APPENDIX A

GENERAL ELECTRIC COMPANY
MORRIS OPERATION
TECHNICAL SPECIFICATION FOR SAFETY
LICENSE SNM-2500

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TABLES

1.0 INTRODUCTION

These technical specifications govern the safety of possession, storage, and shipment of irradiated light-water reactor fuel at Morris Operation.*

1.1 DEFINITIONS

The following definitions apply for the purpose of these technical specifications:

a. Administrative Controls: Provisions relating to organization and management procedures, record keeping, review and audit, and reporting necessary to assure operations involving storage of spent fuel at Morris Operation are performed in a safe manner.

b. Design Features: Facility features associated with basic design such as construction materials, geometric arrangements, dimensions, etc., which, if altered or modified, could have a significant effect on safety.

c. Functional and Operating Limits: Limits on fuel handling and storage conditions necessary to protect the integrity of stored fuel: to protect employees against occupational exposures; and to guard against the uncontrolled release of radioactive materials.

d. Fuel Bundle: Unit of nuclear fuel in the form used in the core of a light-water reactor (LWR). Normally, will consist of a rectangular arrangement of fuel rods held together by end fittings, spacers and tie rods. The BWR fuel bundle does not include the reusable fuel channel which is not shipped with the fuel bundles.

e. Limiting Conditions: The lowest functional capabilities or performance levels of equipment required for facility safe operation.

f. Surveillance Requirements: Surveillance requirements include: (I) inspection and monitoring of spent fuel in storage; (ii) inspection, test and calibration activities necessary to ensure the integrity of required systems and components and the stored spent fuel is maintained; (iii) confirmation that facility operation is within required functional and operating limits; and (iv) a confirmation that limiting conditions required for safe storage are met.

g. Tonne (Te): One metric ton, equivalent to 1000 kg or 2204.6 lb. Fuel quantity is expressed in terms of the fuel heavy metal content, measured in metric tons, and written TeU.

* See Section 7.0 of this document for references and notes.

1.2 GENERAL LICENSE CONDITIONS

1.2.1 Quality Assurance

Morris Operation activities shall be conducted in accordance with 10CFR 72 subpart G, as described in Morris Operation Quality Assurance Plan, NEDE-31559.

1.2.2 Fuel Transfer Canal Closure

The transfer canal upper end (CSAR Figure 1-4) has been sealed by welding a 1/4-inch thick stainless steel plate to imbedded steel angles framing the opening. There are no protrusions from the plate that could be used to facilitate removal. The fuel basket transfer arm has been rendered inoperative by welding a block in place preventing arm movement, and disabling the arm hydraulic system. These conditions shall not be changed without prior Nuclear Regulatory Commission approval.

2.0 FUNCTIONAL AND OPERATING LIMITS

2.1 AUTHORIZED MATERIALS

2.1.1 Specification

a. Light-water reactor nuclear fuel stored at GE-MO has previously met specific requirements detailed in earlier Amendments of this license. Fuel currently in storage has been at GE-MO since 1989, the basins are essentially full. No new fuel will be received and storage is limited to the current inventory.

Station	Type	Cladding	Array	1st Bundle Received	Last Bundle Received	Total Bundles
Connecticut Yankee	PWR	SS 1	5x15	01-13-72	08-05-87	82
Cooper	BWR	Zircalloy	7x7 & 8x8	08-24-84	01-27-89	1054
Dresden	BWR	Zircalloy	7x7	09-05-75	03-31-77	753
Monticello	BWR	Zircalloy	8x8	11-21-84	04-24-87	1058
San Onofre	PWR	SS	14x14	03-27-72	09-07-80	270

b. Tools and equipment incidental to the conduct of General Electric's nuclear and nuclear related business that have become radioactively contaminated may be possessed, stored, repaired and decontaminated. Items bearing smearable contamination shall be packaged for storage. The total contamination of all tools and equipment shall not exceed10 Ci as determined by external exposure from the items as packaged for storage.

c. Tools and equipment specifically related to fuel storage operations, such as shipping cask internals, contaminated with radioactive materials may be possessed, repaired and/or decontaminated.

2.1.2 Basis

The design criteria and subsequent safety analyses of Morris Operation assumed certain characteristics and limitations for fuels that have been received and are currently stored. Specification 2.1.1(a) assures these bases remain valid by defining the authorized stored fuel inventory.

The design bases for criticality analyses were selected from detailed analytical studies based on physical parameters of specific fuel designs (see Table A.10-1, CSAR Appendix A.10). The largest bundle cross-sectional area and infinite bundle length were assumed in the calculations. These limits were based on unirradiated clean fuel and include allowance for the poisoning effect of the stainless steel baskets. Fuel centerline locations and other orientations were assumed to be those giving the maximum system reactivity.

Specification 2.1.1 b provides for storage of tools and equipment incidental to the conduct of General Electric's nuclear businesses while awaiting decontamination, reuse, or ultimate disposal. Activity will be calculated from exposure rate measurements from a package, assuming the radiation originates from a uniform volumetric source having approximately the same dimensions as the package. Unless otherwise determined, gamma emissions of 1 MeV/disintegration will be assumed.

Specification 2.1.1 c provides for storage of tools and equipment specifically related to the conduct of General Electric fuel storage operations, such as cask internals and yokes while awaiting decontamination, reuse, or ultimate disposal. These tools and equipment may be contaminated with Co-60, Cs-137, or other isotopes as encountered in fuel handling and storage activities.

2.2 FUEL STORAGE PROVISIONS

2.2.1 Specification

Irradiated fuel bundles shall be stored in authorized fuel storage baskets, mounted in a support grid, under water in a fuel storage basin.

2.2.2 Basis

The design criteria and subsequent safety analysis for Morris Operation assume irradiated fuel is stored under water in fuel storage baskets, mounted in a support grid in a fuel storage basin. Specification 2.2.1 assures these assumptions remain valid. The fuel storage baskets and support grid are those described in the CSAR, Chapter 5.

3.0 LIMITING CONDITIONS

3.1 LIMITING CONDITION - WATER SHIELD

3.1.1 Specification

The depth of water between the top of the fuel bundle upper tie plate and the surface of the basin water shall be a minimum of 9 feet.

3.1.2 Basis

This specification establishes a minimum water shielding depth to limit radiation dose rate in the basin area. This specification applies to all fuel in storage or being transferred from storage to cask (also, see Section 5.2).

Tests have shown the water surface dose rate does not increase above background until the water depth is decreased to about 7 feet. A conservative water shield depth of 9 feet has been chosen to provide an increased margin of safety.

3.2 LIMITING CONDITION – CRITICALITY

3.2.1 Specification

A structure (unloading pit doorway guard: CSAR Figure 5-5)[1] shall be used at the doorway between the unloading basin and Storage Basin No.1 to prevent a basket from tipping in a manner that its contents may be emptied into the unloading basin.

3.2.2 Basis

The analysis of a fuel basket drop accident (CSAR Chapter 8) indicates that a basket dropped or tipped over in Basin No.1, near the doorway to the cask unloading basin, could empty its contents into the unloading basin. It is assumed the fuel might fall into a critical configuration in the bottom of the unloading basin. The unloading pit doorway guard assures that a basket cannot empty its fuel into the unloading basin.

4.0 SURVEILLANCE REQUIREMENTS

There is no credible event, planned discharge or design basis accident identified at GE-MO that would expose a member of the public to radiation in excess of limits specified in 10 CFR 72.104 or 10 CFR 72.106. However requirements for surveillance of various radiation levels, water levels, and other physical quantities, as well as inspections and other periodic activities to provide assurance of specification compliance are contained in this section. These requirements are summarized in Table 4-1 from details contained in Sections 4.1 through 4.10.

Table 4-1 Surveillance Requirements Summary

Section	Quantity or Item	Period	Value
4.1.1	Effluent air	Weekly	ß: 4x10-8 µCi/ml
4.2.1	Water-evaporation pond and sanitary lagoons	Monthly	ß: 10-5 µCi/ml α: 5x10-6 µCi/ml
4.3.1	Sealed sources ß, γ, n, % Sealed sources - α	Semiannual	α or ß: 0.005 µCi α: 0.005 µCi
4.4.1	Instruments	(see Table 4-2)	
4.5.1	Basin water	Monthly	Conductivity: <1.35 µMho/cm
4.6.1	Basin water	Monthly	<0.2 µCi/ml

4.1 EFFLUENT AIR

4.1.1 Specification

Effluent air shall be continuously sampled for particulates at a location between the main stack and the sand filter. Samples shall be analyzed weekly for gross beta (ß) activity. The maximum value shall not exceed a weekly average of 4x10-8 µCi/ml.

4.1.2 Basis

This specification requires sampling of ventilation air leaving the sand filter to demonstrate that offsite concentrations do not exceed 10 CFR 20 limits. The GE-MO sampling and analysis program provides data for estimating the amounts of radioactive material released to the environment during routine or accident conditions.

4.2 HOLDING BASINS

4.2.1 Specification

Water in the sanitary holding basin and the evaporation pond shall be sampled at least once each month and analyzed for gross alpha and beta radiation. The maximum concentrations shall not exceed 10-5 µCi/ml beta and 5x10-6 µCi/ml alpha radiation. If either pond is dry,[2] no sampling of that pond is required.

4.2.2 Basis

Morris Operation is designed to preclude the release of radioactive materials in normal liquid effluents. As a precautionary measure the sanitary lagoons, which receive and retain plant sewage and some ground water runoff, are periodically sampled to detect inadvertent contamination by radioactive materials.

4.3 SEALED SOURCES

4.3.1 Specification

Each licensed sealed source (not irradiated fuel) containing radioactive material in excess of 100 µCi of beta-gamma emitting material or 10 µCi of alpha-emitting material shall be tested for leakage at least once every 6 months, except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed 3 months. The maximum level of removable (nonfixed) contamination shall be less than 0.005 µCi total for each source, using dry-wipe testing techniques.

4.3.2 Basis

Surface contamination is measured to determine that a sealed source has not developed a leak. The limitations on removable contamination are based on 10CFR 70.39©) limits for plutonium, but other provisions of this reference are not applicable.

4.4 INSTRUMENTATION

4.4.1 Specification

Systems and equipment shall be tested for operability and calibrated at least once during the intervals specified in Table 4-2. Calibration shall be performed in accordance with manufacturer's recommendations, specific GE-MO approved procedures, and operational tests shall be performed to check alarm functions and demonstrate other operational features of the system or equipment.

Table 4-2 Summary Requirements System and Equipment Test Calibration

System or Equipment	Operability Test	Calibration
Basin Leak Detection System	Weekly	Monthly
Area Radiation Monitors	Quarterly	Quarterly
Criticality Monitors	Annual	Quarterly

4.4.2 Basis

Bases for these test and calibration requirements are as follows:

a. Basin Leak Detection System: Operation of this system ensures that a leak in the basin liner will be promptly detected so that corrective action can be initiated. Since the operation of the system is related to the level of water in the detection system, the level alarm set point is checked and instruments receive periodic calibration.

b. Area Radiation Monitors: The audible alarm system for these monitors is tested (operated), and the alarm set point calibrated periodically to provide assurance of reliable operation within equipment specifications, to alert personnel to radiation above preset levels.

c. Criticality Monitors: The audible alarm systems for these monitors, which warn personnel of a criticality, are tested (operated) and the alarm set point calibrated periodically to provide assurance of reliable operation within equipment specifications.

4.5 BASIN WATER CHEMICAL CHARACTERISTICS

4.5.1 Specification

Basin water chemistry shall be maintained as follows:

Item	Acceptable Analysis
Conductivity	less than 1.35 µMho/cm (equivalent to pH of 5.5 to 8.0 in demineralized water)

4.5.2 Basis

Basin water chemical characteristics are selected to maintain a benign environment for fuel and equipment stored in the basin water.

4.6 BASIN WATER RADIOACTIVE CONTAMINANTS

4.6.1 Specification

Additional basin water cleanup measures shall be initiated if the concentration of radioactive material in the water exceeds 0.02 µCi/ml beta.

4.6.2 Basis

Periodic sampling of basin water is required to assure that concentration of radioactive materials remain as low as reasonably achievable. The value selected is consistent with current decontamination practices.

5.0 DESIGN FEATURES

5.1 FUEL STORAGE BASIN

The energy-absorbing pad on the cask set-off shelf shall not be altered without appropriate safety review and documentation as required by 10 CFR 72.48.

5.1.1 Basis

The cask drop accident was analyzed for the IF-300 cask with the energy-absorbing pad in place (CSAR Chapter 8).

5.2 FUEL STORAGE SYSTEM

The following pieces of equipment employ favorable geometry, specific materials, and methods of construction to assure nuclear criticality safety and radiation protection and are considered important to safety. Modifications to the design in dimensions, construction materials, or construction methods shall not be made without appropriate safety review and documentation in accordance with 10 CFR 72.48.

a. Fuel storage basin - concrete walls, floors, and expansion gate are principal elements in protection of stored fuel, and in isolation of basin water from the environment.

b. Fuel storage basin - stainless steel liner forms a second element in fuel protection and basin water isolation, facilitating decontamination.

c. Fuel storage system, including baskets and supporting grids is a principal element in protection of stored fuel.

d. Unloading pit doorway guard - is designed to prevent a loaded fuel basket from being tipped so that fuel bundles could fall into the cask unloading pit. The unloading pit doorway guard is an element in protection of fuel during movement of a loaded basket.

e. Filter cell structure - the concrete cell part of the basin pump room area provides radiation shielding to reduce occupational exposure.

f. Fuel Storage Basin building – the steel structure that surrounds/protects the fuel Basins.

g. Fuel Basket Grapple – Used to remove the fuel baskets from their storage location in the fuel basin support grid.

h. Fuel Grapple – Used to remove the fuel bundles from the fuel baskets when they are in the unloading pit.

l. Fuel Basin Crane – Crane utilized to move the full fuel baskets to the unloading pit.

j. Fuel Handling Crane – Crane used to remove the fuel bundles from the fuel storage baskets and place into a cask.

k. Cask Crane – 125 Ton overhead crane used to lift a fully loaded cask from the unloading pit and place cask onto transport vehicle.

l. Spent Fuel Cladding – Fuel in GE-MO basins are clad with SS or zircalloy cladding.

6.0 ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

The Manager, Morris Operation shall be responsible for overall facility operation in accordance with these specifications and applicable government regulations, and shall delegate in writing the succession of this responsibility during his absence. Operations involving licensed materials shall be performed by, or under the supervision of individuals designated by the Manager, Morris Operation, or his delegate.

6.2 ORGANIZATION

6.2.1 The facility staff organization is shown in the CSAR, Figure 9-2 and senior positions and responsibilities within the organization are described in CSAR 9.2.3.

6.3 PLANS AND PROCEDURES

Plans and procedures shall be established and implemented to assure compliance with these Technical Specifications and applicable governmental regulations.

6.3.1 Changes to Plans and Procedures

All changes or revisions of plans or procedures required by this section shall be made in accordance with facility modification control practices as described in the CSAR, Chapter 9.

6.3.2 Plans and Procedures - Minimum Requirements

Plans and procedures required by this section shall include:

a. A safety manual defining responsibilities and specifying actions to protect the health and safety of employees and others while on site, appropriate safety training programs, and other measures to maintain exposures as low as reasonably achievable.

b. Requirements for analysis of cask drop accident consequences prior to handling spent nuclear fuel shipping casks not previously handled at GE-MO per 10 CFR 72.48.

c. Procedures for the conduct of routine fuel storage operations.

d. A preventive maintenance system for structures, systems and components important to site radiological and criticality safety.

e. Arrangements for providing makeup water to the storage basins under normal and emergency conditions.

6.4 REVIEW AND AUDIT

6.4.1 Safety Committee

Plans, procedures and operations carried out under established plans and procedures involving elements of radiological safety shall be reviewed and approved by a Safety Committee. Three members must be present to conduct business. Other individuals may participate in SC meetings. This committee will consist of members as determined by the Manager, Morris Operation and described in a Safety Committee operating procedure and CSAR Section 9.0, Figure 9-2.

The Committee shall normally meet on a monthly basis, but at no greater than 45-day intervals. The Manager, Morris Operation shall establish appropriate procedures and practices for the conduct of Committee responsibilities.

6.4.2 Audits

Morris Operation activities shall be audited to ascertain the degree of compliance with specifications, standards and procedures. Audits shall be conducted by organizations and persons at such times as designated by GE Nuclear Energy Management. Audits and audit response shall be performed in accordance with General Electric procedures.

6.5 ACTION REQUIRED FOR SPECIFICATION NONCOMPLIANCE

6.5.1 Functional and Operating Limits

The following actions shall be taken if a functional or operating limit is exceeded:

a. Prompt action shall be taken to assure timely return of operations to specification compliance.

b. The Safety Committee shall be promptly notified of the noncompliance.

c. NRC Operations Center shall be notified within 24 hours, advising them of events that resulted in a noncompliance condition.

d. A review of the incident shall be made by the Safety Committee to establish the cause and to define means to prevent reoccurrence.

6.5.2 Limiting Conditions

The following actions shall be taken if a limiting condition is exceeded:

a. Prompt corrective action shall be taken to assure timely return of operations to specification compliance.

b. The Safety Committee shall be advised of the noncompliance within 24 hours.

c. A report shall be sent to the NRC Operations Center within 30 days to advise them of events resulting in limiting conditions being exceeded.

d. A review of the incident shall be made by the Safety Committee to establish the cause and to define means to prevent reoccurrence.

6.5.3 Surveillance Requirements

The following actions shall be taken if surveillance requirements are not satisfied:

a. The Manager, Morris Operation, or his delegate, shall take such action as may be required to assure future compliance with surveillance requirements and, if necessary, to assure return of operations to specification compliance in minimum time.

b. The Safety Committee shall be advised of any event, or sequence of events, involving surveillance requirements that involve systems directly related to radiological safety. The Committee shall investigate such events and recommend corrective action.

6.5.4 Design Features

Design features shall only be changed in accordance with Specification 6.3.1, CSAR Chapter 9 and 10 CFR 72.48. Unauthorized modifications of specified design features, or unauthorized introduction of unapproved tools, fixtures, or other equipment shall require action as specified for functional and operating conditions in Specification 6.5.1.[3]

6.6 LOGS, RECORDS AND REPORTS

6.6.1 Logs and Records

a. A shift log shall be maintained to record nonroutine and significant events that may occur during a shift.

b. Minutes of the Safety Committee shall be documented, including copies of reports required in Section 6.5.1, and other actions of the Committee.

c. Records of facility changes, and changes in procedures described in the CSAR shall be maintained throughout the lifetime of the facility.

d. Records of tests or experiments conducted under provisions of CSAR Chapter 9, and 10 CFR 72.48 shall be maintained throughout the facility lifetime and shall include written safety evaluations providing the bases for determining the test or experiment did not involve unreviewed safety or environmental questions.

7.0 REFERENCES AND NOTES

1. The use of the unloading pit doorway guard is described in CSAR Chapters 1 and 5.

2. Dry to the extent that water samples cannot be obtained in the usual manner.

3. Authorized modifications and approved tools, fixtures, or other equipment are those processed under the provisions of CSAR Section 9.

8.0 ENVIRONMENTAL PROTECTION

8.1 ENVIRONMENTAL MONITORING PROGRAM

8.1.1 Specification

The licensee will maintain the effectiveness of the environmental monitoring program detailed in specific Compliance and Operability Test procedures. Change in frequency or collection sites by the licensee shall be evaluated against the experience of acquired data and reported with the information required by Specification 8.2.

8.1.2 Basis

The environmental monitoring program results from over 20 years of Morris Operation environmental monitoring experience. These years of operational experience with the monitoring program provide a sound basis for evaluating the programs effectiveness.

8.2 ANNUAL ENVIRONMENTAL REPORT

8.2.1 Specification

An annual report will be submitted to the NRC Region III office with a copy to the Director, Office of Nuclear Material Safety and Safeguards, within 60 days after January 1 of each year, specifying the quantity of each of the principal radionuclides released to the environment in liquid and gaseous effluents during the previous 12 months of operation and such other information as may be required by the Commission to estimate maximum potential radiation dose commitment to the public resulting from effluent release and direct radiation at the site property protection area.

8.2.2 Basis

The report of Specification 8.2.1 is required pursuant to 10 CFR 72.44(d)(3).