Progress Energy

Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

Ref: ITS 5.6.2.19(d)

July 15, 2003
3F0703-09

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

Subject: Crystal River Unit 3 – Pressure/Temperature Limits Report, Revision 4

Dear Sir:

Progress Energy Florida, Inc. (PEF) hereby submits the Crystal River Unit 3 Pressure/Temperature Limits Report (PTLR), Revision 4, as required by Improved Technical Specifications (ITS) 5.6.2.19(d). The changes made to the PTLR are administrative in nature. No technical information was changed. The revision number for calculation F-97-0013 was corrected to Revision 4. In addition to the corrected revision number, several minor format changes were made to the graphs on pages 6 through 10 to improve readability.

No new regulatory commitments are made in this letter.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

James H. Terry
Engineering Manager

JHT/pei

Attachment
xc: NRR Project Manager
Regional Administrator, Region II
Senior Resident Inspector

A001

Progress Energy Florida, Inc.
Crystal River Nuclear Plant
15760 W. Powerline Street
Crystal River, FL 34428

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT

Pressure/Temperature Limits Report (PTLR)
Revision 4

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1.0 Pressure/Temperature Limits (Ref.4)

This Pressure-Temperature Limits Report for CR3 has been prepared in accordance with the requirements of Technical Specification Section 1.1 and 5.6.2.19. The pressure/temperature (P/T) limits have been developed using the methodology provided in the references (Ref.1, Ref.2, Ref.3). Additional limits have been included which support the LTOP Technical Specification 3.4.11.

The following pressure-temperature limits are included in this report:

1	Allowable plant heatup and cooldown rates
2	Plant heatup P/T curve
3	Plant cooldown P/T curve
4	Plant inservice leak and hydrostatic testing P/T curve
5	LTOP P/T curves
6	Composite P/T curve

2.0 Fluence and Limiting Material Information (Ref.5)

T/4 Location	
weld	LNB to US Circ. Weld (ID 40%)
material	SA-1769
fluence	4.27E+18 n/cm2
ART	213.0 F

3/4T Location	
weld	LNB to US Circ. Weld (OD 60%)
material	WF-169-1
fluence	1.55E+18 n/cm2
ART	144.5 F

3.0 PTS Evaluation Summary (Ref.6)

Inside Surface	
weld	LNB to US Circ. Weld (ID 40%)
material	SA-1769
fluence	7.08E+18 n/cm2
RTpts	239.9 F

4.0 Instrument Uncertainties

The values referenced by this document do not include instrument uncertainties. Uncertainties must be applied based on the specific instruments being used to measure the parameters of interest.

5.0 References

1. B&W Owners Group, topical report BAW-1543A, Rev. 2, "Integrated Reactor Vessel Surveillance Program," May 1985, and Addendum 1, July 1987.
2. B&W Owners Group, topical report BAW-10046A, Rev. 2, "Methods of Compliance With Fracture Toughness and Operational Requirements of 10CFR50, Appendix G," June 1986.
3. B&W Owners Group, topical report BAW-2241P, Rev. 0, "Fluence and Uncertainty Methodologies," May 1997.
4. FTI Document 32-5001746-01, "CR-3 32 EFPY PT Limits," November 2000.
5. FTI Document 32-5000218-00, "ART for 32 EFPY for CR-3," June 1997.
6. FTI Document 32-5000303-00, "PTS Evaluation for CR3," June 1997.

ALLOWABLE HEATUP AND COOLDOWN RATES

a. For the temperature ranges specified below, the heatup rates are:

i.		T > 280°F	≤ 70°F in any 1 hour period,
ii.	280°F ≥	T > 85°F	≤ 50°F in any 1 hour period,
iii.	85°F ≥	T > 60°F	≤ 15°F in any 1 hour period

b. For the temperature ranges specified below, the cooldown rates are:

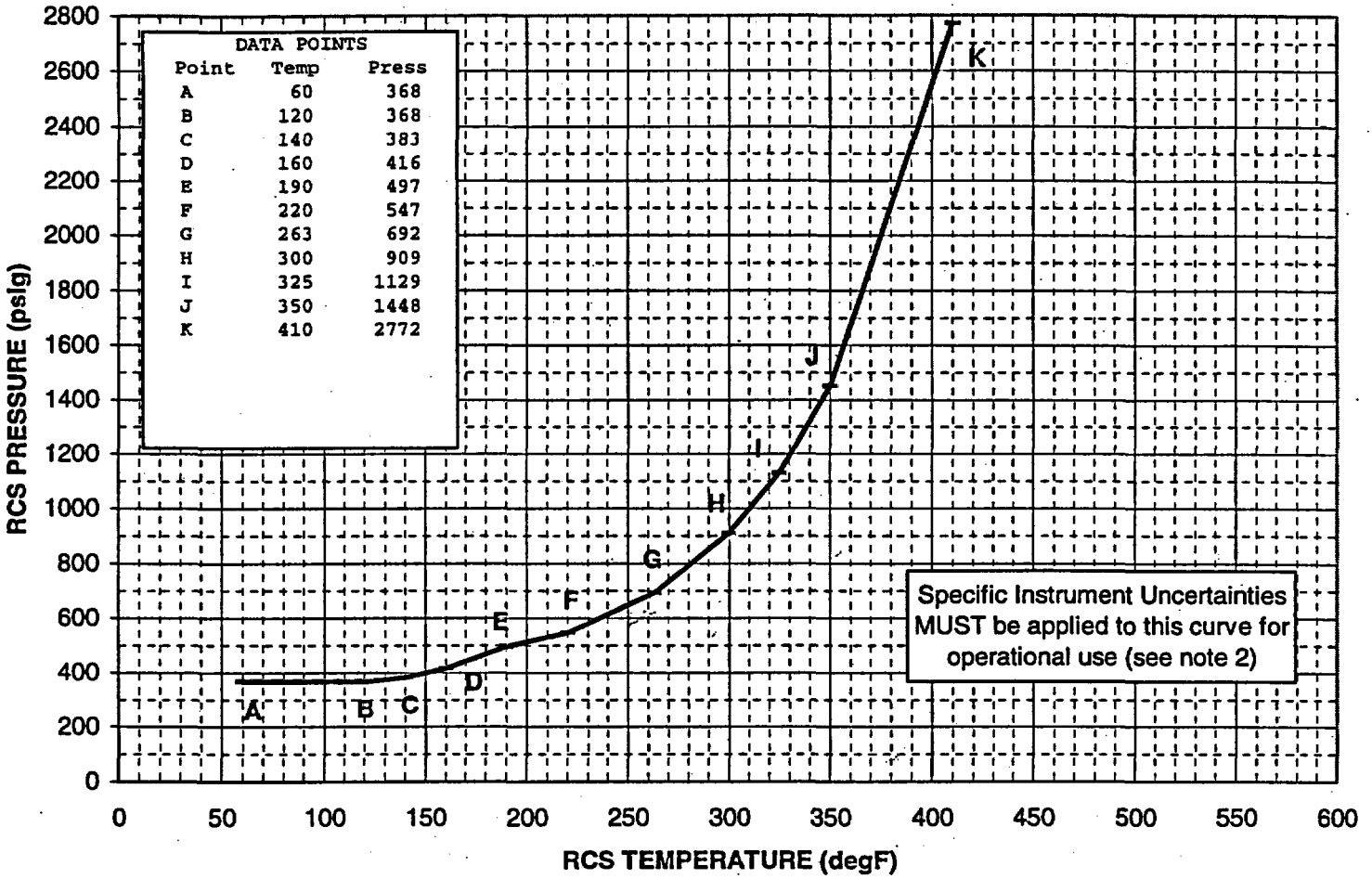
i.		T > 280°F	≤ 50°F in any 1/2 hour period,
ii.	280°F ≥	T > 150°F	≤ 25°F in any 1/2 hour period,
iii.	150°F ≥	T	≤ 25°F in any 1 hour period

and,

c. A maximum temperature change of less than or equal to 5°F in any one hour period during hydrostatic testing operations above system design pressure.

These limits are referred to by Technical Specification 3.4.3.

REACTOR COOLANT SYSTEM PRESSURE-TEMPERATURE LIMITS FOR HEATUP FOR FIRST 32 EFPY



NOTES:

1. The regions of acceptable operation are below and to the right of the limit curve.
2. Margins are included for the pressure differential between point of system pressure measurement and the pressure on the reactor vessel region controlling the limit curve. Additional margins for instrument uncertainty are not included and **must** be applied to operating procedures based on the specific instruments being used to monitor the RCS conditions.
3. Applicable for heatup rates of:

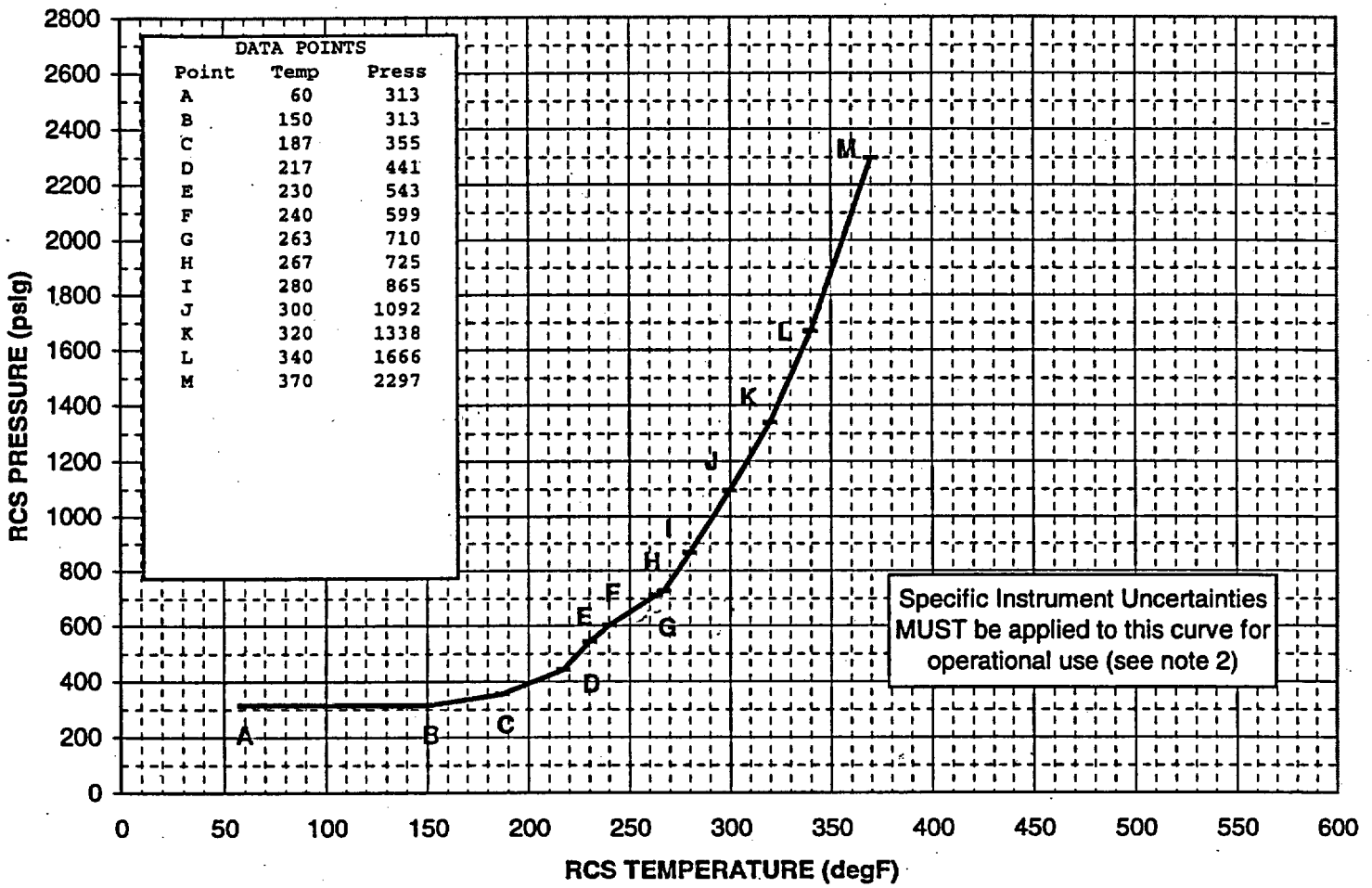
T > 280°F	≤ 70°F in any 1 hour period,
280°F ≥ T > 85°F	≤ 50°F in any 1 hour period,
85°F ≥ T > 60°F	≤ 15°F in any 1 hour period

4. RC Pump Constraints for Heatup:

T > 263°F	None,
263°F > T ≥ 220°F	No more than 3 RCPs running,
220°F > T ≥ 85°F	No more than 2 RCPs running,
85°F > T	No RCPs running

5. Minimum Temperature for Criticality is ≥ 525°F (Reference Technical Specification 3.4.2).
6. This curve referred to by Technical Specification 3.4.3

REACTOR COOLANT SYSTEM PRESSURE-TEMPERATURE LIMITS FOR COOLDOWN FOR FIRST 32 EFPY



NOTES:

1. The regions of acceptable operation are below and to the right of the limit curve.
2. Margins are included for the pressure differential between point of system pressure measurement and the pressure on the reactor vessel region controlling the limit curve. Additional margins for instrument uncertainty are not included and **must** be applied to operating procedures based on the specific instruments being used to monitor the RCS conditions.
3. Applicable for cooldown rates of:

T > 280°F	≤ 50°F in any 1/2 hour period,
280°F ≥ T > 150°F	≤ 25°F in any 1/2 hour period,
150°F ≥ T	≤ 25°F in any 1 hour period

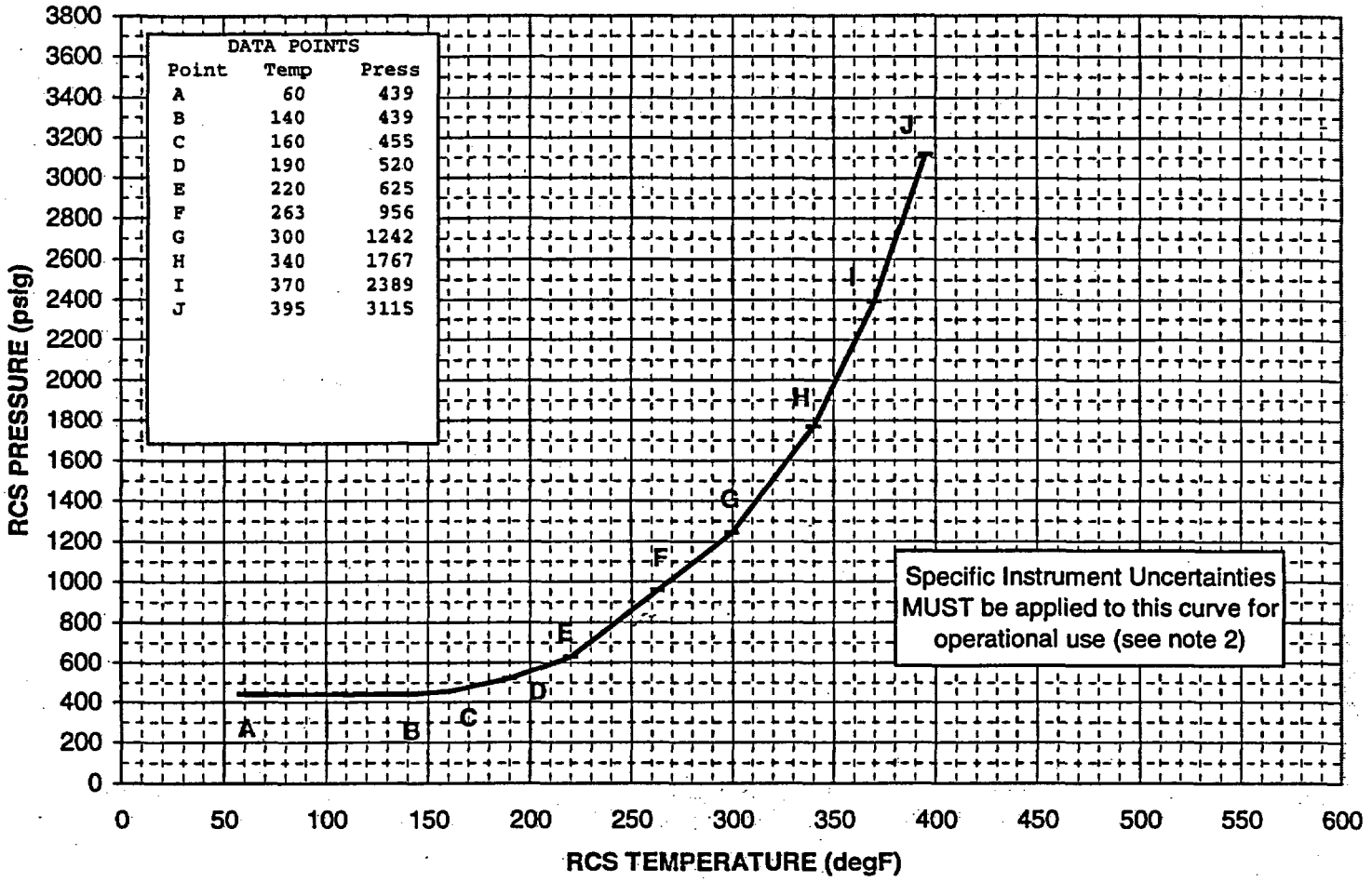
4. RC Pump Constraints for Cooldown:

T > 263°F	None,
263°F ≥ T > 90°F	No more than 2 RCPs running,
90°F ≥ T	No RCPs running

5. This curve referred to by Technical Specification 3.4.3

4

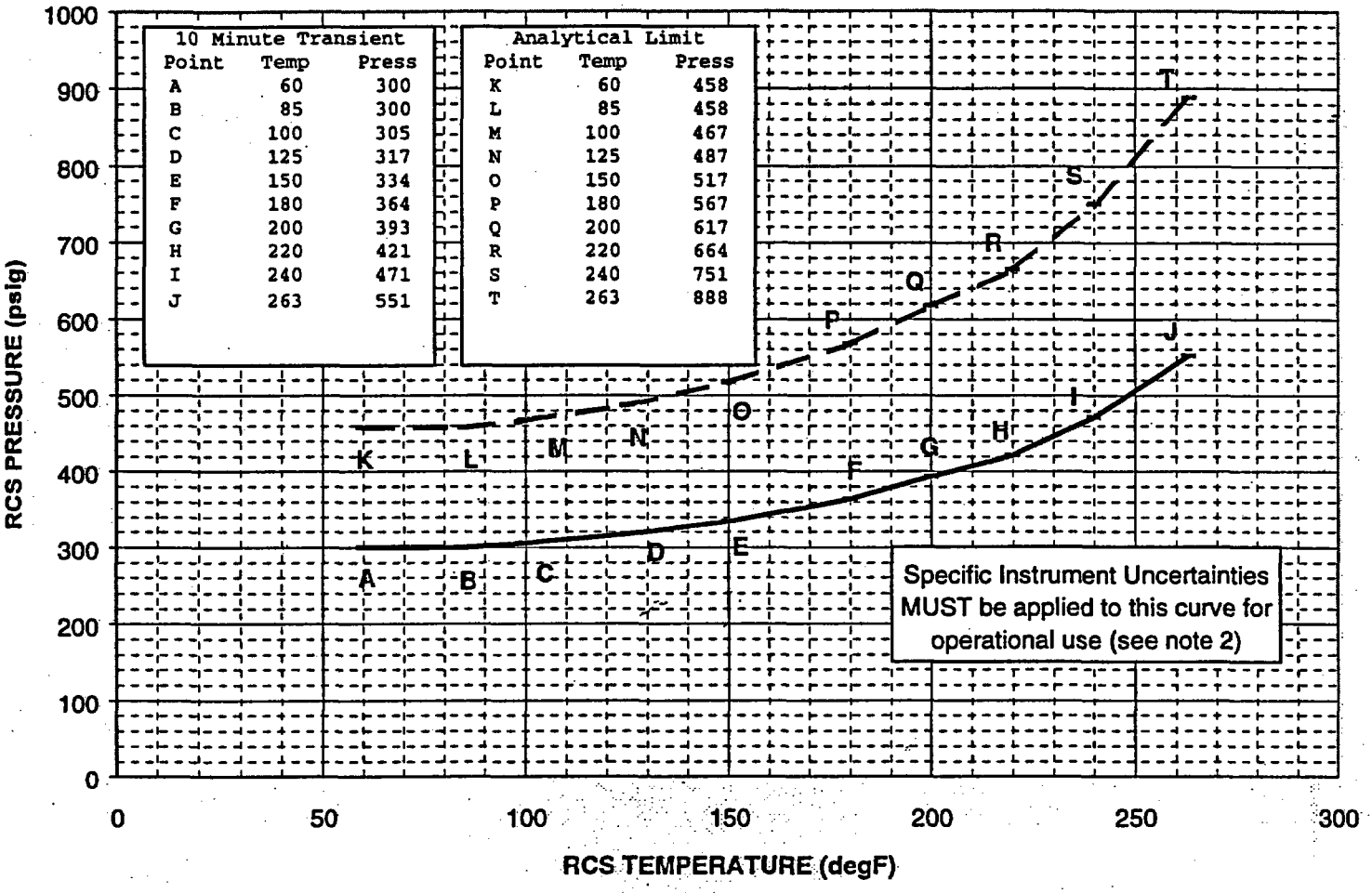
REACTOR COOLANT SYSTEM PRESSURE-TEMPERATURE LIMITS FOR INSERVICE LEAK HYDROSTATIC TESTS FOR FIRST 32 EFPY



NOTES:

1. The regions of acceptable operation are below and to the right of the limit curve.
2. Margins are included for the pressure differential between point of system pressure measurement and the pressure on the reactor vessel region controlling the limit curve. Additional margins for instrument uncertainty are not included and must be applied to operating procedures based on the specific instruments being used to monitor the RCS conditions.
3. Normal heatup and cooldown restrictions should be used with this curve as applicable.
4. This curve referred to by Technical Specification 3.4.3

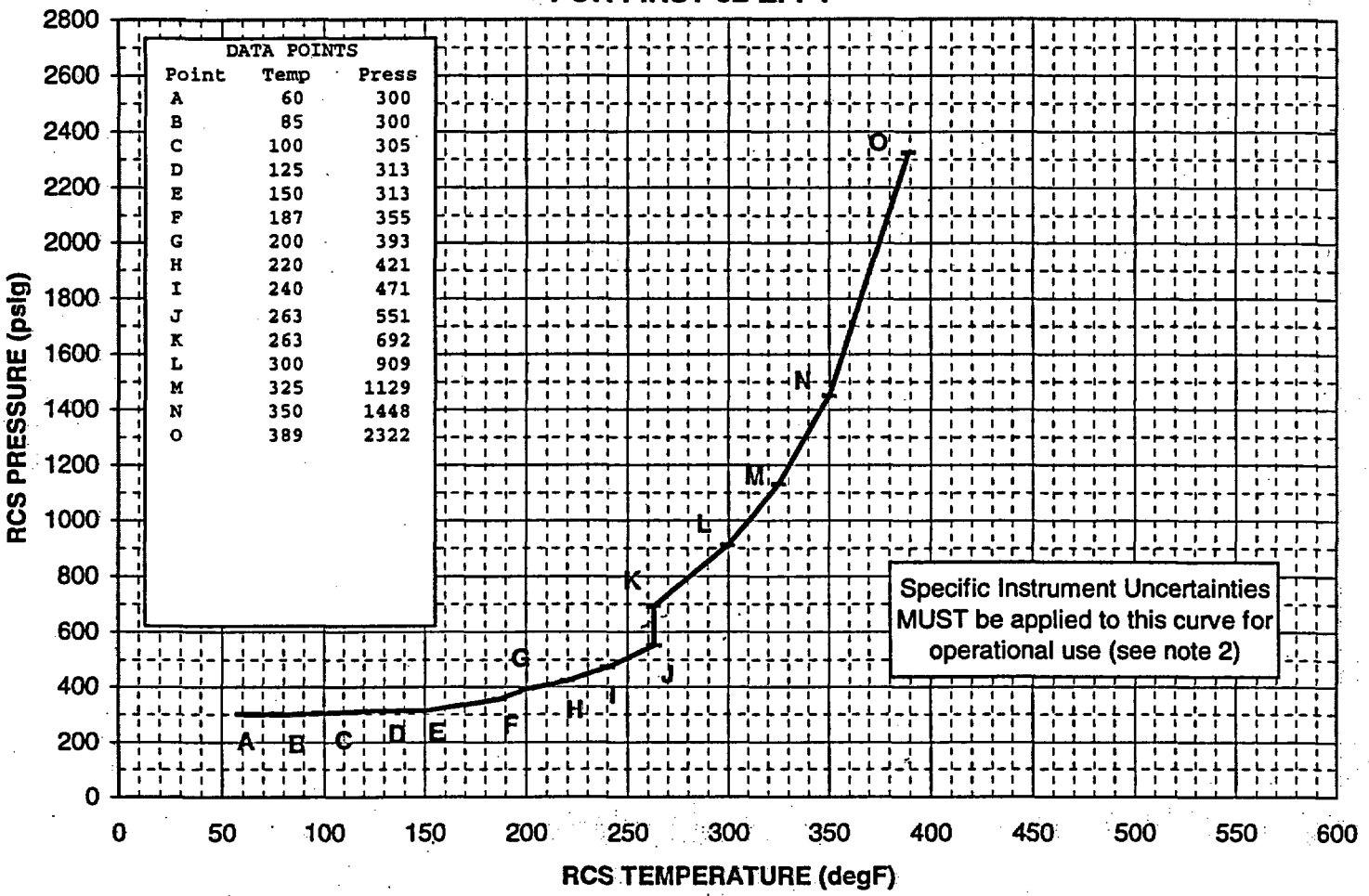
REACTOR COOLANT SYSTEM
LOW-TEMPERATURE OVERPRESSURE PROTECTION LIMITS
FOR FIRST 32 EFPY



NOTES:

1. The regions of acceptable operation are below and to the right of the limit curve.
2. Margins are included for the pressure differential between point of system pressure measurement and the pressure on the reactor vessel region controlling the limit curve. Additional margins for instrument uncertainty are not included and **must** be applied to operating procedures and Technical Specification Limits based on the specific instruments being used to monitor the RCS conditions.
3. The LTOP curve applies to operation below the enable temperature of 263°F.
4. The LTOP 10 Minute Transient Curve is established based on at least 10 minutes of operation of the limiting transient without exceeding the LTOP Analytical Limits with an initial pressurizer level of 160 in.
5. The PORV setpoint is established to protect the LTOP Analytical Limit Curve.
6. This curve referred to by Technical Specification 3.4.3.

REACTOR COOLANT SYSTEM
COMPOSITE PRESSURE-TEMPERATURE LIMITS
FOR FIRST 32 EFPY



NOTES:

1. The regions of acceptable operation are below and to the right of the limit curve.
2. Margins are included for the pressure differential between point of system pressure measurement and the pressure on the reactor vessel region controlling the limit curve. Additional margins for instrument uncertainty are not included and **must** be applied to operating procedures and Technical Specification Limits based on the specific instruments being used to monitor the RCS conditions.
3. Normal heatup, cooldown, and LTOP restrictions should be used with this curve as applicable.
4. The COMPOSITE curve applies to heatup, cooldown, ISLH, and LTOP.
5. This curve envelopes the heatup, cooldown, ISLH, and LTOP curves referred to by Technical Specification 3.4.3.