TUGCO NUCLEAR ENGINEERING CPSES	PROCEDURE	REVISION	ISSUE DATE	PAGE
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DESIGN CONTROL GENERAL REQUIREMENTS	PREPARED BY Craig A. Hunter APPROVED BY R D Calder			

1.0 GENERAL

1.1 PURPOSE

This procedure outlines the general framework and requirements for the performance and control of design activities by TNE in accordance with the CPSES Final Safety Analysis Report (FSAR) commitments, the TUGCO/TUSI Quality Assurance Plan, and the TUGCO Operations Administrative Control and Quality Assurance Plan (OAC/QAP).

1.2 SCOPE

This procedure shall apply to all design activities performed by TNE during the design, construction, and operation phases of Comanche Peak Steam Electric Station (CPSES). The provisions of this procedure, when used with other implementing TNE design control procedures, provide assurance that design activities are carried out in a planned, orderly, and consistent manner.

1.3 RESPONSIBILITIES

The TNE Manager has overall responsibility for implementation of the design control program outlined in this procedure. The Supervising Engineers have been delegated the specific responsibility for assuring that design activities are performed and controlled in accordance with the measures described herein and in the implementing procedures and instructions. In particular, the Supervising Engineers are responsible for ensuring that personnel are qualified for design activities assigned to them and for approving design documents as designated in the appropriate procedure or instruction.

The Responsible Engineer(s) [RE] assigned to a particular design activity is responsible for following the applicable procedure/instruction, documenting design activities in a legible and orderly manner, and for reporting nonconformances (per procedure TNE-AD-5).

1.4 DEFINITIONS

1.4.1 Nuclear Safety-Related - "CLASS I"

Systems, structures, or components that are essential to assure (1) the integrity of the Reactor Coolant System pressure boundary, (2) the capability to shutdown the reactor and maintain it in a shutdown condition, or (3) the capability to prevent or mitigate accidents which could endanger public health and safety.

The following designations shall, by definition, identify a system, structure, or component as Nuclear Safety-Related:

Safety Class 1 (SC-1) Safety Class 2 (SC-2) Safety Class 3 (SC-3)	(Ref: FSAR 3.2.2 and ANSI N18.2-1973)
Seismic Category I	(Ref: FSAR 3.2.1.1; Reg. Guide 1.29)
Class 1E	(Ref: IEEE Stds. 380-1975; 323-1974)
Associated Circuits	(Ref: IEEE Stds. 380-1975; 384-1974)

Nuclear Safety-Related design documents and equipment may be identified or referred to as "CLASS I" and are subject to all pertinent quality assurance requirements of 10CFR50, Appendix B.

1.4.2 Non-Nuclear Safety (NNS) - "CLASS II"

Systems, structures, or components which may contain radioactive fluids, or the failure of which can adversely influence safe normal operations or degrade safety system performance. The following designations shall, by definition, identify a system, structure, or component as Non-Nuclear Safety:

Class 5	(Ref: FSAR 3.2.2)
Seismic Category II*	(Ref: FSAR 3.2.1.2)
Radioactive Waste Management Systems**	(Ref: FSAR 3.2.2; NRC BTP ETSB 11-1, Rev. 1)
Fire Protection Systems	(Ref: FSAR 9.5-1, NRC BTP APCSB 9.5-1)

*Design drawings depicting non-physical attributes of a system, structure, or component (e.g., Electrical Schematics, Instrumentation and Control Diagrams, Flow Diagrams, and Architectural Drawings) shall not be considered Seismic Category II.

**Radioactive Waste Management System (RWMS) design drawings shall be limited to flow diagrams, ICD's, and physical piping drawings (e.g., BRP's). Other RWMS drawings shall be considered Non-Safety.

Non-Nuclear Safety design documents and equipment may be identified or referred to as "CLASS II." The listed references establish the quality assurance requirements applicable to each specific category.

1.4.3 Non-Safety

Systems, structures, or components which are not designated "Nuclear Safety-Related (CLASS I)" or "Non-Nuclear Safety (CLASS II)."

1.4.4 Design Process

The technical and management functions which commence with the identification of design inputs and conclude with the completion of final design.

1.4.5 Design Verification

The process of reviewing, confirming or substantiating the design by one or more methods to provide assurance that the design meets the specified design bases.

1.4.6 Engineering Change Request (ECR)

A document used to forward engineering, design, or technical information between engineering organizations for the purpose of initiating revision of drawings and other design documents. The ECR is a communication/interface document which does not authorize fabrication or construction activities. [Reference: CP-EP-4.6]

2.0 PROCEDURE

2.1 DESIGN CONTROL

Design activities performed by TNE are controlled by the Design Control procedures which supplement this procedure and provide implementation requirements for specific design activities. Not all segments of the design control program may be applicable for a particular design project (e.g., the specification procedure when no hardware or material is required to be procured and the design verification procedure for Non-Safety design). Figure 1 identifies the applicable procedure(s) for each segment of the design control program.

All procedure references include any supplemental instructions.

2.2 DESIGN INPUTS

Applicable design inputs shall be identified, documented, and their selection reviewed and approved to the level of detail necessary to permit the design activity to be carried out in a correct manner. This provides a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes. These inputs may include design bases, regulatory requirements, codes, and standards.

This activity is implemented via the following procedures:

TNE-DC-3	Preparation and Review of Calculations
TNE-DC-4	Preparation and Review of Specifications
TNE-DC-7	Preparation and Review of Design Drawings
TNE-DC-11	Preparation and Review of Design Engineering Packages

2.3 DESIGN DOCUMENTATION

Design documents are prepared according to the following document-specific procedures which establish the scope, format, contents, and the review/approval process for each:

TNE-DC-3	Preparation and Review of Calculations
TNE-DC-4	Preparation and Review of Specifications
TNE-DC-5	Vendor Document Review
TNE-DC-7	Preparation and Review of Design Drawings
TNE-DC-11	Preparation and Review of Design Engineering Packages
TNE-DC-12*	Preparation of Engineering Change Notices
TNE-DC-15	Preparation of Equipment Qualification Checklist
TNE-DC-16	Equipment Qualification Certification

*ASME B&PV Code stamped system stress analysis and pipe support design engineering may be initiated by the ECN Interdisciplinary Review process and performed by CPPE Technical Services and CPPE Pipe Support Engineering respectively.

2.4 INTERFACE CONTROL

Design control interfaces internal to TNE as well as external, are established and controlled on a document-specific basis by each design control (DC) procedure. Administrative (AD) and procurement (PR) procedures may also establish interfaces applicable to design control.

2.5 DESIGN VERIFICATION

All Nuclear Safety-Related (CLASS I) and Non-Nuclear Safety (CLASS II) design documents prepared by TNE shall be design verified prior to issue. Other CPSES design documents, prepared by TNE or by others may also be design verified by TNE as required. All design verification activities shall be controlled via the following procedures:

TNE-DC-8	Design Verification of Engineering Documents
TNE-DC-10	Design Verification of Computer Programs

2.6 DOCUMENT CONTROL

The preparation, review, approval, and revision of each design document is addressed in the implementing procedure for that document as identified in 2.3.

2.7 DESIGN CHANGE CONTROL

Changes to approved design documents shall be documented, reviewed, and approved via revisions to the subject design documents. These changes shall be subjected to design control measures commensurate with those required for the original design. These activities are controlled by the implementing procedure for each design document as identified in 2.3.

2.8 CORRECTIVE ACTION - (PROCEDURAL NONCONFORMANCES)

TNE procedural nonconformances identified during any stage of the design process shall be addressed via the requirements of procedure TNE-AD-5 which include corrective and preventive action and management notification.

2.9 RECORDS

Design documentation and records are collected, logged, and maintained in accordance with procedure TNE-AD-4, Control of Engineering Documents.

2.10 AUDITS

Effective implementation of quality assurance requirements applicable to TNE activities is ensured by the TUGCO Quality Assurance Department.

FIGURE 1
IMPLEMENTATION OF TNE DESIGN CONTROL PROGRAM
SHEET 1 OF 2

Design Control Program Requirement	Applicable TNE Procedure(s)*
I. Design Input Identification	TNE-DC-3 TNE-DC-4 TNE-DC-7 TNE-DC-11
II. Design Documentation	
A. Design Analyses	TNE-DC-3 TNE-DC-11 TNE-DC-12
B. Design Drawings	TNE-DC-7
C. Specification	TNE-DC-4
D. Design Engineering Package (DEP)	TNE-DC-11
E. Engineering Change Notice (ECN)	TNE-DC-12
F. Equipment Qualification	TNE-DC-15 TNE-DC-16
G. Vendor Document Review	TNE-DC-5

*TNE "procedure(s)" includes any supplementary TNE Instructions.

FIGURE 1
IMPLEMENTATION OF TNE DESIGN CONTROL PROGRAM
SHEET 2 OF 2

Design Control Program Requirement		Applicable TNE Procedure(s)*
III.	Interface Control	
	A. External Interface Identification and Documentation	All
	B. Internal Interface Identification and Documentation	All
IV.	Design Verification	TNE-DC-8 TNE-DC-10
V.	Document Control - Preparation, Approval, Issue, and Revision	TNE-DC-3 TNE-DC-4 TNE-DC-5 TNE-DC-7 TNE-DC-11 TNE-DC-12 TNE-DC-15 TNE-DC-16
VI.	Design Change Control	TNE-DC-3 TNE-DC-4 TNE-DC-5 TNE-DC-7 TNE-DC-11 TNE-DC-12 TNE-DC-15 TNE-DC-16
VII.	Corrective Action - (Procedural Nonconformances)	TNE-AD-5
VIII.	Design Documentation and Records	TNE-AD-4
IX.	Audits - TUGCO Quality Assurance Dept.	None

*TNE "procedure(s)" includes any supplementary TNE Instructions.