## TABLE OF CONTENTS


| Section | Title | Page |
|---|---|---|
| **13.0** | **CONDUCT OF OPERATIONS** | |
| **13.1** | **ORGANIZATIONAL STRUCTURE OF APPLICANT** | **13.1-1** |
| 13.1.1 | CORPORATE ORGANIZATION | 13.1-1 |
| 13.1.1.1 | DESIGN RESPONSIBILITIES | 13.1-1 |
| 13.1.2 | NUCLEAR POWER | 13.1-2 |
| 13.1.2.1 | OFFSITE ORGANIZATIONS | 13.1-2 |
| 13.1.2.2 | ONSITE ORGANIZATION | 13.1-2 |
| 13.1.3 | QUALIFICATION REQUIREMENTS FOR NUCLEAR FACILITY PERSONNEL | 13.1-2 |
| **13.2** | **TRAINING PROGRAMS** | **13.2-1** |
| 13.2.1 | ACCREDITED TRAINING PROGRAMS | 13.2-1 |
| 13.2.2 | GENERAL EMPLOYEE AND FITNESS FOR DUTY TRAINING PROGRAMS | 13.2-1 |
| 13.2.3 | OTHER TRAINING PROGRAMS | 13.2-2 |
| **13.3** | **EMERGENCY PLANNING** | **13.3-1** |
| **13.4** | **REVIEW AND AUDIT** | **13.4-1** |
| 13.4.1 | ONSITE REVIEW | 13.4-1 |
| 13.4.2 | INDEPENDENT REVIEW AND AUDIT | 13.4-1 |
| **13.5** | **SITE PROCEDURES** | **13.5-1** |
| 13.5.1 | SYSTEM OF SITE PROCEDURES | 13.5-1 |
| 13.5.1.1 | CONFORMANCE WITH REGULATORY GUIDE 1.33 | 13.5-1 |
| 13.5.1.2 | PREPARATION OF PROCEDURES | 13.5-1 |
| 13.5.1.3 | ADMINISTRATIVE PROCEDURES | 13.5-2 |
| 13.5.2 | OPERATING AND MAINTENANCE PROCEDURES | 13.5-2 |
| 13.5.2.1 | OPERATING PROCEDURES | 13.5-2 |
| 13.5.2.2 | OTHER PROCEDURES | 13.5-3 |
| **13.6** | **PLANT RECORDS** | **13.6-1** |
| 13.6.1 | PLANT HISTORY | 13.6-1 |
| 13.6.2 | OPERATING RECORDS | 13.6-1 |
| 13.6.3 | EVENT RECORDS | 13.6-1 |
| **13.7** | **NUCLEAR SECURITY** | **13.7-1** |
| 13.7.1 | PHYSICAL SECURITY AND CONTINGENCY PLAN | 13.7-1 |
| 13.7.2 | PERSONNEL AND PROGRAM EVALUATION | 13.7-1 |
| 13.7.3 | PHYSICAL SECURITY OF TPBARS | 13.7-1 |

## TABLE OF CONTENTS

| Section | Title | Page |
|---|---|---|

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## LIST OF TABLES


| Section | Title |
|---|---|
| TABLE 13.5-1 | OPERATING PROCEDURES |

## LIST OF TABLES

**Section** **Title**

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## LIST OF FIGURES


| Section | Title |
|---|---|
| FIGURE 13.5-1 | SYSTEM OF WRITTEN PROCEDURES |
| FIGURE 13.5-2 | UNIT 1 & 2 CONTROL ROOM OPERATING AREAS |

## LIST OF FIGURES

**Section** **Title**

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# 13.0 CONDUCT OF OPERATIONS

## 13.1 ORGANIZATIONAL STRUCTURE OF APPLICANT

### 13.1.1 Corporate Organization

The information presented in Tennessee Valley Authority Topical Report TVA-NPOD89, Nuclear Power Organization Description Reference [1], is applicable to Watts Bar Nuclear Plant.

#### 13.1.1.1 Design Responsibilities

Watts Bar Unit 1

Westinghouse Electric Corporation has contracted to supply TVA with two nuclear steam supply systems. The Nuclear Engineering organization serves as the plant architect engineer for the balance of plant equipment and is responsible for ensuring that the technical requirements of the nuclear steam supply system contracts are met. The New Projects organization is responsible for constructing the plant in accordance with design specifications supplied by Nuclear Engineering.

Westinghouse assists in the plant startup program by providing technical guidance in support of the following operations:

*(1)* The storage, protection, installation, cleaning, initial calibration, testing, and operation of the nuclear system equipment, instrumentation, and material supplied by Westinghouse.

*(2)* The preoperational testing of the nuclear plant systems in which Westinghouse supplied equipment is installed. This included the right of review and comment on the preoperational testing of all plant systems that is related to the safety and performance of the nuclear system.

*(3)* Operational checkouts and startup testing of the nuclear system, the initial fuel loading, and startup to the completion of the warranty demonstration test.

*(4)* The onsite training of TVA personnel during the nuclear systems' preoperational testing, initial fuel loading, and startup activities.

*(5)* Overall fuel management services as part of the initial long-term fuel contract.

Watts Bar Unit 2

For the completion of Watts Bar Unit 2, Westinghouse continued to be the Nuclear Steam Safety System Supplier. The Nuclear Engineering organization served as the Design Authority for the balance of plant equipment. The Nuclear Generation Development and Construction (NGDC) organization is responsible for ensuring that the technical requirements of the nuclear steam supply system contracts are met and that engineering is completed and the plant constructed in accordance with design specifications. The Bechtel Corporation will provide professional engineering,

procurement, construction and related services (such as Quality Assurance, Quality Control, and maintenance and modifications work) needed for completion of Watts Bar Nuclear Plant Unit 2.

Westinghouse assists in the plant startup program by providing technical guidance in support of the following operations:

*1* Review and comment on site provided refueling procedures and perform lower core plate inspection, initial core load, install upper internals, install reactor vessel head and complete reassembly activities up to and including missile shields.

*2* Review and comment on the preoperational testing of all plant systems that are related to the safety and performance of the nuclear system.

*3* Westinghouse will provide engineers for onsite engineering support starting approximately one month before initial core loading and continue through the 100% power, test sequence.

## 13.1.2 Nuclear Power

### 13.1.2.1 Offsite Organizations

The information presented in Tennessee Valley Authority OrganizationTopical Report, TVA-NPOD89-A,[1] TVA Nuclear Power Group Organization Description is applicable to Watts Bar Nuclear Plant.

Qualification requirements for positions providing corporate technical support, specifying required education and experience, are maintained in approved position descriptions on file at the site and central office by the Nuclear Human Resources organization. Numbers of positions are contained in approved staffing plans also maintained by the Nuclear Human Resources organization.

### 13.1.2.2 Onsite Organization

The information presented in Tennessee Valley Authority Organization Topical Report, TVA-NPOD89-A,[1] TVA Nuclear Power Group Organization Description is applicable to Watts Bar Nuclear Plant.

## 13.1.3 Qualification Requirements for Nuclear Facility Personnel

Nuclear Power (NP) personnel at the Watts Bar plant will meet the qualification and training requirements of NRC Regulatory Guide 1.8 with the alternatives as outlined in the Nuclear Quality Assurance Program, TVA-NQA-PLN89-A, Reference [2].

Below are various onsite and offsite positions correlated to ANSI N18.1-1971 and ANSI/ANS 3.1-1981 positions as appropriate.

| TVA Position Title | ANSI N18.1-1971 Position Title |
|---|---|
| Plant Manager<br>Operations Manager | Plant Managers |
| Maintenance and Modifications Manager | Maintenance Manager |
| System Engineering Manager | Technical Manager |
| Operations Superintendent | Operations Manager |
| Chemistry Superintendent | Radiochemistry |
| Maintenance Superintendent | Maintenance Manager (Need not have non-destructive testing familiarity, craft knowledge or complete understanding of electrical, pressure vessel and piping codes.) |
| Assistant Unit Operator | Operators (Unlicensed) |
| Reactor Engineering Supervisor | Reactor Engineering and Physics |
| Electrical, I&C System Manager | Instrumentation and Control |

| TVA Position Title | |
|---|---|
| Radiochemical Laboratory Analysts, Instrument Mechanics, Radiological Control Specialists, Health Physics Technicians | Technicians |
| Craftsmen (Machinist, Electrician, Steamfitter, Boilermaker) | Repairmen |
| Offsite Supervisory Personnel | Staff Specialists |

| ANSI/ANS 3.1-1981 | |
|---|---|
| Radiological Control Superintendent | Radiation Protection |
| Shift Technical Advisor | Shift Technical Advisor |
| Shift Manager | Shift Supervisor |
| Unit Supervisor | Senior Operator |
| Unit Operator | Licensed Operators |

Qualification of Plant Personnel

The qualifications of key personnel are maintained on site and are available for NRC inspection.

## REFERENCES

*(1)* Tennessee Valley Authority Organization Topical Report TVA-NPOD89-A, TVA Nuclear Power Group Organization Description.

*(2)* Nuclear Quality Assurance Program, TVA-NQA-PLN89-A, Appendix B.

## 13.2 TRAINING PROGRAMS

### 13.2.1 Accredited Training Programs

The Watts Bar Nuclear Plant (WBN) training programs have been developed in accordance with the Systems Approach to Training as prescribed by the Institute of Nuclear Power Operations (INPO). The National Academy for Nuclear Training, through a formal accreditation process, verifies that WBN training programs meet the established criteria. WBN is a branch of the National Academy and has achieved accreditation of the following programs:

Non-licensed operator
Reactor operator
Senior reactor operator
Continuing training for licensed personnel
Shift manager
Shift technical advisor
Instrument and control technician
Electrical maintenance personnel
Mechanical maintenance personnel
Radiological Control technician
Chemistry technician
Engineering support personnel
Maintenance Supervisor

The training programs are periodically reviewed by management for effectiveness. Revisions are made as appropriate. Records are retained as necessary to support management information needs and to provide historical data.

### 13.2.2 General Employee and Fitness for Duty Training Programs

All persons regularly employed at WBN are trained in the following areas commensurate with their job duties:

Fitness for duty
Plant Organization and Administration
General plant description
Radiological protection
Emergency preparedness
Industrial safety
Fire protection
Security
Quality Assurance and Quality Control (Including Prodedure Overview)

### 13.2.3 Other Training Programs

Responsible managers ensure that personnel performing quality-related activities receive indoctrination and training to ensure that adequate proficiency is achieved and maintained.

## 13.3 Emergency Planning

The TVA Radiological Emergency Plan (REP) has been developed to provide protective measures for TVA personnel, and to protect the health and safety of the public in the event of a radiological emergency resulting from an accident at Watts Bar Nuclear Plant. The REP contains site-specific appendices for each plant. Watts Bar's radiological emergency information is in Appendix C. The REP fulfills the requirements set forth in part 50, Title 10 of the Code of Federal Regulations that an emergency plan be included in the Final Safety Analysis Report and was developed in accordance with the Nuclear Regulatory Commission and Federal Emergency Management Agency Guidance.

The Emergency Plan Implementing Procedures (EPIPs) which implement the REP provide more detailed descriptions of Watts Bar's site emergency organization, emergency response facilities, capabilities, equipment, protective actions, and responsibilities.

The "State of Tennessee Multijurisdictional Radiological Emergency Response Plan for Watts Bar Nuclear Power Plant" is referenced in Appendix E of the REP. The "Georgia Radiological Emergency Response Plan" and "North Carolina Plan for Sequoyah/Watts Bar" are also referenced in Appendix E.

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## 13.4 REVIEW AND AUDIT

### 13.4.1 Onsite Review

The plant staff organization provides continuing review of operational activities to ensure they are conducted in a safe manner. The Plant Operations Review Committee (PORC) is a multi-disciplined committee responsible for providing an oversight review of programs, documents, and activities required for the safe operation of the plant. The PORC advises the Plant Manager on matters related to nuclear safety. Also, technical reviewers provide for reviews of procedure changes and proposed changes to structures, systems, and components that affect nuclear safety in their area of expertise. These technical reviews determine the need for a cross-disciplinary review and whether NRC's approval prior to implementation is required.

Technical reviewers and PORC shall be qualified, organized, and conduct business as described in Reference [1].

### 13.4.2 Independent Review and Audit

Independent review and evaluation is performed by the Nuclear Safety Review Board (NSRB). The NSRB is described in Reference [1].

The Nuclear Assurance (NA) organization conducts the audit and assessment program as described in Reference [1].

The Engineering organization performs independent technical reviews as described in Reference [1].

**REFERENCES**

*(1)* Nuclear Quality Assurance Program, TVA-NQA-PLN89A.

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# 13.5 SITE PROCEDURES

## 13.5.1 SYSTEM OF SITE PROCEDURES

### 13.5.1.1 Conformance with Regulatory Guide 1.33

The Site Vice President and Plant Manager issue procedures governing employee actions and established standards for plant operation. These procedures are written using the guidelines of Regulatory Guide 1.33, Revision 2, February 1978, with alternatives as shown in the Nuclear Quality Assurance Program. Figure 13.5-1 shows the organizational structure of these various instructions. Plant operations and other work activities are performed in accordance with these written and approved procedures.

Administrative restrictions and requirements are established to ensure safe operation of the plant within the limits set by the facility licenses and adherence to Technical Specifications. They provide that plant activities are conducted in a manner which protects the general public, plant personnel, and plant equipment.

### 13.5.1.2 Preparation of Procedures

Site procedures are prepared by the appropriate section supervisors or other knowledgeable staff personnel. They are issued only after review in accordance with the Plant Operations Review Committee Charter and approval of the appropriate responsible manager. Figure 13.5-1 shows the organizational structure of these various procedures.

It is the appropriate responsible manager's responsibility to ensure that required reviews and approvals are completed before authorizing the use of any site procedure.

In addition to planned changes in the plant and its procedures, accidental or gradual changes in plant equipment, characteristics, or conditions can occur. Each supervisor and employee has the responsibility to be continually alert for such changes and to initiate procedure changes which may then be required. The periodic inspection of plant equipment and the continuing review and analysis of operating data from plant logs, instruments, and tests provide regular sources of information on plant conditions.

Temporary instructions are generated when conditions exist such that normal operation or normal administrative control cannot be followed. They are canceled or assigned expiration dates based on when the situation is returned to normal and are periodically reviewed. The administrative procedure system prescribes the methods whereby site procedures can be temporarily changed without delay when the need arises. Temporarily approved changes to procedures may be made provided:

*(a)* The intent of the existing procedure is not altered;

*(b)* The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator license on the unit affected; and

*(c)* The change is documented and reviewed by PORC and approved by the Plant Manager or his designee in accordance with approved administrative procedures within 14 days of implementation.

### 13.5.1.3 Administrative Procedures

Administrative procedures address basic programs and organizational interfaces. They are used to define the authority and responsibility of the reactor operators and senior reactor operators for the general conduct of operation and the programs necessary to support activities affecting safety.

The administrative procedures that prescribe the general conduct of operation satisfy the requirements of 10 CFR 50.54(i-m) and ensure the proper manipulation of controls by licensed reactor operators or senior reactor operators. These procedures also provide for assignment of the duties and responsibilities of shift personnel, shift relief and turnover, limitations on working hours, independent verification of the correct performance of operating activities, feedback of operating experience, plant housekeeping, communications techniques, and control room access. Figure 13.5-2 provides the layout of control boards within the Main Control Room to which access is controlled, and it shows typical operator surveillance areas.

Other administrative procedures are used for material control and address the procurement, receipt, storage, and traceability of material through its installation in the plant.

Administrative procedures are also used to ensure that measuring and test equipment is properly controlled and that the periodic calibrations and adjustments necessary to maintain accuracy within required limits are performed.

Administrative procedures address the detailed test schedules and records to be maintained to assure that all surveillance requirements are conducted in a timely manner and the results are properly documented.

## 13.5.2 Operating and Maintenance Procedures

### 13.5.2.1 Operating Procedures

Table 13.5-1 lists typical operating procedures.

#### 13.5.2.1.1 General Operating Instructions

General Operating Instructions are used for integrated plant operations such as plant startup, plant shutdown, etc. These procedures are required to ensure safety and reliability for complex activities that affect many different systems.

#### 13.5.2.1.2 System Operating Instructions

The System Operating Instructions control the various modes of operation of a system, including startup, shutdown, energizing, filling, venting, draining, and standby operation. They pertain to routine and anticipated operation of a system. Prerequisite conditions for operation, precautions to be observed, technical specifications, and

checkoff lists are included in these procedures when applicable. As far as practical, the System Operating Instructions are proven (during the preoperational and startup test programs) prior to the issuance of the operating license.

#### 13.5.2.1.3 Abnormal Operating Instructions

Abnormal Operating Instructions address conditions where operation of a system or equipment could degrade into an emergency condition without proper action. In addition, symptoms of the abnormality, automatic actions that may occur, and immediate and subsequent operator actions are given.

#### 13.5.2.1.4 Emergency Instructions

Emergency Instructions are prepared for conditions wherein a transient or accident has caused plant parameters to exceed reactor protection system setpoints, engineered safety feature setpoints, or other established limits. These procedures provide a discussion of the symptoms of the emergency event, automatic actions, and immediate and subsequent operator actions.

#### 13.5.2.1.5 Alarm Response Instructions

Alarm Response Instructions identify necessary operator actions in the event of an alarm, the origin of the alarm, and the probable cause of the alarm. These procedures are maintained at the appropriate control and alarm station(s). They are indexed by alarm window number.

#### 13.5.2.1.6 Fuel Handling Instructions

Fuel Handling Instructions are used to ensure a safe and orderly refueling. These procedures are followed when fuel or fuel-related components are handled. The procedures identify or refer to other system operation documents that specify periodic shutdown margin checks, fuel handling techniques, and other precautionary steps to assure that the facility license and Technical Specifications are not violated.

### 13.5.2.2 Other Procedures

#### 13.5.2.2.1 Maintenance Instructions and Modification Procedures

Maintenance Instructions are prepared for critical equipment or systems expected to require frequent or systematic maintenance. Written, generic modification procedures are also prepared for certain anticipated modification activities. These procedures will provide information to assure proper coordination of activities among organizations, as well as step-by-step actions to be followed by the craftsmen doing the work. As experience is acquired, original procedures will be revised and new procedures written to improve the quality of the maintenance and modification programs.

#### 13.5.2.2.2 Instrument Maintenance Instructions

Written instructions are used to perform periodic calibration and testing of safety-related plant instrumentation. These instructions ensure measurement accuracies adequate to maintain plant safety parameters within operational and safety limits.

### 13.5.2.2.3 Surveillance Instructions and Technical Requirement Instructions

Written procedures cover the conduct of periodic surveillance tests and inspections designated in the plant Technical Specifications and Technical Requirements Manual. These procedures specify requirements, precautions, acceptance criteria, step-by-step actions for conduct of the tests and return to normal, and documentation by those conducting the tests or inspections.

### 13.5.2.2.4 Technical Instructions

Written procedures for routine technical evolutions are prepared as required. Examples of these evolutions are chemical sampling and analysis, chemistry control, and calibration of vital instrumentation.

### 13.5.2.2.5 Miscellaneous Procedures

The following procedures prepared by site organizations are discussed in the referenced FSAR sections.

| | |
|---|---|
| Emergency Preparedness Instructions | 13.3 |
| Plant Security Instructions | 13.7 |
| Plant Radiation Protection Instructions | 12.5.3 |
| Radioactive Waste Management | 11.2.4 |
| Radioactive Waste Management | 11.4.4 |

### 13.5.2.2.6 Power Escalation Tests

Written procedures cover the conduct of tests performed during physics testing and power ascension testing. These procedures specify requirements, precautions, acceptance criteria, necessary step-by-step actions for conduct of the tests and return to normal, and signatures of those conducting the tests. These procedures are primarily used during the initial plant startup following core alterations.

**REFERENCES**

None

## Table 13.5-1 Operating Procedures
(Page 1 of 5)

(Note: This is a list of typical operating procedures. It is not all-inclusive, nor are procedures necessarily titled exactly as listed below.)

| |
|---|
| **General Operating Instructions** |
| - Plant Startup from Cold Shutdown to Hot Standby<br>- Plant Startup from Hot Standby to Minimum Load<br>- Plant Shutdown from Minimum Load to Cold Shutdown<br>- Normal Power Operation<br>- Generic Equipment Operating Guidelines |
| **System Operating Instructions** |
| - Main Steam System<br>- Steam Dump System<br>- Moisture Separator Reheaters<br>- Condensate and Feedwater System<br>- Condensate Startup Filter<br>- Auxiliary Feedwater System<br>- Extraction Steam, Heater Drains, and Vent System<br>- Auxiliary Boiler System<br>- Fire Detection System<br>- Condensate Demineralizer Polisher Operation<br>- Condensate Demineralizer Regeneration and Resin Transfer<br>- Condensate Demineralizer Waste Disposal<br>- Steam Generator Blowdown (SGBD) System<br>- Fuel Oil System<br>- Lubricating Oil System<br>- Raw Cooling Water System<br>- Raw Service Water and High-Pressure Fire Protection Systems<br>- Condenser Circulating Water System<br>- Alum Sludge Ponds<br>- Containment Purge System<br>- Containment HVAC and Pressure Control<br>- Incore Instrument Room Air Cooling System<br>- Auxiliary Building HVAC Systems<br>- Auxiliary Building Gas Treatment System (ABGTS)<br>- Shutdown Board Rooms HVAC - Elevations 757 and 772<br>- Containment Air Return Fans<br>- Control Building HVAC System<br>- Post Accident Sampling Facility (PASF) Ventilation System<br>- Control Air System<br>- Auxiliary Air System<br>- Service Air System<br>- Generator Hydrogen Cooling System<br>- Generator $H_2$ Seal Oil System |

**Table 13.5-1 Operating Procedures**
**(Page 2 of 5)**

- Stator Cooling Water System
- Generator Core Condition Monitor
- Secondary Chemical Addition
- Powerhouse $CO_2$ System
- DG $CO_2$ System
- Containment Hydrogen Analyzers
- Post-Accident Sampling System
- HTHW Building Heating System
- Main Turbine Turning Gear Operation
- Turbo-Generator Startup Operation
- Main Turbine Steam Seal System
- Transferring Hypochlorite
- 6.9-kV Common Start Buses
- 6.9-kV Reactor Coolant Pump Start Buses A & B
- 6.9-kV Reactor Coolant Pump Boards
- 6.9-kV and 480-V Common Electrical Boards
- 6.9-kV and 480-V Unit Boards
- 6.9-kV and 480-V Shutdown System
- 120-V AC Power Systems
- Plant DC Systems: 250-V, 125-V, and 48-V
- Security Backup Diesel Generator
- Emergency Lighting Standby Alignment
- Demineralized Water System
- Cask Decontamination System
- Ice Condenser System
- Ice Charging System
- CVCS - Charging and Letdown
- Boron Concentration Control
- CVCS Purification System
- Boric Acid Batching, Transferring, and Storage
- Safety Injection System
- Annulus Vacuum System
- Emergency Gas Treatment System
- Essential Raw Cooling Water System
- Reactor Coolant Pumps
- Pressurizer Pressure and Spray Control System
- Component Cooling Water (CCS)
- Containment Spray System
- RHR Spray System

**Table 13.5-1 Operating Procedures**
**(Page 3 of 5)**

| |
|---|
| - Residual Heat Removal System<br>- Liquid Waste Disposal<br>- Waste Gas Disposal System<br>- Spent Resin Handling<br>- Auxiliary Building Nitrogen and Hydrogen Systems<br>- Spent Fuel Pit Cooling System<br>- Primary Water Makeup System<br>Diesel Generator (DG) 1A-A<br>- Diesel Generator (DG) 1B-B<br>- Diesel Generator (DG) 2A-A<br>- Diesel Generator (DG) 2B-B<br>- Flood Mode Boration Makeup System<br>- Control Rod Drive and Rod Position Indication System<br>- Containment Isolation System<br>- Radiation Monitoring System<br>- Nuclear Instrumentation<br>- Incore Instrumentation System<br>- Reactor Protection System<br>- Communications Systems<br>- Permanent Hydrogen Mitigation System |
| **Abnormal Operating Instructions** |
| - Malfunction of Reactor Control System<br>- Malfunction of Reactor Makeup Control<br>- Nuclear Instrumentation Malfunction<br>- Unscheduled Removal of One RCP Below P-8<br>- Small Reactor Coolant System Leak<br>- Maximum Probable Flood<br>- Tornado Watch or Warning<br>- Earthquake<br>- Loss of Control Air<br>- Loss of Condenser Vacuum<br>- Loss of Containment Integrity<br>- Loss of Essential Raw Cooling Water<br>- Loss of RHR Shutdown Cooling<br>- Loss of Component Cooling Water (CCS)<br>- Loss of Normal Feedwater<br>- Turbine Trip<br>- Malfunction of Pressurizer Pressure Control System<br>- Malfunction of Pressurizer Level Control Channel<br>- Loss of 125-V DC Vital Battery Board I (Unit 1)<br>- Loss of 125-V DC Vital Battery Board II (Unit 1)<br>- Loss of 125-V DC Vital Battery Board III (Unit 1)<br>- Loss of 125-V DC Vital Battery Board IV (Unit 1)<br>- Loss of 125-V DC Vital Battery Board I (Unit 2) |

**Table 13.5-1 Operating Procedures**
**(Page 4 of 5)**

| |
|---|
| - Loss of 125-V DC Vital Battery Board II (Unit 2)<br>- Loss of 125-V DC Vital Battery Board III (Unit 2)<br>- Loss of 125-V DC Vital Battery Board IV (Unit 2)<br>- Break of Downstream Dam<br>- Reactor Coolant Pump Seal Abnormalities during Pump Operation<br>- Loss of 120-V AC Vital Instrument Power Board 1-I<br>- Loss of 120-V AC Vital Instrument Power Board 1-II<br>- Loss of 120-V AC Vital Instrument Power Board 1-III<br>- Loss of 120-V AC Vital Instrument Power Board 1-IV<br>- Loss of 120-V AC Vital Instrument Power Board 2-I<br>- Loss of 120-V AC Vital Instrument Power Board 2-II<br>- Loss of 120-V AC Vital Instrument Power Board 2-III<br>- Loss of 120-V AC Vital Instrument Power Board 2-IV<br>- Loss of Control Room Alarms<br>- Main Control Room Inaccessibility<br>- High Activity in Reactor Coolant<br>- Dropped or Damaged Fuel or Refueling Cavity Seal Failure<br>- Plant Fires<br>- Abnormal Release of Radioactive Materials<br>- Steam Generator Tube Leak<br>- Immediate Boration<br>- Loss of Offsite Power<br>- Turbine Runback Response<br>- Main Steam or Feedwater Line Leak |
| **Emergency Instructions** |
| - Reactor Trip or Safety Injection<br>- Rediagnosis<br>- Reactor Trip Response<br>- SI Termination<br>- Natural Circulation Cooldown<br>- Natural Circulation Cooldown with Steam Void in Vessel<br>- Loss of Reactor or Secondary Coolant<br>- Post LOCA Cooldown<br>- Transfer to Containment Sump<br>- Transfer to Hot Leg Recirculation<br>- Faulted Steam Generator Isolation<br>- Steam Generator Tube Rupture (SGTR)<br>Post-SGTR Cooldown Using Backfill<br>- Post-SGTR Cooldown Using Blowdown<br>- Post-SGTR Cooldown Using Steam Dump<br>- Status Trees<br>- Response to Nuclear Power Generation/ATWS<br>- Response to Loss of Core Shutdown<br>- Response to Inadequate Core Cooling<br>- Response to Degraded Core Cooling |

**Table 13.5-1 Operating Procedures**
**(Page 5 of 5)**

| |
|---|
| - Response to Saturated Core Cooling<br>- Response to Loss of Secondary Heat Sink<br>- Response to Steam Generator Overpressure<br>- Response to Steam Generator High Level<br>- Response to Loss of Normal Steam Release Capabilities<br>- Response to Steam Generator Low Level<br>- Response to Pressurized Thermal Shock<br>- Response to Cold Overpressure Condition<br>- Response to Phase B Containment Pressure<br>- Response to Containment Flooding<br>- Response to High Containment Radiation<br>- Response to High Pressurizer Level<br>- Response to Low Pressurizer Level<br>- Response to Voids in Reactor Vessel<br>- Loss of Shutdown Power<br>- Loss of Shutdown Power Recovery without SI Required<br>- Loss of Shutdown Power Recovery with SI Required<br>- Loss of RHR Sump Recirculation<br>- LOCA Outside Containment<br>- Uncontrolled Depressurization of All Steam Generators<br>- SGTR and LOCA - Subcooled Recovery<br>- SGTR and LOCA - Saturated Recovery<br>- SGTR without Pressurizer Pressure Control |
| **Fuel Handling Instructions** |
| - Receiving, Returning, Inspecting, and Storing New Fuel and Inserts<br>- Spent Fuel Pit Bridge and Spent Fuel Handling Tool<br>- Upender and Fuel Transfer Device and New Fuel Elevator<br>- Refueling Machine<br>- RCC Change Fixture<br>- Refueling Operation (Initial Core Loading)<br>- Full-length Control Rod Drive Shaft Latching and Unlatching<br>- Rod Cluster Control Assembly Change Tool<br>- Primary Source Installation<br>- Burnable Poison Rod Assembly Handling Tool<br>- Thimble Plug Handling Tool<br>- Removal and Unloading of Irradiated Reactor Vessel Material<br>- Surveillance Capsules<br>- Insert Movements<br>- Placement of Irradiated Fuel Assemblies into the New Fuel Elevator for Repairs |

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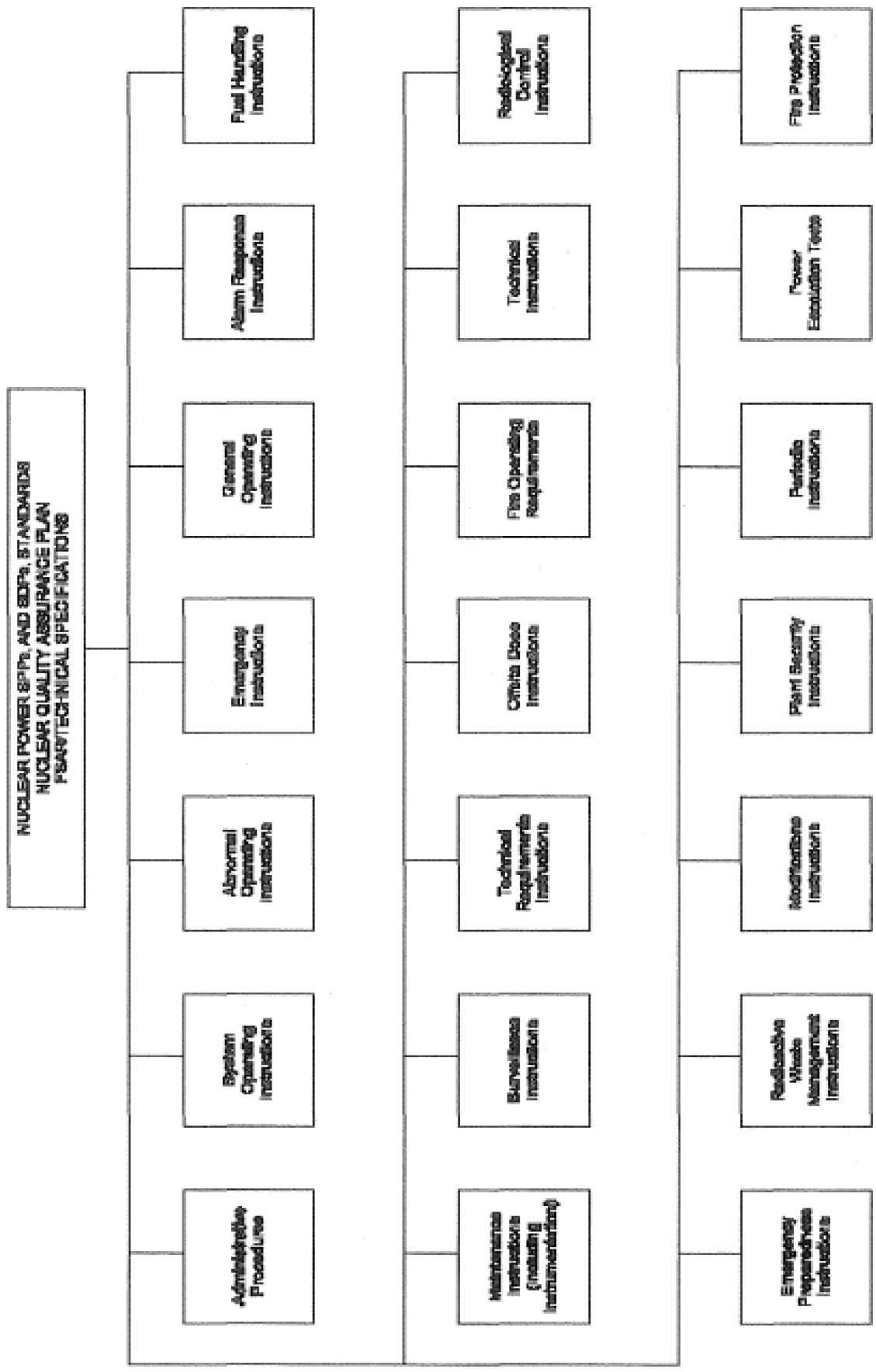


**Figure 13.5-1 System of Written Procedures**

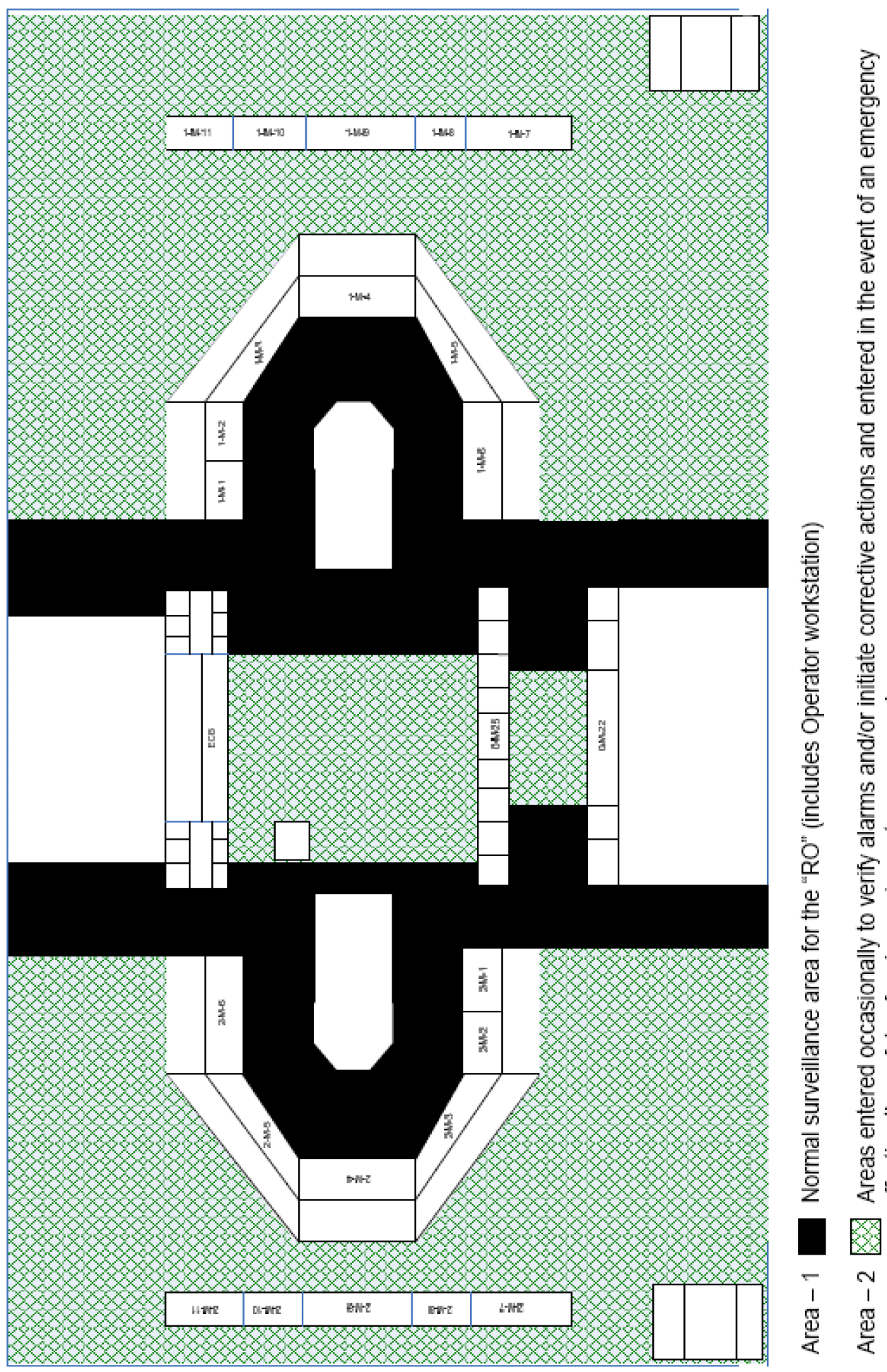


**Figure 13.5-2 Unit 1 & 2 Control Room Operating Areas**

## 13.6 PLANT RECORDS

### 13.6.1 Plant History

TVA's records program observes all acts of Congress, executive orders and regulations of Federal agencies having jurisdiction in records administration (for the particular case of nuclear plants, this includes 10 CFR 50, Appendix B, Criterion XVII). TVA complies with Department of Energy regulations concerning the preservation and disposal of records of public utilities and licensees, insofar as those regulations apply to TVA records relating to the generating, transmission, and sale of electric energy.

The site Management Services (MS) Manager has responsibility for 1) developing, implementing, and maintaining an integrated site program to ensure that documents are properly processed, up-to-date, and readily available for use, and 2) managing a program for storing, updating, and retrieving plant documents.

### 13.6.2 Operating Records

Records reflecting plant or equipment performance and records of tests and inspections which support compliance with the plant licenses, including records of radioactivity release to the environs are routed to the site MS for retention. These records are originated by all plant sections.

The operators maintain journals containing details pertaining to the operation of the plant. Operators also maintain operating data sheets which ensure their frequent observations of equipment condition and operating values. These records are examined by the plant operations management and are support documents for performance analysis. The unit logs or an acceptable electronic copy are retained in the site MS.

The station computer printouts and the operators data sheets serve as the normal source of operating data and statistics. To ensure continuity of information, provision is made for supplementary data to be maintained if the computer becomes inoperative. In addition, this information is supported by installed recording and data logging instrumentation. These records are sent to the Site MS on a regular basis for retention.

The Maintenance section initiates equipment history and inventory files. These records are maintained and updated by Site MS. These records contain complete information on repairs, modifications, tests, derangement and other data as considered necessary to provide a comprehensive material history of the item considered.

Specific records and their retention periods are controlled in the Reference [1].

### 13.6.3 Event Records

Records of individual radiation exposure and plant and environs radiation levels will be retained by Radiation Control Section.

Records of results of surveillance and maintenance requirements are retained by Site MS. Records of radioactive effluent discharges and quantities of radioactive wastes shipped for offsite disposal will be retained by Site MS.

**REFERENCES**

*(1)* Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A.

## 13.7 NUCLEAR SECURITY

### 13.7.1 Physical Security and Contingency Plan

TVA's plan for protection of Watts Bar Nuclear Plant is contained in separate controlled documents. These documents require submission as separate submittals to ensure compliance with 10 CFR 73.21[1] and paragraph 2.390(d) of 10 CFR part 2.[2] These separate submittals provide a comprehensive description of the physical security program for the plant site which include physical barriers and means of detecting unauthorized intrusions; provisions for monitoring access to vital equipment and access control; provisions for selection and training of personnel for security purposes; communication systems for security; provisions for maintenance and testing of security systems; arrangements for law enforcement assistance; provisions for responding to security threats; and required organizational charts and drawings that depict the site layout. These documents may be withheld from public disclosure pursuant to paragraph 2.390(d) of 10 CFR part 2.[2] These documents are identified as:

*(1)* The Physical Security Plan/Contingency Plan as specified by 10 CFR Parts 50.34(c),[3] 50.34(d),[4] and 73.55(a).[5]

*(2)* The Security Personnel Training and Qualification Plan as specified by 10 CFR 73.55(b).[6]

### 13.7.2 Personnel and Program Evaluation

TVA's Nuclear Power organization is responsible for protection of power properties with functional responsibility delegated as shown in the Nuclear Power Organization Description.[7]

The Watts Bar Security Program is evaluated by individual(s) who are knowledgeable of security requirements and independent of both security management and supervision. The review is conducted to determine the effectiveness of security procedures and personnel practices as they relate to the implementation of licensed security documents. Based on the review, a detailed report is submitted to appropriate management recommending corrective action and improvements, if any, to ensure the successful implementation of the security program[8].

### 13.7.3 Physical Security of TPBARs

Watts Bar Nuclear Plant Unit 1 has been approved by the Nuclear Regulatory Commission (NRC) for tritium production. Physical Security for tritium production is identified within a Department of Energy (DOE) approved security plan for WBN that is a separate plan from the NRC Physical Security Plan required by 10 CFR 50. DOE will continue to be the cognizant security agency for physical security concerning protection of the tritium producing burnable absorber rod (TPBARs). NRC’s security oversight and responsibilities will remain the same.

## REFERENCES


*(1)* 10 CFR 73.21(b), Protection of Safeguards Information: Performance Requirements.

*(2)* 10 CFR 2.390(d), Public Inspections, Exemptions, Requests for Withholding.

*(3)* 10 CFR 50.34(c), Contents of Applications; Technical Information; Physical Security Plan.

*(4)* 10 CFR 50.34(d), Contents of Applications; Technical Information; Safeguards Contingency Plan.

*(5)* 10 CFR 73.55(b), Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage; General Performance Objective and Requirements.

*(6)* 10 CFR 73.55(d), Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage; Security Organization.

*(7)* Nuclear Power Organization Description, Topical Report, TVA-NPOD89.

*(8)* 10 CFR 73.55(m), Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage; Security Program Reviews.