

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 22, 2002

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

Serial No. 02-126A
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Docket Nos. 50-338
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License Nos. NPF-4
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Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 & 2
VENTILATION RADIATION MONITOR SYSTEM
SUPPLEMENTAL SPECIAL REPORT

On March 2, 2002, the sample pump for 1-GW-RM-178 tripped due to condensation in the sample flow tubing causing 1-GW-RM-178 to shutdown. Special Report, Serial Number 02-126, was submitted to the NRC on March 15, 2002, outlining the failure to return the Process Vent Radiation Monitor (1-GW-RM-178) to service within seven (7) days. The report identified the need to complete a root cause evaluation (RCE) and provide the results in a supplemental report. This report provides the completed RCE results. In addition, this report identifies the final installation of the last radiation monitor (RM) and functional testing of the redundant RMs for Vent Stack B.

The RCE identified the design and preventive maintenance of existing heat trace circuits as the cause for not returning 1-GW-RM-178 to service within seven days. The interaction between existing heat trace and the replacement radiation monitor (1-GW-RM-178) was not fully understood. The design change package (DCP) recognized that the function of the heat trace is to prevent moisture from developing in skid flow elements, and assumed that the existing heat trace would be adequate for the replacement RM. Later it was recognized that the existing heat trace was not functioning as designed. The moisture sensitivity of the new RM was not initially recognized which would have helped effect repairs. The quantitative requirements necessary to prevent moisture intrusion (i.e. temperature and humidity requirement for the sample inlet to the RM, or current and heating requirement for the sample line heat trace) were also not specified.

The existing heat trace was not maintained as originally designed. The existing heat trace circuit was designed to provide 10 watts/foot of heat, which is sufficient to prevent moisture in the sample line. This value has been confirmed by the vendor's current heat trace redesign effort. Since the DCP specified the replacement sections of heat trace to match the original heat trace design, if the original heat trace had been

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maintained at its design heating value, then moisture would not have developed at the new RM.

The surveillance procedure used to determine if maintenance is required on the heat trace circuit was changed several years ago. This change allowed the existing heat trace circuit to degrade to the point that it provided minimal heat and no longer performed its original design function of preventing moisture. The procedure has since been revised to include acceptable ranges of amperage values for the functioning sections of heat tracing associated with 1-GW-RM-178.

The heat trace circuits for existing sample lines associated with 1-GW-RM-178 are being replaced. In addition, the design basis documents are being revised to describe the heat trace function and required quantitative heat trace heat value to maintain process fluid temperatures and prevent moisture intrusion to the inlet of the RM.

In our original notification of the RM replacement project, Special Report Serial Number 01-295 dated August 13, 2001, we identified that the project would be completed by June 30, 2002. Two of the three RM skids were replaced, tested satisfactorily and placed in operation prior to June 30, 2002. Installation, calibration and testing of the final RM skid, 1-VG-RM-180, was completed on August 14, 2002.

Radiation Monitors 1-VG-RM-112, 113 and 175 provide continuous display and control capability in the main Control Room for Vent Stack B as part of the preplanned alternate method of monitoring while RM-180 was being replaced. On July 2, 2002, RM-112 and 113 were removed from service to perform routine functional testing to ensure continued operability. Radiation Monitors 112 and 113 were tested satisfactorily and returned to service within approximately forty five minutes. During the time period when RM-112 and 113 were out of service, the action to obtain periodic grab samples was initiated and high range monitoring capability was available through RM 175. Routine functional testing was again performed on July 31, 2002 for RM-112 and RM-113. Performance of the functional testing did not compromise the 10 CFR-50.54 (q) evaluation performed in support of the RM replacement project.

The Station Nuclear Safety and Operating Committee has reviewed this report and it will be provided to the Management Safety Review Committee. Should you have any questions regarding this report, please contact us.

Very truly yours,



D. A. Heacock
Site Vice President

Commitments made in this letter: None

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