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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9005210195 DOC.DATE: 90/05/15 NOTARIZED: NO DOCKET #
 FACIL:STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529
 AUTH.NAME AUTHOR AFFILIATION
 BRADISH,T.R. Arizona Public Service Co. (formerly Arizona Nuclear Power
 LEVINE,J.M. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-005-00:on 900417,operation w/steam generator U-tube
 not plugged as required by Tech. Spec.

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.

05000529

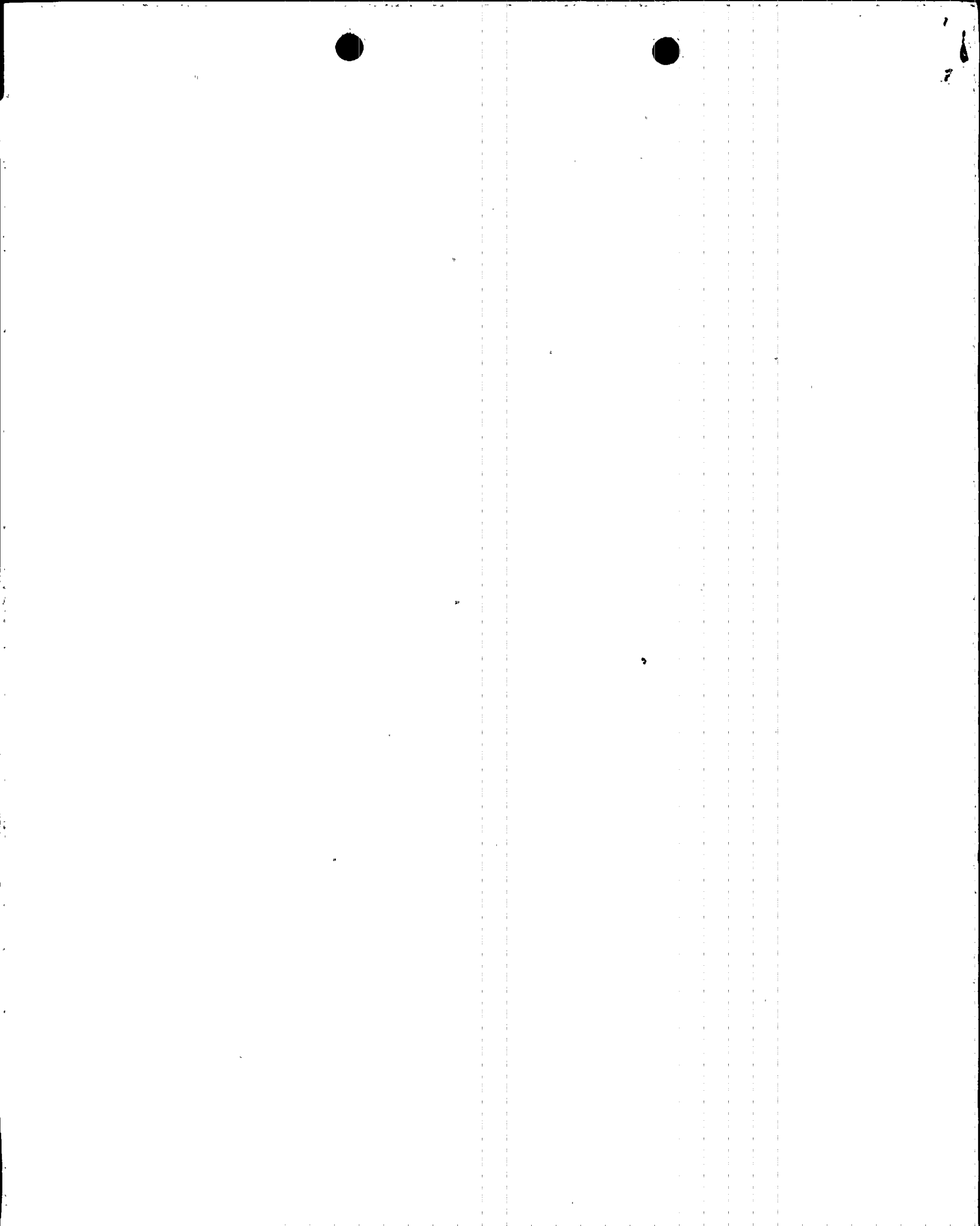
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	PETERSON,S.	1 1	CHAN,T	1 1
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	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	AEOD/ROAB/DSP	2 2	DEDRO	1 1
	NRR/DET/ECMB 9H	1 1	NRR/DET/EMEB9H3	1 1
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	NRR/DST/SELB 8D	1 1	NRR/DST/SICB 7E	1 1
	NRR/DST/SPLB8D1	1 1	NRR/DST/SRXB 8E	1 1
	REG-FILE Q2	1 1	RES/DSIR/EIB	1 1
	RGN5 FILE 01	1 1		
EXTERNAL:	EG&G STUART,V.A	4 4	L ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC MAYS,G	1 1	NSIC MURPHY,G.A	1 1
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A04



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

JAMES M. LEVINE
VICE PRESIDENT
NUCLEAR PRODUCTION

192-00660-JML/TRB/SBJ
May 15, 1990

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

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529 (License No. NPF-51)
Licensee Event Report 90-005-00
File: 90-020-404

Attached please find Licensee Event Report (LER) No. 2-90-005 prepared and submitted pursuant to 10CFR50.73. In accordance with 10CFR50.73(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. R. Bradish, Compliance Manager at (602) 393-2521.

Very truly yours,

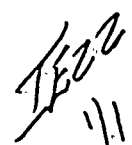


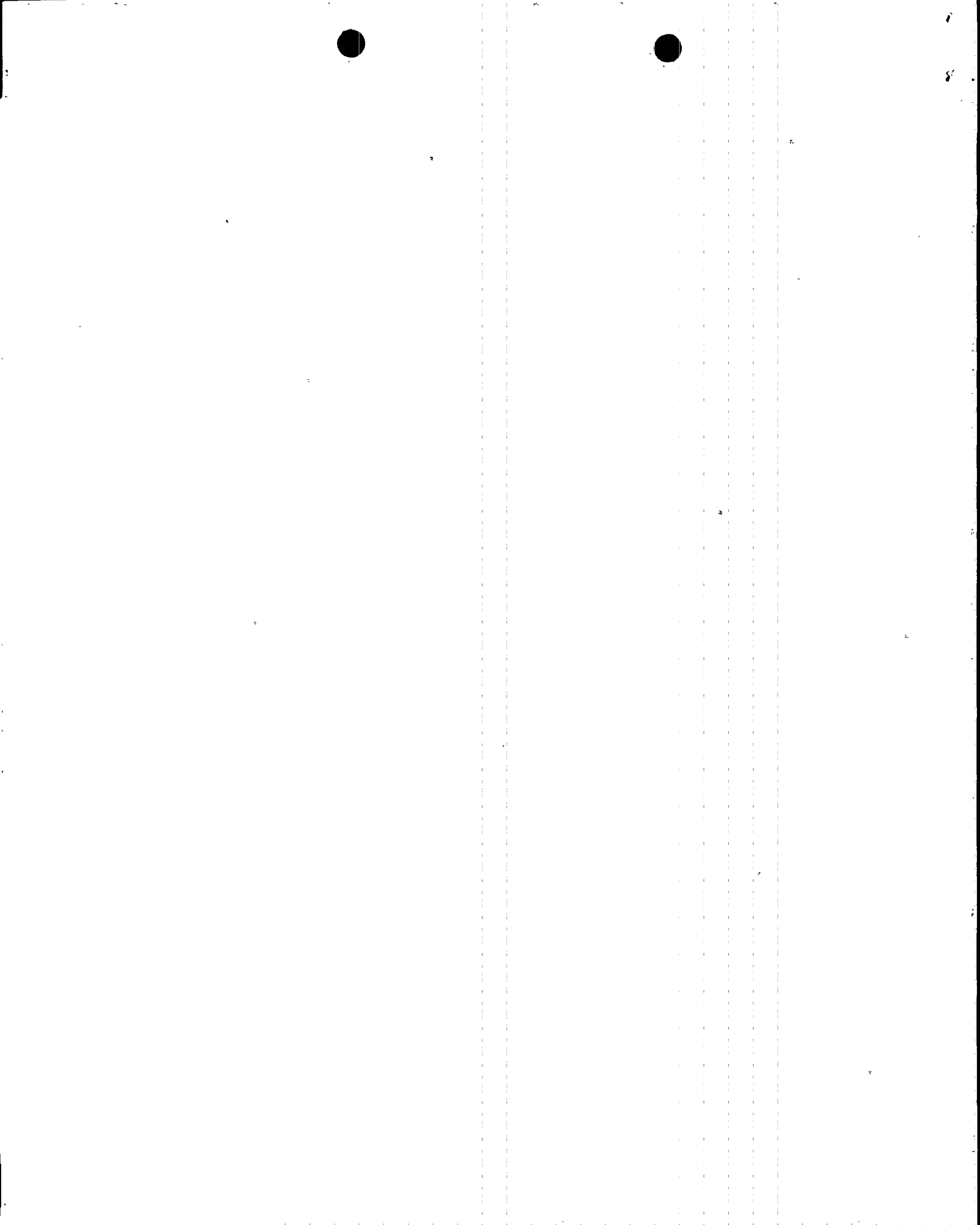
JML/TRB/SBJ/clg

Attachment

cc: W. F. Conway (all with attachment)
J. B. Martin
D. H. Coe
T. L. Chan
A. C. Gehr
J. R. Newman
Inpo Records Center

9005210195 900515
PDR ADUCK 05000529
S PDC





EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)

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) Palo Verde Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 5 2 9										PAGE (3) 1 OF 06									
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TITLE (4)
Operation With Steam Generator U-Tube Not Plugged As Required By Technical Specifications

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)													
0	4	1	7	9	0	9	0	0	5	0	0	5	1	5	9	0	N/A						0 5 0 0 0 0					
									N/A						0 5 0 0 0 0													

OPERATING MODE (9) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																	
POWER LEVEL (10) 0 0 0	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)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	20.405(a)(1)(iii)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(A)										
	20.405(a)(1)(iv)				50.73(a)(2)(iii)				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 Thomas R. Bradish, Compliance Manager												TELEPHONE NUMBER 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 NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	

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				

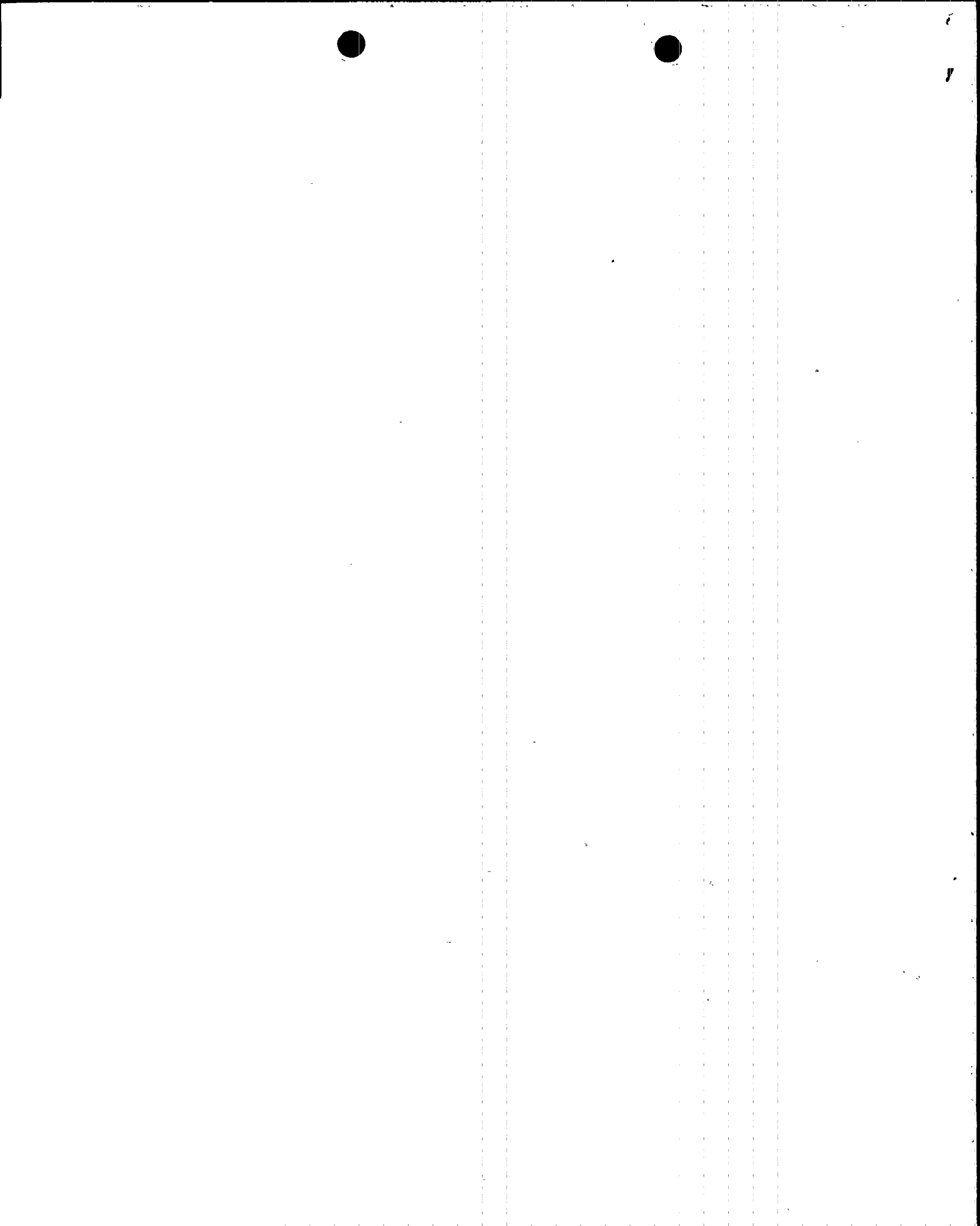
ABSTRACT (Limit to 1400 spaces; i.e., approximately fifteen single-space typewritten lines) (16)

On April 17, 1990, Palo Verde Unit 2 was in a refueling outage with the core off-loaded to the spent fuel pool. The Reactor Coolant System was at atmospheric pressure and approximately 90 degrees Fahrenheit when it was discovered that the wrong U-tube had been plugged on the hot leg side of Steam Generator No. 2. As a result Unit 2 had operated in a condition prohibited by the Technical Specifications from June 11, 1988 until February 24, 1990.

The most probable cause of the event was determined to be a cognitive personnel error during the plugging of the SG in April, 1988. The contract personnel performing the plugging and the quality control personnel performing the plugging verification may not have ensured the correct U-tube was plugged.

As immediate corrective action, the hot leg end of the U-tube was plugged. A Second party verification of U-tube location prior to plugging was initiated prior to the current refueling outage and should prevent recurrence of this event.

No previous similar events have occurred.



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.

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					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 April 17, 1990, Palo Verde Unit 2 was in its second refueling outage with the core (AC) off-loaded to the spent fuel pool (ND). The Reactor Coolant System (RCS) (AB) was at atmospheric pressure and approximately 90 degrees Fahrenheit.

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

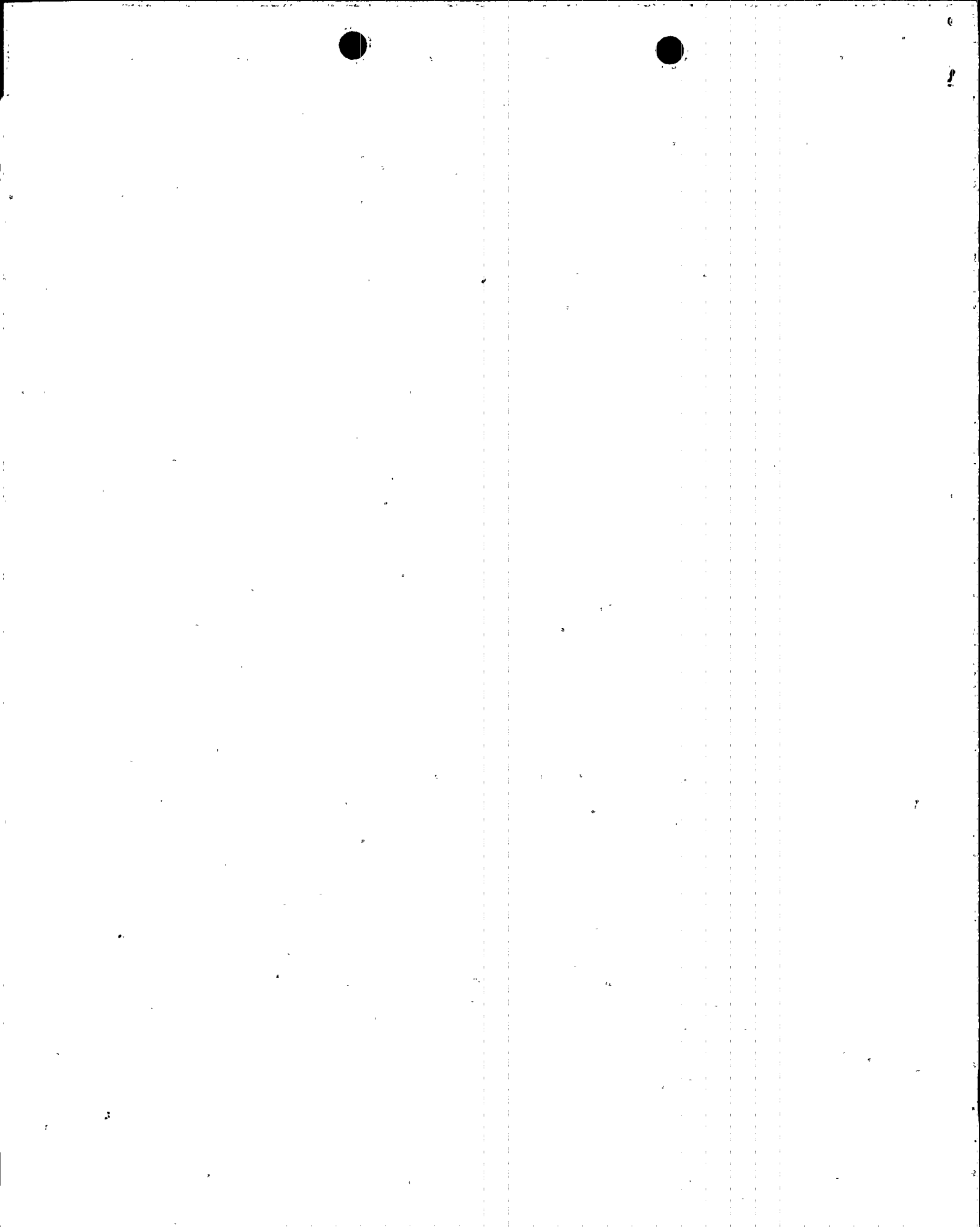
Event Classification: Operation Prohibited by Technical Specifications

On April 17, 1990 during Eddy Current Testing on Palo Verde Unit 2 Steam Generator (SG) (SB) number 2, it was discovered that a U-tube required to be plugged by Technical Specification 4.4.4.4.b as a result of an inspection performed during the first refueling outage had only been plugged on the cold leg side of the SG. Therefore, Palo Verde Unit 2 had operated with a SG tube exceeding the plugging limit, in a condition prohibited by Technical Specifications.

During the Unit 2 first refueling outage in April 1988, Eddy Current Testing revealed that a SG U-tube located at Row 128, Line 149 in SG number 2, had an estimated forty-one percent (41%) wall thinning. Technical Specification 4.4.4.4.a.6 defines the Plugging Limit as "the imperfection depth at or beyond which the tube shall be removed from service and is equal to 40% of the nominal wall thickness". Therefore the U-tube was identified as requiring plugging.

On April 17, 1988 the U-tubes in SG No. 2 requiring plugging were marked by contract personnel (non-licensed) in accordance with approved plant procedures. The plugging marks were verified to be in the proper location by quality control personnel (QC) (utility, non-licensed). On April 19, 1988, the marked U-tubes in SG No. 2 were plugged by contract personnel (non-licensed) in accordance with an approved work document. On April 20, 1988, QC personnel verified that the hot leg side of the U-tube located at Row 128, Line 149 had been plugged.

On April 17, 1990, during the second refueling outage, Eddy Current Testing was being performed on SG No. 2 in Palo Verde Unit



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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NUMBER NUMBER NUMBER

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

2 when the hot leg side of a U-tube to be inspected at Row 84, Line 31 was found to be plugged. Since the U-tube should not have been plugged, a one hundred percent verification of U-tubes plugged prior to the current outage was performed. The verification found that the U-tube located at Row 128, Line 149 was not plugged on the hot leg side as required by Technical Specifications. The cold leg side of the U-tube was verified to have been plugged.

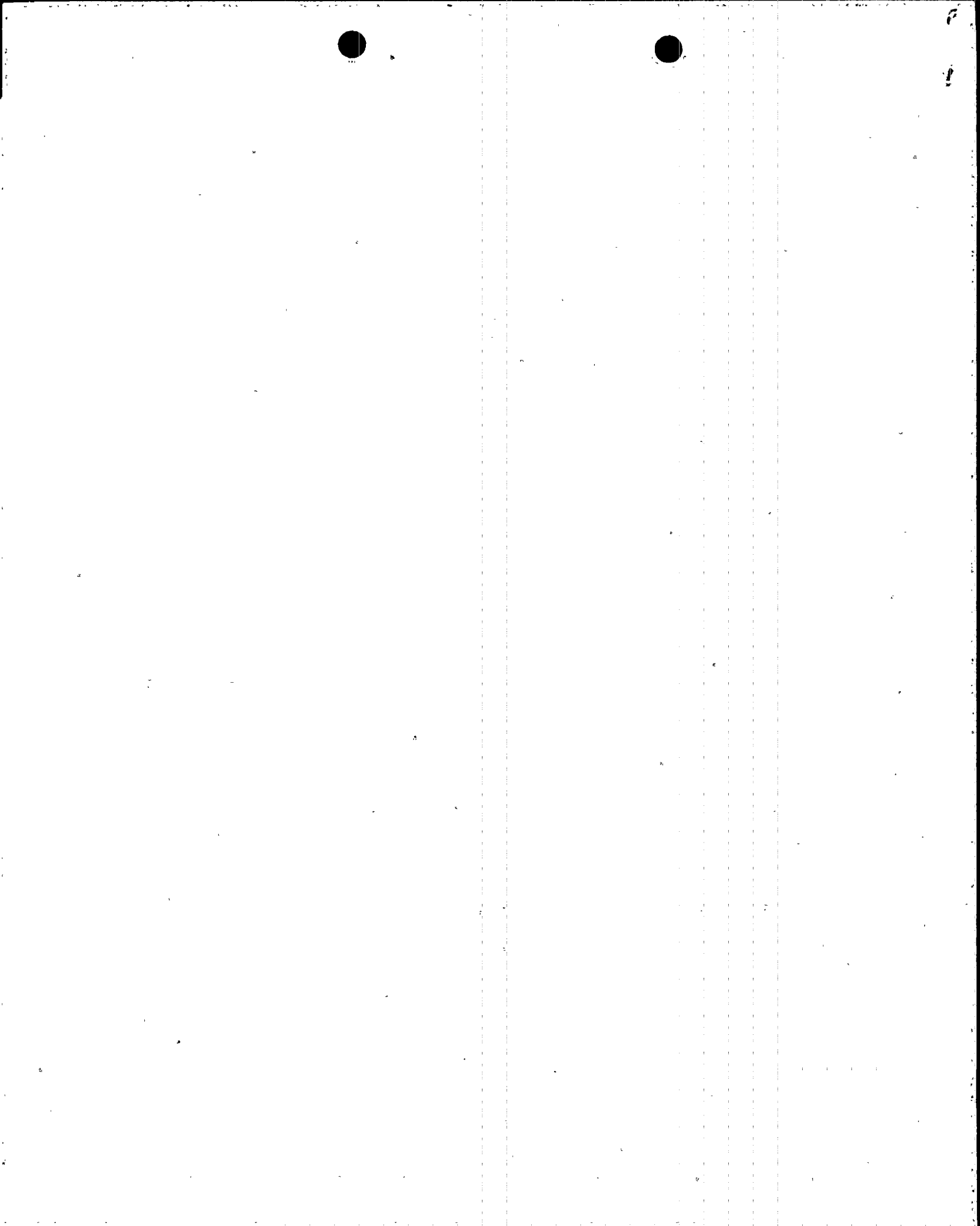
Pursuant to Technical Specification 4.4.4.4.b, a steam generator is OPERABLE after all tubes exceeding the plugging limit and all tubes containing through wall cracks have been plugged. Since the U-tube located at Row 128, Line 149 had not been properly plugged as required by Technical Specifications, SG No. 2 had been inoperable. Technical Specification 3.4.4, which is applicable in Modes 1 (POWER OPERATION), 2 (STARTUP), 3 (HOT STANDBY) and 4 (HOT SHUTDOWN), states, "with one or more steam generators inoperable, restore the inoperable generator(s) to OPERABLE status prior to increasing T cold above 210 degrees Fahrenheit". On June 11, 1988 at approximately 1829 MST, Unit 2 had entered Mode 4 (T cold greater than 210 degrees Fahrenheit) contrary to the requirements of Technical Specification 3.0.4. Technical Specification 3.0.4 restricts entry into an OPERATIONAL MODE unless the conditions of the Limiting Condition for operation are met. With the RCS temperature greater than 210 degrees Fahrenheit, the ACTION requirement of Technical Specification 3.4.4 was not met.

The hot leg end of the SG U-tube located at Row 128, Line 149 in SG No. 2 was plugged on April 29, 1990, in accordance with plant procedures. The cold leg end of the U-tube located at Row 84, Line 31 cold leg end was plugged on April 28, 1990, in accordance with plant procedures.

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

Not applicable - Other than SG No. 2, no structures, systems, or components were inoperable at the start of the event which contributed to this event.

SG No. 2 was inoperable from April of 1988 until May 3, 1990 when inspections and plugging of U-tubes was completed.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

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

Not applicable - there were no component or system failures.

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

Not applicable - there were no component failures.

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

Not applicable - there were no component failures with multiple functions.

G. For failures 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:

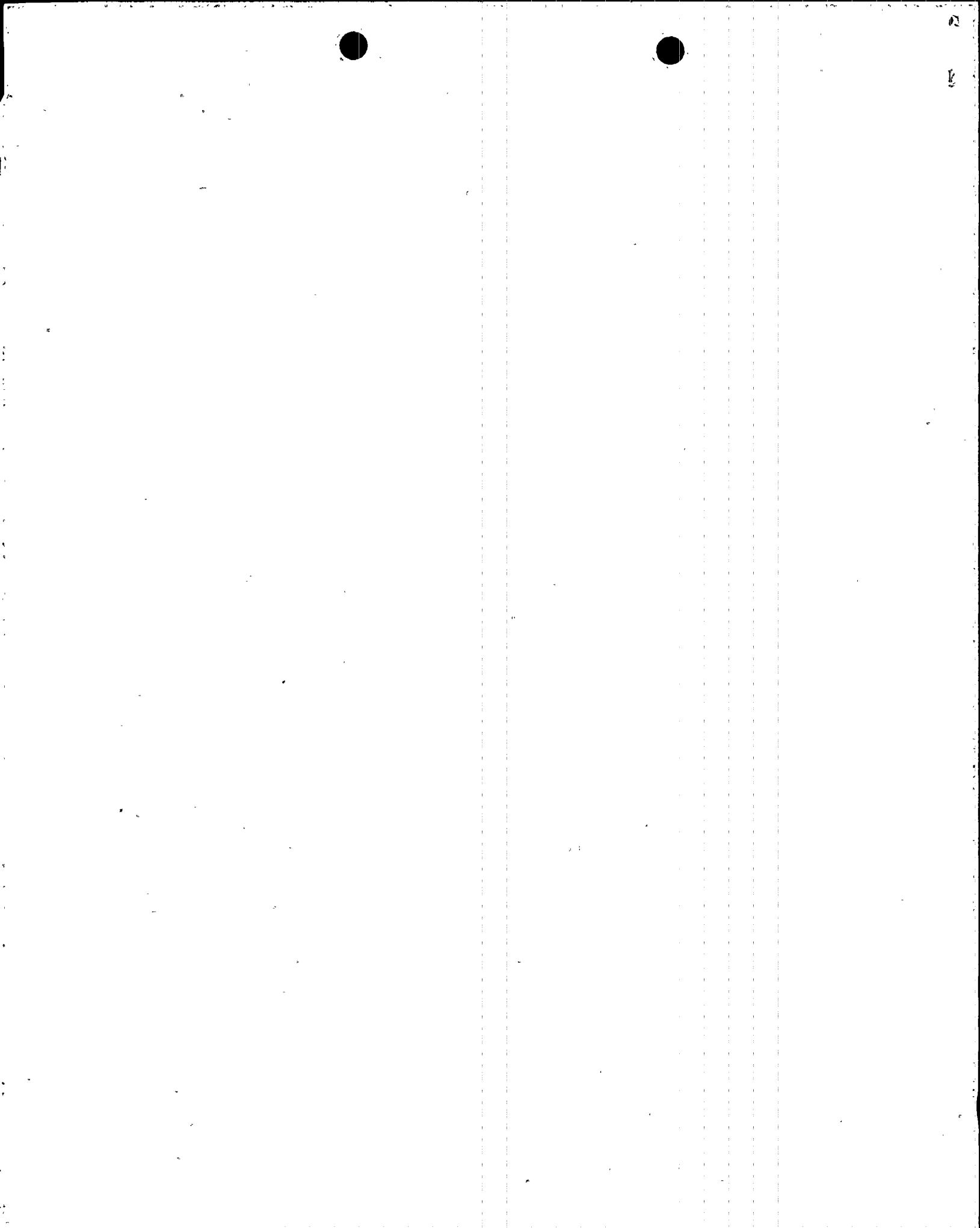
Not applicable - there were no component or system failures.

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

Not applicable - there were no component, system or procedural errors.

I. Cause of Event:

The plant procedure used to perform the U-tube plugging in 1988 properly identified the U-tubes to be plugged and contained the steps necessary to complete the required U-tube plugging. Of the one hundred mechanical tube plugs procured for the outage, ninety-five were documented to be installed in the Unit 2 SGs. Plant documentation indicates the remaining five mechanical tube plugs were returned to the tube plug vendor. There is no documentation that identifies a U-tube being incorrectly plugged. All objective evidence examined indicates that the U-tube located at Row 128, Line 149 was plugged, however, a visual inspection of the U-tube during the current refueling outage did not identify any evidence of the tube having been plugged. Therefore, the most probable cause of the event was determined to be a cognitive personnel error (SALP code A). The contract personnel performing the plugging and the QC personnel (utility) performing the plugging verification may not have ensured the tube plug was installed in



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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the U-tube identified to be plugged by the plant procedure.

The characteristics of the work location contributed to this event. The plugging of the SG is performed in a high radiation area requiring short work times and the wearing of a respirator and protective clothing. The locating and verifying of the U-tube to be plugged is performed remotely using a camera in order to minimize radiation exposure. In order to mark a U-tube and verify its location, a known tube sheet location must be identified. From the known tube sheet location, personnel then count individual U-tubes in order to determine the location of the U-tube to be marked, verified, and plugged.

J. Safety System Response:

Not applicable - there were no safety system actuations associated with this condition.

K. Failed Component Information:

Not applicable - there were no component failures.

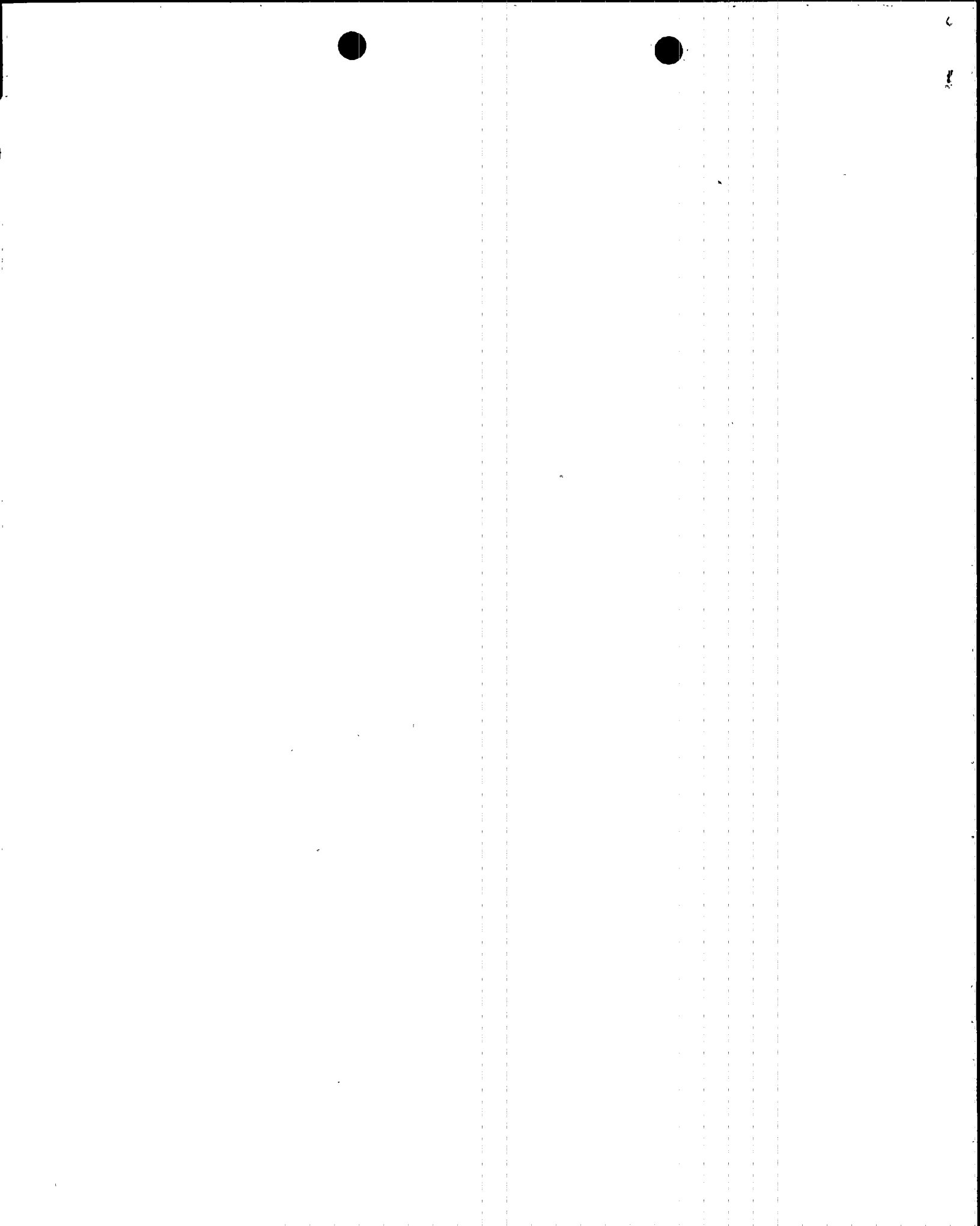
II. ASSESSMENT OF THE SAFETY CONSEQUENCES AND IMPLICATIONS OF THIS EVENT:

The plugging limit of an imperfection depth of 40% nominal wall thickness is based on conservative allowances for measurement errors and further corrosion. The plugging of tubes meeting the plugging limit is performed as a preventive measure to help ensure the RCS pressure boundary integrity is maintained during plant operation. The failure to completely plug the one SG U-tube, did not result in an RCS pressure boundary breach as the RCS structural integrity was maintained during the entire operating cycle. This condition did not effect the health and safety of the public.

III. CORRECTIVE ACTIONS:

A. Immediate:

The hot leg end of the U-tube located at Row 128, Line 149 was plugged. The cold leg end of the U-tube located at Row 84, Line 31 was plugged.



EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-830), 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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TEXT (If more space is required, use additional NRC Form 368A's) (17)

B. Action to Prevent Recurrence:

The steam generator plugging procedures were revised to require second party verification in addition to the QC verification on identifying U-tubes for plugging.

IV. PREVIOUS SIMILAR EVENT:

There have been no previous similar events reported pursuant to 10CFR50.73.

