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Trojan Nuclear Plant
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February 17, 1993
RDM-016-93

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington DC 20555

Gentlemen:

Licensee Event Report No. 93-01 is attached. This report discusses a degraded Technical Specification-related three-hour rated fire barrier penetration that has been out of service for more than seven days without the required compensatory actions being in place.

Sincerely,

R. D. Machon
General Manager
Trojan Nuclear Plant

c: Mr. John B. Martin
Regional Administrator, Region V
U.S. Nuclear Regulatory Commission

Mr. David Stewart-Smith
State of Oregon
Department of Energy

Mr. K. E. Johnston
USNRC Senior Resident Inspector
Trojan Nuclear Plant

LER Distribution

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Trojan Nuclear Plant	0 5 0 0 0 3 4 4	1 OF 5

TITLE (4): Personnel Error to Properly Seal a Fire Barrier Penetration Leads to a Non-Functional Three Hour Fire Barrier Penetration

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
10	08	92	93	- 0 0 1 -	0 0	02	17	93	N/A	0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)

__ 20.402(b)	__ 20.405(c)	__ 50.73(a)(2)(iv)	__ 73.71(b)
__ 20.405(a)(1)(i)	__ 50.36(c)(1)	__ 50.73(a)(2)(v)	__ 73.71(c)
__ 20.405(a)(1)(ii)	__ 50.36(c)(2)	__ 50.73(a)(2)(vii)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A)
__ 20.405(a)(1)(iii)	X 50.73(a)(2)(i)	__ 50.73(a)(2)(viii)A	
__ 20.405(a)(1)(iv)	__ 50.73(a)(2)(ii)	__ 50.73(a)(2)(viii)B	
__ 20.405(a)(1)(v)	__ 50.73(a)(2)(iii)	__ 50.73(a)(2)(x)	

Special Report

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER AREA CODE	TELEPHONE NUMBER
D. L. Claridge, Compliance Engineer	503	556-5541

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
N/A											

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
__ YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (16)

On October 8, 1992, the Trojan Nuclear Plant was operating at 100 percent power. Plant personnel conducting the eighteen month fire barrier surveillance required by Trojan Technical Specification (TTS) 3/4.7.9, "Penetration Fire Barriers," determined that a sleeved conduit penetration did not have an internal seal (between conduit and sleeve). Further investigation by engineering personnel concluded that the penetration was not a TTS-related penetration. On January 18, 1993, during review of discrepancies identified during the 1992 fire barrier surveillance, it was determined that the penetration was a TTS-related penetration. A design drawing error had led to the earlier incorrect conclusion. The penetration is in the wall separating the elevator equipment room from the adjacent corridor on elevation 61' of the Control Building. Compensatory measures required by TTS 3/4.7.9 were implemented within one hour of the discovery. The root cause of this condition is personnel error, failing to seal adequately a three hour fire barrier penetration. Corrective actions included repairing the penetration, correcting the design drawing, and adding the barrier to the barrier inspection program. This report is being submitted to fulfill the reporting requirements of 10 CFR 50.73(a)(2)(i) and as the Special Report required by TTS 3/4.7.9.

INTRODUCTION

Trojan Technical Specification (TTS) 3/4.7.9, "Penetration Fire Barriers," requires that 3-hour rated fire penetration barriers protecting safety-related areas be functional at all times. It has been determined that Fire Barrier Penetration No. 3231 has been non-functional for greater than seven days without having the required compensatory measures in place. This report is submitted to fulfill the requirements of 10 CFR 50.73(a)(2)(i)(B), as a condition prohibited by TTS 3/4.7.9. This report is also submitted to fulfill the TTS 3/4.7.9 Action Statement requirement to submit a Special Report when a non-functional penetration barrier required per TTS 3/4.7.9 is not restored to functional status within seven days.

DISCUSSION

Penetration 3231 is a single 3/4-inch conduit routed through a grouted one-inch diameter conduit sleeve. It is located in the south wall of the elevator machinery room on the 61' elevation of the Control Building, which is also the north wall of the Control Building 61' elevation corridor (Room 35, Fire Area C6). This wall is a concrete block wall approximately eight inches thick. The penetration is approximately 10 feet above the floor. The design for this type of penetration specifies that an internal seal is to be installed around the conduit (between the conduit and the sleeve) to provide a 3-hour rated fire barrier.

On October 8, 1992, a visual inspection of Penetration 3231 was performed as part of the eighteen-month fire barrier surveillance (visual inspection required by TTS 3/4.7.9). The inspectors noted that the conduit in the penetration did not have an internal seal. At that time, a design drawing (PGE drawing A-116) used to identify three-hour rated fire barriers did not identify the south wall of the elevator machinery room on the 61' elevation of the Control Building as a three-hour rated fire barrier. Nuclear Plant Engineering (NPE) Fire Protection was contacted to evaluate the barrier. The fire protection engineer confirmed that the penetration was not in a three-hour rated fire barrier and thus not subject to TTS 3/4.7.9 surveillance requirements. This confirmation was based on the design drawing.

On January 18, 1993, inspection personnel were reviewing surveillance discrepancies discovered in the 1992 fire barrier inspections in order to complete the surveillance package. It was during this review that the design drawing was determined to be in error. This led to the determination that the south wall of the elevator machinery room is a three-hour fire barrier, that Penetration 3231 is subject to TTS 3/4.7.9 requirements, and that a Technical Specification violation had occurred. The violation was that Penetration 3231 was not functional between at least October 8,

1992 (date of discovery) and January 18, 1993, without having the required compensatory actions in place. The penetration was declared inoperable. Appropriate compensatory measures, as required by TTS 3/4.7.9, were taken. A Corrective Action Request was written, and a maintenance request was initiated to repair the penetration. This repair was completed on January 25, 1993, within the seven day limit specified in TTS 3/4.7.9.

IMMEDIATE ACTIONS TAKEN

Fire Protection declared Penetration 3231 inoperable. An hourly fire patrol was implemented within one hour of declaring the penetration inoperable. A maintenance request was initiated on January 18, 1993, to repair the penetration.

CAUSE OF DEFICIENCY

Penetration 3231 was identified in a Request for Design Change (RDC 84-087, Fire Barrier upgrades to meet 10 CFR 50 Appendix R requirements), as a three-hour, Standard Technical Specification fire barrier penetration. The inspection conducted under RDC 84-087 did not identify this penetration as requiring modification to meet the installation requirements for a three-hour fire penetration. Therefore, the most probable cause of this event is personnel error, failure to properly seal a fire barrier penetration; the date on which it was made is not known.

Contributing factors to this event include:

The wall containing the penetration was not indicated on the applicable design drawing as a three-hour fire barrier.

The PGE document used to perform fire barrier surveillances, FP-906, did not list the wall as a three-hour fire barrier.

The penetration had not been surveilled from 1984 to 1992 since it had not been identified in the surveillance program as a TTS-related penetration. Thus, the degraded penetration was not discovered until the entire barrier was surveilled in 1992. Prior to 1992, only three-hour fire penetrations were surveilled; the surveillances did not include the barriers containing the penetrations.

PLANS FOR RESTORING THE PENETRATION TO FUNCTIONAL STATUS

The penetration was restored to functional status on January 25, 1993, after installing the internal seal in accordance with applicable design details for this type of penetration.

CORRECTIVE ACTIONS

NPE Fire Protection revised the incorrect drawing (PGE drawing A-116) to show the wall containing Penetration 3231 as a three-hour fire rated barrier. FP-906 was revised to include that wall in the TTS fire barrier surveillance program.

No further corrective actions have been identified for this event. The fire barrier surveillance program was improved in 1992 to provide more detailed inspections of both fire barriers and barrier penetrations. This revised surveillance program is expected to identify other, if any, fire barriers and barrier penetrations determined in RDC 84-087 to be three-hour fire rated, but that have not been properly upgraded to meet 10 CFR 50 Appendix R requirements.

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences resulting from Penetration 3231 being nonfunctional for more than seven days. There has not been a fire on either side of the affected fire barrier since 1984 that would have challenged the barrier.

The potential implication of having an unsealed penetration in the elevator machinery room south wall is that a postulated fire on either side of the wall could propagate to the other side.

The 3/4-inch conduit through the one-inch unsealed sleeve left an unsealed annular gap of approximately 0.34 square inches. An opening this small through the eight inch thick wall would have limited the amount of flame and hot gas propagation through the penetration. Thus, only a severe fire exposure directly at the face of the penetration would have resulted in flames passing through the penetration and into the adjacent fire area.

Based on a review of the Trojan Permanent Combustible Loading Table (FP-902) and a walkdown of the elevator equipment room performed on November 16, 1992, by a fire protection engineer, the combustible loading on each side of the affected fire barrier is less than five minutes, and the type and quantity of combustibles on each side of the penetration presents a hazard unlikely to propagate through the small unsealed annular space around the conduit. The primary combustible on each side of the penetration is cable. However, cables near the penetration are enclosed in conduit and located several feet from the penetration. Since the penetration is approximately ten feet above the floor, small amounts of transient combustibles, if present, would have little impact on the penetration.

Based on the above information, it is considered unlikely that a fire would have been able to propagate through Penetration 3231. Had such an event occurred, based upon a review of PGE-1012, Trojan Fire Protection Plan, there are no safe-shutdown equipment or cables located in Fire Area C6 or in the elevator equipment room (Control Building 61' elevation). Therefore, the degraded penetration did not compromise safe shutdown capability.

PREVIOUS SIMILAR EVENTS

Deficiencies in the installation, inspection and maintenance of penetration fire barriers have been the subject of several Special Reports and Licensee Event Reports at Trojan over the last two years. These deficiencies received increased management attention, which resulted in the development and implementation of more rigorous penetration seal and overall barrier surveillance programs. These programs are expected to identify inadequacies in fire barrier penetration seals, such as the one reported in this LER, that were not identified in the past under previous inspection practices.