Attachment I to JPN-97-033

REVISED TECHNICAL SPECIFICATION PAGES

PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING DESIGN FEATURES

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

5.0 <u>DESIGN FEATURES</u>

5.1 <u>SITE</u>

5.1.1 The James A. FitzPatrick Nuclear Power Plant is located on the PASNY portion of the Nine Mile Point site, approximately 3,000 ft. east of the Nine Mile Point Nuclear Station, Unit 1. The NPP-JAF site is on Lake Ontario in Oswego County, New York, approximately 7 miles northeast of Oswego. The plant is located at coordinates north 4,819,545.012 m, east 386,968.945 m, on the Universal Transverse Mercator System.

5.1.2 The nearest point on the property line from the reactor building and any points of potential gaseous effluents, with the exception of the lake shoreline, is located at the northeast corner of the property. This distance is approximately 3,200 ft. and is the radius of the exclusion areas as defined in 10 CFR 100.3.

5.2 <u>REACTOR</u>

5.2.1 The reactor core consists of not more than 560 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy clad fuel rods with an initial composition of slightly enriched uranium dioxide (UO_2) as fuel material. Fuel assemblies shall be limited to those fuel designs approved by the NRC staff for use in BWRs.

5.2.2 The reactor core contains 137 cruciform-shaped control rods as described in Section 3.4 of the FSAR.

5.3 <u>REACTOR PRESSURE VESSEL</u>

The reactor pressure vessel is as described in Table 4.2-1 and 4.2-2 of the FSAR. The applicable design codes are described in Section 4.2 of the FSAR.

5.4 <u>CONTAINMENT</u>

5.4.1 The principal design parameters and characteristics for the primary containment are given in Table 5.2-1 of the FSAR.

5.4.2 The secondary containment is as described in Section 5.3 and the applicable codes are as described in Section 12.4 of the FSAR.

5.4.3 Penetrations of the primary containment and piping passing through such penetrations are designed in accordance with standards set forth in Section 5.2 of the FSAR.

5.5 FUEL STORAGE

5.5.1 Criticality

5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.32 in the normal reactor core configuration at cold conditions (20°C);

b. $k_{eff} < 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.3 of the FSAR; and

c. A nominal center to center distance between fuel assemblies placed in the storage racks as described in Section 9.3 of the FSAR.

5.5.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.31 in the normal reactor core configuration at cold conditions (20°C);

b. $k_{eff} \leq 0.90$ if dry;

c. $k_{eff} \leq 0.95$ if fully flooded with unborated water; and

d. A nominal 6.625 inch center to center distance between fuel assemblies placed in storage racks.

5.5.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 344 ft., 6 in.

5.5.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 3247 fuel assemblies.

5.6 SEISMIC DESIGN

The reactor building and all engineered safeguards are designed on a basis of dynamic analysis using acceleration response spectrum curves which are normalized to a ground motion of 0.08 g for the Operating Basis Earthquake and 0.15 g for the Design Basis Earthquake.

SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING DESIGN FEATURES

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333

SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES

I. DESCRIPTION OF THE PROPOSED CHANGES

The following are proposed changes to the James A. FitzPatrick Technical Specifications. A revised infinite lattice multiplication factor for individual fuel bundles is proposed to ensure that the effective neutron multiplication factor of fuel stored in the spent fuel pool (SFP) will be maintained less than 0.95. The maximum number of stored assemblies has been raised to allow installation of additional storage racks to extend the time available before independent spent fuel storage is required. A specification for 'Drainage' is added to be consistent with BWR/4 Standard Technical Specifications (STS, Reference 1). The page layout is changed from landscape to portrait format and Specification numbering is revised to be consistent with STS. Also an editorial correction is made to Specification 5.1.1 (old 5.1.A).

Page 245

Specification 5.1.A has been renumbered 5.1.1 and the word "country" has been replaced with "county."

Specifications 5.1.B, 5.2.A, 5.2.B, 5.4.A, 5.4.B and 5.4.C have been respectively renumbered to 5.1.2, 5.2.1, 5.2.2, 5.4.1, 5.4.2 and 5.4.3.

Specification 5.5 has been revised to be consistent with STS 4.3 as follows:

Specification 5.5.A has been replaced with (the specification regarding the new fuel storage facility is relocated to Specification 5.5.1.2):

"5.5.1 Criticality

5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.32 in the normal reactor core configuration at cold conditions (20°C);"

Page 246

Replace Specification 5.5.B (the spent fuel storage facility specifications are relocated to Specifications 5.5.1.1, 5.5.2 and 5.5.3) with:

(5.5.1.1.b) "b. k_{eff} < 0.95 if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.3 of the FSAR; and

SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES

c. A nominal center to center distance between fuel assemblies placed in the storage racks as described in Section 9.3 of the FSAR."

Add Specification 5.5.1.2 (analogous to old Specification 5.5.A):

"5.5.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_{∞} of 1.31 in the normal reactor core configuration at cold conditions (20°C).;

b. $k_{eff} \leq 0.90$ if dry;

c. $k_{eff} \leq 0.95$ if fully flooded with unborated water; and

d. A nominal 6.625 inch center to center distance between fuel assemblies placed in storage racks."

Specification 5.5.2 is added to be consistent with STS:

"5.5.2 <u>Drainage</u>

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 344 ft., 6 in."

Specification 5.5.3 provides the maximum number of stored spent fuel assemblies (raised from 2797 to 3247 and relocated from old Specification 5.5.B) to be consistent with STS:

"5.5.3 <u>Capacity</u>

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 3247 fuel assemblies."

Delete page 246a containing Bases section 5.5.B. STS do not contain Bases sections for the Design Features Specifications.

II. <u>PURPOSE OF THE PROPOSED CHANGES</u>

The proposed changes provide a limit on fuel bundle reactivity which ensures that criticality margin for the SFP is maintained; provide limitations on the number of assemblies loaded in the pool to assure thermal and structural design requirements are met; correct an editorial error; and make this section of Technical Specifications consistent with STS.

**SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES**

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

The respective renumbering of Specifications 5.5.A, 5.5.B, 5.2.A, 5.2.B, 5.4.A, 5.4.B and 5.4.C to 5.1.1, 5.1.2, 5.2.1, 5.2.2, 5.4.1, 5.4.2, and 5.4.3 is an editorial change which has no effect on content or safety.

The correction of the word "Country" in Specification 5.5.1 to "County" is likewise an editorial change with no impact on safety.

The changes to Specification 5.5 are a combination of editorial change, additional specifications and revised requirements.

The editorial changes associated with making the section consistent with STS are:

> The specification of new fuel storage facility K_{eff} (wet and dry) has been relocated from Specification 5.5.A to Specifications 5.5.1.2.b and 5.5.1.2.c.
>
> The effective neutron multiplication factor limit for the spent fuel storage pool has been relocated from Specification 5.5.B to 5.5.1.1.b. The corresponding fuel assembly infinite neutron multiplication factor in reactor core geometry has been relocated from Specification 5.5.B to 5.5.1.1.a.
>
> The limitation on the number of stored fuel assemblies has been relocated from Specification 5.5.B to 5.5.3.

None of these changes have an effect on safety.

Changes adding new limitations to the Technical Specifications are:

> Specification of spent fuel rack center to center spacing (Specification 5.5.1.1.c) and new fuel rack center to center spacing (Specification 5.5.1.2.c) add details presently described in the FSAR to the Technical Specifications. Elevation 344 ft., 6 in. (design feature preventing SFP drainage, Specification 5.5.2) is the location of the drain between the SFP gates. With the exception of this drain, the SFP may not be inadvertently drained below a nominal elevation of 367 ft., 8 in. This addition makes this Technical Specification section consistent with the STS.
>
> Addition of a limit on fuel assembly infinite neutron multiplication factor in reactor core geometry applicable to the new fuel racks provides the design limitation which ensures compliance with Specifications 5.5.1.2.b and 5.5.1.2.c for FitzPatrick (Reference 2). Compliance with this limit is analogous to the old Specification 5.5.A requirement that "Compliance shall be verified prior to the introduction of any new fuel design to this facility."

SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES

These changes add limitations presently described in other design documents to the Technical Specifications (no new design requirements are established). Therefore, these changes do not affect safety.

The change in fuel assembly infinite neutron multiplication factor in reactor core geometry for fuel stored in the spent fuel pool contained in Specification 5.5.1.1.a (old Specification 5.5.B) is a revised requirement. The basis of this change is as follows:

> The presently installed spent fuel storage racks were licensed based on analyses of 8x8 retrofit fuel loaded with 3.3 weight percent U-235, taking no credit for burnable poison, which demonstrated compliance with the limit of $k_{eff} \leq 0.95$ (References 3,4). The present limit of $k_{\infty} \leq 1.36$ on maximum, exposure dependent, infinite lattice multiplication was obtained by analyzing that same fuel bundle in a reactor core geometry and adjusting the result to account for calculation and model uncertainties (Reference 5). This allowed loading higher enrichment fuel bundles in the SFP, because when the burnable poison in the bundle is considered, the fuel reactivity limit (and consequently the SFP criticality limit) is met.
>
> As fuel bundle design has evolved to use higher enrichments to support longer, higher energy fuel cycles; the correlation between bundle reactivity in the SFP and in the reactor core has changed. Specifically, higher enrichment fuel generates more thermal fissions and results in a harder neutron spectrum. Since boron is a 1/v absorber, when high enrichment fuel is introduced in the lattice it reduces the effectiveness of boron absorption. Therefore, a lower value of infinite lattice neutron multiplication factor in reactor core geometry is required to maintain limits on effective neutron multiplication factor for the spent fuel pool.
>
> To determine the infinite lattice k_{∞} required for higher enrichment fuel bundles, the infinite lattice multiplication factors for a GE12 fuel bundle with an uniform enrichment of 4.6 weight percent U-235 and six 3.0 weight percent gadolinia rods were determined for reactor core and in-rack geometries (Attachment IV). Demonstrating that this design basis fuel bundle meets limits on neutron multiplication for the fuel storage racks allows use of the in-core k_{∞} of this bundle to establish the limit on reactivity for fuel stored in the SFP. These calculations were performed with the Monte Carlo N-Particle Transport Code, Version 4A (MCNP), using continuous energy cross sections. The GE12 fuel lattice was chosen for the design basis bundle since it has the highest reactivity for a given enrichment and gadolinia loading (Reference 6).

SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES

The calculated minimum k_∞ of the design basis fuel assembly in the uncontrolled reactor lattice geometry at 20°C, corrected for bias and uncertainty is 1.3207 (95% probability at the 95% confidence level, 95%/95%). The maximum k_∞ of the same bundle in a nominal storage cell at 4°C, corrected for bias and uncertainty is 0.9189 (95%/95%), which satisfies the storage rack design limit of $k_{eff} < 0.95$. The limiting temperature with respect to reactivity for spent fuel pool temperatures between 0°C and 120°C is 4°C. The infinite multiplication factor of the design basis fuel bundle stored in the aluminum storage racks is bounded by the result for the stainless steel racks (Reference 6). This is due to the larger center to center spacing of fuel bundles when stored in the aluminum racks, as well as to the higher boron loading of the boral plates used in their construction.

Compliance with the Technical Specification maximum limit of 1.32 on fuel bundle infinite multiplication factor in the uncontrolled reactor geometry at 20°C ensures that SFP effective neutron multiplication factor will be maintained less than 0.95. Compliance with this revised limit ensures criticality limits will be met, as higher enrichment fuel assemblies are loaded into the spent fuel pool. The analysis supporting this change considered the new racks being installed to raise SFP capacity to 3247 assemblies.

Reports of additional analyses performed to support the addition of storage racks to raise SFP capacity to 3247 assemblies are contained in Attachments IV and V. Brief descriptions of the thermal-hydraulic and structural analyses follow (criticality analysis was discussed above).

Thermal-Hydraulic Considerations

As described in Attachment V, three systems are available to remove decay heat from fuel stored in the SFP: Fuel Pool Cooling and Cleanup system (FPCC), Residual Heat Removal system in the Fuel Pool Cooling Assist mode (RHR) and the Decay Heat Removal system (DHR).

The nominal heat removal capabilities of each of these systems are:

System	Capability (10^6 Btu/Hr)
DHR (maximum)	45
DHR (minimum)	30
RHR Assist + FPCC (1 pump, 1 Hx)	24
FPCC (2 pumps, 2 Hx's)	10
FPCC (1 pump, 1 Hx)	6.3

Decay heat load of fuel to be discharged is nominally:

Days After Shutdown	Decay Heat (10^6 Btu/Hr)
1	47.9
2	39.2
3	33.6
4	29.7
5	26.9
6	24.8
7	23.2
10	20.0
20	15.1
30	12.4
40	10.6

Additionally, the fuel stored in the pool at the beginning of the limiting outage has a heat load of 2.0E6 Btu/hr.

Sufficient cooling systems shall be maintained available to ensure SFP bulk temperature will be maintained less than or equal to 140°F, assuming an active failure of any single component in the available systems.

When DHR is available to operate in its maximum cooling mode and the decay heat removal requirements of the previous paragraph are met, there is no limitation on the time of initiation or rate of fuel movement, since the ability of DHR to remove decay heat is independent of the location of the fuel (see Attachment V). Otherwise, fuel movement from the core to the pool shall not begin until 96 hours after shutdown and the rate of movement shall be restricted to a net addition of four irradiated assemblies per hour to the SFP.

Structural Analysis

The new rack modules are seismic class I in accordance with the FitzPatrick plant Updated Final Safety Analysis Report (UFSAR). Seismic analyses of the spent fuel storage racks were performed, as described in Section 6.0 of Attachment IV, to determine the rack behavior and to ensure no loss of function resulting from either an operating basis earthquake (OBE) or a design basis earthquake (DBE). The existing and new racks for the FitzPatrick plant SFP are freestanding and self-supporting structures. The seismic analyses demonstrated the racks sustain minimal kinematic displacements during postulated earthquakes. Thus, no rack-to-rack and rack-to-wall impacts occurred under any of the dynamic conditions simulated. The analyses reported in Attachment IV demonstrate that the racks meet design requirements during seismic events so that no loss of function will result from an earthquake.

SAFETY EVALUATION
PROPOSED TECHNICAL SPECIFICATION CHANGES
REGARDING DESIGN FEATURES

An evaluation of pool structural loading is described in Section 8.0 of Attachment IV. This evaluation concludes that the loads following addition of the proposed racks will be bounded by the load analyzed in the structural evaluation supporting Technical Specification amendment 175. Therefore, the safety function of the pool structure will be maintained with the addition of 450 storage locations, providing a SFP capacity of 3247 bundles.

Bases section 5.5.B is deleted to conform to the STS. STS do not contain bases for the design features section. Removal of this material does not impact safety because the information contained is in the FSAR and other design documents.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Operation of the FitzPatrick plant in accordance with the proposed Amendment would not involve a significant hazards consideration as defined in 10 CFR 50.92, since it would not:

1. involve a significant increase in the probability or consequences of an accident previously evaluated because:

   A change in the infinite lattice neutron multiplication factor for a fuel bundle in the reactor core geometry which ensures the criticality limit for fuel in the spent fuel pool geometry is met does not affect initiation of any accident. Operation in accordance with the revised limit ensures the consequences of previously analyzed accidents are not changed. Storage of additional fuel assemblies in the pool does not affect the probability or consequences of dropping a fuel assembly, since this accident is localized to a small area of the storage array. Likewise, addition of specifications containing details presently in plant design documents and editorial changes do not change the probability or consequences of a previously analyzed accident.

2. create the possibility of a new or different kind of accident from any accident previously evaluated because:

   A change in the infinite lattice neutron multiplication factor for a fuel bundle in the reactor core geometry which ensures the criticality limit for fuel in the spent fuel pool geometry is met does not affect the types of reactivity accidents which may occur. Therefore changing the limit will not initiate a new or different type of accident. Maintenance of available decay heat removal systems ensures that no new type of loss of cooling accident associated with the SFP will occur as a result of storing additional irradiated fuel assemblies. Likewise, addition of specifications containing details presently in plant design documents and editorial changes do not create the possibility of a new or different type of accident.

3. involve a significant reduction in a margin of safety because:

The revised limit on infinite lattice neutron multiplication factor for a fuel bundle in the reactor core geometry ensures maintenance of the same margin of safety with respect to criticality as presently exists for storage of fuel in the SFP. Storing additional irradiated fuel assemblies in the pool does not affect the margin of safety with regard to pool cooling since sufficient heat removal systems will be maintained available to ensure maintenance of acceptable pool temperatures. Addition of specifications containing details presently in other design documents and editorial changes have no effect on the margin of safety.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

This amendment request meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

(i) the amendment involves no significant hazards consideration.

As demonstrated in Section IV of this evaluation, the proposed change involves no significant hazards consideration.

(ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The revised limitation on fuel assembly reactivity ensures the margin of safety presently assumed for prevention of spent fuel pool criticality is maintained. This change has no effect on effluents that may be released offsite. Storage of additional fuel assemblies in the SFP will not result in a significant change in the amount of waste generated in the Fuel Pool Cooling and Cleanup system. Therefore there is no significant change in the amount of effluents which may be released offsite.

(iii) there is no significant increase in individual or cumulative occupational radiation exposure.

The revised limitation on fuel assembly reactivity ensures the margin of safety presently assumed for prevention of spent fuel pool criticality is maintained. This has no effect on occupational radiation exposure. Sufficient shielding is provided by the SFP design that storage of additional fuel assemblies has no significant affect on occupational exposure. Therefore, there will be no change in individual or cumulative radiation exposure.

Based on the above, it is concluded that there will be no impact on the environment resulting from the proposed change and the proposed change meets the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.21 relative to requiring a specific environmental assessment by the Commission.

Additionally, implementation of the proposed change will not adversely affect the Fire Protection Program at the FitzPatrick plant.

VI. CONCLUSION

Based on the discussions above, implementation of a maximum, infinite lattice multiplication factor for fuel stored in the spent fuel pool does not involve a significant hazards consideration, or an unreviewed safety question, and will not endanger the health and safety of the public. Similarly, raising the number of fuel assemblies that may be stored in the SFP does not involve a significant hazards consideration, or an unreviewed safety question, and will not endanger the health and safety of the public. The Plant Operating Review Committee and Safety Review Committee have reviewed this proposed Technical Specification change and agree with this conclusion.

VII. REFERENCES

1. "Standard Technical Specifications General Electric Plants, BWR/4," NUREG-1433, April 1995.

2. "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-13, August 1996.

3. Nuclear Associates International Corp. Report, "Nuclear Criticality Analysis for the Spent Fuel Racks of the FitzPatrick Power Plant," NAI 78-12, February 1978.

4. Holtec International Report, "Licensing Report for Increased Storage Capacity for FitzPatrick Spent Fuel Pool," HI-89399, February 1989.

5. GE Letter, P. van Diemen to G. Rorke (NYPA), "FitzPatrick Fuel Storage K-infinity Conversion, Revision 1," July 10, 1986.

6. Evaluation of the FitzPatrick High-Density Storage Rack K_{∞} Criterion, JAF-RPT-MISC-02494R1, August 1997

Attachment III to JPN-97-033

MARKUP OF TECHNICAL SPECIFICATION PAGE CHANGES

PROPOSED TECHNICAL SPECIFICATION
CHANGES REGARDING DESIGN FEATURES

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

5.0 DESIGN FEATURES

5.1 SITE

5.1.1 ~~A.~~ The James A. FitzPatrick Nuclear Power Plant is located on the PASNY portion of the Nine Mile Point site, approximately 3,000 ft. east of the Nine Mile Point Nuclear Station, Unit 1. The NPP-JAF site is on Lake Ontario in Oswego ~~Country~~ County, New York, approximately 7 miles northeast of Oswego. The plant is located at coordinates north 4,819, 545.012 m, east 386, 968.945 m, on the Universal Transverse Mercator System.

5.1.2 ~~B.~~ The nearest point on the property line from the reactor building and any points of potential gaseous effluents, with the exception of the lake shoreline, is located at the northeast corner of the property. This distance is approximately 3,200 ft. and is the radius of the exclusion areas as defined in 10 CFR 100.3.

5.2 REACTOR

5.2.1 ~~A.~~ The reactor core consists of not more than 560 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy clad fuel rods with an initial composition of slightly enriched uranium dioxide (UO_2) as fuel material. Fuel assemblies shall be limited to those fuel designs approved by the NRC staff for use in BWRs.

5.2.2 ~~B.~~ The reactor core contains 137 cruciform-shaped control rods as described in Section 3.[illegible] of the FSAR.

5.3 REACTOR PRESSURE VESSEL

The reactor pressure vessel is as described in Table 4.2-1 and 4.2-2 of the FSAR. The applicable design codes are described in Section 4.2 of the FSAR.

5.4 CONTAINMENT

5.4.1 ~~A.~~ The principal design parameters and characteristics for the primary containment are given in Table 5.2-1 of the FSAR.

5.4.2 ~~B.~~ The secondary containment is as described in Section 5.3 and the applicable codes are as described in Section 12.4 of the FSAR.

5.4.3 ~~C.~~ Penetrations of the primary containment and piping passing through such penetrations are designed in accordance with standards set forth in Section 5.2 of the FSAR.

~~5.5 FUEL STORAGE~~

~~A. The new fuel storage facility design criteria are to maintain a K_{eff} dry <0.90 and flooded <0.95. Compliance shall be verified prior to introduction of any new fuel design to this facility.~~

~~. (Cont'd)~~

~~3. The spent fuel storage pool is designed to maintain k_{eff} less than 0.95 under all conditions as described in the Authority's applications for spent fuel storage modification transmitted to the NRC July 26, 1978 and May 31, 1990. This k_{eff} value is satisfied if the maximum, exposure dependent, infinite lattice multiplication factor, k_{∞}, of the individual fuel bundle is less than or equal to 1.36. The number of spent fuel assemblies stored in the spent fuel pool shall not exceed 2,797.~~

Insert a

5.6 SEISMIC DESIGN

The reactor building and all engineered safeguards are designed on a basis of dynamic analysis using acceleration response spectrum curves which are normalized to a ground motion of 0.08 g for the Operating Basis Earthquake and 0.15 g for the Design Basis Earthquake.

5.5.B Bases

The spent fuel pool and high density fuel storage racks are Class I structures designed to store up to 2,797 fuel bundles. The storage racks are designed to maintain a subcritical configuration having a multiplication factor (k_{eff}) less than 0.95 for all possible operational and abnormal conditions. The nuclear criticality analyses for the Spent Fuel Racks (References 1 and 3) conclude that fresh fuel bundles with 3.3 w/o U-235 meet the 0.95 k_{eff} limit. This design basis bundle was reanalyzed to determine its infinite lattice multiplication factor, k_{∞}, when in a reactor core geometry (Reference 2). This k_{∞} was obtained under conservative calculational assumptions and reduced by 2.33 times the standard deviation in the calculation resulting in the Technical Specification limit of 1.36.

References:

1) Increased Spent Fuel Storage Modification, Stone & Webster Engineering Corporation, Boston, Mass. March 15, 1978.

2) General Electric letter, F. Van Dieman to G. Rorke, FitzPatrick Fuel Storage K-infinity Conversion, Revision 1, dated July 10, 1986.

3) Increased Storage Capacity for FitzPatrick Spent Fuel Pool, Holtec International, Mount Laurel, New Jersey, February, 1989.

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MARKUP OF TECHNICAL SPECIFICATION PAGE CHANGES

Insert a:

5.5 FUEL STORAGE

5.5.1 Criticality

5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.32 in the normal reactor core configuration at cold conditions (20°C);

b. $k_{eff} < 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.3 of the FSAR; and

c. A nominal center to center distance between fuel assemblies placed in the storage racks as described in Section 9.3 of the FSAR.

5.5.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum k_∞ of 1.31 in the normal reactor core configuration at cold conditions (20°C);

b. $k_{eff} \leq 0.90$ if dry;

c. $k_{eff} \leq 0.95$ if fully flooded with unborated water; and

d. A nominal 6.625 inch center to center distance between fuel assemblies placed in storage racks.

5.5.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 344 ft., 6 in.

5.5.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 3247 fuel assemblies.

EVALUATION OF THE DECAY HEAT REMOVAL SYSTEM

PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING DESIGN FEATURES

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
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