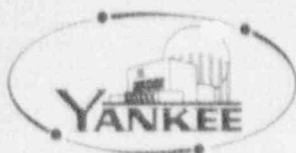


YANKEE ATOMIC ELECTRIC COMPANY

Telephone (413) 424-5261



Star Route, Rowe, Massachusetts 01367

March 4, 1991
BYR 91-40

TO: NRC - DOCUMENT CONTROL DESK
DOCUMENT: LICENSEE EVENT REPORT, LER
EXCEPTIONS: SEND ORIGINAL COPY

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

Subject: Licensee Event Report No. 50-29/89-12-01
Degradation of the Main Coolant System Boundary Results in
System Leak

Dear Sir:

In accordance with 10 CFR 50.73(a)(2)(i) and 50.73(a)(2)(ii), the attached Licensee Event Report is hereby submitted. This Licensee Event Report is a supplement to Licensee Event Report No. 50-29/89-12 dated September 25, 1989.

Very truly yours,

Normand N. St. Laurent
Plant Superintendent

ELM/elm
Enclosure

cc: [3] NSARC Chairman (YAEC)
[1] Institute of Nuclear Power Operations (INPO)
[1] USNRC, Region I
[1] Resident Inspector

9103110008 910304
PDR ADOCK 05000029
S PDR

IE22

11

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Yankee Nuclear Power Station Rowe, Massachusetts	DOCKET NUMBER (2) 0 5 0 0 0 0 2 1 9	PAGE (3) 1 OF 0 3
---	--	----------------------

TITLE (4)
Degradation of a Main Coolant System Boundary Results in System Leak

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
0 8	2 4	8 9	8 9	0 1 2	0 1	0 3	0 4	9 1	
									DOCKET NUMBER(S) 0 5 0 0 0
									0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

OPERATING MODE (9) 4	20 402(b)	20 405(c)	50 73(a)(2)(iv)	73 71(b)
POWER LEVEL (10) 0 0 0	20 405(a)(1)(ii)	50 38(a)(1)	50 73(a)(2)(v)	73 71(c)
	20 405(a)(1)(iii)	50 38(a)(2)	50 73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text NRC Form 360A)
	20 405(a)(1)(iv)	X 50 73(a)(2)(ii)	50 73(a)(2)(viii)(A)	
	20 405(a)(1)(v)	X 50 73(a)(2)(ii)	50 73(a)(2)(viii)(B)	
	20 405(a)(1)(vi)	50 73(a)(2)(iii)	50 73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Gregory A. Maret, Technical Director	AREA CODE 4 1 3 4 2 4 - 5 2 6 1

COMPLETE 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	A	B	PIS P	X 9 9 9	N				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On 8/24/89, at 2338 hours, during a plant start-up following a maintenance outage, (Mode 4 - Main Coolant System (MCS) pressure 305 psig and Temperature 310 degrees F) a report of a steam leak in loop 2 was investigated. At 0035 hours, on 8/25/89, a leak was found in a weld attaching the vent line to the loop bypass line. At 0105 hours the action statement of Technical Specification 3.4.5-2, requiring the plant to be cold shutdown within 30 hours, was entered. At 0115 hours an Unusual Event (UE) was declared based on MCS leakage within the capacity of a charging pump. Notification was made to the states of Vermont and Massachusetts and the NRC. Following the cooldown to Mode 5, the UE was terminated at 0825 hours. Similar vent lines in the remaining loops were inspected and found in satisfactory condition. The vent line was repaired and the plant returned to power at 0525 hours on 8/29/89. During the June 1990 refueling outage the corresponding vent line on each of the other three loops was replaced to maintain configuration consistency.

An initial engineering evaluation attributed the failure to fatigue. The subsequent laboratory evaluation confirmed the results of the initial evaluation. No other corrective actions are planned at this time.

A similar event was reported in LER 83-25. There was no adverse effect to the public health or safety as a result of this event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Yankee Nuclear Power Station, Rowe, Massachusetts, 01367	DOCKET NUMBER (2) 0 5 0 0 0 0 2 9	LER NUMBER (6)			PAGE (3)		
		YEAR 8 9	SEQUENTIAL NUMBER - 0 1 2	REVISION NUMBER - 0 1			
					0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At 2338 hours, on August 24, 1989, during a plant start-up following a maintenance outage, (Mode 4 - Main Coolant System (MCS) [EIIS:AB] pressure 305 psig and temperature 310 degrees F) a licensed reactor operator and radiation protection technician entered loop No. 2 to investigate a report of steam coming from the MCS. Steam was observed issuing from the loop 2 bypass line at the vent valve and water was dripping from the lagging approximately 5 feet from the vent valve. The control room was immediately notified of the situation, and the operator and radiation protection technician exited the loop. They re-entered the loop, after donning respirators, along with an insulation worker and a second radiation protection technician. Lagging was removed from the area of the suspected leak, and a leak was exposed at the weld where the vent line enters the bypass line. The information was passed to the control room at 0035 hours. Cooldown of the plant was initiated.

At 0105 hours the action statement of Technical Specification 3.4.5.2, requiring the plant to be in cold shutdown within 30 hours, was entered. Based on MCS leakage exceeding Technical Specifications but less than one charging pump capacity [EIIS:CB:P], an Unusual Event was declared at 0115 hours. The states of Massachusetts and Vermont were notified at 0126 and 0124 hours, respectively. The NRC was notified via the ENS at 0156 hours. The plant was placed on shutdown cooling [EIIS:BP] at 0330 hours and entered Mode 5, cold shutdown, at 0815 hours. The Unusual Event was terminated at 0825 hours.

An inspection of the area revealed an indication at the weld connecting the 3/4 inch vertical vent pipe to the sockolet [EIIS:PSF] tapping off the 5 inch loop bypass line. After the loop was drained and purged the vent pipe was removed for repair. The pipe, valve [EIIS:VTV] and flange configuration were then welded back into the sockolet. The corresponding welds on the remaining loop bypass lines were liquid penetrant inspected and were found to be in satisfactory condition. Inspections conducted during the subsequent plant start-up indicated no leakage. The plant returned to power at 0525 hours on August 29, 1989. During the June 1990 refueling outage the corresponding vent line on each of the other three loops was replaced to maintain configuration consistency.

An initial engineering evaluation identified fatigue as the cause of the weld degradation. A laboratory evaluation was conducted to determine the root cause of the weld degradation. The following conclusions were drawn on the basis of the data obtained in this investigation:

1. The primary mechanism of cracking involved in the development of the vent line leak was high-cycle fatigue.
2. The cracking was not associated with any inherent materials abnormality or with any weld flaw.
3. The cracking developed in response to high-cycle, low stress, bending loads encountered in some mode of plant operation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Yankee Nuclear Power Station, Rowe, Massachusetts, 01367	DOCKET NUMBER (2) 0 5 0 0 0 0 2 9	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 9	- 0 1 2	- 0 1	0 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 308A's) (17)

- | 4. The cracking and eventual leaking was not significantly affected by
- | high-stress bending loads associated with removal or replacement of
- | the blind flange.

The leakage from the MCS during this event was less than one gallon per minute, as indicated by the Vapor Container Drain Tank level increase. There were no uncontrolled releases to the environment as a result of this event. The plant was not in an unanalyzed condition. There was no adverse effect on any other plant system or safety function and there were no challenges to any Engineered Safety Feature systems as a result of this event. Therefore, there was no adverse effect on the health or safety of the public as a result of this event.

No other corrective actions are deemed necessary at this time. LER 83-25 reported a leak on the No. 1 loop bypass line relief valve line socket weld.