

LICENSEE EVENT REPORT (LER)

|  |  |                     |
|--|--|---------------------|
| FACILITY NAME (1)<br>NORTH ANNA POWER STATION, UNITS 1 & 2 | DOCKET NUMBER (2)<br>0   5   0   0   0   3   1   3   8 | PAGE (3)<br>1 OF 04 |
|--|--|---------------------|

TITLE (4)  
VENT STACK "A" RADIATION MONITOR EXCEEDED T.S. ACTION STATEMENT

| EVENT DATE (5) |     |      | LER NUMBER (6) |                   |                 | REPORT DATE (7) |     |      | OTHER FACILITIES INVOLVED (8) |   |                  |                    |                                   |
|----------------|-----|------|----------------|-------------------|-----------------|-----------------|-----|------|-------------------------------|---|------------------|--------------------|-----------------------------------|
| MONTH          | DAY | YEAR | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH           | DAY | YEAR | FACILITY NAMES                |   | DOCKET NUMBER(S) |                    |                                   |
| 0              | 1   | 2    | 8              | 8                 | 8               | 0               | 0   | 6    | 0                             | 0 | 0                | NORTH ANNA, UNIT 2 | 0   5   0   0   0   3   1   3   8 |
| 0              | 1   | 2    | 8              | 8                 | 8               | 0               | 1   | 2    | 8                             | 8 | 8                |                    | 0   5   0   0   0   3   1   3   8 |

|                               |  |  |  |                  |  |  |                      |  |  |  |  |  |
|-------------------------------|--|--|--|------------------|--|--|----------------------|--|--|--|--|--|
| OPERATING MODE (9)<br>1       | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11) |  |  |                  |  |  |                      |  |  |  |  |  |
| POWER LEVEL (10)<br>0   0   5 | 20.402(b)  |  |  | 20.405(c)        |  |  | 50.73(a)(2)(iv)      |  |  | 73.71(b)   |  |  |
|                               | 20.405(a)(1)(i)  |  |  | 50.36(c)(1)      |  |  | 50.73(a)(2)(v)       |  |  | 73.71(c)   |  |  |
|                               | 20.405(a)(1)(ii)   |  |  | 50.36(c)(2)      |  |  | 50.73(a)(2)(vi)      |  |  | <input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 365A) |  |  |
|                               | 20.405(a)(1)(iii)  |  |  | 50.73(a)(2)(i)   |  |  | 50.73(a)(2)(viii)(A) |  |  | SPECIAL REPORT   |  |  |
|                               | 20.405(a)(1)(iv)   |  |  | 50.73(a)(2)(ii)  |  |  | 50.73(a)(2)(viii)(B) |  |  |  |  |  |
|                               | 20.405(a)(1)(v)  |  |  | 50.73(a)(2)(iii) |  |  | 50.73(a)(2)(x)       |  |  |  |  |  |

|  |  |  |  |  |  |  |   |  |  |
|--|--|--|--|--|--|--|---|--|--|
| LICENSEE CONTACT FOR THIS LER (12)       |  |  |  |  |  |  |   |  |  |
| NAME<br>E Wayne Harrell, Station Manager |  |  |  |  |  |  | TELEPHONE NUMBER<br>7   0   3   8   9   4   -   5   1   5   1 |  |  |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) |        |           |              |                   |       |        |           |              |                   |  |  |
|--|--------|-----------|--------------|-------------------|-------|--------|-----------|--------------|-------------------|--|--|
| CAUSE  | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC |  |  |
|  |        |           |              |                   |       |        |           |              |                   |  |  |
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|---|--|--|--|--|--|--|-------------------------------|--|-------|-----|------|
| SUPPLEMENTAL REPORT EXPECTED (14)   |  |  |  |  |  |  | EXPECTED SUBMISSION DATE (15) |  | MONTH | DAY | YEAR |
| <input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) |  |  |  |  |  |  | NO                            |  | 0     | 2   | 8    |

ABSTRACT (Limit to 1400 spaces, approximately fifteen single-space typewritten lines) (16)

At 1500 hours on January 12, 1988, with Units 1 and 2 in Mode 1, at 5 percent and 100 percent power, respectively, the Kaman Vent Stack "A" Normal Range Radiation Monitor, RI-VG-179-1, was declared inoperable when an increase in radiation level indication actuated an alert alarm and could not be reset. Two additional radiation monitors in the same effluent release path were indicating normal radiation levels during this period. Action Statement 35 of Technical Specification (T.S.) 3.3.3.1 requires that the radiation monitor be returned to operable status within 72 hours, or initiate the preplanned alternate method of monitoring and prepare a Special Report. Since this Action Statement expired at 1500 hours on January 15, 1988, with the radiation monitor still inoperable, this event is reportable pursuant to Technical Specification 6.9.2.

Investigation into the cause for the alert alarm revealed that the flow inverter board had malfunctioned and caused electronic noise to be transmitted through the radiation detector to the microprocessor. The microprocessor read the noise as radiation signals and caused erroneously high radiation signals to be generated. These erroneous radiation signals were higher than what the detector was actually measuring and caused the local and remote alert alarms to actuate. The failed flow inverter board will be replaced and an analysis will be performed to determine the root cause of the board failure.

This event posed no significant safety implications because there were backup radiation monitors for the same release path which remained operable throughout this event. The health and safety of the general public were not affected.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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|--|--|----------------|-------------------|-----------------|----------|----|-----|
| FACILITY NAME (1)<br><br>NORTH ANNA POWER STATION, UNITS 1 & 2 | DOCKET NUMBER (2)<br><br>0 5 0 0 0 3 3 8 | LER NUMBER (6) |                   |                 | PAGE (3) |    |     |
|  |  | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |    |     |
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

1.0 Description of Event

At 1500 hours on January 12, 1988, with Units 1 and 2 in Mode 1 at 5 percent and 100 percent power respectively, the Kaman Vent Stack "A" Normal Range Radiation Monitor, RI-VG-179-1, (EIS System Identifier WE, Component Identifier MON, Vendor Identifier K020) was declared inoperable. The radiation monitor was declared inoperable when an increase in radiation level indication actuated an alert alarm and could not be reset. The problem was immediately diagnosed as a malfunctioned radiation monitor because two additional radiation monitors in the same effluent release path were indicating normal radiation levels during this period. Technical Specification (T.S.) 3.3.3.1 requires that the Kaman Vent Stack "A" Radiation Monitor be operable throughout a range of 5.0 E-7 to E+5 microcuries per cubic centimeter. This range is covered by the normal range radiation monitor (RI-VG-179-1) and the high range radiation monitor (RI-VG-179-2) with some overlap between the two. If the full measurement range cannot be covered, then Action Statement 35 becomes applicable. Action Statement 35 requires that the radiation monitor be returned to operable status within 72 hours or initiate the preplanned alternate method of monitoring and prepare a Special Report. Since this Action Statement expired at 1500 hours on January 15, 1988 with the radiation monitor still inoperable, this event is reportable pursuant to Technical Specification 6.9.2.

The Kaman Vent Stack "A" Normal Range Radiation Monitor senses the radioactivity level of isotopes present in gaseous and particulate form in the effluent release path from a variety of sources. RI-VG-179-1 does not initiate any automatic functions but does provide an input signal for a local indicator, and a chart recorder, an indicator, and alarms in the Control Room. When RI-VG-179-1 failed, the radiation level displayed by all the local and remote indicators kept increasing and the alert alarm actuated but could not be reset.

Investigation into the cause for the erroneously high radiation level being displayed for RI-VG-179-1 revealed that the flow inverter board had malfunctioned. The flow inverter board is part of the sample flow control system. The flow inverter board allows the sample flow rate to be utilized by the microprocessor so that the flow control valve can be adjusted to maintain isokinetic flow conditions and determine the release activity. An analysis will be performed on the failed flow inverter board to determine the root cause of the failure. This LER will be updated to include the results of the analysis.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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|---------------------------------------|-------------------|----------------|-------------------|-----------------|----------|----|----|
| FACILITY NAME (1)                     | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |    |    |
|                                       |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |    |    |
| NORTH ANNA POWER STATION, UNITS 1 & 2 | 05000338          | 88             | -006              | -00             | 03       | OF | 04 |

TEXT (If more space is required, use additional NRC Form 365A's) (17)

2.0 Safety Consequences and Implications

This event posed no significant safety implications because the Westinghouse Vent Stack "A" Radiation Monitors (EIIIS Vendor Identifier W120), which provide high radiation indication to the Control Room via a strip chart recorder, common alarm, alarm lights, and gaseous and particulate meters, remained operable throughout this event. Additionally, the Nuclear Research Corporation Radiation Monitors (EIIIS Vendor Identifier N330) continued to operate throughout this event as the Technical Specification required preplanned alternate monitoring method on the "A" Vent Stack. The health and safety of the general public were not affected.

3.0 Cause of the Event

The alert alarm, initiated by the erroneously high radiation monitor signal, was due to a malfunctioning flow inverter board which caused electronic noise to be induced on the signal return line. This signal return line is electronically on the same line which transfers signals from the radiation detector to the microprocessor. Therefore, the induced noise was transmitted through the radiation detector to the microprocessor. The microprocessor read the noise as radiation signals and caused erroneously high radiation levels to be displayed at the local and remote indicators. These erroneous radiation signals were higher than what the detector was actually measuring and also caused the local and remote alert alarms to actuate. An analysis will be performed to determine the root cause of the flow inverter board failure.

4.0 Immediate Corrective Actions

As an immediate corrective action, Action Statement 35 of Technical Specification 3.3.3.1 was entered and troubleshooting was initiated.

5.0 Additional Corrective Action

As an additional corrective action the malfunctioning flow inverter board will be replaced.

Additionally, due to the number of recent problems encountered with the Kaman Sciences Radiation Monitors, station management contacted The Kaman Sciences Corporation and requested them to perform a ground deficiency analysis on the Kaman Science Process Vent Stack Radiation Monitor (RM-GW-178) and the Kaman Sciences Vent Stack "A" and "B" Radiation Monitors (RI-VG-179 and RI-VG-180, respectively). The recommendations resulting from the Kaman Sciences Corporation analysis have been reviewed. As a result of this review, an existing Design Change Package has been augmented, with a field change, to include those recommendations which were determined to increase the reliability of the radiation monitors.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

This field change will be implemented on RM-GW-178, RM-VG-179, and RI-VG-180 when possible and the additional recommendations from the Kaman Sciences Corporation will be further reviewed and changes implemented as necessary.

The radiation monitor will be returned to service when the flow inverter board is replaced, the field change has been implemented, and station personnel and the Kaman Sciences Technical Representative are confident that the installation of the field change has successfully increased the reliability of the radiation monitor.

6.0 Actions Taken to Prevent Recurrence

An analysis will be performed to determine the root cause of the failed flow inverter card. This Licensee Event Report will be updated to include the results of the analysis.

7.0 Similar Events

No previous events involving radiation monitor inoperability due to malfunctioning flow inverter boards have occurred at North Anna Power Station.

8.0 Additional Information

The implementation of the previously mentioned field change will increase the reliability of the radiation monitors (RM-GW-178, RI-VG-179, and RI-VG-180). During the installation of the field change, the radiation monitors will be removed from service, one at a time, for greater than 72 hours (therefore exceeding Action Statement 35 of Technical Specification 3.3.3.1 which requires a Special Report be submitted within 14 days). Since the installation of the field change is preplanned, and should increase the reliability of the radiation monitors, this document is providing notification of these events, and separate 14 day Special Reports will not be submitted.

# Vepco

VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA POWER STATION  
P. O. BOX 402  
MINERAL, VIRGINIA 23117

January 28, 1988

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

Serial No. N-88-005  
NO/DEQ: nih  
Docket No. 50-338  
50-339

License No. NPF-4  
NPF-7

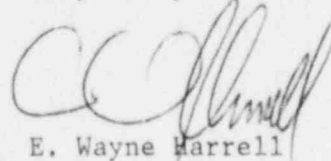
Dear Sirs:

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Units 1 and 2.

Report No. LER 88-006-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to Safety Evaluation and Control for their review.

Very Truly Yours,



E. Wayne Harrell  
Station Manager

Enclosure

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

Mr. J. L. Caldwell  
NRC Senior Resident Inspector  
North Anna Power Station

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