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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
PLUNKETT,T.F. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Responds to NRC 931014 ltr re violations noted in insp repts 50-250/93-21 & 50-251/93-21.Corrective action:four tube side thermal relief valves have been replaced.

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JUL 0 5 1994
L-94-158
10 CFR 2.201

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

Gentlemen:

Re: Turkey Point Units 3 & 4
Docket No. 50-250/251
Clarification of Reply to Notice of Violation
NRC Inspection Report 93-21

Introduction

By letter L-93-249, dated October 14, 1993, Florida Power & Light Company (FPL) replied to a Notice of Violation identified in NRC Inspection Report 93-21. Recent discussions with the NRC staff have identified the need for a clarification to statements made in our reply addressing "Corrective actions which will be taken to prevent further violations."

Accordingly, FPL is submitting this letter to clarify the following statement from L-93-249:

> Notwithstanding the operator error we have been successful in uprating the design pressure of the heat exchanger such that once the relief valves for the higher pressure are replaced, the lineup that caused the problem can be avoided during routine plant startups. Replacement of the relief valves is being tracked as a corrective action to LER 251-93-003; three of the four have been replaced.

Clarification

The design pressure of the feedwater heat exchanger at the time of the violation was 1600 psig and remains at 1600 psig. The design setpoint of the heat exchanger relief valves was 1600 psig (tube side thermal reliefs). FPL invoked American Society of Mechanical Engineers (ASME) Code Section VIII paragraphs UG-134(a) and UG-125(c), which together require relief valves to prevent pressure from rising more than 10% above the maximum allowable working pressure of the device they protect, in this case 1760 psig. The design setpoint of the tube side thermal relief valves was raised to 1700 (+1.0%, -0.0%) psig via Plant Change/Modification (PC/M) 93-168.

JE01

The setting of 1700 psig will prevent the maximum pressure in the heat exchanger from exceeding 1760 psig. A copy of the word document section of the PC/M is attached to aid in understanding the issue, along with a copy of the Authorized Nuclear Inservice Inspector's statement of acceptability of the change.

All four tube side thermal relief valves (two on each unit) have now been replaced with valves set at 1700 psig, and a smaller blowdown than the originals (3-7% vs. 10-30%). The last relief valve was replaced in February 1994. No further problems have been noted with either premature lifting or failure to reset.

Summary

The design setpoint of the feedwater heat exchanger relief valves has been uprated from 1600 psig to 1700 psig (while the design pressure of the heat exchanger remains at 1600 psig). This revised setpoint meets the requirements of ASME Code Section VIII.

If there are any questions on this clarification, please contact us.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Plant

TFP/CLM/cm

Attachments

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

MINOR ENGINEERING PACKAGE (MEP)

PLANT Turkey Point UNITS 3 & 4 PC/M NUMBER 93-168 SUPPL 0

ORIGINATING DOCUMENT N/A EXPIRATION DATE 12/31/94

PC/M CLASSIFICATION ___ SR X QR ___ NNS ___ ADMIN

TITLE Resetting of No. 6 Feedwater Heater Tubeside Thermal Relief Valve

ADDITIONAL REQUIREMENTS/INSTRUCTIONS	YES	NO
AS-BUILDING TO COMMENCE UPON ISSUANCE OF PACKAGE?	___	X
THIS PACKAGE HAS THE POTENTIAL TO SIGNIFICANTLY IMPACT PERSONNEL RADIATION EXPOSURE (See QI 3.13). IF YES, JPN FORM 72 IS REQUIRED.	___	X

INFORMATION ONLY

10CFR50.59 SCREENING	YES	NO
1) DOES THE CHANGE REPRESENT A CHANGE TO THE FACILITY AS DESCRIBED IN THE SAR?	___	X
2) DOES THE CHANGE REPRESENT A CHANGE TO PROCEDURES AS DESCRIBED IN THE SAR?	___	X
3) IS THE CHANGE ASSOCIATED WITH A TEST OR EXPERIMENT NOT DESCRIBED IN THE SAR?	___	X
4) COULD THE CHANGE AFFECT NUCLEAR SAFETY IN A WAY NOT PREVIOUSLY EVALUATED IN THE SAR?	___	X
5) DOES THE CHANGE REQUIRE A CHANGE TO THE TECHNICAL SPECIFICATIONS?	___	X

NOTE: IF THE ANSWER TO ANY OF THE ABOVE 10CFR50.59 SCREENING QUESTIONS IS YES, THE MEP CANNOT BE USED

REVIEW/APPROVAL:

GROUP	INTERFACE TYPE			PREPARED	VERIFIED	APPROVED	FPL APPROVED*
	INPUT	REVIEW	N/A				
MECH	X			8/27/93	8/27/93	8/27/93 for BKD	
ELECT			X				
I&C		X				8-27-93	
CIVIL			X				
NUC**		X				8/27/93	
ESI			X				
NUC FUEL			X				

* For Contractor Evals As Determined By Projects

** Review Interface As A Minimum On All Non-Admin MEPs

FPL PROJECTS APPROVAL: Carl R. Bible DATE: 8/27/93

BACKGROUND

The high pressure No. 6 Feedwater Heater tube side thermal relief valves have a history (at least ten instances since 1986) of lifting and not reseating during low feedwater flow conditions. Two evaluations (PTN-92-041 and 90-T-025) have determined that the root cause of the problem is feedwater system pressure above the relief valve setpoint during low condensate/feed system flow conditions.

Factors contributing to the relief valve problem have been erratic functioning of the condensate system recirculation valves (CV-*-1400 and 1401), large blowdown of the Crosby relief valves (10-30%), and relief valves with a lift setpoint below design (1600 psig).

Measures taken to alleviate the problem have been to tune the recirculation valve controllers for stable operation, increase the surveillance of the recirculation valve controllers, replace the Unit 4 relief valves with low blowdown valves (3-7%), and changing the lift setpoint procedures to provide more accurate settings. However, these measures can not positively prevent the lifting of these thermal relief valves, since under certain transient conditions, while operating the condensate and feedwater pumps near to shut-off head, the pressure in the feedwater system may temporarily exceed the heater relief valve setpoint. These thermal relief valves are designed to prevent the over-pressurization of the heaters from thermal expansion of the heater tube side fluid, when the heaters are isolated, but not to reduce the pressure in the heater during conditions of excessive system pumping capacity.

On August 12, 1993 during a scheduled shutdown of Unit 4 the thermal relief valve on both No. 6A and 6B feedwater heater lifted.

This MEP provides for increasing the set pressure on the tubeside of the Units 3 and 4 No. 6 feedwater heaters thermal relief valves (RV-*-3416 and RV-*-3417) from 1600 psig to 1700 psig.

SAFETY CLASSIFICATION

The Units 3 and 4 portions of the feedwater system associated with the No. 6 feedwater heater are classified not safety related, Quality Group "D", seismically analyzed, per Reference 3. Therefore this MEP is classified as Quality Related.

ENGINEERING JUSTIFICATION

The normal operating pressure (at 100% power) of the Feedwater System is approximately from 1100 psig to 1300 psig. For approximately 300 hours per year (during start-up or hot shut-down) the system operates at 1570 psig to 1590 psig. Operation of the system during this time may result in occasional transients of up to 1670 psig. The duration of these transients is usually on the order of ten minutes, although in some instances these transients have extended to hours with approximately 5 to 6 transients during the 300 hours.

These transients are caused by swapping pumps (having two condensate pumps on at the same time, which reduces per pump recirculation flow by approximately one half, thus increasing the discharge pressure), and/or swings in the condensate recirculation valve position.

These transients are in excess of the Relief Valve (RV) setpoint and consequently the RV lifts. Lifting of the RV does not result in any significant reduction in system pressure because the capacity of the RV is designed for thermal relief (ie. in the range of a hundred gpm). However, the transient is caused by momentary excess pumping capacity and would require a RV capacity of thousands gpm to prevent over-pressurization of the system. The pressure transient is terminated by reducing pumping capacity or increasing flow and is independent of the lifting of the RV following the transient. After the pressure is restored to 1570 psig to 1590 psig, the RV remains open because this pressure is still above the RV blowdown setting of approximately 1440 psig.

ENGINEERING JUSTIFICATION (Cont'd)

The Feedwater System pressure will not drop below 1440 psig until the generating unit is loaded to above approximately 30% load. This may result in the RV being lifted for a number of hours. On occasions it has been necessary to shut pumps down or isolate the Feedwater Heaters, in order to terminate the RV blowdown. Neither of these conditions is acceptable from an operating standpoint.

The over-pressure condition (up to 1670 psig) is approximately 104% of the Feedwater System design pressure (1600 psig) and is well within the tolerances for occasional operation of the construction code of both the piping and heaters of the Feedwater System as evaluated below.

The Feedwater System piping is designed in accordance with requirements of ASA B31.1, 1955 Edition (Reference 5) while the No. 6 Feedwater Heaters are designed in accordance with requirements of the ASME Code Section VIII, 1977 Edition (See Attachment 2).

Paragraph 123 of Reference 5 indicates that for occasional operation the allowable stress values (and consequently the pressure) of a piping system may be exceeded by up to 20%, if this condition is not sustained for more than 1% of the operating period. The over-pressure conditions experienced in the feedwater system piping do not exceed either of these limits; therefore these over-pressure conditions are considered acceptable for the feedwater system piping.

Paragraph UG-125(c) of Reference 4 applicable to the No. 6 Feedwater Heaters indicates that all pressure vessels other than unfired steam boilers shall be protected by a pressure-relieving device that shall prevent the pressure from rising more than 10% above the maximum allowable working pressure. Since the maximum pressure that the heaters are subjected to during the system transients (approximately 104% of design pressure) is below the limit for maximum pressure established in paragraph UG-125(c), these transient conditions are considered acceptable.

ASME Code Section VIII, UG-134(a), requires a pressure relief valve be set to open at the Maximum Allowable Working Pressure (MAWP) or the design pressure. The valve is set at the design pressure, and the Code only allows a higher setting if the MAWP is known or calculated. As reported per the Code Data Report, (Attachment 3) the design pressure is the same as the MAWP. Therefore the valve cannot be set at more than 1600 psig and meet Code requirements unless this higher setting can be demonstrated not to have an impact on the heater design and proper approval of an ASME Code authorized inspector is obtained.

ASME Section VIII, UG-125(c), requires that the pressure will be prevented from exceeding 110% of MAWP. This requirement is met both during the start-up and hot shut-down condition, as described above, and during the condition of isolation of the tubeside while the shell side is hot (thermal relief). During the start-up and hot shut-down condition, the pressure will be limited to the shutoff head of the pumps, which is less than 1760 psig (110% of the design pressure). When the valve is actuated for thermal relief, the pressure will be relieved immediately because thermal expansion is self-limiting.

The function of these thermal relief valves is to protect the tubeside of the Feedwater Heaters from over-pressurization due to thermal expansion of the fluid inside the heater tubeside. This thermal expansion is possible only when the tubeside of the heater is fully isolated and some flow of steam to the shell side may continue or is initiated. The heating capacity of the heater at this no flow condition is considered minimal and consequently the rate of thermal expansion is also considered very low. This rate of thermal expansion will decrease gradually as the temperature of the tubeside fluid increases. On this basis the capacity of the thermal relief valve as well as the relief valve accumulation are not considered critical characteristics for this application. This is because in these thermal relief applications the valves normally will not be required to lift to the fully open position.

ENGINEERING JUSTIFICATION (Cont'd)

Based on the above discussion we concluded that thermal relief valves RV-3/4-3416 and RV-3/4-3417 can be set to 1700 (+1.0%, -0.0%) psig and meet their intended function of preventing the tubeside of the No. 6 Feedwater Heater from exceeding 1760 psig (10% above the 1600 psig heater tubeside design pressure). This is in compliance with requirements of paragraph UG-125(c) of Reference 4 (See Attachment 4 for additional information).

In addition to the thermal relief valve provided for the heater tubeside, each of these heaters is provided with a relief valve on the shell side. The shell side relief valve is designed to prevent over-pressurization of the shell side in the event of tubeside failure. This is in accordance with paragraph UG-133(d) of Reference 4.

The resetting of valves RV-*-3416 and RV-*-3417 to 1700 (+1.0%, -0.0%) psig has been discussed with the manufacturers (Anderson Greenwood and Crosby) of the valves that are approved for this application. Anderson Greenwood Co. has indicated that their model 83MC68-4L which has been used on the tubeside of the No. 6 Feedwater Heaters can be reset to 1700 psig without any hardware changes (See Attachment 5). However this will require sending the valves to Anderson Greenwood Co. or any other qualified valve repair shop for resetting and restamping.

Crosby Co. has indicated that their valve style JRL-41TD presently used for the feedwater heater tubeside will require modification to the valve spring for the new 1700 psig setting (See Attachment 6). This applies also to Crosby styles JRTD/JMB that have been approved for this service. Therefore the Crosby valves for the new 1700 psig set pressure shall be recorded or sent to the manufacturer for modifications.

A review of the requirements of the applicable paragraphs UG-125 and UG-134 of the ASME Code Section VIII 1977 edition which is the construction code of the No. 6 feedwater heater and the 1989 edition referenced in Attachment 7 reveals no differences between requirements of both editions of this code. Therefore the use of the 1989 edition of the ASME Code Section VIII for the evaluation on this document is considered acceptable.

The resetting of thermal relief valves RV-*-3416 and RV-*-3417 to 1700 (+1.0%, -0.0%) psig has been discussed with the PTN site ANII inspector and considered acceptable per Attachment 7.

CONCLUSION

As addressed in this evaluation, the subject modifications have been shown not to adversely affect the original design basis or performance of the No. 6 Feedwater Heater. The modification does not affect the plant as described in the FSAR and, as shown by the 50.59 screening, does not require a 10CFR50.59 evaluation. No unreviewed safety question or change to the current Technical Specifications is required pursuant to 10CFR50.59; therefore prior to NRC approval is not required for implementation.

OTHER AFFECTED DOCUMENTS	REFERENCE PARAGRAPH/PAGE OR ATTACH REVISED PAGES
Procedure 0-PMM-074.14, dated 07/30/93	6.3.8, 6.3.15, Attachment 3 Page 2 of 6, Sect. 6.3.15

SPECIAL INSTRUCTIONS/IMPLEMENTATION REQUIREMENTS

1. The Units 3 and 4 Feedwater System and associated #6 heater tubeside thermal relief valves are classified as not safety related, Quality Group D, seismically analyzed. Therefore, all work shall be Quality Related and materials shall be procured minimum PC-3.

2. Coordinate all work with Plant Operations to obtain the appropriate clearances.

3. The Anderson Greenwood relief valves Model 83MC68-4L in M&S 097-10779-4 shall be sent to the manufacturer (Anderson Greenwood) or to a qualified valve repair shop for resetting to 1700 (+1.0%, -0.0%) psig for service at 450° F and restamping accordingly. These resetting and restamping requirements are also applicable to the Crosby valves in M&S 570-52460-3 which are equivalent to the Anderson Greenwood Valves per IEE No.PTNP-93-0574 Rev. 0.

4. Replacement Anderson, Greenwood and Co. valves, Type 83, shall be tested with gas (nitrogen or equivalent) in accordance with Procedure 0-PMM-074.14 prior to installation, to verify proper set pressure of 1700 (+1.0%, -0.0%) psig.

5. Install new relief valves on Units 3 and 4 in accordance with approved maintenance procedure. Note that replacement of Unit 3 Crosby valves with equivalent Anderson Greenwood valves is acceptable per IEE No. PTNP-93-0574 Revision 0.

6. Procedure 0-PMM-074.14 shall be revised as required to incorporate the new valve set pressure of 1700 (+1.0%, -0.0%) psig for the Anderson Greenwood valves M&S 097-10779-4. A note shall be added to this procedure to clarify that this set pressure is only applicable to valves that are stamped for 1700 psig set pressure. Also the procedure shall specify gas (nitrogen or equivalent) for the set pressure testing of valves in M&M 097-10779-4.

7. Procurement Engineering to revise M&S 097-10779-4 and M&S 570-52460-3 for the new 1700 (+1%, -0%) psig set pressure at 450°F This revision shall include any model change for the Crosby valves..

8. Mechanical Maintenance to establish spare parts requirements for valves in M&S 097-10779-4 and M&S 570-52460-3.

POST MODIFICATION TESTING

An in-service leak test shall be performed in accordance with Post Maintenance Testing Procedure 0-ADM-737.

REFERENCES

1. Turkey Point Units 3 and 4 Safety Analysis Report (FSAR), Revision 10, July 1992.
2. Turkey Point Units 3 and 4 Technical Specifications, Amendments 155 and 149, Dated August 4, 1993, no applicable sections.
3. P&ID Feedwater System, drawings 5613-M-3074, Sh. 2, Revision 11 and 5614-M-3074, Sh. 2, Revision 9.
4. ASME Code Section VIII, 1977 Edition.
5. ASA B31.1, 1955 Edition, Power Piping.

ATTACHMENTS

1 - MEP Pre-Implementation Walkdown
2 - Feedwater Heaters Typical Specification Data Sheet
3 - Feedwater Heaters Typical Code Data Report (U-1 Form)
4 - Reedy Associate Inc. Letter to Mr. L. Pabst, dated 08/17/93
5 - Memo from Mr. J. Donnelly (Anderson, Greenwood and Co.) to Mr. J. Zabalo, dated 08/19/93
6 - Memo from Mr. P. K. Merrill (Crosby Valve Co.) to Mr. J. Zabalo, dated 08/17/93
7 - Memo from Mr. B. B. Blackmon to R. S. Kundalkar, dated 08/19/93

DRAWINGS

PC/M DRAWING NO.	REV	DESCRIPTION/TITLE	(1) D	ALL AFFECTED PLANT DRAWINGS	(2) REV	(3) P	MEP(4) REV
5610-M-311 SH 260/93-168	X 0	Instrument Index	I	5610-M-311 SH 260	5	2	0

VENDOR MANUALS

VENDOR MANUAL NUMBER	(2) REV	VENDOR/EQUIPMENT	(1) D	REMARKS	MEP(4) REV

NONE

(1) DISCIPLINE: C = CIVIL; E = ELECT; I = I&C; M = MECH; N = NUCLEAR
(2) REVISION of affected drawing/vendor manual. Indicate "new" if the drawing/vendor manual is being created. The engineer is accountable for reserving the new drawing/vendor manual number.
(3) PRIORITY: Indicate Yes or No if SRD for PSL. Indicate 1 (POD), 2 (CRD), 3 (MD), 4 (ED), or 5 (other) for PTN.
(4) MEP REVISION under which last drawing change was made.

FPL

Inter-Office Correspondence

PCM 93-168
REVISION 0
ATTACHMENT 7
PAGE 1 OF 1

To: R. S. Kundalkar **Date:** [illegible]

From: B. B. Blackmon **Department:** ANII

Subject: **Turkey Point Units 3 & 4**
#6 Feedwater Heater Tubeside
Thermal Relief Valve

[illegible]

Reference: Letter FPL-93-007 from Reedy Associates, dated August 17, 1993

The purpose of this letter is to document concurrence for resetting the #6 feedwater heater tubeside thermal relief valves to 1700 psig. I have reviewed the referenced letter and Section VIII, Edition 1989 and concluded that the resetting of the subject valve to 1700 psi is acceptable.

No further "Code Approval" is required to proceed with resetting the relief valves.

B. B. Blackmon
ANII, Turkey Point

BBB:kjl

cc: B. Dunn
B. Pearce
D. Powell
N. Motley