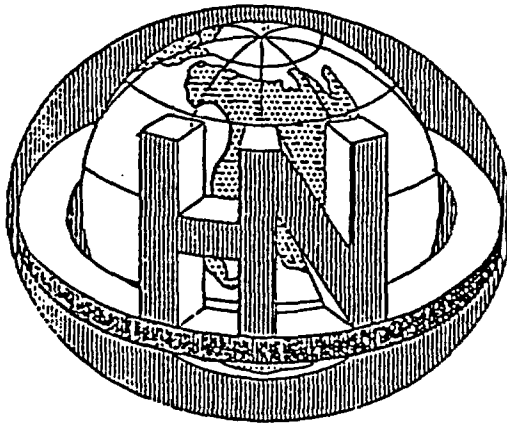


# ASSIGNMENT CONTROL SHEET



## HOLMES & NARVER ENERGY SUPPORT DIVISION NNWSI QUALITY ASSURANCE PROGRAM PLAN

MANUAL CONTROL NUMBER: 25

ASSIGNED TO: S. H. KLEIN

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HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

July 8, 1988

SECTION

N/A

SUBJECT:

NNWSI QAPP APPROVAL

REVISION NO.

1

SUPERSEDES


REV-0

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OF

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Manager, Nevada Operations

4/25/88  
Date

  
Technical Project Officer

4/21/88  
Date

  
Chief, Quality Assurance

4/20/88  
Date

NNA-880706-0017

SAIC/T & MSS

JUL 05 1988

C C F RECEIVED

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

N/A

SUBJECT:

POLICY STATEMENT

REVISION NO.

0

SUPERSEDES

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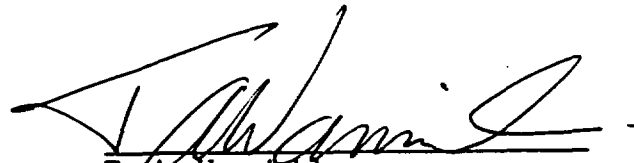
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It is the policy of Holmes & Narver, Inc. (H&N), Energy Support Division, that the achievement of quality is essential to success. H&N is dedicated to provide high quality services to the Department of Energy (DOE).

In order to assist DOE to meet future licensing requirements of the Nuclear Regulatory Commission for a repository site, a Quality Assurance Program Plan (QAPP) has been established in accordance with NVO-196-17 for all Nevada Nuclear Waste Storage Investigations Project (NNWSI) activities performed by H&N. To meet responsibilities for achieving and ensuring quality, H&N has assigned a Technical Project Officer (TPO) with appropriate authority to the Manager, Nevada Operations, for the management and direction of the NNWSI Project. The TPO has direct primary responsibility and accountability for the execution and implementation of the NNWSI Project activities.

This QAPP has the full endorsement and support of management. To be effective, this plan must be understood, accepted, and fully implemented by each H&N employee holding responsibility for NNWSI activities.

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



T. A. Wanniski  
Manager, Nevada Operations

NWS126(2):jem  
02/01/88

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE  
July 8, 1988

SECTION  
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SUBJECT:  
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# HOLMES & NARVER, INC.

NNWSI QUALITY ASSURANCE PROGRAM PLAN

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SAIC/T & MSS

JUL 0 5 1988

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HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

1

SUBJECT:

ORGANIZATION

REVISION NO.

0

SUPERSEDES

QAM-1

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OF

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I. PURPOSE

This section describes the basic organizational structure, functional responsibilities, levels of authority, and lines of communication for administering and implementing the Holmes & Narver, Inc., Energy Support Division (H&N/ESD), Nevada Nuclear Waste Storage Investigation (NNWSI) Quality Assurance Program Plan (QAPP). The responsibility for establishing and executing the Quality Assurance (QA) Program shall be with H&N.

II. SCOPE

- A. The internal organizational structure of H&N/ESD and the external interface organizations are covered in this section. Attachments A and B detail the interface.
- B. H&N/ESD is responsible to DOE/Waste Management Project Office (WMPO) for providing architectural and engineering service to support the Exploratory Shaft Facility (ESF) as assigned to them by the NNWSI Project Work Breakdown Structure (WBS) Dictionary.

III. REQUIREMENTS

- A. The Manager, Nevada Operations (MNO), administers and enforces the H&N/ESD QA policy, and ensures that appropriate quality requirements are included in projects assigned to the Nevada Operations. The MNO determines and establishes organizational structures.
- B. The NNWSI Technical Project Officer (TPO), who reports to the Manager, Technical Services, is responsible for directing the activities performed in support of the Project and ensuring that these activities are performed in accordance with this QAPP. The TPO is the prime interface with the WMPO, Participating Organizations, and supporting contractors. The Technical Project Office consists of Project Engineering, Design, Administration and Budgets and Field Engineering.
  - 1. Project engineering provides qualified engineers to manage the criteria flow, set and monitor schedules, and to check and approve drawings and specifications to criteria established by WMPO. Project Engineering is responsible for coordinating the internal and external interfaces to ensure the technical requirements and schedules are achieved.

2. Design provides qualified personnel to accomplish the design through all its phases. The group will be under the direction of the Design Section Chief. Design will produce drawings and specifications that are timely and accurate, meet the criteria, and are appropriate to the project in form, constructibility, and cost.
3. Administration and Budgets is responsible for budgetary control and office administration including record processing.
4. Field Engineering is responsible for supporting the construction effort with inspection and engineering activities in the field.

#### C. Quality Assurance

1. The Chief, Quality Assurance (CQA), having the appropriate management and QA knowledge and expertise, is responsible to ensure that an appropriate QA program is established and executed effectively. The CQA's organization will verify by checking, auditing, surveilling, and inspecting, that activities affecting quality have been performed correctly. The QA organization has sufficient authority, access to work area, and organizational and freedom to identify quality problems; to initiate, recommend, or provide solutions through designated channels; to verify implementation of the solutions; and to ensure 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 unsatisfactory work. The CQA has direct access to responsible management including, if necessary, the WMPO Project Quality Manager, to resolve quality problems. The CQA reports to a level of management at which this required authority and organizational freedom is provided, including sufficient independence from cost and schedule.
2. Full-time, dedicated, experienced QA personnel will be assigned by the CQA to the Project with additional qualified QA personnel made available to the project as necessary. The CQA shall have responsibility for approval of the QAPP, changes thereto, and interpretations thereof; and implementation procedures and all changes thereto. The assigned personnel shall have the responsibility and authority to verify the adequacy and effectiveness of the QA plans, requirements, and QA program implementation.
  - 1) The external interfaces with WMPO, the participating organizations, and the Nevada Test Site (NTS) Support Contractors, are as shown on Attachment A. Specific interface requirements will be identified as appropriate in the other sections of the QAPP. Direction is received from and responses are given directly to DOE/WMPO.

#### IV. SUPPORT ACTIVITIES

H&N/ESD also support the ESF effort from other H&N/ESD organizations as required. The support activities will be controlled by the Technical Office Project Engineering will authorize the work via an NNWSI Work Initiation issued directly to the manager/supervisor of the appropriate support organization.

- A. The Engineering Records Library provides for the microfilming and storage of records for the entire NNWSI Project.
- B. The Materials Testing Laboratory (MTL), a fully equipped testing laboratory, provides metal, concrete, rock, and soil testing by qualified personnel in support of the Project.
- C. The Nondestructive Testing Section (NDT) provides the NDT expertise in support of the Project.
- D. Field Survey provides survey control and information, both above and below ground, in support of the Project.
- E. Communications Electronics provides consulting on the design of the life support systems and other electronic systems and hardware for the Project.
- F. Communications Systems provides the expertise required to validate and control computer programs, and assists in the procurement of computer systems and hardware support for the Project.
- G. Cable provides consulting on the design, procurement, and inspection of the cable for the Project.

V. ATTACHMENTS

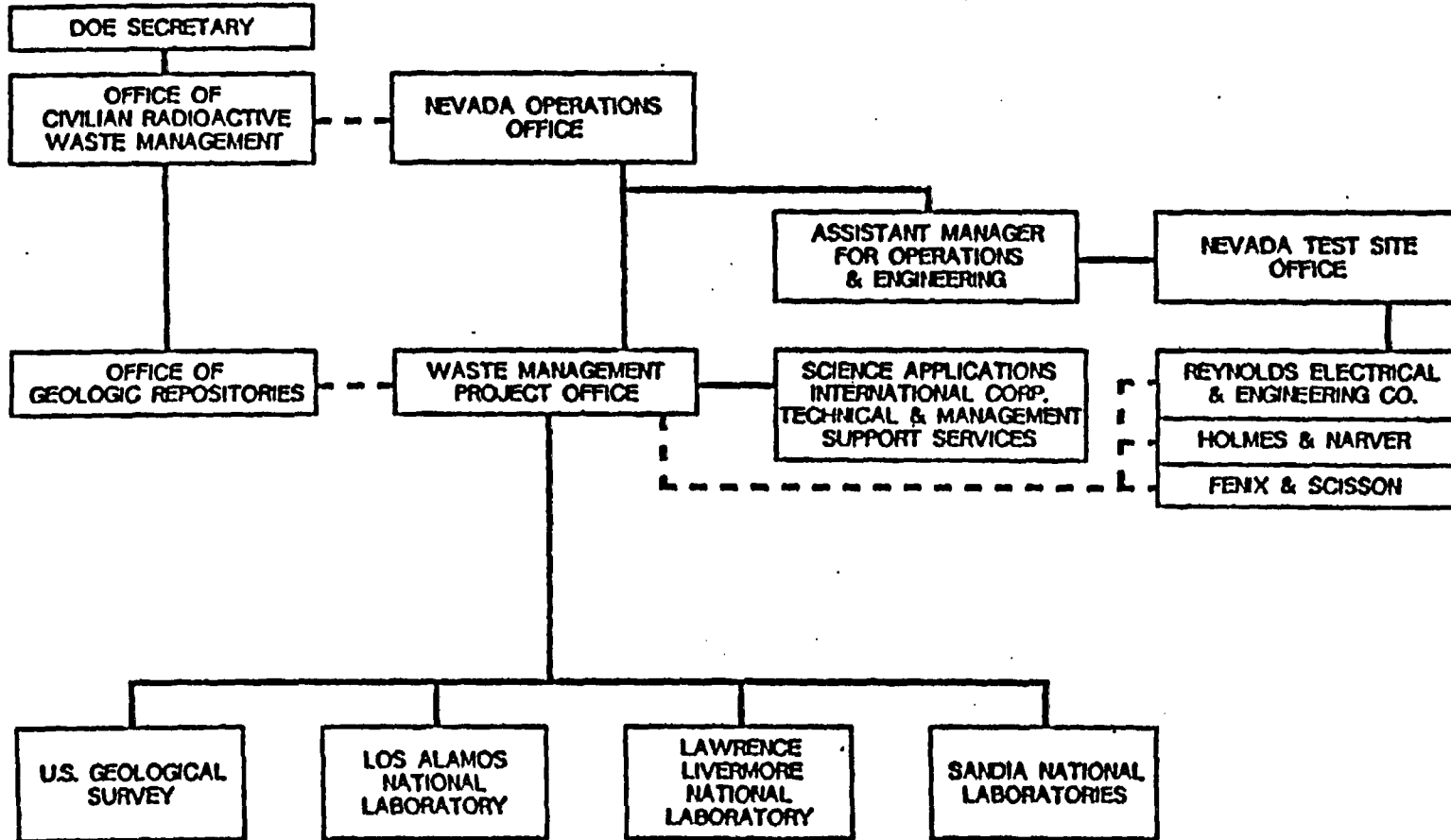
- A. NNWSI Project Organization Chart
- B. H&N NNWSI Project Organization Chart

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02/02/88



ATTACHMENT A

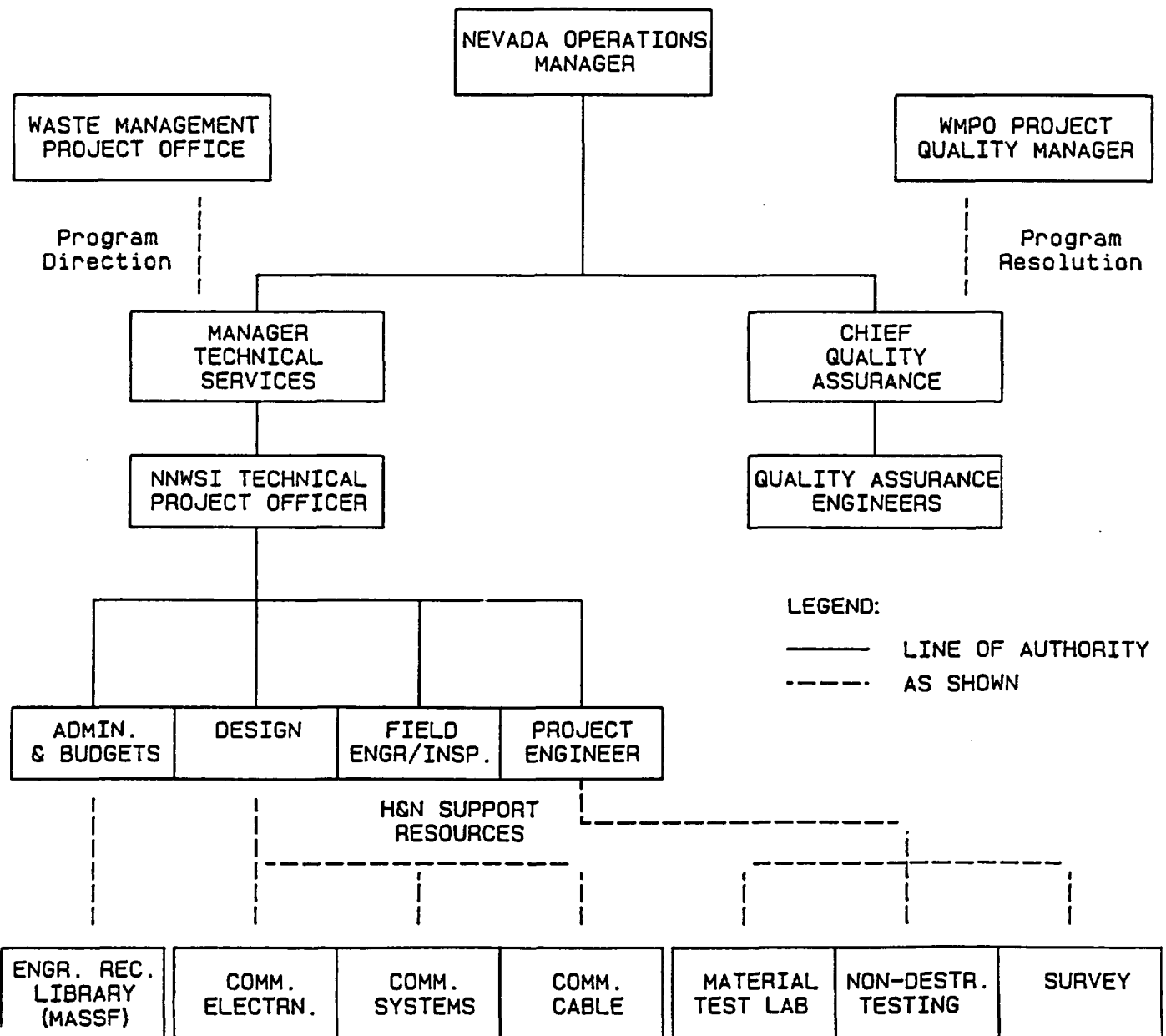
NNWSI PROJECT ORGANIZATION



———— PROGRAMMATIC & POLICY AUTHORITY  
 - - - - PROGRAMMATIC & POLICY GUIDANCE

ATTACHMENT B

HOLMES & NARVER, INC.  
 NNWSI PROJECT ORGANIZATION



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

2

SUBJECT:

QUALITY ASSURANCE PROGRAM

REVISION NO.

0

SUPERSEDES

QAM-2

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OF 3

I. PURPOSE

This section describes the basic Quality Assurance (QA) Program administered and implemented by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) to provide appropriate controls of activities affecting quality.

II. SCOPE

- A. Holmes and Narver, Inc. is the ESF A-E responsible for the design of the the underground Support Systems and the above-ground facilities. Additional responsibilities include field engineering and inspection of facilities, Material Test Laboratory support, nondestructive examination services, and field surveying services.
- B. This Quality Assurance Program Plan (QAPP), which complies with NVO-196-17, is based on applying a graded QA system consistent with the activities importance to safety, waste isolation, and Department of Energy (DOE) mission objectives. These grades or levels have been established and defined as QA Levels I, II, and III.
- C. This QAPP applies to QA Level I and II activities.
- D. H&N/ESD QA Manual (HN-10471-1115) applies to QA Level III activities.

III. REQUIREMENTS

- A. The Chief, Quality Assurance (CQA), shall be responsible for issuing and controlling the QAPP. The QAPP and revisions will be reviewed and approved by the CQA, TPO, and the Manager, Nevada Operations. The QAPP and subsequent revisions must be approved by the Waste Management Project Office (WMPO) prior to implementation.
- B. The QA Program consists of this QAPP plus appropriate implementing procedures required to provide and implement control over activities affecting quality. 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 takes 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 thereof. The program provides for indoctrination and, as necessary, training of personnel performing activities that affect quality to ensure that suitable proficiency is achieved and maintained.

- C. Implementing procedures, developed by qualified personnel, are reviewed and approved by the TPO and CQA, to ensure they meet the requirements of the QAPP, prior to their implementation.
- D. Personnel Selection, Indoctrination, and Training Procedures
1. Procedures shall be developed which establish the requirements for the selection, indoctrination, and training of personnel performing or verifying activities that affect quality. Position descriptions shall establish minimum personnel qualifications, including education and experience. Procedures shall provide for appropriate indoctrination, 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 QAPP.
  2. Personnel selected shall have education and experience commensurate with the minimum requirements specified in position descriptions. Relevant education and experience shall be verified and documented. The initial capabilities of an individual shall be based upon an evaluation of 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.
  3. Prior to performing activities affecting quality, personnel shall be indoctrinated as a minimum to the purpose, scope, methods of implementation, and applicability to the following documents, (including changes thereto), as they relate to the work to be accomplished. Indoctrination may be accomplished by the use of a mandatory reading list, group classroom presentation, or other approved instructional methods.
    - a. QAPP
    - b. Implementing procedures (applicable to the individual's responsibilities.)
    - c. Regulations
    - d. Project level documents
  4. Prior to performing quality affecting activities that are complex in nature (i.e., assignments where it is deemed necessary to develop and demonstrate initial proficiency), personnel training shall be conducted to gain the required proficiency. The 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 approved instructional methods, or combinations thereof.

5. The 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-today employee performance evaluations. Proficiency evaluations shall be performed by managers or supervisors who have responsibility for the activities being performed or verified.
6. 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 following:
  - a. Records of the verification and evaluation of a candidate's education, experience, and training, compared to those required for the position.
  - b. Records of indoctrination which include the objective and content of the indoctrination, date or dates of indoctrination, and other applicable information.
  - c. 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.
  - d. Record 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.
- E. A management assessment is to be conducted annually to determine the effectiveness of the system and management controls that are established to achieve and ensure quality, and the adequacy of resources and personnel provided to the QA program. The assessment is to verify that the QA Program is being effectively implemented and that personnel are trained to the QA requirements of the program. Procedures will be developed 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 all management assessments are to be provided to the WMPO Project Manager and Project Quality Manager.

#### IV. DOCUMENTATION

All records required for implementing this section shall be collected, stored, and maintained in accordance with written procedures which conform to Section 17 of the QAPP.

#### V. REFERENCE

- A. H&N/ESD Quality Assurance Manual (HN-10471-1115)
- B. NVO-196-17 NNWSI Quality Assurance Plan

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

3

SUBJECT:

DESIGN CONTROL

REVISION NO.

0

SUPERSEDES

QAM-3

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OF

6

I. PURPOSE

This section establishes the requirements for the control of design activities.

II. SCOPE

A. This section applies to all design activities performed in support of the project. The term design refers to specifications, drawings, design criteria, and component performance requirements for the natural and engineered components of the repository system.

B. Scientific investigations will not be performed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD).

III. REQUIREMENTS

A. General

1. All design phases must be assigned a Quality Assurance (QA) Level by a Participating Organization and be approved by the Waste Management Project Office (WMPO) prior to commencing of design activities.
2. Personnel performing or verifying design activities shall be indoctrinated, trained, and qualified as prescribed by Section 2 of the Quality Assurance Program Plan (QAPP).
3. All design activities shall be performed in accordance with instruction, procedures, or drawings developed in accordance with Section 5 of the QAPP.

B. Design Inputs

1. Applicable design input, such as criteria letters, design bases, performance and regulatory requirements, codes, standards, manufacturer's design data, and quality standards shall be identified, documented, and their selection reviewed, approved, and/or accepted by the responsible design organization and the responsible QA organization. The purpose of the QA review is to ensure that the documents are prepared, reviewed, approved, or accepted in accordance with documented procedures and quality assurance requirements.
2. Changes to approved design input, including the reason for the changes, shall be identified, documented, approved, and/or accepted and controlled in the same manner as the original document.

3. A partial list of design inputs is provided for consideration in the Attachment.

#### C. Design Analysis

1. Design analyses shall be planned, controlled, and documented in sufficient detail as to purpose, method, assumptions, design input, references, and units such that a technically qualified person may review, understand, and verify the analysis without recourse to the originator. Calculations shall be identifiable by subject (including structure, system, or component) originator, reviewer, and date.
2. Documentation of design analysis shall include the following:
  - a. A definition of the objective of the analysis.
  - b. A definition of design input and their sources.
  - c. A listing of applicable references.
  - d. Results of literature searches or other background data.
  - e. Identification of assumptions and indication of those which require verification as the design proceeds.
  - f. Identification of any computer calculation, including computer type, program name, revision, input, output, evidence of program verification, and the bases of application to the specific problem.
  - g. Signature and dates of review and approval by appropriate personnel including QA personnel. The purpose of the QA review is to ensure that the documentation is prepared, reviewed and approved in accordance with documented procedures and quality assurance requirements.

#### D. Design Verification

1. Design control measures shall be applied in a timely manner to verify the adequacy of design. The responsible design organization shall identify and document the verification method used, the results of the verification, and the verifier.
2. Verification of the adequacy of design shall be performed prior to release for procurement, manufacture, construction, or release to another organization for use in other design activities. In those cases, where this timing cannot be met, the portion or portions of design which have not been verified shall be identified and controlled. In all cases, the verification shall be completed prior to relying on the component, system, or structure to perform its function.
3. The extent of the design verification required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design

has been subjected to a verification process in accordance with this section, the verification process need not be duplicated for identical designs. Standardized or previously proven designs shall meet pertinent design inputs and be verified for each application. Known problems affecting the standardized or previously proven designs and their effects on other features shall be considered. The original design and associated verification measures shall be adequately documented and referenced in the files of subsequent application of the design.

4. Changes to previously verified designs shall require verification including evaluation of the effects of those changes on the overall design.
5. Design verification shall be accomplished by any one or a combination of the following: design reviews, alternate calculations, or qualification testing.
  - a. Design reviews are detailed critical reviews to provide assurance that the design 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.
    - (1) Were the design inputs correctly selected?
    - (2) Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed?
    - (3) Was an appropriate design method used?
    - (4) Were the design inputs correctly incorporated into the design?
    - (5) Is the design output reasonable compared to design inputs?
    - (6) Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions?
    - (7) Are computer programs used for analysis identified and verified in accordance with the methods specified in the NNWSI Project Administrative Procedures Manual?
  - b. 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, computer programs, or other calculation methods used.
  - c. Qualification tests that involve actual physical testing of systems, structures, or components may be used to verify the adequacy of design. Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test



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

6. Design verification shall be performed by any competent, certified individual or individuals, or certified group or groups other than those who performed the original design. The verification may be performed by the originator's supervisor provided that:
  - a. The supervisor is the only individual in the organization competent to perform verification.
  - b. The supervisor did not establish the design input used, specify a singular design approach, or rule out certain design considerations.
  - c. The rationale for satisfying the two requirements above is documented and approved by management superior to the supervisor. The QA manager shall also concur with this rationale.

#### E. Design Change Control

1. Changes to approved designs, including field changes, shall be justified and subjected to design control measures commensurate with those applied to the original design.
2. Errors and deficiencies in approved design and design information documents shall be documented, and action taken to ensure that all errors and deficiencies are corrected. Where a significant design change is necessary because of an incorrect design, the design process and verification procedure shall be reviewed and modified as necessary.

#### F. Design Interface Control

1. Internal and external design interfaces shall be identified and controlled and design efforts shall be coordinated among and within responsible design organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures

among and within responsible design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

2. Design information transmitted across interfaces shall be documented and controlled.

G. Design Output Documents, such as drawings and specifications, shall:

1. Relate to the design input by documentation in sufficient detail to permit design verification.
2. Identify assemblies or components or both that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to its installation, is modified or selected by special inspection or testing or both, to requirements that are more restrictive than the Supplier's published product description, the component part shall be represented as different from the commercial grade item in a manner traceable to a documented definition of the difference.
3. Show evidence that the required review and approval cycle has been achieved prior to release for procurement, construction, or release to another organization for use in other design activities. As a minimum, the review and approval cycle shall include the participation of technical and QA elements of both the responsible design organization and the WMPO. The purpose of the QA review is to ensure that the documents are prepared, reviewed, and approved in accordance with documented procedures and QA requirements.

- H. Computer software used to support a high-level nuclear waste repository license application shall be documented and controlled in accordance with the requirements of NNWSI Project Administrative Procedure AP 5.5.

I. Peer Reviews

1. When directed by WMPO peer reviews shall be conducted in accordance with NNWSI Project Administrative Procedure, AP5.1.
2. Peer review records shall include personnel qualifications of the reviewers, results of the review, and disposition or replies to reviewer comments. These documents are considered QA records.

IV. DESIGN DOCUMENTATION

Design documentation, including design inputs, analyses, drawings, specifications, approved changes thereto, evidence of design verification, peer reviews, and records confirming interface control shall be collected, controlled, stored, and maintained as QA records in accordance with procedures which meet the requirements of Section 17 of this QAPP.

V. ATTACHMENTS

Design inputs.

VI. REFERENCES

NNWSI-AP5.5, Software Quality Assurance

NNWSI-AP5.1, Peer Review

NWS125(2):jem  
02/01/88

## ATTACHMENT

DESIGN INPUTS

## GENERAL

Design inputs include many characteristics and functions of an item or system. These inputs vary depending on the application; however, the following inputs are a partial list that should be considered, depending on specific items or systems under design:

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 application issue and/or agenda.
4. Design conditions such as pressure, temperature, fluid chemistry, and voltage.
5. Loads such as seismic, wind, thermal, and dynamic.
6. Environmental conditions 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 interface involving structures, systems, and components.
8. Material requirements including compatibility, electrical insulation properties, protective coating, and corrosion resistance.
9. Mechanical requirements such as vibration, stress, shock, and reaction forces.
10. Structural requirements covering items such as equipment foundations and pipe supports.
11. Hydraulic requirements such as pump net positive suction heads, 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 site startup, normal site operation, site emergency operation, special or infrequent operation, system abnormal or emergency operation, site 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 site 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 which 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 site including the conditions under which these will be performed.
22. Personnel requirements and limitations including the qualification and number of personnel available for site operation, maintenance, testing, inspection, and radiation exposures to the public and site 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, restricting the use of dangerous materials, escape provision from enclosures, and grounding of electrical systems.
29. Quality control and QA requirements.
30. Reliability requirements of structures, systems, and components including their interactions which may impair functions important to safety.
31. Interface requirements between site equipment and operation and maintenance personnel.
32. Requirements for criticality control and accountability of nuclear materials.

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

4

SUBJECT:

PROCUREMENT DOCUMENT CONTROL

REVISION NO.

0

SUPERSEDES

QAM-4

PAGE

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OF

3

I. PURPOSE

This section establishes the requirements to ensure that the necessary requirements to assure adequate quality are suitably specified in procurement documents.

II. SCOPE

This section applies to the procurement of items and service for the project, including the support provided under NTS-SOP-5101, Major Equipment and Supply Acquisition (MESA), and the Major Acquisition Sequence for Subcontract (MASS) procedures for which Reynolds Electrical & Engineering Co., Inc., has primary procurement responsibility.

III. REQUIREMENTS

- A. Procurement shall be controlled through the use of the Federal Acquisition Regulations (FAR) and Department of Energy Acquisition Regulations (DEAR).
- B. A statement of the scope of the work to be performed by the supplier shall be in the procurement documents.
- C. Technical requirements shall be specified in the procurement documents. 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 purchaser for monitoring and evaluating the supplier's performance.
- D. Quality Assurance Requirements
  1. Procurement documents shall require that suppliers and sub-tier contractors have a documented QA program that is commensurate with and implements the pertinent provisions of this Quality Assurance Program Plan (QAPP) as required for the specific QA Level specified. The extent of the program required shall depend upon the type and use of the item or service being processed.
  2. When developing requirements for tests and other equipment consideration should be given to whether proper performance of that equipment can be determined during or after its use.
  3. The supplier's QA Program shall be reviewed and approved by QA prior to commencement of work.

- E. The procurement documents shall provide for access to the suppliers facilities and records by the purchaser, WMPO, or their authorized representative. For QA Level I procurements this requirement also applies to the suppliers subcontracts.
- F. 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 17 of this QAPP.
- G. The procurement documents shall prescribe the purchaser's requirements for reporting and approving disposition of nonconformances.
- H. 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 an engineering evaluation shall be conducted by qualified individuals to establish the requirements. The evaluation shall consider the interchangeability, function and safety of the item. The evaluation shall be documented.
- I. Procurement Document Review
1. Procurement documents and changes thereto shall be reviewed to ensure that documents transmitted to the prospective supplier or suppliers include appropriate provisions to assure that items or services will meet the specified requirements. The review and the effects shall be completed and documented prior to contract award. Procurement document reviews 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. The review shall include, as a minimum, the cognizant technical organization and QA organization. The review by the QA organization shall ensure 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 with this section.
  2. Procurement document changes 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 or precontract negotiations shall be incorporated into the procurement documents prior to contract award.

J. Quality Level I purchase orders and changes thereto which identify the vendor, describe the scope of work, and detail when work is to start, shall be provided to the Audit and Surveillance Division Manager of the Quality Assurance Support Contractor.

IV. Procurement documents generated as a result of this section shall be processed in accordance with Section 17 of this QAPP.

V. REFERENCES

- A. Federal Acquisition Regulation (FAR)
- B. Department of Energy Acquisition Regulations (DEAR)
- C. NTS-SOP-5101, Major Equipment and Supply Acquisition Procedure (MESA)
- D. Major Acquisition Sequence for Subcontract Procedure (MASS)



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

5

SUBJECT:

INSTRUCTIONS, PROCEDURES, PLANS, AND DRAWINGS

REVISION NO.

0

SUPERSEDES

QAM-5

PAGE

1

OF

1

I. PURPOSE

This section establishes the requirements for preparing instructions, procedures, and drawings.

II. SCOPE

This section applies to all activities affecting quality.

III. REQUIREMENTS

A. Activities affecting quality shall be prescribed by and performed in accordance with written instructions, procedures, plans, or drawings, as appropriate to the activity.

B. Instructions, plans, procedures, etc., shall:

1. Include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished.
2. Identify the Quality Assurance (QA) records that must be generated.

C. A review of all instructions, procedures, plans, and drawings shall be made to assure technical adequacy and inclusion of appropriate quality requirements.

D. Instructions, plans, procedures, and drawings shall be controlled in accordance with Section 6 of the Quality Assurance Program Plan. Controlled distribution of all implementing procedures, plans, and instructions for Level I and II activities shall be made to the Waste Management Project Office Project Quality Manager and the Quality Assurance Department Manager of the Support Contractor.

IV. DOCUMENTATION

All records required for implementing this section shall be collected, stored, and maintained in accordance with written procedures or instructions which conform to Section 17 of the QA Program Plan.

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02/01/88

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

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March 1, 1988

SECTION

6

SUBJECT:

DOCUMENT CONTROL

REVISION NO.

0

SUPERSEDES

QAM-6

PAGE

1

OF

2

I. PURPOSE

This section establishes the requirements to ensure that only correct documents are used.

II. SCOPE

This section applies to the preparation, review, approval, and issuance of instructions, procedures, plans, and drawings, including changes there to, that contain or specify quality requirements, or prescribe activities affecting quality.

III. REQUIREMENTS

A. The document control system shall be prescribed by written procedures appropriately reviewed and concurred with by Quality Assurance. The procedure shall provide for implementation of the following:

1. Identification of documents to be controlled.
2. Identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents.
3. Review of documents for technical adequacy, completeness, correctness, and inclusion of appropriate quality requirements prior to approval and issuance.
4. A method for the removal or marking of obsolete or superseded documents to prevent inadvertent use.
5. A method for ensuring that the correct and applicable documents are available at the location where they are to be used.
6. A master list or equivalent to identify the correct and updated revisions of documents.
7. Coordination of interface documents.

B. Document Changes

1. Changes to documents, other than minor, shall be reviewed and approved by the same organization that performed the original review and approval, unless otherwise specified by appropriate levels of management. The reviewing organization shall have access to pertinent data information upon which to base their approval.

2. Minor changes, such as inconsequential editorial corrections, shall not require that the revised documents receive the same review and approval as the original document. Procedures shall delineate the type of changes that do not require such review and approval, and the individuals who can authorize such a decision.

C. Distribution

1. The document control system shall ensure that documents requiring verification are not released prior to verification or, if they must be released before verification, they are uniquely identified and controlled.
2. The master list or equivalent used to identify the correct and updated revision of documents shall be distributed to all individuals who received controlled distribution of the documents. Copies shall be provided to Waste Management Project Office (WMPO) Project Quality Manager (PQM), and the Project QA Department Manager of the Quality Assurance Support Contractor.

IV. DOCUMENTATION

Records generated in support of this section shall be processed in accordance with Section 17 of this QAPP.

**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI QUALITY ASSURANCE  
PROGRAM PLAN**

EFFECTIVE DATE

March 1, 1988

SECTION 7

SUBJECT: CONTROL OF PURCHASED MATERIALS,  
EQUIPMENT, AND SERVICES

REVISION NO.

0

SUPERSEDES

QAM-7

PAGE 1 OF 6

**I. PURPOSE**

This section establishes the requirements for controlling purchased material, equipment, and services to ensure conformance to the procurement documents.

**II. SCOPE**

- A. This section applies to all procurement activities provided in support of this project.
- B. Direct service contracts let by H&N/ESD for this project shall be in accordance with this section.
- C. Procurement of equipment and subcontracts is the responsibility of Reynolds Electrical & Engineering Co., Inc. (REECO). H&N/ESD supports REECO in equipment and subcontract procurement activities as prescribed by the DOE/NV approved "Major Equipment and Supply Acquisition (MESA)" and "Major Acquisition Reference for Subcontracts (MASS)" procedures. These support activities shall be in accordance with this section.

**III. REQUIREMENTS**

**A. Procurement Planning**

- 1. Procurement activities shall be planned and documented to ensure a systematic approach to the procurement process. Planning shall be accomplished as early as practicable and no later than at the start of those activities which are to be controlled. Procurement methods and organizational responsibilities shall be defined in procedures. Planning shall determine what is to be accomplished, who is to accomplish it, how it is to be accomplished, and when it is to be accomplished. Appropriate QA participation shall be provided for evaluation and selection of suppliers, verification of suppliers activities, and receiving inspection.
- 2. Procedures shall provide for the integration of the following:
  - a. Procurement document preparation, review, and change control.
  - b. Selection of procurement sources including organizational responsibilities for determining supplier capability.
  - c. Verification activities by purchaser, including notification of hold and witness points.

- d. Control of nonconformance.
- e. Corrective action.
- f. Acceptance of items or services.
- g. QA records.

#### B. Supplier Selection

1. Supplier selection evaluation is based on the capability to provide items or services in accordance with the requirements of the procurement documents prior to award of contract.
2. Measures for evaluation and selection of procurement sources and the results thereof shall be documented and shall include one or more of the following:
  - a. Evaluation of the supplier history of providing an identical or similar product which performs satisfactorily in actual use.
  - b. Supplier's current capability and quality records supported by documented qualitative and quantitative information which can be objectively evaluated.
  - c. Supplier's technical and quality capability as determined by a direct evaluation of their facilities and personnel, and the implementation of their QA program.

#### C. Bid Evaluation

1. Bids shall be evaluated to determine conformance to the procurement documents. This evaluation shall be performed by designated individuals or organizations for the following subjects, as applicable to the type of procurement:
  - a. Technical Considerations
  - b. QA Requirements
  - c. Supplier Personnel
  - d. Supplier Production Capabilities
  - e. Supplier Past Performance
  - f. Alternates
  - g. Exceptions
2. Prior to the award of the contract, unacceptable quality or technical condition resulting from the bid evaluation shall be resolved.

## D. Supplier Performance Evaluation

1. The purchaser shall establish measures to interface with the supplier and to verify supplier performance. The measures shall include:
  - a. Documentation of the understanding between the supplier and purchase of the provisions and specifications of the procurement documents.
  - b. Requiring the supplier to identify planning techniques and processes to be used in fulfilling procurement document requirements.
  - c. Reviewing supplier documents and establishing an exchange of information on documentation which are generated or processed during activities fulfilling procurement document requirements.
  - d. Identifying and processing necessary change information.
  - e. Establishing the extent of source surveillance and inspection.
2. 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 quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the supplier activities as early as practicable.
3. Activities that verify conformance of procurement documents such as source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions shall be documented and considered QA records, and controlled in accordance with Section 17 of this QAPP.
4. This documentation shall be evaluated to determine the supplier QA program effectiveness.

E. Control of Changes in Items or Services: Measures to control changes in procurement documents shall be established, implemented, and documented, as prescribed by section 4 of this QAPP.

F. Control of Supplier-Generated Documents: Supplier generated documents shall be controlled and approved in accordance with documented procedures. Submittal of these documents shall be in accordance with the procurement document. These measures shall provide for the acquisition, processing, and recorded evaluation of technical, inspection, and test data against acceptance criteria.

## G. Acceptance of Item or Service

1. Methods shall be established for accepting 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 complies with the procurement requirements. Where required by code,

regulation, or contract requirement, documentary evidence that items conform to procurement documents shall be available at the site prior to installation or use. This documentary evidence 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.

2. Methods used to accept an item or related service from a supplier shall be a supplier certificate of conformance, source verification, receiving inspection, or post-installation test at the facility site, or a combination thereof.
  - a. Certificate of Conformance: When a certificate of conformance is used, the following minimum criteria shall be met:
    - (1) The certificate shall identify the purchased material or equipment such as by the purchaser order number.
    - (2) The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, or other specifications. The procurement requirement shall include approved changes, waivers, and deviations.
    - (3) The certificate shall include unresolved procurement requirements, and an explanation and means for resolving the nonconformances.
    - (4) 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 supplier's QA program.
    - (5) The certification 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 supplier's QA Program.
    - (6) Independent inspection or testing of the item shall be made to verify the validity of the certificate by scheduled inspections or audits at intervals commensurate with past quality performance.
  - b. Source Verification: When source verification is used, it shall be performed at intervals consistent with the importance and complexity of the item or service. It shall be implemented to monitor, witness, or observe activities. Source verification shall be implemented in accordance with plans to perform inspection, examinations, or tests at predetermined points identified to the supplier. 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.

- c. Receiving Inspection: When receiving inspection is used, purchased items shall be inspected as necessary to verify conformance to specified requirements, taking into account source verification and audit documentation and the demonstrated quality of the supplier. Inspection records shall identify objective evidence used for acceptance, such features as proper configuration; identification; dimensional, physical, and other characteristics; freedom from shipping damage; cleanliness; and documentation reviews. Receiving inspection shall be coordinated with review of supplier documentation when procurement documents require such documentation to be furnished prior to receiving inspection.
      - d. 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 supplier.
  3. Acceptance of Services Only: In certain cases involving procurement of services only, such as engineering and consulting, acceptance can be by any or all of the following methods:
    - a. Technical verification of data produced.
    - b. Surveillance and/or auditing of the activity.
    - c. Review of objective evidence for conformance to the procurement document requirements.
- H. Control of Supplier Nonconformances: Purchaser and supplier shall establish and document methods for disposition of items and services that do not meet procurement document requirements and corrective action. These methods shall provide for the following:
  1. Submittal of nonconformance notice to the purchaser as directed by the purchase order. These submittals shall include supplier recommended disposition (e.g., use as-is or repair) and technical justification.
  2. Notices of nonconformances which consist of one or more of the following shall be submitted to the purchaser for approval of recommended disposition:
    - a. Technical or material requirements violated.
    - b. Violation of requirement in suppliers documents which have been approved by the purchaser.
    - c. Nonconformances which cannot be corrected by continuation of the original manufacturing process or by rework.
    - d. The item does not conform to the original requirement even though the item can be restored so that the item function is unimpaired.
  3. Purchaser disposition of supplier recommendation shall be in accordance with documented procedures.



4. Verification of the disposition action.
5. Maintenance of records of supplier nonconformances.

#### I. Commercial-Grade Items

1. Where commercial-grade items are used as an integral part of the design facility, they shall be identified in an approved design or design output document.
2. When the design specifies commercial-grade items, the following requirements are an acceptable alternative to this section's other requirements, except as noted:
  - a. Alternate commercial-grade item may be applied if the appropriate organization provides verification that the item will perform the intended function and will meet the design requirements applicable to both the replaced item and its application.
  - b. Commercial-grade items shall be identified in the purchase order by the manufacturer's published product description (e.g., the catalog number).
3. Upon receipt of a commercial-grade item, the Purchaser, shall determine that:
  - a. Damage was not sustained during shipment.
  - b. The item received was the item ordered.
  - c. Inspection and/or testing is accomplished in accordance with written procedure to ensure conformance with the manufacturer's published requirements.
  - d. Documentation for the item was received and is acceptable.

#### IV. DOCUMENTATION

- A. All records required for implementation of this section shall be collected, stored, and maintained in accordance with written procedures or guidelines which conform to the H&N QA Program, Section 17 of this QAPP.
- B. Records, as a minimum, shall be maintained for all source and bid evaluations, source and receipt inspections, nonconformance reports, and any supplier certificates.

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

8

SUBJECT:

IDENTIFICATION AND CONTROL OF ITEMS,  
SAMPLES AND DATA

REVISION NO.

0

SUPERSEDES

QAM-8

PAGE

1

OF

2

I. PURPOSE

This section establishes requirements for the identification and control of samples and data to ensure that only the correct and acceptable samples and data are utilized.

II. SCOPE

- A. This section applies to activities that process samples or produce data to be utilized by others.
- B. Identification and control of items is not applicable.

III. REQUIREMENTS

A. Control and Identification of Samples

1. Procedures shall be developed and implemented to ensure that samples are identified and controlled in a manner consistent with their intended use. Such procedures shall define the responsibilities (including interface between organizations) for collection, identification, handling, storage, transportation, and generation of records.
2. Identification
  - a. Identification shall be maintained from receipt to installation. Physical identification shall be used to the maximum extent possible. Where physical identification cannot be placed on the sample, appropriate alternative identification methods shall be described and used. All identification methods shall provide methods whereby identification of samples can be traced to the appropriate documentation such as drawings, specifications, drilling logs, test records, inspection documents, and nonconformance reports.
  - b. Samples shall be identified by placing the identification directly on the sample, on their container, or on records traceable thereto. If it is impractical to place the identification on the sample, methods shall be described and implemented to ensure that samples are not mixed with like samples and that the correct identification of samples is verified and documented prior to release for use.
3. Procedures shall ensure that sample collection methods, techniques, and related equipment produce the intended sample.
4. Storage and handling methodology shall be developed and implemented to ensure that samples are maintained in predetermined physical conditions commensurate with their intended purpose. Samples intended for long term

storage, as defined by the responsible organization depending on the sensitivity of the sample to storage conditions, shall receive appropriate treatment to ensure that they do not degrade during storage. Measures shall be taken to maintain sample identification while in storage. These measures shall be consistent with the planned duration and conditions of storage and shall describe actions to be taken where samples may have a maximum life expectancy while in storage. Physical segregation of samples to preclude mixing with like samples shall be used to the maximum degree practical.

5. Transportation methods shall prescribe appropriate containers, handling and any other environmental or safety considerations for the sample(s). Where multiple organizations are involved, appropriate procedures shall define responsibilities and documentation methods to be used.
6. Where samples are controlled by more than one organization, the organizational responsibilities shall be developed and implemented including assurance that sample identification is verified and maintained when handled, transported, or transferred from one organization's responsibility to another.

B. Identification and Control of Data.

1. Procedures shall be developed and implemented to describe organizational responsibilities and to ensure that data is appropriately identified prior to issue.
  - a. The data shall include reference to origin (task, test, experiment, report, publication, etc.) and indication of quality level assigned to the activity that produced the data.
  - b. Where data are the results of the efforts of more than one organization, the data shall be annotated to show what organization produced what portion of the data.

IV. DOCUMENTATION

Records generated shall be processed in accordance with Section 17 of the QAPP.

HOLMES & NARVER, INC.  
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SECTION

9

SUBJECT:

CONTROL OF SPECIAL PROCESSES

REVISION NO.

0

SUPERSEDES

QAM-9

PAGE

1

OF 2

I. PURPOSE

This section establishes the requirements to ensure that processes that affect quality of items or services are controlled.

II. SCOPE

This section applies to all processes that affect quality.

III. REQUIREMENTS

- A. All processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means which shall ensure that process parameters, including acceptance criteria, are identified and controlled, and that special environmental conditions are maintained.
- B. Personnel implementing these processes shall be appropriately indoctrinated and trained as required by Section 2 of this Quality Assurance Program Plan (QAPP).
- C. Special process procedures and personnel shall be qualified and/or certified in accordance with applicable codes, standards, and specifications, such as SNT-TC-1A and AWS D.1.1, as appropriate. The qualification process shall utilize the actual working procedure where possible.
- D. All process procedures, instructions, etc., shall be prepared in accordance with Section 5 of this QAPP.
- E. 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.
- F. Nondestructive examination personnel shall be qualified and certified in accordance with SNT-TC-1A, dated June 1980, as supplemented below:
  1. Special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examinations, shall be identified.
  2. The certificate of qualification shall include the following:
    - a. Employer's name
    - b. Identification of person being certified

- c. Activities certified to perform
- d. Basis used for certification that includes such factors as:
  - 1) Education, experience, and training (when necessary)
  - 2) Test results (where applicable)
  - 3) Results of capability demonstration
- e. Results of periodic evaluation
- f. Results of physical examinations (when required)
- g. Signature of designated representative who is responsible for such certification
- h. Dates of certification and certification expiration

#### IV. DOCUMENTATION

Records for the currently qualified personnel, procedures, and equipment of each special process shall be maintained and processed in accordance with Section 17 of this QAPP.

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SECTION

10

SUBJECT:

INSPECTION

REVISION NO.

0

SUPERSEDES

QAM-10

PAGE

1

OF

2

I. PURPOSE

This section establishes the requirements for the control of inspection activities.

II. SCOPE

This section applies to inspection activities which verify conformance and/or acceptance of an item or activity to specified requirements.

III. REQUIREMENTS

- A. Inspection activities for the purpose of acceptance shall be planned and documented, and performed in accordance with written procedures by personnel qualified and certified in accordance with Appendix A.
- B. Inspection personnel shall:
1. Be independent from the supervision responsible for the activity being inspected.
  2. Have sufficient authority, access to work area, and organizational freedom to identify problems; initiate, recommend or provide solutions to quality problems through designated channels; verify implementation of solutions; and to ensure that further processing, delivery, installation or use is controlled until proper disposition of a nonconformance, deficiency or unsatisfactory condition has occurred.
- C. Mandatory inspection and/or witness hold points, and criteria for determining how inspections are to be performed, shall be established and identified in appropriate documents that control the activity. Work shall not proceed beyond the hold points without written consent from the organization that established the hold points.
- D. In-process type inspections or monitoring, including indirect control by monitoring of process methods, equipment, and personnel shall be performed for work activities, where and when necessary, to ensure features or processes that cannot be verified during final inspection. Where a combination of inspection and process monitoring is used, it shall be performed in a systematic manner to ensure that specified requirements for control of the process and quality of the item are being achieved throughout the duration of the process.
- E. Where sampling techniques are utilized to verify acceptability, the sampling shall be based on recognized sampling plans.

- F. Modifications, repairs, or replacements of items performed subsequent to final inspection requires reinspection or retest, as appropriate, for acceptability.
- G. Final inspection shall include a review of records, for accuracy and completeness, including the results and resolution of nonconformances, modifications, repairs, and replacements identified by previous inspections, to verify the acceptability of the item for conformance to specified requirements. Item acceptance shall be documented and approved by authorized personnel.

#### IV. DOCUMENTATION

- A. Records of inspections shall include the following:

1. Item or activity
2. Date of the inspection
3. Name of the individual performing the inspection
4. Names of personnel contacted during inspection
5. Description of the type of observation (method of inspection).
6. Inspection criteria including identification of drawing, specification, and applicable revision.
7. Equipment used during the inspection
8. Evidence as to the acceptability of the results
9. Acceptance statement
10. References to information on action taken in connection with conditions adverse to quality, nonconformances, and/or actions taken to resolve any discrepancies

- B. Inspection records and qualification records including actual examination and results, and certification, shall be processed in accordance with Section 17 of this QAPP.

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SECTION

11

SUBJECT:

TEST CONTROL

REVISION NO.

0

SUPERSEDES

QAM-11

PAGE

1

OF

2

I. PURPOSE

This section establishes the requirements for the control of tests required to verify conformance of items or systems to specified requirements and to demonstrate that items will perform satisfactorily in service.

II. SCOPE

This section applies to prototype, qualification, production, proof, construction, preoperational, and operational tests performed in support of the project.

III. REQUIREMENTS

A. Test requirements and acceptance or rejection criteria, including required levels of precision and accuracy, shall be based upon the requirements specified in the applicable design or pertinent technical documents provided or approved by the organization responsible for the design, unless otherwise designated.

B. Test Procedures:

1. Tests shall be conducted in accordance with written procedures, instructions, or drawings which identify the characteristics to be tested and test methods. Standard test methods such as those prescribed by the American Society for Testing and Materials (ASTM) and the American Petroleum Institute (API), are acceptable alternates. These documents shall include adequate instructions to ensure the required quality of work.
2. Test procedures or instructions shall include or reference the following, as appropriate:
  - a) Test objectives and provisions for ensuring prerequisites are met.
  - b) Criteria for determining when and how the test is to be performed.
  - c) Completeness of item to be tested.
  - d) Condition of test equipment and item to be tested.
  - e) Environmental requirements.
  - f) Special equipment and instrumentation required.
  - g) Personnel requirements.



- h) Potential source of uncertainty or error that must be monitored and controlled.
  - i) Mandatory hold points.
  - j) Provisions for data acquisition and storage.
3. Test procedures or plans used for qualification of designs shall be verified in accordance with the design verification requirements specified in Section 3 of this Quality Assurance Program Plan (QAPP).
- C. Testing personnel shall be appropriately trained, qualified, and certified as prescribed by Appendix A.
- D. Test Results:
- 1. Test results shall be documented and the results evaluated by a responsible authority to ensure that the test requirements have been satisfied.
  - 2. Test records shall identify the following:
    - a) Item tested
    - b) Test procedure used
    - c) Date of test
    - d) Tester and/or data recorder
    - e) Observations
    - f) Test results and the acceptability or unacceptability of the test results
    - g) Person evaluating test results
    - h) Action taken with deviations noted

#### IV. DOCUMENTATION

Records shall be processed in accordance with Section 17 of this QAPP.

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PROGRAM PLAN

EFFECTIVE DATE

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SECTION

12

SUBJECT:

CONTROL OF MEASURING AND  
TEST EQUIPMENT

REVISION NO.

0

SUPERSEDES

QAM-12

PAGE

1

OF

2

I. PURPOSE

This section establishes the requirements for the control and use of measuring and test equipment (M&TE).

II. SCOPE

- A. This section applies to all M&TE used to either control or acquire data to verify conformance to specified requirements, or to establish characteristics or values not previously known.
- B. Calibration and control measures specified herein are not required for rulers, tapes, levels, and other such devices, if the normal commercial devices provide adequate accuracy.

III. REQUIREMENTS

- A. Selection of M&TE shall be controlled to ensure that the equipment is of proper type, range, accuracy, and tolerance necessary to perform its function of determining conformance to specified requirements.
- B. Identification
  - 1. M&TE shall be uniquely identified. This identification shall be recorded on test reports, travelers, logs, etc., to provide traceability to the device used to take the measurement along with the measurement taken.
  - 2. Each piece of M&TE requiring calibration shall be identified with the due date of the next calibration and provide traceability to calibration data.
  - 3. M&TE not in calibration shall be appropriately tagged and/or segregated to prevent inadvertent use.
- C. Calibration
  - 1. M&TE shall be calibrated against certified equipment having known valid relationship to the National Bureau of Standards or other nationally recognized standards. If no nationally recognized standard exists, the basis for calibration shall be documented.
  - 2. The frequency of calibration shall be based upon the type of equipment, stability, characteristics, required accuracy, precision, intended use, degree of usage recommendation of the manufacturer, and other conditions that affect measurement control.

3. Equipment found to be continually out of calibration shall be repaired or replaced.
  4. Equipment shall be calibrated whenever its accuracy is suspect.
  5. When M&TE is found to be out of calibration, an evaluation shall be made and documented of the validity of previous results obtained and the acceptability of the items previously inspected, tested or data gathered since the last calibration.
- D. M&TE shall be handled and stored in a manner which will maintain equipment accuracy.
- E. Calibration records shall identify the calibration procedure and revision utilized to perform the calibration.

#### IV. Documentation

Records generated in support of the section shall be collected, stored, and processed in accordance with Section 17 of this QAPP.

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EFFECTIVE DATE

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SECTION

13

SUBJECT:

HANDLING, STORAGE, AND SHIPPING

REVISION NO.

0

SUPERSEDES

QAM-13

PAGE 1

OF 1

I. PURPOSE

This section establishes the requirements to control the packaging, handling, storing, shipping, and cleaning of material and equipment to prevent damage, loss, or deterioration.

II. SCOPE

This section applies to the design of, the handling, storage or shipping of materials or equipment that require special provisions to prevent damage, loss or deterioration.

III. REQUIREMENTS

- A. Handling, storage, and shipping of items shall be conducted in accordance with established instructions, drawings, specifications, or other pertinent documents or procedures, specified for use in conducting the activity.
- B. Equipment or items that are critical, sensitive, perishable or exceptionally expensive, may require special environmental protection, protective devices, tools, and procedures for their handling, storage, shipping, preservation, and packaging. When required, these special conditions shall be specified, provided, and their existence verified. Special handling tools and equipment shall be inspected and tested in accordance with procedures, at specified times, to verify that the tools and equipment are being properly maintained.
- C. Operators of special handling and lifting equipment shall be experienced or trained to use the equipment.
- D. Marking and labeling for packaging, shipment, handling and storage shall be established and maintained as necessary, to adequately identify, maintain, and preserve the integrity of the item, including indication of special environments or controls.

IV. DOCUMENTATION

Records generated shall be controlled in accordance with Section 17 of this QAPP.

NWS112(2):jem  
02/01/88

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

14

SUBJECT:

INSPECTION, TEST, AND OPERATING  
STATUS

REVISION NO.

0

SUPERSEDES

QAM-14

PAGE

1

OF

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I. PURPOSE

This section establishes the status requirements for inspections and test activities, and for indicating the status of systems and components to ensure that only items, components, and systems that have been satisfactorily inspected and/or tested are installed and used.

II. SCOPE

- A. This section applies to all inspection and test activities of engineered items and systems related to the project.
- B. Holmes & Narver, Inc. is not responsible for operational testing.

III. REQUIREMENTS

- A. The system of inspection and testing of engineered items shall be maintained through indicators such as physical location and tags, markings, travelers, stamps, inspection and test records, or other suitable means.
- B. Procedures governing inspection and test shall describe the status indicators and their use. The procedure shall contain current actual samples of each type of indicator and the authority for their applications and removal.

NWS111(2):jem  
02/01/88

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

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March 1, 1988

SECTION

15

SUBJECT:

CONTROL OF NONCONFORMING ITEMS

REVISION NO.

0

SUPERSEDES

QAM-15

PAGE

1

OF

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I. PURPOSE

This section establishes the requirements for the control of nonconforming items to prevent their inadvertent installation or use.

II. SCOPE

- A. This section applies to all personnel performing activities in support of the project.
- B. This section also applies to the processing of Nonconformance Reports (NCR) initiated by other than Holmes & Narver, Inc. (H&N), for which H&N has been assigned disposition or disposition implementation responsibility.

III. REQUIREMENTS

- A. The process of controlling nonconformances shall be prescribed by written procedures which shall cover the following:
1. Identification (adequately identify and describe the nonconformance.
  2. NCR sequential numbering system
  3. Documentation
  4. Personnel responsibilities and authority
  5. Segregation
  6. Evaluation
  7. Dispositioning of NCRs
  8. Quality Assurance (QA) responsibilities
  9. Interfaces (internal/external)
  10. Distribution to affected organizations
  11. Examination and verification of corrective action
  12. Trending
- B. It is the responsibility of all personnel associated with the project to identify and report nonconforming items to the appropriate levels of management.

## C. NCR Identification

1. Nonconforming items shall be identified by marking, tagging, or other suitable means that will not adversely affect its potential end use. The identification must be easily recognizable and reference the NCR number. If tags are used, they shall be securely attached to avoid loss during handling.
2. Nonconforming items shall be segregated and placed in a clearly identified and designated hold area until the NCR is dispositioned. When segregation is impractical because of physical conditions, other precautions shall be employed to preclude their inadvertent use.
3. Identification of the package, container, or designated segregated storage area is acceptable if identification of each item is not practical.

## D. The person or organization responsible for disposition of the NCR shall ensure:

1. The disposition is documented and in sufficient technical detail to permit implementation.
2. Appropriate justification is provided for "Use-as-is" or "Repair" disposition.
3. The disposition identifies documents that must be revised as a result of the "Use-as-is" or "Repair" disposition.

Note: Documents changed shall reference the NCR as the authority for the change.

4. The disposition identifies appropriate design documents, procedures, plans, work orders, etc., to be used for correcting the nonconforming condition, where appropriate.
5. The disposition complies with existing design documents, procedures, test plans, reports and regulatory requirements.
6. The disposition is classified as Repair, Rework, Use-as-is, or Reject/Scrap, as appropriate.

Note: Use-as-is and Repair-type disposition require WMPO approval prior to implementation of the disposition.

7. When recurring nonconforming conditions are identified, an evaluation shall be made to determine if further programmatic corrective action is warranted in accordance with Section 16 of this QAPP.

## E. Work on nonconforming items shall be stopped and not reinitiated until the approved disposition to resolve the nonconformance is obtained.

1. If only a specific portion of an item is identified as nonconforming, work may proceed on all but the nonconforming portion.

2. A "Conditional Release" approved by the appropriate WMPO Branch Chief and WMPO PQM is required to continue work on any nonconforming item. The request for conditional release shall include the following:
  - a. Justification for continuing work.
  - b. Assurance that the continuing work will not prevent correcting the nonconformance without damage to the item or associated facility, equipment, or structure at a later date.
  - c. Assurance that the nonconforming item will be accessible for inspection.
  - d. Limits for use of the nonconforming item is evaluated and identified.
  - e. Traceability and identification of the nonconformance item is maintained.
- F. Actions taken to correct nonconforming items shall be verified and documented. Repaired or reworked items shall be reexamined in accordance with the original acceptance criteria, unless the NCR disposition has established alternate acceptance criteria.
- G. A tracking system or log shall be maintained that shall include the following:
  1. NCR number
  2. Brief description of the nonconformance
  3. Identification of the person or organization responsible for determining and carrying out the disposition
  4. Status of nonconformance (open/closed)
- H. Nonconformances shall be evaluated by QA for adverse trends, and for potential reportability as unusual occurrences in accordance with DOE/NV Order 5000.3. Copies of unusual occurrences reports pertaining to this project will be submitted to the WMPO/PQM for information. Adverse trends shall be reported to appropriate levels of management for their evaluation and assessment.

IV. DOCUMENTATION

- A. The NCR and supporting documentation shall be controlled in accordance with Section 17 of this QAPP.
- B. Copies of the NCRs shall be distributed to WMPO PQM and the Project QA Department Implementation Division Manager of the Quality Assurance Support Contractor upon issuance and closure.

V. REFERENCES

DOE/NV Order 5000.3, Unusual Occurrences Reporting System

NWS118(2):jem

02/01/88



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE

March 1, 1988

SECTION

16

SUBJECT:

CORRECTIVE ACTION

REVISION NO.

0

SUPERSEDES

QAM-16

PAGE

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OF

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I. PURPOSE

This section establishes the system for identifying, reporting, and correcting conditions adverse or potentially adverse to quality.

II. SCOPE

- A. This section is applicable to quality related activities performed in support of the project.
- B. It is not the intent of this section to duplicate the requirements of Section 15, Nonconformance Control.

III. REQUIREMENTS

- A. Significant conditions adverse to quality shall be identified and documented via Corrective Action Report (CAR), and reported to the appropriate levels of management for resolution.

Note: 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.

- B. Management shall evaluate the condition (CAR) and take appropriate corrective action including the cause, corrective action to preclude recurrence to resolve the condition in a timely manner.
- C. The QA shall document concurrence of the adequacy of proposed corrective actions to ensure that QA requirements will be satisfied and, follow-up action taken to verify proper implementation of this corrective action and to close out the (CAR).
- D. QA shall periodically evaluate CARs for adverse trends. Results shall be reported to appropriate levels of management for review and assessment.
- E. Corrective Action Reports shall be evaluated by QA for potential reportability as "unusual occurrences" as prescribed by 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/PQM.

IV. DOCUMENTATION

- A. Corrective Action Reports and supporting documentation shall be controlled in accordance with Section 17 of this QAPP.
- B. Copies of CARs shall be submitted to the Project QA Department Implementation Division Manager of the Quality Assurance Support Contractor upon issuance and closure.

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SECTION

17

SUBJECT:

QUALITY ASSURANCE RECORDS

REVISION NO.

0

SUPERSEDES

QAM-17

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OF

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I. PURPOSE

This section establishes the requirements for the control of Quality Assurance (QA) Records.

II. SCOPE

- A. This section applies to the generation, validation, distribution, maintenance and storage, and retrievability of documents classified as QA Records.
- B. Documents which furnish objective evidence of the quality of an item or activity are classified QA Records. The term records as used herein means QA Records.
- C. Permanent storage of records is not the responsibility of Holmes & Narver, Inc.

III. REQUIREMENTS

- A. A records management system shall be defined and implemented in accordance with written procedures. The record system shall include requirements for record transmittal, distribution, retention, maintenance, storage, disposition, retrievability, and for the prevention of delays between record completion and storage at the Project Record Center. QA records system shall comply with applicable Nevada Nuclear Waste Investigations (NNWSI) Administrative Procedures.
- B. Records generated prior to August 1980 shall be reevaluated as prescribed by Nevada Nuclear Waste Storage Investigations Administration Procedure AP 5.9.
- C. All NNWSI records are classified as lifetime records and shall be retained for the life of the project.
- D. Documents that are designated to be QA records shall be legible, identifiable, accurate, complete, reproducible, microfilmable, retrievable, and appropriate to the work accomplished. The record may be the original or a suitable reproduction. Records shall be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. A list of typical records is provided in the Attachment.
- E. Generation of Records: The applicable specifications, procurement documents, implementing and operational procedures, or other documents shall specify the records to be generated, supplied, or maintained by or for WMPO. Procurement type documents shall also invoke similar record management requirements as specified herein.

- F. Validation of Records: 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. 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. Lists shall be maintained which contain the signature and initials of the personnel authorized to authenticate records.
- G. Receipt of Records: Organizations responsible for the receipt of records shall designate a person responsible for receiving the records. The designee shall be responsible for organizing and implementing a documented system of receipt control of records for permanent and temporary storage in accordance with approved procedures.
1. The receipt control system shall include the following:
    - a. A method for designating the required records.
    - b. A method identifying the records received.
    - c. Procedures for receipt and inspection of incoming records.
  2. The receipt control system shall be structured to permit a current and accurate assessment of the record's status.
  3. The individuals responsible for receiving records shall provide protection from damage or loss during the time that the records are in their possession.
- H. Records Identification
1. Records, indexing systems, or both shall provide sufficient information to permit identification of the record to the item or activity to which it applies, location of the record within the system, and subsequent retrieval from the storage system. Records shall be identified with a unique identification number or other designation which shall not be duplicated. The record identification system shall be reviewed and approved by the Waste Management Project Office (WMPO).
  2. Final reports shall contain a listing that enables prompt retrieval of all documents used to compile or evaluate the report. This listing 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).
- I. Records Corrections: Records may be corrected in accordance with written procedures which provide for appropriate review or approval of the originating organization. The correction shall not obliterate the original data, and shall identify the authorized individual making the correction and the date the correction was made.

#### J. Storage

1. Records shall be stored and maintained in a manner that minimizes the risk of theft and vandalism; damage, or destruction from winds, floods, fire; environmental conditions, such as temperature and humidity; infestation of insects, mold, rodents.
2. Records shall be filed in dual storage facilities or in Alternate Storage facilities such as a two-hour fire-rated vault or in two-hour rated Class B file containers which meet the requirements of the National Fire Protection Association (NFPA) 232.
3. Access to records storage areas shall preclude entry of unauthorized personnel and a list shall be maintained that designates those personnel who have access to the file.
4. Dual Facilities: If storage at dual facilities for each record is utilized, the facilities shall be at locations sufficiently remote from each other to eliminate the chance of exposure to a simultaneous hazard.
5. Provisions shall be made in the storage facilities 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 and for filing supplemental information.
6. Records shall be accessible to WMPO and/or their designee.
7. Records removed from storage shall be accounted for and controlled.
8. Replacement, restoration, or substitution of lost or damaged records shall be accomplished within 90 days following determination that a record is lost or damaged.

#### IV. ATTACHMENTS

List of typical QA records

## ATTACHMENT

## LIST OF TYPICAL QA RECORDS

## I. GENERAL

The following is a list of typical QA records. The nomenclature of these may vary for each organization.

## A. Site Characterization

1. Surveys of the underground facility excavations, shafts, and boreholes referenced to readily identifiable surface features
2. Description of the materials encountered
3. Geological maps and cross sections
4. Locations and amounts of seepage
5. Instrument locations, readings, analyses, and reports for in situ testing
6. Technical specifications
7. Sample extraction location maps
8. Site Characterization Report
9. Environmental Assessment
10. Peer review documentation
11. Test plans and procedures, and results thereof
12. Data reduction, evaluations, analyses, and reports for:
  - a. Geomorphology
  - b. Stratigraphy
  - c. Tectonics
  - d. Seismicity
  - e. Geoengineering
  - f. Hydrology
  - g. Geochemistry
  - h. Climatology and Meteorology

13. Environmental Impact Statement

14. Environmental Report

**B. Design Records**

1. Applicable codes and standards used in design

2. Design drawings

3. Design calculations and records of checks

4. Approved design change requests

5. Design deviations

6. Design reports

7. Design verification data

8. Design specifications and amendments

9. Safety analysis report

10. Stress reports for code items

11. Systems descriptions

12. Systems process and instrumentation diagrams

13. Technical analyses, evaluations, and reports

**C. Procurement Records**

1. Procurement specifications

2. Purchase order including amendments

**D. Manufacturing Records**

1. Applicable code data reports

2. 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.)

3. Certificate of compliance

4. Eddy-current examination final results

5. Electrical control verification test results

6. Ferrite test results

7. Heat treatment records
  8. Liquid penetrant examination final results
  9. Location of weld filler material
  10. Magnetic particle examination final results
  11. Major defect repair records
  12. Material properties records
  13. Nonconformance reports
  14. Performance test procedure and results records
  15. Pipe and fitting location report
  16. Pressure test results (hydrostatic or pneumatic)
  17. Radiographs (for in-service inspection applications)
  18. Radiograph review records
  19. Ultrasonic examination final results
  20. Welding procedures
- E. Installation and Construction Records
1. Receiving and Storage: Nonconformance reports
  2. Civil
    - a. Concrete cylinder test reports and charts
    - b. Concrete design mix reports
    - c. Concrete placement records
    - d. Inspection reports for channel pressure tests
    - e. Material property reports on containment liner and accessories
    - f. Material property reports on metal containment shell and accessories
    - g. Material property reports on reinforcing steel
    - h. Material property reports on reinforcing steel splice sleeve material
    - i. Procedure for waste package vessel pressure-proof test and leak rate tests and results



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- j. Reports of high-strength bolt torque testing
  - k. Soil compaction test reports
  - l. Location and description of structural support systems
  - m. Details, methods of emplacement, and location of seals used
3. Welding
- a. Ferrite test results
  - b. Heat treatment records
  - c. Liquid penetrant test final results
  - d. Material property records
  - e. Magnetic particle test final results
  - f. Major weld repair procedures and results
  - g. Radiographs (for in-service inspection application)
  - h. Radiograph review records
  - i. Ultrasonic test final results
  - j. Weld location diagrams
  - k. Weld procedures
4. Mechanical
- a. Cleaning procedures and results
  - b. Code data reports
  - c. Installed lifting and handling equipment procedures, inspection, and test data
  - d. Lubrication procedures
  - e. Material properties records
  - f. Pipe and fitting location reports
  - g. Pipe hanger and restraint data
  - h. Pressure test results (hydrostatic or pneumatic)
  - i. Safety valve response test procedures

- 5. Electrical and Instrumentation and Control
  - a. Cable pulling tension data
  - b. Cable separation data
  - c. Cable splicing procedures
  - d. Cable terminating procedures
  - e. Certified cable test reports.
  - f. Relay test procedures
  - g. Voltage breakdown test results on liquid insulation
- 6. General
  - a. As-built drawings and records
  - b. Final inspection reports and releases
  - c. Nonconformance reports
  - d. Specifications and drawings
  - e. Details of equipment, methods, progress, and sequence of work
  - f. Construction problems
  - g. Anomalous conditions encountered
- F. Pre-Operational and Start-Up Test Records
  - 1. Automatic emergency power source transfer procedures and results
  - 2. Final system adjustment data
  - 3. Pressure test results (hydrostatic or pneumatic)
  - 4. Instrument AC systems and inverters test procedures and reports
  - 5. Off-site power source energizing procedures and test reports
  - 6. On-site emergency power source energizing procedure and test reports
  - 7. Pre-operational test procedures and results
  - 8. Repository protection system tests and results

## G. Operation Records

1. Records and drawing changes that identify repository design modifications made to systems and equipment described in the Final Safety Analysis Report
2. Radioactive waste inventory, emplacement location, and transfer records
  - a. Off-site environmental monitoring survey records
  - b. Waste shipment records
  - c. Repository radiation and contamination survey results
  - d. Radiation exposure records for individuals entering radiation control areas
  - e. Records of gaseous and liquid radioactive material released to the environment
  - f. Records of transient or operational cycles for those repository components designed for a limited number of transients or cycles
  - g. Training and qualification records for members of the repository operating staff
  - h. In-service inspection records
  - i. Records of reviews performed for changes made to procedures or equipment, or reviews of tests and experiments
  - j. Meeting minutes of the repository nuclear safety committee and licensee nuclear review board
  - k. Surveillance activities, inspections, and calibrations required by the technical specifications
  - l. Records of repository tests and experiments
  - m. Changes made to operating procedures
  - n. Sealed source leak-test results
  - o. Records of annual physical inventory of all sealed source material
  - p. Logs of repository operation
  - q. Records and logs of maintenance activities, inspections, repair, and replacement of principal items of structures, systems, and components
  - r. Operational, shift supervisor, and control-room logs
  - s. Licensee event reports

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- t. Fire protection records
- u. Nonconformance reports
- v. Repository equipment operations instructions
- w. Security plan and procedures
- x. Emergency plan and procedures
- y. Quality assurance and quality control manuals
- z. Records of activities required by the security plan and procedures
- aa. Applicable records noted in other sections of this appendix for any modifications or new construction applicable to structures, systems, or components
- bb. Evaluation of results of reportable safety concerns as required by regulations
- cc. Annual environmental operating report
- dd. Annual repository operating report
- ee. Location and description of dewatering systems

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March 1, 1988

SECTION

18

SUBJECT:

AUDITS

REVISION NO.

0

SUPERSEDES

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I. PURPOSE

This section establishes requirements of the audit program and the qualifications of Quality Assurance (QA) audit personnel.

II. SCOPE

This section applies to the conduct of audits and surveillance to verify that procedures and activities comply to the overall Quality Assurance Program and to determine program effectiveness.

III. REQUIREMENTS

A. Scheduling

1. The Chief, Quality Assurance (CQA), is responsible for establishing the audit schedule which shall include dates of audit, the activity to be audited, and the requirements to which the activity are to be audited. Audits shall be scheduled at least annually or once during the life of the activity, whichever is shorter. The audit schedule and changes shall be distributed to the organization to be audited and to the QASC Audit and Surveillance Branch Manager.
2. External Audits: If the activity or contract is less than four months in duration, audits need not be conducted unless considered necessary due to the complexity or importance of the activity performed. Justification for not performing the audit shall be documented and approved by the CQA.
3. Internal and external audits shall be scheduled in a manner to provide coverage of all applicable elements of this QAPP or the organization's QA Manual, as appropriate, commensurate with ongoing activities. The audit schedule shall be evaluated periodically and revised as necessary to ensure that coverage is adequate. The evaluation should include an assessment of program effectiveness based on (a) previous audit results and corrective actions; (b) nonconformance reports; (c) significant changes in personnel, organization, or in the QA Program; and (d) information from other sources such as the American Society of Mechanical Engineers, the Nuclear Regulatory Commission, etc.
4. Surveillances and supplementary audits shall be conducted to supplement the audit program as deemed necessary based on relative impact or importance to the project.

## B. Personnel Qualification

1. Personnel selected for auditing and surveillance assignments shall be qualified based on experience and training. Technical specialists may be used on audits for those activities for which they have specialized expertise. Personnel selected to perform an audit or surveillance shall be independent of any direct responsibility for the activity being audited or surveilled. Personnel who have direct responsibility for performing the activities to be audited or surveilled shall not be involved in the selection of the audit or surveillance personnel.
2. Auditors shall be adequately trained or oriented to perform their required duties competently. Their competence shall be developed, to the extent necessary, by one of the following methods:
  - a. Orientation that provides a working knowledge and understanding of: (1) 10CFR60; (2) the requirements of this QAPP; (3) implementing procedures, including those for conducting audits, reporting results, and closing audits; and (4) other directives, standards, guidelines, and regulations which are applicable to the Project.
  - b. Participation in training programs that provide general and specialized training in audit performance. General training shall include auditing fundamentals, objectives, characteristics, organization, performance, and the results. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods for closing out audit findings.
  - 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.
3. The orientation and training shall be accomplished prior to conducting an audit. Auditors who have not participated in an audit in the past two years shall be reoriented and retrained.
4. Qualification of Lead Auditors: The CQA shall be certified by the Manager, Nevada Operations. Subsequent certification of lead auditors will be performed by the CQA. Individuals considered for lead auditor certification shall meet the following requirements:
  - a. Communication Skills: Prospective lead auditors shall have the capability to communicate effectively, both orally and in writing. These skills shall be attested to in writing on the Lead Auditor Qualification Form (attached) by the CQA.
  - b. Training: Prospective lead auditors shall be trained to the extent necessary to ensure competence in auditing skills, general structure of Quality Assurance program and applications as defined in this QAPP, and audit planning in the functions related to quality for design, purchasing, fabrication, handling, shipping,

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storage, cleaning, erection, installation, inspection, testing, statistics, nondestructive testing, maintenance, repair, and operation.

- c. **Audit Participation:** The prospective lead auditor shall have participated in a minimum of five audits within three years prior to the date of qualification. One of these shall have been a nuclear QA audit conducted within the year prior to qualification.
  - d. **Examination:** Prospective lead auditors shall pass an examination which shall test their knowledge of audit activities, as per the above training requirements. The test may be oral, written, practical, or any combination of the three types, as determined by the CQA. If any portion of the examination is oral, written documentaion of the oral examination question/content shall be maintained. Personnel previously certified in accordance with ANSI N45.2.23 or other applicable certification programs, as evaluated by the CQA, may be accepted as a lead auditor. External training courses with examinations that meet the requirements of this section can be accepted to meet certification requirements with the approval of the CQA. Integrity of the examination results and copies of the objective evidence regarding the type of tests and content of the examinations shall be maintained by the CQA.
- 5. **Maintenance of Lead Auditor Qualifications:** 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, the CQA may extend the qualification, require retraining or requalification.
  - 6. **Requalification:** Lead auditors who fail to maintain their proficiency for a period of two years shall be required to requalify. Requalification shall be in accordance with the requirements of paragraph III B.4.
  - 7. **Certification of lead auditors shall be documented per attachment.**

## C. Audit Preparation

- 1. An audit team shall be identified prior to the beginning of each audit. This team shall have one individual designated as lead auditor who shall organize and direct the audit, coordinate the performance and issuance of the audit report, and evaluate the responses. Auditors may be technical specialists, management representatives, and/or auditors in training. Technical specialists assigned to an audit team shall be identified in the audit plan.
- 2. The lead auditor shall develop and document an audit plan which identifies the audit scope, the requirements, the activities to be

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audited, audit personnel, organizations to be notified, the applicable documents, the audit schedule, and written procedures or checklists.

- a. The lead auditor shall ensure that the audit team is qualified and prepared prior to beginning the audit.

## D. Audit Implementation

1. The audit shall be performed in accordance with written procedures using audit checklists, as early in the life of the activity as practical. Elements that have been selected for audit shall be evaluated against specified requirements including a review of corrective action taken on deficiencies the areas being audited that were identified during previous audits. Objective evidence shall be examined to the extent necessary to ensure compliance with QA Program requirements and for determining the effectiveness of its implementation.
2. The audit team shall conduct a post-audit meeting with the management of the audited organization(s) to present the results of the audit.
3. The audit team shall immediately notify the affected management of conditions which warrant immediate corrective action.
4. Audit findings shall be evaluated for processing as unusual occurrences per DOE/NV Order 5000.3.

## E. Audit Report

Within 30 days of the post-audit meeting, the lead auditor shall prepare, sign, and issue an audit report which, as a minimum, shall contain the following:

1. Description of the audit scope.
2. Identification of the audit team.
3. Identification of the personnel contacted during the audit.
4. Summary of the audit results, including a statement of the effectiveness of the QA program elements audited.
5. Description of each reported finding in sufficient detail to enable corrective action to be taken by the audited organization.

## F. Audit Response

1. The audited organization shall evaluate the audit report and findings (CAR) and provide a written response, to the CQA, with copies to their respective management, within 30 days, as prescribed by Section 16 of this QAPP.
2. The lead auditor shall evaluate and track the response, ensure that follow-up action, including verifications of corrective action, has been performed and that any adverse trends are identified.



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## G. Surveillances

1. Surveillances shall be performed in accordance with approved procedures, checklists, or surveillance plans whenever practical. All deficiencies, nonconformances, and potential quality problems identified are to be documented and tracked until verification of effective corrective action is made.

## IV. DOCUMENTATION

A. All records required for implementation of this section shall be collected, stored, and maintained in accordance with written procedures which conform to Section 17 of this QAPP.

B. Audit records shall be maintained and, as a minimum, shall include the following:

1. Identification of the organizations, activities, or items audited, and the individuals contacted.
2. Description of any deficiencies, nonconformances, or potential problems identified.
3. Audit plans, audit reports, written replies, records of completion of corrective action, and closeout of the audit.
4. Qualification of audit personnel.

C. Surveillance records shall identify the following:

1. Date of surveillance.
2. Name of individual performing the surveillance.
3. Identification of the organization(s), activities, or items surveilled, including the name or names of personnel contacted.
4. Description of deficiencies, nonconformances, and potential problems identified during the surveillance.
5. Specification of recommended and/or approved corrective action resulting from the surveillance.

## V. ATTACHMENTS

Lead Auditor Qualification Record

## VI. REFERENCES

- A. DOE/NV Order 5000.3, Unusual Occurrence Reporting Systems
- B. ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants
- C. 10CFR 60, Code of Federal Regulation, Disposal of High Level Radioactive Waste in Geologic Repositories.

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02/01/88

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

NNWSI QUALITY ASSURANCE  
PROGRAM PLAN

EFFECTIVE DATE  
July 8, 1988

SECTION  
Appendix A

SUBJECT: REQUIREMENTS FOR QUALIFICATIONS AND CERTIFICATION OF INSPECTION AND TEST PERSONNEL

REVISION NO.  
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I. PURPOSE

This attachment establishes the qualification and certification requirements for test and inspection personnel.

II. SCOPE

A. This attachment applies to inspection and test personnel who verify conformance to specified requirements for the purpose of acceptance of items and systems for this project.

B. This attachment does not apply to nondestructive examination.

III. REQUIREMENTS

A. General Requirements

1. Qualification and certification of inspection and test personnel shall be prescribed by written procedures.
2. Personnel selected to perform inspections and tests shall have experience and/or training commensurate with the activity to be performed, and be indoctrinated to the technical objectives and requirements of the applicable codes, standards, and the Quality Assurance (QA) Programs Plan to be employed.
3. Personnel who do not meet the requirements of this appendix may assist an inspection or test team as data-recorders or equipment operators provided they are supervised by a qualified individual.
4. Training of inspection and test personnel shall be conducted and documented as required. Emphasis shall be placed on first-hand experience gained through actual performance (OJT) of inspections and tests.
5. Performance evaluations of inspection and test personnel shall be conducted at periodic intervals not to exceed three years.
  - a. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability.
  - b. If it is determined that the individual's capabilities are not satisfactory, the individual shall be prohibited from performing that activity until the individual is retrained and requalified.
  - c. Individuals who have not performed inspection or testing in their qualified area(s) for a period of one year shall be reevaluated and a redetermination of their qualification made.

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6. Special physical characteristics required for the performance of any inspection or test activity shall be identified, including frequency of examination.
- B. Inspection and test personnel shall be qualified to one of the three functional qualification levels, depending upon the complexity of the functions involved.
1. Level I: Level I personnel 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.
  2. Level II: Level II personnel shall have all of the capabilities of Level I personnel for the inspection, test category, or class in question. Additionally, Level II personnel shall have demonstrated capabilities in planning inspections and tests; in setting up tests, including preparation and setup of related equipment, as appropriate; in evaluating the validity and acceptability of inspection and test results.
  3. Level III: Level III personnel shall have all of the capabilities of Level II personnel 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.

C. Education and Experience Requirements

The following education and experience requirements 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.

1. Level I:
  - a. Two years of related experience in equivalent inspection or testing activities; or
  - b. High school graduation and six months of related experience in equivalent inspection or testing activities; or
  - c. 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.

2. Level II:

- a. One year of satisfactory performance as a Level I in the corresponding inspection or test category or class; or
- b. High school graduation plus three years of related experience in equivalent inspection or testing activities; or
- c. 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
- d. Graduation from a four-year college plus six months of related experience in equivalent inspection activities or testing activities.

3. Level III:

- a. Six years satisfactory performance as a Level II in the corresponding inspection, test category, or class; or
- b. 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 of testing activities with at least two years associated with nuclear facilities; or, if not, at least sufficient training to be acquainted with relevant QA aspects of a nuclear facility; or
- c. 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 nuclear facilities or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or
- d. 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 QA aspects of a nuclear facility.

D. Certification of Qualification

The qualification of inspection and test personnel shall be certified in writing. The certification shall include:

- 1. Employer's name
- 2. Identification of person being certified
- 3. Activities certified to perform

4. Basis used for certification that includes such factors as:
  - a. Education, experience, and training (when necessary)
  - b. Test results (where applicable)
  - c. Results of capability demonstration
5. Results of periodic evaluation
6. Results of physical examinations (when required)
7. Signature of individual responsible for such certification
8. Dates of certification and certification expiration

IV. DOCUMENTATION

Records of qualification, including actual examinations and results, and certification shall be processed in accordance with Section 17 of this QA Program Plan.

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JUL 05 1988

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**HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION**

**NNWSI QUALITY ASSURANCE  
PROGRAM PLAN**

**EFFECTIVE DATE**

March 1, 1988

**SECTION**

Appendix B

**SUBJECT:**

TERMS AND DEFINITIONS

**REVISION NO.**

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N/A

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**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, 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 Mined Geologic Disposal Systems.
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.

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3. The item is used in applications other than Mined Geologic Disposal Systems.

**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.

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**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.



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**ITEM:** An all-inclusive term that is used in place of any of the following: appurtenance, assembly, component, equipment, material, module, part, structure, sub-assembly, 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 that 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. These organizations are required to have a WMPO approved Quality Assurance Program Plan (QAPP) for the conduct of their activities.

**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 shafts.

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**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:** This term applies to the following: (1) the government agencies external to the DOE, (2) national laboratories, and (3) 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 requires interpretation or judgement 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 engineered structures, systems, and components that have been determined to be important to safety, waste isolation, or both, and a list of activities that will provide site characterization data which will be used to assess the performance of natural barriers. The items and activities on this list are subject to the highest quality assurance level (QA Level I) of the formal QA Plan.

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**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 satisfactory 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 furnished 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 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 post-closure performance of the engineered and natural barriers to inhibit the release of radionuclides. 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 and other operational factors that would have an impact on DOE and WMPO concerns, and the environment.

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**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 items 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.

**SCIENTIFIC NOTEBOOK:** A document which may be used to provide a written record of the results of scientific investigations and experiments when the work involves a high degree of professional judgement or trial and error methods, or both. These notebooks may be used in lieu of a technical procedure.

**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,

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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 document 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.

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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.

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02/01/88



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

Number

Sept. 26, 1988

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QUALITY ASSURANCE RECORDS MANAGEMENT		

\* QUALITY AFFECTING PROCEDURES

\*\* PROCEDURE ISSUED FOR INTERIM USE/AWAITING YMP APPROVAL

<u>NUMBER</u>		<u>REVISION</u>	<u>EFFECTIVE DATE</u>
* NNWSI-009	STOP WORK ORDER	<u>0</u>	<u>04/03/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
* NNWSI-010	CONTROL OF MEASURING AND TEST EQUIPMENT	<u>1</u>	<u>05/27/88</u>
** NNWSI-011	NNWSI NONCONFORMANCE CONTROL	<u>0</u>	<u>05/15/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>09/26/88</u>
* NNWSI-012	CORRECTIVE ACTION	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/13/88</u>
* NNWSI-013	SOFTWARE QUALITY ASSURANCE	<u>0</u>	<u>05/01/87</u>
** NNWSI-014	DESIGN VERIFICATION	<u>0</u>	<u>06/30/87</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>09/26/88</u>
* NNWSI-015	DESIGN INPUT CONTROL	<u>0</u>	<u>09/13/88</u>
* NNWSI-016	SURVEY DEPARTMENT DOCUMENT CONTROL AND DISTRIBUTION	<u>0</u>	<u>06/05/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>02/05/88</u>
* NNWSI-017	SURVEY DEPARTMENT WORK FUNCTIONS	<u>1</u>	<u>05/27/88</u>
* NNWSI-019	GENERAL TESTING PROCEDURE FOR THE MATERIALS TESTING LABORATORY	<u>1</u>	<u>07/01/88</u>
* NNWSI-022	NDT PERSONNEL CERTIFICATION	<u>0</u>	<u>06/30/87</u>
NNWSI-026	MICROFILMING AND ARCHIVAL STORAGE SERVICES FACILITY (MASSF)	<u>0</u>	<u>08/07/87</u>
* NNWSI-027	DEPARTMENTAL FILING SYSTEM PROCEDURE	<u>1</u>	<u>05/31/88</u>

\* QUALITY AFFECTING PROCEDURES

\*\* PROCEDURE ISSUED FOR INTERIM USE/AWAITING TWP APPROVAL



* NNWSI-028	MAGNETIC PARTICLE TESTING PROCEDURE	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/01/88</u>
* NNWSI-029	INTERFACE CONTROL	<u>1</u>	<u>04/15/88</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>06/17/88</u>
* NNWSI-031	AUDITS	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>09/26/88</u>
* NNWSI-032	QUALIFICATION OF AUDIT PERSONNEL	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE	<u>N/A</u>	<u>04/26/88</u>
* NNWSI-033	SURVEILLANCE ACTIVITIES	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>09/26/88</u>
* NNWSI-037	CONTROL OF QUALITY ASSURANCE PROGRAM PLAN	<u>0</u>	<u>06/24/88</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>09/26/88</u>
* NNWSI-038	QUALITY ASSURANCE DRAWING AND SPECIFICATION REVIEW	<u>0</u>	<u>06/24/88</u>
NNWSI-043	LITIGATION DISCOVERY PROCESS OF NNWSI PROJECT RECORDS	<u>0</u>	<u>08/05/88</u>
NNWSI-055	REQUEST FOR ESTIMATE AND COST ESTIMATE	<u>0</u>	<u>08/11/88</u>

\* QUALITY AFFECTING PROCEDURES

\*\* PROCEDURE ISSUED FOR INTERIM USE/AWAITING TYP APPROVAL

<b>H&amp;N HOLMES &amp; NARVER, INC.</b>		ICN NO.
INTERIM CHANGE NOTICE		001
PROCEDURE NO.	NNWSI-001	REV. 1
		PAGE 1 OF 2
TITLE	GENERATION AND CONTROL OF YUCCA MOUNTAIN PROJECT (YMP) PROCEDURES	DATE ISSUED
		Sept. 19, 1988
<b>DESCRIPTION OF CHANGE</b>		
<p>Add Paragraph 6.3.3</p> <p>6.3.3 All Quality Affecting procedures, with the exception of those procedures that implement technical activities only, shall be submitted to the Yucca Mountain Project Office for review and approval. Pending receipt of Yucca Mountain Project Office approval, procedures may be issued for interim use.</p> <p>Paragraph 6.4.1 Delete and add the following:</p> <p>6.4.1 Procedures shall be issued and controlled as part of the NNWSI Procedure Manual. When procedures are issued for interim use, the Procedure Manual Index shall be appropriately marked. Upon final approval, procedure holders will be notified.</p> <p>Paragraph 6.4.2 Delete and add the following:</p> <p>6.4.2 The TP Office shall update the index and issue the new or revised procedure and index, via Attachment 8.3, to all manual holders with special instructions, if necessary, on how to update the NNWSI Procedure Manual. The Yucca Mountain Project PQM and the SAIC/T&amp;MSS Project Quality Assurance Department Manager shall each be assigned a Controlled Procedure Manual.</p>		
<b>INTERIM CHANGE APPROVAL</b>		
EFFECTIVE DATE: Sept. 26, 1988		
RESP. DEPT. T. P. Office <i>[Signature]</i> CONCURRENCE 9-14-88	<i>[Signature]</i> CONCURRENCE 9/14/88	<i>[Signature]</i> APPROVAL 9/15/88

**HOLMES & NARVER, INC.****INTERIM CHANGE NOTICE****ICN NO.**

001

**PROCEDURE NO.**

NNWSI-001

**REV.**

1

**PAGE 2 OF 2**

Add Section 6.4.4

6.4.4 A master list identifying the correct, current and updated versions of controlled documents, including the Procedures Manual, shall be submitted to all designated recipients of the controlled documents, including the Yucca Mountain Project PQM and SAIC/T&MSS Quality Assurance Department Manager.

Change existing paragraph numbers 7.2 and 7.3 to 7.3 and 7.4 respectively and add a new paragraph 7.2 as follows:

7.2 A history file of all procedures and revisions.



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

Number

June 2, 1988

NNWSI-001

**SUBJECT** GENERATION AND CONTROL OF NEVADA  
 NUCLEAR WASTE STORAGE INVESTIGATIONS  
 (NNWSI) PROCEDURES

Revision No.

Supersedes  
 REV 0 &  
 ICN 1&2

Page

of

1

1

5

NNWSI-980-526-0021

**1.0 PURPOSE**

This procedure establishes requirements for procedural format, requirements for review and approval, and the issuance and control of procedures.

**2.0 SCOPE**

This procedure applies to all procedures developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the NNWSI Project.

**3.0 REFERENCES**

NNWSI-008, Quality Assurance Records Management

SAIC/T & MSS

**4.0 DEFINITIONS**

None

MAY 26 1988

C C F RECEIVED

**5.0 RESPONSIBILITIES**

5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.

5.2 Managers/Supervisors are responsible for developing procedures necessary to perform their activities.

**6.0 PROCEDURE**

**6.1 General Requirements**

6.1.1 Managers/Supervisors shall determine the need to develop or revise procedures to control their work activities. They shall ensure that the procedure/revision is prepared, as prescribed by this procedure, and submitted to the Technical Project Office (TP) for coordination of the review/approval cycle.

6.1.2 Each procedure shall be assigned a unique identification number. The procedure number shall consist of eight characters (xxxxx-xxx). The first five characters shall be "NNWSI", followed by three characters indicating a sequential number (e.g. 001, 002 etc).

Resp, Dept. TP Office

*H.R. Jettell*  
 Concurrence

5-23-88

*E.O. [Signature]*  
 Concurrence 5/25/88

*Joseph C. [Signature]*  
 Approval 5/25/88

6.1.3. Assignment of procedure numbers shall be the responsibility of the TP Office. A log shall be maintained to ensure duplicate procedures and numbers are not issued.

6.1.4 Each procedure shall contain the following headings, in the sequence specified. If a heading has no contents enter "NONE" under the heading.

<u>HEADING</u>	<u>CONTENTS</u>
1.0 PURPOSE	Describes the reason for the procedure.
2.0 SCOPE	Contains a brief statement of the subject area(s) to which the procedure applies.
3.0 REFERENCES	Contains a listing of reference or related documents which directly affect the subject activity, and are specifically referenced in the text of the procedure.
4.0 DEFINITIONS	Contains a list of definitions as necessary to provide clarification of the text.
5.0 RESPONSIBILITIES	Describes the general responsibilities of individuals and organizational units for implementing the procedure.
6.0 PROCEDURE	Contains the specific requirements and methods for implementation (i.e., the how, when, and where) of the procedure.
7.0 DOCUMENTATION	Designates specific records and/or documents that are required to provide objective evidence that the requirements of the procedure have been met and where such records shall be filed (if applicable).
8.0 ATTACHMENTS	Contains a listing of attachments referenced in the text of the procedure.

6.1.5 Procedures shall be assigned revision numbers (i.e. Revision 0 initial issue, Revision 1,2,3 etc. for subsequent revisions). Each revision shall also be assigned an "Effective Date".

- 6.1.6 Procedures shall be published on the latest version of Attachments 8.1 and 8.2.
- 6.1.7 Attachments may be published on the other than Attachment 8.2, but shall always be identified with the procedure and revision number, and the attachment number. Attachments shall be individually numbered (see Attachment 8.3 for example).
- 6.1.8 Identify the responsible department for the development and maintenance of each procedure in the block of Attachment 7.1, titled "Resp. Dept."
- 6.1.9 Quality Assurance (QA) shall initially review all procedures to determine whether or not they are quality affecting. Quality affecting procedures/revisions shall be reviewed and concurred with by QA. The procedure manual index shall identify those procedures that are quality affecting.

## 6.2 Procedure Review

- 6.2.1. Procedures distributed for review shall be assigned an alphabetical revision number (e.g., Revision A, B, 1A, 1B, 2A, etc.) each time they are revised and distributed for review and comment. When the revised procedure is approved, the alphabetical character shall be removed (e.g., Revision A,B,C, becomes Revision 0, and Revision 1A, 1B becomes Revision 1).
- 6.2.2 Proposed procedures and revisions shall be approved by the responsible manager/supervisor before submittal to the TP Office for coordination of the review/comment cycle. The procedure and/or revision shall be submitted for review/comment to the organization(s) affected by the procedures/revisions, and to QA if the procedure is quality affecting.
- 6.2.3 The TP Office shall forward the review comments to responsible manager/supervisor for resolution. The respective manager or supervisor shall resolve the comments and prepare and submit a final draft to the TP for concurrence and approval. Review comments need not be retained once the procedure or procedure revision is approved and issued.

## 6.3 Procedure Approval

- 6.3.1 The TP Office shall identify via Attachment 8.4 the organization(s) required to provide concurrence.

6.3.2 The TP Office shall obtain concurrence of the organization(s) designated by Attachment 8.4, and obtain the approval signatures of the responsible manager/supervisor, TPO, and QA, if quality affecting, in the appropriate signature blocks on the cover sheet, Attachment 8.1.

#### 6.4 Procedure Issuance

6.4.1 Procedures shall be issued and controlled as part of the NNWSI Procedure Manual.

6.4.2 The TPO Office shall update the index and issue the new or revised procedure & index, via attachment 8.3, to all manual holders with special instructions, if necessary, on how to update the NNWSI Procedure Manual.

6.4.3 Manual holders shall acknowledge receipt of all transmittals, Attachment 8.3. Manual holders are to place the new or revised procedure(s) and index in the manual and discard all superseded documents, unless special instructions to the contrary are noted on the transmittal.

6.4.3.1 If the transmittal, Attachment 8.3, is not returned within 30 days, a follow-up (verbal or written) shall be made and documented. If no response is received within 15 days of the follow-up, notification shall be sent to the manual holders identifying that the manual has been decontrolled and should be returned.

6.4.3.2 Control logs shall be maintained to identify manual assignments and the distribution of procedures and revisions.

#### 6.5 Procedure Revision

6.5.1 Formal revisions are developed, approved, and issued in accordance with paragraphs 6.1 through 6.4 with the following additional provisions:

6.5.1.1 All revised words, sentences, and paragraphs shall be annotated by a vertical bar in the right hand margin adjacent to the change with the exception of correction of typographical errors.

6.5.1.2 Total revisions to a procedure shall be annotated on the transmittal. The notations required in paragraph 6.5.1.1 are not required.

6.5.2 Revisions by Interim Change Notice (ICN), Attachment 8.5, & 8.6 shall be processed as follows:

6.5.2.1 Assign an effective date.

6.5.2.2 Assign a sequential ICN number

6.5.2.3 Complete the "Description of Change".

6.5.2.4 Obtain approval from the TPO and QA.

6.5.2.5 Issue the ICN in accordance with 6.4.

6.5.2.6 No more than three (3) ICN's may be outstanding against a procedure.

6.5.3 If an editorial correction needs to be made to a procedure, the affected page(s) may be issued without changing the revision number and without issuing a new Index. Issuance of the editorial correction shall be accomplished via the Transmittal Record, Attachment 8.3.

## **7.0 DOCUMENTS**

The following documents are required by this procedure and shall be retained by the TP Office until they are forwarded to the records center in accordance with Reference 3.0:

7.1. A history file of all procedures and revisions.

7.2 Control log for procedure manual assignment and distribution of changes.

7.3 Procedure Review Sign-Off Sheet.

## **8.0 ATTACHMENTS**

8.1 NNWSI Procedure Cover Sheet

8.2 NNWSI Procedure Continuation Sheet

8.3 Transmittal Record

8.4 Procedure Review Sign-Off Sheet

8.5 Interim Change Notice

8.6 Interim Change Notice Continuation Sheet





**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

<b>Effective Date</b>	<b>Number</b>
-----------------------	---------------

**SUBJECT:**

<b>Revision No.</b>	<b>Supersedes</b>	<b>Page</b>	<b>of</b>
---------------------	-------------------	-------------	-----------

*(This area is intentionally left blank for the main body of the procedure.)*

**Resp. Dept.**  
**Concurrence**

**Concurrence**

**Approval**

**NNWSI PROCEDURE**

**Number**

**Rev**

**Page**

**of**

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
TRANSMITTAL RECORD

TO: \_\_\_\_\_

DATE: \_\_\_/\_\_\_/\_\_\_

FROM:

MANUAL NO. \_\_\_\_\_

TRANSMITTALS ATTACHED

Document Title & Number	Rev.	Date

INSTRUCTIONS/REMARKS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PLEASE SIGN BELOW AND RETURN TO NNWSI DEPUTY TECHNICAL PROJECT OFFICER, M/S 605,  
MERCURY, NEVADA

I have received the subject material.

Signature: \_\_\_\_\_

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

**PROCEDURE CONCURRENCE  
SIGN-OFF SHEET**

The final draft of the subject procedure identified below is submitted for your concurrence. All comments from the review/comment cycle have been evaluated and incorporated where appropriate.

PROCEDURE TITLE:

PROCEDURE NO.

REV.

ORGANIZATION	REMARKS	SIGNATURE/DATE
Quality Assurance		



**HOLMES & NARVER, INC.**

**INTERIM CHANGE NOTICE**

**ICN NO.**

**PROCEDURE NO.**

**REV.**

**PAGE**

**OF**

**TITLE**

**DATE ISSUED**

**DESCRIPTION OF CHANGE**

**INTERIM CHANGE APPROVAL**

**EFFECTIVE DATE:**

**Resp. Dept.**

**Concurrence**

**CONCURRENCE**

**APPROVAL**



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

PROCEDURE NO.

REV.

PAGE

OF



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO. NNWSI-002

REV. 0

PAGE 1 OF 1

TITLE INDOCTRINATION, TRAINING, CERTIFICATION AND QUALIFICATION

DATE ISSUED

NNA.880318.0013

### DESCRIPTION OF CHANGE

Change paragraph 7.1 to read:

Managers/supervisors shall establish and maintain a file folder for each employee performing and/or verifying activities affecting quality. A copy of the initial file and all subsequent additions shall be forwarded to the TP Office, Training Coordinator. The file folders shall contain the following documents as applicable:

SAIC/T&MSS

MAR 18 1988

CCF RECEIVED

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE:

TP Office  
Responsible Dept.

R/S

*C. D. King*  
CONCURRENCE

*Joseph C. Calorn*  
APPROVAL



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO. 002

PROCEDURE NO. NNWSI-002 REV. 0

PAGE 1 OF 1

TITLE INDOCTRINATION, TRAINING, CERTIFICATION AND QUALIFICATION

DATE ISSUED 03/22/88

### DESCRIPTION OF CHANGE

SAIC/T & MSS

MAR 24 1988

7.0

CCF RECEIVED

7.1.1 Copy of resume. Relevant education and experience must be verified and documented.

7.1.7 Position Description. The position description must be signed by the appropriate manager/supervisor.

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: 04/01/88

TP Office  
Responsible Dept.

*C. D. [Signature]* 3/15/88  
CONCURRENCE

*Joseph C. [Signature]*  
APPROVAL





**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

11/03/86

Number

NNWSI-002

**SUBJECT: INDOCTRINATION, TRAINING, CERTIFICATION  
 AND QUALIFICATION**

Revision No.

0

Supersedes

N/A

Page 1 of 3

**1.0 PURPOSE**

This procedure establishes the requirements for indoctrination, training, certification, and qualification.

**2.0 SCOPE**

This procedure applies to Holmes & Narver, Inc., Energy Support Division (H&N/ESD) employees performing and/or verifying activities affecting quality in support of the NNWSI Project.

**3.0 REFERENCES**

- 3.1 H&N/ESD Manual HN-10471-1115, Quality Assurance Manual with NNWSI Amendments
- 3.2 H&N/ESD Procedure 1815, Outside Training Program
- 3.3 H&N/ESD Procedure 1832, In-House Training
- 3.4 H&N/ESD Procedure 1804, Employee Performance Appraisal Program

**4.0 DEFINITIONS**

Not Applicable

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer is responsible for ensuring implementation of this procedure.
- 5.2 Managers/supervisors are responsible for establishing and providing the specific indoctrination and training to the extent necessary to enable personnel under their control to perform their intended function.
- 5.3 All personnel must meet minimum qualifications and are responsible for maintenance of their qualifications and for utilizing available internal and external training opportunities (References 3.2 and 3.3).

*C. D. Wright*  
 Concurrence

*[Signature]*  
 For J. P. ...  
 Approval

## 6.0 PROCEDURE

### 6.1 General Indoctrination and/or Training

- 6.1.1 Each employee performing and/or verifying activities affecting quality shall receive indoctrination and/or training commensurate with the functions performed.
- 6.1.2 Managers/supervisors shall ensure that indoctrination and/or training requirements for their sections are established, implemented, and documented.
- 6.1.3 The need for indoctrination and/or training shall be evaluated and documented annually. Anytime there is a significant change to the Quality Assurance (QA) program, implementing procedures, or assignment of responsibilities, indoctrination and/or training shall be conducted and documented as prescribed by this procedure.
  - 6.1.3.1 Annual evaluation of non-collective bargaining employees shall be documented per H&N/ESD Procedure 1804.
  - 6.1.3.2 Annual evaluation of collective bargaining employees shall be documented per the indoctrination/training records.
- 6.1.4 Indoctrination shall be documented (Attachment 8.1).
- 6.1.5 Training activities shall be documented and shall include the following:
  - 6.1.5.1 Subject matter
  - 6.1.5.2 Date
  - 6.1.5.3 Duration
  - 6.1.5.4 Name(s) of individuals conducting training
  - 6.1.5.5 Name(s) of individuals receiving training

### 6.2 Specialized Training and Qualification

- 6.2.1 Nondestructive evaluation personnel shall be trained, qualified, and certified as required by Section 9 of Reference 3.1.
- 6.2.2 Inspection and test personnel shall be trained, qualified, and certified as required by Section 10 of Reference 3.1.
- 6.2.3 QA auditors shall be trained, qualified, and certified as required by Section 18 of Reference 3.1.

### 6.3 Certification of Competency

- 6.3.1 Personnel performing and/or verifying Quality Assurance Level I activities, not covered in paragraph 6.2, shall be competent and certified to perform their duties.
- 6.3.2 Certification to perform the employee's specific duties shall be based on education, experience, and training, and shall identify any restrictions or limitations.
- 6.3.3 Initial certification and annual evaluations shall be documented using the Certification of Competency (Attachment 8.2).

### 7.0 DOCUMENTATION

- 7.1 Managers/supervisors shall establish and maintain a file folder for each employee performing and/or verifying activities affecting quality. The file folders shall contain the following documents as applicable:
  - 7.1.1 Copy of resume
  - 7.1.2 Indoctrination records
  - 7.1.3 Training records, internal and external, as appropriate to the performance of individual duties
  - 7.1.4 Qualification records
  - 7.1.5 Certification records
  - 7.1.6 Certification of Competency
- 7.2 Upon completion of the project or termination of the employee, the file folder shall be submitted to the Technical Project Office.
- 7.3 The Technical Project Office shall transmit the file folders to the NNWSI Project Records Center.

### 8.0 ATTACHMENTS

- 8.1 Indoctrination Checklist
- 8.2 Certification of Competency

INDOCTRINATION CHECKLIST

EMPLOYEE NAME \_\_\_\_\_ (1) NO. \_\_\_\_\_ (2)

REPORTING DATE \_\_\_\_\_ (3)

READING LIST

(6) INITIAL | DATE

	(4)		
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

FAMILIARIZATION LIST

(6) INITIAL | DATE

	(5)		
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			

APPROVAL \_\_\_\_\_ (7)  
Manager/Supervisor

INDOCTRINATION CHECKLIST INSTRUCTIONS

- (1) Self explanatory.
- (2) Employee number.
- (3) Date employee reported to department/section.
- (4) List of the significant and frequently used documents the employee should be thoroughly familiar with, that are used in the employee's daily activities.
- (5) List of documents not frequently used in the employee's daily activities that the employee should become familiar with and have knowledge of their existence. These documents may be needed as reference in support of the employee's activities.
- (6) Employee's initials and date to verify that the employee has read and/or become familiar with the identified documents.
- (7) Manager's/supervisor's verification that the employee has completed this portion of the employee's indoctrination.

CERTIFICATION OF COMPETENCY

I (1) certify that (2), based upon his/her education, experience, and training is fully capable of performing his/her assigned duties. These duties are: (3)

(4) Limitations/Restrictions

(5)  
\_\_\_\_\_  
Manager/Supervisor                      Date

(6)

ANNUAL EVALUATION					
Signature/Date					

- (1) Name of responsible Manager/supervisor.
- (2) Name of employee.
- (3) Identify the specific duties or applicable job description number and title.
- (4) Identify any limitations or restrictions if appropriate, i.e., mechanical engineer, electrical engineer versus the broad category engineer. If there are no limitations in restrictions enter "none."
- (5) The responsible Manager/supervisor shall sign and date to attest to initial certification.
- (6) The responsible Manager/supervisor shall sign and date to attest to annual evaluation and continued certification.



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO. NNWSI-003 REV. 0

PAGE 1 OF 2

TITLE SPECIFICATION PREPARATION AND CONTROL

DATE ISSUED

August 26, 1988

### DESCRIPTION OF CHANGE

Section No. 3.0 Delete and add the following:

3.1 NNWSI-004, Design Document Distribution and Control

3.2 NNWSI-027, Document Filing System

6.6.1 Delete and add the following:

6.6.1 Interdiscipline Review

6.6.1.1 Upon completion of the specification check, the specification will be submitted to the DSC for distribution of the interdiscipline review.

6.6.1.2 A copy of the specification will be circulated to each discipline representative for their review and comment. The reviewer makes comments, if appropriate, initials and dates in the appropriate space and routes the specification to the next discipline. When all the disciplines have reviewed the copy of the specification, it is returned to the DSC.

6.6.1.3 All interdiscipline review comments will be returned to the DSC for determination of Resolution of Comments with the appropriate discipline.

6.6.1.4 The returned comments will be filed in accordance with Reference 3.2.

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: August 29, 1988

RESP. DEPT

CONCURRENCE

*Randolph L. Shucra*

8/26/88

CONCURRENCE

8/26/88

APPROVAL

8/26/88

*Joseph C. Colaninno*

NNA 880830-0005



**HOLMES & NARVER, INC.**

**INTERIM CHANGE NOTICE**

**ICN NO.**

001

**PROCEDURE NO.**

NNWSI-003

**REV.** 0

**PAGE 2 OF 2**

6.6.2 Delete and add the following:

6.6.2 The specifications will be submitted for internal review to Safety, QA, and the TP Office for review and comments.



<b>HN HOLMES &amp; NARVER, INC.</b>		ICN NO.
INTERIM CHANGE NOTICE		002
PROCEDURE NO.	NNWSI-003	REV. 0
		PAGE 1 OF 1
TITLE	SPECIFICATION PREPARATION AND CONTROL	DATE ISSUED
		Sept. 19, 1988
<b>DESCRIPTION OF CHANGE</b>		
<p>Add paragraph 6.2.6</p> <p>6.2.6 Identifying assemblies or components or both that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to it's installation, is modified or selected by special inspection or testing or both, to requirements that are more restrictive than the Supplier's published product description, the component part shall be represented as different from the commercial grade item in a manner traceable to a documented definition of the difference.</p>		
<b>INTERIM CHANGE APPROVAL</b>		
EFFECTIVE DATE: Sept. 26, 1988		
RESP. DEPT. Design. <i>Randolph S. Scherer</i> CONCURRENCE 9/14/88	<i>[Signature]</i> CONCURRENCE 9/15/88	<i>Joseph C. Colman</i> APPROVAL 9/15/88



**HOLMES & NARVER, INC.**  
**-ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

November 3, 1986

Number

NNWSI-003

**SUBJECT**

**SPECIFICATION PREPARATION AND CONTROL**

Revision No.

0

Supersedes

N/A

Page 1 of 5

**1.0 PURPOSE**

This procedure outlines the requirements for the preparation, review, approval, and control of construction and performance specifications.

**2.0 SCOPE**

This procedure applies to all specifications developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

NNWSI Procedure NNWSI-004, Design Document Distribution and Control

**4.0 DEFINITIONS**

Not Applicable

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project (TP) Office is responsible for directing proper implementation of this procedure.
- 5.2 Managers shall ensure that specifications for the NNWSI Project are prepared in accordance with the requirements of this procedure.
- 5.3 Supervisors/Section Chiefs shall ensure that their personnel are familiar with this procedure, and use it in developing and preparing specifications.

**6.0 PROCEDURE**

- 6.1 Personnel preparing and checking specifications shall review the following to ensure applicable requirements are addressed:
  - 6.1.1 Design Criteria
  - 6.1.2 Applicable Codes and Standards
  - 6.1.3 Appropriate Quality Standards and Acceptance Criteria

*C. D. Wright*  
Concurrence

*J. Pedalino*  
Approval

- 6.2 Personnel preparing and checking specifications shall consider the need for requirements relating to the following:
- 6.2.1 Design Analysis
  - 6.2.2 Design or Operational Testing To Ensure That the Item Will Perform Satisfactorily in Service
  - 6.2.3 Packaging, Handling, Shipping, Storage, Cleaning, and Protective Coating
  - 6.2.4 Required Documentation To Be Submitted (e.g., Drawings, Manuals, Procedures, Quality Assurance Program, Calculations, Catalog Cuts, etc.)
  - 6.2.5 Engineering Hold Points (i.e., Drawing Review and Source Inspection)
- 6.3 Specifications shall be prepared in accordance with specification formats outlined in Attachments 8.1 and 8.2. Originators shall prepare specifications on the Specification Title Sheet (Attachment 8.3), Specification Signature Sheet (Attachment 8.4), and Specification Continuation Sheets (Attachment 8.5).
- 6.4 Specifications shall be numbered consecutively beginning with NNWSI-50000-000. Supervisors/Section Chiefs shall obtain the number from the TP Office. The TP Office shall maintain a log of all specification numbers to ensure that numbers are not duplicated.
- 6.5 Checking
- 6.5.1 All engineering specifications shall be checked by a person whose qualifications are sufficient to have produced the original work. The checker shall not be the originator.
  - 6.5.2 Checking may be performed by the originator's immediate supervisor if the supervisor did not specify a singular design approach, rule out certain design considerations, or establish the design inputs for the specification, or the supervisor is the only individual in the group competent to perform the check.
  - 6.5.3 For Quality Assurance Level I activities, checking may be performed by the originator's immediate supervisor if the supervisor did not specify a singular design approach, rule out certain design considerations, or establish the design inputs for the specifications, and if the supervisor is the only individual in the group competent to perform the check. The next level of management shall verify that the supervisor meets this criteria by initialing the Specification Signature Sheet.

## 6.6 Review/Comment Coordination

- 6.6.1 The Supervisors/Section Chiefs are responsible for coordinating the internal review/comment cycle. The specifications and their revisions shall be submitted to Safety, Quality Assurance, and the TP Office for review and comment.
- 6.6.2 The Supervisors/Section Chiefs are responsible for resolving review comments and incorporating changes. Matters that cannot be resolved by the Supervisors/Section Chiefs shall be submitted to their Managers for resolution. Based on the extent of the changes, the Supervisors/Section Chiefs and their Managers shall determine if the specification need be resubmitted for review and comments.
- 6.6.3 After the internal review is complete, the TP Office shall submit a copy of the specifications to the Department of Energy/Waste Management Project Office (DOE/WMPO) and DOE/Nevada Test Site Office (DOE/NTSO) for review and comments.
- 6.6.4 Specifications distributed for review shall be assigned an alphabetical revision (e.g., Revision A, B, C, etc.,) each time they are distributed. Revision A, B, etc., becomes Revision 0 when the specification is issued.
- 6.6.4.1 If an issued specification (Revision 0 or higher) is distributed for review, an alphabetical character shall be added following the proposed revision number (e.g., Revision 0 becomes Revision 1A, 1B, etc.).
- 6.6.4.2 When the revised specification is released, the alphabetical character shall be removed (Revision 1A, 1B, etc., becomes Revision 1).

## 6.7 Approval

- 6.7.1 Internal Approvals: The specification signature sheet shall be initialed and dated by the originator and checker, their Supervisor/Section Chief, and a representative from Safety and Quality Assurance for the original issue (Revision 0) and all subsequent revisions. The appropriate Manager and a representative from the TP Office shall sign the title sheet for the original issue and initial all subsequent revisions.
- 6.7.2 External Approvals: Once the specification internal approval cycle is completed, the TP Office shall submit the specification to the DOE/WMPO and DOE/NTSO for approval and signature.

## 6.8 Revision Identification, Control, and Methods

- 6.8.1 Changes shall be made by a formal revision or a Specification Change Notice (SCN) (Attachment 8.6) to the issued

specification. All changes shall be reviewed and approved in the same manner as the original specification.

- 6.8.2 All outstanding SCNs shall be incorporated whenever a formal revision is made. When issuing a formal revision to the specification, all SCNs issued since the last revision shall be noted in the specification title sheet's Revisions block.
- 6.8.3 When a formal revision of a specification is made, changes shall be identified with a vertical bar in the right-hand margin adjacent to the change. All previous revision bars shall be removed.
- 6.8.4 If a change is necessary and the originating organization does not choose to issue a formal revision, an SCN shall be prepared and issued (as outlined in paragraph 6.9).
- 6.8.5 A formal revision is required to supercede or void a specification. The superceding specification shall be issued along with the title sheet of the superceded specification. The Revisions block on the title sheet shall be labeled "Superceded by XXXX (the new revision number)" or "VOID".

Note: All outstanding SCNs shall be listed in the superceding specification's Revisions block.

#### 6.9 SCN Preparation and Control

- 6.9.1 An SCN shall require the same review and approval as the original specification.
- 6.9.2 The Supervisors/Section Chiefs shall prepare and maintain an SCN Log (Attachment 8.7) for each specification issued. The SCN numbers shall be consecutive and shall not be duplicated.
- 6.9.3 Once an SCN is issued, it cannot be revised. An additional SCN may be issued superceding, voiding, or supplementing any previous SCN.
- 6.9.4 No more than five SCNs shall be outstanding before a formal revision is required. If the Supervisors/Section Chiefs deem it necessary, a formal revision may incorporate less than five SCNs.

6.10 Specification Distribution and Control: The TP Office shall distribute the specifications using an H&N Transmittal Record in accordance with NNWSI Procedure NNWSI-004, Design Document Distribution and Control.

#### 7.0 DOCUMENTATION

- 7.1 The original issue, any revisions, and all SCNs shall be transmitted by the Supervisors/Section Chiefs to the TP Office. Supervisors/Section Chiefs shall retain copies of the original issues, revisions, and all SCNs in their files.

7.2 The TP Office shall send the originals to the H&N Engineering Records Library for microfilming and storage. The TP Office shall transmit copies suitable for microfilming to the NNWSI Project Records Center.

**8.0 ATTACHMENTS**

8.1 Typical Format of a Construction Specification

8.2 Sample Format for a Performance Specification

8.3 Specification Title Sheet

8.4 Specification Signature Sheet

8.5 Specification Continuation Sheet

8.6 NNWSI Specification Change Notice

8.7 Specification Change Notice Log

ATTACHMENT 8.1

CSI FORMAT FOR A CONSTRUCTION SPECIFICATION

Construction specifications are divided into 16 divisions as defined below. Each specification will consist of Division 1 and Divisions 2 through 16, as applicable. An example of information to be contained in each division is provided.

DIVISION 1 GENERAL REQUIREMENTS

- o Summary of Work: Summary of Work will be divided into two areas:  
Description of the scope of work to be performed by the supplier.  
Description of the scope of work to be supplied or provided by the purchaser.
- o Codes and Standards: A listing of applicable codes and standards. (The text of the specification should define where and how these codes and standards apply.)
- o Administrative Requirements: This includes the general conditions regarding allowances, schedules, reports, payments, and project coordination. If this section is not included in the purchase order, it shall be included as a section of the specifications.
- o Deliverables: This includes shop drawings, project data, catalog cuts, and samples to be submitted.
- o Special Processes: Specify welding, nondestructive testing, etc. Procedure/personnel qualifications shall also be included in this section.
- o Quality Assurance/Control (QA/QC): Specify QA/QC requirements (program, inspection, and tests).

DIVISION 2 SITE WORK

Specify earthwork, landscape work, paving, drainage, and water supply requirements.

DIVISION 3 CONCRETE

Specify concrete requirements (interior and exterior).

ATTACHMENT 8.1 (Continued)

DIVISION 4 MASONRY

Specify requirements for interior and exterior masonry.

DIVISION 5 METALS

Specify requirements for fabrication and erection of structural steel and sheet metal, and special requirements for material (traceability, etc.).

DIVISION 6 WOOD AND PLASTICS

Specify the requirements for wood and plastics.

DIVISION 7 THERMAL AND MOISTURE PROTECTION

Specify requirements for weather proofing, insulation, and fire proofing.

DIVISION 8 DOORS AND WINDOWS

Specify requirements for doors and windows (i.e., type, composition, and associated hardware).

DIVISION 9 FINISHES

Specify requirements for finishes (i.e., plaster, drywall, tile, ceilings and floors, carpeting, wall covering, paint, special coatings, etc.).

DIVISION 10 SPECIALITIES

Specify requirements for specialties (i.e., metal lockers, special signs, fire extinguishers, cabinets and accessories, toilet and bath accessories, etc.).



ATTACHMENT 8.1 (Continued)

DIVISION 11 EQUIPMENT

Specify requirements for equipment in food services, loading docks, kitchen and laundry appliances, etc.

DIVISION 12 FURNISHINGS

Specify requirements for furniture (i.e., cabinets, draperies, blinds, etc.).

DIVISION 13 SPECIAL CONSTRUCTION

Specify special construction requirements for radiation protection, pre-engineered buildings, security, ramps, etc.

DIVISION 14 CONVEYING SYSTEM

Specify requirements for conveying systems such as elevators (electrical/hydraulic).

DIVISION 15 MECHANICAL

Specify basic mechanical materials/methods: Traceability, mechanical insulation, fire protection, plumbing, HVAC, refrigeration, heat transfer, air handling/distribution, compressed air, gas/fuel piping, and controls.

DIVISION 16 ELECTRICAL

Specify basic electrical materials/methods: Service and distribution, lighting, special systems, communications, and control.

ATTACHMENT 8.2

SAMPLE FORMAT FOR A PERFORMANCE SPECIFICATION

Performance specifications shall describe performance parameters, outline design requirements, state what the specifier must provide, and detail construction practices. The content of performance specifications shall be based on the design criteria for the item or activity being specified. The performance specification shall reference all applicable drawings to clarify detail and ensure conformance with the criteria. Each performance specification will, as a minimum, consist of the following:

SECTION 1 GENERAL REQUIREMENTS

- o Summary of Work: Summary of Work shall be divided into two areas.  
  
Description of the scope of work to be provided by the supplier.  
  
Description of the scope of work to be supplied or provided by the purchaser.
- o Codes and Standards: Codes and standards shall be listed which affect the design, performance, and construction or fabrication of the specified item. These codes and standards shall be referenced in the text to clarify design, construction, and testing and inspection requirements.
- o Administrative Requirements: This segment shall include the general conditions regarding allowances, schedules, reports, payments, and project coordination. If the purchase order does not contain these requirements, this section shall be included.
- o Definitions: All terms that need clarification or are used in a unique application (i.e., contracting parties or agencies, specification language, and stages of the work) shall be defined.
- o Reference Drawing: Any drawings which are necessary for the supplier to fabricate or construct the item shall be included with the specification and referenced within the text.
- o Deliverables: Shop drawings, project data, catalog cuts, and samples to be submitted by the supplier shall be specifically listed.
- o Special Processes: Welding, nondestructive testing, etc., (procedure/personnel qualifications) performed by the supplier shall be called out.
- o Quality Assurance/Control (QA/QC): This segment includes QA/QC requirements (program, inspection, and tests) which must be met by the supplier.

ATTACHMENT 8.2 (Continued)

SAMPLE FORMAT FOR A PERFORMANCE SPECIFICATION

- o Safety: For any work performed at the Nevada Test Site, all applicable safety requirements for construction and security provided by the supplier shall be included.

SECTION 2 DESIGN REQUIREMENTS

- o Design/Operating Conditions: The general conditions in which the system or item must operate shall be specified. The design shall address the criteria's requirements which include environment, maximum and minimum operating parameters, normal operating conditions, transient conditions, design life, and other factors affecting operations. Any maintenance instructions or operators manuals to be provided by the supplier shall be included.
- o Special Conditions: Conditions which are unique to the item or activity specified shall be included. If the special condition requires documentation or modified standard techniques, these requirements shall be fully explained and supported by any means necessary.
- o Performance: The purchaser shall detail the specified performance of the item as outlined in the criteria transmitted to the supplier. This includes parameters such as top rated speed, loading limitations, electrical ratings, water flow capacity, etc.
- o Construction Materials: Any special requirements for the materials to be used in construction and fabrication shall be specified.
- o Procurement Drawing: Procurement drawings shall be provided by the purchaser to clarify detail and to outline any pertinent site features. These drawings shall be cross referenced in the text.

SECTION 3 CONSTRUCTION REQUIREMENTS

- o Equipment: Any equipment not provided by the purchaser which supports or is a major component of the system shall be listed. Any insulating or protective coatings for the equipment shall also be included.
- o Testing: All testing requirements shall be listed. If the required test is performed according to a recognized professional standard, the standard shall be referenced in Section 1. Requirements for an outside agency's participation in testing, any acceptance tests, and special procedures shall be included.

ATTACHMENT 8.2 (Continued)

SAMPLE FORMAT FOR A PERFORMANCE SPECIFICATION

- o Labelling or Marking: Conditions for labelling or marking items or components for control, identification, or segregation purposes shall be described. Procedures to implement these functions shall also be detailed.
- o Shipping, Handling, and Storage: Requirements for shipping and receiving, including acceptance tests performed by other organizations, shall be specified.
- o Special Services: Any specialized services to be provided by the supplier (i.e., supplier personnel or equipment) shall be specified.

ATTACHMENT 8.3

SPECIFICATION

FOR

(1) \_\_\_\_\_

(2) SPECIFICATION \_\_\_\_\_

FOR THE

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

(3) REVISION \_\_\_\_\_

(4) WBS \_\_\_\_\_

(5) IDENTIFICATION \_\_\_\_\_

- (1) Enter Job Title
- (2) Enter Specification Number
- (3) Enter the Latest Revision Number
- (4) Enter the Work Breakdown Structure Number
- (5) Enter the Identification Number

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION

ATTACHMENT 8.4

SPECIFICATION

FOR

(1) \_\_\_\_\_

(2) SPECIFICATION \_\_\_\_\_

\_\_\_\_\_  
 Manager

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 Technical Project Office, H&N

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 DOE/WMPO

\_\_\_\_\_  
 Date

\_\_\_\_\_  
 DOE/NTSO

\_\_\_\_\_  
 Date

TYPICAL

(3)      (4)                      (5)                      (6) (7) (8) (9) (10)(11)(12)    (13)    (14)

REV.	DATE	DESCRIPTION OF CHANGE	ORG	CHK	ESC	QA	SAF	MGR	TPO	WMPO	NTSO

- (1) Enter the Job Title
- (2) Enter the Specification Number
- (3) Enter the Revision Number
- (4) Enter the Revision Date
- (5) Enter a Brief Description of the Revision
- (6) Originator's Initials
- (7) Checker's Initials

- (8) Supervisor/Section Chief's Initials
- (9) Quality Assurance Initials
- (10) Safety Initials
- (11) Manager's Initials
- (12) Technical Project Office Initials
- (13) DOE/WMPO Approval
- (14) DOE/NTSO Approval

NNWSI Procedure NNWSI-003  
Revision 0  
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ATTACHMENT 8.5

SPECIFICATION CONTINUATION SHEET\*

SPECIFICATION \_\_\_\_\_  
REVISION \_\_\_\_\_  
SHEET \_\_\_\_\_ OF \_\_\_\_\_

**TYPICAL**

---

\* Specifications will be prepared on 8 1/2" x 11" white bond paper. The heading will appear in the uppermost right-hand corner.






ATTACHMENT 8.7

H&N SPECIFICATION CHANGE NOTICE LOG

SPECIFICATION \_\_\_\_\_ (1)

TITLE \_\_\_\_\_ (2)

SCN(3) NUMBER	REVISION (4)	ISSUED (5)	INCORPORATED BY (6)	REMARKS (7)
<p><b>TYPICAL</b></p>				
<p>(1) Enter Specification Number</p>				
<p>(2) Enter Title of Specification</p>				
<p>(3) Enter the SCN Number</p>				
<p>(4) Enter the Specification Revision Number Which the SCN Revises</p>				
<p>(5) Enter the Date of Issuance</p>				
<p>(6) Enter the Specification Revision Number the SCN Is Incorporated Into</p>				
<p>(7) Enter a Brief Description of the Changes and Remarks as Appropriate</p>				

 <b>HOLMES &amp; NARVER, INC.</b> <b>INTERIM CHANGE NOTICE</b>		<b>ICN NO.</b> 001
<b>PROCEDURE NO.</b> NNWSI-004 <b>REV.</b> 1	<b>PAGE 1 OF 1</b>	
<b>TITLE</b> CONTROLLED DISTRIBUTION OF DESIGN DOCUMENTS	<b>DATE ISSUED</b> Sept. 19, 1988	
<b>DESCRIPTION OF CHANGE</b>		
<p>Section 6.2.1 Delete and add the following:</p> <p>6.2.1 All controlled distribution of design documents shall be made by the TP Office via a Transmittal Record (Attachment 8.2). Transmittals shall identify the status of the document(s) provided and, where necessary, identify incomplete items which require further review, or approval.</p> <p>Section 6.3.1 Delete and add the following:</p> <p>6.3.1 The TP Office shall maintain a current up-to-date index of all controlled documents issued (eg. drawings, specifications, procedures and QAPP). This index shall identify the document, the latest revision of the document, and any outstanding changes relating to the document.</p> <p>Section 6.3.2 Delete and add the following:</p> <p>6.3.2 This index shall be published and issued to all individuals identified on the Controlled Distribution List at least once per month. The index shall also be issued to the Yucca Mountain Project PQM and SAIC/ T&amp;MSS Quality Assurance Department Manager.</p>		
<b>INTERIM CHANGE APPROVAL</b>		
<b>EFFECTIVE DATE:</b> Sept. 26, 1988		
<b>RESP. DEPT.</b> Admin./Budget <b>CONCURRENCE</b> <i>Janice D. Vaden</i> <i>9/14/88</i>	<i>W.C.D. King</i> <b>CONCURRENCE</b> <i>9/14/88</i>	<i>Joseph C. Calogony</i> <b>APPROVAL</b> <i>9/15/88</i>



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

03/25/88

Number

NNWSI-004

**SUBJECT**

**CONTROLLED DISTRIBUTION  
 OF DESIGN DOCUMENTS**

Revision No.

1

Supersedes

0

Page

1

of

3

**1.0 PURPOSE**

This procedure defines the requirements to control the distribution of design documents to ensure that the latest design documents, revisions, or changes thereto are appropriately distributed to those individuals and/or organizations that must use them for future design or construction.

**2.0 SCOPE**

This procedure covers the distribution of design documents such as drawings and specifications produced by Holmes & Narver, Inc./Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

NNWSI Procedure NNWSI-008, Quality Assurance Records Management

**4.0 DEFINITIONS**

None

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer (TPO) is responsible for directing implementation of this procedure.
- 5.2 The Technical Project (TP) Office is responsible for the controlled distribution of design documents.
- 5.3 Recipients of controlled distribution shall be responsible for updating and maintaining the controlled design documents issued to them.

**6.0 PROCEDURES**

- 6.1 The TP Office shall determine which design documents require controlled distribution and shall establish and maintain Controlled Distribution List(s) (Attachment 8.1) for design documents.

SAIC/T & MSS

APR 27 1988

C C F RECEIVED

TP Office  
 Responsible Management

*C. D. [Signature]* 2/23/88  
 Concurrence

*Joseph C. [Signature]*  
 Approval 2/23/88

**6.1.1 The Controlled Distribution List shall include the following:**

**6.1.1.1 The title of the document(s) that is to have controlled distribution**

**6.1.1.2 The names of the individuals to whom controlled distribution is to be made**

**6.1.1.3 The quantity and type (blue line, sepia, etc.) to be distributed to assigned individual**

**6.1.1.4 The date of each distribution**

**6.1.1.5 The date of acknowledgment of each distribution by the recipient**

**6.1.2 Revisions to the Controlled Distribution List shall be controlled by the TP Office.**

## **6.2 Distribution**

**6.2.1 All controlled distribution of design documents shall be made by the TP Office via a Transmittal Record (Attachment 8.2).**

**6.2.2 Each recipient of controlled distribution is responsible for maintaining the documents and for acknowledging receipt of the document(s) by signing, dating, and returning the Transmittal Record.**

**6.2.2.1 If the Transmittal Record is not returned within 15 days, a follow-up notification (verbal or written shall be made and documented.**

**6.2.2.2 If no response to the follow-up (6.2.2.1) is received within seven days, a formal notification shall be sent to the individual advising that he/she will no longer be on controlled distribution for the subject document(s). This action shall be so noted on the Controlled Distribution List.**

**6.2.3 Uncontrolled copies of drawings may be generated but will be stamped "Uncontrolled" "For Information Only."**

## **6.3 Index of Controlled Design Documents (Drawings and Specifications)**

**6.3.1 The TP Office shall maintain a current up-to-date index of all controlled design documents issued (e.g., drawings and specifications). This index shall identify the document, the latest revision of the document, and all outstanding Engineering Change Notices and Specification Change Notices relating to that specific drawing or specification.**

6.3.2 This index shall be published and issued to all individuals identified on the Controlled Distribution List at least once per month.

## **7.0 DOCUMENTATION**

The Controlled Distribution Lists shall be maintained by the TP Office and forwarded to the Project Record Center upon completion of the Project in accordance with NNWSI Procedure NNWSI-008, Quality Assurance Records Management.

## **8.0 ATTACHMENTS**

8.1 Controlled Distribution List

8.2 Transmittal Record

TITLE \_\_\_\_\_

CONTROLLED COPY HOLDERS OF H&V/ESD NWSI DESIGN DOCUMENTS

Copy No.	Issued to	Transmittal Date	Acknowledge Date	Transmittal Date	Acknowledge Date	Type Quant.
1.						
2.						
3.						
4.						
5.						
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**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

Number

May 19, 1988

NNWSI-005

**SUBJECT:**

**DESIGN DRAWING PREPARATION  
 AND CONTROL**

Revision No.

Supersedes

Page

of

1

0

1

7

**1.0 PURPOSE**

This procedure outlines the requirements for the preparation, review, approval, and control of drawings.

**2.0 SCOPE**

This procedure applies to all drawings developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

- 3.1 NNWSI Procedure NNWSI-002, Indoctrination, Training, Certification and Qualification
- 3.2 NNWSI Procedure NNWSI-004, Controlled Distribution of Design Documents
- 3.3 NNWSI Procedure NNWSI-007, Work Initiation, Criteria Gathering and Reporting
- 3.4 NNWSI Procedure NNWSI-008, Quality Assurance Records Management
- 3.5 NNWSI Procedure NNWSI-014, Design Verification
- 3.6 NNWSI Procedure NNWSI-027, Departmental Filing System Procedure
- 3.7 H&N-0020-1090, H&N Nevada Test Site (NTS) Drafting Manual

SAIC/T & MSS

**4.0 DEFINITIONS**

MAY 11 1988


- 4.1 Intradiscipline - within the same discipline.
- 4.2 Interdiscipline - outside that particular discipline but within the H&N/NNWSI design department.
- 4.3 Internal - within the H&N organization.
- 4.4 Check - to review the drawings for accuracy, neatness, and compliance to drafting standards.
- 4.5 Design Review - A review of all the design documents to ensure that design method's chosen were correct, design calculations are correct, assumptions are reasonable. It is also a preview for the design verification.

C C F RECEIVED

Design Department  
 Responsible Management

*C. O. [Signature]*  
 5/16/88  
 Concurrence

*Joseph C. [Signature]*  
 Approval 5/5/88

 <b>HOLMES &amp; NARVER, INC.</b> <b>INTERIM CHANGE NOTICE</b>		<b>ICN NO.</b> 001
<b>PROCEDURE NO.</b> NNWSI-005	<b>REV.</b> 1	<b>PAGE</b> 1 <b>OF</b> 1
<b>TITLE</b> DESIGN DRAWING PREPARATION AND CONTROL		<b>DATE ISSUED</b> Sept. 19, 1988
<b>DESCRIPTION OF CHANGE</b>		
<p>Paragraph 3.3 Delete and add the following:</p> <p style="padding-left: 40px;">3.3 NNWSI Procedure NNWSI-015, Design Input Control</p> <p>Paragraph 6.1.5 Delete reference to "(NNWSI-007)" and add: "(NNWSI-015)"</p> <p>Add paragraph 6.1.6</p> <p style="padding-left: 40px;">6.1.6 Design drawings, when applicable, shall identify assemblies or components or both that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to it's installation, is modified or selected by special inspection or testing or both, to requirements that are more restrictive than the Supplier's published product description, the component part shall be represented as different from the commercial grade item in a manner traceable to a documented definition of the difference.</p>		
<b>INTERIM CHANGE APPROVAL</b>		
<b>EFFECTIVE DATE:</b> Sept. 26, 1988		
<b>RESP. DEPT. DESIGN</b> <i>Franklin J. Schuvin</i> <b>CONCURRENCE</b> 9/14/88	<i>C. D. [Signature]</i> <b>CONCURRENCE</b> 9/15/88	<i>Joseph C. Calverin</i> <b>APPROVAL</b> 9/15/88



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
TRANSMITTAL RECORD

TO: \_\_\_\_\_

DATE: \_\_/\_\_/\_\_

FROM: JAN VERDEN, PLANNING COORDINATOR

MANUAL NO. \_\_\_\_\_

TRANSMITTALS ATTACHED

Document Title & Number	Rev.	Date
_____	/	/
_____	/	/
_____	/	/
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INSTRUCTIONS/REMARKS

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\_\_\_\_\_

\_\_\_\_\_

PLEASE SIGN BELOW AND RETURN TO NNWSI TECHNICAL PROJECT OFFICER,  
ATTENTION: JAN VERDEN, H/S 519, LAS VEGAS, NEVADA.

I have received the subject material.

Signature: \_\_\_\_\_

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

4.6 Design Verification - A detailed critical review to assure the design is an appropriate response to the input and follows an approved analyses method.

## 5.0 RESPONSIBILITIES

5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.

5.2 The Design Section Chief (DSC) is responsible for ensuring that all NNWSI drawings are prepared and controlled according to the requirements of this procedure.

5.3 The design staff is responsible for preparing all drawings in accordance with the H&N Drafting Manual and this procedure.

## 6.0 PROCEDURE

### 6.1 Preparation

6.1.1 Prior to starting any Quality Assurance Level I or II activity, personnel must be indoctrinated, trained, and certified in accordance with Procedure NNWSI-002.

6.1.2 Personnel preparing drawings will ensure that the drawings reflect the usage of sound engineering practices, applicable design criteria, codes and standards, and contain sufficient detail to permit further design, procurement, fabrication, or construction.

6.1.3 The DSC or an appointed designee is responsible for assigning drawings numbers and maintaining a log to ensure that numbers are not duplicated.

6.1.4 Drawings are to be prepared in accordance with the H&N Drafting Manual with two exceptions: 1) the title block is to be as shown in Attachment 8.1, and 2) the right hand border and the bottom border will have the zone system markings.

6.1.5 Design drawings will be based on accepted Design Input (NNWSI-007) and relate to the input of documentation in sufficient detail to permit design verification (NNWSI-014).

### 6.2 Checking

6.2.1 All drawings will be checked by personnel whose qualifications are sufficient to have originated the original work and did not originate the original work.

#### 6.2.2 Intradiscipline Check

6.2.2.1 The cognizant design section head/designee is responsible for checking all drawings being submitted to the DSC from his/her section.

6.2.2.2 The design section heads are to check the drawings for the following:

- 1) Accuracy
- 2) Neatness
- 3) Clarity
- 4) Adherence to latest design input
- 5) Adherence to Engineer's design and concepts
- 6) Concurrence to applicable codes and standards
- 7) Concurrence to H&N Drafting Manual

6.2.2.3 The initials of the design section head in the checked block on the drawings constitutes agreement that all the above have been successfully performed.

### 6.2.3 Drafting Check

6.2.3.1 A drafting check will performed on all drawings to ensure that they are done in accordance with the H&N Drafting Manual and that the drawings reflect sound engineering practices, applicable design input, latest codes and standards, and contain sufficient detail to permit further design, procurement, fabrication, or construction.

6.2.3.2 The individual responsible for performing this check shall not be the originator of the drawing. The individual will initial the drawing in the checked block as verification of check.

### 6.3 Review/Comment Distribution and Control

6.3.1 The DSC shall coordinate the review/comment resolution cycle.

#### 6.3.2 Interdiscipline Review

6.3.2.1 Upon completion of the intradiscipline and the drafting checks the drawings will be submitted to the DSC for distribution of the interdiscipline review.

6.3.2.2 Either of two methods may be used to accomplish this review:

6.3.2.2.1 One check print circulated where each discipline representative reviews the drawing, makes comments, initials, and dates the print in the appropriate space and gives the print to the next discipline. When all the

disciplines have reviewed the prints they are returned to the DSC.

6.3.2.2.2 A check print distributed to each discipline for their review, comment, initial and date, then return to the DSC.

6.3.2.3 All interdiscipline review check prints will be returned to the DSC for determination of Resolution of Comments with the appropriate discipline.

6.3.2.4 The returned check prints will be filed in accordance with Procedure NNWSI-027.

### 6.3.3 Internal Review

6.3.3.1 After resolution of the comments from the interdiscipline review the drawings will be returned to the DSC.

6.3.3.2 Drawings distributed for review shall be assigned an alphabetical revision number (e.g., Revision A, B, 1A, 1B, 2A, etc.) each time they are revised and distributed for review and comment. When the revised drawing is approved, the alphabetical character shall be removed (Revision A, B, C, becomes Revision 0, and Revision 1A, 1B becomes Revision 1).

6.3.3.3 A check print will be transmitted to the following people or departments using a transmittal form (Attachment 8.5):

- 1) Safety
- 2) Quality Assurance
- 3) Project Engineering (2 copies)
- 4) TPO
- 5) Others at DSC's discretion

6.3.3.4 Comments are to be returned to the DSC within allocated time for resolution.

6.3.3.5 All unresolved comments will be referred to the TPO for final disposition.

6.3.3.6 Based on the extent of the changes, the DSC shall determine the need for resubmittal of the drawings for review.

### 6.4 Approvals

6.4.1 Internal Approval: Upon completion of the appropriate review and resolution comments, the DSC/designee shall obtain the approval signature/initial as appropriate of the following:

- 1) DSC
- 2) Safety
- 3) Project Engineering
- 4) Quality Assurance
- 5) TPO

6.4.2 External Approval: Upon completion of the internal approvals the drawings will be submitted to DOE/WMPO and/or DOE/NTSO as appropriate for approval and signature.

#### 6.5 Preparation for Design Verification/Design Review

Completion of steps 6.1 through 6.3.3.6 will constitute preparation of the design for design verification/design review. Design verification/design review will proceed per Procedure NNWSI-014.

#### 6.6 Revision Identification and Control

6.6.1 Changes to issued drawings will be made by a revision as prescribed by the H&N Drafting Manual or by an NNWSI Project Engineering Change Notice (ECN) (Attachment 8.3). All changes shall be reviewed and approved in the same manner as the original drawing. The original approving authorities shall initial the Revisions block to indicate approval.

6.6.2 All outstanding ECNs must be incorporated when a formal revision to the drawing is issued.

6.6.3 The revisions shall be described concisely in the Revision block. After final approval, the revision date will be assigned.

#### 6.7 ECN Preparation and Control

6.7.1 The ECN shall be prepared as outlined in Attachment 8.3.

6.7.2 All ECNs shall be reviewed and approved in the same manner as the original drawing.

6.7.3 The DSC shall prepare and maintain an ECN log (Attachment 8.4) for each drawing issued. The ECN numbers shall be consecutive and shall not be duplicated.

6.7.4 Once an ECN is issued, it cannot be revised. A new ECN shall be issued for each modification.

6.7.5 No more than five ECNs shall be outstanding before a formal revision is required.

## 6.8 Voiding or Superseding a Drawing

- 6.8.1 A formal revision shall be issued to void or supersede a drawing.
- 6.8.2 A revision that voids or supersedes a drawing need not be resubmitted for formal review and approval. The DSC shall approve the revision.
- 6.8.3 Voided and superseded drawing revisions shall not be distributed. Notification shall be issued to all recipients of the original that the latest issue is void or superseded.
  - 6.8.3.1 This notification shall be via an H&N Transmittal Record.
  - 6.8.3.2 The original mylar of the voided or superseded drawing shall be prominently labeled "Void or Superseded by Drawing X-000X," as appropriate.
  - 6.8.3.3 The voided or superseded drawing mylar shall be returned to the Microfilming and Archival Storage Services Facility (MASSF) for microfilming and storage.
- 6.8.4 The superseding drawing shall reference the superseded drawing (e.g., Supersedes Drawing X-000X).
- 6.8.5 Voided drawing numbers shall not be reused.

## 6.9 Drawing Distribution and Control

- 6.9.1 For the interdiscipline review the DSC or his/her representative will have copies made of the originals and will distribute them to the respective disciplines. The drawings will be returned to the DSC within the specified time and filed in accordance with Procedure NNWSI-027.
- 6.9.2 For all subsequent reviews the drawings will be distributed by the DSC or his/her representative using the NNWSI transmittal form (Attachment 8.5).
- 6.9.3 Formal distribution of approved drawings and revisions will be in accordance with Procedure NNWSI-004.

## 7.0 DOCUMENTATION

- 7.1 The following documents are required by this procedure and shall be retained by the DSC/designee until they are forwarded to the Records Center in accordance with Procedure NNWSI-008.
  - 7.1.1 Interdiscipline check prints
  - 7.1.2. Copy of the latest drawing issued
  - 7.1.3 Each alpha drawing revision issued for external review/approval

7.1.4 Drawing changes (Formal Revisions/ECNs)

7.1.5 Master drawing log

7.1.6 ECN log

## 8.0 ATTACHMENTS

8.1 NNWSI Drawing Title Block

8.2 Review/Comment Routing Stamp

8.3 NNWSI Engineering Change Notice

8.4 NNWSI Engineering Change Notice Log

8.5 NNWSI Transmittal Form

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
DRAWING TITLE BLOCK

10		11		12		13 14 15 16 17 18 19				
NO.	DATE	REVISIONS				BY	APP	PR	CHK	DATE
						CR	SA	AF	DCR	
U.S. DEPARTMENT OF ENERGY										
NEVADA OPERATIONS OFFICE						LAS VEGAS NEVADA				
DESIGNER	DRAWN	TYPICAL								
3	4									
CHECKER	9									
SAFETY	SA									
6	7									
PROJECT ENGINEER	8	AGENCY APPROVAL				DOE APPROVAL		DATE		
SUBMITTED		13		14		15		16		
HOLMES NARVER, INC. ENGINEERS - CONSTRUCTORS ENERGY SUPPORT DIVISION 1050 E. FLANINGO ROAD LAS VEGAS, NEVADA 89108					S.D. NO.	DRAWING NUMBER				
					1	10				
					2	SHEET _____ OF _____				

- 1 H&N ID CHARGE NUMBER
- 2 NNWSI WORK BREAKDOWN STRUCTURE NUMBER
- 3 DESIGNER OF DRAWING
- 4 DRAFTSMAN(S)
- 5 CHECKER(S)
- 6 SAFETY ENGINEER
- 7 QUALITY ASSURANCE REPRESENTATIVE
- 8 PROJECT ENGINEER
- 9 TECHNICAL PROJECT OFFICER (TPO), DESIGN SECTION CHIEF (DSC) INITIALS
- 10 REVISION NUMBER
- 11 DEPARTMENT OF ENERGY APPROVAL DATE
- 12 BRIEF DESCRIPTION OF CHANGES MADE TO DWG. W/REF. DOCUMENTS
- 13 AGENCY APPROVAL (DOE/WHPO)
- 14 DEPARTMENT OF ENERGY APPROVAL (DON/NTSO)
- 15 TITLE OF DWG. PER H&N DRAFTING MANUAL
- 16 DWG. NO. ASSIGNED BY DESIGN DEPARTMENT



NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
ROUTING STAMP

**TYPICAL**

REVIEW AND COMMENT		
RETURN TO D.S.C. BY		
DISCIPLINE	INITIALS	DATE
CIVIL		
ARCH/STRUCT.		
MECHANICAL		
ELECTRICAL		
COMMUNICATIONS		
INTERFACE CONT.		

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
ENGINEERING CHANGE NOTICE

ECN NO. \_\_\_\_\_  
DATE \_\_\_\_\_  
SHEET \_\_\_\_\_ OF \_\_\_\_\_

DRAWING/REV. \_\_\_\_\_ I.D. NUMBER \_\_\_\_\_ (2)  
WBS NUMBER \_\_\_\_\_ (2)

DRAWING TITLE \_\_\_\_\_ (3)

CHANGE REQUESTED BY: (4)  DOE/WMPO  H&N  OTHER

CHANGE PREPARED BY \_\_\_\_\_ (5) DATE \_\_\_\_\_

- DESCRIPTION OF CHANGE (6)
- (1) Enter Drawing Number and Revision and ECN Modifies
  - (2) Enter Project ID and Work Breakdown Structure Numbers
  - (3) Enter Title of Drawing
  - (4) Enter Originator of Change or Modification
  - (5) Enter Originator of ECN
  - (6) Enter a Brief Description of the Change
  - (7) Originator's Initials
  - (8) Checker's Initials
  - (9) Design Section Chief's Initials
  - (10) QA Representative's Initials
  - (11) Safety Department Representative's Initials
  - (12) Project Engineer's Initials
  - (13) Technical Project Officer Initials
  - (14) DOE/NTSO Approval
  - (15) DOE/WMPO Approval

**T Y P I C A L**

APPROVALS

ORG	CHK	DSC	QA	SAF	PE	TPO	DOE/NTS	DOE/WMPO
(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
TRANSMITTAL RECORD

TO: \_\_\_\_\_ DATE: \_\_\_/\_\_\_/\_\_\_

FROM: H&N DOCUMENT/RECORDS CONTROL

DRAWING/DOCUMENT/DISK NO. \_\_\_\_\_

TRANSMITTALS ATTACHED

Drawing/Document Title & Number	Rev.	Date
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/
_____	/	/

**TYPICAL**

INSTRUCTIONS/REMARKS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PLEASE SIGN BELOW AND RETURN WITHIN 15 DAYS TO NNVSI TECHNICAL PROJECT OFFICER  
STATING THAT YOU HAVE RECEIVED SUBJECT MATERIAL.

ATTENTION: HOLMES & NARVER DOCUMENT/RECORDS CONTROL  
101 CONVENTION CENTER DRIVE  
LAS VEGAS, NV 89109  
H/S 519

Signature: \_\_\_\_\_

<b>H&amp;N HOLMES &amp; NARVER, INC.</b> INTERIM CHANGE NOTICE		ICN NO. 001
PROCEDURE NO. NNWSI-006	REV. 0	PAGE 1 OF 1
TITLE DESIGN ANALYSIS		DATE ISSUED Sept. 19, 1988

**DESCRIPTION OF CHANGE**

Paragraph 3.3 Delete and add the following:

3.3 NNWSI Procedure NNWSI-015, Design Input Control

Paragraph 6.1.1 Delete reference "NNWSI-007" and add "NNWSI-015"

Paragraph 6.1.3 Delete and add the following:

6.1.3 Contents of Calculation: Calculations shall state the objective and be orderly and complete so that the work can be understood by other knowledgeable individuals. Informational diagrams (e.g., load, flow, voltage), sketches, or drawings of important details not considered standard shall be included as part of the calculation. The source of this information shall be identified.

**INTERIM CHANGE APPROVAL**

EFFECTIVE DATE: Sept. 26, 1988

RESP. DEPT. Design <i>Richard J. Sullivan</i> CONCURRENCE 9/14/88	<i>C. D. [Signature]</i> CONCURRENCE 9/15/88	<i>Joseph C. [Signature]</i> APPROVAL 9/15/88
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**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date		Number	
May 19, 1988		NNWSI-006	
Revision No.	Supersedes	Page	of
1	0	1	6

**SUBJECT:**  
**DESIGN ANALYSIS**

**1.0 PURPOSE**

This procedure outlines the requirements for the preparation and control of design calculations.

**2.0 SCOPE**

This procedure applies to all design calculations developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) project.

**3.0 REFERENCES**

- 3.1 NNWSI Procedure NNWSI-002, Indoctrination, Training, Certification, and Qualification
- 3.2 NNWSI Procedure NNWSI-004, Controlled Distribution of Design Documents
- 3.3 NNWSI Procedure NNWSI-007, Design Input
- 3.4 NNWSI Procedure NNWSI-008, Quality Assurance Records Management
- 3.5 NNWSI Procedure NNWSI-013, Software Quality Assurance
- 3.6 NNWSI Procedure NNWSI-027, Departmental Filing System Procedure

SAIC/T & MS  
MAY 11 1988  
C C F RECEIV

**4.0 DEFINITIONS**

- 4.1 Preliminary Calculation: A calculation which is the basis of conceptual or preliminary design.
- 4.2 Working Calculation: A calculation which forms the basis for drawings or specifications, but which is prepared with information which may change. This information may be assumptions or other working calculations used as references that require verification.
- 4.3 Final Design Calculation: A calculation based on information that is considered final and which forms the basis of drawings, final specifications, or other design documents used to construct the facility.
- 4.4 Superseded Calculation: A superseded calculation is a completed calculation which is replaced by another completed calculation.

Design Department  
Responsible Management

*C.D. Wright* 5/19/88  
Concurrence

*Joseph C. Labovitz*  
Approval 5/16/88

NNWSI-1 (5/88)

4.5 **Voided Calculation:** A voided calculation is a previously completed calculation for a system which is no longer required.

## 5.0 RESPONSIBILITIES

5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.

5.2 The Design Section Chief (DSC) shall ensure that all calculations for the NNWSI project are prepared and checked according to the requirements of this procedure.

## 6.0 PROCEDURE

### 6.1 Preparation

6.1.1 All calculations will be based on the accepted and approved list for design inputs in accordance with Procedure NNWSI-007.

6.1.2 **Calculation Form:** All calculations prepared by hand are to be on H&N Calculation Sheets, Form 231-3 (Attachment 8.2). Each page shall be numbered consecutively. The calculation number, Reference 6.1.9, and title shall appear on each sheet. The originator will initial and date each sheet. All calculations require a calculation cover sheet (Attachment 8.1).

6.1.3 **Contents of Calculation:** Calculations shall be orderly and complete so that the work can be understood by other knowledgeable individuals. Informational diagrams (e.g., load, flow, voltage), sketches, or drawings of important details not considered standard shall be included as part of the calculation. The source of this information shall be identified.

6.1.4 **Calculation Sources:** Each new calculation shall be preceded with a reference list of the applicable criteria, design assumptions, applicable codes, standards, and references, including the issue date and revision of each, as well as major equation sources. A page from the source of an equation may be included as an attachment of the calculation.

### 6.1.5 Calculation Status

6.1.5.1 When final input data is available or assumptions are verified, it is the responsibility of the Design Section Chief to ensure that preliminary or working calculations are rechecked. The new data shall be evaluated and any necessary changes shall be incorporated as outlined in paragraph 6.2.6. This review will be documented by revising the cover sheet.

6.1.5.2 If no revision is necessary, the revision description on the cover sheet shall be labeled "Reviewed and Classified Final".

6.1.5.3 If a revision is necessary, the revision shall be prepared, and the description on the cover sheet shall be labeled "Revised and Classified Final".

#### 6.1.6 Computer Analysis

6.1.6.1 For Quality Assurance Level I and II activities, all computer software, except software such as word processors; data bases involving no design calculation; or CAD programs limited to drafting only; shall be validated/verified in accordance with Procedure NNWSI-013.

6.1.6.2 All calculations including QA Level III activities, involving computer printouts shall have an accompanying calculation package containing sufficient information for a competent individual to accept or verify the results using inputs and assumptions.

6.1.6.3 The computer calculation package shall contain:

6.1.6.3.1 A completed Calculation Cover Sheet

6.1.6.3.2 A complete outline of the problem

6.1.6.3.3 A complete set of inputs

6.1.6.3.4 A complete set of outputs

6.1.6.3.5 Identification of the program/version used

6.1.6.3.6 Identification of the type of computer equipment used

6.1.6.3.7 All numbered sheets

6.1.7 Programmable Calculators: If a programmable calculator is used, the calculation shall be sufficiently detailed so that the checker can verify results. For Quality Assurance Level I and II calculations, the calculations shall list the calculator name and the title and description of the program used. The description and title of the program shall include the revision number and card or chip identification.

6.1.8 Calculations performed for other projects may be used if the application and conditions are similar, and if the originator and checker are clearly identified. These calculations shall be rechecked for applicability, criteria, and assumptions. A new Calculation Cover Sheet shall be generated per this procedure.

6.1.9 Calculation Number: Calculations shall be numbered consecutively beginning with X-0001. The alphabetical character (X) shall represent the discipline preparing the calculation (i.e., A for Architectural, C for Civil, E for Electrical, FP for Fire



Protection, M for Mechanical, S for Structural, and W for Communications). The Design Section Chief or his/her designee shall assign the number and maintain a calculation log (Attachment 8.3) to status the calculations and ensure that calculation numbers are not duplicated.

## 6.2 Checking

6.2.1 All design calculations will be checked by individuals whose qualifications are sufficient to have produced the original.

6.2.2 The checker will not be the originator of the calculation. For QA Level I and II, the design calculation checking will be performed by individuals from other than NNWSI departments. These individuals will have had no input into the original design.

### 6.2.3 Checking Hand Calculations

6.2.3.1 Checking may be accomplished by a critical review of the calculation or by the use of an alternate calculation. Approximation methods may be adequate for checking.

6.2.3.2 The checker shall check calculations for assumptions, analytical methods, completeness, compliance with design criteria, and the adequacy of design.

6.2.3.3 The checker shall verify that the originator's results are accurate and that numerical differences found do not affect validity of the results. These differences shall be highlighted on the original calculation. Any significant differences shall be resolved with the originator.

6.2.3.4 The checker shall initial each page of the calculation when satisfied, except if an alternate means was utilized. If an alternate calculation was used, the cover sheet of the calculation being checked should indicate "Alternate Check Calculation, Page X (first page number) Attached". Each page of the alternate calculation shall be initialed by the originator.

6.2.3.5 After completion of the check, the checker shall initial the cover sheet.

### 6.2.4 Checking Computer Calculations

6.2.4.1 The checker shall verify the completeness of the computer calculation package (reference paragraph 6.1.6.3).

6.2.4.2 The checker shall verify the applicability of assumptions and program.

6.2.4.3 The checker shall verify that input data is correct.

- 6.2.4.4 The checker shall verify that output data is applicable and reasonable.
- 6.2.4.5 The checker shall initial and date the checkblock on the calculation cover sheet, when satisfied with the calculation.
- 6.2.5 After completion of the calculation check the DSC will review the package to ensure compliance to this procedure. His/her initial will signify concurrence.
- 6.2.6 Calculation Revisions
- 6.2.6.1 Revisions to completed calculations shall be checked, reviewed, and approved in the same manner as the original calculation. Only those parts of the completed calculation which are affected by the revision need to be checked, although the entire original calculation shall be reviewed to determine which parts are affected. If other interfacing or referenced documents are affected by the revisions and require revision, that organization responsible for the document shall be officially notified.
- 6.2.6.2 Revision shall be accomplished as follows:
- 6.2.6.2.1 Page Replacement: Revisions which require that new sheet(s) be prepared to replace the revised portion of the original calculation shall be completed and initialed by the originator, and checked and initialed by the checker. The revised portion of the original shall be lined out, initialed by the originator, identified by appropriate revision indicator, and referenced to the replacement page number.
- 6.2.6.2.2 Line Out Change: If sufficient space exists, the originator shall line out the portion to be revised, add the new information adjacent to line out, and affix appropriate revision identification. No erasures are allowed. The originator's and checker's approval need only be shown one time on each sheet for all changes on that sheet.
- 6.2.6.3 If calculation sheets are added, the added pages will be numbered (e.g., 10a, 12a, 13). The alphabetical character will be assigned when replacement pages are added to replace or supplement existing data on specific sheets.
- 6.2.6.4 The cover sheet(s) shall indicate the sheet being revised, added, or deleted in the revision block (e.g., Revised 10, 12, Added 10a, 12a, and 13).

**6.2.6.5 Revision To Supersede or Void a Calculation**

**6.2.6.5.1** To supersede a calculation, the Calculation Cover Sheet shall be advanced one revision and approved and dated by the Design Section Chief. The revision description shall contain the note "Superseded by Calculation XXXXXX".

**6.2.6.5.2** To void a calculation, the calculation cover sheet shall be advanced one revision, and approved and dated by the Design Section Chief. The revision description shall be "Void".

**6.2.6.6** The calculation log shall be updated each time a calculation is revised.

**7.0 DOCUMENTATION**

**7.1** The DSC/designee shall be responsible for maintaining the design calculation control file in accordance with Procedure NNWSI-027 which will include:

**7.1.1** Original calculation package

**7.1.2** Checked calculation package

**7.1.3** Revisions

**7.1.3.1** Revised original package

**7.1.3.1** Checked revised calculation package

**7.1.4** Master calculation log

**7.2** The Design Section Chief shall submit a copy of each calculation or calculation revision, suitable for microfilming, to the TP Office Records Center in accordance with Procedure NNWSI-008.

**8.0 ATTACHMENTS**

**8.1** NNWSI Calculation Cover Sheet

**8.2** H&N Calculation Form Sheet, Form 231-3

**8.3** NNWSI Calculation Log

ATTACHMENT 8.1

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

CALCULATION COVER SHEET

CALCULATION CLASSIFICATION

PAGE \_\_\_ OF \_\_\_

PRELIMINARY

WORKING

FINAL




CALCULATION NUMBER \_\_\_\_\_

SUBJECT \_\_\_\_\_

PROJECT ID \_\_\_\_\_

WBS NUMBER \_\_\_\_\_

REMARKS:

REVISIONS

REV.	DESCRIPTION	ORG	CHCKR	DSC

**TYPICAL**

ATTACHMENT B.2  
R&N CALCULATION SHEET

NKWSI-006, Rev. 1  
Page 1 of 1 <sup>231-2 (11/80)</sup>

HOLMES & NARVER, INC.  
ENGINEERS • CONSTRUCTORS  
ENERGY SUPPORT DIVISION

JOB NO. \_\_\_\_\_

SHEET \_\_\_\_\_ OF \_\_\_\_\_

TITLE \_\_\_\_\_ BY \_\_\_\_\_ DATE \_\_\_\_\_

**TYPICAL**

ATTACHMENT 8.3

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

CALCULATION LOG

Calc. No.	Rev.	Type		Date/ Final	Remarks
		Prelim.	Working		
(1)	(2)	(3)	(4)	(4)	(5)
					(1) Enter the Calculation Number
					(2) Enter the Revision Number
					(3) Mark the Appropriate Calculation Classification
					(4) Enter Date the Calculation Is Classified As Final
					(5) Enter Remarks (e.g., "Void" or "Superseded")

**TYPICAL**



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date	Number
August 11, 1988	NNWSI-007

SUBJECT:  WORK INITIATION	Revision No.	Supersedes REV. 0 ICN 001	Page	of
	1		1	3

NNA.880805.0010

**1.0 PURPOSE**

This procedure defines the requirements for distributing criteria and initiating work.

**2.0 SCOPE**

This procedure applies to the initiation of work performed by the Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

- 3.1 NNWSI-008, Quality Assurance Records Management
- 3.2 NNWSI-027, Departmental Filing system Procedure

**4.0 DEFINITIONS**

None

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.
- 5.2 Project Engineering (PE) is responsible for initiating and overseeing work being performed for the NNWSI Project and to ensure compliance with this procedure.
- 5.3 The assigned departments are responsible for performing their activities as directed by the Work Initiation in accordance with applicable procedures and specified criteria.

**6.0 PROCEDURE**

**6.1 General**

6.1.1 Project Engineering shall initiate work via a Work Initiation (WI), Attachment 8.1, based upon criteria approved by DOE/WMPO.

Resp. Dept. Project Engineer <i>[Signature]</i> Concurrency 7/25/88	<i>[Signature]</i> Concurrency 7/28/88	<i>[Signature]</i> Approval 7/28/88
--	--	---

7.2.1 Retain all documents until forwarded to the Local Records Center per Reference 3.1.

7.2.2 File documents per Reference 3.2.

7.2.3 Process the WI Control Log at the conclusion of the Project per Reference 3.1.

## 8.0 ATTACHMENTS


NNWSI Work Initiation

**NNWSI Project**

**AUG 05 1988**

**CRF Received**



 <b>HOLMES &amp; NARVER, INC.</b> <b>ENERGY SUPPORT DIVISION</b>	<b>NNWSI WORK INITIATION</b>		
	Date (2)	Number (3)	Rev. (4)
<b>SUBJECT:</b> (1)	WBS (5)	ID (6)	

**DISTRIBUTION (7)**

DOE/NTSO	SAIC	MGR. TECH. SVCS.	FIELD SURVEYS	SAFETY
DOE/WMPO	F&S	MGR. COMM. DEPT.	ENGINEERING SVCS.	ENGR. REC. LIBRARY
DOE/NV	REECo	ESTIMATING	DESIGN AREA	MGR. AREA OPS.
LANL	SUPPORT SERVICES	QUALITY ASSURANCE	TECHNICAL SUPPORT	NNWSI FILES
LLNL	MGR. FIELD OPS.	CONSTR. SERVICES	PROCUREMENT	CENTRAL FILES
SNL	MGR. FIELD SVCS.	ELECTRONICS	MATL. TEST LAB.	NDT

**ORIGINATOR:** (8)                      **AUTHORITY:** (9)                      **QA LEVEL:** (10)

**ADDRESSEE(S):** (11)                      **DUE DATE:** (12)                      **MANHOURS:** (13)

**REFERENCES:** (14)

(15) BODY

1. Work Activity Title
2. Date of Issue
3. WI Control Log Number
4. Self Explanatory
5. WBS Number
6. H&N Charge Number
7. Indicate Appropriate Distribution by: X=Information  
A=Action
8. Originating Project Engineer
9. Authorizing Document Number
10. Identify Appropriate Quality Level(s)
11. Appropriate Department(s) Responsible to Perform the Work.
12. Self Explanatory
13. Established Budget
14. Applicable Criteria Documents
15. Define Scope of Work

**NOTE: IF MORE THAN ONE QUALITY LEVEL APPLIES,  
REFERENCE THE ASSOCIATED QALAS**



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date  
 July 25, 1988

Number  
 NNWSI-008

**SUBJECT:**  
 QUALITY ASSURANCE RECORDS MANAGEMENT

Revision No. 2	Supersedes 1	Page 1	of 6
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**1.0 PURPOSE**

This procedure establishes the requirements for processing Holmes & Narver, Inc. (H&N) generated Quality Assurance (QA) Records for the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**2.0 SCOPE**

This procedure applies to the handling and storage of all QA Records from the time the QA Record is generated through submittal of the record to the Project Record Center (PRC).

**3.0 REFERENCES**

- 3.1 NNWSI Quality Assurance Records Management System (QARMS) Data Base Operations User's Guide, Version 0, Release 1.0
- 3.2 SOP-03-03, Acceptance of Data or Data Interpretation not Developed Under the NNWSI QA Plan
- 3.3 NNWSI-026, Microfilming and Archival Storage Services Facility (MASSF)
- 3.4 NNWSI-027, Departmental Filing System Procedure

**4.0 DEFINITIONS**

- 4.1 Quality Assurance Record: A completed document that furnishes documentary evidence of the quality of an item or quality affecting activity.
- 4.2 Document date: The date (Month/Day/Year) the document was completed (authenticated).
- 4.3 One-of-a-kind records: Records that cannot be duplicated or microfilmed.

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.
- 5.2 Managers/Supervisors of departments originating records shall ensure that all applicable records are transmitted to the Local Records Center (LRC) in accordance with this procedure.

Resp. Dept. Admin./Budget

*James Lee J. Vander*  
 Concurrency

PPS

*P. J. Murphy*  
 Concurrency 7/14/88

*Joseph C. Ashburn*  
 Approval 7/15/88

5.3 The Records Coordinator (RC) is responsible for the receipt, review, and computer indexing of the records into the QARMS, and for the transmittal of these records to the MASSF for microfilming, as well as for the subsequent central data base updates.

## 6.0 PROCEDURE

### 6.1 General Requirements

6.1.1 Each department shall initiate records as prescribed by the implementing NNWSI procedures applicable to that activity.

6.1.2 Records shall be filed within each department in accordance with Reference 3.4.

6.1.3 Records generated prior to August 1980 shall be accepted in accordance with Reference 3.2.

#### 6.1.4 Correction of QA Records

6.1.4.1 The originating organization shall make corrections by drawing a single line through the portion of the document to be changed, add the new information adjacent to the line out, and initial and date. White-out or erasing the old information is not permitted.

6.1.4.2 If the correction is made after the original document has been submitted to the LRC, the correction shall be made as prescribed in 6.1.4.1, on a copy of the original document and resubmitted to the LRC. The RC shall process the records as prescribed by this procedure and assure that the corrected record is cross-referenced to the original record.

#### 6.1.5 Records Storage

6.1.5.1 Records shall be stored and maintained in a manner that minimizes the risk of theft and vandalism; damage, or destruction from winds, floods, fire; environmental conditions, such as temperature and humidity; infestation of insects, mold, and rodents.

6.1.5.2 Records shall be filed in dual storage facilities or in alternate storage facilities, such as a two-hour fire-rated vault or in two-hour rated Class B file containers, which meet the requirements of the National Fire Protection Association (NFPA) 232. Dual facilities shall be at locations sufficiently remote from each other to eliminate the chance of exposure to a simultaneous hazard.

6.1.5.3 Access to the LRC files shall be controlled to preclude unauthorized entry. A controlled access list shall be maintained designating personnel that have access to the files.

- 6.1.5.4 Provisions shall be made in the storage facilities 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.
- 6.1.5.5 Replacement, restoration, or substitution of lost or damaged records shall be accomplished within 90 days following determination that a record is lost or damaged.

## 6.2 Records Processing - Originating Department

- 6.2.1 The originating department shall submit the original or a copy of the record(s), suitable for microfilming, to the LRC utilizing the Transmittal Form, Attachment 8.1. If the records are submitted as a package, an index containing the information of Attachment 8.1, or Attachment 8.1, shall be provided to account for each document in the package.
- 6.2.2 Records may be submitted as an individual document or as a package based on the following:
  - 6.2.2.1 A record may be submitted individually if it meets any of the following criteria:
    - 6.2.2.1.1 A one-of-a-kind item.
    - 6.2.2.1.2 Referenced in a formally published report.
    - 6.2.2.1.3 Intended for individual reference or distribution.
    - 6.2.2.1.4 The output of a Work Breakdown Structure (WBS) sub-level task, or it is in response to an action item, or it is otherwise indicated to be an individual and discrete unit of work.
    - 6.2.2.1.5 One of a series of records to be submitted over a period of time.
  - 6.2.2.2 A record may be submitted as part of a package if it meets any of the following criteria:
    - 6.2.2.2.1 In support of an activity for the issue of a report study, evaluation, or assessment.
    - 6.2.2.2.2 More meaningful and useful in the content of a collection than it would be individually.
    - 6.2.2.2.3 One of a collection of records that is created, filed, or referenced collectively.
    - 6.2.2.2.4 One of a collection of records representing raw, back-up, or supporting data.

6.2.3 The originating department shall ensure that:

6.2.3.1 Records are complete, i.e., attachments and appendices, etc., are included and no pages are missing.

6.2.3.2 That all pages are legible and suitable for microfilming.

6.2.3.2.1 No documents shall be folded. This will also include documents having a dimension greater than 14 inches.

6.2.3.2.2 The original, or a photo copy of computer printouts, shall be submitted as the record.

6.2.3.3 Each record is appropriately dated or stamped, signed, initialed, or otherwise authenticated.

6.2.4 Each department shall retain copies of the documents for information.

### 6.3 Records Processing - Local Records Center

6.3.1 The RC shall acknowledge receipt of the records by signing and returning a copy of Attachment 8.1 to the originator.

6.3.2 The RC shall ensure:

6.3.2.1 That records are of acceptable quality for microfilming.

6.3.2.2 That the required Document Transmittal Form, Attachment 8.1, with all indexing information is submitted.

6.3.2.3 That the record is complete, i.e., all referenced attachments, appendices, etc., are included and no pages are missing.

6.3.2.4 That the record is dated and stamped, initialed or signed, or otherwise authenticated as required by the applicable procedure.

6.3.2.5 Documents found to be unacceptable for microfilming shall be removed and a slip sheet placed in lieu of the document. The slip sheet shall have the information that correlates to the sheet/document to be replaced. Unsuitable document(s) shall be processed as follows:

6.3.2.5.1 The RC shall return the record, along with a Rejection Memo, Attachment 8.2, to the originator for corrective action.

6.3.2.5.2 The originating department shall provide a suitable copy for microfilming, or if a better copy is not available, return the original and indicate that it is best available copy.

6.3.2.5.3 The RC shall remove the slip sheet and insert the copy of the record provided by the originating department. If the original record is used, a copy of Attachment 8.3 shall be placed in front of the record, or if space is available on the record, the RC may stamp the document "Best Available Copy" on the face of the document.

#### 6.4 Preparation and Submittal of Documents

6.4.1 The RC shall assign the next available Records Management System (RMS) number to the document in accordance with Section 4.6 of the QARMS Data Base User's Guide. If the record is a one-of-a-kind item which cannot be marked with an identifying RMS number, the RC shall write the RMS number on a label or tag which can be affixed to the item or it's container, and shall complete a Cross-Reference Target, Attachment 8.4, for microfilming. The one-of-a-kind document shall be retained in the LRC until such time as the RMS provides appropriate instructions for processing a one-of-a-kind items.

6.4.2 The RC shall mark the first page of each record with the "START" stamp.

6.4.3 The RC shall assign each record a "Document Type" in accordance with the QARMS Document Type list. If there is no appropriate document type, contact the NNWSI Records Administrator to establish an appropriate "Document Type".

6.4.4 The RC shall enter the record information into the data base as prescribed by Section 4 of the QARMS User's Guide.

6.4.5 The RC shall prepare and transmit the records via a Transmittal Record, Attachment 8.5, to MASSF for microfilming as prescribed by Section 5 of the QARMS User's Guide.

6.4.5.1 Records, except for oversize documents, shall be shipped to the MASSF in Standard Archive Boxes (GSA No. 8115-00-117-8344). The records shall be placed in the box with the lowest RMS Number first, facing forward, and the "START" stamp facing to the inset.

6.4.5.2 Records shall remain in binders, folders, or left in bound condition.

6.4.5.3 Two sided sheets shall be flagged by placing a slip sheet in front of each two sided document.

6.4.5.4 Replace all colored sheets with white photo copies.

6.4.5.5 Repair damaged documents (torn or rough edges).

6.4.5.6 Oversize Documents

- 6.4.5.6.1 Remove oversize documents and replace with a slip sheet identifying the document.
- 6.4.5.6.2 Identify multi-page documents with RMS number and page number.
- 6.4.5.6.3 Place oversize documents in a suitable container and submit along with associated transfer box.

6.4.5.7 Assign transfer box numbers and assure that an index is included with boxes and oversize containers.

6.4.6 The RC, prior to transmitting the records to MASSF, shall update the QARMS Data Base as prescribed by Section 4 of the QARMS User's Guide, and duplicate each record, except one-of-a-kind records, and store them in a two-hour fire-rated cabinet until MASSF has satisfactorily microfilmed the records.

6.4.7 The RC shall prepare a data diskette and transmit to MASSF, under separate cover, as prescribed by Section 5.3.1 of the QARMS User's Guide.

#### 6.5 RC Acceptance of Microfilm

6.5.1 Review the microfilm for acceptance.

6.5.2 Complete the acceptance portion of the Microfilm Transmittal, Attachment 8.6 and return to MASSF.

6.5.3 Update the QARMS Data Base as prescribed by Section 5.4.2 of the QARMS User's Guide after the microfilm has been accepted. The QARMS update and new information shall be submitted to the PRC at least once month.

6.5.4 Store microfilm for history and future use.

#### 7.0 DOCUMENTATION

None

#### 8.0 ATTACHMENTS

8.1 Transmittal Form

8.2 Rejection Memo

8.3 Best Available Copy

8.4 Cross-Reference Target

8.5 Transmittal Record

8.6 Microfilm Transmittal/Acceptance Form

**NNWSI QUALITY ASSURANCE RECORDS  
TRANSMITTAL FORM**

DATE: \_\_\_/\_\_\_/\_\_\_

TO: Records Coordinator, M/S 519

FROM: \_\_\_\_\_

**QA RECORD INFORMATION**

Originating Person(s) and/or Department: \_\_\_\_\_

Document Identification Number (if applicable): \_\_\_\_\_

Document Title or Subject: \_\_\_\_\_

WBS Number(s): \_\_\_\_\_

Document Date: \_\_\_/\_\_\_/\_\_\_

Quality Level (1, 2, or 3): \_\_\_\_\_

Pages: \_\_\_\_\_

Pertinent Technical Data: (e.g., borehole number, instrument serial number, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Receipt Verification**

I have received the above listed material. Please sign below and return within 15 days.

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



HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
REJECTION MEMO

DATE: \_\_\_/\_\_\_/\_\_\_

TO: \_\_\_\_\_

FROM: Records Coordinator

SUBJECT: Receipt Inspection of NNWSI QA Record(s):  
\_\_\_\_\_  
\_\_\_\_\_

We have inspected the enclosed document(s) and determined that it (they) is (are) not acceptable for further processing and inclusion in the NNWSI Records Management System for the reason(s) marked below.

- Incomplete (pages or attachments missing)
- Not properly authorized (required signatures, authentication missing)
- Required transmittal form missing
- Incomplete data available for document indexing
- Document quality is poor. Will not provide adequate microfilm image.

Please take the appropriate correction action and return the document to the Records Processing Center. The Center staff is available to assist you in preparing documents for processing.

**BEST**

**AVAILABLE**

**COPY**

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
CROSS REFERENCE TARGET

This target replaces the item that was originally filed or referenced in this document. The item is not suitable for microfilming and has been stored in its original state or format in an archival storage facility. See data base for physical location of this item.

RMS Number

---

Identification

---

---

Description

---

---

---

HOLMES & NARVER, INC.  
ENERGY SUPPORT DIVISION  
TRANSMITTAL RECORD

TO: \_\_\_\_\_ DATE: \_\_\_\_\_

FROM: RECORDS CONTROL

DRAWING/DOCUMENT/DISK NUMBER: \_\_\_\_\_

TRANSMITTALS ATTACHED  
\_\_\_\_\_

DRAWING/DOCUMENT TITLE & NUMBER	REVISION	DATE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

=====

INSTRUCTIONS/REMARKS

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

=====

PLEASE SIGN BELOW AND RETURN WITHIN FIFTEEN DAYS TO NNWSI TECHNICAL PROJECT OFFICER STATING THAT YOU HAVE RECEIVED SUBJECT MATERIAL.

ATTENTION: HOLMES & NARVERDOCUMENT/RECORDS CONTROL  
101 CONVENTION CENTER DIRVE  
LAS VEGAS, NV 89109  
M/S 519

SIGNATURE: \_\_\_\_\_



# MICROFILM TRANSMITTAL

N-OA-037  
8/85

Microfilm Transmittal Number \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_

Date \_\_\_\_\_

From: MASSF

To:

## TRANSMITTAL CONTENTS

FILM FORMAT

MICROFILM IDENTIFICATION

Cartridge

Microfiche

Aperture Cards

QARMS Diskette

### Microfilm Acceptance Certificate

- I have reviewed the microfilm listed above and accept the microfilm images as true reproduction of the OA records this organization transmitted to the MASSF for microfilming. My signature releases the hard copy records for further appropriate disposition by the MASSF.
- I have reviewed the microfilm listed above and the following discrepancies are noted:

Name

Title

Date

cc:  
NNWSI Project Records Administrator  
NNWSI Project Records Coordinator



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO. NNWSI-012

REV. 0

PAGE 1 OF 1

TITLE CORRECTIVE ACTION

DATE ISSUED April 4, 1988

### DESCRIPTION OF CHANGE

SAIC/T & MSS

APR 06 1988

Para. 3.2: Delete and substitute the following:  
"3.2 NNWSI-008, Quality Assurance Records Management."

C C F RECEIVED

Para. 6.2.1.3: Delete and substitute the following:  
"6.2.1.3 The initiator shall identify the appropriate type of action response (Remedial, Investigative, Corrective) required by affixing an "X" in the applicable boxes in Block 11. If a response for Corrective Action to Prevent Recurrence" is not required, enter "N/ and initials in Block 16."

Para. 6.2.1.4: Third line delete "14,".

Para. 6.5.2 Delete and substitute the following:  
"6.3.2 The Project QA Department Implementation Division Manager of the QA Support Contractor (SAIC) shall be on distribution of CARs upon issuance and closure."

Para. 7.0 Delete existing sentence and substitute the following:  
"All records (CARs and associated documentation) required per this procedure shall be forwarded to the Records Coordinator as prescribed by Reference J.2."

Attachment 8.1 Delete and substitute revised CAR Form ESD-QA-4A-88 which is attached.

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: April 13, 1988

Quality Assurance  
Responsible Department

*C. J. Wright*  
CONCURRENCE 3/30/88

*Joseph C. Calvino*  
APPROVAL 3/21/88

<b>HOLMES &amp; NARVER</b>		PAGE <u>1</u> OF _____	1
<b>CORRECTIVE ACTION REPORT</b>		ISSUE DATE _____	2
DISCOVERED DURING	3	UNUSUAL OCCURRENCE	4
AUDIT <input type="checkbox"/>		REPORT REQUIRED?	
SURVEILLANCE <input type="checkbox"/>	OTHER <input type="checkbox"/>	YES <input type="checkbox"/>	NO <input type="checkbox"/>
		CAR NO. _____	5
		REVISION _____	
ORGANIZATION	6	PERSON CONTACTED/TITLE	7
		RESPONSE DUE DATE	8
REQUIREMENT	9		
DEFICIENCY	10		
RECOMMENDED ACTION(S)	<input type="checkbox"/> REMEDIAL <input type="checkbox"/> INVESTIGATIVE <input type="checkbox"/> CORRECTIVE		11
INITIATOR	DATE	REVIEW AND APPROVAL	DATE
	12		13

COMPLETED BY ORGANIZATION IN BLOCK 6	REMEDIAL/INVESTIGATIVE ACTION	14
	EFFECTIVE DATE	15
	CORRECTIVE ACTION TO PREVENT RECURRENCE	16
	EFFECTIVE DATE	17
	SIGNATURE	DATE
		18

COMPLETED BY QA ORG	ORIGINAL RESPONSE	<input type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	<input type="checkbox"/> AMENDED RESPONSE	INITIATOR	DATE	REVIEW AND APPROVAL	DATE	19
	AMENDED RESPONSE	<input type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT		INITIATOR	DATE	REVIEW AND APPROVAL	DATE	20
	VERIFICATION	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		INITIATOR	DATE	REVIEW AND APPROVAL	DATE	21
	QA CLOSURE							22

**INSTRUCTIONS FOR COMPLETION OF THE CAR FORM.**

- BLOCK 1** PAGINATE — Self explanatory
- BLOCK 2** ISSUE DATE — Self explanatory
- BLOCK 3** DISCOVERED DURING — Check the appropriate box
- BLOCK 4** UNUSUAL OCCURRENCE REPORT REQUIRED? — Check the appropriate box based on the preliminary evaluation for potential reportability in accordance with H&N/ESD Procedure 1706.
- BLOCK 5** CAR No. — Enter number in accordance with the following guide:
- |    |   |     |   |
|----|---|-----|---|
| XX | X | XXX |   |
| ↑  | ↑ | ↑   |   |
|    |   |     | A three-digit sequential number; e.g., 001, 002.    |
|    |   |     | "A" for audit, "S" for surveillance, "0" for other. |
|    |   |     | Year CAR written.                                   |
- REVISION** — Self explanatory
- BLOCK 6** ORGANIZATION — Enter name of organization expected to respond to the CAR.
- BLOCK 7** PERSON CONTACTED/TITLE — Enter name and title of person(s) within organization named in Block 6 who was contacted to discuss the CAR prior to issuance.
- BLOCK 8** RESPONSE DUE DATE — Enter the date that the response is due (usually thirty days from date entered in Block 2)
- BLOCK 9** REQUIREMENT — Quote or paraphrase the requirement involved, noting the document number with revision and paragraph number. As a guide, use the lowest tiered document number; e.g. quote from the implementing procedure rather than NOA-1.
- BLOCK 10** DEFICIENCY — Briefly state condition(s) which do not meet requirement(s) then include a discussion which supports that statement and include examples of the condition.
- BLOCK 11** RECOMMENDED ACTION(S) — Check the appropriate box and enter recommended action statements concerning methods of resolution.
- BLOCK 12** INITIATOR — Sign and date.
- BLOCK 13** REVIEW & APPROVAL — COA or designee sign and date; for audits, the Lead Auditor shall sign.
- BLOCK 14** REMEDIAL/INVESTIGATIVE ACTION — Enter the actions taken/being taken to correct the examples noted in Block 10 and, when recommended, investigate to identify and correct similar conditions.
- BLOCK 15** EFFECTIVE DATE — Enter date all actions in Block 14 are expected to be completed or were completed.
- BLOCK 16** CORRECTIVE ACTION TO PREVENT RECURRENCE — Enter the cause of the deficiency entered in Block 10 and the actions taken/being taken to prevent recurrence. If procedures are being revised, enter interim plan to be used until revision is implemented.
- BLOCK 17** EFFECTIVE DATE — Enter the date all actions in Block 16 are expected to be completed or were completed.
- BLOCK 18** SIGNATURE — Signature and date of the individual responsible for completion of Blocks 14 & 16.
- BLOCK 19** ORIGINAL RESPONSE — The original response is evaluated by the initiator and CQA/designee or Lead Auditor, and the appropriate box is checked; and the signatures and dates are entered. Note: If "REJECT" is checked, revise the CAR and leave Blocks 20, 21, & 22 blank.
- BLOCK 20** AMENDED RESPONSE — The amended response is evaluated by the initiator and CQA/designee or Lead Auditor and the appropriate box is checked; the signatures and dates are entered. Note: If "REJECT" is checked, revise the CAR and leave Blocks 20 & 21 blank.
- BLOCK 21** VERIFICATION — Check the appropriate box to reflect the results of the verification and state what verification actions were taken. Enter the signatures and dates. Note: If "UNSAT" is checked, revise the CAR and leave Block 22 blank.
- BLOCK 22** QA CLOSURE — Enter the dated signature of the CQA or designee to close the CAR.





**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date  
 October 30, 1987

Number  
 NNWSI-012

**SUBJECT**  
 CORRECTIVE ACTION

Revision No.  
 0

Supersedes  
 N/A

Page of  
 1 5

NNA.871029.0033

**1.0 PURPOSE:**

This procedure establishes a system to identify, report, and obtain resolution of programmatic deficiencies and procedural violations which require remedial, investigative and/or corrective action to prevent recurrence.

**2.0 SCOPE:**

- 2.1 This procedure applies to programmatic deficiencies and procedural violations for which some degree of corrective action is deemed necessary.
- 2.2 The Corrective Action Report (CAR) is not to be used in lieu of a Nonconformance Report.

**3.0 REFERENCES:**

- 3.1 NNWSI Procedure 011 - Nonconformance Control
- 3.2 NNWSI Procedure 008 - Records Management
- 3.3 DOE Order 5000.3, Unusual Occurrence Reporting System.
- 3.4 H&N/ESD-1706, Notification, Investigation, and Reporting of Occurrences.

**4.0 DEFINITIONS**

- 4.1 Corrective Action - The measures taken to rectify conditions adverse to quality and where necessary to preclude recurrences.
- 4.2 CAR - A preformatted form used to document nonhardware-related conditions adverse to quality; and to document remedial, investigative, and corrective action and the evaluation and verification of these actions.
- 4.3 Remedial Action - The measures taken to correct the specific deficiencies identified in the CAR.
- 4.4 Investigative Action - The measures taken to examine a deficiency to determine its extent and depth and to identify all conditions similar to the examples listed in the CAR.
- 4.5 Nonconformance - A deficiency in characteristic, documentation, or procedure that renders the quality of an item unacceptable or indeterminate.

Quality Assurance  
 Responsible Organization

*C. D. Wright*  
 Concurrence

*J. P. Palino*  
 Approval

- 4.6 Item - Any level of unit assembly including structure, system, subsystem, subassembly, component, part, or material.

## 5.0 RESPONSIBILITIES

- 5.1 The Technical Project Officer (TPO) and the Chief Quality Assurance (CQA) are responsible for directing proper implementation of this procedure.
- 5.2 Management of organizations receiving CAR's are responsible for assuring timely responses and implementation of the proposed corrective action.

## 6.0 PROCEDURE

- 6.1 Each deficient condition shall be evaluated by the initiator, to determine the type of deficiency, the effect on quality, and the scope of the deficiency. Based upon the evaluation, the deficiency shall be documented as follows:

6.1.1 If the deficiency is hardware-oriented and meets the criteria of a nonconformance, a Nonconformance Report shall be initiated in accordance with reference 3.1. Where appropriate, a CAR will also be issued to document the procedural or implementation deficiency which caused the nonconforming condition or to document repetitive nonconformance.

6.1.2 If the deficiency is programmatical and constitutes a deviation from a procedure, a CAR ( Attachment 8.1) shall be initiated as prescribed by this procedure. If the deficiency is minor in nature and has been corrected and verified "on-the-spot", a CAR need not be initiated.

- 6.2 CARs shall be processed as follows:

### 6.2.1 Initiation

6.2.1.1 The initiator shall complete Blocks 1 through 12 of the CAR per the instructions provided by Attachment 8.1. If the space provided on the CAR is not sufficient, use the CAR continuation sheet, Attachment 8.2, and cross-reference the applicable block number.

6.2.1.2 The CAR number, Block 5, shall be the next sequential number obtained from the CAR Index, Attachment 8.3. The CAR Number XX-X-XXX is identified as follows: The first two digits represent the year. The third digit (A,S,O) identifies when the deficiency was identified, A=Audit, S=Surveillance, O=Other; the last three identified digits are a sequential number, i.e., 001, 002, etc.

- 6.2.1.3 The initiator shall identify the appropriate type of action responses (Remedial, Investigative, Recurrence) required by affixing an "X" in the applicable boxes in Blocks 14 and 16. If corrective action to prevent recurrence is not required, enter "N/A" and initials in Block 16.
- 6.2.1.4 The initiator shall obtain the approval and signature of the CQA or Lead Auditor, as applicable (Block 13), upon completion of Blocks 3 through 12, 14, and 16 as described above.
- 6.2.1.5 The initiator upon receiving approval (Block 13), shall complete Blocks 1, 2, and 8 and initiate a memo or letter for the CQA or TPO, as appropriate, forwarding the CAR to the appropriate level of management for their action.
- 6.2.2 CAR Response:
- 6.2.2.1 Management of the organization identified in Block 6 shall evaluate the deficiencies, determine root cause, take appropriate corrective action to resolve the problem, complete Blocks 14 through 18 by the response date (Block 8) per the instructions provided by Attachment 8.1, and formally return the CAR to the CQA.
- 6.2.2.2 Requests for extensions of the response due date or the effective dates committed by the responding organization shall be justified to the QA prior to the due date or effective date. The CAR initiator, the CQA, or lead auditor, as appropriate, shall evaluate and approve or deny the request and document the same.
- 6.2.2.3 If the CAR response is not received by the assigned due date, the initiator or designee shall investigate to determine if a response is in the process of being submitted. If the response is not in the process of being submitted, a letter or memo, as appropriate, shall be sent to the next higher level of management identifying the lack of a timely response and shall request that appropriate action be taken.
- 6.2.3 Evaluation of CAR Response
- 6.2.3.1 The initiator, lead auditor, or the CQA shall evaluate the response to ensure that:
- 6.2.3.1.1 The remedial action taken or proposed is appropriate to correct the specific deficiencies identified.
- 6.2.3.1.2 The investigative action taken or proposed is satisfactory to determine the depth and extent of the deficiencies.

6.2.3.1.3 The corrective action to prevent recurrence appropriately identifies the cause of the deficiency and that the action(s) taken or proposed will prevent recurrence.

6.2.3.2 Upon completion of the evaluation of the response, the initiator shall complete Block 19 by checking the appropriate box, shall sign and date the CAR, and shall obtain the CQA or lead auditor's approval.

6.2.3.2.1 An amended reponse shall be requested if clarification of the proposed corrective action is deemed necessary. Final evaluation of the amended response shall be documented in Block 20.

6.2.3.2.2 If the response is unacceptable and an amended response is not deemed appropriate, the response shall be rejected and so annotated in Block 19. The original CAR shall be closed out and the CAR reissued as a revision (same CAR number plus a revision number) in accordance with this procedure, except as follows:

6.2.3.2.2.1 The "Deficiency" Block 10, shall be amended to reflect the reason for the rejection.

6.2.3.2.2.2 The assigned response due date shall be no more than fifteen working days from the date of issue.

6.2.3.2.2.3 The response must address all the deficiencies, including the reason for rejection.

#### 6.2.4 CAR Verification

6.2.4.1 When an acceptable response or amended response has been received and approved (Blocks 19 & 20), verification shall be completed in a timely manner based upon the effective dates committed to by the responding organization.

6.2.4.2 Request for extensions of the effective date for completion of committed corrective actions shall be made in writing by the responsible organization and must be submitted prior to the effective date. These extension requests must contain sufficient justification for the extension.

6.2.4.3 If remedial and corrective actions are not completed by the effective date specified or are not properly or

completely implemented, an evaluation shall be performed by QA to determine what action should be taken. If the CAR is to be rejected, it shall be handled in accordance with paragraph 6.2.3.2.2. If the CAR only requires minor changes and/or clarification, an amended response will be requested from the responding organization.

6.2.4.4 Results of the verification, including appropriate details of the verification performed, shall be documented in Block 21. The verifier shall obtain the "review and approval" of the CQA or lead auditor.

#### 6.2.5 CAR Closure

Upon satisfactory verification, the CAR shall be submitted to the CQA for review and closure (Block 22).

6.2.6 A centralized log shall be maintained by the QA so that the status of open CAR's can be readily determined.

### 6.3 CAR Distribution

6.3.1 The responsible organization shall be notified by letter or memo, as appropriate, when a CAR is officially closed.

6.3.2 The Waste Management Project Office QA Support Contractor shall be distribution for CAR's upon issuance and closure.

### 6.4 Trending

Corrective action reports shall be analyzed by Quality Assurance at least twice each year to show quality trends. Results shall be reported to upper management for review and assessment.

## 7.0 DOCUMENTATION

All documents associated with the processing of the CAR shall be processed in accordance with Reference 3.2.

## 8.0 ATTACHMENTS

8.1 Corrective Action Report

8.2 Corrective Action Report Continuation Sheet

8.3 Corrective Action Report Index

<b>HOLMES &amp; NARVER, INC.</b>		PAGE <u>1</u> OF _____	1
<b>CORRECTIVE ACTION REPORT</b>		ISSUE DATE _____	2
DISCOVERED DURING		UNUSUAL OCCURRENCE	3
AUDIT <input type="checkbox"/>	SURVEILLANCE <input type="checkbox"/>	OTHER <input type="checkbox"/>	4
REPORT REQUIRED?		CAR NO. _____	5
YES <input type="checkbox"/> NO <input type="checkbox"/>		REVISION _____	6
ORGANIZATION	PERSON CONTACTED/TITLE	RESPONSE DUE DATE	7
REQUIREMENT		8	
DEFICIENCY		9	
RECOMMENDED ACTION(S)		10	
INITIATOR	DATE	REVIEW AND APPROVAL	11
		DATE	12

COMPLETED BY ORGANIZATION IN BLOCK 6	REMEDIAL ACTION <input type="checkbox"/>	INVESTIGATIVE ACTION <input type="checkbox"/>	13
			14
			15
	EFFECTIVE DATE _____		16
CORRECTIVE ACTION TO PREVENT RECURRENCE <input type="checkbox"/>		17	
		18	
EFFECTIVE DATE _____		19	
SIGNATURE _____		DATE _____	20

QA ORG	ORIGINAL RESPONSE	<input type="checkbox"/> ACCEPT <input type="checkbox"/> AMENDED RESPONSE	INITIATOR _____	DATE _____	REVIEW AND APPROVAL _____	DATE _____	21
	AMENDED RESPONSE	<input type="checkbox"/> ACCEPT <input type="checkbox"/> REJECT	INITIATOR _____	DATE _____	REVIEW AND APPROVAL _____	DATE _____	22
	VERIFICATION	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	INITIATOR _____	DATE _____	REVIEW AND APPROVAL _____	DATE _____	23
COMPLETE	QA CLOSURE		DATE _____		24		

INSTRUCTIONS FOR COMPLETION OF THE CAR FORM.

- BLOCK 1 PAGINATE - Self explanatory
- BLOCK 2 ISSUE DATE - Self explanatory
- BLOCK 3 DISCOVERED DURING - Check the appropriate box
- BLOCK 4 UNUSUAL OCCURRENCE - REPORT REQUIRED? - Check the appropriate box based on the preliminary evaluation for potential reportability in accordance with Reference 3.3 and 3.4.
- BLOCK 5 CAR NO. - Enter number in accordance with the following guide:  
XX X XXX  
| | | A three-digit sequential number; e.g. 001, 002.  
| | | "A" for audit findings, "S" for surveillance findings.  
| | | "O" for findings found by other methods.  
| | | Year CAR written.  
REVISION - Self explanatory
- BLOCK 6 ORGANIZATION - Enter name of organization expected to respond to the CAR.
- BLOCK 7 PERSON CONTACTED/TITLE - Enter name and title of person(s) within organization named in Block 6 who was contacted to discuss the CAR prior to issuance.
- BLOCK 8 RESPONSE DUE DATE - Enter the date that the response is due (usually twenty working days from date entered in Block 2).
- BLOCK 9 REQUIREMENT - Quote or paraphrase the requirement involved, noting the document number with revision and paragraph number. As a guide, use the lowest tiered document, e.g., quote from the implementing procedure rather than the QAPP.
- BLOCK 10 DEFICIENCY - Briefly state condition(s) which do not meet requirement(s); then include a discussion which supports that statement and include examples of the condition.
- BLOCK 11 RECOMMENDED ACTION(S) - Enter recommended action statements concerning methods of resolution.
- BLOCK 12 INITIATOR - Enter the signature and date.
- BLOCK 13 REVIEW & APPROVAL - CQA or designee enter signature and date; for audits, the Lead Auditor shall sign.
- BLOCK 14 REMEDIAL ACTION - Enter the actions taken/being taken to: (a) correct the examples noted in Block 10 and (b), as necessary, investigate, identify, and correct similar conditions.
- BLOCK 15 EFFECTIVE DATE - Enter date all actions in Block 14 are expected to be completed or were completed.
- BLOCK 16 CORRECTIVE ACTION TO PREVENT REOURENCE - Enter the cause of the deficiency entered in Block 10 and the actions taken/being taken to prevent recurrence. If procedures are being revised, enter interim plan to be used until revision is implemented.
- BLOCK 17 EFFECTIVE DATE - Enter date all actions in Block 16 are expected to be completed.
- BLOCK 18 SIGNATURE - Enter the signature and date of the individual responsible for completion of Blocks 14 & 16.
- BLOCK 19 ORIGINAL RESPONSE - The original response is evaluated by the initiator and CQA/designee or Lead Auditor, and the appropriate box is checked; and the signatures and dates are entered. Note: If "REJECT" is checked, Blocks 20, 21, & 22 are left blank, and the CAR is revised.
- BLOCK 20 AMENDED RESPONSE - The amended response is evaluated by the initiator and CQA/designee or Lead Auditor and the appropriate box is checked; the dated signatures are entered. Note: If "REJECT" is checked, Blocks 20 & 21 are left blank, and the CAR is revised.
- BLOCK 21 VERIFICATION - Check the appropriate box to reflect the results of the verification, and state what verification actions were taken. Enter the dated signatures. Note: If "UNSAT" is checked, leave Block 22 blank, and revise the CAR.
- BLOCK 22 QA CLOSURE - Enter the dated signature of the CQA or designee to close the CAR.
- NOTE: IF ADDITIONAL SPACE IS REQUIRED. USE THE CAR CONTRIBUTION GUIDE

HOLMES & NARVER, INC.  
**CORRECTIVE ACTION REPORT**  
CONTINUATION SHEET

PAGE \_\_\_\_\_ OF \_\_\_\_\_

CAR NO.: \_\_\_\_\_

REVISION: \_\_\_\_\_







**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

May 1, 1987

Number

NNWSI-013

**SUBJECT**

SOFTWARE QUALITY ASSURANCE

Revision No.

0

Supersedes

N/A

Page

1

of

7

**1.0 PURPOSE**

The purpose of this procedure is to establish the internal process for ensuring software quality and documenting software usage for Nevada Nuclear Waste Storage Investigations (NNWSI) quality related items and activities.

**2.0 SCOPE**

Application of this procedure is limited to software which directly impacts quality functions within NNWSI Quality Level I and Quality Level II activities. This procedure primarily applies to scientific and engineering software which perform data acquisition and analysis or engineering design and analysis.

**3.0 REFERENCES**

NNWSI-008 Records Management

**4.0 DEFINITIONS**

**4.1 Software**

A set of computer instructions that perform a specific task or group of tasks for the computer user; a computer program; and a computer code. Examples: Structural Analysis program, Computer-Aided Drafting (CAD) package, HVAC design spreadsheet, real-time data acquisition programs, database programs, word processors, electronic spreadsheets, etc.

**4.2 Source Code**

A set of computer operations specified in some programming language that make up computer program. Examples of programming languages: Assembly, FORTRAN, BASIC, Pascal, "C", dBASE III.

**4.3 Commercial Software**

A software product that was purchased or obtained by Holmes & Narver from the public domain and that has been used for projects other than the NNWSI program.

**4.4 In-House Software**

Software originated and developed by Holmes & Narver, Inc. (H&N).

Systems

Responsible Department

*C. D. Wright*

Concurrence

*J. P. Pedalino*

Approval

#### 4.5 Software Validation

A documented justification that equations, numerical methods and logical processes embodied in software unit suitably apply to the problem intended to be solved.

#### 4.6 Software Verification

A documented confirmation that the software performs exactly the mathematical and logical operations described in the User's Manual and other documents.

#### 4.7 Independent Peer

An individual or group with expertise comparable to that of the software creator(s) who is independent of the work in question in funding, supervision, and accountability.

#### 4.8 Trivial Calculations

Computations which could be done readily on paper or with a nonprogrammable scientific calculator.

### 5.0 RESPONSIBILITIES

5.1 The H&N NNWSI Technical Project Officer (TPO) is responsible for over-all compliance.

5.2 The H&N Communications Systems Group is responsible for controlling and directing all activities within the scope of this procedure.

5.3 The H&N Systems Group Manager is responsible for designating a NNWSI Software Quality Control Officer (SQCO).

5.4 The designated NNWSI SQCO is responsible for initially implementing this procedure and thereafter maintaining all documents required by and related to this procedure.

5.5 Department managers are responsible for ensuring that their department provide in a timely manner the basic information necessary to implement this procedure.

### 6.0 PROCEDURE

#### 6.1 Initial Compilation of Information on Existing Software

To initially implement this procedure the NNWSI SQCO shall distribute to all H&N departments a software usage questionnaire. The information to be provided by this questionnaire are the items given in paragraphs 6.3.2 through 6.3.10. Department supervisors shall assign responsible individuals within their groups to complete and return the questionnaire for all existing software that potentially may be used for NNWSI quality-related activities.

### 6.1.1 Determination and Notification of Compliance

From the information returned on each software usage questionnaire the NNWSI SQCO shall determine the deficiencies each software product may have (if any) in complying with this procedure. The NNWSI SQCO shall notify department supervisors of all identified deficiencies.

### 6.1.2 Corrective Action for Existing Software

For existing in-house software responsibility normally lies on software creator(s) for taking all corrective actions necessary to bring a software product into compliance with this procedure. In cases where software authors are no longer employees of H&N, group supervisors shall assign the task to qualified alternates.

## 6.2 New Software

After this procedure is in place, the NNWSI SQCO shall play an integral roll in planning and monitoring new software acquisitions and developments. The primary purpose of this roll is to ensure from the outset that new software products will comply with this procedure.

### 6.2.1 New Commercial Software

Prior to purchasing new software, the NNWSI SQCO shall be notified of such intended purchases. This notification shall be made in writing on a H&N Form 264, Record of Oral Information (ROI). The NNWSI SQCO shall thoroughly review the software product and its documentation for integrity of purpose. The NNWSI SQCO may request a peer review of the product before it is purchased.

### 6.2.2 New In-House Software Development

Prior to beginning new in-house software development projects, the NNWSI SQCO shall be notified of such intended developments. This notification shall be made in writing on an ROI. The NNWSI SQCO shall thoroughly explain to software creator(s) their responsibilities in checking, demonstrating, and documenting code integrity.

### 6.2.3 Software Revision

When changes are made to in-house software or commercial software for which the source code is available, the programmer assigned to the task shall first notify the NNWSI SQCO of intended changes. This notification and a complete description of the intended revisions shall communicate in writing to the NNWSI SQCO. The NNWSI SQCO shall then issue a new software catalog revision number. Appropriate source code documentation, software validation, verification, and peer review shall be repeated or amended as required.

### 6.3 Central Filing System

The NNWSI SQCO shall create and maintain a central filing system for documenting the usage of and tracking the revision and error history of all software used within the scope of this procedure. The information to be maintained on file shall be:

- 6.3.1 H&N software catalog number (see paragraph 6.4).
- 6.3.2 Software name.
- 6.3.3 Brief description of software function.
- 6.3.4 Software classification (in-house or commercial).
- 6.3.5 H&N principal user organizational unit(s).
- 6.3.6 Computer hardware and operating system on which software is used.
- 6.3.7 Software User's Manual(s).
- 6.3.8 Source code listing for in-house software and commercial software (if available).
- 6.3.9 Vendor's name and software revision code if software is commercial.
- 6.3.10 Reported errors found in software or its documentation.
- 6.3.11 All quality-related correspondence between software users and creators and the NNWSI SQCO.
- 6.3.12 Standard Form 185 (see Attachment 8.0).

### 6.4 Configuration Management

As a method of documenting software usage and changes, the NNWSI SQCO shall assign a unique H&N software catalog number to all computer programs and revisions thereto which fall under the domain of this procedure. Software catalog numbers shall be the principal internal method for identifying software usage and tracking software revisions.

#### 6.4.1 Software Catalog Number

A software catalog number shall consist of the two characters "HN", followed by four digits designating the catalog number, followed by a decimal, followed by three digits designating the software revision number. As an example, the Software Catalog Number HN0001.001 refers to software unit number one, revision number one. Software catalog numbers shall start with the number one and proceed in unitary sequence. Software revision numbers shall start with the number zero and proceed in unitary sequence. Software revision numbers shall refer to the revision of the software

as used by H&N. For commercial software the revision number shall not refer to a revision nomenclature supplied by a software vendor. For example, if H&N purchases a software package at revision Level 4.2c, it shall be initially cataloged by H&N as Revision 000. Subsequent revisions of the software as received by H&N shall be cataloged as Revisions 001, and so on. As a consequence, a software unit's current revision number will reflect the number of revisions of the software that have been used by H&N for NNWSI projects.

#### 6.5 Software Acceptance

Software is acceptable for use in quality-related activities only after the NNWSI SQCO has determined and stated in writing on a ROI that the software product fully complies with this procedure. A copy of the acceptance statement shall be filed in the Central Filing System. At this point the NNWSI SQCO shall create a central file folder for the software product, assign an H&N software catalog number, and complete the usage documentation requirements stated in Section 7.0.

#### 6.6 Requirements for Commercial Software Acceptance

Other than creating a central file folder and completing the documentation requirements stated in Section 7.0, there are no requirements for commercial software. This does not relieve any responsibilities in ensuring the correctness of design and analysis results produced by commercial software.

#### 6.7 Requirements for In-House Software Acceptance

##### 6.7.1 Documentation of In-House Source Code

Source code listings for in-house software shall be documented by the software creator(s) with comment lines to include:

- 6.7.1.1 The name assigned to the software.
- 6.7.1.2 The current H&N software catalog number.
- 6.7.1.3 A brief description of the software's purpose.
- 6.7.1.4 The name of the program creator(s).
- 6.7.1.5 The date the program was initially completed.
- 6.7.1.6 The symbolic name, meaning, and physical unit of each major variable used.
- 6.7.1.7 The symbolic name, meaning, physical unit and default value for any constant used in the program.
- 6.7.1.8 The symbolic name, purpose, and input/output variable names and purpose for each function, procedure, subroutine, segment or module invoked within the software.

6.7.1.9 A brief narrative of the flow of routine program execution.

6.7.1.10 A listed chronology of revision dates and programmer names.

#### 6.7.2 Identifications On Software Output

In-house software shall include provisions for annotating printed and plotted output with the date the output was generated and the current assigned H&N software catalog number.

#### 6.7.3 User's Manual For In-House Software

A User's Manual for in-house software shall be written by the software creator(s) explaining in detail the purpose the software, how it is invoked and used, the data and physical units required for input, and the meaning and physical units of the output. The User's Manual shall be separate from the source code but depending on its length is encouraged to be included in the source code.

#### 6.7.4 Validation of In-House Software

If in-house software contains mathematical operations, then it shall be validated as defined in paragraph 4 above by the software creator(s). For engineering applications, specific reference to governing equations in a technical publication is usually sufficient. Any numerical methods utilized for evaluating equations shall be thoroughly explained. Any limitations or circumstance under which equations, numerical methods, or logical processes employed do not apply shall be noted. Validation documentation shall be attached as an appendix to the User's Manual. Depending on its complexity and length, validation documentation is also encouraged to be included in the body of the source code.

#### 6.7.5 Verification of In-House Software

##### 6.7.5.1 Verification of Mathematical Operations

All portions of in-house software that contain mathematical operations shall be verified as defined in paragraph 4 above by the software creator(s). The amount of work necessary to verify a program's computational workings is dependent upon the complexity of the calculations involved. For trivial calculations, a simple hand calculation which follows the computations in the program will suffice. For more complex programs involving numerical methods, hand calculations may become impossible. In this case comparison with independent published or program results is required. Verification documentation shall be attached as an appendix to the User's Manual. Depending on its complexity and length, verification

documentation is also encouraged to be included in the body of the source code.

#### 6.7.5.2 Verification of Nonmathematical Operations

All portions of in-house software which is not mathematical in nature but still perform a critical function shall be verified or tested by the program creator(s) to demonstrate that it correctly executes all intended purposes as defined in the User's Manual and other related documents.

#### 6.7.6 Peer Review of In-House Software

Except for trivial calculations, in-house software, and its User's Manual (along with its accompanying validation and verification appendices) shall be reviewed by an independent peer. The independent peer shall study and judge the quality and integrity of the overall software product. Documentation of the independent peer review shall be attached as an appendix to the User's Manual.

#### 6.8 Protection of Source Code

Source code for in-house and commercial software shall be protected against inadvertent or unauthorized alteration or destruction. This shall be done by maintaining a current off-line backup copy of the source code on a magnetic media that is not accessible to anyone other than the software creator(s) and computer system administrators.

#### 6.9 Error Reporting

Confirmed errors discovered in any software or its documentation shall be immediately reported to the NNWSI SQCO. Errors shall be reported in detail on an ROI. This form shall be distributed by the NNWSI SQCO to all software users and the software creator(s) or vendor. A thorough assessment shall be made of the effects a reported error may have had on previous designs and analyses. All error assessments shall be documented and forwarded to the NNWSI SQCO and recorded in the software usage filing system.

### 7.0 DOCUMENTATION

#### 7.1 NNWSI Records Management System (RMS) Reporting Requirements

A completed standard Form 185 (Attachment 1) accompanied by all usage documentation defined in paragraph 6.3 shall be submitted to the NNWSI RMS for each software product used for quality-related activities. ROIs documenting each revision and each error also shall be forwarded to the NNWSI RMS per NNWSI-008 Records Management.

### 8.0 ATTACHMENTS

#### 8.1 (Standard Form 185, Federal Information Processing Standard Software Summary)

NWS106(2):ag  
04/22/87



## FEDERAL INFORMATION PROCESSING STANDARD SOFTWARE SUMMARY

01. Summary date Mo. Day	02. Summary prepared by (Name and Phone)	03. Summary action New Replacement Deletion <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Previous Internal Software ID
04. Software date Yr. Mo. Day	05. Software title	
06. Short title		07. Internal Software ID

08. Software type <input type="checkbox"/> Automated Data System <input type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module	09. Processing mode <input type="checkbox"/> Interactive <input type="checkbox"/> Batch <input type="checkbox"/> Combination	10. Application area General Management/Business Support/Utility <input type="checkbox"/> Business Scientific/Engineering <input type="checkbox"/> Process Control Bibliographic/Textual <input type="checkbox"/> Other
--	---	---

11. Submitting organization and address	12. Technical contact(s) and phone
---	------------------------------------

13. Narrative

14. Keywords

15. Computer manufr and model	16. Computer operating system	17. Programming language(s)	18. Number of source program statements
19. Computer memory requirements	20. Tape drives	21. Disk/Drum units	22. Terminals

23. Other operational requirements

24. Software availability Available <input type="checkbox"/> Limited <input type="checkbox"/> In-house only <input type="checkbox"/>	25. Documentation availability Available <input type="checkbox"/> Inadequate <input type="checkbox"/> In-house only <input type="checkbox"/>
---	---

FOR SUBMITTING ORGANIZATION USE





# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

ICN-001

PROCEDURE NO.

NNWSI-014

REV.

0

PAGE

1

OF

1

TITLE

Design Verification

DATE ISSUED

May 6, 1988

### DESCRIPTION OF CHANGE

Add to paragraph 6.3.3 at the end:

"When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model test work shall be subject to error analysis, where applicable, prior to use in the final design work."

SAIC/T & MSS  
MAY 06 1988  
C.C.F. RECEIVED

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: May 6, 1988

Design  
Responsible Department

*C. J. Wright*  
CONCURRENCE 5/4/88

*Joseph C. Colvini*  
APPROVAL



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

002

PROCEDURE NO. NNWSI-014 REV. 0

PAGE 1 OF 2

TITLE DESIGN VERIFICATION

DATE ISSUED

Sept. 19, 1988

### DESCRIPTION OF CHANGE

Paragraph 6.3 Delete and add the following:

6.3 Design verification shall be accomplished by any one of the following: design review, alternate calculation, qualification testing, or peer review, and documented on a DVR.

Paragraph 6.3.3 Delete ICN-001 and paragraph 6.3.3 and add the following:

6.3.3 Qualification tests that involve actual physical testing of systems, structures, or components may be used to verify the adequacy of design. Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test configuration shall be clearly defined and documented. Testing shall be performed to the maximum design constraints. Testing procedures shall contain or reference the requirements and acceptance criteria. Where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. The test results shall be documented, and the results evaluated by the responsible design department. If qualification testing indicates that modifications to the item are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model test work shall be subject to error analysis, where applicable, prior to use in the final design work.

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: Sept. 26, 1988

RESP. DEPT. Design

CONCURRENCE

*Franklin J. Shuman*  
9/4/88

SP3

CONCURRENCE

*C. D. Wright*  
9/15/88

APPROVAL

*Joseph C. Colonna*  
9/15/88



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

002

PROCEDURE NO.

NNWSI-014

REV.

0

PAGE 2 OF 2

Add paragraph 6.3.4

6.3.4 Peer reviews, when used, shall address the following as applicable:

6.3.4.1 Validity of basic assumptions or functional requirements.

6.3.4.2 Alternate interpretations.

6.3.4.3 Appropriateness and limitations of methodology and procedures.

6.3.4.4 Uncertainty of results and consequences if incorrect.

6.3.4.5 Adequacy of application.

6.3.4.6 Verification of calculations or computer software.

6.3.4.7 Adequacy of requirements and criteria.

6.3.4.8 Validity of conclusions.



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date  
 June 30, 1987

Number  
 NNWSI-014

**SUBJECT:**  
 DESIGN VERIFICATION

Revision No. 0	Supersedes N/A	Page 1 of 3
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**1.0 PURPOSE**

This procedure defines the requirements for the performance and documentation of verification of design. It is intended to ensure that the systems, structures, and components are designed adequately and that the designs are integrated properly.

**2.0 SCOPE**

This procedure applies to the design of all systems, structures, and components developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

- 3.1 NNWSI-013, Software Quality Assurance
- 3.2 NNWSI-008, Records Management

**4.0 DEFINITIONS**

**Design Verification:** The measures taken to verify that the design is adequate and has been done in accordance with all applicable codes, criteria, procedures, regulations, specifications, and standards.

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project (TP) Office shall ensure that this procedure is implemented properly.
- 5.2 The Verifier is responsible for the conduct of design verification.
- 5.3 When only one design department is responsible for the design, that department is responsible for conducting the design verification.
- 5.4 The TP Office shall appoint the respective design department responsible for the design verification and shall coordinate the preparation of the Design Verification Report (DVR), Attachment 8.1, when the design involves more than one design department.

Design  
 Responsible Department

*C. O. [Signature]*  
 Concurrence

*[Signature]* Pedalino  
 Approval

## 6.0 PROCEDURES

- 6.1 Design verification will be performed prior to release for procurement, manufacture, construction, or release to another organization for use in other design activities. In those cases, where this timing cannot be met, the portion or portions of design which have not been verified shall be identified and controlled by initiation of a DVR identifying that the design has not been verified. In all cases, the verification shall be completed prior to relying on the component, system, or structure to perform its function.
- 6.1.1 The extent of the design verification is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs.
- 6.1.2 If a similar design has been previously verified, only the design inputs shall be verified with each application. The original design and verification methods shall be adequately documented and referenced in the subsequent design verification report.
- 6.2 The design verification shall be performed by a person or persons whose qualifications are sufficient to have originated the work. The design verification may be performed by the originator's immediate supervisor if the supervisor did not specify a singular design approach, rule out certain design considerations, or establish the design inputs, and if the supervisor is the only individual in the group competent to perform the verification. The next level of management and Quality Assurance shall attest that the supervisor meets the criteria stated above by initialing next to the supervisor's initials on the DVR.
- 6.3 Design verification shall be accomplished by any one or more of the following: design review, alternate calculation, or qualification testing and documented on a DVR.
- 6.3.1 Design reviews shall ensure that the design is correct and satisfactory. The following questions shall be considered during each design review.
- 6.3.1.1 Were the design inputs correctly selected and correctly incorporated into the design?
- 6.3.1.2 Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverification when the detailed design activities are completed?
- 6.3.1.3 Is the design output reasonable compared to the design inputs?
- 6.3.1.4 Have the design interface requirements been satisfied?
- 6.3.1.5 Were appropriate design methods utilized?

6.3.1.6 Were computer programs used for analysis identified and verified in accordance with NNWSI-013, Software Quality Assurance?

6.3.2 Alternate calculations 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 methods used.

6.3.3 Qualification tests that involve actual physical testing of systems, structures, or components may be used to verify the adequacy of design. Where design adequacy is to be verified by qualifications tests, the tests shall be identified. The test configuration shall be clearly defined and documented. Testing shall be performed to the maximum design constraints. Testing procedures shall contain or reference the requirements and acceptance criteria. Where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. The test results shall be documented, and the results evaluated by the responsible design department.

6.4 Each DVR shall be numbered consecutively beginning with DV-0001. The TP Office shall assign the DVR numbers and maintain a DVR log.

6.5 The verifier(s) shall resolve comments, correct documents as appropriate, and complete the DVR.

6.6 Upon completion of the design verification activity the verifier(s) shall sign and date the DVR and submit the documentation to the TP Office.

6.7 If the design verification indicates an error in the design, these errors must be documented and corrected. If a significant design error is identified, the design and/or verification process shall be evaluated and modified as necessary.

6.8 Whenever revisions are made after the design verification has been completed, a supplemental design verification shall be performed. Supplemental DVRs shall be numbered DV-0001.1, DV-0001.2 etc. as supplements 1 and 2 to DVR-0001.

## 7.0 DOCUMENTATION

7.1 Copies of all DVRs shall be retained in the responsible design department.

7.2 Originals or copies suitable for microfilming of all DVRs shall be transmitted to the NNWSI TP Office for processing into the Records Management System in accordance with NNWSI-008, Records Management.

7.3 A DVR control log shall be maintained by the TP Office. Each DVR shall contain the design verification number, WBS number, subject, verifier, and date of completion.

## 8.0 ATTACHMENTS

8.1 Design Verification Report

NWS104(2):fw  
06/23/87



ATTACHMENT 8.1

NNWSI DESIGN VERIFICATION REPORT

VERIFICATION NUMBER:	PAGE	OF
WBS NUMBER:		
PROJECT I.D.:		
SUBJECT:		
METHOD:		
DESIGN REVIEW <input type="checkbox"/>	ALTERNATE CALCULATION <input type="checkbox"/>	QUALIFICATION TESTING <input type="checkbox"/>
DOCUMENT(S) REVIEWED:		
SUMMARY OF REVIEW (Attach all additional sheet(s), if needed):		
CONCLUSIONS (Attach additional sheet(s), if needed):		
VERIFIER(S)		
NAME	DEPARTMENT	POSITION
1.		
2.		
3.		
4.		



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

**SUBJECT:**

DESIGN INPUT CONTROL

Effective Date

Sept. 13, 1988

Number

NNWSI-015

Revision No.

0

Supersedes

N/A

Page

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of

3

**1.0 PURPOSE**

This procedure outlines the requirements for the compiling, review, approval, revision, and control of Design Input.

**2.0 SCOPE**

This procedure applies to all work performed by the Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Project.

**3.0 REFERENCES**

- 3.1 NNWSI Procedure NNWSI-004, Controlled Distribution of Design Documents.
- 3.2 NNWSI Procedure NNWSI-005, Design Drawing Preparation and Control.
- 3.3 NNWSI Procedure NNWSI-008, Quality Assurance Records Management.

**4.0 DEFINITIONS**

- 4.1 Design Input: Those criteria, parameters, bases, or other design requirements upon which detailed final design is based.
- 4.2 Design Input Control Document (DICD): A controlled document to list the accepted design input.
- 4.3 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.
- 4.4 Internal: Within the H&N/NNWSI Project personnel.
- 4.5 External: Other than H&N/NNWSI Project personnel, such as Principal Investigators, DOE/WMPO, etc.

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer (TPO) is responsible for directing proper implementation of this procedure.
- 5.2 The Design Section Chief (DSC) is responsible for compiling, control, and acceptance of Design Input in accordance with this procedure.

<p>Resp. Dept: Design</p> <p><i>Randolph J. Schein</i> 8/29/88</p> <p>Concurrence</p>	<p><i>[Signature]</i> 8/26/88</p> <p>Concurrence</p>	<p><i>Jay C. Colborn</i></p> <p>Approval 8/29/88</p>
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**6.0 PROCEDURE**

6.1 All design input shall be identified, documented, reviewed and accepted prior to use in the design analysis.

**6.2 Identification**

6.2.1 Design input may be, but are not limited to the following; criteria, design basis, codes, standards, manufacturer's design data, and performance and regulatory requirements. See Attachment 8.1.

**6.2.2 Internal**

6.2.2.1 Design input may be generated internally from the list in Section 6.2.1 and clearly identified as to the source of the input.

6.2.2.2 All internal design input is to be submitted in writing to the DSC/designee for inclusion into the DICD.

**6.2.3 External**

6.2.3.1 Design input that comes from an external source may be submitted in written or verbal format.

6.2.3.2 Written input, in original form, shall be given to the DSC for consideration as design input.

6.2.3.3 Verbal input shall be documented on either a Conference Report or a Record of Oral Information (ROI) form, and submitted to the DSC.

**6.3 Review**

6.3.1 All input shall be submitted to the DSC/Designee and compiled according to the Work Breakdown Structure numbers and the design discipline. The input shall be stamped with the review and comment stamp, Attachment 8.2, and distributed to the lead Design Engineers for review.

6.3.2 Initial issuance of the DICD shall be distributed to all design disciplines, Project Engineering, TPO and QA for review and approval. The cover sheet, Attachment 8.3, will be stamped with the review and comment stamp, Attachment 8.2. Each group will initial and date the stamp section in the appropriate place upon completion of their review. Review comments will be resolved prior to final approval.

6.3.3 After baseline issuance, all new design input shall be submitted by an Engineering Change Notice (ECN), Attachment 8.4. External design input shall be submitted by the cognizant Project Engineer. Internal design input shall be submitted by the cognizant lead Design Engineer. The ECN will go through the same review as the original issuance as outlined in 6.3.1 and 6.3.2.

#### 6.3.4 ECN Preparation and Control

6.3.4.1 The ECN shall be prepared as outlined in Attachment 8.3.

6.3.4.2 All ECN's shall be reviewed and approved in the same manner as original issuance.

6.3.4.3 The ECN log shall be the same as used in Reference 3.2.

#### 6.4 Acceptance and Approval

6.4.1 Upon completion of the review/comment resolution cycle, the DICD shall be signed by the DSC, Chief PE, QA, and the TPO. The QA signature is for concurrence.

6.4.2 The DICD shall be controlled and distributed in accordance with Reference 3.1.

#### 6.5 Rejection or Non-Acceptance of Design Input.

6.5.1 Internal: Design input may be rejected or not accepted based on mutual agreement between the conflicting parties. The DSC shall be the intermediate determining authority with the TPO, the final authority to resolve conflicts.

6.5.2 External: Notice of the design input rejection or non-acceptance will be given to the submitting party by a letter from the TPO. The letter will contain justification for the rejection.

### 7.0 DOCUMENTATION

The following documents are required by this procedure and shall be retained by the DSC/designee until they are forwarded to the Records Center in accordance with procedure NNWSI-008.

7.1 Design Input Control Document (DICD)

7.2 Engineering Change Notice (ECN)

7.3 Engineering Change Notice Log

### 8.0 ATTACHMENTS

8.1 Appendix B, Design Inputs

8.2 Review/Comment Routing Stamp

8.3 Design Input Control Document Cover Sheet

8.4 Engineering Change Notice (ECN)

## 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, si 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 indicators 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.







**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

May 31, 1988

Number

NNWSI-027

**SUBJECT:**

**DOCUMENT FILING SYSTEM**

Revision No.

1

Supersedes

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of

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**1.0 PURPOSE**

This procedure establishes the requirements for filing of all quality related documents received and/or generated by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) by departments performing quality related activities for the Nevada Nuclear Waste Storage Investigations (NNWSI) project.

**2.0 SCOPE**

- 2.1 This procedure provides the uniform filing system to be used for the NNWSI Project for Quality Assurance records.
- 2.2 Information files are not required to be maintained as prescribed by this procedure.
- 2.3 Records within the Local Records Center are not required to be filed as prescribed by this procedure.

**3.0 REFERENCES**

NNWSI Project Work Breakdown Structure Dictionary.

**4.0 DEFINITIONS**

- 4.1 Work Breakdown Structure: Unique accounting number assigned to all activities to be conducted for the NNWSI Project.
- 4.2 Primary File: Those files which contain Quality Assurance records.
- 4.3 Quality Assurance Record: A completed document that furnishes direct evidence of the Quality of an item or activity affecting quality.

**5.0 RESPONSIBILITIES**

- 5.1 The TP Office is responsible for developing the filing system and ensuring implementation of this procedure.
- 5.2 Managers/supervisors are responsible for establishing and controlling the filing system within their departments in accordance with this procedure.

**SAIC/T & MSS**

**MAY 24 1988**

**CCF RECEIVED**  
 TP Office

Responsible Department

*C. O. Wright*  
 Concurrency 5/29/88

*Joseph C. Calving*  
 Approval 5/19/88

## 6.0 PROCEDURES

### 6.1 Establishment of the Filing System:

- 6.1.1 The primary filing system shall be based upon the NNWSI Project Work Breakdown Structure (WBS) numbers, which define the scope of work.
- 6.1.2 Each department shall establish primary files based upon the WBS numbers that apply to their specific activities. Subfiles, within the primary WBS files may be created to accommodate specific departmental needs.
- 6.1.3 Each department, in addition to the primary files based upon WBS numbers, may create additional functional files such as chronological correspondence, and numerical files (e.g., laboratory numbers, Test Report numbers, Drill Hole numbers, etc.) that suite their specific needs.

### 6.2 Maintenance of Files

- 6.2.1 Each department shall designate, in writing, an individual to be responsible for the filing system within its department.
- 6.2.2 Each primary file shall have an index or log sheet, to identify all the documents contained in that file by date, subject, and document type, Attachment 8.2.
- 6.2.3 File Control
  - 6.2.4.1 Removal of documents from the primary files shall be controlled via a File-Out-Guide, Attachment 8.1. The File-Out-Guide shall be inserted into the primary file when a document is removed. When the document is returned to the file the File-Out-Guide shall be removed from the file.
  - 6.2.4.2 Records shall be accessible to DOE WMPO and/or their designee.
- 6.2.4 Provisions shall be made in the storage facilities 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 and for filing supplemental information.

## 7.0 DOCUMENTATION

None.

## 8.0 ATTACHMENTS

- 8.1 File-Out-Guide
- 8.2 NNWSI Project File Index Sheet



FILE NUMBER: 1.2.6.2.1.4  
FILE NAME: SITE DRAINAGE - TITLE I

**NNWSI PROJECT  
FILE INDEX SHEET**

<b>DATE</b>	<b>DOCUMENT TYPE</b>	<b>SUBJECT</b>
03/22/88	RFE	(H&N) Site Drainage/Flood Control; Musick to Woodard; NNWSI:RFE:88-006
03/22/88	CE	(H&N) Site Drainage/Flood Control Berming; Woodard to Musick; NNWSI/ESF
04/21/88	MEMO	(H&N) Revision to Sheet C14; Bruno to Schreiner; NNWSI:MEM:88-140

**TYPICAL**



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

Number

May 31, 1988

INDEX

**SUBJECT:**

Revision No.

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NNWSI PROCEDURE MANUAL INDEX

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NNA-880524-0022

<u>NUMBER</u>		<u>REVISION</u>	<u>EFFECTIVE DATE</u>
	POLICY STATEMENT	<u>0</u>	<u>02/11/87</u>
NNWSI-001	GENERATION AND CONTROL OF NNWSI PROCEDURES	<u>0</u>	<u>09/19/86</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>05/15/87</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>05/05/88</u>
NNWSI-002	INDOCTRINATION, TRAINING, CERTIFICATION, AND QUALIFICATION	<u>0</u>	<u>11/03/86</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>03/25/88</u>
	INTERIM CHANGE NOTICE-002	<u>N/A</u>	<u>04/01/88</u>
NNWSI-003	SPECIFICATION PREPARATION AND CONTROL	<u>0</u>	<u>11/03/86</u>
NNWSI-004	CONTROLLED DISTRIBUTION OF DESIGN DOCUMENTS	<u>1</u>	<u>03/25/88</u>
NNWSI-005	DESIGN DRAWING PREPARATION AND CONTROL	<u>1</u>	<u>05/19/88</u>
NNWSI-006	DESIGN ANALYSIS	<u>1</u>	<u>05/19/88</u>
NNWSI-007	WORK INITIATION, CRITERIA GATHERING, AND REPORTING	<u>0</u>	<u>04/02/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>06/30/87</u>
NNWSI-008	QUALITY ASSURANCE RECORDS MANAGEMENT	<u>1</u>	<u>08/28/87</u>
NNWSI-009	STOP WORK ORDER	<u>0</u>	<u>04/03/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
NNWSI-010	CONTROL OF MEASURING AND TEST EQUIPMENT	<u>1</u>	<u>05/27/88</u>

**SAIC/T & MSS**

**MAY 24 1988**

<u>NUMBER</u>		<u>REVISION</u>	<u>EFFECTIVE DATE</u>
NNWSI-011	NNWSI NONCONFORMANCE CONTROL	<u>0</u>	<u>05/15/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
NNWSI-012	CORRECTIVE ACTION	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/13/88</u>
NNWSI-013	SOFTWARE QUALITY ASSURANCE	<u>0</u>	<u>05/01/87</u>
NNWSI-014	DESIGN VERIFICATION	<u>0</u>	<u>06/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>05/06/88</u>
NNWSI-016	SURVEY DEPARTMENT DOCUMENT CONTROL AND DISTRIBUTION	<u>0</u>	<u>06/05/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>02/05/88</u>
NNWSI-017	SURVEY DEPARTMENT WORK FUNCTIONS	<u>1</u>	<u>05/27/88</u>
NNWSI-019	GENERAL TESTING PROCEDURE FOR THE MATERIALS TESTING LABORATORY	<u>0</u>	<u>10/30/87</u>
NNWSI-022	NDT PERSONNEL CERTIFICATION	<u>0</u>	<u>06/30/87</u>
NNWSI-026	MICROFILMING AND ARCHIVAL STORAGE SERVICES FACILITY (MASSF)	<u>0</u>	<u>08/07/87</u>
NNWSI-027	DEPARTMENTAL FILING SYSTEM PROCEDURE	<u>1</u>	<u>05/31/88</u>
NNWSI-028	MAGNETIC PARTICLE TESTING PROCEDURE	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/01/88</u>
NNWSI-029	INTERFACE CONTROL	<u>1</u>	<u>04/15/88</u>

NNWSI-031	AUDITS	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>
NNWSI-032	QUALIFICATION OF AUDIT PERSONNEL	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE	<u>N/A</u>	<u>04/26/88</u>
NNWSI-033	SURVEILLANCE ACTIVITIES	<u>0</u>	<u>10/30/87</u>
	INTERIM CHANGE NOTICE-001	<u>N/A</u>	<u>04/26/88</u>



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO.

NNVSI-029

REV.

1

PAGE

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OF

1

TITLE

Interface Control

DATE ISSUED June 9, 1988

### DESCRIPTION OF CHANGE

Change the title from Interface Control to "Design Interface Control"

Para 3.1 Add: No. 1 after Branch Technical Procedure, and delete the word "Draft" after procedure

Para 6.2 Change existing paragraph numbers 6.2.2, 6.2.3 to 6.2.3 and 6.2.4 respectively

Add a new paragraph as follows:

System Interface Descriptions and characteristics shall be identified and implemented to SID's, per "Design Interface Identification" sheets, Attachment 8.4.

Number the new paragraph 6.2.2

Para 7.0 Add: "Design Interface Identification Sheets" between ECRs and criteria

Para 8.0 Add: 8.4 Design Interface Identification Sheet

Att. 8.1 Page 1 of 2, omit comma between transmittal and record bottom block

Add: Attachment 8.4 to procedure "Design Interface Identification Sheet"

NNA 880613.0025

SAIC/T & MSS

JUN 13 1988

INTERIM CHANGE APPROVAL

C C F RECEIVED

EFFECTIVE DATE: June 17, 1988

Resp. Dept. Project Engineer  
*Phillip Belen*  
CONCURRENCE

*P. D. Wright*  
CONCURRENCE 6/17/88

*Joseph C. Calver*  
APPROVAL 6/17/88



**DESIGN INTERPACE  
IDENTIFICATION**

(Please Print)

System: \_\_\_\_\_ WBS No. \_\_\_\_\_

Responsible Design Participant  H&N  F&S

Design Interface Participant  H&N  F&S  LANL

Description/Location of Interface: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TYPICAL

Reviewed & Agreed With: \_\_\_\_\_

(check one) Date: \_\_\_\_\_

- Phone
- Conference
- Correspondence

Reference Drawings: \_\_\_\_\_  
(if available)

Submitted By: \_\_\_\_\_ Lead Engineer/Other \_\_\_\_\_

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

Send To: Holmes & Narver, Inc.  
101 Convention Center Dr.  
Suite P280 (M/S 519)  
Las Vegas, NV 89109

Attention: Document Control Dept.



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

04/15/88

Number

NNWSI-029

**SUBJECT:**

**INTERFACE CONTROL**

Revision No.

1

Supersedes

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**1.0 PURPOSE**

This procedure defines the requirements for generation and control of design interface documents during the design phase, in support of the Nevada Nuclear Waste Storage Investigations (NNWSI) Exploratory Shaft Facility (ESF) Interface Control Working Group (ICWG).

**2.0 SCOPE**

This procedure applies to work performed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the NNWSI ESF ICWG.

**3.0 REFERENCES**

3.1 Branch Technical Procedure-ESF/ICWG Design Interface Control Procedure-Draft

3.2 NNWSI-004, Controlled Distribution of Design Documents

3.3 NNWSI-005, Design Drawing Preparation and Control

3.4 NNWSI-007, Work Initiation, Criteria Gathering, and Reporting

3.5 NNWSI-008, Quality Assurance Records Management

**4.0 DEFINITIONS**

4.1 System: A specific electrical, mechanical, or structural facility such as water, power, and communication systems.

4.2 Interface: That portion of a system or component which provides a common ground for two or more design agents.

4.3 Participants: Department of Energy/Waste Management Project Office, Reynolds Electrical & Engineering Co., Inc., Fenix & Scisson, Los Alamos National Laboratories, Lawrence Livermore National Laboratories, Sandia National Laboratories, United States Geological Survey, Holmes & Narver, Inc., Science Applications International Corporation.

4.4 Interface Control Working Group (ICWG): A group of individuals, representing each of the participating organizations which have overall

TP Office  
 Responsible Department

*Richard P. ...*  
*for O.C. Wrist* 4/15/88  
 Concurrence

*[Signature]*  
 Approval

responsibility for the identification, definition, approval, and control of all design interface for the ESP design.

- 4.5 Interface Control Number (ICNO): A number assigned by H&N ICWG Support Group (Document Control) to each interface drawing produced.
- 4.6 System Interface Drawing (SID): A block diagram drawing identifying interfaces within a system and the responsible interfacing participants.
- 4.7 Component Interface Drawing (CID): A drawing of a component identifying the interface and responsible interfacing participants.
- 4.8 Engineering Change Request (ECR): A document used to request changes to the baseline interface control documents.
- 4.9 H&N ICWG Support Group: A team of H&N personnel assigned to ensure proper implementation of this procedure, and to support the ICWG in records control and design activities.
- 4.10 Subsystems Design Requirements Document (SDRD): A base line document issued to participants providing requirements for systems and subsystems of the Exploratory Shaft Facility.

## 5.0 RESPONSIBILITIES

- 5.1 The Technical Project Officer (TPO) is responsible for the overall implementation of this procedure.
- 5.2 The H&N ICWG Support Group is responsible for supporting the ICWG within the framework of this procedure.

## 6.0 PROCEDURE

### 6.1 General Requirements

- 6.1.1 All work in support of the ICWG shall follow the interface control flow chart (Attachment 8.1).
- 6.1.2 H&N has two functions within this procedure: responsibility as a project participant and responsibility as a support group to the ICWG.
- 6.1.3 All pertinent support documentation regarding all interface control discussion within the engineering disciplines will be documented with a copy sent to the H&N ICWG Support Group (Document Control) for filing.

### 6.2 Responsibility as a Project Participant

- 6.2.1 To research systems and determine which have interfaces and submit interface information to the H&N ICWG Support Group for development into System Interface Drawings and Component Interface Drawings (SIDs and CIDs).

- 6.2.2 Once the specific SIDs are approved, submit appropriate details of each interface to the H&N ICVG Support Group (Document Control) for development of CIDs.
- 6.2.3 Initiate ECRs and transmit to H&N ICVG Support Group (Document Control) for all changes to baselined SIDs and CIDs. (Attachment 8.2)
- 6.3 Responsibility as an ICVG Support Group (Document Control) and (Interface Design)
- 6.3.1 Information received is logged with the following information: (Attachment 8.3)
- o VBS Number
  - o Date
  - o Originator
  - o No. of Pages
  - o Title
- 6.3.2 The development of the SID and CID drawings shall be initiated by a Work Initiation as prescribed by NNWSI Procedure 007 from the H&N ICVG Support Group (Document Control). The total process covered by NNWSI Procedure 007 is not applicable because interface drawings are not considered design or construction drawings. Those sections that do not apply are: paragraph 6.2.3, sections 6.2.3.1, 6.2.3.2, 6.2.3.3, 6.2.3.4 and paragraph 6.3.
- 6.3.3 Interface drawings shall be produced in accordance with NNWSI-005 except for drawing number assignment. Interfaced drawing numbers shall be designated IC- and a sequential number beginning with 00001 (e.g., IC-00002, IC-00003, etc.). Interface drawing numbers shall be assigned and controlled by the H&N ICVG Support Group.
- 6.3.4 The H&N ICVG Support Group shall assure that an ECR is prepared for any change made to baseline SIDs/CIDs for approval of the ICVG.
- 6.3.5 Drawing distribution to participants shall be controlled and issued in accordance with Procedure NNWSI-004. Each distribution shall be accompanied by an approved ECR.

## 7.0 DOCUMENTATION

The original or copies, suitable for microfilming of the following records (Drawings, ECRs, Criteria (6.3.1)) shall be transmitted to the Records Coordinator for submittal into the Project Records Management System as prescribed by NNWSI-008.

## 8.0 ATTACHMENTS

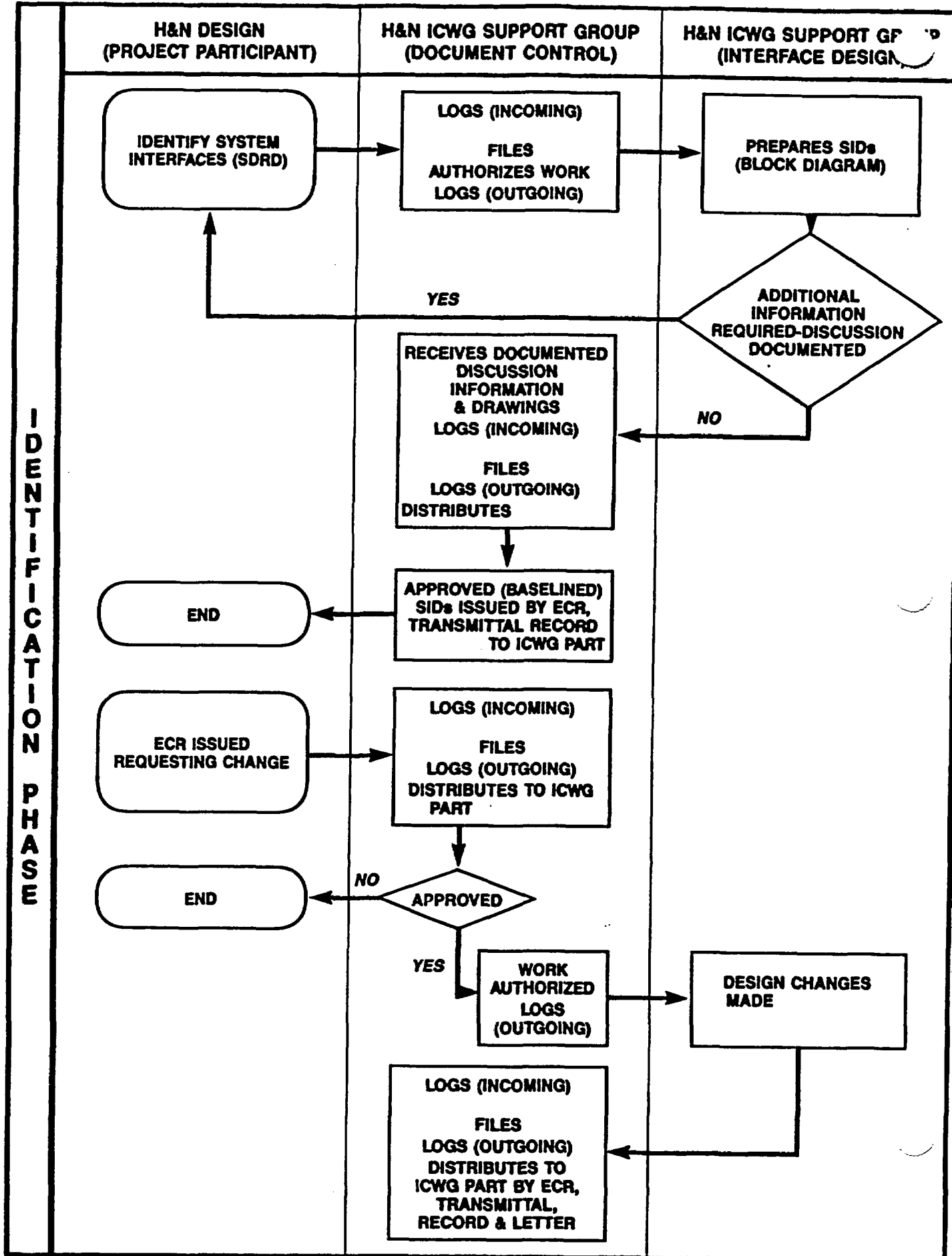
- 8.1 Interface Control Flow Chart
- 8.2 Engineering Change Request (ECR)
- 8.3 Interface Control Log-Processing Sheet

SAIC/T & MSS

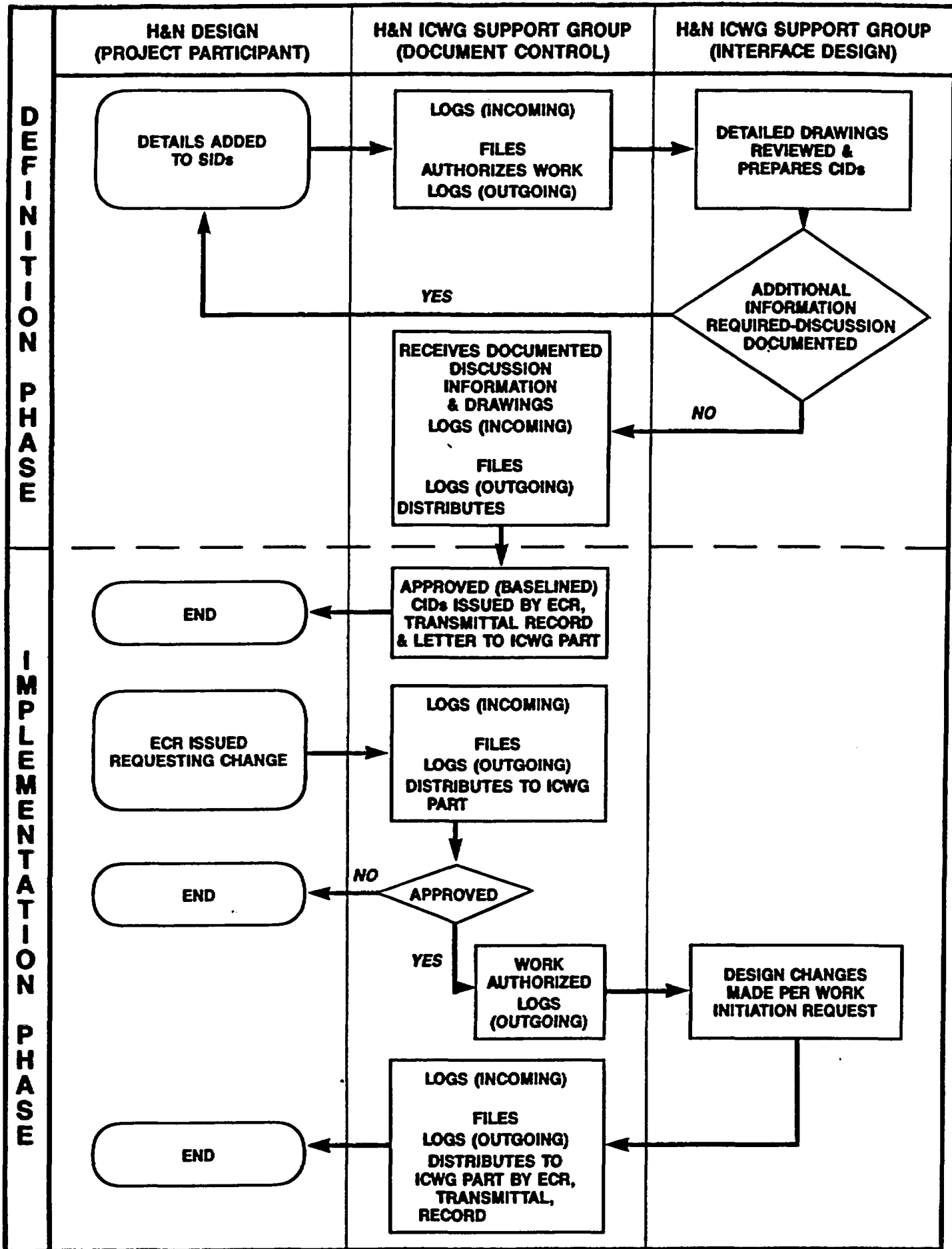
APR 08 1988

C C F RECEIVED

# INTERFACE CONTROL FLOW DIAGRAM



# INTERFACE CONTROL FLOW DIAGRAM (cont.)



**ESF ENGINEERING CHANGE REQUEST**

ESTP11.FMB-12/28/87

ECR NO. _____	PAGE _____ OF _____															
<b>SECTION 1. TO BE COMPLETED BY PARTICIPANT REQUESTING CHANGE</b>																
QA LEVEL _____ SOURCE _____ WBS DESIGNATION _____ TITLE _____ DESCRIPTION _____	PARTICIPANT _____ DATE _____ ORIGINATOR _____ REV. NO. _____ DATE _____ REV. NO. _____ DATE _____															
SEE CONTINUATION PAGE																
<b>BASIS FOR CHANGE</b>																
SEE CONTINUATION PAGE																
SCOPE CHANGE <input type="checkbox"/> YES <input type="checkbox"/> NO																
CONSTRUCTION IMPACT <input type="checkbox"/> YES <input type="checkbox"/> NO																
PARTICIPANT _____	ESF ICWG REPRESENTATIVE OR PARTICIPANT _____															
QA REP _____ DATE _____	TPO _____ DATE _____															
<b>SECTION 2. ACTION</b>																
1. PROCEED WITH ECR EVALUATION _____ YES _____ NO																
2. PROCEED WITH WORK _____ YES _____ NO	_____ ESF ICWG CHAIRMAN															
3. TOTAL COSTS (increase/decrease)	<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">ENGINEERING CONSTRUCTION TOTALS</th> <th style="width: 15%;">ROM</th> <th style="width: 15%;">BUDGET</th> <th style="width: 15%;">PROJECTED</th> </tr> </thead> <tbody> <tr> <td></td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		ENGINEERING CONSTRUCTION TOTALS	ROM	BUDGET	PROJECTED		_____	_____	_____	_____		_____	_____	_____	_____
	ENGINEERING CONSTRUCTION TOTALS	ROM	BUDGET	PROJECTED												
	_____	_____	_____	_____												
	_____	_____	_____	_____												
4. SCHEDULING IMPACT	<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 30%;">ENGINEERING CONSTRUCTION</th> <th style="width: 30%;">WEEKS</th> </tr> </thead> <tbody> <tr> <td></td> <td>_____</td> <td>_____</td> </tr> <tr> <td></td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>		ENGINEERING CONSTRUCTION	WEEKS		_____	_____		_____	_____						
	ENGINEERING CONSTRUCTION	WEEKS														
	_____	_____														
	_____	_____														
5. PROCEED WITH DETAIL ENGINEERING _____ YES _____ NO																
PROCEED WITH DETAIL ESTIMATE _____ YES _____ NO	_____ ESF CHAIRMAN ICWG															
6. FUNDING:	<table style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%;">_____ CHANGE ORDER</td> <td style="width: 50%;">_____ SPECIAL STUDIES</td> </tr> <tr> <td colspan="2">_____ NOT FUNDED, PROJECTED ONLY</td> </tr> </tbody> </table> _____ ESF CHAIRMAN ICWG	_____ CHANGE ORDER	_____ SPECIAL STUDIES	_____ NOT FUNDED, PROJECTED ONLY												
_____ CHANGE ORDER	_____ SPECIAL STUDIES															
_____ NOT FUNDED, PROJECTED ONLY																
7. APPROVED FOR BASELINING	_____ ESF CHAIRMAN ICWG															

### ESF ENGINEERING CHANGE REQUEST

ESTP12 FMB-11/24/01

ECR NO.	PAGE
Continuation Page	_____ OF _____
TITLE _____	
CONTINUATION DATA _____	
OTHER INFORMATION	







# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO.

NNWSI-031

REV.

0

PAGE

OF

1 1

TITLE

AUDITS

DATE ISSUED April 19, 1988

### DESCRIPTION OF CHANGE

Para. 3.6: Delete and substitute the following:

"3.6 NNWSI-008, Quality Assurance Records Management."

Para. 7.1.6: Delete.

Para. 7.1.7: Renumber "7.1.6."

Para. 7.2: Delete and substitute the following:

"7.2 The records identified in 7.1 shall be processed in accordance with Reference 3.6."

SAIC/T & MSS

APR 20 1988

C C F RECEIVED


### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: April 26, 1988

Quality Assurance  
Responsible Department

*C. O. King*  
CONCURRENCE 4/11/88

*Joseph C. Colvin*  
APPROVAL

 <b>HOLMES &amp; NARVER, INC.</b> <b>INTERIM CHANGE NOTICE</b>		<b>ICN NO.</b> 002
<b>PROCEDURE NO.</b> NNWSI-031 <b>REV.</b> 0	<b>PAGE</b> 1 <b>OF</b> 1	
<b>TITLE</b> AUDITS	<b>DATE ISSUED</b> Sept. 19, 1988	
<b>DESCRIPTION OF CHANGE</b>		
<p>Paragraph 6.1.2 Delete and substitute the following:</p> <p>6.1.2 Audits shall be scheduled in a manner to provide coverage of all applicable elements of the QAPP or the organization's QA Manual commensurate with ongoing activities. All applicable elements shall be audited at least annually.</p> <p>Paragraph 6.1.3 Delete and substitute the following:</p> <p>6.1.3 The audit schedule shall be evaluated every six months, as a minimum, and revised as necessary to ensure that coverage is adequate. The evaluation shall be documented and take into account, where applicable, the results of previous audits; subsequent changes in personnel, organization or QA program; the nature and frequency of identified deficiencies; review of supplier furnished documents and records such as: certificates of conformance, nonconformance, and corrective actions; results of previous source inspections; operating experience of identical or similar products furnished by the supplier; and results of audits from other sources, i.e. Customer, ASME or NRC.</p> <p>Paragraph 6.1.5 Delete and substitute the following:</p> <p>6.1.5 The approved audit schedule and revisions thereto shall be submitted to the organizations scheduled to be audited and to the SAIC/T&amp;MSS Project QA Department (QA Verification Division Manager).</p>		
<b>INTERIM CHANGE APPROVAL</b>		
<b>EFFECTIVE DATE:</b> Sept. 26, 1988		
<b>RESP. DEPT</b> Quality Assurance <i>E.P. Deibel</i> 9/17/88 <b>CONCURRENCE</b>	<i>E. J. [Signature]</i> 9/12/88 <b>CONCURRENCE</b>	<i>Joseph C. Colony</i> <b>APPROVAL</b> 9/15/88



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date  
 October 30, 1987

Number  
 NNWSI-031

**SUBJECT**

**AUDITS**

Revision No.  
 0

Supersedes  
 N/A

Page 1 of 7

**1.0 PURPOSE**

This procedure establishes the requirements for planning, scheduling, performing, documenting, and tracking Quality Assurance (QA) audit activities for the purpose of evaluating the adequacy, implementation, and/or effectiveness of the Holmes & Narver, Inc./Energy Support Division (H&N/ESD) Nevada Nuclear Waste Storage Investigations (NNWSI) Quality Assurance Program Plan.

**2.0 SCOPE**

This procedure applies to the conduct of QA audits of all quality affecting activities applicable to the project.

**3.0 REFERENCES**

- 3.1 NNWSI-032, Qualifications of Audit Personnel
- 3.2 NNWSI-011, Nonconformance Control
- 3.3 NNWSI-012, Corrective Action
- 3.4 NNWSI-009, Stop Work Order
- 3.5 H&N/ESD, 1706 Notification, Investigation, and Reporting of Occurrences
- 3.6 NNWSI-008, Records Management
- 3.7 DOE Order 5000.3, Unusual Occurrence Reporting System.

**4.0 DEFINITIONS**

- 4.1 Auditor--A qualified individual who performs any portion of an audit.
- 4.2 Corrective Action Report (CAR)--A preformatted form used to document non-hardware related deficiencies; remedial, investigative, and corrective actions; and the evaluation and verification of these actions.
- 4.3 Item--Any level of assembly, including structure, system, subsystem, sub-assembly, component, part, or material.
- 4.4 Lead Auditor--A qualified and certified individual who organizes and directs the audit, prepares the audit report, and evaluates the corrective action.

QUALITY ASSURANCE  
 RESPONSIBLE ORGANIZATION

*E. D. Wright*  
 Concurrence

*J. P. ...*  
 Approval

NNA.8/1029.0038

- 4.5 Nonconformance--A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate.
- 4.6 Observation--The identification of a weakness in the quality assurance program that if left uncorrected could result in a deficiency.

## 5.0 RESPONSIBILITIES

- 5.1 The Technical Project Officer (TPO) and Chief, Quality Assurance (CQA), are responsible for directing and implementing the requirements of this procedure.
- 5.2 The CQA is responsible for certifying lead auditors.
- 5.3 Management of the audited organization shall provide written responses to the CARs and observations as directed by the Audit report.

## 6.0 PROCEDURE

### 6.1 Audit Schedules

- 6.1.1 The CQA shall establish an audit schedule, Attachment 8.1. The schedule shall include dates of the audit, the activities to be audited, and the requirements to which the activities are to be audited.
- 6.1.2 Audits shall be scheduled in a manner to provide coverage of all applicable elements of the QAPP or the organization's QA Manual commensurate with ongoing activities.
- 6.1.3 The audit schedule shall be evaluated every six months, as a minimum, and revised, as necessary, to ensure that coverage is adequate. The evaluation should include an assessment of the program effectiveness based on previous audit results and corrective actions; nonconformance results; significant changes in personnel, organization, or in the QA Program.
- 6.1.4 External audits of activities whose duration is less than four months need not be audited unless considered necessary due to the complexity or importance of the activity. However, justification for not performing the audit shall be documented and approved by the CQA.
- 6.1.5 The approved audit schedule and revisions thereto shall be submitted to the organizations scheduled to be audited and to the WMPO Quality Assurance Support Contractor (QASC) Audit and Surveillance Branch Manager.
- 6.2 The audit personnel selected by the CQA shall be independent of any direct responsibility for the performance of any activity they audit. Audit personnel shall be qualified and the Lead Auditor qualified and certified in accordance with the requirements of Reference 3.1.

- 6.5.2 The previously prepared checklists shall be used by the auditors as the basis for conducting the audit. The checklist is not intended to limit the scope of the audit. Additional items may be added if warranted.
- 6.5.3 Auditors shall identify the personnel contacted during the audit on Attachment 8.4.
- 6.5.4 When an item on the checklist cannot be audited, justification for its omission shall be recorded in the "objective evidence" section of the checklist.
- 6.5.5 Auditors shall examine objective evidence in sufficient depth to determine if the activity being audited is being conducted satisfactorily. The pertinent objective evidence reviewed shall be recorded in the "objective evidence" section on the checklist. The Checklist Continuation Page, Attachment 8.5, shall be utilized when additional space is needed to record the objective evidence or if additional items are added.
- 6.5.6 Auditors shall record the results of their review of each item audited, "S" Satisfactory, "U" Unsatisfactory, or "N" Not Audited, in the "Result" section on the checklist. If the result was unsatisfactory, "U," the CAR or NCR issued for that deficiency shall also be identified (U/CAR-87-xxx). If the result was satisfactory, "S", and an observation made, the result should be identified "S/O."
- 6.5.7 When conditions adverse to quality are identified, the auditor shall notify the audited organization and the Lead Auditor, and
- 6.5.7.1 If the condition adverse to quality is a hardware deficiency, ensure that a nonconformance report is initiated in accordance with Reference 3.2 or the audited organization's Nonconformance Program.
- 6.5.7.2 If the condition adverse to quality is a programatic or procedural deficiency, a CAR shall be initiated in accordance with Reference 3.3.
- 6.5.7.3 If the condition is not a deficiency, but if left uncorrected could result in a deficiency, it shall be recorded as an observation in the audit report.
- 6.5.7.4 If the conditions identified in 6.5.7.2 are corrected during the audit and the auditor is satisfied that appropriate corrective action has been taken by the audited organization, the CAR need not be issued. However, the condition and corrective action taken shall be duly noted on the checklist and in the audit report (e.g., corrected on-the-spot).

6.5.7.5 When determined by the auditors and the CQA that a condition adverse to quality is of such significance as to warrant "stop work" action, a Stop Work Order shall be initiated in accordance with Reference 3.4.

#### 6.5.8 Post Audit Conference

6.5.8.1 The audit team should meet to review the results of the audit, discuss the deficiencies, observations, and recommendations, to improve the effectiveness of the audited organization or audit process, prior to conducting the post audit conference with the audited organization.

6.5.8.2 The Lead Auditor shall chair the post audit conference which is intended to provide the audited organization with a verbal summary of the results of the audit; to discuss and obtain an understanding of the deficiencies and observations identified; to identify the way in which the findings will be officially transmitted (Draft CARs/NCR may be provided), and to identify when the audit report will be issued.

#### 6.6 Audit Report

6.6.1 The Lead Auditor shall prepare and sign an audit report utilizing the standard format provided by Attachment 8.6.

6.6.2 The Lead Auditor shall prepare a transmittal memo for the CQA for internal audits or a letter for the TPO for external audits. The audit report shall be issued within thirty (30) days of the post audit conference.

6.6.2.1 The transmittal letter or memo shall require that the audited organization provide written responses to the CARs as required by Reference 3.3, and to the observations requiring written responses within thirty (30) days of the issue date of the audit report.

6.6.3 The minimum distribution of audit reports is as follows:

6.6.3.1 Manager, Nevada Operations

6.6.3.2 NNWSI-TPO

6.6.3.3 Chief, Auditor, LVO

6.6.3.4 Responsible manager of the audited organization

6.6.3.5 QA Audit File

6.6.3.6 NNWSI Project File

6.6.3.7 Audit team members

## 6.7 Audit Response

- 6.7.1 Management of the audit organization shall investigate the CARs and observations, schedule corrective action including measures to prevent recurrence, where appropriate, and shall notify the auditing organization, in writing, of the actions taken or planned within 30 calendar days, unless otherwise specified in the Audit Report.
- 6.7.2 The Lead Auditor shall evaluate and track the response, ensure that follow-up action, including verification of corrective action, has been performed and that any adverse trends are identified.
- 6.7.2.1 CARs issued as a result of the audit shall be evaluated and processed as prescribed by Reference 3.3.
- 6.7.2.2 Observation responses shall be evaluated. The Auditor or Lead Auditor, as applicable, shall annotate their acceptance on the audit record copy of the response.
- 6.7.2.3 The Lead Auditor shall evaluate the results of the audit to determine if any condition warrants further processing as an unusual occurrences, DOE/NV Order 5000.3, as required by Reference 3.5.

## 6.8 Audit Closure

When all the CARs have been closed and the responses to the observations have been accepted, the lead auditor shall prepare an audit closure letter or memo, as appropriate. The approval and distribution of the closure memo or letter shall be the same as required for the distribution of the audit report.

## 7.0 DOCUMENTATION

7.1 The following records shall be maintained for audits:

- 7.1.1 Audit Schedules and Revisions
- 7.1.2 Audit Notification
- 7.1.3 Audit Checklists
- 7.1.4 Audit Report
- 7.1.5 Audit Responses
- 7.1.6 CAR Closure Notifications
- 7.1.7 Audit Closure Notification

7.2 The records shall be processed in accordance with Reference 3.6.



**8.0 ATTACHMENTS**

- 8.1 Audit Schedule**
- 8.2 Audit Check List Cover Sheet**
- 8.3 Checklist**
- 8.4 Personnel Contacted**
- 8.5 Checklist Continuation Page**
- 8.6 Audit Report Format**

HOLMES & HARVEY, INC.  
NEVADA OPERATIONS  
CY87 QUALITY ASSURANCE PROGRAM AUDITS  
EFFECTIVE 08/31/87

SECTION	AUDIT #	AUDITORS	SCHEDULE	ACTUAL	TOTAL FINDINGS	FINDINGS REMAIN OPEN	AUDIT CLOSED
CABLE	87-01	VLA/RDB	2/10-12/87	2/11-13/87	2	0	4/16/87
N.N.W.S.I. (Criterion 1-3, 9-6, 12, 16-17)	87-02	RPS	3/16-20/87	3/16-20/87	7	0	6/21/87
PROJECT SERVICES/ ENGINEERING SERVICES	87-03	LNT/KGS/MP	4/21-23/87	4/21-23/87	10	8	
V.O.R.R.P.	87-04	COH/KOH	5/4-7/87	5/4-7/87	13	5	
TTR (RANGE)	87-05	JPD/DNH	5/12-15/87	5/12-15/87	7	5	
AREA 2	87-06	VLA/CRH/JO	6/23-25/87	6/23-25/87	1	0	6/18/87
HONOLULU/JOHNSTON ATOLL	87-07	COH/VLA/KGS	7/1-17/87	7/1-17/87			(Report publication scheduled for Sept. 1)
*TTR (LYSO)	87-08	JPD/DNH/JAT	8/1-13/87	8/10-13/87			(Report publication scheduled for Sept. 18)
FIELD SURVEYS	87-09	LNT	8/23-28/87	8/23-28/87			(Report publication scheduled for Oct. 2)
*SAFETY		JPD	September 1987				
*N.N.W.S.I. (Criterion 4, 7, 9-10, 13-15, 17)		RPS/EM	October 1987				
AREA 6		tbd	October 1987				
SYSTEMS		tbd	October 1987				
CONSTRUCTION SERVICES/ MATERIALS TESTING LAB/ NONDESTRUCTIVE TESTING		tbd	November 1987				

SAMPLE

<b>JANUARY</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>FEBRUARY</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	<b>MARCH</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>APRIL</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	<b>MAY</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>JUNE</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
<b>JULY</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>AUGUST</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>SEPTEMBER</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	<b>OCTOBER</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	<b>NOVEMBER</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	<b>DECEMBER</b> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

**LEGEND**

VLA—V. L. ANGELL  
 JPD—J. P. DE MARRE  
 CRH—E. R. HOUSER  
 RPS—R. P. SABO  
 LNT—L. N. TRUSSELL  
 COH—C. O. WRIGHT  
 tbd—to be determined

\* CHANGES TO SCHEDULE  
 SINCE LAST ISSUE  
 FOR INFORMATION ONLY  
 QA APPROVAL:  
 FOR INFORMATION ONLY

HOLMES & NARVER, INC.  
AUDIT CHECKLIST COVERSHEET

AUDIT No. \_\_\_\_\_

PAGE 1 OF \_\_\_\_\_

AUDIT ACTIVITY \_\_\_\_\_ DATE(S) SCHEDULED \_\_\_\_\_

AUDITED ORGANIZATION \_\_\_\_\_ PERFORMED \_\_\_\_\_

AUDIT TEAM  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PURPOSE/SCOPE  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PREVIEWS OF PREVIOUS AUDITS/SURVEILLANCES/CONCERNS  
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PREPARATION OF CHECKLIST  
REVIEWED BY  
  
\_\_\_\_\_  
LEAD AUDITOR

\_\_\_\_\_  
DATE

COMPLETION OF AUDIT  
REVIEWED BY  
  
\_\_\_\_\_  
LEAD AUDITOR

\_\_\_\_\_  
DATE







AUDIT REPORT

AUDIT NUMBER:

AUDIT DATES: (Month, Day(s), Year)

AUDITED ORGANIZATION:

AUDIT TEAM:

Department

Name: Lead Auditor

Name: Auditor

Name: Auditor

\_\_\_\_\_  
Lead Auditor (signature)

\_\_\_\_\_  
Date

PURPOSE/SCOPE OF THE AUDIT

(Identify the purpose and scope of the audit.)

AUDIT SUMMARY

(Provide a summary of the audit and an evaluation of the effectiveness of implementation of the QAPP requirements.)

DEFICIENCIES

1. (Provide a brief description of each deficiency and identify the CAR or NCR issued to cover the specific deficiency.)

CAR XXX-XXX issued.

2. (In addition to 1. above, identify those deficiencies corrected during the audit.)

Corrected during the audit.

3. \_\_\_\_\_

OBSERVATIONS

Provide a brief description of each observation and identify if a written response is required.

A response to this observation is required. (Or no response required)

RECOMMENDATIONS

Identify any recommendations made to improve the implementation of the program or policies of the audited organization.

ATTACHMENTS

Personnel Contacted

CARs

NWS150(2):jem

10/13/87



# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

001

PROCEDURE NO.

NNWSI-033

REV.

0

PAGE

OF

1 1

TITLE

SURVEILLANCE ACTIVITIES

DATE ISSUED

April 19, 1988

### DESCRIPTION OF CHANGE

SAIC/T MCS

APR 21 1988

CC RECEIVED

Para 3.5: Add the following:

"3.5 NNWSI-008, Quality Assurance Records Management."

Para 6.1.2: Delete and substitute the following:

"6.1.2 Whenever paractical, a planning document (checklist, Attachments 8.1 and 8.2, or another suitable document) shall be prepared based upon applicable sections of the QAPP, procedures, drawings, specifications, etc., which will thoroughly examine the items or activity to be surveilled. The planning document is not intended to restrict the individual or the scope of the surveillance, and it may be amended or revised as conditions varrant."

Section 6.2: Delete Para. 6.2.1 and renumber the change following paragraphs as follows:

"Change Para. 6.2.2 to 6.2.1; Para. 6.2.3 to 6.2.2; Para. 6.2.3.1 to 6.2.2.1; Para. 6.2.3.2 to 6.2.2.2; Para. 6.2.4 to 6.2.3; Para. 6.2.4.1 to 6.2.3.1; Para. 6.2.4.2 to 6.2.3.2; Para. 6.2.4.3 to 6.2.3.3; Para. 6.2.4.4 to 6.2.3.4."

Para 7.2: Add the following:

"7.2 The records identified in 7.1 shall be processed in accordance with Reference 3.5."

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: April 26, 1988

Quality Assurance  
Responsible Department

*C. D. [Signature]* 4/11/88  
CONCURRENCE

*[Signature]*  
APPROVAL





# HOLMES & NARVER, INC.

## INTERIM CHANGE NOTICE

ICN NO.

002

PROCEDURE NO.

NNWSI-033

REV.

0

PAGE

1 OF

2

TITLE

SURVEILLANCE ACTIVITIES

DATE ISSUED

Sept. 19, 1988

### DESCRIPTION OF CHANGE

6.2.2 The individual conducting the surveillance shall examine objective evidence in sufficient depth to determine if the item or activity surveilled meets specified requirements. The characteristics, methods, acceptance criteria, and objective evidence reviewed, shall be recorded on the planning document or the surveillance report, Attachment 8.3.

Delete and substitute revised Attachment 8.3

### INTERIM CHANGE APPROVAL

EFFECTIVE DATE: Sept. 26, 1988

RESP DEPT. Quality Assurance  
*J. F. Schell* 9/12/88  
CONCURRENCE

*C. D. Wright*  
CONCURRENCE 9/12/88

*Joseph L. Colman*  
APPROVAL 9/15/88

**HOLMES & NARVER, INC.**  
**QUALITY ASSURANCE SURVEILLANCE REPORT**

REPORT NO.:     S     (1)

PAGE   1   OF   1  

DATE STARTED \_\_\_\_\_ (2) SURVEILLANCE ACTIVITY \_\_\_\_\_ (4)

DATE COMPLETED \_\_\_\_\_ (3) ORGANIZATION SURVEILLED \_\_\_\_\_ (5)

SURVEILLANCE DETAILS \_\_\_\_\_ (6)

(1) Next sequential number from Surveillance Control Log (Year-S-XXXX)

(2) Self Explanatory

(3) Self Explanatory

(4) Brief description of the activity surveilled (e.g., Nonconformance Control)

(5) Self Explanatory

(6) a. Personnel contacted

b. Brief statement regarding overall results of the surveillance

c. Brief description of the specific attributes/results of the item/activity surveilled.

d. List of equipment used during the surveillance (ie., M&TE)

e. Summary of condition(s) requiring responses from the surveilled organization.

(7) Circle the appropriate results

(8) Identify any CAR/NCR issued

Note: Surveillance report should not be closed until the CAR/NCR are issued for the deficiencies and responses to observation, if any, are reviewed and accepted.

(9) Self Explanatory

(10) Self Explanatory--Signature signifies CQA review/acceptance of report and action taken.

RESULTS: SAT/UNSAT (7) CLOSED BY: CAR/NCR/OTHER (8)

\_\_\_\_\_  
(9)  
PERFORMED BY DATE

\_\_\_\_\_  
(10)  
CHIEF, QUALITY ASSURANCE DATE



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date October 30, 1987	Number NNWSI-033
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SUBJECT  SURVEILLANCE ACTIVITIES	Revision No. 0	Supersedes Q1.4	Page 1 of 4
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NNA.871029.0040

**1.0 PURPOSE**

This procedure establishes the requirements for planning, conducting, and documenting the results of the surveillance of specific items or activities to verify conformance to specified requirements.

**2.0 SCOPE**

Surveillances are intended to supplement the Audit Program and may be conducted on any quality affecting item or activity pertinent to the project.

**3.0 REFERENCES**

- 3.1 NNWSI-002, Indoctrination, Training, Certification and Qualification
- 3.2 NNWSI-011, Nonconformance Control
- 3.3 NNWSI-012, Corrective Action
- 3.4 H&N/ESD-1706, Notification, Investigation, and Reporting of Occurrences

**4.0 DEFINITIONS**

- 4.1 Corrective Action Report (CAR)--A preformatted form used to document non-hardware-related deficiencies; remedial, investigative, and corrective actions; and the evaluation and verification of these actions.
- 4.2 Item--Any level of assembly, including structure, system, subsystem, sub-assembly, component, part, or material.
- 4.3 Nonconformance--A deficiency in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminate.
- 4.4 Observation--The identification of weakness in the quality assurance program which, if left uncorrected, could result in a deficiency.
- 4.5 Surveillance--A process of monitoring or observing an item or activity to verify conformance to specified requirements.

**5.0 RESPONSIBILITIES**

- 5.1 The Technical Project Officer (TPO) and Chief, Quality Assurance (CQA), are responsible for directing and implementing the requirements of this procedure.

Quality Assurance Responsible Organization	<i>C. O. [Signature]</i> Concurrence	<i>J. [Signature]</i> Approval
---	---	-----------------------------------

5.2 Management of the surveilled organizations shall provide written responses to the CARs and observations as directed by the surveillance report.

## 6.0 PROCEDURE

### 6.1 Planning

- 6.1.1 Surveillances may be scheduled or implemented on a random basis. The selection of items or activities to be surveilled shall be based upon relative impact or importance to the project.
- 6.1.2 Once it is determined that an item or activity is to be surveilled, a planning document (checklist, Attachments 8.1 and 8.2, or another suitable document) shall be prepared based upon applicable sections of the QAPP, procedures, drawings, specifications, etc., which will thoroughly examine the item or activity.
- 6.1.3 Surveillance personnel shall be qualified as prescribed by Reference 3.1.
- 6.1.4 Surveillance personnel shall be independent of any direct responsibility for the item or activity they surveil.

### 6.2 Surveillance Performance

- 6.2.1 The previously prepared planning document (6.1.2) shall be utilized as the basis for conducting the surveillance. This document is not intended to restrict the individual or the scope of the surveillance, and it may be amended or revised as conditions warrant.
- 6.2.2 The individual conducting the surveillance shall examine objective evidence in sufficient depth to determine if the item or activity surveilled meets specified requirements. The pertinent objective evidence reviewed shall be recorded on the planning document or the surveillance report, Attachment 8.3.
- 6.2.3 The results of the surveillance shall be recorded on the planning document or the surveillance report. "S" shall be used for Satisfactory, "U" for Unsatisfactory, and "N" for Not Surveilled.
  - 6.2.3.1 If the results of the surveillance are unsatisfactory, the Corrective Action Report (CAR) or Nonconformance Report (NCR) issued shall also be identified (e.g., U/CAR-87-S-XX).
  - 6.2.3.2 If an item was not surveilled, justification for its omission shall be recorded on the planning document.
- 6.2.4 When conditions adverse to quality are identified, the individual or organization responsible for the item or activity being surveilled shall be notified, and:

- 6.2.4.1 If the condition adverse to quality is a hardware-related deficiency, a NCR shall be initiated in accordance with Reference 3.2.
- 6.2.4.2 If the condition adverse to quality is programmatic or is a procedural violation, a CAR shall be initiated in accordance with Reference 3.3.
- 6.2.4.3 If the condition is not a deficiency, but if left uncorrected could result in a deficiency, it shall be identified to the organization as an observation.
- 6.2.4.4 If identified conditions are corrected to the satisfaction of the individual conducting the surveillance during the surveillance, the CAR or observation need not be issued. However, the condition and corrective action taken shall be duly noted.

### 6.3 Post Surveillance Activities

- 6.3.1 A Surveillance Report, Attachment 8.3, shall be prepared.
- 6.3.2 A memo noting the results of the surveillance and any deficiencies on observations shall be transmitted to appropriate management of the organization surveilled. If any deficiencies or observations are identified, the transmittal notification shall request written responses within thirty (30) days unless otherwise specified.
- 6.3.3 Minimum distribution of the surveillance report is as follows:
  - 6.3.3.1 Manager, Nevada Operations
  - 6.3.3.2 NNWSI-TPO
  - 6.3.3.3 Responsible management of the surveyed organization
  - 6.3.3.4 QA Surveillance File
  - 6.3.3.5 NNWSI Project File

### 6.4 Surveillance Response Evaluation

- 6.4.1 CARs issued as a result of the surveillance will be processed and evaluated as prescribed by Reference 3.3.
- 6.4.2 NCRs issued as a result of the surveillance will be processed and evaluated as prescribed by Reference 3.2.
- 6.4.3 Observations identified as a result of the surveillance, which require written responses, shall be evaluated and accepted by the individual who conducted the surveillance. Acceptance shall be annotated on the record copy of the response.

- 6.4.4 All deficiencies identified shall be evaluated to determine if any condition warrants further processing as an "unusual occurrence", DOE/NV Order 5000.3, as required by Reference 3.4.
- 6.4.5 The surveillance shall be considered "closed" when the memo (6.3.2) identifying the results has been issued to the organization surveilled. Resulting CARs, NCRs, and observations shall be tracked.

**7.0 DOCUMENTATION**

7.1 The following records shall be maintained for surveillances:

- 7.1.1 Surveillance Planning Document
- 7.1.2 Surveillance Reports
- 7.1.3 Surveillance Responses
- 7.1.4 Transmittal Notices

**8.0 ATTACHMENTS**

- 8.1 Checklist
- 8.2 Checklist Continuation Page
- 8.3 Quality Assurance Surveillance Report







**HOLMES & NARVER, INC.**  
**QUALITY ASSURANCE SURVEILLANCE REPORT**

REPORT NO.: S (1) PAGE 1 OF 1

DATE STARTED \_\_\_\_\_ (2) SURVEILLANCE ACTIVITY \_\_\_\_\_ (4)

DATE COMPLETED \_\_\_\_\_ (3) ORGANIZATION SURVEILLED \_\_\_\_\_ (5)

SURVEILLANCE DETAILS \_\_\_\_\_ (6)

(1) Next sequential number from Surveillance Control Log (Year-S-XXXX)

(2) Self explanatory

(3) Self explanatory

(4) Brief description of the activity surveilled (e.g., Nonconformance Control)

(5) Self explanatory

(6) a. Personnel contacted

b. Brief statement regarding overall results of the surveillance

c. Brief description of the specific attributes/results of the item/  
activity surveilled

d. Summary of condition(s) requiring responses from the surveilled  
organization

(7) Circle the appropriate results

(8) Identify any CAR/NCR issued

Note: Surveillance report should not be closed until the CAR/NCR are issued  
for the deficiencies and responses to observation, if any, are reviewed and  
accepted.

(9) Self explanatory

(10) Self explanatory--Signature signifies CQA review/acceptance of report and  
action taken.

RESULTS: SAT/UNSAT (7) CLOSED BY: CAR/NCR/OTHER (8)

(9)  
\_\_\_\_\_  
PERFORMED BY DATE

(10)  
\_\_\_\_\_  
CHIEF, QUALITY ASSURANCE DATE



**HOLMES & NARVER, INC.**  
**ENERGY SUPPORT DIVISION**

**NNWSI PROCEDURE**

Effective Date

Number

June 24, 1988

NNWSI-038

**SUBJECT:**

**QUALITY ASSURANCE DRAWING  
 AND SPECIFICATION REVIEW**

Revision No.  
0

Supersedes  
N/A

Page 1 of 3

**1.0 Purpose**

This procedure establishes the method for the review of drawings and specifications by Quality Assurance (QA) to ensure that drawings and specifications have been prepared, reviewed, and approved in accordance with prescribed procedures.

**2.0 Scope**

This procedure applies to all drawings and specifications developed by Holmes & Narver, Inc., Energy Support Division (H&N/ESD) in support of the NNWSI Project.

**3.0 References**

- 3.1 NNWSI-003, Specification Preparation and Control
- 3.2 NNWSI-005, Drawing Preparation and Control
- 3.3 NNWSI-008, Quality Assurance Records Management

**4.0 Definitions**

None

**5.0 Responsibilities**

The Chief, Quality Assurance, is responsible for directing and implementing the requirements of this procedure.

**6.0 Procedure**

**6.1 General Requirements**

6.1.1 Drawings or specifications submitted for final review and sign-off shall have been reviewed and signed-off by all specified review/approval groups, with the exception of the external approvals and that of the Technical Project Officer (TPO), prior to the review/sign-off by QA.

Resp. Dept: Quality Assurance

*[Signature]*  
 Concurrency 6/16/88

*[Signature]*  
 Concurrency 6/16/88

*[Signature]*  
 Approval 6/16/88

- 6.1.2 Drawings or specifications submitted for review and comment, but not for final sign-off, may be reviewed and commented upon concurrently with other reviewing groups.
- 6.1.3 Drawings and specifications prepared and submitted to QA for review, as prescribed by References 3.1 and 3.2, shall be logged in and out on the Quality Assurance Drawing/Specification Log, Attachment 8.0.

## 6.2 Title I Review

### 6.2.1 Title I drawing review shall ensure that:

- 6.2.1.1 Appropriate codes, standards regulations, and quality requirements are specified.
- 6.2.1.2 Quality level(s) are specified.
- 6.2.1.3 Specified approvals are documented.

### 6.2.2 Title I specification review shall ensure that the specification outline complies with the appropriate format prescribed by Reference 3.1.

## 6.3 Title II Review

### 6.3.1 Title II drawings shall be reviewed to ensure that:

- 6.3.1.1 Appropriate codes, standards, regulations, and quality requirements are specified.
- 6.3.1.2 Appropriate acceptance criteria is specified.
- 6.3.1.3 Quality level(s) are specified.
- 6.3.1.4 Specified approvals are documented.

### 6.3.2 Title II specifications shall be reviewed to ensure that:

- 6.3.2.1 Specification format complies with Reference 3.1.
- 6.3.2.2 Appropriate codes, standards, regulations, and quality requirements are specified.
- 6.3.2.3 Appropriate acceptance criteria is specified.
- 6.3.2.4 Submittal requirements such as drawing, procedures, QA program, records, etc., are specified.
- 6.3.2.5 Engineering/QA witness or hold points are specified.

6.3.2.6 Special handling, storage, packaging, and shipping requirements are specified.

6.3.2.7 Special testing or qualification requirements are specified.

6.3.2.8 Specified approvals are documented.

6.4 QA review comments shall be documented and forwarded to the requester for resolution.

6.5 QA shall sign or initial the drawing or specification, as appropriate, when they are satisfied that the drawing or specification is satisfactory and that their comments have been resolved.

**7.0 Documentation:**

7.1 The QA Drawing/Specification Log shall be retained to document the QA review.

7.2 The QA Drawing/Specification Log shall be submitted to the Records Coordinator for processing into the Records Management System in accordance with Reference 3.3 at the completion of the project.

**8.0 Attachments:**

Quality Assurance Specification/Drawing Log

QUALITY ASSURANCE PROGRAM SPECIFICATION LOG

DRAWING/SPECIFICATION REVISION NO.	DATE RECEIVED	DATE COMPLETED	REMARKS	COMMENTS NO YES	SIGN-OFF DATE

QUALITY:AG



## Department of Energy

Nevada Operations Office  
P. O. Box 96518  
Las Vegas, NV 89193-8518

APR 21 1988

Joseph C. Calovini  
Technical Project Officer  
for NNWSI  
Holmes & Narver, Inc.  
101 Convention Center Drive  
Suite 860  
Las Vegas, NV 89109

WASTE MANAGEMENT PROJECT OFFICE (WMPO) QUALITY ASSURANCE (QA) AUDIT 88-2 OF  
HOLMES & NARVER, INC. (H&N) SUPPORT OF THE NEVADA NUCLEAR WASTE STORAGE  
INVESTIGATIONS (NNWSI) PROJECT

Enclosed is the report for Audit 88-2, which was conducted for the WMPO at  
H&N, Las Vegas, on March 28 through April 1, 1988.

The audit reviewed sufficient objective evidence related to the H&N Quality  
Assurance Program Plan (QAPP) and NNWSI Project Procedures Manual to confirm  
that H&N must improve its implementation of certain basic requirements before  
it can be in full compliance with the NNWSI Project Quality Assurance Plan,  
NVO-196-17, Revision 5.

Pertinent items requiring management attention were discussed with you and  
members of your staff during the postaudit conference which was held on  
April 1, 1988. These included the following:

1. A sense of urgency must be instilled in the members of the  
project staff to meet commitments made in Audit 87-2, conducted on  
September 8-11, 1987. These commitments, which were basically related to  
the completion of procedures required for design control activities, were  
not met. In addition, H&N failed to respond to a directive from the WMPO  
which required that implementing procedures be issued at the time of WMPO  
approval of the H&N QAPP.
2. H&N must increase the number of surveillances and/or audits of their  
internal activities to identify areas where corrective action is required  
and to assure that proper action is implemented. This will require  
a review of the adequacy of the number of QA staff dedicated to NNWSI  
Project work.

NNA 880421-0010

APR 21 1988

Joseph C. Calovini

2

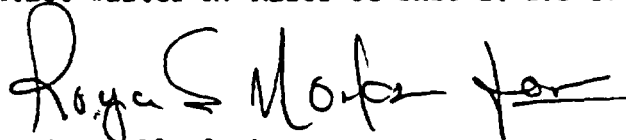
3. Certain problems were encountered during the audit which were caused by the lack of identification on equipment for NNWSI Project activities and Quality Level III work. H&N must establish a clear distinction of equipment used or to be used for NNWSI Project work.

During the course of the audit, the audit team issued 13 Standard Deficiency Reports (SDRs), Nos. 117-129, and five Observations. Subsequent to the audit, an additional three Observations were written, including one which was previously issued as SDR No. 126. Hence, a total of 12 SDRs (Nos. 117-125 and 127-129) and eight Observations (Nos. 1-8) have been issued as a result of this audit. The action copies of the SDRs were transmitted to you by the WMPO letter JB-1799 on April 12, 1988. Copies of the SDRs are also enclosed with this report for your information.

A description of the eight Observations is given in Section 6.0 of the enclosed report. Written responses to these Observations are due within 20 working days of the date of this transmittal letter. Please address your Observation responses to me and concurrently send a copy of each response to Nita Brogan at Science Applications International Corporation (SAIC), Las Vegas, Nevada.

By copy of this letter, Audit <sup>87</sup>88-2 is considered closed. However, as stated in the postaudit conference, because of the number of deficiencies related to procedures involving the design effort, the WMPO will conduct a surveillance of this activity within a month from the date of this letter. Open SDRs or Observations will continue to be tracked by the WMPO until all have been satisfactorily closed.

If you have any questions, please contact Walter R. Kazor of SAIC at 295-8748.



James Blaylock  
Project Quality Manager  
Waste Management Project Office

WMPO:JB-1880

Enclosures:

1. Audit Report 88-2
2. SDR Nos. 117-125 and 127-129

WMPO QUALITY ASSURANCE AUDIT REPORT  
NNWSI AUDIT OF HOLMES & NARVER, INC.

LAS VEGAS, NEVADA

AUDIT NUMBER 88-2

conducted on

March 28 - April 1, 1988

INNA 880421-0011

Prepared By: *W.R. Kean* Date: 4/13/88  
Lead Auditor

Approved By: *[Signature]* Date: 4/13/88  
Manager, Audits & Surveillances

Approved By: *Royce S. Monte* Date: 4/20/88  
Project Quality Manager  
DOE/WMPO

SAIC/T & MSS

APR 21 1988

CCF RECEIVED 1



## 1.0 Introduction

This report contains the results of the Quality Assurance audit of Holmes & Narver, Inc. (H&N), Las Vegas, Nevada. The audit was conducted on March 28 - April 1, 1988, in accordance with the WMPO Quality Assurance Program Plan, NVO-196-18, Rev. 2 and Quality Management Procedure (QMP) 18-01, Rev. 1.

## 2.0 Audit Purpose and Scope

The purpose of the audit was to evaluate the effectiveness of the H&N Quality Assurance Program with respect to the requirements of the NNWSI Project Quality Assurance Plan, NVO-196-17, Revision 5, and to verify implementation of the H&N QA Program as it relates to activities on the NNWSI Project.

## 3.0 Audit Team Personnel

Walter R. Kazor, Lead Auditor, SAIC  
Robert H. Klemens, Auditor, SAIC  
Frederick J. Ruth, Auditor, SAIC  
Gerard Heaney, Auditor, SAIC  
Peter J. Karnoski, Technical Specialist, SAIC  
Royce E. Monks, Observer, DOE/WMPO  
Anthony Baca, Observer, DOE/WMPO  
William L. Belke, Observer, NRC/HQ  
Joseph J. Holonich, Observer, NRC/HQ  
W. R. Marchand, Observer, DOE/HQ Weston

## 4.0 Summary of Audit Results

An evaluation of the H&N Quality Assurance Program and NNWSI Project Procedures Manual indicates that H&N must improve implementation of certain phases of its program before it can be in full compliance with the NNWSI Project Quality Assurance Plan, NVO-196-17, Revision 5. H&N failed to meet certain commitments made as a result of WMPO Audit 87-2 which was conducted on September 8-11, 1987. These commitments were basically related to the completion of procedures required for design control activities. H&N also failed to respond to a DOE/WMPO directive (WMPO letter JB-1158, dated 3/20/87) requiring that implementing procedures be issued at the time of WMPO approval of the H&N QAPP.

The number and types of deficiencies disclosed by this audit could have been identified and corrected by an increased internal audit and surveillance effort on the part of H&N. However, a study of the H&N organization indicates that only one full-time individual is dedicated to NNWSI Project work, with the QA manager and an additional individual assigned on a part-time basis. The audit team recommends that H&N evaluate the adequacy of the number of QA personnel assigned as dedicated individuals to the NNWSI Project.

The audit team also encountered problems in distinguishing NNWSI Project activities and equipment from ongoing work being done at the Nevada Test Site. In order to preclude commingling of activities and the inadvertent use of non-NNWSI Project equipment, H&N must establish a clear distinction between the NNWSI Project and other work for which they are responsible. This could involve the use of color coding and/or tagging of equipment.

The audit team issued 13 Standard Deficiency Reports (SDRs), Nos. 117-129, and five Observations during the course of the audit. Subsequent to the audit an additional three Observations were written, including one which had been previously identified as draft SDR No. 126 at the postaudit conference. Accordingly, a total of 12 SDRs (Nos. 117-125 and 127-129) and eight Observations have been issued as a result of this audit. The action copies of the SDRs were transmitted to you by the WMPO letter JB 1799, on April 12, 1988. Copies of the SDRs are also enclosed with this report for your information.

The SDRs were qualified by the application of severity levels, which are related to the significance of the finding. A discussion of the SDR severity levels is provided in Attachment 1. Ten of the SDRs are classified as severity level 2 and the remaining two are classified as severity level 3.

The Observations identify conditions that are presently not a violation of procedural requirements, but, in the opinion of the audit team, could lead to a violation of requirements in the future. The Observations were in the programmatic areas of document control, design review, procurement, audits, nonconformance control, and corrective action.

## 5.0 Audit Meetings

### 5.1 Preaudit Conference

A preaudit conference was held on March 28, 1988 at 10:00 a.m. in the H&N conference room. The purpose, scope and agenda for the audit were reviewed with the H&N Project Management staff. The audit team members and their assigned counterparts were identified, and the lines of communication were established. The attendees at this meeting are listed in Attachment 2 of this report.

## 5.2 Postaudit Conference

The postaudit conference was held on April 1, 1988, at 10:00 a.m. in the H&N conference room. A brief summary of the results of the audit, including the SDRs and Observations identified during the course of the audit, was presented to the H&N staff. Draft copies of the SDRs and Observations were provided to H&N management. Emphasis was placed on the items highlighted in the summary of this report and notification was given to H&N management that a surveillance of certain phases of their program would be conducted by the WMPO approximately one month from the date of the postaudit conference.

## 6.0 Standard Deficiency Reports/Observations

### 6.1 Standard Deficiency Reports

#### 1) SDR No. 117 - Severity Level 3

Contrary to requirements, there are no position descriptions for personnel performing union surveying activities. In addition, several position descriptions do not specify the minimum educational requirements.

#### 2) SDR No. 118 - Severity Level 2

"Effective Dates" are not listed on H&N procedures NNWSI-004, Rev. 1, NNWSI-005, Rev. 0, NNWSI-011, Rev. 0, NNWSI-002, Rev. 0, and ICN No. 001, which is contrary to requirements. Several revised procedures did not incorporate vertical bars in the right-hand margin, denoting changes.

#### 3) SDR No. 119 - Severity Level 2

Contrary to requirements, a QA review is not being performed on Work Initiation Packages.

#### 4) SDR No. 120 - Severity Level 2

H&N design procedures do not address the required interdiscipline design reviews.

#### 5) SDR No. 121 - Severity Level 2

The annual procedure review required by NNWSI-001 has not been accomplished by H&N.

#### 6) SDR No. 122 - Severity Level 2

The file maintained in the vault by the Records Coordinator does not have an index. This is contrary to requirements.

7) SDR No. 123 - Severity Level 2

The "Cause of Condition" has not been identified in Corrective Action Reports (CARs) issued by H&N.

8) SDR No. 124 - Severity Level 2

H&N issued Purchase Order POJC-412A to Heleco without the required QA review of the purchase order. In addition, there is no documented evidence that H&N implemented the required measures for the evaluation and selection of Heleco as an approved supplier.

9) SDR No. 125 - Severity Level 2

Contrary to requirements, there are no indoctrination and training records in the training file located in the NDE Lab.

10) SDR No. 127 - Severity Level 2

H&N did not issue a required audit schedule for 1988 prior to this audit.

11) SDR No. 128 - Severity Level 2

Contrary to requirements, there is no procedure for issuing and controlling revisions to the H&N QAPP.

12) SDR No. 129 - Severity Level 3

Several forms used in surveying need to be revised to include information relative to verification by the party chief. (Direct Optical Survey Form and Tunnel X-Section Form.)

## 6.2 Observations

### Observation No. 1

The scope of NNWSI-029, Rev. 0 "applies to work performed by Holmes & Narver, Inc., in support of the NNWSI ESF ICWG." The purpose states that the procedure outlines the requirements for generating and controlling design interface documents.

Neither the purpose nor the scope excludes the H&N interdiscipline reviews of H&N design documents, but the procedure does not describe how H&N performs internal, interdiscipline reviews.

Action is required by H&N to revise NNWSI-029 to correct this deficiency by either including instructions for interdiscipline review in NNWSI-029 or in another NNWSI Project procedure which would be referenced in NNWSI-029.

Observation No. 2

H&N procedure NNWSI-001 "Generation and Control of NNWSI Procedures," Rev. 0, Paragraph 6.1.1 requires that a history file of all procedures and revisions be established. A review of these files indicated that they were still being worked on to present a clear and concise history for each NNWSI Project procedure. The audit team requests that H&N QA schedule an audit/surveillance of this activity once the history files are completed to ensure a clear and concise history file is established. The WMPO PQM is to be notified of this scheduled date.

Observation No. 3

Survey Department party chiefs use as reference a "Horizontal and Vertical Control Index." This document contains pencil corrections and uncontrolled revisions to coordinates of control points. Because of the reference importance of this document, its use on the NNWSI Project should be controlled so that all data and changes thereto are standardized for all users.

Observation No. 4

NNWSI-031, Audits, Rev. 0, Paragraph 6.5.6, states "Auditors shall record the results of their review of each item audited as 'N' (not audited), 'S' (satisfactory), or 'U' (unsatisfactory) in the Result section of the checklist. If the result is unsatisfactory, the CAR or NCR issued for the deficiency shall also be identified."

A review of the audit checklists for Audit No. 87-10 indicated that three CARs were identified as "U". Two of the three CAR numbers were not identified on the checklist. During the course of the WMPO audit the lead auditor for 87-10 recorded the CAR numbers on the checklist and initialed and dated the entries.

Observation No. 5

The purchase requisition and calibration records were reviewed for the Ultrasonic Flaw Detector, Serial Number 05110E, located in Area 6.

The purchase requisition indicated recalibration would be on an annual basis, yet the calibration sticker indicates calibration is due in six months. If this piece of equipment was needed for NNWSI Project activities the available records would not meet the Project requirements. It was also noted that there was no QA review of the purchase requisition before it was placed with REECO.

The calibration records were reviewed and found to be satisfactory.

Observation No. 6

1.) H&N Procedure NNWSI-011, "NNWSI Nonconformance Control," Rev. 0, Para. 6.1.5, states "QA shall review H&N/ESD initiated NCRs on a quarterly basis to determine if any adverse trends exist, as prescribed by Reference 3.1." Reference 3.1 is H&N/ESD QA Guideline 16.2, entitled "Review of Nonconformance Documentation."

An H&N response to WMPO Audit 87-02, Observation No. 2, stated that all QA guidelines would be replaced by NNWSI Project Procedures. Procedure NNWSI-011 has not as yet been revised.

2.) H&N Procedure NNWSI-012, "Corrective Action," Rev. 0, Para. 6.4, states "Corrective action reports shall be analyzed by QA at least twice each year to show quality trends. Results shall be reported to upper management."

The same procedure, Attachment 8.1, "Instructions for Completion of the CAR Form," states, "Block 4: Unusual Occurrence - Report Required? - Check the appropriate box based on the preliminary evaluation for potential reportability in accordance with Reference 3.3 and 3.4." Reference 3.3 is DOE Order 5000.3 "Unusual Occurrence Reporting System," Paragraph N of DOE Order NV 5000.3-2, dated March 31, 1986, states "Each organization's UOR System will include written procedures that define responsibility for preparation, review, distribution, and follow-up of UORs."

Reference 3.4, "H&N/ESD-1706 Notification, Investigation and Reporting of Occurrences," is not an NNWSI Project procedure.

The above examples in 1 and 2 indicate where H&N does not have an NNWSI Project procedure in place for the performance and reporting of trend analysis activities or for the evaluation and reporting of unusual occurrences. H&N is requested to provide a schedule for these procedures to be put in place for NNWSI Project activities.

Observation No. 7

Reference: WMPO letter JB-1158, dated 3/20/87, Vieth to TPOs. Page 2, last paragraph, requires H&N to issue revised procedures upon receipt of WMPO approval of the H&N QAPP. The H&N QAPP has an effective date of 3/1/88. As of the date of this audit, H&N has not issued a procedure covering procurement of QA Level I or II activities. Action is required of H&N for the following:

1. Prepare and implement a procurement procedure for NNWSI Project QA Level I or II activities.
2. Prepare and implement any additional procedures applicable to the NNWSI Project.
3. Provide a schedule for the issuance of any required procedures.

Observation No. 8

NNWSI-019, Rev. 0, Para. 6.3.8, requires that "All test data sheets be documented as a part of the test records."

Contrary to the above, raw test data is missing from the test records for WBS No. 1.2.3.5.2H (a hardness test of two set screws made for the NNWSI Project).

Action is required of H&N to locate the missing data and include it in the test records. This requirement is considered to be good engineering practice and H&N should instruct laboratory personnel to implement this requirement in future work.

7.0 Required Action

A written response is required for each Standard Deficiency Report and Observation delineated in Section 6.0. Responses to SDRs are due 20 working days from the date of the SDR transmittal letter, while responses to Observations are due within 20 working days of the date of the audit report transmittal letter. The original SDRs were sent via WMPO letter JB-1799. In addition, copies of these SDRs are included with this report for your information and use. Upon response, acceptance, and satisfactory completion and verification of all remedial and corrective actions, the SDRs will be closed and H&N will be notified by letter of the SDR closure.

## 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.



MEETING PARTICIPANT LIST (88-02)

<u>NAME</u>	<u>ORGANIZATION</u>	<u>LOCATION</u>	<u>TITLE</u>	<u>PREAUDIT CONFERENCE</u>	<u>POSTAUDIT CONFERENCE</u>
J. Adams	H&N	NTS	H&N SQCO	X	
Carolyn Aiello	H&N	Las Vegas	Training Coordinator	X	X
Anthony Baca	DOE/WMPO	Las Vegas	General Engineer	X	X
Catherine Bautista	H&N	Las Vegas	Clerk/Records	X	X
Bill Belke	NRC	Wash., DC	Project Mgr. QA	X	
Joe Calovini	H&N	Las Vegas	Tech. Project Officer	X	X
Helen Hall	H&N	Las Vegas/NTS	Engineer	X	X
Jerry Heaney	SAIC	Las Vegas	QA Engineer	X	X
Joe Holonich	NRC	Wash., DC	Project Manager	X	
Pam Jackson	H&N	Las Vegas	Clerk II	X	X
W. R. Kazor	SAIC	Las Vegas	Act. Mgr. ASD	X	X
R. H. Klemens	SAIC	Las Vegas	QA Engineer	X	X
P. J. Karnoski	SAIC	Las Vegas	QA Engineer	X	X
Joanne Kane-Ledbetter	H&N	Las Vegas	Proj. Coord.	X	X
A. MacIntosh	H&N	NTS	Supv. Mat. Testing	X	
W. R. Marchand	DOE/HQ	Wash., DC	QA Engineer	X	
Royce Monks	DOE/WMPO	Las Vegas	QA Engineer	X	X
E. R. Mouser	H&N	NTS	QA	X	X
Ralph Musick	H&N	Las Vegas	Proj. Engr.	X	X
Larry O'Laughlin	H&N	Mercury	Mgr. Field Svcs.		X
Jim Replogle	H&N	Las Vegas	Chief Project Engr.	X	X
F. J. Ruth	SAIC	Las Vegas	QA Engineer	X	X
R. P. Sabol	H&N	NTS	QA Engineer	X	X
R. L. Schreiner	H&N	Las Vegas	Engr. Sect. Chief	X	
V. Thummala	H&N	NTS	Sr. Engineer	X	X
Jan Verden	H&N	Las Vegas	Admin. Sec. Chief	X	X
T. A. Wanniski	H&N	Las Vegas	Op. Mgr.	X	
Terri Ware	H&N	Las Vegas	Exec. Secretary	X	
S. H. Williams	H&N	Las Vegas	Proj. Eng.	X	
Jade Woodruff	H&N	NTS	H&N	X	X
C. O. Wright	H&N	NTS	Chief, QA	X	X
T. W. Yelvington	H&N	NTS	Mgr. Tech. Svcs.	X	

# WMPO STANDARD DEFICIENCY REPORT

N-QA-03  
3/87

Completed by Originating QA Organization

1 Date 4/1/88	2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-2	3a Identified By F. J. Ruth	3b Branch Chief Concurrence Date N/A	4 SDR No. 117 Rev. 0
5 Organization Holmes & Narver	6 Person(s) Contacted Carl Wright/Carolyn Aiello		7 Response Due Date 20 Working Days from Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) Audit Item No. 1a-3, Page 2 of 18 NVO-196-17, Rev. 5, Section 11 Quality Assurance Program, Subparagraph 5.1 Establishment of Requirements "The requirements shall establish position descriptions that set forth minimum personnel qualifications (cont'd)			
9 Deficiency 1) There are no position descriptions for personnel performing union surveying activities; 2) The following position descriptions do not specify what the minimum education requirements are A) Technician I, II, III B) Principal Technician C) Senior Technician D) Technician Aide E) Inspectors I, II, III, (cont'd)			
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input type="checkbox"/> Corrective Review all position descriptions/job description and identify the education required for that position. Review all position descriptions/job descriptions and establish what the equivalency will be to a degree. (cont'd)			

Aprvl

11 QAE/Lead Auditor Date <i>W.R. Kegan</i> 4/5/88	12 Branch Manager Date <i>Carl Wright</i> 4/5/88	13 Project Quality Mgr. Date <i>Carolyn Aiello</i> 4/6/88
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Completed by Organization in Block 5

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"/> 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



WPMO STANDARD DEFICIENCY REPORT  
CONTINUATION SHEET

N-QA-C  
10/86

SDR No. 117

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Page 2 of 2

Block 8 Requirement (cont'd)

and provide for appropriate indoctrination or training or both, prior to initiation of activities that affect quality.

- 2) NVO-196-17, Rev. 5, Paragraph 5.1.1 Position Description. "Minimum education and experience requirements shall be established and documented in position description for each position involved in the performance of activities affecting quality."
- 3) H&N, Inc. QAPP, Subject Quality Assurance Program, Section 2, Paragraph IIID.1 "Position Descriptions shall establish minimum personnel qualifications, including education and experience."

Block 9 Deficiency (cont'd)

F) Principal Inspector

- 3) Several position descriptions state the minimum education requirements or equivalent but do not spell out what the equivalency might be if there is no degree

Block 10 Recommended Action(s) (cont'd)

Prepare position descriptions/job descriptions for individuals performing surveys.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-0:  
3/87

Completed by Originating QA Organization

1 Date <u>4/1/88</u>	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During <u>WMPO Audit 88-2</u>	3a Identified By <u>G. Heaney</u>	3b Branch Chief Concurrence Date <u>N/A</u>	4 SDR No. <u>118</u> Rev. <u>0</u>
5 Organization <u>Holmes &amp; Narver</u>		6 Person(s) Contacted <u>R. Sabol.</u>	7 Response Due Date i 20 Working Days frc Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) <u>Holmes &amp; Narver NNWSI Procedure NNWSI-001, Rev. 0 states: 1) Para. 5.2.3 - "The initial issue of a procedure shall be 'Rev. 0' with the appropriate date of approval and effective date.</u> <span style="float: right;">(cont'd)</span>			
9 Deficiency Contrary to the above requirements: <u>1) Effective dates are not listed on the following H&amp;N NNWSI procedures: Table of contents, Rev. 15, NNWSI-004, Rev. 1, NNWSI-005, Rev. 0, NNWSI-011, Rev. 0, and NNWSI-002, Rev. 0, ICN No. 001.</u> <span style="float: right;">(cont'd)</span>			
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective			
1) Correct the deficiencies noted in Block 9. 2) Reinstruct personnel to procedural requirements. Provide objective evidence with response to the SDR.			

Aprvl.

11 QAE/Lead Auditor Date <u>4/1/88</u>	12 Branch Manager <u>[Signature]</u>	Date <u>4/1/88</u>	13 Project Quality Mgr. Date <u>[Signature]</u>
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Completed by Organization in Block 5

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"/> 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 Verifi- cation	<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



W.A.P.O. STANDARD DEFICIENCY REPORT  
CONTINUATION SHEET

N-QA-03E  
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- 2) Para. 5.5.1.1 - "All revised words, sentences, and paragraphs shall be noted by a vertical bar in the right hand margin adjacent to the change with the exception of correction of typographical errors." (Refer to Audit Checklist Item No. 1-14)

Block 9 Deficiency (cont'd)

- 2) NNWSI-004, Rev. 1 and NNWSI-008, Rev. 1 were revised and distributed without vertical bars in the right hand margin denoting changes. The procedures do not indicate that the revisions were complete rewrites.

Note: Procedure NNWSI-029 does not indicate the procedure number on pages 2, 3, 4, and 5.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-03  
3/87

Completed by Originating QA Organization

1 Date <u>4/1/88</u>		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page <u>1</u> of <u>2</u>
3 Discovered During <u>WMPO Audit 88-2</u>		3a Identified By <u>P. Karnoski G. Heaney</u>	3b Branch Chief Concurrence Date <u>N/A</u>	4 SDR No. <u>119</u> Rev. <u>0</u>
5 Organization <u>Holmes &amp; Narver</u>		6 Person(s) Contacted <u>C. Wright, R. Schreiner, L. O'Laughlin</u>		7 Response Due Date is <u>20 Working Days from Date of Transmittal</u>
8 Requirement (Audit Checklist Reference, if Applicable) <u>H&amp;N Procedure NNWSI-007 "Work Initiation, Criteria Gathering and Reporting", Rev. 0 paragraph 6.2.3.3 states in part: "QA shall review the Work Initiation package to ensure that the appropriate documents were prepared, reviewed, approved, or accepted in accordance (cont'd)</u>				
9 Deficiency Contrary to the above requirement, the QA review is not being performed. Examples of discrepancies observed during the audit that emphasize the need for this review are: <p style="text-align: right;">(cont'd)</p>				
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective				
1) Revise the work initiation forms to indicate appropriate references and quality assignment levels. <p style="text-align: right;">(cont'd)</p>				

Completed by Organization in Block 5

11 QAE/Lead Auditor Date <u>4/1/88</u>		12 Branch Manager <u>[Signature]</u>		Date <u>4/5/88</u>	13 Project Quality Mgr. Date <u>[Signature]</u>	Date <u>4/6/88</u>
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"/> 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.  
10/86

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119

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of 2

## Block 8 Requirement (cont'd)

with documented procedures and QA requirements. If all documents were processed correctly they shall annotate their acceptance on the Work Initiation Form." (Refer to Audit Checklist Item No. 1-53, 1-54, 1-57, 1-58)

## Block 9 Deficiency (cont'd)

- 1) Work initiation forms for the ESF Utility Power System, ESF UPS Power System and the ESF Standby Power System do not reference the NNWSI/ESF Title 1 "Scope and Planning Basis Document", Rev. 2, which was used as the source of criteria in determining the quality level assignment of the work task.
- 2) The work initiation 87-021, Rev. 0, for "Aerial Mapping Effort in Support of the NNWSI Project" indicates the QA level to be N/A. However, the task for which the work was performed is a Quality Level I activity (refer to Los Alamos National Laboratory Scientific Investigation Plan "Tectonics and Volcanism", No. 86/2.3.1. TV, Rev. 0, and its associated Quality Level Assignment Sheet).

## Block 10 Recommended Action(s) (cont'd)

- 2) Revise the work Initiation Form to include a QA signature block.
- 3) Reinstruct personnel to procedural requirements. Provide objective evidence with response to the SDR.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-1  
3/87

Completed by: [ ] Original QA Organization [ ]

1 Date 4/1/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-2	3a Identified By P. Karnoski G. Heaney	3b Branch Chief Concurrence Date N/A		4 SDR No. 120 Rev. _____
5 Organization Holmes & Narver		6 Person(s) Contacted C. Wright		7 Response Due Date 20 Working Days fr Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) H&N QAPP, Rev. 0, Section 3 "Design Control", Para. III-F-1 states, "Internal and external design interfaces shall be identified and controlled and design efforts shall be coordinated among and with responsible design organizations. Interface controls shall include (cont'd)				
9 Deficiency Contrary to the above requirement, H&N design procedures do not address interdiscipline design reviews. This deficiency was previously identified in WMPO Audit 87-2, Observation No. 4. H&N committed to revising the appropriate design procedures to address this issue. (cont'd)				
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective				
1) Revise the procedures as required.				
2) Perform a review to determine if the lack of procedural control for interdiscipline reviews has any adverse impact on currently on-going design (c				

11 QAE/Lead Auditor Date <i>W.B. [Signature]</i> 4/4/88	12 Branch Manager Date <i>[Signature]</i> 4/5/88	13 Project Quality Mgr. Date <i>[Signature]</i> 4/5/88
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14 Remedial/Investigative Action(s)	15 Effective Date _____
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16 Cause of the Condition & Corrective Action to Prevent Recurrence	17 Effective Date _____
---	-------------------------

18 Signature/Date
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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
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23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date
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WMPO STANDARD DEFICIENCY REPORT  
CONTINUATION SHEET

N-QA.  
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Page 2 of

Block 8 Requirement (cont'd)

the assignment of responsibility and the establishment of procedures among and within responsible design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces." (Refer to Audit Checklist Item No 3-10, 4-10)

Block 9 Deficiency (cont'd)

Additionally, the H&N response to WMPO Audit 87-2, Observation No. 3 committed to revising procedure NNWSI-014 "Design Verification", Rev. 0, to include a section on modeling. At the time of the audit, this action was not complete.

Block 10 Recommended Action(s) (cont'd)

activities.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-  
3/87

5280

Completed by Originating QA Organization

1 Date 4/1/88	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of
3 Discovered During WMPO Audit 88-2	3a Identified By R. Klemens	3b Branch Chief Concurrence Date N/A	4 SDR No. 121 Rev. 0
5 Organization Holmes & Narver	6 Person(s) Contacted J. Calovini	7 Response Due Date 20 Working Days fr Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) NNWSI-001, Rev. 0, Para. 5.3.5; The TPO shall ensure that procedures are reviewed annually for content, clarity, and applicability. The annual review of procedures shall be documented via an ROI or memo to the Chief, QA. (Refer to Audit Checklist Item No. 1-5)			
9 Deficiency The annual procedure review required by Para. 5.3.5 has not been done by H&N.			
10 Recommended Action(s): <input type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input type="checkbox"/> Corrective Establish why procedures review has not been done. Perform review.			

Completed by Organization in Block 5

11 QAE/Lead Auditor Date RHK <i>[Signature]</i> 4/4/88	12 Branch Manager Date <i>[Signature]</i> for 4/5/88	13 Project Quality Mgr. Date Rouge-Monr 4/5/88
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"/> Amended <input type="checkbox"/> Reject <input type="checkbox"/> 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 Verifi- cation	<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

N-QA-0  
3/87

Plan

Completed by Originating QA Organization

Aprvl. 5  
Completed by Organization in Block

Comp. by Orig. QA Org.

1 Date 4/1/88      2 Severity Level  1  2  3      Page 1 of 1

3 Discovered During WMPO Audit 88-2      3a Identified By R. Klemens      3b Branch Chief Concurrence Date N/A      4 SDR No. 122      Rev.     

5 Organization Holmes & Narver      6 Person(s) Contacted Cathy Bautista      7 Response Due Date 20 Working Days fr. Date of Transmittal

8 Requirement (Audit Checklist Reference, if Applicable) NNWSI-027, Rev. 0, Para. 6.2; Each file shall have an index or log sheet attachment 3.2, which identifies all the documents contained in that file. (Refer to Audit Checklist No. 1-240)

9 Deficiency The file maintained in the vault by the Records Coordinator does not have an index. There is no way of knowing what is in the file.

10 Recommended Action(s):  Remedial  Investigative  Corrective  
Establish the required file.  
Determine cause of omission.

11 QAE/Lead Auditor Date 4/4/88      12 Branch Manager [Signature] Date 4/5/88      13 Project Quality Mgr. Date 4/5/88

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  Accept  Amended Response      QAE/Lead Auditor/Date \_\_\_\_\_      Branch Manager/Date \_\_\_\_\_  
 Reject

20 Amended Response  Accept      QAE/Lead Auditor/Date \_\_\_\_\_      Branch Manager/Date \_\_\_\_\_  
 Reject

21 Verification  Satisfactory      QAE/Lead Auditor/Date \_\_\_\_\_      Branch Manager/Date \_\_\_\_\_  
 Unsatisfactory

22 Remarks \_\_\_\_\_

23 QA CLOSURE      QAE/Lead Auditor/Date \_\_\_\_\_      Branch Manager/Date \_\_\_\_\_      PGM/Date \_\_\_\_\_

# WMPO STANDARD DEFICIENCY REPORT

N-QA-0:  
3/87

5850

Completed by Originating QA Organization

1 Date 4/1/88	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 2
3 Discovered During WMPO Audit 88-2	3a Identified By G. Heaney	3b Branch Chief Concurrence Date N/A	4 SDR No. 123 Rev. 0
5 Organization Holmes & Narver		6 Person(s) Contacted C. Wright	7 Response Due Date 20 Working Days fr Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) H&N Procedure NNWSI-012 "Corrective Action", Rev. 0, Para. 6.2.3.1.3 states: "The corrective action to prevent recurrence appropriately identifies the cause of the deficiency and that the action(s) taken or proposed will prevent recurrence." (Refer to Audit Checklist Item No. 1-93, 1-95)			
9 Deficiency Contrary to the above requirement, a review of H&N generated corrective action reports (CARS) indicates that the cause of condition has not been identified by the personnel responsible for resolving the deficiency identified. Additionally, QA personnel have evaluated and closed some of the CARS without identifying the fact (cont'd)			
10 Recommended Action(s): <input type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1) Review to determine if the lack of identifying the cause of the deficiency identified has resulted in inadequate or inappropriate corrective action to prevent recurrence. (cont'd)			

Completed by Organization in Block 5

11 QAE/Lead Auditor Date 4/1/88	12 Branch Manager Date 4/5/88	13 Project Quality Mgr. Date 4/5/88
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

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10/86

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123

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0

Page 2 of 2

Block 9 Deficiency (cont'd)

that the cause of the condition was not identified.

Block 10 Recommended Action(s) (cont'd)

- 2) Reinstruct personnel to procedural requirements. Provide objective evidence with response to the SDR. Reinstruction should include management personnel responsible for correcting the deficiencies in addition to the QA staff.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-1  
3/87

Completed by Organization in Block 5

1 Date 4/1/88 2 Severity Level  1  2  3 Page 1 of 2

3 Discovered During WMPO Audit 88-2 3a Identified By R. Klemens/  
P. Karnoski 3b Branch Chief Concurrence Date N/A 4 SDR No. 124 Rev. 0

5 Organization Holmes & Narver 6 Person(s) Contacted Dale Herrington 7 Response Due Date 20 Working Days fr  
Date of Transmittal

8 Requirement (Audit Checklist Reference, if Applicable) H&N NNWSI QAPP, Rev. 0, Section states "H&N/ESD QA Manual (H&N-10471-1115) applies to QA Level III activities":  
1) Section 4, paragraph IIK of the H&N/ESD QA Manual, which covers Procurement Document Control, states "QA personnel will review procurement documents for (cont

9 Deficiency 1) Contrary to requirement 1 above, H&N issued PO JC-412A to Heleco for calibration services on 2/1/88 without the required QA review. 2) Contrary to requirement 2 above, there is no documented evidence that H&N took the required measures for evaluation and selection of Heleco to perform the required calibration

10 Recommended Action(s)  Remedial  Investigative  Corrective  
Assure that procurement documents are controlled and processed in accordance with H requirements. Conduct necessary training of applicable personnel in the review of purchase orders and evaluation of procurement sources stated in the (cont'd)

11 QAE/Lead Auditor Date WR Kay 4-6-88 12 Branch Manager Date [Signature] 4/6/88 13 Project Quality Mgr. Date [Signature] 4/6/88

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  Accept  Amended Response  Reject  Reject QAE/Lead Auditor/Date \_\_\_\_\_ Branch Manager/Date \_\_\_\_\_

20 Amended Response  Accept  Reject QAE/Lead Auditor/Date \_\_\_\_\_ Branch Manager/Date \_\_\_\_\_

21 Verification  Satisfactory  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  
10/85

SDR No. 124

Rev. 0

Page 2 of 2

Block 8 Requirement (cont'd)

compliance with Project QA requirements. Both Technical and QA reviews will be documented."

2) Section 7, Paragraph IIIB3 states "Measures for evaluation and selection of procurement sources shall be documented."

Block 10 Recommended Action(s) (cont'd)

requirements in Section 8 above.

# WMPO STANDARD DEFICIENCY REPORT

N-QA-  
3/87

Completed by Originating QA Organization

1 Date <u>4/1/88</u>	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page <u>1</u> of <u>1</u>
3 Discovered During <u>WMPO Audit 88-2</u>	3a Identified By <u>F. Ruth</u>	3b Branch Chief Concurrence Date <u>N/A</u>	4 SDR No. <u>125</u> Rev. <u>0</u>

5 Organization <u>Holmes &amp; Narver</u>	6 Person(s) Contacted <u>H. MacIntosh</u>	7 Response Due Date <u>20 Working Days fr</u> Date of Transmittal
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8 Requirement (Audit Checklist Reference, if Applicable) H&N QAPP, Rev. 0, Section 9, Para. IIIB requires that "personnel implementing these processes are appropriately indoctrinated and trained as required by Section 2 of this QAPP."  
(Refer to Audit Checklist Item No. 1CS-17)

9 Deficiency Contrary to the above, no indoctrination and training records are in training file in the NDE laboratory.

10 Recommended Action(s):  Remedial  Investigative  Corrective  
 Perform indoctrination of NDE personnel, document that indoctrination and place the records in the training file. Explain reason for omission.

11 QAE/Lead Auditor Date <u>4/4/88</u>	12 Branch Manager <u>[Signature]</u>	Date <u>4/5/88</u>	13 Project Quality Mgr. Date <u>[Signature] 4/5/88</u>
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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"/> 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 Veri- fication	<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
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Comp. by Orig. QA Org.



# WMPO STANDARD DEFICIENCY REPORT

N-QA-03  
3/87

Completed by Originating QA Organization in Block 5

1 Date 4/1/88	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 1
3 Discovered During WMPO Audit 88-2	3a Identified By F. Ruth	3b Branch Chief Concurrence Date N/A	4 SDR No. 127 Rev. 0
5 Organization Holmes & Narver	6 Person(s) Contacted C. Wright	7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) NNWSI-031, Rev. 0, Para. 6.1.1 requires that the Chief QA establish an audit schedule. (Refer to Audit Checklist Item No. 1-265)			
9 Deficiency Contrary to the above, the audit schedule had not been issued prior to the audit.			
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Issue audit schedule. Explain reason for omission. Note: Prior to the postaudit meeting on 4/1/88 an audit schedule for <u>all</u> H&N contractors was presented to the Lead Auditor. WMPO requires that a schedule unique to NNWSI activities be prepared. <span style="float: right;">Submitted</span>			
11 QAE/Lead Auditor Date <i>[Signature]</i> 4-6-88	12 Branch Manager <i>[Signature]</i> 4-6-88	13 Project Quality Mgr. Date <i>[Signature]</i> 4/6/88	
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	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	PGM/Date

# WMPO STANDARD DEFICIENCY REPORT

N-QA-03  
3/87

Completed by Originating QA Organization

1 Date 4/1/88		2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3		Page 1 of 1
3 Discovered During WMPO Audit 88-2	3a Identified By F. Ruth	3b Branch Chief Concurrence Date N/A	4 SDR No. 128 Rev. 0	
5 Organization Holmes & Narver	6 Person(s) Contacted C. Wright		7 Response Due Date is 20 Working Days from Date of Transmittal	
8 Requirement (Audit Checklist Reference, if Applicable) H&N QAPP Section 2, Para. IIIa requires that the Chief QA will issue and control the QAPP. (Refer to Audit Checklist Item No. 1a-1)				
9 Deficiency Contrary to the above requirement, there is no procedure for issuing and controlling revisions to the QAPP.				
10 Recommended Action(s) <input checked="" type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Prepare and implement required procedure. Determine and explain cause.				

Aprvl.

11 QAE/Lead Auditor Date <i>W.R. Kern 4/4/88</i>	12 Branch Manager <i>[Signature]</i>	Date 4/5/88	13 Project Quality Mgr. Date <i>[Signature]</i>	4/5/88
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Completed by Organization in Block 5

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"/> 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 Verifi- cation	<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

N-QA-C  
3/87

Completed by Originating QA Organization

1 Date 4/1/88	2 Severity Level <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3		Page 1 of 1
3 Discovered During WMPO Audit 88-2	3a Identified By R. Klemens/ P. Karnoski	3b Branch Chief Concurrence Date N/A	4 SDR No. 129 Rev. 0
5 Organization Holmes & Narver	6 Person(s) Contacted Jade Woodruff, Greg Bates		7 Response Due Date 20 Working Days fr Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) NNWSI-016, Rev. 0, ICN-001, Para. 6.1.2: The party chief verifies the data generated included on field notes Direct Optical Survey Forms, and Tunnel X-Section Forms, and initials and dates the survey data. (Refer to Audit Checklist No. 1-116)			
9 Deficiency The Direct Optical Survey Form and Tunnel X-Section Forms need a "Verified By" and signature of the party chief. At present, it cannot be determined if the data has been verified.			
10 Recommended Action(s): <input type="checkbox"/> Remedial <input type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective Prepare and initiate required information on the forms.			

Aprvl.

11 QAE/Lead Auditor Date <i>[Signature]</i> 4/6/88	12 Branch Manager <i>[Signature]</i>	Date 4/6/88	13 Project Quality Mgr. Date <i>[Signature]</i> 4/6/88
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Completed by Organization in Block 5

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"/> 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 Verifi- cation	<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

**VMPO Audit 88-2  
Observation Response**

**OBSERVATION #1**

Interdisciplinary review of design documents will be covered in H&N NNWSI Procedures 003 and 005, covering specification and drawing preparation and control respectively. See H&N's response to SDR No. 120.

The products of NNWSI-029 are not the basis for future design, procurement or construction.

**OBSERVATION #2**

A history file for each procedure is being prepared. A surveillance will be scheduled by O.A. for this activity. Notification of surveillance to the VMPO PQM will be done by a phone call.

**OBSERVATION #3**

The Survey Department Master Control Log will be input into the Survey Department's computer system and will be controlled by the computer technicians. Access to the log will be limited to only the computer technicians. Reference copies of the log book will not be produced.

**OBSERVATION #4**

It was an oversight on the part of the H&N audit team for not identifying the Corrective Action Report (CAR) issued to reflect the deficiencies on the audit checklist as prescribed by Procedure NNWSI-031.

The deficiency when identified by the VMPO auditor was immediately corrected by Ron Sabol, the Lead Auditor.

The H&N Auditor who participated in Audit 87-10 has been verbally notified of the need to complete the audit checklist as prescribed by NNWSI Procedure 031.

**OBSERVATION #5**

The calibration contractor, NDT Systems, has supplied corrected certification and stickers for the subject equipment.

The purchase order and the associated equipment was not intended for any use on the NNWSI Project.

**OBSERVATION #6**

NNWSI-011 has been amended via Interim Change Notice 001 dated 4/19/88 and has eliminated the reference to H&N QA Guideline 16.2. NNWSI-011 contains the requirements for trendings.

Section 5 of the QAPP requires that "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." It does not preclude the use of existing procedures nor does it stipulate that procedures exclusive to the NNWSI Project must be developed and used.

**OBSERVATION #7**

NVO-196-17 and the H&N QAPP requires that all activities affecting Quality shall be prescribed by and performed in accordance with documented instructions, procedures, plans or drawings, as appropriate to the activity.

H&N has exercised proper and prudent controls, as required by our Quality Assurance Program, to ensure that no quality level activities are performed without having the appropriate approved procedures in place and personnel trained. Procedures are being developed and implemented in a sequence to support the schedule of activities assigned and within budget constraints.

The procurement procedure is in work and will be in effect 06/30/88. As in the past, no activity will be accomplished without proper procedures in effect.

**OBSERVATION #8**

The raw data for the hardness test of the two set screws was located and has been appropriately filed.

MTL-Memo 88-22, dated April 14, 1988, has been issued to all MTL personnel which identifies that the raw data sheets must be filed properly.

**EXPLORATORY SHAFT FACILITY  
SCOPE AND PLANNING BASIS DOCUMENT**

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**EXPLORATORY SHAFT FACILITY**  
**SCOPE AND PLANNING BASIS DOCUMENT**

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ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.2.2.1

WBS TITLE: Utilities and Communications Systems

WORK PACKAGE TITLE: Power Systems

	Level I UPS	Level II Standby	Level III Primary & Secondary
<u>QA LEVEL:</u> Per QALA No. 6.2.2.-0011		*6.2.2.-0008	*6.2.2.-0002
		6.2.2.-0009	6.2.2.-0003
		6.2.2.-0010	6.2.2.-0004
			6.2.2.-0005
			6.2.2.-0006
			*6.2.2.-0012

WORK PACKAGE DESCRIPTION: Engineering and design of all surface electrical power systems, subsystems, and facilities to provide electrical power necessary for support and operation of the ESF Project.

TASKS:

1. Analyze requirements.
2. Prepare calculations.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 78 days

INTERFACES:

1. WMPO design review and approval
2. F&S and REECo for power requirements:
  - a. Surface (hoists, ventilators, compressors, emergency)
  - b. Subsurface (mining equipment, emergency)
3. Laboratories for special power needs

\* IDENTIFIED BUT NOT ISSUED



LIST OF DELIVERABLES:

1. Calculations
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

DRAWING LISTPower Systems

1. ESF Electrical Site Plan  
JS-025-ESF-E1
2. Main SWGR - One Line Diagram  
JS-025-ESF-E2
3. Non - Essential Power - One Line Diagram  
JS-025-ESF-E3
4. Essential Power - One Line Diagram  
JS-025-ESF-E4
5. Main Pad - Power and Lighting Pad  
JS-025-ESF-E5
6. Substation Pad - Power and Lighting Pad  
JS-025-ESF-E6
7. Shaft ES-1 DAS UPS Power Riser Diagram  
JS-025-ESF-E7
8. Main Test Level - Power and DAS Location Plan  
JS-025-ESF-E8
9. UPS Distribution - One Line Diagram  
JS-025-ESF-E9

**ORGANIZATION:** Holmes & Narver, Inc.

**WBS NUMBER:** 1.2.6.2.2.2

**WBS TITLE:** Utilities and Communications Systems

**WORK PACKAGE TITLE:** Water System

	Level I	Level II	Level III
<b><u>QA LEVEL:</u></b> Per QALA No.	1.2.6.-0001	*6.2.2.-0007	6.2.1.-0001
	*6.7.1.-0003	*6.7.1.-0015	6.2.2.-0001
	*6.7.1.-0014		6.7.1.-0013

**WORK PACKAGE DESCRIPTION:** Engineering and design of all systems, sub-systems, and components that supply and distribute potable, fire protection, and process water throughout the ESF.

**TASKS:**

1. Analyze requirements.
2. Prepare calculations.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

**ESTIMATED DURATION OF WORK PACKAGE:** 53 days

**INTERFACES:**

1. WMPO design review and approval
2. F&S for subsurface requirements
3. Laboratories for the water tracer units
4. REECo for water quality

**LIST OF DELIVERABLES:**

1. Calculations
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LIST

Water System

1. System Overall Utility Plan  
JS-025-ESF-C26
2. System Main Pad Utility Plan  
JS-025-ESF-C27
3. Booster Pump Station Layout  
JS-025-ESF-C31

ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.2.2.4

WBS TITLE: Utilities and Communications Systems

WORK PACKAGE TITLE: Mine Waste Water System

LEVEL I

LEVEL III

QA LEVEL: Per QALA No. 1.2.6.-0001

6.2.2.-0001

WORK PACKAGE DESCRIPTION: Engineering and design of all systems, sub-systems, and components that provide for collection and disposal of liquid, nonsanitary wastes generated at the esf during construction and operation.

TASKS:

1. Analyze requirements.
2. Perform calculations.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 50 days

INTERFACES:

1. WMPO design review and approval
2. F&S for quantity of waste water
3. REECO for operational efficiency

LIST OF DELIVERABLES:

1. Calculations
2. Engineering drawings
3. Outline specifications
4. Construction cost estimates

DRAWING LIST

Mine Waste Water System

1. System Overall Utility Plan  
JS-025-ESF-C26
2. System Main Pad Utility Plan  
JS-025-ESF-C27
3. Waste Water Facilities Site and Grading Plan  
JS-025-ESF-C41

ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.2.2.5

WBS TITLE: Utilities and Communications Systems

WORK PACKAGE TITLE: Communications (Including Telemetry)

Level II

Level III

QA LEVEL: Per QALA No.\*6.7.1.-0010

6.7.1.-0004

6.2.2.-0006

WORK PACKAGE DESCRIPTION: Engineering and design support to Centel Communication Systems in the development of the surface communication systems that are extensions to the subsurface systems.

TASKS:

1. Analyze requirements.
2. Prepare engineering drawings.
3. Prepare construction cost estimates.
4. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 64 days

INTERFACES:

1. WMPO design review and approval
2. Centel Communications Systems
3. REECo
4. All participants for communication needs

LIST OF DELIVERABLES:

1. Design Inputs
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LISTCommunications (Including Telemetry)

1. Telemetry - Site Plan  
JS-025-ESF-W4
2. Telemetry - Block Diagram  
JS-025-ESF-W5
3. Microwave Communication Shelter Plan and Elevation  
JS-025-ESF-W9
4. Administrative Telephone System Block Diagram  
JS-025-ESF-W10
5. Area 25 Main Camp Block Diagram  
JS-025-ESF-W11
6. Shop Building 6000 - Communications Plan  
JS-025-6000-W1
7. Warehouse Building 6001 - Communications Plan  
JS-025-6001-W1
8. ES-1 & ES-2 Hoist House 6002 - Communications Plan  
JS-025-6002-W1
9. Surface Data Building 6006 - Communications Plan  
JS-025-6007-W1
10. Change House Building 6008 - Communications Plan  
JS-025-6008-W1
11. Office Trailer Type A - Communications Plan  
JS-025-058-1-W1
12. Office Trailer Type B - Communications Plan  
JS-025-058-2-W1



ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.3.1.7

WBS TITLE: Buildings

WORK PACKAGE TITLE: Surface Data Building

	Level I	Level II	Level III
<u>QA LEVEL:</u>	Per QALA No. 6.3.1.-0007	*6.3.1.-0004	6.3.1.-0006 6.3.1.-0009

WORK PACKAGE DESCRIPTION: Engineering and design of the Surface Data Building, which houses all facilities, systems, and services for the communications and data collection and transmission required to support ESF construction and testing activities.

TASKS:

1. Analyze requirements.
2. Perform calculations.
3. Prepare engineering and procurement drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 54 days

INTERFACES:

1. WMPO design review and approval
2. Centel Communication Systems for space allocation
3. Laboratories for IDS and space allocation.

LIST OF DELIVERABLES:

1. Calculations
2. Engineering and Procurement Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LISTSurface Data - Building 6006

1. Surface Data Building 6006 - Floor Plan and General Notes  
JS-025-6006-A1
2. Surface Data Building 6006 - Section and Elevations  
JS-025-6006-A2
3. Surface Data Building 6006 - HVAC Plan  
JS-025-6006-M1
4. Surface Data Building 6006 - Plumbing Plan  
JS-025-6006-M2
5. Surface Data Building 6006 - Fire Protection Plan  
JS-025-6006-FP1
6. Surface Data Building 6006 - Fire Alarm Plan  
JS-025-6006-FP2
7. Surface Data Building 6006 - Lighting and Power Plan  
JS-025-6006-E1
8. Surface Data Building 6006 - Communications Plan  
JS-025-6007-V1

ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.3.1

WBS TITLE: Buildings

WORK PACKAGE TITLE: Subsurface Data Building

Level I

Level III

QA LEVEL: Per QALA No.\*6.7.1.-0009 \*6.7.1.-0008  
\*6.7.1.-0014

WORK PACKAGE DESCRIPTION: Engineering and design of the Subsurface Data Building, which houses all facilities, systems, and services for the communications and data collection and transmission required to support ESF construction and testing activities.

TASKS:

1. Analyze requirements.
2. Perform calculations.
3. Prepare engineering and procurement drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 57 days

INTERFACES:

1. WMPO design review and approval
2. F&S and REECO for alcove space and operational efficiency
3. Laboratories for IDS and space allocation

LIST OF DELIVERABLES:

1. Calculations
2. Engineering and Procurement Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LIST

Subsurface Data - Building 6007

1. Subsurface Data Building 6007 - Plan Section and Gen. Notes  
JS-025-6007-A1
2. Subsurface Data Building 6007 - HVAC Plan  
JS-025-6007-M1
3. Subsurface Data Building 6007 - Fire Protection and Alarm Plan  
JS-025-6007-FP1
4. Subsurface Data Building 6007 - Lighting and Power Plan  
JS-025-6007-E1
5. Subsurface Data Building 6007 - Communications Plan  
JS-025-6007-W1

ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.7.1.1

WBS TITLE: Subsurface Utilities and Communications

WORK PACKAGE TITLE: Subsurface Power System

Level II

QA LEVEL: Per QALA No.\*6.7.1.-0002

WORK PACKAGE DESCRIPTION: Engineering and design of the systems, sub-systems, and components that supply and distribute electrical power to all drifts.

TASKS:

1. Analyze requirements.
2. Perform calculations.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 62 days

INTERFACES:

1. WMPO design review and approval
2. F&S and REECo for power requirements to support mining
3. Laboratories for power requirements to support testing

LIST OF DELIVERABLES:

1. Calculations
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LIST

Subsurface Power System

1. Shaft ES-1 DAS UPS Power Riser Diagram  
JS-025-ESF-E7
2. Main Test Level - Power and DAS Location Plan  
JS-025-ESF-E8
3. UPS Distribution - One Line Diagram  
JS-025-ESF-E9

ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.7.1.2

WBS TITLE: Subsurface Utilities and Communications

WORK PACKAGE TITLE: Life Safety System

Level I

Level II

QA LEVEL: Per QALA No.\*6.7.1.-0014  
\*6.7.1.-0009

\*6.7.1.-0010

WORK PACKAGE DESCRIPTION: Engineering and design of the Life Safety System to support the mining and testing efforts for the NNWSI/ESF.

TASKS:

1. Analyze requirements.
2. Prepare design inputs.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 63 days

INTERFACES:

1. WMPO for design review and approval
2. F&S for Life Safety System tie to the mining support equipment
3. REECo for operational efficiency

LIST OF DELIVERABLES:

1. Design Inputs
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LISTLife Safety System

1. Fire Protection - ES-1 & ES-2 Elevations  
JS-025-ESF-FP1
2. Fire Protection - UDBR Plan  
JS-025-ESF-FP2
3. Fire Protection - Main Test Level Plan  
JS-025-ESF-FP3
4. Fire Protection - Extension Drifts Plan  
JS-025-ESF-FP4
5. Life Safety and Operations - Block Diagram  
JS-025-ESF-FP5
6. Alarm System - ES-1 and ES-2 Elevations  
JS-025-ESF-FP6
7. Alarm System - UDBR PLAN  
JS-025-ESF-FP7
8. Alarm System - Main Test Level Plan  
JS-025-ESF-FP3
9. Alarm System - Extension Drifts Plan  
JS-025-ESF-FP4
10. Fire Detection - ES-1 and ES-2 Elevations  
JS-025-ESF-FP10
11. Fire Detection - UDBR Plan  
JS-025-ESF-FP11
12. Fire Detection - Main Test Level Plan  
JS-025-ESF-FP12
13. Fire Detection - Extension Drifts Plan  
JS-025-ESF-FP13



ORGANIZATION: Holmes & Narver, Inc.

WBS NUMBER: 1.2.6.9.3

WBS TITLE: Integrated Data System

WORK PACKAGE TITLE: Data Cabling

	Level I	Level III
<u>QA LEVEL:</u> Per QALA No.*1.2.6.-0008		6.7.1.-0001
	*1.2.6.-0009	6.7.1.-0005
		6.7.1.-0007

WORK PACKAGE DESCRIPTION: Engineering and design of the data cabling to support the IDS system for the NNWSI/ESF.

TASKS:

1. Analyze requirements.
2. Prepare design inputs.
3. Prepare engineering drawings.
4. Prepare construction cost estimates.
5. Submit design to WMPO for review.

ESTIMATED DURATION OF WORK PACKAGE: 45 days

INTERFACES:

1. WMPO design review and approval
2. Laboratories for IDS cabling requirements
3. F&S and REECO for operational efficiency

LIST OF DELIVERABLES:

1. Design Inputs
2. Engineering Drawings
3. Outline Specifications
4. Construction Cost Estimates

\* IDENTIFIED BUT NOT ISSUED

DRAWING LIST

Data Cabling

1. IDS Cable Plant - Simplified Block Diagram  
JS-025-ESF-W1
2. IDS - Facility Diagram  
JS-025-ESF-W2
3. IDS - Typical Installation Details  
JS-025-ESF-W3



**Holmes & Narver**  
Energy Support Division  
Nevada Operations

YMP:TPO:88-365  
WBS 1.2.9.1.1  
QA Level N/A

September 15, 1988

Carl P. Gertz  
Project Manager  
Yucca Mountain Project Office  
U.S. Department of Energy  
Nevada Operations Office  
Post Office Box 98518  
Las Vegas, NV 89193-8518

**SAIC/T&MSS**

SEP 16 1988

**MRS Received**

HOLMES & NARVER, INC. (H&N) YUCCA MOUNTAIN PROJECT (YMP) MONTHLY REPORT  
FOR AUGUST 1988

WBS 1.2.3.1

Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

Received additional comments on the YMP Site Atlas map portfolio from the Department of Energy/Headquarters (DOE/HQ) after having plotted all the maps on mylars for the first issue of the map portfolio. Additional changes will have to be incorporated into the maps, and this will delay the subcontract for printing the map portfolio.

H&N personnel met with P. Ralphs, Science Applications International Corporation (SAIC), to review completed changes to the YMP Atlas of Field Activities map portfolio, and to develop resolutions to the DOE/HQ comments.

On August 10, 1988, H&N personnel attended a Title I design review meeting held at the Department of Energy/Nevada Test Site Office (DOE/NTSO) regarding A&E Building 4015 Modifications.

Comments have been incorporated into the Title I drawings of the A&E Building, and estimates are being prepared for an updated water supply system to the A&E Building.

H&N personnel attended a meeting on High-Resolution Topographic Mapping and Digital Terrain Data Needs held at the Yucca Mountain Project Office on August 5, 1988.

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H&N systems engineers are attempting to translate the FAX tape of the Greater Exploratory Shaft Area from Dr. S. Wu, United States Geological Survey (USGS), into the various H&N computer systems.

Planned Work:

Complete changes to the YMP Atlas of Field Activities map portfolio from review comments by the Department of Energy/Yucca Mountain Project Office (DOE/Yucca Mountain Project Office) and DOE/HQ. Start procurement action for printing of the maps.

Start Title II design of the A&E Building, with a due date of late October 1988.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.3.5.2**

**Project Title: DRILLING, CONSTRUCTION, AND ENGINEERING**

Planning & Scheduling Account Status:

The Instrumentation/Data-Acquisition System (IDAS) prototype shelters were delivered to Area 6 on August 8, 1988, and H&N personnel continued to plan systems support.

On August 10, 1988, H&N personnel attended a meeting with USGS, DOE/Yucca Mountain Project Office, and DOE/NTSO personnel on the criteria for the design of prototype Flumes.

Engineering personnel reviewed design changes requested by Reynolds Electrical & Engineering Company (REECO) for USGS Modifications to Building 4215, and inspection personnel continued to monitor the progress of construction.

The Materials Testing Laboratory continued to perform the mercury porosimeter and permeameter testing requested by the USGS for equipment testing and personnel certification.

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Planned Work:

Complete the civil and commercial power drawings for the IDAS prototype shelter field locations.

Continue inspection of the IDAS prototype shelters.

Continue equipment testing by the Materials Testing Laboratory.

Continue inspection of USGS Modifications to Building 4215.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.1.1**

**Project Title: ESF MANAGEMENT & INTEGRATION**

Planning & Scheduling Account Status:

Interface Control:

H&N, Fenix & Scisson, Inc. (F&S), and Los Alamos National Laboratory (LANL) design engineers participated in an Interface Control meeting held on August 16, 1988, to review the status of System Interface Drawings (SIDs) and Interface Identification Sheets, and to deliver the preliminary schedule of SID key dates.

H&N and F&S design personnel attended an Interface Control meeting to plan the future forum for agreement on the Interface Design Control Sheets.

H&N personnel attended the Interface Control Working Group (ICWG) meeting on August 25, 1988. At this meeting, it was reported that approximately 30% of the SIDs have been completed. The next ICWG meeting is scheduled for September 22, 1988.

As directed in an action item assigned during the July 21, 1988, ICWG meeting, H&N personnel submitted suggestions for revisions to the Engineering Change Request (ECR) form to D. Irby, DOE/Yucca Mountain Project Office.

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Permitting:

H&N personnel met with representatives of the Environmental Regulatory Branch of SAIC on August 30, 1988, to discuss additional technical information required on various permits and environmental compliances.

A preliminary outline for the Identification and Management Plan for Hazardous Materials at the YMP has been completed per a request from the Environmental Regulatory Branch of SAIC. This information will be used in planning for all hazardous waste permitting requirements.

Design:

Design personnel attended the 90% Title I Technical Assessment held at the Henderson Convention Center, and presented an overview of the designs to the reviewers on August 8, 1988. H&N then responded to all review comments that were generated.

Work Authorizations have been approved for H&N Albuquerque Office personnel to perform the independent design review. Exploratory Shaft Facility (ESF) design packages and calculations have been transmitted to Albuquerque for this process.

Preliminary sketches of the office layout of the existing Area 25 Building 4517 have been completed. Minor modifications will be required prior to building occupancy, which is expected to be in October or November 1988.

H&N personnel completed Readiness Assessment Review interviews on Design Control conducted by DOE/Yucca Mountain Project Office and MAC Technical Services personnel.

The Title II Design Basis Document and Scope and Planning Document are being formulated for a planned submittal date to the DOE/Yucca Mountain Project Office of September 16, 1988.

Estimating personnel have completed preliminary estimates for the Decommissioning of the ESF site.

Planned Work:

Work on the Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

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Complete the permitting requirements submittal process, and submit all required information to SAIC.

Incorporate the changes from the 90% Title I Technical Assessment, and submit the Title I design. Proceed with Title II design with concurrence from DOE/Yucca Mountain Project Office.

Milestones:

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	06/13/88	Surface Engineering Studies Complete.	At the Yucca Mountain Project Office review.
P074(P)	08/01/88	Surface Title I Design Complete	90% design has been submitted.

Problem Areas/Needs:

None

**WBS 1.2.6.2.1**

Project Title: ESF SITE AND ROADS

Planning & Scheduling Account Status:

Estimating personnel completed Title I estimates for the substation pad, lower equipment storage pad, lower parking area, haul road, explosive storage road and pad, north access road, and the muck storage pad.

Planned Work:

Continue Title I design effort.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

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WBS 1.2.6.2.2  
Project Title: ESF SURFACE UTILITIES

Planning & Scheduling Account Status:

Estimating personnel are preparing Title I estimates for the surface power distribution and Data Cabling.

Estimating personnel completed Title I estimates for the water tank line, water telemetry, 150,000 gallon water tank, and the water system main pad. Preliminary estimates for the mine waste water system have also been completed.

Submitted an ECR for recommended changes to the ESF Subsystem Design Requirements Document (SDRD) under the "Utilities" section for the Communications System.

Planned Work:

Continue Title I design effort.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

Efforts are still being made to test the prototype injection system for the water supply with LANL. To date, there has been no progress made in this area.

WBS 1.2.6.3.1  
Project Title: ESF BUILDINGS

Planning & Scheduling Account Status:

Estimating personnel have completed Title I estimates for the Change House and the Hoist House.

The shop design package is pending an ECR from the ICWG.

Planned Work:

Continue work as needed.



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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.7.1**

**Project Title: ESF SUBSURFACE UTILITIES & COMMUNICATIONS**

Planning & Scheduling Account Status:

Estimating personnel are preparing Title I estimates for the subsurface power distribution and Data Cabling.

Submitted two ECRs for recommended changes to the ESF SDRD under the "Underground Utilities" section for the Communications System.

Plans are being made to reschedule the trip to the Lucky Friday Mine, Sunshine Mine, and Homestake Mine for Project Engineers and engineering personnel to observe and discuss with mine personnel the Communications Systems and Life Safety Systems in the mines to aid in Title II design.

Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.9.1**

**Project Title: SCHEDULING**

Planning & Scheduling Account Status:

Schedules are being prepared for the Title I design summary. When completed, responses will be transmitted to Science Applications International Corporation/Technical and Management Support Services (SAIC/T&MSS). The Title II design schedule is under development.

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Estimating personnel are preparing construction schedules for all Title I estimates.

Planned Work:

Finish the schedule for Title II.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.6.9.4

Project Title: PROTOTYPE TESTING

Planning & Scheduling Account Status:

Support to Prototype Testing in "G" Tunnel:

Area 6 inspection personnel continued to report to "G" Tunnel to support prototype testing activities.

The preliminary report for the survey test of the new H&N-designed multishot laser tool in the Area 2 lay down pipe area was completed and submitted to R. Oliver, LANL.

H&N surveyors gave a presentation of the new laser tool to the Exploratory Shaft Test Plan (ESTP) Committee on August 23, 1988. H&N personnel are reviewing the procedures to obtain a government patent for the tool, which gives an accurate center line of horizontal drillholes past the line-of-sight.

The Weekly Cost Summary for Prototype Testing Reports for late July and August 1988 were submitted to LANL.

Planned Work:

Perform survey, materials testing, design, and inspection in support of Cross-Hole testing, Diffusion testing, and the Prototype Drillhole Instrumentation test.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.7.2.1**

**Project Title: CLIMAX - HOIST HOUSE**

Planning & Scheduling Account Status:

Inspection personnel continued to monitor the construction of the Climax Hoist House Replacement throughout the month of August. The final inspection walk-through was conducted on August 9, 1988, at the Area 15 Climax Hoist House.

Planned Work:

Complete inspection of the Climax Hoist House Replacement.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.7.2.3**

**Project Title: "G" TUNNEL SUPPORT**

Planning & Scheduling Account Status:

Inspection personnel continued to monitor Sandia National Laboratory (SNL) Equipment Evaluation and Modification Support activities in "G" Tunnel.

Planned Work:

Continue inspection on construction of the power and lighting for the SNL Equipment Evaluation and Modification Support Modular Structure.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.9.1.1

Project Title: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

H&N personnel submitted marked-up copies of the Technical Procedures List to M. Spaeth, SAIC, in response to SAIC letter L88-RMD-MDC-060.

A listing of prospective H&N vehicle requirements through 1990 for vehicle support to cover the YMP ESF field operations during the construction and test support phase of the project was submitted to S. Davis, REECO.

Submitted a list of all nuclear waste funded equipment/property in the custody of the YMP Group of H&N to the Yucca Mountain Project Office per letter WMPO:SAD:2980.

Planned Work:

Will perform other work as requested on this level of effort account.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.9.1.4

Project Title: RECORDS MANAGEMENT

Planning & Scheduling Account Status:

The YMP Microfilming and Archival Storage Services Facility (MASSF) Box Storage and Microfilm Status Reports for the month of August 1988 were transmitted to the DOE/Yucca Mountain Project Office.

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Records management personnel continued preparations for integration into the new Automated Records System (ARS) records management system, scheduled to go on line at H&N during September 1988. The operating procedure is in final comment resolution.

A final proposal, including staffing and cost estimates, for the YMP records storage facility to be located in the A&E Building in Area 25 at the Nevada Test Site (NTS) was submitted to the DOE/Yucca Mountain Project Office, thus completing Action Item No. 88-1207.

Planned Work:

Complete integration into the ARS records management system.

Microfilm participant records as they are received at the MASSF.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.9.2**

Project Title: PROJECT CONTROL

Planning & Scheduling Account Status:

In response to a request presented at the July 28, 1988, Technical Project Officer (TPO) meeting, revised and updated information on the projected budget for the remainder of Fiscal Year (FY) 1988 was provided to the DOE/Yucca Mountain Project Office and SAIC.

H&N personnel sent the Yucca Mountain Project Office a marked-up copy of revised Work Breakdown Structure (WBS) Section 1.2.6 to complete the first YMP Long Range Planning (LRP) exercise.

In response to a verbal request from the DOE/Yucca Mountain Project Office, summary paragraphs on the H&N scope of work for FY 1989 were submitted. These work summaries reflect budgeting at FY 1990 Work Authorization System (WAS) levels.

The Weekly Status Reports for August 1988, the Monthly Status Report for July 1988, and the Earned Value Report for July 1988 were completed.

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Title I Earned Value Work Packages for August 1988 were distributed to Project Engineers and H&N personnel.

In response to SAIC letter L88-PPMB-CWG-041, the schedule status reporting information for the month of July 1988 was submitted to SAIC on August 5, 1988.

Planned Work:

The Weekly Status Reports for September 1988, the Monthly Status Report for August 1988, and the Earned Value Report for August 1988 will be completed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.9.3**

**Project Title: QUALITY ASSURANCE AND TRAINING**

Planning & Scheduling Account Status:

Quality Assurance (QA) personnel submitted Revision 2 of the Quality Assurance Program Plan (QAPP) to the Yucca Mountain Project Office for review and evaluation.

Per Action Item No. NN1-1988-0001, QA personnel completed and submitted the QAPP Requirements Matrix to the Yucca Mountain Project Office.

The Yucca Mountain Project Office followed up on all Standard Deficiency Reports (SDRs) that were generated by the Yucca Mountain Project Office Audit No. 88-02 of H&N. All SDRs, with the exception of Nos. 119 and 120, were closed.

Per Action Item No. NN1-1988-0011, a response to SDR No. 119 was completed and submitted to the Yucca Mountain Project Office.

QA requested an extension for the completion for SDRs Nos. 117 and 120.

Responded to Yucca Mountain Project Office SDR No. 141 concerning the QA review and approval of ECRs, thus completing Action Item No. 88-0033.

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Submitted an amended response to the three observations and one recommendation for CAR 87-A-048 from QA Surveillance No. N88-S-0010.

QA personnel conducted H&N QA Surveillance No. N88-S-0011 on procedure NNWSI-006, Design Calculations.

QA continued to support the procedure revision and development process, and to review various Title I ESF design drawings.

The following procedures were published: NNWSI-043, Litigation Discovery Process; NNWSI-007, Work Initiation, Criteria Gathering, and Reporting; and NNWSI-055, Estimate Control.

Interim Change Notice (ICN) No. 001 was issued to procedure NNWSI-003 to incorporate the interdisciplinary review of specifications.

The H&N YMP QA department current staffing level has been increased to include three full-time personnel.

#### Training:

H&N presented two classes in the Nondestructive Testing (NDT) Overview Program for H&N, Department of Energy (DOE), and SAIC employees. The final class in the program is scheduled for September 15, 1988.

The QAPP indoctrination class was presented for new employees twice during the month. The thirty-three minute film entitled, "NVO-196-17 Quality Assurance Training Program," was shown during these sessions.

C. Aiello and E. Mouser completed the week-long, DOE-approved "Train the Trainer" class on August 9, 1988.

As required by SDR No. 117, Yucca Mountain Project Office Audit No. 88-02 of H&N, addenda to H&N job descriptions were written and submitted for internal approval. A comprehensive response to this SDR should be completed in September 1988.

Continued with the on-going efforts to complete training records, employment verification, and written procedures for H&N YMP training.

#### Planned Work:

Publish procedure revisions as detailed in the schedule provided to the DOE/Yucca Mountain Project Office (letter WMPO:JB-1799 dated April 12, 1988).

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

The Technical Data Management System Submittal Record is attached.

YMP Cost/Schedule information will be submitted separately.

Joseph C. Calovini  
Technical Project Officer  
for the Yucca Mountain Project

Attachments  
As Stated

cc: M. B. Blanchard, DOE/Yucca Mountain Project Office, w/attach.  
W. R. Dixon, DOE/Yucca Mountain Project Office, w/attach.  
L. P. Skousen, DOE/Yucca Mountain Project Office, w/attach.  
K. K. Hatch, DOE/Yucca Mountain Project Office, w/attach.  
D. H. Irby, DOE/Yucca Mountain Project Office, w/attach.  
W. T. Hughes, DOE/Yucca Mountain Project Office, w/attach.  
J. R. Barner, DOE/NTSO, w/attach.  
J. S. Szymanski, DOE/Yucca Mountain Project Office, w/attach.  
A. R. Veloso, DOE/NTSO, w/attach.  
R. L. Bullock, F&S, w/attach.  
L. R. Hayes, USGS, Denver, w/attach.  
H. N. Kalia, LANL, w/attach.  
T. O. Hunter, SNL, Albuquerque, w/attach.  
R. F. Pritchett, REECO, w/attach.  
D. T. Oakley, Los Alamos, w/attach.  
L. D. Ramspott, LLNL, Livermore, w/attach.  
M. E. Spaeth, SAIC, w/attach.  
G. O. Fredrickson, SAIC, w/attach.  
R. R. Reust, SAIC, w/attach.  
C. W. Garvin, SAIC, w/attach.  
R. H. Klemens, SAIC, w/attach.  
T. L. Jackson, SAIC, w/attach.







**Holmes & Narver**  
Energy Support Division  
Nevada Operations

NNWSI:TPO:88-323  
WBS 1.2.9.1.1  
QA Level N/A

August 10, 1988

SAIC/T&MSS

Carl P. Gertz  
Project Manager  
Waste Management Project Office  
U.S. Department of Energy  
Nevada Operations Office  
Post Office Box 98158  
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HOLMES & NARVER, INC. (H&N) NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
(NNWSI) PROJECT MONTHLY REPORT FOR JULY 1988

WBS 1.2.3.1

Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

Preliminary copies of the NNWSI Atlas of Field Activities map portfolio were delivered to the Waste Management Project Office (WMPO) for review by the Department of Energy/Headquarters (DOE/HQ).

Completed the survey report for verifying nineteen primary control points utilized for vertical/horizontal control for photo panels in the topographic maps compiled by Dr. S. Wu, United States Geological Survey (USGS), Flagstaff.

Surveyors prepared topographic maps for use on the muck sampling bins design for the Sample Management Facility in Area 25.

H&N personnel attended the open house for the new Sample Management Facility in Area 25 on July 20, 1988.

H&N personnel attended the Fleet NNWSI Usage meeting held at the Nevada Test Site Office (NTSO) on July 6, 1988.

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Planned Work:

Complete changes to the NNWSI Atlas of Field Activities map portfolio from review comments by the Department of Energy/Waste Management Project Office (DOE/WMPO). Start procurement action for the printing of the maps.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.3.5.2

Project Title: DRILLING, CONSTRUCTION, AND ENGINEERING

Planning & Scheduling Account Status:

The mechanical, electrical, and electronics drawings for the Instrumentation/Data-Acquisition System (IDAS) shelter shell internals were issued for construction.

H&N personnel met with Reynolds Electrical & Engineering Company (REECO) Procurement and the shelter subcontractor to approve the shop drawings and calculations for steel construction of the IDAS prototype shelters shell. The shelter delivery to Mercury is scheduled for August 8, 1988.

Inspection personnel monitored the progress of construction in Area 25 for the USGS Modifications to Building 4215.

Materials Testing Laboratory personnel took proctor samples of the footing soil for the new second floor of the USGS Modifications to Building 4215, and found existing compaction is 95%. Compressive strength tests are being performed on concrete cylinders taken from the footing.

The Materials Testing Laboratory continued performing the mercury porosimeter and permeameter testing requested by the USGS for equipment testing and personnel certification.

H&N personnel attended the Drilling and Sampling Workshop held at the Science Applications International Corporation (SAIC) on July 26, 1988.

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Planned Work:

Complete the civil and commercial power drawings for the IDAS prototype shelter field locations. Start inspection for IDAS prototype shelters.

Continue equipment testing by the Materials Testing Laboratory.

Continue inspection of USGS Modifications to Building 4215.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.1.1**

Project Title: ESF MANAGEMENT & INTEGRATION

Planning & Scheduling Account Status:

**Interface Control:**

Various Interface Control meetings were held this month with personnel from H&N, Fenix & Scisson, Inc. (F&S), VMPO, and Los Alamos National Laboratory (LANL) in attendance.

Design input on design interfaces for the Exploratory Shaft Facility (ESF) systems was reviewed by F&S and H&N personnel. Interfaces that have been agreed upon by the design participants are being logged into the system, and System Interface Drawings (SIDs) are being generated showing the location of these interfaces.

At the Interface Control Working Group (ICWG) meeting held on July 21, 1988, a status report was given, and the status of the Compressed Air SID was explained. The next ICWG meeting is scheduled for August 25, 1988.

H&N personnel met with E. McCann, Manager of the Environmental Regulatory Branch of SAIC, on July 5, 1988, to discuss schedules and individual task assignments for obtaining permits.

G. Bates, Survey Supervisor, met with F&S personnel on July 7, 1988, to discuss the design of the shaft wall mapping platform for the ESF.

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Estimating personnel reviewed the civil drawing packages.

On July 14 and 15, 1988, J. Verden visited the H&N Albuquerque office to assist in setting-up the NNWSI Records Management System and the employee training records.

Per WMPO Action Item No. 107, H&N submitted proposed criteria revisions to the ESF Title I Design Basis Document and Scope and Planning Basis Document, Revision 3. The intent of Revision 3 is to upgrade the two documents to represent Title I design criteria and design information pertaining to each work package.

Work continued on the Title II design schedule pending completion of WMPO's schedule.

Comments have been resolved and included in the design packages which are being prepared for transmittal to SAIC in preparation for the 90% Title I design review.

Planned Work:

Work on Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

Complete the permitting requirements submittal process, and submit all required information to SAIC.

Milestones:

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	05/20/88	Surface Engineering Studies complete.	At DOE/WMPO for review.
P074(P)	08/01/88	Surface Title I Design Complete	Design in progress.

Problem Areas/Needs:

None

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**WBS 1.2.6.2.1**

**Project Title: ESF SITE AND ROADS**

**Planning & Scheduling Account Status:**

The Site and Roads design packages have completed the internal review process; the comments are being incorporated into the packages for the 90% Title I review.

H&N personnel coordinated comment responses for Engineering Change Requests (ECRs) from F&S and REECO.

Estimating personnel completed the Title I estimates for the "G-4" road and drainage and the "H" road and drainage work packages.

**Planned Work:**

Continue Title I design effort.

Design work will continue on the conceptual design and on the remaining site drainage and road work.

**Milestones:**

There are no H&N milestones under this WBS number.

**Problem Areas/Needs:**

None

**WBS 1.2.6.2.2**

**Project Title: ESF SURFACE UTILITIES**

**Planning & Scheduling Account Status:**

Design packages were distributed on July 12, 1988, for interdiscipline and internal reviews. The Water, Sewage, and Mine Plant Systems design packages have completed the internal review process. The comments are being incorporated into the packages for the 90% Title I review. The Power and Surface Communication Systems design packages are still out for internal review.

Estimating personnel completed the Title I Centel Communications Support and Communication Systems estimates, and are now preparing Title I estimates for the Surface Data Cabling package.

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Planned Work:

Continue Title I design effort.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

Efforts are still being made to test the prototype injection system for the water supply with LANL. To date there has been no progress made in this area.

**WBS 1.2.6.3.1**

**Project Title: ESF BUILDINGS**

Planning & Scheduling Account Status:

After evaluating the ECRs from REECO on the proposed changes to the Shop and Warehouse, H&N personnel determined that if these changes were approved, the Shop and Warehouse would require a complete redesign. The effort required to do this would be six weeks for the design, drafting, and review process. This information was sent to D. Irby, DOE/WMPO.

The floor plan of the new Warehouse will be finished and submitted for the 90% Title I design review.

The drawing packages for all buildings have been through interdisciplinary review, and were distributed for internal review on July 15, 1988.

Estimating personnel completed Title I estimates for the Subsurface Data Building, Surface Data Building, A&E Building 4015, Shop, and Warehouse.

Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

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**WBS 1.2.6.7.1**

**Project Title: ESF SUBSURFACE UTILITIES & COMMUNICATIONS**

**Planning & Scheduling Account Status:**

The Subsurface Power, Subsurface Communication, and Life Safety Systems design packages are out for internal review. When received, the comments will be incorporated into the packages for the 90% Title I design review.

H&N sent letters to three mining companies (Home Stake Mining Co., Sunshine Mining Co., and the Lucky Friday Mine) requesting tours of their mines to see Life Safety and Communications Systems in place. The tours are tentatively scheduled for the last week in August.

The Subsurface Communication work package has been submitted to estimating with Centel equipment estimates.

Estimating personnel completed the Title I Life Safety System estimates, and are now preparing Title I estimates for the Subsurface Data Cabling.

**Planned Work:**

Continue work as needed.

**Milestones:**

There are no H&N milestones under this WBS number.

**Problem Areas/Needs:**

None

**WBS 1.2.6.9**

**Project Title: SCHEDULING**

**Planning & Scheduling Account Status:**

As discussed during a Schedule Task Force meeting on June 13, 1988, H&N sent twenty Draft Project Schedule Activity Sheets to I. Cottle, SAIC.

**Planned Work:**

Finish the schedule for Title II.



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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.9.3**

**Project Title: INTEGRATED DATA SYSTEM**

Planning & Scheduling Account Status:

Comments from the internal review of the Integrated Data System (IDS) design packages are being incorporated into the packages for the 90% Title I review.

Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.9.4**

**Project Title: PROTOTYPE TESTING**

Planning & Scheduling Account Status:

**Support to Prototype Testing in "G" Tunnel:**

Area 6 inspection personnel continued to report to "G" Tunnel to monitor prototype testing activities. The Materials Testing Laboratory performed tests on the Cross-Hole testing cores.

The Cross-Hole testing power drawing was approved and issued for construction. Area 6 engineering personnel are working on the power drawing for the Diffusion Test.

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The Cross-Hole testing holes were surveyed with the new multishot laser tool. Miners assisted by installing steel casing in the drillhole to fit the new survey tool.

The surveyors attended the Exploratory Shaft Test Plan (ESTP) Committee meeting on July 13, 1988, and met with USGS personnel to interface their survey data collection with the photogrammetry equipment to be used for shaft wall mapping.

The Weekly Cost Summary for Prototype Testing Reports for the weeks ending July 3 and 10, 1988, were submitted to LANL.

Planned Work:

Perform survey, materials testing, design, and inspection in support of Cross-Hole testing, Diffusion testing, and the Prototype Drillhole Instrumentation test.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.7.2.1

Project Title: CLIMAX - HOIST HOUSE

Planning & Scheduling Account Status:

Inspection personnel continued monitoring the construction of the Climax Hoist House Replacement. The final inspection walk-through is scheduled for the week of August 8, 1988.

H&N personnel met with Department of Energy/Nevada Test Site Office (DOE/NTSO) and REECO safety personnel on July 8, 1988, to discuss the condition of electrical systems at the headframe and signaling systems for the hoist.

Planned Work:

Complete inspection of the Climax Hoist House Replacement.





**Holmes & Narver**  
Energy Support Division  
Nevada Operations

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WBS 1.2.9.1.1  
QA Level N/A

July 12, 1988

Carl P. Gertz  
Project Manager  
Waste Management Project Office  
U.S. Department of Energy  
Nevada Operations Office  
Post Office Box 98158  
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SAIC/T&MSS

JUL 14 1988

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HOLMES & NARVER, INC. (H&N) NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
(NNWSI) PROJECT MONTHLY REPORT FOR JUNE 1988

WBS 1.2.3.1.4

Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

In response to a Waste Management Project Office (WMPO) request, H&N reviewed the request for identifying core samples received and tested during site investigation. A listing of samples submitted to the Materials Testing Laboratory (MTL) was compiled and transmitted to the Department of Energy/Waste Management Project Office (DOE/WMPO).

H&N personnel attended the Licensing Support System Raw Data Presentation with State of Nevada representatives on June 8 and 9, 1988.

The completed draft of the NNWSI Atlas of Field Activities map portfolio was submitted to DOE/WMPO for review, and we are currently awaiting their comments.

Surveyors completed field work for checking the Horizontal/Vertical control on Vertical Angle Bench Mark (VABM) Alice.

Planned Work:

Complete changes to the NNWSI Atlas of Field Activities map portfolio from review comments by DOE/WMPO. Start procurement action for the printing of the maps.

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Complete the report on the surveyors' findings from checking primary control on Yucca Mountain.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.3.5.2**

**Project Title: DRILLING, CONSTRUCTION, ENGINEERING**

Planning & Scheduling Account Status:

Instrumentation/Data-Acquisition System (IDAS):

H&N personnel submitted the Title II drawings for the IDAS prototype shelters, and attended the review meeting. Resolutions to comments from this meeting have been distributed. H&N personnel attended a meeting at Reynolds Electrical & Engineering Company (REEC) Procurement on June 24, 1988, to review the subcontractor bids.

Engineering personnel are preparing the electrical drawings for the commercial power lines to USW UZ-1 and UE-25 UZ-4 to service the IDAS prototype shelters.

Throughout the month, Inspection personnel monitored the progress of construction in Area 25 for the United States Geological Survey (USGS) Modifications to Building 4215.

Estimates for Site Characterization Plan (SCP) activities were submitted to the USGS and Science Applications International Corporation (SAIC) for survey, design, materials testing, and inspection in support of site investigations activities.

The Materials Testing Laboratory (MTL) continued performing the mercury porosimeter and permeameter testing requested by the USGS for equipment testing and personnel certification.

Planned Work:

Complete the Civil and Commercial power drawings for the IDAS prototype shelter field locations. Approve IDAS shop drawings submittal.

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Continue equipment testing by the Materials Testing Laboratory (MTL).

Continue inspection of the USGS modifications to Building 4215.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.1.1**

**Project Title: ESF MANAGEMENT & INTEGRATION**

Planning & Scheduling Account Status:

In response to WMPO:DHI-2272, Exploratory Shaft Facility (ESF) Title I 50% design review comments were completed and transmitted to DOE/WMPO, completing WMPO Action Item No. 88-1892. The resolution meetings for the 50% Title I review began on June 6, 1988. H&N had 240 comments, all of which were successfully resolved.

H&N responded to WMPO letter WMPO:HBB-2283 by commenting on the proposed Nuclear Regulatory Commission (NRC) rules (National Environmental Policy Act review procedures for Geologic Repositories for High-Level Waste). H&N, which is involved in the design and permitting portions of the ESF, would not be affected by the new rules.

In response to WMPO letter WMPO:RVB-2435, H&N submitted its comments on the transcript of the April 28, 1988, meeting between the NRC and the Advisory Committee on Reactor Safeguards (ACRS), thus completing WMPO Action Item No. 88-2035.

The CAD computer system was installed, initialized, and activated. Preliminary training on the system has started, with advanced training to be scheduled in the future. At the present time, H&N plans to submit the entire Title II Design, and as much of the Title I Design as possible, on CAD drawings.

Reviewed the proposed 10 CFR 61, and determined that there will be no effect on H&N's design effort. This information was transmitted to DOE/WMPO and SAIC.

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#### **Interface Control:**

H&N Project Engineers reassigned to the ESF Interface Control Working Group (ICWG) are C. H. Ward as the Representative and P. D. Gehner as the Alternate. These Project Engineers attended the ICWG meeting on June 30, 1988, and presented a status report on the number of Design Interfaces identified under each system.

H&N and SAIC personnel reviewed the status of the Identification of Design Interfaces in a meeting on June 23, 1988. H&N will produce a modified system one-line drawing, which will show the tabulated interface location, for each system. At a follow-up meeting held on June 27, 1988, H&N and SAIC personnel reviewed areas of Design Interface Control. The major decision of this meeting was the format of the System Interface Drawing (SID) required for the ICWG.

H&N and Fenix & Scisson, Inc. (F&S) personnel met to review the procedure for identifying and submitting Design Interfaces to the H&N Document Control Department, and to discuss the new SID format.

#### **Permitting:**

The National Pollution Discharge Elimination System (NPDES) Permit for the sanitary sewage system at the ESF was submitted to SAIC, Environmental Compliance Branch.

Surveyors staked-out the locations for borrow pits for soils testing and boreholes for the percolation tests for the ESF site plan.

The flood plain study produced by the USGS was being compared to the ESF site layout in order to meet the requirements of the Department of Energy (DOE) Executive Order on Flood Plain Management.

Mylars of drawings required for the Groundwater Appropriation Permit Application were submitted to Tom Pysto, SAIC, per his verbal request, on June 14, 1988. Later in the month, H&N personnel met with E. Oakes, SAIC, to discuss additional information requirements.

H&N personnel continued to gather information for the Underground Injection Control Permit Application for the Prototype Vertical Seismic Profiling Hole to be drilled at the UE-25 UZ-9 Complex.

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H&N personnel met with Ed McCann, Manager of the Environmental Regulatory Branch of SAIC, on June 22 and 29, 1988, to discuss H&N's role in obtaining the permits for the ESF. Hank Gayle has been assigned the task of managing H&N's efforts in gathering technical information for the various permits. Another meeting is scheduled for July 5, 1988, to discuss schedules and individual task assignments.

**Scheduling:**

On June 13, 1988, E. C. Garnett, the designated Network Development Task Force Member, attended the Exploratory Shaft Networking Task Force meeting. The Title II Design schedule is now in preparation.

H&N personnel prepared the Title II schedule for the A&E Building.

**Meetings Attended:**

H&N personnel attended the Design Requirements Document Review meeting on June 3, 1988.

H&N personnel attended a meeting conducted by DOE/WMPO on June 1, 1988, regarding NRC concerns.

**Planned Work:**

Work on Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

Complete Mylar for Groundwater Appropriation Permit.

**Milestones:**

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	05/20/88	Surface Engineering Studies complete.	At DOE/WMPO for review.
P074(P)	08/01/88	Surface Title I Design Complete	Design in progress.

**Problem Areas/Needs:**

None



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**WBS 1.2.6.2.1**

**Project Title: ESF SITE AND ROADS**

**Planning & Scheduling Account Status:**

Copies of the estimates to build a 200- x 300-foot pad for the Multipurpose Boreholes and a 40- x 1,900-foot access road were sent to W. T. Hughes, DOE/WMPO.

Trade-off studies and justifications on the main pad layout were prepared for presentation to DOE/WMPO. Work continued on the new main pad layout based on the conceptual design.

**Planned Work:**

Continue Title I design effort.

The Civil Design Group will continue to investigate the feasibility of the conceptual design. This design approach appears to be the best one at the present, and it is anticipated that this is the direction in which H&N will proceed. Design work will continue on the conceptual design and on the remaining site drainage and road work.

**Milestones:**

There are no H&N milestones under this WBS number.

**Problem Areas/Needs:**

None

**WBS 1.2.6.2.2**

**Project Title: SURFACE UTILITIES**

**Planning & Scheduling Account Status:**

New layouts were prepared based on the conceptual design in the 50% Title I design review package.

Work on the Surface Communication Design progressed throughout the month, and the work package was submitted for internal review. A request for an estimate will be written-up for this work package.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.7.2.3

Project Title: "G" TUNNEL SUPPORT

Planning & Scheduling Account Status:

Area 6 inspection personnel continued monitoring the Sandia National Laboratory (SNL) Equipment Evaluation and Modification Support activities in "G" Tunnel.

H. Hall, Project Engineer, met with T. George, SNL, on July 21, 1988, to discuss additional items to be added to the instrument room before completion of the project.

Planned Work:

Continue inspection on construction of the power and lighting for the SNL equipment evaluation and modification support modular structure.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.9.1.1

Project Title: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

In response to SAIC letter L88-ESF-RRR-036, S. Williams, Project Engineer, has been designated to serve as the H&N representative to the SAIC Safety Committee.

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In response to SAIC letter L88-PPB-JHF-034, completed Document Review Sheets on Draft NNWSI Project Administrative Procedure AP5.10Q were submitted to SAIC.

Worker Data Reporting Forms for April through June 1988 were submitted to DOE/WMPO in response to the requirements of the Site Characterization Socioeconomic Monitoring and Mitigation Plan for Yucca Mountain.

Revised purchase requisitions for capital equipment authorized for H&N for Fiscal Year (FY) 1988 were transmitted to DOE/WMPO. REECO will place the orders for this equipment.

The NNWSI construction specifications are in final draft form after having completed internal review, and will be ready for Title I submittal on August 5, 1988.

Planned Work:

Will perform other work as requested on this level of effort account.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.9.1.4

Project Title: RECORDS MANAGEMENT

Planning & Scheduling Account Status:

The processing of pre-Title I records into the Quality Assurance Records Management System (QARMS) continued.

H&N records management personnel attended a meeting on July 29, 1988, regarding the new AP1.7Q on the Automated Records System (ARS).

The NNWSI Microfilming and Archival Storage Services Facility (MASSF) Box Storage and Microfilm Status Reports for the month of July 1988 were transmitted to DOE/WMPO.

Work on dual storage continued with verification of files vs. office files.

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Planned Work:

The work of entering pre-Title I records into the QARMS will continue.

The microfilming of participant records as they are received at MASSF will continue.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.9.2**

**Project Title: PROJECT CONTROL**

Planning & Scheduling Account Status:

The Weekly Status Reports for July 1988, the Monthly Status Report for June 1988, and the Earned Value Report for June 1988 were completed.

In response to SAIC letter L88-PPMB-CWG-039, the schedule status reporting information for June 1988 was prepared and submitted.

Earned Value Work Packages for July 1988 were distributed to Project Engineers and H&N personnel.

H&N personnel prepared schedules for Title II duration by events and milestones, and transmitted the information to SAIC.

Per WMPO Action Item No. NN1-1988-007, the NNWSI Project FY 1988 Budget Projections and other required information were transmitted to DOE/WMPO.

Planned Work:

Weekly Status Reports for August 1988, the Monthly Status Report for July 1988, and the Earned Value Report for July 1988 will be completed.

Milestones:

There are no H&N milestones under this WBS number.

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Problem Areas/Needs:

None

**WBS 1.2.9.3**

Project Title: QUALITY ASSURANCE AND TRAINING

Planning & Scheduling Account Status:

Quality Assurance (QA) continued to support the procedure review and development process, and to review various Title I design drawings.

QA evaluated and submitted a response to WMPO on the changes to the H&N Quality Assurance Program Plan (QAPP) resulting from issuance of WMPO QAPP 88-9, and is preparing an updated draft of the QAPP, Revision 1, which meets WMPO QAPP 88-9, Revision 1.

QA completed a review of the existing NNWSI Project Procedures against the Implementing Procedures Requirements Matrix, and has submitted the results to WMPO.

A letter was sent to DOE/WMPO requesting revised commitment dates on WMPO QA Audit 88-2 Standard Deficiency Reports (SDRs)-117 and -120.

H&N personnel responded to the three observations and one recommendation that were issued in H&N QA Surveillance N88-S-009.

R. Schreiner, Design Section Chief, responded to H&N QA Surveillance N88-S-008 on July 28, 1988.

QA personnel are conducting H&N QA Surveillance N88-S-011 on Control of Design Calculations (NNWSI Procedure-006).

**Training:**

W. Cotter, H&N, presented the first class in the Nondestructive Testing (NDT) Overview for H&N, Department of Energy (DOE), and SAIC employees on July 8, 1988. The next two classes in the program are scheduled for August 1988. These classes are held in the SAIC Training Center.

A Stress Management class was presented for H&N employees on July 22, 1988, and again on July 29, 1988.

The on-going effort to complete training records and employment verification continued throughout this week.

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Planned Work:

Publish procedure revisions as detailed in the schedule provided to DOE/WMPO (letter WMPO:JB-1799 dated April 12, 1988).

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:


None

The Technical Data Management System Submittal Record is attached.  
NNWSI Project Cost/Schedule information will be submitted separately.



Joseph C. Calovini  
Technical Project Officer  
for the NNWSI Project

Attachments as stated

cc: M. B. Blanchard, DOE/WMPO, w/attach.  
W. R. Dixon, DOE/WMPO, w/attach.  
L. P. Skousen, DOE/WMPO, w/attach.  
K. K. Hatch, DOE/WMPO, w/attach.  
D. H. Irby, DOE/WMPO, w/attach.  
W. T. Hughes, DOE/WMPO, w/attach.  
J. R. Barner, DOE/NTSO, w/attach.  
J. S. Szymanski, DOE/WMPO, w/attach.  
A. R. Veloso, DOE/NTSO, w/attach.  
R. L. Bullock, F&S, w/attach.  
L. R. Hayes, USGS, Denver, w/attach.  
H. N. Kalia, LANL, w/attach.  
T. O. Hunter, SNL, Albuquerque, w/attach.  
R. F. Pritchett, REECo, w/attach.  
D. T. Oakley, Los Alamos, w/attach.  
L. D. Ramspott, LLNL, Livermore, w/attach.  
M. E. Spaeth, SAIC, w/attach.  
G. O. Fredrickson, SAIC, w/attach.  
R. R. Reust, SAIC, w/attach.  
C. W. Garvin, SAIC, w/attach.  
R. H. Klemens, SAIC, w/attach.   
T. L. Jackson, SAIC, w/attach.

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Planned Work:

Continue design Title I effort.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

Efforts are still being made to test the prototype injection system for the water supply with Los Alamos National Laboratory (LANL). To date there has been no progress in this area.

**WBS 1.2.6.3.1**

**Project Title: ESF BUILDINGS**

Planning & Scheduling Account Status:

The IDS has been relocated from the North Access Road to the main pad.

H&N personnel reviewed the Title I drawings of Building 6000, and prepared the construction schedule for Building 6000.

H&N personnel obtained estimates of the costs to lease equipment to build the Main Pad and to purchase the trailers for the Main Pad.

The Surface Data Building and Subsurface Data Building are in the 50% review cycle.

Estimating personnel prepared the Title I estimates for the Surface Data Building, Subsurface Data Building, Warehouse, and Shop, as well as providing Title I estimates for the nine NNWSI-ESF Main Pad Trailers.

Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

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**WBS 1.2.6.7.1**

**Project Title: SUBSURFACE UTILITIES & COMMUNICATIONS**

**Planning & Scheduling Account Status:**

Study 6B, Communication Systems, Rev. 1, was completed and submitted to DOE/WMPO on June 13, 1988, for review and approval.

The Life Safety/Fire Protection subcommittee meetings were held on June 15 and 29, 1988, with fire protection personnel from the Department of Energy/Safety and Health Division (DOE/SHD), H&N, F&S, LANL, and REECo in attendance. This group has been formed to address the ESF surface and subsurface life safety/fire protection requirements, to evaluate A&E concerns, and to furnish recommendations to these areas.

The preliminary engineering work on the Life Safety Work Package was nearly completed. Sketches will be given to the CAD draftsman to produce the required Title I drawings.

The Subsurface Communication Title I work package was completed and submitted for internal review and cost estimates.

**Planned Work:**

Continue work as needed.

**Milestones:**

There are no H&N milestones under this WBS number.

**Problem Areas/Needs:**

None

**WBS 1.2.6.9.3**

**Project Title: SCHEDULING**

**Planning & Scheduling Account Status:**

Preliminary copies of work package schedules were circulated for interdisciplinary review.



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Planned Work:

Finish the Title II schedule.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.6.9.4**

**Project Title: PROTOTYPE TESTING**

Planning & Scheduling Account Status:

Area 6 Inspection personnel continued to report to "G" Tunnel to monitor the prototype testing activities throughout June.

The Materials Testing Laboratory (MTL) has received twelve core samples from the Cross-Hole testing experiment to be used for performing tests in support of the USGS.

H&N surveyors met with USGS and United States Bureau of Reclamation (USBR) personnel on June 21, 1988, to discuss methods for setting controls for the ESF Shaft Wall Mapping.

The drawing of the instrument power supply in support of the Prototype Cross-Hole Test was submitted to Andres Veloso, Department of Energy/Nevada Test Site Office (DOE/NTSO), on June 23, 1988, for review.

Andres Veloso, DOE/NTSO, conducted a surveillance on the Lawrence Livermore National Laboratory (LLNL) Engineered Barrier Design files to review H&N's documentation of field changes. The H&N contacts were Helen Hall and Jim DeMarre.

The Weekly Cost Summaries for Prototype Testing for the month of June were submitted to R. D. Oliver, LANL.

Planned Work:

Perform survey, materials testing, design, and inspection in support of Cross-Hole testing.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.7.2.1**

Project Title: CLIMAX - HOIST HOUSE

Planning & Scheduling Account Status:

Throughout the month of June, Inspection personnel continued to monitor the construction of the Climax Hoist House Replacement.

Planned Work:

Complete inspection of the Climax Hoist House Replacement.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.7.2.3**

Project Title: "G" TUNNEL SUPPORT

Planning & Scheduling Account Status:

Area 6 inspection personnel continued to monitor the Sandia National Laboratory (SNL) Equipment Evaluation and Modification Support activities in "G" Tunnel.

Planned Work:

Continue inspection on construction of the power and lighting for the SNL equipment evaluation and modification support modular structure.

Milestones:

There are no H&N milestones under this WBS number.

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Problem Areas/Needs:

None

**WBS 1.2.9.1.1**

**Project Title: MANAGEMENT AND INTEGRATION**

Planning & Scheduling Account Status:

H&N sent a letter to W. R. Dixon, DOE/VMPO, notifying her of an immediate need for office space (with a locking capacity for expensive calibrated equipment) in Area 25 for the H&N surveyors. This relocation of the H&N surveyors from Areas 6 and 12 to Area 25 will increase their efficiency and aid in separating the NNWSI documentation from the Weapons documentation and equipment.

All H&N personnel continued the preparation, review, and revision of operating procedures to meet current guidelines.

On June 6, 1988, Mr. Donald Trujillo transferred from the Nevada Test Site (NTS) forward areas to the NNWSI support group. Mr. Trujillo is assigned to the design section and will be responsible for the implementation and management of the new CAD System.

Per VMPO letter VMPO:CPG-2269, Beth Munoz has been designated to notify DOE/VMPO of any meeting being held by H&N with any organization other than NNWSI project participants.

In response to verbal direction from Doug Shipley of DOE/VMPO, purchase requisitions for capital equipment authorized for H&N for Fiscal Year (FY) 1988, along with supporting materials, have been transmitted to REECo for procurement.

A proposed Planning and Scheduling (P&S) Account Planning Form for the increased permitting activity was prepared and reviewed with DOE/VMPO.

Per VMPO letter VMPO:LEK-2234, copies of the resolved comments for the NNWSI Project Training Management Plan (TMP) were reviewed and transmitted to VMPO.

Planned Work:

Will perform other work as requested on this level of effort account.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

**WBS 1.2.9.1.4**

**Project Title: RECORDS MANAGEMENT**

Planning & Scheduling Account Status:

The processing of pre-Title I records into the Quality Assurance Records Management System (QARMS) continued.

In response to WMPO letter WMPO:KKE-2196, a revised draft of a proposed NNWSI Project Exploratory Shaft Title I Records Transmittal form for the new Automated Records System (ARS) was submitted for approval.

The NNWSI Microfilming and Archival Storage Services Facility (MASSF) Box Storage and Microfilm Status Reports for the month of June were sent to W. R. Dixon, DOE/WMPO.

H&N Operating Procedure history files were completed.

A dual records storage facility has been established at the H&N Flamingo offices for records generated at the Technical Project (TP) Office. All records have been duplicated, and a system established to create a duplicate of each record as it is created or received at the TP office.

Records Control personnel completed the duplication of all H&N Quality records to satisfy the dual storage requirement.

H&N personnel have reviewed the revised the NNWSI Project Records Management Plan (RMP) and verified that previous comments to this plan have been addressed.

Planned Work:

The work of entering pre-Title I records into the QARMS will continue.

The microfilming of participant records as they are received at MASSF will also continue.

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Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

WBS 1.2.9.2

Project Title: PROJECT CONTROL

Planning & Scheduling Account Status:

Weekly status reports for June 1988, and the monthly status and Earned Value reports for May 1988, were completed.

Revised P&S Account Planning Forms for the FY 1990 budget submission were submitted to DOE/WMPO per letter WMPO:WRD-2205, thus completing WMPO Action Item No. 88-1968.

A review of the funding levels for the NNWSI project revealed some discrepancies in the split between the Work Breakdown Structure (WBS) number divisions. A NNWSI Project Cost/Schedule Change Request form, requesting revisions in allocation of the FY 1988 budget to the fourth level WBS numbers, was submitted to DOE/WMPO on June 16, 1988. The total FY 1988 budget for the NNWSI project remained unchanged.

In response to SAIC letter L88-PPMB-CWG-036, the schedule status reporting information for the month of May was prepared and submitted.

Preparations were made to visit H&N's Albuquerque office to monitor set-up of Quality Assurance (QA) records and training files.

Planned Work:

Weekly status reports for July 1988, and monthly status and earned value reports for June 1988 will be completed.

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

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**WBS 1.2.9.3**  
**Project Title: QUALITY ASSURANCE**

**Planning & Scheduling Account Status:**

H&N personnel continued to support the resolution of findings associated with VMPO Audit 88-02 and, with VMPO and SAIC personnel, amended their responses to Standard Deficiency Reports (SDRs) numbers 122 and 124 from VMPO QA Audit 88-02.

QA surveillance No. N88-S-009 was conducted on the NNWSI Procedure History file, as described in NNWSI Procedure 001, Generation and Control of NNWSI Procedures.

QA personnel continued to evaluate the necessary changes in the H&N Quality Assurance Program Plan (QAPP) to satisfy the changes resulting from the issuance of VMPO QAPP 88-9, and submitted the results to VMPO.

Corrective Action Report N88-S-001, Control of Design Input Data, was issued as a result of H&N internal QA Surveillance No. N88-S-008.

All H&N personnel continued to support the procedure review process throughout the month.

**Training:**

The on-going effort to complete training records and employment verification on all NNWSI assigned employees continued throughout the month. Work progressed on the new data base to be used for training files.

Training sessions on selected NNWSI procedures and the QAPP indoctrination program were conducted for new employees during June.

On June 16, 1988, R. L. Schreiner, Design Section Chief, gave a six hour training session on the NNWSI procedures and the QA plan to the H&N Albuquerque Office personnel.

H&N and SAIC representatives met to discuss the proposed Nondestructive Evaluation Overview Training Program which is scheduled to be presented in six classes held over the months of July, August, and September. These classes are designed for the non-professional, nondestructive evaluation technician. William Cotter, H&N, will present the Overview for any interested H&N, DOE, or SAIC employees.

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H&N reviewed the disposition of comments to the WMPO Training Management Plan, Rev. 1, and sent a concurrence to SAIC and WMPO.

Planned Work:

Publish procedure revisions as detailed in the schedule provided to DOE/WMPO (letter WMPO:JB-1799 dated April 12, 1988).

Milestones:

There are no H&N milestones under this WBS number.

Problem Areas/Needs:

None

The Technical Data Management System Submittal Record is attached.

NNWSI Project Cost/Schedule information will be submitted separately.



Joseph C. Calovini  
Technical Project Officer  
for the NNWSI Project

Attachments  
As Stated

cc: M. B. Blanchard, DOE/WMPO, w/attach.  
W. R. Dixon, DOE/WMPO, w/attach.  
L. P. Skousen, DOE/WMPO, w/attach.  
K. K. Hatch, DOE/WMPO, w/attach.  
D. E. Irby, DOE/WMPO, w/attach.  
W. T. Hughes, DOE/WMPO, w/attach.  
J. R. Barner, DOE/NTSO, w/attach.  
J. S. Szymanski, DOE/WMPO, w/attach.  
A. R. Veloso, DOE/NTSO, w/attach.  
R. L. Bullock, F&S, w/attach.  
L. R. Hayes, USGS, Denver, w/attach.  
H. N. Kalia, LANL, w/attach.  
T. O. Hunter, SNL, Albuquerque, w/attach.  
R. F. Pritchett, REECO, w/attach.  
D. T. Oakley, Los Alamos, w/attach.  
L. D. Ramspott, LLNL, Livermore, w/attach.  
M. E. Spaeth, SAIC, w/attach.  
G. O. Fredrickson, SAIC, w/attach.  
R. R. Reust, SAIC, w/attach.  
C. W. Garvin, SAIC, w/attach.  
R. H. Klemens, SAIC, w/attach. ←  
T. L. Jackson, SAIC, w/attach.







**Holmes & Narver**  
Energy Support Division  
Nevada Operations

NNWSI:TPO:88-251  
WBS 1.2.9.1.1  
QA Level N/A

June 13, 1988

Carl P. Gertz  
Project Manager  
Waste Management Project Office  
U.S. Department of Energy  
Nevada Operations Office  
Post Office Box 98158  
Las Vegas, NV 89193-8518

HOLMES & NARVER, INC. (H&N) NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
(NNWSI) PROJECT MONTHLY REPORT FOR MAY 1988

WBS 1.2.3.1.4  
Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Account Scheduling Status:

During the first week in May, H&N personnel sent copies of the regional NNWSI map to Lloyd Krivanek, Department of Energy/Waste Management Project Office (DOE/WMPO), per his verbal request.

Also during the first week in May, H&N personnel sent copies of the NNWSI Atlas drillholes maps confirming the drillholes locations within the repository boundary, as defined by Sandia National Laboratory (SNL) reports, to Chuck Warren, United States Geological Survey (USGS), as per his verbal request.

H&N received comments from the Department of Energy/Nevada Test Site Office (DOE/NTSO) and Science Applications International Corporation (SAIC) on the draft submittal of the NNWSI Site Atlas Map Portfolio. H&N personnel reviewed comments with SAIC personnel on the map portfolio, and it is currently being revised.

During the last week in May, Mr. Josh Marvil, SAIC/Golden, was given approximate coordinates for the following drillholes: USW UZ-11, USW UZ-12, and UE-25 UZ-14.

SAIC/T & MSS

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Planned Work:

- 1) Complete changes to the NNWSI Atlas of Field Activities map portfolio from review comments by DOE/WMPO, DOE/NTSO, and SAIC. Start procurement action for the printing of the maps.
- 2) Complete the report on the surveyors' findings from checking primary control on Yucca Mountain.

Milestones:

There are no milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.3.5.2**

**Project Title: DRILLING, CONSTRUCTION, ENGINEERING**

Planning & Scheduling Account Status:

Support continued for USGS Modifications to Building 4215, including preparation of construction specifications, estimating, inspection, and assistance in equipment procurement.

Engineering personnel continued design for the Instrumentation/Data Acquisition (IDAS) prototype shelters in support of the USGS Unsaturated Zone Experiments. Early procurement work orders were issued for various items. Comments were received from the preliminary review of the IDAS shelter layout and the resolutions were submitted to Andres Veloso, DOE/NTSO. The Title II drawings for the shelter internals were completed and submitted on May 31, 1988.

During the first week of May, Electronics continued inspection on the Reynolds Electrical and Engineering Company (REECO) telemetry testing of the 23 GHz radio antenna for the IDAS. Electronics completed the inspection during the second week.

The Materials Testing Laboratory (MTL) completed the preparation of a detailed test plan for performing mercury porosimeter and permeameter testing, as requested by the USGS for equipment testing and personnel certification. The camera specifications for the ultracentrifuge were being reviewed for purchase under capital equipment.

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H&N personnel met with Joe Rousseau, USGS/Denver, Al Balch, Colorado School of Mines, and Russ Lahoud, Fenix and Scisson, Inc. (F&S), on May 19, 1988 to discuss the stemming operation technical procedures for the prototype Vertical Seismic Profiling Hole (VSP) to be located in the UE-25 UZ-9 complex.

Planned Work:

- 1) Complete the Civil and Commercial power drawings for the IDAS prototype shelter field locations.
- 2) Continue equipment testing by Materials Testing Laboratory (MTL).
- 3) Continue inspection of USGS modifications to Building 4215.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.1.1**

**Project Title: ESF MANAGEMENT & INTEGRATION**

Planning & Scheduling Account Status

H&N personnel attended the Exploratory Shaft Test Plan (ESTP) Committee Meeting on May 5, 1988. Helen Hall, Project Engineer, gave a presentation to the ESTP Committee on an example of software quality assurance.

H&N personnel attended the Interface Control Working Group (ICWG) meeting on May 3. Preliminary SID drawings and a drawing status report were presented for review. The design interface drawings may require a change in format. An evaluation by engineering and management personnel will be made.

A letter was submitted to the Waste Management Project Office (WMPO) changing the H&N ICWG alternate to Harry Tuthill.

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On May 20, 1988, a meeting between H&N Engineers and F&S Engineers explored the current thinking on design interface control including the topics: how to use the design interface identification form, and what is required from the engineering disciplines to fulfill this task. NNWSI Procedure 029, Design Interface Control, is in the process of being revised to include a "Design Interface Identification" sheet as the vehicle to transmit design interface information.

May 3, 1988, H&N responded to WMPO letter WMPO:LEK-1863, C. Gertz to Technical Project Officers (TPOs), with information relating to licensing support system, which completed WMPO Action Item 88-1540.

H&N submitted to Carl Gertz, DOE/WMPO, proposed revisions to the NNWSI Exploratory Shaft Facility (ESF) Subsystem Design Requirements Document.

During the first week in May, coordination meetings were conducted with F&S in regards to the electrical support, Hoist House arrangement, and the main pad arrangement.

The 50% Title I Design Review was presented on May 9, 10, and 11 at the Henderson, Nevada Convention Center in Henderson, Nevada. Several H&N employees participated in the presentation. H&N's design was well received by the over one hundred people attending the presentation. Some of the organizations in attendance were: the Nuclear Regulatory Commission, Corp of Engineers, the State of Nevada, and Department of Energy (DOE) contractors. The review comments were ready for internal review by June 1, 1988, and for transmission to the DOE by June 3, 1988.

H&N personnel met with the SAIC Environmental Regulatory Branch on May 25, 1988, to discuss H&N's role in obtaining the permits for the ESF and site investigations activities.

Planned Work:

Work on Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

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Milestones:

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	05/20/88	Surface Engineering Studies complete.	At DOE/WMPO for review.
P074(P)	08/01/88	Surface Title I Design Complete	Design in progress.

Problem Areas/Needs:

None.

WBS 1.2.6.1.2  
Project Title: ESF SAFETY AND QA

Planning & Scheduling Account Status:

H&N Albuquerque Design personnel will be used for design verification/design review activities. A work authorization has been prepared.

Planned Work:

Complete work authorization for the use of H&N Albuquerque personnel.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

WBS 1.2.6.2.1  
Project Title: ESF SITE AND ROADS

Planning & Scheduling Account Status:

Soils analyses were requested of the Materials Test Lab (MTL) to determine the suitability of potential borrow areas to be used for fill material at the ESF.

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Workshops were conducted on the probable maximum flood and the major items driving surface design in conjunction with the 50% Title I review.

Design progressed on the proposed location of the muck storage pad to the east of the main pad. The Design Group continued the new main pad layout and configuration with no anticipated delays.

H&N submitted cost estimates for the building of a 200 x 200-foot pad and access road for the Multipurpose Borehole, as per the request of L. J. Owens, DOE/WMPO.

Planned Work:

Continue Title I design effort.

The Civil Design Group will continue to investigate the feasibility of the conceptual design. This design approach appears to be the best one at the present, and it is anticipated that this is the direction in which H&N will proceed. Design work will continue on the conceptual design and on the remaining site drainage and road work.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.2.2**

**Project Title: SURFACE UTILITIES**

Planning & Scheduling Status:

On May 9, a formal presentation of the design concepts of the power system, water system, sewage system, and the mine waste-water system was presented at the 50% Title I review. A workshop was conducted on the power system on May 11 and May 12, 1988.

Design continued on the water, sewer, and mine waste-water utilities throughout May, with no anticipated delays.

Percolation tests were requested from the Materials Test Laboratory (MTL) for potential leach field locations.

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Planned Work:

Continue design Title I effort.

Milestones:

None.

Problem Areas/Needs:

Efforts are still being made to test the prototype injection system for the water supply with Los Alamos National Laboratory (LANL). To date there has been no progress made in this area.

WBS 1.2.6.3.1

Project Title: ESF BUILDINGS

Planning & Scheduling Account Status:

On May 3, 1988, H&N requested additional information on recognized needs for the ESF warehouse building and main pad trailers, from R. F. Pritchett, TPO, REECo.

A formal presentation of the design concepts of the shop, warehouse, and the trailers was presented at the 50% Title I review.

A workshop on the construction requirements for the trailers was conducted in conjunction with the 50% Title I review.

During the last week in May, H&N personnel attended a meeting with REECo personnel in Mercury regarding the shop and warehouse criteria.

In coordination with P&S, the Hoist House arrangement and floor plan are under development.

Work is underway on the A&E Building Design. The completion date for Title I design is July 11, 1988.

An Engineering Change Request (ECR) has been submitted to revise the Subsystem Design Requirement Document (SDRD) to offer more flexibility in the design of the Change House facility. A preliminary concept of the Change House is in progress, reflecting the use of a prefabricated metal building.



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Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.7.1**

**Project Title: SUBSURFACE UTILITIES & COMMUNICATIONS**

Planning & Scheduling Account Status:

The WMPO comments to Study 6A, Life Safety Systems, were evaluated and addressed in Revision 2, which was submitted to WMPO on May 20 for review and approval.

Continued reviews and comment resolution on Study 6B, Communication Systems, for transmittal to DOE/WMPO.

A Life Safety/Fire Protection meeting was held May 26, with personnel from WMPO, REECo, LANL, F&S, Department of Energy/Safety and Health Division (DOE/SHD), and H&N. H&N is using the services of Don Keigher as a fire protection consultant in this design effort. The next subcommittee meeting is scheduled for June 15.

H&N personnel attended the May 17th presentation which explained the specialization of each Bureau of Mines Research Center. H&N personnel are planning a trip on June 8th and 9th in order to confer with the engineers at the Bureau of Mines, Pittsburgh Research Center. Engineering contacts will be made in the areas of Communications and Life Safety Systems.

**WBS 1.2.6.9.3**

**Project Title: SCHEDULING - TITLE I**

Planning & Scheduling Account Status:

The Design Schedule is under revision for a 90% Title I submittal date of August 1, 1988. Schedules are being prepared to determine programmatic impact based on the comment resolution meeting.

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Planned Work:

Finish the new schedule for Title I submittal.

Finish the schedule for Title II.

Problem Areas/Needs:

None.

Milestones:

None.

WBS 1.2.6.9.4

Project Title: PROTOTYPE TESTING

Planning & Scheduling Account Status:

Support to Prototype Testing in "G" Tunnel:

Submitted comments on the cross-hole drilling program to Andres Veloso, DOE/NTSO. Surveyors laid out the first drillhole for the Prototype Cross-Hole testing and the Materials Testing Laboratory (MTL) is waiting the delivery of core samples from that hole for permeability testing.

Surveyors performed "as-built" surveys for drillholes, and calculations were performed for AC-1 and AC-2 for the LANL Air Coring Test in the Demonstration Drift and Laser Drift.

"As-builts" for the Lawrence Livermore National Laboratory (LLNL) Prototype Engineered Design electrical installation were completed. Area 6 inspection personnel monitored "G" tunnel prototype testing activities for LLNL Prototype Engineered Design electrical installation.

Planned Work:

Perform survey and materials testing in support of Cross-Hole testing.

Milestones:

There are no H&N milestones under this WBS.

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**WBS 1.2.7.2.1**  
**Project Title: CLIMAX - HOIST HOUSE**

**Planning & Scheduling Account Status:**

Throughout the month of May, the Inspection group continued to monitor the construction of the Climax Hoist House Replacement.

**Planned Work:**

Complete inspection of the Climax Hoist House Replacement.

**Milestones:**

There are no H&N milestones under this WBS.

**Problem Areas/Needs:**

None.

**WBS 1.2.7.2.3**  
**Project Title: "G" TUNNEL SUPPORT**

**Planning & Scheduling Account Status:**

H&N project engineering personnel issued a field memorandum to replace SO cord with conduit and detailing the penetrations through the modular structure, as per the recommendations of the Bally Engineered manufacturer's manual.

**Planned Work:**

Continue inspection on construction of the power and lighting for the SNL equipment evaluation and modification support modular structure.

**Milestones:**

There are no milestones under this WBS.

**Problem Areas/Needs:**

None.

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**WBS 1.2.9.1.1**

**Project Title: MANAGEMENT AND INTEGRATION**

**Planning & Scheduling Account Status:**

Detailed information on capital equipment items which were requested in the Fiscal Year (FY) 1990 Budget was transmitted to DOE/WMPO in response to letter WMPO:SAC-1909.

H&N responded to a request by SAIC to review items listed on the data base for the identification of Work Breakdown Structure (WBS) numbers. None of the items listed related to the Title I or II design of the ESF, as supported by H&N. This completed the action requested on letter L88-MID-SBJ-004.

Mr. Lynn Affleck transferred from the Tonopah Test Range (TTR) group to NNWSI support. Mr. Affleck is a Senior II Structural Engineer with extensive Civil Engineering experience.

H&N personnel attended a meeting with representatives from the University of Nevada Las Vegas (UNLV) on May 17. This meeting was to discuss the merits of UNLV staff performing some activities for H&N on the NNWSI project.

On May 23, 1988, H&N submitted a mid-year review of the H&N budget complete with Full Time Equivalent (FTE) estimates.

**Planned Work:**

Will perform other work as requested on this level of effort account.

**Milestones:**

There are no H&N milestones for this WBS.

**Problem Areas/Needs:**

None.

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**WBS 1.2.9.1.4**

**Project Title: RECORDS MANAGEMENT**

**Planning & Scheduling Account Status:**

The processing of pre-Title I records into the Quality Assurance Records Management System (QARMS) continued.

H&N records management personnel attended a meeting with DOE/WMPO, SAIC, and other contract personnel on Monday, May 2. The all-day meeting included a review of the QARMS system, the new Automated Records Management System (ARS), Discovery, and all aspects of NNWSI records management.

**Planned Work:**

The work of entering pre-Title I records into the QARMS will continue.

The microfilming of participant records as they are received at the Microfilming and Archival Storage Services Facility (MASSF) will also continue.

**Milestones:**

There are no H&N milestones for this WBS.

**Problem Areas/Needs:**

None.

**WBS 1.2.9.2**

**Project Title: PROJECT CONTROL**

**Planning & Scheduling Account Status:**

Weekly status reports for May 1988, and monthly status and earned value reports for April 1988, were completed.

In response to SAIC letter L88-PPHB-CVG-035, dated April 29, 1988, the schedule status reporting information for the month of April was prepared and submitted.

Submitted revised input to the Socioeconomic Monitoring Section 175 Report. Estimates were revised to include all employees who will work on the NNWSI project for H&N.

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In response to a request from DOE/WMPO, the FY88 Budget was finalized to the fourth level VBS numbers and the information submitted.

Submitted weekly cost summaries for prototype testing to R. D. Oliver, LANL.

Planned Work:

Weekly status reports for June 1988, and monthly status and earned value reports for May 1988 will be completed.

Milestones:

There are no H&N milestones for this VBS.

Problem Areas/Needs:

None.

**VBS 1.2.9.3**

Project Title: QUALITY ASSURANCE

Planning & Scheduling Account Status:

H&N project engineering responded to the disposition of H&N comments concerning the review of AP-5.6Q on May 5.

During May, revisions to NNWSI-001, Generation and Control of NNWSI Procedures, and NNWSI-014, Design Verification, were published and distributed. Revisions to NNWSI-005, Design Drawing Preparation and Control, and NNWSI-006, Design Analysis, were completed, approved, published, and distributed. These procedures were revised to comply with the Quality Assurance Program Plan (QAPP), Rev. 0. H&N also provided updated status information on review/revisions of all H&N procedures to J. Blaylock, DOE/WMPO.

H&N personnel prepared and responded to WMPO audit 88-02, and continued implementation of the plan which will correct the deficiencies in the H&N program.

Mr. C. Wright, Chief, Quality Assurance (QA), attended the monthly NNWSI Project Quality Assurance managers' meeting.

Ron Sabol and Don Brown, Senior Quality Assurance Engineers, were assigned to full-time support of the NNWSI Project at the Valley Bank

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Center location.

An H&N Project Engineer and an Inspector attended the Asbestos Abatement for Workers training class held by REECo Industrial Hygiene on May 27, 1988.

**Training:**

A number of newly assigned H&N employees viewed the Quality Assurance indoctrination program. Employees from the Electronics, Administration, Materials Test Laboratory, and Design groups attended the sessions.

Carolyn G. Aiello, Training Coordinator, conducted training sessions on selected NNWSI Procedures for H&N employees. These training sessions included Nevada Test Site (NTS) employees and Technical Project Office new employees.

Randy L. Schreiner, Design Section Chief, conducted training sessions on NNWSI procedures 005 and 006 for the Cable Group in Mercury, and the Technical Project Office, respectively.

**Planned Work:**

Publish procedure revisions as detailed in the schedule provided to DOE/WMPO (letter WMPO:JB-1799 dated April 12, 1988).

**Milestones:**

There are no H&N milestones for this WBS.

**Problem Areas/Needs:**

None.

The Technical Data Management System Submittal Record is attached.

NNWSI Project Cost/Schedule information will be submitted separately.

  
Joseph C. Calovini  
Technical Project Officer  
for the NNWSI Project

Attachments  
As Stated





cc: M. B. Blanchard, DOE/WMPO, w/attach.  
W. R. Dixon, DOE/WMPO, w/attach.  
L. P. Skousen, DOE/WMPO, w/attach.  
K. K. Hatch, DOE/WMPO, w/attach.  
D. H. Irby, DOE/WMPO, w/attach.  
V. T. Hughes, DOE/WMPO, w/attach.  
J. R. Barner, DOE/NTSO, w/attach.  
J. S. Szymanski, DOE/WMPO, w/attach.  
A. R. Veloso, DOE/NTSO, w/attach.  
R. L. Bullock, F&S, w/attach.  
L. R. Hayes, USGS, Denver, w/attach.  
H. N. Kalia, LANL, w/attach.  
T. O. Hunter, SNL, Albuquerque, w/attach.  
R. F. Pritchett, REECo, w/attach.  
D. T. Oakley, Los Alamos, w/attach.  
L. D. Ramspott, LLNL, Livermore, w/attach.  
M. E. Spaeth, SAIC, w/attach.  
G. O. Fredrickson, SAIC, w/attach.  
R. R. Reust, SAIC, w/attach.  
C. W. Garvin, SAIC, w/attach.  
R. H. Klemens, SAIC, w/attach. ←  
T. L. Jackson, SAIC, w/attach.



**Holmes & Narver**

Energy Support Division

Nevada Operations

NNWSI:TPO:88-217

WBS 1.2.9.1.1

QA Level N/A

May 13, 1988

Carl P. Gertz

Project Manager

Waste Management Project Office

U.S. Department of Energy

Nevada Operations Office

Post Office Box 98158

Las Vegas, NV 89193-8518

HOLMES & NARVER, INC. (H&N) NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
(NNWSI) PROJECT MONTHLY REPORT FOR APRIL 1988

WBS 1.2.3.1.4

Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Account Scheduling Status:

Early in the month of April, Automated Drafting continued plotting data for the Atlas of Field Activities. The information for unpublished sampling from ground water springs, acquired by the Desert Research Institute, was being incorporated. H&N submitted sets of the NNWSI Atlas of Field Activities map portfolio for final review and comment to the Department of Energy Waste Management Project Office (DOE/WMPO), DOE Nevada Test Site Office (NTSO), and Science Applications Incorporated Corporation (SAIC).

Surveyors continued checking the vertical/horizontal control on Yucca Mountain for the photo panels for Dr. Sherman Wu, USGS, Flagstaff. Calculations were performed on the vertical/horizontal survey for primary control used on Yucca Mountain for the photo panels. One final control point, Alice, needs to be resurveyed.

Copies of the regional NNWSI Map were sent to Lloyd Krivanek, DOE/WMPO, for discussions with the State of Nevada. Later in the month, copies of the Regional NNWSI Map were sent to Dick Dye, Sandia National Laboratories (SNL), as per his verbal request. Copies of the NTS Road and Facility Map with Area 25 Central Support Facility sketches were sent to Phil Ralphs, SAIC, as per his verbal request.

SAIC/T & MSS.

MAY 17 1988

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Project Engineering completed Earned Value packages for site investigations.

Planned Work:

- 1) Complete changes to the NNWSI Atlas of Field Activities map portfolio from review comments by DOE/WMPO, DOE/NTSO, and SAIC. Start procurement action for the printing of the maps.
- 2) Complete the report on the surveyors' findings from checking primary control on Yucca Mountain.

Milestones:

There are no milestones under this VBS.

Problem Areas/Needs:

None.

**VBS 1.2.3.5.2**

**Project Title: DRILLING, CONSTRUCTION, ENGINEERING**

Planning & Scheduling Account Status:

Throughout the month of April, Engineering continued the design of the Instrumentation/Data Acquisition System (IDAS) prototype shelters in support of the USGS Unsaturated Zone Experiments. Early procurement of the major mechanical equipment, major electrical equipment, and electronics lock system were initiated April 29, 1988. Surveyors prepared topography for the area around USW UZ-1 and UE-25 UZ-4 for the site plan for the IDAS shelters.

During April, Electronics started inspection on the REECO telemetry testing of the 23 GHZ radio antenna for the IDAS. Inspection continued throughout the month.

During the third week in April, H&N completed the estimate for construction of the USGS Modifications to Building 4215 that incorporates the changes to the drawings resulting from the Title II review and DOE Safety and Health Division meetings. A work order was approved for advance procurement of mechanical equipment and the

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subcontracts for the roofing and fire protection for the USGS Modifications to Building 4215. During the last week in April, Engineering prepared roofing specifications for the subcontract package for the USGS Modifications to Building 4215.

An H&N Project Engineering representative attended a meeting with REECO NTS General, at NTSO, to discuss the asbestos removal for the USGS Modifications to Building 4215 on April 20, 1988. H&N personnel held a meeting with Bob Craig, USGS, and J. C. McDaniel, REECO, on April 14, 1988 on future stemming and instrumentation of the deep Unsaturated Zone drillholes to be conducted during site characterization.

Planned Work:

Complete the preparation of the work order for construction of the USGS modifications to Building 4215. Start inspection on that construction.

Complete the Title I/II drawings for the IDAS prototype shelters' internals. Civil and commercial power drawings will be submitted in a separate package in June.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.1.1**

**Project Title: ESF MANAGEMENT & INTEGRATION**

Planning & Scheduling Account Status

A design Interface Control Meeting was held April 6 with Marge Brake, SAIC; Bill Deason, F&S; and Tom Merson, LANL and H&N personnel. Seven preliminary drawings were handed out for revision and comment. The Design group continued work on the design system interface drawings by giving sketches to the Automated Drafting Services Department to input the information into the CAD system. Approximately 40 D-Size drawings have been submitted to be compiled by the CAD system into a block diagram format. These preliminary drawings will be submitted at the May 3 ICWG meeting for review and comment.

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A letter was received on April 6, 1988, from LANL transmitting proposed design interface information regarding the testing interfaces. This will be incorporated into existing interface information, as soon as possible.

H&N personnel attended the Interface Control Working Group (ICWG) meeting on April 12, and submitted preliminary design interface drawings and a design interface drawing status report to the group for comment. The Branch Technical Procedure, Design Interface Control, was revised and submitted to WMPO for signature and distribution.

H&N personnel attended several meetings during the month of April including the Exploratory Shaft Test Plan (ESTP) committee meeting held at the Valley Bank Center on April 13, 1988, and the ESF site requirements meeting on April 24, 1988. H&N attended the Exploratory Shaft Facility (ESF) Briefing meeting on April 14 and on April 28. Six QALAs were submitted, with H&N comments, to Dennis Irby as requested at the April 14 meeting.

On April 18, in response to WMPO Action Item Number 107, H&N submitted proposed criteria revisions to the ESF Title I Design Basis Document and Scope and Planning Basis Document for consideration and approval by WMPO.

H&N Engineering participated in an internal review of Title I work packages for submittal to DOE/WMPO. On April 18, H&N submitted to SAIC a list of the drawings which H&N will be supplying for the 50% Title I review. A design review meeting was held on April 25 to resolve all the comments on the drawings prior to the 50% Title I submittal. The drawings are scheduled for transmittal on May 2, and the design reviews are scheduled for May 9 and 10.

A Civil drafts-person joined the Design group during April on temporary assignment from the Albuquerque H&N Office. Employment offers are being presented to a Jr. Drafting Technician, an Electrical Designer, and a Senior Designer Mechanical/Fire Protection.

On April 26, 1988, in response to a verbal request from L. Krivanek, DOE/WMPO, H&N submitted estimated costs for the CPAF contractor for construction efforts for the Fiscal Years 1988, 1989, and 1990.

Planned Work:

Work on Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

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Comments to the preliminary drawings will be addressed at the next ICWG meeting on May 3. Also, H&N will transmit Rev. 1 of the Branch Technical Procedure, Design Interface Control, to WMPO for approval.

Milestones:

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	05/20/88	Surface Engineering Studies complete.	At DOE/WMPO for review.
P074(P)	07/15/88	Surface Title I Design Complete	Design in progress.

Problem Areas/Needs:

None.

**WBS 1.2.6.1.2**

**Project Title: ESF SAFETY AND QA**

Planning & Scheduling Account Status:

Negotiations continued throughout the month for the use of H&N Albuquerque Design personnel for design verification activities.

Planned Work:

Continue negotiations for the use of H&N Albuquerque personnel.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.2.1**

**Project Title: ESF SITE AND ROADS**

Planning & Scheduling Account Status:

Throughout the month of April, the Design Group continued the drafting effort on the auxiliary pads, drainage, and the roads' design packages. All drawings were submitted for review on April 18. Comments from the

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internal review for the main pad were incorporated.

Planned Work:

Continue Title I design effort.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.2.2**

Project Title: SURFACE UTILITIES

Planning & Scheduling Status:

The water system, sewage system, and the mine waste water system, and the electrical power system were in the drafting process during the early weeks of April. The Design Group completed the drafting on the water system, sewage system, and the mine waste-water system during the middle of April. All drawings were submitted for distribution and review on April 18, with final submittal for the 50% Title I review on May 2.

Planned Work:

Continue design Title I effort.

Milestones:

None.

Problem Areas/Needs:

None.

**WBS 1.2.6.3.1**

Project Title: ESF BUILDINGS

Planning & Scheduling Account Status:

The floor plans, mechanical plans, fire detection and protection plans, and the electrical plans for the shop, warehouse, and the trailers, were

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submitted for distribution and review on April 18. The date for final submittal for the 50X Title I review was May 2.

In response to DOE Letter WMPO:LEK-1508, dated March 28, 1988, H&N submitted a design schedule and cost estimate for Title I effort on the A/E Building in Area 25.

Planned Work:

Continue work as needed.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**VBS 1.2.6.7.1**

**Project Title: SUBSURFACE UTILITIES & COMMUNICATIONS**

Planning & Scheduling Account Status:

A meeting was held by Don Martin, DOE/SHD with H&N personnel on April 6, to review draft comments made by the Safety Department in reviewing Study 6A, Rev. 1, Life Safety Systems. WMPO has directed H&N to incorporate the seven WMPO comments into a revision of Study 6A. The DOE Safety comments will be included in the front of Rev. 2, but will not be addressed specifically in the Study. These comments will be addressed during Title I design. H&N Engineering is addressing the seven WMPO comments to Study 6A, for inclusion into the Study. A May 20 submittal date to WMPO is planned.

Research into the latest codes applicable to Title I for the Life Safety System Design Work Package is scheduled to start. A risk analysis will be compiled as part of this work. The assistance of a certified Fire Protection Engineer will be required in the design work package.

Engineering received comments from WMPO on Study 6B, Rev. 0, Communications Systems, on March 31. A review by the Electronics group will be made to establish man-hour and schedule information. WMPO has been asked by H&N to research the scope of work for Centel in the Title I and II effort in communications for the ESF. Project Engineering also wrote a work initiation to revise Study 6B, Rev. 0, Communications



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Systems. As a preliminary to the revision of this study, a questionnaire will be sent to all the NNWSI participants for an update on communication requirements at the ESF surface, A/E Building, and ESF subsurface areas. During April, the WMPO comments to Study 6B, were addressed by the communications engineers for incorporation into the Study. To get the desired information from the project participants concerning one study review comment, an information sketch, and building sketches were issued in order to obtain the latest communication requirements for the ESF and the A&E Building. The planned submittal date to WMPO is May 27.

The Design Group is addressing the scope of work required for the Title I Surface and Subsurface Communication Design work packages. This effort is being fulfilled by the H&N Electronics Department Tel/Data Division.

WBS 1.2.6.9.3  
Project Title: SCHEDULING - TITLE I

Planning & Scheduling Account Status:

Work packages were worked on during the month of April for the Title I 50% review scheduled to start May 9. The drawings are to be submitted on May 3 for printing.

The scheduled submittal date for the Title I design is August 1, 1988. A new schedule is being constructed to reflect that date.

A preliminary schedule is under construction for Title II and is not ready for distribution yet.

Planned Work:

Finish the new schedule for Title I submittal.  
Finish the schedule for Title II.

Problem Areas/Needs:

None.

Milestones:

None.

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VBS 1.2.6.9.4  
Project Title: PROTOTYPE TESTING

Planning & Scheduling Account Status:

Support to Prototype Testing in "G" Tunnel:

Prototype Engineered Barrier Design:

Calculations were performed on the as-built survey for drillholes for the Lawrence Livermore National Laboratory (LLNL) Prototype Engineered Barrier Design. Early in April, Surveyors provided as-built coordinates for drillholes for the LLNL Prototype Engineered Barrier Design testing in "G" Tunnel.

Throughout the month of April, Area 6 Inspection reported to "G" Tunnel to monitor activities for the LLNL Prototype Engineered Design electrical installation. A field memorandum was approved to replace six-inch cable trays with readily available 12-inch cable trays.

Prototype Hydrologic Testing:

An H&N Project Engineering representative attended the readiness reviews conducted by Los Alamos at the Valley Bank Center on April 18-19, for the following prototype tests: Cross-Hole Testing, Diffusion, and Sample Extraction Test.

During the month of April, H&N submitted to R. Oliver, Los Alamos National Laboratory, the summary of H&N costs for prototype testing.

Planned Work:

Perform survey asbuilt for Los Alamos prototype Air-Coring test.  
Perform survey and materials testing in support of Cross-Hole testing.  
Continue inspection on Engineered Barrier Design.

Milestones:

There are no H&N milestones under this WBS.

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**VBS 1.2.7.2.1**

**Project Title: CLIMAX - HOIST HOUSE**

**Planning & Scheduling Account Status:**

Throughout the month of April, Inspection personnel continued inspection at Area 15 for the Climax Hoist House replacement.

Engineering reviewed revisions to the Metallic-Braden shop drawings for the Climax Hoist House Replacement prefabricated metal building. The late submittal of these shop drawings resulted in a Nonconformance Report written by H&N Inspection against REECO NTS General since the hoist house was erected to the revised shop drawings.

A field memorandum was issued to replace the main power disconnects and backboard located near the headframe, since there was substantial weathering of these items.

**Planned Work:**

Complete inspection of the Climax Hoist House Replacement.

**Milestones:**

There are no H&N milestones under this VBS.

**Problem Areas/Needs:**

None.

**VBS 1.2.7.2.3**

**Project Title: "G" TUNNEL SUPPORT**

**Planning & Scheduling Account Status:**

Early in April, Engineering submitted field memorandum for a 15 KVA utility mini-panel to be added to the alcove to support Sandia's rock cutting saw experiments. H&N completed the revised estimate to incorporate changes per REECO's check estimate on the SNL Equipment Evaluation and Modification Support.

Revisions were issued to drawing JS-012-U12g-E86.1 that includes a utility mini-panel schedule to provide power to the SNL rock saw and the alcove for the LLNL Engineered Barrier Design.

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H&N's Electronics Department sent an engineer to "G" Tunnel to inspect the Life Safety System in accordance with the California Tunnel and Mining Orders.

Planned Work:

Start inspection on construction of the power and lighting for the SNL equipment evaluation and modification support modular structure.

Milestones:

There are no milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.9.1.1**

**Project Title: MANAGEMENT AND INTEGRATION**

Planning & Scheduling Account Status:

In response to DOE letter VMPO:WAW-1555, dated March 22, 1988, Major System Acquisition Milestone Criteria was reviewed and comments were transmitted to DOE/VMPO during the first week in April.

On April 18, H&N submitted the Worker Data Reporting Forms for the Socioeconomic Monitoring Program for the months from January through March of 1988.

On April 21, H&N responded to letter VMPO:WBS-1760, C. P. Gertz to distribution, by submitting a list of all capital equipment items, with justifications, which need to be purchased for the NNWSI project in FY88.

Planned Work:

Will perform other work as requested on this level of effort account.

Milestones:

There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

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WBS 1.2.9.1.4  
Project Title: RECORDS MANAGEMENT

Planning & Scheduling Account Status:

The processing of Pre-Title I records into the QARMS records system continued throughout the month of April. The processing of E-Mad records was completed during April.

The H&N NNWSI Master List of controlled documents, giving current revision numbers of all documents, as of April 1, was issued to all copy holders.

Planned Work:

The work of entering pre-Title I records into the QARMS will continue. The microfilming of participant records as they are received at the MASSF will also continue.

Milestones:

There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

WBS 1.2.9.2  
Project Title: PROJECT CONTROL

Planning & Scheduling Account Status:

Weekly status reports for April 1988, and monthly status and earned value reports for March 1988, were completed.

Weekly cost summary reports for Prototype Testing were transmitted to Los Alamos National Laboratory.

In response to WMPO letter WMPO:WRD-1798, dated April 12, 1988, H&N submitted the completed forms showing several programmatic impacts resulting from reductions to the Fiscal Year 1989 budget for H&N.

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In response to WMPO letter WMPO:DEL-1710, C. P. Gertz to addressees, it was determined that H&N would have no input to the Performance Assessment/Safety Assessment Budget Crosscut. This response completed WMPO Action Item 88-1466.

On April 19, H&N responded to SAIC letter L88-PPMB-CWG-022, by submitting schedule status information for the month of March 1988.

On April 28, 1988, H&N responded to WMPO letter WMPO:WRD-1633, C. Gertz to Technical Project Officers, by submitting the formula which will be used to calculate Full-Time Equivalents. This letter constituted the completion of WMPO Action Item No. 88-1421.

Planned Work:

Weekly status reports for May 1988, and monthly status and earned value reports for April 1988, will be completed.

Milestones:

There are no H&N milestones for this VBS.

Problem Areas/Needs:

None.

**VBS 1.2.9.3**

Project Title: QUALITY ASSURANCE

Planning & Scheduling Account Status:

Throughout the month of April, H&N personnel continued the review of NNWSI Procedures for compliance to the Quality Assurance Program Plan, Rev. 0 (QAPP), and submitted a list of completion dates for procedure revisions to DOE/WMPO.

H&N personnel prepared responses to the Standard Deficiency Reports (SDRs) and observations resulting from the recent DOE/WMPO audit.

On April 19, in response to SAIC letter L88-PPB-JHF-020, M. E. Spaeth to distribution, H&N completed the review and submitted the document review sheet for the NNWSI Administrative Procedure (AP)5.12.

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H&N NNWSI PROJECT MONTHLY REPORT FOR APRIL 1988  
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Throughout April, the QA department continued the preparation of Rev. 1 to the QAPP. The QA Department submitted Revision 1 of the QAPP to Jim Blaylock, WMPO, for approval during the last week in April.

**Training:**

On April 12, H&N responded to WMPO letter WMPO:LEK-1246, Carl Gertz to Joseph Calovini, dated February 24, 1988, by submitting comments to the Project Training Management Plan.

Training activities continued throughout the month of April. On April 7, 1988, Randy Shreiner, Design Section Chief, gave a thirty minute training session on NNWSI Procedure 004, at the H&N Conference Room.

On April 14, Carolyn G. Aiello, Training Coordinator, conducted a one and one-half hour training session on selected NNWSI Procedures for H&N employees.

On April 25 and 28 the QAPP presentation was given to selected H&N employees. The thirty-three minute film about NVO-196-17 was shown at each session. Employees from the Valley Bank Center, Automated Drafting and Cable Departments at Mercury, and the Nondestructive Testing Department at Area 6, attended the presentations.

On April 26, Carolyn G. Aiello, Training Coordinator conducted a training session on selected NNWSI Procedures for new H&N employees.

**Planned Work:**

Publish procedure revisions as detailed in the schedule provided to DOE/WMPO (letter WMPO:JB-1799 dated April 12, 1988).

Respond to SDRs and Observations form DOE/WMPO audit.

**Milestones:**

There are no H&N milestones for this WBS.

**Problem Areas/Needs:**

None.

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The Technical Data Management System Submittal Record is attached.

NNWSI Project Cost/Schedule information will be submitted separately.



Joseph C. Calovini  
Technical Project Officer  
for the NNWSI Project

Attachments  
As Stated

cc: M. B. Blanchard, DOE/WMPO, v/attach.  
W. R. Dixon, DOE/WMPO, v/attach.  
L. P. Skousen, DOE/WMPO, v/attach.  
K. K. Hatch, DOE/WMPO, v/attach.  
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J. S. Szymanski, DOE/WMPO, v/attach.  
A. R. Veloso, DOE/NTSO, v/attach.  
R. L. Bullock, F&S, v/attach.  
L. R. Hayes, USGS, Denver, v/attach.  
H. N. Kalia, LANL, v/attach.  
T. O. Hunter, SNL, Albuquerque, v/attach.  
R. F. Pritchett, REECo, v/attach.  
D. T. Oakley, Los Alamos, v/attach.  
L. D. Ramspott, LLNL, Livermore, v/attach.  
M. E. Spaeth, SAIC, v/attach.  
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R. R. Reust, SAIC, v/attach.  
C. W. Garvin, SAIC, v/attach.  
R. H. Klemens, SAIC, v/attach.  
T. L. Jackson, SAIC, v/attach







**Holmes & Narver**  
Energy Support Division  
Nevada Operations

NNWSI:TPO:88-161  
VBS 1.2.9.1.1  
QA Level N/A

April 8, 1988

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HOLMES & NARVER, INC. (H&N) NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS  
(NNWSI) PROJECT MONTHLY REPORT FOR MARCH 1988

VBS 1.2.3.1.4

Project Title: SITE INVESTIGATIONS: MANAGEMENT AND INTEGRATION

Planning & Account Scheduling Status:

Throughout the month of March, Automated Drafting continued plotting data for the Atlas of Field Activities. Engineering continued checking the data location information on the maps that are completed. Additional information which has been incorporated is: archaeological survey site locations, unpublished ground water observation wells, summary reports on Climax Spent Fuel Test, and summary reports on "G" Tunnel experiments prior to site characterization. Information on unpublished sampling from springs has been collected, but still needs to be incorporated into the Atlas.

H&N personnel met with Science Applications Incorporated Corporation (SAIC) personnel on March 1, 1988, and again on March 2, with SAIC and Waste Management Project Office (WMPO) personnel to review the Atlas maps with the bibliography data sheets. Max Blanchard chaired the March 2 meeting and gave guidance for information that needed to be included in the Atlas. Information which needed to be collected was an unpublished sampling, done by the Desert Research Institute, of springs.

Surveyors continued checking the vertical/horizontal control on Yucca Mountain for the photo panels for Dr. Sherman Wu, United States Geologic Survey, (USGS), Flagstaff.

SAIC/T&MSS

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During the last week in March, H&N sent copies of the Regional NNWSI Map and preliminary copies of the NNWSI Atlas of Field Activities Drill Holes and trenches maps to J. C. McDaniel, Reynolds Electrical and Engineering Company (REECO), at his verbal request.

Planned Work:

The submittal date for the Atlas maps for SAIC and WMPO review is April 15, 1988.

Complete the report on survey results from checking vertical/horizontal control on Yucca Mountain.

Milestones:

There are no milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.3.5.2**

**Project Title: DRILLING, CONSTRUCTION, ENGINEERING**

Planning & Scheduling Account Status:

Engineering continued the design of the Instrumentation/Data-Acquisition System (IDAS) prototype shelters in support of the USGS Unsaturated Zone Experiments. During the last week in March, H&N Electrical and Mechanical personnel met with an Uninterrupted Power Supply (UPS) representative for the specification for power equipment for the shelter. The power supply must meet the need for continuous data. Additionally, H&N Electronics started inspection on the REECO telemetry testing of the 23 GHZ radio antenna for the IDAS.

Engineering continued incorporating changes to the USGS Modifications to Building 4215 drawings from review meetings held between Nevada Test Site Office (NTSO) and Department of Energy (DOE) Safety and Health Division. The drawings were completed during the month of March, and were issued during the last week of March. Currently, the estimate for changes incorporated into the drawings since the Title II estimate is being updated.

H&N personnel met with D. Smeltz, REECO, on March 11, 1988, at the Technical Shop Building, 4215, to discuss the penetrations through the two-hour rated firewall. Additionally, H&N personnel met Bob Miller,

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REECO, NTS General, at Building 4215 in Area 25 on March 21, 1988 to field-check the samples that were taken by REECO Industrial Hygiene for asbestos. This field trip enabled H&N to prepare the estimate for asbestos removal. The estimate for the asbestos removal on Building 4215 was also completed.

Planned Work:

Complete the preparation of the work order for construction of the USGS modifications to Building 4215. Start inspection on that construction.

Complete the Title I/II drawings for the IDAS prototype shelter.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.1.1**

**Project Title: ESF MANAGEMENT & INTEGRATION**

Planning & Scheduling Account Status

H&N personnel attended various meetings held throughout the month of March. These meetings included: the Interface Control Working Group (ICWG) Meeting held March 1, the Title I Design Status meeting held March 1, weekly Exploratory Shaft Facility (ESF) status meetings, the WMPO Review of H&N Design progress meeting held March 3, meeting with Fenix & Scisson (F&S) on Phase III scheduling on March 3, a meeting with F&S on electrical interfaces and design concepts on March 7, the Technical Data Advisory Group (TDAG) committee meeting on March 8, a brief pre-audit meeting with SAIC Quality Assurance (QA) members on March 9, a Management Review Meeting on March 10, and an ESF Status Meeting on March 18, the ESF Briefing Meeting on March 18, and a meeting on the design interface control with F&S and Los Alamos National Laboratory (LANL) personnel, conducted by H&N, also on March 18.

H&N personnel attended the weekly ESF Status Briefing meeting on March 31. As an action item, H&N was asked to review the drawing list as stated in the Design Basis Document and Scope and Planning Document, and return the comments to D. H. Irby, as soon as possible, if there are any changes or additions.

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During the first week in March, an ICWG Action Item was completed by the generation of a list of systems, with interfaces, for the March 1 ICWG Meeting. A Work Initiation was issued to Engineering to develop system interface drawings. The H&N Interface Control group identified several systems, and began generating system interface drawings. A letter was issued to F&S on March 9 requesting F&S design interface information to incorporate into the system interface drawing package. The Design group proceeded to research H&N and other participant system information as stated in the Subsystem Design Requirement Document (SDRD) and basis for design documents.

Design Interface Control activities have started with F&S and LANL. Meetings were held March 18 and March 23 to outline the operating methods, requirements, and ground rules. Conference reports were written to document these meetings. During the last week in March, hand-drawn system interface drawings were submitted to the H&N Communication Department at Mercury. They are to be generated on their Computer Aided Drafting (CAD) system for the ICWG group review. Another Interface Control Group meeting is planned for April 6. A meeting with LANL and F&S is scheduled for April 6 to review design interfaces.

H&N received WMPO letter JB-1545 dated March 22, 1988 stating that Design Interface Control will be continued by the QA level assigned to the design activity. If a QALA has not been assigned a level yet, it becomes QA Level II. The letter also states that the activity of Interface Control by itself is a QA level N/A.

H&N personnel gathered information for management awareness and personnel training on the ESF and Repository.

In response to DOE letter WMPO:WDS-1370 the ESF Design validation package prepared for the Exploratory Shaft Schedule 47 was submitted to DOE/WMPO for review prior to submittal to DOE/HQ. The complete package included budget support data, construction estimate summaries, network schedules, and validation drawings. The comments were received and the drawings were revised and resubmitted to DOE/WMPO.

H&N personnel met with Bob Kaiser, DOE/WMPO, and Ed McCann and Tom Pysto from SAIC on March 25, 1988 to discuss completing the Application For Permit to Appropriate the Public Waters of the State of Nevada for J-13 water well, and to discuss the future applications that need to be completed for permitting. Again on March 28, H&N personnel met with SAIC to submit drawings of the legal description of water well J-13, pump house, chlorination system, and booster station for inclusion with the Application for Permit to Appropriate the Public Waters of the State of Nevada.

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The Technical Support Group finished two ESF models which were delivered to C. Gertz before March 25. The SAIC-assigned display for the Beatty display center was also finished on schedule. Display work for the DOE booth for the Geologic Society of America (GSA) was completed by the convention opening date; March 28, 1988.

H&N personnel are continuing activities to secure a CAD system with related hardware. Anticipated delivery and set-up is the end of April. During March, work continued on the earned value cost tracking methods for the ESF facilities' work packages. Earned Value Packages were prepared for all of the Title I design work that is currently in process or scheduled for the coming months.

Planned Work:

Work on Underground Injection Permit for prototype Vertical Seismic Profiling (VSP) hole near USW UZ-6.

Milestones:

<u>Milestone</u>	<u>Due Date</u>	<u>Description</u>	<u>Status</u>
R573(P)	03/06/87	Surface Engineering Studies Complete	Delay was due to change in scope of Communications Study.

Milestones continued:

P074(P)	05/15/87	Surface Title I Design Complete	Delay was due to delay in start of Title I.
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Problem Areas/Needs:

None.

WBS 1.2.6.1.2

Project Title: ESF SAFETY AND QA

Planning & Scheduling Account Status:

H&N personnel met with H&N Albuquerque personnel to begin the negotiations for the use of Design verification personnel in the Albuquerque Office. The negotiations continued through the end of the month.

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Planned Work:

Continue negotiations for the use of H&N Albuquerque personnel.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

WBS 1.2.6.2.1

Project Title: ESF SITE AND ROADS

Planning & Scheduling Account Status:

The Main Pad design and work package were completed during March, underwent interdisciplinary review, and were submitted for the internal H&N review. On March 28, the 100% in-house submittal milestone for the Main Pad was accomplished.

The design of the Auxiliary Pads is in process, with half of the pads completed. The roads are in the design phase. Some of them are currently in drafting. The site drainage package is underway with no anticipated delays or problems.

The ESF Status Briefing was held March 31, and the U. S. Bureau of Mines Meeting was held March 29.

Planned Work:

Continue Title I design effort.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

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WBS 1.2.6.2.2  
Project Title: SURFACE UTILITIES

Planning & Scheduling Status:

The Design group completed the drafting and coordination for the validation package. Design Group personnel completed four sets of calculations that are to be presented for the review cycle.

ESC submitted a manpower study to evaluate the need for temporary duty (TDY) personnel.

The Design Civil Section has completed its first work package. The package began the internal review cycle during March.

On March 17, 1988 H&N requested a hydrostatic test be performed on the existing water line from well J13 to the NTS in conjunction with the Title I design of water systems.

During March, work began on the power systems, and progressed as scheduled. The surface power system is about 50% complete with progress continuing on schedule. The design phase of the water system is also underway; the drafting on this phase should begin soon, as per schedule. Investigations are underway to determine the appropriate sewage system. This project is on schedule with no anticipated delays.

Title I surface communications work has started with the researching of codes and other preliminary background information. Study 6B, Rev. 0, Communications Systems, comments are scheduled to be distributed in the next week.

Planned Work:

Continue design Title I effort.

Milestones:

None.

Problem Areas/Needs:

None.



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VBS 1.2.6.3.1  
Project Title: ESF BUILDINGS

Planning & Scheduling Account Status:

The Mechanical, Architectural and the Electrical Design sections conducted an investigation of A/E Building in Area 25 as a preliminary to the start of Title I. Then H&N Engineering personnel performed an evaluation of the A/E Building on Fire Protection Requirements and evaluated Building 4919 for possible occupancy as NDT office/shop facility.

A work initiation was written on March 15 for Title I Design modifications to begin on the A/E Building. Criteria from the participants regarding floor space has been received and information from WMPO requesting a records storage area has also been received. The information will be used in addition to Special Study No. 3, Utilization of the Off-Site A/E Building Area 25, August 1987.

ES-1 and ES-2 Hoist House Title I work was authorized by a work initiation written March 15.

The shop building work package Title I Design was authorized by a work initiation written March 15. The ESF Trailers Work Package was authorized for the start of Title I Design by a work initiation that was also written on March 15. Two work initiations were written on March 15 to start Title I Design for the Surface Data Building, and the Subsurface Data Building.

Preliminary investigations were done on the ESF site buildings and preliminary design work began on the shop, warehouse, A&E Building, Hoist House, and the trailers.

A discussion concerning records storage and participant space requirements was conducted with W. Wilson and Karen Hatch, DOE/WMPO, for Title I planning on the A/E building.

On March 28, H&N responded to a verbal request of WMPO's, by submitting conceptual cost estimates for specific modifications to the A/E Building to WMPO.

On March 27, H&N personnel traveled to the BWIP Project in Hanford, Washington to inspect the trailers available there. The facilities proved to be unacceptable for this project.

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Planned Work:

Continue work leading to the start of Title I, as needed.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.6.7.1**

**Project Title: SUBSURFACE UTILITIES & COMMUNICATIONS**

Planning & Scheduling Account Status:

H&N personnel visited F&S in Tulsa, Oklahoma to discuss interface points and design concepts for the Life Safety System and the Ventilation System.

In mid-March, an H&N Mechanical Engineer and an H&N Communication Engineer attended seminars on fire protection and fire detection offered by NFPA.

Two work initiations were written on March 15 to begin Title I Design on the Life Safety System and the design on the subsurface communication work package.

A copy of Special Study 6A (Rev. 1), Life Safety Systems, was transmitted to Darrel McPherson and Don Martin, DOE/SHD Safety, during the fourth week in March, for review and comment. Comments were scheduled for return to H&N by April 1. In the comments returned to H&N, WMPO requested that the study be changed to reflect the comments. Based on their review, a meeting will be scheduled by D. H. Irby to review the DOE safety comments in the next two weeks. Revisions to Study 6A will not be made until after the DOE safety meeting.

Planned Work:

Continue Title I design effort.

Problem Areas/Needs:

None.

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**WBS 1.2.6.9.3**

**Project Title: SCHEDULING - TITLE I**

**Planning & Scheduling Account Status:**

A work initiation was written March 15 for Title I design to begin on the Integrated Data System (IDS). Preliminary documents such as the IDS Appendix B of the SDRD and Title I integrated Data System Preliminary Design will be used as information to proceed with the design of the work initiation package. H&N personnel attended an IDS Meeting on March 24.

H&N personnel reviewed and commented on LANL-proposed IDS design information for submittal to the SDRD Appendix B.

Work continued on the design schedule for Title I effort during the last weeks in March. The schedule for Title II is in the very preliminary stages; not yet ready for publication.

**WBS 1.2.6.9.4**

**Project Title: PROTOTYPE TESTING**

**Planning & Scheduling Account Status:**

**Support to Prototype Testing in "G" Tunnel:**

**Prototype Engineered Barrier Design:**

The Area 6 Inspection group continued reporting to "G" Tunnel to monitor the Title III activities for the Lawrence Livermore National Laboratory (LLNL) prototype Engineered Barrier Design instrumentation alcove and portal trailer. LLNL has expressed concerns that the instrument power available at "G" Tunnel may have electronic interferences and is currently testing the possibility of such interferences.

Surveyors provided as-built coordinates for drillholes for the LLNL Prototype Engineered Barrier Design, and laid out locations for new holes since the existing holes were crossed in the drilling process. A letter was submitted to Andres Veloso stating the asbuilt indicates that the prime cause of the holes crossing was due to deviation of the collar angle from the survey layout at the head of the collar.

H&N personnel attended the Exploratory Shaft Test Plan (ESTP) Committee Meeting on March 3, 1988 on the prototype testing in "G" Tunnel.

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Planned Work:

Start survey support for Los Alamos prototype Air-Coring test.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.7.2.1**

Project Title: CLIMAX - HOIST HOUSE

Planning & Scheduling Account Status:

The Area 15 Climax Hoist House replacement prefabricated metal building was delivered to the Nevada Test Site early in March. Inspection of that project resumed.

Planned Work:

Complete inspection of the Climax Hoist House Replacement. Expected completion of the Hoist House is April 22.

Milestones:

There are no H&N milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.7.2.3**

Project Title: "G" Tunnel Support

Planning & Scheduling Account Status:

The Area 6 Inspection Group has received a request from Sandia National Laboratories (SNL) to increase the utility power that serves the LLNL prototype Engineered Barrier Design alcove, and the SNL equipment evaluation and modification support alcove, to include the rock-saw cutting experiments. H&N received approval from WMPO to support this request. Engineering is revising the drawing for the utility panel outside the alcove to include the rock saw.

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A construction drawing was issued for Sandia National Laboratories Equipment Evaluation and Modification Support Power and Lighting for the Bally Engineered Modular structure in "G" Tunnel at the request of Andres Veloso, NTSO Project Engineer. The estimate for the REECo labor and equipment for constructing the interior of the modular structure, as shown on the drawing, has been completed.

Planned Work:

Start inspection on construction of the power and lighting for the SNL equipment evaluation and modification support modular structure.

Milestones:

There are no milestones under this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.9.1.1**

Project Title: MANAGEMENT AND INTEGRATION

Planning & Scheduling Account Status:

In response to letter WMPO:MLP-1453, dated March 18, 1988, H&N reported to DOE/WMPO that the NNWSI Group does not have any type of University or College-related support interactions at the present time, but will report any contacts in the future.

In response to WMPO Action Item 88-942, H&N has designated Kenneth Bayne as the procurement coordinator for the NNWSI group.

Early in March, arrangements were made for a Senior Engineer II/Civil from the H&N corporate office in Orange, California to support NNWSI in the TP office. In response to this staffing need, Michael Cowan reported to the Las Vegas office on March 22.

In response to letter WMPO:LEK:839, dated January 7, 1988, the planned visits by State-funded scientists will have no effect on the work being done by H&N, since H&N does not have responsibility for data collection.

In response to DOE letter WMPO:ELL-1265, H&N completed and submitted input to the Section 175 Report for Fiscal Year 1988. This documented potential repository-related impacts for the socio-economic monitoring program. On March 17, 1988, H&N responded to a verbal request from SAIC

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to delineate the assumptions used in preparation of input for the Section 175 report.

In response to DOE letter WMPO:WDS-1221, equipment lists from the Salt Repository Project Office (SRPO) and Basalt Waste Isolation (BWI) projects were reviewed. Equipment was identified that could be utilized by H&N on the NNWSI project and a listing was submitted to DOE/WMPO.

The Materials Test Laboratory, NTS, reports that the Communications Department is continuing to verify the computer programs on the permeability and porosity calculations.

H&N personnel attended meetings on the Work Authorization Structure (WAS), and the Technical Project Officers (TPO) meetings held March 30 and March 31, 1988.

Planned Work:

Will perform other work as requested on this level of effort account.

Milestones:

There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.9.1.4**

Project Title: RECORDS MANAGEMENT

Planning & Scheduling Account Status:

The processing of E-Mad records and Pre-Title I records into the QARMS continued throughout the month of March. The processing of E-Mad records is near completion.

The Records Control Procedure, NNWSI-008, is currently being revised in preparation of the processing of Title I records.

Planned Work:

The work of entering pre-Title I records into the QARMS will continue. The microfilming of participant records as they are received at the MASSF will also continue.

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Milestones:

There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.9.2**

Project Title: PROJECT CONTROL

Planning & Scheduling Account Status:

Weekly status reports for March 1988, and monthly status and earned value reports for February 1988, were completed.

In response to DOE letter WMPO:WDS-1370, H&N completed input for the FY 1990 WAS, and it was submitted to DOE/WMPO. H&N responded to WMPO letter WMPO:WRD-619 completing Action Item number 88-556 indicating that H&N had no comment to the proposed new work breakdown structure numbers which are being used for the Fiscal Year 1990 WAS and the Long-Range Planning exercises.

Meetings on the WAS were attended throughout the last week in March, and funding was finalized for presentations at the DOE/WMPO budget meetings to be held in Washington in April.

Planned Work:

Weekly status reports for April 1988, and monthly status and earned value reports for March 1988, will be completed.

Milestones:

There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

**WBS 1.2.9.3**

Project Title: QUALITY ASSURANCE

Planning & Scheduling Account Status:

Quality Assurance Engineer, Ron Sabol met with SAIC for a pre-audit conference on the Title I design functions at the TP Office, early in

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March. Preparation for the audit of H&N's NNWSI group continued throughout the first three weeks of March. The audit began March 28, 1988, and continued throughout that week. All H&N NNWSI-assigned personnel participated in the SAIC/WMPO audit of H&N activities which took place throughout this week.

H&N personnel reviewed and commented on six QALAs for D. Irby's review. Seven QALAs were distributed to Project Engineering, Design, and Quality Assurance for review and comment as an action item from the March 18 ESF meeting. H&N personnel reviewed and commented on seven QALAs, and submitted them to D. H. Irby at the March 31 ESF meeting.

Carl Wright, Chief, Quality Assurance, and Ron Sabol, Quality Assurance Engineer, attended a Project Quality Assurance Manager's meeting on March 3, 1988.

During March, the Quality Assurance group continued the review of NDT procedures 035 and 036. The QA group continued reviewing NNWSI procedures identified as QA in order to comply with the requirements of the new Quality Assurance Program Plan.

The Quality Assurance group conducted a surveillance on the TP Office NNWSI Training Files on March 16, 1988.

#### Training:

On March 14, Phil Gehner, Project Engineer, conducted a training session on NNWSI procedure 029, Design Interface Control.

On March 16, 1988, Mike Strum, H&N Safety Programs, conducted a training/new employee indoctrination session for H&N NNWSI employees.

Throughout the month of March, indoctrination to the new Quality Assurance Program Plan continued for H&N NNWSI employees. Carolyn G. Aiello, Training Coordinator, presented a Quality Assurance Indoctrination Program on March 9, at the TP Office. Later in the month, Carolyn G. Aiello and Ron Sabol, Quality Assurance Engineer, conducted the Quality Assurance Indoctrination Program for Area 6 Survey Personnel. At each session, the thirty minute film, "Quality Assurance Training Program NVO-196-17" was shown.

Throughout the month of March, training on NNWSI Procedures continued. Training on 008 and 027 was offered by the Training Coordinator on March 11, at the TPO Conference Room. Sixteen H&N employees were in attendance. NNWSI Procedures training for support department clerks was given on March 22, 1988, by Carolyn G. Aiello, Training Coordinator.



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Training was also given by the Training Coordinator to five H&N employees on March 23, 1988, on selected NNWSI Procedures. On March 25, 1988, Randy Schreiner, Design Section Chief, gave a training session on H&N Procedure NNWSI-004 at the TP Office Conference Room.

A Procedures Writing class was given by Lana Buehrer on March 21, 1988, at the TP Office.

During the middle of March, Evert Mouser, Quality Assurance Engineer, attended a week-long Lead Auditor Training which was conducted by DOE/WMPO.

Planned Work:

Work with the H&N NNWSI staff on the development and review of departmental procedures will continue.

Milestones:

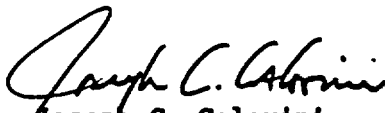
There are no H&N milestones for this WBS.

Problem Areas/Needs:

None.

The Technical Data Management System Submittal Record is attached.

NNWSI Project Cost/Schedule information will be submitted separately.

  
Joseph C. Calovini  
Technical Project Officer  
for the NNWSI Project

Attachments  
As Stated

cc: M. B. Blanchard, DOE/WMPO, w/attach.  
W. R. Dixon, DOE/WMPO, w/attach.  
L. P. Skousen, DOE/WMPO, w/attach.  
K. K. Hatch, DOE/WMPO, w/attach.  
D. H. Irby, DOE/WMPO, w/attach.  
W. T. Hughes, DOE/WMPO, w/attach.  
J. R. Barner, DOE/NTSO, w/attach.  
J. S. Szymanski, DOE/WMPO, w/attach.  
A. R. Veloso, DOE/NTSO, w/attach.  
R. L. Bullock, F&S, w/attach.  
L. R. Hayes, USGS, Denver, w/attach.  
H. N. Kalia, LANL, w/attach.  
T. O. Hunter, SNL, Albuquerque, w/attach.  
R. F. Pritchett, REEC, w/attach.  
D. T. Oakley, Los Alamos, w/attach.  
L. D. Rampott, LLNL, Livermore, w/attach.  
M. E. Spaeth, SAIC, w/attach.  
G. O. Fredrickson, SAIC, w/attach.  
R. R. Reust, SAIC, w/attach.  
C. W. Garvin, SAIC, w/attach.  
R. H. Klemens, SAIC, w/attach.  
T. L. Jackson, SAIC, w/attach.

