FPL Energy Point Beach, LLC, 6610 Nuclear Road, Two Rivers, WI 54241

FPL Energy
Point Beach Nuclear Plant

September 15, 2008

NRC 2008-0073
10 CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Unit 1
Docket 50-266
Renewed License No. DPR-24

Appendix R Fire Scenario Resulting In
Safe Shutdown Required Capability Not Maintained

Enclosed is Licensee Event Report (LER) 266/2008-003-00 for the Point Beach Nuclear Plant Unit 1. LER 266/2008-003-00 describes the discovery of an inadequate cable separation condition while performing an NFPA-805 applicability review. LER 266/2008-003-00 describes the potential for a fire in fire area A23S, South Area of the Auxiliary Feedwater (AFW) room to propagate to fire area A24, Vital Switchgear (VSG) room. This could cause three of the four AFW pumps to be unavailable, which does not meet the requirements for Appendix R safe shutdown capability for Unit 1. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B), an unanalyzed condition that significantly degraded plant safety.

This submittal contains no new or revised regulatory commitments.

Very truly yours,

FPL Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 an 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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Point Beach Nuclear Plant Unit 1	05000266	1 OF 5

4. TITLE

Appendix R Fire Scenario Resulting In Safe Shutdown Required Capability Not Maintained

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Point Beach Unit 2	05000301
07	16	2008	2008	- 003 -	00	09	15	2008	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

Unit 1 MODE 1
Unit 2 MODE 1

10. POWER LEVEL

Unit 1 100%
Unit 2 100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☒ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Tom Staskal	920-755-7621

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

In June 2008, an inadequate cable separation condition was identified while performing an NFPA-805 applicability review. As a result of the inadequate cable separation, the potential was identified for a fire in fire area A23S, South Area of the Auxiliary Feedwater (AFW) room to propagate to fire area A24, Vital Switchgear (VSG) room. A fire in the South Area of the AFW room could cause a short circuit in a cable that traverses the AFW room and the VSG room, causing ignition of the cable. The Point Beach Nuclear Plant (PBNP) Safe Shutdown Analysis assumes a fire in only a single fire area. Following further analysis, on July 16, 2008, it was concluded that the inadequate cable separation created the potential for being unable to meet Appendix R safe shutdown capability. An 8-hour non emergency report, EN#44351, was made in accordance with 10 CFR 50.72(b)(ii)(B), as an event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety. A fire in areas A23S and A24, could cause three of the four AFW pumps to be unavailable, which does not meet the requirements for Appendix R safe shutdown capability for Unit 1. The safety significance of this event is considered to be low because the likelihood of occurrence is low and likely mitigation of a potential fire by the fire detection and suppression systems installed in the fire areas. Compensatory measures were identified to address the situation. These measures consisted of area fire rounds already being performed, implementation of administrative guidance to the Work Control Center (WCC) staff to institute transient combustible controls, and performance of thermography for insipient fire detection in the AFW pump rooms.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Point Beach Nuclear Plant	05000266	2008	-- 003 --	00	2 of 5

A. EVENT DESCRIPTION

In June 2008, an inadequate cable separation condition was identified while performing an NFPA-805 applicability review. As a result of the inadequate cable separation, the potential was identified for a fire in fire area A23S, South Area of the Auxiliary Feedwater (AFW) room to propagate to fire area A24, Vital Switchgear (VSG) room. A fire in the South Area of the AFW room could cause a short circuit in a cable that traverses the AFW room and the VSG room, causing ignition of the cable. The Point Beach Nuclear Plant (PBNP) Safe Shutdown Analysis assumes a fire in only a single fire area. Following further analysis, on July 16, 2008, it was concluded that the inadequate cable separation created the potential for being unable to meet Appendix R safe shutdown capability. An 8-hour non-emergency report, EN#44351, was made in accordance with 10 CFR 50.72(b)(ii)(B), as an event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety. A fire in areas A23S and A24, could cause three of the four AFW pumps to be unavailable, which does not meet the requirements for Appendix R safe shutdown capability for Unit 1. The safety significance of this event is considered to be low because the likelihood of occurrence is low and likely mitigation of a potential fire by fire detection and suppression systems installed in the fire areas. Compensatory measures were identified to address the situation. These measures consisted of area fire rounds already being performed, implementation of administrative guidance to the Work Control Center (WCC) staff to institute transient combustible controls, and performance of thermography for insipient fire detection in the AFW pump rooms.

B. EVENT ANALYSIS

While performing reviews as part of the conversion to NFPA 805, FPL Energy Point Beach determined that power cables to individual components fed from a 4 kV bus, located in the same fire area as the DC control power feed to the bus, would not clear a potential fault condition. Specifically, this cable routing configuration has both DC control and associated 4 kV power cables present in the same fire area without required fire protection features such as fire wrap and fire rated walls. This condition appears to be an original design feature in the plant that was not correctly analyzed in the existing safe shutdown analysis. This condition was identified during conversion to NFPA-805. Although this is a historical design issue, there were previous opportunities to identify the design discrepancy. The discrepancy was not recognized because of an incorrect assumption that the 4 kV breakers would trip on overcurrent without DC control power.

Following discovery of the condition, an extent of condition review was performed. The review identified the DC control power for breakers that were located in the same fire area as the respective 4 kV power cables. It was then postulated that a fire in one of the fire areas could first disable the respective bus 125 V DC breaker control power and short circuit the associated power cable. With the loss of breaker control, the power cable protection would be defeated. The cable damage sequence assumed that secondary fires would occur electrically upstream of the fault location due to the cable-withstand rating being exceeded. The secondary fire location would be in a different location than the initial fire location, which could cause additional equipment to become unavailable.

The extent of condition review encompassed 71 fire areas. Of those 71 areas, 13 had the potential for igniting a fire in a different area. In 7 of the 13 fire areas, initial evaluations indicate no significant additional equipment will be lost other than that already assumed lost for the fire in the original fire area. In the other 6 areas, 5 additional situations where secondary fires could result in the unavailability of Appendix R safe shutdown equipment were identified.

C. SAFETY SIGNIFICANCE

The safety significance of the reported condition is low because the likelihood of occurrence is low. Initially a fire would have to occur in area A23S, (AFW pump room south). The room itself is equipped with fire detection sensors that automatically actuate the installed area halon suppression system. Area A23S has a low combustible loading.

The postulated fire must first directly impact control power cables associated with panel D11, (125 V DC Control Panel) which contains the 125 V DC control power for the protective features for breakers on buses 1A03, (Unit 1 4.16 kV Bus Switchgear) and 1A05, (Unit 1 4.16kV Safeguards Bus Switchgear) one of which is breaker 1A52-58, (Power to 1X13 Station Service Transformer) the normally energized power supply to transformer 1X13, (Unit 1 Station Service Transformer). For the postulated fire to damage equipment in another fire area, control power for the 1X13 supply breakers must be lost first, prior to any associated power cable damage. The assumed fire is in area A23S, the AFW pump room on the 8 foot elevation of the Control Building. Control cables in the room are assumed damaged first, prior to any power cable damage. The control cables go to the D11 panel, which is located on the 26 foot elevation in the Cable Spreading room. Because the assumed fire is located in area A23S, and AFW pumps 1P29, (Turbine-Driven Auxiliary Feedwater Pump) and P38A, (Electric-Driven Auxiliary Feedwater Pump) are located in area A23S, Appendix R requires the assumption that 1P29 and P38A capability is lost.

The postulated fire is also assumed to migrate through cable raceways, resulting in short circuit faults in power cables supplying transformer 1X13. This causes electric current draw in excess of cable withstand rating in the 1X13 supply cable because the control power for the protective features was lost when power panel D11 control cable was damaged. With current values greater than cable withstand ratings a secondary fire is assumed to start in area A24, (4160 V Vital Switchgear Room). The loss of control power must occur prior to the fire-induced power cable overcurrent condition thus preventing automatic protective features from actuating.

The postulated secondary fire in area A24, which is equipped with fire detection equipment that automatically initiates a halon suppression system and is an area with a moderate combustible loading, is conservatively assumed to damage auxiliary feedwater pump P38B (Electric-Driven Auxiliary Feedwater Pump), thus making the pump unavailable to satisfy an Appendix R Safe Shutdown function.

If this unique sequence of events was to occur, the three Unit 1 Auxiliary Feedwater pumps credited for satisfying an Appendix R required Safe Shutdown function would not be available.

D. CAUSE

The cause of the event is an existing historical design issue which was identified during the conversion to NFPA-805. Although this is a historical design issue, there were previous opportunities to identify the design discrepancy. The discrepancy was not recognized because of an incorrect assumption that the 4 kV breakers would trip on overcurrent without DC control power.

E. CORRECTIVE ACTIONS

Upon identifying the situation, compensatory measures in the form of twice-per-shift fire rounds were already being conducted in areas A23S (Auxiliary Feedwater Pump Room South), A24 (4160 V Vital Switchgear Room), A23N (Auxiliary Feedwater Pump Room North), A30 (Cable Spreading Room), A71 (Diesel Generator Building B Train), A01-A (Auxiliary Building, 8 foot elevation and below) and A01-E (Turbine Building and South Service Building), thus addressing the reported condition, as well as the 5 additional areas from the extent of condition evaluation. Also, additional administrative guidance for enhanced transient combustibles and hot work controls were initiated. The administrative guidance has been formalized as requirements in the plant procedures.

Thermography of equipment in the affected zones was started in early August and completed during the first week of September. The purpose for the thermography was the early identification of equipment problems which could cause a fire in a fire area. The scope of the thermography included 12 transformers, 111 pieces of equipment, such as electric motors and pumps, and 198 electrical cable enclosures such as control panels, distribution panels and switchgear. Only two instances of unexpected conditions were identified. Both were minor and are documented in the corrective action program. With the detailed identification of affected equipment complete and the development of inspection routes, thermography will continue to be performed in the affected areas on a weekly basis.

Detailed cable routing walkdowns and safety significance determination will be conducted for the six situations where a fire in one fire area could damage safe shutdown equipment in another fire area. Plant modifications, as required, will be made as part of the conversion to NFPA-805 to correct cable routing deficiencies.

F. SIMILAR OCCURENCES

LER 2005-002-00, "Unanalyzed Condition Due To Deficiency In Appendix R Safe Shutdown Strategy For Charging Pump Capability," dated August 08, 2005.

LER 2005-005-00," Postulated Faults With Electrical Current In Excess Of Maximum Interrupt Ratings and Nonconservative Technical Specification For Degraded Voltage Time Delay Relay Settings," dated November 11, 2005.

LER 2007-006-00, "Fire Inspection Analysis Of Pressurizer Power-Operated Relief Valves and Block Valves," dated September 10, 2007.