

TVA STUDY

I. TVA PROBLEMS

A. At BFN and SQN, no assurance that operating, maintenance and emergency procedures are compatible with physical plant and design basis.

- . SQN Site Director expressed lack of confidence in plant configuration control.
- . Huge backlog of physical work not complete - some completed out of engineering sequence
 - 992 work plans at SQN
 - No ECNs closed-out at BFN since 1981
- . Amount of incomplete work overwhelms plant staffs.
- . Plant operations/maintenance staff don't comprehend need for design maintenance "why must we make changes".
- . SQN EEQ effort had to recreate effect of 800 ECNs on design to get as-builts and had to do field walk-downs to verify design basis.
- . Vendor manual program not planned for completion until 1989.
- . ^{for time} BFN Site Director not directly involved with pilot configuration control program - doesn't want to be.
- . Plant operators reported to have only existing operating procedure in their head.
- . Task leader responsible for developing Configuration Control program is part time.
- . Configuration Control program not getting sufficient support from OPS.

- . Pilot program at Browns Ferry - good in concept - not being pursued in an aggressive, timely manner due to organization resistance.
- . Browns Ferry Program needs additional management support - some evidence that not all offices understand critical nature of existing weakness.

B. Commitment to quality has not yet infused the organization.

- . Budget foremost in decision process - no apparent balance with quality.
- . Of all people we interviewed - no one mentioned quality, except for QA personnel.
- . PM(E) not responsible for quality.
- . NSRS activity necessary to solve routine quality concerns.
- . BF QA Manager anticipates many quality problems in trying to implement work backlog.
- . Plant staffs see QA as pain-in-the-ass.
- . QA organization fragmented as if it were a minor staff function.
- . EEQ - Specific quality documentation problems on 3 of 4 packages reviewed by SWEC.
- . WBN single (simple) Design Change Request selected for SWEC walk-thru had a significant omission - did not consider one of two changes requested.
- . FCNs don't get back to engineering in timely manner for incorporation into the design.

C. Resolution of key nuclear issues lags industry.

- . IEB 79-02 - Baseplates
- . IEB 79-14 - as-configured piping analysis
- . IEB 79-01B } EEQ
- . IEEE 323-74 }
- . Appendix R - Fire protection
- . Post accident sampling
- . Cable tray seismic supports
- . IEB 83-28 - vendor tech manuals
- . Late in licensing commitments at SQN (1980-1981 commitments)
not yet completed.

D. Inadequate information systems for project controls.

- . PM's could not produce integrated schedules.
- . No detailed planning of OE work.
- . 3 separate Records Management systems.
- . 5 groups at BFN engaged in micro-filming.
- . 3 different brands of computer hardware - not best compatible.
- . 4 headquarters managers trying to solve info systems problems - conflict evident.
- . Each site trying to solve info systems weaknesses.
- . Wide variety of abilities in various planning managers

*John ...
16/2/81
1-5/81
11/2/81*

- . EEQ and configuration definition at BFN not on coordinated schedule.
- . EQIS not used at BFN. HEMS arbitrarily substituted.
- . Separate drawing and ECN indices exist. No cross-reference and no feed back from plant staff when work completed.

E. Site/Plant organizations don't fully understand nuclear industry.

- . Didn't appreciate significance of "chimble ejection" incident.
- . Bellefonte P.M. verbally attacks congressman.
- . Inadequate response to July 3, 1985 "Dircks" letter.
- . Plant operators don't understand need to maintain design integrity.
- . Plant staff resists plant changes initiated by engineering (OE).
- . August 22, 1985 memo directs OE not to investigate NRC or generic vendor notices for BFN.
- . Slow and inadequate response to NRC regulatory changes.
- . Cool relations with Sr. Resident NRC Inspector at BFN.
- . Sites perceive corporate licensing as weak and ineffective, meaning that too many commitments are made.
- . Sites seeking minimum acceptance standards rather than excellence.

F. Weaknesses in Project Management

- . Project Manager (OE) lacks responsibility for quality of OE effort. No technical responsibility or involvement.
- . Site Design Services manager is not part of OE. Lacks responsibility for quality of design services.
- . No procedures for assignment, responsibility, and control of site task project managers.
- . Budget constraints (fixed price contracts) may work counter to quality objectives.
- . Site competitive bidding process may weaken OE control of "design integrity".
- . No integration of multi-office/group efforts.
- . Projects, tasks, or commitments don't get done.

II. AREAS YOU ASKED US TO INVESTIGATEA. Engineering Assurance (Tab A)

- . OE lines of responsibility not compatible with decentralization policy.
- . Design process needs better documentation.
- . Audit program needs reinforcement and formalization.
- . No appropriate quality program for procured services.
- . Corrective Action Program needs consolidation and reinforcement.
- . Top management use of program could be strengthened.

B. Records Management/Document Control (Tab B)

- . Too many different systems in use, no long range plan to reduce fragmentation.
- . Key personnel need to be made aware of records/document control systems and requirements and how these systems can be used to support task control and project control.
- . Information systems development is fragmented and not coordinated with the Records Management program.
- . Additional program documentation is recommended.
- . Weak coordination and central direction for information systems. Individual components satisfactory, may be too costly and ineffective because of fragmentation.
- . Some Document Control practices could be improved.

C. EEQ (Tab C)

- . TVA mild radiation environment definition (10^6 RADS) may not be acceptable to NRC.
- . Quality ^freview of EQ binders needed.
- . Sequoyah completion now forecast about 2/1/86.
- . EQ binder contents too broad; includes SQRT and PVRT data/
- . Browns Ferry and Watts Bar effort (Watts Bar and Bellefont^e) not yet started. Insufficient manpower to meet committed dates.
- . Integrated OE/Site schedules not evident.

- . Bellefont EQ not integrated with normal design process yet.
- . Mechanical qualification commitment not yet determined.
- . OE and Sequoyah procedure base better than industry average.

D. Configuration Control Program (Tab D)

- . Browns Ferry Program needs strong management support at Browns Ferry and immediate implementation at Sequoyah. Special program needed at Watts Bar to prevent similar conditions arising at that site. Better integration of Engineering and Construction exception work status at Bellefont would prevent recurrence at Bellefont.

E. Welding Programs (Tab E)

[REDACTED]

- . Action needed to prevent extension to Bellefont.

III. OTHER AREAS WORTHY OF COMMENT

A. Project Control

- . Project Management concept is weak. No one integrates effort of all departments/offices.

- [REDACTED]
- . No central Nuclear Power Planning, Scheduling and Project Management organization to develop/sponsor project controls.
 - . Information and Records Management systems and organizations fragmented.
 - . All functions except operations, engineering, and construction are viewed as staff. Old ways retained in a more complex environment.

B. TVA Overall Organization

- . Office loyalties inhibit project, site integration. Matrix organization imbalanced.
- . Office of Nuclear Power has non-nuclear elements within it. Nuclear Records Management and Purchasing are not within the office of Nuclear Power.
- . Overriding emphasis on cost/budget contributes to reactive attitude with NRC rather than pro-active.

C. Licensing

- . No apparent working infra-structure dealing with NRR and I&E region.
- . Too many people in sign-off of licensing documents.

D. Other

- . Magnitude of effort to get plants back on-line not understood.

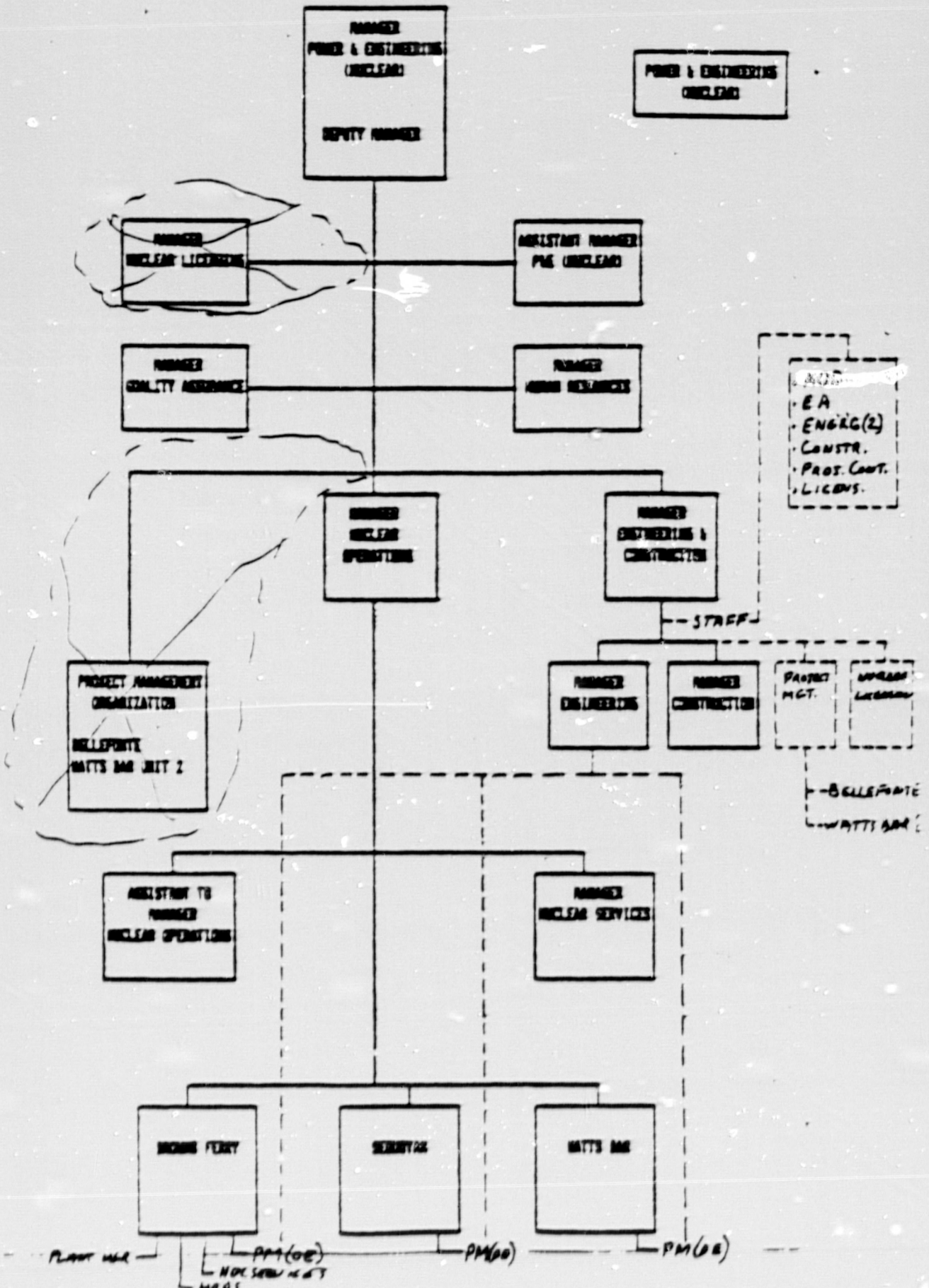
~~There is no significant evidence that the working of the~~
~~plants is being reviewed.~~
~~The magnitude of effort to get plants back on-line is not understood.~~
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IV. RECOMMENDATIONS

1. Revise organization per attached chart.
2. Intensive plant review planning process. For each site, prepare firm, sound, team plan.
3. Upgrade planning/scheduling/project control systems.

4. Get quality to, at least, same level of importance as cost/schedule.
5. Get Site Directors to become real PM's, not super Plant Managers trying to keep plants operating at all cost.
6. Assign PM technical responsibility.

RECOMMENDED ORGANIZATION



V. OPPORTUNITIES FOR SWEC INVOLVEMENTA. Immediate

1. Fill staff position for Manager of Engineering and Construction.

[REDACTED]

[REDACTED]

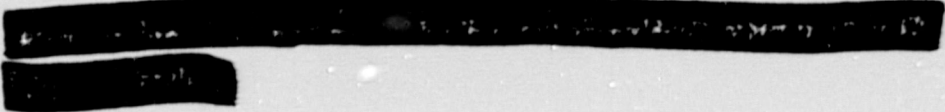
[REDACTED]

3. Provide a quality/engineering assurance review of the Sequoyah Equipment Environmental Qualification binders.

4. [REDACTED]

B. Hot Prospects

1. Provide a configuration control team for Sequoyah.
2. Provide help for Browns Ferry and [REDACTED] services of ACD, Elect, I&C, Mech, others).
3. Provide Engineering/Design/Construction services for Bellefonte.

4. Manage recovery of Browns Ferry 3.
5. Perform a third party review of the Performance Plans.
6. Help for Browns Ferry Configuration Control task force (leader, et al).
7. 
8. Provide Records Management Division consulting services, including services 6 and 7 above and the following:
 - a. Provide assistance in establishing a plan and evaluating assigned records management/document control (RM/DC) responsibilities throughout TVA. This evaluation would examine the RM/DC activities within the Office of Power & Engineering (Nuclear) and related RM/DC activities within TVA with a view toward consolidation and streamlining of all RM/DC activities.
 - b. Provide assistance in development of training programs and/or presentations designed to familiarize the various levels of management with the programs and processes that support records management, document control and configuration management.

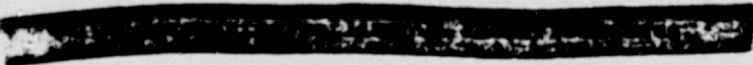
c. Provide assistance in development and implementation of a long range plan covering the Office of Power & Engineering (Nuclear) information management systems. This particular effort would have to be coordinated with those activities already in progress in this area.

d. Provide assistance in the development and implementation of Corporate guidelines that will ensure the total body of corporate knowledge in the areas of records management and document control is made available to the sites in such a manner that reasonable consistency is achieved between sites in their approach to common problems.

e. Provide direct assistance to site records management/ document control groups. Evaluate programs and processes in detail with a view toward upgrading and improvement.

f. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
g. [REDACTED]

10

- 
11. Help site managers become real "PMs".
 12. Manage NSRS output resolution.
 13. Conduct intensive planning session at each site; leading to a firm/sound/team plan.

functional organization. While we are not convinced that the owner-operator/AE organization is best for TVA, if decentralization is to work, total engineering/design responsibility should be vested in the PM(E) who should report directly to the site director. The position of Design Services Manager and the PM(E) should ultimately be combined. The OE functional organization should be assigned responsibility (for operating plants) for providing qualified people or outside services, providing technical expertise and methods on call, and enforcing the engineering assurance program.

2.

~~The design control process needs better documentation and definition.~~

The inter relationship of design products and design interfaces is not well understood. In order to control the development and documentation of a given product, a clean, concise definition and control of inputs and outputs are essential.

- . Plant personnel do not understand the full ramification of minor hardware changes or issues. They do not appreciate the consequences of not making hardware changes when revised engineering requirements are published.
- . Plans apparently cannot be developed for backfit tasks; and, engineering is perceived to be continually working on the wrong thing.

- . Few planning documents are available which clearly delineate each step of a production or development process and all interfaces within and between engineering branches.
- . OE personnel acknowledge that they don't get as good an intersquad check as is needed.
- . The current configuration control problem at all units is indicative that the inter-office interfaces with the design process were not sufficiently controlled.
- . A design close-out process was not evident at Watts Bar. Without such a process, in parallel with the transition to operating plant status, remaining engineering work items, including late licensing commitments, will not be accurately transmitted to the ultimate operating plant site organization. No one will know what's coming next or when action items are completed.
- . Key programs for current plant recovery are not interfaced ideally. The configuration control pilot program is in place at Brown's Ferry. The EEQ lead in at Sequoyah. Both probably will be needed to restart any plant.

3.

[REDACTED]

[REDACTED]

The compliance auditing program has not been effective in disciplining the engineering process as evidenced by the serious configuration control problem which exists at TVA plants. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

~~effective corrective action program audits have resolved the problem~~

~~Plans~~ plans do exist to strengthen the program; however, inadequate staffing, budget, and priority exists to realize improvement soon. This effort should be budgeted at the corporate level in order to assure top management that sufficient quality oversight is maintained. Current procedures provide for technical auditing at the branch chief's discretion; we found no evidence that any such audits have been conducted or are currently scheduled. No plans exist for trending audit results.

4. A program for controlling procured engineering services should be developed.

Procured engineering services are now controlled through the QA program in a manner similar to the procurement of hardware. Design services need additional control at the input/output level because of the high propensity of interface issues which arise in the nuclear field and the existing documentation requirements. The sub-contractor documentation must fit into the owner's total documentation plan and inputs, assumptions and later confirmations must be traceable, compatible, and closed-out. With the likelihood of an increased use of procured engineering services, this weakness requires urgent attention.

~~Additional strengthening and enforcement~~

The NRC idea of an effective CAP is one that results in timely action at all locations. Our experience indicates that a single program which encourages/supports specific unit action while at the same time coordinates action between units works best. TVAs use of the IPR, SCR, NSRS reports, and other commitment follow programs could be more centrally organized without stifling sites or working counter to the decentralization policy. Since most corrective action issues ultimately involve the engineering organization, SWEC recommends inclusion of this function within the OE quality organization responsibilities.

It should be noted that a recent BFNP directive prohibited OE involvement with this basic design integrity issue.

TAB B - RECORDS MANAGEMENT/DOCUMENT CONTROLBackground

Discussions with TVA personnel in the records management and document control areas centered on general administrative controls, document control operations, records storage facilities, microfilming capabilities, records management programs, and supporting information management systems.

In general, we found most individuals to be capable and motivated to do a good job when the proper leadership and direction from management is provided. We also found most of the programs and processes required to support records management and document control to be in place or scheduled to be put in place. Due to a perceived lack of management understanding and attention to this critical area, due to redundant effort in many related areas, and due to significant fragmentation of supporting systems, we believe there has been and will continue to be difficulty in focusing and directing the available staff talent in the development and implementation of those programs necessary to effectively comply with regulatory requirements and good business practices.

Recommendations

1. Eliminate redundant activities in the areas of records management and document control through reorganization, consolidation, or transfer of responsibilities.

At most nuclear sites, the responsibility for distribution and control of drawings, vendor technical manuals, plant procedures/instructions, plant technical and non-technical documents is given to one group who track these documents with one system or portions of an integrated system. At TVA, however, there appears to be a number of groups performing these functions using a variety of systems. This has resulted in confusion and a decrease in morale. In addition it may not be cost effective and it can lead to degradation of configuration control processes.

At Sequoyah and Watts Bar, these responsibilities are shared by both the Site Director's organization and the Plant Managers organization. At Brown's Ferry, there are two separate groups within the Site Director's organization handling these tasks. There are also five separate groups at Brown's Ferry that are involved in microfilming activities. This kind of redundancy places an excessive administrative burden on all levels of staff management including those who must deal with the situation directly and those who deal with it indirectly.

2. A better understanding of the overall records management and document control programs by TVA key personnel is necessary. This can be accomplished through training sessions geared to the level and responsibilities of the individuals.

Confusion exists regarding the organizational responsibilities for records management and document control and for the information systems used to support these areas. This was particularly apparent in the Chattanooga discussions where staff personnel did not appear to understand the overall programs or processes used to ensure quality records were collected and maintained. Even at the sites some key personnel were not familiar with the programs and processes they participated in. The ADP supervisor at one site was not aware who was responsible for collecting operations records data and inputting this data to the NPDCS (Nuclear Plant Document Control System) on the PRIME mini-computer, a machine that this particular supervisor had responsibility for.

The fact that you have to go to the first line supervisor, in many cases, to obtain details on a particular program or process suggests that middle management is generally unaware of these programs and processes.

Many key personnel view Records Management/Document Control as Library Functions. More effective use by in-process control is ignored. Consequently not all needs of expected user groups are satisfied.

3. Serious consideration should be given to development of a long-range plan that will eliminate or reduce the fragmentation that appears to exist in the area of information systems.

Computer assisted systems to support site engineering, construction, and operations are being investigated, developed and implemented by site personnel, by the Information Systems Management Staff, by a special consultant to the Assistant Manager, Power & Engineering Nuclear, by the Configuration Control Task Force at Browns Ferry, and by the Engineering and Computer Methods Branch. These systems are being installed on two main frame computers, the site PRIME mini-computer, personal computers and WANG word processors. Overlap in authority and responsibility appears to exist and this has resulted in confusion, intergroup conflicts, and decreased morale.

Although there is a program in progress to collapse two non-technical records indexing/retrieval systems into a single system, TVA will still have to search three separate data bases to locate all records associated with a particular plant. These include DMS (Drawing Management System) for drawings, NPDCS (Nuclear Plant Document Control System) for technical documents that support plant operation, and RIMS (Record Information Management System) for non-technical documents. Commitment control systems are likewise fragmented between the various groups responsible for controlling plant communications and activities.

With each group developing systems to support their particular activity, critical information is likely to be lost. In addition, this lack of data integration prevents optimum utilization of available data. For example, although there is a system to track drawing revisions and a system to track engineering change notices

(ECN), none of the systems will currently provide a listing of all outstanding ECNs against a particular drawing and the status of that ECN (i.e. proposed, approved, incorporated). This same lack of integration prevents utilization of reference data for editing purposes.

4. Consideration should be given to developing and implementing corporate guidelines that will ensure the total body of corporate knowledge in the areas of records management and document control is made available to the individual sites.

Personnel in Chattanooga and Knoxville were unaware of any organization or activities designed to consolidate this body of information and to provide it to the sites in the form of direction or guidance. Personnel at all sites indicated that records management and document control programs were essentially designed, developed, and implemented without off-site guidance. Although most of these individuals informally discussed their approaches to solving program problems with their counterparts at other sites, there usually is inconsistency between sites in the approach to any particular problem.

Each site expressed a strong belief that corporate attention and control in this area could result in improvement in the consistency of approach between sites and effectiveness in meeting requirements. As an example, drawings signed out for production use at Browns' Ferry are valid only for seven days. At Sequoyah, similar process exists but the drawings are valid for a significantly longer period. This

type of inconsistency can create any number of problems particularly when an individual familiar with one process transfers to a site with a different process. It also creates an opportunity for the NRC to exploit differences between various site practices.

It should be noted that most sites have recently initiated programs to develop their own support procedures.

It is currently acceptable at Sequoyah for an individual to sign out of the vault the only copy of a completed Work Plan. There is currently a significant delay in updating drawings once modifications have been completed. Statistical sampling is not universally used in the verification of microfilm. Controlled Document Stations exist where Reference Document Stations could be substituted.

6. Reassess the progress of the Browns' Ferry Configuration Control Pilot Program from the standpoint of effectiveness and take action.

Implement configuration management programs and conduct additional training in configuration management at all sites in parallel with the pilot program at Browns' Ferry.

TAB C - TVA EQUIPMENT QUALIFICATION (EQ) PROGRAMObservations:

1. Adequate corporate engineering program for EQ binder development and problem resolution in the period of initial EQ basis establishment (prior to transfer of base documents to site).

2. Schedule (O/E only) - Working only to an end date of December 15, which is slipping by about 1 1/2 months for Sequoyah; the program implementation for Browns Ferry and Watts Bar is not started, not scheduled and will be heavily impacted by lack of Browns Ferry configuration information. Note Browns Ferry is a BWR and will not follow Sequoyah PWR example; Watts Bar should be a relatively much simpler effort due to its similarity to Sequoyah. Current EQ completion date expectations for Browns Ferry (July, 1986) and Watts Bar (also July, 1986) impact plant restart/licensing plan dates (early 1986) and EQ schedules are not supported at present by adequate engineering, administrative, and site staff.

3. Schedule (overall) - Integrated schedule to get each licensed unit back to operations was not apparent in mind of EQ Project Personnel and their lack of detail schedule indicates restart efforts are not necessarily coordinated but proceeding on a "best effort" basis.

4. Completion level - Appears effort is only 50% complete, with several open items in some packages. None are issued to date and most open items deal with either test results or field modification completion.

5. Organization structure adequate to support Sequoyah; would need larger organization for supporting other plants. Browns Ferry may require 150 people on project and another 150 in O/E Branches to support program completion within next 6 months, whereas staff is now 50 in project and 50 in Branches, all supporting Sequoyah. Additional 25 people will be needed for Watts Bar to perform that simultaneously. No consideration of Bellefonte even mentioned at this point.

6. Mechanical equipment environmental qualification is not currently within the program. Estimated 3500 pieces are in a BWR. Standard Review Plan, Section 311, and GDC-4 may result in NRC requiring implementation of a program for mechanical equipment environmental qualification. Class 1E electrical equipment only is in existing program.

7. There is no evidence of an external engineering assurance review by the O/E branch chief, the Design QA (Mullen), or O/E QA (Beasley) on the binders. Since the EQ Project reports directly to the Sequoyah Site Director (Abercrombie), it is apparently exempt from these reviews. Site QA for Sequoyah is also not reviewing this project.

8. Internal engineering assurance activities, conducted only by a management review, are an end of process review only and there is no apparent in process engineering assurance review.
9. Project personnel were somewhat puzzled at the significance placed on Sequoyah EQ "documentation" problems and the resulting decisions to voluntarily shutdown Sequoyah plants. They did not sense the overall NRC lack of confidence in TVA's management of its plants or the seriousness of not having adequately responded to the EQ deadline of November 1985.
10. EQ personnel believe NRC staff was completely unaware of EQ documentation problems and embarrassed at their lack of awareness. This may further affect the case regarding the NRC's review and oversight of TVA plants.
11. Overly documented - EQ "binders" can have less pieces of paper to reduce preparation time.
12. Binders include seismic information which is not required for supporting an environmental audit and could lead into additional complication and/or further audits by NRC (SQRT - Seismic Qualification Review Team and PVORT - Pump and Valve Operability Review Team). This information can be separate unless its inclusion is specifically requested by the NRS. (Note: Since NRC has seen example package(s), this appropriateness of this simpler approach must be considered).

13. The TVA definition of a "mild" environment for radiation as 1×10^6 rads is probably unacceptable to NRC. They have previously accepted 1×10^4 rads for electronic equipment, with special devices limited to 1×10^3 rads.

14. Various minor specific errors were noted in three of the four binders TVA presented as samples. These binders had been checked and had management approval but final "issue" step was not completed. The minor errors included a typo on a post accident monitoring accuracy evaluation, where a value of 16.6% vs. 10.6% was entered, thus exceeding the maximum accuracy of 15.0% that is allowed. Additional problems in the binders included added pages that were not in the numerical sequence, modification of numbers and entries without evidence of a review by those previously reviewing the work, and not reconciling the presence of a Bellefonte document in a Sequoyah binder for cables.

15. Program for upgrading procurement documents to embody EQ program requirements has been outlined in the Sequoyah specific EQ procedure, but implementation procedures are not clearly in place at this time.

Recommendations:

1. Perform a detailed engineering assurance review of binders prior to issue using a technical force independent of that producing the binders.
2. Add manpower to begin work on Browns Ferry, Watts Bar.
3. Integrate Bellefonte EQ with routine design activities within OE.
4. Develop schedules for each site that integrate engineering activities with construction or configuration control program. Develop integrated Engineering Schedule.
5. Provide for continuing engineering assurance function.
6. Determine technical position in regard to mechanical equipment environmental qualification, especially in regard to Watts Bar 2 and Bellefonte.
7. Separate seismic information (for SQRT and PVORT review) from EQ binders.

[REDACTED]

[REDACTED]

The details of our review of this issue is included in Section IA of the basic report. We believe this to be the most serious problem encountered during our review of TVA operations. We do not believe the NRC will permit resumption of plant operations until the issue is resolved. We also believe the problem is likely to recur at Watts Bar unless quick action is taken to correct basic weaknesses. We believe this issue developed because of:

- [REDACTED]
- b. weaknesses in information systems and Project Control
 - c. lack of detailed, integrated planning at an appropriate level to track completion of specific work items
 - d. lack of emphasis by Operations personnel in implementing design changes.

Recommendations:

The Browns Ferry Program needs strong management support and immediate extension to other sites.

[REDACTED]

Condition: [REDACTED]

[REDACTED] The problems encountered were avoidable and are reconcilable; however delays in investigating, dispositioning and documenting actions has exacerbated the condition.

Recommendations:

1. Establish a clear-cut statement of the condition(s) or problem(s). To date this is not in evidence. Scope should be circulated to all TVA plants to ensure that problem spill-over is controlled and resolved in an integrated manner.

A welding task force (headed by Jim Coan in OE, Knoxville) has been established but is not well known to plant personnel. This task force must be structured as a team effort involving QA, OC, Operations and OE personnel to be truly effective.

2. By meetings, briefings or scoping material, such as that stated in Item (1) above eliminate the mind-set that a "real" problem does not exist. [REDACTED]

3. Establish acceptance or close-out criteria for each element of the weld problem resolution effort. Obtain consensus both internally and externally (even if informally with NRC) that when certain actions are taken and documented the matter will be considered closed.
4. Set-up an integrated TVA schedule as part of the scoping task. This should include all TVA plants which are or could be affected. In SWEC's view that is all five plant sites. Further state on line item basis the following:
- a. Documentation of weld quality.
 - b. Documentation of welder qualification.
 - c. Falsification, occurrence, impact and resolution.
 - d. Reinspection criteria; including VWAC (Visual Welding Acceptance Criteria), other plant experiences (Comanche Peak, Braidwood, Wolf Creek, etc.) and examination through coatings.
 - e. Describe design margins and weld material crack insensitivity.
 - f. Other problems such as material traceability may be linked to welding quality. Examine possible linkages and be prepared to act.
 - g. State TVA preventive measures to be used in future welding at operating stations (for maintenance and modification).

5. [REDACTED]

[REDACTED]

[REDACTED]

EXERCISE NO 1 CHANGES AT TVA

Rid 3/26
R. Burn's personal
notes
4 pages

1. Replace Parris = move to Knoxville
2. Centralize QA/QC = independent
3. Make Project Manager Engineer responsible for design
4. Eliminate Chattanooga Licensing = make an Engineer discipline
5. Staff Task Project Manager, under job description of Site Design
Manager
6. Get a deputy for regulatory affairs (NRC, Caucus, Public
Relations)
7. Conduct massive training program to facilitate future
organization changes
8. Conduct study to consolidate site organizations
9. Appoint manager of engineering and controls
10. Appoint additional management in office of Engineering
11. Replace management personnel in construction
12. Establish strong project control system
13. Open office in Atlanta and Bethesda for regulatory affairs
14. Overhaul corporate training program

22. Don't know how to get out of trouble
Don't know where they were - is their improvement above baseline
23. Don't have EA for construction services
24. People handling obstacles management - pay, seniority, etc
25. Chattanooga Choo Choo on different track from other trains
26. Behind power curve on other key issues
 - o Configuration Control
 - o ATWS - RIVLIS
 - o Design configuration
27. Poor communication to Senior Management from bottom of organization
28. Formal structure/informal structure problems (food chain)
29. Some weak interdepartmental interface (see Weaknesses #18)
30. In 1986 plant QA manager will report to Site Director - no others
31. Total QA fragmentation.

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STRENGTH

1. Willing to consider and make changes
2. Good people in most cases
3. Matrix is organization for a project control familiar to SWEC
4. Efficient use of engineering personnel
5. Project accountability is good when in place
6. Wealth of experience
7. Attitude - enthusiastic and correct?
8. Site level communication good
9. Culture understood by all
10. Team players pro-active
11. Engineering Modifications - Maintenance - good working relationship
(Parent Engineering at site)
12. Ability to identify need for change
13. Branch Technical Review concept
14. Good use of staff strengths
15. Leadership relations between engineering management and staff
16. Dedicated and loyal
17. Searching to improve
18. No apparent fatal technical problems

The Senior Nuclear Advisor

1. will have qualifications by training and/or experience to advise senior executives (TVA Board) on board management issues.

Operations background or responsibility for operations is essential in establishing qualifications.

2. will advise the TVA Board in broad management areas, i.e., organizational structure, management control systems, etc.; will advise and make recommendations to the Board on broad policy matters.

3. will use existing TVA resources as principal means of gathering information, but this can be supplemented by contract resources if necessary.

4. will use existing and future data as contained in SALP reports, INPO evaluation reports, consultant reports, NRC reports of violations, LER's, 50.55E reports, etc., as the basic data for reviewing the current status of TVA's program and in developing recommendations to the TVA Board.

5. will have frequent and indepth discussions with managers and others in TVA's nuclear organization to gather information that will be used to develop recommendations for TVA.

6. will confine his role to advise and recommend to the TVA Board and will not become involved in the direct management of TVA's nuclear program.

7. will monitor the accomplishments and performance of TVA's nuclear program and develop advice and recommendations to the Board based on his independent assessment of that performance.