UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 26 1988

MEMORANDUM FOR: Thomas T. Martin, Associate Director
for Inspection and Technical Assessment
Office of Nuclear Reactor Regulation

FROM: Christopher I. Grimes, Director
Comanche Peak Project Division
Office of Special Projects

SUBJECT: REQUEST FOR TECHNICAL ASSISTANCE - GENERAL FSAR AMENDMENT REVIEW FOR COMANCHE PEAK

The purpose of this memorandum is to request assistance from your organization in reviewing specific narrow-scope FSAR changes for Comanche Peak.

Since about 1985, the lead applicant, TU Electric, has been engaged in an extensive corrective action program to reexamine the adequacy of the design and construction of the plant and to address concerns raised by external sources (ASLB hearings, NRC, CYGNA, etc.). This program has led to reanalysis, revision, or updating of existing design calculations, physical reinspection of as-built hardware, and hardware modifications and reconstruction, as well as a number of FSAR changes.[1] CPPD staff reviews of TU Electric's corrective action efforts will enable us to prepare those staff evaluations necessary for the hearings. Coincidently, these reviews will cover a number of the FSAR changes and will result in updates to the appropriate SER sections. We have arranged for a number of other FSAR changes to be reviewed by OSP's TVAPD as indicated in Enclosure 1. The remaining FSAR changes, however, cover topics that go beyond the technical review capabilities and/or resources of the OSP staff. Your assistance is requested in reviewing selected SER sections where specialized expertise is needed to more efficiently accomplish the reviews.

---

1 NUREG-0797, the SER related to the operation of the Comanche Peak Steam Electric Station, Units 1 and 2 (Docket Nos. 50-445 and 50-446), was issued in July 1981. Six routine licensing supplements were subsequently issued (SSERs 1, 2, 3, 4, 6, and 12 were involved with the FSAR review, SSER 5 was never issued and SSERs 7, 8, 9, 10, 11, 13 and 14 involved CPRT and CAP). SSER 12, the last of these routine licensing supplements, was issued in October 1985. SSER 12 addressed the FSAR review up through Amendment 54 in most areas and Amendment 55 in others.

At present, the Comanche Peak FSAR has been updated through Amendment 70. Enclosure 1 is a section-by-section matrix of the Comanche Peak SER which identifies those SER sections impacted by FSAR changes and includes our initial judgment on the sections requiring an SER update. Enclosure 1 also identifies review groups by area of technical responsibility and estimates the level of effort required to review the FSAR and provide SSER input. Enclosure 2 details, by SER section, the nature of the FSAR changes involved. Most of the changes are Priority 1 and 2 according to the April 29, 1988 memo from T. Murley (support for hearings and licensing reviews where SER preparation is needed within six months to prevent impact on OL issuance). However, since the changes involve a large number of relatively minor issues, OSP does not believe a significant NRR resource commitment will be required.

Because of the protracted review of the Comanche Peak docket, along with other unique circumstances which have led to its designation as a special project, we request that certain review guidelines be followed to avoid confusion and inefficiencies later in the review process. These guidelines are:

1. Where the previous review criteria cannot be easily determined, reviewers should use the most current SRP criteria. TU Electric has agreed in principle to this approach, provided they have the opportunity to appeal backfitting on specific cases.

2. Our goal is to complete reviews with one round of questions. To facilitate our goal, CPPD plans to conduct a meeting in each technical area after the reviewer has evaluated the comprehensive review package (which will be provided and includes the relevant sections of the FSAR, SER and SSERs, as well as related pertinent correspondence). If necessary, this meeting would be followed by a set of questions to obtain additional, essential docketed information.

3. The fuel load date for Unit 1 is scheduled for June 1989, with hot functional testing beginning around December 1988. To meet this schedule, completion of the staff reviews and supplemental safety evaluations need to be completed by October 1988 to allow time to resolve any remaining technical issues prior to license issuance.

We will arrange for Jim Wilson (x23306), our Assistant Director for Projects, or one of our project managers to meet with your staff to explain the enclosures and make this cooperative effort as painless as possible.

We would be pleased to meet with you and your staff to discuss this matter at your convenience. Thank you for your assistance.

C I Grimes

Christopher I. Grimes, Director
Comanche Peak Project Division
Office of Special Projects

Enclosures:
1. NUREG-0797 Status Matrix
2. Areas Requiring Review

cc w/o encls:
T. Murley
J. Sniezek
S. Ebneter
J. Axelrad

cc w/encls:
L. Shao
C. Rossi
J. Partlow
J. Stohr
J. Roe

May 26, 1988

Thomas T. Martin - 3 -

RE: Request for Technical Assistance - General FSAR Amendment Review for Comanche Peak

DISTRIBUTION:
Docket Files (50-445/446)
NRC PDR
OSP Reading
CPPD Reading
TMurley
JSniezek
SEbneter/JAxelrad
CGrimes
SDRichardson
PMcKee
JLyons
RWarnick
JWilson
MMalloy
JRichardson
AThadano
CYCheng
TMarsh
GBagchi
CMcCracken
SNewberry
FRosa
JCraig
MHodges
EButcher
RErickson
DMatthews
JCunningham
AGody
SWeiss
WRegan
JHannon

#1 5/19/88

OFC	:PM:CPPD	:AD/P:CPPD	:AD/TP:CPPD	:D/DIR:CPPD	:DIR:CPPD	:A/DIR:TPD	:D/DIR:OSP
NAME	:MMalloy/sam	:JHWilson	:JELyons	:PFMcKee	:CIGrimes	:SDRichardson	:JAxelrad
DATE	:4/26/88	:4/26/88	:4/26/88	:4/26/88	:4/27/88	:5/18/88	:5/26/88

OFC	:DIR:OSP	:	:	:	:	:	:
NAME	:SDEbneter	:	:	:	:	:	:
DATE	:5/26/88	:	:	:	:	:	:

OFFICIAL RECORD COPY

RE: Request for Technical Assistance - General FSAR Amendment Review for Comanche Peak

DISTRIBUTION:
Docket Files (50-445/446)
NRC PDR
OSP Reading
CPPD Reading
TMurley
JSniezek
SEbneter/JAxelrad
CGrimes
PMcKee
JLyons
RWarnick
JWilson
MMalloy
JRichardson
AThadani
CYCheng
TMarsh
GBagchi
CMcCracken
SNewberry
FRosa
JCraig
MHodges
EButcher
RErickson
DMatthews
JCunningham
AGody
SWeiss
WRegan
JHannon

OFC	:PM:CPPD	:AD/P:CPPD	:AD/TP:CPPD	:D/DIR:CPPD	:DIR:CPPD	:D/DIR:OSP	:DIR:OSP
NAME	:MMalloy:sam	:JHWilson	:JELyons	:PFMcKee	:CIGrimes	:JAAxelrad	:SDEbneter
DATE	:4/13/88	:4/13/88	:4/22/88	:4/22/88	:4/22/88	:4/ /88	:4/ /88

ENCLOSURE 1

(Contains SER section-by-section estimate of magnitude of FSAR changes and level of review effort required to produce SSER input.

MIN = minimal, i.e., hours

MOD = moderate, i.e., hours-days

MAJ = major, i.e., days - weeks

The cognizant review branch is identified for each section)

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
1 INTRODUCTION AND GENERAL DESCRIPTION OF PLANT																
1.1 Introduction	0 1 2 3 4 6 12	1.1		X				X				X				CPPD
1.2 General Description of the Facility	0	1.2	65, 66		X				X				X			CPPD
1.3 Comparison With Similar Facility Designs	0	1.3	61, 66		X				X				X			CPPD
1.4 Identification of Agents and Contractors	0	1.4	60		X				X				X			CPPD
1.5 Summary of Principal Review Matters	0	N/A		X									X			CPPD
1.6 Modifications to the Facility during the Course of the Staff Review	0 12	N/A		X				X					X			CPPD
1.7 Summary of Outstanding Issues	0 1 2 3 4 6 12	N/A		X				X					X			CPPD
1.8 Confirmatory Issues	0 1 2 3 4 6 12	N/A		X				X					X			CPPD
1.9 License Conditions	0 1 2 3 4 6 12	N/A		X				X					X			CPPD
1.10 Unresolved Safety Issues	0	N/A		X				X					X			CPPD
2 SITE CHARACTERISTICS																
2.1 Geography and Demography																
2.1.1 Site Location and Description	0	2.1.1		X				X				X				ESGB
2.1.2 Exclusion Area Control	0	2.1.2		X				X				X				ESGB
2.1.3 Population Distribution	0	2.1.3		X				X				W				PEPB
2.1.4 Conclusion																
2.2 Nearby Industrial, Transportation and Military Facilities																
2.2.1 Transportation Routes	0	2.2.1		X				X				X				ESGB/ECEB
2.2.2 Nearby Military and Industrial Facilities	0	2.2.2		X				X				X				ESGB/ECEB
2.2.3 Conclusion																
2.3 Meteorology																
2.3.1 Regional Climatology	0	2.3.1		X				X				X				PRPB
2.3.2 Local Meteorology	0	2.3.2		X				X				X				PRPB
2.3.3 Onsite Meteorological Measurements Program	0	2.3.3	65		X			X				X				PRPB
2.3.4 Short-Term (Accident) Diffusion Estimates	0	2.3.4		X				X					X			PRPB
2.3.5 Long-Term (Routine) Diffusion Estimates	0	2.3.5		X				X				X				PRPB
2.4 Hydrologic Engineering																
2.4.1 Hydrologic Description	0	2.4.1		X				X				X				ESGB/TVAP
2.4.2 Flood History	0	2.4.2		X				X				X				ESGB/TVAP
2.4.3 Flood Potential	0 1	2.4.3	65, 68		X				X				X			ESGB/TVAP
2.4.4 Low Water Considerations	0	2.4.11		X				X				X				ESGB/TVAP
2.4.5 Ultimate Heat Sink	0	2.4.8	65, 68		X				X				X			ESGB/TVAP
2.4.6 Groundwater	0	2.4.13	68		X				X				X			ESGB/TVAP
2.4.7 Dispersion, Dilution, and Travel Times of Accidental Releases of Liquid Effluents	0	2.4.12	66, 68		X				X				X			ESGB/TVAP
2.4.8 Monitoring and Maintenance	0 1	2.4.14		X				X				X				ESGB/TVAP
2.4.9 Conclusions																TVAP

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
2.5 Geology and Seismology																
2.5.1 Geologic Information	0	2.5.1	68		X				X				X			ESGB
2.5.2 Seismology	0	2.5.2	68		X				X				X			ESGB
2.5.3 Surface Faulting	0	2.5.3		X				X				X				ESGB
2.5.4 Stability of Subsurface Materials and Foundations	0	2.5.4	68		X				X				X			ESGB
2.5.5 Stability of Slopes	0	2.5.5	68		X				X				X			ESGB
2.5.6 Embankments and Dams	0	2.5.6	68		X				X				X			ESGB
2.6 References																
3 DESIGN CRITERIA FOR STRUCTURES, SYSTEMS, AND COMPONENTS																
3.1 Conformance with General Design Criteria and NRC Regulations	0	3.1	56,59,61			X				X				X		ALL
3.2 Classification of Structures, Components, and Systems																
3.2.1 Seismic Classification	0	3.2.1, 17A	7,41,59, 66		X				X				X			EMEB/ESGB
3.2.2 System Quality Group Classification	0	3.2.2, 17A	42,46,66		X				X				X			EMEB
3.3 Wind and Tornado Loadings																
3.3.1 Wind Design Criteria	0	3.3.1	55, 56		X				X				X			ESGB
3.3.2 Tornado Design Criteria	0	3.3.2	55, 68		X				X				X			ESGB
3.4 Water Level (Flood) Design																
3.4.1 Water Level (Flood) Design	0	3.4.1		X				X				X				SPLB
3.4.2 Water Level (Flood) Design Procedures	0	3.4.2		X				X				X				SPLB/ESGB
3.5 Missile Protection																
3.5.1 Internally Generated Missiles	0	3.5.1		X				X				X				EMTB
3.5.2 Structures, Systems, and Components To Be Protected From Externally Generated Missiles	0	3.5.2	60		X				X				X			SPLB
3.5.3 Barrier Design Procedures	0	3.5.3	66		X				X				X			SPLB
3.6 Protection Against Defects Associate With the Postulated Rupture of Piping																
3.6.1 Plant Design for Protection Against Postulated Failures in Fluid Systems	0	3.6.2	61,68				X				X				X	SPLB/CPPB
3.6.2 Determination of Rupture Location and Dynamic Effects Associated with Postulated Ruptures of Piping	0	3.6.2	61, 68				X				X				X	EMEB/CPPB
3.7 Seismic Design																
3.7.1 Seismic Input	0	3.7K.1	61,66,68		X				X				X			ESGB/CPPB
3.7.2 Seismic Structural System and Subsystem Analysis	0	3.7K.2	61,66,68			X				X				X		ESGB
3.7.3 Seismic Mechanical Subsystem Analyses	0	3.7K.3	61,66,68			X				X				X		EMEB/CPPB
3.7.4 Seismic Instrumentation Program	0	3.7K.4		X				X				X				ESGB
3.8 Design of Seismic Category I Structures																
3.8.1 Concrete Containment	0	3.8.1	56,61,68			X				X				X		ESGB
3.8.2 Concrete and Structural Steel Internal Structures	0	3.8.3	56,61,68			X				X				X		ESGB
3.8.3 Other Seismic Category I Structures	0	3.8.4	56,59,61, 64,68			X				X				X		ESGB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
3.8.4 Foundations	0	3.8.5	56,61		X				X				X			ESGB
3.9 Mechanical Systems and Components																
3.9.1 Special Topics for Mechanical Components	0 12 14	3.9N.1	61, 68		X				X				X			CPPD/EMEB
3.9.2 Dynamic Testing and Analysis	0 12	3.9N.2	57,61,66, 68			X				X				X		EMEB
3.9.3 ASME Code Class 1,2, and 3 Components, Component Supports and Core Support Structures	0 1 3 12	3.9N.3	55,61,66, 68		X				X				X			EMEB/CPPD
3.9.4 Control Rod Drive Systems	0	3.9N.4		X				X				X				EMEB
3.9.5 Reactor Pressure Vessel Internals	0	3.9N.5		X				X				X				EMEB
3.9.6 Inservice Testing of Pumps and Valves	0 1 12	3.9N.6, 3.9B	55,61,66 68		X						X				X	EMEB/CPPD
3.10 Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electrical Equipment	0 1 12	3.9B.2	66		X				X				X			EMEB/CPPD/TVAP
3.11 Environmental Qualification of Safety-Related Electrical Equipment	0 1 6 12	3.11	55,56,66, 68				X				X				X	SPLB/TVAP
4 REACTOR																
4.1 General	0	4.1	14, 46	X				X				X				SRXB
4.2 Fuel Design																
4.2.1 Description	0 1 3 6	4.2.2	14	X				X				X				SRXB
4.2.2 Thermal Performance	0	4.2.3	14, 44	X				X				X				SRXB
4.2.3 Mechanical Performance	0	4.2.3	14, 66		X				X			X				SRXB
4.2.4 Surveillance	0	4.2.4	56,57,66		X				X				X			SRXB
4.2.5 Conclusion																
4.3 Nuclear Design																
4.3.1 Design Bases	0	4.3.1	14	X				X				X				SRXB
4.3.2 Design Description	0 1	4.3.2	15	X					X				X			SRXB
4.3.3 Analytical Methods	0	4.3.3	14, 55		X				X			X				SRXB
4.3.4 Summary of Evaluation Findings	0	N/A	14	X				X				X				SRXB
4.4 Thermal-Hydraulic Design																
4.4.1 Thermal-Hydraulic Criteria and Design Bases	0 1	4.4.1	26	X				X				X				SRXB
4.4.2 Thermal-Hydraulic Analytical Models	0	4.4.1	14	X				X				X				SRXB
4.4.3 Thermal-Hydraulic Design Comparison	0	4.4.4	14,46,66		X				X				X			SRXB
4.4.4 Summary and Conclusion																
4.5 Reactor Materials																
4.5.1 Reactor Vessel Internals and Core Support Materials	0	4.5.2	14	X					X				X			EMTB
4.5.2 Control Rod System Structural Materials	0	4.5.1	14	X					X				X			EMTB
4.6 Functional Design of Reactivity Control Systems	0 1 3	4.6, 9.3.4	14	X					X				X			SRXB
5 REACTOR COOLANT SYSTEM																
5.1 Summary Description	0	5.1	64,66,67, 68		X				X				X			
5.2 Integrity of Reactor Coolant Pressure Boundary																
5.2.1 Compliance With Code and Code Cases	0	5.2.1	55,57,59,		X					X				X		EMEB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
			66													
5.2.2 Overpressure Protection	0,1	5.2.2	66		X				X				X			SRXB
5.2.3 Reactor Coolant Pressure Boundary Materials	0	5.2.3	57		X				X				X			EMIB
5.2.4 Preservice and Inservice Inspection and Testing of the Reactor Coolant Pressure Boundary	0,4,12	5.2.4	55, 57		X				X				X			EMEB
5.2.5 Reactor Coolant Pressure Boundary Leakage Detection System	0	5.2.5	57, 66		X				X				X			SPLB
5.3 Reactor																
5.3.1 Reactor Vessel Materials	0,1	5.3.1		X				X				X				EMIB
5.3.2 Pressure-Temperature Limits	0,3	5.3.2	59		X				X				X			EMIB
5.3.3 Reactor Vessel Integrity	0	5.3.3		X				X				X				EMIB
5.4 Component and Subsystem Design																
5.4.1 Reactor Coolant Pumps	0,1	5.4.1, 5.5.3		X				X				X				SRXB
5.4.2 Steam Generators	0,1,3,4,12	5.4.2	55, 64		X				X				X			EMIB
5.4.7 Residual Heat Removal System	0,6	5.4.7	68			X				X				X		SRXB
5.4.11 Pressurizer Relief Tank	0	5.4.11		X				X				X				SPLB
5.4.5 Loose Parts Monitor	0	4.4.6.4		X				X				X				SPLB
6 ENGINEERED SAFETY FEATURES																
6.1 Engineered Safety Features Materials																
6.1.1 Metallic Materials	0	6.1B, 6.1N	66		X			X					X			EMIB
6.1.2 Organic Materials	0,9	6.1B	55		X			X					X			ECEB
6.2 Containment Systems																
6.2.1 Containment Functional Design	0	6.2.1, 3.9N	52	X				X				X				SPLB
6.2.2 Containment Heat Removal Systems	0,12	6.2.2	55,66,67			X				X				X		SPLB
6.2.3 Containment Isolation System	0,6	6.2.4	68 55,56,57, 65,66,67,68 68			X				X				X		SPLB
6.2.4 Combustible Gas Control System	0	6.2.5	56,66,67		X				X				X			SPLB
6.2.5 Containment Leakage Testing Program	0,6,12	6.2.6	55, 66			X				X				X		SPLB
6.3 Emergency Core Cooling System																
6.3.1 Design Basis	0	6.3.1		X				X				X				SRXB
6.3.2 System Design	0	6.3.2	66		X				X				X			SRXB
6.3.3 Design Evaluation for Single Failures	0,1,2	6.3.3	66, 67		X				X				X			SRXB
6.3.4 Tests and Inspections	0,1	6.3.4		X				X				X				LMFB
6.3.5 Performance Evaluation	0	6.3.5		X				X				X				SRXB
6.3.6 Conclusions																
6.4 Control Room Habitability	0	6.4	55,56,60, 64,66,68			X				X				X		SPLB/PRPB/ECEB
6.5 Engineered-Safety-Feature Atmosphere Cleanup System																
6.5.1 System Description and Evaluation	0	6.5.1, 9.4.1	59, 66			X				X				X		SPLB/PRPB
6.5.2 Containment Spray System	0,3	6.5.2	66, 68			X				X				X		SPLB/ECEB/PRPB
6.6 Inservice Inspection of Class 2 and 3 Components																

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
6.6.1 Evaluation of Compliance for Unit 1 to 10 CFR 50.55a(g)	0 4 12	6.6.1	55, 66		X				X				X			EMIB
6.6.2 Evaluation of Compliance for Unit 2 to 10 CFR 50.55a(g)	0 4 12	6.6.1	55, 66		X				X				X			EMIB
6.6.3 Conclusions																
6.7 Fracture Prevention of Containment Pressure Boundary	0	3.1.5, 3.8.1, 3.8.2		X				X				X				EMIB
7 INSTRUMENTATION AND CONTROLS																
7.1 General																
7.1.1 Acceptance Criteria	0	7.1.2	56		X			X				X				SICB
7.1.2 Conformance to Criteria and Guidelines	0	7.1.2	56		X				X				X			SICB/CPPD
7.1.3 Specific Findings and Open Items																
7.2 Reactor Trip System																
7.2.1 Decription	0	7.2.1	55		X				X				X			SICB
7.2.2 Requirements for Reactor Protection System Anticipatory Trip	0	7.2.2		X				X				X				SICB
7.2.3 Test and Calibration Features of the Safety Systems	A	7.2.3	56		X				X				X			SICB/CPPD
7.2.4 Response Time Testing	0	7.2.3		X				X				X				SICB
7.2.5 Conclusions																
7.2.6 Salem ATWS (Generic Ltr 83-28)	12	15.8		X				X				X				SICB
7.3 Engineered Safety Features Actuation Systems																
7.3.1 Description	0 1 3	7.3.1	55,56,66, 67,68		X				X				X			SICB/CPPD
7.3.2 Resolution of Concerns Related to ESFAS	0 2 6	7.3.2	56,66,68		X				X				X			SICB
7.3.3 Conclusions																
7.4 Systems Required for Safe Shutdown																
7.4.1 Description	0	7.4.1	55,56,60, 66		X				X				X			SICB
7.4.2 Remote Shutdown Capability	0 12	7.4.2	55,56,57, 60,64,65 66,68		X				X				X			SICB
7.4.3 Conclusions																
7.5 Safety-Related Display Instrumentation																
7.5.1 Description	0	7.5.1	66, 68		X				X				X			SICB
7.5.2 Postaccident Monitoring	0 3 12	7.5.2	66, 68				X				X				X	SICB
7.5.3 Bypassed and Inoperable Status Indication for Safety Related Systems	0	7.1.2.6	66		X				X				X			SICB
7.5.4 Conclusions																
7.6 All Other Instrumentation Systems Required for Safety																
7.6.1 Residual Heat Removal Isolation Valves	0	7.6.2		X				X				X				SICB
7.6.2 Accumulator Motor Operated Isolation Valves	0	7.6.4	68		X				X				X			SICB
7.6.3 Switchover from Injection to Recirculation Mode																

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
for Emergency Core Cooling	0	7.6.5		X				X				X				SICB
7.6.4 Reactor Coolant System (RCS) Pressure Control During Low-Temperature Operation	0	7.6.8	57		X				X			X				SICB
7.7 Control Systems Not Required for Safety																
7.7.1 Description	0	7.7.1	67		X			X				X				SICB
7.7.2 Conclusions																
8 ELECTRIC POWER SYSTEMS																
8.1 General Considerations	0 1 3	8.1	60,62,66, 68		X				X				X			SELB/CPPD
8.2 Offsite Power System																
8.2.1 General Description	0 1 3	8.2.1	60,66,67				X				X				X	SELB/CPPD
8.2.2 Testability	0	8.2.2		X				X					X			SELB/CPPD
8.2.3 Grid Stability Analysis	0	8.2.2		X				X					X			SELB/CCPD
8.2.4 Adequacy of Station Electric Distribution System Voltages	0	8.1.2	66, 68			X				X				X		SELB/CPPD
8.2.5 Conclusions																
8.3 Onsite Emergency Power Systems																
8.3.1 AC Power System	0	8.3.1	55,65,66, 67,68			X				X					X	SELB/SICB/CPPD
8.3.2 DC Power Systems	0	8.3.2	60,66,67, 68			X				X				X		SELB/CPPD
8.4 Other Electrical Features and Requirements for Safety																
8.4.1 Containment Electrical Penetrations	0	8.3.1	66, 68				X				X				X	SELB/CPPD
8.4.2 Thermal Overload Protection Bypass	0	8.3.1			X				X				X			SELB
8.4.3 Power Lockout to Motor-Operated Valves	0	8.3.1		X				X					X			SELB/CPPD
8.4.4 Physical Identification and Independence of Redundant Safety-Related Electrical Systems	0 1 3	8.3.1	60,66,67, 68				X				X				X	SELB/SICB/CPPD
8.4.5 Nonsafety Loads on Emergency Sources	0	8.3.1	66,67,68			X				X				X		SELB/SICB/CPPD
8.4.6 Fire Protection	0 12	8.3.3	66, 68		X				X				X			SELB/SICB/CPPD
8.4.7 Use of a Load Sequencer With Offsite Power	0	8.3.1	67		X			X					X			SELB/SICB/CPPD
9 AUXILIARY SYSTEMS																
9.1 Fuel Storage and Handling																
9.1.1 New Fuel Storage	0	9.1.1	38,46,52, 57		X				X				X			SPLB
9.1.2 Spent Fuel Storage	0	9.1.2, 9.1.3, 9.1.4	4,12,38 60,66		X				X				X			SPLB/ECEB
9.1.3 Spent Fuel Pool Cooling and Cleanup System	0	9.1.3	27,31,33, 68			X				X				X		SPLB
9.1.4 Fuel Handling System	0 1	9.1.4	4,31,52, 66			X				X				X		SPLB
9.1.5 Overhead Heavy Load Handling System	6 12	9.1.4		X					X				X			SPLB
9.2 Water Systems																

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
9.2.1 Station Service Water System	0	9.2.1, 1A(B)	7,21,39, 66,68,69			X				X				X		SPLB/ECEB
9.2.2 Reactor Auxiliaries Cooling Water System (Component Cooling Water System)	0	9.2.2	10,52,60, 66,68			X				X				X		SPLB
9.2.3 Demineralized and Reactor Makeup Water System	0	9.2.3	68			X				X				X		SPLB
9.2.4 Potable and Sanitary Water System	0	9.2.4	52, 60		X				X				X			SPLB
9.2.5 Ultimate Heat Sink	0	9.2.5, 3.2.1, 3.5.1	10, 68			X				X				X		
9.2.6 Condensate Storage Facility	0	9.2.6	12, 66		X				X				X			SPLB
9.3 Process Auxiliaries																
9.3.1 Compressed Air System	0	9.3.1	5,27,69			X				X				X		SPLB
9.3.2 Process Sampling System	0	9.3.2, APP 1IB	32,42,55, 59,66			X				X				X		EC*B/SPLB
9.3.3 Equipment and Floor Drainage System	0 6 12	9.3.3	9,22,52	X				X				X				SPLB
9.3.4 Chemical and Volume Control System	0	9.3.4	12, 66		X				X				X			SPLB
9.4 Heating, Ventilation, and Air Conditioning (HVAC) Systems																
9.4.1 Control Room Area Ventilation System	0	9.4.1	41,53,59, 66,68				X				X				X	SPLB
9.4.2 Fuel Handling Building Ventilation System	0	9.4.2	41,53,[illegible]				X				X				X	SPLB
9.4.3 Auxiliary Building and Radwaste Area Ventilation System	0	9.4.3, 9.4.4	41,53,56, 58,66				X				X				X	SPLB
9.4.4 Safeguards Building Ventilation System	0 4 12	9.4.5	4,41,53, 56,66,68				X				X				X	SPLB
9.4.5 Miscellaneous Building Ventilation Systems	0	9.4C	11,13,52, 66,68				X				X				X	SPLB
9.4.6 [illegible]y Chilled Water System	0 3	9.4F	3,11,47, 66			X				X				X		SPLB
9.5 Other Auxiliary Systems																
9.5.1 Fire Protection Review	0 1 12	9.5.1					X				X				X	ECEB/SPLB/CPPB
9.5.2 Communication Systems	0	9.5.2	10,14,66			X				X				X		SICB
9.5.3 Lighting System	0 12	9.5.3	8,31,41, 66,69			X				X				X		SELB
9.5.4 Emergency Diesel Engine Fuel Oil Storage and Transfer System	0	9.5.4, 9.5.1					X				X				X	SPLB
9.5.5 Diesel Generator Cooling Water System	0	9.5.5				X				X				X		SPLB
9.5.6 Emergency Diesel Engine Starting System	0	9.5.6		X				X				X				SPLB
9.5.7 Emergency Diesel Engine Lubricating Oil System	0	9.5.7			X				X				X			SPLB
9.5.8 Emergency Diesel Engine Combustion Air Intake and Exhaust System	0	9.5.8		X				X				X				SPLB
9.5.9 Emergency Diesel Engine Reliability	6 12	9.5.1		X							X				X	SPLB/SELB
10 STEAM AND POWER CONVERSION SYSTEM																
10.1 Summary Description	0	10.1	2,41,59		X				X				X			SPLB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
10.2 Turbine Generator																
10.2.1 Overspeed Protection System	0	10.2	6,11,65		X				X				X			SPLB
10.2.2 Turbine Disc Integrity	6 12	10.2.3	55,55,62		X				X				X			EMIB
10.3 Main Steam Supply System																
10.3.1 Main Steam Supply System (up to and Including the Main Steam Isolation Valves)	0 12	10.3.1	14,20,56, 66			X				X				X		SPLB
10.3.2 Main Steam Supply System (Downstream of the Main Steam Isolation Valve)	0	10.3.2	15	X				X				X				SPLB
10.3.3 Steam and Feedwater System Materials	0	10.3.6		X					X				X			EMIB
10.4 Other Features																
10.4.1 Main Condenser	0	10.4.1	41, 65		X				X				X			SPLB
10.4.2 Main Condenser Evacuation System	0	10.4.2	41, 52	X				X				X				SPLB
10.4.3 Turbine Gland Sealing System	0	10.4.3	27	X				X				X				PSB
10.4.4 Turbine Bypass System	0	10.4.4	7, 9	X				X				X				SPLB
10.4.5 Circulating Water System	0 4 12	10.4.5	41,65,68		X				X				X			SPLB
10.4.6 Condensate Cleanup System	0	10.4.6		X				X				X				ECEB
10.4.7 Condensate and Feedwater System	0 4	10.4.7, 9.2.6	10,57,66, 68				X				X				X	SPLB
10.4.8 Steam Generator Blowdown System	0	10.4.8	9,42,55, 66		X				X				X			ECEB
10.4.9 Auxiliary Feedwater System	0 12	10.4.9	51,57,65, 66,68				X				X				X	SPLB
11 RADIOACTIVE WASTE MANAGEMENT																
11.1 Summary Description	0	11.1		X					X				X			SPCB/PRPB
11.2 System Description and Evaluation																
11.2.1 Liquid Waste Processing System	0	11.2	66, 67			X				X				X		SPCB/PRPB
11.2.2 Gaseous Waste Processing System	0	11.3	55,63,66 67		X				X				X			SPCB/PRPB
11.2.3 Solid Radioactive Waste Treatment System	0 1	11.4	55		X					X				X		SPCB/PRPB
11.3 Process and Effluent Radiological Monitoring Systems	0	11.5	56,59,66 68		X				X				X			SPCB/PRPB
11.4 Evaluation Findings																
12 RADIATION PROTECTION																
12.1 Ensuring That Occupational Radiation Exposures Are As Low As Reasonably Achievable (ALARA)																
12.1.1 Policy Considerations		12.1.1		X					X				X			PRPB
12.1.2 Design Considerations	0	12.1.2		X					X				X			PRPB
12.1.3 Operational Considerations	0	12.1.3		X								X				PRPB
12.1.4 Decommissioning	0	12.3.1		X				X				X				ECEB
12.2 Radiation Sources	0	12.2	66			X				X				X		PRPB
12.3 Radiation Protection Design Features																
12.3.1 Facility Design Features	0	12.3.1		X				X				X				PRPB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
12.3.2 Shielding	0	12.3.2		X												PRPB
12.3.3 Ventilation	0	12.3.3	59		X				X				X			PRPB
12.3.4 Area Radiation and Airborne Radioactivity Monitoring Instrumentation	0	12.3.4	66	X					X				X			PRPB
12.4 Dose Assessment	0	12.4		X				X				X				PRPB
12.5 Health Physics	0	12.5	55,56,57, 59,66		X				X				X			PRPB
13 CONDUCT OF OPERATIONS																
13.1 Organizational Structure and Qualifications	0 1 6 12	13.1	59,60,62, 64,68				X				X				X	LPEB
13.2 Training																
13.2.1 Staff Training Program (Future FSAR Amend.)	0	13.2.1, 13.2.3	55,58,62		X					X				X		LHFB
13.2.2 Licensed Operator Training Program (Future FSAR Amend.)	0 12	13.2.2, 13.2.3	55, 62		X						X				X	LOLB
13.3 Emergency Planning (Future FSAR Amend.)	0 1 3 6	13.3, 13.3A, 13.3B	54, 65			X					X				X	LPEB
13.4 Review and Audit																
13.4.1 Station Operations Review Committee	0 12	13.4.1	55,65,68		X				X				X			LPEB
13.4.2 Operations Review Committee	0 12	13.4.2	55, 65		X				X				X			LPEB
13.4.3 Independent Safety Engineering Group	0 1	13.4.2	55,59,65, 68		X				X				X			LPEB
13.5 Station Administrative Procedures	0 1 12	13.5.1, 13.5.2	55,59,65, 68		X				X				X			LPEB
13.6 Industrial Security	0 1 6	13.6	57, 65		X						X				X	RSGB
14 INITIAL TEST PROGRAM	0 6	14.2	56,59,60, 61,65,66, 68			X					X				X	LHFB
15 ACCIDENT ANALYSIS																
15.1 General																
15.1.1 Input Parameters for Transient and Accident Analyses	0 4	15.0.2 - 15.0.10	53, 57		X				X				X			SRXB/PRPB
15.1.2 Methods of Analysis	0	15.0.11	5	X						X				X		SRXB/PRPB
15.2 Moderate Frequency Transients																
15.2.1 Increased Cooling Transients	0	15.4.4, 15.1.1-15.1.	54	X					X				X			SRXB
15.2.2 Decreased Cooling Transients	0	15.3.1, 15.2.2-15.2.	5, 57			X				X				X		SRXB
15.2.3 Increased Core Reactivity Transients	0 3 6	15.4.1, 15.4.3, 15.4	42, 52	X				X					X			SRXB
15.3 Infrequent Transients and Postulated Accidents																
15.3.1 CVCS Letdown Line Break Outside Containment	0	15.6.2	13, 66			X				X				X		SRXB/PRPB
15.3.2 Uncontrolled Rod Cluster Control Assembly (Rod) Break Withdrawal at Power	0	15.4.2	5	X				X				X				SRXB
15.3.3 Inadvertent Loading of a Feed Assembly Into Improper Position	0	15.4.7	49	X				X				X				SRXB
15.3.4 Rupture of a Control Rod Drive Mechanism Housing (Rod Cluster Control Assembly Ejection)	0	15.4.8	56	X				X				X				SRXB
15.3.5 Steam Line Breaks	0	15.1.5	47, 56		X				X				X			SRXB/PRPB
15.3.6 Feedwater Line Break	0 4	15.2.8	5,57,66			X				X				X		SRXB/PRPB/SELB
15.3.7 Reactor Coolant Pump Locked Rotor Accident	0	15.3.3	5	X				X				X				SRXB/SELB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
15.3.8 Loss-of-Coolant Accident	0 1 3	15.6.5	6	X					X				X			SRXB/PRPB
15.3.9 Anticipated Transients Without Scram	0 1 4	15.8	24	X				X				X				SRXB/PRPB
15.3.10 Conclusions																
15.4 Radiological Consequences of Design-Basis Accidents																
15.4.1 Main Steam Line Failure Outside Containment	0	15.1.5	66			X				X				X		SRXB/PRPB/SELB
15.4.2 Rod Ejection Accident	0	15.4.8	66, 68			X				X				X		SRXB/PRPB
15.4.3 Failure of a Small Line Carrying Primary Coolant Outside Containment	0	15.6.2	13, 66			X				X				X		SRXB/PRPB
15.4.4 Steam Generator Tube Rupture Accident	0 6 12	15.6.3	7, 66			X					X				X	SRXB/PRPB/SELB
15.4.5 Loss-of-Coolant Accident		15.6.5	53,59,66				X				X				X	SPLB/PRPB
15.4.6 Waste Gas System Failure	0	15.7.1	53, 66			X				X				X		SPLB/ESGB
15.4.7 Radioactive Liquid Waste System Leak or Failure	0	15.7.2	53, 66			X				X				X		SPLB/ESGB
15.4.8 Fuel Handling Accident	0 2	15.7.4, 15.7.5	13, 66			X				X				X		SPLB/PRPB
15.4.9 Liquid Tank Failures	0	15.7.3, 2.4.12-2.4.1	9,66,68			X				X				X		SPLB/ESGB
16 TECHNICAL SPECIFICATIONS		16.0														DTSB
17 QUALITY ASSURANCE																
17.1 General	0			X					X				X			LQAB/TVAP
17.2 Organization for the QA Program	0 4 6	17.2	53,55,56, 62				X				X				X	LQAB/TVAP
17.3 Quality Assurance Program	0	17.2	53,54,55, 59,65				X				X				X	LQAB/TVAP
17.4 Conclusion																TVAP
17.5 Outstanding Quality Assurance Issues for Comanche Peak Steam Electric Station, Units 1 and 2	0 1 12	APPENDIX 17A TABLE 17A-1 & 17A-2					X				X				X	LQAB/TVAP
18 REPORT OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS																
19 COMMON DEFENSE AND SECURITY																
20 FINANCIAL QUALIFICATIONS																
21 FINANCIAL PROTECTION AND INDEMNITY REQUIREMENTS																
22 TMI-2 REQUIREMENTS																
22.1 Introduction												X				CPPB
22.2 Discussion of Requirements												X				CPTB
I.A.1.1 Shift Technical Advisor	0		14	X				X				X				LHFB
I.A.1.2 Shift Supervisor Administrative Duties	0 1		14	X				X				X				LHFB
I.A.1.3 Shift Manning	0 1		14	X				X				X				LHFB
I.A.2.1 Immediate Upgrading of Operator and Senior Operator Training and Qualifications	0		14	X				X				X				LOLB
I.A.2.3 Administration of Training Programs for Licensed Operators	0		14	X					X				X			LOLB
I.A.3.1 Revised Scope and Criteria for Licensing Examinations	0		14	X				X				X				LOLB
I.B.1.2 Evaluation of Organization and Management Improvements of Near-Term Operating License Applicants	0 1		29	X				X				X				LHFB
I.C.1 Guidance for the Evaluation and Development of Procedures for Transients and Accidents	0 6 12		19, 66						X					X		LHFB
I.C.2 Shift and Relief Turnover Procedures	0 1 6		19	X				X				X				LHFB

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
I.C.3 Shift Supervisor Responsibilities	0 1		19	X				X				X				LHFB
I.C.4 Control Room Access	0 1		19	X				X				X				LHFB
I.C.5 Procedures for Feedback of Operating Experience to Plant Staff	0 1 6		39,59,65						X					X		HFB
I.C.6 Verify Correct Performance of Operating Activities	0 1		19					X				X				LHFB
I.C.7 NSSS Vendor Review of Procedures	0		19						X				X			LHFB
I.C.8 Pilot Monitoring of Selected Emergency Procedures for Near-Term Operating License Applicants	0 6		19, 66					X				X				LHFB
I.D.1 Control Room Design Review	0		36								X				X	LHFB
I.D.2 Safety Parameter Display System																
I.G.1 Special Low-Power Testing and Training	0 6		21	X						X				X		LHFB
II.B.1 Reactor Coolant System Vents	0 6		38	X				X				X				SRXB
II.B.2 Plant Shielding to Provide Access to Vital Areas and Protect Safety Equipment for Postaccident Operation	0 2		29, 66							X				X		PRPB
II.B.3 Postaccident Sampling Capability	0 2 6		36, 66							X				X		ECEB
II.B.4 Training for Mitigating Core Damage	0		14	X				X				X				LHFB
II.D.1 Performance Testing of Boiling Water Reactor and Pressurized Water Reactor Relief and Safety Valves	0 1		40, 65						X				X			EMEB
II.D.3 Direct Indication of Relief and Safety Valve Position	0		40	X				X				X				SICB
II.E.1.1 Auxiliary Feedwater System (AFWS) Reliability Evaluation	0		22	X						X				X		SPLB
II.E.1.2 Auxiliary Feedwater Initiation and Indication	0		38	X						X				X		SPLB
II.E.3.1 Emergency Power Supply for Pressurizer Heaters	0		14	X				X				X				SELB
II.E.4.1 Dedicated Containment Penetrations	0		14	X					X				X			SPLB
II.E.4.2 Containment Isolation Dependability	0 12		22	X						X				X		SPLB
II.F.1 Additional Accident Monitoring Instrumentation																
Attachment 1: Noble Gas Effluent Monitor	0 3		39	X				X								PRPB/SICB
Attachment 2: Sampling and Analysis of Plant Effluents	0 3		27	X				X								PRPB
Attachment 3: Containment High-Range Radiation Monitor	0 3		39	X				X								PRPB/SICB
Attachment 4: Containment Pressure Monitor	0		22	X				X								PRPB/SICB/SPLB
Attachment 5: Containment Water Level Monitor	0		36	X					X				X			PRPB/SICB/SPLB
Attachment 6: Containment Hydrogen Monitor	0		22	X				X				X				PRPB/SICB/SPLB
II.F.2 Instrumentation for Detection of Inadequate Core Cooling	0 2 6		38	X						X				X		SICB/SRXB
II.G.1 Emergency Power for Pressurizer Equipment	0		14	X				X				X				SELB
II.K.1 IE Bulletins on Measures to Mitigate Small-Break LOCAs and Loss of Feedwater Accidents	0		14	X				X					X			SRXB
II.K.2.13 Thermal Mechanical Report--Effect of High-Pressure Injection on Vessel Integrity for Small-Break Loss-of-Coolant Accident With No Auxiliary Feedwater	0 1 6		38	X				X				X				EMEB
II.K.2.17 Potential for Voiding in the Reactor Coolant System During Transients	0 1 6		38	X				X				X				SRXB
II.K.2.19 Sequential Auxiliary Feedwater Flow Analysis	0		27	X				X				X				SPLB
II.K.3.1 Installation and Testing of Automatic Power-Operated Relief Valve Isolation System	0 1 6		22	X				X				X				SICB
II.K.3.2 Report on Overall Safety Effect of Power-Operated Relief																

SER TABLE OF CONTENTS	SER/SSER #	CORRESPONDING FSAR SECTION	ADDRESSED IN FSAR AMEND #	FSAR CHANGES SUBSEQUENT TO LATEST SSER				FSAR REVIEW REQUIRED				SSER RE-WRITE REQUIRED				REVIEW AREA
				NO	YES			NO	YES			NO	YES			
					MIN	MOD	MAJ		MIN	MOD	MAJ		MIN	MOD	MAJ	
Valve Isolation System	0 1 6		22	X				X				X				SRXB
II.K.3.3 Reporting of Safety Valve and Relief Valve Failure and Challenges	0		52	X				X				X				EMEB
II.K.3.5 Automatic Trip of Reactor Coolant Pumps During LOCA	0 4 12		52	X						X						SRXB
II.K.3.9 Proportional Integral Derivative (PID) Controller Modification	0		14, 66						X				X			SICB
II.K.3.10 Proposed Anticipatory Trip Modification	0		14	X				X				X				SICB
II.K.3.11 Justification of Use of Certain PORVs	0 1 6		14	X				X					X			EMEB
II.K.3.12 Confirm Existence of Anticipatory Reactor Trip Upon Turbine Trip	0		14	X				X				X				SELB
II.K.3.17 Report on Outages of ECCS; Licensee Report and Proposed Technical Specification Changes	0		14	X				X				X				SRXB
II.K.3.25 Effect of Loss of AC Power on Pump Seals	0		14	X				X				X				EMEB
II.K.3.30 Revised Small-Break LOCA Methods To Show Compliance with 10 CFR 50, Appendix K	0 4 12		38, 50					X				X				SRXB
II.K.3.31 Plant-Specific Calculations To Show Compliance with 10 CFR 50.46	0 4 12		38, 60							X				X		SRXB
III.A.1.1 Upgrade Emergency Preparedness	0 1 3 6		14	X				X				X				PEPB
III.A.1.2 Upgrade Emergency Support Facilities	0 1 3 6		27, 68							X				X		PEPB
III.A.2 Improving License Emergency Preparedness--Long Term	0 1 3 6		14	X				X				X				PEPB
III.D.1.1 Integrity of Systems Outside Containment Likely to Contain Radioactive Material	0 4		52	X				X				X				SPLB
III.D.3.3 Improved Inplant Iodine Instrumentation Under Accident Conditions	0 6		51, 66						X				X			SPLB
III.D.3.4 Control Room Habitability Requirements Attachment 1: Information Required for Control Room Habitability Evaluation	0		56	X				X				X				SPLB

ENCLOSURE 2

SECTION 1 - INTRODUCTION & GENERAL DESCRIPTION OF PLANT

1.1
- Staff needs to revise the Introduction to reflect change in ownership, CP amendments, and corrective action programs.

1.2
- Staff needs to update the general facility description.
- The FSAR contains a new general description of the fire protection system.
- General descriptions follow more specific descriptions in later sections.

1.3
- Staff needs to revise discussion on comparison of CPSES with similar facility designs.
- This FSAR section has been revised to be consistent with other, later FSAR sections.

1.4
- Gibbs and Hill is no longer the AE for CPSES. The SER needs to be revised to reflect the change of contractors and agents.

1.5
- Staff needs to update the discussion of principal review matters.

1.6
- Staff needs to describe modifications made to CPSES since SSER 12.

1.7
- Staff needs to update the Summary of Outstanding Issues.

1.8
- Staff needs to update the Confirmatory Issues listing.
- SSER 12 incorrectly states that Item I.C.5 was resolved in SSER 1. This item was resolved in SSER 6.
- SSER 12, Confirmatory Issue (10)m incorrectly references 10 CFR 50.56 (should be 50.46).

1.9
- Staff needs to update the list of License Conditions.

SECTION 2 - SITE CHARACTERISTICS

2.2.2 ° The FSAR describes a non-redundant smoke detector configuration for the control room air intakes (SER states that redundant detectors are provided).

2.3.3 ° TU Electric will update the list of meteorological instruments and relocate the back-up met tower in a future FSAR Amendment.

2.3.4 ° The SER says "staff used RG 1.145 to calculate short-term accident releases." The FSAR says (1A(B)) that RG 1.145 is not applicable to CPSES.

2.4.3 ° The SER states that the applicants' estimate for the probable maximum flood with a volume of 110,200 acre-ft, results in a discharge of 149,000 cfs. The FSAR states that the PMF, with a volume of 118,376 acre-ft, results in a discharge of 142,576 cfs.

° The SER discusses a 36-ft flood wave on the Brazos River from failure of DeCordova Bend Dam. The FSAR discusses consequences of this dam failure in terms of a 37-ft flood wave.

2.4.5 ° Section 2.4.11 of the FSAR contains the functional description of the safe shutdown impoundment low level alarm. This alarm provides no safety-related function and may be changed from time to time to correspond to lake level management efforts.

° The FSAR (Section 9.2) has increased the estimated maximum pond-return temperature from 113.2°F to 115°F.

2.4.6 ° TU Electric has submitted a post-construction groundwater monitoring program (FSAR Section 2.5.4.13) for staff review and approval.

° There is no basis in the FSAR for the SER statement that all backfill is at elevations greater than 789.7 ft.

2.4.7 ° The FSAR Section 2.4.12 incorporates the results of a reanalysis using a more conservative source term taken from the Westinghouse Radiation Analysis Design Manual, Rev. 5.

° The FSAR now reflects that the minimum release of water to Squaw Creek from Squaw Creek Reservoir is controlled by a permit from the Texas Department of Water Resources.

2.4.9 ° TU Electric has taken some minor exceptions to RG 1.59 (p. 1A(B)-26).

2.5 ° As a result of the SWEC validation effort of design basis documents (including Dames and Moore) relating to geology and seismology, Section 2.5 has been reorganized and reworded to support the new information made available from the review of existing design documents and the development of new design studies. These changes affect text, tables and figures.

° TU Electric has taken exceptions to RG 1.60 (listed in 1A(B) and 1A(N)).

2.5.1
- The FSAR does not support the SER conclusion that the closest faulting is approximately 6 miles from CPSES (this may represent the staff's own conclusions).
- The FSAR does not discuss the potential for subsidence as a result of natural gas production (this may represent the staff's own analysis).

2.5.4
- The FSAR does not support the average permeability of 17.63 ft/day in the Twin Mountains formation.
- The SER is not consistent with the FSAR with regard to results of unconfined compression tests (Table 2.5.4-1).
- The FSAR has been revised to add a permanent drainage system under the turbine building to handle in-leakage due to perched water collected at the foundation exterior.
- The SER is not consistent with the FSAR with regard to total and differential settlements (FSAR Table 2.5.4-7).
- The SER cites compression and shear velocities at the foundation level that are slightly below the range of values listed in FSAR Table 2.5.4-5H.
- The FSAR has deleted the discussion of the static lateral loads on vertical walls assuming equivalence to fluid pressure and densities of 56.0 pcf and 89.5 pcf for submerged and unsubmerged conditions, respectively.

2.5.5
- The SER needs to be revised to reflect changes in the method for determining the safety factor for the stability of slopes (assumed clay stone characteristics not found in FSAR).

2.5.6
- The SER states that four passes of a 10-ton vibratory roller were made to establish compaction of the rockfill embankment material during construction. The FSAR states that up to six passes were made (2.5.6.4.4).
- The SER states that the average in-place dry density of the rockfill material was 120 pcf. The FSAR states that the average inplace dry density was 125 pcf.
- The SER states that core material must have dry density greater than 95% between 4% below and 1% above the optimum moisture content. The FSAR states, "Strength properties were determined...at moisture contents ranging from 1% below optimum to 3% above optimum..." (2.5.6.4.3).
- Errata did not pick up FSAR "Appendix 2.54" which should read "Appendix 2.5A" (p. 2-37 of SER).
- The FSAR states that surface alignment monuments and piezometers will be surveyed periodically, rather than annually as stated in the SER (SER p. 2-39, FSAR p. 2.5-202).
- The FSAR has deleted all reference to Gibbs and Hill procedures.

SECTION 3 - DESIGN CRITERIA FOR STRUCTURES, SYSTEMS AND COMPONENTS

3.1 ° The requirement to use N-5 data report forms has been relaxed to using ASME Data Report Forms generally.
° The SER needs to be revised to reflect new design basis which incorporates leak-before-break methodology.

3.2.1 ° The Uninterruptible Power Supply (UPS) Area Air-Conditioning System has been added to the Seismic and Q-lists in the FSAR (includes changes to Table 3.2-3, Sheet 5 and Table 17A-1).

3.2.2 ° The FSAR now exempts Class 5 air-filled copper tubing up to 4" in diameter from consideration as to impact on Seismic I systems (lighter and has less potential for damage than 2" steel pipe which was basis for analysis).
° The FSAR now includes "NC-3200" quality standards requirements for Safety Class 2 pressure vessels, as this quality standard was used for the Safety Injection Accumulator Tanks.
° The FSAR now provides for use of later optional Code revisions (including code cases) in accordance with the requirements of 10 CFR 50.55a.
° The SER incorrectly states that all Class 2 components in fluid systems important to safety are constructed in accordance with Section III of the ASME Code. Table 3.2-1 lists steel-lined concrete storage tanks that are Safety Class 2 as being constructed to ACI-318, vs. ASME-III.

3.3.1 ° The design wind force on a rectangular structure has changed from 7Q to 8Q.
° The gust factor for Category 1 tanks has changed from "1.1" to "1.3" per ASCE Paper 3269.

3.3.2 ° The FSAR has had minor changes to modify description of tornado dampers and blowout panels and doors.
° There has been a design change for all seismic Category 1 structures (now designed to withstand a 360 mph tornado).
° The SER needs to reflect that an exception is taken to RG 1.76 (Section 1A(B) page 1A(B)-49) in that 1 psi pressure drop per second is used for design rather than 2 psi/sec.

3.5.2 ° Staff needs to review compliance with tornado-generated missile criteria of Spectrum II, Region I (used to be 1975 missile spectrum A).
° The FSAR has added Class 1E appurtenances to the FW Control Valves and their associated bypass valves to list of safety-related components not contained within a concrete structure (response to Q312.22).
° List of Class 1E appurtenances on p. 3.5-22 are not protected from tornado missiles. Credit is taken only for the valves for FWLBs and MSLBs inside containment. These pipe ruptures are not postulated to occur simultaneously with a tornado.

3.5.3 ° The FSAR has defined the ductility criteria for steel columns with a slenderness ratio greater than 20 in order to determine the overall response of structural barriers to missile impact.
° The SER needs to reflect that the applicant has submitted information confirming design adequacy of steel and reinforced concrete missile barriers over the diesel fuel storage tanks (as stated on p. 3-10 of the SER).

3.6.1 ° The FSAR has been revised for Reactor Coolant Loop piping to reflect leak-before-break methodology.
° The SER needs to reflect that some items of equipment required for shutdown have been relocated as a result of the flooding evaluation associated with pipe breaks.
° Staff needs to review the FSAR reference to the ASME Code for determination of minimum ultimate uniform stress for pipe whip restraints.
° Staff needs to review and approve TU Electric's request to apply leak-break methodology to specific branch lines (TXX-88382).

3.6.2 ° Location of hinge and direction of pipe movement due to a pipe break has been reviewed by staff and documented in IR 50-445/87-37 and 50-446/87-28.
° The FSAR has been revised for Reactor Coolant Loop piping to reflect leak-before-break methodology.
° The FSAR now states that the RCS HELB's were postulated per ASME Code 1977 Edition through Summer of 1979 (previously used 1974 Edition through Winter 1974).
° Staff needs to verify the acceptability of methodology for choosing intermediate break locations.
° The SER needs to reflect that GL 87-11 and NRC letter of 10/13/87 have approved elimination of arbitrary intermediate breaks.
° The FSAR has redefined the break exclusion area inside containment.
° The FSAR has replaced RELAP-3 with RELAP-5 and PLOTR with CALPLOTF computer codes.
° Computer codes SHPLAST 2267 and AQABUS-ND have been added to supplement PIPERUP.
° A number of FSAR figures have been revised to reflect newest break locations based on stress analysis.

3.7.1 ° TU Electric has taken an exception to RG 1.61 by using Code Case N-411 damping values for piping systems using the response spectrum method (also, stress problems will be identified).
° The text and figures for horizontal and vertical response spectra and artificial time history have been revised to reflect that five damping values have been used for one earthquake, rather than five separate earthquakes, as previously implied.

3.7.2 ° The staff needs to review seismic design for service water intake (new structural model including techniques used to generate stiffness properties and foundation response), including Tables.
° The staff needs to review the use of techniques to generate stiffness properties for seismic Category 1 tanks (FSAR now uses standard structural techniques, i.e., hand calculation, not finite element analysis).

3.7.3 ° The FSAR now employs the more conservative methodology of NUREG/CR-1161 to account for modal contribution above cutoff frequency.

° The FSAR has reduced the number of maximum amplitude loading cycles for the OBE from 600 cycles to 50 cycles and from 120 cycles to 10 cycles for the SSE for ASME Code Class 2 and 3 piping systems only (now consistent with NUREG-0800).

° The equivalent static load method and simplified design method SER) for analysis of Class 2 and 3 piping systems are both based on static seismic analysis (so should not be listed as separate methodologies on p. 3-17, SER).

° The FSAR has changed the superstructure response spectra for the steam generator support (previous figures have been superceded).

° The FSAR has changed the description of treatment of torsional effects of eccentric masses in piping analysis.

° FSAR Figures 3.8-7 & 3.8-9 have been revised to reflect the as-built configuration.

° The statement in the SER that "load combinations in FSAR are more conservative than those specified in SRP 3.8.1" is no longer true (R100.28).

3.8.1 ° The FSAR now lists exceptions to CC-2000 of ASME Code Section 3, Div. 2 with regard to concrete materials.

° The criteria in Section 11.10.3 of ACI 318-71 was used for punching shear (1973 revision of ASME/ACI 359 did not address punching shear).

° The criteria in Appendix A of the ACI 349-76 Code was used in determining thermal stresses (ASME/ACI-359 does not provide guidance in determining thermal stresses and ACI 307 is not applicable to the concrete containment structure).

° The staff needs to verify acceptability of an exception to AISC Specification Table 1.23.5 for pretensioning of high strength bolts (for example in thermal connections to allow movement between the connected parts).

° The staff needs to review the use of NB-2432 in lieu of CC-2612.2 for chemical analysis of weld metal test.

° The staff needs to review the use of 1100 aluminum to be used as a flux without a chemical analysis of each batch, as stipulated by CC-2623.2

° The staff needs to review the use of alternate methods and requirements (Charpy V-Notch impact test temperatures; CPSES preheating requirements; stud welding equipment) to meet intent of the ASME code.

° The staff needs to review the use of alternate non-destructive examination and acceptance standards.

° The FSAR has changed the description of the design and analyses procedures used for the concrete containment structure based on the reanalysis performed as part of the design validation for CPSES.

° The FSAR has taken an exception to the 1973 Edition of ASME Code Section III, Div. 2, Subsection CC (CC-3750) for UT examination of the liner plate in the vicinity of attachments.

° The FSAR has revised load equations and acceptance criteria to be consistent with RG 1.57.

° The staff needs to reference the applicable ACI or AISC specification in the writeup for this SER section.

3.8.2
- The staff may want to include Primary Loop Compartment Walls, which is another major element for the containment internal structures, in the SER for this section.
- The FSAR has revised the discussion of load combinations for polar crane derailment.
- The criteria in Appendix A of the ACI 349-76 Code were used for determining thermal stresses (ASME/ACI-359 does not provide guidance for determining thermal stresses and ACI 307 is not applicable to the concrete containment structure).
- The FSAR has included "Specification for Structural Joints using ASTM A325 or A490 Bolts" as an applicable code.
- The FSAR has changed the description of the design and analysis procedures to correct inconsistencies and reflect new methodologies for structures inside containment which were used during design validation activities.
- The staff needs to reference applicable ACI or AISC specifications for this SER section.
- The FSAR has removed reference to Appendix A of the ACI 318-71 Code (ACI 318 is intended for commercial buildings).
- The FSAR has included a provision for the standard detail for development of reinforcement using a 90° hook not being in accordance with Chapter 12 of ACI 318-71 (exception based on test data similar to ACI 318-83 reduction of development length).

3.8.3
- The FSAR has revised the discussion for outdoor seismic Category 1 tanks to clarify text and make discussions consistent with analysis done in design validation effort.
- The FSAR has revised the technical discussion regarding design and analysis procedures to make discussion consistent with analysis done in the design validation effort (other seismic Category 1 structures other than tanks).
- The FSAR has included alternative design criteria used for brackets and corbels when considering shear stress.
- The staff needs to review the treatment of masonry block walls (R130.36).
- VWAC (visual weld acceptance criteria) for uncoated welds were accepted by staff. The staff needs to review sample inspections (TXX-6909 dated 11/20/89).
- The staff needs to reference the applicable ACI or AISC specification for this SER section.

3.8.4
- The SER needs to address how the issue of seismic gap was addressed by the CPRT.

3.9.1
- Need to reflect that SSER 14 addresses non-NSSS piping up through FSAR Amendment 61.
- The SER needs to be revised to address the elimination of primary coolant loop breaks as they affect the design basis for mechanical systems and components (as a result of leak-before-break).
- The FSAR has revised the values used for percentage damping for reactor coolant pump seismic analyses (change from 4% to 2% damping).
- The FSAR has now removed the restriction that prevented the use of plastic analysis for code components.

3.9.2 ° The preoperational vibration and dynamic effects testing program needs to be reviewed.

3.9.3 ° The acceptability of stainless steel joints and elbows was reviewed and accepted in SSER 14.
° The active valve list (Table 3.9N-10) has been updated to reflect current plant valve operability requirements.
° The steam generator summary stress table (Tables 3.9N-14 through 3.9N-19) have been updated to reflect the latest revision of the stress report for RCS equipment supports.
° Table 3.9N-21, maximum stresses in the reactor coolant loop piping, has been provided in response to Q112.14.
° Need to revise the SER to reflect use of code cases N-318, N-397, and N-411 in the design of piping and pipe supports.
° The SER needs to reflect use of SRSS method in place in absolute summation method for confirming peak dynamic responses of piping systems due to seismic, LOCA and occasional loads.
° Methodology for combination of dynamic pipe loads for components employs the SRSS method endorsed by NUREG-0484, Rev. 1.
° The FSAR has imposed additional requirements to the analysis of certain essential systems to ensure operability during and after a plant accident condition (reviewed and approved by SSER 14).
° The FSAR now contains additional details on the design consideration of a closed system.
° The FSAR now allows AISC supplement for analyzing structural tubing utilized in instrument impulse tubing supports.

3.9.6 ° The FSAR has revised the active valve list in Table 3.9B-10 to reflect current plant valve operability requirements.
° Several tables have been revised to reflect deleting the SSE from the emergency condition, and define SSE in the Faulted condition.
° The FSAR has revised several BOP systems to provide overpressure protection by adding relief valves.
° The IST program for pumps and valves needs to be reviewed.

3.10 ° The FSAR has removed the AC essential lighting system and DC emergency lighting system from the list of seismic Category 1 instrumentation and electrical equipment which require seismic qualification.
° The FSAR states that frequency analysis may be used for design in place of the "g" peak (for tray supports).
° JIOs for ID no. ESE-40 and ESE-XX (SSER 12) are no longer applicable because these items will be qualified.

3.11 ° The values for temperature, pressure and humidity conditions inside and outside containment have changed (Appendix 3A Figs. 4.1 4.2, and Appendix 3A Table 4-1) for both harsh and mild environments.

- ° Need to clarify the SER to reflect that only certain equipment and components in turbine building (not whole turbine building) have been evaluated for harsh environment following HELBs (Appendix 3A Table 4-1).
- ° Evaluation is in progress to determine proper flood elevation inside containment (SDAR 88-15).
- ° For chemical spray, spray pH and composition have changed (pH of 8.5 - 10.5 and concentration less than 2,100 ppm).
- ° TU Electric has committed to the 1976 version of ANSI N18.7-1976 (vice 1972).
- ° Need to evaluate changes in equipment radiation levels inside and outside containment (Table 4-1, Appendix 3A). SER now presently evaluates two radiation levels.
- ° The SEP needs to reflect that TU Electric has committed to having all safety-related electrical equipment qualified prior to OL (no more JIOs).
- ° The SER needs to delete Table 3.2 (listing of electrical equipment with JIOs).
- ° The staff may want to consider deleting Table 3.3 from SSER 6 and reference the master equipment list instead.
- ° The SER needs to correct Confirmatory Issue (14) to Confirmatory Issue (18) (SSER 12, p. 3-19).
- ° The MSLB superheat issue is still open.
- ° CPSES now uses IEEE STD 450-1980, vice 1975 version, for compliance with RG 1.129.
- ° The SER needs to evaluate definition of, and program for, mild environment.
- ° CPSES now uses Cs-137 as well as Co-60 as test sources (in accordance with RG 1.89 Rev. 1).
- ° Mechanical Equipment review for environmental effects submitted by TXX-4420 dated 2/15/85.

4.2.3 ° The SER should reflect installation of the loose parts monitoring system.
° The SER incorrectly states that WCAP-8692, has not been approved for use in licensing.
° The FSAR (and proposed TS limits) indicates a 9.1% DNBR penalty for fuel rod bowing at 33,000 MWD/MTU.
° The staff needs to confirm that guide thimble tube wear for Salem 17 x 17 fuel resolves the issue for CPSES.

4.2.4 ° The FSAR has deleted the requirement for a humidity check during receipt of fuel.
° The FSAR has changed the methodology for rod drop tests (FSAR Table 14.2-3).

4.3.2 ° Figure 4.4-10, concerning CAOC strategy, will be revised in a future FSAR amendment.
° SER and FSAR discussions of use and functions of control rods and chemical poison are inconsistent.
° The SER cites neutron flux at CPSES wall as 2.8×10^{10}. The FSAR gives a neutron flux of 2.08×10^{10}.

4.3.3 ° FSAR Tables 4.3-3A and 4.3-3B have been revised to reflect typical reactivity parameters for RCCA.

4.4.1 ° The SER references an incorrect date for a letter describing future fuel cycles. The date should be 10/5/81 (not 10/2/81).

4.4.3 ° FSAR Table 4.4-1 has been revised subsequent to Table 4.1 of the SER.
° The FSAR has changed the description of testing methodology for reactor coolant flow measurement.

4.5.1 ° The FSAR commits its material specification to ASME Code, Section III, Appendix I, or equivalent. The SER cites Section III, NG-2000 and Section II, Parts A, B and C.

4.5.2 ° The FSAR commits its material specification to ASME Code, Section III, Appendix I, or equivalent. The SER cites Section III, NB-2160 and NB-3120 for control rod components.

4.6 ° The SER and FSAR discussions of use and functions of control rods and chemical poison are inconsistent.

SECTION 5 - REACTOR COOLANT SYSTEM

5.2.1	°	The staff needs to review code cases on Safety Class 1 components within the RCS pressure boundary (response to Q005.4).
5.2.2	°	The staff needs to review the temperature at which accumulator lock-out is required.
5.2.3	°	The FSAR has revised the ASME Code edition applicable to reactor coolant piping by updating the Summer '74 to Winter '75 edition.
5.2.4	°	The staff needs to review the ISI of Class I systems (Subsection IWF is added to IWB).
5.2.5	°	The staff needs to review the method for determining the sump level alarm setpoint.
5.3.2	°	The FSAR has provided the end-of-life reference temperature for reactor vessel beltline material.
5.4.2	°	The staff needs to review eddy current testing of steam generators.
	°	The staff needs to review the description of heat treatment and shot peening of Unit 1 steam generator tubes.
5.4.3	°	The RHR cooldown analysis was redone using SWEC revised heat loads and service water temperatures.
	°	The staff needs to review TU Electric's response to GL 87-12 on RHR pump vortexing during mid-loop operation (TXX-6749 dated 9/18/87).
	°	The staff needs to review the applicability of the natural circulation test at Diablo Canyon to CPSES (FSAR Appendix 5A).

SECTION 6 - ENGINEERED SAFETY FEATURES

6.1.1	°	The staff needs to verify acceptability of the use of designated material for ESF piping.
6.1.2	°	This section needs to cross-reference the SSER 9 evaluation of containment coatings (Appendix L).
	°	Need to reflect staff review and approval of TU Electric program for containment coatings performance (TXX-4491, TXX-4613, TXX-4653, TXX-6157 - NRC letter dated 3/24/87).
6.2.2	°	The FSAR has taken an exception to ANSI N45.4 by using the alternate methodology of ANSI/ANS 56.8-1981 for ILRT (similar changes in NRC letter dated 8/23/84 and SSER 12, Section 6.2.5).
	°	The staff needs to review NPSH curve for the containment spray system.
6.2.3	°	The FSAR has added the pressure at which the water test (Pa) is to occur.
	°	The FSAR has changed the operation of MSIV bypass valves to local manual (ref. TU Electric letter of 12/8/86 in response to RAI of 2/27/86).
	°	The FSAR has changed the isolation criteria for turbine-driven auxiliary feedwater pump warm-up bypass lines.
	°	The FSAR has deleted the requirement to leak test relief valves as an isolation boundary if they relieve into containment.
	°	Local vent, drain and test connection valves are not included on FSAR list but have special measures to ensure that containment integrity is maintained.
	°	The staff needs to review the acceptability of a pressure gauge between containment isolation valves.
	°	The staff needs to review the acceptability of thermal relief valves as a containment boundary.
	°	The FSAR has changed Section 9.4A concerning the design pressure of this containment pressure relief system to 1.5 psig to be consistent with the containment design pressure criteria.
6.2.4	°	The staff needs to resolve the inconsistency between the FSAR and SER on model used for zirc-hydrogen reaction (1.5% vs 5%).
6.2.5	°	The FSAR has provided the alternate methodology for ILRT of ANSI 56.8 (similar changes accepted by staff in letter of 8/28/84 and 6.2.5 of SSER 12).
	°	The staff needs to review the exemption request of 1/20/86 for a personnel airlock testing exemption to Appendix J.
6.3.2	°	The FSAR has changed the power supply for accumulators (breakers now locked out, vice control room key lock switch).
6.3.3	°	The RWST alignment in Modes 5 and 6 needs to be reviewed.
6.4	°	The staff needs to verify acceptability of chlorine inleakage in the plant-specific analysis (800 cfm results in 0.125 inch water gauge over-pressure).
	°	The FSAR has taken an exception to RG 1.95 (i.e., don't assume concurrent LOCA and chlorine release).

6.5.1 ° The FSAR has taken alternates to positions in RG 1.52 which the staff needs to review.

6.5.2 ° The staff needs to review the acceptability of a 2-region (sprayed, unsprayed) vs. 3-region containment spray model.

6.6.1 ° The FSAR has incorporated the requirement to perform an augmented ISI in superpipe area.

6.6.2 ° The FSAR has incorporated the requirement to perform augmented ISI in superpipe area.

SECTION 7 - INSTRUMENTATION AND CONTROLS

7.1.2 ° The staff needs to review additions to the list of equipment that will not be tested during operation (exception to RG 1.22).
° The staff needs to review changes to FSAR Tables 7.1-1 and 7.1-2.

7.2.1 ° TU Electric has committed to submit N-16 transit time flow meter performance data collected during Cycle 1 to NRC.
° The operation of MSIV bypass valves has been changed from MOV to local manual control.
° Staff needs to review TU Electric's letter (TXX-4546 dated 9/5/86) which discusses 1.8% accuracy of transit time flow meter.

7.2.3 ° Need to add CCW supply and return isolation valves to SER list of equipment that cannot be tested at full power.

7.2.7 ° TU Electric has added a new section to the FSAR (Section 7.8) to describe the AMSAC system in response to 10 CFR 50.62.

7.3.1 ° The FSAR has updated/corrected Table 7.3-4. (Staff needs to confirm adequacy.)
° The FSAR has deleted the AFW pump low suction trip.
° Need to correct characterization of when motor operated isolation valves for chemical feed to containment spray open (no basis in FSAR for 2 minutes stated in SER).

7.4.2 ° The FSAR has added an additional fire to be analyzed for shutdown from outside the control room.

7.5.2 ° The FSAR has added RCS subcooling as a Type A Category 1 variable (relied on in EOPs).
° The FSAR has added more deviations to RG 1.97, Rev. 2 variables (Table QO 32.110 and 7.5 tables and text).

SECTION 8 - ELECTRIC POWER SYSTEMS

8.1
- The SER should add a description of the two new startup transformers, new transmission line, and reflect change in utility name.
- CPSES will use IEEE Standard 450-1980, vice 1975 version, for compliance with RG 1.129.
- The SER should change the description of the classification of AC Essential Lighting System and DC Emergency Lighting System from 1E to non-class 1E.

8.2.1
- This section needs to be rewritten to revise description of transmission lines to reflect addition of the Comanche Peak to Comanche Switch transmission line.
- The SER needs to clarify the preferred and alternate power supply for 1E and non-1E.
- CPSES no longer back-feeds 1E buses through the main transformer (can backfeed with non-1E buses), therefore, a third 8-hour source is not available.
- The SER should clarify that the spare startup transformer is not intended as a backup power source.
- Not all control for switch yard circuit breakers is in the control room (air switch associated with space transformer is local).
- Discussion of alarms for voltage drop or rise will be rendered inaccurate due to future validation of new voltages resulting from new offsite power source modification.
- The SER incorrectly describes the worst case loading condition.
- The SER discussion on overloading of startup transformers is no longer valid since the new design (addition of two new startup transformers) prevents overloading of the startup transformers.

8.2.2
- The SER needs to clarify that periodic testing of the automatic transfer scheme will be specified in TS, based on the refueling cycle.

8.2.3
- The SER should document that installation of the new transmission line and new startup transformers has not invalidated original conclusions of grid stability analysis.

8.2.4
- The SER discussions of voltages, testing and load shedding at safety related buses will need to be updated to reflect the new design (i.e., two new startup transformers).

8.3.1
- The SER needs to reflect installation of the emergency evaluation system warning lights.
- The SER needs to state that Section 8.4.4 will contain detailed evaluations of splices and separation issues.
- The SER incorrectly implies that all instrument buses individually have two incoming circuit breakers to power the loads from either the SUPS or from the bypass transformer directly, while this only applies to the "most upstream" 118 VAC instrument buses and the bypass is via the bypass distribution panelboard
- The SER incorrectly states that all safety-related Class 1E motors "... are designed to accelerate their driven loads with 80% of the motor-rated voltage..." when it should say they are designed to be capable of accelerating their driven loads with 80% of the motor-rated voltage available, since some motors are more conservative (such as the 70% starting voltage capability of the 250 HP Spent Fuel Pool Cooling Water Pumps).

8.3.1 (continued)

- Need to rewrite the SER to reflect new bus arrangement resulting from the installation of the two new startup transformers.
- The AC essential lighting has been reclassified to non-1E (detailed evaluation in Section 9.5.3).
- FSAR corrections have been provided for 120 VAC panels.
- Time constraints on operation of a unit on alternate source are now controlled by TS rather than RG 1.93.
- Updated information on qualification of Class 1E electrical equipment will be discussed in Section 3.11.
- The SER should note that electrical penetration assemblies have been changed out as a result of a 10 CFR 50.55(e) report (replaced Bunker-Ramo EPAs with Conex EPAs). Section 8.4.1 contains a detailed evaluation.
- Have powered three new instrument air units to improve reliability of instrument air system (used for EDG airstart).
- Need to rewrite section on EDG periodic testing and load sequencing to clarify previous SER description and reflect changes to load sequencer logic.
- Need to cross-reference 8.4.7 for acceptability of EDG load sequencer.
- Need to clarify that the Safety System Inoperable Indication panel is activated by inoperability of an EDG support system.
- Need to reflect that the EDG is also rendered inoperable by the control room hot standby selector switch in the hot standby position on transfer panel.
- Need to evaluate FSAR revision changes which clarify control of AC circuits/systems (synchronism check relay, 30-second delay, control switch location, location of ammeters, EDG selector switches).
- Need to correct misstatement in the SER that EDGs are located in separate seismic Category 1 structures (EDGs are really in separate rooms).
- TU Electric has committed to RG 1.9 with an exception, which should be noted.
- The SER needs to reference the Grand Gulf prototype testing of TDI diesels.
- The SER needs to accurately list and describe the configuration of static uninterruptible power supplies and uninterruptible power supplies.
- The SER needs to clarify the grounding scheme for the 6.9 kV power supply.
- Staff needs to review changes to 6.9kV & 480V load tables (Tables 8.3-1a, 8.3-1b, 8.3-2, 8.3-8 & 8.3-9).

8.3.2

- The SER needs to correct the characterization that DC breakers are mechanically interlocked rather than electrically interlocked.
- The SER should indicate that DC emergency lighting has been reclassified to non-1E (detailed evaluation in Section 9.5.3).
- The SER incorrectly states that each Class 1E 125V battery is located in a separate seismic Category I room when it should state that each <u>train</u> of Class 1E 125V batteries are located in a separate seismic Category I room.
- Staff needs to review DC load tables changes (Tables 8.3-4 through 8.3-4c).
- Staff needs to review failure and effects analysis changes (Table 8.3-7).
- The SER does not accurately address number and redundancy of DC battery systems.
- The SER discussion of batteries and associated buses is incomplete.
- The SER needs to restate the design basis for battery recharge (now based on a 12-hour recharge).
- Although the FSAR never specifically mentions how Comanche Peak meets GDC 5, the SER concludes GDC 5 is met.

8.4.1
- The SER needs to reflect the change in the containment electrical penetration protection scheme.
- The SER needs to reflect that Bunker-Ramo EPAs have been removed and replaced with Conex EPAs.
- FSAR Figures 8.3-18 through 8.3-45 have been deleted. This information is now on file at the site.
- The SER should summarize the PSR-related issue on DC control power from different sources (Electrical PSR, Appendix A Item 10).
- The SER needs to be corrected to indicate that class 1E motor operated valve motor starters less than 0.66A use fused disconnect switches (SDAR CP-87-54).
- Staff should reconcile selection of three items from lengthy list concerning primary backup protection for containment electrical penetrations.
- Periodic testing of penetration protective devices is controlled by TS (3/4.8.4.2).

8.4.2
- Thermal magnetic breakers are no longer used for class 1E motor-operated valve motor starters less than 0.66A (SDAR CP-87-54)

8.4.3
- Need to correct the SER misstatement that redundant valve position is provided.
- Need to reflect that power lockout MOVs and their required positions are included in TS.

8.4.4
- This section needs to be completely rewritten to reflect change in separation criteria (for both power and I&C cables) based on testing analysis.
- Need to include discussions of splices in raceways (Appendix 8A).
- Staff needs to review 1E - non-1E interface for the EDG grounding transformer (analysis to support exception to RG 1.75).
- The FSAR has revised minimum separation criteria for distribution panels in cable spreading room (used raceway separation criteria).
- The FSAR has reclassified AC essential and DC emergency lighting to non-1E (needs to be reviewed for separation).
- TU Electric has taken an exception to RG 1.75 for components in cable spreading room/control room complex.
- The SER needs to address acceptability of fiber optic cable separation.
- The SER needs to address acceptability of Glastic boards as barriers within control panels.
- Staff needs to review the description of separation for NSSS and BOP inverters (new FSAR Table 8.3-10).
- Staff needs to review the acceptability of cable tray construction gaps.
- SER incorrectly implies on page 16, paragraph 4 that only a single battery exists instead of a train of batteries.
- Need to review the change in description of non-class 1E security lighting.
- Need to review the description of how to confirm operability and qualification of I&C splices inside cabinets, racks and panels.
- A future amendment to Appendix 8.A will restrict use of PIES splices to mild environment.
- Need to revise the SER discussion of color coding of cables.
- Need to recharacterize the SER description of electrical switchgear train separation to reflect separation by distance, rooms and structures (not just elevation).

Section 8

8.4.5 ° Need to revise the description of separation for NSSS and BOP inverters (new FSAR Table 8.3-10).
° The FSAR has reclassified AC essential lighting to non-class 1E.
° The FSAR has revised the description of how non-class 1E electrical loads are connected to class 1E buses (new FSAR Table 8.3-11).
° Need to clarify that there are more than the six loads listed in the SER which are disconnected by a SI signal.
° Need to revise discussion on isolation transformers and isolation between 1E and non-1E control circuits.

8.4.6 ° Staff needs to review the criteria for cable fill with respect to heat generation.
° Staff needs to review the criteria for cable fill with respect to proper application of fire barriers.
° The SER incorrectly implies that all control functions are "transferred" to the Hot Shutdown Panel (some control circuits or instrumentation necessary to effect hot shutdown are just "isolated" from the control room, allowing control of critical components from outside the control room).

8.4.7 ° The SER needs to be rewritten to properly characterize the configuration of sequencers (2 sequencers in one cabinet, vice one sequencer).

9.1.1 ° The procedures have been changed so that inspected fuel elements will be stored without poly bags.

9.1.2 ° The SER needs to be made consistent with the FSAR description of spent fuel pool capacity at time of licensing for Unit 1.

9.1.3 ° The FSAR adds GDC 1 as it applies to safety-related portions of the spent fuel cooling and purification systems.

° The FSAR deletes GDC 3, as the fire protection program does not apply to this system.

° The FSAR adds GDC 56 as it applies to the containment isolation portion of the system (for the skimmer line).

° The FSAR adds GDC 61 as it applies to this system for capability of periodic testing, provisions for containment of radioactivity, decay heat removal from the spent fuel, reduction in fuel storage inventory under accident condition, and purification of the pool water.

° The FSAR adds GDC 63 as it applies to the monitoring systems to detect loss of heat removal, excessive radiation levels, and for initiating appropriate safety action.

° The FSAR adds the "wet cask pit" to the list of components served by this system.

° The FSAR deletes one loop operation for case no. 1, as a single active failure needs not be postulated for full core unload (SRP 9.1.3).

° The FSAR has been revised to reflect a change in sampling frequency of the RCS and refueling canal for boron from every 72 hours to daily (FSAR 9.1.4.2.2).

° There have been a number of changes to FSAR Table 9.1.3 to reflect changes in design, calculations and project specifications, and to reflect plant as-built conditions.

° The FSAR has revised Table 9.1.1 for decay heat produced, maximum spent fuel pool temperature and temperature rise to indicate the latest revised data based on a new calculation. Table 9.1.1 has also been revised to show the number of years after the plant is operational (instead of actual years), since the startup dates for Units 1 and 2 have been changed.

9.1.4 ° The FSAR corrects the text to read "2.5 mrem or less," as per Westinghouse radiation design manual SPM 4'2, Rev. 3 (decimal point was missing).

° The FSAR has deleted reference to WCAP 9198 (Reference (16)) because this report is not applicable to CPSES.

° The fuel building overhead crane has been reclassified as seismic Category I.

° The SER statement that both reactors will not be refueled at the same time is not supported by a commitment in the FSAR.

- The FSAR has revised the load combinations for the fuel building overhead crane to include OBE and SSE with lifted load. The loading combinations for the polar crane includes OBE with lifted load and SSE without lifted load.
- The FSAR now states that the polar crane has a maximum "critical" load of 175 tons (instead of "non critical").
- Contrary to SER p. 9-7, the FSAR states that the spent fuel handing tool and portions of the fuel transfer system components are not seismic Category I.

9.1.5 ° TU Electric has committed to implement any appropriate actions identified in Phase II of NUREG-0612 regarding the handling of heavy loads (TXX-4306 dated 9/24/84).

9.2.1 ° The FSAR deleted the SSW supply to the fire protection booster pumps, as the CPSES design no longer includes fire protection booster pumps. (SER needs to delete the reference to booster pumps and associated valves on pp. 9.8 and 9.9.)

- The SER needs to be revised to delete the SSW back-up source to the fire protection booster pumps, as SER Section 9.2.1, on p. 9-8, 1st paragraph indicates, the "SSW can be used as a back-up water supply for the fire protection booster pumps."
- The FSAR revised various SSW and CCW temperatures and time to cooldown on RHR (see discussion under FSAR Section 5.4.7).
- The FSAR has revised the system operating description to relect the operation of both SSW pumps to minimize the corrosion due to stagnation in the idle train under the previous mode of operation.
- The FSAR has added the use of a toxic non-oxidizing biocide for the control of Asiatic clams and corrosion inhibitor in the station service water system.
- The FSAR has been revised to reflect both pumps of Train "A" and Train "B" in operation to minimize corrosion due to stagnation.
- The FSAR has deleted Figure 9.2.2 which is replaced by Figure 9.1-1 for process flow and Figures 1.2-45 and 1.2-46 for equipment layout.
- The FSAR has deleted the epoxy-based lining in order to prevent sheet mode failure, which can plug safety-related heat exchangers served by SSW System.
- The SER needs to be revised to reflect that both trains of SSCO operate at all times to minimize corrosion (SER Section 9.2.1).
- The FSAR has revised the SSWS outlet temperature from 122°F to 130°F as a result of normal cooldown of one unit using 2 SSWS pumps and 2 SSWS heat exchangers to cool the RCS from 350°F to 140°F in 24 hours.
- FSAR Table 9.2.1 has been revised to: (1) add thermal relief valves for overpressure protection of systems as per the ASME Code Section III requirements; (2) reflect the deletion of the expansion joint and add a hard piece of pipe; and (3) add vacuum breakers to the service water system to prevent/mitigate water hammer in the system.

9.2.2 ° The FSAR has revised the time to cooldown on RHR and revised CCW temperatures (see discussion under FSAR Section 5.4.7).

° The FSAR has added a rotary instrument air compressor package for the non-safeguards loop to provide additional instrument air capacity.

° The FSAR has added the reactor coolant post-accident sampling system sample cooler to the list of the components cooled by the non-safety loop of the component cooling water system.

° The FSAR has deleted the low flow alarms for the control room air-conditioning condensers, as the cooling water flow is regulated by refrigerant pressure.

° The FSAR has clarified that CCWS pumps Trains A and B control switches are located on the hot shutdown panel. CCWS pump Train A transfer switch is located on the shutdown transfer panel and CCWS pump Train B transfer switch is located on the hot shutdown panel.

° The FSAR has added handwheels to the level control valves to the CCW surge tank, which provides the capability of providing the make-up water in the event of loss of instrument air to the control valves.

° The FSAR has revised the chilled water system by: (1) changing the CCW regulating valve automatic control, actuated by refrigerant pressure; (2) adding the accumulator back-up tank; and (3) adding valve handwheels for operator action.

° The SER (p. 9-10) refers to the CCW surge tank and drain tank atmospheric vent valves, which have been deleted from the FSAR.

° The FSAR has changed the valve status from "passive" to "active" on the CCWS inlet and outlet valves to the ventilation chiller and letdown chiller condensors, necessitating closure of these valves on an "S" signal (FV-4650A and B).

° The FSAR has upgraded the CCS flow instrumentation to class 1E to provide isolation of the CCW to the RCP thermal barrier following thermal barrier tube rupture. In addition, control grade alarms alert the operator to a potential rupture of the RCP thermal barriers.

° FSAR Table 9.2.3 has added additional corrosion inhibitors to the list of inhibitors to be qualified for use in the CCW system to provide a more effective corrosion protection program for the CCW system.

° FSAR Figure 9.2.3 has been revised to reflect existing system configuration based on the design validation program and to reflect the as-built system.

9.2.3 ° FSAR Table 9.2-9 has changed the analysis of demineralized water to reflect the latest water chemistry requirements for conductivity, chloride, fluoride and silica.

° FSAR Table 9.2-10 has changed the specification of reactor makeup water to reflect the latest water chemistry requirements for conductivity, chloride, fluride, TSS, TDS and silica. In addition, the footnote on oxygen concentration of the RCS has been revised.

° The FSAR has added a paragraph describing the provision of a demineralized water transfer pump which is the primary source of fire suppression water to the containment hose stations and the deluge piping in the charcoal section of the containment preaccess filters.

- The FSAR has added a demineralized water source to perform turbine generator primary flow rate testing during refueling outages.
- The FSAR has been revised to clarify that the required minimum quantity of water is available during normal plant operation to achieve and maintain safe, cold shutdown. This includes Modes 1 through 5 of the TS. A description of the systems that require a seismic Category I makeup supply has been added.
- The FSAR has corrected the discharge location for the water treatment system from the evaporation pond to the low volume waste treatment facility to make it consistent with FSAR Sections 9.2.3 and 9.2.8.
- FSAR Figure 9.2-5 has been updated to reflect as-built conditions.

9.2.4
- The FSAR has changed the sewage treatment plant capacity from 10,000 gpd to 105,000 gpd, revising the capacity of the treatment plant to reflect actual plant conditions.
- The FSAR has changed the requirement for drawing samples of potable water from several buildings to a single sample drawn daily, consistent with Texas Department of Health Drinking Water Standards, Section VI, paragraph A.
- The SER needs to reflect that the potable water system no longer serves as backup lubricating water for the circulating water pumps.
- FSAR Figures 9.2-6 and 9.2.7 have been revised to reflect as-built conditions.

9.2.5
- The FSAR has revised the basis for heat rates of cooling water discharged into the SSI from one train to two train operation (see discussion under FSAR Section 5.4.7).
- The FSAR has revised the basis of spent fuel pool heat loads (see description under FSAR Section 5.4.7).
- The FSAR has revised the temperatures for component cooling water and service water (see description under FSAR Section 5.4.7).
- The FSAR has revised the text based on the results from the revised safe shutdown impoundment heat load calculation, which uses maximum heat loads in lieu of gradient heat load during the duration of a LOCA period (accompanying FSAR Tables 9.2-11 and 9.2-14 and FSAR Figures 9.2-8 and 9.2-10 have been deleted).
- The FSAR has revised various component cooling water temperatures (see description under FSAR Section 5.4.7).

9.2.6
- The FSAR has modified the CST high level control, which prevents CST overpressurization in the event of condenser surge by isolating the makeup and reject line on CST Hi-Hi level. The condenser hot well is designed to the postulated surges in the event of CST high level.
- The SER (Section 9.2-6, p. 9-14), needs to be revised to delete the surge capacity of the CST because surge overflow is routed to the condenser hotwell.

- The SER (p. 9-14) needs to be revised to reflect the CST usable capacity of 270,000 gal.

9.3.1
- The FSAR has revised the instrument air system design to incorporate the rotary air compressor and its components, as additional system capacity is required. Also, the component description, system operation, instrumentation and power supply sections have been changed to reflect this system design change (also see FSAR Table 9.3-1).
- The FSAR has deleted the pressurizer PORVs from the FSAR text for the for the instrument air system, as these PORVs are now supplied by nitrogen accumulators (also see FSAR Table 9.3-3).

9.3.2
- The FSAR has deleted the boron injection tank, as the CPSES design does not include it.
- The FSAR has revised the steam generator blowdown on-line analysers to detect specific conductivity instead of pH (also see FSAR Table 9.3-4 Sheet 3).
- The FSAR has changed the description of steam generator blowdown sample isolation upon an alarm from the monitor. In place of only sample isolation, it notes that the outboard sample and inboard process isolation valves close. Manual operation from the control room remains unchanged.
- The FSAR has revised Table 9.3-3 to show the addition of air-operated valves that isolate the steam generators during DBAs and HELBs.
- The FSAR has made minor revisions to Table 9.3-5 to reflect the existing design of the liquid storage tanks.
- The FSAR has revised Figures 9.3-1 though 9.3-11 to reflect plant as-built conditions.

9.3.4
- The FSAR has been revised to delete the automatic start of the reactor make-up water pump on demand from the reactor makeup controller. Reactor makeup water pumps do not have a safety function and run continuously in normal operation, which allows the deletion of the automatic start function.

9.4
- The FSAR has revised Tables 9.4-2, 9.4-4, 9.4-5, 9.4-6, 9.4-9 and 9.4-10 to reflect plant as-built conditions.
- The FSAR has revised Figures 9.4-1 through 9.4-9, 9.4-11, 9.4-12, 9.4-14, and 9.4-15 to reflect plant as-built conditions.

9.4.1
- The FSAR has revised the text to clarify the control room location and the design parameters for the systems serving the control room area.
- The FSAR has added the function of the non-safety-related air-conditioning units servicing control room areas.
- The FSAR has changed the operator action time from eight hours to one hour for stopping one pressurization and one filtration unit fan.

- The FSAR has deleted the plant vent stack high radiation monitor from the primary plant ventilation exhaust. Two redundant radiation monitors are provided for each control room air intake vent in lieu of an earlier design which employed one air intake monitor with backup from a plant vent stack high radiation monitor located on the primary plant ventilation exhaust. The SER is no longer correct and the phrase "plant vent stack high radiation signal" needs to be removed.
- The FSAR has provided a statement that the chlorine detectors are not missile protected. This is because locating the detectors within the protected area adversely effects their operating sensitivity. Credit for their operation is not taken during postulated tornado events.
- The FSAR has changed the reference applicable to the iodine adsorbers from RG 1.52, Rev. 1 to the currently applicable revision as discussed in Appendix 1A(B).
- The SER (p. 9-21) reflects that the control room HVAC system has provisions for purging of smoke or other contaminents with no recirculation by bringing in fresh outside air and exhausting the contaminated air to the outside. The FSAR states that portable smoke detectors are used to remove heavy concentrations of contaminents (FSAR 9.4.1.3).
- The SER states that redundant smoke detectors are located in the control room air intake (the FSAR describes non-redundant smoke detector installation).

9.4.2
- The FSAR has changed the fuel building room temperature during normal condition and adds the emergency condition room temperatures for the spent fuel pool heat exchanger and pump rooms (also deleted Table 9.4-2a).
- The FSAR has revised the operation of the ventilation system in accordance with the resolution of SDAR 84-27 (see HVAC PSR). A slight negative pressure is maintained in the fuel handling building during normal operation or a fuel handling accident. However, upon the loss of offsite power, the FHB exhaust will not be maintained by the primary planed exhaust units, so this reference has been removed. In addition, the ambient temperature for the spent fuel pool cooling pumps is maintained by emergency fan coil units and the safety-related chilled water system.
- The FSAR has removed a sentence stating that modulating supply air dampers control the slight negative pressure in the fuel handling area.
- The FSAR has added an air handling unit for storage room 250A in the fuel handling building to adequately cool the non-safety-related equipment.
- The FSAR has added a paragraph defining the safety class and seismic category of the fuel building exhaust duct work, the emergency fan coil units, and the spent fuel exhaust fans.

- The SER (p. 9-22) states that before refueling operations, the FHB exhaust is directed to the 50% ESF exhaust filtration units. This statement is not supported by the FSAR, in fact, current design is a modular ventilation system.

9.4.3
- The FSAR has added emergency fans for room 100 to provide cooling, as per loss-of-non-safety equipment ventilation design change (also, deleted Table 9.4-2a).
- The FSAR has removed the reference to the need to modulate auxiliary building supply dampers in order to maintain a slightly negative pressure and added wording to indicate that it is the emergency fan coil units which control the air temperature.
- The FSAR has revised the section to include that a slight negative pressure is also maintained during and after a LOCA.
- The FSAR has added a description of the recycle holdup tank compartments and the potential effects of a rupture of the tank diaphragms.
- The FSAR has provided emergency fan coil units for each of the various pumps required for a LOCA. Each compartment is maintained at an ambient temperature conducive to the long-term operation of the equipment contained therein.
- The FSAR defines fourteen exhaust units as non-ESF and adds two ESF exhaust units.
- The FSAR has been revised to add a description of the interlocking of the supply and exhaust fans.
- The FSAR has upgraded all of the exhaust system up to the fan discharge to seismic Category I, but the reference to ANS Safety Class 3 is dropped. The air supply system is upgraded from seismic Category II to Category I, except for the fans and dampers which change from non-seismic to Category II.
- The SER (p. 9-24) states that the redundant ESF exhaust units exhaust the air through the auxiliary building's ESF filter systems. This statement is not supported by the FSAR, in fact, current design is a modular ventilation systems.

9.4.4
- The FSAR has modified the description of the modulation of supply air to maintain negative pressure. Modulation will not be necessary to maintain the negative pressure due to fan sizing.
- The FSAR has modified the description of the operation of the system treating as one case the loss of offsite power together with a LOCA. The new description clarifies the use of the emergency fan coil units in the ESF pump rooms.
- The FSAR has upgraded the main air supply system from seismic Category II to I.
- The FSAR has added the function of maintaining ambient temperature above the lower limit for some process piping to the original personnel comfort function of the unit heats.
- The FSAR now states that only compartments containing ESF motor-driven pumps will have emergency fan coil units. These motors are the chief heat generators requiring the cooling coils.

- The FSAR has separated the specification for the exhaust system to show some NNS, seismic Category II construction where it does not interfere with safety functions.

9.4.5
- The FSAR has changed Section 9.4A concerning the design pressure of the containment pressure relief system to 1.5 psig, to be consistent with the containment design pressure criteria.
- The staff has not provided a review of the following systems:
  - containment air recirculation and cooling system (FSAR Section 9.4A);
  - control rod drive mechanism ventilation system (FSAR Section 9.4A);
  - neutron detector well cooling system (FSAR Section 9.4A);
  - containment preaccess filtration system (FSAR Section 9.4A);
  - reactor coolant pipe penetration cooling system (FSAR Section 9.4A); and
  - plant ventilation chilled water system (FSAR Section 9.4E).
- The staff has provided a review (SER Section 6.2.3) only of the isolation aspects of the:
  - containment pressure relief system (FSAR section 9.4A); and
  - containment purge supply and exhaust system (FSAR Section 9.4A).
- The FSAR has revised Section 9.4B, service water intake structural ventilation system, and changed the maximum indoor design temperature to 132°F based on new calculations.
- FSAR Section 9.4C provides the correct function for the diesel generator ventilation system. The description previously described the function of supplying combustion air but this function is accomplished by the diesel generator combustion air intake and exhaust system (see FSAR Section 9.5.8). The SER needs to be revised to delete the system function of providing outside air for diesel combustion.
- The FSAR has clarified the operation of the diesel generator building exhaust fans. Sufficient fans are started to ensure adequate room ventilation. The number of fans operating is limited during the winter months to prevent the room temperature from falling below the minimum design temperature (FSAR Section 9.4C).
- The FSAR has added the description of the isolation dampers in the MSFW piping area ventilation system, which protects the safety-related equipment located in the nearby areas from the effects of MSFW pipe breaks (FSAR Section 9.4C).
- The FSAR has changed the hydrogen concentration level to 2% per ANSI/ANS 59.2-1985 (FSAR Section 9.4C).
- The FSAR has described the dampers and heaters that provide makeup air and heating, following a loss of offsite power, to maintain the battery room under design conditions (FSAR Section 9.4C).

- The FSAR has revised the indoor design conditions for the security office, deleted the humidity requirement and updated the temperature to represent the present as-built conditions (FSAR Section 9.4C).
- The FSAR has revised Section 9.4D with the following changes:
  - updated the design parameters of flow and velocity based on revised design documents;
  - clarified the flow through the vents based on the present design; and
  - added the classification of the vent stack as seismic Category II and its effects on safety-related systems in the event of failure.

9.4.6
- The FSAR has revised Section 9.4F to correct the capacity of the safety-related chillers to 101 tons. This is consistent with the project specification and design criteria.
- SER (p. 9-28) states that functional tests and inspection for the safety chilled water system are to be included in the TS.

9.5.1
- The changes to the fire protection program that have occurred since SSER 12 was published are being reviewed by A. Singh (RIV) and various contractors. Inspection Reports 50-445/84-44 and 50-445/87-22 examined establishment and implementation of the fire protection program and compliance with the requirements of BTP APCSB 9.5.1 Appendix A and 10 CFR 50, Appendix R. CPPD will coordinate the issuance of the SER with NRR.
- FSAR Section 7.4.2 has added an additional fire to be analyzed for shutdown from outside the control room.
- Section 13.3B contains some discussions of the fire protection program.
- TXX-6376 and TXX-6582 list TU Electric responses to SSER 12, Section 9.5.1.
- Additional changes to Section 9.5.1 will be submitted in a future FSAR amendment.

9.5.2
- The SER (which states that there are three paging zones for the public address system) is not consistent with the FSAR (which states that there are two paging zones, the administration building and the main plant [which is further subdivided into 4 zones]).
- The SER states that the PABX telephone system has 28 trunk lines. This is without basis in the FSAR.
- The SER credits the intraplant portable radio transmitter-receiver system with providing communication between the control room and other buildings. The FSAR does not make a commitment to retain a walkie-talkie in the control room. Walkie-talkies may be used by the fire brigade and other chief users outside of the control room.

- The FSAR has provided a thorough listing of the site emergency communication systems.
- The FSAR has deleted the description of the sound-powered telephone system. This system is not used as the primary communication system for hot or cold shutdown, as the intraplant portable radio communication system is used for abnormal and emergency conditions.
- The FSAR has provided a more accurate and thorough description of plant-to-offsite emergency telephone systems.
- The FSAR has added reference to rotating beam lights to clarify the type of visual indication provided with the evacuation alarm.
- The FSAR describes the page-party/public address system as a backup to the portable radio system for use by plant operators during hot shutdown for technical accuracy.

9.5.3
- The FSAR has been revised to add information and references concerning the illumination level provided by the AC essential lighting systems and DC emergency lighting systems.
- The staff needs to revise the SER to reflect that AC essential and DC emergency lighting systems have been reclassified from 1E to non-1E (DC emergency lighting now has own batteries).
- The staff needs to review the FSAR description of lighting levels.
- The staff needs to review the acceptability of fixed flourescent units.
- The FSAR has revised reference to the IES Lighting Handbook to 1981 application volume.
- The turbine building battery pack lighting is rated for four hours.
- Due to reclassification from 1E to non-1E, testing of the AC essential lighting system will not be conducted during periodic EDG loading test.

9.5.4
- The FSAR has clarified the system description for filling, venting, draining and removing condensate from storage tanks, per as-built conditions and in compliance with NRC Regulatory Guide 1.137 and ANSI N195.
- The FSAR reflects replacement of simplex strainers with duplex strainers. This update in filter removal capability eliminates the clogging of filters and improves the availability of quality diesel fuel oil supply to the diesel generators.
- The FSAR has revised the fuel oil day tank capacity from 4-1/2 hours to useable capacity of 3 hours of continuous operation of diesel generators at rated 100% load. This exceeds the requirements of NRC Regulatory Guide 1.137 and ANSI N195 (66 minutes of continuous operation). The FSAR has also deleted the tank capacity in gallons as it varies with the density of fuel oil. SER (p. 9-39) needs to be updated.
- The FSAR has deleted the reference to the diesel generator fuel oil booster pump, the motor driven engine pump, and the auxiliary lube oil pump during emergency operation of the EDG.
- The FSAR has replaced the vacuum pumps with centrifugal blowers for diesel generator crankcase ventilation to provide positive means of forced ventilation through the diesel generator crankcase and to reflect the as-built conditions.

9.5.4 (continued)

- FSAR Figure 9.5-5 has been revised to add the following:
  - note for removal of strainer element from Y-strainer;
  - duplex strainer as per requirements of ANSI N195;
  - day tank vent pipe vacuum breakers which are located in the missile protected area and seismically supported; and
  - miscellaneous technical and editorial changes to the figure to make it consistent with vendor drawings and isometric drawings.
- The SER (Section 9.5.4.2, page 9-39, paragraph 4) needs to be revised for venting components which are seismically supported, but are not ASME Section III, Class 3. Missile protection is provided for vent paths.
- The SER (Section 9.5.4.2, page 9-39, paragraph 5) needs to be clarified for the exceptions to Regulatory Guide 1.137.
- The FSAR has revised the fuel oil monitoring program to conform to current standards. The revised testing will test the parameters which indicate degradation or contamination of fuel during transit (ASTM D975-74 is updated to ASTM D975-81 and ASTM D270-65 is updated to ASTM D4057-81).

9.5.5

- The FSAR has deleted reference to the motor driven jacket water pump, which is not available during emergency operation of the EDG. Need to update the SER (p. 9-40).
- The SER (p. 9-40) needs to delete reference to GDC 17.

9.5.7

- The FSAR has deleted reference to the motor driven lube oil pump which is not available during emergency operation of the EDG. Need to update the SER (p. 9-43).

9.5.9

- The staff needs to review responses to NUREG-1216 for TDI diesel engines (TXX-6236). See SSER 6, Section 9.5.9 and Appendix I. SSER 12 lists this as Outstanding Issue (32) and as License Condition (15).

SECTION 10 - STEAM AND POWER-CONVERSION SYSTEM

10.1 ° FSAR Table 10.1-1 has changed the turbine generator output to 1,203,378 KW with valves wide open. This change represents about a 0.2% increase.

10.2 ° The FSAR reflects that the 90-10 copper nickel alloy MSR tube bundles and tube sheets have been replaced with ferritic stainless steel tubes and inconel clad carbon steel tube sheets to prevent degradation of steam generator tubing.

10.2.1 ° The FSAR states that one main steam and one low-pressure stop-and-control valve will be inspected every 40 months and that all valves will be inspected within 10 years, as required by tech specs.

10.2.2 ° The FSAR has been revised to correct the statement "the high-pressure turbine cannot generate missiles." It is now clear that the high pressure turbine can generate missiles, but they are bounded by the low pressure turbine missile.

- ° The staff needs to review TU's letter (TXX-4512, dated 7/15/85) which seeks to provide basis for removal of License Condition (4) in SSER 12.
- ° SSER 6 states that TU will conduct a visual and surface examination of the turbine discs every 5 years. The FSAR (Section 10.2.3.6) states that visual inspections will be conducted at refueling shutdowns at intervals not to exceed three years.

10.3.1 ° The FSAR has updated the main steam system design parameters based on the design calculations.

- ° The FSAR has changed the limit on steam generator pressure for RHR operation and natural cooldown from 125 psia to 100 psia (FSAR Section 10.3.1 and Table 10.3-3).
- ° The FSAR adds safety-related air accumulators for SG PORVs, as the compressed air system is not safety-related.
- ° The SER states that SG PORVs are provided with nitrogen accumulators and needs to be corrected.
- ° The staff needs to complete its review of the change in MSIV bypass valve operation to manual (this was listed as Confirmatory Issue (27) in SSER 12).
- ° The FSAR states that the MSIV bypass valve will be locked closed during power operation. This replaces a commitment for a design to stop flow in either direction.
- ° The SG PORVs are required to have the capability to be operated remotely from the control room following a SSE, coincident with the LOOP.
- ° The SER needs to be revised to delete discussion of closure of MSIV bypass valve closure time upon receipt of MSIV closure signal, as these valves are now manual.
- ° The FSAR updates the hydrostatic test pressure of the MSIV shell as per ASME B&PV Code, Section III, Table NV 3531-9 (for a 600-lb welded end valve).
- ° The FSAR has clarified the hydrostatic disc testing as per ASME B&PV Code, Section III, paragraph NB 3531.2(c).

10.3.1 (continued)

- The FSAR has changed the Main Steam Safety valve blowdown to 5% of the set pressure of the safety valve, as per ASME B&PV Code, Section III, Subsection NC 7614.1 and Specification 2323-MS-77, Rev. 2.
- The FSAR has changed the material classification of nonpressure retaining components of the MSIVs to match the design.
- The FSAR has changed the secondary water chemistry to agree with the recommendations of the EPRI Owners Group for optimum performance of the steam generators.
- The SER (p. 10-4) states that the plant can be brought to cold shutdown from the control room using only safety-grade mechanical and electrical systems in the event of LOOP or loss of instrument air.

10.3.3 ° The SER states (p. 10-6) that low alloy steel is not utilized for main steam or feedwater system components and that RG 1.50 is not applicable. The FSAR, however, states that preheat temperatures for welding low alloy steel are in accordance with RG 1.50 (FSAR Section 10.3.6.2).

10.4 ° The auxiliary steam system, the extraction steam system, the turbine oil and purification system, and the turbine plant cooling water system are not addressed in the SER, but have undergone changes since the last review of the FSAR.

10.4.1 ° The FSAR reflects the installation of titanium tube bundles (formerly copper-nickel alloy), and titanium clad carbon steel tube sheets (formerly aluminum-bronze), in the Unit 1 and 2 main condenser shells to improve the ability of condenser tubes and tube sheets to resist long term corrosion, erosion or stress cracking.

- The new leak-tight tube sheet design features solid tube sheets in addition to welded tube-to-tube sheet joints, which results in deletion of the tube sheet pressurization system.

10.4.5 ° The FSAR reflects the installation of titanium tube bundles (formerly copper-nickel alloy), and titanium clad carbon steel tube sheets (formerly aluminum-bronze), in the Unit 1 and 2 main condenser shells to improve the ability of condenser tubes and tube sheets to resist long term corrosion, erosion or stress cracking.

- The FSAR indicates that there are no performance tests identified for the circulating water system butterfly valves. Continued maintenance activities assure proper functioning of the valves and valve operators.
- The FSAR deletes mention of the specific amount of chlorine added, as concentration depends on the location of the sample measurement. The NPDES permit limits chlorine to 0.2 ppm, average, and 0.5 ppm, maximum.

10.4.7 ° The FSAR has added the NRC Reg Guide and ANSI Standard applicable to the Condensate and Feedwater System.

° The FSAR has added the MSR separator drain tank (which provides condensate to the system) to the discussion.

° The FSAR has revised the useable volume, design volume and the availability of the condensate storage tank volume for emergency use by the AFW system.
The FSAR has revised the useable volume of 270,000 gallons (needs to be reflected in the SER, which now states 276,000 gallons).

° The FSAR has been revised to add a description of the full flow flushing operation.

° The FSAR has revised the description of the SG sampling system to delete reference to SGs 3 and 4 (sample lines were capped).

° The FSAR has been revised to add the classification of the condensate and feedwater piping in the Safeguards Building (non-nuclear Safety, Seismic Category II).

° The FSAR identifies condenser hot well low level as an additional trip for the condensate pumps.

° The FSAR identifies that transfer from the feedwater control bypass valves to the feedwater control valves is manually initiated.

° The FSAR has made numerous changes with regard to the feedwater isolation valve as a result of concerns regarding water hammer and SG vibration issues.

° The FSAR has been revised to replace the feedwater bypass tempering valve with the feedwater split flow bypass valve.

° The FSAR had modified the controls on the feedwater isolation bypass valve to remain closed instead of automatically open upon lack of water hammer permissives.

° The FSAR has added RG 1.32, 1.47, 1.53 and 1.75 as applicable to the condensate and feedwater systems.

° The FSAR has been revised to indicate that the FIBV is manually opened to purge pockets of cold water.

° The FSAR has changed the flow split from 90:10 (at 40%-100% load) to 90:10 at 100% load and somewhat less than 90:10 from 50% to 100% load to match the as-built system.

° A water hammer test has been added to FSAR Section 14.2. The test report demonstrating water hammer adequacy is available on site for review. The staff needs to review the results and if found acceptable, remove restriction cited in SSER 4, p. H-12.

10.4.8 ° The FSAR has changed the SG blowdown water chemistry to match the latest evaluation of the anticipated conditions with and without a leak from the primary side. This change deletes free hydroxide from both analyses, and hydrazine and morpholine from the analysis without leak, and eliminates the estimate of particle size.

° The FSAR returns to the original estimate for Si at less than 1 mg/l

° The FSAR has added air operated valves in place of motor operated valves to isolate SGs during DBAs and HELBs.

° For the non-safety related portion of SG blowdown, the SER implies that RG 1.143 is met. However, the FSAR specifically indicates CPSES does not commit to RG 1.143 for this portion of SG blowdown system and ASME, Section VIII is met.

10.4.9 ° The FSAR has added warm-up valves and steam supply bypass lines to the TDAFW pump to pre-warm the steam supply lines to minimize transient effect during TDAFW pump surveillance testing (see also FSAR Figure 10.3-1).

° The FSAR has added safety-related accumulators to steam valves for the TDAFW pump to permit valve closing for containment isolation or to isolate a depressurized SG.

° The FSAR has changed the design parameters for the AFW components based on the design documents, certified pump curves and W-SIP 10.1.

° The FSAR has stated that the AFW design basis is (1) 4 hours operation at hot standby in the event of onsite/offsite power available with single failure, and (2) 2 hours of operation at hot standby in the event of main steam or feedwater line breaks.

° The revised useable volume of 270,000 gallons needs to be reflected in the SER (which now states 276,000 gallons).

° The FSAR has revised the AFW system description with regard to number of pumps, pump capacities, and discharge piping configuration.

° The FSAR has added a discussion of the AFW system performance during a large break LOCA.

° The FSAR states that either both motor-driven pumps or the turbine-driven pump alone is required to take the plant to safe shutdown.

° The FSAR states that, depending on the severity of the event, either the two motor-driven pumps or all three AFW pumps auto-start following a MSLB or a FLB.

° The FSAR has added ANS Safety Class 2 for the AFW system containment penetration boundary and a connection to feedwater.

° Upon automatic initiation of the AFW system, isolation of SG blowdown and sampling for all SGs occurs.

° The FSAR adds high flow to auto trip of the flow control valves from manual flow control to automatic pressure control to protect the pumps (now requires low discharge pressure and high flow).

° The FSAR has been revised to identify that the TDAFW turbine has a mechanical/hydraulic governor in lieu of an electronic governor.

° SER Section 10.4.9.1 needs to be revised to reflect FSAR Table 10.4-8.

° The FSAR has been revised to be consistent with the Westinghouse requirements that pump response be based on the receipt of an actuation signal.

° The FSAR has deleted the low suction pressure trip to prevent a spurious low pressure signal from tripping the AFW system.

° The FSAR has been revised to reflect CST alarms for HI-HI, LO, and LO-LO.

° The FSAR clarifies that low discharge pressure alarms are only provided for the motor-driven AFW pumps.

SECTION 11 - RADIOACTIVE WASTE MANAGEMENT

11.1
- TU has taken an exception to RG 1.109, Rev 1 in that an 8-month cow grazing season was assumed.
- The SER and FSAR source term tables for both liquid and gaseous effluents are not consistent. Review and rewrite may be necessary.
- Staff needs to review ODCM (TXX-4499, dated 6/27/85) and future update.

11.2.1
- A change to the Resin Disposal System to allow bypassing of the Spent Resin Storage Tank (to allow for maintenance and repair) has been made.
- Relief Valve 1WP-7176 has been added to the drain system to provide overpressure protection.
- Inlet Isolation Valves XWP-221 and XWP-222 have been added to their respective floor drain tank strainers.
- Relief Valves XWP-318 and XWP-320 have been added to drain channel B.
- Numerous figures have been revised to reflect as-built conditions.
- A clamp-on flow indicator monitor has been added to the demineralizer water tank.
- The SER states, "All liquid waste is processed on a batch basis." The FSAR, however, indicates that the reactor coolant drain circuit is an exception to the batch processing method used for the remainder of liquid waste processing system.
- The SER maximum individual dose tables are not consistent with the FSAR.
- The SER now contains discussions of limits and surveillance to be contained in the tech specs. These requirements will instead be contained in Radiological Effluent Environmental Monitoring Manual (REEMM).
- SER section 11.2.1.3 needs to clarify that CPSES did not commit to RG 1.143.
- The staff needs to review the discrepancy between the FSAR and SER section 11.2.1.3 for liquid waste release of tritium and radioactive materials.

11.2.2
- The radwaste monitor alarm setpoint has been raised from 0.15% to 0.25% hydrogen to reflect as-built conditions.
- The description of the operation of the Gaseous Waste Processing System has been changed for low pressure and higher pressure operations.
- SER Section 11.2.2.5 needs to clarify that CPSES did not commit to RG 1.143.
- The staff needs to review the discrepancy between the FSAR and SER section 11.2.2.5 for releases of gaseous radwaste.

11.2.3
- FSAR page 11.4-5 clarifies the description of containers used for shipment and disposal of radioactive wastes.
- The Process Control Program needs to be reviewed (PCP due no later than 8/1/88).
- Staff needs to review estimates for offsite shipment of solidified wet waste and dry solid waste.
- Additional solid radwaste storage capacity for Unit 2 is an outstanding issue from SSER 12.

11.3
- The staff needs to review FSAR Table 11.5.1 and text which have been changed to update the design and reflect as-built conditions.
- A control room CRT display for digital radiation monitoring system has been added to the console.

SECTION 12 - RADIATION PROTECTION

12.1.1 ° The position titles in this section have been changed.
° The Radiation Protection Manager position now encompasses the former position of Health Physics Engineer. The staff also needs to review the qualifications of the RP Manager (FSAR 13.1.3.1).

12.1.2 ° There is a discrepancy with which revision of RG 8.8 applies to CPSES (SER states Rev 3, FSAR states Rev 2).

12.2 ° Staff needs to review updated source term information in tables and text resulting from the SWEC corrective action program.
° The vent computer code used for calculations of airborne radioactive materials is no longer in use at CPSES.
° NUREG-0017, GALE input was not used (contrary to statement in SER). Staff needs to review.

12.3.3 ° TU has added a commitment to conform to RG 1.140 in addition to RG 1.52.

12.3.4 ° The staff needs to review updated text and tables to this section which reflect design basis changes and as-built configurations.
° An inconsistency in the SER needs to be corrected to reflect that continuous records of the area radiation monitors (ARMs) throughout the plant are not kept.
° SER Section 12.3.4 is inconsistent with FSAR Section 11.5.1.2 and Table 12.3-8.
° The SER states, "All installed instruments in the airborne radioactive monitoring system have independent emergency battery power supplies." There is no basis in the FSAR for this statement.

12.5 ° The titles and responsibilities in this section have been changed to reflect the current Nuclear Operations organization.
° Numerous minor changes have been made to reflect the updated health physics program.
° The qualifications of the Radiation Protection Manager (new position) need to be reviewed.
° The location of the TLD reader has been changed from the health physics office to the Personnel Dosimetry Processing Facility.
° The SER needs to clarify that radiation work permits and general access permits are no longer issued by the Chemistry and Health Physics Engineer (position no longer exists), but are controlled by procedure.

SECTION 13 - CONDUCT OF OPERATIONS

13.1
- Organizational titles, qualifications, staffing responsibilities, technical support, and authorities have changed as a result of reorganizations within TU.
- TU will be updating FSAR Figure 13.1-3, Station Organization, in a future FSAR amendment.
- The FSAR (pp.13-1-61,62) contains a discussion on maintenance engineering and the managed maintenance program.
- The SER needs to reflect that TU now has operators on each shift with previous PWR hot ops experience. License condition (8) from SSER 12 may now be removed. (Actual staffing requirements, per FSAR, will be contained in tech specs).
- The SER needs to be corrected to reflect that TU will have one radiation technician and one chemistry and environmental technician available on site, rather than two radiation technicians (one qualified to provide chemistry support).
- The SER statement that a communications coordinator will be assigned to each shift needs to be corrected.
- The SER statement (p. 13-16) that TU does not have any corporate or plant staff experience at large PWR power plants needs to be corrected.
- Specific staffing levels (p. 13-17) given in the SER are no longer accurate.
- SSER 1 should not specify frequency of management meetings. Management meeting schedules are not addressed in the FSAR.

13.2.1
- The SER incorrectly states that respiratory protection training, respirator fitting and whole body counting are located in the nuclear operations support facility. These activities now take place in a security/administration building near the access control point.
- The SER discussion of training staff staffing may no longer be accurate.
- The auxiliary operator training will be described in a future amendment to the FSAR.

13.2.1
- The licensed operator training program will be revised in a future FSAR amendment to demonstrate how 10 CFR 50.55 is met.

13.3
- The CPSES Emergency Plan has had major revisions since SSER 12, and more are expected.
- The FSAR has revised the CPSES Fire Protection Program and states that it meets the D.B. Vassallo letter of August 1977.

13.4.1
- The chairman of the joint test group and a representative from emergency planning are now members of the SORC. SORC membership (9 members) is now described by function, rather than title.

13.4.2
- The SER incorrectly states that the Vice President, Nuclear, is the ORC chairman. SSER 12 states that the ORC members are appointed by the Executive Vice President, Nuclear. A future FSAR amendment will explicitly state that the chairman and members will be appointed by the Executive Vice President, Nuclear.

13.4.3 ° The SER should reflect that requirements for ISEG composition, qualifications and reporting responsibilities are stated in the tech specs.

13.5 ° The SER needs to be updated to correctly reflect administrative procedure approval authority (is now Vice President, Nuclear Operations, vice Manager, Plant Operations).
° Certain administrative procedures need to be reviewed by NRR prior to plant operation (identified in Section 22 of the SER).

13.6 ° SSER 6 contains many details regarding physical security that are not in the FSAR.
° Staff needs to review the Physical Security Plan, Guard Training Plan, and Safeguards Contingency Plans (future revisions are expected).
° SSER 6 implies that the Security Shift Supervisor (on site at all times) is a TU employee. This position may be filled by a contractor.

SECTION 14 - INITIAL TEST PROGRAM

14

- The FSAR has undergone numerous changes to reflect formation of the Test Department (and JTG) to consolidate and reassign testing/ startup responsibilities and activities.
- The FSAR has added new tests, test methods descriptions, criteria and requirements.
- The SER needs to be rewritten to reflect compliance with RG 1.68, Rev. 2, 8/78 in that procedures will be available to review by regional personnel 60 days prior to scheduled preoperational tests and for startup tests, 60 days prior to fuel loading.
- A future FSAR change will require that test intent be reviewed along with acceptance criteria for any test procedure modifications.
- Six months prior to fuel load, TU will justify why certain portions of HFT and preoperational testing are not being conducted again.
- About six months prior to fuel load, TU Electric will update the list (in License Condition (10) of SSER 12) concerning preoperational tests which require deferral until after fuel load.

SECTION 15 - ACCIDENT ANALYSIS

15.1.1 ° The FSAR (p. 15.0-19) provides clarification that fission product decay energy is based on core average exposure at the end of the equilibrium cycle.

15.1.2 ° The staff has still not reviewed the use of LOFTRAN and FACTRAN for use at CPSES. The staff approved the Westinghouse topical reports on LOFTRAN and FACTRAN in the SERs, issued on 7/29/83 and 9/30/86, respectively.

- ° Source terms for primary side equilibrium activities (FSAR Table 15.1-4) have been revised to reflect use of tech spec limits (on RCS activity) and design basis gap activity.
- ° Source terms for secondary side equilibrium activities (FSAR Table 15.1-4) have been revised to reflect use of 1 gpm SG tube leak and liquid and steam phases.

15.2.1 ° Staff needs to resolve inconsistency between SER and FSAR. SER (p. 15-4) states DNBR did not fall below 1.4. FSAR indicates DNBR greater than 1.3 or DNBR much greater than 1.3 (FSAR Sections 15.1.2.3; 15.1.3.3; 15.1.4.3 and 15.4.4.3).

15.2.2 ° For loss of non-emergency AC power to station auxiliaries and loss of normal feedwater flow, the FSAR (including proposed TS) has been revised to reflect a lower AFW flow rate. These accidents will be further revised in a future FSAR Amendment, considering a different single failure.

- ° Other accident assumptions for loss of non-emergency AC power and loss of normal feedwater flow have been changed and need to be reviewed by the staff.
- ° FSAR Tables 15.2-1 (Sht 5) and 15.2-1 (Sht 6) and Figures 15.2-9 through 15.1-12, summarizing the results of these accidents, need to be reviewed.

15.2.3 ° Rod Cluster Control Assembly Malfunctions (15.2.3.3) were misnumbered as 15.2.2.3 in SSER 6.

15.3.1 ° The FSAR has been revised to reflect an increased CVCS leak rate from 100 gpm to 190 gpm.

- ° The FSAR has been revised to show detection of leak is by low pressure alarm, vice high radiation alarm.
- ° The FSAR has revised the time to detection and operator action to less than 30 minutes, vice detection within 7 minutes.

15.3.4 ° The SER incorrectly cross references 15.5, when it should reference 15.4.2.

15.3.5 ° Automatic MSIV bypass valve actuators were replaced with manual actuators which are locked closed during power operations.

15.3.6 ° The FSAR has changed the assumption for average coolant temperature in double-ended rupture from +5.5°F to +6.5°F.
- ° The initial pressurizer level is 5%, vice 2%, above nominal program value.
- ° FSAR has used more conservative initial water levels in the faulted and intact SG (5% higher in the former and 5% lower in the latter).
- ° The FSAR now assumes 430 gpm flow from AFW system, vice 470 gpm.
- ° The FSAR has changed the assumption used in the analysis of the largest FW line break for FW line purge from 750 seconds to 118 seconds.
- ° The assumptions for initial system configuration have changed for accident modeling (i.e., worst case is when three SGs receive AFW following the break; further, that it is the AFW pump on the intact loops which is assumed to fail, and that flow from the turbine driven pump delivers 430 gpm to the three intact SGs [rather than 470 gpm to two SGs]).
- ° The FSAR states RCS pressure can be maintained at safety valve setpoint until AFW flow is increased to the intact SGs.
- ° FSAR Table 15.2-1 (Shts 7 and 8) and Figures 15.2-13 through 15.2-26 need to be reviewed.

15.3.8 ° TU Electric owes a response to NRC letter dated 2/23/88 concerning non-conservatisms in the model used for ECCS analysis.
- ° The SER incorrectly states that PCT for Unit 1 is 2001°F. The FSAR states that PCT is 2011°F.

15.3.9 ° Although future FSAR changes are expected as a result of 50.62, no changes to Chapter 15 analyses are expected at this time (CPSES to use standard Westinghouse AMSAC).

15.4.1 ° Source terms for primary side equilibrium activities (Table 15.1.4) have been revised to reflect use of tech spec limits (on RCS activity) and design bases gap activity.
- ° Source terms for secondary side equilibrium activities (Table 15.1-4) have been revised to reflect use of 1 gpm SG tube leak and liquid and steam phases.
- ° The revised assumptions include the contributions from iodine spiking.
- ° The staff needs to review Tables 15.1-3 and 15.1-4.
- ° The FSAR has deleted the realistic analysis for main steam line break.

15.4.2 ° The FSAR has been revised to include the activity from melted fuel in the activity for the rod ejection accident, in addition to the changes to primary and secondary source terms previously described.
- ° Staff needs to review Table 15.1-4 as it applies to this accident.
- ° The FSAR has deleted the realistic analysis case from the rod ejection accident.
- ° The staff needs to review Table 15.4-4, which lists parameters and results for this accident.

15.4.3
- The FSAR has deleted the realistic analysis case from the small primary break outside containment accident.
- The FSAR has revised the assumption for primary and secondary source terms for this accident.
- The staff needs to review FSAR Table 15.1-4 as it applies to this accident.

15.4.4
- The primary and secondary source term assumptions have been revised for SGTR.
- FSAR Tables 15.1-3, 15.1-4, 15.6-3 and 15.6-4 need to be reviewed (source terms and iodine data).
- The FSAR has deleted the realistic analysis case from the SGTR accident.
- The staff needs to review the SGTR topical reports already submitted.
- The SGTR analysis will be further revised in a future FSAR Amendment.

15.4.5
- The assumptions for primary and secondary source term have been revised for LOCAs.
- The FSAR has revised the numerical values for core and gap isotopic inventories, based on use of design basis gap activity and the use of a three-region core model at end of life (FSAR Table 15.6-8).
- The FSAR has deleted the realistic analysis case from the LOCA analysis (FSAR Table 15.6-9).
- The FSAR has deleted mention of TACT-IV, since contractor computer codes were used in the new analysis.
- The temperature-vs-time relationship for recirculating water is no longer used.
- Leakage from ESF components is conservatively assumed to start 10 minutes after the LOCA and continue for the duration of the accident (FSAR Table 15.6-10).
- The FSAR has also deleted the assumption that no credit is taken for radioactive decay.
- The FSAR presents the results of the new analysis for ESF leakage.
- The discussion of the gap release case has been deleted.
- A high radiation signal from the Control Room air intake monitors will also initiate emergency recirculation and pressurization of the Control Room air conditioning system (in addition to a SIS signal).
- The FSAR now assumes a constant breathing rate for 8 hours, rather than reducing the rate after the first two hours.
- The FSAR has reduced the iodine adsorber efficiency from 100% to 95% in calculating exposure from release to the atmosphere of leakage from ESF equipment.
- The FSAR now specifies that the differential pressure between the control room and adjacent areas is 0.125 inches water guage (formerly it only indicated that the pressure was slightly above ambient)
- The FSAR analysis for LOCA dose to control room occupants assumes single train emergency recirculation when, in fact, both trains are actuated by SIS (which results in higher outside air intake) resulting in a decreased thyroid dose and increased whole body and skin doses. Operator action is necessary to meet Chapter 15 analysis assumptions (i.e., must turn off one train).

15.4.5 (continued)

- The air volume in the control room was recalculated to be 423,032 ft^3, rather than 3.219×10^5 ft^3.
- Dose models used to evaluate environmental consequences of accidents have been revised in Appendix 15B.
- The analysis of the radiological consequences of containment purging has been deleted from the FSAR, consistent with SRP Section 15.6.5, Appendix C.
- For the analysis of the environmental consequences of releases through the containment pressure relief line, reactor coolant iodine concentrations and noble gas activity concentrations have been revised to be consistent with proposed tech spec limits.

15.4.6
- The primary source term assumptions have changed for the waste gas system failure accident.
- SER Section 15.4.6 cites SRP Section 15.7.1, which was deleted from the SRP in Rev. 1.
- The FSAR has deleted the realistic analysis case (FSAR Table 15.7-1).

15.4.7
- SER Section 15.4.6 cites SRP Section 15.7.2, which was deleted from the SRP in Rev. 1.
- The source term assumptions for the radioactive liquid waste system leak or failure accident have been revised in Table 15.7-3.
- The FSAR has deleted the realistic analysis case (Table 15.7-4)
- Instead of citing RG 1.4 for the method of calculation, Table 15.7-4 now refers to Appendix 15B.

15.4.8
- FSAR Table 15.7-6 has been revised to reflect changes in activity released as a result of changes to source term assumptions for the fuel handling accident.
- The FSAR has deleted the realistic analysis case (FSAR Table 15.7-7).
- The FSAR has deleted the adsorption and filtration efficiencies for inorganic and organic iodine species (since no retention is assumed.)
- Instead of citing RG 1.25 for the method of dose calculation and dose conversion assumptions, FSAR Table 15.7-7 now refers to Appendix 15B.

15.4.9
- FSAR Section 2.4.12 states that controlled release from Squaw Creek Reservoir is set by permit from the Texas Department of Water Resources at 1.5 cfs at Hwy 144 bridge.
- The FSAR gives the storage volume of Squaw Creek Reservoir as 135,062 acre feet (FSAR Section 2.4.12).
- The FSAR has revised the source term assumptions and resulting concentrations for the liquid tank failure accident (FSAR Tables 2.4-20 and 2.4-21).

SECTION 16 - TECHNICAL SPECIFICATIONS

- On October 30, 1987, TU Electric submitted to NRC the proposed Appendix A Technical Specifications (TS) for CPSES based on Rev. 5 of the Westinghouse Standard Technical Specifications.

- Draft 1 of the TS was issued January 6 and Draft 2 was issued on March 2, 1988.

- TU Electric's mark-up of Draft 2 is scheduled for June 30, 1988.

- The current schedule calls for issuance of Proof and Review to the staff at the end of December 1988, with issuance of the TS to Projects by mid-April to support a fuel load date of June 1, 1989.

- Some staff review effort will be required in each technical area after June 30 to review changes to Draft 2 and in early 1989 to support the Proof and Review effort.

- Staff effort may be needed to review a number of generic changes proposed for CPSES, Unit 1 TS. Affected Branches are as follows: ECEB, EMEB, EMTB, ESGB, LHFB, LPEB, LQAB, EPEB, PRPB, RSGB, SELB, SICB, SPLB, and SRXB.

SECTION 17 - QUALITY ASSURANCE

17.1 ° The SER write-up for this section may need to reflect that construction QA programs and activities have been extensively examined as part of CPRT activities.

17.2 ° The FSAR has been rewritten to reflect the reorganization within TU Electric, a clarification of assigned responsibilities by referencing specific departments or positions and text revisions to more clearly define the extension of the TU QA Program requirements to contractors and/or vendors.

17.3 ° The FSAR has been rewritten to reflect the reorganization within TU Electric, a clarification of assigned responsibilities by referencing specific departments or positions and text revisions to more clearly define the extension of the TU QA Program requirements to contractors and/or vendors.

° Reference to RG 1.144 needs to be added to Table 17.1, "Regulatory guidance applicable to quality assurance program" of the SER. The staff needs to ensure that SER write-ups accurately reflect applicable portion of Regulatory Guides used by TU.

17.5 ° Tables 17A-1 and 17A-2 have been extensively revised to reflect the plant as-built condition as a result of the plant redesign and validation effort.

SECTION 22 - TMI-2/REQUIREMENTS

I.A.2.3
- The SER incorrectly states that FSAR Subsection 13.2.1 describes the certification of instructors.

I.C.1
- This remains an open item from SSER 12 (License Condition (13)-system functional task analysis).
- The staff needs to review the function and task analysis submitted by letter dated 12/16/85 (TXX-4641).

I.C.5
- Due to organizational changes within TU, titles and reporting responsibilities have changed for feedback of operating experience.

I.C.7
- The SER incorrectly states (p. 22-18) that FSAR Section 13.5 describes Westinghouse participation in the development of low power and power ascension test procedures.
- The discussion of Westinghouse Owners' Group efforts needs to be revised (the present discussion is garbled).

I.D.1
- A CRDR audit was conducted in 1984 and subsequent major changes have been made to the control room. TU may need to conduct environmental surveys and update the FSAR. Another staff audit may be required.
- The staff needs to review the function and task analysis submitted by letter dated 12/16/85 (TXX-4641).
- Some open HEDs remain from SSER 6.

I.D.2
- SPDS isolator test program results to be submitted by TU Electric.
- TU Electric needs to respond to open items identified in SSER 12.

I.G.1
- Appendix 5A to the SER needs to be reviewed (applicability of Natural Circulation tests at Diablo Canyon to CPSES).

II.B.2
- Numerous changes have been made to reflect the corrective action program.
- The model has been revised to reflect PASS sources.
- The hot cell has been eliminated.

II.B.3
- TU Electric has added relief valves to process sampling systems for overpressure protection per ASME code Section III, NC-7155.
- The hot cell has been eliminated.
- The staff needs to provide a new SER rewrite to reflect that the PASS must be demonstrated operable prior to exceeding 5% power.
- The staff may need to review procedures.

II.B.4
- The SER indicates that the staff will verify completion of: (1) training program before fuel loading; and (2) training of all operational personnel before full power operation.

II.D.1
- New information has been provided in the FSAR on correct safety valve ring settings.
- The SSER needs to close out this issue based on review of associated correspondence (TXX-4849 dated 6/13/86; TXX-6398 dated 4/15/87; TXX-88216 dated 2/12/88.

II.E.1.1° SER Recommendation GS-4 states that the staff will verify plant procedures.
° The SER states that the staff should verify acceptability of auxiliary feedwater system test results.
° The response to Recommendation GS-7 and GL-5 should be reviewed in conjunction with II.E.I.2.

II.E.1.2° Staff needs to review design aspects of this item and provide SER input.

II.E.4.1° The SER states that the 48-inch containment purge supply and exhaust valves, will be "sealed" closed. Clarification of closure requirements should be provided.

II.E.4.2° This item was listed as Confirmatory Issue 10(j) in SSER 12. The staff will have to review applicants' response to close this item (TXX-4644 dated 12/16/85).

II.F.2 ° This item was identified as a license condition (16) in SSER 6.
° Staff needs to review revised program description of this item (TXX-88096 dated 1/22/88).
° The numerical values in Table 22.1 of SSER 6 are not consistent with the FSAR.

II.K.1 ° The SSER states that staff must verify that the requirements of C.1.5 and C.1.10 for IE Bulletins are satisfied prior to licensing.

II.K.3.5° This item was listed as Confirmatory Issue 10(k) in SSER 12. The staff must review information submitted in response to GL 85-12 on selection and implementation of automatic RCP trip during LOCA (TXX-4904 dated 9/24/86).

II.K.3.9° The staff needs to review an alternate method for disabling the derivative action of the PID controller.

II.K.3.11°Although SSER 6 states that closeout of this item is subject to closure of II.K.3.2, and although II.K.3.2 was closed out in SSER 6, the SSER write-up didn't specifically close out II.K.3.11.

II.K.3.30°The SSER write-up needs to reference the NRC SER issued 10/26/87 on the small break LOCA computer code.

II.K.3.31°The staff needs to review use of the NOTRUMP code.
°SSER 6, Confirmatory Item 10(m) incorrectly references 10 CFR 50.56 (the correct reference should be 10 CFR 50.46).

III.A.1.2°SSER 3, Appendix G Item 3.H requires onsite post-implementation review of ERFs.
°The FSAR has changed the time to man the TSC from 40 minutes to 60 minutes.

III.D.3.3°Staff needs to review the applicants' new plans for analyzing silver zeolite cartridges.