VERMONT YANKEE
NUCLEAR POWER CORPORATION

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May 14, 1998
BVY 98-75

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

Subject: **Vermont Yankee Nuclear Power Station**
License No. DPR-28 (Docket No. 50-271)
Reportable Occurrence No. LER 98-001 , Rev. 1

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 98-001, Rev. 1.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Gregory A. Maret
Plant Manager

cc: USNRC Region I Administrator
USNRC Resident Inspector – VYNPS
USNRC Project Manager – VYNPS
VT Dept. of Public Service

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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)	DOCKET NUMBER (2)	PAGE (3)
VERMONT YANKEE NUCLEAR POWER STATION	05000271	01 OF 04

TITLE (4) A TECHNICAL SPECIFICATION FIRE BARRIER PENETRATION SEAL WAS DETERMINED TO BE IN A CONDITION WHICH LOWERED THE RATING OF THE AFFECTED FIRE BARRIER...ROOT CAUSE UNKNOWN

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 NO.(S) 05000
01	24	98	98	-- 01 --	01	05	14	98	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)							
POWER LEVEL (10)	97		20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		(Specify in Abstract below or in NRC Form 366A)
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NO. (Include Area Code)
GREGORY A. MARET, PLANT MANAGER	802-257-7711

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
NA				NO	NA				
NA					NA				

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MO	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)

On 01/24/98, while performing a post work inspection of a fire barrier penetration seal subject to Vermont Yankee plant Technical Specifications (TS) following work potentially affecting the seal, it was discovered that the penetration seal did not conform to the tested configuration for a 3-hour rated seal. A compensatory fire watch was established as required by plant TS, and the seal was repaired. The cause investigation could not determine the root cause for the failure to construct the seal per the specifications. The non-conforming aspect of the seal had not been disturbed since initial plant construction. The current VY Fire Protection Program and configuration management processes would not allow the installation of a non-conforming seal. Long term corrective actions to identify and correct similar conditions include: 1) inspections of similar seals, 2) intrusive examination of a sample of seals, 3) expanding the intrusive inspection sample if needed, and 4) repairing any inadequate seals. Although the seal did not meet the requirements for a 3 hour rating it would have challenged propagation of a fire. The combination of automatic fire suppression and detection, an on-site fire brigade and the as-built condition of the fire barrier seal gives confidence that a postulated fire would have been rapidly detected, and extinguished such that plant safe shutdown capability would not have been jeopardized. This is consistent with the intent of the fire protection program at VY. Therefore it is concluded that this event posed no significant increase in risk to either the health or safety of the public.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REV #	
VERMONT YANKEE NUCLEAR POWER CORPORATION	05000271	98	-- 01 --	01	02 OF 04

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

DESCRIPTION OF EVENT

On 01/24/98, while operating at 97 percent of rated power, during the performance of a post work inspection of a fire barrier penetration seal subject to Vermont Yankee plant Technical Specifications (TS) following work potentially affecting the seal, it was discovered that the penetration seal did not conform to the tested configuration for a 3-hour rated seal. The fire barrier was between a 4160 volt switchgear room in the control building (EIIS = NA) and a hallway connecting the turbine building (EIIS = NM) and the radwaste building (EIIS = NE). The major non-conformance was discovered by the VY Fire Protection Engineer as he was assessing minor degradation caused by work done in a cable tray penetrating a rated fire barrier. The movement of cable tray covers during the work effort resulted in minor cracking in the grout seal around the tray. The work crew contacted the Fire Protection Engineer (FPE) to have the minor flaw assessed. Upon inspection, the FPE confirmed that the damage caused by the work effort was minor. However, the FPE noted a gap which had been created as the cable tray cover had been flexed during the work effort. While investigating the gap, the FPE discovered the gap to penetrate deeply into the wall. The FPE requested that the seal be excavated to ensure that the seal, absent any disturbance caused by the cable tray work, conformed to the rated configuration. The excavation revealed that the seal had not been properly constructed, and that a major void had been left during the seal's original installation. The volume of the void was sufficient for the FPE to conclude that it did not meet the requirements for a 3 hour rated fire barrier seal penetration as required by plant TS. A compensatory fire watch was established as required by plant TS, and the seal was repaired.

CAUSES OF EVENT

The cause investigation could not determine the root cause for the failure to construct the seal according to the specifications for a 3-hour fire seal.

The apparent cause for this event was the lack of a formal fire protection program at the time of the seal installation.

ANALYSIS OF EVENT

The Fire Protection Program at Vermont Yankee uses a defense-in-depth concept to achieve a high degree of fire safety. The objective of the defense in depth is to:

1. Reduce the potential of fires starting,
2. Rapidly detect, control, and promptly extinguish those fires that do occur,
3. Provide adequate protection for structures, systems, and components so that a fire will not prevent the safe shutdown of the plant, and prevent the release of a significant amount of radioactive material, when fires occur.

The fire barrier penetration seal described in this report supports objective number 3 of the Fire Protection Program through conformance to the VY Fire Protection System design bases. VY System Design Bases are divided into two categories, Safety Design Bases and Power Generation Design Bases.

Safety Design Basis - The safety design basis for a safety system states in functional terms the unique design requirements which establish the limits within which the safety objective shall be met.

> A safety objective describes in functional terms the purpose of a system or component as it relates to conditions considered to be of primary significance to the protection of the public. This relationship is stated in terms of radioactive material barriers or radioactive material release. VY Fire Protection Systems have no Safety Design Bases. The systems are not credited for protection of the public but provide protection for plant equipment in support of continued operation and are therefore assigned Power Generation Design Bases.

Power Generation Design Basis - The power generation design basis for a power generation system states in functional terms the unique design requirements which establish the limits within which the power generation objective shall be met. Power Generation Design Bases of the VY Fire Protection Systems are listed below.

The Fire Protection System shall prevent propagation of fire and isolate the areas of the fire by:

1. Providing a reliable supply of fresh water for fire fighting purposes.
2. Providing a reliable system for delivery of the water to potential fire locations.
3. Providing automatic fire detection in those areas where the danger of fire is more pronounced.
4. Providing fire extinguishment by fixed equipment activated automatically or manually in those areas where danger of fire is most pronounced.
5. Providing manually operated fire extinguishing equipment for use by station personnel at selected locations.
6. Providing means to isolate areas so that fires are prevented from propagating from one area to another.

As previously mentioned, the VY Fire Protection Program is a defense-in-depth approach. Similarly the systems employed by VY in support of the system design bases provide defense-in-depth against propagation of a fire. The fire barrier seal found in the non-conforming condition challenged achievement of the Fire Protection System design basis number 6 (listed above). However the other layers of protection afforded by the chosen approach mitigated the significance of that non-conforming seal.

10CFR50 Appendix R states that when "considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boiloff." The seal is credited in VY's Safe Shutdown Capabilities Analysis in demonstrating that the 10CFR50 APP R requirements are met, and that those systems associated with achieving and maintaining safe shutdown conditions are available in the event of a fire affecting either the west switchgear room or the radwaste building hallway.

Although the seal did not meet the requirements for a 3 hour rating, it would have challenged propagation of a fire, as described in the plant TS bases. The combination of automatic fire suppression and detection, an on-site fire brigade and the as-built condition of the fire barrier seal gives confidence that a postulated fire would have been rapidly detected, and extinguished such that plant safe shutdown capability would not have been jeopardized. This is consistent with the intent of both the fire protection program and the 10CFR50 Appendix R program at VY. Therefore it is concluded that this event posed no significant increase in risk to either the health or safety of the public.

CORRECTIVE ACTIONS

Immediate Actions:

1. An Event Report was initiated to document this event and initiate a root cause analysis to determine the cause and appropriate corrective actions for this event. The expected completion date is 03/13/98.

2. The non-conforming seal was repaired. This action is complete.

Long Term Actions:

Because this condition was created during initial plant construction it can not recur. Current VY configuration management control processes and the current VY Fire Protection program would not allow a new seal installation which did not conform to the specifications established for a rated fire seal.

Vermont Yankee's Project Engineering Department will establish an action plan to determine if additional grout blockouts with similar problems exist. The expected completion date is 11/30/98. The preliminary action plan is:

1. Determine the number of similar seals (grout blockouts) which have been undisturbed since initial plant construction.

2. Visually inspect any seals identified in action number one above.

3. Perform a destructive examination of a random sample of the seals identified in action number one above.

4. Repair any grout blockouts found to be in non-conformance with their fire rating requirements.

5. Evaluate the need to repair grout seals based upon the results of the aforementioned inspections.

ADDITIONAL INFORMATION

Vermont Yankee currently has a rigorous seal inspection program. There are in excess of 1800 fire barrier penetration seals subject to the VY fire seal inspection program. VY considers the identified deficiencies to be indicative of the recently improved inspection processes and techniques, and the additional resources recently committed to the fire protection program.

There have been 5 similar events reported over the past five years:

LER 93-01 Degraded vital fire barriers due to inadequate documentation of assumptions and inadequate procedures.
LER 94-18 Two vital fire barriers inoperable due to degraded fire penetration seals.
LER 95-04 Incomplete repair of inoperable vital fire barrier penetration fire seal.
LER 96-07 Vital fire dampers not installed in accordance with manufacturers instructions.
LER 96-26 Inadequate design implementation and subsequent inadequate documentation of inspection findings result in operation outside of plant design basis for fire mitigation and Tech. Spec. non-compliance.