NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	0 5 0 0 0 410	1 OF 08

TITLE (4) Two ESF Actuations Consisting of Standby Gas Treatment Initiations Caused by Inadequate Administrative Policy and Personnel Error

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 NAMES	DOCKET NUMBERS
07	29	87	87	—	045	-- 00	08	28	87	N/A	0 5 0 0 0
										N/A	0 5 0 0 0

OPERATING MODE (9)	2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	004	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		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 (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		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 NUMBER
	AREA CODE
Robert G. Randall, Supervisor Technical Support	315 349-2445

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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On July 29, 1987 Nine Mile Point Unit 2 experienced two separate Engineered Safety Feature (ESF) actuations. Both ESF actuations consisted of secondary containment isolations with subsequent Standby Gas Treatment System (GTS) initiations. At the time of the events the mode switch was in the "STARTUP" position with reactor power at 3.5 percent.

The cause of the first event was lack of administrative controls to prohibit concurrent performance of surveillance procedures which affect the same or closely related systems. The cause of the second event was personnel error when operators attempted to return the Reactor Building Ventilation System (HVR) back to normal with an emergency recirculation fan running.

Corrective actions include:

1. Establish a policy which prohibits concurrent performance of surveillance procedures which are closely related.
2. Revise procedures which were involved in the event to prohibit their concurrent performance.
3. Add a note to the "Lessons Learned" book in the Control Room detailing system lineups required before restoring HVR back into service and emphasizing the need to strictly adhere to the operating procedures.
4. An independent evaluation shall be performed which will explore ways to reduce unnecessary challenges to the GTS from other interrelated systems. Modifications and or procedure changes shall be made as determined by this independent evaluation.

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

I. DESCRIPTION OF EVENT

On July 29, 1987 Nine Mile Point Unit 2 experienced two separate Engineered Safety Feature (ESF) actuations. Both ESF actuations consisted of secondary containment isolations with subsequent Standby Gas Treatment System initiations. At the time of the events the mode switch was in the "STARTUP" position with reactor power at 3.5 percent. The first event was the result of performing two interrelated surveillance procedures concurrently without identifying the adverse consequences one procedure had on the other. The second event was caused by the improper restoration of the Reactor Building Ventilation System (HVR) back into service following the first event with an emergency recirculation fan running.

Plant conditions leading up to the ESF actuations were as follows:

1. Standby Gas Treatment Train A was running for monthly surveillance test N2-OSP-GTS-M001, "Standby Gas Treatment System Functional Test". In support of this test, Train A of the Reactor Building Ventilation System (HVR) Emergency Recirculation Subsystem was in operation in the recirculation-test mode in accordance with Operating Procedure N2-OP-52, "Reactor Building Ventilation System". The emergency recirculation units 2HVR-UC413A and B normally take their suction on the normal ventilation exhaust plenum (Figure 1) which serves the areas of the reactor building below the refueling floor. Each recirculation unit suction duct is equipped with an air-operated damper 2HVR*AOD6A and B and an air-operated test damper 2HVR*AOD34A and B (Figure 1). The test dampers allow test operation of the recirculation units while the respective suction dampers are closed. While in the recirculation-test mode the emergency recirculation units draw suction through 2HVR*AOD34A and B and the normal dampers, 2HVR*AOD6A and B, are closed.

2. Radiation Protection Surveillance Procedure N2-RSP-RMS-M108, "Channel Functional Test of the Reactor Building Above the Refuel Floor Process Radiation Monitors", was also in progress. This monthly test provides direction for performing a channel functional test of the Reactor Building above the Refuel Floor process radiation monitors, 2HVR*RE14A and 2HVR*RE14B (Figure 2). The test was being performed for 2HVR*RE14A. Upon receipt of a high radiation signal these process radiation monitors perform the following actions:

- Isolate the Reactor Building Ventilation system by closing secondary containment isolation dampers.
- Provide auto-start permissive signals to emergency recirculation units UC413A and 413B.
- Start the Standby Gas Treatment system fan and filter train.
- Energize a high radiation annunciator in the control room.

During the performance of N2-RSP-RMS-M108, the energizing and de-energizing of the primary relays for the automatic trip functions resulting from exceeding the high radiation trip setpoint are verified. This includes the primary relays that would provide the isolation of the Normal Reactor Building Ventilation System, activation of the Reactor Building Emergency Recirculation System, and activation of the Standby Gas Treatment System.

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The first event occurred at 1023 hours. Jumpers had been installed per N2-RSP-RMS-M108 to prevent a Division I secondary containment isolation upon energization of the associated trip relay. Per procedure, a high radiation signal was then simulated into the trip relay for 2HVR*RE14A. This caused the inlet test damper to 2HVR*UC413A (2HVR*AOD34A) to close and the normal inlet damper (2HVR*AOD6A) to open. This resulted in 2HVR*UC413A taking suction on the Below Refuel Floor Exhaust Plenum which is a common suction with the Below Refuel Floor Exhaust Fans 2HVR*FN2A and B. Thus both the emergency recirculation unit, 2HVR*UC413A, and the Below Refuel Floor Exhaust Fan 2HVR*FN2A were drawing suction on their common exhaust plenum. The common fan suction duct for Below Refueling Floor Exhaust Fans 2HVR*FN2A and B, is equipped with two flow switches 2HVR*FS37A and B. These switches actuate on low flow. With 2HVR*UC413A drawing suction on the same plenum as the exhaust fan 2HVR*FN2A and recycling air back into the reactor building an air flow imbalance was created. In this case more air was being supplied to the reactor building than was being exhausted. The flow imbalance caused the reactor building pressure to increase from -0.78 to +0.32 inches of water gauge pressure before the flow switches 2HVR*FS37A and B actuated on low flow. This resulted in a secondary containment isolation and subsequent auto-start of GTS Train B (Train A was already running) which restored reactor building pressure to normal. The total duration of the event was approximately 90 seconds.

The second event occurred at 1058 hours. While attempting to restore Reactor Building Ventilation system back to normal operation from the first event another secondary containment isolation occurred. GTS Train B had been restored to normal prior to the event. The Niagara Mohawk licensed operator at the remote panel started a normal supply (2HVR*FN1A) and a normal Below Refuel Floor Exhaust Fan (2HVR*FN2B). He then started another supply fan and the normal Above Refuel Floor Exhaust Fan (2HVR*FN5A). He then noticed that the Below Refuel Floor Exhaust Fan he had previously started (2HVR*FN2B) had tripped. A start of the Standby Below Refuel Floor Exhaust Fan (2HVR*FN2A) was attempted but this fan tripped on motor electrical fault. Thus, with two supply fans and one exhaust fan running, the reactor building overpressurized causing all reactor building supply fans to trip off and a subsequent low flow secondary containment isolation. A Niagara Mohawk licensed operator in the control room noticed reactor building inside /outside differential pressure approaching its high setpoint (greater than 3 inches water gauge pressure) and had manually started GTS System Train B to assist in restoring pressure to normal. This action did not prevent the Reactor Building from equaling its high differential pressure setpoint of +3.00 inches of water gauge.

After reaching a maximum differential pressure of +3.00 inches of water gauge, the pressure decreased to a differential pressure of -0.257 inches of water gauge due to the manual start of the GTS thus ending the event. The total duration of the event was approximately three and one half minutes.

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II. CAUSE OF EVENTS

A root cause analysis has been completed for each of the events per Site Supervisory Procedure S-SUP-1, "Root Cause Evaluation Program".

The root cause of the first event has been attributed to inadequate administrative controls. There is no policy to prohibit concurrent performance of surveillance procedures which affect the same system or closely related systems. If operators in the control room had not allowed both surveillance tests to be run simultaneously, the event would not have occurred.

Contributing to this event was a personnel error by an Assistant Station Shift Supervisor (ASSS) who made an attempt to identify any adverse consequences of performing the two surveillance tests concurrently but failed to identify the action of the contacts mentioned above.

The cause of the second event was cognitive personnel error by the operator who was restoring the HVR back to normal operation. Operating Procedure N2-OP-52, "Reactor Building Ventilation", gives detailed instruction for the startup of the normal reactor building ventilation system. A low flow trip of the below refuel floor exhaust fan (2HVR*FN2A) was caused by the emergency recirculation unit 2HVR*UC413A operating in its normal mode with the normal damper 2HVR*AOV6A open and the test damper 2HVR*AOV34A closed. This resulted in 2HVR*UC413A and 2HVR*FN2A drawing suction on a common plenum. With both units competing for air from the same plenum their flow rates fell causing a low flow trip signal from 2HVR*FS37A and B.

The operating procedure specifies that a valve and damper lineup be verified before starting the normal reactor building ventilation system. This line up specifies that 2HVR*AOV34A and 2HVR*AOV6A be closed. The procedure also specifies that 2HVR*UC413 be secured if running.

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III. ANALYSIS OF EVENT

The secondary containment at Nine Mile Point Unit 2 is designed to be maintained at a negative pressure of 0.25 inches of water gauge with respect to the surrounding outside atmospheric pressure. The secondary containment provides a means of controlling fission product release to the environment. Upon exceeding the high differential pressure setpoint of +3.00 inches of water gauge the Standby Gas Treatment System initiated (operator action was taken before +3.00 inches of water was reached) and the Secondary Containment Isolation Valves closed as designed to re-establish a relative vacuum in the Reactor Building. Thus, all systems responded as designed. No safety consequences would have resulted from these events at any other power level.

IV. CORRECTIVE ACTIONS

Initial operator action for each event was to verify that reactor building pressure returned to normal and that all automatic systems had responded as designed. Immediate corrective action was to initiate a work request (WR 123415) to troubleshoot the cause of the Standby Below Refuel Floor Exhaust Fan motor electrical fault.

To prevent similar events from recurring in the future the following corrective actions have been or will be taken:

1. A policy shall be established that prohibits concurrent performance of surveillance procedures which affect the same system or closely related systems unless explicitly stated in the procedures.

2. Steps shall be added to the applicable procedures which were involved in the first event to prohibit their concurrent performance.

3. A note shall be added to the "Lessons Learned" book in the Control Room detailing the system lineups required before restoring the HVR back into service and emphasizing the need to strictly adhere to the operating procedure when doing so.

4. An Independent Safety Evaluation Group (ISEG) recommendation has been implemented which requests that an evaluation independent of the original designers and startup engineers be performed to reduce unwanted GTS initiations. The focus of this evaluation shall be to enhance GTS auto initiation logic to reduce unnecessary challenges to the GTS from the Radiation Monitoring System (RMS) and the HVR. Modifications and/or procedure changes shall be made as determined by this independent evaluation.

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V. ADDITIONAL INFORMATION

Identification of Components Referred to in this LER

Component	IEEE 803 EIIS Funct	IEEE 805 System ID
Standby Gas Treatment System	N/A	BH
Emergency Recirculation Subsystem	N/A	VA
Reactor Building Ventilation System	N/A	VA
exhaust fans	FAN	VA
supply fans	FAN	VA
Flow Switch	FIS	VA
Dampers	DMP	VA
Relay	RLY	VA

There have been three previous similar GTS initiations due to operators trying to return HVR back to normal operation with an emergency recirculation fan running. Detail of these similar events may be found in LERs 86-12 and 87-36 for Nine Mile Point Unit 2.

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FIGURE 1

REACTOR BUILDING VENTILATION - EMERGENCY RECIRCULATION SUBSYSTEM

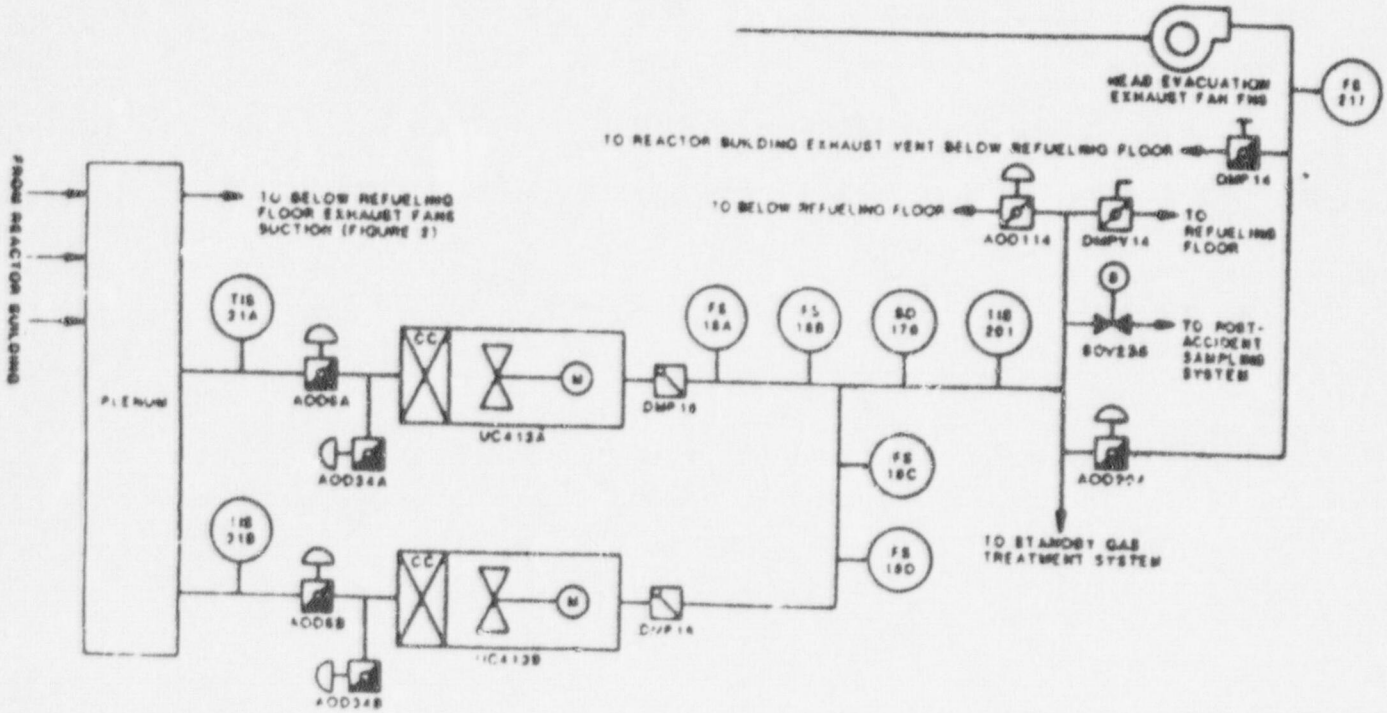

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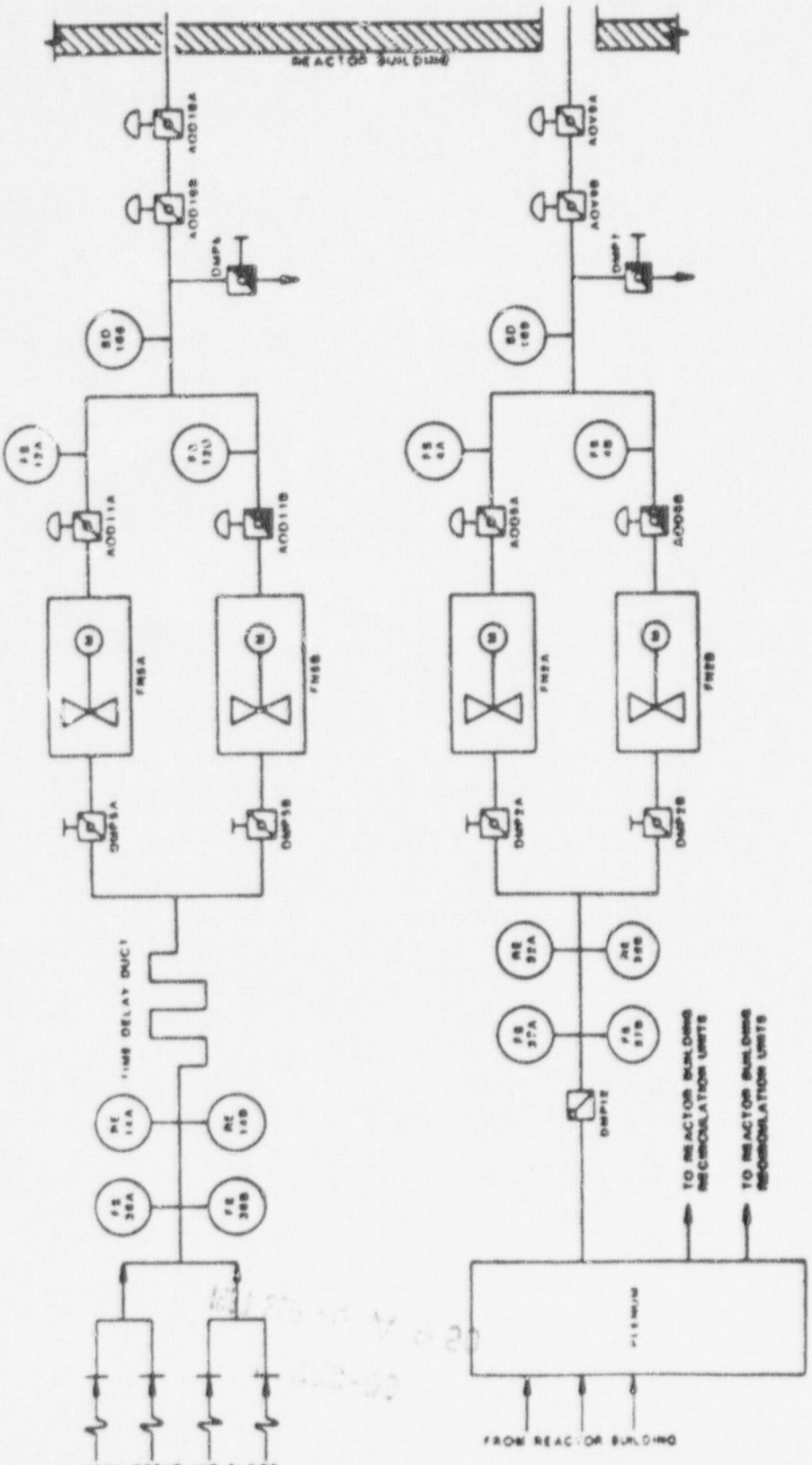
FIGURE 2

REACTOR BUILDING NORMAL EXHAUST VENTILATION



NMP26443

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

301 PLAINFIELD ROAD
SYRACUSE, NY 13212

THOMAS E. LEMPGES
VICE PRESIDENT—NUCLEAR GENERATION

August 28, 1987

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 87-45

Gentlemen:

In accordance with 10 CFR 50.73, we hereby submit the following Licensee Event Report:

LER 87-45 Is being submitted in accordance with 10 CFR 50.73 (a) (2) (iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). However, actuation of an ESF, including the RPS, that resulted from and was part of the preplanned sequence during testing or reactor operation need not be reported."

A 10 CFR 50.72 report was made at 1350 hours on July 29, 1987.

This report was completed in the format designated in NUREG-1022, Supplement No. 2, dated September 1985.

Very truly yours,

Thomas E. Lempges

Thomas E. Lempges
Vice President
Nuclear Generation

TEL/CDS/mjd

Attachments

cc: Regional Administrator, Region 1
Sr. Resident Inspector, W. A. Cook