

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

July 18, 1990

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

Serial No. 90-157  
NL&P/RMN R2  
Docket Nos. 50-280  
50-281  
50-338  
50-339  
License Nos. DPR-32  
DPR-37  
NPF-4  
NPF-7

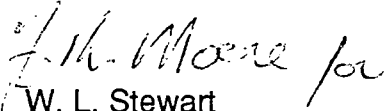
Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY  
SURRY POWER STATION UNITS 1 AND 2  
NORTH ANNA POWER STATION UNITS 1 AND 2  
RESPONSE TO NRC BULLETIN 90-01  
LOSS OF FILL-OIL IN ROSEMOUNT TRANSMITTERS

We have received your March 9, 1990 bulletin (NRCB 90-01) concerning loss of fill-oil in pressure transmitters manufactured by Rosemount. Our response is provided in the attachment.

If you have any questions or require additional information, please contact us.

Very truly yours,



W. L. Stewart  
Senior Vice President - Nuclear

Attachment

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cc: U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 2900  
Atlanta, Georgia 30323

Mr. M. S. Lesser  
NRC Senior Resident Inspector  
North Anna Power Station

Mr. W. E. Holland  
NRC Senior Resident Inspector  
Surry Power Station

COMMONWEALTH OF VIRGINIA )  
 )  
COUNTY OF HENRICO )

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by F. K. Moore who is Vice President - Nuclear Engineering Services, for W. L. Stewart who is Senior Vice President - Nuclear, of Virginia Electric and Power Company. He is duly authorized to execute and file the foregoing document in behalf of that Company, and the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 18 day of July, 1990.

My Commission Expires: May 31, 1994.

Vicki L. Hull  
Notary Public

(SEAL)

**RESPONSE TO NRC BULLETIN NO. 90-01:**  
**LOSS OF FILL-OIL IN TRANSMITTERS**  
**MANUFACTURED BY ROSEMOUNT**  
**NORTH ANNA AND SURRY POWER STATIONS**

On March 9, 1990, the Nuclear Regulatory Commission (NRC) issued NRC Bulletin 90-01. The bulletin requires that all holders of operating licenses or construction permits for nuclear power reactors identify and take appropriate corrective actions for Model 1153, Series B, Model 1153 Series D and Model 1154 Rosemount manufactured transmitters that may be leaking fill-oil.

NRC Bulletin 90-01 requests that each licensee perform the following actions for operating nuclear power reactors. The item numbers used below correspond with those in the Bulletin.

**REQUESTED ACTIONS**

- 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 10 CFR 50.62 (the ATWS rule).**

Response:

Lists of the above described transmitters have been compiled.

- 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:

The above action has been completed. Two transmitters from the high failure fraction lots identified by Rosemount were found to be installed within the reactor protection or engineered safety features actuation systems at Surry Power Station. Both of these have been replaced. No transmitters from the high failure fraction lots were found in the reactor protection or engineered safety features actuation systems at North Anna.

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:

Operability acceptance criteria were developed using the diagnostic procedures proposed by Rosemount in their Technical Bulletins Nos. 1 through 4. The plant records of the transmitters identified in Item 1 have been reviewed in accordance with the requirements of the operability acceptance criteria.

The data obtained for Surry Power Station transmitters identified in Item 1, showed three transmitters were flagged by the calculation screening criteria and were subject to post calculation screening criteria. A review of the data shows that two of these transmitters have exhibited calculated zero shift in the same direction for each of the two calibration periods for which data is available. Data for the third transmitter does not indicate symptoms of loss of fill-oil. These transmitters will continue to be calibrated at the prescribed intervals and are subject to enhanced monitoring as described in Item 4.

The data obtained for North Anna Power Station transmitters identified in Item 1, showed one transmitter was flagged by the calculation screening criteria and was subject to post calculation criteria. A review of the transmitter static pressure criteria indicated that the transmitter results could not be interpreted to mean that the transmitter has exhibited symptoms indicative of loss of fill-oil. This transmitter will continue to be calibrated at the prescribed interval and is subject to enhanced monitoring as described in Item 4.

4. **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 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:

Our training programs have been revised to ensure that appropriate personnel are aware of the symptoms that a transmitter may exhibit, both during operation and during calibration activities, if it is experiencing a loss of fill-oil and the need for prompt identification of transmitters that may display these symptoms. The training involves Instrument and Operations Department personnel.

Station plans for collecting and analyzing transmitter monitoring data during the upcoming refueling outages have been developed and will be implemented during the 1990/1991 refueling outages.

The surveillance program is comprised of monitoring and diagnosis of Rosemount transmitters to provide adequate assurance of correct transmitter performance.

A monitoring program for the transmitters identified in Item 1 has been developed and consists of automated electronic and manual data gathering.

Greater than 90% of the Item 1 transmitters which are identified as safety-related equipment have their output recorded by a high speed data acquisition system. Data are periodically collected and transferred to another computer. Calculations

are performed on these data and operability screening criteria applied to determine the state of each transmitter.

The remaining Item 1 identified transmitters have transmitter output data presented on indicators and a process computer. An evaluation for collecting and processing this data is being performed.

The frequency of data retrieval, calculation performance and screening criteria application shall depend upon transmitter application, environment and model number. Experience gained from enhanced surveillance will be a factor in establishing such frequencies.

The comprehensive enhanced surveillance program plan for both sites will be developed by 9/1/90.

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 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.**

Response:

No transmitters identified by Rosemount as having a high failure fraction due to loss of fill-oil are in use in the reactor protection system, engineered safety features actuation systems or systems installed in accordance with 10 CFR 50.62 (the ATWS Rule).

Thirteen transmitters identified by Rosemount as being from the high failure fraction lots are presently installed at Surry and North Anna. Existing plant procedures do not require that a basis for continued plant operation be prepared for these particular transmitters.

The transmitters perform the following functions:

North Anna 1	Component Cooling	Cont. air cooling water flow
	Chemical and Volume Control	RCS make up flow
North Anna 2	Chemical and Volume Control	RCS make up flow
	Feedwater	Steam generator level
	Reactor Coolant	RTD bypass flow
Surry 1	Chemical and Volume Control	RCP seal delta P
	Chemical and Volume Control	RCP seal delta P
	Chemical and Volume Control	Volume Control Tank level
	Feedwater	Steam generator level
Surry 2	Chemical and Volume Control	Volume Control Tank level
	Chemical and Volume Control	Volume Control Tank level
	Main Steam	Steam generator pressure
	Main Steam	Steam generator pressure



## REPORTING REQUIREMENTS

NRC Bulletin 90-01 requires that each licensee provide identifying reporting in addition to that in the above five (5) items. The item numbers used below correspond with the Bulletin items which require a response that:

- 1a) **Confirms that Items 1, 2, 3, 4, and 5 of Requested Actions for Operating Reactors have been completed.**

Response:

The requested actions have been completed except for a portion of Item 4, which will be done by 9/1/90.

- 1b) **Identifies 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 deposition (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:

There are no transmitters currently installed at Surry or North Anna which are believed to or have been confirmed as having a loss of fill-oil. Two transmitters at Surry which may exhibit symptoms of fill-oil loss, are being closely monitored for any output signal trending.

A North Anna Unit 1 safety injection flow transmitter, Rosemount model number 1153HB6PA, which was replaced in March, 1990, is believed to have lost fill-oil. The transmitter operated for approximately 1095 days at about 3000 psi. The problem was discovered during routine calibration. Due to contamination, the device was not shipped to Rosemount, however tests were done in accordance with Rosemount instructions. Based on results of these tests, Rosemount informed us that they believe the failure was due to loss of fill-oil. The transmitter has been disposed of.

- 1c) **Identifies the system in which the Model 1153 Series B, Model 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 provides a schedule for replacement of these transmitters which are in use in the reactor protection or engineered safety features actuation systems.**

Response:

Of the transmitters identified as being from high failure fraction lots eight are installed at Surry Power Station and five at North Anna. These transmitters are not used in the reactor protection system, engineered safety features actuation systems or systems installed in accordance with 10 CFR 50.62 (the ATWS Rule).

At Surry, five transmitters are in the Chemical and Volume Control System, two are in the Main Steam System and one is in the Feedwater System. At North Anna, two are in the Chemical and Volume Control System and one is in each of the Component Cooling, Feedwater and Reactor Coolant Systems.

2. **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 experience 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 1b) above for each transmitter identified.**

Response:

Transmitters of the above model and series identification which exhibit symptoms of loss of fill-oil or which are confirmed to have experienced a loss of fill-oil shall be reviewed for reportability, under existing NRC regulations. If determined not to be reportable, documentation will be maintained in accordance with existing plant procedures and in a format consistent with that required in Item 1b).