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SUBJECT: Forwards response to Generic Ltr 90-06 re resolution of Generic Issue 70 on PORV & block valve reliability & Generic Issue 94 on addl low temp overpressure protection for LWRs.

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P.O. Box 14000, Juno Beach, FL 33408-0420

DECEMBER 21 1990
L-90-396
10 CFR 50.54(f)

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

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Generic Letter 90-06
Resolution of Generic Issues 70 and 94

Generic Letter (GL) 90-06, issued by the NRC on June 25, 1990, provided recommendations concerning resolution of Generic Issue (GI) 70 and GI-94. Generic Issue 70 addresses "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94 addresses "Additional Low-Temperature Overpressure Protection for Light-Water Reactors."

The staff requested that licensees respond to the recommendations made in GL 90-06, providing the current plans relating to power-operated relief valves (PORVs) and block valves and low temperature overpressure protection (LTOP). A description of the actions which have been taken to date in response to improvements 1, 2 and 3 as described in Section 3.1 of Enclosure A of GL 90-06, and the actions which are planned to be taken are provided in Attachment 1 to this letter. The schedule for the completion of open items is also provided in this attachment. Florida Power & Light Company (FPL) will inform you of the results of its review of the need for revisions to the existing Technical Specifications. If this review results in proposed Technical Specification changes other than those described in the attachments to this letter, FPL will notify the NRC of these changes prior to submittal of the proposed Technical Specifications.

Should there be any questions please contact us.

Very truly yours,

W. H. Bohlke
Vice President
Nuclear Engineering and Licensing

Attachments

WHB/OIH/lef

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

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1/1

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

W. H. Bohlke being first duly sworn, deposes and says:

That he is Vice President, Nuclear Engineering and Licensing 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. H. Bohlke

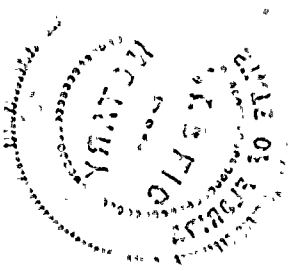
Subscribed and sworn to before me this

21st day of December, 1990.

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

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP JULY 30,1994
BONDED THRU GENERAL INS. UND.

My Commission expires



ATTACHMENT 1
to L-90-396

GENERIC LETTER 90-06

PROPOSED ACTIONS AND RESPONSE SCHEDULE

Florida Power and Light (FPL) proposes to take the following actions in response to the recommendations promulgated by the NRC Staff in Generic Letter (GL) 90-06:

Staff Positions Resulting from Resolution of Generic Issue 70 - PORV and Block Valve Reliability

Recommended Action 1

1. Include PORVs and block valves within the scope of an operational quality assurance program that is in compliance with 10CFR Part 50, Appendix B. This program should include the following elements:

   a. The addition of PORVs and block valves to the plant operational Quality Assurance List.

   b. Implementation of a maintenance/refurbishment program for PORVs and block valves that is based on the manufacturer's recommendations or guidelines and is implemented by trained maintenance personnel.

   c. When replacement parts and spares, as well as complete components, are required for existing non-safety-grade PORVs and block valves (and associated control systems), it is the intent of this generic letter that these items may be procured in accordance with the original construction codes and standards.

FPL Response

Recommended Action 1.a:

FPL currently meets the requirements of this recommended action. The PORVs and block valves are part of the Turkey Point Total Equipment Data Base (TEDB). This program is maintained according to FPL's Quality Assurance Program, therefore, it meets the requirements of 10CFR Part 50 Appendix B.

Recommended Action 1.b:

FPL currently meets the requirements of this recommended action. FPL's maintenance/refurbishment program for the PORVs and block valves is based on the manufacturer's recommendations or guidelines. In addition, the maintenance/refurbishment program is implemented by qualified maintenance personnel.

Recommended Action 1.c:

FPL currently meets the requirements of this recommended action. The TEDB defines the procurement requirements for the PORVs and block valves and lists the PORVs and block valves as safety related (QL-1). This meets or exceeds the requirements of the original construction codes and standards in effect when the plant was built.

Recommended Action 2 - Part 1

Include PORVs, valves in PORV control air systems, and block valves within the scope of a program covered by Subsection IWV, "Inservice Testing of Valves in Nuclear Power Plants," of Section XI of the ASME Boiler and Pressure Vessel Code.

FPL Response

FPL currently meets the intent of this recommended action. ASME Code Section XI Subsection IWV-1100 and 10 CFR 50 specify that only Class 1, 2, or 3 valves which perform a specific safety function fall within the scope of the Inservice Testing (IST) Program. The Turkey Point Units 3 and 4 PORVs and block valves fall within the scope of the IST Program.

The control air system valves are not Class 1, 2, or 3 valves, and therefore, are not within the scope specified in IWV-1100 and 10 CFR 50. However, these valves are tested in accordance with Procedure 3/4-OSP-041.4, "Overpressure Mitigating System Nitrogen Backup Leak and Functional Test." This test includes verification of air/nitrogen supply pressure, pressure regulator output, and control air check valve leakage.

In general, the testing requirements of Procedure 3/4-OSP-041.4 are more comprehensive than the requirements that would be imposed if these valves were included in the IST Program.

1. Procedure 3/4-OSP-041.4 requires that the instrument air check valves be exercised open and closed. The IST

Program in several cases would only require that these check valves be exercised open.

2. Procedure 3/4-OSP-041.4 requires that the nitrogen backup supply check valves be exercised open and closed. The IST Program would only require that these check valves be exercised open.

3. Procedure 3/4-OSP-041.4 requires that the nitrogen and instrument air bypass check valves be exercised open. The IST Program would not impose any requirements for these valves.

There are several areas where the requirements of Procedure 3/4-OSP-041.4 differ from the requirements that would be imposed if these valves were included in the IST Program.

1. GL 89-04 specifies that performance of a valid full-stroke exercise for check valves by flow requires measurement of the flow through the valve. This requires the use of flow indication to verify full stroke capability of the valves. In the absence of a full flow test, Generic Letter 89-04 states that disassembly/inspection can be used as a positive means to verify full stroke capability. The PORV control air system is not equipped with flow indication and therefore would necessitate the disassembly/inspection of these valves. However, per Procedure 3/4-OSP-041.4, PORV actuation within the specified time limits provides confirmation that the instrument air/nitrogen check valves have performed their intended function. This would be accomplished without exposing plant personnel to the additional radiation exposure that would occur by disassembling/inspecting the valves.

2. The IST Program would require measurement of stroke time for the instrument air solenoid valves, which is not required by Procedure 3/4-OSP-041.4. Since these valves are self-enclosed, located in the Pressurizer Cubicle, and have no remote position indication, stroke timing of the valves is impractical. However, per Procedure 3/4-OSP-041.4, PORV actuation within the specified time limits provides confirmation that the instrument air solenoid valves have performed their intended function.

3. The IST Program would require setpoint verification of the nitrogen backup supply relief valves every sixty months. Procedure 3/4-OSP-041.4 does not include this requirement. However, setpoint verification is performed every sixty months in accordance with Turkey Point Plant

Instrument and Control (I&C) Refueling Program Five Year Plan.

Since the requirements of Procedure 3/4-OSP-041.4 in most cases meet the intent of ASME Section XI Code and Generic Letter 90-06, the valves in the PORV control air systems will not be incorporated into the IST Program.

Recommended Action 2 - Part 2

Stroke testing of PORVs should only be performed during Mode 3 (HOT STANDBY) or Mode 4 (HOT SHUTDOWN) and in all cases prior to establishing conditions where the PORVs are used for low-temperature overpressure protection. Stroke testing of the PORVs should not be performed during power operation.

FPL Response

The PORVs and block valves are tested in accordance with the Inservice Test Program. The PORVs are cycled in Mode 3 or Mode 4 during cooldown, and prior to Mode 4 during heat up, unless cycled within the previous ninety-two days. Additionally, the PORVs are cycled during Modes 5 and 6 at least once every 3 months when required to be operable, and following maintenance. Based on valve design, recent modifications, and plant operating experience, testing the PORVs during either Modes 3, 4, 5, or 6 provides acceptable means for assessing valve performance for normal operation and LTOP. Therefore, additional testing requirements will not be imposed for the PORVs. For further discussion regarding the above, refer to Attachment 2.

Recommended Action 2 - Part 3

Additionally, the PORV block valves should be included in the licensees' expanded MOV test program discussed in NRC Generic Letter 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," dated June 28, 1989.

FPL Response

FPL currently meets the requirements of this recommendation. The PORV block valves are part of the expanded Motor Operated Valve (MOV) test program in compliance with the requirements of Generic Letter 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance."

Recommended Action 3

3. For operating PWR plants, modify the limiting conditions of operation of PORVs and block valves in the technical specification for Modes 1, 2, and 3 to incorporate the position adopted by the staff in recent licensing actions.

FPL Response

FPL is currently evaluating the Staff's recommended changes to Technical Specification 3/4.4.4 Relief Valves Limiting Condition for Operation (Attachment A-1 of GL 90-06). FPL will inform you of its determination of the need for changes to the existing Technical Specifications. If changes to the existing Technical Specifications are deemed necessary, the proposed license amendments will be submitted by the end of the Turkey Point Unit 3 Cycle 13 refueling outage which is currently scheduled to start on September 15, 1992. This schedule is in compliance with the requirements of the Generic Letter which specifies submittal of any required Technical Specification modifications by the end of the first refueling outage that starts 6 months or later from the date of issuance of the Generic Letter.

Staff Positions Resulting from Resolution of Generic Issue 94 - Additional Low-Temperature Overpressure Protection (LTOP) For Light-Water Reactors

The Turkey Point Revised Technical Specifications include a Technical Specification 3.4.9.3, "Overpressure Mitigating Systems Limiting Condition for Operation." This Technical Specification takes credit for the PORVs to address LTOP. Therefore, as specified in the Generic Letter, for those plants with existing PORV Technical Specifications for LTOP the only required changes are: (1) to restrict the applicability of ACTION a. to MODE 4, and (2) to incorporate ACTION b. FPL is currently evaluating the proposed changes and will submit any required modifications to the Technical Specifications following the same schedule specified above.

ATTACHMENT 2
to L-90-396

RECOMMENDED ACTION 2 PART 2 - DISCUSSION

Presently, the PORVs and block valves are tested in accordance with the Inservice Test Program. The PORVs are cycled in Mode 3 or Mode 4 during cooldown, and prior to Mode 4 during heat up, unless cycled within the previous ninety-two days. Additionally, the PORVs are cycled during Modes 5 and 6 at least once every 3 months when required to be operable and following maintenance.

The Generic Letter states that, "Testing of the PORVs in HOT STANDBY or HOT SHUTDOWN is required in order to simulate the temperature and pressure environmental effects on PORVs. In many PORV designs, testing at COLD SHUTDOWN is not considered to be a representative test for assessing PORV performance under normal plant operating conditions."

FPL's position is that, based on valve design, recent modifications, and plant operating experience, testing the PORVs during either Modes 3, 4, 5, or 6 provides an acceptable means for assessing valve performance for normal operation and LTOP as does testing of the valves only during Modes 3 or 4.

As stated in NUREG/CR-4692, "Operating Experience Review of Failures of Power Operated Relief Valves and Block Valves in Nuclear Power Plants,"

> "for the air-operated spring loaded design, the seat/plug/cage interface is the only portion of these designs that is subject to steam temperature and pressure. The external appurtenances such as actuator diaphragm, limit switches, and pilot solenoid valve are normally only exposed to containment atmosphere, which is relatively benign under normal operating conditions"

At Turkey Point, the PORVs are Copes-Vulcan Model D100-160 air operated spring loaded design. While the plug/cage seating surface is subject to RCS temperature and pressure, to date no PORV failure mode other than seat leakage has been attributed to these effects. Furthermore, FPL believes that PORV stroke time trending, in accordance with the Inservice Test Program, provides for detection of valve degradation and allows for planned and orderly maintenance. Stroke time history showing little or no variation between tests provides reasonable assurance that the valve will perform its intended function when required. Based on recent Inservice Test history, the PORV opening stroke times, which have been recorded during Modes 3, 4, 5, and 6, show no variation which could be attributed to pressure and temperature environmental effects on the valve.

NUREG/CR-4692 also stated,

> "the majority of the reported mechanical failures for air-operated (spring-closure) PORVs involved seat leakage. This valve design is less susceptible to catastrophic (stuck-open) failure than the pilot-operated relief valve design."

NUREG/CR-4692 further reported that significant contributors to PORV failures were caused by degradation or loss of the air/nitrogen actuating pressure. Failure modes of this type would be noted by either inadequate controlled air pressure, inadequate pressure regulator output or controlled air check valve leakage. At Turkey Point, the air and backup nitrogen supply pressures to the PORV actuator are set based on the most limiting valve operating conditions. During the performance of Procedure 3/4-0SP-041.4, adequate controlled air pressure and pressure regulator output is verified. Additionally, check valves having closure requirements are verified to have no discernable leakage. Based on test results, no changes were noted in regulator output or check valve leakage when tested in Modes 3 or 4 as compared to Modes 5 or 6. Controlled air pressure is environmentally unaffected by changes in RCS temperature or pressure. Additionally, several modifications to the control air system have been implemented at Turkey Point designed to improve the reliability and performance of the PORVs. The modifications include replacement of the pressure regulators, pressure indicators, relief valves in the control air system, and increasing the size of the solenoid valves, tubing, in-line valves, hoses, and fittings for the air and nitrogen supply lines.

Based on these considerations, FPL concludes that testing the Turkey Point Copes-Vulcan air operated spring loaded design PORVs during Modes 5 or 6 provides acceptable means for assessing valve performance and ensuring reliability for both LTOP and normal operation considerations.