

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION

P.O. BOX 125

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H. B. RAY
STATION MANAGER

July 9, 1982

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. R. H. Engelken, Regional Administrator

Dear Sir:

Subject: Docket No. 50-361
30-Day Reports
Licensee Event Report Nos. 82-027, 82-028, 82-029
82-030, 82-031 and 82-032
San Onofre Nuclear Generating Station, Unit 2

In accordance with Appendix A Technical Specification 6.9.1.13.b to Operating License NPF-10 for San Onofre Unit 2, this submittal provides the required 30-day written reports for several occurrences involving the Auxiliary Feedwater System (AFWS). Technical Specification 6.9.1.13.b states that conditions leading to operation in a degraded mode permitted by a Limiting Condition for Operation shall be the subject of a written report within 30 days of occurrence of the event. Separate completed copies of the Licensee Event Report (LER) forms are enclosed, addressing each of these events.

On May 27, 1982, while in Mode 3, one AFW pump was aligned to provide flow to both steam generators. The steam generator water levels were being maintained by intermittently supplying auxiliary feedwater at reduced flow rates. The alignment used resulted in reverse flow through Kerotest valve MU-154. Flow oscillations accompanied by loud banging noises and movement of auxiliary feedwater line to steam generator 2E-089 were noted. These effects lasted for about 4 minutes. On June 9, 1982, while in Mode 3, a special test was performed duplicating the conditions of May 27, 1982. The pipe vibration and banging noise returned and a maximum piping displacement of 0.20 inch was noted by measurements taken at selected points inside the containment. The duration of the event was approximately 15 seconds.

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A second test was performed on June 11, 1982 while in Mode 3 for steam generator 2E-088, to determine if flow instability and vibration would occur under similar conditions. The instabilities returned and during this test a 3/4 inch vent line located on the 2-inch intertie line between the two motor driven trains failed causing the vent valve S21305MR807 to break off completely. Due to uncontrolled leakage through the Kerotest valve pump 2P-141 was secured, rendering it incapable of performing its safety function. This reduced the number of operable trains to two resulting in entry into action statement 3.7.1.2.a. LER 82-027 addresses this event. The vent line was repaired and the system returned to service.

A visual inspection on June 11, 1982 revealed that two restraints in the 2-inch intertie lines were damaged. Since the system was no longer exposed to the abnormal vibration loads, and since these supports did not affect the operability of the main auxiliary feedwater lines, repair of the supports was postponed, until completion of our engineering evaluation to determine if a rework or redesign was required. On June 12, 1982 liquid penetrant (PT) examinations were performed on 19 vent and drain installations (about 45 welds) in the affected lines to verify that there was no evidence of fatigue cracks. No indications were identified.

On June 12, 1982, while in Mode 3, the two electro-hydraulic (E/H) valves 2HV4731 and 2HV4714 were found to be binding (not stroking fully open). These valves must open fully on an Emergency Feedwater Actuation Signal (EFAS) to perform their function. Even though the parallel valves 2HV4715 and 2HV4730 were operable allowing two flow paths, SCE has conservatively taken the position that failures of valves 2HV4731 and 2HV4714 to fully open, renders inoperable the trains associated with motordriven pumps 2P-141 and 2P-504. LER's 82-028 and 82-029 address these two occurrences. The valves were repaired and declared operable within one hour.

On June 12, 1982 while in Mode 3, the E/H valve 2HV4714 was once again found inoperable due to problems with the limit switches. This was repaired on June 13, 1982 and the AFW train 2P-504 was returned to service. LER 82-030 addresses this occurrence.

On June 16, 1982, while in Mode 3, oil leakage was observed from the bearings of AFW motor-driven pump 2P-504. The system was taken out of service for repairs and the train declared inoperable. LER 82-031 addresses this event. The oil leak was repaired on June 17, 1982 and the train returned to service.

On June 17, 1982, while in Mode 3, the vent line again fractured and vent valve S21305MR807 broke off. The inability to isolate a leakage rendered the train associated with motor-driven pump 2P-141 inoperable. LER 82-032 addresses this event. The failure was due to hydraulic instability, causing vibrations resulting in fatigue failure.

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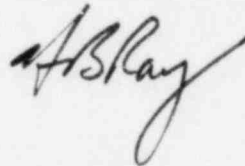
Examinations, tests and calculations demonstrated that the hydraulic instabilities were induced by backflow operation through the 2-inch Kerotest valves MU-154 and MU-553. Such operation would not have impaired the safety capability of the AFWS during plant operation since the line significantly affected by the hydraulic instabilities was the 2-inch intertie line. This line is normally isolated from both trains by locked closed valves. Only during plant startup and shutdown is this line used to feed both steam generators with one auxiliary feedwater pump. During emergency conditions, the AFWS automatically supplies feedwater to the respective steam generators and this intertie line does not play a role.

The Kerotest valve MU-154 was found to have some internal damage that could not be easily repaired and, therefore, it was replaced. The other Kerotest valve MU-553 had only minor disc and seat damage which was repaired. Although no evidence of fatigue damage was detected on the 2-inch intertie line, small sections of the line have been replaced prior to entering Mode 3. The two damaged restraints were also replaced. Additional corrective measures included a revision to Operating Instruction S023-2-4, whereby backflow through the Kerotest valves is now precluded.

In all of the above six (6) events, the health and safety of the public was not affected. At least one AFW flow path remained available and there is no decay heat in the core.

If there are any questions regarding the above, please contact me.

Sincerely,



Enclosures: (LER Nos. 82-027 through 82-032 inclusive)

cc: A. E. Chaffee (USNRC Resident Inspector, San Onofre Unit 2)

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement

U. S. Regulatory Commission
Office of Management Information & Program Control

Institute of Nuclear Power Operations