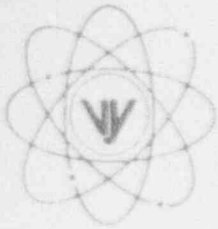


VERMONT YANKEE NUCLEAR POWER CORPORATION



P.O. Box 157, Governor Hunt Road
Vernon, Vermont 05354-0157
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March 5, 1993

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 93-001

Dear Sirs:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER 93-001, Supplement 1.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

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 U.S. NUCLEAR REGULATORY COMMISSION (6-89)										APPROVED OMS NO. 3150-0104 EXPIRES 4/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20603.									
LICENSEE EVENT REPORT (LER)																			
FACILITY NAME (1)										DOCKET NO. (2)					PAGE (3)				
VERMONT YANKEE NUCLEAR POWER STATION										0 5 0 0 0 2 7 1					0 1 OF 0 7				
TITLE (4) Degraded Vital Fire Barriers due to inadequate documentation of assumptions and inadequate procedures																			
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)									
MONTH	DAY	YEAR	YEAR	SEQ #	REV#	MONTH	DAY	YEAR	FACILITY NAMES					DOCKET NO. (S)					
1 2	1 7	9 2	9 3	0 0 1	0 1	0 3	0 5	9 3						0 5 0 0 0					
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO REQ'MTS OF 10 CFR §: CHECK ONE OR MORE (11)																	
N		20.402(b)				20.405(c)				50.73(a)(2)(iv)					73.71(b)				
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)					73.71(c)				
1 0 0		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)					X OTHER:				
		20.405(a)(1)(iii)				X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)					*Voluntary"				
		20.405(a)(1)(iv)				X 50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)									
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)									
LICENSEE CONTACT FOR THIS LER (12)																			
NAME										TELEPHONE NO.									
ROBERT J. WANCEYK, PLANT MANAGER										8 0 2 2 5 7 - 7 7 1 1									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYST	COMPONENT	MFR	REPORTABLE TO NPRDS	....	CAUSE	SYST	COMPONENT	MFR	REPORTABLE TO NPRDS	....							
N/A				....	....	N/A				....	....						
N/A				....	....	N/A				....	....						
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)					MO DAY YR				
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO									

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

On 12/17/92, with the plant at 100% power, when the insulation was removed from a piping penetration (RA-515-SF), an indeterminate fire penetration seal configuration was identified. The piping penetration was only partially filled with the expected fire barrier material. This configuration was determined to be different than expected and potentially not in compliance with design requirements. The penetration was repaired to conform with the sealing requirements for penetrations specified in the original design change.

During subsequent investigations additional insulated lines were also determined to be indeterminate. Additionally, concerns were raised with the qualification of some non-insulated penetrations (piping, conduit, and cable trays), the failure to consider pipe displacement in the selection of appropriate seal type, and with issues surrounding the Quality Control practices of the contractor. The root cause of issues identified during this effort were attributed to (1) inadequate documentation of assumptions, (2) inadequate procedures, (3) human error, and (4) failure to follow procedures.

Corrective actions include repairing all identified discrepancies and performing an enhanced surveillance on all fire barrier penetration seals.

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		93	- 001	- 01	

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

DESCRIPTION OF EVENT

INSULATED PENETRATIONS

On 12/17/92, with the plant at 100% power, when the insulation was removed from piping penetration (RA-515-SF), an indeterminate fire penetration seal configuration was identified. The piping penetration was only partially filled with the expected fire barrier material and partially filled with insulation. This configuration was determined to be different than expected and potentially not in compliance with design requirements. The penetration was repaired to conform with the sealing requirements for penetrations specified in the original design change, Plant Design Change Request (PDCR 79-05). The contractor that was hired to accomplish the sealing effort was Chemtrol Corporation. This contractor is no longer in business.

After review of the issue, an additional penetration RA-519-CA, was inspected and also found to have an indeterminate seal. This line was also an insulated line and was found to have some insulation in the penetration and a fire caulking material sealing the space between the wall and the pipe sleeve.

On 12/22/92, upon discovery of the second indeterminate penetration seal, a group was formed to review the as-found conditions, licensing bases documentation, the design documentation, and to develop the appropriate course of action.

A review of the design basis revealed that as part of Vermont Yankees commitments to address Appendix A to BTP 9.5-1, Vermont Yankee made commitments to upgrade certain penetrations to a rating equivalent to the barrier rating. Plant Design Change Request (PDCR) 79-05 was developed to make the required modifications. Subsequent to this Vermont Yankee took credit for certain barriers for separation of fire zones in support of the Safe Shutdown Capabilities Analysis.

Discussions with cognizant plant personnel, associated with the 1979/80 sealing effort, indicated that a decision was made to not remove pipe insulation during the sealing effort and to seal between the insulation and the pipe sleeve/wall interface. A review of the design documentation by our Fire Protection Specialist has not revealed documentation indicating that this was an acceptable alternative installation nor did it identify any qualification documentation for that type of installation.

On 12/23/92, as a result of the above information, all fire penetration seal barriers containing insulated lines were considered indeterminate and therefore declared inoperable. Vermont Yankee Engineering immediately began a review of all fire barriers which contained insulated lines and appropriate compensatory measures were taken. The compensatory measures will be continued until an engineering evaluation is completed for each installation and an approved seal is installed if required.

Based on this, this event is reportable per 10CFR50.73 (a)(2)(ii) as a condition outside the design basis of the plant.

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		0	3	OF	0	7			

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

On 12/24/92 a Nuclear Network entry was made to alert other nuclear utilities of this condition and to recommend that they review their records for any similar condition. In addition to the Nuclear Network entry, on 12/28/92 the Potential Reportable Occurrence report was evaluated and determined to be reportable as an LER per 50.73(a)(2)(ii) as a condition outside of the design basis. In addition a recommendation was made to evaluate the event for 10 CFR Part 21 implications.

NON-INSULATED PENETRATIONS (piping, conduit, cable trays)

On 01/02/93, during inspections of insulated fire barriers, concerns were raised regarding the adequacy of three nearby un-insulated penetrations through the west wall of the "A" Diesel Generator room (TG-0304SF, TG-0305SF, and TG-0310CA).

Investigation into the noted condition of these seals concluded that they also were not installed in accordance with the design details specified in the original design change "typical details" nor were they consistent with current requirements for a 3 hour fire barrier.

Recognizing this additional potential problem, on 01/05/93, a decision was made to require a continuous fire watch for these 3 additional penetrations. Since this wall was already being continuously watched, due to conditions previously identified with insulated lines, this watch was simply an extension to the existing watch. On 01/06/93 a task team headed by the Vice President, Engineering was formed to investigate the entire situation, to assess the status of fire barriers in the plant and to initiate additional corrective actions as appropriate.

Additional investigation and discussions with cognizant Vermont Yankee, Chemtrol and ANI personnel has not revealed any documentation supporting the configurations identified for non-insulated penetrations. As field investigations continue, similar "non-typical" configurations have been identified.

Based on this, this event is reportable per 10CFR50.73 (a)(2)(ii) as a potential condition outside the design basis of the plant.

SELECTION OF BOOT SEAL DESIGN FOR LINES WITH LARGE DISPLACEMENTS

During the effort to re-seal insulated lines a concern was raised by Vermont Yankee personnel surrounding the need to install "boot" type seals on lines with large displacements. The boots are installed to allow the piping penetrating the barrier to move consistent with thermal and seismic requirements. Additionally, selection of the appropriate seal type ensures for minimal seal degradation over time.

On 01-11-93, a review of the Chemtrol information contained in the design package revealed that boot type design was required for lines with displacements greater than 1/8 ". Based on a review of the design package, existing field configurations, and discussions with cognizant personnel it was determined that the "boot" seal option provided in the design package was not used when required.

Based on this, this event is reportable per 10CFR50.73 (a)(2)(ii) as a condition outside the design basis of the plant.

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IDENTIFICATION OF AN ADDITIONAL TECH SPEC WALL

On 01/12/93 an additional Tech Spec barrier (a portion of the West wall of the Reactor Building) which contained insulated fire penetrations was identified as requiring a continuous fire watch. This area was also compensated with a continuous fire watch.

During the investigation of issues surrounding insulated penetrations a walk down of all barriers was conducted to determine which barriers included insulated piping penetrations. A review of the results of this walkdown revealed that the barrier identified on 01/12/93 was not initially identified. As a result of this the continuous watch required by Tech. Spec. Section 3.13.E.2 was not established within the required time frame.

Based on this, this event is reportable per 10CFR50.73 (a)(2)(i) as a condition prohibited by Tech. Specs.

QUALITY CONTROL DOCUMENTATION ISSUES

During the effort to repair the identified discrepancies with the insulated and non-insulated penetrations, as-built sketches were being generated for use in developing an acceptable seal design.

On 01-14-93, during a review of the as-built sketches against the Quality Control (QC) documentation for the installation effort, concerns were raised about the QC documentation practices that were employed during the seal installation effort. The review revealed many cases where the QC documentation, which was completed on a penetration by penetration basis, did not match the asbuilt configuration and indicated that the seal was installed as detailed on the "typical" design details provided by the contractor.

A review of this event revealed that it was not reportable as an LER however it was recommended that the details of the event be provided in this LER for information. Since this reporting satisfies the reporting requirements of 10CFR part 21 a formal part 21 evaluation was not required.

SURVEILLANCE DISCREPANCIES

During the effort to repair the identified discrepancies with insulated and non-insulated penetrations a number of surveillance type discrepancies were identified. Examples included visible gaps under cable trays, cracking of the diesel generator room block walls, and abandoned holes in block walls. These issues were generally located in areas of the barriers that were not easily accessible. Because of the noted conditions an evaluation of the current surveillance practices was performed as part of this effort.

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CAUSE OF EVENTS

INSULATED PENETRATIONS

The root cause of the insulated line issue was determined to be inadequate documentation of assumptions during the 1979 effort to scope out the penetration sealing design effort. Discussions with cognizant personnel revealed that an assumption was made that insulation did not need to be removed. The basis for this assumption was not documented in the design package.

NON-INSULATED PENETRATIONS

The root cause of the as-found conditions of the un-insulated penetrations (pipes, conduits, and cable trays) was determined to be due to inadequate procedures. A review of the procedures in effect at the time revealed that there was inadequate emphasis on ensuring as-built configurations matched as-tested configurations. Additionally Vermont Yankee's procedures did not provide an effective method for approving field changes on a penetration by penetration basis.

SELECTION OF BOOT SEAL DESIGN FOR LINES WITH LARGE DISPLACEMENTS

The root cause of the failure to consider line displacements during the selection of the appropriate seal type was determined to be human error caused by lack of attention to detail. Coordinating this was the responsibility of the cognizant engineer. Based on discussions with the cognizant engineer this activity was not completed as part of the design effort as required.

IDENTIFICATION OF AN ADDITIONAL TECH SPEC WALL

The root cause of the identification of an additional Tech Spec wall was human error caused by a lack of attention to detail and the fact that the review was performed on an expedited basis. The individuals that performed the plant walkdown overlooked the wall during the plant walk down. A contributing cause is that the list of walls contained in the surveillance procedure does not identify which walls are Tech. Spec., Appendix R and Appendix A to BTP 9.5-1 walls.

QUALITY CONTROL DOCUMENTATION ISSUES

The root cause of the QC documentation practices was determined to be a failure to follow procedures. The QC inspector failed to follow the Chemtrol QC procedures that were in effect at the time.

SURVEILLANCE DISCREPANCIES

The root cause of the identified surveillance deficiencies was determined to be an inadequate surveillance procedure. The procedure did not provide appropriate guidance to inspection personnel as to what was considered acceptable inspection methodology nor did it provide adequate acceptance criteria.

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ANALYSIS OF EVENT

Fire Protection systems are Non-Nuclear Safety and protect and separate various areas containing safety related safe shutdown equipment to ensure that the plant can shutdown and be maintained shutdown given any in-plant fire.

Assessments performed by fire protection personnel have revealed that the "as found" conditions provided some protection of equipment in the event of a fire however, absent a qualified fire test report or assessment by a Fire Protection Specialist the rating was considered indeterminate.

A safety assessment, completed on 01-29-93, concluded that the as-found conditions did not impair the safe shutdown capability of the plant. This assessment was performed on the population of penetrations and barriers that had been identified at that time. Since then the types of barrier configurations found in the plant have been consistent with those assessed in the safety assessment.

Additionally, other fire detection and suppression systems are installed to alert the operator of any potential fires as well as normal operator rounds and normal fire protection walkdowns which would identify any area not maintained to Vermont Yankee's fire standards.

CORRECTIVE ACTIONS

IMMEDIATE CORRECTIVE ACTIONS

1. Immediate corrective actions were to establish compensatory fire watches where needed as well as identifying all potentially impacted areas.
2. Installation of new seals was begun where needed following an engineering review.
3. A special Task Force was formed with outside consultants employed to address this issue and assure appropriate actions are taken in a timely manner.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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EXPIRES 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY
WITH THIS INFORMATION COLLECTION REQUEST:
50.0 HRS. FORWARD COMMENTS REGARDING BURDEN
ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT
BRANCH (P-530), U.S. NUCLEAR REGULATORY
COMMISSION, WASHINGTON, DC 20555, AND TO THE
PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE
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LONG TERM CORRECTIVE ACTIONS

- (1) A design change has been initiated to provide acceptable seal designs for all penetrations. This effort is expected to be complete by 06-01-93.
- (2) The current design procedures will be revised to (1) require the documentation of assumptions made during the scoping stage of design activities (2) place additional emphasis on ensuring as-built configuration satisfy supporting test documentation, and (3) require the need to penetrate fire barriers to be considered as a design input consideration. These procedures are expected to be revised by 08-01-93
- (3) An enhanced surveillance procedure has been developed and an enhanced surveillance is underway on all fire barriers. This effort will assess the configuration of all non-insulated penetrations. This effort will be completed prior to startup from the 1993 refueling outage scheduled to commence in August 1993.
- (4) A walkdown of all barriers containing non-insulated process lines will be performed to identify lines with potentially large displacements. If any are identified, the current seal configuration will be assessed to ensure that appropriate seal configuration is provided and the system penetrating the barrier will be assessed for potential impact on system operability. This effort is expected to be completed by 06-01-93.
- (5) The current surveillance procedure has been revised to provide a listing of barriers along with the corresponding barrier classification (either Tech. Spec., Appendix R, or Appendix A to BTP 9.5-1).

ADDITIONAL INFORMATION

There have been no similar events of this type at Vermont Yankee reported to the Commission in the past five years.

Additional corrective actions are detailed in Vermont Yankee Non-Conformance Report 92-94.