NEXTera® ENERGY
SEABROOK

July 9, 2015

10 CFR 50.90

SBK-L-15132
Docket No. 50-443

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Seabrook Station

Response to Request for Additional Information for License Amendment Request 14-04
Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years

References:

1. Seabrook Station License Amendment Request 14-04, "Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years," SBK-L-14102, July 24, 2014 (ML14216A404).
2. NRC letter to Seabrook Station, "Seabrook Station, Unit No. 1 – Request for Additional Information Regarding License Amendment Request to Revise the Technical Specification Pressure-Temperature Limits and Request for Exemption from 10 CFR Part 50, Appendix G Minimum Temperature requirements (TAC Nos. MF4576 and MF4577)," dated January 9, 2015 (ML14363A367).
3. Seabrook Station letter SBK-L-15040, "Response to Request for Additional Information for License Amendment Request 14-04 Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years, dated March 9, 2015 (ML15072A036).
4. Seabrook Station letter SBK-L-15129, "Response to Request for Additional Information for License Amendment Request 14-04 Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years, dated June 23, 2015.

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted License Amendment Request (LAR) 14-04 to the Technical Specifications (TS) for Seabrook Station and requested an exemption from the requirements of 10 CFR 50 Appendix G. The proposed change revises the

A001
NRR

pressure-temperature (P/T) limits in TS 3 /4.4.9 LCO 3.4.9.1, Reactor Coolant System Pressure-Temperature Limits, to be applicable to 55 effective full power years. The change also revises TS 3 /4/4.9 LCO 3.4.9.3, Overpressure Protection Systems, by providing new overpressure protection setpoints and lowering the RCS temperature at which the TS is applicable.

In Reference 2, the NRC requested additional information to complete its review of LAR 14-04.

NextEra provided the responses to RAIs 2.1.1, 2.1.2, 2.1.3 and 2.1.4 in Reference 3 along with a request to extend its response to RAI 2.2.1 to June 30, 2015.

The response to RAI 2.2.1 required additional input from the vendor to complete the response. In a conference call on June 17, 2015, the NRC requested an additional note be added to the Seabrook pressure-temperature curves restricting the heat-up rate to less than or equal to 20 °F per hour for moderator temperatures less than 120 °F. In Reference 4, NextEra requested additional time to obtain the requested information from its vendor, Westinghouse and to submit its response to RAI 2.2.1.

The response to RAI 2.2.1 is provided in the enclosure to this letter. The revised marked-up technical specification pages are provided in the attachment to this letter.

The response to the NRC RAI-2.2-1 resulted in a change to the previously submitted License Amendment Request 14-04 for the Seabrook Technical Specification (TS) 3.4.9.1, Pressure / Temperature Limits, by providing new reactor coolant system (RCS) pressure and temperature (P/T) limits that are applicable to 55 effective full power years (EFPY). As a result, a No Significant Hazards Consideration was performed for the revised Pressure Temperature Limits in TS Figures 3.4-2 and 3.4-3.

This letter contains no regulatory commitments.

Should you have any questions regarding this letter, please contact Mr. Michael Ossing, Licensing Manager, at (603) 773-7512.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 9, 2015.

Sincerely,

NextEra Energy Seabrook, LLC

Ralph A. Dodds, III
Plant General Manager

Enclosure

cc: D. Dorman, NRC Region I Administrator
J. Lamb, NRC Project Manager, Project Directorate I-2
P. Cataldo, NRC Senior Resident Inspector

Mr. Perry Plummer
Director Homeland Security and Emergency Management
New Hampshire Department of Safety
Division of Homeland Security and Emergency Management
Bureau of Emergency Management
33 Hazen Drive
Concord, NH 03305

John Giarrusso, Jr., Nuclear Preparedness Manager
The Commonwealth of Massachusetts
Emergency Management Agency
400 Worcester Road
Framingham, MA 01702-5399

ENCLOSURE to SBK-L-15132

Response to Request for Additional Information for License Amendment Request 14-04
Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years

Response to Request for Additional Information for License Amendment Request 14-04
Revised Reactor Coolant System Pressure - Temperature Limits Applicable for 55 Effective Full Power Years

NRC RAI 2.2.1: The current TS P-T limit curves for 23.7 EFPY have margins to account for pressure and temperature instrument errors; the proposed 55 EFPY TS P-T limits do not have these margins.

Please address how instrumentation errors will be accounted for to ensure that the RCS is operated in accordance with the proposed TS P-T limits for 55 EFPY.

NextEra Response:

The proposed TS P-T limit curves for 55 EFPY have been revised to include margins to account for pressure and temperature instrument uncertainty. Changes were also made to eliminate heat up and cool down rates that are not achievable during normal plant operating conditions in the lower temperature regions where the cold overpressure mitigation system (COMS) is enabled to protect the RCS with power operated relief valves (PORVs) as identified in TS Figure 3.4-4. No changes were made to the PORV set point values TS Figure 3.4-4 as this figure already contains appropriate instrument uncertainty as well as additional margins for pressure overshoot transients should an actuation occur.

Specifically, the revised curves shift the heat up and cool down P-T Limits curve data points developed in WCAP-17441-NP by 100 psi downward and 20°F to the right to account for the instrument uncertainty. An additional 15 psi uncertainty was applied to the heat up curve above the COMS enable temperature where operationally the wide range pressure indication on the main control board could be the only available indication in some unlikely but possible scenarios.

In addition to accounting for instrument uncertainty, unachievable heat up and cool down rates were eliminated or restricted.

For the heat up limitation curve, proposed TS Figure 3.4-2, a heat up rate restriction of 20°F/hr was added at temperatures at or below 120°F, corresponding to the transient defined in WCAP-17444 and the previous response to RAI 2.1.4. At temperatures greater than 120°F to less than 200°F the heat up rate of 80°F/hr maximum is specified and at greater than or equal to 200°F the maximum rate is 100°F/hr. Instrument uncertainties of 20°F and 100 psi were added to the data points in WCAP-17441-NP Table 6-3. An additional pressure uncertainty of 15 psi was added to the heat up curve starting at 200°F prior to the cold overpressure mitigation system being disabled. Considering the 20°F/hr rate restriction, pressure and temperature data from 60°F to 80°F (40°F to 60°F without the instrument uncertainty of 20°F) were determined using the more limiting pressure rate change between the existing 80°F/hr heat up data and the steady state data. Linear extrapolation of the 60°F to 65°F allowable pressure change of 13 psi per 5°F was applied to the heat up curve pressure limits from 60°F to 80°F. These heat up rate limitations and instrument uncertainties additions result in all pressure limitations at or below 225°F, in the COMS enable temperature region, being above and protected by the COMS system set point curve in TS Figure 3.4-4.

For the cool down limitation curve, proposed TS Figure 3.4-3, the cool down rate is restricted to 20°F/hr at temperatures less than 150°F. Instrument uncertainties of 20°F and 100 psi were added to the data points in WCAP-17441-NP Table 6-4. Since the entire curve is to the left and above the COMS enable temperature and pressure limits identified in TS Figure 3.4-4, the additional 15 psi uncertainty was not

necessary. Pressure and temperature data from 60°F to 80°F (40°F to 60°F without the instrument uncertainty of 20°F) were determined by linear extrapolation of the pressure rate change between 60°F to 65°F for the 20°F/hr cool down data and the steady state data which results in a 13 psi change per 5°F. These cool down rate limitations and instrument uncertainties additions result in all pressure limitations being above and protected by the COMS system set point curve in TS Figure 3.4-4.

The bolt up temperature was maintained at 60°F as identified in WCAP-14040-A, Revision 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves." The limiting closure head region material RT_{ndt} is 30°F allowing bolt up temperature to be as low as 50°F with the application of uncertainty. However, the 60°F bolt up temperature advised in WCAP-14040-A is maintained.

The proposed heat up limitation curve, TS Figure 3.4-2, and the proposed cool down limitation curve, TS Figure 3.4-3 applicable for 55 EFPY have been revised to include margins to account for pressure and temperature instrument uncertainty as described above and are provided in the attachment. The revised data points for the revised heat up and cool down curves are provided in Tables 1 and 2 respectively.

Significant Hazards Consideration

No Significant Hazards Consideration:

The response to the NRC RAI-2.2-1 resulted in a change to the previously submitted License Amendment Request 14-04 for the Seabrook Technical Specification (TS) 3.4.9.1, Pressure / Temperature Limits, by providing new reactor coolant system (RCS) pressure and temperature (P/T) limits that are applicable to 55 effective full power years (EFPY). As a result, a No Significant Hazards Consideration was performed for the revised Pressure Temperature Limits in TS Figures 3.4-2 and 3.4-3.

In accordance with 10 CFR 50.92, NextEra Energy Seabrook has concluded that the proposed change does not involve a significant hazards consideration (SHC). The basis for the conclusion that the proposed change does not involve a SHC is as follows:

1. *Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?*

No. The proposed changes to the Technical Specifications (TS) do not impact the physical function of plant structures, systems, or components (SSCs) or the manner in which SSCs perform their design function. Operation in accordance with the proposed TS will ensure that all analyzed accidents will continue to be mitigated by the SSCs as previously analyzed. The proposed changes do not alter or prevent the ability of operable SSCs to perform their intended function to mitigate the consequences of an initiating event within assumed acceptance limits. The proposed changes neither adversely affect accident initiators or precursors, nor alter design assumptions.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any previously evaluated?

No. The proposed changes do not involve installation of new or different type of equipment, create new failure modes for existing equipment, or create any new limiting single failures. The changes to the pressure - temperature limits will continue to ensure that appropriate fracture toughness margins are maintained to protect against reactor vessel failure, during both normal and low temperature operation. The proposed changes are consistent with the applicable NRC approved methodologies (i.e., WCAP-14040, Rev. 4 and ASME Code Case N-641). Plant operation will not be altered, and all safety functions will continue to perform as previously assumed in accident analyses.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

No. Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed changes will not adversely affect the operation of plant equipment or the function of any equipment assumed in the accident analysis. The proposed changes were developed using NRC approved methodologies and will continue to ensure an acceptable margin of safety is maintained. The safety analysis acceptance criteria are not affected by this change. The proposed changes will not result in plant operation in a configuration outside the design basis. The proposed changes do not adversely affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

Based on the above, NextEra concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(b), and, accordingly, a finding of "no significant hazards consideration" is justified.

Table 1
Data Points for the 55 EFPY Seabrook Unit 1 Heatup Curves using the 1998 through the 2000 Addenda App. G Methodology (with K_{Ic}, without Flange Notch, and with Margins for Instrumentation Errors)

Leak Test Limits		20°F/hr Heatup		80°F/hr Heatup		100°F/hr Heatup		Criticality Limits	
T (°F)	P (psig)	T (°F)	P (psig)	T (°F)	P (psig)	T (°F)	P (psig)	T (°F)	P (psig)
180	1900	60	0					197	0
180	1900	60	577					197	741
197	2385	65	590					200	760
197	2385	70	603					205	793
		75	607					210	831
		80	607					215	872
		85	607					220	919
		90	607					225	971
		95	607					230	995
		100	607					235	995
		105	607					240	995
		110	607					245	1058
		115	609					250	1128
		120	614	120	614			255	1206
				125	622			260	1292
				130	632			265	1387
				135	646			270	1492
				140	662			275	1608
				145	682			280	1736
				150	704			285	1878
				155	730			290	2034
				160	760			295	2206
				165	793			300	2396
				170	831				
				175	872				
				180	919				
				185	971				
				190	995				
				195	995				
				200	995	200	995		
						205	1058		
						210	1128		
						215	1206		
						220	1292		
						225	1387		
						230	1492		
						235	1608		
						240	1736		
						245	1878		
						250	2034		
						255	2206		
						260	2396		

Table 2
Data Points for the 55 EFPY Seabrook Unit 1 Cooldown Curves using the 1998 through the 2000 Addenda App. G Methodology (with K_{Ic}, without Flange Notch, and with Margins for Instrumentation Errors)

Steady-State (0°F/hr)		20°F/hr Cooldown		100°F/hr Cooldown	
T (°F)	P (psig)	T (°F)	P (psig)	T (°F)	P (psig)
60	0	60	0		
60	577	60	537		
65	590	65	550		
70	603	70	563		
75	616	75	576		
80	629	80	589		
85	642	85	602		
90	656	90	618		
95	671	95	635		
100	689	100	654		
105	708	105	674		
110	729	110	697		
115	752	115	723		
120	778	120	751		
125	806	125	782		
130	838	130	817		
135	872	135	855		
140	911	140	897		
145	953	145	944		
150	1000	150	995	150	995
155	1052			155	1052
160	1109			160	1109
165	1172			165	1172
170	1242			170	1242
175	1319			175	1319
180	1404			180	1404
185	1499			185	1499
190	1603			190	1603
195	1718			195	1718
200	1846			200	1846
205	1986			205	1986
210	2142			210	2142
215	2314			215	2314
220	2504			220	2504

Attachment to SBK-L-15132

Marked-Up Technical Specification Pages

INSERT A (NEXT PAGE)

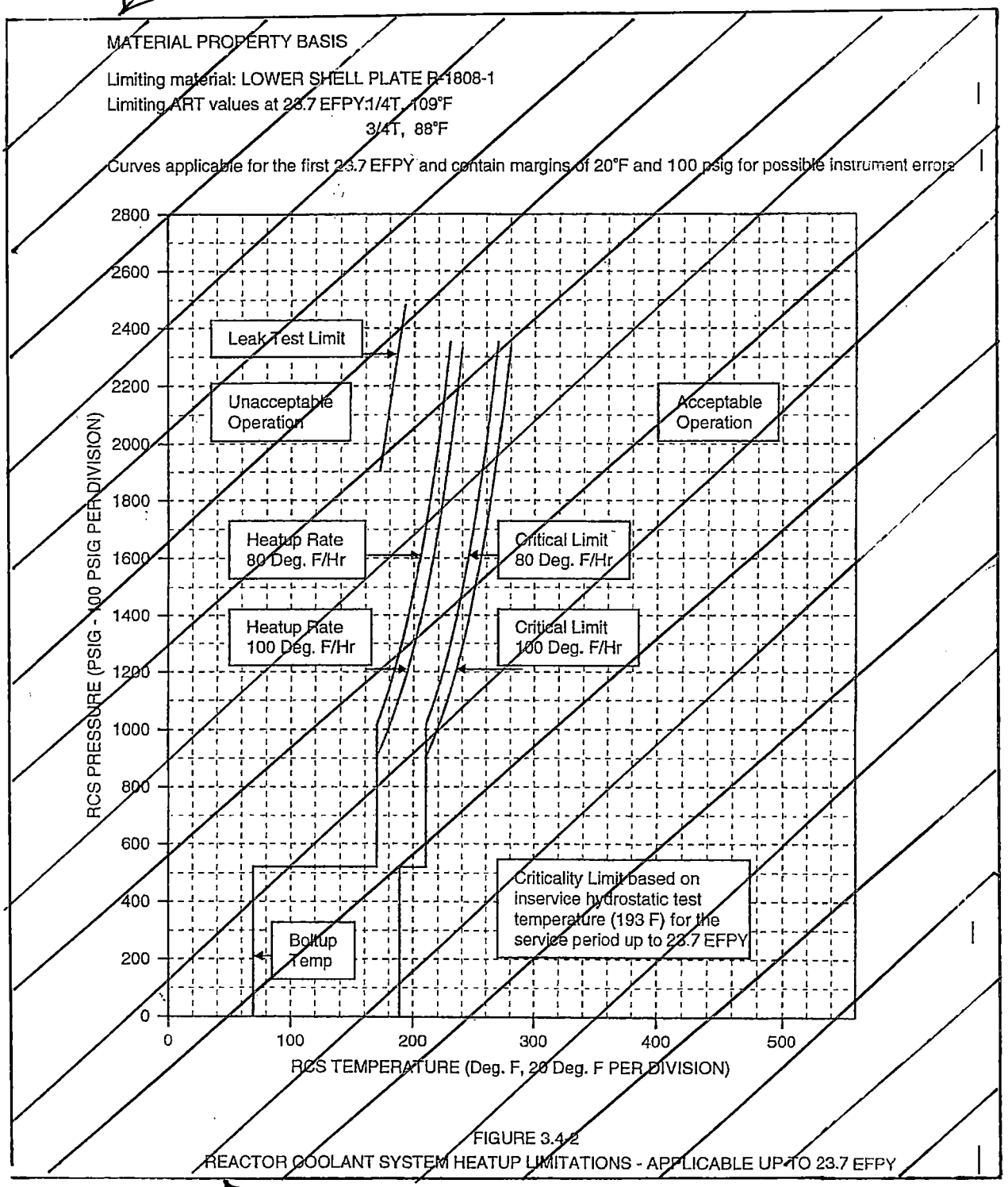


FIGURE 3.4-2
REACTOR COOLANT SYSTEM HEATUP LIMITATIONS - APPLICABLE UP TO 23.7 EFPY

DELETE

Insert A

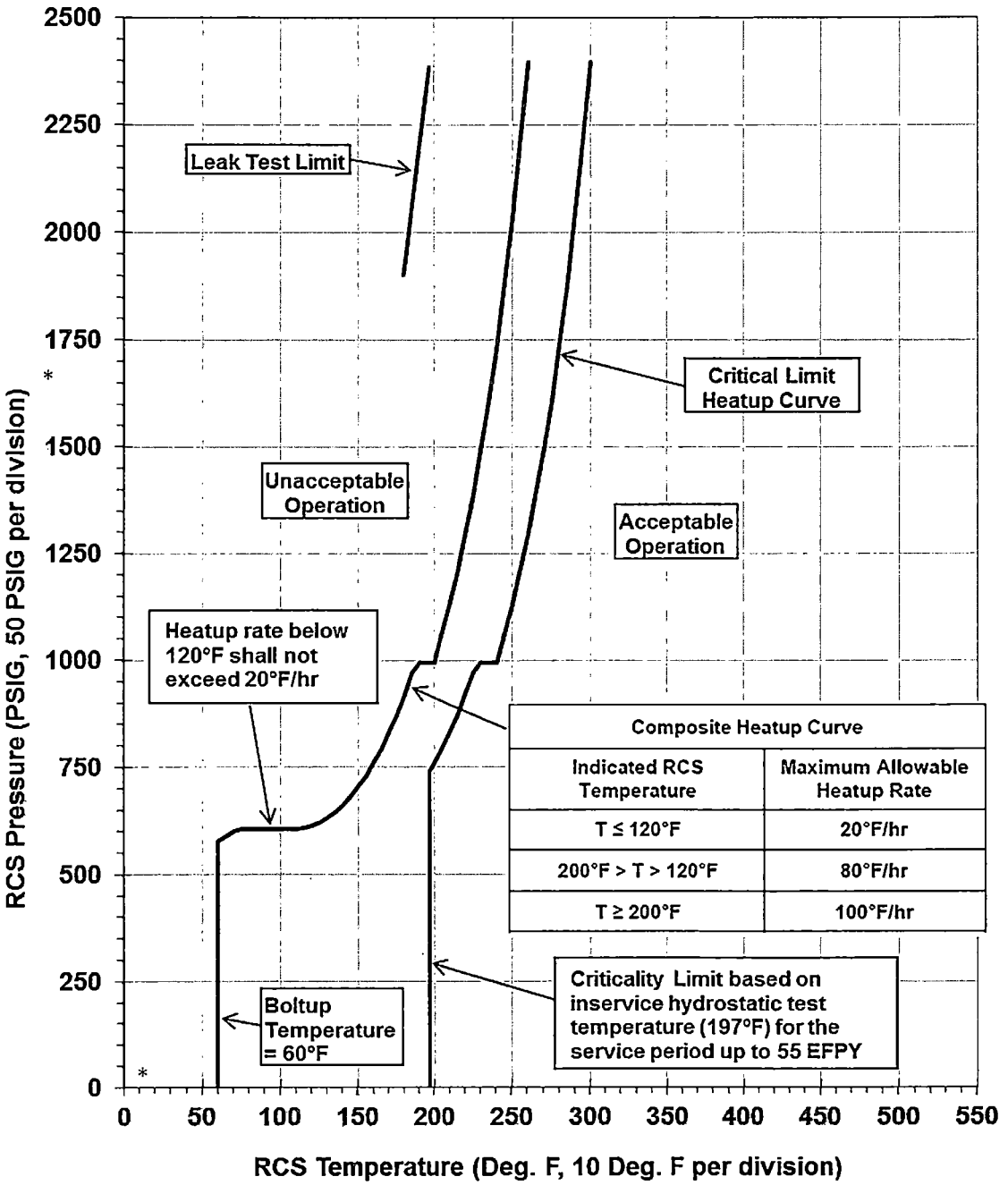
MATERIAL PROPERTY BASIS

LIMITING MATERIAL: Lower Shell Plate R1808-1 without using surveillance data, Position 1.1

LIMITING ART VALUES AT 55 EFPY: 1/4T, 117°F (Axial Flaw)

3/4T, 105°F (Axial Flaw)

Curves applicable for the first 55 EFPY and contain margins for possible instrument errors



Composite Heatup Curve	
Indicated RCS Temperature	Maximum Allowable Heatup Rate
T ≤ 120°F	20°F/hr
200°F > T > 120°F	80°F/hr
T ≥ 200°F	100°F/hr

* Curve is Applicable for RCS Vacuum fill

FIGURE 3.4-2
REACTOR COOLANT SYSTEM HEATUP LIMITATIONS – APPLICABLE UP TO 55 EFPY

INSERT B (NEXT PAGE)

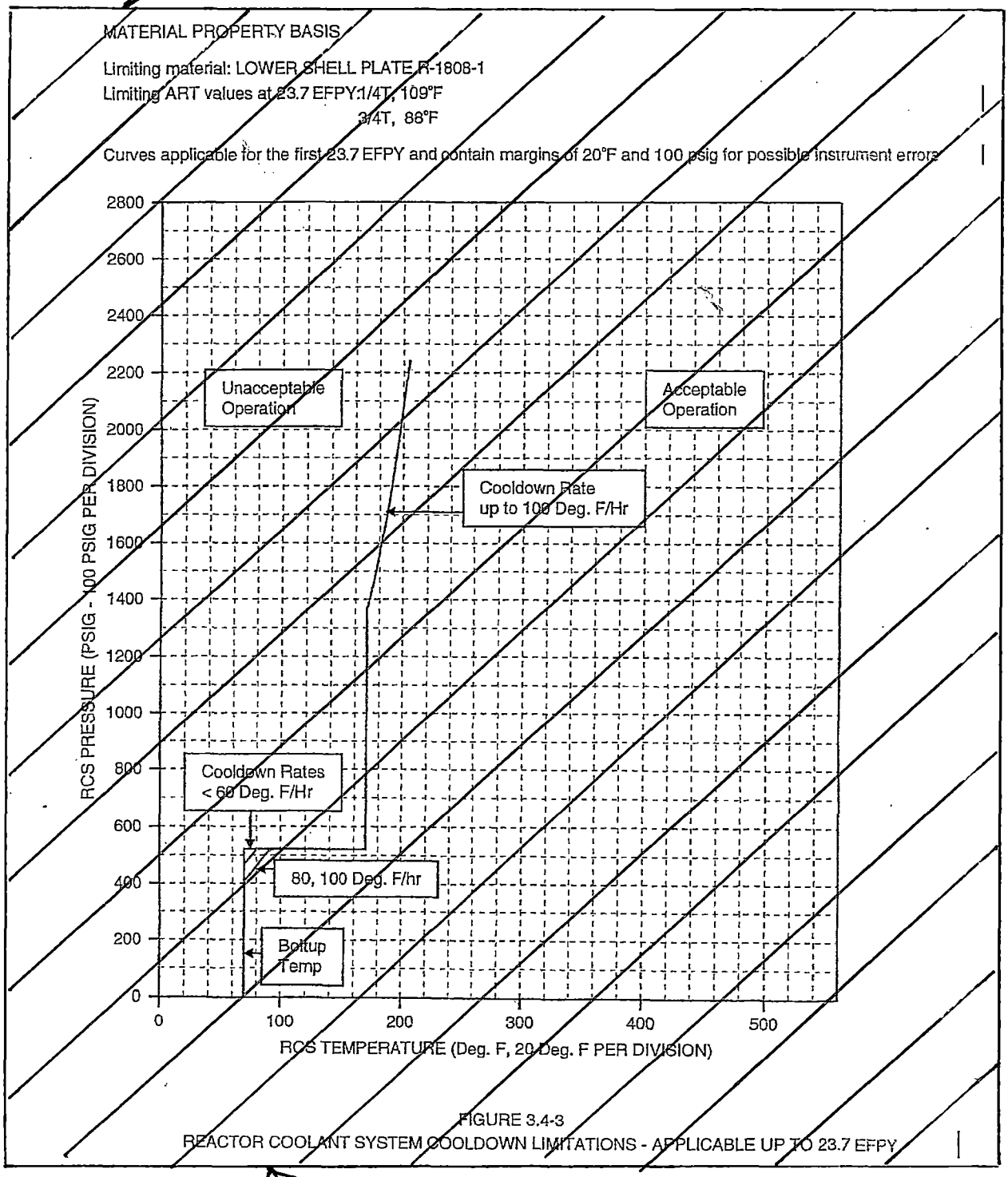


FIGURE 3.4-3
REACTOR COOLANT SYSTEM COOLDOWN LIMITATIONS - APPLICABLE UP TO 23.7 EFPY

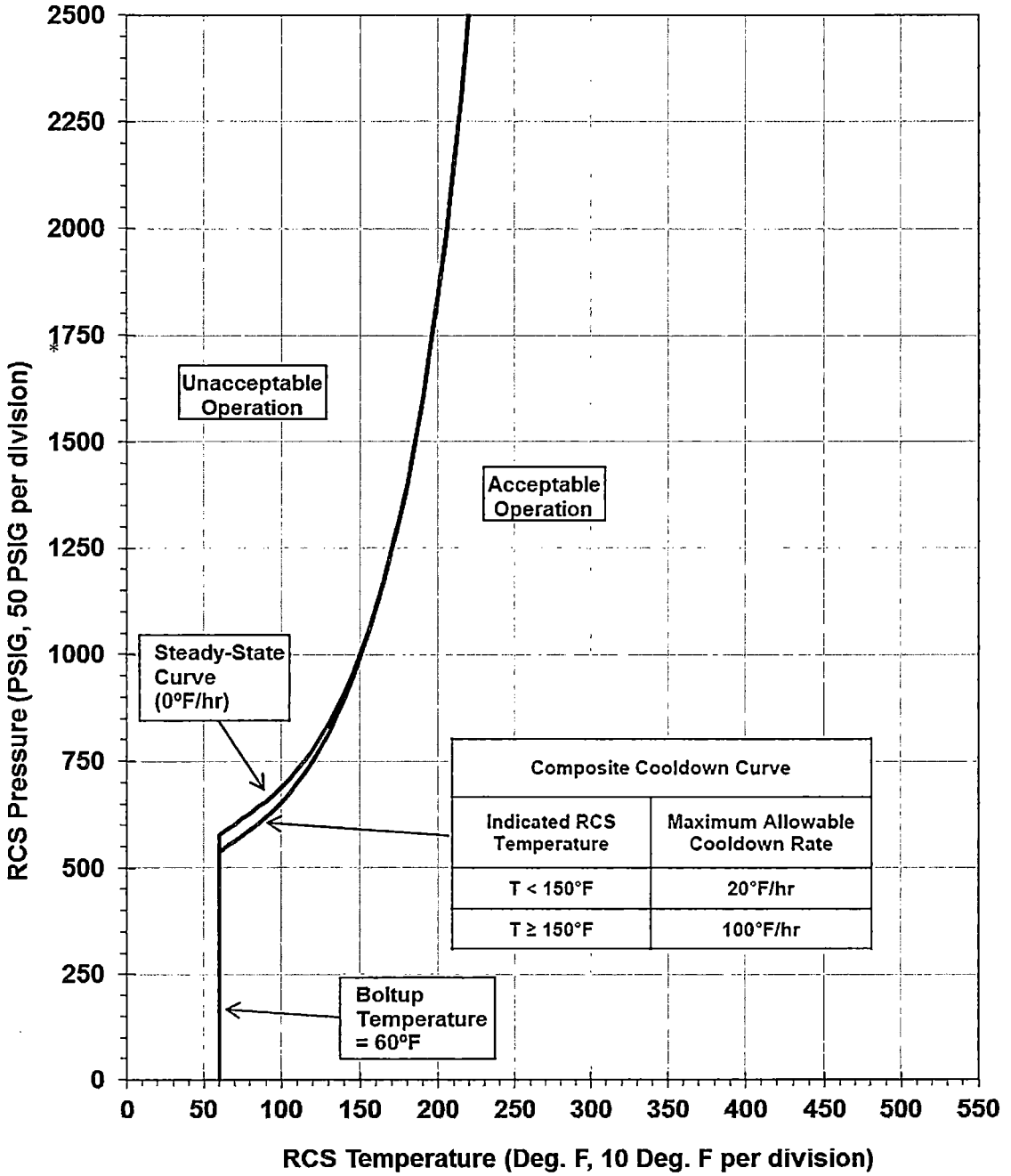
DELETE

Insert B

MATERIAL PROPERTY BASIS

LIMITING MATERIAL: Lower Shell Plate R1808-1 without using surveillance data, Position 1.1
LIMITING ART VALUES AT 55 EFPY: 1/4T, 117°F (Axial Flaw)
3/4T, 105°F (Axial Flaw)

Curves applicable for the first 55 EFPY and contain margins for possible instrument errors



* Curve is Applicable for RCS Vacuum fill

FIGURE 3.4-3
REACTOR COOLANT SYSTEM COOLDOWN LIMITATIONS – APPLICABLE UP TO 55 EFPY