







Bureau of Radiation Protection

Low-Level Waste Advisory Committee Meeting

Update on Three Mile Island Unit 1 and Unit 2

October 2, 2020

Three Mile Island Unit 1 - BACKGROUND

Plant builder: United Engineers & Constructors

Year construction began: 1968

Total gross generation: 837 megawatts

Date Unit 1 entered commercial service: September 1974

Operating license terms: Initially expected to operate until 2034

Unit 1 shutdown due to Unit 2 accident: July 1979

Plant restarted after TMI-2 recovery work" October 1985

TMI-1 permanently ceased operations: September 20, 2019









Safely Shutdown Unit

TMI Unit 1 - TRANSITION to SAFSTOR

Decommissioning Transition SAFSTOR / DECON Site Restoration All Fuel Permanently End of Zirc Fire License Termination Shutdown Decision Shutdown through Fuel in the SFP or Removal from Rx Removal of ISFSI Window Until Fuel Until Permanent Fuel Permanently ISFSI until Removed Pad & Site Until End of Zirc Fire Pool Empty Removed from Rx Shutdown by DOE Window* Restoration Transition Phase t Phase II: Phase III: Phase IV: **Planning** Phase V < SO Days (19 Months) (10 to 49 Years) (Tentative) 5 to 2 01/21/21 to 12/2022 to (9/20/19 to 10/1/19 to 2 to 4 Years 9/30/19) 01/20/21 12/2022 10/2074 Years Phase Objectives: Phase Objectives: Phase Objectives: Phase Objectives: Phase Objectives: Phase Objectives: Restore Site based on Implement DC-AA-300 Transition to Post-Zirc Transition to ISFSI Only Offload the Core DC Activities Start Strategic Decision Process -Complete E-Plan Fire Milestone E-plan Based on Strategic Implement Making Form & Charter Plan & Integrated Site . Continue with DC NRC Approval of ISFSI * Permanently De- Greenfield Transition Teams IP Decommissioning Activities Based on fueled E-Plan Only E-Plan Brownfield Strategic Decision Schedule Develop & Implement Movement of Final Implement Certified Making Staffing Plans Movement of Fuel to Fuel to ISFSI Fuel Handler (CFH) ISFSI IAW Strategic Implement ISFSI only Develop & Implement Program Plan Security Plan Communication Plans-IP . Implement Defueled NRC Approval of Zirc Tech Spec Admin License & Tech Specs* Implement Strategic Fire Milestone & E-Moved to DQA plan Decision Making Implement Revised Plan Process -Complete UFSAR/DSAR and DOA Plan Develop and Submit Key LAR's and Exemptions Access to DC Fund Zirc fire window ends when 1|≥10 hours from the time that the fuel in Develop & Submit the SFP is no longer being cooled until the hottest fuel assembly PSDAR and DCE -IP reaches 900 °C and 2) there is sufficient time to implement pre- Perform Scoping & planned mitigation measures to provide makeup or spray to the SFP Screening of SSC's-IP before the onset of zirconium cladding ignition. Safe EOL Operations

IP - In progress



TMI Unit 1 Decommissioning Milestones

September 2019 – Entered Phase I

Plant shutdown and removal of fuel from reactor to spent fuel pool

October 2019 – Entered Phase II

Spent fuel removed from reactor until end of zirconium fire window

January 2021 – Enter Phase III

End of spent fuel zirconium fire window and change in emergency plan

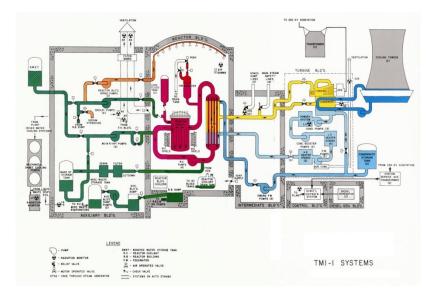
December 2022 - Enter Phase IV

Spent fuel in the ISFSI and transition to ISFSI only emergency plan

December 2022 to October 2074 – Unit remains in SAFSTOR

October 2074 - Enter Phase V

License termination (Removal of ISFSI pad and site restoration)





Three Mile Island Unit 2 - BACKGROUND

Date Issued Operating License: February 1978

Date Unit entered commercial service: December 1978

Plant shutdown due to TMI-2 accident: March 1979

TMI-2 defueling completed*: April 1990

NRC approval of long-term management condition termed PDMS (post-defueling monitored storage)

TMI-2 Core End-State Configuration

Upper girld
damage

Casing of previouslymolten material on
bypass region interior
surfaces

Ablated incore
instrument guide

Lower plenum debris
Possible region
depicted in uranium

* 99% of the damaged fuel was removed and is currently in storage at Idaho National Laboratory, and the U.S. Department of Energy has taken title and possession of the fuel. There is approximately 1000 kg of fuel debris remaining in the Rx vessel and RCS

September 1993



TMI Unit 2 License Transfer Application (LTA)

- On November 12, 2019, GPU Nuclear, Inc. ("GPU Nuclear"), Metropolitan Edison Company, Jersey Central Power & Light Company, and Pennsylvania Electric Company (collectively referred to as the "FirstEnergy Companies") and TMI-2 Solutions, LLC ("TMI-2 Solutions") submitted application to the NRC for consent of license transfer.
- TMI-2 Solutions will be responsible for developing NRC-compliant storage and/or disposal plans for any remaining Core Debris Material until Title of the material is transferred to the U.S. Department of Energy ("DOE") for disposal. TMI-2 Solutions will assume responsibility for all licensed activities at the TMI-2 site, including responsibility under the License to complete radiological decommissioning pursuant to NRC regulations ("Decommissioning").
- TMI-2 Solutions intends to substantially complete Decommissioning of TMI-2 and release the site by 2037, except for a potential area set aside for waste storage facilities.
- The DEP and GPU Nuclear / TMI-2 Solutions entered into an Agreement in early August 2020 regarding the application for license transfer. The NRC has not taken action to approve as of August 27th.
- See: https://www.dep.pa.gov/Business/RadiationProtection/NuclearSafety/Pages/default.aspx



TMI Unit 2 Decommissioning Timeline

DECOMMISSIONING PHASE ACTIVITIES*



^{*} Does not include an assumed schedule for long-term storage of Debris Material after Phase 2 until acceptance by DOE in the early 2050 period.

Three Mile Island Units 1 & 2 - Waste Shipments 2019-2020

TMI-U1 2019

Waste Class	Number of shipments	Total activity (mCi)	Total volume (cu.ft)
Α	13	6.43E+04	2,760
В	3	1.76E+05	285

TMI-1 2020 YTD

Waste Class	Number of shipments	Total activity (mCi)	Total volume (cu. ft)
А	3	10.312E+00	3,500
В	0	N/A	0

TMI-U2 CY 2019 and 2020 NO SHIPMENTS



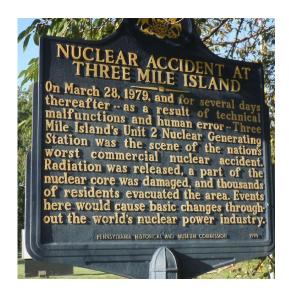
TMI Unit 2 License Transfer - PA DEP Concerns

- > Environmental and Safety Impacts
- Unknown Radiological Conditions
- Cost of Clean-up & Financial Responsibility
- Radioactive Waste Handling
- Local Decommissioning Advisory Committee
- Flooding During Cleanup





Questions?



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