

May 10, 1985



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. James R. Miller, Chief
Operating Reactors Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Serial No. 85-094
NO/DAS/BSO:acm
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

VIRGINIA POWER
NORTH ANNA POWER STATION, UNITS 1 AND 2
CONFORMANCE WITH REGULATORY GUIDE 1.97

Virginia Power letter, Serial No. 84-054, dated January 31, 1984, provided detailed descriptions of our conformance to Regulatory Guide 1.97 Revision 3. Your letter dated February 8, 1985, requested additional information regarding certain items. The attachment to this letter provides a partial response to your request for additional information. The remaining information will be provided by May 30, 1985. The NRC Staff was apprised of this schedule modification in telephone conversations with Ms. N. E. Clark on March 29, 1985 and April 4, 1985.

If you have any questions, or need additional information to complete your review of this partial response, please contact us.

Very truly yours,

A handwritten signature in dark ink, appearing to read "W. L. Stewart".
W. L. Stewart

Attachment

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PDR ADOCK 05000338
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Acc 3
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cc: Dr. J. Nelson Grace
Regional Administrator
Region II

Mr. M. W. Branch
NRC Resident Inspector
North Anna Power Station

NORTH ANNA POWER STATION
REGULATORY GUIDE 1.97
RESPONSE TO NRC LETTER
DATED FEBRUARY 8, 1985

NRC letter, dated February 8, 1985, on conformance with Regulatory Guide 1.97 identified sixteen open items and requested a Virginia Power response to each item. Responses to nine of these items are provided below. The remaining items will be addressed by separate correspondence.

Item 2

Containment isolation valve position -- the licensee should identify the specific deviation from the recommended closed - not closed indication and justify this deviation (Section 3.3.2).

Virginia Power Response

No exception is taken to this item (item B-14). Rather, we intend to install qualified closed - not closed position indication for valves HCV1936 and HCV2936. We will likewise install qualified position indication for a new valve to be installed in line with the HCV2200 valves. When installation of these valve position indicators are complete, we will be in compliance with the requirements of this item.

Item 9

Boric acid charging flow -- the licensee should verify that the instrumentation, as modified, will be environmentally qualified in accordance with 10 CFR 50.49 (Section 3.3.6).

Virginia Power Response

We have reassessed our position on Boric Acid Bypass Flow transmitters and now consider that the present transmitters, although not specifically qualified, are adequate given their indirect confirmatory function and location in a relatively benign environment. Accordingly, it is our position that this item should be reclassified to Category 3 based on the following:

- 1) The boric acid bypass line is used to supply boric acid directly to the charging pump suction in order to compensate for reactivity excursions. In addition, the associated flow transmitters are not required by the operator to initiate planned manual actions or to mitigate the consequence of a design base accident. Verification of accomplishment of the safety function (i.e. reactivity control) and hence the performance of boration is more directly monitored by measurement of neutron flux which is to be upgraded to a Category 1 instrument.
- 2) The boric acid bypass flow transmitters are not used to detect high energy line breaks (HELB). The temperature effects of a HELB in the Auxiliary Building are discussed in the UFSAR in Appendix 3C,

Section 5.4.6.2. Sources of high temperature conditions are identified and methods of mitigation are discussed. Protection from a break in the Chemical and Volume Control Systems includes the use of existing instrumentation to detect the break. However, the boric acid bypass line is not identified as a high energy line. Therefore, the flow transmitters will not be used to detect the source of a HELB.

- 3) The boric acid bypass flow transmitters will not be exposed to a harsh environment during design base events for which they are expected to operate. These flow transmitters are located in the Auxiliary Building at elevation 274'. The environmental zone description for this location identifies the environment to which these transmitters will be subjected to with the following parameters;

- A) 40 year radiation dose of 5.3×10^3 rads -

The 40 year radiation dose of 5.3×10^3 rads (T.I.D.) is below the 10^4 rad threshold level for qualification and has been reviewed and determined not to be detrimental to the operation of the transmitters.

- B) LOCA radiation dose of less than 1×10^6 rads -

It is important to note that this radiation level will not be seen during the time these flow transmitters are required to operate. The boric acid bypass flow line is not designed to be used following a LOCA. Upon initiation of the Safety Injection System, the charging pump suctions are transferred to the Refueling Water Storage Tank. The high radiation levels associated with a LOCA will not be seen at the transmitters until after Safety Injection initiation, at which time this line is no longer required to function.

Based on the above, boric acid bypass flow should be reclassified as a Category 3 variable commensurate with its accident monitoring function.

Item 10

Flow in high pressure injection system -- the licensee should verify that the instrumentation, as modified, meets the requirements of Category 1 instrumentation (Section 3.3.7).

Virginia Power Response

The High Pressure Safety Injection flow transmitters will be modified to meet the requirements of Regulatory Guide 1.97. New Category 1 environmentally and seismically qualified instrument channels will be added in the Auxiliary Building to provide redundant flow information on HPSI hot and cold leg total flow at the Main Control Board, Technical Support Center (TSC) and Emergency Operations Facility (EOF). The existing hot and cold total flow instrument channels will also be changed

to upgrade the equipment to Category 1 instrumentation. In addition to the control room indication, the existing channels will also input to the TSC and EOF. The original approach to upgrade and relocate the individual loop flow channels inside containment was abandoned in favor of the modifications identified above. This modification, when completed, will meet the intent of Regulatory Guide 1.97, Revision 3.

Item 11

Pressurizer level -- the licensee should provide a redundant channel of instrumentation (Section 3.3.8).

Virginia Power Response

In our January 31, 1984 letter, we stated that redundancy was provided for pressurizer level (item A-13). In the same response, we incorrectly stated that redundancy was not provided for pressurizer level (item D-13). As a matter of clarification, redundant instrument channels of pressurizer level will be provided. In addition, the "density compensation" referenced in Section 3.3.8 will be determined by procedure.

Item 12

Pressurizer Heater status -- the licensee should provide the recommended instrumentation for this variable (Section 3.3.9).

Virginia Power Response

Category 2 instrumentation providing power (kw) indication in lieu of current (amperes) indication will be provided to comply with the requirements of Regulatory Guide 1.97, Revision 3. Kw indication is presently used by operators to control pressurizer heaters and continued use of this parameter for pressurizer heater status indication addresses human factors considerations. Since this is a new commitment, we will install the subject indication during the refueling outages presently scheduled for 1987.

Item 13

Containment sump water temperature -- environmental qualification should be addressed in accordance with 10 CFR 50.49 (Section 3.3.13).

Virginia Power Response

Emergency Core Cooling and Containment Heat Removal System pumps take suction from the containment sump when the refueling water storage tank is nearly empty. The analysis performed to meet the criteria of Safety Guide 1, "Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal System Pumps" and to identify NPSH requirements establishes that the sump is adequate with respect to NPSH. Accordingly, it is our position that the variable, containment sump water temperature, should be

reclassified as a Category 3 variable, since it is not needed during design basis accident events.

Item 14

Component cooling water temperature to ESF system -- the licensee should install Category 2 instrumentation for this variable (Section 3.3.15).

Virginia Power Response

The Service Water System provides cooling water to Engineered Safety Feature (ESF) systems. Therefore, service water temperature is the North Anna equivalent variable for the "component cooling water temperature to ESF system" variable specified in Regulatory Guide 1.97.

Service water temperature instrument channels will be modified to meet the requirements of Regulatory Guide 1.97. These modifications are now in the design stage and will provide Service Water Temperature information to the TSC and EOF in addition to the existing temperature indicating meter on the main control board. Replacement of the existing RTD's will not be necessary because they are located in the Turbine Building and the Service Water Pump House and were originally specified to function in the areas in which they are located.

Item 15

Component cooling water flow to ESF system -- the licensee should verify that Category 2 instrumentation is being used for this variable (Section 3.3.15).

Virginia Power Response

Consistent with the response to Item 14 above, service water flow is the North Anna equivalent variable to the "component cooling water to ESF system" variable specified in Regulatory Guide 1.97. New category 2 flow instrument channels will be installed in the Service Water Return Header from the charging pump lube oil, gear box and seal coolers and will provide information to the TSC and EOF via the Data Acquisition System. This information will also be available for call up on CRT displays in the Main Control Room. This modification will meet the intent of Regulatory Guide 1.97.

Item 16

NRC Position

Emergency ventilation damper position -- the licensee should verify that Category 2 instrumentation is being installed for the control room display of this variable.

Virginia Power Response

The Emergency Damper Position indication will be modified in order to comply with the intent of Regulatory Guide 1.97, Revision 3. Environmentally qualified limit switches will be installed on the Emergency Damper to provide information on open-closed status. This information will be available on CRT displays in the control room, TSC and EOF.

Additional Information

In addition to the items addressed in response to your letter of February 8, 1985, Serial No. 85-094, Virginia Power has the following points which require additional discussion.

Containment Sump Narrow Range Water Level - (Item B-12A)

Containment Sump Narrow Range Level is provided for leak detection during normal power operation as required by Regulatory Guide 1.45. Regulatory Guide 1.45 requires leakage detection systems to be qualified to perform their function following seismic events that do not require plant shutdown. The Regulatory Guide does not require environmental qualification in that the leakage detection systems are required for normal operations rather than post-accident conditions.

Accordingly, the containment sump narrow range water level monitor is not qualified for accident radiation levels. For accident conditions involving high radiation levels in the containment, it is reasonable to assume that substantial amounts of water will be in the containment. Containment sump wide range water level detectors, which are fully environmentally qualified as Category 1 instruments, will be provided to monitor containment water level for such conditions. Therefore, Virginia Power considers that the narrow range variable should be reclassified as a Category 3 variable consistent with Regulatory Guide 1.45, based on the fact that sump narrow range water level does not need to be qualified for radiation during normal conditions or during the early stages of an accident and since a qualified wide range device is provided to monitor water level following accidents with corresponding high radiation levels.

Emergency Diesel Generator KVAR - (Item D-35AB)

This information is not required in the TSC or EOF for normal or post-accident operation. Therefore, this variable is deleted from its TSC and EOF display commitments.