

SUPPLEMENTAL QUALITY ASSURANCE REQUIREMENTS

SUPPLEMENT No. 4

QUALITY ASSURANCE RECORDS

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**U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Office of Geologic Repositories**

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ENCLOSURE 1

SUPPLEMENTAL QA REQUIREMENTS

QUALITY ASSURANCE RECORDS

1.0 GENERAL

This Supplement provides amplified requirements for the control of Quality Assurance Records. It supplements the OGR QA Plan and ANSI/ASME NQA-1-1983 (Basic Requirement 17 and Supplement 17S-1). The requirements in this Supplement are to be used in conjunction with the requirements specified or referenced in the governing QA plans and procedures.

2.0 PURPOSE

The purpose of this Supplement is to specify requirements for the control of quality assurance records for geologic repository projects.

3.0 SCOPE

The requirements of this Supplement are applicable to all quality assurance records generated or purchased during the performance of quality levels 1 or 2 activities.

For a geologic repository, records may be of two types:

- (a) Documents - Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.
- (b) Items - Physical samples, magnetic media, and other materials that retain or support data.

A document or item is not considered to be a Quality Assurance Record until it satisfies the definition of a Quality Assurance Record as defined below. The term records, used throughout this Supplement is to be interpreted as Quality Assurance Records, both documents and items.

4.0 DEFINITIONS

- 4.1 Quality Assurance Record - An individual document or other item that has been executed, completed, and approved and that furnishes evidence of the quality and completeness of data (including raw data), items, and activities affecting quality; documents prepared and maintained to demonstrate implementation of quality assurance programs (e.g., audit, surveillance, and inspection reports); procurement documents; other documents such as plans, correspondence, documentation of telecons, specifications, technical

data, books, maps, papers, photographs, and data sheets; and items such as magnetic media, physical samples (such as rock, core, and water); and 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) which 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.

5.0 REQUIREMENTS

5.1 Records Management Plan

Organizations participating in any phase of the geologic repository program shall prepare a records management plan and shall submit it to the same authority that approves their QA Plan for review and approval. The records management plan shall:

- (a) identify the types records to be generated, purchased, and/or maintained, including all records referenced in pertinent final reports and other documents.
- (b) identify the methods to be used to comply with all applicable records requirements including those to be used to control in-process records.
- (c) identify and define the responsibilities of pertinent organizations including the QA organization.
- (d) specify the methods and schedule for periodic purges of nonpermanent records.

5.2 Record Identification and Cross Referencing

Records shall be clearly identified by a unique number or other designation which is directly traceable to controlling programmatic information (e.g., project, contract number, task number, WBS number, preparing organization, author, date, title, subject, etc.).

Final reports shall contain a listing, by unique number or other designation that enables prompt retrieval, of all documents used to compile or evaluate the report. This listing shall include, as a minimum, all referenced documents, peer review or other review documents, computer codes, data sheets, procedures, and test plans. All documents referenced by final reports, except readily available references such as encyclopedias, dictionaries, engineers handbook, etc., shall be retrievable from the Records Management System.

5.3 Temporary Record Storage

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

5.4 Classification

Quality Assurance Records for geologic repositories shall be classified as post-closure, lifetime, or nonpermanent in accordance with criteria given in 5.4.1, 5.4.2, and 5.4.3 below.

5.4.1 Post-Closure Records - Post-closure records are those that will be retained for 300-1000 years depending on the lifetime of the specific waste package(s) to be used in the repository at the selected site(s).

5.4.2 Lifetime Records - Lifetime records are those that are required to be retained and preserved in an acceptable condition for the operating life of the repository, i.e., until termination of the repository license. Any records that meet one or more of the following criteria shall be maintained as lifetime records until the completion of all activities (siting, site characterization, and repository construction, operation, decommissioning and closure) at a particular site:

- (a) Records which may be used for repository licensing.
- (b) Records used in support of site selection, site nomination, site characterization, and repository location recommendations.
- (c) Records used to identify and assess the performance capabilities of those engineered and natural barriers important to waste isolation.
- (d) Records of computer programs and mathematical models needed to perform ongoing correlations between performance assessment predictions and actual test results and data collection and analysis.
- (e) Records which would be of significant value in demonstrating capability for safe operation or in determining the cause of an accident or malfunction of an item in a repository.

- (f) Records which would be of significant value in maintaining, reworking, repairing, replacing, or modifying repository systems, components, or structures.
- (g) Records which would be of significant value in exercising of the retrieval option for the waste package.
- (h) Records which would be of significant value after decommissioning and closure of a repository.

5.4.3 Nonpermanent Records - Nonpermanent records are those that do not qualify as lifetime records.

For a geologic repository, nonpermanent records shall be retained for at least 3 years after initiation of repository operation or until the sites to which they relate are dropped from consideration as a repository site.

5.5 List of Typical Post-Closure Records

Listed below are typical post-closure records:

- Maps which identify site boundaries
- Location of site markers
- Underground facility configuration
- Stored waste inventory and location
- Repository environment monitoring records
- Waste package design, fabrication, testing and inspection records
- Other records having long term archival and historical interest
- Safety analysis reports
- Site Characterization Reports
- Licensing Reports
- Long Term Performance Assessment Records

5.6 List of Typical Lifetime Records

Listed below are typical types of lifetime records for geologic repositories in addition to those specified in Appendix A 17A-1 of NQA-1. Records of a type other than those identified on these lists are normally considered to be nonpermanent. Records initially identified as nonpermanent, and still available, may at any time be reclassified as lifetime.

5.6.1 Siting and Site Characterization Records

Drill hole testing procedures
Drill hole drilling procedures
Drill hole location surveys or maps
Drill hole logs and samples
Drill hole test results (including evaluations and interpretations.)
Geophysical logs and data
Geophysical test results
Self-potential (electrical) logs and data
Caliper logs and data
Radioactive logs and data (gamma, spectral-gamma, neutron-gamma)
Lithologic logs and data
Seismic and resistivity survey procedures
Seismic and resistivity location surveys or location maps
Seismic and resistivity logs and data
Seismic and resistivity test results (including evaluations)
Laboratory testing procedures
Laboratory record books
Laboratory testing data and data processing
Geologic maps and supporting data
Geologic library samples
Geologic and soil sampling procedures
Geologic test results
In-situ test results
Logs, maps, and geophysical data in support of subsurface correlation
Trench logs and data (including location surveys, maps, and results)
Aerial mapping records (photographs and interpreted overlays)
Microseismic records (paper or magnetic tape)
Remote imagery reports and results
Groundwater and hydrologic regime maps and data (including results)
Seismicity maps and supporting data
Fault maps and supporting data
Epicenter maps and supporting data
Isopach maps and supporting data
Model definition and development reports
Model acceptance criteria reports
Model verification reports
Model exercise reports and results
Hydrogeologic test procedures
Hydrogeologic test results and data
Atmospheric test procedures
Atmospheric test results and data
Environmental study evaluations and results
Site characteristics reference documents
Test deviation records
Unusual occurrence reports

5.6.2 Design Records

Procedures and reports
Peer review reports and comment resolution
Design criteria change records
Configuration control records
Design classification system
Conceptual design reports
Baseline document index
Technical computer codes and models photographs of
repository systems, components, and structures
Summary design data and/or records reflecting significant
findings or containing significant findings or containing
significant scientific data not duplicated elsewhere which
serve as backup for notebook entries and/or reports.

5.6.3 Procurement Records

Contract requisitions
Statements of work with amendments
Acceptance records
Equipment manuals
Operating manuals
Maintenance manuals

5.6.4 Installation Construction Records

Grout design mix reports
Material property reports on liner and seal materials
Material property reports on waste package material
Material property reports on rock bolt materials
Rock bolt installation test reports
Seal installation records and test reports
Shaft alignment measurements

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CAUTION NOTICE: This standard is being prepared or reviewed and has not been approved by ANSI/ASME. It is subject to revision or withdrawal before issue.

**DRAFT
AMERICAN NATIONAL STANDARD**

**Quality Assurance Program
Requirements for the Collection
of Scientific and Technical Information
for Site Characterization of
High-Level Nuclear Waste Repositories**

Subcommittee on Nuclear Waste Management
ASME Committee on Nuclear Quality Assurance

ENCLOSURE 2

ANSI/ASME NQA-3 Draft 3, Rev 0
17 QUALITY ASSURANCE RECORDS

The provisions of NQA-1 Basic Requirement 17 and Supplement 17S-1 shall apply, with the following additions, modifications, and amplifications.

- (a) For a nuclear waste repository, QA records include physical samples, or other materials that retain or support data.
- (b) All documents referenced by final reports, except readily available references such as encyclopedias, dictionaries, engineers handbook, etc., shall be retrievable from the QA records system.
- (c) In lieu of classifying QA records as defined in Supplement 17S-1 Paragraph 2.7, QA records for nuclear waste repositories shall be classified as Post Closure, Lifetime, or Nonpermanent in accordance with the criteria specified below.

(1) Post-Closure QA Records are those that will be retained for 300-1000 years depending on the lifetime of the specific waste package(s) to be used in the repository at the selected site(s).

- (2) Lifetime QA Records are those that are required to be retained and preserved in an acceptable condition for the operating life of the repository, i.e., until amendment of the repository license.
- (3) Nonpermanent QA Records are those QA records that do not qualify as post-closure or lifetime records. For a nuclear waste repository, nonpermanent records shall be retained for at least 5 years after initiation of repository operation or until the sites to which they relate are no longer under consideration as a repository site.

ANSI/ASME NQA-3 Draft 3, Rev 0
 APPENDIX 17AW-1 NONMANDATORY GUIDANCE ON
 QUALITY ASSURANCE RECORDS

GENERAL

This Appendix provides listings which identify the minimum Post-Closure, Lifetime, and Nonpermanent QA Records required for the collection of scientific and technical information during the site characterization phase of nuclear waste repositories.

(a) MINIMUM POST-CLOSURE QA RECORDS

Maps which identify site boundaries
 Drawings of site marker locations
 Underground facility configuration drawings
 Other records having long term archival and historical interest

(b) MINIMUM LIFETIME QA RECORDS

(1) Siting and Site Characterization QA Records

Drill hole testing procedures
 Drill hole drilling procedures
 Drill hole location surveys or maps
 Drill hole logs and core samples
 Drill hole test results (including evaluations and interpretations)

 Geophysical logs and data
 Geophysical test results
 Self-potential (electrical) logs and data
 Caliper logs and data
 Radioactivity logs and data (gamma,

spectral-gamma, neutron-gamma, alpha)

Lithologic logs and data
 Seismic and resistivity survey procedures
 Seismic and resistivity location surveys and location maps
 Seismic and resistivity logs and data
 Seismic and resistivity test results (including evaluations)

Laboratory testing procedures
 Laboratory record books
 Laboratory testing data and data processing
 Geologic maps and supporting data

Geologic library samples
 Geologic and soil sampling procedures
 Geologic test results
 Logs, maps, and geophysical data in support of subsurface correlation
 Trench logs and data (including location surveys, maps, and results)

Aerial mapping records (photographs and-interpreted overlays)
 Microseismic records (paper or magnetic tape)

Remote imagery reports and results
 Groundwater and hydrologic regime maps and data (including analysis results)

Seismicity maps and supporting data
Fault maps and supporting data
Epicenter maps and supporting data
Isopach maps and supporting data
Model definition and development reports

Model acceptance criteria reports
Model verification reports
Model exercise reports and results
Hydrogeologic test procedures
Hydrogeologic test results and data

Atmospheric test procedures
Atmospheric test results and data
Site characterization plan and all reference documents
Site-characteristic reports and all reference documents
Test deviation records
Unusual occurrence reports
Environmental test results
Instrumentation installation and calibration records

(2) DESIGN RECORDS

Graded QA methodology records
Peer review reports and comment resolution
Technical computer codes and model photographs of systems, components, and structures

(c) MINIMUM NONPERMANENT RECORDS

QA Program Manual/Plans
QA Administrative Procedures
Technical Procedures (other than

those identified as Lifetime)
Calibration Records (until Recalibrated)
Audit and Surveillance Records
Readiness Review Records
Management Assessment Reports
Task Plans

QA Records initially identified as non-permanent, and still available, may at any time be reclassified as Lifetime or Post-Closure.