

WMPO QUALITY ASSURANCE AUDIT PLAN

AUDIT 88-07

AUGUST 22-26, 1988

1.0 Purpose And Scope

The purpose of this audit is to evaluate the implementation of the Reynolds Electrical and Engineering Co. Inc. (REECO) Quality Assurance Program Plan (QAPP). The evaluation will be based upon the objective evidence gathered during the audit process. Where no work has been performed to support objective evaluation of implementation, the audit will evaluate REECOs capability to perform work in accordance with the QAPP. REECO has not accomplished any Quality Level I or II activities since the last WMPO Audit (87-10 done August 24-28, 1987), with the exception of processing QA records, document control, indoctrination and training, and storage of purchased items.

The scope of this audit will include an evaluation of the methods currently in place to perform those activities which effect quality which are currently within the REECO scope of activity for the NTSO. The specific methods are outlined 5.0 below.

2.0 Organization To Be Audited

Reynolds Electrical & Engineering Co. Inc. (REECO)
Mercury and Las Vegas, Nevada

3.0 Audit Schedule

Preaudit Team Meeting	9:00 a.m.	August 22, 1988	Las Vegas, NV
Preaudit Team Mtg./Observers	2:00 p.m.	August 22, 1988	Las Vegas, NV
Preaudit Conference	9:00 a.m.	August 23, 1988	Mercury, NV
Audit Activities	8:30 a.m.-4:30 p.m.	Aug. 24-26, 1988	Mercury, NV
Postaudit Conference	2:00 p.m.	August 26, 1988	Mercury, NV

4.0 Requirements To Be Audited And Applicable References

The requirements to be evaluated through the audit process are contained in the programmatic checklist. This checklist was developed from the following documents:

- o NNWSI NVO-196-17, Rev. 5
- o REECO QAPP and Implementing Procedures
- o REECO Buyers Handbook Procedure BH 6131

8809200036 880803
PDR WASTE PDC
WM-11

The conduct of the audit will be guided by the documents listed below:

- WMPO QMP 18-01 "Audit System For the Waste Management Project Office" Revision 2.
- WMPO QMP 16-03 "Standard Deficiency Reporting System" Revision 0.
- WMPO Quality Assurance Audit Task Organization.
- WMPO Audit Observer Inquiry.
- Policy For Participation of State, Tribal and NRC Representatives as Observers on DOE Audits Dated July 14, 1987.
- HLW Division Procedure for Conducting Observation Audits of DOE HLWR Program QA Audits
- Headquarters Observation of WMPO QA Audits

5.0 Activities To Be Audited or Evaluated

The activities to be evaluated during the audit process include but are not limited to:

Programmatic Elements:

<u>CRITERIA</u>	<u>ACTIVITIES</u>	<u>AUDIT/EVALUATE</u>
1.0	REECO Matrix Management	Audit
2.0	Indoctrination, Training, Certification of Inspectors, Testers, NDE, Welders	Audit/Evaluate
4.0	Procurement Process	Evaluate
5.0	Control of Documents	Audit
6.0	Document Control Activities	Audit
7.0	Control of Purchased Items	Evaluate
12.0	Control of Measuring and Test Equipment	Evaluate
13.0	Storage Controls	Audit/Evaluate
17.0	Control of QA Records	Audit
18.0	Certification of Lead Auditors and Audit Schedules	Audit/Evaluate

The following programmatic elements will not be audited or evaluated during this audit:

- 3.0 Scientific Investigation/Design Controls
- 8.0 Identification and Control of Samples of Items
- 9.0 Control of Processes and Special Processes
- 10.0 Inspection
- 11.0 Test Control
- 14.0 Inspection and Test Status
- 15.0 Non-Conformances
- 16.0 Corrective Action



Department of Energy
Washington, DC 20585

JUL 14 1987

SAIC/T&MSS

JUL 20 1987

CCF RECEIVED

NNA.870720.0053

State and Tribal Representatives (List Attached)

At the last Quality Assurance Coordinating Group meeting DOE, State, Tribal and NRC representatives discussed the policy that should be used with regard to the participation of State, Tribal and NRC representatives on DOE audits. It appears that a general consensus was reached among the meeting participants on a procedure for participating in the DOE QA auditing process. Details are in the attached draft policy statement.

We are pleased to invite your review of the enclosed draft policy statement and would appreciate knowing of any remaining concerns you may have.

Sincerely,

Stephen H. Kale
Associate Director for
Geologic Repositories, Office of
Civilian Radioactive Waste Management

Enclosure



**POLICY FOR PARTICIPATION OF STATE, TRIBAL AND NRC REPRESENTATIVES
AS OBSERVERS ON DOE AUDITS**

1. The QA Manager of OGR will furnish to the State, Tribal and NRC representatives a schedule of audits planned by DOE-HQ (OGR) and by the DOE project offices. Because of frequent changes to the schedule, the schedule will be updated at approximately monthly intervals and copies furnished to the State, Tribal and NRC representatives.
2. OGR and the project offices will make every effort to send an audit notification at least 30 days prior to each QA audit. The audit notification will, whenever possible, include an audit plan and a description of the scope of the audit. Copies of OGR audit notifications will be furnished to NRC and to all State and Tribal representatives; copies of project audit notifications will be furnished to NRC and to the affected State and Tribal representatives.
3. State, Tribal and NRC representatives may request to participate in any audit. Requests need not be in writing. Telephone contacts to request participation are:

OGR - Carl Newton - (202) 586-5059
BWIP - Pierre Saget - (509) 942-7250
WMPO - Jim Blaylock - (702) 295-1125
SRPO - Jerry Reese - (806) 374-2320

State, Tribal and NRC representatives who wish to participate will make every effort to contact the DOE representative at least two weeks prior to the audit so that arrangements for their participation can be made.

4. When a request to participate is received by DOE from a State, Tribal or NRC representative, it is DOE's policy to make every reasonable effort to honor the request. When small audit teams are used by DOE, and requests for many observers are received, it may be necessary for DOE to limit participation (but in no event to less than one observer per organizational entity, i.e., one from the affected State, one from each affected Tribe, and one from NRC), so that the auditing process will not be hampered by an excessive number of observers. In instances where the limit of one observer per affected party will still result in an excessive observer to auditor ratio, DOE will contact the affected parties and seek voluntary reductions. It is expected the parties will make every reasonable attempt to accommodate DOE's requests.

5. Observers on DOE audits will be under the authority of the audit team leader (or sub-team leader if the team is divided during the audit). Observers are encouraged to participate fully by furnishing their questions, observations and recommendations to the audit team leader (or sub-team leader). Direct interactions between observers and auditee personnel will generally be discouraged and it may be necessary to exempt observers from certain portions of an audit (such as procurement actions that are in-process, classified material, or sensitive personnel records). The DOE policy is that every effort is to be made to limit such exemptions and to include observers as full participants in all aspects of the audit possible.
6. The State, Tribal and NRC representatives who will be participating in a QA audit are to be furnished a copy of the audit checklist as soon as it is available. A target date of ten days prior to the audit will be attempted. The State, Tribal and NRC representatives who receive audit checklists are, of course, to keep their contents confidential and to not, under any circumstances, divulge its contents to representatives of the organization to be audited.
7. DOE encourages observers to receive formal QA auditor training and QA lead auditor training. Every effort to accommodate State, Tribal and NRC representatives in DOE sponsored training courses is to be made. There are, however, no DOE requirements for observers to have had such training.
8. DOE invites observers to express concerns and recommendations on the auditee's QA program to the audit team leader for his consideration in preparing the audit report. DOE also invites observations on the conduct of the audit and solicits recommendations on how we might improve our audit process. Observers will be afforded an opportunity to speak at exit meetings following each audit. Regular opportunities are to be provided to observers during the course of the audit and at the quarterly QACG meeting for State, Tribal and NRC representatives to discuss their comments and recommendations.

State and Tribal Representatives to QACG

Mr. Allan V. Pinkham, Chairman
Nez Perce Tribal Executive Committee
Box 350, Main Street
Lapwai, ID 83540

Mr. Elwood Patawa, Chairman
Board of Trustees
Umatilla Confederated Tribes
P. O. Box 638
Pendleton, OR 97801

Mr. Melvin R. Sampson, Chairman
Yakima Tribal Council
Yakima Indian Nation
P. O. Box 151
Toppenish, WA 98948

Mr. Terry Husseman
Program Director
Office of High-Level Nuclear
Waste Management
Washington State Department
of Ecology, MS PV-11
Olympia, WA 98504

Mr. Max S. Power
Washington State Institute for
Public Policy
Science and Technology Project
The Evergreen State College
4111 Seminar Building TA-00
Olympia, WA 98505

Mr. Steve Frishman, Director
Nuclear Waste Program Office
Office of the Governor
201 E. 14th Street, Room 205
Austin, TX 78711

Ms. Ruth Ann Storey
High-Level Nuclear Waste Office
355 West North Temple
Suite 330
Salt Lake City, Utah 84180-1203

Mr. Robert Loux, Jr.
Director
Nuclear Waste Project Office
Office of the Governor
Capitol Complex
Carson City, NV 89710

Mr. Hall Bohlinger
Assistant Administrator Nuclear
Energy Division
P. O. Box 14690
Baton Rouge, LA 70898

Mr. John W. Green, Jr.
Executive Director
Department of Energy &
Transportation
214 Watkins Building
510 George Street
Jackson, MS 39202

Ms. Susan Zimmerman, Geologist
Nuclear Waste Program Office
Office of the Governor
P. O. Box 12428
Austin, TX 78711

Mr. James Reed
Advisory Committee on Institutional
Government Relations
P. O. Box 13206
Austin, TX 78711

Ms. Cheryl Runyon
National Conference of State Legislatures
1050 17th Street
Suite 2100
Denver, CO 80265

Mr. Carl Johnson
Nevada Nuclear Waste Storage
Investigation
State of Nevada
Capitol Complex
Carson City, NV 89710

Mr. Don Provost
Ofc. of High Level Nuclear Waste
Management
Department of Ecology
Mail Stop P.V. -11
5820 Pacific Avenue
Olympia, WA 98504

Mr. Stephen S. Hart
Council of Energy Resource Tribes
1580 Logan Street, Suite 400
Denver, CO 80203

Mr. Hal Aronson
Nuclear Waste Program
Yakima Indian Nation
5041 West Fair Avenue
Littleton, CO 80123

Mr. Robert Mooney
State of Washington
Dept. of Social & Health Services
Office of Radiation Protection
MS LE-13
Olympia, WA 98504

Mr. William Burke
Nuclear Waste Project Director
Umatilla Confederated Tribes
P. O. Box 638
Pendleton, OR 97801

Mr. Ronald T. Halfmoon
Nez Perce Nuclear Waste Program Manager
Nez Perce Indian Tribe
P. O. Box 350, Main Street
Lapwai, ID 83540

Dennis Bechtel, Planning Coordinator
Clark County, Nevada
225 Bridger Street
Las Vegas, NV 89155

Robert Palm
Clark County, Nevada
225 Bridger Street
Las Vegas, NV 89155

Russel Jim
Yakima Tribal Council
Yakima Indian Nation
P. O. Box 151
Toppenish, WQ 98948

Bim Oliver
355 W. North Temple
#3 Triad Center, Suite 300
Salt Lake City, Utah 84180-1203

6/23/87

QACG Members

Pierre Saget
BWIP Project Office
DOE Richland
710 Jadwin Ave.
P. O. Box 550
Richland, WA 99352

Jake Lefman
Battelle
Project Management Division
505 King Avenue
Columbus, OH 43201

E. A. Patzer
Battelle
Project Management Division
7000 South Adams Street
Willowbrook, IL 60521

Bud Kehew
Quality Assurance Manager
Repository Technology and
Transportation Division
9800 S. Cass Ave.
Argonne, IL 60439

Jerry Reese
U. S. Dept. of Energy
SRPO
110 North 25 Mile Avenue
Hereford, TX 79045

Mike Flannigan
Project Manager and Energy Division
U.S. Dept. of Energy
9800 S. Cass Avenue
Argonne, IL 60439

Rodger Johnson
Rockwell Hanford Operations
Energy Systems Group
Rockwell International
P. O. Box 800
Richland, WA 99352

John Rinaldi
U.S. Dept. of Energy
2753 S. Highland Dr.
Las Vegas, NV 89109

~~John Rinaldi~~
The Valley Bank Ctr.
101 Convention Ctr. Drive
Suite 407
Las Vegas, NV 89109

Jim Blaylock
U.S. Dept. of Energy
Waste Management Project Ofc.
U. S. Dept. of Energy
2753 S. Highland Drive
Las Vegas, NV 89109

Clarence Williams
Battelle
Project Management Division
505 King Avenue
Columbus, OH 43201

Gary Faust
Roy F. Weston
955 L'Enfant Plaza
8th Floor
Washington, D.C. 20024

RECORD OF CORRESPONDENCE CONCURRENCE AND DISTRIBUTION

SUBJECT: Role of Observers on DOE audits

FROM: S.Kale, RW-20

TO: States & Tribes (List attached)

PC CODE: CN 150 (MARIE ADAMS' IBM)

DISTRIBUTION

QA FILE # L5
OCRWM CCRU, RW-13 (5)
OCRWM ARCHIVES (2)
ORIGINATOR'S CHRON: NEWTON
OGR READING FILE
S, L, & QA DIV CHRON

K. Sommer, RW-24
J. Knight, RW-24
M. E. Langston, RW-40
H. Steinberg, RW-33
S. Echols OC-11

D. Siefken, Weston
L. Skoblar, Weston
G. Faust, Weston
J. Kennedy, NRC

L. Barrett, RW-33

CONCURRENCES:

C. Newton 7 / 13 / 87
C. Newton, RW-24

J. Knight 7 / 13 / 87
J. Knight, RW-24

S.K / /
S. Kale, RW-20

#

HQO.871223.0023

QUALITY ASSURANCE PROCEDURE FOR
AUDITING DOE HIGH LEVEL WASTE
REPOSITORY PROGRAM QA AUDITS

1.0 PURPOSE

This guidance describes the HLN Operations Branch QA Section methodology for auditing quality assurance (QA) audits performed by the Department of Energy (DOE) of their contractors and subcontractors. The DOE audits may be performed on the DOE, DOE contractors and subcontractors, or any other participating organization. This may include contractors auditing other contractors.

The objective of the QA audit observation program is to assess the quality of DOE's QA audit program for the geologic repository program. Where necessary, recommendations for improving the DOE audit program will be made by the staff. Audit observations by the staff will enable them to give guidance to DOE on QA programs that are being developed and should help to provide confidence that DOE is meeting NRC's QA program requirements.

2.0 OBJECTIVE

The objective of this procedure is to provide guidance on the following areas:

- (a) Responsibilities.
- (b) Criteria for selection of audits for observation.
- (c) Areas to be observed.
- (d) Qualifications required for the observers.
- (e) Reporting requirements.
- (f) Protocol during the audit.

3.0 RESPONSIBILITIES

NMSS Management - The appropriate NMSS management has the following responsibilities:

- (a) Preparation of an audit schedule. (Branch Chief)
- (b) Selection of one or more observer(s). (Section Leader)
- (c) Evaluating the training needs of the observers. (Section Leader)
- (d) Assuring that the observers are adequately prepared. (Section Leader)
- (e) Transmitting the final observation report to DOE. (Branch Chief)

Observers - The observers have the following responsibilities:

- (a) Notification of the DOE audit team leader.
- (b) Reviewing all pertinent background documents including audit plan, audit checklist, and QA Plan. (Within constraints of lead time provided by audit team leader)

PROCEDURE FOR QA AUDIT

- (c) Preparation of audit report.
- (d) Presentation of observations to auditors.

4.0 CRITERIA FOR SELECTION OF AUDITS FOR OBSERVATION

The selection of audits for observation should be based on the following:

- (a) The importance of the activity being audited (for example, data collection activities important to safety or waste isolation).
- (b) The time since the last audit (NRC, DOE, WMPO, etc).
- (c) The results of previous audits or observations.
- (d) The identification of potential problems by the onsite representatives or other NRC staff.
- (e) Availability of qualified observers.
- (f) OGR Consolidated Audit Schedule.

5.0 AREAS TO BE OBSERVED

The following areas should be addressed before or during the audit to the extent practicable:

5.1 Qualification of the auditors

- (a) Nuclear licensing experience (if any)
- (b) Nuclear QA experience (if any)
- (c) Years of experience
- (d) Communication skills
- (e) Training in auditing techniques
- (f) Technical expertise

5.2 Audit team preparation

- (a) Content of audit plan and checklist
- (b) Knowledge of audited organization
- (c) Knowledge of audited organization procedures, policies, standards, etc. (b and c can only be evaluated by observing the auditors during the audit and interviewing the auditors)

5.3 Selection of areas to be audited

- (a) Technical versus programmatic based on subject matter
- (b) Known problem areas including followup from previous audits

5.4 Conduct of entrance/exit interviews

- (a) Was the scope of the audit clearly discussed?
- (b) Are the audit results clearly communicated to the auditee?
- (c) Did the auditor obtain commitments from the audited organizations to correct noted discrepancies.

PROCEDURE FOR QA AUDIT

5.5 Coverage of the audit

- (a) If applicable, have all 18 criteria been covered?
- (b) What is the purpose or objective of the audit?
- (c) Were the auditors knowledgeable about the regulations and standards they were auditing to?
- (d) What was the nature of the findings (i.e., significant, trivial, etc.)?
- (e) Did the auditor reach a conclusion on a solid foundation of facts?
- (f) Did the auditor research any findings or deficiencies to attempt to determine the root cause?
- (g) Is the audit plan/checklist adequate?

5.6 Examination of technical products - extent and depth of review.

5.7 Involvement of audit team members, use of technical team members.

- (a) Are the technical specialists knowledgeable in the areas being audited (i.e., geochemists for geochemistry)?

5.8 Audit team coordination

- (a) Does the technical specialist complement the audit team?
- (b) Does the lead auditor take charge and run the audit?
- (c) Does the audit report reflect what was discussed by the audit team?
- (d) Were daily or appropriate frequency of caucuses held?

6.0 QUALIFICATIONS OF THE OBSERVERS

Personnel selected for observations shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. The observers should be selected based on the following qualifications: auditing and technical experience, education, auditor training, communication skills, and knowledge of QA, technical, and regulatory requirements. The audit observers will be selected by the High-Level Waste Operations Branch QA Section Leader. When technical specialists are utilized, the selection will be coordinated with the Technical Review Branch. All QA section observers shall meet the requirements of ASME/ANSI NQA-1 for auditor qualifications. Technical observers may also be utilized and shall be selected based on their education and experience in the technical area being audited. If they do not meet the requirements above for QA observers they will not be expected to comment on the QA aspects of the audit.

7.0 REPORTING REQUIREMENTS

A report shall be written upon completion of the audit and will be sent to the Director of Siting, Licensing, and Quality Assurance Division, Office of Civilian Radioactive Waste Management, Department of Energy. The report shall address each area covered in Section 5.0 to the extent that each was observed. In addition, each report shall address the audit results. The report should

PROCEDURE FOR QA AUDIT

The following is a sample format for the report:

7.1 Purpose of audit - state the objective of the audit and observations of the audit.

7.2 Summary

- (a) Areas audited - brief listing of general areas that were audited, date of audit and agenda
- (b) Observations - brief summary of general observations

7.3 Scope of audit

7.4 Observations/conclusions, effectiveness of audit with supporting facts.

7.5 Auditors - list of auditors, observers, titles, and affiliations

All concerns raised will be tracked and followed up.

8.0 PROTOCOL DURING AUDIT

Observers should coordinate with the audit team leader to assure that the effectiveness of the audit team is not disrupted. Observers are encouraged to participate fully by furnishing their questions, observations, and recommendations to the DOE audit team leader. Efforts should be made by the observer to minimize direct questions of the audited organization. It may be necessary to exclude observers from certain portions of the audit (such as procurement actions that are in-process, or sensitive personnel records). Observers should obtain a copy of the audit checklist as soon as it is available and should prevent predisclosure of the list from the audited organization.

Observers shall indicate the acceptable areas of the audit program as well as express concerns, or recommendations to the DOE audit team leader prior to leaving the site. Every attempt should be made to express their concerns daily to the DOE audit team leader. Whenever possible, the observers should attend the entrance and exit meetings and audit team caucuses. The observers should also express their concerns about the auditee's QA program at the auditor caucus prior to the exit meeting. Observer concerns about the conduct of the audit should be addressed only to the audit team. The audit team should be given the opportunity to respond to staff concerns. The staff should consider any new information provided to determine if concerns are still valid. Efforts should be made to reach agreement on the nature of the concern and where necessary that appropriate corrective action will be taken.

All observations should be based on facts and personal opinions should be avoided.

PROCEDURE FOR QA AUDIT

9.0 REFERENCES

ASME/ANSI NQA-1-1986
10 CFR Part 50 Appendix B
DOE Procedure on Observer Protocol (July 19, 1987)
OGR Consolidated Audit Schedule

HQ OBSERVATION OF WMPO QUALITY ASSURANCE AUDITS

Audit No. _____

Audited Organization
and Location _____

Date of Audit _____

Observer _____

General Observation Areas

1. Was the content of the Audit Plan and Checklist adequate?

2. Did the audit team have adequate knowledge of the audited organization (i.e., scope of work, procedures, policies, etc.)?

3. a) If appropriate, were technical areas as well as QA programmatic areas audited? b) Was the extent and depth of review of the technical areas adequate? c) Were the technical specialists knowledgeable in the areas being audited?

4. Were known problem areas identified from previous audits investigated?

5. Was the scope of the audit clearly presented to the audited organization?

6. Were the audit results clearly communicated to the audited organization?

7. Did the auditor obtain commitments from the audited organization to correct noted discrepancies?

8. If applicable, were all 18 criteria of 10CFR50, Appendix B covered?

Requirements of WMPO QMP-18-01, Revision 1

1. Sect. 3.4 Is the audit team leader certified to develop and perform an audit, report audit findings, and to follow-up and evaluate corrective actions?
2. Sect. 4.1.6 Are conditions adverse to quality evaluated and reported on Standard Deficiency Reports (SDRs) per QMP-16-03?
3. Sect. 5.2.2 Are the requirements of this section met?
4. Sect. 5.3.1 Was a pre-audit conference held per this section?
5. Sect. 5.4.1 Were pre-prepared audit checklists used in the conduct of the audit?
6. Sect. 5.4.1 Is objective evidence examined and documented for compliance with the checklist requirements?
7. Sect. 5.4.1.1 Is each "not applicable" or "not audited" entry on the checklist explained?
8. Sect. 5.4.1.2 Is reference to specific deficiencies noted on the checklist by documenting the sequential number of the SDR rough draft (or number of the observation)?

SCHEDULE OF EVENTS AUDIT 88-07

AUGUST 22 - AUGUST 26

TEAM ASSIGNMENTS

<u>DATE</u>	<u>TIME</u>	<u>CRITERIA & ACTIVITY</u>	<u>LOCATION</u>	<u>RESPONSIBLE AUDITORS OR ATTENDING</u>
8/22/88	2:00 pm	Preaudit Team Meeting	Las Vegas SAIC Office	All Team Members & Observers
8/23/88	9:00 am	Preaudit Conference	Mercury, NV REECo Office	All Team Members & Observers
8/23/88	12:30 pm	Team 1 Investigate: REECo Matrix Management & Review Indoctrination, Training & Certifications, of Inspectors, Testers, and NDE Personnel as Applicable Welders (1 & 2) Review Job Descriptions Team 2 Investigate: Document Control, and Measuring and Test Equipment, Assess Present System (6 & 12)	Mercury, NV Robert Prit- chett Office, then Training Area Mercury, NV Mono Fox Office, then M&TE Lab	S. Dana & C. Thompson S. Hans J. Clark
8/23/88	4:00 pm	Audit Team Caucus Meeting	Mercury, NV	All Team Members & Observers
8/24/88	8:30 am	Team 1 Investigate: Follow-up on Training and Certification of Personnel. Then Review Controlled Documents to Assure Instruction Procedures and Drawing are Properly Controlled. Team 2 Investigate: M&TE, then Storage of QA Level I and II NNWSI Items (12 & 13)	Mercury, NV Mono Fox Mercury, NV A. K. Fowkes	S. Dana C. Thompson S. Hans J. Clark

<u>DATE</u>	<u>TIME</u>	<u>CRITERIA & ACTIVITY</u>	<u>LOCATION</u>	<u>RESPONSIBLE AUDITORS OR ATTENDING</u>
8/24/88	4:00 pm	Audit Team Caucus Meeting	Mercury, NV	S. Hans J. Clark S. Dana C. Thompson & Observers
8/25/88	8:30 am	Team 1 Investigate: Present Procurement Practices. Assess Ability to Implement Requirements, then Review Controls on Purchased Items and Services (4 & 7)	Las Vegas D. Burnett	S. Dana C. Thompson
		Team 2 Investigate: Controls on QA Records & In-process Controls on Documents Which Will Become QA Records (17)	Las Vegas, NV M.C. Thompson	S. Hans J. Clark
8/25/88	4:00 pm	Audit Team Meeting with REECo Management	Mercury, NV	S. Hans J. Clark Observers & REECO Mgt.
8/26/88	8:30 am	Team 1 Investigate: Follow-up on Control of Purchased Items and Services. Then any other Activity Needing Follow-up (7)	Mercury, NV	S. Dana C. Thompson
		Team 2 Investigate: Cetification of Lead Auditor & Audit Schedule (18)		S. Hans J. Clark
8/26/88	11:30 am	Audit Investigation Stops and Audit Caucus Meeting Begins	Mercury, NV	S. Dana C. Thompson S. Hans J. Clark Observers
8/26/88	2:00 pm	Postaudit Conference	Las Vegas, NV SAIC Offices	Lead Auditor Team Members WMPO Mgt. REECo Mgt. SAIC Mgt. Observers

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.

QUALITY ASSURANCE PROGRAM PLAN

FOR THE

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS (NNWSI) PROJECT

APPROVED BY


GENERAL MANAGER


TECHNICAL PROJECT OFFICER


PROJECT QUALITY ASSURANCE MANAGER

Effective Date: 1/7/88

88-0445-355
324PA

Copy TO STEVEN HANS
SAIC 7-15-88

REVISION RECORD FOR THE
NMMSI PROJECT QUALITY ASSURANCE PROGRAM PLAN

<u>QAPP</u>	<u>EFFECTIVE DATE</u>
568-DOC-115, Rev. 0	
568-DOC-115, Rev. 1	
568-DOC-115, Rev. 2	
568-DOC-115, Rev. 3	10/23/85
568-DOC-115, Rev. 4	10/31/86
568-DOC-115, Rev. 5	01/07/88

Table of Contents

<u>Title</u>	<u>Page</u>
Signature Page	
Revision Record	
Table of Contents	
Introduction.	i
Policy.	ii
<u>Section</u>	
I Organization	1
1.0 General	1
2.0 QA Functions	5
3.0 Quality Assurance Program Plan.	6
4.0 Multiple Organizations	7
II Quality Assurance Program.	12
1.0 Extent of the Quality Assurance Program.	12
2.0 Application of Graded Quality Assurance.	14
3.0 Management Assessment.	18
4.0 Personnel Selection, Indoctrination, and Training Procedures	19
III Scientific Investigation Control and Design Control.	22
1.0 Scientific Investigation Control	22
2.0 Design Control	22
IV Procurement Document Control	23
1.0 Requirements	23
V Instructions, Procedures, and Drawings	27
1.0 General.	27
2.0 Reviews.	27
3.0 Instructions for Scientific Notebooks.	27
4.0 Distribution	27
VI Document Control	28
1.0 Document Preparation, Review, Approval, and Issuance . .	28
2.0 Document Changes	29
3.0 Distribution of Documents.	29

<u>Title</u>	<u>Page</u>
VII Control of Purchased Items, and Services	30
1.0 General Requirements	30
2.0 Commercial-Grade Items	37
VIII Identification and Control of Items, Samples and Data.	39
1.0 Identification	39
2.0 Control.	40
IX Control of Processes	41
1.0 General Requirements	41
2.0 Process Control.	41
X Inspection	44
1.0 General Requirements	44
2.0 Personnel.	44
3.0 Inspection Hold Points	45
4.0 Inspection Planning.	45
5.0 In-Process Inspection.	45
6.0 Final Inspection	46
7.0 In-Service Inspection.	46
8.0 Qualification Requirements	47
9.0 Records.	47
XI Test Control	48
1.0 General Discussion	48
2.0 Test Requirements.	48
3.0 Test Procedures.	48
4.0 Test Results	51
5.0 Test Records	52
XII Control of Measuring and Test Equipment.	53
1.0 General.	53
2.0 Purpose of Equipment	53
XIII Handling, Shipping, and Storage.	55
1.0- General Requirements	55
XIV Inspection, Test, and Operating Status	56
1.0 Indication of Status	56
2.0 Methods of Indicating Status	56
3.0 Application and Removal of Status Indicators	56

<u>Title</u>	<u>Page</u>
XV Control of Nonconforming Items	57
1.0 General Requirements	57
2.0 Repetitive Nonconformances	60
3.0 Unusual Occurrences.	60
4.0 Trending	61
5.0 Distribution of Documents.	61
XVI Corrective Action.	62
1.0 General.	62
2.0 Distribution of Documents.	62
XVII Quality Assurance Records.	63
1.0 General Requirements	63
2.0 Generation of Records.	64
3.0 Validation of Records.	65
4.0 Receipt of Records	65
5.0 Records Identification	66
6.0 Permanent Storage Facility	66
7.0 Preservation	67
8.0 Safekeeping.	67
9.0 Corrected Information In Records	67
10.0 Storage Facility	68
11.0 Retrieval.	70
12.0 Disposition.	70
XVIII Audits	71
1.0 General Requirements	71
2.0 Surveillances.	75
Appendix A Terms and Definitions	A-1
Appendix B Design Inputs	B-1
Appendix C Requirements for the Qualification of Inspection and Test Personnel	C-1
Appendix D Requirements for the Qualifications of Non-destructive Examination Personnel	D-1
Appendix E List of Typical QA Records	E-1
Appendix F Requirements for the Qualification of Quality Assurance Program Audit Personnel	F-1

INTRODUCTION

REECo is the prime contractor to the U.S. Department of Energy (DOE) at the Nevada Test Site (NTS) providing support for subsurface and surface construction, drilling, and mining. REECo assists in the operation and maintenance of the site facilities and provides procurement activities for the NNWSI Project when requested. The REECo Quality Assurance Program Plan (QAPP), describes the policies and methods used by REECo to conduct quality related activities in support of the NNWSI Project.

This document provides the Quality Assurance Program Plan to implement the NNWSI Project Quality Assurance (QA) Plan, NVO-196-17. It ensures that adequate quality assurance measures are applied and that records provide traceability for those activities of the NNWSI Project that are controlled directly by REECo.

The Reynolds Electrical & Engineering Co., Inc., Quality Assurance Program Plan (REECo QAPP) is issued as a controlled document. It contains a separate cover sheet, a revision record, and a table of contents. As revisions are issued, the revision record, the table of contents, and applicable portions of the QAPP will be updated and issued to all holders of the controlled document.

POLICY

REECO considers quality assurance an essential element of all of its NNWSI Project activities. The Quality Assurance program for the NNWSI Project is based upon the NNWSI Quality Assurance Plan, NVO-196-17, Rev. 5.

It is REECO's policy to apply an approach to quality assurance that recognizes the importance of radiological and nonradiological safety related operations, and that assures that activities affecting quality, safety, reliability, and maintainability during design, procurement, construction, test, storage, or other DOE-directed REECO functions are conducted in accordance with established procedures and specified requirements. This approach is designed to ensure that each activity is assigned a level of quality consistent with the relative impact and/or importance to the project and that it is implemented in accordance with that assigned level. The NNWSI Project has designed the quality system to provide three QA levels of activity: Quality Assurance Levels I, II, and III. These are defined in Section II, Quality Assurance Program.

SECTION I
ORGANIZATION
1.0 GENERAL

REECo operates as the prime support contractor to the U.S. Department of Energy's Nevada Operations Office (DOE/NV) and is under the direction of the Nevada Test Site Office (NTSO), and the Waste Management Project Office (WMPO) for logistical and functional operations at the NTS. In matters of quality policy, REECo interfaces with DOE/NV, DOE/NV WMPO, and DOE/NTSO in the establishment of a consistent quality assurance approach to the problems of the NNWSI Project activities. An organization chart indicating these interface relationships is shown in Figure 1.

Within the Company, REECo has chartered a separate entity, NNWSI Project Quality Assurance, which reports to the Technical Project Officer (TPO), to guide, direct, support as appropriate, and monitor the quality activities of the various functional organizations. Personnel assigned to REECo NNWSI Project Quality Assurance occupy full time dedicated QA positions.

The organizational structure depicting those positions responsible for the management and implementation of the REECo Quality Assurance Program and the relationships of those individuals and/or organizational elements responsible for the performance of activities affecting quality is shown in Figure 2. REECo may delegate to others the work of establishing and executing the Quality Assurance (QA) program, or any part thereof, but shall retain the responsibility therefore.

1.1 GENERAL MANAGER

The General Manager has overall responsibility for the REECo NNWSI Quality Assurance Program, furnishes program guidance and delegates responsibility and authority to the TPO for all NNWSI-related tasks.

1.2 NNWSI TECHNICAL PROJECT OFFICER

The NNWSI Technical Project Officer (TPO) reports directly to the General Manager and is the REECo representative responsible for all NNWSI Project activities. The TPO is the one point contact between REECo, the DOE, Participating Organizations and other Support Contractors on all NNWSI Project activities, and functions in the same capacity for all REECo internal organizations. The REECo TPO is responsible to the WMPO Director to ensure that the Project activities for which REECo is responsible are performed in accordance with project requirements.

1.3 NNWSI PROJECT QUALITY ASSURANCE MANAGER

The NNWSI Project QA Manager reports directly to the TPO and is responsible for the Quality Assurance Program. He supervises the activities of the NNWSI Project QA Organization and establishes standards of quality. He provides guidelines for designing and developing quality activities, assists others in implementing those activities, and audits the Project Quality Assurance Program. In addition, he maintains a Quality Assurance Reporting System, conducts special tests and certifications as necessary, represents the Company in quality interfaces with other agencies and contractors, and provides quality training and familiarization, as necessary. He provides for the performance of periodic audits, and maintains an ongoing surveillance of the achievement and maintenance of quality.

1.4 NNWSI DEPARTMENTS

All REECo departments participating in the NNWSI Project interact with each other to perform tasks identified by work order, QAL, and WBS number. All tasks are performed in accordance with NNWSI Project Administrative Procedures, this QAPP, and implementing procedures. The following departments provide matrix support for accomplishing project tasks. Their organization structure, lines of communication, authority and duties of persons and organizations performing activities which affect quality are as delineated.

Occupational Safety & Fire Protection - The manager of Occupational Safety & Fire Protection Services is responsible for the REECo Safety program as it applies to the NNWSI Project. Personnel within this department performing project activities report to their department manager who in turn reports to the TPO. As a minimum, personnel working on the NNWSI Project are responsible for non-radiological safety and the Unusual Occurrence Reporting system.

Personnel - The manager of the Personnel Department is responsible for developing and implementing training programs as required for the NNWSI Project. In addition this department is responsible for the verification of education and experience requirements of personnel performing activities on the project which affect quality. Personnel performing NNWSI Project activities report through the department manager to the TPO.

Power, Electronics & Communications - The manager of this department is responsible, as a minimum, for the requisitioning, inspection, installation, and maintenance of power and communications requirements for the NNWSI Project. Personnel within this department performing assigned NNWSI activities report to the department manager who in turn reports directly to the TPO on NNWSI Project activities.

Supply & Property Management - The manager of Supply and Property is, as a minimum, responsible for operating and maintaining warehousing functions, i.e., receiving, handling, storage, and issuance of items for the NNWSI Project. Personnel performing these activities report to the department manager who in turn reports to the TPO.

Procurement - The manager of the Procurement Department is, as a minimum, responsible for all procurement activities pertaining to the NNWSI Project and performed for REECO, NTS Contractors, and the DOE/WMPO. Personnel performing these activities as outlined in the Buyers Handbook, FAR, DEAR, and other governmental requirements documents for the NNWSI Project report to the department manager who in turn reports to the TPO.

Contracts Administration - The department manager is responsible for the administration of subcontracts for the NNWSI Project. Department personnel performing these activities report to the department manager who in turn reports to the TPO.

Information Systems - The manager is responsible to the TPO for administration of the records management system for the NNWSI Project. Department personnel performing the review, indexing, storage, and other required tasks for the maintenance, storage, and retrievability of project records report to the department manager who in turn reports to the TPO.

Physical Standards Laboratory (PSL) - The manager of the Quality Assurance Division (QAD) is responsible for activities and administration of the Physical Standards Laboratory. For performance of PSL activities pertaining to the NNWSI Project he reports to the TPO. PSL personnel performing calibration of physical standards, i.e., MASS, flow, temperature, etc., for project participants report to the Section Chief in charge of the PSL who in turn reports to the division manager.

Weld Laboratory - The manager of the Quality Assurance Division (QAD) is responsible for NNWSI Project activities performed by the Weld Laboratory and in these matters reports to the TPO. Such activities as qualification testing and certification of NTS welders are performed by Weld Laboratory personnel who report to the responsible Section Chief within the QAD who reports to the division manager.

FOD/DOD - The department manager is responsible for supporting, as a minimum, NNWSI Project activities in G-Tunnel, i.e., prototype testing, and maintenance of the Climax facility. Personnel performing NNWSI Project activities report to the department manager who in turn reports to the TPO.

FOD/Drilling - The department manager is responsible for supporting, as a minimum, NNWSI Project drilling program requirements as defined by the WMPO. Personnel performing NNWSI drilling activities report to the department manager who in turn reports to the TPO.

Operations Equipment - The department manager is responsible for NNWSI Project activities performed by the department. As a minimum, Operations Equipment specifies, procures, and maintains major equipment used on the project. Repair, electrical, and machine shop capabilities are available to support Project requirements. Personnel performing such activities report to the department manager who in turn reports to the TPO.

Environmental Sciences (ES) - The department manager is responsible for the administration of an Industrial Hygiene Program for the NNWSI Project. A manager of Industrial Hygiene reports to the ES Manager. Personnel performing department activities of Industrial Hygiene report to the department manager. The ES Department Manager reports to the TPO for NNWSI Project activities.

General Notes:

1. The above listed department managers respond administratively to their respective Division Manager. For NNWSI Project activities these division managers report to the TPO providing their divisional matrixed support as required.
2. In all QA matters pertaining to the NNWSI Project, all REECo personnel have direct access to the Project Quality Assurance Manager.

1.5 DEDICATED POSITIONS

The following NNWSI Project functions are performed by dedicated personnel reporting directly to the TPO:

- ° Project Quality Assurance (described in QAPP).
- ° Exploratory Shaft Facility (ESF) - responsible for support of ESF activities as defined by the WMPO.

1.6 PROJECT PARTICIPANTS

REECo interfaces with the project organizations listed below in the manner delineated, as a minimum, and depicted organizationally in Figure 1.

Lawrence Livermore National Laboratory (LLNL) - REECo supports LLNL in the Spent Fuel Test-Climax demonstration experiments, and future requirements as made evident by project requirements. This includes the transportation and maintenance of Casks and the Climax facility.

Los Alamos National Laboratory (LANL) - REECo supports LANL who is acting as lead technical organization for the Exploratory Shaft. This includes the review of study plans and supplying expertise in the area of shaft construction, drilling, and mining.

Sandia National Laboratories (SNL) - REECo provides G-Tunnel support to Sandia for performance of their responsibilities in the area of prototype testing, thermal and mechanical properties of host rock, and in other areas as made evident by project requirements. REECo support consists of providing the mining support of men and equipment for accomplishing Sandia's assigned tasks.

United States Geological Survey (USGS) REECO provides drilling support to the USGS for site characterization of geology, hydrology, tectonism, volcanism, and seismicity. Additional activities performed for the USGS are procurement, transportation of core, and maintenance of facilities.

EG&G, Incorporated - REECO interface with EG&G on the NNWSI Project by utilizing EG&G calibration services for electronic test and measuring equipment.

Science Application International Corporation (SAIC) - REECO interfaces with SAIC in the areas of quality assurance, records management, exploratory shaft facility, and other technical and management support services, as required, and for which SAIC is responsible to the WMPO.

Fenix and Scisson, Inc. (F&S) - REECO interfaces with F&S, the architect-engineer (A-E) for drilling and mining for the NNWSI Project by providing, as a minimum, procurement, calibration, and drilling program support.

Holmes and Narver, Inc. (H&N) - REECO interfaces with H&N, the architect-engineer (A-E) for above ground facilities for the NNWSI Project by providing, as a minimum, procurement and calibration services. In addition, REECO will provide samples to the H&N Materials Testing Laboratory and obtain H&N services for the radiographic inspection of weldments.

Waste Management Project Office (WMPO) - This office is the Department of Energy (DOE) is responsible for management and direction of all programmatic activities. REECO interfaces with the WMPO to provide subsurface and surface construction, mining, and drilling support services. For the NNWSI Project REECO assists in the operation and maintenance of the site facilities and provides procurement and logistical services as requested.

2.0 QA FUNCTIONS

The QA functions are those of assuring that an appropriate QA program is established and executed effectively and of verifying, such as by checking, auditing, surveillance and inspection, that activities that affect the quality functions have been performed correctly. The persons and organizations performing QA functions shall have sufficient authority, access to work areas, and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions through designated channels; to verify implementation of the solutions through designated channels; to verify implementation of the solutions; and to assure that further processing, delivery, installation, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred. This includes the ability to stop (or cause to be stopped) unsatisfactory work through established channels. Such persons or organizations shall have direct access to responsible management at a level where appropriate action can be effected and shall report to a management level at which this required authority and organizational freedom are provided, including sufficient independence from cost and schedule.

2.1 DEDICATED QA POSITIONS

Full-time dedicated QA positions have been established by REECO. The person responsible for directing and managing the overall QA program is identified and has appropriate organizational position, responsibilities, and authority to exercise proper control over the QA program. These positions are occupied by individuals with appropriate management and QA knowledge and experience. They shall be at the same or higher organization level as the highest line manager responsible for performing activities affecting quality and sufficiently independent from cost and schedule. Personnel in these positions have responsibility for approval of (1) QAPPs, changes thereto, and interpretations thereof and (2) implementing procedures and all changes thereto. This position has effective communication channels with other senior management positions. Personnel in these positions shall have the responsibility and authority to verify the adequacy and effectiveness of QA plans, requirements, and QA program implementation by REECO and its subordinate organizations. These personnel shall not be assigned duties that would prevent full attention to QA responsibilities or that would conflict with the reporting and resolution of QA issues and problems.

2.2 AUTHORITY

Authority for the resolution of disputes involving quality arising from a difference of opinion between QA personnel and others shall be identified. This authority shall include the ability of QA personnel to elevate the resolution of disputes to progressively higher organization levels through established channels including the WMPO PQM, if the dispute cannot be resolved within the organization. Within REECO access to the Project QA Manager and the TPO is provided. The WMPO PQM may be utilized to resolve disputes between participants.

2.3 ORGANIZATIONAL STRUCTURE

Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location or locations at which the activities are to be performed, the organizational structure for executing the QA program may take various forms provided that the persons and organizations assigned the QA functions have the required authority and organizational freedom.

3.0 QUALITY ASSURANCE PROGRAM PLAN

This Quality Assurance Program Plan (QAPP) shall apply to all items and activities of REECO affecting quality. The organizational structure and the responsibility of assignments shall be clearly established such that certain results, as described below, are obtained.

3.1 ACHIEVEMENT AND MAINTENANCE OF QUALITY

Quality is achieved and maintained by those who have been assigned responsibility for performing work.

3.2 VERIFICATION

Quality achievement is verified by persons or organizations not directly responsible for performing the work. Verification of conformance to established requirements (acceptance) is accomplished by individuals or groups within the QA organization unless specifically exempted elsewhere in this document.

4.0 MULTIPLE ORGANIZATIONS

If more than one organization is involved in the execution of activities affecting quality, then the responsibility and authority of each organization shall be established clearly and documented.

4.1 DOCUMENTATION OF INTERFACES

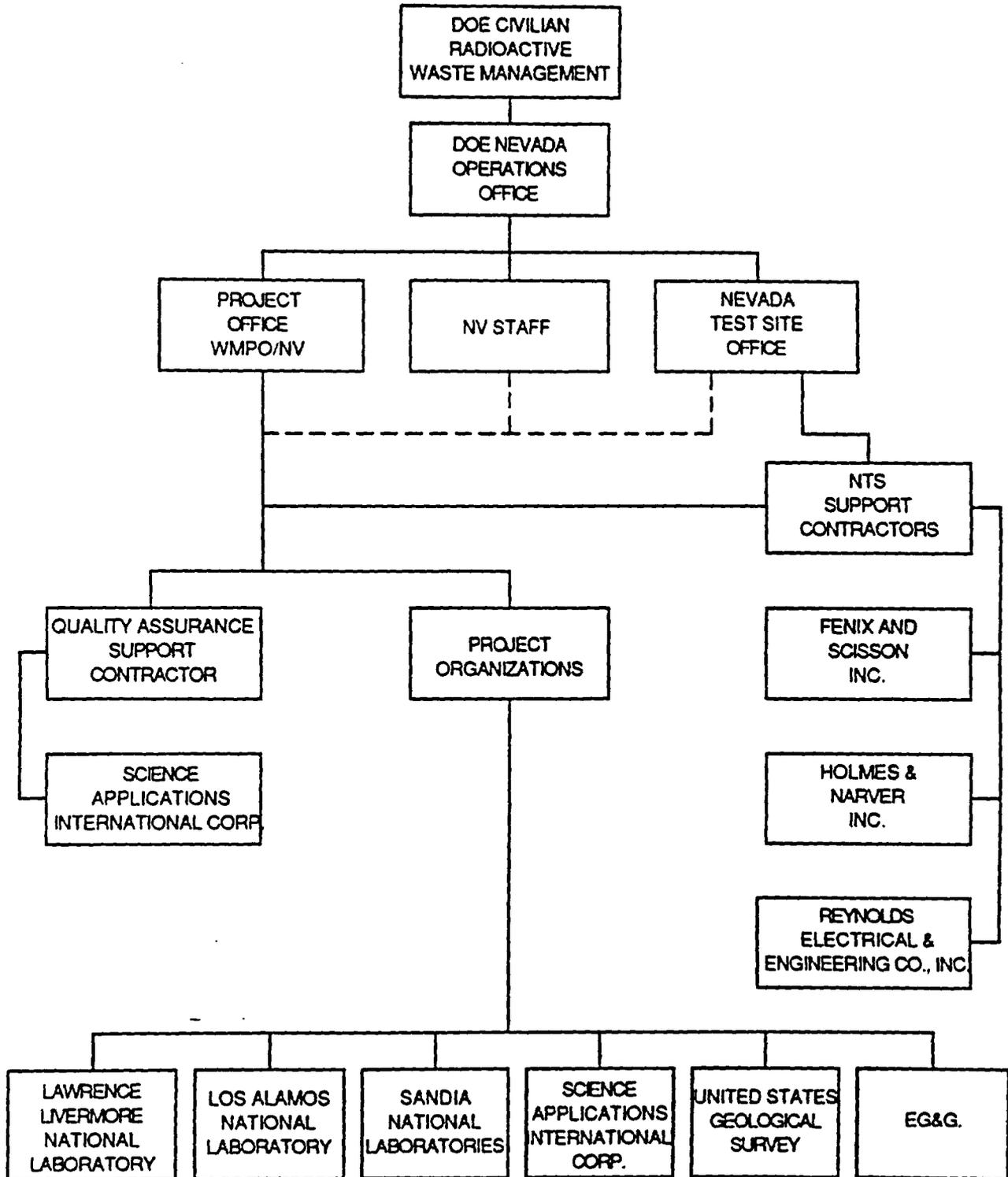
The external interfaces between organizations and the internal interfaces between organizational units and changes thereto shall be documented. All interface responsibilities shall be defined and documented. Interfaces between the WMPO, the Participating Organizations, and the NTS Support Contractors shall be described in this QAPP. (See Figure 1) From an overall NNWSI Project standpoint, these interfaces are exchanges of technical requirements of work to be performed and liaison until completion of work. The NNWSI Project Administrative Procedures (APs) provide the implementing interface controls utilized by all of the NNWSI Project participants while REECos implementing procedures describe the methods of conducting inter-organization interfaces.

The organizational structure for executing the QA program is described in this QAPP. The Technical Project Officer of REECO is responsible to the WMPO Director to ensure that the Project activities for which he is responsible are performed to this QAPP and implementing procedures that are consistent with it.

FIGURE 1

NNWSI PROJECT ORGANIZATION

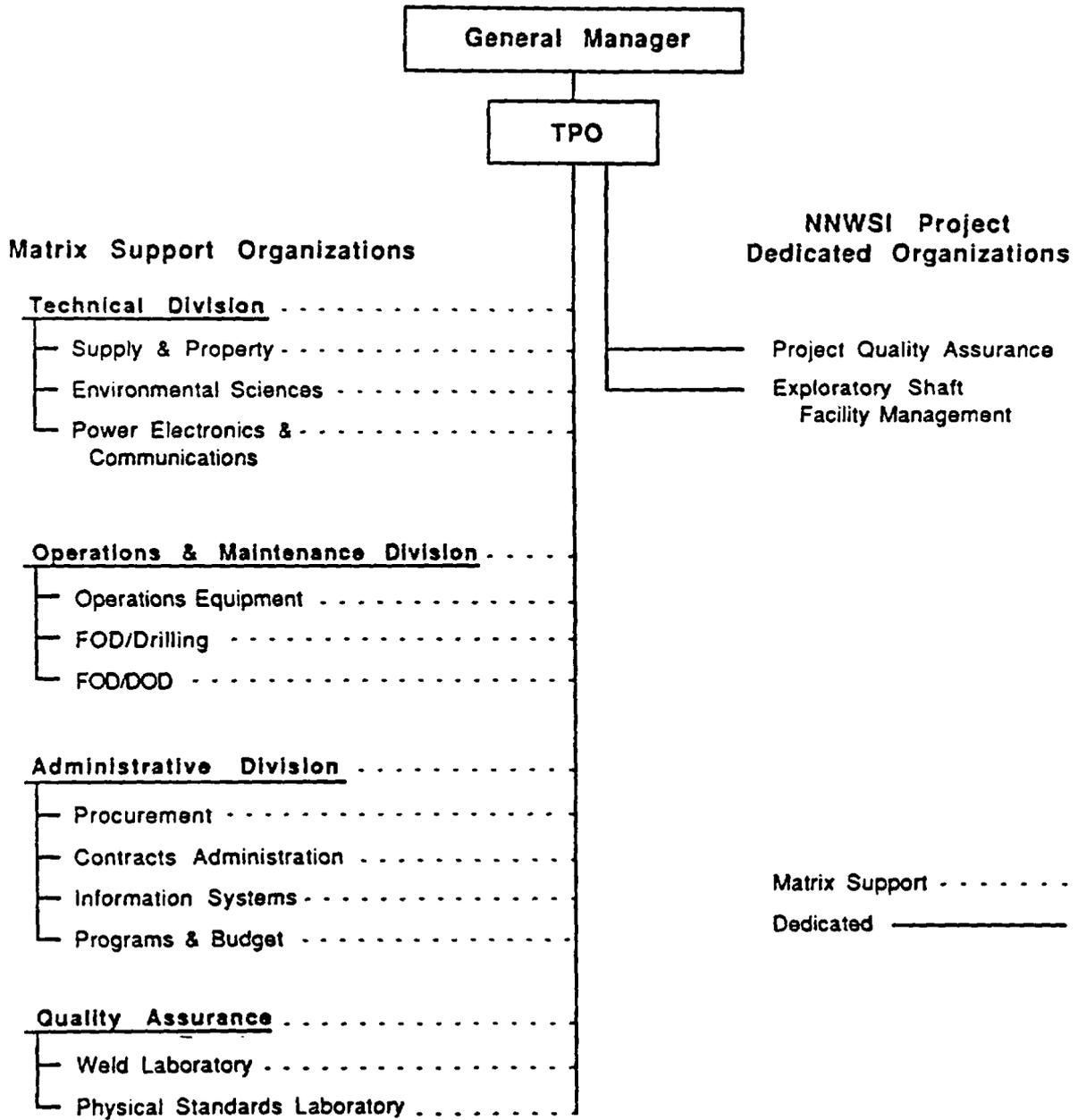
568-DOC-115
REVISION 5



————— DOE/NV Project Participant - Administrative Responsibility, Authority, & Accountability
- - - - - DOE/NV Matrix - Functional Responsibility & Accountability

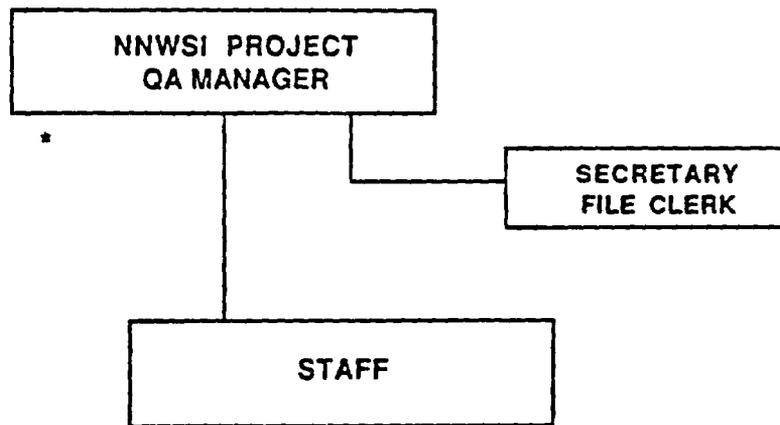
FIGURE 2

REECo ORGANIZATIONAL STRUCTURE NNWSI PROJECT



**QUALITY ASSURANCE ORGANIZATIONAL STRUCTURE
FOR
NEVADA NUCLEAR WASTE STORAGE
INVESTIGATIONS (NNWSI) PROJECT**

FIGURE 3



* Project Quality Assurance is presently staffed by the QA Manager and (1) Sr. Engineer. (2 FTEs)

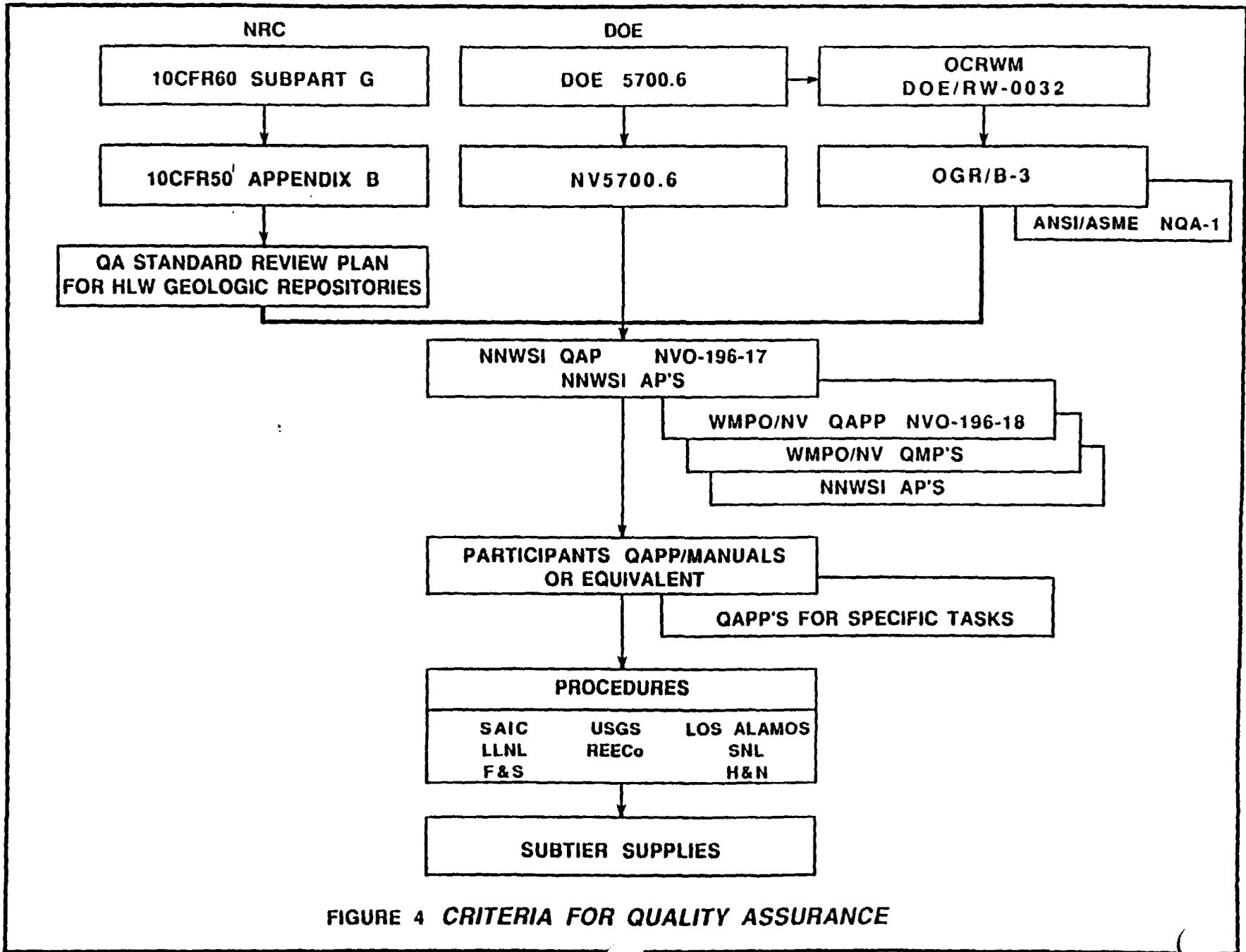


FIGURE 4 CRITERIA FOR QUALITY ASSURANCE

SECTION II QUALITY ASSURANCE PROGRAM

1.0 EXTENT OF THE QUALITY ASSURANCE PROGRAM

REECo has developed this Quality Assurance Program Plan which provides the description of the QA program and indicates the commitment to the applicable NNWSI Project QA requirements. The QAPP includes consideration of the technical aspects of the activities affecting quality and is generated by the QA organization with assistance from the technical staff. The QAPP provides instruction to implement and apply the QA requirements to the technical activities of the NNWSI Project. It is planned, implemented, and maintained in accordance with NVO 196-17 and is consistent with and addresses all of the applicable requirements.

The hierarchy of criteria applicable to the Project are shown in Figure 4 of the Organization Section of this document. Where deviations between the requirements of the documents referenced in that Figure and this QAPP exist, the requirements of NVO-196-17 shall prevail.

All quality-related activities conducted by REECo shall be performed in accordance with this document and the implementing procedures (NQPs).

The QA requirements of this document are binding to REECo personnel, and methods are herein incorporated to pass the appropriate QA requirements to subtier contractors. This program is required to be reviewed and approved by WMPO, and all changes (other than editorial) must be subject to the same level of review and approval as the original program.

1.1 QA CRITERIA

The QA Criteria and specific requirements associated with these criteria have been adapted to the NNWSI Project activities through this QAPP. When a specific criteria is not applicable to REECo's activities, it is noted in this QAPP and recorded on the checklist required in paragraph 1.2 below with justification for its exception.

1.2 CONTENTS OF THE QAPP

The Quality Assurance Program of Reynolds Electrical & Engineering Co., Inc. (REECo) consists of the QAPP plus appropriate implementing procedures required to provide and implement control over activities affecting quality. The control shall be consistent with the importance of the activity. These procedures shall be developed by qualified personnel and be reviewed and approved by the cognizant QA organization prior to implementation to assure that they meet all the requirements of this QAPP.

This QAPP shall be submitted to the WMPO for review and approval prior to implementation and shall include a checklist based on NVO-196-17 which identifies how and where each requirement of this document is addressed. This QAPP shall be reviewed, comments resolved, and the document approved by the WMPO prior to implementation.

1.3 QAPP VERIFICATION

Assurance that the QA requirements have been adequately addressed and effectively implemented will be provided by the WMPO with support from the Quality Assurance Support Contractor (QASC) during the review and approval of this QAPP, monitoring and surveillance operations, and audits of activities. REECo's management shall also monitor their respective QAPPs through internal audits to assess the adequacy of their program and assure its effective implementation.

1.4 USE OF DATA NOT GENERATED UNDER QA CONTROLS

The QA program for the NNWSI Project provides for the acceptance of primary data or primary data interpretations for use in licensing activities that were not generated under the controls of the NNWSI Project QA Plan (QAP). Specific methods for acceptance of this information are contained in the NNWSI Project Administrative Procedures Manual.

1.5 APPROACH TO QA

The NNWSI Project uses an approach to QA that recognizes the differences between items and activities that affect radiological health and safety and those that do not. The approach is designed to ensure that each item or activity is assigned a QA level that is consistent with its potential impact or importance, or both, in terms of radiological health and safety, waste isolation, nonradiological health and safety, the U.S. Nuclear Regulatory Commission (NRC) licensing process, the operability and maintainability of the repository, costs, and schedules. The Participating Organizations or WMPO shall identify the appropriate quality assurance levels for all items and activities that affect quality associated with site characterization, facility and equipment construction, facility operations, performance confirmation, permanent closure, and decontamination and dismantling of surface facilities. Once assigned, the QA level for a particular item or activity shall be applied by all NNWSI Project participants involved in the activity.

1.6 APPLICATION OF QA

REECO has established this QAPP to comply with the requirements of NVO-196-17. This QAPP assures that procedures required to implement the requirements of this document are properly documented, controlled, and mandated through a policy statement or equivalent document signed by a responsible official. This QAPP shall be applied throughout the life of the NNWSI Project in accordance with the established policies, procedures, and instructions. This QAPP applies to all items and activities affecting quality. It also shall identify the major organizations participating in the project and the designated functions of these organizations. This QAPP provides control over activities that affect the quality of the identified structures, systems, and components to an extent consistent with their importance. The activities that affect quality shall be accomplished under suitably controlled conditions. Controlled conditions include the use of appropriate equipment, suitable environmental conditions for accomplishing the activity, and assurance that all prerequisites for the given activity have been satisfied. The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection, test, peer review, or a combination of these. The program shall provide for indoctrination and, as necessary, training of personnel performing activities that affect quality to assure that suitable proficiency is achieved and maintained.

2.0 APPLICATION OF GRADED QUALITY ASSURANCE

2.1 SCOPE

2.1.1 EXTENT OF APPLICATION

The requirements of this section are applicable (as defined herein) to all items and activities that affect quality during geologic repository site characterization, facility and equipment design, procurement and construction, facility operation, performance confirmation, permanent closure, decommissioning, and dismantling of surface facilities. REECO will follow the WMPO administrative procedure for the application of graded QA (assignment of QA Levels).

2.1.2 PURPOSE OF A GRADED QA PROGRAM

The purpose of a graded QA program is to select the QA requirements and measures to be applied to items and activities in the Repository Program consistent with their importance to safety, waste isolation, and the achievement of U.S. Department of Energy (DOE) mission objectives. This will be accomplished by deliberate quality planning and selective application of QA requirements on the item or activity to be performed, with varying degrees of QA applied depending on item function, complexity, consequence of failure, reliability, replicability of results, and economic considerations.

2.1.3 DETERMINATION OF THE DEGREE TO WHICH APPLICATION IS NECESSARY

This approach involves (1) identifying those items and activities whose failure could cause undue risks to the public and facility personnel or extended interruption of facility operation with critical economic losses, or both, and (2) ensuring that these items and activities are covered by a commensurate QA program. Alternatively, an item whose failure or malfunction could result only in operational inconvenience or negligible economic loss may deserve only a quality inspection by the purchaser upon the delivery of the item. Between these two extremes, there are varying degrees of QA to achieve the desired confidence in the quality of the completed line of activity.

2.1.4 FLEXIBILITY OF QA LEVEL SELECTION

The graded approach set forth here provides flexibility in the selection of the level of the quality assurance to be applied to an item or activity that is commensurate with the relative importance of the role or function assigned to the item or activity.

2.2 REQUIREMENTS

The requirements specified in this section are to be used to apply the graded quality philosophy to all NNWSI Project items and activities.

2.2.1 SELECTION OF QUALITY ASSURANCE LEVEL AND QA REQUIREMENTS

The appropriate Quality Assurance Level for any item or activity shall be determined by the application of decision criteria as provided by the NNWSI Project Administrative Procedures. The basis for the selection of the Quality Assurance Level and assigned QA requirements shall be documented. The assigned Quality Assurance Levels and QA requirements must be submitted to the WMPO for review, resolution of comments, and approval prior to implementation or use.

2.2.2 SELECTION OF SPECIFIC QA LEVELS

This approach incorporates three quality assurance levels (QA level) of which one will be assigned to each technical task that effect the quality of the NNWSI Project. The definition, application, and assignment to each of the three QA levels are described in the following discussion.

2.2.2.1 QA Level I - are those 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 until the completion of the permanent closure of the 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 inhibit 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.

2.2.2.2 QA Level II - are those activities and items related to the systems, structures, and components which require a level of quality assurance sufficient to provide for reliability, maintainability, public and repository worker nonradiological health and safety, repository worker radiological health and safety and other operational factors that would have an impact on DOE and WMPO concerns, and the environment.

2.2.2.3 QA Level III - are those activities and items not classified as QA Levels I or II.

2.2.3 APPLICATION OF LEVELS

2.2.3.1 QA LEVEL I

QA level I is the most stringent level of quality assurance. It is to be applied to those items and activities that may affect the ability of the repository to meet the preclosure and postclosure performance objectives specified by the NRC and the U.S. Environmental Protection Agency (EPA) for protecting public health and safety from radiological hazards. QA Level I activities which are on the Q-List will provide the primary data input to the basis for the NRC to authorize construction and to issue a license for the DOE to receive and possess source, special nuclear, and byproduct material (waste) at the geologic repository. QA Level I control and documentation must be applied to activities, including data collection, investigation, analysis, design, construction, fabrication, operation, decommissioning, or sealing when they are specifically concerned with the protection of the public's health and safety with respect to a radiological hazard. To keep radionuclides out of man's environment, a high level radioactive waste repository will utilize engineered systems, structures, and components to contain the waste and ensure the short-term safety. The repository also will utilize the natural barriers to afford long-term isolation. Within this context, QA Level I must be applied for near-term safety as well as long term isolation as per the following:

- ° Where items and activities that could affect the preclosure radiological health and safety of the general public. Specifically, this means items and activities that could cause, or result in, 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 permanent closure of the repository.

- ° Where items and activities that will provide site-characterization data. Site-characterization data are the field and laboratory data and subsequent analyses that provide the basis for determining and demonstrating that the natural and the engineered systems of the repository are capable of providing long-term waste containment and isolation. This includes all tests, experiments, and research which have a significant impact to site-characterization or are an essential part of the data base that directly support the final design of the repository and waste package as well as the assessment of repository and performance. It also includes those activities (e.g., tests, experiments, and research) that are one of several independent activities contributing to a single base of information that is considered in formulating the repository design or performance assessment of the engineered or natural barriers.
- ° Where items and activities that could affect the retrievability of waste up to the time of repository closure.
- ° Where activities are intended is to provide the primary data which will be utilized to support public radiologic health and safety issues for a license application.
- ° Where items and activities that, having failed, could cause a failure of a QA Level I item, or irretrievable loss of QA Level I data.
- ° The design phase which is conducted immediately prior to application for an NRC license, procurement, or construction shall be assigned a QA Level of I prior to execution. One of the purposes of this design phase shall be to define in detail those items which are to be procured and/or constructed as a result of the design. As the design phase proceeds, each item shall be assigned a QA Level (I, II or III as applicable). Once the QA level for the item is approved, design activities associated with the item shall be governed by the QA level assigned to the item.

2.2.3.2 QA LEVEL II

QA Level II is the second highest level of quality assurance. QA Level II controls and documentation shall be applied to the NNWSI Project activities, and items that are specifically concerned with nonradiological operation of the exploratory shaft facilities and repository, and the radiological safety of the repository worker. The high-level waste (HLW) repository will utilize engineered systems, structures, and components which must be designed, constructed, fabricated, tested, and operated to meet the performance objectives during the operational phase and to minimize the nonradiological hazard to the public and repository worker and the radiological hazard to the repository worker. Additionally, activities that have a major impact on project costs or schedules that could delay the achievement of DOE/Office of Geologic Repositories (OGR) milestones must be appropriately controlled. Therefore, Quality Assurance Level II must be applied to activities and items as follows:

- ° Where items and activities that are essential to the design, construction, and operation of the repository or of the exploratory shaft facility, and could have a major impact on the nonradiological health and safety of the public and repository worker.
- ° Where items and activities which having failed or which are performed inadequately would cause repository workers to be exposed to radiation or radioactive contamination levels in excess of the limits expressed in 10CFR20.
- ° Where items and activities that involve the nonradiological operational reliability and maintainability of engineered systems, structures, or components.
- ° The design phases which involve the comparative technical analysis of alternative/methods/equipment to determine which alternative/method/equipment is preferred, shall be assigned a QA level of II prior to execution. Where a particular item can be identified during this phase and warrants a different QA level assignment (other than II), then a separate QA level assignment may be made for that item. Once the QA level is approved, design activities associated with the items a result of activities controlled in accordance with QA level II or III programs, or activities performed prior to the complete implementation of the NNWSI Project Quality Assurance Plan may be used in the licensing process as background or corroborative information.

2.2.4 GENERAL

The requirements contained in this document apply to Quality Assurance Levels I and II items and activities unless otherwise noted herein. The requirements imposed for QA Level III items and activities are those managerial, administrative, scientific, engineering, commercial, and laboratory practices that are commonly used by the organizations participating in the NNWSI Project. Deviations within applicable criteria are permissible for Level II items and activities provided that adequate justification has been documented and approved by the WMPO.

3.0 MANAGEMENT ASSESSMENT

3.1 FREQUENCY OF MANAGEMENT ASSESSMENTS

Management assessment is to be conducted at least annually for determining (1) the effectiveness of the system and management controls that are established to achieve and assure quality, and (2) the adequacy of resources and personnel provided to the QA program. Management is to verify that the QA program is being effectively implemented and that personnel are trained to the QA requirements of the program.

3.2 PERFORMANCE OF MANAGEMENT ASSESSMENT

Management assessment is to be performed by REECO. REECO shall develop its internal procedures for planning, organizing, performing, and documenting the management assessment conducted, including the analysis and reporting of the results and the tracking of recommendations. Copies of each management assessment is to be provided to the Director, WMPO and the WMPO PQM.

4.0 PERSONNEL SELECTION, INDOCTRINATION, AND TRAINING PROCEDURES

4.1 ESTABLISHMENT OF REQUIREMENTS

REECO shall establish requirements for the selection, indoctrination, and training of personnel performing or verifying activities that affect quality. The requirements shall establish position descriptions that set forth minimum personnel qualifications and provide for appropriate indoctrination or training or both, prior to initiation of activities that affect quality. In addition to the following requirements for indoctrination and training, personnel performing activities that specifically require certification by applicable codes and standards (e.g., lead auditors, inspectors, testers, nondestructive examiners, etc.) shall be certified in accordance with the detailed requirements specified elsewhere in this document.

4.1.1 POSITION DESCRIPTION

Minimum education and experience requirements shall be established and documented in position descriptions for each position involved in the performance of activities that affect quality.

4.1.2 PERSONNEL QUALIFICATION EVALUATION

Personnel selected shall have education and experience commensurate with the minimum requirements specified in the position description. Relevant education and experience shall be verified. This verification shall be documented. The initial capabilities of an individual shall be based upon an evaluation of their education, experience, and training and compared to those established for the position. Evaluations shall be documented by managers or supervisors responsible for the activities to be performed.

4.1.3 INDOCTRINATION

Prior to assigning personnel to perform activities affecting quality, they shall be indoctrinated as to the purpose, scope, methods of implementation, and applicability of the following documents, as a minimum, as they relate to the work to be accomplished. Indoctrination may be accomplished by the use of a mandatory reading list, by group classroom presentations, by video presentation, or other instructional methods.

- QAPP's
- Implementing Procedures and Work Instructions (applicable to the individual's responsibilities).
- Regulations
- Project level documents

4.1.4 TRAINING

Prior to assigning personnel to perform quality affecting activities that are complex in nature (i.e., assignments where it is deemed necessary to develop and demonstrate initial proficiency), training shall be conducted to gain the required proficiency. The training (in-depth instruction) shall include the principles, techniques, and requirements of the activity. Such in-depth instruction may be internal or external classroom sessions, classroom sessions supplemented by hands-on workshops, on-the-job training, other instructional methods, or combinations thereof.

4.1.5 PROFICIENCY EVALUATION

After the initial personnel qualification evaluation, the job proficiency of personnel who perform activities affecting quality shall be evaluated and documented at least annually. Proficiency evaluations may be performed in conjunction with periodic or day-to-day employee performance evaluations. Proficiency evaluations shall be performed by managers or supervisors who have responsibility for the activities being performed or verified.

4.1.6 RECORDS

Records of personnel qualification evaluations, indoctrination, training, and proficiency evaluations shall be retained as lifetime QA records. These records shall include, as a minimum, the items listed below.

4.1.6.1 PERSONNEL QUALIFICATION EVALUATION RECORDS

Records of the verification and evaluation of a candidate's education, experience, and training, compared to those required for the position.

4.1.6.2 INDOCTRINATION RECORDS

Records of indoctrination which include the objective and content of the indoctrination, date or dates of indoctrination, and other applicable information.

4.1.6.3 TRAINING RECORDS

Records of training which include the objective(s) and content of the training, name of the instructor, attendees, dates of attendance, and result of proficiency evaluations (where applicable), and other applicable information.

4.1.6.4 PROFICIENCY EVALUATION RECORDS

Records of proficiency evaluation shall include, as a minimum, the name of the evaluated employee, the evaluator, evaluation results, date of evaluation, and the activities covered by the evaluation.

SECTION III

SCIENTIFIC INVESTIGATION CONTROL AND DESIGN CONTROL

1.0 SCIENTIFIC INVESTIGATION CONTROL

1.1 PREPARATION OF PLANS

REECO has no responsibility in the preparation of study plans. REECO shall participate in the technical review of study plans when requested to do so by the WMPO or other participating organization. This review shall be conducted by a technically qualified individual. The results of the technical review shall be documented along with the resolution of any comments by the reviewer(s). This documentation shall be considered a QA record.

2.0 DESIGN CONTROL

2.1 As the primary support contractor at the NTS REECO has no specifically designated responsibility for design in the NNWSI Project nor Work Breakdown Structure (WBS) accountability. Should REECO be assigned responsibility in this area, the requirements of NVO-196-17 will be developed, approved by the WMPO, and included as a part of this QAPP.

SECTION IV

PROCUREMENT DOCUMENT CONTROL

1.0 REQUIREMENTS

1.1 GENERAL

Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents used by REECo for the procurement of items and services, to the extent consistent with the importance, criticality, or complexity of the procurement action. These requirements which include approved vendors, source inspection hold points, and receiving inspection will either be provided by the Participating Organization or A-E contractor initiating the request for a procurement action or will be included by the appropriate REECo internal group in the case of a REECo-initiated action. Actual procurement activities for which REECo has responsibilities will be accomplished by the Procurement Department. To the extent necessary, REECo procurement documents require sub-tier contractors to provide a QA program that is consistent with this QAPP.

The WMPO, Participating Organization, NTS Support Contractor, or REECo internal organization initiating the basic documents from which a procurement action is generated shall ensure that adequate information is provided to be able to include applicable regulatory requirements, design bases, and other requirements in the procurement documents to assure that adequate technical and quality assurance requirements are included or referenced. The Procurement Department shall include such applicable requirements for which adequate information has been provided into the appropriate procurement documents.

Although REECo will support and act as the one point contact for all actions concerning procurements for which REECo has responsibility, activities such as vendor survey for qualification, vendor audit for adequacy of performance, or vendor in-plant inspection will be performed by the Participating Organization, NTS Support Contractor, REECo internal organization, or REECo Project Quality Assurance as may have been designated basic responsibility for the action by the WMPO or DOE/NTSO.

1.2 ADDITIONAL REQUIREMENTS FOR QA LEVEL I ACTIVITIES

1.2.1 All procurement actions identified as QA Level I by participating organizations and/or A-E contractors will include provisions for the following as deemed necessary.

1.2.1.1 SCOPE OF WORK

A statement of the scope of work to be performed by the supplier.

1.2.1.2 TECHNICAL REQUIREMENTS

Where necessary, these requirements shall be specified by reference to specific drawings, specifications, codes, standards, regulations, procedures, or instructions, including revisions thereto, that describe the items or services to be furnished. The procurement documents shall provide for identification of test, inspection, and acceptance requirements of the purchaser for monitoring and evaluating the supplier's performance to the extent specified by the Participating Organization, NTS Support Contractor, or REECo internal organization originating the procurement action.

1.2.1.3 QA PROGRAM REQUIREMENTS

Procurement documents shall require that the supplier have a documented QA program that implements applicable portions of this QAPP. The extent of the program required shall depend upon the type and use of the item or service being procured and the direction of the initiating organization. The procurement documents shall require the supplier to incorporate appropriate QA program requirements in subtier procurement documents.

The QAPP and documents of subcontractors for QA Level I purchases shall be reviewed and approved by REECo Project Quality Assurance. Those which do not adequately define QA requirements shall be corrected prior to initiation of activities specified by the purchase order or contract. The extent of the programs required depends upon the type and use of the items or service being procured.

In developing QA requirements for test and other equipment, consideration should be given to whether proper performance of that equipment can be determined during or after its use (i.e. whether failure or malfunction of the equipment can be detected).

1.2.1.4 RIGHTS OF ACCESS

At each tier of procurement, the procurement documents shall provide for access to the suppliers' facilities and records for inspection by the purchaser, appropriate WMPO personnel, or other WMPO authorized representatives, including representatives of the organization initiating the need for a procurement action. WMPO access to subtier contractor facilities shall be arranged by REECo.

1.2.1.5 DOCUMENTATION REQUIREMENTS

The procurement documents at all tiers shall identify the documentation required to be submitted to the purchaser. The time of submittal shall also be established. If the purchaser requires the supplier to maintain specific QA records, then the retention times and disposition requirements shall be specified in accordance with Section XVII.

1.2.1.6 NONCONFORMANCE

The procurement documents shall prescribe the requirements for reporting and approving disposition of nonconformances to the extent specified in the documents provided to REECO by the WMPO, Participating Organization, NTS Support Contractor, or REECO internal organization upon which the procurement action is based.

1.2.1.7 SPARE AND REPLACEMENT PARTS

The procurement documents shall require the identification of appropriate spare and replacement parts or assemblies and the appropriate delineation of the technical and quality related data that are required for ordering these parts or assemblies. The technical and quality requirements shall be equal to or better than the original. If QA or technical requirements of the original item cannot be determined then a documented engineering evaluation shall be conducted by qualified individuals to establish the requirements. This evaluation shall consider the interchangeability, function, and safety of the item. This evaluation shall be documented.

1.2.2 PROCUREMENT DOCUMENT REVIEW

A review of the procurement documents and changes thereto shall be made by the cognizant technical organization and Project Quality Assurance (PQA) to assure that documents transmitted to the prospective supplier(s) include appropriate provisions to assure that items or services will meet the specified requirements; and this review shall be performed and documented prior to contract award. All such reviews for REECO-responsible procurement actions identified as QA Level I will be processed through the organization originating the need for the procurement action (Participating Organization, NTS Support Contractor, etc.), and Project Quality Assurance, as a minimum. Procurement document reviews within REECO shall be performed by personnel who have access to pertinent information and who have adequate understanding of the requirements and intent of the procurement documents.

As a minimum, the review by REECO Project Quality Assurance shall be performed to determine that QA requirements are correctly stated, inspectable, and controllable; that there are adequate acceptance and rejection criteria; and that the procurement documents have been prepared, reviewed, and approved in accordance with this document.

1.2.3 - PROCUREMENT DOCUMENT CHANGES

Changes to procurement documents shall be subject to the same degree of control as utilized in the preparation of the original documents. Changes that are made as a result of the bid evaluation of precontract negotiations shall be incorporated into the procurement documents and shall be approved by the same organizations that approved the original action.

The review of such changes and their effects shall be completed and documented prior to contract award. Review of changes shall include the considerations that appropriate content has been included in the procurement documents; that additional or modified design or site investigation criteria has been determined; and that analysis of exceptions or changes requested or specified by the supplier and determination of the effects such changes may have on the intent of the procurement documents or quality of the item or service to be furnished have been performed by the organization initiating the need for the procurement action.

1.2.4 DISTRIBUTION OF PROCUREMENT DOCUMENTS

REECO Procurement Department shall forward a copy of all purchase orders and changes thereto, as issued, to the WMPO QA (QASC - Audits and Surveillance Branch Manager) for purchases for which REECO has responsibility and which involve Quality Assurance Level I items or service. Only those purchase documents which identify the vendor, describe the scope of work, and detail when work is to start are required to be submitted.

SECTION V
INSTRUCTIONS, PROCEDURES, AND DRAWINGS

1.0 GENERAL

Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, plans or drawings, of a type appropriate to the circumstances. These documents shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished. Instructions, procedures, and plans shall include a section which identifies the QA records which are generated during implementation of the document. These documents, including drawings, shall be controlled as required in Section VI of this document.

In order to ensure the quality of this program, the Project Quality Assurance group has established a series of administrative QA procedures as a part of the program elements. These documents, known as NQPs, are listed on the master list of REECO NNWSI Project documentation. These NQPs as well as the criteria letters, work instructions, etc., provided to REECO for implementation shall be available at the appropriate work locations.

Division and/or department managers of those organizations performing NNWSI Project activities shall assure that their activities are made evident by written procedures addressing their NNWSI Project tasks to the extent appropriate with the Quality Assurance Level of that task.

2.0 REVIEWS

An independent technical and QA review of all instructions, procedures, plans, and drawings shall be performed by the originating organization.

3.0 INSTRUCTIONS FOR SCIENTIFIC NOTEBOOKS

REECO does not prepare scientific notebooks nor conduct scientific investigations.

4.0 DISTRIBUTION

REECO shall maintain and provide the WMPO PQM and the Quality Assurance Support Contractor (QASC) with controlled distribution of all implementing procedures, plans, and instructions used for QA Level I and II activities.

SECTION VI
DOCUMENT CONTROL

1.0 DOCUMENT PREPARATION, REVIEW, APPROVAL, AND ISSUANCE

1.1 METHODS

The preparation, review, approval, and issuance of documents such as instructions, procedures, plans, and drawings, including changes thereto, shall be controlled through the implementation of methods that assure that only correct documents are used. Document control shall be applied to the following:

- ° Documents that assure technical adequacy.
- ° Documents containing or specifying quality requirements.
- ° Documents that prescribe activities affecting quality.

The document control system shall be documented, and the Project QA organization shall provide the appropriate review, resolution of comments, and concurrence with respect to quality-related aspects of the documents.

1.2 IMPLEMENTATION

Implementation of document control shall provide for the following:

- ° Identification of documents to be controlled.
- ° Identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents.
- ° Review of documents for adequacy, completeness and correctness prior to approval and issuance.
- ° A method for the removal or marking of obsolete or superseded documents to prevent inadvertent use.
- ° A method for assuring that the correct and applicable documents are available at the location where they are to be used.
- ° A master list or equivalent to identify the correct and updated revisions of documents.
- ° Coordination of interface documents.

2.0 DOCUMENT CHANGES

2.1 MAJOR CHANGES

Changes to documents, other than those defined below as minor changes are considered as major changes and shall be reviewed and approved by the same organizations that performed the original review and approval, unless the WMPO specifically designates other organizations to do this. The reviewing organization shall have access to pertinent background data or information upon which to base their approval.

2.2 MINOR CHANGES

Minor changes to documents, such as inconsequential editorial corrections, shall not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a decision shall be clearly delineated.

3.0 DISTRIBUTION OF DOCUMENTS

3.1 DOCUMENT CONTROL SYSTEM

The document control system shall assure that documents requiring verification are not released prior to verification or, if they must be released before verification, they are uniquely identified and controlled. A master list or equivalent used to identify the correct, current and updated versions of documents shall be submitted to the WMPO and the QASC.

SECTION VII

CONTROL OF PURCHASED MATERIALS, EQUIPMENT, AND SERVICES

1.0 GENERAL REQUIREMENTS

Measures shall be established to ensure that purchased material, equipment, and services conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, audit, and examination of products upon delivery. Where required by code, regulation, or contract requirement, documentary evidence that material and equipment conform to the procurement requirements shall be available at the location where the material or equipment is to be used prior to installation or use of such material and equipment. This documentary evidence shall be retained under the control of the Waste Management Project Office (WMPO) QA Records Management System (QARMS) and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, that are to be met by the purchased material and equipment. Specific requirements for the control of purchased items and services are listed below.

1.1 PROCUREMENT PLANNING

1.1.1 GENERAL

Procurement activities shall be planned and documented to ensure a systematic approach to the procurement process. Procurement planning shall result in the documented identification of procurement methods and organizational responsibilities. Project Quality Assurance (PQA) organization participation shall be provided for evaluation and selection of suppliers, verification of suppliers activities and receiving inspections. Planning shall determine the following:

- ° What is to be accomplished.
- ° Who is to accomplish it.
- ° How it is to be accomplished.
- ° When it is to be accomplished.

1.1.2 PROCUREMENT TIMING

To ensure interface compatibility and a uniform approach to the procurement process, planning shall be accomplished as early as practicable and no later than at the start of those procurement activities that are required to be controlled.

1.1.3 PROCUREMENT METHODS

Planning shall result in the documented identification of the methods to be used in procurement activities, the sequence of actions and milestones that indicate the completion of these activities, and the preparation of applicable procedures prior to the initiation of each individual activity listed below. Planning shall provide for the integration of the following:

- Procurement document preparation, review, and change control.
- Selection of procurement sources.
- Purchaser control of supplier performance.
- Verification (surveillance, inspection, or audit) activities by purchaser, including notification for hold-and-witness points.
- Control of nonconformances.
- Corrective action.
- Acceptance of item or service.
- QA records.

1.2 SOURCE EVALUATION AND SELECTION

1.2.1 SELECTION OF SUPPLIERS

The selection of suppliers shall be based on evaluation of their capability to provide items or services in accordance with the requirements of the procurement documents before the award of contract.

1.2.2 SOURCE EVALUATION AND SELECTION MEASURES

Procurement source evaluation and selection measures shall be implemented by the purchaser and shall provide for identification of the purchaser's organizational responsibilities for determining supplier capability.

1.2.3 MEASURES FOR EVALUATION AND SELECTION OF PROCUREMENT SOURCES

Measures for evaluation and selection of procurement sources, and the results thereof, shall be documented and shall include one or more of the following items:

- Evaluation of the supplier's history of providing an identical or similar product that performs satisfactorily in actual use. The supplier's history shall reflect current capability.

- Supplier's current quality assurance records supported by documented qualitative and quantitative information that can be objectively evaluated.
- Supplier's technical and quality assurance capability as determined by a direct evaluation of his facilities and personnel and the implementation of his QA program.

1.3 BID EVALUATION

1.3.1 EXTENT OF CONFORMANCE

Bid evaluation shall determine the extent of conformance to the procurement documents. This evaluation shall be performed by individuals or organizations designated to evaluate the following subjects, as applicable to the type of procurement:

- Technical considerations.
- QA requirements.
- Supplier's personnel.
- Supplier's production capabilities.
- Supplier's past performance.
- Alternates.
- Exceptions.

1.3.2 RESOLUTION OF UNACCEPTABLE QUALITY ASSURANCE CONDITIONS

Before the award of the contract, the purchaser shall resolve or obtain commitments to resolve unacceptable quality assurance conditions resulting from the bid evaluation.

1.4 SUPPLIER PERFORMANCE EVALUATION

1.4.1 INTERFACE MEASURES

The purchaser of items and services shall establish measures to interface with the supplier. The measures shall include the following:

- Documentation of the understanding between purchaser and supplier of the provisions and specifications of the procurement documents.
- Requiring the supplier to identify planning techniques and processes to be utilized in fulfilling procurement document requirements.

- ° Reviewing supplier documents that are generated or processed during activities fulfilling procurement document requirements.
- ° Identifying and processing necessary change information. Measures to control changes in procurement documents shall be established, implemented and documented in accordance with the requirements of this QA document.
- ° Establishing methods of document information exchange between purchaser and supplier.

1.4.2 VERIFICATION MEASURES

1.4.2.1 EXTENT OF VERIFICATION

The purchase of items and services shall establish measures to verify supplier's performance, as deemed necessary by the purchaser. The measures shall establish the extent of source surveillance and inspection activities.

NOTE: When REECO utilizes another Participating Organization or NTS Support Contractor for NNWSI Project activities for which they are responsible, they shall conduct surveillances of the organization performing the work. The surveillance shall be conducted to determine that the item or activity is being produced or performed in accordance with REECO requirements. These surveillances shall be coordinated with the WMPO.

The extent of verification activities, including planning, shall be a function of the relative importance, complexity, and quantity of the item or services procured and the supplier's quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the suppliers' activities. These verification activities shall be conducted as early as practicable. However, the purchaser's verification activities shall not relieve the supplier of his responsibilities for verification of quality achievement.

1.4.2.2 RECORD OF VERIFICATION ACTIVITIES

Activities performed to verify conformance to requirements of procurement documents shall be recorded. Source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions shall be documented. These completed documents shall be considered QA records and shall be controlled in accordance with Section XVII. The purchaser shall ensure that this documentation is evaluated to determine the supplier's QA program effectiveness.

1.5 CONTROL OF DOCUMENTS GENERATED BY SUPPLIERS

Documents that are generated by suppliers shall be controlled, handled, and approved in accordance with documented procedures. Means shall be implemented to ensure that the submittal of these documents is accomplished in accordance with the procurement document requirements. These measures shall provide for the acquisition, processing, and recorded evaluation of technical, inspection, and test data against acceptance criteria.

1.6 ACCEPTANCE OF ITEM OR SERVICE

1.6.1 METHODS FOR ACCEPTANCE

Methods shall be established for the acceptance of an item or service being furnished by the supplier. Prior to offering the item or service for acceptance, the supplier shall verify that the item or service being furnished complies with the procurement requirements. Purchaser methods used to accept an item or related service from a supplier shall be either a supplier certificate of conformance, a source verification, a receiving inspection or post-installation test at the facility site, or a combination thereof. Requirements applicable to these methods of acceptance are listed below.

1.6.1.1 CERTIFICATE OF CONFORMANCE

When a certificate of conformance is used, the following minimum criteria shall be met:

- ° The certificate shall identify the purchased material or equipment, such as by the purchase order number.
- ° The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, or other specifications. This may be accomplished by including a list of the specific requirements or by providing at the point of receipt, a copy of the purchase order and the procurement specifications or drawings, together with a suitable certificate. The procurement requirements identified shall include any approved changes, waivers, or deviations applicable to the subject material or equipment.
- ° The certificate shall identify any procurement requirements that have not been met, together with an explanation and the means by which to resolve the nonconformances.
- ° The certificate shall be attested to by a person who is responsible for this QA function and whose function and position are described in the purchaser's or supplier's QA program.
- ° The certificate system, including the procedures to be followed in filling out a certificate and the administrative procedures for the review and approval of the certificates, shall be described in the purchaser's or supplier's QA program.

- ° Means shall be provided to verify the validity of supplier certificates and the effectiveness of the certification system, such as during the performance of audits of the supplier or independent inspection or test of the items. Such verification shall be conducted by the purchaser at intervals commensurate with the supplier's past quality performance.

1.6.1.2 SOURCE VERIFICATION

If source verification is used, then it shall be performed at intervals that are consistent with the importance and complexity of the item or service, and it shall be implemented to monitor, witness, or observe activities. Source verification shall be implemented in accordance with plans to perform inspections, examinations, or tests at predetermined points. Upon purchaser acceptance of source verification, documented evidence of acceptance shall be furnished to the receiving destination of the item, to the purchaser, and to the supplier.

1.6.1.3 RECEIVING INSPECTION

When receiving inspection is used, purchased items shall be inspected as necessary to verify their conformance to specified requirements, by taking into account source verification and audit documentation and the demonstrated quality performance of the supplier. Receiving inspection shall be performed in accordance with established procedures and inspection instructions to verify by objective evidence such features as proper configuration; identification; dimensional, physical, and other characteristics; freedom from shipping damage; and cleanliness. Receiving inspection shall be coordinated with review of supplier documentation when procurement documents require such documentation to be furnished prior to receiving inspection.

1.6.1.4 POST-INSTALLATION TESTING

When post-installation testing is used, post-installation test requirements and acceptance documentation shall be established mutually by both the purchaser and the supplier.

1.7 ACCEPTANCE OF SERVICES ONLY

1.7.1 PROCUREMENT OF SERVICES ONLY

In certain cases involving procurement of services only, such as third party inspections, engineering, and consulting; and installation, repair, overhaul, or maintenance work, the purchaser shall accept the service by any or any combination of the following:

- ° Technical verification of data produced.
- ° Surveillance, audit, or both, with regard to the activity.

- ° Review of objective evidence for conformance to the procurement document requirements such as certifications, stress reports, etc.

1.8 CONTROL OF SUPPLIER NONCONFORMANCES

1.8.1 METHODS

The purchaser and supplier shall establish and document methods for disposition of items and services that do not meet procurement document requirements. These methods shall include the following provisions:

1.8.1.1 EVALUATION

Evaluation of nonconforming items.

1.8.1.2 SUBMITTAL

Submittal of nonconformance notice to purchaser by supplier as directed by the purchaser. These submittals shall include disposition (e.g., use as-is or repair) and technical justification that are recommended by the supplier. Nonconformances to the procurement requirements or purchaser approved documents, which consist of one or more of the items listed below shall be submitted to the purchaser. Approval of the recommended disposition shall be in accordance with documented procedures.

- ° Technical or material requirement is violated.
- ° Requirement in supplier documents, which has been approved by the purchaser, is violated.
- ° Nonconformance cannot be corrected by continuation of the original manufacturing process or by rework.
- ° The item does not conform to the original requirement even though the item can be restored to a condition such that the capability of the item to function is unimpaired.

1.8.1.3 DISPOSITION

Purchaser disposition of supplier recommendation.

1.8.1.4 VERIFICATION

Verification of the implementation of the disposition.

1.8.1.5 RECORDS MAINTENANCE

Maintenance of records of nonconformances that are submitted by the Supplier.

2.0 COMMERCIAL-GRADE ITEMS

2.1 ALTERNATIVES

If a design requires commercial-grade items, then the following requirements are an acceptable alternative to other requirements of this section, except as noted in Paragraph 2.1.2 below and the requirements of Section IV of this QAPP. If a scientific investigation requires commercial-grade items which only require calibration, they may be controlled by the use of the following requirements (except Paragraph 2.1.1) and Section IV of this QAP. In such instances, calibration meeting the requirements of Section XII is required prior to use.

2.1.1 IDENTIFICATION OF COMMERCIAL-GRADE ITEMS

Where the commercial-grade item is to be used as an integral part of the designed facility, it shall be identified in an approved design or design output document. An alternate commercial-grade item may be supplied if the cognizant organization provides verification that the alternate commercial-grade item will perform the intended function and will meet the requirements applicable to both the replaced item and its application.

2.1.2 SOURCE EVALUATION AND SELECTION

Source evaluation and selection shall be in accordance with Paragraph 1.2, if it is determined necessary by the purchaser based on the complexity of the item and importance to safety.

2.1.3 PURCHASE ORDER

Commercial-grade items shall be identified in the purchase order by the manufacturer's published product description (e.g., the catalog number).

2.1.4 RECEIPT OF COMMERCIAL-GRADE ITEM

After receipt of a commercial-grade item, the purchaser shall determine that the following conditions have been met:

- ° Damage was not sustained during shipment.
- ° The item received was the item ordered.

568-DOC-115
REVISION 5

- Inspection, testing, or both, is accomplished by the purchaser, in accordance with written procedures, to ensure conformance with the manufacturer's published requirements.
- Documentation, as applicable to the item, was received and is acceptable.

D6088/8

SECTION VIII

IDENTIFICATION AND CONTROL OF ITEMS, SAMPLES, AND DATA

INTRODUCTION

This section provides the requirements for the identification and control of items. REECO currently is not responsible for the taking of samples and data. Therefore, the requirements for the identification and control of those items are not addressed in this QAPP. The requirements for items are stated below.

IDENTIFICATION AND CONTROL OF ITEMS

1.0 IDENTIFICATION

Items shall be identified to assure that only correct and accepted items are used or installed. Identification shall be maintained either on the item, their containers, or in documents traceable to the item from receipt until installed.

1.1 GENERAL

Items of production (batch, lot, component, part) shall be identified from the initial receipt and fabrication of the items up to and including installation and use. This identification shall relate an item to an applicable design or other pertinent specifying document.

1.1.1 Physical identification shall be used to the maximum extent possible. Where physical identification on the item is either impracticable or insufficient, physical separation, procedural control, or other appropriate means shall be employed.

1.1.2 Identification markings, when used, shall be applied using materials and methods which provide a clear and legible identification and do not detrimentally affect the function or service life of the item. Markings shall be transferred to each part of an identified item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted.

1.1.3 When specified by codes, standards or specification 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) the program shall be designed to provide such identification and traceability control.

1.1.4 Where specified, items having limited calendar or operating life or cycles shall be identified and controlled to preclude use of items whose shelf life or operating life has expired.

2.0 CONTROL

Provisions shall be made for the control of item identification consistent with the planned duration and condition of storage, such as: (1) provisions for maintenance or replacement of markings and identification records due to damage during handling or aging; (2) protection of identification on items subject to excessive deterioration due to environmental exposure; (3) provisions for updating existing facility records.

SECTION IX
CONTROL OF PROCESSES

1.0 GENERAL REQUIREMENTS

The requirements of this section apply to engineered items and scientific investigations for process control. The requirements for special processes apply to engineered items only. Measures shall be established to ensure that processes that affect quality of items or services are controlled either by instruction, procedures, or other appropriate means. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive testing shall be accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

2.0 PROCESS CONTROL

2.1 METHOD

All processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means. These means shall ensure that process parameters are controlled and that specified environmental conditions are maintained.

2.2 IDENTIFICATION OF SPECIAL PROCESSES

2.2.1 RESPONSIBILITY

It is the responsibility of the Participating Organization and Nevada Test Site (NTS) Support Contractor that is performing the work to identify which portions of its activities involve the use of special processes. A special process is a process in which the results are highly dependent on either the control of the process or the operator's skill, or both, and in which the specified quality cannot be readily determined by inspection or testing of the item.

2.2.2 QUALIFICATION REQUIREMENTS

The necessary requirements for qualifications of personnel, procedures, or equipment shall be specified or referenced in the procedures or instructions either for processes that are not covered by existing codes and standards or for processes where the quality requirements for an item or test exceed those of existing codes or standards.

2.2.3 CONDITIONS

Conditions necessary for accomplishment of the special process shall be included in procedures or instructions. These conditions shall include proper equipment, controlled parameters of the special process and calibration requirements.

2.2.4 APPLICABLE CODES AND STANDARDS

The requirements of applicable codes and standards, including acceptance criteria for the special process, shall be specified or referenced in the procedures or instructions.

2.3 QUALIFICATION OF SPECIAL PROCESS PROCEDURES

2.3.1 PROGRAM FOR QUALIFICATION

Procedures shall be qualified in accordance with applicable codes, standards or other specifications. The program for qualification of procedures shall be specified in documents prepared by the cognizant technical organization. The PQA organization shall provide appropriate reviews to assure compliance with these requirements.

2.4 QUALIFICATION OF PERSONNEL PERFORMING SPECIAL PROCESSES

2.4.1 TRAINING, QUALIFICATION, AND CERTIFICATION

Personnel shall be trained, qualified, and certified in accordance with written procedures. The training and qualification, and certification shall be the responsibility of the organization that is performing the work. These procedures shall be reviewed by the Project QA organization for compliance with requirements.

2.4.2 PROCEDURE

Qualification shall utilize the actual working procedure, to the extent possible.

2.4.3 PERSONNEL QUALIFICATION REQUIREMENTS

Qualification of personnel shall incorporate the personnel qualification requirements of the applicable codes, standards, or specifications.

2.5 SPECIAL PROCESS EQUIPMENT

Special process equipment shall be checked out, qualified, and certified in accordance with specified requirements. These requirements shall implement the requirements of applicable codes, standards, and specifications. Equipment checkout, qualification, and certification shall be the responsibility of the organization performing the work. Project Quality Assurance shall review the procedures for qualification of equipment for compliance with requirements.

2.6 SPECIAL PROCESS RECORDS

Records shall be maintained for the currently qualified personnel, procedures, and equipment of each special process and the requirements for maintenance of these records shall be specified. Special process verification methods and criteria shall also be documented and retained.

SECTION X
INSPECTION

1.0 GENERAL REQUIREMENTS

Measures shall be established to provide inspections required to verify conformance of an item or activity to specified requirements. These measures shall provide for: (1) inspections to be performed in accordance with written procedures by qualified personnel who did not perform the work being evaluated; (2) criteria for determining when inspections are required or how and when inspections are to be performed; (3) sampling methodology, if used; (4) the identification of mandatory hold points; and (5) identification of inspections requiring special expertise. The results of all inspection activities shall be documented by the inspecting organization. The requirements of this section apply to engineered items and do not apply to scientific investigation activities.

2.0 PERSONNEL

2.1 REPORTING INDEPENDENCE OF PERSONNEL

Inspections shall be performed by personnel who are part of the Project QA organization and shall not report directly to the immediate supervisor(s) who is/are responsible for performing the activity being inspection. Qualified individuals from outside the PQA organization may be utilized for inspection where special expertise is necessary, however, the independence of the inspection function must be maintained. The PQA organization shall verify this independence and need for special expertise.

2.2 QUALIFICATION

Each person who verifies conformance of work activities for purposes of acceptance shall be qualified to perform the assigned inspections or tests. The qualification of personnel performing inspection and test activities shall be certified in writing. personnel selected to perform inspection and test activities shall have the experience or training commensurate with the scope, complexity, or special nature of the activities. Personnel shall also be indoctrinated as to the technical objectives and requirements of the applicable codes and standards and the QA program elements that are to be employed.

3.0 INSPECTION HOLD POINTS

Mandatory inspection or witness hold-points shall be established as necessary. When such hold or witness points are established, work may not proceed without the specific consent of the responsible representative. These hold or witness points shall be indicated in appropriate documents controlling the activity. Consent to waive any specified hold or witness point shall be documented before work can be continued beyond the designated hold or witness point.

4.0 INSPECTION PLANNING

Planning for inspection activities shall be accomplished and documented. The documentation shall identify characteristics, methods, and acceptance criteria, and shall provide for recording objective evidence of inspection results, identification and qualification of personnel, and accuracy of the equipment necessary to perform the inspections.

4.1 SAMPLING

When sampling is used to verify acceptability of a group of items, the sampling procedures shall be based on recognized standard practices.

5.0 IN-PROCESS INSPECTION

Inspection of items in-process or under construction shall be performed for work activities where necessary to verify quality. If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment, and personnel shall be provided.

5.1 COMBINED INSPECTION AND MONITORING

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. Both inspection and process monitoring shall be provided when other techniques cannot provide adequate control.

5.2 CONTROLS

Where required, controls shall be established and documented for the coordination and sequencing of activities at established inspection points during successive stages of the conducted process or construction.

6.0 FINAL INSPECTION

Final inspection shall include a records review of the results and resolution of nonconformances identified by prior inspections. The final inspection shall be planned to reach a conclusion regarding conformance of the item to specified requirements.

6.1 INSPECTION REQUIREMENTS

Completed items shall be inspected for completeness, markings, calibration, adjustments, protection from damage, or other characteristics as required to verify the item's quality and conformance to specified requirements. If not previously examined, then quality records shall be examined for adequacy and completeness.

6.2 ACCEPTANCE

The item's acceptance shall be documented and approved by identified authorized personnel.

6.3 MODIFICATIONS, REPAIRS, OR REPLACEMENTS

Modifications, repairs, or replacements of items performed subsequent to final inspection shall require reinspection or retest, as appropriate, to verify acceptability.

7.0 IN-SERVICE INSPECTION

Required in-service inspection of structures, systems, or components shall be planned and executed by or for the organization responsible for operation.

7.1 METHODS

Inspection methods shall be established and executed to verify that the characteristics of an item continue to remain within specific limits. Inspection methods shall include evaluation of performance capability of essential emergency and safety systems and equipment, verification of calibration and integrity of instruments and instrument systems, and verification of maintenance, as appropriate.

8.0 QUALIFICATION REQUIREMENTS

Appendix C of this document defines the requirements for the qualification of inspection and test personnel who perform inspection and testing to verify conformance to specified requirements for the purpose of acceptance. Appendix D defines the requirements for qualification of nondestructive examination personnel. REECO currently performs no nondestructive examination.

9.0 RECORDS

The following are the requirements for inspection records which shall be retained in accordance with Section XVII of this QAPP.

9.1 INSPECTION RECORDS

As a minimum, inspection records shall identify the following:

- Item or activity.
- The date of the inspection.
- Name of individual performing the inspection.
- Name or names of personnel contacted during the inspection.
- A description of the type of observation.
- Inspection criteria.
- Equipment used during the inspection.
- Evidence as to the acceptability of the results.
- Acceptance statement.
- References to information on action taken in connection with conditions adverse to quality, nonconformances and/or actions taken to resolve any discrepancies.

9.2 PERSONNEL QUALIFICATION RECORDS

Records of personnel qualification shall be established and maintained by the employer. The actual examinations used to qualify personnel shall also be retained as part of the record files.

SECTION XI TEST CONTROL

1.0 GENERAL DISCUSSION

Tests required to verify conformance of an item to specified requirements and to demonstrate that items will perform satisfactorily in service shall be planned and executed. Characteristics to be tested and test methods to be employed shall be specified. The test procedures shall be implemented by trained and appropriately qualified personnel.

2.0 TEST REQUIREMENTS

Test requirements and acceptance or rejection criteria, including required levels of precision and accuracy, shall be provided or approved by the organization responsible for the design of the item to be tested, unless otherwise designated. Required tests, including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, pre-operational tests, and operational tests shall be controlled. Test requirements and acceptance or rejection criteria shall be based upon specified requirements contained in applicable design or other pertinent technical documents.

3.0 TEST PROCEDURES

3.1 TEST INSTRUCTIONS, PROCEDURES AND DRAWINGS

Instructions, procedures, and drawings for tests shall be prepared in accordance with the requirements of Section V of this document. Test procedures or instructions shall contain criteria for determining when a test is required and how the test is performed.

3.2 TEST PREREQUISITES

Test procedures shall include or reference test objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained. Prerequisites shall include the following, as applicable: (1) calibrated instrumentation, (2) appropriate equipment, (3) completeness of item to be tested, (4) trained or appropriately qualified personnel, (5) condition of test equipment and the item to be tested, (6) suitable and controlled environmental conditions, and (7) provisions for data acquisition and storage.

3.3 REVIEW OF PROCEDURES

3.3.1 IDENTIFICATION AND DOCUMENTATION

Control measures shall be applied to verify the adequacy of test plans and procedures and verification shall be performed in a timely manner. The responsible organization shall identify and document the verification method used, the results of the verification, and the verifiers.

3.3.2 TIMING OF VERIFICATION

Verification of the adequacy of test plans and procedures shall be performed prior to release. In those cases, where this timing can not be met, the portion or portions which have not been verified shall be identified and controlled. In all cases, the verification shall be completed prior to relying on the test plans and procedures to perform its function.

3.3.3 EXTENT OF VERIFICATION

The extent of the verification required is a function of the importance to safety of the item under consideration, the complexity, the degree of standardization, the state of the art, and the similarity with previously proven test plans and procedures. Where the test plans and procedures have been subjected to a verification process in accordance with Paragraph 3.3 of this section, the verification process need not be duplicated for identical documents. However, the applicability of standardized or previously proven test plans and procedures, with respect to meeting pertinent inputs, shall be verified for each application. Known problems affecting the standardized or previously proven test plans and procedures and their effects on other features shall be considered. The original test plans and procedures and associated verification measures shall be adequately documented and referenced in the files of subsequent applications.

3.3.4 CHANGES TO VERIFIED TEST PLANS AND PROCEDURES

Changes to previously verified test plans and procedures shall require verification including evaluation of the effects of those changes.

3.3.5 PERSONNEL PERFORMING VERIFICATION

Test plans and procedures verification shall be performed in accordance with the requirements of Paragraph 3.3.6 of this Section by any competent, certified individual or individuals or certified group or groups other than those who developed the original test plan or procedure. This includes the following:

3.3.5.1 Individuals or groups from the originator's same organization.

3.3.5.2 Individuals or groups from other organizations contracted for this purpose.

3.3.5.3 The originator's supervisor providing all of the following requirements are met:

- The supervisor is the only individual in the organization competent to perform verification.
- The supervisor did not establish the test plan or procedure input used, specify a singular approach, or rule out certain considerations.
- The rationale for satisfying the two requirements above is documented and approved by management superior to the supervisor. The QA manager shall also concur with this rationale.

3.3.6 METHODS OF TEST PLAN AND PROCEDURE

Verification shall be accomplished by any one or a combination of the following: reviews, alternate calculations, or qualification testing.

3.3.6.1 Test Plan and Procedure

Reviews are detailed critical reviews to provide assurance that the test plan or procedure is correct and satisfactory. At a minimum, the items below shall be considered during the review and the results of such deliberations shall be documented.

- Were the inputs correctly selected?
- Are assumptions necessary to perform the activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed activities are completed?
- Was an appropriate method used?
- Were the inputs correctly incorporated.
- Is the test plan or procedure output reasonable compared to inputs?
- Are the necessary input and verification requirements for interfacing organizations specified in the documents or in supporting procedures or instructions?
- Are computer programs used for analysis identified and verified in accordance with the methods specified in the NNWSI Project Administrative Procedures Manual.

3.3.6.2 Alternate Calculations

Alternate calculations are a form of analysis which may be used to determine the adequacy of the original analyses. The use of alternate calculations shall include a review of the appropriateness of assumptions, inputs and computer programs or other calculation method used.

3.3.6.3 Qualification Tests

Qualification tests that involve actual physical testing of systems, structures, or components may be used to verify the adequacy of test plans or procedures. Where 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 conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the most adverse conditions. Where the test is intended to verify only specific features, the other features shall be verified by other means. Test results shall be documented and evaluated by the responsible organization to assure that test requirements have been met. If qualification testing indicates the 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 work.

3.4 POTENTIAL SOURCES OF ERROR

The potential sources of uncertainty and error in test procedures which must be controlled and measured to assure that tests are well controlled shall be identified.

3.5 ALTERNATIVES

In lieu of specifically prepared written test procedures, appropriate sections of related documents, such as American Society for Testing and Materials (ASTM) methods, Supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria, can be used. Such documents shall include adequate instructions to assure the required quality of work.

4.0 TEST RESULTS

Test results shall be documented and their conformance with acceptance criteria evaluated by a responsible authority to assure that test requirements have been satisfied.

5.0 TEST RECORDS

Test records shall, as a minimum, identify the following:

- ° Item tested.
- ° Date of test.
- ° Tester or data recorder identification.
- ° Type of observation.
- ° Results and acceptability.
- ° Action taken in connection with any deviations noted.
- ° Person evaluating results.

SECTION XII
CONTROL OF MEASURING AND TEST EQUIPMENT

1.0 GENERAL

1.1 MAINTAINING ACCURACY OF EQUIPMENT

Measures shall be established to ensure that tools, gages, instruments, and other measuring and test equipment used in activities that affect quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

1.2 SCOPE OF CONTROL PROGRAM

The REECo Quality Assurance Program Plan (QAPP) defines the scope and methodology of the program for the control of measuring and test equipment. This includes all measuring and test equipment or systems used to calibrate, measure, gage, test, or inspection either to control or to acquire data to verify conformance to a specified requirement, or to establish characteristics or values not previously known.

1.3 DESCRIPTION OF RESPONSIBILITIES

The responsibilities of all organizations shall be described for the establishment, implementation, and assurance that the calibration program is effective.

2.0 PURPOSE OF EQUIPMENT

Measuring and test equipment are devices or systems used to calibrate, measure, gage, test, or inspect either to control or to acquire data to verify conformance to a specified requirement, or to establish characteristics or values not previously known.

Specific requirements for control of measuring and test equipment are listed below:

2.1 SELECTION

Selection of measuring and test equipment shall be controlled to assure that such equipment is of proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements. The type, range, accuracy, and tolerance of a measuring device shall be specified in test and inspection documents. Each device shall have a unique identification number. This number shall be recorded on the data sheet, log, etc., along with the measurement taken, to ensure traceability to the measurement of the device that was used to take the measurement.

2.2 CALIBRATION

Measuring and test equipment shall be calibrated against certified equipment having known valid relationships to the National Bureau of Standards or other nationally recognized standards and shall be calibrated, adjusted, and maintained at prescribed intervals. If no nationally recognized standards exist, the basis for calibration shall be documented.

2.3 CONTROL

The method and interval of calibration for each item shall be defined, based on the type of equipment, stability, characteristics, required accuracy, intended use, and other conditions that affect measurement control. Measuring and test equipment must be labeled, tagged, or otherwise documented in a fashion which indicates the due date of the next calibration and to provide traceability to calibration data. If measuring and test equipment is found to be out of calibration, an evaluation shall be made and documented of the validity of previous results obtained and of the acceptability of items previously inspected, tested or data gathered since the last calibration. Devices that are out of calibration shall be tagged or segregated and shall not be used until they have been recalibrated. If any measuring or test equipment is found to be out of calibration consistently, then it shall be repaired or replaced. A calibration shall be performed when the accuracy of the equipment is suspect.

2.4 COMMERCIAL DEVICES

Calibration and control measures are not required for rulers, tape measure, levels, and other such devices, if normal commercial equipment provides adequate accuracy.

2.5 HANDLING AND STORAGE

Measuring and test equipment shall be handled properly and stored to maintain accuracy.

2.6 RECORDS

Records shall be maintained and equipment shall be marked suitably to indicate calibration status.

SECTION XIII

HANDLING, SHIPPING, AND STORAGE

1.0 GENERAL REQUIREMENTS

Measures shall be established to control the packaging, handling, storage, shipping, cleaning, and preservation of material and equipment to prevent damage, loss, or deterioration. Handling, storage, and shipping of items shall be conducted in accordance with established work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or procedures specified for use in conducting the activity. Specific requirements are listed below.

1.1 SPECIAL EQUIPMENT AND PROTECTIVE ENVIRONMENTS

When required for particular items, special equipment (e.g., containers, shock absorbers, and accelerometers) and special protective environments (e.g., an inert gas atmosphere, specific moisture content levels, and temperature levels) shall be specified and provided, and their existence shall be verified.

1.2 SPECIFIC PROCEDURES

When they are required for critical, sensitive, perishable, or exceptionally expensive articles, specific procedures for handling, storage, packaging, shipping, and preservation shall be used.

1.3 INSPECTION AND TESTING OF SPECIAL TOOLS AND EQUIPMENT

Special handling tools and equipment shall be utilized and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested in accordance with procedures and at specified time intervals to verify that the tools and equipment are maintained adequately.

1.4 OPERATORS OF SPECIAL EQUIPMENT

Operators of special handling and lifting equipment shall be experienced or trained to use the equipment.

1.5 MARKING AND LABELING

Instructions for marking and labeling for packaging, shipment, handling, and storage of items shall be established as necessary to adequately identify, maintain, and preserve the item, including indication of the presence of special environments or the need for special controls.

SECTION XIV
INSPECTION, TEST, AND OPERATING STATUS

1.0 INDICATION OF STATUS

The requirements of this section apply to engineered items and do not apply to scientific investigations. The status of inspection and test activities shall be identified either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used, or operated. Status indicators shall also provide for indicating the operating status of systems and components of the facility, such as by tagging valves and switches, to prevent inadvertent operation.

2.0 METHODS OF INDICATING STATUS

Status shall be maintained through indicators, such as physical location and tags, markings, travelers, stamps, inspections records, or other suitable means. Procedures describing status indicators and their use shall contain current actual examples of each type indicator.

3.0 APPLICATION AND REMOVAL OF STATUS INDICATORS

The authority for application and removal of status indicating tags, markings, labels, and stamps shall be specified in procedures governing inspection, test, and operating status.

SECTION XV

CONTROL OF NONCONFORMING ITEMS

1.0 GENERAL REQUIREMENTS

Measures shall be established to control items that do not conform to requirements to prevent their inadvertent installation or use. These measures shall include documented procedures for identification, documentation, evaluation, segregation (when practical), disposition, and notification to affected organizations. All personnel involved in Nevada Nuclear Waste Storage Investigation (NNWSI) Project activities are responsible for reporting nonconformances in accordance with their established nonconformance control procedures. These procedures shall be consistent with the minimum requirements listed below.

1.1 IDENTIFICATION

1.1.1 METHOD OF IDENTIFICATION

Identification of nonconforming items shall be made by marking, tagging, or other methods that shall not adversely affect the end use of the item. The identification shall be legible, easily recognizable, and shall contain the nonconformance report number. The nonconformance report number shall be a sequential number preceded by an organizational acronym (e.g., REECo-1). If tags are used, they shall be securely attached to avoid loss during handling.

1.1.2 EXCEPTIONS

If identification of each nonconforming item is not practical, the container, package, or segregated storage area, as appropriate, shall be identified.

1.1.3 PARTIAL NONCONFORMANCE

Work on the nonconforming item shall be stopped until completion of the action specified in the Nonconformance Report (NCR) disposition. If only a specific portion of the item is in nonconformance, then that specific area shall be identified and work may proceed on the remaining areas. If work on a nonconforming item must be continued (conditional release) prior to implementation of this disposition, the Waste Management Project Office (WMPO) shall approve such continuance. Requests for conditional releases on nonconforming items shall include documented justification that the following conditions are met:

- The nonconforming item can be removed or corrected at a later date without damage to, or contamination of the associated permanent facility equipment or structures.

- The nonconforming item remains accessible for inspection.
- The nonconforming item is evaluated and limitation(s) for use of the equipment or system is established.
- Traceability and identification of the nonconforming item are maintained.

1.2 LOGGING

1.2.1 NONCONFORMANCE CONTROL LOG

Each NNWSI Project participant shall maintain a nonconformance control log to track nonconforming items. This log shall contain the following information:

- The nonconformance report number.
- A brief description of the nonconforming condition.
- Identification of the person or organization responsible for determining and carrying out the nonconformance disposition.
- The status of each nonconformance report (open or closed).

1.3 SEGREGATION

1.3.1 HOLD AREA

When practical, nonconforming items shall be segregated by placing them in a clearly identified and designated hold area until they are dispositioned properly.

1.3.2 ALTERNATIVE

When segregation is impractical or impossible because of physical conditions, such as size, weight, or access limitations, other precautions shall be employed to preclude inadvertent use of a nonconforming item.

1.4 DISPOSITION

1.4.1 NONCONFORMANCE CHARACTERISTICS

Nonconforming characteristics shall be reviewed and recommended dispositions of nonconforming items shall be proposed and approved in accordance with documented procedures. Further processing, delivery, installation, or use of a nonconforming item shall be controlled pending an evaluation and an approved disposition by authorized personnel. Distribution of nonconformance documentation shall be to all affected organizations.

1.4.2 RESPONSIBILITY AND AUTHORITY

The responsibility and authority for the evaluation and disposition of nonconforming items shall be defined and documented. Those personnel assigned signature approval of the disposition shall be identified. Quality Assurance (QA) responsibilities relating to nonconformances shall be described.

1.4.3 PERSONNEL

Personnel performing evaluations to determine a disposition shall have demonstrated competence in the specific area that they are evaluating, have an adequate understanding of the requirements, and have access to pertinent background information.

1.4.4 DISPOSITIONING OF NCR

The person or organization assigned the responsibility of dispositioning the NCR shall ensure the following:

- Nonconformance documentation adequately identifies and describes the nonconformance.
- Appropriate justification for the disposition has been documented. In the case of use-as-is or repair dispositions, technical justification is required. The as-built records, if such records are required, shall reflect the accepted deviation.
- The disposition has referenced any approved design documents, procedures, plans, work orders, etc., that are to be used for the correction of the nonconforming condition.
- The technical details for correction of the nonconforming condition are adequate for the recommended disposition.
- If continuance has been requested, justification for the activity to continue has been documented and approved by the WMPO.
- The disposition complies with existing design documents, test plans or procedures, reports, and regulatory requirements.
- If a change to reflect the as-built condition is appropriate, then the disposition addresses action to change the existing design documents, test plans or procedures, reports, etc. Any documents changed shall also be cross referenced on the NCR.
- Disposition has identified and documented the correction as repair, rework, use-as-is, or reject/scrap.
- Disposition has identified the people or organization responsible to implement the disposition.

- ° The cause of the nonconforming condition has been described.
- ° Action needed to preclude recurrence has been documented, if appropriate.

1.4.5 WMPO APPROVAL

In those cases where the disposition of "repair" is proposed, the WMPO shall approve the proposed disposition prior to implementation. In the case of a proposed disposition of "use-as-is", the NCR shall be forwarded to WMPO for approval after all actions necessary to support technical justification of the disposition have been completed. The appropriate WMPO Branch Chief and the WMPO PQM shall approve NCR dispositions involving "repair" or "use-as-is" determinations and conditional release recommendations.

1.4.6 CORRECTIVE ACTION

The action taken to correct the nonconforming item shall be verified and documented. Repaired or reworked items shall be reexamined in accordance with applicable procedures and with the original acceptance criteria, unless the nonconforming item disposition has established alternate acceptance criteria.

1.4.7 INTERFACES

Internal interfaces between organizational units and external interfaces between NNWSI Project participants shall be clearly described.

2.0 REPETITIVE NONCONFORMANCES

When repetitive or recurring nonconforming conditions are identified, an evaluation shall be made as to whether or not further programmatic corrective action is warranted to preclude repetition. This corrective action shall be beyond the scope of the action taken for the disposition on the existing NCRs and shall be processed in accordance with the corrective action procedure.

3.0 UNUSUAL OCCURRENCES

REECo shall develop a procedure for reporting unusual occurrences. This procedure shall meet the requirements of U.S. Department of Energy (DOE/NV) Order 5000.3 as supplemented or modified by the cognizant DOE field office. Nonconformance Reports shall be evaluated to determine if further processing as an unusual occurrences is required per DOE/NV Order 5000.3. Reports of unusual occurrences shall be submitted to the cognizant DOE field offices for further processing. Copies shall also be provided to the WMPO Quality Assurance Support Contractor (QASC) Manager.

4.0 TRENDING

Nonconformance reports shall be periodically analyzed by the PQA organization to show quality trends and to help identify root causes of nonconformances. Results shall be reported to upper management for review and assessment.

5.0 DISTRIBUTION OF DOCUMENTS

Copies of nonconformance reports for items shall be sent to the WMPO and the QASC by the originating organization upon issuance and upon closure. The original nonconformance reports shall be sent to the WMPO for approval as required by Paragraph 1.4.5 of this section.

SECTION XVI
CORRECTIVE ACTION

1.0 GENERAL

A corrective action system is to be defined in the Quality Assurance Program Plan (QAPP). This system shall ensure that significant conditions adverse or potentially adverse to quality are identified promptly and corrected as soon as practical. A significant condition adverse to quality is one which, if not corrected, could have a serious effect on safety or operability. Significant conditions include, but are not limited to, breakdowns in the Quality Assurance program and repetitive nonconformances.

1.1 SIGNIFICANT ADVERSE CONDITIONS

The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management.

1.2 FOLLOW-UP ACTION

Follow-up action shall be taken by the Project Quality Assurance (PQA) organization to verify proper implementation of this corrective action and to close out the corrective action in a timely manner.

1.3 CORRECTIVE ACTION

Corrective action reports shall be periodically analyzed by the PQA organization to show quality trends. Results shall be reported to upper management for review and assessment.

1.4 CORRECTIVE ACTION REPORTS

NNWSI Project Quality Assurance shall be responsible for evaluating corrective action reports to determine if further processing is required as an unusual occurrence as stated in Section XV.

2.0 DISTRIBUTION OF DOCUMENTS

Copies of corrective action reports shall be sent to the Waste Management Project Office Quality Assurance Support Contractor (QASC) by the PQA organization upon issuance and closure.

SECTION XVII

QUALITY ASSURANCE RECORDS

1.0 GENERAL REQUIREMENTS

Records that furnish documentary evidence of quality shall be specified, prepared, and maintained in accordance with NNWSI Administrative Procedures which shall meet the requirements of this Section. This shall include the requirements that all documents be legible, identifiable, and retrievable.

1.1 DEFINITION

A document or other item is not considered to be a Quality Assurance Record until it satisfies the definition of a Quality Assurance Record as defined below. The term records, used throughout this Section, is to be interpreted as Quality Assurance Records. Quality Assurance Records include (1) individual documents that have been executed, completed, and approved and that furnish evidence of the quality and completeness of data (including raw data), and activities affecting quality; (2) documents prepared and maintained to demonstrate implementation of quality assurance programs (e.g., audits, surveillance, and inspection reports); (3) procurement documents; (4) other documents, such as plans, correspondence, documentation of telecons, specifications, technical data, books, maps, papers, photographs, and data sheets; (5) magnetic media; and (6) other materials that provide data and document quality, regardless of the physical form or characteristic. A completed record is a document that will either receive no more entries or whose revision would normally consist of the reissue of the document; and is signed and dated by the originator and, as applicable, by personnel authorized to approve the document. Records shall be distributed, handled and controlled in accordance with written procedures.

1.2 ESTABLISHING A RECORD SYSTEM

A record system or systems shall be established at the earliest practicable time consistent with the schedule for accomplishing work activities.

1.2.1 RECORDS MANAGEMENT

The record system shall be defined, implemented, and enforced in accordance with written procedures, instructions, or other documentation prepared in accordance with Section V of this QAPP. The records management activities to be performed when processing QA records are detailed in the NNWSI Project Administrative Procedures Manual.

1.2.2 MINIMUM RECORDS

Sufficient records shall be specified, prepared, and maintained to furnish documented evidence of activities that affect quality. The records shall include at least the following: operating logs, the results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses. Also, the records shall include closely related data such as qualifications of personnel, procedures, and equipment. A list of typical QA records is contained in Appendix E.

1.2.3 CONTROL OF RECORDS

Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition of QA records shall be established and documented.

1.3 PRESERVATION OF RECORDS

The procedure that defines the implementation of the record system for REECO shall identify measures to be implemented for the preservation and safe-keeping of the records before storage and for the prevention of delays between record completion and storage at the Project Record Center.

1.4 RETENTION CLASSIFICATION

For purposes of record retention, all NNWSI Project records are classified as lifetime records and are required to be retained for the life of the Project.

2.0 GENERATION OF RECORDS

2.1 RECORDS SPECIFICATION

The applicable design specifications, procurement documents, implementing procedures, operational procedures, or other documents shall specify the records to be generated, supplied, or maintained by or for the WMPO.

2.1.1 QUALITY OF RECORDS

Documents that are designated to become records shall be legible, identifiable, accurate, complete, reproducible, microfilmable, and appropriate to the work accomplished.

2.1.2 COMPLETION OF RECORDS

Documents that are designated to become records shall be completed in accordance with the methods specified in the NNWSI Project Administrative Procedures Manual.

3.0 VALIDATION OF RECORDS

3.1 METHODS OF VALIDATION

Documents shall be considered valid records only if stamped, initialed, or signed and dated by authorized personnel, or otherwise authenticated in accordance with approved procedures. These records may be originals or reproduced copies. Authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization.

3.2 AUTHENTICATION LIST

Each organization shall maintain a list which contains the signature and initials of the personnel authorized to authenticate records.

4.0 RECEIPT OF RECORDS

4.1 RECEIPT CONTROL

Each organization that is responsible for the receipt of records shall designate a person or organization to be responsible for receiving the records. The designee shall be responsible for organizing and implementing a system of receipt control of records for permanent and temporary storage in accordance with approved procedures. Each receipt control system shall be structured to permit a current and accurate assessment of the status of records during the receiving process. As a minimum, the receipt control system shall include the following:

- ° A method for designating the required records.
- ° A method for identifying the records received.
- ° Procedures for receipt and inspection of incoming records.

4.2 PROTECTION OF RECORDS

The individual or organization responsible for receiving records shall provide protection from damage, deterioration, or loss during the time that the records are in their possession.

5.0 RECORDS IDENTIFICATION

5.1 IDENTIFICATION DESIGNATION

Records or indexing systems, or both, shall provide sufficient information to permit identification between the record and the items or activities to which it applies. Records shall be clearly identified by a unique number or other designation which is directly traceable to controlling programmatic information (e.g., project, contract number, task number, preparing organization, author, date, title, subject, etc.). This unique identification number or other designation shall not be repeated anywhere in the Nevada Nuclear Waste Storage Investigations (NNWSI) Project. The Waste Management Project Office (WMPO) or its designee shall review and approve the records identification system of REECO to ensure consistency.

5.2 INDEXING SYSTEM

The records shall be indexed and the indexing system or systems shall include, as a minimum, the location of the record within the records system or systems.

6.0 PERMANENT STORAGE FACILITY

Records shall be controlled from the time they are complete until the time they are stored in a permanent storage facility. Temporary storage, preservation, safe keeping, and retrievability of completed records shall be in accordance with the requirements applicable to the permanent storage of records. The use of dual storage facilities is an acceptable alternative to a single fire-rated, environmentally controlled facility.

6.1 STORAGE LOCATION

The records shall be stored in a predetermined location or locations that meets the requirements of applicable standards, codes, and regulatory agencies.

6.2 STORAGE PROCEDURE

Before the records are stored, a written storage procedure shall be prepared and responsibility assigned for enforcing the requirements of that procedure. As a minimum, this procedure shall include the following:

- ° A description of the storage facility.
- ° The filing system to be used.
- ° The method for verifying that the records received are legible and are in agreement with the transmittal document.

- The method of verifying that the records are those designated (see Paragraph 4.1 of this section).
- The rules governing access to and control of the files.
- The method for maintaining control of and accountability for records removed from the storage facility.
- A method for filing supplemental information (see Paragraph 9.0 of this section) and disposing of superseded records.

7.0 PRESERVATION

Records shall be stored in a manner approved by the organization or organizations responsible for storage. In order to preclude deterioration of the records, the following requirements shall apply:

- Provisions shall be made in the storage arrangement 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 (e.g., radiographs, photographs, negatives, microfilm, magnetic material, etc.) to prevent damage from excessive light, stacking, electromagnetic fields, temperature, and humidity.

8.0 SAFEKEEPING

8.1 MEASURES TO PRECLUDE ENTRY

Measures shall be established to preclude the entry of unauthorized personnel in the storage area. These measures shall guard against larceny and vandalism.

8.2 REPLACEMENT, RESTORATION, OR SUBSTITUTION

Measures shall be taken to provide for replacement, restoration, or substitution of lost or damaged records. These measures shall be accomplished within 90 days following determination that either a record has been lost or a record has been damaged to a degree that it is no longer complete or legible.

9.0 CORRECTED INFORMATION IN RECORDS

9.1 METHOD

Records may be corrected in accordance with written procedures that provide for appropriate review or approval by the originating organization.

9.2 IDENTIFICATION

The correction shall include the date and the identification of the person authorized to issue such correction and shall not obliterate the corrected data.

10.0 STORAGE FACILITY

The following requirements apply to both permanent and temporary record storage facilities.

10.1 CONSTRUCTION AND MAINTENANCE OF FACILITY

Records shall be stored in facilities constructed and maintained in a manner that minimizes the risk of damage or destruction from natural disasters, such as winds, floods, or fires; environmental conditions such as high and low temperatures and humidity; and infestation of insects, mold, or rodents.

10.2 METHODS

The two satisfactory methods of providing storage facilities are (1) single and (2) dual; these are detailed in the following sections.

10.2.1 SINGLE FACILITY

Design and construction of a single record storage facility shall meet the following criteria:

- ° It shall have reinforced concrete, concrete block, masonry, or equal construction.
- ° It shall have a floor and roof with drainage control and if a floor drain is provided, then a check valve (or equivalent device) shall be included.
- ° It shall have doors, structures and frames, and hardware that shall be designed to comply with the requirements of a minimum two hour fire rating.
- ° Sealant shall be applied over walls as a moisture or condensate barrier.
- ° Surface sealant shall be placed on the floor to provide a hard wearing surface to minimize concrete dusting.
- ° It shall have foundation sealant and provisions for drainage.
- ° It shall have a fire protection system.

- Only those penetrations used exclusively for fire protection, communication, lighting, or temperature and humidity control are allowed. All such penetrations shall be sealed or dampered to comply with the minimum two-hour fire protection rating.
- The construction details shall be reviewed for adequacy of protection of contents by a person who is competent in the technical field of fire protection and fire extinguishing.
- If the facility is located within a building or structure, then the environment and construction of that building can provide a portion or all of these criteria.

10.2.2 ALTERNATE SINGLE FACILITIES

The following are acceptable alternatives to the criteria for a single facility:

- Two-hour fire rated vault that meets National Fire Protection Association (NFPA) 232-1975.
- Two-hour fire rated Class B file containers that meet the requirements of NFPA 232-1975.
- Two-hour fire rated file room that meets the requirements of NFPA 232-1975 with the following additional provisions:
 - An early-warning fire detection and automatic fire suppression capability with electronic supervision at a constantly attended central station.
 - Records storage in fully enclosed metal cabinets.
 - Adequate access and aisle ways.
 - Work that is not associated directly with record storage or retrieval shall be prohibited in the file room.
 - Smoking, eating, or drinking shall be prohibited in the file room.
 - Two-hour fire rated dampers or doors in all boundary penetrations.

10.2.3 DUAL FACILITIES

If storage at dual facilities for each record is provided, then the facilities shall be at locations sufficiently remote from each other to eliminate the chance of exposure to a simultaneous hazard. Neither facility is required to satisfy the requirements of Paragraphs 10.2.1 or 10.2.2 but shall meet the other requirements of this document.

11.0 RETRIEVAL

11.1 PROVISIONS

Storage systems shall provide for retrieval of information in accordance with planned retrieval times based upon the record type. Final reports shall contain a listing, by unique number or other designation, that enables prompt retrieval of all documents used to compile or evaluate the report. This listing shall include, as a minimum, all referenced documents, peer review or other review documents, computer codes, data sheets, procedures, and test plans. All documents referenced by final reports, except readily available references such as encyclopedias, dictionaries, engineers handbook, etc., shall be retrievable from the Records Management System (RMS).

11.2 PERSONNEL

A list shall be maintained that designates those personnel who shall have access to the files.

11.3 ACCESSIBILITY

Records maintained by REECO shall be accessible to the WMPO or its designated alternate.

12.0 DISPOSITION

12.1 ACCESSIBILITY AT VARIOUS LOCATIONS

Records that are accumulated at various locations, prior to transfer, shall be made accessible to the WMPO either directly or through the procuring organization.

12.2 CUSTODIAN

The custodian shall inventory the submittals, acknowledge receipt, and process these records in accordance with this document or the procedures implementing this document.

- 12.3 REQUIREMENTS OF REGULATORY AGENCIES

Various regulatory agencies have requirements concerning records that are within the scope of this document. The most stringent requirements shall be used to determine final dispositions.

SECTION XVIII

AUDITS

1.0 GENERAL REQUIREMENTS

All Nevada Nuclear Waste Storage Investigations (NNWSI) Project activities will be subject to planned and scheduled internal and external audits to assure that procedures and activities comply with the overall Quality Assurance (QA) program and to determine their effectiveness. REECO shall include in their Quality Assurance Program Plan (QAPP) a system of planned, periodic audits to provide an objective evaluation of the quality-related practices, procedures, instructions, activities, and items including the review of documents and records to ensure that the QA program is effective and properly implemented. The audits shall be performed in accordance with written procedures using checklists by appropriately trained personnel who do not have direct responsibility for performing the activities being audited. Audit results shall be documented, reported to, and reviewed by responsible management. Tracking systems shall be instituted for audit findings to assure that all findings are appropriately addressed and to identify quality trends. The audited organization shall describe in a formal report the corrective action to be taken to address findings, and shall submit the report to the auditing organization and their own responsible management.

Followup action, including verification of corrective action or reaudit of specific areas, shall be performed.

1.1 NNWSI PROJECT AUDITS

The NNWSI Project audit program will be executed at the Project level by the Waste Management Project Office (WMPO) and at the activity level by individual Participating Organizations and NTS Support Contractors.

1.1.1 REECO AUDITS

REECO shall conduct internal (covering their entire QAPP, on an annual basis) and external (direct subcontractor) audits of activities under its direct control. These audits will be scheduled, planned, conducted, and reported as described in this QAPP. External and internal audit schedules, dates, and changes thereto, shall be sent to the WMPO QA (QASC Audit and Surveillance Branch Manager). Audit schedules shall identify the date of the audit, the activities to be audited, and the requirements to which the activities are to be audited.

1.1.2 EVALUATING AUDIT REPORTS

REECO shall be responsible for evaluating audit findings to determine if further processing as an unusual occurrence is required per DOE/NV Order 5000.3 as supplemented or modified by the cognizant DOE field office.

1.2 SCHEDULING

Internal and external QA audits, shall be scheduled in a manner that shall provide coverage and coordination with ongoing QA program activities. Audits shall be scheduled at a frequency commensurate with the status and importance of the activity. The audit schedule shall be evaluated periodically and revised as necessary to assure that coverage is maintained current. Revisions of the audit schedule shall be documented. The evaluation should include an assessment of the effectiveness of the program based on (1) previous audit results and corrective actions; (2) nonconformance reports; and (3) information from other sources such as American Society of Mechanical Engineers (ASME), Nuclear Regulatory Commission (NRC), etc. Regularly scheduled audits shall be supplemented by additional audits of specific subjects when necessary to provide adequate coverage.

1.2.1 INTERNAL AUDITS

Elements of this QAPP shall be audited at least annually. The scope of the audit shall be established by: considering the results of any previous audits, the nature and frequency of identified deficiencies, and any significant changes in personnel, organization, or in the QA program.

1.2.2 EXTERNAL AUDITS

Elements of an external organization's QA program shall be audited at least annually or once during the life of the activity, whichever is the shorter period, with the following exception: If the activity is less than four months in duration, an audit is not required to be performed unless an audit is necessary due to the complexity or importance of the activity being performed. The justification for not performing audits of vendors whose activities are less than four months in duration shall be documented and approved by the responsible QA Manager.

1.3 PREPARATION

Preparation for an audit shall include the items listed below.

1.3.1 AUDIT PLAN

NNWSI-Project Quality Assurance (PQA) shall develop and document an audit plan for each audit. This plan shall identify the audit scope, requirements, audit personnel, activities to be audited, organizations to be notified, applicable documents, schedule, and written procedures or checklists.

1.3.2 PERSONNEL

The PQA shall select and assign auditors who are independent of any direct responsibility for the performance of the activities that they are to audit. If the audit is to be an internal one, then the personnel who have direct responsibility for performing the activities to be audited shall not be involved in the selection of the audit team. Audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective. Appendix F defines the requirements for the qualification of QA audit personnel.

1.3.3 SELECTION OF AUDIT TEAM

An audit team shall be identified before the beginning of each audit. This team shall contain one or more auditors and shall have an individual qualified as a lead auditor who organizes and directs the audit, coordinates the preparation and issuance of the audit report, and evaluates the responses. The audit team leader shall ensure that the audit team is prepared before the audit begins.

1.4 PERFORMANCE

Audits shall be performed in accordance with written procedures using checklists as early in the life of the activity as practical and shall be continued at intervals consistent with the schedule for accomplishing the activity. Elements that have been selected for audit shall be evaluated against specified requirements including a review of corrective actions taken on deficiencies in the area being audited that were identified during previous audits. Objective evidence shall be examined to the depth necessary to determine if these elements are adequate for effective control and to determine whether or not they are being implemented effectively. The audit results shall be documented by audit personnel and shall be reviewed by management having responsibility for the area audited. Conditions that require prompt corrective action shall be reported immediately to the management of the audited organization. Audit findings will be reviewed with the audited organizations at a closing meeting.

1.5 REPORTING

The audit report shall be signed by the audit team leader and issued within 30 calendar days after completion of the audit and shall include the following information, as appropriate:

- ° Description of the audit scope.
- ° Identification of the auditors.
- ° Identification of persons contacted during audit activities.
- ° Summary of audit results, including a statement of the effectiveness of the QA program elements that were audited.

- Description of each reported adverse audit finding in sufficient detail to enable corrective action to be taken by the audited organization.

1.6 RESPONSE

Management of the audited organization or activity shall investigate adverse audit findings; schedule corrective action, including measures to prevent recurrence; and, within thirty calendar days of receipt of the audit report, notify the appropriate organizations in writing of action taken or planned. The adequacy of audit responses shall be evaluated by or for the auditing organization.

1.7 FOLLOW-UP ACTION

Follow-up action shall be taken to determine whether or not corrective action has been accomplished as scheduled and shall be verified by the auditing organization. An analysis of audit results shall be performed to identify quality trends.

1.8 RECORDS

1.8.1 AUDITS

As a minimum, audit records shall include the following:

- Identification of the organization(s), activities, or items audited and the individual(s) contacted during the audit(s).
- Description of any deficiencies, nonconformances, and potential quality problems identified. These shall be documented and monitored until verification of effective corrective action is made.
- Audit plans, audit reports, written replies, and the record of completion of corrective action, and close-out of the audit.

1.8.2 PERSONNEL RECORDS

Records of personnel qualifications for Auditors and Lead Auditors performing audits shall be established and maintained by the employer. Records for each Lead Auditor shall be maintained and updated annually.

2.0 SURVEILLANCES

The NNWSI Project audit program shall be supplemented by independent surveillance activities. The purpose of a surveillance is to monitor or observe items or activities to verify conformance to specified requirements. These surveillances shall be conducted and shall be either scheduled or implemented on a random basis.

Measures for the surveillance of site investigation activities shall be established and executed in accordance with procedures prepared by the organization performing the activity. Surveillances shall be scheduled and conducted based on the activity's relative impact or importance, or both, to the NNWSI Project. All deficiencies, nonconformances, and potential quality problems identified during surveillances are to be documented and monitored until verification of effective corrective action is made. Specific requirements applicable to surveillance activities are as follows:

2.1 PLANNING

Surveillances are to be performed to written checklists or surveillance plans whenever practical. The documentation shall identify characteristics, methods, and acceptance criteria, and shall provide for recording objective evidence of results, identification and qualification of personnel and accuracy of the equipment necessary to perform the surveillance.

2.2 REPORTING INDEPENDENCE

Surveillance personnel shall not report directly to the immediate supervisors who are responsible for the work being surveilled.

2.3 RECORDS

As a minimum, surveillance records shall identify the following:

- Item or activity.
- Date of surveillance.
- Name of individual performing the surveillance.
- Identification of the organization(s), activities, or items surveilled, including the name or names of personnel contacted.
- Description of any deficiencies, nonconformances, and potential quality problems identified during the surveillance.
- Surveillance criteria.
- Equipment used during the surveillance.
- Results.
- Acceptance statement.

APPENDIX A
TERMS AND DEFINITIONS

ACCEPTANCE CRITERIA: Specified limits defined in codes, standards, or other requirement documents placed on characteristics of an item, process, or service.

ACCESSIBLE ENVIRONMENT: (1) the atmosphere; (2) the land surface; (3) surface water; (4) oceans; and (5) the portion of the lithosphere that is outside the controlled areas.

ACTIVITIES THAT AFFECT QUALITY: Activities that have impact on the validity of information or data reported to NNWSI Project participants or to agencies designated to receive Project output on functions of structures, systems, or components that are important to operator safety and that could cause undue risk to the health or safety of the public. These activities may include planning, researching, developing, demonstrating, investigating, characterizing, designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, modifying, decontaminating, decommissioning, dismantling, etc.

ACTIVITY: 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.

AP - NNWSI Administrative Procedure: An implementing procedure which identifies the interface control methods to meet QA requirements. The control methods are those which govern Project-wide systems and are implemented by all Project participants.

AUDIT: A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, codes, standards, instructions, drawings, and other applicable requirements, and the effectiveness of implementation.

BARRIER: Any material, structure, system, or component that prevents or substantially delays the movements of water or radionuclides.

CERTIFICATE OF CONFORMANCE: A document signed by an authorized individual that certifies the degree to which items or services meet specified requirements.

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

CHARACTERISTIC: Any property or attribute of an item, process, or service that is distinct, describable, and measurable.

COMMERCIAL GRADE ITEM: An item satisfying all of the following requirements:

- 1) The item is not subject to design or specification requirements that are unique to nuclear facilities;
- 2) The item is to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description, i.e., catalog;
- 3) The item is used in applications other than nuclear facilities.

CONDITION ADVERSE TO QUALITY: An all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and nonconformances. A significant condition adverse to quality is one which, if not corrected, could have a serious effect on safety or operability.

CONTAINMENT: The confinement of radioactive waste within a designated boundary.

CONTAINMENT, PERIOD OF: Known as the period during the first several hundred years following permanent closure of the geologic repository in which radiation and thermal levels are high and the uncertainties of ensuring repository performance are great. During this time, special emphasis is placed upon the ability to contain the wastes by waste packages within an engineered barrier system.

CONTRACTOR: An organization under contract to provide supplies, construction, or services.

CONTROLLED AREA: The surface location, which is to be marked by suitable monuments, that extend horizontally no more than 10 kilometers in any direction from the outer boundary of the underground facility and the underlying subsurface, which is an area that has been committed to use as a geologic repository and from which incompatible activities would be restricted following permanent closure. The controlled area is also known as the site.

CORRECTIVE ACTION: Measures taken to rectify conditions that are adverse to quality and, where necessary, to preclude repetition.

CORROBORATIVE DATA: Information that may or may not have been acquired and controlled in a manner consistent with Quality Assurance Level I requirements and may be used as background, or corroborative support to primary data.

DESIGN: The act of developing designs for construction or of analyzing the performance of repository engineered structures, systems, components, and natural barriers. Design documentation includes, but is not limited to,

drawings, specifications, test plans, design reports, test reports, system design descriptions, configuration status listings, design manuals, and manuals describing computer programs used for design or performance analysis.

DESIGN INPUT: Those criteria, parameters, bases, or other design requirements upon which the detailed final design is based.

DESIGN OUTPUT: Documents, such as drawings, specifications, and others that define technical requirements of structures, systems, and components.

DESIGN PROCESS: Technical and management processes that commence with identification of design input and that lead to and include the issuance of design output documents.

DEVIATION: A departure from specified requirements.

DISPOSITION: The action taken to resolve a nonconforming condition and to restore acceptable conditions.

DOCUMENT: Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results. A document is not considered to be a Quality Assurance Record until it satisfies the definition of a Quality Assurance Record as defined in this Appendix.

DOE: The U.S. Department of Energy or its duly authorized representatives.

ENGINEERED BARRIER SYSTEM: The waste package and the underground facility.

EXTERNAL AUDIT: An audit of those portions of another organization's QA program that is neither under the direct control nor within the organizational structure for the auditing organization.

FINAL DESIGN: Approved design output documents and approved changes thereto.

FUNCTIONAL CHARACTERISTICS: Those attributes of a repository or its structures, systems, and components that determine its performance with respect to safety, reliability, operability, and other design criteria established in the OGR Program or other Federal regulatory documents.

GEOLOGIC REPOSITORY: A system that is either intended to be used for or may be used for the disposal of radioactive wastes in excavated geologic media. A geologic repository includes the geologic repository operations area and the portion of the geologic setting that provides isolation of the radioactive waste.

GEOLOGIC REPOSITORY OPERATIONS AREA: A high-level radioactive waste facility that is part of a geologic repository, including both surface and subsurface areas, in which waste handling activities are conducted.

IMPORTANT TO SAFETY: As it applies to structures, systems, and components, those engineered structures, systems, and components that are essential to the prevention or mitigation of an accident that could result in a radiation dose to the whole body, or any organ, of 0.5 rem or greater at or beyond the nearest boundary of the unrestricted area at any time until the completion of permanent closure.

IMPORTANT TO WASTE ISOLATION: The barriers that 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.

INDOCTRINATION: Instruction provided to personnel for familiarization with programmatic and work-oriented documents applicable to the assigned activity.

INSPECTOR: A person who performs inspection activities to verify whether or not an item or activity conforms to specified requirements.

INSPECTION: Examination or measurement to verify whether an item or activity conforms to specified requirements.

INTERNAL AUDIT: An audit of those portions of an organization's QA program that is retained under its direct control and within its organizational structure.

ISOLATION: Inhibiting the transport of radioactive materials so that amounts and concentrations of this material entering the accessible environment will be kept within prescribed limits.

ITEM: An all-inclusive term that is used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, service, structure, subassembly, subsystem, system unit, data, and prototype hardware. This term includes magnetic media, and other materials that retain or support data.

LIFETIME RECORDS: Quality Assurance Records that furnish evidence of the quality and completeness of data, items, and activities affecting quality. All NNWSI Project QA Records are classified as Lifetime Records.

MATERIAL: A term that includes items plus any hardware or geologic samples either used in or resulting from research and development or site investigations on the NNWSI Project. Hardware and geologic specimens include but are not limited to, test apparatus or equipment, special nuclear material, cores, geologic samples, water and gas samples, etc.

MEASURING AND TEST EQUIPMENT: Devices or systems used to calibrate, measure, gage, test, or inspect, in order to control or to acquire data so that conformance to specified requirements can be verified.

NNWSI PROJECT PARTICIPANTS: An all inclusive term used to describe (generically) the various organizations involved in the NNWSI Project. This term includes the WMPO, Participating Organizations, and NTS Support Contractors.

NNWSI PROJECT PERSONNEL: All U.S. Department of Energy Participating Organizations, and NTS Support Contractor personnel involved in NNWSI Project activities.

NNWSI PROJECT QUALITY ASSURANCE PLAN (QAP): The document that describes the planned, systematic quality assurance requirements that are applicable to the NNWSI Project. The QAPPs of the WMPO, Participating Organizations and NTS Support Contractors shall be consistent with this document.

NONCONFORMANCE: A deficiency in characteristics, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

NTS: Nevada Test Site.

NTS SUPPORT CONTRACTOR: Organizations that are directly under contract to DOE/NV for activities at the NTS and other locations.

OBJECTIVE EVIDENCE: Any documented statement of fact, other information, or record, either quantitative or qualitative, that pertains to the quality of an item or activity, based on observations, measurements, or tests that can be verified.

OPERATIONS, PERIOD OF: Includes the time during which emplacement of wastes occurs; any subsequent period before permanent closure during which the emplaced wastes are retrievable; and permanent closure, which includes sealing of shafts.

OVERVIEW: An analysis and assessment by management of the scope, status, adequacy and effectiveness of Program quality achievement and assurance activities. Overview encompasses effectiveness assessments, technical reviews, readiness reviews, audits, and surveillances, as appropriate.

OWNER: The person, group, company, agency, or corporation that has or will have title to the repository.

PARTICIPATING ORGANIZATION: The government agencies external to the DOE, national laboratories and organizations participating directly in NNWSI Project activities.

PEER REVIEW: A documented critical review performed by personnel who are independent of those who performed the work but who have technical expertise at least equivalent to those who performed the original work. Peer reviews are in-depth, critical reviews and evaluations of documents, material or data that require interpretation or judgment to verify or validate assumptions, plans, results or conclusions or when the conclusions, material or data contained in a report go beyond the existing state of the art.

PERMANENT CLOSURE: The sealing of shafts and boreholes. Permanent closure represents the end of active human intervention with respect to the engineered barrier system.

PERFORMANCE CONFIRMATION: The program of tests, experiments, and analyses that is conducted to evaluate the accuracy and adequacy of the information used to determine with reasonable assurance that the performance objectives for the period after permanent closure will be met.

PRINCIPAL INVESTIGATOR (PI): The individual who has the technical responsibility for a particular technical task. This responsibility includes, but is not limited to, planning and cost control, the day-to-day technical direction and control of the item or activity, and the assembly of a support team to accomplish the item or activity. This term may be synonymous with task leader or project engineer depending upon the NNWSI Project Participant.

PROCEDURE: A document that specifies or describes the way in which an activity is to be performed.

PRIMARY DATA: Information that can be shown to have been acquired and controlled in a manner consistent with all applicable Quality Assurance Level I requirements and is necessary for the resolution of the NRC performance objectives of 10CFR60.

PROCUREMENT DOCUMENT: Purchase requisitions, purchase orders, letters of intent, work authorization letters, drawings, contracts, specifications, instructions, or any document that provides a means by which to acquire possession or ownership of items, or right to the use of services by payment.

PURCHASER: The organization responsible for the establishment of procurement requirements and for the issuance or administration, or both, of procurement documents.

Q-LIST: A list of geologic repository structures, systems, components, and activities that have been determined to be important to safety, waste isolation, or both, and are thereby subject to the highest Quality Assurance Level (Quality Assurance Level I) of the formal QA Plan.

QMP - Quality Management Procedure: An implementing procedure which identifies the control methods to meet Project QA requirements utilized by WMPO, WMPO_matrix support, and QASC personnel.

QUALIFICATION (PERSONNEL): The characteristics or abilities that are gained through education, training, or experience, which are measured against established requirements, such as standards or tests, that qualify an individual to perform a required function.

QUALIFIED PROCEDURE: An approved procedure that has been demonstrated to meet the specified requirements for its intended purpose.

QUALITY ASSURANCE: All those planned and systematic actions that are necessary to provide adequate confidence that the geologic repository and its subsystems or subcomponents will perform satisfactorily in service. Quality Assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system that provide a means by which to control the quality of the material, structure, component, or system to predetermined requirements.

QUALITY ASSURANCE RECORD: An individual document or other item that has been executed, completed, and approved and that furnishes evidence of (1) the quality and completeness of data (including raw data), items, and activities affecting quality; (2) documents prepared and maintained to demonstrate implementation of Quality Assurance programs (e.g., audit, surveillance, and inspection reports); (3) procurement documents; (4) other documents such as plans, correspondence, documentation of telecons, specification, technical data, books, maps, papers, photographs, and data sheets; (5) items such as magnetic media; and (6) other materials that provide data and document quality regardless of the physical form or characteristic. A completed record is a document or item (and documentation) that will receive no more entries, whose revisions would normally consist of a reissue of the document (or documentation), and that is signed and dated by the originator and, as applicable, by approval personnel.

QUALITY ASSURANCE LEVEL I: Those 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 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 inhibit 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.

QUALITY ASSURANCE LEVEL II: Those activities and items related to the systems, structures, and components which require a level of quality assurance sufficient to provide for reliability, maintainability, public and repository worker nonradiological health and safety, repository worker radiological health and safety and other operational factors that would have an impact on DOE and WMPO concerns, and the environment.

QUALITY ASSURANCE LEVEL III: Those activities and items not classified as QA Levels I or II.

QUALITY ASSURANCE PROGRAM PLAN (QAPP): The document that describes the organization's Quality Assurance Program, the applicable QA requirements, and the instructions to implement and apply the QA requirements to activities.

RADIOACTIVE WASTE: High-Level Waste (HLW) and other radioactive materials that are received for emplacement in a geologic repository.

RECEIVING: Taking delivery of an item at a designated location.

REPAIR: The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still does not conform to the original requirement.

REPOSITORY: See Geologic Repository Operations Area.

RETRIEVAL: The act of intentionally removing radioactive waste from the underground location at which the waste had been emplaced previously for disposal.

REWORK: The process by which a nonconforming item or activity is made to conform to the original requirements by completion or correction utilizing existing approved procedures.

RIGHT OF ACCESS: The right of a purchaser or designated representative to enter the premises of a Supplier for the purpose of inspection, surveillance, or Quality Assurance audit.

SCIENTIFIC INVESTIGATION: Any research, experiment, test, study, or activity that is performed for the purpose of investigating the natural barriers or the man-made aspects of the geologic repository, including the overall 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 of 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.

SERVICE: The performance of activities that include but are not limited to, site characterization, design, fabrication, investigation, inspection, nondestructive examination, repair, or installation.

SITE: Location of the controlled area.

SITE CHARACTERIZATION: The program of exploration and research both in the laboratory and in the field that is undertaken to establish the geologic conditions and the ranges of parameters of a particular site that are relevant to the procedures under 10 CFR Part 60. Site characterization includes

borings, surface excavations, excavation or exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing at depth as needed to determine the suitability of the site for a geologic repository. It does not include preliminary borings and geophysical testing needed to decide whether or not site characterization should be undertaken.

SPECIAL PROCESS: A process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product.

SUPPLIER: Any individual or organization under contract to provide items or services to the DOE/NV, to a Participating Organization, or to an NTS Support Contractor for NNWSI Project activities.

SURVEILLANCE: The act of monitoring or observing to verify whether or not an item or activity conforms to specified requirements.

TECHNICAL PROJECT OFFICER (TPO): The individual within each NNWSI Project Participant's organization who has been assigned overall responsibility for the organization's scope of work as detailed in the Work Breakdown Structure (WBS) Dictionary.

TECHNICAL REVIEW: A documented traceable review performed by qualified personnel who are independent of those who performed the work but who have technical expertise at least equivalent to those who performed the original work. Technical reviews are in-depth, critical reviews, analyses and evaluation of documents, material or data that require technical verification and/or validation for applicability, correctness, adequacy and completeness.

TESTING: An element of verification that is used to determine the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

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

TRAINING: In-depth instruction provided to personnel to develop and demonstrate initial proficiency in the application of selected requirements, methods, and procedures, and to adapt to changes in technology, methods, or job responsibilities.

UNDERGROUND FACILITY: The underground structure, including openings and backfill materials, but excluding shafts, boreholes, and their seals.

USE-AS-IS: A disposition that is permitted for a nonconforming item or service when it can be established that the item is satisfactory for its intended use.

VERIFICATION: The act of reviewing, inspecting, testing, checking, auditing, or otherwise determining and documenting whether or not items, processes, services, or documents conform to specified requirements.

WAIVER: Documented authorization to depart from specified requirements.

WASTE MANAGEMENT PROJECT OFFICE (WMPO): The organization to which the U.S. Department of Energy, Nevada Operations Office (DOE/NV), has assigned the responsibility of administering and coordinating the activities of various Participating Organizations and NTS Support Contractors associated with the NNWSI Project.

WASTE PACKAGE: The waste form and any containers, shielding, packing, and other absorbent materials immediately surrounding an individual waste container.

WORK BREAKDOWN STRUCTURE (WBS) DICTIONARY: A product oriented framework for organizing and defining work to be accomplished.

APPENDIX B
DESIGN INPUTS

Design inputs include many characteristics and functions of an item or system. These inputs vary depending on the application; however, it is desirable to consider at least the following listed inputs as they apply to specific items or systems of the repository:

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, agenda, or both.
4. Design conditions such as pressure, temperature, fluid chemistry, and voltage.
5. Loads such as seismic, wind, thermal, and dynamic.
6. Environmental conditions anticipated 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.
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 Interstate Commerce Commission 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.

APPENDIX C

REQUIREMENTS FOR THE QUALIFICATION OF INSPECTION AND TEST PERSONNEL

1.0 GENERAL

The following are the requirements for the qualification of personnel who perform inspection and testing to verify conformance to specified requirements for the purpose of acceptability. The requirements for the qualification of personnel performing nondestructive examination are specified in Appendix D.

2.0 FUNCTIONAL QUALIFICATIONS

Three levels of qualification shall be utilized depending on the complexity of the functions involved. The recommendations for each level are not limiting with regard to organizational position or professional status but, rather, are limiting with regard to functional activities.

2.1 LEVEL I PERSONNEL CAPABILITIES

A Level I person shall be capable of performing and documenting the results of inspections or tests that are required to be performed in accordance with documented procedures, acceptance standards, and/or industry practices as defined in user's written procedures.

2.2 LEVEL II PERSONNEL CAPABILITIES

A Level II person shall have all of the capabilities of a Level I person for the inspection or test category or class in question. Additionally, a Level II person shall have demonstrated capabilities in planning inspections and tests; in setting up tests, including preparation and setup of related equipment, as appropriate; in supervising and certifying lower level personnel; and in evaluating the validity and acceptability of inspection and test results.

2.3 LEVEL III PERSONNEL CAPABILITIES

A Level III person shall have all the capabilities of a Level II person for the inspection, test category or class in question. In addition, the individual shall also be capable of evaluating the adequacy of specific programs used to train and certify inspection and test personnel whose qualifications are covered by this section.

3.0 EDUCATION AND EXPERIENCE QUALIFICATIONS

These education and experience recommendations should be considered with recognition that other factors commensurate with the scope, complexity, or special nature of the activity may provide reasonable assurance that a person can competently perform a particular task. Other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of capability testing. These factors and the basis for their equivalency shall be documented.

3.1 LEVEL I EDUCATION AND EXPERIENCE REQUIREMENTS

- ° Two years of related experience in equivalent inspection or testing activities; or
- ° High school graduation and six months of related experience in equivalent inspection or testing activities; or
- ° Completion of college level work leading to an associate degree in a related discipline plus three months of related experience in equivalent inspection or testing activities.

3.2 LEVEL II EDUCATION AND EXPERIENCE REQUIREMENTS

- ° One year of satisfactory performance as a Level I in the corresponding inspection or test category or class; or
- ° High school graduation plus three years of related experience in equivalent inspection or testing activities; or
- ° Completion of college work leading to an associate degree in a related discipline plus one year of related experience in equivalent inspection or testing activities; or
- ° Graduation from a four-year college plus six months of related experience in equivalent inspection activities or testing activities.

3.3 LEVEL III EDUCATION AND EXPERIENCE REQUIREMENTS

- ° Six years satisfactory performance as a Level II in the corresponding inspection or test category or class; or
- ° High school graduation plus ten years of related experience in equivalent inspection or testing activities; or high school graduation plus eight years of experience in equivalent inspection or testing activities with at least two years associated with nuclear facilities; or, if not, at least sufficient training to be acquainted with relevant Quality Assurance aspects of a nuclear facility; or
- ° Completion of college level work leading to an associate degree and seven years of related experience in equivalent inspection or testing activities with at least two years of this experience associated with nuclear facilities or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or
- ° Graduation from a four-year college plus five years related experience in equivalent inspection or testing activities with at least two years of this experience associated with nuclear facilities or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility.

4.0 CERTIFICATION

4.1 QUALIFICATION REQUIREMENTS

The responsible organization shall designate those activities that require qualified inspection and test personnel and the minimum qualification requirements for such personnel. Further, the responsible organization shall establish written procedures for the qualification of inspection and test personnel and for the assurance that only those personnel who meet the established requirements are permitted to perform inspection and test activities. If a single inspection or test requires implementation by a team or a group, then personnel who do not meet the requirements of this section may be used in data-taking assignments or in repository or equipment operation, provided they are supervised or overseen by a qualified individual.

4.2 PERSONNEL SELECTION

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

4.3 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 Quality Assurance program elements that are to be employed.

4.4 TRAINING

The need for a formal training program shall be determined, and such training activities shall be conducted as required to qualify personnel who perform inspection 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. Instructions shall also be provided on those changes to the QAPP and implementing procedures that affect previous training.

4.5 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 of capability demonstration in accordance with the organization's personnel qualification procedure.

4.6 EVALUATION OF PERFORMANCE

The job performance of 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. If during this evaluation, or at any other time, it is determined by the responsible organization 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 inspection or testing activities in his qualified area for a period of one year shall be reevaluated and a redetermination of their capability made in accordance with the organization qualification procedure.

4.7 CERTIFICATION OF QUALIFICATION

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

- Employer's name
- Identification of person being certified.
- Activities certified to perform.
- Basis used for certification that includes such factors as:
 - Education, experience, and training (when necessary).
 - Test results (where applicable).
 - Results of capability demonstration.
- Results of periodic evaluation.
- Results of physical examinations (when required).
- Signature of employer's designated representative who is responsible for such certification.
- Date of certification and certification expiration.

4.8 PHYSICAL

The responsible organization shall identify any special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examinations.

APPENDIX D

REQUIREMENTS FOR THE QUALIFICATIONS OF NON-DESTRUCTIVE EXAMINATION PERSONNEL

This Appendix provides amplified requirements for the qualification of personnel who perform radiographic (RT), magnetic particle (MT), ultrasonic (UT), liquid penetrant (PT), eddy current (ET), neutron radiographic (NRT), and leak-testing (LT), which is hereinafter referred to as non-destructive examination (NDE), to verify conformance to specified requirements.

1.0 CERTIFICATION

1.1 APPLICABLE DOCUMENTS

The American Society of Non-destructive Testing Recommended Practice No. SNT-TC-1A, June 1980 edition, and its applicable supplements shall apply as requirements to NDE personnel covered by this section.

1.2 PROGRAM

The responsible organization shall establish written procedures for the control and administration of NDE personnel training, examination, and certification.

1.3 CERTIFICATE OF QUALIFICATION

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

- ° Employer's name.
- ° Identification of person being certified.
- ° Activities certified to perform.
- ° Basis used for certification that includes such factors as:
 - Education, experience, and training (when necessary).
 - Test results (where applicable).
 - Results of capability demonstration.
- ° Results of periodic evaluation.

- Results of physical examinations (when required).
- Signature of employer's designated representative who is responsible for such certification.
- Dates of certification and certification expiration.

1.4 PHYSICAL

The responsible organization shall identify any special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examinations.

APPENDIX E
LIST OF TYPICAL QA RECORDS

The following is a list of typical QA records. The nomenclature of these may vary for each Participating Organization and NTS Support Contractor. The NNWSI Project retention period is defined as lifetime. QA records will be submitted to the Project Records Center by the originating organization of the record.

1.0 SITE CHARACTERIZATION

- ° Surveys of the underground facility excavations, shafts, and boreholes referenced to readily identifiable surface features.
- ° Description of the materials encountered.
- ° Geologic maps and geologic cross section.
- ° Locations and amounts of seepage.
- ° Instrument locations, readings, analysis, and reports for in situ testing.
- ° Technical specifications.
- ° Sample extraction location maps.
- ° Site Characterization Report.
- ° Environmental Assessment.
- ° Peer review documentation.
- ° Test plans and procedures, and results thereof.
- ° Data reduction, evaluations, analyses, and reports for:
 - Geomorphology.
 - Stratigraphy.
 - Tectonics.
 - Seismicity.
 - Geoen지니어ing.
 - Hydrology.
 - Geochemistry.
 - Climatology and Meteorology.

- Environmental Impact Statement.
- Environmental Report.

2.0 DESIGN RECORDS

- Applicable codes and standards used in design.
- Design drawings.
- Design calculations and records of checks.
- Approved design change requests.
- Design deviations.
- Design reports.
- Design verification data.
- Design specifications and amendments.
- Safety analysis report.
- Stress reports for code items.
- Systems descriptions.
- Systems process and instrumentation diagrams.
- Technical analysis, evaluations, and reports.

3.0 PROCUREMENT RECORDS

- Procurement specifications.
- Purchase order including amendments.

4.0 MANUFACTURING RECORDS

- Applicable code data reports.

- As-built drawings and records (Note: As-built drawings and records shall correctly identify the installed condition of the item. The type of as-built drawings and records to be maintained shall be specified.)
- Certificate of compliance.
- Eddy-current examination final results.
- Electrical control verification tests results.
- Ferrite test results.
- Heat treatment records.
- Liquid penetrant examination final results.
- Location of weld filler material.
- Magnetic particle examination final results.
- Major defect repair records.
- Material properties records.
- Nonconformance reports.
- Performance test procedure and result records.
- Pipe and fitting location report.
- Pressure test hydrostatic or pneumatic).
- Radiographs (for in-service inspection applications).
- Radiograph review records.
- Ultrasonic examination final results.
- Welding procedures.

5.0 INSTALLATION AND CONSTRUCTION RECORDS

5.1 RECEIVING AND STORAGE - NONCONFORMANCE REPORTS

5.2 CIVIL

- ° Concrete cylinder test reports and charts.
- ° Concrete design mix reports.
- ° Concrete placement records.
- ° Inspection reports for channel pressure tests.
- ° Material property reports on containment liner and accessories.
- ° Material property reports on metal containment shell and accessories.
- ° Material property reports on reinforcing steel.
- ° Material property reports on reinforcing steel splice sleeve material.
- ° Procedure for waste package vessel pressure proof test and leak rate tests and results.
- ° Reports of high strength bolt torque testing.
- ° Soil compaction test reports.
- ° Location and description of structural support systems.
- ° Details, methods of emplacement, and location of seals used.

5.3 WELDING

- ° Ferrite test results.
- ° Heat treatment records.
- ° Liquid penetrant test final results.
- ° Material property records.
- ° Magnetic particle test final results.
- ° Major weld repair procedures and results.

- Radiographs (for in-service inspection application).
- Radiograph review records.
- Weld location diagrams.
- Weld procedures.

5.4 MECHANICAL

- Cleaning procedures and results.
- Code data reports.
- Installed lifting and handling equipment procedures, inspection, and test data.
- Lubrication procedures.
- Material properties records.
- Pipe and fitting location reports.
- Pipe hanger and restraint data.
- Pressure test results (hydrostatic or pneumatic).
- Safety valve response test procedures.

5.5 ELECTRICAL AND INSTRUMENTATION AND CONTROL

- Cable pulling tension data.
- Cable separation data.
- Cable splicing procedures.
- Cable terminating procedures.
- Certified cable test reports.
- Relay test procedures.
- Voltage breakdown test results on liquid insulation.

5.6 GENERAL

- As-built drawings and records.
- Final inspection reports and releases.
- Nonconformance reports.
- Specifications and drawings.
- Details of equipment, methods, progress, and sequence of work.
- Construction problems.
- Anomalous conditions encountered.

6.0 PRE-OPERATIONAL AND START-UP TEST RECORDS

- Automatic emergency power source transfer procedures and results.
- Final system adjustment data.
- Pressure test results (hydrostatic or pneumatic).
- Instrument alternating current (AC) systems and inverters test procedures and reports.
- Offsite power source energizing procedures and test reports.
- Onsite emergency power source energizing procedure and test reports.
- Pre-operational test procedures and results.

7.0 OPERATION RECORDS

- Records and drawing changes that identify repository design modifications made to systems and equipment described in the Final Safety Analysis Report.
- Radioactive waste inventory, emplacement location, and transfer records.
- Offsite environmental monitoring survey records.
- Waste shipment records.

- Repository radiation and contamination survey results.
- Radiation exposure records for individuals entering radiation control areas.
- Records of gaseous and liquid radioactive material released to the environment.
- Records of transient or operational cycles for those repository components designed for a limited number of transients or cycles.
- Training and qualification records for members of the repository operating staff.
- In-service inspection records.
- Records of reviews performed for changes made to procedures or equipment, or reviews of tests and experiments.
- Meeting minutes of the Repository Nuclear Safety Committee and licensee nuclear review board.
- Surveillance activities, inspections, and calibrations required by the technical documents.
- Records of repository tests and experiments.
- Changes made to Operating Procedures.
- Sealed source leak-test results.
- Records of annual physical inventory of all sealed source material.
- Logs of repository operation.
- Records and logs of maintenance activities, inspection, repair, and replacement of principal items of structures, systems, and components.
- Operational, shift supervisor, and control-room logs.
- Licensee event reports.
- Fire protection records.
- Nonconformance reports.
- Repository equipment operations instructions.
- Security plan and procedures.

- Emergency plan and procedures.
- Quality Assurance and Quality Control Manuals.
- Records of activities required by the security plan and procedures.
- Applicable records noted in other section of this appendix for any modification or new construction applicable to structures, systems, or components.
- Evaluation of results of reportable safety concerns as required by regulations.
- Annual environmental operating report.
- Annual repository operating report.
- Location and description of dewatering systems.

APPENDIX F

REQUIREMENTS FOR THE QUALIFICATION OF QUALITY ASSURANCE PROGRAM AUDIT PERSONNEL

1.0 GENERAL

This Appendix provide requirements for the qualification of Lead Auditors. A Lead Auditor organizes and directs audits, reports audit findings, and evaluates corrective action. This Appendix also provides amplified requirements for the qualifications of individuals, henceforth referred to as Auditors, who participate in an audit, such as technical specialists, management representatives, and auditors-in-training.

1.1 QUALIFICATION OF AUDITORS

The responsible auditing organization shall establish the audit personnel qualifications and the requirements for the use of technical specialists to accomplish the auditing of Quality Assurance programs. Personnel selected for Quality Assurance auditing assignments shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors either shall have or shall be given appropriate training or orientation to develop their competence to perform required audits. The competence of personnel to perform the various auditing functions shall be developed by one or more of the methods listed below.

1.1.1 ORIENTATION

Orientation to provide a working knowledge and understanding of this document and the auditing organization's procedures for implementing audits and reporting results.

1.1.2 TRAINING PROGRAMS

Training programs to provide general and specialized training in audit performance. General training shall include fundamentals, objectives, characteristics, organization, performance, and results of quality auditing. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods of closing audit findings.

1.1.3 ON-THE-JOB TRAINING

On-the-job training, guidance, and counseling under the direct supervision of a Lead Auditor. Such training shall include planning, performing, reporting, and follow-up action involved in conducting audits.

1.2 QUALIFICATION OF LEAD AUDITORS

An individual shall meet the requirements listed below before being designated a Lead Auditor:

1.2.1 COMMUNICATION SKILLS

The prospective Lead Auditor shall have the capability to communicate effectively, both orally and in writing. These skills shall be attested to in writing by the Lead Auditor's employer.

1.2.2 TRAINING

Prospective Lead Auditors shall have training to the extent necessary to ensure their competence in auditing skills. Training in the following areas shall be given based upon management evaluation of the particular needs of each prospective Lead Auditor:

- Knowledge and understanding of this document, 10 CFR Part 60, and other nuclear and/or DOE related codes, standards, regulations, and regulatory guides, as applicable to the NNWSI Project.
- General structure of Quality Assurance programs and applicable elements as defined in this document.
- Auditing techniques of examining, questioning, evaluating, and reporting; methods of identifying and following up on corrective action items; and closing out audit findings.
- Audit planning in the functions related to quality for the following activities: design, purchasing, fabrication, handling, shipping, storage, cleaning, erection, installation, inspection, testing, statistics, nondestructive examination, maintenance, repair, operation, modification of nuclear facilities or associated components, and safety aspects of the nuclear facility.
- On-the-job training to include applicable elements of the audit program.

1.2.3 AUDIT PARTICIPATION

The prospective Lead Auditor shall have participated in a minimum of five Quality Assurance audits within a period of time not to exceed three years prior to the date of qualification. One of the audits shall be a nuclear Quality Assurance audit that shall be made within the year prior to qualification.

1.2.4 EXAMINATION

The prospective Lead Auditor shall pass an examination that shall evaluate his comprehension of and ability to apply the body of knowledge identified in Paragraph 1.2.2 above. The test may be oral, written, practical, or any combination of the three types. The development and administration of the examination shall be in accordance with Paragraph 1.4 of this section.

1.3 MAINTENANCE OF QUALIFICATION

1.3.1 MAINTENANCE OF PROFICIENCY

Lead Auditors shall maintain their proficiency through regular and active participation in the audit process; review and study of codes, standards, procedures, instructions, and other documents related to quality assurance program and program auditing; and participation in training programs. Based on annual assessment, management may extend the qualification, require retraining, or require requalification. These evaluations shall be documented.

1.3.2 REQUALIFICATION

Lead Auditors who fail to maintain their proficiency for a period of two years or more shall require requalification. Requalification shall include retraining in accordance with the requirements of Paragraph 1.2.2 of this section, reexamination in accordance with Paragraph 1.4.2, and participation as an Auditor in at least one nuclear Quality Assurance audit.

1.4 ADMINISTRATION

1.4.1 ORGANIZATIONAL RESPONSIBILITY

Training of auditors shall be the responsibility of the employer. The responsible auditing organization shall select and assign personnel who are independent of any direct responsibility for the performance of the activities

that they will audit. The Lead Auditor shall, prior to commencing the audit, concur that assigned personnel collectively have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited.

1.4.2 QUALIFICATION EXAMINATION

The development and administration of the examination for a Lead Auditor required by Paragraph 1.2.4 is the responsibility of the employer. The employer may delegate this activity to an independent certifying agency, but shall retain responsibility for conformance to this document of the examination and its administration. Integrity of the examination shall be maintained by the employer or certifying agency through appropriate confidentiality of files and, where applicable, proctoring of examinations. Copies of the objective evidence regarding the type or types and content of the examination or examinations shall be retained by the employer.

1.5 CERTIFICATION OF QUALIFICATION

Each Lead Auditor shall be certified by his employer as being qualified to lead audits. As a minimum, this certification shall document the following:

- Employer's name.
- Lead Auditor's name.
- Date of certification or recertification.
- Basis of qualification (i.e., education, experience, communication skills, training, examination, etc.).
- Signature of employer's designated representative who is responsible for such certification.



Reynolds Electrical & Engineering Co., Inc.

TITLE:

ORGANIZATION

NO.

NOP 1.0

PAGE 1

of 3

NNWSI

QUALITY PROCEDURE

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

This procedure describes the organization and responsibilities of REECO personnel for the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

APPLICABILITY

The organization and responsibilities outlined in this procedure apply to all NNWSI Project activities.

DEFINITIONS

- A. Nevada Test Site Support Contractor - Organizations (Fenix & Scisson, Holmes & Narver, Reynolds Electrical & Engineering Co., Inc.) directly under contract to the U.S. Department of Energy, Nevada Operations Office (DOE/NV) for activities at NTS that support NNWSI Project activities.
- B. Participating Organizations - The U.S. Government agencies (United States Geological Survey), national laboratories (Los Alamos National Laboratory, Sandia National Laboratories, Lawrence Livermore National Laboratory), and major organizations (Science Applications International Corporation) that participate directly in NNWSI Project activities.
- C. Quality Assurance Support Contractor - The organization (Science Applications International Corporation) which supports the WMPO in the development and implementation of the NNWSI Project Quality Assurance Requirements.
- D. Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

- A. General Manager
 1. Has overall responsibility for NNWSI Project activities assigned to REECO.
 2. Assures compliance with the quality program.

RESPONSIBILITIES (Continued)

B. NNWSI Project Quality Assurance Manager

1. Administers the REECo Quality Assurance Program in conformance with the requirements of 568-DOC-115 for specific NNWSI Project activities.
2. Furnishes guidance and assistance to division and departments of the Company in matters relating to NNWSI Project specific activities.
3. Provides for a system of periodic audits for appraisals of division or department activities to assure compliance with the policies and procedures of the QAPP.
4. Provides for a system of review of division or department written procedures used to implement quality requirements.
5. Supervises the activities of the Project QA (PQA) group.
6. Provides guidelines for designing and developing quality activities.
7. Assists others in implementing quality activities.
8. Maintains a Quality Assurance Reporting System.
9. Conducts special tests and certifications.
10. Represents the Company in Quality interfaces with other agencies and contractors.
11. Provides for quality training and familiarization, as necessary.

D. Division and Department Managers

1. Implement, control, and perform all work tasks necessary for NTS support.
2. Implement, document, and maintain quality activities for their organizational units in accordance with policies, standards, and guidelines developed by the PQA organization.
3. Assures that their quality activities are made evident by written procedures published in the appropriate division/department Procedures Manual.
4. As a minimum, establish activities to incorporate the specific quality requirements into their operations.

E. NNWSI Technical Project Officer (TPO)

1. Coordinates and implements all NNWSI Project activities required of REECo.

RESPONSIBILITIES (Continued)

2. Functions as the one-point contact between REECo, the DOE, Participating Organizations and other NTS Support Contractors on all NNWSI Project activities, and functions in the same capacity for all REECo internal organizations.
3. Reviews and approves all NNWSI Project work instructions or requests required for implementation of REECo assigned tasks.
4. Provides approval and commitment of REECo personnel for NNWSI Project activities.

F. Authority

The persons and organizations performing QA functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; to verify implementation of the solution; and to stop unsatisfactory work. Such persons and organizations performing QA functions shall report to a management level at which this required authority and organizational freedom are provided, including sufficient independence from cost and schedule.

PROCEDURES

REECo utilizes a matrix management organizational concept to support the NNWSI Project. The administrative responsibility, authority, and accountability for REECo matrix personnel, remains with the respective REECo organizational element. The functional responsibility and accountability of the project rests with the NNWSI Project TPO.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.
- B. REECo Organizational Chart.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

RESOLUTION OF DISPUTES

NO.

NQP 1.1

PAGE 1

of 2

APPROVED:


General Manager

3-14-88
DATED

PURPOSE AND SCOPE

The purpose of this procedure is to provide a means for the resolution of disputes arising between QA personnel and others in matters concerning quality. This procedure establishes the authority for and delineates the progressively higher levels of management to be involved in the resolution of any such disputes.

APPLICABILITY

The responsibilities and authority established herein are applicable to all NNWSI Project activities.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115 contains definitions applicable to the NNWSI Project.

RESPONSIBILITIES

A. NNWSI Project Quality Assurance Manager

1. Administers the REECo Quality Assurance Program in conformance with the requirements of 568-DOC-115.
2. Provides guidance and assistance in matters relating to NNWSI Project Quality Assurance activities.
3. Represents the company in interfaces with other agencies and contractors in matters pertaining to quality assurance.

B. Division and Department Managers

1. Implement and maintain quality activities for their organizational units in accordance with requirements prescribed by Project Quality Assurance (PQA) and 568-DOC-115.
2. Establish methods to incorporate specific quality requirements into their operation.

RESPONSIBILITIES (Continued)

C. Authority - 568-DOC-115, Section I, Organization

The persons and organizations performing QA functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend or provide solutions; to verify implementation of solutions; and to stop unsatisfactory work. Such persons and organizations performing QA functions shall report to a management level at which this required authority and organizational freedom are provided, including sufficient independence of cost and schedule.

PROCEDURES

- A. Disputes in matters concerning quality arising in Departments shall be reported to the Project QA Manager for resolution.
- B. The Project QA Manager shall resolve the dispute in accordance with the requirements established in the QAPP, 568-DOC-115.
- C. If the QA Manager's resolution is not satisfactory to the parties of the dispute the WMPO NNWSI Project QA Manager shall provide a resolution based on input from all parties.
- D. All such disputes and their resolutions shall be documented. This documentation shall be considered a QA record and processed in accordance with the Quality Assurance Records Management Handbook (QARMH) and Section XVII of 568-DOC-115.

REFERENCES:

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

QUALITY ASSURANCE PROGRAM

NO.
NQP 2.0

PAGE 1
of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

This procedure describes the Quality Program implemented by REECO for the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

APPLICABILITY

The Quality Assurance Program outlined in this procedure applies to all REECO assigned NNWSI Project activities.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunctions with the NNWSI Project.

RESPONSIBILITIES

- A. The REECO internal organization given authorized direction to perform a specific NNWSI Project task is responsible for the achievement and maintenance of Quality in that task, to the level specified by the work instructions, criteria letters, or other authorized documents that direct the task to be performed.
- B. REECO Project Quality Assurance, as an organization not directly responsible for the work being done, is responsible for the verifying that the specified level of quality has been achieved for tasks given to REECO to perform.
- C. All other organizational responsibilities are specified in NQP 1.0, Organization.

PROCEDURES

- A. REECO has established a Quality Assurance Program to cover its NNWSI Project specific activities. This document is published as 568-DOC-115, and utilizes the WMPO NNWSI Quality Assurance Plan, NVO-196-17, for the basis of requirements to be performed.

PROCEDURES (Continued)

- B. Document 568-DOC-115, contains the 18 criteria elements in the order and manner specified in NVO-196-17. This document provides quality assurance coverage for REECO assigned NNWSI Project task operations in a manner commensurate with the criticality and complexity of the operations involved. As stated under Responsibilities, of this document, conformance to 568-DOC-115, is required of all REECO internal organizations performing NNWSI Project specific tasks.

REFERENCES

- A. NVO-196-17, NNWSI Project Quality Assurance Plan.
- B. 568-DOC-115, Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:
QUALIFICATION AND CERTIFICATION
OF INSPECTION PERSONNEL

NO.
NQP 2.1
PAGE 1
of 2

APPROVED:


General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE AND SCOPE

This procedure defines the qualification and certification requirements for inspection personnel on the NNWSI Project.

APPLICABILITY

This procedure applies to all REECO personnel who perform inspections on the NNWSI Project of Quality Assurance Level I or II items or activities.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

A. NNWSI Project Quality Assurance

1. Establishes the requirements for personnel performing inspections on the NNWSI Project.
2. Establishes and maintains certification records of inspection personnel.

B. Division and Department Managers

Managers of REECO organizations performing NNWSI Project activities shall:

1. Assure that the requirements for the qualification of those personnel who perform inspection activities as specified in 568-DOC-115 are met.
2. Provide indoctrination and training (as necessary) for the qualification of those personnel who perform inspection activities.
3. Issue required certificates attesting to the qualifications of inspection personnel.
4. Establish and maintain records of inspector's qualifications.

PROCEDURE**A. Qualification and Certification**

Qualification and certification of inspection personnel shall be in accordance with the requirements of Appendix C of 568-DOC-115.

B. Records

Records of personnel qualification shall be established and maintained by the responsible department. These shall be considered QA records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

PERSONNEL CERTIFICATION
QA ACTIVITIES

NO.

NQP 2.2

PAGE 1

of 2

APPROVED:


General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE AND SCOPE

To assure that personnel performing activities that affect quality are certified to show competence to perform their specific duties.

APPLICABILITY

This procedure applies to all personnel performing activities that effect quality on the NNWSI Project.

DEFINITIONS

Appendix A, Terms and Definitions of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITY

The department manager is responsible for the certification of personnel within his department.

PROCEDURE

- A. Department managers shall have on file, at the work site, a certification as to the qualifications of his personnel assigned to perform activities that effect quality.
- B. A statement of personnel qualifications and the applicable job description requirements shall be used as a basis for this certification.
- C. The certification shall specify any restrictions or limitations to the certification and must be signed and dated by the department manager.
- D. The special requirements for the certification of audit, NDE, and inspection personnel are included in separate NQPs.
- E. Certification and qualification documents shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

TITLE:

DESIGN AND SCIENTIFIC
INVESTIGATION CONTROL

NO.

NQP 3.0

PAGE 1

NNWSI
QUALITY PROCEDURE

APPROVED:


General Manager

7/19/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

Part A - Scientific Investigation Control

REECO is not a participating organization and has no assigned activity in this area.

Part B - Design Control

As the primary support contractor of the NTS, as opposed to A-E contractor, REECO has no specifically designated responsibility for design in the NNWSI Project. However, REECO does participate in the review of designs from participating organizations or A-E contractors to the extent indicated by WMPO, participating organizations or A-E contractor design control programs. Specific REECO methods for accomplishing this task are described in NQP 3.1.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

DESIGN REVIEW

NO.

NOP 3.1

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 01-16-87.

PURPOSE AND SCOPE

This procedure describes the manner in which designs are reviewed for the applicable Quality Assurance requirements on the NNWSI Project.

APPLICABILITY

This procedure applies to all design documents provided to REECO for review and comment.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

It is the responsibility of Project Quality Assurance to review designs provided to REECO by the WMPO, Participating Organizations, or other NTS Support Contractors to ensure the inclusion of applicable quality assurance requirements.

PROCEDURES

- A. All design documents received for review shall be entered in a log.
- B. The quality assurance review shall take into consideration those characteristics appropriate to the designated quality assurance level.
- C. Typical, but not limiting review guides include:
 1. Material - type, specification, grade, size.
 2. Dimensions - completeness, tolerance.
 3. Welding - spec/code, materials, process certifications, personnel certification.
 4. Finish - surface requirements.
 5. Painting - type, color, primer, area, specs.
 6. Plating - type, thickness, area specs.
 7. Wiring - workmanship standards.
 8. Equipment - type, size, part number, performance.

PROCEDURES (Continued)

9. NDT - specification, personnel certification, acceptance criteria.
10. Marking - type, size, location.
11. Testing - type, spec., procedure.
12. Inspection - special equipment needs.
13. Shelf life - necessary.
14. Packaging - spec., type, special requirements.
15. Quality Program requirements.
16. Quality Assurance Level.

D. The results of this review shall be documented.

QA RECORDS

Documentation generated as a result of this design review procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

PROCUREMENT DOCUMENT CONTROL

NO.

NQP 4.0

PAGE 1

of 6

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 3: This revision supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

This procedure defines the requirements and responsibilities of the control of procurement documents in order to ensure that applicable regulatory requirements, design or site investigation bases, and other requirements that are necessary to assure the specified quality are suitably included or referenced in the documents for procurement of material, equipment, parts, components, and services utilized on the NNWSI Project. Additionally, this procedure reflects the requirements specified in 568-DOC-115.

APPLICABILITY

This NQP applies to all NNWSI Project procurement actions performed by REECo, whether initiated by the WMPO, Participating Organizations, other NTS Support Contractors, or REECo.

DEFINITIONS

- A. Buyer's Handbook - The compilation of procedures and documents established by the REECo Procurement Department that controls, guides or directs Procurement Department personnel in the performance of their procurement duties and activities and incorporates the applicable rules, regulations, conditions, and standards for procurement as directed by REECo's contract with the U.S. DOE, REECo executive management practices, and REECo quality assurance programs.
- B. Appendix A., Terms and Definitions, of 568-DOC-115, contains general definitions applicable to the NNWSI Project.

RESPONSIBILITIES

- A. Requisitioner - Initiates purchase requisitions based on authorized input from the WMPO, Participating Organizations, other NTS Support Contractors or REECo internal organizations, and assures the inclusion of applicable drawings, specifications, other pertinent procurement documents, and a Technical Inspection Report (TIR).
- B. NNWSI Project Quality Assurance (PQA) - Reviews the procurement documentation package to verify that the required quality requirements have been included. This review will be documented and the QA review

RESPONSIBILITIES (Continued)

block on the purchase requisition will be signed by the representative conducting the review. PQA will also review the finalized purchase order prior to the order being placed.

1. For non-REECO originated purchase documents, PQA will review for inclusion of the quality requirements specified by the originating organization. This review will be documented by the reviewer.
 2. For REECO originated purchase documents, PQA will assure that the following requirements are met:
 - a. QA requirements are correctly stated, inspectable, and controllable.
 - b. There are adequate acceptance and rejection criteria.
 - c. Procurement documents have been prepared, reviewed, and approved in accordance 568-DOC-115.
- C. Procurement Department - Performs procurement activities in accordance with the REECO Buyer's Handbook, the REECO NNWSI Project QAPP, and this procedure; forwards a copy of the purchase order to WMPO for Quality Assurance Level I purchases.
1. Procurement documents shall require potential suppliers to provide a QA Program Plan, instructions, drawings, reports and certifications consistent with the provisions of REECO's NNWSI Project Quality Assurance Program Plan, 568-DOC-115, the Quality Assurance Level, and/or other specific requirements as specified in the authorized input which results in the initiation of a procurement action.
 2. The QA Program Plan and other required documents shall be reviewed and approved by the organization initiating the authorized input resulting in a procurement action, and/or by REECO PQA if the procurement action is originated by REECO. In the case of the latter, REECO PQA shall determine whether or not the QA Program Plan adequately defines quality assurance requirements. Those which do not shall be corrected prior to initiation of activities specified by the purchase order or contract. The extent of the program required shall depend upon the type and use of the item or service being procured.
- D. Basic Requirements
1. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents used by REECO for the procurement of items and services, to the extent consistent with the importance, criticality, or complexity of the procurement action. These requirements, which include approved vendors, source inspection hold points, and receiving inspection, will either be provided by the Participating Organization or A-E contractor initiating the request for a procurement action or will be included by the appropriate REECO internal group in the case of a REECO-initiated action. Actual procurement activities for which REECO has responsibilities will be accomplished by the Procurement Department.

RESPONSIBILITIES (Continued)

To the extent necessary, REECO procurement documents require potential suppliers to provide a QA Program Plan that is consistent with the pertinent provisions of the documents from which the action was generated.

2. REECO shall ensure that adequate information is provided to be able to include applicable regulatory requirements, design bases, and other requirements in the procurement documents to assure that adequate technical and quality assurance requirements are included or referenced. The Procurement Department shall include such applicable requirements for which adequate information has been provided into the appropriate procurement documents.
3. Although REECO will support and act as the one point contact for all actions concerning procurements for which REECO has responsibility, activities such as a vendor survey for qualification, vendor audit for adequacy of performance, or vendor in-plant inspection will be performed by REECO PQA and originating organization, if required.

E. Additional Requirements for QA Level I Activities

1. All procurement actions identified as QA Level I by Participating Organizations and/or NTS Support Contractors will include provisions for the following as deemed necessary:
 - a. Scope of Work - A statement of the scope of work to be performed by the supplier.
 - b. Technical Requirements - Where necessary, these requirements shall be specified by reference to specific drawings, specifications, codes, standards, regulations, procedures, or instructions, including revisions thereto, that describe the items or services to be furnished. The procurement documents shall provide for identification of test, inspection, and acceptance requirements of the purchaser for monitoring and evaluating the supplier's performance to the extent specified by the organization originating the procurement action.
 - c. QA Program Requirements - Procurement documents shall require that the supplier have a documented QA program plan that implements applicable portions of 568-DOC-115. The extent of the program required shall depend upon the type and use of the item or service being procured and the direction of the initiating organization. The procurement documents shall require the supplier to incorporate appropriate QA Program Plan requirements in subtier procurement documents.

The QAPP for suppliers of QA Level I purchases shall be reviewed and approved by REECO PQA. Those which do not adequately define QA requirements shall be corrected prior to award of contract.

RESPONSIBILITIES (Continued)

- d. Rights of Access - At each tier of procurement, the procurement documents shall provide for access to the suppliers' facilities and records for inspection by the purchaser, the WMPO, or other NNWSI Project authorized representatives, including representatives of the organization initiating the procurement action.
 - e. Documentation Requirements - The procurement documents at all tiers shall identify the documentation required to be submitted to the purchaser. The time of submittal shall also be established. When the purchaser requires the supplier to maintain specific QA records, the retention times and disposition requirements shall be specified in accordance with the information provided by the organization initiating the need for the procurement action.
 - f. Spare and Replacement Parts - The procurement documents shall require the identification of appropriate spare and replacement parts or assemblies and delineation of the technical and quality related data that is required for ordering parts or assemblies. The technical and quality requirements shall be equal to or better than for the original item. If QA or technical requirements of the original item cannot be determined by the organization initiating the need for the procurement action, then a documented engineering evaluation shall be conducted by qualified individuals which has been used to establish the requirements. This evaluation shall consider the interchangeability, function, and safety of the item. This evaluation shall be documented.
 - g. Nonconformances - The procurement documents shall require the supplier to submit nonconformance reports for nonconformances occurring at the supplier's facility to the purchaser for disposition and/or approval. Nonconformances found during receipt inspection shall be processed in accordance with NQP 15.0.
2. A review of the procurement documents and changes thereto shall be made by the cognizant technical organization and Project Quality Assurance (PQA) to assure that documents transmitted to the prospective supplier(s) include appropriate provisions to assure that items or services will meet the specified requirements and this review shall be performed and documented prior to contract award. All such reviews for REECo-responsible procurement actions identified as QA Level I will be processed through the organization originating the need for the procurement action (Participating Organization, NTS Support Contractor, etc.), and REECo Project Quality Assurance, as a minimum. Procurement document reviews within REECo shall be performed by personnel who have access to pertinent information and who have adequate understanding of the requirements and intent of the procurement documents.
 3. As a minimum, the review by REECo Project Quality Assurance shall be performed to determine that QA requirements are correctly stated, inspectable, and controllable; that there are adequate acceptance and rejection criteria; and that the procurement documents have been prepared, reviewed, and approved in accordance with the specified requirements. This review shall be documented.

RESPONSIBILITIES (Continued)

4. Changes to procurement documents shall be subject to the same degree of control as utilized in the preparation of the original documents. Changes that are made as a result of the bid evaluation of precontract negotiations shall be incorporated into the procurement documents and shall be approved by the same organizations that approved the original action.
5. The review of such changes and their effects shall be completed and documented prior to contract award. Review of changes shall include the considerations that appropriate content has been included in the procurement documents; that additional or modified design or site investigation criteria has been determined; and that analysis of exceptions or changes requested or specified by the supplier and determination of the effects such changes may have on the intent of the procurement documents or quality of the item or service to be furnished have been performed by the organization initiating the need for the procurement action.
6. REECo Procurement Department shall forward a copy of all purchase orders and changes thereto, as issued, to the WMPO for purchases of Quality Assurance Level I items or services.

PROCEDURES

- A. All documents relating to the NNWSI Project procurements shall be so identified by stamp, work order, WBS number, or by some other approved means. The required Quality Assurance Level shall also be readily identifiable upon the face of the document.
- B. Procurement authorizing documents are received and REECo procurement requisitions are prepared by the respective organizational requisitioner from the input of requirements to that organization.
 1. The TPO (or a designated representative) reviews the procurement authorizing documents for the inclusion of technical and administrative information as required by 568-DOC-115 and documents this review.
 2. REECo Project Quality Assurance reviews the procurement authorizing documents for inclusion of quality assurance levels and details as required by 568-DOC-115 and documents this review.
- C. The prepared purchase requisition and accompanying drawings, specifications, catalogs, Technical Inspection Reports (TIR's), and Source Inspection Reports (SIR's), if necessary, are forwarded to PQA for verification of the quality requirements and their adequacy.

PROCEDURES (Continued)

- D. The Procurement Department will process the document package in accordance with Procurement Department procedures.
1. The Procurement Department shall process the documents in accordance with the Buyer's Handbook.
 2. Project Quality Assurance shall review each package for completeness and accuracy prior to placement of the order or award of contract and maintain a verifiable record of such review.
 3. Procurement document changes, including changes as a result of bid evaluations, shall be subject to the same degree of control as utilized in the preparation of the original documents, and shall be approved by the same organizations as the original action.
- E. Procurement shall forward a copy of all purchase orders and changes thereto to the WMPO through the TPO when the procurement is for a Quality Assurance Level I item or service.

F. QA RECORDS

Documentation generated as a result of this procedure is considered QA Records and shall be maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. REECO Buyer's Handbook.
- B. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.
- C. Federal Acquisition Regulation.
- D. Department of Energy Acquisition Regulation.



Reynolds Electrical & Engineering Co., Inc.

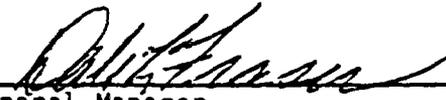
TITLE: INSTRUCTIONS, PROCEDURES,
AND DRAWINGS

NO. NQP 5.0

PAGE 1
of 2

NNWSI
QUALITY PROCEDURE

APPROVED:


General Manager

2-7-88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

This procedure defines the manner in which approved instructions, procedures, drawings, or other documents which will include or reference appropriate quantitative or qualitative acceptance criteria will be used on the NNWSI Project.

APPLICABILITY

QA administrative procedures or documents provide instructions for implementation and application of REECO's NNWSI QAPP 568-DOC-115. The technical documents will be developed by each organization's technical group, and issued and controlled in accordance with the quality assurance administrative procedures (NQP's).

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contain general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

Each organization is responsible for ensuring that they have approved documentation to perform their assigned tasks prior to implementation. Technical and QA administrative documents for QA Level I and II activities shall be available for WMPO or QASC review at the location where the activity is performed.

- A. NNWSI Project Quality Assurance (PQA) is responsible for assuring that Company-level quality documents are fully implemented by the divisions and departments.
- B. Each division or department manager, as applicable, is responsible to assure that such documents originated by them are fully implemented and in accordance with this NQP. PQA will verify implementation during periodic audits.

PROCEDURES

- A. Instructions, procedures, and drawings initiated by the WMPO Participating Organization, or NTS Support Contractor will be forwarded through the REECO Technical Project Officer (TPO) for review and comment when the document pertains to or affects activities to be performed by REECO on the NNWSI Project.
1. The TPO will distribute received documents for review and comment by affected REECO organizational units.
 2. Reviewed documents and/or comments will be returned to the initiating organization through the TPO after reviews are completed.
- B. Instructions, procedures, and drawings initiated by REECO will be distributed for review and comment as required.
- C. Additional Requirements
1. Engineering Documents
 - a. Drawings - The initiating organization shall establish a systematic method for the initiation, checking, approving, issuing, and change controls necessary for the production of drawings. The document control for REECO initiated drawings shall be in accordance with NQP 6.0.
 - b. Instructions and Procedures - All work that affects quality, including purchasing, handling, installation, and any other treatment of products, facilities, standards, or equipment, shall be prescribed in clear, complete, and documented instructions.
 - c. Instructions, procedures, or drawings shall include or reference appropriate quantitative or qualitative criteria for determining that important activities have been accomplished.
 2. For Quality Assurance Level I and II activities, a copy of the QA administrative procedures will be sent to WMPO and the QASC.
 4. For Quality Assurance Level I and II activities, REECO will provide the WMPO and the QASC with an up-to-date index of all documents affected by this procedure.
 5. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.
- B. NQP 6.0, Document Control.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

PROCEDURE REVIEW

NO.

NQP 5.1

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

PURPOSE AND SCOPE

This procedure describes the responsibility and method for the review of procedures for the NNWSI Project.

APPLICABILITY

This procedure applies to all REECO organizational procedures prepared for use on the NNWSI Project.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

- A. Each REECO organization is responsible for ensuring that all procedures, generated in support of the NNWSI Project, are sent to the Project Quality Assurance (PQA) for review and approval.
- B. Project Quality Assurance is responsible for assuring that all procedures affecting quality meet the requirements of 568-DOC-115.

PROCEDURES

- A. All procedures received for review shall be logged in.
- B. The procedure review shall give prime consideration to the following items:
 1. Statement of the procedure's purpose.
 2. A complete sequential list of activities to obtain the objective under "Method" or "Procedure".
 3. Clarity, unambiguity, definitiveness, and appropriateness to the circumstances.

PROCEDURES (Continued)

4. Qualitative and quantitative criteria for determining that activities have been satisfactorily accomplished.
 5. Special requirements for Quality Assurance Level I or II.
 6. QA Records.
- C. Following comment and/or approval, procedures shall be returned to the organization or office requesting review.

QA RECORDS

Documentation relating to the review of procedures as required by this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

DOCUMENT CONTROL

NO.

NQP 6.0

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality are controlled to assure that the correct documents are being employed, and are available at the location at which the prescribed activity is to be performed.

APPLICABILITY

The responsibilities outlined in this procedure apply to all REECO Nevada Nuclear Waste Storage Investigations (NNWSI) Project activities.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

A. NNWSI Technical Project Officer (TPO)

1. Assures that NNWSI Project Quality Assurance (PQA) maintains a master list to identify the correct and updated revision of documents currently in use for QA Level I and II activities.
2. Review document revisions to determine if they affect the integrity or intent of the original.
3. Distributes instructions, procedures, drawings, etc., to the appropriate work organization as necessary, utilizing a transmittal record memorandum with return receipt when they pertain to QA Level I and II activities.
4. As required, directs Quality Assurance Level III documents to be reviewed for comment.

B. Division and Department Managers

1. Managers of REECO organizations performing NNWSI Project activities shall establish methods to control the preparation, approval, issue, and revision of quality-related technical documents.

RESPONSIBILITIES (Continued)

2. Distribute instructions, procedures, drawings, etc., to the appropriate work locations as necessary.

C. NNWSI Project Quality Assurance (PQA)

Project Quality Assurance will perform documented audits of all phases of REECo NNWSI Project operations to assure conformance to the above requirements. These audits will be conducted in accordance with an approved audit schedule.

PROCEDURES

A. Documents shall be reviewed for adequacy and approved for release by authorized personnel. Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval, unless otherwise directed by WMPO.

B. The control of preparation, reviews, approval, and issuance shall be documented to ensure the identification of the documents to be controlled; the identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents; the review of documents for adequacy, completeness, and correctness, before approval and issuance; the availability of correct documents at the point of use, and either removal and replacement of superseded documents by updated documents or marking in a timely manner to prevent inadvertent use; and the coordination of interface documents.

C. Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original. Major changes require the document to process through the same review and approval cycle as for the original. In all cases of changes to policy, operations, or method of task performance, affected documents will be considered to have been subjected to a major change.

D. REECo shall provide WMPO and the QASC with a copy of our master document list for appropriate NNWSI Quality Assurance Level I and Quality Assurance Level II activities.

E. QA Records

Documentation generated as a result of this procedure is considered QA Records and shall be maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

TITLE: CONTROL OF PURCHASED MATERIALS,
EQUIPMENT, AND SERVICES

NO. NOP 7.0

PAGE 1
OF 3

NNWSI
QUALITY PROCEDURE

APPROVED:

Robert Thomas 2-7-88
General Manager DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

This procedure describes the control of material, equipment, and services procured by REECo for the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

APPLICABILITY

This procedure applies to the control of REECo procured QA Level I and II items and services for the NNWSI Project.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

- A. REECo Project Quality Assurance (PQA) will verify that adequate quality criteria have been included for the assurance that purchased materials, equipment, and services will conform to the requirements of the specifications and drawings, in accordance with NQP 4.0. The reviewing PQA representative will sign the purchase requisition in the QA block provided or on the body of the PR if from an outside organization.
- B. REECo Procurement
Performs procurement activities in accordance with the Buyer's Handbook, the NNWSI Project QAPP, and as directed by the DOE.

PROCEDURES

- A. Control of Purchased Items, Equipment, and Supplies
 - 1. The method of control and flow for the procurement of all major items, equipment, and supplies is defined in 568-DOC-115, NQP 4.0, and the Buyer's Handbook.

PROCEDURES (Continued)

2. When procured items, equipment, or supplies are received at NTS, a receiving inspection shall be performed in accordance with NQP 10.0, Inspection.
 - a. Handling, storage, and shipping of items, equipment, and supplies received at NTS shall be in accordance with NQP 13.0, Handling, Shipping, and Storage.
 - b. Acceptance criteria shall be defined in the TIR for the respective procurement.
 - c. Items, equipment, or supplies which do not conform to the procurement document requirements shall be tagged as nonconforming items, and segregated where practical from accepted items. Disposition shall be made in accordance with NQP 15.0, Nonconformances.

B. Control of Subcontracted Services

The method of control for subcontracts shall be in accordance with procedures and policies followed by Contract Administration and the Buyers Handbook.

C. Selection of Suppliers

1. Selection of suppliers shall be based on an evaluation of their capability to provide items or services in accordance with the documents provided by the organization requesting the procurement action.
 - a. Evaluation of suppliers for which REECo has procurement responsibility must be coordinated through REECo Procurement, and, in accordance with requirements of NQP 4.0, copies of all documentation will be provided to Procurement for inclusion in the "file of record" maintained by the Procurement Department.
 - b. For the evaluation of suppliers, REECo Procurement will organize a team which will include representatives from REECo Project Quality Assurance, REECo Procurement, the originating organization, WMPO and other technical and departmental representatives when required.
2. Evaluations of bids will be performed by the Procurement, PQA, representative(s) from the originating organization, WMPO and the responsible Architect Engineer (A-E).
 - a. Bids will be evaluated based on technical considerations, QA requirements, supplier's personnel and production capability and the supplier's past performance.
 - b. Any unacceptable conditions resulting from the bid evaluation shall be resolved by REECo Procurement. The resolutions shall be accepted by the evaluation team prior to award of contract.

PROCEDURES (Continued)

3. The organization originating the procurement activity shall conduct the supplier performance evaluation in accordance with that organization's approved procedure.
 - a. Evaluations of suppliers must be coordinated through REECo Procurement, and copies of all performance evaluation documentation provided to REECo Procurement for inclusion in the "file of record."
 - b. Performance evaluations shall include the review of supplier furnished documents and records such as certificates of conformance, nonconformance reports, audits, and receiving inspections; results of previous source verifications and audits; and operating experience of identical or similar products furnished by the same supplier.
 - c. All supplier performance evaluation activities shall be documented and shall include the basis for acceptance or rejection of the supplier.
4. Documents generated by suppliers shall be handled, controlled, and approved in accordance with the following:
 - a. REECo Procurement will ensure that the submittal of these documents is accomplished in accordance with the procurement document requirements, and that copies are provided to the organization originating the procurement activity. Transmittals will be made utilizing a transmittal record memorandum with return receipt.
 - b. Changes to a procurement action will be controlled in accordance with NQP 4.0.
 - c. Supplier generated nonconformance reports will be forwarded to the procurement action originating organization for tracking, control, and disposition. This will be done by the Procurement Department in accordance with Procedure TPO-1.
5. Commercial grade items will be handled and controlled in accordance with of 568-DOC-115, Section VII, paragraph 2.0.

D. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. REECo Buyer's Handbook.
3. 568-DOC-115, REECo Quality Assurance Program Plan for the NMWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE

PROCUREMENT DOCUMENT REVIEW

NO.

NOP 7.2

PAGE 1

OF 2

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE AND SCOPE

To define the procedure utilized in the quality assurance review of procurement documents used for the NNWSI Project.

APPLICABILITY

This procedure applies to the review of documents for REECO procured items and services.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

Each organization is responsible for submitting Purchase Requisitions and supporting documentation to Project Quality Assurance (PQA), in a timely manner, for review and forwarding to the Procurement Department.

NNWSI Project Quality Assurance is responsible for reviewing all such documents to ensure that applicable regulatory requirements, design bases, technical requirements, and quality assurance requirements are included or referenced.

PROCEDURES

Each procurement document, including purchasing requisitions, specifications, drawings, quality manual, and other pertinent documents shall be reviewed for the following considerations, as minimum:

- A. Authorized signatures
- B. Date
- C. Quality Assurance level
- D. Quality Assurance program requirements

ADDITIONAL REQUIREMENTS

The procurement documents, as appropriate, shall provide for the identification of test, inspection, and acceptance requirements, for monitoring and evaluating the supplier's performance to the extent specified, and for the qualification and certification of personnel and equipment.

Procurement documents require that the supplier have a documented Quality Assurance program that implements applicable portions of 568-DOC-115. The procurement documents require the supplier to incorporate appropriate Quality Assurance program requirements in subtier procurement documents.

QA RECORDS

Documents generated as a result of the activities contained within this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.
- B. NQP 7.0, Control of Purchased Items and Services.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

SUPPLIER EVALUATION

NO.

NOP 7.3

PAGE 1

of 2

APPROVED:

Robert F. Mason
General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE AND SCOPE

To describe the requisites for and the process used to conduct a supplier evaluation for the purpose of determining the ability of the supplier to provide a product or service, while meeting the quality requirement of the NNWSI Project.

APPLICABILITY

This procedure applies to the evaluation of suppliers of all REECo procured items and services for the NNWSI Project.

DEFINITIONS

Appendix, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

- A. The Procurement Department shall initiate the request for evaluation to determine the qualifications of suppliers for Quality Assurance Level I and II procurements. They shall also coordinate and participate in the conduct of these surveys or formally delegate the coordination responsibility.
- B. NNWSI Project Quality Assurance (PQA) shall participate in all requested evaluations.

PROCEDURES

- A. The supplier evaluation team shall be formulated by Procurement and shall consist of personnel from Procurement, Project Quality Assurance, and those included by the user and WMPO.
- B. The evaluation, at the supplier's facility, shall be initiated by a statement of purpose, goals, and a suggested agenda of activities as depicted in the documented evaluation plan.
- C. Following a review of the supplier's quality procedures, a tour of the facility is conducted to verify implementation of the procedures.

PROCEDURES (Continued)

- D. The evaluation shall include a review of the supplier's documents and records such as certificates of conformance, nonconformance reports, audits, receiving, in-process, and final inspections.
- E. A closing meeting is held with the supplier to apprise him of the team's observations and to give him a preliminary report of the evaluation results. These may be:
 - 1. Acceptable as is
 - 2. Acceptable with minor modification of activities
 - 3. Unacceptable
- F. Evaluation participants shall document their results, including the basis for acceptance or rejection of the supplier.
- G. REECo Procurement shall convene a meeting of evaluation participants and/or their representatives to make a final determination of the evaluation results.
- H. REECo Procurement shall formally notify the supplier of the evaluation results.

QA RECORDS

Documentation generated on supplier evaluations conducted in accordance with this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program for the NNWSI Project.
- B. REECo Buyer's Handbook.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

ANNUAL SUPPLIER EVALUATION

NO.

NOP 7.4

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

PURPOSE AND SCOPE

To describe the responsibilities for and the method of annually evaluating the performance of suppliers of materials and services for the NNWSI Project.

APPLICABILITY

This procedure applies to suppliers of Quality Assurance Level I and II materials and services.

DEFINITIONS

Appendix, Terms and Definitions, of 568-DOC-115, contains general definitions used in conjunction with the NNWSI Project.

RESPONSIBILITIES

- A. NNWSI Project Quality Assurance is responsible for accomplishing and reporting a performance evaluation, on an annual basis, of all suppliers within the scope of this procedure.
- B. The Procurement Department is responsible for submitting a continually updated listing of all such suppliers to Project Quality Assurance (PQA).

PROCEDURES

- A. The evaluation shall consist of an objective appraisal of the suppliers performance with special regard to the following considerations:
 1. Timely delivery within the terms of the contract.
 2. Pre-award quality assurance evaluation.
 3. Results of source evaluations and audits.
 4. Suppliers inspection reports and certificates of conformance.
 5. Material and process certifications.
 6. Nonconformance reports.

PROCEDURES (Continued)

7. Receiving inspections.
8. Field performance reports and operating experience.
- B. The results of the evaluation shall be documented, indicating the quality of the suppliers performance, whether satisfactory or unsatisfactory the basis for the determination, and the viability of the supplier as a future procurement source.
- C. Copies of the report shall be transmitted to the Procurement Department and WMPO.
- D. QA Records

Supplier evaluation documentation shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

TITLE: IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

NO. NQP 8.0

PAGE 1
of 2

NNWSI
QUALITY PROCEDURE

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

To define the responsibilities for identification and control of materials, parts, components, and samples used at the NTS for the NNWSI Project.

APPLICABILITY

This procedure applies to all materials, parts, components, and samples that require specific identification and control during their useful life.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITY

The Project Quality Assurance representative will review purchasing documents, criteria letters, work instructions, inspection forms, etc., to determine if specific identification requirements have been included. Such requirements will be included in the appropriate documentation to Procurement for inclusion in purchasing documents to suppliers and subtier vendors.

PROCEDURES

A. Identification and Traceability

Items requiring special identification marking or control shall be marked according to documentation provided. Item identification shall be traceable to documents including, but not limited to, logs, test records, inspection documents, and nonconformance reports.

1. When an item is subdivided, identification markings shall be transferred to all subsections. Identification shall include NTS number, property number, material specification and grade, heat, batch, lot, part or serial number; or specified inspection, test or other record, as applicable.

PROCEDURES (Continued)

2. All identification shall be located on the item and clearly visible whenever possible. If items are too small or cannot be marked for other reasons, the marking is made on the container or package. Markings are not to be covered by coatings of any form while identification is necessary.
3. Items requiring special marking or other means of identification shall be inspected for proper marking at the time the items are received by the receiving inspector. Inspection and documentation shall be performed according to NQP 10.0 inspection.
4. These provisions also apply to the identification and control of samples and items for which the shelf life or operating life may expire. Expiration dates must be clearly marked.

B. Calibration

Items specified as requiring calibration are tagged or labeled in accordance to NQP 12.0, Control of Measuring and Test Equipment, with the tagging and labeling showing the date calibrated, by whom, and date due for recalibration.

C. Nonconformances

Items that do not conform to the specified requirements shall be identified, segregated from acceptable items, and documented in accordance with the provisions referenced in NQP 15.0.

D. Additional Requirements

Items

Identification will relate to applicable design or specifying document. Identification will include all required information as specified in the applicable codes, standards or specifications for identification and traceability. Provisions are made for maintenance and replacement of markings and identification due to damage during handling and aging and updating of existing records.

E. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE

CONTROL OF PROCESSES

NO.

NOP 9.0

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE

To describe the control of processes for which REECo has responsibility under the NNWSI Project.

APPLICABILITY

For NNWSI Project activities, the special process for which REECo currently has responsibility is welding.

DEFINITIONS

A. Special Process

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

B. General

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

A. REECo Quality Operations Welding Operations Support Facility is responsible for providing qualified weld procedures, qualifying welders and preparing checklists, travelers, or any other instructions needed for welding processes.

B. Project Quality Assurance is responsible for reviewing all documentation of welding processes for Quality Assurance Level I activities.

PROCEDURES

A. Welding procedures will meet and be qualified in accordance with REECo's applicable codes and standards.

PROCEDURES (Continued)

- B. Welding procedures and other applicable documents are submitted to the WMPO for approval for Quality Assurance Level I activities.
- C. Welders shall be qualified in accordance with REECo Quality Operations Internal Procedure, "Standard Welder and Welding Operations Certification Specifications."
- D. All welding is performed by welders qualified to specific welding procedures that have been approved by WMPO for Quality Assurance Level I activities.
- E. Equipment used by welders in conjunction with Quality Assurance Level I activities is controlled as required by REECo standards.
- F. Records of welder qualification, including name, the method in which welders were qualified, date qualified, date due for verification of qualification, and welder stamp number shall be maintained by the Quality Operation Welding Support Operations Facility in accordance with the Quality Assurance Records Management Handbook.
- G. Inspection of welding is performed by Quality Operations personnel using the applicable American Welding Society (AWS), American Society of Mechanical Engineers (ASME) Codes, and REECo standards. Inspections will be performed in accordance with NQP 10.0.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.
- B. REECo Quality Operations Internal Procedure, Standard Welder and Welding Operations Certification Specifications.
- C. NQP 10.0, Inspection.



Reynolds Electrical & Engineering Co., Inc.

HNWSI
QUALITY PROCEDURE

TITLE:

WELDING PROCEDURE
QUALIFICATION

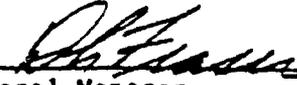
NO.

NOP 9.1

PAGE 1

of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

PURPOSE AND SCOPE

This procedure describes the process used for Qualifying Welding Procedures used by Qualified REECO Welders at the Nevada Test Site.

APPLICABILITY

The NQP applies to all NNWSI Project Welding activities performed by REECO, whether initiated by WMPO, Participating Organizations, other NTS Support Contractors, or REECO.

DEFINITION

- A. Essential Variable - The amount of variance allowable for specific welding data. Example: If a test sample is welded using 100 amps current (nominal), and the essential change allowable is + 10 amps, welding shall be done between 90 and 110 amps to be within the allowable limits of the PQR.
- B. Procedure Qualification Record (PQR) - The record of the welding data (such as joint configuration, base metal, filler material, electrical characteristics, (etc.) used to make a sample weld.
- C. Welding Procedure Specification (WPS) - The document based upon qualified PQR(s) which contains the list of welding data variables for a particular method, materials, and position. The purpose of the WPS is to assure repeated weld quality by qualified welders.

REQUIREMENTS

- A. The Welding Operations Support Facility (WOSF) of Quality Operations
 - 1. Works in conjunction with the applicable implementing group on approved projects to identify and secure representative samples of the material and equipment to be used in the project.
 - 2. Prepares a sample weld using the project representatives material and equipment under the supervision of the welding engineer who records the welding data at the time of welding.

REQUIREMENTS (Continued)

B. The Welding Engineer

1. Records all applicable data at the time of welding.
2. Visually examines the sample weld and evaluates based upon the criteria of the applicable code (i.e., AWS D1.1, ASME IX, etc.)
3. When required by the applicable code, arrange for nondestructive testing of the sample weld (i.e. ultrasonic, radiographic, etc.) and attaches a copy of the nondestructive evaluation report to the original PQR for retention.
4. When required by the applicable code, arranges for destructive testing (i.e., bend testing, tensile testing, etc.) of sample welds found acceptable by nondestructive testing and attaches a copy of the destructive evaluation report to the original PQR for retention.
5. Prepares the WPS from the completed PQR, listing the applicable welding data variables for the particular project that are to be used by the qualified welders assigned to the project.

NOTE: More than one WPS may be based upon single a PQR, provided that all aspects of the applicable code are met and the welding data on the WPS(s) does not exceed the limits of the essential variables for the PQR. WPS's are open for revision and may be updated or changed within the limits of the essential variables of the corresponding PQR(s).

C. QA Records

Documentation generated as a result of the implementation of this procedure will be considered Quality Assurance Records and shall be handled in accordance with the QA Records Management Handbook (QARMH).



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

WELDER CERTIFICATION

NO.
NQP 9.2

PAGE 1
of 2

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

PURPOSE AND SCOPE

The purpose of this document is to describe the process to be used for certifying welders, welding operators, and tackers.

APPLICABILITY

This procedure is applicable to all welders, welding operators and tackers (including apprentices) performing welding operations for the NNWSI project at the NTS. All such individuals are required to be certified for each process, position, thickness range, and material to be used prior to performing any welding.

DEFINITIONS

Welding Operations Support (WOS) - That subfunction of Quality Operations responsible for performing certification of welders, welding operators, and welding procedures.

RESPONSIBILITIES

A. The WOS shall:

1. Work in conjunction with applicable implementing groups on approved projects, secure and maintain adequate material and equipment necessary for the performance of welding tests identified as necessary for NNWSI Project operations.
2. Conduct tests of individuals submitted for certification to determine their capability to perform within the requirements of the specified welding operation.
3. Stamp all individuals test plates for identification prior to beginning the test(s).
4. Witness all welding tests.
5. Visually examine and test, or arrange for the testing of all coupons prepared from the candidates test plates.

RESPONSIBILITIES (Continued)

6. Record all applicable information concerning the candidates' tests on form RE-8111 "Welder Certification Test Record" and maintain a file of such records to be processed in accordance with approved procedures for NNWSI Project records management and the QA Records Management Handbook (QARMH).
 7. Maintain history and recall systems of employee certification by Department and Craft.
 8. Notify the welder's department manager when his certification is due to expire.
 9. Maintain, control, issue, and retrieve welder stamps.
 10. Maintain, provide, and revise as necessary a form RE-0005 "Welder Qualification Certificate" card for each qualified welder or welding operator. The card is to be provided to the qualified individual upon verification of all examination and testing required for qualification.
- B. The welder's department shall:
1. Contact the WOS to establish recertification by:
 - a. Submitting a properly executed form RE-8118 "Welder Qualification - 3 Month Process Verification"; or
 - b. Scheduling a time and date for retesting.
 2. Provide a memorandum to the WOS if any of the certifications are no longer required.
 3. Inform the WOS whenever a welder is transferred or terminated.
 4. Assuring that all recertification tests are scheduled to be performed and processed on or before the expiration date of the existing certification.

QA RECORD

All records generated as a result of welder certification shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

INSPECTION

NO.

NOP 10.0

PAGE 1

of 4

APPROVED:


Department Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

This procedure outlines the responsibilities and requirements for inspection of all materials, products, services, and activities performed on the NNWSI Project. This includes receiving, field, and special inspections.

APPLICABILITY

This procedure applies to all QA Level I and II inspections performed by REECO in conjunction with the NNWSI Project.

DEFINITIONS

A. Originating Organization

The Participating Organization or NTS Support Contractor requiring REECO inspection services.

B. General

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

A. Originating Organization

Originating organizations are responsible for establishing inspection requirements and planning inspection activities for Quality Assurance Level I & II activities. Documentation will be provided to REECO so that the required inspections can be performed. Documentation must include characteristics, methods, equipment and acceptance and rejection criteria used, when performing inspections.

B. Departmental Quality Coordinator (DQC)

The Departmental Quality Coordinator shall ensure that the appropriate Technical Inspection Report and other appropriate documentation is provided to inspectors. If mandatory inspection hold points are required, such hold points shall be included in the inspection forms and shall be identified to all operating parties.

RESPONSIBILITIES (Continued)**C. Inspectors**

When REECo is designated to perform inspection by the WMPO, certified REECo inspection personnel will perform such inspections and fill out appropriate documentation. REECo inspection personnel will be qualified and certified in accordance with NQP 2.1.

PROCEDURES**A. Receiving Inspection**

Receiving inspection shall be performed by qualified personnel in accordance with this procedure. Inspectors fill out TIR's or other documentation provided for recording the inspection activity. Documents shall be signed and dated by the inspector.

B. Field Inspection

Field inspection shall be performed by qualified personnel in accordance with this procedure. Inspectors fill out documentation for recording acceptance or listing nonconformances. Documents shall be signed and dated by the inspector.

C. Special Inspections

Special inspections shall be performed by qualified personnel on one of a kind items or activities. Inspectors fill out required documentation provided by the requisitioner. Documents shall be signed and dated by the inspector.

D. In-Service Inspection

Required in-service inspection or surveillance of structures, systems or components shall be planned and executed by or for the organization responsible for operation.

E. Nonconformances

Nonconformances shall be listed on inspection documents and handled in accordance with NQP 15.0.

F. Additional Requirements

1. When REECo is designated as the organization responsible for performing inspections, the following requirements shall be met:

- a. Documentation - Documentation shall identify characteristics, methods, equipment, and acceptance and rejection criteria. Provisions are made for the recording of objective evidence of the inspection results, identification and qualification of inspection personnel and the accuracy of equipment required to perform the inspection. Documentation used shall be in the form of a TIR or other company inspection form.

PROCEDURES (Continued)

- b. Sampling - Sampling where used to verify the acceptability of a group of items shall be performed using the procedure based on MIL-STD-105D, Sampling by Attributes.
- c. Monitoring - If necessary, the inspection of items in process or under construction shall be performed to verify conformance to specifications. If the inspection of items or activities in progress is neither possible nor advantageous, indirect control by monitoring shall be provided. Both inspection and monitoring shall be provided if inadequate without both.
- d. Supervision of Inspectors - Personnel performing inspections shall not report directly to immediate supervisors who are responsible for performing the work being inspected.
- e. Inspector Qualification - Each person who verifies conformance or work activities for purposes of acceptance shall be qualified to perform such assigned inspection task.
- f. Inspection Hold Points - When mandatory inspection hold points are required beyond which work shall not proceed without the specific consent of the designated representative. The specific hold points shall be indicated in appropriate documents. Inspection acceptance of the authority to waive specified hold points shall be recorded before work can proceed beyond such hold point.
- g. Inspection methods shall include evaluation of performance capability of essential emergency and safety systems and equipment, verification of calibration and integrity of instruments and instrument systems and verification of maintenance, as appropriate.

2. Final Inspection

- a. Inspection Requirements - Completed items shall be inspected for completeness, marking, calibration, adjustments, protection from damage, or other characteristics as required to verify the item's conformance to specified requirements. If not previously examined, quality records shall be examined for adequacy and completeness.
- b. Resolution of Nonconformances - Nonconformances shall be handled in accordance with NQP 15.0.

PROCEDURES (Continued)

3. Records

All TIR's or other inspection documentation shall contain the following information:

- Item inspected
- Date of inspection
- Name and signature of inspector
- Type of inspection
- Inspection criteria
- Equipment used
- Results
- Acceptance statement
- Reference to information on action taken in connection with nonconformances.

4. Modification, Repairs, or Replacements

Modifications, repairs, or replacements of items performed subsequent to final inspection shall require reinspection or retests, as appropriate, to verify acceptability.

5. Acceptance

The items or activities acceptance will be based on the results recorded in the quality inspection file.

6. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REEC Co Quality Assurance Program Plan for the NNWSI Project.
- B. MIL-STD-105D, Sampling by Attributes.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

SURVEILLANCE

NO.

NOP 10.1

PAGE 1

of 2

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE

To ensure that surveillances are planned and performed to verify operational compliance with the REECo NNWSI Project Quality Assurance Program Plan.

APPLICABILITY

This procedure applies to all REECo NNWSI Project activities.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITY

REECo NNWSI Project Quality Assurance (PQA) is responsible for performing surveillances of ongoing REECo activities.

PROCEDURE

A. Surveillances

Surveillances are performed in accordance with plans and checklists developed by Project Quality Assurance for a particular activity based on the activity's impact or importance to the NNWSI Project.

B. Personnel

Surveillances are performed by personnel qualified and certified to perform this activity. Those personnel shall be certified in accordance with the requirements of NQP 2.2, Personnel Certification QA Activities. Persons performing surveillances shall have sufficient authority and organizational freedom to identify quality problems, initiate, recommend, or provide solutions; and to verify implementation of those solutions. Surveillance personnel shall not report directly to the immediate supervisors who are responsible for performing the work being surveilled.

PROCEDURE (Continued)

C. Scheduling

Surveillances, scheduled or nonscheduled, may be performed of activities; depending on the relative impact or importance to the project.

D. Surveillance Plans

A surveillance plan is developed for each surveillance. It identifies the scope, requirements, personnel, and activity involved along with applicable checklists.

E. Reporting

REECo surveillance reports for NNWSI Project activities shall be signed by the person(s) performing the surveillance and shall include the following:

1. The scope of the surveillance
2. Person(s) conducting surveillance
3. Personnel contacted
4. Summary of results
5. Detailed description of findings

F. Nonconformances

Programmatic discrepancies will be recorded and processed for resolution on NNWSI Corrective Action Request. Items and construction nonconformances will be documented and resolved via the nonconformance report.

G. Response and Follow-up

The manager of the department surveilled will respond to Project QA within 30 days indicating corrective action to be taken and estimated effective date. NNWSI Project Quality Assurance will then verify the corrective action and close out the surveillance.

H. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE: TEST AND EXPERIMENT/RESEARCH
CONTROL

NO. NQP 11.0

PAGE 1
of 3

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

This procedure describes the measures established to ensure that structures, systems, and components perform satisfactorily in service or to determine that functional characteristics are satisfactory according to requirements by the effective application of Test Control Methods.

APPLICABILITY

This requirement applies to all REECO responsible NNWSI Project related activities that produce data, recommendations, or other bases for characterization of the site; proof tests prior to installation; preoperational tests; and operational tests during repository operation, of structures, systems, and components.

DEFINITIONS

A. Test Control Documents

Test plans and procedures incorporating the requirements, actions, and limits contained in applicable design criteria from the Participating Organization, NTS Support Contractor, or WMPO. These plans and procedures define the test and the methods for its execution; provide a means for assuring that test prerequisites are met; specify adequate instrumentation and suitable environmental conditions; provide for documentation evaluation, with records of test results; and delineate necessary Quality Assurance provisions.

B. General

Appendix A, Terms and Definitions, of 568-DOC-115 contains general definitions.

RESPONSIBILITIES

A. The manager of the functional organization responsible for supporting test activities is also responsible for incorporating activities that achieve and maintain quality in the support operation; for carrying out such activities in accordance with specified requirements; and for documenting the activity.

RESPONSIBILITIES (Continued)

- B. REECo exercises subcontract control of contracted testing organizations through procurement and subcontract administration.
- C. Unless otherwise specified in the criteria documents, the WMPO, Participating Organization or NTS Support Contractor issuing test control documents is responsible for accomplishing the inspection to assure conformance to Quality Assurance requirements during tests.

PROCEDURES

- A. Test Plans, criteria letters, work instructions, etc., indicating a Quality Assurance Level I or II which are sent to the NNWSI Technical Project Officer (TPO) for incorporation, will be reviewed by the NNWSI TPO or his designated representative, and Project Quality Assurance, as a minimum, to verify that all applicable provisions have been sufficiently included or referenced in the document for REECo to be able to accomplish its task. Documents that do not include adequate information will be documented on a Nonconformance Report, and returned to the originator for correction.

Procedures include provisions for assuring that all prerequisites for the given test have been met, that adequate instrumentation is available and used, and that the test is performed under suitable environmental conditions. Provisions will be included for the recording of results and identification of personnel responsible for evaluating the results.

B. Additional Requirements

- 1. Test Requirements - Test requirements and acceptance criteria is provided or approved by the Participating Organization or NTS Support Contractor responsible for the design of the item to be tested unless otherwise designated. Required tests are controlled including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, preoperational tests, and operational tests. Test requirements and acceptance criteria is based upon specified requirements contained in applicable design or in other pertinent technical documents.
- 2. Test Procedures - Procedures include or reference objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained. Prerequisites may include the following as applicable:
 - a. Calibrated instrumentation;
 - b. Appropriate equipment;
 - c. Trained personnel;
 - d. Condition of equipment and the item under consideration; and

PROCEDURES (Continued)

e. Suitable environmental conditions and provisions for data acquisitions.

3. Alternative Test Procedures - In lieu of specially prepared written procedures, sections of related document can be used. Documents must include acceptance and rejection criteria. Acceptable sources include: American Society for Testing and Materials (ASTM) methods, supplier manuals, equipment maintenance instructions, approved drawings, or travelers. Such documents include adequate instruction to ensure the required quality of work. The use of such documents or part thereof is documented to ensure the requirements of paragraph B are met.

4. Test Results

Results are documented and evaluated by a responsible authority to ensure that requirements have been satisfied.

5. Test Records

As a minimum, records identify the following:

- a. Item;
- b. Date;
- c. Tester or data recorder;
- d. Type of observation;
- e. Results and acceptability;
- f. Action taken in connection with any deviations noted; and
- g. Person evaluating results.

C. QA Records

Test and equipment documents are considered QA records, and controlled and maintained in accordance with the Quality Assurance Records Management Handbook (QARMH).

REFERENCES

- A. 568-DOC-115, REEC Co Quality Assurance Program Plan for the NNWSI Project.
- B. NQP 6.0, Document Control



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

CONTROL OF MEASURING AND
TEST EQUIPMENT

NO.

NQP 12.0

PAGE 1

of 3

APPROVED:

Robert L. ...
General Manager

2-2-88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

To ensure that all tools, gauges, instruments, and other measuring and test equipment is calibrated and adjusted at specified periods to maintain the necessary accuracy of such devices. This includes the devices used in the calibration and adjustment of other devices.

APPLICABILITY

This procedure applies to all tools, gauges, instruments, and other measuring devices and test equipment used by REECo in conjunction with the NNWSI Project that require periodic calibration and/or adjustment.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

A. User

The organization utilizing items that require calibration is responsible for the selection and proper use of such items. The type, range, accuracy and tolerance of a measuring device shall be specified in test and inspection documents. Each device shall have a unique identification number. This number shall be recorded on the data sheet, log, etc., along with the measurement taken to ensure traceability to the device that was used to take the measurement.

1. The user has the responsibility to determine that items are of the proper type, range, accuracy and tolerance for the intended use.
2. The user shall ensure that items are in calibration before use.
3. The user shall be responsible to ensure items are recalibrated prior to expiration of previous calibration period.

B. REECo Physical Standards and Calibration Laboratory (CAL Lab)

RESPONSIBILITIES (Continued)

1. The CAL Lab is responsible for the calibration of its measuring and test equipment.
2. The CAL Lab is responsible for equipment submitted for calibration and/or adjustment by other organizations. Such calibrations must fall within the capabilities of the CAL Lab.
3. The CAL Lab has the responsibility for maintaining a system of identification and recall for items it calibrates.

C. General

1. Unless specified by the using organization, items will be calibrated in accordance with REECO procedures.
2. Handling and storage of items covered by this procedure is the responsibility of the using organization, except when actually in the possession of the CAL Lab; then the CAL Lab is responsible for storage and handling.

PROCEDURES

- A. NNWSI Project procedures governing the operation of the CAL Lab, meet the requirement of this procedure.
- B. Procedures used in conjunction with the calibration and adjustment of items shall contain:
 1. The method and interval of calibration for each item.
 2. Requirements for acceptance and rejection of items requiring calibration.
 3. Identification and marking system for the identification of status and recall of items requiring recalibration.
 4. Traceability of calibrated equipment shall be to the National Bureau of Standards or natural physical constants.
- C. Measuring devices of a special nature, where accuracy requirements are more stringent, the device requires a method of calibration varying significantly from standard procedures, or the device is a one-of-a-kind piece of equipment, used in conjunction with the NNWSI Project shall be calibrated in accordance with documentation provided by the using organization.
- D. Calibration is not required for rulers, tape measures, levels or other such commercial devices when they provide for sufficient accuracy.

QA RECORDS

The records generated as a result of the activities addressed within this procedure shall be maintained in accordance with the Quality Assurance Records Management Handbook (QARMH).

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.
- B. Quality Operations Internal Procedures Part 4.



Reynolds Electrical & Engineering Co., Inc.

TITLE:

HANDLING, SHIPPING, & STORAGE

NO.

NQP 13.0

PAGE 1

of 2

NNWSI

QUALITY PROCEDURE

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

To outline the requirements for handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. The requirements include applicable DOE and DOT orders for the regulation of radioactive shipments and/or hazardous materials. When specified in documents provided to REECo by Participating Organizations, WMPO, or other NTS Support Contractors, special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be incorporated and adhered to.

APPLICABILITY

This procedure applies to the handling, storage, cleaning, packaging, shipping and preservation of items, performed by REECo, including radioactive and other hazardous materials.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

A. Supply Department

The Supply Department, in conjunction with the REECo Traffic Section, is responsible for most activities of this nature. Their activities are conducted in accordance with written procedures established by the department manager.

B. Departmental Quality Coordinator (DQC)

The DQC shall review procurement documents to ascertain if any special handling, storage, or shipping requirements are needed.

PROCEDURES

A. Radioactive Materials

Unless otherwise specified by WMPO, the Participating Organizations, or other NTS Support Contractors, critical activities concerning radioactive materials will be governed and controlled by the written procedures of the Environmental Sciences Department.

B. Safety

Critical activities affecting safety will be governed and controlled by the written procedures of the Occupational Safety and Fire Protection organization which are published in the REECO Industrial Safety Manual.

C. Other Material

Handling, shipping and storage of items that are not radioactive or hazardous is performed according to the procedures of the REECO Supply Department or the functional department.

D. Change, Modifications, Specific Control Requirements

1. Any change, modification, or specific control requirements other than those specified must be provided to REECO in the form of work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or procedures by the organization requiring the activity.
2. Documents provided to REECO that expand or modify existing control requirements must include as applicable, specific procedures for handling, storage, packaging, shipping and preservation; special handling tools and equipment to be utilized and controlled as necessary to ensure safe and adequate handling, including results of inspections and tests performed in accordance with procedures to verify that the tools and equipment are maintained adequately; training requirements of operators of such special equipment (if outside of existing requirements); and instructions for marking and labeling for packaging, shipment, handling, and storage of items as necessary to identify adequately, maintain, and preserve the item, including indication of the presence of special environments or the need for special controls.

E. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

INSPECTION, TEST AND
OPERATING STATUS

NO.

NQP 14.0

PAGE 1

of 2

APPROVED:

[Signature] 2-7-88
General Manager DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

To establish measures to indicate; by the use of markings such as stamps, tags, label, routing cards, or other suitable means; the status of inspections and tests performed upon individual items, and the operational status used in all NNWSI Project related operations.

APPLICABILITY

This procedure applies to all activities where it is necessary to maintain an accurate status of individual items and operating systems to prevent the inadvertent bypassing of required inspections and tests, or to prevent operations or use, when not allowed.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

A. General

Personnel responsible for operations and safety, such as superintendents, department managers, and equipment inspectors have the responsibility to indicate, as appropriate, the status of items in accordance with the REECo Industrial Safety Manual and other appropriate REECo company and departmental procedures.

B. Other Activities

When REECo has the responsibility for maintaining the status of items, systems or activities, the appropriate documentation stating the applicable requirements shall be provided by the originating organization.

C. Removal of Status Indicators

Only individuals installing the status tag, or a QA individual properly authorized and designated by NNWSI Project Quality Assurance (PQA) have the authority to remove status tags for quality related situations.

PROCEDURES

A. Status

The status of items, systems or activities is indicated by the use of physical segregation, tagging, marking, shop travelers, inspection and test records, certificates, and/or other appropriate documentation.

B. Indicator

Indicators (tag, travelers, etc.) shall be placed physically on the items whenever required for the positive identification of status. When not required the indicator must be traced directly to the item concerned.

Indicator should specifically state the status of the item, system or activity.

C. Additional Requirements

The actual procedure for the use and removal of status indicators shall be included in the documents provided to the functioning department.

D. QA Records

Documentation affected or generated as a result of activities outlined in this procedure shall be considered QA records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECO Quality Assurance Program Plan for the NNWSI Project.
- B. REECO Industrial Safety Manual.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

NONCONFORMANCES

NO.

NOP 15.0

PAGE 1

of 5

APPROVED:

John E. Franke

General Manager

3/23/88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

The purpose of this procedure is to define the requirements for identifying nonconformances and the processing of nonconformance reports to prevent the use of or installation of materials, parts or components that do not conform to applicable requirements. This procedure includes measures to identify, document, segregate and dispose of nonconforming items and notify affected organizations of detected nonconformances.

APPLICABILITY

This procedure applies to all materials, parts, and components for which REECO is responsible.

DEFINITIONS

Nonconformance: A deficiency in characteristics, documentation or procedure that renders the quality of an item unacceptable on indeterminate. All other terms and definitions applicable to this procedure are contained in Appendix A of 568-DOC-115.

RESPONSIBILITIES

A. Department Managers

Department Managers are responsible for nonconforming items under their control. Personnel performing evaluations to determine the disposition of nonconforming items shall have demonstrated competence in the area they are evaluating. Such persons shall be appointed by the cognizant department manager.

B. Project QA Manager

The Project QA Manager shall assure that nonconformances are recorded, reported and processed in accordance with this procedure. He shall maintain the log for nonconformance reports (NCR's) and shall maintain a file of closed out NCR's. NCR's requiring the WMPO approval shall be forwarded to the WMPO by the Project QA Manager.

RESPONSIBILITIES (Continued)

C. Requisitioner (For Special Order Material or Items)

The requisitioner is responsible for assuring that nonconforming "Special Order" material is controlled in accordance with the requirements of this procedure. "Special Order" material or items are those specifically ordered for NNWSI Project Quality Assurance Level I and II activities.

D. Project Engineer (PE)

Disposition all nonconformances, providing justification for dispositions. The PE shall interface with the A-E and/or other involved organization as required.

PROCEDURES

A. Nonconformance Reporting

1. The individual detecting the nonconformance will initiate a nonconformance report. After filling in the assigned blocks (see appendix to this procedure) the initiator will submit the NCR to the Project QA Office.
2. Project Quality Assurance shall assign an NCR control number, log the NCR and review those items (blocks) that have been completed for accuracy and completeness and forwards it to the appropriate Project Engineer (PE) for further action as required.

The QA log shall contain the following information:

- The NCR number.
 - A brief description of the nonconforming condition.
 - Identification of the person or organization responsible for determining the disposition.
 - Responsibility for corrective action.
 - The status (open or closed).
3. Copies of all Quality Assurance Level I and II NCR's will be sent to the WMPO and QASC by Project Quality Assurance upon issuance and closure.
 4. The PE, after consulting with the A/E and/or other involved organizations, will make a formal disposition which may be one of the following:
 - Use-As-Is
 - Rework

PROCEDURES (Continued)

- Scrap
 - Reject
5. The Project Engineer (PE), when dispositioning the NCR shall ensure the following:
- Nonconformance documentation adequately identifies and describes the nonconformance.
 - Appropriate justification for the disposition has been documented. In the case of use-as-is or repair dispositions, technical justification is required. The as-built records, if such records are required, shall reflect the accepted deviation.
 - The disposition has referenced any approved design documents, procedures, plans, work orders, etc., that are to be used for the correction of the nonconforming condition.
 - The technical details for correction of the nonconforming condition are adequate for the recommended disposition.
 - If continuance has been requested, justification for the activity to continue has been documented and approved by the WMPO.
 - The disposition complies with existing design documents, test plans or procedures, reports, and regulatory requirements.
 - If a change to reflect the as-built condition is appropriate, then the disposition addresses action to change the existing design documents, test plans or procedures, reports, etc. Any documents change shall also be cross referenced on the NCR.
 - Disposition has identified and documented the correction as repair, rework, use-as-is, reject, scrap.
 - Disposition has identified the people or organization responsible to implement the disposition.
6. After providing the disposition the PE shall determine the cause of the nonconformance and indicate corrective action to prevent recurrence.
7. Verification of acceptable corrective action shall be made by NNWSI Project Quality Assurance (PQA).
8. Nonconformance Reports for QA Level I and II items shall have the WMPO approval when the dispositions involve repair/rework or use-as-is prior to implementation of the disposition.

PROCEDURES (Continued)

9. The action taken to correct the nonconforming item shall be verified and documented. Repaired or reworked items shall be reexamined in accordance with both the applicable procedures and with the original acceptance criteria unless the disposition has provided for alternate acceptance criteria. If required, the as-built records shall reflect the approved deviation.
10. The appendix to this procedure details the processing (flow) of nonconformance reports from issuance to closure.

B. Nonconforming Materials/Items

1. Work on the nonconforming item shall be stopped until completion of the action specified in the NCR disposition. If only a specific portion of the item is in nonconformance, then that specific area shall be identified and work may proceed on the remaining areas. If work on a nonconforming item be continued (conditional release) prior to implementation of the disposition, the WMPO shall approve such continuance. Requests for conditional releases on nonconforming items shall include documented justification and assure that the following conditions are met:
 - The nonconforming item can be removed or corrected at a later date without damage to or contamination of the associated permanent facility or structures.
 - The nonconforming item remains accessible for inspection.
 - The nonconforming item is evaluated and limitations for use of the equipment or system is limited.
 - Traceability and identification of the nonconforming item are maintained.
2. When possible, nonconforming items or material shall be marked and tagged with a Hold Tag. When the size or nature of the item or material precludes the use of the Hold Tag, the item or item container shall be conspicuously identified as nonconforming to prevent its being put into use.
3. Where practical, nonconforming items or material shall be physically segregated from acceptable items and placed in a specifically designated "hold" area until disposition of the nonconformance has been made. When appropriate, this "hold" area shall be defined by walls, fencing or other such barriers and shall be under locked control with access limited to authorized personnel.
4. When space, processing or location requirements do not allow the establishment of such an area, the nonconforming material or items shall be boldly marked, removed from the area of acceptable material or items by sufficient physical distance to positively prevent intermixing, and placed under the direct control of an authorized individual responsible for preventing their use prior to final disposition.

PROCEDURES (Continued)

5. Should a nonconformance be noted during receipt inspection and the item or material be ultimately accepted, such acceptance shall be noted on the applicable Technical Inspection Report (TIR), a copy of the disposition attached to the TIR, all "hold" markings removed from the item or material and the item or material processed as acceptable.

C. QA Records

Documentation generated as a result of the activities described in this procedure are the Nonconformance Report, Hold Tag, and NCR Log. Those documents shall be considered QA Records and maintained in accordance with the Section XVII of 568-DOC-115.

REFERENCES

- A. REECo Quality Assurance Program Plan, 568-DOC-115, for the NNWSI Project.

APPENDIX A

PROCESSING THE NONCONFORMANCE REPORT

This appendix and the attached flow chart delineate the steps in the processing of the Nonconformance Reports on the NNWSI Project. The blocks on the Nonconformance Report will be completed by the individuals assigned that responsibility herein and in accordance with the instruction below.

The initiator is the person who writes the Nonconformance Report. That person may or may not be the same person who discovers the nonconformance. The initiator will complete "Location" through "Actual Condition" with the exception of NCR No., which is completed by Project Quality Assurance.

Location - This information should be definitive enough so that anyone can find the nonconforming item or material.

Date and Time - Self explanatory.

Initiator/Department - Name and departmental organization of the individual writing the Nonconformance Report.

Operating Department - The department responsible for the nonconforming item or material.

Nonconforming Item or Activity - Describe the item or material which is not in conformance with the stated requirements of the specification, procedure or drawing.

Serial/Part No. - The serial or part number of the nonconforming item if available.

Responsible Organization - The organization responsible for the nonconformance. Example: In the case of a procured item which was found to be nonconforming during receipt inspection the Operating Department might be the Supply & Property Department and the responsible organization might be the Procurement Department.

Specification/Drawing/Procedure Requirement - Enter the required condition as specified in the applicable specification, drawing or procedure and which have not been met.

Actual Condition - State the condition of the item or material specifying how it does not conform to the requirements as specified by the specification, drawing or procedure.

When the initiator completes the aforementioned blocks he or she forwards the original of the Nonconformance Report to Project Quality Assurance.

Project Quality Assurance shall review the NCR for accuracy and completeness, assign the next sequential number to the NCR, enter the required data in the NCR log, and forward the original to the Project Engineer for disposition.

In the case of an NCR for QA Level I and II items Project QA shall send a copy of the NCR to the WMPO and the QASC upon issuance and closure.

The Project Engineer or his designee shall complete the blocks Person/Organization Making Disposition through Corrective Action in accordance with the instructions delineated below.

Person/Organization Making Disposition - The individual who makes the disposition shall enter their name and organization in this block.

Disposition - The individual providing the disposition shall check the appropriate block, use-as-is, rework, reject or scrap and center any instructions necessary to implement the disposition such as in the case of "rework" he or she shall enter detailed instructions for rework, i.e. tools to be used and required dimensions or specification or drawing requirements to be complied with.

Justification of Disposition - The justification for the disposition shall be specification, drawing or procedure requirements. If the disposition specifies action which deviates from the requirements of the specification, drawing or procedure justification shall be provided in the form of design calculations or other design parameters.

Corrective Action - The Project Engineer shall specify corrective action to prevent recurrence.

After the foregoing blocks have been completed the PE will return the original of the NCR to Project Quality Assurance.

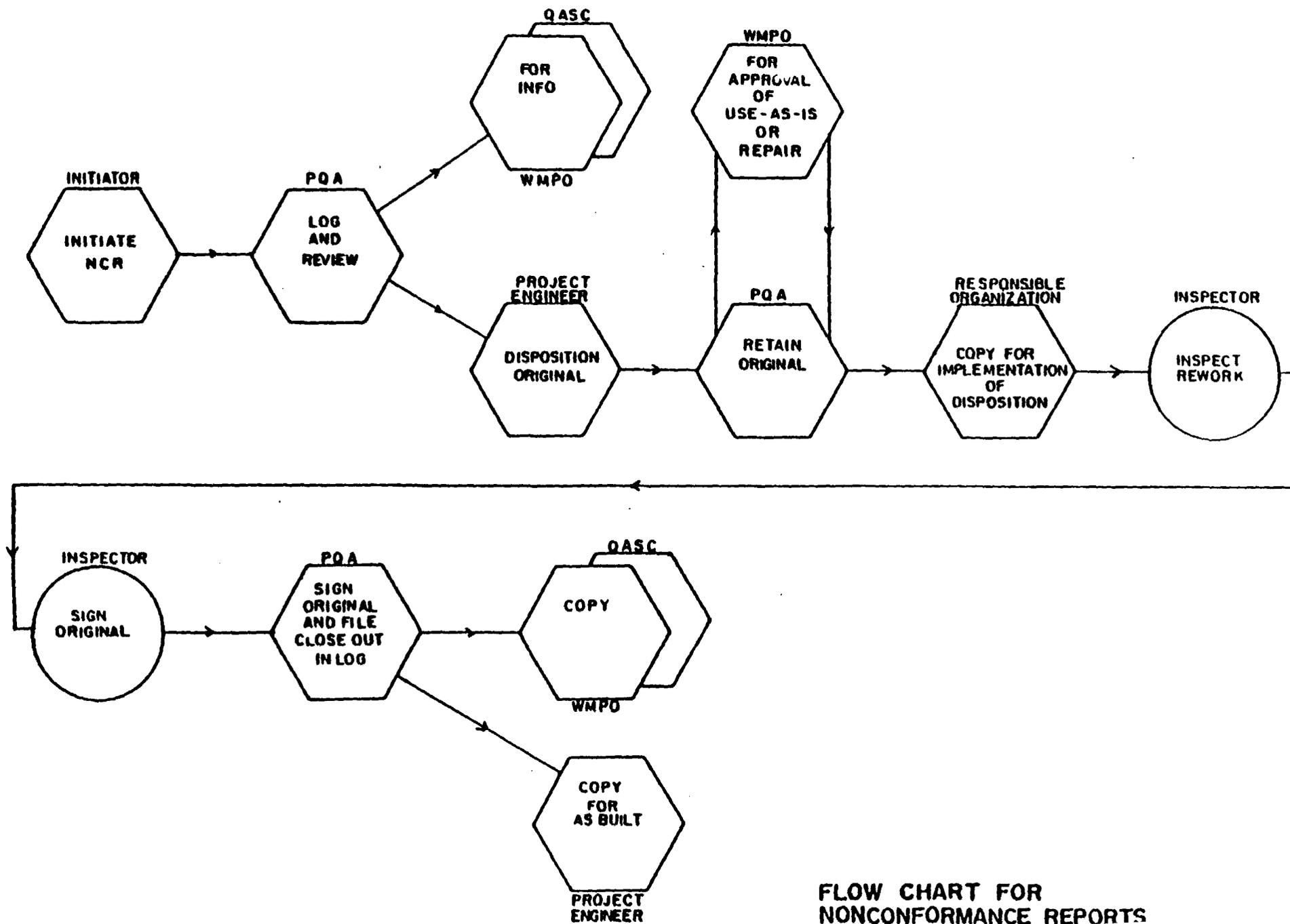
In the case of use-as-is or rework Project Quality Assurance shall send the NCR to the WMPO for approval. Such approval shall be indicated by a WMPO signature in the "WMPO Approval" block.

Following dispositioning of the NCR by the PE and approval by the WMPO, if required, Project Quality Assurance shall send a copy of the NCR to the department who is to implement the disposition.

After the disposition has been implemented the inspector will verify that the disposition has in fact been accomplished in accordance with the PE's instruction and sign the "Inspector Approval" block. The inspector shall then remove and destroy any Hold Tags used to identify the nonconforming item or material.

Project Quality Assurance shall obtain the PE's approval signature, sign the "Project QA Approval" block, close out the NCR in the NCR log and file the original.

Project Quality assurance shall distribute copies of the closed out NCR to the WMPO, if required, to the PE for as built information, to the Operating Department and to the responsible organization.



**FLOW CHART FOR
NONCONFORMANCE REPORTS**

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.
NNWSI PROJECT
NONCONFORMANCE REPORT

NCR NO.

PAGE OF

LOCATION

DATE

TIME

INITIATOR / DEPARTMENT

OPERATING DEPARTMENT

NONCONFORMING ITEM OR ACTIVITY

PART NO./SERIAL NO.

RESPONSIBLE ORGANIZATION

SPECIFICATION / DRAWING / PROCEDURE REQUIREMENT

ACTUAL CONDITION

PERSON / ORGANIZATION MAKING DISPOSITION

DISPOSITION

USE AS IS

REJECT

REPAIR

SCRAP

JUSTIFICATION OF DISPOSITION

CORRECTIVE ACTION

INSPECTOR APPROVAL

DATE

WMPO APPROVAL

DATE

PROJECT ENGINEER APPROVAL

DATE

PROJECT QA APPROVAL

DATE



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

CORRECTIVE ACTION

NO.

NQP 16.0

PAGE 1

of 2

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

To ensure that significant conditions adverse to quality are promptly identified and corrected; and to ensure proper documentation, and reporting of such conditions are performed, and corrective action taken to preclude recurrence.

APPLICABILITY

The requirements contained in this procedure apply to REECo QA Level I and II activities conducted within the NNWSI Project.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITY

Project Quality Assurance (PQA) - It is the responsibility of the PQA to ensure that all conditions which adversely affect quality are identified, the cause determined, and corrective action taken; and that all such conditions are documented and reported to the appropriate levels of management.

PROCEDURES

- A. Significant adverse conditions can be noted at any time by personnel connected with the activity, and shall be brought to the attention of Project QA.
- B. When such a condition is found, the following information shall be included in the documentation:
 1. Nature of Condition
 2. Personnel identifying condition
 3. Date and time.

The information will be provided to the PQA who will forward the information to the appropriate management for corrective action by means of a Corrective Action Request.

PROCEDURES (Continued)

- C. Corrective action taken will be entered on the Corrective Action Request (CAR) form used to report the adverse condition, and such documentation will be forwarded to appropriate management.

Quality Assurance Level I and II - Copies of CARs shall be forwarded to the QASC upon issuance and closure.

- D. Any corrective actions arising out of inspections, test, or other actions required by QAPP 568-DOC-115 shall be handled in accordance with this NQP.

E. QA Records

Documentation generated as a result of the activities outlined in this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.



Reynolds Electrical & Engineering Co., Inc.

NNWSI
QUALITY PROCEDURE

TITLE:

REQUEST FOR
CORRECTIVE ACTION

NO.

NQP 16.1

PAGE 1

APPROVED:

[Signature]
General Manager

2-2-88
DATED

Revision 2: This supersedes Revision 1, 07-14-87.

PURPOSE

To establish the process for obtaining corrective action for reported significant conditions adverse to quality.

APPLICABILITY

This procedure applies to all systems, activities, or programmatic deficiencies for which corrective action is requested.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

- A. It is the responsibility of NNWSI Project Quality Assurance (PQA) to submit a Corrective Action Request, to the organization responsible.
- B. It is the responsibility of the organization accountable for the nonconformance to take appropriate action to prevent recurrence.

PROCEDURE

- A. All requests for corrective action shall be submitted to the responsible organization, using the Corrective Action Request Form.
- B. The response to the request shall be indicated on this form by the accountable organization, and returned to Project QA.
- C. PQA will review the proposed Corrective Action and indicate approval or disapproval upon the form.
- D. Should the action taken by the responsible organization be deemed unsatisfactory, a copy of the form shall be returned to the responsible organization for further disposition.
- E. Distribution of the completed form shall include the PQA, responsible organization, and the QASC, as required by the indicated quality assurance level.

REYNOLDS ELECTRICAL & ENGINEERING CO., INC.

**NNWSI
CORRECTIVE ACTION REQUEST**

CAR NO.

DATE

ADDRESSEE

DEPT.

ATTN.

ORIGINATOR

DEPT.

SIGNATURE

The information transcribed below represents an undesirable condition requiring your immediate attention. Please indicate the action you intend to take to prevent recurrence of the nonconformance and return to Quality Operations. Your response is required within 14 days.

NONCONFORMANCE

CAUSE

CORRECTIVE ACTION

SIGNATURE

DATE

EFFECTIVE DATE

ACTION IS SATISFACTORY

YES

NO

VERIFIED BY:

DATE

APPROVED BY:

DATE

COMMENTS

This PROOF has been approved
for layout, spelling and general
appearance

DATE:

DATE:



Reynolds Electrical & Engineering Co., Inc.

TITLE:

QUALITY ASSURANCE RECORDS

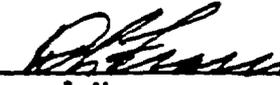
NO.
NQP 17.0

PAGE 1
of 3

NNWSI

QUALITY PROCEDURE

APPROVED:


General Manager

7/14/87
DATED

Revision 2: This supersedes Revision 1, 11-21-86.

PURPOSE AND SCOPE

This procedure establishes the requirements for and the methods of ensuring the maintenance and retrievability of Quality Assurance (QA) records for the NNWSI Project. QA records are those documents or items which provide evidence of the quality of activities, structures, components, and systems assigned Quality Level I or Quality Level II. These records include, but are not limited to, drawings, specifications, inspection reports, audit and survey reports, procedures, test reports, and certificates of conformance.

The scope of this procedure includes the delineation of responsibilities of those individuals and organizational entities designated to implement the REECo Quality Assurance records management system and the detailed activities prescribed in the REECo Quality Assurance Records Management Handbook (QARMH).

APPLICABILITY

This procedure applies to all NNWSI Project QA records generated from functions assigned to REECo or as required by the Participating Organization, NTS Support Contractor, or the WMPO; and NNWSI Project QA records generated by REECo subcontractors, suppliers, vendors, consultants or other organizations providing services which affect the quality of activities or items.

DEFINITIONS

REECo Quality Assurance Records Management Handbook (QARMH), Appendix B, Definitions, contains the definitions applicable to the QA Records Management System.

RESPONSIBILITIES

A. NNWSI Technical Project Officer (TPO)

It is the responsibility of the NNWSI Technical Project Officer (TPO) to ensure that Quality Assurance records are processed in accordance with the QARMH, NNWSI QAPP 568-DOC-115, and this NQP.

RESPONSIBILITIES (Continued)**B. NNWSI Project Records Coordinator**

The NNWSI Project Records Coordinator is appointed by, and responsible to, the TPO for all activities implementing the Quality Assurance Records Management Program. The Records Coordinator shall:

1. Ensure the central monitoring and collection of quality assurance records for processing;
2. Coordinate all QARMP activities within REECo, with DOE WMPO, the Holmes & Narver Project Records Center (PRC) and others as may be necessary;
3. Keep the TPO and Project Quality Assurance informed of all significant activities affecting the QARMP;
4. Make the REECo Records Management Office aware of any policy or operation changes which may affect the QARMP; and
5. Assure the QARMP is administered in accordance with the REECo Quality Assurance Program Plan (QAPP) 568-DOC-115.

C. Departmental Quality Coordinator (DQC)

The DQC has the responsibility to ensure that all quality assurance records generated in his/her department are forwarded to the Local Records Center (LRC) and ensure that compliance with the QARMH is met for all departmental NNWSI Project records.

D. NNWSI Project Quality Assurance (PQA)

The PQA organization has the responsibility for surveillance and/or auditing of the REECo QA Record Management Program to assure compliance with program requirements.

PROCEDURES**A. The NNWSI Technical Project Officer (TPO) shall:**

1. Ensure that REECo QA Records Management System is established and procedures for its implementation are developed;
2. Provide for surveillance and audits of QA Records Management activities of all REECo organizations to ensure that the program requirements are being met; and
3. Provide sufficient resources (facilities, equipment, and personnel) to implement the QA Records Management Program.

PROCUDURES (Continued)

- B. All records generated by REECo, and NNWSI Project QA records generated by REECo subcontractors, suppliers, vendors, consultants or other organizations providing services which affect the quality of activities or items shall be handled in accordance with REECo Quality Assurance Records Management Handbook and REECo Records Inventory and Disposal System (RIDS).
- C. Additional Requirements
1. All documents designated as Quality Assurance records are to be accurate, complete, legible, and of a quality that meets the qualifications for microfilming as set forth in Appendix A of the QARMH.
 2. All QA records shall be validated by dating and either stamped, initialed, or signed by authorized personnel. These records may be originals or reproduced copies which can be microfilmed.
 3. QA records shall be protected to prevent damage from hazards of fire, water, vandalism, vermin, extreme fluctuations in temperature and humidity and from unauthorized access.
 4. QA records shall be identified with unique identification numbers or other designation that shall not be repeated anywhere in the NNWSI Project. The WMPO or its designee shall review and approve the records identification system. Additionally, records and/or indexing system(s) shall provide information to permit identification of the record and the item(s) or activity(ies) to which it applies. Records identification and indexing will assure retrievability. The indexing system(s) shall include record retention times and the location of the record within the record system(s).
- D. All records shall be maintained in accordance with the REECo Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.
- B. Quality Assurance Records Management Handbook.



Reynolds Electrical & Engineering Co., Inc.

TITLE:

AUDITS

NO.

NQP 18.0

PAGE 1

of 4

NNWSI

QUALITY PROCEDURE

APPROVED:

Robert L. ...
General Manager

2-2-88
DATED

Revision 3: This supersedes Revision 2, 07-14-87.

PURPOSE AND SCOPE

To ensure that audits are conducted, planned, and scheduled, to verify compliance with all aspects of operational activities including the requirements of the REECO Quality Assurance Program Plan for the NNWSI Project.

APPLICABILITY

This procedure applies to all NNWSI Project activities for which REECO is directed to perform by the WMPO.

DEFINITIONS

Appendix A, Terms and Definitions, of 568-DOC-115, contains general definitions.

RESPONSIBILITIES

NNWSI Project Quality Assurance (PQA) Department is responsible for performing audits to ensure conformance to the REECO Quality Assurance Program Plan for the NNWSI Project and for performing surveillance of ongoing activities.

PROCEDURES

A. Audits

Audits are performed in accordance with written procedures developed for all NNWSI Project related activities by Project Quality Assurance.

B. Personnel

Quality audits are to be performed by REECO personnel who are independent of any direct responsibility for the performance of the activities that they are to audit. If it is to be an internal audit, then the personnel who have direct responsibility for performing the activities to be audited shall not be involved in the selection of the audit team. Audit personnel have sufficient authority and organizational freedom to make the audit process meaningful and effective. REECO audit personnel are to be trained and certified in accordance with the approved REECO procedure for certification of audit personnel.

PROCEDURES (Continued)

C. Selection of Audit Team

An audit team is to be identified before the beginning of each audit. This team shall contain one or more auditors and has an individual qualified as a lead auditor who organizes and directs the audit, coordinates the preparation and issuance of the audit report, and evaluates the responses. The audit team leader ensures that the audit team is prepared before the audit begins.

D. Performance

Audits are performed in accordance with written checklists as early in the life of the activity as practical and shall be continued at intervals consistent with the schedule for accomplishing the activity. Elements that have been selected for audit evaluated against specified requirements including a review of corrective actions taken on deficiencies in the area being audited that were identified during previous audits. Objective evidence is examined to the depth necessary to determine if these elements are adequate for effective control and to determine whether or not they are being implemented effectively. The audit results are documented by audit personnel and shall be reviewed by management having responsibility for the area audited. Conditions that require prompt corrective action are reported immediately to the management of the audited organization.

E. Scheduling

Internal and external QA audits are to be scheduled in a manner that shall provide coverage and coordination with ongoing QA program activities. Audits are scheduled at a frequency commensurate with the status and importance of the activity. Audit schedules identify the date of the audit, the activities to be audited, and the requirements to which the activities are to be audited. The audit schedule is evaluated periodically and revised as necessary to assure that coverage is maintained current. The evaluation includes an assessment of the effectiveness of the program based on (a) previous audit results and corrective actions; (b) nonconformance reports; and (c) information from other sources such as American Society of Mechanical Engineers (ASME), NRC, etc. Regularly scheduled audits are supplemented by additional audits of specific subjects when necessary to provide adequate coverage.

F. Additional Requirements

1. Internal Audits - Elements of an organization's QA Program Plan are audited at least annually. The scope of the audit is established by: considering the results of any previous audit, the nature and frequency of identified deficiencies, and any significant changes in personnel, organization, or in the QA program.
2. External Audits - Elements of an external organization's QA program are audited at least annually or once during the life of the activity, whichever is shorter.

PROCEDURES (Continued)

3. Supplemental Audits - Supplemental audits are conducted in addition to regularly scheduled audits when:
 - a. Significant changes are made in the functional areas of the Quality Assurance Program, such as major reorganization or procedure revision;
 - b. Deficiencies are suspected in the Quality Assurance Program;
 - c. Assessment of the Quality Assurance Program is considered desirable;
 - d. Determining capability of vendors before contract is awarded;
 - e. A contract has been awarded to verify implementation of the Quality Assurance Program; and
 - f. Necessary to verify corrective actions required by REECO.
4. Audit Plans - REECO develops an Audit Plan for each audit. The Audit Plan identifies the scope, requirements, audit personnel, activities to be audited, organizations to be notified, applicable documents, schedules, and written procedures or checklists to be used in the audit.
5. Reporting - REECO audit reports for NNWSI Project activities shall be signed by the audit team leader and issued within 30 days and shall include the following information, as appropriate:
 - a. The scope of the audit;
 - b. Auditor identification;
 - c. Identification of personnel contacted during audit;
 - d. Summary of audit results, including statement of effectiveness of the Quality Assurance Program elements audited; and
 - e. Detailed description of adverse audit findings.
6. Response and Follow-up - The manager of the department audited shall investigate, and have deficiencies in the Quality Assurance Program corrected or planned corrective action submitted within thirty (30) days. The Auditing Department shall be notified so that the corrective action can be evaluated.
7. Records - Audit records shall include audit plans, checklists, audit reports, written replies and record of extent of completion of the audit and the audit results for each audit plan item.
8. Document Distribution - REECO submits copies of audit schedules to WMPO and the QASC.

QA RECORDS

Audit Documentation shall be considered QA records and maintained in accordance with the Quality Assurance Records Management Handbook (QARMH).

REFERENCES

A. 568-DOC-115, REECo Quality Assurance Program Plan for the NMWSI Project.



Reynolds Electrical & Engineering Co., Inc.

**NNWSI
QUALITY PROCEDURE**

TITLE: **QUALIFICATION AND CERTIFICATION
OF QUALITY ASSURANCE
AUDIT PERSONNEL**

NO. **NQP 18.1**

PAGE 1
of 6

APPROVED:


General Manager

7/14/87
DATED

Revision 1: This supersedes Revision 0, 11-21-86.

PURPOSE

The purpose of this procedure is to establish the qualification and certification requirements for personnel performing Quality Assurance Program audits for the NNWSI Project at the Nevada Test Site, subcontractor facilities, and vendor plants and to define the responsibilities for those who implement the program.

APPLICABILITY

This procedure applies to all personnel performing Quality Assurance Program audits, both internal and external, for the NNWSI Project.

DEFINITIONS

A. Audit

A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, codes, standards, instructions, drawings, and other applicable requirements and the effectiveness of implementation. An audit is not to be confused with a vendor evaluation, surveillance, or inspection for the sole purpose of process control or product acceptance.

B. Lead Auditor

An individual qualified and certified to plan, organize, and direct an audit, report audit findings and evaluate corrective action.

C. Auditor

An individual, having had the required training but lacks the experience requirement for lead auditor, and having been certified, who performs any portion of an audit. This individual may be a lead auditor, but without the "lead" responsibility on a particular audit assignment.

METHOD

A. Requirements

METHOD (Continued)

1. All personnel performing Quality Assurance Program audits shall meet the qualification and certification requirements of this procedure.
2. Records of qualification and certification shall be maintained on file for as long as the individual, engaged in such auditing, is employed, or for the designated period of retention required by contract.
3. Approval of qualification and certification data shall be granted by the Manager of NNWSI Project Quality Assurance (PQA). In the case of training by an outside agency, the above-stated responsibilities remain with the company.
4. Approval for certification shall be in accordance with 568-DOC-115, Appendix F, and shall consist of education, experience, professional, and management sections as defined for each part by that document.
5. Listed education and experience requirements may not be modified.
6. Auditors shall be assessed annually.
7. All certifications shall be automatically invalidated when employment is terminated.
8. Personnel successfully meeting the requirements of lead auditor shall be notified by a Certificate of Competency - Lead Auditor. Personnel qualifying as auditor will have a memorandum attached to their record folder.

B. Qualifications

1. Auditor

Personnel selected for quality assurance auditing assignments shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors shall have, or be given, appropriate training or orientation to develop their competence for performing required audits. Competence of personnel for performance of the various auditing functions shall be developed by one or more of the following methods:

- a. Orientation to provide a working knowledge and understanding of 568-DOC-115, this procedure, and NQP 18.0
- b. Training programs to provide general and specialized training in audit performance. General training shall include fundamentals, objectives, characteristics, organization, performance, and results of quality auditing. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods of closing out audit findings.

METHOD (Continued)

- c. On-the-job training, guidance, and counseling under the direct supervision of a lead auditor. Such training shall include planning, performing, reporting, and follow-up action involved in conducting audits.

2. Lead Auditor

A prospective lead auditor shall have demonstrated knowledge in the following areas before consideration for certification.

- a. General structure of Quality Assurance Programs as a whole and applicable elements, knowledge and understanding of 568-DOC-115, 10 CFR, Part 60, and other nuclear and/or DOE related codes, standards, regulations, and regulatory guides, as applicable to the NNWSI Project.
- b. Auditing techniques of examining, questioning, evaluating and reporting; methods of identifying and following up on corrective action items; and closing out audit findings.
- c. Audit planning in the quality-related functions for the following activities: design, purchasing, fabrication, handling, shipping, storage, cleaning, erection, installation, inspection, testing, statistics, nondestructive examination, maintenance, repair, operation, modification of facilities or associated components and safety aspects of the facility.
- d. Audit Participation - The prospective lead auditor shall have participated in a minimum of five quality assurance audits within a period of time not to exceed three years prior to the date of qualification, one audit of which shall be a nuclear quality assurance audit and shall be made within the year prior to his qualification. Objective evidence of audit experience during previous employment will be considered for qualification as well as certification meeting the requirements of this procedure.
- e. Examination - The prospective lead auditor shall pass an examination which shall evaluate his comprehension of and ability to apply the body of knowledge herein identified. The test may be oral, written, practical, or any combination of the three types.

C. Certification of Quality Lead Auditors

An individual shall meet the requirements below prior to being designated a lead auditor.

METHOD (Continued)

Education and Experience

The prospective lead auditor shall have verifiable evidence that a minimum of ten credits under the following scoring system have been accumulated.

1. Education (four credits maximum) - Associate degree from an accredited institution score one credit or if the degree is in engineering, physical sciences, mathematics, or quality assurance, score two credits, or a bachelor degree from an accredited institution score two credits or if the degree is in engineering, physical sciences, mathematics, or quality assurance, score three credits; in addition, score one credit for a master degree in engineering, physical sciences, business management, or quality assurance from an accredited institution.
2. Experience (nine points maximum) - Technical experience in engineering, manufacturing, construction, operation, or maintenance, score one credit for each full year with a maximum of five credits for this aspect of experience.
 - a. If two or more years of this experience have been in the nuclear field, score one additional credit.
 - b. If two or more years of this experience have been in quality assurance, score two additional credits.
 - c. If two or more years of this experience have been in auditing, score three additional credits.
 - d. If two or more years of this experience have been in nuclear quality assurance auditing, score four additional credits.
3. Other Credentials of Professional Competence (two credits maximum) - Certification of competency in engineering, science, or quality assurance specialties issued and approved by a state agency, or national professional or technical society, score two credits.
4. Rights of Management (two points maximum) - The Company may grant the lead auditor up to two credits for other performance factors applicable to auditing which may not be explicitly called out in this procedure.

Examples of these factors are leadership, sound judgment, maturity, analytical ability, tenacity, past performance, quality assurance training courses.

5. Communication Skill - The prospective lead auditors shall have the capability to communicate effectively, both written and oral. These skills shall be attested to in writing by the Company.
6. Training - Prospective lead auditors shall have training to the extent necessary to assure their competence in auditing skills. Training shall be given based upon management evaluation of the particular needs of each prospective lead auditor.

METHOD (Continued)**D. Maintenance of Qualification****1. General**

The maintenance of proficiency established in this section shall apply to the lead auditor only.

2. Maintenance of Proficiency

Lead auditors shall maintain their proficiency through one or more of the following: regular and active participation in the audit process; review and study of codes, standards, procedures, instructions, and other documents related to quality assurance programs and program auditing; and participation in training programs. Based on management annual assessment, management may extend the qualification, require retraining, or require requalification. These evaluations shall be documented.

3. Requalification

Lead auditors who fail to maintain their proficiency for a period of two years or more shall require requalification. Requalification shall include retraining in accordance with the requirements of B.2, reexamination, and participation as an auditor in at least one nuclear quality assurance audit.

4. Qualification Examination

The development and administration of the examination for lead auditor is the responsibility of the Company. The Company may delegate this activity to an independent certifying agency, but shall retain responsibility for conformance of the examination and its administration to this procedure. Integrity of the examination shall be maintained by the Company or certifying agency through appropriate confidentiality of files and, where applicable, proctoring of examinations. Copies of the objective evidence regarding the type(s) and content of the examination(s) shall be retained by the Company.

E. Records

Records of personnel qualifications for auditors and lead auditors performing audits shall be established and maintained by the Company.

1. Certification of Qualification

Records of certification for lead auditor shall, as a minimum, document the following:

- a. Employer's name
- b. Lead auditor's name
- c. Date of certification or recertification

METHOD (Continued)

- d. Basis for qualification (i.e., education, experience, communication skills, training, examination, etc.)
 - e. Signature of the Company's designated representative who is responsible for such certification.
2. Updating of Lead Auditor's Records
Records for each lead auditor shall be maintained and updated annually.
 3. Qualification records shall be retained as required by 568-DOC-115, Appendix D.
 4. All of the above referenced records generated by this procedure shall be considered QA Records and maintained in accordance with the Quality Assurance Records Management Handbook.

REFERENCES

- A. 568-DOC-115, REECo Quality Assurance Program Plan for the NNWSI Project.

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 1 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
1 1	NNWSI Project QA Plan Para. 2.1	Verify that the individual responsible for directing and managing the overall QA program is at the same or higher organization level as the highest level manager responsible for performing activities affecting quality. Use the matrix management of REECo for this purpose.			
1 2	Para. 1.0	Verify that REECo's project organization structure, lines of communication, authority, and duties are established and delineated in writing for the matrix management of the project.			

(9) Auditor Signature

(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 2 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
1-3	REECo QAPP, Rev. 5 Section I Para. 4.1	Verify that internal interfaces between departments are established and documented.			
1-4	Para. 2.2	Verify that the authority for the resolution of disputes involving quality arising from a difference of opinion between QA and others is identified.			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECO

(2) Page 3 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
2-1	REECO QAPP, Rev. 5 Section II Para. 3.1	Verify that management assessments are conducted at least annually for determining: <ul style="list-style-type: none"> o The effectiveness of the system and management controls that are established. o The adequacy of resources and personnel provided to the QA program. 			
2 2	Para. 3.2	Verify that REECO has developed its internal procedures for planning, organizing, performing, and documenting the management assessment conducted.			
			(9) Auditor Signature	(10) Date	

WMPO AUDIT CHECKLIST NO. 88 07-01

N-QA-044
7/87

(1) Organization REECo (2) Page 4 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
2-3	REECo QAPP, Rev. 5 Section II Para. 4.1.1	Verify that position descriptions have been established and documented for each position involved in activities that affect quality. Verify that the descriptions include minimum education and minimum experience.			
2 4	Para. 4.1.2	Verify that education and experience for the personnel performing activities that affect quality have been verified by REECo.			

(9) Auditor Signature

(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-OA-044
7/87

(1) Organization REECo

(2) Page 5 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
2-5	REECo QAPP, Rev. 5 Section II Para. 4.1.3	Verify that indoctrination includes the purpose, scope, and method of implementation and applicability of: <ul style="list-style-type: none"> o QAPP o NQPs o Regulations o Project level documents 			
2-6	Para. 4.1.4	Are there facilities in place to assure that individuals are trained before performing quality affecting activities? Identify the nature and extent of the training facilities.			
			(9) Auditor Signature	(10) Date	

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 7 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
4-1	REECo QAPP, Rev. 5 Section IV Para. 1.1	Determine how approval of vendors, source inspection, hold points, and receipt inspections will be accomplished by the appropriate REECo internal group for NNWSI.			
4-2	Para. 1.1	Determine the ability of REECo internal organizations or REECo PQA to perform the following: o Vendor survey for qualification o Vendor audits for adequacy of performance o Vendor in-plant inspection			
			(9) Auditor Signature	(10) Date	

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 9 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
4 4	REECo NQA 4.0 Section B-E REECo Procurement Procedure BH-6131, Rev. 1 Section I-IV	Determine the procurement document process from procurement authorization through post award and acceptance.			
4 5	REECo NQA 4.0 Procedure Section F	Verify procurement documents are maintained as QA records.			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 10 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
4 6	REECo Procurement Procedure BII-6131, Rev. 1 Section I.A.7.c	Determine whether the Chief Purchasing Agent (CPA) is qualified to review purchase orders for QA level assignment.			
4 7	REECo Procurement Procedure BII-6131, Rev. 1 Section I.D.2	Determine whether buyers are qualified to perform QA Level I or II NNWSI Project activities. (Reference NQP 2.2)			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 11 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
5 1	REECo QAPP, Rev. 5 Section V Para. 1.0	Verify that NQPs are included on the master list of REECo NNWSI Project documentation.			
5 2	Para. 2.0	Verify that REECo originating organizations have per- formed an independent technical and independent QA review of the instructions, procedures, plans, and drawings currently issued. Originating organizations should include but not be limited to: o Technical Division o Operations & Maintenance Division o Administrative Division (Procurement) o Quality Assurance (Weld Lab & Physical Standards Lab)			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECO

(2) Page 15 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
6-3	REECO QAPP, Rev. 5 Section VI Para. 2.1	Does the system preclude issuance of major changes to documents without review and approval by the same organizations responsible for the original document? <hr/> <hr/> <hr/>			
6-4	Para. 2.2	Does the system preclude issuance of major changes to documents which are indicated as minor changes? <hr/> <hr/> <hr/>			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 17 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
6-7	REECo QAPP, Rev. 5 Section VI Para. 1.2	Is there a master list of documents maintained to identify correct and updated revisions? _____ _____ _____			
6-8	Para. 3.1	Does the system ensure that documents requiring verification are not released prior to verification? Or, if they must be released, are they uniquely identified and controlled? _____ _____ _____			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 20 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
12-1	Section XII Para. 2.1	What controls are in place and functioning for selection of measuring and testing equipment to ensure that such equipment is proper for its intended use?			
12-2	Para. 2.2	Does the program ensure that M&TE is calibrated at prescribed intervals against certified equipment having known valid relationships to NBS or other nationally recognized standards?			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 21 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
12-3	568-D0C-115. Rev. 5 Section XII Para. 2.3	Is the method and interval of calibration for each M&TE item defined based on type of equipment, stability, characteristics, required accuracy, intended use, and other conditions affecting measurement control?			
12 4	Para. 2.3	Does the system provide for identification of M&TE to indicate due date for next calibration and for traceability to calibration data?			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization RERCo

(2) Page 22 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
12-5	568-DQC-115, Rev. 5 Section XII Para. 2.3	Does the program ensure evaluation of previous results when M&TE items are found to be out of calibration? _____ _____ _____			
12-6	Para. 2.5	Does the M&TE program ensure that items are handled and stored properly to maintain accuracy? _____ _____ _____			
			(9) Auditor Signature	(10) Date	

WMPO AUDIT CHECKLIST NO. 88 07 01

N-QA-044
7/87

(1) Organization REECo

(2) Page 24 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
13-3	568-DQC-115, Rev. 5 Section XIII Para. 1.0	Are items that require special controls identified as needing such treatment? _____ _____ _____			
13-4	Para. 1.3	Are there records indicating adequate maintenance where required? _____ _____ _____			
			(9) Auditor Signature	(10) Date	

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 25 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
17-1	568-DQC-115, Rev. 5 Section XVII Para. 1.2.1	Do procedures exist to implement the REECo QA Records Management System? _____ _____ _____			
17-2	Para. 2.1	Are documents/document types which become QA records specified? _____ _____ _____			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECO

(2) Page 26 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
17-3	568-D0C-115, Rev. 5 Section XVII Para. 1.3	Are controls established for completed records in interim storage? (Do these controls include requirements for legibility, accuracy, and completeness?)			
17-4	Para. 3.2	Are QA records validated/authenticated by an authorized individual on the "Authentication List"?			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88-07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 27 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
17-5	568-DQC-115, Rev. 5 Section XVII Para. 5.1	Does the record identification system permit traceability to the item/activity to which it applies?			
17-6	Para. 1.2.3	Are requirements and responsibilities for records transmittal documented?			

(9) Auditor Signature

(10) Date

WMPO AUDIT CHECKLIST NO. 88 07-01

N-QA-044
7/87

(1) Organization REFCo

(2) Page 28 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S. X. N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
17-7	568-DOC-115, Rev. 5 Section XVII Para. 4.1	Is there a receipt control system established by the records receiving organization that includes: a. A method for identifying the records received b. Procedures for receipt and inspection of incoming records?			
17-8	Para. 4.1	Is there a system for statusing submitted records during processing to archives?			
				(9) Auditor Signature	(10) Date

WMPO AUDIT CHECKLIST NO. 88 07-01

N-QA-044
7/87

(1) Organization REECo

(2) Page 32 of 33

(3) AUDIT ITEM NO.	(4) QUALITY ELEMENT & REFERENCE	(5) STANDARD QUALITY REQUIREMENTS AUDIT GUIDELINES	(6) RESULTS S, X, N/A	(7) SUMMARY OF INVESTIGATION	(8) PERSON CONTACTED
18-1	568-DQC-115, Rev. 5 Section XVIII Para. 1.2	Does a schedule exist for audits of REECo internal organizations and contractors? _____ _____ _____			
18-2	Para. 1.4	Have audits been performed as scheduled? _____ _____ _____			
				(9) Auditor Signature	(10) Date

WMPO STANDARD DEFICIENCY REPORT

N-QA-031
3/87

32500
Completed by Originating QA Organization
Aprvl.
Completed by Organization in Block 5
Comp. by Orig. QA Org.

1 Date _____ 2 Severity Level 1 2 3 Page 1 of _____

3 Discovered During _____ 3a Identified By _____ 3b Branch Chief Concurrence Date _____ 4 SDR No. _____ Rev. _____

5 Organization _____ 6 Person(s) Contacted _____ 7 Response Due Date is 20 Working Days from Date of Transmittal

8 Requirement (Audit Checklist Reference, if Applicable) _____

9 Deficiency _____

10 Recommended Action(s): Remedial Investigative Corrective

11 QAE/Lead Auditor Date _____ 12 Branch Manager Date _____ 13 Project Quality Mgr. Date _____

14 Remedial/Investigative Action(s) _____ 15 Effective Date _____

16 Cause of the Condition & Corrective Action to Prevent Recurrence _____ 17 Effective Date _____

18 Signature/Date _____

19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Amended Response <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
-------------	--	-----------------------	---------------------

20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	QAE/Lead Auditor/Date	Branch Manager/Date
---------------------	---	-----------------------	---------------------

21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory	QAE/Lead Auditor/Date	Branch Manager/Date
-----------------	---	-----------------------	---------------------

22 Remarks _____

23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date
---------------	-----------------------	---------------------	----------



**WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET**

N-QA-03E
10/86

SDR No.

Rev.

Page

of

2

WMPO STANDARD DEFICIENCY REPORT

N-QA-03
3/87

Completed by Originating QA Organization	1 Date _____		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of _____		
	3 Discovered During _____		3a Identified By _____		3b Branch Chief Concurrence Date _____		
	4 SDR No. _____		Rev. _____				
	5 Organization _____		6 Person(s) Contacted _____		7 Response Due Date: 20 Working Days from Date of Transmittal		
	8 Requirement (Audit Checklist Reference, if Applicable)						
	9 Deficiency						
	10 Recommended Action(s): <input type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective						
	Completed by Organization in Block 5	11 QAE/Lead Auditor Date _____		12 Branch Manager Date _____		13 Project Quality Mgr. Date _____	
		14 Remedial/Investigative Action(s)				15 Effective Date _____	
		16 Cause of the Condition & Corrective Action to Prevent Recurrence				17 Effective Date _____	
Comp. by Orig. QA Org.	18 Signature/Date						
	19 Response <input type="checkbox"/> Accept <input type="checkbox"/> Amended Response <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date		
	20 Amended Response <input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date		Branch Manager/Date		
	21 Verification <input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date		Branch Manager/Date		
	22 Remarks						
23 QA CLOSURE		QAE/Lead Auditor/Date		Branch Manager/Date			
				PQM/Date			



**WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET**

N-QA-03E
10/86

SDR No.

Rev.

Page

of

2

2

WMPO STANDARD DEFICIENCY REPORT

N-QA-03
3/87

Completed by Originating QA Organization	1 Date		2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of
	3 Discovered During	3a Identified By	3b Branch Chief Concurrence Date		4 SDR No. _____ Rev. _____
	5 Organization	6 Person(s) Contacted			7 Response Due Date: 20 Working Days from Date of Transmittal
	8 Requirement (Audit Checklist Reference, if Applicable)				
	9 Deficiency				
Completed by Organization in Block 5	10 Recommended Action(s): <input type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective				
	11 QAE/Lead Auditor Date	12 Branch Manager Date	13 Project Quality Mgr. Date		
	14 Remedial/Investigative Action(s)				15 Effective Date _____
	16 Cause of the Condition & Corrective Action to Prevent Recurrence				17 Effective Date _____
	18 Signature/Date				
Comp. by Orig. QA Org.	19 Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended Response	QAE/Lead Auditor/Date	Branch Manager/Date
	20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
	21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date
	22 Remarks				
23 QA CLOSURE		QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date	



**WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET**

N-QA-038
10/86

SDR No.

Rev.

Page

of

--



Department of Energy

Nevada Operations Office
P. O. Box 98518
Las Vegas, NV 89193-8518

NNA 87 10 02 00 72

OCT 02 1987

Vincent Gong
Technical Project Officer
for NNWSI
Reynolds Electrical &
Engineering Co., Inc.
P.O. Box 98521
Las Vegas, NV 89193-8521

WASTE MANAGEMENT PROJECT OFFICE (WMPO) QUALITY ASSURANCE (QA) AUDIT 87-10 OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECO) SUPPORT OF THE NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS (NNWSI) PROJECT (WMPO ACTION ITEM #88-109)

Enclosed is the report of QA Audit (87-10) which was conducted for the WMPO at the REECO Nevada Test Site and Las Vegas offices on August 24 through August 28, 1987.

The audit team sampled sufficient evidence related to the REECO Quality Assurance Program Plan (QAPP) to provide confidence that the REECO Quality Assurance Program is in compliance with the NNWSI Project Quality Assurance Plan NVO-196-17, Revision 4, except in the areas cited. Deficiencies are described in Section 6.0 of this report.

During the course of the audit, the audit team generated seven Standard Deficiency Reports (SDRs) (Nos. 074 to 080), four observations, and three recommendations. The SDRs have been previously sent to you in a separate WMPO letter, JB-2771 dated September 18, 1987. Your response is due back to this office by October 16 1987. Copies of the SDRs are enclosed with this audit report for your information.

Written responses to three of the four observations contained within this report are required. These responses are due within 20 working days of the transmittal date of this report. Please address your responses to me and concurrently send a copy of each observation response to Nita J. Brogan, Science Applications International Corporation (SAIC), Las Vegas, NV.

The three recommendations contained in this audit report are submitted for your staff to consider during the implementation of your QAPP and do not require response.

By copy of this letter, the audit is considered closed. Any open SDRs or observations will continue to be tracked by the WMPO SDR tracking system until each is closed to the satisfaction of the Lead Auditor and the Project Quality Manager.

OCT 02 1987

Vincent Gong

-2-

If you have any questions, please contact Jerry Heaney of SAIC at 295-8739.

James Blaylock
James Blaylock
Project Quality Manager
Waste Management Project Office

WMPO:JB-2846

Enclosure:
Report of QA Audit 87-10

cc w/encl:

V. J. Cassella, HQ (RW-222) FORS
J. P. Knight, HQ (RW-24) FORS
Carl Somers, Weston, Washington, DC
M. A. Fox, REECO, Mercury, NV
S. H. Klein, SAIC, Las Vegas, NV
W. R. Kazor, SAIC, Las Vegas, NV
Gerard Heaney, SAIC, Las Vegas, NV
H. H. Caldwell, SAIC, Las Vegas, NV
R. H. Klemens, SAIC, Las Vegas, NV
F. J. Ruth, SAIC, Las Vegas, NV
S. P. Nolan, SAIC, Las Vegas, NV
Theodore Vetter, SAIC, Las Vegas, NV
Ron May, SAIC, Las Vegas, NV
N. J. Brogan, SAIC, Las Vegas, NV
B. A. Wozniak, SAIC, Las Vegas, NV
K. A. MacDonald, SAIC, Las Vegas, NV
P. T. Prestholt, NRC, Las Vegas, NV
V. F. Witherill, NTSO, NV
A. R. Veloso, NTSO, NV
R. W. Gray, MED, NV
J. R. Rinaldi, QAD, NV
Royce Monks, QAD, NV
M. P. Kunich, WMPO, NV
C. P. Gertz, WMPO, NV

NVA 8710020073

WMPO QUALITY ASSURANCE AUDIT REPORT

NNWSI AUDIT OF REYNOLDS ELECTRICAL AND ENGINEERING CO., INC.

AUDIT NUMBER 87-10

CONDUCTED AUGUST 24-28, 1987

Prepared By: Gerard Heaney Date: 9-22-87
Gerard Heaney-Lead Auditor

Approved By: [Signature] Date: 9/22/87
Manager-Audits & Surveillances

Approved By: James Blaylock Date: 9/23/87
PQM-(WMPO)

1.0 Introduction

This report contains the results of a Quality Assurance Audit of Reynolds Electrical and Engineering Co., Inc. (REECO) conducted at the REECO Nevada Test Site and Las Vegas, Nevada offices. The audit was conducted in accordance with the requirements of the WMPD Quality Assurance Program Plan NVO-196-18, Rev. 2 and Quality Management Procedure (QMP) 18-01, Rev. 1.

2.0 Scope

The purpose of the audit was to evaluate the effectiveness of the REECO Quality Assurance Plan and implementing procedures with respect to the requirements of NNWSI Project NVO-196-17, Rev. 4 and to verify the implementation of the Quality Assurance Program as it relates to the NNWSI Project.

3.0 Audit Team Personnel

This audit team consisted of the following members:

Gerard Heaney - Lead Auditor - SAIC, Las Vegas, Nevada
Henry H. Caldwell - Auditor - SAIC, Las Vegas, Nevada
Robert H. Klemens - Auditor - SAIC, Las Vegas, Nevada
Frederick J. Ruth - Auditor - SAIC, Las Vegas, Nevada
Steven P. Nolan - Auditor - SAIC, Las Vegas, Nevada
Theodore Vetter - Auditor - SAIC, Las Vegas, Nevada
Daniel Klimas - Auditor - SAIC, Las Vegas, Nevada
Ken A. MacDonald - Technical Specialist - SAIC, Las Vegas, Nevada
Royce Monks - Observer - QAD, Las Vegas, Nevada

4.0 Summary of Audit Results

Evaluation of the Reynolds Electrical and Engineering Co., Inc. (REECO) Quality Assurance Program and implementing procedures indicate general compliance with NNWSI Project NVO-196-17, Rev. 4 requirements. The audit team identified seven deficiencies and four observations within the REECO NNWSI Project program. The deficiencies are identified on Standard Deficiency Reports (SDRs) and were not concentrated in any one specific programmatic area of activity. The observations identify areas of concern by the audit team that, if appropriate attention is not given to the observations by the REECO staff, program deficiencies could develop in the future. Additionally, four recommendations were generated for the REECO staff to consider. The deficiencies, observations, and recommendations are delineated in Section 6.0 of this audit report.

The following REECo Operating Groups which comprise the REECo Quality Assurance Program in support of NNWSI Project activities were audited to the NNWSI Project Quality Assurance Program requirements:

- o Field Operations Department/Department of Defense
- o Field Operations Department - Drilling
- o Operations and Maintenance Equipment Department
- o Procurement - Las Vegas Office
- o Supply and Property Management
- o Power and Communications
- o Quality Operations
- o Training

The audit team determined the following program elements of the REECo QA Program were in compliance with NNWSI Project Quality Assurance Program requirements:

- 1.0 Organization
- 3.0 Scientific Investigations Control and Design Control
- 4.0 Procurement Document Control
- 5.0 Instructions, Procedures, and Drawings
- 6.0 Document Control
- 7.0 Control of Purchased Material, Equipment and Services
- 8.0 Identification and Control of Materials, Parts and Components
- 11.0 Test and Experiment/Research Control
- 13.0 Handling, Storage and Shipping
- 14.0 Inspection, Test and Operating Status
- 15.0 Nonconformances
- 17.0 Quality Assurance Records
- 18.0 Audits

Program elements which the audit team identified as being deficient were:

- 2.0 Quality Assurance Program (Certifications)
- 9.0 Control of Processes (Drilling Records)
- 10.0 Inspection (Quality Assurance Surveillances)
- 12.0 Control of Measuring and Test Equipment
- 16.0 Nonconformances

The deficiencies were qualified by the application of severity levels which were tied to the significance of the finding. A discussion of the severity levels is provided in Attachment B. Six of the seven SDRs were Severity Level 2, whereas the seventh was Severity Level 3.

The evaluation contained within this audit report gives evidence of significant improvement within the REECo NNWSI Project Quality Assurance Program as compared to the results of previous WMPD audits. The audit team believes that the present QA program in place is adequate to support NNWSI Project Quality Assurance requirements. The adequacy of the present program will be further confirmed in future WMPD audits when site characterization activities are initiated and the REECo Quality Assurance Program is fully implemented.

5.0 Audit Meetings

5.1 Preaudit Conference

A preaudit conference was held on August 24, 1987, at 10:00 a.m. The purpose, scope, and agenda of the audit were reviewed with the REECo staff and coordinators were assigned to escort audit team members during the audit. (See Attachment A for attendees)

5.2 Postaudit Conference

A postaudit conference was held on August 28, 1987 at 10:00 a.m. Results of the audit and SDRs, observations and recommendations identified during the course of the audit were presented to the REECo staff. Draft copies of the SDRs, observations, and recommendations were given to the Technical Project Officer (TPO) and cognizant members of his staff at this time. (See Attachment A for attendees)

6.0 Synopsis of SDRs/Observations/Recommendations

6.1 Standard Deficiency Reports

1. A review of Calibration Reports for NNWSI Project calibrated instruments indicated that the results of calibration values obtained were not being recorded. Refer to SDR-074, Severity Level 2.
2. Personnel transporting explosives are required by REECo procedures to be recertified every two years. Actual practice is to recertify employees when their government licenses expire which is every four years. Refer to SDR-075, Severity Level 2.
3. Core drillers are logging pertinent information in a core drilling shift report. Procedural requirements are to log this information in a drilling log. Refer to SDR-076, Severity Level 2.
4. REECo surveillance reports do not contain a list of personnel contacted during the surveillance or a summary of the surveillance. Refer to SDR-077, Severity Level 2.

5. Certification files for a REECo lead auditor do not contain evidence of performing five quality assurance audits within the last three years prior to certification. Refer to SDR-078, Severity Level 2.
6. Surveillance reports and close out documentation have not been sent to WMPD and QASC per REECo procedural requirements. Refer to SDR-079, Severity Level 3.
7. Nonconformance reports or corrective action requests were not generated for deficiencies identified in a REECo surveillance report. The deficiencies were identified as observations which are not presently defined within the REECo QA program. Refer to SDR-080, Severity Level 2.

6.2 Observations

OBSERVATION NO. 1

REECO Company Procedure (Quality Assurance Section) 4.7.1 "Calibration Program" dated April 30, 1987, Section C Records states "The application of the calibration requirements will be supported by records designed to assure that established schedules and procedures are followed. The records shall include a suitably identified individual record of calibration."

Review of calibration records for NNWSI Project calibrated instruments indicates that the procedure used to calibrate those instruments is not being recorded on the calibration records. The audit team believes that this information should be recorded on the calibration records to ensure documented traceability as to what procedure was used to perform the calibration of the instruments. It is recommended to revise Procedure 4.7.1 to specifically require the recording of this information.

OBSERVATION NO. 2

NNWSI-SOP-02-01, Rev. 1, Paragraph 1.1.1 specifies "The delegation execution of the program requirements shall be documented. The authority and duties of persons and organizations performing activities affecting quality shall be clearly established and delineated in writing."

The authority and responsibilities between REECo and the Nevada Test Site Office (NTSO) is not clearly established and delineated in writing.

Procedure NQP 4.0 "Procurement Document Control," Rev. 1 identifies NNWSI Project procurement requirements and also a REECo interface with NTSO in regards to procurement activities. Discussions with REECo personnel indicated that once NNWSI Project procurement requirements are met, certain purchase orders are routed through NTSO while others are not. The determining factor is the dollar value of the purchase order.

It is recommended that interface procedures be established to clearly document the authority and responsibilities as required by NYO-196-17.

OBSERVATION NO. 3

The Local Record Center is operating to the requirements of the QA Records Management Handbook (QARMH), 554-DOC-17.10, which was issued on July 10, 1987. Since that date, approximately 187 documents have been received in the Local Records Center, according to the Records Administrator. About 185 of these documents were received from Cost Centers 570 and 571 (Supply and Property Management). The following conditions were noted:

1. Supply and Property Management is sending records to the Local Records Center which were not generated by their department - many record copies are not reproducible and are stamped "Best Copy Available." The QARMH specifies in Section D that records generated by a department are to be submitted to the Local Records Center. The present practice will result in numerous copies of the same document being submitted to the Local Records Center unless the QARMH is followed by the various departments.
2. The majority of the records were marked "NA" for Quality Level, while several were marked Level III. Only Quality Level I and II records are to be validated and sent to the Local Records Center.
3. The Records Administrator has not actually started following Desk Procedures covering Receipt Control and Indexing of Quality Records. The QA Records Transmittal and Status Log should be kept current and up-to-date to reflect the current status of records received.
4. None of the other REECo departments have forwarded any records to the Local Records Center to date. Personnel qualifications records are being retained at work stations in violation of requirements.

The audit team recognizes that the REECo QA Records Management Handbook has only been recently approved and that further direction on QA Records processing is forthcoming from the WMPD upon approval of a NNWSI Project Administrative Procedure on QA Records. The WMPD Quality Assurance Support Contractor will perform future surveillances/audits of the REECo processing of QA Records after approval of the new administrative procedure.

REECo is not required to respond to this observation.

OBSERVATION NO. 4

Review of the REECo QA Program indicates that many activities will be performed by the REECo NNWSI Project Quality Assurance Group. Examples of these activities include vendor surveillances to support all project procurement, audits and surveillances of all REECo NNWSI Project activities, review and approval of all REECo NNWSI Project procedures, as well as review of all NTS criteria letters and work orders. Once the Site Characterization Plan and Study Plans are approved by DOE/Headquarters and site characterization activities are initiated and these forementioned activities begin, the work load will be greatly increased. Presently the Project Quality Assurance Group only has two staff members. The audit team believes that the present and proposed QA staffing levels should be evaluated to ensure that these activities will be adequately covered to prevent nonconforming conditions from arising. Consideration should also be given as to the amount of lead time it might take to train and certify personnel to perform these activities as well as to become familiar with NNWSI Project requirements.

6.3 Recommendations

RECOMMENDATION NO. 1

The REECo NNWSI Project QA Calibration Procedures which were reviewed at the REECo Calibration Lab, do not have revision level numbers assigned or the effective date of the procedure.

Original issues of these procedures should be designated as Revision 0 and be listed accordingly in the current index for calibration procedures. Any subsequent changes to the procedures would raise the revision level as applicable. The listing of the current revision number and the procedure's effective date on the procedure and in the index would provide users a method to ensure they are using the latest revision to that procedure.

It should be noted that this condition was found to be similar in other REECo operating departments.

RECOMMENDATION NO. 2

The REECo Field Operations Department - Drilling does not presently have a procedure for wire line core drilling. Discussions with REECo personnel indicated that this method of core drilling will be used in the future to support NNWSI Project work activities. It is recommended that REECo prepare a wire line core drilling procedure at this time to ensure that the procedure will be in place when this type of core drilling activity is initiated.

RECOMMENDATION NO. 3

The REECo procedure for maintenance on the 400 and 900 horsepower NNWSI Project mine hoist should be more specific on the coverage of the maintenance of the hoist motors. If manufacturers instructions for the performance of the maintenance are not explicit in the REECo procedure then the procedure should reference any manufacturer manuals which explicitly define these maintenance instructions.

Furthermore, review of the inspection reports for these inactive NNWSI Project mine hoists shows that the meggering of the motors was not an inspected attribute. Meggering should be included as an attribute to protect the integrity of the internal wiring of these inactive motors.

7.0 Required Action

A written response is required for each Standard Deficiency Report delineated in Part 6 above. The original copies of the SDRs were forwarded to the REECo TPO on September 18, 1987. Responses to each SDR are due 20 working days from the date of the SDR transmittal letter. Upon response, acceptance, and satisfactory completion and verification of all remedial and corrective actions, the SDRs will be closed and REECo will be notified by letter of the SDR closure.

A written response is required for three of the four observations delineated in Part 6 of this audit report. Responses are due within 20 working days of the date of the transmittal letter for this audit report.

Written responses are not required for recommendations contained within this audit report. The recommendations were generated by the audit team for the REECo staff to consider during implementation of its Quality Assurance Program.

Name	Title	Organization	Pre-Audit Conference	During Audit	Post Audit Conference
Jerry Heaney	QA Engr	SAIC	x	X	X
Mono Fox	Proj. QA Mgr.	REFCo	X	X	X
Daniel Klimas	QA Engineer	SAIC	X	X	X
Steven P. Nolan	QA Engineer	SAIC	X	X	
Theodore Vetter	QA Engineer	SAIC	X	X	
Roger S. Monks	Gen. EWGP.	DOF/NV	X	X	
Frederick J. Ruth	QA Engineer	SAIC	X	X	
Henry H. Caldwell	QA Engineer	SAIC	X	X	X
Kenneth A. MacDonald	SR. Mining Engr.	SAIC	X	X	X
Dan Koss	ESF Project Mgr.	REECO	X	X	X
R. J. Lykens	Sr. QA Engr.	REECO	X	X	X
A.K. Fowkes	Chief, QA Serv.	REECO	X	X	X
E. J. Kress	Sr. QC Spec.	REECO	X		
T. L. Mueller	Prin. Staff Asst.	REECO	X		X
Jeff J. Fluckiger	Welding Engr.	REECO	X	X	
Don Snodgrass	Mgr. QA	REECO	X	X	X
Arden Bicker	Asst. Mgr.	REECO	X		X
Victor Milligan	Mgr.	REECO	X		
Doris M. Burnett	Dept. Mgr.	REECO	X	X	
Cheryl A. Lopez	Traf. Sect. Chf.	REECO	X		
Harvey Jackson	Mgr. Supply & Prop.	REECO	X		
Penny Marrs	Purch. Agent	REECO	X	X	X
Larry Kotek	Sr. Staff Asst.	REECO	X		
Frank Guarduci	Sr. Staff Asst.	REECO	X	X	X
Joe Wuellner	Proj. Engr	REECO	X		
Paul Metzler	Sr. Engr.	REECO	X		X
K. L. Limon	Staff Asst.	REECO	X		
L. A. Ruud	Proj. Engr.	REECO	X	X	X
R. A. Martin	Drill. Sup. Supt.	REECO	X		
Alvin R. Frazier	Chief In. Hygiene	REECO	X		
A. Y. Wallace	Mgr. Trng. Rep.	REECO	X		
William J. Donahoe	Dept. Manager	REFCO	X	X	X

Name	Title	Organization	Pre-Audit Conference	During Audit	Post Audit Conference
T. K. Fogliani	Prin. Staff Ast.	REEC0	X		X
A. L. Donald	Sr. Staff Asst.	REEC0	X		
Maodoom Burharl	Sr. Engr.	REEC0	X		
Gabriel Rongo	PDC Feeding	REEC0	X		
John N. Kim	PWR Sys. S/C	REEC0	X	X	
Z. Dale Thompson	Supply Prop.	REEC0	X		X
E.J. Olds	Act. G/S Supt.	REEC0	X		
Roger R. Brodeur	Supp. & Prop.	REEC0	X		
Lew Miller	Power & Comm.	REEC0	X	X	
Vincent Gong	TPO	REEC0	X	X	X
Robert White	Sr. Eng./DQC	REEC0	X		X
Robert H. Klemens	QA Engr.	SAIC	X		X
Kurt R. Harms	Prop. Admin.	REEC0	X		X
Dennis A. Goodman	Supply & Prop.	REEC0	X	X	X
Anna R. Phillips	Staff Assist.	REEC0	X	X	X
Jim Blaylock	PQM	WMPD			X
Walt Kazor	Branch Mgr.	SAIC			X
Bud Adkinson	FOD/DOD	REEC0		X	
Dave Kuhn	FOD/DOD	REEC0		X	

SEVERITY LEVELS

Severity Level 1 - Significant deficiencies considered of major importance. These deficiencies require remedial, investigative, and corrective actions to prevent recurrence.

Severity Level 2 - A deficiency which is not of major importance, but may also require remedial, investigative, and/or corrective action to prevent recurrence.

Severity Level 3 - A minor deficiency in that only remedial action is required. These deficiencies are generally isolated in nature or have a very limited scope. In addition, the integrity of the end result of the activity is not affected nor does the deficiency affect the ability to achieve those results.

Remedial Action - Actions taken to correct the specific deficiencies noted on the SDR.

Investigative Action - Actions taken to further examine the deficient condition to determine the extent and depth. This action should identify all conditions similar to the examples listed on the SDR.

Corrective Action - Actions taken to identify the cause of the condition and to prevent recurrence of the condition identified on the SDR.

REECO WBS ACTIVITIES

AUDIT 88-07

INDEX

1.2.2.1.R	Waste Package Management And Investigation
1.2.3.1.R	Site Investigations Management And Investigation
1.2.3.5.1.R	Drilling Sample Management Facility Support
1.2.3.5.2.R	Drilling, Construction, Engineering
1.2.3.6.1.R	Environmental Monitoring
1.2.6.1.1.R	E.S. Management, Planning And Design Review
1.2.6.1.2.R	ESQA
1.2.6.1.3.R	E.S. Safety
1.2.6.2.1.R	Site Prep And Roads
1.2.6.2.2.R	Utilities And Communications Systems
1.2.6.3.1.R	Surface Facility Buildings
1.2.6.4.1.R	First Shaft And Liner
1.2.6.4.2.R	Hoist And Head Frame
1.2.6.5.1.R	E.S.-2 Second Shaft And Liner
1.2.6.5.2.R	E.S.-2 Hoist And Head Frame
1.2.6.6.R	Subsurface Excavations
1.2.6.7.1.R	Underground Service System Utilities And Communications
1.2.6.7.2.R	Mine Plant
1.2.6.7.3.R	Shaft Internals And Conveyances - ES-1
1.2.6.7.4.R	Shaft Internals And Conveyances - ES-2
1.2.6.8.1.R	Operations Site And Equipment Maintenance
1.2.6.8.2.R	Operations Project Operations
1.2.6.8.3.R	Training
1.2.6.9.2.1.R	E.S. Testing Geologic Testing
1.2.6.9.2.2.R	E.S. Testing Hydrologic Testing
1.2.6.9.2.3.R	E.S. Testing Geomechanical Testing
1.2.6.9.2.4.R	E.S. Testing Geochemical Testing
1.2.6.9.2.5.R	E.S. Testing Engineered Barrier Design Testing
1.2.6.9.3.R	Integrated Data System
1.2.6.9.4.1.R	Prototype Testing Geologic
1.2.6.9.4.2.R	Prototype Hydrologic Testing
1.2.6.9.4.3.R	Prototype Geomechanical Testing
1.2.6.9.4.4.R	Prototype Geochemical Testing
1.2.6.9.4.5.R	Prototype Engineered Barrier Design Testing

1.2.6.9.4.6.R Prototype Air Coring
1.2.6.9.4.7.R Prototype IDS Testing
1.2.7.1.R Test Facilities Management And Integration
1.2.7.2.1.R Testing Climax
1.2.7.2.2.R E-MAD
1.2.7.2.3.R G-Tunnel
1.2.9.1.1.R Project Management And Integration Management
1.2.9.1.2.R Interface Activities
1.2.9.1.4.R Records Management
1.2.9.2.R Project Controls
1.2.9.3.R Quality Assurance

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY -- UNCONTROLLED
18-APR-1988 08:46:31

WBS: 1.2.2.1.R

TITLE: Waste Package Management and Integration

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To manage and integrate work performed within the waste package WBS elements.

DESCRIPTION OF WORK: All efforts required to:

- o All efforts required to administer and monitor the contract relating to the peer review of the waste package copper alloy studies by independent contractors.

C/SCR:
APPROVED:
REV: 1

NOTE

WBS: 1.2.3.1.R

TITLE: Management and Integration

PARTICIPANT: REECo

Entry to be determined and supplied at a later date.

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.3.5.1.R

TITLE: Sample Management Facility Support

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide general support to Project participants with regard to the Sample Management Facility.

DESCRIPTION OF WORK: All efforts required to:

- o provide general support, office space and clerical assistance
- o procure and maintain vehicles
- o provide radio support
- o provide logistical support to the USGS.

C/SCR: 87/296

APPROVED: 14-dec-1987

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.3.5.2.R

TITLE: Drilling, Construction, Engineering

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide NNWSI Project participants with expertise in support of drilling, trenching, and construction related to the NNWSI Project.

DESCRIPTION OF WORK: All efforts required to:

- o provide the necessary labor and materials necessary for drilling, construction, and trenching related to the NNWSI Project.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.3.6.1.R

TITLE: Site Monitoring

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To procure monitoring towers for the meteorological monitoring program and erect the towers.

DESCRIPTION OF WORK: All efforts required to:

- o procure meteorological monitoring towers
- o procure equipment elevator system for 60 meter tower
- o prepare sites for tower erection and equipment installation
- o erect five monitoring towers
- o procure substation transformer and construct power line to meteorological monitoring station.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.1.1.R

TITLE: Exploratory Shaft Management, Planning, and Design Review

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide design reviews and analyses, budgets, and schedules.

DESCRIPTION OF WORK: All efforts required to:

- o provide cost estimates, schedules, and progress reporting for Exploratory Shaft operations
- o prepare and let the subcontractor bid package for shaft construction
- o hold internal and project design reviews
- o provide support as the construction manager.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.1.2.R

TITLE: Quality Assurance

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To develop and implement a Quality Assurance Program Plan (QAPP) and supporting procedures for all REECo work associated with the Exploratory Shaft.

DESCRIPTION OF WORK: All efforts required to:

- o develop and implement a QAPP and supporting procedures for REECo work in accordance with the NNWSI Project QA Plan NVO-196-17
- o document the accomplishment of all items and submit documentation to the NNWSI Project Records Center.

C/SCR: 87/125

APPROVED: 09-nov-1987

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.1.3.R

TITLE: Safety

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To develop safety procedures for all REECo work associated with the Exploratory Shaft.

DESCRIPTION OF WORK: All efforts required to:

- o develop and implement safety standards and procedures.

C/SCR: 87/125

APPROVED: 09-nov-1987

REV: 0

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.2.1.R

TITLE: Site and Roads

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To prepare site and roads for access to the shaft.

DESCRIPTION OF WORK: All efforts required to:

- o provide construction services for all efforts including labor
- o provide materials procurement and subcontracted earthworking equipment rentals
- o improve the existing dirt road grading, widening, and applying a double oil and chip surface treatment
- o clear, grade, and stabilize an approximate by 20-acre contiguous site area to include drainage provisions and access control fencing
- o construct a pad to support the construction effort
- o grade a water tank service road and water tank pad area.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.2.2.R

TITLE: Utilities and Communications System

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide power, water, and sewage systems necessary to support surface and subsurface operations, and to provide surface communications equipment as well as fire protection system monitoring.

DESCRIPTION OF WORK: All efforts required to:

- o provide construction services for listed efforts including labor of standard construction crafts (laborers, teamsters, operating engineers, electricians, plumbers, carpenters, etc.,)
- o provide materials and equipment procurement subcontractors
- o construct an overhead power transmission line
- o construct a substation with primary transformer and associated panels, switches, and conductors
- o construct an electrical distribution system with secondary transformers and associated panels, switches, conduit, and conductors, as necessary
- o install an emergency generator system with automatic transfer switches for connection to hoists, area lighting system, and ventilation fans
- o construct an underground water line to include pumping station(s), storage tank, and distribution system throughout the surface facility
- o install a buried sanitary waste collection piping system, septic tanks, and seepage pit
- o install solar-powered microwave communication system and a digital communication link for fire protection system monitoring.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.3.1.R

TITLE: Buildings

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide concrete building foundations and trailer pads for all site buildings and trailers; to erect a shop and warehouse, complete with utilities; to procure and erect pre-engineered office trailers and change-house trailers.

DESCRIPTION OF WORK: All efforts required to:

- o provide construction services including labor of standard construction crafts
- o construct concrete building foundations and graded trailer pads for prefabricated metal buildings and trailers (this does not include the pads for the hoists)
- o erect one ES-1 hoist house, one ES-2 hoist house, one shop, and one warehouse, complete with utilities (this does not include the erection of the hoists or headframes)
- o set and connect office/laboratory trailers and change house trailers.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.4.1.R

TITLE: Shaft and Liner

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To administer construction of the ES-1 shaft and liner to support in situ testing and provide government-furnished equipment and materials.

DESCRIPTION OF WORK: All efforts required to:

- o serve as construction manager for construction of the ES-1 shaft and liner (including shaft collar and foreshaft), all of which will be performed by the shaft-sinking subcontractor
- o provide construction services under a major subcontract to include labor of standard mining crafts, associated supervisory personnel, materials (exclusive of sand and aggregate for concrete which will be government furnished through REECo procurement), and mining equipment.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.4.2.R

TITLE: Hoists and Headframe

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To install hoists and a headframe to support in situ testing.

DESCRIPTION OF WORK: All efforts required to:

- o construct concrete pads for hoists and headframe and install hoists and headframe, including headframe lighting and grounding
- o provide construction services including labor of standard construction crafts
- o install hoist controls and wiring.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.5.1.R

TITLE: Shaft and Liner

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To administer construction of ES-2 shaft and liner and to provide government furnished equipment and materials.

DESCRIPTION OF WORK: All efforts required to:

- o serve as manager for construction of the ES-2 shaft and liner which will be performed by the shaft-sinking subcontractor
- o provide construction services under a major subcontract to include labor of standard mining crafts, associated supervisory personnel, materials (exclusive of sand and aggregate for concrete which will be government furnished through REECo procurement), and mining equipment.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.5.2.R

TITLE: Hoist and Headframe

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To install ES-2 hoist and to modify and install a headframe to support in situ testing.

DESCRIPTION OF WORK: All efforts required to:

- o construct concrete pads for ES-2 hoist and install hoist and headframe, including headframe modifications, lighting, and grounding
- o provide construction services under a major subcontract to include labor of standard construction crafts
- o install hoist controls and wiring.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.6.R

TITLE: Subsurface Excavations

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: Administer construction of underground openings to support in situ testing.

DESCRIPTION OF WORK: All efforts required to:

- o serve as construction manager for mining of an upper Demonstration Breakout Room (DBR) and a lower Demonstration Breakout Room (LBR)
- o mine the drifts that will be used for the primary testing efforts and alcoves for the subsurface power substation and the Integrated Data System
- o mine a drill room at the bottom of the shaft
- o reinforce all excavated surfaces as required with rock bolts, wire mesh, shotcrete, and fire walls as required
- o provide construction services including standard mining crafts and materials procurement subcontracts.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.7.1.R

TITLE: Utilities and Communications

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To administer construction of utilities and communications to support in situ testing in the underground openings.

DESCRIPTION OF WORK: All efforts required to:

- o serve as construction manager for installation of electrical transformers, conduits, distribution panels, and conductor cable for power distribution in the underground openings
- o install ventilation ducts, compressed air lines, and waterlines in the underground openings
- o install communication cables and telephone instruments as appropriate in the underground openings
- o provide construction services under a major subcontract to include labor of standard construction crafts, and materials and equipment procurement subcontracts.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.7.2.R

TITLE: Mine Plant

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To install the mine plant equipment, including waste water manifolds and pipelines, and ventilation ductwork and compressed air supply for the Exploratory Shaft.

DESCRIPTION OF WORK: All efforts required to:

- o construct concrete foundations for mine plant equipment and erect ventilation ductwork and compressed air supply lines to the shaft collar
- o provide construction services of REECo, including labor of standard construction crafts and materials and equipment procurement subcontracts, including those for ventilation and compressed air systems.

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.7.3.R

TITLE: Shaft Internals and Conveyances - First Shaft

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To administer construction of shaft internals and conveyances to support in situ testing and to provide government-furnished equipment.

DESCRIPTION OF WORK: All efforts required to:

- o oversee subcontractors installation of safety doors, buntons, vertical conveyances guides, and ladder-way
- o install permanent shaft conveyances to include personnel and equipment cage(s) and muck transport skip
- o provide construction services under a major subcontract to include labor of standard mining crafts, associated supervisory personnel, materials and equipment (exclusive of permanent conveyances which will be government furnished through REECo procurement).

C/SCR:
APPROVED:
REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.7.4.R

TITLE: Shaft Internals and Conveyances - Second Shaft

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To administer construction of the ES-2 shaft internals and conveyances.

DESCRIPTION OF WORK: All efforts required to oversee subcontractor's installation of vertical conveyances guides.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.8.1.R

TITLE: Site and Equipment Maintenance

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To assure that the site and equipment are maintained in proper working condition.

DESCRIPTION OF WORK: All efforts required to provide necessary periodic maintenance on all government-owned equipment, the facilities, and the site, including the access road and primary power and water systems.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.8.2.R

TITLE: Project Operations

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide project operations support to LANL.

DESCRIPTION OF WORK: All efforts required to:

- o provide necessary operations services, including administrative and material support (REEC Co Project Office), metered electric power, and equipment operations personnel, to sustain the day-to-day operation of the facility and to maintain underground access for user personnel
- o support underground construction and testing activities and provide LANL logistical support.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.8.3.R

TITLE: Training

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide necessary safety precautions for site and underground facilities and personnel.

DESCRIPTION OF WORK: All efforts required to provide services of the Operations and Maintenance Division consisting primarily of supervisory personnel who will provide necessary safety training, certification, and surveillance for personnel responsible for operational control of underground access.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.2.1.R

TITLE: Geologic Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the Exploratory Shaft testing programs necessary to characterize the site's suitability for the development of a repository.

DESCRIPTION OF WORK: All efforts required to provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.2.2.R

TITLE: Hydrologic Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the Exploratory Shaft testing programs necessary to characterize the site's stability for the development of a repository.

DESCRIPTION OF WORK: All efforts required to provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.2.3.R

TITLE: Geomechanical Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the Exploratory Shaft testing programs necessary to characterize the site's suitability for the development of a repository.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.2.4.R

TITLE: Geochemical Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the Exploratory Shaft testing programs necessary to characterize the site's suitability for the development of a repository.

DESCRIPTION OF WORK: All efforts required to provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.2.5.R

TITLE: Engineered Barrier Design Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the Exploratory Shaft testing programs necessary to characterize the site's suitability for the development of a repository.

DESCRIPTION OF WORK: All efforts required to provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.3.R

TITLE: Integrated Data System (IDS)

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide an Integrated Data System (IDS) to automatically record, control, store, and transfer data acquired during ES tests.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of standard construction crafts as required to support construction of the IDS enclosure and the IDS surface data acquisition building and to install the wiring from the PIs junction box to the junction box in the data alcove, from the IDS data alcove to the surface data acquisition building, and from the surface monitoring instrumentation to the surface data acquisition.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 2

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.1.R

TITLE: Prototype Geologic Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Geologic Test programs conducted under simulated Exploratory Shaft conditions.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of prototype test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.2.R

TITLE: Prototype Geomechanical Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Hydrologic Test programs conducted under simulated Exploratory Shaft conditions.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of prototype test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.3.R

TITLE: Prototype Geomechanical Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Geomechanical Test programs conducted under simulated Exploratory Shaft conditions.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of prototype test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.4.R

TITLE: Prototype Geochemical Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Geochemical Test programs conducted under simulated Exploratory Shaft conditions.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of prototype test

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.5.R

TITLE: Prototype Engineered Barrier Design Testing

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Engineered Barrier Design Testing and Waste Package Environment Tests conducted under simulated Exploratory Shaft conditions.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with installation of prototype test hardware.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.6.R

TITLE: Prototype Air Coring

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for Prototype Air Coring programs.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of miners and standard construction crafts as required to support mining and core drilling operations directly associated with prototype testing.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.6.9.4.7.R

TITLE: Prototype Integrated Data Systems (IDS)

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for the data acquisition and storage systems for use in the Exploratory Shaft.

DESCRIPTION OF WORK: All efforts required to:

- o provide labor, materials, and services of standard construction crafts as required to support construction of the prototype IDS enclosure and to install the wiring from the junction boxes to the field prototype IDS.

C/SCR: 86/166

APPROVED: 23-jun-1986

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.7.1.R

TITLE: Management and Integration

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide management and integration of the REECo support activities associated with drilling services, coreholes, and related construction.

DESCRIPTION OF WORK: All efforts required to:

- o provide management controls including planning, scheduling, budgeting, controlling, and reporting of contracted engineering activity
- o manage the production of design drawings, calculations and related estimates
- o develop and implement proper procedures for drilling, materials handling, and safety related requirements
- o manage drilling programs, produce as-built drawings and related activity.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.7.2.1.R

TITLE: Climax

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support and drilling services for the Climax Test Facility.

DESCRIPTION OF WORK: All efforts required to:

- o provide access for completion of testing in the facility
- o provide labor and materials for exploratory drilling, rock mechanics drilling, and implementation drilling program.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.7.2.2.R

TITLE: E-MAD

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide support for E-MAD facility operation.

DESCRIPTION OF WORK: All efforts required to provide labor and materials for the core hole activity required for the E-MAD Facility.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.7.2.3.R

TITLE: G-Tunnel

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide technical expertise for Tuff Rock Properties
Field Testing.

DESCRIPTION OF WORK: All efforts required to provide the necessary labor
and materials needed to perform the drilling and construction associated with
Tuff Rock Properties Field Testing.

C/SCR:

APPROVED:

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.9.1.1.R

TITLE: Management

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To direct and assure coordination of all NNWSI Project activities necessary to fulfill the goals and objectives of the Project and to coordinate this Project with the NNWSI overall program.

DESCRIPTION OF WORK: All efforts required to manage and coordinate all activities to be consistent with the goals and objectives of the overall DOE NNWSI Project, including planning, technical direction, cost, and schedule control.

C/SCR:

APPROVED:

REV: 1

NOTE

WBS: 1.2.9.1.2.R

TITLE: Interface Activities

PARTICIPANT: REECo

Entry to be determined and supplied at a later date.

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.9.1.4.R

TITLE: Information Management

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To provide the Local Records Center portions of the NNWSI Project Information Management System (IMS) that will meet the requirement of NVO-196-17.

DESCRIPTION OF WORK: All efforts required to:

- o establish and operate a Local Records Center (LRC) for the NNWSI Project Information Management System (IMS)
- o receive, retain, and protect documents/records through an authorized system for receiving, controlling, filing, accessing, tracking, retrieving, distributing, and storing.

C/SCR: 87/039

APPROVED: 23-mar-1987

REV: 1

NNWSI PROJECT WORK BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.9.2.R

TITLE: Project Control

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To monitor the fiscal and technical accomplishments of the REECo participation in the NNWSI Project.

DESCRIPTION OF WORK: All efforts required to:

- o to ensure that the schedule, milestones, and deliverables are maintained within the approved fiscal year budget
- o provide performance measurement information.

C/SCR: 86/145

APPROVED: 16-apr-1986

REV: 1

NNWSI PROJECT WORK-BREAKDOWN STRUCTURE DICTIONARY

WBS: 1.2.9.3.R

TITLE: Quality Assurance

PARTICIPANT: Reynolds Electrical & Engineering Co., Inc.

OBJECTIVE: To establish, implement, and maintain a Quality Assurance Program Plan in accordance with requirements set forth in the NNWSI Project QA Plan, NVO-196-17, and the Project-wide Standard Operating Procedures.

DESCRIPTION OF WORK: All efforts required to:

- o establish appropriate levels of quality for all NNWSI Project items/activities in accordance with NNWSI-SOP-02-02
- o provide personnel training to maintain an awareness of QA requirements and to maintain technical proficiency
- o perform independent verification and assessment of QA program effectiveness through audits, surveillances, and management reviews.

C/SCR:
APPROVED:
REV: 1