

CALVERT CLIFFS NUCLEAR POWER PLANT  
INTEGRATED PLANT ASSESSMENT  
METHODOLOGY VOLUME 1:  
SYSTEMS, STRUCTURES AND COMPONENTS  
SCREENING

BALTIMORE GAS & ELECTRIC COMPANY

LIFE CYCLE MANAGEMENT/LICENSE RENEWAL PROGRAM

DATE: 3/1/93

9303050067 930302  
PDR ADDCK 05000317  
P PDR

**Table of Contents**  
Volume 1: Screening Methodology

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	I-1
1.1 Background	I-1
1.2 Purpose	I-2
1.3 Methodology Summary	I-3
2.0 SCREENING METHODOLOGY BASES AND OVERVIEW	II-1
2.1 Definitions	II-1
2.2 Screening and the Current Licensing Basis (CLB)	II-8
2.3 Assumptions and Initial Conditions	II-8
2.4 Source Document Identification and Characterization	II-9
2.5 Screening Methodology Overview	II-12
2.5.1 Logic Diagrams	II-12
2.5.2 System/Structure Level Screening	II-13
2.5.3 Component Level Screening	II-14
3.0 SYSTEM LEVEL SCREENING	III-1
3.1 Identification of Systems and Structures	III-1
3.2 Define Conceptual Boundaries and Functions	III-2
3.3 Screening "Tools" Preparation	III-3
3.3.1 Tools Addressing Rule Criteria 1 and 2	III-3
3.3.2 Tools Addressing Rule Criterion 3	III-6
3.3.3 Tool Addressing Rule Criterion 4	III-9
3.4 System and Structure ITLR Screening	III-10
3.4.1 ITLR Criteria 1 and 2 -- NRC Safety-Related S/S and Supporting S/S	III-11

<u>Section</u>	<u>Page</u>
3.4.2 ITLR Criterion 3 -- S/3 Relied Upon in Plant Safety Evaluations	III-12
3.4.3 ITLR Criterion 4 -- S/S Subject to Limiting Conditions of Operation	III-12
3.5 Results	III-13
4.0 COMPONENT LEVEL SCREENING	IV-1
4.1 Component Level ITLR Screening for Systems	IV-2
4.1.1 Identification of Detailed ITLR System Functions	IV-2
4.1.2 The Master Equipment List	IV-5
4.1.3 Development of Function Catalogs	IV-6
4.1.4 Generation of Screening Results Table	IV-10
4.2 Component Level ITLR Screening for Structures	IV-10
4.2.1 Unique Identifiers for Components	IV-11
4.2.2 Function Identification	IV-12
4.2.3 Equipment Type Listing for Structures	IV-14
4.2.4 Structural Components Supporting ITLR Functions	IV-14
4.3 Generic Components Handled by Commodity Programs	IV-16
4.4 Results	IV-17
5.0 COMPONENT EVALUATION AND COMPONENT AGING EVALUATION TASKS	V-1
5.1 Component Evaluation	V-1
5.2 Component Aging Evaluation	V-2

---

Attachments

Attachment A, "CCNPP Systems and Structures Listing,"

Attachment B, "System/Structure Level ITLR Screening Procedure:  
LCM-12" Rev 3, Change 0

Attachment C, "CCNPP Systems and Structures Important to License  
Renewal,"

Attachment D, "Component Level ITLR Screening Procedure for  
Systems: LCM-11" Rev 4, Change 0

Attachment E, "Component Level ITLR Screening Procedure for  
Structures: LCM-11S" Rev 1, Change 0

Attachment F, "Component Level Important to License Renewal  
Screening Results"

[Attachments A, B, and C will be submitted with the 3/1/93  
submittal. Attachments D, E, and F will be included in the  
3/15/93 submittal. For the purposes of the 3/15/93 submittal,  
Attachment F will contain only the Salt Water System, Reactor  
Coolant System, Compressed Air System and Containment Structure  
results.]

Figures

	<u>Page</u>
1-1 Integrated Plant Assessment Flow Diagram	I-5
2-1 System/Structure Level ITLR Screening	II-17
2-2 Component Level ITLR Screening of Systems	II-18
2-3 Component Level ITLR Screening of Structures	II-19

Table

	<u>Page</u>
2-1 Source Documents	II-20



## 1.0 INTRODUCTION

The purpose of Volume 1 of the Integrated Plant Assessment for Aging Methodology is to present the Systems, Structures and Components (SSC) Screening Process. During this process, plant SSCs are reviewed to determine whether they are Important to License Renewal as defined in 10 CFR Part 54. [2]<sup>1</sup>. Subsequent volumes of the Methodology will address (1) the evaluation of whether components could be subject to age related degradation unique to license renewal and (2) the detailed evaluation of aging unique to license renewal for such components.

The purpose of this section of Volume 1 is (1) to provide general, background information regarding the Baltimore Gas & Electric Company (BG&E) Life Cycle Management (LCM) Program, (2) to state the purpose of this methodology, and (3) to briefly introduce the topics presented in the following sections of this Screening Methodology.

### 1.1 Background

BG&E has embarked on a comprehensive, long-term LCM Program for Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2. The LCM Program integrates specific design, engineering, operations, and maintenance activities to focus attention on material conditions and aging management. The LCM Program involves all five Nuclear Energy Division (NED) Departments, a number of other BG&E Departments, and selected contractors.

The objectives of the LCM Program are to:

- Operate safely and reliably at maximum capacity,
- Preserve the license renewal option,
- Position BG&E to be ready to submit a license renewal application in the late 1990s

---

1 [ ] denotes a Source Document, as listed in Table 2-1. This designation is used for the first occurrence of a source document in each section.

Figure 1-1 describes the portion of the LCM Program called the Integrated Plant Assessment (IPA) for Aging which is required by 10 CFR Part 54.21. Two of the IPA tasks--specifically, ITLR System/Structure (S/S), and Component Screening--are the focus of this Methodology.

The System and Structure Level Screening Task addresses the systematic screening of all CCNPP systems and structures (S/S) to determine which are Important to License Renewal (ITLR). Throughout this methodology, the screening criteria are based on the definitions of Section 54.3 of the License Renewal Rule. S/S level screening is described in detail in Section 3.0. The term SSCs ITLR is defined in Subsection 2.1.

The Component Screening Task addresses the systematic screening of CCNPP components. The Component Screening Task is also referred to as "component level screening." The purpose of component level screening is to screen constituent components of systems and structures that were identified as ITLR in the S/S level screening to determine which of these components are ITLR. Component level screening is described in detail in Section 4.0 of this Methodology.

The basis for separate system level and component level screening is discussed in Subsection 2.3.

## 1.2 Purpose

The purpose of this Methodology is to: (1) document the basis for the screening process, including the S/S level and component level screening procedures; (2) communicate screening methodology concepts to those who are responsible for performing screening and those who are responsible for screening support; and (3) serve as a Source Document for other LCM Program Tasks and for general LCM Program Team training.

### 1.3 Methodology Summary

The Methodology is divided into six sections. The contents of Sections 2.0 through 6.0 are summarized below.

Section 2.0, Screening Methodology Bases and Overview, introduces the bases underlying the screening methodology and the criteria used to determine which SSCs are ITLR. Section 2.0 also provides definitions of important terms and acronyms that are integral to the screening methodology. Section 2.0 discusses the basic assumptions and initial conditions upon which the screening methodology relies and lists Source Documents which are used as references throughout this Methodology. Source Documents are characterized in accordance with a hierarchy established by the LCM Program and discussed in Section 2.0. It also provides an overview of S/S level and component level screening.

Section 3.0, S/S Level Screening, describes how S/S are identified and how their functions and conceptual boundaries are determined. It specifies the criteria to be used and the methodology to implement the criteria. Section 3.0 describes the development and use of Screening Tools to help determine which S/S are ITLR.

Section 4.0, Component Level Screening, describes how detailed system and structure functions are identified. It describes the methodology and criteria used to screen constituent components of S/S which are ITLR. Section 4.0 contains detailed implementation guidance for the methodology and criteria, and describes the use of the S/S Level Screening Tools to help determine which system components are ITLR. The equivalent process used for screening structural components that are ITLR is also described in section 4.0 as is the methodology for screening generic equipment types not specifically addressed in other portions of the Component Level Screening Process.

Section 5.0, Component Evaluation and Component Aging Evaluation,

introduces the basic approach for the next step of the Integrated Plant Assessment (IPA) process for those components that are identified as ITLR in Section 4.0. The program evaluations and detailed component evaluations which are summarized in this section are addressed in detail in Volume 2 of the IPA Methodology.

The following documents are attached to this Methodology:

Attachment A, "CCNPP Systems and Structures Listing," provides the listing of CCNPP S/S that enter into the screening process. Subsection 3.1 discusses the method for generating this list.

Attachment B, "System/Structure Level ITLR Screening Procedure: LCM-12" Rev 3, Change 0

Attachment C, "CCNPP Systems and Structures Important to License Renewal," provides the list of S/S that have been determined to be ITLR by system level screening.

Attachment D, "Component Level ITLR Screening Procedure for Systems: LCM-11" Rev 4, Change 0

Attachment E, "Component Level ITLR Screening Procedure for Structures: LCM-11S" Rev 1, Change 0

Attachment F, "Component Level Important to License Renewal Screening Results" provides the list of components in the ITLR systems which are ITLR as well as the important functions to which they contribute.

[Attachments A, B, and C will be submitted with the 3/1/93 submittal. Attachments D, E, and F will be included in the 3/15/93 submittal. Attachment F will contain only the Salt Water System, Reactor Coolant System, Compressed Air System and Containment Structure results.]

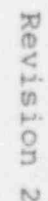
CCNPP IPA Methodology  
Volume 1: SSC Screening

Figure I-1

## 2.0 SCREENING METHODOLOGY BASES AND OVERVIEW

This Section defines the terms and acronyms (Subsection 2.1) that are used throughout the Report. Subsection 2.2 discusses the relationship between the current licensing basis (CLB) and the Screening Tasks. Subsection 2.3 presents the assumptions and initial conditions upon which the screening methodology is based. Subsection 2.4 describes and characterizes Source Documents relied upon during the development and implementation of the screening methodology. Finally, subsection 2.5 presents an overview of the screening methodology.

### 2.1 Definitions

There are a number of defined terms and acronyms that are important to the LCM Program. Many of the following definitions and abbreviations, identified by \*, are taken directly from the License Renewal Rule [2]:

1. (\*) **Aging Mechanisms** - The physical or chemical processes that result in degradation. These mechanisms include but are not limited to fatigue, erosion, corrosion, erosion/corrosion, wear, thermal embrittlement, radiation embrittlement, microbiologically induced effects, creep, and shrinkage.

2. (\*) **Age-Related Degradation** - A change in a system's, structure's, or component's performance or physical or chemical properties resulting in whole or part from one or more aging mechanisms. Examples of this type of change include changes in dimension, ductility, fatigue resistance, fracture toughness, mechanical strength, polymerization, viscosity, and dielectric strength.

**3.(\*) Age-Related Degradation Unique to License Renewal - Degradation--**

(1) That occurs during the term of the current operating license but whose effects are different in character or magnitude after the term of the current operating license (the period of extended operation); or

(2) Whose effects were not explicitly identified and evaluated by the licensee for the period of extended operation and the evaluation found acceptable by the NRC; or

(3) That occurs only during the period of extended operation.

**4. Critical Safety Function (CSF) [6] -** A condition or action that prevents core damage or minimizes radiation release to the public. A CSF may be fulfilled through automatic or manual actuation of a system or systems, from passive system performance, from inherent plant design, or from operator action while following recovery guidelines set down in procedures. The seven CSFs include:

Reactivity Control

RCS Pressure and Inventory Control

RCS Heat Removal

Containment Isolation

Containment Environment Control

Radiation Control

Vital Auxiliaries

**5(\*) Current Licensing Basis (CLB) -** The set of NRC requirements applicable to a specific plant and a licensee's written commitments for assuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts



2, 19, 20, 21, 30, 40, 50, 51, 54, 55, 70, 72, 73, 100, and appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design basis information defined in 10 CFR 50.2, as documented in the most recent final safety analysis report (FSAR) as required by 10 CFR 50.71, and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.

6. **Design Life** - The maximum period of operations for a nuclear power plant based on a presumed operating history.

7.(\*) **Effective Program (EP)** - A documented program to manage age-related degradation unique to license renewal that ensures that a system, structure, or component important to license renewal will continue to perform its required function or will not prevent the performance of a required function during the period of extended operation.

8. **Functional Requirements** - The primary functions of S/S including those which provide specific safety functions. Other auxiliary functions, such as providing an indication signal to an ancillary device, are not considered primary functions. The functional requirements will serve to establish conceptual S/S boundaries.

9.(\*) **Integrated Plant Assessment (IPA)** - A licensee assessment that demonstrates that a nuclear power plant facility's systems, structures, and components important to license renewal have been identified and that age-related degradation unique to license renewal will be managed to ensure that the facility's licensing basis will



be maintained during the renewal term.

**10. Life Cycle Management Evaluation Database (LCMEVAL)**

- A computer-based screening application which is used to facilitate the component level ITLR screening process for systems. LCMEVAL was created, tested and documented in accordance with the BG&E Quality Assurance Program for Software Development to justify its use in the safety-related screening tasks. Master Equipment List (MEL) data, Q-List data, drawing references, and other information useful in the screening process are extracted one system at a time from controlled plant data bases, loaded into LCMEVAL, and made available to evaluator. LCMEVAL helps to streamline the screening process by automating key steps and facilitating storage and printing of the results.

**11. Licensed Life** - The maximum period of operations, in calendar years, as defined by statute. For CCNPP, this period is 40 years.

**12. License Renewal (LR)** - The process whereby a licensee performs Integrated Plant Assessments which define the measures in place or planned to address age-related degradation unique to license renewal of SSCs important to license renewal. The NRC will evaluate and approve these measures and grant a renewal license. The term includes the licensee's collection and presentation of that information necessary to allow the NRC to renew the plant's operating license.

**13. Life Cycle Management (LCM)** - An integrated program to maintain the material condition of important systems, structures, and components through the current and any renewed license terms.

14(\*) **Nuclear Power Plant** - A commercial nuclear power facility of a type described in 10 CFR 50.21(b) or 50.22.

15. **Plant Event Evaluations** - Evaluations to show compliance with regulations concerning Anticipated Transients Without Scram (ATWS), Station Blackout, (SBO), Pressurized Thermal Shock (PTS), Fire Protection (FP), and Environmental Qualification (EQ). These evaluations provide bases for ITLR determinations under ITLR Criterion 3.

16. **Plausible Age-Related Degradation Mechanisms (ARDMs)** - (See Aging Mechanisms) An age-related degradation mechanism is considered plausible for a specific component if, when allowed to continue without any prevention or mitigation measures or enhanced monitoring techniques, it could not be shown that the component would maintain its capability to perform its intended safety function throughout the license renewal term.

(1) ARDMs managed for a specific component by current plant programs - Those Component-ARDM combinations which are addressed by a program which takes those actions necessary to monitor, mitigate, and where possible, prevent the age-related degradation unique to license renewal of the component. Such management is designed to either prevent the conditions which cause or exacerbate the mechanism, or to ensure that the degradation of components will not progress to the point where the component's function is threatened prior to the performance of some remedial action.

(2) ARDMs requiring further management - Plausible Component-ARDM combinations which are not fully addressed by current plant programs. As Component-ARDMs fall into this category, current programs

will be augmented or new programs implemented to fully address the ARDMs for the components in question.

17. (\*) **Renewal Term** - The period of time that is the sum of the additional amount of time beyond the expiration of the operating license that is requested in the renewal application plus the remaining number of years on the operating license currently in effect.

13. (\*) **Systems, Structures, and Components (SSCs) Important to License Renewal (ITLR)** - are:

(1) Safety-related SSCs, which are those relied upon to remain functional during and following design basis events to ensure:

- (i) The integrity of the reactor coolant pressure boundary;
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.

Design basis events are defined as in 10 CFR 50.49

(b) (1).

(2) All non-safety-related SSCs whose failure could directly prevent satisfactory accomplishment of any of the required functions identified in paragraphs (1) (i), (ii), or (iii) of this definition.

(3) All SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49),

pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

(4) All SSCs subject to operability requirements contained in the facility technical specification limiting conditions for operation.

19. **Function Catalog** - A Function Catalog consists of the Criteria Catalog and any additional components required to support each function listed on each system's Table 1. A Function Catalog is developed by reviewing the Criteria Catalog (if there is one), adding other required components and entering the components into LCMEVAL.

20. **Criteria Catalog** - A listing of components for an ITLR criterion obtained from LCMEVAL. The source for the components is the NUCLEIS equipment technical database. Valid ITLR criteria are: Flowsheet numbers, CLS1, LCO, PAM, 5049, Q, 1E, 1M, PB, and SBO.

21. **NUCLEIS Database** - A mainframe computer based information system used to initiate, plan, schedule, track and provide a history of maintenance for all plant components. NETD is an acronym used to denote the NUCLEIS Equipment Technical Database, which is that part of the NUCLEIS information system, indexed by equipment ID, which contains information specific to each component.

22. **MEL** - The MEL (Master Equipment List) is a compilation of the NETD technical data on equipment for a given system.

23. **Screening Tool** - A summary of a Source Document(s) compiled through the research of an event/topic which contains lists of responding systems and their required

functions.

## 2.2 Screening and the Current Licensing Basis (CLB)

The screening process relies on documents containing portions of the CLB to support screening decisions, e.g., is a SSC ITLR and why? Such documents include, but are not limited to, the UFSAR [4]; Technical Specifications [5]; the Q-List Manual [6]; responses to fire protection, ATWS, SBO, PTS, and EQ regulations [15, 16, 17, 20, 21, 24, 25]; and licensing basis information from docketed correspondence [26]. These Source Documents are used in conjunction with the screening criteria to identify ITLR S/Ss, their ITLR functions and the ITLR components required to support those ITLR functions.

Licensing basis information is being collected to support ongoing plant operations and the Integrated Plant Assessment process. The collected licensing basis information, (abbreviated as CLB/D [26]), is a reference that is used during the screening and evaluation process when appropriate to ensure that all S/Ss relied upon in the licensing basis are identified and evaluated.

## 2.3 Assumptions and Initial Conditions

There are a number of basic assumptions and initial conditions upon which the screening methodology relies. They include:

The screening methodology assumes that the most effective approach in screening SSCs is the use of two levels of screening, i.e., system level and component level screening. This segregates SSCs into logical, manageable pieces and is similar to approaches used during design, construction, and operation.

The criteria underlying the system level and component

level ITLR screening processes are identical.

The purpose of the screening methodology is to provide a basis for the procedures which identify SSCs that are ITLR. SSCs important to license renewal are subject to further review in the subsequent steps of the IPA process.

The screening methodology is designed to make maximum use of existing BG&E programs, system and equipment lists, documents, and data bases to reduce duplication of effort and produce implementation results which reference equipment nomenclature already familiar to site personnel.

Tanks which are included in two different site documentation systems, i.e. both on the site structures list and as a component of a particular system in a Master Equipment List, are included only as components of a system during the IPA process.

Because identification of ITLR SSCs is an essential task in the Integrated Plant Assessment for Aging process and is related to plant safety during the license renewal term, applications of the ITLR screening methodology are performed in accordance with the applicable QA program.

#### 2.4 Source Document Identification and Characterization

In order to maximize use of documents and programs that have already been considered by the NRC, the following information hierarchy has been established for use during screening tasks:

1. High Priority

- (1) Source Documents that are controlled as design documents and have been reviewed and approved by the NRC can be directly referenced for ITLR purposes without further review and verification.

(2) Controlled programs that are approved by the NRC and satisfy the effective program evaluation criteria in the Component Aging Evaluation Task can be credited directly as effective aging management programs for a particular ARDM unique to license renewal.

## 2. Medium Priority

(1) Source Documents that are controlled as design documents, but have not been approved by the NRC can be used for ITLR evaluations.

(2) Controlled programs that have not undergone NRC review are not credited as effective programs for managing aging for an ITLR component without a follow on assessment being performed. This assessment ensures that such a program is the optimum method of aging management and that the program will be controlled consistent with its status as a regulatory commitment under the License Renewal Rule.

## 3. Low Priority

(1) Source Documents not controlled as design documents may only be used for background information in ITLR evaluations.

(2) Programs that are not closely controlled (i.e. not governed by a controlled site procedure) and not reviewed by the NRC can be credited as effective programs for managing aging for ITLR components only after proper controls are established for such programs.

**Specific Examples of Information** - Listed below are documents and programs which have been identified (in descending order of priority) and specific uses for each:



- (1) UFSAR - Used to identify system and structure functions and conceptual boundaries.
- (2) Technical Specifications - Used to identify SSCs required to be in service for the reactor to operate.
- (3) BG&E responses to generic issues, i.e., Fire Protection, ATWS, SBO, PTS, and EQ - Used to identify SSCs that satisfy ITLR Criterion 3, i.e., are relied upon in plant event evaluations.
- (4) Industry Reports (i.e., generic documents sponsored by NUMARC and submitted to the NRC to address aging of a specific system) - Used to identify the susceptibility of materials to various kinds of age-related degradation.
- (5) In-Service Test Program and Surveillance Test Programs - May be credited with managing a particular ARDM for a given component if the program meets the requirements described in Subsection 2.1, Definition 7, "Effective Program."
- (6) Q-List Manual - Used as a "Source Document" to determine specific SSC functions. This will facilitate the determination of which SSCs are relied upon in the UFSAR to remain functional during and after design basis events and for post-accident monitoring purposes.
- (7) Design Drawings [14] - Used to establish system and structure boundaries and SSC functions.
- (8) Safety-Related Vendor Reports Prepared Under a QA Program - Used to determine susceptibility of components to various age-related degradation.
- (9) Technical Manuals, Safety Related Purchase Orders and Specifications - Used to determine materials of construction of components.
- (10) Master Equipment List, NUCLEIS Equipment Technical Database - Used to determine system and structure boundaries, and for listing all components in a



- particular system or structure.
- (11) Reliability Centered Maintenance - Used for identification of functions.
  - (12) System Descriptions [9] - Used for identification of system and structure boundaries and SSC functions.
  - (13) Interviews with Experienced Plant Personnel - Used for identification of system and structure boundaries and SSC functions.
  - (14) Non Safety-Related Vendor Reports Not Prepared Under a QA Program - Used to determine susceptibility of components to various age-related degradation.

## 2.5 Screening Methodology Overview

The screening methodology consists of system/structure (S/S) level screening and component level screening, each of which is divided into a number of steps. This subsection provides an overview of each level.

### 2.5.1 Logic Diagrams

Figures 2-1, 2-2, and 2-3 graphically depict the logic flow and the criteria of the two-level screening methodology. Figure 2-1 depicts S/S level ITLR screening, which is described in detail in Section 3.0. Figure 2-2 depicts component level ITLR screening of the constituent components of ITLR systems. Likewise, Figure 2-3 depicts structural component ITLR screening of the component types of ITLR structures. These tasks are defined in more detail in Sections 4.1 and 4.2 respectively.

### 2.5.2 System/Structure (S/S) Level Screening

This Task, which is described in more detail in Section

3.0, provides for establishing conceptual boundaries and functions for the S/S listed in Attachment A, developing Screening Tools which capture the ITLR screening criteria, and applying the Tools to the S/S listed in Attachment A to identify those that are ITLR. Figure 2-1 shows the logic of this Task.

Functional requirements and system descriptions for the S/S listed in Attachment A are identified in Subsection 3.2. The system description and functions for a S/S are used to establish the conceptual boundary for that S/S. Next, screening Tools are developed to facilitate the screening process and insure consistency in screening results. To develop a tool, the evaluator reviews selected Source Documents as discussed in Subsection 3.3 and extracts screening related information for all S/S from those documents. As a result, the evaluator avoids having to pick up and review the same source documents each time a new S/S is screened.

Using the S/S screening Tools, all S/S are evaluated. System level screening of all S/S is performed at one time. S/S meeting any one of the four ITLR Criteria are designated ITLR.

Components of those S/S identified as ITLR undergo component level screening as discussed in the following Subsection. S/S identified as non ITLR require no further evaluation in the Integrated Plant Assessment process.

#### 2.5.3 Component Level Screening

This Task, which is described in more detail in Section 4.0, screens constituent components of ITLR systems and structures. The purpose is to identify which components are required for the system or structure to perform its

required ITLR functions or if they fail would prevent the function from occurring. Such components are designated ITLR. Components that do not meet the criteria of this Task require no further evaluation under the LCM Program. Figures 2-2 and 2-3 show the logic of this Task for system components and structural components respectively.

#### 2.5.3.1 Component Level ITLR Screening for Systems

This subtask, Component Level ITLR Screening of Systems, which is discussed in Subsection 4.1, begins with the identification of ITLR functions for the system being screened by using the system level screening Tools and the 'Q'-List. For each ITLR function, a component function catalog is developed which identifies those components required for the system to perform that ITLR function or if the components failed would prevent that function from occurring. Finally, the function catalogs are resorted by component rather than function to produce a list of components and the ITLR functions to which they contribute, for the system being screened.

As a result of this step, components are identified as ITLR or not ITLR.

#### 2.5.3.2 Component Level ITLR Screening for Structures

This subtask, Component Level ITLR Screening of Structures, achieves similar results as the ITLR component level screening for systems but the process used is adjusted to account for unique characteristics of structures. The specific component level screening process for structures was developed during a pilot screening of the containment structure. During this pilot screening, it was realized that structures perform their

ITLR functions in a different manner than systems and a different type engineering expertise is needed to perform the screening task. This adjusted screening process accounts for the manner that structures perform their functions and allows evaluators with civil engineering expertise rather than design basis event expertise to conduct the screening. Section 4.2 discusses this screening process in more detail.

The structural screening process begins with the identification of all system type components associated with the structure in site databases. In the NUCLEIS Equipment Technical Database (NETD), several structure equipment lists contain components such as pressure switches and pumps which perform system oriented functions. If the evaluator determines these components do not perform a structural function, they are deleted from the structural screening process and screened using the process described in subsection 4.1 . The remaining structural type components, are screened using the process described in this section.

The ITLR functions of a structure are determined by first reviewing a list of possible functions that a structure may perform to support ITLR criteria. Then Chapter 5 of the UFSAR and other reference material are reviewed to determine which of these functions apply for the structure being screened.

Next, a predetermined set of generic structural component types is used to create a list of the component types which are present in the structure being screened. The list is then expanded to include the safety related equipment supports and the seismic II/I equipment supports applicable to the structure as well as any structural component types unique to the particular structure being

screened.

Finally, it is determined whether the identified component types support the specific ITLR functions and if so, this information is recorded in the structural component screening table. The system type components associated with the structure being screened were screened in parallel using the screening process for system type components. These results are merged with the structural component screening table to produce one integrated ITLR screening results for all components associated with the structure.

#### 2.5.3.3 Results

ITLR components require further action by the Integrated Plant Assessment Process and proceed to program evaluations or detailed component evaluations. These tasks are beyond the scope of the screening volume of the IPA Methodology, but are summarized in Section 5.0 to provide a broad picture of the IPA process.

# System Level ITLR Screening Process

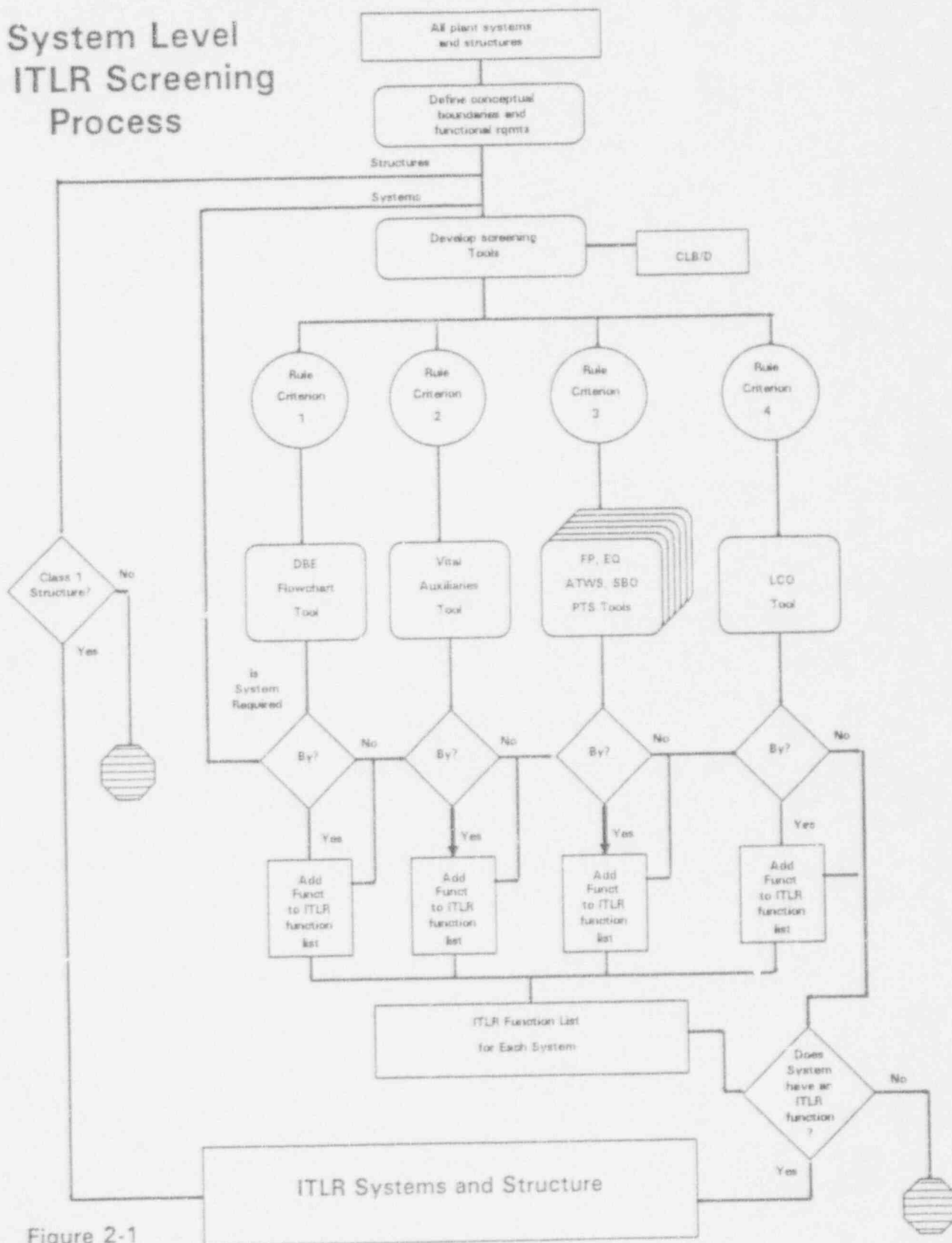


Figure 2-1

## Component Level ITLR Screening of Systems

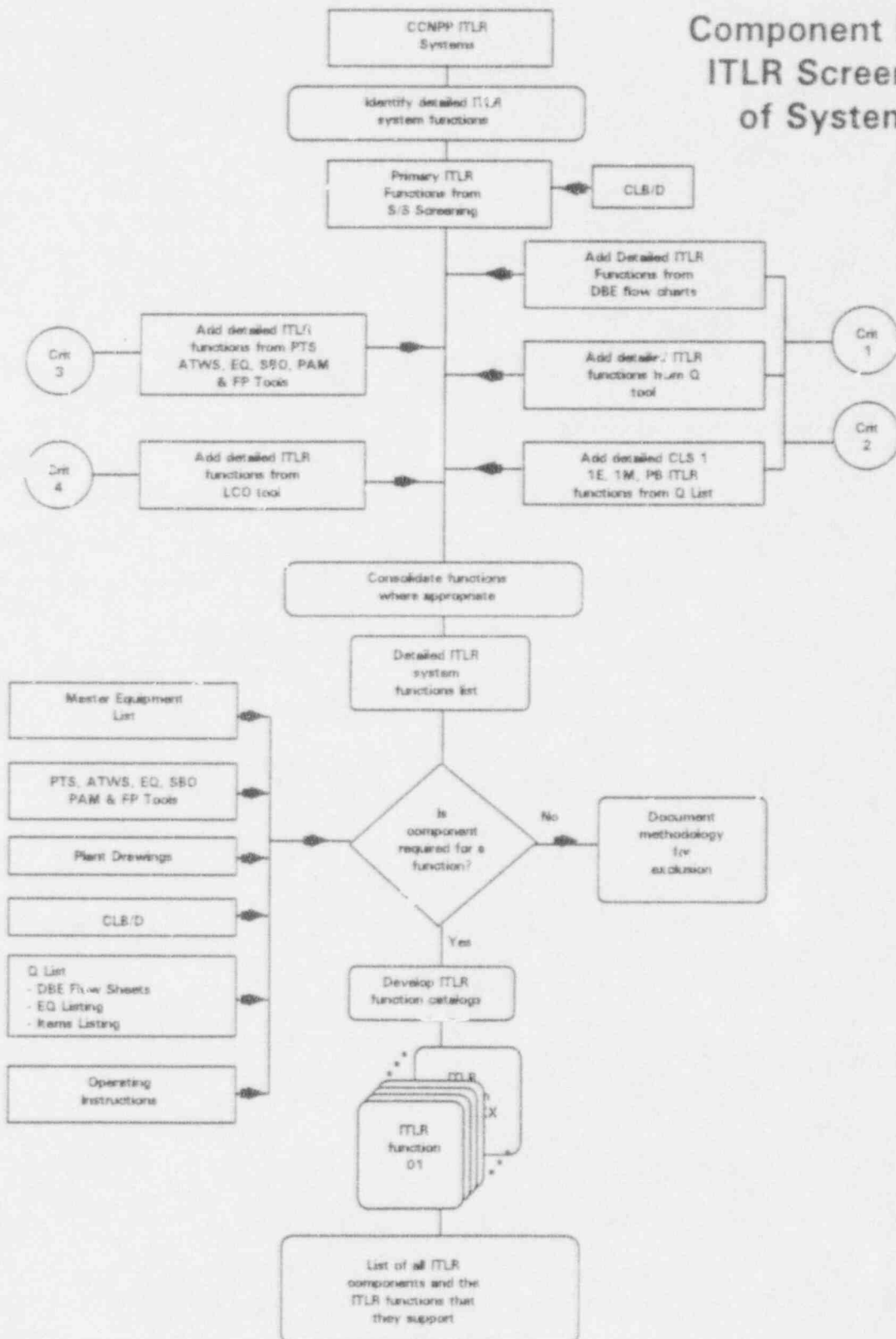


Figure 2-2



## Component Level ITLR Screening of Structures

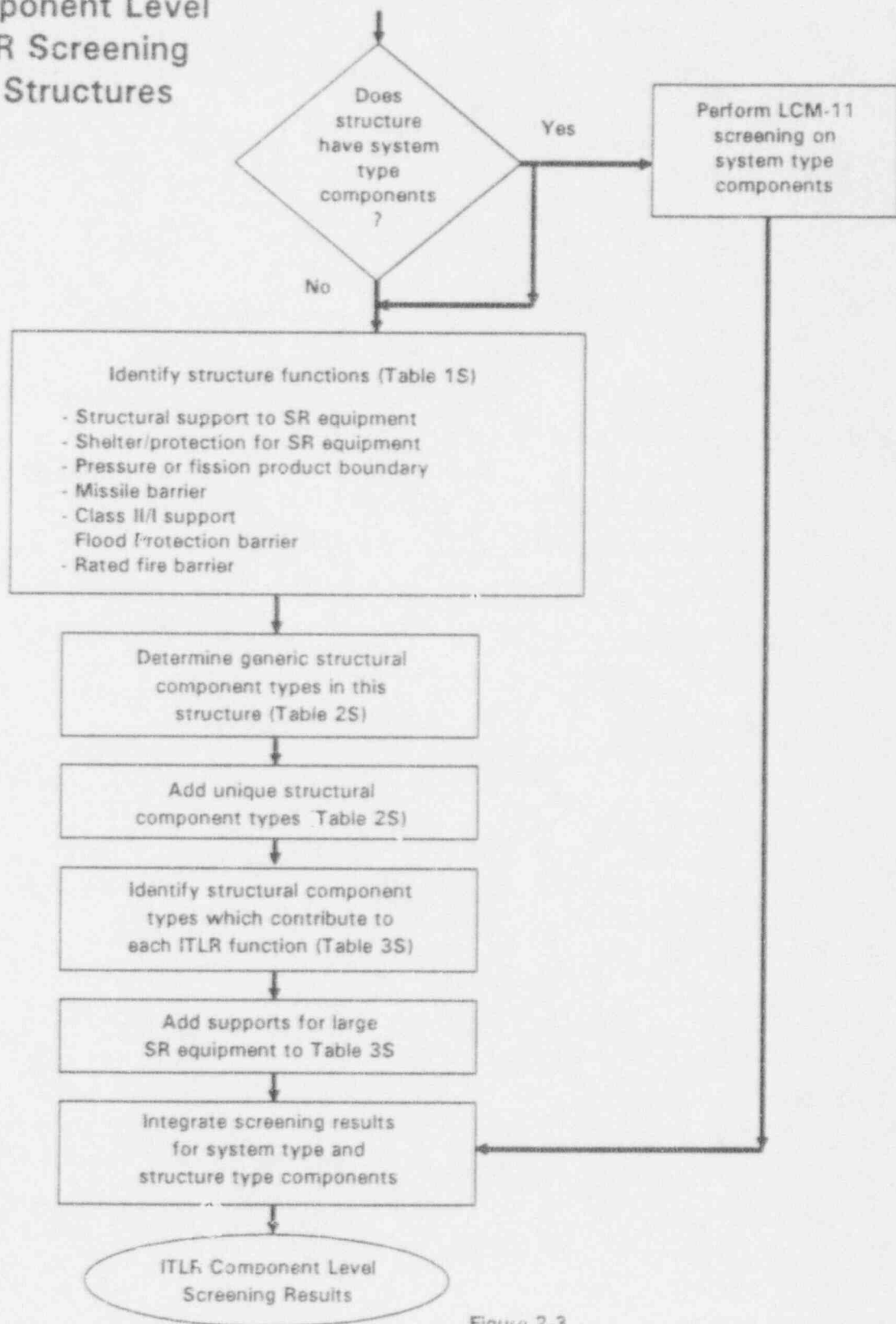


Figure 2-3



Table 2-1  
Source Documents

1. Life Cycle Management/License Renewal Program Management Plan.
2. Nuclear Power Plant License Renewal, Final Rule, Federal Register, Vol 56, No 240, pages 64943-64980, effective January 13, 1992.
3. Nuclear Management and Resource Council, Inc., "Methodology to Evaluate Plant Equipment for License Renewal."
4. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Updated Final Safety Analysis Report.
5. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Technical Specifications Manual.
6. CCNPP Q-List Manual.
7. CCNPP Individual Plant Evaluations Program.
8. CCNPP RCM Analysis Program, July 1989.
9. CCNPP System Descriptions.
10. Design Database Unit Procedure 1 Control of the Master Equipment List, Attachment D.
11. 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants."
12. 10 CFR 100, Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants."
13. NRC Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."
14. CCNPP Plant Drawings.
15. BG&E, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events," June 27, 1986.
16. BG&E, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events," June 11, 1987.

- 
17. BG&E, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events," May 12, 1988.
  18. CCNPP Equipment Qualification (EQ) Design Manual, Revision 6, August 4, 1989.
  19. LCM Policy Instruction 90-02, "Technical Problem Reporting," October 30, 1990.
  20. "Response to NUREG-0737, Supplement 1, Section 6.0, Review of Regulatory Guide 1.97 Application to Emergency Response Facilities, Calvert Cliffs Nuclear Power Plant, Baltimore Gas and Electric Company," December 1, 1984.
  21. "CCNPP Units 1 and 2; Docket Nos. 50-317 and 50-318 Regulatory Guide 1.97 Review Update," August 5, 1988.
  22. 5049 List.
  23. Life Cycle Management Unit Evaluation Database (LCMEVAL) Users Manual
  24. CCNPP Station Blackout Analysis, Rev. 0.
  25. NUREG/CR-4022, "Pressurized Thermal Shock Evaluation of the Calvert Cliffs Unit 1 Nuclear Power Plant," September 1985.
  26. Portions of the CCNPP Current Licensing Basis consisting of docketed correspondence (CLB/D)
  27. NUCLEIS Equipment Technical Database (NETD)

### 3.0 SYSTEM LEVEL SCREENING

This Section describes how all plant systems and structures are screened to determine those that are ITLR. This is accomplished through application of the S/S level ITLR screening process, which is illustrated in Figure 2-1.

S/S level screening is the first major task of the Screening Methodology. It is governed by Step 54.21.(a)(1) of the License Renewal Rule which states:

*(a) Integrated plant assessment (IPA). The IPA must:*

*(1) Identify and list the SSCs important to license renewal.*

Systems and structures ITLR screening consists of several activities. Subsection 3.1 describes how systems and structures are identified and listed. Subsection 3.2 describes the development of conceptual boundaries and identification of system functions. Subsection 3.3 describes the development of system Screening Tools. Subsection 3.4 describes how all ITLR systems and structures are identified. Subsection 3.5 describes how the screening results are documented.

#### 3.1 Identification of Systems and Structures

The S/S listing for CCNPP is provided in Attachment A. The Design Database Unit Procedure 1 "Control of the Master Equipment List," Attachment ) [10] was used to develop the list of systems at CCNPP. This approach ensures that the LCM Program uses systems consistent with those established for current site programs and the Master Equipment List (MEL). The structures list was obtained through a review of the Plant Property and Building Drawing No. 61-502-E. Tanks identified on this drawing are not included in the list of structures since tanks are included as components of associated systems.

### 3.2 Define Conceptual Boundaries and Functions

The identification of the S/S conceptual boundaries and function(s) is accomplished by reviewing the CCNPP UFSAR [4], Technical Specifications [5], CLB/D[26] and System Descriptions [9] as well as conducting interviews with experienced plant personnel.

For each of the S/S listed in Attachment A, the Source Documents mentioned above are reviewed. For each S/S, the primary functional requirements are identified and a brief system description is provided. The description includes a listing of the major components and major system interfaces for each S/S. The functional requirements list should only include the primary functions--including the specific critical safety function(s)--that the S/S performs. The description and functional requirements serve to establish conceptual S/S boundaries needed for the S/S level screening process. It is recognized that the list of functional requirements does not represent a detailed functions list but this level of detail is sufficient for the S/S Screening process. The component level screening task develops the functional requirements list into a detailed system or structure ITLR functions listing.

The following information is compiled for each S/S and entered into an ITLR S/S screening summary table:

- S/S name,
- Unit number,
- ID number,
- Brief description, including major components and system interfaces,
- Source Document reference (for the description) including revision,
- Primary S/S functional requirement(s),

Source Document reference (for each function)  
including revision.

### 3.3 Screening Tools Preparation

The Source Documents identified in this Subsection are reviewed against the ITLR Criteria contained in the License Renewal Rule[2]. For each ITLR criterion, appropriate information is extracted from the source documents and summarized in the form of one or more Screening Tools. Tools are created in order to add efficiency to the screening process by allowing the evaluator to review each reference document only once, rather than once for each system. The Tools are then used to complete the screening process. Each Tool is described below. Direct quotes from the Rule ITLR Criteria Definitions are italicized.

#### 3.3.1 Tools Addressing Rule Criteria 1 and 2

##### **Rule Criterion 1**

*(1) Safety-related SSCs, which are those relied upon to remain functional during and following design basis events to ensure:*

- (i) The integrity of the reactor coolant pressure boundary;*
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or*
- (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.*

*Design basis events are defined as in 10 CFR 50.49 (b) (1).*

##### **Rule Criterion 2**

*(2) All non-safety-related SSCs whose failure could directly prevent satisfactory accomplishment of any of the required*

*functions identified in paragraph (1) of this definition.*  
(Rule Criterion 1)

### 3.3.1.1 Design Basis Event (DBE) Flow Chart Preparation

The following CCNPP UFSAR Chapter 14 Design Basis Event accident analyses are reviewed:

<u>Design Basis Event</u>	<u>Chapter 14 Location</u>
CEA Withdrawal	Section 2
Boron Dilution	Section 3
Excess Load	Section 4
Loss of Load	Section 5
Loss of Feedwater Flow	Section 6
Excess Feedwater Heat Removal	Section 7
RCS Depressurization	Section 8
Loss of Coolant Flow	Section 9
Loss of Non-Emergency AC Power	Section 10
Control Element Assembly Drop Event	Section 11
Asymmetric S/G Event	Section 12
CEA Ejection	Section 13
Steam Line Break	Section 14
S/G Tube Rupture	Section 15
Seized Rotor	Section 16
Loss of Coolant Accident	Section 17
Fuel Handling Accident	Section 18
Turbine-Generator Overspeed	Section 19
Containment Pressure Analysis	Section 20
Hydrogen Accumulation	Section 21
Waste Gas Incident	Section 22
Waste Evaporator	Section 23
Maximum Hypothetical Incident	Section 24
Excess Charging	Section 25
Feed Line Break	Section 26

The CCNPP Q-List Manual [6] presents Accident Shutdown Flow

Sheets for 17 of the DBEs. Each Accident Shutdown Flow Sheet identifies the safety functions which are necessary to reach safe shutdown for the DBE identified, maintain fission product boundaries and prevent off site releases in excess of established guidelines. These flow sheets also identify the supporting systems (as well as vital auxiliary systems) which are required to satisfy the associated safety function. DBE Flow Charts are a consolidation of Q-List Accident Shutdown Flowsheets and any additional supporting systems identified as relied upon for that accident in UFSAR Chapter 14.

The remaining 8 DBEs, which are identified in the UFSAR and are not the subject of Accident Shutdown Flow Sheets in the Q-List Manual, are evaluated in the S/S screening task to determine if DBE flow charts should be prepared for the screening process. A DBE flow chart is not prepared if either of the following criteria is true.

- Plant equipment required to respond to the DBE is completely included within the equipment required to respond to another DBE and a DBE Flow Chart has been prepared for the other DBE. OR
- No active or passive components are credited for mitigation of the DBE.

A DBE flow chart is prepared for each of the 17 DBEs with Q-List Manual Accident Shutdown Flow Sheets and for any of the remaining DBEs meeting the criteria requiring the preparation of flow charts. The DBE flow charts should identify the systems, and the specific functions provided by each of these systems, required to support the critical safety functions necessary to reach safe shutdown for the specific DBE, maintain the fission product barriers and prevent off site releases in excess of established guidelines.



A specific flow chart for vital auxiliaries is also prepared. This flow chart identifies vital support equipment whose failure would directly prevent the performance of a safety related function. Specifically, electric power distribution; control air; cooling water and heating, ventilation and air conditioning functions are reviewed for all safety related equipment to create this flow chart.

All systems and functions identified in the DBE and vital auxiliaries flow charts are coded (by shading) to identify the Source Document(s) from which they were obtained (i.e., UFSAR, Q-List Manual, CLB/D and combinations thereof).

### 3.3.2 Tools Addressing Rule Criterion 3

#### **Rule Criterion 3**

(3) All SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

Plant evaluations have been performed to demonstrate compliance with the regulations identified in Rule Criterion 3. These evaluations are reviewed to identify S/S that are relied upon to mitigate the subject plant event. For a S/S to be listed as ITLR, the specific function associated with that S/S must have been credited in the analysis or evaluation. Mere mention of a S/S in the analysis or evaluation does not necessarily constitute support of a required function.

Additionally, if the S/S function is identical to a safety-



related function (as identified in the Q-List), then the function need not be repeated on the Tools addressing Rule Criterion 3. The analyses and evaluations being reviewed in this step are used to identify important non-safety related functions.

#### 3.3.2.1 Fire Protection (FP) Screening Tool Preparation

The CCNPP CLB (including docketed correspondence and fire protection basis documents) are reviewed to identify the system functions that address the Commission's regulations on Fire Protection (FP) and the BG&E commitments for implementation of those regulations. The identified SSCs, their specific function(s), and the appropriate Source Documents with revision numbers are summarized in the FP Tool.

#### 3.3.2.2 Environmental Qualification (EQ) Screening Tool Preparation

Two tools are produced for this criterion, the EQ tool and the Post Accident Monitoring (PAM) Tool.

The Q-List Manual Attachment D, Q-List Items Report, is reviewed to identify items listed as 5049 (items which must meet the requirements of 10 CFR 50.49). A list of the systems containing components designated as EQ is prepared with the Q-List revision number (or date, as appropriate) provided as a reference.

The BG&E submittals for PAM [20,21], the UFSAR Section 7.5.8, and the CCNPP Q-List Manual Attachment D, Q-List Items Report, are reviewed to identify the systems containing components required for PAM category 1 or 2 variables. The BG&E submittals for PAM are the governing references. The remaining references are used to provide

additional detail. A PAM system summary table is prepared. It lists each system which is required for PAM, the variable(s) it monitors and the appropriate Source Document and revision.

#### 3.3.2.3 Pressurized Thermal Shock (PTS) Screening Tool Preparation

NUREG/CR-4022 [25] and CLB/D are reviewed to identify S/S which are relied upon in response to a PTS event. A PTS Screening Tool is developed which lists the S/S which are relied upon in response to a PTS event, the specific function(s) that each S/S provides, and the appropriate Source Documents with revision number(s).

#### 3.3.2.4 Anticipated Transients Without Scram(ATWS) Screening Tool Preparation

CCNPP docketed correspondence is reviewed to identify the system functions that address the Commission's regulations on Anticipated Transient Without Scram (ATWS). An ATWS Screening Tool is developed. The tool lists the SSCs which are relied upon in response to an ATWS event as identified through a review of BG&E submittals [15, 16, 17]. For each identified system or structure, it lists the specific function(s) that each S/S provides, and the appropriate Source Documents with revision numbers.

#### 3.3.2.5 Station Blackout (SBO) Screening Tool Preparation

The Station Blackout Analysis [24] and CLB/D are reviewed to identify S/S listed in the Station Blackout Analysis which are relied during the "coping duration" phase (as opposed to the power restoration phase) of a SBO event. An SBO Screening Tool is prepared which lists the S/S relied upon in the Station Blackout Analysis, the specific function(s)

that each S/S provides, and the appropriate Source Documents with revision numbers.

### 3.3.3 Tool Addressing Rule Criterion 4

#### **Rule Criterion 4**

*(4) All SSCs subject to operability requirements contained in the facility technical specification limiting conditions for operation.*

#### 3.3.3.1 Limiting Conditions For Operation (LCO) Screening Tool Preparation

The CCNPP Technical Specifications as approved by the NRC are reviewed to identify S/S which are specifically required to be "operable" by an LCO.

In order to eliminate from the ITLR Screening the Tech Spec equipment which has no controlling importance to plant safety, a further review is performed. In a Policy Statement concerning improved technical specifications, the NRC Commission provided three criteria which describe equipment which should be controlled by Tech Spec LCOs in order to ensure adequate public health and safety. The policy statement encourages licensees to remove all LCOs which do not meet these requirements from the tech specs. Based on this guidance from the Commission concerning the LCOs which are of controlling interest to plant safety, the following criteria were applied for each SSC required to be operable by an LCO:.

- Is the SSC installed instrumentation that is used to detect and indicate, in the control room, a significant abnormal degradation of the reactor coolant pressure boundary?
- Is the SSC necessary for monitoring or controlling a

process variable that is an initial condition of a Design Basis Accident or transient analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier?

- Is the SSC part of the primary success path and does it function or activate to mitigate a Design Basis Accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of the fission product barrier?

SSCs governed by Tech Spec LCOs which meet at least one of the above three criteria are included in the LCO Tool.

A third review is performed to minimize redundancy in the screening results. LCO functions which are identical to safety related functions are not included in the LCO Tool. Finally, support equipment is identified for the non safety-related SSCs which are required for the applicable Tech Spec LCOs and the support SSCs are included in the LCO Tool.

(Support equipment includes cooling water, power supplies, HVAC and compressed air systems.) Support equipment for safety related SSCs which may be included in the Tech Spec LCO Tool is identified in the Vital Auxiliaries Tool under ITLR Criterion 2 and is not repeated in the LCO Tool.

Finally, an LCO Screening Tool is prepared. The tool contains the S/S which must be operable or provide a support function to S/S which must be operable, the applicable LCO number, and the Technical Specifications reference and latest amendment number.

### 3.4 System and Structure ITLR Screening

The screening process is implemented for each S/S by reviewing each of the Screening Tools generated in Subsection 3.3 and developing an ITLR S/S screening summary table. For the DBE

Tools and the Vital Auxiliary Tools, the specific function(s) being provided are noted on the ITLR S/S summary table. Since the events, functions, and categories summarized by the Tools address the requirements of the ITLR criteria, inclusion of a S/S in a Tool indicates that the S/S is ITLR. It is important to note that all ITLR functions are identified for each S/S during the screening process. Identifying only one ITLR function would be sufficient to make an ITLR determination for the given S/S; however, the list of all ITLR functions for a system facilitates the component level screening task. This step is repeated for each S/S until all have been screened.

The ITLR S/S screening summary table contains the information (including Source Document references with revision numbers or dates, as appropriate) required to substantiate the classification of each S/S.

#### 3.4.1 ITLR Criteria 1 and 2 -- Safety-Related S/S and Supporting S/S

##### 3.4.1.1 DBE and Vital Auxiliary Flow Charts

The DBE flow charts and the Vital Auxiliary flow chart, (see Subsection 3.3.1.1), are used to identify those S/S whose functions support the Critical Safety Functions (CSFs) for a DBE or whose failure would directly prevent the CSFs. S/S listed in one or more of the DBE flow charts or the Vital Auxiliary flow chart are included in the ITLR Screening Summary Table under Criterion 1 or 2 respectively. For each system or structure listed in the summary table, all DBEs that are applicable to the S/S are identified along with the functions that the S/S provides for each DBE. The summary table also includes appropriate source document references and revision numbers or dates for each of the S/S.

#### 3.4.1.2 Class 1 Structures

For all listed structures, the UFSAR Section 5 and the Q-List General Items section are reviewed to determine whether the structure or a portion thereof is designated as safety-related, CLASS 1. Class 1 structures are ITLR. The results of this screening step are incorporated, along with the appropriate Source Document references and revision numbers or dates, into the ITLR S/S Screening Summary Table for each of the structures.

#### 3.4.2 ITLR Criterion 3 -- S/S Relied Upon In Plant Safety Evaluations

The corresponding Screening Tools (see Subsection 3.3.2) are used to identify the following:

- 1) those S/S that perform functions designated as required for Fire Protection;
- 2) S/S which contain components identified as EQ or PAM;
- 3) S/S whose functions are relied upon in plant event evaluations for ATWS, SBO, and PTS; or
- 4) any combination of these factors.

If one of the S/S being screened is listed in any of these Tools, it satisfies ITLR Criterion 3. The results of this screening step are incorporated into the ITLR S/S Screening Summary Table for each of the S/S. The source document references and revision numbers are not included in the screening summary table since this information can be found in each screening tool.

#### 3.4.3 ITLR Criterion 4 -- S/S Subject To Limiting Conditions of Operation

The LCO Tool (see Subsection 3.3.3.1), is used to identify

those S/S that must be operable according to the Technical Specifications Limiting Conditions of Operation. S/S listed in this Tool satisfy ITLR Criterion 4. Results of this screening step, including the appropriate Technical Specification LCO number are incorporated into the ITLR S/S Screening Summary Table for each of the S/Ss.

### 3.5 Results

As a result of system level screening, systems and structures are assigned to one of two categories: (1) those that are ITLR, and (2) those that are not ITLR. Systems and structures that belong to category (1) require further action in the Integrated Plant Assessment process and proceed to component level screening, as described in Section 4.0.

Attachment B contains the detailed procedure which implements the S/S ITLR Screening process. Attachment C contains the results of applying this procedure to CCNPP systems and structures.



#### 4.0 COMPONENT LEVEL SCREENING

Component level screening of S/S is the second major task of the Integrated Plant Assessment for Aging and is governed by Section 54.21.(a) of the License Renewal Rule [2]:

*(a) Integrated plant assessment (IPA). The IPA must:*

*(1) Identify and list the SSCs important to license renewal.*

*(2) From the list required by paragraph (a)(1) of this section, identify the structures and components (SCs) that contribute to the performance of a required function, or could, if they fail, prevent an SSC important to license renewal from performing its required function.*

The processes for identifying components important to license renewal in accordance with 54.21(a)(1) and that for identifying components which contribute to the performance of a required function or, if they fail, could prevent an SSC important to license renewal from performing its required function (54.21.(a)(2)) are identical. Both are incorporated into the component level ITLR Screening task described in this section.

The component level ITLR screening process is conducted one system at a time for each system or structure designated as ITLR. The screening is accomplished through application of either the component level screening process for systems, which is illustrated in Figure 2-2 and discussed in Subsection 4.1, or the component screening process for structures, illustrated in Figure 2-3 and discussed in Subsection 4.2. Subsection 4.3 describes the screening process for a few generic components which do not fit well into either of the other two component level screening processes. Subsection 4.4 describes how the results are documented.

#### 4.1 Component Level ITLR Screening for Systems

The ITLR component level screening process for systems is implemented by systematically applying the ITLR criteria to all components of ITLR systems. Components are designated as ITLR if they are required for their system to perform its specific ITLR functions or if their failure would prevent an ITLR SSC from performing its required function.

The component level screening process for systems is divided into several distinct steps. Each step is discussed below.

##### 4.1.1 Identification of Detailed ITLR System Functions

The purpose of this step of the screening process is to create a detailed list of the ITLR functions associated with the system being screened. The list is compiled in a System Functions Table using the ITLR S/S Screening results, the Q List Manual [6], plant drawings [14], the UFSAR [4], System Descriptions [9] and other references.

The S/S ITLR Screening Results contain screening Tools which associate ITLR functions with individual systems. The first substep of creating the detailed function list is to review all of the Screening Tools and record the ITLR functions associated with the system being screened onto the System Functions Table.

The CCNPP Q List Manual is the site reference which governs what components are controlled as safety related, safety related support equipment, or other miscellaneous category equipment. To ensure consistency with the Q List Manual, the LCMEVAL software application is used to compile a listing of all Q List categories which are associated with

any components in the system being screened (Q List Criteria listing). This listing represents the Q List related functions associated with the system being screened. The following Q List categories correspond to ITLR criteria as described below:

Q-List flowsheets

these flowsheets identify components which are relied upon to respond to UFSAR Chapter 14 design basis events or serve as vital auxiliaries to safety related equipment. ITLR Criteria 1 and 2.

PB the category of pressure boundary mechanical items which maintain the system pressure of the reactor coolant system, maintain the radiological boundary to prevent exceeding 10CFR 100 limits, or maintain safety system boundary to limit system leakage. ITLR Criteria 1 and 2. (Criterion 2 because PB includes the components needed to maintain the pressure boundary of fluid systems even when such components do not directly contribute to the required ITLR function of the system.)

1E the category of electrical equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or otherwise are essential in preventing significant release of radioactive material to the environment. ITLR Criteria 1 and 2. (Criterion 2 because 1E includes electrical isolation devices whose sole "ITLR" function is to prevent an electrical fault in a non safety related portion of the system from affecting the safety related functions of the system.)

1M the category of mechanical equipment that is essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or otherwise are essential in preventing significant release of radioactive material to the environment. ITLR Criterion 1.

PAM post accident monitoring category of instrumentation used to assess the environs and plant conditions during and following an accident. ITLR Criterion 3, subset of EQ.

5049 this category identifies items which are required to be environmentally qualified to the requirements of 10 CFR 50.49. ITLR Criterion 3.

- CLS1 the category for those structures, systems and components, including their foundations and supports that are designed to remain functional in the safe shutdown earthquake, as defined in 10 CFR 100. ITLR Criterion 2.
- Q the category for any item specified by the Q List Committee as requiring the same level of quality assurance as provided for safety related items. (ITLR Criterion to be determined during screening.)
- SBO the category of equipment required to withstand and recover from a station blackout event. ITLR Criterion 3.

After producing the Q List Criteria Listing for the system being screening, this list is consolidated with the functions already listed in the System Functions Table to finalize the detailed functions listing for the system. The Q List Manual does not contain information related to ITLR Criterion 4 and several of the regulated events in ITLR Criterion 3. Therefore, for the categories shown below, no consolidation with Q List related functions is possible. The associated Screening Tools and their references are used to validate the detailed system function(s) for these criteria.

- FP the functions required by 10 CFR 50.48 for fire protection and safe shutdown after fire.
- ATWS the functions required by 10 CFR 50.62 to provide diverse scram and diverse turbine trip capability during an anticipated transient without scram event.
- PTS the functions required by 10 CFR 50.61 to provide protection during a pressurized thermal shock event.
- LCO the functions required of equipment subject to operability requirements in the CCNPP Technical Specifications Limiting Conditions for Operation.

The final step of ITLR function identification is to eliminate redundant functions. Functions enveloped by another function or identical to another function are

consolidated. The enveloping function is designated as the "Parent" function while the enveloped function is the "Child" function. The child function is retained on the System Functions Table in order to be able to trace the steps of the process which created the table. Parent functions and functions for which no consolidation is possible are assigned a unique ID number (Function ID) to facilitate subsequent steps in the screening process. (For the remainder of this methodology, the term "function" refers to a parent function unless otherwise specified.)

#### 4.1.2 The Master Equipment List

To ensure that all components in the plant are screened with one and only one system, the site Master Equipment List is used to provide the equipment list for the component level screening task for each system. This list is the portion of the NUCLEIS Equipment Technical Database (NETD) [27] which contains all equipment for a given system.

In developing the NETD, conventions were established for determining the boundaries between systems. These conventions provided the guidance for determining which system each component in the NUCLEIS Equipment Technical Database would be assigned to. Several example conventions are listed below. The complete system boundary guidelines are contained in reference [10].

- Heat exchangers are assigned to the load system.
- Electrical components are assigned to load system from the load side of the circuit breaker.
- Sensors are assigned to the system in which they sense. Actuators are assigned to the system in which the actuation takes place.
- Transformers are assigned to the lower voltage system.

As each screening task is begun, the LCMEVAL software application is loaded from the NETD with the Master Equipment List for the system to be screened. Each of the components on this list must be dispositioned during the screening task as either contributing to an ITLR function listed in the System Functions Table or not needed for any of these functions.

#### 4.1.3 Development of Function Catalogs

The next step in the ITLR component level screening process for systems is to determine, for each specific function assigned a function ID (see subsection 4.1.1), which components from the system Master Equipment List are needed to perform the function. A list of components for each function is called the function catalog.

In order to determine the relationship between a given function and the components contributing to the function, the Q List Manual, UFSAR, Technical Specifications [5], System Screening Tools and references associated with the screening tools are used.

The active components associated with mitigating the consequences of individual design basis events or providing vital auxiliary functions to safety related equipment are listed in the plant Q List Manual along with the function(s) they contribute to. Consequently, whenever a System Functions Table contains a design basis event function or a vital auxiliaries function, the Q List Manual provides a direct input to the screening process for determining which components of the given system contribute to ITLR criterion 1 and 2.



The Q List Manual also contains Piping and Instrumentation Drawings (P&IDs) which are color coded to reflect the portions of each system which passively support the system pressure boundary function for that portion of the system relied upon to mitigate design basis events. Whenever, the system function table contains design basis event functions and the master equipment list contains mechanical pressure boundary components, a pressure boundary function catalog is created for the system. The Q List color coded pressure boundaries are transcribed onto the most recent revision of the applicable Piping and Instrumentation drawing for the system being screened to ensure drawing changes made since the last revision to the Q List Manual drawings are included in the screening results. For each component in the master equipment list, a determination is made, based on these color coded P&IDs, whether the component is within the colored portion of the drawing. If so, the component is included in the pressure boundary catalog. Those passive components which perform in exactly the same manner for any ITLR function are not included in catalogs associated with other functions in order to avoid redundancy.

The Q List Manual also contains listings which associate specific components to PAM and EQ functions. This listing is used as a direct input to the screening process whenever PAM or EQ functions are contained in the system function table. Based on this input, a function catalog is created for both PAM and EQ. In order to be more specific regarding which components actually contribute to providing each of the required PAM indications, plant drawings and the BG&E correspondence concerning Reg Guide 1.97 [20,21] are consulted. In addition to the component listing, the PAM catalog contains a letter in the notes column to specify which PAM indication is associated with each component.



The Q List Manual contains a listing which associates specific components to the CLS1 function. This listing is used as a direct input to the screening process whenever there is a CLS1 function in the System Functions Table. Based on this input, a function catalog is created for CLS1. This catalog normally contains electrical panels and other enclosure devices which contain safety related equipment.

Many electrical and a few mechanical components are identified in the Q List Manual as 1E only or 1M only. Such components perform the same function in support of a number of important events but are not actually associated with any particular design basis event in the Q List Manual. When a system contains components that are safety related and designated only as 1E or 1M, a separate function catalog is created to contain these components.

NETD [27] contains a field which associates specific components with the station blackout evaluation. This SBO designation can be used as an input to screening for SBO but further review is needed for the following reasons:

- The NETD SBO designation is assigned to components mentioned in the Station Blackout Evaluation. Other components which must function so that these "mentioned" components can perform their SBO function must be identified and added to the SBO function catalogs.
- Much of the equipment mentioned in the Station Blackout Evaluation is mentioned because it is secured at the start of a Station Blackout event or is used when restoring power after the end of the event. These components are not relied upon for compliance with the Station Blackout Rule and therefore should not be screened as ITLR. These components are not included in

the SBO function catalogs.

When the process is complete, the SBO function catalog or catalogs contain all of the system components which contribute to each regulated SBO function.

The equipment in the system Master Equipment List which is designated in the Q List Manual as safety related category "Q" also requires further analysis during the screening process. The documentation which supports the classification of these type components is reviewed to determine why the equipment has been designated as safety related category Q. If the SR-Q components perform an ITLR function, the components are included in the corresponding ITLR function catalog. If the reasoning behind the component's SR-Q classification does not correspond to any ITLR criterion, the component is not added to any function catalog and is screened as not ITLR. Appropriate plant processes for resolving inconsistencies in the Q List Manual are then initiated to downgrade the classification of such components.

For the ATWS, PTS, Fire Protection, LCO functions contained in the System Functions Table, one function catalog is created for each listed function. The reference information used to create the associated screening tool is consulted as needed along with plant drawings to determine exactly which system components contribute to the performance of each listed function. Components which perform exactly the same function to support one of these criteria as they perform to support a safety related function, are not repeated again in these function catalogs to avoid redundancy. For example, if a pump is required to be operable because of the tech spec LCOs and the same pump must operate to provide cooling water to safety related

equipment to mitigate the consequences of a design basis, event, that pump would not be repeated in the LCO function catalog.

All of the function catalogs discussed above are created using the LCMEVAL software system which contains data loaded directly from a controlled site database (NETD) where possible. For the functions where no source of direct component data is available in software format, the individual components are entered one at a time into the function catalog. The software ensures that only valid components (i.e. in the master equipment list for the system being screened) are added to function catalog. It also facilitates the recording of reference documents which justify that a component supports a given function.

#### 4.1.4 Generation Of Screening Results Table

In the next step of the component level ITLR screening process for systems, the function catalogs that were developed in Subsection 4.1.2 are resorted by LCMEVAL to produce a list of system components and the important functions associated with each component. Components not associated with any ITLR function are designated as not ITLR by the LCMEVAL software system. The table of ITLR components and the ITLR functions that they contribute to is designated as the Component Level ITLR Screening Results Table (Table 2).

#### 4.2 Component Level ITLR Screening for Structures

The component level screening process described above for systems can also be applied to structures. However, this process is somewhat different because of the unique features of structures and how they are documented on site. As with

systems, the screening process is implemented by systematically applying the ITLR criteria presented in subsection 2.1 of this report to all components of ITLR structures. Details of the methodology implementing the ITLR structural component screening are presented below.

#### 4.2.1 Unique Identifiers for Components

The components of structures have not generally been identified and listed in a Master Equipment List. Consequently, the component level screening for structures cannot use a comprehensive equipment listing as an input.

For certain site structures, such as the containment, specific component types have been identified in the site equipment database. For these structures, a partial Master Equipment List is available and the structural component screening process is divided into two parts:

- 1) The components documented in a Master Equipment List for the structure are screened using the process described in section 4.1 above if it is determined that they do not perform a structural type function. Components such as the containment pressure indicators and transmitters are screened using this process because they are designated as components of the containment in the NETD.
- 2) The remaining portions of the structure such as beams, columns and walls are screened using the process described in this section.

The results are then merged when both procedures are complete to present a combined screening result for the entire structure.

#### 4.2.2 Function Identification

The System and Structure Screening process identifies some structures as Important to License Renewal because they are designed to Class 1 criteria or because they are required for fire protection purposes. Unlike the screening results for systems, this structure ITLR determination does not actually reveal a great deal about the ITLR functions of the structure. By their nature, structures perform mostly passive functions and are constructed in accordance with predetermined design requirements. Therefore, civil engineers experienced with nuclear structures determined that a structure, or components of the structure are designed to perform one or more of the following functions in support of the ITLR criteria:

1. provide structural and/or functional support to safety-related equipment
2. provide shelter/protection to safety-related equipment
3. serve as a pressure boundary or a fission product retention barrier to protect public health and safety in the event of any postulated DBEs
4. serve as a missile barrier (internal or external)
5. provide structural and/or functional support to nonsafety-related equipment whose failure could directly prevent satisfactory accomplishment of any of the required safety related functions (Example: seismic Category II over 1 design considerations)
6. provide flood protection barrier (internal flooding event)
7. provide a rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant

This listing allows an evaluator with a specific civil engineering background to determine which of the generic structure functions apply to the structure being evaluated

without being an expert on design basis events.

Functions 1-4 are associated with Class 1 structures. Class 1 design requirements are the structure level equivalent of safety related components specified in ITLR criterion 1. In a similar fashion, functions 5 and 6 apply to non-Class 1 structural components which could, if they fail, prevent a safety related function from occurring. This is the structural equivalent for ITLR criterion 2. Function 7 is the equivalent for the portion of ITLR criterion 3 which is applicable to structures. It should be noted that ITLR criterion 4 does not apply to any structures at CCNPP.

The applicability of each function to the structure is determined by a review of various source documents. If the structure is a Class 1 structure, the UFSAR and the S/S Level Screening Results must be referenced to determine which of functions 1-4 apply to the structure. The applicability of functions 5 and 6 to the structure being screened cannot be made based only on the UFSAR and the S/S ITLR Screening Results. Therefore, the determination of the applicability of these criteria to the structure is deferred until step 4.2.4. To determine whether the structure being evaluated performs function 7 (fire protection), the S/S ITLR Screening Results are consulted.

Regardless of their applicability to the structure being evaluated, the seven functions are assigned generic ID numbers that can be used with any structure being screened. Therefore, the ITLR Structure Functions Table has the same basic format for every structure. The functions that apply to the structure are identified by indicating "YES" in the "Applicable to This Structure?" column of the Structure ITLR Functions Table (referred to as Table 1S).



#### 4.2.3 Equipment Type Listing for Structure

In the structural component screening process, components that are structural in nature are not uniquely identified during the screening process. For example, each wall in the structure is not identified, named and listed. Rather than using a Master Equipment List of named structural components, the screening is conducted on a generic listing of structural component types. This generic list was developed by experts in the field of nuclear Class 1 structures. It contains all the types of structural components which are found in nuclear structures. The list has been checked for completeness against the Containment Industry Technical Report and the Class 1 Structures Industry Technical Report.

The evaluator uses this generic component listing and determines which of the component types on the list are actually contained in the structure being screened. This step is performed by reviewing plant architectural drawings and identifying the specific structural types. Additionally, any structural component types which are unique to the particular structure being screened, such as the prestressed tendons in the containment and the sluice gates in the intake structure, are noted. These unique structural component types are then added to the list of applicable structural component types (Table 2S). Table 2S serves as the equivalent of a Master Equipment List for structural ITLR component screening.

#### 4.2.4 Structural Components With Specific ITLR Functions

This subsection describes the process used to determine which component types of a structure contribute to the ITLR



functions which the structure performs. For every function listed in the Structure ITLR Functions Table that has a "YES" in its "Applicable to This Structure?" column, a review is made of the UFSAR, the Q List Manual, or the S/S ITLR Screening Results (including documents referenced by these results). The component types which contribute to each ITLR function are recorded on the "Structural Components with Specific ITLR Functions" table (Table 3S).

Additionally the supports for large safety related equipment within the structure are identified by reviewing a listing of the safety related equipment installed in the structure that might affect the design of the structure (such as tanks, heat exchangers, or vessels filled with fluid and pumps which require a pedestal as a foundation.). These safety related equipment supports are also included in Table 3S.

The Q List Manual and Flooding Design Guidelines Manual are reviewed to determine if structural component types in the structure being screened are relied on in these documents to contribute to functions 5 and 6. If components are found that provide support to non-safety related equipment designed to Class II/I criteria or the components contribute to a flood barrier function, then this information is captured by recording "YES" in the "Applicable to This Structure?" column of Table 1S (Structural ITLR Functions Table). The components that contribute to these functions are then recorded on the Table 3S with a reference to the appropriate ITLR structure function.

When completed, Table 3S (Structural Components with Specific ITLR Functions) provides the correlation between component types in the structure and the ITLR function(s). Each component type necessary for an ITLR function is

designated as ITLR.

#### 4.3 Generic Components Handled by Commodity Programs

There is a final group of component types that are not screened using either of the processes described in Subsections 4.1 or 4.2. All of these generic components provide a support function for other components. The ITLR determination depends entirely on the components with which they are associated. For example, a pipe hanger satisfies ITLR criterion 2 if the pipe it supports is safety related<sup>1</sup>. A cable is ITLR if the load it supplies is safety related<sup>1</sup>. It is most efficient to "screen" such equipment after the entire plant has been screened to the component level using the processes described in Section 4.1 or 4.2 above.

These components are evaluated utilizing commodity evaluations to determine whether they are subject to age related degradation unique to license renewal and if so, what aging mechanisms need to be managed by effective programs. Once this determination is complete, the scope of the required effective program is established by identifying the individual commodity components which are actually ITLR.

Examples of such generic components are cables, cable raceways, snubbers, and pipe hangers. Using such a commodity screening process helps streamline the screening process and ensures that component types with similar functions are addressed consistently.

---

<sup>1</sup> Note that safety related is specified here rather than ITLR because ITLR Criterion 2 designates as ITLR components which could fail and directly prevent the performance of safety related components.

#### 4.4 Results

As a result of the component level screening process, components are assigned to one of two categories: (1) those that are ITLR and (2) those that are not ITLR. Only components that are ITLR require further action by the Integrated Plant Assessment for Aging process. These components proceed to the component evaluation task introduced in the next section of this methodology.

Attachment D and E to this methodology contain the detailed procedures for component level ITLR screening of systems and structures respectively. Attachment F contains the results of applying these procedures to the components of the ITLR systems and structures at CCNPP. [These Attachments will not be included in the 3/1/93 submittal. Attachments D and E and the Salt Water System, Reactor Coolant System, Compressed Air System and Containment Structure screening results will be included in the 3/15/93 submittal.]

## 5.0 COMPONENT EVALUATION AND COMPONENT AGING EVALUATION TASKS

Sections 3.0 and 4.0 describe the two tasks of the screening methodology, i.e., S/S level screening and component level screening, respectively. Application of the screening methodology produces a subset of components that are ITLR. The next series of steps are the detailed evaluations of those ITLR components to determine if they could be subject to age related degradation unique to license renewal. In addition, these evaluations determine if plant programs are effectively managing the degradation unique to license renewal which might prevent the components from performing their ITLR functions. These two tasks are described in detail in Volume 2 of the IPA Methodology and are summarized below.

### 5.1 Component Evaluation

This task implements section 54.21.(a)(3) of the license renewal rule [2] which states:

(a) *Integrated plant assessment (IPA). The IPA must:*

- (3) *For those SCs identified in paragraph (a)(2) of this section, identify the SCs that could have age-related degradation that is unique to license renewal.*

The important to license renewal structures and components identified in step 54.21(a)(2) are further screened to determine whether these components could be subject to aging unique to license renewal. Components which are subject to regular inspection and testing and are replaced or refurbished based on predetermined criteria dictated by such inspection or testing are not subject to aging unique to

license renewal. Therefore, such components are dispositioned at this step of the IPA process and require no further evaluation.

This task also includes a detailed review of plant programs to determine if they are "adequate" to ensure that components are replaced or refurbished before any aging mechanisms could progress to the point where the aging would be different in character or magnitude during the renewal period. A distinction is made between the program adequacy check in this subsection and the program effectiveness check in subsection 5.2. The adequacy check is focused on monitoring performance of short lived components and the program effectiveness check concentrates on management of specific aging mechanisms.

## 5.2 Component Aging Evaluation

This task implements section 54.21.(a)(5) and (6) of the license renewal rule which states:

- (a) Integrated plant assessment (IPA). The IPA must:
  - (5) For each SC identified in paragraph (a)(3) of this section, demonstrate that the age-related degradation unique to license renewal:
    - (i) Is addressed through an effective program, or
    - (ii) Need not be addressed in an effective program.
  - (6) Describe the applicable effective programs for each SC identified in paragraph (a)(5)(i) of this section, and demonstrate that these programs will be effective in maintaining the CLB during the period of extended operation. The evaluation of these programs shall

include a review of the CLB as appropriate.

Effective programs must:

- (i) Ensure identification and mitigation of age-related degradation unique to license renewal for the SCs identified pursuant to paragraph (a)(3) of this section; and
- (ii) Contain acceptance criteria against which the need for corrective action will be evaluated, and ensure that timely corrective action will be taken when these acceptance criteria are not met; and
- (iii) Be implemented by the facility operating procedures and reviewed by the onsite review committee.

For those ITLR components which are potentially subject to aging unique to license renewal, a detailed evaluation is performed to determine the effects of aging on the component. Components are first grouped according to their design, environment and functions to facilitate the evaluation. Then a review of past evaluation results and industry documents is conducted to formulate a list of the age-related degradation mechanisms which need to be considered for each component group. Each of the identified aging mechanisms is then evaluated for each component group to determine whether that mechanism might prevent the components from contributing to one of the identified important system functions throughout a license renewal term. Finally, the aging is further evaluated to determine whether it might be different in character or magnitude during the renewal period.

This task also includes the evaluation of plant programs which address the aging mechanisms identified above to

determine whether the programs are "effective" (as defined in 54.3) in managing the aging. Whenever no program currently exists for a specific mechanism, the attributes of an effective program to manage this type of aging are determined and included in the evaluation results.

Volume 2 of the IPA Methodology describes the Component Evaluation Task and the Component Aging Evaluation Task. It also provides an introduction into the manner in which IPA results must be prioritized and implemented on site.



Attachment A

CCNPP Systems and Structures Listing

*Calvert Cliffs Nuclear Power Plant*  
*Systems and Structures Listing*

<i>BG&amp;E ID#</i>	<i>System/Structure</i>
1	Switchyard (500 KV) and Switchyard DC
2	Electrical 125 Volt DC Distribution
3	Electrical 13KV Transformers and Buses
4	Electrical 4KV Transformers and Buses
5	Electrical 480V Transformers and Buses
6	Electrical 480V Motor Control Centers
7	Electrical 13KV Unit Buses
8	Well and Pretreated Water
9	Intake Structure
10	Not presently assigned
11	Service Water Cooling
12	Salt Water Cooling
13	Fire Protection
14	Transformer Deluge
15	Component Cooling
16	Electrical 250VDC
17	Instrument AC
18	Vital Instrument AC
19	Compressed Air
20	Data Acquisition Computer
21	Domestic Water
22	Makeup Demineralizer
23	Diesel Oil
24	Emergency Diesel Generator
25	Access Control Area Ventilation
26	Annunciation
27	Auxiliary Steam Generators
28	Auxiliary Steam
29	Plant Heating
30	Control Room HVAC
31	Meteorology Tower and Misc. Computers
32	Aux Building and Radwaste H&V
33	Turbine Building Ventilation
34	Condensate Precoat Filter
35	Chemical Additions - Turbine
36	Auxiliary Feedwater
37	Demin. Water and Condensate Storage
38	Sampling System (NSSS)
39	Condensate Polishing Demineralizer
40	Not Presently Assigned
41	Chemical and Volume Control (CVCS)
42	Circulating Water
43	Condenser Air Removal
44	Condensate
45	Feedwater
46	Extraction Steam
47	Feedwater Heater Drains and Vents

*Calvert Cliffs Nuclear Power Plant*  
*Systems and Structures Listing*

<i>BG&amp;E ID#</i>	<i>System/Structure</i>
48	Emergency Safety Feature Actuation (ESFAS)
49	Simulator Computer
50	Solid Waste Disposal
51	Plant Water
52	Safety Injection
53	Plant Drains
54	Not Presently Assigned
55	Control Rod Drive Mechanism & Electrical
56	Reactor Regulating
57	Technical Support Center Computer
58	Reactor Protective
59	Primary Containment
60	Primary Containment H&V
61	Containment Spray
62	Control Boards
63	Cathodic Protection
64	Reactor Coolant
65	Seismic
66	Cavity Cooling
67	Spent Fuel Pool Cooling
68	Spent Fuel Storage
69	Waste Gas
70	Refueling Pool
71	Liquid Waste
72	Sewage Treatment Plant
73	Hydrogen Recombiner
74	Nitrogen and Hydrogen
75	Low Voltage DC Control Power
76	Secondary Sample
77	Area Radiation Monitoring
78	Nuclear Instrumentation
79	Process Radiation Monitoring
80	New Fuel Storage and Elevator
81	Fuel Handling
82	Not Presently Assigned
83	Main Steam
84	Reactor Vessel Internal
85	Plant Access and Surveillance
86	Power Plant Security
87	Unit Transformers
88	Visitor Center Security
89	Emergency Operations Facility Security
90	Service Building and Outlying Building HVAC
91	Lube Oil Storage
92	Gland Steam
93	Main Turbine
94	Plant Computer (SSS)
95	Carbon Dioxide

*Calvert Cliffs Nuclear Power Plant*  
*Systems and Structures Listing*

*BG&E*  
*ID#*

*System/Structure*

96	Fire and Smoke Detection
97	Lighting and Power Receptacle
98	Main Generator and Excitation
99	Cranes/Test Equipment
100	Plant Communications
101	Not Presently Assigned
102	Plant Areas
* 103	Personnel Safety Equipment
104	Lubrication
* 105	Weight Testing Wire Ropes and Slings
* 106	Ladders
107	Roads
108	Docks and Marine Related Structures
* 109	Shop Equipment
* 110	Manual Valve Components [B-17]
* 111	Materials Processing Facility (MPF) [B-17]
* Not included as a system in LCM/LR Program	

Additional Structures

Auxiliary Bldg.  
Condensate Storage Tank #12 Enclosure  
Domestic Water Treatment Plant  
Engine Gen House  
Equipment Hatch Access Bldg. #1  
Equipment Hatch Access Bldg. #2  
Fire Protection Pump House  
Fuel Assemblies  
Fuel Oil Storage Tank No. 21 Bldg.  
Hydrogen Storage Pad  
NMD Mods Mech. Lock-up (#3)  
NMD Mods Mech. Lock-up (#4)  
Oil Interceptor Pit  
Service Building [B-3]  
South Service Bldg.  
Switchgear Structure  
Transformer Foundations  
Turbine Bldg.  
Waste Water Treatment Bldg.  
Well Observation Bldg.  
Well Water Pump House

Note: 1 Listing is from Attachment D of BG&E Procedure DDBUP-1, Control of Master Equipment List, Revision 1.

*Calvert Cliffs Nuclear Power Plant*  
*Systems and Structures Listing*

- 2 Additional Structures listing was compiled from CCNPP Drawing No. 61-502-E, SH 2, Plant Property and Building, Rev. 1. The following tanks and structures were not included because they are part of a system:

	System No
Acid Storage Tank	37
Condensate Storage Tank Nos. 11 & 21	37
Demineralized Water Storage Tank No. 11	37
Demineralizing Waste Neutralizing Tank No. 11	22
Equipment Storage - Inside Building No. 1	Turbine Bldg
Foam Storage Tank	13
Fuel Oil Storage Tank	23
Liquid Nitrogen Tank	74
Morpholine Storage Tank	35
Neutralizing Tank	37
Oil/Water Interceptor Pit	53
Pretreated Water Storage Tank Nos. 11 & 12	8
Reactor Enclosure - Units #1 and #2	59
Refueling Water Storage Tank Nos. 11 & 12	52
Screen Well Enclosure	9
Sodium Hypochlorite Tank	12
Sprinkler Tank	13
Sodium Hypo Tank	37
Turbine Lube Oil Tank	91

Attachment B

System/Structure Level ITLR Screening Procedure: LCM-12  
Rev 3, Change 0

# LCM-12

## SYSTEM/STRUCTURE LEVEL ITLR SCREENING REVISION 3/CHANGE 0

Action	Signature	Name - Printed	Date
Prepared By	<i>J. Rycyna</i>	J. Rycyna	2/25/93
Technical Reviewer	<i>B.M. Tilden</i>	B.M. Tilden	2/25/93
Functional Reviewer	<i>B.M. Tilden</i>	B.M. Tilden	2/25/93
Supervisory Approval	<i>B.W. Doroshuk</i>	B.W. Doroshuk	2/25/93
QA Approval (If Applicable)	N/A	(N/A)	
POSRC	Mtg No: 93-018 Review	(N/A)	
Plant General Manager Approval	(N/A)	Delayed Implementation Approved YES NO <input checked="" type="radio"/> N/A	
Effective Date	Pre-Implementation Require- ments Completed: YES <input checked="" type="radio"/> N/A	Release for Distribution Signature: <i>B.M. Tilden</i>	2/26/93



## EXECUTIVE SUMMARY SHEET

REVISION

CHANGE NO.

2

0

## SUMMARY OF CHANGES

1. Made procedure a BG&E controlled procedure, instead of a Grove Engineering-controlled procedure.
2. Conforms with DAP-1.
3. Provides an EXECUTIVE SUMMARY SHEET.
4. References QA Manual for Nuclear Power Plants and deletes reference to draft LCM QA Procedure.
5. References Final License Renewal Rule.
6. Adds reference to "Compiled" Portions of the CCNPP docketed correspondence (CLB/D).
7. Adds steps to review CLB/D during preparation of DBE Flow Charts and SBO and PTS Screening Tools.
8. Revises the updating process (Attachment 3) to distinguish between updating approved Work Products and in progress updating and to clarify the updating process.
9. Revises the PAM Tool procedure NOTES to make it clear that PAM 3 functions are not ITLR. Adds note that Reg. Guide 1.97 submittal is the governing source.
10. Deletes LCMDATA Traveler and provides data transfer instructions in Section 7.
11. Deletes Additional Criterion For Structures since screening for Class 1 covers this issue.
12. Adds Criterion 4, Limiting Conditions for Operation, as required by 10CFR 54. Adds steps to create an LCO Tool.

## EXECUTIVE SUMMARY SHEET (continued)

REVISION

CHANGE NO.

2

0

## SUMMARY OF CHANGES

13. Clarifies SBO Tool NOTES to make it clear that functions associated with power restoration and secured equipment are not ITLR.
14. Deletes SIC Tool.
15. Adds NOTES to FP, ATWS, SBO and PTS Tools to make it clear that S/S is not ITLR unless it is "relied" upon.
16. Adds NOTES to FP and ATWS Tools to make it clear that only S/S and associated functions that provide a unique FP/ATWS function should be listed in the respective tools.
17. Adds a general NOTE applicable to the FP, ATWS, PTS and LCO Tools that instructs the evaluator to assume that the single failure criterion is not applicable, and that, as a result, the S/S not in the direct path of equipment required to perform ITLR functions are not ITLR.
18. Provides clarification to the review and approval process. Follows "QA Review" with "if applicable." Specifies when evaluator and verifier sign cover sheets and provides for transmittal of WORK Products to LCM Inf. Sys. Engr. for inclusion in LCMDATA.
19. Incorporates TPRs 91-180 and 91-189 in Bases Section.
20. Makes Attachment 1 reference and DDBUP-1, Attachment D, match exactly.
21. Makes the attachments demonstrating Work Product format and content consistent with the revised procedure NOTES and steps.
22. Adds definition of CLB and Vital Auxiliaries and deletes Additional Criterion for Structures.

## EXECUTIVE SUMMARY SHEET (continued)

REVISION	CHANGE NO.	SUMMARY OF CHANGES
2	0	23. Does not incorporate TPR 91-145 in Bases Section because this procedure will use the FP and ATWS Tools.
		24. Does not incorporate TPR 91-154 in the Bases Section because Change 20 governs changes to Attachment 1 and Section 6.3.B.3 was deleted.
3	0	1. Deletes reference to ITTP screening. [B-12]
		2. Deletes requirement for "in progress" updating. [B-19]
		3. Adds PAM Tool to note concerning Criteria 3 and 4 tools. [B-16]
		4. Clarification of VA flowsheet identification.
		5. Adds note concerning identification of systems which perform containment isolation function. [B-14]
		6. Adds note concerning generation of VA Flow Chart.
		7. Adds note concerning column headings in tools. [B-10]
		8. Modifies note concerning PAM Tool development. [B-18]
		9. Modifies step 6.2.B.4. to include direction concerning references. [B-10]
		10. Adds note to clarify identification of systems for FP Tool. [B-15]
		11. Replaces note concerning generation of ATWS Tool. [B-15]
		12. Adds note concerning generation of SBO Tool. [B-15]
		13. Adds note concerning generation of PTS Tool. [B-15]

EXECUTIVE SUMMARY SHEET (continued)		
REVISION	CHANGE NO.	SUMMARY OF CHANGES
3	0	
	14.	Adds LCO 3.3.3.7 to note concerning exclusion of specific LCOs in tool development. [B-4]
	15.	Adds note concerning generation of LCO Tool. [B-7]
	16.	Inserts step 6.2.1.3. to consider additional criteria in generation of LCO Tool. [B-6]
	17.	Modifies step 6.2.1.4 to consider additional criteria. [B-6]
	18.	Modifies step 6.2.1.5 to consider additional criteria. [B-6]
	19.	Adds step 6.3.A.1.b. to provide directions for Table 2 unit column. [B-10]
	20.	Adds step 6.3.A.1.c. to append Attachment 16 to Table 2. [B-10]
	21.	Provides details for Table 2 DBE column entries. [B-14]
	22.	Moves PAM screening to Criterion 3 section. [B-16]
	23.	Adds SR-1M for consideration with Class 1. [B-11]
	24.	Moves instructions for revision number and date to step 7.0.B from note. [B-10]
	25.	Adds newly designated systems to Attachment 1. [B-17]
	26.	Adds Service Building to Attachment 1. [B-3]
	27.	Adds step and note concerning update to incorporate TPRs only, to Attachment 3. [B-13]
	28.	Expands note concerning references in Attachment 4. [B-5]

EXECUTIVE SUMMARY SHEET (continued)		
REVISION	CHANGE NO.	SUMMARY OF CHANGES
3	0	
		29. Modifies step D.1. in Attachment 5. [B-10]
		30. Adds sample ITRR continuation page to Attachment 6.
		31. Modifies format of PAM Tool in Attachment 8. [B-18]
		32. Modifies format of Q Tool in Attachment 9. [B-8]
		33. Modifies format of FP Tool in Attachment 10. [B-9]
		34. Modifies format of LCO Tool in Attachment 15. [B-6]
		35. Modifies format of Table 2 in Attachment 16. [B-16, B-11]

## TABLE OF CONTENTS

<u>SECTION TITLE</u>	<u>PAGE</u>
1.0 PURPOSE.....	9
2.0 SCOPE/APPLICABILITY.....	9
3.0 REFERENCES.....	10
3.1 DEVELOPMENTAL REFERENCES.....	10
3.2 PERFORMANCE REFERENCES.....	10
4.0 PREREQUISITES .....	11
5.0 PRECAUTIONS .....	11
6.0 PROCEDURE .....	11
6.1 DEFINE CONCEPTUAL BOUNDARIES AND FUNCTIONS.....	12
6.2 PREPARATION OF SCREENING TOOLS.....	13
6.3 SYSTEM AND STRUCTURE SCREENING.....	26
7.0 POST-PERFORMANCE ACTIVITIES	32
8.0 BASES	33
9.0 RECORDS	34
10.0 ATTACHMENTS	34

## LIST OF EFFECTIVE PAGES

Page No.	Change No.	Page No.	Change No.	Page No.	Change No.
1	0	29	0	57	0
2	0	30	0	58	0
3	0	31	0	59	0
4	0	32	0	60	0
5	0	33	0	61	0
6	0	34	0	62	0
7	0	35	0	63	0
8	0	36	0	64	0
9	0	37	0	65	0
10	0	38	0	66	0
11	0	39	0	67	0
12	0	40	0	68	0
13	0	41	0	69	0
14	0	42	0	70	0
15	0	43	0	71	0
16	0	44	0	72	0
17	0	45	0	73	0
18	0	46	0	74	0
19	0	47	0	75	0
20	0	48	0	76	0
21	0	49	0	77	0
22	0	50	0	78	0
23	0	51	0	79	0
24	0	52	0	80	0
25	0	53	0	81	0
26	0	54	0	82	0
27	0	55	0	83	0
28	0	56	0		



## 1.0 PURPOSE

The purpose of this Life Cycle Management (LCM) Program Procedure is to provide instructions for implementing the system/structure (S/S) level screening process for systems and structures at the Calvert Cliffs Nuclear Power Plant (CCNPP). The purpose of the S/S level screening process is to identify those S/S that are Important To License Renewal (ITLR) in accordance with the Baltimore Gas and Electric (BG&E) LCM Program - Methodology for Integrated Plant Assessment, Volume 1: Systems, Structures and Component Screening (Reference 3.1.A).

This LCM Program Procedure also establishes methods for documenting the S/S level screening process and provides instructions for verifying LCM information. Specific instructions are also provided for reviewing and referencing Source Documents. This LCM Program Procedure has been prepared in accordance with the Quality Assurance Manual for Nuclear Power Plants, (Reference 3.1.C). S/S level screening is the first step of the Integrated Plant Assessment for Aging, which is required in 10 CFR 54 (Reference 3.1.D) to establish the site-specific technical basis for license renewal.

## 2.0 SCOPE/APPLICABILITY

This LCM Program Procedure governs the generation of the system and structure summary descriptions and functional requirements, the generation of the S/S level screening tools, and the S/S level screening for all systems and structures at CCNPP Units 1 and 2 to determine those that are ITLR and provide justification for the determination of those that are not. The list of S/S to be screened is provided in Attachment 1.

Evaluators are assigned to generate screening tools and to conduct S/S level screening. Evaluators are responsible for the coordination and completion of the associated steps of this Program Procedure. Evaluators are responsible for generating the Work Products.

Verifiers are assigned to conduct independent technical review for the screening tools and screening results. Verifiers are responsible for providing verification of the work products.

Work Products generated by this Program Procedure are reviewed and approved in accordance with established QA Review and Approval processes, which are not within the scope of this LCM Program Procedure.

This LCM Program Procedure determines which S/S are ITLR, as defined in 10 CFR 54.3. The approach used in this LCM Program Procedure is based on the Screening Methodology identified in Reference 3.1.A. This Program Procedure controls the following activities:

- System summary description, conceptual boundary, and function definition,
- Screening tools preparation,
- System and structure screening.

## 2.0 SCOPE/APPLICABILITY (continued)

The component level screening process is not within the scope of this Program Procedure and will be addressed in separate documents.

S/S level screening is safety related; therefore, a 100% independent technical review is required to verify results.

## 3.0 REFERENCES

### 3.1 Developmental References

- A. Baltimore Gas and Electric LCM Program - Methodology for Integrated Plant Assessment, Volume 1: Systems, Structures and Components Screening, Revision 1, February 1, 1993.
- B. Baltimore Gas and Electric Life Cycle Management Program Management Plan, Baltimore Gas and Electric Co., April 30, 1992 (Revision 2.0).
- C. Quality Assurance Manual for Nuclear Power Plants, Baltimore Gas and Electric Co., with revisions through QAP Manual Transmittal Letter #92-02, dated January 10, 1992.
- D. Code of Federal Regulations, Title 10 Part 54, Revised as of January 13, 1992.
- E. Preparation and Control of Nuclear Engineering Department Procedures, DAP-1.

### 3.2 Performance References

- A. LCM Program Instruction 90-02 Technical Problem Reporting. Include applicable LCM Technical Problem Reports (TPRs) as necessary.
- B. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Updated Final Safety Analysis Report (UFSAR).
- C. Calvert Cliffs Nuclear Power Plant System Descriptions.
- D. Calvert Cliffs Nuclear Power Plant, Quality List Manual, Baltimore Gas and Electric.
- E. CCNPP Unit Nos. 1 and 2 Docket Nos 50-317 and 50-318 Regulatory Guide 1.97 Review Submittals, Baltimore Gas and Electric Co.
- F. Station Blackout Analysis, Baltimore Gas and Electric.
- G. NUREG/CR-4022, "Pressurized Thermal Shock Evaluation of the Calvert Cliffs Unit 1 Nuclear Power Plant."
- H. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Environmental Qualification List (50.43 List).
- I. Current, Approved versions of the screening tools.

### 3.2 Performance References (continued)

- J. Current, Approved versions of the system and structure screening results.
- K. Current, Approved versions of the component level screening results.
- L. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, NUC EIS Database. [B-1]
- M. Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Technical Specifications.
- N. Portions of the CCNPP Licensing Basis consisting of Docketed Correspondence (CLB/D).

### 4.0 PREREQUISITES

This LCM Program Procedure shall be conducted by personnel who have been trained and qualified to conduct LCM safety-related activities. Personnel using LCM Program Procedures must be familiar with the Baltimore Gas and Electric Life Cycle Management Program Screening Methodology for Integrated Plant Assessment, Volume 1: Systems, Structures and Components Screening, (Reference 3.1.A) and the Baltimore Gas and Electric Life Cycle Management Program Management Plan (Reference 3.1.B).

### 5.0 PRECAUTIONS

All source material used in conjunction with this Program Procedure will consist of controlled documents obtained through the LCM Program Staff or directly from the CCNPP Document Control Room.

Work Products generated by this Program Procedure will be referenced to the most recent version(s) of the source material available at the time that the task is begun.

Work Products, which include "Table 1 - System/Structure Information", "Table 2 - System Level Screening Results" and the Screening Tools will become LCM Program Controlled Documents.

### 6.0 PROCEDURE

#### NOTE:

The screening process described in this LCM Program Procedure provides the detail necessary to assure consistent results. A Technical Problem Report shall be submitted in accordance with Reference 3.2.A for any technical issue or procedure step that prevents completion of the screening process.

## 6.0 PROCEDURE (continued)

NOTE:  
(continued)

Sections 6.2.A through 6.2.I can be performed in any order, but the steps within each of these sections must be performed in the sequence stated by the Program Procedure.

Each Work Product as generated in Sections 6.1, 6.2.A through 6.2.I, and 6.3 will be assigned a responsible Evaluator by the Project Manager. Additional Evaluators can be used to assist the responsible Evaluator as necessary.

Each Work Product as generated in Sections 6.1, 6.2.A through 6.2.I, and 6.3 will be assigned a responsible Verifier by the Project Manager.

If the application of this Program Procedure is to update an approved Work Product, then the Evaluator or Verifier should proceed directly to Attachment 3 of this Program Procedure.

The assigned Evaluator is responsible for ensuring that every step of the Program Procedure is completed for each Work Product.

The Evaluator may add notes on Notes Sheets appended to the Work Products. [B-1]

- 6.1 **Define Conceptual Boundaries and Functions.** The Evaluator shall perform steps 6.1.A through 6.1.H. to establish the conceptual S/S boundaries needed for the S/S level screening process (except as noted).
- A. **PREPARE** a blank "Table 1 - System/Structure Information" in a format similar to that provided in Attachment 2.
    - 1. **ASSIGN** a revision designator to the Work Product, "Table 1 - System/Structure Information," Initial Draft Revision #, where # is the appropriate revision being developed.
  - B. For each of the S/S listed in Attachment 1, **REVIEW** the applicable sections of References 3.2.B, 3.2.C and 3.2.N
  - C. In the appropriate column of "Table 1 - System/Structure Information"
    - 1. **RECORD** the system or structure name, Unit number, and System ID number (if applicable).
    - 2. **RECORD** a brief description of the system or structure. **INCLUDE** a listing of the major components and major system interfaces for each S/S.
    - 3. **RECORD** the source for the description in the "Description Reference" column.
    - 4. **RECORD** the functional requirements of the system or structure.

## 6.1 Define Conceptual Boundaries and Functions (continued)

## NOTE:

Functional requirements refer to the primary functions, critical safety functions, and power production functions provided by the S/S. The Evaluator shall review the references for statements and/or implications that address the functional requirements of the S/S.

The Evaluator should use engineering judgement when determining if implied S/S functions should be recorded.

5. **RECORD** the source for the functional requirements in the "Function Reference" column.
- D. **CREATE** a cover sheet for "Table 1 - System/Structure Information" in accordance with Attachment 4.
- E. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
- F. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
- G. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the cover sheet.
- H. After "Table 1 - System/Structure Information" evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.

## 6.2 Preparation of Screening Tools

## NOTE:

For identifying S/Ss on tools being used to address the Non-Safety Related ITLR Criteria (FP, ATWS, SBO, PTS, EQ, PAM and LCO), the Evaluator need not postulate failure of passive portions of the system nor assess the impact of such failure on ITLR criteria. [B-16] Portions of the system which function actively (change position or alter state) to support the ITLR criteria, and piping components in the direct path of required fluid flow, shall be determined to support these ITLR criteria.

- A. **Design Basis Event Flow Chart Preparation** - The Evaluator shall perform steps 6.2.A.1 through 6.2.A.12 (except as noted) to document the S/S required to respond to each design basis event (DBE).

## 6.2 Preparation of Screening Tools (continued)

1. **REVIEW** the following CCNPP UFSAR Chapter 14 Design Basis Event accident analyses (Reference 3.2.B) to identify the S/S and functions required to mitigate DBEs:

Design Basis Event	Chapter 14 Location
CEA Withdrawal	Section 2
Boron Dilution	Section 3
Excess Load	Section 4
Loss of Load	Section 5
Loss of Feedwater Flow	Section 6
Excess Feedwater Heat Removal	Section 7
RCS Depressurization	Section 8
Loss of Coolant Flow	Section 9
Loss of Non-Emergency AC Power	Section 10
Control Element Assembly Drop Event	Section 11
Asymmetric S/G Event	Section 12
CEA Ejection	Section 13
Steam Line Break	Section 14
S/G Tube Rupture	Section 15
Seized Rotor	Section 16
Loss of Coolant Accident	Section 17
Fuel Handling Accident	Section 18
Turbine-Generator Overspeed	Section 19
Containment Pressure Analysis	Section 20
Hydrogen Accumulation	Section 21
Waste Gas Incident	Section 22
Waste Evaporator	Section 23
Maximum Hypothetical Incident	Section 24
Excess Charging	Section 25
Feed Line Break	Section 26

2. **REVIEW** the Accident Shutdown Flow Sheets presented in the CCNPP Q-List Manual (Reference 3.2.D) for the following DBEs to identify the S/S and functions required to mitigate the DBEs:

Design Basis Event	Flow Sheet No.
CEA Withdrawal	2
Boron Dilution	3
Excess Load	4
Loss of Load	5
Loss of Feedwater Flow	6
Excess Feedwater Heat Removal	7
RCS Depressurization	8
Loss of Coolant Flow	9
Loss of Non-Emergency AC Power	10
Asymmetric S/G Event	12
CEA Ejection	13
Steam Line Break	14
S/G Tube Rupture	15
Seized Rotor	16



## 6.2 Preparation of Screening Tools (continued)

Design Basis Event	Flow Sheet No.
Loss of Coolant Accident	17
Fuel Handling Accident	18
Feed Line Break	26

3. REVIEW the Vital Auxiliaries Flow Sheet presented in the CCNPP Q-List Manual, Sheet 50, Reference 3.2.D), for vital auxiliaries to identify the systems required to directly support S/S needed to mitigate DBEs.
4. REVIEW the CLB/D (Reference 3.2.N), as necessary, for references to DBEs to identify any additional S/S and functions required to mitigate those DBEs.
5. DETERMINE which DBEs will require the preparation of a DBE Flow Chart using the following criteria.
  - a. PREPARE a DBE Flow Chart unless an event satisfies both of the following criteria:
    - (1) A DBE Accident Flow Sheet is not prepared in the Q-List Manual.
    - (2) a. Plant equipment required in response to the DBE are included in the flow sheets for other DBEs OR  
b. No active or passive components are credited for mitigation of the DBE.
6. PREPARE a DBE Flow Chart for the required DBEs as determined in the previous step. See Attachment 7 for a sample format of the DBE Flow Charts.
  - a. ASSIGN a revision designator to the Work Product, DBE Flow Charts, Initial Draft Revision #, where # is the appropriate revision being developed.
  - b. IDENTIFY the S/S required to respond to the given DBE along with the specific functions provided to support the critical safety functions necessary to reach safe shutdown.

## NOTE:

The system or structure should be "relied upon" to mitigate the design basis event. A mention of the system or structure in the Source Document does not constitute support for the critical safety function. If there is any confusion regarding whether a system is "relied upon" to mitigate a design basis event or the system is merely mentioned, the Evaluator should refer to the resolution of LCM TPR 91-21 (Reference 3.2.A).

Those S/S and functions that are identified on an Accident Shutdown Flow Sheet, but are specifically identified in the UFSAR as "no credit taken for..." in the Safety Analysis shall be referenced as coming from the "Q-List Manual Only."



## 6.2 Preparation of Screening Tools (continued)

**NOTE:**  
(continued)

The CLB/D should be used to identify those S/S and functions not already identified either by the UFSAR or the Q-List Manual that are relied upon to mitigate a DBE.

Systems identified in the Source Documents as being required to perform either an active or passive safety related function should screen as ITLR. Structures which provide a passive safety related function will screen as ITLR due to the Class 1 or SR-1M criteria for structures in Section 6.3.B.1.d. [B-11]

Include the functions associated with S/S that provide signals to the RPS (58), ESFAS (48), or AFAS (36). Include the functions associated with S/S that are actuated by signals from ESFAS.

UFSAR, Chapter 5, Figure 5-10, specifically identifies containment isolation components. Its use facilitates identification of systems performing the containment isolation function for DBE 13 and DBE 17. [B-14]

A VA Flow Chart in a format similar to that in reference 3.2.D shall be generated.

- c. **IDENTIFY** the vital auxiliaries required to support the S/S while providing the specific functions identified in step 6.2.A.6.b.
  - d. **CODE** all S/S and functions identified in the DBE Flow Charts by shading to identify the Source Document from which they were obtained.
  - e. **IF** the identified S/S and functions result from the UFSAR or CLB/D only, **THEN ADD** a note to the DBE Flow Chart to provide the reason why the S/S functions are identified in the UFSAR or CLB/D, as appropriate, but not in the Q-List Manual Flow Sheets.
7. For those DBEs not requiring a DBE Flow Chart (as determined in 6.2.A.5), **PREPARE** a "blank" DBE Flow Chart.
    - a. **RECORD** the DBE name and number, and justification for not requiring a DBE Flow Chart, with the appropriate Source Document reference(s).
  8. **CREATE** a cover sheet for the DBE Flow Charts in accordance with Attachment 4.

## 6.2 Preparation of Screening Tools (continued)

9. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
10. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
11. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the DBE Flow Charts cover sheet.
12. After evaluation and verification of the DBE Flow Charts are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.

- B. **Post-Accident Monitoring Screening Tool Development.** The evaluator shall perform steps 6.2.B.1 through 6.2.B.9 (except as noted) to determine the systems and components required for Post-Accident Monitoring.

**NOTE:**

The appropriate headings shall be put at the top of each column of each page of each of the tools generated in 6.2.B through 6.2.I. **[B-10]**

1. **REVIEW** the following references.
  - a. UFSAR (Reference 3.2.B) Section 7.5.8.
  - b. The BG&E Reg. Guide 1.97 Submittal (Reference 3.2.E).
  - c. The CCNPP Q-List sort of PAM equipment from the NUCLEIS Equipment Database.

**NOTE:**

Systems supporting PAM 1 and PAM 2 functions are ITLR and should be listed in this Screening Tool. PAM 3 functions are not ITLR.

Systems with parameters monitored by components in the Reg. Guide 1.97 submittal (Reference 3.2.E) shall be placed in the list produced in step 4. below. The UFSAR and Q-List sort provide supporting information only. **[B-18]**

2. **DETERMINE** which components are required for post-accident monitoring per the above references.
3. **DETERMINE** the system or structure to which each of the components (as identified in 6.2.B.2) belong by checking the associated system ID number in the Master Equipment List (NUCLEIS Equipment Database) (Reference 3.2.L) or using "Table 1 - System/Structure Information."

## 6.2 Preparation of Screening Tools (continued)

4. **PREPARE** a list (in a format similar to that provided in Attachment 8) of the S/S required for PAM. **INCLUDE** the variable(s) monitored and the appropriate Source Document Item Number. **ENSURE** references listed at the top of the tool have the current revision as applicable. [B-10]
    - a. **ASSIGN** a revision designator to the Work Product, PAM Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  5. **CREATE** a cover sheet for the PAM Screening Tool in accordance with Attachment 4.
  6. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  7. **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  8. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the PAM Screening Tool cover sheet.
  9. After PAM Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- C. **Q Screening Tool Development.** The Evaluator shall perform steps 6.2.C.1 through 6.2.C.8 (except as noted) to determine the systems using components rated as Q.
1. **REVIEW** the Q-List Manual (Reference 3.2.D) Attachment D, Q-List Manual Items Report, for components rated as Q.
  2. **DETERMINE** the system or structure to which each of the components (as identified in 6.2.C.1) belongs by checking the associated system ID number in the Master Equipment List (NUCLEIS Equipment Database) (Reference 3.2.L) or using "Table 1 - System/Structure Information."
  3. **PREPARE** a list (in a format similar to that provided in Attachment 9) of the S/S and components rated as Q. **INCLUDE** the revision number of the Q-List version used as a reference.
    - a. **ASSIGN** a revision designator to the Work Product, Q Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  4. **CREATE** a cover sheet for the Q Screening Tool in accordance with Attachment 4.

## 6.2 Preparation of Screening Tools (continued)

5. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
6. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
7. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the Q Screening Tool cover sheet.
8. After Q Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.

D. **Fire Protection Screening Tool Development.** The Evaluator shall perform steps 6.2.D.1 through 6.2.D.9 (except as noted) to determine the S/S required to mitigate the effects of any fire condition in the plant and bring the plant to safe shutdown conditions.

1. **REVIEW** the CCNPP docketed correspondence to identify BG&E responses to the NRC that address the Commission's regulations on Fire Protection (FP).
2. **REVIEW** specific correspondence that contain BG&E commitments for implementation of FP regulations.
3. **IDENTIFY** S/S, referred to in the Fire Protection correspondence which are relied upon for fire protection.

**NOTE:**

The S/S should be "relied upon" in response to the plant event. The specific function must have been credited or assumed to have been performed in the analysis or evaluation. Mere mention of a system or structure does not constitute support for the ITLR function.

Only the S/Ss and their associated functions that provide a unique FP function must be listed. That is, if the function has already been identified as safety related through the Q-List (e.g., Provide AFW flow to the SG for decay heat removal) it does not have to be repeated on the FP Screening Tool. If it is unclear that the FP functions and the components relied upon to accomplish those functions are identical with a safety related function, then list the functions and their associated S/S.

Support systems for Safety Related loads that perform their function in a manner that is unique to FP shall be screened ITLR. Support systems for Safety Related loads that perform their function in a manner that is identical to the manner in which they perform in a DBE scenario shall not be screened ITLR in the FP Tool. This equipment is already identified in the VA Flow Chart. Support systems for Non-Safety Related loads shall not be screened ITLR, although they may be specifically mentioned in plant analyses or submittals. [B-15]

4. **PREPARE** a list (in a format similar to that provided in Attachment 10) of the S/S relied upon for fire protection. **INCLUDE** the specific functions that the S/S provides and the appropriate Source Document(s) with its revision number(s).

## 6.2 Preparation of Screening Tools (continued)

- a. **ASSIGN** a revision number designator to the work product, FP Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  5. **CREATE** a cover sheet for the FP Screening Tool in accordance with Attachment 4.
  6. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  7. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  8. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the FP Screening Tool cover sheet.
  9. After FP Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- E. **Anticipated Transients Without Scram Screening Tool Development.** The Evaluator shall perform steps 6.2.E.1 through 6.2.E.9 (except as noted) to determine the systems and structures required to respond to Anticipated Transients Without Scram (ATWS).
1. **REVIEW** the CCNPP docketed correspondence to identify the BG&E responses to the NRC that address the Commission's regulations on ATWS.
  2. **REVIEW** correspondence that contain results of the Plant ATWS Event Evaluation as submitted by BG&E to show compliance with the associated NRC regulations.
  3. **IDENTIFY** S/S and components, listed in the Plant ATWS Event Evaluation, which are relied upon in response to an ATWS event.

**NOTE:**

The S/S should be "relied upon" in response to the plant event. The specific function must have been credited or assumed to have been performed in the analysis or evaluation. Mere mention of a system or structure does not require it to be ITLR.

Support systems for Safety Related loads that perform their function in a manner that is unique to ATWS shall be screened ITLR. Support systems for Safety Related loads that perform their function in a manner that is identical to the manner in which they perform in a DBE scenario shall not be screened ITLR in the ATWS Tool. This equipment is already identified in the VA Flow Chart. Support systems for Non-Safety Related loads shall not be screened ITLR, although they may be specifically mentioned in plant analyses or submittals. [B-15]



## 6.2 Preparation of Screening Tools (continued)

4. **PREPARE** a list (in a format similar to that provided in Attachment 11) of the S/S used in the Plant ATWS Event Evaluation. **INCLUDE** the specific function(s) that the S/S provides and the appropriate Source Document(s) with its revision number(s).
    - a. **ASSIGN** a revision designator to the Work Product, ATWS Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  5. **CREATE** a cover sheet for the ATWS Screening Tool in accordance with Attachment 4.
  6. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  7. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  8. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the ATWS Screening Tool cover sheet.
  9. After ATWS Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- F. **Station Blackout Screening Tool Development.** The Evaluator shall perform steps 6.2.F.1 through 6.2.F.10 (except as noted) to determine the S/S required to respond to a Station Blackout (SBO) Event.
1. **REVIEW** the Station Blackout Analysis (Reference 3.2.F).
  2. **IDENTIFY** S/S listed in the Station Blackout Analysis which are relied upon in response to a SBO event and the specific functions that they provide.

**NOTE:**

The S/S should be "relied upon" in response to the plant event. The specific function must have been credited or assumed to have been performed in the analysis or evaluation. Mere mention of a system or structure does not require it to be ITLR. For example, power restoration functions are not relied upon in response to a SBO event. Similarly, the functions associated with equipment secured during an SBO scenario are not relied upon. However, the plant functions associated with the coping duration and with disconnecting electrical power to secured equipment are relied upon.

Support systems for Safety Related loads that perform their function in a manner that is unique to SBO shall be screened ITLR. Support systems for Safety Related loads that perform their function in a manner that is identical to the manner in which they perform in a DBE scenario shall not be screened ITLR in the SBO Tool. This equipment is already identified in the VA Flow Chart. Support systems for Non-Safety Related loads shall not be screened ITLR, although they may be specifically mentioned in plant analyses or submittals. [B-15]

## 6.2 Preparation of Screening Tools (continued)

3. **REVIEW** the CLB/D (Reference 3.2.N), as necessary, for references to SBO to identify the S/S and functions which are relied upon in response to an SBO event.
  4. **IDENTIFY** any additional S/S based on the review of the CLB/D, that were not identified in Step 6.2.F.2 and the specific functions that the S/S provide.
  5. **PREPARE** a list (in a format similar to that provided in Attachment 12) of the S/S used in the Station Blackout Analysis. **INCLUDE** the specific function(s) that the S/S provides and the appropriate Source Document(s) with its revision number(s).
    - a. **ASSIGN** a revision designator to the Work Product, SBO Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  6. **CREATE** a cover sheet for the SBO Screening Tool in accordance with Attachment 4.
  7. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  8. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  9. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the SBO Screening Tool cover sheet.
  10. After SBO Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- G. **Pressurized Thermal Shock Screening Tool Development.** The Evaluator shall perform steps 6.2.G.1 through 6.2.G.10 (except as noted) to determine the S/S required to respond to a Pressurized Thermal Shock (PTS) Event.
1. **REVIEW** NUREG/CR-4022 (Reference 3.2.G) to show compliance with the associated NRC regulations.
  2. **IDENTIFY** S/S listed in NUREG/CR-4022 which are relied upon in response to a PTS event and the specific functions that the S/S provide.
  3. **REVIEW** the CLB/D (Reference 3.2.N), as necessary, for references to PTS to identify the S/S and functions which are relied upon in response to a PTS event.



## 6.2 Preparation of Screening Tools (continued)

## NOTE:

The S/S should be "relied upon" in response to the plant event. The specific function must have been credited or assumed to have been performed in the analysis or evaluation. Mere mention of a system or structure does not require it to be ITLR.

Support systems for Safety Related loads that perform their function in a manner that is unique to PTS shall be screened ITLR. Support systems for Safety Related loads that perform their function in a manner that is identical to the manner in which they perform in a DBE scenario shall not be screened ITLR in the PTS Tool. This equipment is already identified in the VA Flow Chart. Support systems for Non-Safety Related loads shall not be screened ITLR, although they may be specifically mentioned in plant analyses or submittals. [B-15]

4. **IDENTIFY** any additional S/S which are relied upon in response to a PTS event based on the review of the CLB/D, that were not identified in Step 6.2.G.2 and the specific functions that the S/S provide.
  5. **PREPARE** a list (in a format similar to that provided in Attachment 13) of the S/S relied upon in response to PTS. Include the specific function(s) that the S/S provides and the appropriate Source Document(s) with its revision number(s).
    - a. **ASSIGN** a revision designator to the Work Product, PTS Screening Tool, Initial Draft Revision #, where # is the appropriate revision being sought.
  6. **CREATE** a cover sheet for the PTS Screening Tool in accordance with Attachment 4.
  7. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  8. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  9. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the PTS Screening Tool cover sheet.
  10. After PTS Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- H. **Environmental Qualification Screening Tool Development.** The Evaluator shall perform steps 6.2.H.1 through 6.2.H.8 (except as noted) to determine the systems which contain components with an Environmental Qualification (EQ) rating.
1. **REVIEW** the Q-List Manual (Reference 3.2.D) Attachment D, Q-List Manual Items Report, for components identified as EQ ("5049").

## 6.2 Preparation of Screening Tools (continued)

2. **DETERMINE** the system or structure to which each of the components (as identified in 6.2.H.1) belongs by checking the associated system ID number in the Master Equipment List (NUCLEIS Equipment Database) (Reference 3.2.L) or using "Table 1 - System/Structure Information."
  3. **PREPARE** a list (in the format similar to that provided in Attachment 14) of the S/S which contain components qualified as EQ. **INCLUDE** the revision number of the Q-List version used as a reference.
    - a. **ASSIGN** a revision designator to the Work Product, EQ Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
  4. **CREATE** a cover sheet for the EQ Screening Tool in accordance with Attachment 4.
  5. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
  6. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
  7. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the EQ Screening Tool cover sheet.
  8. After EQ Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.
- I. **Limiting Conditions for Operation Screening Tool Development.** The Evaluator shall perform steps 6.2.I.1 through 6.2.I.10 (except as noted) to determine the S/S that are subject to operability requirements contained in the plant Technical Specifications.
1. **REVIEW** the Unit 1 and Unit 2 plant Technical Specifications (Reference 3.2.M) Limiting Conditions for Operation (LCO).
  2. **IDENTIFY** the S/S for which each LCO places an operability requirement.

## 6.2 Preparation of Screening Tools (continued)

**NOTE:**

The word OPERABLE must appear in the LCO statement. If the LCO refers to meeting specific parameters (e.g., minimum flow rate, shutdown margin) or administratively controlled conditions (e.g., maintain direct communications, maintain valve closed, stay within limits), this does not constitute an operability requirement and should not be included in the LCO Screening Tool.

Surveillance requirements and bases sections may be used to help identify what S/S are subject to the specific LCO.

LCOs 3.3.3.7, 3.6.4, 3.7.11 and 3.7.12 should be excluded from this review since they do not meet the Commission Policy guidance criteria for Tech Spec LCOs of controlling interest to plant safety. See reference 3.1.A for more discussion. [B-4]

Only the S/Ss and their associated functions that provide a unique LCO function must be listed. That is, if the function has already been identified as safety related through the Q-List (e.g., Provide AFW flow to the SG for decay heat removal) it does not have to be repeated on the LCO Screening Tool. If it is unclear that the functions and the components relied upon to accomplish those functions are identical, then list the functions and their associated S/S. [B-7]

3. **IDENTIFY** whether the LCO and associated S/S(s) meet any one of the following additional criteria:
  1. Is the S/S, required to be operable by the LCO, installed instrumentation that is used to detect and indicate, in the control room, a significant abnormal degradation of the reactor coolant pressure boundary? [B-6]
  2. Is the S/S, required to be operable by the LCO, necessary for monitoring or controlling a process variable that is an initial condition of a Design Basis Accident (DBA) or Transient Analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier? [B-6]
  3. Is the S/S, required to be operable by the LCO, part of the primary success path and does it function or activate to mitigate a Design Basis Accident or Transient Analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier? [B-6]
4. **IDENTIFY** the vital auxiliaries required to support the S/S subject to an operability requirement and which meets at least one of the additional criteria. [B-6]

**NOTE:**

Vital auxiliaries have already been identified for those S/S identified as ITLR under Criterion 1. Therefore, only those vital auxiliaries required to support S/S not already identified as ITLR under Criterion 1 need to be identified.

Vital auxiliaries include those that directly support S/S (e.g., cooling water) as well as those that indirectly support S/S (e.g., HVAC) unless there is adequate technical justification that failure of the auxiliary equipment will not prevent the S/S from performing its functions when called upon.

## 6.2 Preparation of Screening Tools (continued)

## NOTE:

Where there are more than one means of providing the required support function, i.e., a normal and alternate means, only the primary (normal) means should be classified as ITLR.

5. **PREPARE** a list (in a format similar to that provided in Attachment 15) of the S/S that are required to be operable in a LCO and which meets at least one of the additional criteria. **INCLUDE** the LCO number(s) and additional criteria number (only one required) for each S/S and the latest overall Technical Specifications amendment number in the LCO Screening Tool's reference block. [B-6]
  - a. **ASSIGN** a revision designator to the Work Product, LCO Screening Tool, Initial Draft Revision #, where # is the appropriate revision being developed.
6. **CREATE** a cover sheet for the LCO Screening Tool in accordance with Attachment 4.
7. **INITIATE** the verification step by compiling a verification package in accordance with Attachment 5.
8. The Verifier and Evaluator shall **PROVIDE** comments and comment resolution in accordance with Attachment 5.
9. After the Evaluator and the Verifier have reached concurrence, the Evaluator and Verifier shall **PRINT** their names on the LCO Screening Tool cover sheet.
10. After LCO Screening Tool evaluation and verification are completed, the Evaluator shall **INITIATE** post-performance activities in accordance with Section 7.0 of this Program Procedure.

## 6.3 System and Structure Screening

- A. **Table 2 - ITLR S/S Level Screening Results.** The Evaluator shall perform the following steps except as noted.
  1. **PREPARE** a blank "Table 2 - ITLR S/S Level Screening Results" (in a format similar to that provided in Attachment 16).
    - a. **ASSIGN** a revision designator to the Work Product, "Table 2 - ITLR S/S Level Screening Results," Initial Draft Revision #, where # is the appropriate revision being developed.
    - b. **ENTER** all Systems/Structures and their ID numbers as listed in Attachment 1 to the appropriate columns in Table 2. In the unit column, enter "Both" if the S/S is shared by both units, enter "1&2" if there are similar S/S in each unit, or enter "1" or "2" if the S/S is applicable only to one of the units. [B-10]

## 6.3 System and Structure Screening (continued)

- c. **APPEND** Attributes for Table 2 from Attachment 16 to the work product as the last two pages. [B-10]

**NOTE:**

Upon completion of the S/S level screening process, the "Table 2 - ITLR S/S Level Screening Results" will contain the information required to substantiate the ITLR classification of each system and structure.

- B. **Actual S/S ITLR Screening.** The Evaluator shall perform the following steps (except as noted) to consolidate the information provided by the Screening Tools developed in Section 6.2 and determine the ITLR status of each S/S.

**NOTE:**

The screening criteria shall be applied to the S/S to show all ITLR determinations. The Evaluator shall use the Screening Tools generated in Section 6.2 of this Program Procedure to identify S/S that satisfy the specific ITLR criteria. The complete screening process shall be repeated for each of the S/S listed in Attachment 1 until all have been screened.

1. **ITLR Criteria 1&2 -- Safety-Related S/S and Supporting S/S.** The Evaluator shall perform the following steps to implement ITLR Criteria 1&2.

**NOTE:**

ITLR Criterion 1 - Safety-related SSCs, which are those relied upon to remain functional during and following design basis events to ensure:

- (1) The integrity of the reactor coolant pressure boundary;
- (2) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (3) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite consequences comparable to the 10 CFR Part 100 guidelines.

Design basis events are defined as in 10 CFR 50.49(b)(1).

ITLR Criterion 2 - All non-safety-related SSCs whose failure could directly prevent satisfactory accomplishment of any of the required safety functions identified in Criterion 1 above.

- a. **REVIEW** the DBE Flow Charts generated in Section 6.2.A of this Program Procedure.

- (1) IF the system/structure being screened is listed in one or more of the DBE Flow Charts, **THEN RECORD** the following information in the appropriately labeled column under the "Criteria 1&2" heading of "Table 2 - ITLR S/S Level Screening Results" for each DBE which lists the system/structure under consideration.

The DBE number(s) that requires the system/structure under consideration.

## 6.3 System and Structure Screening (continued)

- The plant function(s) supported by the system/structure in response to the identified DBE.

## NOTE:

Correlate the DBE number(s) with the plant function(s). Do not use DBE 50. [B-14]

- (2) IF a system/structure is listed as a vital auxiliary to a system which provides support for a plant function in response to the identified design basis event, **THEN RECORD** the following information in the appropriately labeled column under the "Criteria 1&2" heading of "Table 2 - ITLR S/S Level Screening Results."
    - The DBE number(s) that requires the system/structure under consideration.
    - That the system/structure is a vital auxiliary to the S/S supporting a plant function.
  - (3) IF the system/structure being screened is not listed in any DBE flow chart, **THEN RECORD** the following information in the appropriate column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 1&2" heading.
    - "NO" under "Req'd for DBE."
    - "NONE" under "DBE Plant Function(s)."
  - (4) The Class I designation is not applicable to systems, therefore **MARK** the Class I or SR-1M column as "N/A" when screening systems.
- b. **REVIEW** the Q Screening Tool generated in Section 6.2.C. of this Program Procedure.
- (1) IF a system/structure is listed as containing a Q-rated component(s), **THEN RECORD** "YES" in the "Q" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 1&2" heading.
  - (2) IF a system/structure is not listed as containing a Q-rated component(s), **THEN RECORD** "NO" in the "Q" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 1&2" heading.
- c. For all listed structures, **REVIEW** the UFSAR (Reference 3.2.B) Section 5 and the Q-List Manual (Reference 3.2.D) General Items section.



## 6.3 System and Structure Screening (continued)

- (1) IF the structure, or any part of it, is designated as Class I or SR-1M, THEN RECORD the following information in the appropriate column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 1&2" heading. [B-11]
    - "Yes" under the column "Class I or SR-1M." [B-2, B-11]
    - The Source Document in the "Class I or SR-1M Reference" column. [B-2, B-11]
  - (2) IF the structure is not designated as Class I or SR-1M, THEN RECORD the following information in the appropriate column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 1&2" heading. [B-11]
    - "NO" under the column "Class I or SR-1M." [B-2, B-11]
    - The Source Document in the "Class I or SR-1M Reference" column. [B-2, B-11]
2. ITLR Criterion 3 -- S/S Relied Upon In Plant Safety Evaluations. The Evaluator shall perform the following steps to implement ITLR Criterion 3.

## NOTE:

ITLR Criterion 3 - All SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification and post accident monitoring (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63). [B-16]

- a. REVIEW the FP Screening Tool generated in Section 6.2.D of this Program Procedure.
  - (1) IF a system/structure is listed as being relied upon to respond, THEN RECORD "YES" in the "FP" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
  - (2) IF a system/structure is not listed as being relied upon to respond, THEN RECORD "NO" in the "FP" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
- b. REVIEW the ATWS Screening Tool generated in Section 6.2.E of this Program Procedure.



## 6.3 System and Structure Screening (continued)

- (1) IF a system/structure is listed as being relied upon to respond to an ATWS event, **THEN RECORD "YES"** in the "ATWS" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
  - (2) IF a system/structure is not listed as being relied upon to respond to an ATWS event, **THEN RECORD "NO"** in the "ATWS" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
- c. **REVIEW** the SBO Screening Tool generated in Section 6.2.F of this Program Procedure.
  - (1) IF a system/structure is listed as being relied upon to respond to a SBO event, **THEN RECORD "YES"** in the "SBO" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
  - (2) IF a system/structure is not listed as being relied upon to respond to a SBO event, **THEN RECORD "NO"** in the "SBO" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
- d. **REVIEW** the PTS Screening Tool generated in Section 6.2.G of this Program Procedure.
  - (1) IF a system/structure is listed as being relied upon to respond to a PTS event, **THEN RECORD "YES"** in the "PTS" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
  - (2) IF a system/structure is not listed as being relied upon to respond to a PTS event, **THEN RECORD "NO"** in the "PTS" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
- e. **REVIEW** the EQ Screening Tool generated in Section 6.2.H.
  - (1) IF a system/structure is listed as containing components with EQ status, **THEN RECORD "YES"** in the "EQ" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
  - (2) IF a system/structure is not listed as containing components with EQ status, **THEN RECORD "NO"** in the "EQ" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 3" heading.
- f. **REVIEW** the PAM Screening Tool, generated in Section 6.2.B of this Program Procedure, to identify those S/S required for PAM. [B-16]

## 6.3 System and Structure Screening (continued)

- (1) IF a S/S being screened is listed in this Screening Tool, **THEN RECORD "YES"** in "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 3" heading. [B-16]
- (2) IF a system/structure is not listed, **THEN RECORD "NO"** in the "PAM" column of "Table 2 - ITLR S/S Level Screening Results" under the "Criteria 3" heading. [B-16]

3. **ITLR Criterion 4 - S/S Subject to Limiting Conditions of Operation.** The Evaluator shall perform the following steps to implement ITLR Criterion 4.

**NOTE:**

ITLR Criterion 4 - All SSCs subject to operability requirements contained in the facility technical specification limiting conditions for operation.

- a. **REVIEW** the LCO Screening Tool generated in Section 6.2.1.

- (1) IF a system/structure is listed as one on which a LCO places an operability requirement, **THEN RECORD** the following information in the appropriate column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 4" heading.
  - "YES" in the column "LCO."
  - The LCO numbers for each S/S in the "LCO No." column.
- (2) IF a system/structure is not listed as one on which a LCO places an operability requirement, **THEN RECORD** the following information in the appropriate column of "Table 2 - ITLR S/S Level Screening Results" under the "Criterion 4" heading.
  - "NO" in the column "LCO."
  - "None" in the column "LCO No."

5. **Final ITLR Determination.** The Evaluator will perform steps 6.3.B.5.a through 6.3.B.5.f (except as noted) to determine whether the system/structure is ITLR.

- a. **REVIEW** the entire "Table 2 - ITLR S/S Level Screening Results" for the system/structure being screened.
  - (1) IF a DBE number, "VA" or a "YES" was entered in any column of "Table 2 - ITLR S/S Level Screening Results" as a result of previous procedure steps, **THEN RECORD "YES"** in the "ITLR Y/N" column of the table. [B-14]
  - (2) IF "NO" was entered in the "Req'd for DBE" column and "NONE" in the "Plant Function(s)" column,

## 6.3 System and Structure Screening (continued)

AND

IF "NO" was entered in the "PAM," "FP," "ATWS," "SBO," "PTS," "EQ," and "Q" columns of the table,

AND

IF "NO" was entered in the "LCO" column and "NONE" in the "LCO No." column,

AND

IF either "N/A" or "NO" was entered in the "Class I or SR-1M" column, THEN RECORD "NO" in the "ITLR Y/N" column of the table. [B-11]

- b. CREATE a cover sheet for "Table 2 - S/S Level Screening Results" in accordance with Attachment 4.
- c. INITIATE the verification step by compiling a verification package in accordance with Attachment 5.
- d. The Verifier and Evaluator shall PROVIDE comments and comment resolution in accordance with Attachment 5.
- e. After the Evaluator and the Verifier have reached concurrence, the Evaluator and the Verifier shall PRINT their names on the "Table 2 - ITLR S/S Level Screening Results" cover sheet.
- f. After "Table 2 - S/S Level Screening Results" evaluation and verification are completed, the Evaluator shall INITIATE post-performance activities in accordance with Section 7.0 of this Program Procedure.

## 7.0 POST-PERFORMANCE ACTIVITIES

The purpose of this Section is to assemble the Work Products into a package for transmittal to the QA Reviewer, if required, and Approver for:

- 1) review of the Evaluator's verified work, and
- 2) to obtain concurrence signatures on the Work Product Cover Sheets.

## NOTE:

Work Products include Table 1, Table 2 and all Screening Tools.

Additional individuals may be included in the review of the package.

**7.0 POST-PERFORMANCE ACTIVITIES (continued)****A. Work Product Review Package Preparation.**

1. **ASSEMBLE** the following into at least three packages (the original and two or more copies):
  - Work Products (i.e., Table 1, Screening Tools)
  - Respective Work Product Cover Sheets
  - Completed Independent Technical Review Record (ITRR)
2. **FORWARD** the package of originals to the project files.
3. **FORWARD** the other packages to the Approver and QA Reviewer and additional Technical Reviewers, if required, in accordance with LCM Program Policy.

**B. QA Reviewer, if required, and Approver Review**

1. Upon satisfactory completion of the review and approval process, remove the "Verified Draft" designation from the work product, and date the revision with the current (today's) date. The Evaluator, Verifier, Approver, QA Reviewer and additional reviewers, if required, shall then **SIGN** the cover sheets of each of the work products. [B-10]
2. The Approver or his designee shall **FORWARD** the approved Work Products to the LCM Information Engineer for inclusion in LCMDATA at the plant level.

**8.0 BASES**

- |      |  |
|------|--|
| B-1  | TPR 91-180   |
| B-2  | TPR 91-189   |
| B-3  | TPR 92-035   |
| B-4  | TPR 92-062   |
| B-5  | TPR 92-064   |
| B-6  | TPR 92-065   |
| B-7  | TPR 92-066   |
| B-8  | TPR 92-075   |
| B-9  | TPR 92-082   |
| B-10 | TPR 92-086   |
| B-11 | TPR 92-096   |
| B-12 | ITPP Screening will not be done.   |
| B-13 | Updating of verified screening results for the incorporation of TPR results without performing entire periodic update. |
| B-14 | TPR 92-108   |
| B-15 | TPR 92-127   |
| B-16 | PAM screening considered Criterion 3 rather than Criteria 1 and 2.   |
| B-17 | New systems added to Nucleis   |

**8.0 BASES (continued)**

- B-18 Only systems with components in RG 1.97 Response perform PAM functions.
- B-19 "In progress" updating is not required due to short duration of S/S screening.

**9.0 RECORDS**

Records generated by this Program Procedure shall be captured and controlled. Prior to transferring records to Plant History for retention, legibility and completeness of the records shall be verified by the transmitting organization.

All products of this Program Procedure will be delivered to the LCM Program Administrator for serialization.

All products of this Program Procedure are permanent QA records which must be retained for the entire license renewal term.

This includes all Work Product Initial Draft Revisions and Verified Draft Revisions, and the associated ITRR forms.

**10.0 ATTACHMENTS**

- Attachment 1 - CCNPP Systems and Structures
- Attachment 2 - Table 1 - System/Structure Information
- Attachment 3 - Updating
- Attachment 4 - Cover Sheet
- Attachment 5 - Independent Technical Review
- Attachment 6 - Independent Technical Review Record
- Attachment 7 - DBE Flow Chart
- Attachment 8 - PAM Screening Tool
- Attachment 9 - Q Screening Tool
- Attachment 10 - FP Screening Tool
- Attachment 11 - ATWS Screening Tool
- Attachment 12 - SBO Screening Tool
- Attachment 13 - PTS Screening Tool
- Attachment 14 - EQ Screening Tool
- Attachment 15 - LCO Screening Tool
- Attachment 16 - Table 2 - ITLR S/S Level Screening Results
- Attachment 17 - LCM Definitions

Attachment (1)

CCNPP Systems and Structures



BG&E LCM Program	
LCM-12, Rev.3	
SYSTEMS AND STRUCTURES LISTING	
BG&E ID #	System/Structure
1	Switchyard (500 KV) and Switchyard DC
2	Electrical 125 Volt DC Distribution
3	Electrical 13KV Transformers and Buses
4	Electrical 4 KV Transformers and Buses
5	Electrical 480V Transformers and Buses
6	Electrical 480V Motor Control Centers
7	Electrical 13KV Unit Buses
8	Well and Pretreated Water
9	Intake Structure
10	Not presently assigned
11	Service Water Cooling
12	Salt Water Cooling
13	Fire Protection
14	Transformer Deluge
15	Component Cooling
16	Electrical 250VDC
17	Instrument AC
18	Vital Instrument AC
19	Compressed Air
20	Data Acquisition Computer
21	Domestic Water
22	Makeup Demineralizer
23	Diesel Oil
24	Emergency Diesel Generator
25	Access Control Area Ventilation
26	Annunciation
27	Auxiliary Steam Generators
28	Auxiliary Steam
29	Plant Heating
30	Control Room HVAC
31	Meteorology Tower and Misc. Computers
32	Aux Building and Radwaste H&V
33	Turbine Building Ventilation
34	Condensate Precoat Filter
35	Chemical Additions - Turbine
36	Auxiliary Feedwater
37	Demin. Water and Condensate Storage
38	Sampling System (NSSS)
39	Condensate Polishing Demineralizer
40	Not Presently Assigned



BG&E LCM Program	
LCM-12, Rev.3	
SYSTEMS AND STRUCTURES LISTING	
BG&E ID #	System/Structure
41	Chemical and Volume Control (CVCS)
42	Circulating Water
43	Condenser Air Removal
44	Condensate
45	Feedwater
46	Extraction Steam
47	Feedwater Heater Drains and Vents
48	Emergency Safety Feature Actuation (ESFAS)
49	Simulator Computer
50	Solid Waste Disposal
51	Plant Water
52	Safety Injection
53	Plant Drains
54	Not Presently Assigned
55	Control Rod Drive Mechanism & Electrical
56	Reactor Regulating
57	Technical Support Center Computer
58	Reactor Protective
59	Primary Containment
60	Primary Containment H&V
61	Containment Spray
62	Control Boards
63	Cathodic Protection
64	Reactor Coolant
65	Seismic
66	Cavity Cooling
67	Spent Fuel Pool Cooling
68	Spent Fuel Storage
69	Waste Gas
70	Refueling Pool
71	Liquid Waste
72	Sewage Treatment Plant
73	Hydrogen Recombiner
74	Nitrogen and Hydrogen
75	Low Voltage DC Control Power
76	Secondary Sample
77	Area Radiation Monitoring
78	Nuclear Instrumentation
79	Process Radiation Monitoring
80	New Fuel Storage and Elevator

BG&E LCM Program	
LCM-12, Rev.3	
SYSTEMS AND STRUCTURES LISTING	
BG&E ID #	System/Structure
81	Fuel Handling
82	Not Presently Assigned
83	Main Steam
84	Reactor Vessel Internal
85	Plant Access and Surveillance
86	Power Plant Security
87	Unit Transformers
88	Visitor Center Security
89	Emergency Operations Facility Security
90	Service Building and Outlying Building HVAC
91	Lube Oil Storage
92	Gland Steam
93	Main Turbine
94	Plant Computer (SSS)
95	Carbon Dioxide
96	Fire and Smoke Detection
97	Lighting and Power Receptacle
98	Main Generator and Excitation
99	Cranes/Test Equipment
100	Plant Communications
101	Not presently assigned
102	Plant Areas
* 103	Personnel Safety Equipment
104	Lubrication
* 105	Weight Testing Wire Ropes and Slings
* 106	Ladders and Gratings
107	Roads
108	Docks and Marine Related Structures
* 109	Shop Equipment
* 110	Manual Valve Components [B-17]
* 111	Materials Processing Facility (MPF) [B-17]
* Not included as a system in LCM/LR Program	
<i>Additional Structures</i>	
Auxiliary Bldg.	
Condensate Storage Tank #12 Enclosure	
Domestic Water Treatment Plant	
Engine Gen House	

BG&E LCM Program	
LCM-12, Rev.3	
SYSTEMS AND STRUCTURES LISTING	
BG&E ID #	System/Structure
	Additional Structures (continued)
	Equipment Hatch Access Bldg. #1
	Equipment Hatch Access Bldg. #2
	Fire Protection Pump House
	Fuel Assemblies
	Fuel Oil Storage Tank No. 21 Bldg.
	Hydrogen Storage Pad
	NMD Mods Mech. Lock-up (#3)
	NMD Mods Mech. Lock-up (#4)
	Oil Interceptor Pit
	Service Building [B-3]
	South Service Bldg.
	Switchgear Structure
	Transformer Foundations
	Turbine Bldg.
	Waste Water Treatment Bldg.
	Well Observation Bldg.
	Well Water Pump House
NOTE: 1 Listing is from Attachment D of BG&E Procedure DDBUP-1, Control of Master Equipment List, Revision 1.	
2 Additional structures listing was compiled from CCNPP Drawing No. 61-502-E, SH. 2, Plant Property and Building, Rev. 1. The following tanks and structures were not included because they are part of a system:	
	System No
Acid Storage Tank	37
Condensate Storage Tank Nos. 11 & 21	37
Demineralized Water Storage Tank No. 11	37
Demineralizing Waste Neutralizing Tank No. 11	22
Equipment Storage - Inside Building No. 1	Turbine Bldg
Foam Storage Tank	13
Fuel Oil Storage Tank	23
Liquid Nitrogen Tank	74
Morpholine Storage Tank	35
Neutralizing Tank	37
Oil/Water Interceptor Pit	53
Pretreated Water Storage Tank Nos. 11 & 12	8
Reactor Enclosure - Units #1 and #2	59

BG&E LCM Program		
LCM-12, Rev.3		
SYSTEMS AND STRUCTURES LISTING		
BG&E ID #	System/Structure	
	Refueling Water Storage Tank Nos. 11 & 12	52
	Screen Well Enclosure	9
	Sodium Hypochlorite Tank	12
	Sprinkler Tank	13
	Sodium Hypo Tank	37
	Turbine Lube Oil Tank	91

Attachment (2)

Table 1 - System/Structure Information

BG&E LCM Program					Revision 2
TABLE 1					
SYSTEM/STRUCTURE INFORMATION					
System/Structure	Unit	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Switchyard (500 KV) and Switchyard DC	18.2.1	<p>The 500 KV switchyard system is designed to be the interconnection point between the power plant and the Baltimore Gas &amp; Electric Company power grid system. Electrical power from the power grid system to the switchyard is supplied by two physically independent transmission lines designed and located to minimize the likelihood of simultaneous failure under operating and postulated accident and environmental conditions. Two physically independent circuits from the switchyard to the cable, electrical distribution system are also provided. The switchyard is designed with two battery systems, two air supply systems, two tip coils per breaker, two protective relay schemes, and two auxiliary AC supplies from plant emergency buses.</p> <p>The switchyard is arranged in a breaker and one-half arrangement and has two bays consisting of three breakers each and one bay of two breakers with two main buses (the 500 KV rail bus and 500 KV black bus) and connections to both of the generator's main power transformers, the two plant service transformers and two 500 KV lines to the Baltimore Gas &amp; Electric Company power system. Each bay has sufficient capacity to carry the entire output of both turbine generators. The switchyard 500 KV power circuit breakers, the circuits from the switchyard to the generator main power transformers and from the switchyard to the plant service transformers are provided with disconnect switches or isolating links to permit isolating any power circuit breaker or any circuit from the switchyard while allowing the 500 KV buses to remain fed together.</p> <p>The 500 KV lines to the BG&amp;E power system consist of two physically independent lines designed and located to minimize the likelihood of simultaneous failure under operating and postulated accident and environmental conditions. Zone relaying is provided for the circuit from the switchyard to the generator main power transformers and for the two switchyard main buses. The main bus zones include the circuit from the switchyard to the plant service transformers.</p>	UF SAR Section 8.2 Fig. 8.3, 8.4, 8.5	1. To function reliably under all conditions of power plant operations.  2. To furnish service startup power to the power plant.  3. To isolate trouble in the power system grid under power system normal and abnormal conditions.  4. To provide a switching network for power transmission between the Calvert Cliffs nuclear power plant (Units 1 and 2) main generators via sub-volt transformers and the Baltimore Gas and Electric Company (BG&E) power grid system.  5. To provide power to the 500 KV rail bus and the 500 KV black bus, which supply power to the Calvert Cliffs plant auxiliary loads.	UF SAR Section 8.2 Fig. 8.3
Electrical 125 Volt DC Distribution	18.2.2	<p>The electrical 125V DC distribution system for the plant is divided into two independent and isolated channels. Each channel consists of one battery, one battery monitor, two battery chargers, one DC bus, and multiple DC unit control panels. Power to the DC bus and DC unit control panels is supplied by the station batteries and/or the battery chargers.</p> <p>A reserve 125VDC system for the plant is completely independent and isolated from all four separation groups, yet is capable of replacing any of the 125VDC batteries. This system consists of one battery, one battery charger, one battery monitor, and the associated DC switching equipment. The 125VDC distribution system interbuses with the 120V vital instrument AC system and 480V bus system.</p>	UF SAR Section 8.3.6.2 Fig. 8.11, 8.12  SD No. 54 Page 1, 2, App. A	1. The 125 VDC is designed to furnish continuous power to the plant vital instrumentation and control systems regardless of secondary electrical system conditions.	UF SAR Section 8.3.5.1 Fig. 8.11

Attachment (3)

Updating



## Work Product Updating Procedure

## NOTE:

This Attachment applies to the updating of the current, Approved Work Products, (A) and (B).

Step B is to be performed to update an Approved Work Product (System Level Screening Results) for incorporation of TPR resolutions only, after the previous screening has been completed, verified and approved. [B-13]

## A. Updating Approved Work Products (References 3.2.I and 3.2.J).

## NOTE:

The Evaluator shall assign a revision designator to distinguish the Work Product from previous or future approved revisions.

The updating of a current, Approved Work Product requires the traceability of the changes (the use of change bars) to the Work Product.

1. **ASSIGN** an appropriate revision designator. The revision designator should take the form Initial Draft Rev. #, where # is the appropriate revision being developed.
2. **DETERMINE** if the Approved Work Products were developed using an earlier version of the Screening Procedure.
3. **IF** steps of the procedure have been revised, **THEN DETERMINE** if the changes impact the content or conclusions documented in the Work Product.
  - a. **IF** the changes have no impact on the Work Product, **THEN PROCEED** to Step A.4
  - b. **IF** the changes invalidate portions of the Work Product, **THEN REPEAT** the appropriate steps of the Program Procedure to recreate only those sections of the Work Product affected by Procedure revisions.
4. **REVIEW** the applicable LCM TPRs addressing the Work Product and **INCORPORATE** the approved LCM TPRs as necessary.

## Work Product Updating Procedure (continued)

5. **REVIEW** the component level screening results for each completed system (Reference 3.2.K) and **ADD** any new functions to the system summary descriptions and functional requirements in "Table 1 - System/Structure Information". This will ensure the accuracy of the "Table 1 - System/Structure Information" system summary descriptions.
6. **REVIEW** all of the references recorded on the Work Product cover sheet not affected by changes resulting from the preceding Steps.
7. **DETERMINE**, for each reference, if changes and/or revisions have been issued since the reference revisions listed on the cover sheet.
8. **IF** changes have been issued to any references, **THEN DETERMINE** if the changes impact the content or conclusions documented in the Work Product.
  - a. **IF** the changes have no impact on the Work Product, **THEN UPDATE** the revision status of the references listed on the cover sheet by making changes to the existing cover sheet.
  - b. **IF** the changes invalidate portions of the Work Product, **THEN REPEAT** the appropriate steps of the Program Procedure to recreate only those sections of the Work Product affected by reference changes and/or revisions.
9. Once Work Product updating is completed, **RETURN** to the Step of the Program Procedure covering the creation of a Cover Sheet for that Work Product. The cover sheet will list updated references.

B. Update of Screening Results to Incorporate TPR Resolutions Only [B-13]

## NOTE:

Step B is to be performed to update an Approved Work Product (System Level Screening Results) for incorporation of TPR resolutions only, after the previous screening has been completed, verified and approved.

The updating of a current, Approved Work Product requires the traceability of the changes (the use of change bars) to the work product.

1. **IF** updating is being provided on an Approved Work Product to incorporate TPR resolutions, **THEN** the Evaluator will **ASSIGN** an appropriate revision designator. The revision designator should take the form Rev. #, where # is the appropriate revision being developed.

## Work Product Updating Procedure (continued)

## NOTE:

The Evaluator should assign a revision designator to distinguish the Work Product from previous or future working revisions, and previous or future approved revisions.

2. **REVIEW** the TPR resolutions and **DETERMINE** where the resolutions are to be incorporated.
3. If one or more of the TPR resolutions requires modification of Table 1 then **MODIFY** Table 1 in accordance with the TPR resolution(s).
4. If one or more of the TPR resolutions requires modification of one or more of the tools then **MODIFY** the tool(s) in accordance with the TPR resolution(s).
5. If one or more of the TPR resolutions requires modification of Table 2 then **MODIFY** Table 2 in accordance with the TPR resolution(s). **ENSURE** that modifications to Table 1 or the tools, made in steps B.3. or B.4. are reflected in Table 2.
6. **PERFORM** the independent technical review as required by Attachment (5).
7. Once work product updating is completed, **RETURN** to the step of the program procedure covering the creation of a cover sheet for that work product.

Attachment (4)

Cover Sheet

## Work Product Cover Sheet

## NOTE:

Cover sheets are to be completed for each Work Product.

Each cover sheet will consist of a sign-off sheet and reference list (samples attached).

A new cover sheet shall be created for the evaluation step, the verification step and the QA, if required, and approval step if the resulting comment resolutions affect the content of the cover sheet.

A new cover sheet shall be created whenever an Approved Work Product is updated.

Inclusion in the reference list shall be limited to the documents indicating systems or structures are ITLR, because they meet screening criteria (Q-List, Docketed correspondence, technical specifications, SBO Analysis and similar other documents). Supplemental documents used to determine which system or structure components reside in (e.g. systems descriptions) shall not be listed as references. The references listed in the cover sheet shall match those listed in the tool. The cover sheet shall list the complete reference designation including title and revision information. [B-5]

Complete, unabbreviated reference listings shall be used.

- A. **PREPARE** a cover sheet for the Work Product. See the example on the following pages.
- B. The first page serves as the sign-off sheet.
  1. **TITLE** the first page "Cover Sheet."
  2. **RECORD** the name and revision of the Work Product below "Cover Sheet."
  3. Provide a one-paragraph description of the Work Product below the name and revision.
  4. **PROVIDE** sign-off blocks for the Evaluator, Verifier, QA Reviewer (if required), and Approver below the description. The sign-off blocks should require a Printed Name, Signature, and Date.
- C. The second and any necessary additional pages serve as the references list.
  1. **LIST** the references used to create and/or update the Work Product. **INCLUDE** the title, date, report number, revision number, and issuing organization, as available, for each reference.
- D. Number all pages in the cover sheet, for example, Page 1 of 2.

## Cover Sheet

Table 2 - ITLR S/S System Level Screening Results, Revision 3

This table presents the results of the screening which was performed to determine those systems and structures that are important to license renewal. The screening was performed through a review of source documents in accordance with Procedure LCM-12, "System/Structure ITLR Screening," Revision 3.

	<u>Name Printed</u>	<u>Signature</u>	<u>Date</u>
Evaluator	_____	_____	_____
Verifier	_____	_____	_____
QA Reviewer	_____	_____	_____
Approver	_____	_____	_____

---

References

---



Attachment (5)  
Independent Technical Review

### INDEPENDENT TECHNICAL REVIEW

The purpose of this Attachment is to provide the instructions necessary for Independent Technical Review of Work Products generated by the Evaluator. The steps are to be performed by the Evaluator and Verifier, as noted.

#### A. Independent Technical Review Record and Verification Package Preparation

The Evaluator shall:

1. **OBTAIN** a facsimile of the Independent Technical Review Record, provided by Attachment 6.
  - a. **RECORD** today's date in the "Issue Date" block.
  - b. **RECORD** the Evaluator's name in the "Evaluator" block.
  - c. **RECORD** the Verifier's name in the "Verifier" block.
  - d. **RECORD** the document title in the "Document Title" block.
  - e. **RECORD** the revision in the "Revision" block as "Initial Draft Rev #," where '#' is the appropriate revision being developed.
  - f. **RECORD** the document date in the "Date" block.
2. **COMPILE** the verification package (Work Product, Cover Sheet, and Independent Technical Review Record) **AND FORWARD** it to the Verifier.

#### B. Work Product Review

The Verifier shall:

1. **REVIEW** the Work Product generated by the Evaluator.
2. **VERIFY** the following is true in a manner consistent with the application of the Program Procedure:
  - a. Information contained in the Work Product has been derived from Source Documents and Tools, and has been accurately transcribed;
  - b. Results or conclusions reported in the Work Product can be supported by the input information;
  - c. An update has been conducted when applicable, and revision numbers and dates have been revised. The Work Product has been revised to reflect corresponding changes, as appropriate.

## INDEPENDENT TECHNICAL REVIEW (continued)

3. **RECORD** all comments in the "Comments" column of the Independent Technical Review Record.
4. **NUMBER** all comments sequentially in the "Item No." column, beginning at (1).
5. **LOCATE** the applicable area of the document in the "Page/Para" column.
6. **IF** a response is not required to a comment, **THEN PLACE** an 'X' in the "Resp. Not Req'd." column. **IF** a response is required to a comment, **THEN LEAVE** the "Resp. Not Req'd." column blank.
7. **SIGN AND DATE** the Independent Technical Review Record as "Verifier" **AND NUMBER** all pages in the "Page \_\_ of \_\_" block.
8. **RETURN** the package, with the Independent Technical Review Record, to the Evaluator.

## C. Comment Incorporation

The Evaluator shall:

1. **INDICATE**, for each comment, whether or not it was accepted by placing "YES" or "NO" in the "Comment Accepted" column.

**NOTE:**

A 'Yes' means that the Evaluator agrees with the comment, regardless of whether the Work Product requires change. A 'No' means that the Evaluator disagrees with the comment.

2. **EXPLAIN** how each comment is to be incorporated or not in the "Proposed Comment Resolution" column.
3. **REVISE** the Work Product as appropriate.
4. **IDENTIFY** the revised Work Product as "Verified Draft Rev #," where '#' is the ultimate revision level sought.
5. **PLACE** the Verified Draft Work Product and Independent Technical Review Record on top of the Initial Draft package.
6. **RETURN** the entire package to the Verifier for concurrence.

## D. Resolution and Concurrence

1. **IF** the Verifier concurs with the proposed resolution and proposed incorporation of comments, **THEN GO** to step D.4. [B-10]

INDEPENDENT TECHNICAL REVIEW (continued)

2. **ATTEMPT** to resolve the unresolved issues **AND INDICATE** the resolution on the Independent Technical Review Record or Work Product, as appropriate. The Project Manager shall have the ultimate decision in this regard.
3. **IF** any issue remains unresolved, **THEN REQUEST** resolution by submitting a Technical Problem Report per Reference 3.2.A.
4. The Evaluator and Verifier shall:  
  
**INDICATE** concurrence by signing and dating the Independent Technical Review Record in the appropriate places.

Attachment (6)

Independent Technical Review Record

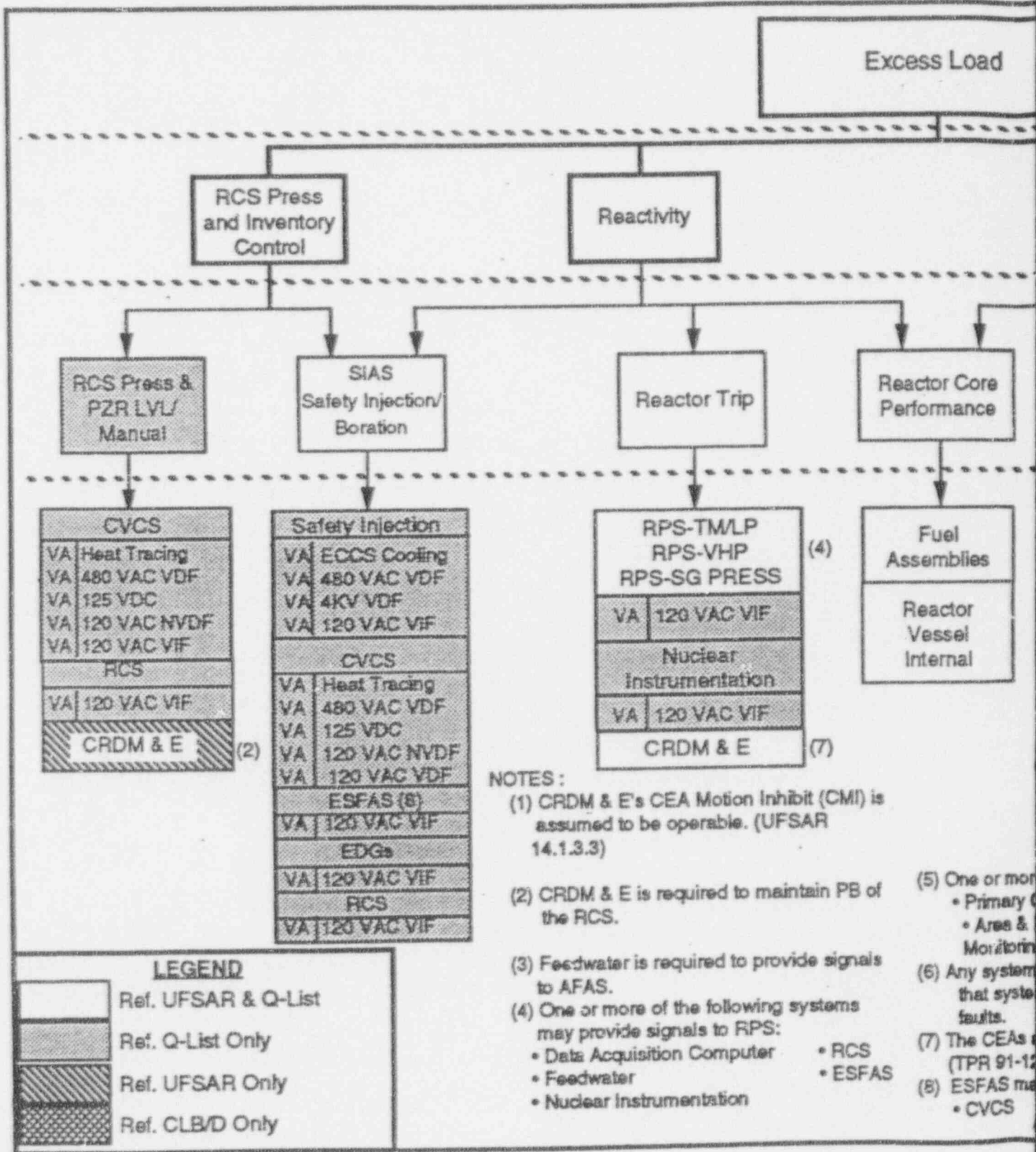
PAGE ____ of ____			INDEPENDENT TECHNICAL REVIEW RECORD			
Issue Date:		Evaluator:		Assigned Verifier:		
Document Title:				Revision:		Date:
Item No.	Page/Paragraph	Resp. Not Reqd.	Comments (Provide rewording, if possible)	Comment Accepted	Proposed Comment Resolution	
Verifier:			Date:			
Evaluator Concurrence:			Date:	Verifier Concurrence:		Date:

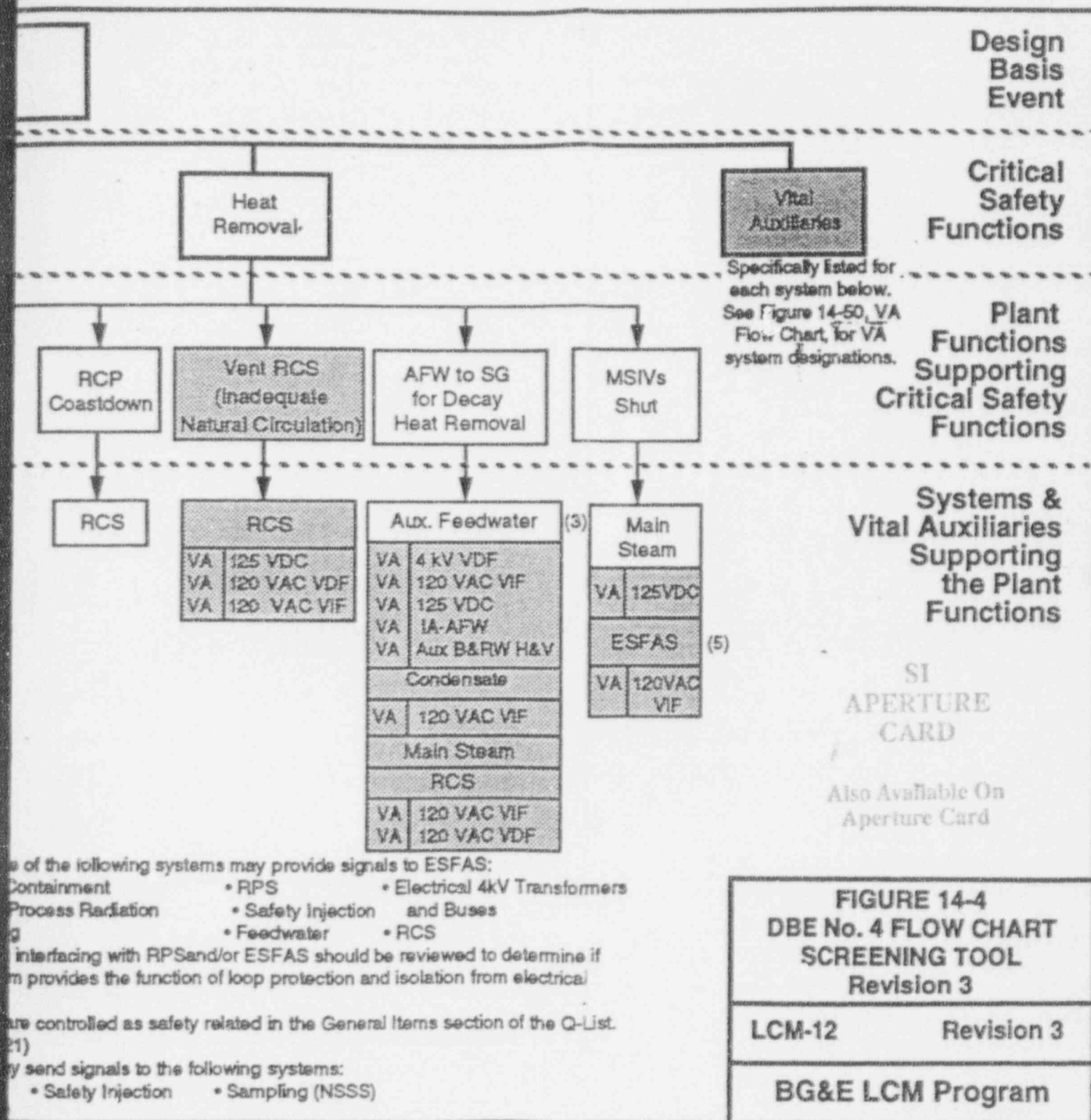
PAGE ____ of ____			INDEPENDENT TECHNICAL REVIEW RECORD		
Item No.	Page/Paragraph	Resp. Not Reqd.	Comments (Provide rewording, if possible)	Comment Accepted	Proposed Comment Resolution



Attachment (7)

DBE Flow Chart





Attachment (8)

PAM Screening Tool

LCM-12, Revision 3			
Post-Accident Monitoring Screening Tool			Revision 3
<p>* Reference 1     <u>Calvert Cliffs Nuclear Power Plant Units 1 and 2;</u>  <u>Docket Nos. 50-317 and 50-318 Regulatory Guide 1.97</u>  <u>Review Update,</u>     Baltimore Gas and Electric Company,  August 9, 1988</p>			
SYSTEM/ STRUCTURE	SYSTEM ID No.	MONITORING VARIABLE(S)/FUNCTION(S)	REF 1 ITEM No.
Electrical 125 Volt DC Distribution	2	* Status of standby power. (voltage, current, ground)	52
		* Battery breaker open indication.	52
		* Battery charger status. (current)	52
		* DC panel potential indication	52
Electrical 4KV Transformers and Buses	4	* Status of standby power. (voltage, current)	52
		* Switchyard feeder status (current)	52
Electrical 480V Transformers and Buses	5	* Status of standby power. (voltage, current)	52
Service Water Cooling	11	* Service water pump status. (motor current)	52
		* Containment cooler cooling water flow.	46
Salt Water Cooling	12	* Salt water pump status. (motor current)	52
Fire Protection	13	* Fire protection supply line cont. isol. valve posit. indic.	48
Component Cooling	15	* Component cooling heat exchanger outlet temperature.	49
		* CCW to RCPs cont. isol. valve position indication.	48
		* Component cooling pump discharge pressure (for flow indic.)	50
		* CCW return from RCPs cont. isol. valve position indic.	48
Vital Instrument AC	18	* Status of standby power. (voltage and ground)	52
		* Inverter position switch indication.	52
Compressed Air	19	* Instrument air containment isolation valve posit. indic.	48
		* Plant (breathing) air containment isolation valve posit. indic.	48
Data Acquisition Computer	20	* Provide fault protection for I&C loops.	7
BG&E LCM Program			Pg. 1 of 4

Attachment (9)  
Q Screening Tool

LCM-12 Revision 3		'Q' Screening Tool		Revision 2
• Reference 1		Calvert Cliffs Nuclear Power Plant, Quality List Manual, Attachment D, Q-List Items Report, Rev. 17		
• Reference 2		Calvert Cliffs Nuclear Power Plant, NUCLEIS Equipment Data Base		
SYSTEM	System ID No.	Equipment ID No.	Description	
Service Water Cooling	11	1LS1650	11 SRW PUMP RM HI LS	
		1LS1651	11 SRW PUMP RM HI LS	
		2LS1650	SRW 21 PP RM HI LS	
		2LS1651	SRW 21 PP RM HI LS	
Component Cooling	15	1LS3860	1 CC PUMP RM LEVEL HI	
		1LS3861	1 CC PUMP RM LEVEL HI	
		2LS3860	2 CC PUMP RM LEVEL HI	
		2LS3861	2 CC PUMP RM LEVEL HI	
Auxiliary Building and Radwaste Building H & V	32	0ACC5419	AIR ACCUMULATOR FOR DSV5419	
		0ACC5420	AIR ACCUMULATOR FOR DSV5420	
		0HS5416	0 HVAC/P FUEL POOL EXH FILT HS	
		0HS5419	0 HVAC/A FUEL POOL EXH FAN 11 HS	
		0HS5420	0 HVAC/A FUEL POOL EXH FAN 12 HS	
		0JL5416W1	0 HVAC/A FUEL POOL EXH FILT 11 JL	
		0JL5416W2	0 HVAC/A FUEL POOL EXH FILT 11 JL	
		0PDIS5418	0 HVAC/A FUEL POOL EXH FILT PDIS	
		0PDI5417	0 HVAC/A FUEL POOL EXH FILT PDI	
		0PO5416-11	0 HVAC/A FUEL POOL EXH FILT CHAR FILT BY-PASS D PO	
		0PO5416-12	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-13	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-14	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-15	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-16	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-17	0 HVAC/A FUEL POOL BY-PASS D PO	
		0PO5416-18	0 HVAC/A FUEL POOL BY-PASS D PO	
		0DAMP5417	FUEL POOL EXH FILT CHAR FILT INLET DMFR	

Pg. 1 of 4

BG&E LCM PROGRAM



Attachment (10)  
FP Screening Tool

LCM-12 Revision 3		Fire Protection (FP) Screening Tool		Revision 2	
SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT	PAGE	
Electrical 480V Transformers and Buses	5	<ul style="list-style-type: none"><li>Provides Reactivity Control by interrupting 480 VAC power supply to CEDM MG Sets to ensure safe shutdown in the event of a postulated severe fire. Components include but are not limited to switchgear and associated controls.</li></ul>	Ref 10 - Att 1, p. 4		
Well and Pretreated Water	8	<ul style="list-style-type: none"><li>Provides make-up water to the fire protection system to ensure safe shutdown in the event of a postulated severe fire.</li><li>Provides alarms in the MCR and at the fire pump; house for low level in the PWSTs.</li></ul>	Ref 1 - Encl. Item E.2 Ref 3 - Encl 1, Item 3.3.7 Ref 10 - Att 1, pp. 21, 55 Ref 5 - Encl 1, Item 3.1.9		
Intake Structure	9	<ul style="list-style-type: none"><li>Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to walls, floors, curbs, ceilings, &amp; fire barrier penetration seals.</li></ul>	Ref 1 - Encl. Item D.1		
Service Water Cooling	11	<ul style="list-style-type: none"><li>Provides required cooling water to EDG &amp; Cntmt Cooler loads to ensure safe shutdown in the event of a postulated severe fire. [Notes 2, 3]</li><li>Includes isolation of non-essential Turbine Bldg loads</li><li>Includes head tank make-up operations</li></ul>	Ref 10 - Att 1, pp. 9, 14-16, 49-53, 59, 67-68		
Salt Water Cooling	12	<ul style="list-style-type: none"><li>Provides ultimate heat sink for SRW/CC systems to ensure safe shutdown in the event of a postulated severe fire. [Note 2]</li></ul>	Ref 10 - Att 1, pp. 8, 16-17, 23, 59, 67		
BG&E LCM PROGRAM					
Page 3 of 12					

Attachment (11)  
ATWS Screening Tool

LCM-12 Revision 3		ATWS Screening Tool		Revision 3
Reference 1	-	BGE LTR (J. A. Tieman) NRC (A. C. Thedani), 880627, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"		
Reference 2	-	BGE LTR (J. A. Tieman) NRC (Document Control Desk), 870611, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"		
Reference 3	-	BGE LTR (J. A. Tieman) NRC (Document Control Desk), 880512, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"		
SYSTEM/ STRUCTURE	ID No.	ATWS FUNCTION(S)	SOURCE DOCUMENT	PAGE
Electrical 480V Transformers and Buses	5	* Interrupt power to the CEDMs/manually initiate reactor trip from the control room on conditions indicative of an ATWS; components include CEDM motor generator input breakers.	Ref 1 - Att A, pp. 2-3	
Auxiliary Feedwater	36	* Provide AFAS START signal (diverse from RPS) on low steam generator water level conditions indicative of an ATWS (AFAS); components include logic modules only.	Ref 1 - Att A, p. 1	
Feedwater	45	* Provide AFAS START signal (diverse from RPS) on low steam generator water level conditions indicative of an ATWS (AFAS); components include level transmitters, isolators, bistables, and initiation relays.	Ref 1 - Att A, p. 1	
Emergency Safety Feature Actuation (ESFAS)	48	* Process sensed signals/provide reactor trip signal (diverse from RPS) on high pressurizer pressure conditions indicative of an ATWS (DSS); components include isolators, bistables, logic modules, and initiation relays.  * Process sensed signals/provide turbine trip signal (diverse from RPS) on CEDM undervoltage conditions indicative of an ATWS (DTT); components include isolators, bistables, logic modules, and initiation relays.	Ref 1 - Att A, pp. 2-3 Ref 2 - Att A, Table 1, p. 2 Att B, p. 1 Att D, Table 1, pp. 3-6  Ref 1 - Att A, p. 1 Ref 2 - Att A, Table 1, p. 2 Att B, p. 1 Att D, Table 1, pp. 3-6	
Control Rod Drive Mechanism and Electrical	55	* Interrupt power to the CEDMs/initiate reactor trip on DSS signal; components include CEDM motor generator output contactors.  * Provide manual initiation of DSS circuits at several locations outside the control room; components include handswitches.	Ref 1 - Att A, p. 2 Ref 2 - Att B, p. 1 Att D, p. iii Att D, Table 1, p. 8  Ref 1 - Att A, pp. 3-4	
Page 1 of 2				
BG&E LCM PROGRAM				

Attachment (12)  
SBO Screening Tool

LCM-12 Revision 3		Station Blackout Screening Tool		Revision 3
•Reference 1 Station Blackout Analysis, BG&E				
SYSTEM	ID NO.	SOURCE DOCUMENT/PG	SBO COPING FUNCTION	
Instrument A/C	17	Ch VII Pgs. 5, 6	• Deenergize the plant computer.	
Audiliary Feedwater	36	Ch IV Pgs. 6,7	• Decay heat removal and condensate inventory.	
Demin. Water & Condensate Storage	37	Ch IV Pg.6	• Heat removal and condensate inventory.	
Sampling System (NSSS) Feedwater	38	Ch IV Pg. 2	• Provide RCS isolation to maintain RCS inventory.	
	45	Ch IV Pg. 7	• Provide SG level indication.	
Safety Injection	52	Ch IV Pg. 2 Ch IV Pgs.11,13 15,16	• Provide RCS isolation to maintain RCS inventory. • Provide valve position indication and manual closure of containment isolation valves.	
Plant Drains	53	Ch IV Pg. 11	• Provide valve position indication and manual closure of containment isolation valves.	
Control Rod Drive Mechanism & Electrical	55	Ch IV Pgs.4,5	• Insert CEAs to provide negative reactivity for shutdown.	
Reactor Protective	56	Ch IV Pg. 4	• Provide RPS low flow trip.	
Reactor Coolant	54	Ch IV Pg. 2 Ch IV Pg. 2 Ch IV Pg. 4 Ch IV Pg. 4 Ch IV Pg. 5  Ch IV Pg. 5 Ch IV Pg. 5	• Detect leakage from the RCS. • Provide RCS isolation to maintain RCS inventory. • Provide reactor vessel level indication. • Provide flow signal to RPS. • Provide indication of natural circulation (CET Indication).  • Provide decay heat removal (steam generator). • Provide RCS overpressure protection via pwr safety valve.	
Nuclear Instrumentation	78	Ch IV Pg. 5	• Provide shutdown indication.	
Main Steam	63	Ch IV Pg. 5 Ch IV Pg. 6 Ch IV Pg. 7  Ch IV Pg. 7 Ch IV Pgs.12,13,16  Ch IV Pg. 7	• Decay heat removal and condensate inventory. • Provide steam to AFW pumps • Provide MS isolation to prevent excessive RCS cooldown and condenser overpressure. • Provide SG blowdown isolation. • Provide valve position indication and manual closure of containment isolation valves. • Prevent excessive RCS cooldown. • Provide condenser overpressure protection.	
				Pg. 1 of 2
BG&E LCM PROGRAM				

Attachment (13)  
PTS Screening Tool



LCM-12 Revision 3			
Pressurized Thermal Shock Screening Tool			Revision 3
*Reference: Pressurized Thermal Shock Evaluation of The Calvert Cliffs Unit 1 Nuclear Power Plant, NUREG/CR-4022, ORNL/TM-9408 Oak Ridge National Laboratory PTS Study Group, Sept. 1985			
SYSTEM/ STRUCTURE	SYS ID No.	Source Document Page No.	PTS Function(s)
Auxiliary Feedwater	36	Pg. 30 Pg. 31	* Limit the maximum AFW flow rate that can be provided (control valves). * Isolate AFW to the steam generators (block valves).
Chemical and Volume Control System	41	Pg. 18 Pg. 34	* Control RCS pressure increase (auxiliary spray). * Isolate letdown (stop and control valves).
Emergency Safety Feature Actuation System	48	Pgs. 24, 304 Pgs. 35, 309	* Provide steam generator isolation signal (SGIS). * Provide letdown isolation signal (SIAS).
Safety Injection	52	Pgs. 31, 33	* Maintain RWT water temperature greater than 45°F.
Reactor Coolant	64	Pgs. 11, 203 Pg. 16 Pg. 17 Pg. 18	* Maintain fracture toughness of the reactor vessel. * Maintain small continuous flow through PZR spray lines. * Provide overpressure protection (PSRVs). * Control pressure increase (pressurizer spray and/or de-energization of proportional heaters and backup heater banks 2 & 4).
Main Steam	83	Pg. 23 Pg. 25	* Provide isolation of steam generators (MSIVs). * Limit blowdown of water in the steam generators (flow orifice).
Reactor Vessel Internals	84	Pgs. 11, 12	* Minimize neutron fluence on the reactor vessel wall (core design).
			Pg. 1 of 1
BG&E LCM Program			

Attachment (14)  
EQ Screening Tool

LCM-12 Revision 3	
Environmental Qualification Screening Tool	
Revision 2	
* Reference 1	Calvert Cliffs Nuclear Power Plant, Quality List Manual, Attachment D, Q-List Items Report, Rev. 17
* Reference 2	Calvert Cliffs Nuclear Power Plant, NUCLEIS Equipment Data Base
SYSTEM	SYSTEM ID No.
Service Water Cooling	11
Salt Water Cooling	12
Component Cooling	15
Compressed Air	19
Plant Heating	29
Auxiliary Building and Radwaste Building H & V	32
Auxiliary Feedwater	36
NSSS Sampling	38
Chemical and Volume Control	41
Feedwater	45
Safety Injection	52
Plant Drains	53
Primary Containment	59
Primary Containment H & V	60
Containment Spray	61
Reactor Coolant	64
Waste Gas	69
Liquid Waste	71
Hydrogen Recombiner	73
Area and Process Radiation Monitoring	77
Nuclear Instrumentation	78
Main Steam	83
Lighting and Power Receptacle	97
Pg. 1 of 1	
BG&E LCM PROGRAM	

Attachment (15)  
LCO Screening Tool

LCM-12, Revision 3				
LCO Screening Tool				Revision 1
* Reference 1      Calvert Cliffs Nuclear Power Plant, Technical Specifications, Units 1 & 2, Sections 3.0 and 4.0, BG&E.				
SYSTEM/ STRUCTURE	ID No.	Operability Requirement(s)	Additional Criterion	LCO No.
Electrical 13KV Transformers and Buses (VA)	3	Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Electrical 480V Transformers and Buses	5	The cont. gaseous and particulate monitors shall be operable with adequate alarm/trip setpoints.	3	3.3.3.1
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
		Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Electrical 480V Motor Control Centers	6	The cont. gaseous and particulate monitors shall be operable with adequate alarm/trip setpoints.	3	3.3.3.1
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
		Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Pg. 1 of 4				
BG&E LCM PROGRAM				

Attachment (16)

Table 2 - ITLR S/S Level Screening Results

BG&E LCM PROGRAM																
TABLE 2																
SYSTEM/STRUCTURE INFORMATION																
System/Structure	Unit ID	Reg'd for DBE	DBE Plant Function(s)	Class 1 or SR 1M	G	Class 1 or SR 1M	Class 1 or SR 1M Reference	CRITERION 3					CRITERION 4		Revision 3	
								PAM	FP	ATWS	SBO	PTS	ED	(3)	LCO No.	ITLR
Switchyard (500 KV) and Switchyard DC	1&2 1	No	None		No	N/A	N/A	No	No	No	No	No	None	No	Yes/No	
Electrical 125 Volt DC Distribution	1&2 2	No 2	VA for CVCS	N/A	No	N/A	N/A	Yes	No	No	No	No	None	No	Yes	
		No 3	VA for Aux Feedwater													
		No 4	VA for Main Steam													
		No 5	VA for Containment Spray													
		No 6	VA for Containment Cool H&V													
		No 7	VA for NSSS Sampling													
		No 9	VA for Primary Containment													
		No 10	VA for EDGs													
		No 12	VA for 4KV Transformers & Buses													
		No 13	VA for 480V MCC													
		No 14	VA for 480V Bus System													
		No 16	VA for Vital Instrument AC													
		No 17	VA for Service Water													
No 18	VA for Component Cooling															
No 20	VA for Salt Water Cooling															
No 50	VA for Control Room HVAC															
Electrical 13KV Transformers and Buses	1&2 3		VA for Aux BM & Red Bld H&V		No	N/A	N/A	No	No	No	No	No	3.4.1.1	Yes	Yes	
			VA for RCS											3.4.1.2		
			VA for CVCS (Core Flush)											3.4.1.3		
			VA for ESFAS											None	Yes	
Electrical 4KV Transformers and Buses	1&2 4		VA for Diesel Oil System													
			None													
		No 2	VA for Aux Feedwater													
		No 3	VA for Safety Injection													
		No 4	VA for Containment Spray													
		No 5	VA for 480V Bus													
		No 6	VA for 480V MCC													
		No 7	VA for Service Water													
		No 9	VA for Salt Water													
		No 10	Provide Signals to, and shed loads for, ESFAS													
		No 12														
		No 13														



Attributes for Table 2 -  
ITLR System Level Screening Results

<u>Column</u>	<u>Content</u>
System/Structure	Indicates the official name used to identify the system or structure.
Unit	<p>"1 and 2" indicates that a separate system or structure exists for each unit. "1" indicates that the system or structure exists for unit 1 only.</p> <p>"2" indicates that the system or structure exists for unit 2 only.</p> <p>"Both" indicates that the system or structure supports units 1 and 2.</p>
ID	<p>Indicates the official identification number for the system or structure.</p> <p>"--" indicates there is no assigned identification number for the system or structure.</p>
CRITERIA 1&2 - Req'd for DBE	<p>Indicates the identification number for the design basis event(s) that require the system or structure for mitigation of the event(s).</p> <p>"None" indicates that the system or structure is not required for any design basis events.</p>
CRITERIA 1&2 - DBE Plant Function(s)	<p>Indicates the plant function(s) provided by the system or structure as stated in the DBE flow charts.</p> <p>"None" indicates that the system or structure provides no plant functions to mitigate design basis events.</p>
CRITERIA 1&2 - Q	<p>Indicates whether a system or structure is or is not (Yes/No) identified by the Q Screening Tool.</p> <p>"{#}" indicates a footnote is provided to address why Q screening cannot be indicated.</p>
CRITERIA 1&2 - Class I or SR-1M	Indicates the Class I classification status for the structure (Yes/No).
CRITERIA 1&2 - Class I or SR-1M Reference	<p>Indicates the source documents used to determine the Class I status for the system or structure.</p> <p>"N/A" indicates the Class I classification is not applicable to the system.</p>
CRITERIA 3 - PAM	<p>Indicates whether a system or structure is or is not (Yes/No) identified by the PAM Screening Tool.</p> <p>"{#}" indicates a footnote is provided to address why PAM screening cannot be indicated.</p>

<u>Column</u>	<u>Content</u>
CRITERION 3 - FP	Indicates whether a system or structure is or is not (Yes/No) identified by the FP Screening Tool.
CRITERION 3 - ATWS	Indicates whether a system or structure is or is not (Yes/No) identified by the ATWS Screening Tool.
CRITERION 3 - SBO	Indicates whether a system or structure is or is not (Yes/No) identified by the SBO Screening Tool.
CRITERION 3 - PTS	Indicates whether a system or structure is or is not (Yes/No) identified by the PTS Screening Tool.  *{#}* indicates a footnote is provided to address why PTS screening cannot be indicated.
CRITERION 3 - EQ	Indicates whether a system or structure does or does not (Yes/No) contain components requiring environmental qualification.
CRITERION 4 - LCO	Indicates whether a system or structure is or is not (Yes/No) identified by the LCO Screening Tool.
CRITERION 4 - LCO No.	Indicates the LCO Number(s) affect the system or structure. "None" indicates that the system or structure is not affected by an LCO.
ITLR Yes/No	Indicates the ITLR status of the system or structure.  "Deferral" indicates that the structure's ITLR status cannot be determined without additional information.  *{#}* indicates a footnote is provided to address the deferral.

Attachment (17)

LCM Definitions

**Life Cycle Management Definitions and Abbreviations**

(\*) - Denotes definitions taken directly from the License Renewal Rule.

1. **Approver** - Individual responsible for assuring that the work performed under this Program Procedure meets the requirements of the LCM/LR Program.
2. **Critical Safety Function (CSF)** - A condition or action that prevents core damage or minimizes radiation release to the public. A CSF may be fulfilled through automatic or manual actuation of a system or systems, from passive system performance, from inherent plant design, or from operator action while following recovery guidelines set down in procedures. The seven CSFs include:
  - Reactivity Control
  - RCS Pressure and Inventory Control
  - RCS Heat Removal
  - Containment Isolation
  - Containment Environment Control
  - Radiation Control
  - Vital Auxiliaries
3. (\*) **Current Licensing Basis (CLB)** - The set of NRC requirements applicable to a specific plant and licensee's written commitments for assuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The CLB includes the NRC regulations contained in 10 CFR Parts 2, 19, 20, 21, 30, 40, 50, 51, 54, 55, 70, 72, 73, 100, and appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design basis information defined in 10 CFR 50.2, as documented in the most recent final safety analysis report (FSAR) as required by 10 CFR 50.71, and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as licensee commitments documented in NRC safety evaluations or licensee event reports.
4. **Design Basis Events (DBEs)** - 10 CFR 50.49 defines DBEs as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure the following three safety functions:
  - (1) The integrity of the reactor coolant pressure boundary,
  - (2) The capability to shut down the reactor and maintain it in a safe shutdown condition,
  - (3) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite consequences comparable to the Part 100 guidelines.

There are three categories of transients and accidents that have been considered in the Calvert Cliffs Unit 1 and Unit 2 Safety Analysis (UFSAR Chapter 14.0), Anticipated Operational Occurrences, Postulated Accidents and Postulated Occurrences.
5. **Evaluator** - Engineer(s) responsible for performing the screening process as described in this Program Procedure.

6. **Functional Requirements** - The primary functions of S/S including those which provide specific safety and/or power production functions. Other auxiliary functions, such as providing indication to the Emergency Response facility, are not considered primary functions. The functional requirements will serve to establish conceptual S/S boundaries.
7. **LCM/LR Information** - The information which adequately supports the technical findings of the screenings and evaluations conducted in accordance with the LCM/LR Screening Methodology Report, and may be input to the LCMDATA system for each SSC.
8. **License Renewal (LR)** - The process whereby a licensee performs Integrated Plant Assessments which define the measures in place or planned to address age-related degradation unique to license renewal of SSCs. The NRC will evaluate and verify these measures and grant a renewal license. The term includes the licensee's collection and presentation of that information necessary to allow the NRC to renew the plant's operating license.
9. **Life Cycle Management (LCM)** - An integrated program to maintain the material condition of important systems, structures, and components (SSCs) through the current and renewed license terms.
10. **Plant Evaluation** - The evaluations submitted to show compliance with the Commission's regulations concerning Anticipated Transients Without Scram (ATWS), Station Blackout (SBO), Pressurized Thermal Shock (PTS), Fire Protection (FP), and Environmental Qualification (EQ). These evaluations provide additional bases for ITLR determinations under ITLR Criterion 3.
11. **Screening Tools** - A summary of a Source Document(s) compiled through the research of an event/topic which contains lists of responding systems and their required functions.
12. **Source Documents** - Related document types to be used as sources of LCM/LR Information. There is a Source Document hierarchy that is based on the status of the Source Document and its intended use. The three hierarchy categories, in decreasing order, include:
  1. **High Priority**
    - (1) Source documents that are controlled as design documents and have been reviewed and approved by the NRC can be directly referenced for ITLR purposes without further review and verification.
    - (2) Controlled programs that are approved by the NRC can be referred to directly in the Existing Program Evaluation Task as managing a particular ARDM for ITLR components.
  2. **Medium Priority**
    - (1) Source documents that are controlled as design documents, but have not been approved by the NRC can be used for ITLR evaluations.
    - (2) Controlled programs that have not undergone NRC review are not credited with managing degradation to an ITLR component without a deliberate commitment assessment task being performed. This task ensures that such a program is the optimum method of aging management and that the program will be managed consistent with its status as a regulatory commitment under the License Renewal Rule.
  3. **Low Priority**
    - (1) Source documents not controlled as design documents may only be used for background information in ITLR evaluations.
    - (2) Programs that are not closely controlled (i.e. governed by a controlled site

procedure) and not reviewed by the NRC can be credited with managing degradation to ITLR components only after proper controls are established for such programs.

13. **(\* Systems, Structures and Components (SSCs) Important to License Renewal (ITLR)**

(1) Safety-related SSCs, which are those relied upon to remain functional during and following design basis events to ensure:

- (i) The integrity of the reactor coolant pressure boundary;
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.

(2) All non-safety-related SSCs whose failure could directly prevent satisfactory accomplishment of any of the required functions identified in paragraphs (1) (i), (ii), or (iii) of this definition.

(3) All SSCs relied on in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62) and station blackout (10 CFR 50.63).

(4) All SSCs subject to operability requirements contained in the facility technical specification limiting conditions for operation.

[Note: The four criteria described above shall be referred to as "ITLR Criteria 1, 2, 3 and 4," or "NRC Criteria 1, 2, 3 and 4." Satisfying any of these criteria will suffice to show that a SSC is Important to License Renewal.]

14. **Verifier Engineer(s)** responsible for verifying the accuracy and completeness of the LCM/LR Information. The Verifier(s) provides engineering assurance by performing an 100% independent technical verification of the Work Products of this Program Procedure.

15. **Vital Auxiliaries** - Support systems which interface with those systems directly credited to satisfy plant safety functions. These systems can be divided into four categories:

- 1. Power Distribution Systems
- 2. Water Cooling Systems
- 3. HVAC
- 4. Instrument Air

Attachment C

CCNPP Systems and Structures Important to License Renewal



# System/Structure ITLR Screening Results Index

2/25/93

Document	Revision	Effective Date
Table 1 - System/Structure Information	3	2/17/93
Design Basis Event Flow Charts	Rev 3/Chng 1	2/25/93
Post Accident Monitoring Screening Tool	3	2/17/93
'Q' Screening Tool	Rev 3/Chng 1	2/25/93
Fire Protection Screening Tool	2	2/19/93
Anticipated Transients Without SCRAM Screening Tool	3	2/19/93
Station Blackout Screening Tool	Rev 3/Chng 1	2/25/93
Pressurized Thermal Shock Screening Tool	3	2/17/93
Environmental Qualification Screening Tool	2	2/19/93
Limiting Conditions for Operation Screening Tool	1	2/17/93
Table 2 - ITLR System Level Screening Results	Rev 3/Chng 1	2/25/93