

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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WBRD-50-390/83-25

WBRD-50-391/83-24

BLRD-50-438/83-29

BLRD-50-439/83-24

U.S. Nuclear Regulatory Commission

Region II

Attn: Mr. James P. O'Reilly, Regional Administrator

101 Marietta Street, NW, Suite 2900

Atlanta, Georgia 30323

Dear Mr. O'Reilly:

WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2 - QA PROGRAM  
DEFICIENCIES PERTAINING TO TVA PERSONAL SERVICES CONTRACT (TV-49510A) -  
WBRD-50-390/83-25, WBRD-391/83-24, BLRD-50-438/83-29, BLRD-50-439/83-24 -  
REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on April 6, 1983 in accordance with 10 CFR 50.55(e) as Audit 83V-26 Deficiencies Numbers 1, 2, and 3. This was followed by interim reports dated May 5 and September 21, 1983. A final report was submitted on October 12, 1983. Enclosed is a revised final report.

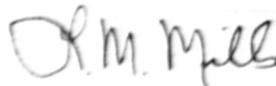
Please note that this report also responds to the concerns in R. C. Lewis' letter to H. G. Parris dated February 9, 1984. Mr. Lewis' concerns are addressed under the discussion for Deficiency No. 2.

TVA still considers that 10 CFR 50.55(e) does not apply to this item.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)  
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U.S. Nuclear Regulatory Commission  
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ENCLOSURE

WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2  
QA PROGRAM DEFICIENCIES PERTAINING  
TO TVA PERSONAL SERVICES CONTRACT (TV-49510A)  
AUDIT NO. 83V-26 DEFICIENCY NO. 1, 2, AND 3  
10 CFR 50.55(e)  
WBRD-50-390/83-25, WBRD-50-391/83-24  
BLRD-50-438/83-29, BLRD-50-439/83-24  
REVISED FINAL REPORT

Deficiency Description

Deficiency No. 1 -

TVA's Division of Engineering Design (EN DES) Engineering Procedure (EP) 1.01, paragraph 2.1, "Policy," states that:

"NRC requires that all activities affecting the quality of design, construction, and operation of TVA nuclear projects will be done within a controlled system of written instructions and procedures. These written instructions and procedures therefore will be: (a) prepared and approved as described in this EP or EN DES-EP 1.44, "Special Engineering Procedures (SEPs), Handling," (b) issued before the QA-related activities begin, and (c) available for use at the location of QA-related activities."

Contrary to this requirement, Audit No. 83V-26 found that:

1. Gilbert Associates, Incorporated (GAI), with whom TVA has a personal services contract TV-49510A, had not received formal documented instructions on methods and procedures to be followed in performing/documenting piping analysis. This pertained to both Watts Bar (WBN) and Bellefonte (BLN) tasks.
2. Work for the task being audited (task 2 to personal services contract TV-49510A) was being performed totally under the TVA program. However, while work had begun in 1979, the first effort of documenting the applicable TVA procedures to operate under took place in November 1982 (WBN). Some BLN work was accomplished during 1983 before establishing a program. Review of the method (or proposed method) of implementing a QA program with the two Civil Engineering Support Branch (CEB) piping analysis groups (WBN and BLN) indicated that different methods of implementation were intended for the same task.
3. The mechanical analysis (MA) piping analysis handbooks were being used as design instructions by GAI. In addition, when EN DES-EP 3.28, "Detailed Piping Analysis Performed by TVA-Procedure for Documentation and Verification," was retired, the MA handbooks were specifically identified as replacement instructions. Although the handbook for BLN was in draft form, it was being used to perform piping analysis. In addition, the handbook policy statement indicated that the handbooks were not QA documents.

Deficiency No. 2 -

ANSI N45.2, section 4.0, paragraph 4.1, states in part that measures shall be established and documented to ensure that the specified design requirements such as design bases are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to these requirements, a review of piping analysis calculation packages prepared by GAI for WBN showed inadequate documentation of baselines for input and output data. TVA had transmitted to GAI the input data required to perform the analysis but this data was not being retained nor fully documented in the final GAI calculation package. The GAI transmittal letter to TVA did attempt to define this input baseline. However, every transmittal letter reviewed by the audit team contained errors concerning drawings and revision levels used to do the analysis. The audit team then reviewed two 1980 GAI packages (N2-1-3A and N2-62-12R) and their corresponding isometric and support load drawings to determine if a design baseline could be established from the drawings. No readily apparent baseline existed from the revision levels, dates, or reason for revision.

This design baseline was being documented by GAI for the BLN task in their calculation packages.

Deficiency No. 3 -

TVA EN DES-EP 1.28, "Control of Documents Affecting Quality," paragraph 3.0, "Policy," states: "All design documents shall be reviewed for adequacy, approved for release by authorized individuals, and distributed to and used at the location where the prescribed activity is being performed. Control of revisions to these documents (or of other documents which change the requirements contained in these documents) shall be commensurate with that of the original document.

Contrary to this requirement, a review of documentation (CEB reports, analysis handbooks, branch/project procedures, active valve lists, design criteria documents, etc.), being used by GAI's WBN and BLN piping analysis groups indicated that this documentation was not controlled. A controlled set of EPs had been transmitted to GAI but had not been received during the audit.

TVA Report N3C-912, Revision 1, which was being used by GAI showed no objective evidence of formal TVA signoff (did not have a completed cover sheet).

Safety Implications

Audit deficiency Nos. 1 and 3 identified a lack of controlled documented instructions being used by GAI to perform analysis work for TVA. However, a review of the current revisions of those documents found to be of the wrong revision levels has shown that they contained no changes which would have had any affect on the work being performed. Corrective measures have been taken to provide GAI with controlled copies of all documents and procedures necessary for their use.

Deficiency No. 2 identified a lack of a "readily apparent baseline" or baselining documentation in GAI transmittal packages to TVA. Additionally, subsequent to TVA's final report to the NRC on October 12, 1983, the NRC

requested the results of TVA's generic review of this deficiency. This request was transmitted in R. C. Lewis' letter to H. G. Parris dated February 9, 1984. Each factor which TVA was requested to consider is addressed below.

## 1. Request

A review and assessment of personal service contracts with all organizations performing safety-related design activities for CEB.

### Response

Upon issuance of the report for audit 83V-26 on April 28, 1983, TVA determined that deficiencies 1, 2, and 3 were reportable under 10 CFR 50.55(e). At that time, TVA initiated an assessment to determine if the findings were generic. TVA's assessment at the time was concerned with those personal services contractors performing design work for CEB. It was determined that all contractors except those performing work on classes 2 and 3 piping analysis were performing this work under their own TVA-approved QA program. As such, sufficient management control was being exercised. Therefore, the findings were applicable only to those contractors performing classes 2 and 3 piping analysis.

Those contractors involved in classes 2 and 3 piping analysis were GAI, Teledyne Engineering Services (TES), and Impell Corporation. TES was performing work under their own TVA-approved QA program and, as such, sufficient management control was being exercised. However, Impell was following the same TVA policies and procedures for classes 2 and 3 piping analyses being followed by GAI. It is logical, therefore, that the audit of Impell (audit 83V-73) would result in the same deficiencies as the audit of GAI, particularly since acceptance of the proposed corrective actions to audit 83V-26, by the auditing organization, occurred on November 3, 1983, and had not yet been implemented at the time of the Impell audit which was conducted on September 13 and 14, 1983.

## 2. Request

A review and assessment of personal service contracts with all organizations performing safety-related design activities for any other TVA office or group responsible or involved with meeting the requirements of 10 CFR 50, Appendix B, Criterion III.

### Response

In the latter part of January 1984, TVA surveyed all other engineering support branches of EN DES to determine if the three reportable deficiencies identified by audit 83V-26 were generic to personal services contracts administered by them. Neither TVA's Electrical Engineering Support Branch (EEB) or Nuclear Engineering Support Branch (NEB) had any contracts with personal services contractors to provide design work. The Mechanical Engineering Support Branch (MEB) did have contracts with personal services contractors to provide design work. However, the work was being performed under the contractor's own TVA-approved QA program, and, as such, sufficient management control was being exercised.

### 3. Request

A specific assessment of any problems identified by these reviews as to their effect on Browns Ferry and Sequoyah.

#### Response

No piping analysis work on Browns Ferry Nuclear Plant (BFN) was being performed at the time of audit 83V-26, nor has any been performed by personal services contractors since that time. Piping analysis work on Sequoyah Nuclear Plant (SQN) was being performed by Impell at the time of audit 83V-26, but none has been assigned to them since that task was finished in May 1983. No other piping analysis work on SQN has been assigned to a personal services contractor.

Subsequent investigation into the documentation of analysis input data has shown that there is no deficiency in documenting this information for analysis work done for TVA by any personal services contractor, including GAI. During the latter part of June 1984, TVA's Office of Quality Assurance, Design Quality Assurance Branch (DQAB), performed an extensive review of EN DES' methodology for performing design reviews resulting from identified design changes. DQAB's review disclosed that while the exact design baseline of piping analysis calculations is not formally documented, the performance of TVA's design verification process as defined in EN DES-EP 3.10, "Design Verification Methods and Performance of Design Verifications," and EN DES-EP 4.01, "Signatures/Initials for Preparation, Review, and Approval of EN DES Drawings," assures that all changes have been reviewed for impact on calculation packages. Since all calculation packages are directly related to an associated isometric drawing, the design checker's signature or initials on the drawing is the verification of the involvement of the calculation package and if the calculation package should be revised or not. DQAB personnel reviewed several randomly selected piping analysis packages for SQN (calculations, isometric drawings, and load-support drawings) against changes to both the calculation package and the associated isometric drawing and found that the documentation conforms to the prescribed system.

In summary, TVA has performed a review (as requested by Mr. Lewis' February 9, 1984, letter) and has determined that the identified deficiencies of audit 83V-26 are not generic. In addition, it has been determined that procedures have been in place and that activities have been performed in accordance with these procedures, thus assuring sufficient control of design. Therefore, TVA still considers that 10 CFR 50.55(e) does not apply to this item.