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SUBJECT: Forwards info requested by NRC staff during 990630 & 0816 telcons,to complete review of proposed license amend for fuel reload process improvement program.

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Florida Power & Light Company, 6351 S. Ocean Drive, Jensen Beach, FL 34957

FPL

September 13, 1999

L-99-195
10 CFR 50.90

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

Re: St. Lucie Unit 2
Docket 50-389
Proposed License Amendment
Cycle 12 Reload Process Improvement
Response to Request for Additional Information

Ref: FPL Letter L-98-308: J.A. Stall (FPL) to NRC (DCD), St. Lucie Unit 2, Docket 50-389, Proposed License Amendment, *Cycle 12 Reload Process Improvement*; December 18, 1998.

The attachment to this letter provides information requested by the NRC staff during telephone conversations with FPL on June 30 and August 16, 1999. The information is deemed necessary to complete the staff's review of the proposed license amendment for our fuel reload process improvement program. Analytical results and assumptions pertaining to certain non-LOCA radiological doses, and additional information involving input parameters for the loss of coolant accident analysis associated with the reference submittal are included.

Please contact us if there are any questions about the attached response or the reference proposed license amendment.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

JAS/RLD

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

A001

A. Information Related to Non-LOCA Dose Calculations

1. *Steam Generator (SG) Tube Rupture (SGTR) Steaming Rates*

a) Steam released in the first 30 minutes (prior to operator action)

83,942 lbm (46.6 lbm/sec)	-	via MSSVs of Affected SG
82,028 lbm (45.6 lbm/sec)	-	via MSSVs of Intact SG

b) Steam released from time of operator action (30 minutes) until 2 hours

572,026 lbm (105.9 lbm/sec)	-	via ADVs

c) Steam released from time of operator action (30 minutes) until 8 hours

1,479,854 lbm (54.8 lbm/sec)	-	via ADVs

NOTE: Total steam releases are shown in Table 8.6.3-3 of original submittal (Attachment 2 to the enclosure with FPL Letter L-98-308)

2. *Calculated Doses for SGTR and Feed-line Break (FLB) Events*

a) SGTR Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) Calculated Doses:

	EAB/2hr	LPZ/8hr
Thyroid PIS	12.0 rem	6.0 rem
Thyroid GIS	2.0 rem	8.0 rem
Whole Body	0.2 rem	0.1 rem

b) FLB with LOAC EAB and LPZ Calculated Doses:

	EAB/2hr	LPZ/8hr
Thyroid	1.56 rem	0.71 rem
Whole Body	< 2 mrem	< 3 mrem

3. *Assumptions for Dose Calculations*

The input assumptions for non-LOCA events remain unchanged from those in Cycle 2 analysis except for the following:

a) Iodine Dose Conversion Factors used are from ICRP-30 for all re-analyzed events, except for SGTR which is conservatively based on TID-14844 (as noted in Table 8.0-8 of original submittal, Attachment 2 to the enclosure with FPL Letter L-98-308).

b) RCS Cooldown Rate for 8 hour dose is ~ 38 ^{0}F/hr instead of 100 ^{0}F/hr to conservatively maximize dose for re-analyzed events.

c) Maximum allowable limits for fuel failure events are back calculated from dose acceptance limits.

d) Decontamination Factor (DF) used for atmospheric dump valves and main steam safety valves is 10 instead of 1. The re-analyses credit a DF equal to 10 for events that do not uncover the steam generator tubes or do not undergo steam generator dryout. Cycle 2 analyses credited flashing on an event specific basis, e.g. Cycle 2 Loss of AC Power dose evaluation used a DF equal to 100 for the release of the initial activity from the steam generator and a DF equal to 1 for the activity associated with the primary to secondary leak.

NOTE: UFSAR Table 15.0-19 lists parameters used in Cycle 2 site boundary dose calculations.

B. Response to NRC Request for Additional Information: LOCA Analysis

1. *FPL should provide a discussion of the general philosophy for input parameter variances or instrument drift, uncertainties, inaccuracies and other variances, and how they are accounted for in the LOCA analysis.*

   Response:

   In general, the LOCA analysis for St. Lucie Unit 2 presented in FPL letter L-98-308 has been performed to achieve results that conservatively bound expected consequences for this event. This conservatism is inherent in the ABB-CE evaluation models used in this analysis that have been developed and approved in accordance with the conservative acceptable features for ECCS evaluation models delineated in 10 CFR 50, Appendix K. As such, the ABB-CE evaluation models used in this analysis provide substantial margins over realistic conditions that are sufficient to bound variances in input parameters including instrument drift, uncertainties and inaccuracies.

   Tables 7.1.2-1 and 7.2.2-1 of Attachment 2 to the enclosure with L-98-308 list the key parameters used in the LOCA analysis for St. Lucie Unit 2. In addition to the substantial inherent conservatism in the evaluation models, the LBLOCA and SBLOCA peak cladding temperature (PCT) significant analysis input parameters were selected to bound as-operated plant values including variances. Other parameters, such as RCS flow rate and RCS pressure, are used at their nominal/reference values as the PCT is not very sensitive to variations in the values of these parameters. The bounding PCT significant input parameters are conservatively applied deterministically, providing further assurance that the LOCA analysis results provide margin to the expected consequences for this event.

   As part of the Reload Process Improvement (RPI) proposed by this license amendment FPL uses a reload analysis "groundrules" process with the Non-Physics Assessment Checklist (NPAC) to assure that all the safety analysis (including SBLOCA and LBLOCA) input assumptions remain bounding for the plant configuration every cycle. This process assures that any proposed or actual changes in plant configuration are appropriately verified to remain bounded by the reload safety analysis for the upcoming fuel cycle.

2. *FPL should discuss specifically the handling of HPSI flow drift, uncertainties, and variances in the SBLOCA analysis input.*

   Response:

   HPSI flow assumptions in the St. Lucie Unit 2 SBLOCA analysis conservatively bound actual plant design configuration values sufficiently to compensate for any flow measurement variances due to instrument drift, uncertainty and inaccuracies during required surveillances, as discussed below:

   a) Maximum Flow Condition:

      Analysis assumptions utilize a conservative flow delivery curve that assumes a three cold leg total injection flow of 453 gpm at 0 psia reactor coolant system (RCS) pressure. This flow compares to the Technical Specification 4.5.2.i.1 minimum three cold leg flow

surveillance requirement of 476 gpm @ a discharge head of 1150 to 1290 ft. A conservative allowance of 23 gpm in the three loop total injection flow thus exists between the analysis value and the Technical Specifications minimum required value. The total HPSI flow measurement uncertainty is calculated to be 18 gpm for the combined three loop flow. This uncertainty includes the instrument loop uncertainty (including drift and other inaccuracies such as orifice plate tolerances and process temperature variance) and throttle valve position variance (±1/32" stem position) that are applicable during routine flow and throttle valve position verification surveillances required by Technical Specifications 4.5.2.g, 4.5.2.h and 4.5.2.i.

b) Zero Flow Condition:

Technical Specification 4.5.2.g surveillance testing of the HPSI pumps consists of a verification that the pumps' total developed head is greater than or equal to 2854 ft. on recirculation flow. The instrument used to measure this parameter has a total uncertainty of approximately 0.9% full scale. The SBLOCA analysis uses 0 gpm injection flow at a RCS pressure of 1214 psia. This analysis value provides a margin of approximately 53 ft. (or 1.2% full scale) to the Technical Specifications value. Therefore, the margin in the safety analysis value is sufficient to accommodate the associated instrument uncertainty.