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 FACIL:STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 AUTH.NAME AUTHOR AFFILIATION
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 LEVINE,J.M. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-007-00:on 891003,main steam safety valve setpoints
 discovered out-of-tolerance.

W/8 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Standardized plant.

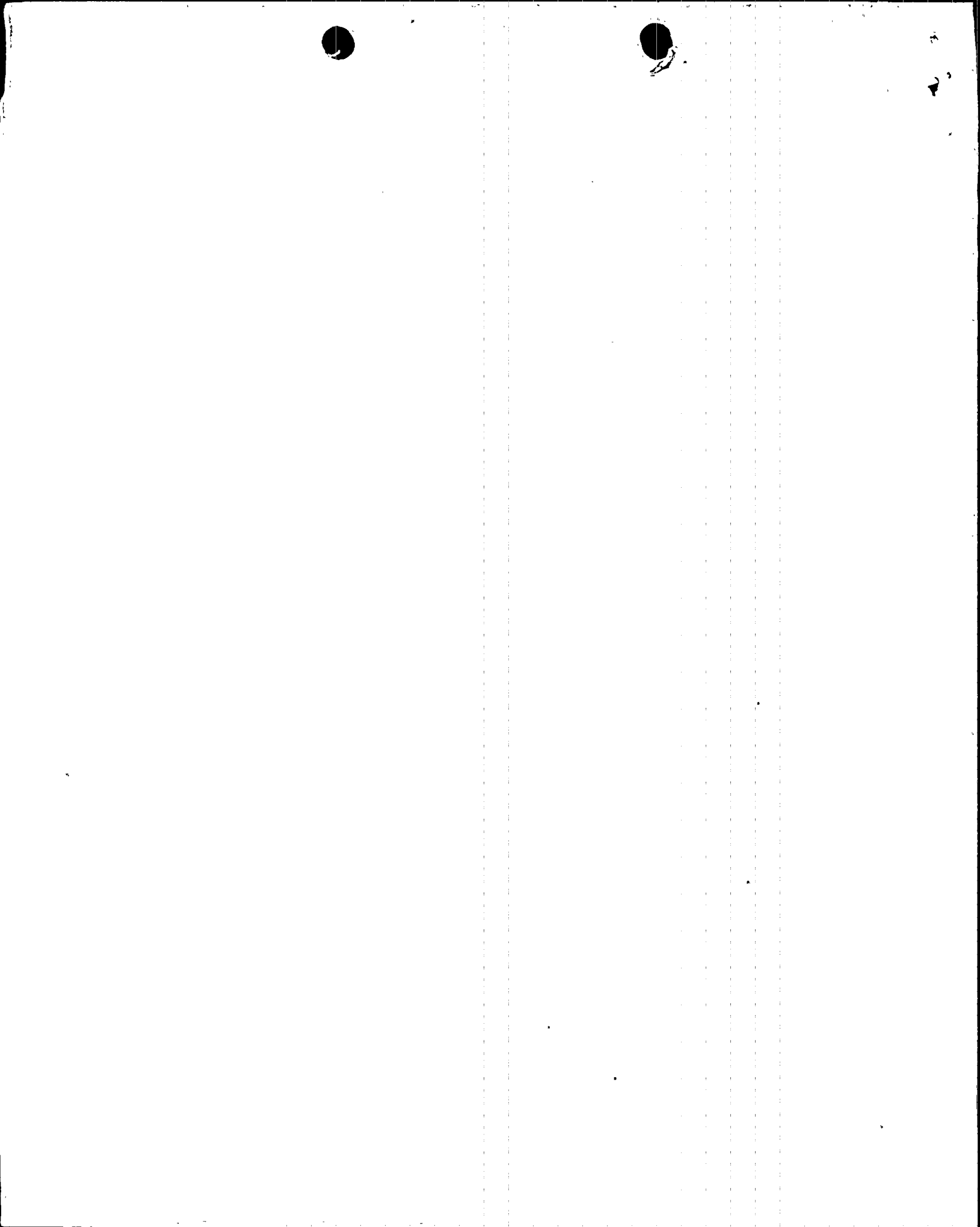
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| | NRR/DOEA/EAB 11 | 1 1 | NRR/DREP/RPB 10 | 2 2 |
| | NUDOCS-ABSTRACT | 1 1 | REG FILE 02 | 1 1 |
| | RES/DSIR/EIB | 1 1 | RGN5 FILE 01 | 1 1 |
| EXTERNAL: | EG&G WILLIAMS,S | 4 4 | L ST LOBBY WARD | 1 1 |
| | LPDR | 1 1 | NRC PDR | 1 1 |
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Arizona Public Service Company

PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

102-00546-JML/TDS/RKR
November 1, 1989

U. S. Nuclear Regulatory Commission
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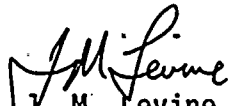
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Licensee Event Report 89-007-00
File: 89-020-404

Attached please find Licensee Event Report (LER) No. 89-007-00 prepared and submitted pursuant to 10CFR 50.73. In accordance with 10CFR 50.73(d), we are herewith forwarding a copy of the LER to the Regional Administrator of the Region V office.

If you have any questions, please contact T. D. Shriver, Compliance Manager at (602) 393-2521.

Very truly yours,


J. M. Levine
Vice President
Nuclear Production

JGH/TDS/RKR/kj

Attachment

cc: W. F. Conway (all w/a)
E. E. Van Brunt, Jr.
J. B. Martin
T. J. Polich
M. J. Davis
A. C. Gehr
INPO Records Center

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PDR. ADOCK 05000529
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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| FACILITY NAME (1) | | | | | | | | | | DOCKET NUMBER (2) | | | | | PAGE (3) | |
| Palo Verde Unit 2 | | | | | | | | | | 0 5 0 0 0 5 2 9 | | | | | 1 OF 0 6 | |

TITLE (4):
Main Steam Safety Valve Setpoints Discovered Out-of-Tolerance

| 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) | | | | | | | | | |
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| OPERATING MODE (8) | | 3 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | | | |
| POWER LEVEL (10) | 000 | 20.402(b) | | 20.405(c) | | 50.73(a)(2)(iv) | | 73.71(b) |
| | | 20.405(a)(1)(i) | | 50.38(c)(1) | | 50.73(a)(2)(v) | | 73.71(c) |
| | | 20.405(a)(1)(ii) | | 50.38(c)(2) | | 50.73(a)(2)(vii) | | OTHER (Specify in Abstract below and in Text, NRC Form 365A) |
| | | 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)(ix) | | |

| LICENSEE CONTACT FOR THIS LER (12) | | | |
|--|--|------------------|-------------------------------|
| NAME | | TELEPHONE NUMBER | |
| | | AREA CODE | |
| Timothy D. Shriver, Compliance Manager | | 6 0 2 | 3 9 3 - 2 5 2 1 |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | |
|--|--------|-----------|--------------|---------------------|--|-------|--------|-----------|--------------|---------------------|--|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS | |
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|---|--|-------------------------------------|-------|-----|------|
| 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)

On October 3, 1989 while Unit 2 was in Mode 1 (POWER OPERATION) at 100 percent power, the evaluation of augmented ASME surveillance testing was conducted which determined that prior to adjustment thirteen (13) of the twenty (20) Main Steam Safety Valves (MSSV)(SB)(RV) relief settings had been out of the tolerance limits specified in Technical Specification (TS) 3.7.1.1 and the testing requirements established by APS. This testing and adjustment was performed during the period of September 19 through 22, 1989 while Unit 2 was in Mode 3 (HOT STANDBY), to verify the relief settings of the Main Steam Safety Valves (MSSV)(SB)(RV). This testing and adjustment was being conducted as a result of the relief settings that were out of tolerance in Units 1 and 2 as reported in Licensee Event Reports (LER) 528/88-014-01, 528/89-010-00, and 529/89-002-00.

The variances identified in the as-found data of the setpoints have been discussed with the valve vendor and are considered to be within the design tolerance of the valves.

As corrective action the valves have been reset and appropriate testing conducted. As corrective action to prevent recurrence, APS is pursuing an amendment to the TS to increase the tolerance on the MSSV setpoint.

Previous similar events were reported in LER's 528/88-014-01, 528/89-010-00, and 529/89-002-00.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) | | |
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| Palo Verde Unit 2 | 0 5 0 0 0 5 2 9 | 8 9 | — 0 0 7 | — 0 0 | 0 2 | OF | 0 6 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

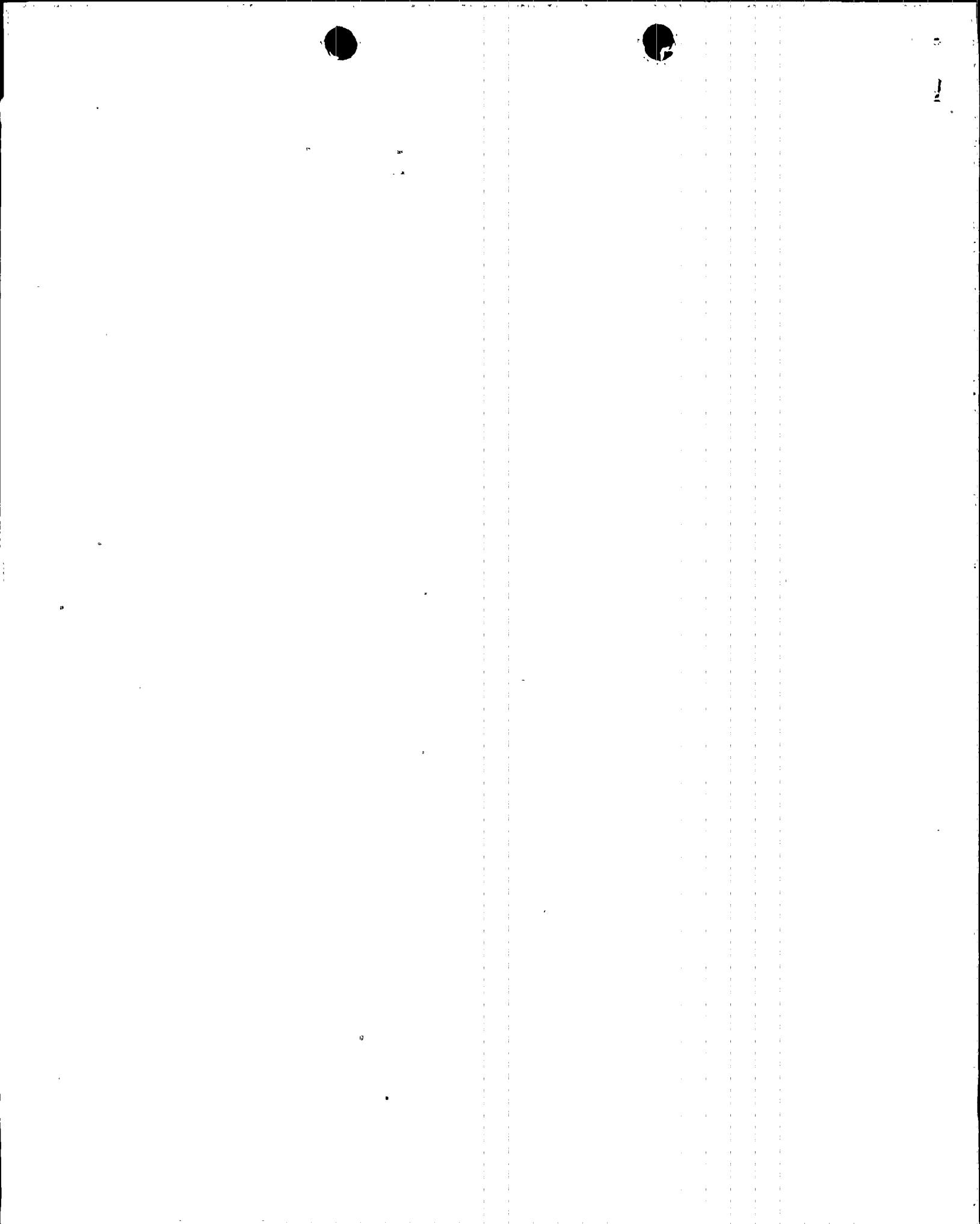
On October 3, 1989 Palo Verde Unit 2 was at 100 percent power in Mode 1 (POWER OPERATION).

B. Event description (Including dates and approximate times of major occurrences and initial plant conditions)

Event Classification: Condition Prohibited by the Plant's Technical Specifications. Condition Which Caused Two Independent Trains to Become Inoperable In a Single System.

Palo Verde Unit 2 is a two-loop pressurized water reactor (PWR). Each loop has a vertical U-tube steam generator (SG)(AB) with two outlet main steam lines (SB). Overpressure protection for the shell side of the steam generators and the main steam line up to the inlet of the turbine (TRB) stop valve (SHV)(TA) is provided by twenty (20) flanged, spring-loaded, direct acting, ASME Code safety valves (RV)(SB) which have open bonnets and discharge to the atmosphere. These safety valves are mounted on each of the main steam lines upstream of the Main Steam Isolation Valves (MSIV)(ISV)(SB) but outside the Containment (CTMT)(NH). The opening pressure of the valves is set in accordance with ASME Code and Technical Specification (TS) requirements. The valves are set to lift sequentially at 1250, 1290, and 1315 pounds per square inch-gauge (psig).

The Main Steam Safety Valves (MSSV)(SB) are required by Technical Specification 4.7.1.1 to be tested once per five (5) years. The testing is conducted using an approved surveillance test procedure. The surveillance test procedure verifies by on-line testing that the set pressure and operation of the main steam safety valves are acceptable for continued service. The testing described herein was conducted using the Furmanite Trevitest Method. The general principle involves using hydraulic force to assist in overcoming the closing force of the valve spring. The applied force is measured, recorded, and analyzed to determine lift point settings. In order to have an acceptable test by current procedural requirements, it is necessary to have three (3) consecutive lifts within plus or minus one (1) percent of the given set pressure of the valve. The testing sequence involves declaring a safety valve inoperable, installing the testing device, and then testing until three consecutive, acceptable lifts are performed. If three consecutive, acceptable lifts cannot be made, the appropriate adjustments are made until the acceptance criteria can



LICENSEE EVENT REPORT (LER)
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| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
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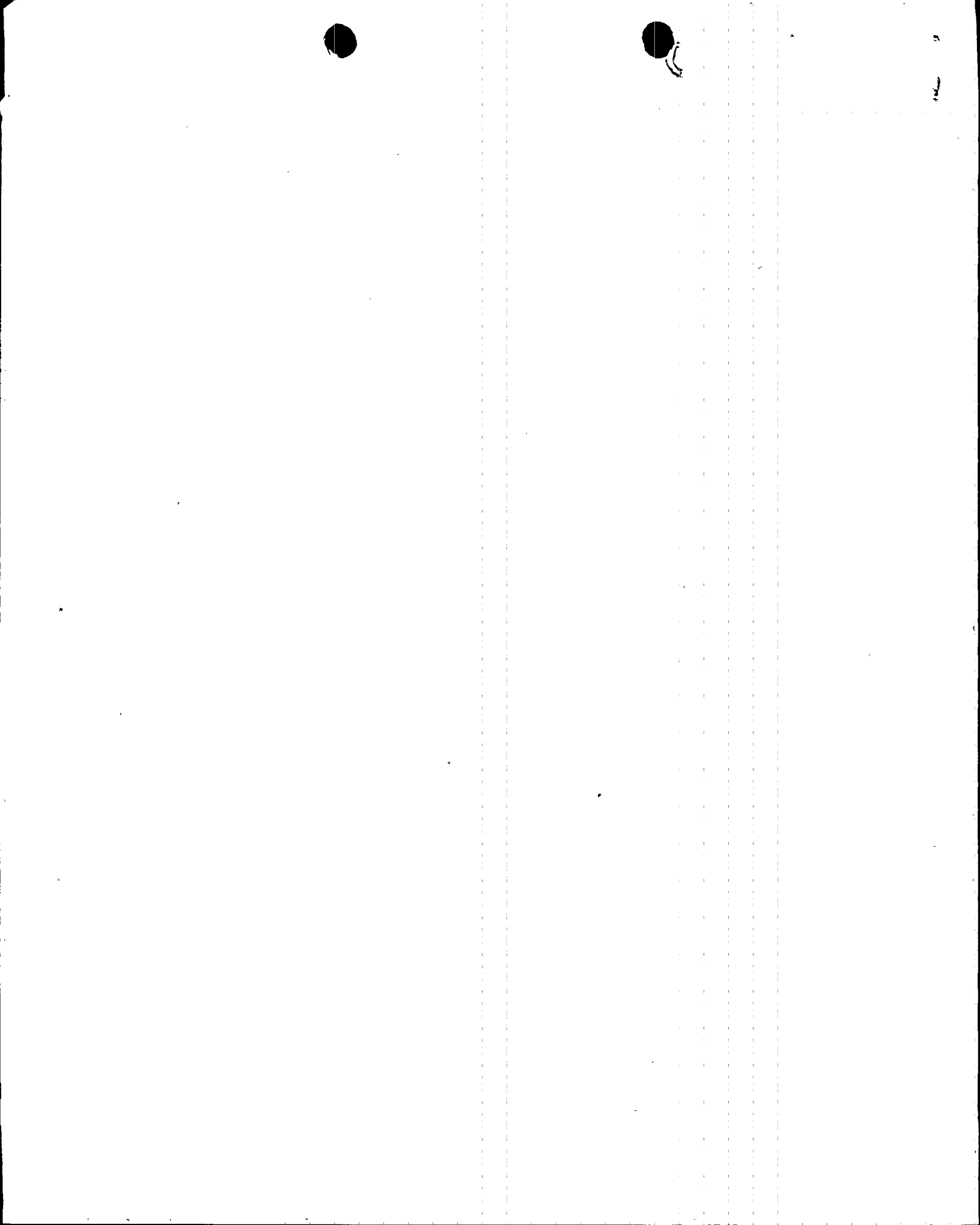
TEXT (If more space is required, use additional NRC Form 366A's) (17)

be satisfied. After three successful lifts are performed, the valve is returned to service. The process of testing, adjusting (where necessary) and testing until satisfactory results are achieved normally encompasses less than four (4) hours per valve.

On October 3, 1989, engineering personnel (utility, non-licensed) completed a review of data obtained from MSSV testing conducted in Unit 2 on September 19 through 22, 1989. As previously discussed, this testing was being conducted as a result of the relief settings that were out of tolerance in Units 1 and 2 as reported in Licensee Event Reports (LER) 528/88-014-01, 528/89-010-00, and 529/89-002-00.

Based upon a review of the actual test results, prior to adjustment, thirteen (13) of twenty (20) safety valves' setpoints were out of tolerance. One (1) MSSV's setpoint was below specification and twelve (12) MSSV's setpoints were above specification. The maximum deviation from setpoint of the as-found settings was 2.49 percent. The following information is provided concerning the Unit 2 safety valves:

- Seven (7) safety valves' relief setpoints were acceptable with no problems noted.
 - Six (6) safety valves' relief setpoints were out of tolerance upon initial testing and required adjustment.
 - Three (3) safety valves' relief setpoints were discovered out of tolerance on the initial lift; however, no adjustments were necessary since subsequent lifts were within limits.
 - Four (4) safety valves' relief setpoints were acceptable on the initial lift; however, subsequent lifts were out of tolerance. Adjustments were necessary to obtain three (3) consecutive acceptable lifts for one (1) of these safety valves. No adjustments were necessary for the other three (3) of these safety valves since subsequent lifts were within limits.
- C. Status of structures, systems, or components that were inoperable at the start of the event which contributed to the event:
- Other than the main steam safety valves, no structures, systems, or components were inoperable which contributed to the event.
- D. Cause of each component or system failure, if known:
- Not applicable - no failures were involved.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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Palo Verde Unit 2

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

- E. Failure mode, mechanism, and effect of each failed component, if known:

Not applicable - no failures were involved.

- F. For failures of components with multiple functions, list of systems or secondary functions that were also involved:

Not applicable - no failures were involved.

- G. For failures that rendered a train of a safety system inoperable, estimated elapsed time from the discovery of the failure until the train was returned to service:

Not applicable - no failures were involved.

- H. Method of discovery of each component or system failure or procedural error:

Not applicable - no failures were involved.

- I. Cause of Event:

The cause of the event is setpoint drift. This is a repetitive event as reported in LER's 528/88-014-01, 528/89-010-00, and 529/89-002-00. Based upon the results of the review, it has been concluded that this type of valve is subject to setpoint drift. However, discussion with the valve vendor indicates that the performance of the MSSV's is within the design tolerance of the valves.

- J. Safety System Responses:

No safety system responses occurred and none were necessary.

- K. Failed Component Information:

Although there were no failed components associated with this event the following data is provided for information:

Manufacturer: Dresser Valve and Controls Division
Dresser Industries, Inc.

Model No: 6" 3707R Consolidated Main Steam Safety Valves



LICENSEE EVENT REPORT (LER)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

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

There were no safety consequences or implications resulting from this event. As described above, the safety valves are intended to provide overpressure protection for the secondary side of the steam generators and main steam lines up to the MSIV's. The safety valves' protective function is to ensure that steam generator pressure remains below 110 percent of design pressure. None of the safety valves' setpoints were above 110 percent of steam generator design pressure and the sequential lifting scheme will ensure that steam generator integrity is not compromised. Additionally, if an event occurred in which the MSIV's were not closed, overpressure protection could have automatically been provided by the Steam Bypass Control System (SB). For other events which required overpressure protection of the secondary side, there are no other components or systems which could have performed the same function as the main steam safety valves. However, manual overpressure protection could be provided by remote operation of the Atmospheric Dump Valves (SB) from the control room.

III. CORRECTIVE ACTIONS:

A. Immediate:

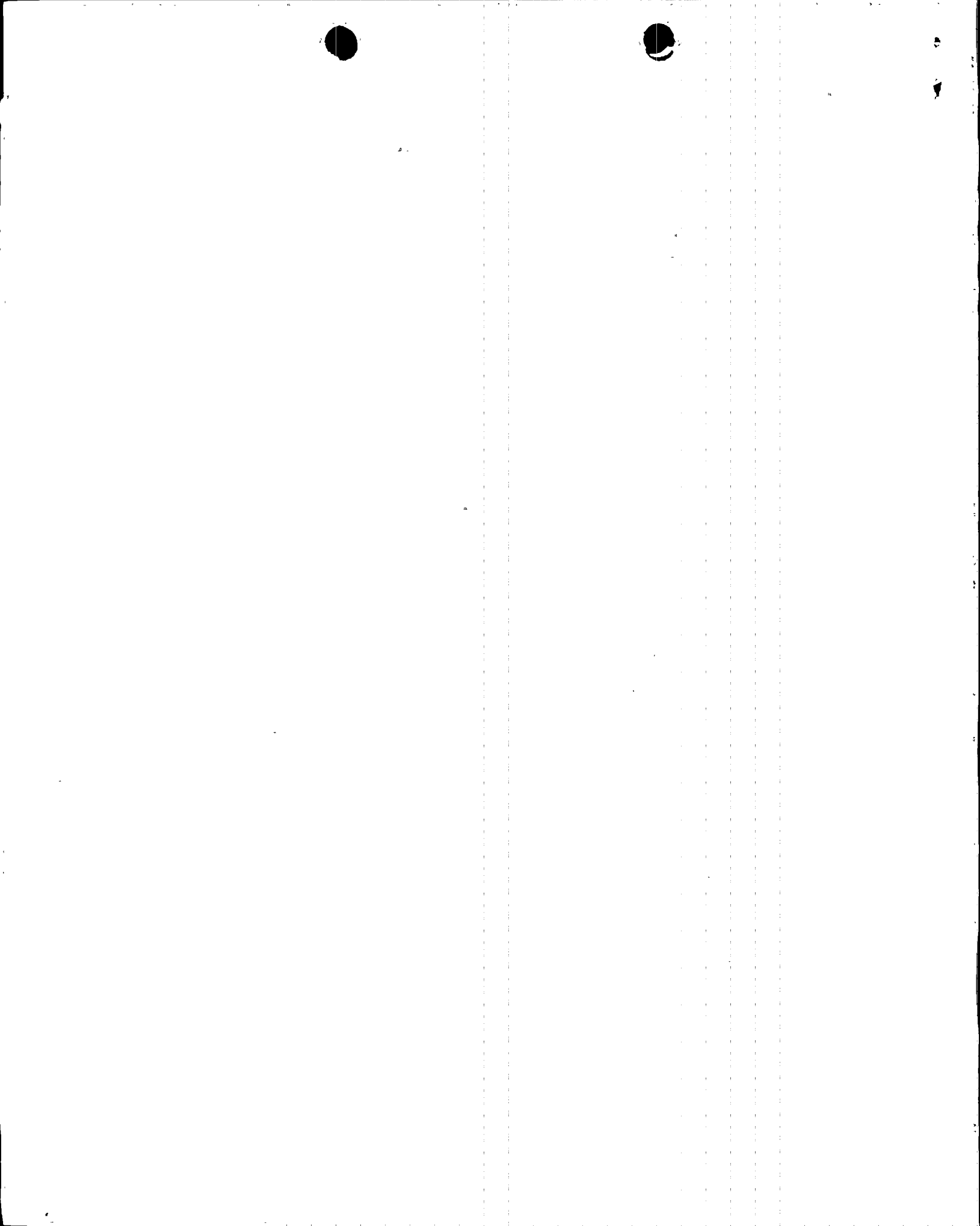
Six (6) MSSV's were out of tolerance upon initial testing and required adjustment. These valves were successfully adjusted and tested. Three (3) MSSV's were out of tolerance upon initial testing and subsequent lifts were within limits. No adjustment was necessary for these valves. Four (4) MSSV's were acceptable upon initial lifts; however, subsequent lifts were out of tolerance. One (1) of these valves required adjustment and the other three (3) did not require adjustment since subsequent lifts were within tolerance. The remaining seven (7) MSSV's were satisfactory on the initial attempts. All twenty (20) MSSV's were successfully tested a minimum of three (3) times.

B. Action to Prevent Recurrence:

Since field setpoint adjustment was successfully accomplished in accordance with the Technical Manual, no further corrective action is necessary at this time.

Due to the tendency toward setpoint drift exhibited by these valves, testing will continue on a refueling schedule until satisfactory performance is observed.

As discussed in LER's 528/88-014-01, 528/89-010-00, and 529/89-002-00, an ongoing investigation is in progress to determine if any actions can be taken to reduce the setpoint drift. If any



LICENSEE EVENT REPORT (LER)
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Palo Verde Unit 2

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

significant actions are identified a supplement to this report will be issued.

APS is pursuing an amendment to the TS to increase the tolerance on the MSSV setpoint.

IV. PREVIOUS SIMILAR EVENTS:

LER 528/88-014-01 described an event wherein seventeen of twenty MSSV's in Unit 2 and fourteen of twenty MSSV's in Unit 1 were out of the tolerance limits specified in Technical Specification 3.7.1.1. Corrective action included reduction of the performance interval on a one time basis. Since this corrective action did not address the cause of the event discussed in this report, it could not have prevented this event.

LER 528/89-010-00 described an event wherein eleven (11) of twenty (20) MSSV's in Unit 1 were out of the tolerance limits specified in Technical Specification 3.7.1.1. Previous corrective action could not have prevented this event due to the tendency toward setpoint drift exhibited by the MSSV's.

LER 529/89-002-00 described an event wherein twelve (12) of twenty (20) MSSV's in Unit 2 were out of the tolerance limits specified in Technical Specification 3.7.1.1. Previous corrective action could not have prevented this event due to the tendency toward setpoint drift exhibited by the MSSV's.

V. ADDITIONAL INFORMATION

During the event described in Unit 3 LER 530/89-001-01, control room personnel noted that one Main Steam Safety Valve (MSSV) lifted approximately 30 pounds per square inch below its setpoint. This MSSV along with eight other Unit 3 MSSV's were sent off-site for testing and setpoint adjustment. During the testing it was determined that the blowdown ring settings on all nine MSSV's were not set per the vendor manual. As a conservative measure, Unit 2 was shutdown (Mode 3, HOT STANDBY) to determine if the MSSV blowdown ring settings were correct. Three of the Unit 2 MSSV's required minor adjustment of the blowdown rings. PVNGS is evaluating the MSSV blowdown ring settings in accordance with 10CFR21 and will report the results if determined to be reportable. As described in this report, the relief settings for the Unit 2 MSSV's were also checked.

