December 3, 2001

Note To: Document Control

From: Robert Prato RP

Subject: DOCKETING OF ATTACHED FAXES

Please place the two attached faxes on the following dockets under distribution code A086:

North Anna, Unit 1 - 338
North Anna, Unit 2 - 339
Surry, Unit 1 - 280
Surry Unit 2 - 281

Thank You,

cc: James Lazevnick

Attachements: as stated

A086

5000 Dominion Boulevard, 2 NE
Glen Allen, VA 23060

Fax# 804-273-3554

DOMINION
License Renewal

Fax

To:	Bob Prato	**From:**	Tom Snow
Fax:	(301) 415-2279	**Pages:**	6 Including cover sheet
Phone:		**Date:**	10/4/2001

Cable Monitoring Activity

INVOICE DRIVE.

SUPPLEMENT TO APPENDIX B: AGING MANAGEMENT ACTIVITIES

B2.1.4 Non-EQ Cable Monitoring

Age-related degradation of cable jackets and connector coverings can result from exposure to high values of radiation or temperature, or to wetted conditions. The effects of aging become evident as cracking, discoloration, or bulging that can be detected by visual inspection. Visual inspections also determine the presence of water around cables. The purpose of the Non-EQ Cable Monitoring activities will be to perform representative sample inspections of accessible cable jackets and connector coverings that are utilized in non-EQ applications.

Temperature monitoring in cable trays ~~with localized adverse conditions~~ at Surry and North Anna Power Station has shown that actual temperatures should remain below the value that can adversely affect cable jackets and connector coverings. In-situ temperature monitoring was performed at cable tray locations that included power cables for major components that would likely experience ohmic heating. The measured temperatures were compared to the 60-year service limits determined using the guidance provided in Sandia National Laboratory report SAND96-0344 (Reference C). The evaluation of measured temperatures confirmed that margin exists with respect to the 60-year service limits. It is expected that the cable-tray temperatures will not change significantly during the period of extended operation, thus precluding a concern regarding cable and connector integrity. However, areas that may be susceptible to elevated temperatures will be included in the inspection plan.

Radiation exposure can cause cracking of cable insulation. The gamma/neutron dose that causes age-related degradation is based on a 60-year service radiation dose limit. As with thermal aging, evaluations confirm that degradation due to radiation exposure is unlikely since the 60-year exposures remain below the 60-year service limit. Visual inspections will be performed in the Containment buildings, ~~in locations that are expected to have the highest fluence values~~based on radiation survey data, to confirm the absence of age-related degradation due to radiation exposure.

Evaluations for cable at Surry and North Anna indicate the expected absence of wetted conditions. However, visual inspections of cable jackets and connector coverings will continue to provide an opportunity to inspect for wetted conditions. It is noted also that there is no direct-buried medium voltage~~, frequently energized~~ cable exposed to significant voltage (i.e., subjected to system voltage more than 25 percent of the time) at Surry and North Anna that could be susceptible to degradation due to wetted conditions. In order to confirm that ambient conditions ~~are~~have not changed~~ing~~ sufficiently to lead to age-related degradation of the cable jackets and connector coverings, initial visual inspections of representative samples of accessible, non-EQ

application insulated power, instrumentation, and control cables (including low-voltage instrumentation and control cables that are sensitive to a reduction of insulation resistance) will be performed as a Licensee Follow-up Action between year 30 and the end of the current operating license. Subsequent inspections will be performed at least once per 10 years during the period of extended operation.

An evaluation of the Non-EQ Cable Monitoring activities in terms of the aging management program attributes provided in the Standard Review Plan for License Renewal (Reference A) is as follows:

Scope

Although evaluations that have been performed show that aging effects requiring management are not expected for cable jackets and connector coverings, Dominion plans additional activities to provide confirmation of the evaluation. A detailed review of Surry and North Anna licensee event reports, deviation reports, and plant issues; and plant walkdowns of both facilities will be performed to determine areas for possible age-related degradation of cable jackets and connector coverings. An inspection plan will be developed based on the results of this review to visually examine representative samples of accessible, non-EQ cable jackets and connector coverings in the areas identified by the review as having potentially adverse localized ~~adverse~~ conditions.

Preventive Actions

The non-EQ cable monitoring activity is designated *condition monitoring*. No preventive actions are required. However, periodic action~~s~~ will be taken to prevent inaccessible non-EQ medium-voltage cables from being exposed to significant moisture ~~such as~~ that is defined as being submerged in standing water for a period as long as several months (i.e. up to three months for manholes without sump pumps; up to one year for manholes with sump pumps). This periodic action to inspect~~ing~~ for water collection in cable manholes ~~and conduit~~ is performed despite the fact that no water is expected due to the manholes being sealed. Corrective action would include ~~and~~ draining any water ~~as needed.~~ that is present.

Parameters Monitored or Inspected

An inspection plan will be developed to visually examine representative samples of accessible, non-EQ cable jackets and connector coverings for surface indications, such as cracking, discoloration, or bulging. Areas will also be visually monitored to determine the presence of water around cables. EPRI document TR-109619 (Reference B) will be used for guidance in performing the inspections.

Detection of Aging Effects

Visual inspections of representative samples of non-EQ power, instrumentation, and control cables and connectors detect the presence of cracking, discoloration, or bulging which could indicate aging effects requiring management due to high values of radiation, temperature, or wetted conditions. The potentially ~~localized~~ adverse localized environment, due to moisture which could lead to water-treeing in medium-voltage cables, is also detected by visually monitoring for the presence of water around cables.

Monitoring and Trending

Visual inspections for surface indications on non-EQ cable jackets and connector coverings can provide indications of age-related degradation due to heat, radiation, or wetted conditions. Initial visual inspections for representative samples of non-EQ, insulated power, instrumentation, and control cables and connectors will be performed as a Licensee Follow-up Action between year 30 and the end of the current operating license. Subsequent inspections will be performed at least once per 10 years during the period of extended operation.

Acceptance Criteria

The acceptance criterion for the condition of non-EQ cable jackets and connector coverings is the absence of anomalous indications that are signs of degradation. Such indications include cracking, discoloration, or bulging. The acceptance ~~criteria~~ criterion with respect to wetted conditions is the absence of ~~long-term submergence of cables~~exposure to significant moisture. Inspection results for the condition of non-EQ cables and connectors will be summarized in a documented engineering evaluation. Any anomalies resulting from the inspections will be dispositioned by Engineering. Occurrence of an anomaly that is adverse to quality will be entered into the Corrective Action System.

Corrective Actions

Corrective actions for conditions that are adverse to quality are performed in accordance with the Corrective Action System as part of the Quality Assurance Program. The engineering evaluation of inspection results anomalies for the representative samples of accessible cables and connectors will consider whether the observed condition is applicable for other accessible or inaccessible cables and connectors. Any resultant maintenance or repair activities are performed in accordance with the Work Control Process. The corrective action process provides reasonable assurance that deficiencies adverse to quality are either promptly corrected or are evaluated to be acceptable. Where evaluations are performed without repair or replacement, engineering analysis reasonably assures that the component intended function is maintained consistent with the current licensing basis. If the deficiency is assessed to be significantly adverse to quality, the cause of the condition is determined, and an action plan is developed to preclude repetition. The Corrective Action System identifies repetitive discrepancies and initiates additional corrective action to preclude

recurrence.

Confirmation Process

The confirmation process for non-EQ cable monitoring involves the Work Control Process to monitor cable conditions on an on-going basis.

Administrative Controls

Administrative and implementation procedures are reviewed, approved, and maintained as controlled documents in accordance with the procedure control process and the Quality Assurance Program.

Operating Experience

~~The non-EQ cable monitoring activity is new and has no operating experience. However, Dominion operating experience has shown that cable jacket anomalies have occurred, and have been evaluated and corrected to maintain intended functions at Surry and North Anna. Industry experience supports the need for the cable monitoring activity.~~The non-EQ cable monitoring activity is new and has no operating experience. However, Dominion operating experience has shown that cable jacket anomalies have occurred, and have been evaluated and corrected to maintain intended functions at Surry and North Anna.

Dominion operating experience has shown that in the past, service water pump motor feed cables have had moisture related failures. The engineering report of the event concluded that the root cause of the failure was the combined result of the manufacturing process in use at the time this cable was purchased in the early 1970's, and the presence of moisture and voltage stress. As a result of the failure, the four service water pump motor feed cables were replaced. Subsequently, manhole modifications were completed to minimize surface water intrusion. Follow-up operating experience determined that some manholes were still experiencing water intrusion, and required the installation of drains. Review of subsequent operating experience following the installation of these drains has shown no further plant issues concerning the integrity of service water pump motor cables.

Summary

The non-EQ cable monitoring activity will confirm the acceptable condition of accessible, non-EQ cable jackets and connector coverings. A Licensee Follow-up Action Item ensures that an initial visual inspection will be performed for representative samples of accessible non-EQ cable jackets and connector coverings between year 30 and the end of the current operating license, and that subsequent inspections will be performed at least once per 10 years during the period of extended operation. Although age-related degradation is not expected for power, instrumentation, and control cables and connectors in their normal operating environments, visual inspections will provide reasonable assurance that the intended functions will be maintained, consistent with the current licensing basis, during the period of extended operation.

5000 Dominion Boulevard, 2 NE
Glen Allen, VA 23060

Fax# 804-273-3554

DOMINION
License Renewal

Fax

To:	Bob Prato	From:	Diane Aitken
Fax:	(301) 415-2279	Pages:	8 Including cover sheet
Phone:	(301) 415-1147	Date:	8.23.01

Bob,

As discussed, Attached are draft copies of our first round of RAIs and their responses. Please contact Mike or Marc with any comments that you have. Again, we appreciate you taking time to review our responses and see this as beneficial in the effectiveness of the project.

Diane Aitken
(804) 273-2694

Attachment 1

License Renewal – Response to RAI
Serial No. 01-514

Response to Request for Additional Information

Dated August 8, 2001

Surry and North Anna Power Stations, Units 1 and 2

License Renewal Applications

Sections 2.5 and B2.1.1

DOMINION

DRAFT 8/23/01

Section 2.5, Electrical and Instrumentation and Controls System Scoping and Screening Results

RAI 2.5-1:

The screening results in both license renewal application (LRA) for Section 2.5 do not include any electrical components listed in NEI 95-10 (Appendix B) and the Standard Review Plan (Table 2.1-5) associated with the offsite power system. These are components such as switchyard bus, transmission conductors, switchyard insulators and transmission line insulators. 10 CFR 54.4(a)(3) requires that all systems, structures, and components (SSCs) relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulation for station blackout (10 CFR 50.63) be included within the scope of Part 54. In 10 CFR 50.63 it's required that each light-water-cooled nuclear power plant licensed to operate be able to withstand and recover from a station blackout of a specified duration that is based upon factors that include the expected frequency of loss of offsite power and the probable time needed to recover offsite power. At North Anna and Surry the specified duration was determined based upon evaluations that followed the guidance in NRC Regulatory Guide 1.155 and NUMARC 87-00, and included the plants' offsite power characteristics. These characteristics helped determine the probable time needed to recover offsite power (coping duration). The resulting four hour coping duration at North Anna and Surry is, therefore, based on the likelihood of recovering offsite power within four hours following its loss. Therefore, identify where in the LRA these Station Blackout SSCs are included within the scope of license renewal, or provide a technical justification for excluding the Station Blackout SSCs from the screening results.

Dominion Response:

A review of the SBO licensing correspondence, including the original Safety Evaluation Report (SER) and subsequent Supplemental SERs (SSERs), has shown that Dominion has evaluated North Anna and Surry Power Stations against the requirements of the SBO rule using the guidance for NUMARC 87-00, except where RG 1.155 takes precedence. Table 1 of RG 1.155 notes where the regulatory guide takes precedence over NUMARC 87-00. NUMARC 87-00, Section 2.4.1, "Assumptions," Item (1), states that the event, (i.e., SBO) ends when ac power is restored to shutdown buses from any source, including alternate ac (AAC).

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Dominion Response (cont'd):

The coping durations for both North Anna and Surry have been determined using NUMARC 87-00, Section 3. Section 3, Table 3-8 has three inputs for determining the required coping duration: the Off-site Power Group, the Emergency AC (EAC) Group, and Allowed EDG Target Reliability. The determination of the Offsite Power Group includes the reliability of the switchyard and the transmission system. However, the methodology used for determining the Offsite Power Group doesn't rely on a component level analysis; but instead uses plant weather, grid, and switchyard features. Plant weather exposure and the "reliability" of the offsite power system has been evaluated to provide input to Table 3-8 to determine coping duration.

Procedures for ac power restorations follow the guidance of NUMARC 87-00, Section 4.2.2. Section 4.2.1 also states that ac power may be restored from either the preferred (off-site) or a standby (Class 1E) power source. If an AAC power source is available, it may also be used to restore power. Neither North Anna nor Surry relies on offsite power to recover from an SBO event, as described in NUMARC 87-00.

North Anna Transfer Buses D, E, and F and Surry Transfer Buses D and E are located inside the normal switchgear rooms of each plant and are the common points where the preferred, standby, and AAC sources are available to restore power to the safe shutdown buses after an SBO. The AAC source and the emergency diesel generators (EDGs) are relied on to recover from an SBO event. The non-safety transfer buses, the AAC source (AAC diesel generator and its supporting systems), and the emergency diesel generators are in the scope of license renewal for compliance with SBO requirements. The non-safety and non-QA SSCs that comprise the switchyard and transmission system are not in the scope of license renewal because they are not required to perform the intended functions for compliance with 10 CFR 50.63 (SBO).

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RAI 2.5-2

The cables and connectors have been evaluated as commodities across system boundaries using the spaces approach. In both LRAs, Section 2.5.2, the applicant states that the evaluation boundary generally includes all cables and connectors in these areas to provide the complete coverage of cables and connectors in the scope of license renewal. The word "generally" is a concern in this statement. Identify any cables and connectors located within these spaces that have been excluded from the scope of license renewal and identify the technical basis for the exclusion.

Dominion Response:

The evaluation boundaries for cables and connectors have been established to include all areas that contain components supporting License Renewal intended functions. Cables and connectors in these areas supporting in-scope systems and components are in the scope of license renewal. To ensure the complete coverage of cables and connectors supporting intended functions, all the cables in these areas have been evaluated, with the following exceptions:

1. Control Rod Drive Mechanism (CRDM) Cables – Loss of the CRDM cables would neither impede nor prevent the performance of the control rod safety function. The CRDM cables are not required to support intended functions meeting the criteria in 10 CFR 54.4(a).

2. Bare Grounding Conductors – Bare grounding conductors are not scheduled or uniquely identified in the Equipment Data System (EDS). They are a part of the in-scope electrical power (EP) system. The bare grounding cables are used to construct the station ground grid and bond metal raceways, building structural steel, and plant equipment to earth ground. Bare grounding conductors provide personnel safety protection by interconnecting plant areas and equipment to minimize potential gradients (voltage differences) between these areas during electrical power system ground fault conditions. Bare grounding conductors are not required to support the intended functions meeting the 10 CFR 54.4(a) criteria.

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Section B2.1.1 Buried Piping and Valve Inspection Activities

RAI B2.1.1-1

The applicant is requested to provide the following information regarding the scope of the Buried Piping and Valve Inspection Activities:

Scoping - In the SPS LRA, page B-9, the applicant states that SPS 1 and 2 utilizes buried copper-nickel pipe. Explain why this material is not included as one of the representative samples for the material/burial condition combinations provided on Page B-8.

Dominion Response:

The absence of copper-nickel material for the Scope statement on page B-8 was an administrative error. Copper-nickel (uncoated) is a material/burial condition combination that is included within the Scope of the Buried Piping and Valve Inspection Activity.

DRAFT

8/23/01

RAI B2.1.1-2

The applicant is requested to provide the following information regarding the scope of the Buried Piping and Valve Inspection Activities:

Detection of Aging Effects - Identify the grade of copper-nickel material used in buried component applications at Surry and verify that this grade of copper-nickel material is not susceptible to changes in material properties (such as selective leaching) when exposed to underground conditions.

Dominion Response:

A 90/10 alloy of copper-nickel is used as buried piping at Surry. Operating experience confirms that the 90/10 alloy is much less susceptible to selective leaching than is the aluminum-bronze alloy. Material degradation problems have not occurred with the 90/10 buried piping that is in service at Surry.

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RAI B2.1.1-3

The applicant is requested to provide the following information regarding the scope of the Buried Piping and Valve Inspection Activities:

Operating Experience - The applicant states that significant external degradation of buried piping due to effects of aging requiring aging management has not been found. This statement is based on the experience that has been gained through the Work Control Process with respect to buried fire protection piping (all four units) and service water system piping (NAS 1and 2). Please describe the operating experience for all four units, including any failure of buried components due to aging or failure of coating material. Include the means by which the aging or coating failure was detected and any corrective actions taken to prevent future aging/failures.

Dominion Response:

Maintenance activities for buried carbon steel (including cast iron) piping and valves have involved principally fire protection components at both the Surry and North Anna Power Stations. The service water system at North Anna also includes buried carbon steel components which are coated or wrapped similarly to fire protection components to prevent water intrusion that could lead to loss of material from the metallic surfaces. Maintenance activities for buried components predominately involve excavation of valves. These tasks occur at an average frequency of three times per year at both Surry and North Anna, and provide the opportunity to examine the integrity of coatings/wraps on the valves and adjacent piping. Visual examinations of these excavated components have not identified external degradation that would be attributable to aging effects.