TABLE OF CONTENTS

Section	Title	Page
1.0	**INTRODUCTION AND GENERAL DESCRIPTION OF PLANT**	
1.1	**INTRODUCTION**	**1.1-1**
1.1.1	INTRODUCTION	1.1-1
1.1.2	LICENSING BASIS DOCUMENTS	1.1-1
1.1.3	NRC COMMITMENTS	1.1-2
1.2	**GENERAL PLANT DESCRIPTION**	**1.2-1**
1.2.1	SITE CHARACTERISTICS	1.2-1
1.2.1.1	LOCATION	1.2-1
1.2.1.2	DEMOGRAPHY	1.2-1
1.2.1.3	METEOROLOGY	1.2-1
1.2.1.4	HYDROLOGY	1.2-1
1.2.1.5	GEOLOGY	1.2-1
1.2.1.6	SEISMOLOGY	1.2-2
1.2.2	FACILITY DESCRIPTION	1.2-2
1.2.2.1	DESIGN CRITERIA	1.2-2
1.2.2.2	NUCLEAR STEAM SUPPLY SYSTEM (NSSS)	1.2-2
1.2.2.3	CONTROL AND INSTRUMENTATION	1.2-4
1.2.2.4	FUEL HANDLING SYSTEM	1.2-5
1.2.2.5	WASTE PROCESSING SYSTEM	1.2-5
1.2.2.6	STEAM AND POWER CONVERSION SYSTEM	1.2-5
1.2.2.7	PLANT ELECTRICAL SYSTEM	1.2-6
1.2.2.8	COOLING WATER	1.2-7
1.2.2.9	COMPONENT COOLING SYSTEM	1.2-7
1.2.2.10	CHEMICAL AND VOLUME CONTROL SYSTEM	1.2-7
1.2.2.11	SAMPLING AND WATER QUALITY SYSTEM	1.2-8
1.2.2.12	VENTILATION	1.2-9
1.2.2.13	FIRE PROTECTION SYSTEM	1.2-9
1.2.2.14	COMPRESSED AIR SYSTEMS	1.2-9
1.2.2.15	ENGINEERED SAFETY FEATURES	1.2-9
1.2.2.16	SHARED FACILITIES AND EQUIPMENT	1.2-10
1.2.3	GENERAL ARRANGEMENT OF MAJOR STRUCTURES AND EQUIPMENT	1.2-13

TABLE OF CONTENTS

Section	Title	Page
1.3	**COMPARISON TABLES**	**1.3-1**
1.3.1	COMPARISONS WITH SIMILAR FACILITY DESIGNS	1.3-1
1.3.2	COMPARISON OF FINAL AND PRELIMINARY DESIGNS	1.3-1
1.4	**IDENTIFICATION OF AGENTS AND CONTRACTORS**	**1.4-1**
1.5	**REQUIREMENTS FOR FURTHER TECHNICAL INFORMATION**	**1.5-1**
1.5.1	17 X 17 FUEL ASSEMBLY	1.5-1
1.5.1.1	ROD CLUSTER CONTROL SPIDER TESTS	1.5-1
1.5.1.2	GRID TESTS	1.5-1
1.5.1.3	FUEL ASSEMBLY STRUCTURAL TESTS	1.5-1
1.5.1.4	GUIDE TUBE TESTS	1.5-2
1.5.1.5	PROTOTYPE ASSEMBLY TESTS	1.5-2
1.5.2	HEAT TRANSFER TESTS (17 X 17)	1.5-2
1.5.2.1	17 X 17 LOCA HEAT TRANSFER TESTS	1.5-2
1.5.2.2	DEPARTURE FROM NUCLEATE BOILING (DNB)	1.5-2
1.6	**MATERIAL INCORPORATED BY REFERENCE**	**1.6-1**
1.7	**ELECTRICAL, INSTRUMENTATION, AND CONTROL DRAWINGS**	**1.7-1**
1.8	**TECHNICAL QUALIFICATION OF APPLICANT**	**1.8-1**
1.9	**NUCLEAR PERFORMANCE PLAN**	**1.9-1**
1.9.1	CORRECTIVE ACTION PROGRAMS	1.9-1
1.9.1.1	CABLE ISSUES	1.9-1
1.9.1.2	CABLE TRAY AND CABLE TRAY SUPPORTS	1.9-2
1.9.1.3	DESIGN BASELINE AND VERIFICATION PROGRAM (DBVP)	1.9-2
1.9.1.4	ELECTRICAL CONDUIT AND CONDUIT SUPPORT	1.9-2
1.9.1.5	ELECTRICAL ISSUES	1.9-2
1.9.1.6	EQUIPMENT SEISMIC QUALIFICATION	1.9-3
1.9.1.7	FIRE PROTECTION	1.9-3
1.9.1.8	HANGER AND ANALYSIS UPDATE PROGRAM (HAAUP)	1.9-3
1.9.1.9	HEAT CODE TRACEABILITY	1.9-3
1.9.1.10	HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) DUCT SUPPORTS	1.9-3

TABLE OF CONTENTS

Section	Title	Page
1.9.1.11	INSTRUMENT LINES	1.9-4
1.9.1.12	PRESTART TEST PROGRAM	1.9-4
1.9.1.13	QA RECORDS	1.9-4
1.9.1.14	Q-LIST	1.9-4
1.9.1.15	REPLACEMENT ITEMS PROGRAM (RIP-CAP)	1.9-4
1.9.1.16	SEISMIC ANALYSIS	1.9-5
1.9.1.17	VENDOR INFORMATION	1.9-5
1.9.1.18	WELDING	1.9-5
1.9.2	SPECIAL PROGRAMS (SPS)	1.9-5
1.9.2.1	CONCRETE QUALITY PROGRAM	1.9-6
1.9.2.2	CONTAINMENT COOLING	1.9-6
1.9.2.3	DETAILED CONTROL ROOM DESIGN REVIEW	1.9-6
1.9.2.4	ENVIRONMENTAL QUALIFICATION PROGRAM	1.9-6
1.9.2.5	MASTER FUSE LIST	1.9-6
1.9.2.6	MECHANICAL EQUIPMENT QUALIFICATION	1.9-6
1.9.2.7	MICROBIOLOGICALLY INDUCED CORROSION (MIC)	1.9-7
1.9.2.8	MODERATE ENERGY LINE BREAK FLOODING (MELB)	1.9-7
1.9.2.9	RADIATION MONITORING SYSTEM	1.9-7
1.9.2.10	SOIL LIQUEFACTION	1.9-7
1.9.2.11	USE-AS-IS CAQS	1.9-7
1.9.3	REFERENCES	1.9-7

2.0 SITE CHARACTERISTICS

2.1	**GEOGRAPHY AND DEMOGRAPHY**	**2.1-1**
2.1.1	SITE LOCATION AND DESCRIPTION	2.1-1
2.1.1.1	SPECIFICATION OF LOCATION	2.1-1
2.1.1.2	SITE AREA MAP	2.1-1
2.1.1.3	BOUNDARIES FOR ESTABLISHING EFFLUENT LIMITS	2.1-2
2.1.2	EXCLUSION AREA AUTHORITY AND CONTROL	2.1-2
2.1.2.1	AUTHORITY	2.1-2
2.1.2.2	CONTROL OF ACTIVITIES UNRELATED TO PLANT OPERATION	2.1-2
2.1.2.3	ARRANGEMENTS FOR TRAFFIC CONTROL	2.1-2
2.1.2.4	ABANDONMENT OR RELOCATION OF ROADS	2.1-2
2.1.3	POPULATION DISTRIBUTION	2.1-2

TABLE OF CONTENTS

Section	Title	Page
2.1.3.1	POPULATION WITHIN 10 MILES	2.1-3
2.1.3.2	POPULATION BETWEEN 10 AND 50 MILES	2.1-3
2.1.3.3	TRANSIENT POPULATION	2.1-4
2.1.3.4	LOW POPULATION ZONE	2.1-4
2.1.3.5	POPULATION CENTER	2.1-4
2.1.3.6	POPULATION DENSITY	2.1-4
2.2	**NEARBY INDUSTRIAL, TRANSPORTATION, AND MILITARY FACILITIES**	**2.2-1**
2.2.1	LOCATION AND ROUTE	2.2-1
2.2.2	DESCRIPTIONS	2.2-1
2.2.2.1	DESCRIPTION OF FACILITIES	2.2-1
2.2.2.2	DESCRIPTION OF PRODUCTS AND MATERIALS	2.2-1
2.2.2.3	PIPELINES	2.2-1
2.2.2.4	WATERWAYS	2.2-1
2.2.2.5	AIRPORTS	2.2-2
2.2.2.6	PROJECTIONS OF INDUSTRIAL GROWTH	2.2-2
2.2.3	EVALUATION OF POTENTIAL ACCIDENTS	2.2-2
2.2.3.1	REFERENCES	2.2-3
2.3	**METEOROLOGY**	**2.3-1**
2.3.1	REGIONAL CLIMATE	2.3-1
2.3.1.1	DATA SOURCES	2.3-1
2.3.1.2	GENERAL CLIMATE	2.3-1
2.3.1.3	SEVERE WEATHER	2.3-2
2.3.2	LOCAL METEOROLOGY	2.3-6
2.3.2.1	DATA SOURCES	2.3-6
2.3.2.2	NORMAL AND EXTREME VALUES OF METEOROLOGICAL PARAMETERS	2.3-6
2.3.2.3	POTENTIAL INFLUENCE OF THE PLANT AND ITS FACILITIES ON LOCAL METEOROLOGY	2.3-9
2.3.2.4	LOCAL METEOROLOGICAL CONDITIONS FOR DESIGN AND OPERATING BASES	2.3-9
2.3.3	ONSITE METEOROLOGICAL MEASUREMENTS PROGRAM	2.3-9
2.3.3.1	PREOPERATIONAL PROGRAM	2.3-9
2.3.3.2	OPERATIONAL METEOROLOGICAL PROGRAM	2.3-12

TABLE OF CONTENTS

Section	Title	Page
2.3.3.3	ONSITE DATA SUMMARIES OF PARAMETERS FOR DISPERSION METEOROLOGY	2.3-13
2.3.4	SHORT-TERM (ACCIDENT) DIFFUSION ESTIMATES	2.3-14
2.3.4.1	OBJECTIVE	2.3-14
2.3.4.2	CALCULATION RESULTS	2.3-16
2.3.5	LONG-TERM (ROUTINE) DIFFUSION ESTIMATES	2.3-17
2.4	**HYDROLOGIC ENGINEERING**	**2.4-1**
2.4.1	HYDROLOGICAL DESCRIPTION	2.4-1
2.4.1.1	SITES AND FACILITIES	2.4-1
2.4.1.2	HYDROSPHERE	2.4-2
2.4.2	FLOODS	2.4-6
2.4.2.1	FLOOD HISTORY	2.4-6
2.4.2.2	FLOOD DESIGN CONSIDERATIONS	2.4-6
2.4.2.3	EFFECTS OF LOCAL INTENSE PRECIPITATION	2.4-8
2.4.3	PROBABLE MAXIMUM FLOOD (PMF) ON STREAMS AND RIVERS	2.4-11
2.4.3.1	PROBABLE MAXIMUM PRECIPITATION (PMP)	2.4-12
2.4.3.2	PRECIPITATION LOSSES	2.4-13
2.4.3.3	RUNOFF AND STREAM COURSE MODEL	2.4-13
2.4.3.4	PROBABLE MAXIMUM FLOOD FLOW	2.4-16
2.4.3.5	WATER LEVEL DETERMINATIONS	2.4-17
2.4.3.6	COINCIDENT WIND WAVE ACTIVITY	2.4-18
2.4.4	POTENTIAL DAM FAILURES, SEISMICALLY INDUCED	2.4-20
2.4.4.1	DAM FAILURE PERMUTATIONS	2.4-21
2.4.4.2	UNSTEADY FLOW ANALYSIS OF POTENTIAL DAM FAILURES	2.4-32
2.4.4.3	WATER LEVEL AT PLANTSITE	2.4-32
2.4.5	PROBABLE MAXIMUM SURGE AND SEICHE FLOODING	2.4-32
2.4.6	PROBABLE MAXIMUM TSUNAMI FLOODING	2.4-33
2.4.7	ICE EFFECTS	2.4-33
2.4.8	COOLING WATER CANALS AND RESERVOIRS	2.4-34
2.4.9	CHANNEL DIVERSIONS	2.4-34
2.4.10	FLOODING PROTECTION REQUIREMENTS	2.4-34
2.4.11	LOW WATER CONSIDERATIONS	2.4-35
2.4.11.1	LOW FLOW IN RIVERS AND STREAMS	2.4-35

TABLE OF CONTENTS

Section	Title	Page
2.4.11.2	LOW WATER RESULTING FROM SURGES, SEICHES, OR TSUNAMI	2.4-35
2.4.11.3	HISTORICAL LOW WATER	2.4-35
2.4.11.4	FUTURE CONTROL	2.4-36
2.4.11.5	PLANT REQUIREMENTS	2.4-36
2.4.12	DISPERSION, DILUTION, AND TRAVEL TIMES OF ACCIDENTAL RELEASES OF LIQUID EFFLUENTS	2.4-37
2.4.12.1	RADIOACTIVE LIQUID WASTES	2.4-37
2.4.12.2	ACCIDENTAL SLUG RELEASES TO SURFACE WATER	2.4-37
2.4.12.3	EFFECTS ON GROUND WATER	2.4-40
2.4.13	GROUNDWATER	2.4-40
2.4.13.1	DESCRIPTION AND ON-SITE USE	2.4-40
2.4.13.2	SOURCES	2.4-41
2.4.13.3	ACCIDENT EFFECTS	2.4-42
2.4.13.4	MONITORING AND SAFEGUARD REQUIREMENTS	2.4-43
2.4.13.5	DESIGN BASIS FOR SUBSURFACE HYDROSTATIC LOADING	2.4-43
2.4.14	FLOODING PROTECTION REQUIREMENTS	2.4-44
2.4.14.1	INTRODUCTION	2.4-44
2.4.14.2	PLANT OPERATION DURING FLOODS ABOVE GRADE	2.4-45
2.4.14.3	WARNING SCHEME	2.4-47
2.4.14.4	PREPARATION FOR FLOOD MODE	2.4-48
2.4.14.5	EQUIPMENT	2.4-49
2.4.14.6	SUPPLIES	2.4-50
2.4.14.7	PLANT RECOVERY	2.4-50
2.4.14.8	WARNING PLAN	2.4-50
2.4.14.9	BASIS FOR FLOOD PROTECTION PLAN IN RAINFALL FLOODS	2.4-51
2.4.14.10	BASIS FOR FLOOD PROTECTION PLAN IN SEISMIC-CAUSED DAM FAILURES	2.4-56
2.4.14.11	SPECIAL CONDITION ALLOWANCE	2.4-57
2.5	**GEOLOGY, SEISMOLOGY, AND GEOTECHNICAL ENGINEERING SUMMARY OF FOUNDATION CONDITIONS**	**2.5-1**
2.5.1	BASIC GEOLOGY AND SEISMIC INFORMATION	2.5-2
2.5.1.1	REGIONAL GEOLOGY	2.5-3
2.5.1.2	SITE GEOLOGY	2.5-26
2.5.2	VIBRATORY GROUND MOTION	2.5-34

TABLE OF CONTENTS

Section	Title	Page
2.5.2.1	SEISMICITY	2.5-34
2.5.2.2	GEOLOGIC STRUCTURES AND TECTONIC ACTIVITY	2.5-41
2.5.2.3	CORRELATION OF EARTHQUAKE ACTIVITY WITH GEOLOGIC STRUCTURES TO TECTONIC PROVINCES	2.5-42
2.5.2.4	MAXIMUM EARTHQUAKE POTENTIAL	2.5-42
2.5.2.5	SEISMIC WAVE TRANSMISSION CHARACTERISTICS OF THE SITE	2.5-44
2.5.2.6	SAFE SHUTDOWN EARTHQUAKE	2.5-45
2.5.2.7	OPERATING BASIS EARTHQUAKE	2.5-45
2.5.3	SURFACE FAULTING	2.5-45
2.5.3.1	GEOLOGIC CONDITIONS OF THE SITE	2.5-45
2.5.3.2	EVIDENCE OF FAULT OFFSET	2.5-45
2.5.3.3	EARTHQUAKES ASSOCIATED WITH CAPABLE FAULTS	2.5-54
2.5.3.4	INVESTIGATIONS OF CAPABLE FAULTS	2.5-54
2.5.3.5	CORRELATION OF EPICENTERS WITH CAPABLE FAULTS	2.5-56
2.5.3.6	DESCRIPTION OF CAPABLE FAULTS	2.5-56
2.5.3.7	ZONE REQUIRING DETAILED FAULTING INVESTIGATION	2.5-56
2.5.3.8	RESULTS OF FAULTING INVESTIGATIONS	2.5-56
2.5.4	STABILITY OF SUBSURFACE MATERIALS	2.5-56
2.5.4.1	GEOLOGIC FEATURES	2.5-56
2.5.4.2	PROPERTIES OF SUBSURFACE MATERIALS	2.5-57
2.5.4.3	EXPLORATION	2.5-89
2.5.4.4	GEOPHYSICAL SURVEYS	2.5-90
2.5.4.5	EXCAVATIONS AND BACKFILL	2.5-93
2.5.4.6	GROUNDWATER CONDITIONS	2.5-101
2.5.4.7	RESPONSE OF SOIL AND ROCK TO DYNAMIC LOADING	2.5-102
2.5.4.8	LIQUEFACTION POTENTIAL	2.5-103
2.5.4.9	EARTHQUAKE DESIGN BASIS	2.5-113
2.5.4.10	STATIC ANALYSIS	2.5-113
2.5.4.11	SAFETY-RELATED CRITERIA FOR FOUNDATIONS	2.5-115
2.5.4.12	TECHNIQUES TO IMPROVE SUBSURFACE CONDITIONS	2.5-115
2.5.4.13	CONSTRUCTION NOTES	2.5-118
2.5.5	STABILITY OF SLOPES	2.5-118
2.5.5.1	SLOPE CHARACTERISTICS	2.5-118
2.5.5.2	DESIGN CRITERIA AND ANALYSIS	2.5-120

TABLE OF CONTENTS

Section	Title	Page
2.5.5.3	LOGS OF BORINGS	2.5-127
2.5.5.4	COMPACTION SPECIFICATIONS	2.5-127
2.5.6	EMBANKMENTS	2.5-127
3.0	**DESIGN OF STRUCTURES, COMPONENTS, EQUIPMENT, AND SYSTEMS**	
3.1	**CONFORMANCE WITH NRC GENERAL DESIGN CRITERIA**	**3.1-1**
3.1.1	INTRODUCTION	3.1-1
3.1.2	WBNP CONFORMANCE WITH GDCS	3.1-1
3.1.2.1	OVERALL REQUIREMENTS	3.1-1
3.1.2.2	PROTECTION BY MULTIPLE FISSION PRODUCT BARRIERS	3.1-5
3.1.2.3	PROTECTION AND REACTIVITY CONTROL SYSTEMS	3.1-12
3.1.2.4	FLUID SYSTEMS	3.1-17
3.1.2.5	REACTOR CONTAINMENT	3.1-30
3.1.2.6	FUEL AND RADIOACTIVITY CONTROL	3.1-35
3.2	**CLASSIFICATION OF STRUCTURES, SYSTEMS, AND COMPONENTS**	**3.2-1**
3.2.1	SEISMIC CLASSIFICATIONS	3.2-1
3.2.2	SYSTEM QUALITY GROUP CLASSIFICATION	3.2-1
3.2.2.1	CLASS A	3.2-2
3.2.2.2	CLASS B	3.2-2
3.2.2.3	CLASS C	3.2-2
3.2.2.4	CLASS D	3.2-2
3.2.2.5	RELATIONSHIP OF APPLICABLE CODES TO SAFETY CLASSIFICATION FOR MECHANICAL COMPONENTS	3.2-3
3.2.2.6	NONNUCLEAR SAFETY CLASS (NNS)	3.2-3
3.2.2.7	HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SAFETY CLASSIFICATION	3.2-3
3.2.3	CODE CASES AND CODE EDITIONS AND ADDENDA	3.2-3
3.2.3.1	TVA DESIGN AND FABRICATION	3.2-3
3.2.3.2	PURCHASED MATERIALS AND COMPONENTS	3.2-4
3.3	**WIND AND TORNADO LOADING**	**3.3-1**
3.3.1	WIND LOADINGS	3.3-1
3.3.1.1	DESIGN WIND VELOCITY	3.3-1
3.3.1.2	DETERMINATION OF APPLIED FORCE	3.3-1

TABLE OF CONTENTS

Section	Title	Page
3.3.2	TORNADO LOADINGS	3.3-1
3.3.2.1	APPLICABLE DESIGN PARAMETERS	3.3-1
3.3.2.2	DETERMINATION OF FORCES ON STRUCTURES	3.3-2
3.3.2.3	ABILITY OF CATEGORY I STRUCTURES TO PERFORM DESPITE FAILURE OF STRUCTURES NOT DESIGNED FOR TORNADO LOADS	3.3-3
3.4	**WATER LEVEL (FLOOD) DESIGN**	**3.4-1**
3.4.1	FLOOD PROTECTION	3.4-1
3.4.2	ANALYSIS PROCEDURE	3.4-1
3.5	**MISSILE PROTECTION**	**3.5-1**
3.5.1	MISSILE SELECTION AND DESCRIPTION	3.5-2
3.5.1.1	INTERNALLY GENERATED MISSILES (OUTSIDE CONTAINMENT)	3.5-2
3.5.1.2	INTERNALLY GENERATED MISSILES (INSIDE CONTAINMENT)	3.5-5
3.5.1.3	TURBINE MISSILES	3.5-10
3.5.1.4	MISSILES GENERATED BY NATURAL PHENOMENA	3.5-23
3.5.1.5	MISSILES GENERATED BY EVENTS NEAR THE SITE.	3.5-23
3.5.1.6	AIRCRAFT HAZARDS	3.5-24
3.5.2	SYSTEMS TO BE PROTECTED	3.5-24
3.5.3	BARRIER DESIGN PROCEDURES	3.5-25
3.5.3.1	ADDITIONAL DIESEL GENERATOR BUILDING (AND OTHER CATEGORY I STRUCTURES ADDED AFTER JULY 1979)	3.5-28
3.5A	**ESTIMATES OF VELOCITIES OF JET PROPELLED MISSILES**	**3.5A-1**
3.6	**PROTECTION AGAINST DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED RUPTURE OF PIPING**	**3.6-1**
3.6A	**PROTECTION AGAINST DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED RUPTURE OF PIPING (EXCLUDING REACTOR COOLANT SYSTEM PIPING)**	**3.6-1**
3.6A.1	POSTULATED PIPING FAILURES IN FLUID SYSTEMS INSIDE AND OUTSIDE CONTAINMENT	3.6-8
3.6A.1.1	DESIGN BASES	3.6-8
3.6A.1.2	DESCRIPTION OF PIPING SYSTEM ARRANGEMENT	3.6-10
3.6A.1.3	SAFETY EVALUATION	3.6-10

TABLE OF CONTENTS

Section	Title	Page
3.6A.2	DETERMINATION OF BREAK LOCATIONS AND DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED RUPTURE OF PIPING	3.6-11
3.6A.2.1	CRITERIA USED TO DEFINE BREAK AND CRACK LOCATION AND CONFIGURATION	3.6-11
3.6A.2.2	ANALYTICAL METHODS TO DEFINE FORCING FUNCTIONS AND RESPONSE MODELS	3.6-17
3.6A.2.3	DYNAMIC ANALYSIS METHODS TO VERIFY INTEGRITY AND OPERABILITY	3.6-21
3.6A.2.4	GUARD PIPE ASSEMBLY DESIGN CRITERIA	3.6-24
3.6A.2.5	SUMMARY OF DYNAMIC ANALYSIS RESULTS	3.6-25
3.6B	**PROTECTION AGAINST DYNAMIC EFFECTS ASSOCIATED WITH THE POSTULATED RUPTURE OF PIPING**	**3.6-26**
3.6B.1	BREAK LOCATIONS AND DYNAMIC EFFECTS ASSOCIATED WITH POSTULATED PRIMARY LOOP PIPE RUPTURE	3.6-26
3.6B.2	ANALYTICAL METHODS TO DEFINE FORCING FUNCTION AND RESPONSE MODELS	3.6-27
3.6B.3	DYNAMIC ANALYSIS OF THE REACTOR COOLANT LOOP PIPING EQUIPMENT SUPPORTS AND PIPE WHIP RESTRAINTS	3.6-29
3.7	**SEISMIC DESIGN**	**3.7-1**
3.7.1	SEISMIC INPUT	3.7-2
3.7.1.1	GROUND RESPONSE SPECTRA	3.7-2
3.7.1.2	DESIGN TIME HISTORIES	3.7-2
3.7.1.3	CRITICAL DAMPING VALUES	3.7-3
3.7.1.4	SUPPORTING MEDIA FOR SEISMIC CATEGORY I STRUCTURES	3.7-3
3.7.2	SEISMIC SYSTEM ANALYSIS	3.7-3
3.7.2.1	SEISMIC ANALYSIS METHODS	3.7-4
3.7.2.2	NATURAL FREQUENCIES AND RESPONSE LOADS FOR NSSS	3.7-21
3.7.2.3	PROCEDURES USED FOR MODELING	3.7-22
3.7.2.4	SOIL/STRUCTURE INTERACTION	3.7-23
3.7.2.5	DEVELOPMENT OF FLOOR RESPONSE SPECTRA	3.7-23
3.7.2.6	THREE COMPONENTS OF EARTHQUAKE MOTION	3.7-25
3.7.2.7	COMBINATION OF MODAL RESPONSES	3.7-26
3.7.2.8	INTERACTION OF NON-CATEGORY I STRUCTURES WITH SEISMIC CATEGORY I STRUCTURES	3.7-28

TABLE OF CONTENTS

Section	Title	Page
3.7.2.9	EFFECTS OF PARAMETER VARIATIONS ON FLOOR RESPONSE SPECTRA	3.7-29
3.7.2.10	USE OF CONSTANT VERTICAL LOAD FACTORS	3.7-29
3.7.2.11	METHODS USED TO ACCOUNT FOR TORSIONAL EFFECTS	3.7-29
3.7.2.12	COMPARISON OF RESPONSES - SET A VERSUS SET B	3.7-30
3.7.2.13	METHODS FOR SEISMIC ANALYSIS OF DAMS	3.7-30
3.7.2.14	DETERMINATION OF CATEGORY I STRUCTURE OVERTURNING MOMENTS	3.7-30
3.7.2.15	ANALYSIS PROCEDURE FOR DAMPING	3.7-31
3.7.3	SEISMIC SUBSYSTEM ANALYSIS	3.7-31
3.7.3.1	SEISMIC ANALYSIS METHODS FOR OTHER THAN NSSS	3.7-31
3.7.3.2	DETERMINATION OF NUMBER OF EARTHQUAKE CYCLES	3.7-32
3.7.3.3	PROCEDURE USED FOR MODELING	3.7-32
3.7.3.4	BASIS FOR SELECTION OF FREQUENCIES	3.7-34
3.7.3.5	USE OF EQUIVALENT STATIC LOAD METHOD OF ANALYSIS	3.7-35
3.7.3.6	THREE COMPONENTS OF EARTHQUAKE MOTION	3.7-35
3.7.3.7	COMBINATION OF MODAL RESPONSES	3.7-36
3.7.3.8	ANALYTICAL PROCEDURES FOR PIPING OTHER THAN NSSS	3.7-37
3.7.3.9	MULTIPLE SUPPORTED EQUIPMENT AND COMPONENTS WITH DISTINCT INPUTS	3.7-44
3.7.3.10	USE OF CONSTANT VERTICAL LOAD FACTORS	3.7-45
3.7.3.11	TORSIONAL EFFECTS OF ECCENTRIC MASSES	3.7-45
3.7.3.12	BURIED SEISMIC CATEGORY I PIPING SYSTEMS	3.7-45
3.7.3.13	INTERACTION OF OTHER PIPING WITH SEISMIC CATEGORY I PIPING	3.7-51
3.7.3.14	SEISMIC ANALYSES FOR FUEL ELEMENTS, CONTROL ROD ASSEMBLIES, CONTROL ROD DRIVES, AND REACTOR INTERNALS	3.7-51
3.7.3.15	ANALYSIS PROCEDURE FOR DAMPING	3.7-53
3.7.3.16	SEISMIC ANALYSIS AND QUALIFICATION OF CATEGORY I EQUIPMENT OTHER THAN NSSS	3.7-53
3.7.3.17	SEISMIC ANALYSIS AND DESIGN OF HVAC DUCT AND DUCT SUPPORT SYSTEMS	3.7-56
3.7.3.18	SEISMIC QUALIFICATION OF MAIN CONTROL ROOM SUSPENDED CEILING AND AIR DELIVERY COMPONENTS	3.7-60
3.7.4	SEISMIC INSTRUMENTATION PROGRAM	3.7-61

TABLE OF CONTENTS

Section	Title	Page
3.7.4.1	COMPARISON WITH REGULATORY GUIDE 1.12	3.7-61
3.7.4.2	LOCATION AND DESCRIPTION OF INSTRUMENTATION	3.7-61
3.7.4.3	CONTROL ROOM OPERATOR NOTIFICATION	3.7-63
3.7.4.4	CONTROLLED SHUTDOWN LOGIC	3.7-64
3.7.4.5	COMPARISON OF MEASURED AND PREDICTED RESPONSES	3.7-65
3.8	**DESIGN OF CATEGORY I STRUCTURES**	
3.8.1	**CONCRETE SHIELD BUILDING**	**3.8.1-1**
3.8.1.1	DESCRIPTION OF THE SHIELD BUILDING	3.8.1-1
3.8.1.1.1	EQUIPMENT HATCH DOORS AND SLEEVES	3.8.1-2
3.8.1.2	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	3.8.1-3
3.8.1.3	LOADS AND LOADING COMBINATIONS	3.8.1-5
3.8.1.4	DESIGN AND ANALYSIS PROCEDURES	3.8.1-7
3.8.1.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.1-10
3.8.1.6	MATERIALS, QUALITY CONTROL AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.1-11
3.8.1.6.1	MATERIALS	3.8.1-11
3.8.1.6.2	QUALITY CONTROL	3.8.1-11
3.8.1.6.3	CONSTRUCTION TECHNIQUES (HISTORICAL INFORMATION)	3.8.1-12
3.8.1.7	TESTING AND INSERVICE SURVEILLANCE REQUIREMENTS	3.8.1-13
3.8.2	**STEEL CONTAINMENT SYSTEM**	**3.8.2-1**
3.8.2.1	DESCRIPTION OF THE CONTAINMENT AND PENETRATIONS	3.8.2-1
3.8.2.1.1	DESCRIPTION OF THE CONTAINMENT	3.8.2-1
3.8.2.1.2	DESCRIPTION OF PENETRATIONS	3.8.2-1
3.8.2.2	APPLICABLE CODES, STANDARDS AND SPECIFICATIONS	3.8.2-3
3.8.2.2.1	CODES	3.8.2-3
3.8.2.2.2	DESIGN SPECIFICATION SUMMARY	3.8.2-4
3.8.2.2.3	NRC REGULATORY GUIDES	3.8.2-6
3.8.2.3	LOADS AND LOADING COMBINATIONS	3.8.2-7
3.8.2.3.1	DESIGN LOADS	3.8.2-7
3.8.2.3.2	LOADING CONDITIONS	3.8.2-9
3.8.2.4	DESIGN AND ANALYSIS PROCEDURES	3.8.2-12
3.8.2.4.1	INTRODUCTION	3.8.2-12

TABLE OF CONTENTS

Section	Title	Page
3.8.2.4.2	STATIC STRESS ANALYSIS	3.8.2-12
3.8.2.4.3	DYNAMIC SEISMIC ANALYSIS	3.8.2-13
3.8.2.4.4	NON-AXISYMMETRIC PRESSURE LOADING ANALYSIS	3.8.2-13
3.8.2.4.5	THERMAL ANALYSIS	3.8.2-14
3.8.2.4.6	PENETRATIONS ANALYSIS	3.8.2-15
3.8.2.4.7	INTERACTION OF CONTAINMENT AND ATTACHED EQUIPMENT	3.8.2-17
3.8.2.4.8	ANCHORAGE	3.8.2-17
3.8.2.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.2-18
3.8.2.5.1	MARGIN OF SAFETY	3.8.2-18
3.8.2.6	MATERIALS, QUALITY CONTROL, AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.2-19
3.8.2.6.1	MATERIALS - GENERAL	3.8.2-19
3.8.2.6.2	CORROSION PROTECTION	3.8.2-22
3.8.2.6.3	PROTECTIVE COATINGS	3.8.2-24
3.8.2.6.4	TOLERANCES	3.8.2-24
3.8.2.6.5	VESSEL MATERIAL INSPECTION AND TEST	3.8.2-25
3.8.2.6.6	IMPACT TESTING	3.8.2-25
3.8.2.6.7	POST-WELD HEAT TREATMENT	3.8.2-25
3.8.2.6.8	WELDING	3.8.2-25
3.8.2.7	TESTING AND INSERVICE INSPECTION REQUIREMENTS	3.8.2-26
3.8.2.7.1	BOTTOM LINER PLATES TEST - HISTORICAL INFORMATION	3.8.2-26
3.8.2.7.2	VERTICAL WALL AND DOME TESTS - HISTORICAL INFORMATION	3.8.2-26
3.8.2.7.3	SOAP BUBBLE TESTS - HISTORICAL INFORMATION	3.8.2-26
3.8.2.7.4	OVERPRESSURE TESTS - HISTORICAL INFORMATION	3.8.2-26
3.8.2.7.5	LEAKAGE RATE TEST - HISTORICAL INFORMATION	3.8.2-26
3.8.2.7.6	OPERATIONAL TESTING - HISTORICAL INFORMATION	3.8.2-27
3.8.2.7.7	LEAK TESTING AIRLOCKS - HISTORICAL INFORMATION	3.8.2-27
3.8.2.7.8	PENETRATION TESTS - HISTORICAL INFORMATION	3.8.2-27
3.8.2.7.9	INSERVICE INSPECTION REQUIREMENTS	3.8.2-27
3.8.3	**CONCRETE INTERIOR STRUCTURE**	**3.8.3-1**
3.8.3.1	DESCRIPTION OF THE INTERIOR STRUCTURE	3.8.3-1
3.8.3.2	APPLICABLE CODES, STANDARDS AND SPECIFICATIONS	3.8.3-7

TABLE OF CONTENTS

Section	Title	Page
3.8.3.3	LOADS AND LOADING COMBINATIONS	3.8.3-13
3.8.3.4	DESIGN AND ANALYSIS PROCEDURES	3.8.3-16
3.8.3.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.3-31
3.8.3.6	MATERIALS, QUALITY CONTROL AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.3-34
3.8.3.7	TESTING AND INSERVICE SURVEILLANCE REQUIREMENTS	3.8.3-38
3.8.3.8	ENVIRONMENTAL EFFECTS	3.8.3-38
3.8.4	**OTHER CATEGORY I STRUCTURES**	**3.8.4-1**
3.8.4.1	DESCRIPTION OF THE STRUCTURES	3.8.4-1
3.8.4.1.1	AUXILIARY-CONTROL BUILDING	3.8.4-1
3.8.4.2	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	3.8.4-17
3.8.4.3	LOADS AND LOADING COMBINATIONS	3.8.4-21
3.8.4.4	DESIGN AND ANALYSIS PROCEDURES	3.8.4-23
3.8.4.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.4-35
3.8.4.6	MATERIALS, QUALITY CONTROL, AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.4-37
3.8.4.7	TESTING AND INSERVICE SURVEILLANCE REQUIREMENTS	3.8.4-39
3.8.5	**FOUNDATIONS AND CONCRETE SUPPORTS**	**3.8.5-1**
3.8.5.1	DESCRIPTION OF FOUNDATIONS AND SUPPORTS	3.8.5-1
3.8.5.1.1	PRIMARY CONTAINMENT	3.8.5-1
3.8.5.1.2	FOUNDATIONS OF OTHER CATEGORY I STRUCTURES	3.8.5-1
3.8.5.2	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	3.8.5-3
3.8.5.3	LOADS AND LOADING COMBINATIONS	3.8.5-4
3.8.5.4	DESIGN AND ANALYSIS PROCEDURE	3.8.5-4
3.8.5.4.1	PRIMARY CONTAINMENT FOUNDATION	3.8.5-4
3.8.5.4.2	AUXILIARY-CONTROL BUILDING	3.8.5-4
3.8.5.4.3	INTAKE PUMPING STATION	3.8.5-4
3.8.5.4.4	SOIL-SUPPORTED STRUCTURES	3.8.5-5
3.8.5.4.5	PILE SUPPORTED STRUCTURES	3.8.5-5
3.8.5.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.5-5
3.8.5.5.1	PRIMARY CONTAINMENT FOUNDATION	3.8.5-5
3.8.5.5.2	FOUNDATIONS OF OTHER CATEGORY I STRUCTURES	3.8.5-5
3.8.5.6	MATERIALS, QUALITY CONTROL, AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.5-6

TABLE OF CONTENTS

Section	Title	Page
3.8.5.6.1	MATERIALS	3.8.5-6
3.8.5.6.2	QUALITY CONTROL	3.8.5-7
3.8.5.6.3	SPECIAL CONSTRUCTION TECHNIQUES	3.8.5-7
3.8.6	**CATEGORY I(L) CRANES**	**3.8.6-1**
3.8.6.1	POLAR CRANES	3.8.6-1
3.8.6.1.1	DESCRIPTION	3.8.6-1
3.8.6.1.2	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	3.8.6-1
3.8.6.1.3	LOADS, LOADING COMBINATIONS, AND ALLOWABLE STRESSES	3.8.6-2
3.8.6.1.4	DESIGN AND ANALYSIS PROCEDURE	3.8.6-2
3.8.6.1.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.6-2
3.8.6.1.6	MATERIALS, QUALITY CONTROLS, AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.6-3
3.8.6.1.7	TESTING AND IN-SERVICE SURVEILLANCE REQUIREMENTS	3.8.6-3
3.8.6.1.8	SAFETY FEATURES	3.8.6-3
3.8.6.2	AUXILIARY BUILDING CRANE	3.8.6-4
3.8.6.2.1	DESCRIPTION	3.8.6-4
3.8.6.2.2	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	3.8.6-5
3.8.6.2.3	LOADS, LOADING COMBINATIONS, AND ALLOWABLE STRESSES	3.8.6-5
3.8.6.2.4	DESIGN AND ANALYSIS PROCEDURE	3.8.6-5
3.8.6.2.5	STRUCTURAL ACCEPTANCE CRITERIA	3.8.6-6
3.8.6.2.6	MATERIALS, QUALITY CONTROLS, AND SPECIAL CONSTRUCTION TECHNIQUES	3.8.6-6
3.8.6.2.7	TESTING AND IN-SERVICE SURVEILLANCE REQUIREMENTS	3.8.6-7
3.8.6.2.8	SAFETY FEATURES	3.8.6-7
3.8A	**SHELL TEMPERATURE TRANSIENTS**	**3.8A-1**
3.8B	**BUCKLING STRESS CRITERIA**	**3.8B-1**
3.8B.1	INTRODUCTION	3.8B-1
3.8B.2	SHELLS STIFFENED WITH CIRCUMFERENTIAL STIFFENERS	3.8B-1
3.8B.2.1	CIRCULAR CYLINDRICAL SHELLS UNDER AXIAL COMPRESSION	3.8B-1
3.8B.2.2	CIRCULAR CYLINDRICAL SHELLS IN CIRCUMFERENTIAL COMPRESSION	3.8B-2

TABLE OF CONTENTS

Section	Title	Page
3.8B.2.3	CIRCULAR CYLINDRICAL SHELLS UNDER TORSION	3.8B-2
3.8B.2.4	CIRCULAR CYLINDRICAL SHELLS UNDER BENDING	3.8B-3
3.8B.2.5	CIRCULAR CYLINDRICAL SHELL UNDER COMBINED LOADS	3.8B-4
3.8B.3	SHELLS STIFFENED WITH A COMBINATION OF CIRCUMFERENTIAL AND VERTICAL STIFFENERS	3.8B-5
3.8B.4	SPHERICAL SHELLS	3.8B-7
3.8B.2.1	THE CRITICAL BUCKLING STRESS IN THE SPHERICAL DOME, EXCEPT FOR EXTERNAL PRESSURE, WAS DETERMINED BY THE FOLLOWING EQUATION:	3.8B-7
3.8B.2.2	SPHERICAL SHELL UNDER COMBINED LOADS	3.8B-8
3.8B.3	FACTOR OF SAFETY	3.8B-8
3.8C	**DOCUMENTATION OF CB&I COMPUTER PROGRAMS**	**3.8C-1**
3.8C.1	INTRODUCTION	3.8C-1
3.8C.2	PROGRAM 1017-MODAL ANALYSIS OF STRUCTURES USING THE EIGEN VALUE TECHNIQUE	3.8C-1
3.8C.3	PROGRAM 1044-SEISMIC ANALYSIS OF VESSEL APPENDAGES	3.8C-1
3.8C.4	PROGRAM E1668-SPECTRAL ANALYSIS FOR ACCELERATION RECORDS DIGITIZED AT EQUAL INTERVALS	3.8C-3
3.8C.5	PROGRAM 1642-TRANSIENT PRESSURE BEAM ANALYSIS	3.8C-3
3.8C.6	PROGRAM E1623-POST PROCESSOR PROGRAM FOR PROGRAM E1374	3.8C-4
3.8C.7	PROGRAM E1374-SHELL DYNAMIC ANALYSIS	3.8C-5
3.8C.7.1	INTRODUCTION	3.8C-5
3.8C.8	PROGRAM E1622-LOAD GENERATION PREPROCESSOR FOR PROGRAM E1374	3.8C-6
3.8C.9	PROGRAM E1624 SPCGEN-SPECTRAL CURVE GENERATION	3.8C-7
3.8C.10	PROGRAM 781, METHOD OF MODELING VERTICAL STIFFENERS	3.8C-7
3.8C.11	PROGRAM 119-CHECK OF FLANGE DESIGN	3.8C-7
3.8C.12	PROGRAM 772-NOZZLE REINFORCEMENT CHECK	3.8C-7
3.8C.13	PROGRAM 1027-WRC 107 STRESS INTENSITIES AT LOADED ATTACHMENTS FOR SPHERES OR CYLINDERS WITH ROUND OR SQUARE ATTACHMENT	3.8C-8
3.8C.14	PROGRAM 1036M-STRESS INTENSITIES IN JUMBO INSERT PLATES	3.8C-8
3.8D	**COMPUTER PROGRAMS FOR STRUCTURAL ANALYSIS**	**3.8D-1**

TABLE OF CONTENTS

Section	Title	Page
3.8E	**CODES, LOAD DEFINITIONS AND LOAD COMBINATIONS FOR THE MODIFICATION AND EVALUATION OF EXISTING STRUCTURES AND FOR THE DESIGN OF NEW FEATURES ADDED TO EXISTING STRUCTURES AND THE DESIGN OF STRUCTURES INITIATED AFTER JULY 1979**	**3.8E-1**
3.8E.1	APPLICATION CODES AND STANDARDS	3.8E-1
3.8E.2	LOAD DEFINITIONS	3.8E-1
3.8E.3	LOAD COMBINATIONS - CONCRETE	3.8E-3
3.8E.4	LOAD COMBINATIONS - STRUCTURAL STEEL	3.8E-5
3.9	**MECHANICAL SYSTEMS AND COMPONENTS**	**3.9-1**
3.9.1	GENERAL TOPIC FOR ANALYSIS OF SEISMIC CATEGORY I ASME CODE AND NON-CODE ITEMS	3.9-1
3.9.1.1	DESIGN TRANSIENTS	3.9-1
3.9.1.2	COMPUTER PROGRAMS USED IN ANALYSIS AND DESIGN	3.9-1
3.9.1.3	EXPERIMENTAL STRESS ANALYSIS	3.9-3
3.9.1.4	CONSIDERATION FOR THE EVALUATION OF THE FAULTED CONDITION	3.9-3
3.9.2	DYNAMIC TESTING AND ANALYSIS	3.9-4
3.9.2.1	PREOPERATIONAL VIBRATION AND DYNAMIC EFFECTS TESTING ON PIPING	3.9-4
3.9.2.2	SEISMIC QUALIFICATION TESTING OF SAFETY-RELATED MECHANICAL EQUIPMENT	3.9-6
3.9.2.3	DYNAMIC RESPONSE ANALYSIS OF REACTOR INTERNALS UNDER OPERATIONAL FLOW TRANSIENTS AND STEADY-STATE CONDITIONS	3.9-8
3.9.2.4	PREOPERATIONAL FLOW-INDUCED VIBRATION TESTING OF REACTOR INTERNALS	3.9-10
3.9.2.5	DYNAMIC SYSTEM ANALYSIS OF THE REACTOR INTERNALS UNDER FAULTED CONDITIONS	3.9-12
3.9.2.6	CORRELATIONS OF REACTOR INTERNALS VIBRATION TESTS WITH THE ANALYTICAL RESULTS	3.9-21
3.9.3	ASME CODE CLASS 1, 2 AND 3 COMPONENTS, COMPONENT SUPPORTS AND CORE SUPPORT STRUCTURES	3.9-22
3.9.3.1	LOADING COMBINATIONS, DESIGN TRANSIENTS, AND STRESS LIMITS	3.9-22
3.9.3.2	PUMPS AND VALVE OPERABILITY ASSURANCE	3.9-29
3.9.3.3	DESIGN AND INSTALLATION DETAILS FOR MOUNTING OF PRESSURE RELIEF DEVICES	3.9-41

TABLE OF CONTENTS

Section	Title	Page
3.9.3.4	COMPONENT SUPPORTS	3.9-43
3.9.4	CONTROL ROD SYSTEM	3.9-48
3.9.4.1	DESCRIPTIVE INFORMATION OF CRDS	3.9-48
3.9.4.2	APPLICABLE CRDS DESIGN SPECIFICATIONS	3.9-48
3.9.4.3	DESIGN LOADINGS, STRESS LIMITS, AND ALLOWABLE DEFORMATIONS	3.9-48
3.9.4.4	CRDS PERFORMANCE ASSURANCE PROGRAM	3.9-48
3.9.5	REACTOR PRESSURE VESSEL INTERNALS	3.9-48
3.9.5.1	DESIGN ARRANGEMENTS	3.9-48
3.9.5.2	DESIGN LOADING CONDITIONS	3.9-48
3.9.5.3	DESIGN LOADING CATEGORIES	3.9-48
3.9.5.4	DESIGN CRITERIA BASIS	3.9-48
3.9.6	INSERVICE TESTING OF PUMPS AND VALVES	3.9-48
3.10	**SEISMIC DESIGN OF CATEGORY I INSTRUMENTATION AND ELECTRICAL EQUIPMENT**	**3.10-1**
3.10.1	SEISMIC QUALIFICATION CRITERIA	3.10-1
3.10.2	METHODS AND PROCEDURES FOR QUALIFYING ELECTRICAL EQUIPMENT AND INSTRUMENTATION	3.10-6
3.10.3	METHODS OF QUALIFYING TVA-DESIGNED SUPPORTS FOR ELECTRICAL EQUIPMENT INSTRUMENTATION AND CABLES	3.10-7
3.10.3.1	ELECTRICAL EQUIPMENT AND INSTRUMENTATION ASSEMBLIES	3.10-7
3.10.3.2	CABLE TRAYS AND SUPPORTS	3.10-7
3.10.3.3	CONDUIT AND SUPPORTS	3.10-8
3.10.3.4	CONDUIT BANKS	3.10-9
3.10.4	OPERATING LICENSE REVIEW	3.10-9
3.10.4.1	TVA SUPPLIED INSTRUMENTATION AND ELECTRICAL EQUIPMENT	3.10-9
3.11	**ENVIRONMENTAL DESIGN OF MECHANICAL AND ELECTRICAL EQUIPMENT**	**3.11-1**
3.11.1	EQUIPMENT IDENTIFICATION AND ENVIRONMENTAL CONDITIONS	3.11-1
3.11.1.1	IDENTIFICATION OF SAFETY SYSTEMS AND JUSTIFICATION	3.11-1
3.11.1.2	IDENTIFICATION OF EQUIPMENT IN HARSH ENVIRONMENTS	3.11-1
3.11.2	ENVIRONMENTAL CONDITIONS	3.11-2

TABLE OF CONTENTS

Section	Title	Page
3.11.2.1	HARSH ENVIRONMENT	3.11-2
3.11.2.2	MILD ENVIRONMENT	3.11-3
3.11.3	ELECTRICAL EQUIPMENT WITHIN THE SCOPE OF 10 CFR 50.49	3.11-3
3.11.4	QUALIFICATION TESTS AND ANALYSES	3.11-4
3.11.5	QUALIFICATION TEST RESULTS	3.11-4
3.11.6	LOSS OF HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)	3.11-4
3.11.7	ESTIMATED CHEMICAL AND RADIATION ENVIRONMENT	3.11-4
3.11.7.1	CHEMICAL SPRAY	3.11-4
3.11.7.2	RADIATION	3.11-5
3.12	**CONTROL OF HEAVY LOADS**	**3.12-1**
3.12.1	INTRODUCTION/LICECING BACKGROUND	3.12-1
3.12.2	SAFETY BASIS	3.12-1
3.12.3	SCOPE OF HEAVY LOAD HANDLING SYSTEM	3.12-1
3.12.4	CONTROL OF HEAVY LOADS PROGRAM	3.12-2
3.12.4.1	WBN COMMITMENTS IN RESPONSE TO NUREG-0612, SECTION 5.1.1	3.12-2
3.12.4.2	REACTOR PRESSURE VESSEL HEAD (RPVH) LIFTING PROCEDURES	3.12-4
3.12.5	SAFETY EVALUATION	3.12-6
4.0	**REACTOR**	
4.1	**SUMMARY DESCRIPTION**	**4.1-1**
4.2	**MECHANICAL DESIGN**	**4.2-1**
4.2.1	FUEL	4.2-2
4.2.1.1	DESIGN BASES	4.2-2
4.2.1.2	DESIGN DESCRIPTION	4.2-5
4.2.1.3	DESIGN EVALUATION	4.2-10
4.2.1.4	TESTS AND INSPECTIONS	4.2-19
4.2.2	REACTOR VESSEL INTERNALS	4.2-23
4.2.2.1	DESIGN BASES	4.2-23
4.2.2.2	DESCRIPTION AND DRAWINGS	4.2-23
4.2.2.3	DESIGN LOADING CONDITIONS	4.2-27

TABLE OF CONTENTS

Section	Title	Page
4.2.2.4	DESIGN LOADING CATEGORIES	4.2-28
4.2.2.5	DESIGN CRITERIA BASIS	4.2-29
4.2.3	REACTIVITY CONTROL SYSTEM	4.2-29
4.2.3.1	DESIGN BASES	4.2-29
4.2.3.2	DESIGN DESCRIPTION	4.2-32
4.2.3.3	DESIGN EVALUATION	4.2-42
4.2.3.4	TESTS, VERIFICATION, AND INSPECTIONS	4.2-51
4.2.3.5	INSTRUMENTATION APPLICATIONS	4.2-53
4.2.4	TRITIUM PRODUCING BURNABLE ABSORBER ROD - TRITIUM PRODUCTION CORE	4.2-54
4.3	**NUCLEAR DESIGN**	**4.3-1**
4.3.1	DESIGN BASES	4.3-1
4.3.1.1	FUEL BURNUP	4.3-2
4.3.1.2	NEGATIVE REACTIVITY FEEDBACKS (REACTIVITY COEFFICIENT)	4.3-2
4.3.1.3	CONTROL OF POWER DISTRIBUTION	4.3-3
4.3.1.4	MAXIMUM CONTROLLED REACTIVITY INSERTION RATE	4.3-4
4.3.1.5	SHUTDOWN MARGINS WITH VESSEL HEAD IN PLACE	4.3-4
4.3.1.6	SHUTDOWN MARGIN FOR REFUELING	4.3-5
4.3.1.7	STABILITY	4.3-5
4.3.1.8	ANTICIPATED TRANSIENTS WITHOUT TRIP	4.3-6
4.3.2	DESCRIPTION	4.3-6
4.3.2.1	NUCLEAR DESIGN DESCRIPTION	4.3-6
4.3.2.2	POWER DISTRIBUTIONS	4.3-7
4.3.2.3	REACTIVITY COEFFICIENTS	4.3-18
4.3.2.4	CONTROL REQUIREMENTS	4.3-22
4.3.2.5	CONTROL	4.3-24
4.3.2.6	CONTROL ROD PATTERNS AND REACTIVITY WORTH	4.3-26
4.3.2.7	CRITICALITY OF FUEL ASSEMBLIES	4.3-27
4.3.2.8	STABILITY	4.3-32
4.3.2.9	VESSEL IRRADIATION	4.3-36
4.3.3	ANALYTICAL METHODS	4.3-37
4.3.3.1	FUEL TEMPERATURE (DOPPLER) CALCULATIONS	4.3-37
4.3.3.2	MACROSCOPIC GROUP CONSTANTS	4.3-38

TABLE OF CONTENTS

Section	Title	Page
4.3.3.3	SPATIAL FEW-GROUP DIFFUSION CALCULATIONS	4.3-39
4.4	**THERMAL AND HYDRAULIC DESIGN**	**4.4-1**
4.4.1	DESIGN BASES	4.4-1
4.4.1.1	DEPARTURE FROM NUCLEATE BOILING DESIGN BASIS	4.4-1
4.4.1.2	FUEL TEMPERATURE DESIGN BASIS	4.4-2
4.4.1.3	CORE FLOW DESIGN BASIS	4.4-3
4.4.1.4	HYDRODYNAMIC STABILITY DESIGN BASES	4.4-3
4.4.1.5	OTHER CONSIDERATIONS	4.4-3
4.4.2	DESCRIPTION	4.4-4
4.4.2.1	SUMMARY COMPARISON	4.4-4
4.4.2.2	FUEL AND CLADDING TEMPERATURES	4.4-4
4.4.2.3	CRITICAL HEAT FLUX RATIO OR DEPARTURE FROM NUCLEATE BOILING RATIO AND MIXING TECHNOLOGY	4.4-7
4.4.2.4	FLUX TILT CONSIDERATIONS	4.4-13
4.4.2.5	VOID FRACTION DISTRIBUTION	4.4-14
4.4.2.6	DELETED	4.4-14
4.4.2.7	CORE PRESSURE DROPS AND HYDRAULIC LOADS	4.4-14
4.4.2.8	CORRELATION AND PHYSICAL DATA	4.4-15
4.4.2.9	THERMAL EFFECTS OF OPERATIONAL TRANSIENTS	4.4-18
4.4.2.10	UNCERTAINTIES IN ESTIMATES	4.4-18
4.4.2.11	PLANT CONFIGURATION DATA	4.4-20
4.4.3	EVALUATION	4.4-21
4.4.3.1	CORE HYDRAULICS	4.4-21
4.4.3.2	INFLUENCE OF POWER DISTRIBUTION	4.4-22
4.4.3.3	CORE THERMAL RESPONSE	4.4-24
4.4.3.4	ANALYTICAL TECHNIQUES	4.4-25
4.4.3.5	HYDRODYNAMIC AND FLOW POWER COUPLED INSTABILITY	4.4-26
4.4.3.6	TEMPERATURE TRANSIENT EFFECTS ANALYSIS	4.4-28
4.4.3.7	POTENTIALLY DAMAGING TEMPERATURE EFFECTS DURING TRANSIENTS	4.4-29
4.4.3.8	ENERGY RELEASE DURING FUEL ELEMENT BURNOUT	4.4-29
4.4.3.9	DELETED	4.4-30
4.4.3.10	FUEL ROD BEHAVIOR-EFFECTS FROM COOLANT FLOW BLOCKAGE	4.4-30

TABLE OF CONTENTS

Section	Title	Page
4.4.4	TESTING AND VERIFICATION	4.4-31
4.4.4.1	TESTS PRIOR TO INITIAL CRITICALITY	4.4-31
4.4.4.2	INITIAL POWER AND PLANT OPERATION	4.4-31
4.4.4.3	COMPONENT AND FUEL INSPECTIONS	4.4-32
4.4.5	INSTRUMENTATION APPLICATION	4.4-32
4.4.5.1	INCORE INSTRUMENTATION	4.4-32
4.4.5.2	OVERTEMPERATURE AND OVERPOWER ΔT INSTRUMENTATION	4.4-32
4.4.5.3	INSTRUMENTATION TO LIMIT MAXIMUM POWER OUTPUT	4.4-32
5.0	**REACTOR COOLANT SYSTEM**	
5.1	**SUMMARY DESCRIPTION**	**5.1-1**
5.1.1	SCHEMATIC FLOW DIAGRAM	5.1-6
5.1.2	PIPING AND INSTRUMENTATION DIAGRAMS	5.1-6
5.1.3	ELEVATION DRAWING	5.1-6
5.2	**INTEGRITY OF REACTOR COOLANT PRESSURE BOUNDARY**	**5.2-1**
5.2.1	DESIGN OF REACTOR COOLANT PRESSURE BOUNDARY COMPONENTS	5.2-2
5.2.1.1	PERFORMANCE OBJECTIVES	5.2-2
5.2.1.2	DESIGN PARAMETERS	5.2-3
5.2.1.3	COMPLIANCE WITH 10 CFR PART 50, SECTION 50.55A	5.2-4
5.2.1.4	APPLICABLE CODE CASES	5.2-4
5.2.1.5	DESIGN TRANSIENTS	5.2-5
5.2.1.6	IDENTIFICATION OF ACTIVE PUMPS AND VALVES	5.2-14
5.2.1.7	DESIGN OF ACTIVE PUMPS AND VALVES	5.2-15
5.2.1.8	INADVERTENT OPERATION OF VALVES	5.2-15
5.2.1.9	STRESS AND PRESSURE LIMITS	5.2-15
5.2.1.10	STRESS ANALYSIS FOR STRUCTURAL ADEQUACY	5.2-15
5.2.1.11	ANALYSIS METHODS FOR FAULTED CONDITIONS	5.2-33
5.2.1.12	PROTECTION AGAINST ENVIRONMENTAL FACTORS	5.2-33
5.2.1.13	COMPLIANCE WITH CODE REQUIREMENTS	5.2-33
5.2.1.14	STRESS ANALYSIS FOR FAULTED CONDITIONS LOADINGS	5.2-33
5.2.1.15	STRESS LEVELS IN CATEGORY I SYSTEMS	5.2-33

TABLE OF CONTENTS

Section	Title	Page
5.2.1.16	ANALYTICAL METHODS FOR STRESSES IN PUMPS AND VALVES	5.2-33
5.2.1.17	ANALYTICAL METHODS FOR EVALUATION OF PUMP SPEED AND BEARING INTEGRITY	5.2-33
5.2.1.18	OPERATION OF ACTIVE VALVES UNDER TRANSIENT LOADINGS	5.2-34
5.2.2	OVERPRESSURIZATION PROTECTION	5.2-34
5.2.2.1	LOCATION OF PRESSURE RELIEF DEVICES	5.2-34
5.2.2.2	MOUNTING OF PRESSURE RELIEF DEVICES	5.2-34
5.2.2.3	REPORT ON OVERPRESSURE PROTECTION	5.2-34
5.2.2.4	RCS PRESSURE CONTROL DURING LOW TEMPERATURE OPERATION	5.2-36
5.2.3	GENERAL MATERIAL CONSIDERATIONS	5.2-41
5.2.3.1	MATERIAL SPECIFICATIONS	5.2-41
5.2.3.2	COMPATIBILITY WITH REACTOR COOLANT	5.2-41
5.2.3.3	COMPATIBILITY WITH EXTERNAL INSULATION AND ENVIRONMENTAL ATMOSPHERE	5.2-42
5.2.3.4	CHEMISTRY OF REACTOR COOLANT	5.2-42
5.2.4	FRACTURE TOUGHNESS	5.2-43
5.2.4.1	COMPLIANCE WITH CODE REQUIREMENTS	5.2-43
5.2.4.2	ACCEPTABLE FRACTURE ENERGY LEVELS	5.2-44
5.2.4.3	OPERATING LIMITATIONS DURING STARTUP AND SHUTDOWN	5.2-44
5.2.5	AUSTENITIC STAINLESS STEEL	5.2-46
5.2.5.1	CLEANING AND CONTAMINATION PROTECTION PROCEDURES	5.2-47
5.2.5.2	SOLUTION HEAT TREATMENT REQUIREMENTS	5.2-48
5.2.5.3	MATERIAL INSPECTION PROGRAM	5.2-48
5.2.5.4	UNSTABLILIZED AUSTENITIC STAINLESS STEELS	5.2-48
5.2.5.5	PREVENTION OF INTERGRANULAR ATTACK OF UNSTABILIZED AUSTENITIC STAINLESS STEELS	5.2-48
5.2.5.6	RETESTING UNSTABILIZED AUSTENITIC STAINLESS STEEL EXPOSED TO SENSITIZATION TEMPERATURES	5.2-51
5.2.5.7	CONTROL OF DELTA FERRITE IN AUSTENITIC STAINLESS STEEL WELDING	5.2-52
5.2.6	PUMP FLYWHEELS	5.2-53
5.2.6.1	DESIGN BASIS	5.2-53

TABLE OF CONTENTS

Section	Title	Page
5.2.6.2	FABRICATION AND INSPECTION	5.2-54
5.2.6.3	ACCEPTANCE CRITERIA AND COMPLIANCE WITH REGULATORY GUIDE 1.14	5.2-54
5.2.7	RCPB LEAKAGE DETECTION SYSTEMS	5.2-55
5.2.7.1	COLLECTION OF IDENTIFIED LEAKAGE	5.2-55
5.2.7.2	UNIDENTIFIED LEAKAGE TO CONTAINMENT	5.2-56
5.2.7.3	METHODS OF DETECTION	5.2-56
5.2.7.4	INTERSYSTEM LEAKAGE DETECTION	5.2-59
5.2.7.5	UNIDENTIFIED LEAKAGE SYSTEM SENSITIVITY AND RESPONSE TIME	5.2-63
5.2.7.6	SEISMIC CAPABILITY	5.2-65
5.2.7.7	INDICATORS AND ALARMS	5.2-65
5.2.7.8	TESTING	5.2-65
5.2.8	INSERVICE INSPECTION OF ASME CODE CLASS 1 COMPONENTS	5.2-66
5.2.8.1	COMPONENTS SUBJECT TO EXAMINATION AND/OR TEST	5.2-66
5.2.8.2	ACCESSIBILITY	5.2-66
5.2.8.3	EXAMINATION TECHNIQUES AND PROCEDURES	5.2-68
5.2.8.4	INSPECTION INTERVALS	5.2-68
5.2.8.5	EXAMINATION CATEGORIES AND REQUIREMENTS	5.2-68
5.2.8.6	EVALUATION OF EXAMINATION RESULTS	5.2-68
5.2.8.7	SYSTEM PRESSURE TESTS	5.2-68
5.3	**THERMAL HYDRAULIC SYSTEM DESIGN**	**5.3-1**
5.3.1	ANALYTICAL METHODS AND DATA	5.3-1
5.3.2	OPERATING RESTRICTIONS ON PUMPS	5.3-1
5.3.3	POWER-FLOW OPERATING MAP (BWR)	5.3-1
5.3.4	TEMPERATURE-POWER OPERATING MAP	5.3-1
5.3.5	LOAD FOLLOWING CHARACTERISTICS	5.3-1
5.3.6	TRANSIENT EFFECTS	5.3-1
5.3.7	THERMAL AND HYDRAULIC CHARACTERISTICS SUMMARY TABLE	5.3-1
5.4	**REACTOR VESSEL AND APPURTENANCES**	**5.4-1**
5.4.1	DESIGN BASES	5.4-1
5.4.1.1	CODES AND SPECIFICATIONS	5.4-1
5.4.1.2	DESIGN TRANSIENTS	5.4-1

TABLE OF CONTENTS

Section	Title	Page
5.4.1.3	PROTECTION AGAINST NON-DUCTILE FAILURE	5.4-2
5.4.1.4	INSPECTION	5.4-2
5.4.2	DESCRIPTION	5.4-2
5.4.2.1	FABRICATION PROCESSES	5.4-3
5.4.2.2	PROTECTION OF CLOSURE STUDS	5.4-4
5.4.3	EVALUATION	5.4-4
5.4.3.1	STEADY STATE STRESSES	5.4-4
5.4.3.2	FATIGUE ANALYSIS BASED ON TRANSIENT STRESSES	5.4-4
5.4.3.3	THERMAL STRESSES DUE TO GAMMA HEATING	5.4-4
5.4.3.4	THERMAL STRESSES DUE TO LOSS OF COOLANT ACCIDENT	5.4-4
5.4.3.5	HEATUP AND COOLDOWN	5.4-4
5.4.3.6	IRRADIATION SURVEILLANCE PROGRAMS	5.4-4
5.4.3.7	CAPABILITY FOR ANNEALING THE REACTOR VESSEL	5.4-14
5.4.4	TESTS AND INSPECTIONS	5.4-15
5.4.4.1	ULTRASONIC EXAMINATIONS	5.4-15
5.4.4.2	PENETRANT EXAMINATIONS	5.4-15
5.4.4.3	MAGNETIC PARTICLE EXAMINATION	5.4-15
5.4.4.4	INSERVICE INSPECTION	5.4-16
5.5	**COMPONENT AND SUBSYSTEM DESIGN**	**5.5-1**
5.5.1	REACTOR COOLANT PUMPS	5.5-1
5.5.1.1	DESIGN BASES	5.5-1
5.5.1.2	DESIGN DESCRIPTION	5.5-1
5.5.1.3	DESIGN EVALUATION	5.5-3
5.5.1.4	TESTS AND INSPECTIONS	5.5-8
5.5.2	STEAM GENERATORS	5.5-8
5.5.2.1	DESIGN BASIS	5.5-8
5.5.2.2	DESIGN DESCRIPTION	5.5-9
5.5.2.3	DESIGN EVALUATION	5.5-9
5.5.2.4	TESTS AND INSPECTIONS	5.5-15
5.5.3	REACTOR COOLANT PIPING	5.5-16
5.5.3.1	DESIGN BASES	5.5-16
5.5.3.2	DESIGN DESCRIPTION	5.5-16
5.5.3.3	DESIGN EVALUATION	5.5-19
5.5.3.4	TESTS AND INSPECTIONS	5.5-20

TABLE OF CONTENTS

Section	Title	Page
5.5.4	STEAM OUTLET FLOW RESTRICTOR (STEAM GENERATOR)	5.5-21
5.5.4.1	DESIGN BASIS	5.5-21
5.5.4.2	DESCRIPTION	5.5-21
5.5.4.3	EVALUATION	5.5-21
5.5.4.4	TESTS AND INSPECTIONS	5.5-22
5.5.5	MAIN STEAM LINE ISOLATION SYSTEM	5.5-22
5.5.6	REACTOR VESSEL HEAD VENT SYSTEM	5.5-22
5.5.6.1	DESIGN BASIS	5.5-22
5.5.6.2	SYSTEM DESCRIPTION	5.5-22
5.5.6.3	DESIGN EVALUATION	5.5-24
5.5.7	RESIDUAL HEAT REMOVAL SYSTEM	5.5-25
5.5.7.1	DESIGN BASES	5.5-25
5.5.7.2	SYSTEM DESCRIPTION	5.5-26
5.5.7.3	DESIGN EVALUATION	5.5-30
5.5.7.4	TESTS AND INSPECTIONS	5.5-33
5.5.8	REACTOR COOLANT CLEANUP SYSTEM	5.5-33
5.5.9	MAIN STEAM LINE AND FEEDWATER PIPING	5.5-33
5.5.10	PRESSURIZER	5.5-33
5.5.10.1	DESIGN BASES	5.5-33
5.5.10.2	DESIGN DESCRIPTION	5.5-34
5.5.10.3	DESIGN EVALUATION	5.5-36
5.5.10.4	TESTS AND INSPECTIONS	5.5-38
5.5.11	PRESSURIZER RELIEF TANK	5.5-39
5.5.11.1	DESIGN BASES	5.5-39
5.5.11.2	DESIGN DESCRIPTION	5.5-39
5.5.11.3	DESIGN EVALUATION	5.5-40
5.5.12	VALVES	5.5-40
5.5.12.1	DESIGN BASES	5.5-40
5.5.12.2	DESIGN DESCRIPTION	5.5-40
5.5.12.3	DESIGN EVALUATION	5.5-41
5.5.12.4	TESTS AND INSPECTIONS	5.5-41
5.5.13	SAFETY AND RELIEF VALVES	5.5-42
5.5.13.1	DESIGN BASES	5.5-42
5.5.13.2	DESIGN DESCRIPTION	5.5-42

TABLE OF CONTENTS

Section	Title	Page
5.5.13.3	DESIGN EVALUATION	5.5-42
5.5.13.4	TESTS AND INSPECTIONS	5.5-43
5.5.14	COMPONENT SUPPORTS	5.5-43
5.5.14.1	DESIGN BASES	5.5-43
5.5.14.2	DESCRIPTION	5.5-43
5.5.14.3	EVALUATION	5.5-45
5.5.14.4	TESTS AND INSPECTIONS	5.5-45
5.6	**INSTRUMENTATION APPLICATION**	**5.6-1**
6.0	**ENGINEERED SAFETY FEATURES**	
6.1	**ENGINEERED SAFETY FEATURE MATERIALS**	**6.1-1**
6.1.1	METALLIC MATERIALS	6.1-1
6.1.1.1	MATERIALS SELECTION AND FABRICATION	6.1-1
6.1.1.2	COMPOSITION, COMPATIBILITY, AND STABILITY OF CONTAINMENT AND CORE SPRAY COOLANTS	6.1-2
6.1.2	ORGANIC MATERIALS	6.1-3
6.1.2.1	ELECTRICAL INSULATION	6.1-3
6.1.2.2	SURFACE COATINGS	6.1-3
6.1.2.3	ICE CONDENSER EQUIPMENT	6.1-4
6.1.2.4	IDENTIFICATION TAGS	6.1-4
6.1.2.5	VALVES AND INSTRUMENTS WITHIN CONTAINMENT	6.1-4
6.1.2.6	HEATING AND VENTILATING DOOR SEALS	6.1-5
6.1.2.7	MISCELLANEOUS	6.1-5
6.1.3	POST-ACCIDENT CHEMISTRY	6.1-5
6.1.3.1	BORIC ACID, H3BO3	6.1-5
6.1.3.2	LITHIUM HYDROXIDE	6.1-5
6.1.3.3	SODIUM TETRABORATE	6.1-5
6.1.3.4	FINAL POST-ACCIDENT CHEMISTRY	6.1-6
6.1.4	DEGREE OF COMPLIANCE WITH REGULATORY GUIDE 1.54 FOR PAINTS AND COATINGS INSIDE CONTAINMENT	6.1-6
6.2	**CONTAINMENT SYSTEMS**	
6.2.1	**CONTAINMENT FUNCTIONAL DESIGN**	**6.2.1-1**

TABLE OF CONTENTS

Section	Title	Page
6.2.1.1	DESIGN BASES	6.2.1-1
6.2.1.1.1	PRIMARY CONTAINMENT DESIGN BASES	6.2.1-1
6.2.1.2	PRIMARY CONTAINMENT SYSTEM DESIGN	6.2.1-3
6.2.1.3	DESIGN EVALUATION	6.2.1-3
6.2.1.3.1	PRIMARY CONTAINMENT EVALUATION	6.2.1-3
6.2.1.3.2	GENERAL DESCRIPTION OF CONTAINMENT PRESSURE ANALYSIS	6.2.1-4
6.2.1.3.3	LONG-TERM CONTAINMENT PRESSURE ANALYSIS	6.2.1-4
6.2.1.3.4	SHORT-TERM BLOWDOWN ANALYSIS	6.2.1-9
6.2.1.3.5	EFFECT OF STEAM BYPASS	6.2.1-17
6.2.1.3.6	MASS AND ENERGY RELEASE DATA	6.2.1-21
6.2.1.3.7	ACCIDENT CHRONOLOGY	6.2.1-29
6.2.1.3.8	MASS AND ENERGY BALANCE TABLES	6.2.1-29
6.2.1.3.9	CONTAINMENT PRESSURE DIFFERENTIALS	6.2.1-31
6.2.1.3.10	STEAM LINE BREAK INSIDE CONTAINMENT	6.2.1-34
6.2.1.3.11	MAXIMUM REVERSE PRESSURE DIFFERENTIALS	6.2.1-39
6.2.2	**CONTAINMENT HEAT REMOVAL SYSTEMS**	**6.2.2-1**
6.2.2.1	DESIGN BASES	6.2.2-1
6.2.2.2	SYSTEM DESIGN	6.2.2-3
6.2.2.3	DESIGN EVALUATION	6.2.2-5
6.2.2.4	TESTING AND INSPECTIONS	6.2.2-7
6.2.2.5	INSTRUMENTATION REQUIREMENTS	6.2.2-8
6.2.2.6	MATERIALS	6.2.2-9
6.2.3	**SECONDARY CONTAINMENT FUNCTIONAL DESIGN**	**6.2.3-1**
6.2.3.1	DESIGN BASES	6.2.3-1
6.2.3.1.1	SECONDARY CONTAINMENT ENCLOSURES	6.2.3-1
6.2.3.1.2	EMERGENCY GAS TREATMENT SYSTEM (EGTS)	6.2.3-1
6.2.3.1.3	AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)	6.2.3-2
6.2.3.2	SYSTEM DESIGN	6.2.3-2
6.2.3.2.1	SECONDARY CONTAINMENT ENCLOSURES	6.2.3-2
6.2.3.2.2	EMERGENCY GAS TREATMENT SYSTEM (EGTS)	6.2.3-6
6.2.3.2.3	AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)	6.2.3-10
6.2.3.3	DESIGN EVALUATION	6.2.3-12

TABLE OF CONTENTS

Section	Title	Page
6.2.3.3.1	SECONDARY CONTAINMENT ENCLOSURES	6.2.3-12
6.2.3.3.2	EMERGENCY GAS TREATMENT SYSTEM (EGTS)	6.2.3-14
6.2.3.3.3	AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)	6.2.3-19
6.2.3.3.4	TRITIUM PRODUCTION CORE EVALUATION (UNIT 1 ONLY)	6.2.3-21
6.2.3.4	TEST AND INSPECTIONS	6.2.3-22
6.2.3.4.1	EMERGENCY GAS TREATMENT SYSTEM (EGTS)	6.2.3-22
6.2.3.4.2	AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)	6.2.3-22
6.2.3.5	INSTRUMENTATION REQUIREMENTS	6.2.3-23
6.2.3.5.1	EMERGENCY GAS TREATMENT SYSTEM (EGTS)	6.2.3-23
6.2.3.5.2	AUXILIARY BUILDING GAS TREATMENT SYSTEM (ABGTS)	6.2.3-23
6.2.4	**CONTAINMENT ISOLATION SYSTEMS**	**6.2.4-1**
6.2.4.1	DESIGN BASES	6.2.4-1
6.2.4.2	SYSTEM DESIGN	6.2.4-4
6.2.4.2.1	DESIGN REQUIREMENTS	6.2.4-5
6.2.4.2.2	CONTAINMENT ISOLATION OPERATION	6.2.4-6
6.2.4.2.3	PENETRATION DESIGN	6.2.4-6
6.2.4.3	DESIGN EVALUATION	6.2.4-12
6.2.4.3.1	POSSIBLE LEAKAGE PATHS	6.2.4-14
6.2.4.4	TESTS AND INSPECTIONS	6.2.4-17
6.2.5	**COMBUSTIBLE GAS CONTROL IN CONTAINMENT**	**6.2.5-1**
6.2.5.1	DESIGN BASES	6.2.5-1
6.2.5.2	SYSTEM DESIGN	6.2.5-2
6.2.5.3	DESIGN EVALUATION	6.2.5-4
6.2.5.4	TESTING AND INSPECTIONS	6.2.5-5
6.2.5.5	INSTRUMENTATION APPLICATION	6.2.5-5
6.2.6	**CONTAINMENT LEAKAGE TESTING**	**6.2.6-1**
6.2.6.1	CONTAINMENT INTEGRATED LEAK RATE TEST	6.2.6-1
6.2.6.2	CONTAINMENT PENETRATION LEAKAGE RATE TEST	6.2.6-2
6.2.6.3	SCHEDULING AND REPORTING OF PERIODIC TESTS	6.2.6-6
6.3	**EMERGENCY CORE COOLING SYSTEM**	**6.3-1**
6.3.1	DESIGN BASES	6.3-1
6.3.1.1	RANGE OF COOLANT RUPTURES AND LEAKS	6.3-1

TABLE OF CONTENTS

Section	Title	Page
6.3.1.2	FISSION PRODUCT DECAY HEAT	6.3-2
6.3.1.3	REACTIVITY REQUIRED FOR COLD SHUTDOWN	6.3-2
6.3.1.4	CAPABILITY TO MEET FUNCTIONAL REQUIREMENTS	6.3-2
6.3.2	SYSTEM DESIGN	6.3-2
6.3.2.1	SCHEMATIC PIPING AND INSTRUMENTATION DIAGRAMS	6.3-2
6.3.2.2	EQUIPMENT AND COMPONENT DESIGN	6.3-2
6.3.2.3	APPLICABLE CODES AND CLASSIFICATIONS	6.3-15
6.3.2.4	MATERIALS SPECIFICATIONS AND COMPATIBILITY	6.3-15
6.3.2.5	DESIGN PRESSURES AND TEMPERATURES	6.3-16
6.3.2.6	COOLANT QUANTITY	6.3-16
6.3.2.7	PUMP CHARACTERISTICS	6.3-16
6.3.2.8	HEAT EXCHANGER CHARACTERISTICS	6.3-16
6.3.2.9	ECCS FLOW DIAGRAMS	6.3-17
6.3.2.10	RELIEF VALVES	6.3-17
6.3.2.11	SYSTEM RELIABILITY	6.3-17
6.3.2.12	PROTECTION PROVISIONS	6.3-21
6.3.2.13	PROVISIONS FOR PERFORMANCE TESTING	6.3-22
6.3.2.14	NET POSITIVE SUCTION HEAD	6.3-22
6.3.2.15	CONTROL OF MOTOR-OPERATED ISOLATION VALVES	6.3-22
6.3.2.16	MOTOR-OPERATED VALVES AND CONTROLS	6.3-23
6.3.2.17	MANUAL ACTIONS	6.3-23
6.3.2.18	PROCESS INSTRUMENTATION	6.3-23
6.3.2.19	MATERIALS	6.3-23
6.3.3	PERFORMANCE EVALUATION	6.3-23
6.3.3.1	EVALUATION MODEL	6.3-23
6.3.3.2	ECCS PERFORMANCE	6.3-24
6.3.3.3	ALTERNATE ANALYSIS METHODS	6.3-24
6.3.3.4	FUEL ROD PERFORATIONS	6.3-25
6.3.3.5	EFFECTS OF ECCS OPERATION ON THE CORE	6.3-25
6.3.3.6	USE OF DUAL FUNCTION COMPONENTS	6.3-25
6.3.3.7	LAG TIMES	6.3-27
6.3.3.8	THERMAL SHOCK CONSIDERATIONS	6.3-27
6.3.3.9	LIMITS ON SYSTEM PARAMETERS	6.3-27
6.3.3.10	USE OF RHR SPRAY	6.3-27

TABLE OF CONTENTS

Section	Title	Page
6.3.4	TESTS AND INSPECTIONS	6.3-28
6.3.4.1	PREOPERATIONAL TESTS	6.3-28
6.3.4.2	COMPONENT TESTING	6.3-29
6.3.4.3	PERIODIC SYSTEM TESTING	6.3-29
6.3.5	INSTRUMENTATION APPLICATION	6.3-30
6.3.5.1	TEMPERATURE INDICATION	6.3-30
6.3.5.2	PRESSURE INDICATION	6.3-30
6.3.5.3	FLOW INDICATION	6.3-31
6.3.5.4	LEVEL INDICATION	6.3-31
6.3.5.5	VALVE POSITION INDICATION	6.3-32
6.4	**HABITABILITY SYSTEMS**	**6.4-1**
6.4.1	DESIGN BASES	6.4-1
6.4.2	SYSTEM DESIGN	6.4-1
6.4.2.1	DEFINITION OF MCRHS AREA	6.4-1
6.4.2.2	VENTILATION SYSTEM DESIGN	6.4-2
6.4.2.3	LEAK TIGHTNESS	6.4-2
6.4.2.4	INTERACTION WITH OTHER ZONES AND PRESSURE-CONTAINING EQUIPMENT	6.4-3
6.4.2.5	SHIELDING DESIGN	6.4-4
6.4.2.6	CONTROL ROOM EMERGENCY PROVISIONS	6.4-4
6.4.2.7	MCRHS FIRE PROTECTION	6.4-4
6.4.3	SYSTEM OPERATIONAL PROCEDURES	6.4-5
6.4.4	DESIGN EVALUATIONS	6.4-7
6.4.4.1	RADIOLOGICAL PROTECTION	6.4-7
6.4.4.2	TOXIC GAS PROTECTION	6.4-7
6.4.5	TESTING AND INSPECTION	6.4-9
6.4.6	INSTRUMENTATION REQUIREMENTS	6.4-9
6.5	**FISSION PRODUCT REMOVAL AND CONTROL SYSTEMS**	**6.5-1**
6.5.1	ENGINEERED SAFETY FEATURE (ESF) FILTER SYSTEMS	6.5-1
6.5.1.1	DESIGN BASES	6.5-1
6.5.1.2	SYSTEM DESIGN	6.5-2
6.5.1.3	DESIGN EVALUATION	6.5-5
6.5.1.4	TESTS AND INSPECTIONS	6.5-5

TABLE OF CONTENTS

Section	Title	Page
6.5.1.5	INSTRUMENTATION REQUIREMENTS	6.5-6
6.5.1.6	MATERIALS	6.5-7
6.5.2	CONTAINMENT SPRAY SYSTEM FOR FISSION PRODUCT CLEANUP	6.5-8
6.5.2.1	DESIGN BASES	6.5-8
6.5.2.2	SYSTEM DESIGN	6.5-8
6.5.2.3	DESIGN EVALUATION	6.5-8
6.5.2.4	TESTS AND INSPECTIONS	6.5-8
6.5.2.5	INSTRUMENTATION REQUIREMENTS	6.5-8
6.5.2.6	MATERIALS	6.5-8
6.5.3	FISSION PRODUCT CONTROL SYSTEMS	6.5-8
6.5.3.1	PRIMARY CONTAINMENT	6.5-8
6.5.3.2	SECONDARY CONTAINMENTS	6.5-10
6.5.4	ICE CONDENSER AS A FISSION PRODUCT CLEANUP SYSTEM	6.5-10
6.5.4.1	ICE CONDENSER DESIGN BASIS (FISSION PRODUCT CLEANUP FUNCTION)	6.5-11
6.5.4.2	ICE CONDENSER SYSTEM DESIGN	6.5-11
6.5.4.3	ICE CONDENSER SYSTEM DESIGN EVALUATION (FISSION PRODUCT CLEANUP FUNCTION)	6.5-11
6.5.4.4	CONDENSER SYSTEM TESTS AND INSPECTIONS	6.5-13
6.5.4.5	ICE CONDENSER MATERIALS	6.5-14
6.6	**INSERVICE INSPECTION OF ASME CODE CLASS 2 AND 3 COMPONENTS**	**6.6-1**
6.6.1	COMPONENTS SUBJECT TO EXAMINATION AND/OR TEST	6.6-1
6.6.2	ACCESSIBILITY	6.6-1
6.6.3	EXAMINATION TECHNIQUES AND PROCEDURES	6.6-1
6.6.4	INSPECTION INTERVALS	6.6-1
6.6.5	EXAMINATION CATEGORIES AND REQUIREMENTS	6.6-1
6.6.6	EVALUATION OF EXAMINATION RESULTS	6.6-1
6.6.7	SYSTEM PRESSURE TESTS	6.6-2
6.6.8	PROTECTION AGAINST POSTULATED PIPING FAILURES	6.6-2
6.7	**ICE CONDENSER SYSTEM**	**6.7-1**
6.7.1	FLOOR STRUCTURE AND COOLING SYSTEM	6.7-1
6.7.1.1	DESIGN BASES	6.7-1
6.7.1.2	SYSTEM DESIGN	6.7-4

TABLE OF CONTENTS

Section	Title	Page
6.7.1.3	DESIGN EVALUATION	6.7-5
6.7.2	WALL PANELS	6.7-8
6.7.2.1	DESIGN BASIS	6.7-8
6.7.2.2	SYSTEM DESIGN	6.7-8
6.7.2.3	DESIGN EVALUATION	6.7-9
6.7.3	LATTICE FRAMES AND SUPPORT COLUMNS	6.7-9
6.7.3.1	DESIGN BASIS	6.7-9
6.7.3.2	SYSTEM DESIGN	6.7-12
6.7.3.3	DESIGN EVALUATION	6.7-13
6.7.4	ICE BASKETS	6.7-14
6.7.4.1	DESIGN BASIS	6.7-14
6.7.4.2	SYSTEM DESIGN	6.7-16
6.7.4.3	DESIGN EVALUATION	6.7-18
6.7.5	CRANE AND RAIL ASSEMBLY	6.7-20
6.7.5.1	DESIGN BASIS	6.7-20
6.7.5.2	SYSTEM DESIGN	6.7-21
6.7.5.3	DESIGN EVALUATION	6.7-21
6.7.6	REFRIGERATION SYSTEM	6.7-22
6.7.6.1	DESIGN BASIS	6.7-22
6.7.6.2	SYSTEM DESIGN	6.7-23
6.7.6.3	DESIGN EVALUATION	6.7-26
6.7.7	AIR HANDLING UNITS	6.7-30
6.7.7.1	DESIGN BASIS	6.7-30
6.7.7.2	SYSTEM DESIGN	6.7-31
6.7.7.3	DESIGN EVALUATION	6.7-31
6.7.8	LOWER INLET DOORS	6.7-32
6.7.8.1	DESIGN BASIS	6.7-32
6.7.8.2	SYSTEM DESIGN	6.7-35
6.7.8.3	DESIGN EVALUATION	6.7-37
6.7.9	LOWER SUPPORT STRUCTURE	6.7-38
6.7.9.1	DESIGN BASIS	6.7-38
6.7.9.2	SYSTEM DESIGN	6.7-39
6.7.9.3	DESIGN EVALUATION	6.7-41
6.7.10	TOP DECK AND DOORS	6.7-50

TABLE OF CONTENTS

Section	Title	Page
6.7.10.1	DESIGN BASIS	6.7-50
6.7.10.2	SYSTEM DESIGN	6.7-51
6.7.11	INTERMEDIATE DECK AND DOORS	6.7-55
6.7.11.1	DESIGN BASIS	6.7-55
6.7.11.2	SYSTEM DESIGN	6.7-56
6.7.11.3	DESIGN EVALUATION	6.7-57
6.7.12	AIR DISTRIBUTION DUCTS	6.7-58
6.7.12.1	DESIGN BASIS	6.7-58
6.7.12.2	SYSTEM DESIGN	6.7-59
6.7.12.3	DESIGN EVALUATION	6.7-59
6.7.13	EQUIPMENT ACCESS DOOR	6.7-59
6.7.13.1	DESIGN BASIS	6.7-59
6.7.13.2	SYSTEM DESIGN	6.7-60
6.7.13.3	DESIGN EVALUATION	6.7-60
6.7.14	ICE TECHNOLOGY, ICE PERFORMANCE, AND ICE CHEMISTRY	6.7-60
6.7.14.1	DESIGN BASIS	6.7-60
6.7.14.2	SYSTEM DESIGN	6.7-61
6.7.14.3	DESIGN EVALUATION	6.7-61
6.7.15	ICE CONDENSER INSTRUMENTATION	6.7-66
6.7.15.1	DESIGN BASIS	6.7-66
6.7.15.2	DESIGN DESCRIPTION	6.7-67
6.7.15.3	DESIGN EVALUATION	6.7-69
6.7.16	ICE CONDENSER STRUCTURAL DESIGN	6.7-69
6.7.16.1	APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS	6.7-69
6.7.16.2	LOADS AND LOADING COMBINATIONS	6.7-69
6.7.16.3	DESIGN AND ANALYTICAL PROCEDURES	6.7-70
6.7.16.4	STRUCTURAL ACCEPTANCE CRITERIA	6.7-70
6.7.17	SEISMIC ANALYSIS	6.7-71
6.7.17.1	SEISMIC ANALYSIS METHODS	6.7-71
6.7.17.2	SEISMIC LOAD DEVELOPMENT	6.7-74
6.7.17.3	VERTICAL SEISMIC RESPONSE	6.7-75
6.7.18	MATERIALS	6.7-75
6.7.18.1	DESIGN CRITERIA	6.7-75
6.7.18.2	ENVIRONMENTAL EFFECTS	6.7-77

TABLE OF CONTENTS

Section	Title	Page
6.7.18.3	COMPLIANCE WITH 10 CFR 50, APPENDIX B	6.7-78
6.7.18.4	MATERIALS SPECIFICATIONS	6.7-79
6.7.19	TESTS AND INSPECTIONS	6.7-80
6.8	**AIR RETURN FANS**	**6.8-1**
6.8.1	DESIGN BASES	6.8-1
6.8.2	SYSTEM DESCRIPTION	6.8-1
6.8.3	SAFETY EVALUATION	6.8-2
6.8.4	INSPECTION AND TESTING	6.8-3
6.8.5	INSTRUMENTATION REQUIREMENTS	6.8-3
6.9	**MOTOR-OPERATED VALVE (MOV) PROGRAMS**	**6.9-1**
7.0	**INSTRUMENTATION AND CONTROLS**	
7.1	**INTRODUCTION**	**7.1-1**
7.1.1	IDENTIFICATION OF SAFETY-RELATED SYSTEMS	7.1-4
7.1.1.1	SAFETY-RELATED SYSTEMS	7.1-4
7.1.1.2	SAFETY-RELATED DISPLAY INSTRUMENTATION	7.1-5
7.1.1.3	INSTRUMENTATION AND CONTROL SYSTEM DESIGNERS	7.1-5
7.1.1.4	PLANT COMPARISON	7.1-5
7.1.2	IDENTIFICATION OF SAFETY CRITERIA	7.1-5
7.1.2.1	DESIGN BASES	7.1-8
7.1.2.2	INDEPENDENCE OF REDUNDANT SAFETY-RELATED SYSTEMS	7.1-13
7.1.2.3	PHYSICAL IDENTIFICATION OF SAFETY-RELATED EQUIPMENT	7.1-16
7.1.2.4	PROCESS SIGNAL ISOLATION RELAYS	7.1-17
7.2	**REACTOR TRIP SYSTEM**	**7.2-1**
7.2.1	DESCRIPTION	7.2-1
7.2.1.1	SYSTEM DESCRIPTION	7.2-1
7.2.1.2	DESIGN BASES INFORMATION	7.2-16
7.2.1.3	FINAL SYSTEMS DRAWINGS	7.2-19
7.2.2	ANALYSES	7.2-19
7.2.2.1	EVALUATION OF DESIGN LIMITS	7.2-20

TABLE OF CONTENTS

Section	Title	Page
7.2.2.2	EVALUATION OF COMPLIANCE TO APPLICABLE CODES AND STANDARDS	7.2-22
7.2.2.3	SPECIFIC CONTROL AND PROTECTION INTERACTIONS	7.2-32
7.2.2.4	ADDITIONAL POSTULATED ACCIDENTS	7.2-35
7.2.3	TESTS AND INSPECTIONS	7.2-35
7.3	**ENGINEERED SAFETY FEATURES ACTUATION SYSTEM**	**7.3-1**
7.3.1	DESCRIPTION	7.3-1
7.3.1.1	SYSTEM DESCRIPTION	7.3-1
7.3.1.2	DESIGN BASES INFORMATION	7.3-6
7.3.1.3	FINAL SYSTEM DRAWINGS	7.3-8
7.3.2	ANALYSIS	7.3-9
7.3.2.1	SYSTEM RELIABILITY/AVAILABILITY AND FAILURE MODE AND EFFECT ANALYSES	7.3-9
7.3.2.2	COMPLIANCE WITH STANDARDS AND DESIGN CRITERIA	7.3-9
7.3.2.3	FURTHER CONSIDERATIONS	7.3-16
7.3.2.4	SUMMARY	7.3-16
7.4	**SYSTEMS REQUIRED FOR SAFE SHUTDOWN**	**7.4-1**
7.4.1	DESCRIPTION	7.4-1
7.4.1.1	MONITORING INDICATORS	7.4-1
7.4.1.2	CONTROLS	7.4-2
7.4.1.3	EQUIPMENT AND SYSTEMS AVAILABLE FOR COLD SHUTDOWN	7.4-5
7.4.2	ANALYSIS	7.4-5
7.5	**INSTRUMENTATION SYSTEMS IMPORTANT TO SAFETY**	**7.5-1**
7.5.1	POST ACCIDENT MONITORING INSTRUMENTATION (PAM)	7.5-1
7.5.1.1	SYSTEM DESCRIPTION	7.5-1
7.5.1.2	VARIABLE TYPES	7.5-1
7.5.1.3	VARIABLE CATEGORIES	7.5-2
7.5.1.4	DESIGN BASES	7.5-3
7.5.1.5	GENERAL REQUIREMENTS	7.5-6
7.5.1.6	ANALYSIS	7.5-7
7.5.1.7	TESTS AND INSPECTIONS	7.5-7
7.5.1.8	POST ACCIDENT MONITORING SYSTEM (PAMS)	7.5-8

TABLE OF CONTENTS

Section	Title	Page
7.5.2	PLANT COMPUTER SYSTEM	7.5-8
7.5.2.1	SAFETY PARAMETER DISPLAY SYSTEM	7.5-9
7.5.2.2	BYPASSED AND INOPERABLE STATUS INDICATION SYSTEM (BISI)	7.5-11
7.5.2.3	TECHNICAL SUPPORT CENTER AND COMMUNICATION DATA LINKS	7.5-13
7.6	**ALL OTHER SYSTEMS REQUIRED FOR SAFETY**	**7.6-1**
7.6.1	120V AC AND 125V DC VITAL PLANT CONTROL POWER SYSTEM	7.6-1
7.6.2	RESIDUAL HEAT REMOVAL ISOLATION VALVES	7.6-1
7.6.2.1	DESCRIPTION	7.6-1
7.6.2.2	ANALYSIS	7.6-2
7.6.3	REFUELING INTERLOCKS	7.6-2
7.6.4	DELETED BY AMENDMENT 63.	7.6-2
7.6.5	ACCUMULATOR MOTOR-OPERATED VALVES	7.6-2
7.6.6	SPURIOUS ACTUATION PROTECTION FOR MOTOR OPERATED VALVES	7.6-3
7.6.7	LOOSE PART MONITORING SYSTEM (LPMS) SYSTEM DESCRIPTION	7.6-4
7.6.8	INTERLOCKS FOR RCS PRESSURE CONTROL DURING LOW TEMPERATURE OPERATION	7.6-8
7.6.8.1	ANALYSIS OF INTERLOCK	7.6-9
7.6.9	SWITCHOVER FROM INJECTION TO RECIRCULATION MODE FOLLOWING A LOCA	7.6-10
7.7	**CONTROL SYSTEMS**	**7.7-1**
7.7.1	DESCRIPTION	7.7-1
7.7.1.1	CONTROL ROD DRIVE REACTOR CONTROL SYSTEM	7.7-1
7.7.1.2	ROD CONTROL SYSTEM	7.7-4
7.7.1.3	PLANT CONTROL SIGNALS FOR MONITORING AND INDICATING	7.7-10
7.7.1.4	PLANT CONTROL SYSTEM INTERLOCKS	7.7-15
7.7.1.5	PRESSURIZER PRESSURE CONTROL	7.7-16
7.7.1.6	PRESSURIZER WATER LEVEL CONTROL	7.7-16
7.7.1.7	STEAM GENERATOR WATER LEVEL CONTROL	7.7-17
7.7.1.8	STEAM DUMP CONTROL	7.7-17
7.7.1.9	INCORE INSTRUMENTATION SYSTEM	7.7-19

TABLE OF CONTENTS

Section	Title	Page
7.7.1.10	CONTROL BOARD	7.7-20
7.7.1.11	DISTRIBUTION CONTROL SYSTEM	7.7-20
7.7.1.12	ANTICIPATED TRANSIENT WITHOUT SCRAM MITIGATION SYSTEM ACTUATION	7.7-23
7.7.2	ANALYSIS	7.7-24
7.7.2.1	SEPARATION OF PROTECTION AND CONTROL SYSTEM	7.7-25
7.7.2.2	RESPONSE CONSIDERATIONS OF REACTIVITY	7.7-25
7.7.2.3	STEP LOAD CHANGES WITHOUT STEAM DUMP	7.7-27
7.7.2.4	LOADING AND UNLOADING	7.7-27
7.7.2.5	LOAD REJECTION FURNISHED BY STEAM DUMP SYSTEM	7.7-28
7.7.2.6	TURBINE-GENERATOR TRIP WITH REACTOR TRIP	7.7-28
7A	**INSTRUMENTATION IDENTIFICATIONS AND SYMBOLS**	**7A-1**
7A.1	IDENTIFICATION SYSTEM	7A-1
7A.1.1	FUNCTIONAL IDENTIFICATION	7A-1
7A.1.2	SYSTEM IDENTIFICATION	7A-3
7A.1.3	LOOP IDENTIFICATION	7A-3
7A.2	**SYMBOLS**	**7A-3**
7A.2.1	INSTRUMENT SYMBOL	7A-4
8.0	**ELECTRIC POWER**	
8.1	**INTRODUCTION**	**8.1-1**
8.1.1	UTILITY GRID AND INTERCONNECTIONS	8.1-1
8.1.2	PLANT ELECTRICAL POWER SYSTEM	8.1-1
8.1.3	SAFETY-RELATED LOADS	8.1-2
8.1.4	DESIGN BASES	8.1-2
8.1.5	DESIGN CRITERIA AND STANDARDS	8.1-4
8.1.5.1	DESIGN CRITERIA	8.1-4
8.1.5.2	OTHER STANDARDS AND GUIDES	8.1-4
8.1.5.3	COMPLIANCE TO REGULATORY GUIDES AND IEEE STANDARDS	8.1-8
8.2	**OFFSITE (PREFERRED) POWER SYSTEM**	**8.2-1**
8.2.1	DESCRIPTION	8.2-1

TABLE OF CONTENTS

Section	Title	Page
8.2.1.1	PREFERRED POWER SUPPLY	8.2-1
8.2.1.2	TRANSMISSION LINES, SWITCHYARD, AND TRANSFORMERS	8.2-3
8.2.1.3	ARRANGEMENT OF THE START BOARDS, UNIT BOARDS, COMMON BOARDS, AND REACTOR COOLANT PUMP (RCP) BOARDS	8.2-4
8.2.1.4	ARRANGEMENT OF ELECTRICAL CONTROL AREA (NUCLEAR PLANT)	8.2-5
8.2.1.5	SWITCHYARD CONTROL AND RELAYING	8.2-5
8.2.1.6	6.9KV START BOARDS CONTROL AND RELAYING	8.2-8
8.2.1.7	6.9KV UNIT AND RCP BOARD CONTROL AND RELAYING	8.2-11
8.2.1.8	CONFORMANCE WITH STANDARDS	8.2-12
8.2.2	ANALYSIS	8.2-20
8.3	**ONSITE (STANDBY) POWER SYSTEM**	**8.3-1**
8.3.1	AC POWER SYSTEM	8.3-1
8.3.1.1	DESCRIPTION	8.3-1
8.3.1.2	ANALYSIS	8.3-25
8.3.1.3	PHYSICAL IDENTIFICATION OF SAFETY-RELATED EQUIPMENT IN AC POWER SYSTEMS	8.3-36
8.3.1.4	INDEPENDENCE OF REDUNDANT AC POWER SYSTEMS	8.3-37
8.3.2	DC POWER SYSTEM	8.3-53
8.3.2.1	DESCRIPTION	8.3-53
8.3.2.2	ANALYSIS OF VITAL 125V DC CONTROL POWER SUPPLY SYSTEM	8.3-61
8.3.2.3	PHYSICAL IDENTIFICATION OF SAFETY-RELATED EQUIPMENT IN DC POWER SYSTEMS	8.3-66
8.3.2.4	INDEPENDENCE OF REDUNDANT DC POWER SYSTEMS	8.3-66
8.3.3	FIRE PROTECTION FOR CABLE SYSTEMS	8.3-67
8A	**ANALYSIS OF SUBMERGED ELECTRICAL EQUIPMENT (DURING POST LOCA) POWERED FROM AUXILIARY POWER SYSTEM**	**8A-1**
8B	**ANALYSIS OF SUBMERGED ELECTRICAL EQUIPMENT (DURING POST LOCA) POWERED FROM INSTRUMENTATION AND CONTROL POWER SYSTEM**	**8A-3**
8C	**DELETED BY AMENDMENT 75**	**8A-5**

TABLE OF CONTENTS

Section	Title	Page
8D	**IEEE STD 387-1984 FOR DIESEL-GENERATING UNITS APPLIED AS STANDBY POWER**	**8A-6**
8E	**PROBABILITY/RELIABILITY ANALYSIS OF PROTECTION DEVICE SCHEMES FOR ASSOCIATED AND NON-CLASS 1E CABLES**	**8A-8**
9.0	**AUXILIARY SYSTEMS**	
9.1	**FUEL STORAGE AND HANDLING**	**9.1-1**
9.1.1	NEW FUEL STORAGE	9.1-1
9.1.1.1	DESIGN BASES	9.1-1
9.1.1.2	FACILITIES DESCRIPTION	9.1-1
9.1.1.3	SAFETY EVALUATION	9.1-1
9.1.2	SPENT FUEL STORAGE	9.1-2
9.1.2.1	DESIGN BASES	9.1-2
9.1.2.2	FACILITIES DESCRIPTION	9.1-2
9.1.2.3	SAFETY EVALUATION	9.1-3
9.1.2.4	MATERIALS	9.1-4
9.1.3	SPENT FUEL POOL COOLING AND CLEANUP SYSTEM (SFPCCS)	9.1-4
9.1.3.1	DESIGN BASES	9.1-4
9.1.3.2	SYSTEM DESCRIPTION	9.1-5
9.1.3.3	SAFETY EVALUATION	9.1-8
9.1.3.4	TESTS AND INSPECTIONS	9.1-11
9.1.3.5	INSTRUMENT APPLICATION	9.1-11
9.1.4	FUEL HANDLING SYSTEM	9.1-12
9.1.4.1	DESIGN BASES	9.1-12
9.1.4.2	SYSTEM DESCRIPTION	9.1-13
9.1.4.3	DESIGN EVALUATION	9.1-20
9.1.4.4	TESTS AND INSPECTIONS	9.1-26
9.2	**WATER SYSTEMS**	**9.2-1**
9.2.1	ESSENTIAL RAW COOLING WATER (ERCW)	9.2-1
9.2.1.1	DESIGN BASES	9.2-1
9.2.1.2	SYSTEM DESCRIPTION	9.2-1
9.2.1.3	SAFETY EVALUATION	9.2-4

TABLE OF CONTENTS

Section	Title	Page
9.2.1.4	TESTS AND INSPECTIONS	9.2-7
9.2.1.5	INSTRUMENT APPLICATIONS	9.2-7
9.2.1.6	CORROSION, ORGANIC FOULING, AND ENVIRONMENTAL QUALIFICATION	9.2-9
9.2.1.7	DESIGN CODES	9.2-10
9.2.2	COMPONENT COOLING SYSTEM (CCS)	9.2-11
9.2.2.1	DESIGN BASES	9.2-11
9.2.2.2	SYSTEM DESCRIPTION	9.2-12
9.2.2.3	COMPONENTS	9.2-15
9.2.2.4	SAFETY EVALUATION	9.2-18
9.2.2.5	LEAKAGE PROVISIONS	9.2-19
9.2.2.6	INCIDENTAL CONTROL	9.2-19
9.2.2.7	INSTRUMENT APPLICATIONS	9.2-20
9.2.2.8	MALFUNCTION ANALYSIS	9.2-21
9.2.2.9	TESTS AND INSPECTIONS - HISTORICAL INFORMATION	9.2-22
9.2.2.10	CODES AND CLASSIFICATION	9.2-22
9.2.3	DEMINERALIZED WATER MAKEUP SYSTEM	9.2-22
9.2.3.1	DESIGN BASES	9.2-22
9.2.3.2	SYSTEM DESCRIPTION	9.2-23
9.2.3.3	SAFETY EVALUATION	9.2-23
9.2.3.4	TEST AND INSPECTION	9.2-24
9.2.3.5	INSTRUMENTATION APPLICATIONS	9.2-24
9.2.4	POTABLE AND SANITARY WATER SYSTEMS	9.2-24
9.2.4.1	POTABLE WATER SYSTEM	9.2-24
9.2.4.2	SANITARY WATER SYSTEM	9.2-25
9.2.5	ULTIMATE HEAT SINK	9.2-28
9.2.5.1	GENERAL DESCRIPTION	9.2-28
9.2.5.2	DESIGN BASES	9.2-29
9.2.5.3	SAFETY EVALUATION	9.2-29
9.2.5.4	INSTRUMENTATION APPLICATION	9.2-31
9.2.6	CONDENSATE STORAGE FACILITIES	9.2-31
9.2.6.1	DESIGN BASES	9.2-31
9.2.6.2	SYSTEM DESCRIPTION	9.2-32
9.2.6.3	SAFETY EVALUATION	9.2-32
9.2.6.4	TEST AND INSPECTIONS	9.2-33

TABLE OF CONTENTS

Section	Title	Page
9.2.6.5	INSTRUMENT APPLICATIONS	9.2-33
9.2.7	REFUELING WATER STORAGE TANK	9.2-34
9.2.7.1	ECCS PUMPS NET POSITIVE SUCTION HEAD (NPSH)	9.2-35
9.2.8	RAW COOLING WATER SYSTEM	9.2-37
9.2.8.1	DESIGN BASES	9.2-37
9.2.8.2	SYSTEM DESCRIPTION	9.2-38
9.2.8.3	SAFETY EVALUATION	9.2-40
9.2.8.4	TESTS AND INSPECTION	9.2-41
9.3	**PROCESS AUXILIARIES**	**9.3-1**
9.3.1	COMPRESSED AIR SYSTEM	9.3-1
9.3.1.1	DESIGN BASIS	9.3-1
9.3.1.2	SYSTEM DESCRIPTION	9.3-1
9.3.1.3	SAFETY EVALUATION	9.3-2
9.3.1.4	TESTS AND INSPECTIONS	9.3-5
9.3.1.5	INSTRUMENTATION APPLICATIONS	9.3-5
9.3.2	PROCESS SAMPLING SYSTEM	9.3-5
9.3.2.1	DESIGN BASIS	9.3-5
9.3.2.2	SYSTEM DESCRIPTION	9.3-5
9.3.2.3	SAFETY EVALUATION	9.3-8
9.3.2.4	TESTS AND INSPECTIONS	9.3-8
9.3.2.5	INSTRUMENTATION APPLICATIONS	9.3-8
9.3.2.6	POSTACCIDENT SAMPLING SUBSYSTEM - (UNIT 1 ONLY)	9.3-8
9.3.3	EQUIPMENT AND FLOOR DRAINAGE SYSTEM	9.3-12
9.3.3.1	DESIGN BASES	9.3-12
9.3.3.2	SYSTEM DESIGN	9.3-12
9.3.3.3	DRAINS - REACTOR BUILDING	9.3-15
9.3.3.4	DESIGN EVALUATION	9.3-15
9.3.3.5	TESTS AND INSPECTIONS	9.3-15
9.3.3.6	INSTRUMENTATION APPLICATION	9.3-15
9.3.3.7	DRAIN LIST	9.3-15
9.3.4	CHEMICAL AND VOLUME CONTROL SYSTEM	9.3-16
9.3.4.1	DESIGN BASES	9.3-16
9.3.4.2	SYSTEM DESCRIPTION	9.3-17
9.3.4.3	SAFETY EVALUATION	9.3-36

TABLE OF CONTENTS

Section	Title	Page
9.3.4.4	TESTS AND INSPECTIONS	9.3-38
9.3.4.5	INSTRUMENTATION APPLICATION	9.3-39
9.3.5	FAILED FUEL DETECTION SYSTEM	9.3-39
9.3.6	AUXILIARY CHARGING SYSTEM	9.3-39
9.3.6.1	DESIGN BASES	9.3-39
9.3.6.2	SYSTEM DESIGN DESCRIPTION	9.3-40
9.3.6.3	DESIGN EVALUATION	9.3-41
9.3.6.4	TESTS AND INSPECTION	9.3-41
9.3.6.5	INSTRUMENT APPLICATION	9.3-41
9.3.7	BORON RECYCLE SYSTEM	9.3-42
9.3.8	HEAT TRACING	9.3-42
9.4	**AIR CONDITIONING, HEATING, COOLING, AND VENTILATION SYSTEMS**	**9.4-1**
9.4.1	CONTROL ROOM AREA VENTILATION SYSTEM	9.4-1
9.4.1.1	DESIGN BASES	9.4-1
9.4.1.2	SYSTEM DESCRIPTION	9.4-3
9.4.1.3	SAFETY EVALUATION	9.4-7
9.4.1.4	TESTS AND INSPECTION	9.4-8
9.4.2	FUEL HANDLING AREA VENTILATION SYSTEM	9.4-9
9.4.2.1	DESIGN BASES	9.4-9
9.4.2.2	SYSTEM DESCRIPTION	9.4-10
9.4.2.3	SAFETY EVALUATION	9.4-11
9.4.2.4	INSPECTION AND TESTING	9.4-12
9.4.3	AUXILIARY BUILDING AND RADWASTE AREA VENTILATION SYSTEM	9.4-12
9.4.3.1	DESIGN BASES	9.4-12
9.4.3.2	SYSTEM DESCRIPTION	9.4-13
9.4.3.3	SAFETY EVALUATION	9.4-18
9.4.3.4	INSPECTION AND TESTING REQUIREMENTS	9.4-23
9.4.4	TURBINE BUILDING AREA VENTILATION SYSTEM	9.4-23
9.4.4.1	DESIGN BASES	9.4-23
9.4.4.2	SYSTEM DESCRIPTION	9.4-23
9.4.4.3	SAFETY EVALUATION	9.4-26
9.4.4.4	INSPECTION AND TESTING REQUIREMENTS	9.4-26
9.4.5	ENGINEERED SAFETY FEATURE VENTILATION SYSTEMS	9.4-26

TABLE OF CONTENTS

Section	Title	Page
9.4.5.1	ERCW INTAKE PUMPING STATION (IPS)	9.4-26
9.4.5.2	DIESEL GENERATOR BUILDINGS	9.4-28
9.4.5.3	AUXILIARY BUILDING ENGINEERED SAFETY FEATURES (ESF) EQUIPMENT COOLERS	9.4-33
9.4.6	REACTOR BUILDING PURGE VENTILATING SYSTEM (RBPVS)	9.4-36
9.4.6.1	DESIGN BASES	9.4-36
9.4.6.2	SYSTEM DESCRIPTION	9.4-39
9.4.6.3	SAFETY EVALUATION	9.4-41
9.4.6.4	INSPECTION AND TESTING REQUIREMENTS	9.4-43
9.4.7	CONTAINMENT AIR COOLING SYSTEM	9.4-43
9.4.7.1	DESIGN BASES	9.4-43
9.4.7.2	SYSTEM DESCRIPTION	9.4-44
9.4.7.3	SAFETY EVALUATION	9.4-46
9.4.7.4	TEST AND INSPECTION REQUIREMENTS	9.4-47
9.4.8	CONDENSATE DEMINERALIZER WASTE EVAPORATOR BUILDING ENVIRONMENTAL CONTROL SYSTEM	9.4-47
9.4.9	POSTACCIDENT SAMPLING FACILITY (PASF) ENVIRONMENTAL CONTROL SYSTEM (UNIT 1 ONLY)	9.4-47
9.5	**OTHER AUXILIARY SYSTEMS**	**9.5-1**
9.5.1	FIRE PROTECTION SYSTEM	9.5-1
9.5.1.1	DELETED BY AMENDMENT 87	9.5-1
9.5.1.2	DELETED BY AMENDMENT 87	9.5-1
9.5.1.3	DELETED BY AMENDMENT 87	9.5-1
9.5.1.4	DELETED BY AMENDMENT 87	9.5-1
9.5.1.5	DELETED BY AMENDMENT 87	9.5-1
9.5.2	PLANT COMMUNICATIONS SYSTEM	9.5-1
9.5.2.1	DESIGN BASES	9.5-1
9.5.2.2	GENERAL DESCRIPTION INTRAPLANT COMMUNICATIONS	9.5-1
9.5.2.3	GENERAL DESCRIPTION INTERPLANT SYSTEM	9.5-4
9.5.2.4	EVALUATION	9.5-5
9.5.2.5	INSPECTION AND TESTS	9.5-7
9.5.3	LIGHTING SYSTEMS	9.5-8
9.5.3.1	DESIGN BASES	9.5-8
9.5.3.2	DESCRIPTION OF THE PLANT LIGHTING SYSTEM	9.5-8

TABLE OF CONTENTS

Section	Title	Page
9.5.3.3	DIESEL GENERATOR BUILDING LIGHTING SYSTEM	9.5-9
9.5.3.4	SAFETY RELATED FUNCTIONS OF THE LIGHTING SYSTEMS	9.5-10
9.5.3.5	INSPECTION AND TESTING REQUIREMENTS	9.5-10
9.5.4	DIESEL GENERATOR FUEL OIL STORAGE AND TRANSFER SYSTEM	9.5-10
9.5.4.1	DESIGN BASIS	9.5-10
9.5.4.2	SYSTEM DESCRIPTION	9.5-11
9.5.4.3	SAFETY EVALUATION	9.5-14
9.5.4.4	TESTS AND INSPECTIONS	9.5-15
9.5.5	DIESEL GENERATOR COOLING WATER SYSTEM	9.5-15
9.5.5.1	DESIGN BASES	9.5-15
9.5.5.2	SYSTEM DESCRIPTION	9.5-15
9.5.5.3	SAFETY EVALUATION	9.5-16
9.5.5.4	TESTS AND INSPECTIONS	9.5-16
9.5.6	DIESEL GENERATOR STARTING SYSTEM	9.5-17
9.5.6.1	DESIGN BASES	9.5-17
9.5.6.2	SYSTEM DESCRIPTION	9.5-17
9.5.6.3	SAFETY EVALUATION	9.5-18
9.5.6.4	TESTS AND INSPECTIONS	9.5-18
9.5.7	DIESEL ENGINE LUBRICATION SYSTEM	9.5-18
9.5.7.1	DESIGN BASES	9.5-18
9.5.7.2	SYSTEM DESCRIPTION	9.5-19
9.5.7.3	SAFETY EVALUATION	9.5-20
9.5.7.4	TEST AND INSPECTIONS	9.5-21
9.5.8	DIESEL GENERATOR COMBUSTION AIR INTAKE AND EXHAUST SYSTEM	9.5-21
9.5.8.1	DESIGN BASES	9.5-21
9.5.8.2	SYSTEM DESCRIPTIONS	9.5-21
9.5.8.3	SAFETY EVALUATION	9.5-22
9.5.8.4	TESTS AND INSPECTION	9.5-22

10.0 MAIN STEAM AND POWER CONVERSION SYSTEMS

10.1 SUMMARY DESCRIPTION 10.1-1

10.2 TURBINE-GENERATOR 10.2-1

TABLE OF CONTENTS

Section	Title	Page
10.2.1	DESIGN BASES	10.2-1
10.2.2	DESCRIPTION	10.2-1
10.2.3	TURBINE ROTOR AND DISC INTEGRITY	10.2-5
10.2.3.1	MATERIALS SELECTION	10.2-5
10.2.3.2	FRACTURE TOUGHNESS	10.2-8
10.2.3.3	HIGH TEMPERATURE PROPERTIES	10.2-9
10.2.3.4	TURBINE DISC DESIGN	10.2-10
10.2.3.5	PRESERVICE INSPECTION	10.2-10
10.2.3.6	INSERVICE INSPECTION	10.2-11
10.2.4	EVALUATION	10.2-13
10.3	**MAIN STEAM SUPPLY SYSTEM**	**10.3-1**
10.3.1	DESIGN BASES	10.3-1
10.3.2	SYSTEM DESCRIPTION	10.3-1
10.3.2.1	SYSTEM DESIGN	10.3-1
10.3.2.2	MATERIAL COMPATIBILITY, CODES, AND STANDARDS	10.3-2
10.3.3	DESIGN EVALUATION	10.3-2
10.3.4	INSPECTION AND TESTING REQUIREMENTS	10.3-3
10.3.5	WATER CHEMISTRY	10.3-4
10.3.5.1	PURPOSE	10.3-4
10.3.5.2	FEEDWATER CHEMISTRY SPECIFICATIONS	10.3-4
10.3.5.3	OPERATING MODES	10.3-4
10.3.5.4	EFFECT OF WATER CHEMISTRY ON THE RADIOACTIVE IODINE PARTITION COEFFICIENT	10.3-5
10.3.6	STEAM AND FEEDWATER SYSTEM MATERIALS	10.3-6
10.3.6.1	FRACTURE TOUGHNESS	10.3-6
10.3.6.2	MATERIALS SELECTION AND FABRICATION	10.3-6
10.4	**OTHER FEATURES OF STEAM AND POWER CONVERSION SYSTEM**	**10.4-1**
10.4.1	MAIN CONDENSER	10.4-1
10.4.1.1	DESIGN BASES	10.4-1
10.4.1.2	SYSTEM DESCRIPTION	10.4-1
10.4.1.3	SAFETY EVALUATION	10.4-4
10.4.1.4	INSPECTION AND TESTING	10.4-5
10.4.1.5	INSTRUMENTATION	10.4-5

TABLE OF CONTENTS

Section	Title	Page
10.4.2	MAIN CONDENSER EVACUATION SYSTEM	10.4-5
10.4.2.1	DESIGN BASES	10.4-5
10.4.2.2	SYSTEM DESCRIPTION	10.4-5
10.4.2.3	SAFETY EVALUATION	10.4-6
10.4.2.4	INSPECTION AND TESTING	10.4-6
10.4.2.5	INSTRUMENTATION	10.4-6
10.4.3	TURBINE GLAND SEALING SYSTEM	10.4-7
10.4.3.1	DESIGN BASES	10.4-7
10.4.3.2	SYSTEM DESCRIPTION	10.4-7
10.4.3.3	SAFETY EVALUATION	10.4-7
10.4.3.4	INSPECTION AND TESTING	10.4-8
10.4.3.5	INSTRUMENTATION	10.4-8
10.4.4	TURBINE BYPASS SYSTEM	10.4-8
10.4.4.1	DESIGN BASES	10.4-8
10.4.4.2	SYSTEM DESCRIPTION	10.4-8
10.4.4.3	SAFETY EVALUATION	10.4-9
10.4.4.4	INSPECTION AND TESTING	10.4-10
10.4.4.5	INSTRUMENTATION	10.4-10
10.4.5	CONDENSER CIRCULATING WATER SYSTEM	10.4-11
10.4.5.1	DESIGN BASIS	10.4-11
10.4.5.2	SYSTEM DESCRIPTION	10.4-11
10.4.5.3	SAFETY EVALUATION	10.4-13
10.4.5.4	INSPECTION AND TESTING	10.4-14
10.4.5.5	INSTRUMENTATION APPLICATION	10.4-14
10.4.6	CONDENSATE POLISHING DEMINERALIZER SYSTEM	10.4-15
10.4.6.1	DESIGN BASES - POWER CONVERSION	10.4-15
10.4.6.2	SYSTEM DESCRIPTION	10.4-15
10.4.6.3	SAFETY EVALUATION	10.4-17
10.4.6.4	INSPECTION AND TESTING	10.4-18
10.4.6.5	INSTRUMENTATION	10.4-18
10.4.7	CONDENSATE AND FEEDWATER SYSTEMS	10.4-18
10.4.7.1	DESIGN BASES	10.4-18
10.4.7.2	SYSTEM DESCRIPTION	10.4-19
10.4.7.3	SAFETY EVALUATION	10.4-27

TABLE OF CONTENTS

Section	Title	Page
10.4.7.4	INSPECTION AND TESTING	10.4-29
10.4.7.5	INSTRUMENTATION	10.4-29
10.4.8	STEAM GENERATOR BLOWDOWN SYSTEM	10.4-29
10.4.8.1	DESIGN BASES	10.4-29
10.4.8.2	SYSTEM DESCRIPTION AND OPERATION	10.4-30
10.4.8.3	SAFETY EVALUATION	10.4-31
10.4.8.4	INSPECTIONS AND TESTING	10.4-32
10.4.9	AUXILIARY FEEDWATER SYSTEM	10.4-32
10.4.9.1	DESIGN BASES	10.4-32
10.4.9.2	SYSTEM DESCRIPTION	10.4-33
10.4.9.3	SAFETY EVALUATION	10.4-34
10.4.9.4	INSPECTION AND TESTING REQUIREMENTS	10.4-37
10.4.9.5	INSTRUMENTATION REQUIREMENTS	10.4-38

11.0 RADIOACTIVE WASTE MANAGEMENT

11.1	**SOURCE TERMS**	**11.1-1**
11.1.1	HISTORICAL DESIGN MODEL FOR RADIOACTIVITIES IN SYSTEMS AND COMPONENTS	11.1-1
11.1.1.1	REACTOR COOLANT HISTORICAL DESIGN ACTIVITY	11.1-1
11.1.1.2	VOLUME CONTROL TANK HISTORICAL DESIGN ACTIVITY	11.1-2
11.1.1.3	PRESSURIZER HISTORICAL DESIGN ACTIVITY	11.1-2
11.1.1.4	GASEOUS WASTE PROCESSING SYSTEM HISTORICAL DESIGN ACTIVITIES	11.1-2
11.1.1.5	SECONDARY COOLANT HISTORICAL DESIGN ACTIVITIES	11.1-2
11.1.2	REALISTIC MODEL FOR RADIOACTIVITIES IN SYSTEMS AND COMPONENTS	11.1-2
11.1.3	PLANT LEAKAGE	11.1-3
11.1.4	ADDITIONAL SOURCES	11.1-3
11.2	**LIQUID WASTE SYSTEMS**	**11.2-1**
11.2.1	DESIGN OBJECTIVES	11.2-1
11.2.2	SYSTEMS DESCRIPTIONS	11.2-1
11.2.3	SYSTEM DESIGN	11.2-4
11.2.3.1	COMPONENT DESIGN	11.2-4
11.2.3.2	INSTRUMENTATION DESIGN	11.2-9

TABLE OF CONTENTS

Section	Title	Page
11.2.4	OPERATING PROCEDURE	11.2-10
11.2.5	PERFORMANCE TESTS	11.2-16
11.2.6	ESTIMATED RELEASES	11.2-17
11.2.6.1	NRC REQUIREMENTS	11.2-17
11.2.6.2	WESTINGHOUSE PWR RELEASE EXPERIENCE	11.2-17
11.2.6.3	EXPECTED LIQUID WASTE PROCESSING SYSTEM RELEASES	11.2-17
11.2.6.4	TURBINE BUILDING (TB) DRAINS	11.2-17
11.2.6.5	ESTIMATED TOTAL LIQUID RELEASES	11.2-18
11.2.7	RELEASE POINTS	11.2-19
11.2.8	DILUTION FACTORS	11.2-20
11.2.9	ESTIMATED DOSES FROM RADIONUCLIDES IN LIQUID EFFLUENTS	11.2-20
11.2.9.1	ASSUMPTIONS AND CALCULATIONAL METHODS	11.2-20
11.2.9.2	SUMMARY OF DOSE FROM RADIONUCLIDES IN LIQUID EFFLUENTS	11.2-22
11.3	**GASEOUS WASTE SYSTEMS**	**11.3-1**
11.3.1	DESIGN BASES	11.3-1
11.3.2	SYSTEM DESCRIPTIONS	11.3-1
11.3.3	SYSTEM DESIGN	11.3-3
11.3.3.1	COMPONENT DESIGN	11.3-3
11.3.3.2	INSTRUMENTATION DESIGN	11.3-3
11.3.4	OPERATING PROCEDURE	11.3-4
11.3.5	PERFORMANCE TESTS	11.3-6
11.3.6	DELETED BY AMENDMENT 77	11.3-6
11.3.7	RADIOACTIVE RELEASES	11.3-6
11.3.7.1	NRC REQUIREMENTS	11.3-6
11.3.7.2	WESTINGHOUSE PWR EXPERIENCE RELEASES	11.3-6
11.3.7.3	EXPECTED GASEOUS WASTE PROCESSING SYSTEM RELEASES	11.3-7
11.3.7.4	RELEASES FROM VENTILATION SYSTEMS	11.3-7
11.3.7.5	ESTIMATED TOTAL RELEASES	11.3-7
11.3.8	RELEASE POINTS	11.3-7
11.3.9	ATMOSPHERIC DILUTION	11.3-9
11.3.10	ESTIMATED DOSES FROM RADIONUCLIDES IN GASEOUS EFFLUENTS	11.3-9

TABLE OF CONTENTS

Section	Title	Page
11.3.10.1	ASSUMPTIONS AND CALCULATIONAL METHODS	11.3-9
11.3.10.2	SUMMARY OF ANNUAL POPULATION DOSES	11.3-12
11.4	**PROCESS AND EFFLUENT RADIOLOGICAL MONITORING AND SAMPLING SYSTEM**	**11.4-1**
11.4.1	DESIGN OBJECTIVES	11.4-1
11.4.2	CONTINUOUS MONITORS	11.4-2
11.4.2.1	LIQUID MONITORS	11.4-2
11.4.2.2	GASEOUS MONITORS	11.4-4
11.4.3	SAMPLING	11.4-8
11.4.4	CALIBRATION AND MAINTENANCE	11.4-9
11.5	**SOLID WASTE MANAGEMENT SYSTEM**	**11.5-1**
11.5.1	DESIGN OBJECTIVES	11.5-1
11.5.2	SYSTEM INPUTS	11.5-1
11.5.3	SYSTEMS DESCRIPTION	11.5-1
11.5.3.1	WET ACTIVE WASTE HANDLING	11.5-1
11.5.3.2	DRY ACTIVE WASTE HANDLING	11.5-3
11.5.3.3	MISCELLANEOUS WASTE HANDLING	11.5-4
11.5.4	EQUIPMENT OPERATION	11.5-4
11.5.4.1	MOBILE SOLIDIFICATION SYSTEM (MSS)	11.5-4
11.5.5	STORAGE FACILITIES	11.5-4
11.5.5.1	INPLANT STORAGE AREA	11.5-4
11.5.5.2	OUTSIDE RADWASTE STORAGE	11.5-4
11.5.6	SHIPMENT	11.5-5
11.6	**OFFSITE RADIOLOGICAL MONITORING PROGRAM**	**11.6-1**
11.6.1	EXPECTED BACKGROUND	11.6-2
11.6.2	CRITICAL PATHWAYS TO MAN	11.6-2
11.6.2.1	DOSES FROM GASEOUS EFFLUENTS	11.6-3
11.6.2.2	INTERNAL DOSES FROM LIQUID EFFLUENTS	11.6-3
11.6.3	SAMPLING MEDIA, LOCATIONS, AND FREQUENCY	11.6-4
11.6.4	ANALYTICAL SENSITIVITY	11.6-4
11.6.5	DATA ANALYSIS AND PRESENTATION	11.6-4
11.6.6	PROGRAM STATISTICAL SENSITIVITY	11.6-4

TABLE OF CONTENTS

Section	Title	Page
11A	**TRITIUM CONTROL**	
11A	**SYSTEM SOURCES**	**11A-1**
11A.1	THE FISSION SOURCE	11A-1
11A.2	CONTROL ROD SOURCE	11A-1
11A.3	BORIC ACID SOURCE	11A-1
11A.4	BURNABLE SHIM ROD SOURCE	11A-2
11A.2	**TRITIUM RELEASES**	**11A-2**
11A.3	**DESIGN BASES**	**11A-2**
11A.4	**DESIGN EVALUATION**	**11A-2**
11A.5	**TRITIUM LEAD TEST ASSEMBLY**	**11A-3**
11A.6	**TRITIUM PRODUCING BURNABLE ABSORBER ROD (TPBAR) SOURCE (UNIT 1 ONLY)**	**11A-3**
12.0	**RADIATION PROTECTION**	
12.1	**ASSURING THAT OCCUPATIONAL RADIATION EXPOSURES ARE AS LOW AS REASONABLY ACHIEVABLE (ALARA)**	**12.1-1**
12.1.1	POLICY CONSIDERATIONS	12.1-1
12.1.2	DESIGN CONSIDERATIONS	12.1-1
12.1.3	ALARA OPERATIONAL CONSIDERATIONS	12.1-1
12.2	**RADIATION SOURCES**	**12.2-1**
12.2.1	CONTAINED SOURCES	12.2-1
12.2.1.1	PRIMARY SYSTEM SOURCES	12.2-1
12.2.1.2	AUXILIARY SYSTEMS SOURCES	12.2-2
12.2.1.3	SOURCES DURING REFUELING	12.2-8
12.2.1.4	MAXIMUM HYPOTHETICAL ACCIDENT (MHA) SOURCES	12.2-8
12.2.1.5	CONDENSATE DEMINERALIZER WASTE EVAPORATOR	12.2-9
12.2.2	AIRBORNE RADIOACTIVE MATERIAL SOURCES	12.2-9
12.3	**RADIATION PROTECTION DESIGN FEATURES**	**12.3-1**

TABLE OF CONTENTS

Section	Title	Page
12.3.1	FACILITY DESIGN FEATURES	12.3-1
12.3.2	SHIELDING	12.3-3
12.3.2.1	DESIGN OBJECTIVES	12.3-3
12.3.2.2	DESIGN DESCRIPTION	12.3-3
12.3.3	VENTILATION	12.3-16
12.3.3.1	AIRFLOW CONTROL	12.3-16
12.3.3.2	TYPICAL SYSTEM	12.3-16
12.3.3.3	ADDITIONAL RADIATION CONTROLS	12.3-17
12.3.4	AREA RADIATION AND AIRBORNE RADIOACTIVITY MONITORING INSTRUMENTATION	12.3-18
12.3.4.1	AREA RADIATION MONITORING INSTRUMENTATION	12.3-18
12.3.4.2	AIRBORNE PARTICULATE RADIOACTIVITY MONITORING	12.3-20
12.3.4.3	DELETED BY AMENDMENT 84.	12.3-22
12.3.4.4	SPECIAL RADIATION MONITORS	12.3-22
12.4	**DOSE ASSESSMENT**	**12.4-1**
12.5	**RADIATION PROTECTION PROGRAM**	**12.5-1**
12.5.1	ORGANIZATION	12.5-1
12.5.2	EQUIPMENT, INSTRUMENTATION, AND FACILITIES	12.5-2
12.5.3	PROCEDURES	12.5-4
13.0	**CONDUCT OF OPERATIONS**	
13.1	**ORGANIZATIONAL STRUCTURE OF APPLICANT**	**13.1-1**
13.1.1	CORPORATE ORGANIZATION	13.1-1
13.1.1.1	DESIGN RESPONSIBILITIES	13.1-1
13.1.2	NUCLEAR POWER	13.1-2
13.1.2.1	OFFSITE ORGANIZATIONS	13.1-2
13.1.2.2	ONSITE ORGANIZATION	13.1-2
13.1.3	QUALIFICATION REQUIREMENTS FOR NUCLEAR FACILITY PERSONNEL	13.1-2
13.2	**TRAINING PROGRAMS**	**13.2-1**
13.2.1	ACCREDITED TRAINING PROGRAMS	13.2-1
13.2.2	GENERAL EMPLOYEE AND FITNESS FOR DUTY TRAINING PROGRAMS	13.2-1

TABLE OF CONTENTS

Section	Title	Page
13.2.3	OTHER TRAINING PROGRAMS	13.2-2
13.3	**EMERGENCY PLANNING**	**13.3-1**
13.4	**REVIEW AND AUDIT**	**13.4-1**
13.4.1	ONSITE REVIEW	13.4-1
13.4.2	INDEPENDENT REVIEW AND AUDIT	13.4-1
13.5	**SITE PROCEDURES**	**13.5-1**
13.5.1	SYSTEM OF SITE PROCEDURES	13.5-1
13.5.1.1	CONFORMANCE WITH REGULATORY GUIDE 1.33	13.5-1
13.5.1.2	PREPARATION OF PROCEDURES	13.5-1
13.5.1.3	ADMINISTRATIVE PROCEDURES	13.5-2
13.5.2	OPERATING AND MAINTENANCE PROCEDURES	13.5-2
13.5.2.1	OPERATING PROCEDURES	13.5-2
13.5.2.2	OTHER PROCEDURES	13.5-3
13.6	**PLANT RECORDS**	**13.6-1**
13.6.1	PLANT HISTORY	13.6-1
13.6.2	OPERATING RECORDS	13.6-1
13.6.3	EVENT RECORDS	13.6-1
13.7	**NUCLEAR SECURITY**	**13.7-1**
13.7.1	PHYSICAL SECURITY AND CONTINGENCY PLAN	13.7-1
13.7.2	PERSONNEL AND PROGRAM EVALUATION	13.7-1
13.7.3	PHYSICAL SECURITY OF TPBARS	13.7-1
14.0	**INITIAL TEST PROGRAM**	
14.1	**SPECIFIC INFORMATION TO BE INCLUDED IN PRELIMINARY SAFETY ANALYSIS REPORT**	**14.1-1**
14.2	**TEST PROGRAM**	**14.2-1**
14.2.1	SUMMARY OF TEST PROGRAM AND OBJECTIVES	14.2-1
14.2.2	ORGANIZATION AND STAFFING	14.2-3
14.2.2.1	PREOPERATIONAL STARTUP ENGINEERING	14.2-3
14.2.2.2	PLANT OPERATING ORGANIZATION	14.2-5

TABLE OF CONTENTS

Section	Title	Page
14.2.2.3	NUCLEAR ASSURANCE	14.2-6
14.2.2.4	MAJOR PARTICIPATING ORGANIZATIONS	14.2-6
14.2.2.5	JOINT TEST GROUP	14.2-7
14.2.2.6	TEST REVIEW GROUP	14.2-8
14.2.2.7	PERSONNEL QUALIFICATIONS	14.2-9
14.2.3	TEST PROCEDURES AND INSTRUCTIONS	14.2-9
14.2.3.1	GENERAL	14.2-9
14.2.3.2	DEVELOPMENT OF PROCEDURES	14.2-10
14.2.3.3	REVIEW AND APPROVAL OF TEST PROCEDURES AND INSTRUCTION	14.2-10
14.2.3.4	FORMAT OF TEST INSTRUCTIONS/PROCEDURES	14.2-10
14.2.3.5	TEST INSTRUCTION/PROCEDURE REVISIONS/CHANGES	14.2-11
14.2.4	CONDUCT OF TEST PROGRAM	14.2-12
14.2.4.1	ADMINISTRATIVE PROCEDURES	14.2-12
14.2.4.2	COMPONENT TESTING	14.2-12
14.2.4.3	PREOPERATIONAL AND ACCEPTANCE TESTING	14.2-13
14.2.4.4	POWER ASCENSION TESTING	14.2-13
14.2.4.5	TEST PREREQUISITES	14.2-13
14.2.4.6	PHASE EVALUATION	14.2-13
14.2.4.7	DESIGN MODIFICATIONS	14.2-14
14.2.5	REVIEW, EVALUATION, AND APPROVAL OF TEST RESULTS	14.2-14
14.2.6	TEST RECORDS	14.2-14
14.2.7	CONFORMANCE OF TEST PROGRAMS WITH REGULATORY GUIDES	14.2-15
14.2.8	UTILIZATION OF REACTOR OPERATING AND TESTING EXPERIENCE IN DEVELOPMENT OF TEST PROGRAM	14.2-29
14.2.9	TRIAL USE OF PLANT OPERATING AND EMERGENCY PROCEDURES	14.2-29
14.2.10	INITIAL FUEL LOADING, POSTLOADING TESTS, INITIAL CRITICALITY, LOW POWER TESTS AND POWER ASCENSION	14.2-30
14.2.10.1	FUEL LOADING	14.2-30
14.2.10.2	POSTLOADING TESTS	14.2-32
14.2.10.3	INITIAL CRITICALITY	14.2-32
14.2.10.4	LOW POWER TESTS	14.2-33
14.2.10.5	POWER ASCENSION	14.2-33

TABLE OF CONTENTS

Section	Title	Page
14.2.11	TEST PROGRAM SCHEDULE	14.2-34
14.2.12	INDIVIDUAL TEST DESCRIPTIONS	14.2-34
14.2.12.1	PREOPERATIONAL TESTS	14.2-34
14.2.12.2	POWER ASCENSION TESTS	14.2-35
15.0	**ACCIDENT ANALYSES**	
15.1	**CONDITION I - NORMAL OPERATION AND OPERATIONAL TRANSIENTS**	**15.1-1**
15.1.1	OPTIMIZATION OF CONTROL SYSTEMS	15.1-3
15.1.2	INITIAL POWER CONDITIONS ASSUMED IN ACCIDENT ANALYSES	15.1-3
15.1.2.1	POWER RATING	15.1-3
15.1.2.2	INITIAL CONDITIONS	15.1-4
15.1.2.3	POWER DISTRIBUTION	15.1-4
15.1.3	TRIP POINTS AND TIME DELAYS TO TRIP ASSUMED IN ACCIDENT ANALYSES	15.1-5
15.1.4	INSTRUMENTATION DRIFT AND CALORIMETRIC ERRORS - POWER RANGE NEUTRON FLUX	15.1-6
15.1.5	ROD CLUSTER CONTROL ASSEMBLY INSERTION CHARACTERISTIC	15.1-6
15.1.6	REACTIVITY COEFFICIENTS	15.1-7
15.1.7	FISSION PRODUCT INVENTORIES	15.1-8
15.1.7.1	RADIOACTIVITY IN THE CORE	15.1-8
15.1.7.2	RADIOACTIVITY IN THE FUEL PELLET CLAD GAP	15.1-8
15.1.8	RESIDUAL DECAY HEAT	15.1-8
15.1.8.1	FISSION PRODUCT DECAY ENERGY	15.1-9
15.1.8.2	DECAY OF U-238 CAPTURE PRODUCTS	15.1-9
15.1.8.3	RESIDUAL FISSIONS	15.1-10
15.1.8.4	DISTRIBUTION OF DECAY HEAT FOLLOWING LOSS OF COOLANT ACCIDENT	15.1-10
15.1.9	COMPUTER CODES UTILIZED	15.1-11
15.1.9.1	FACTRAN	15.1-11
15.1.9.2	LOFTRAN	15.1-11
15.1.9.3	LEOPARD	15.1-12
15.1.9.4	TURTLE	15.1-12
15.1.9.5	TWINKLE	15.1-12
15.1.9.6	VIPRE-01	15.1-13

TABLE OF CONTENTS

Section	Title	Page
15.1.9.7	LOFTTR	15.1-13
15.2	**CONDITION II - FAULTS OF MODERATE FREQUENCY**	**15.2-1**
15.2.1	UNCONTROLLED ROD CLUSTER CONTROL ASSEMBLY BANK WITHDRAWAL FROM A SUBCRITICAL CONDITION	15.2-2
15.2.1.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-2
15.2.1.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-3
15.2.1.3	CONCLUSIONS	15.2-5
15.2.2	UNCONTROLLED ROD CLUSTER CONTROL ASSEMBLY BANK WITHDRAWAL AT POWER	15.2-5
15.2.2.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-5
15.2.2.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-6
15.2.2.3	CONCLUSIONS	15.2-9
15.2.3	ROD CLUSTER CONTROL ASSEMBLY MISALIGNMENT	15.2-9
15.2.3.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-9
15.2.3.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-11
15.2.3.3	CONCLUSIONS	15.2-13
15.2.4	UNCONTROLLED BORON DILUTION	15.2-13
15.2.4.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-13
15.2.4.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-14
15.2.4.3	CONCLUSIONS	15.2-15
15.2.5	PARTIAL LOSS OF FORCED REACTOR COOLANT FLOW	15.2-17
15.2.5.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-17
15.2.5.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-18
15.2.5.3	CONCLUSIONS	15.2-19
15.2.6	STARTUP OF AN INACTIVE REACTOR COOLANT LOOP	15.2-19
15.2.6.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-19
15.2.6.2	CONCLUSIONS	15.2-19
15.2.7	LOSS OF EXTERNAL ELECTRICAL LOAD AND/OR TURBINE TRIP	15.2-20
15.2.7.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-20
15.2.7.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-21
15.2.7.3	CONCLUSIONS	15.2-23
15.2.8	LOSS OF NORMAL FEEDWATER	15.2-23
15.2.8.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-23
15.2.8.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-24

TABLE OF CONTENTS

Section	Title	Page
15.2.8.3	CONCLUSIONS	15.2-27
15.2.9	COINCIDENT LOSS OF ONSITE AND EXTERNAL (OFFSITE) AC POWER TO THE STATION - LOSS OF OFFSITE POWER TO THE STATION AUXILIARIES	15.2-27
15.2.10	EXCESSIVE HEAT REMOVAL DUE TO FEEDWATER SYSTEM MALFUNCTIONS	15.2-28
15.2.10.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-28
15.2.10.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-28
15.2.10.3	CONCLUSIONS	15.2-30
15.2.11	EXCESSIVE LOAD INCREASE INCIDENT	15.2-31
15.2.11.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-31
15.2.11.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-31
15.2.11.3	CONCLUSIONS	15.2-33
15.2.12	ACCIDENTAL DEPRESSURIZATION OF THE REACTOR COOLANT SYSTEM	15.2-33
15.2.12.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-33
15.2.12.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-33
15.2.12.3	CONCLUSIONS	15.2-34
15.2.13	ACCIDENTAL DEPRESSURIZATION OF THE MAIN STEAM SYSTEM	15.2-34
15.2.13.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-34
15.2.13.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-35
15.2.13.3	CONCLUSIONS	15.2-37
15.2.14	INADVERTENT OPERATION OF EMERGENCY CORE COOLING SYSTEM	15.2-37
15.2.14.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.2-37
15.2.14.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.2-38
15.2.14.3	CONCLUSIONS	15.2-42
15.3	**CONDITION III - INFREQUENT FAULTS**	**15.3-1**
15.3.1	LOSS OF REACTOR COOLANT FROM SMALL RUPTURED PIPES OR FROM CRACKS IN LARGE PIPES WHICH ACTUATE THE EMERGENCY CORE COOLING SYSTEM	15.3-1
15.3.1.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-1
15.3.1.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-2
15.3.1.3	REACTOR COOLANT SYSTEM PIPE BREAK RESULTS	15.3-3

TABLE OF CONTENTS

Section	Title	Page
15.3.1.4	CONCLUSIONS - THERMAL ANALYSIS	15.3-4
15.3.2	MINOR SECONDARY SYSTEM PIPE BREAKS	15.3-5
15.3.2.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-5
15.3.2.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-5
15.3.2.3	CONCLUSIONS	15.3-5
15.3.3	INADVERTENT LOADING OF A FUEL ASSEMBLY INTO AN IMPROPER POSITION	15.3-5
15.3.3.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-5
15.3.3.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-6
15.3.3.3	CONCLUSIONS	15.3-7
15.3.4	COMPLETE LOSS OF FORCED REACTOR COOLANT FLOW	15.3-7
15.3.4.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-7
15.3.4.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-9
15.3.4.3	CONCLUSIONS	15.3-9
15.3.5	WASTE GAS DECAY TANK RUPTURE	15.3-10
15.3.5.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-10
15.3.5.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-10
15.3.6	SINGLE ROD CLUSTER CONTROL ASSEMBLY WITHDRAWAL AT FULL POWER	15.3-10
15.3.6.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.3-10
15.3.6.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.3-11
15.3.6.3	CONCLUSIONS	15.3-12
15.4	**CONDITION IV - LIMITING FAULTS**	**15.4-1**
15.4.1	MAJOR REACTOR COOLANT SYSTEM PIPE RUPTURES (LOSS OF COOLANT ACCIDENT)	15.4-1
15.4.1.1	THERMAL ANALYSIS	15.4-2
15.4.1.2	HYDROGEN PRODUCTION AND ACCUMULATION	15.4-12
15.4.2	MAJOR SECONDARY SYSTEM PIPE RUPTURE	15.4-12
15.4.2.1	MAJOR RUPTURE OF A MAIN STEAM LINE	15.4-12
15.4.2.2	MAJOR RUPTURE OF A MAIN FEEDWATER PIPE	15.4-19
15.4.3	STEAM GENERATOR TUBE RUPTURE	15.4-23
15.4.3.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.4-23
15.4.3.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.4-26
15.4.3.3	CONCLUSIONS	15.4-32

TABLE OF CONTENTS

Section	Title	Page
15.4.4	SINGLE REACTOR COOLANT PUMP LOCKED ROTOR	15.4-32
15.4.4.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.4-32
15.4.4.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.4-33
15.4.4.3	CONCLUSIONS	15.4-35
15.4.5	FUEL HANDLING ACCIDENT	15.4-35
15.4.5.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.4-35
15.4.5.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.4-35
15.4.6	RUPTURE OF A CONTROL ROD DRIVE MECHANISM HOUSING (ROD CLUSTER CONTROL ASSEMBLY EJECTION)	15.4-36
15.4.6.1	IDENTIFICATION OF CAUSES AND ACCIDENT DESCRIPTION	15.4-36
15.4.6.2	ANALYSIS OF EFFECTS AND CONSEQUENCES	15.4-39
15.4.6.3	CONCLUSIONS	15.4-44
15.5	**ENVIRONMENTAL CONSEQUENCES OF ACCIDENTS**	**15.5-1**
15.5.1	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED LOSS OF AC POWER TO THE PLANT AUXILIARIES	15.5-1
15.5.2	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED WASTE GAS DECAY TANK RUPTURE	15.5-2
15.5.3	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED LOSS OF COOLANT ACCIDENT	15.5-3
15.5.4	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED STEAM LINE BREAK	15.5-20
15.5.5	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED STEAM GENERATOR TUBE RUPTURE	15.5-21
15.5.6	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED FUEL HANDLING ACCIDENT	15.5-22
15.5.7	ENVIRONMENTAL CONSEQUENCES OF A POSTULATED ROD EJECTION ACCIDENT	15.5-24
15A	**DOSE MODELS USED TO EVALUATE THE ENVIRONMENTAL CONSEQUENCES OF ACCIDENTS**	
15A.1	**INTRODUCTION**	**15A-1**
15A.2	**ASSUMPTIONS**	**15A-1**
15A.3	**GAMMA DOSE AND BETA DOSE**	**15A-1**

TABLE OF CONTENTS

Section	Title	Page
15A.4	**THYROID INHALATION DOSE**	**15A-2**
16.0	**TECHNICAL SPECIFICATIONS**	
16.1	**PROPOSED TECHNICAL SPECIFICATIONS (NOT USED)**	**16.1-1**
16.2	**PROPOSED FINAL TECHNICAL SPECIFICATIONS**	**16.2-1**
16.3	**RELOCATED SPECIFICATIONS**	**16.3-1**
16.3.1	DISCUSSION	16.3-1
16.3.2	DOCUMENT CONTROL	16.3-1
16.3.3	CHANGES TO THE RELOCATED SPECIFICATIONS	16.3-1
17.0	**QUALITY ASSURANCE**	**17-1**
17.1	QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION	17-1
17.1.1	TVA ORGANIZATION	17-1
17.1.2	QUALITY ASSURANCE PROGRAM	17-1
17.1A	WESTINGHOUSE QUALITY MANAGEMENT SYSTEM	17-2
17.2	**QUALITY ASSURANCE FOR STATION OPERATION**	**17.2-1**
17.2.1	IDENTIFICATION OF SAFETY-RELATED FEATURES	17.2-1