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10 CFR 50.90

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

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318

Subject: Response to Request for Additional Information
Proposed Changes to Technical Specification 3.8.1 Actions A.3 and D.3 to Extend the Offsite Circuit Inoperable Completion Times from 72 hours to 14 days on a One-Time Basis on each Unit

References:
1. Letter from D. P. Helker (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "License Amendment Request-Proposed Changes to Technical Specification 3.8.1 Actions A.3 and D.3 to Extend the Offsite Circuit Inoperable Completion Times from 72 hours to 14 days on a One-Time Basis on each Unit," dated August 23, 2018 (ML18235A199).
2. Email from Michael Marshall (NRC to Frank Mascitelli and Rick Villar (Exelon) RAI, dated October 29, 2018 (ML18302A357).

By letter dated August 23, 2018 (Reference 1), Exelon Generation Company, LLC (Exelon) requested an amendment to the Renewed Facility Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Nuclear Power Station, Units 1 and 2, respectively. The proposed amendment requested two one-time use extensions to Technical Specifications (TS) 3.8.1 (AC Sources-Operating) Actions A.3 and D.3 Completion Times (CT) for an inoperable offsite circuit from 72 hours to fourteen (14) days in order to allow for the future installation and tie in of a new 13 kV service transformer during the 2019 Unit 2 Refuel Outage and the 2020 Unit 1 Refuel Outage. The tie in of the new service transformer cannot be accomplished within the current CT of 72 hours.

The NRC staff reviewed the information provided and identified the need for additional information to complete their evaluation of the amendment request. The final request for additional information (RAI) was sent from the NRC to Exelon by electronic mail message on October 29, 2018 (ADAMS Accession No. ML18302A357 (Reference 2). The NRC and Exelon agreed to a response within 20 days (November 18, 2018).

Attachment 1 to this letter provides a restatement of the RAI questions followed by our responses. Attachment 2 provides the additional marked up TS associated with response to RAI #2.

Attachment 3 contains the Technical Evaluation associated with response to RAI #4. Attachment 4 contains the requested temperature data for the 0C DG.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachment 1 of the Reference 1 letter. Exelon has concluded that the information provided in this response does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, Exelon has concluded that the information in this response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments in this response.

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

If you have any questions or require additional information, please contact Frank J. 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 2018.

Respectfully,

David T. Gudger
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments:

1. Response to Request for Additional Information, "Proposed Changes to Technical Specification 3.8.1 Actions A.3 and D.3 to Extend the Offsite Circuit Inoperable Completion Times from 72 hours to 14 days on a One-Time Basis on each Unit"
2. Proposed TS Markup 3.8.1.D.3
3. Technical ECP-18-000496, Technical Evaluation for the Long-Term Degradation Occurring in the 0C2 DG Exhaust Gas Temperatures, dated August 15, 2018
4. Requested 0C DG Temperature Data

cc: USNRC Region I, Regional Administrator
USNRC Project Manager, CCNPP
USNRC Senior Resident Inspector, CCNPP
D. A. Tancabel, State of Maryland

ATTACHMENT 1

License Amendment Request

Calver Cliffs Nuclear Power Plant, Units 1 and 2
Docket Nos. 50-317 and 50-318

Response to Request for Additional Information
Proposed Changes to Technical Specification 3.8.1 Actions A.3 and D.3 to Extend the Offsite Circuit Inoperable Completion Times from 72 hours to 14 days on a One-Time Basis on each Unit

By letter dated August 23, 2018 (Agencywide Document Access Management System (ADAMS) Accession No. ML18235A199), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) proposing to revise Calvert Cliffs Nuclear Power Plant, Units 1 and 2 (Calvert Cliffs) Technical Specifications (TS) to permit one-time extension to the completion times (CTs) for two required actions in Section 3.8.1, "AC [Alternating Current] Sources-Operating," of the Calvert Cliffs TS. The one-time extensions up to 14 days would apply to Required Action A.3, "Restore required offsite circuit to OPERABLE status," and Required Action D.3, "Declare CREVS [Control Room Emergency Ventilation System] and CRETS [Control Room Emergency Temperature Control System] supported by the inoperable offsite circuit inoperable."

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in the LAR and has determined that additional information is needed to complete its review. In an email dated October 29, 2018 to Exelon (ADAMS Accession No. (ML18302A357), the NRC provided a Final Request for Additional Information (RAI) seeking clarification of certain issues related to the submittal. The RAI was discussed during follow-up teleconferences on October 17 and 29, 2018, and it was agreed that a response would be provided within 20 days from the date of October 29, 2018 (November 18, 2018).

REQUEST FOR ADDITIONAL INFORMATION

The requirements in Title 10 of the Code of Federal Regulations (10 CFR), Section 50.63, "Loss of All Alternating Current Power," requires that each light-water-cooled nuclear power plant to be able to withstand and recover from a station blackout (SBO) (i.e., loss of the offsite electric power system concurrent with reactor trip and unavailability of the onsite emergency alternating current electric power system) of a specified duration. The 10 CFR 50.63 requirements provide assurance that necessary operator actions can be performed and that necessary control room – area equipment will be functional under the expected environmental conditions during and following a station blackout, thereby ensuring that the core will be cooled and appropriate containment integrity will be maintained.

In its LAR, the licensee states that overall configuration changes to the plant electrical systems have been evaluated in accordance with the guidance of, NUREG-0800 Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," (ADAMS Accession No. ML113640138). Also, the licensee evaluated the additional effects to CREVS and CRETS from one inoperable offsite source.

RAI #1 QUESTION

Section B of BTP 8-8 states, in part:

> Multi-unit sites that have installed a single AAC [alternate alternating current] power source for SBO cannot substitute it for the inoperable diesel when requesting AOT [allowed outage time] extensions unless the AAC source has enough capacity to carry all LOOP [loss of offsite power] loads to bring the unit to a cold shutdown as a substitute for the EDG [emergency diesel generator] in an extended AOT and carry all SBO loads for the unit that has an SBO event without any load shedding.

Subsection 4.2c of the LAR, which provides the explanation of how Calvert Cliffs meets the above BTP 8-8 requirements but does not appear to discuss whether the AAC power source requires load shedding described in BTP 8-8.

Please provide a discussion of whether the AAC power source requires load shedding.

RESPONSE

Calvert Cliffs operating procedures for the alternate alternating current (AAC) power source (0C Diesel Generator (DG), also referred to as the SBO Diesel) do not require any manual load shedding for plant shutdown from a Loss of Offsite Power (LOOP) condition. If a LOOP or Station Blackout (SBO) occurs, the undervoltage relays on the plant 4 kV emergency safety-related buses send a signal to the Engineered Safety Features Actuation System (ESFAS) to trip the required loads from these buses. This automatic load shed operation is powered from plant batteries and is independent of a loss of offsite power. After the operator selects the 4 kV emergency safety-related bus to be powered, the 0C DG is manually started and the operator verifies the automatic load shed breakers are open and the 0C DG is at proper voltage and frequency. The 0C DG output breaker is then closed and the applicable ESFAS shutdown sequencer is manually initiated to automatically sequence the loads required for plant shutdown or for the SBO unit. This ESFAS automatic sequencing is also powered from plant batteries and independent from offsite power.

The load profile used for this LAR response uses the same shutdown sequence load profile from the Emergency Diesel Generator (EDG) load calculation for the 4 kV emergency safety-related buses. This load profile does not credit any additional load shedding. The two maximum-loaded emergency safety-related buses (4kV bus 11 and 24) were used for conservatism to obtain maximum load. Thus, there is no load shedding requirement in the operation of the AAC source.

RAI #2 QUESTION

Section B of BTP 8-8 states, in part that "The TS must contain Required Actions and CTS to verify that the supplemental AC [alternating current] source is available before entering extended AOT." Section 4.1 of the LAR states, in part, that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line."

In the LAR, the proposed change for TS 3.8.1 Action D.3 does not appear to include the required action(s) and CT(s) to verify that the AAC sources (i.e., SMECO line and SBO DG) are available before entering extended CT.

Please provide a discussion of how the proposed change is consistent with above BTP 8-8 guidance.

RESPONSE

To provide consistency with Section B of BTP 8-8, which requires Required Actions and Completion Times for the supplemental AC source, Exelon is proposing Limiting Conditions for Operation when both the SBO DG and SMECO Line are simultaneously not available. If

during the 14-day extended Completion Time period, a Condition arises that both the SBO DG and SMECO Line are unavailable a Required Action is established to restore one of the AC supplemental sources (either the SBO DG OR SMECO Line) to available status within 24 hours or be in Mode 3 within 6 hours and Mode 5 within 36 hours. The proposed TS 3.8.1.D.3 is contained in Attachment 2 and supersedes previous proposed TS wording in Reference 1.

RAI #3 QUESTION

Section 4.1, "Station Electrical Power Configuration during the 14-day CT Period," of the LAR states, in part that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line." Section B of BTP 8-8 states, in part:

> Multi-unit sites that have installed a single AAC power source for SBO cannot substitute it for the inoperable diesel when requesting AOT extensions unless the AAC source has enough capacity to carry all LOOP loads to bring the unit to a cold shutdown as a substitute for the EDG in an extended AOT and carry all SBO loads for the unit that has an SBO event without any load shedding.

Subsection 4.2c of the LAR, which provides the explanation of how Calvert Cliffs meets the above BTP 8-8 guidance, further states, in part:

> It is noted that the SBO Diesel currently has an equipment issue with its 0C2 turbocharger. A special test run and Technical Evaluation (Reference 24) concluded that the SBO Diesel will maintain greater than continuous 4,766.3 kW load with engine room temperatures averaging 75.4 °F, as would be expected during the months of January through March, based upon historical ambient (outside) and engine room temperatures.

Please provide a summary description of the special test run and the technical evaluation. In the summary description include the following:

a. 0C2 turbo exhaust temperature alarm setpoint.

b. 0C2 turbo exhaust temperature during the special test run.

c. Average 0C2 turbo exhaust temperature for the months of January to March from 2014 to present.

d. 0C2 cylinder temperature alarm setpoint.

e. 0C2 cylinder temperature during the special test run.

f. Average 0C2 cylinder temperature for the months of January to March from 2014 to present.

g. Discuss whether the 0C2 turbo exhaust or 0C2 cylinder temperatures exceed alarm setpoint during the special test run or for the months of January to March from 2014 to present.

RESPONSE:

A summary description of 0C DG current condition and special test run data performed on August 9, 2018 is contained within the Technical Evaluation ECP-18-000496 (Attachment 3). Requested data is also provided in the attached spreadsheet in Attachment 4. Please note that the requested average 0C2 turbo exhaust temperature data from the months of January to March from 2014 to present is not available as it is not a logged point documented by Operations during scheduled 0C DG runs.

a. 0C2 turbo exhaust temperature alarm setpoint – 919°F ± 13°F

b. 0C2 turbo exhaust temperature during the special test run - Data is not available

c. Average 0C2 turbo exhaust temperature for the months of January to March from 2014 to present - Data is not available

d. 0C2 cylinder temperature alarm setpoint - 1135 °F (1122 to 1148 °F uncertainty band) from any one of 16 cylinder outlets)

e. 0C2 cylinder temperature during the special test run - Contained in Attachment 4

f. Average 0C2 cylinder temperature for the months of January to March from 2014 to present - Contained in Attachment 4

RAI #4 QUESTION

Section 4.1, "Station Electrical Power Configuration during the 14-day CT Period," of the LAR states, in part that "During each of these refueling outages CREVS/CRETS alternate power can be provided by either the SBO Diesel or the SMECO line." Subsection 4.2c of the LAR further states, in part "It is noted that the SBO Diesel currently has an equipment issue with its 0C2 turbo charger."

Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," (ADAMS Accession No. ML070380553) in describing the reliability of the EDGs (including, the SBO diesel generator (DG)), states, in part:

> The design of the emergency diesel generators (EDGs) should also incorporate high operational reliability, and this high reliability should be maintained throughout their lifetime by initiating a reliability program that is designed to monitor, improve, and maintain reliability. Increased operational reliability can be achieved through appropriate testing and maintenance, as well as an effective root cause analysis of all emergency diesel generator failures.

The NRC staff notes that the SBO DG is proposed to be an alternate power supply for the CREVS and CRETS if the EDG is inoperable. As part of reviewing the power supply for the CREVS and CRETS, the staff notes that there is no information describing the impact of the equipment issue with respect to its the reliability of the SBO DG. This impact may affect whether the SBO DG is an adequate alternate power source for the CREVS and CRETS when the EDG inoperable.

Please provide a description of how equipment issue impacts the SBO DG reliability with respect to the power source to the CREVS and CRETS.

RESPONSE:

The 0C DG is monitored and maintained in accordance with ER-AA-440, "Emergency Diesel Generator (EDG) Reliability Program."

Based on a review of the Corrective Action Review Program (CAP) from year 2014 to present, the reliability of the 0C DG is 100%. There were no documented start demand failures for scheduled periodic testing during this approximate five-year period.

The equipment issue described in Reference 1 has had no impact on 0C DG reliability based upon not having any failures for any valid start demands per Regulatory Guide 1.155, "Station Blackout." The current equipment issue condition described could impact the 0C DG design capacity of 5,400 kW.

The available 0C DG turbo charger and cylinder exhaust temperature condition has been evaluated (Attachment 3). The evaluation has identified a long-term degradation occurring in the 0C2 DG exhaust gas temperatures. This degradation is resulting in lowered margin to alarm setpoints during fully loaded runs. The evaluation substantiated that despite this degradation, the 0C DG is able to meet the expected 4,766.3kw load for the SBO event described in Reference 1, with the additional establishment of the compensatory action limit of 92 °F ambient (outside) air temperature, during the expected February 2019 and 2020 14-day extended Completion Times. The 0C DG maximum expected load is 4,766.3 kW and is conservatively based on the highest loaded emergency safety-related bus from each unit (4 kV buses 11 and 24). The 0C DG can adequately and individually support being the power source to the CREVS and CRETS, which has an expected total load of 415.4 kW.

RAI 5 and 6 QUESTIONS

The NRC staff reviews the human performance aspects of LARs using the guidance in Standard Review Plan Chapter 18 and NUREG-1764 Rev. 1, "Guidance for the Review of Changes to Human Actions" (ADAMS Accession No. ML072640413). In accordance with the generic risk categories established in Appendix A to NUREG-1764, actions to recover offsite power after a LOOP and actions involving risk-important systems are potentially risk-important. Due to the risk importance, the NRC staff will perform a Level II human factors review per the guidance in Section 4 of NUREG-1764, Rev. 1.

The LAR states that the FLEX DGs will be used as additional defense-in-depth to support the proposed 14 day CT. However, the LAR does not state how the FLEX DGs will be used to support the proposed 14 day CT in relation to how the FLEX DGs were designed to support

mitigation of beyond design-basis external events (BDBEEs) in accordance with Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond Design-Basis External Events," (ADAMS Accession No. ML12054A735). The NRC staff requests the following information to determine whether the use of the FLEX DGs to support the proposed CT is feasible and reliable.

RAI #5 QUESTION

Describe any differences between deployment, staging, timing, and use of the FLEX DGs to support the proposed 14 day CT and to meet the requirements of Mitigating Strategies Order EA-12-049?

RESPONSE:

Upon further review Exelon has determined that no prestaging of the FLEX Diesels (DG) will occur. The FLEX Diesels will be used in accordance with existing approved procedures that implement and support Mitigating Strategies Order EA-12-049. No new activities (deployment, staging, timing and use of FLEX DGs) are being proposed for this LAR's third level of defense-in-depth that have not already been NRC reviewed to support Mitigating Strategies Order EA-12-049.

During the extended 14-day Completion Time, should an SBO event occur, procedures EOP-1 or 2 (Reference 1 Attachment 1, References 12 and 13) would be used and if the SBO condition exceeded one hour (i.e., both SBO Diesel and SMECO Line are unavailable) an ELAP (Extended Loss of AC Power) would be declared. The FLEX Guidelines (FSG) would then be utilized to address the Beyond Design Bases External Event (BDBEE). FSG-5, "Initial Assessment and FLEX Equipment Staging," (Reference 1, Attachment 1, Reference 4) has the major action and time frames that would be implemented for activities to be completed using the FLEX DGs. Selected 480 VAC buses would be powered within approximately seven hours, but there is are no specific actions in the FSG to energize CREVS/CRETS at that time. Should CREV/CRETS be needed, the 480 VAC buses feeding CREVS/CRETS would be given priority restoration. In addition, FSG-15, "Alignment for Area Cooling," has actions to align temporary ventilation to the Control Room within 12 hours using the 5,500 W Pramac FLEX Diesel Generator and 2,000 CFM blower.

RAI #6 QUESTION

If the FLEX DGs will used differently to support the proposed CT than to support Mitigating Strategies Order EA-12-049, answer the following:

a. Will the FLEX DGs remain available and protected from all BDBEEs while being used to support the proposed 14 day CT? If the FLEX DGs will not remain available and protected from all BDBEEs, how will the site meet its allowed unavailability times for FLEX (NEI 12-06, Rev. 0 or Rev. 2 or exception taken in FLEX Implementation Plan and evaluated in FLEX SE)?

b. What procedural and administrative control(s) changes were made to direct staging and use of the FLEX DGs in support of the proposed 14 day CT as opposed to the mitigation of BDBEEs?

c. How was training modified to address the use of the FLEX DGs in the context of supporting the proposed 14 day CT as opposed to the mitigation of BDBEEs?

d. What validation was performed to ensure that the administrative controls are effective and that the FLEX DGs can be connected in the time required to support the proposed 14 day CT as opposed to the mitigation of BDBEEs?

RESPONSE

The FLEX DGs will not be used differently to support the proposed CT than to support Mitigating Strategies Order EA-12-049.

ATTACHMENT 2

License Amendment Request

Calver Cliffs Nuclear Power Plant, Units 1 and 2
Docket Nos. 50-317 and 50-318

Proposed TS Markup 3.8.1.D.3

Page

3.8.1-5

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. LCO 3.8.1.c offsite circuit inoperable.	---------- NOTE ---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems-Operating," when Condition D is entered with no AC power source to a train. ----------	
	D.1 Perform SR 3.8.1.1 or SR 3.8.1.2 for required OPERABLE offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND	
	D.2 Declare, CREVS or CRETS with no offsite power available inoperable when the redundant CREVS or CRETS is inoperable.	24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)
	AND	
	D.3 Declare CREVS and CRETS supported by the inoperable offsite circuit inoperable.	72 hours *

* INSERT 1

INSERT 1

Or 14 days, once during each applicable 2019 and 2020 Refuel Outage, for the connection of the new P-13000 Service Transformer.

Prior to entry into the 14-day Completion Time, the 0C DG and the SMECO 69 kV Line shall be verified available. During the 14-day Completion Time, the 0C DG and SMECO 69 kV Line shall be verified available once per shift.

If both the 0C DG and SMECO 69 kV Line become un-available during the 14-day Completion Time, either the 0C DG or the SMECO 69 kV Line shall be restored to available status within 24 hours, or the Unit shall be brought to MODE 3 within 6 hours and MODE 5 within 36 hours.

ATTACHMENT 3

License Amendment Request

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

Technical ECP-18-000496, Technical Evaluation for the Long-Term Degradation Occurring in the 0C2 DG Exhaust Gas Temperatures, dated August 15, 2018

TECHNICAL EVALUATION

ECP No.:	Rev. No.: 0
ECP-18-000496	

Reason for Evaluation:

Strategic Engineering has reviewed past available 0C Diesel Generator turbo charger and cylinder exhaust temperature data and has identified a long-term degradation occurring in the 0C2 DG exhaust gas temperatures. This degradation is resulting in lowered margin to alarm setpoints during fully loaded runs. This evaluation will substantiate that despite this degradation, the 0C DG is able to meet the commitment of 4766.3kw load for the Electrical Distribution Reliability Improvement Project License Amendment Request submittal.

Detailed Evaluation of Problem/Changes:

The 0C2 Turbo exhaust temperature alarmed during a scheduled 24 hour loaded run of the 0C DG. This resulted in Operators taking alarm response manual actions and lowering the load. The specific alarm received was fed from 0-TIS-10651 and alarmed at 915F (Alarm Window SL-130 in the 0C Control Room). Its alarm setpoint is 919F +/- 13F. Upon alarm validation by plant operators, 0C DG load was lowered from 5000kw to 2400kw. After approximately 1 hour at lowered temperatures, 0C DG load was raised from 2400kw to 3000kw. The 0C DG was subsequently run successfully for 8 hours at 4200kw, which would meet STP 08 Acceptance Criteria, and at 3600kw for the remaining 16 hours to demonstrate Functionality of the 0C DG. Engine Room temperature during the time of the higher load was 90F.

As a result of this issue, focused troubleshooting was performed to determine the cause of the elevated temperatures and nothing abnormal was noted. On 6/7/2018 the 0C DG was operated for 5.75 hours at 5020kw-5097kw load. Engine Room temperature during this run ranged from 81.9F to 86.3F with outside air temperature ranging from 68.3F to 74.0F. At no time during this run were any alarm or operational limits reached.

Further troubleshooting on 8/9/18 revealed that the 0C DG could be loaded to 5200kw for greater than 3 hours with engine room temperature range from 95-107F without alarm limits being reached. Ambient (outside) temperature during this run ranged from 79-88F. It should be noted that the 0C DG Engine room temperature is maintained by 4 fans that cycle on, one at a time, in 10F increments starting at a room temperature of 75F.

Review of previous data reveals a correlation of 0C DG Exhaust temperature to 0C DG Engine Room temperature, with a ratio of 1.375:1.

0C DG run data has been reviewed for DG Room temperature data vs Average Exhaust temperature for the months of Jan-March from 2014 to present. This has indicated an average room temperature of 75.4F with a high of 89F and a low of 70.5F, and average 0C2 Cylinder temperature of 961F. At no time did these temperatures reach alarm response limits. Additionally, historical weather data for Lusby MD shows average high temperature of 44F, 47F and 55F for the months of January to March, respectively.

ECP No.:	Rev. No.: 0
ECP-18-000496	

Conclusion/Findings

Based upon review of previous data and temperature correlations, it is reasonable to expect that the 0C DG will maintain >4766.3kw load with Engine Room temperatures averaging 75.4F as would be expected during the months of January through March, based upon historical ambient and engine room temperatures as noted above. System Manager recommends a limit of 92F ambient (outside) air temperature to credit the 0C DG for LAR commitment based upon these findings, which accounts for historical average of 14F difference between outside air temperature and 0C DG Engine Room temperature, as well as operation at the maximum allowed tolerance for turbo exhaust gas temperature.

ATTACHMENT 4

License Amendment Request

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

Requested 0C DG Temperature Data

Date/Time of Room Temp	0C DG Room Temp	Average Cylinder Exhaust Temp 0C1 engine / 0C2 engine	KW Load	Outside Air
01/11/2014 1138	85F	952/963	5112	
01/11/2014 1217	89F	970/979	5040	
02/08/2014 1605	74F	946/952	5140	
02/08/2014 1634	75F	961/968	5190	
01/11/2015 0203	72F	942/960	5150	
01/11/2015 0210	72F	948/965	5150	
02/12/2015 0023	75.5F	951/976	5025	
02/12/2015 0034	74.3F	954/948	5025	
03/14/2015 2326	80.4F	938/949	4891	
03/15/2015 0000	82.4F	937/953	4862	
01/19/2016 1445	71.3F	931/961	OOS	
02/12/2016 1313	72.6F	937/962	5000	
02/12/2016 1355	74.7F	942/966	5000	
03/03/2016 2346	70.5F	924/943	OOS	
03/04/2016 0015	72.3F	932/950	OOS	
02/09/2017 2257	72F	938/960	5000	
02/09/2017 2316	73.2F	943/965	5000	
02/07/2018 1112	75.2F	954/973	4900	
02/07/2018 1147	71.5F	942/969	4960	
06/07/2018 1041	81.9F	956/985	5040	68.3F
06/07/2018 1113	82.3F	958/989	5020	68.6F
06/07/2018 1201	82.2F	962/992	5082	70.6F
06/07/2018 1258	83.0F	965/997	5039	70.9F
06/07/2018 1357	84.5F	969/999	5089	72.9F
06/07/2018 1500	86.1F	971/1004	5040	73.9F
06/07/2018 1545	86.3F	977/1010	5097	74.0F
08/09/2018 1000	103.6F	975/983	5200	80.6F
08/09/2018 1100	104.8	988/1013	5200	82.4F
08/09/2018 1200	106.1	988/1017	5225	83.4F
08/09/2018 1300	107	991/1017	5200	84.2F