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HL-1336
001191

October 23, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNIT 1
NRC DOCKET 50-321
OPERATING LICENSE DPR-57
LICENSEE EVENT REPORT
MAIN STEAM LINE RADIATION MONITOR SETTTINGS
EXCEED TECHNICAL SPECIFICATION SETPOINT

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(i), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning the main steam line radiation monitor settings which exceeded the setpoint required by the Technical Specifications. This event occurred at Plant Hatch - Unit 1.

Sincerely,

W. G. Hairston, III

JKB/eb

Enclosure: LER 50-321/1990-019

c: (See next page.)



IE22

Georgia Power



c: Georgia Power Company
Mr. H. L. Sumner, General Manager - Nuclear Plant
Mr. J. D. Heidt, Manager Engineering and Licensing - Hatch
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. F. Rinaldi, Acting Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebneter, Regional Administrator
Mr. L. D. Wert, Senior Resident Inspector - Hatch

NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| PLANT HATCH, UNIT 1 | 0 5 0 0 0 3 2 1 | 1 OF 7 |

TITLE (4)
MAIN STEAM LINE RADIATION MONITOR SETTINGS EXCEED TECHNICAL SPECIFICATION SETPOINT

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQ NUM | REV | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| | | | | | | | | | | 0 5 0 0 0 |
| 0 9 | 2 5 | 9 0 | 9 0 | 0 1 9 | 0 0 | 1 0 | 2 3 | 9 0 | | 0 5 0 0 0 |

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)

| OPERATING MODE (9) | 1 | | | | |
|---|---|---|---|---|---|
| POWER LEVEL | 1 0 0 | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| | | 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) |
| | | 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 | |
|---|---|---|
| | AREA CODE | |
| STEVEN B. TIPPS, MANAGER NUCLEAR SAFETY AND COMPLIANCE, HATCH | 912 | 367-7851 |

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

| CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORT TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORT TO NPRDS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X | K D | P M C | T 1 7 2 | N | | | | | | | |
| | | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X NO | | | | |

ABSTRACT (16)


On 9/25/90, at approximately 0955 CDT, Unit 1 was in the Run mode at approximately 2436 CMWT (approximately 100 percent of rated thermal power). At that time, the Unit 1 Shift Supervisor was notified by nonlicensed Chemistry personnel that the Hi-Hi trip setpoints for the Main Steam Line Radiation Monitors (MSLRMs, EIIS Code IL) 1D11-K603A, B, C, and D were not less than or equal to 3 times the normal main steam line background radiation levels at rated thermal power as required by Unit 1 Technical Specifications Table 3.1-1, item 9; Table 3.2-1, item 4; and Table 3.2-8, item 5. The monitors were declared inoperable and the appropriate Limiting Condition for Operation (LCO) was entered. The setpoints were readjusted as required and, subsequently, at 1235 CDT of the same day, the LCO was terminated.

Causes of the event include an ambiguous Technical Specification, a less than adequate procedure, and a malfunction of a hydrogen flow monitor/element.

Corrective actions include issuing a clarification of the Technical Specifications, revising a procedure, and repairing the flow monitor/element. The appropriate personnel have been counseled as to the requirement for strict procedural compliance and the importance of timely dissemination of information regarding plant operating conditions.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
Energy Industry Identification System codes are identified in the text as (EIIS Code XX)

SUMMARY OF EVENT

On 9/25/90, at approximately 0955 CDT, Unit 1 was in the Run mode at approximately 2436 CMWT (approximately 100 percent of rated thermal power). At that time, the Unit 1 Shift Supervisor was notified by nonlicensed Chemistry personnel that the Hi-Hi trip setpoints for the Main Steam Line Radiation Monitors (MSLRMs, EIIS Code IL) 1D11-K603A, B, C, and D were not less than or equal to 3 times the normal main steam line background radiation levels at rated thermal power as required by Unit 1 Technical Specifications Table 3.1-1, item 9; Table 3.2-1, item 4; and Table 3.2-8, item 5. The monitors were declared inoperable and the appropriate Limiting Condition for Operation (LCO) was entered. The setpoints were readjusted as required and, subsequently, at 1235 CDT of the same day, the LCO was terminated.

Causes of the event include an ambiguous Technical Specification, a less than adequate procedure, and a malfunction of a hydrogen flow monitor/element.

Corrective actions include issuing a clarification of the Technical Specifications, revising a procedure, and repairing the flow monitor/element. The appropriate personnel have been counseled as to the requirement for strict procedural compliance and the importance of timely dissemination of information regarding plant operating conditions.

DESCRIPTION OF THE EVENT

On 9/25/90, at approximately 0955 CDT, Unit 1 was in the Run mode at approximately 2436 CMWT (approximately 100 percent of rated thermal power). At that time, licensed personnel were notified by nonlicensed Chemistry personnel that the setpoints for the Hi-Hi trip of the MSLRMs 1D11-K603A, B, C, and D were not less than or equal to 3 times the normal background radiation levels of the main steam lines at rated power as required by Unit 1 Technical Specifications Table 3.1-1, item 9; Table 3.2-1, item 4; and Table 3.2-8, item 5.

On 9/21/90, a Chemistry technician calculated setpoints for the MSLRMs in accordance with procedure 62CI-CAL-005-0S, "Main Steam Line Radiation Monitors," in preparation for the Hydrogen Injection System (EIIS Code KD) being placed into service. The purpose for the Hydrogen Injection System is to reduce the potential for Intergranular Stress Corrosion Cracking (IGSCC) of the reactor vessel internals and the Recirculation System piping. A side affect of hydrogen injection is increased radioactivity of the main steam. The Technical Specifications allow for adjustment of the MSLRM setpoints to account for the

increase in main steam radiation levels. Technical Specifications allow adjusting the setpoints within 24 hours prior to placing the Hydrogen Injection System in service and within 24 hours after isolating the system. The new setpoints calculated on 9/21/90, which took into account the increased radiation levels resulting from the affects of hydrogen injection, were input into the MSLRMs at approximately 0755 CDT, on the same day. By 1529 CDT, the Hydrogen Injection System was placed into service. This evolution occurred within the 24 hour time period required by the Technical Specifications.

When hydrogen injection was started, the normal main steam line background radiation levels did not increase to the expected levels. Chemistry personnel realized that with these existing radiation levels, the MSLRM setpoints were not within the required limits. Consequently, they planned to monitor the readings and adjust the setpoints as required when the radiation levels stabilized at the expected levels. They believed that this action was not inconsistent with the Technical Specifications and, thus, did not notify the Shift Supervisor of the out-of-spec setpoints, as required by procedure.

The MSLRM readings were monitored over the next several days and were observed not to increase to the expected values. Chemistry personnel understood that plans were being made to adjust the hydrogen injection flowrate on 9/24/90 in order to obtain the desired level of protection from IGSCC. Thus, the adjustments to the setpoints were further delayed.

On 9/24/90, the Chemistry technician who calculated the MSLRM setpoints on 9/21/90 returned to work following his regular off-days. On the morning of 9/24/90, he performed the daily comparison check of the MSLRM readings and setpoints per procedure 62CI-CAL-005-0S. This comparison is performed daily to determine if the setpoints are within the "3 times background" limit. The technician noted that the setpoints listed on the comparison check data sheet were lower than those he calculated on 9/21/90. (The setpoints on the data sheet had not been updated when the new setpoints were input into the MSLRMs on 9/21/90. This activity is routinely done but is not required by procedure.) He then checked the actual setpoints on the monitor and verified that they were the same setpoints he had calculated. He then performed a comparison check of the MSLRM readings and the actual setpoints of the monitors and found that the setpoints were not less than or equal to 3 times the normal main steam line background radiation level. (Daily comparison checks performed between 9/21/90 and 9/24/90 did not identify this since those checks were performed with out-of-date setpoints.) Consequently, he notified his foreman of the situation as required by procedure 62CI-CAL-005-0S. The procedure also requires that the technician notify the Shift Supervisor immediately. However, the technician failed to do so, believing that the lab foreman would do this for him. His foreman directed him to recalculate the setpoints and initiate a Maintenance Work Order (MWO) to have the setpoints changed, but he did not notify the Shift Supervisor. The setpoints were recalculated and an MWO was written as directed. (Without the technicians' knowledge, the MWO was held by Chemistry supervisors in anticipation of the previously mentioned hydrogen flowrate change planned for 9/24/90.)

On 9/25/90, while performing the daily comparison check, the same technician noted that the setpoints had not been changed in the monitors. He also noted that the existing setpoints were still not less than or equal to 3 times the normal main steam line background radiation levels. He then promptly notified the Unit 1 Shift Supervisor. The Unit 1 Shift Supervisor declared all four MSLRMs inoperable. As required by the Technical Specifications, Limiting Condition for Operation (LCO) 1-90-507 was initiated requiring an orderly load reduction and closing of the Main Steam Isolation Valves (MSIVs, EIIS Code JM) within 8 hours. Also, at approximately 1036 CDT, the NRC was notified of the event pursuant to 10 CFR 50.72. The trip setpoints were corrected and, subsequently, at approximately 1235 CDT, 2 hours and 40 minutes into LCO 1-90-507, the LCO was terminated.

## CAUSE OF THE EVENT

One cause of the event is an ambiguous Technical Specifications requirement. Specifically, footnote (c) of Table 3.1-1, footnote (e) of Table 3.2-1, and footnote (e) of Table 3.2-8 specify a time limit for changing the MSLRM setpoints to within less than or equal to 3 times the expected normal background radiation levels prior to placing hydrogen injection in service. However, they do not clearly specify a time limit for making adjustments to the setpoints if the actual radiation levels do not reach the levels which would result in the setpoints being within the specification limit. Consequently, Chemistry personnel had the setpoints adjusted within 24 hours of placing the Hydrogen Injection System into service as required by the Technical Specifications. However, when the normal main steam line radiation levels did not reach their expected levels, Chemistry personnel did not believe that they were under time restraints to make adjustments to the setpoints. They decided to monitor the readings and make the appropriate adjustments to the setpoints when the readings stabilized at the expected values.

Another cause of the event is a less than adequate procedure. Specifically, procedure 62CI-CAL-005-0S was less than adequate in that it did not require updating the daily check data sheet with new setpoints each time they were input into the MSLRMs. This activity was routinely performed by the technicians; however, the procedural controls in place were not adequate to ensure that this was done each time the setpoints were changed. As a consequence, the setpoints that were calculated and input into the MSLRMs on 9/21/90 were not recorded on the daily comparison check data sheet. The checks performed between 9/21/90 and 9/24/90 were then performed with out-of-date setpoints. These out-of-date setpoints were within the 3 times the normal background radiation limit. Thus, the setpoint problem was not identified and communicated to the Unit 1 Shift Supervisor during these checks.

TEXT

A contributing factor to the event is a malfunctioning hydrogen flowrate monitor/element. Specifically, earlier during the week of 9/17/90, problems had been experienced with the flow monitor/element. A malfunction of the component resulted in an actual system flowrate lower than that programmed into and displayed by the monitor. The monitor/element was replaced and the system restarted on 9/21/90. When the system was restarted the problem recurred. The indicated system flowrate was 16 scfm; however, the actual flowrate was approximately 12 scfm based upon subsequent flowrate testing of the monitor.

The vendor (General Electric) and plant personnel are currently evaluating the overall performance of the hydrogen injection system to ensure the system performance is consistent with the intended design function and to determine if additional enhancements are warranted. As part of this effort, an analysis of the flowrate monitor's performance was performed. One possible cause of the malfunction was improper installation of the instrument cable between the monitor and element. The cable was incorrectly routed through two splicing terminal boxes resulting in a higher resistance which affected calibration of the instrument. Another possible cause of the flow mismatch was a faulty linearization circuit board.

The instrument cable has been reinstalled correctly and the flow monitor/element has been replaced. Performance will be monitored and additional actions taken as warranted to ensure reliable operation.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required pursuant to 10 CFR 50.73(a)(2)(i)(B) because a condition existed which was prohibited by the Technical Specifications. Specifically, the setpoints for the Unit 1 MSLRMs were not less than or equal to 3 times the normal background radiation levels of the main steam lines at rated thermal power as required by Unit 1 Technical Specifications Table 3.1-1, item 9; Table 3.2-1, item 4; and Table 3.2-8, item 5. This condition existed from approximately 0755 CDT, on 9/21/90 to approximately 1235 CDT, on 9/25/90.

The Main Steam Line Radiation Monitoring System provides a reactor scram and an isolation of primary containment, the mechanical vacuum pump, and the gland seal exhauster upon detection of high activity levels in the main steam lines indicative of gross fuel failures. The Technical Specifications allow adjustments to the trip setpoints for the MSLRMs at reactor power levels greater than 20% rated power. The adjustments are needed to accommodate the expected increase in main steam activity levels as a result of hydrogen injection into the primary system. The increase in activity is primarily due to increased nitrogen-16 (N-16) levels in the steam phase.

The only transient or postulated accident which takes credit for the main steam line high radiation scram and isolation signals is the control rod drop accident (CRDA). For a CRDA, the primary function of the MSLRM is to limit the transport of activity released from failed fuel to the turbine and condenser by initiating closure of the main steam isolation valves and thus isolating the reactor vessel. Main steam line high radiation will also produce a reactor scram signal [reactor scram in the event of a CRDA, however, would be initiated by signals from the Neutron Monitoring System (EIIS Code IG)] and will isolate the mechanical vacuum pump and the gland seal steam exhaust system to reduce leakage of fission products to the atmosphere from the turbine and condenser.

Generic analyses of the consequences of a CRDA have shown that fuel failures are not expected to result from a CRDA occurring at greater than 10% power. As power increases, the severity of the CRDA rapidly decreases due to the effects of increased void formation and increased Doppler reactivity feedback.

In the event, the reactor was at approximately 100 percent of rated thermal power for the period of time in which the setpoints were nonconservative. Per procedure 62CI-CAL-005-0S, the setpoints are required to be reset to pre-hydrogen injection values within 24 hours of reducing reactor power to less than or equal to 20%. Consequently, the setpoints would have been corrected prior to entering the power range in which the MSLRM trip is required.

It should be noted that the NRC is in the process of approving a generic safety evaluation to permit removal of the main steam isolation valve closure function and the scram function of the MSLRMs. The generic safety evaluation is in response to an initiative by the Boiling Water Reactor Owners Group. A General Electric Report, NEDO-31400, was prepared to demonstrate that the vessel isolation function and scram function of the MSLRMs are not required to ensure compliance with the radiation dose guidelines of 10 CFR Part 100.

Based on the above information, it is concluded that this event had no adverse impact on nuclear safety. This safety assessment applies to all power levels.

## CORRECTIVE ACTIONS

The setpoints for the MSLRMs were adjusted to meet the Technical Specifications requirements and the associated LCO was terminated by 1255 CDT on 9/25/90.

Procedure 62CI-CAL-005-0S has been temporarily revised to require the Chemistry technician to use the setpoints displayed on the monitor in performing the daily comparison checks. This revision also added emphasis to the requirement to notify the shift supervisor any time MSLRM setpoints indicate greater than 3 times normal full power background radiation levels. The procedure also requires an investigation of significant (40%) discrepancies between expected and actual MSLRM readings.

Procedures will be permanently revised as necessary to require that the setpoint/reading comparison be performed using the setpoints programmed into the monitors. The appropriate revisions will be made effective by 12/10/90.

A clarification to the Unit 1 Technical Specifications in accordance with procedure 40AC-REG-003-0S, "Licensing Document Revision and Clarification Program," has been issued. The clarification specifies that MSLRM setpoints be adjusted to compensate for changes in hydrogen injection flowrates taking into account the 24 hour grace period allowed by Technical Specifications.

The Hydrogen Injection System flow monitor/element instrument cable has been reinstalled correctly. A new cable has been routed directly from the monitor to the element and the flow monitor/element replaced. No intermediate splice connections were used.

The appropriate personnel have been counseled as to the requirement for strict procedural compliance and the importance of timely dissemination of information regarding plant operating conditions.

ADDITIONAL INFORMATION

No systems other than the MSLRM System were affected by this event.

No previous similar events in which a Technical Specification operational setpoint was exceeded as a result of malfunctioning equipment and a less than adequate procedure have occurred in the previous two years.

FAILED COMPONENT IDENTIFICATION:

| | |
|---|---|
| MPL (Plant Index Identifier): | 1P73-FM604, FE104 |
| Manufacturer: | Thermal Instruments |
| Model Number: | 600DL |
| Type: | Thermal/Solid State Flow Monitor and Element |
| EIIS Code: | PMC |