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SUBJECT: LER 93-024-00:on 930615,ESG actuation of containment instrument air backup nitrogen bottle programmer occurred. Caused by personnel error & procedure deficiency.Test procedures to be strengthened.W/930715 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

July 15, 1993
G02-93-185

Docket No. 50-397

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

Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21**
LICENSEE EVENT REPORT NO. 93-024

Transmitted herewith is Licensee Event Report No. 93-024 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.

Sincerely,

J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

JVP/DAS/cgeh
Enclosure

cc: Mr. B. H. Faulkenberry, NRC - Region V
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INPO Records Center - Atlanta, GA
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	1 OF 5

TITLE (4)
CONTAINMENT INSTRUMENT AIR SYSTEM ACTUATION DURING SYSTEM RESTORATION

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(S)
0 6	1 5	9 3	9 3	0 2 4	0 0	0 7	1 5	9 3		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): 4

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)	X 50.73(a)(2)(iv)	77.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.73(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)(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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
D. A. Swank, Licensing Engineer	AREA CODE 5 0 9 3 7 7 - 4 5 6 3

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (16)

On June 15, 1993, the Containment Instrument Air (CIA) system was returned to service following scheduled containment drywell to wetwell bypass leakage rate testing (BLRT). The CIA system restoration was not performed in accordance with the BLRT procedure. CIA restoration was expedited to support testing of the Main Steam Isolation Valves. The restoration was performed in a sequence other than that required by the BLRT procedure and resulted in an Engineered Safety Feature (ESF) actuation of the CIA backup nitrogen bottle programmer. One root cause of this event was a personnel error in that self checking was not applied. The individual responsible for the coordination of the CIA system restoration has been counseled in expectations for procedural adherence. The second root cause was a deficiency with the BLRT procedure. The BLRT test procedure will be strengthened to prevent CIA programmer actuations. The author and reviewer of the BLRT procedure deviation will be counseled on the need to perform a thorough review with a questioning attitude and when possible to review proposed procedure changes with the appropriate system engineer. Since the CIA system and supported equipment were not required to be operable at the time of this event, this event had no safety significance.

Plant Conditions

Power Level - 0%
Plant Mode - 4

Event Description

On June 15, 1993, the Containment Instrument Air (CIA) system was being restored to service at the completion of the BLRT to support Main Steam Isolation Valve (MSIV) post maintenance testing. CIA also provides nitrogen to the Main Steam Safety/Relief Valves (SRVs). The system was returned to service by a licensed operator prior to the closing of three vent valves which had been opened to support the BLRT. This resulted in low CIA system pressure which caused actuation of the CIA programmers. The CIA programmers sequenced on 15 of the 34 backup nitrogen bottles in approximately three minutes before the system was isolated from the open vent valves.

There are a total of 18 SRVs at WNP-2. The relief mode of operation is accomplished pneumatically. The normal supply of nitrogen (in lieu of air) is from the nonsafety-related plant nitrogen system. The nitrogen is piped through the safety-related CIA system which includes a safety-related accumulator for each SRV. The accumulators provide capacity to open each SRV at least one time following a loss of both the normal and backup nitrogen systems.

The seven SRVs that serve an Automatic Depressurization System (ADS) function are provided with a safety-grade backup nitrogen supply. The CIA system includes a 15 nitrogen bottle bank serving three ADS SRVs and a separate 19 nitrogen bottle bank serving the other four ADS SRVs. These two bottle banks provide sufficient nitrogen to support ADS SRV operation post accident for a period of 30 days. The 18 SRVs open mechanically, in the safety valve mode, on high reactor pressure without reliance on nitrogen.

Each of the two nitrogen bottle banks is equipped with a programmer that, on low CIA header pressure, starts and automatically cycles one backup bottle on service. If header pressure is restored by either the normal nitrogen supply or the bottle, the programmer turns off but the bottle remains in service. The programmer will automatically turn back on and cycle on the next bottle if header pressure again drops below the setpoint. If header pressure remains low, the programmer will continue to cycle bottles on indefinitely, at thirty second intervals, with each bottle remaining in service once it is placed in service by the programmer.

Immediate Corrective Action

The portions of the CIA system where the vents were open were isolated within approximately three minutes. The open CIA vent valves were then closed and the system was returned to service.

Further Evaluation, Root Cause and Corrective Action

A. Further Evaluation

On June 15, 1993, the BLRT was performed. The test procedure (PPM 7.4.6.2.1) was deviated by the Technical Staff engineer on June 13, 1993, to require isolation of the CIA supply to the Safety/Relief Valves (SRVs) and opening of two CIA vent valves outside containment. The procedure already included isolation of the CIA supply to the Main Steam Isolation Valves (MSIVs). Isolation of the CIA supply to the SRVs was required since the periodic CIA system leak test was not performed during the R8 refueling outage. The results of the CIA system leak test are normally used for calculations performed as part of the BLRT. Since this testing was not performed, the portion of the CIA system in containment was isolated for the BLRT test in order to determine the amount of nitrogen that leaked from CIA into the drywell during the BLRT.

At the completion of BLRT testing, plant restoration was delayed while containment pressure was reduced. When containment pressure had been reduced, restoration of the CIA system was expedited by licensed operations personnel to support performance of post-maintenance testing of the MSIVs. The restoration of CIA was performed separate from the BLRT procedure. The three valves used to isolate the CIA supply to containment (CIA-V-20, CIA-V-30A, CIA-V-30B) were restored to service in a sequence different from that specified in the procedure. The three CIA vent valves (CIA-V-44, CIA-V-47A, CIA-V-47B) were not yet closed when the three isolation valves were opened. This resulted in a low pressure condition in the CIA system and actuation of the CIA programmers and backup nitrogen supply bottles. This is an ESF actuation and is reportable pursuant to the requirements of 10CFR50.73(a)(2)(iv).

Further review revealed that the as written BLRT procedure could have caused a CIA programmer actuation on low system pressure during repressurization of the previously vented CIA piping. A detailed review of the procedure deviation incorporated on June 13, 1993, was performed to determine how a potentially less than adequate procedure deviation occurred. Numerous factors led to this potential procedural error including:

- A non-Technical Specification leak rate test of the CIA system that is scheduled to be performed every two years but is normally performed during each refueling outage was not scheduled for the R8 outage. Attempts to add the test to the outage schedule during the course of the outage were unsuccessful due to a concerted plant effort to control outage scope changes. This resulted in the need to deviate the BLRT procedure since the results of the CIA leakage test were not available.

- Prior to implementation of the CIA system leakage test in 1988, the BLRT test had included steps for isolation, venting, and restoration of the CIA system. These steps were used as the basis for the procedure deviation made on June 13, 1993.

- The power fuses for the CIA programmer are normally removed at the beginning of a refueling outage. During the R8 outage the fuses were reinstalled prior to the BLRT test to support use of the SRVs for alternate shutdown cooling and for other testing. Upon further review it was determined that the backup bottle programmers are not required to be operable for alternate shutdown cooling. Normal plant nitrogen, in conjunction with the safety grade SRV accumulators and the ability to manually valve in one of the backup nitrogen bottles, is sufficient to demonstrate operability of the SRVs for alternate shutdown cooling operation with reactor pressure less than 128 psig.

- Since the leak rate test for the CIA system was not performed, the actual system leakage rate is unknown. Therefore, it is not possible to calculate how much nitrogen would have been lost from the CIA accumulators and piping during the duration of the BLRT testing. The restoration flow rates and times also cannot be accurately calculated. When the CIA system leakage test is not performed, the BLRT test calculation conservatively assumes a linear decay rate for the accumulators and CIA piping.

- The restoration section of the BLRT procedure was delayed while containment pressure was reduced. However, the CIA restoration portion of the procedure could have been performed at any time after the completion of testing.

- The CIA piping is primarily 1/2" schedule 160, and thus contains a small total volume of nitrogen.

Without a known leakage rate for the CIA system, there is no way to determine whether the procedure deviation would or would not have created an ESF actuation. The potential for an ESF actuation did, however, exist.

B. Root Cause

One root cause of this event was a personnel error in that self checking was not applied prior to opening of the CIA isolation valves. The procedure for system restoration was not followed which resulted in the CIA actuation. The second root cause of this event was a less than adequate procedure in that if the potential for creating an ESF actuation had been identified during the preparation of the BLRT procedure deviation, the CIA programmer fuses would have been removed which would have prevented this event.

C. Further Corrective Action

The individual responsible for the coordination of the CIA system restoration has been counseled in expectations for procedural adherence. The BLRT procedure will be strengthened prior to use in the next refueling outage to prevent CIA programmer actuations. The BLRT procedure deviation author and reviewer will be counseled on the need to perform a thorough review with a questioning attitude and when possible to review proposed procedure changes with the appropriate system engineer.

Safety Significance

At the time of this event the SRVs and MSIVs were not required to be operable and were not being relied upon for decay heat removal capability. Actuation of CIA did not impact equipment operability or decay heat removal capability. Thus, this event had no safety significance.

Similar Events

Although there have been past instances of CIA actuation, none involved BLRT testing. None of the previous CIA actuations occurred during return of the CIA system to service.

EIIS Information

Text Reference	EIIS Reference System	EIIS Reference Component
CIA-V-20	LD	ISV
CIA-V-30A	LD	ISV
CIA-V-30B	LD	ISV
CIA-V-44	LD	VTV
CIA-V-47A	LD	VTV
CIA-V-47B	LD	VTV
Containment Instrument Air (CIA)	LD	---
CIA Programmers	LD	STC
Containment Drywell	NH	---
Containment Wetwell	NH	---
Safety/Relief Valves (SRVs)	SB	RV
Main Steam Isolation Valves (MSIVs)	SB	ISV
Backup Nitrogen Supply Bottles	NH	TK