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NPL 97-0331

June 6, 1997

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

Gentlemen:

DOCKETS 50-266 AND 50-301  
LICENSEE EVENT REPORT 97-024-00  
POST ACCIDENT SAMPLING SYSTEM DEGRADATION  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Enclosed is Licensee Event Report 97-024-00 for Point Beach Nuclear Plant, Units 1 and 2. This report is provided as an informational report. This report describes the identification that the Post Accident Sampling System for the containment atmosphere at the Point Beach Nuclear Plant does not meet commitments to the design criteria for the system contained in NUREG 0737, Item II.B.3, "Postaccident Sampling Capability."

New commitments within the report are indicated in italics.

If you require additional information, please contact us.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Douglas F. Johnson'.

Douglas F. Johnson  
Manager  
Regulator Services and Licensing

TGM/kmc

Enclosure

cc: NRC Resident Inspector  
NRC Regional Administrator



9706160138 970605  
PDR ADOCK 05000266  
S PDR

## 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)

Point Beach Nuclear Plant, Unit 1

## DOCKET NUMBER (2)

05000266

## PAGE (3)

1 OF 6

## TITLE (4)

Post Accident Sampling System Degradation

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
05	01	97	97	-- 024 --	00	06	05	97	PBNP Unit 2	05000301
									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)							
			20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER			20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(iii)	50.73(a)(2)(x)
LEVEL (10)		000	20.2203(a)(2)(i)			20.2203(a)(3)(iii)			50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)	X OTHER
			20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)	Specify in Abstract below
			20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)	or in NRC Form 366A

## LICENSEE CONTACT FOR THIS LER (12)

## NAME

Thomas G. Malanowski, Senior Project Engineer

## TELEPHONE NUMBER (Include Area Code)

(414) 221-3950

## 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

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During reviews of the performance history for the Unit 2 containment atmosphere post-accident sampling system sample pump, it was determined that excessive leakage occurs at the leak test pressure of 15 psig. Evaluation of the leakage determined that the dose received by personnel obtaining a sample under worst case post-accident conditions would be in excess of the GDC 19 dose limits specified in NUREG 0737, Item II.B.3. This condition also applies to the Unit 1 sampling system. Additional design reviews of the containment atmosphere and reactor coolant post accident sampling systems also determined that in order to place the systems in service, instrument air, which may not be available post accident, would be required to be restored to containment. The containment atmosphere sample system will be upgraded to allow sampling at up to containment design pressure. Containment isolation provisions for the containment and reactor coolant sample systems are being evaluated.

## LICENSEE EVENT REPORT (LER)

## TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Point Beach Nuclear Plant, Unit 1	05000266	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 6
		97	- 024	- 00	

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

**Event Description:**

Point Beach Nuclear Plant, Units 1 and 2 are presently shut down. Unit 1 is in cold shutdown. Unit 2 is defueled. During review of the performance history of the containment atmosphere post-accident sampling system (PASS) sample pump by the system engineer, it was determined that the sample pump consistently exhibited excessive leakage during leak testing at 15 psig. PBNP Units 1 and 2 utilize separate sampling systems. Both sampling systems are presently declared inoperable.

Containment post-LOCA pressure response documented in PBNP Final Safety Analysis Report (FSAR) Chapter 14, indicates that a pressure rating of 15 psig for the containment atmosphere PASS is sufficient to allow sampling and analysis within three hours of the decision to sample as required by NUREG 0737, Item II.B.3. Sample pump leakage at this pressure has been evaluated and it has been determined that at the existing leakage levels, dose to the personnel taking the sample could be as high as 2200 Rem/hr - extremities and 80 Rem/hour - whole body at two hours after accident initiation. These dose rates would result in a person exceeding the GDC 19 dose limits of 75 Rem extremities, 5 Rem whole body for obtaining a sample, as specified by NUREG 0737, Item II.B.3.

Recent reanalysis of the containment pressure response presented in Wisconsin Electric's Technical Specification Change Request 192 submitted on September 30, 1996, and subsequently modified on June 3, 1997, presented a new response curve such that sampling would not be possible for approximately 17 hours after the initiation of the accident due to pressure being above the 15 psig continuous rating of the sample pump. The pump has been evaluated for intermittent use at up to 20 psig. Based on the containment pressure response presented in our September 30, 1996, and subsequent submittal, this would still delay the ability to sample the containment atmosphere to approximately 11 hours after accident initiation. Our September 30, 1996 submittal also presented information that the sample pump was capable of operating at up to 23 psig. This was based on an informal evaluation which assessed the difference in density between air and the post-accident containment atmosphere density.

During the Integrated Leak Rate Test (ILRT) performed on the Unit 2 containment this Spring, the containment atmosphere sampling system was restored to operation when containment pressure was below 5 psig as stipulated by the ILRT procedure. Upon restoration, the sample pump tripped. This occurrence indicated that the pump motor will blow its fuse if started at pressures greater than 4 psig, thereby further calling into question our ability to take a containment atmosphere sample in a timely manner.

The containment atmosphere post-accident sample is obtained utilizing a connection to the containment atmosphere radiation monitoring system. The post-accident reactor coolant sample is obtained from the normal reactor coolant

## LICENSEE EVENT REPORT (LER)

## TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Point Beach Nuclear Plant, Unit 1	05000266	97	024	00	3 OF 6

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)  
system sample lines. As detailed in our September 30, 1982 submittal related to NUREG 0737, Item II.B.3, these systems are isolated on a containment isolation signal and can be restored following resetting of the containment isolation signal. Operation of the containment isolation valves for these systems requires restoration of instrument air to containment. Instrument air to containment is also isolated on a containment isolation signal. This arrangement was found acceptable in an NRC Safety Evaluation dated December 22, 1982. Further review of this condition has determined that this arrangement is undesirable as instrument air to containment may not be available under worst case accident conditions. Instrument air piping within containment is not missile protected and therefore can be assumed to fail as a consequential result of an accident. Failure of this piping would prohibit placing the post-accident sampling system in service and unisolating instrument air to containment under these conditions potentially results in a containment bypass condition. Modification of the containment isolation provisions for these systems may be desirable.

**Component and System Description:**

Post accident reactor coolant samples can be drawn from the reactor coolant system hot leg and the residual heat removal system sample lines. The RCS hot leg sample line is isolated both inside and outside containment by fail close air operated valves. Sample flow is routed through a heat exchanger cooled by component cooling water, then to a high radiation sampling station outside the normal sample room. The high radiation sampling station is provided with extra shielding to protect personnel obtaining the sample. The coolant sample is obtained in a highly shielded portable sample bomb which is then transported to a remote location for analysis. Provisions are made for flushing the sample lines with deionized water to reduce radiation levels following sampling.

The post accident containment atmosphere sample system obtains a sample of the air from the normal containment air radiation monitoring system. The primary purpose of the system is to monitor the containment atmosphere for radioactive particulates and noble gases. During normal operation the system draws a sample from the containment atmosphere utilizing a motor-driven sample pump. Air is drawn through a dual chamber sampler assembly. Air passes through a filter in the first chamber where trapped particulates are monitored by a beta scintillation detector. The air is then routed through a second sample chamber where it is monitored by a beta scintillation detector for noble gases. After passing through the two chambers and sample pump the air is returned to containment.

The system is isolated automatically on a containment isolation signal or containment ventilation isolation signal. These signals also trip the sample pump. For post accident containment atmosphere sampling, after resetting the

## LICENSEE EVENT REPORT (LER)

## TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Point Beach Nuclear Plant, Unit 1	05000266	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 6
		97	- 024	- 00	

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

containment isolation signal if necessary, the system is unisolated and aligned so that the pump draws a sample from the containment atmosphere through a sample septum. A sample of the containment atmosphere is drawn from the septum using syringes and transported to a remote location for analysis. The system is purged with service air.

**Cause:**

The cause of this occurrence has been determined to be an inadequate design review during system installation and an inadequate questioning attitude by personnel reviewing previous test results.

**Corrective Action:**

The containment atmosphere sample systems will be upgraded to be capable of obtaining a containment atmosphere sample at up to the containment design pressure of 60 psig.

Modifications will also be performed to reduce personnel time in the sample hut while aligning the system and obtaining the sample. This and the above modification are expected to reduce the dose to within GDC 19 dose limits.

Procedure changes will also be considered if necessary to reduce dose within limits.

The above modifications will be completed prior to startup of the Units from there present outages.

Evaluation of the isolation provisions for the containment atmosphere and reactor coolant sample systems is continuing. The isolations will be modified if determined to be necessary.

Options are being evaluated for the long-term to further upgrade the systems and reduce dose.

**Reportability:**

This occurrence is being reported as an informational report.

**Safety Assessment:**

Operation of the post-accident sampling system, in particular the containment atmosphere sampling system, following a design basis event would have resulted in a dose to the operators exceeding regulatory limits if a post-accident sample was obtained as soon as practicable in accordance with system design. No



## LICENSEE EVENT REPORT (LER)

## TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Point Beach Nuclear Plant, Unit 1	05000266	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 6
		97	- 024	- 00	

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

appreciable increase in offsite doses would have occurred. The health and safety of the public was not impacted by this event.

**Similar Occurrences:**

NRC Inspection Report 50-266/89008; 50-301/89008, dated April 13, 1989, documents a previous occurrence that resulted in the uprating of the containment post accident sample system for obtaining a sample at up to 15 psig.

**System and Component Identifiers**

The Energy Industry Identification System component function identifier for each component or system referred to in this Licensee Event Report are as follows:

<u>Component</u>	<u>Identifier</u>	<u>System</u>	<u>Identifier</u>
Pump	P	Reactor Coolant	AB
Valve, Isolation	ISV	Radiation Monitoring	IL
Filter	FLT	Service Air	LF
Detector	DET	Instrument Air	LD