



Westinghouse Electric Corporation

Power Systems

PWR Systems Division

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NS-TMA-2399

February 20, 1981

Mr. James R. Miller, Chief
Standardization and Special Projects Branch
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Miller:

This letter transmits data requested by Mr. J. C. Voglewede of the Core Performance Branch. These data are provided on a non-proprietary basis for use in the form proposed in the attachment as sample problem input. The value of the measured fission gas release, details of subsequent testing and the actual fuel rod identity are Westinghouse proprietary information and may not be supplied on a non-proprietary basis.

Very truly yours,

f T. M. Anderson, Manager
Nuclear Safety Department

CJR:kk
Enclosure

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SERVICES

To: S/1

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Rod Reference Identification = RJL

Rod Parameters

Fuel Column Length = 7.083 ft.
 Plenum Length = 15.86 in.
 Initial Diametral Gap Size = 6.3 mils
 Net Plenum Volume = 1.44 in³
 Net Rod Void Volume = 1.96 in³
 Fill Gas = Helium
 Fill Gas Pressure = 450 psia

Pellet Parameters

Pellet OD = 0.3669 in.
 Pellet Length = 0.6043 in.
 Pellet Dish Depth = 0.0135 in.
 Pellet Dish Spherical Radius = 0.66 in.
 % Dish Volume in Pellet Volume = 1.17%
 Pellet Sintering Temperature = 1550°C
 Pellet Sintering Time = 3 hours
 Grain Size = 9.3 μ
 Pellet Density = 94.22 % T.D.
 Pellet O.D. Surface Roughness ≤ 125 μ in AA
 Enrichment = 6%

Cladding Parameters

Cladding Material = Zr-4 CWSR
 Clad OD = 0.4230 in.
 Clad ID = 0.3732 in.
 Clad ID Surface Roughness ≤ 70 μ in AA

System and Irradiation Parameters

Coolant Pressure = 1090 psia
 Coolant Mass Flow Rate = 1.79×10^6 lb/hr-ft²
 Coolant Inlet Temperature = 533°F
 Channel Equivalent Hydraulic Diameter = 1.0123 in.
 Fast Flux >1 Mev = kw/ft x 0.554×10^{13} , nvt
 Fast Fluence >1 Mev = Burnup x 0.948×10^{17} , nvt
 Average Core Temperature Rise = 50°F

Power History - Rod RJL

<u>Time Step No.</u>	<u>Time (hrs)</u>	<u>ΔT (hrs)</u>	<u>Rod Avg. Power (kw/ft)</u>	<u>Axial Power Shape</u>
1	0	-	-	1
2	936	936	2.04	1
3	1296	360	3.93	1
4	1656	360	5.78	1
5	1728	72	7.42	2
6	2944	1216	4.01	3
7	3960	1016	4.28	3
8	4200	240	5.79	3
9	5562	1362	7.03	3
10	7152	1590	7.39	4
11	7728	576	7.95	4
12	8832	1104	5.34	5
13	9611	779	6.36	4
14	10020	409	7.25	5
15	11316	1296	7.77	5
16	11772	456	6.91	5
17	12036	264	7.77	5
18	12204	168	2.84	5
19	12372	168	5.93	5
20	16722	4350	7.77	5
21	17274	552	6.94	6
22	17331	57	8.81	6
23	17514	183	8.76	7
24	17970	456	9.47	7
25	18114	144	4.57	7
26	18570	456	9.47	7
27	19314	744	9.94	7
28	19386	72	4.97	7
29	19687	301	10.15	7
30	23540	3853	9.56	8
31	23864	324	3.87	9
32	24171	307	5.38	9
33	24779	608	7.11	9
34	24995	216	7.78	9
35	25667	672	9.07	9
36	25859	192	8.43	9
37	26359	500	8.93	9
38	27332	973	8.77	9
39	28082	750	8.51	10
40	28832	750	8.46	10
41	29582	750	8.37	10
42	30332	750	8.27	10
43	31072	740	8.03	10
44	31252	180	5.30	10
45	31492	240	7.89	10
46	31672	180	5.21	10
47	32012	340	7.89	10

Axial Power Shapes For Rod RJL

Axial	Station (Inch)	Normalized Axial Power Shape (Bottom to Top)									
		1	2	3	4	5	6	7	8	9	10
1	2.834	.2852	.4019	.4320	.4766	.6009	.7001	.6887	.7534	.5742	.7581
2	8.501	.5197	.6979	.7028	.7608	.8818	.8782	.9255	.9420	.7737	.9584
3	14.168	.7183	.9215	.8810	.9296	1.0046	.9553	1.0095	1.0373	.9145	1.0352
4	19.835	.8623	1.0380	.9492	.9605	.9886	.9733	1.0117	1.0022	.9602	1.0036
5	25.502	1.0841	1.2452	1.1009	1.0691	1.0714	1.0291	1.0663	1.0793	1.0891	1.0682
6	31.170	1.2030	1.3198	1.1483	1.0826	1.0614	1.0440	1.0663	1.0712	1.1323	1.0646
7	36.837	1.2040	1.2634	1.0961	1.0150	.9764	1.0343	1.0304	.9853	1.0849	.9953
8	42.504	1.3035	1.3064	1.1613	1.0703	1.0170	1.0565	1.0451	1.0132	1.1384	1.0308
9	48.171	1.3405	1.2852	1.1877	1.0997	1.0399	1.0590	1.0462	1.0222	1.1524	1.6466
10	53.838	1.2935	1.1782	1.1592	1.0830	1.0183	1.0511	1.0264	.9901	1.1104	1.0206
11	59.506	1.2784	1.1280	1.1755	1.1332	1.0609	1.0784	1.0527	1.0423	1.1312	1.0210
12	65.173	1.2051	1.0263	1.1477	1.1491	1.0870	1.0715	1.0478	1.0505	1.1005	1.0261
13	70.840	1.0664	.8860	1.0632	1.1108	1.0790	1.0495	1.0184	1.0136	1.0203	.9999
14	76.507	.9070	.7304	.9625	1.0718	1.0798	1.0311	1.0035	1.0098	.9508	.9913
15	82.174	.7290	.5719	.8286	.9880	1.0330	.9886	.9611	.9877	.8666	.9705