

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/85011(DRS)

Docket No. 50-341

License No. CPPR-87

Licensee: Detroit Edison Company
2000 Second Avenue
Detroit, MI 48224

Facility Name: Enrico Fermi Nuclear Power Plant, Unit 2

Inspection At: Enrico Fermi 2 Site, Monroe, Michigan

Inspection Dates: February 19-22 and March 4, 1985

Inspectors: *D. H. Danielson*
for P. D. Kaufman

3/19/85
Date

J. W. Muffett
J. W. Muffett

3/19/85
Date

Approved By: *D. H. Danielson*
D. H. Danielson, Chief
Materials & Processes Section

3/19/85
Date

Inspection Summary

Inspection on February 19-22 and March 4, 1985 (Report No. 50-341/85011(DRS))

Areas Inspected: Routine, announced safety inspection to review licensee action on IE Bulletin 79-02 and to review a reactor internal welds allegation. The inspection involved a total of 63 inspector-hours by two NRC inspectors, including 9 inspector-hours during offshifts, and 10 inspector-hours of in-office review.

Results: In the areas inspected, two items of noncompliance were identified. (Failure to take appropriate corrective action - Paragraph 2.b.(3); inadequate design control - Paragraph 2.c.)

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DETAILS

1. Persons Contacted

Detroit Edison Company (DECo)

- *W. H. Jens, Vice President
- *O. K. Earle, Supervisor/Licensing
- *J. E. Conen, Engineer/Licensing
- *F. Schwartz, Supervisor NQA
- *W. M. Street, Supervising Engineer/Civil
- *A. F. Colandrea, Principal Civil Engineer
- *J. F. Malaric, Supervisor/Field Engineering
- G. M. Trahey, Director NQA
- F. Agosti, Manager/Nuclear Operations
- S. Noetzel, Assistant Manager, E.F.2.

*Denotes those attending the onsite exit interview of February 22, 1985.

2. Licensee Action on IE Bulletins

(Closed) IE Bulletin 79-02 (341/79-02-BB, 341/79-02-1B, 341/79-02-2B, 341/79-02-3B): "Pipe Support Base Plate Designs using Concrete Expansion Anchor Bolts."

- a. RIII Inspection Report No. 50-341/84-59 addresses certain remaining open items to be accomplished by the licensee. The following actions were to be performed by the licensee:
 - (1) Verify that the as-built reconciliation stress report loads have been accounted for in the reduced capacity anchor qualification calculations.
 - (2) Perform an anchor bolt surveillance walkdown of the drywell area.
 - (3) Demonstrate that the minimum anchor bolt spacing violations observed during the NRC inspector's walkdown on January 22, 1985 are fully QC documented, and that qualification calculations account for the reduced capacities of the anchor bolts.
 - (4) Compile the 885 Anchor Bolt Surveillance Reports (ABSRs) generated by the Systems Completion Organization and all necessary qualification calculations.
- b. The status of licensee actions regarding the above items was determined to be as follows:

- (1) A review of anchor spacing violation qualification calculations revealed that the licensee has and is using the latest as-built reconciliation stress report loads in its evaluations.
- (2) The licensee conducted an anchor bolt surveillance walk-down of the drywell area on February 14 and 15, 1985. The following supports were found which had minimum expansion anchor spacing violations, but were neither documented nor qualified:

- *T23-I2837-39-G10
- *G33-3096-G30
- *B21-2587-G21
- B21-2588-G06
- T23-I2837-43-G37
- T23-I2837-39-G01
- T23-I2837-39-G38

*Observed by the NRC inspector during a field walkdown conducted on February 5, 1985.

The above supports have since been qualified and fully documented. No rework was required.

- (3) The licensee was unable to provide adequate documentation on the NRC inspector's observed anchor bolt spacing violations. The licensee initiated a sample walkdown looking for 50 apparent anchor spacing violations and determining if the violations had been appropriately QC documented and qualified as requested by the Region III office. The supports listed below, which were found that had anchor spacing violations, were neither documented nor qualified:

- *P44-3368-G12A
- P44-3368-G11
- E11-3154-G10
- G33-3244-G35
- T50-7114-G39

The following support anchor spacing violations were documented, but never technically qualified as acceptable in any design calculations:

- E41-3163-G14
- T50-7432-G03
- T50-7431-G07
- *E11-3178-G06
- *E11-3154-G20
- E11-3152-G23
- E51-3175-G30
- W-P42-5242-G04
- GWI-E21-7005-G05

*Observed by the NRC inspector during a review and field walkdown on January 22, 1985.

Calculations have since been completed for the above anchor spacing violations and confirm the acceptability of the as-installed conditions.

The inspector, after reviewing the installation documentation packages of these supports determined that the majority of these concrete anchors were installed prior to the licensee's March 1982 System Completion Organizations (SCO) anchor violation surveillance walkdown. The anchor violation surveillance program was conducted to facilitate closure of the licensee's reported March 26, 1981, 50.55(e) deficiency report, Item #42, on this matter.

Upon completing their review and analyses of 885 Anchor Bolt Surveillance Reports (ABSRs) generated by the SCO groups walkdown of the site, without any deviations requiring anchor relocation to achieve IE Bulletin 79-02 safety factors, the licensee submitted their final 50.55(e) report, dated June 3, 1983. This 50.55(e) report was subsequently closed in Region III Inspection Report No. 50-341/83-19. However, this NRC inspection revealed a significant amount of anchor bolt installations which deviated from the minimum anchor design spacing requirements specified in DECo Project Specification 3071-226, Revision F, Paragraph 3.3.3, that were neither documented nor qualified.

Based on these findings, the inspector concludes that the licensee did not take appropriate corrective action regarding the reported 50.55(e) on the spacing of concrete anchors. This constitutes an item of noncompliance with Criterion XVI of 10 CFR 50, Appendix B (341/85011-01).

c. The following design deficiencies were noted by the NRC inspector while reviewing ABSR qualification calculations:

- (1) The licensee lowered the average ultimate tensile loads for Phillips Wedge anchor sizes 3/8", 1", and 1 1/4", as indicated in DECo Project Specification 3071-226, Revision F, Table 1-B. This change constituted design evaluations to verify the acceptability of anchors to the slightly lower tensile loads. However, these verifications were never performed as evidenced by Stone and Webster's pipe support calculation No. Z-E11-129, Revision 7, for support E11-3154-620, which still shows the higher average ultimate tensile loads being applied from Revision E of Specification 3071-226.

- (2) Specification 3071-226, Revision F, and DECo drawing 5C721-2002, Revision H, Note 11, requires that the Torque and Tension Test Load be specified on the installation drawing if a designer utilizes the higher tension loads from Table 1-B of Specification 3071-226 in his calculations. However, the installation drawings and all applicable change documents relative to pipe support E11-3154-G20 were reviewed by the NRC inspector and none contained the required special installation torque and tension note.
- (3) Design Change Request (DCR) No. P-5299, Revision B, reconciliation calculation prepared by DECo-Troy design office on February 14, 1985, to resolve an anchor bolt spacing violation utilized the incorrect higher tensile load values from the superseded Revision E of Specification 3071-226.

Failure to assure adequate control of design activities or methods constitutes an item of noncompliance with Criterion III of 10 CFR 50, Appendix B (341/85011-02).

- d. To minimize the effects of expansion anchor bolt spacing violations, the licensee has taken the following actions:
 - o Utilized the concrete compressive test results and a regression analysis to enable an increase in concrete compressive strength ($f'c$) to 5900 psi.
 - o Shear-tension interaction evaluations utilizing a "5/3 power."
 - o Used a shear cone reduction method instead of the straight line reduction method.

The licensee's utilization of the above data in anchor bolt spacing assessments will result in no modifications or reduction in safety factors.

3. Allegation (RIII-84-A-175)

An allegation received by the Fermi 2 Safeteam on August 12, 1983, concerning radiography of reactor internal welds was reported to the NRC resident inspector as follows: The NDE contractor was asked to radiograph the field installed jet pump diffuser to adapter weld on jet pumps #2, #7, #11, and #18. Oversize film was used and the shop tailpipe to diffuser weld was also inadvertently radiographed. Upon developing the film, a decision to trim the unwanted portion, which included the tailpipe to diffuser weld, was made. The inadvertently radiographed tailpipe to diffuser weld contained indications of porosity.

The alleged stated that the film was trimmed to hide unacceptable welding. Subsequent to the initial allegation, the alleged also stated that the diffuser to adapter weld also contained rejectable indications of various types.

Concerning the inadvertently radiographed tailpipe to diffuser shop welds, only dye penetrant and visual examinations are required. The welds in question have passed the required acceptance standards. To provide added assurance regarding these welds, the radiographs of the tailpipe to diffuser welds were evaluated by both the licensee and the NRC inspector and found to be acceptable to the extent reviewed. However, the bases for acceptance of the tailpipe to diffuser welds are the dye penetrant and visual examinations, not the inadvertent radiographs.

Concerning the allegation of rejectable indications of the radiographs of the diffuser to adapter welds, an additional inspection was performed. During this inspection, radiographs of these welds were reviewed and rejectable indications were found. The radiographs of these welds were rejected by the licensee and referred to General Electric (GE) on March 31, 1982. GE decided that radiographic acceptance standards for these welds were inappropriate. GE performed a fracture mechanics evaluation and determined that ultrasonic testing and dye penetrant examination were appropriate in this instance. The welds in question are not pressure boundary welds and, therefore, the change in acceptance standards was appropriate and is acceptable. Ultrasonic testing and dye penetrant examinations were performed and indications found by dye penetrant were removed by grinding. The bases for acceptance of the diffuser to adapter welds are the dye penetrant examination, visual examination, ultrasonic testing and the fracture mechanics evaluation.

The rejectable radiographs of the diffuser to adapter welds were reported to the NRC as a 50.55(e) deficiency. This item was closed in RIII Inspection Report No. 50-341/82-09. Also, the portion of the allegation concerning the trimming of film was closed in RIII Inspection Report No. 50-341/84-59.

The inspection substantiated the alleged cutting of the film and substantiated the rejectable indications in the radiographs of the diffuser to adapter welds. However, neither the governing code nor the applicable procedures were violated by the licensee or its agents. Based on satisfactory completion of appropriate examinations and resolution of the radiographic issue, these welds are acceptable.

This allegation is considered closed.

4. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the onsite portion of the inspection and discussed the scope and concerns of this inspection. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection.

The licensee did not identify any such documents/processes as proprietary. Additional information was discussed telephonically with a licensee representative on March 4, 1985.