

ENERGY NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

July 17, 2003
GO2-03-111

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397
LICENSEE EVENT REPORT NO. 2003-003-00**

Dear Sir or Madam:

Transmitted herewith is Licensee Event Report No. 2003-003-00 for the Columbia Generating Station. This report is submitted pursuant to 10 CFR 50.73(a)(2)(v)(B). The enclosed report discusses items of reportability and corrective actions taken.

If you have any questions or require additional information, please contact Ms. CL Perino at (509) 377-2075.

Respectfully,



RL Webring
Vice President, Nuclear Generation
Mail Drop PE04

Enclosures: 1) Notarized affidavit
2) Licensee Event Report 2003-003-00

cc: TP Gwynn – NRC RIV
BJ Benney – NRC-NRR
INPO Records Center
NRC Sr. Resident Inspector – 988C (2)
RN Sherman – BPA/1399
TC Poindexter – Winston & Strawn
WB Jones – NRC RIV/fax

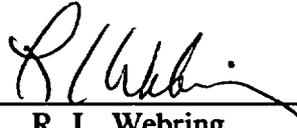
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STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: LER 2003-003-00

I, R. L. Webring, being duly sworn, subscribe to and say that I am the Vice President, Nuclear Generation, for ENERGY NORTHWEST, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE 7/17, 2003



R. L. Webring
Vice President, Nuclear Generation

On this date personally appeared before me R. L. Webring, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 17th day of July, 2003.



Notary Public in and for the
STATE OF WASHINGTON

Residing at Richland WA

My commission expires 3-29-05



NRC FORM 366 (1-2001)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington DC 20555-0001, or by internet e-mail to bj1@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.			EXPIRES 6-30-2001			
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)											
FACILITY NAME (1) Columbia Generating Station				DOCKET NUMBER (2) 05000397			PAGE (3) 1 OF 5				
TITLE (4) Shutdown Cooling Isolation Caused by Deenergization of Wrong Relay During Work Activity											
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
5	21	2003	2003	003	0	7	17	2003	FACILITY NAME	DOCKET NUMBER	
OPERATING MODE (9)		5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)							
POWER LEVEL (10)		00		20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)			
				20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)		50.73(a)(2)(x)			
				20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)		73.71(a)(4)			
				20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)		73.71(a)(5)			
				20.2203(a)(2)(ii)	50.36(c)(2)	X	50.73(a)(2)(v)(B)		Other		
				20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A			
				20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)					
				20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)					
				20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)					
				20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)					
LICENSEE CONTACT FOR THIS LER (12)											
NAME Craig Sly						TELEPHONE NUMBER (Include Area Code) 509-377-8616					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	
YES (If yes, complete EXPECTED SUBMISSION DATE).					X	NO					
<p>ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)</p> <p>On May 21, 2003, Columbia Generating Station was in Mode 5 (refueling) with the reactor head removed, the reactor cavity flooded to greater than or equal to 22 feet above the top of the reactor pressure vessel flange, and the fuel pool gates removed. At approximately 1155 PDT, an isolation of the Residual Heat Removal (RHR) Shutdown Cooling (SDC) common suction header occurred when the inboard isolation valve RHR-V-9 closed.</p> <p>A maintenance team assigned to repair a lug connector on relay MS-RLY-K72A mistakenly worked on relay MS-RLY-K72. The neutral wires of MS-RLY-K72 and MS-RLY-K29 are daisy chained together. When the neutral wire to K72 was disconnected, relay MS-RLY-K29 deenergized and caused RHR-V-9 to close. The closure of RHR-V-9 caused the operating RHR SDC pump to trip.</p> <p>The causes of this event are the failure of the maintenance technicians to seek verification and validation that the proper relay was being worked and less than adequate relay labeling.</p> <p>Corrective actions include counseling appropriate personnel on expectations for equipment identification, self-checking, and sharing the event with maintenance personnel. In addition, the standards for device labeling within electrical cabinets will be reviewed and a standard instruction format for locating relays will be developed.</p>											

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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Event Description

On May 21, 2003, Columbia Generating Station (Columbia) was in Mode 5 (refueling) with the reactor head removed, the reactor cavity flooded to greater than or equal to 22 feet above the top of the reactor pressure vessel flange, and the fuel pool gates removed. At approximately 1155 PDT, an isolation of Residual Heat Removal (RHR) shutdown cooling (SDC) occurred. RHR SDC subsystem A was operating in the shutdown cooling mode and RHR SDC subsystem B was out of service for planned maintenance. In addition, operators were making preparations to remove RHR SDC subsystem A from service to support scheduled testing activities requiring a suspension of shutdown cooling.

The SDC isolation was caused by an isolation of RHR-V-9, a containment isolation valve in the common suction line for both RHR SDC subsystems. Closure of RHR-V-9 subsequently tripped RHR SDC pump 2A (RHR-P-2A).

The isolation occurred during performance of planned maintenance in control room panel H13-P622. A maintenance team was assigned to repair the B4 lug terminal wire on relay MS-RLY-K72A (K72A) in cabinet H13-P622 under a planned work order. This relay is part of the Recirculation System Sample Isolation Valve logic. After a pre-job brief, the technicians went to the Control Room to walk-down the job. They peer-checked the location of the relay, noted the style of lug required and obtained a lug from stores. After returning from stores the technicians once again peer-checked the location of the relay. Believing they had identified the proper relay, they proceeded with the work. The technicians checked the voltage on the relay (zero volts) and after a final peer-check; they removed the B4 wire from the relay, cut off the old lug, replaced it, and re-installed the wire. After the technicians lifted the wire from the B4 terminal, operators observed RHR-P-2A had tripped.

An investigation by the technicians, their supervisor, and the control room staff determined the technicians had worked on the wrong relay. The correct relay as identified in the work order, was relay MS-RLY-K72A. However, the technicians had lifted the B4 wire on relay MS-RLY-K72 (K72). Both relays are located in control room panel H13-P622, and "A" is the only distinct identifier differentiating the two relays.

Removing the B4 wire on relay K72 disrupted the daisy-chained neutral associated with relay MS-RLY-K29 (K29). This relay is normally energized. Opening the neutral to K29 relay caused it to de-energize resulting in a Nuclear Steam Supply Shutoff System (NSSSS) inboard isolation signal (group 6) which closed RHR-V-9.

Operators noticed RHR-P-2A had tripped and at 1155 PDT declared the required shutdown cooling subsystem inoperable. They then entered Technical Specification (TS) Required Actions 3.9.8.A, 3.9.8.B.1, 3.9.8.B.2, 3.9.8.B.3, 3.9.8.B.4, 3.9.8.C.1, and 3.9.8.C.2. Within approximately ten minutes the neutral wire was reconnected to contact B4 on K72. After verifying no other spurious actuation signals were present which would cause RHR-V-9 to close, Control Room Operators reset the NSSSS logic, opened RHR-V-9, and declared RHR SDC subsystem A operable at 1226 PDT.

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Cause of Event

The root causes of this event were the failure of the technicians to seek verification and validation that the proper relay was being worked and less than adequate labeling of the relays inside control room cabinet H13-P622.

Both technicians performing the work assumed no similarly named relays existed in cabinet H13-P622. The technicians identified relay K72 in the cabinet as the correct relay and fell into a mindset this was the correct relay during subsequent checks. The technicians fell into this mindset due to the similar location and inconsistent labeling of the two relays.

Relay K72 is labeled such that it is much easier to identify. This relay is labeled with a paper label reading "MS-RLY-K72". The paper label is located on the relay itself and easy to locate and read when the cabinet is opened. This relay is also labeled with a small paper sticker as "K72". This smaller label is deeper inside the cabinet near the base of the relay. Relay K72A is more difficult to identify. It is lower in the cabinet (below eye level) and no label exists on the relay itself. Relay K72A has a small paper sticker label, reading "K72A" located near the base.

Safety Significance

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

At the time the SDC isolation occurred, Columbia was in a refueling outage with the vessel head removed and reactor water level greater than 22 feet above the reactor vessel flange. These conditions provide a large heat sink for core cooling and adequate time for the restoration of RHR SDC or initiation of an alternate method of decay heat removal. RHR SDC was restored in approximately 31 minutes by reconnecting the wire at the B4 terminal of K72 and resetting the NSSSS logic that isolated RHR-V-9.

If the cause of the RHR-V-9 isolation signal had not been quickly discovered, Abnormal Procedure, ABN-RHR-SDC-LOSS, "Loss of Shutdown Cooling" provides instructions to restore (manually) RHR shutdown cooling prior to the system being unable to perform its intended safety function.

Coincidentally, the unplanned isolation of RHR-V-9 occurred as Control Room Operators were preparing for scheduled testing activities requiring a suspension of shutdown cooling. Therefore, the following TS Actions were in place at the time of the event:

1. Technical Specification 3.9.8 requires one RHR SDC subsystem shall be operable and in operation in Mode 5 with irradiated fuel in the RPV and water level greater than or equal to 22 feet above the top of the RPV flange. A Note in TS 3.9.8 allows the required SDC subsystem to be removed from operation for up to 2 hours per 8-hour period. This note is intended to recognize continuous or intermittent operation of one RHR SDC subsystem can maintain reactor coolant temperature. If the required RHR SDC subsystem is inoperable, TS 3.9.8, Action A.1 requires verification that an alternate method of decay heat removal is available within one hour. If not verified within one hour, then the following actions are required immediately; no irradiated fuel assemblies are

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being loaded into the reactor (Action B.1), secondary containment is operable (Action B.2), both trains of standby gas treatment are operable (Action B.3), and all required secondary containment penetrations flow paths have isolation capability (Action B.4). Since TS 3.9.8 Actions B.1 through B.4 were pre-established, Operators conservatively assumed the TS Actions were required, and documented these actions were complete.

2. TS 3.9.8, Action C.1 and C.2 require verification of reactor coolant circulation by an alternate method and monitoring reactor coolant temperature within one hour respectively. This Completion Time requirement was not exceeded. RHR SDC subsystem A was declared operable in approximately 31 minutes, and reactor coolant circulation (natural circulation) was verified approximately 32 minutes after the isolation of RHR-V-9. Reactor coolant temperature was 75.6 degrees Fahrenheit.

This event is reportable in accordance with 10 CFR 50.73 (a)(2)(v)(B).

Corrective Actions

The neutral wire was reconnected to contact B4 on relay K72. After verifying no other spurious actuation signals were present which would cause RHR-V-9 to close, operators reset the NSSSS logic, opened RHR-V-9, and declared RHR SDC subsystem A operable.

Further Corrective Actions

The technicians involved in this event were counseled on expectations for equipment identification and self-checking. This event has also been shared with maintenance personnel. This event will also be presented to the Maintenance, Health Physics, Chemistry, Engineering, and Operations Training Assessment Groups to consider its inclusion into future training.

A standard instruction format for locating relays is being developed (i.e., includes the Equipment Piece Number (EPN), cabinet, device designator, and cabinet drawing).

Labeling standards will be reviewed for components in electrical panels and adjusted as necessary.

Previous Similar Events

There have been no reported isolations of RHR SDC in the past 5 years. A similar event did occur on June 8, 2001 when isolation of the RHR suction outboard isolation valve occurred during planned maintenance. However, this event was determined to not be reportable under 10 CFR 50.72 or 73 reporting requirements.

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EIIS Information

Text Reference	System	Component
RHR SDC Isolation Valve, RHR-V-9	BO	ISV
RHR SDC Pump RHR-P-2A	BO	P
Nuclear Steam Supply Shutoff System	BD	
Relay MS-RLY-K72	BO	94
Relay MS-RLY-K72A	AD	94
Relay MS-RLY-K29	BO	94