



October 13, 2011

NRC 2011-0088  
10 CFR 50.73

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

Point Beach Nuclear Plant, Unit 2  
Docket 50-301  
Renewed License No. DPR-27

Licensee Event Report 301/2011-004-01  
Automatic Reactor Trip During BOL Physics Testing  
Due to Source Range Detector Failure

Enclosed is Licensee Event Report (LER) 301/2011-004-01 for Point Beach Nuclear Plant (PBNP), Unit 2. This LER documents an automatic reactor trip from 0% power while performing beginning-of-life (BOL) physics testing and amends the report previously submitted on July 25, 2011. Pursuant to 10 CFR 50.73(a)(2)(iv)(A) and (B), the event is reportable as, "... an event or condition that resulted in manual or automatic actuation of the Reactor Protection System including reactor scram or reactor trip."

This submittal contains no new or revised regulatory commitments.

If you have questions or require additional information, please contact Mr. James Costedio at 920/755-7427.

Very truly yours,

NextEra Energy Point Beach, LLC

A handwritten signature in black ink, appearing to read "Larry Meyer".

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

**LICENSEE EVENT REPORT (LER)**

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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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.

<b>1. FACILITY NAME</b> Point Beach Nuclear Plant Unit 2	<b>2. DOCKET NUMBER</b> 05000301	<b>3. PAGE</b> 1 of 3
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**4. TITLE**  
Automatic Reactor Trip During Startup Physics Testing Due to Source Range Detector Failure

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
06	13	2011	2011	- 0004	- 01	10	13	2011	FACILITY NAME	DOCKET NUMBER

**9. OPERATING MODE**  
MODE 2

**10. POWER LEVEL**  
0%

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

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

NAME Fritzie Flentje, Licensing Supervisor	TELEPHONE NUMBER (Include Area Code) 920/755-7656
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
E	JD	DET	P323	Y					

**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)**

On 06/13/11 at 1924 CDT, during beginning-of-life (BOL) physics testing with the reactor critical in MODE 2, an automatic reactor trip occurred while operators were inserting a shutdown bank during dynamic rod worth testing of Shutdown Bank A control rods. As power lowered during testing, the two source range nuclear instruments automatically energized, however, one of the two instruments subsequently failed high, thus establishing the required logic to initiate the automatic reactor trip.

All plant systems functioned as required following the trip. All control rods fully inserted into the core. No emergency core cooling system or auxiliary feedwater systems actuated; the emergency diesel generators did not start; and power continued to be supplied from off-site sources. The reactor coolant system had forced circulation with the atmospheric steam dump valves being used for decay heat removal from the steam generators.

The event was caused by the failure of a high voltage power supply in the source range nuclear detector. The failed power supply unit was replaced. Additional actions tracked in the corrective action program include establishment of a life cycle management program and periodic replacement of NIS high voltage power supplies in accordance with a preventive maintenance schedule.

EN 46957 has been amended and reported in accordance with 10 CFR 50.72(b)(2)(IV)(B). The senior resident inspector was notified of the event.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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**NARRATIVE**

**Description of the Event**

On 06/13/11 at 1924 CDT, during beginning-of-life (BOL) physics testing with the reactor critical in MODE 2, an automatic reactor trip occurred while operators were inserting a shutdown bank during dynamic rod worth testing of Shutdown Bank A control rods. At approximately 1915 CDT, while inserting the Shutdown Bank A control rods from 228 steps to 2 steps, the Group 2 portion of the Shutdown Bank A step counter [STC] stopped at 152 steps, while the Group 1 portion of the step counter continued to insert. Based upon the potential misalignment of the control rods, rod motion was stopped to evaluate the step counter condition. As a result of the previous rod insertion, there was a negative startup rate and reactor power was decreasing through the intermediate range.

The evaluation resulted in the decision to manually trip the Unit 2 reactor and to suspend BOL physics testing in order to determine the cause of the apparent step counter discrepancy. Approximately 30 seconds after the decision was made to manually trip the reactor and during preparations to manually open the reactor trip breakers, an automatic reactor trip occurred as a result of the power level dropping below the P-6 interlock. At the P-6 interlock, both source range nuclear instruments automatically energize, and the source range high flux reactor trip (greater than  $1.5 \times 10^{-5}$  cps on one of two instruments) is unblocked.

Both source range nuclear instruments [DET] energized; however, one of the instruments immediately pegged high on counts and voltage. When this occurred, the source range high flux reactor trip logic (one-out-of-two) [JD] was satisfied, and a reactor protection signal actuated that resulted in the automatic reactor trip. Actions were taken by Operations in accordance with emergency operating procedures to stabilize the reactor in MODE 3 and a post-trip event investigation was initiated.

On June 14, 2011 at 2055 CDT, EN 46957 was amended to state the reactor was subcritical at the time of the trip. Subsequent review of this situation by NextEra resulted in a determination that at the time the test sequence was initiated, the reactor was critical and in MODE 2. Accordingly, the non-emergency report was amended on October 12, 2011, to reflect EN 46957 as originally submitted on June 13, 2011, at 2229 CDT.

This license event report is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) and (B), "... an event or condition that resulted in manual or automatic actuation of the Reactor Protection System including reactor scram or reactor trip."

This event was not a safety system functional failure. The failure of the 2N31 source range detector high voltage power supply resulted in the automatic trip of the Unit 2 reactor on the required one-out-of-two logic.

**Cause of the Event**

The cause of the event was the failure of the nuclear source range detector high voltage power supply.

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**NARRATIVE**

**Analysis of the Event**

Plant systems functioned as required following the automatic reactor trip. Control rods fully inserted into the core. Neither the emergency core cooling system nor the auxiliary feedwater system actuated; the emergency diesel generators did not start; and power continued to be supplied from off-site sources. The reactor coolant system had forced circulation following the trip and the atmospheric steam dump valves were used for decay heat removal from the steam generators.

**Analysis of Safety Significance**

The source range neutron flux trip protects against reactivity excursions during reactor startup from subcritical conditions proceeding into the power range. The reactor is tripped when one-out-of-two source range channels are above the trip setpoint. This trip, which provides protection during reactor startup, can be manually blocked when one-out-of-two intermediate range channels are above the P-6 permissive setpoint. There are also two intermediate range channels that provide protection to the reactor. When both of these intermediate range channels are below the P-6 permissive setpoint, the reactor trip is automatically reinstated. The intermediate range trip is automatically blocked when two-out-of-four high power range signals are above the P-10 permissive setpoint of approximately 10% power. The source range trip setpoint is between the P-6 permissive setpoint (P-6 allows the manual de-energization of the source range high voltage power supply) and the maximum source range power level detection limit.

When the source range detector failed, the one-out-of-two logic to trip was established, resulting in the automatic reactor trip. Since the reactor was subcritical, the reactivity transient was small and the potential for core damage was minimal. Thus, the safety significance of the event was low. There was no impact on the health and safety of the public or plant personnel as a result of this event. There was no radiological release nor any release to the environment. Accordingly, the nuclear safety significance of this event was low.

**Corrective Actions**

The high voltage power supply for the source range detector was replaced. The root cause evaluation for this event determined a life cycle management plan had not been established for the periodic replacement of nuclear instrumentation high voltage power supplies. The preventive maintenance program has been revised to perform periodic replacement of the power supplies. Completion of the corrective actions to develop the life cycle management program and replace the high and low voltage power supplies is being tracked in the site corrective action program.

**Similar Events**

There were no similar reportable events.

**Component Failure Data**

<u>Manufacturer</u>	<u>Description</u>	<u>Model Number</u>
Power Designs	High Voltage Power Supply	UPMD-X54W-M1