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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
UHRIG,R.E. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards supplemental info re 790131 request for amend to Tech Spec,allowing deletion of interim fuel residence time limits.Requests NRC approval by 801130.Attachments A & B encl.

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FLORIDA POWER & LIGHT COMPANY

September 26, 1980
L-80-322

Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Eisenhut:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Fuel Residence Time Limit

This letter supplements our request of January 31, 1979 (L-79-25) to amend the subject Technical Specification. Attachment A responds to the NRC Staff verbal questions. Attachment B provides the requested information on primary coolant activity.

The interim fuel residence time limits in the Turkey Point Technical Specifications no longer apply to the fuel in Turkey Point Units 3 and 4. The limits were established for specific regions of unpressurized fuel in early fuel cycles (Region 2 for Unit 3, Cycle 4 and Region 3 for Unit 4, Cycle 2) to assure that fuel clad flattening would not be expected to occur. The limits of 27,000 EFPH for Unit 3 and 30,000 EFPH for Unit 4 are now predicted to be in excess of 50,000 EFPH for both units.

A fuel residence time Technical Specification limit is not necessary. A reload safety evaluation is conducted prior to each reload. The effects of the reload on the design basis and postulated accidents analyzed in the FSAR are examined. Each fuel region is checked during the reload design process to assure that clad flattening is not expected to occur. Further, for each reload cycle our Turkey Point Plant Nuclear Safety Committee and Florida Power & Light Company Nuclear Review Board review and approve the Reload Safety Evaluation (RSE) report. It is noted that most operating plants do not have fuel residence time limitations based on clad flattening, but these plants do assure that a no-clad flattening design basis is satisfied as a result of the reload design process and review.

The limit for Unit 3 will be exceeded during the current fuel cycle, i.e., Cycle 7. The limit for Unit 4 will be exceeded during the next fuel cycle, A001 S 1/1

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i.e., Cycle 7. Accordingly, approval of our request to delete the interim fuel residence time limits, as proposed on January 30, 1979, is required by November 30, 1980.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/RAK/ah

Attachments

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire

ATTACHMENT A

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Fuel Residence Time Limit

1. If the restriction on residence time is lifted, what is the potential increase in fuel assembly burnup (MWD/MTU)?

   Response:

   The projected increase in the maximum fuel assembly burnup with the deletion of the fuel residence time limit is expected to be less than 3,500 MWD/MTU. Expected burnups for current fuel cycles, i.e., Unit 3 Cycle 7 and Unit 4 Cycle 6, and future cycles are shown below.

   With respect to Unit 3 Cycle 7, Batch 5A (10 assemblies) will exceed the 27,000 EFPH limit before the end of the cycle. The burnup of these Batch 5A assemblies projected for EOC will be:

   35,000 MWD/MTU Batch Average
   37,700 MWD/MTU Maximum Assembly
   28,500 MWD/MTU Minimum Assembly

   The average burnup of all the fuel (Batches 5A and 6), that will be discharged from Cycle 7 is 35,000 MWD/MTU. The maximum assembly burnup of the discharged fuel is 37,700, which is a Batch 6 assembly that does not exceed the residence time limit.

   Although the fuel in Unit 4 Cycle 6 will not exceed the 30,000 EFPH limit, the end of cycle burnups for comparison purposes are expected to be: 33,200 MWD/MTU discharge average and 36,000 MWD/MTU for the maximum assembly.

   Although an increase in fuel residence time is expected in future fuel cycles, a decrease in maximum assembly burnup (less than 37,000 MWD/MTU is expected for Unit 3, Cycles 8 and 9. For Unit 4 Cycle 7, the maximum assembly burnup will remain essentially the same (37,900 MWD/MTU).

   Florida Power & Light Company may consider fuel cycles in the mid 1980's with maximum assembly burnups of up to 41,000 MWD/MTU for Unit 3 and 39,000 MWD/MTU for Unit 4. However, we have not yet made decisions regarding these fuel cycles and fuel cycles beyond the mid 1980's.

2. Have the radiological consequences of accidents where fuel failure is predicted by calculation (e.g., locked rotor incident, fuel handling accident, and others) been examined to assure that the FSAR evaluation is still conservative?

Response:

The radiological consequences of accidents are analyzed for iodine and noble gas releases only. All of the important radioactive iodine and noble gas nuclides are of short half-life compared to the fuel cycle time, with the exception of Kr-85. Thus, except for Kr-85, all reach equilibrium inventories in the fuel so that the release of fission products from fuel failures is independent of burnup. In the case of Kr-85, both the small inventory present and the small biological effects of Kr-85 radiation result in insignificant changes in radiological consequences of accidents involving fuel failures as a result of changes in fuel assembly burnup.

3. What mechanism would the licensee propose to assure that, in addition to clad flattening, radiological consequences of postulated accidents are reviewed on a cycle-by-cycle basis?

Response:

The Reload Safety Evaluation identifies any changes in potential consequences of accidents from a core performance standpoint (e.g., differences in number of rods with minimum DNBR<1.3). These changes would be reviewed by the appropriate radiation specialists within Westinghouse to determine the impact of these changes on the radiological consequences of postulated accidents. Thus, there would be assurance that the radiological consequences of accidents are assessed on a cycle-by-cycle basis.

Furthermore, Florida Power & Light Company reviews the results of the Reload Safety Evaluation and concurs with the conclusions prior to each reload.

ATTACHMENT B

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Fuel Residence Time Limit

Unit 3, Cycle 7

Monthly Radiochemical Surveillance

Primary Coolant Iodine Activity

Month/Year	I-131 (μCi/ml)	I-133 (μCi/ml)
Feb. 1980	2.1×10^{-3}	2.3×10^{-2}
Mar. 1980	1.6×10^{-3}	1.9×10^{-2}
April 1980	2.2×10^{-3}	2.1×10^{-2}
May 1980	9.8×10^{-4}	1.2×10^{-2}
June 1980	2.7×10^{-3}	1.9×10^{-2}
July 1980	2.5×10^{-3}	2.9×10^{-2}
Aug. 1980	3.5×10^{-3}	2.4×10^{-2}

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Fuel Residence Time Limit

Unit 4, Cycle 6

Monthly Radiochemical Surveillance

Primary Coolant Iodine Activity

Month/Year	I-131 (µCi/ml)	I-133 (µCi/ml)
July 1979	1.6×10^{-3}	5.9×10^{-3}
Aug. 1979	1.2×10^{-3}	6.7×10^{-3}
Sept. 1979	1.7×10^{-3}	7.0×10^{-3}
Oct. 1979	1.4×10^{-3}	7.7×10^{-3}
Nov. 1979	1.2×10^{-2}	1.1×10^{-2}
Dec. 1979	3.1×10^{-3}	9.4×10^{-3}
Jan. 1980	2.2×10^{-3}	8.0×10^{-3}
Feb. 1980	6.1×10^{-3}	1.5×10^{-2}
Mar. 1980	2.5×10^{-3}	1.2×10^{-2}
April 1980	3.0×10^{-3}	1.3×10^{-2}
May 1980	Shutdown	Shutdown
June 1980	Shutdown	Shutdown
July 1980	3.4×10^{-3}	1.7×10^{-2}
Aug. 1980	2.6×10^{-3}	1.2×10^{-2}