



WHITE PAPER

NUCLEAR RECORDS REQUIRED FOR THE DECOMMISSIONING PHASE OF NUCLEAR UTILITIES

June 2001

FOREWORD

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ACKNOWLEDGEMENTS

The following members of the Decontamination and Decommissioning Committee of the Regulations Business Unit (past and present) had significant input to the preparation of this document.

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1 PURPOSE

The purpose of this paper is to provide guidance on records needed for a nuclear facility that is in the process of decommissioning. Records are created, indexed, retained, retrieved, issued, used, protected and dispositioned during decommissioning just as they were in the design, construction, startup, operation and use phases.

2 BACKGROUND

The decision to terminate a nuclear facility's license begins a new phase in the lifecycle of its records. Processes and techniques established during operation and use are continued in decommissioning to the maximum extent practical. The requirements for power reactor decommissioning activities may be divided into three phases:

- Initial activities that start on the effective date of permanent cessation of operations and encompasses the activities before the licensee either places the power reactor in a storage mode or begins major decommissioning activities.
- Storage period of major decommissioning activities (i.e., decontamination and dismantlement), or some combination of the two.
- Activities to terminate the license.

3 GENERAL

- 3.1 Existing recordkeeping practices to satisfy other regulatory requirements provide an adequate basis for records required for decommissioning. As a result, this white paper does not treat decommissioning as a separate program.
- 3.2 Decommissioning records to comply with 10 CFR 50.75, *Reporting and Recordkeeping for Decommissioning Planning* should be incorporated as part of the facility's overall quality records system and consistent and/or integrated with other health and safety record systems. *Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Facilities*, American Society of Mechanical Engineers, ANSI-N45.2.9, or *Quality Assurance Program Requirements for Nuclear Facilities*, ASME NQA-1, Sections II-17 and III-17S-1, and IV-17A-1 should be used for guidance on records administration, storage, preservation, safekeeping, and retrieval of decommissioning records.
- 3.3 Records should only be retained for their authorized retention period as established by a Records Retention and Disposition Schedule.

4 PROCESS

NOTE: Numbering of steps is for reference and place-keeping only. Step numbering does not imply sequencing of activities.

- 4.1 Define requirements for the identification, generation, content, review, and approval of quality assurance, health and safety records in procedures.
- 4.2 Maintain records to satisfy a requirement such as a regulation or insurance company rule or for the benefit of the owner based on business decisions. The decision to terminate a facility's license triggers a review of each item in the Records Retention and Disposition Schedule. Requirements to be reviewed include 10CFR50 Appendix B, 10CFR50.75(g), the plant's technical specifications, and the licensee's quality records retention requirements as defined in the quality assurance program.
- 4.3 Analyze any retention period of 'lifetime'. Define what definition of 'lifetime' is linked to the record, such as life of the item, life of the facility, life of the license, life of the corporation. Disposition records that have reached the end of their life in accordance with the previously established records disposition process.
- 4.4 Revise the Records Retention and Disposition Schedule to include new records that are created as a result of decommissioning.
- 4.5 Review 10CFR72 for impact on the Records Retention and Disposition Schedule if termination of the 10CFR50 license occurs while irradiated nuclear fuel remains on-site in an independent spent fuel storage installation (ISFSI) under a 10CFR72 license.
- 4.6 Identify items that may be slated for salvage or reuse and ensure maintenance and history records accompany those items.
- 4.7 Maintain records pertaining to litigation beyond their approved retention period, where appropriate.

5 RECORD RETENTION

- 5.1 All records listed in Appendix A as Decommissioning Case Files are retained by the Nuclear Regulatory Commission (NRC) 20 years after license termination; the other records listed are retained according to the facilities' approved Retention and Disposition Schedule.
- 5.2 These records may be retained on a variety of storage media (paper, optical disk, microfilm, etc.) in diverse formats (PDF, TIF, digital images, WordPerfect, etc.). NRC Regulatory Issue Summary 2000-18, *Guidance on Managing Quality Assurance Records in Electronic Media* is an excellent source of information on electronic records, along with the Nuclear Information & Records Management Association (NIRMA) Technical Guidelines (TG) listed in Section 7.0.

6 DEFINITIONS

- 6.1 DEACTIVATION—Involves the transition from operations to safe, monitored storage.
- 6.2 DECONTAMINATION—The reduction or removal of contaminated radioactive material from a structure, area, object, or person. Decontamination may be accomplished by: (1) treating the surface to remove or decrease the contamination, (2) letting the material stand so that the radioactivity is decreased as a result of natural radioactive decay, or (3) covering the contamination to shield or attenuate the radiation emitted.
- 6.3 DECOMMISSIONING—Permanently removing a nuclear facility from service and reducing radioactive material on the licensed site to levels that would permit termination of the NRC license. There are three acceptable methods of decommissioning:
- (1) DECON—The equipment, structures, and portions of the facility and site that contain radioactive contaminants are removed or decontaminated to a level that permits termination of the license after cessation of operations.
 - (2) SAFSTOR—The facility is placed in a safe stable condition and maintained in that state until it is subsequently decontaminated and dismantled to levels that permit license termination. During SAFSTOR, a facility is left intact, but the fuel has been removed from the reactor vessel and radioactive liquids have been drained from systems and components and then processed.
 - (3) ENTOMB—Encasing radioactive structures, systems, and components in a structurally long-lived substance, such as concrete. The entombed structure is appropriately maintained, and continued surveillance is carried out until the radioactivity decays to a level that permits termination of the licensing.¹
- 6.4 DISPOSITION—(1) Actions taken for records that includes transfer of records to other storage areas when no longer needed in their current environment and destruction. (2) For decommissioning and decontamination, defines the end-state of all products, and could include reapplication of assets (e.g, people, facilities, components).
- 6.5 RESTORATION-- A wide range of activities pertaining to cleanup of nuclear facilities to be returned to use that includes stabilizing contaminated soil, pumping and testing ground water, decommissioning process buildings and nuclear reactors, among other activities.

7 REFERENCES

- 7.1 American National Standard. *Quality Assurance Program Requirements for Nuclear Facilities (NQA-1)*, Sections II-17, II-17S-1, and IV-17A on Quality Assurance Records. The American Society of Mechanical Engineers, New York, NY
- 7.2 American National Standard. *Requirements for Collection, Storage, and Maintenance of Quality Assurance Records*. ANSI N45.2.9. American Society of Mechanical Engineers, New York, NY.

¹Decommissioning of Nuclear Power Reactors, Nuclear Regulatory Commission Regulatory Guide 1.184.

- 7.3 Code of Federal Regulations. *Reporting and Recordkeeping for Decommissioning*, 10 CFR 50.75.
- 7.4 Code of Federal Regulations. *Termination of License*, 10 CFR 50.82. Nuclear Regulatory Commission.
- 7.5 Nuclear Information & Records Management Association (NIRMA). TG11-1998, *Authentication of Records and Media*.
- 7.6 Nuclear Information & Records Management Association (NIRMA). TG15-1998, *Management of Electronic Records*.
- 7.7 Nuclear Information & Records Management Association (NIRMA), TG16-1998, *Software Configuration Management and Quality Assurance*.
- 7.8 Nuclear Information & Records Management Association (NIRMA), TG21-1998, *Electronic Records Protection and Restoration*.
- 7.9 Nuclear Regulatory Commission. *Decommissioning of Nuclear Power Reactors*, Regulatory Guide 1.184.
- 7.10 Nuclear Regulatory Commission. *Staff Responses to Frequently Asked Questions Concerning Decommissioning of Nuclear Power Reactors*, NUREG 1628, Final Report published June 2000. This contains an extensive bibliography of information related to decommissioning.
- 7.11 Nuclear Regulatory Commission. *NRC Regulatory Issue Summary 2000-18, Guidance on Managing Quality Assurance Records in Electronic Media*.

Appendix A – Examples of Records Required for Decommissioning

Category	Examples
D&D Planning Phase	<ul style="list-style-type: none"> • Environmental assessment • Environmental Impact Statement (if required) • Decommissioning Plan • Activity Specifications • Project Management Plan • Funding Plan • Cost & schedule estimates • Characterization survey
Decommissioning Case File	<ul style="list-style-type: none"> • License and amendment information • Technical Specifications, including changes • Decommissioning or Dismantling Plan • Final site surveys by licensee • Final site surveys by regional inspectors • Financial assurance information including decommissioning funding plans, certifications of financial assurance for decommissioning-related cost estimates, and records of funding methods. • Records of spills and other unusual occurrences involving the spread of contamination in and around the facility • License termination orders and associated safety evaluation • As-built drawings and modifications of structures and equipment in restricted areas where radioactive materials were used or stored and locations of possible inaccessible contamination • Any additional documents which refer to decommissioning, decontamination, or termination of the licenses, including interim or partial decommissioning of specific facilities at any time during the history of licensed operations
Defense against litigation	<ul style="list-style-type: none"> • Records related to excessive doses, asbestos exposure, accident reports
Design & Construction Records	<ul style="list-style-type: none"> • Calculations, technical analyses and design verifications • Design changes and updated drawings • Equipment and system specifications, manufacturers as-built/as-installed associate arrangement drawings and piping layouts • Equipment/component specifications including pertinent information; i.e., supplier, weight, size, material of construction, etc. • Fabrication specifications of reactor vessel and internals packages • Structural details including concrete pour drawings, rebar placement, penetration locations • Photographs • Safety analysis reports
Dismantlement and Restoration Phase	<ul style="list-style-type: none"> • Detailed work procedures • Safety analysis report • Periodic status reports that includes costs and schedule

	<ul style="list-style-type: none"> • Survey reports • License modification/termination • Information related to efforts to minimize radiation exposure during decommissioning activities • Public notices • Incident reports
Environmental & Waste Management	<ul style="list-style-type: none"> • Environmental monitoring, surveillance and assessment data and information • Waste information including disposal, characteristics, and shipping records.
Miscellaneous	<ul style="list-style-type: none"> • Information for future contract work and budgeting • Strategic and feasibility studies • Research and development work • Non-technical records of various kinds (e.g., financial documents, insurance, publicity mater)
Operation Records	<ul style="list-style-type: none"> • Abnormal occurrence reports, including spills and/or releases • Deactivation plans/procedures/reports • Operating and maintenance procedures • Power history • Radiological survey reports; radioactive inventories; radiation and contamination survey data; occupational and dose records • Records generated and required for safety administration and regulatory compliance • Staff health records, incident/accident register • Technical manuals • Technical specifications/safety analysis reports including superseded information