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10 CFR 50.90

RA-18-036

March 29, 2018

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

Oyster Creek Nuclear Generating Station  
Renewed Facility Operating License No. DPR-16  
NRC Docket Nos. 50-219 and 72-15

Subject: Response to Request for Additional Information (RAI) and Supplement Regarding License Amendment Request - Proposed Defueled Technical Specifications and Revised License Conditions for Permanently Defueled Condition

- Reference:
- 1) Letter from Michael P. Gallagher, (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission – *"License Amendment Request – Proposed Defueled Technical Specifications and Revised License Conditions for Permanently Defueled Condition,"* dated November 16, 2017 (ADAMS Accession No. ML17320A411)
  - 2) U.S. Nuclear Regulatory Commission Electronic Mail Request to David Helker, et al., (Exelon Generation Company, LLC) – DRAFT RAI - Oyster Creek Defueled TS LAR (EPID: L-2017-LLA-0395), dated February 28, 2018
  - 3) U.S. Nuclear Regulatory Commission Electronic Mail Request to David Helker (Exelon Generation Company, LLC) – "RAI for Oyster Creek Permanently Defueled TS LAR and EAL Scheme LAR (EPID: L-2017-LLA-0395)," dated March 9, 2018 (ML18068A658)
  - 4) U.S. Nuclear Regulatory Commission Electronic Mail Request to David Helker, et al., (Exelon Generation Company, LLC) – DRAFT RAI - Oyster Creek Defueled TS LAR (EPID: L-2017-LLA-0395), dated March 19, 2018

By letter dated November 16, 2017 (Reference 1), Exelon Generation Company, LLC (Exelon) submitted changes to Renewed Facility Operating License (RFOL) No. DPR 16 and Technical Specifications (TSs) for the Oyster Creek Nuclear Generating Station (OCNGS). Exelon requested an amendment to revise the OCNGS RFOL and the associated TS to Permanently Defueled Technical Specifications (PDTS) consistent with the permanent cessation of reactor operation and permanent defueling of the reactor.

Subsequently, in electronic mail requests dated February 28, 2018 (Reference 2), and March 19, 2018 (Reference 4), the U.S. Nuclear Regulatory Commission (NRC) issued draft Requests for Additional Information (RAI) indicating that it had reviewed the information submitted in the Reference 1 letter and that additional clarifying information was needed to support its continued technical review. The draft RAI questions in Reference 2 were further discussed during a teleconference between Exelon and NRC representatives held on March 9, 2018. As a result of the discussion, it was determined that no modifications to the draft RAI questions were needed and the NRC subsequently issued its formal RAI on March 9, 2018 (Reference 3), and requested a response within 30 days of the date of the electronic mail request. The RAI issued in Reference 4 was self-explanatory and did not require further discussion. The response to the last RAI question will be included with the other RAI question responses.

Attachment 1 provides Exelon's responses to the NRC's RAI questions contained in the Reference 3 and Reference 4 electronic mail requests. Attachment 2 includes the revised Permanently Defueled Technical Specifications (PDTS) page mark-ups and Attachment 3 contains the clean pages of the PDTS. The PDTS pages being submitted in this letter supersede in entirety those affected pages submitted in Reference 1.

Exelon has reviewed the information supporting a finding of No Significant Hazards Consideration and the Environmental Consideration provided to the NRC in Reference 1. The additional information provided in this submittal does not affect the previously stated bases in Reference 1 for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the information provided in this submittal 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 contained in this submittal.

If you have any questions concerning this submittal, please contact Paul Bonnett at (610) 765-5264.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 29<sup>th</sup> day of March 2018.

Respectfully,

A handwritten signature in black ink, reading "Michael P. Gallagher". The signature is fluid and cursive, with the first name "Michael" and last name "Gallagher" clearly legible.

Michael P. Gallagher  
Vice President, License Renewal & Decommissioning  
Exelon Generation Company, LLC

Attachment 1: Response to NRC's Request for Additional Information and Supplement

Attachment 2: Revised Permanently Defueled Technical Specifications (PDTS) Page Mark-ups

Attachment 3: Clean Copy - Permanently Defueled Technical Specifications (PDTS)

U.S. Nuclear Regulatory Commission  
Response to Request for Additional Information  
Docket Nos. 50-219 and 72-15  
March 29, 2018  
Page 3

cc: w/Attachments

Regional Administrator - NRC Region I  
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station  
NRC Project Manager, NRR - Oyster Creek Nuclear Generating Station  
Director, Bureau of Nuclear Engineering - New Jersey Department of Environmental  
Protection  
Mayor of Lacey Township, Forked River, NJ

**Attachment 1**

**Response to NRC's Request for Additional Information and Supplement**

## **SUMMARY**

By letter dated November 16, 2017 (Reference 1), Exelon Generation Company, LLC (Exelon) submitted changes to Renewed Facility Operating License (RFOL) No. DPR 16 and Technical Specifications (TSs) for the Oyster Creek Nuclear Generating Station (OCNGS). Exelon requested an amendment to revise the OCNGS RFOL and the associated TS to Permanently Defueled Technical Specifications (PDTS) consistent with the permanent cessation of reactor operation and permanent defueling of the reactor.

Subsequently, in electronic mail requests dated February 28, 2018 (Reference 2), and March 19, 2018 (Reference 4), the U.S. Nuclear Regulatory Commission (NRC) issued draft Requests for Additional Information (RAI) indicating that it had reviewed the information submitted in the Reference 1 letter and that additional clarifying information was needed to support its continued technical review. The draft RAI questions in Reference 2 were further discussed during a teleconference between Exelon and NRC representatives held on March 9, 2018. As a result of the discussion, it was determined that no modifications to the draft RAI questions were needed and the NRC subsequently issued its formal RAI on March 9, 2018 (Reference 3), and requested a response within 30 days of the date of the electronic mail request. The RAI issued in Reference 4 was self-explanatory and did not require further discussion. The response for the last RAI question will be included with the other RAI question responses.

Accordingly, this attachment restates the NRC's RAI questions contained in the Reference 3 and Reference 4 electronic mail requests followed by Exelon's response. RAI questions 1 through 9 were communicated in Reference 3 and RAI question 10 was communicated in Reference 4. Attachment 2 includes the revised Permanently Defueled Technical Specifications (PDTS) page mark-ups and Attachment 3 contains the clean pages of the PDTS. The PDTS pages being submitted in this letter supersede in entirety those affected pages submitted in Reference 1.

## **RESPONSE TO RAI QUESTIONS**

### **RAI-(RFOL)-01**

You propose to delete RFOL 1.C. In Reference 9 (ML15117A551) of your submittal, you refer to the Vermont Yankee Defueled TS amendment that the NRC approved. In the Vermont Yankee approval, the NRC staff approved the following License Condition, which is similar to your RFOL 1.C that you request to delete.

"Actions have been identified and have been or will be taken with respect to: (1) managing the effects of aging on the functionality of structures and components that have been identified to require review under 10 CFR 54.21 (a)(1) during the period of extended operation, and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21 (c), such that there is reasonable assurance that the activities authorized by this license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3 for the facility, and that any changes made to the facility's current licensing basis in order to comply with 10 CFR 54.29(a) are in accordance with the Act and the Commission's regulations."

Please provide a technical justification for deleting RFOL 1.C.

### **Exelon's Response to RAI-(RFOL)-01:**

Exelon withdraws its request to delete Licensing Finding 1.C. Exelon reassessed its request to delete this License Finding and concluded that this finding is part of the historical documented

basis for the NRC Staff's conclusions that the license meets other conditions referenced in the license and should remain unaltered in the license until license termination.

#### **RAI-(RFOL)-02**

In RFOL 2.C.(2), explain why you wish to delete "incorporated in the license" and replace it with "replaced with the Permanently Defueled Technical Specifications (PDTS)." Once you decommission, you will still have a Part 50 license for OCNGS that you must adhere to.

#### **Exelon's Response to RAI-(RFOL)-02:**

Exelon proposed the following change for RFOL 2.C.(2) in Reference 1:

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. [XXX], are hereby ~~incorporated in the license~~ **replaced with the Permanently Defueled Technical Specifications (PDTS)**. Exelon Generation Company shall ~~operate~~ **maintain** the facility in accordance with the **Permanently Defueled** Technical Specifications.

Exelon will revise the proposed change to read:

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. [XXX], are hereby incorporated in the license. Exelon Generation Company shall ~~operate~~ **maintain** the facility in accordance with the **Permanently Defueled** Technical Specifications (PDTS).

#### **RAI-(RFOL)-03**

On December 22, 2017, the NRC staff issued Amendment No. 292 (ML17289A222) regarding Cyber Security. Your current request would supersede Amendment No. 292. Do you wish to supplement your November 16, 2017, submittal to delete your requested change for RFOL 2.C.(4)?

#### **Exelon's Response to RAI-(RFOL)-03:**

Exelon withdraws its request to change for RFOL 2.C.(4). With the NRC issuance of Amendment No. 292 (ML17289A222), the request is no longer valid. A revised page of the RFOL will be supplemented in Attachment 2.

#### **RAI-(RFOL)-04**

In RFOL 2.C.(10), you state that Exelon analyzed the FHA for dose results for the CR. Where is this analysis? Is it part of the submittal dated November 16, 2017? Can you provide more technical details of this analysis?

#### **Exelon's Response to RAI-(RFOL)-04:**

The following provides additional technical information related to the Fuel Handling Accident (FHA) for post-cessation of power operations (decommissioning FHA) provided in Attachment 1 of Reference 1. Specifically, this response summarizes the changes from the FHA analysis for normal power operation compared to the decommissioning FHA analysis. This information does not supersede the decommissioning FHA information in Attachment 1 of Reference 1. Some of the information is repeated from Attachment 1 of Reference 1 for completeness in summarizing the changes here.

The OCNCS decommissioning FHA analysis (Reference 6) removed credit for safety systems which would reduce offsite and Control Room (CR) doses. The safety systems not credited are (1) the Standby Gas Treatment System (SGTS), (2) secondary containment, and (3) control room ventilation and filtration. With the elimination of these safety systems, a FHA in the Spent Fuel Pool (SFP) would not result in a significant radiological release to the general public or environment. Activity that comes out of the SFP would be released into the refuel floor airspace, then released directly to the environment over a 2-hour time period as per Attachment B in Regulatory Guide 1.183 (RG 1.183) (Reference 7). The released activity then migrates to the CR intake and enters the CR unfiltered. In order to evaluate the consequences of downgrading the safety systems from safety-related to non-safety-related required the FHA analysis to consider whether a malfunction of the systems could affect the CR and offsite doses.

The analysis (Reference 6) determined that a malfunction of the CR ventilation system with no filtration has a substantial impact on the CR dose if the CR ventilation system isolated and contained the activity in the CR. A sensitivity study was performed that determined the worst-case scenario. If the CR ventilation was in purge mode at the time of the FHA (maximizing the intake flow) and the CR ventilation system subsequently fails 5 minutes into the accident isolating the control room for the remaining duration of the event, then the dose to the CR operators is maximized. After CR isolation, 10 cfm airflow into and out of the CR is assumed to account for normal operator ingress and egress.

A new source term for the decommissioning FHA analysis was calculated using ORIGEN2.1 using the highest core average burnup and a bounding core average enrichment applicable to the current operating Cycle 26 and future Cycle 27. Per Reference 5, OCNCS will shutdown at the end of Cycle 26. To assess the dose, a 60-day decay time was assumed and no credit was taken for dose reduction due to safety systems and CR ventilation system isolation since they are being downgraded. ORIGEN2.1 was used to calculate the decay of the fuel for the 60 days. In the FHA analysis for normal power operations, ORIGEN2.1 was used to calculate the source term and RADTRAD was used to decay the fuel 1-day. ORIGEN2.1 is more robust than RADTRAD for calculating the decay greater than a few days as ORIGEN2.1 accounts for the progeny of all parent nuclides while RADTRAD usually uses a limited set of approximately 60 nuclides that are significant to dose.

The activity released from the dropped and struck bundles is provided in Table 1.

**Table 1: FHA Noble Gas and Iodine Isotopic Source Terms**

<b>Isotope</b>	<b>FHA for Normal Power Operations Specific Activity* (Ci/MWth)</b>	<b>Decommissioning FHA 60 Day Decay Specific Activity* (Ci/MWth)</b>
Kr-85	6.63E+00	7.12E+00
Kr-85m	4.90E+01	0.00E+00
Kr-87	9.35E+01	0.00E+00
Kr-88	1.31E+02	0.00E+00
I-131	1.54E+00	9.10E-03
I-132	1.38E+00	4.07E-06
I-133	1.95E+00	2.87E-21
I-134	2.15E+00	0.00E+00
I-135	1.83E+00	0.00E+00
Xe-133	3.90E+02	1.69E-01
Xe-135	1.65E+02	0.00E+00

\* FHA for normal power operations specific activity shown in Table is un-decayed. RADTRAD decay functionality was used to decay 1 day. Decommissioning FHA 60-day decay was performed using ORIGEN2.1 instead of RADTRAD.

The decommissioning FHA can only occur in the SFP. However, for conservatism, the fuel damage value of 2.01 bundles associated with dropping a fuel bundle over the vessel with a fall height of approximately 30 feet (as compared to the SFP drop height of approximately 4 feet) was retained as it maximizes the fuel damage and therefore, the released activity, that could occur during a FHA. A Decontamination Factor (DF) of 200 (associated with 23 feet of water coverage) was used; however, the bundle that lays on the SFP racks has slightly less than 23 feet (approximately 21.5 feet) of water coverage. The use of DF of 200 is acceptable due to the conservatism in the fuel damage (factor of 2 higher) – see response to RAI-(TS 3.1)-09 for more detail.

A ground release atmospheric dispersion factor (X/Q) near the Main Steam Isolation Valves (MSIVs) in the turbine building was used in the decommissioning FHA as compared to a main stack release used in the FHA for normal power operations. This release point was selected because it does not credit any safety-systems, it conservatively bounds the atmospheric dispersion from the fuel building (i.e., reactor building) to the CR intake, and was previously evaluated to address the ground-level MSIV leakage during the Alternate Source Term (AST) Loss of Coolant Accident (LOCA).

RADTRAD version 3.03 (RADTRAD) was used to calculate the offsite and CR dose for the decommissioning FHA and the FHA for normal power operations. Table 2 provides a summary of the changes between the FHA for normal power operations and the decommissioning FHA.



**Table 2: Summary of RADTRAD Inputs**

<b>Parameter</b>	<b>FHA for Normal Power Operations Value</b>	<b>Decommissioning FHA Value</b>
Core Activities	Refer to Table 1	Refer to Table 1
Environment Release Point	Offsite: Main stack-level release CR: Main stack-level release	Offsite Ground-level from the reactor building CR: MSIVs in the turbine building
Standby Gas Treatment System Filtration and Flowrate	Credited.	Not credited.
<b>Control Room Parameters</b>		
CR Atmospheric Dispersion Factors	0 – 5 min. ground release (2.59E-03 sec/m <sup>3</sup> ) 5 min. – 8 hours (1.80E-04 sec/m <sup>3</sup> ) 8 – 24 hours (9.67E-05 sec/m <sup>3</sup> ) 24 – 96 hours (2.50E-05 sec/m <sup>3</sup> ) 96 – 720 hours (3.60E-06 sec/m <sup>3</sup> )	0 – 8 hours (2.71E-03 sec/m <sup>3</sup> ) 8 – 24 hours (8.76E-04 sec/m <sup>3</sup> ) 24 – 96 hours (8.63E-04 sec/m <sup>3</sup> ) 96 – 720 hours (8.45E-04 sec/m <sup>3</sup> )
Unfiltered Intake Flow	0 to 720 hours (1.40E+04 cfm)	0 to 8.3333E-02 hours (1.40E+04 cfm) 8.3333E-02 to 720 hours (10 cfm)

**RAI-(TS 3.0)-05**

Why does the proposed LCO 3.0.1 refer to TS 3.0.2 and not LCO 3.0.2?

**Exelon's Response to RAI-(TS 3.0)-05:**

The proposed LCO 3.0.1 referring to TS 3.0.2 is a typographical error and has been corrected to LCO 3.0.1 and LCO 3.0.2. Attachment 2 of this submittal provides the corrected page for Section 3/4, "Limiting Conditions for Operation and Surveillance Requirement Applicability."

**RAI-(TS 3.0)-06**

Why is there a colon between LCO and 3.1 on page 44 of 91?

**Exelon's Response to RAI-(TS 3.0)-06:**

The colon between LCO and 3.1 on page 44 of 91 (and also between LCO and 3.2 on page 55 of 91) represent the formatting as provided in the actual LCOs provide on pages 3/4/1-1 and 3/4/2-1 respectively, where "LCO:" is intended to highlight the LCO.

**RAI-(SR 4.2)-07**

Why is the frequency once per 7 days when liquid is being added? Why not once per 7 days while radioactive liquid is in the tank?

**Exelon's Response to RAI-(SR 4.2)-07:**

The surveillance frequency in proposed SR 4.2 is based on the frequency of SR 4.6.C in the current operating TS. The description and frequency of SR 4.6.C states:

Liquids contained in the following tanks shall be sampled and analyzed for radioactivity.  
Once per 7 days when radioactive liquid is being added to the tank.

LCO 3.2 requires action in the event the quantity of radioactive material in any applicable storage tank exceeds 10.0 curies. The tank is sampled once per 7 days when radioactive liquid is being added to the tank to ensure the total quantity of radioactive material does not exceed 10 curies. If it does then the Required Action of the LCO to begin and continue treatment until the quantity to 10 curies or less. If the existing material in the tank is less than 10 curies, the only means that would cause the radioactivity to increase would be by adding liquid to the tank. Therefore, taking a sample every 7-days when additions are being made to the tank verifies that the radioactivity will remain within limits. A surveillance once per 7 days would not be meaningful if there are no additions being made to the tank.

**RAI-(TS 6.0)-08**

You are proposing to change TS 6.8.1.a, TS 6.8.4.a.9, TS 6.9.1.d, TS 6.9.1.e; however, Amendment No. 290 has been approved with a 60-day implementation period not to exceed March 29, 2020. These are the same TSs being revised in the Defueled TS LAR. How is Exelon going to ensure that Amendment No. 290 is implemented before the Defueled TS amendment? What controls does Exelon have in place?

**Exelon's Response to RAI-(TS 6.0)-08:**

Exelon is tracking the approval of each amendment request and will implement each amendment sequentially as it was issued by the NRC. Amendment 290 revised and removed certain requirements from the Section 6, "Administrative Controls," that are not applicable to the facility in a permanently defueled condition. Specifically, the amendment revised TS Section 6.1, "Responsibility"; TS Section 6.2, "Organization"; TS Section 6.3, "Facility Staff Qualifications"; TS Section 6.6, "Reportable Event Action"; TS Section 6.7, "Safety Limit Violation"; TS Section 6.8, "Procedures and Programs"; and TS Section 6.9, "Reporting Requirements" to reflect the staffing and training requirements for operating staff when the facility is permanently defueled.

Amendment No. 290 will be implemented immediately after the certification of permanent removal of fuel from the reactor vessel pursuant to 10 CFR 50.82(a)(1)(ii), has been docketed with the NRC.

The proposed License Amendment Request (LAR) is to revise the OCNCS Renewed Facility Operating License (RFOL) and associated TS to Permanently Defueled Technical Specification (PDTs) consistent with the permanent cessation of reactor operation and permanent defueling of the reactor. This PDTs LAR will be implemented after a 60-day period from the permanent unit shutdown to allow sufficient decay of the fuel in order to ensure that radiological doses at the EAB, LPZ, and in the Control Room from a postulated FHA are below the limits of 10 CFR 50.67 and Regulatory Guide 1.183.

Amendment (AMD) No. 290 will be implemented at shutdown. This proposed PDTs LAR will not be implemented until after 60 days subsequent to shutdown, ensuring that it is implemented after AMD No 290. This implementation sequence is being tracked in the action tracking system to ensure the timely and effective implementation of the amendments.

**RAI-(TS 3.1)-09**

On April 26, 2007, the NRC issued Amendment No. 262 (ADAMS No. ML071080019) to Facility Operating License No. DPR-16 for the OCNGS, approving the implementation of the alternative source term in accordance with 10 CFR 50.67 following the guidance provided in applicable sections of Regulatory Guide (RG) 1.183, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*.

Chapter 15 of the OCNGS Updated Final Safety Analysis Report (UFSAR) describes the design basis accidents (DBA) and transient scenarios applicable to OCNGS during power operations. With the termination of reactor operations at OCNGS and the permanent removal of fuel from the reactor pressure vessel (RPV) the majority of the DBA scenarios postulated in the UFSAR are no longer possible. During decommissioning, the irradiated fuel will be stored in the Spent Fuel Pool (SFP) and the Independent Spent Fuel Storage Installation until it is shipped off site. The analyzed accidents that remain applicable to OCNGS in the permanently shut down and defueled condition is a Fuel Handling Accident (FHA) in the SFP (a dropped fuel assembly onto the top of the core will no longer be applicable), the Postulated Radioactive Tank Failure, and Release of Radioactive Liquid Waste while radioactive liquids are still present.

The licensee proposed to change TS Section 3.1, *Protective Instrumentation* to be TS Section 3/4.1, *Spent Fuel Storage* with a new proposed TS LCO: TS 3.1, *Spent Fuel Pool Water Level*. The purpose of the change is to ensure safe storage and management of the spent fuel. LCO 3.1, *Spent Fuel Pool Water Level*, specifies requirements to ensure that the minimum water level in the spent fuel pool meets the assumptions of iodine decontamination factors following a FHA in the SFP. LCO 3.1 states:

"Whenever irradiated fuel is stored in the spent fuel storage pool, water level shall be maintained at a level  $\geq$  117 feet 8 inches (elevation above sea level) with the exception of planned cask movements."

To support this new proposed change, the licensee evaluated the required minimum water level in the SFP (calculation C-1302-226-E310-460) for the dropping an irradiated fuel assembly onto irradiated fuel bundles stored in the SFP.

The licensee stated:

"There is slightly over 23 feet of water above the top of active fuel for bundles within the storage racks; however, this does not ensure the dropped bundle will have 23 feet of water coverage above it."

Regulatory Issue Summary (RIS) 2006-04, Summary of Issue 8, *Elemental Iodine Decontamination Factor (DF)*, explains:

"Appendix B to RG 1.183, provides assumptions for evaluating the radiological consequences of a fuel handling accident. If the water depth above [emphasis added] the damaged fuel is 23 feet or greater, Regulatory Position 2 states that the decontamination factors for the elemental and organic [iodine] species are 500 and 1, respectively, giving an overall effective decontamination factor of 200." However, an overall DF of 200 is achieved when the DF for elemental iodine is 285, not 500."

The licensee credits an overall effective decontamination factor of 200 even though 23 feet of water above the dropped bundle is not ensured. The licensee justifies the decontamination factor:

"because less fuel damage would occur due to the shorter drop compensating for having slightly less than 23 feet of water coverage above the dropped bundle."

It is unclear how a decontamination factor of 200 is justified due to the reduced drop height in the SFP. The licensee's fuel assembly drop analysis uses a simplified conservation of energy approach to estimate the maximum kinetic energy generated from a dropped fuel assembly. The analysis does not estimate a decontamination factor due to the assembly drop height.

As discussed in RG 1.183, Regulatory Position 2, *Water Depth*, if the depth of water is not 23 feet, the decontamination factor will have to be determined on a case-by-case method.

Please provide the technical basis for applying a decontamination factor associated with the water above the spent fuel being 23 feet or greater, when the water depth in the SFP is not 23 feet or greater. In addition, explain the methodology used to calculate the decontamination factor. Please state the estimated water level [in linear feet] above the damaged fuel assembly as applied in the radiological consequence analysis.

**Exelon's Response to RAI-(TS 3.1)-09:**

Once the reactor is decommissioned, the FHA can only occur in the SFP. A pool DF of 200 was used, however, the bundle that lays on the SFP racks has approximately 21.5 linear feet of water coverage and the spent fuel assemblies within the storage racks have approximately 23 linear feet of water coverage above the top of active fuel. The reason why the use of a DF of 200 is acceptable, even though the dropped bundle does not have 23 feet of water coverage, is because the FHA used a conservative bundle damage fraction associated with a bundle drop over the RPV. A fuel damage value of 2.01 damaged bundles associated with dropping a fuel bundle over the RPV with a fall height of approximately 30 feet is conservative compared to 50% less fuel damage for the SFP drop with a height of approximately 4 feet. The fuel damage with the RPV drop and the use of a DF of 200 conservatively releases more activity during the FHA than the 50% less fuel damage for the SFP drop with a lower DF accounting for the less water coverage above the dropped bundle. Therefore, the RPV drop with the use of a DF of 200 was conservatively used in the FHA analysis.

**RAI-(TS 1.0)-10**

In Attachment 1, Exelon proposes to delete definitions as described on pages 23 through 32. In Attachment 2, Exelon marks up pages 1.0-1 and 1.0-9. Where are the mark-ups of pages 1.0-2 through 1.0-8 to match Attachment 1 descriptions?

**Exelon's Response to RAI-(TS 3.1)-10:**

Pages 1.0-2 through 1.0-8 of Section 1, Definitions, were not submitted in Attachment 2 of Reference 1 because all the definitions on these pages were proposed for deletion. As noted in Reference 1, for TSs that are deleted in their entirety, Exelon chose not to include the deleted pages in Attachment 2. However, these pages are provided in Attachment 2 of this submittal.

**REFERENCES:**

1. Letter from Michael P. Gallagher, (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission – "*License Amendment Request – Proposed Defueled Technical Specifications and Revised License Conditions for Permanently Defueled Condition*," dated November 16, 2017 (ADAMS Accession No. ML17320A411)

Attachment 1

Response to Request for Additional Information

Docket Nos. 50-219 and 72-15

Page A1-9 of A1-9

2. U.S. Nuclear Regulatory Commission Electronic Mail Request to David Helker, et al., (Exelon Generation Company, LLC) – *"DRAFT RAIs - Oyster Creek Defueled TS LAR (EPID: L-2017-LLA-0395),"* dated February 28, 2018
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5. Letter from Michael P. Gallagher, Exelon Generation Company, LLC to U.S. Nuclear Regulatory Commission – *"Certification of Permanent Cessation of Power Operations for Oyster Creek Nuclear Power Station,"* dated February 14, 2018 (ADAMS Accession No. ML18045A084)
6. C-1302-226-E310-460, "EAB, LPZ, and CR Doses Due to Fuel Handling Accident (FHA) – Post Cessation of Power Operations," August 9, 2017
7. Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Plants," July 2000, (ADAMS Accession No. ML003716792)

**Attachment 2**

**Revised Permanently Defueled Technical Specifications (PDTS) Page Mark-ups**

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION

RENEWED FACILITY OPERATING LICENSE

Renewed License No. DPR-16

1. The Nuclear Regulatory Commission (the Commission) having previously made the findings set forth in License No. DPR-16, has now found that:
  - A. The application for a Renewed Facility Operating License No. DPR-16 filed by the applicant complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
  - B. ~~DELETED Construction of the Oyster Creek Nuclear Generating Station (Oyster Creek or the facility) has been completed in conformity with Provisional Construction Permit No. CPPR-15; the application, as amended; the provisions of the Act; and the rules and regulations of the Commission.~~
  - C. Actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the term of this Renewed Facility Operating License No. DPR-16 on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1); and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by the renewed operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for the facility, and that any changes made to the facility's current licensing basis in order to comply with 10 CFR 54.29(a) are in accordance with the Act and the Commission's regulations;
  - D. The facility will ~~be maintained operate~~ in conformity with the application, as amended; the provisions of the Act; and the rules and regulations of the Commission ~~(except as exempted from compliance in Section 2.D. below);~~

Renewed License No. DPR-16

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, or special nuclear materials as sealed neutron sources ~~that were used~~ for reactor startup, sealed sources ~~that were used~~ for ~~calibration of~~ reactor instrumentation and ~~are used in~~ radiation monitoring equipment ~~calibration~~, and as fission detectors in amounts as required;
  - (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear materials without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate such byproduct, source, or special nuclear materials ~~as may be~~ ~~that were~~ produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified \_\_\_\_\_ in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect and is subject to the additional conditions specified or incorporated below:
- (1) ~~DELETED~~ Maximum Power Level  
~~Exelon Generation Company is authorized to operate the facility at steady-state power levels not in excess of 1930 megawatts (thermal) (100 percent rated power) in accordance with the conditions specified herein.~~
  - (2) Technical Specifications  
The Technical Specifications contained in Appendices A and B, as revised through Amendment No. [###], are hereby incorporated in the license. Exelon Generation Company shall ~~operate~~ ~~maintain~~ the facility in accordance with the ~~Permanently Defueled~~ Technical Specificationsn (~~PDT~~S).
  - (3) ~~DELETED~~ Fire Protection  
~~Exelon Generation Company shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility and as approved in the Safety Evaluation Report dated March 3, 1978, and supplements thereto, subject to the following provision:~~  
  
~~The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.~~



- (4) Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans<sup>1</sup>, submitted by letter dated May 17, 2006, is entitled: "Oyster Creek Nuclear Generating Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 5." The set contains Safeguards Information protected under 10 CFR 73.21.

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Exelon Generation Company CSP was approved by Renewed License Amendment No. 280 and modified by License Amendment No. 288 and 292.

- (5) ~~DELETED~~ Inspections of core spray spargers, piping and associated components will be performed in accordance with BWRVIP-18, "BWR Core Spray Internals Inspection and Flaw Evaluation Guidelines," as approved by NRC staffs Final Safety Evaluation Report dated December 2, 1999.
- (6) ~~DELETED~~ Long Range Planning Program — Deleted
- (7) ~~DELETED~~ Reactor Vessel Integrated Surveillance Program

~~Exelon Generation Company is authorized to revise the Updated Final Safety Analysis Report (UFSAR) to allow implementation of the Boiling Water Reactor Vessel and Internals Project reactor pressure vessel Integrated Surveillance Program as the basis for demonstrating compliance with the requirements of Appendix H to Title 10 of the Code of Federal Regulations Part 50, "Reactor Vessel Material Surveillance Program Requirements," as set forth in the licensee's application dated December 20, 2002, and as supplemented on May 30, September 10, and November 3, 2003.~~

~~All capsules in the reactor vessel that are removed and tested must meet the test procedures and reporting requirements of the most recent NRC-approved version of the Boiling Water Reactor Vessel and Internals Project Integrated Surveillance Program appropriate for the configuration of the specimens in the capsule. Any changes to the capsule withdrawal schedule, including spare capsules, must be approved by the NRC prior to implementation. All capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H.~~

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<sup>1</sup> The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.

## SECTION I DEFINITIONS

The following frequently used terms are defined to aid in the uniform interpretation of the specifications.

### 1.1 OPERABLE-OPERABILITY ACTIONS

*ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.*

~~A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling of seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are also capable of performing their related support function(s).~~

~~A verification of operability is an administrative check, by examination of appropriate plant records (logs, surveillance test records) to determine that a system, subsystem, train, component or device is not inoperable. Such verification does not preclude the demonstration (testing) of a given system, subsystem, train, component or device to determine operability.~~

### 1.2 OPERATING CERTIFIED FUEL HANDLER

~~Operating means that a system or component is performing its required function.~~

### 1.3 POWER OPERATION NON-CERTIFIED OPERATOR

~~Power operation is any operation when the reactor is in the startup mode or run mode except when primary containment integrity is not required.~~

### 1.4 STARTUP MODE

~~The reactor is in the startup mode when the reactor mode switch is in the startup mode position. In this mode, the reactor protection system scram trips initiated by condenser low vacuum and main steam line isolation valve closure are bypassed when reactor pressure is less than 600 psig; the low pressure main steamline isolation valve closure is bypassed; the IRM trips for rod block and scram are operable; and the SRM trips for rod block are operable.~~

### 1.5 RUN MODE

~~The reactor is in the run mode when the reactor mode switch is in the run mode position. In this mode, the reactor protection system is energized with APRM protection and the control rod withdrawal interlocks are in service.~~

### 1.6 SHUTDOWN CONDITION

~~The reactor is in the SHUTDOWN CONDITION when there is fuel in the reactor vessel, the reactor is subcritical, all operable control rods are fully inserted, and the mode switch is in the shutdown mode position. In this position, a control rod block is initiated.~~

#### ~~1.7 — COLD SHUTDOWN CONDITION~~

~~The reactor is in the COLD SHUTDOWN CONDITION when the reactor is in the SHUTDOWN CONDITION, and (except during REACTOR VESSEL PRESSURE TESTING), the reactor coolant system is maintained at less than 212°F and vented.~~

#### ~~1.8 — PLACE IN SHUTDOWN CONDITION~~

~~Proceed with and maintain an uninterrupted normal plant shutdown operation until the SHUTDOWN CONDITION is met.~~

#### ~~1.9 — PLACE IN COLD SHUTDOWN CONDITION~~

~~Proceed with and maintain an uninterrupted normal plant shutdown operation until the COLD SHUTDOWN CONDITION is met.~~

#### ~~1.10 — PLACE IN ISOLATED CONDITION~~

~~Proceed with and maintain an uninterrupted normal isolation of the reactor from the turbine condenser system including closure of the main steam isolation valves.~~

#### ~~1.11 — REFUEL MODE~~

~~The reactor is in the REFUEL MODE when the reactor mode switch is in the REFUEL MODE position and there is fuel in the reactor vessel. In this mode the refueling platform interlocks are in operation.~~

#### ~~1.12 — REFUELING OUTAGE~~

~~For the purpose of designating frequency of testing and surveillance, a REFUELING OUTAGE shall mean a regularly scheduled REFUELING OUTAGE. Following the first REFUELING OUTAGE, successive tests or surveillances shall be performed at least once per 24 months.~~

#### ~~1.13 — PRIMARY CONTAINMENT INTEGRITY~~

~~PRIMARY CONTAINMENT INTEGRITY means that the drywell and adsorption chamber are closed and all of the following conditions are satisfied:~~

- ~~A. — All non-automatic primary containment isolation valves which are not required to be open for plant operation are closed.~~
- ~~B. — At least one door in the airlock is closed and sealed.~~
- ~~C. — All automatic primary containment isolation valves are OPERABLE or the affected penetration is isolated.~~
- ~~D. — All blind flanges and manways are closed.~~

#### 1.14 — SECONDARY CONTAINMENT INTEGRITY

Secondary containment integrity means that the reactor building is closed and the following conditions are met:

- A. ~~At least one door at each access opening is closed.  
(Note: Momentary opening and closing of the trunnion room door does not constitute a loss of secondary containment integrity. In COLD SHUTDOWN CONDITION or REFUEL MODE, the trunnion room door may remain open provided the trunnion room is isolated from the secondary containment through the reactor building walls, penetrations and either the inboard or outboard valves to the main steam and feedwater piping being secured in the closed position.)~~
- B. ~~The standby gas treatment system is operable.~~
- C. ~~All automatic secondary containment isolation valves are operable or are secured in the closed position.~~

#### 1.15 — (DELETED)

#### 1.16 — RATED FLUX

~~Rated flux is the neutron flux that corresponds to a steady state power level of 1930-MW(t). Use of the term 100 percent also refers to the 1930 thermal megawatt power level.~~

#### 1.17 — REACTOR THERMAL POWER-TO-WATER

~~Reactor thermal power-to-water is the sum of (1) the instantaneous integral over the entire fuel clad outer surface of the product of heat transfer area increment and position-dependent heat flux and (2) the instantaneous rate of energy deposition by neutron and gamma reactions in all the water and core components except fuel rods in the cylindrical volume defined by the active core height and the inner surface of the core shroud.~~

#### 1.18 — PROTECTIVE INSTRUMENTATION LOGIC DEFINITIONS

##### A. Instrument Channel

~~An instrument channel means an arrangement of a sensor and auxiliary equipment required to generate and transmit to a trip system a single trip signal related to the plant parameter monitored by that instrument channel.~~

##### B. Trip System

~~A trip system means an arrangement of instrument channel trip signals and auxiliary equipment required to initiate action to accomplish a protective trip function. A trip system may require one or more instrument channel trip signals related to one or more plant parameters in order to initiate trip system action. Initiation of protective action may require the tripping of a single trip system (e.g., initiation of a core spray loop, automatic depressurization, isolation of an isolation condenser, offgas system isolation, reactor building isolation, standby gas treatment and red block) or the coincident tripping of two trip systems (e.g., initiation of scram, isolation condenser, reactor isolation, and primary containment isolation).~~

## ~~1.19 — INSTRUMENTATION SURVEILLANCE DEFINITIONS~~

### ~~A. — CHANNEL CHECK~~

~~A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.~~

### ~~B. — CHANNEL FUNCTIONAL TEST~~

~~A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.~~

### ~~C. — CHANNEL CALIBRATION~~

~~A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.~~

### ~~D. — Source Check~~

~~A SOURCE CHECK is the qualitative assessment of channel response when the channel sensor is exposed to a source of radioactivity.~~

## ~~1.20 — FDSAR~~

~~Oyster Creek Unit No. 1 Facility Description and Safety Analysis Report as amended by revised pages and figure changes contained in Amendments 14, 31 and 45\* and continuing through Amendment 79.~~

## ~~1.21 — CORE ALTERATION~~

~~A core alteration is the addition, removal, relocation or other manual movement of fuel or controls in the reactor core. Control rod movement with the control rod drive hydraulic system is not defined as a core alteration.~~

## ~~1.22 — CRITICAL POWER RATIO~~

~~The critical power ratio is the ratio of that power in a fuel assembly which is calculated, by application of an NRC approved CPR correlation, to cause some point in that assembly to experience boiling transition divided by the actual assembly operating power.~~

## ~~1.23 — (DELETED)~~

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~~\*Per Erata dtd. 4-9-69~~

## ~~1.24 SURVEILLANCE REQUIREMENTS~~

~~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 the safety limits, and that the limiting conditions of operation will be met. Each surveillance requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.<sup>4</sup>~~

~~Surveillance requirements for systems and components are applicable only during the modes of operation for which the system or components are required to be operable, unless otherwise stated in the specification.~~

~~This definition establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance, e.g., transient conditions or other ongoing surveillance or maintenance activities. It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with a fuel cycle length surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for the surveillance that are not performed during refueling outages. The limitation of this definition is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.~~

## ~~1.25 APPENDIX J TEST PRESSURE~~

~~For the purpose of conducting leak rate tests to meet 10 CFR 50 Appendix J,  $P_a = 35$  psig.~~

## ~~1.26 FRACTION OF LIMITING POWER DENSITY (FLPD)~~

~~The fraction of limiting power density is the ratio of the linear heat generation rate (LHGR) existing at a given location to the design LHGR for that bundle type.~~

## ~~1.27 MAXIMUM FRACTION OF LIMITING POWER DENSITY (MFLPD)~~

~~The maximum fraction of limiting power density is the highest value existing in the core of the fraction of limiting power density (FLPD).~~

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<sup>4</sup> For the 10 CFR 50 Appendix J Type A test, the 25% shall not exceed 15 months.

~~1.28 — FRACTION OF RATED POWER (FRP)~~

~~The FRACTION OF RATED POWER is the ratio of core THERMAL POWER to RATED THERMAL POWER.~~

~~1.29 — TOP OF ACTIVE FUEL (TAF) — 353.3 inches above vessel zero.~~

~~1.30 — REPORTABLE EVENT~~

~~A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.~~

~~1.31 — IDENTIFIED LEAKAGE~~

~~IDENTIFIED LEAKAGE is that leakage which is collected in the primary containment equipment drain tank and eventually transferred to radwaste for processing.~~

~~1.32 — UNIDENTIFIED LEAKAGE~~

~~UNIDENTIFIED LEAKAGE is all measured leakage that is other than identified leakage.~~

~~1.33 — PROCESS CONTROL PLAN~~

~~The PROCESS CONTROL PLAN shall contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61 and 71, State regulations, burial ground requirements, and other requirements governing the disposal of solid radioactive waste.~~

~~1.34 — AUGMENTED OFFGAS SYSTEM (AOG)~~

~~The AUGMENTED OFFGAS SYSTEM is a system designed and installed to holdup and/or process radioactive gases from the main condenser offgas system for the purpose of reducing the radioactive material content of the gases before release to the environs.~~

~~1.35 — MEMBER OF THE PUBLIC~~

~~A MEMBER OF THE PUBLIC is a person who is not occupationally associated with Exelon Generation Company, LLC and who does not normally frequent the Oyster Creek Nuclear Generating Station site. The category does not include contractors, contractor employees, vendors, or persons who enter the site to make deliveries, to service equipment, work on the site, or for other purposes associated with plant functions.~~

~~1.36 — OFFSITE DOSE CALCULATION MANUAL (ODCM)~~

~~The OFFSITE DOSE CALCULATION MANUAL shall contain the methodology and~~



~~parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluent, in the calculation of gaseous and liquid effluent monitoring Alarm/trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Section 6.8.4; and (2) descriptions of the information that should be included in the Annual Radioactive Effluent Release Report AND Annual Radiological Environmental Operating Report required by Specifications 6.9.1.d and 6.9.1.e, respectively.~~

#### ~~1.37 — PURGE~~

~~PURGE OR PURGING is the controlled process of discharging air or gas from a confinement and replacing it with air or gas.~~

#### ~~1.38 — SITE BOUNDARY~~

~~The SITE BOUNDARY is the perimeter line around the OCNGS beyond which the land is neither owned, leased nor otherwise subject to control by Exelon Generation Company, LLC (ref. ODCM). The area outside the SITE BOUNDARY is termed OFFSITE or UNRESTRICTED AREA.~~

#### ~~1.39 — REACTOR VESSEL PRESSURE TESTING~~

~~System pressure testing required by ASME Code Section XI, Article IWA-5000, including system leakage and hydrostatic test, with reactor vessel completely water solid, core not critical and section 3.2.A satisfied.~~

#### ~~1.40 — SUBSTANTIVE CHANGES~~

~~SUBSTANTIVE CHANGES are those which affect the activities associated with a document or the document's meaning or intent. Example of non-substantive changes are: (1) correcting spelling, (2) adding (but not deleting) sign-off spaces, (3) blocking in notes, cautions, etc, (4) changes in corporate and personnel titles which do not reassign responsibilities and which are not referenced in the Appendix A Technical Specifications, and (5) changes in nomenclature or editorial changes which clearly do not change function, meaning or intent.~~

#### ~~1.41 — DOSE EQUIVALENT I-131~~

~~DOSE EQUIVALENT I-131 shall be that concentration of I-131 microcuries per gram which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table E-7 or Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluences for the Purpose of Evaluating Compliance with 10 CFR Part 40 Appendix I."~~



#### ~~1.42 — AVERAGE PLANAR LINEAR HEAT GENERATION RATE~~

~~The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) shall be applicable to a specific planar height and is equal to the sum of the heat generation rate per unit length of fuel rod for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle at that height.~~

#### ~~1.43 — CORE OPERATING LIMITS REPORT~~

~~The Oyster Creek CORE OPERATING LIMITS REPORT (COLR) is the document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.f. Plant operation within these operating limits is addressed in individual specifications.~~

#### ~~1.44 — LOCAL LINEAR HEAT GENERATION RATE~~

~~The LOCAL LINEAR HEAT GENERATION RATE (LLHGR) shall be applicable to a specific planar height and is equal to the AVERAGE PLANAR LINEAR GENERATION RATE (APLHGR) at the specified height multiplied by the local peaking factor at that height.~~

#### ~~1.45 — SHUTDOWN MARGIN (SDM)~~

~~SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical throughout the operating cycle assuming that:~~

- ~~a. The reactor is xenon free;~~
- ~~b. The moderator temperature is  $\geq 68^{\circ}\text{F}$ , corresponding to the most reactive state; and~~
- ~~c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.~~

#### ~~1.46 — IDLE RECIRCULATION LOOP~~

~~A recirculation loop is idle when its discharge valve is in the closed position and its discharge bypass valve and suction valve are in the open position.~~

#### ~~1.47 — ISOLATED RECIRCULATION LOOP~~

~~A recirculation loop is fully isolated when the suction valve, discharge valve and discharge bypass valve are in the closed position.~~

#### ~~1.48 — OPERATIONAL CONDITION~~

~~———— The reactor plant operational status as to criticality, reactor mode switch position, reactor coolant temperature, and/or specific system status. These conditions consist of POWER OPERATION, STARTUP MODE, SHUTDOWN CONDITION, COLD SHUTDOWN CONDITION, and REFUEL MODE. A change or entry into an operating condition is Signified by movement of the reactor mode switch or a change in reactor coolant Temperature from  $<212^{\circ}\text{F}$  to  $\geq 212^{\circ}\text{F}$ .~~

#### ~~1.49 RATED THERMAL POWER (RTP)~~

~~RTP shall be a total reactor core heat transfer rate to the reactor coolant of 1930 MWt.~~

#### ~~1.50 THERMAL POWER~~

~~THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.~~

#### ~~1.51 PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)~~

~~The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 6.23.~~

#### 1.52 CERTIFIED FUEL HANDLER

A CERTIFIED FUEL HANDLER is an individual who complies with provisions of the CERTIFIED FUEL HANDLER training program required by Specification 6.3.2.

#### 1.53 NON-CERTIFIED OPERATOR

A NON-CERTIFIED OPERATOR is a non-licensed operator who complies with the qualification requirements of Specification 6.3.1, but is not a CERTIFIED FUEL HANDLER.

## SECTION 3/4

### LIMITING CONDITIONS FOR OPERATION *AND SURVEILLANCE REQUIREMENTS*

#### 3/4.0 LIMITING CONDITIONS FOR OPERATION (GENERAL) *AND SURVEILLANCE REQUIREMENT APPLICABILITY*

Applicability: Applies to all Limiting Conditions for Operation *and Surveillance Requirements*.

Objective: To preserve the single failure criterion for safety systems.

#### *LCO Applicability:*

*LCO 3.0.1 LCOs shall be met during the specified conditions in the TS, except as provided in ~~TS~~LCO 3.0.2.*

*LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met.*

*If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.*

- ~~A. In the event Limiting Conditions for Operation (LCOs) and/or associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in COLD SHUTDOWN within the following 30 hours unless corrective measures are completed that permit operation under the permissible action statements for the specified time interval as measured from initial discovery or until the reactor is placed in a condition in which the specification is not applicable. Exceptions to the requirements shall be stated in the individual specifications.~~
- ~~B. When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of applicable LCOs, provided (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied, the unit shall be placed in COLD SHUTDOWN within the following 30 hours or within the time specified in the applicable specification. This specification is not applicable in COLD SHUTDOWN or the REFUEL MODE.~~
- ~~C. When an LCO is not met, entry into an OPERATIONAL CONDITION or other specified condition in the Applicability shall only be made:~~
- ~~1. When the associated LCO requirement permit continued operation in the OPERATIONAL CONDITION or other specified condition in the Applicability for an unlimited period of time; or~~
  - ~~2. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the OPERATIONAL CONDITION or other specified condition in the applicability, and the establishment of risk management actions, if appropriate; exceptions to this specification are stated in the individual Specifications; or~~
  - ~~3. When an allowance is stated in the individual value, parameter, or other Specification.~~

~~This provision shall not prevent entry into OPERATIONAL CONDITIONS  
or other specified conditions in the Applicability that are required to comply  
with LCO requirements or that are part of a shutdown of the unit.~~

OYSTER CREEK

3/4.0-1

Amendment No.: 64,241

**Attachment 3**

**Clean Copy - Permanently Defueled Technical Specifications (PDTS) pages**

EXELON GENERATION COMPANY, LLC

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION

RENEWED FACILITY OPERATING LICENSE

Renewed License No. DPR-16

1. The Nuclear Regulatory Commission (the Commission) having previously made the findings set forth in License No. DPR-16, has now found that:
  - A. The application for a Renewed Facility Operating License No. DPR-16 filed by the applicant complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
  - B. DELETED
  - C. Actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the term of this Renewed Facility Operating License No. DPR-16 on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1); and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by the renewed operating license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for the facility, and that any changes made to the facility's current licensing basis in order to comply with 10 CFR 54.29(a) are in accordance with the Act and the Commission's regulations;
  - D. The facility will be maintained in conformity with the application, as amended; the provisions of the Act; and the rules and regulations of the Commission;

Renewed License No. DPR-16

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, or special nuclear materials as sealed neutron sources that were used for reactor startup, sealed sources that were used for calibration of reactor instrumentation and are used in radiation monitoring equipment, and as fission detectors in amounts as required;
  - (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear materials without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - (5) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate such byproduct, source, or special nuclear materials that were produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect and is subject to the additional conditions specified or incorporated below:
- (1) DELETED
  - (2) Technical Specifications  
  
The Technical Specifications contained in Appendices A and B, as revised through Amendment No. [###], are hereby incorporated in the license. Exelon Generation Company shall maintain the facility in accordance with the Permanently Defueled Technical Specificationsn (PDTs).
  - (3) DELETED

- (4) Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans<sup>1</sup>, submitted by letter dated May 17, 2006, is entitled: "Oyster Creek Nuclear Generating Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 5." The set contains Safeguards Information protected under 10 CFR 73.21.

Exelon Generation Company shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The Exelon Generation Company CSP was approved by Renewed License Amendment No. 280 and modified by License Amendment No. 288 and 292.

- (5) DELETED
- (6) DELETED
- (7) DELETED

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<sup>1</sup> The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.



## SECTION I DEFINITIONS

The following frequently used terms are defined to aid in the uniform interpretation of the specifications.

### 1.1 ACTIONS

ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.

### 1.2 CERTIFIED FUEL HANDLER

A CERTIFIED FUEL HANDLER is an individual who complies with provisions of the CERTIFIED FUEL HANDLER training program required by Specification 6.3.2.

### 1.3 NON-CERTIFIED OPERATOR

A NON-CERTIFIED OPERATOR is a non-licensed operator who complies with the qualification requirements of Specification 6.3.1, but is not a CERTIFIED FUEL HANDLER.

## SECTION 3/4

### LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

#### 3/4.0 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENT APPLICABILITY

Applicability: Applies to all Limiting Conditions for Operation and Surveillance Requirements.

Objective: To preserve the single failure criterion for safety systems.

#### LCO Applicability:

LCO 3.0.1 LCOs shall be met during the specified conditions in the TS, except as provided in LCO 3.0.2.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

#### Surveillance Requirement Applicability

SR 4.0.1 Surveillance requirements shall be met during the specified conditions in the applicability for individual LCOs, unless otherwise stated in the surveillance requirements. Failure to meet a surveillance, whether such failure is experienced during the performance of the surveillance or between performances of the surveillance, shall be failure to meet the LCO. Failure to perform a surveillance within the specified frequency shall be failure to meet the LCO except as provided in 4.0.2. Surveillances do not have to be performed on variables outside specified limits.

SR 4.0.2 If it is discovered that a surveillance was not performed within its specified frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified frequency, whichever is greater. This delay period is permitted to allow performance of the surveillance. A risk evaluation shall be performed for any surveillance delayed greater than 24 hours and the risk impact shall be managed.

If the surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable condition(s) must be entered.

When the surveillance is performed within the delay period and the surveillance is not met, the LCO must immediately be declared not met, and the applicable condition(s) must be entered.

Surveillance Requirement Applicability (Continued)

- SR 4.0.3 Entry into a specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillance has been met within its specified frequency, except as provided by 4.0.2.

This provision shall not prevent entry into other specified conditions in the Applicability that are required to comply with LCO requirements or that are part of a shutdown of the unit.

- SR 4.0.4 The specified frequency for each SR is met if the surveillance is performed within 1.25 times the interval specified in the frequency, as measured from the previous performance.