

10 CFR 50.90

TMI-19-094

November 12, 2019

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

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

Subject: License Amendment Request – Deletion of PDTS 3/4.1.4, "Handling of Irradiated Fuel with the Fuel Handling Building Crane;" and Two Minor Administrative Changes

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon), proposes changes to the Permanently Defueled Technical Specifications (PDTS), Appendix A of Renewed Facility License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1).

To support decommissioning activities and transfer of spent fuel to the TMI-1 Independent Spent Fuel Storage Installation (ISFSI), the manner in which fuel storage casks are handled inside the Fuel Handling Building (FHB) is being modified with a replacement FHB crane. The original FHB crane, which is non-single-failure-proof, will be replaced with a single-failure-proof FHB crane that will be designed, fabricated, and tested per the guidelines of NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants" and will satisfy the guidance in NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants: Resolution of Generic Technical Activity A-36." This will obviate the need for a Fuel Cask Drop Accident Analysis and the requirements in PDTS 3/4.1.4, "Handling of Irradiated Fuel with the Fuel Handling Building Crane." This LAR is specifically seeking approval to delete PDTS 3/4.1.4 once the replacement FHB crane is made operable.

In addition, two minor omissions that are administrative in nature, that were identified during implementation of TMI-1 PDTS Amendment No. 297, have been included with this license amendment request. The proposed changes are: 1) to revise TS Appendix A List of Figures to include Figure 5-1, "Extended Plot Plan," and 2) to add the proper page number, 5-1a, to PDTS Figure 5-1.

Exelon has concluded that the proposed changes present no significant hazards consideration under the standards set forth in 10 CFR 50.92, "Issuance of amendment."

License Amendment Request
Deletion of PDTS 3/4.1.4, Handling of Irradiated Fuel with the FHB Crane; and Two Minor
Administrative Changes
Docket No. 50-289
November 12, 2019
Page 2

The proposed changes have been reviewed by the TMI Safety Review Committee (SRC) in accordance with the requirements of the Exelon Decommissioning Quality Assurance Program (DQAP).

This amendment request contains no regulatory commitments.

Attachment 1 provides the evaluation of the proposed changes. Attachment 2 provides a copy of the marked-up PDTS/Bases pages that reflect the proposed changes. The marked-up Bases pages that reflect the proposed changes are for information only.

Exelon requests approval of the proposed amendment by November 12, 2020 to support the schedule to move spent fuel to dry cask storage. Upon NRC approval, the amendment shall be implemented within 90 days following the date the replacement FHB crane is made operable.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the Commonwealth of Pennsylvania of this application for license amendment by transmitting a copy of this letter and its attachments to the designated State Official.

Should you have any questions concerning this submittal, please contact Frank Mascitelli at 610-765-5512.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 12th day of November 2019.

Respectfully,



David P. Helker
Sr. Manager, Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachments: 1. Evaluation of Proposed Changes
 2. Markup of Proposed Permanently Defueled Technical Specifications /
 Bases Pages

cc:	Regional Administrator - NRC Region I	w/ attachments
	NRC Senior Resident Inspector - TMI-1	"
	Region I Decommissioning Lead Inspector	"
	NRC Project Manager, NRR - Three Mile Island Nuclear Station, Unit 1	"
	Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Protection	"

ATTACHMENT 1

License Amendment Request

Three Mile Island Nuclear Station, Unit 1

Docket No. 50-289

EVALUATION OF PROPOSED CHANGES

Subject: License Amendment Request – Deletion of PDTS 3/4.1.4, "Handling of Irradiated Fuel with the Fuel Handling Building Crane;" and Two Minor Administrative Changes

1.0 SUMMARY DESCRIPTION

2.0 DETAILED DESCRIPTION

3.0 TECHNICAL EVALUATION

3.1 NUREGs-0554 and -0612 Compliance

3.2 Minor Administrative Changes

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.2 Precedent

4.3 No Significant Hazards Consideration

4.4 Conclusion

5.0 ENVIRONMENTAL CONSIDERATION

6.0 REFERENCES

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon), proposes changes to the Permanently Defueled Technical Specifications (PDTS), Appendix A of Renewed Facility License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1).

To support decommissioning activities and transfer of spent fuel to the TMI-1 Independent Spent Fuel Storage Installation (ISFSI), the manner in which fuel storage casks are handled inside the Fuel Handling Building (FHB) is being modified with a replacement FHB crane (Reference 1). The original FHB crane, which is non-single-failure-proof, will be replaced with a single-failure-proof FHB crane that will be designed, fabricated, and tested per the guidelines of NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants" (Reference 2) and will satisfy NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants: Resolution of Generic Technical Activity A-36" (Reference 3), which combine to satisfy the Heavy Loads Control Program at TMI-1.

The installation of a single-failure-proof FHB crane and operating the FHB crane in accordance with the Exelon Control of Heavy Loads Program (Reference 4) improves the assurance that handling of spent fuel casks in the FHB are performed safely and precludes the need to postulate a Fuel Cask Drop Accident in the FHB. As such, the existing PDTS 3/4.1.4 "Handling of Irradiated Fuel with the Fuel Handling Building Crane" Specifications will no longer be required.

This LAR is specifically seeking approval to delete PDTS 3/4.1.4 once the replacement FHB crane is made operable. The FHB crane modification activity is being evaluated under the 10 CFR 50.59 process (Reference 1).

In addition, two minor omissions that are administrative in nature, that were identified during implementation of TMI-1 PDTS Amendment No. 297 (Reference 5), have been included with this license amendment request. The proposed changes are: 1) to revise TS Appendix A List of Figures to include Figure 5-1, "Extended Plot Plan," and 2) to add the proper page number, 5-1a, to PDTS Figure 5-1.

The proposed changes conform to the requirements of 10 CFR 50.36, "Technical specifications," for the contents of the PDTS.

2.0 DETAILED DESCRIPTION

In order to support decommissioning activities, and safely store spent nuclear fuel in dry cask storage, TMI-1 is modifying the manner in which fuel storage casks are handled in the FHB through the installation of a replacement FHB crane to support the use of a 10 CFR 72.214 approved dry cask storage system.

The original 110-ton FHB crane is underrated for the dry cask storage system and is non-single-failure-proof. The existing PDTS 3/4.1.4 "Handling of Irradiated Fuel with the Fuel Handling Building Crane" Specifications were required for the original non-single-failure-proof FHB crane design based upon the TMI-1 Fuel Cask Drop Accident as described in the TMI-1 Defueled Safety Analysis Report (DSAR) (Reference 6).

The existing seven PDTS 3/4.1.4.1 through 3/4.1.4.7 provide limiting conditions for operation of the FHB crane to ensure assumptions in the fuel cask drop accident are maintained. PDTS 3/4.1.4.1 through 3/4.1.4.5 were original specifications dating back to April 19, 1974 to ensure the original fuel cask drop accident analysis radiological consequences for the site boundary remained within the limits specified in 10 CFR 100. PDTS 3/4.1.4.6 and 3/4.1.4.7 were originally introduced in TS Amendment No. 34, dated December 19, 1977 (Reference 7) to support modifications that increased the capacity of the Spent Fuel Pool "B." Subsequently, in TS Amendment No. 109, dated July 30, 1985 (Reference 8), these specifications evolved to their current state to incorporate commitments regarding the control of heavy loads and specifically the potential drop of fuel casks. The commitments were made in support of the resolution of Multi Plant Action (MPA) C-10, Control of Heavy Loads.

The replacement FHB crane is single-failure-proof and compliant with the guidelines of NUREG-0554 to satisfy the defense-in-depth guidelines of NUREG-0612. The replacement FHB crane is designed with an upgraded main hoist capacity rated for 125 tons to handle the dry cask storage system. The installed location of the replacement FHB crane is not changed.

The FHB crane modification activity is being evaluated under the 10 CFR 50.59 process (Reference 1). Additionally, the original FHB crane will be relocated to TMI Unit 2 and no longer used for TMI-1 spent fuel cask handling.

The manner of compliance with NUREG-0612 Section 5.1.2 "Spent Fuel Pool Area-PWR" is changed to an approved approach considering installation and operation of a NUREG-0554 compliant single-failure-proof crane. Full compliance with NUREG-0612 is maintained through the Exelon Heavy Loads Control Program.

Upgrading the FHB load handling system to a NUREG-0554 compliant single-failure-proof crane and operating the FHB crane in accordance with the Exelon Control of Heavy Loads Program improves the load handling system reliability to an acceptably low probability of a fuel cask drop such that the Fuel Cask Drop Accident will no longer be credible. As such, the existing PDTS 3/4.1.4 Specifications will no longer be required.

The marked-up PDTS/Bases pages that reflect the proposed changes are provided in Attachment 2 of this submittal. The PDTS Bases changes are submitted for information only. The PDTS Table of Contents (page i) is being revised to show PDTS 3/4.1.4 as deleted.

Additionally, two minor administrative changes as described in Section 3.2 below are being proposed.

3.0 TECHNICAL EVALUATION

3.1 NUREGs-0554 and -0612 Compliance

NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants: Resolution of Generic Technical Activity A-36" provides guidance for upgrading handling system reliability and states

that new cranes meet the guidelines of NUREG-0554 "Single-Failure-Proof Cranes for Nuclear Power Plants" to be qualified as single-failure-proof cranes.

The TMI-1 replacement FHB crane design, fabrication, and testing is compliant with guidelines of NUREG-0554, which is an acceptable approach for single-failure-proof cranes in accordance with NUREG-0612.

The Exelon Heavy Loads Program (Reference 4) satisfies the NUREG-0612 Section 5.1, "Recommended Guidelines," for the following defense-in-depth approaches:

- (1) Provide sufficient operator training, handling system design, load handling instructions, and equipment inspection to assure reliable operation of the handling system.
- (2) Define safe load travel paths through procedures and operator training so that to the extent practical heavy loads avoid being carried over or near irradiated fuel or safe shutdown equipment.

The manner of compliance with NUREG-0612 Section 5.1.2 "Spent Fuel Pool Area-PWR" is changed to an approved approach considering installation and operation of a NUREG-0554 compliant single-failure-proof crane. The implementation and use of a single-failure-proof crane in the SFP area negates the need for the additional controls provided in Section 5.1.2 to compensate for use of non-certified single-failure-proof crane. Although updating the method of compliance with Section 5.1.2 of NUREG-0612, full compliance with NUREG-0612 is maintained through the Exelon Heavy Loads Program.

Upgrading the FHB load handling system to a NUREG-0554 compliant single-failure-proof crane and having incorporated the additional defense-in-depth guidance for special lifting devices, lifting devices, and interfacing lift points into the Exelon Control of Heavy Loads Program satisfies NUREG-0612. The FHB crane upgrade will improve the load handling system reliability such that there is an acceptably low probability of occurrence of an uncontrolled lowering, or fuel cask drop so as to effectively preclude consideration of a fuel cask drop accident as a credible event.

3.2 Minor Administrative Changes

During implementation of TMI-1 TS Amendment No. 297 (Reference 5), two administrative omissions were identified. The first one involved not including Figure 5-1, "Extended Plot Plan," in the TS Appendix A List of Figures, and the second one involved not paginating the TS Figure 5-1 with the proper page number of 5-1a. These two items have been corrected and included in the Attachment 2 Markup of the proposed PDTS.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

TS Requirements (10 CFR 36)

The NRC provided guidance for the contents of Technical Specifications (TS) in its "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (58 FR 39132, July 22, 1993 (Reference 9)). The Final Policy Statement identified future criteria to be used in determining whether particular safety functions are required to be included in the Specifications. In particular, the NRC indicated that certain items could be relocated from the TS to licensee-controlled documents and identified criteria to be used to determine the functions to be included in the TS. The NRC subsequently adopted an amendment to 10 CFR 50.36, "Technical specifications," (60 FR 36953, July 19, 1995; to codify and incorporate these criteria. 10 CFR 50.36c(2)(ii) contains the requirements for items that must be in TS. This regulation provides the four criteria that can be used to determine the requirements that must be included in the TS. A TS limiting condition for operation (LCO) of a nuclear reactor must be established for each item meeting one or more of the criteria. These criteria are restated and their applicability to the proposed license amendment are discussed below.

Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

This criterion addresses instrumentation installed to detect excessive reactor coolant system (RCS) leakage. TMI-1 has provided certifications in accordance with 10 CFR 50.82(a)(1)(i) and (ii) that it has permanently shutdown and defueled (References 10 and 11, respectively). In accordance with 10 CFR 50.82(a)(2) the 10 CFR Part 50 license for TMI-1 no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. Since no fuel will be present in the reactor, or the reactor coolant system pressurized when the new crane is in operation, this criterion is not applicable.

Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The purpose of this criterion is to capture those process variables that have initial values assumed in the design basis accident and transient analyses, and that are monitored and controlled during power operation. This criterion also includes active design features (e.g., high-pressure/low-pressure system valves and interlocks) and operating restrictions (pressure/temperature limits) needed to preclude unanalyzed accidents and transients. With the installation and operation of a replacement single-failure-proof FHB crane that complies with NUREG-0554 and NUREG-0612, the existing Fuel Cask Drop Accident will no longer be credible and the existing FHB crane's Specifications will no longer be required.

Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The purpose of this criterion is to capture only those structures, systems, and components (SSCs) that are part of the primary success path of the safety analysis (an examination of the actions required to mitigate the consequences of the design basis accident and transients). The primary success path of a safety analysis consists of the

combinations and sequences of equipment needed to operate so that the plant response to the design basis accident and the transients limits the consequences of these events to within the appropriate acceptance criteria. Also captured by this criterion are those support and actuation systems that are necessary for items in the primary success path to successfully function, but the criterion does not include backup and diverse equipment.

With the installation and operation of a replacement single-failure-proof FHB crane that complies with NUREG-0554 and NUREG-0612, the existing Fuel Cask Drop Accident will no longer be credible. In addition, the replacement crane will not be considered a mitigating SSC that is part of the primary success path and which functions or actuates to mitigate an accident or transient.

Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The purpose of this criterion is to capture only those SSCs that operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

With the installation and operation of a replacement single-failure-proof FHB crane that complies with NUREG-0554 and NUREG-0612, the existing Fuel Cask Drop Accident will no longer be credible and the existing FHB crane Specifications will no longer be credited to ensure public health and safety.

With the installation of the replacement single-failure-proof FHB crane, this replacement crane and its functions do not satisfy any of these four specified criteria and therefore will not require TS Limiting Conditions for Operation (LCOs).

NUREG-0554, "Single-Failure-Proof Cranes"

The replacement FHB crane design, fabrication, and testing is compliant with NUREG-0554 which is an acceptable approach for single-failure-proof cranes in accordance with NUREG-0612.

NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants: Resolution of Generic Technical Activity A-36"

NUREG-0612 provides NUREG-0554 as the guidance document for single failure proof cranes. Compliance with NUREG-0554 meets the requirements of NUREG-0612, although the manner of compliance with Section 5.1.2 "Spent Fuel Pool Area-PWR" is changed to an approved approach considering the single-failure-proof FHB crane. The Exelon Program for Control of Heavy Loads and the FHB crane's operation under this Program, combined with the single-failure-proof replacement FHB crane provide the defense-in-depth requirements and full compliance with NUREG-0612.

4.2 Precedent

NRC has approved the use of a single-failure-proof crane compliant with NUREG-0554 and NUREG-0612 as one methodology to establish an acceptably low probability of a fuel cask drop

so as to effectively preclude consideration of a fuel cask drop accident. Upgrading the FHB load handling system to a NUREG-0554 compliant single-failure-proof crane and having incorporated the additional defense-in-depth guidance for special lifting devices, lifting devices, and interfacing lift points into the Exelon Control of Heavy Loads Program combine to satisfy NUREG-0612. As such, the existing PDTS 3/4.1.4 Specifications for the replacement FHB crane will no longer be required and can be deleted.

4.3 No Significant Hazards Consideration

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (Exelon), proposes changes to the Permanently Defueled Technical Specifications (PDTS), Appendix A of Renewed Facility License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1).

The proposed changes delete PDTS 3/4.1.4, "Handling of Irradiated Fuel with the Fuel Handling Building Crane," once the single-failure-proof replacement Fuel Handling Building (FHB) crane is made operable. The Defueled Safety Analysis Report (DSAR) Fuel Cask Drop Accident analysis is addressed as part of the 10 CFR 50.59 Review for the installation of the replacement single-failure-proof FHB crane.

In addition, two minor omissions that are administrative in nature, that were identified during implementation of TMI-1 PDTS Amendment No. 297 have been included with this license amendment request. The proposed changes are: 1) to revise PDTS Appendix A List of Figures to include Figure 5-1, "Extended Plot Plan," and 2) to add the proper page number, 5-1a, to PDTS Figure 5-1.

The proposed changes conform to the requirements of 10 CFR 50.36, "Technical specifications," for the contents of TS.

Exelon has evaluated the proposed changes, using the criteria in 10 CFR 50.92, "Issuance of amendment," and has determined that the proposed changes do not involve a significant hazards consideration. The following information is provided to support a finding of no significant hazards consideration.

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed License Amendment Request (LAR) to operate a single-failure-proof FHB crane demonstrates that no analysis is required for the fuel cask drop event based on the replacement crane's design, fabrication, testing, and installation and the associated programmatic controls for control of heavy loads. A single-failure-proof crane that is compliant with NUREG-0554 and NUREG-0612 has an acceptably low probability of a fuel cask drop so as to effectively preclude consideration of a fuel cask drop accident.

In addition, two minor changes that correct the PDTS Figure List and paginate a PDTS figure are administrative in nature, and do not involve any accident probabilities or consequences.

Therefore, the proposed changes do not significantly increase the probability or consequences of an accident previously evaluated, as the previously evaluated accident will no longer be credible.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The location of the replacement FHB crane is not changed from that currently described in the DSAR. The design features of the replacement crane have changed to single-failure-proof design and thus uncontrolled lowering, or drop, of a fuel storage cask will not be considered credible per NUREG-0612. Based on the design pedigree and programmatic controls on the replacement crane, no load will lower uncontrollably or drop in or around the spent fuel pool or near an open cask containing spent fuel, nor will a cask containing spent fuel drop or be lowered uncontrollably during operation of the crane. Hence, no new or different kind of accidents will be initiated.

In addition, two minor changes that correct the PDTS Figure List and paginate a PDTS figure are administrative in nature, and do not create the possibility of a new or different kind of accident.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

The proposed changes involve deleting the PDTS 3/4.1.4 Specifications as a result of the replacement of the existing non-single-failure-proof FHB crane with a replacement single-failure-proof FHB crane. The replacement FHB crane has been designed to meet the guidelines of NUREG-0554 to provide adequate protection and safety margin against the uncontrolled lowering of the lifted load.

The occurrence of a fuel cask load drop accident is considered not credible when the load is lifted with a single failure proof lifting system meeting the guidance in NUREG-0612. As a result, the proposed change to delete PDTS 3/4.1.4 once the replacement FHB crane is made operable, has no adverse impact on stored spent fuel, or structural integrity of the spent fuel pool or any existing SSC.

The maximum critical lift capacity of the replacement crane has been increased. The supporting analyses for the crane and support structure satisfy the acceptance criteria of the design basis codes and regulatory guidelines to demonstrate adequate margin considering the increased maximum critical load.

In addition, two minor changes that correct the PDTS Figure List and paginate a PDTS figure are administrative in nature and do not affect any margin of safety.

Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Based on the above evaluation, Exelon concludes that the proposed license amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, paragraph (c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

Exelon has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, "Standards for Protection Against Radiation." However, the proposed amendment does not involve: (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," paragraph (c)(9). Therefore, pursuant to 10 CFR 51.22, paragraph (b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Exelon Engineering Change (EC) 625307, "ISFSI – EC #07 – Fuel Handling Building Crane Upgrade"
2. NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants"
3. NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants: Resolution of Generic Technical Activity A-36"
4. Exelon Procedure MA-AA-716-022, "Control of Heavy Loads Program"
5. Three Mile Island Nuclear Station, Unit 1 – Issuance of Amendment No. 297 Re: Defueled Technical Specifications and Revised License Conditions (EPD L-2018-LLA-0204), dated August 29, 2019 (ML19211D317)
6. TMI-1 Defueled Safety Analysis Report, Section 6.3, "Fuel Cask Drop Accident"
7. TMI-1 TS Amendment No. 34, dated December 19, 1977 (ML003763097)
8. TMI-1 TS Amendment No.109, dated July 30,1985 (ML003764822)
9. Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (58 FR 39132, July 22, 1993)
10. 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)
11. Letter from Michael P. Gallagher (Exelon Generation Company, LLC), "Certification of Permanent Removal of Fuel from the Reactor Vessel for Three Mile Island Nuclear Station, Unit 1," dated September 26, 2019 (ML19269E480)

ATTACHMENT 2

License Amendment Request

**Three Mile Island Nuclear Station, Unit 1
Docket No. 50-289**

**Deletion of PDTS 3/4.1.4, "Handling of Irradiated Fuel with the
Fuel Handling Building Crane;" and Two Minor Administrative Changes**

**Markup of Proposed Permanently Defueled Technical Specifications/Bases
Pages**

Unit 1 PDTS/Bases Pages

i

ii

3/4 - 10

3/4 - 11

3/4 - 12

3/4 - 13

5-1a

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<u>TECHNICAL SPECIFICATIONS</u>	
1 <u>DEFINITIONS</u>	1-1
1.1 <u>ACTIONS</u>	1-1
1.2 <u>CERTIFIED FUEL HANDLER</u>	1-1
1.3 <u>NON-CERTIFIED OPERATOR</u>	1-1
1.4 <u>OPERABLE</u>	1-1
1.5 <u>STATION, UNIT, PLANT, FACILITY</u>	1-1
3/4 <u>LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS</u>	3/4-1
3/4.0 <u>GENERAL ACTION REQUIREMENTS AND SURVEILLANCE REQUIREMENT</u>	3/4-1
3/4.1 <u>APPLICABILITY</u>	3/4-1
3/4.1 <u>HANDLING AND STORAGE OF IRRADIATED FUEL IN THE</u>	3/4-4
3/4.1.1 <u>SPENT FUEL POOL</u>	3/4-4
3/4.1.1 <u>SPENT FUEL POOL WATER LEVEL</u>	3/4-4
3/4.1.2 <u>SPENT FUEL POOL BORON CONCENTRATION</u>	3/4-6
3/4.1.3 <u>SPENT FUEL ASSEMBLY STORAGE</u>	3/4-7
3/4.1.4 HANDLING OF IRRADIATED FUEL WITH THE	3/4-10
FUEL HANDLING BUILDING CRANE Deleted	
5 <u>DESIGN FEATURES</u>	5-1
5.1 <u>SITE</u>	5-1
5.2 <u>SPENT FUEL STORAGE FACILITIES</u>	5-2
5.2.1 Spent Fuel Storage	5-2
6 <u>ADMINISTRATIVE CONTROLS</u>	6-1
6.1 <u>RESPONSIBILITY</u>	6-1
6.2 <u>ORGANIZATION</u>	6-1
6.2.1 Onsite and Offsite Organization	6-1
6.2.2 Facility Staff	6-1
6.3 <u>FACILITY STAFF QUALIFICATIONS</u>	6-2
6.4 Deleted	6-2
6.5 Deleted	6-2
6.6 Deleted	6-2
6.7 Deleted	6-2
6.8 <u>PROCEDURES AND PROGRAMS</u>	6-11
6.9 <u>REPORTING REQUIREMENTS</u>	6-12
6.9.1 Routine Reports	6-12
6.9.2 Annual Radiological Environmental Operating Report	6-12
6.9.3 Annual Radioactive Effluent Release Report	6-13
6.10 <u>RECORD RETENTION</u>	6-13
6.11 Deleted	6-13
6.12 <u>HIGH RADIATION AREA</u>	6-13
6.13 Deleted	6-14
6.14 <u>OFFSITE DOSE CALCULATION MANUAL (ODCM)</u>	6-14
6.15 Deleted	6-15
6.16 Deleted	6-15
6.17 Deleted	6-15
6.18 <u>TECHNICAL SPECIFICATION (TS) BASES CONTROL PROGRAM</u>	6-15

<u>FIGURE</u>	<u>LIST OF FIGURES</u> <u>TITLE</u>	<u>PAGE</u>
3.1.3-1	Minimum Burnup Requirements for Fuel in Region II of the Pool A Storage Racks	3/4-8
3.1.3-2	Minimum Burnup Requirements for Fuel in the Pool "B" Storage Racks	3/4-9
3.1.4-1	Transfer Path to and from Cask Loading Pit	3/4-13
5-1	Extended Plot Plan	5-1a

3/4.1.4 ~~HANDLING OF IRRADIATED FUEL WITH THE FUEL HANDLING BUILDING CRANE Deleted~~

Applicability

~~Applies to the operation of the fuel handling building crane when within the confines of Unit 1 and there is any spent fuel in storage in the Unit 1 fuel handling building.~~

Objective

~~To define the lift conditions and allowable areas of travel when loads to be lifted and transported with the fuel handling building crane are in excess of 15 tons or between 1.5 tons and 15 tons or consist of irradiated fuel elements.~~

Specification

- ~~3.1.4.1 Spent fuel elements having less than 120 days for decay of their irradiated fuel shall not be loaded into a spent fuel transfer cask in the shipping cask area.~~
- ~~3.1.4.2 The key operated travel interlock system for automatically limiting the travel area of the fuel handling building crane shall be imposed whenever loads in excess of 15 tons are to be lifted and transported with the exception of fuel handling bridge maintenance.~~
- ~~3.1.4.3 The lowest surface of all loads in excess of 15 tons shall be administratively limited to an elevation one foot or less above the concrete surface at the nominal 348 ft 0 in. elevation in the fuel handling building.~~
- ~~3.1.4.4 Loads in excess of hook capacity shall not be lifted, except for load testing.~~
- ~~3.1.4.5 Following modifications or repairs to any of the load bearing members, the crane shall be subjected to a test lift of 125 percent of its rated load.~~
- ~~3.1.4.6 Administrative controls shall require the use of an approved procedure with an identified safe load path for loads in excess of 3,000 lbs. handled above the Spent Fuel Pool Operating Floor (348' elevation).~~
- ~~3.1.4.7 During transfer of the cask to and from the cask loading pit, the cask will be restricted to the transfer path shown in Figure 3.1.4.1. Administrative controls will be used to ensure that all lateral movements of the cask are performed at slow bridge and trolley speeds. During this transfer the cask lifting yoke shall be oriented in the East West direction.~~

Bases

~~This specification will limit activity releases to unrestricted areas resulting from damage to spent fuel stored in the spent fuel storage pools in the postulated event of the dropping of a heavy load from the fuel handling building crane. A Fuel Handling accident analysis was performed assuming that the cask and its entire contents of ten fuel assemblies are sufficiently damaged as a result of dropping the cask, to allow the escape of all noble gases and iodine in the gap (Reference 1). This release was assumed to be directly to the atmosphere and to occur instantaneously. The site boundary doses resulting from this accident are 5.25 R whole body and 1.02 R to thyroid, and are within the limits specified in 10 CFR 100.~~

~~Specification 3.1.4.1 requires that spent fuel, having less than 120 days decay post irradiation, not be loaded in a spent fuel transfer cask in order to ensure that the doses resulting from a highly improbable spent fuel transfer cask drop would be within those calculated above.~~

~~Specification 3.1.4.2 requires the key operated interlock system, which automatically limits the travel area of the fuel handling crane while it is lifting and transporting the spent fuel shipping cask, to be imposed whenever loads in excess of 15 tons are to be lifted and transported while there is any spent fuel in storage in the spent fuel storage pools in Unit 1. This automatically ensures that these heavy loads travel in areas where, in the unlikely event of a load drop accident, there would be no possibility of this event resulting in any damage to the spent fuel stored in the pools, any unacceptable structural damage to the spent fuel pool structure, or damage to redundant trains of safety related components. The shipping cask area is designed to withstand the drop of the spent fuel shipping cask from the 349 ft 0 in. elevation without unacceptable damage to the spent fuel pool structure (Reference 2).~~

~~Specification 3.1.4.3 ensures that the lowest surface of any heavy load never gets higher than one foot above the concrete surface of the 348 ft 0 in. elevation in the fuel handling building (nominal elevation 349 ft 0 in.) thereby keeping any impact force from an unlikely load drop accident within acceptable limits.~~

~~Specification 3.1.4.4 ensures that the proper capacity crane hook is used for lifting and transporting loads thus reducing the probability of a load drop accident.~~

~~Following modification or repairs, specification 3.1.4.5 confirms the load rating of the crane.~~

~~Specification 3.1.4.6 imposes administrative limits on handling loads weighing in excess of 3000 lbs. to minimize the potential for heavy loads, if dropped, to impact irradiated fuel in the spent fuel pool, or to impact redundant safe shutdown equipment. The safe load path shall follow, to the extent practical, structural floor members, beams, etc., such that if the load is dropped, the structure is~~

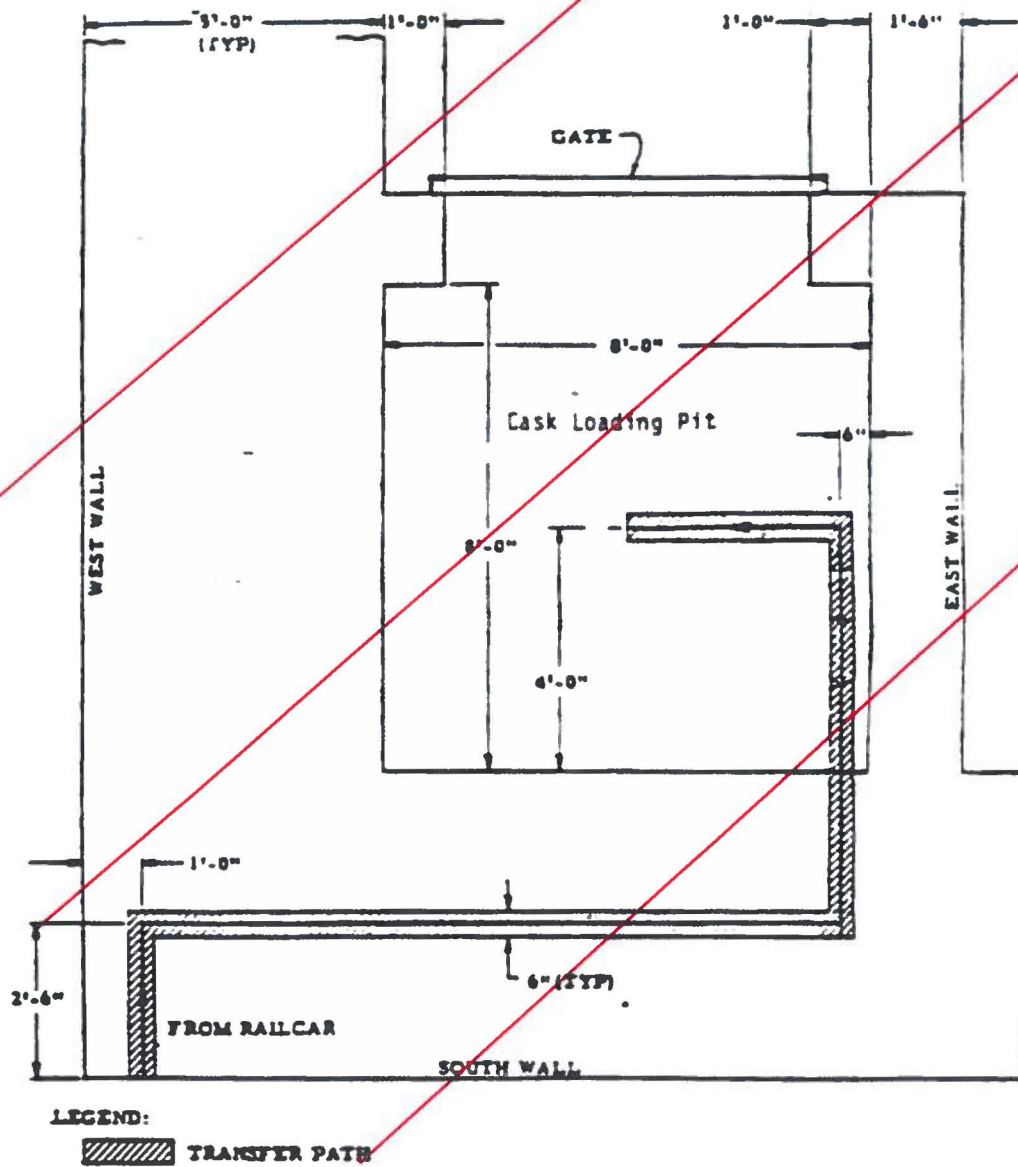
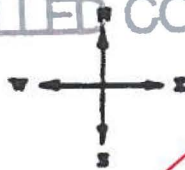
~~more likely to withstand the impact. Handling loads of less than 3000 lbs. without these restrictions is acceptable because the consequences of dropping loads in this weight range are comparable to those produced by the fuel handling accident considered in the FSAR and found acceptable.~~

~~Specification 3.1.4.7 in combination with 3.1.4.3 ensures the spent fuel cask is handled in a manner consistent with the load drop analysis (Reference 3).~~

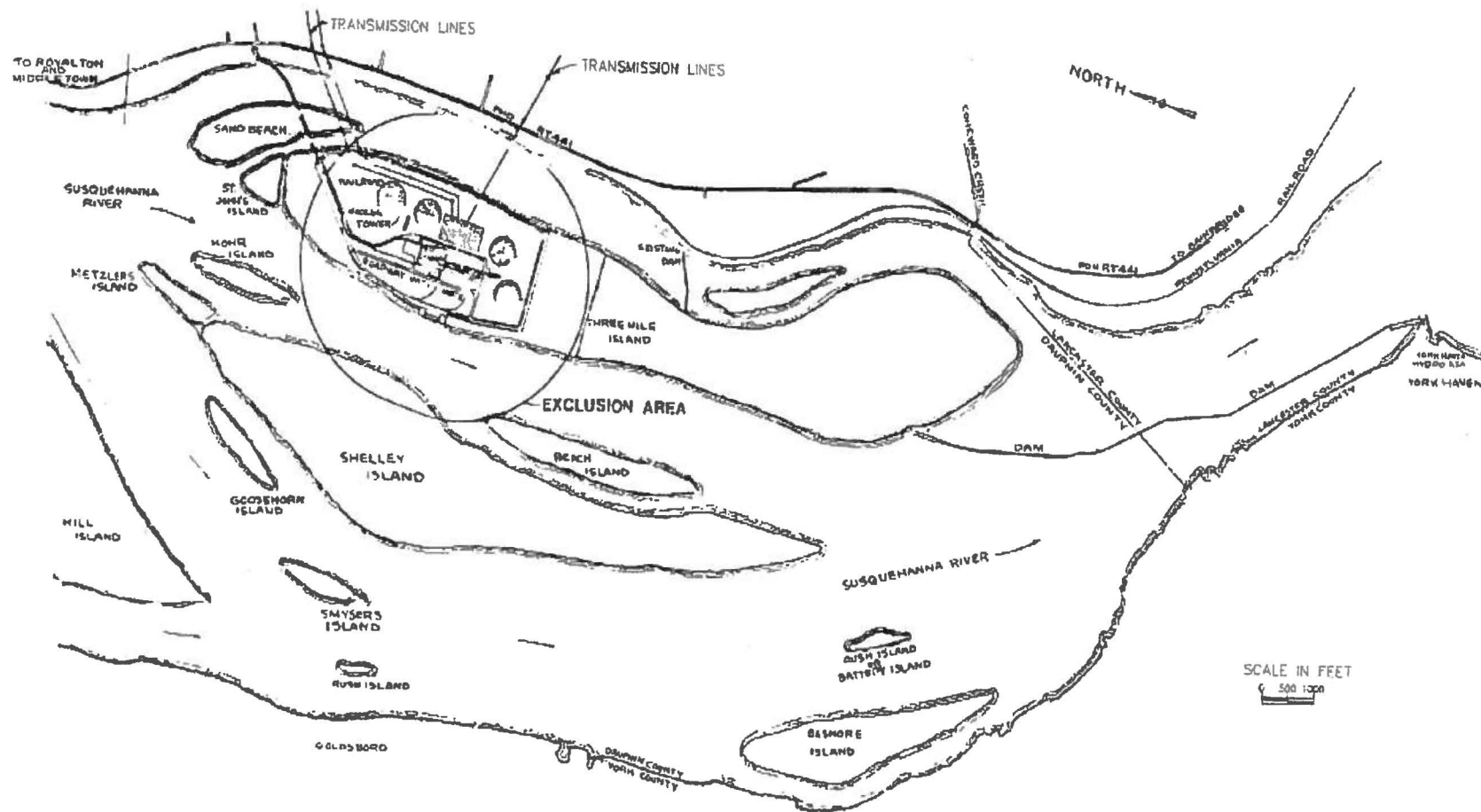
~~References~~

- ~~(1) UFSAR, Section 14.2.2.1 "Fuel Handling Accident"~~
- ~~(2) UFSAR, Section 14.2.2.8 "Fuel Cask Drop Accident"~~
- ~~(3) GPU Evaluation of Heavy Load Handling Operations at TMI-1 February 21, 1984, as transmitted to the NRC in GPUN Letter No. 5211 84 2013.~~

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TRANSFER PATH TO AND FROM CASK LOADING PIT
(EL. 348' 0")
FIGURE 3.1.4-1



Amendment No. 140, 216, 246, 278

Exelon	
Three Mile Island Nuclear Station	
EXTENDED PLOT PLAN	
CAD FILE: 6717R1.DWG	FIG 5-1