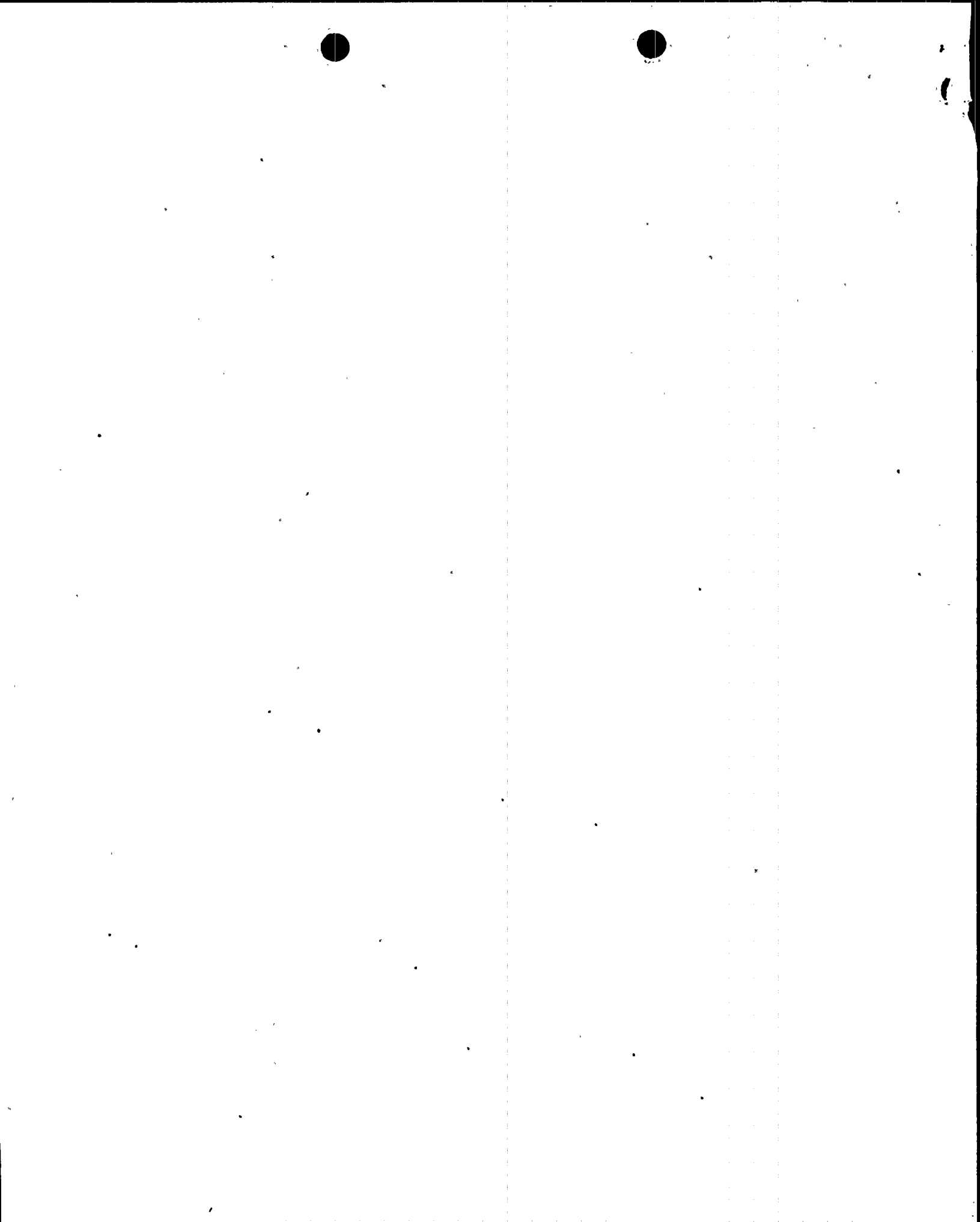


LICENSEE EVENT REPORT (LER)																
FACILITY NAME (1) <div style="text-align: center;">Palo Verde Unit 1</div>										DOCKET NUMBER (2) <div style="text-align: center;">0 5 0 0 0 5 2 8</div>					PAGE (3) <div style="text-align: center;">1 OF 0 5</div>	
TITLE (4) <div style="text-align: center;">Safety Valves As-Found Lift Pressures Out of Tolerance</div>																
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 NUMBERS			
										N/A						
0 3 0 4 9 8			9 8 - 0 0 4 - 0 0 0 4 0 1 9 8							N/A						
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)														
1		20.402(b)				20.405(c)				50.73(a)(2)(M)				73.71(b)		
POWER LEVEL(10)		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(M)				73.71(c)		
1 0 0		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(ii) <input checked="" type="checkbox"/>				<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A) Voluntary Report for PSV		
		20.405(a)(1)(iii)				50.73(a)(2)(i) <input checked="" type="checkbox"/>				50.73(a)(2)(iii)(A)						
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(iii)(B)						
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(iv)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME Dan Marks, Section Leader, Palo Verde Regulatory Affairs										TELEPHONE NUMBER AREA CODE 6 0 2 3 9 3 - 6 4 9 2						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC							
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR		
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)																
<p>On March 4, 1998, Palo Verde Unit 1 was in Mode 1 (POWER OPERATION) operating at approximately 100 percent power when Control Room personnel declared Main Steam Safety Valve (MSSV) SGE-PSV-578 inoperable because the as-found lift pressure was found to be above the maximum allowed Technical Specification (TS) lift setting tolerance during Trevitest activities. The affected MSSV was satisfactorily retested and declared operable. During subsequent MSSV testing, SGE-PSV-579 and SGE-PSV-554 were also declared inoperable because their as-found lift pressures were found to be above the maximum allowed TS lift setting tolerance. The two additional MSSVs were satisfactorily retested, and declared operable. Trevitest activities were completed on March 5, 1998. On March 25, 1998, during off-site Pressurizer Safety Valve (PSV) testing, one PSV as-found lift pressure was found to be below the minimum allowed TS lift setting tolerance. The out-of-tolerance PSV data was factored into the safety analysis that is being performed as a result of this event. The PSV event is being voluntarily reported in this LER.</p> <p>Previous similar events were reported in LERs 529/97-001 (a voluntary LER) and 530/97-003-01 in the past three years. The investigation associated with this LER (528/98-004) is currently evaluating the cause of the MSSVs high out-of-tolerance lift pressure. The preliminary safety analysis demonstrated that system was capable of performing its intended safety function with the out-of-tolerance MSSVs and PSV.</p>																

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**1. REPORTING REQUIREMENT:**

This LER (528/98-004-00) is being submitted to report an event where a single cause or condition may have caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:

- (A) Shut down the reactor and maintain it in a safe shutdown condition;
- (B) Remove residual heat; (C) Control the release of radioactive material;
- or (D) Mitigate the consequences of an accident, as specified in 10 CFR 50.73(a) (2) (vii).

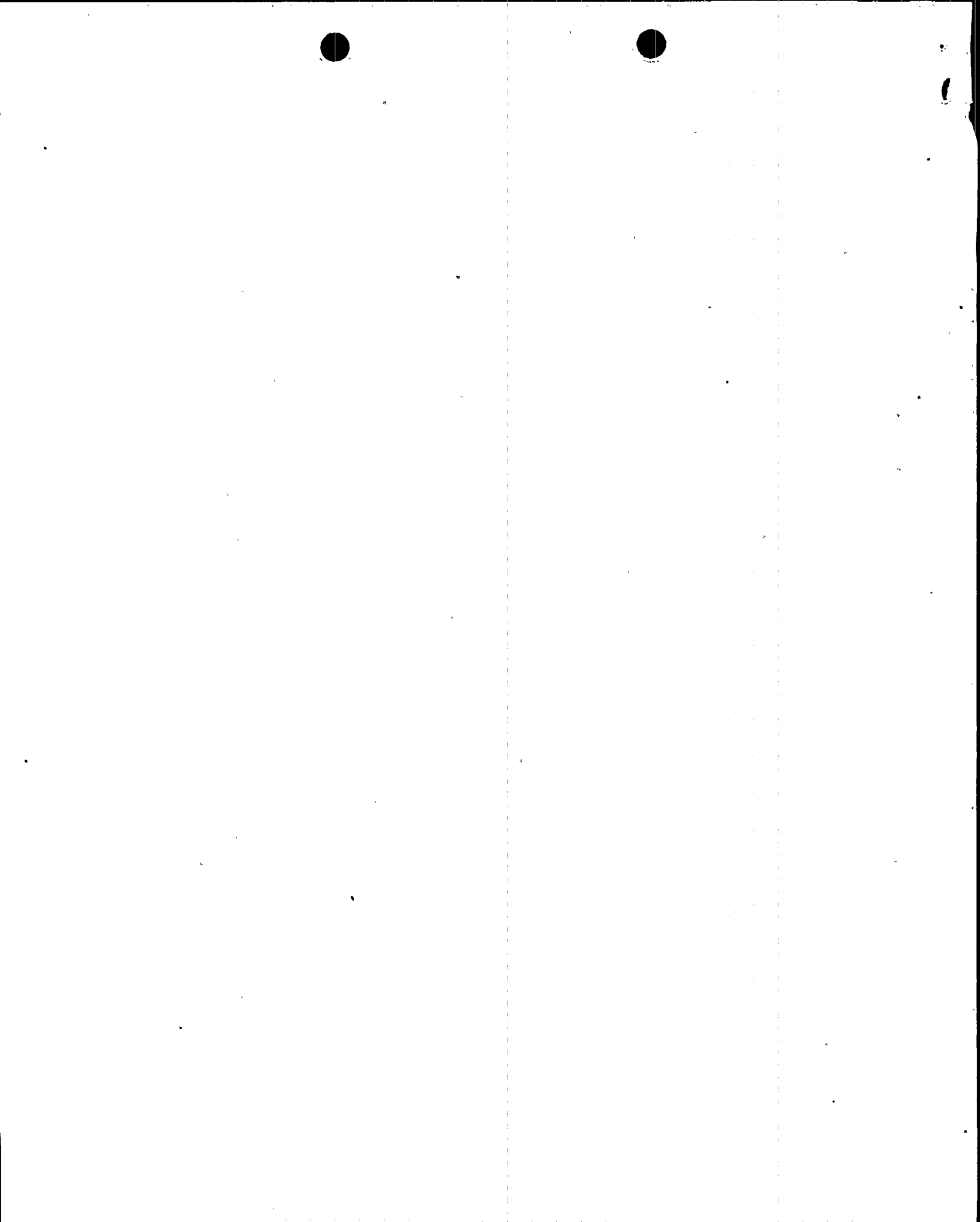
In addition, this LER is being submitted to report an operation or condition prohibited by the plant's Technical Specifications (TS) as specified by 10 CFR 50.73 (a) (2) (i) (B). Because of the number of Main Steam Safety Valves (MSSV) (RV) (SB) found out-of-tolerance, APS has reason to believe the MSSVs became inoperable sometime prior to the time of discovery. As such, the TS Limiting Condition for Operation (LCO) 3.7.1.1 may not have been met during the past operating cycle.

Specifically, on March 4, 1998, Palo Verde Unit 1 was in Mode 1 (POWER OPERATION) operating at approximately 100 percent power when Control Room personnel declared MSSV SGE-PSV-578 inoperable because the as-found lift pressure was found to be above the maximum allowed Technical Specification (TS) lift setting tolerance during Trevitest activities. The affected MSSV was satisfactorily retested and declared operable. During subsequent MSSV testing, SGE-PSV-579 and SGE-PSV-554 were also declared inoperable because their as-found lift pressures were found to be above the maximum allowed TS lift setting tolerance. The two additional MSSVs were satisfactorily retested and declared operable.

This LER 529/97-001-00 is also being submitted to report an operational event that does not meet the reporting criteria contained in 10 CFR 50.73 (i.e., voluntary report). On March 25, 1998, during off-site Pressurizer Safety Valve (PSV) (RV) (AB) testing, one PSV as-found lift pressure was found to be below the minimum allowed TS lift setting tolerance.

**2. EVENT DESCRIPTION:**

On March 3, 1998, Palo Verde Unit 1 was in Mode 1 (POWER OPERATION) operating at approximately 100 percent power when APS Maintenance and Engineering personnel and Furmanite personnel began on-line testing of the Unit 1 MSSVs using the Furmanite Digital Trevitest method. MSSVs are required by TS Surveillance Requirement (SR) 4.7.1.1 and the ASME Code to be tested once per 5 years. This testing has been conducted more frequently than the 5-year interval in accordance with the corrective



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action for previous out-of-tolerance relief settings in Palo Verde Units 1, 2, and 3. The MSSVs are tested in accordance with approved procedures under normal operating pressure and temperature conditions.

At approximately 1348 MST on March 4, 1998, Control Room personnel declared Steam Generator (AB) No. 1's (SG-1) MSSV SGE-PSV-578 inoperable due to an as-found lift pressure of 0.6 percent greater than the maximum tolerance allowed by TS and entered TS 3.7.1.1 ACTION a. The TS allowable tolerance for MSSVs is +/- 3.0 percent. SGE-PSV-578 was satisfactorily retested without any setpoint adjustments and declared operable at approximately 1419 MST on March 4, 1998. TS 3.7.1.1 ACTION a was exited and MSSV testing continued.

At approximately 1436 MST on March 4, 1998, Control Room personnel declared SG-1's MSSV SGE-PSV-579 inoperable due to an as-found lift pressure of 3.5 percent greater than the maximum tolerance allowed by TS and entered TS 3.7.1.1 ACTION a. SGE-PSV-579 was satisfactorily retested without any setpoint adjustments and declared operable at approximately 1503 MST on March 4, 1998. TS 3.7.1.1 ACTION a was exited and MSSV testing continued.

At approximately 0835 MST on March 5, 1998, Control Room personnel declared SG-2's MSSV SGE-PSV-554 inoperable due to an as-found lift pressure of 0.9 percent greater than the maximum tolerance allowed by TS and entered TS 3.7.1.1 ACTION a. SGE-PSV-554 was satisfactorily retested without any setpoint adjustments and declared operable at approximately 0905 MST on March 5, 1998. TS 3.7.1.1 ACTION a was exited and MSSV testing continued until approximately 1631 MST on March 5, 1998 when Trevitest activities were complete.

At approximately 0003 MST on March 14, 1998, Unit 1 shut down for its seventh refueling outage (U1R7). On March 25, 1998, during off-site Pressurizer Safety Valve (PSV) (RV) (AB) testing, one PSV as-found lift pressure was found to be below the minimum allowed TS lift setting tolerance. Data associated with the failed PSV was forwarded to APS Nuclear Fuels personnel for use in the safety analysis being performed to assess the safety consequences of the out-of-tolerance MSSVs.

An investigation was initiated in accordance with the APS corrective action program to evaluate the cause of the MSSVs high out-of-tolerance lift pressures. During the event, there were no safety system actuations and none were required.



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3. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

A preliminary safety analysis, performed as part of the investigation, demonstrated that the system was capable of performing its intended safety function with the out-of-tolerance MSSVs and PSV. The analysis concluded that the condition would not have resulted in the secondary system peak pressure exceeding 110 percent of the design pressure limit. If the conclusions of the final safety analysis differ from preliminary safety analysis, a supplement to this LER will be submitted.

The MSSV and PSV as-found out-of-tolerance conditions did not result in any challenges to the fission product barriers or result in any release of radioactive materials. There were no adverse safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or health and safety of the public.

4. CAUSE OF THE EVENT:

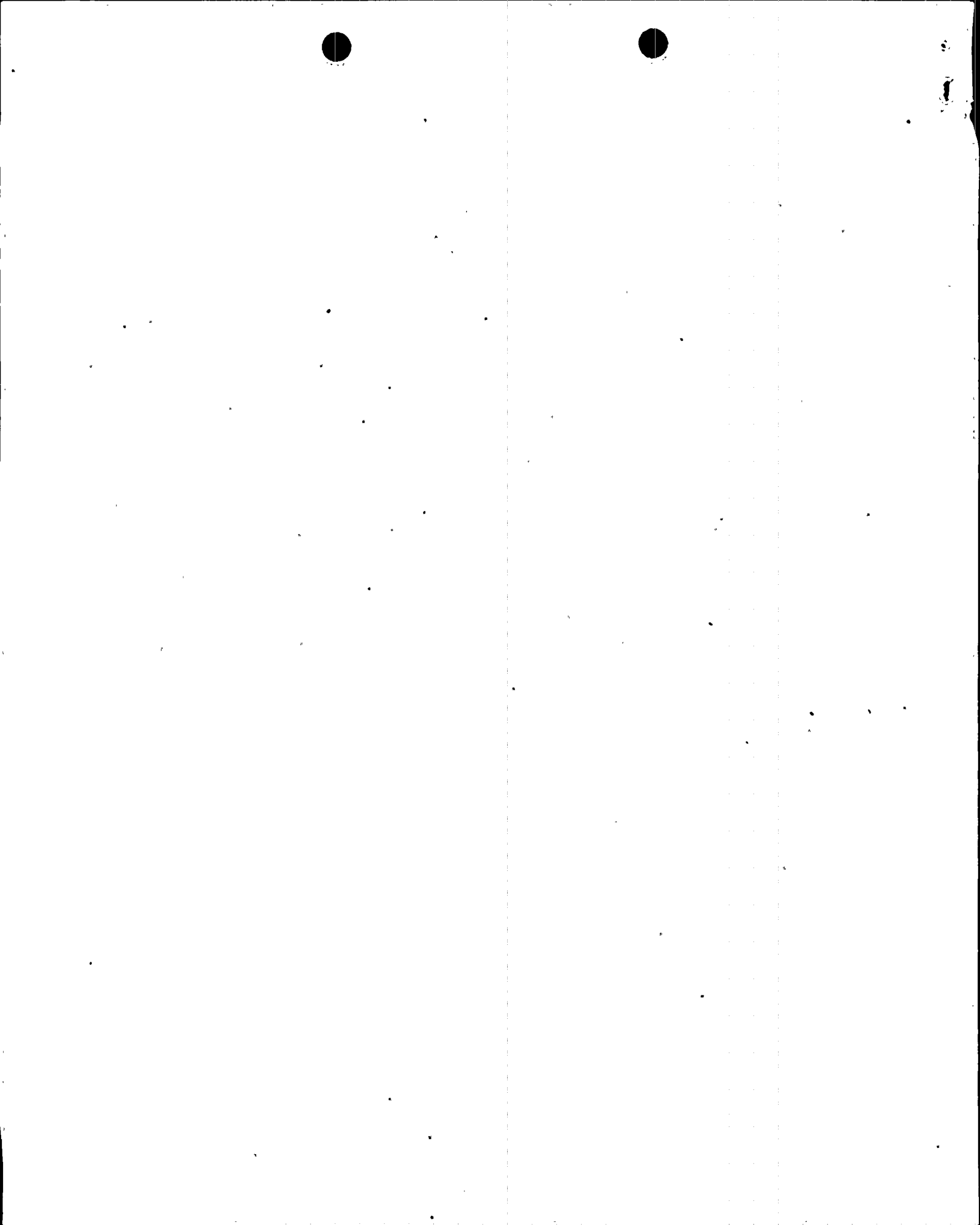
An investigation of this event is being conducted in accordance with the APS Corrective Action Program to evaluate the cause of the event. Three MSSVs had as-found lift pressures greater than the 3 percent of the maximum tolerance allowed by TS 3.7.1.1 and one PSV as-found lift pressure was found to be below the minimum lift setting tolerance allowed by TS 3.4.2.2 (SALP Cause Code: E Component Failure). While the cause of the condition is not yet known, out-of-tolerance MSSV lift pressure phenomenon during pre-refueling outage testing is well documented in the industry.

No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event. No personnel or procedural errors contributed to this event.

5. STRUCTURES, SYSTEMS, OR COMPONENTS INFORMATION:

The MSSVs were manufactured by Dresser/Consolidated and are Consolidated 3700 series valves designed for nuclear service and certified under Section III, class 2, of the ASME Code for application in nuclear power systems. Palo Verde's specific valves are Maxiflow, spring-loaded, direct acting, model No. 3707-R with 6" 1500 pound inlet and a 10" 300 pound outlet.

The PSV was manufactured by Dresser/Consolidated and is Consolidated 31700 series valve designed for nuclear service and certified under Section III, Class 1, of the ASME code for application in nuclear power systems. Palo Verde's specific PSVs are Crossed Bonnet Maxiflow, spring loaded, direct





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TEXT      acting, model No. 31709NA with 6" 2500 pound inlet and an 8" 600 pound outlet.

There are no indications that any structures, systems, or components were inoperable at the start of the event that contributed to this event. No failures that rendered a train of a safety system inoperable were involved. No failures of components with multiple functions were involved.

6.      CORRECTIVE ACTIONS TO PREVENT RECURRENCE:

An investigation of this event is being conducted in accordance with the APS Corrective Action Program to evaluate the cause of the event. Actions to prevent recurrence developed as a result of the investigation will be implemented. The three MSSVs and one PSV that had as-found lift pressures outside the allowable TS tolerance, will be replaced with refurbished and recertified valves during refueling outage U1R7.

7.      PREVIOUS SIMILAR EVENTS:

Previous similar events were reported in LERs 529/97-001 (a voluntary LER) and 530/97-003-01 that described conditions where MSSVs had as-found lift pressures outside the allowable TS tolerance within the past three years. Previous corrective actions included resetting the lift setpoint on the out-of-tolerance MSSVs to +/- 1.0 percent of the TS set pressures, refurbishing the valves, and amending TS to allow for a higher as-found tolerance. The corrective actions taken to date have not been completely effective in preventing the recurrence of out-of-tolerance MSSV conditions found during pre-outage testing. Palo Verde continues to participate in industry-wide efforts to improve the performance of safety valves used in this application.

