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 AUTH.NAME AUTHOR AFFILIATION
 PAPAY, L.T. Southern California Edison Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: Final deficiency rept re lack of nondestructive surface examination of weld repair excavation cavities prior to rewelding. Code Cases N274 & 275 approved to provide alternate acceptance criteria to ASME, Section 3.

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 TITLE: Construction Deficiency Report (10CFR50.55E)

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L. T. PAPAY
VICE PRESIDENT

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July 15, 1980

Mr. R. H. Engelken, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Region V
Suite 202, Walnut Creek Plaza
1990 North California Boulevard
Walnut Creek, California 94506

Dear Mr. Engelken:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station, Units 2 and 3

In a letter to your office dated June 19, 1980, we identified a condition which we consider reportable in accordance with 10CFR50.55(e). This condition concerns the lack of a nondestructive examination of the area prepared for repair for certain piping weld repairs as required by the ASME Code.

Enclosed in accordance with 10CFR50.55(e), are twenty-five (25) copies of a final report entitled "Final Report on Lack of Nondestructive Examination of Weld Repair Excavation Cavities Prior to Rewelding, San Onofre Nuclear Generating Station, Units 2 and 3."

If you have any questions regarding this report, we would be pleased to discuss this matter with you at your convenience.

Very truly yours,

Enclosures

cc: Victor Stello (NRC, Director I&E)
R. J. Pate (NRC, San Onofre Units 2 and 3)

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FINAL REPORT ON LACK OF NONDESTRUCTIVE SURFACE EXAMINATION
OF WELD REPAIR EXCAVATION CAVITIES PRIOR TO REWELDING

San Onofre Nuclear Generating Station, Units 2 and 3

INTRODUCTION

This report is submitted pursuant to 10CFR50.55(e)(3). It describes a condition wherein certain nondestructive surface examinations were not performed on weld repair excavation cavities prior to performing the rewelding and final acceptance radiographic examination as required by the ASME Code. This report includes a description of the deficiency, an analysis of the safety implications of the condition, and a summary of the corrective action taken. By letter dated June 19, 1980, Edison confirmed notification to the NRC of this condition which was considered reportable in accordance with 10CFR50.55(e).

BACKGROUND

ASME Section III, Paragraph NX4453.1 requires nondestructive surface examination of a weld repair excavation cavity prior to rewelding. Due to a misinterpretation of this requirement as specified in the basic Code edition and subsequent amendments, the required nondestructive surface examination was not performed by Bechtel Corporation in all repair situations. The deficiency was identified following an evaluation of Code NDE requirements initiated as a result of a nonconformance report on associated Code NDE requirements for weld preparation (NB5130).

DISCUSSION

The following discussion is responsive to 10CFR50.55(e)(3).

Description of Deficiency

A total of 585 weld repairs were identified as not being in compliance with the nondestructive surface examination requirements of ASME Section III, Paragraph NX4453.1. Ninety (90) of these repairs were dispositioned on the basis that the weld was either removed subsequent to the repair or the rework involved only the addition of reinforcement to bring the profile into compliance with requirements for performing ultrasonic examination in accordance with Section XI of the ASME Code. A total of 495 weld repairs remain within the scope of this report.

Analysis of Safety Implications

Out of a total of 495 weld repairs, five welds located in safety related systems required physical modifications to bring them into compliance with ASME Code requirements as modified by Code Cases. Two of the five welds required cosmetic surface grinding and, therefore, do not represent

a weld structural integrity issue. The remaining three welds required local repair consisting of weld defect removal, nondestructive surface examination of the excavated repair cavity, repair welding and final acceptance by radiographic examination. A structural evaluation of the defects identified by UT examination has not been conducted; however, all welds are now in compliance with all ASME Code requirements.

Corrective Action

Two Code Cases have been approved by the ASME Code Committee to provide alternate acceptance criteria to ASME Section III, Paragraph NX4453.1. Code Case N274 allows the use of an ultrasonic examination of the completed weld repair in lieu of the in-process surface examination requirement (liquid penetrant or magnetic particle examination). Code Case N275 waives the requirement for in-process surface examination of the weld repair region if the defect removal involves the removal of the weld root. Incomplete penetration, unconsumed insert, root concavity/convexity, drop-through, etc. are defects covered by this case and, consequently, ultrasonic examination of the completed weld repair was not performed on welds falling into this category.

All weld repair documentation packages were identified and reviewed. Based upon the requirements contained in Code Cases N274 and N275, the repaired welds were either deemed acceptable to the Code requirements or were repaired to bring them into compliance. The following is a summary of this work:

366 welds accepted by UT per Code Case N274.

123 welds accepted per Code N275 (defect removal involved removal of weld root).

5 welds rejected by UT and repaired.

- 3 - Indications in general location of original defect but presence not identifiable on final RT film following original repair.
- 2 - Corrected by surface grinding of weld reinforcement.

In addition to the 494 welds identified above, one weld could not be examined by UT due to the geometry and physical location of the joint. This weld was located on a main steam drain line downstream of the containment isolation valve. The line comes off the bottom of a restraint forging and is located in a trench between the two restraint forging supports. The conditions of service allowed reclassifying this portion of the main steam line to ANSI B31.1. The "as-built" weld meets all requirements of ANSI B31.1.

In addition, appropriate construction work plan procedures and quality control instruction documents were amended to clarify the requirement for nondestructive surface examination of weld repair excavation cavities prior to rewelding.

Further, the Bechtel QA audit program was revised to include four (4) additional audits during 1980. These audits are designed to specifically assess the field procedures to assure that appropriate requirements of the welding codes are addressed. Specific areas covered include Sections II, III and IX of the ASME Code.

In conclusion, all suspect weld repairs have been identified and the repaired welds were either deemed acceptable to the ASME Code requirements as modified by the two Code Cases (489 welds), were repaired to bring them into compliance with code requirements (5 welds), or were reclassified to other code jurisdictions. Related construction procedures were revised and clarified to assure future compliance with code requirements and additional audits were incorporated into the audit program to monitor future compliance.