TEXAS UTILITIES GENERATING CO.
COMANCHE PEAK STEAM ELECTRIC STATION

MECHANICAL GENERIC ISSUE REPORT

STONE & WEBSTER

January 21, 1987

TEXAS UTILITIES GENERATING COMPANY
COMANCHE PEAK STEAM ELECTRIC STATION
UNITS 1 AND 2

STONE & WEBSTER ENGINEERING CORPORATION'S
MECHANICAL GENERIC ISSUE REPORT

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TEXAS UTILITIES GENERATING COMPANY

COMANCHE PEAK STEAM ELECTRIC STATION
UNITS 1 & 2

GENERIC ISSUES REPORT

MECHANICAL

1.0 INTRODUCTION

This Generic Issues Report for the Comanche Peak Steam Electric Stations (CPSES) Mechanical Systems and Components describes the method, scope and responsibilities for resolving the Comanche Peak Response Team (CPRT) design adequacy issues for mechanical systems and components. The objective is to demonstrate a licensable mechanical design, in accordance with FSAR and other licensing commitments, fully supported by adequate documentation.

2.0 SCOPE

The corrective action to be implemented consists of the design basis validation effort described in Section 3.0 and the individual plans listed in Table 1. The corrective action addresses the CPRT Design Adequacy Program and includes the External Source Concerns resulting from NRC review teams and inspection reports, Cygna Independent Assessment Program, ASLB hearings, and CASE allegations. It also addresses other design related issues identified by the CPRT Quality of Construction (QOC) and Issue Specific Action Plan (ISAP) Reviews. Any new concerns found by SWEC during the corrective action effort will also be reviewed and resolved.

In formulating this plan, the TERA (D) and External Source (E) Discrepancy Issue Reports (DIR) and the TERA Issue Resolution Reports (IRR) were reviewed in order to address all technical concerns. The corrective action will respond to all IRRs and DIRs in the area of mechanical design adequacy.

3.0 CORRECTIVE ACTION METHODOLOGY

Corrective action will be developed to satisfactorily resolve issues related to mechanical design adequacy. In the areas of construction/QC/testing, specific concerns identified by the CPRT Review, related to mechanical design adequacy, will be reviewed and resolutions included in the plan.

Corrective action will be accomplished by review of calculations/design input; design criteria and design values; design change implementation and interface control; component specifications and vendor drawings and documents, and validation of radiological/engineered safety features analyses. The general corrective action methodology is described below. The attached appendices describe the plans for specific IRR technical issues in greater detail.

The SWEC corrective action effort will be performed in accordance with the SWEC QA Program and the SWEC project procedures for corrective action implementation listed below. SWEC corporate technical procedures will be used to develop project specific procedures and to provide technical direction to the SWEC reviewers. The review will include safety-related and selected nonsafety-related systems and components.

Project Procedure Number	Title
PP-004	Preparation, Review, and Approval of Design Basis Documents (DBDs).
PP-005	Processing TNE Design Deviation Reports (TDDRs).
PP-009	Preparation and Control of Manual and Computerized Calculations.
PP-018	Design Verification.
PP-029	Review and Update of CPSES Design Calculations.
PP-031	Configuration Control - Preparation and Issue of Design Change Packages (DCPs) Associated with CAPS.
PP-038	Calculation Validation Procedure.
PP-046	Corrective Action Plan Interface.

1. Review and Establish Design Criteria Bases

In order to establish design criteria, pertinent mechanical design information will be reviewed. This includes:

- Applicable NRC SRPs, Regulatory Guides, NRC IE Bulletins and Information Notices, NUREGs, 10CFRs.
- CPSES FSAR, ER-OLS, SER and Supplements.
- CPSES NRC Correspondence, Meeting records, etc. related to design criteria.
- TERA Design Criteria List.
- Design Interface Criteria Documents, such as NSSS criteria.
- Diagrams.
- Drawings.
- Specifications.

- Nonconformance resolutions, contained in NCRs, CARs, SDARs, etc., which are related to mechanical design adequacy.

These documents will establish the design basis for each system and component design. Inconsistencies in the design commitments of these documents will be resolved at this time so that uniform licensing/design criteria can be used for the remainder of the corrective action efforts. The Design Basis Documents (DBD) established by TUGCO Engineering Report ER-SYS-5 will be reviewed and revised to serve as a consolidated criteria baseline for the effort.

2. Review Design Calculations/FSAR Analyses

A. Calculations

SWEC will review those balance of plant calculations which are pertinent to the specific commitment being reviewed. Calculations performed by the NSSS vendor, specific to the NSSS design criteria, will not be reviewed; however, any criteria imposed on the balance of plant design from the NSSS design will be validated. The review of calculations will validate that design inputs are correct and current, that the assumptions, methodology, and criteria used in the calculations are consistent with the design bases established for the CPSES design, and that the installed and tested conditions have been verified against the calculation results. This review will also ensure that sufficient calculations have been prepared to fully document the CPSES design commitments. Each design commitment will be reviewed to determine whether calculations are required as documentation and what types of calculations are needed. SWEC will establish these documentation requirements based on corporate experience previously found to be acceptable.

The following items will also be reviewed for proper incorporation of calculation results:

Specifications	Instrument/Control Setpoints
Design Drawings and Diagrams	System Operating Procedures
Stress Analysis Input	System Layout Drawings
FSAR Analyses - Radiological/Engineered Safety Features	

Inconsistencies between the calculations and any of the above items will be identified and will be resolved in accordance with the applicable design bases. Results from the calculation review will be provided to the appropriate engineering organizations for activities not within SWEC scope.

New calculations will be prepared and existing calculations supplemented, as necessary, to provide complete, documented CPSES calculation bases. SWEC project procedures for review, preparation, revision and control of calculations, including confirmation of design inputs and, assumptions will be developed.

B. FSAR Analyses

The FSAR analyses document that the plant design meets the licensing regulations. The radiological and engineered safety features analyses will be reviewed to ensure technical adequacy. This review will address calculation inputs, assumptions, methodology, and results. Inputs and assumptions will be reviewed for applicability, accuracy, and source. Methodology will be reviewed to ensure that it is appropriate for the objectives of the calculation. Results will be reviewed to confirm that they are reasonable compared to inputs, methodology, and objectives of the calculation. The following FSAR analyses will be reviewed:

- Subcompartment pressurization.
- Containment accident analyses.
- Combustible gas control.
- Source terms.
- Shielding and dose rates.
- Accident dose analysis.
- Normal radiological releases and population doses.
- Control room habitability analysis.
- Accident radiation environments.

3. Review Design Documents and Specifications

The CPSES design documents and specifications which provide detailed engineering requirements for the design, fabrication and installation of systems and components will be reviewed for consistency with the established licensing and design bases and the calculation results. This review effort will include design documents, such as flow diagrams, instrumentation and control diagrams, technical specifications, component specifications, etc., which define the conceptual engineering requirements. The review will proceed to detailed production documents, such as piping isometrics and vendor documents, since the implementation of design criteria must be verified. All of these documents are subject to change for various reasons during the design process. The planned review will verify that the basic design commitments have been maintained consistently.

4. Utilize As-Built and Test Data

Throughout the review process, as-built data and actual test results will be used to verify calculation results, and resolve discrepancies in design documents. As-built and test data will not be used in place of design document reviews. It will be used as additional information to confirm that the installed plant design meets the CPSES commitments. This portion of the effort will draw on the results of the ERC Quality of Construction review and any other source of verified data in order to utilize as much of the existing as-built information as possible.

5. Implementation of Review Results

The activity to resolve discrepancies, revise affected documentation, and initiate design change packages, if necessary, will be ongoing during all review phases. The following guidelines will be used:

- Resolutions of discrepancies will conform to the design and licensing commitments.
- The Design Basis Documents (DBDs) will be revised as part of the review effort to provide a final documentation of design bases.
- Design document revisions occurring from this corrective action will be sent to TUGCO for review.
- Those discrepancies which have a potential for either hardware impact or a change to existing licensing commitments will be considered on a priority basis and a resolution will be proposed to TUGCO in a timely manner.

It is recognized that many design activities are interdependent and a review of any one area requires input from and output to other review organizations. Stone & Webster will interface with these other organizations in a manner established and directed by specific SWEC and TUGCO project procedures dealing with each interface. The organizations with which SWEC will interface include TUGCO, Gibbs & Hill, EBASCO, IMPELL, ERC, and TERA. Others will be included as required.

At the completion of corrective action, a report will be written. This report will describe the SWEC corrective action for each issue including a description of upgraded documentation, DBDs, and any required hardware changes.

4.0 ORGANIZATION OF THE GENERIC ISSUES REPORT

An overview of the scope and corrective action methodology is contained in the main body of this report.

Table 1 lists the appendices which describe the corrective action plan for each IRR issue.

TABLE 1

MECHANICAL SYSTEMS AND COMPONENTS
CORRECTIVE ACTION PLANS

A. Seismic Qualification of Seismic Category I BOP Equipment and Components (TERA IRR No. DAP-E-M-500)

B. High Energy Line Breaks (TERA IRR No. DAP-E-M-501)

C. Overpressure Protection of Safety-Related Piping and Equipment (TERA IRR NO. DAP-E-M-502)

D. Specification of Mechanical Components - Pressure Boundary Integrity (TERA IRR No. DAP-E-M-503)

E. Determination of Heat Loads for HVAC Equipment Sizing (TERA IRR No. DAP-E-M-504)

F. Control of Welding Processes (TERA IRR No. DAP-E-M-506)

G. Internal and Turbine Missile Evaluations (TERA IRR No. DAP-E-M-507)

H. Fire Protection (TERA IRR No. DAP-E-EIC-505)

I. System Design (TERA IRR No. DAP-E-M-508)

APPENDIX A

Issue A - Seismic Qualification of Seismic Category I BOP Equipment (TERA IRR No. DAP-E-M-500)

This issue is being addressed separately by the Impell Generic Technical.

Issues Report (09-0210--061).

REF: Evaluation and Resolution of TERA Equipment Qualification Issues Resolution Report:
DAP-E-M-500

APPENDIX B

Issue B - High Energy Line Breaks (TEPA IRR No. DAP-E-M-501)

This issue is being addressed by the Ebasco Systems Interaction Program which is described in the Corrective Action Plan attached to this GIR as Supplement A.

APPENDIX C

Issue C - Overpressure Protection of Safety-Related Piping and Equipment (TERA IRR No. DAP-E-M-502)

1.0 Background

The TERA DIRs cite instances where safety-related system designs do not meet ASME III requirements for protection against overpressure. These instances include:

- Components can be isolated and subsequently pressurized without overpressure protection.
- Backpressures were not correctly determined for relief valve setpoints.
- Some relief and safety valve discharge lines were not properly designed (i.e., size and arrangement).
- Some component relief and safety valve sizing and pressure transient calculations are not complete.

In addition, preliminary SWEC observations indicate that the design input used to locate, size, and determine the setpoint of overpressure devices may not have considered worst case system alignments. All of these concerns could lead to inadequate overpressure protection features.

2.0 SWEC's Understanding of the Issue

Due to the number and variety of discrepancies, a comprehensive review of CPSES conformance to ASME III overpressure protection requirements will be performed. This review will include interpretation of ASME Code requirements, the validation of design input, system arrangement and design conditions, the specification of overpressure devices, and the as-built, installed conditions.

3.0 SWEC Action Plan to Resolve Issue

SWEC will review ASME III overpressure protection compliance in the following manner:

- Review TUGCO's interpretation of ASME III Code requirements and establish design criteria.
- Review ASME III portions of system flow diagrams to determine that overpressure protection devices have been provided wherever necessary.
- Review the system calculations to determine the adequacy of design values, such as design pressure, relief flow requirements, inlet/outlet pipe sizing, etc., used as input for each

overpressure device. Ensure that system calculations consider worst-case operating modes. Prepare new calculations or supplement existing calculations, as necessary.

- Review the input provided to the stress analyst and support designer for consistency with relief device funcitonal requirements and design conditions.

- Review the installed location of piping and overpressure devices and evaluate whether as-built conditions, will result in acceptable relief conditions. Arrangement considerations, such as routing, pipe size, low point drains, etc. should be examined.

- Review each overpressure device setpoint for consistency with system design calculations. Prepare new calcs or supplement existing calcs as necessary.

- Review overpressure device specifications for conformance to design requirements and setpoints.

- Review vendor documents for conformance of purchased devices to specification requirements.

- Issue a design change document for any hardware/software revisions.

4.0 Relevant Documents

4.1 Applicable DIRs:

D-0122	D-0159	D-0128	D-0124	D-0226	D-0129	D-0125
D-0229	D-0156	D-0144	D-0238	D-0240	D-1000	D-0239
D-0252	D-0118	D-0265	D-0255	D-0119	D-0296	D-0264
D-0120	D-0297	D-0298	D-0123	D-0348	D-0131	D-0510
D-0299	D-0511	D-0055	E-0512	D-0117	E-0514	D-0149
E-0515	D-0150	E-0516	D-0162	D-0054	D-0157	D-0054
D-0121	D-0056	D-0143	D-0116	D-0147	D-0127	

4.2 All ASME III Fluid System DBDs plus:

DBD-ME-013 - Containment Isolation

DBD-IC-037 - Setpoints

APPENDIX D

Issue D - Specification of Mechanical Components - Pressure Boundary Integrity (TERA IRR No. DAP-E-M-503)

1.0 Background

The DIRs relating to this issue can be grouped into four categories:

1.1 Nozzle loads - There are inconsistencies between the allowable loads specified for the component nozzles when compared to the actual loads imparted by the piping system. This category deals with both large components such as heat exchangers and in-line components, such as expansion joints.

1.2 Design Conditions - The component specification requirements for design pressure, temperature, ambient environment and load combinations are not consistent with the system design and operating conditions.

1.3 Stainless Steel Welding Requirements - The specification welding requirements are inconsistent with the FSAR commitments; in particular, NRC Regulatory Guide 1.44. Some DIRs also address inconsistencies in corrosion tests and control of heat input and interpass temperature. The corrective action for this item will be addressed as part of Appendix F - Control of Welding Processes.

1.4 Material Impact Testing - The TERA DIRs cite a number of instances where impact testing of safety-related ferritic steel components do not meet the requirements of the FSAR and ASME III. These deviations include:

- improperly specified test temperature
- lack of impact testing requirements

The CPSES FSAR commits to impact testing of ASME Cl.2 main steam and feedwater materials and ASME Cl. 1 materials in accordance with ASME III. ASME III requires the testing to be performed at the lowest service temperature. The deviations cite instances where the lowest service temperature was not specified or where the requirement for impact testing was not included in the specification. Because of these deviations there is not adequate assurance that the materials possess sufficient notch toughness to properly function at the lowest service temperature.

2.0 SWEC Understanding of the Issue

Based on a review of the DIRs, it appears that these concerns were found in the review of a number of ASME III specifications. These specifications included:

Mechanical Penetrations	Nuclear Strainers
CCWS Heat Exchangers	Expansion Joints

Shop Fabricated Tanks

Feedwater Isolation Valves
Main Steam Isolation Valves

This sample covered a variety of component types, governed by various code requirements and provides an adequate overview of the conformance of specifications to FSAR, ASME Code and other design commitments. Since several concerns were found in each specification reviewed, a conclusion can be drawn that the requirements of ASME III may not have been clearly addressed in the manner committed in the FSAR. From the information available to date, it is unclear whether this issue is one of documentation, i.e. a lack of specification completeness, or if the code requirements have not been imposed on the as-built component. The SWEC action plan will first determine whether the as-built component complies with the applicable codes and, then, determine the extent of documentation available or needed.

3.0 SWEC Action Plan to Resolve Issue

3.1/3.2 Nozzle Loads/Design Conditions

Equipment nozzle loads and the specification of design conditions must be evaluated by an engineering process which begins with the definition of component operating requirements during plant operating modes of startup, shutdown, test, power generation, abnormal and accident conditions. The specific system conditions, such as pressure, temperature, etc. occurring at the nozzles during each mode, must be determined and the combinations of these system conditions with other loads, such as seismic, must also be specified. This information is normally provided in the component specification as requirements on the manufacturer's design and analysis. The same data, along with a variety of other input, is also given to the pipe stress analyst who, in turn, works with the support designer to establish an acceptable piping/support configuration in accordance with code requirements.

At the nozzle interface, the piping load imposed on the nozzle due to the as-built piping/support configuration must be reconciled as within the allowable nozzle loads which the vendor hardware can accept. These interrelationships among the system design conditions, the vendor designs and the piping/support designs must be evaluated simultaneously because any changes can affect this interface.

In order to resolve this issue a final reconciliation of the following items must be performed. SWEC will accomplish the first three tiems as part of this corrective action plan. Impell will complete the last two items as part of their equipment qualification effort. The interface between both organizations will be closely coordinated since these review efforts are interrelated.

- System operating modes and system conditions versus component specification requirements.
- System operating modes and system conditions versus stress analysis/support design input.

- Load combinations used in component specifications and stress analysis.

- Vendor stress/seismic analyses consistent with system operating modes, conditions and load combinations.

- Calculated nozzle loads versus vendor allowable nozzle loads. All ASME III component nozzles and those nonsafety component nozzles which are large bore and operating at hot temperatures, will be reconciled.

The SWEC reconciliation effort will utilize the results of the detailed review of system calculations, system operating modes, plant loading combinations, and component specifications described in Section 3.0 of the main body and Appendix I of this GIR. This validated design data will also be sent to Impell for use in their review effort.

The impact of any changes in stress input must be evaluated and input to the SWEC PSE effort if restress is required. The review of allowable vs calculated nozzle loads will utilize the loads developed by the PSAS effort. Any changes to specification requirements affecting a vendor's design or analysis will be discussed with the vendor or resolved by analysis.

3.3 Stainless Steel Welding Requirements

The corrective actions to address this concern are part of Appendix F - Control of Welding Processes.

3.4 Material Impact Testing

SWEC will review the impact testing requirements for compliance to the FSAR commitments for both ASME Cl. 1 and 2 materials in the following manner:

- Review the basis for the FSAR commitment to impact test ASME C1.2 materials.

- Review specifications for ASME C1.2 pressure containing components in the main steam and feedwater systems to determine the extent of compliance.

- Review all specifications for ASME III C1.1 ferritic components to determine the adequacy of impact testing requirements, including the specification of test temperatures in accordance with system design.

- Assess the technical/code significance of any deviations.

- Prepare change documents to resolve any deficiencies.

4.0 Relevant Documents

4.1 Applicable DIRs:

D-0246	D-0354	D-0248	D-0497	D-0266	D-0530	D-0267
D-0544	D-0289	D-0552	D-0307	D-0555	D-0313	D-0562
D-0350	D-0563	D-0351	D-0668	D-0524	D-0161	D-0527
D-0233	D-0528	D-1234	D-0541	D-0538	D-0542	D-0545
D-0554	D-0247	D-0148	D-0557	D-0232	D-0609	D-0244
D-0309						

APPENDIX E

Issue E - Determination of Heat Loads for HVAC Equipment Sizing
(TERA IRR No. DAP-E-M-504)

This issue is addressed separately by the Ebasco HVAC Generic Issues Report.

REF: Evaluation and Resolution of Generic Technical Issues for HVAC Systems, Rev. 0, Dated December 15, 1986, Appendix 42.

APPENDIX F

Issue F - Control of Welding Processes
(TERA IRR No. DAP-E-M-506)

1.0 Background

This issue addresses the TERA DIRs identified below (4.1) and includes the concerns expressed in Section 1.3 of Appendix D - Specification of Mechnical Components - Pressure Boundary Integrity.

The TERA DIRs cite instances where the welding of safety-related stainless steel components was not controlled in accordance with FSAR commitments. These instances include:

- Lack of specification requirements invoking Regulatory Guide 1.44.
- Lack of specificaton required vendor documentation related to Regulatory Guide 1.44.
- Lack of specification required vendor documentation related to Regulatory Guide 1.31.
- Lack of specification requirements for arc heat input controls.
- Lack of specification requirements regarding NSSS required modifications to corrosion testing methods.

2.0 SWEC's Understanding of the Issue

The DIRs indicate that the FSAR commitments to Regulatory Guide 1.44 and Regulatory Guide 1.31 have not been consistently invoked in component specifications and, even in cases where invoked, suppliers may not have complied with the specification requirements. Because of these conditions, there is not sufficient assurance that adequate controls have been exercised during the manufacture of safety-related components to avoid the occurrence of microfissures and the degradation of corrosion resistance of austenitic stainless steels.

3.0 SWEC Plan to Resolve Issue

SWEC will review Regulatory Guide 1.31 and 1.44 compliance, the vendor documentation provided, and the specification requirements for heat input controls and corrosion testing methods in the following manner:

- Review all safety-related component specifications requiring the use of austenitic stainless steel and determine the extent of compliance to FSAR commitments.
- Review specification required documentation from vendors to determine extent of compliance to specification requirements.

- Assess the technical significance of any deviations to FSAR and/or specification requirements.

- Prepare change documents to resolve any deficiencies.

4.0 Relevant Documents

4.1 Applicable DIRs:

D-0161 D-0163 D-0164 D-0233 D-0234 D-0538 D-0545
D-1957

APPENDIX G

Issue G - Internal and Turbine Missile Evaluations (TERA IRR No. DAP-E-M-507)

This issue is being addressed by the Ebasco Systems Interaction Program which is described in the Corrective Action Plan attached to this GIR as Supplement A.

APPENDIX H

Issue H - Fire Protection (TERA IRR No. DAP-E-EIC-505)

This issue is being addressed by the Impell Fire Protection Program which is described in the Corrective Action Plan attached to this GIR as Supplement B.

APPENDIX I

Issue I - System Design (TERA IRR No. DAP-E-M-508)

1.0 Background

The DIRs listed below (4.1) concerning this issue can be grouped into the following major concerns:

- System performance documentation and analysis - Inadequate identification, improper evaluation and incorrect determination of system performance criteria and requirements, including system interfaces.
- Specification and evaluation of component performance - Improper specification and evaluation of component performance to meet system operating and functional requirements.
- Control functions - Inadequate provision of control functions to meet system functional requirements.
- Piping arrangement - Inadequate consideration of piping arrangement to meet operating conditions of the component piping and system.
- Safety classification - Improper safety classification of component piping and safety class interfaces.

2.0 SWEC's Understanding of the Issue

2.1 System Performance Documentation and Analysis

It appears that the evaluation of system designs in response to design changes or other related design analyses may not have adequately considered all system operating modes. Incorrect system inputs may have been used and the effects of changes upon system design parameters may not have been properly reviewed. Interfaces with the NSSS vendor and other fluid, control or electrical systems may have been incorrectly addressed when evaluating system performance. Sufficient documentation must be provided to demonstrate that these interfaces were addressed and resolved in accordance with the plant design bases.

2.2 Specification and Evaluation of Component Performance

The specification of component design parameters may not have enveloped all required system operating modes or included necessary margins (e.g. pump design head or capacity equal to the maximum required with no margin to account for wear).

The evaluation of vendor documentation did not consider the performance of the component within the system. This could result in component

performance which meets the specification design point, but not the system design requirements.

The review of vendor documentation did not identify or evaluate differences between the equipment procurement specification or sizing calculations and that specified in the vendor documentation. This could result in the failure to meet equipment functional requirements.

2.3 Control Functions

The implementation of controls to accomplish the system functions, to actuate individual components and to provide automatic vs manual operator capability may not have been in accordance with system design requirements. The necessary controls must consider all system and component operating requirements and the various licensing regulations regarding operator actions to accomplish safety functions. Setpoints established for control functions must be in accordance with the system design bases and must have adequate range and accuracy.

2.4 Piping Arrangement

The piping arrangement may not have adequately considered all of the design considerations necessary to ensure a piping design which functions properly. There are specific design requirements associated with the piping layout, some of which are unique to each system. Unless properly considered, component performance and achievement of system function may be adversely affected.

2.5 Safety Classification

The safety class designations of piping and the methods of safety boundary isolation may not have been correctly determined. Since the design, procurement and installation requirements for nonsafety piping are less stringent than those for safety-related piping, the ability of the system to achieve its safety function can be jeopardized.

The isolation of a nonsafety portion from a safety portion must be accomplished for all cases where failure of the nonsafety piping could affect the system safety function. Specific licensing regulations exist for considering single failure, manual vs automatic operation, and the number and type of required safety-related isolation components. Nonconformance to any of the licensing requirements could compromise system safety.

3.0 SWEC Action Plan to Resolve Issue

3.1/3.2/3.3/3.4 System Performance/Component Performance/Controls/Piping Arrangement

Corrective action will establish all system and component operating requirements, will document these requirements and will validate that these requirements have been correctly input to the system/component designs. The Design Basis Documents (DBDs) will be used to document

these requirements, along with the applicable calculations, diagrams, and specifications. The review will proceed as follows:

1. Establish system functional requirements, instrumentation and control requirements based on the following:

   - FSAR
   - SER and supplements
   - ASME Code compliance
   - Other CPSES 1 & 2 commitments to specific licensing issues

2. Review functional requirements against the following system design documents to establish system operating modes and required control features.

   - Flow diagrams
   - Logic diagrams
   - Specifications
   - NSSS interface criteria documents

3. Review DBDs and incorporate system operating requirements and control features.

4. Review system calculations for conformance to established system operating requirements. Ensure that all operating modes have been enveloped and that the correct operating modes have been chosen as the design basis when calculating component performance requirements.

5. Review that the following items correctly address system operating requirements.

   - Equipment specifications
   - Stress analysis input (including fluid transients)
   - Instrument/control setpoints
   - FSAR analyses - containment (Chapter 6)
     - radiological (Chapter 12)
     - radwaste/process (Chapter 11)
     - accidents (Chapter 15)
   - System operating procedures

6. Review vendor documentation for conformance to calculation results, system performance requirements, and specification performance requirements. Test data (shop and field) will be used to verify that system and component performance requirements are met. The available margin between performance requirements and test data will be reviewed to ensure that expected component wear is taken into account.

7. Review system and component physical arrangement to ensure that the layout is acceptable, that calculation results establishing physical restraints have been included, and that all operating conditions have been considered.

8. Identify and resolve discrepancies found. For "software" resolutions affecting documentation only, the appropriate documents will be revised. For "hardware" resolutions, design change control procedures will be used to ensure that changes are properly reviewed, engineered, and implemented in accordance with the overall plant design criteria.

3.5 Safety Classification

Safety-related systems will be reviewed to determine that piping with a safety function has been correctly designated as Safety Class 1, 2, or 3. Within a system, piping which must retain its pressure boundary even though it is not an essential flow path will be included in this review.

After each system has been reviewed to determine the correct safety classification of piping, the isolation methods at the safety/nonsafety boundaries will be reviewed. Specific criteria will be established for:

- Number and type for isolation devices
- Safety classification of isolation devices
- Instrumentation available to detect failures
- Automatic vs manual closure
- Remote vs local control

The feasibility of local, manual actions will consider the ambient environments, especially radiation, existing at the time these actions are required. Hardware changes, if necessary, will be identified and a recommendation made based on providing a licensable design with the least impact on cost and schedule.

4.0 Relevant Documents

4.1 Applicable DIRs:

D-0011	D-2180	D-1207	D-1385	D-0374	D-0014	D-2181
D-1481	D-1480	D-0550	D-0015	D-2190	D-1482	D-2158
D-0610	D-0020	D-0015	D-1483	D-2159	D-0805	D-0484
D-0158	D-1485	D-2162	D-1342	D-0553	D-0223	D-1653
D-2163	D-1343	D-1386	D-0253	D-1654	D-2172	D-1366
D-1387	D-0219	D-1655	D-2175	D-1368	E-0811	D-0321
D-1960	D-2176	D-1384	D-0241	D-0099	D-1961	D-2179
D-1391	D-0425	D-0152	D-2174	D-2185	D-1486	D-0546
D-0165	D-2186	D-2191	D-2164	D-0556	D-0290	D-2187
T-0020	D-2178	D-1277	D-0305	D-2188	D-0490	D-2184
D-1383	D-0310	D-2189	D-1963	D-1487	D-0311	D-0306
D-0551	D-2161	D-0326	D-0317	D-0687	D-2171	D-0479
D-0491	D-2182	D-2173	D-0480	D-0492	D-1484	D-2192
D-0481	D-0493	D-1652	D-0228	D-0482	D-0494	T-0040
D-2160	D-0489	D-1136	D-0372			

4.2 Safety-related fluid system DBDs.