Enclosure 3

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 28, 1996

Mr. C. Randy Hutchinson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: CONVERSION OF THE DESIGN FEATURES SECTION OF THE TECHNICAL SPECIFICATIONS TO THE IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS), ARKANSAS NUCLEAR ONE, UNIT 2 (ANO-2) (TAC NO. M96480)

Dear Mr. Hutchinson:

By letter dated August 23, 1996, Entergy Operations, Inc. (EOI), submitted the subject application. In that letter EOI requested that the Nuclear Regulatory Commission (NRC) complete its review prior to the next ANO-2 refueling outage (2R12), which is currently scheduled to begin on April 11, 1997.

The NRC staff performed an initial review of the application. The application adopts the improved standard technical specifications (ISTS) for the entire Design Features section. To perform a complete review of the application, it would require a significant staff effort as each change would need to be individually evaluated. In addition, the staff noted differences between the application and the ISTS which would further lengthen the review process.

Due to NRC's priority of reviewing full conversion applications being ahead of partial conversion applications, the staff will not be able to meet EOI's requested review schedule. Accordingly, the staff recommends that you identify the specific changes that are needed to support refueling outage 2R12, and request those changes in a separate application.

Sincerely,

Kombiz Salehi

Kombiz Salehi, Acting Project Manager
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-368

cc: See next page

9610310192 XA

SGML Technical Specifications - Format for Headings

Chapter/Section Numbering and Names

<u>Section 3.0 should NOT have same number as Chapter 3.0</u>

Alt 1:
(New Numbers & Titles)

Chapter	Section	Spec	Name	Where Used
2.0			Safety Limits **(SL) and SL Violations**	TOC and H1
	2.1		**SLs**	TOC and H2
	2.2		**SL** Violations	TOC and H2
3.0			**LCOs and SRs**	TOC Only
	3.A		**General Requirements**	TOC and H1
	(3.0)	**3.A.1**	LCO Applicability	TOC and H2
	(3.0)	**3.A.2**	SR Applicatility	TOC and H2
	3.1		Reactivity Control Systems	TOC and H1
		3.1.1	Shutdown Margin	TOC and H2

Alt 2: (Chapter numbers as a single digit, 3.0 is a Section number)

Chapter	Section	Spec	Name	Where Used
1			Use and Application	TOC and H1
	1.1		Definitions	TOC and H2
	1.2		Logical Connectors	TOC and H2
	1.3		Completion Times	TOC and H2
	1.4		Frequency	TOC and H2
2			Safety Limits **(SL) and SL Violations**	TOC and H1
	2.1		**SLs**	TOC and H2
	2.2		**SL** Violations	TOC and H2
3			**LCOs and SRs**	TOC Only
	3.0		**General Requirements**	TOC and H1
		3.0.1	LCO Applicability	TOC and H2
		3.0.2	SR Applicatility	TOC and H2
	3.1		Reactivity Control Systems	TOC and H1
		3.1.1	Shutdown Margin	TOC and H2
4			Design Features	TOC and H1
	4.1		Site Location	TOC and H2
	4.2		Reactor Core	TOC and H2
	4.3		Fuel Storage	TOC and H2

5		Administrative Controls	TOC and H1
	5.1	Responsibility	TOC and H2
	5.2	Organization	TOC and H2
	5.3	Unit Staff Qualifications	TOC and H2
	5.4	Procedures	TOC and H2
	5.5	Programs and Manuals	TOC and H2
	5.6	Reporting Requirements	TOC and H2
	5.7	High Radiation Area	TOC and H2

TYPICAL PAGE

Definitions
1.1

1 Use and Application **<--Chapter titles are not all capitalized letters!**

1.1 Definitions

TYPICAL PAGE

SLs
2.1

2 Safety Limits (SLs) **and SL Violations**

2.1 **SLs**

TYPICAL PAGE

LCO Applicability
3.0.1

3.0 General Requirements

3.0.1 Limiting Condition for Operation (LCO) Applicability

LCO 3.0.1 LCOs shall be met during the MODES or other specified

TYPICAL PAGE

SR Applicability
3.0.2

3.0 General Requirements

3.0.2 Surveillance Requirement (SR) Applicability

SR 3.0.1 SRs shall be met during the MODES or other specified

TYPICAL PAGE

SDM
3.1.1

3.1 Reactivity Control Systems

3.1.1 Shutdown Margin (SDM) <--Defined terms are not capitalized in titles!

LLO 3.1.1 The SDM shall be [greater than or equal to the limit specified in the COLR. The minimum limit shall be] ≥ [1.0]% Δk/k.

TYPICAL PAGE

Site Location
4.1

4 Design Features

4.1 Site Location

[Text description of site location.]

TYPICAL PAGE

Reactor Core
4.2

4 Design Features

4.2 Reactor Core

4.2.1 <u>Fuel Assemblies</u>

The reactor shall contain [177] fuel assemblies. Each assembly

TYPICAL PAGE

Responsibility
5.1

5 Administrative Controls

5.1 Responsibility

5.1.1 The [Plant Superintendent] shall be responsible for overall unit

TABLE OF CONTENTS

2 Safety Limits (SLs) and SL Violations

2.1 SLs

2.1.1 Reactor Core SLs

SL 1 In MODES 1 and 2, the maximum local fuel pin centerline temperature shall be ≤ [5080 - (6.5×10^{-3} MWD/MTU)°F]. Operation within this limit is ensured by compliance with the AXIAL POWER IMBALANCE protective limits preserved by the Reactor Protection System setpoints in LCO 3.3.1, "Reactor Protection System (RPS) Instrumentation," as specified in the COLR.

SL 2 In MODES 1 and 2, the departure from nucleate boiling ratio shall be maintained greater than the limits of [1.3 for the BAW-2 correlation and 1.18 for the BWC correlation]. Operation within this limit is ensured by compliance with SL 3 and with the AXIAL POWER IMBALANCE protective limits preserved by the RPS setpoints in LCO 3.3.1, as specified in the COLR.

SL 3 In MODES 1 and 2, Reactor Coolant System (RCS) core outlet temperature and pressure shall be maintained above and to the left of the SL shown in Figure 2.1.1-1.

2.1.2 RCS Pressure SL

SL 4 In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained ≤ [2750] psig.

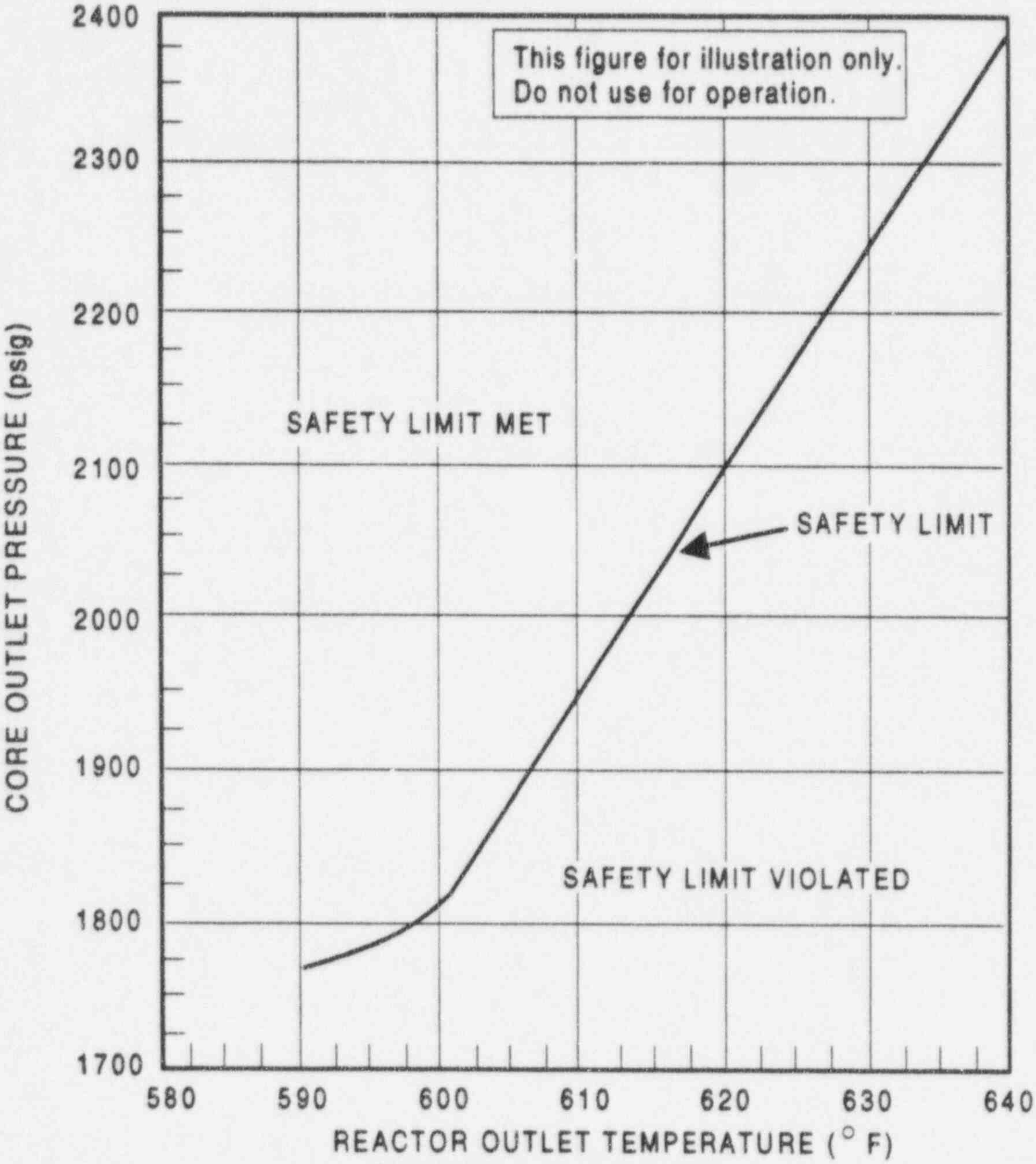

Figure 2.1.1-1 (page 1 of 1)
Reactor Coolant System Departure from Nucleate Boiling Safety Limits

2.2 SL Violations (SLVs)

With any SL violation, the following actions shall be completed:

2.2.1 Reactor Core SLVs

SLV 1 In MODE 1 or 2, if SL 1 or SL 2 is violated, be in MODE 3 within 1 hour.

SLV 2 In MODE 1 or 2, if SL 3 is violated, restore RCS pressure and temperature within limits and be in MODE 3 within 1 hour.

2.2.2 RCS Pressure SLVs

SLV 3 In MODE 1 or 2, if SL 4 is not met, restore compliance within limits and be in MODE 3 within 1 hour.

SLV 4 In MODES 3, 4, and 5, if SL 4 is not met, restore RCS pressure to ≤ [2750] psig within 5 minutes.

B 2.1 Safety Limits (SLs)

B 2.1.1 Reactor Core SLs

BASES

BACKGROUND

GDC 10 (Ref. 1) requires that reactor core SLs ensure specified acceptable fuel design limits are not exceeded during steady state operation, normal operational transients, and anticipated operational occurrences (AOOs). This is accomplished by having a departure from nucleate boiling (DNB) design basis, which corresponds to a 95% probability at a 95% confidence level (95/95 DNB criterion) that DNB will not occur and by requiring that the fuel centerline temperature stays below the melting temperature.

The restrictions of this SL prevent overheating of the fuel and cladding and possible cladding perforation that would result in the release of fission products to the reactor coolant. Overheating of the fuel is prevented by maintaining the steady state peak linear heat rate (LHR) below the level at which fuel centerline melting occurs. Overheating of the fuel cladding is prevented by restricting fuel operation to within the nucleate boiling regime, where the heat transfer coefficient is large and the cladding surface temperature is slightly above the coolant saturation temperature.

Fuel centerline melting occurs when the local LHR, or power peaking, in a region of the fuel is high enough to cause the fuel centerline temperature to reach the melting point of the fuel. Expansion of the pellet upon centerline melting may cause the pellet to stress the cladding to the point of failure, allowing an uncontrolled release of activity to the reactor coolant.

Operation above the boundary of the nucleate boiling regime could result in excessive cladding temperature because of the onset of DNB and the resultant sharp reduction in heat transfer coefficient. Inside the steam film, high cladding temperatures are reached, and a cladding water (zirconium water) reaction may take place. This chemical reaction results in oxidation of the fuel cladding to a structurally weaker form. This weaker form may lose its integrity, resulting in an uncontrolled release of activity to the reactor coolant.

B 2.1 Safety Limits (SLs)

B 2.1.2 Reactor Coolant System (RCS) Pressure SL

BASES

BACKGROUND

According to 10 CFR 50, Appendix A, GDC 14, "Reactor Coolant Pressure Boundary," and GDC 15, "Reactor Coolant System Design" (Ref. 1), the reactor coolant pressure boundary (RCPB) design conditions are not to be exceeded during normal operation nor during anticipated operational occurrences (AOOs). GDC 28, "Reactivity Limits" (Ref. 1), specifies that reactivity accidents including rod ejection do not result in damage to the RCPB greater than limited local yielding.

The design pressure of the RCS is 2500 psig. During normal operation and AOOs, the RCS pressure is kept from exceeding the design pressure by more than 10% in order to remain in accordance with Section III of the ASME Code (Ref. 2). Hence, the safety limit is 2750 psig. To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure prior to initial operation, according to the ASME Code requirements. Inservice operational hydrotesting at 100% of design pressure is also required whenever the reactor vessel head has been removed or if other pressure boundary joint alterations have occurred. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3).

APPLICABLE SAFETY ANALYSES

The RCS pressurizer safety valves, operating in conjunction with the Reactor Protection System trip settings, ensure that the RCS pressure SL will not be exceeded.

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that is most influential for establishing the required relief capacity, and hence the valve size requirements and lift settings, is a rod withdrawal from low power. During the transient, no control actions are assumed except that the safety valves on the secondary plant are assumed to open

Problems with Brackets: Is the bracketed material typical information that could be changed for a plant specific TS or is the bracketed material optional, such that the licensee may choose or not choose to use it?

This becomes a problem in SGML, as well as WP51 if one wishes to remove graphical brackets that are an editing nighmare!

Solution is to show information as typical with [ ] s and NOT attempt to define it further as optional or as being typical within something that itself is typical!

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Operate each FSPVS train for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.7.13.2	Perform required FSPVS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]
SR 3.7.13.3	Verify each FSPVS train actuates on an actual or simulated actuation signal.	[18] months
SR 3.7.13.4	Verify one FSPVS train can maintain a pressure ≤ [ ] inches water gauge with respect to atmospheric pressure during the [post accident] mode of operation at a flow rate ≤ [3000] cfm.	[18] months on a STAGGERED TEST BASIS
SR 3.7.13.5	Verify each FSPVS filter bypass damper can be opened.	[18] months

1.1 Definitions

LEAKAGE

LEAKAGE shall be:

a. <u>IDENTIFIED LEAKAGE</u>

1. LEAKAGE, such as that from pump seals or valve packing (except RCP seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;

2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or

3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System;

b. <u>UNIDENTIFIED LEAKAGE</u>

All LEAKAGE that is not identified LEAKAGE or controlled LEAKAGE;

c. <u>PRESSURE BOUNDARY LEAKAGE</u>

LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

NUCLEAR HEAT FLUX HOT CHANNEL FACTOR ~~$F_Q(Z)$~~

NUCLEAR HEAT FLUX HOT CHANNEL FACTOR [$F_Q(Z)$] shall be the maximum local linear powerdensity in the core divided by the core average fuel rod linear power density, assuming nominal fuel pellet and fuel rod dimensions.

ENGINEERED SAFETY FEATURE (ESF) RESPONSE

The **ESF RESPONSE TIME** shall be that time interval from when the monitored parameter exceeds its ESF

(continued)

B 3.3 INSTRUMENTATION

B 3.3.1 Reactor Protection System (RPS) Instrumentation

BASES

BACKGROUND

The RPS initiates a reactor trip to protect against violating the core fuel design limits and the Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences (AOOs). By tripping the reactor, the RPS also assists the Engineered Safety Feature (ESF) Systems in mitigating accidents.

The protection and monitoring systems have been designed to assure safe operation of the reactor. This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RPS, as well as the LCOs on other reactor system parameters and equipment performance.

The LSSS, defined in this Specification as the Allowable Value, in conjunction with the LCOs, establishes the threshold for protective system action to prevent exceeding acceptable limits during Design Basis Accidents (DBAs).

During AOOs, which are those events expected to occur one or more times during the unit's life, the acceptable limit is:

sequence list:

a. The departure from nucleate boiling ratio (DNBR) shall be maintained above the Safety Limit (SL) value;

b. Fuel centerline melt shall not occur; and

c. The RCS pressure SL of 2750 psia shall not be exceeded.

Maintaining the parameters within the above values ensures that the offsite dose will be within the 10 CFR 20 and 10 CFR 100 criteria during AOOs.

Accidents are events that are analyzed even though they are not expected to occur during the unit's life. The acceptable limit during accidents is that the offsite dose shall be maintained within 10 CFR 100 limits. Meeting the acceptable dose limit for an accident category is considered having acceptable consequences for that event.

(continued)

BACKGROUND (continued)

RPS Overview <--TOPIC

The RPS consists of four separate redundant protection channels that receive inputs of neutron flux, RCS pressure, RCS flow, RCS temperature, RCS pump status, reactor building (RB) pressure, main feedwater (MFW) pump status, and turbine status.

Figure [ ], FSAR, Chapter [7] (Ref. 1), shows the arrangement of a typical RPS protection channel. A protection channel is composed of measurement channels, a manual trip channel, a reactor trip module (RTM), and CONTROL ROD drive (CRD) trip devices. LCO 3.3.1 provides requirements for the individual measurement channels. These channels encompass all equipment and electronics from the point at which the measured parameter is sensed through the bistable relay contacts in the trip string. LCO 3.3.2, "Reactor Protection System (RPS) Manual Reactor Trip," LCO 3.3.3, "Reactor Protection System (RPS) – Reactor Trip Module (RTM)," and LCO 3.3.4, "CONTROL ROD Drive (CRD) Trip Devices," discuss the remaining RPS elements.

The RPS instrumentation measures critical unit parameters and compares these to predetermined setpoints. If the setpoint is exceeded, a channel trip signal is generated. The generation of any two trip signals in any of the four RPS channels will result in the trip of the reactor.

The Reactor Trip System (RTS) contains multiple CRD trip devices, two AC trip breakers, and two DC trip breaker pairs that provide a path for power to the CRD System. Additionally, the power for most of the CRDs passes through electronic trip assembly (ETA) relays. The system has two separate paths (or channels), with each path having either two breakers or a breaker and an ETA relay in series. Each path provides independent power to the CRDs. Either path can provide sufficient power to operate all CRDs. Two separate power paths to the CRDs ensure that a single failure that opens one path will not cause an unwanted reactor trip.

The RPS consists of four independent protection channels, each containing an RTM. The RTM receives signals from its own measurement channels that indicate a protection channel trip is required. The RTM transmits this signal to its own two-out-of-four trip logic and to the two-out-of-four logic

(continued)

BASES

BACKGROUND

RPS Overview (continued) <--SAME TOPIC CONTINUED

of the RTMs in the other three RPS channels. Whenever any two RPS channels transmit channel trip signals, the RTM logic in each channel actuates to remove 120 VAC power from its associated CRD trip breaker.

The reactor is tripped by opening circuit breakers that interrupt the power supply to the CRDs. Six breakers are installed to increase reliability and allow testing of the trip system. A one-out-of-two taken twice logic is used to interrupt power to the rods.

The RPS has two bypasses: a shutdown bypass and a channel bypass. Shutdown bypass allows the withdrawal of safety rods for SDM availability and rapid negative reactivity insertion during unit cooldowns or heatups. Channel bypass is used for maintenance and testing. Test circuits in the trip strings allow complete testing of all RPS trip Functions.

The RPS operates from the instrumentation channels discussed next. The specific relationship between measurement channels and protection channels differs from parameter to parameter. Three basic configurations are used:

a. Four completely redundant measurements (e.g., reactor coolant flow) with one channel input to each protection channel;

b. Four channels that provide similar, but not identical, measurements (e.g., power range nuclear instrumentation where each RPS channel monitors a different quadrant), with one channel input to each protection channel; and

c. Redundant measurements with combinational trip logic outside of the protection channels and the combined output provided to each protection channel (e.g., main turbine trip instrumentation).

These arrangements and the relationship of instrumentation channels to trip Functions are discussed next to assist in understanding the overall effect of instrumentation channel failure.

(continued)

BASES

BACKGROUND (continued)

Power Range Nuclear Instrumentation <--NEW TOPIC

Power Range Nuclear Instrumentation channels provide inputs to the following trip Functions:

TABLE ITEM LIST

1. Nuclear Overpower; <-- semicolon is automatic or not included for any items!

TABLE SUBITEM LIST

a. ~~Nuclear Overpower~~ High Setpoint;

b. ~~Nuclear Overpower~~ Low Setpoint;

7. Reactor Coolant Pump to Power;

8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE ~~(Power Imbalance Flow)~~;

9. Main Turbine Trip (Control Oil Pressure); and

10. Loss of Main Feedwater (LOMFW) Pumps (Control Oil Pressure).

The power range instrumentation has four linear level channels, one for each core quadrant. Each channel feeds one RPS protection channel. Each channel originates in a detector assembly containing two uncompensated ion chambers. The ion chambers are positioned to represent the top half and bottom half of the core. The individual currents from the chambers are fed to individual linear amplifiers. The summation of the top and bottom is the total reactor power. The difference of the top minus the bottom neutron signal is the measured AXIAL POWER IMBALANCE of the reactor core.

Reactor Coolant System Outlet Temperature

The Reactor Coolant System Outlet Temperature provides input to the following Functions:

2. RCS High Outlet Temperature; and <--punctuation

5. RCS Variable Low Pressure.

The RCS Outlet Temperature is measured by two resistance elements in each hot leg, for a total of four.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

Each of the analyzed accidents and transients can be detected by one or more RPS Functions. The accident analysis contained in (Ref. [ ]) takes credit for most RPS trip Functions. Functions not specifically credited in the accident analysis were qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions are high RB pressure, high temperature, turbine trip, and loss of main feedwater. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions also serve as backups to Functions that were credited in the safety analysis.

The safety analyses applicable to each RPS Function are discussed next.

TABLE REFERENCE

1. Nuclear Overpower <--UNDERLINED

a. ~~Nuclear Overpower—~~ High Setpoint

The Nuclear Overpower – High Setpoint trip provides protection for the design thermal overpower condition based on the measured out of core fast neutron leakage flux.

The Nuclear Overpower – High Setpoint trip initiates a reactor trip when the neutron power reaches a predefined setpoint at the design overpower limit. Because THERMAL POWER lags the neutron power, tripping when the neutron power reaches the design overpower will limit THERMAL POWER to a maximum value of the design overpower. Thus, the Nuclear Overpower – High Setpoint trip protects against violation of the DNBR and fuel centerline melt SLs.

b. ~~Nuclear Overpower—~~ Low Setpoint

While in shutdown bypass, with the Shutdown Bypass RCS High Pressure trip OPERABLE, the Nuclear Overpower – Low Setpoint trip must be reduced to ≤ 5% RTP. The low power setpoint, in conjunction with the lower Shutdown Bypass RCS High Pressure setpoint, ensure that the unit is

(continued)

BASES (continued)

ACTIONS

B.1~~and B.2~~

For Required Action B.1 and Required Action B.2, if one or more Functions in two protection channels become inoperable, one of two inoperable protection channels must be placed in trip and the other in bypass. These Required Actions place all RPS Functions in a one-out-of-two logic configuration and prevent bypass of a second channel. In this configuration, the RPS can still perform its safety functions in the presence of a random failure of any single channel. The 1 hour Completion Time is sufficient time to perform Required Action B.1 and Required Action B.2.

B.2

See A.1 above.

C.1

Required Action C.1 directs entry into the appropriate Condition referenced in Table 3.3.1-1. The applicable Condition referenced in the table is Function dependent.

SURVEILLANCE REQUIREMENTS

The SRs for each RPS Function are identified by the SRs column of Table 3.3.1-1 for that Function.

SR 3.3.1.1~~and SR 3.3.1.2~~

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value.

SR 3.3.1.2

See SR 3.3.1.1 above.

SR 3.3.1.3

A comparison of power range nuclear instrumentation channels against incore detectors shall be performed at a 31 day

(continued)

Table 3.3.1-1 (page 1 of 1)
Reactor Protection System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Nuclear Overpower				
a. High Setpoint	$1,2^{(a)}$	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.5 SR 3.3.1.7	≤ [104.9]% RTP
b. Low Setpoint	$2^{(b)},3^{(b)}$ $4^{(b)},5^{(b)}$	E	SR 3.3.1.1 SR 3.3.1.5 SR 3.3.1.7	≤ 5% RTP
2. RCS High Outlet Temperature	1,2	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≤ [618]°F
3. RCS High Pressure	1,2	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7	≤ [2355] psig
4. RCS Low Pressure	$1,2^{(a)}$	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7	≥ [1800] psig
5. RCS Variable Low Pressure	$1,2^{(a)}$	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≥ ([11.59] • T_{out} - [5037.8]) psig
6. Reactor Building High Pressure	$1,2,3^{(c)}$	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≤ [4] psig
7. Reactor Coolant Pump to Power	$1,2^{(a)}$	D	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7	[5]% RTP with ≤ 2 pumps operating
8. Nuclear Overpower RCS Flow and Measured AXIAL POWER IMBALANCE	$1,2^{(a)}$	D	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.5 SR 3.3.1.6 SR 3.3.1.7	Nuclear Overpower RCS Flow and AXIAL POWER IMBALANCE setpoint envelope in COLR
9. Main Turbine Trip (Control Oil Pressure)	≥ [45]% RTP	F	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≥ [45] psig
10. Loss of Main Feedwater Pumps (Control Oil Pressure)	≥ [15]% RTP	G	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≥ [55] psig
11. Shutdown Bypass RCS High Pressure	$2^{(b)},3^{(b)}$ $4^{(b)},5^{(b)}$	E	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6	≤ [1720] psig

(a) When not in shutdown bypass operation.

(b) During shutdown bypass operation with any CRD trip breakers in the closed position and the CRD System capable of rod withdrawal.

(c) With any CRD trip breaker in the closed position and the CRD System capable of rod withdrawal.

4 Design Features

4.1 Site Location

[Text description of site location.]

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain [177] fuel assemblies. Each assembly shall consist of a matrix of [Zircalloy or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rods

The reactor core shall contain [60] safety and regulating and [8] axial power shaping CONTROL RODS. The control material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR];

c. A nominal [ ] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks];

d. A nominal [ ] inch center to center distance between fuel assemblies placed in [the low density fuel storage racks];

e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of 3.7.17-1 may be allowed unrestricted storage in [either] fuel storage rack(s); and

f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of 3.7.17-1 will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent;

b. $k_{eff} \leq 0.95$ is fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR];

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and

d. A nominal [21.125] inch center to center distance between fuel assemblies placed in the storage racks.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [138 ft 4 inches].

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than [1357] fuel assemblies [and six failed fuel containers].

Improved Standard Technical Specifications

NUREG Documents

Revision 1 of the Standard Technical Specifications are published in five NUREG documents as follows:

-----TITLE------------------------------------***--DOCUMENT--
Standard Technical Specifications Babcock and Wilcox Plants ******* NUREG-1430
Standard Technical Specifications Westinghouse Plants ************ NUREG-1431
Standard Technical Specifications Combustion Engineering Plants *** NUREG-1432
Standard Technical Specifications General Electric Plants, BWR/4 *** NUREG-1433
Standard Technical Specifications General Electric Plants, BWR/6 *** NUREG-1434

Each NUREG consists of 3 Volumes, issued as Rev. 1, APRIL 1995. Filenames ending in "ZIP" are compressed WordPerfect 5.1 files. Download (Load to Local Disk) PKZ204G.EXE from PKWare. Inc. to uncompress zipped files.

Drafts of Revision 2 of the Standard Technical Specifications are included at the top of the list for each of the above NUREG file lists.

A set of modified Bases documents is included at the bottom of the lists for each of the vendor NUREGs. The modified Bases documents are in a format that permits pagination of the document. This version of the Bases documents is listed as 1A since the text of these documents is the same as Revision 1 of the NUREG documents. (Some files have been updated to reflect approved Draft Rev 2 changes.) The revised bases were created using WordPerfect Macros which may have application for plant TS Bases. The macros and a writeup on their use is as follows:

--Description of File----------------------FILENAME---
Macros used to create Rev 1A Bases DocumetsMACRO.ZIP (60 kbytes)
Writeup on Macros used to create Rev 1A DocumentsWRITEUP.ZIP (78 kbytes)

Plants Converting to Standard Technical Specifications

Schedule for Conversions (Table Format)
Schedule for Conversions (non-Table Format)

Background/Generic Information

STS individual files: Filename protocol
Compressed (zipped) files: Filename protocol
Document information + printer test README2.ZIP (63kbytes)

Generic Information

--Description of Files and Filenames---
Appendix J, Tech Specs Option B, Interim Model STS APPJOPTB.ZIP (68 kbytes)

SGML Tech Spec Information

--Description of Files and Filenames---

Document Type Definition(DTD) for SGML Tech Specs (Mod15) TSMOD15.DTD (30 kbytes)
Cals Table Entity for SGML Tech Specs CALS-TBL.ENT (8 kbytes)
Character Set Entity for SGML Tech Specs CHAR-SET.ENT (2 kbytes)
Front Matter Entity for SGML Tech Specs FRONT.ENT (2 kbytes)
Reat Matter Entity for SGML Tech Specs REAR.ENT (1 kbytes)

General Electric Plants, BWR/4, NUREG-1433

--Description of File----------------------FILENAME---
First set of Draft Rev 2 files 4SD2-1.ZIP (11 kbytes)
First set of Draft Rev 2 editorial change files 4SD2-1E.ZIP (15 kbytes)

Cover Sheets for BWR/4 STS 4S_COVER.ZIP (149 kbytes)
Table of Contents 4ST_TCR1.ZIP (12 kbytes)
CHAPTER 1.0 Spec: Use and Application 4ST10SR1.ZIP (21 kbytes)
CHAPTER 2.0 Spec: Safety Limits 4ST20SR1.ZIP (2 kbytes)
CHAPTER 2.0 Bases: Safety Limits 4ST21BR1.ZIP (10 kbytes)
CHAPTER 3.0 LCO: Appliability 4ST30LR1.ZIP (4 kbytes)
CHAPTER 3.0 Bases: Appliability 4ST30BR1.ZIP (11 kbytes)
CHAPTER 3.1 LCO: Reactivity Control Systems 4ST31LR1.ZIP (102 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems 4ST31BR1.ZIP (45 kbytes)
CHAPTER 3.2 LCO: Power Distribution Limits 4ST32LR1.ZIP (9 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits 4ST32BR1.ZIP (19 kbytes)
CHAPTER 3.3 LCO: Instrumentation 4ST33LR1.ZIP (65 kbytes)
CHAPTER 3.3 Bases: Instrumentation 4ST33BR1.ZIP (165 kbytes)
CHAPTER 3.4 LCO: Reactor Coolant System 4ST34LR1.ZIP (30 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System 4ST34BR1.ZIP (54 kbytes)
CHAPTER 3.5 LCO: Emergency Core Cooling Systems 4ST35LR1.ZIP (10 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems 4ST35BR1.ZIP (23 kbytes)
CHAPTER 3.6 LCO: Containment Systems 4ST36LR1.ZIP (48 kbytes)
CHAPTER 3.6 Bases: Containment Systems 4ST36BR1.ZIP (106 kbytes)
CHAPTER 3.7 LCO: Plant Systems 4ST37LR1.ZIP (18 kbytes)
CHAPTER 3.7 Bases: Plant Systems 4ST37BR1.ZIP (35 kbytes)

CHAPTER 3.8 LCO: Electrical Power Systems 4ST38LR1.ZIP (31 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems 4ST38BR1.ZIP (73 kbytes)
CHAPTER 3.9 LCO: Refueling Operations 4ST39LR1.ZIP (17 kbytes)
CHAPTER 3.9 Bases: Refueling Operations 4ST39BR1.ZIP (33 kbytes)
CHAPTER 3.10 LCO: Special Operations 4ST3ALR1.ZIP (24 kbytes)
CHAPTER 3.10 Bases: Special Operations 4ST3ABR1.ZIP (43 kbytes)
CHAPTER 4.0 Spec: Design Features 4ST40SR1.ZIP (3 kbytes)
CHAPTER 5.0 Spec: Administrative Controls 4ST50SR1.ZIP (18 kbytes)

Revision 1A Bases Documents:

CHAPTER 2.0 Bases: Safety Limits 4S21BR1A.ZIP (11 kbytes)
CHAPTER 3.0 Bases: Appliability 4S30BR1A.ZIP (11 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems 4S31BR1A.ZIP (49 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits 4S32BR1A.ZIP (21 kbytes)
CHAPTER 3.3 Bases: Instrumentation 4S33BR1A.ZIP (166 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System 4S34BR1A.ZIP (59 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems 4S35BR1A.ZIP (24 kbytes)
CHAPTER 3.6 Bases: Containment Systems 4S36BR1A.ZIP (109 kbytes)
CHAPTER 3.7 Bases: Plant Systems 4S37BR1A.ZIP (38 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems 4S38BR1A.ZIP (74 kbytes)
CHAPTER 3.9 Bases: Refueling Operations 4S39BR1A.ZIP (37 kbytes)
CHAPTER 3.10 Bases: Special Operations 4S3ABR1A.ZIP (48 kbytes)

General Electric Plants, BWR/6, NUREG-1434

--Description of File----------------------FILENAME---
First set of Draft Rev 2 files 6SD2-1.ZIP (10 kbytes)
First set of Draft Rev 2 editorial change files 6SD2-1E.ZIP (14 kbytes)

Cover Sheets for BWR/6 STS 6S_COVER.ZIP (149 kbytes)
Table of Contents 6ST_TCR1.ZIP (12 kbytes)
CHAPTER 1.0 Spec: Use and Application 6ST10SR1.ZIP (21 kbytes)
CHAPTER 2.0 Spec: Safety Limits 6ST20SR1.ZIP (2 kbytes)
CHAPTER 2.0 Bases: Safety Limits 6ST21BR1.ZIP (10 kbytes)
CHAPTER 3.0 LCO: Appliability 6ST30LR1.ZIP (5 kbytes)
CHAPTER 3.0 Bases: Appliability 6ST30BR1.ZIP (11 kbytes)
CHAPTER 3.1 LCO: Reactivity Control Systems 6ST31LR1.ZIP (82 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems 6ST31BR1.ZIP (45 kbytes)
CHAPTER 3.2 LCO: Power Distribution Limits 6ST32LR1.ZIP (7 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits 6ST32BR1.ZIP (18 kbytes)
CHAPTER 3.3 LCO: Instrumentation 6ST33LR1.ZIP (69 kbytes)
CHAPTER 3.3 Bases: Instrumentation 6ST33BR1.ZIP (173 kbytes)
CHAPTER 3.4 LCO: Reactor Coolant System 6ST34LR1.ZIP (27 kbytes)
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CHAPTER 3.5 Bases: Emergency Core Cooling Systems 6ST35BR1.ZIP (21 kbytes)

CHAPTER 3.6 LCO: Containment Systems 6ST36LR1.ZIP (61 kbytes)
CHAPTER 3.6 Bases: Containment Systems 6ST36BR1.ZIP (128 kbytes)
CHAPTER 3.7 LCO: Plant Systems 6ST37LR1.ZIP (16 kbytes)
CHAPTER 3.7 Bases: Plant Systems 6ST37BR1.ZIP (32 kbytes)
CHAPTER 3.8 LCO: Electrical Power Systems 6ST38LR1.ZIP (32 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems 6ST38BR1.ZIP (73 kbytes)
CHAPTER 3.9 LCO: Refueling Operations 6ST39LR1.ZIP (17 kbytes)
CHAPTER 3.9 Bases: Refueling Operations 6ST39BR1.ZIP (31 kbytes)
CHAPTER 3.10 LCO: Special Operations 6ST3ALR1.ZIP (24 kbytes)
CHAPTER 3.10 Bases: Special Operations 6ST3ABR1.ZIP (43 kbytes)
CHAPTER 4.0 Spec: Design Features 6ST40SR1.ZIP (3 kbytes)
CHAPTER 5.0 Spec: Administrative Controls 6ST50SR1.ZIP (18 kbytes)

Revision 1A Bases Documents:

CHAPTER 2.0 Bases: Safety Limits 6S21BR1A.ZIP (11 kbytes)
CHAPTER 3.0 Bases: Appliability 6S30BR1A.ZIP (12 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems 6S31BR1A.ZIP (49 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits 6S32BR1A.ZIP (21 kbytes)
CHAPTER 3.3 Bases: Instrumentation 6S33BR1A.ZIP (174 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System 6S34BR1A.ZIP (64 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems 6S35BR1A.ZIP (23 kbytes)
CHAPTER 3.6 Bases: Containment Systems 6S36BR1A.ZIP (138 kbytes)
CHAPTER 3.7 Bases: Plant Systems 6S37BR1A.ZIP (33 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems 6S38BR1A.ZIP (74 kbytes)
CHAPTER 3.9 Bases: Refueling Operations 6S39BR1A.ZIP (35 kbytes)
CHAPTER 3.10 Bases: Special Operations 6S3ABR1A.ZIP (47 kbytes)

Babcock and Wilcox Plants, NUREG-1430

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Cover Sheets for BWOG STS BS_COVER.ZIP (147 kbytes)
TABLE OF CONTENTS BST_TCR1.ZIP (11 kbytes)
CHAPTER 1.0 Spec: Use and Application BST10SR1.ZIP (20 kbytes)
CHAPTER 2.0 Spec: Safety Limits BST20SR1.ZIP (21 kbytes)
CHAPTER 2.0 Bases: Safety Limits BST21BR1.ZIP (9 kbytes)
CHAPTER 3.0 LCO: Appliability BST30LR1.ZIP (4 kbytes)
CHAPTER 3.0 Bases: Appliability BST30BR1.ZIP (11 kbytes)
CHAPTER 3.1 LCO: Reactivity Control Systems BST31LR1.ZIP (20 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems BST31BR1.ZIP (51 kbytes)
CHAPTER 3.2 LCO: Power Distribution Limits BST32LR1.ZIP (11 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits BST32BR1.ZIP (79 kbytes)
CHAPTER 3.3 LCO: Instrumentation BST33LR1.ZIP (49 kbytes)
CHAPTER 3.3 Bases: Instrumentation BST33BR1.ZIP (127 kbytes)
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CHAPTER 3.4 Bases: Reactor Coolant System BST34BR1.ZIP (48 kbytes)
CHAPTER 3.5 LCO: Emergency Core Cooling Systems BST35LR1.ZIP (10 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems BST35BR1.ZIP (25 kbytes)
CHAPTER 3.6 LCO: Containment Systems BST36LR1.ZIP (19 kbytes)
CHAPTER 3.6 Bases: Containment Systems BST36BR1.ZIP (47 kbytes)
CHAPTER 3.7 LCO: Plant Systems BST37LR1.ZIP (1-9 kbytes)
CHAPTER 3.7 Bases: Plant Systems BST37BR1.ZIP (81 kbytes)
CHAPTER 3.8 LCO: Electrical Power Systems BST38LR1.ZIP (30 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems BST38BR1.ZIP (72 kbytes)
CHAPTER 3.9 LCO: Refueling Operations BST39LR1.ZIP (12 kbytes)
CHAPTER 3.9 Bases: Refueling Operations BST39BR1.ZIP (24 kbytes)
CHAPTER 4.0 Spec: Design Features BST40SR1.ZIP (3 kbytes)
CHAPTER 5.0 Spec: Administrative Controls BST50SR1.ZIP (19 kbytes)

Revision 1A Bases Documents:

CHAPTER 2.0 Bases: Safety Limits BS21BR1A.ZIP (19 kbytes)
CHAPTER 3.0 Bases: Appliability BS30BR1A.ZIP (11 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems BS31BR1A.ZIP (56 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits BS32BR1A.ZIP (82 kbytes)
CHAPTER 3.3 Bases: Instrumentation BS33BR1A.ZIP (132 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System BS34BR1A.ZIP (90 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems BS35BR1A.ZIP (27 kbytes)
CHAPTER 3.6 Bases: Containment Systems BS36BR1A.ZIP (49 kbytes)
CHAPTER 3.7 Bases: Plant Systems BS37BR1A.ZIP (81 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems BS38BR1A.ZIP (73 kbytes)
CHAPTER 3.9 Bases: Refueling Operations BS39BR1A.ZIP (27 kbytes)

Combustion Engineering Plants, NUREG-1432

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Cover Sheets for CEOG STS CS_COVER.ZIP (148 kbytes)
Table of Contents CST_TCR1.ZIP (14 kbytes)
CHAPTER 1.0 Spec: Use and Application CST10SR1.ZIP (20 kbytes)
CHAPTER 2.0 Spec: Safety Limits CST20SR1.ZIP (28 kbytes)
CHAPTER 2.0 Bases: Safety Limits CST21BR1.ZIP (42 kbytes)
CHAPTER 3.0 LCO: Appliability CST30LR1.ZIP (4 kbytes)
CHAPTER 3.0 Bases: Appliability CST30BR1.ZIP (12 kbytes)
CHAPTER 3.1 LCO: Reactivity Control Systems CST31LR1.ZIP (57 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems CST31BR1.ZIP (110 kbytes)
CHAPTER 3.2 LCO: Power Distribution Limits CST32LR1.ZIP (24 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits CST32BR1.ZIP (64 kbytes)
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CHAPTER 3.3 Bases: Instrumentation CST33BR1.ZIP (313 kbytes)
CHAPTER 3.4 LCO: Reactor Coolant System CST34LR1.ZIP (62 kbytes)

CHAPTER 3.4 Bases: Reactor Coolant System CST34BR1.ZIP (86 kbytes)
CHAPTER 3.5 LCO: Emergency Core Cooling Systems CST35LR1.ZIP (11 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems CST35BR1.ZIP (30 kbytes)
CHAPTER 3.6 LCO: Containment Systems CST36LR1.ZIP (36 kbytes)
CHAPTER 3.6 Bases: Containment Systems CST36BR1.ZIP (88 kbytes)
CHAPTER 3.7 LCO: Plant Systems CST37LR1.ZIP (63 kbytes)
CHAPTER 3.7 Bases: Plant Systems CST37BR1.ZIP (87 kbytes)
CHAPTER 3.8 LCO: Electrical Power Systems CST38LR1.ZIP (30 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems CST38BR1.ZIP (72 kbytes)
CHAPTER 3.9 LCO: Refueling Operations CST39LR1.ZIP (12 kbytes)
CHAPTER 3.9 Bases: Refueling Operations CST39BR1.ZIP (26 kbytes)
CHAPTER 4.0 Spec: Design Features CST40SR1.ZIP (3 kbytes)
CHAPTER 5.0 Spec: Administrative Controls CST50SR1.ZIP (20 kbytes)

Revision 1A Bases Documents:

CHAPTER 2.0 Bases: Safety Limits CS21BR1A.ZIP (42 kbytes)
CHAPTER 3.0 Bases: Appliability CS30BR1A.ZIP (12 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems CS31BR1A.ZIP (122 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits CS32BR1A.ZIP (69 kbytes)
CHAPTER 3.3 Bases: Instrumentation CS33BR1A.ZIP (312 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System CS34BR1A.ZIP (92 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems CS35BR1A.ZIP (32 kbytes)
CHAPTER 3.6 Bases: Containment Systems CS36BR1A.ZIP (91 kbytes)
CHAPTER 3.7 Bases: Plant Systems CS37BR1A.ZIP (94 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems CS38BR1A.ZIP (72 kbytes)
CHAPTER 3.9 Bases: Refueling Operations CS39BR1A.ZIP (30 kbytes)

Westinghouse Plants, NUREG-1431

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First set of Draft Rev 2 editorial change files WSD2-1E.ZIP (40 kbytes)
Second set of Draft Rev 2 editorial change files WSD2-1F.ZIP (60 kbytes)

Cover Sheets for WOG STS WS_COVER.ZIP (144 kbytes)
Table of Contents WST_TCR1.ZIP (12 kbytes)
CHAPTER 1.0 Spec: Use and Application WST10SR1.ZIP (19 kbytes)
CHAPTER 2.0 Spec: Safety Limits WST20SR1.ZIP (24 kbytes)
CHAPTER 2.0 Bases: Safety Limits WST21BR1.ZIP (34 kbytes)
CHAPTER 3.0 LCO: Appliability WST30LR1.ZIP (4 kbytes)
CHAPTER 3.0 Bases: Appliability WST30BR1.ZIP (10 kbytes)
CHAPTER 3.1 LCO: Reactivity Control Systems WST31LR1.ZIP (40 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems WST31BR1.ZIP (87 kbytes)
CHAPTER 3.2 LCO: Power Distribution Limits WST32LR1.ZIP (17 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits WST32BR1.ZIP (130 kbytes)
CHAPTER 3.3 LCO: Instrumentation WST33LR1.ZIP (47 kbytes)

CHAPTER 3.3 Bases: Instrumentation WST33BR1.ZIP (115 kbytes)
CHAPTER 3.4 LCO: Reactor Coolant System WST34LR1.ZIP (67 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System WST34BR1.ZIP (98 kbytes)
CHAPTER 3.5 LCO: Emergency Core Cooling Systems WST35LR1.ZIP (14 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems WST35BR1.ZIP (35 kbytes)
CHAPTER 3.6 LCO: Containment Systems WST36LR1.ZIP (88 kbytes)
CHAPTER 3.6 Bases: Containment Systems WST36BR1.ZIP (162 kbytes)
CHAPTER 3.7 LCO: Plant Systems WST37LR1.ZIP (56 kbytes)
CHAPTER 3.7 Bases: Plant Systems WST37BR1.ZIP (87 kbytes)
CHAPTER 3.8 LCO: Electrical Power Systems WST38LR1.ZIP (30 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems WST38BR1.ZIP (73 kbytes)
CHAPTER 3.9 LCO: Refueling Operations WST39LR1.ZIP (13 kbytes)
CHAPTER 3.9 Bases: Refueling Operations WST39BR1.ZIP (26 kbytes)
CHAPTER 4.0 Spec: Design Features WST40SR1.ZIP (3 kbytes)
CHAPTER 5.0 Spec: Administrative Controls WST50SR1.ZIP (18 kbytes)

Revision 1A Bases Documents:

CHAPTER 2.0 Bases: Safety Limits WS21BR1A.ZIP (70 kbytes)
CHAPTER 3.0 Bases: Appliability WS30BR1A.ZIP (11 kbytes)
CHAPTER 3.1 Bases: Reactivity Control Systems WS31BR1A.ZIP (100 kbytes)
CHAPTER 3.2 Bases: Power Distribution Limits WS32BR1A.ZIP (142 kbytes)
CHAPTER 3.3 Bases: Instrumentation WS33BR1A.ZIP (148 kbytes)
CHAPTER 3.4 Bases: Reactor Coolant System WS34BR1A.ZIP (108 kbytes)
CHAPTER 3.5 Bases: Emergency Core Cooling Systems WS35BR1A.ZIP (38 kbytes)
CHAPTER 3.6 Bases: Containment Systems WS36BR1A.ZIP (175 kbytes)
CHAPTER 3.7 Bases: Plant Systems WS37BR1A.ZIP (81 kbytes)
CHAPTER 3.8 Bases: Electrical Power Systems WS38BR1A.ZIP (75 kbytes)
CHAPTER 3.9 Bases: Refueling Operations WS39BR1A.ZIP (30 kbytes)

NRC Home Page

Last update on 10/02/96 by tgd@nrc.gov

DIFFERENCES BETWEEN WP51 AND SGML FORMATTED STS

1. Chapters are numbered with as single digit, 1 2 3 4 5 and the two 3.0 Sections are replaced by two Specifications 3.0.1 and 3.0.2, with same content as before, under a single Section 3.0 named General Requirements. (Title could be changed)

   REASON: Two sections with same number are incompatible with hyper links based on content.

2. Defined Terms are not listed in the term column with their associated acronym. Hence the text of definitions do not start using the acronym form, but rather the defined term, that includes acronyms as they previously appeared in the term column. The acronym form of the defined term is tagged as an alternate term, <alt.term>, but style sheets would not print the alternate terms under the term column, but the acronym forms are included as part of the text for the definition as noted previously. Style sheets for editing the sgml instances would show the alternate terms so that the could be readily edited.

   REASON: Hyper links are based on term content, which must be the same as where terms are used. Alternate terms provide the content reference for hyper links for the acronym use.

3. Plural forms of defined terms are NOT use by adding a lower case s, e.g. APSR (Axial Power Shaping Rod) are APSRS not APSRs. This applies as well as to the spelled out version in words, e.g., not: AXIAL POWER SHAPING RODs. Where a define term in singular, an alternate term exists for the plural versions and as well as one for the plural acronym form.

   REASON Maintain consistent content of term content for hyper links, that include plural versions.

4. LEAKAGE definitions for Identified, Unidentified, and Pressure Boundary, were converted to all capital letter form, e.g., IDENTIFIED LEAKAGE.

   REASON Maintain consistent content of term content for hyper links.

5. Mdash dual term for OPERABILITY-OPERABLE was replace with OPERABILITY under the defined term column, and "(or have OPERABILITY)" was added as part of the definition. OPERABLE is an alternate term. (OPERABILITY in the Term column will be replace with OPERABLE so that the term matches the first usage in the definition of it.)

6. Currently (B&W STS), safety limits are numbered with 4 digit numbers that follow a numbered spec title or carry the spec title number in the case of the RCS Pressure SL. The text addresses them as "SL x.x.x.x" use the SL acronym. The actual numbers are 2.1.1.1, 2.1.1.2, 2.1.1.3, and 2.1.2. For simplicity, these were renumber as 1, 2, 3, and 4 and when listed, include the "SL" as they are referenced in the text.

   REASON: For consistency with hyper linking, numbers that are referenced such as LCO 3.0.1 and SR 3.6.5.2, are included in the instances as just

numbers where the style sheets know that these number are to be output with their prefix, LCO or SR. Hence, tags such as <lco.num.ref>, <sr.num.ref>, and <sl.num.ref> are used, that latter which likewise outputs the "SL" preceding the number where referenced in the text. (It is preferable, but not absolutely necessary, that the specification of the safety limit includes SL prefix to its number. Given this situation, there would be no reason for the initial specification of SL to be displayed as mulit digit numbers, a separate one of which does not exits for the RCS Pressure SL and would be necessary. E.g.:

2.1.2 <u>RCS Pressure Limit</u>

SL 2.1.2.1 In MODES 1, (etc. with the existing spec).

Four digits could be used, but it makes it much harder to follow. For example, action numbers within lcos could have carried the spec number so that you would have had actions like A.3.1.1.1 instead of A.1 for LCO 3.1.1, and all action numbers would have been unique, but it would have used up a lot of space within action table for very little gain, and would be harder to follow.

7. Currently the safety limit violations are just spec numbers that in the Bases are put in an heading such as the following:

"The following SL violation responses are applicable to the reactor core SL:

<u>2.2.1 and 2.2.2</u>

(Discussion)

The only place where these numbers appear is in the initial spec entries and in the bases as the header line shown above. One could continue this, however, for consistency with SL, the term SLVs was coined to reference these items. Likewise they were numbered consecutively, 1 thru n. If there is a better choice rather than "SLV" one could certainly be used. However, some identification is desirable for these items that editors can relate to when choosing the tag for entering the data in the authoring environment. Hence it is desirable to have something that will relate to the data, e.g., SLV 1 is tagged <SLV.NUM>1</SLV.NUM> where it is specified, and <SLV.NUM.REF>1</SLV.NUM.REF> where it is referenced. Multi-digit numbers, while undesirable, could be used and are not an impediment to hyper linking, nor would the acronym prefix be an absolute requirement. The major difference with these numbers, as compared to SLs, is that they do not appear in text usage.

8. Safety limits are subdivided into sections for Reactor Core and RCS Pressure. This subdivision within the SL Section was carried over to the Section on SL Violations.

REASON: This was done for clarity and consistency of subsections and is necessary for consistent SGML tagging of these items and allows auto generation of the index. For example, the current index for safety

limits is:

2.0 SAFETY LIMITS (SLs) 2.0-1
2.1 SLs 2.0-1
2.2 SL Violations 2.0-1

This would be expanded in the electronic versions, and perhaps in the paper version, of SGML STS to be:

2 Safety Limits (SLs) and SL Violations 2.1-1
2.1 SLs 2.1-1
2.1.1 Reactor Core SLs 2.1-1
2.1.2 RCS Pressure SL 2.1-1
2.2 SL Violations (SLVs) 2.2-1
2.2.1 Reactor Core SLVs 2.2-1
2.2.2 RCS Pressure SLVs 2.2-1

Thus, if mulit-digits were retained for SLVs, they would change from 3 to 4 digit numbers, which would be the same if retained for SLs.

9. Capitalization: In titles, notably Chapter as show above, and for defined terms in titles, lower case is used for second and subsequent letters in a word.

   REASON: Space saving for electronic indexing. This is not an SGML requirement, hence, is something that could be changed for TS conversions. For present SGML demonstration, this style is used.

10. Horizontal rules between various subsections and at the top and bottom of every page are not included in SGML style sheets, and would not be included in SGML instances as a special tag (calling out ruled lines) which if used would also need special rules on usage within style sheets. Note: The line rule practice was not incorporated in Sections 3.1 thru 3.n of the existing STS.

    REASON: Unduly complicates SGML implementation.

11. Action Tables and Surveillance Requirements Tables do not use an extra row just to include continuation notation at the bottom of a table where it continues on the next page.

    REASON: Unduly complicates SGML implementation.

12. File management: Files are by Section for all Chapters except 3 where they are by specification. Currently, STS Chapters 2, 4, and 5 are single files.

    REASON: Chapter files unduly complicates SGML implementation.

13. Page numbering: Numbering of pages is on a section or for Chapter 3, a specification basis. Consequently and consistent with file management, printing is on a Section basis, with each Section starting on a new page.

REASON: SGML doe not allow for consecutive page numbering from one file to the next. At least not on a practical file management basis.

14. Figures associated with a Section appear following that Section and not at the end of the Chapter, e.g., the safety limit figure 2.1.1-1 that currently follows Section 2.1.2 in the STS.

    REASON: The structure of the document is specified by the DTD and things are kept in order.

15. Brackets: Items that are typical are tagged as such and style sheets are formatted to show these items in brackets. (Typical items are shown within typical tags, blank items, e.g., "[ ]", are tagged as such. Style sheets output the brackets for displaying the typical and blank items.) Brackets are not nested and other tagging schemes are not used, such as option tags, to make any further distinction of degrees of typicality or designate any other intent on usage.

16. Where numbers and associated text are extracted from tables, typically instrumentation tables showing functional units, and used in a pseudo lists within the bases, the content of the text (item description) is maintained identical to that in the table to facilitate hyper linking based on content.

    REASON Maintain consistent content of term content for hyper links.

17. Bases references to specifications, notably Safety Limits, Actions, Surveillance Requirements. These references are place under an underlined heading of the item, e.g., <u>A.1</u> or <u>SR 3.1.5.1</u> Currently, the STS use multiple entries under these heading such as: <u>A.1, A.2, and A.3</u> These items are tag references, that hyper link to their source specification. Placing multiple items in such references is difficult in SGML since styles sheets would have to output the commas and "and" used to list multiple items. Because these are in underline format, this conflicts with underlining used to indicate hyper links for the visually impaired that can distinguish hyper links based on color. This, in these cases an icon would be used to create hyper links to specification. Overall, the multiple items create major SGML problems. Therefore, this practice will not be allowed by the DTD, and each item will require a separate entry. For now, the SGML instances will duplicate the information under each item for current multiple item entries, and a Reviewer's Note will be added before the text to indicate such, and that conversions may edit out any material not specific to in the indicated item. Any changes in the text of these items for the SGML STS should follow the process for changes in STS in WP51.

    REASON: Current format is incompatible with hyper linking and styling of output forms of the SGML instances.