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

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: Response to Request for Additional Information
License Amendment Request
Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance

Reference:

1. Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request, Proposed Changes to Technical Specifications Sections 3.5.1, 3.6.2.3, 3.7.1.1, 3.7.1.2 and 3.8.1.1 to Extend the Allowed Outage Times," dated March 19, 2010.

2. Letter from Peter Bamford, U.S. Nuclear Regulatory Commission, to Michael J. Pacilio, Exelon Nuclear, "Limerick Generating Station, Units 1 and 2 - Request for Additional Information Regarding Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water (RHRSW) Maintenance (TAC Nos. ME3551 and ME3552)," dated September 30, 2010.

3. Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information, License Amendment Request, Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance," dated October 29, 2010.

4. Letter from Peter Bamford, U.S. Nuclear Regulatory Commission, to Michael J. Pacilio, Exelon Nuclear, "Limerick Generating Station, Units 1 and 2 - Request for Additional Information Regarding Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water (RHRSW) Maintenance (TAC Nos. ME3551 and ME3552)," dated March 10, 2011.

In Reference 1, Exelon Generation Company, LLC (Exelon) requested changes to the Technical Specifications (TS), Appendix A of Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively. The proposed changes would extend the TS Limiting Condition for Operation (LCO) allowed outage time (AOT) for the Unit 1 and Unit 2 Suppression Pool Cooling (SPC) mode of the Residual Heat Removal (RHR) system, the Residual Heat Removal Service Water (RHRSW) system, the Emergency Service Water (ESW) system, and the A.C. Sources - Operating (Emergency Diesel Generators) from 72 hours to seven (7) days in order to allow for repairs of the RHRSW system piping.

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. In Reference 2, the NRC formally issued a request for additional information (RAI). In Reference 3, Exelon provided its response to the RAI.

After review of Exelon's response to the RAI, the NRC identified the need for additional information in order to complete its evaluation of the amendment request. On February 24, 2011, draft questions were sent to Exelon to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. The draft questions were discussed in a teleconference with the NRC on March 3, 2011. In Reference 4, the NRC formally issued the RAI. Attachment 1 to this letter provides a restatement of the questions along with Exelon's response.

Attachment 2 provides revised proposed TS markup pages which supersede the corresponding TS markup pages provided in Reference 3 (see the response to RAI 5 in Attachment 1 to this letter). The remaining TS markup pages provided in Reference 3 that are not included in Attachment 2 to this letter are still valid and remain part of the requested license amendment.

Attachment 3 to this letter provides a restatement of Commitment 2, previously provided in Attachment 4 of Reference 3, which has been revised to change "LPCI subsystems" to "RHR subsystems" to be consistent with the terminology used in the proposed TS LCO 3.7.1.1, Actions a.3.a) and a.3.b) (see the response to RAI 2 in Attachment 1 to this letter). All other wording in Commitment 2 is unchanged from the wording originally provided in Reference 3.

Exelon has concluded that the information provided in this response meets the intent of the original submittal (Reference 1) and does not impact the conclusions of the: 1) Technical

Analysis, 2) No Significant Hazards Consideration under the standards set forth in 10 CFR 50.92(c), or 3) Environmental Consideration as provided in the original submittal (Reference 1).

If you have any questions or require additional information, please contact Glenn Stewart at 610-765-5529.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of March 2011.

Respectfully,

D. P. Helker

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

Attachment 1: Response to Request for Additional Information
Attachment 2: Revised Proposed Technical Specifications Pages
Attachment 3: Summary of Regulatory Commitments

cc: Regional Administrator - NRC Region I w/ attachments
NRC Senior Resident Inspector - Limerick Generating Station "
NRC Project Manager, NRR - Limerick Generating Station "
Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Protection "

ATTACHMENT 1

License Amendment Request

Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353

Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance

Response to Request for Additional Information

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
PROPOSED TECHNICAL SPECIFICATION ALLOWED OUTAGE TIME EXTENSIONS
TO SUPPORT RESIDUAL HEAT REMOVAL SERVICE WATER MAINTENANCE**

In Reference 1, Exelon Generation Company, LLC (Exelon) requested changes to the Technical Specifications (TS), Appendix A of Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively. The proposed changes would extend the TS Limiting Condition for Operation (LCO) allowed outage time (AOT) for the Unit 1 and Unit 2 Suppression Pool Cooling (SPC) mode of the Residual Heat Removal (RHR) system, the Residual Heat Removal Service Water (RHRSW) system, the Emergency Service Water (ESW) system, and the A.C. Sources - Operating (Emergency Diesel Generators (EDGs)) from 72 hours to seven (7) days in order to allow for repairs of the RHRSW system piping.

The NRC reviewed the license amendment request and identified the need for additional information in order to complete its evaluation of the amendment request. In Reference 2, the NRC formally issued a request for additional information (RAI). In Reference 3, Exelon provided its response to the RAI.

After review of Exelon's response to the RAI, the NRC identified the need for additional information in order to complete its evaluation of the amendment request. On February 24, 2011, draft questions were sent to Exelon to ensure that the questions were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. The draft questions were discussed in a teleconference with the NRC on March 3, 2011. In Reference 4, the NRC formally issued the RAI. The questions are restated below along with Exelon's response. Attachment 2 provides revised proposed TS markup pages which supersede the corresponding TS markup pages provided in Reference 3. Attachment 3 provides a restatement of Commitment 2, previously provided in Attachment 4 of Reference 3, which has been revised to provide terminology consistent with the new proposed TS LCO 3.7.1.1, Actions a.3.a) and a.3.b) regarding the availability of RHR subsystems versus LPCI subsystems.

1. The new proposed RHRSW specifications, TS 3.7.1.1 Action a.3.a and TS 3.7.1.1 Action a.3.b, require certain systems to be protected, including RHR subsystems. RHR subsystems are defined in TS 3.4.9.1 (RHR Hot Shutdown) and TS 3.4.9.2 (RHR Cold Shutdown), which are TSs that do not apply to a unit in Operational Condition 1 or 2. TS 3.6.2.2 (Suppression Pool Spray-SPS) and TS 3.6.2.3 (Suppression Pool Cooling) refer to two independent loops, not subsystems, each loop having at least one operable RHR pump, an RHR heat exchanger and the flow path as described in the TS.

   a) Explain why the proposed TS 3.7.1.1 Action a.3.a and TS 3.7.1.1 Action a.3.b require protection of RHR subsystems and the SPC and SPS loops do not require protection.

   Response

   The terms "subsystem," "loop," and "shutdown cooling subsystem" are each used in the LGS TS to describe the RHR equipment and flow paths required to be operable for the

various TS requirements involving the RHR system. The primary focus in establishing the list of equipment and systems to protect was decay heat removal. The term "B and D RHR subsystems," as used in the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a), is defined as the "B" and "D" RHR pumps, the "B" RHR heat exchanger and associated piping, and the valves and controls that are required to support the decay heat removal function(s) of the RHR system in Operational Conditions 1, 2 and 3. Similarly, the term "A and C RHR subsystems," as used in the new proposed RHRSW specification TS 3.7.1.1, Action a.3.b), is defined as the "A" and "C" RHR pumps, the "A" RHR heat exchanger and associated piping, and the valves and controls that are required to support the decay heat removal function(s) of the RHR system in Operational Conditions 1, 2 and 3. Given the multiple functions served by the RHR system, the defined boundary for the "RHR subsystems" as described above, combined with the other equipment and subsystems listed in the proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), results in the injection and spray capabilities of the RHR system also being protected, which includes the suppression pool spray mode of the RHR system and the suppression pool cooling mode of the RHR system.

b) Explain the criteria used in identifying structures, systems, or components for inclusion in the list of protected systems and subsystems stated in TS 3.7.1.1 Action a.3.a and TS 3.7.1.1 Action a.3.b.

Response

As discussed in the response to RAI 1.a) above, the list of systems and subsystems identified in the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), that would be protected in accordance with applicable plant procedures represents those plant features required to support the decay heat removal function(s). As indicated, however, the redundancy of the RHR system, combined with the other equipment and subsystems listed in the proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), results in the decay heat removal function(s) and other RHR system capabilities (i.e., injection and spray) being protected.

c) Discuss the reasons for protecting the Safeguard [direct current] DC buses.

Response

Safeguard DC buses provide control power to the 4kV switchgear and control system logic. They are protected to ensure operation of the RHR, RHRSW and ESW systems.

d) Discuss whether the power that supplies the following components are protected: (1) valves for the operable EDGs, including their associated ESW valves, (2) valves for the only operable Emergency Core Cooling systems, Low Pressure Coolant Injection subsystems and Core Spray subsystems, and (3) valves for the only operable RHRSW subsystem and associated RHR valves.

Response

The list of systems and subsystems identified in the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), that would be protected in accordance with applicable plant procedures represents those plant features required to support the decay heat removal function(s), including supporting functions such as emergency AC and DC power. There are no motor operated ESW system valves that must change state to support the safety functions of the ESW loop, including supplying cooling water to the EDGs. As stated in both the original LAR (Reference 1) and in Reference 3, the ESW return valves to the "A" and "B" RHRSW subsystem return header (HV-011-011A/B and HV-011-015A/B) will be de-energized in the appropriate safe position (open or closed depending on which RHRSW subsystem is inoperable). Therefore, emergency power for these valves is not required to be protected. Power supplies for the motor operated valves for the RHR system, motor operated valves required to support the operable RHRSW subsystem, and the motor operated valves required to support the decay heat removal functions of the RHR subsystems are from the same 4kV buses that power the associated RHR and RHRSW pumps. These 4kV buses also provide power to the respective Core Spray injection valves and Core Spray pumps. Therefore, power that supplies motor operated valves that must change state to support operability of the ESW, RHR, Core Spray and RHRSW subsystems is protected based on the emergency power sources identified in the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b).

2. In the regulatory commitments stated in Section 4.2 (Item 2b) of Attachment 1 to the original March 19, 2010 submittal, the licensee included an inoperable but available Core Spray subsystem as equipment to be verified as available. The licensee's October 29, 2010, version removed the Core Spray subsystem with no apparent explanation.

   a) Discuss the criteria for the list of equipment that is to be verified available and protected in current Commitment 2 of Attachment 4 of the October 29, 2010, submittal.

   Response

   Similar to the list of systems and subsystems identified in the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), the list of systems and subsystems identified in Commitment 2 of Attachment 4 of the October 29, 2010, submittal that would be protected in accordance with applicable plant procedures represents those plant features required to support the decay heat removal function(s).

   b) Discuss why the applicable Core Spray subsystem was removed from the list.

   Response

   The Core Spray subsystem and also the LPCI subsystems were included in the regulatory commitments stated in Section 4.2 (Item 2b) of Attachment 1 to the original March 19, 2010 submittal. However, during development of the responses to the request for additional information questions provided in Reference 3, it was determined that the primary focus of equipment to be protected was on those plant features

required to support decay heat removal functions. It was recognized that the Core Spray subsystem provides coolant injection, and therefore, should not be included in the list of available systems and subsystems since it does not provide a decay heat removal function. Commitment 2 of Attachment 4 of Reference 3 kept the terminology from the original submittal (Reference 1), i.e., "LPCI subsystem"; however, this terminology is inconsistent with the basis for the listed equipment, as stated previously, since LPCI also provides coolant injection rather than decay heat removal. Therefore, in order to establish consistency throughout the new proposed RHRSW specification, TS 3.7.1.1, Action a.3.a) and Action a.3.b), and the regulatory commitments associated with the proposed 7-day AOT extension, the term "LPCI subsystems," as specified in Commitment 2 of Attachment 4 of the October 29, 2010 submittal, will be changed to "RHR subsystems." As discussed above, the RHR subsystems are defined as the applicable RHR pumps, the applicable RHR heat exchanger and associated piping, and the valves and controls that would be required to support the decay heat removal function(s) of the RHR system in Operational Conditions 1, 2 and 3. Attachment 3 to this letter provides the revised Commitment 2 wording.

3. Failure of RHRSW valves 012-0120A or 012-0120B would be a common mode failure that could cause the loss of all RHRSW and ESW. In the response dated October 29, 2010, regarding RAI 4 of Attachment 2, the licensee stated that failure of these valves is considered extremely unlikely because of their stainless construction. Please provide additional justification that these valves will not fail closed during the extended AOT. This information should include, but not be limited to, a description of any inspection programs that include these valves and/or inspections planned before entering the extended AOT.

Response

Valves 012-0120A and 012-0120B are Tricentric cam seated, lugged wafer butterfly valves constructed of stainless steel. These valves are manual valves that are normally maintained in the open position. During the piping repairs, the critical valve position to maintain flow is also in the open position. Since the valves will be locked in their safe position, the only credible failure mechanism that would result in the valve changing position would be a separation of the valve stem from the disk. The valve stem is connected to the disk by two stainless steel keys. The keys can only be removed by displacing the stem in the opposite direction of the operator. Displacement of the stem is prevented by a stainless steel retaining ring grooved into the shaft and attached to the disk by two stainless steel cap screws as well as an annular key and cover plate attached to the valve body by four stainless steel cap screws. Failure of both the retaining ring as well as the cover plate would be required to detach the disk from the valve shaft. Corrosion would be the only credible mechanism to affect both the retaining ring and cover plate. However, since all parts are constructed of stainless steel and the cover plate and its cap screws are not wetted components, corrosion of both the cover plate and retaining ring resulting from a common mechanism is not considered credible.

Since the valves are not accessible without draining the RHRSW return header, which would cause the station to enter a two-unit 72-hour LCO, there are no routine internal inspection activities to verify the condition of the retaining ring or the shaft keys. However, LGS has a number of valves of identical or similar design, which were installed around the

same time as the 012-0120A and 012-0120B valves in the mid-1990's, in the RHRSW system and ESW system that are exposed to continuous or intermittent flow with no documented stem-to-disk separation issues.

Additionally, a review of external operating experience was conducted to identify and review any cases of stem-to-disk separation in Tricentric butterfly valves to determine if the failure mechanism is directly applicable to the 012-0120A and 012-0120B valves. The search yielded 74 entries. Of these 74 entries, only two events were identified which involved separation of the stem and disk of the valves. The first event occurred in 1994 and was determined to be a manufacturing defect in the milling of the shaft keyway unique to the C&S Valve Company commercial line of valves. It was determined that the nuclear valves did not use this keyway design. Therefore, this failure is not applicable to the LGS valves.

The second event occurred in 2001 and was also determined to be a manufacturing defect, in which a pin, which secures the disk to the stem to prevent partial stem ejection, had not been peened per the manufacturer's instructions. The valve also used a two-piece stem. This operating experience was also determined not to be applicable to the 012-0120A and 012-0120B valves for the reasons described below.

1) The disk on the 012-0120A and 012-0120B valves is not attached to the valve stem by a pin. It is secured to the stem by a retaining ring installed in a groove in the shaft and secured by two stainless steel cap screws.

2) The 012-0120A and 012-0120B valves have single piece stems secured from ejection by both the retaining ring and the cover plate. Therefore, the stem-to-disk attachment on the 012-0120A and 012-0120B valves is significantly more robust than the valve in the operating experience.

Based on our review of the valve design as well as internal and external operating experience, Exelon concludes that the passive failure of stem-to-disk separation is not credible for the 012-0120A and 012-0120B valves.

4. The licensee stated in the original submittal (page 11 of 37) "In order to maintain the full operability of the 'B' RHRSW subsystem, Unit 1 EDGs D12 and D14, and Unit 2 EDGs D22 and D24 will be maintained operable," and (Page 18 of 37) "In order to maintain the full operability of the 'A' RHRSW subsystem, Unit 1 EDGs D11 and D13, and Unit 2 EDGs D21 and D23 will be maintained operable." TS 3.7.1.1 Action a.3.a.1 and TS 3.7.1.1 Action a.3.b.1 for Unit 2 do not include all the EDGs as described above. Please explain the basis for this discrepancy.

Response

During the development of the original LAR (Reference 1), the D13 and D14 EDGs were included in the list of EDGs required to support the operability of the remaining operable RHRSW subsystem on both Units 1 and 2 because the HV-11-015A and HV-11-015B valves (the ESW return valves to the 'B' RHRSW subsystem return header) are supplied by emergency power from the D13 and D14 EDGs, respectively. However, as stated in both the original LAR (Reference 1) and in Reference 3, the HV-11-015A and HV-11-015B

valves will be administratively controlled in the proper position (i.e., locked open or closed depending on which RHRSW subsystem is inoperable) and will be de-energized in that position. Therefore, if a loss of offsite power, or a loss of coolant accident coincident with a loss of offsite power, were to occur while in the planned RHRSW subsystem configurations, the HV-11-015A and HV-11-015B valves will already be locked and de-energized in the safe position and would not require re-positioning. As a result, the D13 and D14 EDGs would not be required to support operation of the HV-11-015A and HV-11-015B valves, respectively. Also, the other valves associated with the planned RHRSW/ESW configurations were reviewed and it was determined that none of the other valves are powered by the D13 and D14 EDGs.

In addition, during development of the responses to the request for additional information questions provided in Reference 3, it was determined based on review of UFSAR Table 8.3-3 that the D13 and D14 EDGs (Unit 1 EDGs) were not required to support operation of the RHRSW or ESW pumps because on the Unit 1 side, both sets of RHRSW and ESW pumps are powered by the D11 and D12 EDGs, and on the Unit 2 side, the RHRSW pumps are powered by the D21 and D22 EDGs while the ESW pumps are powered by the D23 and D24 EDGs. Also, on the Unit 1 side, all four RHR pumps are powered by their respective D11 through D14 EDGs while on the Unit 2 side, all four RHR pumps are powered by their respective D21 through D24 EDGs. Therefore, when working through the planned RHRSW/ESW configurations during the RHRSW subsystem piping repairs, on the Unit 2 side, i.e., with Unit 2 operating, it was concluded that the D13 and D14 EDGs do not provide power to any RHRSW pump, ESW pump or RHR pump.

Based on the above discussion, the proposed Unit 2 TS LCO 3.7.1.1, Actions a.3.a) and a.3.b), i.e., [Insert B] as provided in Reference 3, are appropriate. As indicated in the response to RAI 5 below, because of the addition of Insert B2 to the proposed TS markups for TS LCO 3.7.1.1, Action a.3 for both Units 1 and 2, for the purposes of clarity, the original "Insert B" provided in Reference 3 has been renamed "Insert B1" for both Units 1 and 2, and is provided in the proposed TS markups included in Attachment 2 to this letter for completeness; however, there is no change to the original insert as provided in Reference 3 on either unit.

5. The application dated March 19, 2010, describes the requested AOT extension as follows: "...the 72 hour AOT for the affected system may be extended once per calendar year *for one unit only* [emphasis added] for a period of up to 7 days to allow repairs..." By letter dated October 29, 2010, revised TS pages were submitted that allow a doubling of this frequency, i.e. one entry every other calendar year for each RHRSW subsystem for each unit, or possibly twice per year total per unit, with no explanation provided to justify the change. Please submit revised TS pages that reflect the original intent of the LAR, or provide justification for the proposed scope change to the allowed frequency of the extended AOT. If such a scope change to the original application is requested, please understand that the NRC review activities performed to date, including but not limited to, the probabilistic risk assessment review, will have to be re-performed.

Response

Although a total of two extended 7-day AOT entries are supported by the PRA analysis during the same calendar year on opposite units, the original LAR submittal (Reference 1) indicated that, based on the plan to perform RHRSW subsystem piping repairs during normally scheduled refueling outages, the extended 7-day AOT would only be entered once per calendar year for one unit only. To better align with the original LAR submittal and to clarify the limitations for entering the extended 7-day AOT for an inoperable RHRSW subsystem consistent with the original LAR submittal, a new Insert B2 (footnote) has been added to TS LCO 3.7.1.1, Action a.3, concerning the proposed 'A' RHRSW subsystem and 'B' RHRSW subsystem inoperable Actions a.3.a) and a.3.b), as shown on the revised proposed TS page 3/4 7-1 (for both Units 1 and 2) included in Attachment 2 to this letter. The proposed footnote indicates that only one of the two Actions, either a.3.a) or a.3.b), may be entered on the applicable unit in a calendar year. The footnote also indicates that, if either TS LCO 3.7.1.1, Action a.3.a) or a.3.b) has previously been entered on the opposite unit in the calendar year, then Action a.3.a) or a.3.b) on the affected unit may not be entered during that same calendar year.

Note that, for the purposes of clarity, the original "Insert B" provided in Reference 3 has been renamed "Insert B1" for both Units 1 and 2; however, there is no change to the original insert on either unit (see response to RAI 4 above).

REFERENCES

1. Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request, Proposed Changes to Technical Specifications Sections 3.5.1, 3.6.2.3, 3.7.1.1, 3.7.1.2 and 3.8.1.1 to Extend the Allowed Outage Times," dated March 19, 2010.

2. Letter from Peter Bamford, U.S. Nuclear Regulatory Commission, to Michael J. Pacilio, Exelon Nuclear, "Limerick Generating Station, Units 1 and 2 - Request for Additional Information Regarding Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water (RHRSW) Maintenance (TAC Nos. ME3551 and ME3552)," dated September 30, 2010.

3. Letter from Pamela B. Cowan (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information, License Amendment Request, Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance," dated October 29, 2010.

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ATTACHMENT 2

License Amendment Request

Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353

Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance

Revised Proposed Technical Specifications Pages

Unit 1 TS Page

3/4 7-1

Unit 2 TS Page

3/4 7-1

3/4.7 PLANT SYSTEMS

3/4.7.1 SERVICE WATER SYSTEMS

RESIDUAL HEAT REMOVAL SERVICE WATER SYSTEM - COMMON SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.1 At least the following independent residual heat removal service water (RHRSW) system subsystems, with each subsystem comprised of:

a. Two OPERABLE RHRSW pumps, and

b. An OPERABLE flow path capable of taking suction from the RHR service water pumps wet pits which are supplied from the spray pond or the cooling tower basin and transferring the water through one Unit 1 RHR heat exchanger,

shall be OPERABLE:

a. In OPERABLE CONDITIONS 1, 2, and 3, two subsystems.

b. In OPERABLE CONDITIONS 4 and 5, the subsystem(s) associated with systems and components required OPERABLE by Specification 3.4.9.2, 3.9.11.1, and 3.9.11.2.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3:

1. With one RHRSW pump inoperable, restore the inoperable pump to OPERABLE status within 30 days, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

2. With one RHRSW pump in each subsystem inoperable, restore at least one of the inoperable RHRSW pumps to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3. With one RHRSW subsystem otherwise inoperable, restore the inoperable subsystem to OPERABLE status with at least one OPERABLE RHRSW pump within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. (unless otherwise specified in a) or b) below**)

INSERT B1

4. With both RHRSW subsystems otherwise inoperable, restore at least one subsystem to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN* within the following 24 hours.

*Whenever both RHRSW subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by the ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

INSERT B2

INSERT [B1] (RHRSW 3.7.1.1.a.3)

a) When the 'A' RHRSW subsystem is inoperable to allow for repairs of the 'A' RHRSW subsystem piping, with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the 72-hour Allowed Outage Time may be extended to 7 days once every other calendar year with the following compensatory measures established:

   1) The following systems and subsystems will be protected in accordance with applicable station procedures:
      - 'B' RHRSW subsystem
      - 'B' ESW loop
      - 'B' and 'D' RHR subsystems
      - D12, D14, D22, and D24 4kV buses and emergency diesel generators
      - Division 2 and Division 4 Safeguard DC, and

   2) The 'A' and 'B' loop of ESW return flow shall be aligned to the operable 'B' RHRSW return header only. The ESW return valves to the 'B' RHRSW return header (i.e., HV-11-015A and HV-11-015B) will be administratively controlled in the open position and de-energized prior to entering the extended AOT. The ESW return valves to the 'A' RHRSW return header (i.e., HV-11-011A and HV-11-011B) will be administratively controlled in the closed position and de-energized as part of the work boundary.

b) When the 'B' RHRSW subsystem is inoperable to allow for repairs of the 'B' RHRSW subsystem piping, with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the 72-hour Allowed Outage Time may be extended to 7 days once every other calendar year with the following compensatory measures established:

   1) The following systems and subsystems will be protected in accordance with applicable station procedures:
      - 'A' RHRSW subsystem
      - 'A' ESW loop
      - 'A' and 'C' RHR subsystems
      - D11, D13, D21, and D23 4kV buses and emergency diesel generators
      - Division 1 and Division 3 Safeguard DC, and

   2) The 'A' and 'B' loop of ESW return flow shall be aligned to the operable 'A' RHRSW return header only. The ESW return valves to the 'A' RHRSW return header (i.e., HV-11-011A and HV-11-011B) will be administratively controlled in the open position and de-energized prior to entering the extended AOT. The ESW return valves to the 'B' RHRSW return header (i.e., HV-11-015A and HV-11-015B) will be administratively controlled in the closed position and de-energized as part of the work boundary.

INSERT [B2] (RHRSW 3.7.1.1.a.3)

** Only one of these two Actions, either a.3.a) or a.3.b), may be entered on Unit 1 in a calendar year. However, if either Unit 2 TS LCO 3.7.1.1, Action a.3.a) or a.3.b) has previously been entered in the calendar year, then Unit 1 Action a.3.a) or a.3.b) may not be entered during that same calendar year.

3/4.7 PLANT SYSTEMS
3/4.7.1 SERVICE WATER SYSTEMS
RESIDUAL HEAT REMOVAL SERVICE WATER SYSTEM - COMMON SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.1 At least the following independent residual heat removal service water (RHRSW) system subsystems, with each subsystem comprised of:

a. Two OPERABLE RHRSW pumps, and

b. An OPERABLE flow path capable of taking suction from the RHR service water pumps wet pits which are supplied from the spray pond or the cooling tower basin and transferring the water through one Unit 2 RHR heat exchanger,

shall be OPERABLE:

a. In OPERATIONAL CONDITIONS 1, 2, and 3, two subsystems.

b. In OPERATIONAL CONDITIONS 4 and 5, the subsystem(s) associated with systems and components required OPERABLE by Specification 3.4.9.2, 3.9.11.1, and 3.9.11.2.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3:

1. With one RHRSW pump inoperable, restore the inoperable pump to OPERABLE status within 30 days, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

2. With one RHRSW pump in each subsystem inoperable, restore at least one of the inoperable RHRSW pumps to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

3. With one RHRSW subsystem otherwise inoperable, restore the inoperable subsystem to OPERABLE status with at least one OPERABLE RHRSW pump within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. (unless otherwise specified in a) or b) below**)

INSERT B1

4. With both RHRSW subsystems otherwise inoperable, restore at least one subsystem to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN* within the following 24 hours.

*Whenever both RHRSW subsystems are inoperable, if unable to attain COLD SHUTDOWN as required by this ACTION, maintain reactor coolant temperature as low as practical by use of alternate heat removal methods.

INSERT B2

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INSERT [B1] (RHRSW 3.7.1.1.a.3)

a) When the 'A' RHRSW subsystem is inoperable to allow for repairs of the 'A' RHRSW subsystem piping, with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the 72-hour Allowed Outage Time may be extended to 7 days once every other calendar year with the following compensatory measures established:

   1) The following systems and subsystems will be protected in accordance with applicable station procedures:
      - 'B' RHRSW subsystem
      - 'B' ESW loop
      - 'B' and 'D' RHR subsystems
      - D12, D22, and D24 4kV buses and emergency diesel generators
      - Division 2 and Division 4 Safeguard DC, and

   2) The 'A' and 'B' loop of ESW return flow shall be aligned to the operable 'B' RHRSW return header only. The ESW return valves to the 'B' RHRSW return header (i.e., HV-11-015A and HV-11-015B) will be administratively controlled in the open position and de-energized prior to entering the extended AOT. The ESW return valves to the 'A' RHRSW return header (i.e., HV-11-011A and HV-11-011B) will be administratively controlled in the closed position and de-energized as part of the work boundary.

b) When the 'B' RHRSW subsystem is inoperable to allow for repairs of the 'B' RHRSW subsystem piping, with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the 72-hour Allowed Outage Time may be extended to 7 days once every other calendar year with the following compensatory measures established:

   1) The following systems and subsystems will be protected in accordance with applicable station procedures:
      - 'A' RHRSW subsystem
      - 'A' ESW loop
      - 'A' and 'C' RHR subsystems
      - D11, D21, and D23 4kV buses and emergency diesel generators
      - Division 1 and Division 3 Safeguard DC, and

   2) The 'A' and 'B' loop of ESW return flow shall be aligned to the operable 'A' RHRSW return header only. The ESW return valves to the 'A' RHRSW return header (i.e., HV-11-011A and HV-11-011B) will be administratively controlled in the open position and de-energized prior to entering the extended AOT. The ESW return valves to the 'B' RHRSW return header (i.e., HV-11-015A and HV-11-015B) will be administratively controlled in the closed position and de-energized as part of the work boundary.

INSERT [B2] (RHRSW 3.7.1.1.a.3)

** Only one of these two Actions, either a.3.a) or a.3.b), may be entered on Unit 2 in a calendar year. However, if either Unit 1 TS LCO 3.7.1.1, Action a.3.a) or a.3.b) has previously been entered in the calendar year, then Unit 2 Action a.3.a) or a.3.b) may not be entered during that same calendar year.

ATTACHMENT 3

License Amendment Request

Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353

Proposed Technical Specification Allowed Outage Time Extensions to Support Residual Heat Removal Service Water Maintenance

Summary of Regulatory Commitments

SUMMARY OF REGULATORY COMMITMENTS

The following table provides a restatement of Commitment 2 which has been revised to change "LPCI subsystems" to "RHR subsystems" to be consistent with the terminology used in the proposed TS LCO 3.7.1.1, Actions a.3.a) and a.3.b), as provided in the October 29, 2010 RAI response (see the response to RAI 2 in Attachment 1 to this letter). The wording changes are marked by bold lettering.

Commitment as listed in October 29, 2010 RAI Response, Attachment 4	Revised Commitment (Based on Attachment 1, Response to RAI Question # 2)
2. Also, the following actions will be taken prior to entry into the proposed configuration: • When the 'A' RHRSW subsystem is inoperable to allow for repairs of the RHRSW A subsystem piping with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop A o Unit 1 **LPCI subsystems** A and C o D11, D13, and D23 4kV buses and emergency diesel generators o Unit 1 Division 1 and Division 3 Safeguard DC • When the 'A' RHRSW subsystem is inoperable to allow for repairs of the RHRSW A subsystem piping with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop A o Unit 2 **LPCI subsystems** A and C o D11, D21, and D23 4kV buses and emergency diesel generators o Unit 2 Division 1 and Division 3 Safeguard DC (continued)	2. Also, the following actions will be taken prior to entry into the proposed configuration: • When the 'A' RHRSW subsystem is inoperable to allow for repairs of the RHRSW A subsystem piping with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop A o Unit 1 **RHR subsystems** A and C o D11, D13, and D23 4kV buses and emergency diesel generators o Unit 1 Division 1 and Division 3 Safeguard DC • When the 'A' RHRSW subsystem is inoperable to allow for repairs of the RHRSW A subsystem piping with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop A o Unit 2 **RHR subsystems** A and C o D11, D21, and D23 4kV buses and emergency diesel generators o Unit 2 Division 1 and Division 3 Safeguard DC (continued)

Commitment as listed in October 29, 2010 RAI Response, Attachment 4	Revised Commitment (Based on Attachment 1, Response to RAI Question # 2)
(continued) • When the 'B' RHRSW subsystem is inoperable to allow for repairs of the RHRSW B subsystem piping with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop B o Unit 1 **LPCI subsystems** B and D o D12, D14, and D24 4kV buses and emergency diesel generators o Unit 1 Division 2 and Division 4 Safeguard DC • When the 'B' RHRSW subsystem is inoperable to allow for repairs of the RHRSW B subsystem piping with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop B o Unit 2 **LPCI subsystems** B and D o D12, D22, and D24 4kV buses and emergency diesel generators o Unit 2 Division 2 and Division 4 Safeguard DC	(continued) • When the 'B' RHRSW subsystem is inoperable to allow for repairs of the RHRSW B subsystem piping with Limerick Generating Station Unit 2 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop B o Unit 1 **RHR subsystems** B and D o D12, D14, and D24 4kV buses and emergency diesel generators o Unit 1 Division 2 and Division 4 Safeguard DC • When the 'B' RHRSW subsystem is inoperable to allow for repairs of the RHRSW B subsystem piping with Limerick Generating Station Unit 1 shutdown, reactor vessel head removed and reactor cavity flooded, the following equipment will be verified as available and protected as defined in procedure OP-AA-108-117: o ESW loop B o Unit 2 **RHR subsystems** B and D o D12, D22, and D24 4kV buses and emergency diesel generators o Unit 2 Division 2 and Division 4 Safeguard DC