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SUBJECT: LER 90-001-00:on 900115,bypassed source range monitor during fuel loading resulted in Tech Spec violation.

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NINE MILE POINT NUCLEAR STATION/P.O. BOX 32, LYCOMING, N.Y. 13093/TELEPHONE (315) 343-2110

February 21 , 1990

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

RE: Docket No. 50-220
LER 90-01

Gentlemen:

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

LER 90-01 is being submitted in accordance with 10CFR50.73 (a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications".

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

Very truly yours,

J. L. Willis
General Superintendent
Nuclear Generation

JLW/GB/lmc

ATTACHMENT

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

IE22
1/1

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH 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)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 1	0 5 0 0 0 2 2 0	1 OF 0 5

TITLE (4) Bypassed Source Range Monitor During Fuel Loading Resulted in Technical Specification Violation

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 NUMBER(S)
0 1	1 5	9 0	9 0	0 0 1	0 0	0 2	2 1	9 0	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
R	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	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)	X 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
George H. Montgomery, Technical Asst. to Station Supt.	AREA CODE 3 1 5 3 4 9 - 2 6 4 0

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
X	I G	7 4	G 0 8 0	Yes					

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)

ABSTRACT

On January 15, 1990, at 2330 hours with Nine Mile Point Unit 1 (NMP1) performing a spiral core reload, it was determined that a Source Range Monitor (SRM) was in bypass during the time that fuel was being loaded into the associated core quadrant. Loading of fuel in a core quadrant with the SRM bypassed is in violation of Technical Specification 3.5.3.b.

The root cause was determined to be personnel error due to a breakdown in verbal communications. Contributing factors include inadequate procedures and training, and an incomplete Equipment Status Log entry.

Corrective action was to return the SRM to the unbypassed position upon its discovery. Fuel loading was subsequently stopped until a root cause analysis (Human Performance Evaluation System) was performed. The appropriate procedures were revised, a Lessons Learned Transmittal was developed, and shift training was completed prior to resuming fuel loading. Long term corrective action includes expanded training on refueling operations.

DESCRIPTION OF THE EVENT

On January 15, 1990, at 2330 hours with Nine Mile Point Unit 1 (NMP1) performing a spiral core reload, it was determined that a Source Range Monitor (SRM) was in bypass during the time that fuel was being loaded into the associated core quadrant. Loading of fuel in a core quadrant with the SRM bypassed is in violation of Technical Specification 3.5.3.b., "Extended Core and Control Rod Drive Maintenance".

Earlier on January 15, 1990, at 0230 hours, the Control Room annunciator for short period alarm (20 seconds) on SRM 14 was received. SRM 14 was placed in bypass to support troubleshooting of this alarm. At the next break in fuel loading, technicians from the Instrumentation and Control (I&C) Department were dispatched to troubleshoot the alarm under a Work Request. The problem was identified and corrected at 0530 hours by replacement of the 10K59 relay coil. The Work Request was not immediately returned to the Control Room for acceptance and closure.

At 0745 hours, the Work Request was returned to the Control Room and accepted by the Station Shift Supervisor (SSS). However, the SRM was not taken out of bypass.

Fuel moves continued throughout the day with the SRM in bypass. From 1730 hours until 2246 hours, fuel was loaded into the quadrant in which the bypassed SRM 14 was located. SRM 14 was taken out of bypass at 2307 hours after eighteen (18) fuel assemblies were loaded into that core quadrant.

CAUSE OF THE EVENT

A Human Performance Evaluation System (HPES) analysis was performed which concluded that the root cause of this event was personnel error due to a breakdown in verbal communications in that the Station Shift Supervisor did not notify the Chief Shift Operator to unbypass SRM 14 when he accepted the Work Request as closed. Contributing factors that allowed the SRM to remain in bypass while loading fuel include:

A. Inadequate Procedures

Fuel Handling Procedure N1-FHP-27, "Whole Core Off Load-Reload", and Operating Procedure N1-OP-34, "Refueling Procedure" listed

Technical Specifications 3.5.1, "Source Range Monitors", and 3.5.3, "Extended Core and Control Rod Drive Maintenance", in their respective reference sections. However, the "Precautions and Limitations", sections of each procedure only addressed information from Technical Specification 3.5.1. The details of Technical Specification 3.5.3 were not addressed in either procedure. This condition allowed operators to incorrectly conclude that all Technical Specification requirements were contained in procedures N1-FHP-27 and N1-OP-34.

Operations Department Shift Check Procedure N1-ST-SO verified only Technical Specification 3.5.1 requirements to be met, which require 3 of 4 SRM's to be operable and on scale with counts greater than 3 counts per second (cps).

Changes to the referenced procedures were not implemented in a timely manner to include the additional criteria required in order to meet the intent of General Electric's, Potentially Reportable Condition, PRC-89-01, "Core Monitoring During Fuel Loading." Changes to these procedures were still being made until December 1989.

B. Inadequate Training

Licensed operator requalification and refuel training included only those requirements addressed in procedures N1-FHP-27 and N1-OP-34, which did not include Technical Specification 3.5.3. Training briefly addressed General Electric's PRC-89-01, however, emphasis was not placed on the basis of spiral reload in non-coincident Reactor Protection System (RPS) logic. Shift briefings dealt specifically with implementing procedures N1-FHP-27, N1-OP-34 and N1-ST-SO.

Additionally, the content of licensed operator requalification training cycle 8 (October 1989) changed from Source Range Monitor, Intermediate Range Monitor and Operating Procedures to Job Performance Measures as operators voiced a concern that license requalification examinations were scheduled for November 1989.

C. Incomplete Equipment Status Log Entry

An Equipment Status Log (ESL) entry was made as required by Administrative Procedures, however, the applicable Technical Specification sections were not entered.

D. Equipment Markups

Troubleshooting activities under the Work Request were not controlled under the Equipment Markup Program which is identified in Administrative Procedure AP-4.2, "Control of Equipment Markups". When performing troubleshooting activities, an individual was stationed as the markup in lieu of an equipment markup. Had an equipment markup been utilized per Administrative Procedure AP-4.2, it may have provided additional assurance for returning SRM 14 to normal upon the completion of maintenance activities.

ANALYSIS OF THE EVENT

This event is considered reportable in accordance with 10CFR50.73 (a)(2)(i)(B) which requires the licensee to report any operation or condition prohibited by the plant's Technical Specifications.

Fuel loading in non-coincident RPS logic has not been previously performed at NMP1. The decision to load fuel in this manner is based on the recommendations of General Electric PRC-89-01 regarding the possibility of unmonitored core alterations during a spiral reload of the entire core.

Normally the function of the SRM is to monitor the reactor core, guide operators during fuel handling operations, and provide rod blocks for inoperable, upscale and detector not full in indications. Only in non-coincident RPS logic does the SRM produce an upscale high count rate scram at 5×10^5 CPS.

The potential of new and irradiated fuel reaching criticality during fuel loading is highly unlikely when control rods are fully inserted in the cells where fuel is being loaded. However, the bypassed SRM channel would have prevented the actuation of that channel's scram function for the quadrant where core alterations were taking place.

The health and safety of plant personnel and the general public was not compromised as a result of this event based on the following:

1. Although SRM 14's scram function in non-coincident RPS logic was bypassed, flux level indication for that channel was available in the Control Room. All SRM channels were being monitored by licensed operators for the loading operation being performed. Therefore, in the unlikely

event of a localized criticality, abnormal neutron flux levels would have been detected by operator observation of instrumentation.

2. During spiral fuel loading, a non-coincident RPS logic is employed in the neutron monitoring system portion of the RPS, enabling a high neutron flux signal from any one neutron monitor (Source Range Monitor, Intermediate Range Monitor, or Average Power Range Monitor) to cause a full reactor scram. Intermediate range monitors (IRM) 13 and 14 are located in the same core quadrant as SRM 14 and were available to produce a full reactor scram in the event that a high neutron flux level was detected in that core quadrant. Since this event is not possible in operational conditions other than refueling, no other safety consequences exist.

CORRECTIVE ACTIONS

Immediate corrective action included returning SRM 14 to the unbypassed position. Fuel loading was subsequently stopped by the Station Superintendent until a root cause analysis (Human Performance Evaluation System) was performed and necessary corrective action taken.

Follow-up corrective actions included discussing this event and its consequences with the individual which made the communication error to prevent similar recurrences.

A Lessons Learned Transmittal was generated to address the experiences encountered during this event. Issues emphasized included: The importance of thorough and comprehensive entries into the Equipment Status Log, the need for a continued conservative approach and questioning attitude when confronted with conditions that are unfamiliar, individual responsibilities including reporting and maintaining component operability status, and that assurance must be maintained that paperwork and physical equipment condition are in the appropriate state. Additionally, when training on procedures, training should include all applicable Technical Specifications.

Fuel Handling Procedure N1-FHP-27 and Operating Procedure N1-OP-34 were revised to specifically include the requirements of Technical Specification 3.5.3.

Shift Checks Procedure N1-ST-SO was revised to verify and document that the requirements of Technical Specification 3.5.3 are met once per shift.

All other operations shifts met with Operations management to discuss the Lessons Learned Transmittal and review all procedural changes prior to resuming fuel loading.

To prevent recurrence of this type of event, expanded training will be included in the lesson plan for the refuel training module.

A second Lessons Learned Transmittal will be issued regarding the use of removed relays or similar devices as a mark-up point and use of personal tags for personnel protection. Administrative Procedure AP-4.2 will be revised to clarify the use of personal tags.

ADDITIONAL INFORMATION

A. Previous similar events:

On May 1, 1984, Source Range Monitor 14 was found to be bypassed while loading fuel into the associated core quadrant. At that time it was concluded that the Source Range Monitor was operable even though bypassed since it provided indication which would alert the operator of an approach to criticality. During this core reload, the SRM was not required to produce a high count rate scram signal at 5×10^5 cps since loading was being performed in coincident RPS logic. This condition was identified in USNRC Inspection Report No. 50-220/84-07. This event was not reported under 10CFR50.72 or 10CFR50.73. Corrective action for this event did not prevent recurrence since it was a part of a night order and not permanently captured.

B. Identification of components referred to in this LER:

COMPONENT	EIIS FUNCT IEEE 803	SYSTEM ID IEEE 805
Source Range Monitor (SRM)	JI	IG
Relay/Bypass Switch	74	IG

C. Failed component identification:

Component ID	Source Range Monitor Bypass Switch Relay
Manufacturer	General Electric Company
Type	10K59 Relay (Coil only)
Model Number	CR120A04002AA