

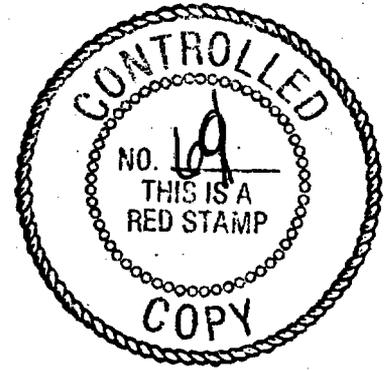
U.S. DEPARTMENT OF ENERGY

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**TECHNICAL & MANAGEMENT  
SUPPORT SERVICES  
QUALITY ASSURANCE  
PROGRAM PLAN  
AND  
SUPPORTING  
DOCUMENTS**

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WM-11

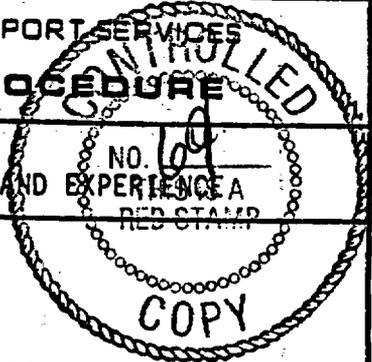


Science Applications International Corporation  
TECHNICAL & MANAGEMENT SUPPORT SERVICES

102.7  
WM-11  
NH031/1







Title

AP 3.15 - T&MSS VERIFICATION OF INFORMATION ON EDUCATION AND EXPERIENCE

### 1.0 PURPOSE AND SCOPE

This procedure describes the administrative process followed to verify the accuracy of information on education and experience as provided by new SAIC Technical and Management Support Services (T&MSS) personnel. This procedure supplements SAIC Policy B-3, Employment Records, and SAIC Policy B-3-1, Accuracy of Information on Qualifications and Experience.

### 2.0 APPLICABILITY

This procedure applies to all new T&MSS Project employees.

### 3.0 DEFINITIONS

#### 3.1 NEW T&MSS EMPLOYEE

The phrase, "new T&MSS employee", refers to employees new to SAIC. It does not apply to employees transferring to the T&MSS Project from other SAIC divisions or groups.

#### 3.2 PERSONNEL ADMINISTRATOR

Personnel Administrator refers to the T&MSS Personnel Administrator located in the Las Vegas, Nevada office.

#### 3.3 REGIONAL PERSONNEL OFFICE

Regional Personnel Office refers to SAIC Personnel Offices in McLean or La Jolla supporting the T&MSS Project.

### 4.0 RESPONSIBILITIES

#### 4.1 EMPLOYEE

The new T&MSS employee is responsible for providing accurate information necessary to complete the Verification of Education form (see Figure 3.15-1) and the Verification of Employment form (see Figure 3.15-2).

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AP 3.15 - T&MSS VERIFICATION OF INFORMATION ON EDUCATION AND EXPERIENCE

4.2 PERSONNEL ADMINISTRATOR

The Personnel Administrator is responsible for:

1. Providing new T&MSS employees with the Verification of Employment form and Verification of Education form for completion by the employee;
2. Verifying the accuracy of information provided by the new T&MSS employee on the two verification forms for the T&MSS Project;
3. Submitting the two verified forms to the appropriate Regional Personnel Office responsible for corporate personnel verification;
4. Notifying the Finance and Administration Director of unresolved verification of education and employment history; and
5. Providing copies of the verified forms for retention in the T&MSS personnel file and the T&MSS Records Center.

4.3 FINANCE AND ADMINISTRATION DIRECTOR

The Finance and Administration Director is responsible for resolution and documentation of all unresolved verification of education and/or employment history.

4.4 T&MSS QUALITY ASSURANCE MANAGER

The T&MSS Quality Assurance (QA) Manager shall assure that implementation of the procedures is verified by audit and surveillance.

5.0 PROCEDURE

5.1 COMPLETION AND SUBMITTAL OF VERIFICATION FORMS

New T&MSS employees participate in project orientation on an individual or group basis on the day the employee reports to work or as soon thereafter as possible (AP-3.1, Training and Orientation of T&MSS Staff). At this orientation, the Personnel Administrator presents the Verification of Employment form and the Verification of Education form for completion by all new T&MSS employees. The Personnel Administrator retains the completed forms for verification processing.

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5.2 T&MSS VERIFICATION OF EDUCATION

At a minimum, the highest degree claimed shall be verified with required verification accomplished during the first 30 days of employment. The Personnel Administrator shall verify the accuracy of education by documented telephone contact or by letter of confirmation.

The documentation shall note if the contacted personnel refuse to release the requested information. In this instance, contact shall be followed by a letter requesting verification of education. The Personnel Administrator shall maintain a copy of the letter in a "tickler" file to be followed up within 30 days.

5.2.1 Verification of Education Documentation Requirements

Verification of education may be in the form of documented confirmation by telephone contact or a letter of confirmation. Documentation shall contain at a minimum:

1. Date and time of contact (not required for a letter of confirmation);
2. Name and position of confirming personnel; and
3. Name, signature and position of T&MSS personnel initiating contact.

5.2.2 Unresolved Verification of Education

The Personnel Administrator shall refer all unresolved or disputed verification of education to the Finance and Administration Director for resolution and documentation.

5.3 T&MSS VERIFICATION OF EMPLOYMENT

As a minimum, the Personnel Administrator shall verify the past three years of each new T&MSS employee's employment experience by documented telephone contact or by letter of confirmation. This documentation shall include data as to position and dates of employment. It shall be accomplished during the first 30 days of employment. Past or current employment shall not be checked without the employee's permission (the new T&MSS employee's signature on the Verification of Employment form authorizes release of such information).

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**5.3.1 Verification of Employment Documentation Requirements**

Verification of employment shall be in the form of documented confirmation by telephone contact or by a letter of confirmation. Documentation shall contain at a minimum:

1. Date and time of contact (not required for a letter of confirmation.
2. Name and position of confirming personnel; and
3. Name and position of T&MSS personnel initiating the contact.

**5.3.2 Unresolved Verification of Employment**

The Personnel Administrator shall refer all unresolved or disputed verification of employment matters to the Finance and Administration Division Director for resolution and documentation.

**5.4 MAINTENANCE OF VERIFICATION FORM RECORDS**

In compliance with SAIC Corporate Policy B-3, Employment Records, the Personnel Administrator forwards the verified education and employment forms to the appropriate Regional Personnel Office.

The Personnel Administrator shall assure that verified copies of all education and employment forms are placed in the T&MSS personnel files and submitted to the T&MSS Project Files.

**6.0 REFERENCES**

SAIC Administrative Handbook: SAIC Policy B-3, Employment Records

SAIC Administrative Handbook: SAIC Policy B-3-1, Accuracy of Information on Qualifications and Experience

AP-3-1 Training and Orientation of T&MSS Staff

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7.0 APPLICABLE FORMS

Figure 3.15-1 Verification of Education

Figure 3.15-2 Verification of Employment

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AP 3.15 - T&MSS VERIFICATION OF INFORMATION ON EDUCATION AND EXPERIENCE

**SAIC** Science Applications International Corporation GROUP No. \_\_\_\_\_

School Name: \_\_\_\_\_

Address: \_\_\_\_\_

Dear Sir/Madam:

The individual identified below has indicated graduation from your school. Please provide for our records, the academic degree information requested in the block below.

Name: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Employee No.: \_\_\_\_\_

Social Security No.: \_\_\_\_\_

I authorize the release of my educational record to Science Applications International Corporation.

\_\_\_\_\_  
Signature of Employee

---

For Completion by College/University

Enter information of highest degree obtained

Degree \_\_\_\_\_ Year Granted \_\_\_\_\_

Major \_\_\_\_\_ Overall GPA \_\_\_\_\_

\_\_\_\_\_  
Signature

Please use the enclosed stamped, self-addressed envelope to return the completed information to the address shown. Your cooperation is very much appreciated.

Very truly yours,  
**SCIENCE APPLICATIONS INTERNATIONAL CORPORATION**

Please return mail here  
**SAIC** 101 Convention Ctr. Dr., #407, Las Vegas, NV 89109  
Other SAIC Offices: Albuquerque Chicago Denver Denver Huntington Las Angeles Las Vegas Orlando Salt Lake San Francisco Tucson and Washington, D.C.

Figure 3.15-1 Verification of Education

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VERIFICATION OF EMPLOYMENT

Former Employee	Employee No.	Social Security No.
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The above named individual has authorized us to contact you and has signed a statement releasing your company from liability in connection therewith. Your assistance in verifying the requested information is appreciated. Thank you for this courtesy.

I hereby authorize release of the information as requested below.

Employee Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Company To Be Contacted: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

	EMPLOYEE STATES:	YOUR RECORDS SHOW (LEAVE BLANK IF SAME)
POSITION HELD		
PERIOD EMPLOYED	FROM:	FROM:
	TO:	TO:
BASE PAY		
REASON FOR LEAVING		

ELIGIBLE FOR REHIRE

NOT ELIGIBLE FOR REHIRE

Comments: \_\_\_\_\_

Please use the enclosed stamped, self-addressed envelope to return the completed information to the address shown. Your cooperation is very much appreciated.

Signature \_\_\_\_\_

Title \_\_\_\_\_ Date \_\_\_\_\_

**SAIC** 101 Convention Ctr. Dr., #407, Las Vegas, NV 89109

City: St. Louis, Chicago, Denver, Dallas, Fort Worth, Los Angeles, San Diego, Orlando, San Francisco, Tucson and Washington D.C.

Figure 3.15-2 Verification of Employment

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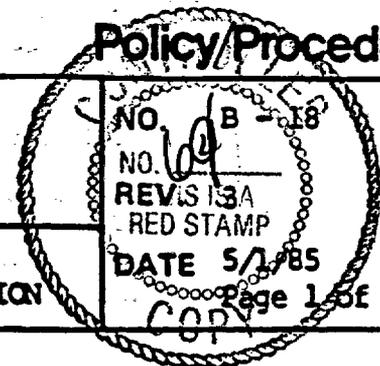


TITLE

USE OF CONSULTANT

APPROVAL

J. DENNIS HEEST, SENIOR VICE PRESIDENT FOR ADMINISTRATION



**I PURPOSE AND SCOPE**

To set forth policy and procedure relative to the use of outside consultants in support of company activities and to specify the conditions, contract provisions and regulatory requirements applicable to consultant utilization.

This policy and the procedural requirements set forth herein apply to all SAIC operations, including wholly owned and majority owned subsidiaries.

**II POLICY**

**A. Utilization**

It is the policy of SAIC to use independent outside consultants in the performance of company requirements when particular professional knowledge or skill is needed and either does not exist or is not currently available within the company or is contractually directed by SAIC's customer. The use of consultant shall comply with applicable contractual and regulatory requirements and with the requirements as provided herein.

**B. Consultant Status**

**1. Consultant Definition and Responsibility**

Consultants are independent contractors who are members of a particular profession or who possess particular professional knowledge or skill.

As independent contractors, consultants are responsible to the company for the results accomplished by their work and are not subject to control or direction by the company as to the means and methods of accomplishing the required results.

**2. Liability and Limitation**

The services of an individual should not be acquired through a consulting agreement or subcontract unless the individual will render services as an independent contractor.

If an individual is being used in a manner and arrangement indicative of an employer-employee relationship, the company can be held liable for payroll withholding tax and state unemployment benefits and any penalties attendant thereto.



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3. Determination of Status

Several factors must be considered in order to determine whether a consultant or employee relationship exists.

An employee relationship is indicated if:

- a. The company provides facilities, tools, equipment, supplies or clerical support
- b. The services to be performed are required in the company's normal business activity and comparable services are regularly performed by company employees
- c. The individual provides services only to SAIC and/or the services are of a continuous as opposed to temporary or intermittent nature
- d. The term of service is in excess of ninety days
- e. The services to be performed require direction with regard to the methodology used in achieving the result and/or direct supervision of the individual
- f. The individual is financially compensated by time expended rather than by task completion.

The more of the above questions answered in the affirmative, the more likely a finding that the individual will be regarded as an employee.

If an employee relationship exists, the Corporate Personnel department will provide information regarding the types of employment arrangement that are available.

C. Regulatory and Contractual Requirements

1. Consultant Utilization

The use of consultants (independent contractors) represents a labor-hour subcontract arrangement. Consultant costs that are charged as a direct cost to cost reimbursement prime contracts are subject to the Subcontracts Clause included in all Government prime contracts.



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The Subcontracts Clause requires the company to provide the cognizant Government Contracting Officer Advance Notification of the intent to utilize a consultant(s) whose cost will be charged as a direct cost to a contract. In some situations the Contracting Officer's Written Consent to utilize consultants is also required. Non-Government contracts may also contain similar requirements.

**NOTE:** The Advance Notification - Consent process can be greatly enhanced by identifying consultant utilization, by name if possible, as a specific cost element in proposals.

## 2. Selling Agencies

Payment of contingent fees for soliciting or obtaining Government contracts is considered contrary to public policy unless the fee is paid to a bona fide employee or agency. Every Government contract includes a requirement that the company sign a Covenant Against the Payment of Contingent Fees.

Accordingly, a consultant who does not qualify as a "bona fide agency" within the meaning of FAR 3.408-2, will not be permitted to sell to the U.S. Government or to U.S. Government contractors. The FAR defines a "Bona Fide Agency" as an established commercial or selling agency, maintained for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts, or holds itself out as being able to obtain any Government contract through improper influence.

The following guidelines are used by Contracting Officers to determine if a bona fide agency exists:

- a. The fee should not be inequitable or exorbitant when compared to the services performed or to customary fees for similar services related to commercial business.
- b. The agency should have adequate knowledge of the contractor's products and business, as well as other qualifications necessary to sell products or services on their merits.
- c. The contractor and the agency should have a continuing relationship or, in newly established relationships, should contemplate future continuity.



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<p>d. The agency should be a concern that has existed for a considerable period of time, or be a newly established concern likely to continue in the future. The business of the agency should be conducted in the agency name and characterized by the customary indicia in the conduct of regular business.</p> <p>e. While an agency that confines its selling activities to Government contracts is not disqualified, the fact that an agency represents the contractor in Government and commercial sales should be given favorable consideration.</p> <p><b>D. Responsibility</b></p> <p>1. Corporate Purchasing - La Jolla.</p> <p>Administration of consultant activity is the responsibility of Corporate Purchasing - La Jolla and includes:</p> <ul style="list-style-type: none"><li>a. Issuance of consultant agreements</li><li>b. Specific task order releases against consulting agreements</li><li>c. Preparation of advance notification and consent to issue letters and submittal thereof to the cognizant Contracting Officer</li><li>d. Developing and maintaining a current roster of consultants</li><li>e. Evaluation of consultant invoices with respect to agreement/task order coverage and prior fulfillment of Subcontracts Clause requirements</li></ul> <p>2. Designated Locations/Facilities</p> <p>Individuals at other SAIC facilities may also be designated the responsibility for issuing consultant agreements and task order releases as may be delegated by the Director, Corporate Purchasing.</p>	



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### III PROCEDURE

#### A. Consultant Agreement

1. The SAIC Pro-Forma Consultant Agreement specifies the terms and conditions, rate of pay, term of agreement, invoicing procedures, the consultant's responsibilities to SAIC and its customers, and a generalized definition of the consultant's area of involvement in potential task assignments.
2. The Consultant Agreement is essentially an unfunded Basic Ordering Agreement (BOA) that does not authorize the commencement of work or incurrence of cost.
3. Specific task order releases are required to initiate consultant activity. Task order releases are effected as a result of an approved "Request for Consultant Services" (Attachment 1).

#### B. Request for Consultant Services

1. SAIC personnel requiring consultant services shall initiate a "Request for Consultant Services" form. All sections of the form must be completed.
  - a. The Consultant's resume shall be submitted with the "Request for Consultant Services" unless one is already on file in Corporate Purchasing - La Jolla.
  - b. A new request must be completed for each task except that tasks amounting to less than \$5,000.00 or two weeks duration may be combined.
2. A request for less than \$10,000.00 requires a Division Manager's approval. If a Division Manager is the requestor, the approval of the Group or Operations Manager is necessary.
3. Group Manager approval is required if the request is for an amount of \$10,000.00 or more or the aggregate value of this and other previous requests for the same task exceeds \$10,000.00.
4. The Principal Investigator must also approve requests for consultants that direct charge to a contract.



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5. If a minimum amount of consulting time or fee (a "retainer") is to be guaranteed to a consultant, approvals must be obtained from the SAIC President, Chief Operating Officer or Group Manager. Approval authority is delegable for amounts less than \$5,000.00. Agreements with a retainer can only be executed on behalf of SAIC by the Director, Corporate Purchasing.

6. Upon completion and approval, forward the "Request for Consultant Services" form to the Consultant Coordinator, Corporate Purchasing - La Jolla.

**C. Task Order Authorization**

1. Upon receipt of a Request for Consultant Services, the Consultant Coordinator will:
  - a. Verify approvals for the sub-project number(s) indicated
  - b. Determine if there is a requirement for Contracting Office Advance Notification or Consent to Issue
  - c. Initiate the Advance Notification/Request for Consent action, as required

NOTE: Advance Notification is required for any consultant utilization charged direct to cost reimbursable prime contract.

Contracting Officer written consent is required for consultant utilization involving research, development or experimental activities charged to cost reimbursable RD prime contracts.

Consultant work shall not commence until the above requirements are satisfied. Actions to the contrary are a violation of U.S. Code and Federal Acquisition Regulations and can result in unallowable costs.

2. The Consultant Coordinator will initiate a Consultant Agreement upon receipt of a request if the consultant does not have an active agreement in place.
3. The Consultant Coordinator will issue a Task Order Letter Authorization to Proceed (Attachment 2) to the consultant and a copy thereof to the requestor.



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<p><b>D. Designated Consultant Coordinators</b></p> <p>The executed Consultant Agreement and all related documents will be retained in the files of the cognizant Consultant Coordinator. The Consultant Coordinator will forward a copy of the executed Agreement and related documents (including the consultant's resume) to Corporate Purchasing La Jolla. The Consultant Coordinator will provide a copy of the Contracting Officer's approval for the appropriate contract file.</p> <p><b>E. Selling Services</b></p> <p>If the "Request for Consultant Agreement" indicates that the services of the consultant will include selling, the Consultant Coordinator will ensure that the transmittal letter and questionnaire included herein as Attachment 3 are forwarded to the consultant. The questionnaire must be completed and received by the Consultant Coordinator before the Consultant Agreement can be executed.</p> <p><b>F. Use of Proposed Consultants' Names and Resumes</b></p> <p>The cognizant SAIC PI shall obtain the written permission of the consultant prior to the use of that consultant's name or resume in any situation, including proposals. A copy of the letter granting permission shall be forwarded to the Consultant Coordinator who will place it in the consultant's file.</p> <p>If it is not possible to obtain written permission prior to the date of a proposal submission, the PI shall obtain verbal approval from the consultant, initiate a memo stating the date of such approval and forward a copy of the memo to the Consultant Coordinator for inclusion in the file.</p> <p><b>G. Payments to Consultants</b></p> <ol style="list-style-type: none"><li>1. Consultants requesting reimbursement for their services and expenses must complete the three part "Invoice for Consulting Services" form (Attachment 4). In order to satisfy cost reimbursement and DCAA audit requirements, the invoice must describe the nature and scope of work performed and include, as a minimum, the following:<ol style="list-style-type: none"><li>a. Contract number, if applicable</li><li>b. A brief description of specific tasks or services performed</li></ol></li></ol>	



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- c. Where and for whom each task was performed
- d. The date each task or service was performed and the amount of time spent on each
- e. If a product was involved, e.g. the preparation and delivery of a report or study, identification of the product and the Company representative to whom it was delivered.

In addition to the above, the consultant must separately list and identify any time spent in soliciting business from existing customers.

- 2. If the consultant's invoice includes expenses, the consultant must complete an "Expense Report" in accordance with SAIC Policy E-1.
- 3. The consultant's invoice and expense report must be submitted to and approved by each SAIC employee who requested the consultant services and also by the appropriate Division Manager(s). Group Manager approval is also required for any invoices for service/expenses which are in excess of \$5,000.00.
- 4. Approved invoices and expense reports are to be sent to Accounts Payable.
- 5. Prior to processing consultant invoices and expense reports, Accounts Payable will verify, with the Consultant Coordinator, that fees are in accordance with the agreed upon rate, within the period of performance and that Contracting Officer Advance Notification/Consent to Issue requirements have been met.

**H. Termination/Renewal of the Consultant Agreement**

- 1. Prior to the end of the performance period specified in the Consultant Agreement, SAIC may terminate the agreement for its convenience. If the employee who requested the services no longer desires to have the consultant perform work, he/she must promptly notify the Consultant Coordinator, who will terminate the Consultant Agreement.
- 2. Approximately one month prior to the expiration of a Consultant Agreement, the Consultant Coordinator will forward to the original requestor a "Renewal of Consultant Agreement" form (Attachment 5). The requestor should return the form stating the agreement should be renewed, including the applicable contract number and an update of the duties of the consultant, or state that the consultant's services are no longer required.



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<p>I. Modification of Forms by Subsidiaries</p> <p>Some of the attached forms refer to Science Applications International Corporation or SAIC. These forms may be modified by the subsidiaries and affiliates only to reflect the identities of their organizations.</p>	



14. Will any contract be charged?      Yes      No. If so, indicate contract number(s) \_\_\_\_\_

Did SAIC's proposal specify the use of this consultant or were costs associated with the use of consultants included in the proposal?      Yes      No

Will any overhead or other indirect number be charged?      Yes      No

If so, indicate Division No. \_\_\_\_\_

15. Will consultant require (check one only):

(a) Access to classified information at an SAIC site only?     

(b) Receipt and access to classified information at his own place of business     

If (a): Process as a "Type A" consultant with SAIC to process and hold clearance.

If (b): Process as a classified subcontractor ("Type B" Consultant) with consultant to provide own facility clearance at the address stated in the Agreement.

Prepared by: \_\_\_\_\_  
Requestor Date Consultant Coordinator - Date

Approved by: \_\_\_\_\_  
Principal Investigator Date Security: \_\_\_\_\_  
(If Direct Charge) Date Facility Security, \_\_\_\_\_  
Date \_\_\_\_\_

Approved by: \_\_\_\_\_  
Division Manager Date Special Approvals: \_\_\_\_\_  
Group Mngr if over \$10,000 - Date Date \_\_\_\_\_

PLEASE ATTACH COPY OF CONSULTANT'S RESUME TO THIS FORM.

TQ1/30

Policy B-18  
Rev. 3 (5/1/85)

ATTACHMENT 2

To:

Subject: Authorization to Proceed

Re: Contract No. \_\_\_\_\_  
Project No. \_\_\_\_\_

Gentlemen:

In accordance with your current Consultant Agreement with SAIC, you are hereby authorized to commence work and to incur costs not to exceed \$ \_\_\_\_\_ in the performance of the statement of work attached hereto.

The SAIC Technical Contact for this effort is \_\_\_\_\_ (Telephone \_\_\_\_\_). If you have any questions regarding contractual or payment matters, please contact the undersigned at \_\_\_\_\_.

Sincerely,

\_\_\_\_\_  
Consultant Coordinator

TQ1/31

Policy B-18  
Rev. 3 (5/1/85)

ATTACHMENT 3

Dear

Attached, in duplicate, is the standard consulting agreement of Science Applications International Corporation and its subsidiaries. Please sign and return both copies. A duly executed copy will be returned to you.

Since it is understood that your services under this consulting agreement could include some selling, it is also necessary that you complete and return the attached questionnaire. The purpose of this questionnaire is to assist us and the Government in determining the allowability of your compensation costs under Government contracts. Compensation for selling services is an allowable cost under Government contracts (if otherwise reasonable and allocable) only when paid to bona fide employees or bona fide established commercial or selling agencies. In determining whether a "bona fide established commercial or selling agency" exists, the factors considered include the following:

- a. The compensation charged must be reasonable in relation to services rendered.
- b. The adequacy of the agency's knowledge of SAIC's products, services, and business, and the agency's qualifications to sell products and services.
- c. The continuity of the agency's relationship with SAIC.
- d. Whether the agency is an established concern and whether the business of the agency is conducted in the agency name, characterized by the customary indicia of the conduct of a regular business.
- e. Whether the agency acts as sales agent for both Government and commercial customers.

Your answers to the questions posed in the questionnaire will be most helpful in making a judgement as to whether you qualify as a "bona fide commercial or selling agency".

Also enclosed is a letter to all consultants from J. Dennis Heipt, Corporate Secretary and Senior Vice President for Administration, SAIC. Please read it and return the questionnaire (attachment 3) with your signed agreement. Retain the balance of the enclosure for reference.

Should you have any questions, please feel free to call or write.

Sincerely,

JANIE DUCHEIN  
Consultant Coordinator

Encl: 4



**INVOICE FOR CONSULTING SERVICES**  
(SEE INSTRUCTIONS ON REVERSE SIDE)

<p align="center"><b>INDIVIDUAL CONSULTANT</b></p> <p>DATE OF INVOICE _____</p> <p>CONSULTANT NAME _____</p> <p>SOCIAL SECURITY NO. _____</p> <p>MAILING ADDRESS _____</p>	<p align="center"><b>CONSULTING FIRM, INC, CORP, LTD.</b></p> <p>DATE OF INVOICE _____</p> <p>CONSULTING FIRM _____</p> <p>FEDERAL TAX I.D. NO. _____</p> <p>MAILING ADDRESS _____</p>
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DATE	AUTHORIZED BY	SCOPE OF WORK, NATURE AND LOCATION	COMPANY PROJECT (CHARGE) NUMBER	HOURS	EXPENSES (ATTACH APPROVED EXPENSE REPORT)
					Policy B-18 Rev. 3 (5/1/85) Attachment 4

<p align="center"><b>FOR ACCOUNTS PAYABLE USE ONLY</b></p> <p><input type="checkbox"/> AGREEMENT ON FILE</p> <p><input type="checkbox"/> AGREEMENT EFFECTIVE DATES: _____ / _____ TO _____ / _____</p> <p><input type="checkbox"/> RATES: _____ HR. \$ _____ DAY \$ _____ MONTH</p> <p><input type="checkbox"/> VERIFIED BY _____ DATE _____</p>	<table style="width:100%;"> <tr> <td style="width:70%;">TOTAL HOURS</td> <td style="width:10%; text-align: center;">\$ _____</td> <td style="width:20%; text-align: center;">per _____ = \$ _____</td> </tr> <tr> <td>TOTAL EXPENSES</td> <td colspan="2">_____</td> </tr> <tr> <td>LESS _____</td> <td colspan="2">_____</td> </tr> <tr> <td><b>TOTAL INVOICE AMOUNT</b></td> <td colspan="2">_____</td> </tr> </table>	TOTAL HOURS	\$ _____	per _____ = \$ _____	TOTAL EXPENSES	_____		LESS _____	_____		<b>TOTAL INVOICE AMOUNT</b>	_____	
TOTAL HOURS	\$ _____	per _____ = \$ _____											
TOTAL EXPENSES	_____												
LESS _____	_____												
<b>TOTAL INVOICE AMOUNT</b>	_____												

<p>I CERTIFY THAT (a) THIS BILL IS CORRECT AND JUST, (b) IT IS BASED ON TIME RECORDS MAINTAINED ON A CURRENT BASIS, (c) PRIOR PAYMENT HAS NOT BEEN RECEIVED, AND (d) THE CHARGES REPRESENT MY TOTAL CHARGES FOR THE DATES INDICATED. I UNDERSTAND THAT THE AMOUNT PAID MAY BECOME THE BASIS FOR A CLAIM AGAINST THE UNITED STATES GOVERNMENT.</p>	<p>I (WE) CERTIFY THAT THESE SERVICES WERE PERFORMED AS STATED AND ARE PROPER CHARGES TO THE PROJECT(S) INDICATED. IF THIS IS A FINAL PAYMENT, ALL COMPANY AND CLASSIFIED MATERIAL HAS BEEN RETURNED.</p> <p>Contract Charges: _____      Indirect Charges: _____</p>
---	---

ATTACHMENT 5

Date: \_\_\_\_\_

RENEWAL OF CONSULTING AGREEMENT

TO:

FROM: Janie Duchain, Consultant Coordinator, La Jolla

SUBJECT: RENEWAL OF CONSULTING AGREEMENT FOR \_\_\_\_\_

The consulting agreement which you requested for the above named consultant will expire \_\_\_\_\_

Current rate of Consultant: \_\_\_\_\_

Special Provisions: \_\_\_\_\_

If Consultant no longer required, check block and sign \_\_\_\_\_

\_\_\_\_\_  
(Signature - P.I.)

Date: \_\_\_\_\_

Please renew Agreement:

Applicable Contract Number: \_\_\_\_\_

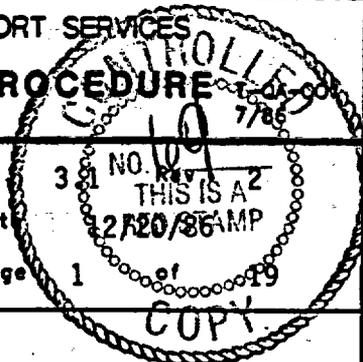
Daily rate revision (if any) \_\_\_\_\_

Justification for revision of rate \_\_\_\_\_

Updated Exhibit "A" (Duties of Consultant) \_\_\_\_\_

\_\_\_\_\_  
(Signature - P.I.)

Date: \_\_\_\_\_



Title: QP 3.1 SCIENTIFIC INVESTIGATION CONTROL AND DESIGN CONTROL

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1.0 PURPOSE AND SCOPE

This procedure defines the Technical and Management Support Services (T&MSS) responsibilities and requirements for control of scientific investigation and design activities performed by T&MSS in support of the Waste Management Project Office (WMPO).

2.0 APPLICABILITY

This procedure applies to T&MSS Quality Assurance Level I and II (see QP 2.4, Assignment of Quality Assurance Levels) scientific investigation and design activities. Scientific investigation activities include the preparation, review, and approval of a scientific investigation plan; control of technical changes to the plan, interface control; and technical review and approval of the results of the scientific investigations. Design activities include the development of design criteria, inputs, and output documents; design verification; interface controls; and changes to design. Design control measures shall be applied to items and activities such as stress, thermal and hydraulic analyses, and material selection.

3.0 DEFINITIONS

3.1 DESIGN

Design is the act of developing designs for construction documentation or of analyzing the performance of a geologic nuclear waste repository engineered structures, systems, components, and natural barriers.

3.2 DESIGN PROCESS

The design process is the technical and management process that begins with the identification of design input and leads to and includes the issuance of design output documents.

3.3 DESIGN INPUT

Design input refers to those criteria, parameters, bases, or other design requirements upon which the detailed final design is based.

APPROVALS

 QA Manager	12/18/86 Date	 Project Manager	12/19/86 Date
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### 3.4 DESIGN OUTPUT DOCUMENTS

Design output refers to documents such as drawings, specifications, and other documents that define technical requirements of structures, systems, and components.

### 3.5 DESIGN VERIFICATION

Design verification is the determination and documentation of whether the design of an item or process conforms to specified requirements and is capable of performing its intended function. Design verification may be accomplished by reviews, use of alternate or simplified calculations, or a suitable test program.

### 3.6 DESIGN DOCUMENTS

Design documents include, but are not limited to, drawings, specifications, test plans, design review reports, test reports, system design descriptions, configuration status listings, design manuals, and manuals describing computer programs used for design or performance analysis.

### 3.7 INDEPENDENT REVIEW

An independent review is a documented verification process which ensures that the material (report, plan, work, assessment, data, analysis, assessment, or evaluation) is technically adequate and will satisfy requirements of the NNWSI Project.

### 3.8 ITEM

Item is an all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, system, subsystem, unit, data, samples (including core and other field and laboratory samples), or prototype hardware.

### 3.9 PEER REVIEW

A documented verification process performed by an organization other than the organization which performed the work. A peer review is over and above the normal independent technical review to assure that the material is technically adequate and that it will satisfy the requirements established to meet the NNWSI Project objectives. Peer reviews are also required when the conclusions, material or data contained in material go beyond the existing state of the art.



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### 3.10 QUALITY ASSURANCE LEVEL I

Quality Assurance Level I refers to radiological health and safety related items and activities that are important to either safety or waste isolation and that are associated with the ability of a geologic nuclear waste repository to function in a manner that prevents or mitigates the consequences of a process or event that could cause undue risk to the radiological health and safety of the public. Items and activities important to safety are those engineered structures, systems, components and related activities essential to the prevention or mitigation of an accident that could result in a radiation dose either to the whole body or to any organ of 0.5 rem or greater either at or beyond the nearest boundary of the unrestricted area at any time until the completion of the permanent closure of the geologic nuclear waste repository. Items and activities important to waste isolation are those barriers and related activities which must meet the criteria that address long-term performance of the engineered and natural barriers to prevent the release of radionuclides from the site to the accessible environment after permanent closure. The criteria for items or activities important to safety and waste isolation are found in 10CFR60 and 40CFR191.

### 3.11 QUALITY ASSURANCE LEVEL II

Quality Assurance Level II refers to items and activities related to the systems, structures, and components which require a level of quality assurance sufficient to provide for reliability, maintainability, public and geologic nuclear waste repository worker non-radiological health and safety, geologic nuclear waste repository worker radiological health and safety, and other operational factors that would have an impact on U.S. Department of Energy-Office of Geologic Repositories (DOE HQ-OGR) and the WMPO concerns, and the environment.

### 3.12 SCIENTIFIC INVESTIGATION

Any research, experiment, test, study, or activity which is performed for the purpose of investigating the natural barriers or the man-made aspects of the geologic nuclear waste repository, including the investigations which support the design of the facilities and the waste package. This will include, but will not be restricted to, all geologic, tectonic, seismologic, hydrologic, climatologic, geochemical, chemical, geophysical, physical, mechanical, geomechanical, meteorological, metallurgical, environmental, socioeconomic, and transportation studies or activities which are performed for, or in support of, the investigation, exploration, site characterization, development of design bases, licensing, construction, operation, monitoring, performance evaluation and/or closure of the geologic nuclear waste repository.



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#### 4.0 RESPONSIBILITIES

##### 4.1 PROJECT MANAGER

The Project Manager (PM) is responsible for ensuring the control of T&MSS scientific investigation and design activities and related documents. By specific task assignment from the WMPO, the PM is responsible for the review of scientific investigations and designs produced by NNWSI Project Participants. The PM may delegate these responsibilities.

##### 4.2 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager, or designee, is responsible for ensuring the application of the T&MSS QA Program to T&MSS scientific investigation and design activities; for review and approval of scientific investigation plans and results, and design output documents; and for participating in the reviews of T&MSS scientific investigations and designs, and those of NNWSI Project Participants when assigned to T&MSS by the WMPO.

##### 4.3 TASK MANAGER

The Task Manager (TM) is responsible for the implementation of the T&MSS scientific investigation process and design process within the respective T&MSS task in accordance with this procedure and applicable codes, standards and regulatory requirements; including the preparation, review, and approval of scientific investigation plans and results, and design output documents. Specialists may be brought in as determined necessary by the TM and approved by the PM to achieve the requirements of this procedure.

#### 5.0 PROCEDURE

##### 5.1 SCIENTIFIC INVESTIGATION CONTROL

###### 5.1.1 Preparation of the Scientific Investigation Plan

5.1.1.1 Prior to the start of any QA Level I or II scientific investigation, the responsible TM shall develop a plan for that investigation. This plan shall be identified by a unique numeric or alpha-numeric designation, revision number, and appropriate title. Such plans shall contain or shall reference the following:

1. A discussion of the overall purpose of the work, including references to any applicable regulatory requirements, baseline documents, standards, approved methodologies, performance criteria, key issues,



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issues, information needs, higher level scientific investigation plans, or Work Breakdown Structure (WBS) items. This discussion shall identify the factors and concerns which are important to the planning of the scientific investigation.

2. A description of any previous work which will be used in support of the scientific investigation, including the identification of the QA levels, or QA controls, under which the previous work was performed.
3. A description of the work which is to be performed in the scientific investigation. This description shall identify or reference the following, as appropriate:
  - a) The methods, procedures, equipment, and computer codes which shall be used or be developed;
  - b) Any pertinent interfaces between this work and any other work, including all data, information and item inputs from other work to this work, and all data, information and item outputs from this work to other work;
  - c) The report or other document that will delineate the results of the investigation.

5.1.1.2 The plan shall contain sufficient information, such that a meaningful review of the adequacy of the plan to meet its stated purpose can be made by technically qualified personnel without recourse to the originator of the plan.

#### 5.1.2 Assignment of Quality Assurance Levels

5.1.2.1 Once the plan has been developed, the associated Quality Assurance Level Assignment Sheet(s) (QALASs) for all of the items and activities within that plan shall be prepared (see QP 2.4).

#### 5.1.3 Review and Approval Process

5.1.3.1 T&MSS shall conduct a technical review of the plan in accordance with AP 2.3, Independent Review and Peer Review. This review shall be performed by a competent, qualified individual(s) or group, as designated by the PM, other than those who developed the original plan, but who may be of the same organization. This review may be performed by the originator's supervisor, provided that: the supervisor did not specify, or rule out, the methods or approaches to be used; the supervisor is the only person who is technically



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qualified to review the plan within the organization; and prior to the review, the TM obtains the documented approval of the QA Manager for the supervisor to perform the review. cursory supervisory reviews shall not satisfy the intent of this requirement. The results of this technical review, including the qualification records of the reviewers (see Figure 3.1-1, T&MSS Review Team, Independent Reviewer Qualifications), and the resolution of any comments by the reviewer(s), shall be documented, and shall become QA records.

5.1.3.2 The scientific investigation plan shall be signed and dated by the TM, technical reviewer(s), QA Manager, and PM.

5.1.3.3 The PM shall then forward the plan to the WMPO Project Quality Manager (PQM) for the WMPO review and approval. The WMPO PQM shall return the plan to the PM upon completion of the WMPO review and approval cycle.

5.1.3.4 A peer review of the plan (see AP 2.3) shall be conducted as directed by the WMPO (1) when there is a unique application of an established or standard practice and (2) when the activity involves untried practices, the work exceeds the existing state-of-the-art, or new or unusual techniques are to be used.

#### 5.1.4 Changes

5.1.4.1 All technical changes to the scientific investigation plan shall be subject to the same review and approval process as the original plan. The TM shall evaluate and document the impact of such changes on the associated QA Level assignments.

#### 5.1.5 Interface Control

5.1.5.1 The TM shall identify the interface controls within and external to T&MSS for scientific investigations. Interfaces between T&MSS scientific investigations, or between a T&MSS scientific investigation and any other NNWSI Project activity including design activities, shall be coordinated in accordance with procedures established by the WMPO. Interfaces between T&MSS and its suppliers shall be controlled in accordance with QP 7.1, Control of Purchased Items and Services. Interface controls include the assignment of responsibility and the establishment of procedures within involved organizations for the review, approval, release, distribution and revision of documents involving such interfaces.



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5.1.5.2 Information or items, including samples of natural or man-made materials, which are transmitted across interfaces shall be documented and confirmed promptly in writing.

5.1.6 Reports, Conclusions, and Recommendations

5.1.6.1 The results of a scientific investigation shall be a report, which may contain one or more conclusions and/or recommendations for use in other scientific investigations, or for use in the licensing, design, fabrication, construction, inspection, and/or testing of the geologic nuclear waste repository. Technical reviews shall be conducted to verify the adequacy of the results of the scientific investigations and to assure correct field and laboratory data acquisition, reduction, and interpretation. Technical reviews shall be conducted in accordance with AP 2.3, using the Technical Review Checklist, Figure 3.1-2, or the equivalent as the basis.

Following the resolution of technical reviewers comments, the scientific investigation report shall be forwarded to the PM for review and approval (see AP 2.3). The T&MSS approved scientific investigation report shall be transmitted to the WMPO for review and approval.

5.1.7 Use of Computer Programs

Computer programs that are used for analysis are subject to the requirements of QP 3.2, Use and Control of Computer Programs.

5.1.8 Scientific Investigation QA Records

QA records relating to scientific investigations, including scientific investigation plans, QA Level Assignment Sheets, analyses, technical and peer reviews, independent reviewers' qualifications, and results, shall be maintained in accordance with QP 17.1, QA Records.

5.2 DESIGN CONTROL

5.2.1 Design Bases

Regulatory requirements, codes, standards, and project procedures applicable to a design activity shall be used to establish the design criteria for Quality Assurance Level I and II items and activities. QA criteria applicable to a design activity shall be specified in accordance with QP 2.4. The design and QA criteria shall be the basis for the detailed design requirements contained in specifications, plans, drawings, procedures, instructions, and technical reports. Reliability and maintainability requirements shall be considered in the establishment of design criteria.



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### 5.2.2 Design Inputs

5.2.2.1 A design input document shall be prepared by an individual/organization assigned by the responsible TM to identify and document applicable design inputs. The design input document shall be approved by the TM, QA Manager, and PM, as a minimum. The design inputs shall be derived from sources such as, but not limited to, criteria letters, design bases, performance requirements, regulatory requirements, codes, standards, supplier's design data, and quality standards.

5.2.2.2 Design inputs shall provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes. Design inputs shall be identified and documented to a level of detail necessary to assure that they may be correctly translated into final design documents. Review of design inputs for applicability shall be accomplished using the Design Input Checklist, Figure 3.1-3, as a guide.

5.2.2.3 Changes to the design input document, including the reason(s) for the changes, shall be documented and be subject to the same review as the original design input document.

### 5.2.3 Design Process

#### 5.2.3.1 General

5.2.3.1.1 Design documents shall be of sufficient detail to permit performance of design, manufacturing, or construction; to permit verification that design output meets design input requirements; and to permit QA verification that the as-built item complies with the detailed design requirements. Design methods, materials, parts, equipment, and processes shall be selected and reviewed by technically competent individuals to ensure suitability for the intended application.

5.2.3.1.2 Deviations from the specified design control process shall be identified, documented, controlled, and resolved in accordance with QP 15.1, Control of Nonconformances.

#### 5.2.3.2 Design Analyses and Calculations

5.2.3.2.1 Design analyses shall be performed in a planned, controlled, and documented manner. Design analysis documentation shall be complete and legible and shall include identification of the preparing, reviewing, and approving authorities.



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5.2.3.2.2 Design analyses and calculations shall be of sufficient detail such that a technically qualified person can review and understand the purpose, method, assumptions, design inputs, references, and units of the analysis, and can verify the adequacy of the results without consulting the originator.

5.2.3.2.3 Design analysis documentation shall include the objective of the analysis, definition of the design inputs and their sources, a listing of applicable references, results of literature or other background data searches, identification of assumptions and those which require verification as the design proceeds, and supporting calculations. Computer calculations, if used, shall be attached, and the design analysis documentation shall identify the computer type, program name, revision, evidence of program verification (see QP 3.2) input, output, and the bases of application to the specific problem.

5.2.3.2.4 Standard calculation methods shall be used whenever possible. Where nonstandard methods are used, the basis for applicability of the method shall be referenced and checked. The checking process shall not be a substitute for the design verification detailed in Section 5.2.5, but is an interim step in the design development process. Calculations shall include the subject of the analysis (identifiable to the applicable item). Calculations shall also be signed and dated by the preparer, reviewer(s), and approving supervisor or manager, unless the calculation is an integral part of an approved design analysis which shall include the appropriate signatures and dates.

#### 5.2.3.3 Computer Codes

Computer codes, programs, and data bases used to support design analyses shall be controlled and used under a system of access control, configuration control, and validation and verification, as described by QP 3.2.

#### 5.2.3.4 Component Identification

Assemblies and components that are a part of the item being designed shall be identified in the final design documents. The design documents shall identify commercial grade assemblies and components, which prior to their installation have been modified or selected by special inspection or test to requirements that are more restrictive than the supplier's published product (catalog) description, as different from standard commercial grade items and shall delineate or reference the specific differences.



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#### 5.2.4 Design Interfaces

The TM shall identify the interface controls for the coordination of design activities within the T&MSS and externally among the NNWSI Project Participants, the WMPO, and T&MSS suppliers. These controls shall include the assignment of responsibilities and the requirements for the review, approval, release, distribution, and revision of documents involving design interfaces. Design information transmitted within T&MSS or to NNWSI Project Participants shall be documented and controlled by the TM.

#### 5.2.5 Design Verification

##### 5.2.5.1 General

5.2.5.1.1 The adequacy of T&MSS designs shall be verified by the performance of design reviews, use of alternate or simplified calculations, or by performance of a suitable testing program. The extent of the design verification required is a function of the importance of safety of the item under consideration, the complexity of the design, the degree of standardization, the state-of-the-art, and the similarity with previously proven designs. The TM shall specify and document the verification method(s) to be used with the concurrence of the QA Manager, and provide measures for the participation of the WMPO. Changes to previously verified designs shall require verification including evaluation of the effects of those changes on the overall design.

5.2.5.1.2 Design verification shall be performed by technically competent, certified individuals or groups other than those who performed the original design, although they may be from the same organization. In instances where state-of-the-art is involved, a peer review may be required by the WMPO.

5.2.5.1.3 If a test program is used as the basis for design verification, the program shall include qualification testing of an item under conditions that simulate the most adverse design conditions.

5.2.5.1.4 The results of design verification shall be documented and shall include the name and signature of each verifier.

5.2.5.1.5 Verification of the adequacy of design shall be performed prior to release for procurement, manufacture, construction or release to another organization for use in other design activities. In those cases where this timing cannot be met, the portion(s) of design which have not been verified shall be identified and controlled by the TM. In all cases the design shall be verified before the item can be relied upon to perform its function.



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#### 5.2.5.2 Design Review

5.2.5.2.1 Design reviews shall be performed by the originator's supervisor only if:

1. The supervisor is the only technically qualified individual in the organization who is competent to perform the verification; and
2. The supervisor did not specify a singular design approach, rule out certain design considerations, or establish the design input to be used; and
3. The need for supervisory design verification has been approved in advance by the TM with the concurrence of the QA Manager.

5.2.5.2.2 Cursory supervisory reviews do not satisfy the intent of this requirement. When supervisory reviews are used as the basis for design verification, the above conditions shall be documented to provide evidence that the requirements were met.

5.2.5.2.3 Design reviews may be conducted as conceptual, preliminary, in process, and final design reviews according to the extent and complexity of the design. Design reviews shall be conducted by a design review team, consisting of the PM or designee, the QA Manager, the WMPO, and one or more independent reviewers with appropriate qualifications. Resolution of differences of opinion shall be resolved and documented.

5.2.5.2.4 The design review team shall develop and implement a written plan, using the Design Review Checklist, Figure 3.1-4, to assure that critical aspects of the design and reference documents are properly applied.

5.2.5.2.5 A final design review report shall be prepared to respond to the items of the Design Review Checklist and to note any apparent deficiencies. Final design review reports shall include the documented qualifications of independent reviewers and the review team, using the T&MSS Review Team, Independent Reviewer Qualifications, Figure 3.1-1.

#### 5.2.5.3 Alternate Calculations and Analyses

Alternate calculations may be made to verify correctness of the original calculations or analyses. The alternate method may be a more simplified, less rigorous method such as a hand calculation used to check a computer analysis.



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A review shall be performed by an individual/organization designated by the TM to determine the adequacy of assumptions, input data, and the computer program or other calculation methods used.

#### 5.2.5.4 Qualification Tests

5.2.5.4.1 Qualification testing may be performed to verify all or part of a design. When only part of the complete design is verified by this method, the remaining design must be verified by other methods. The test configuration shall be clearly defined and documented, and testing shall be performed in accordance with a written and approved procedure. Test results shall be documented and evaluated in accordance with the procedure.

5.2.5.4.2 The testing shall demonstrate performance adequacy under conditions which simulate the most adverse design conditions. Operating modes and environmental conditions shall be considered in determining the design conditions.

5.2.5.4.3 When tests are performed on models or mock-ups, scaling rules shall be established and verified. The results of model testing shall be analyzed by error analysis, where applicable, prior to use in final design work.

5.2.5.4.4. If modifications to the design are necessary to obtain acceptable performance, the modifications shall be documented, and the item modified and retested or otherwise verified to assure satisfactory performance.

#### 5.2.6 Design Change Control

When an approved and verified final design requires changes (including field modifications), the change proposed shall be justified and subject to control measures commensurate with those applied to the original design. When possible, the design change shall be approved and verified by the original T&MSS design organization. When this is not possible, or the original design organization is no longer responsible for the design, the WMPO shall designate another organization to approve and verify the design change. This designated organization shall have demonstrated competence in the specific design area and shall have an adequate understanding of the requirements and intent of the original design.



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### 5.2.7 Design Output Documents

Design output documents shall relate to the design input in sufficient detail to permit design verification/evaluation and shall identify assemblies and/or components that are part of the item being designed (see Section 5.2.3.4). In addition design output documents shall show evidence that the required reviews and approvals have been accomplished prior to release for procurement, construction, or to another organization for use in other design activities. Design output documents shall be reviewed and approved by the TM, independent reviewers, QA Manager, PM, and the WMPO, as a minimum.

### 5.2.8 Design QA Records

Design documentation, including the design bases, input documents, analyses, drawings, specifications, as-built drawings and records, other design output documents, with approved changes thereto, evidence of design verification/evaluation, qualification records of reviewers, and documents confirming interface control, shall be considered QA records and be maintained in accordance with QP 17.1.

### 5.3 DESIGN OR SCIENTIFIC INVESTIGATION ERRORS

When significant changes are necessary because of errors, incorrect input, or when evaluations of original designs or scientific investigations indicate adverse conditions, the methodologies, procedures, and verification processes shall be reviewed and modified as necessary. Documentation of errors and resolution shall be accomplished in accordance with QP 16.1, Corrective Action.

### 6.0 REFERENCES\*

- QP 2.4 Assignment of Quality Assurance Levels
- QP 3.2 Use and Control of Computer Programs
- QP 7.1 Control of Purchased Items and Services
- QP 15.1 Control of Nonconformances
- QP 16.1 Corrective Action
- QP 17.1 QA Records



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AP 2.3 Independent Review and Peer Review

\* Current issue.

**7.0 APPLICABLE FORMS**

Figure 3.1-1 T&MSS Review Team, Independent Reviewer Qualifications

Figure 3.1-2 Technical Review Checklist

Figure 3.1-3 Design Input Checklist

Figure 3.1-4 Design Review Checklist



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T&MSS REVIEW TEAM,  
INDEPENDENT REVIEWER QUALIFICATIONS

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Reviewer Name \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

Education \_\_\_\_\_

Telephone \_\_\_\_\_ Position Title \_\_\_\_\_

Membership in Related Professional Organizations and Peer Committees \_\_\_\_\_

Contractual Arrangements with Other WMPO/NV Contractors (Where Applicable) \_\_\_\_\_

Related Experience, Scientific Publications, and Professional Licenses \_\_\_\_\_

Committee Chairperson  
Signature \_\_\_\_\_ Date \_\_\_\_\_

Figure 3.1-1 T&MSS Review Team, Independent Reviewer Qualifications





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**DESIGN INPUT CHECKLIST**

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Design inputs include many characteristics and functions of an item or system. These inputs vary depending on the application. The following listed inputs shall be considered, as appropriate, for specific items or systems of the repository.

- |  | Initials* |
|--|-----------|
| 1. Basic functions of each structure, system and component.  | _____     |
| 2. Performance requirements such as capacity rating and system output.   | _____     |
| 3. Codes, standards, and regulatory requirements including the applicable issue and/or agenda.   | _____     |
| 4. Design conditions such as pressure, temperature, fluid chemistry, and voltage.  | _____     |
| 5. Loads such as seismic, wind, thermal, and dynamic.  | _____     |
| 6. Environmental conditions expected during storage, construction, and operation such as pressure, temperature, humidity, corrosiveness, site elevation, wind direction nuclear radiation, electromagnetic radiation, and duration of exposure.  | _____     |
| 7. Interface requirements including definition of the functional and physical interfaces involving structures, systems, and components.  | _____     |
| 8. Material requirements including such items as compatibility, electrical insulation properties, protective coating, and corrosion resistance.  | _____     |
| 9. Mechanical requirements such as vibration, stress, shock, and reaction forces.  | _____     |
| 10. Structural requirements covering such items as equipment foundations and pipe supports.  | _____     |
| 11. Hydraulic requirements such as pump net positive suction heads (NPSH), allowable pressure drops, and allowable fluid velocities.   | _____     |
| 12. Chemistry requirements such as provisions for sampling and limitations on water chemistry.   | _____     |
| 13. Electrical requirements such as source of power, voltage, raceway requirements, electrical insulation, and motor requirements.   | _____     |
| 14. Layout and arrangement requirements.   | _____     |
| 15. Operational requirements under various conditions such as repository startup, normal repository operation, repository emergency operation, special or infrequent operation, system abnormal or emergency operation, repository decontamination, decommissioning, and dismantling.    | _____     |
| 16. Instrumentation and control requirements including indicating instruments, controls and alarms required for operation, testing, and maintenance. Other requirements such as the type of instrument, installed spares, range of measurement, and location of indication are included. | _____     |
| 17. Access and administrative control requirements for repository security.  | _____     |
| 18. Redundancy, diversity, and separation requirements of structures, systems, and components.   | _____     |
| 19. Failure effects requirements of structures, systems, and components including a definition of those events and accidents that they must be designed to withstand.  | _____     |

\*Mark N/A if not applicable to structure, system or component.

Figure 3.1-3 Design Input Checklist



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**DESIGN INPUT CHECKLIST**

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- |  | Initials* |
|--|-----------|
| 20. Test requirements including pre-operational and subsequent periodic in-service tests and the conditions under which they will be performed.  | _____     |
| 21. Accessibility, maintenance, repair, and in-service inspection requirements for the repository including the conditions under which these will be performed.  | _____     |
| 22. Personnel requirements and limitations including the qualification and number of personnel available for repository operation, maintenance, testing, and inspection, and radiation exposures to the public and repository personnel. | _____     |
| 23. Transportability requirements such as size and shipping weight, limitation, and I.C.C. regulations.  | _____     |
| 24. Fire protection or resistance requirements.  | _____     |
| 25. Handling, storage, cleaning, and shipping requirements.  | _____     |
| 26. Other requirements to prevent undue risk to the health and safety of the public.   | _____     |
| 27. Materials, processes, parts, and equipment suitable for application.   | _____     |
| 28. Safety requirements for preventing injury to personnel including such items as radiation safety that restrict the use of dangerous materials, escape provisions from enclosures, and grounding of electrical systems.                | _____     |
| 29. Quality control and quality assurance requirements.  | _____     |
| 30. Reliability requirements of structures, systems, and components, including their interactions, which may impair functions that are important to safety.  | _____     |
| 31. Interface requirements between repository equipment and operation and maintenance personnel.   | _____     |
| 32. Requirements for criticality control and accountability of nuclear materials.  | _____     |

Prepared By \_\_\_\_\_

Date \_\_\_\_\_

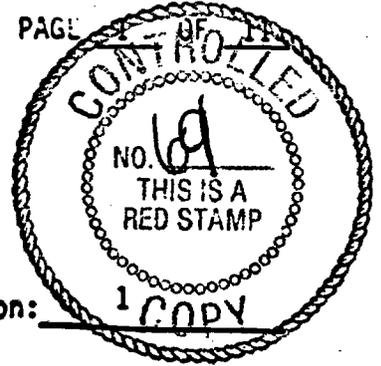
\*Mark N/A if not applicable to structure, system or component.

Figure 3.1-3 Design Input Checklist (Continued)



WMPO INTERIM CHANGE NOTICE

PAGE



Applies To: NNWSI SOP-02-01

Revision: 1

Originated By: J. Jardine / F. Peters

Date: 4/25/86

**Change Required:**

Add definition of "Scientific Investigation" as per attached to Appendix A.

Section 3.0 revised as indicated on attached sheets 3 through 11.

Effective Date: 5/9/86

Approved By: [Signature]  
WMPO Director

5/7/86  
Date

[Signature]  
QAD Director

5-9-86  
Date

[Signature]  
WMPO Project Quality  
Manager

5/2/86  
Date

(to be added to Appendix A of SOP-02-01)

**Scientific Investigation:** Any research, experiment, test, study, or activity which is performed for the purpose of investigating the natural barriers or the man-made aspects of the geologic repository, including the investigations which support design of the facilities and the waste package. This will include, but will not be restricted to, all geologic, tectonic, seismologic, hydrologic, climatologic, geochemical, chemical, geophysical, physical, geomechanical, mechanical, meteorological, metallurgical, environmental, socioeconomic and transportation studies or activities which are performed for, or in support of, the investigation, exploration, site characterization, development of design bases, licensing, construction, operation, monitoring, performance evaluation and/or closure of the geologic repository.

PART A  
SCIENTIFIC INVESTIGATION CONTROL

3A.1 Preparation of the Scientific Investigation Plan

3A.1.1 Prior to the start of any scientific investigation, the responsible Principal Investigator (PI) shall develop a plan for that investigation. This plan shall be identified by a unique numeric or alpha-numeric designation, revision number, and appropriate title. It is recognized that such plans may have been developed already, for other purposes; and that these pre-existing plans may fulfill the requirements given here. In any case, such plans shall contain or shall reference the following:

- 1) A discussion of the overall purpose for the work, including references to any applicable regulations, requirements, performance criteria, key issues, information needs, higher level scientific investigation plans, or Work Breakdown Structure (WBS) items, for which the work is to be performed. This discussion shall identify all of the factors and concerns which are important for the planning of the scientific investigation.
- 2) A description of any previous work which will be used in support of the scientific investigation, including the identification of the QA levels, or QA controls, under which that previous work was performed.
- 3) A description of the work which is to be performed in the scientific investigation. This description shall include or shall reference, the following; as may be appropriate:
  - a) The methods, procedures, equipment, and computer codes which will be used or must be developed, for the work.
  - b) Any pertinent interfaces between this work and any other work, including all data, information and item inputs from other work to this work, and all data, information and item outputs from this work to other work.
  - c) The report which will be produced, if applicable.

3A.1.2 The scientific investigation plan shall contain sufficient information, such that a meaningful review of the adequacy of the plan to meet the stated purposes of the work, can be performed.

3A.2 Assignment of Quality Assurance Levels

3A.2.1 Quality Assurance levels shall be assigned in accordance with

the procedures specified in SOP-02-02.

3A.2.2 Once the plan specified in 3A.1.1 has been developed, the associated Quality Assurance Level Assignment Sheet(s) (QALAS) for all of the items and activities within that plan can be prepared. It may be necessary in some cases to assign QA levels to the activities and items within a plan that was prepared earlier. Therefore, the QALAS(s) are not a part of the plans themselves, even though they would normally accompany those plans and go thru the same review and approval process.

### 3A.3 Review and Approval Process

3A.3.1 The responsible Participating Organization shall conduct a technical review of the plan. This review shall be performed by any qualified individual(s) other than those who developed the original plan. In exceptional cases, the originator's immediate supervisor can perform the review if the supervisor is the only technically qualified individual, and if the need is individually documented and approved in advance with the concurrence of the quality assurance manager of the originating organization. cursory supervisory reviews shall not satisfy the intent of this requirement. The results of this technical review, and the resolution of any comments by the reviewer(s) shall be documented, and shall become a part of the QA record.

3A.3.2 The plan shall be signed and dated by the PI, the technical reviewer(s), the responsible organization's PQA, and the TPO.

3A.3.3 The TPO shall then forward the plan to the WMPO Project Quality Manager (PQM) for review and approval by the appropriate Branch Chief and the PQM. The WMPO PQM shall return the plan to the responsible organization's TPO upon completion of the WMPO review and approval cycle.

3A.3.4 A peer review of the plan will be conducted when the WMPO deems it necessary.

### 3A.4 Use of Computer Programs

3A.4.1 Computer programs that are used for analysis are subject to the requirements of SOP-03-02 (latest revision).

### 3A.5 Change Control

3A.5.1 All technical changes in the plan shall go thru the same review and approval process as specified in 3A.3. The Participating Organization shall be responsible for evaluating the impacts of such changes on the associated QA level assignments.

### 3A.6 Interface Control

3A.6.1 Interface controls shall include the assignment of

responsibility and the establishment of procedures among and within participating organizations for the review, approval, release, distribution, and revision of documents involved in interfaces. Interfaces between scientific investigations, or between a scientific investigation and any other project activity including design activities, shall be coordinated among participants in accordance with procedures established by WMPD. Interfaces between Participating Organizations and their suppliers shall be controlled in accordance with procedures established by the Participating Organization.

3A.6.2 The transmittal of information or items, including samples of natural or man-made materials, across interfaces shall be documented.

**3A.7 Reports, Conclusions, and Recommendations**

3A.7.1 The Participating Organization shall have procedures for the technical review and approval of the results of scientific investigations. These procedures shall include WMPD in this review and approval cycle.

PART B  
DESIGN CONTROL<sup>1</sup>

38.1 DESIGN INPUT<sup>2</sup>  
REQUIREMENTS FOR QA LEVEL I & II DESIGN ACTIVITIES

38.1.1 Identification/Review/Approval of Input-Applicable design input, such as criteria letters, design bases, performance and regulatory requirements, codes, standards, manufacturer's design data and quality standards, shall be identified, documented and their selection reviewed and approved by the responsible design organization.

38.1.2 Changes to Design Input - Changes to approved design input, including the reason for the changes, shall be identified, documented, approved and controlled by the responsible design organization.

38.2 DESIGN ANALYSIS  
REQUIREMENTS FOR QA LEVEL I & II DESIGN ACTIVITIES

38.2.1 Design Analysis Documents - Design analysis documents shall be sufficiently detailed such that a technically qualified person may verify the analysis without recourse to the originator.

These documents shall be legible and in a form suitable for reproduction, filing and retrieval. Calculations shall be identifiable by subject (including structure, system or component) originator, reviewer and date.

---

1. Reference Section 2.0 of this document concerning the certification of personnel performing design work. Also reference Section 5.0 concerning requirements for instructions, procedures and drawings.

2. The topics and references listed in Appendix E of this document provide guidance in the consideration of design input.

**3B.2.2 Documentation of Design Analyses - Documentation of design analysis shall include the following:**

- (1) definition of the objective of the analysis;
- (2) definition of design input and their sources;
- (3) a listing of applicable references;
- (4) results of literature searches or other background data;
- (5) identification of assumptions and indication of those which require verification as the design proceeds;
- (6) identification of any computer calculation, including computer type, program name, revision, input, output, evidence of program verification and the bases of application to the specific problem.
- (7) signatures and dates of review and approval by appropriate personnel.

**3B.2.3 Use of Computer Programs - Computer programs that are used for analysis are subject to the requirements of NNWSI SOP-03-02 (latest revision).**

**3B.3 DESIGN VERIFICATION  
REQUIREMENTS FOR QA LEVEL I DESIGN ACTIVITIES**

**3B.3.1 Identification/Documentation - Design control measures shall be applied to verify the adequacy of design. The responsible design organization shall identify and document the verification method used, the results of the verification and the verifier.**

**3B.3.2 Timing of Verification - Verification of the adequacy of design shall be performed prior to release for procurement, manufacture, construction or release to another organization for use in other design activities. In those cases, where this timing can not be met, the portion(s) of design which have not been verified shall be identified and controlled. In all cases, the verification shall be completed prior to relying on the component, system or structure to perform its function.**

**3B.3.3 Extent of Verification - The extent of the design verification required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design has been subjected to a verification process in accordance with paragraph 3B.3 of this document, the verification process need not be duplicated for identical designs. However, the applicability of standardized or previously proven designs, with respect to meeting pertinent design inputs, shall be verified for each application. Known problems affecting the standardized or previously proven designs and their effects on other features shall be considered. The original design and associated verification measures shall be adequately documented and referenced in the files of subsequent application of the design.**

- 38.3.4 Changes to Verified Designs - Changes to previously verified designs shall require verification including evaluation of the effects of those changes on the overall design.
- 38.3.5 Personnel Performing Verification - Design verification shall be performed by any competent, certified individual(s) or group(s) other than those who performed the original design.  
This includes;
- (1) individual(s) or group(s) from the originator's same organization.
  - (2) individuals(s) or group(s) from other organizations contracted for this purpose.
  - (3) the originator's supervisor providing all of the following requirements are met;
    - a. the supervisor is the only individual in the organization competent to perform verification.
    - b. the supervisor did not establish the design input used, specify a singular design approach or rule out certain design considerations.
    - c. the rationale for satisfying the requirements of paragraphs 38.3.5a & b above is documented and approved by management superior to the supervisor.
- 38.3.6 Methods of Design Verification - Design verification shall be accomplished by any one or a combination of the following design reviews, alternate calculations, or qualification testing.
- (1) Design reviews are detailed critical reviews to provide assurance that the design is correct and satisfactory. At a minimum, items (a) through (f) below shall be considered during the review and the results of such deliberations shall be documented.
    - (a) Were the design inputs correctly selected?
    - (b) Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed?
    - (c) Was an appropriate design method used?
    - (d) Were the design inputs correctly incorporated into the design?
    - (e) Is the design output reasonable compared to design inputs?
    - (f) Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions?
  - (2) Alternate calculations are a form of analysis which may be used to determine the adequacy of the original analysis. The use of alternate calculations shall include the re-  
of assumptions, inputs and computer programs when applicable.

- (3) Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test configuration shall be clearly defined and documented. Testing shall demonstrate adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the adverse conditions. Where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. Test results shall be documented and evaluated by the responsible design organization to assure that test requirements have been met.
- If qualification testing indicates that modifications to the test are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model test work shall be subject to error analysis, where applicable, prior to use in the final design work.

#### .4 EVALUATION OF DESIGN BY REVIEW REQUIREMENTS FOR QA LEVEL II DESIGN ACTIVITIES

- 3B.4.1 Identification/Documentation - Design control measures shall be applied to evaluate the adequacy of design. The responsible design organization shall identify and document those personnel who participated in the evaluation and the results.
- 3B.4.2 Method of Evaluation - The adequacy of design shall be evaluated through the use of design review. These reviews are to be performed by the responsible design organization, are general in nature and intended to provide assurance that the design output is reasonable compared to design input.
- 3B.4.3 Extent of Evaluation - The extent of the design evaluation required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design has been subjected to an evaluation process in accordance with paragraph 3B.4 of this document, the evaluation process need not be duplicated for identical designs providing the application of the design is intended to satisfy identical design input.

- 38.4.4 Timing of Evaluation - Evaluation of the adequacy of design shall be performed prior to release for procurement, manufacture, construction or release to another organization for use in other design activities. In those cases, where this timing can not be met, the portion(s) of design which has not been evaluated shall be identified and controlled. In all cases, the evaluation shall be completed prior to relying on the component, system or structure to perform its function.
- 38.4.5 Personnel Performing Evaluation - Evaluation of the adequacy of the design shall be performed by personnel other than the originator. Personnel who perform design evaluation may be either the originator's supervisor or personnel designated by the supervisor as being competent to perform the evaluation.
- 38.4.6 Changes to Designs Previously Evaluated - Changes to designs which have been previously evaluated shall require evaluation including evaluation of the effects of the changes on the overall design.

38.5 DESIGN CHANGE CONTROL  
REQUIREMENTS FOR QA LEVEL I & II DESIGN ACTIVITIES

- 38.5.1 Changes to Approved Designs - Changes to approved designs including field changes, shall be justified and subjected design control measures commensurate with those applied to the original design and approved by the same affected groups or organizations which reviewed and approved the original design documents; except where an organization which originally was responsible for approving a particular design document is no longer responsible, then the WMPO shall designate a new responsible organization. The designated organization shall have demonstrated competence in the specific design area of interest and have an adequate understanding of the requirements and intent of the original design.

**3B.6 DESIGN INTERFACE CONTROL  
REQUIREMENTS FOR QA LEVEL I & II DESIGN ACTIVITIES**

**3B.6.1 Identification/Responsibility** - Internal and external design interfaces shall be identified and design efforts shall be coordinated among and within participating organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures among and within participating organizations for the review, approval, release, distribution and revision of documents involving design interfaces.

**3B.6.2 Information Transmitted Across Interfaces** - Design information transmitted across interfaces shall be documented and controlled. Where it is necessary to initially transmit design information orally or by other informal means, the transmittal shall be confirmed promptly by a controlled document.

**3B.7 DESIGN OUTPUT  
REQUIREMENTS FOR QUALITY LEVEL I & II DESIGN ACTIVITIES**

**3B.7.1 Design Output Documents** - Design output documents shall;

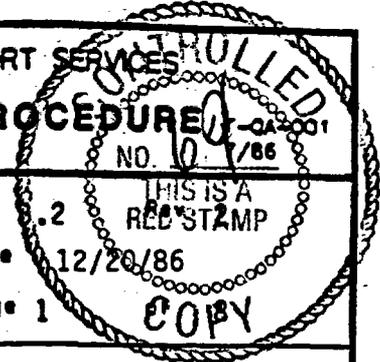
- (1) relate to the design input by documentation in sufficient detail to permit design verification/evaluation; and
- (2) identify assemblies and/or components that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to its installation, is modified or selected by special inspection and/or testing to requirements that are more restrictive than the Supplier's published product description, the component part shall be represented as different from the commercial grade item in a manner traceable to a documented definition of the difference; and
- (3) show evidence that the required review and approval cycle has been achieved prior to release for procurement, construction, or release to another organization for use in other design activities. As a minimum, the review and approval cycle shall include the participation of the technical and quality assurance elements of both the responsible design organization and the WMPO.

**3B.8 DESIGN DOCUMENTS AS QA RECORDS  
REQUIREMENTS FOR QUALITY LEVEL I & II DESIGN ACTIVITIES**

**3B.8.1 Design Documents as QA Records** - Design documentation, including design inputs, analyses, drawings, specifications, approved changes thereto, evidence of design verification/evaluation, and records confirming interface control shall be controlled, stored, and maintained as quality assurance records (See Section 5.0 and 17.0 of NNWSI SOP-02-01 latest revision).



TECHNICAL & MANAGEMENT SUPPORT SERVICES  
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 OP 3.2 USE AND CONTROL OF COMPUTER PROGRAMS

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**1.0 PURPOSE AND SCOPE**

This procedure establishes the attached Standard Operating Procedures NNWSI-SOP-03-02, Software Quality Assurance, and NNWSI-SOP-03-03, Acceptance of Data or Data Interpretation Not Developed Under the NNWSI OA Plan, as amplified herein, as the methodology used for documenting and controlling the quality of scientific and engineering software (SES). Other (e.g., auxiliary) software required in support of NNWSI Project activities is covered on an interim basis by this procedure until an NNWSI SOP is issued.

**2.0 APPLICABILITY**

This procedure applies to the use of computer software for Quality Assurance Levels I and II activities. Selected portions of this procedure may be applied to Quality Assurance Level III activities, as appropriate (see OP 2.4 Assignment of Quality Assurance (OA) Levels). This procedure applies to the development, use, or modifications of software by NNWSI Project Participants in support of T&MSS OA Level I and II activities, and may be applied to OA Level III activities, as appropriate. General purpose commercial software that is procured for multi-user applications will be tested in accordance with Section 5.1.2 of this procedure, but is otherwise exempt. User manuals for such applications as word processing, data base management systems and spreadsheets are provided by the software publishers, and program maintenance manuals are not needed because users seldom have access to source code. In those instances where vendors provide source code and the T&MSS contractor customizes the software, this procedure will apply.

This procedure shall remain in effect for Quality Assurance Levels I and II activities, and as appropriate, Quality Assurance Level III activities, until subsequently modified by the forthcoming NNWSI-SOP-XX-XX, Auxiliary Software.

**3.0 DEFINITIONS**

The definitions contained in NNWSI-SOP-03-02 and NNWSI-SOP-03-03 apply to T&MSS with the following additions and clarifications:

**APPROVALS**

 QA Manager	02/18/86 Date	 Project Manager	12/20/86 Date
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### 3.1 BRANCH MANAGER

Branch Manager as used in this procedure, is a T&MSS manager reporting to a Division Director, as shown in the Organization Chart under OAPP-1.

### 3.2 TPO

The Project Manager (PM) is the designated TPO for the T&MSS Project.

### 3.3 REQUESTOR

The Requestor is the individual responsible for initially identifying the requirement for software and would normally be the primary user of the software. In those instances where the software is requested for the use of a single Branch, that Branch Manager will have the responsibility for performing those functions assigned herein to the Requestor.

### 3.4 DEVELOPMENTAL SOFTWARE

Computer programs are often produced on an incremental basis and are used to support NNWSI Project work during the development period. The Branch Manager who is responsible for development of the software will assure that such programs are tested in accordance with Section 5.1.2 prior to their being used to support NNWSI Project activities. Software that is in the development process is not subject to the formal change control procedure per Sections 5.3 and 5.4.

### 3.5 BASELINED SOFTWARE

Computer programs that meet the users functional requirements, and have been satisfactorily tested and documented, will be baselined and placed under the change control procedure as described herein.

### 3.6 SINGLE OR SPECIAL PURPOSE SOFTWARE

Computer programs produced or procured for, or by a single Branch to perform tasks specified by that Branch, such as the cost control or planning and scheduling software, are the responsibility of the using Branch to test and document.



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### 3.7 MULTI PURPOSE, MULTI USER OR GENERAL PURPOSE SOFTWARE

These are programs used by many Branches for such tasks as word processing, data base management, action item logs, correspondence logs, etc., and are the responsibility of the Computer Services Branch Manager to test and document, as required.

### 3.8 TEST PLAN

A documented and approved plan for the verification and validation of T&MSS designed and developed software, and the installation and proper operation of all software applied to QA Level I & II activities.

## 4.0 RESPONSIBILITIES

The responsibilities in NNWSI-SOP-03-02 and NNWSI-SOP-03-03 apply to T&MSS with the following additions and clarifications:

### 4.1 PROJECT MANAGER

The T&MSS Project Manager (PM) or designee is responsible for assuring that Scientific and Engineering Software (SES) and Auxiliary Software application programs and their associated documentation packages meet the requirements of this procedure and are reviewed and approved in accordance with this procedure.

### 4.2 BRANCH MANAGER

The Branch Manager who is the user of special or single purpose software is responsible for approving the development and use of baselined or developmental versions of computer programs prior to each use of the software for NNWSI Project work. This Branch Manager is responsible for establishing and executing a test plan which exercises all of the normally used features of the program(s) and is responsible for producing the users manual. The Branch Manager shall also determine whether or not an independent review of the test plan is required in accordance with AP 2.3, Independent Review and Peer Review. If such independent review is required, it shall be the Branch Managers' responsibility to assure that the independent review is conducted. This Branch Manager may utilize programming resources within the Branch; other programmers within the T&MSS contractor's organization, or the Branch Manager may assign



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the programming work to the Computer Services Branch. If the work is assigned to the Computer Services Branch, the Computer Services Branch will prepare the program maintenance manual, otherwise it will be the responsibility of the requestor, or user Branch Manager.

#### 4.3 COMPUTER SERVICES BRANCH MANAGER

The T&MSS Computer Services Branch Manager is responsible for the design, development, implementation and maintenance of all T&MSS general purpose software including associated documentation. The Computer Services Branch Manager is also responsible for preparing and executing test plans for general purpose software. The Computer Services Branch Manager is responsible for the preparation and revision of Standard Form 185 (or functional equivalent), see Figure 3.2-1. This form will be prepared for each baselined version of special and general purpose software and transmitted to the Configuration Management Branch and the T&MSS Records Coordinator for formal identification (see Section 4.5) and incorporation into the T&MSS Records Management System (see OP 17.1, QA Records). The Computer Services Branch Manager shall ensure that Configuration Management Branch is notified each time that a T&MSS software package is provided to either NNWSI or OCRWM Participant.

#### 4.4 QUALITY ASSURANCE MANAGER

The T&MSS Quality Assurance Manager is responsible for surveillance and audits of the activities concerned with this procedure.

#### 4.5 CONFIGURATION MANAGEMENT BRANCH MANAGER

The T&MSS Configuration Management Branch Manager shall institute a Configuration Management System that provides for (1) identification and documentation, (2) change control, (3) status reporting, and (4) maintenance of a list of recipients of SES and baselined auxiliary software.

#### 4.6 REQUESTOR

The Requestor is responsible for identifying the need for new software or changes to existing software. He/she is also responsible for approval of verification and validation activities through a test plan prepared jointly by the Requestor and the Computer Services Branch Manager as defined in this procedure.



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## 5.0 REQUIREMENTS

The requirements specified in NNWSI-SOP-03-02 and NNWSI-SOP-03-03 Section 5.0 shall be adhered to except as follows:

### 5.1 VERIFICATION AND VALIDATION

5.1.1 Verification and validation (V&V) of auxiliary software and of all QA Level III software is not generally required. To the extent V&V is performed on any software (QA Levels I, II, and III), it shall be the joint responsibility of the Requestor or principal using Branch Manager and the Computer Services Branch Manager to see that it is properly conducted and documented.

5.1.2 V&V for T&MSS software, other than QA Level I computer programs, does not need to be performed by peer review. Peer review will only be performed at the specific direction of the WMPO. Adequate techniques will be selected based on the relative significance to the NNWSI Project of the software. A test plan will be written that will assure that all of the commonly used features of the program(s) are exercised and that the product meets the users requirements. The test plan will include a pre- and post-test examination of the files or data base used in the test to assure that the exercise of program(s) has not corrupted or otherwise disturbed these files. The test plan can also include reproducing results for a variety of sample problems, using independent hand calculations, evaluation of reasonableness of results, or comparison with the results of another generally accepted method of analyses.

### 5.2 PROGRAM IDENTIFICATION

The operating or production version of computer programs and their associated documentation (including subsequent revisions) shall be uniquely identified. The usual method of identification is to assign a version and suffix number, e.g., Version 3.2.2.

### 5.3 COMPUTER PROGRAM DOCUMENTATION

Computer program documentation for T&MSS developed auxiliary or QA Level III software shall be prepared by the using Branch Manager or the Computer Services Branch Manager and approved for use by the Requestor following testing and V&V as appropriate.



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Computer program documentation for T&MSS developed auxiliary and QA Level III software shall include users manual and program maintenance manual, as a minimum.

A copy of the approved computer software documentation package shall be sent to the Configuration Management Branch Manager for retention, control and distribution.

#### 5.4 SOFTWARE CHANGE CONTROL

When changes such as version, major modifications, technical contact or error corrections are made to verified and validated software, the Computer Services Branch Manager shall assure that the changes are appropriately verified and validated, properly documented, and transmitted to the Configuration Management Branch Manager for retention in accordance with Sections 5.1 and 5.3 of this procedure. The Configuration Management Branch shall determine whether or not an earlier version of the software has been provided to other NNWSI Project participants, and if it has, the recipient shall be advised as to the availability of the new version.

#### 5.5 PROGRAM USE

Only SES and Auxiliary Software that has been documented and controlled in accordance with this procedure shall be used for T&MSS Project activities in support of the WMPO for Quality Assurance Level I, II, or III activities, as appropriate. This use shall be consistent with specific requirements as developed for the related technical or management support service functional area.

#### 6.0 REFERENCES\*

OAPP-1	T&MSS QA Program Plan
QP 2.4	Assignment of Quality Assurance Levels
QP 17.1	QA Records
AP 2.3	Independent Review & Peer Review
NNWSI-SOP-03-02	Software Quality Assurance



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Acceptance of Data or Data Interpretation Not  
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NNWSI-SOP-XX-XX

Auxiliary Software

\*Current issue

7.0 APPLICABLE FORMS

Figure 3.2-1

Federal Information Processing Standard Software  
Summary, Standard Form 185 (or functional  
equivalent)



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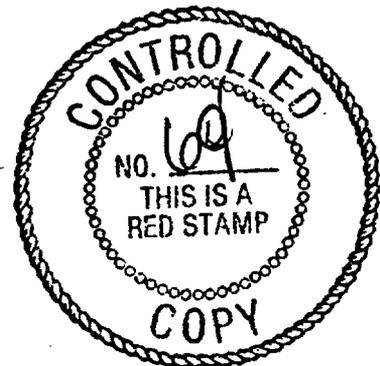
FEDERAL INFORMATION PROCESSING STANDARD SOFTWARE SUMMARY			
01. Summary date Yr. Mo. Day		02. Summary prepared by (Name and Phone)	
04. Software date Yr. Mo. Day		03. Summary action New <input type="checkbox"/> Replacement <input type="checkbox"/> Deletion <input type="checkbox"/> Previous Internal Software ID	
06. Short title		07. Internal Software ID	
08. Software type <input type="checkbox"/> Automated Data System <input type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module		09. Processing mode <input type="checkbox"/> Interactive <input type="checkbox"/> Batch <input type="checkbox"/> Combination	
10. General <input type="checkbox"/> Computer Systems Support/Utility <input type="checkbox"/> Scientific/Engineering <input type="checkbox"/> Bibliographic/Textual		Application area Specific <input type="checkbox"/> Management/Business <input type="checkbox"/> Process Control <input type="checkbox"/> Other	
11. Submitting organization and address		12. Technical contact and phone	
13. Narrative			
14. Keywords			
15. Computer model's and model	16. Computer operating system	17. Programming language(s)	18. Number of source program statements
19. Computer memory requirements	20. Tape drives	21. Disk/Drum units	22. Terminals
23. Other operational requirements			
24. Software availability Available <input type="checkbox"/> Limited <input type="checkbox"/> In-house only <input type="checkbox"/>		25. Documentation availability Available <input type="checkbox"/> Inadequate <input type="checkbox"/> In-house only <input type="checkbox"/>	
26. FOR SUBMITTING ORGANIZATION USE			

Figure 3.2-1 FEDERAL INFORMATION PROCESSING STANDARD SOFTWARE SUMMARY

U.S. DEPARTMENT OF ENERGY  
**ORR**  
**W**  
**M**  
**OGR**

10222 Nevada  
Investigations  
PROJECT

# Nevada Nuclear Waste Storage Investigations Project



**NNWSI-SOP-03-02**

**REVISION 0**

## **SOFTWARE QUALITY ASSURANCE**

Nevada Operations Office  
UNITED STATES DEPARTMENT OF ENERGY



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**1.0 PURPOSE & SCOPE**

The purpose of this Standard Operating Procedure (SOP) is to establish requirements for documenting and controlling the quality of software used to support a high-level nuclear waste repository license application.

This SOP applies to scientific and engineering (SES) software used in support of an NNWSI license application (Quality Assurance Level I). Assignment of quality assurance levels is covered by SOP-02-02. It does not apply to operating systems, compilers, standard libraries, auxiliary software, utilities, or data bases. Data generated by software before the effective date of this SOP may be qualified under SOP-03-03.

**2.0 APPLICABILITY**

This document defines the requirements to be met to satisfy the Nuclear Regulatory Commission of the quality of software used in a nuclear waste repository license application. It uses the guidance contained in NUREG-0856 and applies to Quality Assurance Level I as defined in NVO-196-17. This SOP also applies to Quality Assurance Level II to the extent appropriate as also defined in NVO-196-17. Furthermore, numerical methods are differentiated from analytic methods to be consistent with standard usage in the sciences and engineering and to allow appropriate application of the requirements to analytic software.

The requirements set forth below define the extent of the documentation and controls required. The development and implementation of procedures for this SOP are the responsibility and sole province of the participating organizations, and NTS Support Contractors are to be incorporated into their Quality Assurance Program Plans, and are to be approved by the Waste Management Project Office.

**3.0 DEFINITIONS**

Comparable terms defined in NUREG-0856 are given in parentheses.

**Analytic Method** - A direct transliteration of mathematical formulae into software, where no computational approximations are made other than those imposed by the word length of the computer.

**Auxiliary Software** - Software which is not scientific and engineering software. Auxiliary software includes but is not limited to simple statistics, coordinate transformations, trivial calculations, sorting, reformatting, data acquisition, and graphics.

**PROVALS**

Originator

James Blaylock  
Date 1/31/86

Director, WMPO

  
Date 2/3/86

Director, DOE/NV OAD

  
Date 2-3-86

Supersede N/A

Rev. Initial  
Date Issue



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**Benchmarking** - Comparison of the results of one item of software with the results of another item of software designed to solve a comparable problem to show that they produce similar results. The particular problem for which this comparison is made is called a benchmark problem.

**Component** - Any logically distinct subset of a model. Model is understood to include components. (component model)

**Computer Program, Computer Code, Code** - Synonyms for "software" or any type of software.

**Configuration Management** - A system of controls and authorizations which prevents ambiguity as to which version of software is used for a particular computation.

**Independent Peer** - A disinterested qualified peer. An independent peer may be a member of the participating organization of the NNWSI Project as long as the peer is not a member of both the participating organization and the NNWSI Project.

**Loader** - Any combination of utilities used to perform the tasks of linkage editing and loading, whether relocatably or not.

**Mathematical Model** - A mathematical representation of any model. (mathematical model)

**Model** - Synonym for any or all of the kinds of models defined.

**NNWSI** - Nevada Nuclear Waste Storage Investigations. A U.S. Department of Energy Project.

**Numerical Method** - An approximate computational method for solving a problem mainly by a sequence of arithmetic operations. (numerical method)

**Numerical Model** - A representation of a physical or mathematical model using numerical methods. (numerical model)

**Peer** - An individual or group with expertise comparable to that of the software creator(s).

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**Peer Review** - A documented review, by an independent peer of items required by the relevant sections of this SOP, the process also includes the Technical Contact's documented response to questions raised by the reviewer.

**Physical Model** - Any representation of a physical system or process. (model)

**Records Management System (RMS)** - The system of record keeping defined in SOP-17-01.

**RMS** - Records management system.

**Scientific and Engineering Software** - Software which specifies operations according to a physical or mathematical model or which uses a numerical method.

**SES** - Scientific and engineering software.

**Software** - A set or sets of computer operations specified by any language(s) which can be translated unambiguously into machine language. Machine language is also software. (computer code)

**SOP** - Standard Operating Procedure. A document in the NNWSI Quality Assurance Plan.

**Technical Contact** - The technical professional identified on the software summary form (usually the author of or current expert on the software).

**TPO** - Technical Project Officer.

**Trivial Calculations** - computation which could be done on paper or with an unprogrammed calculator.

**Validation** - Assurance that the physical model as embodied in software is a correct representation of the intended physical system or process. (validation)

**Verification** - Assurance that the software correctly represents the model(s). (verification)

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**4.0 RESPONSIBILITIES**

4.1 Participating organizations and NTS Support Contractors are responsible for implementing this SOP for software within the scope of their activities by developing and implementing appropriate written procedures and including them in their Quality Assurance Program Plans. The Technical Project Officer (TPO) is the responsible party within each participating organization. The TPO may delegate all or part of these responsibilities; any such delegation shall be documented in the Quality Assurance Program Plan.

4.2 Participating Organizations and NTS Support Contractors quality assurance is responsible for reviewing these procedures and auditing their implementation.

**5.0 REQUIREMENTS**

5.1 Format - This SOP shall not be construed to endorse any documentation format or software-portability requirements. The information called for is required but the format in which it is given may be varied.

5.2 Configuration Management Program - All Participating Organizations and NTS Support Contractors shall institute a software configuration management program appropriate to the projects they conduct and shall provide documentation of this program to the Records Management System (RMS).

5.2.1 The minimum requirements for this configuration management program shall be: the inclusion of a unique identification, including software version numbers, whenever feasible, in the output and listings of the software on all versions of SES under the scope of this SOP; and a brief chronology of the software versions under the scope of this SOP, including descriptions of the changes made between versions to ensure an audit trail of all changes made to a specific software program.

5.3 Software Summary Form - For each item of SES a software summary form shall be provided to the RMS. Standard Form 185 or its functional equivalent shall be used for this software summary.

5.3.1 The software summary shall be updated and the updated version provided to the RMS whenever a new version of the software is released, whenever major modifications are made to the software, whenever the Technical Contact is changed, whenever an error is discovered in the software or documentation is reported, and whenever any change to the software summary is made.

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5.4 Description of Models - Physical, mathematical, and numerical models used for the software shall be explained such that peers can understand the methods used. This documentation shall be detailed enough to stand alone as a basis for peer review of the methods used in the software, and it shall be reviewed by an independent peer. These documents, including peer reviews, shall be provided to the RMS (cf. 5.6.3).

5.4.1 The overall nature and purpose of the analysis of which the model is a part shall be described and the general aspects of this analysis addressed by the model shall be stated. Specific aspects of the analysis addressed by the model shall be stated by software users. The information that goes into and comes out of the software shall be stated in general terms.

5.4.2 The overall solution strategy shall be described with any appropriate combination of flowcharts, block diagrams, narratives, and pseudocode listings (cf 5.4.4.4). The locations of subroutines within this strategy shall be shown. Subdivisions of the software reflecting any model components shall be defined, and the location of each such component in the overall solution strategy shall be described.

5.4.3 To the extent it is known, the overall performance of the models shall be discussed and the conditions under which they are known to perform well or adversely shall be described. General rules or recommendations that should be followed when using the models shall be given if available.

5.4.4 For each physical or mathematical model or component thereof the following shall be described.

5.4.4.1 The purpose and scope of the model or component; its input, output, and solution strategy; and the circumstances under which it is used shall be described as in 5.4.1 and 5.4.2.

5.4.4.2 The final mathematical form of the physical model (i.e. the governing equations) shall be given and an appropriate combination of references or derivations from generally accepted principles shall be included to justify that mathematical model. Any assumptions made or known limitations to the physical or mathematical model shall be described. Major variables important to understanding the operation of the software, including all input and output variables and governing equation variables, shall be cross-referenced between this derivation and the software (cf. 5.5.1, 5.5.2.1, and 5.5.2.2).

5.4.4.3 If the model or component is empirical or semi-empirical, its derivation from experimental data and the range and type of data used shall be described or referenced.

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5.4.4.4 Any numerical methods used shall be characterized and the derivation of the numerical model from the mathematical or physical model shall be described. Available references for the numerical method and numerical model shall be given. The input to and output from the numerical model, including boundary conditions and coefficients, and the origin and use of these data shall be stated. An appropriate combination of flowcharts, block diagrams, narratives, and pseudocode listings shall be used to describe the computational sequence and numerical solution strategy used (cf. 5.4.2). The location of the numerical model in the software shall be stated. The known stability and accuracy of the numerical model shall be stated, differentiating between proven and empirical effects. (The requirements of this section do not apply to any analytic methods used.)

5.4.4.5 Alternatives considered to the model or component and the reasons for choosing the one used shall be stated briefly.

5.5 User's Manual - A user's manual which allows a peer to understand the results produced by the software, to run the software, and to install it on an appropriately equipped computer shall be provided to the RMS. The software listing (cf. 5.7) and all comments given in that listing shall be considered part of the user's manual.

5.5.1 The function and invocation of each major option and any recondite effects of combining options shall be described. Initial values of input, output, and governing-equation variables, where they are initialized, whether they are fixed or default values, and their units, if any, shall be described. Any restart and consecutive-case capabilities of the software and their use shall be described. Error processing, including the location and likely causes of all major errors returns, shall be described unless the error messages returned contain such information (cf. 5.4.4.2).

5.5.2 The general content, purpose and organization of each data file used, and the location(s) in the software where these files are read or written shall be described. Known auxiliary software which uses or affects these files shall be referenced.

5.5.2.1 The input data, including formats of individual records and the structure and format of the overall input data, any record and field identifiers and delimiters, names of variables into which the data are read any any units of these data, and any known limits of the input data values, shall be described. Any optional data and defaults shall be described (cf. 5.4.4.2).

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5.5.2.2 The output data, including any normalization, units, output variable names, graphical capabilities of the software, and the effects of input options on output formats shall be described (cf. 5.4.4.2).

5.5.2.3 Sample problems, including input and output listings, which exercise the major options shall be given. Computer-readable copies of the sample problem input shall also be given (cf. 5.7).

5.5.3 The interface between the software and the computer system shall be described. Any system-dependent features (e.g. external references), the compiler and loader and compiler- and load-options used, any special hardware requirements, the memory required, and any command cards or files used and interactive commands issued shall be described. Sample commands cards or files and interactive commands shall be listed, and any application-dependence of these command structures shall be described (cf. 5.5.1).

5.6 Verification and Validation - The correctness of the software shall be verified, and the applicability of the software to the problem shall be validated, both to the extent appropriate. Validation may be done by the software user with a peer review. The methods used to verify the software and validate the model shall be stated. Records of these verification and validation activities, including the peer review and the conclusions drawn from the peer reviews, shall be provided to the RMS.

5.6.1 The physical models, mathematical models, and any numerical models used, shall be reviewed by an independent peer, and any changes made or planned as a result of this review shall be described.

5.6.2 The correctness of the models' translation into software shall be verified to the extent appropriate by the software developer or Technical Contact and by an independent peer.

5.6.2.1 One acceptable form of verification is the documented wide use of the software by peers. Similarly, documented benchmarking and other documented comparisons to independently-derived results are acceptable forms of verification.

5.6.3 The applicability to and adequacy of the software for the problem shall be validated to the extent appropriate by the software developer, Technical Contact, or software user; and by an independent peer (cf 5.4).

5.6.3.1 The applicability of the model or component to the geologic repository, including any extrapolations, restrictions, and effects of unusual or extreme conditions peculiar to the repository, shall be described by the user.



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5.7 Software Listings - Computer-readable and hard-copy listings of all versions of the software under the scope of this SOP shall be provided to the RMS (cf. 5.5 and 5.5.2.3).

5.7.1 Accessible copies of any software libraries used shall be referenced, including version numbers, or the parts of these libraries used shall be included in the listings described in 5.7.

5.8 Errors - Any errors discovered in either the software or any model used for the software, any effects of these errors on data used in the license application, and remedial actions taken to correct the errors and their effects shall be documented and these documents shall be provided to the RMS. Participating Organizations and NTS Support Contractors shall have provision for reporting such errors and change to the code users.

5.9 Documentation Changes - Any changes to the required documentation, due to changes made in the software, errors discovered in the documentation, new limitations discovered for the models, new results from the verification and validation program (cf. 5.6), or for any other reason, shall be provided to the RMS.

#### 6.0 REFERENCES

NUREG-0856, Final Technical Position on Documentation of Computer Codes for High-Level Waste Management, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, June, 1983.

NVO-196-17, Nevada Nuclear Waste Storage Investigations Quality Assurance Plan, NNWSI, Nevada Operations Office, U.S. Department of Energy, Las Vegas, Nevada.

SOP-02-02, Assignment of Quality Assurance Levels to NNWSI Activities and Items, NNWSI, Nevada Operations Office, U.S. Department of Energy, Las Vegas, Nevada.

SOP-02-03, Verification of Data Generated Pre-NNWSI Project QAP, NNWSI, Nevada Operations Office, U.S. Department of Energy, Las Vegas, Nevada.

SOP-17-01, Records Management Plan, NNWSI, Nevada Operations Office, U.S. Department of Energy, Las Vegas, Nevada.



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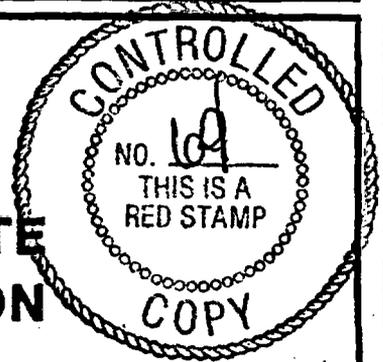
Standard Form 185, Federal Information Processing Standard Software Summary, Federal Information Processing Standard Publication 30 (FIPS. PUB 30), U.S. Department of Commerce, National Bureau of Standards, 1974. Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, July, 1974; or the General Services Administrations as Federal Supply Stock Item 7540-00-111-8541.

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# Nevada Nuclear Waste Storage Investigations Project

## NEVADA NUCLEAR WASTE STORAGE INVESTIGATION



**NNWSI-SOP-03-03**

**Revision 0**

**ACCEPTANCE OF DATA  
OR DATA INTERPRETATION  
NOT DEVELOPED UNDER  
THE NNWSI QA PLAN**

**Nevada Operations Office  
UNITED STATES DEPARTMENT OF ENERGY**





## NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

QUALITY ASSURANCE  
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ACCEPTANCE OF DATA OR DATA INTERPRETATION	Effective Date: 1/31/86
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## 1.0 PURPOSE AND SCOPE

This procedure describes the methods to be used by all Nevada Nuclear Waste Storage Investigation (NNWSI) Project participating organizations and Nevada Test Site (NTS) support contractors for the acceptance in current licensing activities of data or data interpretations that were not generated under the controls of the NNWSI QA Plan.

## 2.0 APPLICABILITY

2.1 This procedure applies to the acceptance of data or data interpretation which support the end results of a current licensing Quality Assurance Level I activity. The data or data interpretation may be in the form of any of the following conditions: (a) data or data interpretations and reports that were generated by the NNWSI Project participants, predecessor organizations, or their subcontractors involved in siting the NNWSI high-level waste (HLW) repository prior to the NNWSI QA Plan, Revision 0, implementation date, August 1980; or (b) data from reports, books, and theses from non NNWSI Project participants; or, (c) data or data interpretations from a technical journal.

2.1.1 If the data or interpretations fall in condition (a), they must be processed in accordance with this procedure within four years of the effective date of this procedure.

2.1.2 If the data or interpretations fall in conditions (a) or (b), they shall be processed for acceptance as condition (a).

2.2 This procedure is not intended to cover data or data interpretations that were generated by the NNWSI participants after the NNWSI QA Plan implementation date (August 1980) where the QA Plan was not implemented. In this case the data or data interpretations shall be processed as a nonconformance in accordance with NNWSI-SOP-15-01.

## APPROVALS

Originator James Blaylock Date Jan 9, 1986	Director, WMPO Donald L. Kuehl Date Jan 9, 1986	Director, DOE/NV OAO [Signature] Date 1-19-86	Supersede N/A Rev. Initial Date Issue
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**3.0 DEFINITIONS****3.1 ACTIVITY**

An activity is any time consuming effort (operation, task, function, or service) which influences or affects the achievement or verification of the objectives of the NNWSI Project as depicted in the WBS Dictionary.

**3.2 APPENDIX A, DEFINITIONS OF NNWSI SOP-02-01**

The definitions contained in Appendix A of NNWSI-SOP-02-01 shall be used in conjunction with this procedure, as necessary.

**3.3 NNWSI PROJECT PERSONNEL**

NNWSI Project personnel refers to all U.S. DOE participating organizations and NTS support contractor personnel involved in NNWSI Project activities.

**3.4 PRINCIPAL INVESTIGATOR**

Principal Investigator (PI) is synonymous with task leader, project chief, or project engineer depending upon the terminology used by the NNWSI Project participant. The PI is the individual who has the technical responsibility for an assigned task including, but not limited to planning and cost control, day-to-day technical direction and quality control of the item or activity, and assembling a support team to accomplish the item/activity.

**3.5 TECHNICAL JOURNAL**

A technical journal is a refereed scientific or engineering publication by a recognized national or international organization.

**4.0 RESPONSIBILITIES**

4.1 It is the responsibility of all NNWSI Project participant PIs to ensure that the process outlined in this procedure is followed for the acceptance of data or data interpretations that were not generated under the controls of an NNWSI Quality Assurance Plan.



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4.2 It is the responsibility of individual PIs to adhere to this procedure, and the responsibility of the respective participant organizations to ensure this adherence.

4.3 It is the responsibility of WMPO to ensure that this procedure is followed prior to approving the information for use in Quality Assurance Level I licensing activities.

4.4 Detailed responsibilities for NNWSI Project and WMPO personnel are outlined in Section 5 of this procedure.

#### 5.0 PROCEDURE

5.1 When an NNWSI Project participant PI identifies a need to accept data or data interpretations for use in current licensing Quality Assurance Level I activities, the PI is responsible for initiating an acceptance action and shall coordinate the acceptance process for the data or data interpretations.

5.1.1 If the data or data interpretations fall in condition (a) or (b) as described in Section 2.1, the PI shall have any available supporting documents collected which can be used during the acceptance process such as:

1. statement of work
2. log books
3. documented technical procedures
4. documented reviews
5. calibration records
6. other available pertinent documented information.

5.1.2 If the data or data interpretations are from a published technical journal (condition c as described in Section 2.1), the PI shall collect the following:

1. known additional data or data interpretations from published technical journals that support the information under review

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2. known data or data interpretations from published technical journals rebutting the information under review
3. available documentation of an independent verification.

5.2 The PI shall initiate a Data/Data Interpretation Acceptance Review Sheet (Exhibit 1) or Technical Journal Data/Data Interpretation Acceptance Review Sheet (Exhibit 2). A Continuation Sheet (Exhibit 3) is used as necessary.

5.2.1 For condition (a) or (b) (Section 2.1) for which the Data/Data Interpretation Acceptance Review Sheet shall be used, the PI shall complete Part I of the form indicating the following:

1. name and organization of the coordinating PI
2. name and organization of the original investigator
3. detailed description of the data and all constituent parts, and its relationship to the current activity or item for which it is being considered
4. technical justification explaining in detail why the subject data/data interpretation should be used. Explain why the process cannot be repeated under NNWSI QA Plan controlled conditions, including cost and schedule considerations
5. description of the quality assurance methods (procedures, reviews, approvals, etc.) that may have been used during the generation of the subject data or data interpretations, including the manner in which the data were collected and the tools, resources, computer programs, etc. used in their collection.

5.2.2 For condition (c) for which the Technical Journal Data/Data Interpretation Acceptance Review Sheet shall be used, the PI shall complete Part I of the form indicating the following:

1. complete reference of the subject technical journal to include the following: journal date and issue, article title, author, and other relevant references if the article is part of a series
2. concise description of the information in the article and its relationship to the current NNWSI Project activity or item for which it will be used

**QUALITY ASSURANCE  
STANDARD OPERATING PROCEDURE**

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ACCEPTANCE OF DATA OR DATA INTERPRETATION  
NOT DEVELOPED UNDER THE NNWSI QA PLAN

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3. technical justification explaining in detail why the subject technical journal information should be used, and why the process cannot be repeated under NNWSI QA Plan controlled conditions
4. attached list of known supporting articles from published technical journals indicated
5. attached list of rebuttal articles from published technical journals indicated
6. complete reference of any known independent verification of the data or data interpretations including who performed it and how it was performed (reconstruction or review).

5.3 The PI, with concurrence from the Technical Project Officer (TPO), shall select the individuals to perform separate and independent reviews of the subject information provided by the PI. The reviewers shall be familiar with the general subject matter, but shall not have had involvement with the data collection or data interpretation. For data or data interpretations that fall into condition (a) or (b), there shall be three individuals as reviewers, two with a technical background and one with a quality assurance background. For the technical article journal review (condition c), only one individual with a technical background shall be selected in addition to the coordinating PI to perform reviews.

5.3.1 The PI shall record the names of the assigned individuals on Part II of the review sheet.

5.3.2 The PI shall forward to each reviewer a copy of the review sheet with appropriate Appendix Sheet (Exhibits 4 or 5), and any additional documented information to assist the reviewers when performing their review. For condition (c), the PI shall document the review on Exhibit 5.

5.4 Upon receipt of the Appendix Sheet, each reviewer shall perform and document their reviews independently of each other. The extent of the review can be spot check or similar checks such that the reviewer is satisfied as to the validity and correctness of any conclusions based on the data.

5.4.1 As a minimum each reviewer shall respond to the attributes listed on the supplied Appendix Sheet.

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NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

**QUALITY ASSURANCE  
STANDARD OPERATING PROCEDURE**

N-0  
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5.4.2 Each reviewer shall document their comments for each attribute, identify failures to meet each attribute, evaluate the importance of each attribute and the importance of any discrepancy. Also, if the reviewer believes the information is in question, the reviewer shall indicate (if possible) other ways of securing acceptable data. Each reviewer shall document this information on the Appendix Sheet.

5.4.3 Upon completion, each reviewer shall sign and date their Appendix Sheet and return all documents to the coordinating PI.

5.5 Upon receipt of the completed Appendix Sheets, the PI shall review them for clarity and completeness. It shall be the responsibility of the PI to resolve (if possible) any open issues with the reviewer and to document resolutions.

5.6 If the PI believes that clarification or justification comments are appropriate when the acceptance process involves condition (a) or (b) only to support a decision, they shall be documented on Part III of the review sheet. Upon completion, the PI shall sign and date the review sheet, then forward the complete package of documents to the TPO for approval.

5.7 The TPO shall review the documents for concurrence that the subject information had adequate controls for its intended use on the NNWSI Project. In the case of technical journals when there is a difference of opinion between the reviewer initially selected and the review by the PI, the TPO shall have another individual review the technical journal article and document the review in accordance with this procedure. Upon approval by the TPO the package shall be submitted to WMPO for approval.

5.8 The appropriate WMPO Branch Chief shall perform a management review of the submitted documents for concurrence with the results of the acceptance review. The WMPO PQM shall review the documentation to ensure that the requirements of the procedure have been met. If acceptable, their respective approvals shall be documented on part IV of the Review Sheet. If not acceptable, their reasons for disapproval shall be documented and attached to the review sheet. Upon completion of the WMPO review cycle the package shall be returned to the coordinating PI through the TPO.

5.9 The PI shall ensure that all approved review sheets and associated document packages (with all references and attachments) are properly dispositioned in accordance with the organization's QA Records Control System. When the acceptance process results in the data or data interpretations not being accepted for use (during any step in the process), only the review and appendix sheets will be considered QA records and require control.



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**QUALITY ASSURANCE  
STANDARD OPERATING PROCEDURE**

N-QA-013  
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<b>Title</b> ACCEPTANCE OF DATA OR DATA INTERPRETATION NOT DEVELOPED UNDER THE NNWSI QA PLAN	<b>No.</b> NNWSI-SOP-03-03 <b>Rev.</b> 0 <b>Effective Date</b> 1/31/86 <b>Page</b> 7 <b>of</b> 12
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**6.0 REFERENCES (latest edition in effect at time of use)**

- NVO-196-17 NNWSI Project Quality Assurance Plan
- NNWSI-SOP-02-01 Quality Assurance Program Plan. Requirements for NNWSI Project Participating Organizations and NTS Support Contractors, and their sub-tier vendors.
- NNWSI-SOP-15-01 NNWSI Nonconformance Control System

**7.0 APPLICABLE FORMS**

- Exhibit 1 Data/Data Interpretation Acceptance Review Sheet
- Exhibit 2 Technical Journal Data/Data Interpretation Acceptance Review Sheet
- Exhibit 3 Data/Data Interpretation Acceptance Review Continuation Sheet
- Exhibit 4 Data/Data Interpretation Acceptance Review-Appendix Sheet
- Exhibit 5 Technical Journal Data/Data Interpretation Acceptance Review-Appendix Sheet



NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

QUALITY ASSURANCE  
STANDARD OPERATING PROCEDURE

NO  
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Title  
ACCEPTANCE OF DATA OR DATA INTERPRETATION  
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**DATA/DATA INTERPRETATION  
ACCEPTANCE REVIEW SHEET** N-QA-001  
11/85

Use continuation sheets (N-QA-011) when necessary.

**PART I - BACKGROUND INFORMATION**

Coordinating PI \_\_\_\_\_ Organization \_\_\_\_\_  
 Original Investigator \_\_\_\_\_ Organization \_\_\_\_\_  
 Subject Data Description \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technical Justification (why data should be used and cannot be repeated under NNWSI QA Plan controlled requirements)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Procedures/Resources used during Data Collection \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**PART II - REVIEW INFORMATION** (reviewer comments documented on appendix sheets)

Technical Reviewer 1 \_\_\_\_\_ Affiliation \_\_\_\_\_  
 Technical Reviewer 2 \_\_\_\_\_ Affiliation \_\_\_\_\_  
 QA Reviewer \_\_\_\_\_ Affiliation \_\_\_\_\_

**PART III - PI COMMENTS ON REVIEW**

PI \_\_\_\_\_ Date \_\_\_\_\_

**PART IV - MANAGEMENT CONCURRENCE**

	Approval	Disapproval	Date
TPO _____	<input type="checkbox"/>	<input type="checkbox"/>	_____
WMPO Branch Chief _____	<input type="checkbox"/>	<input type="checkbox"/>	_____
WMPO PCM _____	<input type="checkbox"/>	<input type="checkbox"/>	_____

Exhibit 1. Data/Data Interpretation Acceptance Review Sheet









NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

**QUALITY ASSURANCE  
STANDARD OPERATING PROCEDURE**

N-C  
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Title  
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**TECHNICAL JOURNAL DATA/DATA INTERPRETATION  
ACCEPTANCE REVIEW SHEET**

**N-QA-002  
12/85**

Use continuation sheets (N-QA-011) when necessary.

**PART I - BACKGROUND INFORMATION**

Coordinating PI \_\_\_\_\_ Organization \_\_\_\_\_

Subject Technical Journal

Date \_\_\_\_\_ Issue \_\_\_\_\_ Author \_\_\_\_\_

Article Title \_\_\_\_\_

Relevant References \_\_\_\_\_

Description of Subject Data/Interpretation \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Technical Justification (why the data interpretation should be used) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

List of Supporting Technical Journals Attached  No. of Pages \_\_\_\_\_

List of Rebutting Technical Journals Attached  No. of Pages \_\_\_\_\_

Documentation of Independent Verification  No. of Pages \_\_\_\_\_

**PART II - REVIEW INFORMATION (reviewer comments documented on appendix sheets)**

Technical Reviewer 1 \_\_\_\_\_ Affiliation \_\_\_\_\_

**PART III - MANAGEMENT CONCURRENCE**

TPO \_\_\_\_\_ Approval  Disapproval  Date \_\_\_\_\_

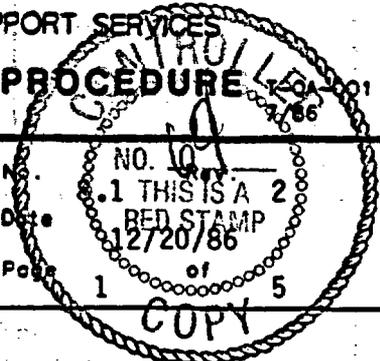
WMPO Branch Chief \_\_\_\_\_ Approval  Disapproval  Date \_\_\_\_\_

WMPO PCM \_\_\_\_\_ Approval  Disapproval  Date \_\_\_\_\_

**Exhibit 5. Technical Journal Data/Data Interpretation  
Acceptance Review - Appendix Sheet**



TECHNICAL & MANAGEMENT SUPPORT SERVICES  
**QUALITY ASSURANCE PROCEDURE**



Title

QP 8.1 IDENTIFICATION AND CONTROL OF ITEMS

**1.0 PURPOSE AND SCOPE**

This procedure establishes the Technical and Management Support Services (T&MSS) requirements and responsibilities for identifying and providing traceability of items, including items in process, used for T&MSS activities in support of the Waste Management Project Office (WMPO).

**2.0 APPLICABILITY**

The identification and control methods established by this procedure to prevent the use of incorrect or defective items are applicable to all Quality Assurance Level I and II items (see QP 2.4, Assignment of Quality Assurance Levels).

**3.0 DEFINITIONS**

**3.1 ITEM**

Item is an all inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, system, subsystem, unit, data, samples (including core and other field and laboratory samples), or prototype hardware.

**3.2 PROCUREMENT DOCUMENTS**

Procurement documents are the purchase requisition (PR), including changes; purchase order (PO), including changes; subcontract, including changes; specifications; drawings; or instructions used to define requirements for purchase.

**3.3 SUPPLIER**

A supplier is any individual or organization who furnishes items or services required by a procurement document. It is an all inclusive term used

APPROVALS

 QA Manager	12/20/86 Date	 Project Manager	14/20/86 Date
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in place of any of the following: vendor, seller, contractor, subcontractor, fabricator, consultant and their subtier levels.

### 3.4 TRACEABILITY

Traceability is the ability to trace the history, application, or location of an item and like items or activities by means of recorded identification.

### 4.0 RESPONSIBILITIES

#### 4.1 PROJECT MANAGER

The Project Manager (PM) is responsible for ensuring the establishment of the overall item identification and control system for the T&MSS Project. This responsibility may be delegated.

#### 4.2 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager is responsible for assuring by inspection, surveillance, and audit that only correct and accepted items are used or installed and that items (including geologic, radiological and environmental samples) are traceable to applicable documents, properly handled, and adequately stored.

#### 4.3 TASK MANAGER (TM)

The TM requiring or using an item shall maintain an identification system that relates the item to the applicable design, sampling, or other pertinent specifying documents. The identification system shall provide for identification and traceability controls, when specified by codes, standards, specifications, or procurement documents, that include specific identification or traceability requirements (such as identification or traceability of the item to applicable specification and grade of material; heat, batch, lot, part, or serial number; or specified inspection, test, or other records).



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## 5.0 PROCEDURE

### 5.1 TRACEABILITY

5.1.1 The applicable procurement, design, sampling, or other specifying document shall include an assigned number for each item which shall provide identification of the item throughout fabrication, testing, examination, erection, installation, collection, preparation, and use of the item. For items other than geologic, environmental or radiological samples, the procurement documents shall specify the traceability requirements of the items to their sources of fabrication by identifying the manufacturer; manufacturer's part, serial, batch, lot, and heat number; date of manufacture; and shelf life, as applicable or required, by codes and standards.

5.1.2 In general, for geologic, environmental, and radiological samples obtained by T&MSS, the sampling specifications shall relate unique sample numbers to the location, sample method, date of sample, conditions prevailing at time of sampling, and other pertinent information. The unique sample number is to be assigned by the Task Manager obtaining the sample, and shall remain as the identification number from the point of sample collection, through processing, testing, and storage and archival activities up to and including disposal.

### 5.2 PHYSICAL IDENTIFICATION OF ITEMS

5.2.1 Physical identification of items shall be used wherever possible. Application of identifying markings shall be permanent and legible and shall not adversely affect the function, service or archival life of the item.

5.2.2 Each sub-part of an item, when removed from the item, shall be identified with the appropriate sub-part number which shall not be obliterated or hidden by surface treatment or coating unless other means of identification are substituted.

5.2.3 When it is impractical to physically identify an item because of its small size or other limitations, the item shall be controlled by other means,



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approved by the QA Manager, such as placement in a marked container, tagging (the tag must be controlled by approved procedure), locked and marked storage, or other procedural control, to ensure traceability of the item to related records (logs, test records, inspection records, Nonconformance Reports, etc.).

### 5.3 STORAGE OF ITEMS

5.3.1 Items not installed but under control of this procedure shall be stored in an area of controlled access. Access restrictions shall be specified by the TM responsible for the item.

5.3.2 Item identification shall be maintained by the protection of the identification markings subject to deterioration due to environmental exposure until the item is consumed, installed, or scrapped. Regular inspections consistent with the planned duration and conditions of storage shall be conducted in accordance with QP 10.1, Inspection. Markings and identification records are not to be changed but may be upgraded or replaced as necessary with the approval of the QA Manager, or designee.

5.3.3 To preclude the use of items for which the shelf life has expired, a log of items not used and with limited shelf life shall be maintained by the TM responsible for the items. Items whose shelf life has expired shall not be used, and shall be replaced.

5.3.4 As part of a maintenance program, a record shall be maintained by the responsible TM of any installed items with limited operating life or cycles. Those shall be replaced as required during regular maintenance.

5.3.5 Item identification shall be traceable to documents, including but not limited to, procurement documents, logs, test results, inspection documents, and Nonconformance Reports, which shall be maintained in accordance with QP 17.1, QA Records.



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**6.0 REFERENCES\***

QP 2.4 Assignment of Quality Assurance Levels

QP 10.1 Inspection

QP 17.1 QA Records

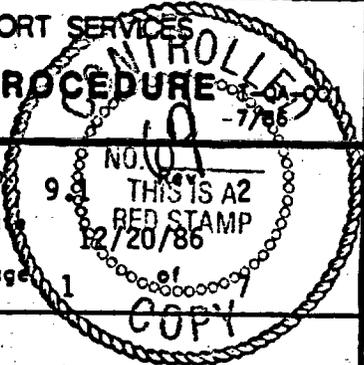
\* Current issue

**7.0 APPLICABLE FORMS**

None



TECHNICAL & MANAGEMENT SUPPORT SERVICES  
**QUALITY ASSURANCE PROCEDURE**



Title

QP 9.1 CONTROL OF PROCESSES

No. 9  
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**1.0 PURPOSE AND SCOPE**

This procedure establishes Technical and Management Support Services (T&MSS) requirements and responsibilities for ensuring that special processes (such as welding, heat treating, cleaning, nondestructive examination, destructive testing, and core sample preparation) are controlled and performed using qualified procedures, equipment, and personnel for activities performed in support of the Waste Management Project Office (WMPO).

**2.0 APPLICABILITY**

Procedures specific to special processes identified during task assignment review shall be developed as needed. This procedure applies to the overall T&MSS control of special processes relating to Quality Assurance Level I and II activities and items (see QP 2.4, Assignment of Quality Assurance Levels).

**3.0 DEFINITIONS**

**3.1 ACCEPTANCE CRITERIA**

Acceptance criteria are specified limits placed on characteristics of an item, process, or service defined in codes, standards, or other requirement documents.

**3.2 CERTIFICATION**

Certification is the act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.

**3.3 QUALIFICATION (PERSONNEL)**

Qualification (personnel) refers to the characteristics or abilities

APPROVALS

*John D. O'Connell*  
 QA Manager

12/20/86  
 Date

*Michael Spurr*  
 Project Manager

12/21/86  
 Date



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gained through education, training, or experience, as measured against established requirements, such as standards or tests, that qualify an individual to perform a required function.

### 3.4 QUALIFIED PROCEDURE

A qualified procedure is an approved procedure that has been demonstrated to meet the specified requirements for its intended purpose.

### 3.5 SPECIAL PROCESS

A special process is a process in which the results are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot readily be determined by inspection or test of the item.

## 4.0 RESPONSIBILITIES

### 4.1 TASK MANAGER

The Task Manager (TM) concerned is responsible for identifying special processes required for assigned tasks, and for preparing and qualifying special process procedures in accordance with this procedure. The TM shall also assure that personnel are qualified and certified, as applicable, in accordance with written procedures prior to performing special processes.

### 4.2 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager is responsible for verifying that special process procedures and personnel have been adequately qualified and certified in accordance with the requirements of this procedure. In addition, it is the responsibility of the QA Manager to develop nondestructive examination procedures and to develop procedures for qualifying and certifying nondestructive examination personnel and procedures.



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5.0 PROCEDURE

5.1 GENERAL

5.1.1 Processes

All processes relating to Quality Assurance Level I and II activities and items shall be accomplished in accordance with procedures, instructions, drawings, checklists, or other appropriate means. Procedures shall be prepared to define the required controls; process parameters; equipment, calibration, environment, and personnel requirements; and acceptance criteria.

5.1.2 Nondestructive Examinations (NDE)

No NDE (radiographic, magnetic particle, ultrasonic, liquid penetrant, eddy current, neutron radiographic, and leak testing) are required by T&MSS task assignments. When such examinations are required, the QA Manager, or designee, shall develop and establish written procedures for the control and administration of NDE personnel training, examination, and certification, and related records; and, procedures for qualifying and performing specific NDE operations based upon the American Society of Nondestructive Testing Recommended Practice No. SNT-TC-1A, June 1980 edition, and its applicable supplements; and any additional requirements of the WMPO.

5.2 SPECIAL PROCESS PROCEDURE PREPARATION AND QUALIFICATION

5.2.1 Identification of Special Processes

During review of task assignments (see AP 2.1, Task Planning and Review), TMs shall identify those special processes within their respective areas of responsibility.

5.2.2 Special Process Procedures

TMs shall prepare and qualify procedures to identify the controls and requirements for special processes within their areas of responsibility. These procedures shall be reviewed and approved by the QA Manager, or designee, and shall include or reference as a minimum:



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1. Applicable codes and standards for the processes;
2. Equipment qualification and calibration requirements;
3. Personnel qualification and level of qualification requirements;
4. Environmental conditions and monitoring requirements;
5. Process parameter limits and monitoring requirements;
6. Required inspections, examinations, or tests; and
7. Acceptance or rejection criteria.

For special processes not covered by existing codes and standards, or where quality requirements exceed the requirements of existing codes and standards, the above requirements shall be clearly and completely described in the procedure.

### 5.2.3 Special Process Procedure Qualification

Special process procedures shall be qualified in accordance with applicable codes, standards, and/or other specifications. The procedures shall identify the methods to control process quality, detect the minimum acceptance or rejection conditions by actual performance of the process, and verify the acceptability of results. The program for the qualification of special process procedures shall be specified in a procedure prepared by the responsible TM and approved by the QA Manager.

The performance of the process and the results of the qualification shall be documented. The QA Manager shall review the process qualification documentation to assure that all qualification requirements have been met.

## 5.3 SPECIAL PROCESS PERSONNEL QUALIFICATION

### 5.3.1 General

Personnel performing special processes related to Quality Assurance Level I and II activities and items shall be qualified based on a combination of education, experience, training, and evaluation by appropriate management in accordance with applicable codes and standards for the processes. Procedures shall be prepared to establish the specific requirements that personnel must satisfy to be considered qualified to perform special processes. Qualifications shall be related to the actual working procedure to the extent possible.



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### 5.3.2 Personnel Qualification Procedures

As required by specific tasks, TMs shall prepare and approve procedures to identify the specific qualification requirements for personnel who perform special processes. These procedures shall be approved by the QA Manager, and shall include or reference, as appropriate:

1. Applicable codes and standards for the qualification;
2. Education requirements;
3. Experience requirements;
4. Training requirements;
5. Personnel physical limitations;
6. Evaluation or examination requirements;
7. Evaluation or examination acceptance criteria; and
8. Requalification, recertification, or renewal requirements.

For special processes not covered by existing codes and standards, the above requirements shall be clearly and completely described in the qualification procedure.

### 5.3.3 Personnel Certification

Personnel qualified to perform special processes in accordance with the applicable qualification procedure shall be certified by the responsible TM or QA Manager, as appropriate (see Sections 4.1 and 4.2). Certifications shall specify the individual's name, applicable process or discipline, qualification level, date of certification, due date for recertification, and the certifying authority signature. The QA Manager shall review the personnel qualification and certification documentation prepared by TMs to verify that all requirements have been met.

### 5.4 SPECIAL PROCESS EQUIPMENT QUALIFICATION

Special qualification, certification, or calibration requirements for special process equipment shall be described in the special process procedures prepared in accordance with Section 5.2.2. Equipment checkout, qualification, and certification shall be the responsibility of the Task Manager responsible for the process.



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## 5.5 DOCUMENT CONTROL

### 5.5.1 Procedures

Special process procedures and personnel qualification procedures shall be prepared, reviewed, approved, issued, distributed, revised, and controlled in accordance with QP 5.1, Instructions, Procedures, and Drawings; OP 6.1, Document Control; and NNWSI AP 1.5, Issuance and Maintenance of Controlled Documents.

### 5.5.2 Quality Assurance Level I Special Process Procedures

Copies of all T&MSS Quality Assurance Level I special process procedures, and revisions, shall be submitted to the WMPO for review and approval prior to use.

### 5.5.3 Quality Assurance Level II Special Process Procedures

A copy of the current listing of T&MSS Quality Assurance Level II special process procedures shall be submitted to the WMPO and the Quality Assurance Support Contractor (QASC) when issued or revised.

## 5.6 QA RECORDS

Special process procedures and qualifications records; special process personnel qualification procedures and qualification records; equipment qualification records; personnel certification records, and the results of special processes performed shall be maintained in accordance with OP 17.1, QA Records.

## 6.0 REFERENCES

- QP 2.4\* Assignment of Quality Assurance Levels
- QP 5.1\* Instructions, Procedures, and Drawings
- QP 6.1\* Document Control



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QP 17.1\* QA Records

AP 2.1\* Task Planning and Review

NNWSI AP 1.5 Issuance and Maintenance of Controlled Documents

\* Current issue

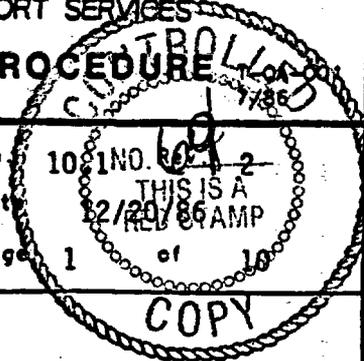
American Society of Nondestructive Testing Recommended Practice No. SNT-TC-1A,  
June 1980 edition, and its applicable supplements

7.0 APPLICABLE FORMS

None



TECHNICAL & MANAGEMENT SUPPORT SERVICES  
**QUALITY ASSURANCE PROCEDURE**



Title: QP 10.1 INSPECTION

No. 10  
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**1.0 PURPOSE AND SCOPE**

This procedure establishes Technical and Management Support Services (T&MSS) measures for the performance of inspections to verify conformance of an activity or item associated with work performed in support of the Waste Management Project Office (WMPO) to approved written instructions, procedures, and drawings.

**2.0 APPLICABILITY**

This procedure applies to T&MSS inspection and process monitoring of Quality Assurance (QA) Level I and II activities and items (see QP 2.4, Assignment of QA Levels) including one-of-a-kind items.

**3.0 DEFINITIONS**

**3.1 HOLD POINTS**

Hold points are those points beyond which work shall not proceed without specific, documented consent or waiver of the QA Manager, or designee, or the WMPO, as appropriate.

**3.2 INSPECTION**

Inspection is an examination or measurement to verify whether an item or activity conforms to specified requirements.

**3.3 PROCESS MONITORING**

Process monitoring is a method of inspection for systematically examining an in-process activity for the purpose of collecting and documenting required data relating to equipment, procedures, methods, personnel, and process parameters. The data shall be of such a nature that when evaluated by qualified individual(s), an adequate determination as to the acceptance/rejection of the process and/or related activity or item can be made.

**APPROVALS**

 QA Manager	12/20/86 Date	 Project Manager	12/20/86 Date
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#### 4.0 RESPONSIBILITIES

##### 4.1 TASK MANAGER

The responsible Task Manager (TM), in coordination with the QA Manager, is responsible for identifying the need for a formal inspection or process monitoring plan, and the preparation and approval of such a plan. This responsibility includes ensuring the preparation of inspection or process monitoring procedures or instructions and related inspection personnel qualification procedures, as required. The TM shall provide QA and WMPO appropriate work controlling documents for the identification of T&MSS QA and/or the WMPO hold points. The Task Manager (TM) is also responsible for notifying the WMPO and/or QA Manager, or designee, as appropriate, at the established notification time prior to reaching a hold point for activities within his/her area of responsibility.

##### 4.2 QUALITY ASSURANCE MANAGER

The QA Manager, or designee, is responsible for coordination with the responsible TM in determining the need for a formal inspection or process monitoring plan. The QA Manager, or designee, shall identify the type and extent of inspections or process monitoring activities consistent with design and procurement documents, and QA Procedures, and shall insert hold points during his/her review of work controlling documents. The QA Manager, or designee, shall approve personnel qualification procedures, and inspection or process monitoring procedures/instructions, and shall establish hold point notification time(s) with the TM.

##### 4.3 INSPECTION PERSONNEL

Personnel performing T&MSS inspections or process monitoring shall be qualified, as appropriate, in accordance with this QP and shall be responsible for ensuring that inspection and process monitoring activities are conducted in accordance with applicable QA and other procedures or instructions.

#### 5.0 PROCEDURE

##### 5.1 GENERAL

5.1.1 T&MSS inspections include first line inspections of hardware and manufacturing or construction activities, receiving inspection, in-process inspections, and final inspections.



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## 5.2 PERSONNEL

### 5.2.1 Reporting Independence

Inspections shall be performed by persons other than those who performed or directly supervised the work being inspected.

### 5.2.2 Qualifications

Personnel shall be qualified in accordance with a procedure based on the requirements of Figure 10.1-1. This procedure shall be prepared and approved by the TM and approved by the QA Manager. WMPO shall approve personnel qualification procedures for inspection personnel performing inspections of QA Level I activities or items.

## 5.3 INSPECTION OR PROCESS MONITORING PLANNING

5.3.1 Responsible TMs shall review task plans in accordance with AP 2.1, Task Planning and Review; design documents (see QP 3.1, Scientific Investigation Control and Design Control); and purchase orders (see QP 4.1, Procurement Document Control) to identify and document inspection and process monitoring requirements and responsibilities for performing the inspection or process monitoring necessary to verify the compliance of items and activities to design specifications and other applicable requirements. These reviews shall be coordinated with the QA Manager.

5.3.2 Planning for inspection or process monitoring of activities and items shall be accomplished by the responsible TM and QA Manager and documented by the responsible TM. Planning documentation shall identify or reference the following information as applicable:

1. Item or activity concerned;
2. Characteristics concerned;
3. Method to be used (including sampling);
4. Drawings, specifications, or procedures, inspection forms and revision level to be used;
5. Acceptance or rejection criteria;
6. Personnel qualifications (discipline and level), as appropriate;
7. Responsibilities for performing the inspections/process monitoring;
8. Calibrated measuring and test equipment required;
9. Records requirements; and
10. Hold points and notification times.



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5.3.3 If sampling is used to verify the acceptability of a group of items, the sampling plan shall be based on recognized standard practices or shall provide the statistical basis for sample size, rejection number, and selection process.

5.3.4 When hold points are identified by the WMPO or QA Manager, the hold points shall be included in the work controlling documents by the TM responsible for the item or activity to be inspected. Hold points shall identify a notification time as established by the organization/individual designating the hold point. The notification time is a period prior to reaching a hold point when the organization/individual who will perform the required inspection shall be notified by the TM so that necessary arrangements can be accomplished.

#### 5.4 DOCUMENTATION OF INSPECTION AND PROCESS MONITORING REQUIREMENTS

Detailed inspection and process monitoring requirements shall be documented in plans, procedures, instructions, checklists, or other similar documents. The document utilized shall identify or reference the information required by Section 5.3.2.

#### 5.5 RECEIVING INSPECTION

Receiving inspection shall be performed as required by and in accordance with the procurement documents; QP 7.1, Control of Purchased Items and Services; and this QP. Unless otherwise required, personnel performing receiving inspection shall document the condition of the item on receipt; document any apparent damage to the item or container; verify records required by the procurement documents are complete and legible; and confirm that the item received is the one specified in the procurement documents.

#### 5.6 IN-PROCESS INSPECTION

Where verification of quality cannot be accomplished by review of the finished item or completed activity, in-process inspection or process monitoring requirements for activities shall be established and identified in appropriate inspection planning or work controlling documents by the TM. If direct inspection of the item is not possible or advantageous, indirect control shall be provided by process monitoring of equipment, methods, and personnel. Data recording of process parameters shall be the responsibility of the TM performing the work. The QA Manager shall conduct periodic surveillance (see QP 10.2, Surveillance) of the process monitoring activity to ensure that correct procedures, personnel, and equipment are being used and that data are being recorded properly.



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### 5.7 COMBINED INSPECTION AND PROCESS MONITORING

5.7.1 Where a combination of inspection and process monitoring methods is used, it shall be performed in a systematic manner to ensure that the specified requirements for control of the process and quality of the item are being achieved throughout the duration of the process. Controls shall be established by the TM performing the work with the concurrence of the QA Manager.

### 5.8 FINAL INSPECTION

5.8.1 Finished items shall be inspected for completeness, identification markings, calibration, protection from damage and environment, or other characteristics, as required, to verify the conformance of the item to specified requirements. If not previously examined, records, including the results and resolution of previously identified nonconformances, shall be examined for adequacy and completeness.

5.8.2 Modifications, repairs, or the replacement of items performed subsequent to final inspection acceptance shall require reinspection or retest in accordance with the original inspection or test requirements, as applicable.

5.8.3 The acceptability of the item(s) shall be documented on inspection records which shall be approved by authorized and qualified personnel.

5.8.4 Items shall be tagged to indicate inspection status of the items in accordance with QP 14.1, Control of Inspection, Test, and Operating Status.

### 5.9 IN-SERVICE INSPECTION

In-service inspection (ISI) of structures, systems, and components shall be planned and accomplished by the TM responsible for the operation of the item. Surveillance of these items shall be performed and documented in accordance with QP 10.2. Inspection, examination, test, and calibration requirements, as appropriate, shall be established to verify that the characteristics of an item remain within specified limits during operation.

### 5.10 NONCONFORMANCES

Rejected or other nonconforming items noted during inspections or process monitoring shall be tagged and dispositioned in accordance with QP 15.1, Control of Nonconformances.



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### 5.11 RESULTS

5.11.1 The results of inspection activities shall be documented and shall identify as a minimum:

1. Item(s) or activities;
2. Date of inspection;
3. Name of inspector;
4. Name(s) of personnel contacted during the inspection;
5. Type of observation;
6. Acceptance/rejection criteria utilized;
7. Equipment used (serial or control number; calibration date);
8. Results of inspection activity;
9. Reference to nonconformances and resolutions; and
10. Acceptance statement signed/dated by the inspector.

5.11.2 The results of process monitoring activities shall be documented and shall identify as a minimum:

1. Item or activity;
2. Date/time;
3. Name of observer;
4. Equipment used (serial or control number and calibration date);
5. Applicable procedure or specification;
6. Process monitored;
7. Observed values of process parameters; and
8. Evaluator of the results.

### 5.12 DOCUMENT CONTROL

5.12.1 Inspection plans, procedures or instructions, and personnel qualification procedures shall be prepared, reviewed, approved, and distributed in accordance with this procedure; QP 5.1, Instructions, Procedures, and Drawings; QP 6.1, Document Control; and NNWSI AP 1.5, Issuance and Maintenance of Controlled Documents.

### 5.13 QA RECORDS

Inspection and process monitoring plans, procedures, and instructions; personnel qualification procedures and related qualification records; and the results of inspections and process monitoring are QA records and shall be maintained in accordance with QP 17.1, QA Records.



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6.0 REFERENCES\*

- QP 2.4 Assignment of Quality Assurance Levels
- QP 3.1 Scientific Investigation Control and Design Control
- QP 4.1 Procurement Document Control
- QP 5.1 Instructions, Procedures, and Drawings
- QP 6.1 Document Control
- QP 7.1 Control of Purchased Items and Services
- QP 10.2 Surveillance
- QP 14.1 Control of Inspection, Test and Operating Status
- QP 15.1 Control of Nonconformances
- QP 17.1 QA Records
- AP 2.1 Task Planning and Review
- NNWSI AP 1.5 Issuance and Maintenance of Controlled Documents

\* Current issue

7.0 APPLICABLE FORMS/ATTACHMENTS

Figure 10.1-1 Qualifications of Inspection and Test Personnel and Personnel Performing Experiments or Research Activities



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## 1.0 PURPOSE

To provide requirements for the qualification of personnel who perform inspection and testing to verify conformance to specified requirements for the purpose of acceptability; and, of personnel performing research/experiment activities. These requirements do not apply to the qualification of personnel who perform nondestructive examination.

## 2.0 CERTIFICATION

### 2.1 Qualification Requirements

The responsible TM and QA Manager shall designate those activities that require qualified personnel during reviews of task plans (see AP 2.1). The responsible TM or QA Manager, as appropriate, shall identify the minimum qualification requirements and establish written procedures for the qualification of research/experiment, inspection, and test personnel and for the assurance that only those personnel who meet the established requirements are permitted to perform these activities.

If a single inspection or test requires implementation by a team or a group, then personnel who do not meet these requirements may be used in data-taking assignments or in geologic nuclear waste repository or equipment operation, provided they are supervised or overseen by a qualified individual.

### 2.2 Personnel Selection

Personnel selected to perform research/experiment, inspection, and test activities shall have the experience or training commensurate with the scope, complexity, or special nature of the activities.

### 2.3 Indoctrination

Provisions shall be made for the indoctrination of personnel as to the technical objectives and requirements of the applicable codes and standards and the T&MSS Quality Assurance Program elements that are to be employed.

Figure 10.1-1 Requirements for the Qualification of Inspection and Test Personnel and Personnel Performing Experiments or Research Activities



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#### 2.4 Training

The need for a formal training program shall be determined by the responsible TM or QA Manager, as appropriate, and such training activities shall be conducted as required to qualify personnel who perform experiments/research, inspections, and tests. On-the-job training shall be included also in the program, with emphasis on first-hand experience gained through actual performance of inspections and tests or conduct of experiments/research activities, as appropriate. Instructions shall be provided in regard to those changes to the T&MSS QAPP and implementing procedures that affect previous training.

#### 2.5 Determination of Initial Capability

The capabilities of a candidate for certification shall be initially determined by a suitable evaluation of the candidate's education, experience, training, and either test results or capability demonstration in accordance with the T&MSS personnel qualification procedure.

#### 2.6 Evaluation of Performance

The job performance of research/experiment, inspection, and test personnel shall be reevaluated at periodic intervals not to exceed three years. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability in accordance with the requirements of Section 2.5 of this document. If during this evaluation, or at any other time, it is determined by the responsible TM or QA Manager, as appropriate, that the capabilities of an individual are not in accordance with qualification requirements specified for the job, then that person shall be removed from that activity until such time as the required capability has been demonstrated. Any person who has not performed research, experiment, inspection, or testing activities in his/her qualified area for a period of one year shall be reevaluated by a redetermination of required capability in accordance with the T&MSS qualification procedure.

Figure 10.1-1 Qualifications of Inspection and Test Personnel and Personnel Performing Experiments or Research Activities (continued)



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## 2.7 Certificate of Qualification

The qualification of personnel shall be certified in writing on an appropriate form, including the following information:

- o Employer's name;
- o Identification of person being certified;
- o Activities certified to perform;
- o Basis used for certification that includes such factors as:
  - Education, experience, and training (when necessary),
  - Test results (where applicable), and
  - Results of capability demonstration;
- o Results of periodic evaluation;
- o Results of physical examinations (when required);
- o Signature of T&MSS Manager or Division Director who is responsible for such certification; and
- o Dates of certification and certification expiration.

## 2.8 Physical

The responsible TM or QA Manager, as appropriate, shall identify any special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examinations.

## 3.0 RECORDS

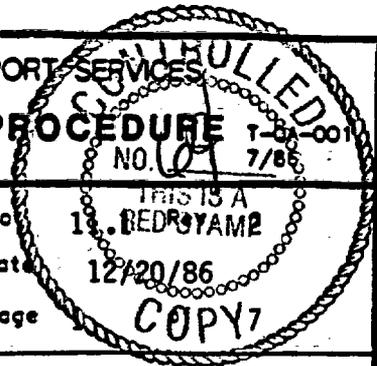
### 3.1 Record Files

Records of personnel qualification shall be established and maintained in accordance with the applicable QP and QP 17.1.

Figure 10.1-1 Qualifications of Inspection and Test Personnel and Personnel Performing Experiments or Research Activities (continued)



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**1.0 PURPOSE AND SCOPE**

This procedure provides the Technical and Management Support Services (T&MSS) system for controlling tests which demonstrate items perform satisfactorily in service or to determine functional characteristics; and, for controlling experiments or research activities which are conducted to establish characteristics or values not previously known. This procedure shall be used for the control of activities performed in support of the Waste Management Project Office (WMPO) activities.

**2.0 APPLICABILITY**

This procedure applies to proof tests prior to installation, preoperational tests, prototype qualification tests, production tests, construction tests, and operational tests during geologic nuclear waste repository operations of Quality Assurance Level I and II items (see QP 2.4, Assignment of Quality Assurance Levels). It also applies to geologic scientific investigations that produce data, recommendations or other bases for characterization of the site, and to research and development activities which provide design bases. This procedure shall be implemented upon receipt of a task assignment from the WMPO which requires its application.

**3.0 DEFINITIONS**

**3.1 EXPERIMENT**

An experiment is the performance of operations that are carried out under controlled conditions to establish characteristics or values not previously known.

**3.2 FUNCTIONAL CHARACTERISTICS**

Functional characteristics are those attributes of a geologic nuclear waste repository or its structures, systems, and components that determine its performance with respect to safety, reliability, operability, and other design criteria established by the Office of Civilian Radioactive Waste Management (OCRWM) Program or other federal regulatory documents.

**APPROVALS**

*John D. Cawell*  
 QA Manager

12/20/86  
 Date

*Michael E. Edwards*  
 Project Manager

12/20/86  
 Date



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### 3.3 ITEM

Item is an all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, sub-assembly, system, subsystem, unit, data, samples (including core and other field and laboratory samples), or prototype hardware.

### 3.4 SCIENTIFIC INVESTIGATION

Any research, experiment, test, study, or activity which is performed for the purpose of investigating the natural barriers or the man-made aspects of the geologic nuclear waste repository, including the investigations which support the design of the facilities and the waste package. This will include, but will not be restricted to, all geologic, tectonic, seismologic, hydrologic, climatologic, geochemical, chemical, geophysical, physical, mechanical, geo-mechanical, meteorological, metallurgical, environmental, socioeconomic, and transportation studies or activities which are performed for, or in support, of the investigation, exploration, site characterization, development of design bases, licensing, construction, operation, monitoring, performance evaluation and/or closure of the geologic nuclear waste repository.

### 3.5 TEST

A test is an element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental or operating conditions.

## 4.0 RESPONSIBILITIES

### 4.1 TASK MANAGER (TM)

The TM identifies the tests, experiments and/or research activities required as a result of assigned tasks, design activities, and/or scientific investigation plans; and, prepares and approves test, experiment and research plans and procedures, and related personnel qualification procedures for his/her assigned tasks. The TM evaluates the results of completed T&MSS tests, experiments, and research activities; and, reviews test, experiment, and research related documents prepared by other Nevada Nuclear Waste Storage Investigations (NNWSI) Project Participants for adequacy, as requested by WMPO. The TM requests independent or peer reviews of test and experiment/research plans, procedures, and results as required.



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#### 4.2 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager reviews and approves test and experiment/research plans and procedures to assure that appropriate quality assurance requirements are included; reviews and approves personnel qualification procedures; verifies that tests and experiments/ research activities are performed in accordance with approved plans and procedures; and verifies that results are prepared in accordance with approved procedures.

#### 5.0 PROCEDURE

##### 5.1 TEST AND EXPERIMENT/RESEARCH PLANNING

5.1.1 The TM shall review task plans in accordance with AP 2.1, Task Planning and Review, and review scientific investigation and design documents in accordance with QP 3.1, Scientific Investigation Control and Design Control, to identify any test and experiment/research requirements. This review shall be coordinated with the QA Manager.

5.1.2 Planning for Quality Assurance Level I and II tests, experiments and research activities shall be accomplished and documented by the responsible TM and approved by the QA Manager. Test requirements and acceptance criteria shall be based upon specified requirements contained in applicable design or other pertinent document. Planning documentation shall identify or reference the following appropriate information:

1. Requirements and objectives;
2. Prerequisites;
3. Suitable environmental conditions;
4. Equipment and calibrated instrumentation requirements;
5. Condition of equipment and the item under consideration, appropriate;
6. Personnel qualifications (discipline and level);
7. Method of conducting the activity (including monitoring and data acquisition requirements, and the evaluation and verification of results);
8. Acceptance or rejection criteria;
9. Identification (see QP 14.1, Control of Inspection, Test, and Operating Status) of the status of items;
10. Discussion of expected uncertainties in data;
11. Documentation requirements in regard to the results;
12. References, including applicable codes and standards; and
13. Procedures that need to be developed to conduct the activity.



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These items may be a part of a test procedure document described in Section 5.3, or experiment/research procedure identified in Section 5.6.

### 5.2 TEST AND EXPERIMENT/RESEARCH PERSONNEL

Test and experiment/research personnel shall be trained and qualified in accordance with a procedure for the qualification of test and experiment/research personnel which shall be prepared by the responsible TM based upon Figure 10.1-1 (see QP 10.1, Inspection) on receipt of a task assignment from the WMPO requiring application of test and/or experiment/research activities. Personnel qualification procedures shall be reviewed and approved by the TM preparing the document and the QA Manager, as a minimum.

### 5.3 TEST PROCEDURES

5.3.1 Detailed test requirements shall be documented in plans and procedures which shall be reviewed and approved by the TM preparing the document and QA Manager, as a minimum. The test procedure shall contain step-by-step instructions for the conduct of tests and shall identify or reference the information required in Section 5.1.2.

5.3.2 Appropriate sections of documents such as ASTM methods, supplier manuals, maintenance instructions, approved drawings, or other related documents, may be used in lieu of procedures, provided that such documents include adequate instructions to ensure the required quality of work, and that the requirements of Section 5.1.2 are identified. The test plan shall document this use of alternative test procedures.

5.3.3 Where procedures involve untried practices or unique application of standard practices, exceed state-of-the-art, or use new or unusual test or experimental/research techniques, an independent or peer review shall be conducted in accordance with AP 2.3, Independent Review and Peer Review, to validate the applicability of the proposed method and the results, once obtained.

### 5.4 TEST REPORTS

5.4.1 Test reports shall document the results of test activities and shall include, as a minimum:

1. Test identification;
2. Item tested;
3. Date of test;
4. Name of tester or data recorder;
5. Type of observation;



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6. Equipment used (serial or control number; calibration date);
7. Results of test (including data sheets, charts, graphs, etc.);
8. Reference to deviations and resolutions;
9. Evaluation of test results and name of the evaluators; and
10. Acceptance statement.

5.4.2 Test results shall be evaluated by the TM responsible for the test and the QA Manager, as a minimum, to assure that test requirements have been satisfied and that test procedures have been followed.

#### 5.5 TEST DEVIATIONS

Test deviations shall be identified and controlled in accordance with QP 15.1, Control of Nonconformances, or QP 16.1, Corrective Action, depending on the nature of the deviation.

#### 5.6 EXPERIMENTS AND RESEARCH CONTROL

Experiments and research activities shall be conducted to establish characteristics or values not previously known. Experiments and research activities shall be controlled by use of logbooks and/or procedures to provide uniform documentation of the experiment/research activity. Experiment/research documentation shall include, but is not limited to, the information listed below:

1. Initial Entries (and as experiment research changes):

- a. Title of experiment or research;
- b. Name(s) of qualified personnel performing activity;
- c. Objectives;
- d. Equipment and material used;
- e. Calibration requirements; and
- f. Dated signature of the individual(s) making the above entries.

2. Periodic Entries, as appropriate:

- a. Date and name of individual making the entry;
- b. Description of experiment or research element attempted;
- c. Conditions which could adversely affect experiment or research;
- d. Identification of samples utilized;
- e. Listing of results (including unexpected results);
- f. Deviations to initial entries; and
- g. Interim conclusions reached (if appropriate).



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3. Final Entries:

- a. Final results;
- b. Summary of the outcome of the experiment or research objectives previously listed; and
- c. Review and evaluation.

5.6.1 The results of experiments and research activities shall be reviewed and evaluated by the responsible TM and QA Manager, as a minimum, to assure that experiment/research requirements have been satisfied, and that experiment/research procedures have been followed.

5.7 DOCUMENT CONTROL

Test and experiment/research plans and procedures, personnel qualification procedures shall be prepared, reviewed, approved, and distributed in accordance with QP 5.1, Instructions, Procedures, and Drawings, and QP 6.1, Document Control.

5.7.1 A copy of Quality Assurance Level I test and experiment/research procedures, including personnel qualification procedures, and the current listing of these procedures shall be submitted to the Quality Assurance Support Contractor (QASC) and the WMPO, as required by QP 5.1. Quality Assurance Level I test and experiment/research procedures, including personnel qualification procedures, shall be reviewed and approved by the WMPO prior to use by T&MSS.

5.7.2 A copy of the current listing of Quality Assurance Level II test and experiment/research procedures, including personnel qualification procedures, shall be submitted to the QASC and the WMPO for information, as required by QP 5.1.

5.8 QA RECORDS

Test and experiment/research plans, procedures, personnel qualification procedures and records, logbooks, and results are QA records and shall be maintained in accordance with QP 17.1, QA Records.

6.0 REFERENCES\*

AP 2.1 Task Planning and Review

AP 2.3 Independent Review and Peer Review



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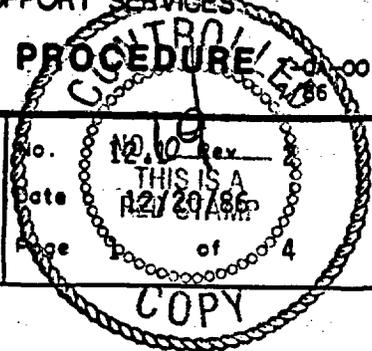
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- QP 2.4 Assignment of Quality Assurance Levels
- QP 3.1 Scientific Investigation Control and Design Control
- QP 5.1 Instructions, Procedures, and Drawings
- QP 6.1 Document Control
- QP 10.1 Inspection
- QP 14.1 Control of Inspection, Test, and Operating Status
- QP 15.1 Control of Nonconformances
- QP 16.1 Corrective Action
- QP 17.1 QA Records

\* Current issue

7.0 APPLICABLE FORMS

None



Title

OP 12.1 CONTROL OF MEASURING AND TEST EQUIPMENT

1.0 PURPOSE AND SCOPE

This procedure establishes the Technical and Management Support Services (T&MSS) requirements and responsibilities related to controlling the accuracy of measuring and test equipment associated with work performed in support of the Waste Management Project Office (WMPO).

2.0 APPLICABILITY

The controls established by this procedure apply to all measuring and test equipment under T&MSS control which is used for Quality Assurance Levels I and II (see QP 2.4, Assignment of Quality Assurance Levels) activities in support of the WMPO.

3.0 DEFINITIONS

3.1 MEASURING AND TEST EQUIPMENT

Measuring and test equipment (M&TE) includes devices or systems used to calibrate, measure, gage, test, or inspect in order to control or to acquire data to verify conformance to specified requirements.

4.0 RESPONSIBILITIES

4.1 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager, or designee, assures implementation of this procedure by review and approval of appropriate T&MSS plans, procedures, and instructions which identify the requirements for calibrated equipment, and by surveillance and audit of calibration activities and activities requiring the use of calibrated M&TE.

4.2 TASK MANAGER (TM)

The TM performing the activity concerned is responsible for the condition, calibration, and control of M&TE. The TM is also responsible for identifying

APPROVALS

R. D. Kettell  
QA Manager

12/20/86  
Date

[Signature]  
Project Manager

12/20/86  
Date



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the requirements for calibrated equipment in test, experiment, or research plans. The TM is also responsible for preparing and approving required calibration procedures or instructions.

## 5.0 PROCEDURE

### 5.1 SELECTION OF EQUIPMENT

M&TE shall be selected by the responsible TM based on documented requirements for instrument type, range, accuracy, and tolerance.

### 5.2 CALIBRATION AND MAINTENANCE

5.2.1 M&TE shall be calibrated, adjusted, and maintained in accordance with written procedures or instructions at intervals determined by frequency of usage or as prescribed by codes, standards, and manufacturer's recommendations, or other applicable authority. Calibration intervals shall be defined in the appropriate procedure. Procedures relating to calibration shall be approved by the preparing TM and the QA Manager, as a minimum (see QP 5.1, Instructions, Procedures, and Drawings), and shall be controlled in accordance with QP 6.1, Document Control, and NNWSI AP 1.5, Issuance and Maintenance of Controlled documents.

5.2.2 Items used as calibration standards shall be certified to have known valid relationships to the National Bureau of Standards (NBS) or other accepted standard. If no nationally recognized standard exists, the basis for calibration shall be documented.

5.2.3 All M&TE shall be identified on a list maintained by the responsible TM that includes the following information in regard to specific M&TE:

1. Identification number;
2. Manufacturer, with reference to applicable technical manuals, standards and recommended methods of calibration;
3. Place of storage;
4. Specified calibration intervals;



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5. Last calibration date with the initials of the calibrator and the identification number of the calibration standard(s) used;
6. Calibration due date; and
7. Periodic maintenance due date, if required.

5.2.4 All M&TE shall be labeled with a calibration sticker, as practical, which identifies the assigned unique number, date of the last calibration with an indication as to who performed the last calibration, and the date the next calibration is due. When the size or functional characteristics limit the application of calibration stickers, an identifying code shall be applied to the item to reflect serviceability and the due date for the next calibration. All M&TE shall be recalled by the responsible TM, or designee, for calibration or maintenance on or before the calibration or maintenance due date. M&TE not calibrated or maintained before the due date shall be labeled by the responsible TM, or designee, as "Beyond Calibration Due Date" and submitted for calibration and/or the required maintenance.

5.2.5 M&TE found or suspected to be out of calibration or malfunctioning shall be replaced, and an evaluation made and documented by the responsible TM, or designee, to determine the validity of previous results. This includes the acceptability of items inspected or tested since the last acceptable calibration. M&TE requiring repair shall be removed from service, repaired, and re-calibrated before being returned to service.

5.2.6 Rulers, tape measures, levels, and other non-adjustable devices may be exempt from calibration and control rules provided they are identified as exempt and used only where considered adequate.

### 5.3 STORAGE

5.3.1 Each TM responsible for the custody of M&TE shall maintain an current inventory list of the M&TE under his/her control which shall include the location (field or storage) of each device.

5.3.2 When not in use, each M&TE item shall be stored in an access controlled area that shall be environmentally controlled and free from any environmental hazards.

5.3.3 When in use, precautions shall be taken to minimize environmental hazards to instruments.



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5.3.4 If an M&TE item has been or is suspected to have been damaged by any means, it shall be removed from service, identified as damaged or suspect, and returned for repair, recalibration or other disposition, as appropriate in accordance with QP 15.1, Control of Nonconformances.

#### 5.4 MEASURING AND TEST EQUIPMENT OF SPECIAL DESIGN

Measuring and test equipment which is of special design for a particular investigative activity shall be designed, developed, and manufactured under the control of the responsible TM. Before using such equipment in an NNWSI Project test, experiment, or research activity, a complete check-out shall be conducted per approved written procedures to assure conformance to specifications, and to assure that the equipment is calibrated in accordance with QP 12.1.

#### 5.5 RECORDS

5.5.1 Procurement, maintenance, and calibration records for M&TE shall be retained in accordance with QP 17.1, QA Records.

#### 6.0 REFERENCES\*

QP 2.4 Assignment of Quality Assurance Levels

QP 5.1 Instructions, Procedures, and Drawings

QP 6.1 Document Control

QP 15.1 Control of Nonconformances

QP 17.1 QA Records

NNWSI AP 1.5 Issuance and Maintenance of Controlled Documents

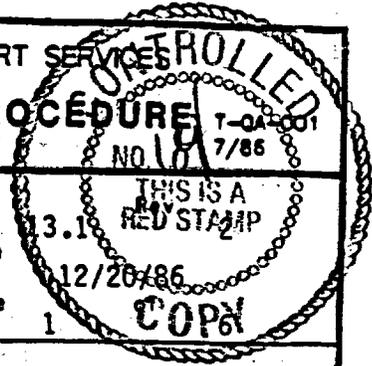
\* Current issue

#### 7.0 APPLICABLE FORMS

None



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**1.0 PURPOSE AND SCOPE**

This procedure describes the Technical and Management Support Services (T&MSS) requirements and responsibilities for the handling, cleaning, identification, packaging, preservation, storage, and shipping of items to prevent damage, loss, or deterioration.

**2.0 APPLICABILITY**

This procedure applies to work performed by T&MSS in support of the Waste Management Project Office (WMPO) for Quality Assurance Level I and II items (see QP 2.4, Assignment of Quality Assurance Levels) that are handled, packaged, preserved, stored, and/or shipped by T&MSS.

**3.0 DEFINITIONS**

**3.1 ARCHIVE**

An archive is a designated storage area for records, documents, or materials.

**3.2 ITEM**

An item is an all-inclusive term used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, subassembly, system, subsystem, unit, data, samples (including core and other field and laboratory samples), or prototype hardware.

**4.0 RESPONSIBILITIES**

**4.1 TASK MANAGER**

As identified by assigned tasks, the Task Manager (TM) is responsible for the preparation of specific handling, packaging, preservation, storage, and

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shipping procedures or instructions for items as required. The TM is responsible to prepare and approve procedures or instructions for handling, shipping, packaging, and storage activities related to core and/or other field and laboratory samples. The TM shall ensure that only approved procedures or instructions are used for these activities.

#### 4.2 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager is responsible for ensuring that necessary audits, surveillances, and inspections of handling, storage, and shipping activities are performed. The QA Manager is also responsible for reviewing and approving T&MSS procedures and instructions relating to handling, shipping, packaging, and storage activities to assure that appropriate quality requirements are included (see QP 5.1, Instructions, Procedures, and Drawings).

### 5.0 PROCEDURE

#### 5.1 HANDLING, STORAGE, AND SHIPPING

##### 5.1.1 General

5.1.1.1 The handling, storage, and shipping of items shall be conducted in accordance with established procedures, work and inspection instructions, drawings, specifications, or other pertinent documents, which shall be prepared, approved and controlled in accordance with QP 5.1; QP 6.1, Document Control; and NNWSI AP 1.5, Issuance and Maintenance of Controlled Documents. These documents shall reference applicable codes or standards. The identification of items is addressed in QP 8.1, Identification and Control of Items. Once assigned, the identification number of an item shall be referenced on all documents that control the item.

5.1.1.2 When required for critical, sensitive, perishable, or high-value articles, specific procedures or instructions for handling, storage, packaging, shipping, and preservation shall be prepared, approved, and implemented by the responsible TM (see QP 5.1). The QA Manager shall approve these procedures and instructions prior to the approval of the TM. These procedures or instructions should, at a minimum:



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1. Identify the item or category of items to be controlled by the procedure;
2. Reference applicable standards or codes;
3. Indicate the degree of cleanliness, preservation, and packaging required;
4. Specify the step-by-step sequence of operations to be followed in handling, shipping, and storing the item or class of items;
5. Specify the level of experience and training required to perform the handling, storage, and shipping activities specified;
6. Specify special handling tools and equipment requirements;
7. Specify special identification or marking requirements, and the logging of these markings. (Marking and labeling shall be established to adequately identify, maintain, and preserve the item, and specify any special controls needed);
8. Specify maximum storage and retention times (shelf life), including necessary disposal requirements;
9. Specify unique equipment requirements (e.g., containers, shock absorbers, and accelerometers) and special protective environments (e.g., inert gas atmosphere, specific moisture content, and temperature); and
10. Specify QA audit and surveillance requirements.

5.1.1.3 Special handling tools and equipment shall be controlled, as necessary, to ensure safe handling. Requirements for tools and equipment not addressed in recognized standards shall be specified by procedure or instruction which shall identify the level of experience and training required to use these tools.

5.1.1.4 QA personnel shall periodically audit and perform surveillance of handling, shipping, and storage activities of T&MSS items to ensure the activities are being performed in accordance with approved procedures or instructions.



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5.1.2 Core and Other Field and Laboratory Samples

5.1.2.1 In addition to the requirements in Section 5.1.1, the following specific requirements apply to core and other field and laboratory samples.

5.1.2.2 The integrity of certain samples obtained for specific analyses cannot be preserved beyond limited times. Re-analysis beyond that time will not be accurate. Procedures or instructions for such samples shall specify the time beyond which sample integrity cannot be maintained. In these instances, samples should be carefully maintained in accordance with accepted standards, procedures, or instructions only until the analysis is performed and verified.

5.1.2.3 The verified analytical results shall then replace the sample as the item to be controlled. The accuracy of the analysis must be included with the analytical result (e.g., analytical result plus or minus  $x$  standard deviations); or in the case of single sample experiments, acceptable data handling rationale shall be documented in accordance with procedures/instructions prepared and approved by the responsible TM in accordance with QP 5.1 and QP 6.1.

5.1.2.4 Sampling methods shall be performed by qualified personnel in accordance with approved procedures or instructions prepared by the responsible TM. These procedures or instructions must include or reference recognized standards to prevent contamination. If more than one sampling method is acceptable, the sampling method used shall be documented and the sample labeled to identify that method. Any deviation from the sampling procedure or instruction shall be treated as a nonconformance (see QP 15.1, Control of Nonconformances). These deviations shall be noted on the sample label and the location of the related documentation noted.

5.1.2.5 The QA Manager, or designee, shall perform periodic audits and surveillances to ensure that sampling is being performed in accordance with approved procedures.

5.1.2.6 The system for the identification of samples is specified in QP 8.1.



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## 5.2 ARCHIVING OF CORE AND OTHER FIELD AND LABORATORY SAMPLES

Physical samples, for which T&MSS is responsible and in which sample integrity can be maintained, shall be stored as directed by the WMPO. Containers and protective atmospheres shall be provided for various samples in accordance with recognized standards. The location of the samples shall be logged. Access restrictions shall be specified by the responsible TM.

5.2.1 Documentation related to the samples shall be maintained on file in the sample archive. Documents shall be identified with the sample's archive location and the sample's identification number. The identification marking on the sample shall indicate the control number(s) for analysis documents and other related control documents. Verified analytical results that replace the physical sample shall be retained on file in the sample archive. Access to and retrieval from archive files shall be controlled by the responsible TM.

5.2.2 Instructions or procedures controlling all activities identified in Sections 5.2 and 5.2.1 shall be prepared and approved by the responsible TM, and approved by the QA Manager, as a minimum (see QP 5.1 and QP 6.1).

## 5.3 QA RECORDS

All documents identified in Sections 5.1 and 5.2 relating to the handling, shipping, and storage of items shall be considered QA records and retained in accordance with QP 17.1, QA Records.

## 6.0 REFERENCES\*

- QP 2.4 Assignment of Quality Assurance Levels
- QP 5.1 Instructions, Procedures, and Drawings
- QP 6.1 Document Control
- QP 8.1 Identification and Control of Items
- QP 15.1 Control of Nonconformances
- QP 17.1 QA Records



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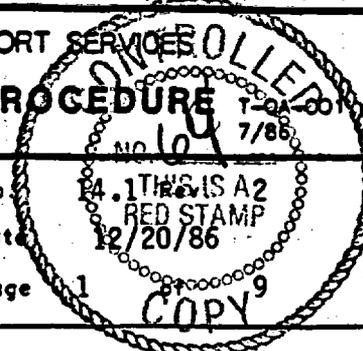
\* Current issue

7.0 APPLICABLE FORMS

None



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1.0 PURPOSE AND SCOPE

This procedure establishes Technical and Management Support Services (T&MSS) responsibilities and methods to ensure that required inspections and tests are performed; items or associated data failing inspections or tests are not inadvertently installed, used, or operated; and the identification of nonconformances is controlled for work performed in support of the Waste Management Project Office (WMPO).

2.0 APPLICABILITY

This procedure applies to inspection and test activities for all T&MSS Quality Assurance Level I and II (see QP 2.4, Assignment of Quality Assurance Levels) items or associated data to be used in the geologic nuclear waste repository; research and development activities for operations that include a planned sequence of activities that are to be verified; and to test or data generation hardware that is fabricated, performance tested, or verified during the progress of work.

3.0 DEFINITIONS

3.1 CERTIFICATION

Certification is the act of determining, verifying and attesting in writing to the qualifications of personnel, processes, procedures or items in accordance with specified requirements.

3.2 INSPECTION

Inspection is an examination or measurement to verify whether an item or activity conforms to specific requirements.

3.3 TESTING

Testing is an element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental or operating conditions.

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### 3.4 TRACEABILITY

Traceability is the ability to trace the history, application, or location of an item and like items or activities by means of recorded identification.

## 4.0 RESPONSIBILITIES

### 4.1 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager, or designee, is responsible for ensuring by audit and surveillance that this procedure is applied to T&MSS work; and, that T&MSS suppliers have acceptable quality assurance programs that include inspection/test/operating status systems and nonconformance control systems (see QP 7.1, Control of Purchased Items and Services). In addition, the QA Manager, or designee is responsible for the removal of all T&MSS "Hold" tags (see QP 15.1, Control of Nonconformances.)

### 4.2 TASK MANAGERS

Cognizant Task Managers (TMs) responsible for the inspection or testing of QA Level I and II items or activities shall ensure that this procedure is applied to T&MSS work, and, that the requirements of this procedure are included in T&MSS procurement documents (see QP 4.1, Procurement Document Control), when required.

### 4.3 INSPECTION AND TEST PERSONNEL

Inspection and test personnel are responsible to identify items that have been inspected or tested, and for indicating the operating status of items to be used in the repository. Inspection and test personnel shall be qualified in accordance with QP 10.1, Inspection.

## 5.0 PROCEDURE

### 5.1 INSPECTION AND TEST STATUS

The status of T&MSS inspection and test activities shall be identified either on the items or data or in documents traceable to the items or data, where it is necessary (1) to assure that required inspections and tests have been performed, and (2) to assure that items or data which have not passed the required inspections and tests are not inadvertently installed, used, or



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operated. This status shall be maintained through indicators, such as tags, inspection records, test data records, T&MSS technical procedures/instructions that provide a step-by-step sequence of operations to be performed and identify required tests and inspections, or by other suitable means.

Tags indicating test and inspection status shall be applied to items or associated data only by T&MSS inspection and test personnel. The status indicators shall be applied so that they are clearly visible at all times. Prior to the performance of research and development (R&D) activities, the research and development work controlling document shall be submitted to T&MSS QA and the WMPO for the identification of hold points in accordance with QP 10.1. Inspection personnel shall be notified of upcoming inspection points in accordance with QP 10.1. Test personnel shall indicate the status of tests as required in the specific test procedure (see QP 11.1, Test and Experiment/Research Control).

Documents utilized for R&D activities that include a planned sequence of operations that are to be verified shall be maintained current by the TM, or designee. Acceptance status of items and/or related data in-process of manufacturing, installation, assembly, test, or experiment/ research activities shall be identified by the T&MSS test or inspection personnel's signature and date at the completed inspection/test operation on the applicable document. When appropriate (i.e., receipt inspection or acceptance testing), acceptance status shall be indicated on the item/data by inspection/test personnel applying a T&MSS "Accepted" tag (see Figure 14.1-1) to the item/data. "Accepted" tags shall be removed prior to use or operation of the item or data concerned. If the inspection or test operation indicates a nonconforming or unacceptable condition, the T&MSS inspection or test personnel shall so indicate this at the appropriate step of the work controlling document and/or on the item/data, as appropriate, by use of the T&MSS "Hold" tag (see Figure 14.1-2) and shall issue a Nonconformance Report (see QP 15.1). T&MSS inspection and test personnel shall record the Nonconformance Report number on the work controlling document. When the Nonconformance Report (NCR) has been properly dispositioned and the required corrective action has been completed and verified as adequate, the item and/or related data shall be reinspected or retested, as appropriate, in accordance with approved instructions. If the results of this inspection or test are acceptable, the NCR shall be closed per QP 15.1 and the "Hold" tag(s) removed by the T&MSS QA Manager, or designee. T&MSS inspection and test personnel shall record in the work controlling document that the NCR has been closed. T&MSS inspection and test personnel shall affix an "Accepted" tag to the item. The "Accepted" tag shall be removed prior to use or operation of the item or data concerned. If the disposition of the NCR is reject, T&MSS inspection or test personnel shall affix a "Rejected" tag (see Figure 14.1-3) to the item/data which references the applicable NCR. The rejected item/data shall be disposed of by the responsible TM in accordance



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with instructions provided in the NCR. If the disposition of the NCR limits the use of the item or data, the inspection or test personnel shall affix a "Limited Use" tag (see Figure 14.1-4) to the item/data which references the NCR that specified the approved use of the item/data.

### 5.2 OPERATING STATUS

The operating status of T&MSS items to be used in the geologic nuclear waste repository shall be identified with an "Accepted", "Limited Use", "Hold", or "Rejected" tag which shall be affixed or removed by T&MSS personnel as identified in Section 5.1.

An "Accepted" tag indicates the item meets all T&MSS requirements and is acceptable for usage in all intended applications. The "Accepted" tags shall be removed from the item prior to the item being used or operated in the geologic nuclear repository. A "Limited Use" tag indicates the item is not acceptable for usage in all intended applications. The "Limited Use" tag shall identify the dispositioned NCR which delineates the specific applications for which the item is acceptable, e.g., training, dry runs, specific tests, custom fitted into a specific application, etc. A "Hold" tag indicates the item can not be used for any application until the associated NCR has been dispositioned as acceptable or limited use. The "Hold" tag shall identify the NCR which shall delineate the reason the "Hold" tag is affixed. A "Rejected" tag indicates the item cannot be used, and the disposition of the appropriate NCR shall state that the item shall be returned to the supplier or scrapped, as appropriate. Adequate "Hold" tags shall be provided for each item, as appropriate, to assure the item is not operated inadvertently or incorrectly used; e.g., an adequate number of "Hold" tags shall be affixed to switches, valves, control panels, etc., to ensure the item is not operated. The "Hold" tags for a specific item shall be individually identified such as 1 of 3, 2 of 3, 3 of 3, by T&MSS inspection and test personnel in accordance with specific instructions.

### 5.3 QA RECORDS

Inspection records, test data records, technical procedures/instructions, work controlling documents, and NCRs shall be maintained in accordance with QP 17.1, QA Records.

### 6.0 REFERENCES

QP 2.4 Assignment of Quality Assurance Levels

QP 4.1 Procurement Document Control



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QP 7.1 Control of Purchased Items and Services

QP 10.1 Inspection

QP 11.1 Test and Experiment/Research Control

QP 15.1 Control of Nonconformances

QP 17.1 QA Records

\* Current issue

7.0 APPLICABLE FORMS

Figure 14.1-1 Accepted Tag (Green)

Figure 14.1-2 Hold Tag (Red)

Figure 14.1-3 Rejected Tag (Blue)

Figure 14.1-4 Limited Use Tag (Yellow)



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*Science Applications International Corporation*

**ACCEPTED**

ITEM \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE                      DATE

BACK

**ACCEPTED**

Figure 14.1-1 Accepted Tag (Green)



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**HOLD**

NCR NO. \_\_\_\_\_ TAG NO. \_\_\_\_\_ OF \_\_\_\_\_  
ITEM \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE                      DATE

BACK

**HOLD**

Figure 14.1-2 Hold Tag (Red)



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**REJECTED**

NCR NO. \_\_\_\_\_  
ITEM \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE                      DATE

BACK

**REJECTED**

Figure 14.1-3 Rejected Tag (Blue)



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**LIMITED USE**

NCR NO. \_\_\_\_\_

ITEM \_\_\_\_\_

\_\_\_\_\_  
SIGNATURE                      DATE

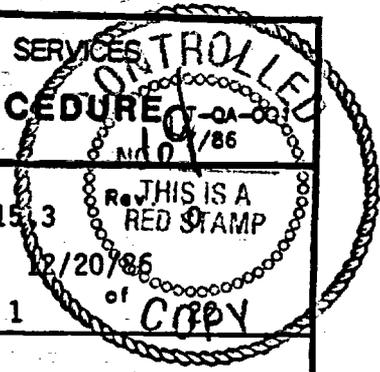
BACK

**LIMITED  
USE**

Figure 14.1-4 Limited Use Tag (Yellow)



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QP 15.3 INCIDENT AND UNUSUAL OCCURRENCE REPORTING

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**1.0 PURPOSE AND SCOPE**

This procedure provides criteria and instructions to Technical and Management Support Services (T&MSS) personnel for reporting incidents and unusual occurrences that may have significant programmatic, safety, or environmental impact; analyzing the information reported; and disseminating the analysis results as required by DOE Order 5000.3, Unusual Occurrence Reporting System.

**2.0 APPLICABILITY**

This procedure is applicable to the reporting and evaluation of incidents relating to T&MSS QA Level I, II, or III activities (see QP 2.4, Assignment of QA Levels) performed for the Nevada Nuclear Waste Storage Investigations (NNWSI) Project. This procedure may also be applied to T&MSS suppliers. The specific application to a supplier shall be determined on a case-by-case basis and identified in the T&MSS purchase order to the supplier (see QP 4.1, Procurement Document Control). The T&MSS Incident and Unusual Occurrence Reporting System shall not be used in lieu of other required reporting mechanisms, such as Nonconformance Reports (see QP 15.1, Control of Nonconformances) or Corrective Action Requests (see QP 16.1, Corrective Action). However, an Unusual Occurrence Report (UOR) may result from analyses of and shall be in addition to these other reporting methods.

**3.0 DEFINITIONS**

**3.1 FACILITY**

Equipment, systems, buildings, utilities, services, and related activities whose use is directed to a common purpose at a single location.

**3.2 INCIDENT**

Any deviation from the planned or expected behavior of an activity or operation, or course of events which requires further evaluation to determine whether it has or may have significant programmatic (reliability, cost, schedule, data loss, or invalid data), safety, health, and/or environmental impact. (see Figure 15.3-1 for typical examples of incidents.)

**APPROVALS**

QA Manager <i>John Samuel</i>	Date 12/20/86	Project Manager <i>Michael Spurr</i>	Date 12/20/86
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### 3.3 INCIDENT REPORT (IR)

A written description and evaluation of an incident that is prepared in sufficient detail to enable the reviewer to assess the significance, consequences, and implications of the incident and to determine the means for minimizing the potential for recurrence.

### 3.4 INCIDENT REVIEW BOARD (IRB)

The IRB is comprised of the PM, or designee, who performs the functions of the IRB Chairman (see Section 4.4); responsible Task Manager; Quality Assurance Manager; and at the minimum, two additional individuals designated by the PM, who are technically knowledgeable of the subject matter under review, but are independent from the work involved. The IRB shall review the Incident Report (IR, see Section 5.3) and determine (1) action required to resolve the reported incident, or (2) that the IR should be elevated to an Unusual Occurrence Report (UOR, see Section 5.5.1).

### 3.5 UNUSUAL OCCURRENCE

Any unusual or unplanned event having programmatic significance such that it adversely affects the (a) performance, reliability, or safety of a facility or (b) validity of site characterization data that are essential to licensing.

### 3.6 UNUSUAL OCCURRENCE REPORT (UOR)

A written description and evaluation of an unusual occurrence that is prepared in sufficient detail to enable the reviewer to assess the significance, consequences, or implications of the unusual occurrence and to determine the means of minimizing the potential for recurrence.

## 4.0 RESPONSIBILITIES

### 4.1 PROJECT MANAGER (PM)

The Project Manager (PM) shall be responsible for:

- (1) Designating individuals who shall comprise the Incident Review Board (IRB);
- (2) Performing the functions as the IRB Chairperson or designating the Chairperson;



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- (3) Reviewing and approving UORs; and
- (4) Directing the Quality Assurance Manager to issue interim UORs.

#### 4.2 RESPONSIBLE TASK MANAGER (TM)

The Responsible Task Manager shall be responsible for:

1. Ensuring that T&MSS issued procurement documents, as appropriate, include requirements for the supplier to report and document incidents;
2. Documenting verbally reported incidents;
3. Evaluating an incident to determine if the incident should be formally reported as an IR or UOR;
4. Identifying and documenting the cause; immediate effects; programmatic, safety, health, and/or environmental impact; and recommendations to resolve the incident documented on the IR, and/or UOR, as appropriate;
5. Assisting the QA Manager in the preparation of a UOR;
6. Participating on Incident Review Boards (IRBs);
7. Ensuring the corrective action identified on an IR and/or UOR is implemented;
8. Requesting the SAIC Corporate Purchasing Agent or the REECO Buyer, as appropriate, to notify the supplier of IR review results and decisions, and
9. Reviewing and approving UORs.

#### 4.3 QUALITY ASSURANCE (QA) MANAGER

The QA Manager, or designee, shall be responsible for;

1. Documenting verbally reported incidents and initiating IRs;



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2. Evaluating incidents to determine if a Nonconformance Report (see QP 15.1) and Stop Work Order (see OP 15.2, Stop Work Order) should be issued;
3. Concurring with the information provided by the Responsible TM on the IR (see Section 5.2.4) prior to the initial IRB meeting;
4. Participating on Incident Review Boards (IRBs);
5. Initiating initial UORs;
6. Initiating interim UORs as directed by PM;
7. Verifying the adequacy of corrective action in regard to IRs and UORs.
8. Initiating final UORs following verification of the corrective action identified on the UOR;
9. Maintaining IR and UOR Logs;
10. Acting as the T&MSS contact for the DOE Unusual Occurrence Report Coordinator; and
11. Tracking IRs and UORs.

#### 4.4 INCIDENT REVIEW BOARD (IRB) CHAIRPERSON

The IRB Chairperson shall be responsible for:

1. Scheduling and coordinating IRB meetings;
2. Coordinating the IR resolution;
3. Preparing a memorandum documenting the IR resolution and basis for the resolution; and
4. Indicating on the IR if the incident should be reported as a UOR.



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#### 4.5 SAIC CORPORATE PURCHASING AGENT/REECO BUYER

The SAIC Corporate Purchasing Agent/REECO Buyer shall be responsible for:

1. Reviewing IRs and UORs, as applicable, prior to transmittal to the affected T&MSS supplier, and
2. Notifying suppliers of IR review results and decisions.

### 5.0 PROCEDURE

#### 5.1 GENERAL

The Responsible TM shall ensure that T&MSS procurement documents contain requirements for suppliers to initially report and document incidents, as well as to provide necessary information relating to the incidents to T&MSS, as appropriate.

#### 5.2 REPORTING OF INCIDENTS

Figure 15.3-1 lists examples of incidents which would require reporting and analysis.

##### 5.2.1 Timeliness of Reporting

All incidents related to T&MSS or T&MSS supplier activities that are detected by T&MSS staff members or suppliers, whether they are discovered at a supplier's facility, on or adjacent to the Nevada Test Site (NTS), or at T&MSS, shall be reported verbally to the Responsible Task Manager (TM) or the QA Manager within 24 hours of the discovery of an incident; and, in writing to the Responsible TM and/or QA Manager within 48 hours of discovery.

##### 5.2.2 Verbal Reporting

Incidents that are verbally reported to the Responsible TM or QA Manager by a supplier or a T&MSS staff member shall be promptly documented by the individual receiving the verbal report on a Telephone Conference Report Form (See AP 1.5, Telephone Communications), when appropriate, or a memorandum. Copies of the documented verbal report shall be provided to the individual reporting the incident and the QA Manager or Responsible TM, as applicable.



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5.2.3 Nonconformance Report and Stop Work Order

Incidents shall be evaluated immediately on a case-by-case basis by the QA Manager to determine whether a Nonconformance Report (NCR, see OP 15.1) should be issued and the work stopped while the incident is being resolved. An NCR shall be issued in accordance with OP 15.1. If it is determined that the work should be stopped, a Stop Work Order shall be issued in accordance with OP 15.2. The QA Manager shall notify the PM of the results of this evaluation.

5.2.4 Initiation of an IR

Upon notification of the incident, the QA Manager shall verbally notify the PM and the WMPO, and shall issue an IR (see Figure 15.3-2) which shall include the incident description, and identify what remedial action has been taken or recommended. The incident shall be described in sufficient detail so that it can be readily understood by reviewers who may not be familiar with the circumstances, facilities, or activities involved. If a preliminary report is made (telephone report, memorandum, teletype), the QA Manager shall reference the report in the IR and attach appropriate documentation. The QA Manager shall assign a unique number to each Incident Report beginning with IR-1, IR-2, etc. The QA Manager shall sign and date the IR and forward it to the Responsible TM. Copies of the IR shall be provided to the PM and the WMPO.

The Responsible TM shall identify the following information on the IR:

- (1) Cause of the incident and immediate effects;
- (2) Programmatic (reliability, cost, schedule, data loss, or invalid data), safety, health, and/or environmental impact; and
- (3) Recommendations to the IRB for resolving the incident or elevating the incident to a UOR.

NOTE: In some supplier related incidents, the above listed information may require verbal coordination with an authorized spokesperson of the supplier.

The Responsible TM shall sign/date the IR and return it to the QA Manager. The QA Manager shall review the IR, resolve any questions/concerns with the Responsible TM, and sign/date the IR indicating concurrence with the information provided.



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### 5.3 INCIDENT REVIEW BOARD (IRB)

The PM shall convene an IRB within 48 hours of being notified by the QA Manager that an IR is being prepared. Members of the IRB shall include the PM, Responsible TM, QA Manager, and at the minimum two individuals (designated by the PM) who are technically knowledgeable of the subject matter under review, but independent from the work involved. Prior to the initial IRB meeting, the QA Manager shall ensure each IRB member receives a copy of the IR in process, and any additional related information. The PM, or designee, shall act as the IRB Chairperson.

The IRB shall determine if the incident reported on the IR constitutes an unusual occurrence (necessitating the writing of an Unusual Occurrence Report), or whether it should remain classified as an incident and continued to be followed on an Incident Report.

The following criteria shall be considered as the basis for elevating the IR to an Unusual Occurrence Report:

1. Any violation of an approved technical specification, operating safety requirement, or other safety limits prescribed by DOE;
2. An unplanned event in any portion of a program conducted in accordance with approved requirements and procedures which results in a significant program delay;
3. A deficiency such that a system or component vital to program performance does not conform to stated criteria and cannot perform its intended function;
4. A deficiency in construction, manufacturing, operation, testing, maintenance, modification, or damage to a structure, system, component, or facility vital to program continuity; which to redesign, or repair, or otherwise establish the adequacy of the item to perform its intended function, will result in a significant program delay or cost;
5. An unplanned event during field, laboratory, or facility testing which results in the loss of essential test data, or is due to a computer code or programming error that will result in a significant program delay to evaluate, redesign, retest, and/or repair to meet stated design or test requirements, or to otherwise establish the validity of the data;



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6. A series of related events which individually do not warrant reporting under the preceding criteria one through five, but which collectively are considered sufficient to warrant reporting;
7. Lessons to be learned and to identify possible adverse trends;
8. Potential generic significance to other NNWSI Project Participants;
9. A reasonable level of significance based on safety, health, radiological, and environmental factors; criticality; performance efficiency; quality; cost; and schedules; and
10. At the direction of the WMPO.

IRB review and resolution shall be accomplished within three working days of the initial IRB meeting. Minutes of IRB meetings shall be taken and distributed to IRB members for review prior to signature. The minutes shall identify IRB members, and date(s) and time(s) of IRB meetings(s), and shall be signed by all IRB members. The minutes shall also document whether (1) the IR is to remain open or (2) the incident is to be elevated to a UOR and the associated IR be closed. If the IR is to remain open, the minutes shall identify action required to resolve the reported incident, responsibility for implementing the corrective action, and required corrective action completion date.

#### 5.4 IR RESOLUTION

##### 5.4.1 Follow-up of IR

If the IRB determines the incident is not reportable as an unusual occurrence, but shall remain an open IR, the IRB Chairperson shall so indicate on the IR and transmit the IR with attached IRB meeting minutes to the Responsible TM for action.

The Responsible TM shall ensure action is taken to resolve the IR based on the results of the IRB as delineated in the minutes of the IRB meeting. When the required action has been completed by the Responsible TM or T&MSS supplier, and verified adequate by the QA Manager, the IR shall be closed by the QA Manager. The closed IR shall be distributed to the PM, IRR members, and the WMPO.



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5.4.2 IR Elevated to a UOR

If the IRB deems the incident should be elevated to an unusual occurrence, the IRB Chairperson shall so indicate on the original IR and sign/date the IR. The QA Manager shall immediately notify the WMPO that a UOR is being prepared, and shall prepare a T&MSS Unusual Occurrence Report Form (see Figure 15.3-3) and Section 5.5.1). The QA Manager shall identify the unique, assigned UOR number in the appropriate section of the corresponding IR and close the IR. The closed IR shall be distributed to the PM, IRB members, and the WMPO.

5.4.3 IR Memorandum

The IRB Chairperson shall prepare a memorandum documenting the resolution of the IR. The memorandum shall identify actions taken to resolve the incident. Distribution of the memorandum shall be as specified in Section 5.4.2.

5.4.4 Disbanding the IRB

If the IRB deems the incident is not reportable as an unusual occurrence, the PM shall disband the IRB upon issuance of the memorandum described in Section 5.4.3. If a UOR is prepared, the PM shall disband the IRB upon receipt of the final UOR specified in Section 5.5.

5.5 T&MSS UNUSUAL OCCURRENCES

Unusual occurrences can be of two kinds: 1) one that has been initially reported as an incident and elevated to an unusual occurrence after assessment by an IRB; and 2) a reported incident that has a substantial impact on the project, safety, or environment such that it is immediately recognizable as an unusual occurrence and is reported as such. Reported incidents shall be investigated by the Responsible TM and the QA Manager on a case-by-case basis to determine how they shall be reported. If the incident is immediately determined to be an unusual occurrence, the actions required in Sections 5.2.1, 5.2.2, and 5.2.3 shall be accomplished prior to proceeding to Section 5.5.1.

5.5.1 Initiation of Unusual Occurrence Report (UOR)

Unless the incident has been reported on an IR, the QA Manager shall immediately notify the PM and the WMPO of the incident and that a UOR is being prepared. Once an incident has been deemed reportable as an unusual occurrence (after review by the IRB, or as a result of immediate recognition), the QA



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Manager shall initiate a T&MSS Unusual Occurrence Report which shall include the current status in regard to the incident, and other required input provided by the Responsible TM or obtained by the Responsible TM from the affected T&MSS supplier. Previous pertinent documentation shall be attached to the UOR. The UOR shall be written so that it can be readily understood by reviewers who may not be familiar with the circumstances, facilities, or activities involved. The UOR shall be assigned a unique number by the QA Manager beginning with T&MSS UOR-1, T&MSS UOR-2, etc.

#### 5.5.2 Investigation

Each unusual occurrence shall be investigated and evaluated to determine probable cause and programmatic impact. Remedial and corrective actions (e.g., design changes, personnel training, or procedure revision) shall be initiated to resolve immediate and long-term problems.

#### 5.5.3 Types of UORs

UORs may be of three types: initial, interim, and final. A combined initial-final UOR may be submitted for an unusual occurrence that can be quickly resolved. Classified information shall not be included in a UOR. UORs concerning certain sensitive facilities or activities shall be reviewed for classification where appropriate.

- a. Initial UOR An initial (or initial-final) UOR shall be issued within a period not to exceed 10 working days from the date the occurrence was determined to be reportable as a UOR.
- b. Interim UOR At the discretion of the PM an interim UOR may be required. An interim UOR shall provide current status and progress achieved toward resolution, as well as the schedule for completion and issuance of a final UOR.
- c. Final UOR A final UOR shall be issued when corrective action has been completed and verified as acceptable. The final UOR shall retain the information provided in the initial and interim UORs, as necessary, to provide a complete description of the occurrence, an evaluation (including a determination of cause), and action taken to prevent recurrence. A final UOR shall be revised and reissued if it is determined by the WMPO to be incomplete or requires clarification.



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#### 5.5.4 UOR Review

Each UOR shall be reviewed and signed by the Responsible TM and PM who shall assure that:

1. Each unusual occurrence is clearly, completely, and accurately described (with drawings and sketches as needed);
2. The evaluation of the occurrence includes a concise explanation of cause, immediate actions taken, and effect on the project or the facility;
3. The corrective actions are sufficient to treat the underlying causes and prevent recurrence; and
4. The UOR contains no classified information.

Copies of the UOR shall be provided to the PM, Responsible TM and the SAIC Corporate Purchasing Agent/REECO Buyer for transmittal to the T&MSS supplier, if applicable. The UOR shall be forwarded to the WMPO for further processing.

#### 5.5.5 UOR Close Out

Following the completion of all required corrective action identified on the UOR by the Responsible TM or T&MSS supplier, as appropriate, and the verification of the adequacy of the corrective action by the QA Manager, a final UOR shall be prepared by the QA Manager and reviewed and approved by the Responsible TM and the PM. The final UOR shall be distributed to IRB members, PM, and SAIC Corporate Purchasing Agent/REECO Buyer for transmittal to the T&MSS supplier, if appropriate. The UOR shall be forwarded to the WMPO for further processing.

#### 5.6 STATUS REPORT

The QA Manager shall provide the WMPO, PM, and Responsible TMs with a UOR quarterly status report.

#### 5.7 LOGS

The QA Manager shall maintain a log of IRs and a log of UORs which shall identify the following for each report:



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- a. Date initiated;
- b. T&MSS or T&MSS supplier activity;
- c. Responsible TM;
- d. Remarks regarding status; and
- e. Date closed.

#### 5.8 RECORDS

IRs, minutes of IRB meetings, UORs, and other documents related to IRs and UORs shall be maintained by T&MSS in accordance with QP 17.1, Quality Assurance Records.

#### 6.0 REFERENCES\*

- AP 1.5 Telephone Communications
- QP 2.4 Assignment of QA Levels
- QP 4.1 Procurement Document Control
- QP 15.1 Control of Nonconformances
- QP 15.2 Stop Work Order
- QP 16.1 Corrective Action
- QP 17.1 QA Records

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#### 7.0 APPLICABLE FORMS

- Figure 15.3-1 Examples of Incidents
- Figure 15.3-2 Incident Report
- Figure 15.3-3 Unusual Occurrence Report



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EXAMPLES OF INCIDENTS

Note: The following listing of incidents are intended as examples and shall not be considered as all-inclusive. All problems similar in nature and severity to those listed shall be reported and analyzed. Depending upon the significance of an incident, a UOR may be required to be issued.

A. Site Characterization

1. Incidents which invalidate data or documents used as reference material for official T&MSS reports:
  - a) Loss of single copy records or data;
  - b) Analyses performed with inappropriate computer programs or programs which had not been validated;
  - c) Use of inadequate or inappropriate test equipment or analysis procedure;
  - d) Data obtained with gages subsequently found to be out-of-calibration;
  - e) Discovery of unresolved, independent technical or peer review comments; and
  - f) Failure to perform independent technical reviews or peer reviews, when required.
2. Incidents associated with ongoing T&MSS site characterization field and laboratory data collection and analyses:
  - a) Recurring quality-related problems which result in work stoppage, unexpected or excessive cost, invalid data, schedule slippages, etc;
  - b) Loss, theft, or damage to samples or cores;
  - c) Significant deviations from approved technical or quality assurance plans or procedures;

Figure 15.3-1 Examples of Incidents



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- d) Loss or theft of single copy records or data;
- e) Accidents or equipment theft or failures which significantly affect data collection and/or analysis;
- f) Loss or theft of data or sample traceability;
- g) Vandalism;
- h) Obvious, deliberate, or malicious sabotage of records or equipment; and
- i) Lost time, accidents or death of T&MSS personnel at or adjacent to the Nevada Test Site (NTS).

**B. Design, Construction, and Operation**

- 1. Incidents which may invalidate final, decision, T&MSS reports, drawings or technical specifications issued for procurement or construction:
  - a) Use of incorrect or inappropriate design criteria or other design input data;
  - b) Use of invalidated or inappropriate computer programs for design calculations;
  - c) Failure to perform independent technical or peer reviews, when required;
  - d) Discovery of unresolved comments resulting from independent technical, design, peer, drawings, or specification reviews;
  - e) Use of inappropriate prototype validation tests; and
  - f) Unanticipated adverse impact on site integrity or characterization applicable to isolation or containment.

Figure 15.3-1 Examples of Incidents (Continued)



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2. Incidents associated with T&MSS construction activities:

- a) Any activity which adversely affects the safety or health of or seriously injures any site contractor personnel;
- b) Any unplanned event which could result in public concern;
- c) Significant problems caused by inaccurate or inadequate information contained in drawings, specifications, or procedures;
- d) Discovery of unapproved design changes;
- e) Equipment problems or personnel actions which adversely affect construction activities;
- f) Major theft (including vandalism), sabotage, or loss of equipment, material, components, records or other items;
- g) Major fabrication or construction problems such as shaft liner welding problems, grout mix or placement problems, shaft misalignment problems, etc; and
- h) Any unexpected event caused by nature (e.g., flood, wind, etc.) which damages equipment or records, or which delays or otherwise significantly affects construction or testing activities.

3. Incidents associated with T&MSS testing and operations activities:

- a) All applicable potential incidents previously listed in Section A for data collection and analysis activities;
- b) Problems with flammable, toxic, explosive, or other unsafe or dangerous processes, chemicals, materials, or items previously banned or prohibited;
- c) Unscheduled testing delays or shaft shutdowns resulting from facility deficiencies, breakdowns, malfunctions, anomalies, or from procedural deviations, operational errors, or other personnel-related incidents;

Figure 15.3-1 Examples of Incidents (Continued)



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- d) Failure to meet specified fire, electrical, mining, building, EPA, or OSHA codes;
- e) Problems resulting from an unscheduled shutdown or failure of major facilities, equipment, or systems such as the shaft hoist, ventilation system, alarm system, etc; and
- f) Any equipment or personnel problems associated with the use of radioactive material for testing purposes.

Figure 15.3-1 Examples of Incidents (Continued)



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<b>INCIDENT REPORT</b> (SEE INSTRUCTIONS ON REVERSE SIDE)		T-QA-068 6/86
1 Report No.	2 Date	Page _____ of _____
3 Responsible Task Manager	4 Activity	5 Location
6 Incident Description Date _____ Time _____ of Incident		
7 Remedial Action		
8 Preliminary Report (Attach Copy) Rec'd. From _____ via _____ Date _____ Time _____ <small>(Telephone, telex, etc.)</small>		
9 Signed (QA Manager)		Date _____
10 Cause and Immediate Effects		
11 Describe Programmatic (e.g. reliability, cost, schedule, data loss, or invalid data), Safety, Health, and/or Environmental Impact		
12 Recommendations to Resolve the Incident		
13 Signed (Task Manager)	Date _____	14 Concurrence (QA Manager) Date _____
15 Disposition of Incident <input type="checkbox"/> Additional Action Required. See Attached. <input type="checkbox"/> Reported as Unusual Occurrence. IR is Closed.		
16 Signed (IRB Chairperson)		Date _____
17 Verification of Required Action <input type="checkbox"/> Required Action Has Been Completed and Verified. IR is Closed. <input type="checkbox"/> Unusual Occurrence Report No. _____ Has Been Issued. IR is Closed.		
18 Signed (QA Manager)		Date _____

QA MANAGER

TASK MANAGER

IRB CHAIRPERSON

QA MANAGER

Figure 15.3-2 Incident Report



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**QA MANAGER**

1. Report No. Enter unique IR number.
2. Date Enter IR origination date.
3. Responsible Task Manager Enter Responsible Task Manager.
4. Activity Enter affected T&MSS activity.
5. Location Enter location where the incident occurred.
6. Incident Description Describe what, when, where, how, and why the incident took place. Enter date and time incident occurred.
7. Remedial Action Indicate whether remedial action including the issuance of a Stop Work Order has been recommended, or taken, or none is required.
8. Preliminary Report If a preliminary report was issued, enter name of person reporting, how it was reported (e.g. by telephone), date, time. Attach copy of report.
9. Signed/Date Signature of QA Manager and date.

**RESPONSIBLE TASK MANAGER**

10. Cause & Immediate Effects Describe what caused the incident and its immediate effects.
11. Describe Programmatic, Safety, Health, and/or Environmental Impact Describe programmatic (e.g. reliability, cost, schedule, data loss, or invalid data), safety, health, and/or environmental impact.
12. Recommendations to Resolve the Incident Provide recommendations to the IRB for resolving the incident or elevating the incident to a UCR.
13. Signed/Date Signature of Responsible Task Manager and date.
14. Concurrence/Date Signature of QA Manager and date.

**IRB CHAIRPERSON**

15. Final Disposition of Incident by IRB IRB Chairperson checks appropriate box.
16. Signed/Date Signature of IRB Chairperson and date.

**QA MANAGER**

17. Final Disposition of Incident by QA Manager QA Manager checks appropriate box following verification of required action, and identifies the number assigned to the UCR, if applicable.
18. Signed/Date Signature of QA Manager and date.

Figure 15.3-2 Incident Report (continued)



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SAIC		UNUSUAL OCCURRENCE REPORT (COMPLETE BOTH SIDES)		T-QA-069 6/86	
<sup>1</sup> Report No.	<sup>2</sup> Date	<input type="checkbox"/> Initial <input type="checkbox"/> Interim <input type="checkbox"/> Final	Page of		
<sup>3</sup> Responsible Task Manager		<sup>4</sup> Activity		<sup>5</sup> Ref. Incident Rpt. No. (Attach Copy)	
<sup>6</sup> Subject of Occurrence					
<sup>7</sup> Date of Occurrence		<sup>8</sup> Time of Occurrence		<sup>9</sup> Location of Occurrence	
<sup>10</sup> Operating Conditions at Time of Occurrence					
<sup>11</sup> Apparent Cause <input type="checkbox"/> Design <input type="checkbox"/> Material <input type="checkbox"/> Personnel <input type="checkbox"/> Procedure <input type="checkbox"/> Other (Describe)					
<sup>12</sup> Description of Occurrence (include facility, system, or equipment involved)					
<sup>13</sup> Immediate Evaluation					
<sup>14</sup> Describe Programmatic (e.g. reliability, cost, schedule, data loss, or invalid data), Safety, Health, and/or Environmental Impact					
<sup>15</sup> Impact on Codes and Standards					

Figure 15.3-3 Unusual Occurrence Report



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16 Immediate Action Taken and Results

17 Corrective Action

Taken  
Recommended  
To Be Supplied

18 Recommendation

19 Further Evaluation Required  No  Yes  
If yes, before further operation  No  Yes  
If Yes, By Whom \_\_\_\_\_ When \_\_\_\_\_

20 Final Evaluation and Lessons Learned

21 Similar UCR Numbers

22 Submitted by (Type name of QA Manager)

Signature \_\_\_\_\_ Date \_\_\_\_\_

23 Approved (Type name of Responsible Task Manager)

Signature \_\_\_\_\_ Date \_\_\_\_\_

24 Approved (Type name of Project Manager)

Signature \_\_\_\_\_ Date \_\_\_\_\_

Figure 15.3-3 Unusual Occurrence Report (continued)



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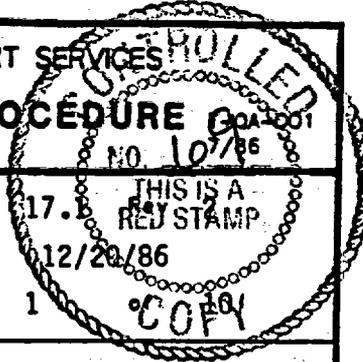
Title QP 15.3 INCIDENT AND UNUSUAL OCCURRENCE REPORTING

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UNUSUAL OCCURRENCE REPORT INSTRUCTIONS  
(T-QA-069)

- |  |  |
|--|--|
| 1. Report No.  | Enter unique UOR Number.   |
| 2. Date  | Enter report origination date.   |
| 3. Responsible Task Manager  | Enter Responsible Task Manager.  |
| 4. Activity  | Enter affected T&MSS activity.   |
| 5. Referenced Incident Report No.                                      | Identify IR number (if applicable), and attach copy of the referenced IR.  |
| 6. Subject   | Give brief title or description of occurrence.   |
| 7. Date of Occurrence  | Enter date problem occurred, if known; if not, enter date problem was identified and so state.   |
| 8. Time of Occurrence  | Enter time problem occurred.   |
| 9. Location of Occurrence  | Enter place of occurrence.   |
| 10. Operation Conditions at Time of Occurrence                         | Describe operational status of facility or equipment at time of occurrence.  |
| 11. Apparent Cause   | Check box that best describes apparent cause. If "Other", explain.   |
| 12. Description of Occurrence  | Describe what, when, where, how, and why the occurrence took place. Include facility, system, or equipment involved, cause and effects, and list any previous similar UOR numbers.<br>a. For occurrence that was previously reported on an IR, information should be extracted from the IR.<br>b. For occurrence that has not been reported previously, information shall be developed jointly by QA Manager and Responsible Task Manager. |
| 13. Immediate Evaluation   | Describe immediate evaluation as to cause and effects or possible effects on system, facility, etc.  |
| 14. Describe Programmatic, Safety, Health, and/or Environmental Impact | Describe programmatic (e.g. reliability, cost, schedule, data loss, or invalid data), safety, health, and/or environmental impact.<br>a. For occurrence that was previously reported on an IR, information should be extracted from the IR.<br>b. For occurrence that has not been reported previously, information shall be developed jointly by QA Manager and Responsible Task Manager.   |
| 15. Impact on Codes and Standards                                      | If occurrence impacts requirements of national codes or standards, or program standards, adequacy of codes or standards to prevent recurrence should be stated.  |
| 16. Immediate Action Taken and Results                                 | Describe immediate action taken to return facility or equipment to service or to correct condition and results of these actions (may be temporary measures).   |

Figure 15.3-3 Unusual Occurrence Report (continued)



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1.0 PURPOSE AND SCOPE

This procedure implements the requirements of NNWSI-SOP-17-01, Rev. 0 and describes the Technical and Management Support Services (T&MSS) Quality Assurance (QA) records management process and controls. It includes the identification of types of QA records and the generating, receiving, validating, inspecting, indexing, identifying, filing, controlling, accessing, tracking, retrieving, transferring, and dispositioning of QA records relating to activities performed in support of the Waste Management Project Office (WMPO). The term records, used throughout this procedure, shall be interpreted as QA records.

2.0 APPLICABILITY

This procedure applies to records for Quality Assurance Level I and II activities and items (see QP 2.4, Assignment of Quality Assurance Levels) generated, received and/or maintained by T&MSS. In addition, this procedure applies to QA Level Assignment Sheets (see QP 2.4) for QA Level III activities and items and to other records for QA Level III activities and items as deemed appropriate by the Task Manager concerned.

3.0 DEFINITIONS

3.1 DOCUMENT

A document is any pictorial or written information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results. A document is not considered to be a record until it is complete and satisfies the definition of a record.

3.2 RETENTION PERIODS

All T&MSS records shall be classified as lifetime records.

A lifetime retention period begins when the document is validated as a record and ends at the date the geologic nuclear waste repository has been decommissioned and closed. This covers the time period required for the

APPROVALS

*Johnell Powell*  
QA Manager

12/20/86  
Date

*Michael Edwards*  
Project Manager

12/20/86  
Date



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#### 4.2 DIVISION DIRECTORS

Each Division Director is responsible for providing the T&MSS Records Coordinator with a list of the types of records that shall be generated or maintained (e.g., T&MSS suppliers' records) in his/her area of responsibility.

#### 4.3 TASK MANAGER

The Task Managers (TMs) concerned are responsible for providing their Division Directors with a list of the types of records that will be generated or received; assuring the generation and validation of documents, which, following the act of validation, shall be considered records; and, for the transmittal of records for their areas of concern to the T&MSS Records Coordinator. TMs are responsible for providing the T&MSS Records Coordinator with a list of individuals authorized to validate records. (see Section 5.3).

#### 4.4 QUALITY ASSURANCE MANAGER

The Quality Assurance (QA) Manager or designee is responsible for verifying the implementation of this procedure by surveillance and audit. The QA Manager or designee is responsible for providing T&MSS QA input into the T&MSS Records Type List (see Section 5.1), and for generating, validating, and transmitting records to the T&MSS Records Center. Additionally, the QA Manager or designee shall provide the T&MSS Records Coordinator with a list of QA personnel authorized to validate records generated or received by Quality Assurance.

#### 4.5 T&MSS RECORDS COORDINATOR

The T&MSS Records Coordinator is responsible for coordinating the collection, processing, and control of T&MSS records prior to the transfer of the records to the PRC, and to coordinate the transfer of T&MSS records to the PRC.

### 5.0 PROCEDURE

#### 5.1 T&MSS RECORDS TYPE LIST

The Director of Project Management Support Division, Technical Programs Division Technical Director, Technical Programs Division Administrative Director, Director of the Finance and Administration Division, and the QA



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Manager shall each provide a list of the types of records that shall be generated or received (e.g., from a T&MSS supplier) in his/her area of responsibility to the T&MSS Records Coordinator. The T&MSS Records Coordinator shall consolidate the various lists into the T&MSS Records Type List (RTL). This RTL shall be approved by the PM and shall be transmitted to the WMPO for approval. On an annual basis the RTL shall be reviewed and updated, as necessary, by the QA Records Coordinator. This review shall be documented. Revisions to the RTL shall be subject to the same review and approval process as the original. The RTL shall be identified with a revision number (original issue shall be Rev. 0, the first revision shall be Rev. 1, etc.). The RTL, including changes, and the documented annual review of RTLs shall be considered records.

### 5.2 GENERATION OF RECORDS

T&MSS Quality Assurance Program Plan and supporting procedures, T&MSS technical procedures and instructions, and other applicable documents specify the records to be generated by or supplied to T&MSS. Documents that are designated to become records shall be legible, accurate, complete, reproducible, microfilmable, and appropriate to the work accomplished. Documents that are designated to become records shall be completed in a permanent, indelible medium, i.e., black ink or print.

### 5.3 QA RECORD VALIDATION

Completed documents shall be considered valid records by the completion of the top section of the Records Declaration Form and by the completion of the Records Inventory Form (see Figures 17.1-1 and 17.1-2) by T&MSS personnel authorized to validate documents as being records. The Records Declaration Form shall identify the total number of Record Inventory Forms attached to it. Records may be originals or reproduced copies, although originals are preferred for legibility, and to preclude questions of unauthorized changes or improper signatures. Each TM shall provide the T&MSS Records Coordinator with a list which contains the signature and initials of T&MSS personnel authorized to validate records for a specific task. The QA Manager shall provide the T&MSS Records Coordinator with a list which contains the signature and initials of QA personnel authorized to validate records generated or received by Quality Assurance.

### 5.4 TRANSFER OF RECORDS TO THE T&MSS RECORDS CENTER (TRC)

Following the validation of records, the Task Manager concerned shall review the Records Inventory Form(s) and sign/date the Records Declaration



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Form. Copies of records shall exist prior to transfer to the TRC in the event records are lost or damaged in transit.

### 5.5 RECEIPT OF RECORDS

5.5.1 Records received at the T&MSS Records Center shall be reviewed by the T&MSS Records Coordinator to ensure the record type is identified on the current RTL. If the records do not appear on the applicable RTL, refer to Section 5.5.2. The T&MSS Records Coordinator shall maintain a copy of each of the Records Inventory Forms transmitted to him/her, which shall enable the T&MSS Records Coordinator to identify the records transmitted to the TRC. Each record shall be inspected by the T&MSS Record Coordinator to assure to the extent possible that the record has been validated; that the record is legible, and not torn or damaged; and, that the record meets the requirements of NNWSI-SOP-17-01, Appendix A, Standards for PRC Acceptance of QA Records As Source Documents For Retention and Microfilming. The T&MSS Records Coordinator shall maintain a current and accurate assessment of the inspection status of received records by indicating on the appropriate Records Inventory Form that the record has been inspected and accepted. Received records shall be segregated into three separate distinct areas to prevent mix (one area shall be for records received and not inspected; one area shall be for records received, which have been inspected and accepted and are awaiting further processing; and one area shall be for records received which have been inspected and determined to be unacceptable or the record does not appear on the RTL).

5.5.2 When a record is received and is determined to be unacceptable or does not appear on the RTL, the T&MSS Records Coordinator shall take necessary action to obtain an acceptable record or revised RTL, as appropriate. The T&MSS Records Coordinator shall indicate on the appropriate Records Inventory Form that the record was rejected and returned to the TM concerned for replacement or until the RTL has been formally revised, as appropriate. Following resolution of the problem (i.e., unacceptable record or inadequate RTL) the record shall be transmitted to the T&MSS Records Coordinator under a new Records Declaration and identified on a new Records Inventory Form. If the record is determined to be acceptable, the T&MSS Records Coordinator shall indicate on the new Records Inventory Form that the record has been inspected and accepted, and shall attach the new Records Inventory Form and Records Declaration Form to the original forms. Upon the documented completion of the T&MSS Records Coordinator's inspection of all records identified on the Records Inventory Form, the T&MSS Records Coordinator shall sign and date the Records Declaration Form(s) attached to the Records Inventory Form(s), and forward a copy to the affected TM.



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## 5.6 RECORD IDENTIFICATION

5.6.1 Acceptable records shall be indexed and provided with a unique number as assigned by T&MSS Records Coordinator by completing an indexing sheet for each record that shall provide required information into the T&MSS QA Records Management System Database. This information includes, as appropriate, record title, date, originator, Work Breakdown Structure Number, unique identification number, QA Level, record number and revision, file location, serial numbers of items listed on the record, documents referenced on the record, number of pages, and contract number, as a minimum.

## 5.7 RECORDS STORAGE

### 5.7.1 T&MSS Record Center

A T&MSS Record Center (TRC) shall be established to store records. The T&MSS Records Coordinator shall be responsible for implementing the requirements of this procedure in regard to the adequacy of the TRC and for protecting the records from damage or loss while maintained in the TRC.

### 5.7.2 Records Storage Facility

The TRC shall be an access-controlled records and storage area that meets the requirements of an alternate single records facility as identified in NQA-1, 1983, Supplement 175-1, QA Records. In the absence of an acceptable alternate single records facility, T&MSS Records shall be stored in dual facilities meeting the dual storage requirements as delineated in NQA-1, 1983, Supplement 175-1, QA Records.

### 5.7.3 Personnel Access Control

A list of persons allowed unescorted access, as authorized by the T&MSS Records Coordinator, shall be maintained by the T&MSS Records Coordinator. This list shall include, as a minimum, the Project Manager, Division Directors, the T&MSS Records Coordinator, QA Manager, and QA personnel. Persons not on the access list shall be escorted. The T&MSS Records Coordinator may allow temporary unescorted access to specific personnel such as auditors, where necessary, to accomplish work activities. Personnel not authorized for access and unescorted personnel entering the storage area shall indicate on an access log their name, and the date, time, and purpose of their access to the storage area.



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#### 5.7.4 Preservation of Records

Records shall be stored in a manner to prevent damage from moisture, temperature, and pressure. Records shall be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. Provisions shall be made for special processed records (such as radiographs, photographs, negatives, microfilm, magnetic material, core samples, etc.) in order to prevent damage from excessive light, stacking, electromagnetic fields, temperature, and humidity.

#### 5.8 FILING OF RECORDS

Records shall be filed in numerical (identification number is provided in Section 5.6) order in steel file cabinets or in National Fire Protection Agency (NFPA) two hour rated cabinets until transferred to the PRC.

#### 5.9 RETRIEVAL OF RECORDS

Records shall be filed, identified, and indexed in a manner to allow timely retrieval.

#### 5.10 CORRECTED INFORMATION

Records may be corrected when determined by review, audit, or inspection, that the record is incorrect. The TM responsible for the incorrect record shall, as appropriate, formally transmit the incorrect record to the organization that generated it, and shall identify the error(s). The originating organization shall make the required corrections, and shall obtain the dated approvals of the initiator of the record and the T&MSS QA Manager, or designee, on an attachment to the corrected record. This attachment shall identify the specific record in detail, identify the corrections, and contain the aforementioned approvals. The corrected record, with the approval attachment, shall be forwarded to the affected TM by the T&MSS QA Manager. The affected TM shall attach the corrected record and the approval attachment to the new Records Inventory Form which lists the corrected record. The corrected record and attachments shall be transmitted to the JRC per Sections 5.3 and 5.4 and shall be filed with the original record.

#### 5.11 SAFEKEEPING OF RECORDS

Records that are lost or damaged shall be replaced, restored, or substituted by the applicable Task Manager within 30 days after the determination that a record has been lost or damaged.



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### 5.12 REVISIONS

Revisions to QA Level I and II procedures, plans, instructions, and drawings shall be filed as separate documents with the previous revision(s).

### 5.13 TRANSFER OF RECORDS TO THE PRC

Records shall be transferred to the PRC by the T&MSS Records Coordinator in accordance with NNWSI-SOP-17-01.

### 6.0 REFERENCES\*

QP 2.4 Assignment of Quality Assurance Levels

NNWSI-SOP-17-01 NNWSI Records Management

\*Current issue

### 7.0 APPLICABLE FORMS

Figure 17.1-1 Records Declaration

Figure 17.1-2 Records Inventory



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RECORDS DECLARATION

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I, the undersigned, an employee of \_\_\_\_\_  
declare that the records listed on the attached Records Inventory Form(s), Pages 1 thru  
\_\_\_\_\_ are authentic records.

Name: (Print or Type)

Division/Branch

Date

\_\_\_\_\_  
Signature

TRANSFER OF RECORDS TO THE T&MSS RECORDS COORDINATOR

Responsible Task Manager

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

T&MSS RECORDS COORDINATOR ACCEPTANCE OF RECORDS

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Figure 17.1-1 Records Declaration



