Director of Nuclear Manager's Review Group (Ronald K. Seiberling)- Mr. Seiberling is an INPO employee. TVA has contracted with INPO for Mr. Seiberling's services as Director of Nuclear Manager's Review Group. Mr. Seiberling has more than twenty-five years of nuclear experience, including the positions of Operations and Maintenance Superintendent at Mississippi Power & Light's Grand Gulf Nuclear Plant and INPO Evaluation Team Manager for both site and corporate evaluations.

The Nuclear Manager's Review Group provides independent assessment of the effectiveness of ONP activities, processes and programs associated with design, construction and operation of TVA's nuclear facilities.

Site Director of Browns Ferry (H. P. Pomrehn) - Mr. Pomrehn is an employee of Bechtel Nc[illegible]merican Power Corporation. TVA has contracted with Bechtel for the services of Mr. Pomrehn as Site Director of Browns Ferry. Mr. Pomrehn has more than twenty-six years of nuclear experience, including positions of Project Manager for Bechtel's four-reactor nuclear project in Korea, Project Engineer of the Palo Verde Nuclear Plant, and Deputy Manager of the Division of Business Development for Bechtel.

The Site Director for Browns Ferry is responsible for managing site activities including plant modifications and other site activities to ensure safe, reliable, and efficient restart of the Browns Ferry plant and operation in conformance and compliance with ONP policy and applicable Federal, state, and local regulations. This includes planning, scheduling, coordinating, and providing project direction for the activities of the site support organizations.

Site Director of Watts Bar (George Toto) - Mr. Toto is an employee of Westinghouse Electric Corporation. TVA has contracted for the services of Mr. Toto as the Site Director of Watts Bar. Mr. Toto has more than thirty years of nuclear engineering and project management experience including his most recent position as the Manager of Reactor Mechanical Projects at Westinghouse.

The Site Director for Watts Bar Nuclear Plant is responsible for managing site operations including testing, modification, and other site activities to ensure safe, reliable, and efficient startup of Watts Bar Unit 1 and, when construction is complete, Unit 2.

Following startup, the Site Director is responsible for operations and modification in conformance and compliance with TVA policy and applicable Federal, state, and local regulations. This includes planning, scheduling, coordinating, and providing project direction for the activities of the site support organizations.

d. Resumes

The resumes of each of TVA's key senior nuclear managers (both permanent and acting) are provided in Appendix 4. As is demonstrated by the resumes in Appendix 4 and the summaries provided above, TVA's new management continues to be strengthened and has an outstanding record of nuclear management experience encompassing essentially all facets of design, construction, and operation of nuclear power reactors. These individuals are well qualified to provide the necessary leadership and proper direction for TVA's nuclear activities.

2. Additional Senior Nuclear Managers

a. Deputy Managers Hired

TVA has selected experienced individuals to serve as permanent TVA employees in Deputy positions reporting to key senior management. These individuals include:

- John G. Walker, Deputy Nuclear Site Director of Browns Ferry Nuclear Plant, has twenty-one years of nuclear experience including positions of Bechtel's Project Manager for Enrico Fermi Nuclear Plant Unit 2 and Manager of Operating Plant Services for Bechtel's Ann Arbor Office.

  Mr. Walker assists the Site Director in the direction of activities on the Browns Ferry site.

- Mark B. Whitaker, Jr., a Deputy Director of Nuclear Safety and Licensing, has more than eighteen years of nuclear experience, including positions of Group Manager of Regulatory and Support Services, Group Manager of Engineering and Licensing for South Carolina Electric and Gas Company.

The Deputy Director provides assistance to the Director of Nuclear Safety and Licensing in the management of Nuclear Safety and Licensing programs and activities.

- Michael J. Ray, a Deputy Director of Nuclear Safety and Licensing, has more than eleven years of nuclear experience, including positions of Assistant Vice-President and Manager of Special Projects for Niagara Mohawk Power Corporation.

  The Deputy Director provides assistance to the Director of Nuclear Safety and Licensing in the management of Nuclear Safety and Licensing programs and activities.

- R. W. Cantrell, Deputy Director of Nuclear Engineering, has twenty years of nuclear experience, including positions as Manager, Office of Engineering and Manager of Engineering and Technical Services.

  The Deputy Director provides assistance to the Director of Nuclear Engineering in the management of Nuclear Engineering programs and activities.

- R. C. Parker, Deputy Director of Nuclear Quality Assurance, has more than twenty-two years of nuclear experience, including positions of Assistant Director, Division of Quality Assurance, Watts Bar Site Quality Manager, and Manager of the Technical Support Staff for the Division of Nuclear Power.

  The Deputy Director provides assistance to the Director of Nuclear Quality Assurance in the management of Nuclear Quality Assurance programs and activities.

- Claude Turnbow, Jr., Deputy Director of Nuclear Construction, has more than twenty years of nuclear experience, including a position at Browns Ferry Nuclear Plant under a contract with Bechtel and a position as Manager of Construction in Bechtel's Western Power Division in San Francisco.

  The Deputy Director provides assistance to the Director of Nuclear Construction in the management of Nuclear Construction programs and activities.

- C. G. Robertson, Deputy Director of Nuclear Services, has twenty-one years of nuclear experience, including positions as Acting Director of Nuclear Services and General Manager of Houston Lighting and Power Company's Nuclear Engineering Department.

  The Deputy Director provides assistance to the Director of Nuclear Construction in the management of Nuclear Services programs and activities.

b. Other Loaned Managers

TVA has contracted for several experienced individuals to serve as senior nuclear managers. These individuals include:

- D. M. Lake, Construction Manager, Watts Bar, is an employee of Bechtel North American Power Corporation. TVA has contracted with Bechtel for the services of Mr. Lake in this position. Mr. Lake has more than thirty years of nuclear experience including positions as Field Construction Manager at Calvert Cliffs, Grand Gulf Nuclear project and the Three Mile Isiand recovery project.

The construction manager is responsible for the direction of onsite construction project activities.

- C. D. Lundin, Manager, Welding Project is an employee of Stone and Webster Engineering Company (SWEC). Mr. Lundin has more than eighteen years of nuclear experience, including the position of Chief Engineer, Quality Systems Division for SWEC.

  Mr. Lundin manages the Welding Project, a special organization to improve the overall TVA welding program.

- R. A. Matheny, Manager, Operations Readiness Review Project, is an employee of Westinghouse. Mr. Matheny has more than thirty-three years of nuclear experience including a position of Manager, Startup and Training Department, Westinghouse Nuclear Service Division.

  Mr. Matheny manages the operational readiness review project to assure that each of TVA's nuclear plants is ready for restart or startup at the completion of the restart items on the corrective actions item lists for each plant.

- P. Brewington, Jr., Manager, Contracted Engineering Services, Division of Nuclear Engineering, is an employee of Seehuus and Hart Associates, Inc. Mr. Brewington has more than eleven years of nuclear experience including positions of Assistant Manager for the Strategic Petroleum Reserve, DOE and Director of Clinch River Breeder Reactor Project, DOE.

  Mr. Brewington manages all contracted engineering and technical services under the auspices of the Division of Nuclear Engineering with special emphasis on managing the major architect engineering contracts.

c. Other Senior Nuclear Managers

Table 2 provides a listing of all other senior nuclear managers promoted or hired since October 1985.

3. Ongoing Short-Term Staffing

TVA anticipates that additional experienced nuclear managers will be hired and other changes in managers will be made as TVA's new nuclear management continues its evaluation of TVA's nuclear program.

Several members of TVA's new nuclear management workforce are loaned managers who are obligated to serve TVA for a period of two years. TVA expects that this period of service will be sufficient for these individuals to identify the problems in its nuclear program, to determine what actions are necessary to correct those problems and prevent their recurrence, and to have TVA's nuclear program well on the road to recovery. TVA recognizes that this two year period will not be sufficient to correct all of its problems and it may be necessary to extend the contracts of some loaned managers. However, as is discussed below, TVA expects that this period will be sufficient for it to acquire additional experienced nuclear managers as permanent TVA employees.

B. TVA's Long-Term Actions to Provide for a Sufficient Number of Experienced Nuclear Managers

Several members of TVA's new management workforce are not permanent TVA employees. TVA must make arrangements to replace the loaned managers with experienced nuclear managers who are permanent TVA employees and to upgrade the management skills and experience of the TVA managers. TVA plans to take two actions to accomplish this.

1. Recruiting Program

TVA has begun a nationwide recruiting effort. This nuclear recruiting program is an ongoing program. TVA will continue the recruitment of experienced managers as well as other experienced professionals to serve as permanent TVA employees. Some of the elements of this program are: an aggressive advertising campaign, the use of search firms to identify candidates, additional staff responsible for nuclear recruitment activities, a targeted recruitment effort for selected management positions and a selection process that includes thorough background investigations, and the use of a Management Review Board to review employment selections, promotions, and management assignments for managers.

As mentioned earlier in this section, the statutory limitations on salaries of TVA employees presents significant recruiting and retention difficulties. To address the salary disparity between TVA employees and the private sector of the nuclear industry, the TVA Board of Directors has expanded the scope of incentive pay programs to include a home purchase relocation service and a relocation incentive payment plan. TVA is currently considering other enhancements to improve the compensation plan for selected managers.

TVA believes that these additional pay incentives will facilitate recruiting new employees prior to the expiration of the loaned managers' contracts.

The statutory limits on salaries of TVA employees remains a long-term problem to be solved and TVA does not expect that it will be able to recruit all of the necessary experienced nuclear managers from outside of TVA over the long-term, nor does it expect to retain all of its senior nuclear managers.

Accordingly, as is discussed below, ONP plans to develop a number of experienced nuclear managers from within its own organization. This is a long-term program that has several aspects as follows:

2. Management Development and Training

TVA has a large staff of technically competent individuals, many of whom possess the potential for developing into excellent nuclear managers. TVA intends to develop the managerial potential of the best of these individuals by placing them in responsible positions under the direction and guidance of TVA's senior nuclear management and by implementing a Management Development and Training program that will include the following elements:

- Identification of managerial skill and staffing needs for effective management of the ONP.

- Training and development activities to provide managers at all levels with the skills needed to provide leadership and meet the challenges of managing in the ONP.

- Implementation of Management Development Planning as needed to meet job performance and competency requirements.

- Programmatic changes in the personnel management and performance appraisal processes that support the effective selection, retention and promotion of competent supervisors and managers.

The program will support the Manager of Nuclear Power's philosophy of excellence and emphasize the responsibility and accountability of management for maintaining standards of excellence not only in quality and safety but also in how people and functions are managed.

A Management Training plan has been developed using in-house resources with input and guidance from management

training experts from a utility which has successfully undertaken a similar effort to improve management effectiveness on a major scale. The plan includes training courses covering basic skills and management philosophy for each level of management.

In addition, a Management Development plan will be developed to include such activities as:

- Implementation of individual and organizational training and development plans as needed to support the Manager of Nuclear Power's commitment to stable and effective management of ONP activities.

- Implementation of or improvements to supporting systems for Management Development such as succession planning and performance appraisal.

The long term goal of the ONP management development system is to prepare managers in sufficient numbers and with sufficient skills to assume responsibility at all levels in the ONP, including senior management.

It will address development of the individual manager and development of the management system as a whole in order to address problems with and future needs for managerial effectiveness in ONP.

To assure that these goals are accomplished, TVA has reorganized the management development and training functions. Management development is the responsibility of the Manager of Nuclear Personnel and management training is the responsibility of the Director of Nuclear Training. To coordinate and focus the development of an ONP management training program, TVA has established a position of Manager of Management Training who reports directly to the Manager of ONP.

C. Conclusions

TVA has taken and will be taking additional short-term and long-term actions to increase the number of experienced managers for its nuclear program. Supplementing these actions with the management development courses will provide ONP with the necessary qualified managers to accomplish actions described in this Revised Corporate Nuclear Performance Plan.

TABLE 1

OFFICE OF NUCLEAR POWER KEY SENIOR MANAGERS

Title/Function	Name of Senior Manager	Status, (TVA/Loaned Manager)
Manager of Nuclear Power	S. A. White	Loaned Manager/STEMAR
Deputy Manager of Nuclear Power	C. C. Mason	TVA Employee
Deputy Manager of Nuclear Power	C. H. Fox, Jr.	TVA Employee
Assistant Manager of Nuclear Power	Vacant	
Director, Nuclear Engineering	J. A. Kirkebo	TVA Employee
Nuclear Project Manager, WBN-2	R. A. Pedde	TVA Employee
Site Director/Project Manager, BLN	J. P. Darling	TVA Employee
Director, Nuclear Construction	R. A. Pedde	TVA Employee (Acting)
Director, Nuclear Quality Assurance	N. C. Kazanas	Loaned Manager/GPUN
Director, Nuclear Safety and Licensing	R. L. Gridley	Loaned Manager/GE
Site Director, SQN	H. L. Abercrombie	TVA Employee
Site Director, WBN	G. Toto	Loaned Manager/W
Site Director, BFN	H. P. Pomrehn	Loaned Manager/Bechtel
Director, Nuclear Services	J. L. McAnally	TVA Employee
Director, Nuclear Training	R. J. Johnson	TVA Employee
Assistant to the Manager of Nuclear Power	L. L. Jackson	TVA Employee
Manager, Nuclear Personnel	M. E. Taylor	TVA Employee
Director, Nuclear Managers Review Group	R. K. Seiberling	Loaned Manager/INPO
Manager, Nuclear Information Staff	C. E. Ayers	TVA Employee
Manager, Employee Concern Task Group	W. R. Brown, Jr.	TVA Employee
Manager, Employee Concern Program	E. K. Sliger	TVA Employee
Chairman, Nuclear Safety Review Boards	W. H. Hannum	TVA Employee
Manager, Planning and Financial Staff	S. B. Fisher	TVA Employee
Special Assistant to the Manager of Nuclear Power	T. B. Jenkins	TVA Employee
Manager, Management Training	M. S. Blackburn	TVA Employee

TABLE 2

OTHER SENIOR NUCLEAR MANAGERS

PROMOTED OR HIRED SINCE OCTOBER 1985

Title/Function	Name of Senior Manager	Status, (TVA/Loaned Manager)
Assistant Director Quality Assurance, DNQA	W. E. Andrews	TVA Employee
Branch Chief, Procurement Quality Assurance, DNQA	D. R. Armentrout	TVA Employee
Manager, Radiological Control, DNS	J. H. Barker	TVA Employee
Project Engineer, Watts Bar, DNE	H. B. Bounds	TVA Employee
Chief, Field Services Branch, DNC	R. C. Bradford	TVA Employee
Power Plant Superintendent, Watts Bar	W. L. Byrd III	TVA Employee (Acting)
Manager, Engineering Assurance, DNE	A. P. Capozzi	TVA Employee
Deouty Project Engineer, Browns Ferry, DNE	T. G. Chapman	TVA Employee
Manager, Management Systems, DNS	J. L. Childs	TVA Employee
Manager, Corporate Materials	Tom Chiles	TVA Employee
Unit Superintendent, Browns Ferry	T. D. Cosby	TVA Employee
Chief, Nuclear Fuels Supply Branch, DNS	R. H. Davidson	TVA Employee
Maintenance Superintendent, Watts Bar	H. M. Desousa	TVA Employee (Acting)
Chief, Technical Support Branch, DNE	R. W. Dibeler	TVA Employee
Assistant to the Director, DNSL	J. A. Domer	TVA Employee
Assistant Project Engineer, DNE	H. R. Gavankar	TVA Employee
Assistant Project Manager	G. T. Hall	TVA Employee
Site Licensing Manager, Sequoyah, DNSL	M. R. Harding	TVA Employee

TABLE 2

OTHER SENIOR NUCLEAR MANAGERS

PROMOTED OR HIRED SINCE OCTOBER 1985

Title/Function	Name of Senior Manager	Status, (TVA/Loaned Manager)
Deputy, Modifications Manager, DNC, Sequoyah Nuclear Plant	W. V. Horn	TVA Employee
Site Quality Manager Watts Bar, DNQA	H. C. Johnson	TVA Employee
Site Quality Manager Bellefonte, DNQA	S. Johnson, Jr.	TVA Employee (Acting)
Chief, Project Services Branch, DNE	C. W. Kilgore	TVA Employee
Chief, Quality Systems Branch, DNQA	J. E. Law	TVA Employee
Assistant to Director, DNE	L. L. Lepisto	TVA Employee
Site Quality Manager, Sequoyah, DNQA	L. E. Martin	TVA Employee
Site Licensing Manager, Browns Ferry, DNSL	M. J. May	TVA Employee
Manager, Support Operations, DNE	D. P. McCloskey	TVA Employee
Site Licensing Manager, Watts Bar, DNSL	J. A. McDonald	TVA Employee
Unit Superintendent, Browns Ferry	R. McKeon	TVA Employee
Modification Manager, Watts Bar, DNC	R. C. Miles	TVA Employee
Quality Assurance Manager, Watts Bar, DNQA	J. P. Mulkey	TVA Employee
Director Designee, NMRG	G. R. Mullee	TVA Employee
Plant Manager Sequoyah	L. M. Nobles	TVA Employee (Acting)
Plant Manager, Watts Bar	R. Norman, Jr.	TVA Employee (Acting)
Modifications Manager, Sequoyah, DNC	R. W. Olson	TVA Employee

TABLE 2

OTHER SENIOR NUCLEAR MANAGERS

PROMOTED OR HIRED SINCE OCTOBER 1985

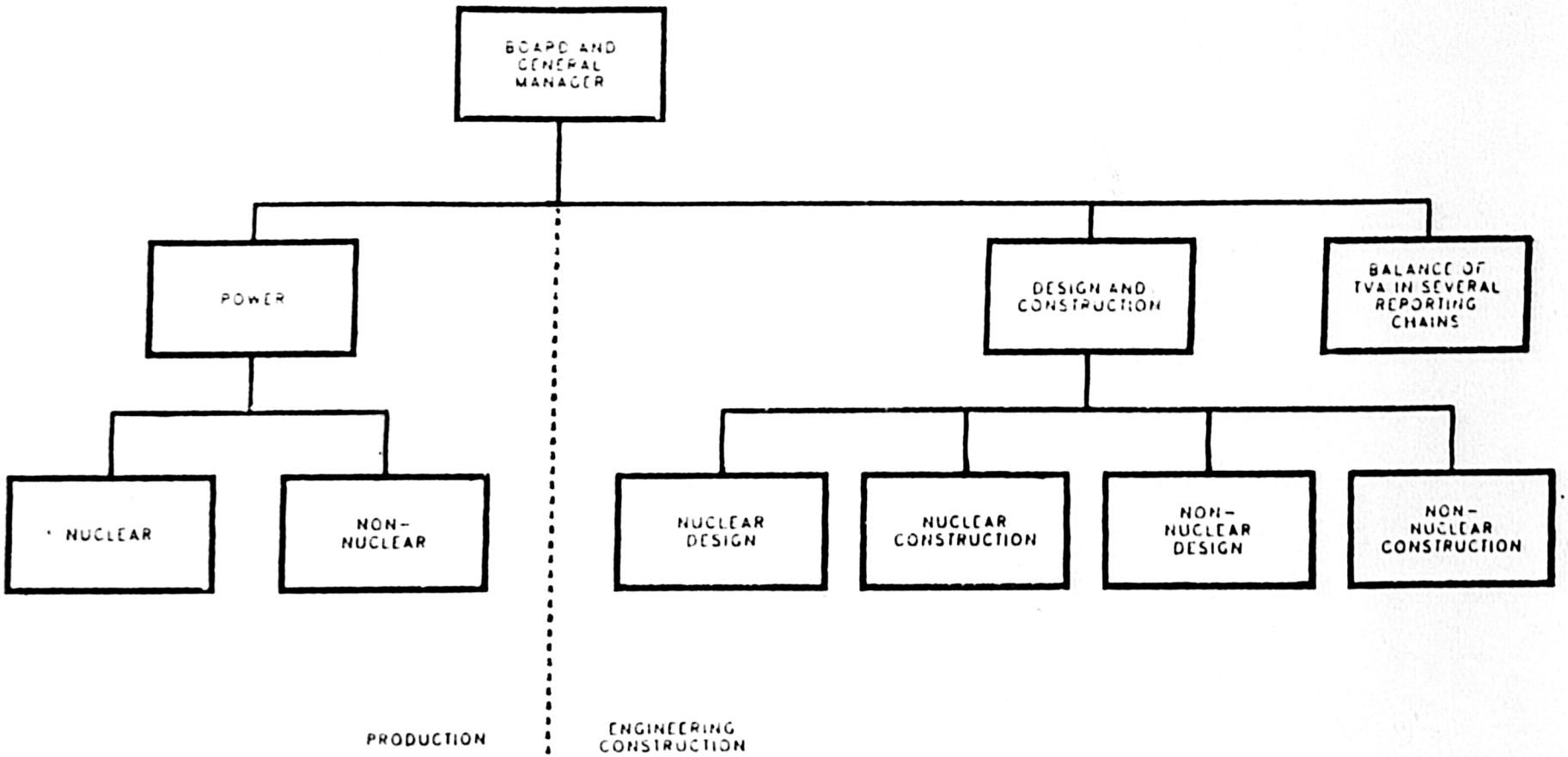
Title/Function	Name of Senior Manager	Status, (TVA/Loaned Manager)
Assistant Director, NMRG	J. W. Overlid	TVA Employee
Deputy Construction Manager, Watts Bar, DNC	B. F. Painter	TVA Employee
Manager, Engineering and Technical Services, DNE	W. E. Pennell	TVA Employee
Assistant Division Director, DNS	J. R. Ratliff	TVA Employee
Chief, Electrical Engineering, DNE	W. S. Raughley	TVA Employee
Chief, Nuclear Fuel Engineering Branch, DNS	J. D. Robertson	TVA Employee
Assistant to the Site Director, Browns Ferry	S. M. Rudge	TVA Employee
Assistant Director Nuclear Training, DNT	L. M. Sain	TVA Employee
Manager, Operations Engineering Services, DNE	R. A. Sessoms	TVA Employee
Project Engineer, Browns Ferry, DNE	P. J. Speidel	TVA Employee
Quality Assurance Manager, Watts Bar, DNQA	B. J. Thomas	TVA Employee
Site Quality Manager, Browns Ferry, DNQA	G. A. Turner	TVA Employee
Assistant to Director, DNE	F. J. Weinhold	TVA Employee
Project Engineer, Sequoyah, DNE	D. W. Wilson	TVA Employee
Manager, Modifications Bellefonte, DNC	R. E. Young	TVA Employee (Acting)

IV. RESTRUCTURING OF TVA'S ORGANIZATION

A. Introduction

Some of the problems in TVA's nuclear program have involved a lack of communication and coordination among TVA's nuclear departments and an uncertainty regarding lines of authority and responsibility. Other problems involved a lack of centralized direction and control by TVA's nuclear management. Both of these problems are at least partly attributable to the manner in which TVA's organization was structured. As is explained below, TVA has taken and is taking action to remedy this situation by restructuring its organization.

Until recently, TVA's organization did not provide for effective centralized management of its nuclear activities. Instead, as is shown in Figure 1, TVA's organization was divided among power operations, design and construction, and the balance of TVA's activities, each of which was responsible for both nuclear and non-nuclear activities. Consequently, TVA had no upper level management personnel who were devoted exclusively to managing nuclear activities, and the responsibility for the nuclear activities was divided among several departments, which did not report to a single senior nuclear manager. Furthermore, each of TVA's nuclear plants acted autonomously, for the most part developing its own programs and systems to control plant activities.



TVA's Organizational Structure Prior to July 1983 (Functional Organization Chart)
Figure 1

As a result of this organizational structure, TVA did not have experienced senior nuclear managers who were in charge of all of TVA's nuclear activities. Furthermore, TVA's organizational structure made communication and coordination between departments difficult, and lines of authority and responsibility for specific nuclear activities were not always clear. To complicate this situation further, engineering and design personnel were not located at the operating nuclear plants.

Beginning in 1985, TVA started to consolidate responsibility for its nuclear activities within one central organization and to divest that organization of virtually all responsibility for non-nuclear activities. That process was significantly advanced through the approval by the Manager of Nuclear Power of the organizational structure through the fourth reporting level within the Office of Nuclear Power on May 23, 1986. The site organizational structure will be described in the site-specific volumes of the Nuclear Performance Plans.

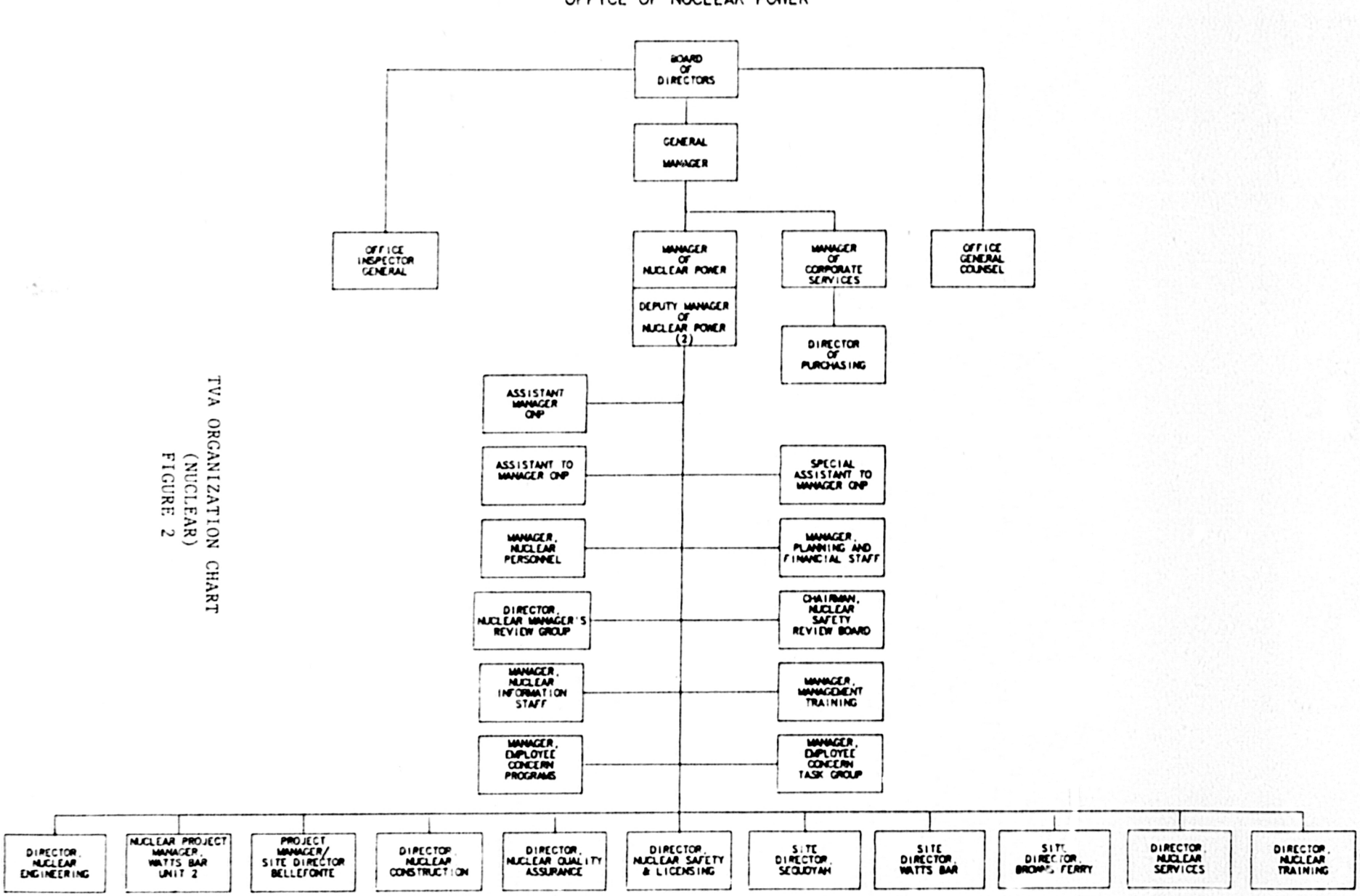
The restructuring of TVA's nuclear organization has been implemented in three stages, each in a more extensive form. First, responsibility for all of TVA's nuclear activities was consolidated within a single organization, the Office of Nuclear Power. Second, primary responsibility for each

functional area within the Office of Nuclear Power was assigned to the appropriate director or staff manager. Finally, the nuclear headquarters departments were given responsibility for the technical direction and adequacy of those site support activities within their respective functional areas. The organizational form in each of these stages is discussed below.

B. Consolidation of TVA's Nuclear Organization

1. The Office of Nuclear Power (ONP)

Figure 2 depicts TVA's new organizational structure for its nuclear activities. As is evident from Figure 2, all of TVA's nuclear activities are under the direction and control of the Manager of Nuclear Power, who reports to the General Manager and Board of Directors of TVA. Additionally, TVA's nuclear organization has virtually no responsibility for non-nuclear activities. Effective May 23, 1986, the first level of management below the directors and all of the key staff management or assistant functions were approved. And, effective December 31, 1986, the management for ONP was approved through the branch level by the Manager of ONP.



TVA ORGANIZATION CHART
(NUCLEAR)
FIGURE 2

The TVA Board of Directors has given the Manager of Nuclear Power an extensive charter. As is reflected in the revised Memorandum of Understanding between the Board and Mr. White (which is attached as Appendix 1), Mr. White "will have direct authority and responsibility for the management control and supervision of TVA's entire nuclear program." Subject to the guidelines incorporated by reference in the revised Memorandum of Understanding, Mr. White's authority includes the power to hire, remove, or reassign any personnel engaged in TVA's nuclear program and to redirect or restructure TVA offices involved in TVA's nuclear program (subject to approval by the Board and TVA's General Manager). Furthermore, the Board has given Mr. White the authority "to take any other actions that he deems necessary or appropriate to improve the effectiveness of the overall management of TVA's nuclear power program." In sum, Mr. White has been placed in complete charge of TVA's nuclear activities.

2. Interfaces between the ONP and Other TVA Support Groups

Certain of TVA's administrative groups (such as the Division of Purchasing) which provide support for the execution of the nuclear program do not report directly to the Manager of Nuclear Power. Instead the Office of Nuclear Power obtains support services from these groups.

There are three basic ways in which the ONP gains support. These are:

a. Support is provided on a scope of effort and budget basis. The supporting organization submits its proposed activities, schedule, and budget for the review and approval of the responsible ONP Manager. All work done by support organizations is under the budget authority controlled by ONP and the support organization functions similar to a contractor. These organizations include the Division of Services and Field Operations, Power Systems Operations, Division of Air and Water Resources, and the Power Service Shops.

b. Support is provided by personnel who are an integral part of ONP activities but who administratively report to an organization outside of ONP. Examples include Public Safety, Power Stores, and the Nuclear Information Staff.

c. The last area covers support from organizations on an overhead basis which do not have people assigned to ONP. An example is procurement of materials by the Division of Purchasing. The Division of Purchasing processes all requisitions based on specifications

provided by ONP. Its main focus is to handle the bidding processes and other functions necessary to procure needed equipment, materials, and services in accordance with instructions written and approved by the Division of Purchasing. The Division of Purchasing is required to implement the Nuclear Quality Assurance Program.

As the ONP organization is implemented, standardized procedures are being developed to control the interfaces with other of TVA's organizations that perform functions for, or provide support to, the Office of Nuclear Power. The Manager of Nuclear Power has the authority (with the approval of the Board of Directors and General Manager of TVA) to redirect and/or restructure the activities and functions of these divisions as they pertain to the nuclear power program.

By divesting the nuclear organization of virtually all responsibility for non-nuclear activities, TVA's nuclear organization is now able to focus its full attention on assuring the safety of its nuclear plants. Additionally, by placing all responsibility and authority for TVA's nuclear activities under a single manager reporting to the highest level of TVA's organization, TVA's Board of Directors has established a management position which can exercise strong and consistent control over its nuclear program and ensure

that the activities of TVA's various nuclear departments are coordinated. Finally, by creating the position of Manager of Nuclear Power, the Board has established a position where a highly qualified and experienced manager, such as Mr. White, can provide the necessary leadership to remedy TVA's existing nuclear problems and provide a means for quickly resolving any problems which may develop in the future.

C. Consolidation of Responsibility for Functional Areas Within Functional Departments

As described above, until recently, responsibility for TVA's nuclear activities was not consolidated within a single organization. Additionally, responsibility for various functional areas (such as quality assurance) was divided among several groups. As a result, functional activities were not subject to central control, coordination of activities was sometimes difficult, and many support activities (such as quality assurance) did not have high visibility with management. As described below, TVA has taken and is taking steps to improve this situation.

TVA's nuclear headquarters personnel have been divided into several newly created departments, each of which has responsibility for a discrete type of function. Each department is headed by a director or manager who reports

directly to the Manager of Nuclear Power and is responsible for all of the activities within the assigned functional areas. These departments are headed by the Director of Nuclear Quality Assurance, Director of Nuclear Engineering, Director of Nuclear Construction, Director of Nuclear Services, Director of Nuclear Safety and Licensing, Director of Nuclear Training, Manager of Nuclear Personnel, Manager of Planning and Financial Staff, Chairman Nuclear Safety Review Boards, Manager of Employee Concern Program, Manager of Nuclear Information Staff, and Director of Nuclear Manager's Review Group.

Additionally, each of TVA's nuclear departments is responsible for developing programs and standards, providing technical direction, and providing technical support for all activities within its functional area, including activities at TVA's nuclear plants. Moreover, the director or manager of each of TVA's nuclear headquarters departments (and the line managers under him) is accountable for the technical adequacy of all TVA activities within his functional area.

This arrangement of TVA's nuclear organization and assignment of functional responsibilities has several advantages compared to TVA's prior organization. First, until the reorganization occurred, TVA did not have groups with overall responsibility and authority for TVA's nuclear activities in the areas such

as nuclear training and nuclear personnel. By establishing these departments and having them report directly to the Manager of Nuclear Power, TVA has provided added emphasis on the importance of these functions.

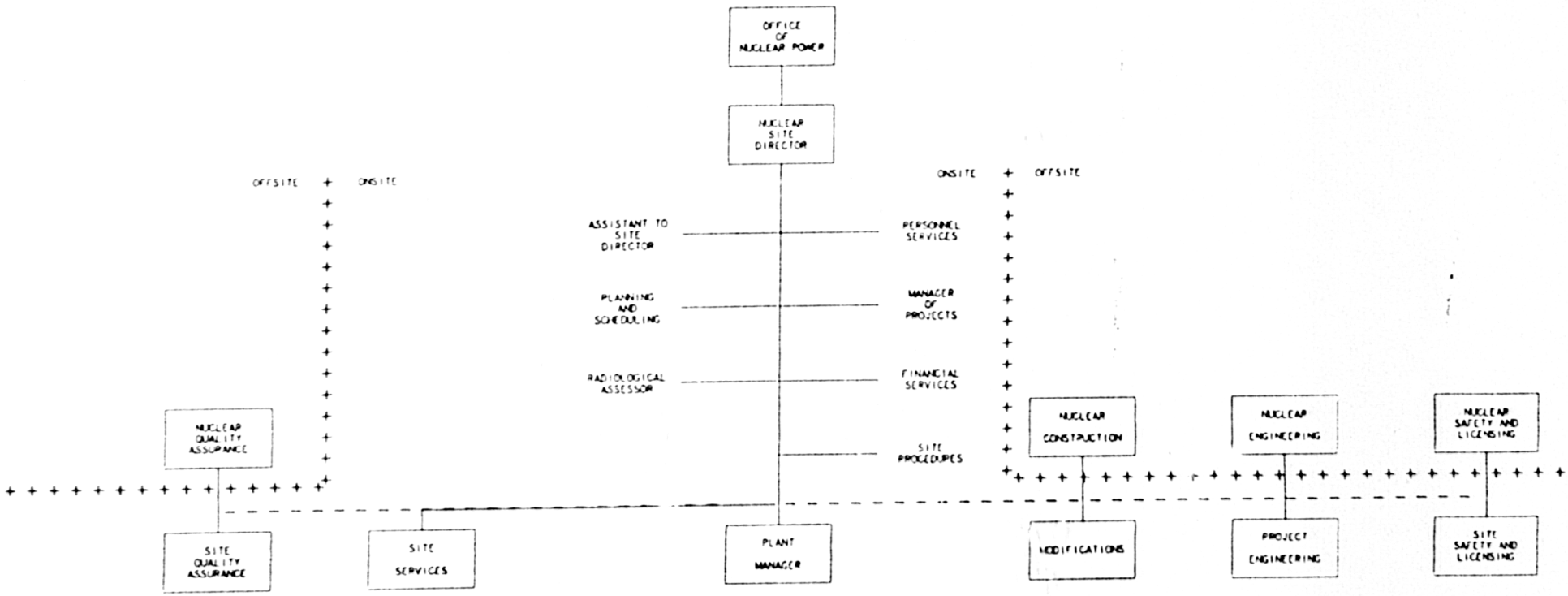
By placing responsibility for these functions within a single group reporting directly to the Manager of Nuclear Power, TVA has established the means to effect centralized direction of these functions and has provided added emphasis on their importance. Finally, by making each nuclear group responsible for the technical adequacy of functional activities within its respective area, TVA has provided a means for establishing centralized direction and control of its nuclear activities at the sites.

D. Centralized Direction of Site Activities

TVA's activities at each of its nuclear sites is headed by either a Nuclear Site Director (for operating plants) or a Nuclear Project Manager (for plants under construction). Each of these directors and managers reports directly to the Manager of Nuclear Power to ensure centralized control over the plant activities.

TVA's nuclear site personnel are divided into 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.



TVA SITE ORGANIZATION
(OPERATIONS)
FIGURE 3

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 involved writing position descriptions for each of TVA's nuclear directors, managers, and specialists. These position descriptions formally define the duties and responsibilities for which an individual is held accountable and against which performance is measured. These descriptions were reviewed by a review team composed of senior TVA and consultant personnel who reported to the Manager of Nuclear Power. The purpose of this review was 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 provided guidance to the organization through the issuance of a Policy and Organization Manual (P&OM) on December 31, 1986, that set forth policy in major areas and defined the organizational structure (in command chart format) together with the organization description for each key functional component of the organization. The P&OM is a living document and will be revised, as necessary, to reflect organizational changes or policy changes.

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, position descriptions and procedures is intended to minimize the number of technical and management disagreements or problems 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 as proposed Revision 9 on May 1, 1986, to describe the then current organization and QA procedure system. The NRC approved Revision 9 on January 30, 1987.

Additionally, the Nuclear Quality Assurance Manual, (NQAM), has been reorganized to provide a corporate NQAM. Refinements will continue to provide more effective corporate control of all QA activities. 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 are 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 ensures 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 management development programs and for technical development programs (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 Beilefonte (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. A permanent training center has been built and occupied at

BFN and the BFN simulator is in place and being used for training in that facility. A permanent training center is presently under construction at WBN. The WBN simulator is being built and is scheduled to be ready for training by August 1988. The BLN simulator has already been moved to the new training facility at BLN.

In the fall of 1986, the Westinghouse Electric Company performed an assessment of the Division of Nuclear Training. Their report identified significant strengths but also recommended improvements in several areas. The DNT analyzed and responded to all conclusions and recommendations. These recommendations concerned training program evaluation and feedback, expansion of DNT's organizational scope, long range planning, and implementation of qualification standards (e.g., qualification card systems). Thirty-eight DNT action items were identified as a result of these recommendations. Seven items have been completed as of March 20, 1987. The longest lead action item is expected to be completed in the fall of 1988 with the completion of the Watts Bar Training Facility.

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 has taken 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.