VERMONT YANKEE
NUCLEAR POWER CORPORATION

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

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BVY 95-63

U.S. Nuclear Regulatory Commission
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REFERENCE: Operating License DPR-28
Docket No. 50-271
Reportable Occurrence No. LER 94-004, Supplement 1

Dear Sirs:

As defined by 10 CFR 50.73, we are reporting the attached Reportable Occurrence as LER 94-004, Supplement 1.

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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1/1

NRC Form 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
VERMONT YANKEE NUCLEAR POWER STATION	05000271	01 OF 06

TITLE (4) Reactor Scram from High Moisture Separator Level due Inadequate Maintenance on the "C" Moisture Separator Normal Drain Valve Level Transmitter

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
04	10	94	94	-- 004 --	01	06	05	95	N/A	

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: CHECK ONE OR MORE (11)							
			20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	98.5		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER:
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
			20.405(a)(1)(iv)		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)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NO. (Include Area Code)
ROBERT J. WANCZYK, PLANT MANAGER	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	REPORTABLE TO NPRDS
B	SN	LT	F130	NO					
B	SN	LC	F130	NO					

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 4/10/94, at 0122 hours with the reactor at 98.5 % power, a reactor scram occurred from a Turbine Control Valve (TCV) Fast Closure scram signal due to a high level in the "C" Moisture Separator (MS). The event was initiated during turbine testing when the level transmitter for the Normal Level Control valve failed to sense an increasing level in the MS Drain Tank due to a shift in calibration of the transmitter. This allowed the level in the MS Drain Tank to increase to the Emergency Dump Valve opening setpoint. The Emergency Dump Valve Level Transmitter sent an open signal to the Emergency Dump Valve Level Controller but the controller failed to bleed the air off the Emergency Dump Valve diaphragm which allows the valve to open. Consequently, the high MS level trip point was reached and tripped the turbine which resulted in the TCV Fast Closure scram.

During this event, a subsequent reactor scram and corresponding Primary Containment Isolation signals for Groups 2,3 and 5 were received due to low reactor water level. The reactor was stabilized in Hot Standby, the Primary Containment Isolations were reset, Reactor Water Cleanup was restarted and normal water level was re-established using the 10% Feedwater Regulator valve.

The apparent cause of this event is inadequate preventive maintenance of the Emergency Dump Valve level controller. The failure mode of the controller could not be determined as the controller was checked and recalibrated, in an effort to correct the problem, prior to being sent to the manufacturer for analysis. A contributing cause of this event is a calibration shift of the normal water level transmitter.

Corrective Actions include replacement and calibration of the level instruments and controllers in the MS drain system.

DESCRIPTION OF EVENT

On 4/10/94, at 0122 hours with the reactor at 98.5% power a reactor scram occurred during Turbine Intercept Valve testing. The scram resulted from a turbine trip due to a Turbine Control Valve Fast Closure scram signal from a high level in the "C" Moisture Separator. The Moisture Separator Drain Tank Normal Level Control Valve did not open on an increasing level in the drain tank due to a calibration shift in the Normal Level Transmitter(EIIS = LT)(Fisher Model No. 2500T-259B). This allowed the level to reach the Emergency Dump Valve high level setpoint at which point the Emergency Dump valve did not open due to a failure of the valve controller(EIIS = LC)(Fisher Model No. 2506R), subsequently, the high level in the Moisture Separator generated a turbine trip signal with a resultant reactor scram. Following the Moisture Separator high level alarms, the operators secured turbine testing and were investigating the problems with the Moisture Separator Level instruments when the scram occurred.

The following automatic responses occurred within the first minute following the scram:

a. 01:22:51 hrs - Turbine trip due to high moisture separator level.
b. 01:22:51 hrs - Main Generator load reject scram.
c. 01:22:51 hrs - Turbine Stop Valve (TSV) scram signal.
d. 01:22:51 hrs - Turbine Bypass Valves (TBV'S) opened to control reactor pressure.
e. 01:22:51 hrs - Generator breaker trip.
f. 01:22:51 hrs - 4KV Bus Loads Automatic Transfer to the Startup Transformers.
g. 01:23:00 hrs - Reactor water level low scram due to vessel level shrink as a result of Turbine Control Valve closure.
h. 01:23:00 hrs - Primary Containment Isolation System (PCIS) (EIIS = JM) Groups 2,3 and 5 isolation on low reactor water level.
i. 01:23:02 hrs - Standby Gas Treatment System start

Automatic responses a. through f. are normally expected responses following a Turbine Control Valve Fast Closure scram. The PCIS isolations were in response to the reactor low water level which occurred as a result of void collapse following the Turbine Stop/Control Valve closure. Normal reactor vessel water level and pressure were quickly established and maintained using the Bypass Valves, Main Condenser, Feedwater/Condensate Systems and the reactor Water Cleanup System.

Operations personnel implemented OE-3100, "Scram Procedure" following the scram which governs reactor operation in a post-scram environment. At 0124 hours, in accordance with OE 3100, the scram was reset and the plant was stabilized in Hot Standby Mode. The reactor remained in the Hot Standby condition until the subsequent plant startup.

The Reactor Protection Systems (RPS) and the PCIS responded normally and the actions took place as designed and within the required response times. No Emergency Core Cooling System (ECCS)

DESCRIPTION OF EVENT (cont.)

initiation signal setpoints were received and no ECCS system or Relief Valve actuations occurred.

CAUSE OF EVENT

The apparent cause of this event is inadequate preventive maintenance of the Emergency Dump Valve level controller, however, the failure mode of the level controller could not be determined as the controller was checked and recalibrated, in an effort to correct the problem, prior to being replaced and sent to the manufacturer for analysis.

A contributing cause of this event was a shift in the calibration of the Normal Level transmitter. This allowed an increased level in the Moisture Separator drain tank. The setpoint to open the Normal Level valve had shifted such that a higher than normal level occurred in the drain tank. The level increased until the level setpoint for the Emergency Dump Valve was reached. Subsequently, the Emergency Dump Valve did not open on the high level signal as its controller would not bleed off sufficient air pressure to allow the Emergency Dump Valve to open.

The manufacturer, who completed the analysis, stated that they could find no reason for the controller not to open the valve on demand, however, they theorize that the controller relay diaphragms could have stuck to their casings and caused the problem.

Due to these two failures, the Moisture Separator High Level Trip Setpoint was reached and tripped the turbine with the subsequent load reject scram.

ANALYSIS OF EVENT

Although this event is significant in that it challenged the plant ESF Systems it created no immediate safety concern since all systems operated as designed.

The Moisture Separator drain system provides no safety function for the plant.

The Reactor Protection System operated as designed and scrammed the reactor as a result of the load reject scram signal.

The PCIS Groups 2,3 and 5 operated as designed and isolated the appropriate valves upon receipt of a low reactor water level signal.

No ECCS Systems were required and no ECCS signals were present. No automatic or manual initiation of any ECCS Systems took place.

ANALYSIS OF EVENT (cont.)

Station electrical loads automatically transferred from the Auxiliary Transformer to the Station Start-up Transformers.

The operators responded properly to the scram in accordance with OE 3100 "Scram Procedure". Reactor water level and pressure were controlled using the Bypass Valves, Feedwater, Condensate, and Reactor Cleanup Systems in the Hot Standby mode.

Based on the fact that all safety systems operated as designed, it is concluded that there are no safety consequences from this event. This event did not pose any threat to the health and safety of the public.

CORRECTIVE ACTIONS

IMMEDIATE CORRECTIVE ACTIONS:

The immediate corrective action was the recovery from the load reject scram and stabilization of plant conditions to the Hot Standby mode.

SHORT TERM CORRECTIVE ACTIONS:

1) Troubleshooting and recalibration of the Moisture Separator Drain Tank Normal Level Valve Transmitter to return it to the required operating range.

2) The Emergency Dump Level Controller and Level Control Valve for the A, B, C, and D Moisture Separators were checked and calibrated. The A Moisture Separator Level Controller was replaced as it was determined to have a non-linear output.

3) The D Moisture Separator Normal Dump Valve Positioner was replaced due to instability during power operations.

4) Replacement of the C Moisture Separator Emergency Dump Valve Controller. Although the Emergency Dump Valve Controller was recalibrated it was replaced prior to startup to allow for analysis of the controller.

5) During the subsequent reactor startup and during turbine testing the following week, the Instrument and Control Department monitored the Moisture Separator Drain System. As some instability was discovered in the Normal Drain Valve instrument loop, the valve positioners were bypassed for the C and D Moisture Separators to provide greater valve position stability for normal level changes.

CORRECTIVE ACTIONS (cont.)

LONG TERM CORRECTIVE ACTIONS: (completed)

1) The Moisture Separator Emergency Dump Valve Controller was sent to the manufacturer to determine the cause of the failure. The manufacturers report stated that the root cause could not be determined as the controller was checked and recalibrated prior to being returned for analysis.

2) The Moisture Separators Normal and Emergency Drain Tank Level transmitters, controllers, valve positioners/air regulators and control valves were replaced during the 1995 refueling outage. The original pneumatic control loops were replaced with state-of-the-art digital electronic equipment.

3) A Significant Corrective Action Report (CAR) was completed on 9/18/94 which determined the Apparent Cause and additional Corrective Actions.

4) The Maintenance Planning and Control (MPAC) calibration files for all loop components were revised to enhance instructions and ensure meaningful calibration for the new equipment.

5) A special training course was provided for the I&C Department in June 1994 on the original Moisture Separator Drain Tank and Feedwater heater level control. This provided additional training, on the then present equipment, prior to the installation of the new equipment during the 1995 refueling outage.

6) Operator training on Moisture Separator drain valve failures and corresponding alarm responses was also completed, on the original equipment, during the 1994 operator training cycle.

7) Operator and I&C training was provided on the new equipment/process control prior to startup from the 1995 refueling outage.

LONG TERM CORRECTIVE ACTIONS: (to be completed)

1) Similar equipment in the Feedwater Heater Emergency Drain loop is being evaluated under the System Analyzed Maintenance Program in preparation for the Maintenance Rule. This will be completed by 12/31/95.

ADDITIONAL INFORMATION

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

The plant started up from a refueling outage on 5/3/95. Since placing the turbine on the line the Moisture Separator drain system has performed according to design and no problems have been encountered.