REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8806220301 DOC. DATE: 88/06/17 NOTARIZED: NO DOCKET #
FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
AUTH. NAME AUTHOR AFFILIATION
WASHINGTON, S. L. Washington Public Power Supply System
POWERS, C. M. Washington Public Power Supply System
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-016-00: on 880511, reactor protection sys actuation ocurred. Caused by error in plant design. Event discussed in Mechanics shop meeting & article describing event to be included in prefuelling outage Bulletin. W/880617 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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 0 4

TITLE (4) Reactor Protection System Actuation Caused By An Average Power Range Monitor High Power (Not real) Trip Due To Plant Design

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	1 1	8 8	8 8	0 1 6	0 0	0 6	1 7	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
4	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(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
Steven L. Washington, Compliance Engineer	AREA CODE 5 0 9 3 7 7 - 1 2 0 8 0

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 0835 hours on May 18, 1988 a full Reactor Protection System (RPS) actuation occurred. At the time of the event the Plant was shut down for annual refueling and maintenance. The cause of this event is the accidental movement of a Local Power Range Monitor (LPRM) cable by Plant Mechanics while removing support ("shoot-out") steel from the Control Rod Drive (CRD) undervessel area. Movement of the high capacitance LPRM cable caused a signal noise spike of sufficient magnitude to cause a high power trip of Average Power Range Monitor (APRM) Channel "B" which in turn tripped RPS Channel "B". At the same time Plant Instrument Technicians in a pre-planned action tripped Main Steamline, Channel "A", Radiation Indicating Switch which tripped RPS Channel "A". Tripping both RPS channels causes an RPS actuation; however, since the Plant was shut down no actual control rod movement occurred. The "root cause" of this event is Plant design. One hundered and seventy two LPRM cables drop through the "shoot-out" steel in the confined CRD undervessel area and it is impossible to totally prevent accidental movement of the cables while working in the area. Working conditions in the CRD undervessel area are difficult since extensive radiological protective clothing and equipment is required and workers must crouch because there is insufficient clearance between the "shoot-out" steel and the CRD work platform to stand. A Plant Control Room Operator (CRO) reset the RPS. A Plant Instrument Technician was sent to the CRD undervessel area to investigate the cause of the RPS actuation. Corrective Actions to be taken include: Discussing this event in a Mechanics Shop Meeting, and preparation of an article describing this event to be included annually in the Pre-Refueling Outage Monthly Operating Bulletin. There is no safety significance associated with this event since no actual RPS initiating conditions existed and all actuations occurred as designed.

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

Plant Conditions

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

Event Description

At 0835 hours on the morning of May 18, 1988 a full Reactor Protection System (RPS) actuation occurred. At the time of the event the Plant was shut down for annual refueling and maintenance. No actual control rod movement occurred.

Prior to the event, at 0716 hours, Plant Instrument Technicians began a technical specification surveillance channel calibration of the Main Steamline "Channel A" Radiation Indicating Switch (MS-RIS-610A). Performance of this surveillance causes RPS Channel "A" trips.

At 0815 hours, two Plant Mechanics and a Plant Laborer entered the Control Rod Drive (CRD) undervessel area to remove the support ("shoot-out") steel in preparation for changing out control rod drives during the outage. The "shoot-out" steel limits the distance a CRD could be ejected from the Reactor Pressure Vessel (RPV) and is part of the Control Rod Drive Housing Support Structure.

At 0835 hours RPS Channel "A" was purposely in a tripped condition as a result of the MS-RIS-610A surveillance. Also at this time Plant Mechanics inadvertently caused a high power trip of Average Power Range Monitor (APRM) Channel "B" by accidently moving a Local Power Range Monitor (LPRM) signal cable which caused RPS Channel "B to trip. Tripping both RPS Channels causes an RPS Actuation.

Immediate Corrective Action

At 0837 hours, the Control Room Operator (CRO) reset the half scram. At 0916 hours, the Plant Mechanics exited the undervessel area. At 1100 hours, Plant Instrument Technicians entered the CRD undervessel area to investigate the cause of the APRM Channel "B" trip.

Further Evaluation

There were no systems or components inoperable at the start of this event which contributed to the event.

The Plant Instrument Technicians did not record the results of their May 18, 1988 undervessel inspection. Two LPRM cables that feed a signal to APRM B were repaired during the outage, but there are no records that directly tie a specific damaged cable to this incident.

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Further Evaluation (continued)

The cause of the event was an inadvertent and unplanned APRM B high power trip. Each APRM Channel is feed by 21 or 22 LPRMS through high capacitance signal cables which drop through the "shoot-out" steel. Due to the high capacitance of the LPRM signal cables they are very sensitive to movement. When the Reactor Mode Switch is NOT in "Run" the APRM channel high power trip is setdown to 15% thermal power and a single LPRM signal spike of 330% is enough to trip an APRM channel. Based on previous Plant experience it is known that the movement of LPRM cables can produce a signal spike of sufficient magnitude to cause an APRM channel to trip.

The "root cause" of this event is Plant Design. One hundered and seventy two LPRM cables drop through the "shoot-out" steel in very confined conditions and it is impossible to not occasionally move a cable or even worse catch a cable in tools or equipment and give it a tug. The working conditions in the CRD undervessel area are among the toughest in the Plant. Workers must be in radiological protective clothing and respirators or bubble suits, and work must be performed while crouching since there is not enough clearance to between the CRD work platform and the "shoot-out" steel to stand.

An RPS actuation causes the CRD scram valves to open and if control rods had been withdrawn from the core they would have inserted.

Corrective Actions to be taken:

- o There are no corrective actions which will totally prevent this problem from reoccuring in the future.
- o This LER will be discussed in a Mechanics Shop meeting.
- o The sensitivity of the Neutron Monitoring System (NMS) (includes LPRM plus Intermediate Range Monitoring System (IRM) and Source Range Monitoring System (SRM)) cables and the need for extra care and caution during CRD undervessel work will be included annually in the Pre-Refueling Outage Monthly Operating Bulletin.

This event is reportable per 10CFR50.73 (a) (2) (iv). An Engineered Safety Feature actuation.

Safety Significance

There is no safety significance associated with this event. There were no actual RPS initiating conditions, and the RPS functioned as designed. This event posed no threat to the safety of the Public or Plant personnel.

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Similiar Events

LER 85-033, this is a similar event in that Plant Laborers were spraying water in the CRD undervessel area and caused an Intermediate Range Monitor (IRM) RPS actuation due to cable movement. The corrective actions taken in LER-85-033 have been effective in preventing a similar event. The cause identified in this LER is the same (NMS cable movement), but the corrective actions identified in LER 85-033 are not applicable to this situation.

EIIS Information

Text Reference	EIIS Reference	
	System	Component
Reactor Protection System (RPS)	JC	- - -
Local Power Range Monitor (LPRM) (cable)	IG	CBL1
Support ("shoot-out") Steel	AA	SPT
Control Rod Drive (CRD) Undervessel Area	AA	- - -
Average Power Range Monitor(APRM)	IG	- - -
Main Steamline Radiation Indicating Switch (MS-RIS-610A)	SB	RIS
Control Rod	AA	ROD
CRD Work Platform	AA	CRN
Reactor Pressure Vessel (RPV)	- - -	- - -
Control Rod Drive Housing Support Strcuture	AA	SPT
CRD Scram Valves	AA	V
Neutron Monitoring System (NMS)	JC	CBL1
Intermediate Range Monitoring System (IRM)	JC	CBL1
Source Range Monitoring System SRM	JC	CBL1

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

June 17, 1988

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 88-016

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-016 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,

C.M. Powers (M/D 927M)
WNP-2 Plant Manager

CMP:lg

Enclosure:
Licensee Event Report No. 88-016

cc: Mr. John B. Martin, NRC - Region V
Mr. C.J. Bosted, NRC Site (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D.L. Williams, BPA (M/D 399)

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