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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9012120169 DOC. DATE: 90/11/21 NOTARIZED: NO DOCKET #
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
 AUTH. NAME AUTHOR AFFILIATION
 CONWAY, J. Niagara Mohawk Power Corp.
 FIRLIT, J.F. Niagara Mohawk Power Corp.
 RECIPIENT AFFILIATION

SUBJECT: LER 90-020-00: on 901027, ESF actuation due to procedural deficiency. Flow switch procedure revised. W/901121 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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November 21, 1990

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

RE: Docket No. 50-410
LER 90-20

Gentlemen:

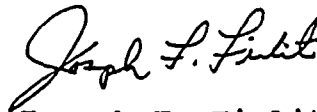
In accordance with 10CFR50.73, we hereby submit the following Licensee Event Report:

LER 90-20 is being submitted in accordance with 10CFR50.73 (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)".

A telephone notification was made on October 27, 1990, at 0855 hours per 10CFR50.72 part (b)(2)(ii).

This report was completed in the format designated in NUREG-1022, Supplement 2, dated September 1985.

Very truly yours,



Joseph F. Firlit
Vice President - Nuclear Generation

JFF/AC/lmc

ATTACHMENT

xc: Thomas T. Martin, Regional Administrator Region I
William A. Cook, Sr. Resident Inspector

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Nine Mile Point Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 4 1 1 0	PAGE (3) 1 OF 0 1 5
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TITLE (4)
Engineered Safety Feature Actuation Due To Procedural Deficiency

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														
									N/A														
1	0	2	7	9	0	9	0	0	0	2	0	0	0	0	1	1	2	1	9	0	N/A		

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

OPERATING MODE (9) 5	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	20.406(a)(1)(i)	50.38(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	50.38(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.406(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	
	20.406(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	
	20.406(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME John Conway, Manager Technical Support	TELEPHONE NUMBER
	AREA CODE: 3 1 5 NUMBER: 3 4 9 - 2 6 9 8

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On October 27, 1990, at 0549 hours, Nine Mile Point Unit 2 experienced an actuation of an Engineered Safety Feature (ESF). Specifically, the Secondary Containment (Reactor Building) isolated and an automatic start of the Reactor Building Emergency Recirculation Unit Coolers occurred, caused by low flow in the Reactor Building Ventilation System (HVR). At the time of the event, the reactor mode switch was in "REFUEL", no fuel movement was in progress and the core was off-loaded.

The root cause is a procedural deficiency in that the procedure for calibration of the flow switches did not account for potential flow variations between the redundant fans. A contributing cause was excessive flow variation between fans.

The immediate corrective action was to determine the cause of the ESF actuation, assess the plant for other possible initiating conditions and restore the HVR System to normal operation. Additionally, the Reactor Building above/below refuel floor low flow switches were recalibrated, other applicable flow switch setpoints were verified as correct and the procedure was revised.



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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Nine Mile Point Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 4 1 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 0	- 0 2 0	- 0 0	0 2	OF 0 5

TEXT (If more space is required, use additional NRC Form 368A's) (17)

I. DESCRIPTION OF EVENT

On October 27, 1990, at 0549 hours, Nine Mile Point Unit 2 experienced an actuation of an Engineered Safety Feature (ESF). Specifically, the Secondary Containment (Reactor Building) isolated and an automatic start of the Reactor Building Emergency Recirculation Unit Coolers occurred, caused by low flow in the Reactor Building Ventilation System (HVR). At the time of the event, the reactor mode switch was in "REFUEL", no fuel movement was in progress and the core was off-loaded.

A low flow signal was detected by the Division II flow switch in the below refuel floor exhaust duct, which initiated, per its design, a secondary containment isolation and an auto start of the reactor building emergency recirculation unit coolers. The Standby Gas Treatment System received an initiation signal, but both trains were in pull-to-lock to prevent operation of the system due to other maintenance activities.

Secondary Containment integrity was not required during this event as the core was off-loaded and fuel was not being moved.

Subsequent to the ESF initiations, control room personnel investigated the cause of the event and found no indication of a high radiation or Loss of Coolant Accident (LOCA) signal (the other signals capable of causing the initiation). The Control Room alarm printer indicated a DIV II below refuel floor exhaust air low flow (HVR FC11) at 05:49:36 and the ventilation panels at the rear of the control room (CEC PNL 870, 871) indicated that the building had isolated and the unit coolers had initiated. When no other trip indications were found, the operators placed the above and below refuel floor low flow override switches in the "override" position, restarted the reactor building ventilation system, and secured the Emergency Recirculation Unit Coolers. The ventilation system started up normally and all four of the low flow switches reset, indicating normal flow. The low flow override switches were left in "override" until the cause of the trip could be determined.

The Reactor Building Ventilation System has four exhaust fans. Exhaust below the refuel floor is controlled by two 70,000 CFM exhaust fans 2HVR-FN2A, 2B, each capable of 100% of the exhaust flow with the other fan remaining in standby. The fans draw air through a common duct. The air flow through the duct is protected against low flow by redundant air flow switches 2HVR*FS37A (Div I) and 2HVR*FS37B (Div II) which initiate secondary containment isolation and other ESF actuations on low flow.



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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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 (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Nine Mile Point Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 4 1 0 9 0 -	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 9 0 -	0 2 0 -	0 0	0 3	OF 0 5

TEXT (If more space is required, use additional NRC Form 368A's) (17)

I. DESCRIPTION OF EVENT (cont.)

Testing of fans and flow switches for the below refuel floor duct disclosed the following:

1. Fan HVR-FN2B has a flow of approximately 115% of design flow (i.e., outside the 100% ± 10% normal flow balance) during normal operation and flow switches 2HVR*FS37A and 37B were operating with an adequate margin between the normal operating point and the low flow setpoint when this fan is in service.
2. Fan HVR-FN2A has a flow of 95% of design flow (i.e., within the 100% ± 10% normal flow balance) during normal operation and flow switches 2HVR*FS37A and 37B were operating with reduced margin between the normal operating point and the low flow setpoint when this fan is in service.

The low flow setpoint (approximately 20% less than normal flow) was selected based on the normal flow using fan 2HVR-FN2B. When fan 2HVR-FN2A was placed in service, its operating flow was slightly above the low flow trip setting. A small disturbance of exhaust flow (cause unknown) resulted in the low flow trip.

II. CAUSE OF EVENT

A root cause investigation was performed utilizing Nuclear Division Procedure NDP-16.01, "Root Cause Evaluation". The immediate cause of this event was a low air flow signal in the HVR System. The low air flow signal was caused by the low flow setpoint being close to the operating point. The setpoint was established by procedure N2-IPM-GEN-@003, "Calibration of Fluid Components Incorporated Flow Switches". However, the procedure did not address possible flow variations between the two fans.

Therefore, the root cause is a procedural deficiency in that the procedure for calibration of the flow switches did not account for potential flow variations between the redundant fans. A contributing cause was excessive flow variation between fans.

III. ANALYSIS OF EVENT

This event is reportable per 10CFR50.73, part (a)(2)(iv), "Any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF)".



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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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 (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Nine Mile Point Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 4 1 0	LER NUMBER (6)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 368A's) (17)

III. ANALYSIS OF EVENT (cont.)

The Secondary Containment isolation and Reactor Building unit cooler starts were conservative actions, and actuation of these systems have no adverse safety consequences to the general public or plant at any reactor power level. The event in no way adversely affected any other safety system nor the operators' ability to achieve safe plant conditions.

The duration of the event was 17 minutes.

IV. CORRECTIVE ACTIONS

The immediate action was to evaluate the cause of the event. It was determined that the ESF actuation was NOT the result of a LOCA or a Reactor Building high radiation signal, but had in fact been initiated by a Reactor Building exhaust ventilation low flow signal. Subsequent to this determination, the low flow signal was overridden in accordance with N2-OP-52 and the reactor building ventilation was restored to normal operation. Other corrective actions for this event include:

1. Procedure N2-IPM-GEN-@003, "Calibration of Fluid Components Incorporated Flow Switches", has been revised to include duplicate flow measurements for each of the alternate fans for the above (2HVR-FN5A and 5B with flow switches 2HVR*FS36A and 36B) and below (2HVR-FN2A and 2B with flow switches 2HVR*FS37A and 37B) refuel floor exhaust fans.
2. Flow switches 2HVR*FS36A and 36B setpoints were verified per the revised procedure and found to be calibrated correctly (FS36A and B are the only other application of this type of flow switch having the possibility of flow induced by alternate fans).
3. Flow switches 2HVR*FS37A and 37B have been recalibrated to a new lower setpoint based on revised procedure N2-IPM-GEN-@003.
4. Other Fluid Component Incorporated flow switches to which this procedure applies have been evaluated for impact and no other applications involving two fans have been found.



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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		0	0 2 0 -	0 0	0 5	OF	0 5

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

V. ADDITIONAL INFORMATION

- A. Failed Components: None.
- B. Previous Similar Events: None. There have been other ESF actuations, however, no previous event associated with the Reactor Building Ventilation System had the same root cause.
- C. Identification of components referred to in this LER.

COMPONENT	IEEE 803 EIS FUNCTION	IEEE 805 SYSTEM ID.
Secondary Containment (Reactor Building)	N/A	NG
Reactor Building Unit Coolers	CLR	VA
Reactor Building Ventilation (HVR)	N/A	VA
Standby Gas Treatment (GTS)	N/A	BH
Flow Switch	80	VA
Override Switch	N/A	VA
Reactor Building Ventilation System		
Exhaust Fans	FAN	VA

