

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 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.

FACILITY NAME (1)

Clinton Power Station

DOCKET NUMBER (2)

05000461

PAGE (3)

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TITLE (4)

Failure to Recognize the Impact of Disconnecting Division 1 Intermediate Range Monitor (IRM) Cable While Division 2 IRM Cable was Disconnected Results in 2-out-of-4 Reactor Protection System Actuation Logic Being Satisfied

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
01	28	97	97	003	01	07	01	97	None	05000
									FACILITY NAME	DOCKET NUMBER
									None	05000
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
5		20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)		50.73(a)(2)(viii)
POWER LEVEL (10)		20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		50.73(a)(2)(x)
000		20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		73.71
		20.2203(a)(2)(ii)			20.2203(a)(4)			X 50.73(a)(2)(iv)		OTHER
		20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)		

## LICENSEE CONTACT FOR THIS LER (12)

NAME

R. A. Wattles, Project Operations Specialist

TELEPHONE NUMBER (Include Area Code)

(217) 935-8881, Extension 3496

## 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 15 single-spaced typewritten lines) (16)

The plant was in REFUELING during the sixth refueling outage, the reactor mode switch was locked in the shut down position, and all reactor control rods were fully inserted. A safety tagout was in place for reworking a cable connector assembly on the Neutron Monitoring system Division 2 intermediate range monitor (IRM) channel F. The channel F cable was disconnected from its detector causing an IRM trip signal to the reactor protection system (RPS) as expected. Additional safety tags were hung for the Division 1 IRM channel E to allow the channel E cable to be used in trouble shooting the channel F monitor. Disconnecting the channel E cable caused a second IRM trip signal to the RPS and satisfied the 2-out-of-4 RPS actuation logic. The off-normal procedure for reactor scram was entered and applicable portions completed. No control rods moved as a result of the RPS actuation. The cause of this event is attributed to personnel error. The impact of the safety tagout for IRM channel E was not recognized by the operations crew prior to hanging the tagout. Corrective action for this event included counseling the personnel involved in this event about adequate turnovers, questioning the impact of tagouts and recording the impacts on the tagout documentation.

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

## DESCRIPTION OF EVENT

On January 26, 1997, a safety tagout was issued for maintenance in accordance with maintenance work request (MWR) D73357 to rework a cable [CBL] connector [CON] assembly on Neutron Monitoring System [IG] Division 2 intermediate range monitor (IRM) [MON] channel F. Several other Neutron Monitoring System components were included in the same tagout. Per the MWR, the channel F cable was disconnected from its detector [DET] resulting in an expected Division 2 IRM trip signal input into the Reactor Protection System [JC] (RPS).

On January 27, 1997, at about 0700 hours, the team performing work on the IRMs discussed the need for work on IRM E with the day-shift Operations Shift Supervisor and the Line Assistant Shift Supervisor (LASS) and requested an addendum to the safety tagout for MWR D73357. MWR D73357 was revised to add the IRM E work which involved rerouting the IRM E cable to allow its use in troubleshooting the IRM channel F. The discussion included the impact of performing the IRM E work and the need to use the sensor bypass switch [HS] while performing the work on both IRMs to prevent an actuation of the RPS.

At about 1700 hours, the IRM work team discussed the IRM E work, the impact matrix for the work, and the need to use the sensor bypass switch to prevent an RPS actuation with the day-shift Shift Resource Manager (SRM). The SRM authorized the work at this time but did not sign the impact matrix for the work on IRM E.

At about 1900 hours, during shift turnover, the day-shift SRM discussed the need for adding safety tags for the IRM E work with the mid-shift SRM but may not have discussed the impact that adding the IRM E work would have on the RPS. At about 1930 hours, the mid-shift SRM swapped positions with the LASS but the impact of the safety tagout on the RPS was not discussed. The new mid-shift SRM prepared the additional safety tags for the IRM E work.

On January 28, 1997, the plant was in Mode 5 (REFUELING), reactor [RCT] coolant temperature was about 80 degrees Fahrenheit and pressure was atmospheric, and the sixth refueling outage (RF-6) was in progress. The reactor mode switch was locked in the shutdown position and all reactor control rods were fully inserted.

At about 0630 hours, the oncoming day-shift SRM questioned the mid-shift SRM about whether the safety tags for the IRM E work were added to the tagout for the IRM work. In response to the question, the mid-shift SRM added the safety tags for the IRM E work to the tagout documentation in accordance with administrative procedure 1014.01, "Safety Tagging." The impact assessment on the tagout documentation for the additional safety tags identified that IRM E would be out of service but did not address the impact on the RPS.

At about 0800 hours, the day-shift SRM reviewed and verified the additional safety tags and took the safety tags to the Main Control Room (MCR) for hanging. MCR personnel identified that the caution statement on the tagout documentation did not account for IRM E and returned the tagout documentation to the SRM for correction.



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At about 0900 hours, the corrected tagout documentation for IRM channel E to allow the use of the channel E cable in trouble shooting the channel F monitor was returned to the MCR. The impact of the added IRM E work on the RPS was not discussed.

The Line Assistant Shift Supervisor (LASS) directed the B reactor operator to hang the additional safety tags. The impact of the IRM E work on the RPS was not discussed.

At 1108 hours, the B reactor operator hung the tags for IRM channel E and disconnected the channel E cable connector. Disconnecting the cable caused a Division 1 IRM trip signal input into the RPS actuation logic. The combination of the Division 1 IRM trip signal and the Division 2 IRM trip signal satisfied the 2-out-of-4 actuation logic resulting in an automatic actuation of the RPS.

At 1122 hours, operators placed the Division 2 sensor bypass switch in the bypass position, and at 1125 hours, reset the RPS actuation logic. In response to the RPS actuation, operators entered and completed appropriate portions of off-normal procedure CPS No. 4100.01, "Reactor Scram," at about 1126 hours. No control rods moved as a result of the RPS actuation.

Condition Report 1-97-01-254 was initiated to track a cause and corrective action determination for the event.

No automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. No other equipment or components were inoperable at the start of this event to the extent that their inoperable condition contributed to this event.

## CAUSE OF EVENT

The cause of this event is attributed to personnel error by the mid-shift and day-shift SRMs, the day-shift LASS, and the B reactor operator who hung the additional safety tags. The SRMs failed to adequately address the impact of adding the safety tags to remove IRM E from service and include that information in the tagout documentation. The SRMs recognized and documented that adding the tags made IRM E inoperable, however, they failed to recognize and document the impact on the entire tagout. Tagging out IRM E inoperable while IRM F was tagged out inoperable caused the RPS actuation.

The mid-shift SRM was not briefed on the additional work and/or the RPS impact, but could have reviewed the entire safety tagout and recognized that tagging out IRM E would cause an RPS actuation. The day-shift SRM was present during discussions about the added IRM E work and the impact on the RPS, but failed to communicate that information to the mid-shift SRM who added the safety tags for the IRM E work. The day-shift SRM failed to communicate the RPS impact to the day-shift LASS and the B reactor operator who hung the additional safety tags.

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The day-shift LASS was aware of the RPS impact but failed to hold a briefing prior to hanging the additional safety tags and failed to communicate to the reactor operators that the Division 2 sensor bypass switch needed to be placed in the bypass position to prevent an RPS actuation due to two inoperable IRMs.

The B reactor operator who hung the additional safety tags failed to perform self-checking concerning the impact of the additional tags. The operator was aware that one channel of the IRMs was already tripped and that this tagout would trip a second IRM channel, but did not stop and think about the outcome of tripping the second IRM channel.

On the morning of January 28, 1997, the day-shift SRM was ill and had to leave the site; this condition contributed to the cause of this event. In addition, poor communications in the form of turnovers and lack of a pre-job briefing contributed to this event.

CORRECTIVE ACTION

The personnel involved in this event were counseled by the Operations Shift Supervisor about performing adequate turnovers, questioning the impact of safety tagouts, and recording the impacts on the tagout documentation. Personnel involved in this event were also counseled concerning the use of three part communications and the expectation to hold pre-job briefings.

Following the improper restoration of a tagout on February 10, 1997, documented in Condition Report 1-97-02-079, the Assistant Plant Manager-Operations implemented mandatory "Peer Checking" as a temporary, interim action to arrest tagout hanging/removal problems. Peer Checking required the operator performing a tagout to be accompanied by another operator making the same checks as the performer. Peer checking improved the performance of operators in hanging and removing safety tags. However, the effectiveness of peer checking diminished as it became routine, so mandatory peer checking was discontinued to reestablish personnel responsibility during safety tagging and prevent operator reliance on the peer checkers.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10CFR50.73(a)(2)(iv) due to the automatic actuation of the Reactor Protection System.

An assessment of the safety consequences and implications of this event identified that this event was not nuclear safety significant for existing plant conditions or other applicable plant modes or power levels. At the time the event occurred, all control rods were fully inserted into the reactor core and the plant was in a safe and stable condition. The RPS actuation ensured the plant remained in a safe and stable condition.

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The input of the IRM trip signals into the two-out-of-four RPS actuation logic is a designed response to inoperable IRMs. Disconnecting the IRM cables caused the two divisions of IRMs to become inoperable, resulting in the trip signals that satisfied the 2-out-of-4 RPS actuation logic. The Neutron Monitoring and the Reactor Protection Systems responded as designed to the inoperable IRMs. The capability of the plant to perform its intended safety functions and achieve and maintain a safe shutdown condition was not affected by this event.

The IRM trip input to the RPS is bypassed when the reactor mode switch is in the RUN position, however, a reactor scram would occur if the two IRMs were placed in an inoperable condition during intermediate power operations. The Reactor Protection System is designed to automatically scram the reactor to prevent fuel damage throughout the power ranges of the reactor. This event would not result in any unanalyzed condition that would challenge plant safety.

**ADDITIONAL INFORMATION**

No equipment or components failed as a result of this event.

Clinton Power Station has not reported similar events in recent history.

For further information regarding this event, contact R. A. Wattles, Project Operations Specialist, at (217) 935-8881, extension 3496.