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SUBJECT: Forwards comments on preliminary accident sequence precursor analysis.

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C A T E G O R Y 1 D O C U M E N T

Florida Power & Light Company, P.O. Box 128, Fort Pierce, FL 34954-0128

FPL

June 20, 1996

L-96-155
10 CFR 50.4

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

Re: St. Lucie Unit 1
Docket No. 50-335
Comments on the Preliminary
Accident Sequence Precursor Analysis

On May 16 1996, the NRC issued the subject preliminary analysis for comment. The report documented the accident sequence precursor (ASP) program for events that occurred in 1995. The events documented in the subject preliminary ASP analysis were performed as part of the NRC ASP program.

Florida Power & Light Company (FPL) appreciates the opportunity to review the draft ASP analysis. Although the conditional core damage probability (CCDP) for the period that the power operated relief valves (PORV) were unavailable is greater than the NRC accident precursor screening criteria of 1E-6, FPL has calculated a CCDP that is less than the NRC estimate of 1.3E-4.

The attachment to this letter provides specific comments regarding the ASP analysis for these events. Please contact us if there are any questions.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

240119

JAS/GRM

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

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FPL has reviewed the preliminary ASP analysis and concurs that the conditional core damage probability (CCDP) is greater than the NRC precursor screening value of 1.0E-6. It is concluded, however, that the CCDP should be less than the 1.3E-4 calculated by the NRC. The following are specific comments regarding the preliminary accident precursor analysis:

1. The CCDP, as calculated in the NRC evaluation, represents the total core damage probability (CDP) given the PORVs are unavailable. Presenting the results in this manner can make it difficult to compare the precursor evaluation results to the screening value of 1E-6 since the baseline CDP for many of the dominant sequences identified are not impacted by the PORV unavailability and have baseline values greater than 1E-6. On page 2-5 of NUREG/CR-4674 Vol. 21 ("Precursors to Potential Severe Core Damage Accidents: 1994, A status Report"), it is stated that "... for condition assessments, the CCDP, CDP, and the difference between the two values are provided for each condition assessment." Both the CCDP and the change in CDP were not provided for this analysis.

   It is recommended that the results be presented as discussed in the excerpt from the 1994 precursor report referenced above. If only the CCDP is presented, as a minimum, it should be stated in the report that (1) the CCDP does not represent the change in the CDP due to the analyzed event, and (2) how the calculated CCDP is compared to the precursor screening value.

2. The "Event Summary" section discusses three primary events that are addressed in the draft precursor analysis (reactor coolant pump (RCP) seal stage failures, PORV unavailability, and removal of the shutdown cooling (SDC) system from service for 22 hrs.). This section states that "The conditional core damage probability estimated for this event is 1.3E-4". The CCDP is actually the total CCDP for three different events, not one event. The actual analysis concluded that (1) the event related to the SDC system being out-of-service was less that the precursor screening value of 1E-6, (2) the estimated CCDP contribution from a postulated RCP seal loss of coolant accident (LOCA) was 5.9E-6, and (3) the CCDP contribution from the PORV unavailability was 1.2E-4. The CCDP contribution from the three events are unrelated except for a short time period. The dominance of the contribution from the PORV unavailability is not discussed until the "Analysis Results" section. The "Event Summary" section should essentially serve as an executive summary and provide a more detailed summary of the results.

   It is recommended that the "Event Summary"should (1) identify that the total CCDP represents a combination of multiple events, and (2) provide the contribution from each event so that is clear what is the dominant contributor to the total CCDP.

3. Comments regarding the CCDP assessment associated with the PORVs being out-of-service for approximately 5840 hrs.:

(a) LOOP Sequences 16 and 21:

These sequences are essentially the same except for whether or not offsite power is recovered within 6 hrs. The representation of these sequences in the event tree is confusing. It appears that the sequence for feed and bleed failure is not correct in that it occurs after the attempted recovery of offsite power at 6 hours is either successful or fails. Feed and bleed is a short term action (less than 30 minutes) after complete loss of feedwater. These sequences also do not seem to take credit for the potential recovery of offsite power following failure of feed and bleed. Feed and bleed failure would occur in less than 30 minutes, and core damage could still be prevented if main feedwater (MFW) and/or condensate pumps could be recovered within 2 hours (offsite power recovery).

It is recommended that since LOOP 16 is a dominant contributor to the total CCDP, that the actual sequence of events represented by sequences LOOP 16 and LOOP 21 be more clearly explained, and that the potential for recovery of MFW and/or condensate pumps be evaluated.

(b) LOOP Sequences 40,30,39,41,23,and 32:

The NRC's event for failure to recovery emergency power (EPS-XHE-NOREC - probability 0.8) does not give proper credit for the capability to tie a diesel generator from Unit 2 to Unit 1 via the blackout crosstie. Use of the blackout crosstie was covered in the emergency operating procedures in place during the time that the PORVs were unavailable. The crosstie failure probability is approximately 9E-2 (including hardware failures, operator failure to align crosstie, and unavailability of crosstie).

If the crosstie failure probability (9E-2) is used instead of EPS-XHE-NOREC (probability = 0.8), the sequence CCDP changes would be as follows:

Sequence 40:changes from 1.9E-5 to 2.1E-6
Sequence 30:changes from 4.4E-6 to 5.0E-7
Sequence 39:changes from 4.4E-6 to 5.0E-7
Sequence 41:changes from 2.5E-6 to 2.8E-7
Sequence 23:changes from 2.4E-6 to 2.7E-7
Sequence 32:changes from 2.4E-6 to 2.7E-7

It is recommended that the blackout crosstie capability be incorporated in the CCDP calculations.