

Public Service  
Electric and Gas  
Company

**Thomas M. Crimmins, Jr.**

Public Service Electric and Gas Company P.O. Box 236, Hancocks Bridge, NJ 08038 609-339-4700

Vice President - Nuclear Engineering

**JUL 18 1990**

**NLR-N90149**

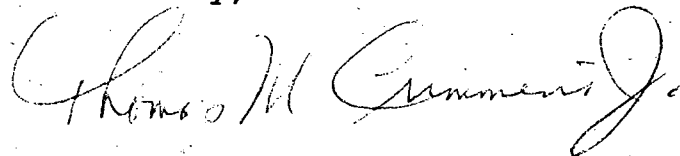
United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Gentlemen:

RESPONSE TO BULLETIN 90-01  
SALEM AND HOPE CREEK GENERATING STATIONS  
DOCKET NOS. 50-272, 50-311 AND 50-354

Public Service Electric and Gas Company (PSE&G) hereby forwards requested information in response to Bulletin 90-01 "Loss of Fill-Oil in Transmitters Manufactured by Rosemount." Enclosure 1 details the actions taken by PSE&G to address the subject bulletin, and Attachments 1 and 2 provide the requested data. If you have any questions regarding this response, please do not hesitate to call.

Sincerely,



Attachments

9007240013 900718  
PDR ADOCK 05000272  
Q PDC

IE39  
111

JUL 18 1990

C Mr. J. C. Stone  
Licensing Project Manager - Salem

Mr. C. Y. Shiraki  
Licensing Project Manager - Hope Creek

Mr. T. Johnson  
Senior Resident Inspector

Mr. T. Martin, Administrator  
Region I

Mr. Kent Tosch, Chief  
New Jersey Department of Environmental Protection  
Division of Environmental Quality  
Bureau of Nuclear Engineering  
CN 415  
Trenton, NJ 08625

ENCLOSURE

- I. Bulletin 90-01 requests that power reactor licensees provide/implement the following actions within 120 days of receipt:
  - A. CONFIRM THAT THE FOLLOWING ACTIONS HAVE BEEN COMPLETED:
    1. Identify Model 1153 Series B, 1153 Series D, and 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 10CFR50.62 (the ATWS rule).

RESPONSE

All Rosemount Model 1153 Series B, D and Model 1154 pressure or differential pressure transmitters installed at Salem and Hope Creek Generating Stations have been identified and documented in a computerized database maintained at each station. There are 266 of these transmitters in service at Hope Creek, 117 at Salem Unit 1, and 120 at Salem Unit 2.

2. 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.

RESPONSE

Prior to the issuance of Bulletin 90-01 there were 63 transmitters installed at Hope Creek, 2 at Salem Unit 2 and none at Salem Unit 1 from the manufacturing lots identified by Rosemount as having a high failure rate due to loss of fill-oil. One of the Salem 2 transmitters was replaced as scheduled in May 1990. Three of the Hope Creek transmitters were replaced in March 1990 to initiate the replacement program. One other transmitter at Hope Creek was later identified as showing unacceptable symptoms of oil loss and replaced. There remain 59 transmitters from the suspect lots at Hope Creek and one at Salem 2.

The breakdown of these transmitters is as follows:

Hope Creek

- Transmitters in control circuits for RPS, ESF, or ATWS systems:
    - 28 units in "Pressurized Service" - (transmitters which are normally or intermittently operated above atmospheric pressure)
    - 14 units in "Atmospheric Pressure Service" - (transmitters which are operated at or below atmospheric pressure except for a possibility of a brief exposure to 60 psi during a Design Basis Accident)
  - Transmitters associated with Reactor Protection, ESF or ATWS systems but with indication or alarm only functions:
    - 9 units in "Pressurized Service"
    - 3 units in "Atmospheric Pressure Service"
- Five (5) transmitters are not associated with Reactor Protection, ESF, or ATWS systems

A replacement program has been initiated at Hope Creek to replace all 37 transmitters associated with the Reactor, ESF, or ATWS systems in "pressurized service," including those with alarm or indication only function. This replacement program will be completed by the end of the third refueling outage which is scheduled to begin in January of 1991.

There are no plans to replace the 17 units in "Atmospheric Pressure Service." The manufacturer's investigation of this issue has determined that these units are at no significant risk of suffering from loss of fill-oil. The performance of these units in the enhanced surveillance program has been exemplary.

The five units not associated with RPS, ESF or ATWS will be monitored through the enhanced surveillance program and scheduled for replacement if inoperability occurs. One of these has been identified as exhibiting symptoms of potential oil loss (Attachment 1) and has been scheduled for replacement during the January 1991 refueling outage.

Salem 2

- Transmitter associated with ESF system but with indication or alarm only function
  - 1 unit in "Pressurized Service"

The single transmitter installed at Salem Unit 2 has an indication only function. It is currently scheduled for replacement by October 1991.

3. 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.

#### RESPONSE

A review of plant records is being conducted to determine whether any of the installed transmitters have exhibited symptoms of oil loss. The result of this review are documented in Engineering Evaluation A-O-VAR-CEE-0296, Rev. 1. All suspect lot transmitter reviews have been completed and of all transmitters identified in Item 1, 90% are complete for Hope Creek; 92% are complete for Salem 1 and 89% are complete for Salem 2. The remaining units' reviews will be completed by August 31, 1990. Appropriate operability criteria has been developed and utilized. Transmitters required to be operable and subsequently declared inoperable will be addressed in accordance with the applicable technical specification action statement. Inoperable non-technical specification transmitters will be addressed by updating the basis for continued operation, if appropriate, and scheduled for replacement.

4. Develop and implement an enhanced surveillance program to monitor transmitters 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 of 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 transmitters 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.

#### RESPONSE

The enhanced surveillance program at Salem and Hope Creek for Rosemount model 1153 and 1154 transmitters consists of the following:

Drift Analysis - Transmitter drift will continue to be trended in the same manner as performed for Engineering Evaluation A-O-VAR-CEE-0296, Rev. 1. Station procedures are presently being revised to ensure the flow of data to the program coordinator.

Sluggish Response Monitoring - All calibration procedures are being revised to include directions to check for sluggish response during normal calibrations. In addition, transmitters which are identified as potential oil leakers may be subjected to a full upper range limit calibration to confirm oil loss.

Process Noise Analysis - A program to record and analyze transmitter response to process noise was developed and implemented at Hope Creek as a result of the February 1989 10CFR Part 21 notification issued by Rosemount. This program covers transmitters in processes which provide sufficient noise to generate adequate data and which have not been in service a sufficient time to verify their fully reliable operation. The program is run quarterly as an

independent monitor of transmitter degradation. It also can be used as a verification method for transmitters which show signs of oil loss by the drift analysis method. A similar program is being initiated at Salem Generating Station. The program will continue for as long as it is judged to be of benefit.

5. 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 engineering 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.

#### RESPONSE

The basis for continued operation (JCO) has been completed and documented in Engineering Evaluation (A-O-VAR-CEE-0296, Rev. 1. This JCO will be updated/ revised to include new transmitter information as necessary.

- B. Identify the indicated manufacturer; the model number; the system the transmitter was utilized in; the approximate amount of time at pressure; the corrective actions taken; and the disposition (e.g., returned to vendor for analysis) of Rosemount Model 1153 Series B, Model 1153 Series D, and Model 1154 transmitters that are believed to have exhibited symptoms indicative of loss of fill-oil or have been confirmed to have experienced a loss of fill-oil. This should include Model 1153 Series B, Model 1153 Series D and Model 1154 transmitters manufactured after July 11, 1989.

RESPONSE

The list of transmitters at Salem and Hope Creek which have exhibited symptoms of oil loss is included as Attachment 1.

- C. Identify the system in which 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 are utilized and provide a schedule for replacement of these transmitters which are in use in the reactor protection or engineered safety features actuation systems.

RESPONSE

The list of transmitters installed at Hope Creek from the manufacturing lots identified by Rosemount as having high failure rates is included as Attachment 2. Suspect lot transmitters in "pressurized service" are scheduled for replacement during the next refueling outages - scheduled to begin in January 1991. "Atmospheric pressure service" transmitters will continue to be monitored through the enhanced surveillance program, there are no plans to replace these 17 units. The manufacturer's investigation of this issue has determined that these units are at no significant risk of suffering loss of fill-oil. These units do not exhibit any symptoms of pending failure.

Salem Unit 2 has one transmitter from the identified lot, 2PT-919. It monitors safety injection discharge pressure but has no control or trip function. It will be replaced prior to the end of the Fall 1991 refueling outage.

- II. Model 1153 Series B, Model 1153 Series D and Model 1154 transmitters that, subsequent to providing the response required by Item 1 above, exhibit symptoms of loss of fill-oil or are confirmed to have experienced a loss of fill-oil should be reviewed for reportability under existing NRC regulations. If determined not to be reportable, addressees are requested to document and maintain, in accordance with existing plant procedures, information consistent with that requested in Item I B) above for each transmitter identified.

RESPONSE

Rosemount transmitters that exhibit symptoms of loss of fill-oil or are confirmed to have experienced a loss of fill-oil will continue to be reviewed for reportability. PSE&G intends to maintain the existing data bases for Rosemount transmitters at Artificial Island.



## Attachment 1

TRANSMITTERS EXHIBITING SIGNS OF POTENTIAL OIL LOSS  
SINCE ISSUE OF BULLETIN 90-01

<u>Tag No.</u>	<u>Model</u>	<u>System</u>	<u>Static Press</u>	<u>Net Time at Press</u>	<u>Suspect List</u>	<u>Disposition</u>
<u>Hope Creek</u>						
1BBLT-N080D	1153DB4	RPS/Isol	1000 PSI	36 mos.	Y	To be replaced-Sched. by 8/15/90 Bi-weekly noise analysis until replacement
1BBLT-3683B	1153DB4	Post Accident Monitoring (Indication only)	1000PSI	21 mos.	N	To be replaced during 1991 Outage
1BCFT-N015B	1153DB5	RHR (Indication only)	167PSI 350PSI	35 mos. 11 mos.	Y	Replaced 5/90 to be returned to Rosemount
1BCFT-N052C	1153DB4	RHR	167PSI	46 mos.	N	To be replaced upon receipt of replacement unit.
1BGFT-N012A	1153DB5	RWCU	1102PSI	36 mos.	N	Monthly zero output check. Confirmation Test to be performed during next system outage.
1EGFT-2549B3	1153DB5	SACS (Indication only)	135PSI	51 mos.	Y	To be replaced upon receipt of substitute -No later than 1991 Outage.
<u>Salem</u>						
1PT-457	1153GD9	Pressurizer Control	2200PSI	65 mos.	N	Daily channel checks against 3 redundant units to verify operating at drift until replacement. Replacement by 7/31/90.
1LT-935C	1153HD4	Safety Inject (Indication/Alarm) Only	650PSI	60 mos.	N	To be replaced during fall 1990 Outage

8.2 ATTACHMENT 2

HOPE CREEK SUSPECT TRANSMITTER DATABASE

INSTRUMENT ID	DESCRIPTION	CLASS	R	CODE	STATIC	PR.	SERIAL #	INSTALL DATE	SUS.	
									LOT	TRIP
1BPDT-NO86B-B21	STEAM LINE A FLOW	ESF	7		980.0	419038	03/01/88	Y	Y	
1ABPDT-NO86D-B21	STEAM LINE A FLOW	ESF	7		980.0	419157	03/01/88	Y	Y	
1ABPDT-NO88D-B21	STEAM LINE C FLOW	ESF	7		980.0	419158	03/01/88	Y	Y	
1ABPDT-NO89B-B21	STEAM LINE D FLOW	ESF	7		980.0	419040	03/01/88	Y	Y	
1BBFT-NO14B-B31	LOOP A RECIRC FLOW	RPS	5		1025.0	412235	08/01/86	Y	Y	
1BBFT-NO14D-B31	LOOP A RECIRC FLOW	RPS	5		1025.0	412616	08/01/86	Y	Y	
1BBFT-NO24A-B31	LOOP B RECIRC FLOW	RPS	5		1025.0	412239	12/01/87	Y	Y	
1BBFT-NO24C-B31	LOOP B RECIRC FLOW	RPS	5		1025.0	412379	08/01/86	Y	Y	
1BBFT-NO24D-B31	LOOP B RECIRC FLOW	RPS	5		1025.0	412380	08/01/86	Y	Y	
1BBLT-NO80C-B21	REACTOR WATER LEVEL LOW	RPS	4		1000.0	411996	08/01/86	Y	Y	
1BBLT-NO80D-B21	REACTOR WATER LEVEL LOW	RPS	4		1000.0	414745	08/01/86	Y	Y	
1BBLT-NO85A-B21	REACTOR SHROUD LEVEL	PAM	5		1000.0	412240	08/01/86	Y	N	
1BBLT-NO85B-B21	REACTOR SHROUD LEVEL	PAM	5		1000.0	412225	08/01/86	Y	N	
1BBLT-NO91A-B21	REAC LVL CS/RHR/HPCI	ESF	5		1000.0	412617	12/01/85	Y	Y	
1BBLT-NO91B-B21	REAC LVL CS/RHR/ADS/RCIC	ESF	5		1000.0	412233	08/01/86	Y	Y	
1BBLT-NO91C-B21	REAC LVL CS/RHR/HPCI	ESF	5		1000.0	412718	12/01/85	Y	Y	

8.2 ATTACHMENT 2

HOPE CREEK SUSPECT TRANSMITTER DATABASE

INSTRUMENT ID	DESCRIPTION	CLASS	R CODE	STATIC PR.	SERIAL #	INSTALL DATE	SUS.	
							LOT	TRIP
1RBTL-NO91F-B21	REAC LVL CS/RHR/ADS/RCIC	ESF	5	1000.0	412237	01/01/86	Y	Y
1RBTL-NO91G-B21	REAC LVL CS/RHR/HPCI	ESF	5	1000.0	412238	12/01/85	Y	Y
1RBTL-NO97D-B21	REACTOR WATER LEVEL-RCIC	RCIC	5	1000.0	412376	02/01/89	Y	Y
1RBTL-NO97H-B21	REACTOR WATER LEVEL-RCIC	RCIC	5	1000.0	412365	08/01/86	Y	Y
1RBPT-NO50A-C71	DRYWELL PRESSURE	RPS	5	2.0	412526	08/01/86	Y	Y
1RBPT-NO50B-C71	DRYWELL PRESSURE	RPS	5	2.0	412527	08/01/86	Y	Y
1RBPT-NO50C-C71	DRYWELL PRESSURE	RPS	5	2.0	412528	08/01/86	Y	Y
1RBPT-NO94B-B21	DW PRESS/CS/RHR/RCIC/ADS	ESF	5	2.0	412531	08/01/86	Y	Y
1RBPT-NO94C-B21	DW PRESS/CS/RHR/HPCI	ESF	5	2.0	412532	08/01/86	Y	Y
1RBPT-NO94D-B21	DW PRESS/CS/RHR/RCIC/ADS	ESF	5	2.0	412533	08/01/86	Y	Y
1RBPT-NO94E-B21	DW PRESS CS/RHR/HPCI	ESF	5	2.0	412534	08/01/86	Y	Y
1RBPT-NO94F-B21	DW PRESS CS/RHR/RCIC/ADS	ESF	5	2.0	412535	08/01/86	Y	Y
1RBPT-NO94G-B21	DW PRESS CS/RHR/HPCI	ESF	5	2.0	412536	08/01/86	Y	Y
1RBPT-NO94H-B21	CONT PRES CS/RHR/RCIC/ADS	ESF	5	2.0	412537	08/01/86	Y	Y
1RCFT-4435	RHR LOOP B FLOW	ESF	5	167.0	415219	04/01/86	Y	N
1RCFT-4462B	RHR CONTNMNT SPRY FLW B	ESF	5	167.0	413670	08/01/86	Y	N

8.2 ATTACHMENT 2

HOPE CREEK SUSPECT TRANSMITTER DATABASE

INSTRUMENT ID	DESCRIPTION	CLASS	R	CODE	STATIC	PR.	SERIAL #	INSTALL DATE	SUS.	
									LOT	TRIP
1BCFT-NO15A-E11	RHR LOOP A FLOW	ESF	5		167.0	412216	08/01/86	Y	N	
1BCFT-NO15C-E11	RHR LOOP C FLOW	ESF	5		167.0	412218	08/01/86	Y	N	
1BCFT-NO15D-E11	RHR LOOP D FLOW	ESF	5		167.0	412219	08/01/86	Y	N	
1BDPT-NO53-E51	RCIC PUMP SUCTION HDR TRP	RCIC	5		5.0	414902	01/01/86	Y	Y	
1BEPDT-NO56-E21	CORE SPRAY DIFF PRESSURE	ESF	5		1000.0	412618	01/01/86	Y	Y	
1BGFT-NO36A-G33	RWCU INLET	ESF	5		1020.0	412224	08/01/86	Y	Y	
1BGFT-NO41A-G33	RWCU DISCH TO FEEDWATER	ESF	5		1080.0	412222	08/01/86	Y	Y	
1BGFT-NO41D-G33	RWCU DISCH TO FEEDWATER	ESF	5		1080.0	415032	04/01/89	Y	Y	
1BHPT-NO04B-C41	SLC PMP B DISCH HDR	SLC	9		1235.0	410675	08/01/86	Y	N	
1BJLT-4805-1	SUPPRESSION POOL	PAM	5		0.0	412524	01/01/86	Y	Y	
1BJLT-4805-2	SUPPRESSION POOL	RSP	5		0.0	412717	01/01/86	Y	N	
1EGFT-2549B1	SACS PMP DISCH LOOP B	EAS	5		135.0	412930	04/01/86	Y	N	
1EGFT-2549B3	SACS PMP DISCH LOOP B	RSP	5		135.0	415214	04/01/86	Y	N	
1EGPDT-2529A	FUEL POOL HEAT EXCH A	EAS	5		110.0	415216	04/01/86	Y	Y	
1EGPDT-2529B	FUEL POOL HEAT EXCH B	EAS	5		110.0	415215	04/01/86	Y	Y	
1EGFT-NO03-E51	RCIC PUMP DISCH FLOW	RCIC	5		1275.0	412523	08/01/86	Y	Y	

8.2 ATTACHMENT 2

HOPE CREEK SUSPECT TRANSMITTER DATABASE

INSTRUMENT ID	DESCRIPTION	CLASS	R CODE	STATIC	PR.	SERIAL #	INSTALL DATE	SUS.	
								LOT	TRIP
FDFT-NO08-E41	HPCI PMP DISCH-TURB CNTRL	ESF	5	1120.0	412366	08/01/86	Y	N	
1GSPT-4960A3	DRYWELL-CONT ATM CONTROL	PAM	5	2.0	412722	04/01/88	Y	N	
1GUFT-9394C	DELUGE FLOW CONTROL CVH 2	ESF	4	25.0	415227	05/01/86	Y	Y	
1KPFT-6053A	MSIV INBD SEAL GAS SPLY	ESF	4	5.0	415226	04/01/86	Y	Y	
1RCFT-0664-D24	PASS LIQ SMPL RTN/SUPPR	PASS	4	1000.0	414746	08/01/86	Y	N	
1SALT-N402F-B21	RPV LVL FOR RRCS-LVL 2 T	ATWS	5	1000.0	406061	08/01/86	Y	Y	
1SMLT-NO81A-B21	REAC LVL FOR NS4 LEVEL 2	ESF	5	1000.0	412786	12/01/85	Y	Y	
1SMLT-NO81C-B21	REAC LVL FOR NS4 LEVEL 2	ESF	5	1000.0	412230	12/01/85	Y	Y	
1SMPT-NO75B-B21	CONDENSER LOW VACUUM	ESF	5	0.0	412627	08/01/86	Y	Y	
1SMPT-NO75C-B21	CONDENSER LOW VACUUM	ESF	5	0.0	412737	08/01/86	Y	Y	
1SMPT-NO75D-B21	CONDENSER LOW VAUUM	ESF	5	0.0	412735	08/01/86	Y	Y	