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 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH. NAME AUTHOR AFFILIATION
 SWANK, D.A. Washington Public Power Supply System
 BAKER, J.W. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 91-012-00: on 910506, manual initiation of reactor protection sys occurred due to low scram air header pressure caused by hose failure. Hose that blown off air dryer skid replaced. W/910604 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

Docket No. 50-397

June 4, 1991

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 91-012

Dear Sir:

Transmitted herewith is Licensee Event Report No. 91-012 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Very truly yours,

J. W. Baker

J. W. Baker (M/D 927M)
WNP-2 Plant Manager

JWB:ac

Enclosure:
Licensee Event Report No. 91-012

cc: Mr. John B. Martin, NRC - Region V
Mr. C. Sorensen, NRC Resident Inspector (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D. L. Williams, BPA (M/D 399)
NRC Resident Inspector - walk over copy

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 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) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 7 1										PAGE (3) 1 OF 05	
TITLE (4) MANUAL INITIATION OF REACTOR PROTECTION SYSTEM DUE TO LOW SCRAM AIR HEADER PRESSURE CAUSED BY HOSE FAILURE																					
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	5	0	6	9	1	9	1	0	6	0	4	9	1	0 5 0 0 0							
OPERATING MODE (9) 5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
POWER LEVEL (10) 0100		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)					73.71(b)						
		20.405(a)(1)(i)				50.38(c)(1)				<input type="checkbox"/> 50.73(a)(2)(v)					73.71(c)						
		20.405(a)(1)(ii)				50.38(c)(2)				<input type="checkbox"/> 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)				<input type="checkbox"/> 50.73(a)(2)(vii)(A)											
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				<input type="checkbox"/> 50.73(a)(2)(vii)(B)											
		20.405(a)(1)(v)				50.73(a)(2)(iii)				<input type="checkbox"/> 50.73(a)(2)(ix)											
LICENSEE CONTACT FOR THIS LER (12)												TELEPHONE NUMBER									
NAME D. A. Swank, Licensing Engineer												AREA CODE 501 9371 2184118									
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											
B	IH	CIMP		Y																	
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<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)

At 1248 hours on May 6, 1991 a manual scram was inserted due to decreasing pressure in the scram air header. This is a manual initiation of the Reactor Protection System (RPS).

As part of the Spring 1991 Maintenance and Refueling Outage the Supply System preplanned maintenance on the installed Control Air System (CAS) air compressors and single twin tower regenerative filter/dryers. In order to support the ongoing outage work requiring CAS or the Service Air System (SA) a portable filter/dryer skid and temporary portable air compressor were connected to supply both CAS and SA. Three inch connection hoses with required fittings were procured as Quality Class G items from a local vendor to support this activity.

On May 6, 1991 at 1248 hours with decreasing pressure in the SA and CAS systems the licensed control room operators initiated a manual scram as required by procedure. The scram did not affect the Plant since the reactor was shutdown and all control rods were already fully inserted. Investigation by the operators revealed that one of the hoses on the temporary compressor/dryer unit had blown off. The hose was replaced and SA and CAS were restored to service by 1358 hours. The RPS scram logic was reset at 1405 hours. Because the reactor was in cold shutdown with all the control rods fully inserted this event had minimal safety significance.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 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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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Abstract (continued)

The root cause of this event was a manufacturing error where the end of the hose was not cut squarely and the outboard hose clamp was installed over a resulting notch in the end of the hose. This resulted in a poor connection that failed to hold pressure with the hose in-service.

The corrective actions taken were: 1) The defective clamp and poorly cut hose were replaced with a different hose and properly installed new style clamps; 2) The remaining hose clamps on the temporary connections were checked and in one case repaired to correct a similar poor placement of the clamp.

Plant Conditions

Plant Mode - 5 (Refueling)
Power Level - 0%

Event Description

At 1248 hours on May 6, 1991 a manual scram was inserted due to decreasing pressure in the scram air header. This is a manual initiation of the Reactor Protection System (RPS).

In order to support work for the Spring 1991 Maintenance and Refueling outage, a temporary portable air compressor and associated air dryer unit were connected to supply both the Service Air System (SA) and Control Air System (CAS). This installation provided an air supply while the three installed plant air compressors and associated single twin tower regenerative filter/dryer were out of service for maintenance. The installed air compressors and dryers are Quality Class II and serve no safety function. Safety grade air required to achieve and maintain safe shutdown is provided by the Containment Instrument Air System which was not affected by this event.

The usual outage connection for a temporary air compressor without the temporary filter/dryer was outside the turbine building and took advantage of the SA/CAS piping and dryers through a long temporary hose. This configuration required a single connection hose from the portable compressor to the installed system with the hose leased with the compressor. Since the 1991 outage included maintenance work on the dryers as well the compressors the compressor/dryer package required for this outage was placed near the Circulating Water Pump House and was connected using separate hoses to SA and CAS. These extra hoses were purchased as Quality Class G from a local vendor with the necessary connection fittings already installed.

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

On May 6, 1991 at 1242 hours the control room operators noticed decreasing air pressure in both the SA and CAS. At 1248 hours with air pressure continuing to decrease, the control room operators inserted a manual scram as required by PPM 4.8.1.1, "Control Air System Failure". Since the Plant was in Mode 5 with the mode switch in the "REFUEL" position with the control rods fully inserted prior to this manual scram, no control rod motion was necessary or occurred. The loss of the temporary air compressor/dryer resulted in a total loss of CAS since the three installed compressors, CAS-C-1A, 1B, and 1C and the single twin tower regenerative dryer were out of service for maintenance at the time of the event.

Investigation of the decreasing pressure by operations personnel revealed that the temporary hose connection from the dryer skid to SA had blown off. Service Air Isolation Valve SA-V-174 was closed to isolate SA from the hole created by the missing hose, and the isolation valve on the filter/dryer skid that had been supplying the hose was closed. Closing SA-V-174 allowed Service Air Compressor SA-C-1 which was in service, in conjunction with the temporary compressor supplying CAS, to return SA system pressure to normal at 1259 hours.

The hose that had blown off was replaced. CAS pressure was returned to normal by 1358 hours. At 1405 hours with the scram discharge header pressure returned to normal, the control room operator reset the RPS scram logic.

Immediate Corrective Action

1. On May 6, 1991 valve SA-V-174 and the isolation valve supplying the blown hose were closed when it was discovered that the discharge hose from the air dryer skid to SA had blown off.
2. On May 6, 1991 the hose that had blown off the air dryer skid was replaced.

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is being reported under the requirements of 10CFR50.73(a)(2)(iv) as an unplanned manual initiation of the Reactor Protection System. This event was previously reported on the Emergency Notification System per the requirements of 10CFR50.72(b)(2)(ii) at 1437 hours on May 6, 1991.
2. The root cause of this event was a manufacturing error where the end of the hose was not cut squarely and the outboard hose clamp was installed over a notch in the end of the hose. This resulted in a poor connection that failed to hold pressure with the hose in-service. An examination of the three inch hose that had blown off revealed that the hose had been attached to a three inch, 150 psi rated raised face flange with barbed hose fitting using two "Bandit" hose clamps. One of the clamps was found near the hose and the second was still on the hose. From markings on the

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hose it was apparent that the outboard hose clamp which had been blown off the hose had been installed over a notched ragged end of the hose which prevented efficient clamping of the hose. In addition, the hose exhibited signs of cracking and checking indicative of aging and a lack of resiliency. The hose was procured as new in 1991. The use of the "Bandit" clamps was evaluated and is considered acceptable for this application if properly installed.

3. An examination of the other hose clamps associated with the temporary air compressor/dryer setup revealed a second clamp installed in the same manner as the one that had blown off.
4. There were no structures, systems, or components out of service at the start of the event which contributed to the event, other than the CAS compressors/dryers.

B. Further Corrective Action

1. The second hose clamp that was found to be incorrectly installed on the end of the hose was replaced with a correctly installed new style one.

Safety Significance

The loss of CAS had minimal safety significance since the system is not safety related, the plant is designed to be shut down and cooled down safely with a loss of CAS at 100% reactor power, and the reactor was already in cold shutdown with all control rods inserted when the loss of CAS occurred. This event had no effect on the ability to maintain reactor cooling or to maintain the reactor in a shutdown condition.

Similar Events

None

EIIS InformationText ReferenceEIIS Reference

	<u>System</u>	<u>Component</u>
Reactor Protection System (RPS)	SC	--
Control Air System (CAS)	LD	--
Control Air Compressor (CAS-V-1A,1B,1C)	LD	CMP

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Control Air Dryer	LD	DRY
Service Air system (SA)	LH	--
Temporary Portable Air Compressor	LD	CMP
Temporary Dry	LD	DRY
Service Air Compressor (SA-C-1)	LH	CMP
Service Air Isolation Valve (SA-V-174)	LH	ISV