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10 CFR 50.54(bb)

TM-19-023

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Three Mile Island Nuclear Station, Unit 1
Renewed Facility Operating License No. DPR 50
NRC Docket No. 50 289

Subject: Spent Fuel Management Plan for Three Mile Island Nuclear Station – Unit 1

References:
1) Letter from J. Bradley Fewell (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations for Three Mile Island Nuclear Station, Unit 1," dated June 20, 2017 (ML17171A151)
2) Letter from Pamela B. Cowan (Exelon Generation Company, LLC), to U.S. Nuclear Regulatory Commission – "Submittal of Preliminary Decommissioning Cost Estimate and Spent Fuel Management Plan," dated April 17, 2009 (ML091130429)

Pursuant to 10 CFR 50.54(bb), "Conditions of licenses," Exelon Generation Company, LLC (Exelon) is submitting the Three Mile Island Nuclear Station, Unit 1 (TMI-1) Spent Fuel Management Plan (SFMP). By letter dated June 20, 2017, Exelon informed the U.S. Nuclear Regulatory Commission (NRC) that TMI-1 will permanently cease power operations on or about September 30, 2019 (Reference 1). In accordance with 10 CFR 50.54(bb) and 10 CFR 50.82(a)(4)(i), Exelon is required to submit a SFMP, Site-Specific Decommissioning Cost Estimate (DCE), and Post-Shutdown Decommissioning Activities Report (PSDAR) within two years of permanent cessation of operations.

The SFMP is included as the Attachment to this letter. The TMI-1 PSDAR and DCE are being submitted under separate cover letters.

As discussed in 10 CFR 50.54(bb), a licensee shall "within two (2) years following permanent cessation of operation of the reactor or 5 years before expiration of the reactor operating license, whichever occurs first, submit written notification to the Commission for its review and preliminary approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor following permanent cessation of operation of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository."

Exelon is submitting the attached SFMP to fulfil the 10 CFR 50.54(bb) requirement to submit a SFMP to the NRC within two (2) years following permanent cessation of operation of the reactor for Commission review and preliminary approval of the program by which TMI-1 intends to manage and provide funding for the management of all irradiated fuel at the reactor facility until title and possession of the irradiated fuel is transferred to the U. S. Department of Energy for ultimate disposal.

Prior to the TMI-1 license being extended to 2034 (License Renewal), Exelon submitted a SFMP to the NRC on April 17, 2009 (Reference 2) to fulfil the 10 CFR 50.54(bb) requirement to submit a SFMP to the NRC five (5) years before expiration of the operating license, which was set to expire in 2014. The SFMP in the Attachment to this letter, supersedes and replaces in entirety the SFMP submitted in 2009.

In accordance with 10 CFR 50.54(bb), a copy of this notification will be maintained until the expiration of the TMI-1 operating license. Additionally, TMI-1 will notify the NRC of any other significant changes in the proposed Spent Fuel Management Plan described in the Attachment pursuant to 10 CFR 50.54(bb).

There are no new regulatory commitments contained in this letter.

If you have any questions concerning this submittal, please contact Paul Bonnett at (610) 765-5264.

Respectfully,

Michael P. Gallagher
Vice President, License Renewal & Decommissioning
Exelon Generation Company, LLC

Attachment: Spent Fuel Management Plan for Three Mile Island Nuclear Station

cc: w/ Attachment

Regional Administrator - NRC Region I
NRC Senior Resident Inspector – Three Mile Island Nuclear Station – Unit 1
NRC Project Manager, NRR – Three Mile Island Nuclear Station – Unit 1
NRC Project Manager, NMSS/DUWP/RDB – Three Mile Island – Unit 2
Director, Bureau of Radiation Protection - PA Department of Environmental Resources

ATTACHMENT
SPENT FUEL MANAGEMENT PLAN (SFMP)
FOR
THREE MILE ISLAND NUCLEAR STATION - UNIT 1

1. BACKGROUND

By letter dated June 20, 2017, and as required by 10 CFR 50.82(a)(1)(i) and 10 CFR 50.4(b)(8), Exelon Generation Company, LLC (Exelon) provided notice to the U.S. Nuclear Regulatory Commission (NRC) of its intent to permanently cease power operations at TMI-1 on or about September 30, 2019 (Reference 1).

The decommissioning approach that has been selected by Exelon for TMI-1 is the SAFSTOR method.

The Spent Fuel Management Plan (SFMP) for TMI-1 was previously provided to the NRC in 2009 (Reference 2). The SFMP in this Attachment supersedes and replaces in entirety the SFMP submitted in Reference 2.

In order to estimate the costs associated with maintenance of the TMI-1 site in SAFSTOR and the eventual decommissioning of the site, at the time of the estimate, Exelon assumed 2030 as the first year that the U.S. Department of Energy (DOE) will begin removing spent nuclear fuel from nuclear power reactor sites. Pursuant to the Nuclear Waste Policy Act (Reference 3), the Federal government has the responsibility to remove all spent fuel from TMI-1 and other commercial nuclear power reactor sites. However, the DOE spent fuel and high-level waste management program is currently stalled. Given the status of the DOE program, Exelon considered information made publicly available by DOE, the Government Accountability Office (GAO), the Blue Ribbon Commission on America's Nuclear Future, and the political environment surrounding this issue, and concluded that 2030 was the most likely timeframe for DOE to initiate removal of commercial nuclear fuel from reactor sites.

2. SPENT FUEL MANAGEMENT STRATEGY

The NRC requires (as discussed in 10 CFR 50.54(bb)) that licensees establish a program *"to manage and provide funding for the management of all irradiated fuel at the reactor following permanent cessation of operation of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository."* Pending transfer of the fuel to the DOE [Secretary of Energy], Exelon will store fuel on an interim basis in the spent fuel pool and/or the Independent Spent Fuel Storage Installation (ISFSI) located at the TMI-1 site.

A licensed ISFSI will be built by early 2021 to support decommissioning operations at TMI-1. The ISFSI facility will be able to accommodate the inventory of spent fuel remaining in the spent fuel pool at the time of permanent shutdown. After the required cooling time, the spent fuel will be loaded in fuel storage canisters and moved to the ISFSI. Once the spent fuel pool is emptied of fuel, the facility will be placed in a SAFSTOR condition. The ISFSI will continue to operate until the transfer of spent fuel to the DOE is complete.

Assuming the DOE's generator allocation/receipt schedules are based upon the oldest fuel receiving the highest priority and that the DOE begins removing spent fuel from commercial facilities in 2030 with an annual capacity of 3,000 metric tons of uranium, spent fuel is projected to remain at the TMI-1 site for approximately 16 years after the termination of operation (spent fuel is projected to be removed from the TMI-1 site by the end of 2035). Any delay in transfer of fuel to DOE or decrease in the rate of acceptance will correspondingly prolong the transfer process and result in spent fuel remaining at the site longer than anticipated.

Operation and maintenance costs for the storage facilities (ISFSI and spent fuel pool) are inputs to the TMI-1 Decommissioning Cost Estimate (DCE) which will be submitted to the NRC separately and include the costs for staffing the facilities, maintenance of necessary operational requirements as well as security, insurance, and licensing fees. The estimate includes the costs to purchase, load, and transfer the fuel storage canisters to the ISFSI and to decommission the ISFSI. A discussion of site-specific considerations for the management of spent fuel at TMI-1 will be addressed in the DCE report. The new DCE will supersede in its entirety the 2009 DCE (Reference 2).

When TMI-1 terminates operations in 2019, TMI-1 will continue to comply with existing NRC licensing requirements, including the operation and maintenance of the systems and structures needed to support continued operation of the TMI-1 spent fuel pool and ISFSI, as necessary. In addition, TMI-1 will also comply with applicable license termination requirements in accordance with 10 CFR 50.82, *"Termination of license,"* with respect to plant shutdown and post-shutdown activities, including seeking NRC approvals as appropriate for the continued storage of irradiated fuel until transfer of the fuel to the DOE is complete.

3. COST ESTIMATE AND FUNDING FOR SPENT FUEL MANAGEMENT

Total costs for spent fuel management under the SAFSTOR scenario will be approximately $156.4 million (2018 dollars). Further breakdown and analysis will be discussed in the DCE to be submitted under separate cover letter.

As of December 31, 2018, the TMI-1 decommissioning trust fund balance was $669.6 million. At this time, there are no annual contributions to the fund and none are anticipated through the decommissioning period. To the extent that the trust fund balance exceeds costs required for radiological decommissioning, trust fund monies (subject to receipt of NRC approval of an exemption as discussed in Section 4), in conjunction with Exelon operating revenues, will be used to pay for spent fuel management costs.

An additional potential source of funding for TMI-1 spent fuel management costs is the Settlement Agreement between Exelon and the DOE, under which the United States Government has agreed to reimburse Exelon for costs incurred attributable to DOE's failure to meet its contractual obligations for the transfer of spent fuel from TMI-1 and other Exelon nuclear plants (Reference 4).

4. NRC APPROVALS

This SFMP contemplates potential withdrawals from the decommissioning trust for spent fuel management purposes. Prior to any such withdrawals, in accordance with 10 CFR 50.12, "Specific exemptions," Exelon will make appropriate submittals seeking an exemption from the requirements of 10 CFR 50.82(a)(8)(i)(A) in order to use the decommissioning trust funds for spent fuel management expenses. Exelon will monitor the funding level of the decommissioning fund to ensure that spent fuel management withdrawals will not inhibit the ability of Exelon to complete radiological decommissioning.

5. REFERENCES

1. Letter from J. Bradley Fewell (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations for Three Mile Island Nuclear Station, Unit 1," dated June 20, 2017 (ML17171A151)
2. Letter from Pamela B. Cowan (Exelon Generation Company, LLC), to U.S. Nuclear Regulatory Commission – "Submittal of Preliminary Decommissioning Cost Estimate and Spent Fuel Management Plan," dated April 17, 2009 (ML091130429)
3. United States of America Public Law 97-425, "Nuclear Waste Policy Act of 1982," dated January 7, 1983
4. Settlement Agreement between the U.S. Department of Energy and Exelon Generation Company, LLC (including Commonwealth Edison Company and AmerGen Energy Company), signed and executed August 5, 2004, as amended by the Addendum to the Settlement Agreement signed May 4, 2009