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HL-1036  
000396

June 29, 1990

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

PLANT HATCH - UNITS 1, 2  
NRC DOCKETS 50-321, 50-366  
OPERATING LICENSES DPR-57, NPF-5  
NRC BULLETIN 90-01, LOSS OF FILL-OIL  
IN TRANSMITTERS MANUFACTURED BY ROSEMOUNT

Gentlemen:

NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," was issued March 9, 1990 to all holders of operating licenses or construction permits. The Bulletin requests that licensees take actions to ensure Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters manufactured by Rosemount that may be leaking fill-oil are in compliance with 10 CFR 50, Appendix A, General Design Criterion 21, and 10 CFR 50.55a(h).

Licensees are required to provide a response within 120 days after receipt of the bulletin that:

- a. Confirms Items 1 through 5 of the requested actions have been completed.
- b. Identifies pertinent data for Rosemount Models 1153 Series B, 1153 Series D, and 1154 transmitters believed to have exhibited symptoms indicative of loss of fill-oil or confirmed to have experienced a loss of fill-oil.
- c. Identifies the systems the Models 1153 Series B, 1153 Series D, and 1154 transmitters from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil are utilized. A schedule for replacement of these transmitters in use in the reactor protection or engineered safety features actuation systems is required.

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In response to NRC Bulletin 90-01, Georgia Power Company (GPC) implemented actions to meet the intent of Items 1 through 5. The attached enclosure provides a discussion of each of the requested actions, along with GPC's response. The enhanced surveillance program was implemented as described in the enclosure. The information and schedule for replacement requested by reporting requirements items 1.(b) and 1.(c) are also provided in the enclosure.

Model 1153 Series B, this Model 1153 Series D and Model 1154 transmitters that, subsequent to this response, exhibit symptom of loss of fill-oil or are confirmed to have experienced a loss of fill-oil will be reviewed for reportability under existing NRC regulations. If determined not to be reportable, GPC will document and maintain, in accordance with existing plant procedures, information consistent with that requested in Item 1.(b) for each transmitter identified.

Mr. W. G. Hairston, III states he is Senior Vice President of Georgia Power Company and is authorized to execute this oath on behalf of Georgia Power Company, and to the best of his knowledge and belief, the facts set forth in this letter are true.

GEORGIA POWER COMPANY

BY: W. G. Hairston, III  
W. G. Hairston, III

Sworn to and subscribed before me this 29<sup>th</sup> day of June 1990.

Sherry Ann Mitchell  
Notary Public

MY COMMISSION EXPIRES DEC. 15, 1992

JKB/eb

Enclosures:

1. Requested Actions.
2. Transmitters Identified as Having a High Failure Fraction.
3. Transmitters Confirmed or Believed to Have Exhibited Loss of Fill-Oil.

cc: (See next page.)

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c: Georgia Power Company

Mr. H. C. Nix, General Manager - Nuclear Plant

Mr. J. D. Heidt, Manager Engineering and Licensing - Hatch

GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.

Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II

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ENCLOSURE 1

PLANT HATCH - UNITS 1, 2  
NRC DOCKETS 50-321, 50-366  
OPERATING LICENSES DPR-57, NPF-5  
NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

1. Bulletin Item 1, NRC Requested Action:

Identify Model 1153 Series B, 1153 Series D, Model 1154 pressure or differential pressure transmitters, excluding Model 1153 Series B, 1153 Series D, and Model 1154 transmitters manufactured by Rosemount subsequent to July 11, 1989, that are currently utilized in either safety-related systems or systems installed in accordance with 10 CFR 50.62 (the ATWS rule).

GPC Response:

GPC has identified all Model 1153 Series B, 1153 Series D, and 1154 pressure or differential pressure transmitters manufactured by Rosemount that are currently used in either safety-related systems or systems installed in accordance with 10 CFR 50.62. Fifty-seven of the subject transmitters are currently being used on Unit 1, and 54 are currently being used on Unit 2.

2. Bulletin Item 2, NRC Requested Action:

Determine whether any transmitters identified in Item 1 are from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil. Addressees are requested not to utilize transmitters from these suspect lots in the reactor protection or engineered safety features actuation systems; therefore, addressees are requested to develop and implement a program to replace, at the earliest appropriate opportunity, transmitters from these suspect lots in use in the reactor protection or engineered safety features actuation systems.

ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

GPC Response:

GPC identified 13 transmitters within the scope of Item 1 that are from the manufacturing lots identified by Rosemount as having a high failure fraction due to loss of fill-oil. The 13 transmitters (11 on Unit 1 and 2 on Unit 2) were also determined to be used in the reactor protection or engineered safety features actuation systems. Ten (10) transmitters on Unit 1 were removed from service and either returned to Rosemount for sensing module replacement or refurbished on site using approved vendor instructions. The remaining transmitter on Unit 1 was replaced. These transmitters were reinstalled prior to startup from the Spring 1990 refueling outage.

One of the two transmitters on Unit 2 was replaced on April 20, 1990. The remaining transmitter, 2E32-N051F, is currently in service on the Main Steam Isolation Valve Leakage Control system. Since no new sensing module or replacement was available, a basis for continued operation was developed for this transmitter, and it is scheduled to be replaced during the next Unit 2 refueling outage currently scheduled to begin on approximately April 5, 1991.

Enclosure 2 provides a list of the Models 1153 Series B, 1153 Series D, and 1154 transmitters from the manufacturing lots identified by Rosemount as of December 22, 1989 as having a high failure fraction due to loss of fill-oil. The MPL no., serial no., system description, and replacement status or schedule for replacement of each transmitter are provided.

3. Bulletin Item 3, NRC Requested Action:

Review plant records (for example, the three most recent calibration records) associated with the transmitters identified in Item 1 above to determine whether any of these transmitters may have already exhibited symptoms indicative of loss of fill-oil. Appropriate operability acceptance criteria should be developed and applied to transmitters identified as having exhibited symptoms indicative of loss of fill-oil from this plant record review. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity.



ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

GPC Response:

The review of plant records to determine whether any of the transmitters identified in Item 1 may have already exhibited symptoms indicative of loss of fill-oil has been completed. As a result of the review, no transmitters in use at the time GPC received NRCB 90-01 were determined to be exhibiting symptoms indicative of loss of fill-oil.

Prior to the issuance of NRCB 90-01, GPC developed and implemented corrective actions relative to the potential for Rosemount Models 1153 and 1154 transmitter failures due to loss of fill-oil. The loss of fill-oil malfunction was identified at Plant Hatch on two Rosemount Model 1153 transmitters on February 26, 1988, and reported in Licensee Event Report 50-321/1988-003. These two transmitters were returned to Rosemount for further evaluation. On August 22, 1988, and August 30, 1988, a Rosemount Model 1154 transmitter and a Model 1153 transmitter exhibiting symptoms of loss of fill-oil were identified and returned to Rosemount for further evaluation. Rosemount confirmed the four transmitters had experienced loss of fill-oil in the sensor modules. On March 19, 1990, a Rosemount 1153 transmitter exhibiting loss of fill-oil symptoms was identified and returned to Rosemount for further evaluation.

It should be noted that four of the five cases were detected by plant operations personnel performing normal channel checks and a post scram review. The operations investigations resulted in the issuance of calibration requests to instrument and controls personnel. Calibration results identified the transmitters as suspect of fill-oil loss which was later confirmed by Rosemount. The fifth case was identified during normal calibration.

Enclosure 3 provides the MPL number, manufacturer, model no., system in which the transmitter was utilized, approximate amount of time at pressure, corrective actions taken, and disposition of the five transmitters confirmed or believed to have experienced a loss of fill-oil.

ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

4. Bulletin Item 4, NRC Requested Action:

Develop and implement an enhanced surveillance program to monitor transmitters identified in Item 1 for symptoms of loss of fill-oil. This enhanced surveillance program should consider the following or equally effective actions:

- a) Ensuring appropriate licensee personnel are aware of the symptoms that a transmitter, both during operation and during calibration activities, may exhibit if it is experiencing a loss of fill-oil and the need for prompt identification of transmitters that may exhibit these symptoms;
- b) Enhanced transmitter monitoring to identify sustained transmitter drift;
- c) Review of transmitter performance following planned or unplanned plant transients or tests to identify sluggish transmitter response;
- d) Enhanced awareness of sluggish transmitter response to either increasing or decreasing test pressures during calibration activities;
- e) Development and implementation of a program to detect changes in process noise; and
- f) Development and application to transmitter identified as having exhibited symptoms indicative of loss of fill-oil of an appropriate operability acceptance criteria. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria should be addressed in accordance with the applicable technical specification. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the technical specifications should be replaced at the earliest appropriate opportunity.



ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

GPC Response:

In response to the identified loss of fill-oil failures, IN 89-42, Rosemount's 10 CFR 21 notification, and INPO Significant Event Notification Number 57, GPC implemented several actions prior to receiving NRCB 90-01 to ensure transmitters exhibiting symptoms of loss of fill-oil were promptly detected. These actions included the following:

- o Performing inservice and calibration histories on the 111 Model 1153 and 1154 transmitters.
- o Initiating discussions with Rosemount technical contacts regarding methods to identify symptoms of loss of fill-oil.
- o Revising calibration intervals such that calibration is performed at intervals not to exceed once per refueling cycle on transmitters with less than 48 months of service.
- o Informing Instrument and Controls technicians of loss of fill-oil symptoms and the need for increased awareness during calibration.
- o Training appropriate operations personnel of the failure mode, associated symptoms, and the need for increased awareness.
- o Initiating a monitoring program to detect output shifts. This program was initiated on February 10, 1989, but was discontinued on June 7, 1989, since the small magnitude in output shifts associated with loss of fill-oil were difficult to interpret due to normal changes in plant parameters.

Subsequent to the receipt of NRCB 90-01, GPC enhanced the surveillance program to include additional elements to ensure the prompt detection of transmitters exhibiting loss of fill-oil. The program, which is based as much as practical on the diagnostic measures provided in Rosemount Technical Bulletin No. 4, consists of the following elements:

- A. Additional "tool box" discussions for instrument and controls technicians. These actions were implemented to provide assurance that appropriate personnel are aware of the symptoms a transmitter may exhibit if experiencing a loss of fill-oil during operation and calibration activities.



ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

- B. Departmental instructions DI-REG-20-0690N and DI-OPS-41-0690N have been implemented to provide enhanced transmitter monitoring to identify sustained transmitter drift. Beginning July 2, 1990, readings will be recorded for safety-related Models 1151, 1153 and 1154 transmitters with normal operating pressures greater than or equal to 250 psi. The readings are to be taken, initially, on monthly intervals and trended. The monitoring frequency may be adjusted in the future based on a review of the results. Monthly trending is not established for transmitters with normal operating pressures less than 250 psi. Exclusion is justified since, according to Rosemount, the time period involved in the fill-oil loss failure for these transmitters is so extended as to make this type of monitoring ineffective. Normally scheduled calibration of these transmitters combined with increased operator awareness is sufficient to identify transmitters exhibiting symptoms of fill-oil loss prior to transmitter failure.

The comparison checks and/or trend will serve as the initial acceptance criteria to determine the need for further assessment. Calibration of the transmitter and the associated calibration acceptance criteria will provide determination of the transmitter's capability to perform its safety function. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the acceptance criteria will be addressed in accordance with the applicable unit's Technical Specifications. Transmitters identified as having exhibited symptoms indicative of loss of fill-oil that do not conform to the operability acceptance criteria and are not addressed in the Technical Specifications will be replaced at the earliest practical opportunity.

- C. Operations personnel currently perform reviews of plant equipment performance following planned or unplanned plant transients. Shift technical advisors (STAs) have previously identified Rosemount transmitters exhibiting symptoms of fill-oil loss using this process.
- D. Fifteen calibration and surveillance procedures have been revised to include the following:
- o Confirmation that transmitter performance does not exhibit a sluggish response (i.e., output does not lag input changes.)

ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

- o Confirmation that as-found data do not reflect a zero or span shift.
  - o Confirmation that as-found data do not indicate an inability to operate over the entire calibration range.
  - E. Monitoring to detect changes in process noise is not included in GPC's enhanced surveillance program. This type of monitoring is difficult to interpret, dependent on application, and is suitable only for transmitters that operate near their setpoints. Also, amplitude versus frequency data may not detect a transmitter exhibiting symptoms of loss of fill-oil until the unit has lost the capability to respond. GPC has determined that exclusion of process noise monitoring is justified.
5. Bulletin Item 5, NRC Requested Action:

Document and maintain in accordance with existing plant procedures a basis for continued plant operation covering the time period from the present until such time that the Model 1153 Series B, 1153 Series D, and Model 1154 transmitters from the manufacturing lots that have been identified by Rosemount as having a high failure fraction due to loss of fill-oil in use in the reactor protection or engineered safety features actuation systems can be replaced. In addition, while performing the actions requested above, addressees may identify transmitters exhibiting symptoms indicative of loss of fill-oil that do not conform to the established operability acceptance criteria and are not addressed in the technical specifications. As these transmitters are identified, this basis for continued plant operation should be updated to address these transmitters covering the time period from the time these transmitters are identified until such time that these transmitters can be replaced. When developing and updating this basis for continued plant operation, addressees may wish to consider transmitter diversity and redundancy, diverse trip functions (a separate trip function that may also provide a corresponding trip signal), special system and/or component tests, or (if necessary) immediate replacement of certain suspect transmitters.



ENCLOSURE 1 (Continued)

NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

REQUESTED ACTIONS

GPC Response:

As stated in the response to Bulletin Item 2, GPC identified 11 transmitters on Unit 1 and 2 transmitters on Unit 2 that were from the manufacturing lots identified by Rosemount as having a high failure fraction due to loss of fill-oil and were installed in either the reactor protection or engineered safety features actuation systems. Since Unit 1 was in a refueling outage upon receipt of NRCB 90-01 and all 11 transmitters were replaced or refurbished prior to restart, the development of a basis for continued operation was not applicable. A basis for continued operation was developed for both transmitters on Unit 2 (i.e., 2B21-N081B and 2E32-N051F). Transmitter 2B21-N081B was subsequently replaced on April 20, 1990. Transmitter 2E32-N051F is scheduled to be replaced during the Spring 1991 Unit 2 outage. The documented basis for continued operation is available for review at Plant Hatch.



# ENCLOSURE 2

PLANT HATCH - UNITS 1, 2  
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NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

TRANSMITTERS IDENTIFIED AS  
HAVING A HIGH FAILURE FRACTION

<u>MPL</u>	<u>Serial No.</u>	<u>Description</u>	<u>Replacement Schedule</u>
1B21-N090E	410643	Reactor Vessel Low Pressure	Complete
1B21-N093A	415038	Reactor Water Level 8, RCIC	Complete
1B21-N093B	414997	Reactor Water Level 8, HPCI	Complete
1C71-N050A	414610	Drywell High Pressure	Complete
1C71-N050B	414611	Drywell High Pressure	Complete
1C71-N050C	414612	Drywell High Pressure	Complete
1C71-N050D	414613	Drywell High Pressure	Complete
1E11-N094A	414614	Drywell High Pressure	Complete
1E11-N094B	414615	Drywell High Pressure	Complete
1E11-N094C	414616	Drywell High Pressure	Complete
1E11-N094D	414617	Drywell High Pressure	Complete
2P21-N081B	411214	Reactor Water Level 1, MSIV	Complete
2E32-N051F	411279	Main Steam Line Pressure	Unit 2 1991 Outage

# ENCLOSURE 3

PLANT HATCH - UNITS 1, 2  
NRC DOCKETS 50-321, 50-366  
OPERATING LICENSES DPR-57, NPF-5  
NRC BULLETIN 90-01, LOSS OF FILL-OIL IN  
TRANSMITTERS MANUFACTURED BY ROSEMOUNT

TRANSMITTERS CONFIRMED OR BELIEVED TO  
HAVE EXHIBITED LOSS OF FILL-OIL

<u>MPL</u>	<u>Manufacturer</u>	<u>Model No.</u>	<u>Applicable System</u>	<u>Operation Pressure (psig)</u>	<u>Approx. Time at Pressure (Months) (Note 3)</u>	<u>Corrective Action</u>	<u>Disposition</u>
1) 1B21-N090A	Rosemount	1153GB9RJ	Main Steam	1020	33.3	Replaced	Note 1
2) 2B21-N081B	Rosemount	1.54DP5RT	RPS	1020	9	Replaced	Note 1
3) 1B21-N120C	Rosemount	1153GB8PA	Main Steam	1020	29.2	Replaced	Note 1
4) 1B21-N122D	Rosemount	1153GB8PA	Main Steam	1020	29.2	Replaced	Note 1
5) 1B21-N122B	Rosemount	1153GB8PA	Main Steam	1020	49.5	Replaced	Note 2

## NOTES:

1. Transmitter returned to Rosemount and confirmed to have experienced loss of fill-oil.
2. Transmitter returned to Rosemount.
3. Time at pressure is equal to the number of reactor critical hours.