



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD, SUITE 102
KING OF PRUSSIA, PA 19406-1415

February 4, 2025

Jeff Richardson
President
TMI-2 Solutions, LLC and Energy Solutions, LLC
121 West Trade Street
Charlotte, NC 28202

SUBJECT: TMI-2 SOLUTIONS, LLC, THREE MILE ISLAND NUCLEAR STATION,
UNIT 2 - NRC INSPECTION REPORT NOS. 05000320/2024004 AND
07200080/2024004

Dear Jeff Richardson:

On December 31, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed inspections under Inspection Manual Chapter (IMC) 2690, "Inspection Program For Storage Of Spent Reactor Fuel And Reactor-Related Greater-Than-Class C Waste At Independent Spent Fuel Storage Installations And For 10 CFR Part 71 Transportation Packagings" and IMC 2561, "Decommissioning Power Reactor Inspection Program," at the permanently shutdown Three Mile Island Nuclear Station, Unit 2 (TMI-2). The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and the conditions of your license. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and plant walk-downs. The results of the inspection were discussed with Paul Ross, Project Director, and other members of your staff on January 7, 2025, and are described in the enclosed report.

Within the scope of this inspection, no violations of more than minor safety significance were identified.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

No reply to this letter is required. Please contact Harry Anagnostopoulos of my staff at (610) 337-5322, if you have any questions regarding this matter.

Sincerely,

Elise Eve, Team Leader
Decommissioning Team
Decommissioning, ISFSI, and Reactor Health
Physics Branch
Division of Radiological Safety and Security

Docket No.: 05000320

License No.: DPR-73

cc w/ encl: Distribution via ListServ

Enclosure:

Inspection Report No. 05000320/2024004 and 07200080/2024004

SUBJECT: TMI-2 SOLUTIONS, LLC, THREE MILE ISLAND NUCLEAR STATION, UNIT 2 -
NRC INSPECTION REPORT NO. 05000320/2024004 AND 07200080/2024004
DATED FEBRUARY 4,2025

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U.S. NUCLEAR REGULATORY COMMISSION
REGION 1

INSPECTION REPORT

Docket No.: 05000320 and 07200080

License No.: DPR-73

Report No.: 2024004

Licensee: TMI-2 Solutions, LLC (TMI-2S)

Facility: Three Mile Island Nuclear Station, Unit 2 (TMI-2)

Location: Middletown, PA 17057

Inspection Dates: October 1, 2024, to December 31, 2024

Inspectors: H. Anagnostopoulos, CHP, Senior Health Physicist
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

C. Hargest, Health Physicist
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

Approved By: E. Eve, Team Leader
Decommissioning Team
Decommissioning, ISFSI, and Reactor Health Physics Branch
Division of Radiological Safety and Security

Enclosure

EXECUTIVE SUMMARY

TMI-2 Solutions, LLC (TMI-2S)
Three Mile Island Unit 2 (TMI-2)
NRC Inspection Report No. 05000320/2024004 and 07200080/2024004

A routine announced decommissioning inspection was completed on December 31, 2024, at Three Mile Island Unit 2. The inspection included a review of quality assurance, decommissioning performance and status, environmental and groundwater monitoring, shipments of radioactive materials, and construction of a new concrete storage pad at the site's ISFSI. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and site walk-downs. The U.S. Nuclear Regulatory Commission's (NRC's) program for overseeing the safe decommissioning of a permanently shut-down nuclear power reactor is described in Inspection Manual Chapter (IMC) 2561, "Decommissioning Power Reactor Inspection Program."

Additionally, the inspection period included inspection of the placement of a concrete pad for the storage of vertical concrete casks which will house fuel bearing material. The NRC's program for overseeing the operation of dry storage of spent fuel at an Independent Spent Fuel Storage Installation (ISFSI) is described in IMC 2690, "Inspection Program for Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71 Transportation Packagings."

List of Violations

None

REPORT DETAILS

1.0 Background

In December 1993, TMI-2 received a possession-only license from the NRC to enter Post-Defueling Monitored Storage (PDMS). On December 18, 2020, the license for TMI-2 was transferred from GPU Nuclear, Inc. to TMI-2 Solutions (TMI-2S) (ADAMS No. ML20352A381). On March 31, 2023, an amended license was issued removing TMI-2 from PDMS and allowing them to begin decommissioning activities (ADAMS No. ML23051A042).

TMI-2 is currently in Category 3, "Decommissioning (DECON), No Fuel in the Spent Fuel Pool" as described in IMC 2561.

2.0 Active Decommissioning Performance and Status Review

The inspectors performed on-site decommissioning inspection activities from December 9 – 12, 2024 and was supplemented by in-office reviews and periodic phone calls. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and site walk-downs.

2.1 Inspection Procedure (IP) 40801 "Problem Identification and Resolution at Permanently Shutdown Reactors"

a. Inspection Scope

The inspectors reviewed the "Three Mile Island Unit 2 Decommissioning Quality Assurance Plan (DQAP)," TMI2-QA-PG-001, Revision 21 to evaluate how quality systems are being applied to programs and processes which are important to compliance with NRC regulations and the conditions of the NRC's license. The inspectors interviewed the TMI-2S Quality Assurance Manager, reviewed condition reports that were related to implementation of the quality program and conducted a walk-down of the Decommissioning Support Building (DSB) foundation. The DSB is under construction and portions of the construction have had an augmented quality program applied to it via work package hold points and field inspections.

The inspectors reviewed the "TMI2 Decommissioning QAP Orientation," TMI2-QA-TRB-QAPO-0009, Revision 0 to determine whether TMI-2S project personnel are given appropriate instruction into the quality aspects of their work, which would ensure that they attain the necessary proficiency needed to implement quality requirements into their work.

b. Observations and Findings

The inspectors identified that the DQAP was comprehensive and appropriately applied quality assurance to programs and processes which were also important to regulatory compliance and/or business objectives. These were identified as "within scope of the QA program" activities and this additional scope is commonly referred to as Augmented Quality (AQ).

The inspectors noted that QA personnel maintained a questioning attitude, were intrusive in their reviews of project work, and persuasive in their promotion of work and safety standards. The inspectors observed an effective use of the corrective action process, with a low threshold for the initiation of condition reports. In addition, follow-up reviews of the effectiveness of corrective actions after closure by QA personnel were efficacious for the program.

c. Conclusions

No violations of more than minor significance were identified.

2.2 Inspection Procedure (IP) 71801 “Decommissioning Performance and Status Reviews at Permanently Shutdown Reactors”

a. Inspection Scope

The inspectors noted significant decommissioning activities during the inspection period.

b. Observations and Findings

Significant decommissioning activities that were conducted by TMI-2S during the inspection period included:

1. Placed concrete for the Decommissioning Support Building pad
2. Placed concrete for Vertical Concrete Cask pad
3. Began decontamination and removal of interferences from the carousel under the shielded work platform in the reactor cavity
4. Added water to the deep end of the reactor cavity to reduce dose rates in the general area
5. Completed Reactor Building supply fan modifications to allow a restart, with subsequent ventilation airflow smoke testing inside the building
6. Completed electrical and mechanical refurbishment of the 5-ton auxiliary crane in the Reactor Building

c. Conclusions

No violations of more than minor significance were identified.

2.3 Inspection Procedure (IP) 84750 “Radioactive Waste Treatment, and Effluent and Environmental Monitoring”

a. Inspection Scope

The inspectors reviewed the “2023 Annual Radiological Environmental Operating Report”, TMI-24-006, dated April 29, 2024, for Three Mile Island Nuclear Station Unit 1 and 2. This report documents the results of routine environmental monitoring in the areas around the Three Mile Island site and is required by the NRC license for either unit. The environmental monitoring program is managed by Constellation Energy Generation (CEG), LLC, the licensee for Unit 1.

The inspectors reviewed the implementation of the Groundwater Protection Initiative program and the results of groundwater sampling for 2023.

The inspectors examined the quality control program results, including their participation in an inter-laboratory comparison program, for the contracted laboratory which analyses environmental monitoring and groundwater protection program samples for the Three Mile Island site.

b. Observations and Findings

The inspectors determined that the environmental monitoring program met regulatory requirements and was in compliance with the TMI-2 Offsite Dose Calculation Manual.

The inspectors established that the groundwater monitoring program under the Groundwater Protection Initiative had continued following shutdown of both units and that the program maintained all of the required elements.

c. Conclusions

No violations of more than minor significance were identified.

2.4 Inspection Procedure (IP) 86750 "Solid Radioactive Waste Management and Transportation of Radioactive Materials"

a. Inspection Scope

The inspectors observed activities, interviewed personnel, performed walkdowns, and reviewed documentation to assess the licensee's programs for handling, storage, and transportation of radioactive material. The inspectors observed workers handling and packaging radioactive waste and performed walk-downs of radioactive waste storage locations, including areas near the spent fuel pool and in the turbine building, to evaluate if the licensee had properly classified and stored radioactive materials. The inspectors reviewed a risk-informed selection of work packages for shipments of radioactive waste. The review included records of shipment packaging, surveying, labeling, marking, placarding, vehicle checks, and emergency instructions to determine compliance with NRC and Department of Transportation (DOT) regulations. The inspectors reviewed training records to determine if radwaste personnel were qualified to implement the site solid radwaste program.

b. Observations and Findings

The inspectors observed that radioactive material shipping was being conducted by contracted employees of the destination waste disposal site, that there was adequate qualified staff, and that they were knowledgeable in their role. No deficiencies were noted in the interviews or review of shipping documents.

c. Conclusions

No violations of more than minor significance were identified.

3.0 Independent Spent Fuel Storage Installation (ISFSI)

The inspectors performed on-site inspection activities from October 8 - 9, 2024 and was supplemented by in-office reviews and phone calls. The inspection consisted of observations by the inspectors, interviews with site personnel, a review of procedures and records, and site walk-downs.

3.1 Inspection Procedure (IP) 60853 "Onsite Fabrication of Components and Construction of an ISFSI"

The ISFSI storage pad at Three Mile Island was designed and constructed to store NAC International's Vertical Concrete Casks (VCCs) on a single pad foundation. At the time of this inspection, 48 VCCs containing spent fuel from Unit 1 had been previously placed on the ISFSI pad. In order to support the additional storage of up to 14 VCCs with Fuel Bearing Material (FBM) as part of the decommissioning of Unit 2, TMI-2S constructed a second concrete storage pad, which is adjacent to and within the security envelope of the existing Unit 1 pad.

a. Inspection Scope

The inspectors reviewed the TMI-2S evaluations that were developed to demonstrate a reasonable assurance that the (new) Unit 2 concrete pad complied with the requirements of 10 CFR 72.212(b)(5)(ii). The inspectors performed a review of the structural assessment of the Unit 2 ISFSI pad design for static and dynamic loads associated with the VCCs as required by 10 CFR 72.212. In addition, the inspectors reviewed the tip over analysis of a VCC storage cask and the soil structure interaction analysis performed for that event at the new pad. The inspectors focused their review on completeness and accuracy of the information provided by the licensee. The inspectors evaluated the analysis and design methodology used for the MAGNASTOR casks to determine if they were consistent with the MAGNASTOR Final Safety Analysis Report (FSAR) and the applicable guidance in American Concrete Institute (ACI) 318, ACI 349, NUREG-1536, and NUREG-2215.

The inspectors observed the final formwork and reinforcing steel set-up, placement of concrete, and surface finishing work.

b. Observations and Findings

The inspectors concluded that TMI-2S' overall approach was reasonable, satisfied the requirements of 10 CFR 72.212(b)(5)(ii), and provides a reasonable assurance of safety.

c. Conclusions

No violations of more than minor significance were identified.

4.0 Exit Meeting Summary

On January 7, 2025, the inspectors presented the inspection results to Paul Ross, Project Director, and other members of TMI-2S staff. No proprietary information was documented in this report

SUPPLEMENTARY INFORMATION

ITEMS OPEN, CLOSED, AND DISCUSSED

None

PARTIAL LIST OF DOCUMENTS REVIEWED

C-1101-114-003 ISFSI Storage Pad Design, Rev 1
C-1101-114-004 ISFSI Bearing Capacity and Settlement, Rev 0
C-1101-114-004, Rev.0 "Independent Spent Fuel Storage Installation (ISFSI) Bearing Capacity and Settlement"
C-1101-114-005 ISFSI Liquefaction Potential Evaluation, Rev 0
C-1101-114-005, Rev.0 "ISFSI Liquefaction Potential Evaluation."
Consolidated Concrete Testing Information
ESJ-0003-C-008, TMI2-EN-DWG-C-00-00193, Rev 0 General Notes
ESJ-0003-CALC-004 ISFSI Storage Pad Design, Rev 0
ESJ-0003-DSPEC-001, Rev.0 Cast-in-Place Concrete
Shipping packages LLRW-24-0067 and MISC-24-0024
Three Mile Island Unit-2 Decommissioning Quality Assurance Plan
TMI-1 DSAR, Revision 2
TMI2-EN-CALC-S-00-0022, Rev.0, "TMI2 ISFSI Storage Pad Design"
TMI2-EN-CALC-S-00-0027, Rev.0, "Development of Five Earthquakes for SSI"
TMI2-EN-CALC-S-00-0028, Rev.0, "Development of Strain Compatible Soil Property
TMI2-EN-CALC-S-00-0029, Rev.0, "SSI Analysis of TMI2 ISFSI"
TMI2-EN-SPC-2023-0002 Excavation and Fill