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SUBJECT: Responds to Generic Ltr 88-17, "Loss of DHR." Plans for plant programmed enhancement will be submitted by 890202.

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JANUARY - 4 1989

L-88-552
10 CFR 50.54(f)

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

Gentlemen:

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Loss of Decay Heat Removal (Generic Letter 88-17)

By Generic Letter 88-17 (GL 88-17) dated October 17, 1988, the NRC staff forwarded to licensees, recommendations related to operation following placement of the nuclear steam supply system (NSSS) on shutdown cooling or following the attainment of NSSS conditions under which shutdown cooling would normally be initiated. Florida Power & Light Company's (FPL's) plans for St. Lucie Units 1 and 2, with respect to the expeditious actions recommendations, are attached. FPL's plans for St. Lucie Units 1 and 2, related to the programmed enhancement recommendations, will be submitted by February 2, 1989, in accordance with the GL 88-17 schedule.

If you have any questions concerning this response, please contact us.

Very truly yours,

W. F. Conway
W. F. Conway
Senior Vice President - Nuclear

WFC/EJW/cm

Attachment

cc: Malcolm L. Ernst, Acting Regional Administrator, Region II
USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

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PDR ADOCK 05000335
P PDC

EWGL8817

an FPL Group company

ADD:
H. BALUKJIAN
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LTR 2 ENCL 2
1 1

STATE OF FLORIDA)
) ss.
COUNTY OF PALM BEACH)

W. F. Conway being first duly sworn, deposes and says:

That he is Senior Vice President- Nuclear 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.



W.F. Conway

Subscribed and sworn to before me this
3 day of January, 1989.



NOTARY PUBLIC, in and for the County
of Palm Beach, State of Florida

My Commission expires:  **Notary Public, State of Florida**
My Commission Expires June 1, 1989.
Bonded Thru Troy Fain - Insurance, Inc.

OFFICE OF THE
SHERIFF
COUNTY OF LOS ANGELES
CALIFORNIA

Generic Letter 88-17
St. Lucie Units 1 and 2
Expeditious Actions

- 1) Discuss the Diablo Canyon event, related events, lessons learned, and implications with appropriate plant personnel. Provide training shortly before entering a reduced inventory condition.

Response

This training is scheduled to be completed prior to entering a reduced inventory mode. Training will be provided to Shift Technical Advisors and operators on the Diablo Canyon event. This training will include the event, related events and lessons learned. Based on the complexity of the changes to the procedures, training will also be provided on procedure changes made to address this event. Specific training items will include symptoms of the event, indications available to the operator, RCS vent capacity required to minimize pressurization when the vessel head is in place, flow paths available for inventory addition, containment integrity requirements and operator actions necessary to recover from a loss of Shutdown Cooling (SDC).

- 2) Implement procedures and administration controls that reasonably assure that containment closure ** will be achieved prior to the time at which a core uncover could result from a loss of DHR coupled with an inability to initiate alternate cooling or addition of water to the RCS inventory. Containment closure procedures should include consideration of potential steam and radioactive material release from the RCS should closure activities extend into the time boiling takes place within the RCS. These procedures and administrative controls should be active and in use:

- a) prior to entering a reduced RCS inventory condition for NSSSs supplied by Combustion Engineering or Westinghouse, and
- b) prior to entering an RCS condition wherein the water level is lower than four inches below the top of the flow area of the hot legs at the junction of the hot legs to the RV for NSSSs supplied by Babcock and Wilcox,

and should apply whenever operating in those conditions. If such procedures and administrative controls are not operational, then either do not enter the applicable condition or maintain a closed containment.

** Containment closure is defined as a containment condition where at least one integral barrier to the release of radioactive material is provided. Further discussion and qualifications which the integral barrier must meet are provided in enclosure 2 and in the definitions provided in enclosure 3 (to GL 88-17).

Response

Procedures will be revised to provide more in-depth instructions for the operators' use in the event of a loss of SDC. These procedures will provide for containment closure prior to the RCS boiling caused by a loss of SDC. Containment closure will be established by providing at least one integral barrier to the release of radioactive material.

- 3) Provide at least two independent, continuous temperature indications that are representative of the core exit conditions whenever the RCS is in a mid-loop condition* and the reactor vessel head is located on top of the reactor vessel. Temperature indications should be periodically checked and recorded by an operator or automatically and continuously monitored and alarmed. Temperature monitoring should be performed either:

- a) by an operator in the control room (CR), or
- b) from a location outside of the containment building with provision for providing immediate temperature values to an operator in the CR if significant changes occur. Observations should be recorded at an interval no greater than 15 minutes during normal conditions.**

* A mid-loop condition exists whenever RCS water level is below the top of the flow area of the hot legs at the junction with the RV.

** Guidance should be developed and provided to operators that covers evacuation of the monitoring post. The guidance should properly balance reactor and personnel safety.

Response

FPL will use the existing core exit thermocouples when the reactor vessel head is installed and the SDC supply and return line temperatures at other times. These temperatures will be periodically checked and recorded by an operator.

- 4) Provide at least two independent, continuous RCS water level indications whenever the RCS is in a reduced inventory condition. Water level indications should be periodically

checked and recorded by an operator or automatically and continuously monitored and alarmed. Water level monitoring should be capable of being performed either:

- a) by an operator in the CR, or
- b) from a location other than the CR with provision for providing immediate water level values to an operator in the CR if significant changes occur. Observations should be recorded at an interval no greater than 15 minutes during normal conditions.**

** Guidance should be developed and provided to operators that covers evacuation of the monitoring post. The guidance should properly balance reactor and personnel safety.

Response

St. Lucie Units 1 and 2 both have remote level indications meeting the generic letter expeditious requirements. These indicators have separate differential pressure transmitters with a common sensing line. The common sensing line will be blown down prior to its use in the reduced inventory mode. This will provide reasonable assurance that the indicated water level will be representative of RCS level. Remote level indication was installed at St. Lucie #1 during a recent outage and alarm capability is being considered for both units. The currently installed indicators are considered adequate for monitoring RCS level. They will be periodically checked and recorded by an operator.

- 5) Implement procedures and administrative controls that generally avoid operations that deliberately or knowingly lead to perturbations to the RCS and/or to systems that are necessary to maintain the RCS in a stable and controlled condition while the RCS is in a reduced inventory condition.

If operations that could perturb the RCS or systems supporting the RCS must be conducted while in a reduced inventory condition, then additional measures should be taken to assure that the RCS will remain in a stable and controlled condition. Such additional measures include both prevention of a loss of DHR and enhanced monitoring requirements to ensure timely response to a loss of DHR should such a loss occur.

Response

Maintenance on systems that could affect the RCS will not routinely be performed while in a reduced inventory mode. Guidelines will be provided to ensure perturbation-causing operations are minimized and additional controls will be established, if necessary.

- 6) Provide at least two available* or operable means of adding inventory to the RCS that are in addition to pumps that are a part of the normal DHR systems. These should include at least one high pressure injection pump. The water addition rate capable of being provided by each of the means should be at least sufficient to keep the core covered. Procedures for use of these systems during loss of DHR events should be provided. The path of water addition must be specified to assure the flow does not bypass the reactor vessel before exiting any opening in the RCS.

* Available means ready for use quickly enough to meet the intended functional need.

Response

As stated in the response to Generic Letter 87-12, Charging, High Pressure Safety Injection (HPSI) or Low Pressure Safety Injection (LPSI) pumps may be available while the RCS is at reduced inventory. In the event that all charging capacity is lost, an administratively available HPSI pump could be used for inventory control. This concern will be addressed in the procedures that are being revised or developed.

- 7) (Applicable to Westinghouse and Combustion Engineering nuclear steam supply system (NSSS) designs). Implement procedures and administrative controls that reasonably assure that all hot legs are not blocked simultaneously by nozzle dams unless a vent path is provided that is large enough to prevent pressurization of the upper plenum of the RV. See references 1 and 2.

Response

FPL will provide adequate administrative controls such that RCS pressurization is minimized when hot leg nozzle dams are in place simultaneously. A vent path will be established to ensure proper venting during reduced inventory modes. Procedures have been revised to ensure that cold leg nozzle dams are installed prior to the hot leg nozzle dams and vice versa when removing these dams. Procedures will be revised to ensure vent path adequacy.

- 8) (applicable to NSSSs with loop stop valves). Implement procedures and administrative controls that reasonable assure that all hot legs are not blocked simultaneously by closed stop valves unless a vent path is provided that is large enough to prevent pressurization of the RV upper plenum or unless the RCS configuration prevents RV water loss if RV pressurization should occur. Closing cold legs by nozzle dams does not meet this condition.

Response

This item is not applicable to St. Lucie Units 1 and 2.

Additional Discussion

Many of the above action items will be included in new or revised operating procedures. It is planned that these procedures will include:

- A. Potential causes of loss of SDC capacity such as loss of electrical power, leaks, losses of cooling water, etc.
- B. Alternate decay heat removal success paths.
- C. Specific instructions to restore SDC once it is lost due to the various potential causes.
- D. Contingency actions, such as establishing containment integrity, if SDC cannot be restored, when specific instructions may not be accomplished.
- E. Checklists for verifying proper valve and breaker lineups.
- F. A table that provides instrument level indication and elevation correlations.
- G. Precautions for operations at reduced inventory.

FPL considers that the above actions meet the intent of Generic Letter 88-17 and each of the expeditious actions contained in that letter. Many of these actions may also satisfy the long term program enhancements that were also requested to be addressed. It is anticipated that additional analyses will be done as a Combustion Engineer Owner's Group (CEOG) activity. Any technical concerns and resolutions that surface as a result of that activity will be considered for FPL's program.