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SUBJECT: LER 92-009-00:on 920302,determined that Containment Instrument Air pressure switch setting changes are required. Caused by analysis deficiency.Pressure switches were reset in accordance w/new setpoint calculations.W/920401 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

April 1, 1992
G02-92-077

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. 92-009-00

Transmitted herewith is Licensee Event Report No. 92-009-00 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,

RT Hanold for/

J. W. Baker
WNP-2 Plant Manager (Mail Drop 927M)

Enclosure

cc: Mr. John B. Martin, NRC - Region V
Mr. C. Sorensen, NRC Resident Inspector (Mail Drop 901A, 2 Copies)
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Mr. D. L. Williams, BPA (Mail Drop 399)

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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 6

TITLE (4)

Containment Instrument Air Pressure Switch Setting Changes Required Due to Revised Setpoint Calculation

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 3	0 2	9 2	9 2	-- 0 0 9	-- 0 0	0 4	0 1	9 2		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)	50.73(a)(2)(iv)	77.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 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, Compliance Engineer	AREA CODE 5 0 9 3 7 7 - 4 4 5 1

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 March 2, 1992 contract engineers working in the Setpoint Methodology Program determined that the setpoints for Containment Instrument Air (CIA) pressure switches would not ensure proper system operation under all postulated post-accident harsh environment conditions. A four hour verbal notification was made to the NRC on March 2, 1992. The Plant was in a mode where CIA and the systems supported by CIA were not required to be operable, so no immediate corrective actions were needed. Corrective actions did include increasing the system operating pressure and increasing the pressure switch setpoints to ensure proper system operation.

A review of past instrument setpoint data showed that the as-found and as-left instrument setpoints would have supported proper system operation. This LER is submitted due to the potential impact of a post-accident harsh environment on these pressure switches. Multiple failures must be postulated for this setpoint nonconservatism to potentially affect Plant shutdown. Therefore, this event is deemed to have been of minimal safety significance.

This event posed no threat to the health and safety of either the public or Plant personnel.

Plant Conditions

Power Level - 0%
Plant Mode - 4 (Cold Shutdown)

Event Description

On March 2, 1992 contract engineers working in the Setpoint Methodology Program determined that the setpoints for Containment Instrument Air (CIA) pressure switches CIA-PS-21A, 21B, 22A, 22B, 39A, and 39B did not necessarily ensure proper system operation under all postulated post-accident harsh environment conditions. A four hour verbal notification was made to the NRC on March 2, 1992 pursuant to the requirements of 10CFR50.72(b)(2)(iii)(A).

Immediate Corrective Action

No immediate corrective actions were required since the CIA system and the supported equipment, the Automatic Depressurization System (ADS), are not required to be operable in Plant Operational Condition 4.

Further Evaluation and Corrective Action

A. Further Evaluation

There are a total of 18 Safety/Relief Valves (SRVs), each of which is supplied by a nonsafety-related nitrogen supply through the CIA system including a safety-related accumulator capable of supporting at least one valve actuation. The CIA system is the safety-related Quality Class I nitrogen (used in place of air) supply for the SRVs. Seven of the SRVs serve an ADS function. 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 for a 30 day period. There is also one remote bottle connected to each bank, accessible post-accident, that provides the capability to supply the ADS SRVs for an indefinite period of time through bottle change-out. The 18 SRVs will also open mechanically, in the safety valve mode, on a high reactor pressure condition.

The normal nitrogen supply to the 18 SRVs is from the nonsafety-related nitrogen storage tank through the CIA system piping. On a low nitrogen header pressure, the nonsafety-related portion of the nitrogen system is automatically isolated and the safety-related bottle banks are automatically placed in service. This automatic system initiation is accomplished through a two out of three logic. The three logic inputs and the associated old setpoints are: 1) pressure switches CIA-PS-21A and 21B were set to trip on low pressure at 140-143 psig; 2) pressure switches CIA-PS-22A and 22B

were set to trip on low pressure at 136-138 psig; and 3) closure of the safety to nonsafety-related isolation valves CIA-V-39A and 39B. These two valves are isolated on a low CIA system pressure of 140-142 psig as sensed by pressure switches CIA-PS-39A and 39B. The safety to nonsafety-related CIA system interfaces also include check valves, CIA-V-41A and 41B, which provide isolation.

The new setpoints described in this LER are a result of the Supply System efforts to reevaluate the harsh environment Technical Specification related setpoints. The original setpoint calculations for the six pressure switches in question were performed based on a minimum steam pressure under the SRV seats. This steam tends to open the valves just as the steam opens the valves in the mechanical safety valve mode. This resulted in a lower required nitrogen pressure from the CIA system to open the valves due to the "assist" provided by steam. The new setpoint calculations do not take credit for the steam "assist." The new setpoints conservatively include the effects of postulated harsh environmental conditions on the pressure switch accuracy, potential inaccuracies in the calibration instrumentation, and the potential effects of instrument drift between calibrations.

In order to ensure that given the postulated instrument inaccuracies the instruments still trip at or above the minimum CIA pressure required to operate the SRVs, 133.5 psig, the instruments must be calibrated to trip at a point higher than 133.5 psig. The pressure switches are now set with minimum setpoints ranging from 155 psig to 159 psig in order to ensure proper CIA/ADS operation under postulated post-accident harsh environment conditions. This increase in the instrument setpoints is necessitated by the assumed effects of a harsh environment on instrumentation accuracy and drift.

The old CIA instrument trip setpoints did not ensure that the CIA/ADS systems would function properly under all postulated accident harsh environment conditions. This resulted in a condition that alone could have prevented the fulfillment of a safety function needed to shut down the reactor and maintain it in a shutdown condition. This condition is reportable pursuant to the requirements of 10CFR50.73(a)(2)(v).

The root cause of this event was an analysis deficiency in that the previous setpoint calculations did not adequately address the effects of harsh environment on setpoint accuracy.

There were no structures, systems, or components inoperable prior to the start of this event that contributed to the event.

B. Further Corrective Action

Pressure switches CIA-PS-21A, 21B, 22A, 22B, 39A, and 39B were reset in accordance with the new setpoint calculations to ensure the CIA and ADS systems will respond properly in the postulated harsh environments. The normal system operating pressure was increased to provide an acceptable operating band between the new system trip setpoints and the normal system pressure. The CIA and ADS system components were reviewed to ensure the increased system pressure did not invalidate component qualification. Finally, the system relief valves were reset to account for the new system pressure. The system design pressure is well above the new system operating pressure.

The Setpoint Methodology Program is an ongoing program to address the more general concern of setpoint adequacy and the effects of harsh environment. No additional corrective actions are planned as a result of this event.

Safety Significance

The SRVs are used, through manual operator action, to: 1) limit reactor pressure to less than the SRV mechanical lift setpoints, and 2) to dump steam to the suppression pool in the event the main condenser or the bypass valves are unavailable. The SRVs are also used, as initiated by ADS, to reduce reactor pressure to the point where the Low Pressure Core Spray or Low Pressure Core Injection systems can inject water into the reactor in the unlikely event the High Pressure Core Spray (HPCS) system is not available to supply high pressure water to the reactor during a transient involving a loss of the Reactor Feedwater.

The normal nonsafety-related nitrogen supply for the SRVs is not affected by the conditions described in this LER. The normal nitrogen supply is capable of supporting all of the SRV functions for an indefinite period of time. The CIA bottle systems provide a safety grade backup to the normal nitrogen supply. Need for the CIA system is predicated on a loss of Plant nitrogen.

A review of the setpoint data for the six pressure switches in question revealed that as-found setpoints were only below the new lower analytical limit value of 133.5 psig on two occasions. In one instance, the setpoint was found at 133.4 psig.. This 0.1 pound difference would easily have been compensated for by the presence of steam under the SRV valve seats. In the second instance the CIA-PS-21B trip setpoint was found at 116.5 psig. This is indicative of an instrument failure. In each of these instances, however, the other two instruments that comprise the two out of three logic for the CIA Programmer for the affected train were set above 133.5 psig as required to ensure SRV operation. The postulated effect of harsh environmental conditions is that the system pressure could have been too low to support SRV operation, i.e. less than 133.5 psig, without the pressure switches actuating the safety grade nitrogen bottle system. For the setpoint "inaccuracy" to have had an affect on CIA system operation, two of the three pressure

switches on a given train of CIA would have had to have been effected in this manner. Additionally, the CIA/ADS systems would have performed their intended safety functions unless two of the three pressure switches on both trains were similarly impacted.

If this condition had occurred, however, the operator would have had indication of low CIA system pressure. The operator could have manually isolated the nonsafety-related normal nitrogen supply, resulting in CIA system pressure bleeding down to the point where the pressure switches would have tripped and initiated the safety-related bottle system. The operator could also have valved in the remote safety-related nitrogen bottle, with or without isolating the normal nitrogen supply, to support ADS valve operation. Finally, the CIA Programmers can be manually initiated if they are physically accessible.

The actual as-found and as-left setpoints for these pressure switches would, neglecting the potential effects of harsh environment, have supported proper CIA/ADS operation. The steam "assist" available for SRV opening provides an additional margin to safety not credited in the new calculations. Multiple component or system failures must occur for the safety-related CIA bottle system to be needed. Several methods were available to the operator to support ADS operation from the safety-related portion of the CIA system if the pressure switches had failed to trip at the required pressure and the normal nitrogen system pressure was degraded. Therefore, this event is deemed to have had minimal safety significance.

Similar Events

The Supply System has identified several setpoint problems previously reported in LERs. These include LER 92-002 dealing with the Main Steam Isolation Valve Leakage Control System, and LER 92-006 dealing with the Reactor Building to Suppression Pool Vacuum Breaker valves. Technical Specification harsh environment instrumentation setpoints continue to be evaluated as part of the Setpoint Methodology Program to ensure WNP-2 setpoints incorporate the necessary conservatisms and modern analytical setpoint calculation techniques.

EIIS Information

Text Reference	EIIS Reference System	EIIS Reference Component
Containment Instrument Air	LD	---
CIA-PS-21A, 21B, 22A, 22B, 39A, 39B	LD	PS
CIA Programmer	LD	STC
Automatic Depressurization System	BG	---
Safety/Relief Valves	SB	RV
SRV Accumulator	SB	ACC
Nitrogen Storage Tank	LK	TK
CIA-V-39A and 39B	LD	IHV
CIA Relief Valves	LD	RV
CIA Nitrogen Bottles	LD	TK
Suppression Pool	C	TK
Main Condenser	SD	COND
Bypass Valves	MS	SHV
Low Pressure Core Spray	BM	---
Low Pressure Core Injection	BO	---
High Pressure Core Spray	BG	---
Reactor Feedwater	SJ	---
Plant Nitrogen	LK	---
Vacuum Breakers	C	PDCV