

LICENSEE EVENT REPORT (LER)																			
Facility Name (1)										Docket Number (2)					Page (3)				
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2										0150000361					1 of 04				
Title (4)																			
INOPERABLE FIRE SPRINKLER SYSTEM																			
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)							
1	1	4	9	4	915	0	0	4	0	0	5	2	0	9	5				
OPERATING MODE (9) <input type="checkbox"/> THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																			
POWER			<input type="checkbox"/> 20.402(b)			<input type="checkbox"/> 20.405(c)			<input type="checkbox"/> 50.73(a)(2)(iv)			<input type="checkbox"/> 73.71(b)							
LEVEL			<input type="checkbox"/> 20.405(a)(1)(i)			<input type="checkbox"/> 50.36(c)(1)			<input type="checkbox"/> 50.73(a)(2)(v)			<input type="checkbox"/> 73.71(c)							
(10)			<input type="checkbox"/> 20.405(a)(1)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(vii)			<input type="checkbox"/> Other (Specify in							
			<input checked="" type="checkbox"/> 20.405(a)(1)(iii)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)			Abstract below and							
			<input type="checkbox"/> 20.405(a)(1)(iv)			<input type="checkbox"/> 50.73(a)(2)(ii)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)			in text							
			<input type="checkbox"/> 20.405(a)(1)(v)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(x)			10CFR 73.71(d)							
LICENSEE CONTACT FOR THIS LER (12)																			
Name										TELEPHONE NUMBER									
R. W. Krieger, Vice President, Nuclear Generation										AREA CODE : 714361-6255									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS										
X	KIP	V	X	9/9/9	NO														
B	KIP	WI	M	3/0/2	NO														
SUPPLEMENTAL REPORT EXPECTED (14)																			
Expected Submission Date (15)																			
Yes (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO																			
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																			

On 11/14/94, during surveillance testing of pre-action valve SA2301MU469, the valve release weight stuck and did not drop upon electronic actuation, and the valve did not open as required. On 1/26/95, Edison replaced the weight switch, the valve was tested satisfactorily, and the release weight was reset. In accordance with TS 3.7.8.2, an hourly fire watch had been maintained while the valve was inoperable.

Edison initially believed the valve failed at the time of the surveillance. However, Edison subsequently determined that the weight switch, initially installed on the valve on 9/17/94, had been incorrectly assembled by the manufacturer, Micro Switch (a Division of Honeywell). On 4/20/95, Edison discovered that the weight switch had also been slightly mispositioned in the valve. Edison concluded the combination of the two factors resulted in intermittent binding of the release weight. Edison conservatively assumed the valve may have been inoperable between 9/20/94 and 11/14/94. Because an hourly fire watch was not in place as required by TS 3.7.8.2, Edison is providing this report in accordance with 10 CFR 50.73(a)(2)(i).

Edison replaced the incorrectly manufactured weight switch on 1/26/95 and ensured it was correctly positioned. Edison confirmed that Micro Switch Part No. OPD-AR62 weight switches are only used in non-safety related fire protection valves and are not installed in any other systems at SONGS.

Edison requested the manufacturer investigate this occurrence and take appropriate corrective actions. Edison reported this occurrence on the INPO Nuclear Network.

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DESCRIPTION OF THE EVENTS:

Plant:	San Onofre Nuclear Generating Station, Unit 2
Reactor Vendor:	Combustion Engineering
Event Date:	November 14, 1994
Reportability Confirmation Date:	April 20, 1995
Mode:	Unit 2, Mode 1, 98% reactor power

BACKGROUND

San Onofre fire suppression spray/sprinkler systems are required by Technical Specification (TS) 3.7.8.2 to be operable whenever equipment protected by the system is required to be operable. Fire suppression water flow for some systems is controlled by an Automatic Sprinkler Corporation of America (ASCOA) Model-C pre-action or deluge valve, installed in non-safety related fire protection systems (see attached figure).

In a pre-action system, upon receipt of a signal from a fire detection circuit or a remote pull station, an electrical relay will retract and allow a release weight to fall in the valve release enclosure box on the latch arm, which in turn, releases the valve clapper allowing water to charge the lines to the sprinkler heads. Water flows from each sprinkler head when activated by heat. Also contained in the release enclosure box is a weight switch that activates an alarm when the weight is dropped. The alarm sounds locally, and is sent to the Fire Department Office and Control Room via the Fire Monitoring System.

EVENT DESCRIPTION

On 11/14/94, during surveillance testing of pre-action valve SA2301MU469 [V] [KP], the valve release weight stuck and did not drop upon electronic actuation, and the valve did not open as required. A nonconformance report was initiated to document and investigate the failure. On 1/26/95, Edison replaced the weight switch [WIS] [KP], the valve was tested satisfactorily, and the release weight was reset. The valve was declared operable on 1/27/95. In accordance with TS 3.7.8.2, an hourly fire watch had been maintained while the valve was inoperable.

Edison initially believed the valve failed at the time of the surveillance. However, Edison subsequently determined that the weight switch, initially installed on the valve on 9/17/94, had been incorrectly assembled by the manufacturer, Micro Switch (a Division of Honeywell). The internal flat spring in the switch was reversed, limiting external lever rotation.

On 4/20/95, Edison discovered that the weight switch had also been slightly mispositioned in the valve (the weight switch external lever had been placed against the vertical surface of the release weight rather than on the tab at the base of the weight). Improper placement of the weight switch alone is not sufficient to affect valve operability, as evidenced by two other valves with mispositioned weight switches which continue to successfully pass their surveillance testing.

Edison concluded the combination of the two factors resulted in intermittent binding of the release weight. The valve failure was intermittent as this valve had been successfully tested at other times. Edison conservatively assumed the valve may have been inoperable between 9/20/94 and 11/14/94. Because an hourly fire watch was not in place as required by TS 3.7.8.2, Edison is providing this report in accordance with 10 CFR 50.73(a)(2)(i).

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CAUSE OF THE EVENT:

The intermittent failure was due to release weight binding caused by a combination of the incorrectly manufactured weight switch and the slight mispositioning of the weight switch.

CORRECTIVE ACTIONS:

Edison replaced the incorrectly manufactured weight switch on 1/26/95 and ensured it was correctly positioned. The valve was satisfactorily tested, the release weight was reset, and the valve was returned to service on 1/27/95.

Edison confirmed that Micro Switch Part No. OPD-AR62 weight switches are only used in non-safety related fire protection valves and are not installed in any other systems at SONGS.

As a precautionary measure, Edison initiated fire watches for all fire areas protected by deluge valves (except for four valves inside Unit 3 containment) while performing inspections to confirm the correct weight switches are installed. Edison inspected 55 of the 68 pre-action/deluge valves and confirmed that these valves do not contain incorrectly manufactured switches. The remaining valves outside containment (9) will be inspected by 7/15/95. The 4 valves inside Unit 3 containment will be inspected during the next outage of sufficient duration. Edison also inspected all spare Micro Switch weight switches on Site and identified one other incorrectly manufactured weight switch.

Edison requested the manufacturer investigate this occurrence and take appropriate corrective actions. Edison reported this occurrence on the INPO Nuclear Network.

Edison has separately assembled a multi-discipline task force to evaluate the pre-action/deluge valves to identify potential system and personnel training improvements.

SAFETY SIGNIFICANCE OF THE EVENT:

This valve is in the fire suppression sprinkler system for diesel generator 2G002. For worst case fires, the pre-action system is not credited with being able to extinguish the fire prior to the loss of the diesel generator. Therefore, for these large fires, the pre-action system has little impact on core damage risk and is not credited in the Fire Individual Plant Examination of External Events (IPEEE). For smaller fires, backup fire fighting features remained operable such as 1) ionizing smoke detectors which provide early warning alarm in the Control Room and Fire Department Office via the Fire Monitoring System, 2) infrared flame detectors which provide pre-action system actuation signal alarm in the Control Room and Fire Department Office via the Fire Monitoring System, 3) portable fire extinguishers and manual hose stations located in or near the affected area, and 4) the onsite full-time professional Fire Department which was always available to respond to fire alarms. The increase in the annual core damage probability attributable to this event was concluded to be negligible. Therefore, there was minimal safety significance to this event.

ADDITIONAL INFORMATION:

In the past three years, there have been no reportable occurrences of inoperable fire sprinkler systems associated with incorrectly manufactured or incorrectly positioned weight switches.

MODEL C PRE-ACTION OR DELUGE VALVE

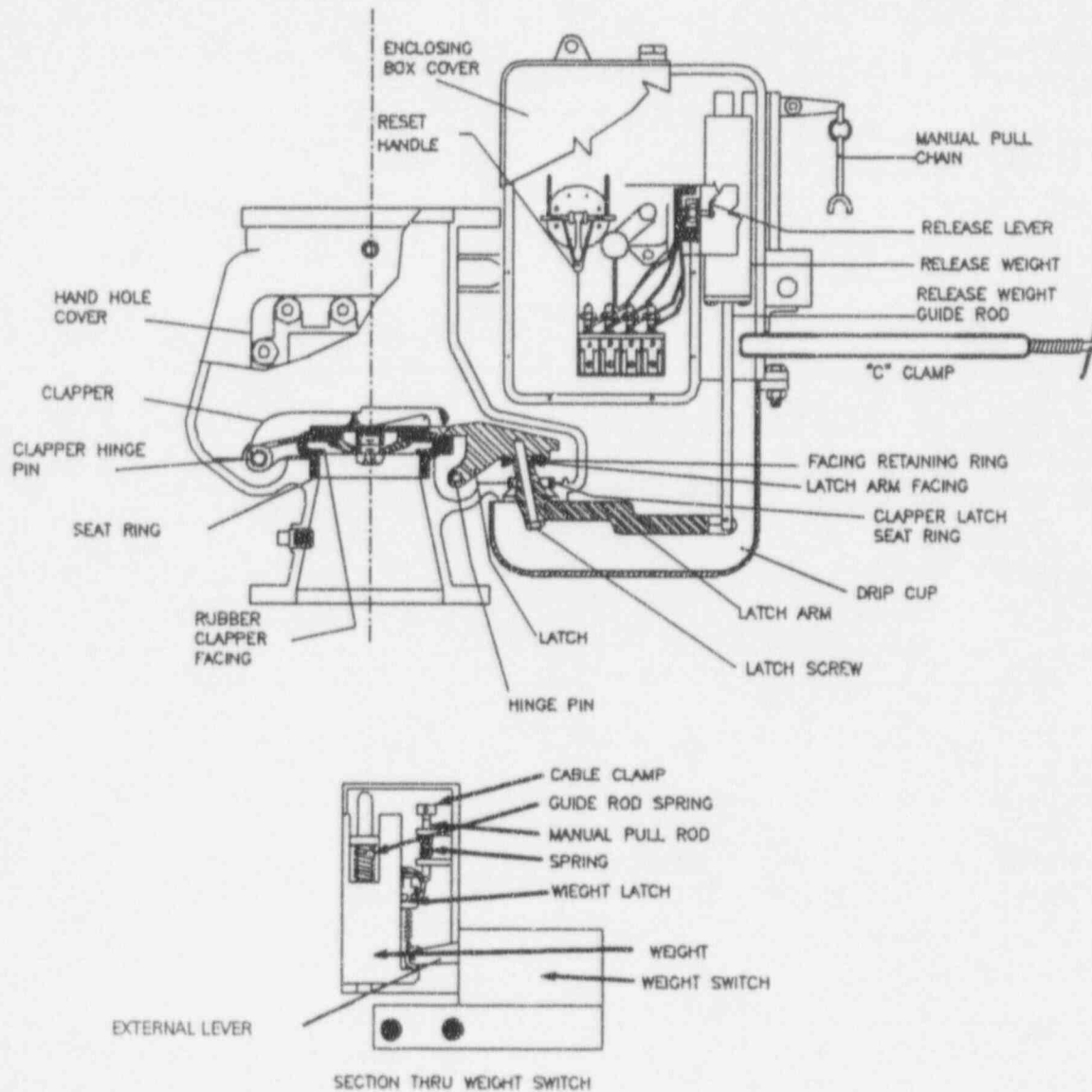


Figure 1