COPY NO._____

QUALITY PROCEDURES MANUAL

Operation and Procedures
of the
Quality Assurance Program
for the
Saugus Facility
of
NATIONAL TECHNICAL SYSTEMS

Rewritten: 24 October 1980

Revision C: 7 July 1982

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PDR FOIA
CURRAN85-863 PDR

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REVISION SUMMARY
Revision C, 7 July 1982

Page(s) Affected	Paragraph	Description of Change
Title	-----	Deleted Chatsworth facility and changed Canyon Country to Saugus
ii	1st	Same as title page
ii	2nd	Added MIL-STD-45662
ii	-----	Revised signatures
iii, iv, & v	-----	Revised to reflect changes
1	1.1.1	Changed NHB 5300.4 (1C) to NHB 5300.4 (1D-2) and added MIL-STD-45662
1	1.1.3	Changed Executive V. P. to Laboratory Operations Manager and deleted last sentence
1	1.1.5.1	Added "sections" & "section"
2	1.1.5.3	Revised to describe current procedure
3	1.2.4.1	Deleted reference to page 6
5	Org. Chart	Revised to reflect current organization
6	Org. Chart	Deleted Org. Chart for Chatsworth facility and renumbered subsequent pages
7	2.2.1	Added item 14
7 & 8	2.2.2	Reorganized to improve clarity Deleted requirement for "... four or more tests, ..."

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REVISION SUMMARY
Revision C, 7 July 1982

Page(s) Affected	Paragraph	Description of Change
9	2.4.2	Deleted requirement for "... more than three tests, ..."
9	2.4.3	Reworded to improve clarity
10	Job Traveler	Revised to reflect new form
10a	Job Traveler	Added to reflect new form
12	2.6.1	Reworded to improve clarity
14	3.1 thru 3.2.3	Reworded to reflect current practice
16	Rec. Insp. form	Deleted (no longer used)
16a	Rec. Insp. form	Renumbered to become "15"
19	4.3.1.1	Added word "legible"
24	5.2 thru 5.2.3	Revised to reflect current practice
25	Shipper form	Revised to reflect new form
26	6.2.1	Added word "legibility"
26	6.2.5	Changed ten years to three years
28	7.3.4	Added to describe new stamp
29	8.2.4	Revised to reflect current practice
33	8.3.4.4	Added new paragraph
36	9.1 & 9.2.1	Revised to reflect current practice
37	10.2	Changed "Corporate Office" to "SSG Data Processing Center" and revised 5th sentence to reflect current practice
40	10.4.1	Changed "equipment" to "standards" in last sentence

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Page(s) Affected	Paragraph	Description of Change
41	Label	Corrected referenced paragraphs
42	10.5.4	Changed "...Department at the Corporate Office..." to "... Data Processing Center..." and Changed "...generate..." to "...update..." in last sentence
43	10.6.1	Deleted "Fixed Actuators"
46	10.9.3	Deleted Chatsworth facility
46 & 47	10.11	Added new paragraph
53	12.3	Added title "Audit Report"
53	12.3.1	Was 12.3
53	12.3.2	Was 12.4
54	12.4	Added title "Audit Follow-up" (was 12.5) and reworded items a and c to improve clarity and syntax
54	12.5	Added title "Record Keeping" was 12.6
57	14.4.3	Corrected paragraph number (was 14.2.3)
57	14.4.4	Corrected paragraph number (was 14.2.4)
A-3	1st	Deleted reference to Chatsworth and Canyon Country facilities
A-3	2nd	Deleted 2nd sentence referencing "... Organization Chart on the following page ..."
A-3a	Org. Chart	Deleted
A-5	6th	Added option of registered P.E.
A-12	Last	Corrected spelling of word "Section"

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Page(s) Affected	Paragraph	Description of Change
A-16	2nd	Revised first sentence
A-16	3rd	Deleted exception to paragraph 6.2.5
A-24	Ref.	Changed "90CFR50..." to "10CFR50..."
Throughout		Corrected numerous references to page and paragraph numbers which were changed due to the revisions described above.

These revisions reviewed and approved by:

ROBERT A. ELY, Quality Assurance Manager, Saugus Facility

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REVISION SUMMARY

Revision	Date	Page(s) Affected	Paragraph(s) Affected
B	10-30-81	All	Reprinted on NTS paper
B	10-30-81	Numerous	All references to Approved Engineering Test Laboratories & AETL have been changed to National Technical Systems, and NTS respectively.
B	10-30-81	Numerous	References to QC Manager & QC manual have been changed to QA Manager & Quality Procedures Manual respectively.
B	10-30-81	Cover	"Chatsworth and Canyon Country Facilities" was "Valley and Saugus Facilities"
B	10-30-81	1,3,7,11,12	1.1.3, 1.2.2.1, 1.2.4.1, 2.2.2, Job Traveler, 2.4.5.1, 2.5.2
B	10-30-81	13-15,21,22	2.6.1, MJO form 3.2.2, 4.3.3.1, data sheet form
B	10-30-81	23,24,26	4.4.1 b, NOD form, Shipper form
B	10-30-81	28,29	7.2.9.1, 7.2.9.1.1., 7.2.9.2, 7.2.9.2.1, 7.2.9.3, 7.3., 7.3.1, 7.3.2, 7.3.3
B	10-30-81	31-34	8.3.3.1, Supplier Questionnaire form
B	10-30-81	36	Purchase Order form, 9.2.5
B	10-30-81	38,44	10.1.1, 10.6.5
B	10-30-81	46,50	10.9.3, Request for Corrective Action form
B	10-30-81	51,55	12.2.4, 13.2.7

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REVISION SUMMARY

Revision	Date	Page(s) Affected	Paragraph(s) Affected
B	10-30-81	A-2	1st and 2nd paragraphs
B	10-30-81	A-3a	Added Organization Chart
B	10-30-81	A-7,8	Element III was rewritten
B	10-30-81	A-14	Element IX was rewritten
B	10-30-81	A-16	Element XI was rewritten
B	10-30-81	A-19	2nd paragraph of Element XIV
B	10-30-81	A-25	Element XIX was rewritten

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REVISION SUMMARY

Revision	Date	Page(s) Affected	Paragraph(s) Affected
A	7/9/81	ii; 2	Signature Block; 1.1.5, 1.1.6, 1.1.7
A	7/9/81	5; 6; 11	Org. Chart; Org. Chart; 2.4.4.1
A	7/9/81	17; 18	3.1.1, 3.2.1, 3.2.3, 3.2.4; 3.3.2
A	7/9/81	22; 34	4.3.1.1, 4.3.2.3; 4.4.1 b, 4.4.5
A	7/9/81	36; 38; 41	5.2.1; 6.2.5; 8.2.2 d, 8.2.3, 8.2.4
A	7/9/81	56; 58; 59	10.5.4; 10.6.5; 10.9.1, 10.9.2
A	7/9/81	59; 60; 63	10.9.3, 10.9.4; 11.2.3; 12.1.1, 12.2.1
A	7/9/81	64; 65; A-11	12.2.4.1 a; 12.3; 3rd and 4th paragraphs
A	7/9/81	A-12	Inserted 2nd paragraph
A	7/9/81	A-17	2nd sentence, corrected referenced paragraphs
A	7/9/81	A-22	2nd paragraph
A	7/9/81	A-24	Added Element XIX

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FOREWORD

This manual describes the procedures by which quality control functions are performed at the Saugus facility of National Technical Systems Testing Division (NTS).

The quality control program at NTS has been established to comply with the requirements of MIL-I-45208A and those portions of: MIL-Q-9858A, and NHB 5300.4 (1D-2), that are applicable to a testing laboratory. The equipment calibration system complies with the requirements of MIL-C-45662A and MIL-STD-45662.

This manual is subject to annual review, and revision if necessary. It shall be revised whenever it is found to be seriously deficient, and whenever operational changes within the organization make revisions necessary.

When reviewing the procedures described in this manual, it should be remembered that NTS Testing Division is engaged only in providing testing services, and manufactures nothing. Because some elements of a quality program that are applicable to a manufacturer of deliverable hardware do not apply to a service organization such as NTS, they are therefore not addressed in this manual.

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1.0 POLICY AND ORGANIZATION

1.1 Quality Control Program

1.1.1 Policy

The quality control program described in this manual has been established to comply with the requirements of MIL-I-45208A, and those portions of MIL-Q-9858A and NASA Handbook NHB 5300.4 (1D-2) that are applicable to a testing laboratory. The calibration control system has been established to meet the requirements of MIL-C-45662A and MIL-STD-45662. Additional specific procedures, applicable only to testing performed for the nuclear power industry, are contained in the Appendix "Supplementary Quality Control Procedures for Nuclear Power Industry Contracts". The Quality Control Department shall assure conformance to NTS' established policy of strictly adhering to all Government regulations relative to quality control, as they apply to an independent test laboratory.

1.1.2 Purpose and Scope

The procedures contained in this manual have been established for the purpose of providing a system by which the integrity, accuracy, and quality of all testing and other services may be assured as being commensurate with the requirements of the applicable test specifications and contractual documents.

1.1.3 Applicability

This program, as described in this manual, is applicable to all government and commercial contracts. The quality control procedures described in this manual may be superceded by other specifications or procedures only when specifically made a part of a particular contract, and then only with the approval of the Laboratory Operations Manager.

1.1.4 Significance

The procedures delineated in this manual and in any other documents executed in implementation thereof, shall be in addition to, and not in derogation of, other contract requirements.

1.1.5 Quality Procedures Manual

1.1.5.1 Format

This manual is comprised of numbered sections and paragraphs. Each section covers a particular element of the quality control program.

1.1.5.2 Revisions

Revisions to this manual may be effected by means of formal revisions or by interim procedures which have been approved by the Quality Assurance Manager. This manual shall be reviewed at least annually, and shall be revised as necessary. This manual shall also be revised, as necessary, whenever significant operational changes are made within the company. Pages and paragraphs affected by revisions to this manual shall be identified on a revision summary page which shall also indicate the concurrence and approval of the persons who signed the original manual. The currently effective revision applicable to each page shall appear in the upper right corner of each page of this manual. The currently effective revision of the manual itself shall be indicated by revision letter and date on the cover. If applicable, the re-affirmation date shall also appear on the cover. Holders of "controlled" copies of this manual shall be notified of revisions in accordance with the procedure described in paragraph 1.1.5.3.

1.1.5.3 Distribution

To ensure control and proper distribution of the Quality Procedures Manual and revisions thereto, the Quality Assurance Manager shall maintain a record of controlled copies; listing: copy number, revision letter, issue date, identity of recipient, and receipt verification. Verification of receipt of mailed copies is accomplished by return of a signed and dated facsimile of the manual's title page. Hand-delivered copies are acknowledged by the recipient's signature in the "remarks" section of the control log. Upon verification of receipt, a preaddressed mailing label is filed for mailing of future revisions and the verification date is entered in the "remarks" section of the control log. Considering varying contractual obligations and distribution costs, copies of the Quality Procedures Manual are not considered to be "controlled copies" until receipt is acknowledged.

1.1.6 Quality Control Costs

It is the policy of NTS to keep the cost of its quality control program consistent with the actual needs of each element of the overall quality control program. Elaborate and complex procedures shall be avoided. No quality control cost record program is embraced within this manual, since nearly all of NTS' quality costs consist of equipment maintenance and calibration costs, and test monitoring costs.

1.2 Organization and Responsibilities

1.2.1 Program Management

1.2.1.1 Every job received for testing is assigned to a Test Engineer whose primary responsibility is to review the contract, understand the

requirements, determine the best way to accomplish the required tests or analyses, determine the data requirements, schedule the work, coordinate the test program within the NTS organization and act as a liaison person with the customer, and submit the billing information to the Contracts Department.

1.2.1.2 It is also the responsibility of the Test Engineer to assure that the technicians working under his direction are conducting the test program in accordance with requirements of the test specification or procedure.

1.2.2 Test Coordination

1.2.2.1 Test technicians working under the direction of the Test Engineer are responsible for completing the portion of the test program assigned to them, including: test specimen examination, test setup and proper handling of the test specimens, recording and maintaining complete and accurate test data, performing the tests in accordance with the test procedures or specifications, and post-test cleanup.

1.2.2.2 Each portion of the test program will be performed by technicians who are suitably qualified for the task.

1.2.3 Contract Administration

1.2.3.1 Preparation of job instruction forms (MJO's), processing of the customer's purchase order, contract administration, and storage of job records are the responsibility of the Contracts Department.

1.2.3.2 The Contracts Administrator shall verify conformance of the statement of work, price, terms and conditions, and other information on the customer's purchase order, to NTS' quotation, and shall prepare the acknowledgement to the customer. The Contracts Administrator shall verify that NTS has received the applicable test specifications, test procedures and/or instructions for testing. The Contracts Administrator is also responsible for distributing the job package to the proper departments and activities within NTS, and for invoicing the customer.

1.2.4 Quality Assurance

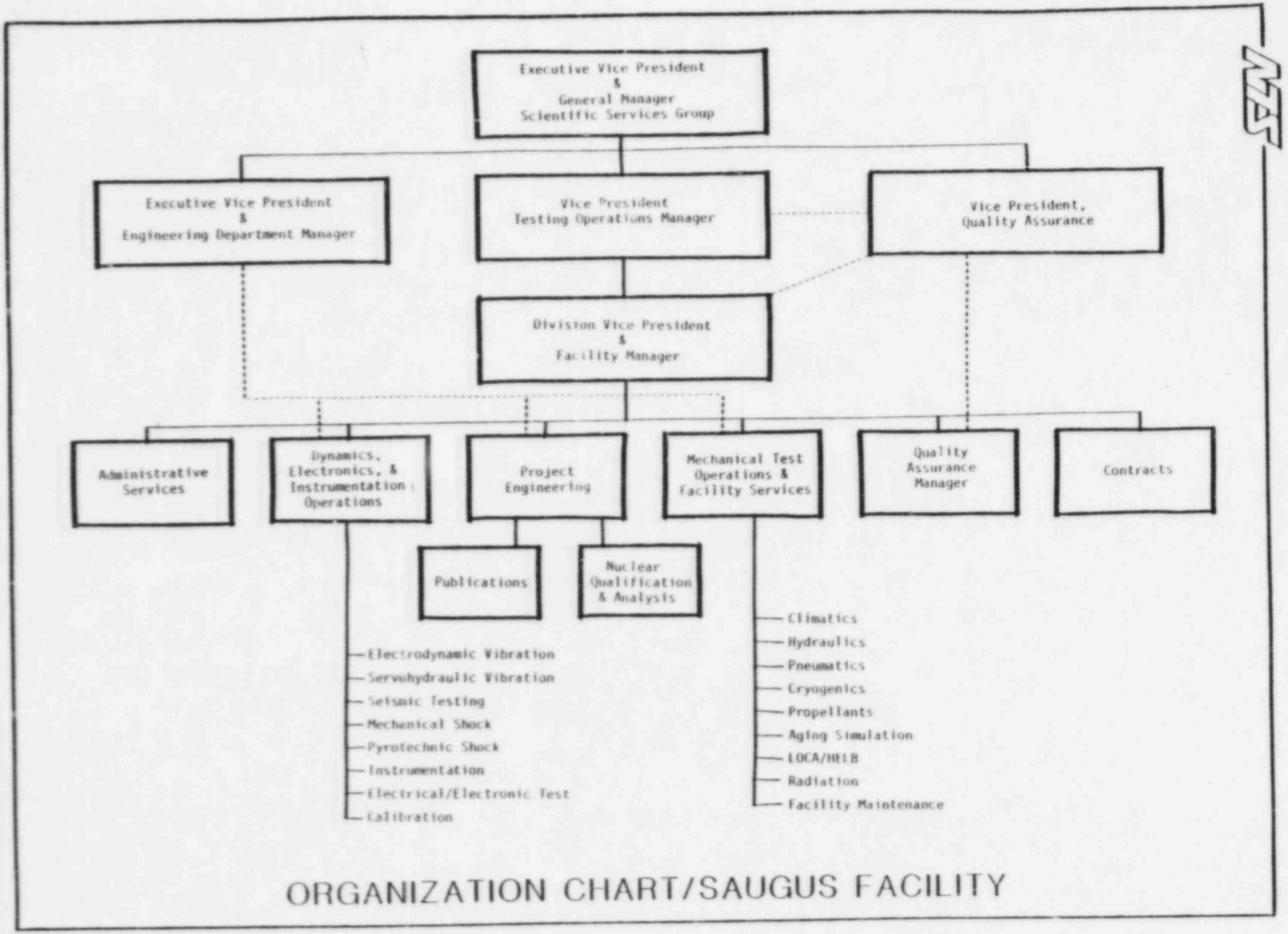
1.2.4.1 The Quality Control Department operates independently of those departments directly responsible for the performance of testing programs, and has direct access to top management, as shown on the Organization Chart on Page 5.

1.2.4.2 The Quality Assurance Manager has been authorized by the Director of Laboratory Operations to stop testing or other work in the event of a serious non-conformance with the procedures described in this manual or in any applicable test specification.

1.2.4.3 The primary responsibility of the Quality Control Department, is to devise and implement the managerial controls necessary to assure the integrity and proper quality level of tests conducted by NTS on behalf of its customers and the United States Government.

1.2.4.4 Quality Control Department personnel are responsible for implementing the quality control procedures described in the manual, and for taking appropriate action, as necessary, to assure that NTS's established quality standards are maintained; and for assuring that all testing and other services are in compliance with contractual requirements and the applicable specifications and regulations.

1.2.4.5 The Quality Control Department shall be responsible for the issuance, revision, withdrawal, distribution, and control of quality control plans and procedures, and changes thereto.



ORGANIZATION CHART/SAUGUS FACILITY

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2.0 TEST PROGRAM PLANNING

2.1 General

The following procedures describe the manner in which customers' purchase orders are translated into job instructions, test plans, and definitive test procedures.

2.2 Job Initiation

2.2.1 Before any testing or other processing begins, the following procedure shall be followed:

Upon receipt, the customer's purchase order, packing slip, shipper, test specification, drawings, and any other pertinent technical or contractual documents, as available, shall be forwarded to the Contracts Department for initiation of the Master Job Order. The Contracts Department shall review the above documents and NTS' Quotation, and then translate the requirements into job instructions by entering the information into the Master Job Order (MJO). The MJO (see Page 8) shall include the following information:

1. Master Job Order number.
2. Contract type.
3. Customer's name, address, telephone number and contact.
4. Date of job opening.
5. NTS Quotation number.
6. Purchase Order number.
7. Reference or Shipper number.
8. Name of Test Engineer to whom the test program has been assigned.
9. Inspection Requirements, including Government contract number and priority rating, if applicable.
10. Test Specimen name, part number, serial number(s), and quantity.
11. Test Specification Number, Test Procedure Number, and/or Drawing Number and all applicable revisions.
12. Report requirements.
13. Specific job instructions and any unusual requirements (in narrative form).
14. GSI, PHOTO, T&M, or "Caution - Explosives" "reminder-stamp" impressions, as required.

2.2.2 Upon Completion of the MJO form by the Contracts Department, the MJO form, the customer's purchase order, and any accompanying specifications or drawings shall be forwarded to the Facility Manager and the Quality Assurance Manager for review. The Quality Assurance Manager shall also review the customer's purchase order as delineated in Paragraph 2.3. After their review and approval, all of the above (called the "Job Package") shall then be returned to the Contracts Department which will route it to the Test Engineer to whom the test program has been assigned.

When Government source inspection is required, a copy of the MJO and the purchase order shall be forwarded to the DCAS Quality Assurance Representative (QAR) by the Contracts Department. The Test Engineer shall review the MJO and other documents and verify that there are adequate job instructions for the test technicians. The Test Engineer shall also review the MJO with regard to any requirements for source inspection, so that any cognizant source inspectors may be notified prior to the start of testing. A Job Traveler form shall be prepared by the Test Engineer, as described in Paragraph 2.4. The Job Traveler shall become a part of the Job Package, and thus, a part of the permanent data for that test program.

2.2.3 Any changes in the original contract, whether originated by the customer or by NTS, shall be in writing, and shall be reviewed in the same manner as the original contract.

2.3 Purchase Order Review

2.3.1 This procedure establishes the general requirements for the review of purchase orders received by NTS from its customers. The customer's purchase order shall be reviewed to ensure that all instructions are understood and that there is no information lacking which could cause a discrepancy during the performance of the service ordered. In the event that there is a lack of information or an instruction that is not clearly understood, the Contracts Department shall contact the customer and request an explanation or clarification and/or an amendment to the original purchase order. Copies of such clarification or amendment shall be forwarded to the DCAS QAR when a job requiring Government Source Inspection is involved.

2.3.2 Review Procedure

2.3.2.1 In addition to the review by the Facility Manager, purchase orders received by NTS shall be reviewed by the Quality Control Department after the Master Job Order has been completed by the Contracts Department (reference Paragraph 2.2.1). The review procedure shall include, as applicable, a check for the following information:

A. Adequate Specifications
   1. Military Specifications and current amendments.
   2. Contractor specifications.
   3. Customer specifications.

B. Government Contract and Priority Numbers

C. Inspection Requirements
   1. Government Source Inspection.
   2. Contractor Source Inspection.
   3. Customer Source Inspection.

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Sheet 1 of ___

MJO No.

CONTRACT TYPE:
☐ SINGLE FIXED PRICE ☐
☐ BLANKET T&M ☐

MASTER JOB ORDER

CUSTOMER _____ DATE: _____ QUOTE NO. _____
DIVISION _____ P.O. NO: _____
ADDRESS _____ REF. NO: _____
_____ SHIPPER NO: _____
PHONE _____ EXT _____ ENGINEER: _____
CONTACT _____ CONTRACTS AUTH: _____

INSPECTION:
GSI: Yes ☐ No ☐ CUSTOMER Yes ☐ No ☐ OTHER SOURCE Yes ☐ No ☐ _____
GOV'T CONTRACT NO: _____ PRIORITY: _____

COS NO.	DATE	REMARKS

TEST SPECIMEN(S): _____
PART NO(S): _____
SERIAL NO(S): _____
QUANTITY _____ DATE REC'D _____
OVERTIME AUTHORIZED Yes ☐ No ☐
SHIPPING INSTRUCTIONS: _____

TEST SPECIFICATIONS: _____
_____ REV _____
TEST PROCEDURE _____
_____ REV _____
DRAWING NO: _____ REV _____

REPORT INFORMATION:
NOT REQUIRED ☐ DATA ONLY ☐
CERTIFICATION ☐ FORMAL ☐
PHOTOS ☐ TYPE _____
NO. COPIES _____ NO. REPROS _____
PER SPEC: _____

TEST SPECIMEN EXPECTED: _____ TESTING TO BEGIN: _____
EST. COMP. DATE: _____ ACT. COMP. DATE: _____
DATE SPECIMEN(s) RET'D: _____ SHIPPED VIA: _____
NTS SHIPPER NO. (s): _____ ATTACHED: Yes ☐ No ☐
DATE REPT. COMP: _____ REPT. SENT TO CUST.: Yes ☐ No ☐
WRITTEN BY: _____ TYPED BY: _____

JOB INSTRUCTIONS:

BILLING DATE _____ INV. NO. _____ INV. AMT. _____

ENGINEERING

D. Proper identification and nomenclature of parts to be tested or analyzed.

E. Adequate packaging and shipping instructions.

2.3.2.2 It is the responsibility of the Contracts Department to forward copies of all purchase orders received by NTS to the Quality Control Department.

2.3.2.3 The Quality Assurance Manager, or his delegate, will apply his initials or a square QA inspection stamp impression to the purchase order as evidence of review.

2.4 Use of Job Traveler Form

2.4.1 Purpose of Job Traveler Form

The purpose of the Job Traveler form (see Pages 10 and 10a) is to indicate the status of the test program and the completion of the individual tests, processes, and inspection operations in the test program. In addition, it is an excellent planning tool.

2.4.2 Initiation of Job Traveler

It is the responsibility of the Test Engineer to complete the Job Traveler form, prior to the start of testing, showing all tests to be conducted, functional testing or other special requirements between specified tests and all mandatory "hold-points". The sequence of testing shall be at the option of the Test Engineer unless the sequence of testing has been specified by the customer's specification and/or purchase order.

2.4.3 Use of Job Traveler

QC stamp impressions or hand-written initials will be placed in the appropriate column of the Job Traveler form by the cognizant Test Engineer and/or the QA Manager when it has been ascertained that the test or other process has been conducted in accordance with the applicable specifications. After a particular test or process has been approved, the next test or process in the sequence may be started. Any failure or deviation shall be briefly noted in the "remarks" column of the Job Traveler form, as will any NODs or COPs.

2.4.4 Specified Sequence

When the sequence of testing has been specified by the customer's specification or purchase order, all tests shall be listed and the sequence for each shall be shown in the test sequence column. All required operations occurring between tests shall be listed as they are to be accomplished and shall be sequentially numbered in the

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JOB TRAVELER

NON-NUCLEAR

SEQUENCE	TEST OR OPERATION	CUSTOMER PROCEDURE PARAGRAPH NUMBER / NTS TEST PROCEDURE PARAGRAPH NUMBER	COMPLETION/INSPECTION: [illegible]	DATE	CUSTOMER OR QCI	Q.A. ITEMS	WO NO. _____ REMARKS
	Receive & Inspect Test Specimens & other equipment (Verify P/N & S/Ns						DCAS Rel'd: Yes___ No___
	Test Procedure Approved				X		Part No. _____ Spec. No. _____
	Data Sheet Started				X		
	Equip. & Instrs. calibrated & ready				X		Loan Items:
	Perform a System Checkout Pre-Test Calibration)				X		Supervisor's signature/date required - See Note (2)
	OK to start (signed by QC or Supv.)	*		*	*	*	Under and Controls OK___ Over and Controls OK___ Press. Relief Valves OK___
	Acceleration						* DCAS Notified Yes___ No___
	Transport Vibration						
	Vibration						
	Shock						
	Temperature						
	Salt Spray						
	Sand & Dust						
	Humidity						

COMMENTS: NCDR's: _____ * OPERATION QA's: _____ S/N's: _____

NDE: X-Ray Dye Pent.; etc.___ Photos___ SC Cert. Only___ REMOVALS: CHSR _____ SC_____

NOTE: (1) Test Sequence must be followed.
(2) The prior operation number must be signed or stamped off before the next operation is started. Quality Control and Customer when required.

Form 3-27-81 RE REV. E (6-28-82)

JOB TRAVELER

NUCLEAR

INITIALS	TEST OR OPERATION	CUSTOMER PROCEDURE PARAGRAPH NUMBER / NTS TEST PROCEDURE PARAGRAPH NUMBER	COMPLETION/INSPECTION DATE	CUSTOMER	QC	ITEMS	REMARKS
	Receive & Inspect Test Specimens & other equipment Verify P/N & S/Ns						Customer Rep Present: Yes__ No__
	Test Procedure Approved				X		Rev. No. _____ Date No. _____
	Data Sheet Started				X		
	Equip. & Instr. calibrated & ready				X		Cert. Nos.
	Perform a System Checkout				X		Supervisor's Signature/Date required - See Note 1
	OK to start (signed by QC or Supv.)	*	*	*	*		Under Temp. Controls OK____ Over Temp. Controls OK____ Press. Relief Valves OK____
	Baseline Functional Test						**Customer Notified Yes__ No__
	Radiation Test						
	Post-Radiation Functional Test						
	Thermal Aging						
	Post-Thermal Aging Functional Test						
	Cyclic Aging						
	Post-Cyclic Aging Functional Test						
	Seismic						
	Post-Seismic Functional Test						
	Environmental						
	Post-Environmental Functional Test						
	OBE/LOCA						
	End Point Functional Test						

COMMENTS: NDD(s)_____ & OPERATION NO(s): _____ D/R's: _____

NDE: X-Ray Dye Pent., etc.___ Photos___ APPROVALS: CVGA _____ _____

NOTE: 1) Test sequence must be followed.
2) The prior operation number must be signed or stamped off before the next operation is started. Quality Control and Customer when required.

Form 3-27-81 RE REV. C (6-24-82)

order by which they are to be accomplished. When the sequence of operations has been specified, as above, no operation or test shall be commenced until the Job Traveler has been initialed or stamped, indicating that the previous operation or test has been completed.

2.4.5 Optional Sequence

2.4.5.1 In those instances where test sequence has been left to the discretion of the NTS Test Engineer, he shall fill in all the required data as to operations and/or tests required, prior to the start of test, but he will not fill in the sequence of testing. The sequence column will be left blank, except for the word "optional" written down the column. The actual sequence of testing shall be indicated by sequentially numbering each operation or test as it is accomplished.

2.5 Test and Inspection Planning

2.5.1 The Test Engineer is responsible for collecting the necessary specifications, drawings, and test procedures, and including them in the job instruction package that is used by the test technicians. It is also the responsibility of the Test Engineer to assure that the test technicians are conducting the test program in accordance with the requirements of the specifications. This responsibility is in addition to the responsibility of the Quality Control Department to assure specification compliance, integrity, and testing accuracy.

2.5.2 Prior to beginning testing, any source inspectors that have cognizance of the test program shall be notified. Testing shall not begin until the review of contract documents described in Paragraphs 2.2.2 and 2.3.2 is completed and any cognizant source inspectors have been notified of the test schedule by a Quality Control representative or by the Test Engineer.

2.5.3 NTS Quality Control representatives, DCAS, and outside source inspection personnel shall be advised by the Test Engineer of the test schedule sufficiently in advance of the actual test to permit their arrival for the purpose of witnessing the tests.

2.5.4 The Test Engineer is responsible for coordinating with other NTS departments and with vendors on any sub-contracted test, including inter-division (within the NTS organization) transfer. The Test Engineer shall verify that the proposed vendor is on NTS's list of approved vendors; and shall provide the vendor with all the necessary test specifications or test procedures, and any other information that may be required to properly conduct the test being subcontracted or transferred. The Test Engineer shall be responsible for the preparation of the purchase order to the vendor, or the

Inter-division Job Transfer form in the case of inter-division transfers; and shall assure that the purchase order or Inter-division Job Transfer form has been reviewed by the Quality Assurance Manager prior to its release. In the case of a test program requiring DCAS quality inspection, the purchase order or Inter-division Job Transfer form shall also be reviewed by the DCAS QAR prior to its release. The Test Engineer shall be responsible for coordinating with the vendor on the actual performance of the test, including scheduling, arranging for any required inspection, evaluation of the vendor's test methods, packaging and transportaton of the test specimens, and acceptance of the vendor's test data or test report.

2.6 Test Procedures

2.6.1 Test procedures written by NTS shall be reviewed by the Quality Control Department to assure that the procedure delineates a feasible means of accomplishing the tests or processes in accordance with the requirements of the applicable specifications. The procedures shall be written in sufficient detail to preclude the possibility of misunderstanding or misinterpretation of exactly what is to be accomplished. The procedures shall describe the function(s) that will be tested, the manner in which each function will be measured, the equipment that will be used to measure the function; and shall include: schematic diagrams, charts, sample data sheets, and any other information that may be required to present a clear description of what is to be accomplished. The procedure shall also describe any special handling, storage, or shipping requirements in adequate detail. The review and concurrence of the Quality Assurance Manager will be evidenced by his signature on the approval page of the procedure. The test procedure shall then be submitted to the customer for review and approval.

2.6.2 In the event that a test procedure or specification, either written by NTS or provided by the customer, is to be revised "on-the-spot" during the course of a test program, a Change of Procedure (COP) form (see Page 13) shall be executed by the responsible NTS Test Engineer. The COP form shall be completely filled in, and shall clearly state the change, the reason for the change, who initiated the change and his company affiliation; and shall be dated and signed by the authorized representative of the customer and by NTS' responsible Test Engineer. The original COP form will become a permanent part of the job package and will be filed with it. Copies of the COP form will be provided to the customer's representative and NTS' Quality Assurance Manager. In the event that the test program requires Government Source Inspection, a copy shall also be provided to the DCAS QAR.

CHANGE OF PROCEDURE

CUSTOMER _____ MJO NO. _____

PART NAME _____ P.O. NO. _____

PART NO. _____ C.O.P. NO. _____

SERIAL NO. _____ DATE _____

TEST SPECIFICATION _____ REV _____ PARA. NO. _____

TEST TITLE _____

CHANGE REQUESTED _____

REASON _____

C.O.P. INITIATED BY _____ OF (Company) _____

CUSTOMER NOTIFICATION

MADE TO _____ HOW _____

DATE AND TIME _____ BY _____

APPROVAL

CUSTOMER REPRESENTATIVE _____

NTS ENGINEER _____ NTS QC _____

DCAS NOTIFIED [ ] Yes [ ] N/A DATE _____

3.0 RECEIVING INSPECTION

3.1 General

This procedure describes the methods that are employed to perform inspection of incoming test specimens. This procedure is also applicable to purchased materials and supplies to the extent that it is reasonable and appropriate for the particular material or supply involved. Receiving functions are to be performed by the assigned Receiving Department person.

3.2 Procedure for Test Specimens

3.2.1 Upon receipt, the Receiving Department person shall perform a cursory inspection of all test specimens prior to the performance of the test program. Receiving Department personnel shall also perform a cursory inspection of all explosives prior to their storage in approved facilities or areas or the performance of any testing. Test specimens and all explosives shall be visually inspected for evidence of damage, and for conformance to the shipping document (with regard to quantity, part number, and serial numbers).

3.2.2 Should a test specimen deviate from the shipping documents or if there is any evidence of damage, a note of the damage or discrepancy will be made on the Receiving Inspection Data Sheet form (see Page 15) and the Quality Control Department shall be notified so that they may validate the discrepancy.

3.2.3 In the event that there is damage to a test specimen or there is some other discrepancy, the Quality Control Department and/or the Cognizant Test Engineer shall be notified. The Test Engineer shall notify the customer immediately and no tests will be performed until the customer authorizes NTS to proceed with the test program. When Government source inspection is required, the cognizant DCAS QAR shall be notified immediately upon discovery of the damage or discrepancy, so that he may verify the conditions of the test specimen as it was received.

3.2.4 When any portion of a test program requiring Government source inspection has been subcontracted to an outside laboratory, evidence of inspection by the cognizant Government agency at the supplier's facility shall accompany the test specimen upon its return to NTS. In the event that such evidence is not received, the test specimen shall be withheld from further testing, pending a disposition by the Quality Assurance Manager, who shall coordinate the disposition with the DCAS QAR at NTS.

3.2.5 When the nature or type of test specimens is such that they could be confused with those of another customer, or with NTS property, they shall be identified with a "CUSTOMER PROPERTY" tag (see Page 16), and stored in the proper storage area. Test specimens that

NTS

RECEIVING/SHIPPING INSPECTION

DATE: _____

INTERDIVISIONAL GOV. CONTRACT NO.: _____

MJO NO.: _____ PRIORITY NO.: _____

CUSTOMER/VENDOR: _____ P.O. NO.: _____

ITEM: _____ P/N: _____ REV. _____

CARRIER: _____ RECEIVER/SHIPPER NO.: _____

INTERIM RECEIVING CONDITION: CONTAINER: DAMAGED OK

GSI: YES NO SHIPPING/RECEIVING DOCUMENTS RECEIVED YES NO N/A

1. PURCHASED MATERIALS YES NO P.O. NO.: _____
   A. OPERATING MANUALS/LITERATURE RECEIVED YES NO N/A
   B. CERTIFICATIONS RECEIVED YES NO COMMENT: _____
   C. HAZARDOUS MATERIALS YES NO ORDNANCE: YES NO CLASS _____
   D. LABORATORY ANALYSIS REQUIRED YES NO
   E. ARE ITEMS IN GOOD CONDITION YES IF NO, EXPLAIN IN REMARKS COLUMN
      CUSTOMER NOTIFIED YES NO _____

2. CUSTOMER SUPPLIED YES NO (INTERDIVISIONAL) (RENTED)
   A. OPERATING MANUALS, AS REQUIRED, RECEIVED YES NO
   B. ORDNANCE ITEMS YES NO CLASS _____
   C. SHIPPING DOCUMENTS RECEIVED YES NO
      ACCURATE YES NO
   D. ARE ITEMS IN GOOD CONDITION YES IF NO, EXPLAIN IN REMARKS COLUMN
      CUSTOMER NOTIFIED YES NO _____

3. IF CUSTOMER SUPPLIED, IS CUSTOMER INSPECTION/REVIEW REQUIRED YES NO _____

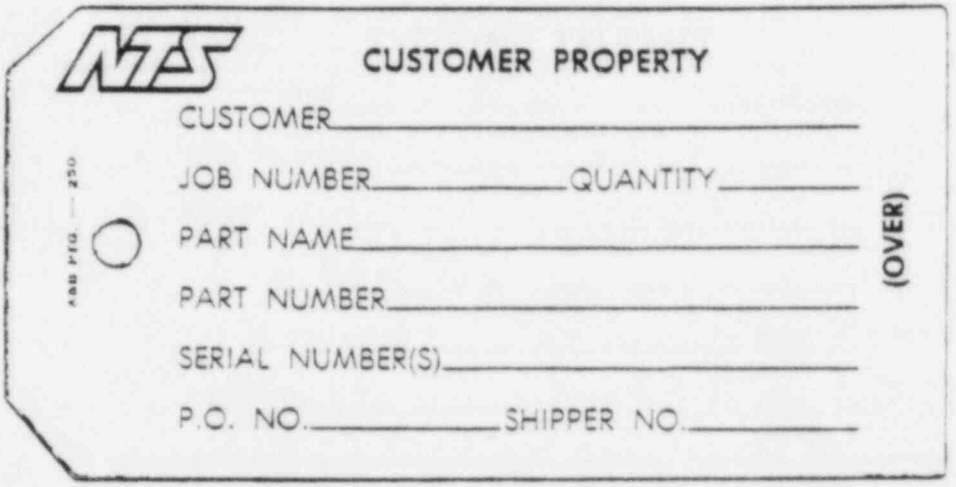
4. REMARKS: _____

5. RECEIVING/SHIPPING INSPECTION COMPLETE: _____ STAMP
   DATE

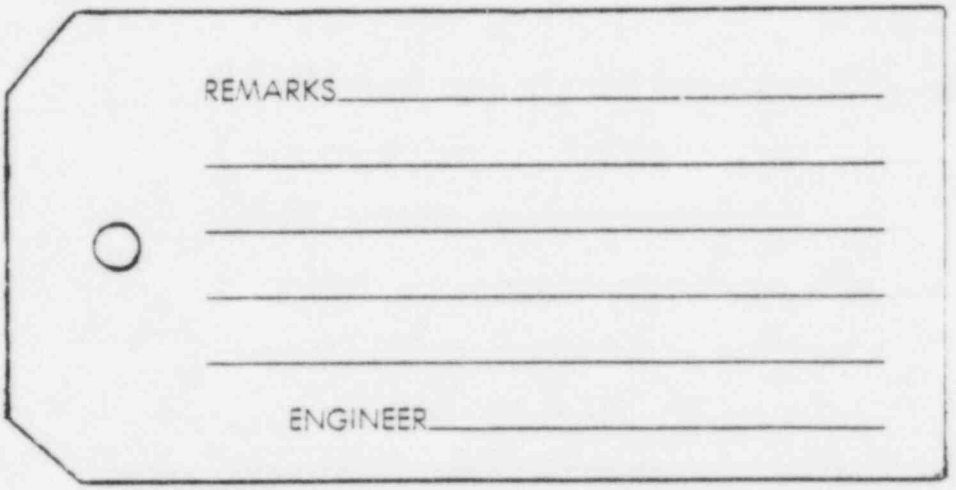
6. SHIPPING INSPECTION
   A. SPECIMEN OR ITEM INSPECTION PRIOR TO PACKING YES NO BY: _____
   B. PACKAGING INSPECTION BEFORE SEALING YES NO N/A
   C. PACKAGING EXTERNAL MARKINGS/DECALS YES NO N/A
   D. SHIPPING DOCUMENTS INSPECTED YES NO N/A ITEM COUNT _____

DATE: _____ STAMP

FRONT
(WHITE)

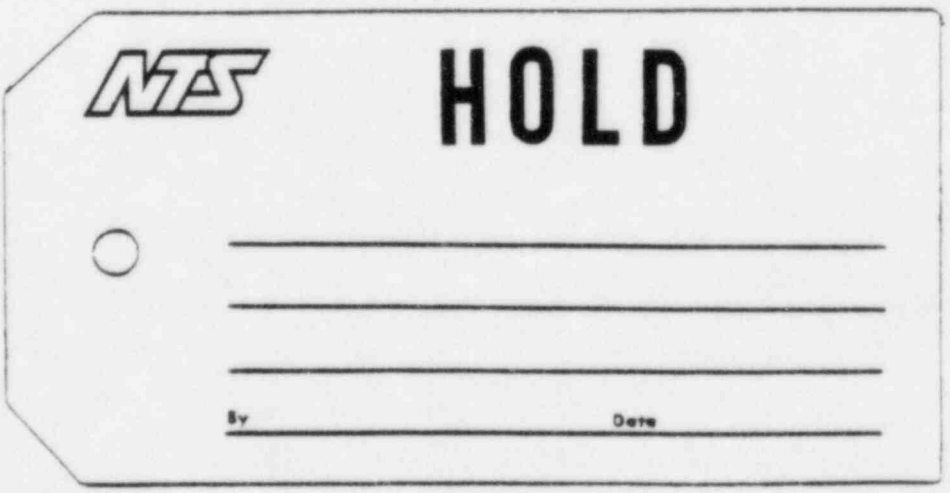


BACK
(WHITE)



Ref. 3.2.5

(RED)



Ref. 3.2.5, 3.3.4, and 4.4.5

have been "rejected" upon receiving inspection, shall be separated from the "accepted" test specimens, and shall be identified with a red "HOLD" tag (see Page 16). The "rejected" test specimen shall be disposed of in accordance with the instructions of the Quality Assurance Manager, who shall coordinate the disposition with the customer. Normally, all "rejected" test specimens are returned to the customer.

3.3 Procedure for Purchased Supplies and Materials

3.3.1 Receiving inspection of noncritical supplies and materials shall be performed by the department that ordered them. The inspection may be as thorough as they deem necessary to assure themselves that they have received adequate material to meet requirements. Receiving inspection of critical supplies and materials shall be the responsibility of the Quality Assurance Manager or his delegated representative.

3.3.2 When chemical or physical analysis of purchased materials or supplies is required, the certificate of analysis shall be forwarded to the Quality Control Department prior to using the material in any test. The Quality Control Department shall review the certification for compliance to the applicable specifications. The certificate shall certify that the material conforms to the requirements of all applicable specifications, or the materials shall be rejected. Suppliers are required to maintain evidence of control of raw materials as required by NTS purchase orders.

3.3.3 Certificates of conformance for purchased materials and supplies shall be kept on file with the Quality Control Department, and shall be made available for inspection by all authorized personnel.

3.3.4 Critical materials and supplies that have been accepted by the Quality Assurance Manager or his delegate will be released to testing personnel when it has been determined that all required Certificates of Compliance or Reports of Chemical or Physical Analysis are also acceptable. Rejected material and supplies shall be identified with a red "HOLD" tag, and shall be separated from acceptable material and supplies. The rejected material shall then be disposed of in accordance with instructions received from the Quality Assurance Manager, who will coordinate the dispositon with the supplier.

4.0 TESTING INSPECTION

4.1 General

This procedure prescribes the manner in which testing inspection shall be practiced at NTS.

4.2 Procedure

4.2.1 In addition to the routine test surveillance by the Quality Assurance Manager, testing inspection shall be conducted by the responsible Quality Control delegates and the Test Engineer responsible for the particular test program. All tests are subject to testing inspection at the following intervals:

1. At the beginning of each test.

2. During and throughout the test program.

Inspection shall include at least the following:

a. A check to ensure that the test specimens are being handled with care.

b. Verification of the adequacy of the test setup (prior to starting the test).

c. A check for the use of instruments that are properly calibrated and adequate for the intended application.

d. An examination of data, and other pertinent records, to assure that the data are being recorded as prescribed in Paragraph 4.3.2.

e. A check to ascertain that the test specification or test procedure specified on the MJO is available and is being followed.

Performance of these inspections will be indicated by a square quality control or quality assurance stamp impression on the Job Traveler and/or test data sheets wherever required by the nature of the test operations.

4.2.2 NTS does not allow outside source inspection personnel to operate NTS' test equipment. However, the necessity for outside source inspection personnel and customer representatives to verify test results and other measurements is recognized. Therefore, NTS personnel are directed to make measurements in the presence of source inspection personnel and customer representatives as may be necessary.

4.3 Test Data

4.3.1 Responsibility

4.3.1.1 The cognizant Test Engineer is responsible for assuring that the data sheet forms used for a particular test are appropriate and adequate, are dated and numbered chronologically, and that any recording charts or photographs are properly identified. The test technician will be responsible for the finished data sheets being complete, legible and accurate. The cognizant Test Engineer will be responsible for all data recorded by the test technicians assigned to him.

4.3.1.2 The test technician will sign and date all data sheets. The Test Engineer will review all data, and his approval shall be indicated by a signature or inspection stamp on each sheet.

4.3.1.3 All data sheets shall be securely fastened into the job folder by the technicians. The data sheets are subject to review at any time by NTS' Quality Control Department, and by Government and prime contractor's source inspectors, as applicable.

4.3.2 Data Recording Procedure

4.3.2.1 All hand-written test data shall be recorded in black ink only. In no case shall pencil be used to record data.

4.3.2.2 All data shall be recorded directly on the data sheet or data log, and shall not be transcribed from any other record such as worksheets, unless specifically authorized by the responsible Test Engineer.

4.3.2.3 All data recorded are to be the primary readings, taken directly from the test instruments. Conversion of the primary readings to significant units of measure shall be done on the data sheet in such a manner that the calculated factors and conversion are shown on the data sheets. When more convenient, properly identified calculating machine or data logger tapes may be attached to and considered as part of the data.

4.3.2.4 Corrections to recorded data are to be made by striking out the incorrect entry with a single line and adding the correct data as close as possible to the original entry. All such corrections shall be initialed and dated by the person making the correction. Erasures or other forms of obliteration are not permitted.

4.3.2.5 All title block information and test equipment identification are to be completed prior to the start of testing.

4.3.2.6 Test setups, other than routine, should be depicted by simple diagrams. Enough detailed information should be given so as to

enable duplication of the test setup by another person at a later date, if necessary.

4.3.3 Data Sheet Completion Instructions

4.3.3.1 Although the following procedure is written for completion of General Data Sheets (see example on Page 21), the principle applies to all data forms.

4.3.3.2 Each blank of the data sheet is to be filled in, if only with an "N/A", to make it apparent that no block was overlooked.

4.3.3.3 Under "Test Description" the following information shall be included, if applicable. The description shall not be limited to these items only, as the object of preparing test data sheets is to document all facts pertinent to the test.

Description of Test - Record, in a step-by-step manner, the test procedures followed, in exact sequence, stating all parameters, any deviations, and/or discrepancies. Follow the test procedure format, where possible, when describing the test. Include the start and completion dates of the tests.

Notices of Deviation - Notices of Deviation (NOD's) shall be included in the description of the test as a reference. The completed NOD shall be included in the job package.

Test Media - Record all test media used during the test.

Specimen Temperature - Record the test specimen temperature during the test, if applicable.

4.3.3.4 The test equipment utilized during the test shall be listed in the appropriate place on the data sheet by using NTS identification number and calibration due date.

4.3.3.5 The acceptance blocks of the data sheet shall be completed as follows:

Test By - The technician shall sign his name in this space.

Date - The date the data sheet is signed shall be recorded.

Engineer - The NTS Test Engineer and/or customer representative will sign in this space.

Govt. QAR - The Government Quality Assurance Representative shall stamp this space, when applicable.

NTS

GENERAL DATA SHEET

TEST _____ DATE _____ W/O _____

CUSTOMER _____

TEST ITEM _____ P/N _____ S/N _____

SPECIFICATION _____ PAR _____

TEST DESCRIPTION

NTS ID	CALIB DUE DATE	NTS ID	CALIB DUE DATE	NTS ID	CALIB DUE DATE

PAGE _____ OF _____

TEST BY _____ DATE _____

ENGR _____ GOVT QAR _____

4.4 Reporting Discrepancies

4.4.1 Any discrepancy or deviation from the test specification requirements during the test program shall be reported and documented by the following means:

a. Oral notification to the customer shall be made as soon as possible after the occurrence of the discrepancy or deviation. The notification shall include all details, including:

1. Prevailing conditions.
2. Test procedure being employed.
3. Nature of discrepancy or deviation.
4. Any other information pertinent to conditions or requirements.

b. The oral notification shall be followed by a written notification to the customer, made by means of a properly executed Notice of Deviation (NOD), (see Page 23). The responsible Test Engineer shall ensure that an NOD is prepared immediately after the occurrence of a deviation, and prior to the continuation of testing. The NOD shall indicate the action taken in response to the deviation. The NOD shall be properly identified and referenced in the test log. It will then become a part of the original test data. The customer's representative will be requested to sign the NOD if he is present.

4.4.2 The customer's decision regarding the dispositon of the deviation and a subsequent course of action will be ascertained, and NTS will act accordingly. If Government Source Inspection (GSI) is required, the DCAS QAR will be advised of the disposition and the new course of action as soon as practicable.

4.4.3 All test deviations and discrepancies shall be orally reported to the Quality Control Department by the Test Engineer as soon as possible after the occurrence. A copy of the written NOD will be submitted to the Quality Assurance Manager within 24 hours of the occurrence of the deviation.

4.4.4 In the event that a deviation or discrepancy occurs during a test program that is under the cognizance of the DCAS QAR, he shall be notified by means of a written Notice of Deviation from the Test Engineer within 24 hours of the occurrence of the deviation.

4.4.5 Should the discrepancy involve a test specimen that could be confused with an "acceptable" test specimen, a HOLD tag (see Page 16) or other means of segregation shall be employed to prevent confusion with non-discrepant test specimens.

NTS

NOTICE OF DEVIATION

CUSTOMER _____ MJO NO. _____

PART NAME _____ P.O. NO. _____

PART NO. _____ N.O.D. NO. _____

SERIAL NO. _____ DATE _____

TEST SPECIFICATION _____ REV. _____ PARA. NO. _____

TEST TITLE _____ ORIGINATOR _____

REQUIREMENT: _____

DEVIATION: _____

DISPOSITION: _____

REVIEW : _____ APPROVAL : _____
NTS QE (Customer Representative)

CUSTOMER NOTIFICATION:

Made to: _____ How: _____

Date & Time: _____ By: _____

DCAS Notified: ☐ YES ☐ NO _____ _____
DATE NTS Dept. Supervisor

NTS

5.0 FINAL INSPECTION AND SHIPPING

5.1 General

This procedure describes the requirements for the final inspection and shipping of test specimens and other customer property that has been in NTS' custody.

5.2 Procedure

5.2.1 The purpose of the final inspection is to assure that each test program is conducted in accordance with all applicable specifications as contractually required, that test documentation is complete, and that test specimens and other materials are properly packed and shipped. The Quality Control Department shall coordinate final inspection of test specimens and the associated data and other records with the cognizant Test Engineer after he has verified their completeness, legibility and accuracy.

5.2.2 The cognizant Test Engineer shall initial the appropriate space on the Job Traveler to indicate his review of the test program. His review shall include checks to verify that all tests were properly conducted and that the test data and records are complete. A representative of Quality Control Department shall apply his inspection stamp impression to the Job Traveler to verify that the review procedure has been accomplished.

5.2.2.1 The Shipping Department person shall perform an inspection to verify that the shipment conforms to the shipping document with regard to quantity, part number(s), serial number(s), and that the addressee is correct. The Shipping Department shall assure that the applicable ICC and DOT rules and regulations are being followed.

5.2.3 After the test specimens or other customer property have been inspected by the Shipping Department person, they will be packaged in accordance with the customer's specifications or, if there are none, in the manner in which they were received. In any event, the test specimens or other property will be packaged in a manner that will assure safe transit to their destination. Explosives shall be packaged, labeled, and shipped in accordance with the procedures described in the NTS Safety Manual.

5.2.4 Test specimens or other customer property shall be shipped in accordance with the instructions on the customer's purchase order, or, if there are none, the articles shall be shipped by the method and carrier deemed most suitable by NTS.

5.2.5 No material shall move out of NTS without a descriptive Shipper form (see Page 25) being completed by the Test Engineer or a technician. Shippers for test specimens requiring Government Source Inspection shall be submitted to the DCAS Quality Assurance representative by the Test Engineer or technician prior to shipment.

NTS

Shipper

National Technical Systems | Scientific Services Group | Originating Division

Purchase order number

Ship to

Date | Shipped via

MJO number

Item	Quantity	Description

Total number packages

Counted, packed and shipped by

Required PQA of listed items has been performed.

Typed name | Date | Office number

Signature and stamp DCAS QAR | Contract number

These goods were carefully checked and packed.
Before making any shortage claim, please examine packing thoroughly.

6.0 TEST REPORTS

6.1 General

This procedure describes the manner in which the quality of test reports and certifications is maintained and controlled. At NTS, test reports and certifications are the only product. Therefore, it is imperative that they be of the highest possible quality and accuracy. The format of all formal reports will be similar to that of MIL-STD-831, unless otherwise specified in the customer's purchase order.

6.2 Procedure

6.2.1 After test data sheets, recording charts, sketches, photographs, and all other pertinent test data have been reviewed by the Test Engineer for completeness, legibility and accuracy, the entire job package shall be forwarded to the Publications Department which shall then generate the final test report.

6.2.2 After the report is completed it will be forwarded, along with the job package to the originating Test Engineer, and then to the Quality Assurance Manager, for review. The review procedure will include a comparison of all pertinent information as recorded on the test data sheets, recording charts, etc., with the final test report, to ensure that the report accurately reflects the procedures used to conduct the test program and obtain the test data, and that the results of the test program are accurately reported. Additionally, the Quality Assurance Manager will verify conformance to the proper format and NTS reporting standards.

6.2.3 Following the approval and signature by the Test Engineer and the Quality Assurance Manager, the test report will, if required by the contract, be submitted to the DCAS Quality Assurance Representative for his review and signature. The signature of the DCAS Quality Assurance Representative is intended only to constitute a verification of the data contained in the report, and does not necessarily indicate concurrence with the conclusions presented in the report.

6.2.4 After all reviews have been completed as outlined above, the Publications Department shall make the required number of copies and distribute them as required.

6.2.5 Test records, including all original test data sheets, and the final test report shall be filed with the job package for the particular contract and shall be available for inspection by authorized personnel. All such job packages shall be stored for the length of time required by the particular contract, in any case, for a period of at least three years. The storage of job packages shall be under the control of the Contracts Department. Test records will be stored and maintained at the facility where the testing was performed.

7.0 USE OF INSPECTION STAMPS

7.1 General

This procedure describes the general requirements for the use of inspection stamps for the purpose of identifying the status of articles submitted for testing.

7.2 Procedure

7.2.1 Stamp impressions will be applied by rubber stamp, metal stamp, or by electrochemical etching.

7.2.2 Stamps will be issued to authorized personnel by the Quality Assurance Manager.

7.2.3 Stamps will be issued by serial number. A record will be kept by the Cuality Assurance Manager identifying the person to whom a stamp is issued.

7.2.4 Loss of stamps will be reported to the Quality Assurance Manager.

7.2.5 Terminated employees will return their stamps upon termination.

7.2.6 The Quality Assurance Manager will suspend, for a period of at least six months, the use of a stamp that has been lost and recovered, or which has been used by a terminated employee.

7.2.7 Unless otherwise specified in a particular contract, NTS personnel will apply inspection stamp impressions only to paperwork and not to the test specimens themselves. NTS, in its role as an independent test laboratory, does not "reject" customers' test specimens, it merely reports the results of the tests that it conducts; and the acceptance or rejection of the test specimens is left to the customer. Therefore, no "rejection" stamps are used by NTS.

7.2.8 Quality Control representatives to whom an inspection stamp has been issued will be responsible for the care and safekeeping of their stamp. Inspection stamps should be kept on the person of the Quality Control representative or in a place that will, at all times, preclude the possiblity of unauthorized use of the stamp.

7.3 Stamps

7.3.1 Quality Assurance Stamp 

This stamp is used by the Quality Assurance Manager to indicate review and approval of tests and test data. It is also used on Job Traveler forms to indicate satisfactory completion of a test or other operation.

7.3.2 Quality Control Inspection Stamp 

This stamp is used by Quality Control Inspectors, Test Engineers, and several other persons who have been delegated Quality Control Representatives to indicate review and approval of tests and test data. It is also used on Job Traveler forms to indicate satisfactory completion of a test or other operation. Personnel using this stamp are directly accountable to the Quality Assurance Manager for its use.

7.3.3 Calibration Stamp 

This stamp is used by NTS personnel who perform calibration. It is placed on calibration data sheets and on calibration labels which are affixed to calibrated instruments. Its use is not mandatory. It is generally used in lieu of writing the calibrating technician's name in the small space available on the calibration label. Personnel are accountable to the Quality Assurance Manager when performing calibration of test and measuring equipment.

7.3.4 Test Stamp 

This stamp is used by NTS personnel who perform testing, and who have been delegated the responsibility and authority to indicate satisfactory completion of a test or other required operation. The stamp shall be applied to test data sheets and log sheets. It shall also be used on the Job Traveler form to denote completion of a required test or operation. Personnel using this stamp are directly accountable to the Quality Assurance Manager for its use.

NTS

8.0 PROCUREMENT CONTROL

8.1 General

Procurement of laboratory supplies and services, including the services of outside testing laboratories, is controlled as described in Paragraphs 8.2 and 8.3.

8.2 Vendor Evaluation

8.2.1 The Corporate Director of Quality Assurance maintains a list of approved vendors. This list shall be used by the Quality Control Department and shall be periodically reviewed and updated as necessary. Vendors shall be evaluated in accordance with the procedure described in Paragraph 8.2.2.

8.2.2 The Corporate Director of Quality Assurance or the Quality Assurance Manager will evaluate vendors by one or more of the following methods, depending on the nature of the product or service:

a. Review of vendor's Quality Procedures Manual.

b. Survey of the vendor's facilities to ensure that proper measures are being taken to maintain adequate control over the quality of the vendor's product or service.

c. Evaluation of the completed Vendor Quality Questionnaire form. (see Pages 30 through 32).

d. Approval based on a history of, or reputation for, supplying their product or services in accordance with specified quality requirements.

8.2.3 Vendors being considered for "critical purchases" (defined in Paragraph 8.3.2) shall be approved by the Quality Assurance Manager prior to awarding a contract to them.

8.2.4 The performance of Vendors utilized for "critical purchases" shall be reviewed at least annually by the Quality Assurance Manager or the Corporate Director of Quality Asssurance. Vendors that continually deliver inferior or deficient services or products, will be disapproved by the Corporate Director of Quality Assurance and removed from the Approved Vendor List. This action will be taken only after corrective action procedures, as described in Section 11.0 of this Manual, have failed to correct the deficiency.

8.3 Purchase Order Review

8.3.1 This procedure establishes the screening and control requirements of the Quality Control Department with respect to the issuance of purchase orders and changes thereto (see Page 35). Purchase orders must provide adequate instructions so that the supplier may furnish the service or material in accordance with requirements.

SUPPLIER QUALITY CONTROL QUESTIONNAIRE

Supplier:_____ Date:_____

Street:_____ Phone:_____

City:_____ Zip:_____

FACILITY

Type of service or product:_____

Plant area:_____Sq. Ft. Level of security clearance:_____

Is the company a large or small business (according to the SBA?):_____large
_____small

MANAGEMENT

Name	Position

QUALITY CONTROL ORGANIZATION

Dept. Head:_____ Title:_____

Reports to:_____ Title:_____

To what specification(s) does the QC system conform?_____MIL-Q-9858A
_____MIL-I-45208A,_____NQA-1,_____NHB 5300.4(1B),_____N45.2
_____MIL-C-45662A, Other: (specify)_____

Government representative is:_____itinerant _____resident

PERSONNEL

	1st shift	2nd shift	3rd shift
Total:			
Administrative:			
Production:			
Inspection/QC:			

QUALITY CONTROL SYSTEM

	YES	NO	N/A
Do you have a quality procedures manual? (Please provide copy)	—	—	—
Do you have a drawing and manufacturing change control system?	—	—	—
Do you maintain an "approved vendor" list?	—	—	—
Do you utilize a scheduled calibration program for test equipment?	—	—	—
Is calibration traceable to the National Bureau of Standards?	—	—	—
Are shop travelers or similar production and inspection controls used?	—	—	—
Do you maintain records of material certification or analysis?	—	—	—
Receiving inspection?	—	—	—
In-process inspection?	—	—	—
Final inspection?	—	—	—
Are records of inspections and tests available for review by customers?	—	—	—
Do you identify non-conforming materials or supplies to prevent or limit their use?	—	—	—
Is a corrective action system in use?	—	—	—
Do you supply your customers with a report or similar document certifying conformance to specific requirements?	—	—	—

SPECIAL PROCESSES

List special processes you perform and the applicable specification.

Process	Specification
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Please list some of the major contractors for which you are an approved source.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Please provide impressions of the inspection stamps presently in use.

Stamp	Use
_____	_____
_____	_____
_____	_____
_____	_____

This questionnaire was answered by:

_____
Signature

_____
Title

_____
Date

This portion is for use by NTS only.

_____ ____Approved ____Disapproved
Reviewed by

Comments: _____

_____

_____

_____

_____

_____

_____

8.3.2 Critical Purchases

Purchases of subcontracted test services, test fluids, materials that could directly affect the results of tests, and purchases that require Government Source Inspection are considered to be "critical purchases" and, as such, the purchase order for those procurements must be reviewed by a member of the Quality Control Department prior to its release and distribution.

8.3.3 Non-critical Purchases

The review of purchase orders for non-critical purchases such as: stationery, office supplies, small tools, maintenance items, and miscellaneous laboratory supplies, shall be the responsibility of those individuals initiating the procurements. The Quality Control Department will not review purchases of this type.

8.3.4 Review Procedure

8.3.4.1 All purchase orders and change orders are subject to review by a representative of the Quality Control Department; however, as a general rule, only purchase orders and change orders for "critical purchases" will actually be reviewed by the Quality Control Department. The review shall include a check for the inclusion of the following pertinent information, as applicable:

a. Correct name and address of the vendor or subcontractor.
b. Correct nomenclature and part number or catalog number.
c. Government contract number and priority rating.
d. Pertinent specifications and technical requirements.
e. Adequate shipping instructions.
f. Statement of applicability of specifications: MIL-Q-9859A, or MIL-I-45208A, and/or MIL-C-45662A, or portions thereof, as appropriate.
g. Statement requiring Government Source Inspection.
h. Actual point of Government inspection.
i. Deviations authorized by contract change notice.

8.3.4.2 Additionally, the Approved Vendor List shall be checked to verify that the proposed vendor has been evaluated and approved by one of the methods described in Paragraph 8.2.2. Only vendors listed on the Approved Vendor List shall be utilized for "critical purchases".

8.3.4.3 The Quality Control Department's review and approval of purchase orders shall be indicated by means of an inspection stamp impression or the signature of the Quality Assurance Manager.

8.3.4.4 After all appropriate signatures have been obtained, a copy of the purchase order (for "critical purchases" only) shall be forwarded to the Quality Control Department.

8.3.5 Review Procedure for Purchases Requiring Government Source Inspection

8.3.5.1 If the performance of Government Source Inspection is a requirement, the purchase order shall be reviewed by the Quality Control Department in accordance with the procedure described in Paragraph 8.3.4, and then forwarded to the DCAS Quality Assurance Representative for his review prior to its distribution. When Government Source Inspection is required, NTS shall include the following statement on the purchase order:

> "Government Inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished."

8.3.5.2 When, under authorization of the Government Representative, copies of the purchasing documents are to be furnished directly by NTS to the Government Representative at the vendor's facility rather than through Government channels, NTS shall include the following statement in lieu of the one above:

> "On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant, or if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately."

8.3.5.3 Sufficient copies of the purchase order shall be provided for Government Representatives, as needed.

NTS

Purchase Order

National
Technical
Systems

Scientific
Services
Group

Date

Purchase order number

Date required

This number must appear on all invoices, packages, packing lists and correspondence.

Vendor

Ship to

Phone

Vendor number

Bill to

NTS company number

Terms

☐ MJO ☐ CAR number

FOB

Ship via

Item	Quantity	Due date	Part number	Description and purpose	Tax (yes/no)	Unit price	Extension	Account

Requested by

Date

Authorized signature

Received by

Date

1. No acknowledgement of this order is required. If any discrepancies appear, please contact buyer immediately.
2. Delivery against this order constitutes acceptance of the terms and conditions of this purchase order.
3. Packing lists must accompany each shipment showing purchase order number.
4. Invoice must show your shipper or packing list number and our purchase order number.
5. Do not invoice more than one purchase order on an invoice.
6. This order is subject to the terms and conditions on the reverse side hereof and any attachment(s) hereto. Acceptance of the offer represented by this order is expressly limited to such terms and conditions without change or addition. Delivery in whole or in part of the articles or services to be furnished hereunder shall constitute acceptance of this order. This is the entire contract and any other terms or conditions proposed by seller's acknowledgment shall not be binding upon buyer.

CORPORATE FILE

360

NTS

9.0 CONTROL OF SPECIFICATIONS AND DRAWINGS

9.1 General

This procedure describes the manner in which changes to drawings and specifications received by NTS are controlled.

9.2 Procedure

9.2.1 Amendments or revisions to customers' or prime contractors' specifications or drawings shall be routed to the Quality Control and Engineering Departments upon receipt by NTS. It will be the responsibility of the Engineering Department to assure that all changes and revisions promptly reach the various places at which they are to be used. It is also the responsibility of the Engineering Department to assure that all documents known to be obsolete are identified as "Not Current Issue".

9.2.2 Documents known to be obsolete will be identified as being "Not Current Issue" by means of a rubber stamp impression in red ink, as shown below.

NOTICE
NOT CURRENT ISSUE

9.2.3 In order to maintain knowledge of their current location, whenever a specification or other document is removed from the file, an "OUT" card stating the borrower's name and the date, will be inserted in the place of the removed document.

9.2.4 During the course of their routine surveillance of the various tests and other operations in the laboratory, Quality Control Department representatives and Test Engineers will check to assure that the specifications and procedures being used are of the proper revision, as required by the Master Job Order.

9.2.5 Revisions to test procedures written by NTS will be made by the Publications Department as directed by the responsible Test Engineer and will be reviewed by the Quality Assurance Manager. The revision(s) will be documented on the Revision Summary page. Revisions to test documents, whether originated by NTS or by its customers, will be made known to the Government Quality Assurance Representative if Government Source Inspection is required. The obsolete documents will be identified as described in paragraph 9.2.2, with one copy being retained in the appropriate job package for future reference.

9.2.6 Specifications and other documents necessary for inspection shall be made available to source inspectors, Government representatives, and other authorized personnel whenever they are needed.

NTS

10.0 INSTRUMENT CALIBRATION

10.1 General

10.1.1 This procedure describes the system used to assure that all test equipment is of an accuracy that is adequate for its intended use, and that the calibration of this equipment is traceable to the National Bureau of Standards. The records, including calibration reports, procedures, and other documents pertaining to this system are subject to surveillance by the Government Quality Assurance Representative and NTS' Vice President of Quality Assurance including any personnel he may assign to perform quality audits.

10.1.2 The Quality Control Department is responsible for the acceptance, storage, maintenance, calibration, repair, and loan control of all test equipment.

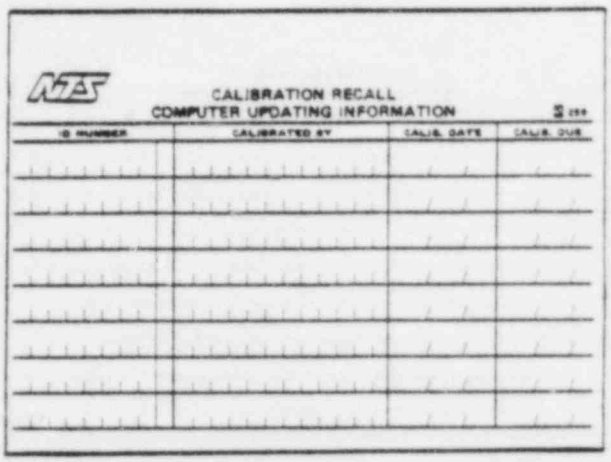
10.2 Control Method

All test equipment shall have a label permanently attached to it, showing the NTS identification number. (see Paragraphs 10.9 and 10.10). The Official Equipment List shall list all equipment in numerical order by the NTS identification number, and shall describe the equipment with regard to nomenclature, manufacturer, model number, serial number, and, as applicable, the accuracy, range, established calibration interval, and any other descriptive information that is appropriate. An example of the form used to input such information into the computer is shown on Page 39. This official list is kept in the computer located at the Scientific Services Group (SSG) Data Processing Center. A new, updated list shall be printed at approximately quarterly intervals. Near the end of each month, an Equipment Recall List printout shall be supplied listing those items of equipment which are scheduled for recalibration during the coming month. The purpose of this recall list is to facilitate the timely recalibration of equipment. All test equipment that is due for recalibration shall be removed from service and/or identified with a red "DO NOT USE UNTIL CALIBRATED" label. In the event that an item of test equipment is being used in a test program and it cannot be replaced with a similar instrument, and it is not feasible to recalibrate the equipment, the calibration interval may be extended as provided in Paragraph 10.6.5 of this manual.

10.3 Indication of Calibration Status

10.3.1 A variety of labels is used to indicate the calibration status of test equipment. Examples of these labels are shown on Page 41.

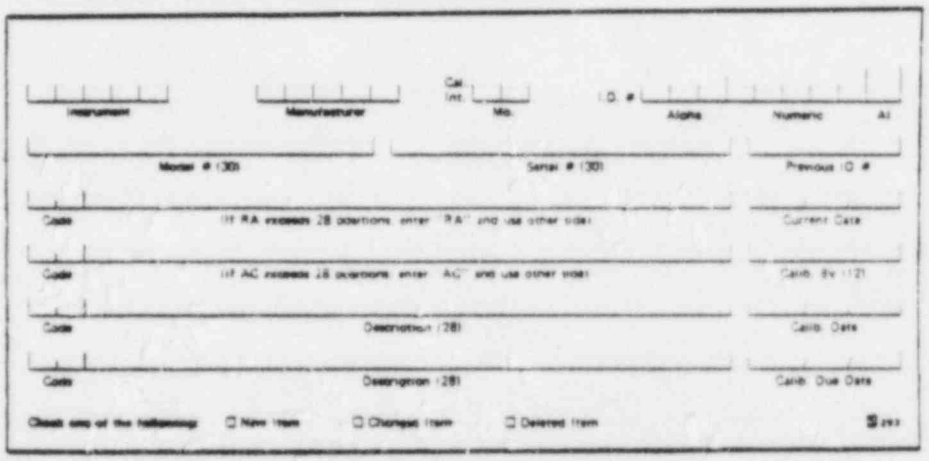
10.3.2 A calibration label shall be applied in a conspicuous location to each item of test equipment, whether calibrated by NTS or by an outside laboratory. The label applied to equipment calibrated



NTS

CALIBRATION RECALL
COMPUTER UPDATING INFORMATION

ID NUMBER	CALIBRATED BY	CALIB. DATE	CALIB. DUE



Instrument | Manufacturer | Cal Int. Mo. | I.D. # Alpha Numeric AI

Model # (30) | Serial # (30) | Previous I.D. #

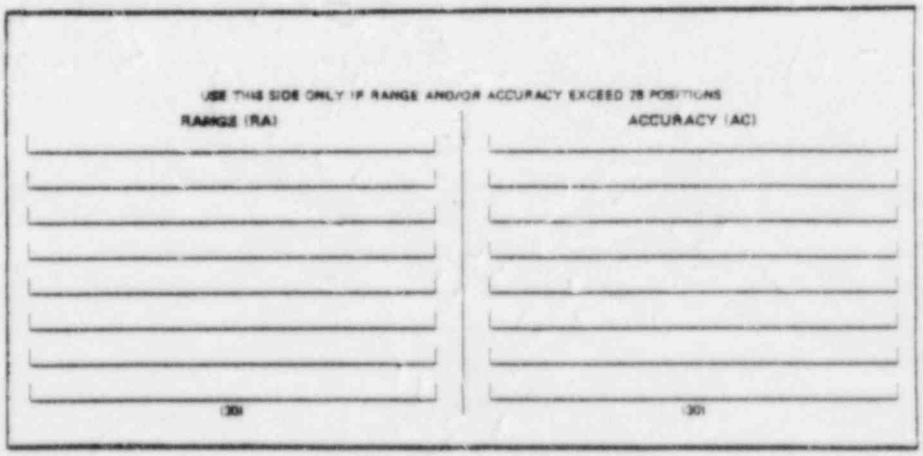
Code | If RA exceeds 28 positions, enter "RA" and use other side! | Current Date

Code | If AC exceeds 28 positions, enter "AC" and use other side! | Calib. By (12)

Code | Description (28) | Calib. Date

Code | Description (28) | Calib. Due Date

Check any of the following: ☐ New Item ☐ Changed Item ☐ Deleted Item



USE THIS SIDE ONLY IF RANGE AND/OR ACCURACY EXCEED 28 POSITIONS

RANGE (RA) | ACCURACY (AC)

(30) | (30)

by NTS has blank spaces which are filled in to indicate calibrated date, calibration due date, by whom the calibration was performed, equipment I.D. Number, and the accuracy of the equipment. All blank spaces on the label must be filled in before the equipment is released to the laboratory. Equipment which has been calibrated by an outside laboratory shall have a calibration label applied to it in a conspicuous location. The label shall indicate, as a minimum, the following: calibration date, calibration due date, and by whom calibrated. In the event that the label affixed by the outside laboratory does not provide all the required information, it shall be replaced with an NTS calibration label filled in as applicable. In the event that the calibration interval shown on a calibration label affixed by an outside calibration laboratory does not correspond with the interval specified in NTS' Official Equipment List, the Quality Control Department shall apply an NTS Calibration Label, over that supplied by the outside calibration laboratory. The NTS calibration label shall indicate the proper recall date and shall take precedence over the label supplied by the outside calibration laboratory.

10.3.3 Noncalibrated test equipment shall have a "CALIBRATION NOT REQUIRED" or a "DO NOT USE FOR TEST DATA" label, as appropriate, applied in a conspicuous location.

10.3.4 When the calibration of an item of equipment expires, and the equipment will not be recalibrated immediately, it will have a red "DO NOT USE UNTIL CALIBRATED" or an orange "OUT OF SERVICE" label applied to it in a conspicuous location.

10.3.5 Some items of equipment used in test systems require calibration immediately prior to being used. This equipment shall have a "CALIBRATE PRIOR TO USE" label applied in a conspicuous location. Due to the fact that the accuracy of calibration prior to use is dependent on the entire test setup, and is valid for that test setup only, calibration certificates (or calibration reports) will not be completed as required by Paragraph 10.5. The test data sheets shall note the fact that calibration prior to use was performed.

10.3.6 When maintenance of test equipment is performed on a periodic basis and calibration is not required, a label stating the maintenance date, due date, and the name of the person who performed the maintenance, shall be applied to the test equipment in a conspicuous location.

10.3.7 Only labels of the type that will be permanently damaged if transfer is attempted will be used.

10.3.8 NTS calibration labels shall be used in accordance with the following procedures:

10.3.8.1 Color and number coded calibration labels are used to facilitate the timely recall of equipment for recalibration. Colors are used to indicate at a glance the week of the month that recalibration is due in accordance with the following schedule:

Calendar Week Number	Color
1	Red
2	White
3	Blue
4	Yellow
5	Green

10.3.8.2 Numbers are used to indicate the month in which calibration is due. The numbers 1 through 12 are used to indicate January through December, respectively.

10.3.8.3 These labels greatly facilitate surveillance of calibration control, in that by merely looking at them (even from a considerable distance) it is possible to determine the month and week that calibration is next due.

10.4 Performance of Calibration

10.4.1 Test equipment shall be calibrated, adjusted, or repaired if necessary, and certified by a capable commerical calibration laboratory unless adequate facilities are available at NTS. All outside calibration laboratories shall be periodically surveyed to assure that they are, in fact, capable of performing the required service in accordance with the requirements of Military Specification MIL-C-45662A; that they are adhering to the applicable calibration procedures, and that they are using standards that are traceable to the National Bureau of Standards.

10.4.2 All standards used for calibration, shall be adequate for the intended use and shall be of a higher accuracy than the equipment being calibrated, as required by MIL-C-45662A.

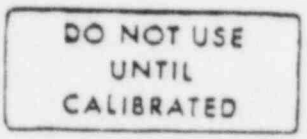
10.4.3 Whenever necessary, calibration shall be performed in an environmentally controlled laboratory. When an item of equipment is to be used in an environment that differs from that in which it was calibrated, to the extent that it would provide erroneous information, compensating correction factors shall be determined and applied as required.

10.4.4 Calibration of equipment shall be performed in accordance with the manufacturer's instructions or industry standard practices. Equipment manufactured by NTS shall be calibrated in accordance with the applicable written procedure, which is maintained in the Instrumentation Department's files. All calibration sources are subject

(White)

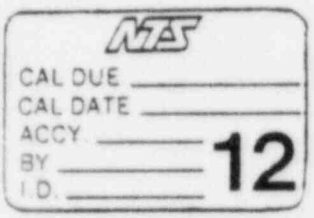
Ref. 10.2

(Red)



Ref. 10.2 & 10.3.4

(Red, White, Blue, Yellow or Green)



Ref. 10.3.2 & 10.3.8.1

(White or Orange)

Ref. 10.3.3

(White)

Ref. 10.3.3

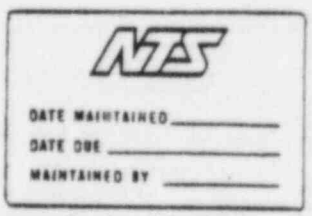
(Orange)

Ref. 10.3.4

(White)

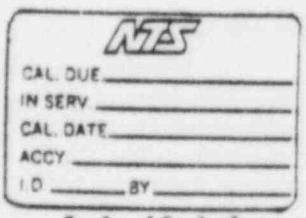
Ref. 10.3.5

(White)



Ref. 10.3.6

(Orange)



Ref. 10.6.6

CALIBRATION CONTROL LABELS

to surveillance by a representative of NTS' Quality Control Department to assure conformance to established calibration procedures, and other provisions of Section 10 of this manual. When calibration is performed by NTS, the technician's signed calibration data sheet shall be maintained on file in lieu of a formal calibration report, as is usually provided by outside calibration laboratories.

10.5 Calibration Certification

10.5.1 All calibration reports must state that the equipment was calibrated with standards, the calibration of which is traceable to the National Bureau of Standards or to a natural physical constant. When NBS does not maintain a standard for a particular parameter, and there is no natural physical constant, the calibration shall be traceable to the best commercially available industry standard.

10.5.2 All calibration reports shall state the manufacturer, model number, serial number, and the accuracy of the instrument calibrated; and, when required, the environmental conditions at which the calibration was performed. All calibration reports shall be dated and signed by a responsible representative of the laboratory that peformed the calibration.

10.5.3 Calibration reports shall be filed in numerical order by the NTS identification number of the equipment. In the event that repair is necessary to re-establish the accuracy of the equipment, a repair report will be made by the certifying laboratory. The repair report will describe the nature of the anomaly that necessitated the repair, the action taken to correct the fault, and an itemized list of the components replaced. Repair reports will be filed with the corresponding calibration report for the equipment if the repair report is not a part of the calibration report form.

10.5.4 All calibration reports and other calibration records shall be made available for inspection by any person that has a valid need for such information. All calibration records, including calibration data sheets, shall be maintained on file for a period of at least ten years. After equipment has been recalibrated, the following information shall be entered on a Calibration Recall-Computer Updating Information card: I.D. Number, Calibration Date, Calibration Due Date, Calibration By (see Page 38). The card shall be sent to the Data Processing Center for keypunching and processing. This data will be used to update the monthly Equipment Recall List.

10.6 Calibration Intervals

10.6.1 The intervals at which equipment is to be recalibrated are based on the calibration history of the particular instrument and its inherent stability, as well as its intended use and normal degree of usage. The calibration interval that has been established for

each item of equipment is cited in the description of the particular instrument in the Official Equipment List. Generally, calibration intervals have been established as follows:

Daily or Prior to Each Use	Mass Spectrometer Helium Leak Detectors, Vibration Monitoring Systems.
1, 2, and 3 months (dependent on usage)	Pressure Gauges (Master Test Gauges may be on a 12-month interval, dependent on usage).
3 months	Temperature Recorders
6 months	VTVMS, Oscillators, Signal Generators, Vacuum Gauges, Frequency Counters, Dielectric Strength Testers, Oscilloscopes, most devices employing vacuum tubes, Electric Bridges, Dynamic Meters, Precision Ratio Transformers, Accelerometers, Digital Meters.
Annually	Spring Scales Fixed electrical devices, i.e., Shunts Transformers Filters Dead Weight Testers Manometers Barometers Flowmeters Torque Measuring Devices Real Time Analyzers

10.6.2 The above calibration intervals may be extended or reduced if the calibration history of the particular item of equipment indicates that a change is in order, and would be justified. Any change in the length of a calibration interval shall be approved by the Quality Assurance Manager.

10.6.3 Test equipment shall be calibrated whenever there is any reason to suspect that there has been an event or occurrence that may have disturbed the accuracy of the equipment as established at last calibration check.

10.6.4 All test technicians are responsible for reporting any damaged or erratic instruments to the Quality Control Department.

10.6.5 In the event that it is not feasible to recalibrate an instrument on or before the scheduled recalibration date due to the instrument being used in a test setup, the calibration interval may, with the permission of the Quality Assurance Manager, be extended until the completion date of the test on which the instrument is being used. Equipment for which the calibration period has been extended, shall have a tag attached showing the authorization of the Quality Assurance Manager. The tag shall be as follows:

NOTICE

CALIBRATION EXTENSION IS AUTHORIZED
FOR A DAY PERIOD (MAXIMUM).

NO._____

MGR. Q.C._____EXPIRES_____

Upon completion of the test for which the extension was granted, the instrument shall be removed from the test setup, identified with a red "DO NOT USE UNTIL CALIBRATED" label, and submitted for recalibration.

10.6.6 The recall date on certain types of equipment may be held in abeyance until it is put into service, provided: 1) that the equipment is properly stored to protect it from anything that might disturb the accuracy that was established at the last calibration, and 2) that the Quality Assurance Manager approves the application of this procedure for the particular type of equipment. In those cases where this procedure is adopted, a special calibration label (orange) (see Page 41) shall be used to indicate the "In Service Date" in addition to the information specified in Paragraph 10.3.2. These dates shall be communicated to the Quality Assurance Manager by means of the in-service notice shown below. The Quality Assurance Department shall then update the computer as described in Paragraph 10.5.4.

NOTICE

To Quality Assurance Manager

This Equipment has been put into service, as noted below:

I.D. Number:_____

Date Calibrated:_____

Date in Service:_____

Date Next Due:_____

In Service By:_____

Computer updated_____

Quality Control

10.7 Calibration Environment

Measuring and test equipment shall be calibrated and utilized in an environment controlled to the extent necessary to assure measurements of the required accuracy giving due consideration to temperature, humidity, vibration, cleanliness, and other controllable factors affecting precision measurement. When necessary, compensating corrections shall be applied to test measurements made in an environment which significantly departs from normal conditions.

10.8 Calibration Standards

Standards used for the calibration of test equipment shall be at least four times more accurate than the equipment being calibrated except where the state-of-the-art does not provide standards of this accuracy. State-of-the-art standards shall be deemed those standards available in the better commercial calibration laboratories. A list of calibration standards, separate from the Official Equipment List, shall be maintained by the Quality Control Department. Each calibration standard shall be identified with a label indicating that it is a "standard", and as such, is not to be used to make test measurements.

10.9 Equipment Control - Company-Owned

10.9.1 Test equipment shall have a tamper proof label showing the NTS "Identification Number". The identification number shall consist of three parts; type, numerical, and facility designation.

10.9.2 NTS equipment type designations are:

"A"	-	Automotive
"D"	-	Dynamic
"E"	-	Electronic and Electrical
"ENV"	-	Environmental
"F"	-	Flow
"G"	-	General
"M"	-	Mechanical
"MET"	-	Metrology
"P"	-	Pressure
"S"	-	Solar
"V"	-	Vacuum and Leak Detection

10.9.3 NTS facility designations are:

"D"	-	Washington, D.C. (Hartwood, VA)
"E"	-	South El Monte
"F"	-	Fullerton
"L"	-	Los Angeles
"S"	-	Saugus (Canyon Country)

10.10 Equipment Control - Employee-Owned

Employee-owned equipment used to make test measurements, shall be controlled by the same procedure as NTS-owned equipment, except the Identification Number assigned shall be comprised of the employee's initials and a numerical series starting with 001, followed by the letter designating the applicable facility.

10.11 Out of Tolerance Reporting

10.11.1 If, during calibration, an item of measurement or test equipment is found to be significantly out of tolerance, an investigation will be conducted to determine the extent of the out of tolerance condition and the identity of test programs on which it was used.

10.11.2 In order to determine where the out of tolerance instrument was used, during the period since the previous calibration was performed, job files for all likely test programs (both currently active and closed) will be reviewed to determine whether or not the instrument was used to make any test measurements.

10.11.3 When the affected test programs have been identified, and it is determined that MIL-STD-45662 or ANSI N45.2 were specified on the customer's Purchase Order, the Quality Control Department will notify the cognizant NTS Test Engineer(s) so that he (they) may evaluate the degree of significance of the out of tolerance condition as it relates to the measurement(s) made with the equipment. The NTS Test Engineer(s), will make a brief written report to the Quality Assurance Manager describing the significance of the out of tolerance condition to the measurements made on each test program where the faulty equipment was used. If it appears that there is a possibility that erroneous data may have been recorded due to the faulty test equipment, the Quality Assurance Manager shall convene a review committee to further assess the significance of the out of tolerance condition on each affected test program. The review committee shall consist of the: Quality Assurance Manager, cognizant Test Engineer(s), Testing Operations Manager, and Vice President - Quality Assurance; and any other personnel that may be able to assist in determining the course of action that NTS will follow. If the consensus of the review committee is that the out of tolerance condition could have affected the validity of the collected test data, the Quality Assurance Manager will notify any affected customers, in writing, that testing had been performed with an instrument that was subsequently found to be out of tolerance. Each affected customer shall be given all the pertinent information relevant to the out of tolerance condition, the measurement parameters for which the instrument was used, the identity of the test specimen(s) which may be affected, and any other pertinent information that would assist the customer in assessing the impact of the out of tolerance measuring equipment on the validity or adequacy of the testing which was performed.

NTS

11.0 CORRECTIVE ACTION

11.1 General

This procedure describes the method of requesting and obtaining corrective action. This procedure is to be used for internal applications as well as for vendors.

11.2 Procedure

11.2.1 When corrective action cannot be obtained by verbal request or by other informal methods, or when the nature of the discrepancy is such that a written request is deemed more suitable, a "REQUEST FOR CORRECTIVE ACTION" form (see Page 50) will be initiated by a representative of the Quality Control Department. The request will be addressed to the supervisor or other person responsible for the functional area in which the discrepancy occurred.

11.2.2 The "REQUEST FOR CORRECTIVE ACTION" form shall be executed in duplicate by the Quality Control Department representative that is requesting the corrective action. The requestor shall complete the form down to the section for "CAUSE".

11.2.3 The requestor shall enter, in the appropriate space, the number of days that will be allotted for the responsible individual to effect the corrective action and to reply to the request. The reply shall state the cause of the discrepancy and the corrective action that has been taken to prevent a recurrence. Generally, five days will be allotted for correction of internal discrepancies and deficiencies; ten days will be allotted for correction of discrepancies and deficiencies that are the responsibility of a vendor. The allotted time will depend on the criticalness of the discrepancy, the delivery schedule, and other considerations which are pertinent to the specific circumstances, and shall be determined by the Quality Assurance Manager.

11.2.4 In the event that a reply to a request for corrective action is not received within the allotted time, a memorandum requesting an immediate reply will be forwarded to the responsible individual. If the responsible individual still does not respond, another "REQUEST FOR CORRECTIVE ACTION" form will be forwarded to him. A copy of this request will be sent to the Facility Manager with a memorandum explaining that a response to the first request is delinquent.

11.2.5 It is the responsiblity of the Quality Control Department to follow up on corrective action requests, to assure that corrective action is effected, and that written replies are received within the allotted time.

11.2.6 Corrective action requests involving tests where Government Source Inspection is required shall be coordinated with the DCAS Quality Assurance Representative. The Quality Assurance Manager shall forward a copy of the request and the corrective action reply to the DCAS Quality Assurance Representative.

CORRECTIVE ACTION REQUEST

TO: Quality Manager and _____

FROM: _____ _____
NAME TITLE

DATE: _____

CUSTOMER/VENDOR _____ SPECIFICATION _____ MJO/P.O. _____

ITEM _____ P/N _____

DESCRIPTION OF DISCREPANCY:

_____

_____

_____

_____

_____
INITIATOR

CAUSE:

_____

_____

_____

_____

_____

CORRECTIVE ACTION TAKEN:

_____

_____

_____

_____

_____

BY _____ DATE _____

FOLLOW UP/RECOMMENDATION:

_____

_____

_____

_____

COMPLETED _____ DATE

QA STAMP

NTS

12.0 AUDITS

12.1 General

A Corporate quality internal audit of the quality program described in this manual shall be conducted as described below, at intervals of approximately six months. The audit shall be conducted by an audit team consisting of one or more qualified individuals who have no direct responsibility for the activities that they will be auditing. NTS' internal audit will be periodically supplemented with external audits performed by various customers and other outside organizations. Additionally, interim audits may be conducted by the Quality Control Department itself. Interim audits shall generally follow the procedures described below, except that the audit team may be selected by the Quality Assurance Manager; however, the audit team members shall be independent of direct responsibility for the department(s) and/or activities to be audited. Reports of external and internal audits shall be used by NTS' management to evaluate the effectiveness of its quality assurance program, and shall be reviewed when planning its own internal audits.

12.2 Performance of Audits

12.2.1. Corporate quality audits shall be performed by an audit team consisting of one or more auditors led by a Lead Auditor who shall be appointed by the Vice President of Quality Assurance. Personnel selected as auditors shall be management level employees who are independent of any direct responsibility for the performance of activities which they will audit. Audit personnel shall be qualified as required by Supplement 2S-3 for ANSI/ASME NQA-1 to the extent that is feasible within the organizational structure of NTS.

12.2.2 Departments and activities to be audited shall be notified approximately one week prior to the performance of the audit. The notification shall be in the form of a memorandum, and shall include such information as: the scope of the audit, the scheduled date, and the amount of time expected to take to perform the audit. The names of the audit team members shall also be given if they are known.

12.2.3 The Lead Auditor shall develop and document the audit plan. The audit plan shall include: a statement of the scope of the audit, identification of the audit personnel, identification of the departments and/or activities to be audited, identification of reference documents to be used during the audit, and shall include a checklist showing the elements to be audited.

12.2.4 The elements of the quality program that will be audited will be selected by the Lead Auditor, with consideration given to the results of previously conducted internal and external audits, and will be selected to ensure that all elements are audited at least annually.

12.2.4.1 During the semi-annual audit, the following procedures shall be followed in addition to any other quality program elements or procedures that may be selected by the Lead Auditor:

1. Perform a complete review of one reasonably complex qualification test program that was completed within the previous six months. The review shall consist of an examination of all documentation, including: contractual documents, job instructions, test data sheets, the Job Traveler, shipping documents, and supporting data such as calibration records to verify compliance with the job instructions and the customer's purchase order. The final test report shall also be reviewed to determine completeness, accuracy, and conformance to the prescribed format.

2. Perform a complete review of at least two relatively simple test programs that were completed within the previous six months. The review shall consist of an examination of all documentation pertaining to these programs to verify adequate instructions and the availability of the necessary written procedures and specifications.

3. Perform a check of office and laboratory operations underway at time of the audit.

4. Verify that the calibration records of ten randomly-selected items of test equipment are in order, and that they show evidence of traceability to the National Bureau of Standards. An effort shall be made to select several different types of equipment to be verified.

12.2.4.2 The completed test programs to be audited shall be selected by any convenient means of random selection.

12.2.5 A pre-audit conference will be held with the Facility Manager, the Quality Assurance Manager, and other personnel as appropriate depending on the departments and activities to be audited. This conference will be used to explain the scope of the audit, and to confirm and expand on the information provided in the memorandum which provides notification of the pending audit.

12.2.6 All audits shall be performed by using checklists and written procedures to evaluate compliance with specified requirements. The audit team shall examine objective evidence to the extent necessary to determine if the selected elements are being implemented effectively. The audit team may employ any of the following methods to accomplish their audit.

a. A review of the office and laboratory operations being performed at the time of the audit.

b. A review of the MJO, test procedure, test specifications, drawings, test data sheets and recording charts, or any other

documentation, for completeness, accuracy, and appropriateness to the operation being documented.

c. Review of records of completed test programs to verify conformance to established requirements.

d. Examination of personnel training and qualification records.

e. Any additional review and examination techniques, including personal interviews, as may be necessary to accomplish a thorough and effective audit.

12.2.7 At the conclusion of the audit, a post-audit conference shall be held with the same personnel that were contacted during the pre-audit conference. This conference will be for the purpose of discussing the audit results, to clarify any misunderstandings, and to report any unsatisfactory conditions that require immediate corrective action.

12.3 Audit Report

12.3.1 Within fifteen days of the conclusion of the audit, a report shall be compiled by the Lead Auditor describing the results of the audit, and shall also include: the names of the auditors, the scope of the audit, the names of persons contacted during the audit, a summary the audit, a summary of the results of the audit, an evaluation of the effectiveness of the quality program, and a thorough description of any adverse findings. The report shall request a date for a response by the appropriate laboratory management person. The report shall be distributed to the Facility Manager, the Quality Assurance Manager, and any other appropriate management personnel. Corrective action, if required, will be implemented as described in Section 11.0.

12.3.2 The Facility Manager, or other appropriate management personnel which he may delegate to do so, shall respond in writing to the audit report on or before the requested date. The response should be directed to the Lead Auditor and should clearly state the corrective action taken to prevent recurrence of any adverse findings, and if feasible, the action to correct the specific deficiency cited in the report. In the event that corrective action cannot be accomplished immediately, the response should include a scheduled date for initiation and completion of corrective action. Additional responses should be periodically directed to the Lead Auditor to keep him informed of the status of the corrective action being taken until all corrective action has been completed.

12.4 Audit Follow-up

Follow-up action shall be taken by the Lead Auditor, as necessary, to verify:

a. A timely response to any necessary corrective action.

b. The adequacy of the response.

c. All corrective action has been implemented as scheduled.

12.5 Record Keeping

When all necessary corrective action has been accomplished, all the data concerning the audit shall be enclosed in a file folder which shall be identified as to the activities audited and the date of the audit; and shall be retained as a record of a closed-out audit. The file shall be maintained by the Vice President, Quality Assurance for at least five years. A copy of the audit report, and any correspondence relating to any necessary action, shall be maintained by the Quality Assurance Manager for five years.

13.0 GOVERNMENT FURNISHED EQUIPMENT

13.1 General

This procedure provides for the control of Government furnished equipment. Under the provisions of certain contracts the Government will provide equipment required for the test and inspection of test articles. Government furnished equipment shall be controlled as outlined in Paragraph 13.2 of this manual, and the corporate procedure for the control of Government equipment.

13.2 Procedure

13.2.1 Government furnished equipment includes that property furnished by the Government from Government sources under the terms of a contract.

13.2.2 Upon receipt, Government furnished equipment shall be inspected for conformance to the shipping documents, shall be examined for evidence of shipping damage, and shall be given a functional check whenever practical. A complete description of the equipment shall be recorded on the Receiving Inspection form (see Page 15).

13.2.3 Any shortage or other discrepancy with the shipping documents will be noted on the Receiving Inspection form in the space provided. In addition to recording the discrepancy on the Receiving Inspection form, NTS shall immediately notify its Government Representative.

13.2.4 After the inspection and the functional check, the equipment shall be identified with a Customer Property tag and stored in a secured area, if required.

13.2.5 Government furnished equipment shall be utilized only for the purpose for which it was intended, and only when the use is authorized.

13.2.6 Precautions shall be taken within the storage facility to protect the equipment from handling damage, corrosion, and/or other injury.

13.2.7 The Quality Control Department shall inspect any Government furnished equipment at approximately six month intervals, or sooner if required.

14.0 GENERAL INSTRUCTIONS AND FORMAT FOR STANDARD OPERATING PROCEDURES

14.1 General

14.1.1 From time to time, Standard Operating Procedures (SOP's) will be written to describe, in detail, the methods by which a specific operation or function of a repetitive nature is to be accomplished. This procedure establishes the system by which SOP's are to be written, approved, and distributed. The system shall consist of a compilation of SOP's which shall be written by the various department supervisors or by the Quality Control Department. The purpose of the system is to document and communicate the accepted procedures for accomplishing various operations that are of a repetitive and/or routine nature. SOP's will not be issued for those operations or functions whose nature is so basic and generally understood that an SOP would be of little value. All department supervisors are urged to initiate an SOP whenever, in their opinion, one would be helpful and provide for a more efficient operation of NTS.

14.2 Format

14.2.1 All SOP's shall be written to conform to the format described below. Each SOP will be assigned a number by the Quality Control Department. Margins shall be adequate and shall allow for loose leaf binding. All pages shall be numbered and dated. Each paragraph shall be numbered in accordance with the conventional decimal scheme. Each main paragraph (1.0, 2.0, etc.) shall be given a heading which shall be in capital letters. In all SOP's Paragraph 1.0 shall be headed "PURPOSE". All other paragraphs will state, in detail, and in sequence, the steps required to accomplish the procedure. All SOP's shall be written in a clear and concise manner and shall include enough detailed information to preclude any doubt about what is to be done, and how it is to be done.

14.3 Approval

14.3.1 Each SOP shall be signed in the "Written By:_____" space at the top of the first page by the person who originated it. Each SOP will also be reviewed by the Quality Assurance Manager and the Facility Manager and if approved, they will sign their names in the "Approved By:_____" spaces at the bottom of the first page.

14.4 Distribution

14.4.1 NTS employees will be issued the SOP's that are of particular concern to them. All SOP's will be indexed and filed by the Quality Control Department and will be available for review by anyone. All employees are urged to keep a loose leaf notebook for the purpose of filing and retaining SOP's and other reference material that is issued periodically.

14.4.2 The Quality Control Department shall annually review all SOP's to determine their current status and effectiveness. Standard Operating Procedures that are found to be ineffective or obsolete shall be revised or rescinded.

14.4.3 Standard Operating Procedures that become ineffective or insufficient due to operating changes or for other reasons shall be corrected by means of supplements or revisions.

14.4.4 Standard Operating Procedures that are no longer required shall be deleted from the system and all copies shall be taken out of circulation.

APPENDIX

SUPPLEMENTARY QUALITY PROCEDURES MANUAL

FOR

NUCLEAR POWER INDUSTRY CONTRACTS

NTS

FOREWORD

This supplement to NTS' Quality Procedures Manual is organized in nineteen major sections, each covering a particular element of NTS' Quality Assurance Program. This supplement is presented in this format in order to facilitate the review of NTS' quality control procedures by persons whose primary interest lies in the area of nuclear quality assurance, and who are most familiar with those quality assurance documents pertaining to nuclear power plants, including Appendix B of 10CFR50; 10CFR21; the ANSI N45.2 series; and ANSI NQA-1.

The heading of each major section in this supplement makes reference to one of the eighteen criteria of 10CFR50, Appendix B, and to the corresponding sections of the ANSI documents, and for Section XIX to 10CFR21.

This supplement describes the special quality control procedures which NTS implements on contracts for testing services on items intended for use in nuclear power plants; or, in some cases, merely refers the reader to the appropriate sections or paragraphs in the basic Quality Procedures Manual that describe the normal quality control procedures that address the particular quality element covered by a section of this supplement.

NTS acknowledges and has adopted the Terms and Definitions contained in Supplement S-1 of ANSI/ASME NQA-1a-1981.

When reviewing the procedures described in this supplement, it should be remembered that NTS is an independent testing laboratory, engaged only in providing testing services. It does not manufacture any products, therefore, the procedures contained in this supplement, as well as the basic Quality Procedures Manual itself, have been written to assure that NTS complies with those quality standards and requirements that are realistically applicable to a testing laboratory.

NTS

ELEMENT I ORGANIZATION

Ref: 10CFR50, Appendix B, Criterion I
ANSI/ASME N45.2-1977, Section 3
ANSI/ASME NQA-1-1979, Section I

NTS personnel are organized and the lines of authority are structured as shown on the Organization Charts on page 5 of the Quality Procedures Manual. Quality Control Department personnel operate independently of the other departments in the company, but it should be noted that there is a considerable amount of coordination with the other departments and activities within the company.

Section 1.0 of the Quality Procedures Manual further describes how the company is organized and delineates the responsibilities of the principal management personnel.

The managers of the various test departments are responsible for the indoctrination, continued training, and development of qualification requirements for the personnel assigned to their respective departments. The Quality Control Department administers the record-keeping function pertaining to the qualification of testing and inspection personnel.

NTS

ELEMENT II QUALITY ASSURANCE PROGRAM

Ref: 10CFR50, Appendix B, Criterion II
ANSI/ASME N45.2-1977, Section 2
ANSI/ASME NOA-1-1979, Section 2

NTS has documented its quality assurance program in the Quality Procedures Manual and in this Appendix which supplements the basic manual with specific information on the quality assurance procedures that are applicable to contracts for testing of hardware for use in nuclear power generating plants. Otherwise, the basic manual is applicable to all contracts, whether commercial or for a government agency. Additional information concerning the applicability of the basic quality control procedures is given in Paragraph 1.1.3 of the Quality Procedures Manual.

NTS' management regularly reviews the effectiveness of its quality assurance program through the evaluation of both internal and external audits; and by an annual review of the Quality Procedures Manual.

NTS recognizes that the testing business is a very specialized business and that it is very difficult to find potential employees that have been adequately trained by educational institutions or by previous employers, thus it has become necessary to rely heavily upon on-the-job-training. Following is a description of the quality-related positions at NTS for which qualification requirements have been established, a description of the minimum qualifications for each, the procedures by which qualification is determined, and the administrative procedures employed to keep the necessary records and assure compliance with requirements.

Personnel Qualification

Training on the job is a regular part of the daily routine for most technical personnel at NTS. NTS also holds seminars in specialized areas for the purpose of training individuals or groups of technicians, and sends employees to relevant outside seminars and symposia. NTS actively supports continuing college education and strongly encourages employees to continue their education and take advantage of college educational opportunities through the company-sponsored tuition refund program.

The Quality Control Department will be responsible for administering competency tests for each job classification in specialized areas before allowing employees to function in the related job capacity, and shall maintain records of education, work experience, job-related training classes, seminars and symposia attended, and test results for all employees.

Quality-related positions of employment at NTS are Test Engineer, Test Technician, Technician Trainee, Contract Administrator, Analyst, Quality Assurance Manager, and Quality Control Inspector.

A Test Engineer must be either a graduate engineer or the equivalent and will have two years test-related experience and shall have demonstrated leadership ability and competence within his area of expertise.

A Test Technician shall be a high school graduate with a minimum of one year test-related work experience, and shall have good basic math skills, demonstrated mechanical ability, and show evidence of good record-keeping skills.

Technician Trainees will have a high school diploma or the equivalent, a related work background with one year of experience, and must show evidence of mechanical and mathematical aptitude.

The Contract Administrator will be a high school graduate with demonstrated administrative and communicative skills, the ability to coordinate and delegate duties, experience in dealing with the public, and extensive experience in administrative work.

The Analyst will have a college degree in a field of engineering, at least two years testing experience, and an extensive background in both the technical and administrative areas of engineering, instrumentation, or design and development, and will be capable of performing program planning and direction. He shall have demonstrated competence in engineering, design, and analysis.

The Quality Assurance Manager will hae a college degree or the equivalent, should be an ASQC Certified Quality Engineer or a registered Professional Engineer, have extensive experience with quality control, and must have at least two years of high technology test laboratory experience. He should have demonstrated abilities in management, communication and personnel supervision. He must have a working knowledge of the standards and specifications enumerated in the Foreword of this Appendix, and be capable of training others.

Quality Control Inspectors will be high school graduates with demonstrated record-keeping ability, test-related experience, related work background, and experience in administrative coordination and implementation. They will have a minimum of one year of test-related experience and will have demonstrated their capabilities for inspection and test monitoring.

Performance Evaluation

The capabilities of a potential employee shall be initially determined by an evaluation of the candidate's education, experience, training, and either test results or capability demonstration.

The job performance of inspection and test personnel shall be re-evaluated at two year intervals, and must show evidence of continued satisfactory performance or the individuals's capability must be redetermined like that of a prospective employee in accordance with the previous paragraph. If during this evaluation, or at any other time, it is determined that the capabilities of an individual are not in accordance with the qualification requirements specified for the job, the person shall be removed from that job until such time as the required capability has been demonstrated.

The qualifications of personnel will be documented and maintained by the Quality Control Department, and will provide the following information:

A) the name "NTS"
B) employee's identification
C) activities certified to perform
D) basis used for qualification
E) results of periodic evaluation
F) the signature of NTS's evaluator
G) date of qualification and expiration

Each employee must be willing to submit to a physical examination prior to performance of certain activities, such as strenuous lifting.

Delineation of acceptance criteria for inspections and tests including those that may be needed for design verification.
Conclusions
References

Upon completion, the Analyst shall sign and date the Analysis Sheets and prepare copies to be used as "Verification Copies".

3. Design Verification

A Verifier is assigned by the Project Manager. This person must be competent to perform the analysis, but must not have participated in the approach or performance. Using the Verification Copy, the Verifier performs the following:

A) Verifies derivations by alternative or simplified methods (unless established derivations have been used)
B) Verifies accuracy of calculations
C) Marks notes of affirmation or exception by distinctive color for identification. (In case of exceptions, the analysis is returned to the Analyst for correction or exceptions and resolutions; and Verifier also intials and dates them)
D) Signs and dates the Heading, upon finding no exceptions
E) Gives the completed Verification Copy and Analysis Sheets to the Project Manager for final approval.

4. Approval

The Project Manager, acting as Approver, reviews the analysis for (a) fulfillment of terms of the assignment; (b) utilization of proper procedures; (c) signatures of participants; and (d) dates of the performance of work by the Analyst and Verifier. If the review is satisfactory, the Project Manager signs and dates in the Heading as "Approved".

5. Release

The Quality Assurance Manager reviews the analysis package for proper documentation of performance and for concurrence of Analyst and Verifier; secures concurring approvals, if required; and signs and dates "Released" for unlimited use, or "Released for _____" in case of limited use, and distributes copies as may be required.

6. Design Changes and Revisions

Design changes and revisions are accomplished and reviewed by the same procedure as described above.

NTS

ELEMENT IV PROCUREMENT DOCUMENT CONTROL

Ref: 10CFR50, Appendix B, Criterion IV
ANSI/ASME N45.2-1977, Section 5
ANSI/ASME NQA-1a-1981, Section 4

NTS's procurement documents (usually the purchase order) for critical purchases (defined in Paragraph 8.3.2 of the Quality Procedures Manual) shall be initiated by the cognizant Test Engineer or Project Engineer to whom the test program has been assigned. The procurement documents shall:

1. include a statement of the scope of the work to be performed by the supplier;

2. specify the technical requirements for the material or service to be supplied;

3. include NTS' inspection and acceptance requirements;

4. require that the supplier have a documented quality assurance program that implements all, or specified portions, of 10CFR50, Appendix B, and/or other quality assurance documents that may be specified by NTS;

5. require that NTS and other interested parties, as authorized by NTS, have the right of access to the supplier's facilities and records for the purpose of inspection and audit; and

6. identify the documentation required to be submitted for information, review and approval by NTS, and shall include the delivery schedule for such documentation; and, in the event that NTS requires the supplier to maintain quality assurance documents, the retention times and disposition requirements.

Nonconformances occurring at a supplier's facility or because of a supplier's actions shall be documented on an NTS Notice of Deviation (NOD) form as described in Paragraph 4.4 of the Quality Procedures Manual. The completed NOD shall become a part of the NTS data package, and shall be in addition to any other documentation supplied by the supplier.

Paragraph 8.3 of the Quality Procedures Manual describes the review procedure for purchase orders issued for the procurement of items and services.

Any changes to procurement documents are subject to the same procedures and controls as described above.

NTS

ELEMENT V INSTRUCTIONS, PROCEDURES AND DRAWINGS

Ref: 10CFR50, Appendix B, Criterion V
ANSI/ASME N45.2-1977, Section 6
ANSI/ASME NQA-1-1979, Section 5

NTS' procedure for translating contractual requirements into documented job instructions is described in Section 2.0 of the Quality Procedures Manual.

Paragraph 2.2 describes the standard procedure for initiation of NTS' Master Job Order (MJO).

Paragraph 2.3 describes the procedure for quality assurance review of the client's purchase order to NTS.

Paragraph 2.4 describes the use of NTS' Job Traveler.

Paragraph 2.5 discusses test and inspection planning.

Paragraph 2.6 describes the procedure used by the Quality Assurance Department to review test procedures written by NTS.

ELEMENT VI DOCUMENT CONTROL

Ref: 10CFR50, Appendix B, Criterion VI
ANSI/ASME N45.2-1977, Section 7
ANSI/ASME NQA-1-1979, Section 6

On most test programs, NTS performs testing services in accordance with the requirements of specifications, test procedures, and drawings which have been provided or specified by the client. The procedure used to control such documents is described in Section 9.0 of the Quality Procedures Manual.

Test procedures and other documents originated by NTS are reviewed by the Quality Assurance Manager as described in Paragraph 2.6.1 of the Quality Procedures Manual. Revisions to NTS-prepared test procedures are reviewed in the same manner, as required by Paragraph 9.2.5 of the Quality Procedures Manual.

NTS

ELEMENT VII CONTROL OF PURCHASED ITEMS AND SERVICES

Ref: 10CFR50, Appendix B, Criterion VII
ANSI/ASME N45.2-1977, Section 8
ANSI/ASME NQA-1-1979, Section 7
10CFR21

Section 8.0 of the Quality Procedures Manual describes the procedures for procurement control. The planning associated with the procurement of items and services directly related to a test program performed by NTS is the responsibility of the Test Engineer to whom the test program is assigned.

Solicitation and evaluation of bids for procurements directly affecting a test program is the responsibility of the NTS Test Engineer to whom the test program has been assigned.

Purchase orders are reviewed as described in Paragraph 8.3.4 of the Quality Procedures Manual, except that one of the review criteria is modified to ensure that a statement of the applicability of 10CFR50, Appendix B; ANSI/ASME N45.2 or ANSI/ASME NQA-1; and/or 10CFR21 is included as appropriate.

Verification of proper performance of suppliers performing any subcontracted test is the responsibility of NTS' Quality Control Department. The Quality Control Department may delegate other organizations within NTS the authority to perform source surveillance or other quality assurance activities as may be necessary to assure that the supplier is performing as contractually required.

In the event of a nonconformance on a subcontracted test, the NTS Notice of Deviation (NOD) shall be completed and added to the data package as described in Paragraph 4.4 of the Quality Procedures Manual. The execution of the NOD shall be in addition to any other documentation prepared by the supplier. The NOD will be distributed to the customer in order to assure compliance with the requirements of 10CFR21.

Any necessary corrective action by a supplier shall be accomplished and documented as described in Section 11.0 of the Quality Procedures Manual.

NTS

ELEMENT VIII IDENTIFICATION AND CONTROL OF ITEMS

Ref: 10CFR50, Appendix B, Criterion VIII
ANSI/ASME N45.2-1977, Section 9
ANSI/ASME NQA-1-1979, Section 8

Inasmuch as NTS does not manufacture any deliverable items, this quality program element is essentially nonapplicable to NTS. However, NTS does recognize the importance of maintaining the identity and traceability of clients' items which are in its custody. Therefore, NTS will not remove the physical identification from any item unless it is necessary to test it properly. In such a case, the removal of the item's identification will be done only with the client's permission, and only when a suitable alternate method of identification has been agreed upon by the client and NTS. The alternate identification method shall then be implemented by NTS.

If, during the course of a test program, a test specimen deviates from the specification requirements or otherwise is deemed to be "unacceptable", a HOLD tag (see Page 16) will be affixed to it.

NTS will not apply any permanent markings to the client's items unless specifically required by the contract, and then only in accordance with a written procedure which has been approved by the client.

ELEMENT IX CONTROL OF SPECIAL PROCESSES

Ref: 10CFR50, Appendix B, Criterion IX
ANSI/ASME N45.2-1977, Section 10
ANSI/ASME NQA-1-1979, Section 9

Except for helium leak testing, NTS does not perform any "special processes". Helium leak testing is performed in accordance with written procedures by personnel who have been certified in accordance with ASNT SNT-TC-1A. All other testing performed by NTS is accomplished in accordance with written procedures, specifications or drawings, and the job instructions provided by the Master Job Order (MJO) and Job Traveler. The MJO form shall be completed as described in Paragraph 2.2 of the Quality Procedures Manual, and the Job Traveler shall be completed as described in Paragraph 2.4 of the Quality Procedures Manual and in Element XIV of this Appendix.

NTS

ELEMENT X INSPECTION

Ref: 10CFR50, Appendix B, Criterion X
ANSI/ASME N45.2-1977, Section 11
ANSI/ASME NQA-1-1979, Section 10

Those inspection activities that are applicable to a testing laboratory are described in Sections 3.0, 4.0 and 5.0 of the Quality Procedures Manual. The procedure used for inspection planning is described in Paragraph 2.5 of the Quality Procedures Manual.

NTS

ELEMENT XI TEST CONTROL

Ref: 10CFR50, Appendix B, Criterion XI
ANSI/ASME N45.2-1977, Section 12
ANSI/ASME NQA-1a-1981, Section 11

Inasmuch as NTS' customers are usually the designers of the items to be tested, test requirements, acceptance criteria, and the testing procedures are usually specified or provided by them. However, oftentimes NTS will prepare a written test procedure which describes, in detail, how it intends to conduct a test program to satisfy the requirements of the test specifications. In such cases, the test procedure will be written and reviewed as described in paragraph 2.6 of the Quality Procedures Manual. When NTS has contracted to provide engineering services which include design analysis and/or the development of test plans and acceptance criteria for the customer's product, the analysis report, documented test plan, test specification or test procedure will be subjected to the design review procedure described in Element III, and will then be submitted to the customer and/or other designated organization(s) for approval.

Testing programs shall be planned and controlled by utilization of the Job Traveler form as described in paragraph 2.4 of the Quality Procedures Manual, except that the requirement in paragraph 2.4.3 for inspection stamp impressions or initials by "...the cognizant Test Engineer and/or the QA Manager ..." is modified to make it mandatory for the QA Manager to also stamp or initial the Job Traveler form as each test or other operation is properly accomplished. Test data shall be recorded and controlled as described in paragraph 4.3; and routine testing inspection and test surveillance are conducted as described in paragraph 4.3 of the Quality Procedures Manual. At the conclusion of the test program, the test data shall be compiled and summarized into a final test report as described in Section 6.0 of the Quality Procedures Manual. NTS does not evaluate the test results with regard to the suitability of the tested item for its intended service. Rather, NTS performs the required tests and reports the results. The determination of whether or not the item complies with the design requirements, and its suitability for its intended use is left to the customer. Defects are reported as described in Element XIX.

Test records, including all original test data sheets, shall be maintained as described in paragraph 6.2.5 of the Quality Procedures Manual.

NTS

ELEMENT XII CONTROL FOR MEASURING AND TEST EQUIPMENT

Ref: 10CFR50, Appendix B, Criterion XII
ANSI/ASME N45.1-1977, Section 13
ANSI/ASME NQA-1-1979, Section 12

Measuring and test equipment is controlled as described in Section 10.0 of the Quality Procedures Manual.

ELEMENT XIII HANDLING, STORAGE AND SHIPPING

Ref: 10CFR50, Appendix B, Criterion XIII
ANSI/ASME N45.2-1977, Section 14
ANSI/ASME NQA-1-1979, Section 13

Items to be tested and other property of the client shall be handled, stored, packaged and shipped in accordance with the client's specifications. In the event that the client does not specify handling, storage and shipping procedures or requirements, NTS shall use reasonable care during all handling and storage operations and shall adhere to the appropriate procedures described in the Quality Procedures Manual, as listed below:

Identification of client's property	3.2.5
Careful handling during testing	4.2.1 a
Packaging	5.2.3
Shipping	5.2.4 and 5.2.5

ELEMENT XIV INSPECTION, TEST AND OPERATING STATUS

Ref: 10CFR50, Appendix B, Criterion XIV
ANSI/ASME N45.2-1977, Section 15
ANSI/ASME NQA-1-1979, Section 14

The status of test programs being conducted on items affecting the safety of nuclear power plants shall be indicated on the Job Traveler form as described in Paragraph 2.4 of the Quality Procedures Manual. The procedures described in Paragraph 2.4 of the Quality Manual shall be implemented regardless of the number of individual tests in the test program. In addition, the Quality Assurance Manager shall review the Job Traveler to assure that all required test and inspection operations, including any mandatory hold points, are listed on the Traveler form. The Quality Assurance Manager's approval shall be indicated by the application of his inspection stamp imprint at the top of the Job Traveler form.

Test items that do not conform with the established acceptance criteria shall be identified with a red HOLD tag. An example of this tag is shown on Page 16 of the Quality Procedures Manual.

NTS

ELEMENT XV CONTROL OF NONCONFORMING ITEMS

Ref: 10CFR50, Appendix B, Criterion XV
ANSI/ASME N45.2-1977, Section 16
ANSI/ASME NQA-1-1979, Section 15

Nonconforming test items shall be identified with a red HOLD tag of the type shown on Page 16 of the Quality Procedures Manual. The nature of the nonconformance and the conditions at the time of occurrence shall be documented on the Notice of Deviation (NOD) form as described in Paragraph 4.4 of the Quality Procedures Manual.

Inasmuch as NTS is not the owner of items submitted to it for testing, it does not "accept" or "reject" tested items. Rather, NTS performs the required tests and inspections and reports the results to its clients. Those items which do not meet the acceptance criteria shall be identified with a red HOLD tag, but will not be "rejected" per se. The disposition of all tested items, whether or not they meet the acceptance criteria, is left to the client. NTS will then act in accordance with the client's instructions regarding the handling and disposition of tested items.

ELEMENT XVI CORRECTIVE ACTION

Ref: 10CFR50, Appendix B, Criterion XVI
ANSI/ASME N45.2-1977, Section 17
ANSI/ASME NQA-1-1979, Section 16

The procedure used by NTS for effecting necessary corrective action is described in Section 11.0 of the Quality Procedures Manual.

NTS

ELEMENT XVII QUALITY ASSURANCE RECORDS

Ref: 10CFR50, Appendix B, Criterion XVII
ANSI/ASME N45.2-1977, Section 18
ANSI/ASME NQA-1a-1981, Section 17

Because test records are considered to be evidence of activities pertaining to quality, they shall be legible, identifiable, and retrievable, and shall be protected from loss, damage and deterioration. These records are to be maintained for the duration of the contract, and a minimum of three years thereafter, or longer if so specified in individual contracts. The records shall be available for review by the customer upon request.

Test records include, but are not limited to:

a) test plans, test procedures and specifications, and drawings;
b) receiving inspection reports;
c) the job package (defined in paragraph 2.2.2 of the Quality Procedures Manual);
d) test data, calculations and formulas;
e) in-process test inspection records and data sheets;
f) data recorder charts;
g) shipping and transportation documents; and
h) final test reports and certifications.

Copies of NTS-generated test records, test plans and/or test procedures, and final test reports (with photographs, if appropriate) are routinely submitted to the customer. Consequently, parallel data files are maintained at separate facilities, and thus effectively eliminate the chance of exposure to simultaneous hazard.

Since it is the responsibility of the plant owner to maintain "lifetime records", which include: test records, design verification records, and safety analysis reports, etc., it is NTS's policy, in the absence of contractual obligations to the contrary, to maintain such records for a period of at least three years beyond the end of the fiscal year in which the last entry was made. After the second year, the customer will be notified of NTS's intention to dispose of the records, and will be given an opportunity to request transfer of the records to their facility.

Test records kept by NTS will be maintained in the contracts office area or in a locked storeroom established for that purpose. The storeroom is constructed to preclude entry of unauthorized personnel so as to protect against theft and vandalism. The key to the storeroom and a list of authorized personnel who shall have access to the storeroom is kept by the Contracts Administrator.

Equipment Calibration Records - The Quality Control Department maintains records of the calibration and repair of test equipment as described in paragraphs 10.5.3 and 10.5.4 of the Quality Procedures Manual.

Personnel Qualification Records - NTS's Quality Control Department maintains a record of the qualification of test personnel. The various test department managers are responsible for monitoring, evaluating, and documenting the work performance and abilities of the personnel assigned to their department. Documented records of these evaluations shall be forwarded to the Quality Control Department so that they may be added to the employee's cumulative qualification and experience file. Certifications of training, proficiency test records, and other educational and work experience records (including records of attendance at seminars and symposia) shall also be forwarded to the Quality Control Department for filing and retention. Duplicate personnel files may be maintained by the facility Office Manager.

Additionally, records of the qualifications of each quality auditor are maintained by the Vice-President, Quality Assurance as described under Element II of this Supplement to the Quality Procedures Manual.

Design Documents - Design documentation, when applicable to NTS's operations, which provides evidence that design and verification processes were performed in accordance with established requirements, shall be maintained in the applicable "job package" for as long as required to support the final design. These records include: drawings and specifications, and any revisions thereto, sources of design data input, and notes and reports from consultation, engineering calculations, and the final design documents. Control and maintenance of such design documents is the responsibility of the cognizant test engineer in coordination with the Contracts Department.

Other Quality Records - It is the responsibility of the Quality Control Department to maintain files containing: audit reports, Standard Operating Procedures, Requests for Corrective Action, certificates of conformance for purchased materials, vendor surveys, identification of holders of inspection stamps, and any other quality records that are not directly related to a job, and which are not identified in preceeding paragraphs under this element. The records shall be readily retrievable for at least three years.

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ELEMENT XVIII AUDITS

Ref: 10CFR50, Appendix B, Criterion XVIII
ANSI/ASME N45.2-1977, Section 19
ANSI/ASME NQA-1-1979, Section 18

Planned and scheduled quality audits are performed as described in Section 12 of the Quality Procedures Manual.

ELEMENT XIX REPORTING OF DEFECTS

Ref: 10CFR21
Energy Reorganization Act of 1974, Section 206

The procedures described herein will be implemented whenever the provisions to 10CFR21 are included in a contract or purchase order issued to NTS.

Should a deviation occur during a test program, NTS will issue a Notice of Deviation (NOD) as described in paragraph 4.4 of the Quality Procedures Manual. The purpose of the NOD is to document any deviation from the technical requirements established by the test procedure or specification.

The NOD form shall be completely filled-in and shall fully describe the conditions prevailing at the time of the deviation and shall include:

- customer's name;
- hardware identification including part number(s) and serial number(s);
- the date when the deviation first became known;
- the corrective action taken, or being taken, and the name (if known) of the persons responsible for assuring that corrective action is taken;
- any other information necessary to completely describe the circumstances surrounding the deviation.

Part 21 of Title 10 in the Code of Federal Regulations requires that any known "...defects, which could create a substantial safety hazard..." be immediately reported to the Nuclear Regulatory Commission (NRC). Generally, reportable situations would exist when: 1) the tested hardware did not meet the performance requirements of the approved test procedure or test specification or 2) a test was performed in a manner significantly different from the requirements of the approved test procedure, specification, or other documented instruction specified by the procurement documents, such that the intent of the test may not have been fulfilled; and if, on the basis of an evaluation, the deviation could create a substantial safety hazard. Because NTS may be unable to effectively evaluate and determine whether or not a deviation from specified technical requirements is reported as a "defect," if, in the judgement of NTS, a deviation could possibly be reportable to the Nuclear Regulatory Commissions under the provisions of 10CFR21, an additional copy of the NOD (in addition to the usual distribution) shall be forwarded to the customer's top quality assurance official, and one more copy shall be made and forwarded to NTS' Director of Laboratory Operations. The customer will be responsible for evaluating the deviation to determine whether or not it constitutes a reportable "defect", and then making a report to the NRC if necessary.

A copy of the following documents shall be posted in the NTS departments where testing for the nuclear power generation industry is performed:

1. 10CFR21;
2. Section 206 of the Energy Reorganization Act of 1974;
3. A copy of this procedure (Element XIX of Appendix A of the NTS Quality Manual).

The provisions of 10CFR21 shall be specified by reference on each procurement document issued by NTS for materials or services when it is applicable. The reference to 10CFR21 shall be verified by the Quality Control Department when they review the Purchase Order, as described in paragraph 8.3.4 of the Quality Procedures Manual.

A copy of the Notice of Deviation describing any deviation that occurs during a test program is filed with the job package which is maintained on file at NTS for a period of at least three years.