

DEC 21 2001



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U. S. Nuclear Regulatory Commission
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Gentlemen:

LER 354 / 2001- 008 - 00
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF- 57
DOCKET NO. 50-354

Gentlemen:

This Licensee Event Report entitled "Unplanned Nuclear Steam Supply Shutoff System Isolation during Functional Testing" is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv)(A). The attached LER contains no commitments.

Sincerely,

A handwritten signature in black ink, appearing to read "D. F. Garchow", written over the printed name.

D. F. Garchow
Vice President - Operations

Attachment

/KMB

C Distribution
 RTL 3E.111

IB22

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 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not

HOPE CREEK GENERATING STATION

05000354

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UNPLANNED NUCLEAR STEAM SUPPLY SHUTOFF SYSTEM ISOLATION DURING FUNCTIONAL TESTING

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|-------------------|-----|------|--------------------|-------------------|--------------------|----------------|----------------------|------|---------------------------------|---------------|
| MO | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO | MO | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 10 | 30 | 2001 | 2001 | 008 | 00 | 12 | 21 | 2001 | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |
| 9. OPERATING MODE | | 4 | 20.2201(b) | | 20.2203(a)(3)(ii) | | 50.73(a)(2)(ii)(B) | | 50.73(a)(2)(ix)(A) | |
| 10. POWER LEVEL | | 0 | 20.2201(d) | | 20.2203(a)(4) | | 50.73(a)(2)(iii) | | 50.73(a)(2)(x) | |
| | | | 20.2203(a)(1) | | 50.36(c)(1)(i)(A) | | X 50.73(a)(2)(iv)(A) | | 73.71(a)(4) | |
| | | | 20.2203(a)(2)(i) | | 50.36(c)(1)(ii)(A) | | 50.73(a)(2)(v)(A) | | 73.71(a)(5) | |
| | | | 20.2203(a)(2)(ii) | | 50.36(c)(2) | | 50.73(a)(2)(v)(B) | | OTHER | |
| | | | 20.2203(a)(2)(iii) | | 50.46(a)(3)(ii) | | 50.73(a)(2)(v)(C) | | Specify in Abstract below or in | |
| | | | 20.2203(a)(2)(iv) | | 50.73(a)(2)(i)(A) | | 50.73(a)(2)(v)(D) | | NRC Form 366A | |
| | | | 20.2203(a)(2)(v) | | 50.73(a)(2)(i)(B) | | 50.73(a)(2)(vii) | | | |
| | | | 20.2203(a)(2)(vi) | | 0.73(a)(2)(i)(C) | | 50.73(a)(2)(viii)(A) | | | |
| | | | 20.2203(a)(3)(i) | | 50.73(a)(2)(ii)(A) | | 50.73(a)(2)(viii)(B) | | | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|---|--------------------------------------|
| NAME | TELEPHONE NUMBER (Include Area Code) |
| Kennard M. Buddenbohn, Licensing Engineer | (856) 339-5653 |

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

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|---------------|--------------------|-------|--------|-----------|---------------|--------------------|
| | | | | | | | | | |

14. SUPPLEMENTAL REPORT EXPECTED

| | | |
|---|---|----|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X | NO |
|---|---|----|

15. EXPECTED SUBMISSION DATE

| MONTH | DAY | YEAR |
|-------|-----|------|
| | | |

On October 30, 2001 at 1859, during the performance of electro-hydraulic control (EHC) testing, an actuation of the Nuclear Steam Supply Shutoff System (NSSSS) occurred. This actuation was due to the Low Condenser Vacuum Trip bypass becoming un-bypassed during the performance of testing of the EHC system logic for turbine overspeed protection. The apparent cause of this event was improper execution of a test procedure step that resulted in the main turbine reset push button on the EHC section of the Main Control Panel (MCP) being depressed and held (the normal method of turbine reset).

Corrective actions include a review of this event to facilitate proper interface between technicians and operators during testing, a review of the associated functional test, and a review of human performance traps.

There was no safety significance to this event. The Nuclear Steam Supply (NSS) system was removed from service per station procedures and was not capable of producing steam. All valves that were expected to close from this signal were already closed with the exception of the main steam line drain inboard and outboard isolation valves. These containment isolation valves closed as expected. The condition is being reported in accordance with the requirements of 10CFR 50.73 (a) (2) (iv) (A) as "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B).."

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

PLANT AND SYSTEM IDENTIFICATION

General Electric – Boiling Water Reactor (BWR/4)

Containment Isolation Control System {JM/--}*

Main/Reheat Steam System {SB/ISV}*

* Energy Industry Identification System {EIS} codes and component function identifier codes appear as (SS/CCC)

IDENTIFICATION OF OCCURRENCE

Event Date: October 30, 2001

Discovery Date: October 30, 2001

CONDITIONS PRIOR TO OCCURRENCE

The plant was in OPERATIONAL CONDITION 4 (COLD SHUTDOWN) with average reactor coolant temperature less than 200 degree F. The main turbine and main condenser were out of service, therefore the existence of low condenser vacuum contributed to the start of the event.

DESCRIPTION OF OCCURRENCE

On October 30, 2001 at 1859, during the performance of electro-hydraulic control (EHC) testing of Main Turbine trip functions in accordance with procedure HC.IC-FT.CH-0002 (Z), Main Turbine Trips, an unplanned actuation of the Nuclear Steam Supply Shutoff System (NSSSS) {JM/--} occurred. This actuation was due to the Low Condenser Vacuum Trip bypass becoming un-bypassed because of an error during the performance of Instrumentation & Control (I&C) testing of the EHC system logic for turbine overspeed protection.

Procedure step 5.5.38 required the main turbine reset pushbutton on the EHC section of the Main Control Panel (MCP) to be depressed "momentarily" to electrically reset the turbine logic, allowing the system testing to continue. However, the pushbutton was depressed and held (the normal method of turbine reset), permitting the turbine stop valves to open. This un-bypassed the condenser low vacuum bypass, and produced the unexpected isolation.

At the time of the event, the main turbine condenser was out of service, and the NSSSS system sensed a low condenser vacuum concurrent with the turbine stop valves not full closed. The NSSSS system generated a "group one" isolation from this signal. All valves expected to close from this signal were already closed with the exception of two main steam line drain valves, H1AB -AB-HV-F019 and H1AB -AB-HV-F016 {SB/ISV}. These two containment isolation valves closed as expected. The EHC test was terminated.

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CAUSE OF OCCURRENCE

The apparent cause of the event was improper execution of an EHC functional test procedure step that resulted in the main turbine reset pushbutton on the EHC section of the MCP being depressed and held (the normal method of turbine reset). This resulted in an NSSSS isolation due to low condenser vacuum condition concurrent with turbine stop valves not being full closed.

Failure mechanisms include:

- a. Inadequate procedure. Some licensed operators and technicians were aware of the potential of an actuation. The procedure as written did not sufficiently address the potential for this actuation to occur. The step that cautions the technician/operator to momentarily depress the pushbutton appears only once in the "setup" section of the procedure, and merely warns the technician to do this action, not why it is done in this manner. Additionally, the steps that direct the technician to ask the reactor operator to reset the turbine give no warning at all, merely stating the reactor operator should "momentarily depress" the reset pushbutton.
- b. Imprecise communications. The EHC test was terminated and recommenced without a thorough technician and operations crew brief. An effective crew brief may have identified the potential for the isolation initiation and prevented this event. Communications between the technician and the control room operator were imprecise, and resulted in the operator resetting the main turbine in the normal manner, rather than momentarily depressing the pushbutton and resetting the turbine electrically only, as was desired.

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PREVIOUS OCCURRENCES

A review of reportable events at Hope Creek identified two reportable events due to inadequate procedures and imprecise communications.

1. LER 354/00-005-00 reported an event during the ninth refuel outage in which a reactor water cleanup system (RWCU) isolation occurred due to an inadvertent Standby Liquid Control (SLC) initiation signal during surveillance testing. Performing three surveillance tests simultaneously resulted in the initiation logic being completed for the Redundant Reactivity Control System (RRCS) system to provide an initiation signal to the SLC system. The apparent cause of the event was procedures that did not include adequate precautions and prerequisites. Specifically, the procedures did not verify the absence of other activities that could affect the RRCS logic (e.g., the Average Power Range Monitor (APRM) jumpers installed). A contributing cause of the event was the SLC flow test remaining in the restoration phase for an extended period of time. A second contributing cause was performing two procedures in parallel on redundant trains of the same system due to an error in judgment by the maintenance technician. Corrective actions included counseling the personnel involved, Maintenance Department roll-outs to address parallel performance of surveillance tests / operating experience, and a revision of RRCS logic test procedures to ensure adequate precautions and prerequisites are included.

2. LER 354/94-004-00 reported an event during the fifth refuel outage in which a main steam isolation valve (MSIV) closure was initiated due to a low vacuum condition with the turbine stop valves open. The turbine stop valves had been opened under the direction of Instruments and Controls (I&C) test procedure for the combined intermediate valve testing. The turbine stop valves were closed, the MSIV isolation logic was reset and the MSIV's were reopened to support pressure boundary testing. The root cause of the event was procedural deficiency. Contributing factors were personnel error and inadequate communications during the pre-job briefing. Corrective actions included a review of Operations and I&C procedures to include appropriate precautions and limitations regarding NSSSS isolation logics, a review of work requests for their potential to create an inadvertent actuation, and counseling of the engineer involved in the event in regard to proper communication during pre-job briefings.

The corrective actions associated with LER 354/00-005-00 and LER 354/94-004-00 were specific to the events and would not have prevented this event from occurring.

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SAFETY CONSEQUENCES AND IMPLICATIONS

There were no actual safety consequences associated with this event. The Nuclear Steam Supply (NSS) system was removed from service per station procedures and was not capable of producing steam. All valves expected to close from this signal were already closed with the exception of the main steam line drain inboard and outboard isolation valves, H1AB -AB-HV-F016 and H1AB -AB-HV-F019 {SB/ISV}. These containment isolation valves closed as expected. The NSSSS isolation was not necessary to maintain vessel inventory. Based on the above, this event did not present a risk to the health and safety of the public.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, did not occur.

CORRECTIVE ACTIONS:

1. A review of this event will be conducted by Instrumentation & Controls (I&C) for human performance shortfalls including procedural guidance, the use of error prevention tools such as pre-job briefs when starting and stopping complex testing, and communication tools when performing specific procedural steps during procedures that require the interface of technicians and reactor operators.
2. A thorough review of functional test HC.IC-FT.CH-0002 (Z), Main Turbine Trips, will be conducted and shortfalls in the procedure will be identified and corrected.
3. A review of this event will be conducted with licensed operators during the next licensed operator requalification cycle. The review will highlight human performance traps and discuss the issues including a review of NSSSS initiation logic and how the event occurred.

COMMITMENTS

The corrective actions cited in this LER are voluntary enhancements and do not constitute commitments.