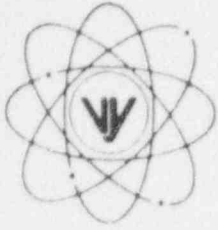


VERMONT YANKEE NUCLEAR POWER CORPORATION



P.O. Box 157, Governor Hunt Road
Vernon, Vermont 05354-0157
(802) 257-7711

May 23, 1996
BVY 96-68

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

REFERENCE: Operating License DPR-28
Docket No. 50-271
Reportable Occurrence No. LER 96-013

Dear Sirs:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER 96-013.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Robert J. Wanczyk
Robert J. Wanczyk
Plant Manager

cc: Regional Administrator
USNRC
Region I
475 Allendale Road
King of Prussia, PA 19406

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NRC Form 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION LICENSEE EVENT REPORT (LER)				APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY 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 (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.					
FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER STATION				DOCKET NUMBER () 05000271		PAGE (3) 01 OF 03			
TITLE (4) Two fire suppression systems do not meet design requirements due to personnel error on the part of vendor who designed and installed the systems									
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
04	24	96	96	-- 013 --	00	05	23	96	N/A
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)							
H		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
POWER LEVEL (10)		100		20.2203(a)(1)		20.2203(a)(3)(i) X		50.73(a)(2)(ii)	
				20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)	
				20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)	
				20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)	
				20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)	
								OTHER	
								(Specify in Abstract below or in NRC Form 366A)	
LICENSEE CONTACT FOR THIS LER (12)									
NAME ROBERT J. WANCZYK, PLANT MANAGER							TELEPHONE NO. (Include Area Code) 802-257-7711		
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER
NA					NA			
NA					NA			
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MO	DAY
YES (If yes, complete EXPECTED SUBMISSION DATE)				X NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 4/24/96, while operating at 100% power, the Fire Protection Improvement Project Team identified two fire suppression systems that do not meet their design requirements. The Reactor Recirculation Pump Motor Generator Set foam suppression system area of coverage per foam nozzle was found to exceed the manufacturers recommended coverage. The Reactor Building to cable vault cable penetration area at elevation 252' in the reactor building was found to have an error in the hydraulic calculation in that a section of 4" pipe was not included in the calculation. This omission changes the amount of water each sprinkler can deliver and results in some of the sprinkler heads not meeting the minimum discharge requirements. The cause of the event is personnel error on the part of the vendor who designed and installed the systems. The systems were administratively declared inoperable and compensatory measures put into place. The systems will be modified as necessary to bring them to their design requirements prior to startup from the 1996 refueling outage.

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						02 OF 03

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

DESCRIPTION OF EVENT

On 4/24/96, while operating at 100% power, the Fire Protection Improvement Project team identified two fire suppression systems that do not meet their design requirements.

It was found for the Reactor Recirculation Pump Motor Generator (RRMG) Set foam suppression system (EISS=KQ) that the area of coverage per foam nozzle exceeded the manufacturers recommended coverage. The design requirement for spacing of the sprinklers is that it cannot exceed 144 sq. ft. (12' X 12' O.C.). Contrary to this, there are three areas where the 144 sq. ft. spacing is exceeded. This results in an average delivered density of foam less than the minimum the design required.

For the Reactor Building to cable vault cable penetration area fire suppression system (EISS=KP) it was found that there was an error in the hydraulic calculation in that a section of 4" pipe was not included in the calculation. This omission changes the amount of water each sprinkler can deliver and results in some of the sprinkler heads not meeting the minimum discharge requirements.

Since the two systems do not meet their design requirements this is reportable under 10CFR50.73(a)(2)(iii) as a condition outside the design basis of the plant.

CAUSE OF EVENT

The root cause investigation for this event is in progress however due to the time elapsed between now and when the systems were installed in 1978 an exact root cause may not be able to be determined. The apparent cause is personnel error on the part of the vendor who prepared the design and performed the installation.

A contributing cause is a failure to perform an adequate detailed review of the vendor design and associated calculations when the systems were installed.

At the time these systems were installed the design work on fire protection systems was contracted out to a vendor specializing in fire protection systems to provide the design and installation services to meet the NFPA code requirements. Design reviews performed at the time did not identify the discrepancies between the actual installation and the design requirements.

Should the root cause investigation identify a different cause, a supplement to this LER will be provided.

ANALYSIS OF EVENT

The RRMG Set foam suppression system is a fully automatic, open nozzle suppression system, actuated by a two-zone detection system. An actuation signal to the system is provided when both a thermal detector and an ionization detector are tripped. The purpose of the system is to suppress a lube oil fire in the area around the RRMG sets and prevent spread of a fire to safety class electrical equipment. The area around the RRMGs is equipped with concrete berms to contain any oil leakage and a potential fire. The berms will also serve to contain the foam suppression in the area and concentrate it such that it will flow over the whole area suppressing any fire in the area and preventing its spread to safety related equipment.

The Reactor Building to cable vault cable penetration area at elevation 252' uses sealed fusible link sprinkler heads and an automatically-actuated deluge valve, thus requiring the trip of both an ionization detector and melting of the heads for system operation. The system is installed to provide protection for the safety related cable trays in the area where they enter the

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reactor building to prevent a fire in one of the safety division trays from spreading to the other division trays. Two layers of sprinkler heads are provided. One below the cable trays to suppress a fire at floor level and another set of sprinkler heads above the cable trays to suppress a fire in the trays themselves. The selected minimum discharge density was 0.30 gpm/sq. ft. over the protected area.

The calculation assumes that all 46 of the installed sprinkler heads are fully open. In an actual fire situation in the area not all of the heads would be open. Based on historical information from NFPA a limited number of sprinkler heads in a sprinkler system are required to suppress potential fires. Since the system is designed with two layers of sprinklers to deal with the two possible fire situations there is some additional margin for a normal fire situation. Under this condition the flow would be above the minimum required and would suppress any potential fire.

Based upon the above there were no adverse consequences to public health or safety as a result of this event.

CORRECTIVE ACTIONS

1. The affected systems were declared inoperable and compensatory measures put into place. These compensatory measures will remain in place until all design issues with the systems are resolved.
2. The two fire suppression systems will be modified as necessary to bring them to their design configuration prior to startup from the 1996 refueling outage.
3. Due to changes made in the design change process/procedures since these designs were performed, a similar occurrence would not be expected to occur at this time.

ADDITIONAL INFORMATION

Previous events involving fire protection system deficiencies reported to the NRC in the past five years include LER's 93-01, 94-11, 94-18, 95-03, 95-04, 95-14, 95-14 Supplement 1, 95-14 Supplement 2, and 96-07.

As a result of past Fire Protection Program concerns two task teams were initiated. A Fire Protection Improvement Team has been formed to assess the overall Fire Protection Program and review the program base documents against the current regulatory documents. An Appendix "R" Project Team has been formed to address all open issues identified in the Appendix "R" area, rewrite the Safe Shutdown Capability Analysis, identify any necessary design changes to meet Appendix "R" requirements, and ensure the Vermont Yankee Appendix "R" Program becomes a well documented and comprehensive program. These task team efforts are working to resolve all Appendix "R" compliance issues by the end of the 1996 refueling outage and address all fire protection program issues by December 1997.