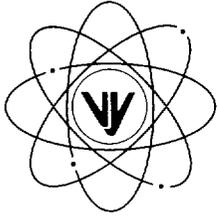


# VERMONT YANKEE NUCLEAR POWER CORPORATION



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

June 8, 2000  
BVY 00-57

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 2000-02, Rev. 0**

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 2000-02, Rev. 0.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael A. Balduzzi  
Plant Manager

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

RGH-001

IE22

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

VERMONT YANKEE NUCLEAR POWER STATION (VY)

DOCKET NUMBER (2)

05000271

PAGE (3)

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TITLE (4)

Valve Repair/Replacement Activities were not Performed in accordance with ASME Section XI Requirements

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 NUMBER
05	09	2000	2000	002	00	06	08	2000	N/A	

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (Check one or more) (11)										
		20.2201(b)	20.2203(a)(1)	20.2203(a)(2)(i)	20.2203(a)(2)(ii)	20.2203(a)(2)(iii)	20.2203(a)(2)(iv)	20.2203(a)(2)(v)	20.2203(a)(2)(vi)	20.2203(a)(2)(vii)	20.2203(a)(2)(viii)	
N	100								X			

Specify in Abstract below or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Michael A. Balduzzi, Plant Manager	(802) 257-7711

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (12)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
NA					N/A				
N/A					N/A				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)  
 On 5/09/00, with the reactor at 100% power, research was being done to determine the correct weld repair procedures to repair a leaking valve bonnet, leakoff line seal weld on a Reactor Core Isolation Cooling (RCIC) steam supply isolation valve. During this research, it was discovered that, contrary to plant-approved welding procedures, no determination had been made regarding the requirements for post-weld heat treatment of the seal weld. It was subsequently determined that a pinhole leak existed in the valve bonnet one-quarter inch leakoff line plug seal weld. Further investigation revealed that the same seal weld problem existed for two other RCIC isolation valves and a Main Steam Drain isolation valve. The post-weld heat treatment determination is a plant procedure requirement which in turn is a requirement of ASME Section XI Code. Adherence to ASME Section XI is a requirement of Vermont Yankee's Technical Specifications 4.6.E. Contrary to this, the requirements were not met following the seal welding of these leakoff plugs. This event is therefore reportable under 10.CFR50.73 (a)(2)(i) as a condition prohibited by Technical Specifications. The root cause of this event is attributed to inadequate administrative controls of the welding process. Immediate corrective action included an operability assessment which determined that continued operation was acceptable. Had the entire seal weld failed, any leak would have been limited by the small line size and threaded plug installed in the line, to within the bounds of any analyzed accident. Therefore this event posed no significant increased risk to the health and safety of the public.

**LICENSEE EVENT REPORT (LER)**  
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**DESCRIPTION**

On 5/9/00, a review of weld repair documentation for Reactor Core Isolation Cooling (RCIC) (EII=BN) motor-operated steam supply isolation valve V13-16 concluded that, contrary to welding procedures, applicable post-weld heat treatment (PWHT) of valve packing leakoff line seal welds had not been completed. All other aspects of the welding process were complied with. The plant was operating at 100% power at the time of discovery.

Vermont Yankee Technical Specification (TS) 4.6.E requires compliance to ASME Section XI (1986). The failure to comply with welding procedure controls for PWHT constitutes non-compliance to ASME XI and is, therefore, reportable as a condition prohibited by technical specifications in accordance with 10CFR50.73(a)(2)(i).

On 4/3/00, an auxiliary operator on rounds discovered a packing steam leak on V13-16. On 4/10/00, during preparation to repair the packing leak, another leak was identified and determined to be from a pinhole on the one-quarter inch leakoff line threaded plug seal weld. Subsequent to repairs, Vermont Yankee (VY) management determined that additional review of the acceptability of the seal weld installation was warranted.

On 4/18/00, further investigation revealed that seal welds also were used on threaded plug leakoff lines associated with RCIC inboard steam isolation valve V13-15, RCIC pump discharge isolation valve V13-20, and Main Steam (EII=SB) Drain isolation valve V2-74.

The initial seal welds had been installed during valve packing configuration modifications that were started during the 1996 refueling outage then continued during the 1998 refueling outage. The packing configuration changes involved the installation of Live Load Packing to maintain constant pressure on the packing rings and reduce the frictional forces on the stem to improve motor actuator performance. This configuration positioned the stem leak off line under the packing rings and within the system pressure boundary of the valve bonnet. In addition, the threaded stem leakoff pipe was replaced with a threaded pipe plug to provide added assurance of leak prevention.

On 5/9/00, following review of the condition, VY determined that the prior application of the seal welds constituted a repair subject to ASME XI code requirements and that the failure to meet associated PWHT requirements was reportable.

**CAUSE**

The root cause of this event is attributed to inadequate administrative controls associated with the VY welding program. Specifically, inadequate controls were in place to assure the appropriate review of weld data sheets by personnel sufficiently knowledgeable in applicable ASME code requirements and implementation.

**ANALYSIS**

The RCIC system provides automatic coolant makeup to the reactor pressure vessel under reactor core isolation conditions; the system does not require ac power to perform this function. RCIC is not credited as an Emergency Core Cooling System. Associated piping and equipment is designed to withstand the effects of an earthquake without a failure that could lead to a radioactivity release in excess of 10CFR100 limits.

The relevant function of the primary system steam piping is to accommodate transient operational and earthquake stresses to assure that 10CFR100 radioactivity release limits and control room habitability analyses are satisfied.

For the four valves that had been seal welded without having met code PWHT requirements, VY review has concluded that the subject welds are not structural welds; the threaded plug and threads provide pressure boundary structural integrity. With respect to RCIC V13-16, the pinhole leak is attributed by engineering review to porosity that had not been detected by surface nondestructive testing. Visual inspection results indicated the pinhole leak did not result from or cause cracks in the seal weld.

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The following operability assessment was performed to evaluate the lack of PWHT condition:

- Engineering assessment concludes that the subject valves will meet their required safety function.
- Nondestructive examination of the subject seal welds performed after installation identified no cracks detected due to improper welding.
- The threaded portion of the plug provides the pressure boundary for the valve bonnet; the seal is not considered a structural weld or a pressure boundary.
- No valve indicates any leakage from the seal weld.
- A metallurgical analysis was performed which concluded that the structural integrity of the pressure boundary had not been jeopardized.

In the unlikely event that any of the seal welds failed completely, the small (one-quarter inch) line size and threaded connection will limit any steam leak such that resultant releases will be well within the bounds of analyzed accidents. Therefore, the condition does not challenge control room habitability and poses no significant increased risk to the health and safety of the public.

**CORRECTIVE ACTIONS**

Immediate Action

An operability assessment was performed and determined that continued operation is acceptable. The basis for operability is addressed in the analysis above.

Corrective Actions

1. Subsequent to installation of the seal welds in 1996 and 1998 and independent of this LER, the following applicable corrective actions were completed by 9/2/99.
  - VY developed and issued formal administrative controls governing ASME XI repair and replacement activities. Appropriate guidance has been implemented defining process requirements and personnel responsibilities associated with these activities to ensure code compliance.
  - A welding process coordinator with appropriate expertise in this area has been assigned to control welding processes and associated code compliance and implementation.

The above corrective actions were implemented as a result of a previous code noncompliance that was the subject of LER 98-18, discovered in the same time frame as the subject of this LER. Had these improvements been in place prior to the installation of the seal welds, it is likely that this event would have been prevented.

2. Welding procedure AP 0203, Control of Special Processes has been enhanced to formalize the practice established following the 1998 refuel outage requiring the welding process coordinator to complete weld data sheets and specify welding requirements prior to performance of safety related welding.
3. On a schedule consistent with the VY corrective action program and with consideration for valve accessibility due to location and personnel exposure, follow-up visual examinations will be performed on valves V13-15, V13-20 and V2-74 to verify the seal welds have not developed defects requiring further repair.
4. On a schedule consistent with the VY corrective action program and with consideration for valve accessibility due to location and personnel exposure, other similar valves determined to be within the population that may have had seal welds applied to leakoff line plugs will be inspected and evaluated.
5. A sample review of welding packages will be performed to verify technique applicability and compliance with weld procedure specification requirements.

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TEXT CONTINUATION

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**ADDITIONAL INFORMATION**

LER 95-17, "Technical Specifications 4.6.E not met due to components not included in the IST program"

LER 96-01, "Technical Specifications 4.6.E not met due to components not included in the IST program scope."

The above LER's address components not included in the scope of the ASME Section XI program, therefore, corrective actions associated with these LER's would not have prevented conditions presented in this LER.

LER 98-18, "ASME Section XI Code VT-3 examination not completed following repair of Main Steam Isolation valve due to the omission of relevant information from a plant procedure." It is likely that this event would also been prevented had the new ASME Section XI procedure and the Welding Process Coordinator been in place prior to the event.

It should be noted that the corrective actions put in place as a result of LER 98-18 occurred after the seal welds were installed on the RCIC and Main Steam valve bonnet leakoffs. Those corrective actions will prevent further similar occurrences but could not prevent historical events.