

## LICENSEE EVENT REPORT (LER)

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-6 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)

McGuire Nuclear Station, Unit 1

DOCKET NUMBER (2)

05000369

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TITLE (4)

Unit 1 Reactor Trip During Power Range Nuclear Instrumentation Testing

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(S)
05	14	97	97	- 07	- 0	06	13	97	N/A	05000

OPERATING MODE (9)

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

3	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)
POWER	20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
LEVEL (10)	20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	Abstract below and
	20.405(a)(1)(iv)	X		50.73(a)(2)(viii)(B)	in Text, NRC Form
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

J. W. Pitesa

TELEPHONE NUMBER

AREA CODE

(704)

875-4788

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
				NO					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

YEAR

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

Unit Status: Unit 1 - Mode 3 (Hot Standby) at 0 percent power with Shutdown Rod Banks A and B withdrawn.

**Event Description:** On May 14, 1997, at 1104, the Unit 1 Reactor tripped during performance of Power Range (PR) Detector N42 Analog Channel Operational Testing (ACOT). Prior to the performance of the ACOT, PR Detector channel N41 had been bypassed due to being connected to the Reactivity Computer in preparation for Zero Power Physics Testing. The procedure chosen to bypass the N41 channel failed to bypass Permissive P-8, which unblocks reactor trip due to turbine trip. During simulation of reactor power rising to 120 percent on PR Detector N42 per the ACOT, Permissive P-8 logic was met on two out of four channels which, along with the tripped turbine, tripped the reactor. Permissive logic P-10 was met on two out of four channels, which de-energized both Source Range Detectors causing momentary entry into Technical Specification 3.0.3. A Feedwater Isolation signal occurred due to a Reactor trip signal concurrent with the Low Tavg Bistables.

**Event Cause:** This event was caused by personnel utilizing an inappropriate procedure for the existing plant conditions. This event is considered to be of no significance with respect to the safety of the public.

**Corrective Actions:** Corrective actions include a review of subject and associated procedures to determine any necessary enhancements or revisions.

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## EVALUATION:

## Description of Event

Immediately prior to the event on May 14, 1997, Unit 1 was in Mode 3 (Hot Standby), stable at 557 degrees Fahrenheit and 0 percent power. Reactor [EIIS:RCT] Trip Breakers [EIIS:BKR] were closed with Shutdown Rod Banks A and B withdrawn. Excore Neutron Flux Monitor [EIIS:JC] System Power Range (PR) Detector [EIIS:DET] N41 was out of service and connected to the Reactivity Computer [EIIS:CFU] in preparation for Zero Power Physics Testing (ZPPT).

- At approximately 1015, the Operations Shift Manager directed Maintenance personnel to perform the Analog Channel Operational Testing (ACOT) on PR Detector N42 in preparation for unit startup following a Steam Generator replacement outage.
- At 1030, Maintenance personnel performed steps in procedure PT/1/A/4600/01/014D, PR Detector N41 ACOT, in order to place the channel in bypass because the detector had been placed out of service for ZPPT. This procedure allows bypass of Reactor Protection System functions for PR Detector N41. It was not recognized that the test procedure did not address disabling Permissives P-8 and P-10.

Note: P-8 unblocks Reactor trip on Turbine trip when two out of four PR Detectors indicate Reactor power greater than 48 percent rated thermal power. P-10 de-energizes both Source Range (SR) indicators when two out of four PR Detectors indicate reactor power greater than 10 percent rated thermal power.

- At 1104, Maintenance personnel were performing procedure PT/1/A/4600/014E, PR Detector N42 ACOT. Step 12.1.14 required simulation of 120 percent power.
- As the simulated power signal was increased above 10 percent power, the logic satisfying Permissive P-10 was met on both channels (N42 due to simulated signal and N41 due to being out of service defaulted above setpoint).
- At 1104:33.843, as the simulated signal was increased above 48 percent power, the logic for Permissive P-8 was met on both channels (N42 due to simulated signal and N41 due to being out of service defaulted above setpoint). As a result, a Solid State Protection

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Signal (SSPS) of "Turbine Trip Causes Reactor Trip" was initiated.

- Reactor Trip Breakers opened as expected for these conditions and Shutdown Rod Banks A and B inserted fully.
- A Main Feedwater [EIIS:BA] (CF) Isolation signal was initiated due to "Reactor Trip and Low Tavg" logic and all Feedwater Isolation Valves [EIIS:ISV] closed as expected.
- Operators entered emergency procedure EP/1/A/5000/E-0, Reactor Trip or Safety Injection, and transitioned to EP/1/A/5000/ES-1.0, Reactor Trip Response.
- At approximately 1120, CF flow was re-established and Steam Generator levels were returned to normal.
- All plant systems and equipment responded as expected except the non-safety hydraulic pump associated with CF Isolation valve 1CF-30, which continued to run in recirculation after reopening the valve.
- Source Range (SR) indication was lost for less than 2 minutes (approximately 100 seconds) due to P-10 permissive being met during the performance of the N42 ACOT. Operations personnel were aware of this loss of indication and responded appropriately using Abnormal Operating Procedures.

**Conclusion:**

This event did not result in any uncontrolled releases of radioactive material, personnel injuries, or radiation overexposures. This event is not Nuclear Plant Reliability Data System (NPRDS) reportable.

The event was caused by Maintenance Personnel using an inappropriate procedure for the existing plant condition to bypass PR detector N41. The involved personnel failed to recognize that Permissives P-8 and P-10 would not be bypassed. A review of the ACOT procedures is planned to implement enhancements to clearly delineate their purpose and use.

Review of industry and internal Operating Experience Program (OEP) and the Problem Investigation Program (PIP) databases for the past 24 months revealed that there have been no similar events associated with inadequate bypassing of channels during testing of reactor power

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monitoring instrumentation. This event is not considered to be recurring.

## CORRECTIVE ACTION:

### Immediate:

1. N42 simulated power was reduced to 0 to re-energize Source Range indication, CF system flow was reestablished, Steam Generator levels were returned to normal, and the unit was returned to stable conditions with no problems.

### Subsequent:

1. The following procedures were placed on Administrative hold:
  - PT/1/A/4600/014D, 014E, 014F, and 014G - Analog Channel Operational Tests (ACOT) for all four Power Range channels - Unit 1
  - PT/2/A/4600/014D, 014E, 014F, and 014G - Analog Channel Operational Tests (ACOT) for all four Power Range channels - Unit 2
2. Details of this event were shared with all Maintenance Personnel.

### Planned:

1. All procedures associated with ACOT testing and bypassing (listed in Subsequent actions above) are being reviewed for enhancements which will provide appropriate barriers and guidance to ensure the proper procedures are utilized.

## SAFETY ANALYSIS:

Based on this analysis, this event is not considered to be significant. At no time were the safety or health of the public or plant personnel affected as a result of the event.

This reactor trip occurred, during Mode 3 at 0 percent power, when a simulated reactor power signal met logic for Permissive P-8 (two out of

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four Power Ranges indicating rated thermal power at greater than 48 percent), which unblocked the reactor trip signal due to a turbine trip (this signal was present because the turbine trip logic had not yet been reset as part of startup activities).

Shutdown Rod Banks A and B fully inserted.

Since the unit was in Mode 3 (K effective < .99) at 0% power, insertion of the A and B Shutdown Rod banks did not alter reactor power.

During the event all required safety systems responded as expected.

A CF System isolation occurred, as a result of "Reactor Trip and Low Tavg", as expected and all equipment performed satisfactorily. Due to the minimal feedwater flow requirements at the time, S/G levels did not change significantly and Auxiliary Feedwater was not required. During this time, minimal heatup of the reactor coolant system occurred.

The hydraulic pump associated with valve CF Isolation valve 1CF-30 continued to run in recirculation after reopening the isolation valve but caused no safety concerns.

Source Range indication was lost momentarily due to the P-10 permissive being met. Operations personnel were aware of the momentary loss and acted according to guidance provided by Abnormal Procedures as required. The only changes in reactivity parameters during this time occurred due to the minimal heatup of the reactor coolant system and the insertion of the two shutdown banks. The overall effect was a negative reactivity addition during the brief time the Source Range instruments were unavailable.