July 16, 1980

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1990 North California Boulevard
Suite 202, Walnut Creek Plaza
Walnut Creek, California 94596

Attention: Mr. R. H. Engelken, Director

DOCKET No. 50-206
SAN ONOFRE - UNIT 1

Dear Sir:

Reference:

1) Letter dated May 16, 1980 from SCE (J. M Curran) to NRC (R. H. Engelken).

2) Letter dated May 29, 1980 from SCE (H. L. Ottoson) to NRC (R. H. Engelken).

Reference (2) provided an interim follow-up report in accordance with the provisions of Section 6.9.2a of Appendix A to the Provisional Operating License No. DPR-13. This letter provides a final report in accordance with these provisions, and the requirements of Section XI, Article IWB 3125(b) of the ASME B&PV Code.

During our 1980 refueling outage a radiographic examination of main steam piping circumferential welds inside containment was performed. References (1) and (2) presented the preliminary results of this examination. The examination is now complete. A total of 33 welds were examined, of which six (6) welds were found with reportable flaws. A summary of these reportable flaws is given below:

FLAW No.	LINE No.	LINE SIZE	WELD NO.	DESCRIPTION OF FLAW
1	1	24	3	Slag Inclusion Clusters
2	1	24	5	Slag Inclusion Clusters
3	2	24	2	Linear Slag Inclusions
4	2	24	3	Linear Slag Inclusions and Lack of Penetration
5	6	24	2	Linear Slag Inclusions
6	3	20	5	3 Cracks in Weld Root

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The attached report (for flaws 1 through 5) is an assessment of the significance of these weld indications. This assessment is based on (1) a review of the code acceptance standards for piping in accordance with ASME B&PV Code, Section XI Criteria using Addenda through the Summer 1978, and (2) a flaw evaluation analysis to estimate conservatively the critical flaw size and critical loads to cause failure, consistent with the procedure of Appendix A of Section XI. Although our Inservice Inspection Program requires use of Addenda through the Summer of 1975, this version of the code contains standards only for safe-end attachment welds and provides no acceptance criteria for piping. Consequently, the criteria found in the 1978 Addenda was used.

Based upon this investigation, it was concluded that the flaws would be acceptable under the Summer 1978 acceptance criteria of Section XI of the ASME B&PV Code. The results of the conservative flaw evaluation show that the presence of the flaws has negligible effect ($\leq$5%) on the static strength of pipe and that leak-before-break is assured.

A fatigue analysis to predict subcritical flaw growth under the assumption that the defects are crack-like has not been performed at this time. Since these flaws have been shown in the report to be acceptable to the standards of Section XI (1977 Edition, Summer 1978 Addenda) fatigue analysis is not considered to be necessary. The fact that these defects were introduced during fabrication and have not been observed to grow during service further suggests fatigue is not a problem.

Weld 3-20-5 in which cracks were found in the root (flaw No. 6) was repaired under a repair program meeting the requirements of the ASME B&PV Code Section XI. A visual inspection of these cracks indicated that they were old and in our judgement not service induced, but repair of the flaw was considered prudent.

Based on the results of the attached analysis and completion of the repair program for weld number 3-20-5, the main steam system may be returned to service with no adverse effects on public health or safety.

We have discussed the finding of this analysis with members of the NRC staff in Nuclear Reactor Regulation. It is our understanding that this report will be forwarded for their review.

Should you have any questions on the above, please call me.

Sincerely,

ORIGINAL SIGNED

H. L. Ottoson
Manager of Nuclear Operations

Enclosures: Licensee Event Report 80-024
Report on the Significance of
Circumferential Weld Defects in
24-inch Main Steam Piping at the
San Onofre Nuclear Generating Station
Unit 1 - Fracture Analysis.

cc: Director, Office of Inspection and Enforcement (30)
Director, Office of Management Information & Program Control (3)
L. Miller - USNRC Resident Inspector
Director, Nuclear Safety Analysis Center

WWS/JTR:nll

bcc: R. Dietch
NARC Members (8)
OSRC Members (9)
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EDM Files