

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

February 1, 2002

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.: 01-685A
LR/MWH R0
Docket Nos.: 50-280/281
50-338/339
License Nos.: DPR-32/37
NPF-4/7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
SURRY AND NORTH ANNA POWER STATIONS UNITS 1 AND 2
REQUEST FOR ADDITIONAL INFORMATION
LICENSE RENEWAL APPLICATIONS

In an October 22, 2001 letter, the NRC requested additional information regarding the license renewal applications (LRAs) for Surry and North Anna Power Stations. The attachment to this letter contains the response to Request for Additional Information (RAI) 3.6-1.

Should you have any questions regarding this submittal, please contact Mr. J. E. Wroniewicz at (804) 273-2186.

Very truly yours,



David A. Christian
Senior Vice President – Nuclear Operations and Chief Nuclear Officer

Attachment

Commitments made in this letter: None

Rec'd 7/15/02 - QCD
A086
Add: Omid Tabatabai-Yazdi

cc:

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COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by David A. Christian who is Senior Vice President and Chief Nuclear Officer of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 1st day of February, 2001.
My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

Attachment

**License Renewal – Response to RAI
Serial No. 01-685**

**Response to Request for Additional Information
Dated October 22, 2001
Surry and North Anna Power Stations, Units 1 and 2
License Renewal Applications
RAI 3.6-1**

**Virginia Electric and Power Company
(Dominion)**

Section 3.6, "Aging Management of Electrical and Instrumentation and Controls"

RAI 3.6-1:

In response to the staff's request for the applicant to management aging of non-EQ insulated power, instrumentation, and control cables and connectors, as documented in a letter dated June 17, 2001, the applicant commits to a visual inspection of representative samples of accessible insulated power, instrumentation, and control cables and connectors. Visual inspection alone, however, will not necessarily detect reduced insulation resistance (IR) levels in cable insulation before the intended function is lost. Exposure of electrical cables to adverse localized environments caused by heat or radiation can result in reduced IR. A reduction in IR will cause an increase in leakage currents between conductors and from individual conductors to ground, and is a concern for circuits with sensitive, low level signals such as radiation and nuclear instrumentation since it may contribute to inaccuracies in the instrument loop. Because low level signal instrumentation circuits may operate with signals that are normally in the low milliamp range or less, they can be affected by extremely low levels of leakage current. These low levels of leakage current may affect instrument loop accuracy before the adverse localized environment can cause changes that are visually detectable. Routine calibration tests performed as part of the plant surveillance test program can be used to identify the potential existence of this aging degradation.

The staff is not convinced that aging of these cables will initially occur on the outer casing resulting in sufficient damage such that visual inspection will be effective in detecting the degradation before IR losses lead to a loss in intended function. Therefore, the applicant is asked to provide a technical justification that will demonstrate that visual inspections will be effective in detecting damage before current leakage can affect instrument loop accuracy, or provide a description of an AMA that will demonstrate that the effects of aging will be managed such that the intended function will be maintained consistent with the current licensing basis for the period of extended operation.

Dominion Response:

Although Dominion aging management reviews have determined that there are no applicable aging effects for non-EQ cables that require aging management, in response to RAI 3.6.2-1 Dominion credited an inspection program for the non-EQ cables located in areas that have potential adverse localized environments, such as heat, radiation, or moisture. This program has been requested by the NRC staff to provide reasonable assurance that these cables will not lose the ability to perform their intended function in the future due to aging effects resulting from the possible creation of adverse localized environments.

Adverse localized environments caused by heat or radiation have the potential to produce reduced insulation resistance (IR). However, since IR-sensitive circuits operate with currents in the milli-ampere range or less, heat generated in the conductor

is insufficient to cause cable degradation from internal sources. Degradation from externally applied stressors of heat or radiation would have to affect the conductor insulation to cause a reduction of insulation resistance. External degradation of the cable jacket would likely be detected by visual inspection prior to loss of cable intended function.

A review of Dominion operating experience indicates that no instrument cable failures have occurred due to aging and that visual inspection would be effective in detecting cable degradation before any loss of intended function. A review of other utility license renewal SERs indicates acceptance of this approach (e.g., ANO Unit 1, Duke-Oconee, FP&L-Turkey Point [draft], and Southern-Hatch). In addition, the Electrical Cable and Terminations Aging Management Guideline, SAND96-0344, concludes in Section 1.4 that "... reliance on visual inspection techniques for the assessment of low-voltage cable and termination aging appears warranted since these techniques are effective at identifying degraded cables." An industry operating experience review and a literature search, including the SAND96-0344 report, did not provide any supporting information for the NRC staff concern.

Therefore, the Non-EQ Cable Monitoring Aging Management Activity, as described in response to RAI 3.6.2-1, will provide reasonable assurance through visual inspection that instrument cables that are sensitive to reduced insulation resistance will maintain their intended functions during the period of extended operation.