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National Space Science Data Center/  
World Data Center A For Rockets and Satellites

82-24

# Launch Summary for 1981



September 1982



Launch Summary

for

1981

Robert W. Vostreys

September 1982

National Space Science Data Center (NSSDC)/  
World Data Center A for Rockets and Satellites (WDC-A-R&S)  
National Aeronautics and Space Administration  
Goddard Space Flight Center  
Greenbelt, Maryland 20771

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## INTRODUCTION

### Purpose

World Data Center A for Rockets and Satellites (WDC-A-R&S) collects and exchanges reports of sounding rocket launches; reports of satellite and space probe launchings; descriptive information on spacecraft experiments; scientific reports on results of experiments that receive a limited distribution; data which support conclusions but which are not included in the published reports; and precise positional observations, orbital elements, and ephemerides that are of great scientific interest and value. Original (raw) or calibrated (reduced or analyzed) data are not normally deposited in the subcenters for rockets and satellites. Data related to rocket and satellite launchings are summarized in the *Launch Summary*. This annual report replaces the annual *World Data Center A Rockets and Satellites Catalogue of Data*, last published in 1975.

This document is in accordance with international agreements concerning international exchange of rocket and satellite data adopted by the Committee on Space Research (COSPAR) in May 1962 and published in *COSPAR Information Bulletin*, No. 9, Part I, July 1962. The *COSPAR Guide to Rocket and Satellite Information and Data Exchange* was incorporated in full by the Comité International de Géophysique (CIG) into the overall *Guide to International Data Exchange through the World Data Centers for the Period 1960-Onwards* (published in November 1963). These agreements were modified to include recommendations for improving the exchange of information and data, and a revised *COSPAR Guide to Rocket and Satellite Information and Data Exchange* was adopted by COSPAR in May 1972 and published in *COSPAR Transactions*, No. 8, Part I, December 1972.

The current plans for continued international exchange of solar-terrestrial data through the WDCs were set forth in the *STP Notes*, No. 6, and incorporated with slight modifications in the *Fourth Consolidated Guide to International Data Exchange through the World Data Centres*, published in June 1979 by the International Council of Scientific Unions (ICSU) panel on World Data Centers.

### NSSDC Facilities and Services

The National Space Science Data Center (NSSDC) provides facilities for reproduction of data and for onsite data use. Resident and visiting researchers are invited to study data while at the Data Center. The Data Center staff will assist users with additional data searches and with the use of equipment. Advance notice of such a visit enables the staff to provide better services to the data user. In addition to rocket information and satellite data, the Data Center maintains some supporting information and other data that may be related to researchers' needs.

The services provided by NSSDC are available to any individual or organization resident in the United States and to researchers outside the United States through WDC-A-R&S. Normally a charge is made for the requested data to cover the cost of reproduction and the processing of the request. The researcher will be notified of the charge, and payment must be received prior to processing the request. However, as resources permit, the Director of

NSSDC/WDC-A-R&S may waive 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 or colleges; (4) State or local governments; or (5) nonprofit organizations.

The Data Center's address for requests follows:

National Space Science Data Center  
Code 601.4  
Goddard Space Flight Center  
Greenbelt, Maryland 20771  
Telephone No.: (301) 344-6695  
Telex No.: 86975  
TWX No.: 7108289716

Researchers who reside outside the U.S. should direct requests to

World Data Center A for Rockets and Satellites  
Code 601  
Goddard Space Flight Center  
Greenbelt, Maryland 20771  
U.S.A.  
Telephone No.: (301) 344-6695  
Telex No: 86975  
TWX No.: 7108289716

### Organization

This publication is a summary of launchings identified by NSSDC/WDC-A-R&S from launching reports received for the period January 1, 1981, through December 31, 1981. There are two major sections to this edition: Sounding Rockets, and Artificial Earth Satellites and Space Probes.

The Sounding Rockets section contains a summary list of sounding rocket launchings and a list of the experimenters associated with the launchings and their addresses. There is also an index of launch sites and two tables giving the meanings and the codes used in the launch list for the Experiment Discipline and Instrument categories. A sample rocket launching report form is also included. The Artificial Earth Satellites and Space Probes section includes a summary list of satellite and space probe launchings, and a sample satellite or space probe launching report form. (The satellite and space probe launch list, as well as the sounding rocket launch list and the launch site index in the Sounding Rocket section, were all generated from the NSSDC information system.) There are two appendixes to this document. Appendix 1 is a description of the World Data Centers, including functions and responsibilities. Appendix 2 gives the addresses of the WDC-A Coordination Office and seven subcenters.

NSSDC/WDC-A-R&S welcomes comments regarding errors in this report. Recommendations directed to the appropriate address in reference to the overall contents and organization of this report would also be appreciated.

## SOUNDING ROCKETS

### List of Launches

The list of sounding rocket launchings was generated using the NSSDC Rocket File. This file is compiled from reports of rocket launchings, national reports to COSPAR, and scientific publications. The Rocket File is used for such lists because it facilitates easy sorting, selecting, updating, and report generation.

The list is a summary of launchings identified between January 1, 1981, and December 31, 1981, regardless of launch date. Information extracted from the file for this time-ordered printout is as follows: date and time of launch (universal time); the agency rocket identification; and the sponsoring country or countries. Sponsors provided scientists (experimenters), support personnel (such as launch crews), equipment (rocket vehicles, launch facilities), or funds for the launch; the launch site; experiment disciplines; instruments used for the experiment; experimenters or institutions involved in the launching; and the peak altitude achieved by the rocket.

When the launch site is aboard a ship, the coordinates of the ship location at time of launch are included, if known. Table 1 is a list of the launch sites identified to date. When launch sites have changed names or are in close proximity to one another, only one name is used.

The scientific disciplines with which the experiments are concerned are coded, as well as can be determined, from the information provided in the launch report. The disciplines are divided into 10 general categories, each of which may have up to 13 subcategories (See Table 2).

When possible, the type of instrumentation used on a particular rocket flight was selected from a standard coded list of instruments. In preparing this list, what was measured by the instrument or sensor function was emphasized, and the collimating, concentrating, selecting, comparing, and amplification characteristics were largely ignored. Table 3 shows the codes in use. Additional codes are available for instruments not covered in the list. NSSDC/WDC-A-R&S will assign these as needed.

Some rocket launches are not reported because the launching agencies did not provide the necessary information to WDC-A-R&S. Because the value of this publication increases with the number of flights reported, all agencies with knowledge of rocket launches are encouraged to announce launchings to WDC-A-R&S at the address given on page 2 of this document, preferably by means of the form shown in Figure 1. Copies of this form may be obtained from WDC-A-R&S.

Table 1. List of Launch Sites

SITE NAME	SITE LOCATION	GEOGRAPHIC		GEOMAGNETIC		ADD FOR UNIVERSAL TIME
		LAT	E LONG	LAT	E LONG	
ABERPORTH	WALES	52.09	355.67	55.64	79.76	-1.0 HR.
AKITA	JAPAN	39.57	140.07	29.47	205.45	-9.0 HR.
AKITA-KEN	SEE AKITA					
AKITA-SHI	SEE AKITA					
ALASKA ROCKET RANGE	SEE FAIRBANKS					
ANDENES	SEE ANDOYA					
ANDOYA	NORWAY	69.30	16.02	67.34	113.94	-1.0 HR.
ANTIQUA	WEST INDIES	17.15	298.22	28.55	7.85	+4.0 HR.
ARECIBO	PUERTO RICO	18.50	293.17	29.99	2.38	+4.0 HR.
ARENOSILLO	SEE EL ARENOSILLO					
ASCENSION ISLAND	EQUATORIAL ATLANTIC	-7.98	245.58	-1.24	53.83	+0.0
ATLANTIC MISSILE RANGE	SEE CAPE CANAVERAL					
BARBADOS	WINDWARD ISLANDS	13.05	300.50	24.38	10.17	+4.0 HR.
BARKING SANDS	SEE KAUAI					
BARREIRA DO INFERNO	SEE NATAL					
BARROW	USA/ALASKA	71.33	203.22	68.54	241.11	+10.0 HR.
BARTER ISLAND	USA/ALASKA	70.12	216.37	69.97	253.17	+10.0 HR.
BERMUDA	N ATLANTIC	32.20	295.55	43.66	5.32	+4.0 HR.
CAMP TORTUGUERA	SEE ARECIBO					
CAMP TUTO	SEE THULE/CAMP TUTO					
CAPE CANAVERAL	USA/FLORIDA	28.45	279.47	39.63	346.72	+5.0 HR.
CAPE KARIKARI	NEW ZEALAND	-34.00	173.50	-38.63	250.28	-12.0 HR.
CAPE KENNEDY	SEE CAPE CANAVERAL					
CAPE PARRY	CANADA/NORTHWEST TERRITORIES	70.17	235.28	73.72	269.94	+8.0 HR.
CARNARVON	AUSTRALIA/WESTERN AUSTRALIA	-24.50	113.40	-35.99	182.70	-8.0 HR.
CASSINO	BRAZIL	-32.20	307.83	-21.14	15.23	+3.0 HR.
CELA	SEE CHAMICAL					
CELA ATLANTICO	SEE MAR CHIQUITA					
CENTRE SPATIAL GUYANAIS	SEE KOUROU					
CHAMICAL	ARGENTINA	-30.33	293.68	-18.84	2.45	+4.0 HR.
CHILCA	PERU	-12.50	283.20	-1.11	352.19	+5.0 HR.
CHURCHILL	SEE FORT CHURCHILL					
COLOMB BECHAR	SEE HAMMAGUIR					
CORONIE	SURINAM (DUTCH GUIANA)	5.85	303.70	17.06	13.21	+4.0 HR.
CROATAN (SHIP)	VARIOUS OCEANS AND SEAS					
DEFIANCE (SHIP)	VARIOUS OCEANS AND SEAS					
DUMONT D'URVILLE	ANTARCTICA	-64.67	140.02	-73.80	228.07	-9.0 HR.
EAST QUODDY	CANADA/NEWFOUNDLAND	44.90	296.58	56.33	7.16	+4.0 HR.
EASTERN TEST RANGE	SEE CAPE CANAVERAL					
EGLIN AIR FORCE BASE	USA/FLORIDA	30.38	273.30	41.26	339.58	+6.0 HR.
EL ARENOSILLO	SPAIN	37.10	353.27	41.69	70.98	-1.0 HR.
ESRANGE	SEE KIRUNA					
FAIRBANKS	USA/ALASKA	65.00	212.40	64.79	256.58	+10.0 HR.
FORT CHURCHILL	CANADA/MANITOBA	58.73	266.18	68.67	323.20	+6.0 HR.
FORT GREELEY	USA/ALASKA	64.00	214.88	64.38	259.86	+10.0 HR.
FORT SHERMAN	PANAMA	9.33	280.02	20.61	348.42	+5.0 HR.
FORT WAINWRIGHT	SEE FAIRBANKS					
FOX MAIN	CANADA/NORTHWEST TERRITORIES	68.77	278.78	80.23	353.11	+5.0 HR.
GEOPOLE STATION	SEE THULE/CAMP TUTO					
GILLAM	CANADA/MANITOBA	55.92	264.00	65.67	321.87	+6.0 HR.
GREEN RIVER	USA/UTAH	38.93	249.94	47.11	311.34	+7.0 HR.
GUAM	N PACIFIC	13.50	144.67	3.97	212.89	+10.0 HR.
HALL BEACH	SEE FOX MAIN					
HAMMAGUIR	ALGERIA	30.90	356.92	34.91	72.92	+0.0
HEISS ISLAND	FRANZ JOSEF LAND	27.62	58.05	71.31	156.06	-5.0 HR.
HOLLOMAN AFB	SEE WHITE SANDS					
HUELVA	SEE EL ARENOSILLO					
ILE DU LEVANT	FRANCE	43.05	06.47	44.87	86.48	+0.0
JOHNSTON ATOLL	SEE JOHNSTON ISLAND					
JOHNSTON ISLAND	EQUATORIAL PACIFIC	16.75	190.48	14.33	256.34	+11.0 HR.
KAGOSHIMA	JAPAN	31.25	131.07	20.38	198.24	-9.0 HR.
KAGOSHIMA SPACE CENTER	SEE KAGOSHIMA					
KAPUSTIN YAR	U.S.S.R.	48.52	45.80	42.75	125.04	-4.0 HR.
KARACHI	SEE SONMIANI					
KARIKARI	SEE CAPE KARIKARI					
KARYSTOS	GREECE	38.02	24.42	36.46	102.12	-2.0 HR.
KAUAI	USA/HAWAIIAN ISLANDS	22.07	200.23	21.50	264.70	+11.0 HR.
KERGUELEN ISLAND	INDIAN OCEAN	-48.83	70.00	-56.79	127.95	-5.0 HR.
KWEENAW	USA/MICHIGAN	47.43	272.28	58.14	335.71	+6.0 HR.
KHEYSA ISLAND	SEE HEISS ISLAND					
KIRUNA	SWEDEN	67.90	21.10	65.3	115.8	-1.0 HR.
KOROLEV (SHIP)	VARIOUS OCEANS AND SEAS					
KORONI BEACH	GREECE	36.77	21.95	35.73	99.38	-2.0 HR.
KOUROU	FRENCH GUIANA	5.20	307.27	16.04	16.60	+4.0 HR.
KRENKEL OBSERVATORY	SEE HEISS ISLAND					
KRENKEL (SHIP)	VARIOUS OCEANS AND SEAS					
KRONOGARD	SWEDEN	66.22	19.78	69.95	113.95	-1.0 HR.
KWAJALEIN	MARSHALL ISLANDS	8.73	167.73	2.33	235.80	-12.0 HR.
LANDES TEST CENTER	SEE TEST CENTER OF LANDES					
LAPAN SPACE CENTER	INDONESIA	-6.27	106.87	-17.74	175.69	-7.0 HR.
LEBA	POLAND	54.47	17.33	53.60	102.24	-1.0 HR.
LENINSK	SEE TYURATAN					
MAR CHIQUITA	ARGENTINA	-37.75	302.58	-26.48	10.21	+4.0 HR.
MAR DEI PLATA	SEE MAR CHIQUITA					
MARMOLO	SEE VILCOMEDORO MARAMBIO					
MCMURDO	ANTARCTICA	-77.50	165.00	-79.13	291.78	-11.0 HR.
MICHIKAWA	SEE AKITA					
MOLODEZHAYA	ANTARCTICA	-67.67	45.87	-69.76	85.36	-3.0 HR.
NATAL	BRAZIL	-5.87	324.62	3.87	33.70	+3.0 HR.
NORTON SOUND (SHIP)	VARIOUS OCEANS AND SEAS					
NOUADHIBOU	MAURITANIA	20.91	342.99	27.67	56.21	+0.0
NOYKOV (SHIP)	VARIOUS OCEANS AND SEAS					
OBACHI	JAPAN	40.70	141.73	30.60	206.75	-9.0 HR.
OSTROV KHEYSA	SEE HEISS ISLAND					
PACIFIC MISSILE RANGE	SEE POINT ARGUELLO					
PASSAT (SHIP)	VARIOUS OCEANS AND SEAS					
PERDASFOGU	SEE SARDINIA					
PLESETSK	U.S.S.R.	65.70	40.35	59.90	129.08	-4.0 HR.



Table 1. List of Launch Sites (concluded)

SITE NAME	SITE LOCATION	GEOGRAPHIC		GEOMAGNETIC		ADD FOR UNIVERSAL TIME
		LAT	E LONG	LAT	E LONG	
PLYMOUTH ROCK (SHIP)	VARIOUS OCEANS AND SEAS					
POINT ARGUELLO	USA/CALIFORNIA	34.62	239.42	41.20	301.03	+8.0 HR.
POINT BARROW	SEE BARROW					
POINT MUGU	USA/CALIFORNIA	34.12	240.88	40.96	302.73	+8.0 HR.
POKER FLAT	SEE FAIRBANKS					
PORT-AUX-FRANCAIS	SEE KERGUELEN ISLAND					
PRILIV (SHIP)	VARIOUS OCEANS AND SEAS					
PRIMROSE LAKE	CANADA/SASKATCHEWAN	54.75	249.95	62.50	304.83	+7.0 HR.
PROFESSOR VIZE (SHIP)	VARIOUS OCEANS AND SEAS					
PUNTA LOBOS	PERU	-12.30	283.52	-0.89	352.69	+5.0 HR.
REGGANE	ALGERIA	26.72	0.17	30.26	75.13	+0.0
RESOLUTE BAY	CANADA/NORTHWEST TERRITORIES	74.70	265.10	82.99	289.27	+6.0 HR.
RUSHMORE (SHIP)	VARIOUS OCEANS AND SEAS					
SALTO DI QUIRRA	SEE SARDINIA					
SAN MARCO PLATFORM	INDIAN OCEAN	-2.94	40.20	-6.64	128.30	-3.0 HR.
SAN MARCO RANGE	SEE SAN MARCO PLATFORM					
SAN NICOLAS ISLAND	SEE POINT MUGU					
SARDINIA	SARDINIA	39.56	9.24	40.95	87.95	-1.0 HR.
SHIP A	EQUATORIAL PACIFIC	0.18	198.58	-0.31	267.59	+11.0 HR.
SHIP A.I. NOYEKOV	SEE NOYEKOV (SHIP)					
SHIP B	N ATLANTIC	62.06	296.08	73.49	8.39	+4.0 HR.
SHIP C	CANADA/NORTHWEST TERRITORIES	74.57	265.52	82.97	290.67	+6.0 HR.
SHIP D	N ATLANTIC	54.00	306.67	64.91	21.98	+4.0 HR.
SHIP E	N ATLANTIC	58.43	304.94	69.42	21.03	+4.0 HR.
SHIP F	N ATLANTIC	49.00	311.60	59.54	27.09	+3.0 HR.
SHIP G	N ATLANTIC	57.80	313.30	68.05	32.74	+3.0 HR.
SHIP H	N ATLANTIC	63.60	302.00	70.72	20.06	+4.0 HR.
SHIRSHOV (SHIP)	VARIOUS OCEANS AND SEAS					
SHOKALSKI (SHIP)	VARIOUS OCEANS AND SEAS					
SIPLE STATION	ANTARCTICA	-75.92	276.09	-85.83	300.58	-6.0 HR.
SONDRE STROMFJORD	GREENLAND	57.02	309.60	77.40	34.82	+3.0 HR.
SONMIANI	PAKISTAN	25.20	66.75	16.74	138.75	-5.0 HR.
SOUTH END	CANADA/SASKATCHEWAN	56.32	256.56	65.17	313.05	+6.0 HR.
SOUTH UIST	UNITED KINGDOM	57.37	352.67	61.00	80.17	-1.0 HR.
SRIHARIKOTA	INDIA	13.78	80.25	3.84	150.15	-5.5 HR.
SYOWA BASE	ANTARCTICA	-69.00	39.60	-69.66	77.69	-3.0 HR.
SYOWA BAY	SEE SYOWA BASE					
TARTAGUL	ARGENTINA	-22.77	296.18	-11.31	4.87	+4.0 HR.
TERLS	SEE THUMBA					
TEST CENTER OF LANDES	FRANCE	44.27	3.61	46.61	84.11	-1.0 HR.
THULE/CAMP TUTO	GREENLAND	76.55	291.2	88.05	1.37	+4.0 HR.
THUMBA	INDIA	8.33	76.87	-1.22	146.27	-5.5 HR.
TONOPAH TEST RANGE	USA/NEVADA	38.00	243.50	45.19	304.48	+8.0 HR.
TRIVANDRUM	SEE THUMBA					
TYURATAM	U.S.S.R.	45.63	63.27	37.35	139.39	-5.0 HR.
TYURATAM-BAIKONUR	SEE TYURATAM					
UCHINOURA	SEE KAGOSHIMA					
USHAKOV (SHIP)	VARIOUS OCEANS AND SEAS					
USS PLYMOUTH ROCK	SEE PLYMOUTH ROCK (SHIP)					
VANDENBURG AFB	SEE POINT ARGUELLO					
VEGA DAJA	SEE ARECIBO					
VICECOMEDORO MARAMBIO	ANTARCTICA	-64.27	303.07	-52.95	8.67	-4.0 HR.
VIKTOR BUGAYEV (SHIP)	VARIOUS OCEANS AND SEAS					
VIZE (SHIP)	SEE PROFESSOR VIZE (SHIP)					
VOLGOGRAD	U.S.S.R.	48.68	44.35	43.14	123.82	-4.0 HR.
VOLNA (SHIP)	VARIOUS OCEANS AND SEAS					
WALKER CAY	BAHAMA ISLANDS	27.00	282.00	38.34	349.76	+5.0 HR.
WALLOPS FLIGHT CENTER	SEE WALLOPS ISLAND					
WALLOPS ISLAND	USA/VIRGINIA	37.83	284.52	49.31	352.12	+5.0 HR.
WEST GEIRINISH	SEE SOUTH UIST					
WESTERN TEST RANGE	SEE POINT ARGUELLO					
WHITE SANDS	USA/NEW MEXICO	32.40	253.47	41.19	316.88	+7.0 HR.
WOOMERA	AUSTRALIA/SOUTHERN AUSTRALIA	-31.97	136.52	-42.18	209.55	-9.5 HR.
YUMA	USA/ARIZONA	32.87	245.68	40.51	308.23	+7.0 HR.

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Table 2. Experiment Discipline Codes

1. Aurora and Airglow
  - 1A atmospheric radiations
  - 1B auroral emissions
  - 1C airglow emissions
  - 1D airglow composition
  - 1X subdiscipline unknown
2. Atmospheric Physics
  - 2A winds and diffusion
  - 2B pressure
  - 2C temperature
  - 2D albedo
  - 2E planetary radiations
  - 2F neutral density
  - 2G neutral composition
  - 2H electromagnetic waves
  - 2I acoustics
  - 2J meteorological applications
  - 2K noctilucent clouds
  - 2L absorption/scattering
  - 2X subdiscipline unknown
3. Ionosphere
  - 3A wave propagation
  - 3B currents and fields
  - 3C ion/electron density
  - 3D ion composition
  - 3E ion/electron temperature
  - 3F ion production/recombination
  - 3G ionospheric motions
  - 3X subdiscipline unknown
4. Energetic Particles
  - 4A galactic or solar cosmic rays
  - 4B precipitating particles
  - 4C trapped radiation
  - 4X subdiscipline unknown
5. Magnetic and Electric Fields
  - 5A electric fields
  - 5B magnetic fields
  - 5C other
  - 5X subdiscipline unknown
6. Solar Physics
  - 6A radio ( $> 1$  mm)
  - 6B infrared (0.8-1000 micrometers)
  - 6C visible (3000-8000 Å)
  - 6D ultraviolet (2000-3000 Å)
  - 6E extreme UV (100-2000 Å)
  - 6F X rays (0.001-100 Å)
  - 6G gamma rays ( $< 0.0001$  Å)
  - 6X subdiscipline unknown
7. Astronomy
  - 7A radio ( $> 1$  mm)
  - 7B infrared (0.8-1000 micrometers)
  - 7C visible (3000-8000 Å)
  - 7D ultraviolet (2000-3000 Å)
  - 7E extreme UV (100-2000 Å)
  - 7F X rays (0.001-100 Å)
  - 7G gamma rays ( $< 0.0001$  Å)
  - 7X subdiscipline unknown
8. Planetology
  - 8A micrometeorites
  - 8B zodiacal light or gegenschein
  - 8C gravity
  - 8D terrain photographs
  - 8X subdiscipline unknown
9. Biology
  - 9X subdiscipline unknown
10. Rocket/Satellite Test and Other
  - 0A performance
  - 0B communication systems
  - 0C experiment/test development
  - 0D engineering experiments
  - 0E other
  - 0X subdiscipline unknown

Table 3. Instrument Codes

AF	accelerometer	QK	photon spectrometer (spectrograph)
AK	air sample	QKCN	Bragg
BD	antenna	QKKQ	interferometer (grating spectrometer)
CR	camera	QKPF	optical monochromator
CRKE	image tubes (TV)	QK?*	proportional
CRQH	photography	Q?%J	scintillator
CX	chaff, needles, tracked parachute	QO	Pitot tube
DC	chemical releases	RV	pressure
DCLA	ion cloud	SE	propagation
DCOM	neutral cloud	SEBZ	beacon
DCYQ	vapor	SESN	radar
GB	dust	SEZA	vlf/elf emissions
GI	electric field meter (electrometer)	SW	radiometer
GY	energy deposition	SWCH	bolometer
GYZ	ion chamber	SUHU	fixed frequency
GYPC	nuclear emulsions	SUOG	multichannel
HG	exobiology (extraterrestrial life)	SUOZ	nonscanning
HGCF	biological sample	SUQI	photometer
HP	falling sphere	SUQJ	photomultiplier
JE	gravity	SUQO	polarimeter
JH	grenade	SUUE	scanning
KD	hygrometer	SUVV	single frequency
LD	ion trap (probe or retarding potential analyzer)	SUVY	swept frequency
LDDI	cold cathode gage	UT	single element counter
LDHQ	Faraday cup (planar trap)	UTCW	Cerenkov
LDIY	capacitance probe	UTFI	channeltron (electron multiplier)
LDIZ	Gerdien condenser	UTL4	Geiger tube
LDKF	impedance probe	UTOR	neutron monitor
LDLU	Langmuir probe	UTPC	nuclear emulsions
LDTP	resonance probe	UTQJ	photomultiplier
LDVY	spherical traps	UTSF	proportional
LDWU	suprathermal ion detector	UTUH	scintillator
LG	ionization gauge	UTVP	solid-state detector
LGAS	alphatron	XG	telescope
LGBY	Bayard-Alpert	XGBD	antenna
LGPH	omegatron	XP	thermometer
LGTf	redhead (magnetron)	XPCA	bead thermistor
LI	ionosondes (pulsed transmitter, receiver)	XX	mydas gyro
LIHU	fixed frequency	ZZ	unknown instrument or instruments
LIQG	multichannel		
LIWY	swept frequency		
MT	magnetometer		
MTBD	antenna		
MTHZ	fluxgate		
MTSB	proton precession		
MTUI	search coil		
MTYQ	vapor		
NP	meteorological rocketsonde		
NR	micrometeorites		
NX	other instrument or instruments		
OH	multielement counter		
OHCV	Cerenkov		
OH CZ	channeltron (electron multiplier)		
OHIQ	Geiger tube		
OHOR	neutron monitor		
OHPC	nuclear emulsions		
OH SF	proportional		
OHUH	scintillator		
OHVP	solid-state detector		
OHVU	spark chamber		
OO	ozone		
OOAC	absorption		
OOGT	emission		
OOUF	scattering (backscatter or forward scatter)		
OOZU	chemiluminescence		
PX	particle spectrometer (mass spectrometer)		
PXD T	conductance/resistance		
PXFV	double focus		
PXGS	electrostatic analyzer		
PXMR	magnetic		
PXSK	quadrupole radio frequency (mass filter)		
PXST	radio frequency (Bennett tube)		
PXYV	velocity filter (time of flight)		
PXZU	chemiluminescence		

**REPORT OF ROCKET LAUNCHING**

WORLD DATA CENTER A  
ROCKET LAUNCHING CENTER  
CODDARD SPACE FLIGHT CENTER  
GREENBELT, MARYLAND 20771 U.S.A.

R8VC5-0401

SPONSORING (FUNDING) COUNTRY/COUNTRIES  
U.S.

REPORT DATE  
YEAR 1981 MONTH May DAY 4

AGENCY ROCKET IDENTIFICATION  
27-058UH

PROJECT NAME OR NUMBER

ROCKET TYPE  
Nike Black Brant

OTHER ROCKET IDENTIFICATION

LAUNCH SITE COUNTRY  
WHITE SANDS MISSILE RANGE, NM

LAUNCH SITE (SHIP) NAME  
N/A

LAUNCH SITE LATITUDE 32 ° 25 ' 4 "  NORTH  SOUTH

LAUNCH SITE LONGITUDE 106 ° 19 ' 15 "  EAST  WEST

UT LAUNCH DATE AND TIME  
YEAR 1981 MONTH May DAY 4 HOUR 07 MINUTES 55

LOCAL ZONE LAUNCH TIME  
DAY \_\_\_\_\_ HOUR \_\_\_\_\_ MINUTES \_\_\_\_\_

PROJECT SCIENTIST  
Dr. John Delvaile

AFFILIATION  
Smithsonian Astro-physical Observatory

PERFORMANCE  
 SUCCESS  
 PARTIAL  
 FAILURE

PEAK ALTITUDE  
KM 294.4 STATUTE MILES 182.5

NUMBER	EXPERIMENTER	EXPERIMENTER AFFILIATION	DISCIPLINE*	INSTRUMENT OR OBSERVING TECHNIQUE*
1	Dr. Delvaile	SAO	7F	GY; MT

EXPERIMENTS

CHECK 1/1 IF REQUIRED FOR LAUNCH

AIRGLOW/AURORA  NIGHT  STRATWARM

ECLIPSE  NOCTILUCENT CLOUD  METEOR SHOWER

DAWN/DUSK  SUN/MAG QUIET  OTHER \_\_\_\_\_

SPONADIC E  ARTIFICIAL EVENT

SPREAD F  SOLAR FLARE

SID PCA, OR AZA  OVERFLY

MAGNETIC STORM  SATELLITE

ACTIVE SUN

PREPARED BY J. J. Wolff

AGENCY NASA/GSFC

REMARKS/RESULTS  
The objective of this observation was a study of the spectrum of the diffuse soft X-ray background in the energy range 0.4 to 10 keV. The mission was successful and the payload has been recovered.

601-43 (1/73)

Figure 1. Sample Rocket Launching Report

List of Launches

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
78/04/07 1845	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (29 45N 29 43W)	2G 3C 3D 3E	LDKF LDLU PXST	178	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
78/04/19 1935	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (19 49N 29 48W)	2G 3C 3D 3E	LDKF LDLU PXST	161	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
78/04/19 1537	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (19 51N 30 24W)	2G 3C 3D 3E	LDKF LDLU PXST	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
78/04/21 0529	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (20 05N 30 00W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	170	INST OF APPLIED GEOPHYS SSCNR
78/04/21 0626	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (20 03N 29 47W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	170	INST OF APPLIED GEOPHYS SSCNR
78/04/21 0752	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (19 59N 29 26W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	---	INST OF APPLIED GEOPHYS SSCNR
78/04/21 1740	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (20 05N 30 31W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	170	INST OF APPLIED GEOPHYS SSCNR
78/04/21 1830	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (20 05N 30 31W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	170	INST OF APPLIED GEOPHYS SSCNR
78/05/04 0614	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (24 49S 29 36W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	168	INST OF APPLIED GEOPHYS SSCNR
78/05/04 0705	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (24 49S 29 34W)	1C 4D 6D	OOAC SWQ1 UTC2 UTIQ	165	INST OF APPLIED GEOPHYS SSCNR
78/05/04 1829	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (24 54S 30 25W)	4D 6D 6E	SWQJ UTC2 UTIQ	168	INST OF APPLIED GEOPHYS SSCNR
78/05/05 0630	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (24 49S 29 29W)	1C 4C	SWQ1 UTC2 UTIQ	160	INST OF APPLIED GEOPHYS SSCNR
78/05/30 2035	MR-12	U.S.S.R.	VOLGOGRAD	2H 4D 5A 5D	G1 MT UTIQ	170	INST OF APPLIED GEOPHYS
78/06/06 1741	MR-12	U.S.S.R.	VOLGOGRAD	2A 2G 3D	DCOM PXST	180	INST OF APPLIED GEOPHYS
78/06/06 2035	MR-12	U.S.S.R.	VOLGOGRAD	2A 2G 3D	DCOM PXST	176	INST OF APPLIED GEOPHYS
78/06/06 2321	MR-12	U.S.S.R.	VOLGOGRAD	2A	DCOM	176	INST OF EXP METEOROLOGY
78/06/11 0127	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (37 47N 75 14W)	2G 3D 4C 6D 6E	PXST SWQJ UTC2 UTIQ	170	INST OF APPLIED GEOPHYS SSCNR
78/06/19 2310	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (37 45N 75 13W)	4C 6D 6E	SWQJ UTC2 UTIQ UTVP	175	INST OF APPLIED GEOPHYS SSCNR
78/06/24 2113	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (37 47N 75 12W)	4C 6D 6E	SWQJ UTC2 UTIQ UTVP	168	INST OF APPLIED GEOPHYS SSCNR
78/06/26 2031	MR-12	U.S.S.R.	PROFESSOR VIZE (SHIP) (37 46N 75 13W)	4C 6D 6E	SWQJ UTC2 UTVP	165	INST OF APPLIED GEOPHYS SSCNR
78/10/06 0155	MR-12	U.S.S.R.	VOLGOGRAD	2H 3B	G1 LD SWQ1	125	INST OF APPLIED GEOPHYS
78/11/30 1200	MR-12	U.S.S.R.	VOLGOGRAD	2G 3D 3E	DCLA LDKF LDLU PXST	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
78/11/30 1600	MR-12	U.S.S.R.	VOLGOGRAD	2G 3D 3E	DCLA LDKF LDLU PXST	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
78/11/30 1855	MR-12	U.S.S.R.	VOLGOGRAD	2G 3B 3D 4B 5A	G1 PXST SWQ1 UTIQ	170	INST OF APPLIED GEOPHYS
78/11/30 2255	MR-12	U.S.S.R.	VOLGOGRAD	4B 5A 5D 6X	SWQ1 UTQJ	190	INST OF APPLIED GEOPHYS
78/12/01 0055	MR-12	U.S.S.R.	VOLGOGRAD	2G 2H 3D 4B	PXST SE2A UTIQ	165	INST OF APPLIED GEOPHYS
79/01/21 0616	MR-12	U.S.S.R.	HEISS ISLAND	2G 3C 3D 3E 3F	LDKF LDLU PXST	180	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY

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IDENTIFIES LAUNCHINGS THAT FAILED TO RETURN USEFUL DATA.

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
79/02/08 0437	MR-12	U.S.S.R.	HEISS ISLAND	2A 3C 3E 3F 4A 4B	DCOM LDKF LDLU UTCZ UTIQ	155	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHR
79/02/23 1407	MR-12	U.S.S.R.	HEISS ISLAND	2A 3C 4A 4B	DCOM LDKF UTCZ UTIQ	175	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHP
79/03/06 1527	MR-12	U.S.S.R.	HEISS ISLAND	2A 3C 3E 4B	DCOM LDKF LDLU UTCZ UTIQ	160	INST OF EXP METEOROLOGY SSCHR
79/03/10 1843	MR-12	U.S.S.R.	HEISS ISLAND	4B 5A 5B	GI MT UTCZ UTIQ	160	IZNIRAN
79/03/13 2152	MR-12	U.S.S.R.	HEISS ISLAND	2A 3C 4B	DCOM LDTP UTCZ UTIQ	160	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHR
79/03/17 1742	MR-12	U.S.S.R.	HEISS ISLAND	2A 3C 4B	DCOM LDTP UTCZ UTIQ	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHR
79/03/26 0253	MR-12	U.S.S.R.	HEISS ISLAND	3B 3C 3E	GI LDLU LDTP	165	INST OF APPLIED GEOPHYS BOURGESSY.
79/03/31 0245	MR-12	U.S.S.R.	HEISS ISLAND	3D 3C 3E	GI LDLU LDTP	165	INST OF APPLIED GEOPHYS BOURGESSY.
79/04/05 0034	MR-12	U.S.S.R.	HEISS ISLAND	2G 3C 3D 3E 4B	LD LDKF PKST UTCZ UTIQ	175	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHR
79/04/07 0148	MR-12	U.S.S.R.	HEISS ISLAND	3B 3C 3E	GI LDLU LDTP	170	INST OF APPLIED GEOPHYS BOURGESSY.
79/04/11 1045	MR-12	U.S.S.R.	HEISS ISLAND	2G 3C 3D 4B	LDTP PKST UTCZ UTIQ	180	INST OF APPLIED GEOPHYS SSCHR
79/04/14 1844	MR-12	U.S.S.R.	HEISS ISLAND	2G 3C 3D 4B	LD LDKF PKST UTCZ UTIQ	175	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY SSCHR
79/08/15 1709	MR-12	U.S.S.R.	VOLGOGRAD	2B 2F 2G 3D	LG PKST	170	INST OF APPLIED GEOPHYS
79/08/07 1714	MR-12	U.S.S.R.	VOLGOGRAD	2A	DCOM	160	INST OF EXP METEOROLOGY
79/08/13 1712	MR-12	U.S.S.R.	VOLGOGRAD	2A 2G 3D	DCOM PKST	160	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
79/08/22 1642	MR-12	U.S.S.R.	VOLGOGRAD	2A 2G 3D	DCOM PKST	155	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
79/10/17 1450	MR-12	U.S.S.R.	VOLGOGRAD	3C 3D 4B 5A 5B	GI LDKF MT PKST UTCZ UTIQ	160	INST OF APPLIED GEOPHYS
79/10/18 0055	MR-12	U.S.S.R.	VOLGOGRAD	3L 3D 4B 5A 5B	GI LDKF MT PKST UTCZ UTIQ	165	INST OF APPLIED GEOPHYS
79/10/22 0900	MR-12	U.S.S.R.	VOLGOGRAD	3C 3D 3E	LDKF LDTP PKST	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
79/10/25 2005	MR-12	U.S.S.R.	VOLGOGRAD	1A 3C 3D 4B 5A 5B	GI LDKF MT PKST SWQI UTCZ UTIQ	---	INST OF APPLIED GEOPHYS
79/12/12 0105	NASA 4.338UE	UNITED STATES	WHITE SANDS	1B	PK SWQJ	122	SHARP, W.E.
79/12/19 0157	MR-12	U.S.S.R.	VOLGOGRAD	6D 6E	SWQI UTVP	165	INST OF APPLIED GEOPHYS
79/12/20 1158	MR-12	U.S.S.R.	VOLGOGRAD	6D 6E	SWQI UTVP	165	INST OF APPLIED GEOPHYS
79/12/26 1405	MR-12	U.S.S.R.	VOLGOGRAD	2A 2G 3D	DCOM PKST	170	INST OF APPLIED GEOPHYS INST OF EXP METEOROLOGY
79/12/27 1407	MR-12	U.S.S.R.	VOLGOGRAD	1A 2G 3D	OOAC PKST SWQI	165	INST OF APPLIED GEOPHYS

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
80/01/20	6450 NASA 25.062DG	UNITED STATES	WHITE SANDS	6E	CR GK	209	CARRUTHERS,G.R.
80/01/27	0917 NASA 29.014UE TM2-9510	UNITED STATES	FAIRBANKS	5A	LD MTU1 UTQJ	433	ARNOLDY,R.L. CAHILL,L.J.,JR.
80/02/15	0825 NASA 15.200UE	ITALY	SAN MARCO PLATFORM	3C	LD12 LDLU	88	HALE,L.C. MITCHELL,J.D.
80/02/16	0825 NASA 15.201UE	ITALY	SAN MARCO PLATFORM	3C	LD12 LDLU	83	HALE,L.C. MITCHELL,J.D.
80/02/16	0825 NASA 23.017UE	UNITED STATES	SAN MARCO PLATFORM	4C	LD	78	CROSKY,C. HALE,L.C.
80/02/16	0910 NASA 15.207UC	ITALY	SAN MARCO PLATFORM	3C	LD12 LDLU	78	HALE,L.C. MITCHELL,J.D.
80/02/16	2030 NASA 23.018UE	UNITED STATES	SAN MARCO PLATFORM	4C	LD	76	CROSKY,C. HALE,L.C.
80/03/16	1155 NASA 34.003UE TM2-6087	UNITED STATES	FAIRBANKS	5A	DC	571	WESCOTT,E.M.
80/03/19	0759 NASA 34.001UE TM2-6085	UNITED STATES	FAIRBANKS	5A	DC	596	WESCOTT,E.M.
80/03/22	1136 NASA 34.002UE TM2-6086	UNITED STATES	FAIRBANKS	5A	DC	618	WESCOTT,E.M.
80/06/27	1901 NASA 25.046CE TM1-9852	UNITED STATES	WHITE SANDS	3A	PX PKFV QKKQ SWQ1	260	CHRISTENSEN,A.U. FELDMAN,P.D. GENTIEU,E.P.
80/07/02	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/07/02	1400 M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/07/02	1930 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/07/04	1500 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/07/07	1900 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/07/09	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/07/09	1400 M-100	INDIA	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/07/09	1500 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/07/09	1730 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/07/09	1930 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	91	CENTRAL AEROLOGICAL OBS
80/07/11	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/07/12	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/07/14	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/07/14	1911 NASA 30.003UU T 1-9968	UNITED STATES	WALLOPS ISLAND	2F	AK	76	HORVATH,J.J.
80/07/16	1400 M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/07/16	1400 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	79	CENTRAL AEROLOGICAL OBS
80/07/16	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/07/16	2030 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/07/18	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/07/18	1600 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	81	CENTRAL AEROLOGICAL OBS
80/07/23	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/07/23	1400 M-100	INDIA	THUMBA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/07/23	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/07/23	1700 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/07/23	2020 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/07/25	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	91	CENTRAL AEROLOGICAL OBS
80/07/28	1900 NASA 33.013UE	UNITED STATES	WALLOPS ISLAND	3D	PX	229	NIER,A.O.C.
80/07/30	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	67	CENTRAL AEROLOGICAL OBS
80/07/30	1400 M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/07/30	1420 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/07/30	1700 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/07/30	1930 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	90	CENTRAL AEROLOGICAL OBS
80/08/06	0130 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/08/06	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/06	0300 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/06	1700 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/08/13	0200 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/08/13	1400 M-100	INDIA	THUMBA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/08/13	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/08/13	1800 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/13	1930 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/08/14	0202 NASA 33.005UA TM2-9873	UNITED STATES	WHITE SANDS	6D	PX	192	ZIFF,E.C.,JR.
80/08/14	0240 NASA 31.021UE T 2-7428	UNITED STATES	WALLOPS ISLAND	3A 3C 3D	LD	90	KELLEY,M.C.
80/08/14	0311 NASA 15.210UE T 1-7429	UNITED STATES	WALLOPS ISLAND	3C 3D 3E	LD	94	HALE,L.C.
80/08/16	1150 M-100	INDIA	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/08/19	2130 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/20	0220 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/20	1400 M-100	INDIA	THUMBA	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/08/20	1400 M-100	U.S.S.R.	MOLODEZHNYA	2J	NP	90	CENTRAL AEROLOGICAL OBS
80/08/26	2000 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/26	2120 MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/08/26	2300 M-100	U.S.S.R.	VOLGOGRAD	2J	NP	79	CENTRAL AEROLOGICAL OBS
80/08/27	0210 M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/08/27	1400 M-100	INDIA	THUMBA	2J	NP	82	CENTRAL AEROLOGICAL OBS

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80/08/27 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/09/03 0520	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/03 1215	M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/09/03 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/09/03 1430	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/09/03 1600	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/03 1730	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	81	CENTRAL AEROLOGICAL OBS
80/09/03 1900	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	77	CENTRAL AEROLOGICAL OBS
80/09/03 2000	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/05 0820	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	54	CENTRAL AEROLOGICAL OBS
80/09/09 1500	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	49	CENTRAL AEROLOGICAL OBS
80/09/09 1630	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/09/09 1800	MMR-06	U.S.S.R.	VOLGOGRAD	2J	NP	75	CENTRAL AEROLOGICAL OBS
80/09/09 2110	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/09/10 0220	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/10 0735	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/09/10 1400	M-100	INDIA	THUMBA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/09/10 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/12 0735	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	56	CENTRAL AEROLOGICAL OBS
80/09/17 1400	M-100	INDIA	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/09/17 1400	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/09/17 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/09/17 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/09/17 1720	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/09/19 0730	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/09/24 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/09/24 0700	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	58	CENTRAL AEROLOGICAL OBS
80/09/24 1400	M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/09/24 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/09/24 1650	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/01 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/10/01 0700	MMR-06	U.S.S.R.	KRENKEL' (SHIP) (52 00N 34 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/01 0900	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/01 1400	M-100	INDIA	THUMBA	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/10/01 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	83	CENTRAL AEROLOGICAL OBS
80/10/01 1850	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/03 0700	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/08 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/10/08 0700	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/08 1400	M-100	INDIA	THUMBA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/10/08 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/10/08 1650	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/08 1839	NASA 33-007UL TW2-987A	UNITED STATES	WHITE SANDS	3F	LD PK QKPM	200	ZIFF, E.C., JR
80/10/15 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/15 0800	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/15 1400	M-100	INDIA	THUMBA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/10/15 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/10/15 1720	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/10/15 2000	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/10/16 1854	NASA 30-004UU T 1-9969	UNITED STATES	WALLOPS ISLAND	2F	AK	75	HORVATH, J.J.
80/10/17 0700	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/22 0240	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	81	CENTRAL AEROLOGICAL OBS
80/10/22 0800	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
80/10/22 1400	M-100	INDIA	THUMBA	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/10/22 1500	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/10/22 1650	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	59	CENTRAL AEROLOGICAL OBS
80/10/23 1900	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/10/24 0800	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	60	CENTRAL AEROLOGICAL OBS
80/10/29 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
80/10/29 0900	MMR-06	U.S.S.R.	V. BUGAYEV (SHIP) (53 00N 35 00W)	2J	NP	59	CENTRAL AEROLOGICAL OBS
80/10/29 1400	M-100	INDIA	THUMBA	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/10/29 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/29 1920	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/10/30 0430	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/11/34 2100	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/11/04 2130	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	89	CENTRAL AEROLOGICAL OBS

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
*80/11/05 1400	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/11/05 1400	M-100	U.S.S.R.	HOI ODEZHAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/11/11 2100	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/11/12 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	71	CENTRAL AEROLOGICAL OBS
80/11/12 1400	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	80	CENTRAL AEROLOGICAL OBS
80/11/12 1630	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/11/14 0720	MRR-06	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/11/14 0920	MRR-06	U.S.S.R.	VOLGOGRAD	2J	NP	76	CENTRAL AEROLOGICAL OBS
80/11/14 1220	MRR-06	U.S.S.R.	VOLGOGRAD	2J	NP	75	CENTRAL AEROLOGICAL OBS
80/11/16 0349	HASA 33.010UE T02-9B35	SWEDEN UNITED STATES	KIRUNA	3C 3D 6C 6F	LD LDLU OH1Q PX	180	KOPP,E. SMITH,L.G.
80/11/16 0415	HASA 33.011UE T02-9B36	SWEDEN UNITED STATES	KIRUNA	3C 3D 6C 6F	LD LDLU OH1Q PX	181	KOPP,E. SMITH,L.G.
80/11/18 1020	MRR-06	U.S.S.R.	VOLGOGRAD	2J	NP	76	CENTRAL AEROLOGICAL OBS
80/11/18 1130	MRR-06	U.S.S.R.	VOLGOGRAD	2J	NP	76	CENTRAL AEROLOGICAL OBS
80/11/18 2100	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/11/19 1000	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/11/19 1310	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/11/19 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/11/20 1400	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/11/21 0820	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/11/25 0900	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/11/25 2100	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	89	CENTRAL AEROLOGICAL OBS
80/11/26 1400	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/11/26 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/11/26 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	92	CENTRAL AEROLOGICAL OBS
80/11/28 0325	FERDINAND 52 DUGATTI 11	AUSTRIA FED REP OF GERMANY NORWAY	ANDOYA	0A 2G 3C 4D	LDHQ LD12 MT OH1Q OHVP PX UTVP	97	BJORDAL,J. FRIEDRICH,M. SORAAS,F. THRANE,E.V. VON ZAHN,U.
80/11/28 0325	FERDINAND 56 TRIONON 11	AUSTRIA FED REP OF GERMANY NORWAY	ANDOYA	0A 2G 3C 3D	LDHQ LD12 MT PKSK CX	146	ARNOLD,F. FRIEDRICH,M. KRANKOVSKY,D.K.H. THRANE,E.V. WIDDEL,H.U.
*80/11/28 0345	MPSC-8003A	FED REP OF GERMANY NORWAY	ANDOYA	2A 2F	CX	94	WIDDEL,H.U.
80/11/30 2344	HASA 33.009UE T02-9B34	SWEDEN UNITED STATES	KIRUNA	3C 3D 6C 6F	LD LDLU OH1Q PX	171	KOPP,E. SMITH,L.G.
80/12/03 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/12/03 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/12/03 1410	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/12/03 1700	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/12/05 0900	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	80	CENTRAL AEROLOGICAL OBS
80/12/09 0630	HASA 27.047GG	UNITED STATES	WHITE SANDS	7X	CR CRG..	301	SMITH,A.M.
80/12/09 2100	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	68	CENTRAL AEROLOGICAL OBS
80/12/10 1300	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/12/10 1430	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	86	CENTRAL AEROLOGICAL OBS
80/12/10 1820	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/12/12 0230	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	70	CENTRAL AEROLOGICAL OBS
80/12/12 0620	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	77	CENTRAL AEROLOGICAL OBS
80/12/12 1020	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	96	CENTRAL AEROLOGICAL OBS
80/12/12 1117	HASA 15.189UE Y21-9506	UNITED STATES	SIPLE STATION	40	UT1Q UTUH	80	SHELDON,W.R.
80/12/12 1719	HASA 18.203UE	UNITED STATES	SIPLE STATION	3C 5A 5D	BD GI LIQG MT	211	CORNELL U U OF OSLO U OF SOUTHAMPTON MATTHEWS,D.L.
80/12/16 2130	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	92	CENTRAL AEROLOGICAL OBS
80/12/17 0210	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	91	CENTRAL AEROLOGICAL OBS
80/12/17 0430	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	69	CENTRAL AEROLOGICAL OBS
80/12/17 0530	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	84	CENTRAL AEROLOGICAL OBS
80/12/17 1000	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
80/12/17 1400	M-100	INDIA U.S.S.R.	THUMBA	2J	NP	82	CENTRAL AEROLOGICAL OBS
80/12/17 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/12/18 2330	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	60	CENTRAL AEROLOGICAL OBS
80/12/20 1730	HASA 15.190UE Y21-9507	UNITED STATES	SIPLE STATION	40	UT1Q UTUH	80	SHELDON,W.R.
86/12/20 1732	HASA 18.204UE	UNITED STATES	SIPLE STATION	3C 5A 5D	BD GI LIQG MT	---	CORNELL U U OF OSLO U OF SOUTHAMPTON MATTHEWS,D.L.
80/12/23 0000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
80/12/24 0400	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	91	CENTRAL AEROLOGICAL OBS

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*80/12/24 1400	M-100	INDIA	THUMBA	2J	NP	85	CENTRAL AEROLOGICAL OBS
80/12/24 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	93	CENTRAL AEROLOGICAL OBS
80/12/24 1900	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
80/12/30 2200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	91	CENTRAL AEROLOGICAL OBS
80/12/30 2300	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/12/31 0200	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
80/12/31 1400	M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/01/01 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/01/04 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/01/05 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/01/06 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	92	CENTRAL AEROLOGICAL OBS
81/01/07 1400	M-100	INDIA	THUMBA	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/01/07 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/01/07 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/01/08 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	91	CENTRAL AEROLOGICAL OBS
81/01/09 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/01/10 1822	NASA 18.205UE	UNITED STATES	SIPLE STATION	3C 5A 5B	BD GI LIQG MT	198	CORNELL U OF OSLO OF SOUTHAMPTON MATTHEWS,D.L.
81/01/11 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/01/12 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	82	CENTRAL AEROLOGICAL OBS
81/01/13 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/01/14 0200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/01/14 0440	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	77	CENTRAL AEROLOGICAL OBS
81/01/14 1300	MNR-06	U.S.S.R.	VOLNA (SHIP) (62 005 162 00E)	2J	NP	54	CENTRAL AEROLOGICAL OBS
81/01/14 1400	M-100	INDIA	THUMBA	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/01/14 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/01/14 1450	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/01/14 1500	MNR-06	U.S.S.R.	PRILIV (SHIP) (62 005 172 00E)	2J	NP	55	CENTRAL AEROLOGICAL OBS
81/01/15 1300	MNR-06	U.S.S.R.	VOLNA (SHIP) (62 005 159 00E)	2J	NP	61	CENTRAL AEROLOGICAL OBS
81/01/15 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/01/16 1450	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/01/17 1400	MNR-06	U.S.S.R.	PRILIV (SHIP) (57 005 178 00E)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/01/18 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/01/19 0337	AED-05B-054	CANADA	FORT CHURCHILL	2B 2C	LG OH	263	DE LEEUW,J.H.
81/01/19 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/01/20 1300	MNR-06	U.S.S.R.	PRILIV (SHIP) (53 005 167 00E)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/01/20 1300	MNR-06	U.S.S.R.	VOLNA (SHIP) (62 005 155 00E)	2J	NP	55	CENTRAL AEROLOGICAL OBS
81/01/20 2120	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/01/21 0025	NASA 27.017NP	UNITED STATES	WHITE SANDS	0C	**	209	CHASSAY,R.P.
81/01/21 0440	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
81/01/21 1330	MNR-06	U.S.S.R.	VOLNA (SHIP) (59 005 155 00E)	2J	NP	60	CENTRAL AEROLOGICAL OBS
81/01/21 1340	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	79	CENTRAL AEROLOGICAL OBS
81/01/21 1400	M-100	INDIA	THUMBA	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/01/21 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/01/21 1500	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	61	CENTRAL AEROLOGICAL OBS
81/01/21 2146	S-310-009	JAPAN	KAGOSHIMA	2G 2L 3C 3E	LKDF LDLU OOAC	174	HIRAO,K. ITOH,T. OBAYASHI,T. OGAWA,T. OYAMA,K. WATANABE,T. WATANABE,Y.
81/01/22 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/01/23 1500	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	74	CENTRAL AEROLOGICAL OBS
81/01/24 1400	M-100	U.S.S.R.	SHIRSHOV (SHIP) (13 41N 170 00E)	2J	NP	92	CENTRAL AEROLOGICAL OBS
81/01/25 2040	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/01/26 0720	AAF-04B-036	CANADA	FORT CHURCHILL	1B 3G	LD LDWU OH	584	KELLOGG,P.J. KOEHLER,J.A. MCHAMARA,A.G. WHALEN,B.A.
81/01/26 1300	M-100	U.S.S.R.	SHIRSHOV (SHIP) (05 00N 180 00E)	2J	NP	67	CENTRAL AEROLOGICAL OBS
81/01/26 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/01/27 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/01/28 0500	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/01/28 1340	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	82	CENTRAL AEROLOGICAL OBS
81/01/28 1400	M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/01/28 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/01/28 2200	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/01/29 0412	NASA 25.060UE	CANADA	FORT CHURCHILL	4A	MT PX	789	SHARP,W.E.

\*IDENTIFIES LAUNCHINGS THAT FAILED TO RETURN USEFUL DATA.  
\*\*NO SCIENTIFIC INSTRUMENTS USED.

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
81/01/29 0700	S-020-002 T-112	JAPAN UNITED STATES	KAGOSHIMA	3A 3B 3C 3E 0A 5D	CRKE LDHU LDLU SE SEZA UTC2 XR	325	AKAI, K., BANKS, P. M., DENIG, W. F., HIRAO, K., KAWASHIMA, N., KAYA, N., KIMURA, I., MATSUMOTO, H., MATSUO, H., MIYATAKE, S., NAKAI, Y., OYAMA, K., RAITI, J., SASAKI, S., WATANABE, Y., WILLIAMSON, R., YAMAGISHI, H., YOKOTA, T.
81/01/30 1500	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/01/30 2200	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/02/02 1240	M-100	U.S.S.R.	SHIRSHOV (SHIP) (02 00N 179 00E)	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/03 1300	M-100	U.S.S.R.	SHIRSHOV (SHIP) (04 00N 180 00E)	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/03 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/04 0110	A24.751-01	UNITED STATES	WHITE SANDS	2J	SW06	387	MUNDOCK, I. L.
81/02/04 0700	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	54	CENTRAL AEROLOGICAL OBS
81/02/04 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/02/04 1400	M-100	U.S.S.R.	SHIRSHOV (SHIP) (01 29N 179 00E)	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/04 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	78	CENTRAL AEROLOGICAL OBS
81/02/05 1126	A36-072	UNITED STATES	FAIRBANKS	1B	NP QKXU SW01	130	HUNT, D. A., STEEB, A., WHEELER, N. H.
81/02/05 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/02/06 0700	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/02/06 0845	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	59	CENTRAL AEROLOGICAL OBS
81/02/06 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/02/10 1300	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/02/10 1400	MNR-06	U.S.S.R.	PRILIV (SHIP) (55 00S 150 00E)	2J	NP	60	CENTRAL AEROLOGICAL OBS
81/02/10 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/02/11 1330	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/02/11 1400	M-100	INDIA	THUMRA	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/11 1400	M-100	UNITED STATES					
81/02/11 1400	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/12 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/02/13 0830	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/02/13 1700	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/13 1715	NASA 27.050CS	UNITED STATES	WHITE SANDS	6F	NP CRKE QKST	205	DAVIS, J. M.
81/02/15 1330	M-100	U.S.S.R.	SHIRSHOV (SHIP) (05 00S 165 00E)	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/02/17 1330	M-100	U.S.S.R.	SHIRSHOV (SHIP) (00 00N 160 00E)	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/02/17 1440	M-100	U.S.S.R.	SHIRSHOV (SHIP) (00 00N 160 00E)	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/02/17 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	72	CENTRAL AEROLOGICAL OBS
81/02/18 0720	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	60	CENTRAL AEROLOGICAL OBS
81/02/18 0840	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	57	CENTRAL AEROLOGICAL OBS
81/02/18 1330	M-100	U.S.S.R.	SHIRSHOV (SHIP) (02 00N 160 00E)	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/02/18 1400	M-100	INDIA	THUMRA	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/02/18 1400	M-100	U.S.S.R.					
81/02/18 1440	M-100	U.S.S.R.	MOLODEZHNYAYA	2J	NP	59	CENTRAL AEROLOGICAL OBS
81/02/18 1440	M-100	U.S.S.R.	SHIRSHOV (SHIP) (02 00N 160 00E)	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/02/18 1900	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/02/19 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/19 2130	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/20 1500	MNR-06	U.S.S.R.	PRILIV (SHIP) (63 00S 145 00E)	2J	NP	64	CENTRAL AEROLOGICAL OBS
81/02/20 1700	MNR-06	U.S.S.R.	KRENKEL' (SHIP) (53 00N 35 00W)	2J	NP	56	CENTRAL AEROLOGICAL OBS
81/02/21 1500	M-100	U.S.S.R.	SHIRSHOV (SHIP) (15 00N 160 00E)	2J	NP	80	CENTRAL AEROLOGICAL OBS
81/02/22 1320	MNR-06	U.S.S.R.	VOLNA (SHIP) (63 00S 147 00E)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/02/23 1500	M-100	U.S.S.R.	SHIRSHOV (SHIP) (25 00N 160 00E)	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/02/23 1500	MNR-06	U.S.S.R.	VOLNA (SHIP) (60 00S 147 00E)	2J	NP	62	CENTRAL AEROLOGICAL OBS
81/02/24 1340	MNR-06	U.S.S.R.	VOLNA (SHIP) (58 00S 147 00E)	2J	NP	57	CENTRAL AEROLOGICAL OBS
81/02/24 1350	M-100	U.S.S.R.	SHIRSHOV (SHIP) (29 00N 160 00E)	2J	NP	87	CENTRAL AEROLOGICAL OBS

\*IDENTIFIES LAUNCHINGS THAT FAILED TO RETURN USEFUL DATA.

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DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
81/02/24 2130	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/25 1230	MMR-06	U.S.S.R.	PRILIV (SHIP) (54 005 142 00E)	2J	NP	56	CENTRAL AEROLOGICAL OBS
81/02/25 1400	M-100	INDIA	THUMBA	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/02/25 1407	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/25 1500	M-100	U.S.S.R.	SHIRSHOV (SHIP) (33 00N 160 00E)	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/25 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/02/25 1700	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/02/25 2030	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/02/25 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	80	CENTRAL AEROLOGICAL OBS
81/02/25 1827	NASA 30,007UU T 1-9900	UNITED STATES	WALLOPS ISLAND	2F	AK	77	HORVATH, J.
81/03/02 0040	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/03/02 0530	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	63	CENTRAL AEROLOGICAL OBS
81/03/03 1740	M-100	U.S.S.R.	SHIRSHOV (SHIP) (34 00N 155 00E)	2J	NP	77	CENTRAL AEROLOGICAL OBS
81/03/03 2030	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/03/04 1400	M-100	INDIA	THUMBA	2J	NP	82	CENTRAL AEROLOGICAL OBS
81/03/04 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/03/04 1640	M-100	U.S.S.R.	SHIRSHOV (SHIP) (32 00N 155 00E)	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/03/04 1700	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	80	CENTRAL AEROLOGICAL OBS
81/03/05 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/03/06 2130	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	88	CENTRAL AEROLOGICAL OBS
81/03/07 0809	A13,02C	UNITED STATES	FAIRBANKS	1D 3D 3E 4B	LDLU OHUH PK5K PXGS SWQ1	203	HARCISI, R.S. ROSSI, R.J.
81/03/07 0809	A13,030	UNITED STATES	FAIRBANKS	1B 3C		156	HEROUX, L.J. MCMAHON, W.J. VANTASSEL, R.A.
81/03/07 0826	A13,031	UNITED STATES	FAIRBANKS	1B 3C	PXGS QK	169	HEROUX, L.J. MCMAHON, W.J. PAULSEN, D.E.
81/03/07 0838	A10,903	UNITED STATES	FAIRBANKS	2A 2B 2C 2F 5A	AF BD DC HP	187	PHILBRICK, C.R. QUESADA, A.F. SMIDDY, M.
81/03/07 1600	M-100	U.S.S.R.	SHIRSHOV (SHIP) (20 00N 152 00E)	2J	NP	82	CENTRAL AEROLOGICAL OBS
81/03/07 1700	M-100	U.S.S.R.	SHIRSHOV (SHIP) (20 00N 152 00E)	2J	NP	77	CENTRAL AEROLOGICAL OBS
81/03/10 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	80	CENTRAL AEROLOGICAL OBS
81/03/11 1400	M-100	INDIA	THUMBA	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/11 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	89	CENTRAL AEROLOGICAL OBS
81/03/11 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/13 0210	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/03/13 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/03/17 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	81	CENTRAL AEROLOGICAL OBS
81/03/18 1400	M-100	INDIA	THUMBA	2J	NP	72	CENTRAL AEROLOGICAL OBS
81/03/18 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	92	CENTRAL AEROLOGICAL OBS
81/03/18 1600	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/03/19 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/19 2000	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	76	CENTRAL AEROLOGICAL OBS
81/03/20 0710	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/23 1500	MMR-06	U.S.S.R.	PRILIV (SHIP) (33 00S 90 00E)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/03/24 0300	NASA 27-055UH	UNITED STATES	WHITE SANDS	7E	CRQH XG	261	GARMIRE, G.P.
81/03/24 2020	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	90	CENTRAL AEROLOGICAL OBS
81/03/25 1400	M-100	INDIA	THUMBA	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/03/25 1400	M-100	U.S.S.R.	MOLODEZHAYA	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/03/25 1620	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	82	CENTRAL AEROLOGICAL OBS
81/03/26 1500	MMR-06	U.S.S.R.	PRILIV (SHIP) (21 00S 90 00E)	2J	NP	55	CENTRAL AEROLOGICAL OBS
81/03/26 1600	MMR-06	U.S.S.R.	VOLNA (SHIP) (08 00S 100 00E)	2J	NP	58	CENTRAL AEROLOGICAL OBS
81/03/26 2300	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	72	CENTRAL AEROLOGICAL OBS
81/03/27 1600	M-100	U.S.S.R.	VOLGOGRAD	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/03/28 0154	AAF-4B-037	CANADA	FORT CHURCHILL	3C 4X 5B	LDLU MT PX	675	ANDERSON, H.R. MCNAMARA, A.G. WALLIS, D.B. WHALEN, B.A.
81/03/28 0154	AAF-5B-55	CANADA	FORT CHURCHILL	3C 4X 5B	LDLU MT PX	327	KOEHLER, J.A. MCNAMARA, A.G. WALLIS, R. WHALEN, B.A.
81/03/28 1600	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00N 135 00E)	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/28 1720	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00N 135 00E)	2J	NP	80	CENTRAL AEROLOGICAL OBS
81/03/28 1830	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00N 135 00E)	2J	NP	84	CENTRAL AEROLOGICAL OBS
81/03/29 1630	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00N 135 00E)	2J	NP	81	CENTRAL AEROLOGICAL OBS

IDENTIFIES LAUNCHINGS THAT FAILED TO RETURN USEFUL DATA.

DATE AND TIME OF LAUNCH (UT)	AGENCY ROCKET IDENTIFICATION	SPONSORING COUNTRIES	LAUNCHING SITE	EXPERIMENT DISCIPLINES	INSTRUMENTS	PEAK ALT. (KM)	EXPERIMENTERS OR INSTITUTIONS
81/03/29 1740	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00H 135 00E)	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/03/29 1850	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00H 135 00E)	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/03/30 1620	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00H 135 00E)	2J	NP	87	CENTRAL AEROLOGICAL OBS
81/03/30 1730	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00H 135 00E)	2J	NP	86	CENTRAL AEROLOGICAL OBS
81/03/30 1833	M-100	U.S.S.R.	SHIRSHOV (SHIP) (12 00H 135 00E)	2J	NP	83	CENTRAL AEROLOGICAL OBS
81/03/31 2120	M-100	U.S.S.R.	HEISS ISLAND	2J	NP	85	CENTRAL AEROLOGICAL OBS
81/05/04 0755	HASA 27.058UH	UNITED STATES	WHITE SANDS	7F	GY M1	294	DELVAILLE,J.
81/05/06 0800	HASA 27.060UL	UNITED STATES	WHITE SANDS	7E	UTC2 XG	322	BARTH,C.A.
81/05/27 0425	HASA 21.067UG	UNITED STATES	WHITE SANDS	7E	CRKE QK XG	225	FELDMAN,P.D.

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List of Experimenters

The list which follows gives (in alphabetical order) the names of the experimenters associated with the sounding rocket launches. The current organizational affiliation and address of the experimenters are also given. Because NSSDC/WDC-A-R&S does not acquire experiment data from these launchings, please contact the experimenters for further information about them.

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## ARTIFICIAL EARTH SATELLITES AND SPACE PROBES

The summary of satellite and space probe launchings that follows was compiled from information received from several sources. Primary sources of information were contained in the national launching announcements and the reports of satellite and space probe launchings. This information was submitted to the International Ursigram and World Days Service (iuwds) and to the World Data Centers in accordance with the revised *COSPAR Guide to Rocket and Satellite Information and Data Exchange*, adopted at the XVth Plenary Meetings of COSPAR, Madrid, May 1972 (*COSPAR Transactions*, No. 8); the former version was published as Part I of *COSPAR Transactions*, No. 4, in December 1967. These announcements and reports are published every month in the *SPACEWARN Bulletin*. Additional information was obtained from the *Table of Artificial Earth Satellites*, published by the Royal Aircraft Establishment, Farnborough, Hants, England. Requests for information on the availability of the *SPACEWARN Bulletin* should be directed to the following address:

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

A report on the U.S. scientific satellite Solar Mesosphere Explorer (SME) is shown in Figure 2. This sample illustrates the type of information in such reports. More detailed narrative descriptions are submitted to COSPAR and published in *COSPAR Information Bulletin* when information on spacecraft experiments is available.

The entries in this summary are for satellites and space probes launched during the period January 1, 1981, to December 31, 1981. The information is arranged sequentially by launch date. Apoapsis and periapsis entries are given in kilometers except the entries for satellites and space probes with heliocentric orbits, which are in astronomical units. Periods are given in minutes except for the entries for satellites and space probes with heliocentric orbits, which are given in days. All inclinations are in degrees. International organizations are included under the country heading.

## SAMPLE SATELLITE OR SPACE PROBE LAUNCHING REPORT

<u>COSPAR Designation</u>	<u>Popular Name</u>	<u>Launching Site</u>	<u>Launching Date</u>	<u>Universal Time</u>
1981-100A	SME	Western Test Range	Oct. 6, 1981	1127 UT

### Spacecraft Brief Description

The Solar Mesosphere Explorer (SME) mission objective was to understand what physical phenomena cause changes in the density and distribution of the Earth's ozone. Specific mission objectives were (1) to understand the nature and magnitude of changes in mesospheric ozone densities that are the result of changes in solar ultraviolet flux; (2) to understand the relationship between solar flux, ozone, and the temperature of the mesosphere; (3) to understand the relationship between mesospheric ozone and water vapor; (4) to study the atmosphere ozone chemistry following solar proton events; (5) to understand the stability of ozone against changes of any kind in mesospheric conditions; and (6) to extend any increase in understanding of the mesosphere into the stratosphere. These objectives were accomplished by measuring ozone parameters and the processes in the mesosphere and upper stratosphere that determine their values. Simultaneous measurements were made of ozone, the solar ultraviolet radiation that produces and destroys it, and the amount of water vapor and nitrogen dioxide whose photodissociation products cause catalytic destruction of ozone. Temperature and pressure were also measured. The satellite experiment complement consisted of a solar ultraviolet spectrometer, an ozone UV spectrometer, an infrared radiometer, an infrared spectrometer, and a nitrogen dioxide spectrometer. In addition, a solar proton alarm mechanism was carried to measure the integrated solar flux in the range 30-500 MeV. Spin stabilized at about 5 rpm, the satellite moved in a 3 a.m. - 3 p.m. sun-synchronous orbit. The spin axis was oriented normal to the orbital plane in the data-taking mode. A magnetic control system maintained the attitude of the spin axis to within plus or minus 1 deg pitch and plus or minus 2 deg yaw, and was not used during data-taking periods. There was a separate spin rate control. The command system was capable of executing either discrete or modal commands in real time or from stored program control. Power was supplied by a solar cell array. The telemetry system was PCM and could be used either in real time or in a tape-recorder mode.

### Physical Characteristics

The spacecraft shape was that of a right octagonal prism slightly under 1 m in diameter and .75 m in length. The base module housed all spacecraft subsystems except the scientific payload and data storage. The observatory module containing the scientific instruments, associated engineering sensors, and the data storage system was attached as an assembly to one of the octagonal faces of the base module. The launch vehicle adaptor was mounted to the opposite octagonal face.

### Transmitters

Telemetry frequency is 2287.5 MHz at 5 W.

SAMPLE SATELLITE OR SPACE PROBE LAUNCHING REPORT  
(Continued)

<u>Objectives</u>	<u>Instruments</u>	<u>Principal Investigators and Institutions</u>
1. <u>UV Ozone:</u> To measure ozone absorption of Rayleigh-scattered sunlight in the middle ultraviolet region	Dual-channel Ebert-Fastie spectrometer	C. A. Barth University of Colorado Boulder, Colorado
2. <u>Infrared Radiometer:</u> To determine altitude-mixing ratio profiles for water and ozone from thermal emissions	Four-channel radiometer/telescope	C. A. Barth University of Colorado Boulder, Colorado
3. <u>1.27 Micrometer Airglow:</u> To obtain limb-scanning measurements of 1.27 $\mu$ airglow in 50- to 80-km altitude range and hydroxyl emission between 0.8 and 2.4 $\mu$	Dual-channel Ebert-Fastie spectrometer	C. A. Barth University of Colorado Boulder, Colorado
4. <u>Visible Nitrogen Dioxide:</u> To measure distribution of NO <sub>2</sub> in the 20- to 40-km region	Dual-channel Ebert-Fastie spectrometer	C. A. Barth University of Colorado Boulder, Colorado
5. <u>Solar UV Monitor:</u> To monitor incoming solar radiation to determine the effect on ozone concentration	Dual-channel Ebert-Fastie spectrometer	C. A. Barth University of Colorado Boulder, Colorado

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COSPAR DESIGNATION	SPACECRAFT NAME	COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
1981-001A	COSMOS 1237	U.S.S.R.	01/06/81	01/07/81	GEOCENTRIC	418.	287.	72.9	98.4
1981-002A	MOLNIYA 3 (81-002A)	U.S.S.R.	01/09/81	01/10/81	GEOCENTRIC	4878.4	485.	62.8	736.
1981-003A	COSMOS 1238	U.S.S.R.	01/16/81	01/17/81	GEOCENTRIC	1976.	411.	83.	109.1
1981-004A	COSMOS 1239	U.S.S.R.	01/16/81	01/17/81	GEOCENTRIC	265.	222.	82.3	89.
1981-005A	COSMOS 1240	U.S.S.R.	01/20/81	01/21/81	GEOCENTRIC	377.	178.	64.9	89.4
1981-006A	COSMOS 1241	U.S.S.R.	01/21/81	01/22/81	GEOCENTRIC	1888.	1888.	65.8	188.
1981-007A	PROGRESS 12	U.S.S.R.	01/24/81	01/25/81	GEOCENTRIC	299.	188.	51.6	89.1
1981-008A	COSMOS 1242	U.S.S.R.	01/27/81	01/28/81	GEOCENTRIC	484.	635.	81.2	97.4
1981-009A	MOLNIYA 1 (81-009A)	U.S.S.R.	01/30/81	01/31/81	GEOCENTRIC	48801.	464.	62.8	736.
1981-010A	COSMOS 1243	U.S.S.R.	02/02/81	02/03/81	GEOCENTRIC	1826.	316.	66.	98.
1981-011A	INTERCOSMOS 21	U.S.S.R.	02/06/81	02/07/81	GEOCENTRIC	520.	475.	74.	94.8
1981-012A	ETS 4	JAPAN	02/11/81	02/12/81	GEOCENTRIC	35824.	223.	28.4	636.
1981-013A	COSMOS 1244	U.S.S.R.	02/12/81	02/13/81	GEOCENTRIC	1824.	978.	82.9	108.
1981-014A	COSMOS 1245	U.S.S.R.	02/13/81	02/14/81	GEOCENTRIC	483.	288.	72.9	98.3
1981-015A	COSMOS 1246	U.S.S.R.	02/18/81	02/19/81	GEOCENTRIC	292.	282.	64.9	89.0
1981-016A	COSMOS 1247	U.S.S.R.	02/19/81	02/20/81	GEOCENTRIC	39548.	613.	62.8	789.
1981-017A	HINOTORI	JAPAN	02/21/81	02/22/81	GEOCENTRIC	643.	577.	31.4	96.9
1981-018A	CONSTAR 4	UNITED STATES	02/21/81	02/22/81	GEOCENTRIC	36519.5	552.8	28.7	652.3
1981-019A	1981-019A	UNITED STATES	02/28/81	03/01/81	GEOCENTRIC	336.	138.	90.4	89.3
1981-020A	COSMOS 1248	U.S.S.R.	03/05/81	03/06/81	GEOCENTRIC	348.	173.	67.1	89.7
1981-021A	COSMOS 1249	U.S.S.R.	03/05/81	03/06/81	GEOCENTRIC	282.	258.	65.	89.6
1981-022A	COSMOS 1250	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022B	COSMOS 1251	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022C	COSMOS 1252	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022D	COSMOS 1253	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022E	COSMOS 1254	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022F	COSMOS 1255	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022G	COSMOS 1256	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-022H	COSMOS 1257	U.S.S.R.	03/06/81	03/07/81	GEOCENTRIC	1588.	1458.	74.	118.
1981-023A	SOYUZ T-4	U.S.S.R.	03/12/81	03/13/81	GEOCENTRIC	331.	250.	51.6	98.1
1981-024A	COSMOS 1258	U.S.S.R.	03/14/81	03/15/81	GEOCENTRIC	1832.	322.	65.8	98.
1981-025A	1981-025A	UNITED STATES	03/16/81	03/17/81	GEOCENTRIC	35527.	35463.	1.9	1421.8
1981-026A	COSMOS 1259	U.S.S.R.	03/17/81	03/18/81	GEOCENTRIC	405.	215.	78.4	98.4
1981-027A	RADUGA (81-027A)	U.S.S.R.	03/18/81	03/19/81	GEOCENTRIC	36590.	36590.	0.4	1477.
1981-028A	COSMOS 1260	U.S.S.R.	03/20/81	03/21/81	GEOCENTRIC	458.7	435.2	65.	98.3
1981-029A	SOYUZ 39	U.S.S.R.	03/22/81	03/23/81	GEOCENTRIC	321.	271.	51.63	98.3
1981-030A	MOLNIYA 3 (81-030A)	U.S.S.R.	03/24/81	03/25/81	GEOCENTRIC	40655.	641.	62.8	736.
1981-031A	COSMOS 1261	U.S.S.R.	04/01/81	04/02/81	GEOCENTRIC	40178.	615.	62.8	718.
1981-032A	COSMOS 1262	U.S.S.R.	04/07/81	04/08/81	GEOCENTRIC	418.	287.	72.9	98.4
1981-033A	COSMOS 1263	U.S.S.R.	04/09/81	04/10/81	GEOCENTRIC	1988.	483.	83.	189.
1981-034A	STS-1	UNITED STATES	04/12/81	04/12/81	GEOCENTRIC	245.	237.	48.4	89.2
1981-035A	COSMOS 1264	U.S.S.R.	04/15/81	04/16/81	GEOCENTRIC	411.	216.	78.4	98.8
1981-036A	COSMOS 1265	U.S.S.R.	04/16/81	04/17/81	GEOCENTRIC	317.	210.	72.9	89.4
1981-037A	COSMOS 1266	U.S.S.R.	04/21/81	04/22/81	GEOCENTRIC	278.	259.	65.	89.68
1981-038A	1981-038A	UNITED STATES	04/24/81	04/25/81	GEOCENTRIC	26068.	250.	63.8	697.
1981-039A	COSMOS 1267	U.S.S.R.	04/25/81	04/26/81	GEOCENTRIC	278.	280.	51.6	89.
1981-040A	COSMOS 1268	U.S.S.R.	04/28/81	04/29/81	GEOCENTRIC	391.	217.	78.4	98.3
1981-041A	COSMOS 1269	U.S.S.R.	05/07/81	05/08/81	GEOCENTRIC	833.	797.	74.	188.9
1981-042A	SOYUZ 40	U.S.S.R.	05/14/81	05/15/81	GEOCENTRIC	387.	268.	51.6	98.1
1981-043A	METEOR 2 (81-043A)	U.S.S.R.	05/14/81	05/15/81	GEOCENTRIC	904.	868.	81.3	182.5
1981-044A	1981-044A	UNITED STATES	05/15/81	05/16/81	GEOCENTRIC	937.	354.	98.2	97.7
1981-045A	COSMOS 1270	U.S.S.R.	05/18/81	05/19/81	GEOCENTRIC	370.	180.	64.9	89.7
1981-046A	COSMOS 1271	U.S.S.R.	05/19/81	05/20/81	GEOCENTRIC	678.	628.	81.2	97.5
1981-047A	COSMOS 1272	U.S.S.R.	05/21/81	05/22/81	GEOCENTRIC	403.	217.	78.4	98.4
1981-048A	COSMOS 1273	U.S.S.R.	05/22/81	05/23/81	GEOCENTRIC	277.	221.	82.3	89.2
1981-049A	GOES 5	UNITED STATES	05/22/81	07/29/81	GEOCENTRIC	35769.	35715.	0.32	1434.
1981-050A	INTELSAT 5B F-1	UNITED STATES	05/23/81	05/24/81	GEOCENTRIC	35960.	172.	24.1	633.9
1981-051A	ROHINA 2	INDIA	05/31/81	05/31/81	GEOCENTRIC	418.	136.	46.3	98.5
1981-052A	COSMOS 1274	U.S.S.R.	06/03/81	06/04/81	GEOCENTRIC	380.	183.	67.2	89.8
1981-053A	COSMOS 1275	U.S.S.R.	06/04/81	06/05/81	GEOCENTRIC	1826.	983.	83.	184.9
1981-054A	MOLNIYA 3 (81-054A)	U.S.S.R.	06/09/81	06/10/81	GEOCENTRIC	48837.	471.	62.8	736.
1981-055A	COSMOS 1276	U.S.S.R.	06/16/81	06/17/81	GEOCENTRIC	265.	224.	82.3	89.1
1981-056A	COSMOS 1277	U.S.S.R.	06/17/81	06/18/81	GEOCENTRIC	393.	216.	78.4	98.3
1981-057A	METEOSAT 2	INTERNATIONAL	06/19/81	06/20/81	GEOCENTRIC	35680.	35680.	8.	1448.
1981-058A	COSMOS 1278	U.S.S.R.	06/19/81	06/20/81	GEOCENTRIC	40165.	614.	62.8	726.
1981-059A	NOAA 7	UNITED STATES	06/23/81	06/24/81	GEOCENTRIC	863.	845.	98.9	182.
1981-060A	MOLNIYA 1 (81-060A)	U.S.S.R.	06/24/81	06/25/81	GEOCENTRIC	48640.	645.	62.8	736.
1981-061A	EKRAN	U.S.S.R.	06/26/81	06/27/81	GEOCENTRIC	35636.	35636.	0.4	1426.
1981-062A	COSMOS 1279	U.S.S.R.	07/01/81	07/02/81	GEOCENTRIC	385.	218.	78.4	98.3
1981-063A	COSMOS 1280	U.S.S.R.	07/02/81	07/03/81	GEOCENTRIC	312.	222.	82.3	89.4
1981-064A	COSMOS 1281	U.S.S.R.	07/07/81	07/08/81	GEOCENTRIC	419.	288.	72.8	98.5
1981-065A	METEOR 1 (81-065A)	U.S.S.R.	07/10/81	07/11/81	GEOCENTRIC	667.	634.	97.9	97.8
1981-065C	ISKRA	U.S.S.R.	07/10/81	07/11/81	GEOCENTRIC	663.	638.	98.	97.8
1981-066A	COSMOS 1282	U.S.S.R.	07/15/81	07/16/81	GEOCENTRIC	357.	179.	64.9	89.6
1981-067A	COSMOS 1283	U.S.S.R.	07/17/81	07/18/81	GEOCENTRIC	278.	184.	82.3	88.9
1981-068A	COSMOS 1284	U.S.S.R.	07/29/81	07/30/81	GEOCENTRIC	270.	195.	82.3	88.8
1981-069A	RADUGA (81-069A)	U.S.S.R.	07/30/81	07/30/81	GEOCENTRIC	36583.	36582.	0.4	1476.8
1981-070A	DYNAMICS EXPLORER 1	UNITED STATES	08/03/81	08/03/81	GEOCENTRIC	23289.6	567.6	89.9	418.8
1981-070B	DYNAMICS EXPLORER 2	UNITED STATES	08/03/81	08/03/81	GEOCENTRIC	1012.5	309.	89.99	98.
1981-071A	COSMOS 1285	U.S.S.R.	08/04/81	08/05/81	GEOCENTRIC	40165.	630.	62.8	726.
1981-072A	COSMOS 1286	U.S.S.R.	08/04/81	08/05/81	GEOCENTRIC	453.	433.	65.	93.24
1981-073A	FLTSATCOM 5	UNITED STATES	08/06/81	08/07/81	GEOCENTRIC	35781.	174.	26.4	638.5
1981-074A	COSMOS 1287	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074B	COSMOS 1288	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074C	COSMOS 1289	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074D	COSMOS 1290	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074E	COSMOS 1291	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074F	COSMOS 1292	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074G	COSMOS 1293	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-074H	COSMOS 1294	U.S.S.R.	08/06/81	08/07/81	GEOCENTRIC	1508.	1446.	71.	115.2
1981-075A	INTERCOSMOS BULGAR 1300	BULGARIA	08/07/81	08/08/81	GEOCENTRIC	906.	825.	81.2	181.9
1981-076A	GMS-2	JAPAN	08/10/81	08/11/81	GEOCENTRIC	37895.	173.	28.9	656.
1981-077A	COSMOS 1295	U.S.S.R.	08/12/81	08/13/81	GEOCENTRIC	1826.	966.	82.9	104.8
1981-078A	COSMOS 1296	U.S.S.R.	08/13/81	08/14/81	GEOCENTRIC	377.	181.	67.2	89.8
1981-079A	COSMOS 1297	U.S.S.R.	08/18/81	08/19/81	GEOCENTRIC	389.	209.	72.9	98.2
1981-080A	COSMOS 1298	U.S.S.R.	08/21/81	08/22/81	GEOCENTRIC	351.	179.	64.9	89.5
1981-081A	COSMOS 1299	U.S.S.R.	08/24/81	08/25/81	GEOCENTRIC	281.	250.	65.	89.7
1981-082A	COSMOS 1300	U.S.S.R.	08/24/81	08/25/81	GEOCENTRIC	675.	648.	82.5	97.7
1981-083A	COSMOS 1301	U.S.S.R.	08/27/81	08/28/81	GEOCENTRIC	300.	224.	82.3	89.4

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COSPAR DESIGNATION	SPACECRAFT NAME	COUNTRY	LAUNCH DATE	EPOCH DATE	ORBIT TYPE	APOAPSIS	PERIAPSIS	INCLINATION	PERIOD
1981-084A	COSMOS 1302	U.S.S.R.	08/28/81	08/30/81	GEOCENTRIC	812.	783.	74.0	100.8
1981-085A	1981-085A	UNITED STATES	09/03/81	09/04/81	GEOCENTRIC	526.	244.	96.9	92.3
1981-086A	COSMOS 1303	U.S.S.R.	09/04/81	09/05/81	GEOCENTRIC	398.	216.	70.4	90.4
1981-087A	COSMOS 1304	U.S.S.R.	09/04/81	09/05/81	GEOCENTRIC	984.	917.	83.	104.
1981-088A	COSMOS 1305	U.S.S.R.	09/11/81	09/12/81	GEOCENTRIC	13870.	648.	63.	264.
1981-089A	COSMOS 1306	U.S.S.R.	09/14/81	09/16/81	GEOCENTRIC	462.	409.	65.	93.3
1981-090A	COSMOS 1307	U.S.S.R.	09/15/81	09/16/81	GEOCENTRIC	419.	209.	72.9	90.4
1981-091A	COSMOS 1308	U.S.S.R.	09/18/81	09/19/81	GEOCENTRIC	1017.	978.	82.9	104.9
1981-092A	COSMOS 1309	U.S.S.R.	09/18/81	09/19/81	GEOCENTRIC	281.	225.	82.3	89.2
1981-093A	CHINA 9	PEOPLE'S REP OF CHINA	09/19/81	09/20/81	GEOCENTRIC	1611.	235.	59.47	103.49
1981-094A	OREOL 3	U.S.S.R.	09/21/81	09/21/81	GEOCENTRIC	1920.	380.	82.6	108.2
1981-095A	COSMOS 1310	U.S.S.R.	09/23/81	09/24/81	GEOCENTRIC	524.	478.	65.9	94.6
1981-096A	SBS-B	UNITED STATES	09/24/81	09/25/81	GEOCENTRIC	36830.	166.	27.7	650.8
1981-097A	COSMOS 1311	U.S.S.R.	09/28/81	10/01/81	GEOCENTRIC	521.	470.	83.	94.5
1981-098A	COSMOS 1312	U.S.S.R.	09/30/81	09/30/81	GEOCENTRIC	1503.	1490.	82.6	115.9
1981-099A	COSMOS 1313	U.S.S.R.	10/01/81	10/02/81	GEOCENTRIC	314.	214.	70.4	89.5
1981-100A	SME	UNITED STATES	10/06/81	10/07/81	GEOCENTRIC	535.	533.	97.5	95.3
1981-100B	UOSAT	UNITED STATES	10/06/81	10/07/81	GEOCENTRIC	561.	536.	97.5	95.4
1981-101A	COSMOS 1314	U.S.S.R.	10/09/81	10/10/81	GEOCENTRIC	263.	220.	82.3	89.
1981-102A	RADUGA (81-102A)	U.S.S.R.	10/09/81	10/10/81	GEOCENTRIC	35900.	35900.	0.4	1442.
1981-103A	COSMOS 1315	U.S.S.R.	10/14/81	10/15/81	GEOCENTRIC	685.	628.	81.2	97.7
1981-104A	COSMOS 1316	U.S.S.R.	10/15/81	10/16/81	GEOCENTRIC	407.	215.	70.3	90.5
1981-105A	MOLNIYA 3 (81-105A)	U.S.S.R.	10/17/81	10/18/81	GEOCENTRIC	40644.	649.	63.	736.
1981-106A	VENERA 13	U.S.S.R.	10/30/81		VENUS ORBITER				
1981-107A	1981-107A	UNITED STATES	10/31/81	11/01/81	GEOCENTRIC	35527.	35463.	2.0	1421.
1981-108A	COSMOS 1317	U.S.S.R.	10/31/81	11/01/81	GEOCENTRIC	40163.	584.	62.9	725.7
1981-109A	COSMOS 1318	U.S.S.R.	11/03/81	11/04/81	GEOCENTRIC	379.	183.	67.2	89.8
1981-110A	VENERA 14	U.S.S.R.	11/04/81		VENUS ORBITER				
1981-111A	STS-2	UNITED STATES	11/12/81	11/12/81	GEOCENTRIC	229.	219.	38.	89.0
1981-112A	COSMOS 1319	U.S.S.R.	11/13/81	11/13/81	GEOCENTRIC	377.	209.	70.4	90.4
1981-113A	MOLNIYA 1 (81-113A)	U.S.S.R.	11/17/81	11/17/81	GEOCENTRIC	441.	39136.	62.8	702.
1981-114A	RCA-STATCOM III R	U.S.S.R.	11/20/81	11/21/81	GEOCENTRIC	35929.9	185.1	27.4	635.0
1981-115A	BHASKARA 2	INDIA	11/20/81	11/20/81	GEOCENTRIC	542.	520.	50.6	95.2
1981-116A	COSMOS 1320	U.S.S.R.	11/28/81	11/29/81	GEOCENTRIC	1638.	1482.	73.9	117.3
1981-116B	COSMOS 1321	U.S.S.R.	11/28/81	11/29/81	GEOCENTRIC	1635.	1482.	74.	117.3
1981-116C	COSMOS 1322	U.S.S.R.	11/28/81	11/29/81	GEOCENTRIC	1631.	1483.	74.	117.3
1981-116D	COSMOS 1323	U.S.S.R.	11/28/81	11/30/81	GEOCENTRIC	1627.	1483.	74.	117.2
1981-116E	COSMOS 1324	U.S.S.R.	11/28/81	11/30/81	GEOCENTRIC	1623.	1482.	74.	117.2
1981-116F	COSMOS 1325	U.S.S.R.	11/28/81	11/30/81	GEOCENTRIC	1619.	1483.	74.	117.1
1981-116G	COSMOS 1326	U.S.S.R.	11/28/81	11/29/81	GEOCENTRIC	1617.	1485.	74.	117.1
1981-116H	COSMOS 1327	U.S.S.R.	11/28/81	11/29/81	GEOCENTRIC	1609.	1486.	74.	117.
1981-117A	COSMOS 1328	U.S.S.R.	12/03/81	12/03/81	GEOCENTRIC	665.	637.	82.5	97.7
1981-118A	COSMOS 1329	U.S.S.R.	12/04/81	12/04/81	GEOCENTRIC	264.	232.	65.0	89.5
1981-119A	INTELSAT 5 F-3	UNITED STATES	12/15/81	12/16/81	GEOCENTRIC	35947.	165.	23.7	633.5
1981-120A	RADIO 3	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-120B	RADIO 4	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-120C	RADIO 5	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-120D	RADIO 6	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-120E	RADIO 7	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-120F	RADIO 8	U.S.S.R.	12/17/81	12/18/81	GEOCENTRIC	1794.	1685.	83.	120.9
1981-121A	COSMOS 1330	U.S.S.R.	12/19/81	12/20/81	GEOCENTRIC	403.	177.	70.4	90.
1981-122A	MARECS-A	INTERNATIONAL	12/20/81	12/23/81	GEOCENTRIC	35724.	35640.	2.3	1430.7
1981-123A	MOLNIYA 1 (81-123A)	U.S.S.R.	12/23/81	12/24/81	GEOCENTRIC	38990.	485.	63.	699.

## APPENDIXES

### Appendix 1 - World Data Centers

World Data Centers conduct international exchange of geophysical observations in accordance with the principles set forth by the International Council of Scientific Unions (ICSU). They were established in 1957 by the International IGY Committee (CSAGI) as part of the fundamental international planning for an International Geophysical Year program. This program was to collect data from the numerous and widespread IGY observational programs and to make such data readily accessible to interested scientists and scholars for an indefinite period of time. WDC-A was established in the U.S.A.; WDC-B, in the U.S.S.R.; and WDC-C, in Western Europe, Australia, and Japan. This new system for exchanging geophysical data was found to be very effective, and the operations of the World Data Centers were extended by ICSU on a continuing basis to other international programs; the WDCs were under the supervision of the Comité International de Géophysique (CIG) for the period 1960 to 1967 and are now supervised by the ICSU Panel on World Data Centers.

The current plans for continued international exchange of solar-terrestrial data through the WDCs were set forth in the *STP Notes*, No. 6, and incorporated with slight modifications in the *Fourth Consolidated Guide to International Data Exchange through the World Data Centres*, published in June 1979 by the International Council of Scientific Unions (ICSU) panel on World Data Centers.

#### Functions and Responsibilities of WDCs

The World Data Centers collect data and publications for the following disciplines: Glaciology, Meteorology, Oceanography, Rockets and Satellites, Solar-Terrestrial Physics disciplines (Solar and Interplanetary Phenomena, Ionospheric Phenomena, Flare Associated Events, Geomagnetic Phenomena, Aurora, Cosmic Rays, Airglow), Solid-Earth Geophysics disciplines (Seismology, Tsunamis, Marine Geology and Geophysics, Gravimetry, Earth Tides, Recent Movements of the Earth's Crust, Rotation of the Earth, Magnetic Measurements, Paleomagnetism and Archeomagnetism, Volcanology, Geothermics). In planning for the various scientific programs, decisions on data exchange were made by the scientific community through the international scientific unions and committees. In each discipline the specialists themselves determined the nature and form of data exchange, based on their needs as research workers. Thus the type and amount of data in the WDCs differ from discipline to discipline.

The objects of establishing several World Data Centers for collecting observational data were (1) to ensure against loss of data by the catastrophic destruction of a single center; and (2) to meet the geographical convenience of, and provide easy communication for, workers in different parts of the world. Each WDC is responsible for (1) endeavoring to collect a complete set of data in the field or discipline for which it is responsible; (2) safe-keeping of the incoming data; and (3) correct copying and reproduction of data, maintaining adequate standards of clarity and durability; (4) supplying copies to other WDCs of data not received directly; (5) preparation of



catalogs of all data in its charge; and (6) making data in the WDCs available to the scientific community. The WDCs conduct their operation at no expense to ICSU or to the ICSU family of unions and committees.

#### World Data Center A

World Data Center A, for which the National Academy of Sciences through the Geophysics Research Board (GRB) and its Committee on Data Interchange and Data Centers has overall responsibility, consists of the WDC-A Coordination Office and seven subcenters at scientific institutions in various parts of the United States. The GRB periodically reviews the activities of WDC-A and has conducted several studies on the effectiveness of the WDC system. As a result of these reviews and studies, some of the subcenters of WDC-A have been relocated so that they can serve the scientific community more effectively. The addresses of the WDC-A subcenters and Coordination Office are given in Appendix 2. There are very close connections between WDC-A for Solar-Terrestrial Physics and WDC-A for Rockets and Satellites, which exchange solar-terrestrial geophysical data; for the convenience of users, data may be sent to one WDC-A subcenter by way of the other.

The data received by WDC-A have been made available to the scientific community in the following ways: (1) reports containing data and results of experiments have been compiled, published, and widely distributed; (2) synoptic type data on cards, microfilm, or tables are available for use at the subcenters and for loan to scientists; and (3) copies of data and reports are provided upon request.

Appendix 2 - WDC-A Coordination Office and Subcenters

World Data Center A consists of the Coordination Office

and seven Subcenters:

World Data Center A  
Coordination Office  
National Academy of Sciences  
2101 Constitution Avenue, N.W.  
Washington, D.C. 20418  
U.S.A.  
Telephone: (202) 334-3359

*Glaciology (Snow and Ice):*

World Data Center A: Glaciology  
(Snow and Ice)  
Campus Box 449  
CIRES  
Boulder, Colorado 80309  
U.S.A.  
Telephone: (303) 492-5171

*Meteorology (and Nuclear Radiation):*

World Data Center A: Meteorology  
National Climatic Center  
Federal Building  
Asheville, North Carolina 28801  
  
Telephone: (704) 258-2850

*Oceanography:*

World Data Center A: Oceanography  
National Oceanic and Atmospheric  
Administration  
Washington, D.C. 20235  
U.S.A.  
Telephone: (202) 634-7249

*Rockets and Satellites:*

World Data Center A for Rockets and  
Satellites  
Goddard Space Flight Center  
Code 601  
Greenbelt, Maryland 20771  
U.S.A.  
Telephone: (301) 344-6695

*Rotation of the Earth:*

World Data Center A: Rotation  
of the Earth  
U.S. Naval Observatory  
Washington, D.C. 20390  
U.S.A.  
Telephone: (202) 254-4023

*Solar-Terrestrial Physics (Solar  
and Interplanetary Phenomena,  
Ionospheric Phenomena, Flare-  
Associated Events, Geomagnetic  
Variations, Magnetospheric and  
Interplanetary Magnetic  
Phenomena, Aurora, Cosmic Rays,  
Airglow):*

World Data Center A  
for Solar-Terrestrial Physics  
Environmental Data Service, NOAA  
Boulder, Colorado 80303  
U.S.A.  
Telephone: (303) 499-1000, Ext. 6467

*Solid-Earth Geophysics (Seismology,  
Tsunamis, Gravimetry, Earth Tides,  
Recent Movements of the Earth's  
Crust, Magnetic Measurements,  
Paleomagnetism and Archeomagnetism,  
Volcanology, Geothermics):*

World Data Center A  
for Solid-Earth Geophysics  
Environmental Data Service, NOAA  
Boulder, Colorado 80303  
U.S.A.  
Telephone: (303) 499-1000, Ext. 6521

1. Communications regarding data interchange matters in general and the World Data Center A as a whole should be addressed to World Data Center A, Coordination Office (See address above).

2. Inquiries and communications concerning data in specific disciplines should be addressed to the appropriate subcenter listed above.