FPL Energy
Seabrook Station

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May 29, 2003

Docket No. 50-443

NYN-03040

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

Reference: NYN-02093, Seabrook Station License Amendment Request 02-04, "Revision To Technical Specifications Associated with Pressure/Temperature Curves and Low Temperature Over Pressure Protection Limits," dated October 11, 2002.

Seabrook Station
Response to Request for Additional Information for License Amendment Request 02-04
"Revision To Technical Specifications Associated with Pressure Temperature Curves
and Low Temperature Over Pressure Protection Limits"

Enclosed is the response to a request for additional information in support of License Amendment Request (LAR) 02-04. The additional information supports the justification in the Framatome Cold Overpressure Mitigating System (COMS) Setpoint Development Methodology for performing the mass addition event analysis assuming flow from a single centrifugal charging pump. This response also provides, as requested, the corresponding stress intensity factor ($K_{It}$) and temperature gradient values for each "20 EFPY P-T" data point given in Tables 15 and 16 of Topical Report WCAP-15745.

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Regulatory Programs Manager, at (603) 773-7194.

Very truly yours,
FPL Energy Seabrook, LLC.

Mark E. Warner
Site Vice President

A001

Oath and Affirmation:

I, Mark E. Warner, Site Vice President of FPL Energy Seabrook, LLC hereby affirm that the aforementioned additional information and statements to support License Amendment Request 02-04 are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Mark E. Warner
Site Vice President

Sworn and Subscribed
before me this
29 day of May, 2003

cc:

H. J. Miller, NRC Region 1 Administrator
V. Nerses, NRC Project Manager, Project Directorate I-2
G. T. Dentel, NRC Senior Resident Inspector

Mr. Donald Bliss, Director
New Hampshire Office of Emergency Management
State Office Park South
107 Pleasant Street
Concord, NH 03301

MICHAEL D. O'KEEFE
MY COMMISSION EXPIRES FEB. 5, 2008
NOTARY PUBLIC
NEW HAMPSHIRE

**ENCLOSURE TO NYN-03040**

**Seabrook Station**
**Response to Request for Additional Information for License Amendment Request 02-04**
**"Revision To Technical Specifications Associated with Pressure Temperature Curves and Low Temperature Over Pressure Protection Limits"**

**NRC Request 1:** Provide a justification on the acceptability of having two Centrifugal Charging Pumps (CCPs) capable of injecting into the RCS during pump swaps in Modes 4, 5, and 6.

**FPLE Seabrook Response to Request 1:** Technical Specification 3.1.2.3, Reactivity Control Systems – Boration Systems - Charging Pumps – Shutdown, was revised by Amendment 74 to Facility Operating License No. NPF-86[1] to allow an additional charging pump to be made capable of injecting under administrative control for up to one hour during pump swap operation, except during RCS water-solid operation. This provision is similar to what was approved by the Nuclear Regulatory Commission (NRC) in Technical Specification Task Force (TSTF) –285. The provision is acceptable because being able to swap operating pumps without loss of flow reduces stress on piping and reduces the potential for degradation of reactor coolant pump seals. Additionally, it is unlikely that an overpressure event will occur while under administrative control in the time permitted by the Technical Specifications." The changes proposed in LAR 02-04 do not invalidate the provisions previously approved in Amendment 74.

**NRC Request 2:** The proposed 20 effective full power years (EFPY) pressure-temperature (P-T) limit curves are based on the methods of Code Case N-641, "Alternative Pressure-Temperature Relationship and Low Temperature Overpressure Protection System Requirements, Section XI, Division 1." The latest editions of ASME Section XI, Appendix G, endorsed by reference in 10 CFR 50.55a allow for use of plant specific $K_{It}$ and temperature gradient values as acceptable inputs for the calculation of P-T limits for operating reactors. For each "32 [20] EFPY P-T limit" data point given in Tables 9-1 and 9-2 [15 and 16] of Topical Report WCAP-15047 [15745], provide the corresponding $K_{It}$ and temperature gradient values (i.e., the DT values between the temperatures for RCS coolant and those at the ¼T and ¾T thickness locations of the RV) that were used for calculation of the data point.

Note: Bracketed information [ ] reflects the Seabrook specific table numbers and WCAP.

**FPLE Seabrook Response to Request 2:** Refer to the following Tables 1 and 2 for the stress intensity factor ($K_{It}$) and temperature gradient values that were used for each data point. Table 1 contains the ¼T and ¾T location temperatures and $K_{It}$ values for the maximum heatup rate curve (100°F/hr). Table 2 contains the ¼T location temperatures and $K_{It}$ values for the maximum cooldown rate curve (100°F/hr). Note that the Cooldown is only limited at the ¼T location, thus the ¾T values are not supplied. The heatup curves could be limited at both the ¼T and ¾T locations, depending on the temperature.

[1] North Atlantic letter NYN-00058 dated June 20, 2000, Seabrook Station License Amendment Request 00-01, Revision 1, "Enhancements to Technical Specifications Addressing Reduced Inventory Conditions"; NRC letter dated September 11, 2000, "Seabrook Station, Unit No. 1 – Issuance of Amendment Re: Enhancements to Technical Specifications to Provide Flexibility of Operation (TAC No. MA8272)

Table 1: Kit Values for 100°F/hr Heatup Curve (20 EFPY)

| Water Temp (°F) | Vessel Temperature @ 1/4T Location for 100°F/hr Heatup (°F) | 1/4T Thermal Stress Intensity Factor (KSI SQ. RT. IN.) | Vessel Temperature @ 3/4T Location for 100°F/hr Heatup (°F) | 3/4T Thermal Stress Intensity Factor (KSI SQ. RT. IN.) |
|---|---|---|---|---|
| Steady State is limiting @ T = 60°F, Remaining Temperatures are limiting by the 3/4T Location | | | | |
| 65 | 58.6 | -2.4527 | 55.3 | 1.4376 |
| 70 | 61.6 | -3.7136 | 56.0 | 2.4259 |
| 75 | 64.9 | -4.9121 | 57.1 | 3.3570 |
| 80 | 68.4 | -5.9484 | 58.6 | 4.1917 |
| 85 | 72.1 | -6.8957 | 60.6 | 4.9397 |
| 90 | 75.9 | -7.7187 | 62.9 | 5.6022 |
| 95 | 79.9 | -8.4708 | 65.4 | 6.1958 |
| 100 | 84.0 | -9.1295 | 68.3 | 6.7232 |
| 105 | 88.1 | -9.7286 | 71.3 | 7.1945 |
| 110 | 92.4 | -10.2561 | 74.6 | 7.6153 |
| 115 | 96.7 | -10.7377 | 78.1 | 7.9942 |
| 120 | 101.1 | -11.1644 | 81.7 | 8.3345 |
| 125 | 105.6 | -11.5552 | 85.4 | 8.6415 |
| 130 | 110.1 | -11.9029 | 89.3 | 8.9183 |
| 135 | 114.6 | -12.2227 | 93.3 | 9.1691 |
| 140 | 119.2 | -12.5087 | 97.4 | 9.3963 |
| 145 | 123.9 | -12.7732 | 101.6 | 9.6032 |
| 150 | 128.5 | -13.0109 | 105.8 | 9.7917 |
| 155 | 133.2 | -13.2322 | 110.1 | 9.9643 |
| 160 | 138.0 | -13.4323 | 114.5 | 10.1225 |
| 165 | 142.7 | -13.6197 | 118.9 | 10.2683 |
| 170 | 147.5 | -13.7903 | 123.4 | 10.4028 |
| 175 | 152.3 | -13.9514 | 127.9 | 10.5277 |
| 180 | 157.1 | -14.0989 | 132.5 | 10.6437 |
| 185 | 161.9 | -14.2392 | 137.1 | 10.7522 |
| 190 | 166.7 | -14.3688 | 141.7 | 10.8537 |
| 195 | 171.5 | -14.4928 | 146.3 | 10.9492 |
| 200 | 176.4 | -14.6082 | 151.0 | 11.0394 |
| 205 | 181.2 | -14.7196 | 155.6 | 11.1249 |
| 210 | 186.1 | -14.8239 | 160.3 | 11.2061 |
| 215 | 190.9 | -14.9253 | 165.0 | 11.2837 |
| 220 | 195.8 | -15.0209 | 169.8 | 11.3580 |

**Table 2: Kit Values for 100°F/hr Cooldown Curve (20 EFPY)**

| Water Temp (°F) | Vessel Temperature @ 1/4T Location for 100°F/hr Cooldown (°F) | 100°F/hr Cooldown 1/4T Thermal Stress Intensity Factor (KSI SQ. RT. IN.) |
|---|---|---|
| 185 | 211.6 | 16.8211 |
| 180 | 206.6 | 16.7520 |
| 175 | 201.5 | 16.6823 |
| 170 | 196.4 | 16.6130 |
| 165 | 191.3 | 16.5432 |
| 160 | 186.2 | 16.4738 |
| 155 | 181.1 | 16.4039 |
| 150 | 176.0 | 16.3346 |
| 145 | 170.9 | 16.2648 |
| 140 | 165.9 | 16.1955 |
| 135 | 160.8 | 16.1258 |
| 130 | 155.7 | 16.0566 |
| 125 | 150.6 | 15.9870 |
| 120 | 145.5 | 15.9179 |
| 115 | 140.4 | 15.8486 |
| 110 | 135.3 | 15.7797 |
| 105 | 130.2 | 15.7105 |
| 100 | 125.2 | 15.6419 |
| 95 | 120.1 | 15.5730 |
| 90 | 115.0 | 15.5045 |
| 85 | 109.9 | 15.4359 |
| 80 | 104.8 | 15.3677 |
| 75 | 99.7 | 15.2993 |
| 70 | 94.6 | 15.2314 |
| 65 | 89.5 | 15.1633 |
| 60 | 84.5 | 15.0949 |

**NOTE: All Cooldown Rates are limited by the Steady State Condition**

- **Vessel Radius to the ¼T and ¾T Locations are as follows:**

  **1/4T Radius = 88.818" &**

  **3/4T Radius = 93.133"**