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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:

References:

(1) Letter SCE (J.M. Curran) to NRC (R.H. Engelken) dated April 14, 1980.

(2) Letter SCE (K.P.Baskin) to NRC (D.M. Crutchfield) dated June 24, 1980.

(3) Steam Generator Return to Power Report, letter SCE (K. P. Baskin) to NRC (D.M. Crutchfield) dated April 10, 1981.

(4) Steam Generator Repair Report, SE-SP-40(80) Revision 1, dated March 1981.

This letter provides a follow-up Licensee Event Report (LER) to a reportable occurrence involving the steam generators. Submittal is in accordance with the reporting requirements stipulated in Section 4.16.E.4.b and Section 6.9.2 of Appendix A to the Provisional Operating License DPR-13.

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On April 9, 1980, San Onofre Unit 1 was shutdown two days prior to a scheduled refueling outage due to increasing primary-to-secondary steam generator tubing leakage. Later, nine tubes were identified as leaking by a secondary side leakage test (Reference 1). Additional diagnostics, including eddy current examinations, individual tube pressure tests, and metallographic examination of tubing samples, indicated that significant intergranular attack (IGA) was occurring at the top of the tubesheet in the inlet side tubing of all three steam generators (References 2 & 3).

In July 1980, SCE advised the NRC that a program to install leak tight brazed sleeves in the affected tubing would be initiated (Reference 4). After difficulties were encountered with implementation of the brazed sleeve joint in deep sludge, an alternative design was developed utilizing mechanical joints. This design was presented to the NRC in February 1981. This letter, in Table 1, provides a final repaired configuration of tubes, sleeves and plugs in each steam generator.

Final pressure testing of the steam generators was completed June 6, 1981 with a 1900 psid primary-to-secondary differential pressure test followed by a 800 psig secondary side pressure test to verify the location of any leaking tubes. These tests were performed to demonstrate the margin to the normal operating differential pressure of 1400 psid of the entire tube bundle. As a result of this test, two tubes (R9 C51 in steam generator B and R13 C51 in steam generator C) were identified as leaking and plugged. Three other tubes (R12 C47, R12 C33 and R11 C32 in steam generator C) were identified as possible leakers and plugged as a precaution. As mentioned above, the final plugging totals are contained in the attached Table 1.

These tests complete the steam generator repair program for this outage. Should you have any further questions on this matter please contact me.

JG Haynes

J. G. Haynes
Manager of Nuclear Operations

MPS:dh:70U

Attachments: Table 1
Licensee Event Report 80-014

cc: L. F. Miller (NRC Resident Inspector)

Director, Office of Management Information & Program Control
Director, Nuclear Safety Analysis Center

TABLE 1

Steam Generator Tube Plugging Summary

	A	B	C	TOTAL
Tubes plugged prior to 4/8	95	50	124	269
Tubes plugged per 5/80 - 6/80 ECT	143	60	20	223
Tubes plugged due to sleeving	102	185	169	456
Total Pluggs	340	295	313	948
PERCENT TUBES PLUGGED	9.0	7.8	8.2	8.3

Sleeving Summary

	A	B	C	TOTAL
Brazed	117	67	173	357
Brazed with leak paths	54	25	24	103
Mechanical & Mechanical Conversions	2073	2049	1944	6066
Total sleeves	2244	2141	2141	6526
Percent Equivalent Plugging Level	13.6	12.2	12.6	12.7

MPS:dh:070U