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U.S. NUCLEAR REGULATORY COMMISSION
Mail Station P1-137
Washington, D.C. 20555

10 CFR 50.73

Ladies/Gentlemen:

DOCKET NO. 50-301
LICENSEE EVENT REPORT 301/2000-002-00
REDUNDANT CHANNELS OF STEAM GENERATOR PRESSURE INDICATION
AND SOURCE RANGE NUCLEAR INSTRUMENTATION
NOT ROUTED INDEPENDENT OF COMMON FIRE ZONES
POINT BEACH NUCLEAR PLANT UNIT 2

Enclosed is Licensee Event Report 301/2000-002-00 for Point Beach Nuclear Plant Unit 2. This report is provided in accordance with 10 CFR 50.73(a)(2)(ii)(B) as "any event or condition that resulted in the ... nuclear power plant being: (B) in a condition that was outside the design basis of the plant." This report describes the discovery of two situations in which cables, necessary to provide plant process parameters required to be monitored for Appendix R safe shutdown locations, were not routed independent of the appropriate fire zones. The specific parameters involved in this report are steam generator pressure indication and source range nuclear instrumentation.

New commitments within this report are indicated in italics.

Please contact us if you require additional information regarding this event.

Sincerely,

A. J. Cayia
Manager,
Site Services & Assessment

Enclosure

CWK/tat

cc: NRC Resident Inspector
NRC Regional Administrator
NRC Project Manager
PSCW
INPO Support Services

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NRC FORM 366 (4-95) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE 'INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)

Redundant Channels Of Steam Generator Pressure Indication and Source Range Nuclear Instrumentation Not Routed Independent Of Common Fire Zone

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 NAME	DOCKET NUMBER
										05000
04	13	2000	2000	- 002 -	00	05	11	2000	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
POWER LEVEL (10)	100	20.2201(b)	20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Charles Wm. Krause, Senior Regulatory Compliance Engineer	(920) 755-6809

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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 15 single-spaced typewritten lines) (16)

While conducting a revalidation and reverification project for the Point Beach Nuclear Plant 10 CFR 50 Appendix R fire protection programs, the licensee discovered that several cables necessary to provide plant parameters required to be monitored for an Appendix R safe shutdown locations were not routed independent of fire zones containing cables for redundant equipment. Specifically we discovered on April 13, 2000 that the power supply for steam generator (SG) pressure transmitter 2PT-469 would not be available for a postulated fire event in the north section of the 26' Primary Auxiliary Building. Cabling for the redundant SG pressure transducer, 2PT-483, already has its cable routed in this same fire zone. We also determined on April 17, 2000, that the redundant power supply to Source Range Monitor 2N-32 may not be available for a fire in the 8' PAB. Alternate Source Range Monitors 2N-31 and 2N-40 would already be considered unavailable because their signal cables are in the same fire zones. In accordance with plant procedures a twice per shift fire round has been established for these fire zones pending correction of the cable routing. These events were reported to the NRC in accordance with 10 CFR 50.72 as conditions outside the Appendix R design basis for the plant.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Point Beach Nuclear Plant, Unit 2	05000301	2000	- 002	- 00	2 OF 6

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

Event Description:

Wisconsin Electric, licensee for the Point Beach Nuclear Plant (PBNP), is conducting a rebaselining project to verify conformance with the plant's 10 CFR 50 Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," programs. This project includes reviews and revalidation of the bases and assumptions for the Appendix R Safe Shutdown analyses and fire scenario evaluations as described in the PBNP Fire Protection Evaluation Report (FPER). While reassessing the fire hazard evaluations for various fire zones, we discovered two conditions of inappropriate routing of power or signal cables that could result in redundant equipment necessary for Appendix R safe shutdown equipment potentially being unavailable for specific fire locations.

The first of these conditions involves a postulated fire in the north half of the 26 foot elevation of the Primary Auxiliary Building (PAB), we discovered that the routing of the power cable (ZF24212BA) for Battery Charger D-109 from MCC 2B-42 was incorrectly listed in the Cable and Raceway Data System (CARDS). Raceway S286 only shows this power cable located in FZ 226, the DC distribution bus D-04 equipment room. The raceway is actually routed from the MCC in FZ 187 through the North corridor of the PAB 26 foot elevation to the D109 Transfer Switch in the D-04 equipment room. Fire Zone 187 is also identified as the "Monitor Tank Room" and is located on the 26 foot elevation of the PAB.

For an Appendix R postulated fire event in the North section of the 26' PAB, battery charger D109 is relied upon to provide power to DC distribution bus D-03 which, in turn, powers the White Instrument Channel. The white instrument channel supplies Steam Generator (SG) pressure transmitter 2PT-469, which was required to be available due to loss of the redundant SG pressure transmitter instrument, 2PT-483, for a fire in FZ 215 within this fire area. D-109 can be powered from 480 V distribution busses 1B-32, 2B-42 or B-81 A transfer switch is used to select which power source. However, bus 1B-32 is already considered lost in this postulated fire and bus B-81 can only be powered from the onsite gas turbine, G-05, which has not previously been credited as being available for this fire area. With the corrected routing information discovered by this event, bus 2B-42 will also not be available. Thus, battery charger D-109 is also not available for this fire event, and consequently 2PT-469, which was assumed to be powered through D-109 and the white instrument channel will not be available.

The 10 CFR 50 Appendix R Safe Shutdown Analysis requires that redundant equipment is maintained free of fire damage to support safe shutdown of the Plant. Appropriate process instrumentation is required to adequately monitor the plant parameters while shutting down. For a fire in this area of the PAB, 2PT-469 had been the relied upon SG pressure instrument for Unit 2 due to loss of other instruments from cable and/or power supply losses. The unavailability of 2PT-469 leaves no other instruments available to monitor Steam Generator pressure for a fire in this zone. This does not meet the Appendix R requirements and places the plant outside the design basis for Appendix R.

The second cable routing concern involves the source range (SR) nuclear instrumentation (NI). We have determined that SR Monitor 2N-32 could potentially not be available for a postulated fire event in the Component Cooling Water (CCW) Pump Room (FZ 142) and the Unit 2 Motor Control Center (MCC) Room (FZ 166) of the 8' PAB. CARDS shows incorrect Fire Zone routing for the Unit 2 White Instrument Power cable ZQ2DY03A from the 2-83/DY-03 Static Transfer Switch to the 2Y-203 Distribution Panel. CARDS had the cable routed from the D-03 DC distribution bus instrument room over to the central area of the 26' PAB and into the Cable Spreading Room (CSR). The cable is in fact routed from the D-03 instrument room through the floor to the Unit 2 MCC Room into the central area CCW Pump room, then to the Auxiliary Feedwater Pump Room and then up to the CSR. Since

2N-32 is powered from the White Instrument Channel, for this postulated fire that NI monitor must be considered unavailable. The other SR NI channels, 2N-31 & 2N-40, were already considered to be unavailable since their signal cables were known to be routed through FZ 142 and 166.

The 10 CFR 50 Appendix R Safe Shutdown analysis requires that redundant equipment is maintained free of fire damage to support safe shutdown of the Plant. Process monitoring is required to adequately monitor the plant parameters while shutting down. At least one of the SR Nuclear Instruments 2N-31, 2N-32 or 2N-40 must be available to monitor source range flux. SR NI channel 2N-32 is the relied upon instrument in FZ 142 and 166 due to cable losses on the 2N-31 and 2N-40 instruments. The unavailability of 2N-32 under these postulated conditions is also another condition outside the Appendix R design basis.

Following the discovery of these situations, condition reports (CR 00-1223 and CR 00-1255) were initiated. In accordance with the requirements of plant procedure OM 3.27, "Appendix R Safe Shutdown Equipment Compensatory Measures," twice per shift fire round were initiated in the affected fire zones as a compensatory measure. NRC ENS one hour notifications were made pursuant to 10 CFR 50.72(b)(1)(ii)(B) on April 13 and 17, 2000, (Event notifications 36889 and 36902) for identification of conditions outside the Appendix R design basis for the plant.

Cause:

These conditions resulted from inadequate configuration management. These cable installations were part of plant modifications to provide additional safety related batteries and battery chargers to enhance the reliability and diversity of the DC power distribution system. The close out of these modifications apparently did not accurately identify the actual cable routing for the alternate power supply to the D-109 battery charger and the power supply to the 2N-32 SR NI channel. The licensee has previously identified weakness in other areas of the original Appendix R safe shutdown analyses, including incomplete documentation of other modifications, and had initiated a rebaselining of the evaluations which has identified, and is correcting, this and other concerns (see Similar Events.)

Corrective Actions:

As identified in the Event Description, twice per shift fire rounds were initiated in accordance with procedure OM 3.27 in FZ 215 for 2PT-469 and in FZ 142 and 166 for the SR NI monitors to minimize the risk of postulated fires in these areas.

A plant modification (MR 99-045) has been initiated as the corrective action for LER 301/1999-002-00, to reroute cable ZP2I483F for the red channel SG pressure transmitter, 2PT-483, off of the 26 foot elevation of the PAB. This cable rerouting will make that pressure instrument available for the first fire event discussed in this report.

To restore a channel of source range monitoring, it was necessary to provide an alternate source of 120 Vac power to the 2N-32 instrument rack located in the 2C-131 Cabinet, which is located in the Control Room. Under the postulated fire conditions, all other instrument bus power (i.e. Red, Blue and Yellow channels) are available. There are numerous receptacles in other instrument cabinets and control boards in the area which are supplied from these sources. Normally 120 Vac power is hardwired in the cabinet and then connected to the 2N-32 Instrument Rack via a quick connect cable connection. A new cable has been fabricated which can be used to connect the 2N-32 rack to another available 120 Vac receptacle in the area. This can be quickly and

easily accomplished by available operations personnel already in the Control Room should power actually be lost to that instrument. Use of this cable is not considered a repair since it does not require any lifting or landing of leads and does not require any special tools. The fire emergency plans for the CCW Pump Room and the Unit 2 MCC Room have been revised to add guidance for operations to use the special extension cable to restore power to 2N-32. The special extension cable has been staged in the bottom of the cabinet and properly tagged and secured. The Operations monthly inventory report has been revised to add the special extension cable to the required inspection list. These activities were completed on April 24, 2000, and restored compliance with the Appendix R safe shutdown requirements for this parameter. The fire rounds initiated with this event have been suspended.

Component and System Description:

A systematic approach was used for the review of the fire hazards and their exposure to safety-related equipment and components necessary for safe shutdown within fire zones and areas. The type and quantity of combustible materials, type of fire hazards these materials present in the area, and the fire protection features (passive, active and manual) for the areas were reviewed. The effects of postulated fires on the performance of safe shutdown functions and the minimization of radioactive releases to the environment were evaluated.

A safe shutdown analysis was performed on an area-by-area basis to satisfy the provisions of 10 CFR 50 Appendix R. The safe shutdown analysis is contained in Section 6.0 of the PBNP Fire Protection Evaluation Report (FPER). To facilitate station personnel in assessing fire hazards within each zone, a Fire Hazard Evaluation was performed on a zone by zone basis with consideration for adequate separation between redundant and alternate safe shutdown equipment in accordance with 10 CFR 50 Appendix R.

The fire hazard evaluations provide a detailed description of the fire protection features provided for each Fire Zone containing safe shutdown equipment. In addition the safe shutdown equipment located in each Fire Zone is identified and an evaluation of the adequacy of fire protection features to assure survivability of redundant or alternate equipment is performed. Where fire protection features deviate from the measures defined by Appendix R, they were identified and evaluated, and justification provided for their adequacy.

Safety Assessment:

The defense-in-depth approach to Point Beach Nuclear Plant's Fire Protection Program, which includes fire detection and partial suppression in the area of the SG pressure indication channels and fire detection and full suppression in the area of the 2N-32 cables , would mitigate the significance of this condition and provide a high likelihood that postulated in plant fires would be prevented or controlled adequately and the Appendix R safe shutdown equipment would remain available. The twice per shift fire rounds which have been, or in the case of the 2N-32 condition were, implemented as a compensatory measure in the affected fire zones, provide additional assurance that conditions leading to the potential in-plant fires are unlikely to occur.

The area of concern for the postulated fire event involving 2PT-469 is considered a low combustible loading area with combustible material consisting primarily of cable insulation from a single 9" cable tray running north to south in the central section of the area. The area contains full area fire detection and partial area fire

suppression, specifically over the section containing the cable tray. Notwithstanding these considerations, in the event of a worst case fire scenario, all PBNP Unit 2 steam generator pressure indication have to be considered unavailable following a fire in the north wing area of the 26' PAB. Under those circumstances, without the steam generator pressure parameter the operators will have to rely on the remaining parameters to estimate the actual steam generator pressure. Specifically the RC temperature, RCS pressure and Steam Generator Level could be correlated to estimate the steam generator pressure. Over pressure protection of the steam generators is provided by the main steam code safety relief valves. In addition, the G-05 to B-81 to D-109 line-up will not be affected by the fire event and will remain available. While the line-up has not previously been credited, it is possible for the operators to align the equipment to restore power to the White Channel Inverter power supply and provide power to 2PT-469. AOP 10A provides specific guidance on making this line up. While this postulated fire event is not specifically covered by the procedure, should operations desire, they could accomplish the line-up by using the appropriate sections of the procedure. This postulated fire event also cannot by itself cause a Loss of Offsite Power, thus normal equipment will in all likelihood be available. This would mean B-81 would be normally energized and available to power D-109.

Regarding the 2N-32 cable concern, in the event of a worst case fire scenario all source range flux indication for Unit 2 would have been considered unavailable following a postulated fire event in either of the areas. Under those circumstances, without the source range flux indication, the operators would have needed to maintain the unit in Hot Shutdown until source range instrumentation was restored. This is similar to the Technical Specification Table 15.3.5-2, Item 4, requirement to bring the Unit to Hot Shutdown within 8 hours for loss of source range instruments. All other process monitoring parameters will have adequate instruments available and the Unit 2 Sample Room, where boron samples are taken to verify adequate shutdown margin, is on the 26' PAB away from the fire event. Thus, Hot Shutdown parameters could have been monitored with the available instrumentation and the results of boron sampling used to insure reactivity is controlled during Hot Shutdown. As mentioned in the Corrective Actions, this condition has been corrected.

Based on the above considerations, the safety significance of these Appendix R design basis discrepancies is concluded to be minimal and the health and safety of the public and plant personnel was not compromised. Since the situations described in this report involved only the capability to monitor certain process parameters following postulated fire events and alternative methods could have been made available to provide the operators with comparable process information, we have also concluded that the conditions discussed in this LER did not result in a loss of a safety function and these conditions did not constitute a safety system functional failure.

System and Component Identifiers:

The Energy Industry Identification System component function identifier for each component/system referred to in this report are as follows:

Component/System	Identifier
Auxiliary Building	NF
Cable Raceway System	FA
Fire Detection System	IC
Cable Raceway System	FA
Incore/Excore Monitoring System	IG
Main Steam System	SB
Cable, Low Voltage Power	CBL4
Cable, Low Level Signal	CBL1

Pressure Transmitter	PT
Pressure Indicator	PI
Charger, Battery	BYC

Similar Occurrences:

A review of recent LERs (past three years) identified the following events which identified issues that were outside the Appendix R design basis. Note particularly the event discussed in LER 301/1999-002-00 which is closely related to this report:

LER NUMBER	Title
266/2000-004-00	Appendix R Design Basis - Potential Unavailability of Process Monitoring Instrumentation
301/2000-001-00	Replacement of Charging Pump Control Fuse Outside Appendix R Design Basis
266/1999-008-00	Postulated Fire Could Lead To Loss Of Redundant Trains Of Charging Capacity
266/1999-006-00	Postulated Fire and Inability to Isolate PORV Outside Appendix R Design Basis
266/1999-004-00	Fuel Oil Transfer Pump Cable in the AFW Pump Room Outside Appendix R Design Basis
301/1999-002-00	Red Channel of Steam Generator Pressure Indication Passes Through Fire Zone
266/98-030-00	Assumptions for Equipment Necessary To Maintain Hot Safe Shutdown Outside Appendix R Design Basis
266/97-020-01	Conditions Outside 10 CFR 50 Appendix R Safe Shutdown Analysis
266/97-022-00	Electrical Short Circuits During A Control Room Fire Could Affect Safe Shutdown Capability