

LUNAR PORTABLE MAGNETOMETER
RELIABILITY AND QUALITY ASSURANCE PLAN

D34-102

**AMES
RESEARCH
CENTER**



**Moffett Field,
California**

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February 17, 1970

LUNAR PORTABLE MAGNETOMETER
RELIABILITY AND QUALITY ASSURANCE PLAN
D34-102

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PREFACE

This document sets forth the Reliability and Quality Assurance (R&QA) activities to be implemented during the development, fabrication and testing of the Lunar Portable Magnetometer experiment. For clarity this document has been organized into five chapters as follows:

(1) Introduction; (2) Management; (3) Reliability Assurance Activities; (4) Quality Assurance Activities; and (5) Test Activities.

The Lunar Surface Magnetometer that was placed on the lunar surface during the Apollo 12 mission provided unexpected scientific results. The next Lunar Surface Magnetometer is not scheduled for deployment on the lunar surface until the Apollo 15 mission. To provide an interim magnetometer for the Apollo 14 mission, a portable magnetometer will be developed.

The portable magnetometer will be developed, fabricated and tested entirely in-house at Ames Research Center. Existing designs and parts will be used whenever possible in order to meet the stringent schedule and low budget restraints.

The portable magnetometer will consist of a three-axis flux-gate sensor assembly mounted on a tripod. A 50 foot flat conductor cable will interconnect the sensor assembly to the electronics box. The electronics box will provide drive and feedback to each sensor and also provide an output to a visual readout device. This magnetometer will not provide any telemetry output capability.

The astronaut will deploy the magnetometer on the lunar surface, manually turn the electronics on and visually read and report the indicator readings. The astronaut will also manually align and "flip" the sensor assembly as required. After the readings are complete the magnetometer will be turned off and left on the lunar surface.

This document may be revised from time-to-time by page changes or a complete revision. Revised paragraphs shall be coded with a line on the binder edge identifying the specific area of change. Revised pages or documents shall be coded with a revision letter (i. e. , A, B, C, ...). Comments or recommendations concerning the contents of this document should be submitted to the R and QA Branch, mail stop N244-5. Extra copies are also available from the R and QA Branch.

CONTENTS

	<u>Page</u>
Chapter 1: Introduction	
1.1 Purpose	1
1.2 Responsibility	1
1.3 Applicable Documents	1
1.4 Schedule	3
Chapter 2: Management	
2.1 R and QA Organization	4
2.2 Inspection Organization	4
2.3 Experiment Organization	4
Figure 1 - Organization Chart	5
Chapter 3: Reliability Assurance Activities	
3.1 Design Review	6
3.2 Flight Readiness Review	6
3.3 Parts and Materials	6
3.4 Failure Reporting	6
3.5 Reliability Analysis	7
Chapter 4: Quality Assurance Activities	
4.1 Drawing and Change Control	8
4.2 Control of Procurement Sources	8
4.3 Handling and Storage of Articles	9
4.4 Control of Fabrication and Assembly	9
4.4.1 Environment	9
4.4.2 Fabrication and Assembly	10
4.4.3 Identification	10
4.4.4 Records	10
4.4.5 Inspection Status	10
4.4.6 Training and Certification	11
4.5 Nonconforming Article Control	11
4.5.1 Initial Action	11
4.5.2 Material Review Board Membership	11

	<u>Page</u>	
4.5.3	Material Review Board Responsibilities	12
4.5.4	Material Review Board Dispostions	12
4.5.5	Nonconformance Reporting	13
4.6	Control of Inspection, Measuring, and Test Instruments	13
4.7	Equipment Records	13
4.8	Data Package	14
Chapter 5:	Test Activity	
5.1	Test Philosophy	15
5.2	Test Procedure	15
5.3	Functional Tests	15
5.4	Environmental Tests	15
	5.4.1 Shock (Nonoperating)	16
	5.4.2 Vibration	16
	5.4.3 Thermal-Vacuum	17
	5.4.4 Acoustics	18
	5.4.5 Magnetic Calibration	18
5.5	Quality Assurance Actions	18
	5.5.1 Prior to testing	18
	5.5.2 During testing	18
	5.5.3 Subsequent to testing	19
Appendix A	R and QA Portion of Inter-Center (ARC-MSD) Agreement	20
Appendix B	Applicable Documents	21

CHAPTER 1: INTRODUCTION

1. 1 PURPOSE

The purpose of this document is to define the Reliability and Quality Assurance (R&QA) activities to be implemented during the development, fabrication, and testing of the Portable Magnetometer Experiment.

1. 2 RESPONSIBILITY

Ames Research Center is responsible for the management of the experiment and is required by the Apollo Program Office to establish and implement an R&QA program that will ensure the maximum success consistent with the effective application of allocated resources. See Appendix A for the R&QA portion of the inter-center agreement.

1. 3 APPLICABLE DOCUMENTS

The issues of the following documents from a part of this publication to the extent specified herein.

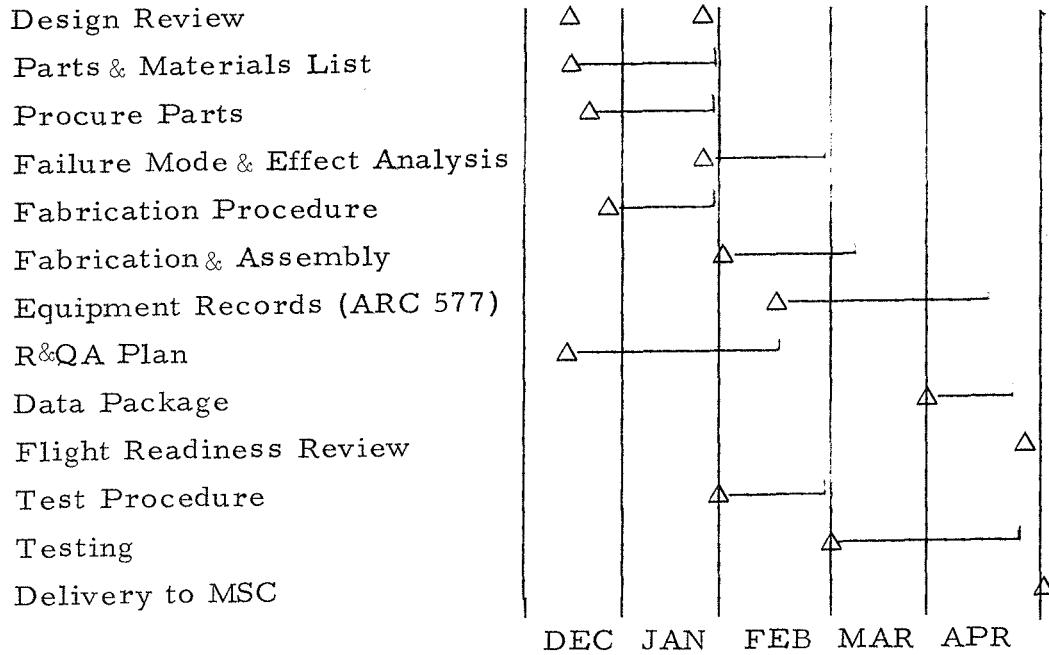
<u>Number</u>	<u>Title</u>	<u>Paragraph</u>
ARC 23	Project Parts, Devices, and Materials List	3. 3
AMM 5310-1	R&QA General Policy, Responsibility, and Authority	2. 1
AMM 5311-1	Delegation of R&QA Functions	4. 2
AMM 5150-3	Review of Purchase Requests for R&QA Requirements	4. 2
AMM 5339-1	Bonded Storage System	4. 3
NHB 5300. 4(3A)	Requirements for Soldered Electrical Connections	4. 4. 2, 4. 4. 6

<u>Number</u>	<u>Title</u>	<u>Paragraph</u>
AHB 5335-2	Conformal Coating and Potting of Electronic Assemblies	4. 4. 2
ARC 244	Conformance Tag	4. 4. 5
AMM 5338-1	Quality Status Stamps	4. 4. 5
ARC 248	Nonconformance Tag	4. 5. 1. c
ARC 158	Nonconformance Report	4. 5. 1. c, 4. 5. 5
RQA 5337-1	Nonconformance Data Control	4. 5. 5
RQA 5339-13	Instrument Calibration and Status Reporting	4. 6
ARC 577	System and Component Historical Record	4. 7

Applicable Ames policies, procedures and sample forms are in Appendix B.

1.4 SCHEDULE

The proposed schedules for R and QA activities is given below. This schedule is subject to change in accordance with overall experiment progress.



CHAPTER 2: MANAGEMENT

2.1 R&QA ORGANIZATION

The Director of Development establishes Center-wide R&QA policy which is implemented via the R&QA Branch. However, due to the necessity of operating across organizational lines in carrying out R&QA functions, R&QA policies and procedures are established by authority and approval of the Center Director (See AMM 5310-1).

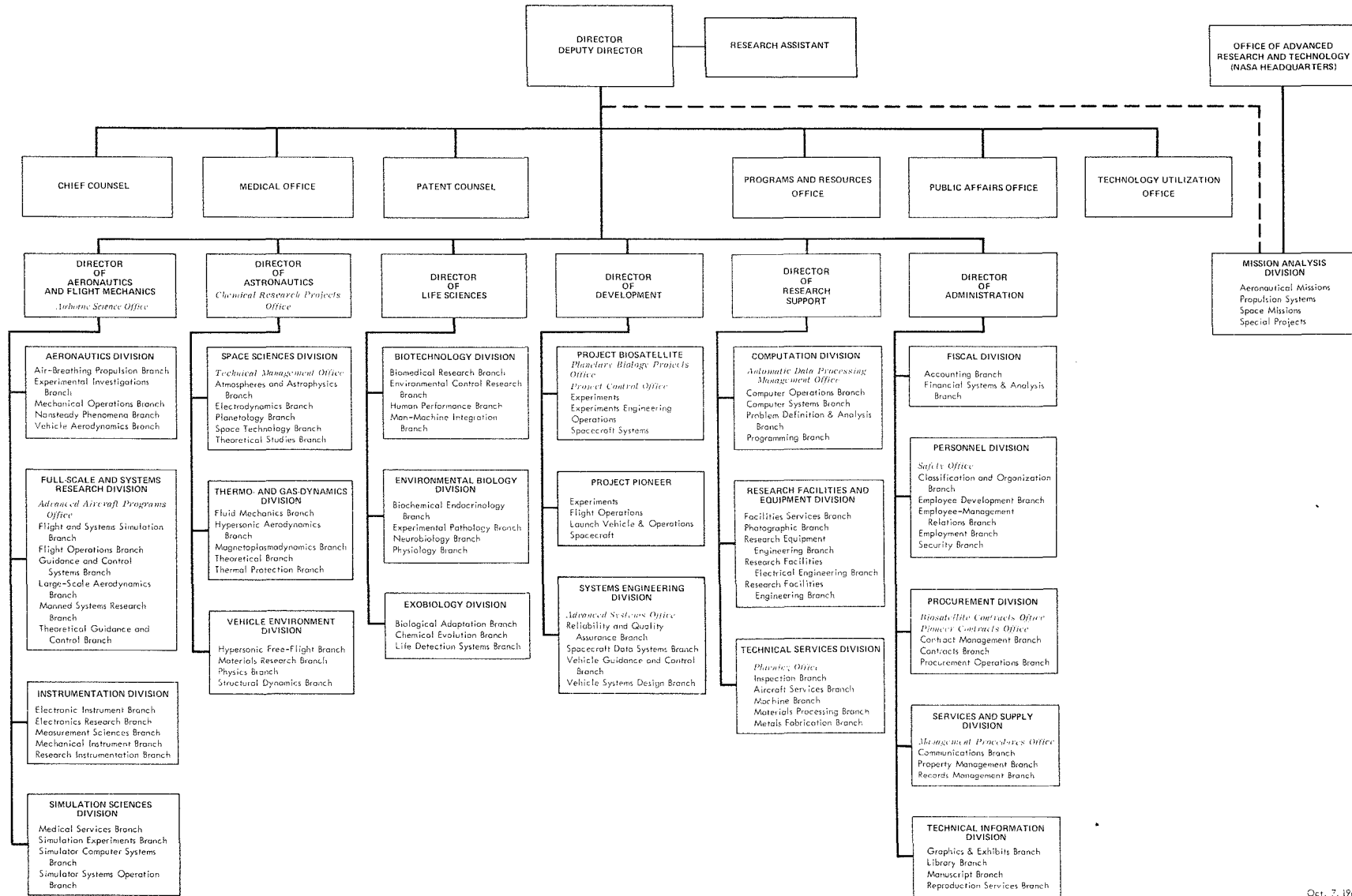
2.2 INSPECTION ORGANIZATION

The Inspection Branch is independent of the R&QA Branch and is located under the Technical Services Division of the Director of Research Support.

2.3 EXPERIMENT ORGANIZATION

The experiment will be managed by the Space Sciences Division of the Director of Astronautics. Figure 1 shows the Ames Organizational Chart.

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Oct. 7, 1969

Figure 1

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5

CHAPTER 3: RELIABILITY ASSURANCE ACTIVITIES

3.1 DESIGN REVIEW

A design review will be held early in the program to (1) ensure that the design will satisfy mission objectives; (2) evaluate and approve the design approach; (3) determine potential problem areas; (4) establish action items; and (5) provide a basis for future reviews, if needed. R&QA will participate.

3.2 FLIGHT READINESS REVIEW (Acceptance Review)

Prior to shipment, a Flight Readiness Review will be held to (1) ensure that the experiment is in a flight worthy condition; (2) review all problem areas which have occurred and assure that remedial and preventive action has been taken; (3) assure that the data package is complete; and (4) list all actions to be taken prior to flight. R&QA will participate.

3.3 PARTS AND MATERIALS

A "Project Parts, Devices, and Materials List" ARC 23, shall be completed by the Experiment Manager and submitted to the Project R&QA Manager for review and acceptability from a reliability aspect. For those parts not space qualified or demonstrated through qualification testing as acceptable, the Project R&QA Manager will provide a recommendation on their use or an acceptable substitute. This list will be maintained current by the R&QA Branch as information is supplied by the Experiment Manager.

3.4 FAILURE REPORTING

Failures will be documented and handled as a nonconformance (See para. 4.5). Failures of the experiment will be identified

by the R&QA Representative of the Material Review Board on form ARC 158. A copy of the report will be submitted to NASA-MSD by U. S. - Air Mail within 48 hours of occurrence. If the report is not closed-out at that time, another copy will be submitted at the time of close-out.

A failure will be defined as the inability of the experiment, or any part thereof, to perform its required function within specified limits, under specified duration.

3.5 FAILURE MODE AND EFFECT ANALYSIS (FMEA)

A modified Failure Mode and Effects analysis of the experiment shall be made to determine possible modes of failure and their affects on experiment success. This modified FMEA shall be sent to the Apollo Program Office when completed.

CHAPTER 4. QUALITY ASSURANCE ACTIVITIES

4.1 DRAWING AND CHANGE CONTROL

Drawings and changes thereto shall be the responsibility of the Experiment Manager. Drawings shall present an accurate representation of the hardware to be produced. Sufficient detail shall be included in order to minimize the need for verbal instructions to fabrication personnel. Each drawing shall be uniquely numbered. Revision blocks shall be maintained in the upper right hand part of each revised drawing to identify each revision (i. e. , A, B, C, etc.). This will provide was-is information and hardware effectivity. Each drawing will be approved by the Experiment Manager.

A "Master Drawing List" will be maintained which lists the drawing title, number, revision and release date. This list will be supplied as a part of the data package.

As documents are released or revised, they shall be distributed to the proper points and obsolete documents removed from the area. Red-lining of documents will be permitted as an interim measure only provided each change is initialed (by the Experiment Manager or his authorized designess) and dated.

A procedure will be prepared by the Experiment Manager detailing the Drawing and Change Control System.

4.2 CONTROL OF PROCUREMENT SOURCES

Because of schedule restraints it will be necessary to obtain, whenever possible, parts from other space programs (i. e. , Lunar Surface Magnetometer, Pioneer Magnetometer, IMP

Magnetometer, etc.). These parts have passed screening inspection and burn-in in accordance with their specific program requirements. This will minimize procurement actions, however, all purchase requests shall be reviewed by the Project R&QA Manager in accordance with AMM 5150-3. R&QA requirements, commensurate with the program objectives, shall be included in the procurement during this review. This review will also determine the need for Government Source Inspection (GSI) in accordance with AMM 5311-1.

4.3 HANDLING AND STORAGE OF ARTICLES

Articles to be used in fabrication of the experiment shall be under the custody of the Experiment Manager. All articles shall be delivered to Building 244, Room 215, where they will be stored in a locker specifically for that purpose. Records of limited shelf life material shall be maintained to prevent any outdated material being used in flight hardware.

After final assembly the flight and qualification models shall be placed in the R&QA Bonded Store room whenever the period between operations exceeds 24 hours, unless otherwise authorized by the Project R&QA Manager, in accordance with AMM 5339-1.

4.4 CONTROL OF FABRICATION AND ASSEMBLY

4.4.1 Environment. Electronic and mechanical assembly shall be accomplished in Building 244, Room 215. The work areas and work benches shall be maintained free of dirt, grease and other foreign matter. Personnel will be required to wear lab coats in work and test areas. Smoking, eating and drinking at the work stations shall not be permitted. This area shall be controlled as follows:

- a. Temperature $75 \pm 10^\circ\text{F}$.
- b. Relative Humidity 60% Maximum
- c. Lighting 100 foot candles
minimum on the
work surfaces.

4. 4. 2 Fabrication and Assembly. The experiment shall be fabricated, assembled, and inspected in accordance with applicable drawings and procedures. The Project R&QA Manager, or his designee, shall provide surveillance of the assembly and soldering process. Soldering shall be in accordance with NHB 5300. 4(3A). Conformal coating and potting shall be in accordance with AHB5335. 2.

4. 4. 3 Identification. Each assembly and subassembly shall be identified by a part number and a serial number. Individual parts will not be serialized. Identification and serial numbers will be applied in a manner that will not compromise quality and will be in a prominent location.

4. 4. 4 Records. A fabrication and inspection procedure, including a flow chart, shall be prepared and maintained. The procedure shall identify the individual (by initial or stamp) accomplishing each step. The procedure shall also provide a record of the specific identification (by part and serial number) of the assembly or subassembly, in-process inspections and tests, and applicable reference documentation.

4. 4. 5 Inspection Status. Each assembly inspected and conforming to requirements shall be accompanied by a Conformance Tag, ARC 244. Nonconforming articles shall be handled in accordance with paragraph 4. 5.

Quality Status Stamps are issued and controlled as set forth in AMM 5338-1.

4. 4. 6 Training and Certification. Solder operators and inspectors shall be trained and certified to the requirements of NHB 5300. 4(3A). Training and certification is the responsibility of the R&QA Branch. Records of training are maintained in the soldering classroom.

4. 5 NONCONFORMING ARTICLE CONTROL

4. 5. 1 Initial Action. When an article does not conform to requirements, it shall be handled in accordance with the following:
- a. The inspector shall determine if rework or completion of operations will possibly bring the article into conformance. If so, the fabrication procedure will be marked accordingly and the article returned for rework or completion. After rework or completion, the article shall be resubmitted for inspection.
 - b. When the article is found to be nonconforming on receipt, it may be returned to the supplier.
 - c. When the above dispositions are not appropriate, a Non-conformance Tag, ARC 248, shall be completed; a Non-conformance Report, ARC 158, shall be initiated; and the article shall be segregated and submitted to the Material Review Board for final disposition.
4. 5. 2 Material Review Board Membership. The Material Review Board shall be comprised of the following members and their alternates:

	<u>Principal</u>	<u>Alternate</u>
a. Experiment Manager	C. Privette	J. Keeler
b. Cognizant Eng. ,		
Electronics	M. Dix	J. Prucha
Mechanical	D. Engelbert	
Thermal	J. Arvesen	
c. R QA Representative	G. DeYoung	R. Barrow

4.5.3 Material Review Board Responsibilities. The Material Review Board will:

- a. Determine disposition of submitted articles.
- b. Ensure that effective remedial and preventive actions are taken.
- c. Ensure that accurate records of MRB actions are maintained.

4.5.4 Material Review Board Dispositions. Dispositions, other than scrap, require the unanimous agreement of the Board members. In determining dispositions, the Board shall: consider the effect of the nonconformance upon the intended use, review records of earlier review actions affecting the same article, and consider the recommendations of personnel acting in an advisory capacity. The Board shall specify one of the following dispositions:

- a. Repair. When, in the opinion of the Board, an acceptable repair is possible, repair action may be authorized. Procedures shall be established to perform this repair and shall include inspections and tests to verify the acceptability of the repair.
- b. Use As Is. The rationale for making a use as is disposition shall be documented on the nonconformance report.

- c. Scrap. If the article is unfit for use, it shall be identified as such and removed from the work area.

4. 5. 5 Nonconformance Reporting. Nonconformances, including failures, shall be documented on a Nonconformance Report, ARC 158. After Material Review Board disposition, copy 1 and 2 of the ARC 158 will be directed to the R&QA Data Control, N244-2a, for processing, dissemination, reporting, and retention in accordance with RQA 5337-1. Copy 3 will be directed to the Experiment Manager and copy 4 will be retained by the originator. Control will submit a copy of failure reports (or ARC 158, see para. 3. 4) to NASA/MSC by U. S. - Air Mail within 48 hours of occurrence.

4. 6 CONTROL OF INSPECTION, MEASURING, AND TEST INSTRUMENTS

Instruments shall be calibrated and controlled in accordance with RQA 5339-13.

4. 7 EQUIPMENT RECORDS

A System and Component Historical Record, ARC 577, shall be initiated after final assembly and maintained with each experiment. This record shall provide a continuous history of each experiment from final assembly to delivery. Entries shall include, but not be limited to:

- a. Change of location.
- b. Any nonconformance, including failure, with reference to applicable documents.
- c. Operating time.
- d. Inspection or test operations.

- e. Change of configuration.
- f. Unusual or questionable occurrences.

4.8 DATA PACKAGE

The Experiment Manager shall be responsible for establishing and maintaining a Data Package for delivery with the experiment.

The Data Package shall contain the following, as a minimum:

<u>Item</u>	<u>Paragraph</u>
a. List of Drawings	4. 1
b. Drawings	4. 1
c. Parts and Materials List	3. 3
d. Special Handling and Storage Instructions	
e. Operating Manual and Instructions	
f. Calibration Instructions	
g. Equipment Record (ARC 577)	4. 7
h. Limited Life Items Identification	
i. Completed Test Procedure and Data	5. 0
j. Nonconformance Reports (ARC 158)	3. 4, 4. 5. 5
k. DD 1149	
l. Flight Readiness Review Status	3. 2

CHAPTER 5: TEST ACTIVITY

5.1 TEST PHILOSOPHY

The test philosophy is to subject the experiment to maximum anticipated environmental levels which will be encountered during prelaunch activities, in-transit to the lunar surface (launch and post-launch), and during lunar deployment and operation. The experiment is required to be maintained in a storage condition until actual operation on the lunar surface during the lunar day. Actual operational time will be less than 24 hours. A qualification model will be fabricated and assembled in the same manner and configuration as the flight model. Due to program restraints, it will be necessary to use the qualification model as a flight spare.

5.2 TEST PROCEDURE

A test procedure, including a flow chart, shall be prepared. The procedure shall identify the individual (by initial or stamp) accomplishing each step and identify personnel witnessing such tests. The procedure shall include a list of equipment, details of how the test is to be conducted, records of measurements taken, functional tests to be performed, inspections to be accomplished, and applicable reference documentation.

5.3 FUNCTIONAL TESTS

Functional tests shall be conducted to verify operational performance prior to, during, and after environmental testing. The test procedure shall define when and what tests are to be performed.

5.4 Environmental Tests

The following provides the environmental levels the experiment

shall be subjected to during testing at Ames. These environmental conditions are derived from "Environmental Conditions Induced by LM on the Cosmic Ray Detector (LMMP), Grumman Aircraft ICD No. LIS-360-22308. The experiment axis will be specified in the test procedure. The qualification model shall be subjected to the qualification levels indicated and all flight models shall be subjected to the Acceptance levels indicated.

5.4.1 Shock (nonoperating)

<u>Axis</u>	<u>Acceptance Level</u>	<u>Qualification Level (X1.6)</u>	<u>Pulse Shape</u>
X	+ 5.0 g	+ 8.0 g	20m sec linear rise
Y	\pm 5.0 g	\pm 8.0 g	100 m sec hold
Z	\pm 5.0 g	\pm 8.0 g	40m sec linear fall (Ramp Step)

5.4.2 Vibration (nonoperating)

a. Random (Launch and Boost Phase)

<u>Axis</u>	<u>Frequency Range HZ</u>	<u>Acceptance Level 2.5 min/axis</u>	<u>Qualification Level (x1.3) 2.5 min/axis</u>
X	20-34	0.004 g ² /h ²	0.005 g ² /hz
	34-200	+6 db/oct	+6 db/oct
	200-230	0.16 g ² /hz	0.2 g ² /hz
	230-350	-12 db/oct	-12 db/oct
	350-700	0.03 g ² /hz	0.04 g ² /hz
	700-2000	-6 db/oct	-6 db/oct
Y-Z	20-100	0.004 g ² /hz	0.005 g ² /hz
	100-160	+3 db/oct	+3 db/oct
	160-600	0.006 g ² /hz	0.008 g ² /hz
	600-800	+9 db/oct	+9 db/oct
	800-1500	0.016 g ² /hz	0.02 g ² /hz
	1500-2000	-6 db/oct	-6 db/oct

b. Sinusoidal (Launch and Boost Phase)

<u>Axis</u>	<u>Frequency Range HZ</u>	<u>Acceptance Level 3 oct/min</u>	<u>Qualification Level (x1.3) 3 oct/min</u>
X	5-16	0.16" DA	0.2" DA
	16-100	2.1 g	2.7 g
Y-Z	5-10	0.16" DA	0.2" DA
	10-100	0.77 g	1.0 g

c. Random (Lunar Descent Phase)

<u>Axis</u>	<u>Frequency Range HZ</u>	<u>Acceptance Level 12.5 min/axis</u>	<u>Qualification Level (x1.3) 12.5 min/axis</u>
X	5-30	0.02" DA	0.03" DA
	30-100	1.1 g	1.4 g

5.4.3 Thermal-Vacuum

Pressure-Atmospheric pressure at sea level to
 1×10^{-8} mm hg

Temperature-Operating: 0°C. to +50°C.

Nonoperating: -10° C. to +50° C.

A temperature-pressure profile shall be specified in the test procedure. Solar-vacuum testing or magnetic field cancellation are not required, however, if facilities are available and schedule permits, solar-vacuum and/or thermal-vacuum-magnetic calibration may be conducted.

5. 4. 4 Acoustics (Nonoperating)

<u>Octave Band (Hz)</u>	<u>Level db(+5) for 2 min</u>
9 to 18.8	127
18.8 to 37.5	133
37.5 to 75.0	136
75.0 to 150.0	134
150.0 to 300.0	129
300.0 to 600.0	125
600.0 to 1200.0	120
1200.0 to 2400.0	116
2400.0 to 4800.0	112
4800.0 to 9600.0	107
OVERALL	141

5. 4. 5 Magnetic Calibration

The sensors shall be placed in a known magnetic field and appropriate readings shall be taken and recorded. All three axis shall be calibrated.

5. 5 QUALITY ASSURANCE ACTIONS

5. 5. 1 Prior to testing, the quality assurance personnel shall:

- a. Verify that the test procedure is available and approved.
- b. Verify that articles are identified.
- c. Verify configuration of articles.
- d. Verify that configuration of GSE, if any, is consistent with articles under test.
- e. Verify that test equipment is calibrated and such calibration will be effective and sustained during the test period.

5. 5. 2 During testing, the quality assurance personnel shall:

- a. Ensure that testing is accomplished in accordance

with the test procedures.

- b. Ensure accurate and complete recording of data and tests results.
- c. Document rework, repair or modification occurring during the test operation.
- d. Document nonconformances and participate in their dispositions.
- e. Assure that required changes to the test procedure are properly documented.

5.5.3 Subsequent to testing, the quality assurance personnel shall:

- a. Ensure proper disposition of articles.
- b. Report any additional nonconformances and participate in their dispositions.
- c. Ensure that remedial and preventive action has been accomplished relative to nonconformances.
- d. Verify that test results and reports are accurate, complete, and traceable to the tested articles.

APPENDIX A

R and QA Portion of Inter-Center (ARC-MSD) Agreement

Paragraph 7.1 - Quality Assurance Requirements

NASA/ARC shall implement and maintain a program for the control of quality in accordance with the requirements of NPC 200-3, "Inspection System Provisions for Suppliers of Space Materials, Parts, Components and Services," Paragraphs 1.1, 1.2, 2.1, 2.2, 2.4, 3.1, 3.2, 3.4, 3.6, 3.7, 3.9, 3.10, 3.13, and 3.14 and with Chapter 8 of NHB 5300.4 (1B), Quality System provisions for Aeronautical and Space Contractors. A Quality Assurance Program Plan shall be prepared and implemented within 90 days of authorization to proceed.

Paragraph 7.2 - Reliability Requirements

NASA/ARC shall implement and maintain a Reliability Program in accordance with NPC 250-1, "Reliability Program Provisions for Space System Contractors," paragraphs 2.1, 2.2, 3.4, 3.6, 3.7, 3.9, and 4.3.3. A Reliability Program Plan shall be prepared and implemented within 90 days of authorization to proceed.

APPENDIX B: APPLICABLE DOCUMENTS

This appendix contains policies, procedures, and sample forms applicable to this R and QA plan.

Attch:

AMM 5150-3

AMM 5310-1

RQA 5311-1

RQA 5337-1

RQA 5338-1

RQA 5339-1

RQA 5339-13

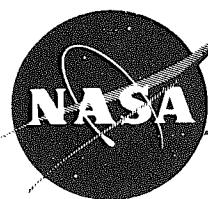
ARC form 23

ARC form 158

ARC form 244

ARC form 248

ARC form 577



AMES

RESEARCH CENTER

AMM 5310-1

January 20, 1970

MANAGEMENT MANUAL

SECTION	RELIABILITY AND QUALITY ASSURANCE
SUBJECT	R&QA General Policy, Responsibility, and Authority

1. PURPOSE

This article sets forth the policy of Ames Research Center in the areas of reliability, quality assurance, and safety as applied to reliability and quality assurance; and the responsibility, authority, and mechanics for implementing the Center's R&QA program.

2. POLICY

Reliability and quality assurance will be applied on a Center-wide basis. The R&QA program will cover the broad range of Ames research activities, from fundamental research to space flight projects, as well as the technical supporting functions.

3. APPLICABILITY

The provisions of this article are applicable to all Ames programs and organizational elements.

4. RELIABILITY AND QUALITY ASSURANCE ORGANIZATION

a. Organizational Location. The Director of Development will establish Center-wide R&QA policy, and implement this policy via the Reliability and Quality Assurance Branch of the Systems Engineering Division. Since the Director of Development must operate across organizational lines in carrying out reliability and quality assurance functions, he will establish R&QA policy and procedures by authority and approval of the Director. Although the R&QA Branch is located organizationally in the Systems Engineering Division, the Chief, Reliability and Quality Assurance Branch, is given the authority to report directly to the Director of Development on R&QA matters. The Director of Development, in turn, reports to the Director.

b. Responsibility and Authority. Subject to the provisions of 4a above, the Director of Development is delegated authority to act for the Director on R&QA matters. He will serve as the contact point

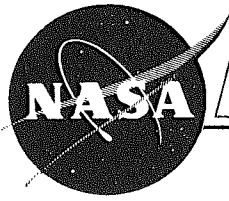
- c. Direct implementation will be accomplished on a local Center-wide basis by all cognizant organizational elements in accordance with R&QA policy and procedures.
- d. Support to the organizational elements will be accomplished on a Center-wide basis by:
 - (1) Reliability and Quality Assurance Branch personnel on a program class basis (such as space flight programs) and/or a functional basis (such as parts selection) rather than on an individual program responsibility basis (individual program support will be limited);
 - (2) Contracts monitored by the Reliability and Quality Assurance Branch.

6. CANCELLATION

AMM 5310-1, dated March 25, 1968 (T. S. No. 94)

7. DISTRIBUTION

ASDL-10



MANAGEMENT MANUAL

SECTION

PROCUREMENT

SUBJECT

Review of Purchase Requests
for R&QA Requirements

1. PURPOSE

This article sets forth the procedure to be followed in reviewing Purchase Requests (ARC 3ls) to ensure that consideration is given to reliability and quality assurance requirements.

2. APPLICABILITY

This procedure is applicable to all Ames organizational elements for all classes of programs (see AMM 5310-2).

3. POLICY

All Purchase Requests (PRs) shall be reviewed to assure that reliability and quality assurance requirements commensurate with the class of program are included.

4. REVIEW CRITERIA

The following criteria are to be used with each individual PR to determine if review by the R&QA Branch is required.

- a. **Required** - R&QA Branch review of PRs for materials, supplies, and equipment for Class IA (flight equipment) and Class IB (mission-essential ground equipment) of space programs.
- b. **Required** - R&QA Branch review of PRs for materials, supplies, and equipment in excess of \$2500 for all classes of space programs.
- c. **Required** - R&QA Branch review of PRs of non-space programs (Classes II and III) for deliverable hardware where the current or anticipated value exceeds \$25,000.
- d. **Optional** - All other PRs not covered by 4a, 4b, and 4c above may be submitted to the R&QA Branch when the originators or reviewers believe that it will be of benefit to the Center.

6. ATTACHMENTS

A—Illustration of completed PER 025 " R&QA Procurement Review Information Sheet"

B—Illustration of completed ARC 31 "Purchase Request/Purchase Order" showing addition of R&QA Branch reviewer's notation.

7. DISTRIBUTION

ASDL-10

December 2, 1968

AMM 5150-3
ATTACHMENT A

RELIABILITY AND QUALITY ASSURANCE BRANCH AMES RESEARCH CENTER		
R&QA PROCUREMENT REVIEW INFORMATION SHEET	DATE 10-1-68	
TO: PROCUREMENT DIVISION		
SUBJECT: PR # PA 0342	dated _____	
PURCHASE REQUEST REVIEW (Ref: PR 1.5003, 1.5004, 1.5104, 1.5105, 14.150):		
<input type="checkbox"/> Completed. R&QA Provisions not required. <input checked="" type="checkbox"/> Completed. R&QA Provisions: <input type="checkbox"/> adequate as specified <input checked="" type="checkbox"/> attached <u>Memo PER-603-68</u> <input type="checkbox"/> Incomplete. R&QA Provisions under study: DO NOT issue RFP or Order until R&QA Provisions are received. Estimated date of completion: _____ <input type="checkbox"/> DD Form 250 required. Include this requirement in work statement. <input type="checkbox"/> R&QA participation required in Bidder's Conference (if one is held). Notify the R&QA Representative when conference is to be held.		
PROPOSAL REVIEW (Ref: PR 1.5004, 1.5105):		
<input checked="" type="checkbox"/> R&QA evaluation of proposals not required. <input type="checkbox"/> R&QA evaluation of proposals required. Include the R&QA Representative in the review of proposals and pre-award surveys to be conducted.		
CONTRACT REVIEW:		
<input checked="" type="checkbox"/> Copy of the contract not required by the R&QA Branch. <input type="checkbox"/> Copy of the contract, work statement, and applicable specifications needed by R&QA. Forward a copy to the R&QA Representative.		
DELEGATION REVIEW (Ref: PR 51.312):		
<input checked="" type="checkbox"/> Delegation of R&QA Functions not required. <input type="checkbox"/> Delegation of R&QA functions anticipated. Memo from R&QA will follow R&QA receipt of contract.		
REMARKS:		
R&QA Representative John Mulkern	M.S. N244-5	Phone X2585
GENERAL INFORMATION		
Order # —	Class of Program (AMM 5310-2) IB	Est. Cost # 131.75
RFP # —	J.O. # R 2092	T.O. # A 723
Contract # NAS2- —	Tech. Mon. Henry Lum	MS/Phone 244-4/2135
PER 025 (Aug. 68)		1. Procurement

Completed PER 025 "R&QA Procurement
Review Information Sheet"

December 2, 1968

AMM 5150-3
ATTACHMENT B

UARC BUSINESS FORMS
OAKLAND, CALIF.

USE TYPEWRITER OR PRINT USING BALL POINT — BEAR DOWN

NASA AMES RESEARCH CENTER

PURCHASE REQUEST / PURCHASE ORDER

<p>TO: SELLER</p>	<p>SHIP TO: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AMES RESEARCH CENTER MOFFETT FIELD, CALIFORNIA 94035</p>	<p>ORDER NUMBER A</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">FOR PROCUREMENT USE ONLY</td> <td style="font-size: small;">PPC</td> <td style="font-size: small;">PURCHASE REQUEST NO.</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> <td style="text-align: center;"> </td> </tr> <tr> <td style="font-size: x-small;">ORG</td> <td style="font-size: x-small;">SERIAL</td> <td style="font-size: x-small;"> </td> </tr> <tr> <td style="text-align: center;">PA</td> <td style="text-align: center;">0342</td> <td style="text-align: center;"> </td> </tr> </table> <p style="font-size: x-small; text-align: right;">SEE AMM 5150-1</p>	FOR PROCUREMENT USE ONLY	PPC	PURCHASE REQUEST NO.				ORG	SERIAL		PA	0342	
FOR PROCUREMENT USE ONLY	PPC	PURCHASE REQUEST NO.													
ORG	SERIAL														
PA	0342														

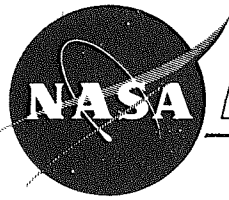
FOB POINT		SHIP VIA		GS CONTRACT		DISCOUNT TERMS			DATE DELIVERY REQUIRED			
TC	PY/FS/MF	OBJ. CL.	JOB ORDER	PR ITEM	P.O. ITEM	ARTICLES OR SERVICES <small>(PROGRAM CODE) SHOW NAME OF ITEM, DESCRIPTION AND SPECIFICATIONS</small>		QUANTITY	UNIT	UNIT PRICE	AMOUNT	ESTIMATED COST
			R-2092	1		PRINTED CIRCUIT TEST JACK, Birnbach Type 1177 or equivalent, Blue color		35	ea			4.00
				2		INTEGRATED CIRCUIT, Motorola MC830P, 0 to +75 degrees C, Plastic Case 93 (dual in-line package)		5	ea			7.75
				3		INTEGRATED CIRCUIT, Motorola MC845P, 0 to +75 degrees C, Plastic Case 93 (dual in-line package)		40	ea			120.00
<p>R&QA Branch reviewer's notation indicates that R&QA review has been completed.</p>												
TOTAL											131.75	

APPROVALS	INITIAL	DATE	USE: (CONTINUE ON REVERSE OF SHEET)
BRANCH	<i>PLM</i>	<i>10-2-68</i>	Pioneer - Coding Experiment
DIVISION			R4QA BR. REV. <i>JRM 10-1-68</i>
ASST. DIR.			
PROC. CONTROL			APPROPRIATION
PROP. PROC.			CERTIFIED FOR NATIONAL DEFENSE UNDER DDPA REG 7 AND/OR DMS REG 1. RATING DO-
PROG & RES			DELIVER TO: <i>H. Lum</i> MS.PHONE: <i>244-4/2135</i> SPO ACCT. NO.: <i>542</i>
			I CERTIFY THAT FUNDS ARE AVAILABLE IN THE AMOUNT OF \$ _____
			YOU ARE HEREBY AUTHORIZED TO FURNISH THE ABOVE IN ACCORDANCE WITH _____
			SIGNATURE OF CONTRACTING OFFICER _____ DATE _____

REVERSE SIDE MUST BE COMPLETED

ARC 31 (REV. APR. 68) PREVIOUS EDITIONS ARE OBSOLETE © 235187
PROCUREMENT COPY (1)

Completed ARC 31 "Purchase Request/Purchase Order" showing addition of R&QA Branch reviewer's notation



AMES

RESEARCH CENTER

RQA 5311-1

February 5, 1969

RELIABILITY AND QUALITY ASSURANCE MANUAL

SECTION R&QA POLICIES, PROCEDURES,
AND INSTRUCTIONS

SUBJECT Delegation of
R&QA Functions

* *The text below was copied (except for those words in italics) from AMM 5311-1.*

1. PURPOSE

This article sets forth the criteria and procedure for obtaining reliability and quality services from Government agencies performing contract administration functions at supplier facilities.

2. APPLICABILITY

This article is applicable to all Ames organizational elements for all classes of programs (see *RQA 5310-2*).

3. DEFINITIONS

For purposes of this article, the following definitions are established:

- a. Delegation is the process whereby a contract administration office is given authority and responsibility by a contracting officer to perform identified functions necessary to assure effective performance of specific contract requirements.
- b. The NASA-DoD Representative is a NASA Headquarters employee who provides liaison assistance in the administration of NASA contracts delegated to other Government agencies.
- c. The Project R&QA Manager is the individual designated by the R&QA Branch Chief to be responsible for management of the reliability and quality services for a specific program or project.

4. REFERENCES

- a. NHB 5330.7 "Management of Government Quality Assurance Functions for Supplier Operations."
- b. NPC 200-1A "Quality Assurance Provisions for Government Agencies."
- c. NPC 400 "NASA Procurement Regulation."
- d. DD Form 250 "Material Inspection and Receiving Report."

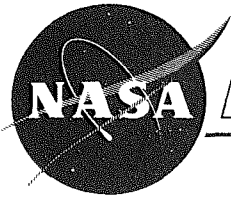
- (3) Include R&QA functions in the letter of delegation when received from the R&QA Branch.
- (4) Require the supplier to prepare and distribute DD Form 250 when R&QA functions are delegated (see NPC 400, Appendix I).

b. The Project R&QA Manager shall:

- (1) Review the contract, work statement, and applicable specifications to determine the need for delegating R&QA functions. The need will be based on the delegation criteria specified herein.
- (2) Arrange and participate in a quality assurance planning conference with the cognizant Government agency to establish basic requirements for critical major contracts. Inform the NASA-DoD Representative when and where the quality assurance planning conference will be held.
- (3) Furnish reliability and quality assurance requirements, to be invoked on the cognizant Government agency, to the contracting officer for inclusion in the letter of delegation. NHB 5330.7 sets forth requirements for NASA direction and management of Government quality assurance functions performed for NASA contracts. Appendix A thereof contains guidelines for the preparation of the quality assurance portion of delegation letters. The requirements shall cite specifically the extent to which NPC 200-1A shall be invoked and include specific instructions as to the requirements of various action paragraphs.
- (4) Arrange and participate in a post-award conference with the supplier and the cognizant Government agency for critical major contracts. Inform the NASA-DoD Representative when and where the post-award conference will be held.
- (5) Keep cognizant Project and Procurement personnel informed on significant delegation actions.

9. DISTRIBUTION

RQAL-1



AMES

RESEARCH CENTER

RQA 5337-1

March 14, 1969

RELIABILITY AND QUALITY ASSURANCE MANUAL

SECTION

R&QA POLICIES, PROCEDURES,
AND INSTRUCTIONS

SUBJECT

Nonconformance Data Control

1. PURPOSE

This article sets forth the policy and responsibilities for establishing and maintaining a system for nonconformance data acquisition, dissemination, reporting, and retention at Ames. The system is designed to accommodate nonconformance data originating at Ames, other NASA and government installations, and contractor facilities.

2. APPLICABILITY

This article is applicable to all Ames organizational elements engaged on contracts and projects where the requirement for nonconformance reporting has been established.

3. DEFINITION

Nonconformance - A condition of any article, material, or service in which one or more characteristics do not conform to the specified requirements, e.g., noncompliance with drawings, specifications, fabrication, inspection and test documents. Includes failures, discrepancies, deficiencies, defects, and malfunctions.

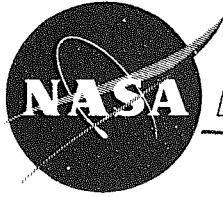
4. POLICY

- a. A nonconformance data acquisition, dissemination, reporting, and retention system shall be established and maintained.
- b. The system shall provide support for all contracts and projects wherein the requirement for nonconformance reporting has been established.

5. RESPONSIBILITIES

- a. The R&QA Branch shall:

- (1) Establish and maintain a system for the timely acquisition, dissemination, reporting and retention of nonconformance data.
- (2) Establish and maintain general and special reports pertaining to nonconformance data, as necessary. These reports will include project nonconformance visibility at both the Project Manager and Project Personnel levels.



RELIABILITY AND QUALITY ASSURANCE MANUAL

SECTION R&QA POLICIES, PROCEDURES, AND INSTRUCTIONS

SUBJECT Quality Status Stamps

* The text below was copied (except for those words in italics) from AMM 5338-1.

1. PURPOSE

This article sets forth the policy, responsibilities and procedures for the issuance and control of Quality Status Stamps required to indicate the quality status of articles, materials, and documents either procured from suppliers or fabricated at Ames.

2. APPLICABILITY

This article is applicable to all Ames organizational elements and, through letter of delegation, to all Government agencies performing quality functions on behalf of Ames.

3. AUTHORITY

This article is an Ames implementing issuance for NASA Headquarters issuance NMI 5330.2A "Quality Status Stamping Requirements".

4. DEFINITION

Stamp Controller - The individual designated by the R&QA Branch Chief to be responsible for the issuance and control of Quality Status Stamps. Authorized substitutes are designated to act in his absence.

5. POLICY

a. The quality status of equipment, components, materials, and documents shall be identified by use of the following Quality Status Stamps:

- (1) Conformance Stamp
(2) Nonconformance Stamp
(3) Void Stamp

b. Where special indications are required, such as for magnetic inspection, special stamps may be used. The control provisions of Quality Status Stamps shall apply to this type of special stamp.

(2) R&QA Branch

- (a) Upon receipt of a request, the R&QA Branch shall review its contents and, if approved, shall forward the request to the Stamp Controller.
- (b) The Stamp Controller shall forward the stamps requested and a copy of stamp receipt form (ARC 131) to the requesting organization. The Stamp Controller shall maintain a copy of the request, a copy of the transmittal correspondence forwarding the stamps, and the returned stamp receipt form (ARC 131).
- (c) If the stamp receipt form (ARC 131) is not returned within three weeks, the Stamp Controller shall contact the individual to whom the stamps are issued. He shall verify receipt of the stamps and request the return of the stamp receipt form (ARC 131).

b. Control

- (1) The individual to whom the stamps are issued shall notify the Stamp Controller when:
 - (a) Stamps are worn or damaged and require replacing.
 - (b) Stamps are lost. Written notification describing the circumstances which led to the loss shall be forwarded to the Stamp Controller.
 - (c) Unauthorized use or issuance of stamps is determined.
 - (d) Transfer or termination of duty.
 - (e) Stamps are no longer required for NASA quality functions.
- (2) The Stamp Controller shall:
 - (a) Review the qualifications to perform quality assignments as described on the returned stamp receipt form (ARC 131). Questionable qualifications shall be directed to the attention of the R&QA Branch Chief.
 - (b) Conduct a periodic inventory (at least once a year). This shall be accomplished by completion of ARC 130 "Quality Status Stamp Control" forms. A summary report of the inventory shall be sent to the R&QA Branch Chief. This report shall include type and quantity of issued stamps, type and quantity of unissued stamps, type and quantity of stamps replaced, description of lost stamps and any other pertinent information. All stamps shall be accounted for.

- (a) Conformance Stamp. A round stamp used to indicate that articles or accompanying documents meet Ames requirements. This stamp may also be used in lieu of the calibration stamp. This stamp is to be used on articles or accompanying documents which will be used internally at Ames, and on articles of commercial or industrial grade quality. This stamp shall not be used on articles or accompanying documents designated for Space Programs (Class I; see RQA 5310-2).
 - (b) Calibration Stamp. A round stamp with a "C" used to indicate that articles have been calibrated against higher level standards traceable to natural physical constants, and are within the original design tolerance.
 - (c) Surveillance Stamp. A round stamp with a "S" used to indicate that a specific task (e.g., a test) has been accomplished to established requirements and witnessed by the individual issued the stamp.
 - (d) Magnetic Inspection Stamp. A stamp shaped similar to a magnetic field used to indicate that articles satisfy Ames magnetic requirements.
 - (e) Additional special Installation stamps will be designed and issued by the R&QA Branch as the requirements are established.
- (3) The identification, Installation symbol, assigned numbers, size, and material shall be in accordance with NMI 5330.2A.

b. Marking Inks

Marking ink shall provide a permanent and legible indication of quality status which will not degrade the quality of the article or material. Ink shall not be used which generates toxic effects or is incompatible with fluids, gases or propellants in the expected environments. In Attachment C, Tables I and II give the composition and properties of commonly used marking inks.

9. ATTACHMENTS

- A - ARC 130 "Quality Status Stamp Control"
- B - ARC 131 "Quality Status Stamp Receipt"
- C - Composition of Inks
 - Ink Properties

10. DISTRIBUTION

RQAL-1

February 14, 1969

RQA 5338-1
ATTACHMENT B

NASA-AMES RESEARCH CENTER Moffett Field, California 94035 QUALITY STATUS STAMP RECEIPT									
GOVERNMENT INSPECTION AGENCY Defense Contract Administration Services Office 3939 Fabian Way Palo Alto, California 94303									
NASA/ARC CONTRACT NUMBERS NAS2-3397 NAS2-3554									
<p>1. I hereby verify that I have received and hold in my personal possession the Quality Status Stamps as imprinted below.</p> <p>2. The Ames Reliability & Quality Assurance Branch shall be notified when:</p> <ul style="list-style-type: none">a. Stamps are worn or damaged and require replacing.b. Stamps are lost. Written notification describing the circumstances shall be forwarded to the Ames Reliability & Quality Assurance Branch.c. Unauthorized use or issuance of stamps is determined.d. Transfer or termination of duty.e. Stamps are no longer required for NASA quality functions. <p>3. These stamps may be inventoried at any time.</p> <p>4. Listed below is a brief description of my qualifications to perform quality assignments, including special training and/or certifications.</p>									
QUALIFICATIONS									
1. Six years as a Government Quality Control Representative.									
2. Completion of NASA Soldering School and certified as an Examiner/Instructor.									
3. Completion of NASA/DoD Quality Training Course.									
SIGNATURE AND TITLE <i>John A. Jones</i> Space Systems QC Representative		DATE February 12, 1968							
STAMP IMPRINT		Return the completed form to: National Aeronautics and Space Administration Ames Research Center R&QA Branch (244-2A) Moffett Field, California 94035							
<table border="1"><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>									
ARC 131 (Rev Dec 67)		Previous editions of this form are obsolete							

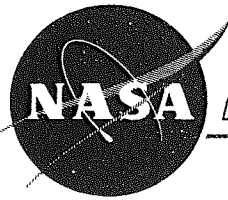
Table I
Composition of Inks

Identification	Composition			
	Resin	Curing Agent	Pigment	Solvent
Opaque Stamp Pad, Ink, No. 7 Black*	Oil	None	Nigrosene JSS	Diacetone Alcohol
Humiseal Type ** S-790-403	Bisphenol-A resin, mol. wt. about 400	Diethylaminopropyl- amine	Carbon Black	Toluene
Wornowink *** MONC	Bisphenol-A resin, mol. wt. about 1,000	Cat.-A; mixture, tertiary aromatic amine, & aliphatic primary and second- ary amines	CuCr_2O_4 , Mn_3O_4 CoMnO_3	Diethyl Carbitol
Wornowink MONC	Bisphenol-A resin, mol. wt. about 1,000	Cat.B-3; mixture, salt of tertiary aromatic amine, & aliphatic primary and secondary amines	CuCr_2O_4 , Mn_3O_4 CoMnO_3	Diethyl Carbitol
Wornowink MON	Bisphenol-A resin, mol. wt. about 1,000	Cat.-A See Above	BaSO_3 Fe_3O_4	Diethyl Carbitol
Wornowink MON	Bisphenol-A resin, mol. wt. about 1,000	Cat. B-3 See Above	BaSO_3 Fe_3O_4	Diethyl Carbitol

* Philips Process Co., Inc.

** Columbia Technical Corp. 24-30 Brooklyn-Queens Expressway, West Woodside
77, New York.

*** Wornow Process Paint Company, 1218 Long Beach Ave., Los Angeles 21, Calif.



RELIABILITY AND QUALITY ASSURANCE MANUAL

SECTION R&QA POLICIES, PROCEDURES, AND INSTRUCTIONS

SUBJECT Bonded Storage System

* The text below was copied (except for those words in italics) from AMM 5339-1.

1. PURPOSE

This article sets forth policies, responsibilities and procedures for the implementation and operation of a Bonded Storage System for the storage, control, and protection of those articles and materials defined as Bonded Stores for Space Programs (Class I).

2. APPLICABILITY

This article is applicable to all Ames organizational elements for Class I Programs (see RQA 5310-2).

3. DEFINITIONS

For purposes of this article, the following definitions are established:

- a. Bonded Stores - Articles and materials (except those classified as radioactive, explosive, flammable, narcotics, or controlled drugs) where integrity and quality are to be maintained during periods of nonuse.
b. Bonded Storage Area - A controlled access area designated by the R&QA Branch Chief to be used for the storage and control of those articles and materials defined as Bonded Stores.
c. Bonded Storage System - The system described in this article for the storage, control, and protection of those articles and materials defined as Bonded Stores.
d. Bonded Storage Controller - The individual designated by the R&QA Branch Chief to be responsible for the proper handling of articles and materials within the Bonded Storage Area. He also maintains records of submittals, withdrawals, inspections, and an inventory of articles and materials in the Bonded Storage Area.
e. Off-Duty Alternates - Individuals designated by the R&QA Branch Chief to be responsible for providing access to Bonded Storage Areas during off-duty hours and ensuring that proper submittal, withdrawal, or inspection of articles or materials is made.

- (b) The person making the request, hereafter called the requester, shall make the necessary arrangements with the Bonded Storage Controller for a scheduled time to deliver the item to the Bonded Storage Area indicated by the Bonded Storage Controller. The requester shall provide or arrange for the transportation of the articles or materials to the Bonded Storage Area.
 - (c) The requester shall provide the information needed by the Bonded Storage Controller to complete PER 010 "Bonded Storage Record" (illustrated in Attachment A). This information shall include special instructions for identification, disposition, and replacement of limited-life items. Also, special instructions shall be provided for handling and storage of articles or materials requiring special precautions.
- (2) Bonded Storage Controller shall:
- (a) Contact the requester for the purpose of making arrangements for submittal of the items. See 6a(1)(b) above.
 - (b) Examine items for submittal to the Bonded Storage Area. He shall decline to accept articles or materials that are not defined as Bonded Stores. Items that are inadequately packaged or lack sufficient information or instructions shall be declined. The using organization shall correct deficiencies and resubmit items for storage.
 - (c) Complete PER 010 for each submittal transaction and maintain the cumulative records. A copy of a Bonded Storage Inventory Report (illustrated in Attachment B) shall be forwarded to each using organization on a monthly basis.
 - (d) Complete PER 034 "Bonded Stores Tag Number" (illustrated in Attachment A) by entering the unique 4-digit number (identical to that on PER 010). Attach PER 034 to the item.
 - (e) Not modify the package in any way except for partial withdrawal accomplished in the presence of an authorized individual from the using organization or where special storage requirements so dictate. In case a package proves to be inadequate during storage or is damaged in handling, the Bonded Storage Controller shall notify the Project Manager. The Project Manager shall be requested to send an authorized individual to take the necessary corrective action.

b. Withdrawal

(1) Using Organizations

- (a) Using organizations shall initiate the request and make the arrangements for withdrawal of items from the Bonded Storage Area by a request to the Bonded Storage Controller.

- (c) When submitting an item, the requester shall place the item in the designated receiving area for Bonded Stores and record the required information on the PER 030 "Off-Duty Bonded Stores Log" (illustrated in Attachment D) located in the Bonded Storage Area.
 - (d) When withdrawing an item, the requester shall refer to the Bonded Storage Inventory Report located in the Bonded Storage Area. This report, listed by project and item description order, provides the item location and bonded stores record number for every item in storage. Regardless of whether the item is being withdrawn, submitted, or inspected, the requester must record the required information on the PER 030 located in the Bonded Storage Area.
 - (e) Items belonging to other individuals or projects shall not be handled, rearranged, or removed from the Bonded Storage Area.
 - (f) The requester shall provide the necessary transportation of items.
- (3) Off-Duty Alternate shall:
- (a) Provide access to Bonded Storage Areas to authorized individuals having legitimate reasons for access.
 - (b) Check requester's Ames identification badge and ensure that he is authorized by PER 031 to enter Bonded Stores. If the requester's name does not appear on the PER 031, the Off-Duty Alternate may contact the requester's Project Manager for authorization or at his discretion allow access based on his knowledge of the requester's project association.
 - (c) Ensure that items being submitted are placed in the designated receiving area in the Bonded Storage Area.
 - (d) Ensure that all information required on the PER 030 is completed by the requester regarding submittal, withdrawal, or inspection of items.
 - (e) When the transaction is complete, sign the PER 030 and secure the Bonded Storage Area.
- (4) Ames Guards shall:
- (a) When requested to provide access to Bonded Storage Areas, verify that the requester is authorized to enter the area. This shall be accomplished by checking the requester's Ames identification badge against the PER 031 listing persons authorized to enter the Bonded Storage Area. Written authorization in the form of a memo signed by the Project Manager and dated for the

June 25, 1969

RQA 5339-1
ATTACHMENT A

1 2 3 4				BONDED STORAGE RECORD																																															
0017				ITEM DESCRIPTION																																PART/SERIAL OR MODEL NUMBER															
MOLECULAR SIEVE-13X CARTRIDGE																																RAF-SNT 13X																			
PROJECT NAME																WITHDRAWAL AUTHORIZATION BY:																BOND STOR LOC.				QUANT.				DOCUMENTATION REC'D WITH ITEM				DATE ITEM RECEIVED							
SPARCS																PROJECT LIST																B-5048				YES				NO				04-08-69							
STORAGE REQUESTED BY																REMARKS OR SPECIAL HANDLING																																			
JACK SAMSON																ITEMS MUST BE LEFT IN SPECIAL CONTAINER PROVIDED.																																			

SIDE 1

PER 010 (2-69)

ITEM TRANSACTION RECORD									
TYPE TRANS		INDIVIDUAL	DATE	BONDED STORES REPRESENTATIVE	TYPE TRANS		INDIVIDUAL	DATE	BONDED STORES REPRESENTATIVE
REC'D	✓	J. SAMSON	4-8-69	D. GOWAN	REC'D				
ISSUED					ISSUED				
REC'D		P. SMITH	4-10-69	D. GOWAN	REC'D				
ISSUED	✓				ISSUED				
REC'D	✓	P. SMITH	4-11-69	D. GOWAN	REC'D				
ISSUED					ISSUED				
REC'D					REC'D				
ISSUED					ISSUED				
REC'D					REC'D				
ISSUED					ISSUED				

SIDE 2

BONDED STORES TAG NUMBER	
○	0017
PER 034 (2-69)	

June 25, 1969

ROA 5339-1
ATTACHMENT B

PER0100-R02 LIST BY BONDED STORES NUMBER		NASA - AMES RESEARCH CENTER MUFFETT FIELD, CALIFORNIA DEVELOPMENT DIRECTORATE BONDED STORAGE INVENTORY REPORT				PAGE NO. 001 REPORT DATE 04-11-69			
BONDED STORES NUMBER	ITEM DESCRIPTION	ITEM PART/MODEL OR SERIAL NUMBER	PROJECT NAME	SOURCE OF WITHDRAWAL AUTHORIZATION	BONDED STORES LOCATION	QUANTITY OF ITEMS	ISSUED BY	DATE ISSUED	QTY
0003	FINE SUN SENSOR	002	SPARCS	PROJECT LIST 1	A-2	001			
0004	FINE SUN SENSOR	005	SPARCS	PROJECT LIST 1	A-2	001			
0010	HEADSET-TELEX	197500	SPARCS	PROJECT LIST 2	A-1	001			
0011	HEADSET-TELEX	64532-00	SPARCS	PROJECT LIST 2	A-1	004			
0012	CABLE-TCU TO PAGE P-13 TO P-9	501-03	SPARCS	PROJECT LIST 2	A-3	001			
0013	CABLE- P-12 TO P-8 TCU TO PAGE	501-02	SPARCS	PROJECT LIST 2	A-3	001			
0016	CABLE P-9 TO P-13	5500303-501	SPARCS	PROJECT LIST 2	A-3	001			
0017	MOLECULAR SIEVE-13X CARTRIDGE	RAF-SMT 13X	SPARCS	PROJECT LIST 2	B-5	048			
0018	FILTER CARTRIDGE CAPSULE	RAF-BCU	SPARCS	VG&C	B-4	024			
0019	INDICATOR-OIL VAPOR	RAF-OV1	SPARCS	PROJECT LIST 4	B-4	006			
0020	GAS CYLINDER -DUPONT	JB2185	SPARCS	PROJECT LIST 2	A-5	001			
0021	GAS CYLINDER-DUPONT	JB-3149	SPARCS	PROJECT LIST 2	A-5	001			
0022	PRESSURE TRANSDUCER	5125018-1 NSN	SPARCS	PROJECT LIST 4	X-2	001			
0023	COARSE SUN SENSOR HOUSING-CELL	5001453-1-3	SPARCS	PROJECT LIST 4	X-2	001			
0024	RESOLVER-POTENTIOMETER	44164200 SN-5	SPARCS	PROJECT LIST 4	X-2	001			
0025	BATTERY CELLS	418001AA13	SPARCS	PROJECT LIST 4	X-2	024			
0026	MAGNETOMETER PROBE	1891	SPARCS	PROJECT LIST 1	X-2	001			
0027	MAGNETOMETER PROBE-ELECTRONICS	2328	SPARCS	PROJECT LIST 1	X-2	001			
0028	BATTERY CASE	5001315-501	SPARCS	PROJECT LIST 4	X-2	001			
0029	BATTERY ARM SWITCH	5001436-501	SPARCS	PROJECT LIST 1	X-2	001			
0030	STRAPS,INSERT PROTECTION	N/A	SPARCS	PROJECT LIST 4	X-3	003			
0031	DECOM CASE-EMPTY	02	SPARCS	PROJECT LIST 2	C-1	001			
0037	THERMAL LOUVER SET	NONE	SRT	KIRKPATRICK	I-5	001			
0038	HORIZON SCANNER	UU-U00	BIOSAT	HANSEN	G-1	001			
0041	CAMERAS AND ACCESSORIES	NONE	BIOSAT	PROJECT LIST 2	G-5	006			
0042	DESPUN AND ANTENNA SYSTEM	NAS2-4272	PIONEER	PROJECT LIST		0			
0043	RECOVERY CAPSULE	301	BIOSAT	PROJECT LIST 5	FLR	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 099	BIOSAT	PROJECT LIST 1	E04	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 100	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 101	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 102	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 103	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 104	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 105	BIOSAT	PROJECT LIST 1	F01	001			
0044	PRIMATE RESTRAINT SUIT	SERIAL NO 106	BIOSAT	PROJECT LIST 1	F01	001			

June 25, 1969

RQA 5339-1
ATTACHMENT C

BONDED STORES

PROJECT PERSONNEL AUTHORIZATION LIST

THE FOLLOWING NAMED PERSONNEL HAVE BEEN AUTHORIZED TO WITHDRAW ARTICLES
OR MATERIALS FROM THIS BONDED STORAGE AREA. THIS APPLIES ONLY TO THOSE ITEMS
LISTED AS THE PROPERTY OF PROJECT _____.

PROJECT LIST
AUTHORIZATION LEVEL

NAME

NOTE: HANDWRITTEN NAMES ARE NOT ACCEPTABLE ON THIS LIST.

SIGNATURE _____

TYPED NAME, TITLE, & ORGANIZATION _____

PER 031

OFF-DUTY BONDED STORES LOG

Name of Guard or Off-Duty Alternate	Name of Individual	Badge Number	Date	Purpose			Bonded Stores Record Number	Item Description/Remarks
				Submittal	Withdrawal	Inspection		
BOB ROTH	JIM SMITH	858	6/5/69	X			0160	MAGNETOMETER
BOB ROTH	MIKE BROWN	298	6/6/69		X		0111	PRIMATE RESTRAINT SUIT
DICK WELLS	TOM McCANN	195	6/9/69		X		0099	FINE SUN SENSOR

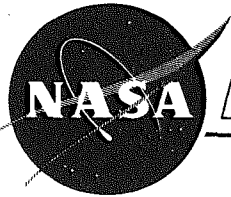
PER 030 (Nov 68)

June 25, 1969

ROA 5339-1
ATTACHMENT D

T.N. No. 2

Page 1 of 1



AMES

RESEARCH CENTER

RQA 5339-13

March 25, 1969

RELIABILITY AND QUALITY ASSURANCE MANUAL

SECTION

R&QA POLICIES, PROCEDURES,
AND INSTRUCTIONS

SUBJECT

Instrument Calibration
& Status Reporting

1. PURPOSE

This article sets forth the procedure for calibration, recall, and status reporting of instruments. This is an element of the Instrument Control System necessary to assure that instruments are maintained in accordance with their original design specification.

2. APPLICABILITY

- a. This article is applicable to the Development Directorate organizational elements for all classes of programs (see RQA 5310-2).
- b. Other organizational elements are responsible to ensure through their own instrument control systems that instruments used by them in conjunction with Space Programs (Class I) are in calibration. The organizational elements may utilize the forms and programs comprising this system.

3. DEFINITIONS

For the purposes of this document, the following definitions are applicable:

- a. Calibration - The process by which a standard or instrument of a given accuracy is checked against a standard of higher accuracy and adjusted as necessary to ensure that the lower accuracy standard or instrument is within the manufacturer's rated accuracy specifications.
- b. Calibration Record - A record which provides a history of information regarding repairs made, parts replaced, standards used to calibrate and adjustments made to instruments or standards.
- c. Instruments - Instruments shall comprise general purpose instruments and special test instruments. This includes equipment, tools, gages, jigs and fixtures used to measure, gage, test, inspect, or otherwise examine articles and materials.
 - (1) General Purpose Instruments are instruments which may be procured as a commercial (off-the-shelf) product by catalog or model number and having general application.

- (b) Calibrate instruments requiring only routine or minor adjustments or which require simple verification of rated value or performance.
- (c) Assure calibration void seals are affixed in appropriate places.
- (3) The Instrument Control Engineer shall:
 - (a) Establish calibration intervals in accordance with Attachment A.
 - (b) Review calibration records and adjust calibration intervals in accordance with the criteria set forth in Attachment A.
 - (c) Perform audits of calibration laboratories to assure proper calibration and maintenance of instruments will be accomplished.
 - (d) Control issuance of NASA-AMES CALIBRATION stickers.
- b. Recall of Instruments
 - (1) The Instrument Consignee shall:
 - (a) Surrender instruments for calibration at the scheduled recall date. Arrangements may be made with the Instrument Controller to have calibration performed before the scheduled recall date where instruments cannot be released on the scheduled recall date.
 - (b) Provide the Instrument Controller with the instrument manual when the manual is not available in the Instrument Control System.
 - (2) The Instrument Controller shall:
 - (a) Arrange for transportation of instruments to and from calibration laboratory.
 - (b) Tag all instruments scheduled for calibration with a completed ARC 523 "Equipment Usage Suspension Tag."
 - (c) Give the stub portion of the tag (ARC 523) to the Instrument Consignee as a receipt for the instrument.
 - (d) Originate an ARC 66 "Request for Shipping Services" when instruments are to be shipped to off-site calibration laboratories.
 - (e) Coordinate shipment and receipt of instruments with Shipping (Property Management Branch) when instruments are shipped off-site.

CALIBRATION INTERVALS

1. Instruments shall be calibrated at periodic intervals established on the basis of stability, purpose and degree of usage.
2. Intervals shall be shortened to assure continued accuracy as evidenced by results of preceding calibrations.
3. Intervals may be lengthened when the results of previous calibration provides definite indications that such action will not adversely affect the accuracy of the instrument, or at the discretion of the Instrument Control Engineer.
4. The instruments listed in Table II on the following pages have been assigned Recall Cycle Codes based on established time intervals as used in the U.S. Navy Standards Laboratory Information Manual (SLIM).

Actual Instrument Recall Frequency is computed from Table I below by using the assigned Recall Cycle Code and the applicable Usage Factor Code. Tabulated numbers indicate days between recall.

RECALL CYCLE CODES	Instrument Recall Frequency		
	1 (light)	2 (moderate)	3 (heavy)
A	720 days	360 days	180 days
B	360 days	180 days	120 days
C	180 days	120 days	90 days
D	120 days	90 days	60 days
E	90 days	60 days	30 days

Example: A torque wrench is assigned a Recall Cycle Code "E" from Table II. This instrument, undergoing heavy usage, would be recalled every 30 days (Code E-3) for calibration check. Normally if usage were determined as "light", it would be recalled every 90 days (Code E-1). However, at the discretion of the Instrument Control Engineer, a particular torque wrench, depending on circumstances of usage or application, might be assigned a different Recall Cycle Code such as "C". This coupled with a light usage factor would give a new recall frequency of 180 days between scheduled calibrations.

5. Recall Cycle Codes for instruments are designated in Table II on the following pages.

TABLE II (Continued)

<u>INSTRUMENTS</u>	<u>CYCLE</u>
Clock, Digital	C
Coder, Modulation	B
Collimator	B
Comparator, Microvolt	B
Comparator, Internal and External	B
Comparator, Impedance	B
Comparator, Thread Measuring	A
Computer, Angle	B
Controller, Temperature	C
Converter, AC-DC	C
Converter, Counter	C
Comparator, Gage Block	B
Converter, Frequency	B
Counter, Electronic	C
Coupler, Directional	B
Crimp Tools	B
Decade, Capacitor	A
Decade, Inductor	A
Decade, Resistor	A
Detector, Leak	B
Detector, Very High Frequency	B
Divider, Voltage	B
Driver, Sweep	B
Filter, Band Pass	A
Filter, Electronic	B
Filter, High Pass	B
Filter, Low Pass	B
Flat, Optical	A
Flat, Toolmakers	A
Frequency Standard	C
Generator, Data	B
Generator, FM-AM-SWEEP	B
Generator, Function	B
Generator, High Frequency	B
Generator, Low Frequency	B
Generator, Noise	C
Generator, Pulse	C
Generator, Radio Frequency	B
Generator, Square Wave	B
Generator, System	B
Gage, Depth	A
Gage, Force	A
Gage, Height	B
Gage, Height, Electronic Readout	B
Gage, Magna	B
Gage, Ionization	B

TABLE II (Continued)

<u>INSTRUMENTS</u>	<u>CYCLE</u>
Meter, Sound Level	B
Meter, Spectra Brightness	A
Meter, Temperature	B
Meter, Vibration	B
Meter, Differential	C
Meter, Volt, Panel	A
Meter, Volt, Portable	A
Meter, VSWR	A
Meter, Volt-Recording	A
Meter, Vacuum Tube Volt Meter	B
Meter, Volt-Transfer-HF	C
Meter, Watt	B
Meter, Watt, Radio Frequency	B
Meter, Wow-Flutter	A
Micrometers (All Types)	A
Micrometer, Super	A
Micrometer, Light Wave	A
Monitor, Modulation	A
Multiplier, Period	C
Multitracer	A
Oscillator, Audio	B
Oscillator, Carrier	B
Oscillator, Sweep	B
Oscillator, Transfer	B
Oscilloscope	B
Oscilloscope, Plug-In	B
Parallels, Box, Taper, Other Types	A
Plate, Surface	A
Plug, Plain	C
Plug, Threaded (Taper)	C
Plug, Threaded (Straight)	C
Potentiometers	A
Power Supplies	A
Pressure Test Set	A
Probes, Heating Rate	A
Pyreheliometers	A
Pyrometers	A
Protractor	A
Q Standards	A
Radiac Detectors	B
Radiometer	B
Ratio Set	B
Receiver	B
Recorder	B
Regulator, Voltage	A

March 25, 1969

RQA 5339-13
ATTACHMENT A

TABLE II (Continued)

<u>INSTRUMENTS</u>	<u>CYCLE</u>
Transit	A
Unit, Time Interval	C
Vacuum System	B
Variator, Pressure-Vacuum	B
Voltage Standard	C
Watch, Stop	A
Weight Set	A
Wires, Thread	A

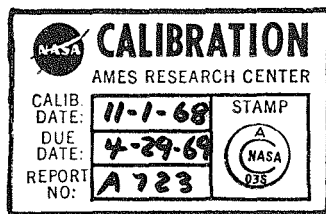
March 25, 1969

RQA 5339-13
ATTACHMENT B

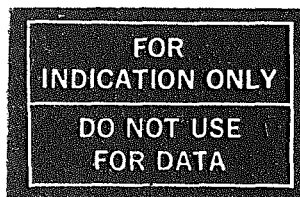
TO BE REMOVED BY CALIBRATION LABORATORY ONLY NASA / AMES RESEARCH CENTER	EQUIPMENT USAGE SUSPENSION TAG		No. 2951	No. 2951
	EQUIPMENT NAME CURVE TRAKER, TEKTRONIX 575			
	I. D. NO. NASA 50000		S/N 001	
	LOCATION BLDG N 244 Rm 217			
	CUSTODIAN PER (GOWAN)		EXT. 2940	
	<input checked="" type="checkbox"/> CALIBRATION REQ'D.		<input type="checkbox"/> MAINTENANCE REQ'D.	
	<input type="checkbox"/> OTHER (EXPLAIN) PLEASE CALL D. GOWAN			
	FOR PICK UP ; EXT 2940			
	DATE 2/18/69		SIGNATURE D. C. Gowan	
	ARC 523 (OCT. 66)			

(black on red)

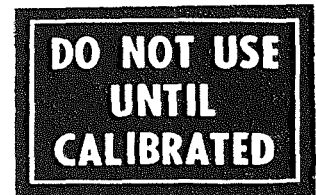
ARC 523 - EQUIPMENT USAGE SUSPENSION TAG



(black on yellow)



(white on green)



(white on red)

ILLUSTRATIONS OF CALIBRATION STICKERS

March 25, 1969

RQA 5339-13
ATTACHMENT C

DECAL NO.	INSTRUMENT DESCRIPTION	MANUFACTURER NAME	MODEL NUMBER	A	B	C	D	E	BLD	F	RM	RPO	F	G	DUE DATE																																																																																																																																																																
INSTRUMENT INFORMATION FIELD CODES																																																																																																																																																																															
NASA-AMES RESEARCH CENTER		A INSTRUMENT CLASS		B APPLICATION			C CALIBRATION AGENCY																																																																																																																																																																								
INSTRUMENT RECORD CARD		1 GENERAL PURPOSE 2 GENERAL PURPOSE LOAN 3 SPECIAL 4 STANDARD 5 PRIVATE PROPERTY		1 SEPARATE INSTRUMENT 2 PART OF ASSEMBLY			01 AMES (FI) 02 AMES (PER) 03 NAS (ALAMEDA) 04 - 99 OTHER																																																																																																																																																																								
CALIBRATION AGENCY CODE		D CALIBRATION REQUIRED		RECALL						C DISPOSITION																																																																																																																																																																					
USAGE FACTOR CODE		1 BY CALIB. LAB. 2 CALIB. AT LOCATION 3 CALIBRATED BY USER 4 INDICATION USE ONLY 5 INSTRUMENT CONTRL.		F USAGE FACTOR CODE						0 REFURBISH 1 CALIBRATION 2 REPAIR (BROKEN) 3 REPAIR (WEAROUT) 4 MODIFICATION																																																																																																																																																																					
DISPOSITION CODE				E CYCLE		1 LIGHT 2 MODERATE 3 HEAVY																																																																																																																																																																									
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ARC 574 - INSTRUMENT RECORD CARD

DECAL NO.	INSTRUMENT DESCRIPTION	MANUFACTURER	MODEL NUMBER	A	B	C	D	E	LOCATION	RPO	F	G	DUE DATE																
LOCATION												DATE		INSTRUMENT	CONSIGNEE														
Bldg		Floor		Room		RPO		Checked Out		Return On		NAME		EXTENSION															
NASA AMES RESEARCH CENTER INSTRUMENT LOCATOR CARD																													
Decal No.	Instrument Description	Manufacturer	Model Number	A	B	C	D	E	Location	RPO	F	G	Due Date																
1	ARC 575 (APR 68)		46 47	55	56	57	58	59	60	61	62	68	69	72	73	74	75	79											

ARC 575 - INSTRUMENT LOCATOR CARD

NASA - AMES RESEARCH CENTER
NONCONFORMANCE REPORT

1022

1. SOURCE OF REPORT	2. CONTRACTOR/EXPERIMENTER	3. PROJECT NAME	4. NONCONFORMANCE DATE	5. RELATED REPORTS
---------------------	----------------------------	-----------------	------------------------	--------------------

6. IDENTIFICATION DATA

NAME	PART / DRAWING NUMBER	SERIAL NUMBER	MANUFACTURER	FED MFG CODE
SYSTEM				
SUB-SYSTEM				
ASSEMBLY				
SUB-ASSEMBLY				
PART				

7. TEST SITE	TEST TYPE	TEST SPECIFICATION	8. ENVIRONMENT
--------------	-----------	--------------------	----------------

9. DETAILED DESCRIPTION OF NONCONFORMANCE

- AMBIENT TEMPERATURE
- HI TEMPERATURE
- LO TEMPERATURE
- VIBRATION
- ALTITUDE
- ACCELERATION
- HUMIDITY
- SHOCK
- RECEIVING INSPECTION / TEST
- HANDLING
- WORKMANSHIP
- OTHER (Specify) _____

ORIGINATOR: _____ ORGANIZATION: _____ EXT: _____

10. DISPOSITION (INSTRUCTIONS)

12. ITEM DISPOSITION

- USE AS IS
- REPAIR
- REWORK
- SCRAP
- OTHER (Specify) _____

RETEST INSTRUCTIONS: _____

11. MATERIAL REVIEW BOARD ACTION REQUIRED: YES NO

COGNIZANT ENGR: _____ PROJ. ENGR: _____ R & QA ENGR: _____

14. ACTION

CORRECTIVE ACTION: _____

13. REPORT DISPOSITION

- NO FURTHER ACTION REQUIRED
- CORRECTIVE ACTION NOT SATISFACTORY
- FAILURE ANALYSIS REQUIRED
- OTHER (Specify) _____

NAME OF COGNIZANT ENGINEER _____

NCR CLOSE-OUT _____

R & QA SIGNATURE _____ DATE _____

15. SUPPLEMENT USED YES NO

FFECTIVITY: _____

	16. NONCONFORMANCE REPORT CODES				DO NOT WRITE BELOW THIS LINE				15. SUPPLEMENT USED						
	PROJECT CODE	MICROFILM LOCATION	NASA-ARC DISPOSITION	COGNIZANT ENGINEER	ITEM	RESP ENGR	CONFIGURATION	TEST	ENVR	SYMPTOM	CRIT	TYPE	CAUSE	DISPOSITION	COR ACT
	_____	_____	_____	_____	1	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	2	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	3	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	4	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

1022

SYSTEM AND COMPONENT HISTORICAL RECORD

1. ITEM NAME	2. ITEM NUMBER	3. DRAWING NUMBER	4. MANUFACTURER	5. SERIAL NUMBER	
6. SYSTEM/SUBSYSTEM	7. PROJECT	8. LIFE LIMITS:	TIME/CYCLES		9. EFFECTIVITY
		OPERATING	STORAGE		

10. SPECIAL HANDLING AND/OR SHIPPING INSTRUCTIONS

11. DATE	12. LOCATION	13. HISTORICAL EVENTS	14. TIME/CYCLES	15. QC STAMP

PROJECT PARTS, DEVICES, AND MATERIALS LIST

NASA-AMES RESEARCH CENTER
MOFFETT FIELD, CALIFORNIA 94035

PROJECT _____

CONTRACTOR _____

CONTRACT NUMBER _____

PAGE _____ OF _____

DATE _____

REVISION _____

ITEM NO	PART, DEVICE, MATERIAL IDENTIFICATION					PROCUREMENT SPECIFICATION		PART, DEVICE, MATERIAL QUALIFICATION DATA	STATUS CODE	QUANTITY USED	REV
	IDEP CODE	GENERIC NAME	MANUFACTURER								
			CATALOG DESIGNATION OR TYPE NUMBER	MFR. FED. SUPPLY CODE	NAME	SPECIFICATION NUMBER	SOURCE CODE				

INSTRUCTIONS FOR PREPARATION OF PROJECT PARTS, DEVICES AND MATERIALS LIST

GENERIC NAME: Enter the basic name of the part or material (e.g., capacitor, resistor, transistor).

HEADING: Enter appropriate project name, contractor's name, NASA contract number, and list revision letter and date of revision, in spaces provided. All pages of the "Project Parts, Devices, and Materials List" shall bear the same revision letter and date of review.

IDEP CODE: Enter the first five digits of the IDEP code index number (XXX.XX) using IDEP II "Codes for Establishing Index Number".

ITEM NO.: Enter the reference number assigned to each specific part or material type. All subsequent correspondence, reports, revisions, etc., should contain this number for ready identification.

CATALOG DESIGNATION OR TYPE NUMBER: Enter the manufacturer's catalog designation (type number or related E.I.A. registration number).

MANUFACTURER'S FEDERAL SUPPLY CODE: Enter the Federal supply code number listed in Federal Cataloging Handbook H-4 of the actual producer of the part or material.

NAME: Enter the name of the producer of part or material.

SPECIFICATION NUMBER: Enter the number of the procurement specification being used. This shall include the general specification and the detail specification slash number or drawing number, as applicable. Where multiple levels of reliability and/or quality conformance inspection are defined in the specification, the actual level procured shall be identified.

SOURCE CODE: Enter the federal supply code number in Federal Cataloging Handbook H-4 assigned to the source listed in the column entitled "Specification Number". A code number is not required when Military or Federal Specifications or Standards are used for procurement.

STATUS CODE: Enter the code defining usage level or restriction, and test status as shown:

USAGE X TEST STATUS F

S Unrestricted	Q Qualification Test Completed
M Essential/Nonessential Ground Equipment	P Qualification Test in Progress
G Nonessential Ground Equipment	S Engineering Evaluation Test Completed
X Restricted Use (Use of each item so classified must be justified in writing and have the approval of the contractor's parts engineering group and the ARC Contract Administrator.)	R Engineering Evaluation Test In Progress
	N Testing Not Required
	F Test Results Unacceptable
	T Previous Program or Data Bank Test Results Used

NASA DISPOSITION: (To be completed by NASA only.)

A Acceptable
U Unacceptable
L Limited to use in unique application
P Temporarily acceptable pending results of qualification test

Footnotes will be used to refer to the applicable note explaining the reason for the indicated disposition. Notes will be found on the NASA attachment to the "Project Parts, Devices, and Materials List". For revised lists, the previous NASA disposition shall be incorporated prior to submittal.

LINE ITEM REVISION LETTER: The revision letter shown for each line item should be the revision letter of the entire list at the time the line item was added, deleted, or otherwise revised.

QUANTITY USED: Enter the actual quantity (and the units of measure) being used per system. Do not enter quantity if the line item is the second or third source supply for the specification entered in the column entitled "Specification Number". This may be estimated for the lists submitted during early phases of the project and revised for later submittals.

PART/MATERIAL QUALIFICATION DATA: Enter the number of qualified products list associated with the actual government procurement specification being used for the part or material, or other basis of qualification (i.e., contractor's test report number, IDEP test report number, etc.). The scheduled completion date of any qualification or evaluation tests being conducted, the results of which are intended to verify the acceptability of the item.

PROJECT PARTS, DEVICES, AND MATERIALS LIST									
Biosatellite General Electric NAS2-1900		PAGE 14 OF 73		DATE April 1967		REVISION K			
ITEM NO.	QTY	GENERIC NAME	CATALOG DESIGNATION OR TYPE NUMBER	SPECIFICATION NUMBER	NAME	SOURCE CODE	STATUS CODE	QUANTITY USED	REV
167	742.40	Trans.	STC - 5634 (241724)	07256	Silicon Trans. Corp.	R2468 15226	QPL-19500 TR-5629	SQ A 8	H
168	742.20	Trans.	2N2222 USA	01295	Texas Instruments	MIL-S-19500/255	QPL-19500	SQ A B/ L	H
169	152.76	Cap.	69F370	06001	General Electric	R2944 15226	QPL-3965	XF L 16	A
176	153.20	Cap.	CK06	96095	Aerovox Corp.	MIL-C-11015	QPL-11015	SQ A 450	F
177	742.50	MOSFET	2N3608	07216	Philco-Ford Corp.	None	July 1967	SR U 4	H
178	651.50	Resistor	GEM-60	12400	IRC, Inc.	MIL-R-55182/3 Level R	QPL-55182	SQ A 96	K