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TS 6.21.d

RA-19-019

April 12, 2019

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Oyster Creek Nuclear Generating Station  
Renewed Facility Operating License No. DPR-16  
Docket No. 50-219

Subject: Submittal of Changes to Technical Specifications Bases

In accordance with the requirement of Oyster Creek Nuclear Generating Station (OCNGS) Technical Specification 6.21.d, Exelon Generation Company, LLC hereby submits a complete updated copy of the Technical Specifications Bases. The enclosed Technical Specifications Bases include changes through the date of this letter.

If you have any questions or require further information, please contact Richard Gropp at 610-765-5557.

Respectfully,

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

Enclosure: Oyster Creek Technical Specifications Bases

cc: w/o Enclosure  
USNRC Administrator, Region I  
USNRC Decommissioning Inspector, OCNGS  
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ADD?  
NRR

**B3/4.0 BASES FOR LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE  
REQUIREMENT APPLICABILITY**

LCO 3.0.1 through LCO 3.0.2 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.

LCO 3.0.1 establishes the applicability statement within each individual specification as the requirement for when the LCO is required to be met (i.e., when the facility is in the specified conditions of the applicability statement of each Specification).

LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The completion time of each required action for an ACTIONS condition is applicable from the point in time that an ACTIONS condition is entered. The required actions establish those remedial measures that must be taken within specified completion times when the requirements of an LCO are not met. This specification establishes that:

- a. Completion of the required actions within the specified completion times constitutes compliance with a specification; and
- b. Completion of the required actions is not required when an LCO is met within the specified completion time, unless otherwise specified.

Completing the required actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual specifications.

SR 4.0.1 establishes the requirement that surveillance requirements must be met during the specified conditions in the applicability for which the requirements of the LCO apply, unless otherwise specified in the individual surveillance requirements. This specification is to ensure that surveillances are performed to verify that variables are within specified limits. Failure to meet a surveillance within the specified frequency constitutes a failure to meet an LCO.

SR 4.0.2 establishes the flexibility to defer declaring an affected variable outside the specified limits when a surveillance has not been completed within the specified frequency. A delay period of up to 24 hours or up to the limit of the specified frequency, whichever is greater, applies from the point in time that it is discovered that the surveillance has not been performed in accordance with SR 4.0.4, and not at the time that the specified frequency was not met.

This delay period provides adequate time to complete surveillances that have been missed. This delay period permits the completion of a surveillance before complying with required actions or other remedial measures that might preclude completion of the surveillance.

The basis for this delay period includes consideration of facility conditions, adequate planning, availability of personnel, the time required to perform the surveillance, the safety significance of the delay in completing the required surveillance, and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the requirements.

Failure to comply with specified surveillance frequencies is expected to be an infrequent occurrence. Use of the delay period established by SR 4.0.4 is a flexibility which is not intended to be used as an operational convenience to extend surveillance intervals.

While up to 24 hours or the limit of the specified frequency is provided to perform the missed surveillance, it is expected that the missed surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the surveillance as well as any plant configuration changes required to perform the surveillance) and impact on any analysis assumptions, in addition to facility conditions, planning, availability of personnel, and the time required to perform the surveillance. All missed surveillances will be placed in the licensee's Corrective Action Program.

If a surveillance is not completed within the allowed delay period, then the variable is considered outside the specified limits and the completion times of the required actions for the applicable LCO conditions begin immediately upon expiration of the delay period. If a surveillance is failed within the delay period, then the variable is outside the specified limits and the completion times of the required actions for the applicable LCO conditions begin immediately upon the failure of the surveillance.

Completion of the surveillance within the delay period allowed by this specification, or within the completion time of the actions, restores compliance with Surveillance Requirement 4.0.1.

SR 4.0.3 establishes the requirement that all applicable SRs must be met before entry into a specified condition in the Applicability. This Specification ensures that system variable limits are met before entry into specified conditions in the Applicability for which these variable limits ensure safe operation of the facility.

SR 4.0.4 establishes the requirements for meeting the specified frequency for surveillances. SR 4.0.4 permits a 25% extension of the interval specified in the frequency. This extension facilitates surveillance scheduling and considers facility conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the surveillance at its specified frequency. This is based on the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the SRs.

The provisions of SR 4.0.4 are not intended to be used repeatedly merely as an operational convenience to extend surveillance intervals (other than those consistent with refueling intervals).

Basis:

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 fuel handling accident (FHA) in the spent fuel pool (SFP). The water also provides shielding during the movement of spent fuel.

The required minimum water level in the SFP meets the assumptions of the FHA described in calculation C-1302-226-E310-460 and Chapter 15.7.4 of the UFSAR. The resultant dose limits at the exclusion area boundary are within the criteria of RG1.183.

A general description of the spent fuel storage pool design is found in the UFSAR, Section 9.1.2. The assumptions of the fuel handling accident are found in the UFSAR, Section 15.7.4.

The FHA is evaluated for dropping an irradiated fuel assembly onto irradiated fuel bundles stored in the SFP. The consequences of a FHA in the SFP are documented in FSAR Chapter 15. The water level in the SFP provides for absorption of water soluble fission product gases and transport delays of soluble and insoluble gases that must pass through the water before being released to the building atmosphere. This absorption and transport delay reduces the potential radioactivity of the release during a FHA.

The SFP water level is monitored in terms of elevation above mean sea level. Elevation 117 feet 8 inches corresponds to the SFP low level alarm in the Control Room. Since the pool has no installed drains, level cannot be lowered by the cooling system below the level of the weirs. At the normal 400 gpm flow rate, the pool level is about three inches above the weir level, and the overflow just equals the 400 gpm being supplied to the pool from the diffusers. At the SFP low level alarm level, the pool contains a depth of approximately 37 feet of water (approximately 23 feet above active fuel), providing adequate shielding for normal building occupancy by operating personnel.

LCO 3.1 requires that when the water level in the SFP is lower than the required level, the movement of irradiated fuel assemblies in the SFP is to be "immediately" suspended. "Immediately" as used in this completion time means the required action should be pursued without delay and in a controlled manner, such that the suspension of this activity shall not preclude completion of movement of an irradiated fuel assembly to a safe position. This effectively precludes a spent fuel handling accident from occurring in the SFP when the level is below the required elevation. This specification is not meant to affect spent fuel cask movements during planned SFP level adjustments. The FSAR Chapter 15 analysis states that a spent fuel cask drop accident is no longer credible since the reactor building crane has been upgraded to be single-failure proof.

Surveillance Requirement (SR) 4.1 verifies that sufficient SFP water is available in the event of a fuel handling accident. The water level in the SFP must be checked periodically. The frequency of every 24 hours is acceptable based on operating experience, considering that the water volume in the pool is normally stable and water level changes are controlled by unit procedures.

The fuel pool water level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).



Basis:

LCO 3.2, "Radioactive Liquid Storage:"

Restricting the quantity of radioactive material contained in the defined outdoor storage tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20.1001-20.2402, Appendix B, Table 2, Column 2 in the canal at the Route 9 bridge.

The specification satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).



## B5 Bases

### B5.1 - Site

Exclusion area means that area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. This area may be traversed by a highway, railroad, or waterway, provided these are not so close to the facility as to interfere with normal operations of the facility and provided appropriate and effective arrangements are made to control traffic on the highway, railroad, or waterway, in case of emergency, to protect the public health and safety. Residence within the exclusion area shall normally be prohibited. In any event, residents shall be subject to ready removal in case of necessity. Activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazard to the public health and safety will result.

Activities unrelated to plant operation within the exclusion area are acceptable provided:

- (a) Such activities, including accidents associated with such activities, represent no hazard to the plant or have been shown to be accommodated as part of the plant design basis.
- (b) The licensee is aware of such activities and has made appropriate arrangements to evacuate persons engaged in such activities, in the event of an accident, and
- (c) There is reasonable assurance that persons engaged in such activities can be evacuated without receiving radiation doses in excess of the guideline values given in 10 CFR Part 100.

Contract provisions for property agreements in the exclusion area must ensure that the licensee retains sufficient control of all activities in the exclusion area including the authority to exclude or removal personnel and property, thereby, (1) maintaining compliance with 10 CFR Part 100 radiological limits for the exclusion area, including evacuation when necessary, and (2) ensuring that any activities, now or in the future, in the exclusion area would not negatively effect nuclear safety, safe plant operations or violate current plant design or licensing bases.

Any property transactions in the "exclusion area", as is the case for any activity which has the potential to adversely affect nuclear safety or safe plant operations, requires a specific safety evaluation and 50.59 review.

## B5.2 – Fuel Storage

The specification of a K-effective less than or equal to 0.95 in fuel storage facilities assures an ample margin from criticality. This limit applies to unirradiated fuel in both the dry storage vault and the spent fuel racks as well as irradiated fuel in the spent fuel racks. Criticality analyses were performed on the poison racks to ensure that a K-effective of 0.95 would not be exceeded. The analyses took credit for burnable poisons in the fuel and included manufacturing tolerances and uncertainties as described in Section 9.1 of the FSAR. Computational uncertainties described in 5.2.1.A are explicitly defined in FSAR Section 9.1.2.3.9. Any fuel stored in the fuel storage facilities shall be bounded by the analyses in these reference documents.

The effects of a dropped fuel bundle onto stored fuel in the spent fuel storage facility has been analyzed. This analysis shows that the fuel bundle drop would not cause doses resulting from ruptured fuel pins that exceed 10 CFR 100 limits.

Detailed structural analysis of the spent fuel pool was performed using loads resulting from the dead weight of the structural elements, the building loads, hydrostatic loads from the pool water, the weight of fuel and racks stored in the pool, seismic loads, and loads due to thermal gradients in the pool floor and the walls. Thermal gradients result in two loading conditions: normal operating and the accident conditions with the loss of spent fuel pool cooling. For the normal condition, the reactor building air temperature was assumed to vary between 65°F and 110°F while the pool water temperature varied between 85°F and 125°F. The most severe loading from the normal operating thermal gradient results with reactor building air temperatures at 65°F and the water temperature at 125°F. Air temperature measurements made during all phases of plant operation in the shutdown heat exchanger room, which is directly beneath part of the spent fuel pool floor slab, show that 65°F is the appropriate minimum air temperature. The spent fuel pool water temperature will alarm control room before the water temperature reaches 120°F.

Results of the structural analysis show that the pool structure is structurally adequate for the loadings associated with the normal operation and postulated accidents. The floor framing was also found to be capable of withstanding the steady state thermal gradient conditions with the pool water temperature at 150°F without exceeding ACI Code requirements. The walls are also capable of operation at a steady state condition with the pool water temperature at 140°F.

Since the cooled fuel pool water returns at the bottom of the pool and the heated water is removed from the surface, the average of the surface temperature and the fuel pool cooling return water is an appropriate estimate of the average bulk temperature; alternately the pool surface temperature could be conservatively used.

1.0 Environmental Monitoring

Bases

The Final Environmental Statement for the Oyster Creek Nuclear Generating Station documents cold shock fish kills associated with rapid temperature decreases caused by plant shutdown during the winter.

Station shutdowns during winter months are, on occasion, unavoidable. Due to the physical configuration of the station and the discharge canal, some mortality to organisms may be experienced during winter shutdowns.

Mortality information associated with a winter shutdown will provide the empirical bases on which to judge the impact of these fishkills on Barnegat Bay, Oyster Creek, and Forked River.



2.0 Special Monitoring And Study Activities

Bases

Prompt reporting to the NRC of unusual or important events as described above is necessary for responsible and orderly regulation of the nation's system of nuclear power reactors. The information provided may be useful or necessary to others concerned with the same environmental resources. Prompt knowledge and action may serve to alleviate the magnitude of the environmental impact.