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 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Public 05000528  
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-008-00: on 920508, discovered that surveillance  
 requirement for nonessential auxiliary feedwater pump not  
 performed. Caused by personnel error. Instruction change  
 request submitted. W/920608 ltr.

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**Arizona Public Service Company**

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

192-00786-JML/TRB/KR

June 8, 1992

JAMES M. LEVINE  
VICE PRESIDENT  
NUCLEAR PRODUCTION

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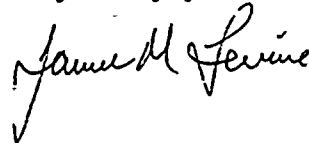
Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 1  
Docket No. STN 50-528 (License No. NPF-41)  
Licensee Event Report 92-008-00  
File: 92-020-404

Attached please find Licensee Event Report (LER) No. 92-008-00 prepared and submitted pursuant to 10CFR50.73. This LER reports that Technical Specification Surveillance Requirement 4.7.1.2.a.2 was not met for several valves in the flowpath from the nonessential auxiliary feedwater pump to the steam generators. In accordance with 10CFR50.73(d), a copy of this LER is being forwarded to the Regional Administrator, NRC Region V.

If you have any questions, please contact T. R. Bradish, Compliance Manager, at (602) 393-5421.

Very truly yours,



JML/TRB/KR

Attachment

cc: W. F. Conway (all with attachment)  
J. B. Martin  
D. H. Coe  
INPO Records Center

9206150059 920608  
PDR ADDCK 05000528  
S PDR

*JE22*



# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Palo Verde Unit 1</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 5 2 8</b>	PAGE (3) <b>1 OF 0 8</b>
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TITLE (4) <b>Surveillance Requirement For Nonessential Auxiliary Feedwater Pump Not Performed</b>
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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)
									Palo Verde Unit 2		0 5 0 0 0 5 2 9
0 5	0 8	9 2	9 2	0 0 8	0 0	0 6	0 8	9 2	Palo Verde Unit 3		0 5 0 0 0 5 3 0

OPERATING MODE (9) <b>5</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										
POWER LEVEL (10) <b>0 0 0</b>	20.402(b)			20.405(c)			50.73(a)(2)(v)			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)(vi)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
	20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(vii)(A)				
	20.405(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(vii)(B)				
	20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)				

LICENSEE CONTACT FOR THIS LER (12)	
NAME <b>Thomas R. Bradish, Compliance Manager</b>	TELEPHONE NUMBER AREA CODE: <b>6 0 2</b> NUMBER: <b>3 9 3 1 - 5 4 2 1</b>

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
<input type="checkbox"/> 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 May 8, 1992, at approximately 1430 MST, Palo Verde Unit 1 was in Mode 5 (COLD SHUTDOWN), Palo Verde Unit 2 was in Mode 1 (POWER OPERATION), and Palo Verde Unit 3 was in Mode 3 (HOT STANDBY) when Operations Standards personnel discovered that the position of several valves in the flowpath from the nonessential auxiliary feedwater pump (AFWP) to the steam generators in Units 1, 2, and 3 was not being surveillance tested in accordance with Technical Specification (TS) Surveillance Requirement (SR) 4.7.1.2.a.2. Therefore, the operability requirements of TS Limiting Condition for Operation (LCO) 3.7.1.2 and the associated ACTIONS for one or more AFWPs inoperable were not met. The requirements of TS LCO 3.0.4 and TS SR 4.0.4 also were not met.

The cause of the event was that plant personnel developing the surveillance procedure for the auxiliary feedwater monthly alignment did not recognize that the position of these valves located in the flowpath from the nonessential AFWP to the steam generators was required to be checked as part of the TS Surveillance Requirement.

As corrective action, Units 1, 2, and 3 Operations personnel verified that each valve (manual, power-operated, or automatic) in the flowpath from the nonessential AFWP to the steam generators that is not locked, sealed, or otherwise secured in position, was in its correct position.

A previous similar event was reported in Unit 1 LER 528/91-003.



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		92	008	00	02	OF	08

TEXT

I. DESCRIPTION OF WHAT OCCURRED:

A. Initial Conditions:

At 1430 MST on May 8, 1992, Palo Verde Unit 1 was in Mode 5 (COLD SHUTDOWN) during a scheduled refueling outage with the reactor coolant system (RCS) (AB) temperature at approximately 125 degrees Fahrenheit and RCS pressure at approximately 355 pounds per square inch absolute (psia), Palo Verde Unit 2 was in Mode 1 (POWER OPERATION) at approximately 100 percent power, and Palo Verde Unit 3 was in Mode 3 (HOT STANDBY) at normal operating temperature and pressure following a controlled plant shutdown which occurred on May 7, 1992, to continue testing and verification of the plant annunciator system (Special Report 3-SR-92-002).

B. Reportable Event Description (Including Dates and Approximate Times of Major Occurrences):

Event Classification: Condition prohibited by the plant's Technical Specifications.

At approximately 1430 MST on May 8, 1992, Operations Standards personnel (utility, nonlicensed) discovered that the position of several valves in the flowpath from the nonessential auxiliary feedwater pump (AFWP) (P)(BA) to the steam generators (AB) in Units 1, 2, and 3 was not being surveillance tested in accordance with Technical Specification (TS) Surveillance Requirement (SR) 4.7.1.2.a.2. The TS SR 4.7.1.2.a.2 requires that "Each auxiliary feedwater pump shall be demonstrated OPERABLE at least once per 31 days on a STAGGERED TEST BASIS by verifying that each valve (manual, power-operated, or automatic) in the flowpath that is not locked, sealed, or otherwise secured in position, is in its correct position." The valves in the flowpath from the nonessential AFWP to the steam generators were not being periodically checked since they were not included in existing surveillance procedures. Therefore, the operability requirements of TS Limiting Condition for Operation (LCO) 3.7.1.2 and the associated ACTIONS for one or more AFWPs inoperable were not met. TS LCO 3.0.4 restricts MODE changes if the ACTION requirements of a TS LCO are in effect. TS SR 4.0.4 restricts MODE changes if the SRs for a TS LCO have not been performed within the surveillance interval. Since the ACTIONS and SRs associated with TS LCO 3.7.1.2 were not met, the requirements of TS LCO 3.0.4 and TS SR 4.0.4 also were not met.

The auxiliary feedwater system in each unit consists of two motor-driven pumps and one steam turbine-driven pump, associated valves,

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
	05000528	92	008	00	03	OF	08

TEXT

piping, controls, and instrumentation. Each unit has a Seismic Category I essential motor-driven AFWP, a Seismic Category I essential steam turbine-driven AFWP, and a Seismic Category II nonessential motor-driven AFWP. Both motor-driven AFWPs are powered from Class 1E Emergency Diesel Generator (EDG) (DG)(EK) backed power supplies (EB). The primary water source for the system is the 550,000 gallon Condensate Storage Tank (CST), with a backup supply from the reactor makeup water tank furnished to the essential pumps. Each AFWP is capable of supplying either steam generator with auxiliary feedwater. The major functions of the AFWPs are as follows:

1. the nonessential AFWP provides the initial fill and makeup water to the steam generators during startup;
2. the nonessential AFWP supplies makeup water to the steam generators during hot standby and normal shutdown and subsequent cooldown until the shutdown cooling system can be placed in service;
3. the nonessential AFWP can be used during emergency operation as a backup to the essential AFWPs;
4. the essential AFWPs maintain water inventory in the steam generators during emergency operation when the main feedwater system (SJ) is inoperable; and
5. the essential AFWPs maintain level in the steam generators under accident conditions to effect a reactor coolant system cooldown at maximum rate of 75 degrees Fahrenheit to a temperature of 350 degrees Fahrenheit.

The nonessential AFWP flowpath and associated valves are as described below (see attached Figure):

The nonessential AFWP (AFN-P01) takes suction from the Condensate Storage Tank (CST) through two redundant, motor-operated valves (CTA-HV-1 and CTA-HV-4). Upstream of AFN-P01 is the suction isolation valve (AFN-V001) and downstream of AFN-P01 are the discharge isolation valve (AFN-V013) and the recirculation isolation valve to the CST (AFN-V133). The flowpath continues to both steam generators via the main feedwater supply lines (i.e., through the downcomer feedwater regulating valves and into the upper nozzles of the steam generators). The nonessential auxiliary feedwater supply lines join main feedwater upstream of the main feedwater downcomer control valves. The valves in this flowpath are the steam generator feedwater isolation block



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		92	008	00	04	OF	08

**TEXT**

valves (SGN-HV-1142 and SGN-HV-1144), steam generator downcomer feedwater control valves (SGN-FV-1113 and SGN-FV-1123), and the steam generator downcomer isolation valves (SGA-UV-172, SGA-UV-175, SGB-UV-130 and SGB-UV-135). An additional bypass flowpath around SGN-FV-1113, SGN-FV-1123, SGN-FV-1142, and SGN-FV-1144 exists and contains the steam generator feedwater isolation bypass valves (SGN-HV-1143 and SGN-HV-1145).

Of the fifteen manual, power-operated, or automatic valves located in the flowpath of the nonessential AFWP, five (CTA-HV-1, CTA-HV-4, AFN-V001, AFN-V013, and AFN-V133) were surveillance tested in accordance with existing surveillance procedures. Three of the five valves (AFN-V001, AFN-V013, and AFN-V133) are required to be locked in their desired position. The ten valves that were not surveillance tested are in the flowpath from the discharge isolation valve (AFN-V013) of the nonessential AFWP to the steam generators. Therefore, the operability requirements of TS LCO 3.7.1.2 and the associated ACTIONS have not been met since issuance of the operating licenses for Units 1, 2, and 3 (Unit 1 on June 1, 1985, Unit 2 on April 24, 1986, and Unit 3 on November 25, 1987). Disabling selected valves in the nonessential AFWP flowpath from the CST to the steam generators could cause an entry into an applicable TS LCO 3.7.1.2 ACTION statement since a flowpath from the CST to the steam generator would not be available using the nonessential AFWP. The requirements of TS LCO 3.0.4 and TS SR 4.0.4 also were not met.

Units 2 and 3 were immediately notified and the applicable valves were verified to be properly aligned by approximately 1930 MST on May 8, 1992. Unit 1 valves were verified to be properly aligned on May 13, 1992, prior to entry into Mode 4 (HOT SHUTDOWN).

- C. Status of structures, systems, or components that were inoperable at the start of the event that contributed to the event:

No structures, systems, or components were inoperable at the start of the event which contributed to this event except as described in Section I.B.

- D. Cause of each component or system failure, if known:

Not applicable - no component or system failures were involved.



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
	0   5   0   0   0   5   2   8	9   2	0   0   8	0   0	0   5	OF	0   8

## TEXT

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

Not applicable - no component failures were involved.

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

Not applicable - no failures of components with multiple functions were involved.

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

Not applicable - no failures that rendered a train of a safety system inoperable were involved.

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

There have been no component or system failures identified. During a review of the surveillance requirements associated with power operated auxiliary feedwater system valves, Operations Standards personnel discovered that the surveillance testing procedure for the TS SR 4.7.1.2.a.2 did not include several valves in the flowpath from the nonessential AFWP to the steam generators.

- I. Cause of Event:

An investigation of this event was conducted in accordance with the APS Incident Investigation Program. The investigation team determined that plant personnel developing the surveillance procedure for the auxiliary feedwater monthly alignment did not recognize that the position of ten valves in the flowpath from the discharge isolation valve of the nonessential AFWP to the steam generators was required to be checked as part of TS SR 4.7.1.2.a.2 (SALP Cause Code A: Personnel Error). No unusual characteristics of the work location (e.g., noise, heat, poor lighting) directly contributed to this event.

- J. Safety System Response:

Not applicable - there were no safety system responses and none were necessary.



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE		
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		92	008	00	06	OF	08

TEXT

**K. Failed Component Information:**

Not applicable - no component failures were involved.

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

The operability of the auxiliary feedwater system ensures that the reactor coolant system can be cooled down to 350 degrees Fahrenheit from normal operating conditions in the event of a total loss of offsite power (i.e., maintain level in the steam generators under accident conditions to effect a reactor coolant system cooldown at a maximum rate of 75 degrees Fahrenheit to a temperature of 350 degrees Fahrenheit). The essential and nonessential motor-driven AFWs and the essential steam turbine-driven AFW deliver feedwater flow to the steam generators. Their minimum capacity (i.e., 750 gallons per minute at a pressure of 1270 psia) is sufficient to ensure that adequate feedwater flow is available to remove decay heat and reduce the RCS temperature to less than 350 degrees Fahrenheit. At that time, the shutdown cooling system (BP) may be placed into operation. The nonessential pump is not credited for accident mitigation circumstances as defined in the Updated Final Safety Analysis Report Chapters 6 and 15. In addition, the nonessential AFW is not automatically actuated for any Engineered Safety Feature Actuation System actuation. The nonessential AFW is the preferred AFW for post trip operation in the Emergency Operating Procedures. Since various valves in the flowpath for the nonessential AFW could have been closed, the nonessential AFW may not have been available for steam generator fill. However, the essential AFWs would have been available if required. Therefore, there were no safety consequences or implications as a result of this event. This event did not adversely affect the safe operation of the plant or the health and safety of the public.

**III. CORRECTIVE ACTION:**

**A. Immediate:**

Units 1, 2, and 3 Operations personnel verified that each valve (manual, power-operated, or automatic) in the flowpath from the nonessential AFW to the steam generators that is not locked, sealed, or otherwise secured in position, was in its correct position to satisfy the TS SR 4.7.1.2.a.2.

**B. Action to Prevent Recurrence:**

An instruction change request for the auxiliary feedwater monthly alignment surveillance testing procedure was submitted to verify



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME	DOCKET NUMBER	LER NUMBER			PAGE	
Palo Verde Unit 1		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		92	008	00	07	OF 08

TEXT

the position of the valves in the flowpath from the nonessential AFWP to the steam generators. The corresponding procedure change became effective on May 26, 1992. In the interim, a night order was issued to all three units to notify Operations personnel of the ten additional valves to be included in verifying the flowpath for the nonessential AFWP.

## IV. PREVIOUS SIMILAR EVENTS:

A previous similar event in which the essential spray pond cross connect valves were not being verified to be in their correct position in accordance with TS SRs was reported in Unit 1 LER 528/91-003. At that time, the event was believed to be an isolated occurrence, and the corrective actions did not include a review of other systems to verify valve position to ensure that TS SRs are met.

Both the previous event and the event described in this LER involved examples wherein personnel developing and reviewing the surveillance testing procedures excluded valves which needed to be periodically checked for verbatim compliance with the surveillance requirement. In both cases, required valve position was routinely verified by other means (e.g., system alignment checklists after outages, control room annunciation, required alignment for proper system operation). As a result, the safety significance is limited to not completing a check of valve position per the periodicity prescribed in the TS SR rather than valves not being in a required position. A review will be conducted to verify that the TS surveillance testing procedures for valve alignments include all the valves required to be checked in the applicable TS SRs. If other valves are discovered not to be verified in accordance with the TS SRs, a supplement to this report will be submitted. The review will also attempt to ascertain why previous audits and reviews of the TS surveillance program did not discover these omissions. The review is expected to be completed by August 31, 1992.



# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME  
Palo Verde Unit 1

DOCKET NUMBER

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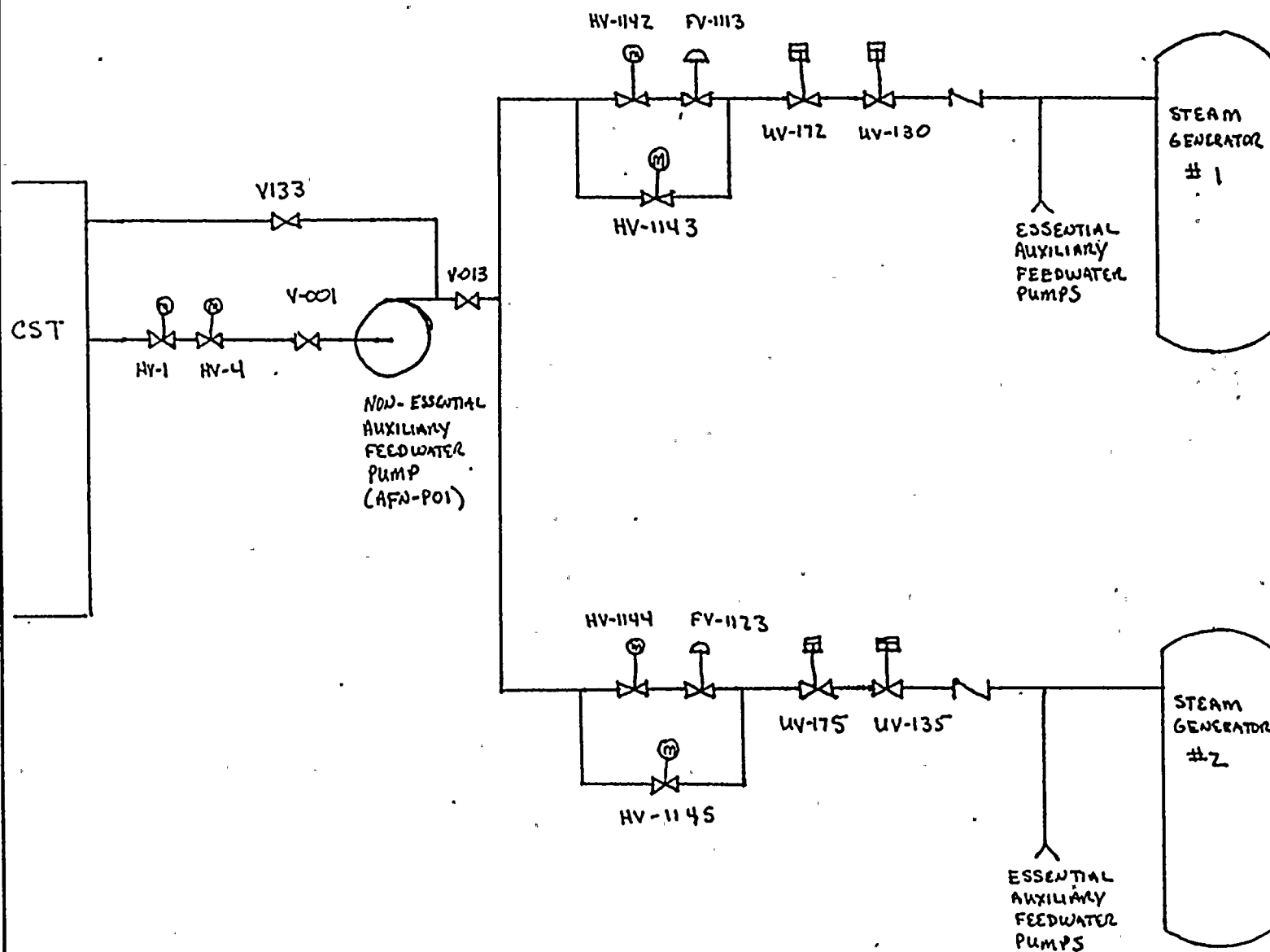
LER NUMBER  
01018

REVISION NUMBER  
010

PAGE

018 OF 018

TEXT



FIGURE