

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) VERMONT YANKEE NUCLEAR POWER STATION	DOCKET NUMBER (2) 0 5 0 0 0 2 7 1	PAGE (3) 1 OF 0 5
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TITLE (4)
SLC Squib Valve Failure To Fire

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 (8)
0 2	1 1	8 6	8 6	0 0 4	0 0 0	3 1	2 8	6	NA		0 5 0 0 0
									NA		0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) N	20.402(b)	20.405(a)	20.73(a)(2)(iv)	73.71(b)
	20.405(a)(1)(i)	20.30(a)(1)	X 20.73(a)(2)(v)	73.71(a)
	20.405(a)(1)(ii)	20.30(a)(2)	20.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 306A)
	20.405(a)(1)(iii)	20.73(a)(2)(i)	20.73(a)(2)(vii)(A)	
	20.405(a)(1)(iv)	20.73(a)(2)(ii)	20.73(a)(2)(vii)(B)	
	20.405(a)(1)(v)	20.73(a)(2)(iii)	20.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
James P. Pelletier, Plant Manager	8 0 2 2 5 7 1 7 7 1 1

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
B	B	R	V C 5 1 5	Y					

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 fifteen single-space typewritten lines) (16)

On 2/8/86 and with the reactor shutdown for the 1985/86 recirc pipe replacement, the "A" Standby Liquid Control (SLC) Squib Valve failed to fire during performance of annual surveillance.

On 2/11/86 an attempt was made to fire the "B" SLC Squib Valve and the attempt failed. The system was declared inoperable and the appropriate notifications were made.

Investigations into the event revealed Vermont Yankee was sent incorrectly wired trigger assemblies from the vendor which led to the SLC system being declared inoperable.

Vermont Yankee Tech. Spec. Section 3.4.A requires the SLC system to be operable whenever fuel is in the reactor except when the reactor is in cold shutdown.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
VERMONT YANKEE NUCLEAR POWER STATION	0 5 0 0 0 2 7 1 8 6	—	0 0 4	—	0 0 0	2	OF 0 5

TEXT (If more space is required, use additional NRC Form 388A's) (17)

Description of Occurrence:

On 2/8/86 at approximately 10:00 a.m. and with the reactor shut down for the recirc pipe replacement, the "A" SLC squib valve failed to fire during performance of annual Surveillance. A Maintenance Request (MR) was generated to investigate the reason for the failure to fire. Concurrently with the investigation NRC notification was made as well as notification of plant Management and State Officials. A Potential Reportable Occurrence (PRO) was also generated at this time. Initial investigations indicated the "A" squib valve wiring was not in accordance with the Color Code shown on applicable Control Wiring Diagrams. Investigations of the "B" valve circuitry indicated the "B" squib valve appeared to be wired exactly the same as the "A" circuitry. Work continued on the MR and reconnected the wiring on the "A" circuitry to match the color code shown in the Control Wiring Diagram (CWD). The "A" system fired satisfactorily. It was concluded at that time an attempt to fire the "B" squib valve would not take place until a more in depth evaluation could be made to the "as found" wiring configuration of the "B" squib valve. The "B" system was tagged out and left as found. The "A" circuitry was left in accordance with the color code as depicted on the CWD.

It should be noted here that although the "A" system did not fire, all Control Room indication (which indicates continuity through the circuit) showed continuity. That is, there was no indication that the circuit would not fire the squib valve based on the continuity indication in the Control Room.

Once the "as found" wiring was documented it was concluded that a test of the "B" system should be performed to determine its operability. At approximately 14:30 on 2/11/86 an attempt was made to fire the "B" system. The charge did not fire and the system was declared inoperable. The NRC was again notified, a PRO generated and the State Officials were again notified. An entry was made on Nuclear Network identifying the potential problem.

A review of past maintenance request and maintenance history cards was made to determine what, if any, work had been performed on the system since the last operability check. The review of past maintenance went beyond the past operating cycle and looked at any maintenance performed to the firing circuitry since the modification to the firing circuit was made per Plant Design Change (PDCR) 77-2. This modification was in response to GE Service Information Letter No. 186. V.Y. has ascertained that the as found wiring was in accordance with the requirements of GE SIL 186.

On 2/11/86 at $\approx$ 1830, the Maintenance Supervisor had identified the possibility of two different pin to charging coil configurations based on two different revisions of the drawings for the same trigger assembly.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 9/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
VERMONT YANKEE NUCLEAR POWER STATION	0 5 0 0 0 2 7 1 8 6	—	0 0 4	—	0 0 0	3	OF 0 5

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The drawings showed an inconsistency in Pin identification which indicated the possibility that VY had two different pin to coil wiring configurations. Conax Corp. (manufacturer of the trigger assembly) was contacted about this change and they revealed that, in actuality, the two drawings were showing the same pin to coil configuration. The only thing that had changed was the labeling going from A-D in a clockwise rotation to a 1-4 in a counterclockwise rotation.

Reviewing the circuit diagram in the "as found" condition, it appeared that the charge should have fired in the "as wired" configuration. To determine the cause of the failure a continuity check was performed on two separate trigger assemblies; one from the batch that did not fire during the past annual surveillance test and one spare from a batch that had been successfully tested during a previous outage.

The continuity check revealed Vermont Yankee did indeed have two differently wired trigger assemblies. One having continuity between Pins 1+4 and 2+3, the other having continuity between Pins 1+2 and 3+4. The latter of the two being the incorrectly wired.

Conax Corp. was again contacted and they indicated they have never changed the pin to coil configuration. The only change they acknowledged was the A-D to 1-4 change previously described.

Further discussions with Conax Corp. on 2/14/86 indicated that the location for manufacturing of these units changed from Buffalo, New York to Florida in late 1982 to early 1983. Our Purchase Order (P.O.) shows a manufacturing date of 10/10/83 which indicates that the incorrectly wired trigger assemblies were manufactured in Florida. The Conax Corp. indicated that they agree this type of mishap could have taken place although all their records indicate everything was acceptable.

It should be noted that the pin to coil wiring configuration is an integral part of the trigger assembly. There is no possible way to change the configuration once the units are manufactured.

To further substantiate the contention that the system would have been operable if it had the same type of trigger assemblies as in past cycles, a trigger assembly from a P.O. dated 5/82 was installed into the "as found" circuit and was fired satisfactorily. This further substantiated that the "as found" circuitry was correct for the as designed trigger assemblies.

Designation of Apparent Cause of this Occurrence:

The root cause of this event is the manufacturing error by Conax Corp. which resulted in the installation of charges which were incorrectly wired. The manufacturing (of the two different types) was not evident to VY nor was it known by Conax. The fact that two different types of trigger assemblies mistakenly were manufactured led to the SLC system being inoperable over the past operating cycle.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 9/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
VERMONT YANKEE NUCLEAR POWER STATION	0 5 0 0 0 2 7 1	8 6	— 0 0 4	— 0 0	0 4	OF 0 5

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VY Purchase Order 21182 requested Conax Corp. to supply a Certificate of Conformance (C of C) indicating all requirements of the purchase order were met. The P.O. specified that the equipment being purchased was equal to or better than the original equipment previously supplied and identical (by part No., catalog No., and drawing No.) to the items specified in the purchase order.

This C of C was provided by Conax Corp. for P.O. 21182.

Analysis of Occurrence

The net result of this event is that Vermont Yankee operated for a total of one (1) operating cycle, Aug. 1984 to Sept. 21, 1985, with an inoperable SLC system. The purpose of the Standby Liquid Control System (SLC) is a an independent, backup system for the Control Rod Drive System. It is used to shut down and maintain the Reactor subcritical (independent of the control rods) in the event that not enough control rods can be inserted to shut down the reactor. The SLC system provides a mechanism for shutting down the reactor in the unlikely event of control rod drive failure. As noted in FSAR section 3.8, a fast scram of the reactor or operational control of fast reactivity transients is not specified to be accomplished by this system. The SLC system is not used during normal plant operation and is expected never to be needed for plant safety due to the large number of independent control rods available to shut down the reactor.

Corrective Actions (Completed, or in Progress)

I. Operating Procedures

1. Revise Operating Procedures to include a pin to pin continuity check of all primer units prior to installation.
2. Revise Operating Procedures to change the method in which VY tests the first primer of a batch about to be put into service. The test will be performed utilizing the firing circuit. This will provide added assurance that the correct wiring configuration (within the primer) will actually fire.

II Pigtail Wiring Change

The wiring configuration of the trigger assembly pigtails to the firing circuit will be changed such that either type of pin to coil configuration will work.

III Continuity Circuit

Although it has been demonstrated that the continuity circuit can operate correctly without being able to fire the primers, no further hardware changes are being considered at this time. However, further evaluation is being performed to address the design basis of the continuity circuit.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
VERMONT YANKEE NUCLEAR POWER STATION	0 5 0 0 0 2 7 1 8 6	—	0 0 4	—	0 0	0 5	OF 0 5

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

IV Purchasing

Any future purchasing, of squib valves or their associated parts, will require the latest revision of the applicable drawings be furnished. It will then be the responsibility of the affected departments to review this drawing against the previous revision for any significant changes.

Yankee Nuclear Services Division Quality Department and Procurement Group will be appraised of the vendor related problems such that they can augment their vendor surveillance program for the Conax Corp.

In addition to this, a thorough check will be given to ensure the remaining trigger assemblies in Stores have not passed their five year shelf/service life time. Controls will be instituted to ensure these dates are clearly marked and procedures established to direct proper disposal of trigger assemblies which have insufficient shelf/service life.

V System Operability

Upon completion of dispositioning recommendations I through IV, Testing Procedures will be repeated to ensure that the system has been left in the proper and operable condition.

A check will also be made to the continuity circuit to ensure the normal/expected values will be seen in the Control Room.

To add further assurance that all systems are operable per their surveillance procedures, each department will review their surveillance procedures to identify any procedures that may perform a surveillance check after the system has been in operation in lieu of before the system is declared operational. Any system that performs its surveillance after the fact (such as is done with the SLC squib valves) will have a closer look to ensure its drawings and procedures correctly reflect the "as built" condition. Specifically, the Transverse Incore Probe (TIP) squib valve circuit will be reviewed to ensure its completeness.

No similar events have been reported to the Commission in the last five years.



VERMONT YANKEE NUCLEAR POWER CORPORATION

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GOVERNOR HUNT ROAD
VERNON, VERMONT 05354

March 12, 1986

VYV 86-058

U.S. Nuclear Regulatory Commission
Document No. 50-271
Washington, D.C. 20555

REFERENCE: Operating License DPR-28
Docket No. 50-271
Reportable Occurrence No. LER 86-04

Dear Sirs:

As defined by 10CFR50.73, we are reporting the attached Reportable Occurrence as LER 86-04.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Patrick J. Drumelly for JAP
James P. Pelletier
Plant Manager

HMM/drc

cc: Regional Administrator
USNRC Office of Inspection and Enforcement
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

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