



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENCLOSURE

SAFETY EVALUATION RELATED TO
REQUEST FOR RELIEF FROM VISUAL EXAMINATION
OF REPAIRED CONTROL ROD DRIVE HOUSING
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT UNIT 3

I. BACKGROUND INFORMATION

By letter dated February 3, 1988, Florida Power and Light Company (FPL) requested emergency relief from the visual examination requirement during the hydrostatic test of a repaired control rod drive housing at the Turkey Point Plant Unit 3. Emergency relief was required to support the startup of the unit on February 12, 1988. Verbal approval was granted after a review of the data was presented and compared to a similar relief granted June 23, 1987. The following is the detailed safety evaluation.

II. INFORMATION RELATED TO RELIEF REQUEST NO. 17

A. COMPONENT IDENTIFICATION

- Class 1
- Reactor Pressure Vessel
- Control Rod Drive Lower Canopy Seal Weld No. D-8
- Examination Category: B-0
- Examination Item Number: B14.10
- Examination Description: Pressure Retaining Welds in Control Rod Drive Housings

B. EXAMINATION REQUIREMENTS

- IWR-2500-1, perform volumetric or surface examination of 10% of the peripheral control rod drive housings during the inspection interval. Drawing number MCI-CRD-004 provides the examination requirements for a typical CRDM housing weld.
- IWA-7530 and IWA-4500, requires prior to return of the plant to service, and following a repair or replacement, a preservice inspection shall be performed.
- IWA-5000, after repairs by welding on the pressure retaining boundary, a system hydrostatic pressure test shall be performed.

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- IWA-5246, the visual (VT-2) examination following a repair or replacement of a component, the examination may be limited to the repaired or replaced component, but shall include any connection made to the existing system.

C. LICENSEE'S RELIEF REQUESTED

- FPL requests relief from the visual (VT-2) examination requirements of the repaired control rod drive housing number D-8.

D. LICENSEE'S BASIS FOR RELIEF

1. LOCATION

The location of the CRDM two (2) piece split canopy seal is located in the third (3) row from the outer peripheral of the reactor pressure vessel closure head.

2. INITIAL PREPARATION FOR EXAMINATION

In order to perform the initial visual examinations, the following preparations had to be performed:

- a. The visual inspection/examination ports in the shroud were removed.
- b. Radiation surveys were conducted prior to performance of examinations.
- c. Remote visual examination equipment was lowered down in the cavity in order to video tape results.

3. INITIAL EXAMINATIONS

The identification of the leaking CRDM was identified by an inspection through the recently installed inspection/examination ports. Visual (VT-1) examinations using the remote visual examination confirmed the location of the leak and identified the indication at 180 degrees (backside) of the CRDM housing.

In addition to the confirmation of the leaking CRDM, an additional sample of eight (8) CRDM were also examined, in order to bound in the area. The remote visual examinations identified above resulted in a exposure of 3950 mr to the examiners.



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4. REPAIR

The repair of the leakage CRDM lower canopy seal weld will consist of encapsulating the entire weld with a two (2) piece split ring. This two (2) piece split ring will be welded to CRDM housing and the instrument port by a fillet weld running 360 degrees around the top and bottom of the ring. The second piece will be welded by two (2) long welds (open butt). These welds will be facing the outer peripheral of the closure head such that a partial examination can be performed through the inspection ports during the pressure test.

The examinations performed during the repair activity will consist of in-process visuals and surface and visual examinations of the completed welds and a remote visual examination of the repair area taped to establish a baseline. The surface examination performed after the repair will satisfy both the construction and ASME Section XI Codes.

5. ACCESSIBILITY DURING SYSTEM PRESSURE TESTS

The following restrictions prohibit 100% direct or remote visual (VT-2) examination of the entire repair weld during the pressure test:

- a. The installation of the CRDM coil stacks and the RPI cables prohibit entry from the top of the head.
- b. Access to the CRDM is limited by the CRDM ports being eight and one half inches (8 1/2") away from each other.
- c. The test pressure and test temperature, 2350 psi and 547 degrees Fahrenheit respectively, prohibit direct examination of the repair area.
- d. The radiation doses.

6. ADDITIONAL COMMENTS

In addition to the above obstructions, the amount of associated effort and supporting work to comply with the ASME Code requirements is not justified for the following reasons:

- a. The design configuration of the encapsulating canopy ring will provide assurance of an acceptable level of quality and safety. Drawing no. MCI-CRD-007.
- b. FPL feels that with the design of the split ring and the examinations performed, coupled with the VT-2 examination through the inspection/examination ports, that an acceptable level of quality and safety will be assured.

- c. FPL feels that with the addition of the three (3) inspection ports, early identification of leaks from the CRDM ports will assure a continued acceptable level of quality and significantly reduce the radiation exposure to personnel.
- d. FPL feels that the removal of the above obstructions solely for the purpose of the viewing the repair welds by the visual examination method, coupled with the large expenditures of manhours and man-rem that will be required, essentially result in no compensating increase in plant safety.

E. ALTERNATE EXAMINATIONS PROPOSED BY THE LICENSEE

FPL proposes the following alternatives:

1. Perform the visual (VT-2) examinations during the reactor coolant system overpressure test to the extent practical.
2. Perform these examinations through the visual inspection/examination ports and with the use of a high intensity light, these viewing ports will provide the inspector/examiner with a means of locating and identifying leaks that may be present during the overpressure test.

III. STAFF EVALUATION

A review of the information and drawing provided by the licensee supports the conclusion that the Code-required visual (VT-2) of the repaired CRDM number D-8 is impractical to perform at Turkey Point Unit 3. The repaired CRDM is located in the third row from the outer periphery of the reactor pressure vessel closure head. The close proximity of the drive mechanisms, the high temperature in the inspection area during the test and the radiation levels prohibit 100% direct visual (VT-2) examination of the entire weld during the pressure test. Access to the CRDM is limited by the installation of CRDM coil stacks and the rod position indication system cables.

The repair of the CRDM entailed a supplementary split ring encapsulating the leaking lower canopy seal weld. The ring will be welded to the CRDM housing and the instrument port by a fillet weld running 360 degrees around the top and bottom of the ring. The licensee will perform the visual (VT-2) examinations, to the extent practical, during the reactor coolant system overpressure test. This examination would be accomplished by utilizing the inspection ports and with the use of a high intensity light.

IV. CONCLUSION

Considering the obstructions, radiation levels, and temperature in the areas of the repair welds, imposition of the visual examination requirement would place an undue burden on the licensee without providing a compensating increase in assurance of the structural integrity of the welds versus that gained by the weld design change, the licensee's proposed alternative, and the volumetric and surface examinations performed on the welds. Based on this, the staff concludes that relief from the visual examination required by Section XI may be granted, and that the granting of this relief is authorized by law and will not endanger life or public property or the common defense and security and is otherwise in the public interest.

Dated: March 28, 1988

Principal Contributor:

G. Johnson

3/30/88

