

TITLE PAGE

REVISED CORPORATE NUCLEAR  
PERFORMANCE PLAN

TENNESSEE VALLEY AUTHORITY

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## MESSAGE FROM THE TVA BOARD OF DIRECTORS

The Board of Directors' top priority is the safe operation of TVA's nuclear plants. In conformance with this policy, TVA shut down its Browns Ferry and Sequoyah plants and has not sought an operating license for Watts Bar Unit 1 due to problems in the management of TVA's nuclear program. The Board has taken steps to re-establish effective management of TVA's nuclear program. These steps are reflected in this revised Corporate Nuclear Performance Plan. TVA will not operate a nuclear plant until the Board is satisfied that the plant can and will be operated safely in accordance with TVA's standards and commitments and in compliance with applicable laws and regulations.

Since the development and original submittal of the Corporate Nuclear Performance Plan on November 1, 1985, Board members have discussed aspects of the Corporate Nuclear Performance Plan with NRC, members of Congress, and others. As a result of its assessment of TVA's nuclear program, the Board has taken a number of additional steps to improve TVA nuclear performance. These steps are reflected in the revised Corporate Nuclear Performance Plan.

During November and December 1985, TVA searched for a nuclear advisor to the Board. The original purpose of the advisor was to review TVA's nuclear power program activities and performance in order to provide independent assessments and advice to the Board on nuclear power matters. During this search, the Board became convinced that the

creation of a nuclear advisor position without actual responsibility and authority for managing TVA's nuclear activities would not be a sufficient change to achieve the needed improvement.

We concluded that, instead of a nuclear advisor, a strong and experienced Manager of Nuclear Power was needed with direct authority and responsibility for the total management, control, and supervision of TVA's entire nuclear power program. In seeking a candidate, the TVA Board sought a highly qualified and nationally respected manager in the nuclear field. On January 3, 1986, the TVA Board selected retired Admiral Steven A. White for this position, and he began his duties on January 13, 1986.

Before he retired as a four-star admiral, Mr. White was head of the U.S. Navy's procurement program - a \$66 billion per year operation with a quarter-million employees. Before that, he commanded the nation's Atlantic submarine fleet of 90 nuclear-powered submarines. His Navy experience includes reactor operation and maintenance as well as management of complex technical and commercial issues.

We have given the Manager of Nuclear Power a strong charter. The powers entrusted to him are broad and far-reaching. Mr. White is responsible for the daily management of the nuclear power program and will report to the TVA General Manager and to the TVA Board for oversight, direction, and support. We are convinced that these powers, coupled with the complete support from the Board, will provide Mr. White with the

necessary authority to execute his broad scope of responsibility and build confidence in TVA's nuclear program. The TVA Board reaffirms the agreement reached with Mr. White as documented in the Memorandum of Understanding enclosed as Appendix 1 of the revised Corporate Nuclear Performance Plan. We recognize that the safe operation of TVA's nuclear plants will require considerable resources and will succeed only with the dedication of the entire TVA nuclear organization. We are committed to ensuring that this happens.

## MESSAGE FROM THE MANAGER OF NUCLEAR POWER

On January 3, 1986, I accepted the position of TVA's Manager of Nuclear Power. I accepted that position for a two-year period with the simple commitment to correct TVA's problems in managing its nuclear program. I intend to do that. While it may take longer than two years to achieve the high level of safety and quality which TVA desires for all of its nuclear activities, I believe that two years is a sufficient period of time for me to re-establish TVA as a solid nuclear performer.

Based upon my observations during my visit to TVA in November 1985 and during the ensuing period, I have come to the opinion that TVA's most pressing problem is to improve its nuclear management. There are a number of ways to approach this problem, and I have selected the one I believe best suits the situation at TVA. I plan to concentrate on strengthening key management positions throughout TVA's nuclear organization and will make a number of organizational changes.

I have interviewed TVA's leading nuclear managers and find that they do not lack technical skill or professional knowledge. Instead, the problems I see here are similar to those sometimes found in large industrial organizations or large government facilities such as shipyards--namely, a lack of commitment to and responsibility for achieving excellence in performance.

To solve this problem, I am bringing to TVA's nuclear organization a number of technical/professional managers from outside contractors, each of whom possesses considerable experience in his/her field and a proven ability to motivate individuals to perform up to their capabilities and assume responsibility for the quality of their activities. I am assigning them into key management positions--not as advisors but as line managers. They are committed by their parent organizations for a two-year assignment to TVA. At the same time, I am attempting to identify a permanent TVA manager to work in a line position under each new manager so that the permanent TVA manager can learn and be capable of assuming the top position prior to the end of the two-year period.

Managers who possess the requisite qualities and experience to satisfy TVA's needs are not easy to locate. I am using as many sources as I need to find these new managers. In each case, I am insisting on receiving a "total" commitment from senior persons in the parent organizations in order to ensure that the new managers have sufficient support to accomplish their mission.

Not every key managerial position will be filled with managers from outside contractors. There are a number of TVA people who have demonstrated their capability to handle the task at hand, and I intend to use them. It is my opinion that once these key people are in place, the multitude of problems facing us will be addressed and resolved in a

reasonable time. I am also convinced that once there is demonstrated leadership coming out of management, the personnel at all levels and at all sites will respond.

Employee concerns is an issue which has received much attention as a symptom of TVA's nuclear problems. I intend to institute and fully support the timely and objective resolution of employee concerns. I will not tolerate intimidation or harassment of any kind, and I will use whatever legal powers I or my organization has to ensure that individuals who engage in intimidation or harassment will be subject to swift and appropriate disciplinary action. TVA's newly appointed Inspector General and I are in complete accord on this issue, and we are committed to cooperate fully in its implementation. It is my ultimate objective that within a short period of time employees will have regained confidence in their line organization and will be willing to voice their concerns to the line organization. Nevertheless, when requested, we will continue to provide confidentiality to employees who express concerns.

Over a year ago, a major management decision was made to "decentralize" TVA's nuclear program. Site Directors were created and more authority was given to the various sites with less being assumed by headquarters. I intend to alter that concept to some degree. I will continue to hold the Site Director responsible for ensuring that the necessary site activities are performed in a timely manner. However, in all functional areas, such as engineering, quality assurance, licensing, and training, I will hold the headquarter's manager responsible for the technical adequacy of activities within their functional areas.

I am enthusiastic with the prospect of revitalizing TVA's nuclear program, and I am optimistic that it can be done. It will take time, dedication, and resources. The Board of Directors has provided me with the authority to do the job and has assured me that the necessary resources will be provided. We will not be able to correct all of the problems immediately. However, we will resolve these issues in an orderly manner and ultimately achieve safe and efficient operation of TVA's nuclear plants.

I have reviewed previously established goals and have articulated new goals for our organization which are designed to implement the above principles. Realization of these goals will result in strong and effective management and safe and reliable operation of all plants, and it will also restore credibility with employees, management, outside agencies, and customers. A copy of these goals is attached.

The revised Corporate Nuclear Performance Plan outlines many of the significant actions I believe are necessary to strengthen TVA's nuclear program. I am dedicated to realizing this purpose and to the safe and efficient operation of TVA's nuclear plants.

In summary, I am fully aware of the magnitude of my assignment and am fully cognizant of the huge demands which will be placed on TVA's resources. The task is large but manageable, and many actions have already been initiated to accomplish our goals.

---

S. A. White

## TVA Corporate Nuclear Performance Goals

1. Build a strong, effective management team with clear lines of responsibility, authority, and accountability.
2. Fully implement required prerequisites for safe operation of nuclear plants.
3. Bring shutdown plants back into operation expeditiously.
4. Complete plants under construction in full compliance with all design and regulatory requirements and obtain operating licenses.
5. Conduct operation of all TVA nuclear plants in a safe and efficient manner.
6. Create a working environment built on trust and confidence that will permeate the entire organization.

EXECUTIVE SUMMARY  
FOR THE  
REVISED CORPORATE NUCLEAR PERFORMANCE PLAN  
OF  
TENNESSEE VALLEY AUTHORITY

Tennessee Valley Authority (TVA) has five nuclear units with operating licenses and four units with construction permits. It thus has one of the largest nuclear generation programs in the country. In response to problems which had developed in its nuclear program, TVA voluntarily shut down all of its operating units in 1985 and did not request an operating license for one of its units whose construction is essentially complete. On September 17, 1985, the NRC requested, pursuant to 10 CFR 50.54(f), that TVA submit information regarding its plans for correcting plant-specific problems and for correcting problems in the overall management of its nuclear program. The NRC also requested that this information be submitted before TVA restarted any of its operating units or requested an operating license for its essentially complete unit. In response to this request, TVA has prepared a Corporate Nuclear Performance Plan which identifies the root causes of the problems in the management of TVA's nuclear program and describes TVA's plans for correcting those problems. Additionally, TVA is in the process of preparing additional plans which will respond to the NRC's request for plant-specific information. In total, these plans will provide a complete account of the actions which TVA is taking to improve its nuclear program.

The primary cause of the problems in TVA's nuclear program is the lack of a sufficient number of experienced nuclear managers who can provide leadership and proper direction for TVA's nuclear activities. In response to this situation, TVA has restructured its organization and assigned responsibility for all of its nuclear activities to the Office of Nuclear Power directed by the Manager of Nuclear Power. Of particular note, TVA has contracted for the services of Steven A. White, as Manager of Nuclear Power, and has assembled a new management team under his leadership. Mr. White is a retired four-star admiral who headed the U.S. Navy's procurement program and commanded the Atlantic Submarine Force. The senior management team reporting directly to Mr. White has been strengthened substantially since October 1985 through the addition of the following experienced senior nuclear managers: Charles C. Mason as Deputy Manager of Nuclear Power, with twenty years of nuclear experience; Richard B. Kelly as Director of Nuclear Quality Assurance, with more than twenty years of nuclear experience; William C. Drotleff, Jr., as Director of Nuclear Engineering, with about twenty years of nuclear experience; Brian R. McCullough as Director of Nuclear Construction, with about fifteen years of nuclear experience; C. G. Robertson as Acting Director of Nuclear Services, with twenty years of nuclear experience; H. P. Pomrehn as Site Director of Browns Ferry Nuclear Plant, with more than twenty-five years of nuclear experience; and Richard L. Gridley as Director, Nuclear Safety and Licensing, with almost thirty years of nuclear experience.

Additionally, TVA has upgraded the overall knowledge and experience level of its nuclear management team with additional staff reporting to the Manager of Nuclear Power. These new managers, together with TVA's existing core of experienced nuclear managers, provide TVA with a senior-management team having extensive nuclear experience, both from outside TVA and within TVA--a balance that is judged important to maintain throughout the reorganization period.

Due to statutory limits on the salaries of TVA's employees and the limited number of available experienced managers, TVA has had difficulty in hiring experienced nuclear managers as permanent TVA employees. Consequently, many members of TVA's new nuclear management team are not permanent TVA employees but instead are serving on a temporary basis (generally for a two-year period) under contracts with various companies in the nuclear industry. In order to ensure itself of a sufficient supply of experienced nuclear managers over the long term, the Office of Nuclear Power is seeking to develop the managerial skills and capabilities of its permanent employees by placing individuals with managerial potential as deputies to TVA's new nuclear management team. Given the close working relationship between the deputies and managers and the guidance which the managers will provide to the deputies, TVA expects that the deputies will develop the necessary skills and experience to assume senior management positions within the Office of Nuclear Power.

In the past, all of TVA's departments responsible for nuclear activities have not been unified into a single nuclear organization. TVA's nuclear plants and headquarters departments have at times acted autonomously, and authority for functional activities was sometimes divided among several groups. As a result, the lines of responsibility have not always been clear, the necessary authority has not always been delegated, and the implementation of TVA's nuclear program has not been consistent. To remedy this, TVA is totally restructuring its nuclear organization. This reorganization was accomplished through the following steps:

- For the first time in the history of TVA's nuclear program, responsibility for all nuclear activities has been consolidated within a single organization and this organization does not have any responsibility for non-nuclear activities. The Office of Nuclear Power is headed by the Manager of Nuclear Power, who reports directly to TVA's General Manager and Board of Directors. Thus, TVA has established a senior management position able to exercise strong and consistent control over TVA's nuclear program and to provide the necessary leadership to remedy TVA's nuclear problems.
- TVA's nuclear headquarters has been reorganized into several newly-created departments, each of which has responsibility for a discrete type of functional activity (such as engineering, construction, quality assurance, training, or licensing) and is headed by a director or manager. The directors and managers

have the responsibility and authority to establish programs and procedures governing the functional activity assigned to that department. The director or manager will be held accountable for the technical adequacy of all activities within the department's assigned areas, including support activities provided at TVA's nuclear plants. Through this reorganization, TVA now provides centralized direction and control of its nuclear activities.

- TVA's nuclear site personnel have been reorganized into a line organization for operation of the plant and major support departments, all under the direction of the Nuclear Site Director. For plants under construction all site activities are under the direction of the Nuclear Project Manager. Each support department receives technical direction from its respective headquarters department. The site directors and project managers are responsible for the conduct of all activities at the site, especially the planning, scheduling, coordinating, and project management activities to achieve TVA's overall goals at each site. This arrangement enables TVA to provide uniform direction and technical control of the activities at its nuclear sites, while giving the site directors and project managers the authority to determine what site activities should be performed and when they should be accomplished.

In sum, by restructuring its nuclear organization, TVA has provided centralized direction and control over its nuclear program and clear

lines of authority and responsibility for its nuclear activities. This step, together with the development and issuance of position descriptions will help assure that TVA's nuclear managers and supervisors are accountable for the quality and timeliness of their work. The Manager of Nuclear Power will provide management direction through ONP Policy and Directives available to the entire organization.

Due to TVA's lack of sufficient numbers of experienced nuclear managers and the absence of an effective organizational structure to provide leadership and proper direction to ensure the safe construction and operation of TVA's nuclear plants, many TVA employees lost confidence in TVA's nuclear management. This has resulted in a large number of employee concerns. In addition to installing a new management team and making other improvements in its nuclear management, TVA has taken steps which are directly intended to restore employee confidence in TVA's nuclear management. First, TVA has established an Employee Concern Program. Among other things, this program consists of full-time employee concerns personnel located at each of TVA's nuclear plants and major corporate nuclear locations. These personnel are available to receive employee concerns through several different means, including mandatory exit interviews for transferring or terminating employees. Second, TVA has policies that place paramount importance on the safety of its nuclear activities, that place the responsibility for the quality of work on the individual, and that prohibit intimidation or harassment of employees who express safety or quality concerns. TVA has taken steps to ensure that these policies are communicated to employees and continue to be

enforced. In particular, Mr. White has emphasized and will continue to emphasize in meetings with his managers, staff, and other employees that he will not tolerate intimidation or harassment of any kind and that he will take swift and appropriate disciplinary actions against those who engage in such actions.

In addition to these steps, TVA is making other improvements in its nuclear management program. These improvements include the following:

- Increasing Management Awareness - TVA's upper management has not always been aware of problems and developments in TVA's nuclear program or involved in their solution. By consolidating TVA's nuclear organization and placing it under the control of the Manager of Nuclear Power who reports to the TVA Board of Directors and General Manager, the flow of information to the Board and General Manager has improved. Additionally, the Board has created the Office of Inspector General and enlisted the Institute of Nuclear Power Operations (INPO) to conduct annual corporate evaluations of the nuclear power program until it is clear that the actions taken to strengthen the management and improve TVA's nuclear performance are working.
- Improvements In Management Systems and Controls - Some of the problems in TVA's nuclear program have involved insufficient

programs and procedures, a lack of prior planning and integration of nuclear activities, and a failure to satisfy prior commitments to the NRC. In response to these problems, TVA is reviewing its nuclear procedures and is establishing policies, centralized programs and procedures to direct and/or control all TVA nuclear activities. The Office of Nuclear Power has assigned to the Division of Nuclear Services the responsibility to develop an integrated management information system. The Planning and Financial Staff has the responsibility for centralized planning, scheduling, and financial controls. Additionally, TVA is implementing a nuclear Corporate Commitment Tracking System under the Division of Nuclear Safety and Licensing.

- Improvements In TVA's Corrective Action Program - In the past, TVA has not always taken timely and effective corrective action for its nuclear activities. To remedy this, TVA is improving its nuclear corrective action program to provide for (1) tracking of conditions adverse to quality and prompt escalation of those conditions which are not resolved in a timely manner to higher levels of management, (2) trending of conditions adverse to quality and analysis of significant conditions to identify their root causes for corrective action, and (3) centralized analysis of problems at other nuclear plants to identify the need for remedial or preventive action at TVA's nuclear plants.

- Programmatic Improvements - In response to weaknesses found in certain of its programs, TVA has taken actions to improve discrete areas of its nuclear program, including welding, operations, maintenance, and control of design changes and modifications.

TVA earlier developed and submitted a Nuclear Performance Plan for its Sequoyah Nuclear Plant but is currently revising this plan and will resubmit it in a separate Volume. TVA is also developing Nuclear Performance Plans for its Browns Ferry and Watts Bar plants which will address site-specific problems. These will be submitted to the NRC for review prior to startup of the respective plants.

In sum, TVA has taken significant steps to improve the management of its nuclear program. These include installing a new experienced senior nuclear management team to provide leadership and direction for TVA's nuclear activities, consolidating TVA's nuclear departments within a single organization to clarify lines of authority and responsibility and to provide greater management control over TVA's nuclear activities, and establishing an Employee Concern Program to help restore employee confidence in TVA's nuclear management. TVA is continuing to evaluate its problems to identify the need for specific improvements in its overall nuclear program and in its site activities. TVA will provide the NRC with a proposed schedule for startup of its nuclear plants when this evaluation process has been completed.

## I. PURPOSE

On September 17, 1985, pursuant to 10 CFR 50.54(f), the Nuclear Regulatory Commission (NRC) requested the Tennessee Valley Authority (TVA) to furnish information related to problems which had developed at its nuclear power plants (Ref. 1). Among other things, the NRC identified an area of concern regarding "programmatic and management deficiencies that have contributed to the continued poor direction and control of [TVA's] nuclear activities," and the NRC requested TVA to describe corrective actions in this general area. In compliance with this request, TVA presented a Corporate Nuclear Performance Plan (NPP) to the NRC on November 1, 1985 (Ref. 2).

Subsequent to submission of the Corporate NPP, TVA made significant changes in its nuclear management personnel. As a result, TVA re-evaluated its approach for correcting the problems which have arisen in its nuclear program and developed a substantially revised Corporate NPP which was submitted on March 10, 1986 (Ref. 7). The purpose of this revision of the Corporate NPP is to provide a further update that addresses the NRC's questions communicated on May 1, 1986 (Ref. 8) and to describe the measures which TVA has taken and currently intends to take to improve the corporate-level management of its nuclear activities and to correct the problems which have occurred in this area. As such, this report not only responds to the NRC's specific request

for information under 10 CFR 50.54(f) regarding TVA's corporate nuclear activities, but also presents an integrated plan for addressing the NRC's general concern.

TVA earlier submitted a Nuclear Performance Plan (currently under revision) for its Sequoyah Nuclear Plant and is preparing to submit Nuclear Performance Plans for Browns Ferry Nuclear Plant and Watts Bar Nuclear Plant as soon as these are complete. In total, the revised Corporate Nuclear Performance Plan and the plant-specific plans along with the revisions thereto, will provide a complete account of the actions which TVA has taken or will be taking to improve its nuclear program.

## II. INTRODUCTION

### A. History and Background

TVA is an agency of the Federal government whose purpose is, among other things, to supply electricity to customers in the area of the Tennessee River Valley. TVA also has one of the largest nuclear power programs in the country, with operating licenses for five units (Browns Ferry Nuclear Plant, Units 1, 2, and 3; and Sequoyah Nuclear Plant, Units 1 and 2) and construction permits for four other units (Watts Bar Nuclear Plant, Units 1 and 2; and Bellefonte Nuclear Plant, Units 1 and 2).

During the last few years, several events have occurred which have reflected adversely upon the quality of performance of TVA's nuclear activities. In response to these and other events, TVA has voluntarily shut down operation of its Browns Ferry and Sequoyah plants and has deferred requesting an operating license for its essentially complete Watts Bar Unit 1.

On September 17, 1985, the NRC issued a Systematic Assessment of Licensee Performance (SALP) Report of TVA's nuclear activities (Reference 1). This report identified a number of weaknesses in the conduct of TVA's nuclear activities. Based upon the conclusions in this report and the recent history of TVA's nuclear activities, the NRC concluded that TVA had

"demonstrated ineffective management of its nuclear program." As a result, the NRC requested that TVA develop corrective action for the "programmatic and management deficiencies that have contributed to the continued poor direction and control of nuclear activities," as well as corrective action for the plant-specific deficiencies. Although the NRC recognized that TVA had already taken some actions to address these concerns, the NRC requested pursuant to 10 CFR 50.54(f) that TVA document its corrective actions prior to restarting its operating units and prior to requesting an operating license for Watts Bar Unit 1.

B. Outline of TVA's Approach to Solving its Nuclear Problems

TVA has reviewed the problems which have developed in its nuclear program during recent years in order to identify the causes of these problems. As a result of this review, TVA has formed judgments regarding the root causes of the problems in its nuclear program. In order to confirm this judgment, TVA assembled a team of senior, experienced industry advisors to analyze more than 800 documents which contained criticisms of TVA's nuclear activities and to identify any adverse trends and their root causes. In general, the results of this analysis agreed with the judgments formed by TVA regarding the source of the problems in TVA's nuclear program. Although the individual

problems are varied, many of them stem from the same cause--namely, the lack of a sufficient number of experienced managers to provide leadership and proper direction coupled with the absence of an effective organizational structure to ensure the safe design, construction and operation of TVA's nuclear plants. As a result, many TVA employees have lost confidence in TVA's management.

As is discussed in the remainder of this report, TVA has taken, and is planning to take, actions to provide effective management of its nuclear program and to restore employee trust in TVA's nuclear management. This objective is accomplished through the following actions:

1. Effective Management of Nuclear Activities

TVA is providing effective management of its nuclear activities through the hiring, development and retention of experienced nuclear managers. Section III of this report describes TVA's short-term and long-term efforts to provide experienced managers for its nuclear activities.

2. Restructuring of Nuclear Organization

TVA has restructured its nuclear organization, to centralize the responsibility and authority therefor,

under the Manager of Nuclear Power. Within the Office of Nuclear Power, a new organizational structure has been implemented and position descriptions are being developed to provide centralized direction and control of its nuclear activities. A description of this restructuring and the new organization is provided in Section IV.

### 3. Restoring Employee Trust

TVA is taking steps to restore employee trust in its nuclear management. These steps are discussed in Section V.

### 4. Improving Control of Nuclear Activities

In order to facilitate effective management and control of its nuclear activities, TVA has been and will be implementing changes in the manner in which its nuclear activities have been managed. These changes include increasing upper management awareness of and involvement in TVA's nuclear activities, improving TVA's nuclear management systems and controls, improving TVA's nuclear corrective action program, and making improvements in programmatic areas. These changes are discussed more fully in Section VI of this report.

The subsequent sections of this report describe the major elements of the Corporate NPP and address the NRC's request for information under 10 CFR 50.54(f). TVA's responses to the NRC's specific requests regarding Corporate Activities (Enclosure 2 of Reference 1) are provided in Appendix 2. Additionally, Appendix 3 provided TVA's revised responses to the NRC's December 20, 1985, questions regarding the original Corporate NPP (Reference 3). Responses to the NRC's request for information regarding Sequoyah have already been submitted, however, this volume of the NPP will be updated to reflect the results of TVA's detailed assessment of changes, modifications, corrective action, and improvements necessary to ensure safe startup and operation of the Sequoyah nuclear plant. TVA is also preparing plans which address NRC's plant-specific questions on Watts Bar and Browns Ferry. Finally, Appendix 7 provides a summary of the responses to the NRC's questions regarding the Corporate NPP contained in its letter of May 1, 1986 (Reference 8).

TVA is still in the process of implementing its new nuclear organization, developing the programs which will be used to manage its nuclear activities, and preparing plans which address plant-specific nuclear problems and respond to the NRC's questions regarding these problems. As a part of these processes, TVA has formulated a schedule for the restart of Sequoyah Unit 2 and will formulate a schedule for resumption of operation of its Sequoyah Unit 1 and the Browns Ferry units.

### III. HIRING, DEVELOPMENT, AND RETENTION OF EXPERIENCED NUCLEAR MANAGERS

In general, the problems in TVA's nuclear program during the last several years are attributable to a lack of a sufficient number of experienced nuclear managers. TVA's first priority was to obtain experienced managers for its nuclear activities. These managers will then provide the leadership and direction which are essential to cure TVA's remaining nuclear problems and assure the safety of operation of TVA's nuclear plants.

The need for a sufficient number of experienced nuclear managers represents both a short-term and a long-term problem for TVA. As a result, TVA has taken and will be taking actions to address both of these concerns. These actions are described in detail below.

#### A. TVA's Short-Term Actions to Provide for a Sufficient Number of Experienced Nuclear Managers

At the time the NRC issued its request for information pursuant to 10 CFR 50.54(f), TVA had an immediate need for additional experienced nuclear managers. Since TVA did not have an adequate number of experienced nuclear managers in-house, it sought to hire experienced nuclear managers from outside of TVA's organization.

Due to statutory limitations on the salaries of TVA employees and the limited number of available experienced managers, TVA has had difficulty in hiring experienced nuclear managers. To help offset the salary differential between TVA nuclear employees and managers in private industry, the TVA Board of Directors has approved several incentives: including a home relocation service, a relocation incentive payment, and establishment of a nuclear senior manager service to enhance compensation to top level personnel. Nevertheless, TVA still has not been able to hire a sufficient number of experienced nuclear managers as permanent TVA employees. As a result, TVA decided to contract with various companies in the nuclear industry to obtain experienced individuals to serve as line managers within TVA's organization on a temporary basis (generally, for a two-year period).

#### 1. TVA's New Senior Nuclear Management Team

To date, TVA has been largely successful in establishing a new management team with extensive nuclear experience through a combination of utilizing existing experienced TVA managers, hiring new experienced managers as permanent TVA employees, and contracting for the use of experienced managers on a temporary basis. This success is indicated by the fact that seventeen of TVA's top twenty positions in its nuclear organization have been filled with new or different individuals since October 1985.

## a. Additions to TVA's Senior Nuclear Management Team

Since October 1985, the following individuals have been added to TVA's Senior Nuclear Management team within the Office of Nuclear Power.

Manager of Nuclear Power (Steven A. White) - TVA has contracted with Steven A. White to be Manager of Nuclear Power for a two-year period. Mr. White is a retired four-star admiral who was head of the U.S. Navy's procurement program, commanded the Atlantic Submarine Force, and has experience in reactor operation and maintenance. Mr. White is in charge of all TVA nuclear activities and will be the primary motivating force behind the improvements which TVA intends to make in its nuclear program.

Deputy Manager of Nuclear Power (Charles C. Mason) - TVA has hired Charles C. Mason as a permanent TVA employee to be Deputy Manager of Nuclear Power. Mr. Mason has more than twenty years of nuclear experience, including positions of Director of Nuclear Operations and Site Director of the Wolf Creek Nuclear Generating Station, Site Director and Plant Manager of Sequoyah Nuclear Plant, and Power Plant Superintendent of Watts Bar Nuclear Plant. Mr. Mason assists the Manager of Nuclear Power in the management of TVA's nuclear activities.

Assistant Manager of Nuclear Power (William T. Cottle)

- Mr. Cottle is a TVA employee. Prior to being assigned to his current position, Mr. Cottle had almost twenty years of nuclear experience, including positions of Nuclear Site Director of Watts Bar and operating superintendent at Farley Nuclear Plant. Mr. Cottle assists the Manager of Nuclear Power in the management of TVA's nuclear activities. For the interim, Mr. Cottle also serves as Acting Site Director of Watts Bar.

Director of Nuclear Quality Assurance (Richard B.

Kelly) - Mr. Kelly is an employee of Stone & Webster Engineering Corporation (SWEC). TVA has contracted with SWEC for the services of Mr. Kelly as Director of Nuclear Quality Assurance. Mr. Kelly has more than twenty years of nuclear experience, including positions of Vice-President and Director of Quality Assurance/Quality Control for SWEC. Mr. Kelly is in charge of TVA's nuclear quality assurance activities.

Director of Nuclear Engineering (William C. Drotleff,

Jr.) - Mr. Drotleff is also a SWEC employee. TVA has contracted with SWEC for Mr. Drotleff's services as Director of Nuclear Engineering. Mr. Drotleff has about twenty years of nuclear experience, including positions of Assistant Manager of SWEC's Cherry Hill Operating Center and Engineering Manager of SWEC's

Power Operating Services and Advisory Operations.

Mr. Drotleff is in charge of TVA's nuclear engineering activities.

Director of Nuclear Construction (Brian R. McCullough)

- Mr. McCullough is a Bechtel employee. TVA has contracted with Bechtel for the services of Mr. McCullough as Director of Nuclear Construction. Mr. McCullough has about fifteen years of nuclear experience, including a position of Manager of Construction for Bechtel's Los Angeles Power Division. Mr. McCullough is in charge of TVA's nuclear construction activities.

Acting Director of Nuclear Services (C. G. Robertson) -

TVA has hired Mr. Robertson as a permanent TVA employee to be Acting Director of Nuclear Services.

Mr. Robertson has twenty years of nuclear experience, including a position of General Manager of Houston Lighting and Power Company's Nuclear Engineering Department. Mr. Robertson is in charge of generic support programs for TVA's nuclear activities including Industrial Safety, Nuclear Fuels, Emergency Preparedness, Radiological Controls, support operations and management systems.

Site Director of Browns Ferry (H. P. Pomrehn) -

Mr. Pomrehn replaces Mr. W. C. Bibb, Director of Browns Ferry. Mr. Pomrehn is an employee of Bechtel 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-five 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.

Site Director of Watts Bar - TVA is searching for a person to fill this position. In the interim, Mr. Cottle remains Acting Site Director of Watts Bar.

Project Manager of Watts Bar, Unit 2 (Robert A. Pedde)

- Mr. Pedde is a TVA employee. Prior to being assigned to his current position, Mr. Pedde had almost fifteen years of nuclear experience, including a position of Assistant to the Manager of TVA's Office of Construction.

Director of Nuclear Safety and Licensing (Richard L.

Gridley) - Mr. Gridley is an employee of General Electric (GE). TVA has contracted with GE for Mr. Gridley's services as Manager of Nuclear Safety and Licensing. Mr. Gridley has almost thirty years of

nuclear experience, including positions of Manager of Fuel and Services Licensing and Manager of Operating Reactor Licensing for GE. Mr. Gridley is in charge of TVA's nuclear safety and licensing activities.

Director of Nuclear Managers Review Group (Ronald K. Seiberling)- Mr. Seiberling is an INPO employee. TVA has arranged a loan agreement with INPO for Mr. Seiberling's services as Director of Nuclear Managers Review Group. Mr. Seiberling has approximately twenty-nine years of nuclear experience, including the position of Operations and Maintenance Superintendent at Mississippi Power & Light's Grand Gulf Nuclear Plant.

Manager of Nuclear Personnel (Marilyn E. Taylor) - Ms. Taylor is a TVA employee. Prior to being assigned to her current position, Ms. Taylor had twenty years of experience in personnel relations, including a position of Director of Personnel for TVA. Ms. Taylor is in charge of TVA's personnel programs for nuclear activities.

Manager of Nuclear Procedures Staff (M. H. Sturdivant) - Ms. Sturdivant is an employee of M. H. Sturdivant and Associates. TVA has contracted with her company for her services as Manager of Nuclear Procedures Staff. Ms. Sturdivant has eleven years of nuclear experience, including the position of Project Manager, Nuclear

Mission Procedures, Toledo Edison Company at Davis-Besse Nuclear Plant. Ms. Sturdivant is in charge of TVA's nuclear procedures development activities.

Manager of Planning and Financial Staff (John C. Krummel) - Mr Krummel is an employee of Stone & Webster Engineering Corporation. TVA has contracted with Stone & Webster for Mr. Krummel's services as Manager of Planning and Financial Staff. Mr. Krummel has 27 years of experience, 21 of which has been in contract administration, procurement, and financial management. Mr. Krummel has held positions as Procurement Manager for the U.S. DOE's Continuous Electron Beam Accelerator Project, and Project Contracts Manager for Stone & Webster on the U.S. DOE's Clinch River Breeder Reactor Project. Mr. Krummel is in charge of TVA's Nuclear planning, scheduling and financial control activities.

b. Existing Senior Nuclear Managers

TVA's remaining senior nuclear managers are existing TVA employees with extensive nuclear experience. As listed below, Herbert L. Abercrombie, Nuclear Site Director of Sequoyah, has more than fifteen years of nuclear experience; J. P. Darling, Nuclear Project Manager of Bellefonte has more than fifteen years of nuclear experience; R. Joe Johnson, Director of Nuclear

Training, has more than twenty years of nuclear experience; Eric K. Sliger, Manager, Employee Concern Program, has more than 15 years of nuclear experience; and R. W. Cantrell, Chairman, Nuclear Safety Review Board, has more than nineteen years of nuclear experience.

c. Resumes

The resumes of each of TVA's senior nuclear managers are provided in Appendix 4. As is demonstrated by the resumes in Appendix 4 and the summaries provided above, TVA's new management team has extensive 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. New Middle-Level Nuclear Managers

TVA has also hired experienced individuals to serve as permanent TVA employees in middle-level nuclear managerial positions. These individuals include:

- John G. Walker, Deputy Nuclear Site Director of Browns Ferry Nuclear Plant, with about twenty 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.
- Mark B. Whitaker, Jr., Deputy Manager of Nuclear Safety and Licensing, with more than fifteen 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.
- Richard P. Denise, Assistant to the Manager of Nuclear Power, with about twenty years of nuclear experience, including position of the Director of the Division of Reactor Safety for NRC Region IV.
- Larry L. Jackson, Assistant to the Manager of Nuclear Power, with almost fifteen years of nuclear experience, including a position of Chemistry Department Manager and Evaluation Team Manager for the Institute of Nuclear Power Operations (INPO).
- Lawrence E. Martin, Project Manager, with more than twenty years of nuclear experience including a position of Section Chief with NRC Region IV.

TVA has also contracted for experienced individuals to serve as middle-level nuclear managers. These individuals include:

- James E. Huston, Deputy Director of Nuclear Quality Assurance, with more than twenty years of nuclear experience, including a position of Manager of Quality Assurance for SWEC.
- L. J. Sas, Deputy Director of Engineering has more than 15 years of nuclear engineering experience including position of Vice President of Ebasco.
- John A. Kirkebo, Manager of Engineering and Technical Services, with more than twenty years of nuclear experience, including the position of Assistant Engineering Manager for SWEC's Cherry Hill Operations Center.
- Alan K. Priest, Manager of Projects for Construction and Modifications, with more than fifteen years of nuclear experience, including the position of Bechtel's Assistant Project Manager for the South Texas Project.
- F. E. DiCola, Manager of Operations Engineering Services, with more than 17 years of nuclear experience including the position of Manager of Plant Services Department at SWEC's Cherry Hill Operations Center.

### 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 team continues its evaluation of TVA's nuclear program.

Many members of TVA's new nuclear management team are contract personnel who are obligated to serve TVA for a period of two years. TVA expects that this period of service will be sufficient for these new managers 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 cure all of its problems and it may be necessary to extend the contracts of some contract personnel. 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

Since many members of TVA's new management team are not permanent TVA employees, TVA must make arrangements to replace these individuals eventually with experienced nuclear managers who are permanent TVA employees. TVA plans to take two actions to accomplish this.

1. Recruiting Program

First, as an ongoing program TVA will continue to recruit experienced managers from the nuclear industry to serve as permanent TVA employees.

Since most of the new contract managers will be serving for a two-year period, TVA will have sufficient time to satisfy at least part of its nuclear management needs by this method.

Given the statutory limits on salaries of TVA employees, TVA does not expect that it will be able to recruit all of the necessary experienced nuclear managers from outside of TVA.

Accordingly, as is discussed below, TVA is also planning to develop experienced nuclear managers from within its own organization. This is a long-term program that has several aspects as follows.

## 2. Management Development

In general, TVA has a large staff of technically competent individuals, many of whom possess the potential for developing into excellent nuclear managers. Some of these individuals are already serving in senior and middle level managerial positions within TVA's organization. TVA intends to develop the managerial potential of the best of these individuals by placing them as deputies to TVA's new nuclear management team. These deputy managers are identified in Table 1. As a result of the deputies' close working relationship with the new nuclear management team and the guidance which the managers will provide to the deputies, TVA anticipates that these permanent TVA employees will quickly develop their managerial skills and experience and will be ready to assume senior management positions within TVA's nuclear organization when the contract managers' terms with TVA expire.

Since the basic salaries of TVA's senior nuclear managers are below industry norms due to statutory limitations, TVA will continue to experience difficulties in recruiting experienced nuclear managers. However, through the use of its management development system, TVA will have a continuous source of experienced nuclear managers who will be prepared to assume responsibilities as senior managers within TVA's nuclear organization. Therefore, while turnover of senior nuclear management personnel will remain a concern to TVA, it has taken steps to mitigate its effects.

C. Conclusions

TVA has taken and will be taking both short-term and long-term actions to increase the number of experienced managers for its nuclear program. By obtaining experienced nuclear managers, TVA is providing the necessary leadership and proper direction for its nuclear program. In particular, by establishing the new management team headed by Mr. White, TVA has provided a necessary ingredient for resolving the remaining problems in TVA's nuclear program and placing the program on the road to recovery.

TABLE 1  
TVA'S NUCLEAR MANAGEMENT DEVELOPMENT SYSTEM

<u>Senior Management Position</u>	<u>Name of Senior Manager</u>	<u>Status of Senior Manager - TVA Employee or Contractor</u>	<u>Name of Deputy or Assistant Manager</u>	<u>Status of Deputy or Assistant Manager - TVA Employee or Contractor</u>
Manager of Nuclear Power	Steven A. White	Contractor	Charles C. Mason William T. Cottle	TVA Employee TVA Employee
Director of Nuclear Quality Assurance	Richard B. Kelly	Contractor	James E. Huston	Contractor
Director of Nuclear Engineering	William C. Drotleff	Contractor	L. J. Sas	Contractor
Director of Nuclear Construction	Brian R. McCullough	Contractor	William R. Brown, Jr.	TVA Employee
Acting Director of Nuclear Services	Cloin G. Robertson	TVA Employee	Richard A. Sessoms	TVA Employee
Site Director of Sequoyah	Herbert L. Abercrombie	TVA Employee	N/A	--
Site Director of Browns Ferry	Hugo P. Pomrehn	Contractor	John G. Walker	TVA Employee
Site Director of Watts Bar	William T. Cottle*	TVA Employee	N/A	--
Project Manager of Watts Bar 2	Robert A. Pedde	TVA Employee	N/A	--
Project Manager of Bellefonte	James P. Darling	TVA Employee	N/A	--
Director of Nuclear Safety and Licensing	Richard L. Gridley	Contractor	Mark B. Whitaker, Jr.	TVA Employee
Director of Nuclear Training	R. Joe Johnson	TVA Employee	Leo H. Sain	TVA Employee
Manager of Nuclear Personnel	Marilyn E. Taylor	TVA Employee	N/A	--
Manager of Planning and Financial Staff	John C. Krummel	Contractor	J. L. McAnally	TVA Employee
Manager of Nuclear Procedures Staff	M. H. Sturdivant	Contractor	N/A	
Director of Nuclear Managers Review Group	Ronald K. Seiberling	Contractor	N/A	

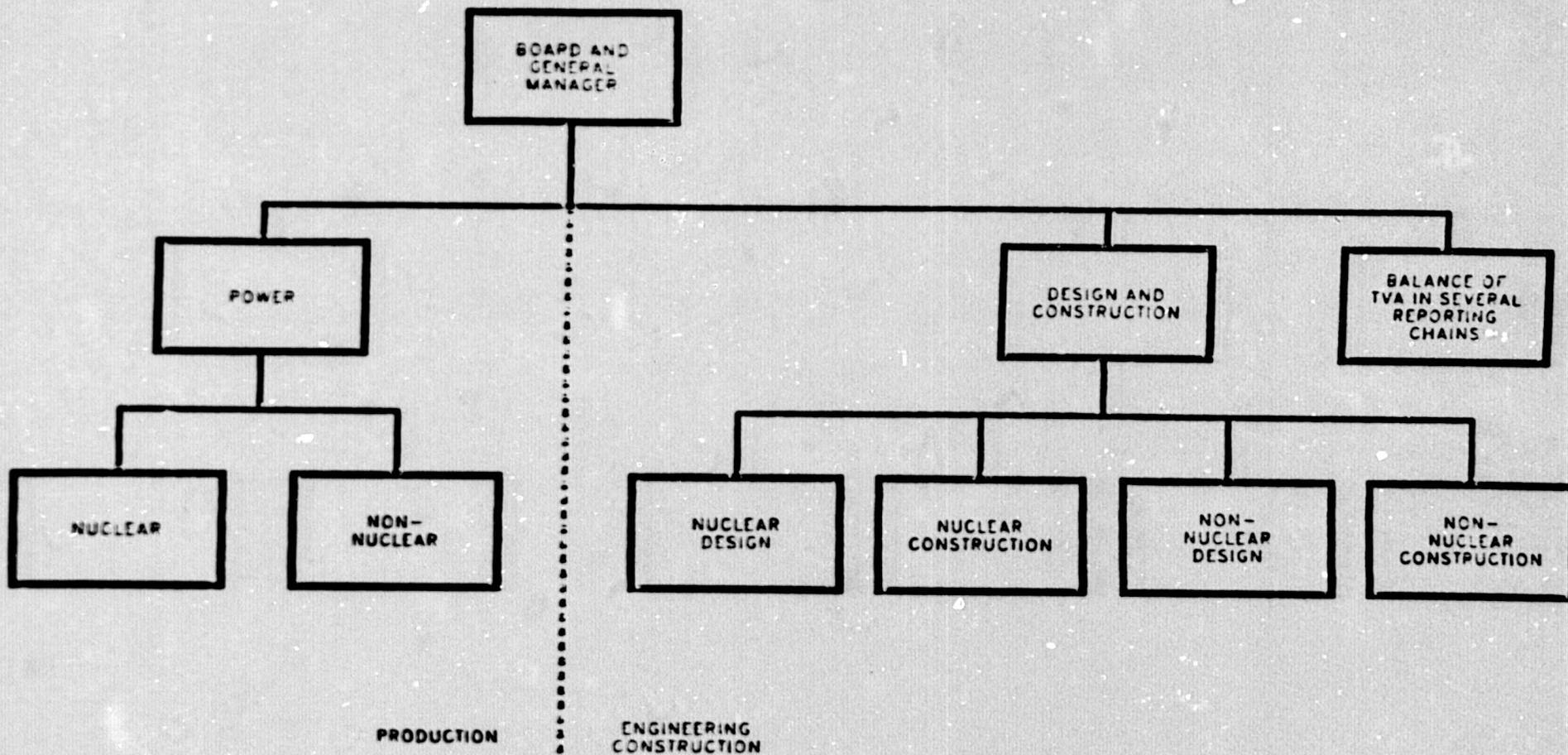
\*Interim assignment

#### 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, none of which reported to a single



TVA's Organizational Structure Prior to July 1985 (Functional Organization Chart)  
Figure 1

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manager. Furthermore, each of TVA's nuclear plants acted autonomously, for the most part developing its own programs and systems to control plant activities.

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 TVA's nuclear 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 any responsibility for non-nuclear activities. That process was significantly advanced through the approval of the organizational structure for the Office of Nuclear Power on May 23, 1986. The organizational structure, as applied to each site, will be described in the site-specific volumes of the Nuclear Performance Plans.

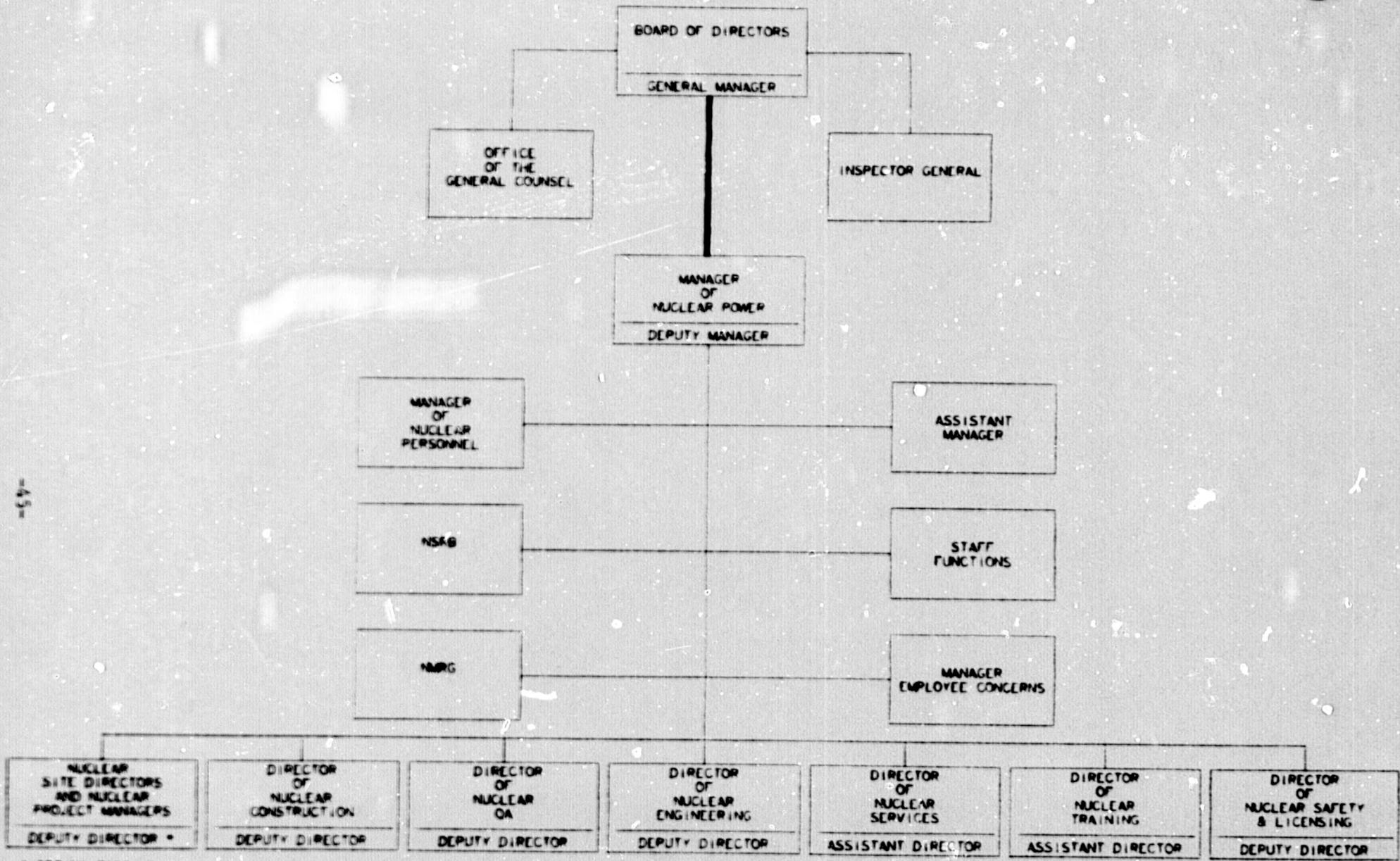
The restructuring of TVA's nuclear organization has been implemented in three stages, each in a more extensive form. First, responsibility for all of TVA's nuclear activities was consolidated within a single organization, the Office of

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 does not have any 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.



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\* BROWNS FERRY ONLY

TVA ORGANIZATION CHART  
(NUCLEAR)  
FIGURE 2

REVISION 1

The TVA Board of Directors has given the Manager of Nuclear Power an extensive charter. As is reflected in the Memorandum of Understanding between the Board and Mr. White (which is attached as Appendix 1), Mr. White "will have the direct authority and responsibility for the management control and supervision of TVA's entire nuclear program." This 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 will be 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 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 nuclear functional areas (such as quality assurance) was divided among several groups. As a result, nuclear functional activities were not subject to central control. Coordination of functional activities was sometimes difficult, and many nuclear 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 Board, Manager of Employee Concern Program, Manager of Nuclear Power Information, Manager of Nuclear Procedures 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. Similarly, prior to the reorganization, responsibility for nuclear functions, such as quality assurance, was divided among several organizations.

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.