

## V. DETAILS

The NSRS management review of OQA focused on four primary elements which are examined in detail in the following sections V.A through V.D. These primary elements reviewed are:

- The OQA organization, including staffing, reporting, communicating and interface relationships, and utilization of resources.
- TVA QA Programs, existing and as proposed, including status and progress.
- OQA internal operations, including status of implementation of procedures.
- Corrective action programs, specifically the status of Quality Problem 83-01 and verification of NSRS items transferred to OQA.

The review effort lasted approximately five weeks during which time the five NSRS reviewers interviewed a wide range of personnel from OQA, OEDC, and POWER. The personnel interviewed are identified in section VI. Interview notes were taken in all cases but signed statements were not requested since the nature of the review was noninvestigatory. Extensive document review was performed as well, and a listing of those documents is included in section VII. From assimilation of interview and document review results and actual observation of selected work in progress, the necessary information was obtained to permit the assessments of the four primary review elements.

### A. Office of Quality Assurance (OQA) Organization

OQA reports to the Assistant General Manager (Technical) in the Office of the General Manager as a staff organization (attachment 1). As such, it appears to possess sufficient independence from line production cost and schedule pressures, subject only to routine budgetary constraints and top-level management controls. Within this degree of independence, OQA may identify quality problems, recommend resolutions, and verify corrective actions are undertaken in a timely and quality manner.

The OQA staff numbered approximately 150 persons and ultimately intended to expand to 200. The organization consisted of four branches and two staffs which report to the Manager, OQA, an M-10 level position (attachment 2). The span of control is considered normal and the manager's position level adequate for an effective interface with line organizations. The branches and staffs with their primary summarized functions are listed below:

- Systems Engineering Branch (SEB) - TVA QA Program Development

- Design QA Branch (DQAB) )
- Construction QA Branch (CQAB) ) Verification and Assessment of Implementing QA Programs
- Operations QA Branch (OQAB) )
- Quality Improvement Staff (QIS) - Assessment of overall QA Program
- Management Services Staff (MSS) - Training and Administration

The mission of OQA, to establish and assure effective execution of an overall integrated TVA QA Program, was understood by all OQA members contacted although there were differing opinions and philosophies on how to accomplish it. Regardless of the quality philosophy or strategies employed, the Manager, OQA, has the necessary documented authority to determine quality-related issues and to effectively support the QA staff to achieve timely, meaningful corrective actions. Through interviews, NSRS determined that this authority is recognized and accepted by TVA top management at and above the Office level, and by OEDC Division Managers.

1. R-83-19-OQA-01, Obstacles to Achieving Corporate Goals in Establishing OQA

According to the Assistant General Manager (Technical), in addition to the goal of establishing an independent Office of Quality Assurance, other strategic goals were established which were intended to improve TVA's quality performance. Among the most important of these was an improvement in line and management attitude toward the QA program and organization, and understanding of the contribution that effective quality assurance can provide. To aid in the achievement of this goal the idea was put forth that OQA be used as an element in the TVA management career development path. It was considered that interchange of line and OQA personnel would provide personnel with an appreciation of quality organization efforts and problems as well as providing a broader agency perspective and understanding of the TVA commitment to quality. NSRS considered this goal to be vital to achieving the objective of improving TVA's quality assurance performance. However, NSRS identified three real and perceived obstacles to attaining this corporate goal that may require attention by the Division of Personnel and the General Manager for resolution.

- a. The Division of Personnel (PERS) policy on "Employment Tenure Status of Salary Policy Employees" dated November 11, 1977 provides for the assignment of "job security classifications" within TVA. Allocations of permanent, prepermanent, and indefinite positions are provided to TVA offices to assign internally as directed

by office managers. Understandably, there has been reluctance (and refusal) on the part of personnel with permanent tenure to transfer to positions in other divisions or offices that are not assigned "permanent" status, since the transferring individual loses the security of "permanent" status. While "directed transfers" are legally authorized, NSRS does not consider this alternative to be an attitude-enhancing routine practice.

- b. The managerial level M-7 was divided in 1982 into M-7A (lower salary range) and M-7B (upper salary range) in an attempt to more competitively compensate the technically as well as managerially qualified mid-level managers. At the same time, a similar division was made on the engineering scale creating the SC engineering scale (higher salary range) in addition to the previous SD engineering scale (lower salary range). PERS determined that OQA positions at these levels were described by the lower of the two salary ranges in each case. NSRS did not attempt to determine whether or not that decision accurately corresponds with nuclear quality assurance industry pay structures or on what basis it was made. Intuitively through, it appears that M-7B and SC candidates for OQA M-7A and SD positions would logically refrain from accepting offers which invoke lower pay scales. There is the further implication that the individual assigned to the QA organization does not require the same level of qualification as the individual in the line organization. This is an outgrowth of the philosophy utilized in staffing the original QA organizational units in TVA that was found to be ineffective.
- c. Although extensive detailed comparisons were not performed, from information gathered and observations made during this review it appeared to NSRS reviewers that a disparity between authority/responsibilities and grade levels or pay scales existed between OEDC, OQA, and POWER. OEDC and OQA positions generally appeared to rank a grade level higher than their "counterpart" positions in POWER. Thus, it is probable that while personnel may be willing to transfer to OQA from POWER, there could be disinclination to an eventual return to POWER. Some individuals interviewed expressed concerns to NSRS reviewers not substantiated by documentation, that NUC PR discouraged transfers from POWER to OQA on even a temporary basis. It appeared credible that POWER would be forced to discourage transfers in order to avoid an excessive depletion of nuclear trained, experienced personnel.

The line management in NUC PR, both in the central office and at the plantsites, consistently expressed the opinion that the grade levels of OQA were too high. Another opinion expressed was that, "simply making someone an M-5 or M-6 doesn't make that person qualified to do the job."

2. R-83-19-OQA-02, OQA Internal Communications/Interfaces Working Relationships

NSRS examined OQA internal communications effectiveness and methods, formal and informal interfaces, and working relationships in order to assess "information processing" as it related to efficient job performance. The primary source of information on this subject was from interviews with OQA personnel, though correspondence and other documentation were also reviewed.

Communications

The communication chain appears to rely heavily on meetings. These meetings have been described as generally productive. However, some concerns were identified that appear to have reduced the effectiveness of meetings. Below are some typical comments received (paraphrased, not quoted).

- ° The Manager of OQA does not usually talk in definitive statements so it is difficult to understand what he expects. Thus, branch chiefs or attendees may leave the meeting with different interpretations as to what was said.
- ° Everybody attempts to do things the way the Manager of OQA wants and won't make a firm decision until they get a reading from him.
- ° Feedback is not adequate.
- ° Passage of information is much better than before, but information is not very meaningful.

A "new language" is being used in OQA. While necessary that all personnel in QA use the same terminology, use of the new standard terminology had contributed to delays and additional iterations in procedure development and understanding of program details and philosophies.

CQAB communication appeared to be representative of the OQA system. The branch chief attended a weekly meeting with the manager and other branch chiefs. Items of information, questions, and other matters were recorded by the attendee(s) by whatever method chosen (informal notes, memory, etc.). After the conclusion of this meeting, the CQAB Branch Chief

conveyed the information to the group head(s). The Power Plant Programs Group (PPPG) Head then had a telecon session with all unit (site) supervisors (BLNS, WBNS, and DAMS) and conveyed the information as he had recorded it. These supervisors, in turn, verbally communicated information to members of their unit. The telecon sessions and weekly activities report appeared to be the primary sources of information received by the site personnel. These people did not routinely communicate with members of other branches.

NSRS reviewers observed an extreme degree of inconsistency on the part of site OQA units in their understanding of the implementation methods and details of the verification program. The following examples are illustrative:

- CQAB audit teams required close interface with construction site OQA sections responsible for surveillance. Information pertinent to the audit subject was freely communicated, such as surveillance discrepancies already identified, areas not recently reviewed, and satisfactory areas. OQAB audit teams, on the other hand, perceived instructions not to interface with the site representative to obtain information on the audit subject so as to remain objective.
- In preliminary implementation of the surveillance program at BLN and WBN, both site units tried to resolve any identified problems at the lowest level of CONST project personnel that could provide a solution and/or explanation for the problem. At WBN the QA evaluator completed a form that described the results of the surveillance and identified any necessary follow up. Follow up was scheduled if the evaluator identified a problem area. The evaluator communicated any problems to CONST attention (lowest level) for corrective action but did not provide the affected personnel a copy of the surveillance form and did not require a written response from CONST. The practice at BLN is essentially the same as WBN, but the evaluators have been supplying CONST with a description of the problem on a "message" form. This form had a section for a written response and the site CQAB unit had been requiring written responses from CONST by established due dates.
- Significant confusion existed over the terms "monitor," "review," and "surveillance." Each group, and in some cases, individuals within groups, had a different understanding of what these terms meant. This was compounded by inconsistent usage in OQAP 7.04, "Administration and Conduct of Surveillance," sections 3.5, 3.6, and 7.3.2. Further, OQAP 1.05, "Abbreviations, Acronyms, and Definitions," had not yet been issued so a consistent definition was not prescribed.

QQAP 7.04 permitted a wide range of surveillance techniques, varying from casual "walk through" observations of activities or equipment to formal, researched "mini-audits" with checklists, guide sheets, etc. CQAB evaluators at WBN interviewed indicated that in accordance with the new surveillance program, they anticipated performing surveillances on a frequency range of one per day to one per week. The OQAB evaluator thought that he would be able to perform only one surveillance per month. A comprehensive schedule and scope of required surveillance had not been provided to the site QA evaluators by OQA, so the evaluators in the absence of other guidance, determined the scope, depth, and frequency of surveillances as well as surveillance targets. One evaluator interviewed stated that he didn't receive any direction from the central office, he was satisfied with that arrangement, and if he did get direction, probably couldn't do what "they" wanted him to do.

#### Internal Interfacing/Working Relationships

NSRS reviewers learned through extensive interviews with OQA personnel that working relationships were considered less than adequate and morale generally poor. NSRS identified a variety of factors and events that had contributed to these conditions. Some of the adverse conditions are considered to be attributable to normally expected "growing pains" of a newly formed organization as personnel from a variety of backgrounds are brought together for the first time. Previously addressed communication problems are also considered contributory. Other factors and events are discussed in the following paragraphs.

Although OQA managers were aware of the required mission of OQA, there was considerable disagreement and dispute on strategies, plans, and procedures needed to accomplish it. Disagreement on basic QA philosophy, intermediate goals, objectives, assignment of responsibility for tasks, and establishment of priorities was apparent and indicated that significant disunity existed among the branches, staffs, and field units.

Some personnel expressed frustration and resentment over apparent conflicting priorities, "borrowing" of personnel, and bypassing the organizational structure. From early weekly activities reports, there was evidence of apparent duplication of assignments among branches and staffs.

OQA has emphasized internal planning and development, the details of which are further discussed in section V.C. One such planning document, the detailed Office Plan, was initiated in order to supplement the Transition Plan as well as for budgeting and resource allocation purposes.

"Office planning" has taken up a considerable amount of time and has had a disrupting and demoralizing affect on the OQA managers. Some managers spent an estimated average of two man-weeks on uncompensated overtime to create an acceptable plan. Original plans were revised as many as five times before a plan acceptable to OQA top management was achieved. During these iterations upper management issued what were perceived to be arbitrary edicts concerning the actual time required to perform the various tasks that are part of the plan. The iterative process, which is considered typical for OQA document development, contributed to what NSRS observed to be a degree of "employee burnout." It also contributed to a widely held perception within OQA that "all we ever do is plan, never execute." The internal perception of the final plan is that it does not accurately reflect the time needed to accomplish the tasks. From one branch, NSRS heard that the plan was difficult to follow due to the uncertainty involved in audits, responses, and follow-ups, and was therefore not used.

NSRS observed an inappropriate degree of "competition" or non-cooperation between and among branches and staffs that apparently originated from authority and/or "territorial" disputes as well as from opposing concepts, and in some cases, personality conflicts. Most frequently heard were complaints about the "highhanded" manner by which SEB approached procedure development, review, and approval (see also V.C) and the consistently argumentative nature of the Quality Improvement Staff personnel.

At WBN, NSRS learned of what is considered a significant morale problem created when the CONST audit function was transferred to OQA. Prior to the formation of OQA, personnel (auditors) in CONST QA were classified on the engineering scale as "SCs." This designation was determined by PERS as being the appropriate classification for the duties and responsibilities of a QA auditor. The engineering scale entitled auditors to certain benefits and protections under the Articles of Agreement. Among those benefits were:

- (1) Right to file a grievance if the individual felt he had been treated unfairly.
- (2) Project life severance pay for site personnel.
- (3) Consideration for annual salary increase.
- (4) Other TVA Engineering Association (EA) "benefits."

Upon formation of OQA, all SC-3 and -4 QA auditors were unilaterally transferred, without consideration for promotion, to the management (M) scale and given the title of QA Evaluator. Because of this unilateral transfer of all

"3C" personnel, benefits (listed above) were perceived as lost since the Articles of Agreement do not in all cases apply to the personnel on the M scale.

Due to the timing of the transfer, November 1982, some transferred personnel told NSRS that they did not receive an annual salary increase due either engineering or management scales. The attitude of some personnel was characterized as bitter. For reasons not yet discerned, NSRS did not hear this resentment expressed at BLN, though the transfer process was identical and simultaneous.

NSRS concluded that a significant management effort is needed to try to improve the internal communications, group and individual interfaces, and working relationships within OQA.

3. R-83-19-OQA-03, External Communications/Interface/  
Working Relationships

Correspondence interface agreements had been issued by OQA to both OEDC and POWER and with minor revision had been endorsed by the office managers. These agreements were issued as memoranda, which were considered less formal than approved procedures, but they did provide contact points for various correspondence subjects.

Informal working relationships and interfacing at the M-6 level and below were characterized by both line and OQA personnel as ranging from adequate to very good. However, from interviews with line and QA personnel, and from review of items of correspondence, NSRS determined that OQA communications and/or working relationships above that level (but below the level of Office Manager) as well as those external to TVA (i.e., the Nuclear Regulatory Commission [NRC]) were less than adequate as detailed in the following paragraphs.

The NRC was apparently not effectively appraised as to how long the establishment and transition of the OQA organization and program would require. The expressed perception of NRC resident inspectors was that after about one year effective change had not occurred, no change or improvement was discernable. NRC resident inspectors had apparently concluded that program improvements would be implemented within six months of formation of the organization. The Manager of OQA told NSRS that his original estimate had also been about 6 months, but that was quickly revised to approximately 18 months to 2 years due to staffing setbacks and comprehension of the magnitude of transition and program development.

In a March 1983 revision to 10CFR50.54 and 50.55 TVA (and all other applicable utilities) was required to keep the NRC informed of changes to the QA program. Changes in the

program as described by the Topical Report which did not diminish the QA program were required to be submitted to the NRC within 90 days of the change. As the approved Topical Report of March 1983 (i.e., Revision 5) did not address the reorganization of TVA's QA organization, it was determined that a revision was required to be submitted to NRC by June 11, 1983 in order to comply with the regulation. Efforts to meet the deadline were unsuccessful and not until July 12, 1983 was the revision submitted. Apparent conflicts in responsibility for content, review, and submission of the Topical Report between OQA and POWER Nuclear Licensing Section (NLS) were resolved by the Assistant General Manager (Technical) in a memorandum dated June 20, 1983 (reference section VII), after he became aware of the problem. This authority/responsibility conflict between OQA and POWER contributed to the delay. Although TVA requested an extension to submit, which was authorized by NRC, NSRS considered that failure to meet this first significant deadline under the new regulation degraded NRC's appreciation of TVA's efforts to demonstrate improvement in the QA program, especially in the area of timeliness and responsiveness.

In an extensive series of interviews with line managers, in both POWER and OEDC, including plant superintendents, project managers, and their staffs, NSRS reviewers heard that line organizations below the Office Manager level were not cognizant of intended detailed QA program changes, especially at the sites. The prevailing opinion was that "something is going to happen, it hasn't happened yet, and we don't know when it will, or what's going on." OQA managers have not been fully effective in communicating to line personnel the intended scope and impact of intended QA program changes so that the changes are understood. A consistent complaint was that OQA management had not spent sufficient time at the sites to explain the program or organization. This subject is also addressed in section V.C, but as an example of inadequate interface and communication, Watts Bar project management erroneously thought that auditing and surveillance had ceased at WBN with all QA efforts directed at verifying previous deficiencies to be corrected.

Prior to the actual start of the review, an NSRS engineer attended a three-day joint meeting of OQA, OEDC, and POWER representatives. The stated purpose of the meeting was to resolve differing positions associated with proposed Topical Report revision 7 requirements. During the OQA management review, an NSRS engineer attended a similar joint meeting which was scheduled for the expressed purpose of resolving differing opinions on requirements of proposed ID-QAPs 2.7 and 2.8. NSRS observed that these policy resolution meetings involving OQA, OEDC, and POWER were not fully effective. Differing positions were not resolved, but were "noted" for resolution by higher authority. OQA appeared to be reluctant to exercise its authority to resolve QA matters for TVA.

The OQA-requested meeting of OQA, NUC PR and OEDC concerning comments on draft ID-QAPs 2.7 and 2.8 was attended by NSRS to evaluate the formal interfacing between OQA and these other organizations. The meeting produced good communication between organizations, however, little was accomplished. Minor wording changes and obvious errors, such as misspellings, were agreed upon; however, the major differences between organizations were not resolved but merely postponed until after the meeting. The level of management needed to make decisions was not in attendance for some organizations which resulted in little real progress being made.

NOTE: It was stated during the exit meeting with OQA on August 1, 1983, that NSRS misinterpreted the intent of these meetings, and that the actual purpose was to identify the conflicts to be referred to upper management.

The interface and working relationship between OQA and NUC PR was evaluated by NSRS as less than adequate. Through a series of interviews with NUC PR, including site managers and OQA personnel and review of items of correspondence, NSRS reviewers obtained the following information.

- o NUC PR said they did not understand the role or function of the OQAB Program Section Supervisor (OQA site representative). The function had apparently been ineffectively communicated to NUC PR by OQA, since the Director of NUC PR and all four plant superintendents agreed that they did not understand what the Program Section Supervisor was responsible for, or how he was to interface with site personnel. They expressed concerns that OQA personnel would interfere with the productive efforts of site personnel, taxing already strained resources by asking "a bunch of dumb questions" and identifying problems of little consequence. The Director of NUC PR had issued a memorandum to the plant superintendents stating, in essence, that until the function and responsibility of the OQA representative was clarified, they were to be treated as auditors. In another memorandum to the Manager of OQA, NUC PR requested that assignment of additional OQA personnel to operating plans be delayed until such clarification was forthcoming. (OQA had originally planned to locate as many as four evaluators at each site in the Program Section.) The Manager of OQA stated that attempts to provide clarification of function and interface had been made but were not well received. Additional evaluators had not been assigned to sites though, and this problem was considered unresolved by NSRS.

- As part of the data collection phase of Quality Problem 83-01 (see section V.D) OQAB had requested real time access to the NUC PR computerized deficiency/ commitment tracking system both verbally and in two memoranda. This request was later refused, by memorandum, possibly delaying OQAB's input to a preliminary situation assessment report. As an alternative to online access, NUC PR provided a computer printout of information requested and agreed to provide this printout twice per year. At the time of the exit meeting on July 18, 1983, it was not known if this alternative resolved the issue.
- OQA requested the temporary assignment of two operations-experienced personnel from NUC PR to OQA to assist in procedural/program development by providing background and expertise from the NUC PR staff. NUC PR denied the request on the grounds that no two individuals could cover all aspects of operations. They told the Manager of OQA that they would provide appropriate expertise to help prepare any identified procedures or resolve any identified problem in operations. According to NUC PR, OQA did not identify any specific assignments, so assistance was not provided. NUC PR expressed a concern that OQA program development would fail to consider the operations environment, since they perceive OQA to lack appropriate operations-oriented expertise. This issue remained unresolved.
- NUC PR stated they intended to relocate the BFN OQAB representative offsite due to working space limitations (in a general administration building located approximately 100 yards from the security gates). OQA opposed this move on the basis that it would degrade the effectiveness of the site Program Section, augmenting his perceived status as an "outsider." The move, scheduled for July 1, 1983, had not occurred at the time of the exit on July 18, 1983, and the situation was unresolved.

The details highlighted above are believed indicative of an unsatisfactory working relationship, interface, and communications between NUC PR and OQA. As previously reported, informal working relationships were described as adequate at the M-6 level and below. Working relationships were also described as adequate at all levels between OQA and OEDC management and personnel. OEDC appeared to be more receptive to quality assurance innovations and the organization although there was no consistent understanding of proposed integrated quality program details and OEDC personnel interviewed also generally perceived OQA to be staffed at too high a grade level.

4. R-83-19-OQA-04, Staffing - Utilization of Resources

NSRS could not identify in TVA an organization such as a "Central Office Service Staff" with a charter and resources to provide a complete assistance package to managers forming a new organization or office. This apparent lack of centralized broad-based administrative experience and knowledge contributed to some of the delays and setbacks encountered by the Manager of OQA in organization development.

According to the Manager of OQA and the Assistant General Manager (Technical), they had understood early in the spring of 1982 that they had PERS concurrence to staff OQA with personnel whose experience and qualifications best fit the requirements of the position they sought to fill. This selection was to have been based on a very competitive process, with recruitment not restricted to the QA organizations then in existence or even within TVA. The Manager of OQA intended to personally interview each prospective candidate for every position in the office. With this understanding, between six weeks to two months of planning and recruiting was conducted. Much of the time involved in this effort was forfeited however, when the understanding with PERS was reversed and PERS determined that all personnel employed in the existing QA organizations whose functions were to be transferred to OQA also had to be transferred to the corresponding positions available in OQA. The transfer of personnel from the POWER QA Branch took place on September 5, 1982, and from OEDC QA Branches on November 14, 1982. (The delay in the OEDC transfers was the result of personnel-action disputes involving the simultaneous transfer of personnel from the engineering SC scale to the M-scale. The Engineering Association had reserved the right to grieve this action but at the time of the review had not done so.) The PERS management representative interviewed, disagreed with OQA's understanding of the staffing plans, stating that OQA had been informed from the outset of the requirement to unilaterally transfer personnel whose functions were transferred. This misunderstanding or failure in communication adversely impacted OQA development in three ways:

- (1) Much of the six weeks to two months spent in planning and recruiting efforts was time lost.
- (2) The Manager of OQA was not able to fill all positions with personnel selected on the basis of qualifications and knowledge (i.e., the best people to fit the jobs).
- (3) Some positions were filled by personnel whose qualifications had been determined not best suited to OQA or for rapid organizational development. Additional training, orientation, or reorientation in innovative quality concepts was thought to be necessary to achieve organizational harmony.

NSRS observed that organizational harmony and common understanding of quality concepts and strategies had not yet been achieved.

Many OQA managers interviewed expressed frustration with the attitude and degree of cooperation of PERS in their effort to effectively staff the office, although PERS indicated that it was believed that all issues with OQA were at least marginally satisfied. The Manager of OQA did not agree with the PERS assessment. NSRS is unaware that the OQA/PERS conflict over "SC" versus "SD" positions was resolved in a manner which will allow OQA to fill the positions with the experienced people necessary to accomplish the job. Additional details of this conflict were discussed in section V.A.1.

PERS had directed that the responsibility for establishing and maintaining a fully integrated TVA-wide QA records program is to be fulfilled by an M-4. OQA has agreed to this classification, downgraded from their M-5 request, since OQA management felt PERS would not approve the M-5, based on their preconception of the function of this position. The Manager of OQA expressed his belief that this function could be adequately performed by the "right M-4," and felt he could actually obtain the services of an individual, but at the exit meeting on July 18, 1983, the position had not been filled. NSRS was concerned that even an experienced records management professional on the M-4 level would have difficulty independently establishing integrated record program requirements involving the cooperation of and interface with other offices.

Through interviews and review of organization charts, the OQA Office Plan, and other documents and through observations of work in progress, NSRS identified some areas in which the utilization of available resources should be reevaluated by OQA management for possible improvement. These areas are described below.

- o While OQAB and DQAB lacked a sufficient number of certified lead auditors, CQAB primarily used M-4 evaluators to act as lead auditors. Most CQAB M-3 lead auditors were not used as such, but acted as evaluators in the surveillance program. In the absence of regulatory requirements for performing surveillance, such as exist for the audit function, it may be efficient to orient CQAB lead auditors now performing surveillance to perform audits in design and operations. Surveillance could be performed by personnel not certified as lead auditors.

The OQAB Procurement Programs Group appeared to be understaffed. According to one lead auditor, approximately only one-half to two-thirds of the scheduled

vendor audits were being conducted. Vendors not audited were relegated to "inactive" status, necessitating "emergency" audits should their products or services later be required.

- According to OQAB, approximately one-half of their audited vendors were also reviewed by DQAB, but both OQAB and DQAB maintain extensive separate vendor audit programs. If this function should not be performed by line organizations, consolidation of this effort within OQA should be considered.
- DQAB, CQAB, and OQAB all have Planning and Support Services Staffs primarily for branch verification planning. One SEB program management function was to "projectize" branch verification plans. The functions appeared to be similar enough to warrant consideration of consolidation.
- It was apparent that, without benefit of records, significant amounts of overtime were being worked by OQA management and employees. Many were not convinced that the efforts were worthwhile (especially office planning).
- OQA personnel, including management, expressed concerns that the establishment of priorities was not being accomplished in a systematic manner. The crisis-mode was thought to be the general rule in OQA. New concerns, such as office planning or QA problem 83-01, became top priority, but previous high priorities were not reshuffled. People complained of working to "put out planning fires" instead of making progress on planned tasks.

It was described as ironic that planning was apparently a top priority, but the amount of planning interfered with the implementation of other plans. For example, Quality Problem 83-01 on Corrective Action Programs (see section V.D) had interfered with the corrective action process by using manpower needed to follow up on open items. Also, some of the NSRS items transferred to OQA had not been assigned to evaluators for follow up due to the number and frequency of other priority assignments.

- The formal organizational chart for OQAB did not in all cases depict actual assignments. The Planning and Support Services Section was not functional because the computer programming assistance required for scheduling and manpower allocation was not available. The person assigned to this project had been "borrowed" by MSS. Verification scheduling and manpower allocation was

being manually for the Support Services Program Group by the Plant Programs Group. Variations between approved organization charts and plans and functional assignments were identified in other branches as well and OQAB was not considered atypical. The majority of these assignments were considered to be "temporary" and required for functional flexibility. Managers were cognizant of the variations and were confident that the charts depicted organizations as planned when at full strength.

- DQAB was reviewing all of some types of documents, such as NCRs and purchase requisitions. Duplicating this effort, the procurement documents were also reviewed by EN DES QEB with the exception of sole-source procurement documents. This 100 percent review by DQAB appeared excessive, in view of their manpower shortage. Personnel performing these reviews indicated that a considerable number of problems were identified. It was noted by OQA that the duplication of effort was necessary until revision 7 of the Topical Report was approved and some OQA procedures were revised.

## B. TVA QA Programs

The second primary element of the management review involved NSRS review of TVA's QA Program as it existed during the review, as well as a verification of the status of progress toward establishing and implementing the new "integrated QA program" directed by the Organization Bulletin of March 2, 1983.

### 1. Existing QA Program

TVA has documented its Quality Assurance Program, as required by 10CFR50, Appendix B, in the Topical Report. Revision 5 of the Topical Report was in effect at the beginning of the review but was known to contain significant inadequacies and omissions, especially in the description of the TVA quality assurance and control organizations. Revision 6 of the Topical Report had been submitted to the NRC in May 1983 but was not approved. However, this revision did not describe the function, responsibilities, or organization of OQA either. (Revision 6 was "approved by default" on July 1, 1983, i.e., failure of the NRC to query or respond within 60 days). A proposed revision 7 to the Topical Report had been drafted by OQA and undergone an initial review in TVA. By a March 1983 revision to 10CFR50.54 and .55, Topical Report revision 7 was required to be submitted to NRC by June 11, 1983, and was actually submitted on July 12, 1983. In assessing the adequacy of the Topical Report, NSRS compared draft 3 of revision 7 of the report with the NRC, NUREG-0800 (revision 2 of July 1981), "Standard Review Plan." Additional changes were made

to draft 3 prior to submitting the report, but NSRS did not compare the submitted version with the Standard Review Plan due to time limitations.

Draft 3 of revision 7 to the Topical Report as well as the submitted version and revisions 0 and 1 of the Transition Plan identify three primary QA program controlling documents. These are described as the top-tier implementation program requirements for TVA's design, construction, and operations QA programs. The three documents are:

- (1) QA Program Requirements Manual (PRM)
- (2) Interdivisional Quality Assurance Program Manual  
(ID-QAM)
- (3) Office of Power Quality Assurance Manual (OP-QAM)

Revision 7 of the Topical Report and the "Transition Plan" assign responsibility to OQA for maintenance and approval of these (and other) program manuals. NSRS reviewers identified concerns regarding the maintenance of these programs detailed in the following paragraphs.

R-83-19-OQA-05, Failure to Maintain an Approved Quality Assurance Program

Maintenance of the PRM, ID-QAP, and OP-QAM appeared to have been neglected by OQA.

- The PRM was placed in "hold" status by revision 1 of the Transition Plan. Only 3 of 55 manual entries had been approved by OQA by July 18, 1983.
- Only 1 of 25 ID-QAPs had been approved by OQA. No new ID-QAPs had been issued, although some had been drafted and were in the review cycle.
- The OP-QAM had not been approved by OQA.

The PRM and ID-QAM were previously identified by NSRS as inadequate in NSRS reports R-81-11-WBN, R-81-14-OEDC, and R-82-02-WBN. In response to items of these reports, OQA had identified the corrective action planned but significant progress had not been made.

Additionally, the Nuclear Construction Manual (NCM) which describes the TVA QA Program for complying with requirements of ASME Section III was not identified specifically as one of the "program controlling" documents in the Topical Report

revision 7. As this program is derived from ASME III, subsection NA-4000, and not from other TVA requirements, consideration of its "independent" status in the integrated QA program is warranted. Maintenance and approval of the NCM is addressed in the Topical Report and it has been approved as required by OQA although not by the Authorized Nuclear Inspection Agency at the time of the August 1, 1983 exit meeting.

2. Proposed Integrated QA Program

In accordance with a presentation to the NRC on May 25, 1983 (at NRC's request), OQA committed to have the office fully operational by September 30, 1983 and the new integrated QA program operational by September 30, 1984. As noted below, insufficient controlling documentation for the proposed program had been generated to permit meaningful evaluation. However, the concept of integrated quality implementing programs under the cognizance of an upper-tier quality assuring program appeared to be a workable one, provided the implementing programs can be effectively controlled by the assuring organization. It is believed that the escalation policies of OQA and the demonstrated stop work authority will ultimately provide the necessary control.

The Manager of OQA issued a memorandum dated May 27, 1983 entitled "TVA Quality Assurance Program Organization Plan." With this memorandum an attempt had been made to comprehensively identify those activities which affect quality and for which management controls are intended to be developed.

The management controls are planned to be issued when developed and approved as a manual of Management Policies and Requirements (MPR) from which TVA offices will develop implementing quality programs. These implementing programs will be required to be in accordance with the MPR manual and in accordance with the intent of a "TVA Quality Assurance Program Description" which had not yet been approved or issued by OQA. The Program Description was scheduled for issue in August 1983. Additionally, a TVA QA Code statement of policy had not been approved or issued. No MPRs had been developed or issued.

At the start of the review, only six Office of Quality Assurance Procedures (OQAPs) had been issued, four of which were on "hold," primarily because they required reference to other OQAPs which had not been written, approved, and/or distributed. Ultimately, approximately 70-80 OQAPs were planned which were intended to fully prescribe the operation of OQA. At completion of the review, approximately 24 OQAPs had been issued, at least preliminarily, including most of those needed to implement the verification program. (The verification program is addressed in section V.C). From

those OQAPs which NSRS reviewed in detail, including the 700 Series Verification Program, and from OQA personnel interviews, it appeared that many OQAPs lacked sufficient instruction detail to permit implementation by all branches without additional "unofficial" branch or unit guidance. This situation could be further degraded by the absence of the planned integrated QA program, with the current necessity of each branch operating to verify compliance with existing fragmented programs. For example, OQAB continued to audit and interface with POWER in accordance with the Operational QA Manual. Interviews with OQAB personnel disclosed their concern that the verification program did not "fit" the OQAM requirements, or in some cases Technical Specification requirements, without further amplification.

In interviews with OQA and line personnel, NSRS learned of some perceptions which, if uncorrected, may adversely impact acceptance of an integrated QA program in TVA. These perceptions are summarized as follows:

- It appeared that there was insufficient analysis of existing QA programs before the decision was made to replace them with an unproven theoretical QA program which was being imposed upon TVA without regard for the adequacy of the QA program already in place. It was believed that the new program would work if it was applied to a new organization but not TVA. (Perception primarily of NUC PR, but shared by some managers in OEDC and OQA.)
- There was no clear understanding of what OQA intended to change or require (perception of all).
- There was and will continue to be insufficient line CONST and Operations background/experience in the development of requirements. Knoxville OQA is primarily an EN DES QA/CONST QA organization (perception of NUC PR and OEDC).
- CONST would be completed at WBN prior to any effective changes, so why bother? (Perception of some managers in OEDC and some personnel in OQA.)
- There was duplication of OQA effort by other organizations (perception of all).

Examples:

- (1) The NUC PR line management and quality organizations within NUC PR agreed on their perception of OQA. Both felt that the proposed surveillance program was in some way redundant to the one

already conducted by POWER Field Quality Engineering (FQE) and that the additional workload imposed upon operations by the OQAB information inquiries have actually caused a decrease in the quality of plant operations. Line management understood the requirement for auditing by OQAB but the surveillance program was disliked partly because no one knew exactly what it entailed.

(2) Plant management was particularly concerned with the staffing of an onsite OQAB section with SC-3 and SC-4 personnel when the functions they would be performing appeared to be similar to those for which the plant Field Quality Engineering (FQE) Section was using SE-4 personnel. Also, the proposed onsite staff was viewed as being too large for its intended functions.

- o People were concerned that too much planning and not enough implementation was taking place. It appeared to them that OQA is "spinning its wheels" (perception of all).

The report highlights these perceptions without further analysis of validity. They are listed as indication that communications problems and unfavorable attitudes toward OQA and the QA program exist.

### C. OQA Internal Operations

As stated in the preceding section, OQA operations and administration are intended to be prescribed by OQAPs. The Verification Program is described in the OQAPs primarily in sections 7 and 8 of the OQAP manual. Through interviews with OQA personnel and review of procedures, NSRS identified the Verification Program as the fundamental method by which OQA will accomplish its assuring function. It consists of two separately controlled, but related verification processes: (1) the audit function and (2) the surveillance function. Both are intended to be formally conducted by OQA personnel exclusively.

The audit function is directed by the Topical Report to meet the requirements of NRC Regulatory Guide (RG) 1.144 augmented by ANSI N45.2.12, and of operating Technical Specifications. The formal surveillance function is a new quality assuring concept in TVA, and as described by OQA personnel and procedures, is intended to both supplement and complement the audit function by providing "real time" detection and correction of problems and potential problems affecting quality. Formal surveillance consisted of one (or more) of three types of assuring activities: (1) review, (2) observation, and (3) monitoring.

The Verification Program had been unofficially implemented early in 1983. (The auditing function had continued through the transition and was not "newly implemented.") It was intended to be "officially" implemented in accordance with applicable OQAPs on July 1, 1983.

1. R-83-19-OQA-06, Verification Program and Implementation

Through interviews, observations, and document review, NSRS identified the following concerns associated with the verification program and implementation by OQA.

- Topical Report, R7, commits to RG 1.144 requiring annual audit of all elements of the QA program, per ANSI N45.2.12. The verification program is not designed to meet this commitment, intending to use surveillance to replace or reschedule audits in some cases. Additionally, there is a concern not restricted to verification, that development of internal procedures, prior to development of upper-tier requirements, i.e., MPRs, could result in consistency problems without close coordination.
- Audit depth had previously emphasized implementation of local procedural requirements. Recent audits were observed to be more "programmatic." However, some recent audits indicate that implementation was delegated to verification by surveillance. The surveillance program, however, was not "officially" implemented until July 1, 1983.
- Audit reports had not been issued within 30 days as required by N45.2.12. There appeared to be an overly circuitous review/approval cycle compounded by logistics, contributing to the delays.
- Some audits (e.g., DQAB 8304, CQAB 83-01, CQAB SQ-83TS-04) expressed deficiencies as "concerns" not requiring response. A similar problem was previously identified by NSRS in report R-82-02-WBN-15.
- The OQAP 7.01-7.03 audit program was incompletely and inconsistently implemented at the time of the NSRS review. The NSRS review was performed prior to the July 1, 1983 "official" implementation date however (see section V.A.2).
- There was no qualification/certification program for QA evaluators performing surveillance. One branch chief was considering such a program. One branch chief maintained that qualified auditors are intrinsically qualified for surveillance.

° The Administrative Controls, section 6.2 of BFN Technical Specifications, requires that the Nuclear Safety Review Board (NSRB) ". . . function to provide independent review and audit of designated activities. . . ." Among the eight designated activities listed is "quality assurance practices." SQN has a similar Technical Specification requirement. OQAP 7.01, "Planning and Scheduling of Verification Activities," required OQAB interface and coordination with NSRB during the audit scheduling and planning phase. OQAP 7.02, "Audit Administration and Follow Up," section 7.4, required the Supervisor, Planning and Support Services, to collect input from "other organizations" to be used for detailed planning and audit conduct. From this information, three points were noted by NSRS.

- (1) OQAP 7.02 did not specify that NSRB would be a required source of input for audit conduct necessary to comply with the intent of Technical Specifications, if OQA provides the actual audit function. OQAP 7.01 did include NSRB in the planning and scheduling phase however.
- (2) OQAPs did not address NSRB concurrence with audit reports performed under NSRB cognizance.
- (3) An "independent review and audit" of OQA quality assurance practices should not be performed by OQA.

° OQAB site personnel did not have all responses to audits. Official responses to audits could not be located at SQN, although draft responses were available.

° OQAB and DQAB were understaffed to effectively perform all aspects of the planned audit program (preparation/performance/reporting).

DQAB presently was understaffed in the Design Program Group. Of the 23 listed engineering positions, 11 were vacant and one person was on loan to SEB. Thus, the group was at less than 50 percent strength. The shortage of personnel and the number of top priority tasks had combined to overload the group. The follow up of open items was not being systematically accomplished due to these combined effects. Also, only two lead auditors were in DQAB which, in addition to the restriction that one may not audit the project over which one performs surveillance, had caused each audit to involve more personnel than would otherwise be needed. The shortage of personnel and the method of performing audits had resulted in the cancellation of normal surveillance activities of DQAB while an audit was being planned, performed, and documented.

OQAB had approximately 185 audits scheduled for 1984. With 16 certified lead auditors available, including M-6s and M-5s, this would require an average of one audit planned, conducted, and reported per month, per lead auditor. However, due to supervisory and surveillance assignments, only 11 lead auditors were actively and routinely participating, requiring approximately one audit each 20 days per lead auditor (without consideration of time spent on sick and annual leave, training, or other responsibilities).

It was noted that lead auditors whose qualifications were reviewed generally appeared to have strong QA backgrounds and were evaluated as well qualified. Certifications were generally current.

- NSRS completed R-83-16-NPS, a review of security activities, July 1, 1983. Regarding OQA involvement in nuclear security, it was determined during this review that OQAB intended to audit security during 1984. Additionally, a series of security training audits were scheduled for September 1983. However, no routine surveillance of site security practices was scheduled, and OQAB did not have an auditor security specialist, although they planned to hire one in 1984. From another NSRS review in progress, R-83-18-NPS, OQA actual and planned involvement with health physics activities were determined to be adequate.
- During the review of OQAB vendor audits, the vendor audit checklist was reviewed. This checklist was routinely placed in the front of the vendor audit notebook which contained the pertinent records of the audit. The checklist contained a number of steps to be completed from the time an audit was planned until all of the audit deficiencies were adequately resolved. This served as a reminder to complete all the required steps and gave a quick method of assessing an audit's status. The checklist appeared fairly complete and should serve to achieve consistency in the processing of audits. One area, however, that appeared to need improvement was the status of this file as a QA document which required special storage in accordance with ANSI N45.2.9. The concern was that the checklist stated that the last step was to declare the audit file a QA record and to store accordingly. NSRS' position, stated in item R-81-14-OEDC(BLN)-9, was that audit support records and the audit report become QA records when the report is issued. It was noted that this checklist was not yet being implemented but was being placed in the audit files in preparation for implementation.

## 2. QQAP Development

Another OQA activity reviewed was that of QQAP development. Certain aspects of this activity have been previously addressed in both sections V.A and V.B. One commonly shared opinion regarding the internal review process is noted here. NSRS heard from interviews with all OQA branches and QIS that personnel thought SEB was not effectively resolving the branch comments on QQAPs and, in some cases, was unilaterally rewriting the procedures after submittal by the assigned original author. One specific comment on this subject was, "Our comments are neither solicited nor appreciated," (describing SEB's attitude toward the comments). This approach may have contributed to a lack of meaningful review of the QQAPs, as well as problems with working relationships.

## 3. Reporting Responsibilities and Requirements

OQA had recently issued QQAPs describing formal reporting requirements for appraising TVA management of quality program status, assessment, and problems. Prior to this time, such reporting appeared to have been via internal weekly reports, biweekly key topics reports, and "informal" verbal discussions, which were evaluated by NSRS as ineffective in identifying significant problems in a timely manner for management action. The effectiveness of the new reporting requirements and reports was not evaluated as implementation occurred after the review.

## D. Corrective Action

### 1. Quality Problem 83-01

To accomplish its mission, OQA planned a strategy of emphasizing internal organization development while attempting to accomplish an orderly transition of responsibilities for specific activities with a minimum of program changes until such time as sufficient appropriately trained and experienced personnel and resources could be brought to bear on creation and implementation of the integrated TVA QA Program. This strategy has had some negative effects:

- a. NRC impatience with efforts towards achieving meaningful and timely corrective action.

The NRC resident inspectors believed that elevation of QA to the corporate level was a good idea but so far there had been no observed changes in the activities of QA. At one plant the NRC resident inspector had recognized an increase in the quality of work performance over recent years but he credited this to an improvement in line management. Other inspectors saw some

improvement in auditing but still felt that the major emphasis was on the number of audits conducted with the schedule taking prominence over the depth of the audit. TVA appeared to adequately identify and report deficiencies, but the corrective action was thought to be routinely untimely and unresponsive.

- b. TVA line (and in many cases OQA) disappointment at the lack of anticipated improvements and a concern that the integrated QA program will be promulgated as a unilateral step change in requirements with significant disruptive impact.
- c. Failure of OQA to act responsively and decisively on some issues that needed immediate attention, such as:

- (1) Timeliness and responsiveness of corrective action.

- (2) Establishing a prescribed working interface between EN DES and POWER (NUC PR).

As a result of their concerns over failure to detect improvement in TVA's timeliness and responsiveness in implementing meaningful corrective actions, the NRC strongly suggested that TVA and OQA take measures to improve in this area.

In response, Quality Problem 83-1 was initiated by OQA to make an assessment of TVA's deviation control/corrective action process. This assessment was planned to determine if and why the performing organizations were having difficulty dispositioning and correcting deviations in a timely manner. In addition, a determination was to be made as to whether the performing organizations were effectively establishing the root cause and corrective action for the root causes of deviations.

Other facets that the Quality Problem 83-1 addressed were as follows:

- Obtain listing and present status of all open items that represented conditions adverse to quality.
- Analyze and classify deviations into categories and levels of importance.

- Develop OQAPs for the identification of deviations and corrective action, analysis of the status of deviation disposition, requesting management action to cause prompt action, and for reporting status and adequacy to management.
- The development of the OQA process for collecting input data on deviation status, analyzing the data, summarizing the results, reporting the status, and initiating follow-up actions as necessary to secure responsive and timely action.
- Via the Quality Assurance Program Assessment report the status and the adequacy of actions to disposition deviations and prevent recurrence will be summarized for use by senior line management.
- Evaluation of the existing deviation control and corrective action systems of the performing organizations and initiation of any needed improvements.

Completion of the first phase of this effort was scheduled for August 1, 1983.

NSRS reviewed the status of QP-83-01 and has the following comments:

- QP-83-01 was behind schedule. Necessary procedures had been issued late and a preliminary QIS assessment report was delayed due to incomplete branch input. This could result in missing the Phase 1 completion date of August 1, 1983, of which NRC was notified. One reason for incomplete branch input could have been NUC PR's refusal to provide OQAB with access to their full deficiency/commitment tracking system, also addressed in section V.A.3. An informal agreement had been reached at midlevel management for a computer printout of all open deviations tracked by NUC PR. The printout was made, but a higher level NUC PR manager refused to release it to OQAB. The information was released only after an agreement was reached by the Division Director and Manager of OQA. One reason offered by NUC PR management for this problem was the alienating nature of the QP-83-01 plan issued by memorandum on May 11, 1983.
- OQAP 8.01, "Reporting and Disposition of Deviations," required for QP-83-01 was rewritten and condensed by SEB from 46 pages to 27 pages. The originator, QIS, considered that the condensed (approved) version failed to include all necessary

instructions. When received by the branches for use, it was perceived as too prescriptive, entailing too much "paperwork."

- The OEDC response to the "timeliness and responsiveness" issue raised by the NRC has been commendable. The Manager of OEDC has personally emphasized to OEDC personnel that TVA shall improve in this area and has taken actions to cause improvement. Although this review was completed before adequate evaluation of the effectiveness of OEDC efforts could be made, the initial impact of the appointment of two Assistants to the Manager of OEDC to coordinate resolution of this problem appears to be positive.
- The NRC "suggestion" appeared to have been effective in alerting OQA to some quality problems that require timely management attention involving action as well as planning effort. However, planning for achievement of long-term goals remains necessary if the TVA quality program is to improve. There was no indication that OQA strategic planning would be sacrificed or that crisis management would remain the standard practice.

## 2. OQA Follow Up of NSRS Items

In a memorandum from H. N. Culver to J. W. Anderson dated December 29, 1982, NSRS transferred to OQA the responsibility for follow up and action on some of its review report findings. This transfer of findings occurred to avoid duplication of efforts. It also appeared that the OQA staff could more appropriately incorporate these findings into their activities.

The findings had related to activities performed by the line organizations and audit activities by the quality assurance organizations (POWER and OEDC QA organizations) in existence prior to the formation of OQA. NSRS requested that OQA provide follow up on the findings against line organizations and close out these items when the work had been completed. Also, all recommendations that were previously associated with the QA organizations were designated for action by OQA, but with responsibility for follow up and closure remaining with NSRS. Eventually, SEB was assigned responsibility for coordination of these items in OQA.

In a memorandum from the SEB Branch Chief to Those listed dated February 9, 1983, the transferred NSRS items were delegated to the appropriate branch of OQA for action. This memorandum indicated that each Knoxville OQA branch should maintain the status of findings assigned to them in the

"Tracking and Reporting of Open Items" (TROI) system. As evidenced by the memorandum from J. R. Lyons to Those listed dated March 24, 1983 and the memorandum from G. A. Gonsalves to R. A. Costner dated June 10, 1983, problems and questions arose concerning documentation and handling of NSRS items.

As a part of this review, OQA actions on 13 of 78 NSRS findings that were assigned to OQA for tracking and closure were examined. Eleven of the findings had been internally assigned to CQAB for verification and two to DQAB. OQAB had not performed any follow up or verification of items, precluding NSRS evaluation of their methods.

Internal guidelines had been developed by SEB for follow up on NSRS transferred items. These guidelines appeared adequate and were being satisfactorily followed by both CQAB and DQAB.

A separate manual tracking system developed in SEB was used by OQA for the NSRS items, rather than the Tracking and Reporting of Open Items (TROI) system. The TROI system was also being updated by OQA, but apparently did not meet their needs.

For the items examined, NSRS found that CQAB site units evaluated items and responses, verified actions taken, tracked the status, and reported the results to CQAB in an acceptable manner.

DQAB's follow up of an NSRS item concerning the conflicts identified between Construction Specification G-29C and AWS D1.1 was examined. The closure file for the item, R-82-02-WBN-24, was reviewed and OQA personnel were interviewed concerning the closure of this item at WBN and BLN. NSRS' evaluation of the acceptability of the EN DES response, the basis on which DQAB determined the item closed, differed from DQAB's. This difference is being handled through separate correspondence. According to a DQAB supervisor, not all of the NSRS items were being actively followed up in DQAB. This was apparently due to the shortage of personnel in this branch and other problems that gained higher priority. One other item reviewed, involving examination of structural welds through carbo-zinc primer, was awaiting final resolution and direction from QIS. The closure file was incomplete for this reason, but the item was being followed.

There were instances of untimely OQA actions, specifically in reporting that verified corrective actions closed items and in responding to NSRS items which required OQA to take corrective actions. In one case, items verified corrected at WBN in March were not reported as closed by OQA until May, and in another, OQA responses to six NSRS items were received approximately two months late. When received, responses were generally determined to be adequate.

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## VI. PERSONS CONTACTED

### A. Office of Quality Assurance

J. W. Anderson, Manager of Quality Assurance

#### 1. Systems Engineering Branch (SEB)

J. A. Crittenden, SAS, Supervisor  
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#### 2. Design Quality Assurance Branch (DQAB)

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5. Quality Improvement Staff (QIS)

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6. Management Services Staff (MSS)

W. Andrews, T&C, Training Officer  
D. Beeler, T&C, Training Officer  
L. Long, Certification Unit, QA Specialist  
D. Stinson, Jr., Certification Unit, Supervisor

B. Office of the General Manager

G. F. Dilworth, Assistant General Manager (Technical)

C. Office of Engineering Design and Construction (OEDC)

1. Office of Engineering Design and Construction (OEDC)

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E. Division of Personnel (PERS)

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F. U.S. Nuclear Regulatory Commission (NRC)

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G. Paulk, NRC Senior Resident Inspector, BFN

G. Nuclear Steam System Supplier (NSSS)

1. General Electric

Clarence Root, GE Operating Engineer, BFN

2. Westinghouse

R. A. Mathieson, Site Service Manager, SQN

NOTE: Personnel contacted during the NSRS health physics and security reviews are identified in NSRS reports R-83-18-NPS and R-83-16-NPS, respectively.

VII. DOCUMENTS REVIEWED

A. Procedures/Manuals

1. 10CFR50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
2. TVA Topical Report TVA-TR75-1, Draft R7, "Quality Assurance Program Description for Design, Construction, and Operation"
3. NUREG-0800, "USNRC Standard Review Plan," R2, July 1981
4. Regulatory Guide 1.144, "Auditing of Quality Assurance Programs for Nuclear Power Plants," R1, September 1980

5. ANSI/ASME N45.2.12-1977, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"
6. ANSI/ASME N45.2.23-1978, "Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants"
7. TVA Code - Quality Assurance, "Assuring Quality in the Performance of Agency Activities, Draft, May 3, 1983
8. The Tennessee Valley Authority Quality Assurance Program Organization Plan, RO, May 27, 1983 (OQA 830527 001)
9. Organizational Bulletin, Tennessee Valley Authority, Office of Quality Assurance, March 2, 1983
10. "Office of Quality Assurance - Construction Quality Assurance Branch - Functional Statement," R1, March 18, 1983
11. "Office of Quality Assurance - Construction Quality Assurance Branch - Quality Assurance Instructions Manual"
12. "Plan and Schedule for Verification of the TVA Constructors' Quality Assurance Program in 1983-84"
13. "Organization Plan for Surveillance of the TVA Constructor Quality Assurance Program," WBNS, SQNS, and BLNS for second quarter 1983
14. Office of Quality Assurance - Construction Quality Assurance Branch - 2nd Quarter Audit Schedule
15. Office of Quality Assurance Quarterly Verification Plan and Schedule (3rd quarter) - CQAB Audit
16. Office of Quality Assurance Design Quality Assurance Branch Functional Statement, R1, March 18, 1983
17. Verification Plan of the Designer and Schedule for Evaluation of Supplier's Quality Assurance Program - January 6, 1983
18. Design Quality Assurance Branch's Plan for Quality Verification of the Designer Program
19. ID-QAP 2.8 Draft, "Design Requirements Control Program," June 29, 1983
20. OQAP-1.02, "Policy Statement," RO, June 6, 1983
21. OQAP-2.01, "Office of Quality Assurance Procedures," RO, February 16, 1983

22. QQAP-2.02, "Control of Office of Quality Assurance Procedures Manual," R0, February 16, 1983
23. QQAP-7.01, "Planning and Scheduling of Verification Activities," R0, April 8, 1983
24. QQAP-7.02, "Audit Administration and Followup," R2, May 5, 1983
25. QQAP-7.03, "Conduct of Audit," R0, May 5, 1983
26. QQAP-7.04, "Administration and Conduct of Surveillance," R0, June 3, 1983
27. QQAP-7.05, "Review of Procurement Documents," R0, May 17, 1983
28. QQAP-7.07, "Review of Construction Documents," R0, June 6, 1983
29. QQAP-8.01, "Reporting and Disposition of Deviations," R0, June 17, 1983
30. QQAP-8.03, "Management Action Requests," R0, June 17, 1983
31. Technical Specifications, Section 6, BFN and SQN (Revisions of February 13, 1980 and original, respectively).

B. Memoranda

1. Memorandum from J. W. Anderson to Those listed dated November 12, 1982, "Transition of Quality Assurance Activities from OEDC to OQA" (EDC 821112 016)
2. Memorandum from G. H. Kimmons to Those listed dated November 12, 1982, "Transition of Quality Assurance Activities from OEDC to OQA" (EDC 821112 017)
3. Memorandum from H. N. Culver to J. W. Anderson dated December 29, 1982, "Transfer of Responsibility for Followup and Action on Nuclear Safety Review Staff (NSRS) Review Report Findings," (GNS 821229 151)
4. Memorandum from J. R. Lyons to Those listed dated February 9, 1983, "Transfer of Responsibility for Followup and Action on NSRS Review Report Findings" (OQA 830210 403)
5. Memorandum from J. W. Anderson to Those listed dated February 22, 1983, "Transfer of Quality Assurance Activities from OEDC, POWER, and NSRS to OQA (OQA 830222 403)
6. Memorandum from J. R. Lyons to Those listed dated March 24, 1983, "Handling of NSRS Items Transferred to OQA" (OQA 830328 425)

7. Memorandum from C. Bonine to W. R. Brown and R. M. Pierce dated March 29, 1983, "Correction of Outstanding QA Program Problems" (DOC 830329 008)
8. Memorandum from A. W. Rogers to G. Ladewitz dated May 10, 1983, "Open Audit Deficiencies" (QA 830520 650)
9. Memorandum from J. W. Anderson to Those listed dated May 27, 1983, "TVA Quality Assurance Program Organizational Plan" (OQA 830527 001)
10. Memorandum from J. R. Lyons to R. A. Costner and R. W. Dibeler dated June 1, 1983, "ANS Audits of TVA Nuclear Projects"
11. Informal memorandum from G. A. Gonsalves to R. A. Costner dated June 10, 1983, "Instructions - NSRS Items"
12. Informal memorandum from R. A. Costner to J. R. Lyons dated June 10, 1983, "Procedure Development Activities"
13. Memorandum from H. J. Green to H. L. Abercrombie, T. D. Knight, and R. A. Sessoms dated April 19, 1983, "The Role of the Office of Quality Assurance," L00 830418 863
14. Memorandum from J. R. Lyons II to L. M. Mills dated June 15, 1983, "TVA Topical Report (TVA-TR75-1A), revision 7.
15. Corrective Action Status Report, SQN, June 9, 1983 (FQE)
16. Memorandum from J. E. Law to C. C. Mason and D. O. McCloud dated May 13, 1983, "Monthly Quality Assurance Report to Management," L17 830513 929
17. Memorandum from J. R. Patterson to R. A. Matson dated May 9, 1983, "FY 1984 Power Program Workplans," OQA 830509 100
18. Memorandum from R. L. Lumpkin, Jr., to L. M. Mills dated February 23, 1983, "Audit of 10CFR50, Appendix B, Criteria VIII - Browns Ferry and Sequoyah Nuclear Plants" (OQA 830223 704)
19. Memorandum from R. L. Lumpkin, Jr., to F. A. Szczepanski dated February 22, 1983, "Nuclear Plant Audit Reports" (OQA 830222 702)
20. Workload Analysis for the TVA Operations Audit Program - Meeting Minutes (A43 830121 061)
21. Memorandum from Ray Cole to G. W. Killian dated March 21, 1983, "OQAB QA Program Summary for 1982" (OQA 830321 703)

22. Memorandum from Ray Cole to G. W. Killian dated March 14, 1983, "Special Problem Report, Criterion III, V, VI, 10CFR50 Appendix B"
23. Memorandum from F. A. Szczepanski to H. G. Parris dated June 9, 1983, "Nuclear Plant Audit Reports" (A43 830614 007)
24. Memorandum from R. L. Lumpkin to F. A. Szczepanski dated June 17, 1983, "OQAB Workload/Resource Analysis"
25. Memorandum from Ray Cole to G. W. Killian dated February 14, 1983, "BFNP Monthly Report - January 1983" (OQA 830214 705)
26. Memorandum from H. J. Green to J. P. Darling dated June 15, 1982, "Cost Effectiveness of Quality Assurance in the Office of Power" (LOR 820615 814)
27. Memorandum from R. L. Lumpkin to Those listed dated May 27, 1983, "Transmittal of OQA Operational Quality Assurance Branch Audit Plan and Schedule" (OQA 830527 703)
28. Memorandum from H. J. Green to R. L. Lumpkin dated May 25, 1983, "Radiological Hygiene Branch Quality Assurance Manual"
29. Memorandum from H. J. Green to J. W. Anderson dated May 24, 1983, "Office of Quality Assurance Staffing" (L00 830524 877)
30. Memorandum from H. J. Green to J. P. Darling dated April 19, 1983, "Interfaces with the Office of Quality Assurance"
31. Memorandum from J. A. Coffey to R. L. Lumpkin dated April 4, 1983, "Commendation on Audit No. CH-8200-12 - Browns Ferry Nuclear Plant" (OQA 830407 701)
32. Memorandum from H. J. Green to R. L. Lumpkin dated June 9, 1983, "Office Space Requirements for OQA/Plant Programs Section" (OQA 830610 701)
33. Quality Assurance/Quality Control (QA/QC) Auditing to Ensure Effective Execution, R. L. Lumpkin, Jr., June 6, 1983
34. Draft memorandum from J. W. Anderson to H. J. Green and M. N. Sprouse, "Special Investigation - Environmental Qualification of Class IE Equipment"
35. Memorandum from R. L. Lumpkin to H. T. Mitchell dated June 2, 1983, "Power System Operations QA Program Guidelines" (OQA 830602 702)
36. Memorandum from J. W. Anderson to Those listed dated May 11, 1983, "Quality Problem 83-1"

37. Informal memorandum from R. A. Costner to J. R. Lyons dated June 10, 1983, "Procedures Development Activities"
38. Memorandum from R. L. Lumpkin to J. P. Darling dated May 3, 1983, "NUC PR - Commitment Tracking - Deficiencies from All Sources" (OQA 830503 700)
39. Memorandum from R. L. Lumpkin to H. J. Green dated June 17, 1983, "OQAB Review of the Division of Nuclear Power's Deviation Control and Corrective Action Systems" (OQA 830617 703)
40. Memorandum from H. J. Green to R. L. Lumpkin dated June 24, 1983, "OQAB Review of the Division of Nuclear Power's Deviation Control and Corrective Action Systems" (LOO 830624 880, OQA 830627 703)
41. Memorandum from H. J. Green to R. L. Lumpkin dated July 5, 1983, "OQAB Review of the Division of Nuclear Power's Deviation Control and Corrective Action Systems" (LOO 830705 803, OQA 830707 706)

**C. Deficiency Tracking Reports**

1. NRC Inspection Scoreboard (F Log) - WBN
2. Monthly NRC-NSRS-OPQA-Audit Review Printout - WBN
3. NRC-NSRS OPQA Closed Out Items - WBN
4. CATS, June 15, 1983 - SQN
5. BFN Commitment Tracking Printout
6. Discrepancy Report Log - WBN
7. CAR Log Status Sheet - WBN

**D. Audit Reports**

1. Audit Open Item Summary Report, July 1, 1982-October 1, 1983 (OQAB) [A24 820930 002]
2. SQ-82TS-05, Correction of Deficiencies, January 1, 1983
3. Response to SQ-82TS06, March 2, 1983
4. SQ-8200-01, Outage Activities, October 29, 1982
5. SQ-82-00-01, ALARA, March 21, 1983
6. Response to SQ-8200-02, June 3, 1983

7. SQ-82TS-04, Process Control Program (Solidification), February 16, 1983
8. Response to SQ-82TS-04, May 4, 1983
9. SQ-83TS-03, Test Control, May 6, 1983
10. CH-8200-04, Environmental Qualification Program, February 25, 1983
11. Response to CH-8200-04, May 10, 1983
12. BF-83TS-05, Technical Specifications, May 11, 1983
13. BF-83TS-04, Test Control, May 18, 1983
14. BF-83TS-03, Operating Status, April 28, 1983
15. BF-83TS-02, Maintenance and Modification Inspection Program, March 7, 1983
16. CB-83-01, "Construction Testing Program, June 15, 1983
17. CB-83-02, "Nonconformance/Deviation Control and Corrective Action," June 8, 1983
18. CB-83-03, "Document Control," June 28, 1983
19. YC-G-82-07, "Procurement Document Control," November 23, 1982
20. YC-G-83-01, Preventive Maintenance and Preservation," February 1, 1983

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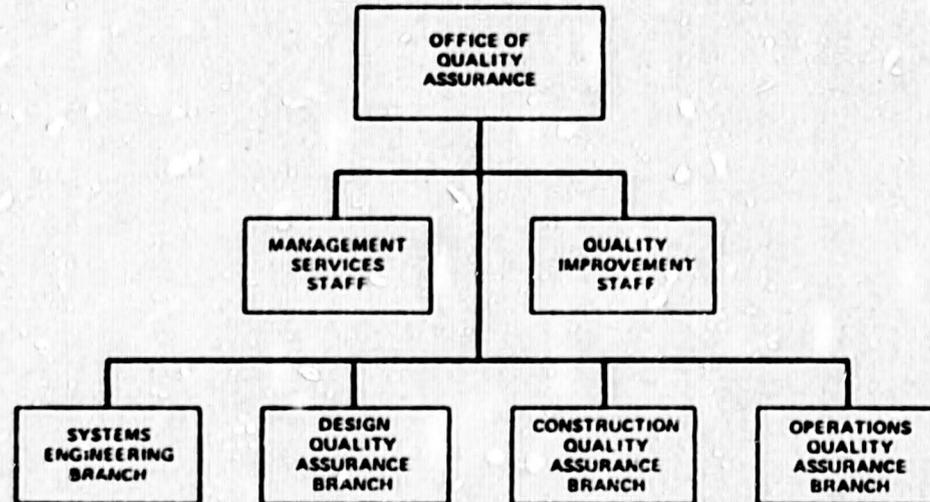
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**TENNESSEE VALLEY AUTHORITY**  
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- **MISSION:** The Office of Quality Assurance is Responsible for Establishing and Ensuring Effective Execution of an Overall, Integrated Quality Assurance Program for TVA

- **STAFFING PLAN:**

	9-5-82	11-14-82	CURRENT 5-1-83	PLANNED			
			7-1-83	10-1-83	1-1-84	4-1-84	
● TOTALS	31	111	146	169	193	198	204

UNITED STATES GOVERNMENT

## Memorandum

GNS 83 07 21 055  
TENNESSEE VALLEY AUTHORITY

TO : H. G. Parris, Manager of Power, 500A CST2-C

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

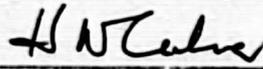
DATE : July 21, 1983

SUBJECT: BROWNS FERRY NUCLEAR PLANT (BFN) - NUCLEAR SAFETY REVIEW STAFF (NSRS)  
REPORT NO. R-83-20-BFN - ROUTINE REVIEW TO DETERMINE THE STATUS OF  
NSRS OPEN ITEMS

Attached is a copy of the subject report containing the status of previously identified open items that have resulted from past NSRS reviews of BFN. The action taken for 20 NSRS recommendations was assessed. Fifteen of these items have been closed in this report. The remaining five items should be reviewed by NUC PR in a timely manner and appropriate action taken. The corrective action will be evaluated during a future review or investigation and the items will be considered for closure.

This report also contains an Appendix A which lists all NSRS reports previously written totally or partially for BFN and the current status of those reports.

The excellent cooperation extended by your staff, both onsite and in the Central Office, is appreciated. If you have any questions concerning this report, contact K. W. Whitt at extension 6620-K.



---

H. N. Culver

JCJ:LML

Attachment (submitted under ACCNO GNS 830721 056)

cc (Attachment):

G. F. Dilworth, E12D46 C-K

MEDS, W5B63 C-K

**NSRS FILE**

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
REVIEW  
NSRS REPORT NO. R-83-20-BFN

Subject: Routine Review to Determine the Status of NSRS Open Items

Date of Review: June 20-23 and July 1, 1983

Reviewers: K. W. Whitt 7/21/83  
Kermit W. Whitt Date

Gerald G. Brantley 7/21/83  
Gerald G. Brantley Date

James C. Jones 7/21/83  
James C. Jones Date

Approved by: K. W. Whitt 7/21/83  
Kermit W. Whitt Date

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## I. SCOPE

This review was performed to determine the status of corrective actions for resolution of items remaining open from NSRS reports previously written for Browns Ferry Nuclear Plant.

## II. CONCLUSIONS/RECOMMENDATIONS

There were no new areas assessed during this review, and no new conclusions or recommendations resulted for presentation in this report.

## III. STATUS OF PREVIOUSLY IDENTIFIED OPEN ITEMS

### A. Report No. R-79-10-01, Operating Practices Where Protective System Signals Are Bypassed

#### 1. R-79-10-01, Item IV.B, Temporary Alteration Control Form

The temporary alteration control form had been revised to provide for approval of safety-related temporary alterations by the Plant Operations Review Committee (PORC). This item is closed. (See section IV.A.1 for details.)

#### 2. R-79-10-01, Item IV.C, Closure of Main Steam Tunnel Doors

An analysis by EN DES in response to IE Bulletin 79-01B indicated that it was acceptable to leave the steam tunnel doors open. NSRS has reviewed the EN DES analysis and concurs with the conclusion reached. This item is closed. (See section IV.A.2 for details.)

#### 3. R-79-10-01, Item IV.E, Clarification of Technical Specification Note Relating to Operability of Temperature Switches

A change had been made to the Technical Specifications to clarify the intent of "inoperable" temperature channels as used in table 3.2.A of the Technical Specifications. This item is closed. (See section IV.A.3 for details.)

#### 4. R-79-10-01, Item IV.G, Logging of Emergency Conditions

A temporary alteration log is maintained by the shift engineer, and all temporary alterations installed under emergency conditions are reviewed by PORC the next regular working day. This item is closed. (See section IV.A.4 for details.)

B. Memorandum Report on Chlorine Accident Dated December 10, 1979

1. Recommendations 1 and 2, Upgrade the Control Bay HVAC System

Chlorine in the gaseous form is no longer used at BFN; and the BFN units 1, 2, and 3 control room acceptability meets the requirements in NUREG 0737, Item III.D.3.4, "Control Room Habitability." These two items are closed. (See section IV.B.1 for details.)

2. Recommendation 3, Program to Monitor BFN-3 Selected Control Bay Equipment Deterioration after the Chlorine Accident

A program to monitor selected BFN-3 control bay equipment for deterioration has been completed. This item is closed. (See section IV.B.2 for details.)

C. Report No. R-80-03-BFN, Shift technical Advisor (STA) Program

1. R-80-03-NUC PR, Item III.A.1, Initial Training and Training Documentation

DPM N79A15, "Shift Technical Advisor Program," had been revised to require written examinations, criteria for examinations, and documentation of examination results. This item is closed. (See section IV.C.1 for details.)

2. R-80-03-NUC PR, Item III.A.2, Periodic Evaluation of STA Program

A program for periodic evaluation of the STA had been established in DPM N79A15 and implemented in Standard Practice BF 12.12, "Duties and Responsibilities of STAs." This item is closed. (See section IV.C.2 for details.)

3. R-80-03-NUC PR, Item III.A.3, Assurance that Routine Duties do not Interfere with STA Operational Duties

NUC PR had established a requirement that no other duties would take precedence over STA responsibilities. This item is closed. (See section IV.C.3 for details.)

4. R-80-03-NUC PR, Item III.B, STA Cognizance of Operational Status

Administrative controls had been established to ensure that the STA maintained cognizance of operational status of plant systems. This item is closed. (See section IV.C.4 for details.)

D. Unnumbered NSRS Report Dated April 30, 1980 - Causes of Reactor Scrams on February 10, 12, and 15 and March 4, 1980

1. Recommendation III.D, Expedite the Installation of the Computerized Transient Event Recording System Discussed in DCR-1802

Enhanced scram analysis capabilities will be provided by installation of new plant process computer equipment. This item is closed. (See section IV.D.1 for details.)

E. Report No. R-80-07-BFN, NSRS Review of Contamination Control

1. R-80-07-BFN-01, Plant Decontamination Program

A formal instruction defining the decontamination program at BFN has not been established. This item remains open. (See section IV.E.1 for details.)

F. Report No. R-80-12-BFN, Routine Review - June 9-13, 1980

1. R-80-12-BFN-04, Install Protective Enclosures for Instrument Panels

NSRS will verify implementation of DCRs 2877 and 2881 to install protective enclosures and to provide "key card" entry for instrument panels at BFN. This item remains open. (See section IV.F.1 for details.)

2. R-80-12-BFN-08, EECW Flow Verification

Modifications to the system by implementation of ECNs L1970 and P0083 are in progress. The system modifications and the continuing flow monitoring evaluations satisfy the NSRS concerns. This item is closed. (See section IV.F.2 for details.)

G. Report No. R-80-13-BFN, Special Review of Incidents and Activities Conducted to Resolve Deficiencies in Control Rod Drive System Performance

1. R-80-13-BFN-09, Modifications to Scram Discharge Instrument Volume

A means to monitor the scram discharge drainage flowrate had been provided, but the existing testing program had not been implemented. This item remains open. (See section IV.G.1 for details.)

H. Report No. R-81-08-BFN, Management Review of Office of Power and Office of Health and Safety

1. R-81-08-BFN-18, Temporary Alteration Control Program

An evaluation of the existing temporary alteration had been performed, and a schedule had been provided to NSRS indicating when all the temporary alterations would be removed and DCRs would be initiated. This item is closed. (See section IV.H.1 for details.)

2. R-81-08-BFN-34, Closure of ECNs

Adequate ECN controls had been addressed in the applicable engineering procedure and BFN Standard Practice. This item is closed. (see section IV.H.2 for details.)

3. R-81-08-BFN-38, Requirements and Commitments Matrix

The requirements and commitments matrix had been developed. This item is closed. (See section IV.H.3 for details.)

4. R-81-08-BFN-45, Special Work Permit (SWP)

a. SWP-Routine Timesheets - Need and Enforcement  
(Item 2 of Recommendation R-81-08-BFN-45)

The SWP-Routine had been replaced by a Special Inspection Permit (SIP). The original concern of compliance with supplementary timesheet requirements was still valid. This item remains open. (See section IV.H.4.a for details.)

b. Reindoctrination Training for Authorized SWP-Routine User: (Item 4 of Recommendation R-81-08-BFN-45)

A successful SIP program will depend in part on full compliance with the initial training and annual retraining requirements of the new RCI-9. This item remains open. (See section IV.H.4.b for details.)

5. R-81-08-BFN-53, Radiological Hygiene Branch Formal Review of Purchase Contracts

The Radiological Hygiene Branch responsibilities have been transferred to the Office of Power. The formal review has not been identified. This item remains open. (See section IV.H.5 for details.)

#### IV. DETAILS

A. Report No. R-79-10-01, Operating Practices Where Protective System Signals are Bypassed

1. R-79-10-01, Item IV.B, Temporary Alteration Control Form

In report No. R-79-10-01, NSRS recommended that temporary alteration control form 6266 be revised to require the review of the Plant Operations Review Committee (PORC) prior to the installation of temporary alterations. Form 6266 was an attachment of DPM N73011, "Control of Temporary Alterations and Use of the Temporary Alteration Order." This DPM was cancelled and incorporated into the October 6, 1982 revision of the Operational Quality Assurance Manual (OQAM). Form 6266 therefore became an attachment to part II, section 6.4, of the OQAM. The form has been revised to require review of safety-related temporary alterations prior to installation except in emergencies. This item is closed.

2. R-79-10-01, Item IV.C, Closure of Main Steam Tunnel Doors

This item was initially reported in NSRS report No. R-79-10-01 and subsequently discussed in report Nos. R-80-12-BFN, R-81-10-BFN, and R-82-11-BFN. The temperature in the steam tunnels could not be maintained at the desired level with the steam tunnel doors (door between the steam tunnel and the reactor building) closed. The open doors provided additional ventilation that aided in cooling the steam tunnel space. Modifications to the steam tunnel duct work and steam line installation had apparently proven unsuccessful in lowering the steam tunnel temperature an adequate amount since the doors were observed in the open position during this review.

The latest response from POWER on the subject stated, "Review of the FSAR and analyses by EN DES indicated that no credit is taken for the main steam tunnel door as a barrier and that the high energy line break analysis for IE Bulletin No. 79-01B did not consider this door to act as a barrier to steam release into the reactor building." NSRS has reviewed the high energy line break analysis performed by EN DES and concurs with the EN DES conclusion that it is acceptable to operate the plant with the steam tunnel doors in the open position. The bases for this position are:

- o The blow-out panels between the steam tunnel and turbine building will blow to provide the appropriate relief for the steam in case of a steam line break even if the steam tunnel doors are open.
- o The environmental conditions under which the equipment in the affected area of the reactor building must function are less severe than a postulated break of the

4-inch HPCI steam line break which had been previously analyzed and evaluated. This item is closed.

3. R-79-10-01, Item IV.E, Clarification of Technical Specification Note Relating to Inoperability of Temperature Switches

NSRS recommended that NUC PR submit a revision to the BFN Technical Specifications to clarify the intent of inoperable temperature switches as used in table 3.2.A of the Technical Specifications. Different interpretations could be made to determine when the main steam lines should be isolated because of inoperable instrumentation. The Technical Specifications have been revised. Notes 11 and 12 were added to table 3.2.4. Note 11 states, "A channel may be placed in an inoperable status for up to four hours for required surveillance without placing the trip system in the tripped condition provided at least one operable channel in the same trip system is monitoring that parameter." Note 12 states, "A channel contains four sensors, all of which must be operable for the channel to be operable." This satisfies the NSRS concern, and the item is closed.

4. R-79-10-01, Item IV.G, Logging of Emergency Conditions

NSRS recommended that NUC PR establish a requirement that the initiation and termination of each emergency condition under which normal administrative controls for temporary alterations could be bypassed be logged in the shift engineer's log. NUC PR took the position that all equipment, procedural, and administrative conditions that lead to an emergency condition are routinely logged. The entries can be used to reconstruct plant conditions along with recorded plant parameters. A jumper log is maintained for all installed electrical jumpers. PORC reviews all temporary alterations not covered by approved procedures prior to installation except those installed under the emergency condition provision. All temporary alterations installed during emergencies are reviewed by PORC on or before the next working day. NSRS has concluded that these controls are adequate to assure conservative implementation of the emergency condition provision. This item is closed.

B. Memorandum Report on Chlorine Accident Dated December 10, 1979

1. Recommendations 1 and 2, Upgrade the Control Bay HVAC System

Recommendation 1 suggested that the BFN control bay HVAC system control logic should be upgraded to provide automated sensing and isolation features to prevent exposure of the control bay operators and equipment if chlorine, smoke, or high temperatures are present at the control bay air in-

units in a safe shutdown condition from backup control rooms should the main control room become uninhabitable.

Based upon the evaluations performed by NUC PR, EN DES, and NRC and the existence of applicable Emergency Operating Instructions, NSRS concurs with the NUC PR decision not to upgrade the control bay HVAC. These items are closed.

2. Recommendation 3 - Program to Monitor BFN-3 Selected Control Bay Equipment Deterioration after the Chlorine Accident

POWER reported in reference Vi.C.19 that samples of residues on surfaces were collected at 17 locations in the unit 3 control bay on July 3, 1979 (approximately one month after the chlorine release accident). These locations were selected to represent vulnerable control bay materials that are used in critical applications. These samples were analyzed for chloride concentrations, and the results of the analyses indicated residual chloride contamination levels well below those that would degrade "Lexan" or stainless steel. POWER has determined that during the event, concentrations of chlorine in the control bay never approached levels that would initiate degradation of "Lexan" and stainless steel.

During this review NSRS interviewed supervisory personnel from the electrical and instrumentation maintenance and engineering sections to determine if any equipment failure in the control bay had been attributed to exposure to chlorine during the accident. The interviews indicated that these supervisors were unaware of any control bay equipment that had failed as a result of exposure to chlorine.

Based upon the actions taken by POWER and the interviews with plant supervisory personnel concerning equipment failure, NSRS determined that no further action was required. This item is closed.

C. Report No. R-80-03-NUC PR, Shift Technical Advisor (STA) Program

1. R-80-03-NUC PR, Item III.A.1, Initial Training and Training Documentation

NSRS recommended that written instructions be provided to require written examinations and acceptance criteria subsequent to STA training. Documentation of the STA training was also recommended.

A formal training program has been developed and implemented for the STA program. DPM N79A15, "Shift Technical Advisor,"

takes. Recommendation 2 suggested that POWER and EN DES evaluate the feasibility and cost of providing an emergency air cleanup mode of operation for the BFN control bay HVAC system.

On April 28, 1980 Design Change Request BF-DCR No. D-2113 was issued requesting EN DES to upgrade the control room isolation and ventilation per recommendations 1 and 2 as stated in the respective NSRS report. In addition, NUC PR made the decision to discontinue the use of liquid/gaseous chlorine for raw water system asiatic clam and slime control and to remove all liquid chlorine from the plant site. A temporary treatment method utilizing liquid sodium hypochlorite (NaOCl) which represents essentially no threat to control room habitability was employed. This treatment method is currently being used, and NUC PR plans to make the temporary system permanent. DCR 2113 was subsequently cancelled, and a proposed DCR (P2688) requesting only the installation of chlorine sensors was issued.

Subsequently, habitability of the units 1, 2, and 3 control rooms was evaluated by NUC PR, EN DES, and NRC against criteria provided by NRC in item III.D.3.4 of NUREG-0737. Based upon the information provided by IVA, NRC concluded that the BFN control room acceptability met the requirements in NUREG 0737, Item III.D.3.4, "Control Room Habitability," and will provide safe, habitable conditions within the control room under normal and accident radiation and toxic gas conditions. Proposed DCR P2688 was cancelled as it was determined that there was no threat to control room habitability from any identifiable source of chlorine.

POWER further indicated to NSRS in reference VI.C.4 that an additional review of the NSRS safety concerns which were not covered by the review requirements of NUREG-0737 was performed. It was determined that the threat to control room habitability from heat (steam) and smoke from external sources was small.

The following BFN Emergency Operating Instructions have been issued which define actions to be taken by operating personnel if severe conditions should threaten the habitability of the control room:

- ° EOI No. 42, "Control Room Operator Safety Threatened by Release of Hazardous Chemicals or Gases," Revised October 13, 1982 - This instruction defines immediate and subsequent operator actions to be taken in the event of an onsite or offsite release of hazardous chemicals or gases.
- ° EOI No. 34, "Control Room Abandonment" - Revised November 16, 1982 - This instruction defines operator action to shut down operating units and maintain all

describes the program and contains instructions for its implementation. In accordance with the instructions of this procedure, the STA students are evaluated on a continuous basis. Examinations are conducted over each 40 hours of completed training. A score of 70 percent is required for each test. Upon completion of the training program, the students are given a final oral, written, and walk-through examination. A score of 70 percent is required on the written examination for satisfactory completion. Ratings of satisfactory or unsatisfactory are given for the oral and walk-through examinations. Failure to achieve a satisfactory performance on the oral or walk-through will require a reevaluation. Unsatisfactory reevaluation results in termination from the program. Prior to assuming STA duties, the candidate STAs must be certified by the Manager, Nuclear Production; Manager, Maintenance and Engineering; and Personnel Services Staff Supervisor or their designated representatives.

The NCO Personnel Services Staff is responsible for establishing and maintaining the STA training records. These records are filed in the training records section. This item is closed.

2. R-80-03-NUC PR, Item III.A.2, Periodic Evaluation of the STA Program

NSRS recommended that NUC PR periodically evaluate the STA program to ensure that the long-term program satisfied the intent of NUREG-0578. A formal, comprehensive program has been developed and implemented for training STAs and for assuring that they maintain a working knowledge of plant activities. The program consists of 25 to 34 weeks of formal classroom and plant system formalization training. The variation in time is due primarily to varying degrees of knowledge each participant has of plant systems. The maximum of 10 weeks may be required for some STA students to learn the systems well enough to satisfactorily complete the final exams, while others may have sufficient plant experience to enable them to gain the necessary knowledge in less time. NSRS believes that the established program is sufficient to assure that STAs for BFN are adequately trained and qualified on a long-term basis. This item is closed.

3. R-80-03-NUC PR, Item III.A.3, Assurance that Routine Duties do not Interfere with STA Operational Duties

NSRS recommended that NUC PR ensure that routine duties did not interfere with the opportunity for STAs to gain experience in the operation of plant systems. The STA program assures that STAs gain knowledge in interaction and method of operation of plant systems. The STAs do not gain experience in the operation of plant systems since they are not responsible for the operation of the systems. A candidate for STA

must have a bachelors degree in engineering or a physical science. All candidates and trained STAs are assigned to perform an engineering function in some part of the plant and are therefore knowledgeable in some area of the plant. No other duties take precedence over STA responsibilities. Each STA completes a retraining program annually consisting of classroom and simulator training as well as continuous updating on plant procedures. The NSRS reviewer verified that only trained STAs have been assigned to perform STA duties. This NSRS recommendation appears to have been implemented. This item is closed.

4. R-80-G3-NUC PR, Item III.B, STA Cognizance of Operational Status

NSRS recommended that NUC PR take appropriate administrative action to ensure that STAs are cognizant of the operational status of plant systems. The STA program requirement as specified in DPM N79A15 and as implemented in Standard Practice BF 12.12 requires that the STAs on duty be aware of plant and system operational status. The principal work station of the STA is the control room or the technical support center. No other duties take precedence over STA responsibilities. Some of the responsibilities of the STAs that require them to be aware of plant conditions include:

- Advising the shift engineer on off-normal events.
- Preparing scram reports.
- Advising the shift engineer on allowable conditions for inoperable equipment and equipment out of service.
- Evaluating operating core parameters and activity release levels as necessary to correlate assessment of fuel integrity.
- Performing engineering evaluations of continuing adequacy of operational quality assurance and plant operating procedures.
- Maintaining awareness of day-to-day conditions including special posted instructions.
- Maintaining an up-to-date log in the control room and documenting the status of each unit, including significant operating events and conditions.

These instructions and requirements for the STA activities adequately satisfy NSRS concerns in this area. This item is closed.

D. Unnumbered NSRS Report Dated April 30, 1980 - Causes of Reactor Scrams on February 10, 12, and 15 and March 9, 1980

1. Recommendation III.D, Expedite the Installation of the Computerized Transient Event Recording System Discussed in DCR-1802

DCR 1802, issued January 23, 1980, requested a real-time evaluation analysis and monitoring system (REAMS) to provide for the acquisition of plant data at an accelerated rate. This data could be used to enhance scram analysis. Procurement plans for the REAMS equipment were cancelled in January 1981 because of plans to upgrade the process computer equipment to comply with requirements of NUREG-0696, "Functional Criteria for Emergency Response Facilities." DCR 2491 requesting upgraded process computer systems for each of the three BFN units was issued November 17, 1982 and approved on May 16, 1983. Installation is scheduled to begin for unit 3 in October 1983 and for units 1 and 2 during subsequent refueling outages. When installed, the new process computers should provide enhanced scram analysis capabilities thus providing similar applicable capabilities as those requested in DCR 1802. This item is closed.

E. Report No. R-80-07-BFN, NSRS Review of Contamination Control

1. R-80-07-BFN-01, Plant Decontamination Program

NSRS recommended that a formal procedure defining the decontamination program at BFN should be established and should include as a minimum a statement of goals, specific criteria, assignment of responsibilities and authority, and description of the specific function of the health physics staff and other personnel involved in the program. POWER's initial response for this item (reference VI.C.6) indicated that the following actions had been or would be taken to fully implement an effective decontamination program at BFN:

- ° The plant organization had been restructured putting the laborers and janitors in a section under the supervision of a newly created plant manager.
- ° A health physics technician would be dedicated to contamination control.
- ° A division procedure defining a program for C-Zone control would be prepared by November 1, 1980.
- ° A quarterly report would be submitted to NSRS until the program was successful.

From a discussion with senior plant managers and the Health Physics and Building Services supervisors, review of division and BFN documents, and plant tours, NSRS determined the following:

- ° The plant organization had been restructured putting the laborers and janitors in a section under the supervision of the Building Services Supervisor. The organization for the decontamination program consisted of a dedicated crew of approximately 12 to 20 laborers (number fluctuated depending upon refueling outages) supervised by two decontamination crew foremen who in turn reported to the Building Services Supervisor through a general foreman.
- ° A health physics technician had been dedicated (full time) to contamination control and was assisted when needed by a second technician.
- ° Division procedures had been issued defining methods to be used for recovery from spills of radioactively contaminated liquids (DPM N81E4) and chemical cleaning or decontamination of plant equipment or systems (DPM N73E2). However, a division procedure defining a program for C-Zone control had not been issued.
- ° Quarterly reports were submitted to NSRS until a goal of 125 C-Zones had been achieved.
- ° No formal plant procedure existed that included a statement of goals, specific criteria, assignment of responsibilities and authority, and description of specific functions of the health physics staff and other personnel involved in the program.
- ° The current number of C-Zones had been reduced to a total of 105 by the end of May 1983.
- ° The two operating units (units 2 and 3) were very clean, and the number of C-Zones had been minimized.
- ° The health physics personnel made inspection tours each day for the purpose of C-Zone control and issued maintenance requests as needed to clean up contaminated areas. Informal reports to their supervisors were submitted.
- ° The present plant management was dedicated to a good C-Zone control program and worked hard at enforcing the policy.

It was clear that the functional C-Zone control program at BFN was effective and working well. This can be attributed to the fact that the present senior plant management was dedicated to minimizing C-Zones within the plant. However, a formal procedure defining the decontamination program had not been established as recommended by NSRS in the original

report. The functional program should be formalized in division and BFN documents to ensure its continued success over the years as plant management changes. This item remains open until such documents have been issued.

F. Report No. R-80-12-BFN, Routine Review - June 9-13, 1980

1. R-80-12-BFN-04, Install Protective Enclosures for Instrument Panels

NSRS had recommended that NUC PR install protective enclosures around certain instrument panels having sensitive instrumentation. This concern was based on repeated trips of BFN-2 in 1980 which could have been initiated by unidentified personnel. The recommendation was to be implemented by ECN P0039, which was scheduled for work on all units at BFN during 1983-84. This review involved verifying the status of work performed in accordance with ECN P0039. It was determined that ECN P0039 had been cancelled; DCR 2825 had been written to replace the ECN, and it was subsequently cancelled. Two more DCRs had been written. DCR 2877 had been written and included more panels which were to be protected by enclosures. DCR 2881 had been written and involved "key card" entry to the protected panels. No work has been performed to date, and personnel interviewed at BFN did not have the priority schedule for completion of work. This item remains open pending verification of completion at a future date.

2. R-80-12-BFN-08, EECW Flow Verification

NSRS had identified EECW flow deficiencies as an item of continuing and considerable safety concern. NUC PR's efforts to develop measures to correct or mitigate the conditions causing low flow rates to EECW components had been noted previously. A concern had been expressed regarding flow rates for the emergency diesel coolers. In a followup review, NSRS report No. R-82-11-BFN, the reviewer was told that modifications to implement immediate improvements to the EECW system (ECNs L-1970 and P0083) had been deferred from the fall of 1982 outage agenda due to priority commitments to the NRC. These ECNs were desirable to upgrade flow performance as well as reduce exposure and man-hour requirements imposed by accelerated testing (once per six weeks, two days per test) required to maintain system performance at an acceptable level. The reviewer concluded that the EECW flow concerns were being addressed acceptably based on the information received. However, the item was left open in the R-80-12-BFN report pending verification of completion of work.

This review consisted of discussions with site personnel pertaining to the progress of the implementation of ECNs L-1970, P0083 and others connected with the EECW flow verification. ECN L-1970, which removes all carbon steel

pipings, valves (except header isolation valves), and fittings 4 inches and smaller that are safety related and replaces them with type 316 stainless steel, has been partially completed on units 1 and 2. ECN P0083, which is to replace the RHM pump seal coolers, has been completed on unit 3 and has been partially completed on unit 1. This progress, along with the continuing EECW flow monitoring efforts and evaluations by NUC PR personnel, indicates that NSRS concerns are being adequately addressed. This item is closed.

G. Report No. R-80-13-BFN, Special Review of Incidents and Activities Conducted to Resolve Deficiencies in Control Rod Drive System Performance

1. R-80-13-BFN-09, Modifications to Scram Discharge Instrument Volume

Part of this item had been closed in NSRS report R-82-11-BFN. The remaining part that had not been closed was the recommendation that NUC PR should consider a means to monitor the scram discharge volume (SDV) drainage flow rate, such as by periodically closing the scram discharge instrument volume (SDIV) drain valve. The intent of this recommendation was to monitor for unusual SDV drainage rate into the SDIV and to subsequently determine how well the SDIV drains into the clean radwaste (CRW) system. This was considered necessary as the June 28, 1980 event on unit 3 at BFN involving the failure of 76 control rods to properly insert was determined to be caused by a buildup of water in the SDV which for some reason had failed to drain properly through the SDIV to CRW. The initiating cause of this event has never been determined.

A review of BFN documents and discussions with the BFN cognizant nuclear engineer for the CRD system were conducted. From the review and discussion, the following were determined:

- ° An amendment was made to section 4.3.F.1.a of the BFN Technical Specifications that permitted intermittent closing of the SDIV drain and vent valves for testing.
- ° BFN Technical Instruction BF TI 20, "Scram Discharge Fill Time," was written and issued to provide the cognizant nuclear engineer for each unit with a record of scram discharge volume fill time during each scram. The record of the change in fill times over a period of operating time was to be reviewed by the cognizant nuclear engineer for the CRD system. Using this, test drainage rates from the SDV into the SDIV could be determined and trended.
- ° The BF TI 20 scram discharge fill time test was not being performed.

- No periodic testing was being performed to monitor for unusual SDV drainage rates.
- No periodic testing was being performed to determine how well the SDIV was draining into the CRW system.
- All modifications to the CRD system determined necessary to prevent recurrence of the June 28, 1980 event had not been made.

The intent of this part of the recommendation had not been met. As a minimum, the BF TI 20 testing which requires data reduction of information available from each scram should be performed. Data from past scrams for each unit should be reduced and normal or expected SDV drainage rates determined for each unit. Data should be reviewed for trends that indicate problems with SDV drainage rates.

This item remains open until past data has been evaluated and the BF TI 20 testing program has been implemented.

H. Report No. R-81-08-BFN, Management Review of Office of Power and Office of Health and Safety

1. R-81-08-BFN-18, Temporary Alteration Control Program

This item involved the large number of alterations in effect at BFN during the management review. NSRS asked NUC PR to review the temporary alteration control program and provide NSRS with a schedule for full implementation of the program. Discussion with NUC PR personnel had indicated agreement that the temporary alterations should be reviewed and removed where practical. For those that could not be removed, an unreviewed safety question determination should be made and DCRs prepared as applicable. POWER responded that on June 7, 1982 there were 527 outstanding temporary alteration control forms (TACFs), ten of which had associated DCRs. As of August 30, 1982 there were approximately 370 outstanding TACFs, 70 of which had associated DCRs. The estimated completion date was December 31, 1983. During this review it was found that there were 249 outstanding TACFs, 206 of which had associated DCRs. Most of the remaining 43 TACFs that had not been dispositioned involved special cases that were expected to be resolved in the near future. NSRS concluded that appropriate action was being taken with regard to the temporary alteration control program. This item is closed.

2. R-81-08-BFN-34, Closure of ECNs

The review of procedures for handling DCRs/ECNs had originally failed to identify a formal, documented means to inform EN DES when a modification was "field complete" and all affected drawings were issued "as constructed."

NSRS report No. R-82-11-BFN concluded that the concern was the responsibility of EN DES, not NUC PR. This item was closed with NUC PR and had been monitored for EN DES action as directed in LR 4.02. Revision 12 of EP 4.02 had been issued and adequately addressed the NSRS concerns. Further, BFN Standard Practice BF 8.3 formally addressed means for the BFN plant superintendent to notify the EN DES project manager that ECNs were "field complete" and all drawings were "as constructed." This item is closed.

3. R-81-08-BFN-38, Requirements and Commitments Matrix

This item was initially identified in the management review of POWER (R-81-08-BFN) and subsequently discussed in R-82-11-BFN. A recommendation was made that NUC PR develop a matrix or an alternative system to define regulatory requirements and TVA commitments pertinent to each nuclear plant along with the basis for the requirements and commitments and the method of satisfying them. In the response to R-82-11-BFN, NUC PR stated, "Preliminary matrices were completed October 1, 1982 showing the relationship between requirements, division-level procedures, and plant implementing procedures." The response also indicated that further development and refinement of the matrices would be an ongoing process.

During this review a representative sample of the matrices was examined. The matrices of requirements and commitments in the TVA Topical Report were essentially completed and approved. Those associated with regulatory guides and industry standards were either complete or in final draft. Matrices of requirements in the POWER quality assurance manual were being prepared. It was also noted that BFN site personnel had developed a matrix showing division-level requirements, the plant-level procedure that implemented each requirement, and the section responsible for the implementation of each requirement. This system was not complete, but it contained a significant number of requirements and was being updated as time permitted. The NSRS concern in this area has been satisfied. This item is closed.

4. R-81-08-BFN-45, Special Work Permit

a. SWP-Routine Timesheets - Need and Enforcement (Item 2 of Recommendation R-81-08-BFN-45)

The original item recommended that the need for the timesheet requirements associated with the SWP routines should be evaluated and based upon the evaluation either canceled or enforced. It had been observed that personnel were not signing in and out nor recording their radiation doses as required by the controlling procedure (RCI-9). It had subsequently been determined that the timesheets were needed for dose trending and

tracking but that the procedure was too cumbersome to be enforced. The decision had been made to restructure and improve the SWP system at BFN.

RCI-9, "Special Work Permit-Routine," and RCI-10, "Special Work Permits," had been combined into a new comprehensive RCI-9, "Special Work Permit, Special Inspection Permit," which had been issued for implementation at BFN on June 22, 1983. As the title of the revised RCI-9 implies, the "SWP-Routines" had been replaced by the "Special Inspection Permit (SIP)." The SIP is a form that can be used by the health physics supervisor to authorize qualified personnel to perform routine inspections, radiological surveys, valves operations, and minor repairs or adjustments not involving the opening of radiologically hazardous components or systems in specific areas of the plant containing radiological hazards. This should effectively reduce the administrative workload associated with the SWP. The SIP could be issued for periods of up to one year.

The revised RCI-9 required those personnel entering areas on an SIP authorization to sign in and out and record their doses on supplementary timesheets similar to the SWP-Routine requirements of the superseded RCI-9. As the revised RCI-9 was in the early stages of implementation, this item remains open until proper implementation has been demonstrated.

b. Reindoctrination Training for Authorized SWP-Routine Users (Item 4 of Recommendation R-81-08-BFN-45)

The original item recommended that a reindoctrination training program in the proper procedures and limitations associated with SWP-Routines be established and presented to all personnel authorized plant access under RCI-9. The revised RCI-9 requires formal initial training of potential SIP user personnel before being authorized SIP privileges. Annual retraining is required for continued use. The safe use of the SIP is dependent in part upon a good training and retraining program as the responsibility of radiological protection is placed somewhat on the user. As this program was in the early stages of implementation, this item remains open until proper implementation has been demonstrated.

5. R-81-08-BFN-53, Radiological Hygiene Branch Formal Review of Purchase Contracts

The original item recommended that NUC PR should include the Radiological Hygiene Branch in the formal review process for purchase by the Central Office of

submitted bid proposals for radwaste services or equipment having radiation exposure or contamination potential. POWER's response in reference VI.C.25 indicated that the NUC PR Radwaste Management Group was designated for coordinating all contract purchases for services and equipment for radioactive waste treatment at all operating nuclear power stations. Radiological impact on plant operation was evaluated during this coordination process. If a significant radiological impact was possible, coordination was to be established with the Radiological Hygiene Branch before the contract was awarded. However, the Radiological Hygiene Branch activities had been transferred to the Office of Power. This item remains open until the review process, including formal assignment of responsibilities for this activity, has been verified by NSRS.

#### V. PERSONS CONTACTED

<u>Name</u>	<u>Org./Job Title</u>	<u>Attended Entrance Meeting</u>	<u>Contacted During Review</u>	<u>Attended Exit Meeting</u>
Andrews, W. E.	Quality Engr. Branch, NUC PR		X	
Burnette, A. L.	Asst. Operations Supervisor, BFN			X
Burns, R. E.	Instrument Unit Supervisor, BFN		X	
Cargill, E. M.	Asst. H.P. Supervisor, BFN		X	
Chinn, T. L.	Compliance Sect. Supervisor, BFN		X	
Clement, A. L.	Chemical Unit Supervisor, BFN		X	
Coffee, J. A.	Acting Plant Superintendent, BFN	X		X
Crabb, P. A.	Engr. Assoc., Field Services, BFN		X	
Davis, M. W.	Plant Training Officer, BFN		X	
Green, J. A.	Building Services Supervisor, BFN		X	
Jackson, J. M.	Asst. Elec. Maint. Section Supervisor, BFN		X	
Jordan, T.	Asst. Operations Supervisor, BFN		X	
McCaleb, A. W.	Assist. Inst. Maint. Section Supervisor, BFN		X	
McCloud, D. O.	Quality Engr. Branch, NUC PR		X	
McKeown, E. G.	Engineer, NUC PR		X	
Metke, R. C.	Special Projects, BFN		X	
Mims, D. C.	Acting Engr. Sect. Supervisor, BFN		X	
Nave, E. D.	Nuclear Engr Sect. Supervisor, BFN		X	
Norman, M. I.	Engineer, NUC PR		X	
Oaks, K. S.	Engineer, NUC PR		X	
Parker, R. C.	Chief, Quality Engr. Branch, NUC PR		X	
Phifer, J. R.	Safety Sect. Supervisor, BFN		X	
Roberts, W. A.	Compliance Engineer, BFN		X	
Rozear, C. J.	Compliance Engineer, BFN		X	X
Simpkins, W.	Student, STA Program, BFN		X	
Sorrell, A. W.	H.P. Supervisor, BFN		X	
Swindell, J. E.	Asst. Plant Superintendent, BFN			X
Wingo, M. D.	Nuclear Engineer, BFN		X	