

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8803240066 DOC.DATE: 88/03/16 NOTARIZED: NO DOCKET #
 FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH.NAME AUTHOR AFFILIATION
 ARBUCKLE,J.D. Washington Public Power Supply System
 POWERS,C.M. Washington Public Power Supply System
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-007-00:on 880214,breach of secondary containment
 (reactor building roof rupture) during cold shutdown.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 11
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
PD5 LA	1 1	PD5 PD	1 1
SAMWORTH,R	1 1		
INTERNAL: ACRS MICHELSON	1 1	ACRS MOELLER	2 2
AEOD/DOA	1 1	AEOD/DSP/NAS	1 1
AEOD/DSP/ROAB	2 2	AEOD/DSP/TPAB	1 1
ARM/DCTS/DAB	1 1	DEDRO	1 1
NRR/DEST/ADS7E4	1 0	NRR/DEST/CEB8H7	1 1
NRR/DEST/ESB 8D	1 1	NRR/DEST/ICSB7A	1 1
NRR/DEST/MEB9H3	1 1	NRR/DEST/MTB 9H	1 1
NRR/DEST/PSB8D1	1 1	NRR/DEST/RSB 8E	1 1
NRR/DEST/SGB 8D	1 1	NRR/DLPQ/HFB10D	1 1
NRR/DLPQ/QAB10A	1 1	NRR/DOEA/EAB11E	1 1
NRR/DREP/RAB10A	1 1	NRR/DREP/RPB10A	2 2
NRR/DRIS/SIB9A1	1 1	NRR/PMAS/ILRB12	1 1
REG FILE 02	1 1	RES TELFORD,J	1 1
RES/DE/EIB	1 1	RES/DRPS DIR	1 1
RGN5 FILE 01	1 1		
EXTERNAL: EG&G GROH,M	4 4	FORD BLDG HOY,A	1 1
H ST LOBBY WARD	1 1	LPDR	1 1
NRC PDR	1 1	NSIC HARRIS,J	1 1
NSIC MAYS,G	1 1		

TOTAL NUMBER OF COPIES REQUIRED: LTTR 45 ENCL 44

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 1 7										PAGE (3) 1 OF 1																					
TITLE (4) Breach of Secondary Containment (Reactor Building Roof Rupture) During Cold Shutdown Due to HVAC Overpressurization Transient - Personnel Error																																									
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 2			1 4			8 8			8 8			0 0			7 0			0 0			3 1			6 8			8 8									0 5 0 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)						50.73(a)(2)(iv)						73.71(b)																	
POWER LEVEL (10)						20.405(a)(1)(i)						50.38(c)(1)						X 50.73(a)(2)(v)						73.71(c)																	
0 10 10						20.405(a)(1)(ii)						50.38(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																					
J.D. Arbuckle, Compliance Engineer																				AREA CODE 5 0 9 3 7 7 - 2 1 1 5																					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																									
CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NRC						CAUSE			SYSTEM			COMPONENT			MANUFACTURER			REPORTABLE TO NRC											
B			VIA			FLUID			W11210			N																													
SUPPLEMENTAL REPORT EXPECTED (14)																				EXPECTED SUBMISSION DATE (15)																					
YES (If yes, complete EXPECTED SUBMISSION DATE)																				MONTH DAY YEAR																					
NO																																									

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

On February 14, 1988 during a forced outage to repair a main condenser tube leak, visual inspections were performed on various Westinghouse DS416 breakers as required by NRC Bulletin 88-01.

At 2036 hours, following the inspection of the 480V breaker for Reactor Building Return Outside Air Fan ROA-FN-1A, a Plant Equipment Operator (EO) informed the Control Room Operator (CRO) that the breaker was returned to service. However, the EO failed to verify that the local open indicating light was not illuminated, which indicated a lack of trip circuit function.

After verifying proper Reactor Building Ventillation System valve lineup, the CRO (at 2041 hours) placed the ROA-FN-1A control switch from the "Pull-To-Lock" position to the "After Stop" position. He then noticed that no indicating lights were illuminated and returned the switch to the "Pull-To-Lock" position, assuming the problem was related to the breaker. The "Pull-To-Lock" position is normally a position which disables the close circuit and locks in a continuous trip signal to the circuit breaker. Due to wiring errors in the system, the breaker closed and started the fan. However, due to the lack of trip circuit power (and unknown to the CRO), ROA-FN-1A continued to run while in the "Pull-To-Lock" position.

At 2043 hours, while investigating the problem, the CRO and Control Room Supervisor (CRS) noted that a full-scale spike (approximately +7"W.C.) had been recorded on the secondary containment differential pressure recorder for a brief period and had returned to +1.5"(W.C.). Unknown to the Operators, the drop in differential pressure was due to the rupture of the Reactor Building roof. In less than two minutes, without a Reactor Building Exhaust Air (REA) fan running, the roof ruptured 8803240066 880316

8803240066 880316
PDR ADOCK 05000397
S DCD

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 8	0 0 7	0 0	0 2	OF	1 0

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Abstract (Continued)

Due to the full-scale pressure spike, the Operators suspected that ROA-FN-1A was running and directed an EO to trip the breaker locally. Reactor Building Ventilation Air Intake Valve ROA-V-1 was closed to aid in reducing pressure. At 2051 hours, the EO stopped the fan by manually tripping the breaker.

At 2300 hours, the Control Room received a report from a Plant Chemistry Technician who observed nuts and bolts scattered around the refueling floor (Reactor Building 606' Elevation). On February 15, 1988 at 0030 hours, damage assessment was completed and concluded that the Reactor Building roof had ruptured.

Although not required for the operating condition at the time (Mode 4-Cold Shutdown), Secondary Containment was immediately declared inoperable. Prior to restart, Secondary Containment was restored, an ROA/REA and associated systems operational verification was performed, and a root cause evaluation was conducted. The root cause of this event occurring is personnel error related to a wiring error in the ROA/REA logic circuit, and the cause for the event not terminating prior to the roof rupturing was the lack of ROA-FN-1A trip function due to an unreliable fuse block. Further corrective action includes 1) developing an EO training program on operation of switchgear breakers, 2) implementing an alternate positive-pressure limiting design for the ROA/REA system, and 3) developing an investigative process to provide a sufficient level of confidence that the wiring errors are limited as perceived.

This event did not affect the health and safety of either the public or plant personnel.

Plant Conditions

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

Event Description

On February 14, 1988 during a forced outage to repair a main condenser tube leak, visual inspections were performed on various Westinghouse DS416 breakers as required by NRC Bulletin 88-01. The plant was in a cold shutdown condition with the Standby Gas Treatment (SGT) system in service maintaining a slight negative pressure on Secondary Containment.

At 2036 hours, following the inspection, the 480V breaker (switchgear SL-73) for Reactor Building Return Outside Air Fan ROA-FN-1A was racked in and the trip and close fuse blocks were installed by a Plant Equipment Operator (EO) to return the breaker to service. However, the EO failed to verify that the open indicating light at the breaker was not illuminated when the trip logic fuses were installed, which indicated a lack of trip circuit function. The breaker status lights, both local and remote, are

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER				
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7 8 8	—	0 0 7	—	0 0	0 3	OF	1 0

TEXT (If more space is required, use additional NRC Form 368A's) (17)

powered from the trip circuit. The EO heard the breaker closing coil charge motor operate when the closing set of fuses were installed and assumed the breaker was successfully returned to service. He then contacted the Control Room Operator (CRO) and informed him that ROA-FN-1A circuit breaker was returned to service. The CRO noticed a plant computer alarm reset, which acknowledged a normal condition for the breaker overload protective device. The CRO obtained permission from the Control Room Supervisor (CRS) to restart the system and then proceeded to the back panel to check the valve lineup for Reactor Building ventilation in preparation for system startup. At 2040 hours, the CRO opened Reactor Building Discharge Duct Isolation Valve REA-V-2 and, at approximately 2041 hours, placed the ROA-FN-1A control switch from the "Pull-To-Lock" to the "After Stop" position without first verifying breaker status (green) light indication. At the time the CRO placed the fan control switch to the "After Stop" position, he then noticed that no indicating lights were illuminated. As a result of a wiring error (which is discussed in the Further Evaluation section of this LER), and unknown to the CRO, ROA-FN-1A had autostarted when the control switch was removed from the "Pull-To-Lock" position. The CRO did not realize ROA-FN-1A started given the absence of functional indicating lights. The CRO then proceeded to verify that the green light bulb was operable and returned the ROA-FN-1A control switch to the "Pull-To-Lock" position, assuming the problem was related to the breaker which had recently been returned to service.

By placing the switch in the "Pull-To-Lock" position, the CRO performed a conscious action to put the unit in what should have been a secure position and which would have normally terminated the event had the trip logic been energized. The "Pull-To-Lock" position is designed as a position which disables the close circuit and locks in a continuous trip signal to the circuit breaker. The actions taken by the CRO were in accordance with the normal operating procedure. However, due to the lack of trip circuit power, ROA-FN-1A continued to run while in the "Pull-To-Lock" position. It should be noted that, while at the control panel when the fan started, the CRO did not observe the change in building pressure and, as a result, starting the REA fan was not considered necessary.

While discussing the breaker problem, the CRO and Control Room Supervisor (CRS) were alerted by a series of SGT alarms and returned to the ventilation control panels. At 2043 hours, while responding to the SGT alarms, they noted that a full-scale spike of approximately +7"(W.C.) had been recorded on the differential pressure chart recorder for Secondary Containment for a brief period, and had returned to +1.5"(W.C.), higher than normal. Unknown to operators, the observed drop in differential pressure on the recorder was due to the rupture of the Reactor Building roof. In less than two minutes of ROA-FN-1A operation, the Reactor Building roof ruptured.

Due to noting the full-scale pressure spike, the CRO and CRS suspected that ROA-FN-1A was running. Accordingly, attempts were made to further reduce pressure with increasing SGT flow. At 2049 hours, Reactor Building Ventilation Air Intake Valve ROA-V-1 was closed to aid in reducing pressure. As a result, pressure rapidly dropped from +1.5"(W.C.) to less than 0"(W.C.). An EO that had earlier been dispatched to the 480V-breaker, confirmed that circuit breaker ROA-CB-FN-1A was closed, and was directed to trip the breaker locally. At 2051 hours, the EO stopped the fan by manually tripping the breaker.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7 8 8	—	0 0 7	— 0 0	0 4	OF	1 0

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

The Shift Support Supervisor (SSS) had also responded to the earlier call from the Control Room with the EO, noticed the absence of indicating lights, and verified that the fuse blocks for both sets of control power fuses for ROA-CB-FN-1A were installed correctly. However, the EO noticed that one fuse clip for the trip circuit holder was loose. Both sets of fuses for the control circuitry were replaced in the clip holders and the holders were replaced in the trip and close circuitry. The EO verified that the local panel indicating lights were functional.

At 2058 hours, the CRO placed the ROA-FN-1A control switch in the "After Stop" position, observed the anticipated start of ROA-FN-1A, and manually started REA-FN-1B. At that time, Standby Gas Treatment System Fan SGT-FN-1A was secured.

At 2300 hours, a Plant Chemistry Technician observed nuts and bolts scattered around on the refueling floor (Reactor Building 606' Elevation) and contacted the Control Room.

On February 15, 1988 at 0030 hours, the damage assessment was completed and concluded that the Reactor Building roof had ruptured.

Immediate Corrective Action

Although not required for the operating condition at the time (Mode 4 - Cold Shutdown), Secondary Containment was declared inoperable.

Further Evaluation and Corrective Action

A. Further Evaluation

An evaluation process was formulated that included three functional tasks; roof repair, ROA/REA and associated systems operational verification, and a root cause evaluation. The root cause evaluation and the supporting investigations provided the following:

- 1) The root cause of this event is personnel error related to a wiring error in the ROA/REA System. The ROA-FN-1B logic circuit wiring error was verified by inspection and test to be the cause of the ROA-FN-1A autostart. The logic was designed to provide a delayed autostart of the backup fan if the running fan breaker is closed (motor running) and a low operating fan differential pressure occurs (indicative of a fan belt failure). However, the actual wiring configuration at the breaker (52a contact) bypassed the breaker-closed portion of the logic, thereby, providing an autostart signal from the low differential condition (regardless of breaker position) following a ten-second time delay. Had the wiring error been corrected, the errors made by the Operations Staff would not have resulted in the fan starting. This wiring error was not resolved during the preoperational testing process or by subsequent troubleshooting efforts. The lack of trip function also prevented either the operator actions taken or the automatic tripping of the fan once it started.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 8	0 0 7	0 0	0 5	OF	1 0

TEXT (If more space is required, use additional NRC Form 368A's) (17)

- Corrective Action

Prior to restart, the ROA and REA trip systems and automatic start logic were returned to the proper design configuration and functionally tested. A control switch wiring error not affecting the trip and autostart logic was not returned to the design configuration. A 10CFR50.59 evaluation was performed and the condition determined to be acceptable until corrected.

In addition compensatory measures have been established in that an EO will be dispatched to the switchgear prior to an ROA/REA system start until such time that an alternate Secondary Containment pressure relief design can be executed.

- 2) As a result of the wiring error, the ROA/REA acceptance test was reviewed and verified to not completely test the autostart function. The initial preoperational test condition was with one fan running and tested the autostart of the lag fan by exercising the low differential pressure switch for the running fan. This test method did not independently functionally test the contribution of both the low flow and breaker position portions of the logic. A records review indicates that the wiring error originated from a multi-system design change document (PED-W-218-E-5147) that was issued by the A/E (Burns and Roe, Inc.) and acknowledged by the Supply System Startup organization but not fully implemented for the ROA/REA System. As a result, the configuration for the ROA/REA System did not include the (52a) breaker status contact for all the fan circuits. Other wiring errors, not associated with the PED, were found in the system that affected three of the four fans control switch and a high/low pressure trip system. The errors are believed to be limited to the ROA/REA (non-safety-related) System as all of the other systems included in the PED were successfully implemented.

- Corrective Action

An investigative process will be developed to provide a sufficient level of confidence that the wiring errors found are limited as perceived.

- 3) The failure of the trip logic to energize is due to the unreliable fuse block. Subsequent inspections of the fuse block discovered an incorrect fuse block base installation. The loose-fitting fuses is considered to be the most probable cause of the loss of trip power. The fuse block used in this application is a Westinghouse Model 347A062H03.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 1 7 8 1 8	- 0 1 0 7	- 0 1 0	0 1 6	OF	1	1 0

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

- Corrective Action

Prior to restart, all critical switchgear (4 KV and 480 VAC) circuit breaker fuse holders and bases were inspected. Some fuse bases were found to be incorrectly installed on 480 VAC switchgear, possibly allowing for insufficient contact when fuse holders were installed. In addition, the fuse clip assembly for both ROA fans displayed a loose fuse-to-fuse clip fit. Accordingly, all fuse block installation deficiencies were corrected and fuse clip adjustments were made to provide for sufficient fuse contact.

- 4) A review of Plant Nonconformance Reports (NCRs) and Plant Deficiency Reports (PDRs) was performed to determine if the Reactor Building had experienced previous pressurization transients. It was discovered that one PDR documented a previous transient during 1985 and a Maintenance Work Request (MWR) documented an erroneous auto start.

It was stated on the PDR that apparently the REA exhaust fan was either shut down or tripped with the supply fan still running, causing the building to become pressurized, which resulted in the nonstructural roofing material to rise in two places. The PDR was dispositioned "Use-As-Is" and no corrective action was deemed necessary. The PDR is now recognized as an inadequate evaluation and a potentially missed opportunity to correct the wiring deficiencies and prevent this event.

The troubleshooting effort caused by the MWR is believed to have used an electrical wiring diagram that does not show sufficient detail to discover the wiring error. In addition, plant operating procedures had been previously revised to alert the staff to the potential for automatic starts when the control switch was removed from the "Pull-To-Lock" position.

- Corrective Action

Since that time, programmatic changes have been implemented that require an NCR dispositioned as "Use-As-Is" to be approved by the Plant Operating Committee (POC) as a proposed change to the Plant and a 10CFR50.59 evaluation performed. The plant NCR/PDR procedure is being revised to apply the same level of evaluation and review to PDRs. The Plant Staff has also been reminded to use the NCR/PDR process to document operational abnormalities to ensure an adequate level of review and concurrence with the problem disposition.

- 5) An engineering analysis was performed to determine the peak pressure reached when the Reactor Building roof ruptured. Evaluation of the strip chart recording data indicated that the pressurization and venting (roof rupture) time ranged from 106 to 176.5 seconds. The calculation indicates a roof rupture pressure from 0.469 psid to 0.564 psid. Accordingly, the conclusion was made that the roof performed as designed near 0.5 psid, the Design Basis Tornado limit and greater than the 0.25 psid High Energy Line Break Design Basis limit.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 8	— 0 0 7	— 0 0	0 7	OF	1 0

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

The Reactor Building to wetwell vacuum breakers that auto-open when the delta pressure between the Reactor Building and wetwell exceeds .5 psig were verified by calibration records review to trip at 13.8 inches W.C. as a minimum. The Reactor Building to wetwell vacuum breakers were verified to not have opened automatically during the building pressure transient. This substantiates the engineering analysis that estimated that the actual pressure did not substantially exceed the .5 psi roof rupture design limit. Metalurgical analysis of the controlled release fasteners indicates a one-time failure, further substantiating proper design performance and concluding that no previous Reactor Building pressurization transient affected the roof response. Corrective actions are planned and deal with alternate design configurations to prevent both positive and negative pressurization transients. The current design is acceptable until the design changes can be implemented.

- 6) The roof damage assessment revealed that most of the Reactor Building roof panels moved, some as much as 9-12 inches. Damage sustained was obvious damage to the roof structure (decking, purlins, bolting and roofing), which was designed to lift. Some of the bolting fell into the spent fuel pool.

• Corrective Action

Prior to restart, the Q-decking and damaged purlins were replaced. The built-up roofing material will be replaced at a later date. The built-up roofing is considered a environmental barrier that does not affect Secondary Containment integrity. In addition, an integrity test was performed which verified Secondary Containment per Plant Technical Specification LCO 3/4.6.5. A 10CFR50.59 Evaluation was performed and concluded that the conditon is acceptable until corrected.

- 7) An investigation was performed to verify the trip system logic function for the ROA and REA fans because a functional trip system for ROA-FN-1A would further prove that the trip logic was not energized.

Two trip systems (A and B) trip an ROA/REA "A" fan pair and the "B" trip system trips the ROA/REA, "B," fans. A trip system consists of four sensors that input to a low-value selector. The output is used for building pressure control, as well as the trip input for each trip system. Each trip unit provides a -2.5" or +4.0"(W.C.) pressure trip for an ROA and REA fan pair.

The investigation concluded that the "A" trip system was verified to be functional. However, the "B" trip system was found to be inoperable in that the REA-DPS-2B trip unit signal common was not installed. As a result, this condition prevented both the high and low trip for the "B," ROA and REA fans. The cause of the wiring error is unknown and is under investigation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0500039788	88	007	00	08	OF	10

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

● Corrective Action

The followup investigation will be performed as a part of the investigative process discussed in the item 2) corrective action of this section.

- 8) Other inspections which were performed prior to restart to assess the extent of damage caused by the overpressure transient included the following:
- The Reactor Building HVAC Systems were inspected (including all accessible components, ducting and supports) and no damage was found.
 - Miscellaneous structural elements (steam tunnel blowout panels; electrical and mechanical penetration seals and boots; vacuum breakers; and primary containment) were inspected/assessed and no damage was found.
- 9) An off-site dose calculation for the radiological consequences of the overpressure transient was performed and concluded that no increase to the normal dose commitments resulted from this event.
- 10) A Human Performance Evaluation System (HPES) evaluation was performed and concluded that improvements were needed in the EO training process for racking breakers in/out. The EO error to verify status light indication contributed to the event.

● Corrective Action

Prior to restart, a breaker racking-in/out procedure was approved by the Plant Operating Committee. The procedure will be physically present during the rack-in/out process until such time that a training program is developed and implemented.

Senior Plant Management also conducted meetings with various departments for the purpose of discussing the event and emphasizing Management expectations with regard to problem identification and resolution.

B. Further Corrective Action

- 1) A periodic training program on operation of switchgear breakers will be developed and presented to EOs.
- 2) Further review of past Reactor Building pressure transients will be performed in support of the ROA/REA System design review process. Several design concepts have been developed and will be further evaluated.
- 3) Inspection and replacement of fuses and fuse holders will be incorporated into the Electrical Maintenance Program.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7 8 8	- 0	0 7	- 0	0	9	OF 1 0

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

- 4) A fuel pool inspection plan has been developed and will be implemented prior to fuel pool usage in support of fuel receipt for the next refueling outage (Spring 1988).
- 5) An alternate positive pressure-limiting design will be implemented for the ROA/REA System. An engineering analysis and evaluation will be completed for negative Reactor Building pressure transients to determine if a design change similar to ROA is required for the REA fans.
- 6) As previously stated, an investigative process will be developed to provide a sufficient level of confidence that the wiring errors are limited as perceived. The results of this investigation will be transmitted to the NRC as requested by Region V.

Similar Events

None.

Safety Significance

The Secondary Containment structure, in conjunction with other Secondary Containment systems, provides a means of controlling and minimizing radiological leakage from the Primary Containment to the outside atmosphere during a LOCA and during a refueling accident. At the time of the event the reactor was in Cold Shutdown (Operational Mode 4) and, as a result, Secondary Containment was not required to be operational.

The design bases for the Secondary Containment are provided in FSAR Sections 3.3 (Wind and Tornado Loading) and 6.2.3 (Secondary Containment Functional Design). The Design Basis Tornado limit is 0.5 psid and the High Energy Line Break (HELB) limit is 0.25 psid.

It has been concluded from Engineering analysis/evaluations, and inspection and testing performed, that the Reactor Building roof ruptured as designed. No other damage was found, or is anticipated, and the repair effort has successfully restored Secondary Containment to an operational condition.

The HELB resultant activity levels would probably not even cause a Secondary Containment isolation (design basis is a refueling accident) and is further bounded by the Main Steam Line Break which causes a loss of Secondary Containment (Main Steam Tunnel blowout panels to the Turbine Building). This event, however, could represent a condition of safety significance if it occurred coincident with a DBA LOCA or refueling accident. This scenario is beyond the currently-accepted design failure criteria. It is, however, for this concern that an alternate design (that does not affect Secondary Containment integrity) to limit pressure will be implemented. This design change, in conjunction with the auto start and pressure trip functions of the ROA/REA system, is intended to preclude this combination of event.

This event did not affect the health and safety of either the public or plant personnel.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 17 8 18	-	0 0 7	-	0 0	1 0	OF 1 0

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

EIIS InformationText ReferenceEIIS Reference

	System	Component
Reactor Building HVAC System	VH	---
Standby Gas Treatment (SGT) System	BH	---
ROA-FN-1A	VH	FAN
ROA-CB-FN-1A	VH	52
REA-V-2	VH	SHV
ROA-V-1	VH	SHV
REA-FN-1B	VH	FAN
SGT-FN-1A	BH	FAN
Reactor Building Roof (Secondary Containment)	NG	---
ROA-FN-1B	VH	FAN
REA-DPS-2B	VH	PDIS

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

March 16, 1988

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 88-07

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-07 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:sm

Enclosure:
Licensee Event Report No. 88-07

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)

IE22
11

P723058481
~~P723058481~~