71-9253

Department of Energy

Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, Tennessee 37831—

October 2, 2001

Ms. Nancy Osgood
U. S. Nuclear Regulatory Commission
Spent Fuel Project Office
One White Flint North
11555 Rockville Pike
Washington, DC 20555

Dear Ms. Osgood:

TN-FSV SAFETY ANALYSIS REPORT SUPPLEMENTAL INFORMATION

In accordance with recent conversations the Department of Energy (DOE) has enclosed the changes requested.

The DOE trusts that the enclosed submittal will provide the Nuclear Regulatory Commission with the information needed to complete the review of our application. The DOE appreciates your timely efforts to maintain the current schedule for this important project.

If there are any questions, please contact me at (865) 241-6182.

Sincerely,

Brian DeMonia
Spent Nuclear Fuel
Program Manager

Enclosure

cc w/o enclosure:
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Table 2-8 Summary of Normal Condition Stress Analysis for the Standoffs, Tie Rods, Flux Traps, and Fuel Compartments

Component	Applied Load	Stress Category	Stress Intensity (ksi.)	Allowable Stress (ksi.)
Standoffs	Maximum Preload (Normal conditions)	Compression	10.88	45.00
		Buckling	10.88	28.04
Tie Rods	Maximum Preload (Normal conditions)	Stress Intensity	27.04	45.00
Flux Traps	16 *g* End drop (Normal conditions)	Compression	2.52	20.00
		Buckling	2.52	10.67
Fuel Compartment	16 *g* End drop (Normal conditions)	Compression	1.04	20.00
		Buckling	1.04	5.87
	20 *g* Side drop (Normal conditions)	Bending	0.83	20.00

Compressive Stress in Standoffs due to Tie Rod Nut Preload

The cross sectional area of a single standoff is,

$$A = \pi/4 \times (0.875^2 - 0.5625^2) = 0.3528 \text{ in.}^2$$

Therefore, the maximum compressive stress, σ_{pn}, generated in the standoffs by the maximum tie rod nut preload is,

$$\sigma_{pn} = \frac{F_a}{A} = \frac{3{,}840}{0.3528} = 10{,}884 \text{ psi.} < 45{,}000 \text{ psi. } \ldots \text{ o.k.}$$

Tensile Stress in Tie Rods due to Tie Rod Nut Preload

The critical cross sectional area of the tie rod is located in the thread region, and is, $A_t = 0.142$ in^2.

Therefore the maximum tensile stress, σ_{pn}, generated in the tie rods by the maximum tie rod nut preload is,

$$\sigma_{pn} = \frac{F_a}{A} = \frac{3{,}840}{0.142} = 27{,}042 \text{ psi.} < 45{,}000 \text{ psi. } \ldots \text{ o.k.}$$

Summary of Calculated and Allowable Stress in TN-FSV Container Flux Traps, Tie Rods				
Component	**Applied Load**	**Stress Category**	**Stress Intensity (ksi.)**	**Allowable Stress (ksi.)**
Flux Traps	16 g End drop (Normal conditions)	Compression	2.52	20.00
		Buckling	2.52	10.67
	60 g End drop (Accident conditions)	Compression	9.46	47.95
		Buckling	9.46	21.33
Flux Trap Welds	16 g End drop (Normal conditions)	Compression	4.98	20.00
	60 g End drop (Accident conditions)	Compression	18.67	47.95
Flux Trap Bottom Plate	16 g End drop (Normal conditions)	Bending	0.16	30.00
	60 g End drop (Accident conditions)	Bending	0.59	68.50
Tie Rods	Maximum Preload (Normal conditions)	Stress Intensity	27.04	45.00
	60° Corner drop (Accident conditions)	Stress Intensity	92.89	135.00