500E 01 TO 1.110E 01	MIC A		3 1271
MARINER 6 IR SPECTROMETER.....	(69-014A-02)	PIMENTEL	07/31/69	TO 07/31/69	R 1.430E 01 TO 1.900E 00	MIC		4 396
MARINER 7 IR SPECTROMETER.....	(69-030A-02)	PIMENTEL	08/05/69	TO 08/05/69	R 1.430E 01 TO 1.900E 00	MIC		4 404
NIMBUS 4 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR).....	(70-025A-02)	MCCULLOCH	04/10/70	TO 04/30/72	R 1.250E 01 TO 6.500E 00	MIC A		3 1325
NIMBUS 5 TEMPERATURE-HUMIDITY INFRARED RADIOMETER (THIR).....	(72-097A-08)	MCCULLOCH	12/19/72	TO 04/09/73	R 1.250E 01 TO 6.500E 00	MIC A		3 1404
TIROS 4 SCANNING RADIOMETER.....	(62-002A-03)	BARKSDALE	02/08/62	TO 06/30/62	R 1.200E 01 TO 2.500E-01	MIC A		3 51
MARINER 2 INFRARED RADIOMETER.....	(62-041A-02)	NEUGEBAUER	12/14/62	TO 12/14/62	R 1.040E 01 TO 8.400E 00	MIC		4 60
NIMBUS 1 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(64-052A-03)	FOSHEE	08/28/64	TO 09/22/64	R 4.200E 00 TO 3.400E 00	MIC A		3 133
NIMBUS 2 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(66-040A-03)	FOSHEE	05/15/66	TO 11/15/66	R 4.200E 00 TO 3.400E 00	MIC A		3 241
NIMBUS 3 HIGH-RESOLUTION INFRARED RADIOMETER (HRIR).....	(69-037A-02)	CHERRIX	04/14/69	TO 01/31/70	R 4.200E 00 TO 7.000E-01	MIC A		3 407
NIMBUS 3	(69-037A-06)	BRANCHFLOWER						

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F O R E) (LAMBDA)			
1.3.5 SENSING COLD (PLANETARY) SOURCES									
IMAGE DISSECTOR CAMERA SYSTEM (IDCS).....			04/14/69	TO 05/31/70	R	7.000E-01 TO 4.000E-01	MIC A	3	1272
NIMBUS 4	(70-025A-06)	BRANCHFLOWER							
IMAGE DISSECTOR CAMERA SYSTEM (IDCS).....			04/18/70	TO 04/30/72	R	7.000E-01 TO 4.000E-01	MIC A	3	1328
ATS 3	(67-111A-01)	SUOMI							
MULTICOLOR SPIN-SCAN CLOUDCOVER CAMERA (MSSCC).....			01/01/67	TO 05/25/70	R	7.000E-01 TO 3.900E-01	MIC A	3	1201
MARINER 6	(69-014A-04)	BARTH							
UV SPECTROMETER.....			07/31/69	TO 07/31/69	R	4.300E-01 TO 1.100E-01	MIC	4	1259
MARINER 7	(69-030A-04)	BARTH							
UV SPECTROMETER.....			08/05/69	TO 08/05/69	R	4.300E-01 TO 1.100E-01	MIC	4	1267
MARINER 9	(71-051A-02)	BARTH							
ULTRAVIOLET SPECTROMETER (UVS).....			11/12/71	TO 02/08/72	R	3.400E-01 TO 1.100E-01	MIC	4	1355
ATS 3	(67-111A-03)	BRANCHFLOWER							
IMAGE DISSECTOR CAMERA (IDC).....			01/01/67	TO 05/25/70	R	1.000E-01 TO 4.000E-01	MIC A	3	1202
SURVEYOR 7	(68-001A-01)	SHOEMAKER							
TELEVISION.....			01/10/68	TO 02/14/68	R	8.000E-04 TO 3.000E-04	MIC	M	371
SURVEYOR 6	(67-112A-01)	SHOEMAKER							
TELEVISION.....			11/10/67	TO 11/24/67	R	8.000E-04 TO 3.000E-04	MIC	M	359
APOLLO 12 CSM	(69-099A-09)	GOETZ							
MULTISPECTRAL PHOTOS.....			11/18/69	TO 11/20/69	R	8.000E-04 TO 3.000E-04	MIC	M	422
MARINER 6	(69-014A-01)	LEIGHTON							
MARS TV CAMERA.....			07/29/69	TO 07/31/69	R	5.730E-04 TO 4.690E-04	MIC	4	391
MARINER 7	(69-030A-01)	LEIGHTON							
MARS TV CAMERA.....			08/02/69	TO 08/05/69	R	5.730E-04 TO 4.690E-04	MIC	4	1266

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE * MAX VALUE	(F OR E) (LAMBDA)			
1.3.6 SENSING THE SUN									
ALOUETTE 2 COSMIC RADIO NOISE.....	(65-098A-03)	HARTZ	11/29/65	TO 10/13/72	R	1.000E 05 TO 1.500E 07	HZ	0	1085
ISIS 1 COSMIC RADIO NOISE.....	(69-009A-10)	HARTZ	01/30/69	TO 08/31/72	R	1.000E 05 TO 2.000E 07	HZ	0	1257
ISIS 2 COSMIC RADIO NOISE.....	(71-024A-10)	HARTZ	04/08/71	TO 01/05/73	R	1.000E 05 TO 2.000E 07	HZ	0	1353
ALOUETTE 1 COSMIC RADIO NOISE.....	(62-049A-04)	HARTZ	01/00/67	TO 03/18/70	R	5.000E 05 TO 1.200E 07	HZ	0	1024
DGO 3 RADIO ASTRONOMY.....	(66-049A-18)	HADDOCK	06/09/66	TO 08/16/68	R	2.000E 06 TO 4.000E 06	HZ	0	259
OSO 1 3800- TO 4800-A SOLAR FLUX MONITOR.....	(62-006A-06)	HALLAM	03/07/62	TO 05/15/62	R	4.800E 03 TO 3.800E 03	A	0	1017
OSO 4 SOLAR EUV SPECTROMETER.....	(67-100A-07)	GOLDBERG	10/25/67	TO 11/29/67	R	1.400E 03 TO 3.000E 02	A	0	356
OSO 6 SOLAR UV SCANNING SPECTROMETER, SPECTROHELIO METER (300 TO 1400 A).....	(69-068A-01)	GOLDBERG	08/12/69	TO 05/12/70	R	1.400E 03 TO 3.000E 02	A	0	1305
OSO 4 SOLAR EUV SPECTROMETER.....	(67-100A-07)	GOLDBERG	10/25/67	TO 11/29/67	R	1.400E 03 TO 3.000E 02	A	0	356
OSO 6 SOLAR UV SCANNING SPECTROMETER, SPECTROHELIO METER (300 TO 1400 A).....	(69-068A-01)	GOLDBERG	08/12/69	TO 05/12/70	R	1.400E 03 TO 3.000E 02	A	0	1305
EXPLORER 37 SOLAR RADIATION DETECTORS.....	(68-017A-01)	KREPLIN	03/08/68	TO 12/31/71	R	1.350E 03 TO 1.080E 03	A	0	1226
SOLRAD 1 X-RAY AND LYMAN-ALPHA STUDY.....	(60-007B-01)	FRIEDMAN	06/22/60	TO 11/01/60	R	1.350E 03 TO 1.050E 03	A	0	26
OSO 1 SOLAR HYDROGEN LYMAN-ALPHA FLUX MONITOR.....	(62-006A-07)	HALLAM	03/07/62	TO 05/15/62	R	1.216E 03 TO 1.216E 03	A	0	1018
OSO 6 STUDY OF SOLAR HELIUM I, HELIUM II, OXYGEN, AND NITROGEN RADIATION.....	(69-068A-06)	BOYD	08/11/69	TO 10/03/70	R	1.216E 03 TO 3.040E 02	A B	0	1308
OSO 1 SOLAR SPECTROMETER.....	(62-006A-01)	NEUPERT	03/07/62	TO 05/15/62	R	4.000E 02 TO 1.000E 01	A	0	53
OSO 1 SOLAR SPECTROMETER.....	(62-006A-01)	NEUPERT	03/07/62	TO 05/15/62	R	4.000E 02 TO 1.000E 01	A	0	53
OSO 4 SOLAR SPECTROMETER.....	(67-100A-08)	GIACCONI							

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE OF MEASUREMENTS		MAX REGION (LAMBDA)	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MIN VALUE MAX	(F OR E) VALUE			
1.3.6 SENSING THE SUN									
SOLAR X-RAY TELESCOPE.....			10/20/67	TO 05/12/68	R 7.000E 01	TD 3.000E 00	A	0	1199
SOLRAD 7A	(64-001D-01)	KREPLIN							
SOLAR X-RAY (2 TO 60 A) AND UV (1225 TO 1350 A) FLUX.....			01/11/64	TO 02/03/65	R 6.000E 01	TD 2.000E 00	A	0	121
OSO 2	(65-007A-02)	CHUBB							
SOLAR X-RAY BURSTS.....			02/04/65	TO 03/08/65	R 6.000E 01	TD 2.000E 00	A	0	187
OGO 2	(65-081A-16)	KREPLIN							
SOLAR X-RAYS.....			10/14/65	TO 10/23/65	R 6.000E 01	TD 5.000E-01	A	0	1080
EXPLORER 30	(65-093A-01)	KREPLIN							
SOLAR X-RAY AND ULTRAVIOLET MONITOR.....			11/19/65	TO 11/30/67	R 6.000E 01	TD 5.000E-01	A	0	1081
OGO 4	(67-073A-21)	KREPLIN							
SOLAR X-RAY EMISSIONS.....			07/29/67	TO 07/16/68	R 6.000E 01	TD 5.000E-01	A	0	1192
EXPLORER 37	(68-017A-01)	KREPLIN							
SOLAR RADIATION DETECTORS.....			03/08/68	TO 12/31/71	R 6.000E 01	TD 5.000E-01	A	0	1226
OSO 5	(69-006A-04)	CHUBB							
SOLAR X-RAY RADIATION ION CHAMBER PHOTOMETER.....			01/23/69	TO 08/02/70	R 6.000E 01	TD 5.000E-01	A	0	1250
VELA 5A	(69-046D-02)	CHAMBERS							
SOLAR X-RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A.....			05/27/69	TO 05/15/70	R 6.000E 01	TD 5.000E-01	A	0	1276
VELA 5B	(69-046E-02)	CHAMBERS							
SOLAR X-RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A.....			05/27/69	TO 05/15/70	R 6.000E 01	TD 5.000E-01	A	0	1279
VELA 6A	(70-027A-02)	CHAMBERS							
SOLAR X RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A.....			04/11/70	TO 01/01/71	R 6.000E 01	TD 5.000E-01	A	0	1332
VELA 6B	(70-027B-02)	CHAMBERS							
SOLAR X RAY DETECTORS, .5 TO 3.0 A, 1 TO 8 A, 1 TO 16 A, 44 TO 60 A.....			04/11/70	TO 01/01/71	R 6.000E 01	TD 5.000E-01	A	0	1334
OSO 6	(69-068A-04)	ARGO							
X-RAY SPECTROMETER.....			08/14/69	TO 01/20/70	R 4.030E 01	TD 1.600E 01	A	0	1307
INJUN 1	(61-015B-07)	KREPLIN							
2- TO 8-A AND 8- TO 20-A X-RAY DETECTORS.....			06/29/61	TO 11/26/61	R 2.000E 01	TD 2.000E 00	A	0	1011
ERS 17	(65-058C-02)	VETTE							
X-RAY DETECTORS.....			07/20/65	TO 11/03/65	R 1.400E 01	TD 1.000E 00	A	0	205
OGO 5	(68-014A-04)	ANDERSON							
ENERGETIC RADIATIONS FROM SOLAR FLARES.....			03/08/68	TO 10/04/69	R 1.241E 01	TD 1.241E 00	A	0	1210

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF MIN VALUE (F OR E) MAX VALUE (LAMBOA)	MEASUREMENTS MIN REGION MAX REGION	PLANET ABCDEFGHIJ/012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
1.3.6 SENSING THE SUN								
EXPLORER 35 ELECTRON AND PROTON DETECTORS.....	(67-070A-01)	VAN ALLEN	07/19/67	TO 05/28/70	R 1.200E 01 TO 2.000E 00	A	0	338
INJUN 1 GM COUNTER.....	(61-015B-01)	FRANK	06/29/61	TO 08/31/62	R 1.200E 01 TO 2.000E 00	A	0	1010
INJUN 3 GEIGER TUBE DETECTORS.....	(62-067B-01)	O'BRIEN	12/14/62	TO 10/28/63	R 1.200E 01 TO 2.000E 00	A	0	62
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	R 1.200E 01 TO 2.000E 00	A	0	274
SOLRAD 1 X-RAY AND LYMAN-ALPHA STUDY.....	(60-007B-01)	FRIEDMAN	06/22/60	TO 11/01/60	R 8.000E 00 TO 2.000E 00	A	0	28
OSO 3 8- TO 12-A SOLAR X-RAY ION CHAMBER.....	(67-020A-05)	TESKE	03/09/67	TO 07/16/68	R 8.000E 00 TO 1.200E 00	A	0	1152
OSO 1 1- TO 8-A SOLAR X-RAY FLUX.....	(62-006A-04)	WHITE	03/07/62	TO 05/15/62	R 8.000E 00 TO 1.000E 00	A	0	1016
EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	R 6.204E 00 TO INFINITY	A	0	1167
OSO 3 SOLAR AND CELESTIAL GAMMA-RAY TELESCOPE.....	(67-020A-07)	PETERSON	03/09/67	TO 04/08/68	R 1.611E 00 TO 6.204E-02	A	0	1152
OGO 1 IONIZATION CHAMBER.....	(64-054A-20)	WINCKLER	09/05/64	TO 12/06/67	R 1.241E 00 TO 2.482E-01	A	0	144
OGO 5 ENERGETIC RADIATIONS FROM SOLAR FLARES.....	(68-014A-04)	ANDERSON	03/08/68	TO 10/04/69	R 1.241E 00 TO 1.379E-01	A	0	1210
EXPLORER 37 SOLAR RADIATION DETECTORS.....	(68-017A-01)	KREPLIN	03/08/68	TO 12/31/71	R 6.204E-01 TO 1.551E-01	A	0	1226
OSO 1 20- TO 100-KEV SOLAR X-RAY DETECTOR.....	(62-006A-02)	FROST	03/07/62	TO 05/15/62	R 6.204E-01 TO 1.241E-01	A	0	1015
OGO 3 IONIZATION CHAMBER.....	(66-049A-23)	WINCKLER	06/08/66	TO 08/12/68	R 1.241E-01 TO 2.482E-02	A	0	266
OSO 1 0.1- TO 0.7-MEV SOLAR GAMMA-RAY MONITOR.....	(62-006A-03)	FROST	03/07/62	TO 05/15/62	R 1.241E-01 TO 1.773E-02	A	0	1016
OSO 1 HIGH-ENERGY GAMMA-RAY.....	(62-006A-09)	FAZIO	03/17/62	TO 09/22/62	R 1.241E-02 TO INFINITY	A	0	1019
OSO 3 HIGH ENERGY GAMMA RAY.....	(67-020A-01)	CLARK	03/08/67	TO 06/28/68	R 5.000E 01 TO INFINITY	MEV	0	1151

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF		RANGE OF MEASUREMENTS			PLANET	PAGE
			DATA AT NSSDC EARLIEST MM/DD/YY	LATEST MM/DD/YY *	MIN VALUE (F O R E) (LAMBDA)	MAX REGION MIN	MAX REGION ABCDEFGHI/012345M		
1.3.7 SENSING HOT (STAR) SOURCES									
DAO 2	(68-110A-02)	CODE	12/11/68	TO 02/24/72	R 4.670E 03	TO 1.185E 03	A	I	1246
WISCONSIN EXPERIMENT PACKAGE.....									
DAO 2	(68-110A-02)	CODE	12/11/68	TO 02/24/72	R 3.800E 03	TO 1.800E 03	A	I	1246
WISCONSIN EXPERIMENT PACKAGE.....									
DAO 2	(68-110A-01)	WHIPPLE	12/08/68	TO 04/30/70	R 2.850E 03	TO 1.200E 03	A	I	1244
HIGH-RESOLUTION TELESCOPES.....									
DAO 2	(68-110A-02)	CODE	12/11/68	TO 02/24/72	R 2.000E 03	TO 1.050E 03	A	I	1246
WISCONSIN EXPERIMENT PACKAGE.....									
OGO 6	(69-051A-12)	CLARK	06/08/69	TO 06/08/69	R 1.216E 03	TO 1.216E 03	A	I	1282
LYMAN-ALPHA PHOTOMETER.....									
SURVEYOR 6	(67-112A-01)	SHOEMAKER	11/10/67	TO 11/24/67	R 8.000E 00	TO 3.000E 00	A	I	359
TELEVISION.....									
EXPLORER 11	(61-013A-01)	KRAUSHAAR	04/27/61	TO 11/17/61	R 5.000E 01	TO INFINITY	MEV	I	1008
PHOSWICH-CERENKOV COUNTER TELESCOPE.....									
OGO 5	(68-014A-12)	VAN DE HULST	03/05/68	TO 08/31/71	R 5.000E 02	TO INFINITY	MEV	I	1214
MEASUREMENT OF THE ABSOLUTE FLUX AND ENERGY SPECTRUM OF ELECTRONS.....									

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PHENOMENON MEASURED INDEXES

SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC R RANGE OF MEASUREMENTS		E MIN VALUE (F OR E) MAX VALUE (LAMBDA)	MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
2. CHARGED PARTICLE MEASUREMENTS								
2.1 SENSING ELECTRONS								
2.1.1 OF THERMAL ENERGIES (LESS THAN OR EQUAL TO 1 KEV)								
ARIEL 1 RADIO FREQUENCY CAPACITANCE PROBE.....	(62-015A-01)	SAYERS	04/27/62	TO 07/08/62	U THERMAL ENERGIES	B		56
EXPLORER 17 LANGMUIR PROBES.....	(63-009A-02)	BRACE	04/04/63	TO 04/04/63	U THERMAL ENERGIES	B		98
TIROS 7 LANGMUIR PROBE.....	(63-024A-03)	BRACE	06/19/63	TO 07/09/63	U THERMAL ENERGIES	B		104
EXPLORER 22 LANGMUIR PROBE.....	(64-064A-02)	BRACE	10/10/64	TO 05/31/65	U THERMAL ENERGIES	BC		162
PIONEER 7 ELECTROSTATIC ANALYZER.....	(66-075A-03)	WOLFE	08/17/66	TO 02/28/71	R THERMAL ENERGIES	H		1128
ATS 1 FARADAY ROTATION.....	(66-110A-15)	DAROSA	01/01/67	TO 12/31/69	U THERMAL ENERGIES	DE		301
ARIEL 3 LANGMUIR PROBE.....	(67-042A-01)	SAYERS	05/05/67	TO 04/14/68	U THERMAL ENERGIES	BC		321
ARIEL 3 RADIO FREQUENCY CAPACITANCE PROBE.....	(67-042A-06)	SAYERS	05/05/67	TO 04/14/68	U THERMAL ENERGIES	BC		326
PIONEER 8 TWO-FREQUENCY BEACON RECEIVER.....	(67-123A-03)	ESHLEMAN	12/14/67	TO 03/07/71	U THERMAL ENERGIES	B H		365
PIONEER 9 TWO-FREQUENCY BEACON RECEIVER.....	(68-100A-03)	ESHLEMAN	11/08/68	TO 03/07/71	U THERMAL ENERGIES	B H		381
ISIS 1 SWEEP FREQUENCY SOUNDER.....	(69-009A-01)	WHITTEKER	01/30/69	TO 02/07/73	U THERMAL ENERGIES	C		1254
ISIS 1 FIXED FREQUENCY SOUNDER.....	(69-009A-02)	CALVERT	01/30/69	TO 04/20/71	U THERMAL ENERGIES	C		390
ISIS 2 SWEEP FREQUENCY SOUNDER.....	(71-024A-01)	WHITTEKER	04/08/71	TO 01/05/73	U THERMAL ENERGIES	C		1351
ISIS 2 FIXED FREQUENCY SOUNDER.....	(71-024A-02)	CALVERT	04/08/71	TO 06/10/71	U THERMAL ENERGIES	C		1352
EXPLORER 18 RETARDING POTENTIAL ANALYZER.....	(63-046A-01)	SERBL	11/27/63	TO 11/27/63	R THERMAL ENERGIES	DE		109
EXPLORER 21 RETARDING POTENTIAL ANALYZER.....	(64-060A-01)	SERBU	10/05/64	TO 04/04/65	R THERMAL ENERGIES	B E		153

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID	EXPERIMENTER	LIMITING DATES OF		RANGE OF	MEASUREMENTS	MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY					

2. CHARGED PARTICLE MEASUREMENTS

2.1 SENSING ELECTRONS

2.1.1 OF THERMAL ENERGIES (LESS THAN OR EQUAL TO 1 KEV)

EXPLORER 28 RETARDING POTENTIAL ANALYZER.....	(65-042A-01)	SERBU	05/29/65	TO 05/05/67	R	THERMAL ENERGIES	B DE	196
VELA 3A ELECTROSTATIC ANALYZER AND GM TUBES.....	(65-058A-04)	BAME	07/26/65	TO 05/21/70	U	THERMAL ENERGIES	GH	1064
VELA 3B HEMISPHERICAL ELECTROSTATIC ANALYZER AND GEIGER COUNTERS.....	(65-058B-04)	BAME	07/26/65	TO 05/21/70	U	THERMAL ENERGIES	GH	1067
PIONEER 6 ELECTROSTATIC ANALYZER.....	(65-105A-06)	WOLFE	12/16/65	TO 07/30/72	R	1.000E 00 TO 5.000E 02 EV	H	1101
OGO 3 LOW-ENERGY ELECTRONS AND PROTONS.....	(66-049A-08)	FRANK	07/14/66	TO 07/16/66	R	5.000E 00 TO 1.100E 03 EV	DEFGH	256
VELA 5A SOLAR WIND EXPERIMENT.....	(69-046D-05)	BAME	11/07/69	TO 02/28/71	R	7.500E 00 TO 1.850E 04 EV	GH	1277
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.200E 01 TO 1.000E 03 EV	H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.200E 01 TO 1.000E 03 EV	H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.200E 01 TO 1.000E 03 EV	H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.200E 01 TO 1.000E 03 EV	H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.200E 01 TO 1.000E 03 EV	H	364
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.200E 01 TO 1.000E 03 EV	H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.200E 01 TO 1.000E 03 EV	H	380
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.200E 01 TO 1.000E 03 EV	H	380
VELA 5B SOLAR WIND EXPERIMENT.....	(69-046E-05)	BAME	11/07/69	TO 02/28/71	R	2.000E 01 TO 3.300E 04 EV	GH	1280
VELA 5A SOLAR WIND EXPERIMENT.....	(69-046D-05)	BAME	11/07/69	TO 02/28/71	R	2.000E 01 TO 3.300E 04 EV	GH	1277

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PHENOMENON MEASURED INDEXES



SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF		RANGE OF	MEASUREMENTS		PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		E MIN S MAX	VALUE VALUE (LAMBDA)		
<b>2. CHARGED PARTICLE MEASUREMENTS</b>									
<b>2.1 SENSING ELECTRONS</b>									
<b>2.1.1 OF THERMAL ENERGIES (LESS THAN OR EQUAL TO 1 KEV)</b>									
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TO 07/04/67	R 3.300E 01	TO 1.050E 03	EV	H	332
APOLLO 14 LM CHARGED PARTICLE LUNAR ENVIRONMENT.....	(71-008C-08)	O'BRIEN	02/05/71	TO 06/07/71	R 4.000E 01	TO 2.000E 03	EV	GH	M 1346
EXPLORER 33 PLASMA PROBE.....	(66-058A-06)	BRIDGE	07/06/66	TO 09/23/69	R 5.000E 01	TO 5.400E 03	EV	GH	1116
EXPLORER 35 PLASMA PROBE.....	(67-070A-06)	BRIDGE	07/25/67	TO 07/03/68	R 5.000E 01	TO 5.400E 03	EV	H	1181
EXPLORER 40 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(68-066B-01)	FRANK	08/09/68	TO 05/29/70	R 5.000E 01	TO 1.100E 03	EV	C	1231
EXPLORER 18 FARADAY CUP.....	(63-046A-07)	BRIDGE	11/27/63	TO 01/13/65	U 6.500E 01	TO 2.100E 02	EV	DEF H	119
PIIONEER 6 SOLAR WIND PLASMA FARADAY CUP.....	(65-105A-02)	BRIDGE	12/18/65	TO 02/28/70	R 9.000E 01	TO 1.580E 03	EV	H	1098
PIIONEER 7 SOLAR WIND PLASMA FARADAY CUP.....	(66-075A-02)	BRIDGE	08/18/66	TO 12/31/70	R 1.150E 02	TO 1.600E 03	EV	H	1127
EXPLORER 21 FARADAY CUP.....	(64-060A-07)	BRIDGE	10/04/64	TO 09/24/65	U 1.300E 02	TO 2.650E 02	EV	DEF H	161
VELA 3B HEMISPHERICAL ELECTROSTATIC ANALYZER AND GEIGER COUNTERS.....	(65-058B-04)	BANE	07/26/65	TO 05/21/70	R 2.000E 02	TO 1.800E 04	EV	GH	1067
INJUN 1 CADMIUM SULFIDE DETECTOR.....	(61-015B-02)	FREEMAN	06/30/61	TO 08/31/62	U 2.000E 02	TO 5.000E 05	EV	C	36
VELA 3A ELECTROSTATIC ANALYZER AND GM TUBES.....	(65-058A-04)	BANE	07/26/65	TO 05/21/70	R 2.000E 02	TO 1.800E 04	EV	GH	1064
EXPLORER 12 CHARGED PARTICLES.....	(61-020A-03)	VAN ALLEN	08/16/61	TO 12/06/61	U 2.000E 02	TO 5.000E 05	EV	B DEF H	45
OGO 4 LOW-ENERGY AURORAL PARTICLE DETECTOR.....	(67-073A-11)	HOFFMAN	07/30/67	TO 01/25/69	R 7.000E 02	TO 2.380E 04	EV	CDEF	1186

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SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSOC R RANGE OF MEASUREMENTS			MAX REGION (LAMBDA)	PLANET MIN ABCDEFGHI/012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN VALUE S MAX VALUE			
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)								
OGO 3	(66-049A-08)	FRANK	07/14/66	TO 07/16/66	R 1.100E 03 TO 1.000E 04 EV	DEF GH	256	
EXPLORER 40	(68-066B-01)	FRANK	08/09/68	TO 05/29/70	R 1.100E 03 TO 1.200E 04 EV	C	1231	
EXPLORER 34	(67-051A-04)	VAN ALLEN	06/30/67	TO 07/04/67	R 1.700E 03 TO 1.150E 04 EV	H	332	
APOLLO 14 LM	(71-008C-08)	O'BRIEN	02/05/71	TO 06/07/71	R 2.000E 03 TO 2.000E 04 EV	GH	M 1346	
ATS 1	(66-110A-01)	FREEMAN	12/10/66	TO 02/18/67	R 3.000E 03 TO INFINITY EV	F	1142	
EXPLORER 25	(64-076B-06)	VAN ALLEN	02/13/65	TO 07/19/66	U 5.000E 03 TO INFINITY EV	C	174	
INJUN 3	(62-067B-05)	O'BRIEN	12/14/62	TO 10/31/63	U 5.000E 03 TO INFINITY EV	C	87	
INJUN 3	(62-067B-06)	O'BRIEN	12/14/62	TO 10/25/63	U 1.000E 04 TO INFINITY EV	C	88	
OGO 1	(64-054A-16)	KONRADI	09/07/64	TO 11/16/65	R 1.000E 04 TO 1.000E 05 EV	B DEFG	140	
OGO 3	(66-049A-10)	KONRADI	06/09/66	TO 01/26/67	R 1.000E 04 TO 1.000E 05 EV	EFGH	257	
OGO 3	(66-049A-08)	FRANK	07/14/66	TO 07/16/66	R 1.000E 04 TO 4.900E 04 EV	DEF GH	256	
EXPLORER 40	(68-066B-01)	FRANK	08/09/68	TO 05/29/70	R 1.200E 04 TO 5.000E 04 EV	C	1231	
EXPLORER 14	(62-051A-05)	DAVIS	10/02/62	TO 08/10/63	R 1.300E 04 TO 1.000E 05 EV	EFGH	1025	
EXPLORER 12	(61-020A-05)	DAVIS	08/16/61	TO 12/06/61	R 1.500E 04 TO 1.000E 05 EV	EFG	1013	
EXPLORER 15	(62-059A-05)	DAVIS	10/28/62	TO 01/27/63	R 1.500E 04 TO 1.000E 05 EV	E	1028	
EXPLORER 26	(64-086A-04)	DAVIS	12/00/64	TO 06/00/65	R 1.700E 04 TO 1.000E 05 EV	E	1056	
EXPLORER 4	(58-005A-01)	VAN ALLEN						

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		R RANGE S	OF MIN VALUE MAX VALUE	OF (F OR E) (LAMBDA)	MEASUREMENTS MAX REGION MIN	PLANET ABCDEFGHI/012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY						
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)										
CHARGED PARTICLE DETECTOR.....			07/26/58	TO 09/21/58	U	2.000E 04	TO INFINITY	EV	B D	7
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	2.000E 04	TO INFINITY	EV	H	1291
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TO 07/04/67	R	2.100E 04	TO 5.700E 04	EV	H	332
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U	2.200E 04	TO INFINITY	EV	GH	273
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U	2.200E 04	TO INFINITY	EV	H	1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U	2.200E 04	TO INFINITY	EV	H	M 1177
EXPLORER 7 RADIATION AND SOLAR PROTON.....	(59-009A-04)	VAN ALLEN	10/13/59	TO 02/28/61	U	3.000E 04	TO INFINITY	EV	B D	22
OGO 5 ENERGETIC RADIATIONS FROM SOLAR FLARES.....	(68-014A-04)	ANDERSON	03/08/68	TO 10/04/69	U	3.000E 04	TO 1.200E 05	EV	GH	1210
INJUN 1 ELECTRON DIFFERENTIAL ENERGY SPECTROMETER.....	(61-015B-03)	LAUGHLIN	06/30/61	TO 08/31/62	U	4.000E 04	TO 5.000E 04	EV	C	37
INJUN 3 GEIGER TUBE DETECTORS.....	(62-067B-01)	O'BRIEN	12/14/62	TO 10/28/63	U	4.000E 04	TO INFINITY	EV	C	82
INJUN 3 MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER.....	(62-067B-03)	O'BRIEN	12/14/62	TO 10/28/63	U	4.000E 04	TO 6.000E 04	EV	C	1030
ERS 17 X-RAY DETECTORS.....	(65-058C-02)	VETTE	07/20/65	TO 11/03/65	U	4.000E 04	TO INFINITY	EV	EF	205
ATS 5 TRI-DIRECTIONAL MEDIUM ENERGY PARTICLE DETECTOR.....	(69-069A-04)	MOZER	09/16/69	TO 04/09/71	R	4.000E 04	TO 1.200E 05	EV	F	1311
INJUN 1 GM COUNTER.....	(61-015B-01)	FRANK	06/29/61	TO 08/31/62	U	4.000E 04	TO INFINITY	EV	C	1010
EXPLORER 14 TRAPPED PARTICLE RADIATION.....	(62-051A-03)	VAN ALLEN	10/02/62	TO 08/11/63	U	4.000E 04	TO INFINITY	EV	B DEF H	76
EXPLORER 25 GEIGER-MUELLER COUNTER.....	(64-076B-03)	VAN ALLEN	02/13/65	TO 07/19/66	U	4.000E 04	TO INFINITY	EV	C	171
EXPLORER 12	(61-020A-03)	VAN ALLEN								

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		R RANGE R	OF O	MEASUREMENTS (F DR E)	MAX REGION M A X R E G I O N	PLANET P L A N E T	PAGE		
			EARLIEST M M / D D / Y Y	LATEST M M / D D / Y Y							E MIN VALUE E M I N V A L U E	MAX VALUE M A X V A L U E
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)												
CHARGED PARTICLES.....			08/16/61	TO 12/06/61	U	4.000E	04	TO 1.000E	05	EV	B DEF H	45
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TO 07/04/67	U	4.000E	04	TO INFINITY		EV	H	332
ALQUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R	4.000E	04	TO INFINITY		EV	CDEF	75
EXPLORER 40 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(68-066B-01)	FRANK	08/09/68	TO 05/29/70	U	4.000E	04	TO INFINITY		EV	C	1231
EXPLORER 21 ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	U	4.000E	04	TO INFINITY		EV	GH	158
EXPLORER 28 ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	U	4.000E	04	TO INFINITY		EV	H	1061
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	4.000E	04	TO INFINITY		EV	H	1291
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U	4.500E	04	TO INFINITY		EV	GH	273
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U	4.500E	04	TO INFINITY		EV	H	1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U	4.500E	04	TO INFINITY		EV	H	M 1177
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	U	4.500E	04	TO INFINITY		EV	H	274
EXPLORER 21 ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	U	4.500E	04	TO INFINITY		EV	GH	158
EXPLORER 28 ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	U	4.500E	04	TO INFINITY		EV	H	1061
EXPLORER 35 ELECTRON AND PROTON DETECTORS.....	(67-070A-01)	VAN ALLEN	07/19/67	TO 05/28/70	U	4.800E	04	TO INFINITY		EV	H	338
OGO 1 ELECTRON SPECTROMETER.....	(64-054A-21)	WINCKLER	09/00/64	TO 12/06/67	R	5.000E	04	TO 4.000E	06	EV	H	148
OGO 3 ELECTRON SPECTROMETER.....	(66-049A-22)	WINCKLER	06/00/66	TO 05/03/68	R	5.000E	04	TO 4.000E	06	EV	B DEF H	260
ATS 1 ELECTRON SPECTROMETER.....	(66-110A-04)	WINCKLER	12/19/66	TO 12/30/67	R	5.000E	04	TO 1.000E	06	EV	F	1146

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		DATA AT NSSDC R RANGE OF		MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE	(F OR E) (LAMBDA)	MIN			
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)											
OGO 5 PARTICLE WAVE STUDY.....	(68-014A-13)	COLEMAN, JR.	03/08/68	TO 02/14/71	R	5.000E 04	TO 5.000E 05	EV	B DEFGH		1216
OGO 1 ELECTRON SPECTROMETER.....	(64-054A-21)	WINCKLER	09/00/64	TO 12/06/67	R	5.000E 04	TO 4.000E 06	EV	DEF		148
OSO 1 PROTON ELECTRON ANALYZER.....	(62-006A-11)	SCHRADER	03/07/62	TO 07/14/63	U	6.000E 04	TO INFINITY	EV	B		54
EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	U	7.000E 04	TO INFINITY	EV	DEFGH		1167
OGO 5 ELECTRON AND PROTON SPECTROMETER.....	(68-014A-06)	WEST, JR.	03/04/68	TO 05/01/69	R	7.900E 04	TO 4.800E 05	EV	DEFGH		1211
OSO 4 PROTON ELECTRON DETECTOR.....	(67-100A-04)	WAGGONER	10/23/67	TO 12/30/67	R	8.000E 04	TO 5.400E 05	EV	B		1198
INJUN 3 MAGNETIC DIFFERENTIAL ELECTRON SPECTROMETER.....	(62-067B-03)	O'BRIEN	12/14/62	TO 10/28/63	U	8.000E 04	TO 1.100E 05	EV	C		1030
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	8.000E 04	TO INFINITY	EV	H		1291
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	U	8.000E 04	TO 1.300E 05	EV	H		330
INJUN 1 ELECTRON DIFFERENTIAL ENERGY SPECTROMETER.....	(61-015B-03)	LAUGHLIN	06/30/61	TO 08/31/62	U	9.000E 04	TO 1.000E 05	EV	C		37
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U	1.000E 05	TO INFINITY	EV	B DEF		1069
OVI-13 ELECTRON SPECTROMETER.....	(68-026A-02)	KATZ	05/13/68	TO 07/10/68	R	1.000E 05	TO 1.000E 06	EV	COE		1229
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	1.600E 05	TO INFINITY	EV	H		1291
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	U	1.750E 05	TO 3.900E 05	EV	H		330
TELSTAR 1 PROTON AND ELECTRON RADIATION.....	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R	1.800E 05	TO 9.900E 05	EV	B DE		59
EXPLORER 6 SCINTILLATION COUNTER.....	(59-004A-02)	SONETT	08/07/59	TO 10/06/59	U	2.000E 05	TO INFINITY	EV	DEF		1005
RELAY 1 SOLID-STATE ION CHAMBER ELECTRON AND	(62-068A-02)	BROWN									

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		R RANGE	OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		E MIN VALUE S MAX VALUE	(F OR E) (LANBDA)			
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)										
PROTON DETECTOR.....			12/13/62	TO 03/31/64	R 2.000E 05	TO 1.000E 06	EV	B DE		92
RELAY 2 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR.....	(64-003A-02)	BROWN	01/21/64	TO 12/31/65	R 2.230E 05	TO 1.120E 06	EV	B DE		123
EXPLORER 14 TRAPPED PARTICLE RADIATION.....	(62-051A-03)	VAN ALLEN	10/02/62	TD 08/11/63	U 2.300E 05	TO INFINITY	EV	B DEF H		78
INJUN 3 GEIGER TUBE DETECTORS.....	(62-067B-01)	O'BRIEN	12/14/62	TO 10/28/63	U 2.500E 05	TO INFINITY	EV	C		82
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TO 05/29/70	R 2.640E 05	TO 8.000E 05	EV	C		1233
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U 2.800E 05	TO INFINITY	EV	C		105
EXPLORER 26 SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/23/67	R 3.000E 05	TO 4.500E 05	EV	B DE		1055
OV3-3 MAGNETIC ELECTRON SPECTROMETER.....	(66-070A-05)	VAMPOLA	08/04/66	TO 09/06/67	R 3.000E 05	TO 2.300E 06	EV	CDE		1119
ATS 1 OMNIDIRECTIONAL SPECTROMETER.....	(66-110A-03)	PAULIKAS	12/17/66	TO 08/31/72	U 3.000E 05	TO INFINITY	EV	F		1146
EXPLORER 34 LOW-ENERGY SOLID-STATE TELESCOPE.....	(67-051A-01)	BROWN	05/24/67	TO 05/03/69	R 3.000E 05	TO 1.000E 06	EV	DEFGH		1165
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R 3.000E 05	TO INFINITY	EV	B DE		93
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R 3.100E 05	TO 1.900E 06	EV	H		1239
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U 3.200E 05	TO INFINITY	EV	B DE		1069
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	U 3.400E 05	TO 5.200E 05	EV	H		1208
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	R 3.500E 05	TO 1.100E 06	EV	DEFGH		1290
EXPLORER 11 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	U 3.500E 05	TO 4.000E 05	EV	B		33
ATS 1 PARTICLE TELESCOPE.....	(66-110A-05)	BROWN	12/09/66	TO 03/01/67	R 4.000E 05	TO 3.000E 06	EV	F		300
EXPLORER 11	(61-013A-02)	GARMIRE								

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		RANGE OF	MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		E MIN VALUE S MAX VALUE	(F OR E) (LAMBDA)			
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)										
CRYSTAL SANDWICH/CERENKOV COUNTER.....			04/28/61	TO 11/12/61	U	4.000E 05	TO 4.000E 06	EV	B	33
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	R	4.000E 05	TO INFINITY	EV	C	1078
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	R	4.000E 05	TO INFINITY	EV	C	1184
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U	4.400E 05	TO INFINITY	EV	B DE	310
ATS 1 OMNIDIRECTIONAL SPECTROMETER.....	(66-110A-03)	PAULIKAS	12/17/66	TO 08/31/72	U	4.500E 05	TO INFINITY	EV	F	1146
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	R	4.500E 05	TO INFINITY	EV	B DE	93
MARINER 2 COSMIC-RAY IONIZATION.....	(62-041A-04)	ANDERSON	08/28/62	TO 12/30/62	U	5.000E 05	TO INFINITY	EV	H 2	1021
EXPLORER 15 ELECTRON AND PROTON SOLID STATE DETECTORS.....	(62-059A-01)	BROWN	10/27/62	TO 01/01/63	R	5.000E 05	TO 2.800E 06	EV	E	1027
EXPLORER 15 ELECTRON AND PROTON SOLID STATE DETECTORS.....	(62-059A-01)	BROWN	10/27/62	TO 01/01/63	R	5.000E 05	TO 2.800E 06	EV	D	1027
EXPLORER 26 OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....	(64-086A-02)	MCILWAIN	12/21/64	TO 05/21/67	U	5.000E 05	TO INFINITY	EV	B DEF	185
OGO 2 COSMIC-RAY IONIZATION.....	(65-081A-06)	ANDERSON	10/14/65	TO 04/02/66	U	5.000E 05	TO INFINITY	EV	C	1077
OGO 4 COSMIC RAY IONIZATION.....	(67-073A-07)	ANDERSON	07/30/67	TO 08/11/67	U	5.000E 05	TO INFINITY	EV	C	1184
OGO 5 PARTICLE WAVE STUDY.....	(68-014A-13)	COLEMAN, JR.	03/08/68	TO 02/14/71	R	5.000E 05	TO 1.200E 06	EV	B DEF&H	1216
EXPLORER 15 DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....	(62-059A-02)	MCILWAIN	10/27/62	TO 01/30/63	U	5.000E 05	TO INFINITY	EV	B DE	1028
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	U	5.200E 05	TO 4.300E 06	EV	H	1208
OSO 4	(67-100A-04)	WAGGONER								

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T T I T L E	LIMITING DATES OF		RANGE OF MEASUREMENTS (F OR E)	MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)								
PROTON ELECTRON DETECTOR.....			10/23/67	TO 12/30/67	R 5.400E 05 TO 5.300E 05 EV	B		1198
DV1- 2 ELECTRON AND PROTON DETECTORS.....	(65-078A-02)	FARLEY	10/05/65	TO 12/01/65	U 5.600E 05 TO INFINITY EV	B		1073
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-02)	SIMPSON	07/28/67	TD 02/02/69	R 5.200E 05 TO INFINITY EV	C		1184
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TD 10/20/64	R 6.200E 05 TO INFINITY EV	B DE		93
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TD 10/23/67	U 6.300E 05 TO INFINITY EV	B DE		310
ERS 13 CHARGED PARTICLE DETECTORS.....	(64-040C-01)	VETTE	07/17/64	TD 12/08/64	U 7.000E 05 TO INFINITY EV	B DE		1041
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TD 09/21/58	U 7.000E 05 TO INFINITY EV	B D		7
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TD 09/15/67	U 7.000E 05 TO INFINITY EV	H		1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TD 07/24/68	U 7.000E 05 TO INFINITY EV	H	N	1177
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TD 12/13/66	R 7.000E 05 TO INFINITY EV	C		1078
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TD 06/09/67	U 7.000E 05 TO INFINITY EV	GH		273
TELSTAR 2 PROTON AND ELECTRON RADIATION.....	(63-013A-01)	BROWN	05/07/63	TD 05/07/65	R 7.500E 05 TO 1.400E 06 EV	B DE		100
EXPLORER 15 DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....	(62-059A-02)	MCILWAIN	10/27/62	TD 01/30/63	U 8.000E 05 TO INFINITY EV	B DE		1028
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TD 05/29/70	R 8.000E 05 TO INFINITY EV	C		1233
OGO 5 ELECTRON AND PROTON SPECTROMETER.....	(68-014A-06)	WEST, JR.	03/04/68	TD 05/01/69	R 8.200E 05 TO 2.800E 06 EV	DEFGH		1211
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TD 10/20/64	U 8.200E 05 TO INFINITY EV	B DE		93
EXPLORER 34	(67-051A-01)	BROWN						

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PHENOMENON MEASURED INDEXES



SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE OF M I N V A L U E M A X V A L U E	OF M E A S U R E M E N T S ( F O R E ) ( L A M B D A )	MAX REGION M I N A B C D E F G H I	PLANET 012345M	PAGE
			EARLIEST M M / D D / Y Y	LATEST M M / D D / Y Y					
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)									
LOW-ENERGY SOLID-STATE TELESCOPE.....			05/24/67	TO 05/03/69	U 1.000E 06	TO INFINITY	EV	DEFGH	1165
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U 1.000E 06	TO INFINITY	EV	H	1291
PIONEER 1 ION CHAMBER.....	(58-007A-01)	SONETT	10/11/58	TO 10/13/58	U 1.000E 06	TO INFINITY	EV	B DEF	9
EXPLORER 18 ION CHAMBER AND GM COUNTERS.....	(63-046A-05)	ANDERSON	11/27/63	TO 03/26/65	U 1.000E 06	TO INFINITY	EV	H	115
EXPLORER 21 ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	U 1.000E 06	TO INFINITY	EV	GH	158
EXPLORER 26 SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/23/67	R 1.000E 06	TO 2.500E 06	EV	B DE	1055
EXPLORER 28 ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	U 1.000E 06	TO INFINITY	EV	H	1061
ATS 1 OMNIDIRECTIONAL SPECTROMETER.....	(66-110A-03)	PAULIKAS	12/17/66	TO 08/31/72	U 1.000E 06	TO INFINITY	EV	F	1146
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/18/69	R 1.000E 06	TO 1.000E 07	EV	C	1285
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	U 1.100E 06	TO INFINITY	EV	DEFGH	1290
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U 1.100E 06	TO INFINITY	EV	B DE	310
OVI- 2 ELECTRON AND PROTON DETECTORS.....	(65-078A-02)	FARLEY	10/09/65	TO 12/01/65	R 1.200E 06	TO 4.700E 06	EV	B	1073
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U 1.200E 06	TO INFINITY	EV	C	105
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U 1.270E 06	TO INFINITY	EV	B DE	310
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U 1.310E 06	TO INFINITY	EV	B DE	310
INJUN 3 INTEGRAL MAGNETIC ELECTRON SPECTROMETER.....	(62-067B-04)	O'BRIEN	12/14/62	TO 10/25/63	U 1.500E 06	TO INFINITY	EV	C	86
PIONEER 5 ION CHAMBER AND GM TUBE.....	(60-001A-03)	WINCKLER	03/11/60	TO 05/17/60	R 1.600E 06	TO INFINITY	EV	B GH	26

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		RANGE R	OF MEASUREMENTS		MAX REGION M I N A B C D E F G H I / 0 1 2 3 4 5 M	PLANET
			EARLIEST M M / D D / Y Y	LATEST M M / D D / Y Y		E MIN VALUE 5 M A X V A L U E	(F O R E) (L A M B D A)		

2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)

EXPLORER 12 CHARGED PARTICLES.....	(61-020A-03)	VAN ALLEN	08/16/61	TO 12/06/61	U	1.600E 06	TO INFINITY	EV	B DEF H	45
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	U	1.900E 06	TO 5.100E 06	EV	H	1239
ATS 1 OMNIDIRECTIONAL SPECTROMETER.....	(66-110A-03)	PAULIKAS	12/17/66	TO 08/31/72	U	1.900E 06	TO INFINITY	EV	F	1146
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U	1.930E 06	TO INFINITY	EV	B DE	310
HEDS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-08)	LABEYRIE	01/01/69	TO 11/06/71	R	2.000E 06	TO 7.000E 06	EV	H	1242
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U	2.400E 06	TO INFINITY	EV	C	105
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U	2.500E 06	TO INFINITY	EV	GH	273
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U	2.500E 06	TO INFINITY	EV	H	1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U	2.500E 06	TO INFINITY	EV	H	M 1177
EXPLORER 18 COSMIC RAYS.....	(63-046A-04)	MCDONALD	11/27/63	TO 05/26/64	R	2.700E 06	TO 2.100E 07	EV	FGH	1038
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R	2.800E 06	TO INFINITY	EV	CDEF	75
EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	R	2.800E 06	TO 2.700E 07	EV	DEFGH	1167
EXPLORER 6 ION CHAMBER AND GM COUNTER.....	(59-004A-03)	WINCKLER	08/07/59	TO 10/06/59	R	2.900E 06	TO INFINITY	EV	B DEF	15
EXPLORER 1 COSMIC-RAY DETECTOR.....	(58-001A-01)	VAN ALLEN	02/01/58	TO 03/16/58	U	3.000E 06	TO INFINITY	EV	B D	3
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U	3.000E 06	TO INFINITY	EV	B D	7
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	3.000E 06	TO INFINITY	EV	H	1291
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U	3.200E 06	TO 7.500E 06	EV	B DE	1069

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I T L E	EXPERIMENTER T I T L E	LIMITING DATES OF		DATA AT NSSDC R RANGE OF		MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	S	MAX VALUE	(F OR E)	(LAMBDA)			
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)											
EXPLORER 15 DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....	(62-059A-02)	MCILWAIN	10/27/62	TO 01/30/63	U	3.500E 06	TO INFINITY	EV	B DE		1028
ERS 13 CHARGED PARTICLE DETECTORS.....	(64-040C-01)	VETTE	07/17/64	TO 12/08/64	U	3.500E 06	TO INFINITY	EV	B DE		1041
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U	3.600E 06	TO INFINITY	EV	C		105
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	U	3.700E 06	TO INFINITY	EV	B DE		93
EXPLORER 18 COSMIC RAYS.....	(63-046A-04)	MCDONALD	11/27/63	TO 05/26/64	U	4.000E 06	TO INFINITY	EV	FGH		1038
EXPLORER 26 OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....	(64-086A-02)	MCILWAIN	12/21/64	TO 05/21/67	U	4.000E 06	TO INFINITY	EV	B DEF		185
EXPLORER 11 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	U	4.000E 06	TO 1.500E 07	EV	B		33
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	U	4.200E 06	TO 8.400E 06	EV	H		1208
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U	5.000E 06	TO INFINITY	EV	B D		7
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	U	5.100E 06	TO INFINITY	EV	H		1239
EXPLORER 18 ION CHAMBER AND GM COUNTERS.....	(63-046A-05)	ANDERSON	11/27/63	TO 03/26/65	U	6.000E 06	TO INFINITY	EV	H		115
EXPLORER 21 ION CHAMBER AND GM COUNTERS.....	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	U	6.000E 06	TO INFINITY	EV	GH		158
EXPLORER 28 ION CHAMBER AND GM COUNTERS.....	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	U	6.000E 06	TO INFINITY	EV	H		1061
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/18/69	R	1.000E 07	TO 1.000E 08	EV	C		1285
EXPLORER 6 PROPORTIONAL COUNTER TELESCOPE.....	(55-004A-01)	SIMPSON	08/07/59	TO 10/06/59	U	1.300E 07	TO INFINITY	EV	B DEF		12
PIONEER 5 PROPORTIONAL COUNTER TELESCOPE.....	(60-001A-01)	SIMPSON	03/11/60	TO 05/16/60	U	1.300E 07	TO INFINITY	EV	H		24
OGO 5 (68-014A-05)	MEYER										

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		RANGE	OF	MEASUREMENTS		MAX REGION	PLANET	PAGE	
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			E MIN VALUE S MAX VALUE	(F OR E) (LAMBDA)				
2.1.2 OF ENERGIES GREATER THAN THERMAL (GREATER THAN 1 KEV)												
COSMIC RAY ELECTRONS.....			03/05/68	TO	07/13/72	R	1.500E 07	TO	4.500E 07	EV	GH	1214
EXPLORER 11	(61-013A-02)	GARNIRE										
CRYSTAL SANDWICH/CERENKOV COUNTER.....			04/28/61	TO	11/12/61	U	1.500E 07	TO	INFINITY	EV	B	33
OGO 6	(69-051A-20)	STONE										
COSMIC RAY EXPERIMENT.....			06/07/69	TO	09/18/69	R	1.000E 08	TO	1.000E 09	EV	C	1285
OGO 5	(68-014A-12)	VAN DE HULST										
MEASUREMENT OF THE ABSOLUTE FLUX AND												
ENERGY SPECTRUM OF ELECTRONS.....			03/05/68	TO	08/31/71	D	5.000E 08	TO	5.000E 09	EV	B DEFGH	1214
OGO 5	(68-014A-12)	VAN DE HULST										
MEASUREMENT OF THE ABSOLUTE FLUX AND												
ENERGY SPECTRUM OF ELECTRONS.....			03/05/68	TO	08/31/71	D	5.000E 09	TO	1.000E 10	EV	B DEFGH	1214

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSOC		RANGE OF MEASUREMENTS		MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN VALUE S MAX VALUE	(F OR E) (LAMBDA)			
2.2 SENSING PROTONS OR HYDROGEN IONS									
EXPLORER 10 PLASMA PROBE.....	(61-010A-02)	BRIDGE	03/25/61	TO 03/27/61	R THERMAL ENERGIES		EFGH		32
EXPLORER 18 RETARDING POTENTIAL ANALYZER.....	(63-046A-01)	SERBU	11/27/63	TO 11/27/63	R THERMAL ENERGIES		DE		109
EXPLORER 21 RETARDING POTENTIAL ANALYZER.....	(64-060A-01)	SERBU	10/05/64	TO 04/04/65	R THERMAL ENERGIES		B DE		153
EXPLORER 28 RETARDING POTENTIAL ANALYZER.....	(65-042A-01)	SERBU	05/29/65	TO 05/05/67	R THERMAL ENERGIES		B DE		196
ATS 1 SUPRATHERMAL ION DETECTOR.....	(66-110A-01)	FREEMAN	12/10/66	TO 02/18/67	R THERMAL ENERGIES		F		1142
OGO 3 LOW-ENERGY ELECTRONS AND PROTONS.....	(66-049A-08)	FRANK	07/14/66	TO 07/16/66	R 5.000E 00 TO 1.100E 03 EV		DEFGH		256
VELA 5B SOLAR WIND EXPERIMENT.....	(69-046E-05)	BAME	11/07/69	TO 02/28/71	R 2.000E 01 TO 3.300E 04 EV		GH		1280
VELA 5A SOLAR WIND EXPERIMENT.....	(69-046D-05)	BAME	11/07/69	TO 02/28/71	R 2.000E 01 TO 3.300E 04 EV		GH		1277
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TO 07/04/67	R 2.500E 01 TO 1.050E 03 EV		H		332
EXPLORER 21 FARADAY CUP.....	(64-060A-07)	BRIDGE	10/04/64	TO 09/24/65	R 4.000E 01 TO 5.400E 03 EV		DEF H		161
MARINER 5 INTERPLANETARY ION PLASMA PROBE FOR E/Q OF 40 TO 9400 VOLTS.....	(67-060A-03)	BRIDGE	06/14/67	TO 11/21/67	R 4.000E 01 TO 9.400E 03 EV		H		1173
EXPLORER 18 FARADAY CUP.....	(63-046A-07)	BRIDGE	11/27/63	TO 01/13/65	R 4.500E 01 TO 5.400E 03 EV		DEF H		119
EXPLORER 33 PLASMA PROBE.....	(66-058A-06)	BRIDGE	07/06/66	TO 09/23/69	R 5.000E 01 TO 5.400E 03 EV		H		1116
EXPLORER 35 PLASMA PROBE.....	(67-070A-06)	BRIDGE	07/25/67	TO 07/03/68	R 5.000E 01 TO 5.400E 03 EV		H		1181
EXPLORER 40 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(68-066B-01)	FRANK	08/09/68	TO 05/29/70	R 5.000E 01 TO 1.100E 03 EV		C		1231
PIONEER 6 SOLAR WIND PLASMA FARADAY CUP.....	(65-105A-02)	BRIDGE	12/18/65	TO 02/28/70	R 7.500E 01 TO 9.485E 03 EV		H		1098
PIONEER 7	(66-075A-02)	BRIDGE							

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		RANGE E MIN	OF VALUE	MEASUREMENTS (F O R E)	MAX VALUE	REGION (LAMBDA)	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY							
2.2 SENSING PROTONS OR HYDROGEN IONS											
SOLAR WIND PLASMA FARADAY CUP.....			08/18/66	TO 12/31/70	R	7.500E	01 TO 9.485E	03 EV		H	1127
EXPLORER 25 CADMIUM SULFIDE DETECTORS.....	(64-076B-05)	VAN ALLEN	02/13/65	TO 07/19/66	U	1.000E	02 TO INFINITY	EV		C	173
VELA 5A SOLAR WIND EXPERIMENT.....	(69-046D-05)	BAME	11/07/69	TO 02/28/71	R	1.200E	02 TO 5.000E	03 EV		GH	1277
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.500E	02 TO 1.500E	04 EV		H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.500E	02 TO 1.500E	04 EV		H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.500E	02 TO 1.500E	04 EV		H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.500E	02 TO 1.500E	04 EV		H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.500E	02 TO 1.500E	04 EV		H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.500E	02 TO 1.500E	04 EV		H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.500E	02 TO 1.500E	04 EV		H	364
PIONEER 9 ELECTROSTATIC ANALYZER.....	(68-100A-02)	WOLFE	11/08/68	TO 03/29/69	R	1.500E	02 TO 1.500E	04 EV		H	380
PIONEER 8 ELECTROSTATIC ANALYZER.....	(67-123A-02)	WOLFE	12/14/67	TO 04/28/71	R	1.500E	02 TO 1.500E	04 EV		H	364
APOLLO 14 LM CHARGED PARTICLE LUNAR ENVIRONMENT.....	(71-008C-08)	O'BRIEN	02/05/71	TO 06/07/71	R	1.700E	02 TO 2.000E	03 EV		GH	M 1346
VELA 3A ELECTROSTATIC ANALYZER AND GM TUBES.....	(65-058A-04)	BAME	07/26/65	TO 05/21/70	R	2.000E	02 TO 1.800E	04 EV		GH	1064
PIONEER 6 ELECTROSTATIC ANALYZER.....	(65-105A-06)	WOLFE	12/16/65	TO 07/30/72	R	2.000E	02 TO 1.000E	04 EV		H	1101
PIONEER 7 ELECTROSTATIC ANALYZER.....	(66-075A-03)	WOLFE	08/17/66	TO 02/28/71	R	2.000E	02 TO 1.000E	04 EV		H	1128
VELA 3B HEMISPHERICAL ELECTROSTATIC ANALYZER AND GEIGER COUNTERS.....	(65-058B-04)	BAME	07/26/65	TO 05/21/70	R	2.000E	02 TO 1.800E	04 EV		GH	1067
MARINER 2 SOLAR PLASMA ANALYZER.....	(62-041A-06)	NEUGEBAUER	08/29/62	TO 12/30/62	R	2.310E	02 TO 8.824E	03 EV		H	1022
EXPLORER 18 SOLAR WIND PROTONS.....	(63-046A-06)	WOLFE	11/27/63	TO 04/03/64	R	2.500E	02 TO 1.600E	04 EV		GH	118
EXPLORER 34	(67-051A-08)	OGILVIE									

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF		RANGE	OF MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		E MIN S MAX	VALUE VALUE			
2.2 SENSING PROTONS OR HYDROGEN IONS										
ELECTROSTATIC ANALYZER.....			05/24/67	TD 02/08/68	R 3.100E 02	TO 5.100E 03	EV	H		1170
EXPLORER 21 SOLAR WIND PROTONS.....	(64-060A-06)	WOLFE	10/05/64	TD 12/23/64	R 7.000E 02	TO 8.000E 03	EV	H		160
DGO 4 LOW-ENERGY AURORAL PARTICLE DETECTOR.....	(67-073A-11)	HOFFMAN	07/30/67	TD 01/25/69	R 7.000E 02	TO 2.380E 04	EV	COEF		1186
INJUN 1 CADMIUM SULFIDE DETECTOR.....	(61-015B-02)	FREEMAN	06/30/61	TD 08/31/62	U 1.000E 03	TO 1.000E 07	EV	C		36
INJUN 1 CADMIUM SULFIDE DETECTOR.....	(61-015B-02)	FREEMAN	06/30/61	TD 08/31/62	U 1.000E 03	TO 1.000E 07	EV	C		36
EXPLORER 12 CHARGED PARTICLES.....	(61-020A-03)	VAN ALLEN	08/16/61	TD 12/06/61	U 1.000E 03	TO 1.000E 07	EV	B DEF H		45
DGO 3 LOW-ENERGY ELECTRONS AND PROTONS.....	(66-049A-08)	FRANK	07/14/66	TD 07/16/66	R 1.100E 03	TO 1.100E 04	EV	DEFGH		256
EXPLORER 40 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(68-066B-01)	FRANK	08/09/68	TD 05/29/70	R 1.100E 03	TO 1.200E 04	EV	C		1231
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TD 07/04/67	R 1.700E 03	TO 1.150E 04	EV	H		332
APOLLO 14 LM CHARGED PARTICLE LUNAR ENVIRONMENT.....	(71-008C-08)	O'BRIEN	02/05/71	TD 06/07/71	R 2.000E 03	TO 2.000E 04	EV	GH	N	1346
DGO 3 LOW-ENERGY ELECTRONS AND PROTONS.....	(66-049A-08)	FRANK	07/14/66	TD 07/16/66	R 1.100E 04	TO 4.900E 04	EV	DEFGH		256
EXPLORER 40 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(68-066B-01)	FRANK	08/09/68	TD 05/29/70	R 1.200E 04	TO 5.000E 04	EV	C		1231
EXPLORER 34 LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....	(67-051A-04)	VAN ALLEN	06/30/67	TD 07/04/67	R 2.100E 04	TO 4.700E 04	EV	H		332
INJUN 3 DC SCINTILLATOR.....	(62-067B-05)	O'BRIEN	12/14/62	TD 10/31/63	U 5.000E 04	TO INFINITY	EV	C		87
ATS 5 TRI-DIRECTIONAL MEDIUM ENERGY PARTICLE DETECTOR.....	(65-069A-04)	MOZER	09/16/69	TD 04/09/71	R 6.000E 04	TO 1.650E 05	EV	F		1311
EXPLORER 14 PROTON-ELECTRON SCINTILLATION DETECTOR.....	(62-051A-05)	DAVIS	10/02/62	TD 08/10/63	R 9.700E 04	TO 1.000E 07	EV	EFGH		1025

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		RANGE OF	MEASUREMENTS	MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY					
2.2 SENSING PROTONS OR HYDROGEN IONS									
EXPLORER 26 PROTON-ELECTRON SCINTILLATION DETECTOR.....	(64-086A-04)	DAVIS	12/00/64	TO 06/00/65	R 9.700E 04	TO 1.000E 07	EV	E	1056
EXPLORER 12 PROTON-ELECTRON SCINTILLATION DETECTOR.....	(61-020A-05)	DAVIS	08/16/61	TO 12/06/61	R 1.000E 05	TO 1.000E 07	EV	EFG	1013
OGO 5 ELECTRON AND PROTON SPECTROMETER.....	(68-014A-06)	WEST, JR.	03/04/68	TO 05/01/69	R 1.000E 05	TO 5.700E 05	EV	DEFGH	1211
EXPLORER 15 PROTON-ELECTRON SCINTILLATION DETECTOR.....	(62-059A-05)	DAVIS	10/28/62	TO 01/27/63	R 1.050E 05	TO 1.000E 07	EV	E	1028
OGO 1 TRAPPED RADIATION SCINTILLATION COUNTER.....	(64-054A-16)	KONRADI	09/07/64	TO 11/16/65	R 1.200E 05	TO 4.500E 06	EV	B DEFG	140
OGO 3 TRAPPED RADIATION SCINTILLATION COUNTER.....	(66-049A-10)	KONRADI	06/09/66	TO 01/26/67	R 1.200E 05	TO 4.500E 06	EV	EFGH	257
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STDNE	06/07/69	TO 09/18/69	R 2.000E 05	TO 2.000E 06	EV	C	1285
GRS-A PROTON TELESCOPE.....	(69-097A-03)	MORITZ	11/08/69	TO 06/30/70	R 2.500E 05	TO 2.400E 06	EV	CD	1315
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U 3.000E 05	TO INFINITY	EV	GH	273
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U 3.000E 05	TO INFINITY	EV	H	1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U 3.000E 05	TO INFINITY	EV	H	M 1177
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TO 05/29/70	R 3.060E 05	TO 3.440E 06	EV	C	1233
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	U 3.100E 05	TO 1.000E 07	EV	H	274
EXPLORER 35 ELECTRON AND PROTON DETECTORS.....	(67-070A-01)	VAN ALLEN	07/19/67	TO 05/28/70	U 3.200E 05	TO 6.300E 06	EV	H	338
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U 4.000E 05	TO INFINITY	EV	B D	7
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U 4.000E 05	TO INFINITY	EV	H	1291
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	R 4.700E 05	TO 5.000E 06	EV	DEFGH	1290
EXPLORER 35 .....	(67-070A-01)	VAN ALLEN							

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SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF		RANGE	OF	MEASUREMENTS	MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY						
2.2 SENSING PROTONS OR HYDROGEN IONS										
ELECTRON AND PROTON DETECTORS.....			07/19/67	TO 05/28/70	U	4.800E 05	TO 3.000E 06	EV	H	338
INJUN 1	(61-015B-01)	FRANK								
GM COUNTER.....			06/29/61	TO 08/31/62	U	5.000E 05	TO INFINITY	EV	C	1010
EXPLORER 14	(62-051A-03)	VAN ALLEN								
TRAPPED PARTICLE RADIATION.....			10/02/62	TO 08/11/63	U	5.000E 05	TO INFINITY	EV	B DEI' H	78
EXPLORER 33	(66-058A-05)	VAN ALLEN								
ELECTRON AND PROTON DETECTORS.....			07/01/66	TO 12/31/68	U	5.000E 05	TO 4.000E 06	EV	H	274
INJUN 3	(62-067B-01)	O'BRIEN								
GEIGER TUBE DETECTORS.....			12/14/62	TO 10/28/63	U	5.000E 05	TO INFINITY	EV	C	82
EXPLORER 40	(68-066B-01)	FRANK								
LOW-ENERGY PROTON AND ELECTRON DIFFERENTIAL ENERGY ANALYZER (LEPEDEA).....			08/09/68	TO 05/29/70	U	5.000E 05	TO INFINITY	EV	C	1231
EXPLORER 21	(64-050A-05)	ANDERSON								
ION CHAMBER AND GM COUNTERS.....			10/04/64	TO 09/23/65	U	5.000E 05	TO INFINITY	EV	GH	158
EXPLORER 28	(65-042A-05)	ANDERSON								
ION CHAMBER AND GM COUNTERS.....			05/29/65	TO 01/03/67	U	5.000E 05	TO INFINITY	EV	H	1061
EXPLORER 25	(64-076B-04)	VAN ALLEN								
SOLID-STATE DETECTOR.....			11/23/64	TO 07/19/66	U	5.200E 05	TO 4.000E 06	EV	C	1050
EXPLORER 34	(67-051A-01)	BROWN								
LOW-ENERGY SOLID-STATE TELESCOPE.....			05/24/67	TO 05/03/69	R	5.600E 05	TO 5.000E 06	EV	DEI'GH	1165
OGO 5	(68-014A-06)	WEST, JR.								
ELECTRON AND PROTON SPECTROMETER.....			03/04/68	TO 05/01/69	R	5.700E 05	TO 1.300E 06	EV	DEI'GH	1211
EXPLORER 25	(64-076B-03)	VAN ALLEN								
GEIGER-MUELLER COUNTER.....			02/13/65	TO 07/19/66	U	6.000E 05	TO INFINITY	EV	C	171
PIONEER 6	(65-105A-03)	FAN								
COSMIC RAY TELESCOPE.....			12/16/65	TO 04/30/71	R	6.000E 05	TO 6.000E 06	EV	H	234
PIONEER 7	(66-075A-06)	SIMPSON								
COSMIC-RAY TELESCOPE.....			08/17/66	TO 04/30/71	R	6.000E 05	TO 6.000E 06	EV	H	1131
ATS 1	(66-110A-05)	BROWN								
PARTICLE TELESCOPE.....			12/09/66	TO 03/01/67	R	6.000E 05	TO 1.000E 08	EV	F	300
EXPLORER 34	(67-051A-05)	MCCRACKEN								
COSMIC-RAY ANISOTROPY.....			05/24/67	TO 05/02/69	U	7.000E 05	TO 7.600E 06	EV	DEFGH	1167
EXPLORER 34	(67-051A-05)	MCCRACKEN								
COSMIC-RAY ANISOTROPY.....			05/24/67	TO 05/02/69	R	7.000E 05	TO 7.600E 06	EV	DEFGH	1167
OGO 2	(65-081A-07)	SIMPSON								

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SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		R RANGE S MAX	OF VALUE	MEASUREMENTS (F OR E) (LAMBOA)		MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			E MIN	VALUE			
2.2 SENSING PROTONS OR HYDROGEN IONS											
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	U	7.200E 05	TO 1.100E 07	EV	C		1078
OGO 4	(67-073A-02)	SIMPSON									
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			07/28/67	TO 02/02/69	U	7.200E 05	TO 1.100E 07	EV	C		1184
EXPLORER 33	(66-058A-05)	VAN ALLEN									
ELECTRON AND PROTON DETECTORS.....			07/01/66	TO 12/31/68	U	7.300E 05	TO INFINITY	EV	H		274
EXPLORER 35	(67-070A-01)	VAN ALLEN									
ELECTRON AND PROTON DETECTORS.....			07/19/67	TO 05/28/70	U	7.400E 05	TO INFINITY	EV	H		338
EXPLORER 34	(67-051A-03)	SIMPSON									
COSMIC-RAY PROTON (R VS DE/DX).....			05/24/67	TO 05/02/69	R	8.000E 05	TO 9.600E 06	EV	H		330
EXPLORER 41	(69-053A-03)	SIMPSON									
COSMIC-RAY PROTON (R VS DE/DX).....			06/21/69	TO 09/06/71	R	8.000E 05	TO 8.450E 06	EV	H		1293
EXPLORER 33	(66-058A-05)	VAN ALLEN									
ELECTRON AND PROTON DETECTORS.....			07/01/66	TO 12/31/68	U	8.200E 05	TO 1.900E 06	EV	H		274
EXPLORER 18	(63-046A-03)	SIMPSON									
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R	9.000E 05	TO 6.500E 06	EV	H		1037
EXPLORER 21	(64-060A-03)	SIMPSON									
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/09/65	R	9.000E 05	TO 6.500E 06	EV	GH		1047
EXPLORER 25	(64-076B-04)	VAN ALLEN									
SOLID-STATE DETECTOR.....			11/23/64	TO 07/19/66	U	9.000E 05	TO 1.800E 06	EV	C		1050
EXPLORER 34	(67-051A-07)	BOSTROM									
SOLAR PROTON MONITOR.....			05/24/67	TO 05/03/69	U	1.000E 06	TO 1.000E 07	EV	GH		1168
EXPLORER 41	(69-053A-07)	BOSTROM									
SOLAR PROTON MONITORING EXPERIMENT.....			06/21/69	TO 12/23/72	U	1.000E 06	TO 1.000E 07	EV	GH		1295
RELAY 1	(62-068A-03)	MCILWAIN									
PROTON-ELECTRON DETECTORS.....			12/14/62	TO 10/20/64	R	1.100E 06	TO 1.400E 07	EV	B DE		93
INJUN 3	(62-067B-07)	O'BRIEN									
PROTON SPECTROMETER.....			12/14/62	TO 10/31/63	U	1.200E 06	TO 2.200E 06	EV	C		89
1963-038C	(63-038C-01)	BOSTROM									
ENERGETIC ELECTRON AND PROTON DETECTORS.....			09/28/63	TO 12/31/68	U	1.200E 06	TO 2.200E 06	EV	C		105
MARINER 4	(64-077A-04)	SIMPSON									
COSMIC-RAY TELESCOPE.....			11/28/64	TO 10/01/65	U	1.200E 06	TO 1.500E 07	EV	H		1052
OGO 2	(65-081A-07)	SIMPSON									
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	R	1.220E 06	TO 1.200E 07	EV	C		1078

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T T I T L E	LIMITING DATES OF DATA AT NSSDC		R	RANGE	OF	MEASUREMENTS		PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				E MIN VALUE	(F OR E) (LAMBDA)		
2.2 SENSING PROTONS OR HYDROGEN IONS											
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	R	1.220E 06	TO	1.200E 07	EV	C	1184
INJUN 1 SOLID-STATE PROTON DETECTOR.....	(61-015B-06)	BOSTROM	06/30/61	TO 08/31/62	R	1.400E 06	TO	1.700E 07	EV	C	39
EXPLORER 12 COSMIC RAY.....	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	R	1.400E 06	TO	2.200E 07	EV	EFG	47
OGO 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-18)	SIMPSON	09/05/64	TO 11/25/67	R	1.400E 06	TO	8.600E 06	EV	DEFGH	141
EXPLORER 14 COSMIC RAY.....	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	R	1.400E 06	TO	2.200E 07	EV	EFGH	79
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	1.500E 06	TO	INFINITY	EV	H	1291
OGO 3 COSMIC-RAY SPECTRA AND FLUXES.....	(66-049A-03)	SIMPSON	06/09/66	TO 12/01/69	R	1.600E 06	TO	8.600E 06	EV	DEFGH	254
EXPLORER 26 SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/23/67	R	1.700E 06	TO	1.600E 07	EV	B DE	1055
OSD 4 PROTON ELECTRON DETECTOR.....	(67-100A-04)	WAGGONER	10/23/67	TO 12/30/67	R	1.700E 06	TO	1.200E 07	EV	B	1198
TELSTAR 2 PROTON AND ELECTRON RADIATION.....	(63-013A-01)	BROWN	05/07/63	TO 05/07/65	R	1.800E 06	TO	2.800E 07	EV	B DE	100
RELAY 1 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR.....	(62-068A-02)	BROWN	12/13/62	TO 03/31/64	R	1.800E 06	TO	1.800E 07	EV	B DE	92
RELAY 2 SOLID-STATE ION CHAMBER ELECTRON AND PROTON DETECTOR.....	(64-003A-02)	BROWN	01/21/64	TO 12/31/65	R	1.800E 06	TO	1.800E 07	EV	B DE	123
OSO 1 PROTON ELECTRON ANALYZER.....	(62-006A-11)	SCHRADER	03/07/62	TO 07/14/63	U	2.000E 06	TO	INFINITY	EV	B	54
OGO 5 LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW E EXPERIMENT).....	(68-014A-27)	SIMPSON	03/05/68	TO 09/24/71	R	2.000E 06	TO	5.000E 06	EV	B DEFGH	1225
EXPLORER 6 SCINTILLATION COUNTER.....	(59-004A-02)	SONETT	08/07/59	TO 10/06/59	U	2.000E 06	TO	INFINITY	EV	DEF	1005
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/18/69	R	2.000E 06	TO	2.000E 07	EV	C	1285

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF		DATA AT NSSOC R RANGE OF		MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE	(F OR E) (LAMBDA)	MIN ABCDEF GHI /012345M			
2.2 SENSING PROTONS OR HYDROGEN IONS											
GR5-A PROTON TELESCOPE.....	(69-097A-03)	MORITZ	11/08/69	TO 06/30/70	R	2.000E 06	TO 2.000E 07	EV	CD		1318
TELSTAR 2 PROTON AND ELECTRON RADIATION.....	(63-013A-01)	BROWN	05/07/63	TO 05/07/65	R	2.000E 06	TO 3.000E 07	EV	B DE		100
EXPLORER 15 ELECTRON AND PROTON SOLID STATE DETECTORS.....	(62-059A-01)	BROWN	10/27/62	TO 01/01/63	R	2.100E 06	TO 2.200E 07	EV	DE		1027
EXPLORER 15 ELECTRON AND PROTON SOLID STATE DETECTORS.....	(62-059A-01)	BROWN	10/27/62	TO 01/01/63	R	2.100E 06	TO 2.200E 07	EV	DE		1027
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	U	2.200E 06	TO 8.000E 06	EV	C		89
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U	2.200E 06	TO 8.500E 06	EV	C		105
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R	2.200E 06	TO 1.000E 07	EV	H		1239
TELSTAR 1 PROTON AND ELECTRON RADIATION.....	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R	2.400E 06	TO 2.500E 07	EV	B DE		5v
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R	2.600E 06	TO 1.330E 07	EV	H		1060
OGO 1 SOLAR COSMIC RAYS.....	(64-054A-12)	ANDERSON	09/30/65	TO 05/03/66	R	3.000E 06	TO 3.000E 07	EV	DEFGH		139
OGO 3 SOLAR COSMIC RAYS.....	(66-049A-01)	ANDERSON	06/24/66	TO 02/27/67	R	3.000E 06	TO 9.000E 07	EV	DEFGH		253
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TO 05/29/70	R	3.440E 06	TO 2.490E 07	EV	C		1233
EXPLORER 11 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	U	3.500E 06	TO 3.500E 07	EV	B		33
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U	3.500E 06	TO 2.700E 07	EV	H		1069
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R	3.500E 06	TO 1.100E 07	EV	H		1208
HEOS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-06)	LABEYRIE	01/01/69	TO 11/06/71	R	3.800E 06	TO 3.500E 07	EV	H		1242
INJUN 3	(62-067B-01)	O'BRIEN									

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		RANGE OF		MEASUREMENTS (F OR E) (LAMBDA)	MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	S	MAX				
2.2 SENSING PROTONS OR HYDROGEN IONS										
GEIGER TUBE DETECTORS.....			12/14/62	TO 10/28/63	U	4.000E 06	TO INFINITY	EV	C	82
PIONEER 1 ION CHAMBER.....	(58-007A-01)	SONETT	10/11/58	TO 10/13/58	U	5.000E 06	TO INFINITY	EV	B DEF	9
ATS 1 OMNIDIRECTIONAL SPECTROMETER.....	(66-110A-03)	PAULIKAS	12/17/66	TO 08/31/72	U	5.000E 06	TO 2.100E 07	EV	F	1146
EXPLORER 34 LOW-ENERGY SOLID-STATE TELESCOPE.....	(67-051A-01)	BROWN	05/24/67	TO 05/03/69	R	5.000E 06	TO 1.900E 07	EV	DEFGH	1165
OGO 5 LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW E EXPERIMENT).....	(68-014A-27)	SIMPSON	03/05/68	TO 09/24/71	R	5.000E 06	TO 1.500E 07	EV	B DEFGH	1225
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	R	5.000E 06	TO 1.900E 07	EV	DEFGH	1290
EXPLORER 26 OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....	(64-086A-02)	MCILWAIN	12/21/64	TO 05/21/67	U	5.200E 06	TO INFINITY	EV	B DEF	185
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	U	5.200E 06	TO INFINITY	EV	B DE	93
PIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R	6.000E 06	TO 1.390E 07	EV	H	234
PIONEER 7 COSMIC-RAY TELESCOPE.....	(66-075A-06)	SIMPSON	08/17/66	TO 04/30/71	R	6.000E 06	TO 1.270E 07	EV	H	1131
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R	6.500E 06	TO 1.900E 07	EV	H	1037
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R	6.500E 06	TO 1.900E 07	EV	GH	1047
PIONEER 7 COSMIC-RAY ANISOTROPY.....	(66-075A-05)	MCCRACKEN	08/17/66	TO 01/31/67	U	7.200E 06	TO INFINITY	EV	H	1130
PIONEER 7 COSMIC-RAY ANISOTROPY.....	(66-075A-05)	MCCRACKEN	08/17/66	TO 01/31/67	U	7.200E 06	TO 4.700E 07	EV	H	1130
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	U	7.200E 06	TO 1.100E 07	EV	C	1184
PIONEER 6 COSMIC-RAY ANISOTROPY DETECTION.....	(65-105A-05)	MCCRACKEN	12/16/65	TO 02/06/67	U	7.400E 06	TO INFINITY	EV	H	1100
PIONEER 6 COSMIC-RAY ANISOTROPY DETECTION.....	(65-105A-05)	MCCRACKEN	12/16/65	TO 02/06/67	U	7.400E 06	TO 4.400E 07	EV	H	1100

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF		DATA AT NSSDC R RANGE OF		MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN 5 MAX	VALUE VALUE	(F OR E) (LANBDA)	MIN			
2.2 SENSING PROTONS OR HYDROGEN IONS											
EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	U	7.600E 06	TO 5.500E 07	EV	DEF	GH	1167
OGO 5 ENERGETIC RADIATIONS FROM SOLAR FLARES.....	(68-014A-04)	ANDERSON	03/08/68	TO 10/04/69	U	8.000E 06	TO 3.000E 08	EV		GH	1210
INJUN 3 PROTON SPECTROMETER.....	(62-067B-07)	O'BRIEN	12/14/62	TO 10/31/63	U	8.000E 06	TO 2.400E 07	EV	C		89
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U	8.000E 06	TO 2.100E 07	EV	DE		1069
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TO 05/29/70	R	8.420E 06	TO 7.400E 07	EV	C		1233
EXPLORER 41 COSMIC-RAY PROTON (R VS DE/DX).....	(69-053A-03)	SIMPSON	06/21/69	TO 09/06/71	R	8.450E 06	TO 3.090E 07	EV		H	1293
1963-038C ENERGETIC ELECTRON AND PROTON DETECTORS.....	(63-038C-01)	BOSTROM	09/28/63	TO 12/31/68	U	8.500E 06	TO 2.500E 07	EV	C		105
OGO 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-18)	SIMPSON	09/05/64	TO 11/25/67	R	8.600E 06	TO 3.300E 07	EV	DEF	GH	141
OGO 3 COSMIC-RAY SPECTRA AND FLUXES.....	(66-049A-03)	SIMPSON	06/09/66	TO 12/01/69	R	8.600E 06	TO 3.300E 07	EV	DEF	GH	254
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	R	9.600E 06	TO 9.420E 07	EV		H	330
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U	1.000E 07	TO INFINITY	EV	B D		7
OGO 2 COSMIC-RAY IONIZATION.....	(65-081A-06)	ANDERSON	10/14/65	TO 04/02/66	U	1.000E 07	TO INFINITY	EV	C		1077
OGO 4 COSMIC RAY IONIZATION.....	(67-073A-07)	ANDERSON	07/30/67	TO 08/11/67	U	1.000E 07	TO INFINITY	EV	C		1184
MARINER 2 COSMIC-RAY IONIZATION.....	(62-041A-04)	ANDERSON	08/28/62	TO 12/30/62	U	1.000E 07	TO INFINITY	EV		H 2	1021
OV1- 2 ELECTRON AND PROTON DETECTORS.....	(65-078A-02)	FARLEY	10/05/65	TO 12/01/65	U	1.000E 07	TO 2.300E 07	EV	B		1073
EXPLORER 41 SOLAR PROTON MONITORING EXPERIMENT.....	(69-053A-07)	BOSTROM	06/21/69	TO 12/23/72	U	1.000E 07	TO INFINITY	EV		GH	1295
EXPLORER 26 SOLID-STATE ELECTRON DETECTOR.....	(64-086A-01)	BROWN	12/21/64	TO 05/23/67	R	1.000E 07	TO 2.100E 07	EV	B DE		1055

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF		RANGE OF E MIN VALUE (F O R E)	MEASUREMENTS MAX VALUE (LAMBDA)	MAX REGION MIN ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY					
2.2 SENSING PROTONS OR HYDROGEN IONS									
EXPLORER 34 SOLAR PROTON MONITOR.....	(67-051A-07)	BOSTROM	05/24/67	TO 05/03/69	U 1.000E 07	TO INFINITY EV		GH	1168
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R 1.000E 07	TO 4.200E 07 EV		H	1159
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R 1.100E 07	TO 6.400E 07 EV		H	1208
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(66-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U 1.200E 07	TO INFINITY EV		GH	273
EXPLORER 34 ION CHAMBER.....	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U 1.200E 07	TO INFINITY EV		H	1166
EXPLORER 35 ENERGETIC PARTICLE.....	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U 1.200E 07	TO INFINITY EV		H	M 1177
ERS 13 CHARGED PARTICLE DETECTORS.....	(64-040C-01)	VETTE	07/17/64	TO 12/08/64	U 1.200E 07	TO 2.300E 07 EV		DE	1041
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	R 1.200E 07	TO 3.920E 07 EV		C	1078
ATS 2 OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....	(67-031A-05)	MCILWAIN	04/07/67	TO 10/23/67	U 1.200E 07	TO INFINITY EV		B DE	310
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	R 1.200E 07	TO 3.920E 07 EV		C	1184
OSO 4 PROTON ELECTRON DETECTOR.....	(67-100A-04)	WAGGONER	10/23/67	TO 12/30/67	R 1.200E 07	TO 3.700E 07 EV		B	1198
PIONEER 7 COSMIC-RAY TELESCOPE.....	(66-075A-06)	SIMPSON	08/17/66	TO 04/30/71	R 1.270E 07	TO 7.300E 07 EV		H	1131
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 1.330E 07	TO 2.600E 07 EV		H	1060
PIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R 1.390E 07	TO 7.320E 07 EV		H	234
OGO 5 ELECTRON AND PROTON SPECTROMETER.....	(68-014A-06)	WEST, JR.	03/04/68	TO 05/01/69	U 1.400E 07	TO 4.600E 07 EV		DEFGH	1211
MARINER 4 COSMIC-RAY TELESCOPE.....	(64-077A-04)	SIMPSON	11/28/64	TO 10/01/65	R 1.500E 07	TO 7.000E 07 EV		H	1052
EXPLORER 41	(69-053A-02)	ANDERSON							

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF			MEASUREMENTS		MAX REGION	PLANET	PAGE
			DATA AT NSSDC	RANGE OF	OF	(F OR E)	MIN			
			EARLIEST	LATEST	E MIN	VALUE	(LAMBDA)	MIN	ABCDEF	GH I / 012345M
			MM/DD/YY	MM/DD/YY	S	MAX	VALUE			
2.2 SENSING PROTONS OR HYDROGEN IONS										
ION CHAMBER.....			06/21/69	TO 02/18/72	U	1.500E 07	TO INFINITY	EV	H	1291
EXPLORER 18	(63-046A-05)	ANDERSON								
ION CHAMBER AND GM COUNTERS.....			11/27/63	TO 03/26/65	U	1.700E 07	TO 1.701E 38	EV	H	115
EXPLORER 21	(64-060A-05)	ANDERSON								
ION CHAMBER AND GM COUNTERS.....			10/04/64	TO 09/23/65	U	1.700E 07	TO INFINITY	EV	GH	158
EXPLORER 28	(65-042A-05)	ANDERSON								
ION CHAMBER AND GM COUNTERS.....			05/29/65	TO 01/03/67	U	1.700E 07	TO INFINITY	EV	H	1061
RELAY 1	(62-068A-03)	MCILWAIN								
PROTON-ELECTRON DETECTORS.....			12/14/62	TO 10/20/64	R	1.820E 07	TO 6.300E 07	EV	B DE	93
EXPLORER 18	(63-046A-04)	MCDONALD								
COSMIC RAYS.....			11/27/63	TO 05/26/64	R	1.870E 07	TO 8.160E 07	EV	FGH	1038
EXPLORER 18	(63-046A-03)	SIMPSON								
COSMIC-RAY RANGE VS ENERGY LOSS.....			11/27/63	TO 06/07/64	R	1.900E 07	TO 9.000E 07	EV	H	1037
EXPLORER 21	(64-060A-03)	SIMPSON								
COSMIC-RAY RANGE VS ENERGY LOSS.....			10/04/64	TO 04/09/65	R	1.900E 07	TO 9.000E 07	EV	GH	1047
EXPLORER 7	(59-009A-04)	VAN ALLEN								
RADIATION AND SOLAR PROTON.....			10/13/59	TO 02/28/61	U	2.000E 07	TO INFINITY	EV	B D	22
ATS 2	(67-031A-05)	MCILWAIN								
OMNIDIRECTIONAL PROTON AND ELECTRON DETECTORS.....			04/07/67	TO 10/23/67	U	2.000E 07	TO INFINITY	EV	B DE	310
OGD 6	(69-051A-20)	STONE								
COSMIC RAY EXPERIMENT.....			06/07/69	TO 09/18/69	R	2.000E 07	TO 2.000E 08	EV	C	1285
ATS 1	(66-110A-03)	PAULIKAS								
OMNIDIRECTIONAL SPECTROMETER.....			12/17/66	TO 08/31/72	U	2.100E 07	TO 7.000E 07	EV	F	1146
OGD 1	(64-054A-18)	SIMPSON								
COSMIC-RAY SPECTRA AND FLUXES.....			09/05/64	TO 11/25/67	R	2.200E 07	TO 1.030E 08	EV	DEF GH	141
QV1- 2	(65-078A-02)	FARLEY								
ELECTRON AND PROTON DETECTORS.....			10/05/65	TO 12/01/65	U	2.200E 07	TO 5.000E 07	EV	B	1073
EXPLORER 12	(61-020A-03)	VAN ALLEN								
CHARGED PARTICLES.....			08/16/61	TO 12/06/61	U	2.300E 07	TO INFINITY	EV	B DEF H	45
INJUN 3	(62-067B-07)	O'BRIEN								
PROTON SPECTROMETER.....			12/14/62	TO 10/31/63	U	2.400E 07	TO 1.000E 08	EV	C	89
PIONEER 5	(60-001A-03)	WINCKLER								
ION CHAMBER AND GM TUBE.....			03/11/60	TO 05/17/60	R	2.500E 07	TO INFINITY	EV	B GH	26
1963-038C	(63-038C-01)	BOSTROM								

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PHENOMENON MEASURED INDEXES



SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		RANGE R	OF S	MEASUREMENTS		MAX REGION MIN ABCDEFGHI	PLANET /012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			E MIN VALUE E	(F OR E) (LAMBDA)			
2.2 SENSING PROTONS OR HYDROGEN IONS											
ENERGETIC ELECTRON AND PROTON DETECTORS.....			09/28/63	TO 12/31/68	U	2.500E	07 TO 1.000E	08 EV	C		105
TELSTAR 1 PROTON AND ELECTRON RADIATION.....	(62-029A-01)	BROWN	07/10/62	TO 02/21/63	R	2.600E	07 TO INFINITY	EV	B DE		59
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R	2.600E	07 TO 9.400E	07 EV	H		1060
EXPLORER 25 GEIGER-MUELLER COUNTER.....	(64-076B-03)	VAN ALLEN	02/13/65	TO 07/19/66	U	2.700E	07 TO INFINITY	EV	C		171
EXPLORER 41 ION CHAMBER.....	(69-053A-02)	ANDERSON	06/21/69	TO 02/18/72	U	3.000E	07 TO INFINITY	EV	H		1291
EXPLORER 1 COSMIC-RAY DETECTOR.....	(58-001A-01)	VAN ALLEN	02/01/58	TO 03/16/58	U	3.000E	07 TO INFINITY	EV	B D		3
OGO 2 GALACTIC AND SOLAR COSMIC RAY.....	(65-081A-08)	WEBBER	10/15/65	TO 10/24/65	U	3.000E	07 TO INFINITY	EV	C		220
OGO 3 COSMIC-RAY SPECTRA AND FLUXES.....	(66-049A-03)	SIMPSON	06/09/66	TO 12/01/69	R	3.000E	07 TO 1.000E	08 EV	DEFGH		254
EXPLORER 41 SOLAR PROTON MONITORING EXPERIMENT.....	(69-053A-07)	BOSTROM	06/21/69	TO 12/23/72	U	3.000E	07 TO INFINITY	EV	GH		1295
OGO 1 SOLAR COSMIC RAYS.....	(64-054A-12)	ANDERSON	09/30/65	TO 05/03/66	R	3.000E	07 TO 9.000E	07 EV	DEFGH		139
OGO 3 SOLAR COSMIC RAYS.....	(66-049A-01)	ANDERSON	06/24/66	TO 02/27/67	R	3.000E	07 TO 9.000E	07 EV	DEFGH		253
EXPLORER 34 SOLAR PROTON MONITOR.....	(67-051A-07)	BOSTROM	05/24/67	TO 05/03/69	U	3.000E	07 TO INFINITY	EV	GH		1165
EXPLORER 14 COSMIC RAY.....	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	U	3.000E	07 TO INFINITY	EV	EFIGH		79
OGO 4 GALACTIC AND SOLAR COSMIC RAY.....	(67-073A-09)	WEBBER	07/30/67	TO 08/27/67	U	3.000E	07 TO INFINITY	EV	C		343
EXPLORER 12 COSMIC RAY.....	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	U	3.000E	07 TO INFINITY	EV	EFG		47
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U	3.000E	07 TO INFINITY	EV	B D		7
EXPLORER 41 COSMIC-RAY PROTON (R VS DE/OX).....	(69-053A-03)	SIMPSON	06/21/69	TO 09/06/71	R	3.090E	07 TO 1.190E	08 EV	H		1293
EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	R	3.150E	07 TO 1.250E	08 EV	DEFGH		1167

LIMITING DATES OF  
DATA AT NSSDC R RANGE OF MEASUREMENTS

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	EARLIEST	LATEST	E MIN	VALUE	(F OR E)	MAX REGION	PLANET	PAGE
			MM/DD/YY	MM/DD/YY	S	MAX	VALUE	(LAMBDA)		

2.2 SENSING PROTONS OR HYDROGEN IONS

EXPLORER 34 COSMIC-RAY ANISOTROPY.....	(67-051A-05)	MCCRACKEN	05/24/67	TO 05/02/69	R	3.150E 07	TO 1.250E 08	EV	DEFGH	1167
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R	3.300E 07	TO INFINITY	EV	CDEF	75
RELAY 1 PROTON-ELECTRON DETECTORS.....	(62-068A-03)	MCILWAIN	12/14/62	TO 10/20/64	U	3.400E 07	TO INFINITY	EV	B DE	93
EXPLORER 11 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	U	3.500E 07	TO 7.500E 07	EV	B	33
HEOS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-06)	LABEYRIE	01/01/69	TO 11/06/71	R	3.500E 07	TO 2.000E 08	EV	H	1242
EXPLORER 33 ION CHAMBER AND GM COUNTERS.....	(65-058A-04)	ANDERSON	07/01/66	TO 06/09/67	U	3.500E 07	TO INFINITY	EV	GH	273
ERS 17 CHARGED PARTICLE DETECTORS.....	(65-058C-01)	VETTE	07/20/65	TO 11/04/65	U	3.500E 07	TO INFINITY	EV	B DE	1069
EXPLORER 6 ION CHAMBER AND GM COUNTER.....	(59-004A-03)	WINCKLER	08/07/59	TO 10/06/59	R	3.640E 07	TO INFINITY	EV	B DEF	15
ERS 13 CHARGED PARTICLE DETECTORS.....	(64-040C-01)	VETTE	07/17/64	TO 12/08/64	U	3.900E 07	TO 5.000E 07	EV	B DE	1041
EXPLORER 15 DIRECTIONAL AND OMNIDIRECTIONAL ENERGETIC PROTONS AND ELECTRONS.....	(62-059A-02)	MCILWAIN	10/27/62	TO 01/30/63	U	4.000E 07	TO 1.100E 08	EV	B DE	1028
INJUN 3 PULSE SCINTILLATOR.....	(62-067B-02)	O'BRIEN	12/14/62	TO 10/28/63	U	4.000E 07	TO INFINITY	EV	BC	84
EXPLORER 26 OMNIDIRECTIONAL AND UNIDIRECTIONAL ELECTRON AND PROTON FLUXES.....	(64-086A-02)	MCILWAIN	12/21/64	TO 05/21/67	U	4.000E 07	TO 1.100E 08	EV	B DEF	185
EXPLORER 4 CHARGED PARTICLE DETECTOR.....	(58-005A-01)	VAN ALLEN	07/26/58	TO 09/21/58	U	4.000E 07	TO INFINITY	EV	B D	7
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R	4.200E 07	TO 3.200E 08	EV	H	1239
PIONEER 6 COSMIC-RAY ANISOTROPY DETECTION.....	(65-105A-05)	MCCRACKEN	12/16/65	TO 02/06/67	U	4.400E 07	TO 7.700E 07	EV	H	1100
PIONEER 7 COSMIC-RAY ANISOTROPY.....	(66-075A-05)	MCCRACKEN	08/17/66	TO 01/31/67	U	4.700E 07	TO 6.500E 07	EV	H	1130
EXPLORER 18	(63-046A-04)	MCDONALD								

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I T L E	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC R RANGE OF			MEASUREMENTS (F O R E) (LAMBDA)	MAX REGION MIN ABCDEFGHI	PLANET 012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX				
2.2 SENSING PROTONS OR HYDROGEN IONS									
COSMIC RAYS.....			11/27/63	TO 05/26/64	U 5.000E 07	TO INFINITY	EV	FGH	1038
OGO 2	(65-081A-08)	WEBBER	10/15/65	TO 10/24/65	R 5.000E 07	TO 2.000E 08	EV	C	220
GALACTIC AND SOLAR COSMIC RAY.....									
OGO 4	(67-073A-09)	WEBBER	07/30/67	TO 08/27/67	R 5.000E 07	TO 2.000E 08	EV	C	343
GALACTIC AND SOLAR COSMIC RAY.....									
TELSTAR 2	(63-013A-01)	BROWN	05/07/63	TO 05/07/65	R 5.000E 07	TO 1.000E 08	EV	B DE	100
PROTON AND ELECTRON RADIATION.....									
EXPLORER 35	(67-070A-02)	ANDERSON	07/19/67	TO 07/24/68	U 5.000E 07	TO INFINITY	EV	H	M 1177
ENERGETIC PARTICLE.....									
EXPLORER 34	(67-051A-02)	ANDERSON	05/24/67	TO 09/15/67	U 5.000E 07	TO INFINITY	EV	H	1166
ION CHAMBER.....									
EXPLORER 18	(63-046A-05)	ANDERSON	11/27/63	TO 03/26/65	U 5.200E 07	TO INFINITY	EV	H	115
ION CHAMBER AND GM COUNTERS.....									
EXPLORER 21	(64-060A-05)	ANDERSON	10/04/64	TO 09/23/65	U 5.200E 07	TO INFINITY	EV	GH	158
ION CHAMBER AND GM COUNTERS.....									
EXPLORER 28	(65-042A-05)	ANDERSON	05/29/65	TO 01/03/67	U 5.200E 07	TO INFINITY	EV	H	1061
ION CHAMBER AND GM COUNTERS.....									
EXPLORER 14	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	R 5.500E 07	TO 5.000E 08	EV	EFGH	79
COSMIC RAY.....									
EXPLORER 12	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	R 5.500E 07	TO 5.000E 08	EV	EFG	47
COSMIC RAY.....									
EXPLORER 34	(67-051A-07)	BOSTROM	05/24/67	TO 05/03/69	U 6.000E 07	TO INFINITY	EV	GH	1168
SOLAR PROTON MONITOR.....									
EXPLORER 41	(69-053A-07)	BOSTROM	06/21/69	TO 12/23/72	U 6.000E 07	TO INFINITY	EV	GH	1295
SOLAR PROTON MONITORING EXPERIMENT.....									
PIONEER 8	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R 6.400E 07	TO 1.100E 08	EV	H	1208
COSMIC RAY GRADIENT DETECTOR.....									
PIONEER 7	(66-075A-05)	MCCRACKEN	08/17/66	TO 01/31/67	U 6.500E 07	TO 8.100E 07	EV	H	1130
COSMIC-RAY ANISOTROPY.....									
EXPLORER 25	(64-076B-03)	VAN ALLEN	02/13/65	TO 07/19/66	U 7.000E 07	TO INFINITY	EV	C	171
GEIGER-MUELLER COUNTER.....									
MARINER 4	(64-077A-04)	SIMPSON	11/28/64	TO 10/01/65	R 7.000E 07	TO 1.700E 08	EV	H	1052
COSMIC-RAY TELESCOPE.....									
PIONEER 7	(66-075A-06)	SIMPSON	08/17/66	TO 04/30/71	R 7.300E 07	TO 1.600E 08	EV	H	1131
COSMIC-RAY TELESCOPE.....									

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		R	RANGE OF		MEASUREMENTS (F OR E)	MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		S	MAX VALUE (LAMBDA)				
2.2 SENSING PROTONS OR HYDROGEN IONS											
PIIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R	7.320E	07 TO 1.750E	06 EV	H		234
EXPLORER 6 PROPORTIONAL COUNTER TELESCOPE.....	(59-004A-01)	SIMPSON	08/07/59	TO 10/06/59	U	7.500E	07 TO INFINITY	EV	B DEF		12
PIIONEER 5 PROPORTIONAL COUNTER TELESCOPE.....	(60-001A-01)	SIMPSON	03/11/60	TO 05/16/60	U	7.500E	07 TO INFINITY	EV	H		24
EXPLORER 11 CRYSTAL SANDWICH/CERENKOV COUNTER.....	(61-013A-02)	GARMIRE	04/28/61	TO 11/12/61	U	7.500E	07 TO 3.500E	08 EV	B		33
OGO 5 ENERGETIC RADIATIONS FROM SOLAR FLARES.....	(68-014A-04)	ANDERSON	03/08/68	TO 10/04/69	U	8.000E	07 TO 3.000E	08 EV	GH		1210
OGO 5 COSMIC RAY ELECTRONS.....	(68-014A-09)	MEYER	03/05/68	TO 07/13/72	R	9.000E	07 TO 1.800E	08 EV	GH		1214
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R	9.000E	07 TO 1.900E	08 EV	H		1037
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R	9.000E	07 TO 1.900E	08 EV	GH		1047
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R	9.400E	07 TO 1.900E	08 EV	H		1060
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	R	9.420E	07 TO 1.700E	08 EV	H		330
EXPLORER 41 COSMIC-RAY PROTON (R VS DE/DX).....	(69-053A-03)	SIMPSON	06/21/69	TO 09/06/71	R	1.190E	08 TO 1.000E	09 EV	H		1293
ALQUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R	1.300E	08 TO INFINITY	EV	COEF		75
PIIONEER 7 COSMIC-RAY TELESCOPE.....	(66-075A-06)	SIMPSON	08/17/66	TO 04/30/71	R	1.650E	08 TO INFINITY	EV	H		1131
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	R	1.700E	08 TO INFINITY	EV	H		330
PIIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R	1.750E	08 TO INFINITY	EV	H		234
OGO 5 COSMIC RAY ELECTRONS.....	(68-014A-09)	MEYER	03/05/68	TO 07/13/72	R	1.800E	08 TO 1.800E	09 EV	GH		1214
OGO 4 GALACTIC AND SOLAR COSMIC RAY.....	(67-073A-05)	WEBBER	07/30/67	TO 08/27/67	R	2.000E	08 TO 2.000E	09 EV	C		343

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC R RANGE OF MEASUREMENTS				MAX REGION (F OR E) (LAMBDA)	PLANET MIN ABCDEFGHI/012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE			
2.2 SENSING PROTONS OR HYDROGEN IONS									
OGO 2 GALACTIC AND SOLAR COSMIC RAY.....	(65-081A-08)	WEBBER	10/15/65	TO 10/24/65	R	2.000E 08 TO 2.000E 09	EV	C	220
MEOS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-06)	LABEYRIE	01/01/69	TO 11/06/71	R	2.000E 08 TO 8.500E 08	EV	H	1242
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/18/69	R	2.000E 08 TO 3.000E 08	EV	C	1285
PIIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R	2.400E 08 TO 2.200E 09	EV	H	1208
OGO 6 COSMIC RAY EXPERIMENT.....	(65-051A-20)	STONE	06/07/69	TO 09/18/69	U	3.000E 08 TO INFINITY	EV	C	1285
PIIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R	3.200E 08 TO 2.200E 09	EV	H	1239
EXPLORER 12 COSMIC RAY.....	(61-020A-04)	MCDONALD	08/16/61	TO 12/06/61	U	6.000E 08 TO INFINITY	EV	EFG	47
EXPLORER 14 COSMIC RAY.....	(62-051A-04)	MCDONALD	10/02/62	TO 08/11/63	U	6.000E 08 TO INFINITY	EV	EFGH	79
MEOS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-06)	LABEYRIE	01/01/69	TO 11/06/71	R	8.500E 08 TO INFINITY	EV	H	1242
OGO 5 COSMIC RAY ELECTRONS.....	(68-014A-09)	MEYER	03/05/68	TO 07/13/72	R	1.800E 09 TO 1.600E 10	EV	GH	1214
OGO 5 MEASUREMENT OF THE ABSOLUTE FLUX AND ENERGY SPECTRUM OF ELECTRONS.....	(68-014A-12)	VAN DE HULST	03/05/68	TO 08/31/71	O	2.000E 10 TO 1.000E 11	EV	B DEFGH	1214

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC R RANGE OF MEASUREMENTS				MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S	VALUE (F OR E) MAX VALUE (LAMBDA)			
2.3 SENSING HELIUM NUCLEI									
EXPLORER 34 ELECTROSTATIC ANALYZER.....	(67-051A-08)	DGILVIE	05/24/67	TO 02/03/68	R 3.100E 02	TO 5.100E 03	EV	H	1170
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/18/69	R 2.000E 05	TO 3.000E 08	EV	C	1285
EXPLORER 25 SOLID-STATE DETECTOR.....	(64-076B-04)	VAN ALLEN	11/23/64	TO 07/19/66	U 5.200E 05	TO 4.000E 06	EV	C	1050
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	U 5.900E 05	TO 2.250E 08	EV	H	274
PIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R 6.000E 05	TO 6.000E 06	EV	H	234
PIONEER 7 COSMIC-RAY TELESCOPE.....	(66-075A-06)	SIMPSON	08/17/66	TO 04/30/71	R 6.000E 05	TO 1.300E 07	EV	H	1131
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(65-081A-07)	SIMPSON	10/14/65	TO 12/13/66	U 7.200E 05	TO 1.100E 07	EV	C	1078
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	U 7.200E 05	TO 1.100E 07	EV	C	1184
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(64-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	U 7.800E 05	TO 9.800E 07	EV	H	274
EXPLORER 25 SOLID-STATE DETECTOR.....	(64-076B-04)	VAN ALLEN	11/23/64	TO 07/19/66	U 9.000E 05	TO 1.800E 06	EV	C	1050
EXPLORER 34 LOW-ENERGY SOLID-STATE TELESCOPE.....	(67-051A-01)	BROWN	05/24/67	TO 05/03/69	R 1.000E 06	TO 6.000E 06	EV	DEFGH	1165
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	R 1.000E 06	TO 4.400E 06	EV	DEFGH	1290
EXPLORER 34 SOLAR PROTON MONITOR.....	(67-051A-07)	BOSTROM	05/24/67	TO 05/03/69	U 1.000E 06	TO 1.000E 07	EV	GH	1168
EXPLORER 41 SOLAR PROTON MONITORING EXPERIMENT.....	(69-053A-07)	BOSTROM	06/21/69	TO 12/23/72	U 1.000E 06	TO 1.000E 07	EV	GH	1295
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68	U 1.130E 06	TO 4.600E 07	EV	H	274
MARINER 4 COSMIC-RAY TELESCOPE.....	(64-077A-04)	SIMPSON	11/28/64	TO 10/01/65	U 1.200E 06	TO 1.500E 07	EV	H	1052
OGO 2 LOW-ENERGY PROTON, ALPHA PARTICLE	(65-081A-07)	SIMPSON							

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSOC R RANGE OF MEASUREMENTS					PLANET A B C D E F G H I / 0 1 2 3 4 5 M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN 5 MAX	VALUE VALUE	(F OR E) (LAMBDA)		
2.3 SENSING HELIUM NUCLEI									
MEASUREMENT.....			10/14/65	TO 12/13/66	R	1.220E 06	TO 1.200E 07	EV C	1078
OGO 4 LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....	(67-073A-08)	SIMPSON	07/28/67	TO 02/02/69	R	1.220E 06	TO 1.200E 07	EV C	1184
EXPLORER 40 SOLID-STATE PARTICLE DETECTOR.....	(68-066B-03)	VAN ALLEN	08/09/68	TO 05/29/70	R	1.250E 06	TO 8.400E 06	EV C	1233
OGO 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-18)	SIMPSON	09/05/64	TO 11/25/67	R	1.400E 06	TO 8.600E 06	EV DEFGH	141
OGO 5 ELECTRON AND PROTON SPECTROMETER.....	(68-014A-06)	WEST, JR.	03/04/68	TO 05/01/69	U	1.500E 06	TO 5.400E 06	EV FGH	1211
OGO 3 COSMIC-RAY SPECTRA AND FLUXES.....	(66-049A-03)	SIMPSON	06/09/66	TO 12/01/69	R	1.600E 06	TO 8.600E 06	EV DEFGH	254
EXPLORER 35 ELECTRON AND PROTON DETECTORS.....	(67-070A-01)	VAN ALLEN	07/19/67	TO 05/28/70	U	2.000E 06	TO 1.020E 07	EV H	338
EXPLORER 33 ELECTRON AND PROTON DETECTORS.....	(66-058A-05)	VAN ALLEN	07/01/66	TO 12/31/68		2.100E 06	TO 1.700E 07	EV H	274
ATS 1 PARTICLE TELESCOPE.....	(66-110A-05)	BROWN	12/09/66	TO 03/01/67	R	2.400E 06	TO 4.000E 08	EV F	300
APOLLO 15 CSM ALPHA PARTICLE SPECTROMETER.....	(71-063A-10)	GORENSTEIN	07/29/71	TO 08/04/71	O	3.500E 06	TO 7.500E 06	EV H	M 1376
APOLLO 16 CSM ALPHA PARTICLE SPECTROMETER.....	(72-031A-09)	GORENSTEIN	04/19/72	TO 04/25/72	O	3.500E 06	TO 7.500E 06	EV H	M 1394
ALOUETTE 1 ENERGETIC PARTICLES DETECTORS.....	(62-049A-02)	MCDIARMID	09/29/62	TO 03/26/64	R	4.300E 06	TO INFINITY	EV CDEF	75
EXPLORER 41 LOW-ENERGY SOLID-STATE TELESCOPE.....	(69-053A-01)	BROWN	06/21/69	TO 08/15/70	R	4.400E 06	TO 1.100E 07	EV DEFGH	1290
PIONEER 9 COS C-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R	5.800E 06	TO 4.200E 07	EV H	1239
EXPLORER 34 LOW-ENERGY SOLID-STATE TELESCOPE.....	(67-051A-01)	BROWN	05/24/67	TO 05/03/69	U	6.000E 06	TO 1.200E 07	EV DEFGH	1165
PIONEER 6 COSMIC RAY TELESCOPE.....	(65-105A-03)	FAN	12/16/65	TO 04/30/71	R	6.000E 06	TO 1.390E 07	EV H	234
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R	6.600E 06	TO 6.400E 07	EV H	1208
OGO 4 (67-073A-08) SIMPSON									

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF		DATA AT NSSDC R RANGE OF		MEASUREMENTS		MAX REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE	(F OR E) (LAMBDA)	MIN ABCDEFGHI/012345M			

2.3 SENSING HELIUM NUCLEI

LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			07/28/67	TO 02/02/69	U	7.200E 06	TO 1.100E 07	EV	C		1184
OGO 1	(64-054A-18)	SIMPSON									
COSMIC-RAY SPECTRA AND FLUXES.....			09/05/64	TO 11/25/67	R	8.600E 06	TO 3.300E 07	EV	DEFGH		141
OGO 3	(66-049A-03)	SIMPSON									
COSMIC-RAY SPECTRA AND FLUXES.....			06/09/66	TO 12/01/69	R	8.600E 06	TO 3.300E 07	EV	DEFGH		254
EXPLORER 41	(69-053A-01)	BROWN									
LOW-ENERGY SOLID-STATE TELESCOPE.....			06/21/69	TO 08/15/70	R	1.100E 07	TO 2.100E 07	EV	DEFGH		1290
OGO 2	(65-081A-07)	SIMPSON									
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			10/14/65	TO 12/13/66	R	1.200E 07	TO 3.920E 07	EV	C		1078
OGO 4	(67-073A-08)	SIMPSON									
LOW-ENERGY PROTON, ALPHA PARTICLE MEASUREMENT.....			07/28/67	TO 02/02/69	R	1.200E 07	TO 3.920E 07	EV	C		1184
PIONEER 7	(66-075A-06)	SIMPSON									
COSMIC-RAY TELESCOPE.....			08/17/66	TO 04/30/71	R	1.300E 07	TO 7.000E 07	EV	H		1131
PIONEER 6	(65-105A-03)	FAN									
COSMIC RAY TELESCOPE.....			12/16/65	TO 04/30/71	R	1.390E 07	TO 7.320E 07	EV	H		234
MARINER 4	(64-077A-04)	SIMPSON									
COSMIC-RAY TELESCOPE.....			11/28/64	TO 10/01/65	R	1.500E 07	TO 7.000E 07	EV	H		1052
EXPLORER 18	(63-046A-04)	MCDONALD									
COSMIC RAYS.....			11/27/63	TO 05/26/64	R	1.870E 07	TO 8.160E 07	EV	FGH		1038
OGO 5	(68-014A-04)	ANDERSON									
ENERGETIC RADIATIONS FROM SOLAR FLARES.....			03/08/68	TO 10/04/69	U	3.000E 07	TO 1.200E 09	EV	GH		1210
PIONEER 6	(65-105A-05)	MCCRACKEN									
COSMIC-RAY ANISOTROPY DETECTION.....			12/16/65	TO 02/06/67	U	3.100E 07	TO 7.600E 07	EV	H		1100
HEOS 1	(68-109A-06)	LABEYRIE									
COSMIC-RAY PARTICLE FLUX.....			01/01/69	TO 11/06/71	R	4.000E 07	TO 1.200E 08	EV	H		1242
OGO 2	(65-081A-08)	WEBBER									
GALACTIC AND SOLAR COSMIC RAY.....			10/15/65	TO 10/24/65	R	5.000E 07	TO 2.000E 08	EV	C		220
MARINER 4	(64-077A-04)	SIMPSON									
COSMIC-RAY TELESCOPE.....			11/28/64	TO 10/01/65	R	7.000E 07	TO INFINITY	EV	H		1052
PIONEER 7	(66-075A-06)	SIMPSON									
COSMIC-RAY TELESCOPE.....			08/17/66	TO 04/30/71	R	7.000E 07	TO 1.780E 08	EV	H		1131
PIONEER 6	(65-105A-03)	FAN									
COSMIC RAY TELESCOPE.....			12/16/65	TO 04/30/71	R	7.320E 07	TO 1.750E 08	EV	H		234

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PHENOMENON MEASURED INDEXES



SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		R	RANGE OF MEASUREMENTS		MAX REGION M A X R E G I O N	PLANET P L A N E T	PAGE
			EARLIEST M M / O O / Y Y	LATEST M M / O O / Y Y		E MIN VALUE E M I N V A L U E	(F OR E) ( L A M B D A )			
2.3 SENSING HELIUM NUCLEI										
NEOS 1 COSMIC-RAY PARTICLE FLUX.....	(68-109A-06)	LABEYRIE	01/01/69	TO 11/06/71	R	1.200E 08	TO 4.400E 08	EV	H	1242
OGO 2 GALACTIC AND SOLAR COSMIC RAY.....	(65-081A-08)	WEBBER	10/15/65	TO 10/24/65	R	2.000E 08	TO 2.000E 09	EV	C	220
OGO 6 COSMIC RAY EXPERIMENT.....	(69-051A-20)	STONE	06/07/69	TO 09/16/69	U	3.000E 08	TO INFINITY	EV	C	1285
OGO 5 ENERGETIC RADIATIONS FROM SOLAR FLARES.....	(68-014A-04)	ANDERSON	03/08/68	TO 10/04/69	U	3.000E 08	TO 3.000E 08	EV	GH	1210

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF		DATA AT NSSDC R RANGE OF		MEASUREMENTS		PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE	(F OR E) (LAMBDA)	MAX REGION MIN ABCDEFGHI		
2.4 SENSING OTHER PARTICLE SPECIES										
EXPLORER 31 MAGNETIC ION MASS SPECTROMETER.....	(65-098B-05)	HOFFMAN	12/01/65	TO 03/03/68	U	THERMAL ENERGIES		BC		1088
ALOUETTE 2 CYLINDRICAL ELECTROSTATIC PRDBE.....	(65-098A-05)	BRACE	02/21/66	TO 11/13/67	U	THERMAL ENERGIES		C		1086
PIONEER 6 SUPERIOR CONJUNCTION FARADAY ROTATION.....	(65-105A-06)	LEVY	10/12/66	TO 11/24/66	U	THERMAL ENERGIES		H		240
PIONEER 7 SUPERIOR CONJUNCTION FARADAY ROTATION.....	(66-075A-08)	LEVY	06/13/67	TO 07/19/67	U	THERMAL ENERGIES		H		292
ISIS 1 CYLINDRICAL ELECTROSTATIC PRDBE.....	(69-009A-07)	BRACE	01/30/69	TO 06/05/70	U	THERMAL ENERGIES		C		1255
MARINER 6 S-BAND OCCULTATION.....	(69-014A-06)	KLIQRE	07/00/69	TO 08/00/69	U	THERMAL ENERGIES			4	1261
MARINER 7 S-BAND OCCULTATION.....	(69-030A-06)	KLIQRE	08/00/69	TO 08/00/69	U	THERMAL ENERGIES			4	1269
EXPLORER 17 LANGMUIR PROBES.....	(63-009A-02)	BRACE	04/04/63	TO 04/04/63	U	THERMAL ENERGIES		B		98
OGO 5 LIGHT ION MASS MAGNETIC SPECTROMETER.....	(68-014A-18)	SHARP	03/07/68	TO 05/31/69	U	1.000E-02 TO 1.000E 01 EV		DEF		1221
APOLLO 14 LM CHARGED PARTICLE LUNAR ENVIRONMENT.....	(71-008C-08)	O'BRIEN	02/05/71	TO 06/07/71	R	1.700E 02 TO 2.000E 03 EV		GH	N	1346
VELA 5A SOLAR WIND EXPERIMENT.....	(69-046D-05)	BAME	11/07/69	TO 02/28/71	R	1.000E 03 TO 8.300E 03 EV		GH		1277
APOLLO 14 LM CHARGED PARTICLE LUNAR ENVIRONMENT.....	(71-008C-08)	O'BRIEN	02/05/71	TO 06/07/71	R	2.000E 03 TO 2.000E 04 EV		GH	N	1346
EXPLORER 35 ELECTRON AND PROTON DETECTORS.....	(67-070A-01)	VAN ALLEN	07/19/67	TO 05/28/70	U	4.600E 05 TO 1.080E 07 EV		H		338
OGO 5 LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW E EXPERIMENT).....	(68-014A-27)	SIMPSON	03/05/68	TO 09/24/71	R	5.000E 05 TO 5.000E 06 EV		B DEFGH		1225
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	R	8.000E 05 TO 9.600E 06 EV		H		330
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R	9.000E 05 TO 6.500E 06 EV		H		1037
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R	9.000E 05 TO 6.500E 06 EV		GH		1047

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC R RANGE OF MEASUREMENTS				MAX REGION (F O R E) (L A M B D A)	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	E MIN S MAX	VALUE VALUE			
2.4 SENSING OTHER PARTICLE SPECIES									
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 2.600E 06	TO 1.330E 07	EV	H	1060
EXPLORER 41 COSMIC-RAY PROTON (R VS DE/DX).....	(69-053A-03)	SIMPSON	06/21/69	TO 09/06/71	R 3.000E 06	TO 1.000E 09	EV	H	1293
OGO 5 LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW E EXPERIMENT).....	(68-014A-27)	SIMPSON	03/05/68	TO 09/24/71	R 5.000E 06	TO 5.000E 07	EV	B DEFGH	1225
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 6.500E 06	TO 1.900E 07	EV	H	1037
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R 6.500E 06	TO 1.900E 07	EV	GH	1047
EXPLORER 34 COSMIC-RAY PROTON (R VS DE/DX).....	(67-051A-03)	SIMPSON	05/24/67	TO 05/02/69	R 9.600E 06	TO 9.420E 07	EV	H	330
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 1.330E 07	TO 2.600E 07	EV	H	1060
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R 1.900E 07	TO 9.000E 07	EV	GH	1047
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 1.900E 07	TO 9.000E 07	EV	H	1037
OGO 1 COSMIC-RAY SPECTRA AND FLUXES.....	(64-054A-18)	SIMPSON	09/05/64	TO 11/25/67	R 2.200E 07	TO 1.030E 08	EV	DEFGH	141
EXPLORER 28 COSMIC-RAY RANGE VS ENERGY LOSS.....	(65-042A-03)	SIMPSON	05/29/65	TO 05/02/67	R 2.600E 07	TO 9.400E 07	EV	H	1060
OGO 3 COSMIC-RAY SPECTRA AND FLUXES.....	(66-049A-03)	SIMPSON	06/09/66	TO 12/01/69	R 3.000E 07	TO 1.300E 08	EV	DEFGH	254
PIONEER 9 COSMIC-RAY TELESCOPE.....	(68-100A-06)	WEBBER	12/01/69	TO 03/31/73	R 4.200E 07	TO 3.200E 08	EV	H	1239
OGO 5 LOW-ENERGY HEAVY COSMIC-RAY PARTICLES (HIGH-Z LOW E EXPERIMENT).....	(68-014A-27)	SIMPSON	03/05/68	TO 09/24/71	R 5.000E 07	TO 8.000E 07	EV	B DEFGH	1225
PIONEER 8 COSMIC RAY GRADIENT DETECTOR.....	(67-123A-06)	WEBBER	12/13/67	TO 01/31/73	R 6.300E 07	TO 1.700E 08	EV	H	1208
EXPLORER 18 COSMIC-RAY RANGE VS ENERGY LOSS.....	(63-046A-03)	SIMPSON	11/27/63	TO 06/07/64	R 9.000E 07	TO 1.900E 08	EV	H	1037
EXPLORER 21 COSMIC-RAY RANGE VS ENERGY LOSS.....	(64-060A-03)	SIMPSON	10/04/64	TO 04/09/65	R 9.000E 07	TO 1.900E 08	EV	GH	1047

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER T I T L E	LIMITING DATES OF		R RANGE	OF	MEASUREMENTS	MAX REGION	PLANET
			EARLIEST MM/DD/YY	LATEST MM/DD/YY					

2.4 SENSING OTHER PARTICLE SPECIES

EXPLORER 28	(65-042A-03)	SIMPSON							
COSMIC-RAY RANGE VS ENERGY LOSS.....			05/29/65	TO 05/02/67	R 9.400E 07	TO 1.900E 08	EV	H	1060
EXPLORER 34	(67-051A-03)	SIMPSON							
COSMIC-RAY PROTON (R VS DE/DX).....			05/24/67	TO 05/02/69	R 9.420E 07	TO 1.700E 08	EV	H	330
PIONEER 8	(67-123A-06)	WEBBER							
COSMIC RAY GRADIENT DETECTOR.....			12/13/67	TO 01/31/73	R 1.700E 08	TO 1.600E 09	EV	H	1208
EXPLORER 34	(67-051A-03)	SIMPSON							
COSMIC-RAY PROTON (R VS DE/DX).....			05/24/67	TO 05/02/69	R 1.700E 08	TO INFINITY	EV	H	330
PIONEER 9	(68-100A-06)	WEBBER							
COSMIC-RAY TELESCOPE.....			12/01/69	TO 03/31/73	R 3.200E 08	TO 2.200E 09	EV	H	1239
EXPLORER 7	(59-009A-03)	POMERANTZ							
HEAVY PRIMARY COSMIC-RAY.....			10/13/59	TO 05/31/60	U 4.400E 08	TO 7.500E 09	EV	B	21
EXPLORER 7	(59-009A-03)	POMERANTZ							
HEAVY PRIMARY COSMIC-RAY.....			10/13/59	TO 05/31/60	U 4.400E 08	TO 7.500E 09	EV	B	21
ARIEL 1	(62-015A-03)	ELLIOTT							
COSMIC-RAY DETECTOR.....			04/27/62	TO 07/12/62	U 2.500E 09	TO 1.600E 10	EV	B	57

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC R		E MEASURED S CHARACTERISTIC	REGION	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY		ABCDEFGHI	0123456	
<b>3. MICROSCOPIC NEUTRAL MEASUREMENTS</b>								
<b>3.1 SENSING NEUTRONS</b>								
OSO 1	(62-006A-10)	MESS						
BF-3 PROPORTIONAL COUNTER NEUTRON DETECTOR.....			03/07/62	TO 07/14/63	R ENERGY FLUX	B		1019

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC R		E MEASURED S CHARACTERISTIC	REGION ABCDEFGHI/012345M	PLANET	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
3.2 SENSING ATOMS AND OR MOLECULES								
MARINER 6 S-BAND OCCULTATION.....	(69-014A-06)	KLIORE	07/00/69	TO 08/00/69	U COLUMNAR DENSITY		4	1261
MARINER 7 S-BAND OCCULTATION.....	(69-030A-06)	KLIORE	08/00/69	TO 08/00/69	U COLUMNAR DENSITY		4	1269
OGO 6 MICROPHONE ATMOSPHERIC DENSITY GAUGE.....	(69-051A-01)	SHARP	06/11/69	TO 01/31/70	U PARTICLE FLUX	C		1281
EXPLORER 17 MASS SPECTROMETER.....	(63-009A-01)	REBER	04/03/63	TO 06/01/63	R TEMPERATURE	B		97
EXPLORER 17 PRESSURE GAUGE.....	(63-009A-03)	NEWTON	04/03/63	TO 06/08/63	U TEMPERATURE	B		99
EXPLORER 32 NEUTRAL PARTICLE MAGNETIC MASS SPECTROMETER.....	(66-044A-02)	REBER	05/26/66	TO 05/31/66	R TEMPERATURE	B		246
ARIEL 3 MOLECULAR OXYGEN DISTRIBUTION.....	(67-042A-03)	STEWART	05/05/67	TO 01/12/68	TEMPERATURE	C		1161

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PHENOMENON MEASURED INDEXES

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		MEASURED C H A R A C T E R I S T I C	MEASURING T E C H N I Q U E	PLANET 012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
4. OBSERVATIONS OF MACROSCOPIC BODIES								
4.2 SENSING VENUS								
MARINER 5 CELESTIAL MECHANICS.....	(67-060A-07)	ANDERSON	06/14/67	11/20/67	GRAVITY FIELD	ORBIT ANALYSIS	2	1176

SATELLITE NAME DESCRIPTIVE EXPERIMENT TITLE	EXPERIMENT ID EXPERIMENT TITLE	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC		MEASURED CHARACTERISTIC	MEASURING TECHNIQUE	PLANET 012345M PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			
4.3 SENSING EARTH							
GEMINI 4	(65-043A-02)	NAGLER	06/03/65	06/07/65	ATMOS FEATURE	PHOTO, LOW RES	3 1063
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 5	(65-068A-03)	NAGLER	08/21/65	08/29/65	ATMOS FEATURE	PHOTO, LOW RES	3 1071
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 7	(65-100A-02)	NAGLER	12/04/65	12/18/65	ATMOS FEATURE	PHOTO, LOW RES	3 1091
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 6A	(65-104A-02)	NAGLER	12/15/65	12/16/65	ATMOS FEATURE	PHOTO, LOW RES	3 1094
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 10	(66-066A-01)	NEY	07/18/66	07/21/66	ATMOS FEATURE	PHOTO, LOW RES	3 277
ZODIACAL LIGHT PHOTOGRAPHY.....							
GEMINI 11	(66-081A-07)	NAGLER	09/12/66	09/15/66	ATMOS FEATURE	PHOTO, LOW RES	3 1134
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 12	(66-104A-03)	NAGLER	11/11/66	11/15/66	ATMOS FEATURE	PHOTO, LOW RES	3 1140
SYNOPTIC WEATHER PHOTOGRAPHY.....							
GEMINI 3	(65-024A-03)	LOWMAN, JR	03/23/65	03/23/65	FEATURE, GEOG	PHOTO, LOW RES	3 1057
70-MM HASSELBLAD EARTH PHOTOGRAPHY.....							
GEMINI 4	(65-043A-01)	LOWMAN, JR	06/03/65	06/07/65	FEATURE, GEOG	PHOTO, LOW RES	3 1062
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 5	(65-068A-02)	LOWMAN, JR	08/21/65	08/29/65	FEATURE, GEOG	PHOTO, LOW RES	3 1071
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 7	(65-100A-01)	LOWMAN, JR	12/04/65	12/18/65	FEATURE, GEOG	PHOTO, LOW RES	3 1091
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 6A	(65-104A-01)	LOWMAN, JR	12/15/65	12/16/65	FEATURE, GEOG	PHOTO, LOW RES	3 1093
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 8	(66-020A-01)	LOWMAN, JR.	03/16/66	03/16/66	FEATURE, GEOG	PHOTO, LOW RES	3 1105
SYNOPTIC TERRAIN PHOTOGRAPHY.....							
GEMINI 9	(66-047A-05)	LOWMAN, JR.	06/03/66	06/06/66	FEATURE, GEOG	PHOTO, LOW RES	3 1107
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 10	(66-066A-02)	LOWMAN, JR.	07/18/66	07/21/66	FEATURE, GEOG	PHOTO, LOW RES	3 1118
70-MM HASSELBLAD SYNOPTIC TERRAIN PHOTOGRAPHS.....							
GEMINI 11	(66-081A-06)	LOWMAN, JR.					

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PHENOMENON MEASURED INDEXES



SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		MEASURED C H A R A C T E R I S T I C	MEASURING T E C H N I Q U E	PLANET	
			EARLIEST M M / D D / Y Y	LATEST M M / D D / Y Y			012345M	PAGE
4.3 SENSING EARTH								
70-MM SYNOPSIS TERRAIN PHOTOGRAPHS.....			09/12/66	TO 09/15/66	FEATURE, GEOG	PHOTO, LOW RES	3	1133
GEMINI 12	(66-104A-02)	LOWMAN, JR.						
70-MM SYNOPSIS TERRAIN PHOTOGRAPHS.....			11/11/66	TO 11/15/67	FEATURE, GEOG	PHOTO, LOW RES	3	1140
APOLLO 9	(69-018A-01)	ALLENBY, JR.						
70-MM HASSELBLAD SPECTRAL TERRAIN PHOTOGRAPHS.....			03/03/69	TO 03/13/69	FEATURE, GEOG	PHOTO, LOW RES	3	1264
GEMINI 5	(65-068A-02)	LOWMAN, JR.						
70-MM HASSELBLAD SYNOPSIS TERRAIN PHOTOGRAPHS.....			08/21/65	TO 08/29/65	FEATURE, GEOG	PHOTO, LOW RES	3	1071

SATELLITE NAME D E S C R I P T I V E E X P E R I M E N T T I T L E	EXPERIMENT ID E X P E R I M E N T I D	EXPERIMENTER E X P E R I M E N T E R	LIMITING DATES OF DATA AT NSSDC		MEASURED C H A R A C T E R I S T I C	MEASURING T E C H N I Q U E	PLANET 012345M	PAGE
			EARLIEST M M / D D / Y Y	LATEST M M / D D / Y Y				
4.4 SENSING EARTH'S MOON								
4.4.1 GEOGRAPHIC CHARACTERISTICS								
APOLLO 11 LM	(69-059C-04)	ALLEY						
LASER RANGING RETRO REFLECTOR.....			07/21/59	12/30/71	DISTANCE	OTHER TECHNIQUES		M 1303
APOLLO 14 LM	(71-008C-09)	FALLER						
LASER RANGING RETROREFLECTOR.....			01/09/71	12/30/71	DISTANCE	OTHER TECHNIQUES		M 1348

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		MEASURED CHARACTERISTIC	MEASURING TECHNIQUE	PLANET	
			EARLIEST MM/DD/YY	LATEST MM/DD/YY			012345M	PAGE
4.4.2 NON-GEOGRAPHIC CHARACTERISTICS								
APOLLO 11 CSM APOLLO 11 PHOTOGRAPHIC STUDIES.....	(69-059A-01)	MAPPING SCIENCES LAB	07/16/69	TO 07/24/69	FEATURE, GEOG	PHOTO, HIGH RES	M	1298
APOLLO 12 CSM APOLLO 12 PHOTOGRAPHIC STUDIES.....	(69-099A-01)	MAPPING SCIENCES LAB	11/18/69	TO 11/24/69	FEATURE, GEOG	PHOTO, HIGH RES	M	1317
APOLLO 10 APOLLO 10 PHOTOGRAPHIC STUDIES.....	(69-043A-01)	ALLENBY, JR.	05/18/69	TO 05/26/69	FEATURE, GEOG	PHOTO, LOW RES	M	1274
APOLLO 13 CSM APOLLO 13 PHOTOGRAPHIC STUDIES.....	(70-029A-01)	MAPPING SCIENCES LAB	04/11/70	TO 04/17/70	FEATURE, GEOG	PHOTO, LOW RES	M	1335
RANGER 7 LUNAR TELEVISION.....	(64-041A-01)	KUIPER	07/31/64	TO 07/31/64	FEATURE, GEOG	PHOTO, MED RES	M	127
RANGER 8 LUNAR TELEVISION.....	(65-010A-01)	KUIPER	02/20/65	TO 02/20/65	FEATURE, GEOG	PHOTO, MED RES	M	190
RANGER 9 LUNAR TELEVISION.....	(65-023A-01)	KUIPER	03/24/65	TO 03/24/65	FEATURE, GEOG	PHOTO, MED RES	M	192
LUNAR ORBITER 1 LUNAR PHOTOGRAPHIC STUDIES.....	(66-073A-01)	KOSOFISKY	08/18/66	TO 08/29/66	FEATURE, GEOG	PHOTO, MED RES	M	1122
LUNAR ORBITER 2 LUNAR PHOTOGRAPHIC STUDIES.....	(66-100A-01)	KOSOFISKY	11/18/66	TO 11/25/66	FEATURE, GEOG	PHOTO, MED RES	M	1137
LUNAR ORBITER 3 LUNAR PHOTOGRAPHIC STUDIES.....	(67-008A-01)	KOSOFISKY	02/15/67	TO 02/23/67	FEATURE, GEOG	PHOTO, MED RES	M	1148
LUNAR ORBITER 4 LUNAR PHOTOGRAPHIC STUDIES.....	(67-041A-01)	KOSOFISKY	05/11/67	TO 05/26/67	FEATURE, GEOG	PHOTO, MED RES	M	1159
LUNAR ORBITER 5 LUNAR PHOTOGRAPHIC STUDIES.....	(67-075A-01)	KOSOFISKY	08/06/67	TO 08/18/67	FEATURE, GEOG	PHOTO, MED RES	M	1196
APOLLO 8 APOLLO 8 PHOTOGRAPHIC STUDIES.....	(68-118A-01)	ALLENBY, JR.	12/21/68	TO 12/27/68	FEATURE, GEOG	PHOTO, MED RES	M	1248
APOLLO 12 CSM MULTISPECTRAL PHOTOS.....	(69-099A-09)	GOETZ	11/18/69	TO 11/20/69	FEATURE, GEOG	PHOTO, MED RES	M	422
APOLLO 14 CSM ORBITAL AND SURFACE PHOTOGRAPHY.....	(71-008A-01)	UNKNOW	01/31/71	TO 02/09/71	FEATURE, GEOG	PHOTO, MED RES	M	1339
APOLLO 15 CSM PANORAMIC PHOTOGRAPHY.....	(71-063A-02)	DOYLE	07/31/71	TO 08/12/71	FEATURE, GEOG	PHOTO, MED RES	M	1369
APOLLO 15 CSM METRIC PHOTOGRAPHY.....	(71-063A-03)	DOYLE	07/31/71	TO 08/04/71	FEATURE, GEOG	PHOTO, MED RES	M	1372
APOLLO 16 CSM	(72-031A-01)	DOYLE						

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T T I T L E	EXPERIMENTER	LIMITING DATES OF DATA AT NSSDC			MEASURING TECHNIQUE	PLANET 012345M PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MEASURED CHARACTERISTIC		
4.4.2 NON-GEOGRAPHIC CHARACTERISTICS							
HANDHELD PHOTOGRAPHY.....			04/16/72	TO 07/27/72	FEATURE, GEOG	PHOTO, MED RES	M 1387
APOLLO 16 CSM PANORAMIC PHOTOGRAPHY.....	(72-031A-02)	DOYLE	04/21/72	TO 04/25/72	FEATURE, GEOG	PHOTO, MED RES	M 1390
APOLLO 16 CSM METRIC PHOTOGRAPHY.....	(72-031A-03)	DOYLE	04/21/72	TO 04/25/72	FEATURE, GEOG	PHOTO, MED RES	M 1392
LUNAR ORBITER 1 SELENODESY.....	(66-073A-02)	MICHAEL, JR.	08/10/66	TO 10/28/66	GRAVITY FIELD	ORBIT ANALYSIS	M 282
LUNAR ORBITER 2 SELENODESY.....	(66-100A-02)	MICHAEL, JR.	11/06/66	TO 10/11/67	GRAVITY FIELD	ORBIT ANALYSIS	M 297
LUNAR ORBITER 3 SELENODESY.....	(67-008A-02)	MICHAEL, JR.	02/05/67	TO 10/09/67	GRAVITY FIELD	ORBIT ANALYSIS	M 306
LUNAR ORBITER 4 SELENODESY.....	(67-041A-02)	MICHAEL, JR.	05/04/67	TO 07/11/67	GRAVITY FIELD	ORBIT ANALYSIS	M 319
LUNAR ORBITER 5 SELENODESY.....	(67-075A-02)	MICHAEL, JR.	08/01/67	TO 01/31/68	GRAVITY FIELD	ORBIT ANALYSIS	M 349
APOLLO 15 LM HEAT FLOW.....	(71-063C-06)	LANGSETH	07/31/71	TO 07/31/72	INTERIOR CHAR	OTHER TECHNIQUES	M 1380
APOLLO 11 LM PASSIVE SEISMIC.....	(69-059C-03)	LATHAM	07/21/69	TO 08/11/69	INTERIOR CHAR	SEISMIC TECH	M 1302
LUNAR ORBITER 1 MICROMETEOROID DETECTORS.....	(66-073A-03)	GURTLER	08/10/66	TO 09/14/66	PARTICLE FLUX	OTHER TECHNIQUES	M 264
SURVEYOR 3 SOIL MECHANICS SURFACE SAMPLER.....	(67-035A-02)	SHOEMAKER	04/27/67	TO 04/27/67	SURFACE CHAR	OTHER TECHNIQUES	M 314
SURVEYOR 5 ALPHA-SCATTERING SURFACE ANALYZER.....	(67-084A-02)	TURKEVICH	09/09/67	TO 09/24/67	SURFACE CHAR	OTHER TECHNIQUES	M 355
SURVEYOR 6 ALPHA-SCATTERING SURFACE ANALYZER.....	(67-112A-02)	TURKEVICH	11/10/67	TO 11/19/67	SURFACE CHAR	OTHER TECHNIQUES	M 362
SURVEYOR 7 ALPHA-SCATTERING SURFACE ANALYZER.....	(68-001A-03)	TURKEVICH	01/10/68	TO 01/23/68	SURFACE CHAR	OTHER TECHNIQUES	M 375
SURVEYOR 7 SOIL MECHANICS SURFACE SAMPLER.....	(68-001A-02)	SCOTT	01/11/68	TO 01/22/68	SURFACE CHAR	OTHER TECHNIQUES	M 374
APOLLO 15 LM SOIL MECHANICS.....	(71-063C-02)	MITCHELL	07/31/71	TO 08/02/71	SURFACE CHAR	OTHER TECHNIQUES	M 1378
APOLLO 16 LM SOIL MECHANICS.....	(72-031C-09)	MITCHELL	04/21/72	TO 04/24/72	SURFACE CHAR	OTHER TECHNIQUES	M 1398

SATELLITE NAME D E S C R I P T I V E	EXPERIMENT ID E X P E R I M E N T	EXPERIMENTER T I T L E	LIMITING DATES OF DATA AT NSSDC		MEASURED CHARACTERISTIC	MEASURING TECHNIQUE	PLANET 012345M	PAGE
			EARLIEST MM/DD/YY	LATEST MM/DD/YY				
4.4.2 NON-GEOGRAPHIC CHARACTERISTICS								
APOLLO 15 LM SOIL MECHANICS.....	(71-063C-02)	MITCHELL	07/31/71	TO 08/02/71	SURFACE CHAR	OTHER TECHNIQUES	M	1378
APOLLO 16 LM SOIL MECHANICS.....	(72-031C-09)	MITCHELL	04/21/72	TO 04/24/72	SURFACE CHAR	OTHER TECHNIQUES	M	1398
SURVEYOR 1 TELEVISION.....	(66-045A-01)	SHOEMAKER	06/02/66	TO 07/13/66	SURFACE CHAR	PHOTO, HIGH RES	M	248
SURVEYOR 3 TELEVISION.....	(67-035A-01)	SHOEMAKER	04/20/67	TO 05/03/67	SURFACE CHAR	PHOTO, HIGH RES	M	311
SURVEYOR 5 TELEVISION.....	(67-084A-01)	SHOEMAKER	09/11/67	TO 09/24/67	SURFACE CHAR	PHOTO, HIGH RES	M	352
SURVEYOR 6 TELEVISION.....	(67-112A-01)	SHOEMAKER	11/10/67	TO 11/24/67	SURFACE CHAR	PHOTO, HIGH RES	M	359
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 LM LUNAR FIELD GEOLOGY.....	(72-096C-02)	SWANN	12/10/72	TO 12/13/72	SURFACE CHAR	PHOTO, HIGH RES	M	1402
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 17 CSM METRIC PHOTOGRAPHY.....	(72-096A-07)	DOYLE	12/10/72	TO 12/16/72	SURFACE CHAR	PHOTO, HIGH RES	M	1400
APOLLO 15 CSM HAND-HELD PHOTOGRAPHY.....	(71-063A-01)	DOYLE	07/26/71	TO 08/12/71	SURFACE CHAR	PHOTO, LOW RES	M	1364
APOLLO 17 CSM HANDHELD PHOTOGRAPHY.....	(72-096A-05)	DOYLE	12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M	1399

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			EARLIEST MM/DD/YY	LATEST MM/DD/YY	MEASURED CHARACTERISTIC		
4.4.2 NON-GEOGRAPHIC CHARACTERISTICS							
APOLLO 8	(68-118A-01)	ALLENBY, JR.					
APOLLO 8 PHOTOGRAPHIC STUDIES.....			12/21/68	TO 12/27/68	SURFACE CHAR	PHOTO, MED RES	M 1248
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 17 CSM	(72-096A-05)	DOYLE					
HANDHELD PHOTOGRAPHY.....			12/07/72	TO 12/19/72	SURFACE CHAR	PHOTO, MED RES	M 1399
APOLLO 11 LM	(69-059C-01)	SHOEMAKER					
LUNAR FIELD GEOLOGY.....			07/20/69	TO 07/20/69	SURFACE CHAR	RETURNED SAMPLES	M 1300
APOLLO 12 LM	(69-099C-01)	SHOEMAKER					
LUNAR FIELD GEOLOGY.....			11/21/69	TO 11/22/69	SURFACE CHAR	RETURNED SAMPLES	M 1319
APOLLO 15 LM	(71-063C-10)	SWANN					
FIELD GEOLOGY.....			07/31/71	TO 08/02/71	SURFACE CHAR	RETURNED SAMPLES	M 1381
APOLLO 17 LM	(72-096C-02)	SWANN					
LUNAR FIELD GEOLOGY.....			12/10/72	TO 12/13/72	SURFACE CHAR	RETURNED SAMPLES	M 1402
APOLLO 14 LM	(71-008C-01)	SWANN					
LUNAR FIELD GEOLOGY.....			02/03/71	TO 03/26/71	SURFACE CHAR	RETURNED SAMPLES	M 1344
APOLLO 16 LM	(72-031C-05)	MUEHLBERGER					
FIELD GEOLOGY.....			04/21/72	TO 04/24/72	SURFACE CHAR	RETURNED SAMPLES	M 1396
APOLLO 14 LM	(71-008C-01)	SWANN					
LUNAR FIELD GEOLOGY.....			02/03/71	TO 03/26/71	SURFACE CHAR	VISUAL OBSERVATION	M 1344
APOLLO 16 LM	(72-031C-05)	MUEHLBERGER					
FIELD GEOLOGY.....			04/21/72	TO 04/24/72	SURFACE CHAR	VISUAL OBSERVATION	M 1396
APOLLO 15 LM	(71-063C-10)	SWANN					
FIELD GEOLOGY.....			07/31/71	TO 08/02/71	SURFACE CHAR	VISUAL OBSERVATION	M 1381
APOLLO 17 LM	(72-096C-02)	SWANN					

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			EARLIEST MM/DD/YY	LATEST MM/DD/YY			
4.9 SENSING MICROMETEORITES, METEORS, ETC.							
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