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SUBJECT: Forwards thimble tube eddy current insp rept re NRC Bulletin 88-009.

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U. S. Nuclear Regulatory Commission
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Gentlemen:

Subject: Turkey Point Unit 3
Docket No. 50-250
IE Bulletin 88-09
Thimble Tube Thinning in Westinghouse Reactors

Provided as an attachment is the Thimble Tube Eddy Current
Inspection Report for Turkey Point Unit 3.

Should there be any questions, please contact me.

Very truly yours,


K. N. Harris
Vice President
Turkey Point Plant Nuclear

KNH/WFK/gp

Attachment

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

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TURKEY POINT UNIT 3
END OF CYCLE XI
FLUX MAP THIMBLE TUBE
EDDY CURRENT TEST REPORT
FOR
NRC BULLETIN 88-09

Introduction

An eddy current examination (ECT) of the Turkey Point Unit 3 flux map thimble tubes was performed during the Cycle XI to Cycle XII refueling outage. The examination was performed by the Florida Power and Light (FPL) Materials, Codes, and Inspections group using standard eddy current techniques. Two of the fifty installed thimble tubes could not be inspected due to blockage. Of the remaining forty eight, none of the thimbles had wear in excess of the 60% wall loss which would indicate a loss of structural integrity.

Acceptance Criteria

Westinghouse was commissioned to perform a Turkey Point specific analysis for the maximum allowable wall loss that could be sustained, and still maintain the pressure boundary integrity. The Westinghouse analysis determined that up to a 60% wall loss over a 0.75 inch length could be sustained and still maintain the thimble tube integrity.

Performance

Forty eight (48) of the fifty (50) tubes were cleaned and flushed by Westinghouse prior to the eddy current examination. The remaining two thimble tubes, in core locations E-11 and D-12, are blocked. E11 is blocked by a fixed incore detector from a demonstration project and D12 by a cut-off moveable incore detector. Removal of these devices at this time was not possible because of ALARA concerns. The examination probe was inserted and withdrawn manually, with data being recorded during the withdrawal phase. The entire length of each thimble tube was examined.

Results

The ECT data was analyzed by the FPL Materials, Codes, and Inspections group to determine the percent wall loss and wear scar length for each thimble tube. The results from the data analysis identified the thimble tube locations with 10% or greater wall loss. A total of 13 thimble tubes showed a wall loss greater than 10%. Attachment 1 summarizes the results of the inspection. All of the 48 thimble tubes inspected met the acceptance criteria.

Analysis

The ECT results were reviewed by Nuclear Engineering to determine if there were any operability concerns. The evaluation by Nuclear Engineering recommended the closing of isolation valves on the two thimbles not inspected. Also thimble N5, which indicated a wall loss of 48%, was recommended to have its isolation valve closed until further measurements can be taken to determine its wear rates.

Conclusion

The ECT inspection of forty-eight out of fifty flux map thimble tubes indicated that one thimble needed to be isolated until a wear rate could be determined. The two thimble locations not inspected shall also be isolated until they can be properly evaluated or replaced.

Inspection Program

The upper limit of the acceptance criteria for thimble tube wall loss has been established at 60% wall loss for scars less than 0.75 inches long over 60° of the tube circumference by the Westinghouse analysis. The establishment of a specific inspection frequency based on the current inspection results would be predicted on an assumed wear rate. To measure the thimble tube wear rate, the results of this initial inspection will be considered as baseline data, and another thimble tube inspection will be performed during the next refueling outage. After the measured wear rate has been determined, a specific inspection frequency will be established based on the worst wear locations and the measured wear rate.

REACTOR FUEL LOCATION
TURKEY POINT PLANT UNIT NO. 3
CYCLE NO. XI TO CYCLE XII

ECT RESULTS OF FLUX MAP THIMBLE TUBE INSPECTION FOR THIMBLE WITH WEAR >10%

