ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9210260292 DOC.DATE: 92/10/21 NOTARIZED: NO DOCKET #
FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
AUTH.NAME AUTHOR AFFILIATION
FULLER,R.E. Washington Public Power Supply System
BAKER,J.W. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-039-00:on 920921,RWCS isolated on high differential flow while ROs were attempting to place filter-demineralizer RWCU-DM-1B back into service.Caused by inadequate mgt methods.Degraded equipment repaired & procedures updated.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 9
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD5 LA	1	1	PD5 PD	1	1
	DEAN,W.	1	1			
INTERNAL:	ACNW	2	2	ACRS	2	2
	AEOD/DOA	1	1	AEOD/DSP/TPAB	1	1
	AEOD/ROAB/DSP	2	2	NRR/DET/EMEB 7E	1	1
	NRR/DLPQ/LHFB10	1	1	NRR/DLPQ/LPEB10	1	1
	NRR/DOEA/OEAB	1	1	NRR/DREP/PRPB11	2	2
	NRR/DST/SELB 8D	1	1	NRR/DST/SICB8H3	1	1
	NRR/DST/SPLB8D1	1	1	NRR/DST/SRXB 8E	1	1
	REG FILE 02	1	1	RES/DSIR/EIB	1	1
	RGN5 FILE 01	1	1			
EXTERNAL:	EG&G BRYCE,J.H	2	2	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY,G.A	1	1
	NSIC POORE,W.	1	1	NUDOCS FULL TXT	1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK. ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 31 ENCL 31

A04

RIDS/ADDS

RIDS/ADDS

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

G02-92-243
October 21, 1992

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. 92-039-00

Transmitted herewith is Licensee Event Report No. 92-039-00 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. W. Baker
WNP-2 Plant Manager (Mail Drop 927M)

JWB/REF/lmr
Enclosure

cc: Mr. J. B. Martin, NRC - Region V
Mr. W. Ang, NRC Resident Inspector (Mail Drop 901A, 2 Copies)
INPO Records Center - Atlanta, GA
Mr. D. L. Williams, BPA (Mail Drop 399)

IE22
1/1

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 8

TITLE (4)
REACTOR WATER CLEANUP ISOLATION DUE TO HIGH DIFFERENTIAL FLOW

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 9	2 1	9 2	9 2	0 3 9	0 0	1 0	2 1	9 2		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)				
POWER LEVEL (10)	1 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
R.E. Fuller, Licensing Engineer	AREA CODE 5 0 9 3 7 7 - 4 1 4 8

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)

At 1248 hours on September 21, 1992, the Reactor Water Cleanup (RWCU) System isolated on high differential flow while Reactor Operators (RO) were attempting to place the filter-demineralizer (F/D) RWCU-DM-1B back into service. This isolation occurs in response to a possible leak in the RWCU System and is considered an Emergency Safety Feature (ESF) actuation at WNP-2.

The isolation occurred as designed. This event resulted in no other actuation of Plant systems. No leaks were found upon inspection of RWCU piping. The isolations were reset and the RWCU System was returned to service.

The root causes of this event are inadequate management methods to initiate timely repair of degraded equipment and inadequate supervisory oversight. Contributing causes to the event consisted of inadequate self checking by an Equipment Operator (EO), and unclear wording of procedure instructions.

The corrective actions include repair of the degraded equipment, correction of the appropriate procedures to remove identified deficiencies, self-checking will be re-emphasized to operations personnel, and management expectations will be clarified with regard to RWCU high differential flow conditions and Control Room supervisory oversight. In addition, a review will be performed to identify similarly existing chronic problems. The review will assess the schedule for timely repair and ensure interim adequate administrative controls are in place to assure the equipment can be operated within preestablished limits.

There is no safety significance associated with this event. There was no breach of the RWCU System that required the isolation valves to close. The event did not pose a threat to the health and safety of Plant personnel or the public.

Plant Conditions

Power Level - 100%
Plant Mode - 1 (Power Operation)

Event Description

At 1248 hours on September 21, 1992, the Reactor Water Cleanup (RWCU) System isolated on high differential flow while Reactor Operators (RO) were attempting to place the filter-demineralizer (F/D) RWCU-DM-1B back into service. This isolation occurs in response to a possible leak in the RWCU System and is considered an Emergency Safety Feature (ESF) actuation at WNP-2.

Just prior to this event, the spent resin had been backwashed from the F/D and the F/D regenerated with fresh resin. This is known as backwash and precoat. Following precoat of RWCU-DM-1B, the RO initiated flow through the F/D per Plant Procedures to place the F/D into service. During this process, a high differential flow trip occurred indicating that the difference in volumetric flow between the inlet and outlet of the RWCU System exceeded the trip point of 58.5 gpm. If a high differential flow persists for longer than 45 seconds, a RWCU System isolation occurs. On this occasion, the high differential flow persisted, resulting in an ESF actuation (closing the Primary Containment isolation valves RWCU-V-1 and RWCU-V-4). A low flow condition resulted which caused pumps RWCU-P-1A and 1B to trip off.

The high differential flow trip is designed to isolate the RWCU System in the event of a breach in the system boundary. The trip time delay minimizes the probability of a spurious trip from momentary fluctuations in flow.

Immediate Corrective Action

The isolation occurred as designed. This event resulted in no other actuation of Plant systems. The RWCU System piping was inspected and no leaks were found. The isolation signals for RWCU-V-1 and RWCU-V-4 were reset and the RWCU System was returned to service.

Further Evaluation and Corrective Action

A. Further Evaluation

1. This event is considered reportable per 10 CFR 50.73(a)(2)(iv) as a condition that resulted in automatic actuation of an ESF. The NRC was verbally notified of this event at 1358 hours PDT on September 21, 1992 per 10 CFR 50.72(b)(2)(ii).

2. The backwash process for the RWCU-DM-1B incorporates an air surge step where a significant flow of air is blown into the demineralizer in an attempt to help scour the spent resin beads from the F/D septa. Per the attached figure, Service Air (SA) is fed from manual valve SA-V-251, through an air filter, an air operated ball valve RWCU-V-213B, and finally through a manual isolation valve RWCU-V-230B before entering RWCU-DM-1B.

   The air supply valve RWCU-V-213B has been leaking for approximately one and half years. The leak allowed air into RWCU-DM-1B following completion of the air surge step and during the filter regeneration process when the tank is at atmospheric pressure.

   An attempt was made in June of 1991 to repair the RWCU-V-213B valve. However, the valve requires ASME components, and it was determined that qualified replacement parts were unavailable from the original manufacturer, Hills-McCanna Company. The current manufacturer of the valve, Edwards Valve Company, does not normally qualify the components of this valve to ASME standards. Therefore, a decision to procure the components and repair the valve had been deferred pending consideration of replacement of the valve.

   Since June of 1991, there had been numerous RWCU high differential flow conditions during restoration of RWCU-DM-1B to service before the subject event, but none resulted in a RWCU isolation. One of these precursor events occurred on September 11, 1992. The SA-V-251 was closed to prevent air leakage into RWCU-DM-1B in addition to closing RWCU-V-213B. This event demonstrated that SA-V-251 also leaked by. In response to the September 11 event, another attempt was made September 11, 1992 to repair the RWCU-V-213B valve. The valve was disassembled to determine the amount of degradation that had occurred. The ASME qualified replacement parts were still unavailable. The valve was reassembled with the worn parts.

   A request was made September 15, 1992 to repair SA-V-251. The SA-V-251 valve does not require ASME qualified components. However, in order to repair the valve, the SA supply to the Radwaste Building must be interrupted until the valve can be returned to service. The Radwaste SA supplies air for backwash of filter demineralizers, and for breathing air and pneumatic tools. A decision was made to defer repair of the valve.

3. As indicated above, several RWCU high differential flow conditions had occurred in the past without isolation caused by entrapped air during regeneration of RWCU-DM-1B. The Plant procedure used for regeneration of RWCU F/Ds and restoring them to service was revised September 17, 1992 to preclude the high differential flow condition.

   The crucial steps to prevent air from leaking into the demineralizer RWCU-DM-1B included closing SA-V-251 and opening the air filter drain valve SA-V-23. Opening the air filter drain valve was to depressurize the SA header downstream of SA-V-251 and upstream of RWCU-V-213B.

   On September 21, 1992, when the procedure directed the Equipment Operator (EO) to close SA-V-251, he found this valve and SA-V-23 closed. The next step of the procedure was to "Crack open SA-V-23 to depressurize the service air header." The EO interpreted this to mean that the valve was to be opened long enough to depressurize the header then reclosed. The real intent was to leave the SA-V-23 open to ensure the header would not be repressurized from the leaking SA-V-251 valve. Because the EO found SA-V-251 already closed, he presumed that SA-V-23 had been opened, the header depressurized, and the valve reclosed. The EO did not notify anyone that he did not actually perform the crucial steps of the procedure, nor did he explain to anyone his interpretation of the procedure. No one could be identified as having manipulated the above indicated valves. Had the SA-V-23 valve been left open at the appropriate time in the process of regenerating the F/D, this event would not have occurred.

   As a result of the leaking SA-V-251 and RWCU-V-213B valves, misalignment of the SA-V-3 and RWCU-V-230B valves created an air pocket in the RWCU-DM-1B tank. When bringing the F/D into service, the F/D inlet valve is opened to pressurize the F/D with the outlet valve closed. Normally there would be no flow of water into F/D tank because the tank would be vented and filled completely with water. In this case, because of the air pocket that had developed, water flowed into the tank when the F/D inlet valve was opened, compressing the air pocket to reactor pressure. The high differential flow condition occurred during the time the air pocket was being compressed.

5. Following completion of field valve manipulation, the evolution of placing in service the regenerated F/D requires an RO at the Control Room panel P602 and personnel in the Radwaste Control Room to control flow through the F/Ds. It had become common practice to station a person at a rear panel in the Control Room to monitor the status of the 45-second trip delay timer. There is some evidence that, in the event of persistent high differential flow, while placing a F/D into service, some Control Room personnel believed it appropriate to shutoff the RWCU pump(s) precluding an ESF actuation.

Prior to starting the evolution, an RO stationed himself at P602 and established communication with the Radwaste Control Room. The Control Room Supervisor (CRS) and other ROs were not aware that the RWCU-DM-1B F/D was being returned to service. Upon opening the inlet valve to RWCU-DM-1B by the Radwaste Control Room, the high differential flow annunciator alarmed and the trip delay timer initiated. This was not expected by the RO because he was aware that the procedures had been revised to preclude the high differential flow condition. The RO at P602 lost track of the elapsed time since the alarm actuated. While attempting to have another RO in the vicinity determine the status of the timer at the rear panel, the timer timed out and the isolation occurred.

There was no discussion prior to the evolution between the RO at P602 and other ROs to assist with the evolution. Although the CRS and the other ROs were aware that the RWCU-DM-1B F/D would likely be returned to service some time during the shift, they were unaware that the evolution was in progress. This evolution was considered routine and the RO felt confident that the procedure revision would preclude the high differential flow condition.

6. The first root cause of this event was that management methods did not permit a timely response to repairing or replacing RWCU-V-213B and SA-V-251. Adequate time was available to obtain ASME qualified replacement parts for RWCU-V-213B or replace the valve. The SA-V-251 could have been repaired with minimal impact to Plant operations.

   The second root cause of this event was that the supervisory oversight was less than adequate. The operating crew was not staged to assist in this evolution. Guidance and/or assistance from the other crew members may have precluded this event.

7. The first contributing cause of this event was that the EO did not apply self-checking to ensure the steps that he did not perform were actually performed correctly. A more questioning attitude may have resulted in proper depressurization of the SA header and correct interpretation of the step requiring the SA-V-23 be left open.

   The second contributing cause of this event was the unclear wording of the procedure step requiring SA-V-23 to be opened. There was no clear statement that the valve was to be left open.

B. Further Corrective Action Taken

1. Plant Procedures have been changed to clarify the required position of SA-V-23.

2. Internal leakage of RWCU-V-213B was corrected on or about October 17, 1992.

C. Further Corrective Action

1. Correct the internal leakage of SA-V-251 by May 31, 1993.

2. Operations Management will re-emphasize procedural compliance with operating crews by November 30, 1992. The emphasis will indicate that the steps are to be completed prior to proceeding with the evolution. It is inappropriate to assume that a step has been performed without having personal knowledge of its correct execution.

3. Management expectations with regard to supervisory involvement in specific evolutions will be clarified by November 30, 1992.

4. Management will identify similar chronic problems and ensure the priority for resolution is commensurate with the problem's impact on Plant safety, availability and operation by November 15, 1992.

5. Management expectations will be formalized by November 30, 1992 with regard to Reactor Operator response to RWCU high differential flow conditions.

Safety Significance

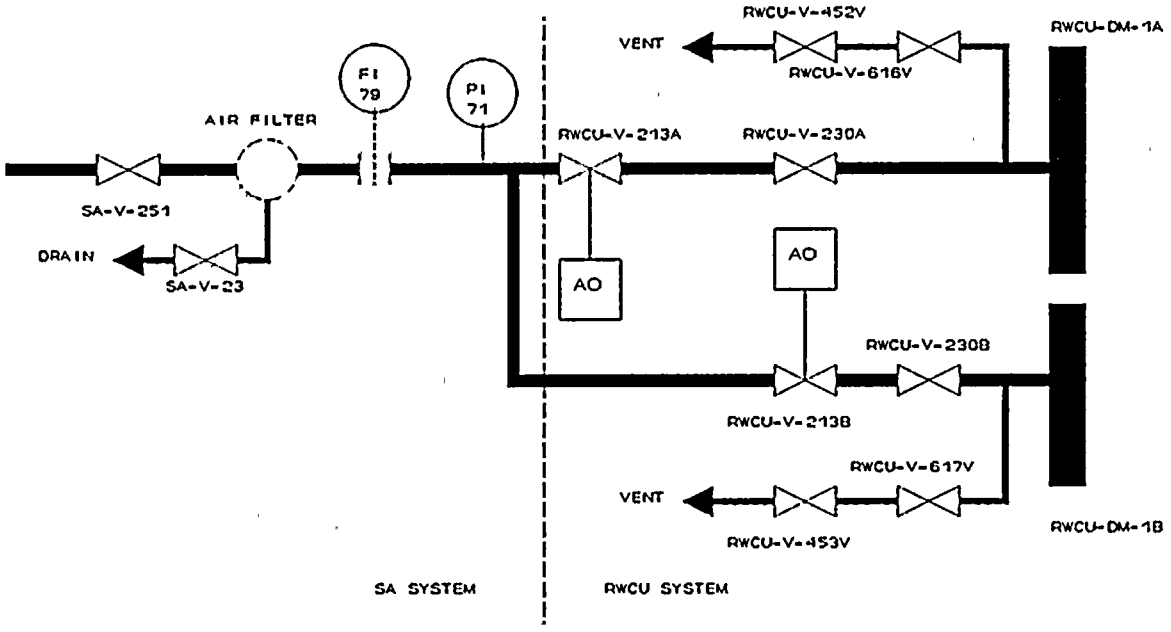
There is no safety significance associated with this event. There was no breach of the RWCU System that required the isolation valves to close. The event did not pose a threat to the health and safety of Plant personnel or the public.

Similar Events

WNP-2 has had approximately thirty RWCU System isolations. One isolation similar to this event, documented in LER 84-97, occurred while restoring RWCU-DM-1B back to service following backwash and precoat. As a result, some modifications were made to the RWCU System.

EIIS Information

Text Reference	EIIS Reference System	EIIS Reference Component
Reactor Water Cleanup System	CE	
Reactor Water Cleanup System Valve	CE	V
Reactor Water Cleanup System Filter-Demineralizer	CE	FDM
Service Air System Valve	LF	V
Breathing Air System	LH	



RWCU BACKWASH AIR SUPPLY

SA/RWCU AIR SURGE FLOW DIAGRAM