VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Serial No.	92-846A
NL&P/GDM	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
SUPPLEMENTAL RESPONSE TO NRC BULLETIN 90-01
LOSS OF FILL-OIL IN ROSEMOUNT TRANSMITTERS

As requested during an April 13, 1994 telephone conversation with Mr. B. C. Buckley and Ms. D. W. Spaulding of the NRC, we are providing a supplemental response to our previous submittal of March 16, 1993, (Serial No. 92-846) on NRC Bulletin 90-01, Supplement 1. This response includes additional information regarding the performance history and testing of certain Rosemount transmitters, as well as the training provided to personnel to recognize degrading transmitter performance.

If you require additional information, please contact us.

Very truly yours,

James P. O'Hanlon
Senior Vice President - Nuclear

Attachments

JE39

cc: U. S. Nuclear Regulatory Commission
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Mr. M. W. Branch
NRC Senior Resident Inspector
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NRC Senior Resident Inspector
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ATTACHMENT
SUPPLEMENTAL RESPONSE
TO NRC BULLETIN 90-01, SUPPLEMENT 1

The NRC has requested Virginia Electric and Power Company to provide a supplemental response to our previous submittals on the Rosemount loss of fill-oil issue discussed in NRC Bulletin 90-01 and its Supplement 1. The purpose of this supplemental response is to formalize the information provided to NRC questions discussed during an April 13, 1994, conference call regarding in service transmitter performance trending and monitoring.

Supplement 1 to NRC Bulletin (NRCB) 90-01 required categorizing safety related Rosemount transmitters based on their service and associated system pressure, as well as providing an overview of the programs in place to detect a failed transmitter. As part of the evaluation to determine transmitter category and surveillance frequency, the transmitters' "performance in service" had to be considered. By reviewing transmitter maintenance records, we determined which transmitters had reached their psi-month threshold. These transmitters were considered to have had acceptable "performance in service" or they would have been previously replaced. Acceptable performance of the transmitters was determined by testing the transmitters for symptoms suggestive of loss of fill-oil such as sluggish response to a step change in pressure or zero shift trending in one direction. Testing records for these transmitters indicated they were performing properly. For those transmitters that had not reached their psi-month threshold, a monitoring-trending program was implemented. Also, as discussed in our letter of March 16, 1993, instrument indication of operating systems is monitored routinely by operators trained to detect transmitters displaying symptoms of loss of fill-oil. Similarly, transmitter calibration is performed by technicians trained to detect transmitters displaying symptoms of loss of fill-oil.

The information above was the basis for our initial response to NRCB 90-01, Supplement 1. This reasoning remains valid and supports the additional information provided below in response to followup NRC questions.

As recently as February 1994, the majority of transmitters in the monitoring program were being evaluated monthly by an operational data monitoring system. This system used a data acquisition system and a custom database program to perform calculations that compared operating data with Rosemount acceptance criteria. This monthly program was recently discontinued since the transmitters operating at greater than 1500 psi either became mature or were replaced by transmitters from a non-suspect lot. However, enhanced refueling calibration (zero shift trending and transmitter pressure response testing) will continue in accordance with the guidance of NRCB 90-01, Supplement 1.

The following information addresses the specific questions directed to Virginia Power during the teleconference of April 13, 1994.

1. If performing enhanced surveillance monitoring on a refueling cycle frequency for the Reactor Coolant System (RCS) pressure, flow, and level transmitters, provide justification for the transmitters' monitoring frequency based on their performance in service, specific function, etc.

For both North Anna and Surry, these transmitters are either mature or have been replaced with Rosemount transmitters from a non-suspect lot (i.e., transmitters with a serial number greater than 500,000). Furthermore, these transmitters are part of the reactor protection system, and therefore have redundant channels of indication which operators frequently compare.

A failing transmitter would be identified quickly by this operational surveillance. As previously discussed, these transmitters were monitored monthly until they reached maturity or were replaced. Acceptable performance of these transmitters has been confirmed during both operational monitoring (operator and data monitoring) and the enhanced refueling calibration where trend data have been consistently within Rosemount's acceptance criteria.

2. If performing enhanced surveillance monitoring on a refueling cycle frequency for the RCS wide range pressure transmitters, provide justification for the transmitters' monitoring frequency based on their performance in service.

For both North Anna and Surry, these transmitters are mature and have been in service for over eight years. They have been successfully calibrated at least five times with no failures and have been pressure response tested as well. The trend data for these transmitters have been consistently within Rosemount's acceptance criteria. Based on these results, we do not expect these transmitters to fail due to loss of fill-oil.

3. If performing operational surveillance of the North Anna charging system make-up flow transmitters, how is trending done with only one transmitter.

The Unit 2 transmitter has been in service over three years and is now mature. The Unit 1 transmitter has been replaced with a Rosemount transmitter from a non-suspect lot (i.e., transmitter with a serial number greater than 500,000). There are no redundant transmitters/channels with which to compare readings. Consequently, the single reading taken each week was compared with previous weekly readings to identify any changes in performance. Make-up flow rate tends to be fairly steady for a given power level. Additionally, operators are sensitive to this parameter and would be able to detect failure by other means (e.g., pressurizer level, letdown flow rate). Acceptable performance of these transmitters has been confirmed during both operation (operator and data monitoring) and enhanced refueling calibration.

4. If monitoring frequency is greater than quarterly for the Surry charging system make-up flow transmitters, provide justification for the extended monitoring frequency.

These transmitters are mature and have been in service for over seven years. There are no redundant transmitters/channels with which to compare readings. Consequently, the single reading taken each week was compared with previous weekly readings to identify any changes in performance. Make-up flow rate tends to be fairly steady for a given power level. Additionally, operators are sensitive to this parameter and would be able to detect failure by other means (e.g., pressurizer level, letdown flow rate). Acceptable performance of these transmitters has been confirmed during both operation (operator and data monitoring) and enhanced refueling calibration where trend data have been consistently within Rosemount's acceptance criteria.

5. Why is only the zero shift and not both the zero and span shift trended as part of the enhanced calibration program on site?

As part of the operational monitoring program recently completed, the Rosemount allowable zero and span shifts were used in determining acceptable differences in operating data between redundant channels (where applicable). We considered this to be acceptable span monitoring. During calibration both the span and zero are calibrated, however, only the zero is trended. We believe that zero shift trending is adequate because there is not an appreciable span shift without a corresponding zero shift of much greater magnitude as discussed in Rosemount Technical Report # 4. Transmitters exhibiting a continual zero shift in one direction would alert the technician to a potential loss of fill-oil problem, and if the zero shift exceeded the Rosemount drift limit, the transmitter would be replaced. Therefore, zero shift is a more sensitive indicator of a potential loss of fill-oil and is sufficient for trending.