

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

February 10, 1984

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - RESPONSE TO VIOLATIONS -
50-438/83-31-01, 50-439/83-31-01 - MAINTENANCE COVERS ON SOLID STATE
CABINETS, 50-438/83-31-02 - ORIENTATION OF ASCO SOLENOID VALVES

This letter is in response to R. C. Lewis' letter dated January 4, 1984,
report numbers 50-438/83-31, 50-439/83-31 concerning activities at the
Bellefonte Nuclear Plant which appeared to have been in violation of NRC
regulations. Enclosed is our response to the citations.

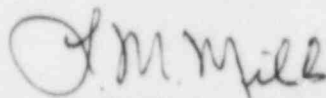
As discussed with NRC-OIE Inspector P. E. Fredrickson on January 13, 1984,
TVA will submit our response to the programmatic aspects of the violations
by March 5, 1984. A one-week extension for the submittal of this response
was also discussed with Inspector Fredrickson on February 1, 1984.

If you have any questions concerning this matter, please get in touch with
R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein are
complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc (Enclosure):

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO SEVERITY LEVEL IV VIOLATION
50-438/83-31-01, 50-439/83-31-01
MAINTENANCE COVERS ON SOLID STATE CABINETS

Description of Deficiency

10 CFR 50, Appendix B, Criterion XIII and the accepted QA Program (TVA-TR75-1A, Revision 5) Section 17.1.13 require that measures shall be established to control the handling and storage of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration and, when necessary for particular products, that special environments, such as temperature levels, shall be specified and provided.

BNP QCP-1.3, Revision 4, requires the Responsible Engineering Unit to stipulate the environmental conditions required during the installation of solid state equipment after reviewing vendors manuals for the requirements.

Consolidated Control Corporation, for solid state equipment procured under Contract No. 85550, states that the equipment is rated for a temperature environment of 50 - 104°F with a normal temperature of 75°F.

Contrary to the above, special temperature environments were not provided in that on November 8, 1983 solid state control cabinets in train A and B instrument rooms were found to be energized with their heat dissipation louvers covered and the metal exterior of the cabinet very hot to the touch and exceeding the 104°F maximum temperature.

TVA Response

Admission or Denial of the Alleged Violation

TVA denies the violation occurred as stated.

The plastic covers in question were installed to prevent dirt and dust from construction activities from entering the cabinets in accordance with vendor requirements. These covers actually had slits cut in them at the top and were also open at other locations at the top. In addition, the penetrations opening into the bottom of the cabinets allow some passage of air. Therefore, there was in fact some convective cooling occurring at the time the inspector identified the problem. Although the technical manual states that the solid state control system (SSCS) cabinets are designed to function continuously in a 50-104°F environment, the temperature limits were modified through Contract Change No. 41 on September 1, 1981 to increase the range to 50-120°F. The upper limit (120°F environment) is the ambient temperature limit around the cabinet, which implies the cabinet interior and surface would exceed 120°F when the ambient temperature is near the limit. Discussions with the vendor have revealed that the components subject to damage due to high temperature are the integrated circuit (IC) chips which are acceptable to 160°F.

Although the temperature of the cabinet surface could have exceeded 104°C due to the electrically generated heat trapped by the covers, there is no absolute way of determining the cabinet internal and surface temperatures at the time of the inspection. However, TVA has performed a simulation of this condition by covering a cabinet in unit 2, operating it for 20 hours, then taking temperature measurements at various locations. The location of the measuring thermocouple and the corresponding temperature measured appear below:

<u>Location</u>	<u>Temperature</u>
1. Air temperature between circuit boards inside cabinet.	105.2°F
2. Surface temperature on cabinet.	103.7°F
3. Air temperature near boards at top of cabinet.	101.9°F

Based on the above data, TVA does not believe that the vendor requirements for a 120°F maximum environment were violated. TVA believes that existing conditions, even with the plastic covering in place, allowed sufficient heat transfer to meet the intent of the 120°F environment limit while protecting the equipment from contamination. Additionally, no erratic or spurious operation or component failures in the SSCS cabinets have been identified which would suggest component damage due to excessive temperatures.

BELLEFONTE NUCLEAR PLANT UNIT 1
RESPONSE TO SEVERITY LEVEL IV VIOLATION
50-438/83-31-02
ORIENTATION OF ASCO SOLENOID VALVES

Description of Deficiency

10 CFR 50, Appendix B, Criterion V, and the accepted QA program (TVA-TR75-1A, revision 5), Section 17.1.5, requires that activities affecting quality be prescribed and accomplished in accordance with procedures and drawings and that these procedures and drawings include appropriate quantitative and qualitative acceptance criteria.

ASCO 3- and 4-way solenoid valve catalog No. NP-1 states that the Model No. 206-380 solenoid valve must be mounted with the solenoid vertical and upright.

Contrary to the above, activities affecting quality were not prescribed and accomplished in accordance with procedures and drawings containing appropriate acceptance criteria, in that the ASCO solenoid orientation requirement is not described in any Bellefonte installation and inspection procedure or drawing and, in that the operators on containment isolation valves INV-IFSV-152 and INV-IFSV-140, were mounted in a position that oriented the model No. 206-380 solenoid in a horizontal position.

1. Admission or Denial of Alleged Violation

TVA admits the violation occurred as stated.

2. Reason for the Violation

TVA failed to require from the vendor specific information regarding orientation limitations on the affected valves.

3. Corrective Steps Which Have Been Taken and the Results Achieved

Vendor documentation for pneumatic control valves with safety-related pilot solenoids was researched to identify all valves using solenoids which have orientation limitations. When the potential problem valves were identified, the mechanical piping drawings were reviewed for control valve (and consequently solenoid valve) orientation. Upon elimination of those installed correctly, the resulting list identified all valves with unacceptable installations.

An engineering change notice (ECN) will be prepared to revise all the vendor drawings for the unacceptable installations to reflect correct solenoid orientation. After completion of the design work, the affected valves will be properly oriented by TVA's Division of Construction (CONST).

4. Corrective Steps Which Will Be Taken to Avoid Further Violations

TVA is in the process of preparing its response to the programmatic aspects of this violation as requested in the transmittal letter.

5. Date When Full Compliance Will Be Achieved

TVA will properly orient all affected valves by August 1, 1985. Actions taken to avoid further violations will be addressed by the programmatic response to be supplied by March 5, 1984.