

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9009250084 DOC. DATE: 90/09/13 NOTARIZED: YES DOCKET #
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 *SEE SUBJ FILE 12632 + 12633*
BOHLKE, W.H. Florida Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Application for amends to Licenses DPR-31 & DPR-41, allowing removal of resistance temp detector bypass replacement.

DISTRIBUTION CODE: AP01D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 12 + 166
TITLE: Proprietary Review Distribution - Operating Reactor

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD2-2 LA EDISON, G	1 1 3 3	PD2-2 PD	1 1
INTERNAL:	AEOD/DOA OGC/HDS2	1 1 1 0	AEOD/DSP/TPAB REG. FILE 01	1 1 1 1
EXTERNAL:	NRC PDR	1 0		

NOTE TO ALL "RIDS" RECIPIENTS:

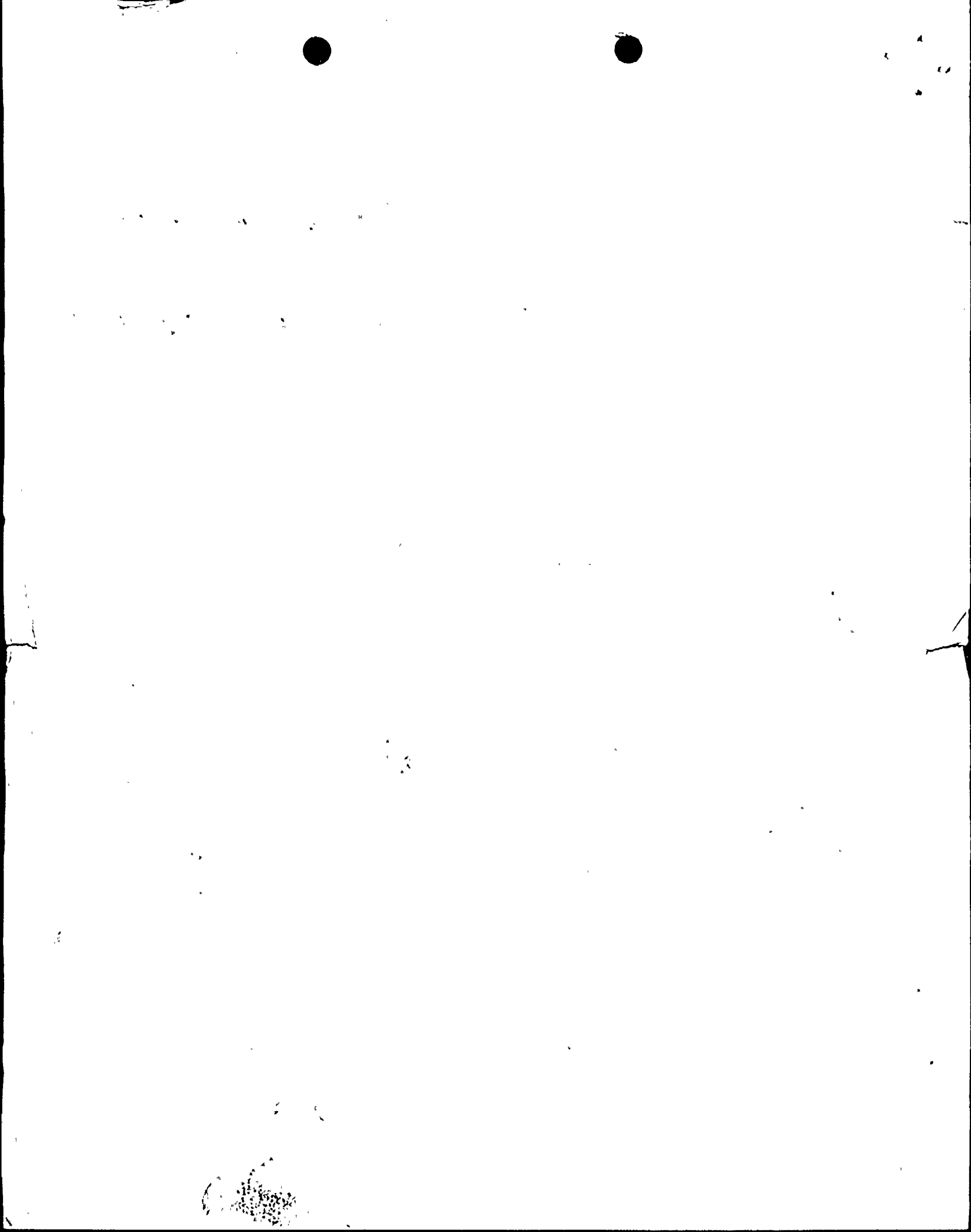
PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTR 10 ENCL ~~1~~

*A.A. / 2
mit*

R
I
D
S
/
A
D
D
S

R
I
D
S
/
A
D
D
S





FPL

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

EXEMPT FROM DISCLOSURE
10 CFR 2.790 INFORMATION

SEPTEMBER 13 1990

L-90-68A
10 CFR 50.90

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
Proposed License Amendments
Resistance Temperature Detector Bypass Replacement

In accordance with 10 CFR 50.90, Florida Power & Light Company (FPL) requests that Facility Operating Licenses DPR-31 and DPR-41 be amended to allow removal of the existing Resistance Temperature Detector (RTD) bypass manifold system, in order to replace this hot leg and cold leg temperature measurement method with fast response, thermowell mounted, RTDs installed in the reactor coolant loop piping.

Attachment 1 is 10 copies of Westinghouse Proprietary Report, WCAP-12632, entitled "RTD Bypass Elimination License Report for Turkey Point Units 3 and 4" and 10 copies of Westinghouse Non-Proprietary Report, WCAP-12633. Attachment 2 is a "Determination of No Significant Hazards Consideration." Attachment 3 includes the marked-up Technical Specifications pages for Turkey Point Units 3 and 4. Attachment 4 is an affidavit pursuant to 10 CFR 2.790 requesting proprietary treatment of the Attachment 1 Proprietary Report, WCAP-12632.

In accordance with 10 CFR 50.91(b)(1), a copy of these proposed license amendments are being forwarded to the State Designee for the State of Florida.

The proposed amendments have been reviewed by the Turkey Point Plant Nuclear Safety Committee and the FPL Company Nuclear Review Board.

9009250084 900913
PDR ADOCK 05000250
P PDC

NOTE: LPDR } NON
NSIC } PROP
NRC PDR } ONLY

00039

AP01
11



1952

11/11

11/11

11/11

U. S Nuclear Regulatory Commission
L-90-68 A
Page Two

Should there be any questions on this request, please contact us.

Very truly yours,



W. H. Bohlke
Vice President
Nuclear Engineering and Licensing

WHB/TCG/lef

Attachments

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant
Mr. Jacob Daniel Nash, Florida Department of Health and
Rehabilitative Services



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

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

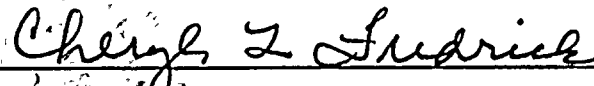
That he is Vice President, Nuclear Engineering and Licensing of Florida Power & Light Company, the Licensee herein;

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

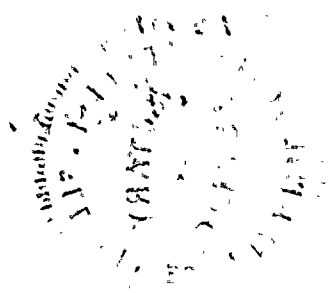
Subscribed and sworn to before me this
13TH day of SEPTEMBER, 1990.



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

My Commission expires _____

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. OCT. 30, 1991
BONDED THRU GENERAL INS. UND.



ATTACHMENT 1

Proprietary WCAP - 12632

**RTD Bypass Elimination License
Report for Turkey Point
Units 3 and 4**

and

Non-Proprietary WCAP - 12633

**RTD Bypass Elimination License
Report for Turkey Point
Units 3 and 4**

L-90-68

ATTACHMENT 2

No Significant Hazards Determination

RTD Bypass Replacement

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATIONS

INTRODUCTION

Pursuant to the requirements in 10 CFR 50.92, each application for amendment to an operating license must be reviewed to determine if the modification involves a significant hazard. The amendment as defined in this report has been reviewed and deemed not to involve a significant hazard based on the following evaluation.

This amendment describes the following subjects:

1. Elimination of the $f(\Delta I)$ penalty function for the OPAT setpoint and a reduction in the slope of the $f(\Delta I)$ penalty function for the OTAT setpoint.
2. The use of fast response Resistance Temperature Detectors (RTDs) and EAGLE-21 microprocessor based process protection equipment in place of the original bypass system, as described in WCAP-12632.

BACKGROUND

The original RTD bypass system utilized an arrangement which directs a sample of the RCS flow from the main coolant piping to an independent temperature measurement manifold. Coolant is redirected by scoops from the hot leg at three locations, 120° apart in the same plane around the pipe circumference, in order to obtain a representative sample. A cold leg sample is also taken, at the discharge of the reactor coolant pump, which provides sufficient mixing such that multiple sampling is not necessary. After temperature measurement, the sample is then returned to the main coolant flow. The narrow range RTDs provide the temperature to calculate loop ΔT and T_{AVG} .

Changes to the Technical Specifications shown in Table 1 are being proposed by Florida Power and Light. The proposed changes involve removing and replacing the existing RTD bypass manifold system with fast response RTDs located in the reactor coolant hot leg and cold leg piping at Turkey Point Units 3 and 4. In order to eliminate operating obstacles associated with the bypass system (such as leakage through valves, flanges, etc. and radiation exposure during maintenance) Florida Power and Light Company is proposing to install a fast response system which measures loop temperature via thermowell mounted RTDs protruding into the main reactor coolant flow thereby eliminating the bypass piping network.

In addition to, and concurrent with the RTD Bypass Elimination effort, a portion of the protection and control system is being upgraded with EAGLE-21 digital electronics equipment and a 7100 system analog Median Signal Selector. Specifically, the functions being replaced are the $\Delta T/T$ -avg and the pressurizer level control. For those racks being upgraded with the EAGLE-21 process protection equipment, the surveillance intervals for Reactor Trip channels are being extended from one month to quarterly, and the limit for a Reactor Trip channel to be bypassed to allow for testing of another channel in the same function is increased to four hours. As discussed in WCAP-12632, a comprehensive evaluation of the effects of the RTD Bypass Elimination effort has been completed, and it has been determined that the control and protection requirements relied upon for safe operation of the plant are not adversely affected. No adverse safety implications have been identified as a result of the RTD Bypass Elimination.

Finally, the proposed amendment involves the elimination of the $f(\Delta I)$ penalty function for the OPAT trip and a relaxation in the slope of the $f(\Delta I)$ penalty function for the OTAT trip. These modifications to the $f(\Delta I)$ penalty function are a result of a previous setpoint study. As discussed in the detailed safety evaluation (SECL-89-1164), transmitted by FPL-90-606, a comprehensive evaluation was performed to establish that the effects of the $f(\Delta I)$ penalty function can be removed from the OPAT setpoint and that the $f(\Delta I)$ penalty function slope can be relaxed for the OTAT setpoint without compromising core protection.

It is noted that established Westinghouse setpoint methodology was utilized to verify the adequacy of the previously established set points for Pressurizer Water Level High, Overtemperature and Overpower ΔT , Reactor Coolant Flow and T_{avg} Low-Low coincidence logic. This methodology incorporates a 12 hour time limit for determining the operability of a channel which exhibits excessive rack drift, following the reestablishment of the specified setpoint. However, the requirement to place an inoperable channel in trip within 1 hour after determining inoperability is retained.

BASIS

With respect to the criteria of 10 CFR 50.92 the following conclusions can be made:

A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment:

- i) would not involve a significant increase in the probability or consequences of an accident previously evaluated:

The use of the fast response RTDs does not increase the probability or consequences of any accident previously evaluated. Channel uncertainty analysis have been performed to demonstrate that the channel statistical accuracies for Overtemperature ΔT , Overpower ΔT , T_{avg} Low, Loss of Flow, and Pressurizer Water Level provide assurance that the current trip setpoints can be maintained. The channel uncertainty analysis has also determined that the RTD Bypass Elimination and EAGLE-21 upgrade did not increase any uncertainty beyond that currently assumed in any FSAR analyses. Although the use of the approved Westinghouse setpoint methodology results in the elimination of the $f(\Delta I)$ penalty function for the OPAT setpoint and a reduction in the slope of the $f(\Delta I)$ penalty function for the OTAT setpoint, the OPAT and OTAT setpoints continue to trip the reactor before an operating condition

could compromise core protection during ANS Condition I and II events. Furthermore, the total channel response time of 6 seconds for the OPΔT/OTΔT reactor trip functions, used in the FSAR safety analyses assumptions, remain unchanged. Therefore, the RTD Bypass Elimination and partial EAGLE-21 plant upgrades do not adversely affect any input to or initial condition assumed in the FSAR Chapter 14 accident analyses. Consequently, the current analyses of record and therefore, the LOCA and non-LOCA design basis conclusions are still met.

The proposed extension of the surveillance test interval from monthly to quarterly and the increase in time to 4 hours that an inoperable channel may be placed in "Bypass" for the purpose of surveillance testing, does not involve a significant increase in the probability or consequences of an accident previously evaluated. Results of a EAGLE-21 reliability/availability evaluation concluded that the EAGLE-21 digital system availability is equivalent to or better than the present analog process equipment for which extended surveillance intervals and time in "Bypass" have been previously approved by the NRC staff in WCAP 10271-P-A, "Evaluation of Surveillance Frequencies and Out Of Service Times For The Reactor Protection Instrumentation System". The test methodology for the EAGLE-21 process protection channels is consistent with the methodology used for the enhancements for the analog protection channels. These same enhancements have been previously approved by the NRC staff for the EAGLE-21 process protection system in the Sequoyah Safety Evaluation Report (Docket 50-327) dated May 16, 1990. Therefore, the change to the surveillance testing interval and placing a channel in "Bypass" for up to four hours for testing of additional channels in the same function would not significantly increase the probability or consequence of an accident previously evaluated.

- i) would not create the possibility of a new or different kind of accident from any accident previously evaluated:

The reactor trip function of the $\Delta T/T_{AVG}$ protection channels is not changed because of the bypass elimination. The newly installed fast response RTDs perform the same function in both T_{HOT} and T_{COLD} applications as the RTDs previously installed in the bypass loops. The three T_{HOT} signals are electronically averaged, and will automatically add an electronic bias to a two-RTD average should one RTD fail. A dual element RTD is installed in the cold leg with both elements averaged to represent cold leg temperature. Also, a failed element may be disabled and the remaining element used alone to represent cold leg temperature. These measured temperature values still serve as inputs to two-out-of-three voting logic for protection functions. In addition, the EAGLE-21 environmental and seismic qualification, and compliance with established acceptance criteria for both hardware and software has been documented in WCAP-12374. RTD qualification is in compliance to the 10CFR50.49 requirements. As stated in WCAP-12632, the single failure criteria continues to be satisfied and separation criteria is maintained. The ability of the plant protection system to perform its intended safety function will not be adversely affected by this modification. Thereby, precluding the possibility of a new or different kind of accident as a result of the instrumentation aspects of the RTD bypass elimination.

Specification of a quarterly surveillance test interval and four hours for "Bypass" of an inoperable channel to allow testing of other channels in the same function do not create the possibility of a new or different kind of accident from any accident previously evaluated. The functional logic of the reactor protection system is not affected by the period selected for surveillance test or the time limits for "Bypass" of an inoperable channel.

Incorporation of the Westinghouse setpoint methodology does not create the possibility of a new or different kind of accident from any accident previously evaluated. The setpoint methodology documents the acceptability of the setpoints in providing the required safety function operations.

The implementation of fast response RTDs does not create the possibility of a new or different kind of accident from any accident previously evaluated. At Turkey Point the three hot leg dual element RTDs and one dual element cold leg RTD will utilize existing bypass system penetrations into the RCS piping. If structural interferences preclude the placement of a thermowell in an existing Bypass Manifold scoop, then the scoop or nozzle will be capped and a new RCS penetration will be made to accommodate the relocated thermowell. The thermowell assemblies and as needed manifold scoop caps will be designed and fabricated from materials that meet the pressure boundary criteria established in ASME Section III (Class 1). Caps and welds sealing the crossover leg bypass return piping nozzle, as well as the modification and welding for the existing penetrations, will be qualified in accordance with the ASME code. All non destructive testing will be performed in accordance with Section XI of the ASME Code. A system hydrostatic test in accordance with Section XI of the ASME Code will be performed after the bypass elimination modification is complete to demonstrate the integrity of the new pressure boundary welds. By adhering to all applicable ASME Codes, the pressure boundary integrity of the piping will be maintained, thus precluding the possibility for a new or different-kind of accident.

The evaluation has determined that no new failure modes have been defined for any system or component and no new limiting single failure been created as a result of this amendment. Nor has any new accident mechanisms been identified.

i) would not involve a significant reduction in a margin of safety.

The effect of the response time, setpoint and temperature measurement uncertainties does not involve a reduction in a margin of safety. The evaluation of the effect of these variables on non-LOCA and LOCA transients has verified that plant operation will be maintained within the bounds of safe, analyzed conditions as defined in the FSAR and the Revised Technical Specifications. The conclusions presented in the FSAR remain valid.

The elimination of the $f(\Delta I)$ penalty function for the OPAT trip and relaxation in the slope of the $f(\Delta I)$ penalty function for the OTAT trip does not involve a reduction in a margin of safety. The OPAT and OTAT reactor trips are designed to ensure reactor operation within the DNB and fuel centerline melting design basis. The analyses demonstrate that with the recommended changes to the $f(\Delta I)$ penalty function the DNB and fuel centerline design bases continue to be met.

In addition, there is no significant reduction in a margin of safety due to the selection of quarterly surveillance test intervals or four hours for "Bypass" of an inoperable channel for testing additional channels in the same function. Margin of safety is determined by the relationship between protection system setpoints and safety analysis limits. This relationship is not impacted by the utilization of a quarterly surveillance test interval or a four hour Allowed Outage Time for testing.

No reduction in the margin of safety as defined in the basis for any Technical Specification exists for operation of the Turkey Point units with the new RTD bypass elimination system and associated changes.