

New Hampshire Yankee

Ted C. Feigenbaum
Senior Vice President and
Chief Operating Officer

NYN-90089

April 6, 1990

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

Reference: (a) Facility Operating License NPF-67, Docket No. 50-443

(b) Facility Operating License NPF-86, Docket No. 50-443

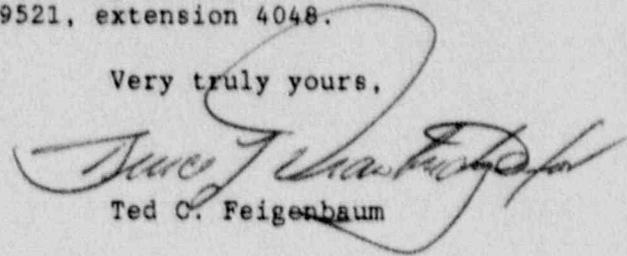
Subject: Licensee Event Report (LER) No. 90-006-01: Actuation of
Control Room Emergency Air Cleanup and Filtration Subsystem
due to Failed Radiation Monitor

Gentlemen:

Enclosed please find Licensee Event Report (LER) No. 90-006-01 for
Seabrook Station. This submittal supplements LER 90-006-00, which
documented an event which occurred on February 6, 1990. It also addresses
issues of Seabrook Station LERs 90-005-00 and 90-007-00, which reported
similar events that occurred on February 3, 1990, and February 8, 1990,
respectively. This event is being reported pursuant to 10CFR50.73(a)(2)(iv).

Should you require further information regarding this matter, please
contact Mr. Richard R. Belanger at (603) 474-9521, extension 4048.

Very truly yours,



Ted C. Feigenbaum

Enclosures: NRC Forms 366, 366A

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cc: Mr. Thomas T. Martin
Regional Administrator
United States Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Mr. Victor Nerses, Project Manager
Project Directorate I-3
United States Nuclear Regulatory Commission
Division of Reactor Projects
Washington, DC 20555

Mr. Noel Dudley
NRC Senior Resident Inspector
P.O. Box 1149
Seabrook, NH 03874

INPO
Records Center
1100 Circle 75 Parkway
Atlanta, GA 30339

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Seabrook Station	DOCKET NUMBER (2) 0 5 0 0 0 4 4 3	PAGE (3) 1 OF 0 3
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TITLE (4)
Actuation of Control Room Emergency Air Cleanup and Filtration Subsystem due to Failed Radiation Monitor

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 2	0 6	9 0	9 0	0 0 6	0 1	0 4	0 6	9 0			0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)											

OPERATING MODE (9) 5	POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 20.406(a)(1)(vi)	<input checked="" type="checkbox"/> 20.406(a)	<input type="checkbox"/> 50.38(a)(1)	<input type="checkbox"/> 50.36(a)(2)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
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LICENSEE CONTACT FOR THIS LER (12)										TELEPHONE NUMBER					
NAME Richard R. Belanger, Lead Engineer - Compliance - Extension 4048										AREA CODE 6 0 3		7 4 7 4		- 1 9 5 2 1	

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	V I R E		G O 6 3	N					

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)			MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)			<input checked="" type="checkbox"/> NO					

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

On February 6, 1990 at 6:22 pm EST, following a source check, the control room ventilation system Train A radiation monitor (RM-6506A) went into a high alarm condition. The monitor is located within the east air intake structure. The alarm condition resulted in the actuation of the Control Room Emergency Air Cleanup and Filtration Subsystem (CRA) [VI] and the transfer of the system to its recirculation/filtration mode. The radiation monitor check source became mechanically bound in front of the Geiger-Muller (GM) tube window, causing the monitor to enter into a high alarm condition. This problem was resolved by smoothing the walls of the guide slots and increasing the tension on the solenoid return spring. However, during this repair the GM tube became detached from the detector assembly plate. The GM tube was remounted, and a retest of the monitor was unsuccessful because of damage from the assembly being detached and remounted. The GM tube was replaced, and the monitor was returned to service at 3:54 pm on February 7, 1990. There were no adverse safety consequences as a result of this event. All equipment other than the monitor functioned as designed, fulfilling the Engineered Safety Features (ESF) function.

Previous events involving ESF actuations resulting from failed radiation monitors were reported via Seabrook Station LERs 90-005-00, 89-003-00, 89-001-00 and 87-001-00.

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		YEAR 9 0	SEQUENTIAL NUMBER 0 0 6	REVISION NUMBER 0 1	0 2	OF 0 3

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

On February 6, 1990 at 6:22 pm EST, following a source check the control room ventilation system Train A radiation monitor (RM-6506A) went into a high alarm condition. The monitor is located within the east air intake structure. The alarm condition resulted in the actuation of the Control Room Emergency Air Cleanup and Filtration Subsystem (CBA) [VI] and the transfer of the system to its recirculation/filtration mode. The event occurred following an automatic check source test. This check source test is automatically performed every 24 hours.

CORRECTIVE ACTIONS

It appears the radiation monitor check source became mechanically bound, such that the check source rod was binding against its guide slots, resulting in the source remaining positioned in front of the GM tube window longer than normal. This caused the monitor to enter the high alarm condition. The walls of the guide slots were smoothed with emery cloth and the tension of the solenoid return spring was increased to prevent the binding from recurring. However, during these activities the GM tube became detached from the detector assembly plate. The GM tube was remounted, and after a retest of the monitor was unsuccessful because of damage from the assembly being detached and remounted, the GM tube was replaced. The monitor was returned to service at 3:54 pm on February 7, 1990.

Due to repetitive problems with the east air intake monitors, RM-6506A&B, (see Seabrook Station LERs 90-007-00 and 90-005-00), the west intake monitors, RM-6507A&B, were also checked for rod binding problems. There appeared to be no problems with these monitors.

To prevent recurrence of this event, a note will be incorporated into the surveillance procedures for these monitors to look for and remove any burrs on the check sources rod, to adjust spring tension, if necessary, and to visually verify smoothness of operation. In addition, the routine performance monitoring and trend analysis activities that have been implemented will continue to track and evaluate future failures of a similar nature. For long term corrective action, New Hampshire Yankee is evaluating a Design Coordination Report (DCR) which will address redundant CBA actuation logic or other appropriate modifications to increase the reliability of the air intake radiation monitors.

ROOT CAUSE

The root cause of the monitor failure has been determined to be mechanical binding of the check source. The check source assembly consists of a check source, drive rod and a spring return rotary actuator. The rod/actuator mechanical linkage translates the rotary motion into a rod linear motion. The drive rod is guided by a long hollow tube. With the requirement for

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

check source movement the potential exists for check source misalignment and binding. The binding results in the check source remaining positioned in front of the detector window longer than the automatic test circuit allows, causing the monitor to go into a high alarm condition. This results in initiation of the Control Room Emergency Air Cleanup and Filtration Subsystem transferring to its recirculation/filtration mode.

A review of the history of the four intake air radiation monitors (RM-6506A&B and RM6507A&B) has been completed. Since 1986, three out of the four intake monitors have had one event each involving a check source binding. The intake monitors use a Model RD-7 detector. There are a total of thirteen RD-7 detectors at Seabrook Station. In over 15,000 check source actuations with the RD-7 detector since 1986, there have been only eight check source binding events.

SAFETY CONSEQUENCES

There were no adverse safety consequences as a result of this event. All equipment other than the detector check source linkage functioned as designed, fulfilling the Engineered Safety Features (ESF) function. The failure of the monitor in this manner does not impair the ESF function of the Control Room Emergency Air Cleanup and Filtration Subsystem and automatically places the CBA system in the configuration required by Seabrook Station Technical Specification 3.3.3.1.

PREVIOUS OCCURRENCES

A previous occurrence of an ESF actuation resulting from a radiation monitor check source binding was reported via Seabrook Station LER 90-005-00. Additionally, events involving ESF actuations resulting from failed radiation monitors were reported via Seabrook Station LERs 89-003-00, 89-001-00 and 87-001-00; however, these events did not result from check source binding. Since 1986 there have been only eight check source binding events with the RD-7 detectors, however not all of these resulted in an ESF actuation.

At the time of this event, Seabrook Station was in Mode 5, cold shutdown.