VII. REFERENCES

A. Browns Ferry Operational Quality Assurance Manual (OQAM) (as revised 10/15/81)

B. Division Procedure N78A13, "Nuclear Plant Operator Training Programs" (revision dated 8/21/81)

C. Division Procedure N75A5, "Nuclear Steam Generating Plant Operator Training Program Outline" (as revised 12/11/78)

D. Division Procedure N7505, "Backup Controls for Shutdown Outside the Main Control Room Drills" (dated 10/3/75)

E. Division Procedure N77TC6, "Simulator Training Scheduling" (dated 6/20/77)

F. Division Procedure N71A1, "Division Procedure Manual" (as revised 4/30/18)

G. Division Procedure N79A7, "General Employee Training" (as revised 5/27/82)

H. Division Procedure N72A39, "Review of Nuclear Plant Operating Experience Reports" (as revised 11/15/81)

I. Division Procedure N7704, "Assistant Unit Operator Training" (dated 6/20/77)

J. Division Procedure N77A5, "Scheduling License Examination With NRC" (as revised 3/1/77)

K. Division Procedure N80A5, "Certification of Operator Submitted for License" (dated 2/20/80)

L. Division Procedure N75A8, "Plant Systems Familiarization Study Guide" (as revised 12/5/78)

M. Division Procedure N79A12, "Operational Review of Training Required by Division Procedure" (dated 10/23/79)

N. Memorandum from L. M. Mills to J. R. Calhoun dated April 9, 1980, "Qualifications of Reactor Operators," (A27 800409 011) with attached letter from H. R. Denton of NRC (A02 800402 003)

O. Letter from L. M. Mills to H. R. Denton dated November 10, 1980 (A27 801112005) in response to H. R. Denton's letter on "Qualification of Reactor Operators" dated March 28, 1980 (A02 800402 003)

P. Section 6.0 of Browns Ferry Technical Specifications (as revised 1/10/78)

Q. Browns Ferry Finals Safety Analysis Report, Chapter 13 (as ammended on 10/15/81)

R. Browns Ferry Standard Practice 2.10, "Plant Records Management" (as revised 2/25/81)

S. Browns Ferry Standard Practice 3.3, "Operational Quality Assurance Program" (as revised 5/31/79)

T. Browns Ferry Standard Practice 3.9, "Operational Quality Assurance Program" (as issued on 1/21/82)

U. Browns Ferry Standard Practice 4.4, "Training and Qualification Policy" (as revised 8/13/81)

V. Browns Ferry Standard Practice BFA 75, "Training for Nuclear Plant Operators" (as revised on 8/28/78)

W. Code of Federal Regulations, Title 10, Parts 50 and 55 (as issued on 10/15/81)

X. ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel" (dated 3/8/71)

Y. TVA Topical Report TR75-1, Revision 4

Z. NUREG-0094, "NRC Operator Licensing Guide" (revision 1 of WASH 1094, July 1976)

AA. NUREG-0737, "Clarification of TMI Action Plan Requirements" (11/80)

BB. SQN, BFN, and WBN plant training files

CC. SQN FSAR Chapter 13.2 (as ammended on 10/15/81)

DD. SQN OQAM (as revised on 10/15/81

EE. SQN Technical Specifications, section 6.4.1

FF. SQN Operations Section Letter - Training Manual

GG. AI-14, "Plant Training Program"

HH. Selected revisions to EOIs, AOIs, and SIs

II. SQN Operations Section training files

JJ. General employee training files

KK. WBN FSAR Chapter 13.2

LL. WBN OQAM

MM. WBN Technical Specifications, section 6.4.1

NN. WBN Standard Practice WB 12.7, "Plant Training Program"

OO. WBN AI-10.3, "Nuclear Plant Training Program Manual Distribution" (as revised on 11/20/81)

PP. WBN Operations Section Letter - Training (as revised on 11/20/81)

QQ. WBN Selected revisions to EOIs, AOIs, and SIs (as revised on 22/20/81)

RR. WBN Plant training files (11/16/81 - 11/20/81)

SS. WBN Plant QA Staff files (11/16/81 - 11/20/81)

TT. Division Procedure N75A9, "POTC Operating Information and Modifications" (as revised on 12/11/81)

UU. POTC Hot License Certification Programs (PWR and BWR) (as written on 12/11/81)

VV. POTC Cold License Certification Programs (PWR and BWR) (as written on 12/11/81)

WW. POTC Requalification Program (PWR and LWR) (as written on 12/11/81)

XX. Instructor Certification Program (as written on 12/11/81)

YY. POTC Standard Practices (as revised on 12/11/81)

ZZ. POTC training files (NSGPO and Simulator) (11/30/81 - 12/11/81)

AAA. NSGPO daily lesson plans (as revised on 12/11/81)

BBB. Memorandum from J. M. Ballentine to H. J. Green dated November 9, 1981, "Annual Assessment of the Quality Assurance Program" (L16 811027 871)

CCC. Memorandum from J. G. Dewease to R. Joe Johnson dated October 16, 1979, "NSGPO Daily Lesson Plans" (L51 791001 812)

DDD. Memorandum from J. G. Dewease to R. Joe Johnson dated December 7, 1979, "Bulletin of the Nuclear Accrediting Subcommittee No. 7-30," (L51 791203 815)

EEE. Memorandum from J. S. Olson to J. G. Dewease dated February 25, 1980, "Memorandum Concerning NUREG-0578, Section 2.2.1.a," (L51 800225 806)

APPENDIX A

Problems Identified in Reviewing the Division of Nuclear Power DPMs and OQAM

1. In DPM N78A13, section V.F.5.a and b on page 53, are listed categories of the RO and SRO qualification examination. The items listed here are not consistent with the training presented. The areas included in training, such as mitigation of core damage, applicable sections of the 10CFR, and plant technical specification are not covered on the requalification examination. One item listed on the RO requalification examination, item No. 2, is not presented in the lecture series.

2. The DPM N78A13 is inadequate in that observation training for personnel with no previous training and experience is not addressed.

3. The DPM N78A13 provides no guidance for the onsite cold license program in such areas as program preparation, required training, preferable sequence, etc.

4. The DPM N78A13 does not provide guidance in that a method of selection and certification of NSGPO and simulator instructors is not detailed or referenced.

5. A standard controlled method of documentation and records storage of NSGPO, plant, and simulator training is not provided or referenced. Standard forms as attachments or appendices to the different programs would help ensure documentation compliance.

6. The requirement for inexperienced cold license candidates to participate in a supervised program at a research power reactor, during which the individual performs 10 reactor startups, is not contained in DPM N78A13.

7. There is not provided in DPM N78A13 a program for training licensed supervisors (SROs). A program was submitted to J. G. Dewease on February 25, 1980 by J. S. Olson attached to a memorandum (L51 800225 806); apparently no action was taken to implement.

8. There is no guidance provided in DPM N78A13 as to the method of administering and documenting cold and hot license certification examinations.

9. The "training plan for operators" is referenced in DPM N78A13. This is an uncontrolled document. The part which is referenced should be contained within the DPM.

10. The NSGPO program is contained in the portion of the DPM N78A13 identified as "Nonlicense Related Training Programs."

    A major portion of the subjects taught, such as health physics, heat transfer, fluid flow, basic nuclear physics, thermodynamics, reactor physics, and plant technology are part of the licensed operator training requirements.

The 500 hours in Appendix F of NUREG-0094 for hot license certification cannot be obtained without taking credit for part of the NSGPO program.

11. In the DPM N78A13, section V.F.3, the last paragraph, is a statement concerning requalifying to return to license activities following absence of over four months. It appears to be inappropriately located and is incomplete in content. See OQAM, part III, section 6.1, and 10CFR55.31.e

12. In DPM N78A13, section III (page 8 through 14), "Introduction," the change in name to Nuclear Operator Training Program (NOTP) from Nuclear Steam Generating Plant Operator (NSGPO) program presents somewhat of a problem in that historically NSGPO has been used and referenced in many other documents in TVA, such as the OQAM, the training plan for operators, DPMs N75A5, N75A8, and TVA Nuclear Program review dated May 1979 (Blue Book).

    The change in name to NOTP could also indicate any one of several different programs, i.e., cold license program, hot license program, requalification program, refresher program, observation program, etc. All are NOTPs. In any case, if the name is changed to NOTP, all other documents containing NSGPO should be revised.

13. In DPM N78A13, section III (page 8 through 14), the introduction appears to be more of a program description after the first paragraph. Webster's definition of an introduction is that it is a formal preliminary statement or guide to the book. Synonyms are forward and preface. Even as lenghty as it is, it is not an introduction to the entire program, only the NOTP (NSGPO).

    Section III.A, B, and C would probably be better placed under IV.A, Nuclear Operator Training Program.

14. In DPM N78A13, section III.D.2.b is a repeat of III.D.2 on page 13.

15. In DPM N78A13, section IV.A.5, the reference should be IV.C.7 instead of II.C.7.

16. In DPM N78A13, section IV.A.5 indicates there are only oral and written examinations given at the end of student III, step 2. This is not consistent with what is indicated in section III.B (pages 20 and 21).

17. In DPM N78A13, the introduction to section V should reference the plant FSAR as containing the program and schedule for each nuclear plant (pages 36-40).

18. In DPM N78A13, paragraph 6 of V.F.2 on page 50 is in conflict with V.F.3, Control Manipulations on page 51. One is from 10CFR55, Appendix A, and the other from H. R. Denton's letter, to which TVA is now committed.

19. In DPM N78A13, paragraph 1 of V.F.3, on page 51, the starred (*) items mentioned are marked with a + in the listing.

20. In DPM N78A13, the last paragraph of section V.A on page 37, concerning applicants for SRO licenses, there is an inconsistency with that presented in section V.B.3 prerequisites for cold license program on page 42. One appears to quote H. R. Denton's letter of March 28, 1980 and the other ANS 3.1, March 13, 1981 draft.

21. In DPM N78A13, several items of the requalification program description, such as "Knowledge of Facility Changes and Applicable Operating Experience," "Review of Abnormal Emergency and Security Procedures," and "Performance Evaluation by Supervisors," are contained in section V.A. (page 39), "Introduction," and in section V.F.g (page 53), "Requalification Evaluation and Documentation," but not in V.F.2 (pages 50 and 51), "Requalification Program Description."

22. The DPM N78A13 does not provide guidelines on how the three months onshift as an extra man onshift should be conducted, evaluated, and documented.

23. The DPM N78A13 does not provide a method for the selection and certification of NSGPO, plant license training, or simulator instructors.

24. The DPM N78A13 should reference any other DPM containing guidelines for operator training, such as N79A39, "Review of Nuclear Plant Operating Experience."

25. The OQAM, part III, section 6.1, paragraph 1.4.3.1.1 on page 8, provides experience and educational requirements which did not meet current NRC requirements in H. R. Denton's March 28, 1980 letter as implemented in DPM N78A13.

26. The OQAM, part III, section 6.1, paragraph 1.4.5.1.2 note allows AUOs to be assigned shift duties prior to receiving any plant systems training. The only exception being the lone responsiblity of the radioactive waste area. ANSI N18.1-1971, paragraph 4.1, and paragraph 1.5.3 of the OQAM states that nuclear power plant personnel shall have that combination of education, experience, health, and skills commensurate with their level of responsibility which provides reasonable assurance that decisions and actions during all normal and abnormal conditions will be such that the plant is operated in a safe and efficient manner.

    ANSI N18.1-1971, paragraph 5.3, states, "A suitable training program shall be established for managers, supervisor, professionals, operators, technicians, and repairmen to properly prepare them for their assignment; and to meet the requirements established by the facility license."

    It was concluded by the NSRS that there was the possiblity of assignment of AUOs to activities affecting nuclear safety without proper training if the guidelines of the note in paragraph 1.4.5.1.2 were followed. This item should be evaluated for its impact on nuclear safety and the note of paragraph 1.4.3.1.2 should be deleted or clarified more to limit AUO's responsibility until training on plant systems is received.

The SQN containment spray down incident should be adequate evidence of the need.

27. DPM N78A13 states that the operation section supervisor shall have an SRO license. Paragraph 1.5.2 on page 13 of part III, section 6.1, of the OQAM does not include the operation section supervisor.

28. The OQAM, part III, section 6.1, paragraphs 1.5.2.1 and 1.5.2.2 on page 14, did not agree with DPM N78A13. They should be revised to either reference DPM N78A13 or include heat transfer, fluid flow, thermodynamics, control or mitigation of an accident in which the reactor core is severely damaged and increased emphasis on plant transients. In addition, there are no provisions in paragraph 1.5.2.1 (training of cold license candidates for NRC examination) for documentation of training and other details of the program. This paragraph of the OQAM should be revised or partially deleted and reference DPM N78A13.

29. In the OQAM, part III, section 6.1, paragraph 1.5.2.3 on page 15 (hot license training) does not establish requirements of onsite training program documentation. DPM N78A13 did. OQAM should reference DPM N78A13 or be revised to be consistent.

30. In the OQAM, part III, section 6.1, paragraph 1.5.4 on page 16 (general emoloyee training), does not establish documentation and recordkeeping for GET. Should reference DPM N79A7.

31. In the OQAM, part III, section 6.1, paragraph 1.5.5.1.1, pages 16, 17, and 18 (retraining program), does not include requirements of H. R. Denton's March 1980 letter as implemented in DPM N78A13 dated August 21, 1981.

32. In the OQAM, part III, section 6.1, paragraph 1.5.1.1 allows a trainee to miss 16 hours of classroom training; it should also establish number of hours of simulator training that can be missed each year, if any.

33. The Browns Ferry Technical Specifications commit the plant to ANSI N18.1-1971 standards for training. The item listed in the OQAM, part III, section 6.1, paragraph 1.5.5.1.1 for requalification training are those listed in 10CFR55, Appendix A. Paragraph 5.5.1 of ANSI N18.1-1971 lists the following:

    - Plant startup and shutdown procedures.
    - Normal plant operating conditions and procedures.
    - Operational limitations, precautions, and set points.
    - Emergency plans and security procedures.
    - Abnormal operating procedures.
    - Emergency shutdown systems.

- Changes in equipment and operating procedures.
- General safety, first aid, and radiation safety.
- Alarms and instrumentation signals.
- Operation of selected auxiliary systems important to overall plant safety.

It is the conclusion of NSRS that TVA is committed to both 10CFR55, Appendix A and to ANSI N18.1-1971. Furthermore, DPM N78A13 establishes additional criteria based on TVA's commitment to H. R. Denton's March 18, 1980 letter.

Based on these facts, the DPM N78A13 and the OQAM should be revised to list all commitments or the OQAM, part III, section 6.1, paragraph 1.5.5.1.1 revised to only reference the DPM N78A13. In addition, the plant technical specification at BFN should be revised to include TVA's commitment to H. R. Denton's letter. SQN has already revised their technical specifications to include this commitment to H. R. Denton's letter.

34. The OQAM, part III, section 6.1, paragraph 1.5.5.1.2 on page 18 did not meet requirements of H. R. Denton's March 1980 letter in reference to reactivity changes. DPMN78A13 did. It should be revised or deleted and DPM N78A13 referenced.

35. The OQAM, part III, section 6.1, paragraph 1.5.5.1.3 (requalification) on page 19, did not comply with H. R. Denton's March 1980 letter on grade requirements. DPM N78A13 did. The OQAM should be revised or DPM N78A13 referenced.

36. The OQAM, part III, section 6.1, paragraph 1.5.5.1.3 on pages 19 and 20, lists members of the plant training review board but excludes the plant training Shift Engineer (SE). The DPM N78A13 and plant standard practice BFA 75 at BFN both listed the training SE as a member of the review board. The BFN FSAR did not list the training shift engineer.

37. The OQAM, part III, section 6.1, paragraph 1.5.5.1.5 on pages 21 and 22, the DPM N78A13 and the plant standard practice (SP) on training did not agree in the area of how often facility design changes, procedure changes, and license changes shall be distributed. The OQAM indicates weekly. The SP states "periodically;" the DPM N78A13 states, "shall be supplied periodically." The FSAR also states periodically. It is the conclusion of the NSRS that contradications exist and that a specific time frame should be established and be consistent in all documents listed.

38. In the OQAM, part III, section 6.1, paragraph 2.1.1.5 on page 25, indicates that hot license training can be accomplished without use of the simulators. In TVA's response to H. R. Denton's March 1980 letter, TVA committed to simulator training for both hot and cold license training. This paragraph should be revised or deleted.

39. The OQAM, part III, section 6.1, paragraph 2.1.2 on pages 25 and 16, described training and experience requirements for reactor operators that did not meet requirements in H. R. Denton's March 1980 letter as implemented in DPM N78A13. This paragraph should be revised or partially deleted and DPM N78A13 referenced.

40. The OQAM, part III, section 6.1, nor the DPM N78A13 provided forms for training documentation. All forms used for training documentation should be attachments to or appendices to the programs for which they provide a method of training documentation. Changes or deletions of the documentation forms should be controlled. The OQAM provides forms in numerous other areas, so as to have a consistent way to do business within the division. There should be division direction provided in the area of training documentation. It was the conclusion of NSRS that if forms are provided for all required documentation and instructions are followed in using these forms, NUC PR should never be cited for noncompliance in this area.

41. The OQAM, part III, section 6.1, paragraph 3.1, Replacement Training, on page 28 should reference DPM N78A13 and DPM N75A5 instead of the training plan for operators which is an uncontrolled document. All of TVA's basic training plans for reactor operators should be contained in controlled documents. The training plan for operators is not a controlled document. 10CFR50.50, Appendix B, Criterion V, states, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with the instructions, procedures, or drawings." Criterion VI on document control states, "Measures shall be established to control the issuance of documents which prescribe all activities affecting quality. These changes are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at location where the prescribed activity is performed. The training plan for operators does not meet Criterion VI.

DPM N78A13 or the OQAM should contain the outline for operator training and reference DPM N75A5 for the NSGPO details.

42. The DPM N78A13 did not provide guidance in the area of auxiliary operator training. This is a new position recently established in NUC PR. The task analysis used to write the job description should have been used to determine the minimum training requirement for the position. The NSRS could find no evidence of any division-level guidance in what minimum training for the position should be established. ANSI N18.1-1971, paragraph 4.1 and paragraph 1.5.3 of the OQAM states that nuclear power plant personnel shall have the combination of education, experience, health, and skills commensurate with their level of responsibility which provides reasonable assurance that decisions and actions during normal and abnormal conditions will be such that the plant is operated in a safe and efficient manner. Also see ANSI N18.1-1971, paragraph 5.3.

Barrier Summary Note: The six projects require approximately 75 barriers to be installed. NRC commitment date for all barriers is January 1, 1982. As of December 16, 1981, 5 barriers remained to be installed. NUC PR had increased manpower and scheduled work hours on the 6 projects. Significant items: evaluation by plant personnel of appropriate actions concerning conflicting regulatory requirements for barrier installation and plant safety, e.g., the welding of barriers in controlled areas where the environment potentially contains explosive gases.

13. Provide Rusco access control system with a tamper indication - Work in progress, completion due December 17, 1981. NRC commitment January 1, 1982.

14. Install 24-hour battery backup to perimeter alarm system - Work complete. NRC commitment January 1, 1982.

15. Install 24-hour batter backup to Wells Fargo system - Work complete. NRC commitment February 1, 1982.

16. Install door/gate equipped with intrusion detection and access control equipment to intake structure - Work in progress, completion due March 15, 1982. NRC commitment April 1, 1982.

17 Install E-field over east portal - Work in progress, completion due December 23, 1981. NRC commitment January 1, 1982. Post modification testing problems.

18. Alarm System for main vehicle gate - Work in progress, completion due December 22, 1981. NRC commitment January 1, 1982. OEDC to coordinate vendor assistance during installation.

19. Rusco access control system (electirc lock controls) - Work in progress, completion due December 22, 1981. NRC commitment January 1, 1982. No significant items.

20. E-Filed (intrusion detection device) improvements - Testing and scoping scheduled to start week of November 16, 1981 to determine necessary improvements. NRC commitment January 1, 1982. Improvements are designed to ensure that system operations are in accordance with NRC guidelines.

TVA 64 (05-9-65)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

GNS '82 0329 050

TO : H. J. Green, Director of Nuclear Power, 1750 CST2-C

FROM : H. N. Culver, Director of Nuclear Safety Review Staff, 249A HBB-K

DATE : March 29, 1982

SUBJECT: SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 - NUCLEAR SAFETY REVIEW STAFF REVIEW REPORT NO. R-82-01-SQN

Attached is the NSRS report of a routine review conducted at SQN during the period February 2-5, 1982 regarding followup of previously identified NSRS items and review of activities related to the unit 2 startup test program. The report is the result of our planned onsite visit interval to monitor the unit 2 startup test program from January 4 through March 5, 1982 as described in my memorandum to you dated December 24, 1981 (GNS 811224 050).

Our review resulted in closure of six previously identified items (R-80-05-SQN-08, R-81-01-SQN-01, R-81-05-SQN-03, R-81-07-SQN-05, R-81-12-SQN-01, and R-81-24-SQN-01), and identified two new concerns R-82-01-SQN-01 and -02 requiring action by NUC PR for resolution. You are requested to inform NSRS of your plans and schedule for implementation of our recommendations for these items by April 30, 1982. In your response, you are also requested to provide your anticipated action in resolving NSRS item R-81-27-SQN-03. Though this item was identified initially in NSRS report No. R-81-27-SQN dated December 29, 1981 (GNS 811230 056) as an enhancement and required no response from NUC PR, it is not evident that appropriate action will be taken during or following the unit 2 startup test program in order to resolve this issue. Therefore, to ensure that consistency exists between what was approved by NRC:NRR in modifying the unit 2 initial startup test program, the operating license conditions of 2.C.(3), and that defined in section 14 of the SQN FSAR, you are requested to indicate your intended action at this time.

The details of all items raised or closed out are provided in section IV of the attached report and correspond to applicable recommendations in section II.

If you have any questions regarding this report, please contact R. C. Sauer at extension 4815 in Knoxville.

H. N Culver

H. N. Culver

RCS:LML
Attachment
cc (Attachment):
A. W. Crevasse, 401 UBB-C
MEDS, 100 UB-K
F. A. Szczepanski, 417 UBB-C

NSRS FILE

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

REVIEW

NSRS REPORT NO. R-82-01-SQN

Subject: Tennessee Valley Authority
Sequoyah Nuclear Plant - Units 1 and 2
Routine Review

Date of
Onsite Review: February 2-5, 1982

Reviewers: Robert C. Sauer — Date: 29 Mar 82

for Ronald W. Travis — Date: 29 Mar 82

Approved: Kermit W. Whitt — Date: 3/29/82

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I. SCOPE

This was a routine review of site activities to review the results of selected unit 2 startup tests and preoperational tests performed after criticality and to review corrective action taken on previously identified NSRS items.

II. CONCLUSIONS AND RECOMMENDATIONS

The following paragraphs contain the conclusions followed by recommendations if applicable. An "E" or "R" in brackets has been placed at the end of each recommendation. The [R] indicates that NSRS has concluded the recommendation is based on a regulatory requirement or a TVA commitment. The [E] indicates NSRS has determined that the recommendation has no firm regulatory basis. It is considered an enhancement and is based on subjective judgment.

A. R-82-01-SQN-01, Unreviewed Safety Question Determination Required on SU-7.3.1 Procedural Controls

Procedural controls utilized in SU-7.3.1 for determining unit 1 and unit 2 boron endpoints for various rod configurations conflict with the testing method described in section 14 of the SQN FSAR.

Recommendation

The SQN plant staff should document a 10CFR50.59 review of the testing method used in SU-7.3.1 and evaluate R-82-01-SQN-02 to preclude future oversights or incomplete reviews. (See section IV.C.2.a for details.) [R]

B. R-82-01-SQN-02, Need to Provide Minimum Nuclear Safety Evaluation Criteria in Evaluating USQD's

A possibility exists whereby subjects of the nuclear safety discipline may be missed or overlooked in performing 10CFR50.59 reviews.

Recommendation

NUC PR should develop minimum nuclear safety review criteria questions to aid PORC in considering all potential safety impacts when USQDs are evaluated for locally proposed changes in the facility, PORC-approved procedures, special tests, or experiments intended to be conducted, or for changes to the licensed technical specifications. (See section IV.C.2.b and Attachments A and B for details and example safety review questioning.) [E]

C. Onsite Tracking of NSRS Concerns

The SQN compliance staff agreed to take positive action to track NSRS items for resolution. A summary of all open items from previous NSRS review reports except for NSRS special

reviews (e.g., public safety and training) has been provided to facilitate the compliance staff's tracking effort. (See section IV.A for details.)

D. Review of Preoperational Tests Performed After Criticality

Preoperational test packages completed for tests performed after criticality were determined to be complete, understandable, and traceable. (See section IV.B for details.)

E. Startup Test Results Review

Observation of controls associated with startup testing and test result package preparations indicated that these activities were in place, functioning, and adequately managed. (See sections IV.C.1, .3, and .4 for details.)

III. STATUS OF PREVIOUSLY IDENTIFIED ITEMS

The following is a concise listing of all previously identified NSRS items that required NUC PR resolution. At the start of this review there were 21 total open items. As a result of this review six of these items were closed. The status of each item is noted before the item number.

A. (Open) R-80-05-SQN-03, Nitrogen Cover Gas on Primary Containment Electrical Penetrations

See section IV.A.1 for details.

B. (Open) R-80-05-SQN-05, Additional Operator Training for Hydrogen Control

See section IV.A.2 for details.

C. (Open) R-80-05-SQN-07, Potential Design and Installation Problems Associated with Flexible Metal Conduit

See section IV.A.3 for details.

D. (Closed) R-80-05-SQN-08, Environmental Qualification and Isolation for the Primary Containment Vacuum Breakers and Associated Isolation Valves

Completion of ECN L-5009 adequately resolved the NSRS concerns on these components. See section IV.A.4 for details.

E. (Open) R-80-05-SQN-11, Siltation and Clam Buildup in Systems Utilizing River Water

See section IV.A.5 for details.

F. (Closed) R-81-01-SQN-01, Inadequate Document Control Utilized to Resolve Startup Test Deficiencies or Procedure Conflicts Encountered

Westinghouse analysis of the unit 1 SU-7.3.2 completed startup test data sufficiently addressed the remaining NSRS concern identified on this item. NSRS considers this item resolved. See section IV.A.6 for details.

G. (Open) R-81-05-SQN-01, RHR and Letdown Isolation

See section IV.A.7 for details.

H. (Open) R-81-05-SQN-02, Personnel and Logs

See section IV.A.8 for details.

I. (Closed) R-81-05-SQN-03, Data Available

Since TVA has committed to NRC to establish a Technical Support Center (TSC), improved data acquisition methods are expected and will be evaluated further by NSRS after final TSC installation. Therefore, this item was considered sufficiently resolved to close it out. See section IV.A.9 for details.

J. (Open) R-81-07-SQN-01, Employee Concern No. 79-12-01, Required Material not in Sequoyah FSAR - Safety Concern on ERCW Pumping Station

See section IV.A.10 for details.

K. (Open) R-81-07-SQN-02, Lack of Maintenance Instructions

See section IV.A.11 for details.

L. (Open) R-81-07-SQN-03, Lack of Management Control of Surveillance Program

See section IV.A.12 for details.

M. (Open) R-81-07-SQN-04, Inaccurate Organization Representation

See section IV.A.13 for details.

N. (Closed) R-81-07-SQN-05, Lack of Management Control in the Area of Nuclear Operator Training Program

NSRS special review R-81-31-NPS had just recently been concluded whose purpose was to evaluate the adequacy of the Nuclear Operator Training Program. This item was to be reevaluated during that review. For tracking simplicity and because of its reevaluation, this item is being closed out at this time. See section IV.A.14 for details.

O. (Open) R-81-07-SQN-06, Errors and Inconsistencies in Sequoyah Nuclear Plant Instructions

See section IV.A.15 for details.

P. (Closed) R-81-12-SQN-01, ERCW Flow and Suction Temperature Concerns

Corrective action taken by NUC PR on SI-3 was considered sufficiently responsive to close this item out. See section IV.A.16 for details.

Q. (Closed) R-81-24-SQN-01, Inadequate Procedural Controls in Installing the Unit 2 Online Reactivity Computer

Corrective action identified and taken in CAR 21-81-122 was considered sufficiently responsive to close this item out. See section IV.A.17 for details.

R. (Open) R-81-24-SQN-02, Inadequate Trip Switch Identification Utilized in TI-67

See section IV.A.18 for details.

S. (Open) R-81-27-SQN-01, Need to Identify at Affected Procedural Points that a Test Deficiency had been Written Against it

See section IV.A.19 for details.

T. (Open) R-81-27-SQN-02, Need for Identifying a Data Reviewer When Completing Supportive Data Sheets Used for Acceptance Testing or for Operational Limitations

See section IV.A.20 for details.

U. (Open) R-81-27-SQN-03, Revision of SQN FSAR Section 14 to Reflect Accurately the Unit 1-Unit 2 Startup Programs

See section IV.A.21 for details.

IV. DETAILS

A. Previously Identified Open Items

This section of the report lists all previously identified NSRS items that were still open (unresolved) at the beginning of this review. Twenty-one items were included in this category. Six of these open items are being closed as a result of this review. The remaining 15 items were not evaluated during this review; thus no new information is available. The items are listed here for the convenience of the Compliance Section. After this report, a tracking system should be established at the site, and this repetition should not be required. The wording is mostly taken from the earlier NSRS reports where the items are still open.

1. R-80-05-SQN-03, Nitrogen Cover Gas on Primary Containment Electrical Penetrations

The NSRS recommended that NUC PR:

a. Ensure that each electrical penetration is pressurized with nitrogen to 15 psig.

b. Assign responsibility and prepare procedures that address how the penetrations and manifold system will be periodically inspected for leaks.

c. Revise SI-157 to reflect how local leak rate testing of electrical penetrations will be impacted by the nitrogen manifold system.

d. Determine whether or not these findings are reportable to NRC.

This item remains open.

2. R-80-05-SQN-05, Additional Operator Training for Hydrogen Control

NUC PR's response to NSRS on this matter should be revised to specify how NUC PR plans to modify the generic hydrogen control procedures being developed by the Westinghouse Owners' Group for dry containments to account for the SQN ice condenser containment design.

This item remains open.

3. R-80-05-SQN-07, Potential Design and Installation Problems Associated with Flexible Metal Conduit

NSRS must further review this item before recommendations or a status can be provided. The results of the review will be reported in a subsequent report or reports.

From NSRS report R-81-12-SQN the following was reported:

"NSRS discussed flex hose and flexible metal conduit installation practices and procedures with outage and plant staff personnel. Only three flex hoses have been installed by NUC PR, and the revised G-40 was followed since there was no NUC PR procedure. Discussions with outage and plant staff personnel revealed that they agreed with the NSRS reviewer on the need for a written NUC PR instruction. Consequently, NSRS recommended that an instruction for the installation of flex hose be written by NUC PR using the guidelines presented in G-40.

M&AI-6, 'Installation of Conduit and Junction Boxes,' revision 0, November 8, 1979, a NUC PR procedure that addressed flexible metal conduit installation methods, has been reviewed by NSRS. It was found to contain most of the guidelines set forth in General Construction Specification G-40, except for details on the minimum bending radius allowed for various sizes of flexible metal conduit. Consequently, NSRS recommends that NUC PR revise M&AI-6 to include the minimum bending radius criteria listed in G-40. This is necessary to ensure adequate seismic installation.

This item remains open.

4. R-80-05-SQN-08, Environmental Qualification and Isolation for the Primary Containment Vacuum Breakers and Associated Isolation Valves

The NSRS recommended that NUC PR should:

a. Expedite the implementation of ECN L-5049 to correct the potential solenoid environmental qualification problems and the redundant control air supply problem.

b. Ensure that TVA's final containment isolation requirements in light of TMI address the isolation requirements for these valves.

ECN L-5049 was completed on August 18, 1981. This item is considered closed.

5. R-80-05-SQN-11, Siltation and Clam Buildup in Systems Utilizing River Water

NSRS recommended that NUC PR should:

a. Expedite the completion and implementation of their proposed heat exchanger performance and preventive maintenance programs for heat exchangers that use river water.

b. Expedite the development of a schedule for the timely implementation of the ERCW piping changeout authorized by ECN L-5009.

From R-81-12-SQN, NSRS recommended that NUC PR should:

c. Complete SI 668.1 which addresses the inspection of ERCW piping for corrosion products and clam accumulation.

d. Determine if procedures will be written to address the use of flow and temperature measurements instead of visual inspection as a method of detecting clams.

e. Complete development of their preventive maintenance program for SQN.

SI-668.1 has been completed. This closes our part C. Other parts of this item remain open until further review is possible.

6. R-81-01-SQN-01, Inadequate Document Control Utilized to Resolve Startup Test Deficiencies or Procedural Conflicts Encountered

Neither table 7 of SU-7.3.2 nor test deficiency No. 1-7.3.2-4 accounted for a -15.6 percent difference between the measured and predicted powers of fuel assembly M-7. The allowed difference was ±15 percent.

Westinghouse has analyzed the data and determined that the test was adequate. Though SQN failed to specifically identify fuel assembly M-7 in the test results package as not meeting test acceptance criteria, NSRS considers the Westinghouse evaluation adequate to resolve this issue.

This item is closed.

7. R-81-05-SQN-01, RHR and Letdown Isolation

The NSRS recommends that the EOIs should be updated to address LOCAs while on RHR cooling. In particular, the isolation of letdown and RHR hot leg suction from the RCS should be accomplished to prevent additional draining of the RCS and possible cavitation of the RHR pumps. Since the operators failed to recognize the need to do this, we also recommend additional operator training on LOCAs while on RHR cooling.

From R-81-12-SQN the following was reported:

"During this review period the NSRS reviewer discussed NUC PR's response with the SQN Operator Training Officer. The operators had received training on the event immediately after the spray event during their weekly onsite training sessions. The NUC PR report was discussed in depth. In addition, during the second week of the requalification program, all of the operators received additional classroom instruction and simulator training on the event. Finally, plant procedures are being revised to specify the required operator actions during a LOCA while on RHR cooling."

This item remains open pending completion of plant procedure revisions.

8. R-81-05-SQN-02, Personnel Statements and Logs

NSRS recommends training for the Operations personnel and shift technical advisors (STAs) on preparation of detailed

logs and statements, especially those involving an accident or incident. Also, we recommend that someone with operations knowledge and authority read each statement and ask for more detail where required before the personnel leave the plant site after an event. Moreover, NUC PR should consider assigning someone the responsibility of maintaining a log when an event occurs.

From R-81-12-SQN the following was reported:

"In NUC PR's response it was stated that 'the Plant Superintendent and Assistant Plant Superintendent of Operations discussed in detail the spray event with the appropriate Operations personnel and requested additional information and clarification before they left the plant following the event.' It is obvious, as stated in our previous report on this item, that all of the information was not included in the statements. Discussions with the supervisor of the compliance staff confirmed this. Consequently, NSRS reiterates the need to use good management practices and sound judgment to ensure accurate records of an event. This is essential to minimize the impact of review/audit groups on the plant staff and especially to be able to recreate the sequence of events after an accident."

This item remains open.

9. R-81-05-SQN-03, Data Availability

NSRS recommends that NUC PR should ensure that all two-pen strip chart recorders which record two different parameters be equipped with two different colors of ink to enable the reading of the chart. This item appears to no longer be a problem and is closed.

NSRS also recommended that NUC PR investigate other data acquisition methods that are superior to strip chart recorders. NUC PR plans to depend on the equipment provided as part of the TSC design, which had not been finalized. Since TVA has committed to the NRC to establish a TSC this item is considered closed. The NSRS will evaluate the final installation of the TSC.

10. R-81-07-SQN-01, Employee Concern No. 79-12-01, Required Material Not in Sequoyah FSAR - Safety Concern on ERCW Pumping Station

NSRS recommended that EN DES amend the SQN FSAR as previously requested and as committed to by EN DES. Since the barge collision analysis had been completed and since the other recommendations identified in the NSRS report had been addressed in draft FSAR amendments, NSRS felt that completion of the item would not impact unit 2 fuel load and therefore implementation should be completed in a timely manner.

From R-81-12-SQN the following was reported.

"NSRS concurs with the response to our recommendations and with the draft FSAR sections. However, this item remains open pending issuance of amendments 68 and 69 for the SQN FSAR."

This item remains open pending further NSRS review.

11. R-81-07-SQN-02, Lack of Maintenance Instructions

The NSRS recommended that an instruction or group of instructions be written by NUC PR for repair and/or replacement of the incore and excore flux monitoring detectors.

From R-81-12-SQN the following was reported:

'NUC PR's response to our recommendation is acceptable. NSRS plans to review the procedures (IMI-92-SRPC, IRIC, and PRIC) when they are received and the newly written SI-671 during a later review period."

This item remains open pending NSRS review.

12. R-81-07-SQN-03, Lack of Management Control of Surveillance Program

Ths NSRS recommended that:

a. NUC PR review SQA 41 and correct it to include all Technical Specification surveillance requirements.

b. NUC PR assign responsibility for maintaining SQA 41 as a current document in a written program.

c. NUC PR address the NSRS's concerns listed in section V.B.3 of NSRS report R-81-07-SQN.

d. NUC PR reconsider the appropriateness of using SQA 41, a document not reviewed by PORC, as the primary basis for scheduling surveillances.

From R-81-12-SQN the following was reported:

"NUC PR's response to our recommendations did not address the problem we identified. We recommended that NUC PR assign responsibility for maintaining SQA 41 as a current document. NUC PR responded that the QA staff periodically updated SQA 41.

During our initial review the QA supervisor stated that he did not have responsibility for updating or ensuring correctness of SQA 41 after the first review which followed issuance of the unit 1 license and Technical Specifications. Conversations with other section supervisors revealed that they felt no responsibility for ensuring correctness of the entire surveillance requirements listing in SQA 41. Consequently, NSRS does not feel that this item is resolved. Further discussions with the plant staff will be held during a later NSRS review. This item remains open.

NSRS also recommended that SQA 41 be reviewed and corrected to include all Technical Specification surveillance requirements. This has been done. This part of the item is considered closed.

Finally, NSRS recommended that NUC PR should reconsider the appropriateness of using SQA 41, a document not reviewed by PORC, as the primary basis for scheduling surveillances. This recommendation still applies after conversations with plant staff. Presently the plant staff is using this document to schedule surveillance testing, as required in SI-1. NUC PR should realize the potential problems of using an unapproved document, especially one that is not controlled for revisions to the Technical Specifications surveillance requirements."

This item remains open.

13. R-81-07-SQN-04, Inaccurate Organization Representation

NSRS recommended that:

a. The SQN FSAR, N-OQAM, DPM No. N74A20, and the SQN-1 Technical Specifications be revised by NUC PR to be consistent and to depict the current plant organization.

b. NUC PR delete table 13.1-1 of the SQN FASR, if possible, or change it to list those individuals, and their qualifications, who presently hold positions as key staff specialists.

c. Section 13.1.3.1 of the SQN FSAR and N-OQAM, part III, section 6.1, be revised by NUC PR to require 10 years of responsible power plant experience for the Assistant Plant Superintendent.

From R-81-12-SQN the following was reported.

"This item remains open pending issuance of the revision to chapter 13 of the SQN FSAR and of the revised DPM No. N74A20."

14. R-81-07-SQN-05, Lack of Management Control in the Area of Nuclear Operator Training Program

NSRS recommended that:

a. NUC PR revise the N-OQAM and DPM No. N78A13 immediately to detail the operator training program.

b. SQN and Power Operations Training Center (POTC) revise their procedures to comply with the revised N-OQAM and DPM No. N78A13.

This item is being closed out in this report since this issue has been investigated more thoroughly in NSRS special review report R-81-31-NPS involving the Nuclear Operator Training Program.

15. R-81-07-SQN-06, Errors and Inconsistencies in Sequoyah Nuclear Plant Instructions

The NSRS recommended that:

a. SQN procedures and instructions be reviewed in depth as time permits to assure that up-to-date and accurate guidance is provided to plant personnel in a timely manner.

b. The comments in section V.B.6 of NSRS report R-81-07-SQN be evaluated by NUC PR and incorporated, as determined to be appropriate, into the applicable instructions in a timely manner.

From R-81-12-SQN the following was reported:

"NSRS pointed out that if we could find so many problems with a few plant procedures in such a brief review period, then the plant staff should make an honest effort to review and revise all plant procedures in a timely fashion. NUC PR's response indicated that AI-14 should take care of our concern. NSRS is aware of the requirements for procedure preparation, review, and approval as stated in AI-14. However, we feel that it is not being adequately implemented. Consequently, our previous recommendations still apply. NSRS will discuss this with plant staff during a subsequent review."

This item remains open.

16. R-81-12-SQN-01, ERCW Flow and Suction Temperature Concerns

The NSRS recommended that NUC PR:

a. Incorporate the resolution of the ERCW flow deficiencies to the electrical board rooms and the main control room air conditioning in the unit 1 test data package for preoperational test TVA-18C.

b. Revise Surveillance Instruction SI-3, step 3.1.5, to state clearly where the ERCW suction temperature will

be taken daily to comply with Technical Specification surveillance requirement 4.7.5.b.

SI-3 has been rewritten to define the method of taking water temperature. This item is closed.

17. R-81-24-SQN-01, Inadequate Procedural Controls in Installing the Unit 2 Online Reactivity Computer

The bistables of the power range channel used to input the reactor flux level to the reactivity computer for unit 2 startup testing activities were not tripped when the channel was removed from service. The cause of this deficiency was either failure to follow the procedure (TI-67) being used to trip the inoperable power range channel or having an inaccurate procedural step NOTE in the reactivity computer setup procedure (TI-25).

NSRS recommended that NUC PR remove the possibility of ever reusing the incorrect guidance given in Technical Instruction TI-25 for the remaining unit 2 low-power physics startup test program, for subsequent startups after refueling operations, or to mislead WBN should they use SQN's procedure in developing their own startup test instructions by revising TI-25 to delete steps 2.2, 2.3, 2.4, 7.4, 7.5, and 7.6 of paragraph 4.B. Deletion of these steps would also make TI-25 compatible with TI-67, referenced for performance in TI-25, which completes the same required action for the affected power range channel.

CAR 21-81-122 was issued and corrective action has been taken. A permanent revision to TI-25 has been authorized. This item is closed.

18. R-81-24-SQN-02, Inadequate Trip Switch Identification Utilized in TI-67

The trip switch identification nomenclature in TI-67 is not consistent with current plant switch identification practices. NSRS found cases where the plant unique identification for trip switches was not being utilized necessitating review of instrument tabulations to correlate vendor-supplied component identification to the corresponding plant switch designation.

The NSRS recommends that the SQN plant staff evaluate TI-67 and other applicable procedures for switch/component identification consistency and usefulness to the plant employee utilizing this information.

This item remains open.

19. R-81-27-SQN-01, Need to Identify at Affected Procedural Steps that a Test Deficiency had been Written Against It

Completed procedural steps or data sheets are not identified with a unique test deficiency number to indicate a test deficiency had been written against them thereby closing what appears to be an open loop.

NSRS recommended that NUC PR evaluate establishing a policy to annotate test data sheets and procedural steps with the unique test deficiency number at the point a discrepant condition is identified.

This item remains open

20. R-81-27-SQN-02, Need for Identifying a Data Reviewer when Completing Supportive Data Sheets Used for Acceptance Testing or for Operational Limitations

Calculations, hand-plotted data, etc., used to support acceptance tests or to provide operational limitation. such as generation of rod withdrawal curves when the moderator temperature coefficient has been determined to be positive, do not reflect directly that the data was reviewed by an independent source.

NSRS recommended that the SQN plant staff evaluate requiring supportive data that aids in meeting acceptance criteria or provides operational limitations to undergo the same program and reviewer signature requirements as normal test instruction data sheets.

This item remains open.

21. R-81-27-SQN-03, Revision of SQN FSAR Section 14 to Reflect Accurately the Unit 1-Unit 2 Startup Programs

NRC apparently had mistakenly amended the SQN FSAR prior to Licensing's approval of TVA's recommended FSAR revisions.

NSRS recommended that NUC PR revise the SQN FSAR to accurately reflect the unit 1-unit 2 Startup Test Programs as described in NSRS report R-81-27-SQN, section IV.B.2.c.

This item remains open.

B. Review of Preoperational Tests Performed After Criticality

The unit 2 preoperational tests reviewed for this evaluation were in various stages of completion. Some had data partially taken and others had been completed, reviewed, and were ready for transmittal to EN DES. The tests were reviewed for compliance with the Section Instruction Letters, Standard Practices, and the OQAM.

The following preoperational tests were reviewed:

W-10.1 Automatic Reactor Control System, R0, written 3/31/81, approved for use 8/24/81

W-10.2 Automatic Steam Generator Level Control, R0, written 7/13/81, approved for use 9/21/81

W-10.5 Dynamic Automatic Steam Dump Control, R0, written 3/15/80, approved for use 11/17/80

W-11.7 Calibration of Steam and Feedwater Flow Instruments, R0, written 6/1/78, approved for use 7/25/79

W-11.10 Adjustment of Reactor and Turbine Control System, R0, written 6/11/78, approved for use 7/25/79

No items of nuclear safety concern were noted in this review.

C. Startup Test Results Review

1. Results Review

Six completed startup test packages for unit 2 were reviewed by the NSRS reviewer to ascertain whether uniform criteria are being applied for evaluation of completed startup tests to assure their technical and administrative adequacy. Each procedure was reviewed to verify that:

a. Each test had been completed and performed at the power level described in section 14 of the Sequoyah FSAR as required by unit 2 operating license conditions 2.C.(3).a, c, and d.

b. Each procedure change was approved and implemented as required by SQA-44, section 5.0, and AI-4, sections VI, VII, and XII.

c. Each test change had been completed if it entailed specific action.

d. Procedure changes made did not change the basic objectives of the test or other test conditions specified in section 14 of the Sequoyah FSAR as required by unit 2 operating license condition 2.C.(3).b.

e. All test deficiencies had been identified and resolved and that resolution had been accepted by appropriate management as required by section 9.0 of SQA-44.

f. All outstanding test exceptions had been evaluated for safety and design significance prior to continuation of the startup program.

g. Retest requirements had been completed if required for resolution of the test deficiency.

h. Management review and evaluation of the test results and acknowledgement that the testing accomplished had demonstrated system design requirements.

i. The measured test results were compared with established acceptance criteria.

j. Data sheets had been completed and reviewed and that all data recorded, where required, were within the criteria set by the test or limits specified by the technical specifications.

k. Those personnel charged with the responsibility for review and acceptance of the test results had documented their review and acceptance of the test package as required by SQA-44, section 10.0.

The following startup tests were reviewed:

*SU-7.2 Initial Criticality, R8, approved for use 11/2/81, results approved 1/6/82

*SU-7.3.1 Nuclear Design Check Test: Boron Endpoint Determination and Isothermal Temperature Coefficient Measurement, R5, approved for use 11/2/81, results approved 1/6/82

SU-7.4 Rod and Boron Worth Measurement During Boron Dilution, R7, approved for use 11/2/81, results approved 1/6/82

SU-7.5 Rod and Boron Worth Measurement During Boron Addition, R7, approved for use 11/2/81, results approved 1/6/82

SU-7.7 Minimum Shutdown Verification, R5, approved for use 9/19/81, results approved 1/6/82

SU-8.5.5 Low Power NIS Calibration, R4, approved for use 11/4/81, results approved 11/30/81

*These tests were reevaluated because of their being in the review stage at the time NSRS first reviewed them as identified in NSRS review report R-81-27-SQN dated December 29, 1981.

2. Problems and Concerns

The comments resulting from the NSRS review were provided to the Reactor Engineer as the reviews were completed. Corrections and actions taken by the Results Staff on the comments were also reviewed during this period. The more significant areas of concern are discussed below.

a. R-82-01-SQN-01, Unreviewed Safety Question Determination Required on SU-7.3.1 Procedural Controls

As required by 10CFR50.59, paragraph (a)(1), licensees are allowed to make changes to the facility, its procedures, and other operations as described in the Safety Analysis Report (SAR) without prior NRC approval, provided the proposed change does not involve a change in the technical specifications incorporated in the license or that an "unreviewed safety question" does not exist. The criteria for determining whether an "unreviewed safety question" exists are defined in paragraph (a)(2) of 10CFR50.59. Essentially, the language of the guidance provides that any proposed change to a system or procedure as described or discussed in the SAR, either by text or drawing, should be reviewed by the licensee to determine whether it involves an "unreviewed safety question" prior to performance of that change.

Table 14.1-2.a of the Sequoyah FSAR summarizes the test prerequisites, test objectives, testing method, and acceptance criteria for the tests which are to be performed during the initial operating phase of the SQN unit 2 plant from initial core loading to rated power operation.

Using this table, the testing method identified in performing the boron endpoint determination specifies that the endpoint measurement is to be conducted by partially inserting the controlling bank, then quickly pulling and reinserting it with no boron adjustment being made. The procedural controls of startup test SU-7.3.1 allows the option that the controlling bank may initially be either partially inserted or withdrawn. Partially withdrawn is contrary to the FSAR test method. NSRS review of the completed SU-7.3.1 results revealed the manner in which the critical boron concentration was determined for shutdown bank D and all control banks at 0 steps was through quick insertion, not withdrawal. A similar comparison was made to unit 1 and boron endpoints for control bank D at 0 steps and control banks D, C, and B at 0 steps were also found to be accomplished through quick insertion.

NSRS does not have a technical concern in the manner in which these endpoints were determined, nor does the testing method used invalidate the data obtained, the test results, or alter the intent of the test. The NSRS concern is administrative since SQN did not ensure that the intended testing method compared to that which was described in the FSAR. Sequoyah Nuclear Plant staff should therefore document a 10CFR50.59 review for the method of testing performed in determining the unit 1 and 2 critical boron concentrations for various rod configurations and evaluate NSRS item R-82-01-SQN-02

in ensuring that all plant, component, or system changes and all proposed, issued, or revised procedures do not conflict with criteria described in the FSAR.

b. R-82-01-SQN-02, Need to Provide Minimum Nuclear Safety Review Criteria in Evaluating USQDs

The Nuclear Regulatory Commission requires through 10CFR50.59 that holders of licenses authorizing operation of a nuclear power facility are to maintain written safety evaluation records which provide the basis for the determination that a proposed change in the facility, its procedures, or tests or experiments that it intends to conduct does not involve an unreviewed safety question. If an unreviewed safety question is involved, NRC approval is required prior to physical implementation of the change.

NSRS review of SQN Standard Practice SQA-119, "Unreviewed Safety Question Determination (USQD)," indicates the instruction does not provide any guidance as to what minimum nuclear safety review criteria (factors which impact safety significance) should be evaluated, nor does it describe how the justification should be completed when answering the three NRC mandated questions deeming whether or not a proposed change, test, or experiment involves an unreviewed safety question.

NSRS did not find, nor did it look for, cases whereby subjects of the nuclear safety discipline were missed or overlooked. [However, this is the second time NSRS has determined that a USQD was overlooked in the revision of a startup test described in the SQN FSAR. The case previous to the one described in section IV.C.2.a of this report was NSRS item R-80-20-SQN-01 presented in NSRS report R-80-20-SQN dated January 14, 1981 (GNS 810115 154)]. The NSRS concern here is directed only at ensuring that the preparer of a USQD evaluation has at least some minimum nuclear safety review criteria questions to be answered so that potential safety impacts are not overlooked or missed during local USQD evaluations.

As examples of ensuring completeness in USQD evaluations, NSRS has provided attachments A and B. Attachment A was provided to broaden the condensed questions asked in 10CFR50.59 and attachment B was added to provide a typical nuclear safety review factor checklist in resolving this concern. These attachments are being made available for review and use in the NUC PR quality program if/as NUC PR determines to be appropriate.

D. Observation of Unit 2 Startup Test Activities

On February 5, 1982 the NSRS reviewers witnessed portions of startup test SU-9.1, "10% Load Swing Test," conducted at 30 percent reactor power. The observers verified that the proper revision of the procedure was in use, that all temporary changes had been complied with, all prerequisites had been signed as being accomplished, shift manning was proper and in accordance with the procedure and license conditions, that procedural steps were being properly signed off as they were accomplished, and that the transient test equipment required by the procedure was in use, calibrated, and started via a central controlling element.

In addition, NSRS observed test personnel briefing of operations personnel to acquaint them on expected plant response to the transient and allowable actions they could take without invalidating the test results. Further, data acquisition, personnel coordination, and test result determinations made as to whether or not the test procedure acceptance criteria had been met were also observed.

No major problems or deficiencies were noted.

V. PERSONNEL CONTACTED

*A. M. Carver, Sequoyah Compliance Staff
W. M. Halley, Supervisor, Preoperational Test Section
M. R. Harding, Supervisor, Compliance Staff
*T. L. Howard, Quality Assurance Staff
R. W. Fortenberry, Reactor Engineer
+*J. M. McGriff, Assistant Plant Superintendent, H&S Group
M. A. Skarzinski, Assistant Supervisor, Preoperational Test Section

*Present at exit meeting, February 5, 1982
+Senior station representative at exit meeting

VI. DOCUMENTS REVIEWED (REFERENCES)

A. U.S. NRC Regulatory Guide 1.68, "Preoperational and Initial Startup Test Program for Water Cooled Power Reactors," November 1973

B. Sequoyah Nuclear Plant, "Final Safety Analysis Report"

C. Facility Operating License DPR-79, Sequoyah Nuclear Plant

D. Sequoyah Nuclear Plant - Standard Practice SQA-44, "Plant Startup Test Program"

E. Sequoyah Nuclear Plant - Standard Practice SQA-119, "Unreviewed Safety Question Determination"

F. Sequoyah Nuclear Plant - Administrative Instruction AI-4, "Plant Instructions Document Control"

G. Sequoyah Nuclear Plant - Administrative Instruction AI-7, "Recorder Charts and Quality Assurance Records"

H. Division of Nuclear Power, "Operational Quality Assurance Manual"

ATTACHMENT A

NUCLEAR SAFETY EVALUATION CHECKLIST

A. Proposed Change

1. Facility _____ Affected Unit(s)_____
2. System/Structure/Component/Instruction Name_____
3. Description of change (include TACF, Instruction, or STEAR Number and Revision)

_____
_____
_____
_____

B. 10CFR50.59 Applicability

Does the proposed change represent:

1. Yes____ No____ A change to the plant as described in the FSAR?
2. Yes____ No____ A change to procedures described in the FSAR?
3. Yes____ No____ A test or experiment not described in the FSAR?
4. Yes____ No____ A change to the Technical Specifications (Appendix A of the operating license)?

If the answer to any question in section B is "yes," a safety evaluation is required. Complete section C. A written justification basis for all answers in section C must be provided on page 3 of this checklist.

C. Safety Evaluation

1. Yes____ No____ Will the probability of an accident previously evaluated in the FSAR be increased?
2. Yes____ No____ Will the consequences of an accident previously evaluated in the FSAR be increased?
3. Yes____ No____ May the possibility of an accident which is different than any already evaluated in the FSAR be created?
4. Yes____ No____ Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?
5. Yes____ No____ Will the consequences of a malfunction of equipment important to safety different than any already evaluated in the FSAR be increased?
6. Yes____ No____ May the possibility of a malfunction of equipment important to safety different from any already evaluated in the FSAR be created?
7. Yes____ No____ Will the margin of safety as defined in the basis to any Technical Specificaton be reduced?

NUCLEAR SAFETY EVALUATION CHECKLIST

The following provides justification for answers given in section C of the safety evaluation:

Prepared by/Date _____

Reviewed by/Date _____

If the answer to any of the above questions is "yes," an unreviewed safety question may be involved and NRC approval may be required prior to physical implementation of the change.

Prepared by/Date_____

Reviewed by/Date_____

D. PORC concurs with the above evaluation.

_____

PORC Chairman/Date

E. Plant Superintendent concurs with the above evaluation.

_____

Plant Superintendent/ Date

ATTACHMENT B

MINIMUM NUCLEAR SAFETY REVIEW CRITERIA QUESTIONS TO BE ANSWERED IN DETERMINING IF AN UNREVIEWED SAFETY QUESTION EXISTS

Facility _____ Affected Unit(s)_____
System/Structure/Component/Instruction Name_____
Prepared by/Date_____ Reviewed by/Date_____
Description of Change (Include TACF, Instruction, or STEAR Number and Revision)

_____
_____
_____
_____

A. Evaluation Constraints

1. The safety evaluation may be based on engineering judgments to the extent deemed necessary to the individuals involved in the review, but questions which result in significant doubt must always be resolved with nuclear safety as the only consideration.

2. Consideration of plant capacity factor, economics, and the effects of plant unavailability are not to be taken into account when performing a safety evaluation.

B. Safety Review Questions

Could the Proposed Change Affect:	Yes/No	Comment
1. The basic function or performance requirement of a safety structure, system, or component?		
2. Primary/secondary containment or system design conditions of pressure, temperature, atmospheric/fluid chemistry or power availability?		
3. Loading constraints designed for seismic, wind, thermal, and dynamic conditions?		
4. Environmental conditions considered for safety grade equipment such as pressure, temperature, fluid or vapor spray, humidity, corrosiveness, elevation, wind direction, floods, and radiological exposure duration?		

Could the Proposed Change Affect:	Yes/No	Comment
5. Environmental conditions for habitability of the control room or other locations?		
6. Containment of radioactive materials from reaching the environment, either onsite or offsite?		
7. Material requirements for compatibility, center of gravity, and protective covering?		
8. Mechanical requirements to guard against excessive vibration, stress, shock, or reactionary forces on seismic category I or I(L) equipment?		
9. Structural requirements on equipment foundations and supports?		
10. Hydraulic requirements for safety equipment such as pump net positive suction head, allowable pressure drops, allowable fluid velocities, peak pressure, minimum allowed bypass flow, etc.?		
11. Electrical power requirements including sources of alternate or auxiliary power, loading capacity, voltage, raceway requirements, insulation durability and motor rotation and cooling needs?		
12. Chemistry requirements, including accident and postaccident sampling?		
13. Layout and arrangement requirements such as mechanical, electrical, and conduit connections and mounting details?		
14. Instrumentation, control, and alarm requirements necessary for the safe shutdown of the plant?		

Could the Proposed Change Affect:	Yes/No	Comment
15. Plant security?		
16. Plant or system transients?		
17. Alter any TVA responses to NRC questions made?		
18. Redundancy, diversity, and separation requirements of structures, systems, or components?		
19. The operator's ability to mitigate an accident or to increase the possibility of operator error?		
20. A system not described in the FSAR but has been designated as a safety-related system?		
21. Other?		

If the answer to any of the above questions is "yes," an unreviewed

TVA 64 (08-8-80)

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : G. H. Kimmons, Manager of Engineering Design and Construction, W12A9 C-K

FROM : H. N. Culver, Chief, Nuclear Safety Review Staff, 249A HBB-K

DATE : January 27, 1981

SUBJECT: DIFFERING STAFF OPINIONS - NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT NO. I-80-14-NPS

REFERENCES:
1. Memorandum, R. F. Keck to S. Duhan, dated August 15, 1980, "Quality Assurance Evaluation QAE 80-1-Procurement Control Activities (QAM 800421 001)" (HPP 800815 027)
2. Memorandum, W. P. Kellegham to S. Duhan, dated September 24, 1980, "Phipps Bend Nuclear Plant - Quality Assurance Evaluation QAE 80-1" (PBN 800923 024)

Attached is the NSRS report of the findings resulting from our investigation into the two EXPRESSIONS OF STAFF VIEWS as noted above. The employee concerns involving the disposition of audit findings detailed in OEDC QA Management Evaluation Report QAE 80-1 and the lack of EN DES procurement controls to effectively control the quality of material purchased by TVA were found valid in the major areas concerned.

Our recommendations, as stated in Section V of this report, show twenty-one (21) open items requiring action by OEDC for resolution. We have not established a resolution date for the recommended actions; however, we feel that these items should be resolved in a timely manner.

You are requested to inform NSRS of your plans and schedule for implementing the recommendations presented in the report by February 27, 1981. If you have any questions, we will be glad to discuss them with you.

H N Culver

H. N. Culver

RCS:MJT
Attachment

TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

EMPLOYEE CONCERN - CASE NO. I-80-14-NPS

Subject: Tennessee Valley Authority
Office of Engineering Design and Construction

Quality Assurance Evaluation Report QAE 80-1 -
Differing Staff Opinion

Period of
Investigation: September 4, 1980 - November 3, 1980

Investigator: Robert C. Sauer — Robert C. Sauer — 1/27/81 — Date

Approved by: K. W. Whitt — K. W. Whitt — 1/28/81 — Date

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I. Differing Staff Opinions

On August 12, 1980, the Nuclear Safety Review Staff (NSRS) received a designated copy of a memorandum (HPP 800815 027) written by Richard F. Keck of EN DES to his former supervisor, Stanley Duhan of the OEDC Quality Compliance Section. The designated copy of the memorandum was sent to the NSRS staff under the provisions of Section II of the TVA Code, EXPRESSION OF STAFF VIEWS (Attachment A), in which Mr. Keck felt that further pursuit of his concern with his management for resolution would have been ineffective. A complete statement of Mr. Keck's concern is provided in Appendix A to this report.

Similarly, on September 26, 1980, the NSRS staff received a second memorandum (PBN 800923 024) as an EXPRESSION OF STAFF VIEWS on the same subject from Mr. Joseph E. Rose of CONST written through his supervisor Mr. William P. Kelleghan, the Project Manager at the Phipps Bend Nuclear Plant construction site, with his concurrence. A complete statement of Messrs. Rose/Kelleghan's concern is provided in Appendix B to this report.

Messrs. Keck and Rose/Kelleghan memoranda were written responses to a verbal request made by Mr. Duhan for their concurrence with a proposed memorandum (see either Appendix A or B) anticipated to be issued by E. G. Beasley, Quality Assurance Manager, OEDC, on the disposition of the findings presented in Quality Assurance Evaluation report QAE 80-1 (QAM 800421 001). Both Mr. Keck and Mr. Rose along with three other individuals (Messrs. M. Guity, L. G. Hebert and team leader S. Duhan) participated as members of the subject evaluation which had been initiated to evaluate the adequacy and the effectiveness of the EN DES Quality Engineering Branch (QEB) in controlling the quality of nuclear safety-related materials purchased by TVA. The proposed Beasley memorandum provided a judgment as to whether any or all of the thirty-three identified evaluation findings should be considered deficiencies and whether any had sufficient substance to warrant being considered significant when reviewed for significance in accordance with OEDC Quality Administrative Instruction QAI-4.0. This action was prompted partially by an enforcement action taken earlier by the NRC as a result of an inspection of OEDC conducted in Knoxville, during the week of July 7-11, 1980 (reference B).

In Summary, Mr. Keck's concerns were:

A. The OEDC QA staff should have considered the majority of the items identified in QAE 80-1 as deficiencies instead of the four presented particularly in light of the EN DES responses made to those items.

B. The OEDC QA Staff should have considered significant those items and the responses to them which indicated a failure of QEB to understand their QA function or which indicated QEB lacked the resources to effectively carry out their QA function.

C. OEDC managements' attitude that items concerning management methods and procedures have only a secondary impact on quality was in error.

A summary of Mr. Rose/Kelleghan's concerns are:

A. Engineering Design lacks the organizational and enforcement structure to effectively:

1. Evaluate and recommend prospective suppliers.
2. Adequately specify and provide enforceable quality requirements in the contracts language.
3. Provide adequate vendor surveillance during the fabrication phase of the contract to effectively identify and handle problems encountered during fabrication.

B. When viewed collectively, individual findings of QAE 80-1 indicate EN DES ineffectiveness in the control of the quality of material purchased by TVA is significant.

II. Scope of the Investigation

The investigation involved background research of EN DES procurement control procedures; review of the QAE 80-1 report findings and associated supportive documents; informal personnel interviews to ascertain the intent, meaning and support of the report findings, recommendations and resultant responses; to determine whether any of the evaluation report findings should be considered deficiencies; whether any of the evaluation report findings are significant when considered individually or collectively; whether OEDC QA management's method of handling its differing staffs views was adequate; whether those evaluation team members concurring with the Beasley memo understood the intent of their concurrence; and to determine whether the dissenting evaluators had sufficient basis for their concerns.

III. Background

Originally, Quality Assurance Report QAE 80-1 began as an OEDC QA Management Audit, M80-2. This audit involved a review of EN DES QEB in the area of vendor surveillance to assure that the portion of the OEDC QA program implemented by QEB was functioning effectively. The audit was to run from January 15, 1980, through February 6, 1980, and entailed inspection visits of the Philadelphia Regional Office, four vendor facilities and the QEB Knoxville Office. Later, the audit was expanded to cover the Chicago Regional Office and the Bristol and Milwaukee Suboffices. This added two additional weeks onto the initial proposed audit completion date and the audit was redesignated as M80-3. Due to the scope and nature of the review OEDC management felt that an in-depth look at the program could not be accomplished within the time constraints allotted. OEDC QA management thereupon departed from the concept of an audit and designated this review as an "evaluation." Management Audits M80-2 and M80-3 were then cancelled and QAE 80-1 instituted as the first exercise under this new review concept. Inspection of the Milwaukee suboffice was also deleted as part of the

revision. With this revised format OEDC management felt the auditors could therefore perform a more localized review of all aspects of the Procurement Program and equate the findings to encompass QEB in general. Recommendations on problem or potential problem areas would then be made to division management for action.

The final evaluation report, QAE 80-1, was issued on April 21, 1980. EN DES subsequently responded to the findings and recommendations on May 30, 1980 (reference E) and June 25, 1980 (reference F). The EN DES responses were considered by the NSRS investigator to be vague and in some cases poor choices of words may have been used. This may be due in part to the lack of details supporting the OEDC recommendations. OEDC QA's rebuttal to the EN DES responses was then curtailed by Mr. Beasley in an effort to:

A. Restrain the two divisions from bickering.

B. Identify as deficiencies only those evaluation findings that had sufficient supportive documentation to substantiate the deficiency classification.

C. Delete those items considered contrary to management's chartered responsibilities.

This action was also prompted by a recent NRC inspection finding which identified that OEDC QA was not documenting its audit findings as deficiencies and reviewing them for significance.

The proposed Beasley memorandum identified four items as being deficient, none of which were considered significant. In addition, the memo negated any further correspondence on the remaining 29 items. This draft was sent to the evaluation team members for their review and tacit approval. Three members concurred with Mr. Beasley's intention of not requiring additional response on the remaining items, two did not. The Beasley memo was subsequently issued over the protests of the two dissenting team members on August 28, 1980 (QAM 800829 001). This action effectively neutralized the majority of the results of the audit team up to that point. No action was taken on Mr. Keck's written concern and his dissenting opinion was issued with the report for information only. Mr. Rose's dissenting opinion, though expressed verbally at the time of the memo's issuance, was subsequently expressed formally in a memorandum issued through his supervisor on September 24, 1980. It should be noted that, at the time of the Beasley memorandum, only those team members not under his direct supervision dissented.

Shortly after transmittal of the Beasley memo the NSRS staff formally began investigation into the two concerns.

IV. Summary and Conclusions

QAE 80-1 was conducted at the request of OEDC management during the period January 15 through March 3, 1980, to evaluate procurement control activities of EN DES Knoxville, QEB Philadephia and Chicago Regional Offices, and the Bristol Suboffice. The evaluation report was issued on April 21, 1980, identifying 33 items which required EN DES management review and action.

Subsequent to the report issuance, OEDC QA reevaluated their conclusions and recommendations to determine if any should have been documented as deficiencies. This action was prompted as a result of an NRC inspection finding of OEDC QA conducted during the week of July 7-11, 1980. The finding cited OEDC QA for failure to properly identify and handle its audit deficiencies. The reevaluation resulted in four findings being identified as deficiencies, none of which were considered significant. The other 29 findings were considered suggestive items to improve EN DES efficiency and therefore would require no further response.

The two employee concerns which came about as a result of the OEDC QA reevaluation have been reviewed and evaluated by the NSRS staff. To ensure adequate independent review of the concerns and fairness in the resultant findings, the following constraints were applied:

a. The OEDC QA recommendations and EN DES responses were to be investigated without influence from the OEDC QA rebuttal identified in Mr. Keck's concern (see Appendix A).

b. Items, if determined deficient to some required quality or element, would be identified as such to OEDC QA management for their reevaluation and determination for significance.

c. The review was to encompass only the material audited by OEDC QA, on file in EN DES repositories or the MEDS system, and information obtained through personnel interviews. No on site review of the evaluated regional offices, Bristol suboffice, or vendor facilities would be performed. If a separate, related item developed, it was to be reviewed to a conclusion.

d. Materials reviewed were limited to on or before November 5, 1980.

The detailed results of this review have been presented in Attachment B, numbered in accordance with the section IV numbers identified in the QAE 80-1 report. Due to the depth of the OEDC QA evaluation, the details of the attachment have been limited to only identifying the OEDC QA recommendations, the resultant EN DES responses, and the NSRS evaluations. Background information leading up to each identified OEDC QA finding can be found in the OEDC QA report (QAM 800421 001). A summary brief of Attachment B and the QAE 80-1 background details have been provided in Table 1. A summary of all items considered open or deficient by this investigation is provided in Table 6. These items shall remain open until a response or corrective action is provided by OEDC.

The NSRS investigator's review of the 33 QAE 80-1 evaluation findings and recommendations identified 11 additional deficient items to the four previously identified by OEDC QA management, making a total of 15 deficiencies which should have been reported to appropriate EN DES management for their review and resolution. Six of the 15 deficiencies are considered by NSRS to be of sufficient substance that OEDC QA management will be requested to reevaluate them for significance. Further, of the 11 additional deficiencies addressed in this report two were discovered by the NSRS investigator to be outside the apparent boundaries of the OEDC QA evaluation. These items possibly would have been recognized by the OEDC QA staff had the depth of the evaluation been expanded. In addition, five of the 33 QAE 80-1 findings were found to be similar by subject and were therefore coalesced to form two separate items; both subsequently were determined to be deficient. Finally, of the remaining 16 OEDC QA findings considered by NSRS not to be deficient, one item was considered by the NSRS investigator to be editorial, one redundant with another, seven to be suggestive or reemphasizing current EN DES policy, and seven appeared to be deficient to some stated requirement but lacked sufficient supporting detail to be included in the deficient item category or used to provide additional examples of previously identified deficiencies. The last seven were therefore concluded to be suggestive.

From the results evaluated and presented in Attachment B of this report and through background review, the NSRS investigator has drawn the following conclusions:

A. The employee concerns were considered valid based on discovery by the NSRS investigator that:

   1. A large number of the findings identified in the QAE 80-1 report could be found deficient to some stated requirement or policy, contrary to the four identified by OEDC QA management.

   2. EN DES appears to be yielding to the pressures of costs and schedules by:

      a. Identifying and using these terms as excuses for not performing its QA responsibilities as evidenced in their responses to the evaluation report findings.

      b. Imposing travel restrictions on its QC inspection personnel.

      c. Delaying formulation of a formal training program.

      d. Its inability to effect corrective action in resolving identified deficiencies.

   3. EN DES does lack the organizational structure to adequately:

      a. Evaluate and recommend prospective suppliers.

b. Specify and provide enforceable quality requirements within the language of its contracts.

c. Provide vendor surveillance during material fabrication to effectively assure that quality requirements are satisfied.

d. Assure that all EN DES documents, such as purchase requisitions, are reviewed for interface compatibility by all EN DES organizations affected by, or concerned with, the document.

e. Identify to its personnel their functions, assignments, and responsibilities.

f. Review and revise current regulatory commitments made to NRC in order to keep TVA at the forefront of safety in the nuclear industry.

4. EN DES appears to have a misunderstanding as to what its QA responsibilities are when it considers among other things, that:

a. Plant surveys are not recognized as QA surveys.

b. Comparison of hardware to drawings is an inspection and surveillance function, but not one of QA.

c. Inspection reports are trip reports.

d. Responses to identified audit deficiencies are not binding to the 30-day response request.

e. Costs and schedules are acceptable excuses for not implementing action.

5. Collectively, from the investigators' review, EN DES appears to be ineffective in controlling the quality of material being purchased by TVA, especially in STRIDE contracts

B. At the time of the Beasley memorandum, only those members not under his direct supervision dissented. The reasons for why the others did not dissent can be attributed to any or all of the following:

1. The knowledge of the EN DES responses was not provided when the proposed Beasley memorandum was submitted for concurrence.

2. Awareness that Messrs. Rose and Keck dissented and were planning to take formal action to voice their dissent.

3. The belief that the remaining evaluation report findings, not already identified by OEDC QA management as deficiencies, lacked sufficient substantiating details to warrant their

upgrade to deficiency status and could be investigated to a greater degree during a subsequent audit.

4. Limited participation in the review necessitated allowing the decisions to identify any or all of the evaluation report findings as deficiencies, up to the other evaluation team members.

C. Few of the reviews stated by EN DES to be completed by July, 1980, in response to the QAE 80-1 evaluation findings, have been completed in accordance with the time frame specified. Some responses are still pending.

D. OEDC QA management's methods of handling its differing staff's views is considered inadequate.

The NSRS investigator does not consider the OEDC QA management decision to include its dissenting staffs' views (whether the concerned individual is part of the OEDC QA staff or on temporary loan to perform or assist in an audit) with memoranda it issues to activities outside its own organization to be a final, just solution in resolving the concern. As identified in a memorandum prepared by Mr. Willis on this subject (reference NN), resolution of employee concerns may require one or more reviews by the affected organization prior to elevating the concern to the next higher level of management for review. Should the concerned employee desire an entirely independent evaluation of his concern or feel that further pursuit of the concern with his respective management would be ineffective, the Nuclear Safety Review Staff is available and chartered to handle such concerns. The specific mechanics for handling differing staff views should be established in each organization's administrative procedures and made known to each of its staff employees.

Contrary to Mr. Willis' memorandum, as of November 5, 1980, no OEDC QA procedure could be identified to handle these concerns. This item is considered a deficiency (I-80-14-NPS-18).

In addition, the NSRS investigator considers the two employee concerns would have been partially resolved prior to the issuance of the Beasley memorandum had the OEDC QA staff been following the guidelines provided in the OEDC Quality Assurance Program Requirements Manual (PRM). Quality Administrative Instruction OEDC-QAI-4, "Determining, Reporting, and Correcting Conditions Adverse to Quality," section 4 provides instructions in the manner in which conditions adverse to quality, such as deficiencies, are handled. Step 4.D identifies that each condition adverse to quality is to be evaluated by the reporting organization for significance and those determined to be significant are to be reported to appropriate levels of management and to EN DES for review of potential reportability to NRC. Those determined to be nonsignificant are to be reviewed by the appropriate QA organization or another organization independent of the reporting organization and where deemed necessary upgraded to significant. The upgraded condition is then handled identically

to the significant condition. Once the determination was made that the four deficient items were nonsignificant, the OEDC QA manager should have submitted the items to a separate QA or independent review organization for verifying the nonsignificance of the items.

Contrary to the requirement specified in the PRM, the four evaluation deficiencies addressed in the Beasley memorandum as being nonsignificant were not reviewed by any designated QA organization or other review organization such as the Nuclear Safety Review Staff, for an independent evaluation for signficance. This item is considered a significant deficiency by the Nuclear Safety Review Staff since no objective evidence can be found to demonstrate that such a review has ever been performed or requested. OEDC should take prompt and necessary corrective action to resolve this deficiency (I-80-14-NPS-19).

E. The OEDC definition of significance is considered inadequate.

The NSRS investigator considers the OEDC determination for significance provided in step 4.C of OEDC Quality Administrative Instruction OEDC-QAI-4 to be inadequate since: (1) the criteria defining the existence of a significant condition utilizes the same supportive adjective significant and (2) significance as defined in this section has the appearance of cost value or manpower implications rather than that of operational safety. OEDC therefore needs to review its definition (I-80-14-NPS-20) to consider the following types of situations:

1. Any condition which if remained uncorrected could have affected adversely the safety of nuclear power plant operations at any time throughout the expected lifetime of the plant.

2. Any condition which is considered to be prompt reportable to the NRC within 24 hours from the time of discovery of the deficient item.

3. Any condition discovered in the construction or operational phases of a nuclear facility or activity or a basic component supplied for such facility or activity which fails to comply with the rules, regulations, and requirements of the NRC relating to a substantial safety hazard or is known to contain a defect.

4. Any adverse condition which has occurred with such frequency that it indicates past corrective action has been ineffective.

5. Any condition which negates the effectiveness of design or quality assurance controls.

Upon revision or review of this definition, OEDC QA management should reevaluate the following deficiencies for significance: Attachment B items IV.A.3, IV.A.4, IV.B.1, IV.B.2.b, IV.B.2.c,

IV.B.3.a, IV.B.3.b and IV.C.5.c and the item previously identified in paragraph IV.E. In addition, OEDC QA management should review the items collectively, as an apparent breakdown in the EN DES procurement control program appears evident (I-80-14-NPS-21). This review may require a reaudit of EN DES to identify the cause and effect and to determine the extent of the corrective action required.

F. The method of conducting OEDC QA evaluations is not supported by procedure.

As required by ANSI N45.2-1971, Section 6, "Instructions, Procedures, and Drawings," activities affecting quality are to be described by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. The instructions are also to include qualitative and quantitative criteria, as appropriate, for determining satisfactory work performance and quality compliance.

Contrary to the above, the OEDC QA division does not have a procedure for conducting quality assurance evaluations or the methods necessary to handle deficiencies incurred during the evaluation. This item is considered a deficiency requiring OEDC QA management resolution (I-80-14-NPS-22).

G. OEDC QA audit and evaluation reports are considered vague and lack supporting detail.

From review of the QAE 80-1 evaluation report and other OEDC QA management audit reports in general, the NSRS investigator considers the reports to be lacking sufficient detail to determine what records, both satisfactory and deficient, were reviewed and what general areas were found deficient. The generally deficient areas should then be supported by specific cases of noncompliance, e.g., inspection report content was found deficient as evidenced by . . . , rather than focusing on one specific item, e.g., of the 2500 inspection reports reviewed, 42 percent had omisisons in the report heading. Specific focusing tends to correct only the deficient item rather than the general problem (see Attachment B, item IV.B.2.b for additional details).

The NSRS investigator considers the lack of supporting information in the QAE 80-1 evaluation report content misled OEDC QA management in its determination of which report findings, if any, should be considered deficient.

V. Recommendations

The following recommendations are provided to resolve the conclusions stated in Section IV and the open and deficient items discussed in Attachment B (summarized in Table 6). The Nuclear Safety Review Staff realizes that due to termination of data review on November 5, 1980, and providing a preliminary draft release of this report on

December 12, 1980, to verify correctness of the information supporting the conclusions and recommendations, that corrective action may have already been taken on several of these items.

1. EN DES-QEB should take appropriate action to ensure specific actions required by its administrative instructions such as QEB field office monthly meetings, are conducted as required by procedure (see Attachment B, item IV.A.1.b for details).

2. EN DES needs to review its method of issuing or revising procedures/manuals to ensure that each design document contains the minimum identification information required by EN DES-EP 1.28. (See Attachment B, item IV.A.1.C for details.)

3. EN DES needs to revise purchase requisition preparation procedure EN DES-EP 5.01 and/or contract language to include provisions for the following:

   a. Assurance that all EN DES organizations affected by, or concerned with, purchase requisitions review the document for technical/physical/interface compatability.

   b. Addition of Enforcement Provisions:

      (1) Allowance of TVA inspectors to perform independent material examinations and request product retests if necessary.

      (2) Requirement for minimum quantities or percentages for shipment.

      (3) Specification that material released without a waiver or release form will be sent back to the supplier at the supplier's expense.

   c. Detailing applicable codes, standards, or other requirements clearly in the language of the contract specifications.

   d. Initiating preaward activities with prospective suppliers.

   (See Attachment B, items IV.A.3 and IV.B.3.a for details.)

4. EN DES needs to complete its manpower evaluation for activities assigned to the Philadelphia and other regional offices originally scheduled to be completed July 21, 1980. (See Attachment B, item IV.A.3 for details.)

5. EN DES-QAB and OEDC QA need to establish a "tickler" system to ensure audit report issuances and audited organization responses are issued/received in a timely manner (see Attachment B, item IV.A.4 for details).

6. EN DES needs to establish a procedure to qualify, certify, and/or recertify QC personnel engaged in special process activities other than NDE (see Attachment B, item IV.B.1 for details).

7. EN DES needs to complete its proposed corrective action to deficiency No. 3, OEDC QA Management Audit M79-12, of conducting procedure training on QEB-EP 24.56 at all its field offices. The need to issue an inspection report for each visit to a supplier's facility, in addition to completing all specified administrative requirements such as filling out inspection report headings and release form spaces, should also be emphasized (see Attachment B, item IV.B.2.6 for details).

8. Inspection Procedure D1.1, paragraph 3 of the TVA Inspection Manual needs to be revised to allow addition of hold points to the affirmation letter other than those specified in the procurement contract only if approval for the additional hold points has been obtained between the vendor and the originating organization (see Attachment B, item IV.B.2.c for details).

9. EN DES engineering procedure EN DES-EP 5.43 and TVA Inspection Manual paragraph 5.2.2, Section C, needs to be revised to require waiver authorization to undergo the same degree of control as was utilized in the preparation of the procurement document, that is, approval by the originating organization and concurred in by QA (see Attachment B, item IV.B.2.c for details).

10. EN DES needs to establish a procedure to conduct preaward activities in order to ensure an understanding is reached between TVA and the supplier as to the planning, manufacturing techniques, tests, inspections, and processes that are to be employed by the supplier to meet the procurement contract requirements (see Attachment B, item IV.B.3.b for details).

11. OEDC needs to review NRC Regulatory Guide Commitments made in TVA-TR75-1, paragraph 17.1A.2.1.1 by reference to Table 17.1A-4, to determine if current revisions of the regulatory documents can be implemented. (See Attachment B, item IV.B.4.a for details.)

12. EN DES engineering procedure EN DES-EP 5.34 needs to be revised to identify to suppliers that failure to respond to audit findings within the time frame requested by the audit report is an item of noncompliance (see Attachment B, item IV.B.4.b.1 for details).

13. TVA Inspection Manual, paragraph 2.3, section C, needs to be revised to recognize that a plant survey is a quality assurance activity and to recognize QC is a part of quality assurance (see Attachment B, item IV.B.5.a for details).

14. Technical Engineers and EN DES personnel should be informed to notify QEB-Knoxville whenever interfacing with a vendor, such as through meetings, audits, visits, or telecons resulting in contract problem resolutions or decisions which may affect contract requirements, inspection or testing, so that the branch field offices can be made aware of this action. EN DES personnel should also be instructed in the responsibilities applicable to and expected of them as detailed in QEB-AI 115 (see Attachment B, items IV.C.1.C, IV.C.2 and IV.C.5.b for details).

15. EN DES should take action to ensure the granting of waivers and changes to contracts, their specifications, drawings, and other supportive documents are made through appropriate channels and undergo the same degree of control as was utilized in the preparation of the document and are distributed appropriately to all participating organizations. Measures to ascertain that proper documents are being used and assurance that distribution lists are current should also be reviewed (see Attachment B, items IV.B.2.c and IV.C.5.c for details).

16. OEDC needs to establish a procedure to handle differing staff views (see IV.D for details).

17. OEDC QA needs to request another designated QA or independent review organization to review deficiencies it had previously identified as nonsignificant for significance as required by OEDC procedure (see IV.D for details).

18. OEDC needs to clarify its definition of significant deficiencies contained in OEDC QAI-4, (see IV.E. for details).

19. Based on the findings presented in this investigation and after revision of the OEDC determination for significance, OEDC QA should reevaluate the following NSRS evaluated deficiencies for significance:

    a. Field Office Manpower Inadequacies (Attachment B, IV.A.3)

    b. Failure to issue audit reports and respond to identified audit deficiencies in a timely manner (Attachment B, IV.A.4)

    c. Failure to have a Qualification Procedure for personnel engaged in special processes other than NDE (Attachment B, IV.B.1)

    d. Inspection Report Content Inadequacies (Attachment B, IV.B.2.b)

    e. Lack of Waiver Release Controls (Attachment B, IV.B.2.c)

    f. Lack of Interface Controls in design document review (Attachment B, IV.B.3.a)

    g. Lack of preaward activities in evaluating supplier performance (Attachment B, IV.B.3.b)

    h. Lack of document controls in Field Inspection Program (Attachment B, IV.C.5.c)

    i. Lack of an independent review of nonsignificant OEDC QA audit deficiencies (IV.D)

    In addition to the items noted, the entire QAE 80-1 evaluation report should be reviewed collectively for significance as an apparent breakdown in the EN DES procurement control program appears evident (see IV.E for details).

20. OEDC QA needs to establish a procedure on the method of conducting quality assurance evaluations and handling its associated deficiencies (see IV.F for details).

21. OEDC QA needs to reevaluate the EN DES procurement control program by performing an in-depth audit of the areas evaluated in the QAE 80-1 report and those more specifically identified in V.19 above (see IV.E for details).

VI. Personnel Contacted

E. G. Beasley, OEDC QA

M. D. Conner, EN DES-QEB

R. A. Costner, Jr., EN DES-QAB

S. Duhan, OEDC QA

M. Guity, OEDC QA

L. G. Hebert, OEDC QA

R. F. Keck, EN DES-HPP

J. P. Knight, OEDC QA

J. F. Lewis, EN DES-QEB

J. W. Mabee, EN DES-QEB

J. L. Parris, EN DES-QEB

P. A. Schrandt, EN DES QEB

VII. Definitions

Other terms and their defintions are contained in ANSI N45.2.10-1973, "Quality Assurance Terms and Definitions." Those defined here are pertinent to this report and are to be used as an aid to the reader.

Certification (Personnel) - The action of determining, verifying, or attesting in writing to the qualifications of personnel (reference ANSI N45.2.6-1973).

Conditions Adverse to Quality - Conditions such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances (10 CFR part 50, Appendix B, criterion XVI).

Deficiency - Lacking in some required quality or element (reference EN DES-EP 1.26).

Designated Representative - An individual or organization authorized by the Purchaser to perform functions in the procurement process (reference ANSI N45.2.13-1976).

Designated Reviewer - The contract engineering branch chief (or his appointed representative) designates the group or person responsible for the review. The reviewer must be someone other than the preparer, but is not required to be in the preparer's group. The reviewer then performs an "independent review" of the complete requisition package; when certain it meets all applicable regulatory requirements, design basis, and other requirements needed to assure adequate quality are included or referenced and verifies the technical adequacy of the specification he signs the requisiton at "Reviewed by" (reference EN DES-EP 5.01).

Element (EN DES) - Any engineering branch (civil, electrical, . . ., etc.) or design project group.

Examination - An element of inspection consisting of investigation of materials, components, supplies, or services to determine conformance to those specified requirements which can be determined by such investigation. Examination is usually nondestructive and includes simple physical manipulation, gauging, and measurement (reference ANSI N45.2.10-1973).

Experience Clause - Terminology included in the requisition's Special Conditions that requires a supplier to verify his capability to supply products that are similar to products required by TVA, specifically:

a. The supplier must have designed or built the products, preferably both.

b. The product must have operated well.

c. The product must be close enough in capacity, characteristics, and type to demonstrate an ability to meet TVA's needs. (Reference EN DES-EP 5.23.)

Finding - Documentation of a program deficiency (reference EN DES-EP 1.29).

Hold Points - Those points established during the material fabrication process which allows quality control inspectors the opportunity to witness or inspect quality achieving (ed) processes to assure compliance with contract requirements.

Independent Review - A review that is considered to be sufficiently independent if the designer is not under the direct technical or administrative supervision of the engineer performing the design review, for the work under consideration. A designer's immediate supervisor does not have sufficient independence to perform an

independent design review. The immediate technical supervisor may participate in those reviews but may not be the sole reviewer and may not lead a review team where independent review is required of a design for which he was the immediate supervisor (reference EN DES-EP 5.01).

Indoctrination As to the technical objectives of the project; the codes and standards that are to be used; and the quality assurance elements that are to be employed.

Inspection A phase of quality control which by means of examination, observation, or measurement determines the conformance of materials, supplies, components, parts, appurtenances, systems, processes, or structures to predetermined quality requirements (reference ANSI N45.2.6-1973).

Objective Evidence Any statement of fact, information, or record, either quantitative or qualitative, pertaining to the quality of an item or service based on observations, measurements, or tests which can be verified (reference EN DES-EP 5.34).

Plant Capability Survey - A study that may be conducted either informally or formally to determine such items as the bidder's experience, adequacy of facilities, personnel qualifications, and financial status (reference EN DES-EP 5.01).

Program Deficiency - Failure to develop, document, or implement effectively any applicable element of the QA program as required by various regulations, codes, standards, the OEDC QA Program Requirements Manual (PRM), and procedures (reference EN DES-EP 1.29).

Postaward Meeting - A formal meeting convened after the award of a contract to discuss general and specific contract requirements and promote mutual understanding between the contractor and all TVA organizations interfacing with the contractor. Such a meeting is often convened to clarify cost, scheduling, technical, document submittal, quality assurance, or administrative requirements of the contract, and lines of communication (reference EN DES-EP 5.59).

Procedure - A document that specifies or describes how an activity is to be performed. It may include methods to be employed, equipment or materials to be used, and sequence of operations (reference EN DES-EP 1.26).

Procurement Document - Purchase requisitions, purchase orders, drawings, contracts, specifications, or instructions used to define requirements for purchase (reference ANSI N45.2.13-1976).

Proficiency Testing - Tests devised for determining the capability and proficiency of personnel who perform a specific action.

Purchaser - The organization responsible for establishment of procurement requirements and for issuance, administration, or both, of procurement documents (reference ANSI N45.2.13-1976).

Purchase Requisition - A document completed by a contract engineering branch that defines the requirements of the procurement request and additional requirements necessary for the Divison of Purchasing (PURCH) to procure materials, equipment, components, or systems and the services of an erecting engineer needed for a TVA project.

Information supporting a purchase requisition may be received from sources either internal or external to the contract engineering branch and may be one or more of the following:

a. Bills of material

b. Equipment/valve data sheets

c. Completed Procurement Request form

d. Procurement schedules

e. Special requests (reference EN DES-EP 5.01)

Quality Assurance - All those planned or systemmatic actions necessary to provide adequate confidence that an item or a facility will perform satisfactorily in service (reference ANSI N45.2-1971).

Quality Assurance Program Survey - An evaluation of a supplier's capability to perform under the QA program required by the Invitation to Bid conducted at his facility prior to award of contract (reference EN DES-EP 5.01).

Quality Assurance Records - Those records which furnish documentary evidence of the quality of items and of activities affecting quality (reference ANSI N45.2.13-1976).

Qualification - The characteristics or abilities gained through training or experience or both that enable an individual to perform a required function (reference ANSI N45.2.6-1973).

Quality Control Those quality assurance actions which provide a means to control and measure the characteristics of an item, process, or facility to established requirements (reference ANSI N45.2-1971).

STRIDE General Electric Company (GE) Standard Reactor Island Design

STRIDE Procurement Package - A collection of drawings, specifications, lists, and other documents supplied under STRIDE for TVA's procurement of reactor island equipment or materials (reference EN DES-EP 5.18).

STRIDE Vendor A vendor, under contract to TVA, who uses GE's STRIDE procurement documents to manufacture or supply equipment for the reactor island portion of the nuclear plant (reference EN DES-EP 5.18).

Supplier Any individual or organization who furnishes items or services to a procurement document. It includes the terms Vendor, Seller, Contractor, Subcontractor, Fabricator, Consultant, and subtier levels (reference ANSI N45.2.13-1976).

Surveillance - The physical presence to monitor by observation the designated activites to assure that they are performed in a specified manner (reference ANSI N45.2.13-1976).

Testing - The determination or verification of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions (reference ANSI N45.2.6-1973).

VIII. References

A. Memorandum from J. P. Knight to M. N. Sprouse, "Procurement Control Activites - Quality Assurance Evaluation QAE 80-1," dated April 21, 1980 (QAM 800421 001).

B. NRC:OIE Inspection Report Nos. 50-327/80-24, 50-439/80-13, 50-553/80-11, 50-328/80-15, 50-518/80-11, 50-554/80-10, 50-390/80-20, 50-519/80-11, 50-566/80-10, 50-391/80-14, 50-520/80-11, 50-567/80-10, 50-438/80-13, 50-521/80-11 from J. P. O'Reilly to H. G. Parris dated August 6, 1980.

C. OEDC QA Notification of Quality Assurance Audit, Audit No. M80-2 from J. P. Knight to R. H. Dunham, "Vendor Surveillance Activities," dated January 4, 1980 (QAM 800104 002).

D. OEDC QA Notification of Quality Assurance Audit, Audit No. M80-3 from J. P. Knight to R. H. Dunham, "Vendor Surveillance Activities," dated January 17, 1980 (QAM 800118 001).

E. Memorandum from M. N. Sprouse to J. P. Knight, "All Nuclear Projects - OEDC QA Evaluation 80-1," dated May 30, 1980 (QAS 800530 003).

F. Memorandum from M. N. Sprouse to J. P. Knight, "All Nuclear Plants - OEDC QA Evaluation 80-1," dated June 25, 1980 (QAS 800625 001).

G. Memorandum from E. G. Beasley to M. N. Sprouse, "Procurement Control Activities - Quality Assurance Evaluation QAE 80-1," dated August 28, 1980 (QAM 800829 001).

H. Memorandum from J. L. Parris to R. A. Costner, "Procurement Control Activites - Quality Assurance Evaluation QAE 80-1," dated September 19, 1980 (QEB 800919 011).

I. Memorandum from R. T. Hathcote to H. H. Mull, "Hartsville Nuclear Plant - Project Trend Analysis," dated May 29, 1979 (HTN 790601 701).

J. Memorandum from R. H. Anderson to Civil Engineering Branch Files, "Critical STRIDE Contracts - Hartsville Nuclear Plants A and B and Phipps Bend Nuclear Plant - Meeting Notes," dated June 18, 1979 (CEB 790621 005).

K. Memorandum from T. W. Roberts to Civil Engineering Branch Files, "Hartsville Nuclear Plants A and B and Phipps Bend Nuclear Plant - CONST-EN DES May 9, 1979, Meeting Regarding Critical STRIDE contracts," dated May 9, 1979 (CEB 790514 013).

L. Memorandum from R. T. Hathcote to H. C. Russell, "Hartsville Nuclear Plant - Listing of Civil/Structural Contracts," dated May 24, 1979 (HTN 790524 104).

M. Memorandum from H. C. Russell to W. P. Kelleghan and R. T. Hathcote, "Critical STRIDE Contract for Hartsville Nuclear Plant and Phipps Bend Nuclear Plant," dated June 6, 1979 (CEB 790605 009).

N. Memorandum from W. P. Kelleghan to H. H. Mull, "Phipps Bend Nuclear Plant - Quality of Contract Equipment Being Received Onsite," dated December 10, 1979 (PBN 791210 041 and January 8, 1980 (PBN 800108 044).

O. Memorandum from J. L. Parris to M. N. Sprouse, "Quality Engineering Branch - Baden, Switzerland - Regional Quality Control (QC) Office - EN DES Internal Audit 80-9," dated August 12, 1980 (QAS 800812 800).

P. Inspection Report No. 1-CH, TVA Contract No. 80K73-827317 dated August 11, 1980 (QEB 800811 526).

Q. Memorandum from A. R. Eilmess to D. L. McLean, "Meeting Notes - Chicago Regional QC Office Staff Meeting No. 18," dated February 4, 1980.

R. Memorandum from W. P. Kelleghan to H. H. Mull, "Phipps Bend Nuclear Plant - Project Trend Analysis," dated July 24, 1980 (PBN 800724 017).

S. Memorandum from W. P. Kelleghan to H. H. Mull, "Phipps Bend Nuclear Plant - Project Trend Analysis," dated August 20, 1980 (PBN 800820 024).

T. Memorandum from W. R. Dahnke to H. H. Mull, "Bellefonte Nuclear Plant - Project Trend Analysis," dated October 24, 1980 (BLN 801024 401).

U. Memorandum from R. T. Hathcote to H. H. Mull, "Hartsville Nuclear Plant A - Contract 75K61-86227-2 - Containment Vessel - Contract 76K61-86965 - RPV Pedestal - Contract 76K72-820119 - Drywell Vent Structure and RPV Shield Wall - Contract 76K72-820117 - Erection Problems," dated April 16, 1979 (HTN 790416 114).

V. Memorandum from J. L. Parris to QEB Files, "Meeting Minutes - Discussion with Atlas Machine and Iron Works, Incorporated - Contracts 78K74-822922 and 78K71-823941," dated February 27, 1980 (QEB 800227 018).

W. Memorandum from R. H. Dunham to H. H. Mull, "Quality of Contract Equipment Being Shipped to the Construction Sites," dated January 18, 1980 (QEB 800118 020).

X. Memorandum from H. C. Russell to R. T. Hathcote and W. P. Kelleghan, "QEB Efforts to Improve Quality of Vendor Fabrication on Critical Civil STRIDE Contracts," dated August 27, 1979 (QEB 790827 006).

Y. Memorandum from D. L. McLean to V. C. Kolinger and A. R. Eilmess, "Suggested Inspection and Listed Hold Points," dated July 3, 1979.

Z. Letter from W. A Eckhardt, Lakeside Bridge & Steel Company, to J. G. Hannah, TVA, "Drywell Vent Structure TVA Contract 76K72820119 Radiographic Inspection of Buttered Plate Edges," dated May 22, 1979.

AA. Memorandum from A. R. Eilmess to D. L. McLean, "Quality Deficient Material Received at Hartsville Nuclear Plant," dated June 7, 1979.

BB. Memorandum from M. N. Sprouse to E. G. Beasley, "Procurement Control Activities - Quality Assurance Evaluation QAE 80-1," dated September 22, 1980 (QAS 800922 015).

CC. OEDC QA Quality Assurance Evaluation Report No. QCS 78-2, "Evaluation of QEB Inspection & Test Reports," dated February 13, 1978 (OEDC QA Files).

DD. OEDC QA Management Audit Report No. M78-5 from J. P. Knight to R. H. Dunham and H. H. Mull, "QA Training and Indoctrination," dated July 11, 1978 (QAM 780711 001).

EE. OEDC QA Management Audit Report No. M79-12 from J. P. Knight to R. H. Dunham, "Quality Assurance Program Implementation," dated December 11, 1979 (QAM 791211 001).

FF. OEDC QA Management Audit Report No. M76-38 from J. P. Knight to R. H. Dunham, "QA/QC Activities," (OEDC QA Files).

GG. Memorandum from J. L. Parris to D. L. McLean, "Internal Quality Assurance Audit 78-2," dated January 12, 1978 (QAS 780112 002).

HH. Memorandum from E. G. Beasley to G. H. Kimmons, "OEDC Quality Assurance Staff Report for September 1980," dated October 1, 1980 (QAM 801002 003).

II. Letter from J. L. Parris, TVA, to J. Kelley, Atlas Machine and Iron Works, Incorporated, "Hartsville and Phipps Bend Nuclear Plants - Contract 77K71-821398, Structural Steel for Auxiliary Building - Contract 77K72-821399, Structural Steel for Fuel Building - Contract 78K74-822922 - Shield Building Steam Tunnel Embedments - Vendor Audit 78V-18," dated July 5, 1978 (QAS 780705 802).

JJ. Letter from J. L. Parris, TVA, to A. J. Everitt, Atlas Machine and Iron Works, Incorporated, "Hartsville and Phipps Bend Nuclear Plants - Contract 77K71-821398, Structural Steel for Auxiliary Building - Contract 76K72-823941, Drywell Framed Embedments - Contract 77K72-821399, Structural Steel for Fuel Building - Contract 78K74-822922, Shield Building Steam Tunnel Embedments - Quality Assurance Audit 79V34," dated February 7, 1980 (QAS 800207 800).

KK. Memorandum from A. R. Eilmess to D. L. McLean, "Meeting Notes - Chicago Regional Office Staff Meeting No. 17," dated August 13, 1979.

LL. Memorandum from A. R. Eilmess to D. L. McLean, "Inspection and Release of Equipment," dated February 11, 1980.

MM. Memorandum from J. E. Rose to Phipps Bend Nuclear Plant Files, "Phipps Bend Nuclear Plant - Inspection of Work in Progress at Atlas Machine and Iron Works, Trenton, New Jersey," dated February 5, 1980.

NN. Memorandum from W. F. Willis to Those listed, "Differing Staff Opinions," dated August 15, 1980 (GNS 800812 050).

OO. Remarks by S. David Freeman, Chairman TVA, before the 20th Annual Conference United Press International Editors and Publishers, Houston, Texas, "A Safety-First Nuclear Policy for TVA," dated October 8, 1979.