

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Point Beach Nuclear Plant	DOCKET NUMBER (2) 0 5 0 0 0 2 6 6	PAGE (3) 1 OF 15
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TITLE (4)  
Containment Isolation Valve Leakage in Excess of TS Limits

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 NAMES		DOCKET NUMBER(S)
0	4	15	8	8	004	0	5	13	None		0 5 0 0 0
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) N A	20.402(b)	20.408(a)	50.73(a)(2)(iv)	73.71(b)
	20.408(a)(1)(i)	50.38(a)(1)	50.73(a)(2)(v)	73.71(c)
	20.408(a)(1)(ii)	50.38(a)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.408(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.408(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.408(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME C. W. Fay, Vice President - Nuclear Power	TELEPHONE NUMBER	
	AREA CODE 4 1 4	2 2 1 - 2 8 1 1

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
X	B/D	I/S/V	R 3 4 0	Yes					
X	B/D	I/S/V	R 3 4 0	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On April 15, 1988, during type "C" leak rate testing, two valves exceeded the leak rate allowed by Technical Specifications 15.4.4.II.B and III.B. In each case, the required test pressure could not be achieved and therefore, the leak rate could not be quantified.

One valve was the "A" reactor coolant pump component cooling water supply line check valve (755A). This valve did not have excessive leakage last year. However, because of past leakage problems with valves of this type in the same application, it has been removed and replaced.

The second valve was a check valve in the nitrogen supply line to the pressurizer relief tank (528). 528 has not had a history of high leak rates. This valve has been cleaned and returned to service.

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

EVENT DESCRIPTION

Unit 1 was shutdown for its annual refueling maintenance outage on April 5, 1988. The total "as found" leakage for type "B" and "C" local leak rate testing potentially exceeded 0.6 La when excessive leakage through the "A" reactor coolant pump component cooling water supply line containment isolation valve (755A) was found on April 15, 1988. Potential excessive "as found" leakage also occurred through the nitrogen supply check valve (528) to the pressurizer relief tank.

Valve 755A was tested according to procedure; however, the required test pressure of 80 psia could not be achieved in the test volume. An indicated, test pressure of 43.4 psia was achieved while an indicated leak rate of greater than 124,000 standard cubic centimeters per minute (sccm) existed. Note that this leak rate is not the actual leak rate that could have been shown if the test volume could have been pressurized to 80 psia. Therefore, in view of the test findings, it is assumed that the leak rate of 755A by itself would violate the total leakage limits set forth in the Technical Specifications. The "as found" leak rate for this valve in 1987 was 12 sccm.

The test of valve 528 reached a pressure of 58.3 psia while indicating a leak rate of greater than 100,000 sccm. This leak rate, also, is not the actual leak rate that would have been exhibited if the test volume could have been pressurized to the rated pressure of 80 psia. Therefore, in view of the test findings, it is assumed that the leak rate of 528 was large enough by itself to violate the total leakage limits set forth in the Technical Specifications. Valve 528 has had no history of excessive leak rates. The "as found" leak rate for this valve was 18 sccm in 1987.

The total "as found" local leak rate summing all Type "B" and "C" tests excluding 755A and 528 was 57529 sccm or 24.9% of 0.6 La.

The total "as left" leakage for Unit 1 after the 1988 refueling outage was 18588 sccm or 8% of the Technical Specification allowance.

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

SYSTEM DESCRIPTIONS

Valve 755A is a four-inch, 150-pound, carbon steel, swing check valve model 73908 manufactured by Velan Corporation. This valve is located inside containment in an incoming component cooling line to the "A" reactor coolant pump. Additional isolation capability is provided by valve 754A located outside containment which can be operated remotely from the control room. Operator action would be required to shut this valve in the event it was needed to establish containment isolation. 754A was subjected to a Type "C" test with satisfactory results.

Valve 528 is a 2-inch, forged carbon steel, 600 lb., 900°F, Rockwell Edwards lift check valve, Figure 838Y. The valve is located just inside containment in a 3/4-inch stainless steel line. Isolation capability is possible with manual valve 595 just outside containment. 595 passed its "as found" leak rate test.

GENERIC IMPLICATIONS

Other valves of this type in this application have failed their leak rate tests in the past. 3 of 4 component cooling water supply check valves installed at Point Beach Nuclear Plant of the type found in this test have been replaced with valves of a similar design but with different valve seat orientation as described in the corrective actions section. The last valve is scheduled for replacement during the next Unit 2 refueling outage. No generic implications have been found for valve 528.

REPORTABILITY

This Licensee Event Report is filed pursuant to 10 CFR 50.73(a)(2)(i), "Any operation or condition prohibited by the plant's Technical Specifications."

The Energy Industry Identification System component function identifier and system names of each valve and system referred to in the LER are:

Valve #	755A	528
System	BD	BD
Component	ISV	ISV

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

CAUSE

The causes of failure for each of these valves is operational in nature. The 755A type valves have had a history of failure after a certain number of years of service in which they have good leak rate test histories. The 755A valve was disassembled and inspected. No obvious signs of damage, wear or debris were found. As noted during inspection of other valves of this type in this application, when slowly lowering the valve disc by hand it is possible to have it hang open slightly. The top of the disc hits the seat first and must slide up the seat to allow the bottom of the disc to contact the seat. The friction during this action appears to prevent the disc from seating when lowered slowly such as during a pump coastdown and subsequent draining of the line prior to the leak rate test.

528 was opened, cleaned and returned to service. Rust particles were found on the valve seat. The origin of the rust is speculative. Since 528 is in a dry nitrogen gas line, the origin of the rust could be from reactor coolant traveling from the pressurizer relief tank during the gas purge which takes place near the end of each refueling outage. 528 is a carbon steel valve and therefore the valve body could have also contributed rust to the area of the valve seat.

SAFETY ASSESSMENT

Operation of Unit 1 during the last fuel cycle posed no safety hazard to the employees of Point Beach Nuclear Plant or the general public for several reasons.

During the test procedures for 755A no actual liquid back-flow condition was created through the check valve as would be expected under accident conditions. Therefore, there was no hydraulic shutting force created by reverse flow against the disc during the test. It is very likely that during a design basis accident, should the containment atmosphere be exposed to a broken component cooling water line creating reverse flow in the line, liquid remaining in the line would cause the valve disc to seat resulting in a less significant leak rate than found during the test. If a component cooling line break had occurred during a period of high containment pressure, the valve disc would have been forced quickly onto the valve seat.

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The component cooling system is a closed system outside containment with normal operating pressures greater than containment accident pressure. Also, a remote operating valve 754A outside containment from 755A would allow the operator to isolate the CCW line should it become necessary to establish containment integrity. 745A passed its local leak rate test with a value of 260 sccm.

The nitrogen supply line for the pressurizer relief tank, also, has a manual isolation valve (595) outside containment that could be used to isolate the line, if needed. Valve 595 passed its local leak rate test with 16 sccm.

CORRECTIVE ACTIONS

755A has been replaced with a new Velan swing check valve with a slightly different disc/seat orientation. This seat is angled approximately 15 degrees from the vertical to provide for gravity to aid in the seating of the valve. The "as left" leak rate for the new 755A was 160 sccm.

One old type component cooling water check valve (755B) still remains installed on Unit 2. It is scheduled for replacement with a new valve during the next Unit 2 refueling outage in the fall of 1988.

The repair of valve 528 consisted of disassembly, cleaning and reassembly. A new stainless valve is being ordered to replace the existing forged carbon steel valve and is scheduled to be installed during the next Unit 1 refueling outage after receipt of the new valve. The "as left" leak rate for 528 was 20 sccm.

Procedures will be reviewed and appropriately revised to provide guidance that will reduce the probability of liquid in the pressurizer relief tank nitrogen line during the purge evolution. This should also reduce the probability of rust forming in the check valve area.

SIMILAR OCCURRENCES

Other valves of the 755A type have failed leak rate tests in the past. See LERs 83-004/T-01, 84-008-00, 85-002-00, 85-002-01, 86-005-00 and 86-005-01 for Unit 2. Also, see LER 86-002-00 for Unit 1.

There is no history of excessive leak rates for valve 528.



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VPNPD-88-277

NRC-88-045

10 CFR 50.73

May 16, 1988

U. S. NUCLEAR REGULATORY COMMISSION  
Document Control Desk  
Washington, D.C. 20555

Gentlemen:

DOCKET NO. 50-206  
LICENSEE EVENT REPORT NO. 88-004-00  
CONTAINMENT ISOLATION VALVE LEAKAGE IN EXCESS OF TECHNICAL  
SPECIFICATION LIMITS  
POINT BEACH NUCLEAR PLANT, UNIT 1

Enclosed is Licensee Event Report 88-004-00 for Point Beach Nuclear Plant, Unit 1. This report is being provided in accordance with 10 CFR 50.73(a)(2)(i), "Any Operation or Condition Prohibited by the Plant's Technical Specifications."

This report details the failure of two valves to pass local leak rate tests at a level required by Technical Specifications.

If any further information is needed, please do not hesitate to contact us.

Very truly yours,

C. W. Fay  
Vice President  
Nuclear Power

Enclosure

cc: NRC Resident Inspector  
NRC Regional Administrator, Region III

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