Wisconsin Electric
POWER COMPANY

231 W Michigan, PO Box 2046, Milwaukee WI 53201-2046 (414) 221-2345

VPNPD-95-049
NRC-95-031

May 16, 1995

Document Control Desk
U. S. NUCLEAR REGULATORY COMMISSION
Mail Station P1-137
Washington, DC 20555

Gentlemen:

DOCKET 50-266
LICENSEE EVENT REPORT 95-005-00
MANUAL REACTOR TRIP DURING STARTUP PHYSICS TESTING
POINT BEACH NUCLEAR PLANT, UNIT 1

Enclosed is Licensee Event Report 95-005-00 for Point Beach Nuclear Plant, Unit 1. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the reactor protection system (RPS)." This report describes the condition where a manual reactor trip was initiated by control room personnel during troubleshooting activities being performed in response to a dropped rod.

Please contact us if there are any questions.

Sincerely,

Bob Link
Vice President
Nuclear Power

FDP/cms

Enclosure

Copies to NRC Regional Administrator, Region III
NRC Resident Inspector

IE22
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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Point Beach Nuclear Plant, Unit 1	05000266	1 of 5

TITLE (4)
Manual Reactor Trip During Startup Physics Testing

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	16	95	95	-- 005 --	00	05	16	95	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one more) (11)							
			20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	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
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
			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 (Include Area Code)
Frank Padovano, Senior Engineer - Licensing	(414) 221-3374

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	AA	CL	W120	Y						

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On April 16, 1995, control room personnel initiated a manual reactor trip on Unit 1 when control rod E11 dropped part way into the core during troubleshooting activities being performed in response to dropped rod, F12. The manual reactor trip was initiated because controlling procedural guidance did not provide guidance concerning a reactor restart with the existing rod configuration. It was determined that rod E11 had dropped part way into the core because fuses for its movable gripper coil had been removed to facilitate troubleshooting activities being performed on rod F12. Both rod E11 and rod F12 share a common fuse for their movable gripper coils.

Event Description:

On April 15, 1995, Unit 1 was critical below the point of adding heat with low power physics testing in progress and Unit 2 was at full power. At 1655, rod F12 in shutdown bank A of Unit 1 dropped into the core during the performance of RESP 4.2, "Control Rod Reactivity Worth Measurements." Low power physics testing was subsequently suspended and troubleshooting began to determine the cause of the rod drop.

An Instrumentation and Control (I & C) engineer coordinated the troubleshooting activities. An inspection of the power and logic cabinet associated with the dropped rod was performed. No abnormalities were found during this inspection. It was then decided to check the physical electrical connections to the control rod drive mechanism for rod F12. In order to support this activity, the fuses for the stationary, lift, and movable gripper coils were removed to electrically isolate rod F12. It should be noted that the fuses for the movable gripper coil for rod F12 were also common to rod E11 on control bank A. Therefore, rod E11 would drop if any attempt was made to move control bank A because no power would be supplied to the movable gripper coil for that rod.

Prior to the removal of the fuses, the I & C engineer discussed the impending troubleshooting activities with the reactor engineer who was coordinating the physics testing in the control room. The I & C engineer, upon completion of this discussion with the reactor engineer, believed that reactor power level would be maintained constant and rods would not be moved. The reactor engineer, however, believed that the I & C engineer wanted reactor power level to be maintained constant, but he did not believe that he was precluded from using rods to accomplish this task.

Subsequently, while preparations were underway to continue the troubleshooting, the Unit 1 control operator withdrew rods in control bank A one step to maintain a constant power level. The reactor engineer noticed that power level actually decreased. The reactor engineer then recommended that the Unit 1 control operator again withdraw rods to restore reactor power at approximately 0010 on April 16, 1995. The control operator began moving rods on control bank A. Both he and the reactor engineer subsequently noticed that rod E11 was no longer aligned with the remaining rods in the bank. They also noticed decreasing reactor power level. They stopped moving rods and informed the Duty Shift Superintendent that rod E11 had dropped part way into the core. During this time period, reactor power continued to decrease. The reactor was now subcritical with power in the intermediate range below the lower limit for physics testing.

The Duty Shift Superintendent and the reactor engineer subsequently determined that RESP 4.2 and other controlling procedures did not provide

guidance concerning a reactor restart with the existing rod configuration. As a result, the DSS continued shutting down the reactor. He then decided, after a consultation with the reactor engineer, to trip the reactor instead of driving in all of the rods in order to expedite the shutdown since power was already in the source range. The reactor was tripped from the control room at 0016 on April 16, 1995.

Following the reactor trip, troubleshooting activities continued. These activities determined that rod F12 had dropped because of a failed stationary gripper coil. This coil was replaced and post-maintenance testing was satisfactorily completed. A critical approach commenced on Unit 1 at 1650 on April 16, 1995 with criticality being attained at 1730.

Component and System Description:

The function of the control rod drive system is to move the 33 full-length control rods to control the fission rate in the reactor in response to either manual actions by control room personnel or automatically by reactor control system signals. Each control rod drive mechanism consists of an internal latch (gripper) assembly, a pressure vessel, an operating coil stack, a drive shaft assembly, and a control rod position indicator (RPI) coil stack.

The latch assembly contains the working components which withdraw and insert the drive shaft and attached control rod. This assembly is located within the pressure housing and is operated by three electromagnets. The electromagnets actuate two sets of latches which engage the grooved section of the control rod drive shaft to hold the control rod in place. When the electromagnets deenergize (as in the case of a reactor trip signal), the latch assembly no longer engages the drive shaft and the control rod completely inserts into the reactor core.

Cause and Corrective Action:

Subsequent to the reactor trip, the troubleshooting on rod F12 identified that the cause of that rod drop was a failed stationary gripper coil. This coil was replaced and retested satisfactorily on April 16, 1995. Additionally, an evaluation is now being performed in order to determine the cause of the coil failure.

Discussions with the I & C engineer and the reactor engineer indicate that a miscommunication between the two of them contributed to the partial dropping of control rod E11. The I & C engineer knew that rods in control bank A should not be moved because of the pulled fuses. However, the reactor engineer did not believe that he was precluded from moving control rods in order to maintain reactor power level. This misunderstanding contributed to the event's occurrence.

In order to determine all the underlying causes of this event, a root cause evaluation is being performed. The results of this evaluation and any recommended corrective actions will be presented to the plant manager for his review and approval.

Reportability:

This Licensee Event Report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv), "Any event or condition that resulted in the manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)." A four-hour notification was made to the NRC in accordance with 10 CFR 50.72(b)(2)(ii) and the NRC Resident Inspectors were informed.

Safety Assessment:

There are no safety consequences from this event. Point Beach's Technical Specifications allow continued operation with a dropped rod if reactor power is maintained less than 75 percent of rated thermal power. During this event, reactor power never entered the power range. A review of Point Beach's safety analyses also indicate that no core design limits were exceeded as a result of the one dropped rod and the one misaligned rod.

Additionally, when reactor power decreased below the minimum power level required for physics testing, control room personnel made a conservative decision and manually tripped the reactor because procedural guidance did not address a reactor restart with the existing rod configuration. All plant systems functioned and responded as designed following the reactor trip. The health and safety of plant personnel and the public were not endangered.

Similar Occurrences:

A review of Licensee Event Reports was performed. The following reports describe reactor trips that occurred during physics testing:

LER 266\87-001 Manual Reactor Trip During End-of-Life Testing
LER 301\86-008 Reactor Trip During Beginning-of-Life Physics Testing
LER 301\92-004 Manual Reactor Trip During Hot Control Rod Drop Testing