

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

6N 38A Lookout Place

March 10, 1986

Mr. Nunzio J. Palladino, Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Palladino:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-259
50-260
50-296
50-327
50-328
50-390
50-391
50-438
50-439

On January 7, 1986, it was agreed that I would evaluate the TVA nuclear power program problems and to lay out an action plan for my solutions. The enclosure is TVA's corporate action plan which is based upon an assessment of the problems. As a result of this effort, the root cause of TVA's nuclear program problems has been identified, and TVA has developed a plan to remedy these problems.

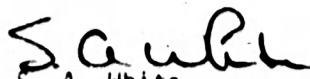
As indicated in my letter to Mr. Victor Stello dated February 4, 1986, this submittal revises our Corporate Nuclear Performance Plan (NPP), dated November 1, 1985. As such, this volume responds to enclosure 2 of Mr. Dircks' September 17, 1985 letter which requests information regarding TVA's corporate-level actions to correct problems in the management of TVA's nuclear activities. TVA has and will be submitting plans which address the NRC's plant-specific requests for information at a future date.

The revised Corporate NPP describes actions taken to strengthen our management, revise the organization responsible for implementing our nuclear power program, restore employee confidence in TVA's management, and implement various new programs and activities. These actions form the basis for both the short- and long-term recovery of TVA.

TVA will monitor the progress of implementation of the revised Corporate NPP and provide additional information to NRC staff as needed.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


S. A. White
Manager of Nuclear Power

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Mr. Nunzio J. Palladino, Chairman

March 10, 1986

Sworn to and subscribed before me
this 10th day of March 1986.

Jessie C. Miller
Notary Public

My Commission Expires 07/90

Enclosure

cc (Enclosure):

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Commissioner Roberts
Commissioner Bernthal
Commissioner Zech
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Washington, D.C. 20555

Mr. James Taylor, Director (5)
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

TITLE PAGE

**REVISED CORPORATE NUCLEAR
PERFORMANCE PLAN**

TENNESSEE VALLEY AUTHORITY

March 1986

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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

The 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 generative 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 assembled a new management team for its nuclear activities. Of particular note, TVA has contracted for the services of Steven A. White, as Manager of Nuclear Power, to take charge of all of TVA's nuclear activities. Mr. White is a retired four-star admiral who headed the U.S. Navy's procurement program and commanded the Atlantic Submarine Force. Additionally, since October 1985, TVA has added the following experienced senior nuclear managers to its staff: 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; W. C. Bibb as Site Director of Browns Ferry Nuclear Plant, with more than thirty years of nuclear experience; and Richard L. Gridley as Manager, Nuclear Safety and Licensing, with almost thirty years of nuclear experience. These new managers, together with TVA's existing core of experienced nuclear managers, provide TVA with a senior-management team having extensive nuclear experience.

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, TVA is seeking to develop the nuclear managerial capability 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 soon develop the necessary skills and experience to assume senior management positions.

In the past, all of TVA 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, lines of authority and responsibility have not always been clear, and the implementation of TVA's nuclear program has not been consistent. To remedy this, TVA is totally restructuring its nuclear organization. This reorganization will consist of the following steps:

- o For the first time in the history of TVA's nuclear program, responsibility for all nuclear activities will be consolidated within a single organization, and this organization will not have any responsibility for non-nuclear activities. TVA's nuclear organization will be headed by the Manager of Nuclear Power, who

will report directly to TVA's Board of Directors and General Manager. Thus, TVA has established a senior management position which can exercise strong and consistent control over TVA's nuclear program and provide the necessary leadership to remedy TVA's nuclear problems.

- o TVA's nuclear headquarters personnel will be reorganized into several newly-created departments, each of which will have responsibility for a discrete type of functional activity (such as engineering, construction, quality assurance, training, or licensing). Each department will have the authority to establish programs and procedures governing its type of functional activity, and will be held responsible for the technical adequacy of activities within its functional area, including activities at TVA's nuclear plants. As a result, TVA will now be providing centralized direction and control of its nuclear activities.
- o TVA's nuclear site personnel will be reorganized into functional departments which parallel the functional departments in TVA's nuclear headquarters. Each site department will receive technical direction from its respective headquarters department, and site directors and project managers will be responsible for planning, scheduling, coordinating, and providing project direction for the activities of the site departments. This arrangement will enable TVA to provide uniform direction and technical control of the activities at its nuclear sites, while giving the site directors and project managers sufficient authority to determine what site activities should be performed and when they should be accomplished.

In sum, by restructuring its nuclear organization, TVA will be providing centralized direction and control over its nuclear program and will be providing clear lines of authority and responsibilities 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 will be accountable for the quality of their work.

As a result of TVA's lack of sufficient number of experienced nuclear managers who could provide leadership and proper direction to ensure the safe construction and operation of TVA's nuclear plants, many TVA employees have 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 will be available to receive employee concerns through several different means, including mandatory exit interviews for transferring or terminating employees. Second, TVA has had a policy which places paramount importance on the safety of its nuclear activities, which makes each individual responsible for the quality of his work, and which prohibits intimidation or harassment of employees who express quality concerns. TVA is taking steps to ensure that this policy is communicated to employees and is 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:

- o 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 will establish a nuclear safety review group to help keep the Board informed and advised regarding nuclear matters.
- o 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 will be establishing centralized programs and procedures to control all TVA nuclear activities; TVA has assigned the Division of Nuclear Services with the responsibility

to provide centralized planning, scheduling, and budgeting controls for TVA's nuclear activities; and TVA is establishing a nuclear Corporate Commitment Tracking System.

- o 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 escalation of 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.
- o Programmatic Improvements - TVA is taking several steps to improve areas of its nuclear program, including welding, operations, maintenance, and control of design changes and modifications.

TVA has also developed a Nuclear Performance Plan for Sequoyah Nuclear Plant and is 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 any of these 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).

Since submission of the Corporate NPP, TVA has made significant changes in its nuclear management personnel. As a result, TVA has re-evaluated its approach for correcting the problems which have arisen in its nuclear program and has developed a substantially revised Corporate NPP. The purpose of this revision of the Corporate NPP is 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 has also submitted a Nuclear Performance Plan for Sequoyah Nuclear Plant and is planning to submit Nuclear Performance Plans for Browns Ferry Nuclear Plant and Watts Bar Nuclear Plant. In total, the revised Corporate Nuclear Performance Plan and the plant-specific plans will provide a complete account of the actions which TVA is 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 (Ref. 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 action 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, a lack of a sufficient number of

experienced managers who can provide leadership and proper direction to ensure the safe 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. In general, this action consists of the following:

- o TVA will provide 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.
- o TVA is restructuring its nuclear organization to clarify lines of authority and responsibility (including providing position descriptions) and to provide centralized direction and control of its nuclear activities. A description of this reorganization is provided in Section IV.
- o TVA is taking steps to restore employee trust in its nuclear management. These steps are discussed in Section V.

- o 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.

In general, these steps address the NRC's request for information under 10 CFR 50.54(f). TVA's responses to the NRC's specific requests are provided in Appendix 2. Additionally, Appendix 3 provides TVA's revised responses to the NRC's December 20, 1985, questions regarding the original Corporate NPP (Ref. 3). Responses to the NRC's request for information regarding Sequoyah have already been submitted and TVA is preparing plans which address NRC's plant-specific questions on Watts Bar and Browns Ferry.

At the present time, it is not possible to predict when TVA will be ready to operate any of its nuclear plants. TVA is still in the process of installing its new nuclear management, 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. Until these processes are complete, TVA will not be in a position to formulate a schedule for resumption of operation.

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 is 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 and a relocation incentive bonus. The Board is also considering a deferred compensation plan. Nevertheless, TVA still has not been able to hire a sufficient number of experienced nuclear managers as permanent TVA employees. As a result, TVA has 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).

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 eleven of TVA's top fifteen positions in its nuclear organization have been filled with new or different individuals since October 1985. Specifically, the following changes have been made in TVA's senior nuclear management since October 1985:

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 will be 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 will assist 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 will assist the Manager of Nuclear Power in the management of TVA's nuclear activities. For the interim, Mr. Cottle will remain as 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 will be 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 will be 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 will be 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 will be in charge of planning and scheduling and other services for TVA's nuclear activities.

Site Director of Browns Ferry (W. C. Bibb) - Mr. Bibb is an employee of Management Analysis Company (MAC). TVA has contracted with MAC for the services of Mr. Bibb as Site Director of Browns Ferry. Mr. Bibb has more than thirty years of nuclear experience, including positions of Vice-President of Operations Services for MAC, Director of Power Generation for the Washington Public Power Supply System, and GE Site Manager for the Cooper Nuclear Station.

Site Director of Watts Bar - TVA is searching for a person to fill this position. In the interim, Mr. Cottle will remain as 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 will be in charge of TVA's nuclear safety and licensing activities.

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 will be in charge of TVA's personnel programs for nuclear activities.

Others

TVA's remaining senior nuclear managers also have extensive nuclear experience. For example, Herbert L. Abercrombie, Nuclear Site Director of Sequoyah, has more than fifteen years of nuclear experience; and R. Joe Johnson, Director of Nuclear Training, has more than twenty years of nuclear experience. 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.

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

- o 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.
- o 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.
- o 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.

- o Larry L. Jackson, Program Manager, 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).
- o 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:

- o 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.
- o John A. Kirkebo, Director 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.
- o Alan K. Priest, Assistant to Manager of Nuclear Construction, with more than fifteen years of nuclear experience, including the position of Bechtel's Assistant Project Manager for the South Texas Project.

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. Additionally, as is discussed below, TVA expects that this period will be sufficient for it to have acquired 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.

First, 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.

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 manager is 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.

TABLE 1
TVA'S NUCLEAR MANAGEMENT DEVELOPMENT SYSTEM

<u>Senior Management Position</u>	<u>Name of Senior Management</u>	<u>Is Senior Manager a TVA Employee or Contractor</u>	<u>Name of Deputy or Assistant Manager</u>	<u>Is Deputy or Assistant Manager a 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	John A. Kirkebo	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. Sessions	TVA Employee
Site Director of Sequoyah	Herbert L. Abercrombie	TVA Employee	N/A	--
Site Director of Browns Ferry	William C. Bibb	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. Cridley	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	--

*Interim assignment

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

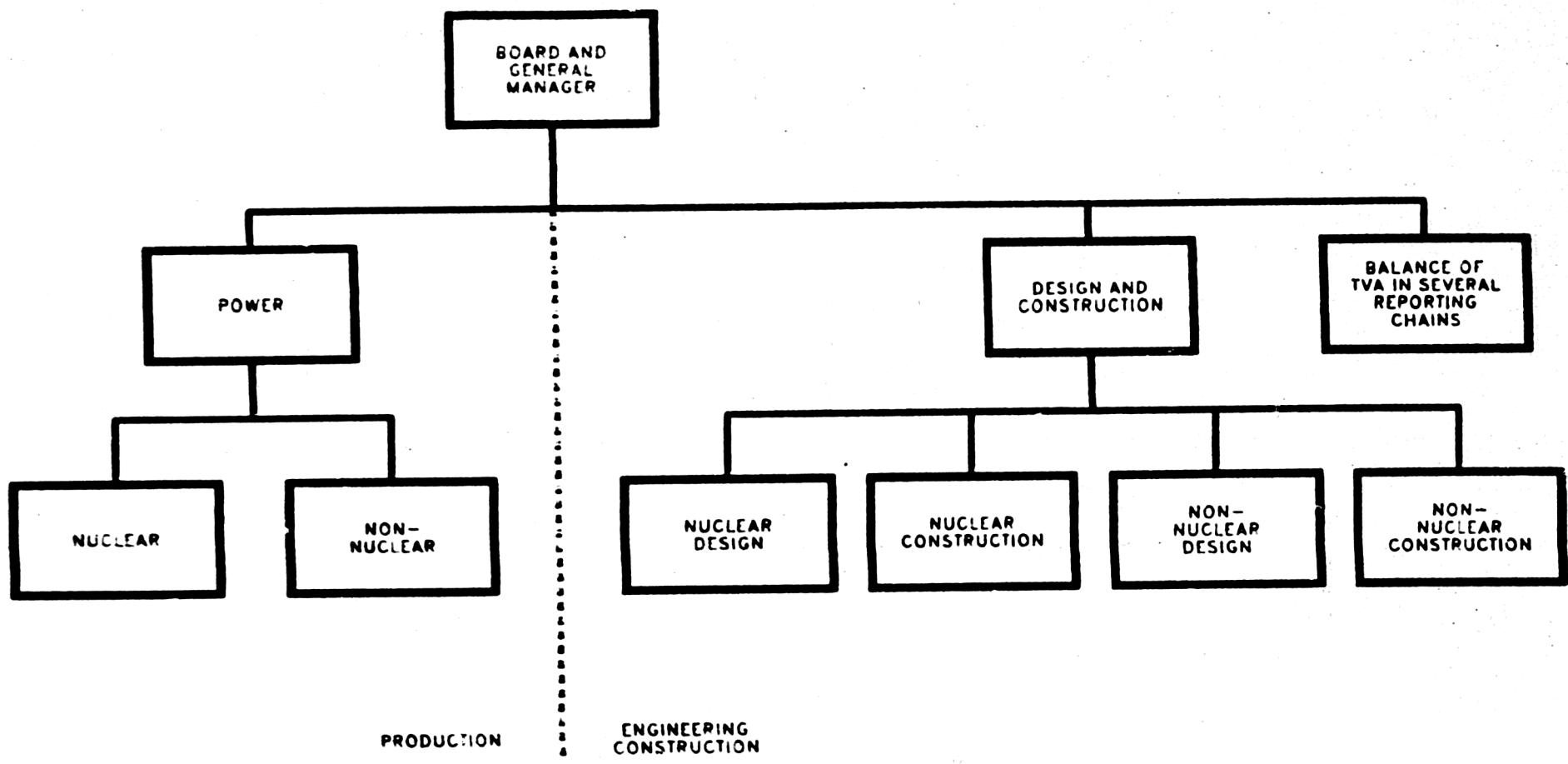
TVA has taken and will be taking both short-term and long-term action to increase the number of experienced managers for its nuclear program. By obtaining experienced nuclear managers, TVA will be providing the necessary leadership and proper direction for its nuclear program. In particular, by establishing 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.

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 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 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 is still continuing and will be essentially complete by May 1986.

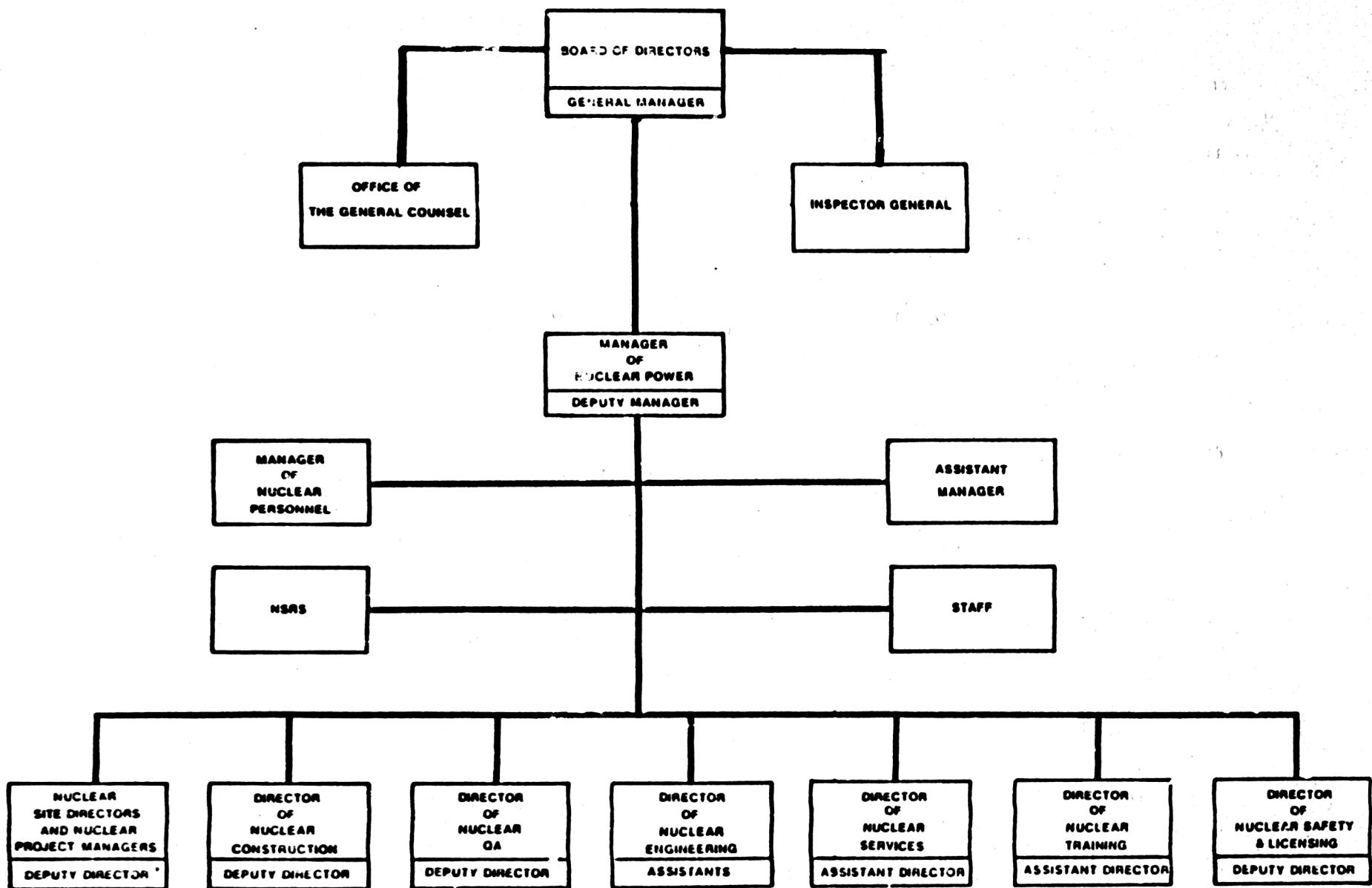
The restructuring of TVA's nuclear organization essentially is taking three forms. First, responsibility for all of TVA's nuclear activities is being consolidated within a single organization. Second, responsibility for each nuclear function is being consolidated within a single department devoted to that function. Finally, the nuclear headquarters departments are being given responsibility for providing technical direction for site activities within their respective functional areas. Each of these concepts is discussed below.

B. Consolidation of TVA's Nuclear Organization

Figure 2 depicts TVA's planned organizational structure for its nuclear activities. As is evident from Figure 2, all of TVA's nuclear activities will be under the direction and control of the Manager of Nuclear Power, who will report to the General Manager and Board of Directors of TVA.

Additionally, upon completion of the reorganization, TVA's nuclear organization will in general not have any responsibility for non-nuclear activities.

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." In general, 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.



*Brown Ferry only

**TVA ORGANIZATION CHART
(NUCLEAR)**
Figure 2

Certain TVA administrative groups (such as the Division of Purchasing) which provide support for the execution of the nuclear program will not report to the Manager of Nuclear Power. However, a representative from each of these support groups has been or will be assigned to the Office of Nuclear Power to ensure close cooperation and coordination between TVA's nuclear departments and the administrative groups. In particular, the Manager of Nuclear Power has the authority (with the approval of the Board of Directors and General Manager of TVA) to redirect and restructure the activities and functions of the Division of Purchasing as they pertain to the nuclear power program.

By divesting the nuclear organization of responsibility for non-nuclear activities, TVA's nuclear organization will be 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 will be divided into several newly-created departments, each of which will have responsibility for a discrete type of function. These departments will be 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, and Manager of Nuclear Personnel. Each of these directors and managers will report directly to the Manager of Nuclear Power.

Additionally, each of TVA's nuclear departments will be 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) will be held responsible 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 groups 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,

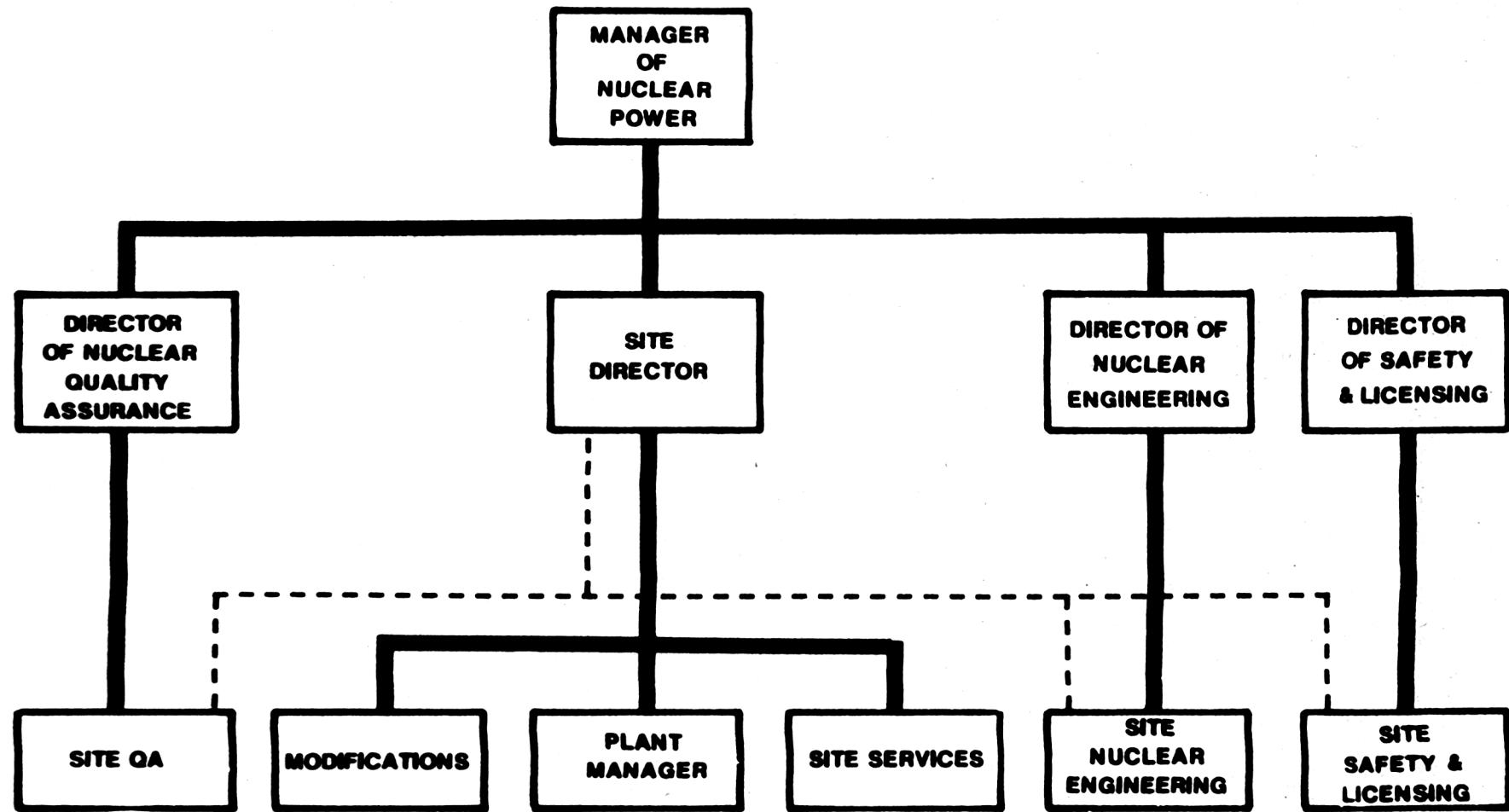
TVA has also provided added emphasis on their importance. Finally, by making each nuclear group responsible for the technical adequacy of functional activities within its respective area, TVA has provided a means for establishing centralized direction and control of its nuclear activities.

D. Centralized Direction of Site Activities

TVA's activities at each of its nuclear sites will be 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 will also report directly to the Manager of Nuclear Power to ensure his control over the plant activities.

TVA's nuclear site personnel will also be divided into several departments, each of which will have responsibility for a discrete type of function. In general, the functions of the nuclear site departments will parallel those of the nuclear headquarters departments and will consist of functions such as nuclear quality assurance, nuclear engineering, nuclear training, nuclear site services, and nuclear licensing.

As is depicted in Figure 3, each of TVA's nuclear headquarters departments will have responsibility for providing technical direction and assuring the technical adequacy of the activities performed by its parallel departments at TVA's nuclear plants. The Nuclear Site



TVA SITE ORGANIZATION
(OPERATIONS)

FIGURE 3

Directors and Nuclear Project Managers will have the authority and responsibility for planning, scheduling, coordinating, and providing project direction and control of the functional site departments. This structure will assure 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.

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

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 a nuclear QA organization which was responsible for conducting corporate-level audits, it had a nuclear QA group within the construction organization which was responsible for conducting inspections of construction activities, it had a nuclear QA group within engineering which was responsible for conducting audits of engineering activities, and it had 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 is taking several steps to improve this situation.

The responsibility for various quality assurance functions throughout the Office of Nuclear Power, including QA/QC activities related to engineering, construction, and operations, will be consolidated under the Director of Nuclear Quality Assurance. This includes QC inspections of construction and maintenance/modifications activities.

A standardized TVA quality assurance program will be developed and implemented. Among other things, the TVA Quality Assurance Topical Report will be revised and upgraded. Additionally, Nuclear Quality Standards and Directives will be developed and issued and Site Model Quality Assurance Procedures will be developed and issued. The standard nuclear QA program will be implemented at each nuclear site by the Site Quality Assurance Manager's organization. Adjustments of the standard program to meet site-specific conditions will be allowed, but only with the approval of the Director of Nuclear Quality Assurance and only to the extent that the adjustments do not degrade the level of quality provided by the standard program.

As a result of these actions, responsibility for TVA's nuclear QA/QC functions will be consolidated in one department, which will report to a high level of management within TVA, and TVA's nuclear QA/QC activities will be performed in accordance with a standard program. 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 is taking action to remedy this situation.

Responsibility for all nuclear engineering activities is being 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:

- o Contracting for outside engineering services and managing of engineering service contracts.
- o Directing multi-discipline teams created to investigate and resolve engineering issues (such as fire protection and environmental equipment qualification) associated with individual plants.
- o Acquiring, or creating, and maintaining, the technical record of the as-built facility and maintaining the record current with changes in the plant.
- o 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 will clarify lines of authority and responsibility for nuclear engineering activities and will help assure that these activities will be properly performed.

Engineering support for TVA's nuclear plants will be further strengthened by establishing a project team within the Division of Nuclear Engineering for each plant. Each project team will be responsible for all engineering activities associated with its plant. This

is a significant improvement from TVA's past practice where each nuclear plant was supported by many engineering discipline teams. By assigning overall engineering responsibility for a plant to one project team, the overall engineering effort for the plant will be better coordinated and focused on the particular needs of the plant.

3. Nuclear Training

There is an obvious inconsistency in the commitment to training, the implementation of training programs, and training performance at the sites. This condition is indicative of the need for a strong, centralized training program with uniform standards, motivated managerial involvement at the site level, and the support of top management.

The Director of Nuclear Training will report directly to the Manager of Nuclear Power. His primary goal will be to provide sufficient quality training and training programs to support safe startup and continual safe operation of all TVA nuclear units. Site managers, however, are responsible and will be held accountable for the implementation of authorized training programs and the training performance of their people. The Manager of Nuclear Power will provide the necessary resources, facilities, and direction to allow site management to produce the required results.

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

TVA has placed responsibility for the control for all TVA nuclear licensing and regulatory functions, compliance, and regulatory for its nuclear activities under the Director of Nuclear Safety and Licensing, who reports directly to the Manager of Nuclear Power. Although each of TVA's nuclear plants is retaining a licensing staff (and is increasing the size of its staff), this staff is subject to technical direction from the Director of Nuclear Safety and Licensing. Thus, the Director of Nuclear Safety and Licensing is

responsible for central control (and consistency) of the TVA nuclear licensing process, including policies, programs, strategies, and documentation for licensing activities.

By centralizing its nuclear licensing activities under a manager who reports directly to the Manager of Nuclear Power, TVA is increasing 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 is restructuring its organization to consolidate all responsibility for its nuclear activities within a single organization headed by the Manager of Nuclear Power. TVA is also establishing functional nuclear departments which will 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 will provide assurance that lines of responsibility and authority for nuclear activities will be clear, that the necessary coordination and communication among nuclear organizations will occur, and that TVA's nuclear activities will be subject to centralized management direction and control.

V. RESTORING EMPLOYEE CONFIDENCE IN TVA NUCLEAR MANAGEMENT

A. Introduction

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

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

Additionally, TVA plans to take several steps which are directly intended to restore employee trust in TVA nuclear management and to instill an atmosphere which is conducive to quality. In general, these steps consist of (1) establishing a

system in which employees can express quality concerns to TVA's nuclear management without fear of reprisal and with assurance that their concerns will be fully addressed, and (2) establishing a policy which promotes quality, ensuring that TVA's employees are aware of this policy, and taking disciplinary action against those who act contrary to this policy. Each of these is discussed below.

B. Establishing A System To Receive Employee Concerns

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

1. Special Program at Watts Bar for Resolving Employee Concerns

In 1985, TVA augmented its existing employee concern program with the Special Program designed to elicit any employee concerns related to construction of Watts Bar. This program consisted of hiring an independent contractor, Quality Technology Company (QTC), to interview all TVA employees associated with Watts Bar and establishing a hot line to receive concerns from other TVA

employees. Measures were taken to protect the confidentiality of employees who expressed concerns. The substance of the concerns were investigated by the Nuclear Safety Review Staff (NSRS) which, at that time, reported to the Board of Directors. These investigations are continuing.

Although the initial interview process has been completed, the QTC contract has been extended and its funding level has been increased. QTC's current activities include maintenance of the existing employee concern files and answering questions relating to the information in the files. QTC is also ensuring continued confidentiality of employee concerns.

As a result of the Special Program, employee concerns regarding construction of Watts Bar have been identified. Many of these concerns have already been investigated. The next phase of the Special Program is the resolution of identified concerns at Watts Bar.

Although most of the concerns related to Watts Bar remain to be resolved, TVA has evaluated the resolution process (including NRC comments resulting from its inspection of the program) to determine whether any improvements could be made. As a result, TVA has refined its program to emphasize: (1) in-depth review of concerns, (2) more rapid resolution of issues, (3) development of generic treatment of issues, (4) identification of trends and root

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

TVA is reviewing individual concerns to determine an appropriate resolution for each concern. In addition, in order to provide for evaluation of related concerns and determine whether a trend or generic concern exists, TVA has divided all concerns into the following nine categories: Quality Assurance (QA)/Quality Control (QC); Material Control; Management and Personnel issues; Intimidation, Harassment, and Misconduct; Operations; Welding; Construction; Industrial Safety; and Engineering. Each of these categories of concerns will be assigned to a review group of senior TVA and/or contractor personnel for further evaluation. In general, the review groups will perform the following functions:

- o As appropriate, the review groups will divide the concerns into subcategories and will establish an approach and schedule for reviewing the concerns in each subcategory.
- o The review groups will then review each category or subcategory of concerns, determine whether any generic condition exists, and evaluate the significance of any such condition. The review groups will also determine

whether any represents a condition which might be reportable to NRC pursuant to 10 CFR 50.55(e), 10 CFR 50.72, 10 CFR 50.73, or 10 CFR Part 21. Such conditions will be appropriately documented, referred to the responsible TVA department for further evaluation and reporting if necessary, and tracked as part of the Special Program.

- o The review group will recommend corrective action for each generic condition, will perform a root cause analysis of such conditions, and will recommend action to remedy the root cause of the condition. The responsible TVA nuclear departments will determine what corrective actions will be implemented, subject to the review and approval of the review groups.
- o The review groups will prepare a report which will form the basis for closing the specific concerns in each category. The closeout reports will include a section outlining TVA's planned actions to resolve the concerns. These reports will be in lieu of individual responses to the employees who expressed concerns and will be made available to all employees and other interested parties.

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

Finally, the Inspector General will also investigate and report on cases involving intimidation and harassment. Until the Inspector General is ready to assume full responsibility for this function, it will be performed under the direction of TVA's Office of General Counsel (OGC). The OGC's present intent is to use Quality Technology Company (QTC) to investigate these allegations.

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

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

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

TVA has a policy which encourages each employee to report any concern he may have to his supervisor and up through line management if necessary. Line management has responsibility for the quality and safety of activities under its control and for the resolution of any problems which may arise in those activities. Accordingly, if the managers are to function effectively, they should be aware of employee concerns regarding the quality of the activities for which they are responsible.

TVA also has a policy which prohibits intimidation, harassment, or reprisal against employees who raise concerns. Nevertheless, TVA realizes that, for a variety of reasons, some employees may be reluctant to report their concerns to supervisors and line management. This will be especially true until employee confidence in TVA's nuclear management is restored. Consequently, TVA is providing alternative means for employees to express their concerns.

TVA has established a new Employee Concern Program to receive and evaluate employee concerns regarding any of its nuclear activities. This program takes advantage of the lessons learned from the Special Program at Watts Bar and reflects the long-term needs of TVA. The Employee Concern Program is described in detail in a November 20, 1985 submittal to the NRC (Ref. 4) and is summarized below.

The new Employee Concern Program is headed by an Employee Concern Program Manager, who reports directly to the Manager of Nuclear Power. The Employee Concern Manager has full-time Site Representatives reporting to him from each nuclear site and major corporate nuclear location. Each location will utilize standard procedures, documentation, and recordkeeping, and will contribute to a common data base of information regarding employee concerns.

The Site Representatives are responsible for receiving and investigating employee concerns, ensuring resolution of the concerns, providing feedback to the employees who express concerns, and documenting this process. Employees can express concerns to the Site Representatives through several different means. This includes mail-in forms, telephone calls, walk-in interviews, and mandatory exit interviews for transferring or terminating employees. Any employee who expresses a concern may request that his

identity be kept confidential. A special orientation program for all employees has been completed to inform them of how the program works.

The Site Representatives will periodically determine employee understanding of and satisfaction with the Employee Concern Program through several means, including interviews and questionnaires. Additionally, information regarding individual employee concerns will be input into a computerized data base, and evaluations will be performed to identify any trends and the collective significance of the concerns, to identify the root causes of any adverse trends, and to develop appropriate corrective action.

Unlike the Special Program established for Watts Bar, the new Employee Concern Program will not utilize an independent contractor such as QTC, but instead will rely upon a system which reports to TVA's nuclear line management. This arrangement has several advantages. First, it unifies the responsibility for receipt, investigation, and resolution of the concerns in one group, thereby allowing for more timely and effective corrective action. Second, it ensures that the organization which is responsible for the quality and safety of its activities is also responsible for ensuring that the quality concerns of its employees are identified and resolved. Finally, by having the Employee Concern

Manager report directly to the Manager of Nuclear Power, it provides employees with a means for reporting their concerns to a high-level within TVA's nuclear organization if, for any reason, the employees do not believe that their supervisors would properly respond to expressions of concern.

In addition to TVA's Employee Concern Program, TVA's new Inspector General will operate a telephone hot line and other means to receive allegations and concerns. Since the Inspector General will report directly to TVA's Board of Directors, TVA employees will have a method of expressing concerns which is separate from the Office of Nuclear Power. Additionally, the Inspector General will investigate those employee concerns that the Office of Nuclear Power has determined involve intimidation or harassment and appropriate misconduct concerns. Naturally, employees will also be free to go outside TVA and express any concerns to the NRC and other governmental bodies.

In sum, TVA encourages employees to express their concerns so that prompt and effective corrective action can be taken. In particular, by establishing the Employee Concern Program, TVA has provided a means by which employees can present concerns in confidentiality to a high level of nuclear management, while ensuring that line

management has sufficient authority to obtain resolution of and corrective action for the concerns. TVA has confidence that this Program will help restore employee trust in TVA's nuclear management.

C. Instilling an Atmosphere Conducive to Quality and Safety

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

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

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

Given the large number of employee concerns expressed outside the normal chain of management (especially expressions of fear of reprisals for raising concerns related to quality), it is apparent that the Board's policy has not always been taken to heart by every TVA nuclear manager and supervisor. As a result, TVA is taking action to ensure that (1) safety and quality are the paramount consideration of every TVA employee, (2) that each individual takes responsibility for the quality and safety of the activities performed by him or under his direction or review, and (3) that employees are not intimidated from or harassed for expressing concerns.

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

Second, TVA's policy will be strictly enforced. Any individual who engages in intimidation or harassment of any kind will be subject to swift and appropriate disciplinary action to the full extent permitted by law. Additionally, each individual

will be held accountable for the quality of his work and of the work of those whom he supervises, and TVA will take appropriate action with respect to those individuals whose work quality does not conform with applicable standards.

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

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

A. Introduction

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

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

B. Increasing Upper Management Awareness of Nuclear Activities

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

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

1. Briefings and Reports for the Board of Directors

The TVA Board of Directors will be kept informed of developments and problems in TVA's nuclear program through three independent sources. First and primarily, the Board will be kept informed through the Manager of Nuclear Power's direct reporting relationship with the Board. Second, the Board will be kept informed through TVA's new Inspector General. Finally, TVA intends to establish a group of nuclear industry experts of national stature to provide advice on nuclear matters to the Board. Each of these sources is discussed below.

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

- o The TVA Board and General Manager are now receiving detailed monthly performance briefings from the Manager of Nuclear Power or his designee on progress toward specified goals and objectives for the nuclear power

program. Potentially significant nuclear safety issues are highlighted in these briefings. Special attention also is given to programmatic issues such as current employee concerns and quality assurance issues noted by NRC.

- o In addition to the formal briefings described above, Mr. White typically has had and expects to have informal conversations with one or more members of the Board several times per week. These conversations represent a significant means for informing Board members of developments in TVA's nuclear program.
- o The Manager of Nuclear Power informs the Board of nuclear plant events and other nuclear developments warranting its attention as they occur.

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

TVA has also established an Office of Inspector General, which is independent of the remainder of TVA's organization and which will report directly to the Board of Directors. The proposed plan approved by the Board of

Directors for the creation, structure, authority, and function of the Office of Inspector General is provided in Appendix 5. Under this proposed plan, the purpose of TVA's Inspector General is to provide complete and timely reporting to the TVA Board of Directors and to Congress on the overall efficiency, effectiveness, and economy of all TVA programs and operations; on TVA efforts to prevent and detect waste, fraud, and abuse; and on investigations of employee concerns. Among his other functions, the Inspector General will have the responsibility to

- 1) conduct inquiries and make determinations relating to all TVA programs and operations,
- 2) provide leadership and coordination and recommend policies for activities designed to prevent and detect fraud, waste, and abuse,
- 3) keep the TVA Board fully and currently informed about problems and deficiencies in TVA programs and operations and of progress on corrective action,
- 4) report to the Board on investigations of employee concerns, and
- 5) operate a telephone hot line and other means to receive allegations and information from all sources.

TVA will inform the NRC of the final plans governing the authority and function of the Inspector General after they are developed. By establishing an Office of Inspector General, TVA has provided the Board with a significant additional source of information for enabling the Board to stay involved in the management of TVA's nuclear program.

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

Finally, TVA is establishing a group of four or five nuclear industry experts of national stature to provide advice to them on nuclear matters. The functions and authority of this group, and the identity of its members, are still being developed. TVA will inform the NRC of these details after they become final.

2. Briefings and Reports for the Manager of Nuclear Power

The Manager of Nuclear Power will be kept informed of developments and problems in TVA's nuclear program through three primary mechanisms. First, as the manager with responsibility for the day-to-day management of TVA's overall nuclear program, the Manager of Nuclear Power will be in continuous contact with his staff and line managers and therefore will routinely learn of any significant developments and problems in the program.

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

Second, the Manager of Nuclear Power has assigned and is assigning an individual from nuclear headquarters to each of TVA's nuclear plants. These individuals will monitor activities at the plants and provide independent reports to the Manager of Nuclear Power regarding these activities.

Third, the Manager of Nuclear Power expects to hold regular meetings with his staff and line managers and to receive regular reports from them identifying any significant developments or problems. Since TVA is still in the process of restructuring its organization, hiring experienced managers, and evaluating its nuclear program, specific provisions governing plans for these meetings and reports will be developed at a later time.

Finally, TVA's Nuclear Safety Review Staff (NSRS) will report to the Manager of Nuclear Power. Currently, TVA is evaluating means to increase the effectiveness upon completion of the evaluation, TVA will notify the NRC of its conclusions and any action that will be taken. Additionally, the Manager of Nuclear Power receives reports from the Nuclear Safety Review Board for TVA's plants regarding their review of nuclear safety-related operating activities, programs, and events.

3. Conclusions

In order to enable upper management to provide timely and effective corrective action for significant problems in TVA's nuclear program, TVA has taken several steps to keep upper management informed of problems as they develop.

Most importantly, consolidation of TVA's nuclear organization will facilitate the flow of information up to TVA's senior management, and the hiring of additional experienced nuclear managers will provide TVA with the managerial resources to develop timely and effective corrective action for nuclear activities. To provide further assurance that TVA's Board of Directors is adequately informed of any significant problems which may develop, it will receive regular briefings and reports from three different sources (Manager of Nuclear Power, Inspector General, and a group of industry advisors). Similarly, the Manager of Nuclear Power will remain aware

of developments in TVA's nuclear power program through his day-to-day management of the program, regular meetings and reports from his staff and line managers, sources outside of line management and his staff and through reports from the NSRS.

C. Improving Management Systems and Controls

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

1. Improvements in Programs and Procedures

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

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

More specifically, TVA is planning to develop new corporate-level nuclear procedures and directives to govern its nuclear activities, including activities at its nuclear plants. To manage this effort, TVA has hired a person experienced in the development of procedural systems for controlling nuclear power activities. As discussed below, the actual development of the procedures will be performed on both a short-term and long-term basis.

- o In the short-term, TVA will prepare interim corporate-level nuclear standards for developing directives and procedures for each of the headquarters departments reporting to the Manager of Nuclear Power. These standards will be used to evaluate and revise all existing nuclear procedures on a site-by-site basis and will serve as a basis for preparation of final

corporate-level nuclear directives and procedures.

Whenever possible, the interim standards will be based upon those provisions of existing procedures which provide effective control of the activity in question.

- o In the long-term, TVA will prepare and issue Nuclear Power Directives, approved by the Manager of Nuclear Power, to define the specified objectives and responsibilities of the headquarters departments reporting to the Manager of Nuclear Power. Based upon the Nuclear Power Directives, corporate-level directives and procedures will be developed or revised for each headquarters department. Plant-specific procedures will then be reviewed and revised on a site-by-site basis to assure their conformance with the requirements in the corporate-level nuclear directives and procedures.

As a result of this process, TVA will have a set of corporate-level nuclear directives and procedures to control activities at each of its nuclear sites.