1.3 METHODS OF TECHNICAL PRESENTATION

1.3.1 Purpose

The original purpose of this Final Safety Analysis Report (FSAR) was to provide the technical information required by Section 50.34 of 10 CFR 50 to establish a basis for evaluation of the plant with respect to the issuance of facility operating licenses. The FSAR is to serve as the one document which will provide a complete and up-to-date description of the Browns Ferry Nuclear Plant as constructed and as modified since. In accordance with 10 CFR 50.71(e), as amended, the FSAR will be kept up-to-date through the issuance of amendments. An effective page listing will be placed just ahead of the FSAR Table of Contents. This listing will ensure that each copy in use within TVA is maintained in the most up-to-date condition possible. Except where otherwise specified, the information in this report is applicable to all three units of the Browns Ferry Nuclear Plant.

1.3.2 Radioactive Material Barrier Concept

Because the safety aspects of this report pertain to the relationship between plant behavior under a variety of circumstances and the radiological effects on persons off site, the report is oriented to the radioactive material barriers. This orientation facilitates evaluation of the radiological effects of the plant on the environment. Thus, the presentation of technical information is considerably different from that which would be expected in an operational manual, maintenance manual, or nuclear engineer's handbook.

The overriding consideration that determines the depth of detailed technical information presented about a system or component is the relationship of the system or component to the radioactive material barriers. Systems that must operate to preserve or limit the damage to the radioactive material barriers are described in the greatest detail. Systems that have little relationship to the radioactive material barriers are described only with as much detail as necessary to establish their functional role in the plant.

1.3.3 Organization of Contents

The Final Safety Analysis Report is organized into 14 major chapters, each of which consists of a number of sections. A system for classifying the various aspects of the BWR with respect to safety is given in section 1.4 (fourth section in Chapter 1). This classification system is fundamental to assessing the adequacy of the plant with respect to the relative importances of different safety concerns. The principal architectural and engineering criteria, which define the broad frame of reference within which the plant is designed, are set forth in section 1.5. Section 1.6 presents a brief description of the plant in which the nuclear safety systems and engineered

safeguards are separated from the other plant systems, so that those systems essential to safety are clearly identified.

Chapters 2 through 13 present detailed information about the design and operation of the plant. The nuclear safety systems and engineered safeguards are integrated into these sections according to system function (core standby cooling, control), system type (electrical, mechanical), or according to their relationship to a particular radioactive material barrier. Chapter 3 (Reactor) describes plant components and presents design details that are most pertinent to the fuel barrier. Chapter 4 (Reactor Coolant System) describes plant components and systems that are most pertinent to the nuclear system process barrier. Chapter 5 describes the primary and secondary containments. Thus Chapters 3, 4, and 5 are arranged according to the four radioactive material barriers.

The remainder of the chapters group system information according to plant function (radioactive waste control, core standby cooling, power conversion, control) or system type (electrical, structures). Chapter 14 (Plant Safety Analysis) provides an overall safety evaluation of the plant which demonstrates both the adequacy of equipment designed to protect the radioactive material barriers and the ability of the safeguard features to mitigate the consequences of situations in which one or more radioactive material barriers are assumed damaged.

1.3.4 Format Organization of Sections

Sections are numerically identified by representing their order of appearance in a chapter by two numbers separated by a decimal point; e.g., 3.4 is the fourth section in Chapter 3. Sections are further divided into subsections by numbers separated by decimal points (3.4.1, 3.4.1.1, etc.). Pages within each section are consecutively numbered (3.4-1, 3.4-2, etc.).

Tables are identified by the section number followed by a decimal point and the number of the table according to its order of mention in the text; e.g., Table 7.5-3 is the third table of section 7.5. Drawings, pictures, sketches, curves, graphs, and engineering diagrams are identified as Figures and are numbered in the same manner as tables. Figures 1.3-1 and 1.3-2 defines the meanings of piping and instrumentation symbols used in the figures of this report. Table 1.3-1 provides a list of all design and plant system figures appearing in the FSAR with the FSAR figure number cross-referenced to the engineering drawing number.

The general organization of a section describing a system or component is as follows:

Objective
Design Basis
Description
Evaluation
Inspection and Testing

To clearly distinguish the safety versus operational aspects of a system, the objective, design basis, and evaluation titles are modified by the word "safety" or "power generation", according to the definitions given in Section 1.2. Systems that have safety objectives are safety systems. A safety evaluation is included only when the system has a safety design basis; the evaluation shows how the system satisfies the safety design basis. A power generation evaluation is included only when needed to clarify the safety versus power generation aspects of a system that has both safety and power generation functions.

A nuclear safety operational analysis of the plant was performed to systematically identify the operational limitations or restrictions which were to be observed with regard to certain process variables and certain plant systems to satisfy specified nuclear safety operational criteria during the initial operational fuel cycle. The method used for this analysis is described in Appendix G. Subsequent nuclear safety operational analyses have been and will continue to be generated for the plant as they are necessitated by plant modifications.

Sections presenting information on topics other than plant systems or components are arranged individually according to the subject matter so that the relationship between the subject and public safety is emphasized.

Within each section of the text, applicable supporting technical material is referenced. References are cited either at the bottom of a page or at the end of a subsection. Most of the references are cited as a particular technical basis for BWR plant design and analysis, but some are specifically applicable to the Browns Ferry Nuclear Plant. The references in this category generally provide a full development and analysis of some aspect of GE BWR plant technology. These special references are incorporated by reference into the safety analysis report, thereby becoming part of the license application.

1.3.5 Power Level Basis for Analysis of Abnormal Operational Transients and Accidents

For those abnormal operational transients and accidents for which high power operation increases the severity of the results, the analyses assume plant operation at design power as an initial condition. For those events for which an initial condition

of low or intermediate power level operation renders the most severe results, the analyses presented in this report represent the most severe case within the operating spectrum.