TENNESSEE VALLEY AUTHORITY

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BLRD-50-438/82-68 BLRD-50-439/82-61

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 - GENERIC DEFICIENCIES AT CONSOLIDATED CONTROLS CORPORATION - BLRD-50-438/82-68, BLRD-50-439/82-61 -FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on September 16, 1982 in accordance with 10 CFR 50.55(e) as NCR 1950. This was followed by our interim reports dated October 18, 1982 and May 18, 1983. Enclosed is our final report. We consider 10 CFR Part 21 applicable to this deficiency.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Mahager Nuclear Licensing

Enclosure

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

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



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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 GENERIC DEFICIENCIES AT CONSOLIDATED CONTROLS CORPORATION NCR 1950 BLRD-50-438/82-68, BLRD-50-439/82-61 10 CFR 50.55(e) FINAL REPORT

Description of Deficiency

Consolidated Controls Corporation (CCC) of Bethel, Connecticut, has supplied TVA with the solid-state control system (SSCS) as well as the basic control room switch modules (Type 5N3) for the Bellefonte Nuclear Plant. Since the beginning of shipment in May 1977 and continuing to the present, there have been at least 39 nonconformances written against the equipment supplied by CCC. At least six (NCRs 1309 (BLRD-50-438,439/81-12), 1296 (BLRD-50-438/81-32,439/81-35), 1362, 1559 (BLRD-50,438/81-39, 439/81-42), BLN EEB 8204 (BLRD-50,438/82-38, 439/82-34), and 2162 (BLRD-50-438/83-12)) of these nonconformances have been determined to be reportable to the NRC. Individually, most of these nonconformances do not represent a significant condition adverse to quality; however, collectively, they do indicate a breakdown in the supplier's quality control program.

Bellefonte is the only TVA plant to receive equipment under a Quality Assurance (QA) contract from CCC.

Due to the indications of a QA program breakdown, TVA has conducted three QA audits of CCC, in addition to the NRC QA audit of July 1982. Below is a description of the deficiencies identified during these audits:

 One deficiency written as the result of findings during the September 29-October 1, 1981, TVA Audit No. 81V-28 (letter from R. A. Costner, TVA to Consolidated Controls Corporation dated October 19, 1981).

Forms 25-1057 and 25-1057A are not always used when a change to Engineering drawings is requested. This is contrary to CCC Quality Assurance Manual, Revision 6, Section 11.

- Six nonconformances written as the result of findings during the July 13-15, 1982, NRC inspection (letter from Uldis Potapovs, NRC to Consolidated Controls Corporation dated September 2, 1982).
 - A. Visual inspection of reworked 6N191 control buffer modules Serial Number (S/N) 010 through 1869) and 6N193 field buffer modules (S/N 010 through 1439) was not performed. This is contrary to "Post Module Repair Acceptance Testing - 6N191 and 6N193, of the Inspection Checklist," dated November 11, 1981, which requires that all reworked modules be tested in accordance with procedures KBJ1315 and KBK1315, respectively.

- B. One field buffer module 6N193 (S/N 033) was not scrapped as dispositioned by Discrepancy Report (DR) No. 1-0962 dated November 13, 1981, as evidenced by the Test Documentation Sheet (TDS) which reflects an acceptable operating retest on June 11, 1982. This is contrary to paragraph 6.3.1.2 of the Guality Control Manual No. 2, Revision 6, dated August 1, 1981.
- C. Test dates had not consistently been inserted in the TDSs for 6N191 control buffer modules and 6N193 field buffer modules. Actions taken in connection with noted deficiencies had not been entered in the TDSs for various 6N191 and 6N193 modules covered by some DRs. These actions are contrary to paragraph 18.0 of Appendix A to TVA Contract Specification No. 2200.
- D. Revised quality control standards and quality control instructions had not been reviewed and approved by the Quality Control Manager or the Assistant Quality Control Manager. This is contrary to paragraph II of Quality Control Instruction (QCI) No. 057 dated April 21, 1978.
- E. Various documents show that final testing of ten 6N193 field buffer modules was not completed prior to submittal to TVA's inspector. This is contrary to paragraph 6.1 of the Quality Control Manual No. 2, Revision 6, dated August 1, 1981.
- F. A burn-in test was not conducted on certain reworked 6N191 control buffer modules. This is contrary to Table No. 1 entitled "Post Module Repair Acceptance Testing 6N191 and 6N193 of the Inspection Checklist," dated November 11, 1981.
- One deficiency written as the result of findings during the October 12-14 1982, TVA Audit No. 82V-67 (letter from P. L. Duncan, TVA to Consolidated Controls Corporation dated October 28, 1982).

Objective evidence could not be presented to indicate the conduct of internal audits of activities at both the plants (Danbury and Bethel). This does not provide evidence of compliance with the Quality Control Manual, Section 26.

4. One deficiency writte. as the result of findings during the June 14-16, 1983, TVA Audit No. 83V-42 (letter from R. A. Costner, TVA to Consolidated Controls Corporation dated July 28, 1983).

It was determined that quality assurance records were not properly indexed, filed, and stored. This is contrary to the Quality Assurance Manual and ANSI N45.2.

Safety Implications

A deficient vendor QA program could result in TVA receiving safety-related equipment of indeterminant quality. Failure of this equipment due to unidentified deficiencies could result in a condition adverse to safe plant operation. Corrective Actions for Audit Findings

1. As stated in the letter from R. A. Costner, TVA to Consolidated Controls Corporation dated December 3, 1981:

CCC Quality Assurance Manual, Revision 6, Section 11, paragraph 11.11.4 (page 54) was changed by Addenda No. 2 to state that forms 25-1057 and 25-1057A are the only authorized forms for use when <u>releasing</u> Engineering drawing changes.

- As stated in the letters from L. E. Goodsell, Jr., CCC to the Nuclear Regulatory Commission dated September 21 and 30, 1982.
 - A. Test data records of all module types (Nos. 6N191 through 6N196, 6N198, 6N199, and 6N215) for each module previously accepted by CCC and TVA were completed and reviewed. Manufacturing routings for module types 6N191 and 6N193 were revised to add to the final inspection process the instruction, "Enter and verify all entries are complete on test data sheets and form No. 81-069."

QCI089 was revised in October 1982 to include specific instructions to assure that test data is properly reviewed and inspection entries completed prior to product presentation to the customer.

B. The June 11, 1982, test entry was in error and the TDS was annotated to provide continuity of DR disposition action for the 6N193 field buffer module, S/N 033.

Current DRs that authorize scrap disposition have the DR number posted on the test data record. A copy of the DR is being sent to the inspection supervisor in addition to the originator.

C. TDSs for all TVA module types (6N191 through 6N196, 6N198, 6N199, and 6N215) were reviewed and completed as required for correct and complete dates. TDSs were posted for the 6N191 and 6N193 modules which lacked DR information.

Test and inspection supervisors instructed their personnel to post complete entry dates on all test documents. This requirement is monitored by periodic scheduled internal audit activities. DR information is being posted on test data records. A copy of the DR is being sent to the inspection supervisor in addition to the originator.

- D. All revisions to Quality Control Instructions and Quality Control Standards are being signed by the Quality Control Manager or the Assistant Quality Control Manager, per QCI057.
- E. Documentation was located which provided proof that the ten 6N193 field buffer modules were fully tested and inspected, as required. The test technicians had not entered this information on the TDSs. This proof was presented to the NRC in L. E. Goodsell, Jr.'s September 30, 1982, letter.

QCI089 was revised in October 1982 to include specific instructions to assure that test data is properly reviewed and inspection entries are complete before product presentation to the customer.

F. The transistors purchased to replace those originally installed on the 6N191 control buffer modules were preburned-in and identified with a blue dot on the transistor case.

This part change-out was the only exception to (Table No. 1) requirements for semi-conductor devices. All the 6N191 modules had been previously subjected to burn-in requirements.

3. As stated in the letter from R. A. Costner, TVA to Consolidated Controls Corporation dated December 6, 1982.

CCC Internal Audit Checklist forms, used to record audit findings, were revised to denote plant activity location where the audit was conducted. CCC audit personnel were instructed to comply with the required use of the new form.

CCC compliance was verified during the TVA Audit No. 83V-42 of June 14-16, 1983 (letter from R. A. Costner, TVA to Consolidated Controls Corporation dated July 28, 1983).

4. As stated in the letter from R. A. Costner, TVA to Consolidated Controls Corporation dated July 28, 1983.

Records were available but were not properly indexed or filed. CCC is filing the records and preparing an index. Records will be stored in the records storage area.

TVA will verify satisfactory completion of these activities to resolve this deficiency. This verification will be made during a visit to CCC facilities by TVA audit personnel on or before December 30, 1983.

Other Programmatic Corrective Actions

As stated in the letter from L. E. Goodsell, Jr., CCC to TVA dated December 15, 1982.

Manual Changes: Since 1976, CCC Quality Control Manual No. 2 (QCM No. 2) has been revised six times to update and include Regulatory and American National Standard quality regulations and controls specifically addressing the quality needs of the Nuclear Power Industry.

Quality Standards: Starting in 1975, 21 Quality Control Standards have been originated by CCC specifically for this product classification, (Ref. QCM No. 2, Appendix A) detailing the acceptance criteria for such products and services as fabricated control cabinets, weldments, printed circuit boards, soldering methods and metal finishing processes. These standards were implemented for use by controlled distribution to CCC inspection, engineering and manufacturing departments. Quality control review of manufacturing routing instructions includes the implementation of the applicable standard for the process performed. CCC procurement orders to subtier suppliers include those applicable to the process or service purchased. <u>Quality</u> Instructions: Since 1975, 20 new Quality Control Instructions supplementing the QC Manual have been originated by CCC for use by detailing specific instructions for a process, existing procedure or to implement a specific customer requirement (Ref. QCM No. 2, Appendix A).

<u>Standard Procedures Instructions:</u> In addition to the Quality Control Standards and Instructions, 30 Standard Procedure Instructions (SPIs) have been originated by CCC as a supplement to QCM No. 2. This series is identified by the prefix No. "1563." Both QCM No. 2 and the 1563 series of SPIs have been endorsed by CCC Management. QCM No. 2, Section II, paragraph

11.2 denotes the use of Standard Procedure Instructions. SPI's address the subject of Design Review, Production Release Methods, Indoctrination of Personnel, Reporting of Defects and Noncompliances per Federal Code 10CFR21, and other subjects relative to safety-related equipment.

Personnel Qualification: All CCC in process and final tests are now performed by CCC Test Technicians qualified to the requirements of ANSI N45.2.6.

CCC inspection personnel performing duties in receiving inspection, subassembly and final inspection are qualified to the requirements of ANSI N45.2.6 (Ref. QCM No. 2, Section 6, and Organizational Chart, page 5A).

This change was implemented by Revision 6 to QCM No. 2, dated August 1, 1981 (see QCI089 and QCI092). Each qualified individual is issued a card denoting the level of qualification, with a three-year validity, after which requalification is required.

<u>Product Verification:</u> CCC Quality Control Instruction QCI089 was revised in September 1982 to include a product verification listing of characteristics to be inspected prior to the presentation of the product for customer acceptance to assure compliance with contractual requirements. This verification includes preshipment inspection of subassemblies, final assemblies, and equipment spares (see QCI089, paragraph 6.0).

<u>Action Teams</u>: In November 1981 "Action-Oriented Problem Solving" teams were organized by CCC. This management endorsed program is similar to those referred to as Quality Circles. The teams consist of volunteer members from various disciplines who devote their efforts to solving in-house problems, many of which are quality oriented. The teams meet weekly during working hours and report their written resolution recommendations to management for implementation. To date the Action Teams are credited with the implementation of many quality, safety-related and cost saving improvements.

TVA has concluded that CCC has taken adequate action to resolve the quality control concerns identified on NCR 1950.