

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

April 11, 2001

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

Serial No. 01-037  
NLOS/GDM R2  
Docket Nos. 50-280, 281  
License Nos. DPR-32, 37

Gentlemen:


**VIRGINIA ELECTRIC AND POWER COMPANY**  
**SURRY POWER STATION UNITS 1 AND 2**  
**REQUEST FOR ADDITIONAL INFORMATION**  
**ALTERNATE SOURCE TERM - PROPOSED TECHNICAL SPECIFICATION CHANGE**

In a letter dated April 11, 2000 (Serial No. 00-123), Virginia Electric and Power Company (Dominion) submitted a license amendment request for implementation of the Alternate Source Term (AST) as the plant design and licensing bases for Surry Power Station Units 1 and 2. Supplemental responses to NRC requests for additional information were provided on August 28 and November 20, 2000.

A conference call was held with the NRC staff on December 7, 2000 to address several questions that had been previously provided by the Surry NRC Project Manager, Gordon Edison. At the conclusion of the conference call, Dominion agreed to provide additional information to the NRC to facilitate the staff's continued review of the AST license amendment request. A portion of this information is provided in the attachment. The balance of the requested information requires an extensive amount of analysis and therefore will be provided in a future submittal. The outstanding analysis work will also necessitate a revision to the proposed Basis section of Technical Specification 3.10. The revised Basis section will also be provided in the future submittal.

Should you have any questions or require additional information, please contact us.

Very truly yours,



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

Enclosure

A001

Commitment made in this letter:

1. The balance of the information requested by the NRC in the telecon of December 7, 2000, including a revision to the proposed Basis section of Technical Specification 3.10, will be provided in a future submittal.

cc: U.S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
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Atlanta, Georgia 30303-8931

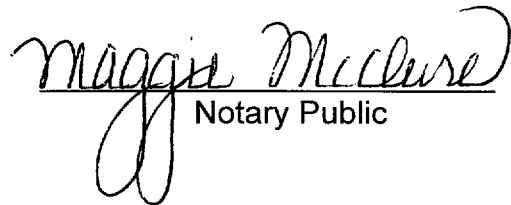
Mr. R. A. Musser  
NRC Senior Resident Inspector  
Surry Power Station

COMMONWEALTH OF VIRGINIA    )  
                                                  )  
COUNTY OF HENRICO            )

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering & Services, of Virginia Electric and Power Company. She has affirmed before me that she 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 her knowledge and belief.

Acknowledged before me this 11<sup>th</sup> day of April, 2001.

My Commission Expires: 3-31-04.

  
\_\_\_\_\_  
Notary Public

(SEAL)

**Enclosure**

**Response to NRC Request for Additional Information**  
**Alternate Source Term**

**Surry Power Station Units 1 and 2**

**Dominion**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**  
**ALTERNATE SOURCE TERM TECHNICAL SPECIFICATION CHANGES**  
**SURRY POWER STATION, UNITS 1 AND 2**

**NRC Question No. 1**

Defense in depth requires the capability of closing the containment equipment hatch and personnel airlock in the event of an accident during refueling. The commitment may include the provision that dose rates will not endanger plant personnel. Describe the procedures that will be used to close the equipment hatch and airlock. Is there a designated individual or group assigned to close the hatch and/or airlock? Who determines the dose rates to these individuals? What other duties will these other individuals have? What training will they receive? What restrictions will be placed on cables and hoses across the hatch or airlock?

**Dominion Response**

The station implementation plan for the proposed alternate source term (AST) Technical Specification license amendment request includes actions for procedural development and/or revisions to address closure of the equipment hatch, personnel airlock, and other containment penetrations following a fuel handling accident (FHA) inside containment. The general philosophy for procedures for containment closure following an FHA inside containment will parallel the philosophy already reflected in procedures currently in place to respond to a loss of decay heat removal event. The philosophy can be summarized as follows:

- A breach log will be maintained to identify and track containment openings.
- Although the team will have other duties (e.g., normal reactor disassembly and reassembly activities), containment closure team members will be pre-designated individuals that are available to perform closure duties.
- The team members will be fully aware of the required closure actions, trained, and briefed prior to fuel handling.
- The required tools and equipment to accomplish closure actions will be pre-staged.
- The limiting case for Surry is the closure of the equipment hatch, which requires actions from inside containment.
- Appropriate precautionary measures (e.g., quick disconnects, etc.) will be in place with regard to cables, hoses, etc. penetrating the equipment hatch.
- In the event of an FHA inside containment, the appropriate annunciator response procedures and/or abnormal procedures will provide direction to the appropriate containment closure procedures.

- The pre-designated team members, along with Radiological Protection personnel assigned to monitor area and personnel dose rates, will respond to take the required closure actions based on the existing conditions and established radiation protection practices (which consider allowable doses, stay times, etc.).
- Assuming acceptable radiological protection conditions exist, containment closure will be established within 45 minutes following the decision to isolate containment.

### **NRC Question No. 2**

Reference page 14 of the April 11, 2000 submittal, GDC 64 requires releases from the containment to be monitored. How will this be done for the open equipment hatch/airlock during an accident situation?

### **Dominion Response**

The implementation plan for the proposed alternate source term (AST) Technical Specification license amendment request includes actions for procedural development to address the potential radiological concerns associated with the open equipment hatch. The general philosophy for these procedures will parallel the philosophy reflected in practices currently in place.

When the equipment hatch is open, the opening is typically covered with a "polyethylene curtain" unless unimpeded access is necessary for the movement of equipment into or out of containment. However, the curtain is not airtight. During refueling operations, containment purge will be in operation, and inward airflow will result. However, in the event of an FHA, purge may be isolated, so there could be outward airflow from the containment. Radiological assessment will be conducted using the on-site and off-site radiological teams dispatched as part of the Emergency Response Organization, as appropriate. Although there is no permanently installed radiation monitoring equipment in the proximity of the equipment hatch, the permanently installed radiation monitors elsewhere in containment will provide information to assess containment radiological conditions. In the event of confirmed outflow from containment, radiological assessment will be conducted in the area of the hatch to assess radioactive concentrations. Dose will be accounted for and reported in accordance with the Off-site Dose Calculation Manual (ODCM).

### **NRC Question No. 3**

Provide a sketch or drawing of the Surry Control Room envelope that shows the locations of the installed differential pressure indicators.

### **Dominion Response**

A drawing of the Surry Control Room that shows the locations of the eight installed differential pressure indicators is provided in Attachment 1.

**NRC Question No. 4**

Confirm that the meteorological measurement program meets the guidelines of Regulatory Guide 1.23, "Onsite Meteorological Programs," including factors such as maintaining good siting, instruments within specifications, and adequate data recovery and quality assurance checks. If deviations occurred, describe such deviations from Regulatory Guide 1.23 guidance.

**Dominion Response**

Our meteorological measurement program for Surry Power Station is in accordance with the guidance provided in Regulatory Guide 1.23 (February 1972) without deviation.

**NRC Question No. 5**

Describe any problems with the meteorological measurement instrumentation that may have affected the accuracy of meteorological data in the 1992 – 1996 time frame.

**Dominion Response**

A review of documentation showed that the Delta T system was replaced in July 1993 due to difficulties in maintaining the previous system. The previous system was designed such that if one temperature probe failed, or if the signal conditioner failed, then the entire system had to be returned to the manufacturer for repair. The replacement system uses individual components that can be replaced and adjusted as needed. The specifications of both systems meet Regulatory Guide 1.23 instrument accuracy requirements. Between July 1993 and May 1996, numerous maintenance visits were required to investigate intermittent, suspicious Delta T readings, and various repairs and improvements were made such as repeated verifications of equipment calibration, replacement of temperature shields, replacement of the Delta T power supply and improvements in the site's grounding. During this period, data that were obviously erroneous were deleted from the historical database and were not included in the data provided to the NRC.

**NRC Question No. 6**

The following questions relate to Attachment 3 (Question No. 7) of your November 20, 2000 supplemental alternate source term submittal, that provided details used in the calculation of atmospheric dispersion factors.

- a. Determine the wind sector which applies to the number 4 in the first column of figures in the PAVAN input file (denoted as Table 3 and labeled 'PAVAN Input File – Unit 1 Reactor Release Ground-Level Release')
- b. Provide the reason for use of the upper wind speed increments indicated in the joint frequency tables generated as PAVAN input.

- c. Examine the reason why the apparent output from ARCON96 runs had a time interval of 2-8 hr and these atmospheric dispersion factors were entered in the calculation in the 0-8 hr column. These values are found in the LOCA (Table 5) and Fuel Handling Accident (Table 3) calculations provided as Attachment 1 (Question No. 1) to the November 20, 2000 supplemental alternate source term submittal.

**Dominion Response**

- a. The number "4" is the frequency distribution for wind direction "north" and wind speed category "5.0-6.9 m/s" under Stability Class A.
- b. The wind speed bins were incremented in miles per hour and the wind speed data input into these bins were in meters per second. As a result, the relatively high wind speed categories of 12.0-14.9 m/s, 15.0-18.9 m/s and 19.0-23.0 m/s were included in the joint frequency distribution tables. The highest wind speed in the data was in the 9.0-11.9 m/s category. Dominion will re-calculate the atmospheric dispersion factors using wind speed bins consistent with meters per second. These revised atmospheric dispersion factors will be used in revised LOCA and FHA offsite dose calculations. Dominion will submit the revised results from these calculations in a future submittal.
- c. The column heading "0-8 hr" was a typographical error. The column heading should have been "2-8 hr", consistent with ARCON96 output. As a result of this discrepancy, the 0-8 hr atmospheric dispersion factors were used for both the 0-2 hour interval and the 2-8 hr interval. This resulted in non-conservative dose consequences. The Surry LOCA and FHA onsite dose consequences will be re-calculated with the correct ARCON96 atmospheric dispersion factors. Dominion will submit the revised results from these calculations in a future submittal.

**NRC Question No. 7**

Please provide a legible marked-up site plan that indicates the relative locations of sources and receptors used in the ARCON96 runs and dose analysis.

**Dominion Response**

A site sketch identifying the relative locations of sources and receptors is provided in Attachment 2. (A scale site plot plan is also provided for comparison/reference with the sketch.)



**NRC Question No. 8**

Provide results of a sensitivity calculation that determines the maximum assumed control room unfiltered air leakage values for a LOCA and a FHA that would result in reaching the control room TEDE limit.

**Dominion Response**

It is Dominion's understanding that the Staff intends to use this sensitivity result in a risk-informed fashion as part of the evaluation for control room design performance during the AST review. During the December 7, 2000 telecon discussion, Dominion stated that the maximum allowable leakage value associated with the LOCA event is expected to be limiting (i.e., LOCA would result in a smaller allowable leakage value than that for the FHA event). Dominion proposed (and the Staff concurred) that if this was confirmed, results would only be provided for LOCA. Preliminary calculations have confirmed that the LOCA results will be more limiting than the FHA for this purpose. Consequently, Dominion will submit the requested result for the LOCA event in a future submittal.

**NRC Question No. 9**

Explain why the timing of the containment pressure transient is being changed.

**Dominion Response**

This question concerns the proposed increase in the allowable time (from one hour to 4 hours) to achieve subatmospheric conditions following the design basis LOCA. This change was made possible by the margins inherent in the reanalysis with the AST assumptions. The radiological analyses have incorporated an extended period of containment leakage to account for the effects of this change.

**NRC Question No. 10**

Relating to the subatmospheric pressure limit change: a) Are any containment heat removal systems being changed? b) Are the containment integrity analyses being redone to take credit for the margin?

**Dominion Response**

No changes are proposed at this time to containment heat removal systems nor are any containment integrity analyses being redone to take credit for this margin. This margin represents a potential future benefit.