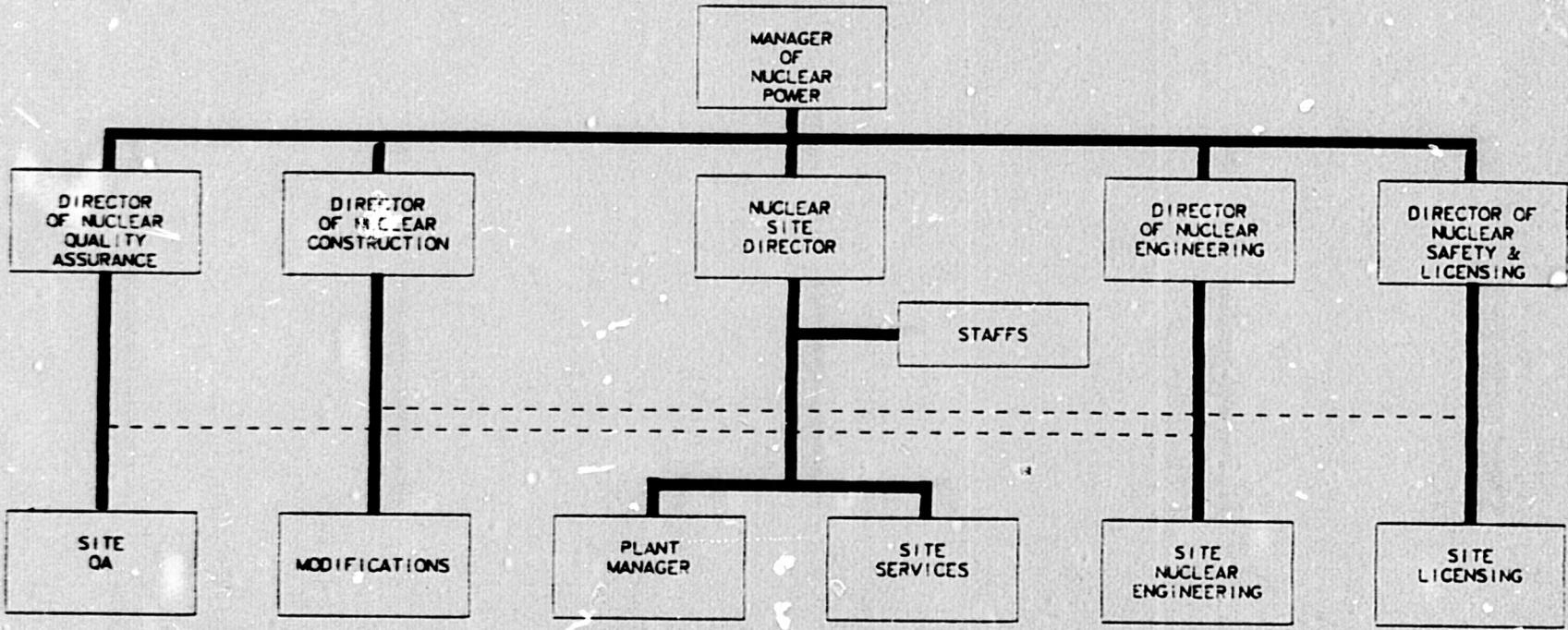


TVA's nuclear site personnel are divided into a line organization for operation of the plant and major support departments, each of which have responsibility for a discrete type of function. In general the functions of the support departments at each site parallel those of the nuclear headquarters departments but serve the needs and requirements of one particular site.

As is depicted in Figure 3, each of TVA's nuclear headquarters departments has responsibility for providing technical direction and assuring the technical adequacy of the activities performed by its support departments at TVA's nuclear plants. The Nuclear Site Directors and Nuclear Project Managers have the authority and responsibility for the safe conduct of all activities at the site, especially the planning, scheduling, coordinating, and project management activities, to achieve TVA's overall goals. This structure assures that nuclear site departments receive uniform technical direction from nuclear headquarters which specifies how an activity should be performed, while giving the Nuclear Site Directors and Nuclear Project Managers sufficient authority to determine what site activities should be undertaken and when they should be accomplished.



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TVA SITE ORGANIZATION
(OPERATIONS)
FIGURE 3

REVISION 1

As a part of the implementation of the above organization, the Manager of Nuclear Power has initiated a program to assure that lines of authority and responsibility are clear and that personnel understand their duties and responsibilities, that they have the resources to get their jobs done, and that they know they are accountable for the quality and timeliness of their work. This program consists of writing position descriptions for each of TVA's nuclear directors, managers, and specialists. These position descriptions will formally define the duties and responsibilities for which an individual will be held accountable and against which performance will be measured. These descriptions will be reviewed and subject to approval by a review team composed of senior TVA and consultant personnel who will report to the Manager of Nuclear Power. The purpose of this review will be to identify any weaknesses, duplications of effort, or missing functions in the position descriptions and to assure that key interface responsibilities between groups are properly defined.

The Manager of Nuclear Power will provide guidance to the organization through the issuance of a Policy and Organization Manual that will set forth policy in major areas and define the organizational structure (in command chart format) together with the charter for each key functional component of the organization. The implementation of these policies will come through the Nuclear Procedures System described in Section VI.

In the event a conflict develops into a situation where the site and technical or corporate organizations cannot agree on an issue, the Manager of Nuclear Power has the ultimate responsibility for the resolution of the conflict. The administrative system of policies, job descriptions and procedures is intended to minimize the number of technical and management disagreements that the Manager of Nuclear Power is required to settle. It is recognized that policy clarifications and changes will be needed as the system evolves and these are reserved to the Manager of Nuclear Power.

E. Improvements in Specific Functional Areas

TVA expects that consolidation of responsibility for functional areas within individual nuclear departments will result in substantial improvements in quality assurance, engineering, training, and licensing. Accordingly, each of these areas is discussed in more detail below.

1. Quality Assurance

In the past, TVA's nuclear quality assurance (QA) and quality control (QC) functions have not been effectively unified under a single department. For example, TVA had one nuclear QA organization which was responsible for

conducting corporate-level audits; it had another nuclear QA group within the construction organization which was responsible for conducting inspections of construction activities; it had another nuclear QA group within engineering which was responsible for conducting audits of engineering activities, and it had still other QA groups at each nuclear site responsible for QA/QC activities at the site. As a result, TVA's nuclear QA activities were not performed under a consistent set of programs and procedures, and TVA's nuclear QA groups did not report to a high level of management within TVA (thereby diminishing the visibility and importance of these activities to management). TVA has taken several steps to improve this situation.

In the new organization, all Quality Assurance and Quality Control functions report to the Director of Nuclear Quality Assurance. The responsibility for the various quality assurance functions throughout the Office of Nuclear Power, including QA/QC activities related to engineering, construction, and operations, has been consolidated under the Director of Nuclear Quality Assurance. This includes QC inspections of construction and maintenance/modifications activities.

The Director of Nuclear Quality Assurance is responsible for developing, maintaining and assuring the implementation of a standardized nuclear quality assurance program for the design, construction, and operation of TVA nuclear facilities that meets TVA policy and regulatory requirements. The TVA Quality Assurance Topical Report (TVA-TR75-1A) was revised, upgraded and submitted to the NRC on May 1, 1986, to describe the then current organization and QA procedure system. A follow-up revision is currently underway to fully reflect the organization as approved 5/23/86. Additionally, the NQAM, which currently addresses all ONP activities but allows separate QA programs to exist, is being reorganized to provide a corporate NQAM. This action supports TVA's commitment to implement a strong centralized QA program and will, in the short-term result in a corporate QA requirements volume defining generic requirements and procedures and an operations QA volume that defines the requirements for operating plant QA procedures. This interim structure allows the ONP organizations to conform their individual QA manuals in the short-term while the long-term upgrade and standardization program is carried out. The long term program will result in a standardized nuclear Quality Assurance Program for TVA which, while providing for necessary site differences will permit only those site variances to the standard program that do not degrade the

intent of the original program. Each such variance will require the approval of the Director of Nuclear Quality Assurance.

The responsibility and authority to implement the ONP quality programs is divided among five functions all reporting to the Director Nuclear Quality Assurance. These are: Nuclear Quality Audit and Evaluation Branch, Procurement Quality Assurance Branch, Site Quality Managers, Quality Systems Branch, and Technical Support Branch.

In the reorganization of quality assurance functions, the Director of Nuclear Quality Assurance has assumed the responsibilities for both QA and QC. The following actions are planned to enhance the procedure system that addresses the Division of Nuclear Quality Assurance (DNQA) activities.

- a. Where required, additional QA or QC procedures will be written to cover new functions.
- b. DNQA internal QA and QC procedures will be consolidated into a single set of procedures.

- c. Functions that will be performed uniformly throughout the Division of Nuclear Quality Assurance will be identified and the multiple procedures that now exist for these functions will be replaced by a single procedure applicable to all organizations.

As new procedures are developed throughout the Office of Nuclear Power, the Division of Nuclear Quality Assurance will review and concur in those that implement Quality Assurance requirements.

These actions will help elevate the importance of quality assurance and increase management oversight and direction of nuclear QA activities. These actions will also help assure that nuclear QA/QC personnel are independent of production personnel, that lines of responsibility and authority for nuclear QA/QC activities are clearly defined, and that nuclear QA/QC activities are performed consistently.

2. Engineering

In the past, problems and confusion have developed with respect to TVA's nuclear engineering activities since both the headquarters nuclear engineering organization and TVA's nuclear plants performed engineering activities. TVA has taken action to remedy this situation.

- a. Responsibility for all nuclear engineering activities has been consolidated in the Division of Nuclear Engineering. This includes the following responsibilities that have in whole or part been performed by TVA's nuclear sites in the past:
- Contracting for outside engineering services and managing of engineering service contracts.
 - Directing multi-discipline teams created to investigate and resolve engineering issues (such as fire protection and environmental equipment qualification) associated with individual plants.
 - Acquiring, or creating, and maintaining the technical record of the as-built facility and maintaining the record current with changes in the plant.
 - Preparing and approving modification packages that change the design and configuration of the plant.

By placing responsibility for these and other engineering activities within the Division of Nuclear Engineering, TVA has established clear lines of authority and responsibility for nuclear engineering activities. This will help assure that these activities will be properly performed.

- b. Engineering support for TVA's nuclear plants has been further strengthened by establishing a Project Engineering function within the Division of Nuclear Engineering for each plant.

The responsibility for engineering for each nuclear plant has now been assigned to a Project Engineer who will be located at the plant site. The Project Engineer has been authorized the engineering resources to perform the plant-specific engineering work. A project team has been assigned to report to the Project Engineer. This project team is principally located at the plant site and is comprised of engineers from each of the engineering disciplines, assigned to the project through a matrix organization. Work and resources are being shifted from the central staff to the project teams as necessary to implement the project engineering concept.

The Project Engineer has direct and close control over the work produced for that project and ensure that technical direction provided by the chief discipline engineers is followed for project work. The Project Engineer typically has two or more assistant project engineers who are each responsible for a particular portion of the overall project work.

- c. In addition, to strengthen the project engineering concept, a new project services discipline has been established in DNE. This discipline will be headed by a Chief Project Services Engineer, who will be responsible for such services as planning, cost engineering, budgets, and project administration for DNE activities. These services will be performed on project with resources provided by the Chief Project Services Engineer who will monitor and control their performance.

- d. To assure that the Nuclear Quality Assurance Program is applied to TVA nuclear engineering and design activities, the Engineering Assurance organization was established within the Division of Nuclear Engineering.

The Manager of Engineering Assurance reports to the Director of Nuclear Engineering on all matters other than Quality Assurance. In matters relating to the implementation of the Nuclear Quality Assurance Program, Engineering Assurance reports to and takes direction from the Director of Nuclear Quality Assurance.

The functions performed by Engineering Assurance include the following:

- 1) Develop, issue, maintain, and control quality-related nuclear engineering procedures

which establish the systems used to implement the Nuclear Quality Assurance Program for engineering and design activities.

- 2) Ensure that engineering procedures interface effectively with organizations outside of the Division of Nuclear Engineering.
- 3) Provide training for DNE employees in the use of quality-related Nuclear Engineering Procedures.
- 4) Conduct program audits at regular intervals to assess compliance to Nuclear Engineering Procedures and the engineering/design aspects of the Nuclear Quality Assurance Program.
- 5) Conduct in-depth technical audits, utilizing engineering expertise outside of Engineering Assurance as necessary to assess the technical adequacy of engineering work.

Deficiencies noted during Engineering Assurance audits are reported to the Director of Nuclear Engineering and the Director of Nuclear Quality Assurance. Follow-up reviews are performed by Engineering Assurance to verify implementation of effective corrective action measures.

The Manager of Engineering Assurance has the authority to stop engineering work that does not conform to established requirements. Additional functions performed by Engineering Assurance include review and approval of documents used to procure engineering services, assuring adequate QA implementation by these suppliers, trending of engineering related deficiencies, and centralized monitoring of engineering related problems to ensure that potentially generic implications are considered and action implemented as required.

3. Nuclear Training

In the earlier organization, there were inconsistencies in the commitment to training, the implementation of training programs, and training performance at the sites. This condition indicated the need for a strong, centralized training program with uniform standards, motivated managerial involvement at the site level, and the support of top management.

In the new organization, the Director of Nuclear Training reports directly to the Manager of Nuclear Power and is responsible for the development (including accreditation) and conduct of training programs for nuclear plant operations, quality and management systems, engineering and technical support (including maintenance, radiological

control, radiochemistry, safety and fire protection), and the nuclear plant simulators through the Division of Nuclear Training (DNT). Under this structure, the Nuclear Site Director ensures that site personnel are properly qualified and receive the necessary training while the responsibility for development and execution of the training programs rests with the Director of Nuclear Training. Nuclear Training is the corporate training organization which provides central direction, planning, and allocation of resources for the training of personnel at each of the sites.

Site training organizations have been established at Browns Ferry (BFN), Watts Bar (WBN), and Bellefonte (BLN). The Power Operations Training Center (POTC) located at Sequoyah provides the training for Sequoyah (SQN) personnel and serves as the corporate training headquarters as well. Permanent training centers are presently under construction at BFN and WBN. The BFN simulator is currently operational at the POTC. It is tentatively scheduled to be moved to the new Browns Ferry training center in December 1986 and ready for training by February 1987. The WBN simulator is under construction and is tentatively scheduled to be ready for training by July 1988. The BLN simulator has already been moved to the new training facility at BLN.

4. Licensing

TVA has had a nuclear licensing group at its corporate headquarters for a number of years, and it also had licensing groups at each of its nuclear plant locations which were essentially independent of the headquarters group. In its SALP V Report on TVA's nuclear activities (Ref. 1), the NRC stated that "there are weaknesses evident in [TVA's] licensing support as indicated by incomplete submittals, inadequate technical evaluations and justifications, late submittals, failure to report to the NRC (10 CFR 50.72), and repeated [NRC] requests for additional information and supplementary responses to Notice(s) of Violation." TVA is taking steps to improve its management oversight and direction of nuclear licensing activities in order to remedy this problem.

TVA has assigned the responsibility for the management of all TVA nuclear licensing, compliance, and regulatory functions for its nuclear activities to the Director of Nuclear Safety and Licensing, who reports directly to the Manager of Nuclear Power. The Division of Nuclear Safety and Licensing (DNSL) will have both a corporate staff for central program management and a site licensing staff reporting to the Director of Nuclear Safety and Licensing but providing services to the Nuclear Site Director. Thus,

the Director of Nuclear Safety and Licensing is responsible for central control (and consistency) of the TVA nuclear licensing process, including implementing policies, developing programs and strategies, and preparing documentation for licensing activities. The DNSL also is responsible for the implementation of TVA's Nuclear Safety policy and programs which establish the Independent Safety Engineering Group (ISEG) and the Nuclear Operating Experience Review Program.

By centralizing its nuclear licensing activities under a single Director who reports directly to the Manager of Nuclear Power, TVA has increased its management oversight of and emphasis on nuclear licensing and is providing a means for assuring timely, complete, and technically adequate licensing submittals for all of its plants.

F. Conclusions

TVA has restructured its organization to consolidate all responsibility for its nuclear activities within a single organization headed by the Manager of Nuclear Power. TVA has also established functional nuclear divisions and staff departments which have the responsibility and authority for providing technical direction for and assuring the technical adequacy of all TVA nuclear activities within their respective

functions, including site activities. As a result, TVA has taken action which provides assurance that lines of responsibility and authority for nuclear activities are clear, that the necessary coordination and communication among nuclear organizations occurs, and that TVA's nuclear activities are subject to centralized management direction and control.

V. RESTORING EMPLOYEE CONFIDENCE IN TVA NUCLEAR MANAGEMENT

A. Introduction

The NRC and some members of Congress have received expressions of concern from TVA employees regarding the quality of TVA's nuclear activities and expressions of fear that TVA would take reprisals against them if they expressed their quality concerns directly to TVA management. Additionally, TVA has received many employee concerns through its own system. These employee concerns indicate that many TVA employees have lost confidence in TVA's nuclear management and its ability to ensure that TVA's nuclear activities are properly conducted.

TVA has and is taking several steps to remedy this problem. As discussed above, TVA has installed a new nuclear management team to provide leadership and direction for TVA's nuclear program. Furthermore, as is discussed in the following sections, TVA has and is improving its nuclear management systems and is also taking steps to improve various programmatic elements of its nuclear program. After these actions have had an opportunity to be effective, they should contribute greatly to a restoration of employee confidence in TVA's nuclear management.

Additionally, TVA has taken [or plans to take] several steps which are directly intended to restore employee trust in TVA nuclear management and to instill an atmosphere which is conducive to quality. In general, these steps consist of (1) establishing a system in which employees can express their concerns regarding quality or safety to TVA's nuclear management without fear of reprisal and with assurance that their concerns will be fully addressed, and (2) establishing a policy which promotes quality, ensuring that TVA's employees are aware of this policy, and taking disciplinary action against those who act contrary to this policy. Each of these is discussed below.

B. Establishing A System To Receive Employee Concerns

In 1985, TVA established the Special Program at Watts Bar for resolving employee concerns. This program was to identify, investigate, and resolve concerns related to the construction of the Watts Bar Nuclear Plant. Given the large number of concerns received from this special program, TVA has also established a TVA Office of Nuclear Power Employee Concern Program for all of its nuclear activities. Each of these programs is described below.

1. Special Program at Watts Bar for Resolving Employee Concerns

In 1985, TVA augmented its existing employee concern program with the Employee Concern Special Program (ECSP) designed to elicit any employee concerns related to construction of Watts Bar. This program consisted of hiring an independent contractor, Quality Technology Company (QTC), to interview all TVA employees associated with Watts Bar and establishing a hot line to receive concerns from other TVA employees. Measures were taken to protect the confidentiality of employees who expressed concerns. Responsibility for conducting or overseeing investigation of the substance of safety concerns was in the Nuclear Safety Review Staff (NSRS) which, at that time, reported to the Board of Directors. The NSRS role has been restructured and investigations of employee concerns are now continuing under the direction of the Watts Bar Employee Concern Task Group (ECTG).

Following completion of the initial interview process, the QTC contract first was extended and then reduced in scope when TVA determined that a more effective process for resolving concerns was needed. QTC has been required to retain and store the original QTC files but has turned over copies of those files to the NRC. QTC and the NRC are also ensuring continued confidentiality of employee concerns. In order to identify safety-related issues to TVA without breaching confidentiality agreements, the NRC is examining

each QTC file and deleting information from the QTC file documents which could reveal the identity of a confidential source. Once a QTC record has been screened and sanitized by the NRC, the sanitized record (containing only the safety-related issues) is provided to the TVA Inspector General (IG) for a second screening to assure confidentiality is maintained. Once the TVA IG screening is complete, the safety-related issues raised by a concerned individual are transmitted to the ECTG for evaluation and resolution.

As a result of the Special Program, employee concerns regarding TVA's nuclear plants and corporate offices have been identified. Many of these concerns have already been investigated. The next phase of the Special Program is the resolution of identified concerns.

a. Resolution of Concerns

Although most of the concerns related to Watts Bar remain to be resolved, TVA has evaluated the resolution process (including NRC comments resulting from its inspection of the program) to determine whether any improvements could be made. As a result, TVA has refined its program to emphasize: (1) in-depth review of concerns, (2) more rapid resolution of issues, (3) development of generic treatment

of issues, (4) identification of trends and root causes, (5) increased efficiency, (6) improved management control, and (7) more effective closeout. The improvements which have been made in this area are discussed below.

TVA is reviewing concerns individually and collectively as appropriate to determine an appropriate resolution for each concern. In addition, in order to provide for evaluation of related concerns and determine whether a generic concern exists, TVA has divided all concerns into the following nine categories: Quality Assurance (QA)/Quality Control (QC); Material Control; Management and Personnel issues; Intimidation, Harassment, and Misconduct; Operations; Welding; Construction; Industrial Safety; and Engineering. The Inspector General will investigate concerns that involve intimidation, harassment, misconduct, and wrongdoing. Each of the remaining eight categories of concerns has been assigned to a review group of senior TVA and/or contractor personnel for further evaluation. In general, the review groups perform the following functions:

- As appropriate, the review groups divide the concerns into subcategories and establish an approach and schedule for reviewing the concerns in each subcategory.

- The review groups will then review each category or subcategory of concerns, determine whether any generic condition exists, and evaluate the significance of any such condition. The review groups will also determine whether any concerns or group of concerns represent a condition which might be reportable to NRC pursuant to 10 CFR 50.55(e), 10 CFR 50.72, 10 CFR 50.73, or 10 CFR Part 21. Such conditions will be appropriately documented, referred to the responsible TVA department for further evaluation and reporting if necessary, and tracked as part of the Special Program.
- After the review group identifies a generic condition, the appropriate site department will perform a root cause analysis of each such condition and will require TVA line management to evaluate the condition and recommend action to remedy the root cause of the condition. The review group will then determine whether or not the corrective action is acceptable. If the review group and line management cannot agree as to the corrective action, their differences will be documented and escalated to the Manager of Nuclear Power for resolution. The responsible TVA nuclear departments will then implement the corrective actions.
- The review groups will prepare a report which will form the basis for closing the specific concerns in each

category. The closeout reports will include a section outlining TVA's planned actions to resolve the concerns.

Additionally, the Office of General Counsel or the Inspector General will investigate and report separately on cases involving wrongdoing, misconduct, intimidation or harassment.

Final plans have not yet been made for the dissemination of various reports under the Employee Concern Program.

TVA has also established a Senior Review Board to review the categorization of the concerns, the root cause analyses, the proposed corrective actions, and the closeout reports to assure that these activities are adequately performed. The Senior Review Board is comprised of nuclear industry experts from outside of TVA who will report to the Manager of Nuclear Power.

b. Reporting of Results

TVA plans to make the results of the Watts Bar Employee Concern Special Program (WBECSPP) available to all present TVA nuclear employees. Present plans call for one summary report and eight category reports. The Office of General Counsel or the Inspector General will

investigate and report separately on cases involving wrongdoing, misconduct, intimidation or harassment. The summary report will be available on request to interested parties as well as to former TVA nuclear employees who left the nuclear program between March 31, 1985, and the date that the report is issued.

Through this Special Program, TVA has taken steps to ensure that employee concerns related to construction of Watts Bar will be evaluated and that any conditions adverse to quality identified as a result of these concerns will be corrected. As part of the evaluation, TVA will review the concerns to determine whether any generic problems exist and will perform a root cause analysis for the purpose of developing action to preclude recurrence of the problems.

2. TVA's Office of Nuclear Power Employee Concern Program

TVA has received numerous employee concerns through the Special Program at Watts Bar. As a result, TVA has established an Employee Concern Program for its entire Office of Nuclear Power.

TVA has a policy which encourages each employee to report any concern he may have to his supervisor and up through line management if necessary. Line management has responsibility for the quality and safety of activities

under its control and for the resolution of any problems which may arise in those activities. Accordingly, if the managers are to function effectively, they should be aware of employee concerns regarding the quality of the activities for which they are responsible. TVA also has a policy which prohibits intimidation, harassment, or reprisal against employees who raise concerns. Nevertheless, TVA realizes that, for a variety of reasons, some employees may be reluctant to report their concerns to supervisors and line management. This will be especially true until employee confidence in TVA's nuclear management is restored. Consequently, TVA is providing alternative means for employees to express their concerns.

TVA has established a new Employee Concern Program to receive and evaluate employee concerns regarding any of its nuclear activities. This program takes advantage of the lessons learned from the Special Program at Watts Bar and reflects the long-term needs of TVA. The Employee Concern Program as described in TVA's May 2, 1986 submittal to the NRC (Ref. 4) is summarized below.

- a. The new Employee Concern Program is headed by an Employee Concern Program Manager, who reports directly to the Manager of Nuclear Power. The Employee Concern Manager has full-time Site Representatives reporting to

him from each nuclear site and major corporate nuclear location. Each location will utilize standard procedures, documentation, and recordkeeping, and will contribute to a common data base of information regarding employee concerns.

- b. The Site Representatives are responsible for receiving and investigating employee concerns, ensuring resolution of the concerns, providing feedback to the employees who express concerns, and documenting this process. Employees can express concerns to the Site Representatives through several different means. This includes mail-in forms, telephone calls, walk-in interviews, and mandatory exit interviews for transferring or terminating employees. Any employee who expresses a concern may request that his identity be kept confidential. A special orientation program for all employees has been completed to inform them of how the program works.

The Site Representatives will periodically determine employee understanding of and satisfaction with the Employee Concern Program through several means, including interviews and questionnaires. Additionally, information regarding individual employee concerns will be input into a computerized data base, and evaluations

will be performed to identify any trends and the collective significance of the concerns, to identify the root causes of any adverse trends, and to develop appropriate corrective action.

- c. Unlike the Special Program established for Watts Bar, the new Employee Concern Program will not utilize an independent contractor such as QTC, but instead will rely upon a system which reports to TVA's nuclear line management. This arrangement has several advantages. First, it unifies the responsibility for receipt, investigation, and resolution of the concerns in one group, thereby allowing for more timely and effective corrective action. Second, it ensures that the organization which is responsible for the quality and safety of its activities is also responsible for ensuring that the quality concerns of its employees are identified and resolved. Finally, by having the Employee Concern Manager report directly to the Manager of Nuclear Power, it provides employees with a means for reporting their concerns to a high-level within TVA's nuclear organization if, for any reason, the employees do not believe that their supervisors would properly respond to expressions of concern.

- d. In addition to TVA's Employee Concern Program, TVA's new Inspector General operates a telephone hot line and has other means to receive allegations and concerns. Since the Inspector General reports directly to TVA's Board of Directors, TVA employees have a method of expressing concerns which are separate from the Office of Nuclear Power. Additionally, the Inspector General investigates those employee concerns that the Office of Nuclear Power has determined involve intimidation or harassment and appropriate misconduct concerns. Employees are also free to go directly to the Board or outside TVA and express any concerns to the NRC and other governmental bodies.
- e. In sum, TVA encourages employees to express their concerns so that prompt and effective corrective action can be taken. In particular, by establishing the Employee Concern Program, TVA has provided a means by which employees can present concerns in confidentiality to a high level of nuclear management, while ensuring that line management has sufficient authority to obtain resolution of and corrective action for the concerns. TVA has confidence that this Program will help restore employee trust in TVA's nuclear management.

C. Instilling an Atmosphere Conducive to Quality and Safety

For many years, TVA has had an official policy which encourages employees to express differing views, with special emphasis on encouraging views associated with the safety of design, construction, and operation of TVA's nuclear plants (see Appendix 6). TVA's Board of Directors reiterated this policy in a policy statement issued in April of 1985 to all TVA employees. Specifically, the Board stated that:

The TVA Board members, individually and collectively, have a personal, as well as a corporate, commitment to the protection of public health and operation of TVA nuclear facilities. Each employee involved in our nuclear effort has a responsibility for the proper and safe execution of all TVA job functions. In addition, as a matter of policy, TVA actively solicits comments from all employees about matters that may have safety implications. You should be aware of the ways to share your views about safety with TVA management and the NRC. We want to assure you that you are encouraged to come forward and that there will be no retaliation if you report something which you believe is not right. It is only through your help that we can maintain the "safety-first" standards of TVA.

TVA continues to support this policy, and it believes that the themes expressed in this policy statement are essential to the safety of TVA's nuclear program.

Given the large number of employee concerns expressed outside the normal chain of management (especially expressions of fear of reprisals for raising concerns related to quality), it is

apparent that the Board's policy has not always been taken to heart by every TVA nuclear manager and supervisor. In response, TVA is taking action to ensure that (1) safety and quality are the paramount consideration of every TVA employee, (2) that each individual takes responsibility for the quality and safety of the activities performed by him or under his direction or review, and (3) that employees are not intimidated from or harassed for expressing concerns.

First, TVA is taking steps to ensure that its employees understand TVA's commitment to this policy. The new Manager of Nuclear Power, Mr. White, has met and will continue to meet with TVA's nuclear managers and employees to impress upon them that safety and quality are of paramount importance and that each individual will be held responsible for the quality of his work. In particular, Mr. White has clearly stated that he will not tolerate intimidation or harassment of any kind. TVA's nuclear managers have been instructed to reinforce this policy in meetings with their staff.

Second, TVA's policy will be strictly enforced. Any individual who engages in intimidation or harassment of any kind will be subject to swift and appropriate disciplinary action to the full extent permitted by law. Additionally, each individual will be held accountable for the quality of his work and of the work of those whom he supervises, and TVA will take appropriate action with respect to those individuals whose work quality does not conform with applicable standards.

In sum, TVA has a policy which promotes quality and safety, and it has taken steps to ensure that this policy is understood by TVA employees and is strictly enforced. Together with the other improvements which TVA is implementing, these steps will help restore the confidence of employees in TVA's nuclear management.

VI. IMPROVEMENTS IN TVA'S NUCLEAR MANAGEMENT SYSTEMS AND PROGRAMS

A. Introduction

As discussed above, the primary cause of the problems in TVA's nuclear program was a lack of a sufficient number of experienced nuclear managers who could provide the necessary leadership and direction of TVA's nuclear activities. TVA has established a new nuclear management team to cure this problem.

Another cause of the problems in TVA's nuclear program (which is related to and derives from TVA's lack of a sufficient number of experienced nuclear managers) relates to TVA's nuclear management systems and programs. This section of the report identifies the problems in TVA's nuclear management systems and programs, and it discusses the steps which TVA has taken and will take to correct those problems and improve TVA's nuclear management.

B. Increasing Upper Management Awareness of Nuclear Activities

Some of the problems in TVA's nuclear program have been recurring or have persisted for a significant period of time without effective corrective action being taken. To a large extent, this situation was attributable to a lack of management awareness of the problems and a lack of management involvement

in formulating corrective action. In order to provide assurance that TVA's management will be aware of significant problems and involved in their resolution, TVA is taking the steps discussed below.

1. Briefings and Reports for the Board of Directors

The TVA Board of Directors is being kept informed of developments and problems in TVA's nuclear program through a number of independent sources. First and primarily, the Board is kept informed through the Manager of Nuclear Power's direct reporting relationship with the Board. Second, the Board is kept informed through TVA's new Inspector General. Also, TVA has arranged for INPO to conduct an annual corporate evaluation of its program. The Board will be directly involved in receiving INPO's findings. Each of these sources is discussed below.

- a. The Manager of Nuclear Power has the responsibility to keep the TVA Board of Directors informed of the performance of TVA's nuclear plants. This is accomplished through various types of briefings of the Board, including the following:

- The TVA Board and General Manager are now receiving detailed monthly performance briefings from the Manager of Nuclear Power or his designee on progress toward specified goals and objectives for the nuclear power program. Potentially significant nuclear safety issues are highlighted in these briefings. Special attention also is given to programmatic issues such as current employee concerns and quality assurance issues noted by NRC.
- In addition to the formal briefings described above, Mr. White typically has had and expects to have informal conversations with one or more members of the Board several times per week. These conversations represent a significant means for informing Board members of developments in TVA's nuclear program.
- The Manager of Nuclear Power informs the Board of nuclear plant events and other nuclear developments warranting its attention as they occur.

In sum, these briefings assure that TVA's Board of Directors is provided with sufficient information to enable the Board to take whatever action may be necessary to correct any problems which may arise in TVA's nuclear program.

- b. The TVA Board has also established an Office of Inspector General, which is independent of the remainder of TVA's organization and which reports directly to the Board of Directors. The plan approved by the Board of Directors for the creation, structure, authority, and function of the Office of Inspector General is provided in Appendix 5A.

The duties and responsibilities of the Inspector General as approved by the TVA Board are set forth in Appendix 5B.

The TVA Office of the Inspector General (OIG) is a unique organization within TVA with special responsibilities and functions. The TVA Inspector General is responsible for conducting and supervising audits and investigations of all TVA activities, providing leadership in promoting efficiency and effectiveness within TVA, detecting and preventing waste, fraud, and abuse, and informing the Board of Directors and Congress of problems and necessary corrective actions.

The office consolidates TVA's audit and investigative functions under a single official, free from any undue influence or constraints.

The OIG's functions and responsibilities help promote employee confidence in the management of the TVA nuclear program by serving as a "safety valve" for managers and workers. Any employee may bring his or her concerns directly to the Inspector General, where allegations of violations of law or regulation, waste, fraud, abuse, harassment, or other misconduct will be investigated and resolved by persons independent of TVA line management.

Employees may also express their views through the Office of Nuclear Power's employee concerns program, but if they are dissatisfied with the results of that process, they can go to the OIG.

Any employee concerns or complaints that relate to violations of laws or regulations, waste, fraud, abuse, harassment or other misconduct and which are made or referred to the OIG are investigated independently and the results of the investigation provided to the ONP. In those cases which require corrective action, timeframes are established by the Inspector General within which to make necessary corrections. Failure to make necessary corrections in a timely manner is reported to the Board and to Congress through the Inspector General's semiannual report and other means.

With respect to employee concerns, the OIG's activities contribute to a workplace environment in which TVA employees are free to express their views without fear of harassment or intimidation. The OIG will investigate and report on acts of reprisal, harassment, or intimidation and nuclear program managers or employees who have committed such prohibited activities will be subject to disciplinary measures, up to and including termination.

The OIG also audits the effectiveness of ONP's employee concerns program, and thus ensures that employee concerns are handled effectively by ONP.

Finally, as OIG addresses various individual allegations and complaints and audits ONP's employee concerns program, it endeavors to identify trends, generic problems and systemic deficiencies, including past management shortcomings, that are contributing to TVA's present difficulties.

TVA has hired Norman A. Zigrossi as the Inspector General. Before being hired as the Inspector General, Mr. Zigrossi was a special agent in charge of the Federal Bureau of Investigation's field office in Washington, D.C. Mr. Zigrossi is well qualified to act as TVA's Inspector General.

- c. In addition to the previous measures, TVA has arranged for the Institute of Nuclear Power Operations (INPO) to conduct an annual corporate evaluation of its nuclear program until it is clear that the actions taken to strengthen our management and improve TVA's nuclear performance are working. INPO has agreed to do this. The Board will be directly involved in receiving INPO's findings.

- d. Finally, TVA is strengthening the structure and organization of the already existent Nuclear Safety Review Boards (NSRB) by adding at least 10 outside experts as NSRB members. Although these Boards report to the Manager of Nuclear Power, all minutes of their meetings and their reports will be provided to the Board of Directors.

2. Briefings and Reports for the Manager of Nuclear Power

The Manager of Nuclear Power will be kept informed of developments and problems in TVA's nuclear program through a number of primary mechanisms:

- a. As the manager with responsibility for the day-to-day management of TVA's overall nuclear program, the Manager of Nuclear Power is in frequent contact with

his staff and line managers and therefore routinely learns of any significant developments and problems in the program.

In this regard, it may be noted that Mr. White, the Manager of Nuclear Power, has a practice of periodically observing the activities being performed by personnel throughout his organization and of talking with these individuals to elicit concerns, comments, suggestions, and other information from them. As a result, Mr. White has an informal source of information regarding the nuclear program which is independent of his line managers and staff.

- b. The Manager of Nuclear Power has assigned and is assigning an individual from nuclear headquarters to each of TVA's nuclear plants. These individuals monitor activities at the plants and provide independent reports to the Manager of Nuclear Power regarding these activities.
- c. The Manager of Nuclear Power holds regular meetings with his staff and line managers and receives regular reports from them identifying any significant developments or problems. Policies and directives are being developed which will cover these meetings and reports.

- d. The Nuclear Managers Review Group (NMRG) has been established and reports to the Manager of Nuclear Power on matters designated by the Manager of Nuclear Power for review and investigation. The NMRG was formed to realign the functions of the previous Nuclear Safety Review Staff as part of the overall restructuring of the ONP.
- e. Finally, the Manager of Nuclear Power receives reports from the Nuclear Safety Review Boards (NSRBs) which conduct independent reviews of TVA's nuclear safety-related operating activities, programs, and events. The NSRBs are being enhanced by the addition of 10 outside consultants/advisors.

3. Conclusions

In order to enable upper management to provide timely and effective corrective action for significant problems in TVA's nuclear program, TVA has taken several steps to keep upper management informed of problems as they develop. Most importantly, consolidation of TVA's nuclear organization has and will continue to facilitate the flow of information up to TVA's senior management, and the hiring of additional experienced nuclear managers will provide TVA with the managerial resources to develop timely

and effective corrective action for nuclear activities. To provide further assurance that TVA's Board of Directors is adequately informed of any significant problems which may develop, it receives regular briefings and reports from different sources (Manager of Nuclear Power, Inspector General, INPO annual corporate evaluations, and the NSRBs). Similarly, the Manager of Nuclear Power remains aware of developments in TVA's nuclear power program through his day-to-day management of the program, regular meetings and reports from his staff and line managers, sources outside of line management and his staff, and through reports from the NSRB.

C. Improving Management Systems and Controls

Some of the problems in TVA's nuclear program involved insufficient programs and procedures, a lack of prior planning and integration of nuclear activities, and a failure to satisfy prior commitments. Each of these indicates a weakness in the management systems and controls being utilized in support of TVA's nuclear program. The sections below describe the steps which TVA is taking to improve its nuclear management systems and controls.

1. Improvements in Programs and Procedures

As is discussed above, TVA's nuclear organization was not centralized until recently, and TVA's nuclear plants utilized programs and procedures which at times were different from those being used at the other plants. As a result, each of TVA's plants was not able to take full advantage of the lessons learned at the other plants or in the nuclear industry at large, nor was TVA able to receive the maximum benefit from its resources.

By consolidating its nuclear organization and assigning various headquarters departments with responsibility for the technical adequacy of functional areas, TVA is able to utilize its available resources more fully to develop programs applicable to all of TVA's nuclear plants. Furthermore, by utilizing a central nuclear organization, TVA is able to monitor developments at each of its nuclear plants and the industry as a whole in order to determine whether any changes are warranted in the manner in which TVA's nuclear activities are conducted.

a. Nuclear Procedures Systems

TVA is developing a new system of ONP Policies, Directives, Standards, Procedures and Instructions to govern its nuclear activities, including activities at its nuclear plants. To manage this effort, TVA has hired M. H. Sturdivant. She is responsible for managing the restructuring of the ONP procedures system and she has been given adequate resources for accomplishing this effort. As discussed below, the actual development of the procedures will be performed on both a short-term and long-term basis.

- 1) In the short-term, TVA will prepare Standards for developing directives and procedures for each of the headquarters departments and sites and will assure that those corporate-level nuclear procedures required to control corporate level activities which support the safe operation of each nuclear plant are in place. Also in the short term, the existing nuclear procedures at each site will be revised to correct documented deficiencies, reflect the new organization and reflect installed plant modifications. Whenever possible, the above procedures will be based upon those provisions of existing procedures which provide effective control of the activities in question. The end result will

be approved procedures required for the startup, operation and support of the respective nuclear plant.

- 2) In the long-term, TVA is planning to develop an integrated Nuclear Procedures System to aid the administration of the ONP activities. The restructured ONP procedure hierarchy will consist of five (5) levels of documentation designated as Policies, Directives, Standards, Procedures, and Instructions. The ONP Policies, Directives, and Standards are upper-tier documents which establish ONP management position and interface responsibilities, authorities, and uniform methods for implementing requirements. The lower-tier Procedures and Instructions will represent a detailed extension of the upper-tier documents by delineating the responsibilities, authorities, requirements and actions to be accomplished at the user level.

b) Programmatic controls

The establishment of this procedure system ensures ONP centralized control, technical uniformity, and continuity for the manner in which all corporate and

site departments interface. ONP Policies and Directives will be approved by the Manager of Nuclear Power. ONP Standards will be issued to govern activities to be performed by two or more organizational components where a uniform result is required. The Director to whom responsibility is assigned approves and issues the ONP Standard after obtaining concurrences from those Directors affected by the stipulated requirements. All ONP Directives and Standards which establish and implement the Nuclear Quality Assurance Program will either be approved or concurred with by the Director of Nuclear Quality Assurance. The site procedures and instructions will be governed by ONP Policies, Directives, and Standards. The long-term program to upgrade operating plant procedures is based on the establishment of a management system which will ensure that commitments and requirements are systematically identified and incorporated in the appropriate procedures. A procedure tracking system will monitor the status (i.e. development, review, approval) of each level of documentation within the Nuclear Procedures System. Transition to the new Nuclear Procedures System will be accomplished in a planned and orderly manner.

c. Resources for Implementation

The Nuclear Procedures Staff (NPS) has the responsibility and authority to monitor and direct the development of ONP Policies, Directives and Standards as well as to upgrade ONP Procedures and Instructions for each site. The NPS will ensure that site Procedures and Instructions represent appropriate extensions of the requirements and responsibilities for functions specified in the upper-tier ONP Policies, Directives, and Standards. This will be accomplished by the issuance of ONP Standards which will require that commitments and requirements be systematically identified and incorporated in the site Procedures and Instructions. To facilitate this process controlled information systems are being developed.

The Nuclear Procedures Staff includes, a dedicated procedures staff with counterparts at the sites. The NPS is to be staffed with technical as well as administrative personnel under the direction of Manager, Nuclear Procedures Staff. The NPS will support the line organizations in developing the nuclear procedures system by providing guidance coordinating the review and approval process, scheduling, tracking, editing, verifying, and human

factoring of procedures. This charter for the NPS will exist throughout the short-term upgrade effort as well as on a permanent basis.

d. Conclusion

As a result of the foregoing improvements, ONP will ultimately have a set of nuclear directives and procedures to control activities throughout the ONP headquarters and at each of its nuclear sites.

2. Improvements in Planning and Integration of Nuclear Activities

As discussed above, TVA did not have a consolidated nuclear organization prior to 1985. Furthermore, TVA did not have a corporate-level nuclear office assigned the responsibility of planning, scheduling, and budgeting the activities of TVA's various nuclear departments. As a result, the efforts of TVA's nuclear departments were not always integrated or performed in a timely manner.

TVA has taken steps to remedy this problem.

- a. As part of the consolidation of its nuclear organization, TVA has established the Planning and Financial Staff. This staff will provide the overall direction to nuclear sites and headquarters departments in the execution of planning, scheduling, and financial

activities of TVA's nuclear activities. Areas where the central staff will improve upon existing practices include:

- Development of a consistent approach to planning, scheduling, and budgeting throughout ONP. This approach will provide for enhanced work scope definition through a more structured process of estimating work activities, as well as integration of the efforts of all groups into common schedules. Scope definition and schedule integration efforts are currently underway at the nuclear sites.
- Establishment of internal controls to ensure that the planning, scheduling, and financial activities provide meaningful, accurate information to management.
- Development of a process for performing analysis of schedule and budget information so that trends can be established and variances identified to management for corrective action where appropriate.

- Creation of reports tailored to various levels of management, including summary level reports for the Manager, ONP.

In addition to providing overall direction for planning and budgeting, the Planning and Financial Staff will conduct periodic assessments of nuclear sites and headquarters departments to verify that the implementation and execution of planning, scheduling, and budgeting programs are effective and consistent with corporate policy and direction.

- b. Responsibility for developing and maintaining nuclear management information systems has been consolidated into the Division of Nuclear Services. The intent is to provide adequate central control to ensure coordination and compatibility as well as system's integrity while, at the same time, permitting divisions to have a feasible level of autonomy in system operation.

The Division of Nuclear Services will establish a system of data bases that can be utilized by the responsible ONP department, for example, the system as presently foreseen would have data bases for design control, configuration control, technical information,

erection information, testing, maintenance, and operations support. The foundation of the design of the integrated data bases will be the concept of sharing computer-stored data among cooperating organizations. The design will be guided by the following principles:

- 1) A given item of data, such as letter received from the NRC or the status of a particular corrective action or a contract being awarded, will be recorded only once. This saves time by eliminating duplicate efforts and minimizes data entry costs.
- 2) Master file data will be recorded and stored in a single location with appropriate backup. This would eliminate the duplicated files and the errors that occur when attempts are made to maintain the same data on several data bases. It also reduces the cost of storage and inconsistency that occurs in reports that are drawn from separate sources. Whether the "single location" is a central computer or a node in a network of computers will depend on several considerations.
- 3) Controlled access will be maintained to prevent unauthorized file changes while making data available to all with a "need to know."

The Division of Nuclear Services will maintain the integrated nature of the information systems and of the data bases by controlling changes to the computer programs and the associated procedures, by controlling the implementation of additions and enhancements to the computer software, and by executing the computer code with appropriate backup, recovery, and security functions. The organizations that supply input data will be responsible for the authenticity, accuracy, and completeness of their inputs, and, in most cases, for the entry of that data into the systems. The nuclear management information systems will have interfaces to other TVA corporate systems such as Division of the Comptroller's new Accounting Information System.

The integrated data bases that are part of the nuclear management information systems will be available to serve operations, engineering, construction, quality assurance, and corporate nuclear management. Use of such centralized systems with the appropriate security, management controls, availability, and reliability will help assure that nuclear management, at all levels, will have sufficient information about the activities of each nuclear department in TVA.

c. In sum, TVA has established organizations responsible for managing a centralized nuclear information system and for planning, scheduling, and financial control of TVA's nuclear activities based on input provided by responsible managers. These actions will provide assurance that TVA's nuclear activities will be adequately integrated and performed in a timely manner.

3. Improvements in Commitment Tracking

Over the years, each organization within the TVA nuclear program (including each of the nuclear plants) has tracked NRC commitments for which it was responsible using its own managerial and system tracking capability. This resulted in a multitude of commitment tracking systems and no centralized system. Thus some commitments were not adequately tracked and closed by TVA. TVA has taken steps to remedy this situation.

TVA has created a Corporate Commitment Tracking System (CCTS) which is administered by the Director of Nuclear Safety and Licensing. The CCTS is an integrated data base for tracking all formal commitments made to NRC in order to assure that licensing commitments will be met.

In order to maintain management control over commitments and ensure that commitments are documented and tracked, TVA is requiring that commitments be documented in formal correspondence to NRC or other reports required by regulation such as Licensee Event Reports (LERs). It is also intended that those verbal agreements made by authorized ONP managers in the course of day-to-day working relations with the NRC will be documented and tracked on CCTS where the agreement commits the TVA organization to a future action. A procedure will be written to identify the authorized ONP managers and provide methodology for handling these verbal agreements.

Licensing personnel make the initial entry on the CCTS which identifies each commitment made to the NRC. When the action required to fulfill the commitment has been completed, a verification and completion form is sent to licensing, and the appropriate entry is made in the data base.

The responsible TVA management personnel are kept advised of the status of the open CCTS items. The Director of Nuclear Safety and Licensing or a designee's approval is required to change a forecast response or completion date for resolving a commitment.

Supervisors responsible for implementing commitments tracked in CCTS are also responsible for allocating resources and setting priorities to ensure that commitments are met on time or revised (with appropriate approvals). When unexpected delays threaten completion of commitments on schedule, supervisors are required to inform the Director of Nuclear Safety and Licensing to permit timely notification of the NRC of the revised commitment dates.

The organization which is responsible for implementing an action necessary to fulfill a commitment is required to maintain an up-to-date status of the commitment on the CCTS until the item is closed out. After completion, licensing personnel will close the item in CCTS upon receipt of documentation which verifies completion and thereby justifies closure. Licensing periodically issues a report to the Manager of Nuclear Power showing numbers of commitments made, completed, and closed by each organization. Included in each report is a specific comment on trends observed for each organization responsible for timely closure of commitments.

The commitment tracking systems previously used by TVA's nuclear plants and various nuclear departments have been reviewed to ensure that CCTS includes all open/incomplete commitments made to NRC. The information in the tracking

system which was previously used by licensing (which included commitments being tracked by corporate-level departments) was used as the initial source of information for CCTS. The data in the commitment tracking systems used at each of TVA's nuclear plants are being reviewed to verify that CCTS completely identifies open or incomplete commitments. This review has been completed for the Sequoyah, Watts Bar and Browns Ferry plants, and the CCTS is currently being used for tracking commitments applicable to these plants. A schedule for implementing the CCTS at Bellefonte is being established.

With CCTS fully operational, TVA's nuclear program will have a single commitment tracking system which will be used in all of TVA's nuclear departments and plants. This centralized system will help assure that TVA's commitments to the NRC will be implemented in a timely manner.

4. Conclusions

TVA has taken and will take steps to improve its nuclear management systems and controls by establishing a long-term program to develop an integrated Nuclear Procedures System to direct and/or control activities at TVA's nuclear plants; by centralizing responsibility for

planning, scheduling, and financial control of nuclear activities; by establishing a central management nuclear information system; and by implementing a Corporate Commitment Tracking System. These actions help to assure that TVA's nuclear activities are controlled by corporate-level management, that the activities of each of TVA's nuclear departments are integrated, and that TVA satisfies its commitments to the NRC.

D. Improving TVA's Nuclear Corrective Action Program

During recent years, there have been occasions when TVA has identified problems in its nuclear program but has not corrected those problems in a timely manner, or has not identified and corrected the root cause of the problems in order to preclude their recurrence, or has not evaluated a problem at one nuclear plant to determine whether the same problem is applicable at another nuclear plant. This situation indicates a weakness in TVA's nuclear corrective action program and the management of that program. As is discussed below, TVA is taking several steps to improve its programs and management in this area.