ENERGY
NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

June 9, 2004
GO2-04-107

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397; LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION 3.4.11 REACTOR COOLANT SYSTEM (RCS) PRESSURE AND TEMPERATURE (P/T) LIMITS**

Reference: Letter GO2-04-032, dated March 5, 2004, DK Atkinson (Energy Northwest) to U.S. Nuclear Regulatory Commission, "Schedule for Requesting Revision of Technical Specification P/T Curves and Adoption of the BWRVIP Integrated Surveillance Program"

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Energy Northwest hereby requests an amendment to the Columbia Generating Station (Columbia) Technical Specifications (TS) Limiting Condition for Operation 3.4.11, "RCS Pressure and Temperature (P/T) Limits." Specifically, this proposed amendment would replace the P/T curves for Inservice Leak and Hydrostatic Testing, Non-Nuclear Heating and Cooldown, and Nuclear Heating and Cooldown currently illustrated in TS Figures 3.4.11-1, 3.4.11-2, and 3.4.11-3, respectively. Energy Northwest has evaluated the proposed changes pursuant to the criteria of 10 CFR 50.92(c) and has determined the proposed changes warrant a no significant hazards consideration.

Energy Northwest requests approval of the proposed amendment by early May of 2005, to allow application of the revised P/T curves during the next scheduled refueling outage at Columbia. Energy Northwest also requests a 60-day implementation period upon approval of this request. There are no new commitments associated with this submittal.

A P01

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 9, 2004.

If you have any questions or require additional information regarding this matter, please contact Mr. DW Coleman, Regulatory Programs Manager, at (509) 377-4342.

Respectfully,

DK Atkinson
Vice President, Technical Services
Mail Drop PE08

Enclosure: General Electric Affidavit-Proprietary Information

Attachments:

1. Evaluation of the Proposed Changes.
2. Marked-up Affected Pages from the Technical Specifications.
3. Retyped Affected Pages from the Technical Specifications.
4. Figure 6-1, "Azimuthal Distribution of Fast Neutron Fluence at RPV Inside Surface at Core Midplane." Excerpted from GE-NE-0000-0023-5057-R0, "Energy Northwest Columbia Generating Station Neutron Flux Evaluation")
5. Figure 6-2, "Axial Distribution of Fast Neutron Fluence at RPV Inside Surface at the Peak Azimuth." Excerpted from GE-NE-0000-0023-5057-R0, "Energy Northwest Columbia Generating Station Neutron Flux Evaluation")
6. GE Nuclear Energy proprietary report NEDC-33144P, "Pressure-Temperature Curves for Energy Northwest Columbia," April 2004.
7. GE Nuclear Energy non-proprietary report NEDO-33144, "Pressure-Temperature Curves for Energy Northwest Columbia," April 2004.

cc: BS Mallet - NRC – RIV
WA Macon - NRC – NRR
NRC Sr. Resident Inspector – 988C
RN Sherman - BPA/1399
TC Poindexter – Winston & Strawn
JO Luce – EFSEC

General Electric Company
AFFIDAVIT

I, David J. Robare, state as follows:

(1) I am Technical Projects Manager, Technical Services, General Electric Company ("GE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in the GE proprietary report NEDC-33144P, "Pressure-Temperature Curves for Energy Northwest Columbia", Class III, Revision 0, (GE Proprietary Information), dated April 2004 (Attachment 6 to this submittal). The proprietary information is delineated by a double underline inside double square brackets. In each case, the superscript notation[(3)] refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.

(3) In making this application for withholding of proprietary information of which it is the owner, GE relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.790(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals aspects of past, present, or future General Electric customer-funded development plans and programs, resulting in potential products to General Electric

d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a., and (4)b, above.

(5) To address 10 CFR 2.790 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GE, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GE, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within GE is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GE are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it contains detailed methods and processes, which GE has developed and applied to pressure-temperature curves for the BWR over a number of years.

The development of the BWR pressure-temperature curves was achieved at a significant cost, on the order of 3/4 million dollars, to GE. The development of the evaluation process along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GE asset.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GE's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GE's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GE.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GE's competitive advantage will be lost if its competitors are able to use the results of the GE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 23rd day of APRIL 2004.

David J. Robare
General Electric Company

1.0 DESCRIPTION

This submittal is a request to amend Operating License 50-397 for Columbia Generating Station (Columbia). The proposed changes would revise Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.4.11, "RCS Pressure and Temperature (P/T) Limits," to allow increased operational flexibility with regard to reactor coolant system (P/T) limits. Energy Northwest is requesting approval of the proposed changes by early May of 2005, in order to begin applying the revised P/T limits during the next refueling outage at Columbia which is scheduled to begin May 2005.

2.0 PROPOSED CHANGE

Energy Northwest herein requests an amendment to the Columbia Generating Station TS LCO 3.4.11, "RCS Pressure and Temperature (P/T) Limits," to replace the P/T curves for Inservice Leak and Hydrostatic Testing, Non-Nuclear Heating and Cooldown, and Nuclear Heating and Cooldown currently illustrated in TS Figures 3.4.11-1, 3.4.11-2, and 3.4.11-3, respectively.

3.0 BACKGROUND

General Electric Nuclear Energy (GE) recently fulfilled a contract with Energy Northwest to recalculate the Reactor Pressure Vessel (RPV) fluence using an NRC approved methodology in accordance with RG 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," and to incorporate the new fluence value into a revision of the P/T limit curves specified in TS LCO 3.4.11 (TS Figures 3.4.11-1, 3.4.11-2, and 3.4.11-3). The proposed P/T curves were developed in accordance with 10 CFR 50 Appendix G and the 1998 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, including the 2000 Addenda. Precedent has been established for the acceptability of this license amendment request with the Staff's issuance of a Safety Evaluation Report approving a similar request for the Browns Ferry Nuclear plant (ref. 3).

4.0 TECHNICAL ANALYSIS

4.1 Development of the Revised P/T Limit Curves

As required by 10 CFR 50, Appendix G, operating P/T limits are calculated and implemented by plant procedural requirements to ensure that fracture toughness requirements of the reactor pressure boundary are maintained. These requirements specify the vessel P/T limits designed to prevent brittle fracture. The proposed new P/T limit curves were developed to incorporate appropriate non-beltline limits and irradiation embrittlement effects in the beltline. The proposed new P/T curves were developed for 33.1 effective full power years (EFPY), where 33.1 EFPY represents the end of Columbia's 40-year license period. The proposed new P/T curves incorporate the results of a new fluence calculation as discussed in Section 4.2.

The proposed new P/T curves reflect changes from those currently in TS Figures 3.4.11-1, 3.4.11-2 and 3.4.11-3. These new P/T curves have been generated to reflect a revised fluence calculated using a methodology approved by the NRC as adhering to the guidance of Regulatory Guide (RG) 1.190. The limiting beltline shift for the P/T curves is 35°F, based upon a peak surface fluence of 7.41E+17 n/cm^2 for 33.1 EFPY (9.64E+8 MWh). The calculation of 33.1 EFPY factors in the uprated power (3486 MWt) from cycle 11 through the end of the currently licensed interval (ref. 1).

The methodology used to generate the new P/T curves is presented in Section 4.3 of the GE Nuclear Energy P/T curve report, NEDC-33144P, "Pressure-Temperature Curves For Energy Northwest, Columbia"(Attachment 6). The non-proprietary version of this report, NEDO-33144, is included as Attachment 7. The 1998 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, including 2000 Addenda, which directly incorporates ASME Code Cases N-588 and N-640, was used in the evaluation and development of the curves. The P/T curve methodology includes the following from the ASME Code: 1) the use of K_{IC} from Figure A-4200-1 of Appendix A to determine T-RT_{NDT}; and, 2) the use of the M_m calculation in paragraph G-2214.1 for a postulated defect normal to the direction of maximum stress. The proposed new P/T curves were developed using the geometry of the RPV shells and discontinuities, the initial RT_{NDT} of the RPV materials, and the Adjusted Reference Temperature (ART) for the beltline materials.

4.1.1 Initial Reference Temperature

The data and methodology used to determine initial RT_{NDT} are documented in Section 4.1 of the GE P/T curve report, NEDC-33144P (Attachment 6). The initial RT_{NDT} is the reference temperature for the unirradiated material as defined in Section III of the ASME Boiler and Pressure Vessel Code, paragraph NB-2331. The Charpy energy data used to determine the initial RT_{NDT} values were tabulated from the Certified Material Test Report (CMTRs) for Columbia. The initial RT_{NDT} for the beltline materials remain unchanged from those previously reported for Columbia with the following two exceptions: dropweight information was obtained and considered, resulting in a revised initial RT_{NDT} for weld heats 3P4955, Lot 0342/3443 (tandem wire) and 3P4966, Lot 1214/3481 (single wire) (see Table 4 below).

4.1.2 Adjusted Reference Temperature (ART)

The ART calculation, methodology, and ART tables for 33.1 EFPY are included in Section 4.2 of the GE- P/T curve report, NEDC-33144P (Attachment 6). Adjusted Reference Temperature is the reference temperature of the limiting beltline material when including irradiation shift and a margin term.

RG 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," provides acceptable methods for calculating 1/4T fluences and ART. The value of ART is a function of RPV 1/4T fluence and beltline material chemistry. The peak inside diameter fluence value of 7.41E+17 n/cm^2 (33.1 EFPY) from the GE fluence report, GE-NE-0000-0023-5057-R0, "Energy Northwest Columbia Generating Station Neutron Flux Evaluation," April 2004 (GE proprietary) is used in the P/T curve analysis. The peak 1/4T fluence values (n/cm^2) used for P/T curve development are as follows:

- 1.75E+17 for lower shell #1 (9.5 inches)
- 5.11E+17 for lower-intermediate shell #2 (6.1875 inches)
- 2.81E+17 for N6 nozzle (6.1875 inches)
- 2.13E+17 for girth weld between shell #1 and shell #2 (6.1875 inches)

Note that for conservatism, the RPV thicknesses are minimum thicknesses. In addition, the clad thickness is conservatively omitted.

4.1.3 Beltline Chemistry

Beltline chemistry values are discussed in Section 4.2.1.1 of the GE P/T curve report NEDC-33144P (Attachment 6). Comprehensive documentation of the RPV discontinuities that are considered is also included in Appendix A of the report. Appendix A provides a table that documents which non-beltline discontinuity curves are used to protect each discontinuity, and an analysis that demonstrates that all reactor vessel nozzles requiring fracture toughness evaluation are either included in the development of the P/T curves or are outside the beltline region.

4.1.4 Equivalent Margin Analysis for Upper Shelf Energy

The calculation for Equivalent Margin Analysis (EMA) for Upper Shelf Energy (USE) is included in Appendix F of the GE P/T curve report, NEDC-33144P (Attachment 6). Based on the results of this calculation, the USE for EMA values for the Columbia reactor vessel beltline materials remain within the limits of RG 1.99, Revision 2 and 10 CFR 50 Appendix G for 33.1 EFPY of operation. Furthermore, the USE values for those materials where sufficient unirradiated information is available, remain well above 50 ft-lb at 33.1 EFPY, as required by 10 CFR 50, Appendix G.

4.2 Fluence Calculation Methodology and Results

A neutron fluence calculation methodology that has been approved by the NRC staff and is consistent with the attributes defined in NRC RG 1.190 has been used for the determination of Columbia's RPV neutron fluence values used for the P/T curve development. The methodology used in the GE fluence report, GE-NE-0000-0023-5057-R0 (ref. 1), conforms to GE Licensing Topical Report (LTR) NEDC-32983P-A, "General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluation." In general, the methodology

described in NEDC-32983P-A conforms to the guidance in RG 1.190 for neutron flux evaluation and was approved by the NRC in a Safety Evaluation Report (SER) (ref. 2).

Table 1 below, excerpted from GE-NE-0000-0023-5057-R0, Section 3.5, provides a comparison between the new calculation and the surveillance capsule calculation for Columbia, previously reported in GE Nuclear Energy GE-NE-B1301809-01, "Washington Public Power Supply System WNP-2 Surveillance Materials Testing and Analysis," March 1997.

Table 1
Comparison with 1996 Calculation

Parameter	1996 results	New Calculation	% Change
RPV ID Flux			
Peak Flux (n/cm^2-s)	8.15E+8	7.60E+8	-6.7
Peak Azimuth (deg.)	25.0	26.0	
Peak Elevation (inches above Bottom Active Fuel)	100	101	
Peak/Midplane Ratio	1.07	1.10	
300° Capsule			
Calculated Flux (C) (n/cm^2-s)	7.85E+8	7.15E+8	-8.9
Lead Factor	0.95	0.94	-1.1
Measured Flux (M) (n/cm^2-s)	6.85E+8	6.85E+8	
C/M Ratio	1.15	1.04	-9.6

Table 2 below, excerpted from the GE fluence report, GE-NE-0000-0023-5057-R0, Table 6-3, provides a summary of the neutron fluence results for the Columbia RPV.

Table 2
Summary of Neutron Fluence Results for RPV

	Flux (n/cm^2-s)		**Fluence (n/cm^2)**	
	Cycle 10	**Representative Future Cycle**	**40-year (33.1 EFPY)** note 1	**60-year (51.6 EFPY)** note 1
RPV				
At Midplane	6.92E+08	5.75E+08	6.77E+17	1.03E+18
At Peak Elevation	7.60E+08	6.27E+08	7.41E+17	1.12E+18
Peak/Midplane	1.10	1.09	1.09	1.09
Elevation for 1.0E+17 fluence note 2 (inches above Bottom Active Fuel)				
Bottom			-3.3	-7.0
Top			156.2	160.0

Note 1: EFPY is based on OLTP (3323 MWt)
Note 2: Defines beltline region (reference 10 CFR 50 Appendix G and H)

4.3 Differences Between Previously Reported and New Values

Tables 3 and 4 below provide values that have changed from those previously reported.

Table 3
Differences Between Previously Reported and New Values for Beltline Material Chemistries[1]

	Heat/Lot	%Cu			%Ni		
		FSAR	RVID[5]	NEW	FSAR	RVID[5]	NEW
Plate Material	B5301-1	0.14	0.14	0.13[2]	Note 1	Note 1	Note 1
Weld Material	5P6756/0342-3447 (S)	Note 1	Note 1	Note 1	0.93	0.93	0.936[3]
	5P6756/0342-3447 (T)	0.09	0.09	0.08[3]	0.92	0.92	0.936[3]
	3P4966/1214-3482 (S)	0.02	0.02	0.025[3]	0.80	0.92	0.913[3]
	3P4966/1214-3482 (T)	0.02	0.02	0.025[3]	0.92	0.92	0.913[3]
	3P4966/1214-3481 (S)	0.03	0.03	0.025[3]	0.90	0.88	0.913[3]
	3P4966/1214-3481 (T)	0.03	0.03	0.025[3]	0.88	0.90	0.913[3]
	3P4955/0342-3443 (S)	0.023	0.023	0.027[3]	0.95	0.95	0.921[3]
	3P4955/0342-3443 (T)	0.025	0.03	0.027[3]	0.90	0.90	0.921[3]
	624039/D205A27A	0.01	No data	0.10[4]	No data	No data	No data

Notes:
1. Values are entered for changes only.
2. GE Report NEDC-33144P (Based on surveillance capsule data).
3. GE Report NEDC-33144P (based on best estimate chemistry values from the BWRVIP ISP, "Data Source Book and Plant Evaluations").
4. Error corrected to reflect CMTR value.
5. Reactor Vessel Integrity Database

Table 4
Differences Between Previously Reported Values and New Values for Beltline/Vessel Material RTndt and Initial USE Values

	Heat/Lot	Initial RTndt (°F)			Initial Transverse USE (ft-lb)		
		FSAR/GL 92-01	RVID[5]	NEW	GL 92-01	RVID[5]	NEW
N4 FW Nozzle	Q2Q55W 786S-3	-14	No data	0[2]	Note 1	No Data	Note 1
Plate Material	B5301-1	Note 1	Note 1	Note 1	EMA	EMA	98.0[3]
Weld Material	3P4955/0342-3443 (T)	-44	-44	-20[4]	Note 1	Note 1	Note 1
	3P4966/1214-3481 (S)	-26	-26	-20[4]	Note 1	Note 1	Note 1
	3P4966/1214-3481 (S&T)	N/A	N/A	N/A	EMA	EMA	98.0[3]

Notes:
1. Values are entered for changes only.
2. GE Report NEDC-33144P (based on CMTR data).
3. GE Report NEDC-33144P (based on surveillance capsule data).
4. GE Report NEDC-33144P (based on newly identified dropweight information).
5. Reactor Vessel Integrity Database

4.4 BWRVIP ISP Data

The data applicable to Columbia from the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP), "Data Source Book and Plant Evaluations," has been evaluated in the P/T curve analysis. The evaluation of this data follows the guidance of BWRVIP-102, "BWR Integrated Surveillance Program Implementation Guidelines," and BWRVIP ISP, "Data Source Book and Plant Evaluations." The ISP data does not directly impact the P/T limit curves but did result in changes to several beltline weld material ART values as reported in Attachment 6. Columbia has committed to adopt the ISP and has included the evaluation of the applicable ISP data in anticipation of submitting a license amendment request to adopt the ISP.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration Determination

In accordance with 10 CFR 50.92(c), a proposed change to the operating license involves a no significant hazards consideration if operation of the facility in accordance with the proposed change would not: 1) involve a significant increase in the probability or consequences of any accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. Energy Northwest has evaluated the proposed changes to the Columbia Generating Station Technical Specifications using the three criteria set forth in 10 CFR 50.92(c) and has determined that they warrant a no significant hazards consideration as described below:

1. **Does the operation of Columbia Generating Station in accordance with the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?**

   Response: No

   The proposed changes deal exclusively with the Reactor Coolant System (RCS) Pressure and Temperature (P/T) curves, which define the limitations for operation and testing. Because of the design conservatisms used to calculate the RCS P/T limits, reactor vessel failure has a low probability of occurrence and is not considered as a design basis accident in the safety analyses of the plant. The proposed changes adjust the reference temperature for the limiting material to account for irradiation effects and provide a comparable level of protection as previously evaluated and approved. The adjusted reference temperature calculations were performed in accordance with the requirements of 10 CFR 50 Appendix G using the guidance contained in RG 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," to provide operating limits for up to 33.1 EFPY. The proposed license amendment does not involve a change to operation of equipment required to mitigate any accident analyzed in Columbia's UFSAR. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. **Does the operation of Columbia Generating Station in accordance with the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?**

   Response: No

   The revised P/T curves are based on a later edition and addenda of the ASME Code that incorporates current industry standards for the curves. The revised curves are also based on an RPV fluence that has been recalculated in accordance with the methodology of RG 1.190. The proposed changes do not involve a modification to plant equipment. There is no effect on the function of any plant system, and no new

system interactions are introduced by this change. No new failure modes are introduced. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. **Does the operation of Columbia Generating Station in accordance with the proposed amendment involve a significant reduction in the margin of safety?**

   Response: No

   The proposed curves conform to the guidance contained in RG 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," and RG 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," and maintain the safety margins specified in 10 CFR 50 Appendix G. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

5.2 Applicable Regulatory Requirements

The regulatory requirements for fluence calculations are General Design Criteria (GDC) 30 and 31 of 10 CFR 50 Appendix A. The NRC issued RG 1.190 in March 2001, which provided state-of-the-art calculations and measurement procedures that are acceptable for determining pressure vessel fluence. The NRC has previously approved the RPV fluence calculation methodology used for this proposed license amendment request. The methodology satisfies the requirements of GDC 30 and 31 and conforms to the guidance of RG 1.190. Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) such activities will be conducted in compliance with the Commission's regulations; and, (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve; (i) a significant hazards consideration; (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite; or, (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs be prepared in connection with the proposed amendment.

7.0 REFERENCES

1) GE Nuclear Energy, GE-NE-0000-0023-5057-R0, "Energy Northwest Columbia Generating Station Neutron Flux Evaluation")
2) Letter, S.A. Richard, USNRC to J.F. Klapproth, GE-NE, "Safety Evaluation for NEDC-32983P, General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluation (TAC No. MA9891)", MFN 01-050, September 14, 2001.
3) Letter dated March 10, 2004, Kahtan N. Jabbour (NRC) to J.A. Scalice (TVA); "Browns Ferry Nuclear Plant, Units 2 and 3 – Issuance of Amendments Regarding Pressure – Temperature Limit Curves (TAC NOS. MC0807 and MC0808).

Proposed Technical Specifications (marked up)

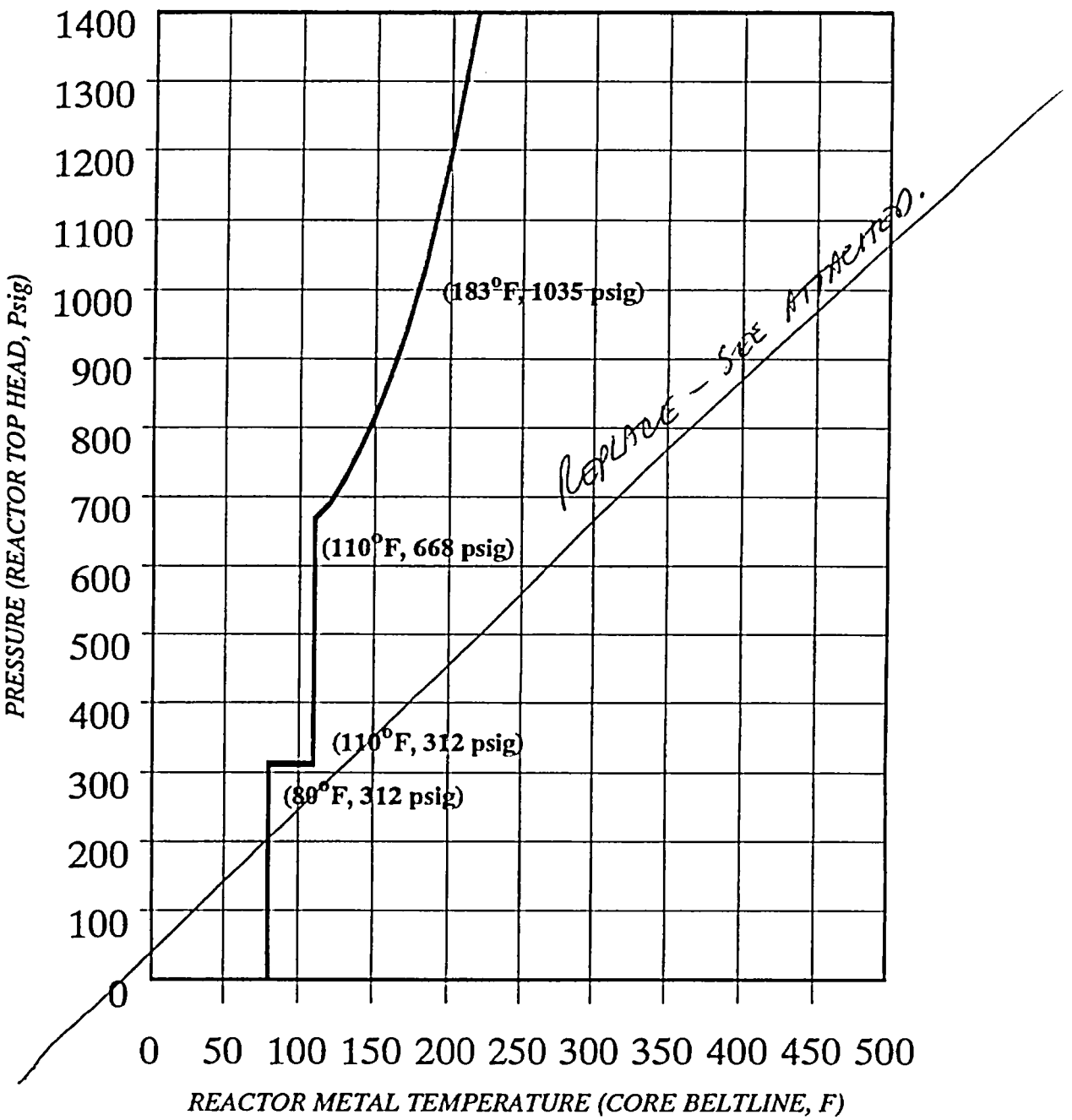


Figure 3.4.11-1 (Page 1 of 1)
Inservice Leak and Hydrostatic Testing Curve

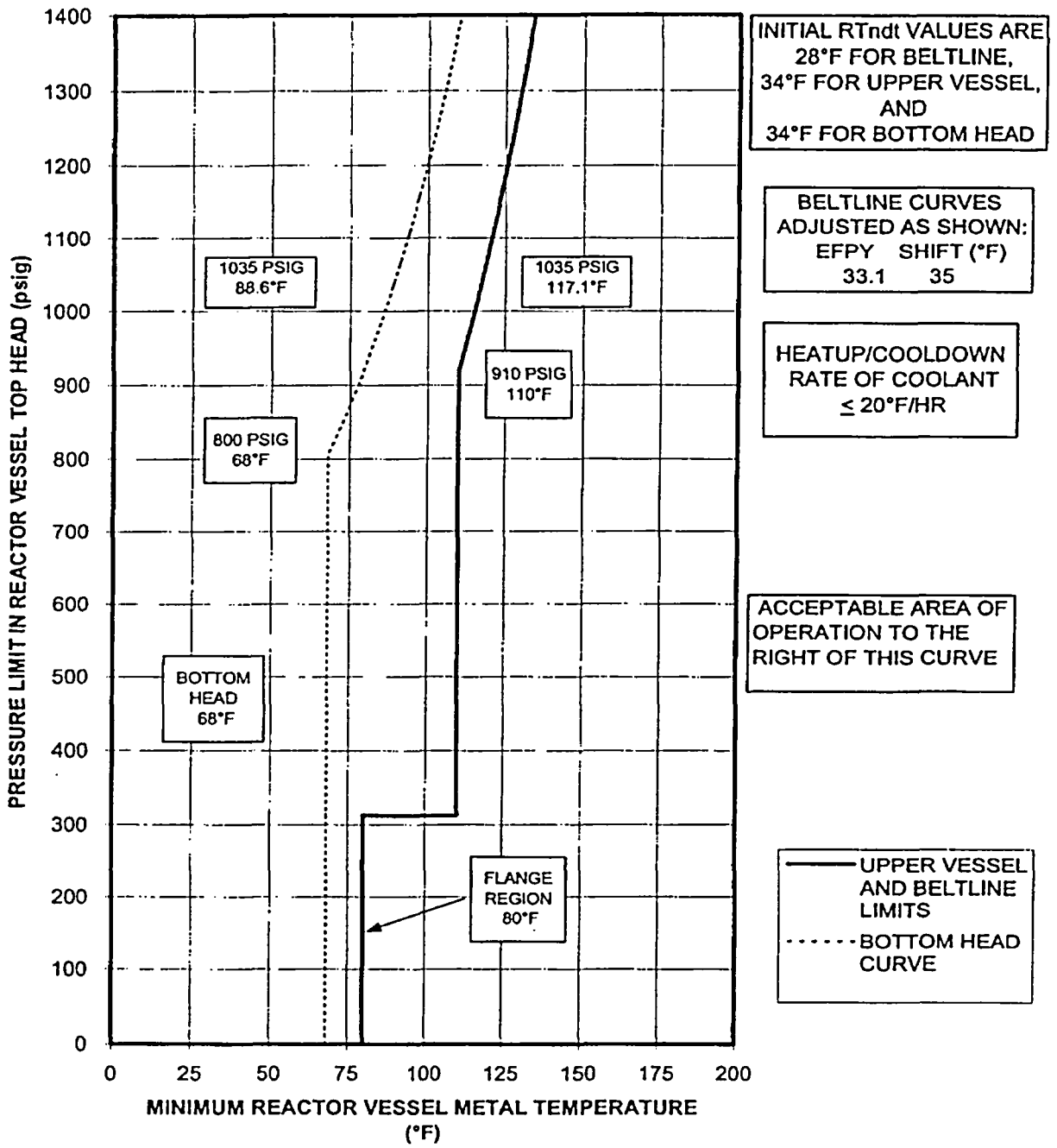


Figure 3.4.11-1 (Page 1 of 1)
Inservice Leak and Hydrostatic Testing Curve

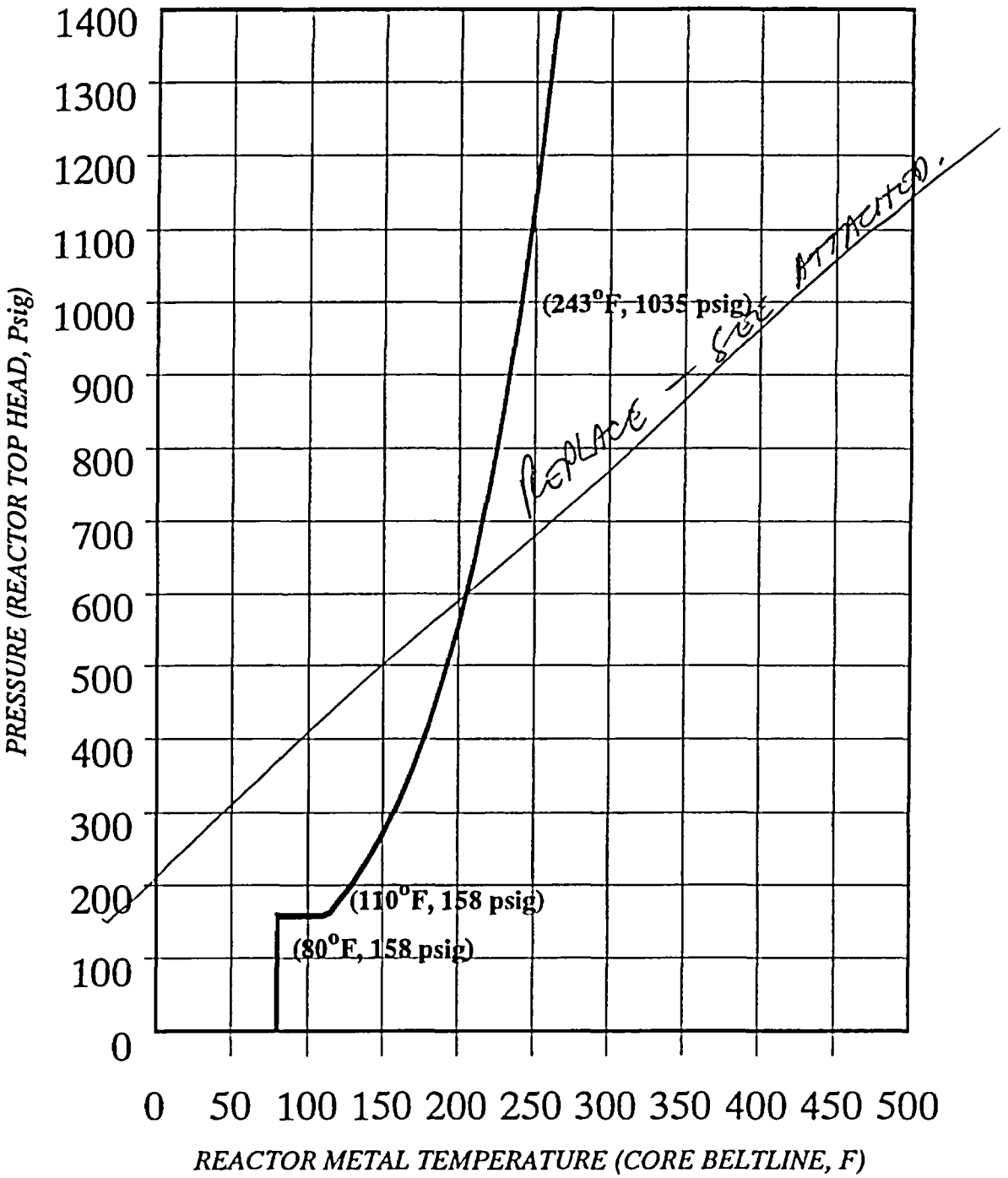


Figure 3.4.11-2 (Page 1 of 1)
Non-Nuclear Heating and Cooldown Curve

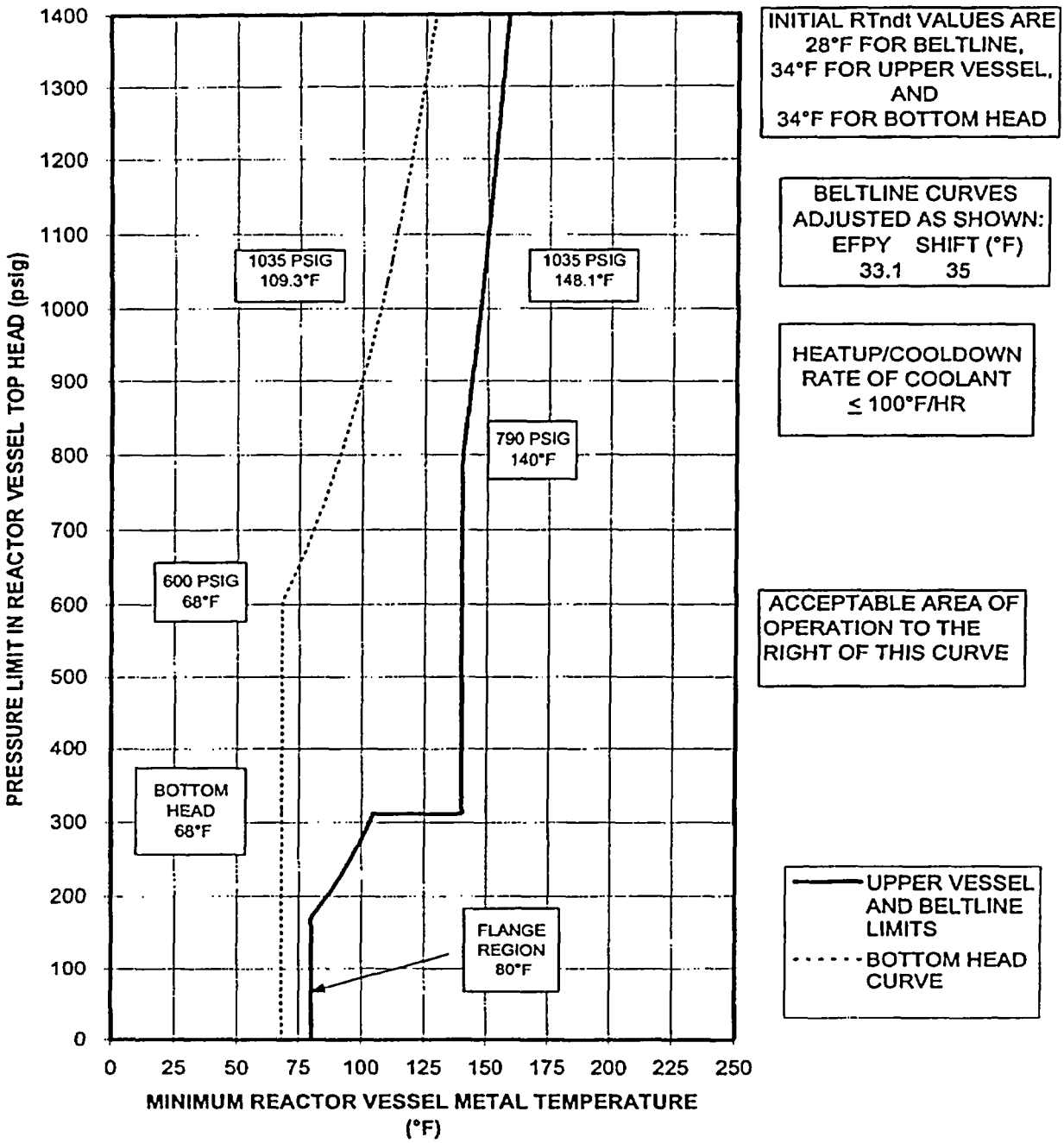


Figure 3.4.11-2 (Page 1 of 1)
Non-Nuclear Heating and Cooldown Curve

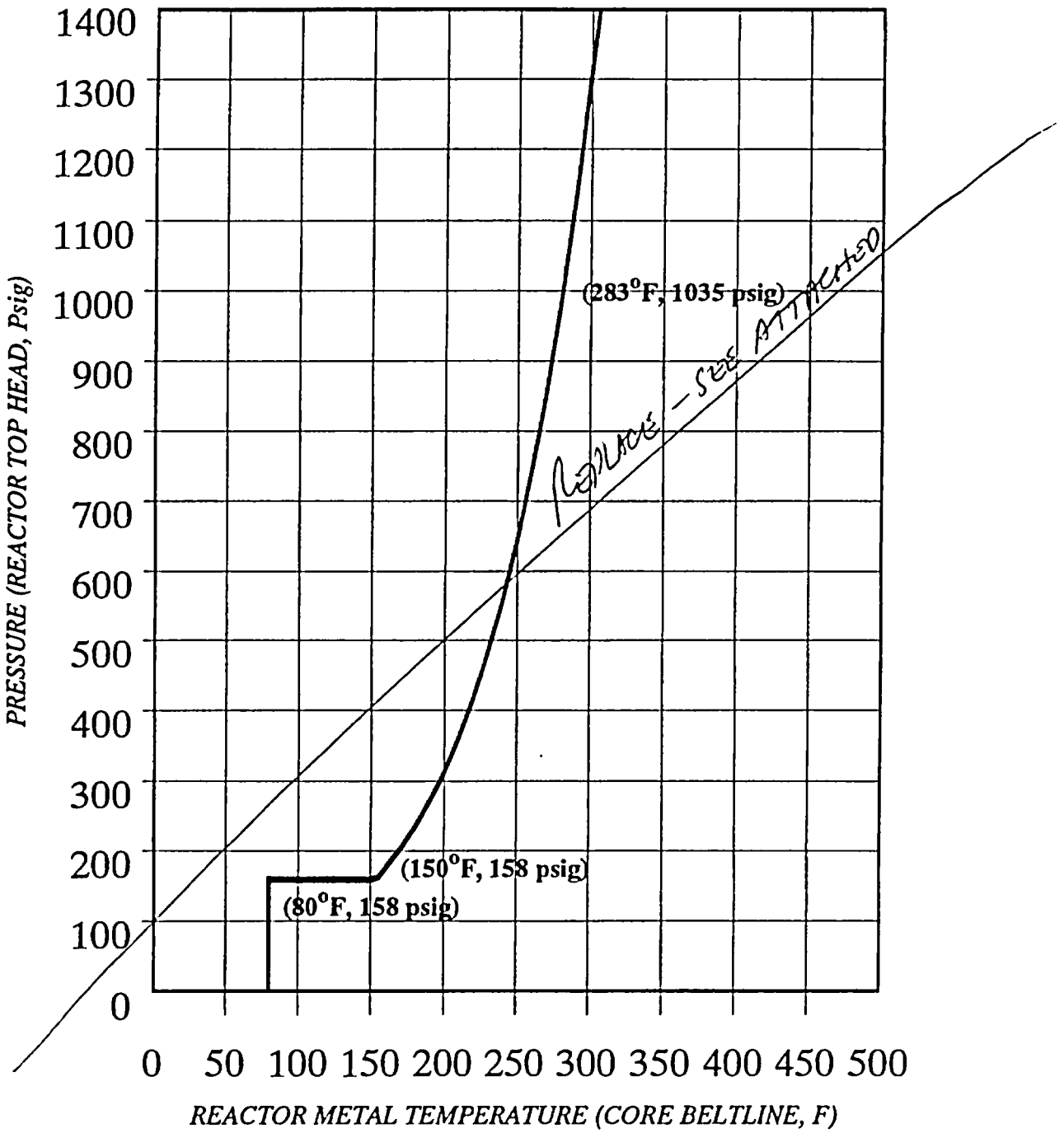


Figure 3.4.11-3 (Page 1 of 1)
Nuclear Heating and Cooldown Curve

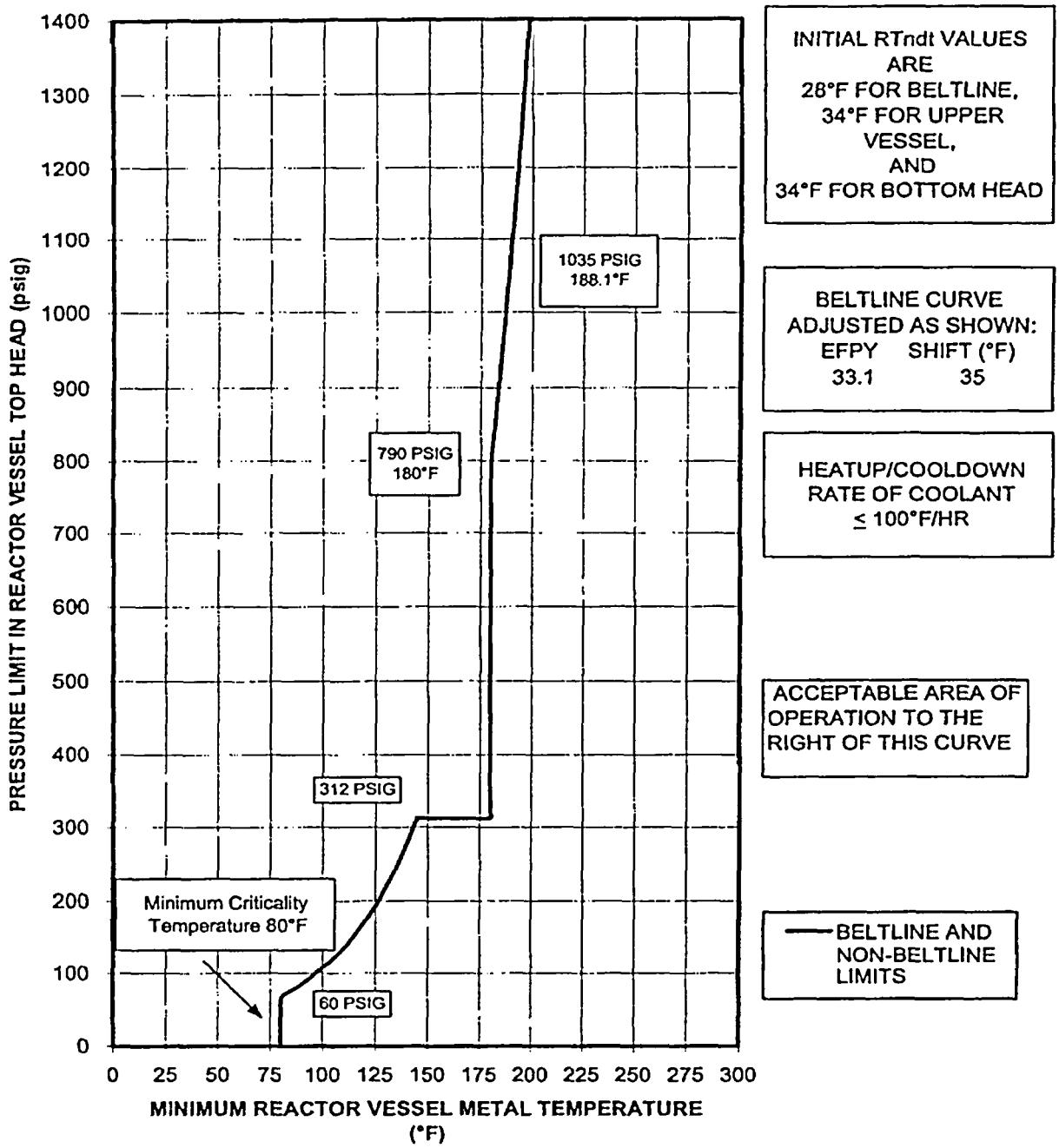


Figure 3.4.11-3 (Page 1 of 1)
Nuclear Heating and Cooldown Curve

Proposed Technical Specification Pages (typed)

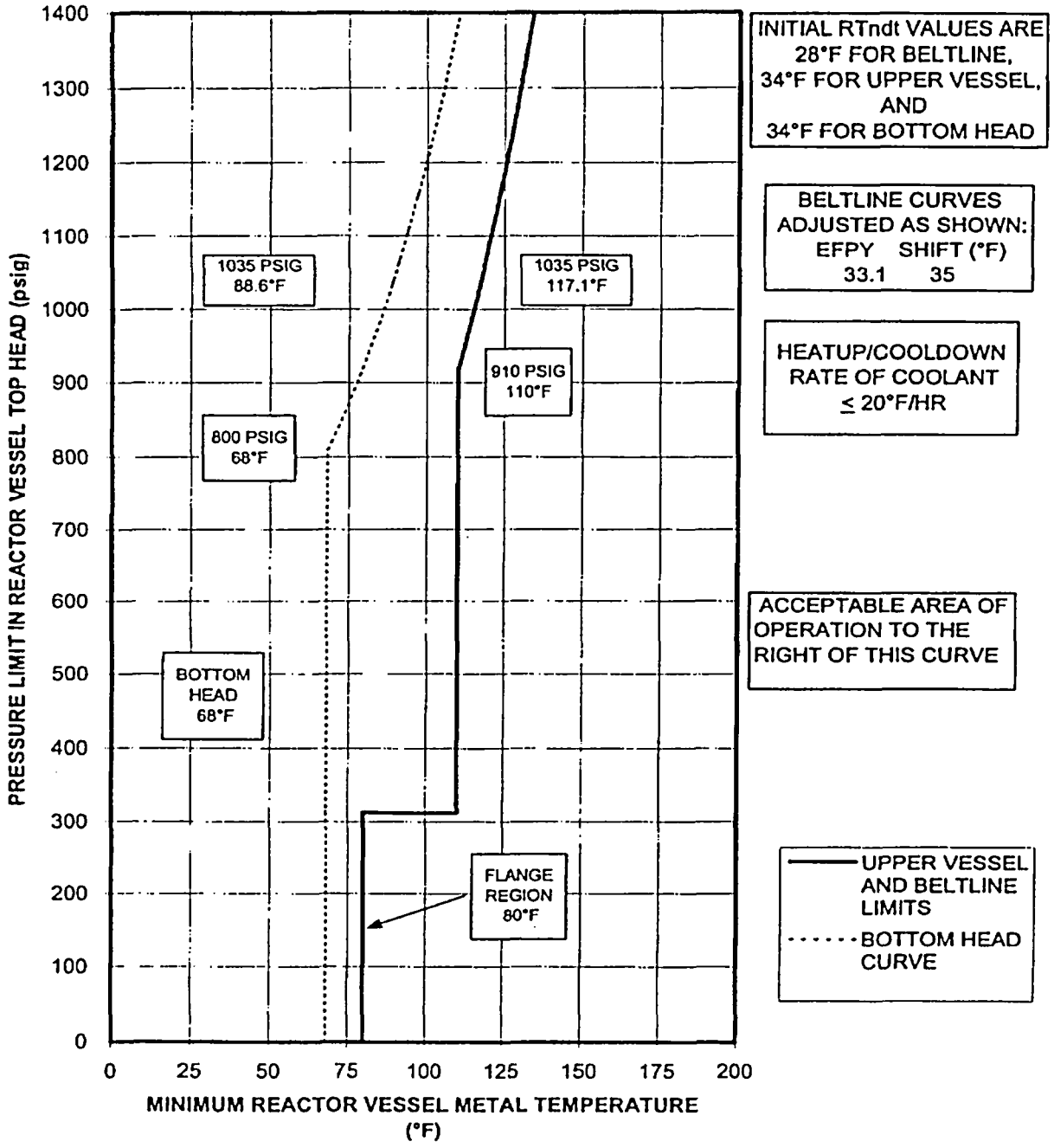


Figure 3.4.11-1 (Page 1 of 1)
Inservice Leak and Hydrostatic Testing Curve

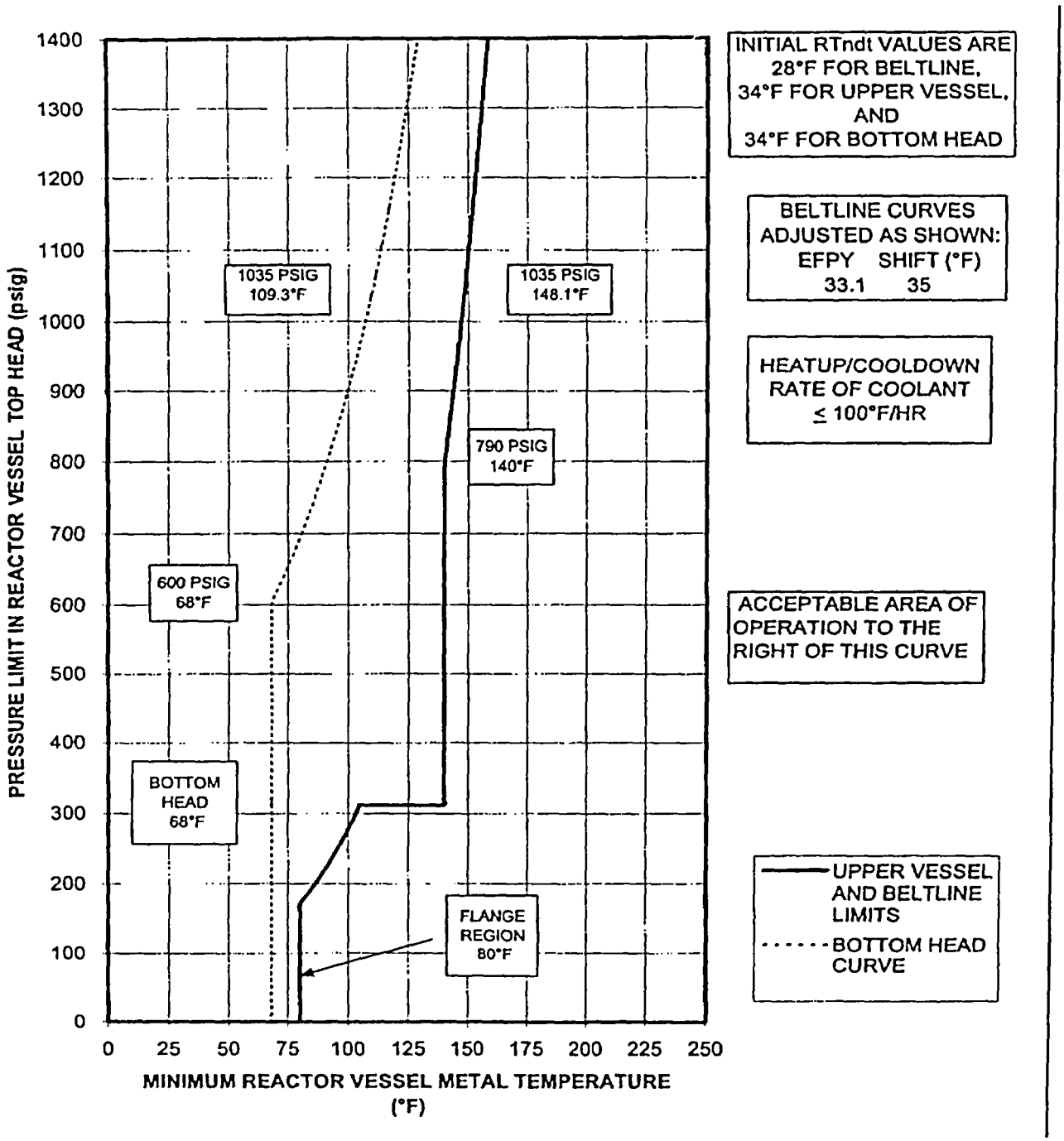


Figure 3.4.11-2 (Page 1 of 1)
Non-Nuclear Heating and Cooldown Curve

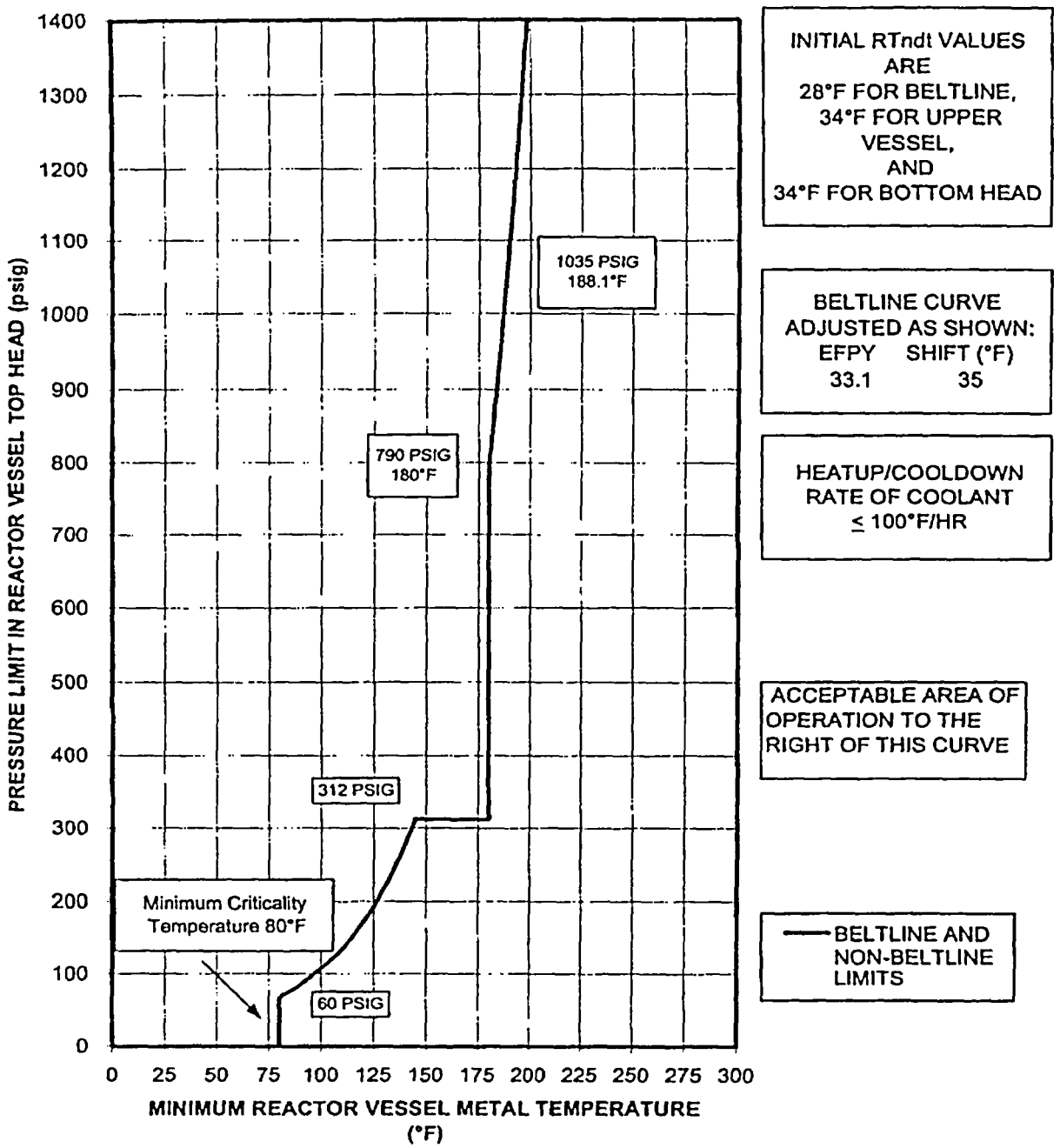


Figure 3.4.11-3 (Page 1 of 1)
Nuclear Heating and Cooldown Curve

Figure 6-1
Azimuthal Distribution of Fast Neutron Fluence at RPV Inside Surface at Core Midplane

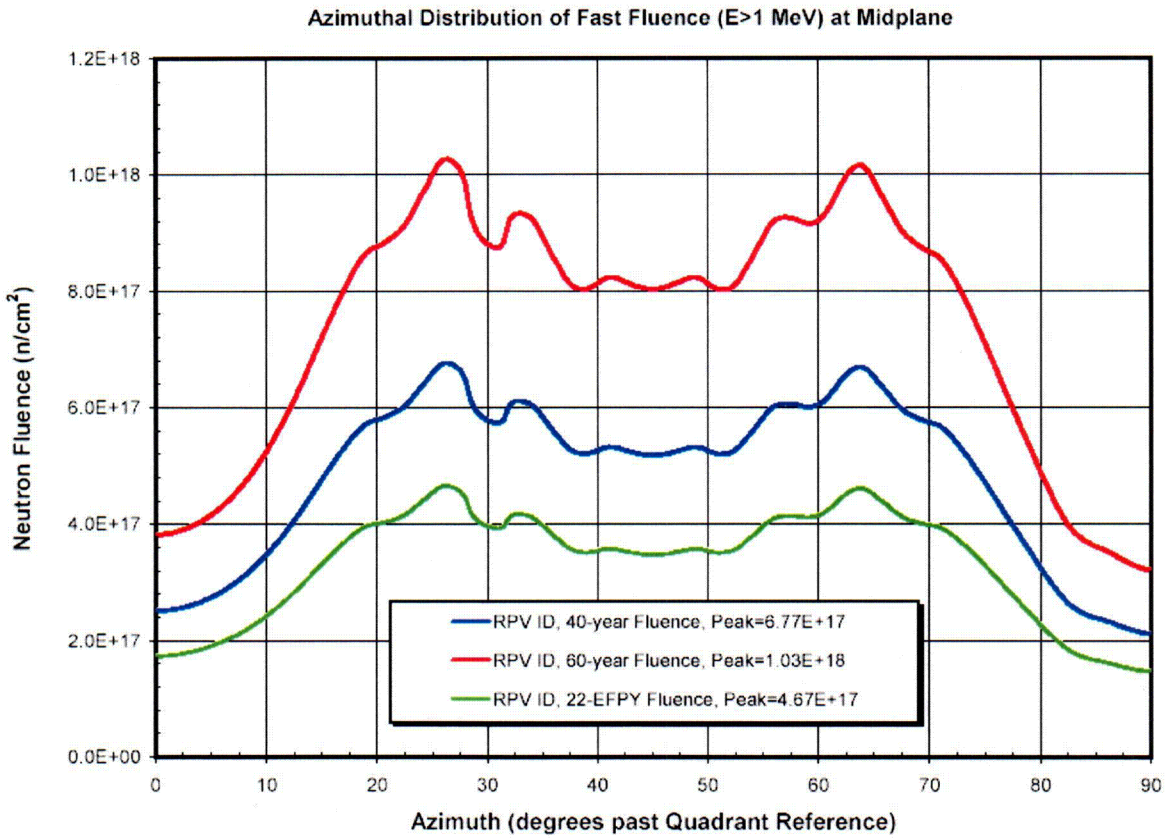
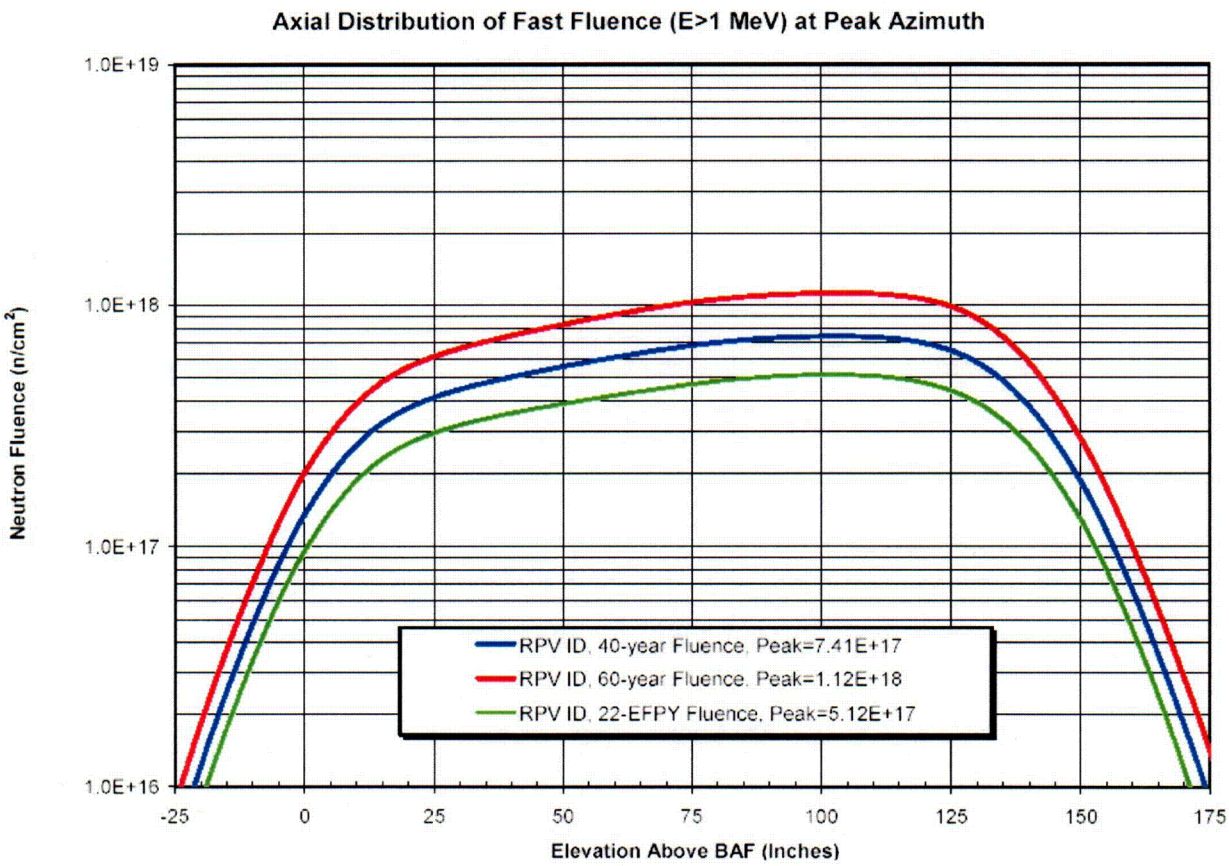


Figure 6-2
Axial Distribution of Fast Neutron Fluence at RPV Inside Surface at the Peak Azimuth



C02

LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION 3.4.11 REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE LIMITS
Attachment 7

GE Nuclear Energy Non-Proprietary Report NEDO-33144
Pressure-Temperature Curves for Energy Northwest Columbia
April 2004.