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

Gentlemen:

DOCKETS 50-266 AND 50-301
LICENSE EVENT REPORT 94-003-00
REACTOR COOLANT SAMPLE SYSTEM CONTAINMENT ISOLATION VALVE TESTING
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Enclosed is License Event Report 94-003-00 for Point Beach Nuclear Plant, Units 1 and 2. This report is provided in accordance with the provisions of 10CFR50.73(a)(2)(i)(B), "The licensee shall report...any operation or condition prohibited by the plant's Technical Specifications."

This report details the discovery of reactor coolant sample system containment penetration isolation valves that were not being appropriately tested as required by Technical Specification 15.4.4.III, "Type C Tests."

Please contact us if any further information is required.

Sincerely,

for

Bob Link
Vice President
Nuclear Power

TGM/jg

Enclosure

cc: NRC Resident Inspector
NRC Regional Administrator, Region III

IE22
1/1

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 6

TITLE (4)
Reactor Coolant Sample System Containment Isolation Valve 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
									PBNP, Unit 2	05000301
02	17	94	94	-- 003 --	00	03	21	94	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%	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
		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)	X	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)
Thomas G. Malanowski, Project Engineer - Licensing	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)			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)

A comprehensive review of containment mechanical penetrations and our 10 CFR 50, Appendix J testing program was performed to verify that the appropriate testing was being conducted and to ensure that the Point Beach Nuclear Plant design and licensing basis for containment isolation is being appropriately maintained. Penetration P-28a in both units, reactor coolant system hot leg sample lines, was identified as potentially not meeting redundant barrier design criteria for containment penetrations in its tested configuration. The tested isolation valve inside containment is located inside the missile shield which is in conflict with FSAR requirements. A subsequent evaluation was performed, based on leak before break analyses and the probability of failure of the sample line following a design basis event, that justified returning the sample line to service for an interim period until final corrective action can be taken.

EVENT DESCRIPTION
(refer to the attached figure)

On February 17, 1994, with Point Beach Nuclear Plant (PBNP) Units 1 and 2 operating at 100% power, containment penetrations 1(2)P-28a, reactor coolant system sample line (hot leg) was declared inoperable and was isolated. The penetration was isolated by closing the automatic containment isolation valve 1(2) SC-966C outside containment.

A comprehensive review of the containment penetration isolation provisions and our 10 CFR 50, Appendix J, Type C testing program was performed to verify that the redundant containment isolation boundaries for mechanical penetrations were being appropriately maintained and tested. The qualification of one of the tested valves counted on for containment isolation of Penetration P-28a, was questioned in this review. A condition report was initiated for further evaluation.

Penetration P-28a is classified in the PBNP Final Safety Analysis Report (FSAR) as a Class 1 penetration. Class 1 penetrations are normally operating outgoing lines connected to the reactor coolant system. The isolation provisions defined for Class 1 penetrations include, as a minimum, one automatic trip valve and one manual isolation valve in series, located outside containment to satisfy redundant barrier criteria. In addition to the isolation valves, each line connected to the reactor coolant system is provided with a remotely operated stop valve located near its connection to the reactor coolant system.

The PBNP FSAR identifies valve SC-966C as the remotely operated trip valve outside containment, valves SC-956C and SC-946 as the manual isolation valves in series, and valve SC-955 as the remotely operated stop valve which also trips on a containment isolation signal. Our local leak rate (Type C) test program, as required by Appendix J and PBNP Technical Specification 15.4.4.III, includes valves SC-966C and SC-955. Normally open manual valve SC-956C and normally closed valve SC-946 are not leak rate tested and therefore have not been verified to be capable of performing a containment isolation function. Valves SC-966C and SC-955 are being relied on to perform as redundant isolations for penetration P-28a.

Valve SC-955 is located inside the missile shield within the containments. Containment isolation valves inside containment are normally missile protected due to being located between the missile shield and the containment wall. An evaluation was completed on February 15, 1994, which verified the SC-955 location in Unit 2 and concluded SC-955 could not be considered missile protected and therefore, did not

satisfy all requirements for a containment isolation valve. This results in penetration P-28a being provided with only one fully qualified isolation valve since manual valve SC-956C and SC-946 were not being leak tested.

A condition report documenting this conclusion was initiated on February 17, 1994. The penetration was declared inoperable and was isolated by shutting the remotely operated trip valve outside containment (SC-966C) thereby restoring containment integrity as defined by Specification 15.1.c of the PBNP Technical Specifications.

Additional reviews performed to verify the manual isolation provisions for this penetration concluded that valve SC-956C was classified outside the ASME Section XI program. This valve and adjacent piping is not being tested in accordance with ASME Code requirements and should not be considered adequate for establishing the containment boundary. Walkdowns of the valve and the associated piping determined however, that the valve and piping are seismically supported.

Isolating this line removes the failed fuel monitor from operation thereby reducing the ability to detect failed fuel on a real-time basis. An internal justification for continued operation (JCO) was prepared and approved to justify unisolating and returning the sample line to service. The JCO concluded that operation with the line in service in its presently tested configuration until fully qualified, redundant isolation provisions are in place is acceptable. This conclusion is based on:

1. The NRC concluded in Generic Letter 84-04, "Safety Evaluation of Westinghouse Topical Reports Dealing with Elimination of Postulated Pipe Breaks in PWR Primary Main Loops," that the potential for significant failure of stainless steel primary piping was low enough so that main loop pipe breaks need not be considered as a design basis for defining structural loads. The supporting evaluations are applicable to PBNP. This Generic Letter accepts the "leak before break" philosophy which effectively eliminates the reactor coolant system piping as a possible missile hazard which could render SC-955 inoperable.

2. Temporary procedure changes to emergency procedures have been approved and implemented which require manual isolation of the penetration if SC-966C fails to indicate shut following a valid isolation signal.

3. Probabilistic Safety Analysis estimates the probability of a fission product release from containment due to failure of SC-955

at 4.19E-8 per year. Thus, failure of SC-955 as a result of a loss of coolant accident is considered incredible.

Penetration P-28a on both units was subsequently unisolated on February 24, 1994.

CAUSE

A design and licensing review of this penetration was performed to better define the design and testing requirements for the penetration. As documented in the original PBNP Final Facility Description and Safety Analysis Report (FFDSAR), during the early operation of PBNP (pre-TMI), this line was normally isolated utilizing SC-955. SC-955 was a remotely operated air operated valve which, if open, would fail shut on the loss of instrument air. A review performed in 1974, to verify that PBNP met the intent of the 10 CFR 50 Appendix J test requirements, determined that the only valve requiring testing in this line was SC-956C. No information supporting this conclusion was located.

Following the issuance of NUREG-0578 in 1979, the reactor coolant system sample line was classified as essential as required by the guidance in Item 2.1.4a. As clarified NUREG-0737, Item II.E.4.2, Penetration P-28a, as an essential penetration, did not require upgrading to the present General Design Criteria requirements (issued subsequent to PBNP licensing) for redundant automatic isolation. However, a trip signal on containment isolation was added to valve SC-955 as committed to in a 1980 response to NUREG-0578 providing penetration P-28a with two automatic trip valves. This valve was added to our Type C test program in 1983 and relied upon from that time to provide containment isolation. No documentation resolving missile protection concerns for SC-955 during this time frame has been found. We also began operating with SC-955 normally open to support failed fuel monitoring during this timeframe.

A review of containment penetration isolation provisions was performed and the FSAR updated in 1992. The purpose of this review was to determine which valves listed in the FSAR and depicted in the associated drawings satisfied the PBNP penetration class definitions. This review determined that valves SC-956C, SC-966C and SC-946, satisfied the isolation provisions for a Class 1 penetration. This would require manual valves SC-956C and SC-946 to be leak tested. The PBNP Type C test program was not reviewed or updated at that time to ensure this was reflected in our test program.

Based on this design and licensing review we have concluded that the previous changes made in the isolation provisions for this penetration

and in the PBNP FSAR did not receive a complete and documented engineering review against the PBNP design and licensing requirements.

COMPONENT AND SYSTEM DESCRIPTION

Penetration P-28a is classified in the PBNP Final Safety Analysis Report (FSAR) as a Class 1 penetration. Class 1 penetrations are normally operating outgoing lines connected to the reactor coolant system. This class of penetrations is provided with, at a minimum, one automatic trip valve and one manual isolation valve in series, located outside containment. In addition to the isolation valves, each line connected to the reactor coolant system is provided with a remotely operated stop valve located near its connection to the reactor coolant system. The automatic trip valve and manual valve satisfy the design requirement specified in the FSAR that penetrations requiring closure to satisfy the containment function be protected by redundant valving and associated apparatus.

Penetration P-28a is provided with three valves outside containment that are designated containment isolation valves in the PBNP FSAR. These valves are SC-966C, which receives a trip signal on containment isolation, and manual valves SC-956C and SC-946. In addition, a remote stop valve, SC-955, located inside the missile shield wall, is provided with trip signal on containment isolation.

REPORTABILITY

This discovery is being reported in accordance with the requirements of 10 CFR 50.73 (a) (2) (i) (B), ". . . Any operation or condition prohibited by the Technical Specifications." In addition, a one-hour report was made in accordance with 10 CFR 50.72 (b) (1) (ii) (B), as a condition potentially outside the design basis of the plant.

SAFETY ASSESSMENT

As discussed previously, the present penetration isolation configuration was evaluated and determined to be of minimal safety significance. Applying "leak before break" criteria approved for PBNP in Generic Letter 84-04 virtually eliminates the consideration of missiles generated by the failure of reactor coolant system piping preventing SC-955 from functioning as a containment isolation valve. This is supported by Probabilistic Safety Analysis estimates of the probability of a

radiological release from containment caused by the failure of SC-955 of 4.19E-8 per year. Valve SC-955 is tested in accordance with 10 CFR 50, Appendix J and the PBNP Technical Specifications. Therefore, SC-955 can be expected to perform the containment isolation function. SC-955 and SC-966C provide the required redundant penetration isolation.

CORRECTIVE ACTION

Immediate

1. Penetration P-28a on both PBNP units was isolated utilizing the fully qualified isolation valve SC-966C.

Near-Term

1. An internal justification for continued operation was prepared which demonstrates that the existing penetration isolation valve configuration is acceptable for operation until final corrective actions can be taken. The results of this JCO are discussed above.

2. Valve SC-956C was verified to be leak tight under normal system pressure.

Long-Term

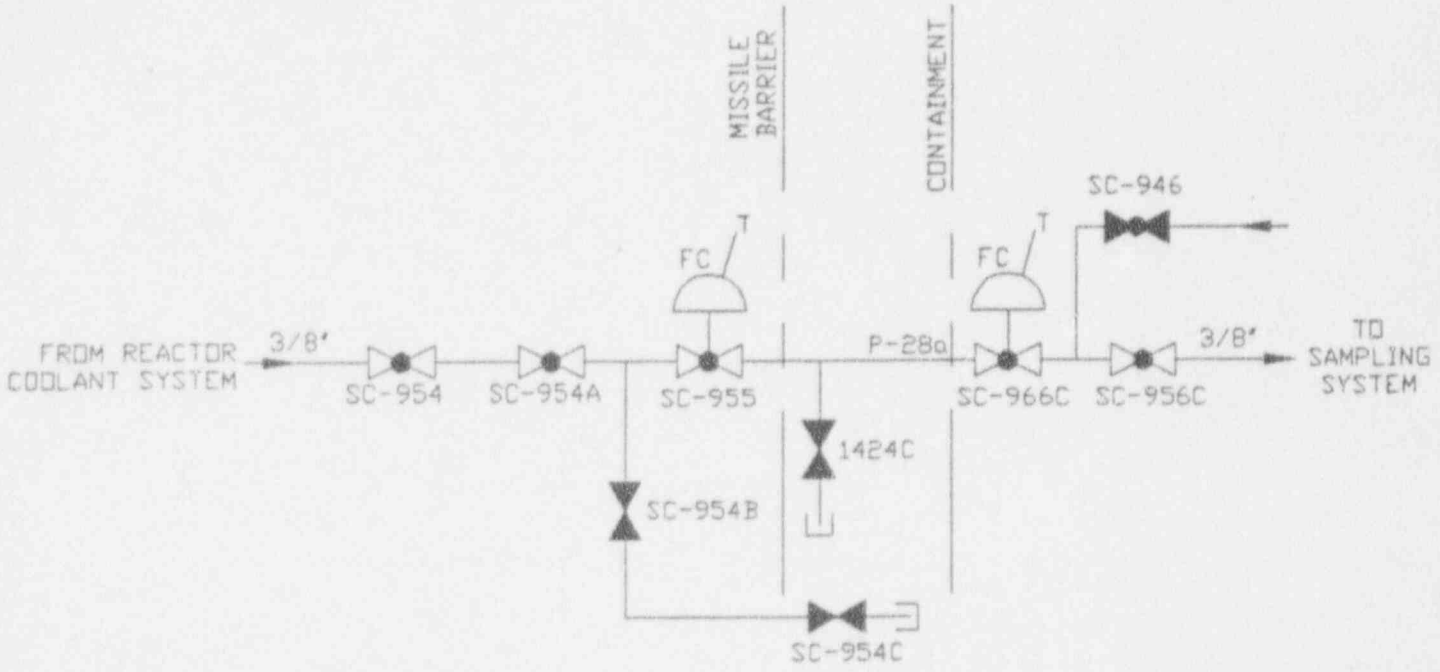
1. Additional evaluation utilizing PBNP design documentation will be performed and missile protection, if appropriate, will be provided for SC-955 and associated piping no later than the 1995 refueling outages for both units.

2. Changes to the PBNP FSAR defined containment isolation provisions have been approved and are planned for the 1994 update which will clearly define the isolation provisions for each containment penetration. These changes have been reviewed with consideration for our local leak rate test program to ensure all required containment isolation valves are tested as required.

SIMILAR OCCURRENCES

LER 93-006-00 for PBNP Units 1 and 2 dated May 17, 1993, describes the discovery of a containment isolation valve in the chemical and volume control system that was not being appropriately tested.

REACTOR COOLANT SYSTEM SAMPLE LINES (HOT LEG SAMPLE)



PENETRATION	CONTAINMENT ISOLATION VALVES INSIDE	CONTAINMENT ISOLATION VALVES OUTSIDE	BRANCH/SYSTEM	LINE SIZE	FLUID	TEMP. HOT>200 COLD<200	CLASS
28a		SC-966C	HOT LEG SAMPLE	3/8"	G	HOT	1
		SC-956C	/SAMPLING SYSTEM				
		SC-946					
FOR FURTHER INFORMATION REFER TO FSAR CHAPTER 9 & FIG. 9.4-1							

NOTE:
THIS PENETRATION MEETS CLASS 1 CONTAINMENT ISOLATION CRITERIA. LOCATED OUTSIDE CONTAINMENT ARE MANUAL VALVES (SC-956C, SC-946) CONNECTED IN SERIES TO AN AUTOMATIC TRIP VALVE (SC-966C). IN ADDITION, AUTOMATIC TRIP VALVE (SC-955) IS LOCATED INSIDE CONTAINMENT AND IS THE ROOT VALVE LOCATED NEAR ITS CONNECTION TO THE RCS.

FIG. 5.2-28a
June 1992