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September 23, 1985
Fort St. Vrain
Unit No. 1
P-85333

Regional Administrator
Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Attn: Mr. Dorwin Hunter

Docket No. 50-267

SUBJECT: Low Power Operation of FSV

REFERENCE: 1) PSC Letter Warembourg to Hunter dated August 30, 1985 (P-85302)

2) PSC Letter Warembourg to Hunter dated September 10, 1985 (P-85312)

3) PSC Letter Warembourg to Hunter dated September 11, 1985 (P-85317)

Dear Mr. Hunter:

In the follow-up low power operation letter of September 10, 1985, (Reference 2) PSC provided predicted fuel/PCRV liner temperatures as a result of a design basis event from 8% power and subsequent reactor cooling utilizing the liner cooling system (see response to Question 4, Attachment 1, P-85312). The information presented was based on leaving the PCRV at pressure (340 psig) as this represented the worst case condition for heat flux to the PCRV liner.

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As a supplement to these calculations, and recognizing that PSC would depressurize the PCRV following an LOFC, additional calculations with the PCRV depressurized have been performed. The results of these calculations, as shown in Table 1, confirm our original position that leaving the PCRV pressurized represents the worst case for the PCRV liner.

The peak and average fuel temperatures increased for the depressurized versus pressurized conditions, as would be expected, but remain well below the fuel damage threshold of 2900 degrees Fahrenheit.

The controlling liner temperature parameter is improved in the depressurized case versus the pressurized case (approximately 35 hours to reach 400 degrees Fahrenheit liner temperature depressurized versus approximately 20 hours to reach 400 degrees Fahrenheit liner temperature pressurized).

The follow-on calculations confirm our original contention that the pressurized condition represents the worst case scenario. There are no changes to our previous conclusions that adequate time is available to manually establish PCRV liner cooling including depressurization.

Operating procedures have been developed on the basis of depressurizing the PCRV.

This information is being submitted to clarify the temperatures for both the pressurized and depressurized conditions. If you have any question or require any additional information please contact M. H. Holmes at (303) 571-8409.

Very truly yours,

D. W. Warembourg

D. W. Warembourg, Manager
Nuclear Engineering Division

DWW:pa

Attachment

TABLE 1

FORT ST. VRAIN STATION
TEMPERATURES OF FUEL/LINER FOLLOWING
AN LOFC DESIGN BASIS EVENT FROM 8% POWER
UTILIZING LINER COOLING

PARAMETER	PCRV PRESSURIZED ONE LINER COOLING LOOP	PCRV DEPRESSURIZED ONE LINER COOLING LOOP
Peak Fuel Temperature	938 degrees Fahrenheit at 30 hours decreasing thereafter	1281 degrees Fahrenheit at 100 hours (still increasing at 0.26 degrees Fahrenheit per hour)
Core Average Temperature	726 degrees Fahrenheit at 55 hours	836 degrees Fahrenheit at 100 hours (still increasing at 0.5 degrees Fahrenheit per hour)
Liner Temperature	140 degrees Fahrenheit	129 degrees Fahrenheit

PARAMETER	PCRV PRESSURIZED NO LINER COOLING	PCRV DEPRESSURIZED NO LINER COOLING
Fuel Temperature	1034 degrees Fahrenheit at 100 hours (still increasing at 0.5 degrees Fahrenheit per hour)	1332 degrees Fahrenheit at 100 hours (still increasing at 1 degree Fahrenheit per hour)
Core Average Temperature	850 degrees Fahrenheit at 100 hours	963 degrees Fahrenheit at 100 hours (still increasing at 1.75 degrees Fahrenheit per hour)
Liner Temperature	400 degrees Fahrenheit at 20 hours	400 degrees Fahrenheit at 35 hours