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 FACIL: 50-335, St. Lucie Plant, Unit 1, Florida Power & Light Co.
 AUTH.NAME: STALL, J.A. AUTHOR AFFILIATION: Florida Power & Light Co.
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SUBJECT: Forwards response to request for addl info re proposed license amend for UFSAR evaluation of MSSV inadvertent opening.

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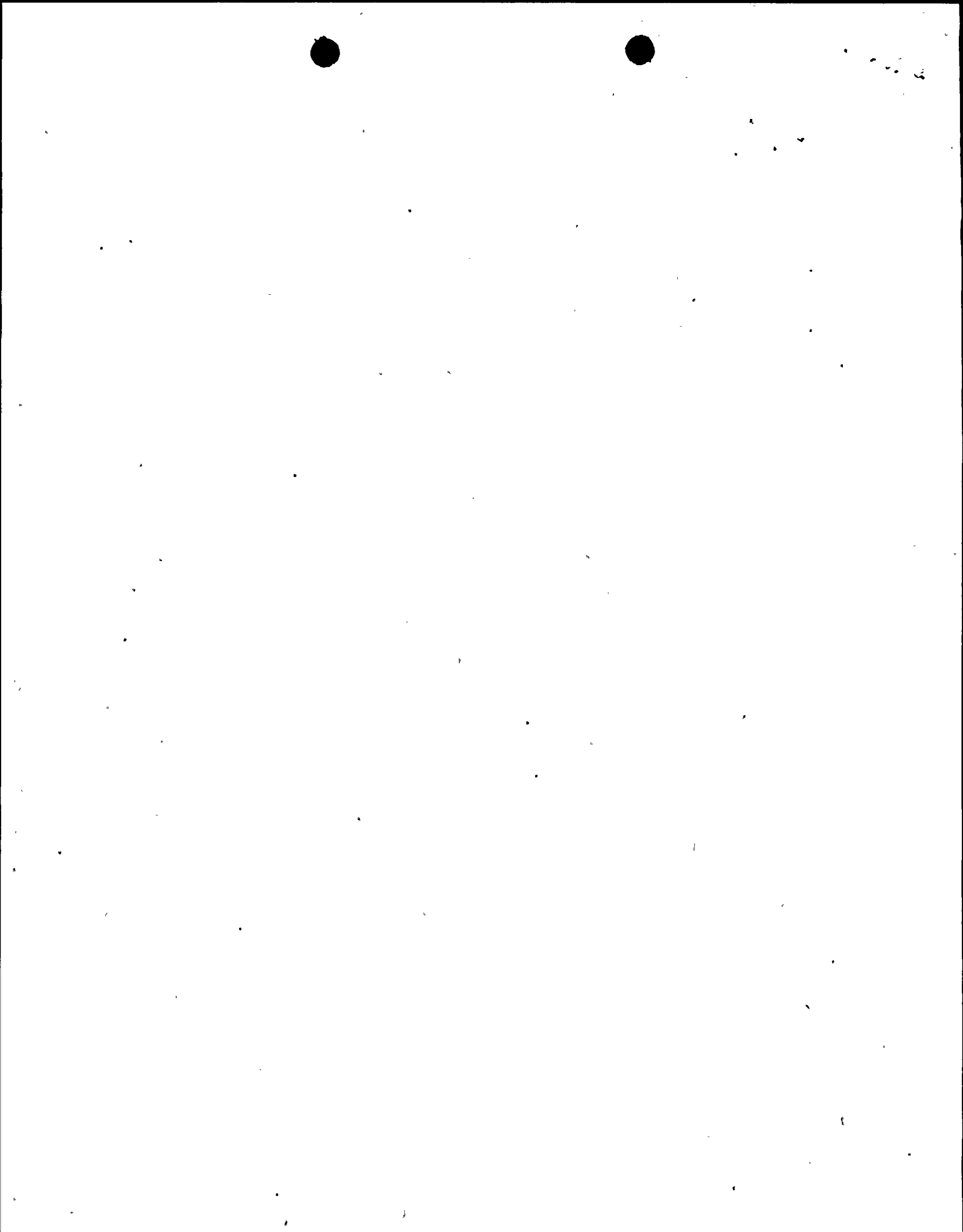
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December 8, 1997

L-97-301
10 CFR 50.90

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

Re: St. Lucie Unit 1
Docket No. 50-335
Proposed License Amendment: UFSAR Evaluation of MSSV
Inadvertent Opening (TAC No. M99315), Request for Additional Information

Ref: (1) FPL Letter L-97-158, J.A. Stall to NRC (DCD): Proposed License Amendment, UFSAR
Evaluation of MSSV Inadvertent Opening; July 22, 1997.

(2) NRC Letter, L.A. Wiens to Thomas F. Plunkett (FPL): REQUEST FOR ADDITIONAL
INFORMATION, ST. LUCIE UNIT 1 - EVALUATION OF MAIN STEAM STOP VALVE
INADVERTENT OPENING (TAC NO. M99315); October 6, 1997.

Reference 1 is an application for license amendment from Florida Power and Light Company (FPL) which will incorporate a recent evaluation of a postulated inadvertent opening of a Main Steam Safety Valve (MSSV) into the current licensing basis for St. Lucie Unit 1. Reference 2 forwarded a request for additional information (RAI), which is identified as information needed by the NRC staff to complete its assessment of the amendment request. The questions (shown in italics) and FPL's responses are contained in the Attachment to this letter.

Please contact us if there are any questions about this submittal.

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.
Mr. W.A. Passetti, Florida Department of Health and Rehabilitative Services.

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St. Lucie Unit 1
Docket No. 50-335
Proposed License Amendment: UFSAR Evaluation of MSSV
Inadvertent Opening (TAC No. M99315), Request for Additional Information

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STATE OF FLORIDA)
) ss.
COUNTY OF ST. LUCIE)

J. A. Stall being first duly sworn, deposes and says:

That he is Vice President, St. Lucie Plant, for the Nuclear Division of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.

J. A. Stall
J. A. Stall

STATE OF FLORIDA
COUNTY OF St. Lucie

Sworn to and subscribed before me

this 8th day of December, 19 97

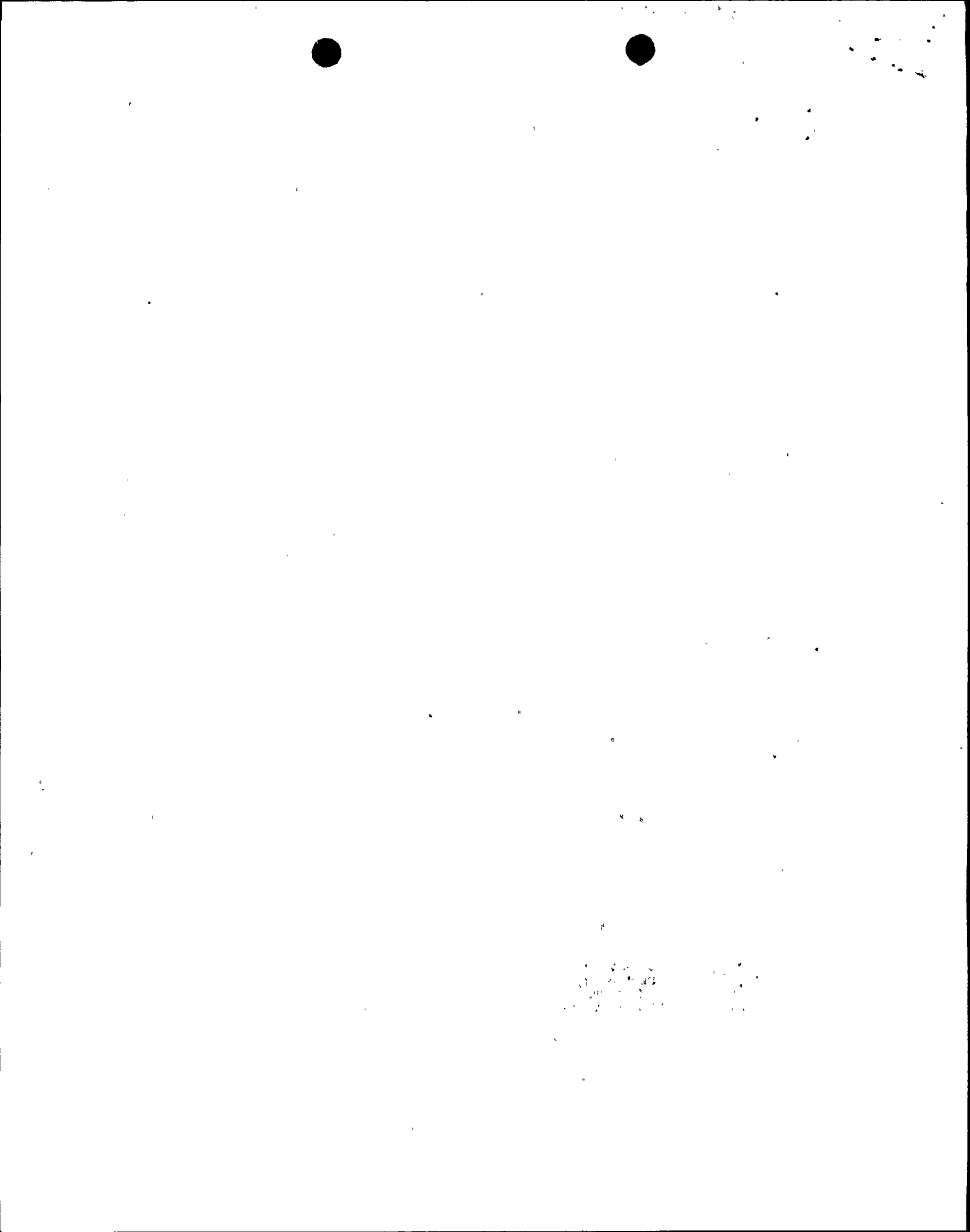
by J. A. Stall, who is personally known to me.

Leslie J. Whitwell
Signature of Notary Public-State of Florida



Leslie J. Whitwell
MY COMMISSION # CC646183 EXPIRES
May 12, 2001
BONDED THRU TROY FAIR INSURANCE, INC.

Name of Notary Public (Print, Type, or Stamp)



1. *Explain why the inadvertent opening of a main steam safety valve is most limiting when it occurs at hot zero power.*

The stuck open main steam safety valve (MSSV) event is of interest for radiological releases and loss of shutdown margin. The radiological consequences of a stuck open MSSV are directly proportional to the mass released through the open MSSV. As such, hot zero power is considered limiting since the initial steam generator (SG) water inventory is greater under hot zero power conditions. The analysis assumes that the complete steam generator inventory is released to the atmosphere. This assumption also provides conservative results for the loss of shutdown margin.

2. *The major acceptance criteria for this event is that the transient DNB value is above the minimum DNBR established for St. Lucie Unit 1 (see SRP 15.1.4). Please provide the results of the analyses to demonstrate that this acceptance criteria is met.*

The limiting excess load event from a DNBR perspective is the simultaneous opening of the steam dump and bypass valves. These valves are designed to provide a direct flow path from the main steam header (downstream of the main steam isolation valves) to the main condenser and are sized to enable the plant to accept a loss of electrical load in excess of 40% of full power. This event clearly bounds the open MSSV event which is a much smaller transient. An open MSSV will pass the steam flow equivalent of approximately 7-8% power.

Unit 1 Updated Final Safety Analysis Report (UFSAR) Section 15.2.11 provides the analysis of the steam dump and bypass valve event and concludes that the minimum DNBR for this event is greater than the design limit of 1.22 as specified in the bases for Unit 1 Technical Specification 2.1.1. Since the steam dump and bypass valve event bounds the MSSV event with respect to DNBR, an analysis of the minimum DNBR associated with a stuck open MSSV was not necessary.

3. *Confirm that the most conservative parameters are used in the analytical model (address each parameter listed in SRP 15.1.4, page 15.1.1-4, items a through d).*

The inadvertent opening of an MSSV is not limiting with respect to the departure from nucleate boiling or linear heat rate specified acceptable fuel design limits. Therefore, the input parameters were selected to maximize the radiological doses and the loss of shutdown margin.

- a. The initial plant condition assumed for the MSSV event is Hot Zero Power (HZP). This condition maximizes the inventory of steam generator liquid mass and



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contained radioactivity for the purpose of providing conservative results for both the reactor coolant system (RCS) cooldown and site boundary radiation dose calculations. For the purpose of computer code initialization, a core power level of 1 Mwt was used in the St. Lucie Unit 2 analysis of record.

b. Conservative scram characteristics were assumed: (i) the reactivity value used for scram worth corresponds to the minimum shutdown margin allowed by Technical Specifications which inherently assumes the single control element assembly (CEA) of highest reactivity worth remains withdrawn; and (ii) the maximum holding coil delay time and CEA insertion characteristics were employed in the evaluation..

c. End of cycle (EOC) core burnup is assumed for the evaluation. The EOC moderator temperature coefficient (MTC) and doppler coefficient maximize the positive reactivity addition due to RCS cooldown. The MTC was conservatively modeled as a linear function of moderator temperature instead of the density dependent treatment typically used in cooldown (main steam line break) transients. In addition, the value selected for inverse boron worth is conservative for EOC conditions.

d. The mitigating systems, i.e., SG Water Level-Low trip, main steam isolation and safety injection actuation, used in the detailed St. Lucie Unit 2 analysis contained appropriate instrumentation uncertainties. Equipment setpoints and instrument uncertainties differ slightly between St. Lucie Unit 1 and 2; however, these differences were factored into the Unit 1 evaluation and it was concluded that the Unit 2 results could be conservatively applied to Unit 1. This approach implicitly incorporates the impact of instrumentation uncertainties on the results.