UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-321/94-29 and 50-366/94-29

Licensee: Georgia Power Company
P. O. Box 1295
Birmingham, AL 35201

Docket Nos.: 50-321 and 50-366 License Nos.: DPR-57 and NPF-5

Facility Name: Edwin I. Hatch Nuclear Plant Units 1 and 2

Inspection Conducted: December 12 - 16, 1994

Inspector: Paul J. Fillion 1/3/95
P. Fillion Date Signed

Accompanying Personnel: C. Doutt, NRR

NRC Contractor Inspector: J. Hansen, Idaho National Engineering Laboratory

Approved by: Charles A Casto for 1/5/95
M. Shymlock, Chief Date Signed
Plant Systems Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of maintenance of instrumentation and control systems. The inspectors verified licensee actions implemented pursuant to NRC Bulletin 90-01, Supplement 1, Loss of Fill-Oil in Transmitters manufactured by Rosemount. Temporary Instruction 2515/122, Evaluation of Rosemount Pressure Transmitter Performance and Licensee Enhanced Surveillance Programs, provided guidance for conducting the inspection. In addition, walkdown inspections were conducted of several plant areas.

Results:

In the areas inspected, violations or deviations were not identified.

The inspectors verified that the licensee had resolved the safety concern expressed in Bulletin 90-01, Supplement 1. Their approach was to replace transmitter models listed in the bulletin as being prone to fill-oil leakage

Enclosure

with more reliable models. Also, the licensee's records indicated that there had not been any failures due to loss of fill-oil in models that continue in service.

During the walkdown inspections, the plant was found to be clean and, no equipment deficiencies were identified. The only exception to this was that oil leaks were seen at the diesel generators which represented a housekeeping problem (refer to Section 3. for discussion.)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

G. Chambers, Engineer, Southern Company Services
*P. Fornel, Maintenance Manager
*M. Googe, Manager, Outages and Planning
J. Graham, Engineer, Southern Company Services
*G. King, Specialist, Nuclear Safety and Compliance
*L. Sumner, General Manager
*S. Tipps, Manager, Nuclear Safety and Compliance

Other licensee employees contacted during this inspection included engineers and technicians.

NRC Employees

*B. Holbrook, Senior Resident Inspector
*M. Shymlock, Chief, Plant Systems Section Region II

*Indicates attended exit meeting.

2. Evaluation of Rosemount Pressure Transmitter Performance and Licensee Enhanced Surveillance Programs (TI 2515/122)

On December 22, 1992, the NRC issued Bulletin 90-01, Supplement 1, Loss of Fill-Oil in Transmitters Manufactured by Rosemount, to inform licensees of actions taken by the NRC staff and the industry in evaluating loss of fill-oil in Rosemount transmitters and to request licensees to take actions to resolve the issue. Licensees were requested to take certain specified actions with regard to Model 1153, Series B and D, and Model 1154 transmitters manufactured before July 11, 1989. Specified actions varied depending on the factors of system pressure, the system in which the transmitter is installed and the time in service at a particular pressure (the psi-month criterion). The purpose of the requested actions was to ensure that installed Rosemount transmitters meet current design criteria as highly reliable components for which failures can be readily detected. Model 1151, 1152, and 1153A transmitters were excluded from actions requested in the supplement due primarily to few confirmed oil loss failures and differences in the oil sensor design, as compared to the "problem" models. Similarly, Model 1153, Series B and D, and Model 1154 transmitters manufactured after July 11, 1989, were also excluded. Even though certain models were excluded from the specific requested actions of the bulletin, the NRC requested licensees to monitor all Rosemount pressure transmitters installed in the plant in light of the potential oil-loss problem.

The licensee responded to the bulletin on February 17, 1993, and provided additional information on July 25, 1994. The NRC evaluated those submittals for completeness and technical adequacy, and issued a Safety Evaluation approving the licensee's program to resolve the issue in October 1994. In general, the licensee's approach to resolving the

issue was replacement of transmitters as opposed to "enhanced surveillance." The objectives of this inspection were to verify implementation of the licensee's program and to evaluate performance of any Rosemount pressure transmitters installed in the plant.

The licensee established a list of all the Rosemount pressure transmitters covered by Bulletin 90-01, Supplement 1. The list included the plant tag number, the Rosemount model and serial numbers, and the plant parameter being monitored. This information was not contained in any previously existing list. The Rosemount pressure transmitter list was developed as follows. The instrument data sheets which had been developed by Bechtel Corp. and General Electric Co. represented the complete list of instruments installed in systems covered by the bulletin. The lists were controlled documents that were maintained current. All the pressure transmitters in these systems were inspected in the field to determine where the Rosemount transmitters were installed and to record the model and serial numbers. Records show that the field inspections were completed on April 17, 1990 (SCS File No. REA HT-90652EQ.02.02). This information was also compared to the Equipment Qualification list and the NPRDS data base. All available information was cross-checked for discrepancies.

Any transmitter that would have required enhanced surveillance pursuant to Bulletin 90-01, Supplement 1, was expeditiously replaced with a transmitter manufactured after July 11, 1989, (500000 series) or was retrofitted with a sensor cell manufactured after July 11, 1989 ("A" suffix). Therefore, enhanced surveillance of transmitters was not required at the Hatch plant The inspectors verified by review of plant change notices and other re ords that the changeouts had been implemented. For those transmitters that remained in service based on the psi-month criterion, the inspectors reviewed a sample of surveillance data to verify that these transmitters have performed well.

2.1 Disposition of Stored Transmitters and Purchase Order Controls

As stated above, the licensee developed a list of Rosemount transmitters installed in the plant. Based on the information in this list and the bulletin required actions, a number of transmitters were replaced. To ensure that future replacements made during normal maintenance activities would not invalidate this study, additional controls as described below were implemented.

The licensee identified all Rosemount Model 1153 Series B and D, and Model 1154 transmitters manufactured before July 11, 1989, in spare parts stock. For each of these, a caution letter restricting use of the transmitter to limited applications was affixed to the individual storage box. Six of these Model 1154 transmitters were also identified as Quality Control hold items. The NRC inspector verified this facet of the program by examining each of these transmitters in the warehouse. In addition, the NRC inspector examined a random sample of 1153B/D and 1154 transmitter stock to verify that they had 500000 series or "A" suffix serial numbers. Also, the licensee stated they plan to provide

note in the comment field of the warehouse inventory system (Nucleis) to further identify the transmitters in warehouse stock having restricted application.

The licensee also planned to use the capability of their computer based purchasing system to automatically generate a statement on purchase orders for pressure transmitters that identifies suspect transmitters by serial and model number. This statement should help prevent the purchasing of suspect transmitters and, if one should be inadvertently shipped to the site, it could be detected during receipt inspection. The inspectors concluded that sufficient administrative controls were in place to maintain the validity of the original Rosemount transmitter list thus preventing a "problem" transmitter from inadvertently being installed in the plant.

2.2 Rosemount Models 1151, 1152, and 1153A

Models 1151, 1152, and 1153A Rosemount transmitters were excluded from the specific requested actions in the bulletin, but the inspectors reviewed the performance of these models to ascertain whether any exhibited oil loss symptoms.

Review of licensee records identified 21 Model 1151s, 0 Model 1152s and 2 Model 1153As installed in safety-related applications.

The inspectors reviewed calibration data for the three most recent calibrations on four, medium pressure application, Model 1151 transmitters. The purpose of the review was to determine if any of the out-of-tolerance as-found calibration data indicated a loss of fill-oil. The data reviewed was obtained from completed Procedure 57CP-CAL-069-1S and 2S instrument calibration records for the following transmitters:

1C32-N003A Steam Flow
2C32-N003B Steam Flow
2C32-N003C Steam Flow
2C32-N003A Steam Flow

Results of the calibration data review verified that no fill-oil loss symptoms were indicated. All out-of-tolerance data was considered to be normal instrument drift. In all cases the transmitters were easily adjusted within acceptable limits.

2.3 Rosemount Models 1153, Series B and D, and 1154 Manufactured after July 11, 1989

Models 1153, Series B and D, and 1154 Rosemount transmitters manufactured after July 11, 1989, were excluded from the specific requested actions in the bulletin, but the inspectors reviewed the performance of these models to ascertain whether any exhibited oil los symptoms.

Review of licensee records identified the following numbers of transmitters installed in safety-related systems:

Unit	Model	Number installed
1	1153	14
1	1154	14
2	1153	12
2	1154	6

The inspectors reviewed calibration data on six Model 1153s installed in medium pressure safety-related systems to determine what calibration failures have been experienced on these transmitters since installation, and to determine if any of the out-of-tolerance as-found calibration data indicated a loss of fill-oil. The data reviewed was obtained from completed Procedure 57SV-CAL-003-1S and 2S instrument calibration records for the following transmitters:

1B21-N078B Reactor High Pressure Scram
2B21-N078A Reactor High Pressure Scram
1B21-N122B Low-Low Set SRV Control Reset Pressure
1B21-N120A Low-Low Set SRV Control Set Pressure
2B21-N122A Low-Low Set Control Reset Pressure
2B21-N122B Low-Low Set Control Reset Pressure

Results of the calibration data review verified that no fill-oil loss symptoms were indicated for any of these six medium pressure transmitters since installation. All out-of-tolerance data was considered to be normal instrument drift and in all cases the transmitters were easily adjusted within acceptable values. Each of these was a Model 1153B manufactured or retrofitted after July 11, 1989.

2.4 Failure Analysis

The inspector reviewed the licensee's treatment of failed transmitters to ascertain whether failures due to oil loss were recognized and recorded. The licensee stated that any transmitter suspected of oil loss was returned to Rosemount for confirmation of the failure mode. Records indicated that five such transmitters were returned to Rosemount (four in 1988 and one in 1991). The failure mode for these five transmitters was confirmed to be loss of fill-oil. This was verified by the inspector by referring to Rosemount letters dated January 31, 1991, July 22, 1988, November 9 and 11, 1988. During reviews of various records such as NPRDS, Equipment Qualification documents, and calibration data the inspectors did not identify any additional cases of failed transmitters. The inspector requested a summary of Maintenance Work Orders covering all Rosemount transmitters. Review of this summary

did not identify any failures beyond the five mentioned above. As far as could be determined, the licensee has accurately recorded all cases of failure due to loss of fill-oil.

2.5 Current Calibration Procedures

Even though the licensee was not required to perform an "enhanced surveillance" program, the inspectors assessed the licensee's capability of detecting loss of fill-oil in Rosemount transmitters that were installed (i.e. those excluded from Bulletin 90-01, Supplement 1).

The licensee's response to Bulletin 90-01, Supplement 1, committed to revise calibration procedures to include the following guidance to help identify loss of fill-oil in Rosemount transmitters:

* Confirmation that transmitter performance does not exhibit a sluggish response

* Confirmation that the as-found data do not reflect a zero or span shift

* Confirmation that the as-found data do not indicate an inability to operate over the entire calibration range.

The inspectors verified that the licensee has revised the appropriate procedures to include the above guidance. Guidance was provided in the special requirements section and procedure steps were included. Both the loop and instrument calibration procedures contained the above guidance. In general, if a loop calibration gave acceptable results, the instrument calibration was not performed.

The inspectors made the following comment on the loop calibrations. They were not particularly effective in detecting sluggish response because the input and output were entered/read at different locations and the procedure did not specify use of a voltmeter at the input location.

The inspectors made the following comments on both the loop and instrument calibrations. The procedures did not call for checking over the full span capability of the instrument, which would be more predictive than checking over the required calibrated span. The acceptance criterion as applied to zero or span shift could be enhanced to detect smaller percentage oil loss, especially since trending of results was not part of the program.

The licensee agreed that the comments were valid, and agreed to consider incorporating them into the procedures even though there was no actual requirement to do so.

The inspectors interviewed Instrument and Control technicians and their supervisors to determine whether they were aware of the symptoms of oil loss in Rosemount transmitters. The persons interviewed were aware of the oil loss concern and what the symptoms were in terms of loop and instrument calibrations.

The inspectors concluded that the licensee had met their commitment to revise calibration procedures to help detect oil loss in transmitters should it occur in those outside the scope of Bulletin 90-01, Supplement 1. Three comments in this regard were made by the inspectors, and the licensee will consider further enhancements.

3. Walkdown Inspections

The inspector performed walkdown type inspections of the diesel generator building (including engine rooms, battery rooms and switchgear rooms), the 1A, 1B, 1C and 2B batteries and other plant areas. The inspector looked for the attributes of cleanliness and equipment deficiencies such as leaks, broken devices, excessive noise and temperature, battery cell plate discoloration etc. In general, the plant was maintained in a clean condition and equipment deficiencies were not identified. The inspector observed oil leaks at the diesel generators as follows:

* At the 1C diesel generator, oil was leaking from the lube oil heater (1R43-B002C) at a point where the discharge pipe connects. The condition had been identified by the licensee as evidenced by a deficiency tag and Maintenance Work Order (MWO) No. 19404871 which scheduled work to correct the leak for the next refueling outage. The leak was quite slow and a catch pan had been put in place. The inspector observed that the catch pan had overflowed and oil had collected on the platform and floor below.

  NRC Inspection Report 94-27 describes a maintenance problem where the lube oil pump motor was reconnected after maintenance to rotate in the reverse direction, resulting in failure to circulate oil and overheating of the heater. The heater was scheduled for replacement pending receipt of the new heater, and the leak would be corrected at that time as well. The leak was probably caused by insufficient tightening of the threaded pipe connection and failure to apply sealant to the threads during work performed at the last outage.

* At the 1B diesel generator, oil was leaking from the engine end-cover gasket. The leak was quite slow, but about 2 pints of oil had collected on the floor. Need for a Maintenance Work Order will be re-evaluated at the next outage.

* At the 2C diesel generator, oil was leaking from the exhaust manifold gasket at cylinder No. 1 and 2. MWO 29402388 was initiated on July 26, 1994, to correct the problem.

When the leaks were evaluated by the inspector he agreed with the licensee's determination that they did not represent an impact on the operability of the diesel generators. The inspector's comment was that, the licensee should consider more frequent cleanup and containment of leakage until permanent corrective actions are taken.

4. Exit Meeting (30703)

The inspection scope and results were summarized on December 16, 1994, with those persons indicated in Section 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.