

TMI-11-056
April 7, 2011

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

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

Subject: Response to Request for Additional Information, Proposed Technical Specification Changes Regarding Relocation of Equipment Load List from Technical Specifications to a Licensee Controlled Document (TAC NO. ME4732)

References:

1. Letter from P. B. Cowan, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, "TMI-1 Technical Specifications Change Request (TSCR) No. 348 Relocation of Equipment Load List from TS 4.5.1.1b, Sequence and Power Transfer Test, to the Updated Final Safety Analysis Report (UFSAR)," dated September 22, 2010.
2. Letter from Peter Bamford, U.S. Nuclear Regulatory Commission, to Mr. M. J. Pacilio, President and Chief Nuclear Officer, Exelon Nuclear, "Three Mile Island Nuclear Station, Unit 1 - Request for Additional Information Regarding Proposed Relocation of Equipment Load List from the Technical Specifications to a Licensee Controlled Document (TAC NO. ME4732)," dated March 21, 2011.

In Reference 1, Exelon Generation Company, LLC (Exelon) submitted a request for an amendment to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1). The proposed amendment would relocate the list of pumps, fans, and valves in Technical Specifications (TS) TS 4.5.1.1b, Sequence and Power Transfer Test to the TMI-1 UFSAR. TS 4.5.1.2b, TS 4.5.2.2a, and TS 4.5.2.2b are also being revised to reflect the proposed change to TS 4.5.1.1b. TS Bases 4.5 are being changed (submitted for information only) to be consistent with NUREG-1430, "Standard Technical Specifications Babcock and Wilcox Plants."

Request for Additional Information
Relocation of Equipment Load List from the
Technical Specifications to a Licensee Controlled Document
April 7, 2011
Page 2

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. A request for additional information (RAI) was transmitted to Exelon on March 21, 2011 (Reference 2). Attachment 1 to this letter provides a restatement of the RAI along with Exelon's response. Attachment 2 provides the revised proposed TS Markup pages in response to the RAI. Attachment 3 provides UFSAR Table 8.2-11 (for information only). Attachment 4 provides the revised proposed TS Bases Markup page (for information only).

The revised proposed TS and TS Bases Markup pages supersede the original proposed changes submitted in Reference 1.

Exelon has concluded that the information provided in this response does not impact the conclusions of the: 1) Technical Evaluation, 2) No Significant Hazards Consideration (NSHC) under the standards set forth in 10 CFR 50.92(c), or the 3) Environmental Consideration as provided in the original submittal (Reference 1). However, in order to fully reflect the attached RAI responses, minor changes were made to the NSHC. The revised NSHC is provided in Attachment 5.

This RAI response contains no regulatory commitments.

If you have any questions or require additional information, please contact Frank Mascitelli at 610-765-5512.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 7th day of April 2011.

Respectfully,



David P. Helker
Manager - Licensing
Exelon Generation Company, LLC

- Attachment 1: Response to Request for Additional Information
- Attachment 2: Revised Proposed Technical Specifications Markup Pages
- Attachment 3: UFSAR Section 8.2, Table 8.2-11, "Engineered Safeguards Loading Sequence" (for information only)
- Attachment 4: Revised Proposed Technical Specifications Bases Markup Page (for information only)
- Attachment 5: Revised No Significant Hazards Consideration - Relocation of Equipment Load List from Technical Specifications (TS 4.5.1.1b) to a Licensee Controlled Document

Request for Additional Information
Relocation of Equipment Load List from the
Technical Specifications to a Licensee Controlled Document
April 7, 2011
Page 3

cc: USNRC Regional Administrator, Region I
USNRC Project Manager, TMI
USNRC Senior Resident Inspector, TMI
Director, Bureau of Radiation Protection, PA Department of
Environmental Resources
Chairman, Board of County Commissioners, Dauphin County, PA
Chairman, Board of Supervisors, Londonderry Township, PA
R. R. Janati, Commonwealth of Pennsylvania

ATTACHMENT 1

License Amendment Request

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

**License Amendment Request Regarding
Relocation of Equipment Load List from Technical Specifications to a Licensee
Controlled Document**

Response to Request for Additional Information

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST REGARDING Relocation of Equipment Load List
from Technical Specifications to a Licensee Controlled Document**

In Reference 1, Exelon Generation Company, LLC (Exelon) submitted a request for an amendment to the Technical Specifications (TS), Appendix A of Renewed Facility Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1 (TMI-1). The proposed amendment would relocate the list of pumps, fans, and valves in Technical Specifications (TS) TS 4.5.1.1b, Sequence and Power Transfer Test to the TMI-1 Updated Final Safety Analysis Report (UFSAR). TS 4.5.1.2b, TS 4.5.2.2a, and TS 4.5.2.2b are also being revised to reflect the proposed change to TS 4.5.1.1b. TS Bases 4.5 are being changed (submitted for information only) to be consistent with NUREG-1430, "Standard Technical Specifications Babcock and Wilcox Plants."

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. A request for additional information (RAI) was transmitted to Exelon on March 21, 2011 (Reference 2). The questions are restated below along with Exelon's response.

RAI Question 1

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(b) states, in part: "The technical specifications will be derived from the analysis and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to §50.34." The LAR presents a brief description of how the requested changes meet the requirements of 10 CFR 50.36(c)(2)(ii), however it does not explain how relocating the equipment list back to the document from which TS is derived will comply with the above 10 CFR 50.36(b) requirement(s). Additionally, TSs are required to contain surveillance requirements in accordance with the requirements at 10 CFR 50.36(c)(3) which states: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

Please explain how the surveillance will continue to ensure that the safety-related equipment proposed for relocation from the TS to the UFSAR will continue to be able to perform the specified safety functions and how continued compliance with 10 CFR 50.36(b) is met. The response should include, but not be limited to, an explanation of how the revised TS will ensure that all equipment described in TMI-1 UFSAR Chapter 14, which depends on the sequencer, will be properly tested.

RESPONSE

During an NRC/Exelon teleconference conducted on February 25, 2011, to clarify the RAI questions, it was identified that, in this specific case, the reference to a UFSAR section in TS was problematic in that the Surveillance Requirements (SRs) need to be derived from the analysis and evaluation (i.e., UFSAR). Directly referencing the UFSAR section in a TS SR makes it difficult to ensure compliance to 10 CFR 50.36(b). Exelon agrees and, therefore, has modified the proposed SRs to require that the Sequence and Power Transfer Test, and the Sequence Test, verify that the permanently connected and auto-connected emergency loads

(as appropriate for each test) will be tested through the sequencer. The permanently connected and auto-connected emergency loads that support TMI-1 UFSAR Chapter 14 analyses have been identified in UFSAR Section 8.2, Table 8.2-11, "Engineered Safeguards Loading Sequence" (Reference 3), which complies with the requirements of 10 CFR 50.36(b). UFSAR Table 8.2-11, as revised by Engineering Change Request (ECR) TM 10-00286 (Reference 4), has been included in Attachment 3 for information only. The equipment proposed to be deleted from TS 4.5.1.1.b is listed in UFSAR Table 8.2-11. UFSAR Section 8.3, "Tests and Inspections," will not be modified as originally proposed in Reference 1.

This LAR does not change the current SRs for, nor the scope of, equipment loads required to be tested under the Sequence and Power Transfer Test, and the Sequence Test. Therefore, the current surveillance tests will continue to ensure that the safety-related equipment proposed for relocation from the TS to the UFSAR will continue to be able to perform their specified safety functions.

RAI Question 2

In the LAR, Attachment 1, Section 4.3, the LAR states that the proposed changes are consistent with Standard Technical Specifications (STS), NUREG-1430, "Standard Technical Specifications Babcock and Wilcox Plants." Section 3.0 of Attachment 1 states that the proposed changes are consistent with STS surveillance test requirements contained in SR 3.8.1.19 and SR 3.8.1.11. The LAR further states that while the performance of the Sequence and Power Test meets the criteria of 10 CFR 50.36(c)(2)(ii) for inclusion in the TS, the listing of equipment being relocated provides little or no safety benefit. However, the proposed relocation of the equipment load list does not include a high level description, in the TS, of the loads that the test is designed to cover, leaving very little description to ensure compliance with 10 CFR 50.36(c)(3). Such a high level description is provided in NUREG-1430, which includes reference to energizing permanently connected Emergency Diesel Generator loads and energizing auto-connected emergency/shutdown loads through the automatic load sequencer. Such a description would be needed to be consistent with the referenced STS, as the application purports.

Please provide an updated version of the proposed TS with a high level description of the equipment load list in the surveillance or provide justification as to why it is not provided.

RESPONSE

Exelon agrees that a high level description is needed to be consistent with the referenced improved STS SR 3.8.1.19 and SR 3.8.1.11 (Reference 5). Therefore, TS 4.5.1.1b is being revised to include wording similar to improved STS SR 3.8.1.19.c.1 and 2, as applicable, to describe the equipment loads that are included in the scope of the Sequence and Power Transfer Test. For the Sequence and Power Transfer Test, the high level description refers to permanently connected and auto-connected emergency loads using the load sequencer. Also, TS 4.5.1.2b is being revised to include wording similar to improved STS SR 3.8.1.11.c.2, as applicable, to describe the equipment loads that are included in the scope of the Sequence Test. For the Sequence Test, the high level description refers to auto-connected emergency loads using the load sequencer.

Attachment 2 contains the proposed revised TS 4.5.1.1b and TS 4.5.1.2b wording that references energizing permanently and auto-connected emergency loads using the load

sequencer. TS 4.5.2.2a is being revised to reference the emergency loading test in TS 4.5.1, since the actual loading sequence equipment (auxiliaries) will no longer be listed in TS 4.5.1.1b. TS 4.5.2.2b is being revised to delete the reference to TS 4.5.1.1b because TS 4.5.1.1b will no longer contain a list. The reference to TS 4.5.1.1b can be completely deleted since there are no additional decay heat pumps other than those originally listed in TS 4.5.1.1b, and the phrase "decay heat pumps" can stand on its own with no additional modifying or descriptive phrases.

The TS Bases are being revised (Attachment 4) to reflect the change required to the TS 4.5.1 Bases References section. The revised proposed References section will be changed to refer to UFSAR Table 8-2.11, "Engineered Safeguards Loading Sequence," instead of UFSAR Section 8.3, "Tests and Inspections," since Section 8.3 is no longer being revised to add the relocated equipment load list from TS 4.5.1.1b.

References:

1. Letter from P. B. Cowan, Exelon Generation Company, LLC, to U.S. Nuclear Regulatory Commission, "TMI-1 Technical Specifications Change Request (TSCR) No. 348 Relocation of Equipment Load List from TS 4.5.1.1b, Sequence and Power Transfer Test, to the Updated Final Safety Analysis Report (UFSAR)," dated September 22, 2010.
2. Letter from Peter Bamford, U.S. Nuclear Regulatory Commission, to Mr. M.J. Pacilio, President and Chief Nuclear Officer, Exelon Nuclear, "Three Mile Island Nuclear Station, Unit 1 - Request for Additional Information Regarding Proposed Relocation of Equipment Load List from the Technical Specifications to a Licensee Controlled Document (TAC NO. ME4732)," dated March 21, 2011.
3. TMI-1 Updated Final Safety Analysis Report (UFSAR), Section 8.2, Electrical System Design, Table 8.2-11, "Engineered Safeguards Loading Sequence."
4. Engineering Change Request (ECR) TM 10-00286, Rev 0, "UFSAR and SDBD Revisions," Attachment 12, Table 8.2-11, "Engineered Safeguards Loading Sequence," approved June 14, 2010.
5. NUREG 1430, Rev 3.1, "Standard Technical Specifications Babcock and Wilcox Plants," SR 3.8.1.11 and SR 3.8.1.19.

ATTACHMENT 2

License Amendment Request

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

**License Amendment Request Regarding
Relocation of Equipment Load List from Technical Specifications to a Licensee
Controlled Document**

Revised Proposed Technical Specifications Markup Pages

4-39

4-41

4.5 EMERGENCY LOADING SEQUENCE AND POWER TRANSFER, EMERGENCY CORE COOLING SYSTEM & REACTOR BUILDING COOLING SYSTEM PERIODIC TESTING

4.5.1 Emergency Loading Sequence

Applicability: Applies to periodic testing requirements for safety actuation systems.

Objective: To verify that the emergency loading sequence and automatic power transfer is operable.

Specifications:

4.5.1.1 Sequence and Power Transfer Test

a. At the frequency specified in the Surveillance Frequency Control Program, a test shall be conducted to demonstrate that the emergency loading sequence and power transfer is operable.

b. The test will be considered satisfactory if the following pumps and fans have been successfully started and the following valves have completed their travel on preferred power and transferred to the emergency power.

- M. U. Pump
- D. H. Pump and D. H. Injection Valves and D. H. Supply Valves
- R. B. Cooling Pump
- R. B. Ventilators
- D. H. Closed Cycle Cooling Pump
- N. S. Closed Cycle Cooling Pump
- D. H. River Cooling Pump
- N. S. River Cooling Pump
- D. H. and N. S. Pump Area Cooling Fan
- Screen House Area Cooling Fan
- Spray Pump. (Initiated in coincidence with a 2 out of 3 R. B. 30 psig Pressure Test Signal.)
- Motor Driven Emergency Feedwater Pump

c. Following successful transfer to the emergency diesel, the diesel generator breaker will be opened to simulate trip of the generator then re-closed to verify block load on the reclosure.

4.5.1.2 Sequence Test

a. At the frequency specified in the Surveillance Frequency Control Program, a test shall be conducted to demonstrate that the emergency loading sequence is operable, this test shall be performed on either preferred power or emergency power.

b. The test will be considered satisfactory if the pumps and fans listed in 4.5.1.1b have been successfully started and the valves listed in 4.5.1.1b have completed their travel.

The test will be considered satisfactory if the auto-connected emergency loads have been successfully energized using the load sequencer.

The test will be considered satisfactory if the permanently connected loads and auto-connected emergency loads have been successfully energized on preferred power using the load sequencer and transferred to emergency power.

INSERT

DELETE

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4.5.2 EMERGENCY CORE COOLING SYSTEM

Applicability: Applies to periodic testing requirement for emergency core cooling systems.

Objective: To verify that the emergency core cooling systems are operable.

Specification

4.5.2.1 High Pressure Injection

- a. At the frequency specified in the Surveillance Frequency Control Program and following maintenance or modification that affects system flow characteristics, system pumps and system high point vents shall be vented, and a system test shall be conducted to demonstrate that the system is operable.
- b. The test will be considered satisfactory if the valves (MU-V-14A/B & 16A/B/C/D) have completed their travel and the make-up pumps are running as evidenced by system flow. Minimum acceptable injection flow must be greater than or equal to 431 gpm per HPI pump when pump discharge pressure is 600 psig or greater (the pressure between the pump and flow limiting device) and when the RCS pressure is equal to or less than 600 psig.
- c. Testing which requires HPI flow thru MU-V16A/B/C/D shall be conducted only under either of the following conditions:
 - 1) Indicated RCS temperature shall be greater than 329°F.
 - 2) Head of the Reactor Vessel shall be removed.

4.5.2.2 Low Pressure Injection

- a. At the frequency specified in the Surveillance Frequency Control Program and following maintenance or modification that affects system flow characteristics, system pumps and high point vents shall be vented, and a system test shall be conducted to demonstrate that the system is operable. The auxiliaries required for low pressure injection are all included in the emergency loading sequence specified in 4.5.1.
- b. The test will be considered satisfactory if the decay heat pumps ~~listed in~~ test ~~4.5.1.b~~ have been successfully started and the decay heat injection valves and the decay heat supply valves have completed their travel as evidenced by the control board component operating lights. Flow shall be verified to be equal to or greater than the flow assumed in the Safety Analysis for the single corresponding RCS pressure used in the test.

DELETE

ATTACHMENT 3

License Amendment Request

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

**License Amendment Request Regarding
Relocation of Equipment Load List from Technical Specifications to a Licensee
Controlled Document**

**UFSAR Section 8.2, Table 8.2-11, "Engineered Safeguards Loading Sequence"
(for information only)**

TABLE 8.2-11
(Sheet 1 of 1)

Engineered Safeguards Loading Sequence

<u>Loading Sequence</u>	<u>Description</u>
Block 1	Diesel Generator Starts & ES Bus Load Shedding Actuates Makeup Pump (High Pressure Injection), Decay Heat Pump (Low Pressure Injection), Most ES Motor Operated Valves, and Permanently connected ES loads including: Emergency Lighting, Inverters, Control Building Lighting, Radiation Monitors Battery Chargers, and Miscellaneous Heat Trace and Unit Heaters
Block 2	Reactor Building Ventilation Units, Reactor Building Emergency Cooling - River Water Pump
Block 3	Nuclear Services Closed Cooling Pump, Nuclear Services River Water Pump, Decay Heat Closed Cooling Pump, Decay Heat River Water Pump, Miscellaneous motor operated Valves
Block 4	Reactor Building Spray Pump, NS/DC Pump Area Fan, Screen House Fan
Block 5	Emergency Feedwater Pump
Manually Applied Loads	Instrument Air Compressor, Spent Fuel Pump Control Building Ventilation Supply Fan, Control Building Exhaust Fan, Control Building Chiller Penetration Cooling Fan, Chilled Water Supply Pump

ATTACHMENT 4

License Amendment Request

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

**License Amendment Request Regarding
Relocation of Equipment Load List from Technical Specifications to a Licensee
Controlled Document**

**Revised Proposed Technical Specifications Bases Markup Page
(for information only)**

Bases

The Emergency loading sequence and automatic power transfer controls the operation of the pumps associated with the emergency core cooling system and Reactor Building cooling system.

Automatic start and loading of the emergency diesel generator to meet the requirements of 4.5.1.1b/c above is described in Technical Specification 4.6.1.b.

The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the Emergency Diesel Generator loading logic. In certain circumstances, many of these loads can not actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or decay heat removal (DHR) systems performing a DHR function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the Emergency Diesel Generator system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

References

UFSAR, Table 8.2-11, Engineered Safeguards Loading Sequence

ATTACHMENT 5

License Amendment Request

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

**License Amendment Request Regarding
Relocation of Equipment Load List from Technical Specifications to a Licensee
Controlled Document**

**Revised No Significant Hazards Consideration - Relocation of Equipment Load List
from Technical Specifications (TS 4.5.1.1b) to a Licensee Controlled Document**

NO SIGNIFICANT HAZARDS CONSIDERATION
Relocation of Equipment Load List from Technical Specifications (TS 4.5.1.1b) to a
Licensee Controlled Document

Exelon Generation Company, LLC (Exelon) has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No.

The proposed license amendment does not add, delete or modify plant equipment. The proposed changes are administrative in nature. The proposed amendment would relocate the list of pumps, fans and valves in Technical Specification (TS) 4.5.1.1b, Sequence and Power Transfer Test, to the TMI-1 Updated Final Safety Analysis Report (UFSAR) Section 8.2, Table 8.2-11, Engineered Safeguards Loading Sequence. In addition, TS 4.5.1.1b and TS 4.5.1.2b are being modified to include a high level description of equipment required to be included in the Sequence and Power Transfer Test, and the Sequence Test, respectively.

The proposed changes relocate surveillance requirement details that are not required by 10 CFR 50.36. The proposed changes do not change current surveillance requirements. The subject list of pumps, fans and valves that will be relocated to UFSAR Section 8.2, Table 8.2-11, will be controlled under 10 CFR 50.59.

The probability of an accident is not increased by these proposed changes because neither the Sequence and Power Transfer Test nor the Sequence Test are initiators of any design basis event. Additionally, the proposed changes do not involve any physical changes to plant structures, systems, or components (SSCs), or the manner in which these SSCs are operated, maintained, or controlled. The consequences of an accident will not be increased because the proposed administrative changes to the Sequence and Power Transfer Test, and the Sequence Test, will continue to provide a high degree of assurance that the Electric Power System will meet its safety related function.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed changes do not alter the physical design, safety limits, safety analyses assumptions, or the manner in which the plant is operated or tested.

The proposed changes are administrative in nature and the surveillance requirements remain the same. Accordingly, the proposed changes do not introduce any new accident initiators, nor do they reduce or adversely affect the capabilities of any plant SSC in the performance of their safety function.

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

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The margin of safety is associated with the confidence in the ability of the fission product barriers (*i.e.*, fuel cladding, reactor coolant pressure boundary, and containment structure) to limit the level of radiation to the public. There are no physical changes to SSCs or operating and testing procedures associated with the proposed amendment.

The proposed changes do not impact the assumptions of any design basis accident, and do not alter assumptions relative to the mitigation of an accident or transient event. The proposed changes are administrative in nature and the surveillance requirements remain the same.

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

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

4.4 CONCLUSIONS

Exelon has determined that the proposed changes do not require any exemptions or relief from regulatory requirements (other than the TS) and do not affect conformance with any General Design Criteria.

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 to the health and safety of the public.