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TEST DESIGN DESCRIPTION AND POSTIRRADIATION EXAMINATION OF THE HT9 ADVANCED DRIVER FUEL TEST (X430)

by

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ABSTRACT

The HT9 Advanced Driver Fuel Test, subassembly X430 (later reconstituted into X430A and X430B), was initiated to obtain fuel performance data for a fuel element design similar to that envisioned for a PRISM-type advanced liquid metal reactor. HT9 cladding of 0.290-in. diameter and 13.5-in. long fuel slugs of 0.225-in. diameter were employed. Irradiation in EBR-II was performed to peak burnups of 12.0 at.% for U-10Zr, 11.9 at.% for U-19Pu-10Zr, and 6.6 at.% for both U-22Pu-10Zr and U-26Pu-10Zr fueled elements. This report contains the X430 test design description and the results of the postirradiation examinations performed to date; a calculated thermal history for the test is also included. Measurements of axial fuel swelling, cladding diametral strain, and fission gas release indicate that the performance of these larger-diameter, higher-Pu fuel elements is consistent with previous data for smaller-diameter, lower-Pu fuel, such as subassembly X425.

I. TEST OBJECTIVES

The lead HT9-clad metallic fuel test (subassembly X425) irradiated in EBR-II contained 0.173-in. diameter U-10Zr, U-8Pu-10Zr and U-19Pu-10Zr slugs. To extend the results of that test to larger slug diameters and higher Pu contents, the HT9 Advanced Driver Fuel Test (subassembly X430) was initiated. The X430 slug diameter of 0.225 in. is similar to those proposed for the SAFR and PRISM reactors at the time of the initiation of the test. The test was designed to provide beginning-of-life (BOL) linear heat generation rates and peak cladding temperatures representative of PRISM fuel elements.

II. TEST DESCRIPTION

Subassembly X430 contained 37 elements (28 U-10Zr and nine U-19Pu-10Zr) in a modified D-37 subassembly. X430 was irradiated to a peak burnup of 5.4 at.% and removed for interim examination. The subassembly was reconstituted into X430A, at which time four U-22Pu-10Zr elements and five U-26Pu-10Zr elements were included, replacing eight U-10Zr elements and two U-19Pu-10Zr elements. Because no performance data was available at the time for the U-22Pu-10Zr and U-26Pu-10Zr fuel elements, the experimenters wished to obtain initial data (FCCI information in particular) at conservative (i.e., less severe) operating conditions; therefore, those elements with higher Pu contents were placed in the outer row of subassembly X430A, where they would experience relatively low cladding temperatures. X430A was irradiated to a peak burnup of 7.5 at.% and removed for interim examination. After the interim examination of X430A elements, the U-22Pu-10Zr and U-26Pu-10Zr elements, then at ~2.3 at.% burnup, were placed in the center three rows of subassembly X430B.

The nominal design parameters for the X430, X430A, and X430B fuel elements and the target BOL irradiation conditions are summarized in Tables I and II. Tables III, IV, and V list the as-cast fuel slug chemistry, masses, isotopic compositions and dimensions for each element. Included in the listing of elements is the grid position of

each element for the subassemblies in which it was irradiated as well as its burnup prior to that cycle.

TABLE I. Nominal Design Parameters for X430, X430A, X430B Fuel Elements and Subassembly

Fuel Compositions:	U-10Zr U-19Pu-10Zr U-22Pu-10Zr U-26Pu-10Zr
Cladding Material:	HT9
Fuel Slug O.D.:	0.225 in.
As-cast Fuel Length	13.5 in.
Cladding I.D.:	0.258 in.
Cladding O.D.:	0.290 in.
Fuel Element Length:	29.75 in.
Plenum vol/Fuel vol.:	1.4
Smeared Fuel Density:	75%
Wire Wrap Diameter:	0.056 in.
Wire Pitch:	6 in.
Bond Na Fill Above Fuel:	0.25 in.
EBR-II Subassembly Type:	modified D-37
Hex Duct Material:	12% CW 316SS
Orifice:	
drawing no.	EB-1-51167-B
description	1 hole, sharp-edged, centered
dimension	0.6875 ± 0.002 in. dia.

TABLE II. Design Beginning-of-Life Irradiation Conditions for X430*

Subassembly Power	582 kW
Subassembly Flow	56.5 gpm
Peak Element Linear Power	15 kW/ft
Peak Fuel Temperature**	770°C
Peak Cladding Temperature**	563°C

*Actual values are reported in the next section.
**PRISM[1] nominal values.

III. IRRADIATION HISTORY

Spanning a time from May 1987 to October 1992, subassemblies X430, X430A and X430B were irradiated sequentially in EBR-II. The EBR-II run information and subassembly conditions obtained from postrun calculations is summarized for the relevant runs. Thermal analyses of X430, X430A, and X430B were performed on a run-by-run basis to provide a continuous history of the operating conditions for these subassemblies throughout their lifetimes. An overview of these thermal histories is provided.

TABLE III. Chemical Analyses for X430 Casting Batches

Batch I.D.	X430-E-IC001 (#1)			X430-E-IC003 (#3)			X430-E-IC004 (#4)		
Type	U-10Zr			U-10Zr			U-10Zr		
Location	Top	Center	Bottom	Top	Center	Bottom	Top	Center	Bottom
Total U	91.38	91.3	89.49	71.37	71.44	70.76	71.57	71.20	71.63
U-234	0.398	0.397	0.399	0.231	0.231	0.231	0.230	0.231	0.232
U-235	42.39	42.4	42.39	24.44	24.43	24.50	24.38	24.46	24.40
U-236	0.179	0.178	0.18	0.113	0.113	0.114	0.113	0.112	0.115
U-238	57.03	57.03	57.03	75.22	75.23	75.16	75.27	75.20	75.26
Total Pu	-	-	-	18.96	18.95	18.81	19.13	19.08	19.19
Pu-239	-	-	-	81.06	81.06	81.01	81.04	81.08	81.06
Pu-240	-	-	-	17.28	17.30	17.33	17.31	17.28	17.31
Pu-241	-	-	-	1.26	1.24	1.26	1.25	1.25	1.24
Pu-242	-	-	-	0.40	0.40	0.40	0.40	0.40	0.40
Zr	9.12	8.84	10.73	10.53	10.16	11.17	10.79	9.34	10.94
Si (ppm)		121			129			148	
Al (ppm)		330			180			50	
Cu (ppm)		<20			<20			28	
Cr (ppm)		<20			<20			<20	
Co (ppm)		<20			<20			<20	
Ni (ppm)		<20			<20			170	
Fe (ppm)		176			100			170	
Mn (ppm)		<20			<20			<20	
density (g/cc)		15.9937			15.7404			15.8547	

Batch I.D.	X430-E-IC005 (#5)			X430-E-IC007 (#7)			X430-E-IC008 (#8)		
Type	U-10Zr			U-10Zr			U-10Zr		
Location	Top	Center	Bottom	Top	Center	Bottom	Top	Center	Bottom
Total U	68.42	68.30	68.19	64.62	64.88	64.30	91.00	90.43	90.66
U-234	0.199	0.197	0.196	0.145	0.154	0.146	0.395	0.398	0.397
U-235	20.98	20.93	20.97	15.57	15.52	15.58	42.29	42.27	42.32
U-236	0.091	0.090	0.090	0.067	0.072	0.069	0.179	0.181	0.179
U-238	78.73	78.78	78.74	84.22	84.26	84.21	57.14	57.15	57.10
Total Pu	22.20	22.02	22.10	25.88	25.88	26.11	-	-	-
Pu-239	80.91	80.88	80.88	80.87	80.89	80.88	-	-	-
Pu-240	17.46	17.48	17.49	17.50	17.48	17.49	-	-	-
Pu-241	1.22	1.24	1.23	1.24	1.23	1.24	-	-	-
Pu-242	0.40	0.40	0.40	0.40	0.40	0.40	-	-	-
Zr	9.70	10.24	10.57	9.60	10.13	10.06	9.67	10.05	9.04
Si (ppm)		122			248			148	
Al (ppm)		100			80			86	
Cu (ppm)		39			<20			<20	
Cr (ppm)		21			26			<20	
Co (ppm)		<20			<20			<20	
Ni (ppm)		228			<20			26	
Fe (ppm)		254			150			120	
Mn (ppm)		<20			<20			<20	
density (g/cc)		15.7008			15.7162			15.7475	

TABLE III. (Contd.)

Batch I.D.	X430-E-IC009 (#9)			X430-E-IC010 (#10)			X430-E-IC011 (#11)		
Type	U-10Zr			U-10Zr			U-10Zr		
Location	Top	Center	Bottom	Top	Center	Bottom	Top	Center	Bottom
Total U	89.95	90.25	89.95	64.73	64.92	64.91	68.12	68.72	67.78
U-234	0.401	0.395	0.402	0.149	0.145	0.145	0.198	0.198	0.198
U-235	42.46	42.41	42.45	15.42	15.47	15.45	20.92	20.88	20.96
U-236	0.178	0.178	0.182	0.069	0.067	0.067	0.101	0.100	0.099
U-238	56.96	57.02	56.96	84.36	84.32	84.34	78.78	78.82	78.74
Total Pu	-	-	-	26.02	26.13	25.36	21.93	22.06	21.78
Pu-239	-	-	-	80.92	80.84	80.84	81.07	81.07	81.04
Pu-240	-	-	-	17.44	17.45	17.47	17.29	17.29	17.32
Pu-241	-	-	-	1.24	1.31	1.29	1.24	1.25	1.25
Pu-242	-	-	-	0.40	0.40	0.40	0.39	0.39	0.39
Zr	10.30	10.26	10.22	10.04	9.78	9.52	10.26	9.81	10.34
Si (ppm)		204			176			79	
Al (ppm)		150			35			30	
Cu (ppm)		<20			<20			<20	
Cr (ppm)		21			<20			<20	
Co (ppm)		<20			<20			<20	
Ni (ppm)		42			<20			79	
Fe (ppm)		170			61			144	
Mn (ppm)		<20			<20			<20	
density (g/cc)		15.6820			15.8909			15.8177	

Batch I.D.	X430-E-IC012 (#12)			X430-E-IC013 (#13)			X430-E-IC014 (#14)		
Type	U-10Zr			U-10Zr			U-10Zr		
Location	Top	Center	Bottom	Top	Center	Bottom	Top	Center	Bottom
Total U	89.45	90.04	90.14	90.00	90.30	90.23	90.24	90.90	89.60
U-234	0.395	0.398	0.397	0.391	0.396	0.396	0.397	0.396	0.397
U-235	42.27	42.28	42.23	42.44	42.45	42.40	42.39	42.37	42.34
U-236	0.178	0.178	0.178	0.174	0.177	0.180	0.180	0.180	0.180
U-238	57.16	57.15	57.20	56.99	56.98	57.03	57.03	57.05	57.08
Total Pu	-	-	-	-	-	-	-	-	-
Pu-239	-	-	-	-	-	-	-	-	-
Pu-240	-	-	-	-	-	-	-	-	-
Pu-241	-	-	-	-	-	-	-	-	-
Pu-242	-	-	-	-	-	-	-	-	-
Zr	9.06	9.71	9.90	10.41	10.15	10.01	9.32	8.48	9.79
Si (ppm)		248			188			190	
Al (ppm)		<20			<20			74	
Cu (ppm)		<20			<20			<20	
Cr (ppm)		<20			<20			31	
Co (ppm)		<20			<20			<20	
Ni (ppm)		21			<20			89	
Fe (ppm)		48			91			135	
Mn (ppm)		<20			<20			<20	
density (g/cc)		15.8989			15.6907			15.8621	

TABLE IV. As-built Information for Elements from X430, X430A, and X430B

Jacket ID	Description	Slug Length (in.)	Avg. Slug Dia. (in.)	Element Mass (g)	Na Mass (g)	Xe Tag Gas Vol. (cc)	Slug Mass (g)	Uranium (g)	Pu (g)	Zr (g)
T651	U-10Zr	13.563	0.2252	213.86	2.887	1.37	139.95	125.91	0.00	14.04
T652	U-19Pu-10Zr	13.564	0.2247	212.56	2.922	1.58	138.94	98.58	26.40	13.96
T653	U-19Pu-10Zr	13.557	0.2234	211.16	3.022	1.65	137.35	97.45	26.10	13.80
T654	U-19Pu-10Zr	13.558	0.2237	211.36	3.002	1.84	137.78	97.75	26.18	13.85
T655	U-19Pu-10Zr	13.509	0.2245	211.34	2.931	1.63	137.61	97.63	26.15	13.83
T656	U-19Pu-10Zr	13.563	0.2232	211.56	3.038	1.76	137.89	97.83	26.20	13.86
T657	U-19Pu-10Zr	13.563	0.2246	211.91	2.932	1.60	138.39	98.24	26.30	13.85
T658	U-19Pu-10Zr	13.564	0.2250	211.98	2.902	1.57	138.39	98.24	26.30	13.85
T659	U-19Pu-10Zr	13.559	0.2243	211.67	2.952	1.50	138.11	98.04	26.24	13.83
T660	U-19Pu-10Zr	13.550	0.2243	212.05	2.950	1.51	138.44	98.27	26.30	13.87
T662	U-10Zr	13.555	0.2248	210.97	2.915	1.43	137.34	123.45	0.00	13.89
T663	U-10Zr	13.515	0.2246	211.32	2.923	1.44	137.67	123.75	0.00	13.92
T664	U-22Pu-10Zr	13.556	0.2239	211.45	2.981	1.61	137.63	93.53	30.28	13.82
T665	U-22Pu-10Zr	13.478	0.2249	212.20	2.895	1.59	138.16	93.89	30.40	13.87
T666	U-10Zr	13.538	0.2246	211.63	2.927	1.57	137.93	123.98	0.00	13.95
T667	U-22Pu-10Zr	13.556	0.2237	212.02	2.996	1.57	138.05	93.81	30.37	13.86
T668	U-22Pu-10Zr	13.520	0.2241	211.57	2.959	1.68	137.97	93.76	30.35	13.85
T669	U-22Pu-10Zr	13.550	0.2249	211.64	2.904	1.53	137.84	93.72	30.32	13.80
T670	U-22Pu-10Zr	13.517	0.2255	211.73	2.852	1.54	137.80	93.69	30.32	13.79
T671	U-22Pu-10Zr	13.529	0.2251	212.89	2.89	1.48	139.05	94.54	30.59	13.92
T672	U-22Pu-10Zr	13.560	0.2239	211.79	2.987	1.34	138.06	93.86	30.37	13.82
T675	U-26Pu-10Zr	13.558	0.2252	213.18	2.886	1.58	139.31	89.15	36.22	13.94
T677	U-26Pu-10Zr	13.465	0.2251	211.23	2.877	1.43	137.52	88.00	35.76	13.77
T678	U-26Pu-10Zr	13.547	0.2231	213.22	3.045	1.58	139.18	89.06	36.19	13.93
T679	U-10Zr	13.559	0.2239	211.17	2.987	1.52	137.37	123.48	0.00	13.89
T680	U-26Pu-10Zr	13.555	0.2239	213.19	2.981	1.60	139.10	89.01	36.17	13.92
T681	U-10Zr	13.557	0.2243	211.65	2.951	1.36	137.91	123.96	0.00	13.95

TABLE IV. (Contd.)

Jacket ID	Description	Slug Length (in.)	Avg. Slug Dia. (in.)	Element Mass (g)	Na Mass (g)	Xe Tag Gas Vol. (cc)	Slug Mass (g)	Uranium (g)	Pu (g)	Zr (g)
T682	U-26Pu-10Zr	13.545	0.2240	212.99	2.974	1.51	138.95	88.920	36.13	13.91
T683	U-26Pu-10Zr	13.564	0.2243	213.26	2.958	1.72	139.40	89.210	36.24	13.95
T684	U-26Pu-10Zr	13.519	0.2241	211.99	2.959	1.66	138.29	88.500	35.95	13.84
T685	U-10Zr	13.552	0.2253	214.15	2.879	1.75	140.64	126.54	0.00	14.10
T686	U-10Zr	13.543	0.2255	213.27	2.857	1.68	139.93	125.90	0.00	14.03
T687	U-10Zr	13.550	0.2252	212.41	2.884	1.66	138.85	124.92	0.00	13.93
T688	U-10Zr	13.551	0.2248	211.29	2.915	1.61	138.39	124.51	0.00	13.88
T689	U-10Zr	13.559	0.2253	213.66	2.876	1.61	140.02	125.98	0.00	14.04
T690	U-10Zr	13.564	0.2256	214.94	2.856	1.54	141.45	127.26	0.00	14.19
T692	U-10Zr	13.555	0.2239	211.13	2.981	1.39	137.31	123.42	0.00	13.89
T693	U-10Zr	13.563	0.2243	212.49	2.958	1.48	138.75	124.72	0.00	14.03
T694	U-10Zr	13.479	0.2253	210.98	2.860	1.44	137.39	123.49	0.00	13.90
T696	U-10Zr	13.553	0.2248	212.23	2.915	1.48	138.51	124.50	0.00	14.01
T697	U-10Zr	13.521	0.2229	211.37	3.049	1.48	137.80	123.86	0.00	13.94
T698	U-10Zr	13.545	0.2239	211.10	2.979	1.40	137.33	123.44	0.00	13.89
T700	U-10Zr	13.496	0.2240	210.65	2.964	1.54	136.95	123.10	0.00	13.85
T702	U-10Zr	13.540	0.2250	211.57	2.897	1.43	137.83	123.89	0.00	13.94
T704	U-10Zr	13.550	0.2246	213.69	2.930	1.41	139.92	125.89	0.00	14.03
T705	U-10Zr	13.555	0.2249	213.03	2.910	1.39	139.16	125.20	0.00	13.96
T706	U-10Zr	13.560	0.2249	212.51	2.911	1.45	139.42	125.44	0.00	13.98
T707	U-10Zr	13.560	0.2253	213.33	2.881	1.45	139.64	125.64	0.00	14.00
T708	U-10Zr	13.540	0.2251	213.64	2.887	1.43	139.97	125.93	0.00	14.04
T709	U-10Zr	13.552	0.2247	212.87	2.920	1.23	139.29	125.32	0.00	13.97
T710	U-10Zr	13.546	0.2247	212.20	2.924	1.58	138.49	124.60	0.00	13.89
T711	U-10Zr	13.545	0.2249	213.01	2.903	1.50	139.37	125.39	0.00	13.98

TABLE V. As-built Isotopic Masses and Reconstitution Information for Elements from X430, X430A, and X430B

Jacket ID	Description	Batch No. *	grid # / peak init.burnup (at.%)			U-234 (g)	U-235 (g)	U-236 (g)	U-238 (g)	Pu-239 (g)	Pu-240 (g)	Pu-241 (g)	Pu-242 (g)
			X430	X430A	X430B								
T651	U-10Zr	12	33/0	33/5.2	33/7.3	0.50	53.42	0.22	71.77	0.00	0.00	0.00	0.00
T652	U-19Pu-10Zr	3	19/0	19/5.1	36/7.3	0.23	24.12	0.11	74.12	21.36	4.60	0.33	0.11
T653	U-19Pu-10Zr	3	21/0	21/5.1	21/7.2	0.23	23.84	0.11	73.27	21.12	4.55	0.33	0.11
T654	U-19Pu-10Zr	3	26/0	26/5.2	26/7.3	0.23	23.92	0.11	73.50	21.18	4.57	0.33	0.11
T655	U-19Pu-10Zr	3	30/0	30/5.3	30/7.4	0.23	23.89	0.11	73.41	21.16	4.56	0.33	0.11
T656	U-19Pu-10Zr	3	37/0		4/0.0	0.23	23.94	0.11	73.56	21.20	4.57	0.33	0.11
T657	U-19Pu-10Zr	4	1/0		1/0.0	0.23	24.02	0.11	73.88	21.29	4.57	0.33	0.11
T658	U-19Pu-10Zr	4	8/0	8/5.0	8/7.2	0.23	24.02	0.11	73.88	21.29	4.57	0.33	0.11
T659	U-19Pu-10Zr	4	12/0	12/5.1	12/7.3	0.23	23.97	0.11	73.73	21.24	4.56	0.33	0.11
T660	U-19Pu-10Zr	4	17/0	17/5.2	17/7.4	0.23	24.03	0.11	73.90	21.29	4.57	0.33	0.11
T662	U-10Zr	8	2/0			0.49	52.42	0.22	70.32	0.00	0.00	0.00	0.00
T663	U-10Zr	9	14/0	14/5.0	2/7.2	0.49	52.55	0.22	70.49	0.00	0.00	0.00	0.00
T664	U-22Pu-10Zr	5			6/0.0	0.18	19.61	0.08	73.65	24.52	5.27	0.37	0.12
T665	U-22Pu-10Zr	5			7/0.0	0.18	19.69	0.08	73.94	24.62	5.29	0.37	0.12
T666	U-10Zr	9	16/0			0.49	52.64	0.22	70.62	0.00	0.00	0.00	0.00
T667	U-22Pu-10Zr	5			11/0.0	0.18	19.67	0.08	73.88	24.59	5.28	0.37	0.12
T668	U-22Pu-10Zr	5			18/0.0	0.18	19.66	0.08	73.84	24.58	5.28	0.37	0.12
T669	U-22Pu-10Zr	11		16/0.0	20/2.5	0.19	19.64	0.09	73.80	24.53	5.29	0.38	0.12
T670	U-22Pu-10Zr	11		2/0.0	14/2.5	0.19	19.64	0.09	73.77	24.53	5.29	0.38	0.12
T671	U-22Pu-10Zr	11		28/0.0	27/2.3	0.19	19.81	0.09	74.44	24.75	5.34	0.38	0.12
T672	U-22Pu-10Zr	11		36/0.0	19/2.3	0.19	19.67	0.09	73.91	24.57	5.30	0.38	0.12
T675	U-26Pu-10Zr	7			13/0.0	0.13	13.79	0.06	75.15	29.33	6.30	0.45	0.14
T677	U-26Pu-10Zr	7			25/0.0	0.13	13.61	0.06	74.19	28.95	6.22	0.44	0.14
T678	U-26Pu-10Zr	10		1/0.0		0.13	13.78	0.06	75.10	29.26	6.32	0.46	0.14
T679	U-10Zr	9	11/0	11/5.1		0.49	52.43	0.22	70.33	0.00	0.00	0.00	0.00
T680	U-26Pu-10Zr	10		4/0.0		0.13	13.77	0.06	75.05	29.25	6.32	0.46	0.14
T681	U-10Zr	8	6/0	6/5.1		0.49	52.64	0.22	70.61	0.00	0.00	0.00	0.00

TABLE V. (Contd.)

Jacket ID	Description	Batch No. *	grid # / peak init.burnup (at.%) X430	X430A	X430B	U-234 (g)	U-235 (g)	U-236 (g)	U-238 (g)	Pu-239 (g)	Pu-240 (g)	Pu-241 (g)	Pu-242 (g)
T682	U-26Pu-10Zr	10		22/0.0	24/2.3	0.13	13.75	0.06	74.97	29.21	6.31	0.46	0.14
T683	U-26Pu-10Zr	10		37/0.0	32/2.3	0.13	13.80	0.06	75.21	29.30	6.33	0.46	0.14
T684	U-26Pu-10Zr	10		34/0.0	31/2.4	0.13	13.69	0.06	74.61	29.08	6.28	0.46	0.14
T685	U-10Zr	1	18/0	18/5.2		0.48	53.69	0.23	72.14	0.00	0.00	0.00	0.00
T686	U-10Zr	1	20/0	20/5.1	16/7.3	0.48	53.42	0.23	71.78	0.00	0.00	0.00	0.00
T687	U-10Zr	1	22/0			0.47	53.00	0.22	71.22	0.00	0.00	0.00	0.00
T688	U-10Zr	1	23/0	23/5.3	23/7.5	0.47	52.83	0.22	70.99	0.00	0.00	0.00	0.00
T689	U-10Zr	1	24/0	24/5.3	22/7.5	0.48	53.45	0.23	71.83	0.00	0.00	0.00	0.00
T690	U-10Zr	1	25/0	25/5.2		0.48	54.00	0.23	72.55	0.00	0.00	0.00	0.00
T692	U-10Zr	8	3/0	3/4.9	3/7.2	0.49	52.41	0.22	70.30	0.00	0.00	0.00	0.00
T693	U-10Zr	8	4/0			0.49	52.96	0.22	71.04	0.00	0.00	0.00	0.00
T694	U-10Zr	8	5/0	5/5.1	5/7.4	0.49	52.44	0.22	70.34	0.00	0.00	0.00	0.00
T696	U-10Zr	8	7/0	7/5.0		0.49	52.87	0.22	70.92	0.00	0.00	0.00	0.00
T697	U-10Zr	8	9/0	9/4.9	9/7.1	0.49	52.59	0.22	70.55	0.00	0.00	0.00	0.00
T698	U-10Zr	9	10/0	10/5.2	10/7.4	0.49	52.42	0.22	70.31	0.00	0.00	0.00	0.00
T700	U-10Zr	9	13/0	13/5.1		0.49	52.27	0.22	70.12	0.00	0.00	0.00	0.00
T702	U-10Zr	9	15/0	15/5.0	15/7.1	0.49	52.61	0.22	70.57	0.00	0.00	0.00	0.00
T704	U-10Zr	12	31/0	31/5.3	34/7.4	0.50	53.41	0.22	71.76	0.00	0.00	0.00	0.00
T705	U-10Zr	12	32/0	32/5.2	37/7.3	0.50	53.12	0.22	71.36	0.00	0.00	0.00	0.00
T706	U-10Zr	12	34/0			0.50	53.22	0.22	71.50	0.00	0.00	0.00	0.00
T707	U-10Zr	12	35/0	35/5.3	35/7.4	0.50	53.31	0.22	71.61	0.00	0.00	0.00	0.00
T708	U-10Zr	12	36/0			0.50	53.43	0.22	71.78	0.00	0.00	0.00	0.00
T709	U-10Zr	12	29/0	29/5.3	29/7.5	0.50	53.17	0.22	71.43	0.00	0.00	0.00	0.00
T710	U-10Zr	13	27/0	27/5.2	28/7.3	0.49	52.95	0.22	70.94	0.00	0.00	0.00	0.00
T711	U-10Zr	13	28/0			0.49	53.28	0.22	71.39	0.00	0.00	0.00	0.00

*Batch No. corresponds to number as indicated in Table III.

A. EBR-II Run Information

Subassembly X430 was irradiated in core position 4C2 from Run 144A to Run 148B, subassembly X430A was irradiated in core position 4E2 from Run 150A to Run 152D, and subassembly X430B was irradiated in core position 4A3 from Run 155A to Run 161A (omitting the transient Run 159 for which X430B was removed). Figures 1 through 6 show the EBR-II power history for the years 1987 through 1992. The subassembly was orificed to provide a nominal flowrate of 56.5 gal/min in a row 4 position. The run-by-run flowrates obtained from postrun calculations along with subassembly power are shown in Tables VI through VIII; postrun calculations were not available for every subrun.

The nature of the neighboring subassemblies surrounding X430, X430A and X430B varied considerably over their lifetimes. Figures 7 through 9 show these neighbors for each unique subrun. The arrows in these figures point toward core center. Table IX provides a brief description of each of the neighboring subassemblies.

B. Operating Conditions

Using the subassembly power and flowrate for each subrun, given in Tables VI through VIII, calculations of temperature throughout the subassembly were made for those runs of significant duration. The calculations were performed using SE2-ANL (SE2), the ANL modified version of SUPERENERGY-2.[2] RCT[3] data files were used to obtain radial and axial power distribution factors for the individual elements within the subassembly.

The subassembly temperatures, including coolant and cladding temperatures, are tabulated in the Appendices. Axial temperature profiles for each element are given for the beginning-of-cycle (BOC) for X430, X430A, and X430B, and for the end-of-cycle (EOC) for X430B; peak temperatures for each element are given for each subrun. Fuel temperature calculations were made for fresh elements at their beginning-of-life (BOL) and are included where appropriate in the

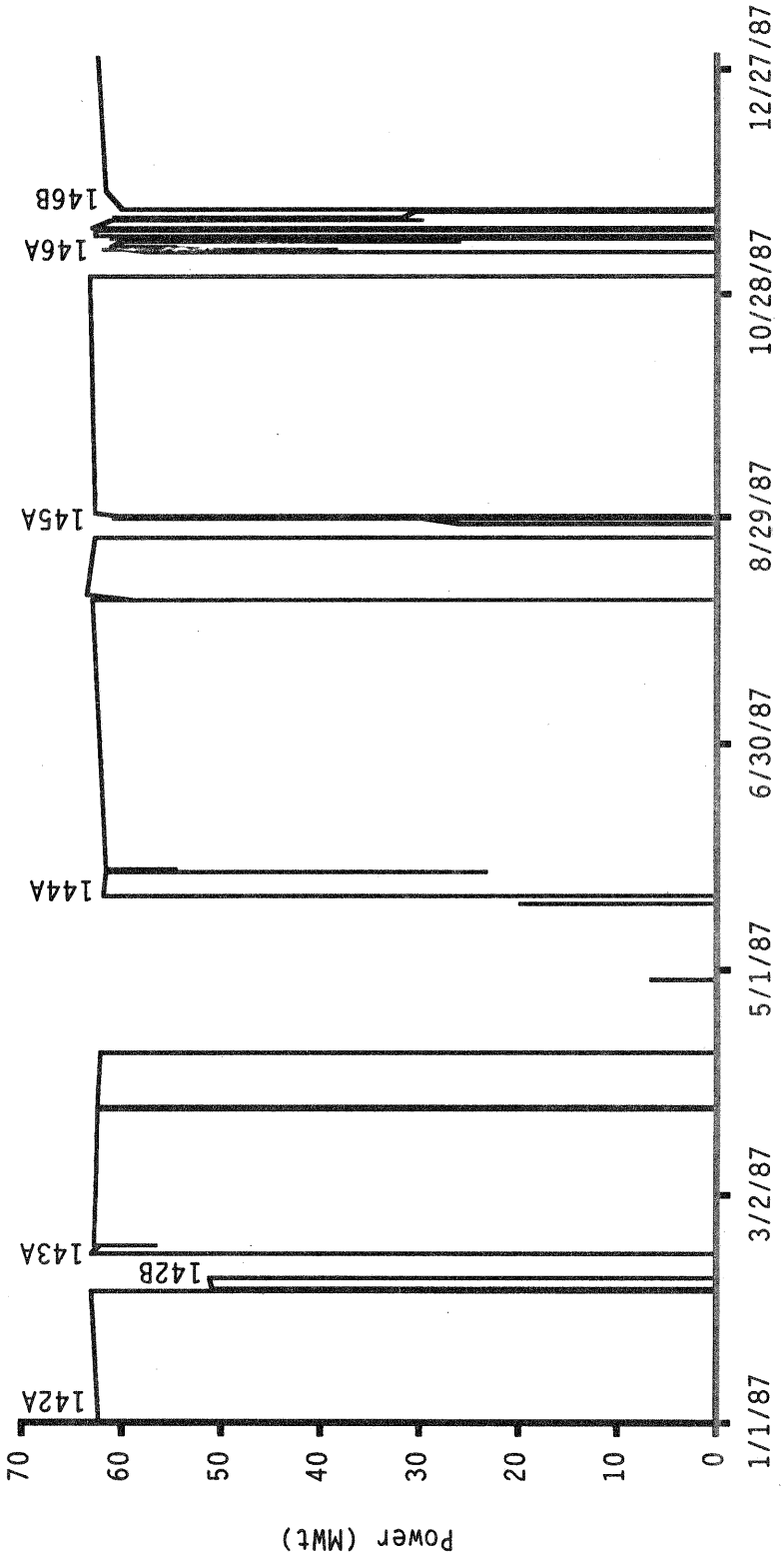


Fig. 1. EBR-II Power History for 1987

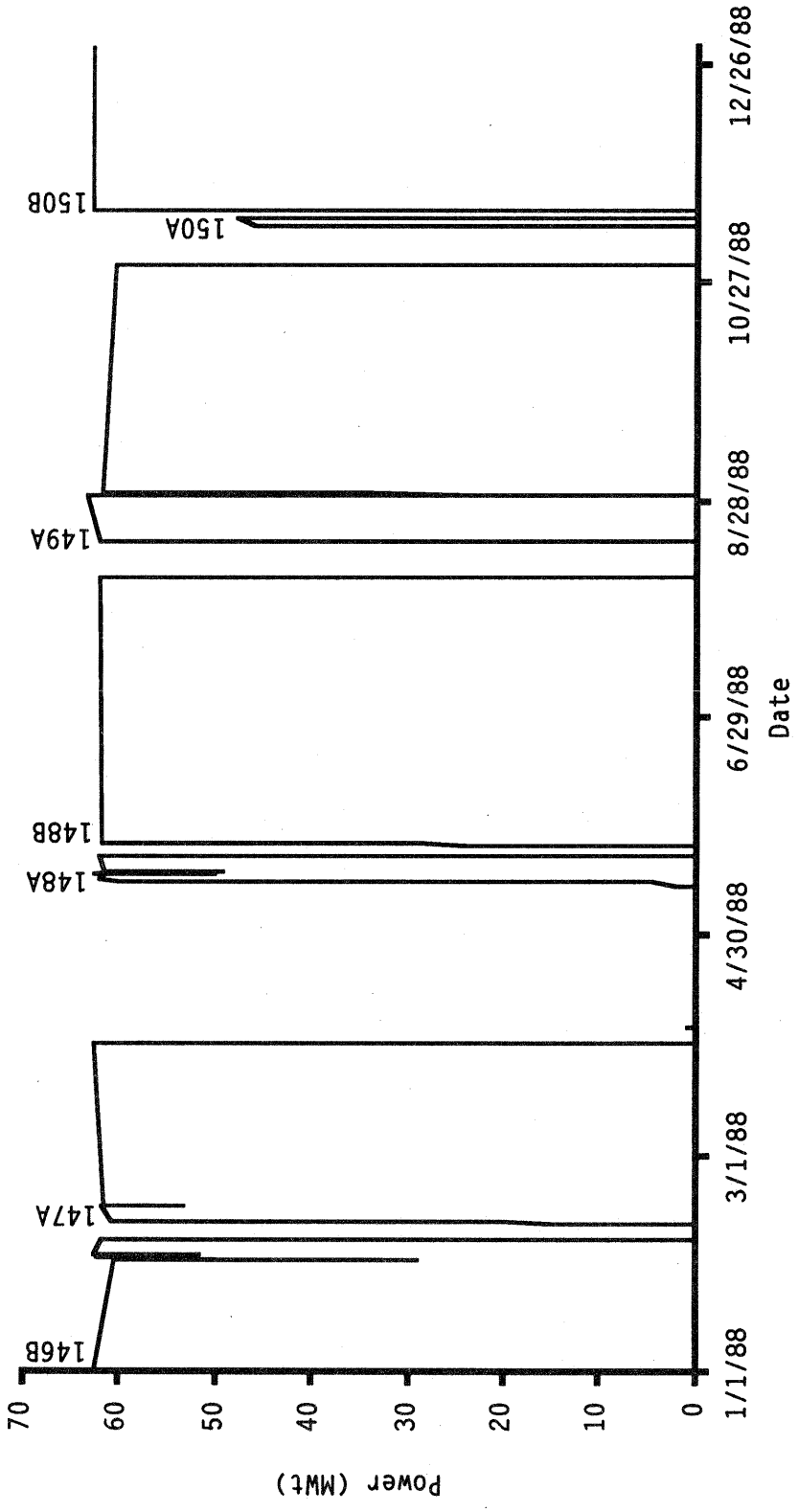


Fig. 2. EBR-II Power History for 1988

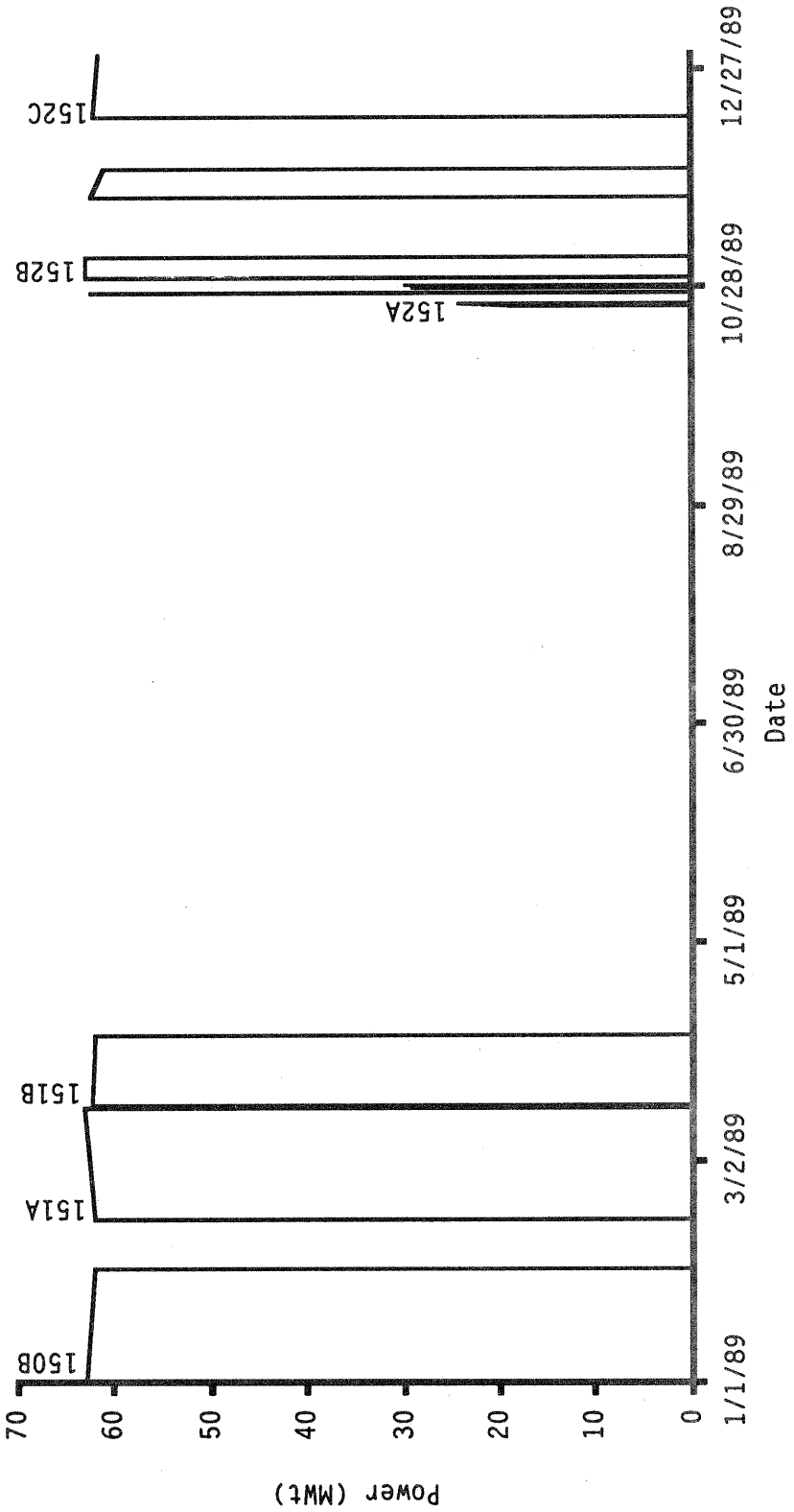


Fig. 3. EBR-II Power History for 1989

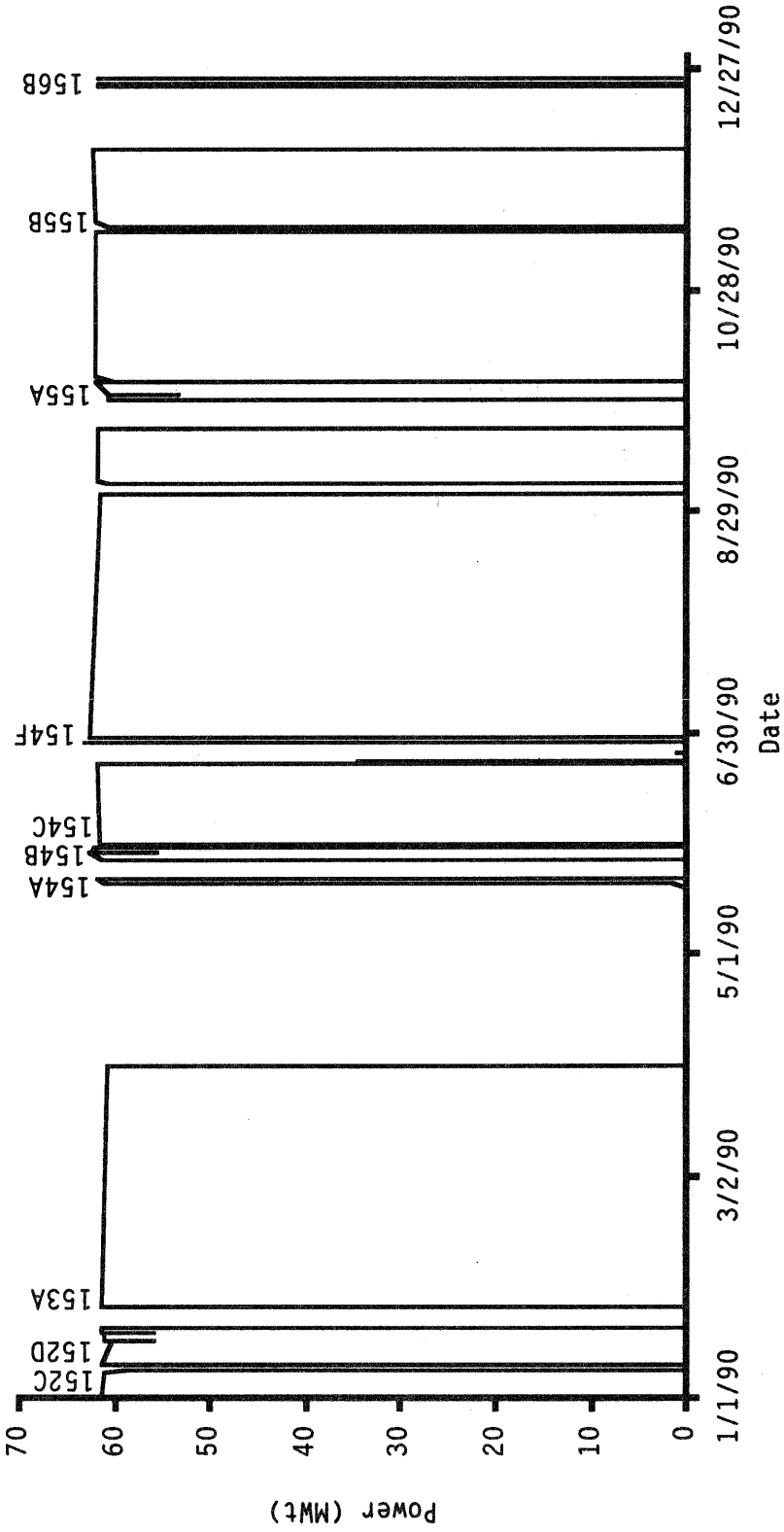


Fig. 4. EBR-II Power History for 1990

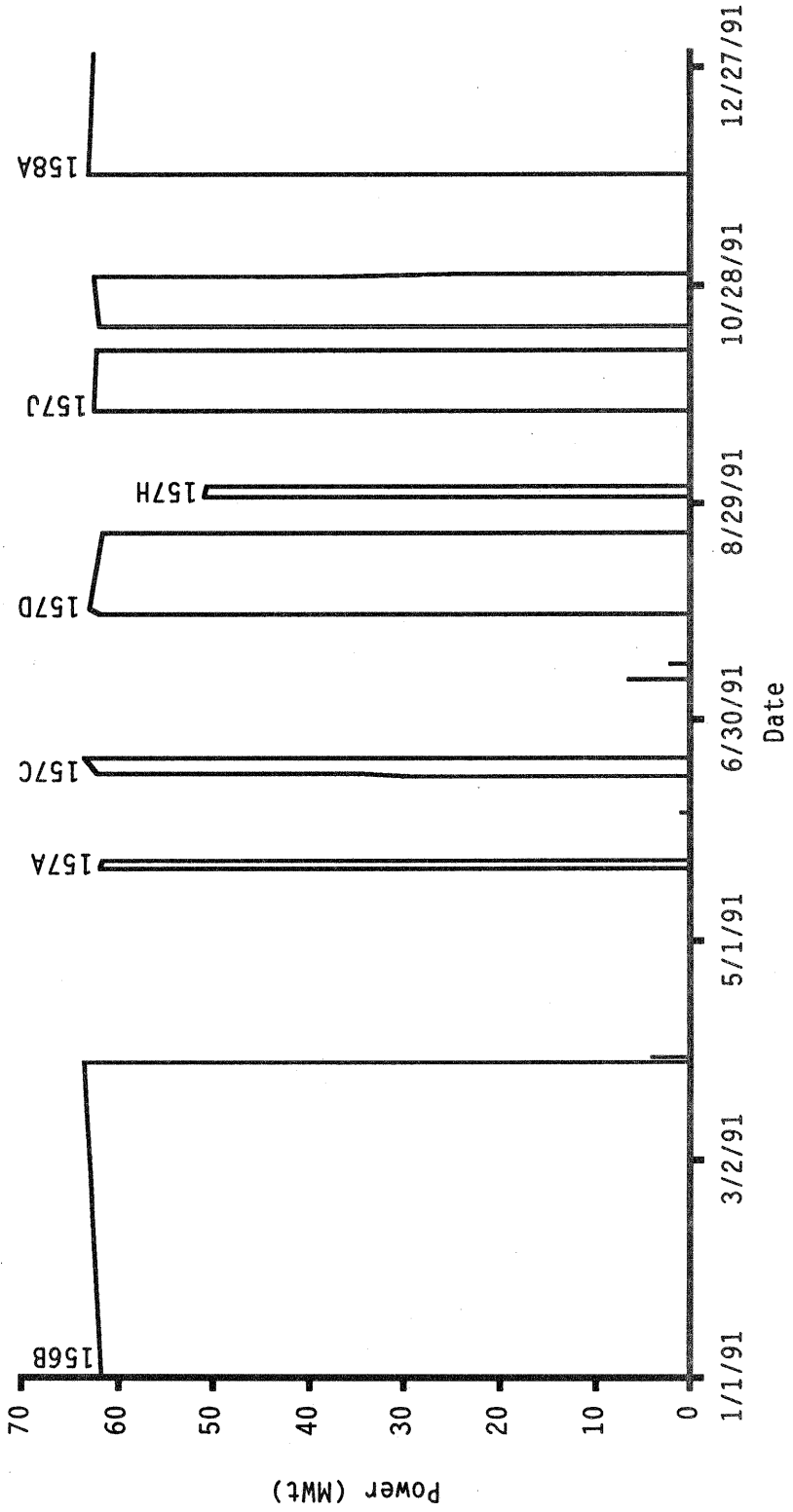


Fig. 5. EBR-II Power History for 1991

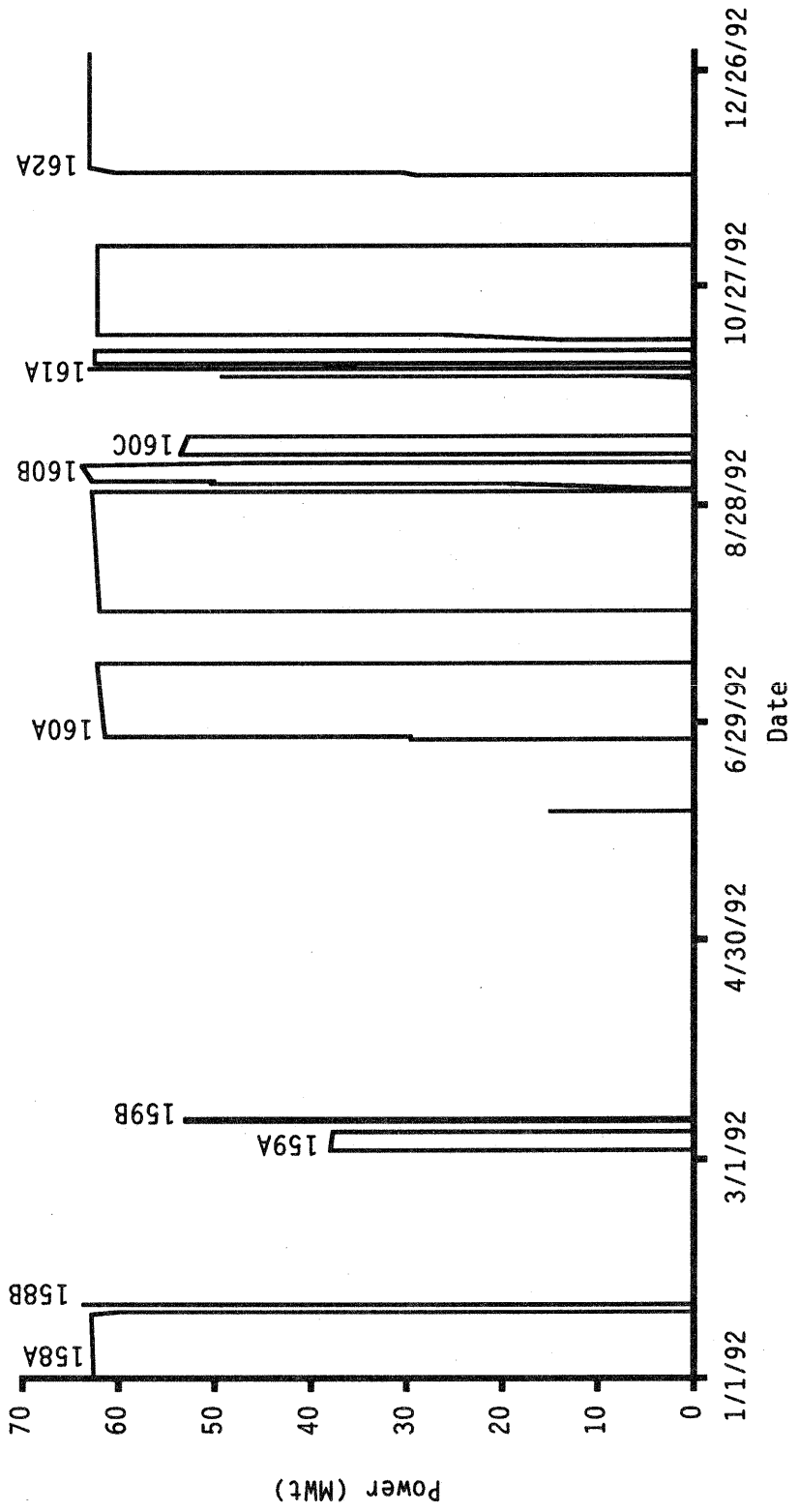


Fig. 6. EBR-II Power History for 1992

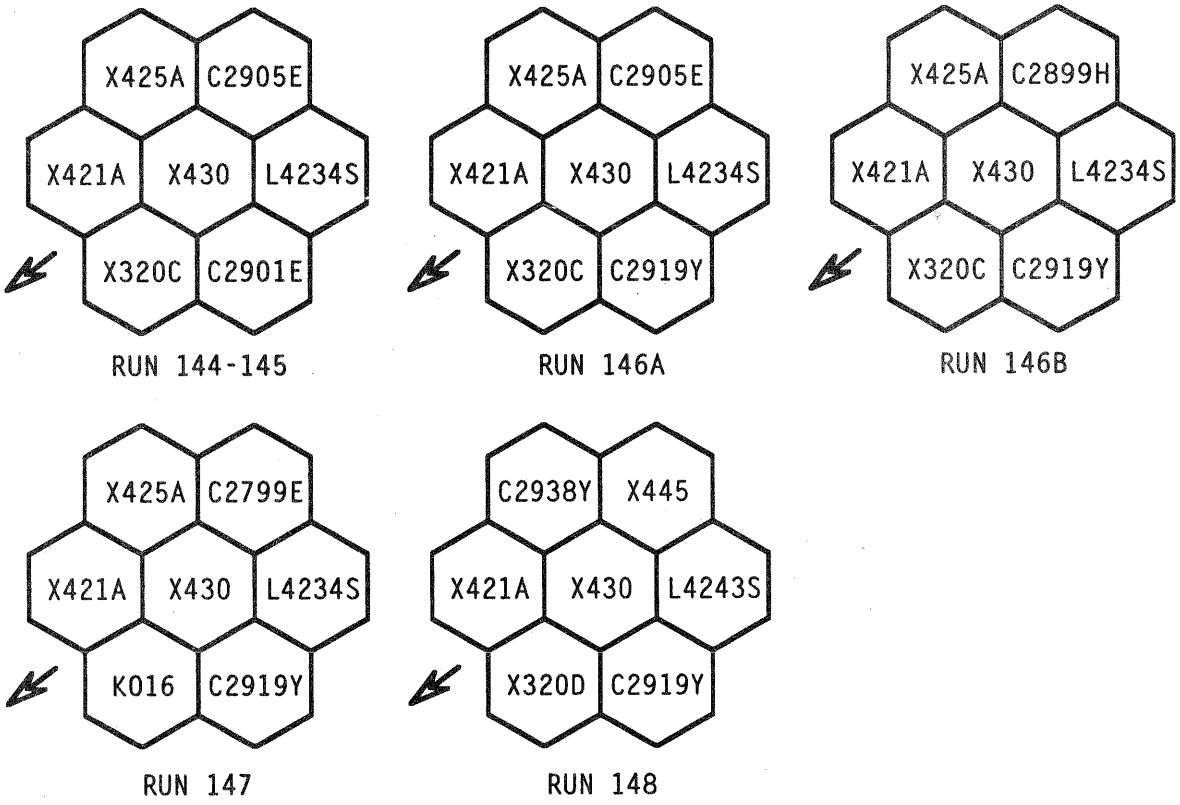


Fig. 7. X430 In-core Position 4C2 and Nearest Neighbors (arrows point toward core center)

TABLE VI. EBR-II Conditions for X430

Run	Sub Run	EBR-II MWt-days	X430 Power (kW)	X430 Flow (gpm)
144	A	5865	561.1	55.34
145	A	4011	546.9	55.85
146	A	437	525.3	55.30
	B	4921	521.7	57.02
147	A	3062	493.3	55.79
148	A	473	-	-
	B	4613	500.8	57.11

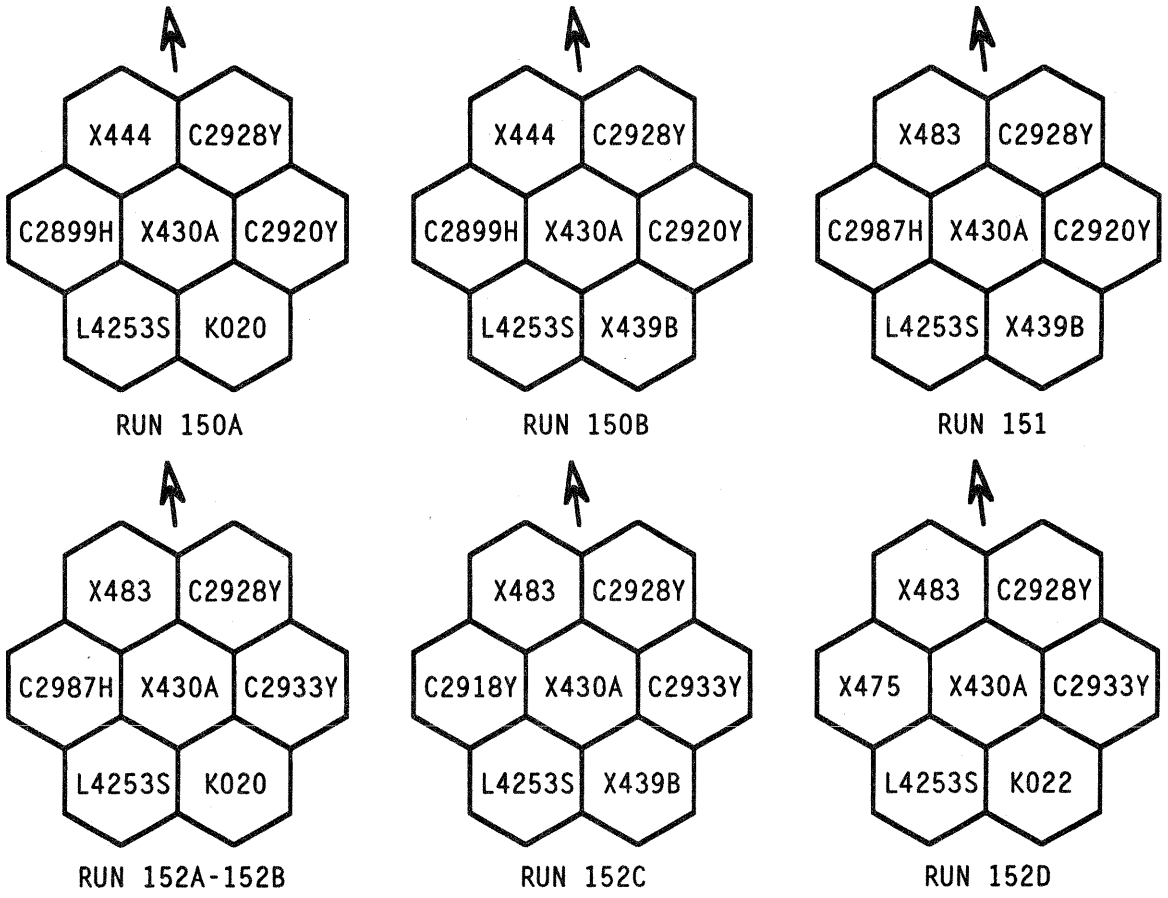


Fig. 8. X430A In-core Position 4E2 and Nearest Neighbors (arrows point toward core center)

TABLE VII. EBR-II Conditions for X430A

Run	Sub Run	EBR-II MWt-days	X430A Power (kW)	X430A Flow (gpm)
150	A	120	424.9	57.28
	B	4774	467.7	57.48
151	A	1871	471.0	57.70
	B	1161	415.1	57.40
152	A	51	488.9	58.23
	B	359	487.6	58.22
	C	2132	466.7	58.92
	D	579	457.2	58.55

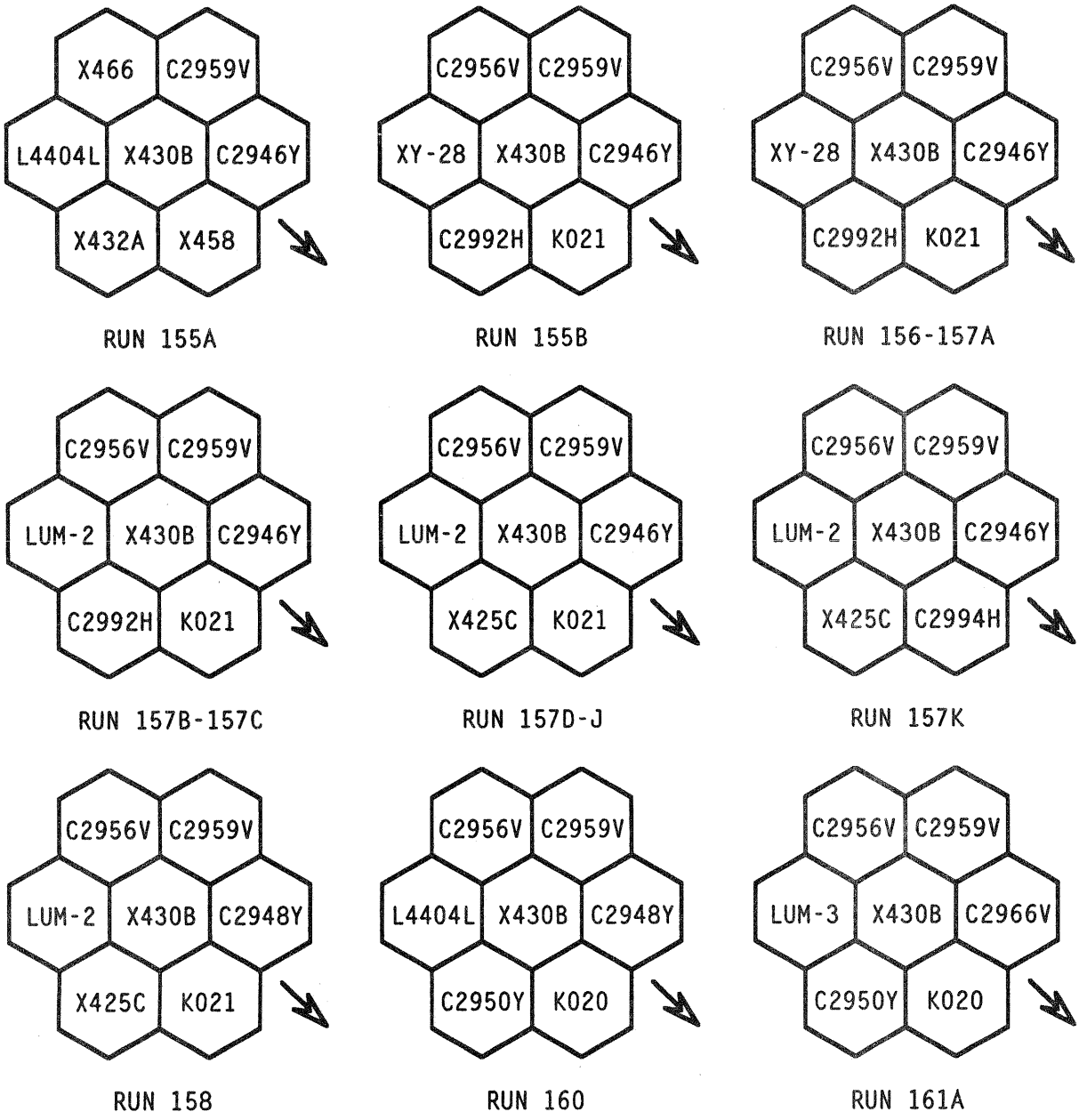


Fig. 9. X430B In-core Position 4A3 and Nearest Neighbors (arrows point toward core center)

TABLE VIII. EBR-II Conditions for X430B

Run	Sub Run	EBR-II MWt-days	X430B Power (kW)	X430B Flow (gpm)
155	A	2766	446.0	57.95
	B	1281	446.0	57.95
156	A	~0	-	-
	B	5899	447.5	57.17
157	A	91	427.1	57.01
	B	~0	-	-
	C	258	437.2	56.83
	D	1354	439.5	57.03
	E	~0	-	-
	F	~0	-	-
	G	~0	-	-
	H	176	436.8	57.76
	J	1978	-	-
	K	~0	-	-
158	A	3302	426.6	56.94
	B	19	426.6	56.94
160	A	3322	427.8	56.31
	B	360	432.1	56.71
	C	282	432.1	56.71
161	A	1933	434.1	56.94

TABLE IX. Descriptions of Nearest Neighbors

Drivers		Experiments		Miscellaneous	
C2799E	MK-IIA	X320C	Structural	K016	SS-DUMMY
C2899H	MK-IIA	X421A	IFR Metal Fuel	K020	SS-DUMMY
C2901E	MK-IIA	X425A	IFR Metal Fuel	K021	SS-DUMMY
C2905E	MK-IIA	X425C	IFR Metal Fuel	K022	SS-DUMMY
C2918Y	MK-III	X432A	IFR Metal Fuel	L4234S	HWCR
C2919Y	MK-III	X439B	Thermionic Fuel Emitter	L4243S	HWCR
C2920Y	MK-III	x444	IFR Metal Fuel	L4252S	HWCR
C2928Y	MK-III	X445	IFR Metal Fuel	L4404L	CRPD
C2933Y	MK-III	X458	SP-100 Structural	LUM-2	DUMMY
C2938Y	MK-III	X466	PNC Oxide	LUM-3	DUMMY
C2946Y	MK-III	X475	PNC Oxide		
C2948Y	MK-III	X483	IFR Metal Fuel		
C2950Y	MK-III	XY-28	PNC Oxide		
C2956V	MK-IIIA				
C2959V	MK-IIIA				
C2966V	MK-IIIA				
C2987Y	MK-III				
C2992H	MK-IIIA				
C2994H	MK-IIIA				

Appendices. No attempt was made to calculate fuel temperatures for elements following BOL since such calculations would entail assumptions regarding fuel swelling, fuel constituent redistribution, porosity, etc.; coolant and cladding temperatures, which are calculated without

such assumptions, are reported to provide a baseline from which analysts may conduct more sophisticated analyses of fuel temperatures after BOL. Average and peak fuel element burnups and cladding fluences obtained from the RCT data files are also reported for each element in the Appendices; the peak-to-average ratios for these elements are ~1.12.

Figures 10 through 14 show the peak-inside-cladding-temperature (PICT) histories for the highest burnup U-10Zr, U-19Pu-10Zr, U-22Pu-10Zr and U-26Pu-10Zr elements. Only a representative sample of the many U-10Zr and U-19Pu-10Zr elements are shown in Figs. 10 and 11; all of the high burnup U-22Pu-10Zr and U-26Pu-10Zr elements are shown in Figs. 12 and 13.

The U-10Zr and U-19Pu-10Zr elements shown in Figs. 10 and 11 were present in X430, X430A, and X430B. In general, the PICT for these elements is highest in X430 and decreased in X430A and X430B. These elements originally occupied grid positions near the center of the subassembly and were moved outward as U-22Pu-10Zr and U-26Pu-10Zr elements were added for X430A and X430B.

The U-22Pu-10Zr and U-26Pu-10Zr elements shown in Figs. 12 and 13 were present only in X430A and X430B. These elements were located in grid positions near the periphery of the subassembly during X430A and were moved inward for X430B. Consequently, the PICT for these elements are higher during X430B.

Figure 14 shows the calculated peak fuel temperatures at BOL for every element. The peak fuel temperatures calculated for each fuel type have the following ranges: 638-695°C for U-10Zr, 695-737°C for U-19Pu-10Zr, 648-698°C for U-22Pu-10Zr, and 661-715°C for U-26Pu-10Zr.

In order to determine the quantitative influence of inter-subassembly heat transfer on coolant and fuel element temperatures in X430, SE2 calculations which alternately included and omitted intersubassembly heat transfer were made for X430 for Run 144A. For the calculation that omitted intersubassembly heat transfer, adiabatic

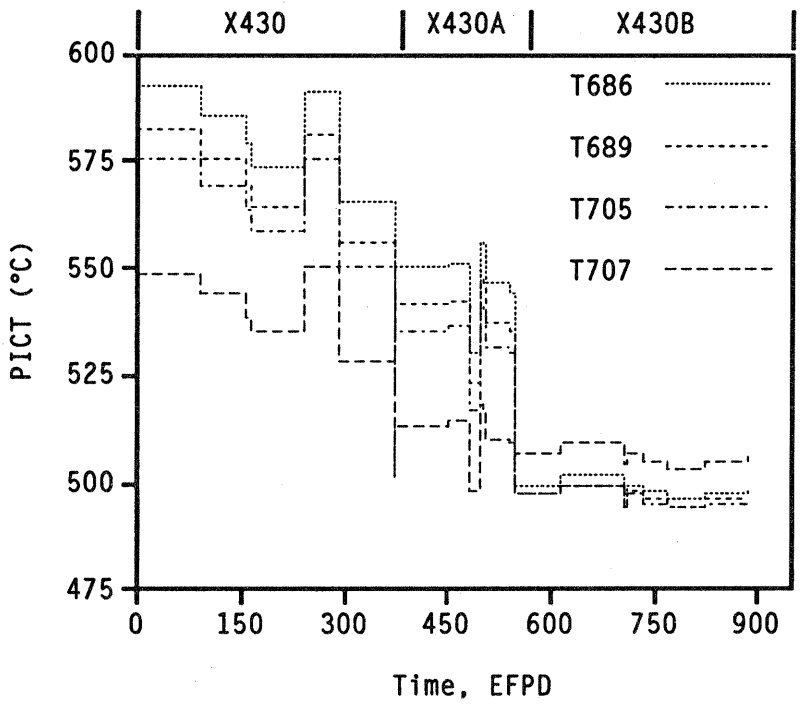


Fig. 10. Typical PICT History for Highest Burnup U-10Zr Elements

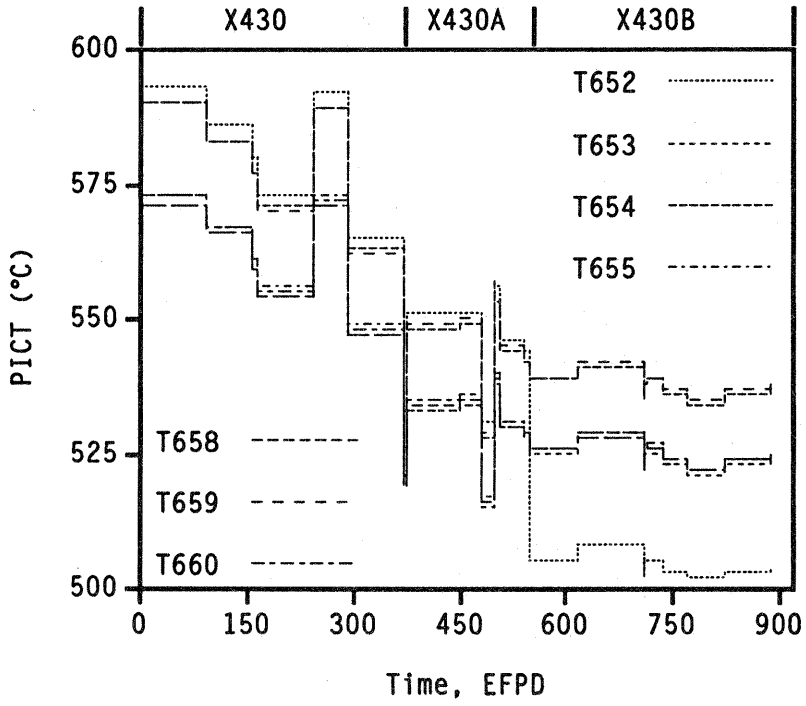


Fig. 11. PICT History for Highest Burnup U-19Pu-10Zr Elements

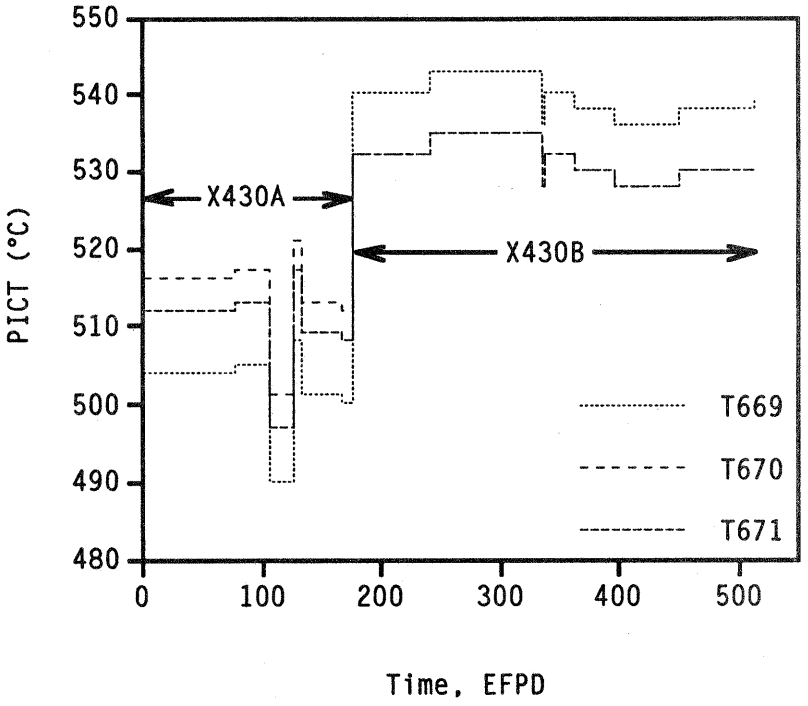


Fig. 12. PICT History for Highest Burnup U-22Pu-10Zr Elements

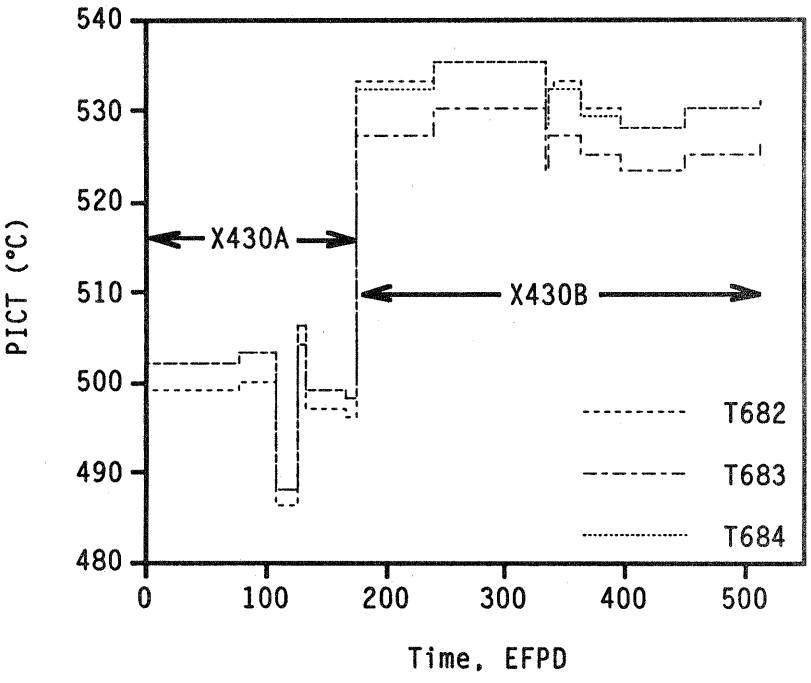


Fig. 13. PICT History for Highest Burnup U-26Pu-10Zr Elements

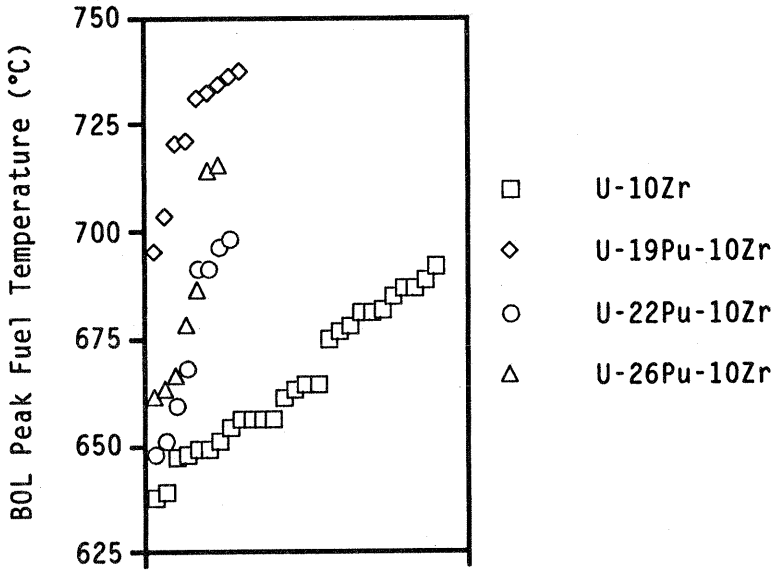


Fig. 14. Beginning-of-Life Peak Fuel Temperatures

boundary conditions were employed at the subassembly duct boundary of X430. To include the effects of intersubassembly heat transfer, an SE2 calculation was made which included heat exchange between X430 and its six neighboring subassemblies. As shown in Fig. 7, X430 had a high-worth control rod, two drivers, two IFR metallic fueled experiments, and a structural experiment as neighbors during Run 144A. When intersubassembly heat transfer was included in the analysis, a net 6.9 kW was transferred from X430 to the neighboring subassemblies. This heat loss from X430 represents ~1% of the total power of the subassembly. The coolant outlet temperatures corresponding to each grid position in X430 are shown in Table X for both calculations.

All of the coolant outlet temperatures from the calculation made allowing no intersubassembly heat transfer are equal to or greater than those from the calculation which allowed intersubassembly heat transfer, indicating that in general X430 ran hotter than its neighbors during Run 144A. The mean deviation between the coolant outlet temperatures produced by the two calculations is 2.0°C. For all internal elements (i.e., elements not on the outer ring adjacent to the subassembly duct), the maximum difference between the coolant outlet

TABLE X. Coolant Outlet Temperatures for X430 in Run 144A

Grid	Flow Outlet Temp. (°C) with inter-SA HT	Flow Outlet Temp. (°C) without inter-SA HT	Change (°C)	Position/Adjacent SA
1	502	503	1	-
2	514	515	1	-
3	513	515	2	-
4	498	503	5	Corner/HWCR
5	514	515	1	-
6	541	542	1	-
7	548	548	0	-
8	540	542	2	-
9	510	515	5	Edge/HWCR
10	513	515	2	-
11	548	548	0	-
12	559	559	0	-
13	559	559	0	-
14	547	548	1	-
15	511	515	4	Edge/HWCR
16	499	503	4	Corner/IFR SA
17	541	542	1	-
18	559	559	0	-
19	562	562	0	-
20	559	559	0	-
21	540	542	2	-
22	495	503	8	Corner/HWCR
23	511	515	4	Edge/IFR SA
24	547	548	1	-
25	559	559	0	-
26	559	559	0	-
27	547	548	1	-
28	511	515	4	Edge/MK-IIA
29	511	515	4	Edge/IFR SA
30	540	542	2	-
31	547	548	1	-
32	540	542	2	-
33	508	510	2	-
34	499	503	4	Corner/Structural
35	512	515	3	-
36	512	515	3	-
37	499	503	4	Corner/Structural

temperatures from the two calculations is 2°C. The temperatures for the seven central grid positions within the subassembly did not differ between calculations. The differences for elements adjacent to the duct are slightly higher. The maximum difference of 8°C occurs for grid position 22, a position in a corner of subassembly X430 that is away from core center with a high-worth control rod subassembly and a Mk-IIA driver subassembly as neighbors. Based on the results of this preliminary study of the influence of intersubassembly heat transfer, it

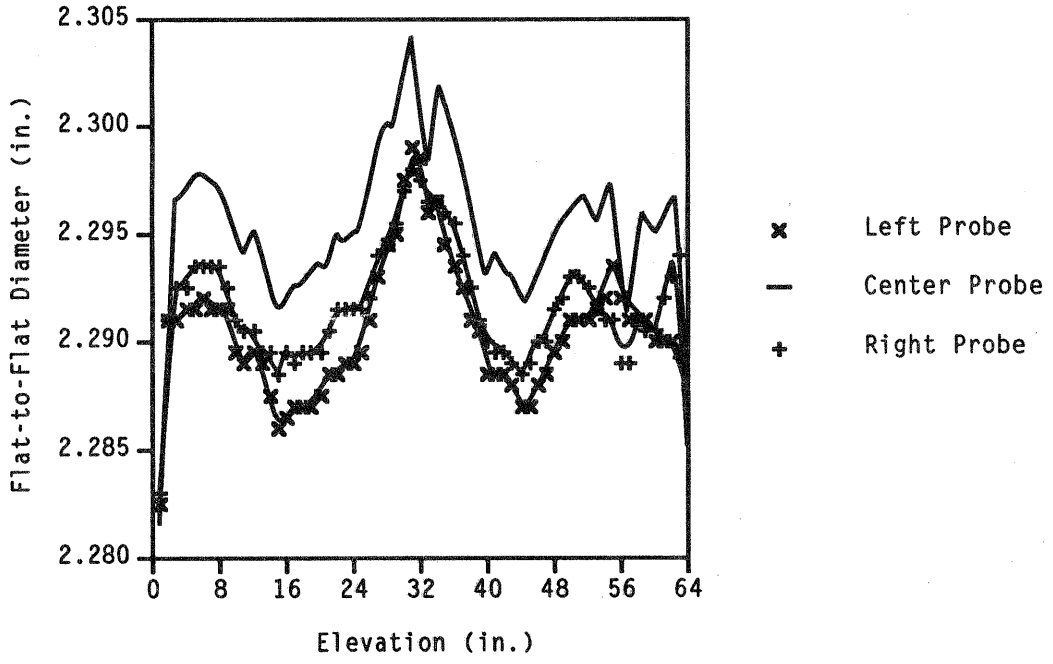
was concluded that the temperature calculations for X430, X430A, and X430B made excluding intersubassembly heat transfer are adequate.

IV. NDE RESULTS

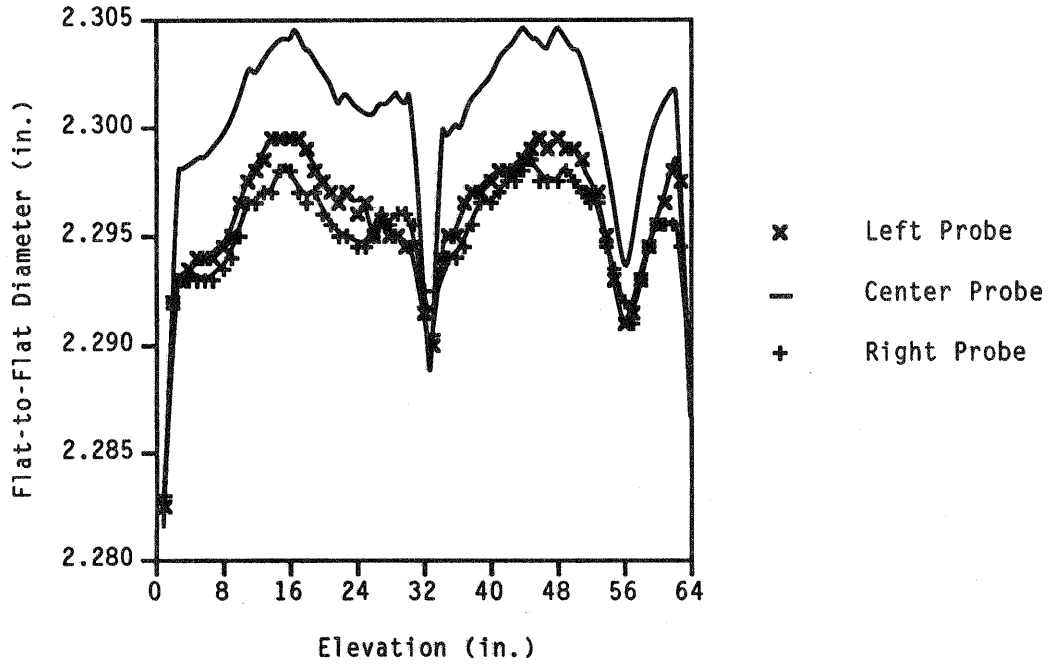
After removal from the reactor, subassemblies X430, X430A, and X430B were each given the standard argon cooling and water wash during transfer into the Hot Fuel Examination Facility (HFEF). During dismantling of the subassemblies, the elements were visually inspected for unusual features (e.g., scratches, loose spacer wires, etc.); each row of elements was photographed prior to removal from the subassembly grid. After disassembly from X430, X430A and X430B, the elements were weighed and neutron radiographed. Individual visual inspections were performed for all elements of X430A and X430B. Diameters for all the elements from X430, X430A, and X430B were measured using helical contact profilometry.

A. Subassembly NDE

Subassembly profilometry (SAP) measurements of X430A were made prior to the dismantling of the subassembly. The measurements were made at 1-in. intervals along the approximately 64-in. length of the hexduct. Because the flat-to-flat diametral measurements made for flats 1 and 4 are of the same dimension (measurements taken from flat 4 are made after the subassembly is rotated 180° from the position in which flat 1 is measured), the results from those two measurements were averaged and are shown in Fig. 15a. Similarly, the flat-to-flat diameters measured from flats 2 and 5 and from flats 3 and 6 are shown in Figs. 15b and 15c, respectively. The averaged corner-to-corner measurements are shown in Fig. 15d. The maximum flat-to-flat diameter was 2.308 in., or 0.021 in. greater than the nominal diameter of 2.297 in. The maximum corner-to-corner diameter was 2.618 in. The maximum deflection (the distance that any flat of the subassembly deviates from a straight surface) was measured to be 0.047 in. as shown in Fig. 16.

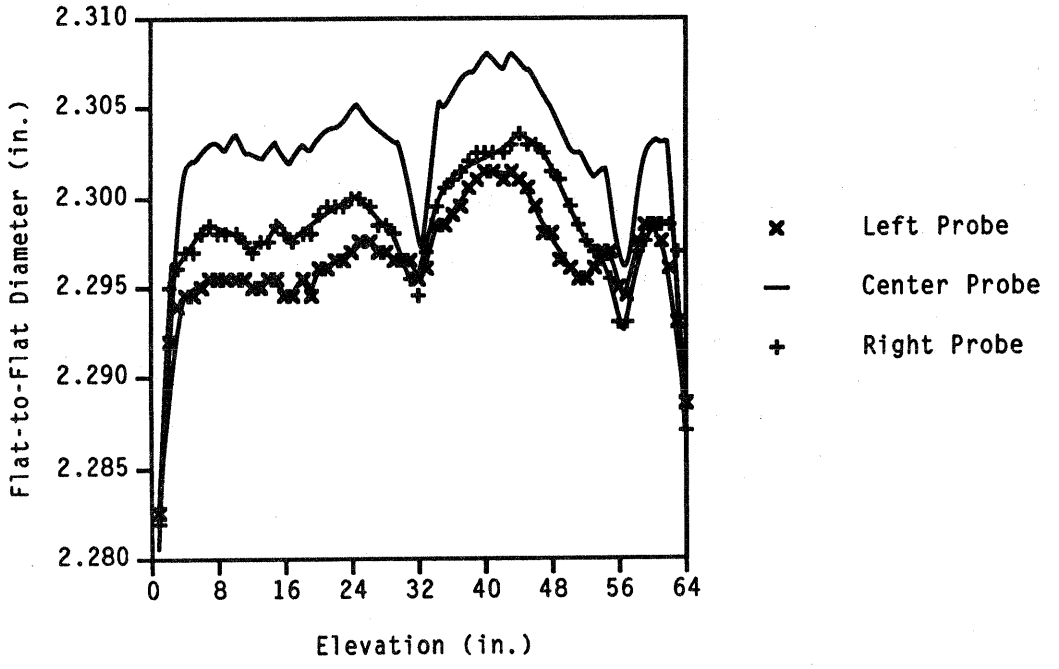


(a)

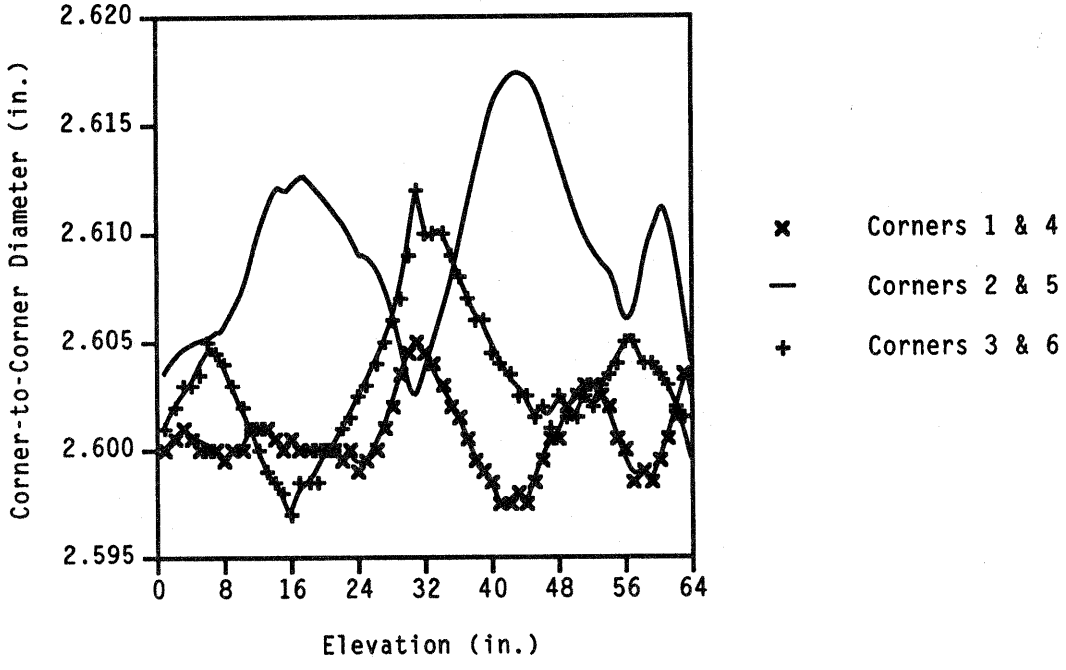


(b)

Fig. 15. Averaged Flat-to-Flat Diameter Profiles for Subassembly X430A at End-of-Cycle from (a) flats 1 and 4, (b) flats 2 and 5, (c) flats 3 and 6, and (d) corner-to-corner diameter measurements from all corners



(c)



(d)

Fig. 15. (Contd.)

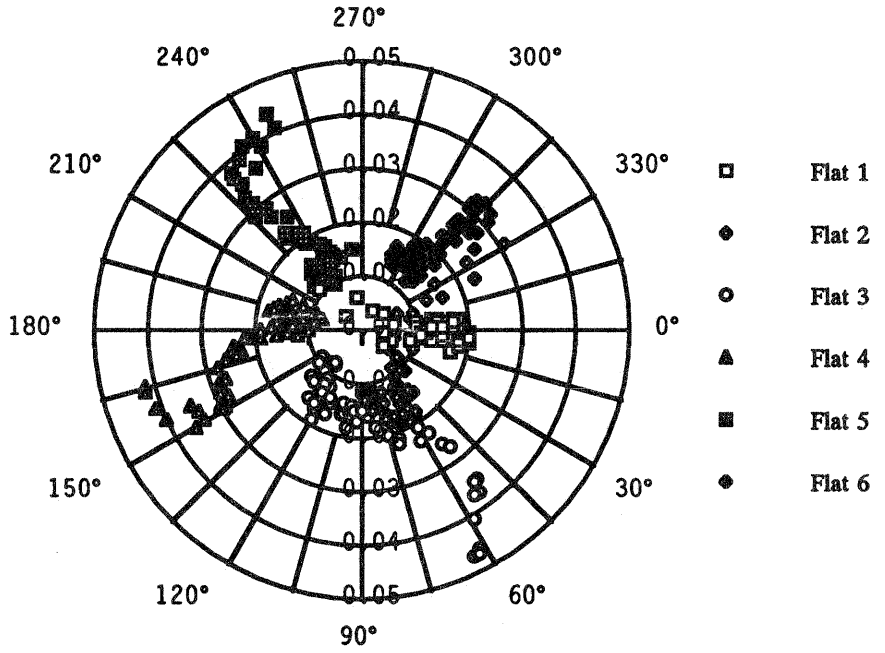


Fig. 16. Plot of Deflection (in inches) versus Azimuthal Angle from Subassembly X430A at End-of-Cycle

B. Element NDE

Nondestructive examination of elements from X430, X430A, and X430B included visual examination, neutron radiography, cladding profilometry, and element weighing.

1. Visual Examination

Visual examination of X430A fuel elements performed by an HFEF experiment coordination and control engineer revealed only two items considered to be unusual. Element T696 appeared to have a piece, or chip, of a dark-colored substance attached to the wire wrap at about 11 in. above the fuel column. This piece of substance was considered to be of no consequence, and the element was placed into subassembly X430B for further irradiation. Element T682 had a region at the bottom of the rounded hole of the T-bar slot on the lower-end plug where some material had been removed or deformed; the region appeared "flattened". This anomaly was also considered benign, and the element was reconstituted

into subassembly X430B. The features typically observed on the X430A and X430B elements consisted of a few light spotty stains, a few light axial scratches, and a few light randomly oriented scratches. These features are not out of the ordinary and are typically found during examination of irradiated fuel elements.

2. Neutron Radiography

Neutron radiographs from X430, X430A, and X430B elements revealed nothing unusual. Measurements of axial swelling of the fuel column were made from the exposures in which the fuel column appeared darkest, i.e., those imaged with thermal neutrons. Values of axial fuel strain were calculated from the as-cast measurements (see Table I in Sect. II) and from as-irradiated measurements and are listed in Tables XI, XII, and XIII. The results show that all ternary alloys exhibited significantly less axial swelling than did the binary fuel. A dependence of axial swelling on grid position for the Pu-bearing fuel can be seen from these tables. As observed by previous experimenters,[4] axial fuel swelling is significantly higher for Pu-bearing fuel elements located in the outer row of a subassembly relative to similar elements located in inner rows. Additionally, axial swelling appears to occur early in life; elements that were irradiated in X430 exhibited essentially no further axial swelling after irradiation in X430A. For the binary fuel, the axial fuel swelling measured following X430A and X430B had decreased significantly relative to the swelling measured following X430.

3. Isotopic Gamma Scans

Isotopic gamma scans were performed in HFEF on three fuel elements from X430B: U-19Pu-10Zr element T654 (at 11.6 at.% peak burnup), U-22Pu-10Zr element T670 (at 6.6 at.% peak burnup) and U-26Pu-10Zr element T684 (at 6.6 at.% burnup). As a representative sample, Figs. 17 through 19 show the Nb-95 and Cs-137 gamma scans for these elements.

TABLE XI. Values of Fuel Axial Swelling Measured from X430 Fuel Elements

Grid No.	Jacket I.D.	Description	Fuel Length (in.)	Axial Strain (%)
1	T657	U-19Pu-10Zr	14.00	3.22
2	T662	U-10Zr	14.61	7.78
3	T692	U-10Zr	14.65	8.08
4	T693	U-10Zr	14.63	7.87
5	T694	U-10Zr	14.52	7.72
6	T681	U-10Zr	14.53	7.18
7	T696	U-10Zr	14.58	7.58
8	T658	U-19Pu-10Zr	13.76	1.45
9	T697	U-10Zr	14.60	7.98
10	T698	U-10Zr	14.50	7.05
11	T679	U-10Zr	14.53	7.16
12	T659	U-19Pu-10Zr	13.75	1.41
13	T700	U-10Zr	14.42	6.85
14	T663	U-10Zr	14.55	7.66
15	T702	U-10Zr	14.52	7.24
16	T666	U-10Zr	14.52	7.32
17	T660	U-19Pu-10Zr	13.73	1.33
18	T685	U-10Zr	14.70	8.47
19	T652	U-19Pu-10Zr	13.78	1.59
20	T686	U-10Zr	14.63	8.03
21	T653	U-19Pu-10Zr	13.79	1.72
22	T687	U-10Zr	14.61	7.82
23	T688	U-10Zr	14.53	7.22
24	T689	U-10Zr	14.61	7.75
25	T690	U-10Zr	14.67	8.15
26	T654	U-19Pu-10Zr	13.75	1.42
27	T710	U-10Zr	14.59	7.71
28	T711	U-10Zr	14.66	8.23
29	T709	U-10Zr	14.70	8.47
30	T655	U-19Pu-10Zr	13.65	1.04
31	T704	U-10Zr	14.66	8.19
32	T705	U-10Zr	14.68	8.30
33	T651	U-10Zr	14.78	8.97
34	T706	U-10Zr	14.70	8.41
35	T707	U-10Zr	14.67	8.19
36	T708	U-10Zr	14.72	8.71
37	T656	U-19Pu-10Zr	13.92	2.63

TABLE XII. Values of Fuel Axial Swelling and Cladding Diametral Strain Measured from X430A Fuel Elements

Grid No.	Jacket I.D.	Description	Fuel Length (in.)	Axial Strain (%)	Cladding Dia. (in.)	Cladding Strain (%)
1	T678	U-26Pu-10Zr	13.84	2.16	0.2906	0.21
2	T670	U-22Pu-10Zr	13.78	1.95	0.2912	0.41
3	T692	U-10Zr	14.53	7.19	0.2910	0.34
4	T680	U-26Pu-10Zr	13.96	2.99	0.2907	0.24
5	T694	U-10Zr	14.45	7.20	0.2910	0.34
6	T681	U-10Zr	14.43	6.44	0.2910	0.34
7	T696	U-10Zr	14.50	6.99	0.2912	0.41
8	T658	U-19Pu-10Zr	13.74	1.30	0.2911	0.38
9	T697	U-10Zr	14.52	7.39	0.2912	0.41
10	T698	U-10Zr	14.49	6.98	0.2910	0.34
11	T679	U-10Zr	14.48	6.79	0.2907	0.24
12	T659	U-19Pu-10Zr	13.75	1.41	0.2913	0.45
13	T700	U-10Zr	14.30	5.96	0.2913	0.45
14	T663	U-10Zr	14.44	6.84	0.2913	0.45
15	T702	U-10Zr	14.52	7.24	0.2910	0.34
16	T669	U-22Pu-10Zr	13.92	2.73	0.2906	0.21
17	T660	U-19Pu-10Zr	13.72	1.25	0.2908	0.28
18	T685	U-10Zr	14.61	7.81	0.2913	0.45
19	T652	U-19Pu-10Zr	13.74	1.30	0.2909	0.31
20	T686	U-10Zr	14.60	7.80	0.2910	0.34
21	T653	U-19Pu-10Zr	13.79	1.72	0.2912	0.41
22	T682	U-26Pu-10Zr	13.98	3.21	0.2908	0.28
23	T688	U-10Zr	14.53	7.22	0.2908	0.28
24	T689	U-10Zr	14.52	7.09	0.2909	0.31
25	T690	U-10Zr	14.59	7.56	0.2911	0.38
26	T654	U-19Pu-10Zr	13.75	1.42	0.2910	0.34
27	T710	U-10Zr	14.48	6.90	0.2916	0.55
28	T671	U-22Pu-10Zr	14.12	4.37	0.2908	0.28
29	T709	U-10Zr	14.54	7.29	0.2911	0.38
30	T655	U-19Pu-10Zr	13.65	1.04	0.2908	0.28
31	T704	U-10Zr	14.55	7.38	0.2911	0.38
32	T705	U-10Zr	14.55	7.34	0.2913	0.45
33	T651	U-10Zr	14.72	8.53	0.2911	0.38
34	T684	U-26Pu-10Zr	13.95	3.19	0.2904	0.14
35	T707	U-10Zr	14.56	7.37	0.2908	0.28
36	T672	U-22Pu-10Zr	14.00	3.25	0.2904	0.14
37	T683	U-26Pu-10Zr	14.11	4.03	0.2909	0.31

TABLE XIII. Values of Fuel Axial Swelling and Cladding Diametral Strain Measured from X430B Fuel Elements

Grid No.	Jacket I.D.	Description	Fuel Length (in.)	Axial Strain (%)	Cladding Dia. (in.)	Cladding Strain (%)
1	T657	U-19Pu-10Zr	13.97	3.00	0.2914	0.48
2	T663	U-10Zr	14.31	5.88	0.2916	0.55
3	T692	U-10Zr	14.37	6.01	0.2916	0.55
4	T656	U-19Pu-10Zr	14.00	3.22	0.2913	0.45
5	T694	U-10Zr	14.31	6.17	0.2917	0.59
6	T664	U-22Pu-10Zr	13.72	1.21	0.2910	0.34
7	T665	U-22Pu-10Zr	13.69	1.57	0.2915	0.52
8	T658	U-19Pu-10Zr	13.72	1.15	0.2921	0.72
9	T697	U-10Zr	14.31	5.84	0.2918	0.62
10	T698	U-10Zr	14.34	5.87	0.2920	0.69
11	T667	U-22Pu-10Zr	13.69	0.99	0.2909	0.31
12	T659	U-19Pu-10Zr	13.75	1.41	0.2934	1.17
13	T675	U-26Pu-10Zr	13.81	1.86	0.2909	0.31
14	T670	U-22Pu-10Zr	13.81	2.17	0.2910	0.34
15	T702	U-10Zr	14.37	6.13	0.2919	0.66
16	T686	U-10Zr	14.44	6.62	0.2922	0.76
17	T660	U-19Pu-10Zr	13.75	1.48	0.2930	1.03
18	T668	U-22Pu-10Zr	13.69	1.26	0.2915	0.52
19	T672	U-22Pu-10Zr	14.00	3.24	0.2912	0.41
20	T669	U-22Pu-10Zr	13.88	2.44	0.2911	0.38
21	T653	U-19Pu-10Zr	13.75	1.42	0.2919	0.66
22	T689	U-10Zr	14.31	5.54	0.2921	0.72
23	T688	U-10Zr	14.37	6.04	0.2917	0.59
24	T682	U-26Pu-10Zr	13.88	2.47	0.2911	0.38
25	T677	U-26Pu-10Zr	13.69	1.67	0.2911	0.38
26	T654	U-19Pu-10Zr	13.72	1.19	0.2928	0.97
27	T671	U-22Pu-10Zr	14.03	3.70	0.2913	0.45
28	T710	U-10Zr	14.34	5.86	0.2919	0.66
29	T709	U-10Zr	14.40	6.26	0.2918	0.62
30	T655	U-19Pu-10Zr	13.66	1.12	0.2925	0.86
31	T684	U-26Pu-10Zr	13.94	3.11	0.2908	0.28
32	T683	U-26Pu-10Zr	13.94	2.77	0.2912	0.41
33	T651	U-10Zr	14.50	6.91	0.2918	0.62
34	T704	U-10Zr	14.31	5.61	0.2920	0.69
35	T707	U-10Zr	14.40	6.19	0.2918	0.62
36	T652	U-19Pu-10Zr	13.88	2.33	0.2915	0.52
37	T705	U-10Zr	14.31	5.57	0.2920	0.69

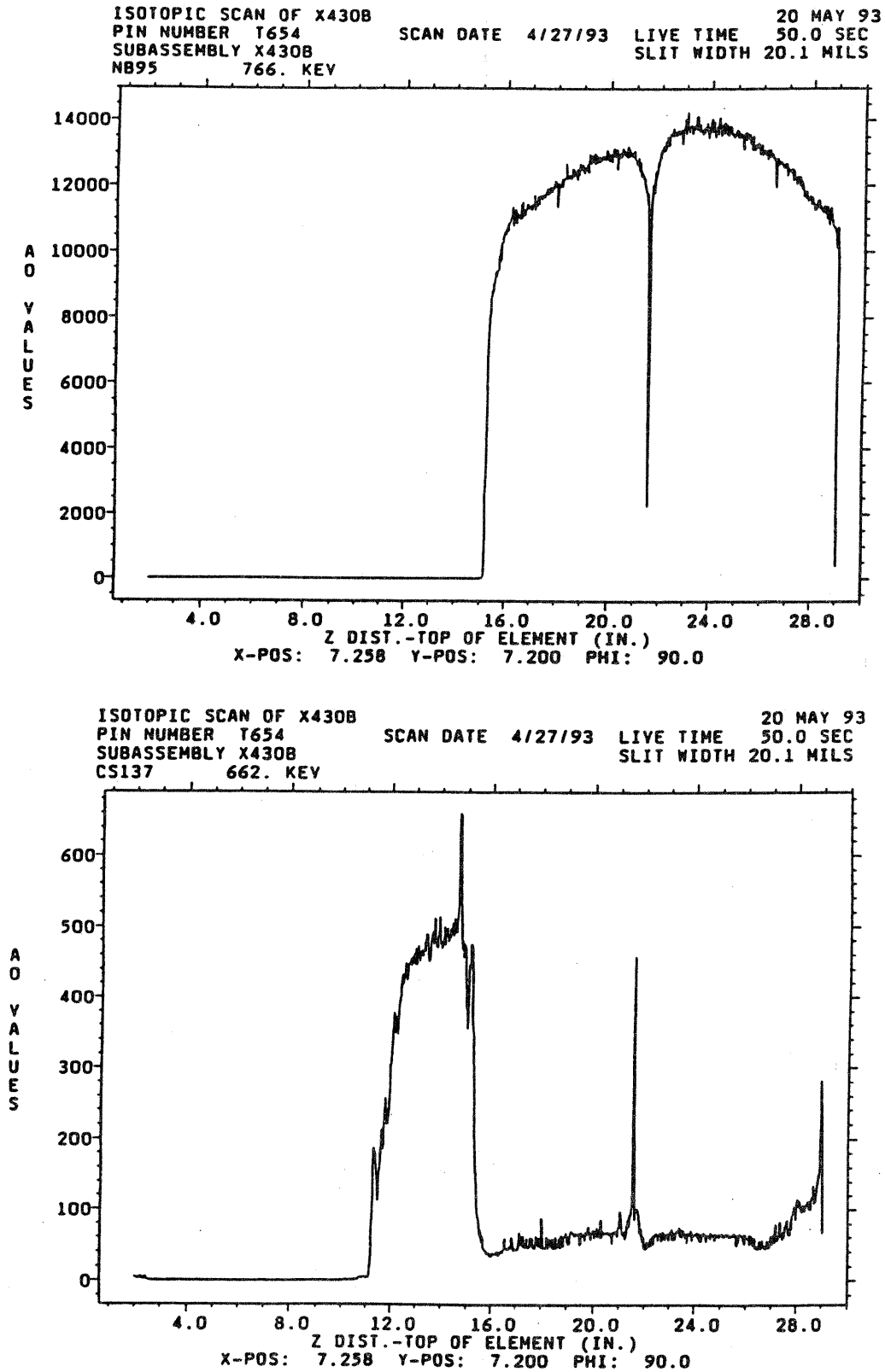


Fig. 17. Nb-95 and Cs-137 Gamma Scans for U-19Pu-10Zr Element T654

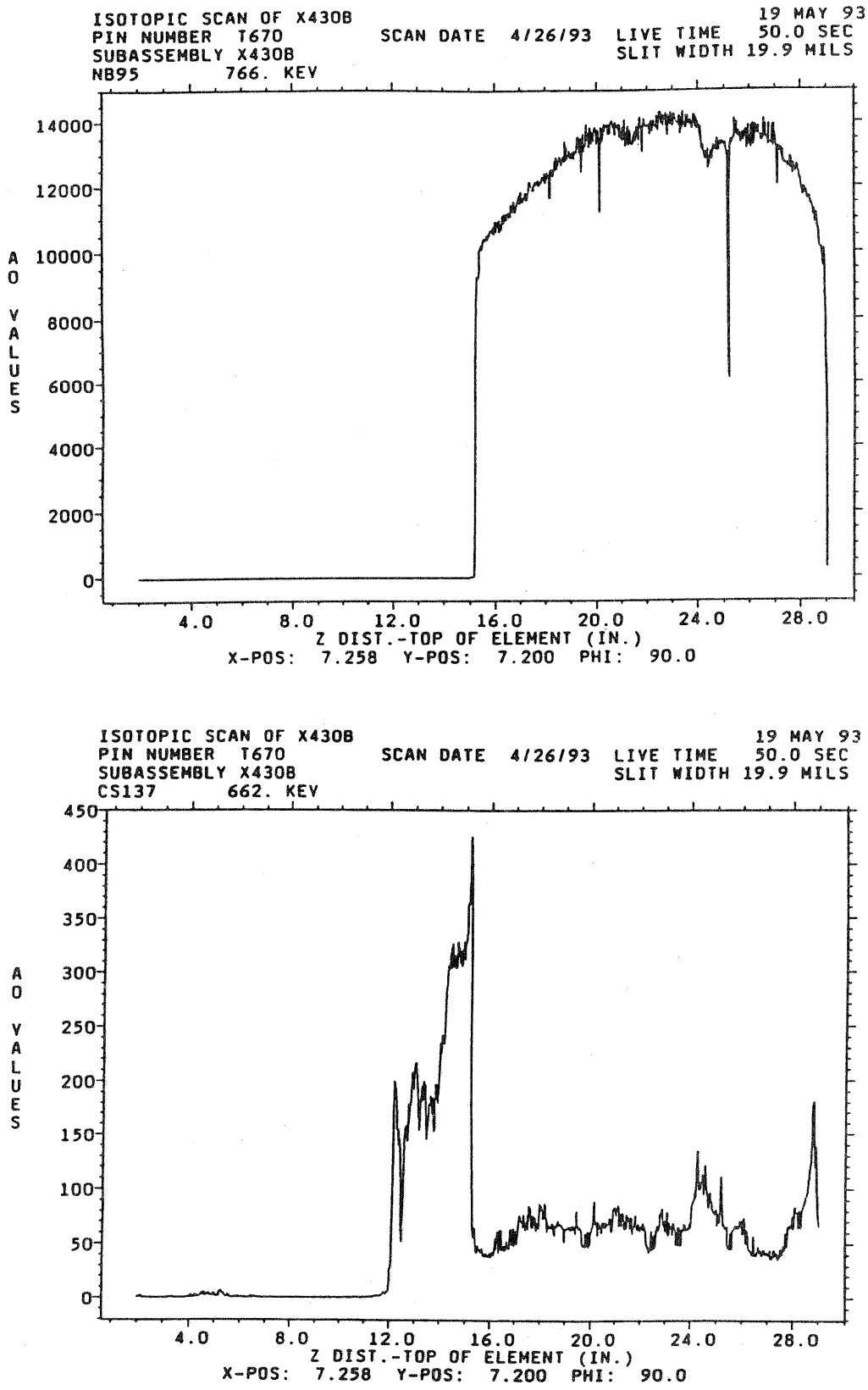


Fig. 18. Nb-95 and Cs-137 Gamma Scans for U-22Pu-10Zr Element T670

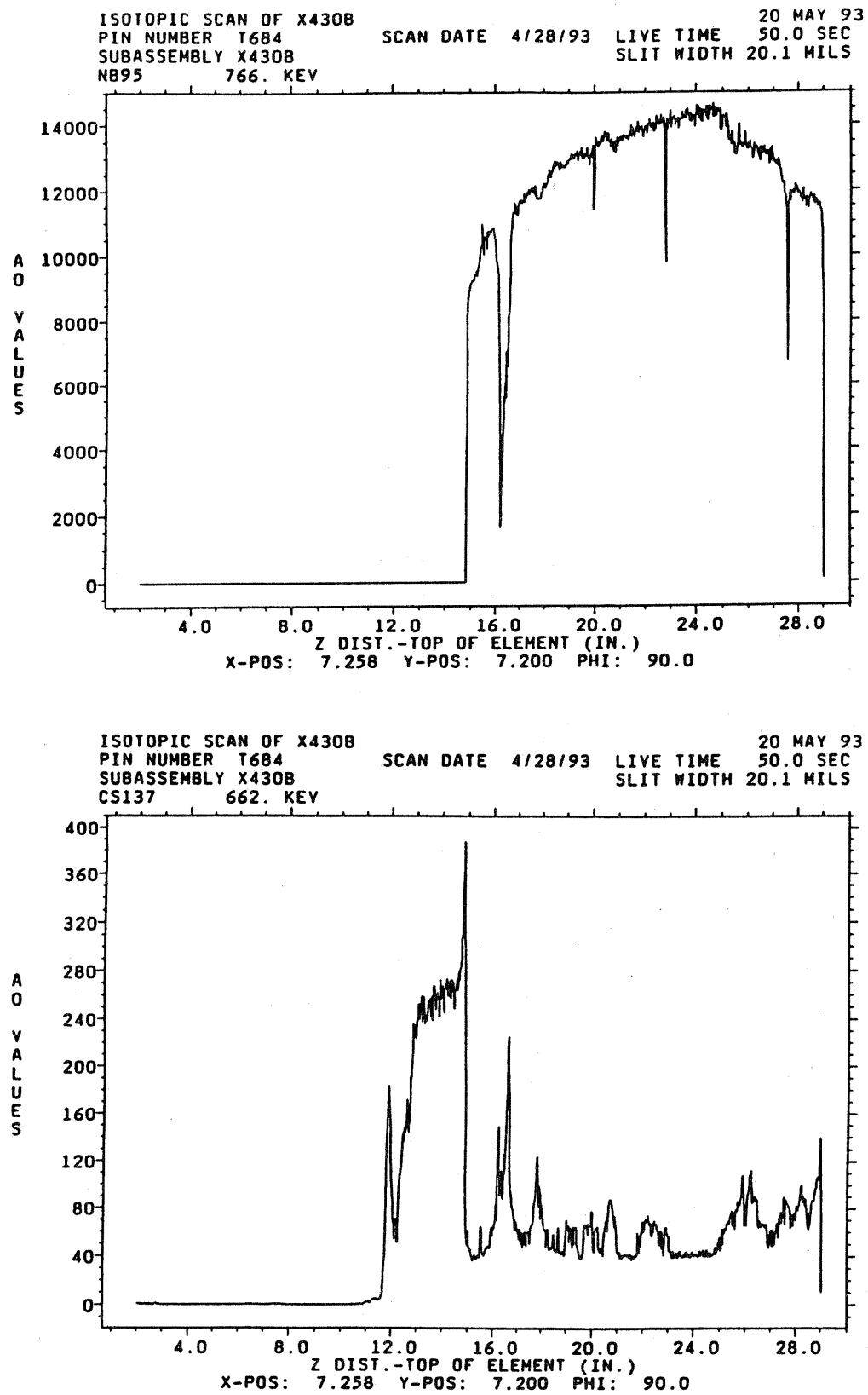


Fig. 19. Nb-95 and Cs-137 Gamma Scans for U-26Pu-10Zr Element T684

4. Cladding Profilometry

Diameters of elements from subassembly X430 were measured using helical contact profilometry and were found to have not changed significantly from the nominal as-built values. Changes in cladding diameter were measurable after irradiation in subassembly X430A, but were still small. Values of cladding strain calculated from measured cladding diameters of X430A and X430B elements relative to nominal as-built diameters are listed in Tables XII and XIII.

5. Element Weights

All elements from subassemblies X430, X430A and X430B were weighed after removal from the subassembly. All the elements had masses within 0.05 g of their respective as-built masses. This indicated that none of the elements had breached, consistent with indications of both visual examination and the absence of tag gas in the EBR-II cover gas.

V. DESTRUCTIVE EXAMINATION

U-26Pu-10Zr element T678 from X430A (at 2.6 at.% peak burnup) was retained for destructive examination. The element was first laser-punctured in HFEF for measurements of plenum volume and fission gas pressure in the plenum. The element was then shipped to the Alpha Gamma Hot Cell Facility for metallographic examination and Fuel Behavior Test Apparatus (FBTA) testing. The results of the metallographic examination have been presented elsewhere,[5] but the results of the fission gas measurements and a calculation of fission gas release are presented below. Measurements made on the HFEF GASR system[6] determined the gas pressure of element T678 at 305 K to be 648 ± 60 kPa (94 ± 9 psia) and the plenum volume to be 9.54 ± 1.23 cm^3 (0.582 ± 0.075 $in.^3$).

The uncertainties are 2-sigma values. To calculate the proportion of fission gas released, the following assumptions are made:

1) 0.25 atoms of fission gas are released for every heavy metal atom fissioned.

2) The glovebox pressure and temperature at the time of element fabrication were 84 kPa (12.2 psia) and 298 K, respectively.

Additional information is listed in Table XIV.

The calculation of gas release proceeds as follows:

$$\text{volume of tag and fill gas at fabrication} = \text{element vol.} - \text{slug vol.} - \text{bond Na vol.}$$

$$= \left(\frac{(28.25\ \text{in.})(0.258\ \text{in.})^2\pi}{4} - \frac{(13.55\ \text{in.})(0.223\ \text{in.})^2\pi}{4}\right)\left(\frac{2.54\ \text{cm}}{\text{in.}}\right)^3 - \frac{3.05\ \text{cm}^3}{0.968\ \text{g / cm}^3} = 12.4\ \text{cm}^3$$

$$\text{amount of tag and fill gas} = \frac{PV}{RT} = \frac{(84\ \text{kPa})\left(\frac{1\ \text{atm}}{101.3\ \text{kPa}}\right)(12.4\ \text{cm}^3)}{\left(\frac{82.06\ \text{cm}^3 \cdot \text{atm}}{\text{mole} \cdot \text{K}}\right)(298\ \text{K})} = 4.21 \times 10^{-4}\ \text{moles}$$

$$\text{amount of released fission gas} = \left(\frac{PV}{RT}\right)_{\text{measured}} - \left(\frac{PV}{RT}\right)_{\text{tag \& fill}}$$

$$= \frac{(648\ \text{kPa})\left(\frac{1\ \text{atm}}{101.3\ \text{kPa}}\right)(9.54\ \text{cm}^3)}{\left(\frac{82.06\ \text{cm}^3 \cdot \text{atm}}{\text{mole} \cdot \text{K}}\right)(305\ \text{K})} - 4.21 \times 10^{-4}$$

$$= 2.01 \times 10^{-3}\ \text{moles}$$

$$\text{amount of fission gas produced} = (\text{avg. burnup}) \times (\text{moles heavy metal}) \times \left(\frac{\text{atoms fission gas}}{\text{atom fissioned}}\right)$$

TABLE XIV. Information Necessary for Calculation of Fission Gas Release to the Plenum of Element T678

Item	Value	Source
Na density	0.968 g/cm^3	"Sodium-NaK Engineering Handbook," Vol.1, ed. by O.J. Foust, Gordon and Breach, Science Publishers Inc. New York, 1972, p.15.
gas constant	82.06 cm^{3}atm/mole-K	"Handbook of Chemistry and Physics," 41st ed., ed. by C. D. Hodgman, Chemical Rubber Publishing Co. Cleveland, 1959, p. 3188.
fuel slug length	13.55 in.	Table IV
fuel slug dia.	0.223 in.	Table IV
Bond Na mass	3.05 g	Table IV
nominal cladding ID	0.258 in.	Table I
plenum length	28.25 in.	dwg. no. EB-1-54281-C
avg. element burnup	2.3 at.%	Appendices
heavy metal content	125.25 g	Table IV
molar mass heavy metal	~236 g	approximation

$$= \left(\frac{2.3 \text{ moles heavy metal fissioned}}{100 \text{ moles heavy metal total}}\right)\left(\frac{125.25 \text{ g heavy metal}}{\left(\frac{236 \text{ g heavy metal}}{\text{mole heavy metal}}\right)}\right) \times \left(\frac{0.25 \text{ moles fission gas}}{\text{mole heavy metal fissioned}}\right)$$

$$= 3.05 \times 10^{-3} \text{ moles}$$

$$\text{fission gas release} = \frac{\text{amount fission gas released}}{\text{amount fission gas produced}}$$

$$= \frac{2.01 \times 10^{-3}}{3.05 \times 10^{-3}} = 0.66 = 66\% \text{ gas release}$$

Three elements from X430B were laser-punctured in HFEF for measurements of plenum volume and fission gas pressure in the plenum: U-19PU-10Zr element T654 (at 11.6 at.% peak burnup), U-22Pu-10Zr element T670 (at 6.6 at.% peak burnup) and U-26Pu-10Zr element T684 (at 6.6 at.% burnup). Measurements made on the HFEF GASR system at 305 K determined

the gas pressures and plenum volumes of these elements to be: 2695 ± 361 kPa (391 ± 52 psia) and 8.82 ± 1.57 cm^3 (0.538 ± 0.096 $in.^3$) for element T654; 1765 ± 239 kPa (256 ± 35 psia) and 9.50 ± 1.74 cm^3 (0.580 ± 0.106 $in.^3$) for element T670; and 1751 ± 257 kPa (254 ± 37 psia) and 9.24 ± 1.87 cm^3 (0.564 ± 0.114 $in.^3$) for element T684. Using the same procedure and assumptions as above, the fission gas release for these elements are 65.89% for T654, 79.84% for T670, and 76.69% for T684.

VI. DISCUSSION AND CONCLUSIONS

From the work performed thus far with the HT9 Advanced Driver Fuel Test (subassembly X430), two items are apparent. First, Tables XI, XII, and XIII indicate that fuel containing Pu swells significantly less than U-10Zr fuel. U-22Pu-10Zr and U-26Pu-10Zr fuel in X430A swelled about twice as much as did U-19Pu-10Zr fuel. However, those higher-Pu fuel elements were placed in the outermost row of the subassembly where the fuel element temperatures would be lower. Previous experimenters[4] have noted an increase in axial fuel swelling for Pu-bearing fuel with decreasing temperature. Second, the axial fuel swelling measured for U-10Zr elements following X430A and X430B had decreased significantly relative to the swelling measured following X430. Such a trend in the binary fuel has not been documented previously.

Second, the fission gas released to the plenum of elements T654 (a U-19Pu-10Zr element at 11.6 at.% peak burnup), T670 (a U-22Pu-10Zr element at 6.6 at.% peak burnup), T678 (a U-26Pu-10Zr element at 2.6 at.% peak burnup) and T684 (a U-26Pu-10Zr element at 6.6 at.% peak burnup) were measured as 66%, 80%, 66%, and 77%, respectively. These values are similar to those measured in other elements from previous experiments with smaller diameter elements.[7] Therefore, the measured values for fission gas release are as expected. Furthermore, the similarity of the values suggests that gas release is not sensitive to the diameter of the fuel slug.

Furthermore, the U-19Pu-10Zr elements, which are a larger diameter version of EBR-II Mk-V driver fuel elements, performed within the bounds

of the Mk-V/VA safety case.[8] Measured values of axial fuel swelling, cladding strain and plenum pressure met criteria used for the Mk-V/VA safety case and/or performed within the bounds of expected behavior.

Subassembly X430C will be reconstituted from elements removed from X430, X430A, and X430B (perhaps with some fresh filler elements). After the PIE data from X430B elements has been examined, cladding wastage and gas release in the higher-Pu elements can be addressed. Such analyses will be used to justify further irradiation of subassembly X430C. The subassembly may be reorificed to increase cladding temperatures. Further examination of those fuel elements will assess fuel-cladding chemical interaction, fuel axial swelling, and fission gas release in elements of varying Pu contents at higher burnup.

ACKNOWLEDGMENTS

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APPENDIX A

X430 BEGINNING-OF-CYCLE ELEMENT TEMPERATURES

Grid: 1
Jacket: T657

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	11.6	372	399	413	425	591
0.10	12.9	384	414	429	442	620
0.20	13.9	397	429	446	460	647
0.30	14.5	410	444	462	476	668
0.40	14.7	424	459	476	492	682
0.50	14.5	438	472	490	506	691
0.60	14.0	453	486	503	518	695
0.70	13.1	468	498	514	528	693
0.80	11.8	480	508	522	535	685
0.90	10.4	492	516	528	540	672
1.00	8.8	501	522	533	542	655

Grid: 2
Jacket: T662

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.0	372	400	415	427	541
0.10	13.0	386	416	432	444	566
0.20	13.8	400	433	449	463	590
0.30	14.4	416	450	466	482	612
0.40	14.5	432	466	483	499	628
0.50	14.4	448	482	498	514	640
0.60	13.8	463	496	513	528	648
0.70	13.1	478	509	524	538	651
0.80	11.8	492	520	534	547	648
0.90	10.6	504	528	541	552	643
1.00	9.2	513	535	546	556	635

Grid: 3
Jacket: T692

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	11.9	372	400	414	426	541
0.10	12.9	386	416	431	444	565
0.20	13.7	400	433	449	463	589
0.30	14.3	416	450	466	482	610
0.40	14.4	432	466	483	498	626
0.50	14.2	448	482	498	514	638
0.60	13.7	463	496	512	527	646
0.70	12.9	478	508	524	538	649
0.80	11.7	491	519	533	546	647
0.90	10.4	502	528	540	552	642
1.00	9.1	513	534	545	555	634

Grid: 4
Jacket: T693

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.0	372	400	414	426	541
0.10	12.9	384	414	430	442	564
0.20	13.7	397	429	445	459	586
0.30	14.3	410	444	462	476	606
0.40	14.4	424	458	476	491	619
0.50	14.2	438	472	490	504	630
0.60	13.7	453	485	501	516	636
0.70	12.9	466	496	512	526	638
0.80	11.7	478	506	520	532	635
0.90	10.4	488	514	526	537	628
1.00	9.2	498	519	530	540	620

Grid: 5
Jacket: T694

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	415	428	544
0.10	13.2	386	416	432	446	570
0.20	14.1	400	434	450	465	594
0.30	14.7	416	450	468	484	616
0.40	14.9	431	467	484	500	632
0.50	14.7	447	482	500	516	644
0.60	14.2	463	496	513	528	651
0.70	13.4	478	508	524	540	654
0.80	12.1	491	519	534	547	651
0.90	10.8	502	528	541	553	646
1.00	9.3	513	535	546	557	637

Grid: 6
Jacket: T681

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	416	428	545
0.10	13.2	389	420	436	450	573
0.20	14.1	408	441	458	472	600
0.30	14.6	427	462	480	495	625
0.40	14.8	447	482	499	515	645
0.50	14.6	466	500	518	534	660
0.60	14.1	484	517	534	550	670
0.70	13.2	500	532	548	563	675
0.80	12.1	516	545	559	573	674
0.90	10.8	530	555	568	580	670
1.00	9.3	540	563	574	585	663

Grid: 7
Jacket: T696

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	416	428	545
0.10	13.2	389	420	436	450	573
0.20	14.0	408	442	458	473	601
0.30	14.6	428	463	480	496	626
0.40	14.8	448	483	501	517	646
0.50	14.6	468	502	520	536	662
0.60	14.1	487	521	538	553	672
0.70	13.2	505	536	552	567	678
0.80	12.0	521	550	564	578	678
0.90	10.8	534	560	574	586	675
1.00	9.3	547	569	580	591	668

Grid: 8
Jacket: T658

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	11.6	372	400	414	425	591
0.10	12.8	389	419	434	448	624
0.20	13.8	408	440	457	471	655
0.30	14.4	427	462	478	494	681
0.40	14.5	447	481	498	514	698
0.50	14.3	466	500	516	532	710
0.60	13.8	484	516	533	548	718
0.70	12.9	500	532	546	561	719
0.80	11.7	515	543	558	571	714
0.90	10.4	528	553	566	577	704
1.00	8.7	539	560	571	581	688

Grid: 9
Jacket: T697

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.0	372	400	415	427	542
0.10	13.0	386	416	432	444	566
0.20	13.8	400	433	449	463	590
0.30	14.4	416	450	466	482	611
0.40	14.4	431	465	482	498	625
0.50	14.2	446	480	498	512	636
0.60	13.7	461	494	510	525	644
0.70	12.9	476	506	522	536	647
0.80	11.7	488	516	530	543	644
0.90	10.4	500	524	538	549	639
1.00	9.2	510	532	543	553	632

Grid: 10
Jacket: T698

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.4	372	401	416	428	547
0.10	13.4	386	417	433	446	572
0.20	14.3	400	434	451	466	597
0.30	14.9	416	451	468	484	618
0.40	15.1	431	467	485	501	635
0.50	14.9	446	482	500	516	646
0.60	14.4	462	496	514	529	654
0.70	13.6	476	509	526	540	656
0.80	12.3	490	519	534	548	653
0.90	10.9	502	528	541	553	646
1.00	9.4	512	535	546	557	638

Grid: 11
Jacket: T679

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.3	372	401	416	429	546
0.10	13.4	389	420	436	450	575
0.20	14.2	408	442	459	474	603
0.30	14.8	428	464	481	496	628
0.40	15.0	448	484	502	518	649
0.50	14.8	468	504	521	537	664
0.60	14.3	487	521	538	554	675
0.70	13.4	504	536	552	568	680
0.80	12.2	521	550	565	578	680
0.90	10.9	534	560	574	586	676
1.00	9.4	547	569	581	591	670

Grid: 12
Jacket: T659

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	11.8	372	400	414	426	595
0.10	13.1	390	420	436	449	628
0.20	14.1	409	442	459	474	660
0.30	14.7	430	464	482	498	688
0.40	14.9	451	486	504	520	708
0.50	14.7	472	507	524	540	722
0.60	14.2	492	526	543	559	731
0.70	13.2	512	544	560	574	734
0.80	12.0	529	558	572	586	730
0.90	10.6	544	570	582	594	721
1.00	8.9	558	579	590	600	707

Grid: 13
Jacket: T700

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	416	428	544
0.10	13.2	390	420	436	450	572
0.20	14.0	409	442	459	473	601
0.30	14.6	430	464	482	497	626
0.40	14.7	451	486	503	519	647
0.50	14.6	472	506	524	540	664
0.60	14.0	492	526	542	558	676
0.70	13.1	512	542	558	574	683
0.80	12.0	529	558	572	586	685
0.90	10.8	544	570	583	595	683
1.00	9.3	558	580	591	602	678

Grid: 14
Jacket: T663

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.1	372	401	416	428	544
0.10	13.2	389	420	436	449	572
0.20	14.0	408	441	458	472	600
0.30	14.6	428	462	480	496	625
0.40	14.7	448	483	501	516	644
0.50	14.4	468	502	520	536	660
0.60	14.0	487	520	537	552	670
0.70	13.1	504	536	552	566	676
0.80	11.9	520	549	563	577	676
0.90	10.6	534	560	572	584	674
1.00	9.3	546	568	579	590	667

Grid: 15
Jacket: T702

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.1	372	401	415	427	543
0.10	13.1	386	416	432	445	567
0.20	13.9	400	433	450	464	591
0.30	14.4	416	450	467	482	612
0.40	14.5	431	466	483	498	627
0.50	14.3	446	480	498	512	638
0.60	13.8	461	494	511	526	645
0.70	12.9	476	506	522	536	648
0.80	11.8	489	517	531	544	646
0.90	10.6	500	526	538	550	640
1.00	9.2	510	532	543	553	633

Grid: 16
Jacket: T666

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.6	372	402	417	429	549
0.10	13.7	384	416	432	446	573
0.20	14.5	397	431	448	463	596
0.30	15.1	410	446	464	480	616
0.40	15.4	424	461	479	495	632
0.50	15.2	438	474	492	508	642
0.60	14.7	452	487	504	520	648
0.70	13.8	466	498	514	530	649
0.80	12.5	478	508	523	536	644
0.90	11.1	488	516	528	541	637
1.00	9.6	498	521	533	543	627

Grid: 17
Jacket: T660

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.1	372	401	415	427	599
0.10	13.4	389	420	436	450	633
0.20	14.4	408	442	459	474	665
0.30	15.1	427	463	481	496	691
0.40	15.3	447	483	501	518	711
0.50	15.1	466	502	520	536	722
0.60	14.6	484	518	536	552	730
0.70	13.6	500	532	550	564	730
0.80	12.3	516	545	560	574	723
0.90	10.9	528	554	568	580	712
1.00	9.1	540	562	573	583	694

Grid: 18
Jacket: T685

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.7	372	402	418	430	552
0.10	13.8	390	422	438	452	580
0.20	14.7	409	444	461	476	609
0.30	15.3	430	466	484	500	635
0.40	15.5	451	488	506	523	657
0.50	15.3	472	508	526	544	674
0.60	14.8	492	527	545	561	685
0.70	13.9	512	544	562	576	692
0.80	12.6	529	559	574	589	692
0.90	11.2	544	572	585	598	690
1.00	9.7	558	581	593	604	684

Grid: 19
Jacket: T652

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.0	372	401	415	427	598
0.10	13.2	390	420	436	450	632
0.20	14.3	409	443	460	474	663
0.30	14.9	430	465	483	498	690
0.40	15.1	451	487	505	521	711
0.50	14.9	472	508	526	542	726
0.60	14.4	493	527	544	560	734
0.70	13.4	512	544	560	576	737
0.80	12.2	531	560	574	588	734
0.90	10.8	546	572	586	598	726
1.00	9.1	561	582	593	604	712

Grid: 20
Jacket: T686

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.5	372	402	417	430	549
0.10	13.6	390	422	438	451	578
0.20	14.4	409	443	460	475	606
0.30	15.0	430	465	483	499	632
0.40	15.2	451	487	505	521	653
0.50	15.0	472	508	526	542	670
0.60	14.5	492	527	544	560	681
0.70	13.6	512	544	560	576	688
0.80	12.4	529	558	573	587	689
0.90	11.1	544	570	584	596	687
1.00	9.6	558	581	592	603	682

Grid: 21
Jacket: T653

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	11.7	372	400	414	426	593
0.10	12.9	389	420	435	448	626
0.20	13.9	408	441	457	472	657
0.30	14.6	427	462	479	494	683
0.40	14.6	447	481	499	514	700
0.50	14.4	466	500	517	532	712
0.60	13.9	483	517	533	548	720
0.70	13.1	500	532	547	562	720
0.80	11.8	515	543	558	571	715
0.90	10.4	528	554	566	578	704
1.00	8.8	540	561	571	581	689

Grid: 22
Jacket: T687

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	415	428	545
0.10	13.2	384	414	430	444	568
0.20	14.1	396	429	446	460	590
0.30	14.7	408	444	462	476	610
0.40	14.7	422	457	475	490	622
0.50	14.5	436	470	488	504	632
0.60	14.0	450	483	500	515	638
0.70	13.2	462	494	510	524	639
0.80	12.0	475	503	517	530	635
0.90	10.8	486	510	524	535	628
1.00	9.3	495	517	528	538	620

Grid: 23
Jacket: T688

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.7	372	402	417	430	552
0.10	13.8	386	418	434	448	577
0.20	14.7	400	435	453	468	602
0.30	15.4	416	452	470	486	624
0.40	15.6	432	469	487	504	641
0.50	15.4	448	484	502	518	652
0.60	14.9	462	497	515	531	659
0.70	13.9	476	510	526	542	660
0.80	12.7	489	519	535	548	657
0.90	11.2	500	528	541	554	650
1.00	9.7	511	534	546	556	640

Grid: 24
Jacket: T689

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.9	372	403	418	431	554
0.10	13.9	389	422	438	453	582
0.20	14.8	408	443	461	476	610
0.30	15.4	428	465	483	500	636
0.40	15.7	448	486	504	521	657
0.50	15.5	468	505	524	540	672
0.60	15.0	487	523	540	557	682
0.70	14.1	504	538	554	570	687
0.80	12.7	521	551	566	581	686
0.90	11.4	534	562	576	588	682
1.00	9.8	546	570	582	593	674

Grid: 25
Jacket: T690

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.9	372	403	418	431	555
0.10	14.0	390	422	439	453	583
0.20	14.9	409	444	462	477	612
0.30	15.5	430	466	485	501	638
0.40	15.7	451	488	507	524	660
0.50	15.5	472	508	528	544	676
0.60	15.0	492	528	546	562	688
0.70	14.1	512	545	562	578	694
0.80	12.8	529	559	575	589	694
0.90	11.4	544	572	586	598	692
1.00	9.9	558	581	594	605	686

Grid: 26
Jacket: T654

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.0	372	401	415	427	598
0.10	13.2	390	420	436	450	632
0.20	14.2	409	443	460	474	663
0.30	14.9	430	465	482	498	690
0.40	15.1	451	487	505	521	710
0.50	14.9	472	507	525	542	724
0.60	14.4	492	526	544	559	733
0.70	13.4	512	544	560	574	736
0.80	12.2	529	558	573	586	732
0.90	10.8	544	570	583	595	724
1.00	9.1	558	579	590	601	710

Grid: 27
Jacket: T710

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.5	372	402	417	429	549
0.10	13.6	389	421	437	451	577
0.20	14.4	408	442	459	474	605
0.30	15.0	428	464	482	498	630
0.40	15.2	448	484	502	519	650
0.50	14.9	468	504	522	538	666
0.60	14.4	487	521	539	555	676
0.70	13.6	504	538	554	568	682
0.80	12.3	521	550	565	579	681
0.90	11.1	534	561	574	586	678
1.00	9.6	547	569	581	592	671

Grid: 28
Jacket: T711

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.5	372	402	417	429	549
0.10	13.5	386	418	434	448	574
0.20	14.4	400	434	451	466	598
0.30	15.0	416	452	469	484	619
0.40	15.1	431	467	485	501	635
0.50	14.9	448	482	500	516	646
0.60	14.4	462	496	514	529	653
0.70	13.6	476	508	524	540	656
0.80	12.3	489	519	533	547	652
0.90	10.9	500	527	540	552	646
1.00	9.5	511	533	545	555	637

Grid: 29
Jacket: T709

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	13.0	372	403	418	431	555
0.10	14.1	386	418	435	450	580
0.20	14.9	400	435	453	469	604
0.30	15.6	416	452	471	488	626
0.40	15.9	431	469	488	505	644
0.50	15.6	448	484	502	520	655
0.60	15.1	462	498	516	532	662
0.70	14.1	476	510	526	542	663
0.80	12.9	489	520	535	549	659
0.90	11.4	500	528	542	554	652
1.00	9.9	511	534	546	557	642

Grid: 30
Jacket: T655

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	416	428	602
0.10	13.5	389	421	437	451	635
0.20	14.5	408	442	459	474	666
0.30	15.1	427	463	481	497	692
0.40	15.5	447	483	502	518	712
0.50	15.2	466	502	520	536	724
0.60	14.7	484	518	536	552	731
0.70	13.8	500	534	550	564	731
0.80	12.4	515	545	560	574	724
0.90	10.9	528	554	568	580	712
1.00	9.2	540	562	573	583	696

Grid: 31
Jacket: T704

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.9	372	403	418	431	554
0.10	14.0	389	422	438	453	582
0.20	14.8	408	443	461	476	610
0.30	15.4	428	465	483	499	636
0.40	15.7	448	486	504	521	657
0.50	15.4	468	505	524	540	672
0.60	14.9	487	523	540	557	682
0.70	14.0	504	538	554	570	687
0.80	12.7	521	551	566	581	686
0.90	11.4	534	562	576	588	682
1.00	9.9	546	570	582	593	675

Grid: 32
Jacket: T705

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.8	372	403	418	431	552
0.10	13.8	389	422	438	452	580
0.20	14.6	408	442	460	475	608
0.30	15.2	427	463	482	498	632
0.40	15.5	447	483	502	518	652
0.50	15.2	466	502	520	536	666
0.60	14.7	484	519	536	552	677
0.70	13.9	500	534	550	566	681
0.80	12.6	516	545	561	575	679
0.90	11.2	528	556	569	582	675
1.00	9.8	540	563	575	586	667

Grid: 33
Jacket: T651

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.7	372	402	417	430	552
0.10	13.8	384	418	434	448	576
0.20	14.6	399	433	451	466	599
0.30	15.2	414	450	468	484	620
0.40	15.4	428	465	483	499	636
0.50	15.2	444	480	498	514	646
0.60	14.7	459	494	511	527	654
0.70	13.8	472	506	522	537	656
0.80	12.6	486	516	531	544	652
0.90	11.2	498	524	537	550	646
1.00	9.7	507	530	542	553	636

Grid: 34
Jacket: T706

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	13.1	372	403	419	432	557
0.10	14.2	384	416	434	448	580
0.20	15.0	397	432	450	465	602
0.30	15.6	410	448	466	482	622
0.40	16.0	424	462	481	498	639
0.50	15.8	438	476	494	512	648
0.60	15.2	452	488	507	523	655
0.70	14.2	466	500	516	532	655
0.80	13.0	478	509	524	538	650
0.90	11.6	488	516	530	543	642
1.00	10.1	498	522	534	545	632

Grid: 35
Jacket: T707

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	13.1	372	403	419	432	557
0.10	14.1	386	418	436	450	581
0.20	14.9	400	436	453	469	605
0.30	15.6	416	452	471	488	626
0.40	15.8	431	469	488	504	644
0.50	15.6	447	484	502	520	655
0.60	15.1	462	498	516	533	662
0.70	14.1	478	510	528	543	664
0.80	12.9	490	521	536	550	660
0.90	11.6	502	529	543	556	654
1.00	10.1	512	536	548	559	645

Grid: 36
Jacket: T708

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	13.1	372	403	419	432	556
0.10	14.1	386	418	436	450	580
0.20	14.9	400	435	453	469	604
0.30	15.5	416	452	470	487	626
0.40	15.8	431	468	487	504	642
0.50	15.6	446	484	502	518	654
0.60	15.0	462	498	516	532	661
0.70	14.1	476	510	527	542	662
0.80	12.8	490	520	536	550	659
0.90	11.4	502	528	542	555	653
1.00	10.0	511	535	547	558	644

Grid: 37
Jacket: T656

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	12.2	372	401	415	428	601
0.10	13.4	384	416	432	445	630
0.20	14.4	397	431	448	463	656
0.30	15.1	410	446	464	480	677
0.40	15.3	424	460	479	495	692
0.50	15.1	438	474	492	508	700
0.60	14.5	452	487	504	520	703
0.70	13.6	466	498	514	529	700
0.80	12.3	478	507	522	535	691
0.90	10.9	488	514	528	539	677
1.00	9.2	498	520	531	541	659

APPENDIX B

X430 RUN-BY-RUN MAXIMUM TEMPERATURES

X430 in Run 144A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
1	T657	0.013	14.7	502	522	533	542	695
2	T662	0.013	14.5	514	535	546	556	651
3	T692	0.013	14.4	513	534	545	555	649
4	T693	0.013	14.4	498	519	530	540	638
5	T694	0.014	14.9	514	535	546	557	654
6	T681	0.013	14.9	541	563	574	585	675
7	T696	0.013	14.8	548	569	580	591	678
8	T658	0.013	14.5	540	560	571	581	720
9	T697	0.013	14.4	510	532	543	553	647
10	T698	0.014	15.1	513	535	546	557	656
11	T679	0.014	15.0	548	569	581	591	681
12	T659	0.014	14.9	559	579	590	600	734
13	T700	0.013	14.7	559	580	591	602	685
14	T663	0.013	14.7	547	568	579	590	677
15	T702	0.013	14.5	511	532	543	553	648
16	T666	0.014	15.4	499	521	533	543	649
17	T660	0.014	15.4	541	562	573	583	731
18	T685	0.014	15.5	559	581	593	604	692
19	T652	0.014	15.1	562	582	593	604	737
20	T686	0.014	15.2	559	581	592	603	689
21	T653	0.013	14.7	540	561	571	581	721
22	T687	0.013	14.8	495	517	528	538	639
23	T688	0.014	15.6	511	534	546	556	661
24	T689	0.014	15.7	547	570	582	593	687
25	T690	0.014	15.7	559	581	594	605	695
26	T654	0.014	15.1	559	579	590	601	736
27	T710	0.014	15.2	547	569	581	592	682
28	T711	0.014	15.1	511	533	545	555	656
29	T709	0.014	15.9	511	534	546	557	664
30	T655	0.014	15.5	540	562	573	583	732
31	T704	0.014	15.7	547	570	582	593	687
32	T705	0.014	15.5	540	563	575	586	681
33	T651	0.014	15.4	508	530	542	553	656
34	T706	0.014	16.0	499	522	534	545	656
35	T707	0.014	15.9	512	536	548	559	664
36	T708	0.014	15.8	512	535	547	558	663
37	T656	0.014	15.3	499	520	531	541	703

X430 in Run 145A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.022	14.3	499	518	528
2	T662	0.022	14.2	510	531	541
3	T692	0.022	14.1	510	531	541
4	T693	0.022	14.1	499	519	530
5	T694	0.023	14.5	510	531	542
6	T681	0.022	14.5	536	557	568
7	T696	0.022	14.5	542	563	574
8	T658	0.022	14.2	536	555	566
9	T697	0.022	14.1	510	531	541
10	T698	0.023	14.8	510	531	542
11	T679	0.023	14.7	542	563	574
12	T659	0.023	14.5	553	572	583
13	T700	0.022	14.4	553	573	584
14	T663	0.022	14.3	542	563	574
15	T702	0.022	14.2	510	531	542
16	T666	0.023	15.0	499	520	531
17	T660	0.023	14.9	536	556	567
18	T685	0.023	15.1	553	574	586
19	T652	0.023	14.7	555	575	586
20	T686	0.023	14.8	553	574	585
21	T653	0.022	14.3	536	556	566
22	T687	0.022	14.4	499	519	530
23	T688	0.023	15.2	510	532	543
24	T689	0.023	15.3	542	564	575
25	T690	0.023	15.3	553	575	586
26	T654	0.023	14.7	553	573	583
27	T710	0.023	14.8	542	563	575
28	T711	0.023	14.7	510	531	543
29	T709	0.024	15.4	510	532	544
30	T655	0.023	15.0	536	556	567
31	T704	0.023	15.2	542	564	576
32	T705	0.023	15.0	536	558	569
33	T651	0.023	15.0	506	527	539
34	T706	0.024	15.5	499	521	533
35	T707	0.024	15.4	510	533	544
36	T708	0.023	15.3	510	533	544
37	T656	0.023	14.9	498	519	530

X430 in Run 146A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.023	13.6	494	514	524
2	T662	0.023	13.5	506	526	536
3	T692	0.023	13.4	505	525	535
4	T693	0.023	13.4	491	511	521
5	T694	0.024	13.8	505	526	536
6	T681	0.023	13.8	531	551	562
7	T696	0.023	13.8	537	557	568
8	T658	0.023	13.5	530	549	559
9	T697	0.023	13.4	502	522	533
10	T698	0.024	14.1	505	525	536
11	T679	0.024	14.0	537	557	568
12	T659	0.024	13.8	547	567	577
13	T700	0.023	13.7	547	567	578
14	T663	0.023	13.7	536	556	567
15	T702	0.023	13.5	502	523	533
16	T666	0.024	14.4	492	513	524
17	T660	0.024	14.2	530	550	561
18	T685	0.024	14.5	547	568	580
19	T652	0.024	14.0	550	569	580
20	T686	0.024	14.2	547	568	579
21	T653	0.023	13.6	530	549	559
22	T687	0.023	13.8	488	509	519
23	T688	0.024	14.6	503	524	536
24	T689	0.024	14.6	536	558	569
25	T690	0.024	14.7	547	569	580
26	T654	0.024	14.0	547	567	577
27	T710	0.024	14.1	536	557	569
28	T711	0.024	14.1	503	524	535
29	T709	0.025	14.8	503	525	536
30	T655	0.024	14.4	530	550	561
31	T704	0.024	14.6	536	558	569
32	T705	0.024	14.4	530	552	563
33	T651	0.024	14.4	500	521	532
34	T706	0.025	14.9	491	513	525
35	T707	0.025	14.8	504	526	538
36	T708	0.024	14.7	504	526	537
37	T656	0.024	14.2	491	511	522

X430 in Run 146B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.034	13.5	490	509	519
2	T662	0.033	13.4	501	521	532
3	T692	0.033	13.3	501	521	532
4	T693	0.033	13.3	490	510	521
5	T694	0.034	13.7	501	522	532
6	T681	0.034	13.7	525	546	556
7	T696	0.034	13.7	531	551	562
8	T658	0.033	13.4	525	544	554
9	T697	0.033	13.3	501	521	532
10	T698	0.035	14.0	501	522	533
11	T679	0.034	13.9	531	551	562
12	T659	0.034	13.7	541	560	570
13	T700	0.034	13.6	541	561	572
14	T663	0.034	13.6	531	551	562
15	T702	0.033	13.5	501	521	532
16	T666	0.035	14.2	490	511	522
17	T660	0.035	14.1	525	545	555
18	T685	0.035	14.4	541	562	573
19	T652	0.034	13.9	543	563	573
20	T686	0.034	14.1	541	562	573
21	T653	0.034	13.6	525	544	554
22	T687	0.034	13.7	490	511	521
23	T688	0.035	14.4	501	522	534
24	T689	0.035	14.5	531	552	564
25	T690	0.035	14.6	541	562	574
26	T654	0.035	14.0	541	560	571
27	T710	0.035	14.1	531	552	563
28	T711	0.034	14.1	501	522	533
29	T709	0.036	14.7	501	523	534
30	T655	0.035	14.3	525	545	556
31	T704	0.035	14.5	531	552	564
32	T705	0.035	14.3	525	547	558
33	T651	0.035	14.3	497	518	529
34	T706	0.036	14.8	490	512	524
35	T707	0.036	14.7	501	523	535
36	T708	0.035	14.6	501	523	534
37	T656	0.035	14.2	490	510	521

X430 in Run 147A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.040	14.3	502	522	533
2	T662	0.039	14.3	513	535	546
3	T692	0.039	14.2	514	535	546
4	T693	0.039	14.2	502	523	534
5	T694	0.040	14.6	513	535	547
6	T681	0.040	14.6	540	562	573
7	T696	0.040	14.5	546	568	579
8	T658	0.039	14.3	540	560	571
9	T697	0.039	14.2	514	535	546
10	T698	0.041	14.8	513	536	547
11	T679	0.041	14.8	546	568	580
12	T659	0.040	14.6	557	577	589
13	T700	0.040	14.5	557	578	590
14	T663	0.040	14.5	546	568	579
15	T702	0.039	14.4	513	535	547
16	T666	0.042	15.1	502	524	536
17	T660	0.041	15.0	540	561	572
18	T685	0.041	15.3	557	579	592
19	T652	0.041	14.8	559	580	592
20	T686	0.041	15.0	557	579	591
21	T653	0.040	14.4	540	560	571
22	T687	0.040	14.6	501	523	535
23	T688	0.042	15.3	513	536	548
24	T689	0.042	15.4	546	569	581
25	T690	0.041	15.5	557	580	592
26	T654	0.041	14.9	557	578	589
27	T710	0.041	15.0	546	568	580
28	T711	0.041	15.0	513	536	548
29	T709	0.042	15.6	514	537	549
30	T655	0.042	15.2	540	561	573
31	T704	0.042	15.5	546	569	582
32	T705	0.041	15.3	540	563	575
33	T651	0.041	15.3	509	532	544
34	T706	0.043	15.7	502	525	538
35	T707	0.042	15.6	514	537	550
36	T708	0.042	15.6	513	537	549
37	T656	0.042	15.1	501	523	535

X430 in Run 148B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.050	12.9	485	504	514
2	T662	0.050	12.9	496	515	525
3	T692	0.049	12.8	496	515	525
4	T693	0.049	12.8	485	505	515
5	T694	0.051	13.1	496	515	526
6	T681	0.051	13.1	519	538	549
7	T696	0.050	13.1	524	544	554
8	T658	0.050	12.8	519	537	547
9	T697	0.049	12.8	496	515	525
10	T698	0.052	13.3	496	516	526
11	T679	0.051	13.3	524	544	555
12	T659	0.051	13.1	534	552	562
13	T700	0.051	13.1	534	553	564
14	T663	0.050	13.0	524	544	554
15	T702	0.050	12.9	496	515	526
16	T666	0.052	13.6	485	506	516
17	T660	0.052	13.4	519	538	548
18	T685	0.052	13.7	534	554	565
19	T652	0.051	13.3	536	555	565
20	T686	0.051	13.5	534	554	565
21	T653	0.051	13.0	519	537	547
22	T687	0.050	13.1	485	505	515
23	T688	0.053	13.7	496	516	527
24	T689	0.053	13.8	524	545	556
25	T690	0.052	13.9	534	555	566
26	T654	0.052	13.3	534	553	563
27	T710	0.052	13.5	524	545	555
28	T711	0.051	13.4	496	516	527
29	T709	0.053	13.9	496	517	528
30	T655	0.053	13.6	519	538	549
31	T704	0.053	13.9	524	545	556
32	T705	0.052	13.7	519	540	550
33	T651	0.052	13.7	492	512	523
34	T706	0.054	14.1	485	507	518
35	T707	0.053	14.0	496	517	528
36	T708	0.053	14.0	496	517	528
37	T656	0.053	13.5	485	505	515

APPENDIX C

X430 RUN-BY-RUN BURNUPS AND FLUENCES

X430 in Run 144A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.012	1.87E+22	1.57E+22	8.91	0.013	2.13E+22	1.82E+22	10.41
2	T662	0.012	1.86E+22	1.56E+22	8.98	0.013	2.11E+22	1.81E+22	10.51
3	T692	0.012	1.85E+22	1.55E+22	9.04	0.013	2.10E+22	1.79E+22	10.58
4	T693	0.012	1.83E+22	1.53E+22	9.08	0.013	2.07E+22	1.77E+22	10.63
5	T694	0.012	1.90E+22	1.60E+22	8.81	0.014	2.17E+22	1.86E+22	10.29
6	T681	0.012	1.89E+22	1.59E+22	8.88	0.013	2.15E+22	1.84E+22	10.38
7	T696	0.012	1.88E+22	1.58E+22	8.94	0.013	2.14E+22	1.83E+22	10.45
8	T658	0.012	1.86E+22	1.56E+22	8.97	0.013	2.12E+22	1.80E+22	10.51
9	T697	0.012	1.84E+22	1.54E+22	9.00	0.013	2.09E+22	1.78E+22	10.54
10	T698	0.012	1.93E+22	1.63E+22	8.73	0.014	2.20E+22	1.89E+22	10.19
11	T679	0.012	1.92E+22	1.62E+22	8.79	0.014	2.19E+22	1.88E+22	10.27
12	T659	0.012	1.91E+22	1.60E+22	8.84	0.014	2.17E+22	1.86E+22	10.33
13	T700	0.012	1.89E+22	1.59E+22	8.87	0.013	2.15E+22	1.84E+22	10.38
14	T663	0.012	1.88E+22	1.57E+22	8.89	0.013	2.13E+22	1.82E+22	10.40
15	T702	0.012	1.86E+22	1.55E+22	8.89	0.013	2.11E+22	1.80E+22	10.41
16	T666	0.012	1.96E+22	1.66E+22	8.66	0.014	2.24E+22	1.92E+22	10.11
17	T660	0.012	1.95E+22	1.64E+22	8.70	0.014	2.22E+22	1.91E+22	10.17
18	T685	0.012	1.94E+22	1.63E+22	8.74	0.014	2.21E+22	1.89E+22	10.22
19	T652	0.012	1.93E+22	1.62E+22	8.77	0.014	2.19E+22	1.87E+22	10.25
20	T686	0.012	1.91E+22	1.60E+22	8.78	0.014	2.17E+22	1.86E+22	10.27
21	T653	0.012	1.89E+22	1.59E+22	8.78	0.013	2.15E+22	1.84E+22	10.27
22	T687	0.012	1.87E+22	1.57E+22	8.76	0.013	2.13E+22	1.81E+22	10.26
23	T688	0.012	1.98E+22	1.67E+22	8.63	0.014	2.26E+22	1.94E+22	10.08
24	T689	0.012	1.97E+22	1.66E+22	8.65	0.014	2.24E+22	1.92E+22	10.12
25	T690	0.012	1.95E+22	1.64E+22	8.67	0.014	2.23E+22	1.91E+22	10.14
26	T654	0.012	1.94E+22	1.63E+22	8.68	0.014	2.21E+22	1.89E+22	10.15
27	T710	0.012	1.93E+22	1.62E+22	8.67	0.014	2.19E+22	1.87E+22	10.14
28	T711	0.012	1.91E+22	1.60E+22	8.65	0.014	2.17E+22	1.85E+22	10.11
29	T709	0.013	1.99E+22	1.68E+22	8.57	0.014	2.28E+22	1.95E+22	10.02
30	T655	0.012	1.98E+22	1.67E+22	8.58	0.014	2.26E+22	1.93E+22	10.03
31	T704	0.012	1.97E+22	1.65E+22	8.58	0.014	2.24E+22	1.92E+22	10.03
32	T705	0.012	1.95E+22	1.64E+22	8.57	0.014	2.22E+22	1.90E+22	10.02
33	T651	0.012	1.94E+22	1.63E+22	8.54	0.014	2.21E+22	1.88E+22	9.99
34	T706	0.013	2.01E+22	1.69E+22	8.49	0.014	2.29E+22	1.96E+22	9.93
35	T707	0.013	1.99E+22	1.67E+22	8.49	0.014	2.27E+22	1.94E+22	9.93
36	T708	0.012	1.98E+22	1.66E+22	8.47	0.014	2.25E+22	1.92E+22	9.91
37	T656	0.012	1.97E+22	1.65E+22	8.44	0.014	2.24E+22	1.91E+22	9.87

†DPA accumulated during this run only.

X430 in Run 145A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.020	3.15E+22	2.65E+22	6.09	0.022	3.58E+22	3.07E+22	7.16
2	T662	0.020	3.13E+22	2.63E+22	6.09	0.022	3.56E+22	3.04E+22	7.14
3	T692	0.020	3.10E+22	2.60E+22	6.09	0.022	3.53E+22	3.01E+22	7.11
4	T693	0.019	3.07E+22	2.57E+22	6.07	0.022	3.49E+22	2.97E+22	7.07
5	T694	0.020	3.20E+22	2.69E+22	6.04	0.023	3.64E+22	3.12E+22	7.09
6	T681	0.020	3.18E+22	2.67E+22	6.04	0.022	3.62E+22	3.10E+22	7.07
7	T696	0.020	3.16E+22	2.65E+22	6.03	0.022	3.59E+22	3.07E+22	7.05
8	T658	0.019	3.13E+22	2.62E+22	6.02	0.022	3.56E+22	3.03E+22	7.02
9	T697	0.019	3.10E+22	2.59E+22	6.01	0.022	3.52E+22	2.99E+22	6.99
10	T698	0.020	3.25E+22	2.74E+22	5.97	0.023	3.70E+22	3.18E+22	6.99
11	T679	0.020	3.23E+22	2.72E+22	5.97	0.023	3.68E+22	3.15E+22	6.99
12	T659	0.020	3.21E+22	2.70E+22	5.97	0.023	3.65E+22	3.13E+22	6.97
13	T700	0.020	3.18E+22	2.67E+22	5.96	0.022	3.62E+22	3.09E+22	6.95
14	T663	0.020	3.16E+22	2.64E+22	5.95	0.022	3.59E+22	3.06E+22	6.93
15	T702	0.020	3.12E+22	2.61E+22	5.93	0.022	3.55E+22	3.02E+22	6.90
16	T666	0.021	3.30E+22	2.78E+22	5.88	0.023	3.76E+22	3.23E+22	6.88
17	T660	0.020	3.28E+22	2.76E+22	5.89	0.023	3.74E+22	3.21E+22	6.88
18	T685	0.020	3.26E+22	2.74E+22	5.90	0.023	3.71E+22	3.18E+22	6.88
19	T652	0.020	3.24E+22	2.72E+22	5.89	0.023	3.69E+22	3.15E+22	6.87
20	T686	0.020	3.21E+22	2.69E+22	5.88	0.023	3.65E+22	3.12E+22	6.85
21	T653	0.020	3.18E+22	2.67E+22	5.87	0.022	3.62E+22	3.09E+22	6.83
22	T687	0.020	3.15E+22	2.64E+22	5.85	0.022	3.58E+22	3.05E+22	6.80
23	T688	0.021	3.32E+22	2.80E+22	5.81	0.023	3.80E+22	3.26E+22	6.76
24	T689	0.021	3.31E+22	2.78E+22	5.81	0.023	3.77E+22	3.23E+22	6.77
25	T690	0.021	3.28E+22	2.76E+22	5.81	0.023	3.74E+22	3.20E+22	6.77
26	T654	0.020	3.26E+22	2.74E+22	5.81	0.023	3.71E+22	3.17E+22	6.76
27	T710	0.020	3.24E+22	2.71E+22	5.80	0.023	3.68E+22	3.14E+22	6.75
28	T711	0.020	3.21E+22	2.69E+22	5.78	0.023	3.65E+22	3.12E+22	6.73
29	T709	0.021	3.35E+22	2.82E+22	5.72	0.024	3.82E+22	3.28E+22	6.64
30	T655	0.021	3.33E+22	2.80E+22	5.73	0.023	3.80E+22	3.25E+22	6.65
31	T704	0.021	3.31E+22	2.77E+22	5.72	0.023	3.77E+22	3.22E+22	6.65
32	T705	0.021	3.28E+22	2.75E+22	5.72	0.023	3.74E+22	3.19E+22	6.64
33	T651	0.020	3.26E+22	2.73E+22	5.70	0.023	3.71E+22	3.17E+22	6.63
34	T706	0.021	3.37E+22	2.83E+22	5.63	0.024	3.85E+22	3.29E+22	6.55
35	T707	0.021	3.35E+22	2.81E+22	5.63	0.024	3.82E+22	3.26E+22	6.55
36	T708	0.021	3.32E+22	2.78E+22	5.63	0.023	3.79E+22	3.23E+22	6.53
37	T656	0.020	3.30E+22	2.77E+22	5.62	0.023	3.76E+22	3.21E+22	6.52

†DPA accumulated during this run only.

X430 in Run 146A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.020	3.28E+22	2.76E+22	0.72	0.023	3.74E+22	3.20E+22	0.84
2	T662	0.020	3.26E+22	2.74E+22	0.71	0.023	3.71E+22	3.17E+22	0.83
3	T692	0.020	3.24E+22	2.71E+22	0.71	0.023	3.68E+22	3.14E+22	0.82
4	T693	0.020	3.21E+22	2.68E+22	0.70	0.023	3.64E+22	3.10E+22	0.81
5	T694	0.021	3.34E+22	2.81E+22	0.73	0.024	3.80E+22	3.26E+22	0.85
6	T681	0.021	3.32E+22	2.79E+22	0.72	0.023	3.78E+22	3.23E+22	0.84
7	T696	0.021	3.29E+22	2.76E+22	0.71	0.023	3.75E+22	3.20E+22	0.83
8	T658	0.020	3.27E+22	2.73E+22	0.70	0.023	3.71E+22	3.16E+22	0.82
9	T697	0.020	3.23E+22	2.70E+22	0.70	0.023	3.67E+22	3.12E+22	0.81
10	T698	0.021	3.39E+22	2.85E+22	0.73	0.024	3.86E+22	3.31E+22	0.85
11	T679	0.021	3.37E+22	2.83E+22	0.72	0.024	3.84E+22	3.29E+22	0.85
12	T659	0.021	3.35E+22	2.81E+22	0.72	0.024	3.81E+22	3.26E+22	0.84
13	T700	0.021	3.32E+22	2.79E+22	0.71	0.023	3.78E+22	3.23E+22	0.83
14	T663	0.021	3.29E+22	2.76E+22	0.70	0.023	3.74E+22	3.19E+22	0.82
15	T702	0.020	3.26E+22	2.73E+22	0.69	0.023	3.70E+22	3.15E+22	0.81
16	T666	0.022	3.44E+22	2.90E+22	0.73	0.024	3.92E+22	3.37E+22	0.85
17	T660	0.021	3.42E+22	2.88E+22	0.72	0.024	3.90E+22	3.34E+22	0.85
18	T685	0.021	3.40E+22	2.86E+22	0.72	0.024	3.87E+22	3.32E+22	0.84
19	T652	0.021	3.38E+22	2.83E+22	0.71	0.024	3.84E+22	3.29E+22	0.83
20	T686	0.021	3.35E+22	2.81E+22	0.71	0.024	3.81E+22	3.25E+22	0.82
21	T653	0.021	3.32E+22	2.78E+22	0.70	0.023	3.77E+22	3.22E+22	0.82
22	T687	0.021	3.29E+22	2.75E+22	0.69	0.023	3.73E+22	3.18E+22	0.81
23	T688	0.022	3.47E+22	2.92E+22	0.72	0.024	3.96E+22	3.40E+22	0.85
24	T689	0.022	3.45E+22	2.90E+22	0.72	0.024	3.93E+22	3.37E+22	0.84
25	T690	0.021	3.43E+22	2.88E+22	0.71	0.024	3.90E+22	3.34E+22	0.84
26	T654	0.021	3.40E+22	2.85E+22	0.71	0.024	3.87E+22	3.31E+22	0.83
27	T710	0.021	3.38E+22	2.83E+22	0.70	0.024	3.84E+22	3.28E+22	0.82
28	T711	0.021	3.35E+22	2.81E+22	0.69	0.024	3.81E+22	3.25E+22	0.81
29	T709	0.022	3.50E+22	2.94E+22	0.72	0.025	3.99E+22	3.42E+22	0.84
30	T655	0.022	3.47E+22	2.92E+22	0.71	0.024	3.96E+22	3.39E+22	0.84
31	T704	0.022	3.45E+22	2.89E+22	0.71	0.024	3.93E+22	3.36E+22	0.83
32	T705	0.021	3.43E+22	2.87E+22	0.70	0.024	3.90E+22	3.33E+22	0.82
33	T651	0.021	3.40E+22	2.85E+22	0.70	0.024	3.87E+22	3.30E+22	0.81
34	T706	0.022	3.52E+22	2.96E+22	0.71	0.025	4.01E+22	3.43E+22	0.83
35	T707	0.022	3.49E+22	2.93E+22	0.71	0.025	3.98E+22	3.40E+22	0.83
36	T708	0.022	3.47E+22	2.91E+22	0.70	0.024	3.95E+22	3.37E+22	0.82
37	T656	0.021	3.45E+22	2.89E+22	0.70	0.024	3.92E+22	3.34E+22	0.81

†DPA accumulated during this run only.

X430 in Run 146B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.030	4.82E+22	4.04E+22	8.42	0.034	5.47E+22	4.67E+22	9.86
2	T662	0.030	4.79E+22	4.01E+22	8.33	0.033	5.44E+22	4.64E+22	9.75
3	T692	0.030	4.75E+22	3.97E+22	8.24	0.033	5.40E+22	4.59E+22	9.64
4	T693	0.029	4.71E+22	3.93E+22	8.15	0.033	5.34E+22	4.54E+22	9.53
5	T694	0.030	4.90E+22	4.11E+22	8.49	0.034	5.57E+22	4.76E+22	9.95
6	T681	0.030	4.87E+22	4.08E+22	8.40	0.034	5.54E+22	4.73E+22	9.84
7	T696	0.030	4.84E+22	4.05E+22	8.31	0.034	5.50E+22	4.68E+22	9.74
8	T658	0.030	4.80E+22	4.01E+22	8.23	0.033	5.45E+22	4.64E+22	9.63
9	T697	0.030	4.75E+22	3.96E+22	8.14	0.033	5.39E+22	4.58E+22	9.52
10	T698	0.031	4.98E+22	4.18E+22	8.52	0.035	5.67E+22	4.85E+22	9.99
11	T679	0.031	4.95E+22	4.15E+22	8.45	0.034	5.63E+22	4.82E+22	9.90
12	T659	0.030	4.92E+22	4.12E+22	8.37	0.034	5.59E+22	4.77E+22	9.81
13	T700	0.030	4.88E+22	4.09E+22	8.29	0.034	5.55E+22	4.73E+22	9.71
14	T663	0.030	4.84E+22	4.05E+22	8.20	0.034	5.50E+22	4.68E+22	9.60
15	T702	0.030	4.79E+22	4.00E+22	8.11	0.033	5.44E+22	4.62E+22	9.50
16	T666	0.031	5.05E+22	4.25E+22	8.53	0.035	5.76E+22	4.93E+22	10.01
17	T660	0.031	5.02E+22	4.22E+22	8.47	0.035	5.73E+22	4.90E+22	9.93
18	T685	0.031	5.00E+22	4.19E+22	8.41	0.035	5.69E+22	4.86E+22	9.85
19	T652	0.031	4.96E+22	4.16E+22	8.33	0.034	5.65E+22	4.82E+22	9.76
20	T686	0.031	4.92E+22	4.12E+22	8.25	0.034	5.60E+22	4.77E+22	9.67
21	T653	0.030	4.88E+22	4.09E+22	8.17	0.034	5.55E+22	4.73E+22	9.56
22	T687	0.030	4.84E+22	4.05E+22	8.08	0.034	5.49E+22	4.67E+22	9.45
23	T688	0.032	5.10E+22	4.29E+22	8.47	0.035	5.81E+22	4.98E+22	9.94
24	T689	0.031	5.07E+22	4.26E+22	8.42	0.035	5.78E+22	4.94E+22	9.87
25	T690	0.031	5.04E+22	4.22E+22	8.36	0.035	5.74E+22	4.90E+22	9.79
26	T654	0.031	5.00E+22	4.19E+22	8.29	0.035	5.69E+22	4.86E+22	9.71
27	T710	0.031	4.97E+22	4.16E+22	8.21	0.035	5.65E+22	4.82E+22	9.61
28	T711	0.031	4.93E+22	4.13E+22	8.13	0.034	5.60E+22	4.77E+22	9.51
29	T709	0.032	5.14E+22	4.32E+22	8.41	0.036	5.86E+22	5.02E+22	9.86
30	T655	0.031	5.11E+22	4.28E+22	8.36	0.035	5.82E+22	4.97E+22	9.80
31	T704	0.031	5.07E+22	4.25E+22	8.30	0.035	5.78E+22	4.93E+22	9.73
32	T705	0.031	5.04E+22	4.22E+22	8.23	0.035	5.73E+22	4.89E+22	9.64
33	T651	0.031	5.01E+22	4.19E+22	8.16	0.035	5.69E+22	4.86E+22	9.55
34	T706	0.032	5.17E+22	4.34E+22	8.35	0.036	5.90E+22	5.04E+22	9.79
35	T707	0.032	5.14E+22	4.30E+22	8.30	0.036	5.85E+22	4.99E+22	9.72
36	T708	0.032	5.10E+22	4.27E+22	8.24	0.035	5.81E+22	4.95E+22	9.65
37	T656	0.031	5.07E+22	4.25E+22	8.17	0.035	5.77E+22	4.92E+22	9.57

†DPA accumulated during this run only.

X430 in Run 147A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.035	5.74E+22	4.81E+22	4.71	0.040	6.52E+22	5.56E+22	5.38
2	T662	0.035	5.71E+22	4.77E+22	4.68	0.039	6.48E+22	5.52E+22	5.33
3	T692	0.035	5.67E+22	4.73E+22	4.65	0.039	6.43E+22	5.47E+22	5.29
4	T693	0.035	5.62E+22	4.68E+22	4.63	0.039	6.36E+22	5.40E+22	5.28
5	T694	0.036	5.84E+22	4.90E+22	4.72	0.040	6.64E+22	5.67E+22	5.42
6	T681	0.036	5.81E+22	4.86E+22	4.70	0.040	6.60E+22	5.63E+22	5.37
7	T696	0.036	5.77E+22	4.83E+22	4.67	0.040	6.55E+22	5.58E+22	5.32
8	T658	0.035	5.72E+22	4.78E+22	4.64	0.039	6.49E+22	5.52E+22	5.27
9	T697	0.035	5.67E+22	4.73E+22	4.61	0.039	6.42E+22	5.45E+22	5.25
10	T698	0.037	5.93E+22	4.98E+22	4.72	0.041	6.75E+22	5.78E+22	5.43
11	T679	0.036	5.90E+22	4.95E+22	4.70	0.041	6.71E+22	5.73E+22	5.39
12	T659	0.036	5.87E+22	4.91E+22	4.68	0.040	6.67E+22	5.69E+22	5.34
13	T700	0.036	5.82E+22	4.87E+22	4.65	0.040	6.61E+22	5.63E+22	5.30
14	T663	0.036	5.77E+22	4.83E+22	4.62	0.040	6.55E+22	5.57E+22	5.25
15	T702	0.035	5.72E+22	4.77E+22	4.59	0.039	6.48E+22	5.51E+22	5.21
16	T666	0.037	6.02E+22	5.07E+22	4.71	0.042	6.86E+22	5.88E+22	5.43
17	T660	0.037	5.99E+22	5.03E+22	4.69	0.041	6.82E+22	5.84E+22	5.39
18	T685	0.037	5.96E+22	5.00E+22	4.67	0.041	6.78E+22	5.79E+22	5.36
19	T652	0.036	5.92E+22	4.96E+22	4.65	0.041	6.73E+22	5.74E+22	5.31
20	T686	0.036	5.88E+22	4.92E+22	4.62	0.041	6.68E+22	5.69E+22	5.27
21	T653	0.036	5.83E+22	4.87E+22	4.59	0.040	6.61E+22	5.63E+22	5.22
22	T687	0.036	5.77E+22	4.83E+22	4.56	0.040	6.55E+22	5.57E+22	5.17
23	T688	0.037	6.08E+22	5.11E+22	4.68	0.042	6.93E+22	5.93E+22	5.38
24	T689	0.037	6.05E+22	5.08E+22	4.66	0.042	6.89E+22	5.89E+22	5.35
25	T690	0.037	6.01E+22	5.04E+22	4.64	0.041	6.84E+22	5.84E+22	5.32
26	T654	0.036	5.97E+22	5.00E+22	4.61	0.041	6.79E+22	5.79E+22	5.28
27	T710	0.037	5.93E+22	4.96E+22	4.59	0.041	6.74E+22	5.74E+22	5.23
28	T711	0.036	5.88E+22	4.93E+22	4.56	0.041	6.68E+22	5.69E+22	5.18
29	T709	0.038	6.13E+22	5.15E+22	4.64	0.042	6.99E+22	5.98E+22	5.34
30	T655	0.037	6.10E+22	5.11E+22	4.62	0.042	6.94E+22	5.93E+22	5.31
31	T704	0.037	6.06E+22	5.07E+22	4.60	0.042	6.89E+22	5.88E+22	5.27
32	T705	0.037	6.02E+22	5.04E+22	4.57	0.041	6.84E+22	5.83E+22	5.23
33	T651	0.037	5.98E+22	5.01E+22	4.55	0.041	6.79E+22	5.79E+22	5.19
34	T706	0.038	6.18E+22	5.18E+22	4.60	0.043	7.04E+22	6.01E+22	5.29
35	T707	0.038	6.14E+22	5.14E+22	4.57	0.042	6.98E+22	5.95E+22	5.26
36	T708	0.038	6.10E+22	5.10E+22	4.55	0.042	6.93E+22	5.91E+22	5.22
37	T656	0.037	6.06E+22	5.07E+22	4.53	0.042	6.89E+22	5.87E+22	5.18

†DPA accumulated during this run only.

X430 in Run 148B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.044	7.31E+22	6.12E+22	7.74	0.050	8.30E+22	7.08E+22	9.05
2	T662	0.045	7.27E+22	6.08E+22	7.68	0.050	8.25E+22	7.03E+22	8.98
3	T692	0.044	7.22E+22	6.03E+22	7.63	0.049	8.19E+22	6.96E+22	8.92
4	T693	0.044	7.16E+22	5.97E+22	7.59	0.049	8.11E+22	6.88E+22	8.87
5	T694	0.045	7.44E+22	6.24E+22	7.77	0.051	8.45E+22	7.22E+22	9.09
6	T681	0.045	7.40E+22	6.19E+22	7.72	0.051	8.40E+22	7.17E+22	9.02
7	T696	0.045	7.35E+22	6.15E+22	7.67	0.050	8.34E+22	7.10E+22	8.96
8	T658	0.044	7.29E+22	6.09E+22	7.63	0.050	8.27E+22	7.03E+22	8.91
9	T697	0.044	7.22E+22	6.02E+22	7.58	0.049	8.18E+22	6.94E+22	8.86
10	T698	0.046	7.56E+22	6.35E+22	7.77	0.052	8.60E+22	7.35E+22	9.09
11	T679	0.046	7.52E+22	6.30E+22	7.73	0.051	8.55E+22	7.30E+22	9.04
12	T659	0.045	7.47E+22	6.26E+22	7.69	0.051	8.49E+22	7.24E+22	8.99
13	T700	0.045	7.42E+22	6.21E+22	7.64	0.051	8.43E+22	7.18E+22	8.94
14	T663	0.045	7.36E+22	6.15E+22	7.60	0.050	8.35E+22	7.10E+22	8.88
15	T702	0.045	7.29E+22	6.08E+22	7.56	0.050	8.26E+22	7.02E+22	8.83
16	T666	0.047	7.67E+22	6.45E+22	7.74	0.052	8.73E+22	7.48E+22	9.05
17	T660	0.046	7.63E+22	6.41E+22	7.71	0.052	8.69E+22	7.43E+22	9.02
18	T685	0.046	7.59E+22	6.36E+22	7.68	0.052	8.64E+22	7.37E+22	8.99
19	T652	0.046	7.54E+22	6.32E+22	7.65	0.051	8.57E+22	7.31E+22	8.94
20	T686	0.046	7.49E+22	6.27E+22	7.61	0.051	8.51E+22	7.24E+22	8.89
21	T653	0.045	7.43E+22	6.21E+22	7.56	0.051	8.43E+22	7.18E+22	8.84
22	T687	0.045	7.36E+22	6.15E+22	7.51	0.050	8.34E+22	7.10E+22	8.77
23	T688	0.047	7.74E+22	6.51E+22	7.67	0.053	8.82E+22	7.55E+22	8.98
24	T689	0.047	7.70E+22	6.46E+22	7.66	0.053	8.77E+22	7.49E+22	8.96
25	T690	0.047	7.66E+22	6.42E+22	7.64	0.052	8.71E+22	7.43E+22	8.93
26	T654	0.046	7.61E+22	6.37E+22	7.60	0.052	8.65E+22	7.37E+22	8.89
27	T710	0.046	7.56E+22	6.32E+22	7.56	0.052	8.58E+22	7.31E+22	8.84
28	T711	0.046	7.50E+22	6.28E+22	7.51	0.051	8.51E+22	7.25E+22	8.78
29	T709	0.048	7.81E+22	6.56E+22	7.62	0.053	8.90E+22	7.61E+22	8.91
30	T655	0.047	7.77E+22	6.51E+22	7.61	0.053	8.84E+22	7.54E+22	8.90
31	T704	0.047	7.72E+22	6.46E+22	7.59	0.053	8.78E+22	7.48E+22	8.87
32	T705	0.047	7.67E+22	6.42E+22	7.55	0.052	8.72E+22	7.43E+22	8.83
33	T651	0.046	7.62E+22	6.38E+22	7.51	0.052	8.66E+22	7.38E+22	8.77
34	T706	0.048	7.87E+22	6.60E+22	7.57	0.054	8.96E+22	7.65E+22	8.85
35	T707	0.048	7.82E+22	6.54E+22	7.56	0.053	8.90E+22	7.58E+22	8.84
36	T708	0.047	7.77E+22	6.50E+22	7.53	0.053	8.84E+22	7.52E+22	8.80
37	T656	0.047	7.72E+22	6.46E+22	7.49	0.053	8.78E+22	7.48E+22	8.75

†DPA accumulated during this run only.

APPENDIX D

X430A BEGINNING-OF-CYCLE ELEMENT TEMPERATURES

Grid: 1
Jacket: T678

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.1	372	395	407	417	596
0.10	11.2	380	406	420	430	623
0.20	12.1	390	418	432	445	647
0.30	12.6	400	430	444	458	666
0.40	13.0	410	440	456	469	679
0.50	12.9	420	450	466	480	685
0.60	12.4	431	461	476	489	686
0.70	11.6	442	470	484	496	680
0.80	10.5	452	477	490	501	669
0.90	9.2	461	483	494	504	652
1.00	7.7	469	487	496	505	630

Grid: 2
Jacket: T670

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.0	372	395	407	417	575
0.10	11.0	382	408	420	432	601
0.20	11.8	392	420	434	446	624
0.30	12.4	404	432	448	460	644
0.40	12.7	415	445	460	474	658
0.50	12.6	427	456	472	485	665
0.60	12.2	439	468	482	495	668
0.70	11.4	450	477	490	502	664
0.80	10.3	460	485	497	508	655
0.90	9.1	470	491	502	511	641
1.00	7.6	477	495	504	512	622

Grid: 3
Jacket: T692

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	392	418	430	-	-
0.30	11.2	404	430	444	-	-
0.40	11.4	415	442	456	-	-
0.50	11.3	428	454	468	-	-
0.60	11.0	439	465	478	-	-
0.70	10.4	450	474	486	-	-
0.80	9.5	460	482	494	-	-
0.90	8.6	468	489	499	-	-
1.00	7.4	476	494	503	-	-

Grid: 4
Jacket: T680

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.8	372	395	406	416	590
0.10	10.8	380	406	418	430	617
0.20	11.7	390	417	431	443	640
0.30	12.2	400	428	443	456	658
0.40	12.5	410	439	454	467	671
0.50	12.4	420	450	464	478	677
0.60	12.0	431	459	473	486	678
0.70	11.2	440	468	481	492	672
0.80	10.2	450	474	486	497	661
0.90	8.9	458	479	490	499	644
1.00	7.5	465	483	492	500	623

Grid: 5
Jacket: T694

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	394	406	-	-
0.10	10.3	382	406	418	-	-
0.20	10.9	392	418	431	-	-
0.30	11.3	404	430	444	-	-
0.40	11.6	415	442	456	-	-
0.50	11.4	426	454	467	-	-
0.60	11.1	438	464	477	-	-
0.70	10.5	450	474	486	-	-
0.80	9.7	460	482	494	-	-
0.90	8.6	468	490	500	-	-
1.00	7.5	477	495	504	-	-

Grid: 6
Jacket: T681

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	395	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.8	398	423	436	-	-
0.30	11.3	412	438	452	-	-
0.40	11.5	426	453	467	-	-
0.50	11.4	440	466	480	-	-
0.60	11.1	453	479	492	-	-
0.70	10.4	466	490	502	-	-
0.80	9.6	477	500	511	-	-
0.90	8.6	488	508	518	-	-
1.00	7.5	496	514	523	-	-

Grid: 7
Jacket: T696

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.8	398	424	436	-	-
0.30	11.2	412	439	452	-	-
0.40	11.4	427	454	468	-	-
0.50	11.3	442	468	482	-	-
0.60	11.0	456	481	495	-	-
0.70	10.4	468	494	506	-	-
0.80	9.6	481	503	515	-	-
0.90	8.6	492	512	522	-	-
1.00	7.5	500	518	527	-	-

Grid: 8
Jacket: T658

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.9	384	408	419	-	-
0.20	10.5	398	423	435	-	-
0.30	10.9	412	438	450	-	-
0.40	11.2	426	452	465	-	-
0.50	11.1	440	466	478	-	-
0.60	10.7	453	478	491	-	-
0.70	10.1	466	490	502	-	-
0.80	9.3	477	499	510	-	-
0.90	8.2	486	506	516	-	-
1.00	7.1	495	512	520	-	-

Grid: 9
Jacket: T697

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	10.0	382	404	416	-	-
0.20	10.5	392	417	430	-	-
0.30	10.9	404	430	442	-	-
0.40	11.1	415	441	454	-	-
0.50	11.0	426	452	465	-	-
0.60	10.7	437	462	475	-	-
0.70	10.1	448	472	484	-	-
0.80	9.3	457	479	490	-	-
0.90	8.4	466	486	496	-	-
1.00	7.3	474	491	500	-	-

Grid: 10
Jacket: T698

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.8	392	418	431	-	-
0.30	11.2	404	430	444	-	-
0.40	11.5	415	442	455	-	-
0.50	11.4	426	453	466	-	-
0.60	11.0	438	464	477	-	-
0.70	10.4	448	474	486	-	-
0.80	9.6	459	482	493	-	-
0.90	8.6	468	488	499	-	-
1.00	7.5	476	494	503	-	-

Grid: 11
Jacket: T679

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.7	398	423	436	-	-
0.30	11.1	412	438	452	-	-
0.40	11.4	427	454	467	-	-
0.50	11.2	442	468	482	-	-
0.60	10.9	455	481	494	-	-
0.70	10.4	468	493	506	-	-
0.80	9.5	481	503	514	-	-
0.90	8.6	491	512	522	-	-
1.00	7.5	500	518	527	-	-

Grid: 12
Jacket: T659

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.9	384	408	420	-	-
0.20	10.5	399	423	436	-	-
0.30	11.0	414	440	452	-	-
0.40	11.2	429	455	469	-	-
0.50	11.1	444	470	484	-	-
0.60	10.7	459	485	497	-	-
0.70	10.1	474	498	510	-	-
0.80	9.3	486	508	519	-	-
0.90	8.2	498	518	528	-	-
1.00	7.1	508	525	533	-	-

Grid: 13
Jacket: T700

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	10.0	384	408	420	-	-
0.20	10.5	399	423	436	-	-
0.30	10.9	414	440	452	-	-
0.40	11.1	429	455	468	-	-
0.50	11.0	444	470	484	-	-
0.60	10.7	459	484	497	-	-
0.70	10.1	474	498	510	-	-
0.80	9.3	486	508	519	-	-
0.90	8.4	498	518	528	-	-
1.00	7.3	508	525	534	-	-

Grid: 14
Jacket: T663

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	9.9	384	408	420	-	-
0.20	10.4	398	423	435	-	-
0.30	10.8	412	438	451	-	-
0.40	11.0	427	453	466	-	-
0.50	10.9	442	468	480	-	-
0.60	10.6	455	480	493	-	-
0.70	10.1	468	492	504	-	-
0.80	9.3	480	502	513	-	-
0.90	8.4	490	510	520	-	-
1.00	7.3	499	517	526	-	-

Grid: 15
Jacket: T702

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	404	-	-
0.10	9.8	382	404	416	-	-
0.20	10.3	392	417	429	-	-
0.30	10.7	404	428	442	-	-
0.40	10.9	415	440	453	-	-
0.50	10.8	426	452	464	-	-
0.60	10.5	437	462	474	-	-
0.70	9.9	448	471	483	-	-
0.80	9.2	457	479	490	-	-
0.90	8.2	466	486	496	-	-
1.00	7.3	474	491	500	-	-

Grid: 16
Jacket: T669

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	417	574
0.10	10.9	380	406	418	430	598
0.20	11.7	390	417	431	443	621
0.30	12.3	400	428	444	456	638
0.40	12.6	410	439	454	467	651
0.50	12.5	420	450	464	478	657
0.60	12.1	430	459	473	486	659
0.70	11.3	440	468	480	492	654
0.80	10.2	450	474	486	497	644
0.90	9.1	458	480	491	500	630
1.00	7.6	466	484	493	501	612

Grid: 17
Jacket: T660

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.9	384	408	420	-	-
0.20	10.6	398	423	435	-	-
0.30	11.0	412	438	450	-	-
0.40	11.2	426	452	466	-	-
0.50	11.1	440	466	480	-	-
0.60	10.8	453	478	491	-	-
0.70	10.2	466	490	502	-	-
0.80	9.3	477	499	510	-	-
0.90	8.3	486	506	516	-	-
1.00	7.1	495	512	521	-	-

Grid: 18
Jacket: T685

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	395	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.8	399	424	437	-	-
0.30	11.2	414	440	454	-	-
0.40	11.4	429	456	469	-	-
0.50	11.3	444	470	484	-	-
0.60	11.0	459	485	498	-	-
0.70	10.4	474	498	510	-	-
0.80	9.6	486	509	520	-	-
0.90	8.6	498	518	528	-	-
1.00	7.6	508	526	535	-	-

Grid: 19
Jacket: T652

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.8	384	408	419	-	-
0.20	10.4	399	423	436	-	-
0.30	10.8	414	440	452	-	-
0.40	11.0	429	455	468	-	-
0.50	10.9	444	470	484	-	-
0.60	10.6	460	485	497	-	-
0.70	10.0	474	498	510	-	-
0.80	9.2	487	509	520	-	-
0.90	8.1	500	518	528	-	-
1.00	7.0	510	527	535	-	-

Grid: 20
Jacket: T686

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.0	384	408	420	-	-
0.20	10.5	399	423	436	-	-
0.30	10.9	414	440	452	-	-
0.40	11.1	429	455	468	-	-
0.50	11.0	444	470	484	-	-
0.60	10.7	459	484	497	-	-
0.70	10.1	474	498	510	-	-
0.80	9.3	486	508	520	-	-
0.90	8.4	498	518	528	-	-
1.00	7.4	508	525	534	-	-

Grid: 21
Jacket: T653

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.7	372	393	403	-	-
0.10	9.5	384	406	418	-	-
0.20	10.0	398	421	433	-	-
0.30	10.4	412	436	448	-	-
0.40	10.6	426	451	464	-	-
0.50	10.5	440	464	476	-	-
0.60	10.2	453	477	489	-	-
0.70	9.7	466	488	500	-	-
0.80	8.9	476	497	508	-	-
0.90	8.0	486	505	514	-	-
1.00	6.8	495	511	519	-	-

Grid: 22
Jacket: T682

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	414	583
0.10	10.2	380	404	416	426	606
0.20	11.0	389	415	428	439	628
0.30	11.6	398	426	440	452	646
0.40	11.8	408	436	450	462	656
0.50	11.6	418	446	460	472	662
0.60	11.3	429	455	469	480	663
0.70	10.6	438	464	476	488	658
0.80	9.6	448	470	482	492	648
0.90	8.4	456	476	486	495	634
1.00	7.2	464	481	489	497	616

Grid: 23
Jacket: T688

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.1	382	406	418	-	-
0.20	10.7	392	417	430	-	-
0.30	11.1	404	430	442	-	-
0.40	11.2	415	442	455	-	-
0.50	11.1	426	452	466	-	-
0.60	10.8	438	463	476	-	-
0.70	10.2	448	472	484	-	-
0.80	9.4	458	480	492	-	-
0.90	8.5	467	487	497	-	-
1.00	7.4	475	492	501	-	-

Grid: 24
Jacket: T689

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.7	398	423	436	-	-
0.30	11.1	412	438	452	-	-
0.40	11.3	427	454	467	-	-
0.50	11.1	442	468	482	-	-
0.60	10.8	455	481	494	-	-
0.70	10.2	468	492	505	-	-
0.80	9.4	480	503	514	-	-
0.90	8.6	490	511	521	-	-
1.00	7.5	500	518	527	-	-

Grid: 25
Jacket: T690

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	384	408	420	-	-
0.20	10.7	399	424	437	-	-
0.30	11.1	414	440	453	-	-
0.40	11.2	429	455	469	-	-
0.50	11.1	444	470	484	-	-
0.60	10.8	459	485	498	-	-
0.70	10.2	474	498	510	-	-
0.80	9.5	486	509	520	-	-
0.90	8.6	498	518	528	-	-
1.00	7.5	508	526	535	-	-

Grid: 26
Jacket: T654

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.8	372	393	403	-	-
0.10	9.5	384	406	418	-	-
0.20	10.1	399	422	435	-	-
0.30	10.6	414	438	451	-	-
0.40	10.7	429	454	467	-	-
0.50	10.6	444	470	482	-	-
0.60	10.3	459	483	496	-	-
0.70	9.8	474	496	508	-	-
0.80	8.9	486	507	518	-	-
0.90	8.0	498	516	526	-	-
1.00	6.9	508	524	532	-	-

Grid: 27
Jacket: T710

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	405	-	-
0.10	9.8	384	408	418	-	-
0.20	10.3	398	422	435	-	-
0.30	10.6	412	438	450	-	-
0.40	10.8	427	453	465	-	-
0.50	10.7	442	466	480	-	-
0.60	10.4	455	480	492	-	-
0.70	9.9	468	492	504	-	-
0.80	9.1	480	502	513	-	-
0.90	8.2	491	510	520	-	-
1.00	7.3	500	517	526	-	-

Grid: 28
Jacket: T671

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	415	566
0.10	10.3	382	406	418	428	589
0.20	11.0	392	418	431	443	610
0.30	11.5	404	430	444	456	628
0.40	11.7	415	443	457	469	640
0.50	11.6	426	454	468	480	648
0.60	11.2	438	464	478	489	651
0.70	10.6	448	474	486	497	648
0.80	9.6	458	481	492	503	641
0.90	8.5	467	487	497	506	630
1.00	7.3	475	492	501	508	614

Grid: 29
Jacket: T709

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.0	382	405	416	-	-
0.20	10.6	392	417	430	-	-
0.30	10.9	404	430	442	-	-
0.40	11.1	415	441	454	-	-
0.50	11.0	426	452	466	-	-
0.60	10.7	438	463	475	-	-
0.70	10.1	448	472	484	-	-
0.80	9.3	458	480	491	-	-
0.90	8.4	466	486	496	-	-
1.00	7.4	474	492	501	-	-

Grid: 30
Jacket: T655

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.8	372	393	403	-	-
0.10	9.5	384	406	418	-	-
0.20	10.1	398	422	434	-	-
0.30	10.6	412	436	450	-	-
0.40	10.7	426	451	464	-	-
0.50	10.6	440	464	478	-	-
0.60	10.3	453	477	489	-	-
0.70	9.7	466	488	500	-	-
0.80	8.9	477	498	508	-	-
0.90	8.0	486	506	515	-	-
1.00	6.8	495	511	519	-	-

Grid: 31
Jacket: T704

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	9.9	384	408	420	-	-
0.20	10.4	398	423	435	-	-
0.30	10.8	412	438	450	-	-
0.40	10.9	427	453	466	-	-
0.50	10.8	442	468	480	-	-
0.60	10.5	455	480	493	-	-
0.70	9.9	468	492	504	-	-
0.80	9.2	480	502	513	-	-
0.90	8.3	490	510	520	-	-
1.00	7.3	500	517	526	-	-

Grid: 32
Jacket: T705

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	405	-	-
0.10	9.8	384	408	418	-	-
0.20	10.2	398	422	434	-	-
0.30	10.6	412	436	450	-	-
0.40	10.7	426	451	464	-	-
0.50	10.6	440	464	478	-	-
0.60	10.3	453	477	490	-	-
0.70	9.8	466	488	500	-	-
0.80	9.0	477	498	509	-	-
0.90	8.2	486	506	516	-	-
1.00	7.3	495	512	521	-	-

Grid: 33
Jacket: T651

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	404	-	-
0.10	9.7	381	404	416	-	-
0.20	10.2	391	415	427	-	-
0.30	10.6	402	426	440	-	-
0.40	10.7	413	438	451	-	-
0.50	10.6	424	450	462	-	-
0.60	10.3	436	460	472	-	-
0.70	9.8	446	470	481	-	-
0.80	9.0	456	477	488	-	-
0.90	8.2	465	484	494	-	-
1.00	7.3	473	490	499	-	-

Grid: 34
Jacket: T684

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	415	584
0.10	10.4	380	404	417	428	609
0.20	11.2	390	416	429	441	632
0.30	11.8	400	428	442	454	650
0.40	11.8	410	438	452	464	659
0.50	11.7	420	448	462	474	665
0.60	11.3	431	458	471	483	666
0.70	10.6	441	466	479	490	662
0.80	9.7	450	473	485	495	651
0.90	8.6	458	478	489	498	636
1.00	7.2	466	483	491	499	618

Grid: 35
Jacket: T707

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	393	404	-	-
0.10	9.8	382	404	416	-	-
0.20	10.3	392	417	429	-	-
0.30	10.7	404	428	442	-	-
0.40	10.8	415	440	453	-	-
0.50	10.7	426	452	464	-	-
0.60	10.4	438	462	475	-	-
0.70	9.9	448	472	484	-	-
0.80	9.1	459	480	491	-	-
0.90	8.2	468	487	497	-	-
1.00	7.3	475	493	501	-	-

Grid: 36
Jacket: T672

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	414	564
0.10	10.2	382	406	418	428	588
0.20	11.0	392	418	431	442	609
0.30	11.5	404	430	444	456	628
0.40	11.6	415	442	456	468	638
0.50	11.4	426	454	466	478	645
0.60	11.1	438	464	477	489	648
0.70	10.4	448	474	486	496	646
0.80	9.5	459	481	492	502	639
0.90	8.4	468	488	498	506	628
1.00	7.2	475	492	501	508	613

Grid: 37
Jacket: T683

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	414	581
0.10	10.2	380	404	416	426	605
0.20	10.9	390	415	428	440	626
0.30	11.4	400	426	440	452	644
0.40	11.5	410	437	451	463	653
0.50	11.4	420	448	461	472	659
0.60	11.0	431	457	470	482	661
0.70	10.4	441	466	478	489	657
0.80	9.4	450	473	484	494	647
0.90	8.4	458	478	488	497	634
1.00	7.1	466	483	491	499	616

APPENDIX E

X430A RUN-BY-RUN MAXIMUM TEMPERATURES

X430A in Run 150A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
1	T678	0.000	13.0	470	487	496	505	686
2	T670	0.000	12.7	478	495	504	512	668
3	T692	0.050	11.4	477	494	503	-	-
4	T680	0.000	12.5	466	483	492	500	678
5	T694	0.051	11.6	477	495	504	-	-
6	T681	0.051	11.5	496	514	523	-	-
7	T696	0.050	11.4	501	518	527	-	-
8	T658	0.050	11.2	495	512	520	-	-
9	T697	0.050	11.1	474	491	500	-	-
10	T698	0.052	11.5	477	494	503	-	-
11	T679	0.052	11.4	501	518	527	-	-
12	T659	0.051	11.2	509	525	533	-	-
13	T700	0.051	11.1	509	525	534	-	-
14	T663	0.051	11.0	500	517	526	-	-
15	T702	0.050	10.9	475	491	500	-	-
16	T669	0.000	12.6	467	484	493	501	659
17	T660	0.052	11.2	496	512	521	-	-
18	T685	0.052	11.4	509	526	535	-	-
19	T652	0.052	11.0	511	527	535	-	-
20	T686	0.051	11.1	509	525	534	-	-
21	T653	0.051	10.6	495	511	519	-	-
22	T682	0.000	11.8	464	481	489	497	663
23	T688	0.053	11.2	475	492	501	-	-
24	T689	0.053	11.3	500	518	527	-	-
25	T690	0.052	11.2	509	526	535	-	-
26	T654	0.052	10.7	509	524	532	-	-
27	T710	0.052	10.8	500	517	526	-	-
28	T671	0.000	11.7	475	492	501	508	651
29	T709	0.053	11.1	475	492	501	-	-
30	T655	0.053	10.7	496	511	519	-	-
31	T704	0.053	10.9	500	517	526	-	-
32	T705	0.052	10.7	496	512	521	-	-
33	T651	0.052	10.7	473	490	499	-	-
34	T684	0.000	11.8	466	483	491	499	666
35	T707	0.053	10.8	476	493	501	-	-
36	T672	0.000	11.6	476	492	501	508	648
37	T683	0.000	11.5	467	483	491	499	661

X430A in Run 150B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.011	14.4	478	497	507
2	T670	0.011	14.1	487	506	516
3	T692	0.060	12.6	487	505	515
4	T680	0.011	13.8	475	493	503
5	T694	0.061	12.8	487	506	516
6	T681	0.061	12.7	508	527	537
7	T696	0.060	12.6	513	532	542
8	T658	0.060	12.3	507	525	534
9	T697	0.059	12.2	484	502	512
10	T698	0.062	12.7	486	505	515
11	T679	0.061	12.5	513	532	542
12	T659	0.061	12.3	522	539	549
13	T700	0.061	12.2	522	540	550
14	T663	0.060	12.2	512	531	540
15	T702	0.059	12.0	484	502	512
16	T669	0.011	13.9	475	494	504
17	T660	0.062	12.4	508	526	535
18	T685	0.062	12.6	522	541	551
19	T652	0.061	12.2	524	541	551
20	T686	0.061	12.3	522	540	550
21	T653	0.060	11.7	507	524	533
22	T682	0.010	13.0	472	490	499
23	T688	0.063	12.4	485	503	513
24	T689	0.062	12.4	513	531	541
25	T690	0.062	12.4	522	540	550
26	T654	0.061	11.8	522	539	548
27	T710	0.061	11.9	513	531	540
28	T671	0.010	12.9	485	503	512
29	T709	0.063	12.2	484	503	513
30	T655	0.062	11.8	507	524	533
31	T704	0.062	12.0	513	531	540
32	T705	0.062	11.8	507	525	535
33	T651	0.061	11.8	482	500	510
34	T684	0.011	13.1	475	493	502
35	T707	0.063	11.9	486	504	513
36	T672	0.010	12.8	485	503	512
37	T683	0.010	12.7	475	493	502

X430A in Run 151A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.016	14.5	478	498	508
2	T670	0.016	14.1	488	507	517
3	T692	0.063	12.6	487	506	515
4	T680	0.015	13.9	475	494	504
5	T694	0.065	12.9	487	506	516
6	T681	0.065	12.8	509	528	538
7	T696	0.064	12.7	514	533	542
8	T658	0.063	12.4	508	526	535
9	T697	0.063	12.3	484	503	512
10	T698	0.066	12.8	487	506	516
11	T679	0.065	12.6	514	533	542
12	T659	0.065	12.4	522	540	550
13	T700	0.064	12.3	522	541	550
14	T663	0.064	12.2	513	531	541
15	T702	0.063	12.1	485	503	512
16	T669	0.016	14.1	476	495	505
17	T660	0.066	12.5	508	526	536
18	T685	0.065	12.7	522	541	551
19	T652	0.065	12.2	525	542	551
20	T686	0.064	12.3	522	541	551
21	T653	0.064	11.8	508	525	534
22	T682	0.014	13.0	473	491	500
23	T688	0.067	12.5	485	504	514
24	T689	0.066	12.5	513	532	542
25	T690	0.066	12.5	522	541	551
26	T654	0.065	11.9	522	540	549
27	T710	0.065	12.0	513	532	541
28	T671	0.014	13.0	485	503	513
29	T709	0.067	12.4	485	504	513
30	T655	0.066	11.9	508	525	534
31	T704	0.066	12.1	513	532	541
32	T705	0.065	11.9	508	526	536
33	T651	0.065	11.8	483	501	511
34	T684	0.015	13.2	475	493	503
35	T707	0.066	12.0	486	504	514
36	T672	0.014	12.9	486	504	513
37	T683	0.014	12.8	475	493	503

X430A in Run 151B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.019	12.7	467	484	493
2	T670	0.018	12.4	475	492	501
3	T692	0.066	11.1	474	491	500
4	T680	0.018	12.2	464	480	489
5	T694	0.067	11.3	475	492	500
6	T681	0.067	11.3	493	510	519
7	T696	0.066	11.2	498	514	523
8	T658	0.066	10.9	492	508	516
9	T697	0.065	10.9	472	488	496
10	T698	0.068	11.2	474	491	500
11	T679	0.068	11.1	498	514	523
12	T659	0.067	10.9	505	521	529
13	T700	0.067	10.9	505	521	530
14	T663	0.066	10.8	497	513	521
15	T702	0.065	10.7	472	488	497
16	T669	0.018	12.4	465	482	490
17	T660	0.068	11.0	493	509	517
18	T685	0.068	11.2	505	522	531
19	T652	0.067	10.8	507	523	531
20	T686	0.067	10.9	505	521	530
21	T653	0.066	10.4	492	507	515
22	T682	0.017	11.5	462	478	486
23	T688	0.069	11.0	473	489	498
24	T689	0.068	11.0	497	514	523
25	T690	0.068	11.0	505	522	530
26	T654	0.067	10.5	505	520	528
27	T710	0.067	10.6	497	513	522
28	T671	0.017	11.5	473	489	497
29	T709	0.069	10.9	472	489	497
30	T655	0.068	10.5	492	508	516
31	T704	0.068	10.7	497	513	522
32	T705	0.067	10.5	492	509	517
33	T651	0.067	10.5	471	487	495
34	T684	0.017	11.7	464	480	488
35	T707	0.068	10.6	473	490	498
36	T672	0.017	11.4	473	489	497
37	T683	0.016	11.3	464	480	488

X430A in Run 152A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C)		
				Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.019	15.0	481	501	512
2	T670	0.018	14.7	491	511	521
3	T692	0.066	13.2	490	509	520
4	T680	0.018	14.6	478	497	508
5	T694	0.068	13.3	491	510	520
6	T681	0.067	13.2	513	532	542
7	T696	0.067	13.2	518	537	547
8	T658	0.066	13.0	512	530	540
9	T697	0.065	12.9	487	506	516
10	T698	0.068	13.1	490	509	520
11	T679	0.068	13.0	518	537	547
12	T659	0.067	12.9	527	545	555
13	T700	0.067	12.8	527	546	556
14	T663	0.066	12.8	517	536	546
15	T702	0.065	12.7	488	507	517
16	T669	0.018	14.4	479	498	508
17	T660	0.068	12.9	512	531	540
18	T685	0.068	13.1	527	546	557
19	T652	0.067	12.7	529	547	557
20	T686	0.067	12.8	527	546	556
21	T653	0.066	12.3	512	530	539
22	T682	0.017	13.7	475	494	504
23	T688	0.069	12.8	488	508	518
24	T689	0.068	12.9	517	537	547
25	T690	0.068	12.9	527	546	556
26	T654	0.067	12.3	527	544	554
27	T710	0.067	12.5	517	536	546
28	T671	0.017	13.6	488	507	517
29	T709	0.069	12.7	488	507	517
30	T655	0.068	12.3	512	530	539
31	T704	0.068	12.5	517	536	546
32	T705	0.068	12.4	512	531	541
33	T651	0.067	12.3	486	505	515
34	T684	0.017	13.6	478	497	506
35	T707	0.069	12.3	489	508	518
36	T672	0.017	13.3	489	508	517
37	T683	0.017	13.3	478	497	506

X430A in Run 152B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C)		
				Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.020	15.0	481	501	511
2	T670	0.019	14.7	491	510	521
3	T692	0.067	13.2	490	509	519
4	T680	0.019	14.6	477	497	507
5	T694	0.068	13.3	490	510	520
6	T681	0.068	13.2	512	532	542
7	T696	0.067	13.2	517	537	547
8	T658	0.067	13.0	511	530	539
9	T697	0.066	12.9	487	506	516
10	T698	0.069	13.1	490	509	519
11	T679	0.069	13.0	517	536	546
12	T659	0.068	12.9	526	544	554
13	T700	0.067	12.8	526	545	555
14	T663	0.067	12.8	517	535	545
15	T702	0.066	12.7	487	506	516
16	T669	0.019	14.4	478	498	508
17	T660	0.069	12.9	512	530	540
18	T685	0.069	13.1	526	546	556
19	T652	0.068	12.7	529	547	556
20	T686	0.068	12.8	526	545	555
21	T653	0.067	12.3	511	529	538
22	T682	0.018	13.7	475	494	504
23	T688	0.070	12.8	488	507	517
24	T689	0.069	12.9	517	536	546
25	T690	0.069	12.9	526	545	556
26	T654	0.068	12.3	526	544	553
27	T710	0.068	12.5	517	536	546
28	T671	0.018	13.6	488	507	517
29	T709	0.070	12.7	488	507	517
30	T655	0.069	12.3	511	529	538
31	T704	0.069	12.5	517	536	546
32	T705	0.068	12.4	511	530	540
33	T651	0.068	12.3	485	504	514
34	T684	0.018	13.6	478	496	506
35	T707	0.069	12.3	489	508	517
36	T672	0.018	13.3	489	507	517
37	T683	0.017	13.3	478	496	506

X430A in Run 152C

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C)		
				Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.024	14.4	476	495	505
2	T670	0.024	14.1	484	503	513
3	T692	0.071	12.6	484	502	512
4	T680	0.024	13.9	472	491	500
5	T694	0.073	12.8	484	503	513
6	T681	0.072	12.7	505	523	533
7	T696	0.072	12.6	509	528	538
8	T658	0.071	12.4	504	521	530
9	T697	0.070	12.3	481	499	509
10	T698	0.073	12.7	484	502	512
11	T679	0.073	12.5	510	528	538
12	T659	0.072	12.4	518	535	545
13	T700	0.072	12.2	518	536	545
14	T663	0.071	12.2	509	527	536
15	T702	0.070	12.0	481	499	509
16	T669	0.024	13.9	473	492	501
17	T660	0.073	12.4	504	522	531
18	T685	0.073	12.6	518	536	546
19	T652	0.072	12.2	520	537	546
20	T686	0.072	12.3	518	536	546
21	T653	0.071	11.7	504	521	530
22	T682	0.022	13.0	470	488	497
23	T688	0.074	12.4	482	500	510
24	T689	0.073	12.4	509	528	537
25	T690	0.073	12.4	518	536	546
26	T654	0.072	11.8	518	535	544
27	T710	0.072	11.9	509	527	537
28	T671	0.022	12.9	482	500	509
29	T709	0.074	12.2	482	500	509
30	T655	0.073	11.8	504	521	530
31	T704	0.073	12.0	509	527	536
32	T705	0.072	11.8	504	522	531
33	T651	0.072	11.7	480	498	507
34	T684	0.022	13.0	472	490	499
35	T707	0.073	11.8	483	501	510
36	T672	0.022	12.7	483	500	509
37	T683	0.022	12.6	473	490	499

X430A in Run 152D

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T678	0.026	14.0	474	493	503
2	T670	0.025	13.7	483	502	512
3	T692	0.072	12.3	482	501	510
4	T680	0.025	13.5	471	489	499
5	T694	0.074	12.5	483	501	511
6	T681	0.073	12.4	503	522	531
7	T696	0.073	12.3	508	526	536
8	T658	0.072	12.0	502	519	529
9	T697	0.071	12.0	479	498	507
10	T698	0.074	12.3	482	501	510
11	T679	0.074	12.2	508	526	536
12	T659	0.073	12.0	516	533	542
13	T700	0.073	12.0	516	534	543
14	T663	0.072	11.9	507	525	534
15	T702	0.071	11.8	480	498	507
16	T669	0.025	13.5	472	490	500
17	T660	0.074	12.1	503	520	529
18	T685	0.074	12.3	516	534	544
19	T652	0.073	11.8	518	535	544
20	T686	0.073	12.0	516	534	544
21	T653	0.072	11.4	502	519	528
22	T682	0.023	12.6	469	487	496
23	T688	0.075	12.1	480	499	509
24	T689	0.075	12.1	507	526	535
25	T690	0.074	12.1	516	534	544
26	T654	0.073	11.5	516	533	542
27	T710	0.073	11.6	507	525	535
28	T671	0.023	12.6	481	499	508
29	T709	0.075	11.9	480	498	508
30	T655	0.074	11.5	502	519	528
31	T704	0.074	11.7	507	525	535
32	T705	0.073	11.6	502	520	530
33	T651	0.073	11.5	478	496	506
34	T684	0.024	12.7	471	489	498
35	T707	0.074	11.6	481	499	509
36	T672	0.023	12.4	481	499	508
37	T683	0.023	12.4	471	489	498

APPENDIX F

X430A RUN-BY-RUN BURNUPS AND FLUENCES

X430A in Run 150A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.000	3.89E+20	3.27E+20	0.55	0.000	4.42E+20	3.77E+20	0.84
2	T670	0.000	3.85E+20	3.23E+20	0.55	0.000	4.37E+20	3.72E+20	0.84
3	T692	0.045	7.26E+22	6.06E+22	0.54	0.050	8.23E+22	7.00E+22	0.83
4	T680	0.000	3.77E+20	3.14E+20	0.54	0.000	4.26E+20	3.62E+20	0.82
5	T694	0.046	7.47E+22	6.27E+22	0.55	0.051	8.50E+22	7.26E+22	0.84
6	T681	0.045	7.43E+22	6.23E+22	0.55	0.051	8.45E+22	7.20E+22	0.83
7	T696	0.045	7.39E+22	6.18E+22	0.54	0.050	8.39E+22	7.14E+22	0.83
8	T658	0.044	7.33E+22	6.12E+22	0.54	0.050	8.31E+22	7.07E+22	0.82
9	T697	0.045	7.26E+22	6.05E+22	0.54	0.050	8.22E+22	6.98E+22	0.82
10	T698	0.046	7.59E+22	6.38E+22	0.54	0.052	8.64E+22	7.39E+22	0.84
11	T679	0.046	7.56E+22	6.34E+22	0.54	0.052	8.59E+22	7.34E+22	0.83
12	T659	0.045	7.51E+22	6.29E+22	0.54	0.051	8.54E+22	7.28E+22	0.83
13	T700	0.046	7.46E+22	6.24E+22	0.54	0.051	8.47E+22	7.21E+22	0.82
14	T663	0.045	7.40E+22	6.18E+22	0.54	0.051	8.39E+22	7.14E+22	0.81
15	T702	0.045	7.32E+22	6.11E+22	0.53	0.050	8.30E+22	7.05E+22	0.81
16	T669	0.000	3.82E+20	3.19E+20	0.54	0.000	4.32E+20	3.67E+20	0.83
17	T660	0.046	7.67E+22	6.44E+22	0.54	0.052	8.73E+22	7.46E+22	0.83
18	T685	0.047	7.63E+22	6.40E+22	0.54	0.052	8.68E+22	7.41E+22	0.82
19	T652	0.046	7.58E+22	6.35E+22	0.54	0.052	8.62E+22	7.35E+22	0.82
20	T686	0.046	7.53E+22	6.30E+22	0.53	0.051	8.55E+22	7.28E+22	0.81
21	T653	0.045	7.47E+22	6.24E+22	0.53	0.051	8.47E+22	7.21E+22	0.80
22	T682	0.000	3.57E+20	2.94E+20	0.52	0.000	4.01E+20	3.37E+20	0.80
23	T688	0.047	7.78E+22	6.54E+22	0.54	0.053	8.87E+22	7.59E+22	0.82
24	T689	0.047	7.74E+22	6.50E+22	0.54	0.053	8.81E+22	7.53E+22	0.82
25	T690	0.047	7.70E+22	6.45E+22	0.54	0.052	8.75E+22	7.47E+22	0.82
26	T654	0.046	7.65E+22	6.40E+22	0.53	0.052	8.69E+22	7.41E+22	0.81
27	T710	0.046	7.59E+22	6.35E+22	0.53	0.052	8.63E+22	7.35E+22	0.80
28	T671	0.000	3.55E+20	2.92E+20	0.52	0.000	3.99E+20	3.34E+20	0.79
29	T709	0.048	7.85E+22	6.59E+22	0.53	0.053	8.94E+22	7.64E+22	0.82
30	T655	0.047	7.80E+22	6.54E+22	0.53	0.053	8.88E+22	7.58E+22	0.81
31	T704	0.047	7.76E+22	6.49E+22	0.53	0.053	8.82E+22	7.52E+22	0.81
32	T705	0.047	7.71E+22	6.45E+22	0.53	0.052	8.76E+22	7.46E+22	0.80
33	T651	0.047	7.66E+22	6.41E+22	0.52	0.052	8.70E+22	7.41E+22	0.79
34	T684	0.000	3.62E+20	3.00E+20	0.53	0.000	4.07E+20	3.42E+20	0.81
35	T707	0.048	7.86E+22	6.57E+22	0.53	0.053	8.94E+22	7.62E+22	0.80
36	T672	0.000	3.54E+20	2.92E+20	0.52	0.000	3.97E+20	3.34E+20	0.80
37	T683	0.000	3.50E+20	2.88E+20	0.52	0.000	3.92E+20	3.28E+20	0.79

†DPA accumulated during this run only.

X430A in Run 152B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.010	1.61E+22	1.35E+22	1.09	0.011	1.83E+22	1.56E+22	1.27
2	T670	0.010	1.59E+22	1.33E+22	1.10	0.011	1.81E+22	1.54E+22	1.28
3	T692	0.053	8.79E+22	7.35E+22	1.10	0.060	1.00E+23	8.49E+22	1.29
4	T680	0.010	1.55E+22	1.30E+22	1.10	0.011	1.77E+22	1.50E+22	1.29
5	T694	0.055	9.04E+22	7.58E+22	1.09	0.061	1.03E+23	8.77E+22	1.26
6	T681	0.054	8.98E+22	7.52E+22	1.09	0.061	1.02E+23	8.70E+22	1.27
7	T696	0.054	8.92E+22	7.46E+22	1.09	0.060	1.01E+23	8.62E+22	1.27
8	T658	0.053	8.84E+22	7.38E+22	1.09	0.060	1.00E+23	8.53E+22	1.28
9	T697	0.053	8.75E+22	7.30E+22	1.09	0.059	9.92E+22	8.42E+22	1.28
10	T698	0.055	9.15E+22	7.68E+22	1.08	0.062	1.04E+23	8.89E+22	1.24
11	T679	0.055	9.09E+22	7.62E+22	1.08	0.061	1.03E+23	8.82E+22	1.25
12	T659	0.054	9.03E+22	7.56E+22	1.08	0.061	1.03E+23	8.75E+22	1.26
13	T700	0.054	8.96E+22	7.49E+22	1.09	0.061	1.02E+23	8.66E+22	1.27
14	T663	0.054	8.88E+22	7.41E+22	1.08	0.060	1.01E+23	8.56E+22	1.27
15	T702	0.053	8.79E+22	7.33E+22	1.08	0.059	9.96E+22	8.46E+22	1.27
16	T669	0.010	1.58E+22	1.32E+22	1.07	0.011	1.80E+22	1.53E+22	1.23
17	T660	0.055	9.20E+22	7.72E+22	1.07	0.062	1.05E+23	8.94E+22	1.24
18	T685	0.055	9.14E+22	7.66E+22	1.08	0.062	1.04E+23	8.86E+22	1.25
19	T652	0.054	9.08E+22	7.59E+22	1.08	0.061	1.03E+23	8.78E+22	1.25
20	T686	0.054	9.00E+22	7.52E+22	1.08	0.061	1.02E+23	8.70E+22	1.26
21	T653	0.053	8.93E+22	7.45E+22	1.07	0.060	1.01E+23	8.61E+22	1.26
22	T682	0.009	1.48E+22	1.22E+22	1.07	0.010	1.67E+22	1.41E+22	1.26
23	T688	0.056	9.30E+22	7.80E+22	1.07	0.063	1.06E+23	9.05E+22	1.23
24	T689	0.056	9.24E+22	7.74E+22	1.07	0.062	1.05E+23	8.97E+22	1.24
25	T690	0.055	9.18E+22	7.68E+22	1.07	0.062	1.04E+23	8.89E+22	1.24
26	T654	0.055	9.12E+22	7.62E+22	1.07	0.061	1.04E+23	8.81E+22	1.24
27	T710	0.055	9.04E+22	7.56E+22	1.07	0.061	1.03E+23	8.73E+22	1.25
28	T671	0.009	1.47E+22	1.21E+22	1.06	0.010	1.66E+22	1.40E+22	1.25
29	T709	0.056	9.34E+22	7.83E+22	1.06	0.063	1.06E+23	9.07E+22	1.22
30	T655	0.055	9.28E+22	7.76E+22	1.06	0.062	1.06E+23	8.99E+22	1.23
31	T704	0.056	9.21E+22	7.70E+22	1.06	0.062	1.05E+23	8.91E+22	1.23
32	T705	0.055	9.15E+22	7.64E+22	1.06	0.062	1.04E+23	8.84E+22	1.23
33	T651	0.055	9.08E+22	7.58E+22	1.05	0.061	1.03E+23	8.77E+22	1.23
34	T684	0.009	1.50E+22	1.24E+22	1.05	0.011	1.69E+22	1.43E+22	1.21
35	T707	0.056	9.30E+22	7.77E+22	1.05	0.063	1.06E+23	8.99E+22	1.22
36	T672	0.009	1.47E+22	1.21E+22	1.05	0.010	1.66E+22	1.39E+22	1.22
37	T683	0.009	1.45E+22	1.19E+22	1.04	0.010	1.64E+22	1.37E+22	1.22

†DPA accumulated during this run only.

X430A in Run 151A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.014	2.23E+22	1.87E+22	1.04	0.016	2.54E+22	2.17E+22	1.20
2	T670	0.014	2.20E+22	1.85E+22	1.05	0.016	2.51E+22	2.14E+22	1.21
3	T692	0.057	9.40E+22	7.85E+22	1.06	0.063	1.07E+23	9.07E+22	1.22
4	T680	0.013	2.15E+22	1.80E+22	1.07	0.015	2.44E+22	2.08E+22	1.24
5	T694	0.058	9.65E+22	8.09E+22	1.03	0.065	1.10E+23	9.37E+22	1.19
6	T681	0.058	9.59E+22	8.03E+22	1.04	0.065	1.09E+23	9.29E+22	1.20
7	T696	0.057	9.52E+22	7.96E+22	1.05	0.064	1.08E+23	9.20E+22	1.21
8	T658	0.056	9.43E+22	7.88E+22	1.06	0.063	1.07E+23	9.10E+22	1.22
9	T697	0.056	9.34E+22	7.78E+22	1.07	0.063	1.06E+23	8.98E+22	1.24
10	T698	0.059	9.76E+22	8.19E+22	1.03	0.066	1.11E+23	9.49E+22	1.18
11	T679	0.058	9.70E+22	8.13E+22	1.04	0.065	1.10E+23	9.41E+22	1.19
12	T659	0.057	9.63E+22	8.06E+22	1.04	0.065	1.09E+23	9.33E+22	1.20
13	T700	0.058	9.55E+22	7.98E+22	1.05	0.064	1.08E+23	9.23E+22	1.21
14	T663	0.057	9.47E+22	7.90E+22	1.06	0.064	1.07E+23	9.13E+22	1.22
15	T702	0.057	9.37E+22	7.81E+22	1.06	0.063	1.06E+23	9.01E+22	1.23
16	T669	0.014	2.19E+22	1.83E+22	1.02	0.016	2.49E+22	2.12E+22	1.17
17	T660	0.058	9.80E+22	8.22E+22	1.03	0.066	1.12E+23	9.52E+22	1.19
18	T685	0.059	9.74E+22	8.15E+22	1.03	0.065	1.11E+23	9.44E+22	1.19
19	T652	0.058	9.67E+22	8.08E+22	1.04	0.065	1.10E+23	9.35E+22	1.20
20	T686	0.058	9.59E+22	8.01E+22	1.05	0.064	1.09E+23	9.26E+22	1.21
21	T653	0.057	9.50E+22	7.93E+22	1.05	0.064	1.08E+23	9.16E+22	1.22
22	T682	0.013	2.04E+22	1.69E+22	1.06	0.014	2.31E+22	1.95E+22	1.23
23	T688	0.059	9.90E+22	8.30E+22	1.02	0.067	1.13E+23	9.62E+22	1.18
24	T689	0.059	9.84E+22	8.24E+22	1.03	0.066	1.12E+23	9.54E+22	1.19
25	T690	0.059	9.77E+22	8.17E+22	1.03	0.066	1.11E+23	9.45E+22	1.19
26	T654	0.058	9.69E+22	8.10E+22	1.04	0.065	1.10E+23	9.37E+22	1.20
27	T710	0.058	9.62E+22	8.03E+22	1.04	0.065	1.09E+23	9.28E+22	1.21
28	T671	0.013	2.03E+22	1.68E+22	1.04	0.014	2.30E+22	1.93E+22	1.22
29	T709	0.060	9.93E+22	8.32E+22	1.02	0.067	1.13E+23	9.64E+22	1.18
30	T655	0.059	9.86E+22	8.24E+22	1.02	0.066	1.12E+23	9.55E+22	1.19
31	T704	0.059	9.79E+22	8.17E+22	1.03	0.066	1.11E+23	9.46E+22	1.19
32	T705	0.059	9.72E+22	8.11E+22	1.03	0.065	1.10E+23	9.38E+22	1.20
33	T651	0.058	9.64E+22	8.05E+22	1.04	0.065	1.09E+23	9.30E+22	1.20
34	T684	0.013	2.07E+22	1.72E+22	1.02	0.015	2.35E+22	1.98E+22	1.18
35	T707	0.059	9.87E+22	8.24E+22	1.02	0.066	1.12E+23	9.54E+22	1.18
36	T672	0.013	2.03E+22	1.67E+22	1.03	0.014	2.29E+22	1.93E+22	1.19
37	T683	0.012	2.01E+22	1.65E+22	1.03	0.014	2.26E+22	1.90E+22	1.20

†DPA accumulated during this run only.

X430A in Run 151B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.016	2.61E+22	2.19E+22	1.02	0.019	2.98E+22	2.54E+22	1.18
2	T670	0.016	2.58E+22	2.17E+22	1.03	0.018	2.94E+22	2.51E+22	1.19
3	T692	0.059	9.77E+22	8.17E+22	1.04	0.066	1.11E+23	9.44E+22	1.20
4	T680	0.016	2.52E+22	2.11E+22	1.05	0.018	2.87E+22	2.44E+22	1.21
5	T694	0.060	1.00E+23	8.42E+22	1.01	0.067	1.14E+23	9.74E+22	1.17
6	T681	0.060	9.97E+22	8.35E+22	1.02	0.067	1.13E+23	9.66E+22	1.18
7	T696	0.060	9.89E+22	8.27E+22	1.03	0.066	1.12E+23	9.57E+22	1.19
8	T658	0.058	9.80E+22	8.19E+22	1.04	0.066	1.11E+23	9.46E+22	1.20
9	T697	0.059	9.70E+22	8.09E+22	1.04	0.065	1.10E+23	9.33E+22	1.21
10	T698	0.061	1.01E+23	8.51E+22	1.01	0.068	1.15E+23	9.86E+22	1.16
11	T679	0.061	1.01E+23	8.44E+22	1.02	0.068	1.15E+23	9.78E+22	1.17
12	T659	0.060	1.00E+23	8.37E+22	1.02	0.067	1.14E+23	9.69E+22	1.18
13	T700	0.060	9.92E+22	8.29E+22	1.03	0.067	1.13E+23	9.59E+22	1.19
14	T663	0.059	9.83E+22	8.20E+22	1.03	0.066	1.12E+23	9.48E+22	1.20
15	T702	0.059	9.73E+22	8.11E+22	1.04	0.065	1.10E+23	9.36E+22	1.21
16	T669	0.016	2.57E+22	2.14E+22	1.00	0.018	2.92E+22	2.48E+22	1.15
17	T660	0.061	1.02E+23	8.53E+22	1.01	0.068	1.16E+23	9.88E+22	1.16
18	T685	0.061	1.01E+23	8.46E+22	1.01	0.068	1.15E+23	9.80E+22	1.17
19	T652	0.060	1.00E+23	8.39E+22	1.02	0.067	1.14E+23	9.70E+22	1.18
20	T686	0.060	9.95E+22	8.31E+22	1.03	0.067	1.13E+23	9.60E+22	1.19
21	T653	0.059	9.86E+22	8.22E+22	1.03	0.066	1.12E+23	9.50E+22	1.20
22	T682	0.015	2.39E+22	1.98E+22	1.03	0.017	2.71E+22	2.28E+22	1.20
23	T688	0.062	1.03E+23	8.61E+22	1.00	0.069	1.17E+23	1.00E+23	1.15
24	T689	0.061	1.02E+23	8.55E+22	1.01	0.068	1.16E+23	9.90E+22	1.16
25	T690	0.061	1.01E+23	8.47E+22	1.01	0.068	1.15E+23	9.81E+22	1.17
26	T654	0.060	1.01E+23	8.40E+22	1.02	0.067	1.14E+23	9.71E+22	1.18
27	T710	0.060	9.97E+22	8.32E+22	1.02	0.067	1.13E+23	9.62E+22	1.19
28	T671	0.015	2.38E+22	1.97E+22	1.02	0.017	2.70E+22	2.27E+22	1.19
29	T709	0.062	1.03E+23	8.62E+22	1.00	0.069	1.17E+23	1.00E+23	1.15
30	T655	0.061	1.02E+23	8.55E+22	1.01	0.068	1.16E+23	9.89E+22	1.16
31	T704	0.061	1.01E+23	8.47E+22	1.01	0.068	1.15E+23	9.80E+22	1.17
32	T705	0.061	1.01E+23	8.40E+22	1.01	0.067	1.14E+23	9.71E+22	1.18
33	T651	0.060	1.00E+23	8.33E+22	1.02	0.067	1.13E+23	9.63E+22	1.18
34	T684	0.015	2.43E+22	2.02E+22	1.00	0.017	2.75E+22	2.32E+22	1.15
35	T707	0.061	1.02E+23	8.53E+22	1.00	0.068	1.16E+23	9.87E+22	1.16
36	T672	0.015	2.38E+22	1.96E+22	1.01	0.017	2.69E+22	2.26E+22	1.17
37	T683	0.015	2.35E+22	1.94E+22	1.01	0.016	2.66E+22	2.23E+22	1.17

†DPA accumulated during this run only.

X430A in Run 152A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.016	2.63E+22	2.21E+22	0.13	0.019	3.00E+22	2.56E+22	0.16
2	T670	0.016	2.60E+22	2.18E+22	0.13	0.018	2.96E+22	2.53E+22	0.16
3	T692	0.059	9.79E+22	8.18E+22	0.13	0.066	1.11E+23	9.45E+22	0.15
4	T680	0.016	2.54E+22	2.12E+22	0.13	0.018	2.88E+22	2.45E+22	0.15
5	T694	0.060	1.01E+23	8.43E+22	0.13	0.068	1.14E+23	9.76E+22	0.16
6	T681	0.060	1.00E+23	8.36E+22	0.13	0.067	1.14E+23	9.68E+22	0.16
7	T696	0.060	9.91E+22	8.29E+22	0.13	0.067	1.13E+23	9.58E+22	0.16
8	T658	0.059	9.82E+22	8.20E+22	0.13	0.066	1.11E+23	9.47E+22	0.15
9	T697	0.059	9.72E+22	8.10E+22	0.13	0.065	1.10E+23	9.35E+22	0.15
10	T698	0.061	1.02E+23	8.52E+22	0.13	0.068	1.16E+23	9.87E+22	0.16
11	T679	0.061	1.01E+23	8.46E+22	0.13	0.068	1.15E+23	9.79E+22	0.16
12	T659	0.060	1.00E+23	8.39E+22	0.13	0.067	1.14E+23	9.70E+22	0.16
13	T700	0.060	9.94E+22	8.31E+22	0.13	0.067	1.13E+23	9.60E+22	0.15
14	T663	0.059	9.85E+22	8.22E+22	0.13	0.066	1.12E+23	9.49E+22	0.15
15	T702	0.059	9.74E+22	8.12E+22	0.13	0.065	1.10E+23	9.37E+22	0.15
16	T669	0.016	2.58E+22	2.16E+22	0.13	0.018	2.94E+22	2.50E+22	0.16
17	T660	0.061	1.02E+23	8.55E+22	0.13	0.068	1.16E+23	9.90E+22	0.16
18	T685	0.061	1.01E+23	8.48E+22	0.13	0.068	1.15E+23	9.81E+22	0.16
19	T652	0.060	1.00E+23	8.40E+22	0.13	0.067	1.14E+23	9.72E+22	0.15
20	T686	0.060	9.96E+22	8.32E+22	0.13	0.067	1.13E+23	9.62E+22	0.15
21	T653	0.059	9.87E+22	8.24E+22	0.13	0.066	1.12E+23	9.51E+22	0.15
22	T682	0.015	2.41E+22	1.99E+22	0.13	0.017	2.73E+22	2.30E+22	0.15
23	T688	0.062	1.03E+23	8.63E+22	0.13	0.069	1.17E+23	1.00E+23	0.16
24	T689	0.061	1.02E+23	8.56E+22	0.13	0.068	1.16E+23	9.91E+22	0.15
25	T690	0.061	1.01E+23	8.49E+22	0.13	0.068	1.15E+23	9.82E+22	0.15
26	T654	0.060	1.01E+23	8.41E+22	0.13	0.067	1.14E+23	9.73E+22	0.15
27	T710	0.060	1.00E+23	8.34E+22	0.13	0.067	1.13E+23	9.63E+22	0.15
28	T671	0.015	2.40E+22	1.98E+22	0.13	0.017	2.71E+22	2.28E+22	0.15
29	T709	0.062	1.03E+23	8.63E+22	0.13	0.069	1.17E+23	1.00E+23	0.15
30	T655	0.061	1.02E+23	8.56E+22	0.13	0.068	1.16E+23	9.91E+22	0.15
31	T704	0.061	1.02E+23	8.48E+22	0.13	0.068	1.15E+23	9.82E+22	0.15
32	T705	0.061	1.01E+23	8.41E+22	0.13	0.068	1.15E+23	9.73E+22	0.15
33	T651	0.060	1.00E+23	8.35E+22	0.13	0.067	1.14E+23	9.65E+22	0.15
34	T684	0.015	2.45E+22	2.03E+22	0.13	0.017	2.77E+22	2.34E+22	0.15
35	T707	0.061	1.02E+23	8.55E+22	0.13	0.069	1.16E+23	9.89E+22	0.15
36	T672	0.015	2.39E+22	1.98E+22	0.13	0.017	2.71E+22	2.28E+22	0.15
37	T683	0.015	2.37E+22	1.95E+22	0.13	0.017	2.67E+22	2.24E+22	0.15

†DPA accumulated during this run only.

X430A in Run 152B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†
1	T678	0.017	2.75E+22	2.31E+22	1.09	0.020	3.14E+22	2.68E+22	1.29
2	T670	0.017	2.72E+22	2.28E+22	1.09	0.019	3.10E+22	2.65E+22	1.28
3	T692	0.060	9.91E+22	8.28E+22	1.08	0.067	1.13E+23	9.57E+22	1.27
4	T680	0.017	2.66E+22	2.22E+22	1.08	0.019	3.02E+22	2.57E+22	1.26
5	T694	0.061	1.02E+23	8.53E+22	1.09	0.068	1.16E+23	9.88E+22	1.29
6	T681	0.061	1.01E+23	8.46E+22	1.08	0.068	1.15E+23	9.80E+22	1.28
7	T696	0.060	1.00E+23	8.39E+22	1.08	0.067	1.14E+23	9.70E+22	1.27
8	T658	0.059	9.94E+22	8.30E+22	1.07	0.067	1.13E+23	9.59E+22	1.26
9	T697	0.059	9.84E+22	8.20E+22	1.07	0.066	1.11E+23	9.47E+22	1.25
10	T698	0.062	1.03E+23	8.63E+22	1.08	0.069	1.17E+23	1.00E+23	1.29
11	T679	0.061	1.02E+23	8.56E+22	1.08	0.069	1.16E+23	9.91E+22	1.28
12	T659	0.060	1.01E+23	8.49E+22	1.08	0.068	1.15E+23	9.82E+22	1.27
13	T700	0.060	1.01E+23	8.40E+22	1.07	0.067	1.14E+23	9.72E+22	1.26
14	T663	0.060	9.96E+22	8.32E+22	1.07	0.067	1.13E+23	9.61E+22	1.25
15	T702	0.059	9.86E+22	8.22E+22	1.06	0.066	1.12E+23	9.48E+22	1.23
16	T669	0.017	2.70E+22	2.26E+22	1.08	0.019	3.08E+22	2.62E+22	1.28
17	T660	0.061	1.03E+23	8.65E+22	1.08	0.069	1.17E+23	1.00E+23	1.28
18	T685	0.061	1.02E+23	8.58E+22	1.07	0.069	1.16E+23	9.93E+22	1.27
19	T652	0.060	1.02E+23	8.50E+22	1.07	0.068	1.16E+23	9.83E+22	1.26
20	T686	0.061	1.01E+23	8.42E+22	1.06	0.068	1.14E+23	9.73E+22	1.25
21	T653	0.059	1.00E+23	8.33E+22	1.05	0.067	1.13E+23	9.62E+22	1.23
22	T682	0.016	2.52E+22	2.09E+22	1.04	0.018	2.86E+22	2.41E+22	1.22
23	T688	0.062	1.04E+23	8.73E+22	1.07	0.070	1.18E+23	1.01E+23	1.28
24	T689	0.062	1.03E+23	8.66E+22	1.07	0.069	1.18E+23	1.00E+23	1.27
25	T690	0.062	1.03E+23	8.58E+22	1.07	0.069	1.17E+23	9.93E+22	1.26
26	T654	0.061	1.02E+23	8.51E+22	1.06	0.068	1.16E+23	9.84E+22	1.25
27	T710	0.061	1.01E+23	8.43E+22	1.05	0.068	1.15E+23	9.74E+22	1.23
28	T671	0.016	2.51E+22	2.07E+22	1.04	0.018	2.84E+22	2.39E+22	1.21
29	T709	0.062	1.04E+23	8.73E+22	1.07	0.070	1.19E+23	1.01E+23	1.26
30	T655	0.061	1.04E+23	8.65E+22	1.06	0.069	1.18E+23	1.00E+23	1.26
31	T704	0.062	1.03E+23	8.58E+22	1.06	0.069	1.17E+23	9.93E+22	1.24
32	T705	0.061	1.02E+23	8.51E+22	1.05	0.068	1.16E+23	9.84E+22	1.23
33	T651	0.061	1.01E+23	8.44E+22	1.04	0.068	1.15E+23	9.75E+22	1.21
34	T684	0.016	2.56E+22	2.12E+22	1.06	0.018	2.90E+22	2.45E+22	1.25
35	T707	0.062	1.04E+23	8.64E+22	1.05	0.069	1.18E+23	1.00E+23	1.24
36	T672	0.016	2.51E+22	2.07E+22	1.04	0.018	2.83E+22	2.38E+22	1.23
37	T683	0.015	2.48E+22	2.04E+22	1.03	0.017	2.80E+22	2.35E+22	1.21

†DPA accumulated during this run only.

X430A in Run 152C

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.021	3.46E+22	2.91E+22	0.81	0.024	3.94E+22	3.37E+22	0.97
2	T670	0.021	3.42E+22	2.87E+22	0.81	0.024	3.90E+22	3.33E+22	0.96
3	T692	0.064	1.06E+23	8.86E+22	0.81	0.071	1.20E+23	1.02E+23	0.95
4	T680	0.021	3.34E+22	2.79E+22	0.80	0.024	3.80E+22	3.24E+22	0.95
5	T694	0.065	1.09E+23	9.12E+22	0.81	0.073	1.24E+23	1.06E+23	0.96
6	T681	0.065	1.08E+23	9.05E+22	0.81	0.072	1.23E+23	1.05E+23	0.96
7	T696	0.064	1.07E+23	8.96E+22	0.80	0.072	1.22E+23	1.04E+23	0.95
8	T658	0.063	1.06E+23	8.87E+22	0.80	0.071	1.21E+23	1.02E+23	0.95
9	T697	0.063	1.05E+23	8.76E+22	0.80	0.070	1.19E+23	1.01E+23	0.94
10	T698	0.066	1.10E+23	9.21E+22	0.80	0.073	1.25E+23	1.07E+23	0.96
11	T679	0.065	1.09E+23	9.14E+22	0.80	0.073	1.24E+23	1.06E+23	0.96
12	T659	0.064	1.08E+23	9.06E+22	0.80	0.072	1.23E+23	1.05E+23	0.95
13	T700	0.064	1.07E+23	8.97E+22	0.80	0.072	1.22E+23	1.04E+23	0.94
14	T663	0.064	1.06E+23	8.87E+22	0.79	0.071	1.21E+23	1.02E+23	0.94
15	T702	0.063	1.05E+23	8.76E+22	0.79	0.070	1.19E+23	1.01E+23	0.93
16	T669	0.021	3.39E+22	2.84E+22	0.80	0.024	3.86E+22	3.29E+22	0.95
17	T660	0.065	1.10E+23	9.22E+22	0.80	0.073	1.25E+23	1.07E+23	0.95
18	T685	0.065	1.09E+23	9.14E+22	0.80	0.073	1.24E+23	1.06E+23	0.95
19	T652	0.064	1.08E+23	9.06E+22	0.79	0.072	1.23E+23	1.05E+23	0.94
20	T686	0.064	1.07E+23	8.97E+22	0.79	0.072	1.22E+23	1.04E+23	0.93
21	T653	0.063	1.06E+23	8.87E+22	0.78	0.071	1.21E+23	1.03E+23	0.92
22	T682	0.020	3.17E+22	2.62E+22	0.78	0.022	3.59E+22	3.02E+22	0.91
23	T688	0.066	1.11E+23	9.29E+22	0.79	0.074	1.26E+23	1.08E+23	0.95
24	T689	0.066	1.10E+23	9.22E+22	0.79	0.073	1.25E+23	1.07E+23	0.94
25	T690	0.065	1.09E+23	9.13E+22	0.79	0.073	1.24E+23	1.06E+23	0.94
26	T654	0.064	1.08E+23	9.05E+22	0.79	0.072	1.23E+23	1.05E+23	0.93
27	T710	0.064	1.07E+23	8.97E+22	0.78	0.072	1.22E+23	1.04E+23	0.92
28	T671	0.020	3.15E+22	2.60E+22	0.77	0.022	3.56E+22	3.00E+22	0.91
29	T709	0.066	1.11E+23	9.28E+22	0.79	0.074	1.26E+23	1.08E+23	0.94
30	T655	0.065	1.10E+23	9.20E+22	0.79	0.073	1.25E+23	1.07E+23	0.93
31	T704	0.065	1.09E+23	9.12E+22	0.78	0.073	1.24E+23	1.05E+23	0.92
32	T705	0.065	1.08E+23	9.04E+22	0.78	0.072	1.23E+23	1.04E+23	0.92
33	T651	0.064	1.08E+23	8.96E+22	0.77	0.072	1.22E+23	1.04E+23	0.90
34	T684	0.020	3.21E+22	2.66E+22	0.78	0.022	3.64E+22	3.07E+22	0.93
35	T707	0.066	1.10E+23	9.17E+22	0.78	0.073	1.25E+23	1.06E+23	0.92
36	T672	0.019	3.14E+22	2.59E+22	0.77	0.022	3.55E+22	2.99E+22	0.91
37	T683	0.019	3.11E+22	2.56E+22	0.76	0.022	3.51E+22	2.94E+22	0.90

†DPA accumulated during this run only.

X430A in Run 152D

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T678	0.023	3.65E+22	3.07E+22	1.06	0.026	4.16E+22	3.56E+22	1.27
2	T670	0.022	3.61E+22	3.03E+22	1.06	0.025	4.11E+22	3.51E+22	1.26
3	T692	0.065	1.08E+23	9.02E+22	1.06	0.072	1.23E+23	1.04E+23	1.25
4	T680	0.022	3.52E+22	2.95E+22	1.06	0.025	4.01E+22	3.41E+22	1.24
5	T694	0.066	1.11E+23	9.28E+22	1.06	0.074	1.26E+23	1.08E+23	1.27
6	T681	0.066	1.10E+23	9.20E+22	1.06	0.073	1.25E+23	1.07E+23	1.26
7	T696	0.065	1.09E+23	9.12E+22	1.06	0.073	1.24E+23	1.05E+23	1.25
8	T658	0.064	1.08E+23	9.02E+22	1.05	0.072	1.23E+23	1.04E+23	1.24
9	T697	0.064	1.07E+23	8.91E+22	1.05	0.071	1.21E+23	1.03E+23	1.23
10	T698	0.067	1.12E+23	9.37E+22	1.06	0.074	1.27E+23	1.09E+23	1.26
11	T679	0.066	1.11E+23	9.29E+22	1.06	0.074	1.26E+23	1.08E+23	1.26
12	T659	0.065	1.10E+23	9.21E+22	1.05	0.073	1.25E+23	1.07E+23	1.25
13	T700	0.065	1.09E+23	9.12E+22	1.05	0.073	1.24E+23	1.05E+23	1.24
14	T663	0.065	1.08E+23	9.02E+22	1.04	0.072	1.23E+23	1.04E+23	1.23
15	T702	0.064	1.07E+23	8.91E+22	1.04	0.071	1.21E+23	1.03E+23	1.22
16	T669	0.022	3.58E+22	2.99E+22	1.05	0.025	4.08E+22	3.47E+22	1.26
17	T660	0.066	1.12E+23	9.37E+22	1.05	0.074	1.27E+23	1.09E+23	1.25
18	T685	0.066	1.11E+23	9.29E+22	1.05	0.074	1.26E+23	1.08E+23	1.25
19	T652	0.065	1.10E+23	9.21E+22	1.05	0.073	1.25E+23	1.07E+23	1.24
20	T686	0.065	1.09E+23	9.11E+22	1.04	0.073	1.24E+23	1.05E+23	1.23
21	T653	0.064	1.08E+23	9.02E+22	1.03	0.072	1.23E+23	1.04E+23	1.22
22	T682	0.021	3.34E+22	2.76E+22	1.02	0.023	3.78E+22	3.19E+22	1.20
23	T688	0.067	1.13E+23	9.45E+22	1.04	0.075	1.28E+23	1.09E+23	1.25
24	T689	0.067	1.12E+23	9.37E+22	1.04	0.075	1.27E+23	1.08E+23	1.24
25	T690	0.066	1.11E+23	9.28E+22	1.04	0.074	1.26E+23	1.07E+23	1.23
26	T654	0.065	1.10E+23	9.20E+22	1.03	0.073	1.25E+23	1.06E+23	1.22
27	T710	0.065	1.09E+23	9.11E+22	1.03	0.073	1.24E+23	1.05E+23	1.21
28	T671	0.021	3.32E+22	2.74E+22	1.02	0.023	3.76E+22	3.16E+22	1.20
29	T709	0.067	1.13E+23	9.43E+22	1.04	0.075	1.28E+23	1.09E+23	1.23
30	T655	0.066	1.12E+23	9.35E+22	1.03	0.074	1.27E+23	1.08E+23	1.23
31	T704	0.066	1.11E+23	9.26E+22	1.03	0.074	1.26E+23	1.07E+23	1.22
32	T705	0.066	1.10E+23	9.18E+22	1.02	0.073	1.25E+23	1.06E+23	1.20
33	T651	0.065	1.09E+23	9.10E+22	1.01	0.073	1.24E+23	1.05E+23	1.19
34	T684	0.021	3.39E+22	2.81E+22	1.03	0.024	3.83E+22	3.24E+22	1.22
35	T707	0.067	1.12E+23	9.31E+22	1.02	0.074	1.27E+23	1.08E+23	1.21
36	T672	0.021	3.31E+22	2.73E+22	1.02	0.023	3.74E+22	3.15E+22	1.20
37	T683	0.020	3.28E+22	2.70E+22	1.01	0.023	3.70E+22	3.10E+22	1.18

†DPA accumulated during this run only.

APPENDIX G

X430B BEGINNING-OF-CYCLE ELEMENT TEMPERATURES

Grid: 1
Jacket: T657

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.8	372	395	407	-	-
0.10	10.7	380	406	418	-	-
0.20	11.3	391	417	431	-	-
0.30	11.8	402	429	444	-	-
0.40	12.0	412	440	455	-	-
0.50	11.9	424	452	466	-	-
0.60	11.6	434	461	475	-	-
0.70	10.9	444	470	483	-	-
0.80	10.0	454	478	490	-	-
0.90	8.9	463	484	494	-	-
1.00	7.6	471	489	498	-	-

Grid: 2
Jacket: T663

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.8	372	395	406	-	-
0.10	10.4	382	406	418	-	-
0.20	10.9	393	419	432	-	-
0.30	11.3	406	432	446	-	-
0.40	11.5	417	444	458	-	-
0.50	11.4	430	456	470	-	-
0.60	11.1	441	467	480	-	-
0.70	10.4	452	477	490	-	-
0.80	9.7	463	485	497	-	-
0.90	8.8	472	492	503	-	-
1.00	7.7	480	498	507	-	-

Grid: 3
Jacket: T692

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	395	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	393	418	431	-	-
0.30	11.1	406	432	444	-	-
0.40	11.3	417	444	457	-	-
0.50	11.2	430	456	470	-	-
0.60	10.9	441	467	480	-	-
0.70	10.4	452	476	489	-	-
0.80	9.5	463	485	497	-	-
0.90	8.6	472	492	502	-	-
1.00	7.6	480	498	507	-	-

Grid: 4
Jacket: T656

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.2	380	404	416	-	-
0.20	10.8	391	416	429	-	-
0.30	11.3	402	428	442	-	-
0.40	11.5	412	439	453	-	-
0.50	11.4	424	450	464	-	-
0.60	11.0	434	460	473	-	-
0.70	10.4	444	469	482	-	-
0.80	9.6	454	477	488	-	-
0.90	8.4	463	483	493	-	-
1.00	7.3	471	488	497	-	-

Grid: 5
Jacket: T694

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.5	382	406	420	-	-
0.20	11.1	393	419	432	-	-
0.30	11.4	406	432	446	-	-
0.40	11.6	417	445	459	-	-
0.50	11.6	430	456	470	-	-
0.60	11.2	441	468	481	-	-
0.70	10.6	452	478	490	-	-
0.80	9.8	463	486	497	-	-
0.90	8.9	472	493	504	-	-
1.00	7.8	480	498	508	-	-

Grid: 6
Jacket: T664

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.6	372	397	409	420	586
0.10	11.6	384	412	426	438	613
0.20	12.4	399	428	443	456	639
0.30	13.0	414	444	460	473	661
0.40	13.3	428	459	475	489	677
0.50	13.2	442	474	490	504	687
0.60	12.7	456	486	502	515	691
0.70	11.9	470	498	512	524	688
0.80	10.8	481	507	520	531	680
0.90	9.4	492	514	525	536	666
1.00	8.0	500	519	529	537	649

Grid: 7
Jacket: T665

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.5	372	397	409	420	584
0.10	11.5	384	412	426	437	612
0.20	12.3	399	428	443	455	638
0.30	12.9	414	444	460	474	660
0.40	13.2	429	460	476	490	676
0.50	13.1	444	476	490	504	686
0.60	12.6	459	489	504	517	691
0.70	11.8	472	500	514	528	690
0.80	10.7	485	510	523	535	681
0.90	9.4	496	518	529	540	669
1.00	7.9	505	524	533	542	652

Grid: 8
Jacket: T658

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	405	-	-
0.10	9.9	384	408	420	-	-
0.20	10.5	399	424	436	-	-
0.30	10.9	414	440	452	-	-
0.40	11.1	428	454	468	-	-
0.50	11.1	442	468	482	-	-
0.60	10.7	456	482	495	-	-
0.70	10.1	470	494	506	-	-
0.80	9.3	481	503	514	-	-
0.90	8.4	492	511	521	-	-
1.00	7.1	500	517	526	-	-

Grid: 9
Jacket: T697

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.1	382	406	418	-	-
0.20	10.6	393	418	431	-	-
0.30	10.9	406	430	444	-	-
0.40	11.1	417	443	457	-	-
0.50	11.0	430	456	468	-	-
0.60	10.7	441	466	479	-	-
0.70	10.2	452	476	488	-	-
0.80	9.4	463	485	496	-	-
0.90	8.4	472	492	502	-	-
1.00	7.5	480	498	507	-	-

Grid: 10
Jacket: T698

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.6	382	406	420	-	-
0.20	11.1	393	419	433	-	-
0.30	11.5	406	432	446	-	-
0.40	11.7	417	445	459	-	-
0.50	11.6	430	456	470	-	-
0.60	11.3	441	468	481	-	-
0.70	10.7	452	478	490	-	-
0.80	9.9	463	486	498	-	-
0.90	8.9	472	493	504	-	-
1.00	7.8	480	498	508	-	-

Grid: 11
Jacket: T667

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.7	372	397	410	421	588
0.10	11.7	384	412	426	438	616
0.20	12.6	399	429	444	457	642
0.30	13.2	414	446	461	474	664
0.40	13.5	429	461	477	491	681
0.50	13.4	444	476	492	506	691
0.60	12.9	459	489	505	518	696
0.70	12.1	472	501	516	528	693
0.80	10.9	485	511	524	536	685
0.90	9.6	496	518	530	540	672
1.00	8.0	505	524	534	542	654

Grid: 12
Jacket: T659

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	10.1	384	408	420	-	-
0.20	10.7	400	425	438	-	-
0.30	11.1	416	442	454	-	-
0.40	11.3	431	458	471	-	-
0.50	11.3	447	474	487	-	-
0.60	10.9	463	488	501	-	-
0.70	10.4	478	502	514	-	-
0.80	9.5	491	513	525	-	-
0.90	8.4	502	523	533	-	-
1.00	7.2	513	530	539	-	-

Grid: 13
Jacket: T675

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.4	372	396	409	419	602
0.10	11.4	384	412	426	437	632
0.20	12.3	400	429	443	456	659
0.30	12.9	416	446	461	474	682
0.40	13.2	431	462	478	492	699
0.50	13.1	447	478	494	508	710
0.60	12.6	463	492	507	521	714
0.70	11.9	478	506	520	532	712
0.80	10.7	491	516	529	541	703
0.90	9.4	502	525	536	546	690
1.00	7.8	513	532	541	550	670

Grid: 14
Jacket: T670

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.8	372	395	407	-	-
0.10	10.7	384	410	422	-	-
0.20	11.4	399	426	440	-	-
0.30	12.0	414	442	456	-	-
0.40	12.2	429	458	473	-	-
0.50	12.1	444	472	488	-	-
0.60	11.7	459	487	501	-	-
0.70	11.1	472	498	512	-	-
0.80	10.0	485	509	521	-	-
0.90	8.9	496	516	528	-	-
1.00	7.5	505	523	532	-	-

Grid: 15
Jacket: T702

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.0	382	406	418	-	-
0.20	10.5	393	418	430	-	-
0.30	10.9	406	430	444	-	-
0.40	11.0	417	443	456	-	-
0.50	11.0	430	456	468	-	-
0.60	10.7	441	466	479	-	-
0.70	10.1	452	476	488	-	-
0.80	9.3	463	485	496	-	-
0.90	8.4	472	492	502	-	-
1.00	7.4	480	498	506	-	-

Grid: 16
Jacket: T686

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.2	372	396	408	-	-
0.10	10.9	380	406	419	-	-
0.20	11.5	391	418	431	-	-
0.30	11.9	402	430	444	-	-
0.40	12.1	412	441	455	-	-
0.50	12.0	423	452	466	-	-
0.60	11.7	434	461	475	-	-
0.70	11.0	444	470	484	-	-
0.80	10.1	454	478	490	-	-
0.90	9.1	463	484	496	-	-
1.00	7.9	471	490	499	-	-

Grid: 17
Jacket: T660

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.3	384	408	421	-	-
0.20	11.0	399	425	438	-	-
0.30	11.4	414	440	454	-	-
0.40	11.6	428	455	469	-	-
0.50	11.5	442	470	484	-	-
0.60	11.2	456	483	496	-	-
0.70	10.6	470	494	507	-	-
0.80	9.7	481	504	516	-	-
0.90	8.6	492	512	522	-	-
1.00	7.3	500	518	526	-	-

Grid: 18
Jacket: T668

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.6	372	397	410	420	586
0.10	11.7	384	412	426	438	614
0.20	12.5	400	429	444	457	641
0.30	13.1	416	446	462	476	664
0.40	13.4	431	463	479	493	681
0.50	13.3	447	478	494	508	692
0.60	12.8	463	493	508	522	698
0.70	12.0	478	506	520	533	696
0.80	10.9	491	516	529	541	689
0.90	9.6	502	526	537	547	678
1.00	8.0	513	532	542	550	660

Grid: 19
Jacket: T672

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.0	372	396	408	-	-
0.10	11.0	384	410	424	-	-
0.20	11.8	400	427	441	-	-
0.30	12.4	416	444	459	-	-
0.40	12.6	431	461	476	-	-
0.50	12.5	448	476	492	-	-
0.60	12.1	463	492	506	-	-
0.70	11.4	478	504	518	-	-
0.80	10.3	492	516	529	-	-
0.90	9.1	504	526	537	-	-
1.00	7.6	515	533	542	-	-

Grid: 20
Jacket: T669

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.8	384	410	423	-	-
0.20	11.5	400	427	441	-	-
0.30	12.1	416	444	458	-	-
0.40	12.3	431	460	475	-	-
0.50	12.2	447	476	490	-	-
0.60	11.8	463	490	505	-	-
0.70	11.1	478	504	516	-	-
0.80	10.1	491	515	527	-	-
0.90	8.9	502	524	534	-	-
1.00	7.5	513	531	540	-	-

Grid: 21
Jacket: T653

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.7	384	408	419	-	-
0.20	10.3	399	423	435	-	-
0.30	10.7	414	438	452	-	-
0.40	10.9	428	454	467	-	-
0.50	10.8	442	468	480	-	-
0.60	10.5	456	481	494	-	-
0.70	9.9	470	492	504	-	-
0.80	9.1	481	503	514	-	-
0.90	8.1	492	510	520	-	-
1.00	7.0	500	517	525	-	-

Grid: 22
Jacket: T689

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.0	380	404	416	-	-
0.20	10.5	391	415	428	-	-
0.30	10.9	402	426	440	-	-
0.40	11.0	412	438	451	-	-
0.50	11.0	424	449	462	-	-
0.60	10.7	434	459	472	-	-
0.70	10.1	444	468	480	-	-
0.80	9.4	454	476	487	-	-
0.90	8.4	463	483	493	-	-
1.00	7.5	471	488	497	-	-

Grid: 23
Jacket: T688

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.7	382	406	420	-	-
0.20	11.2	393	420	433	-	-
0.30	11.7	406	432	446	-	-
0.40	11.9	417	445	459	-	-
0.50	11.8	430	458	472	-	-
0.60	11.4	441	468	482	-	-
0.70	10.8	452	478	490	-	-
0.80	9.9	463	486	498	-	-
0.90	8.9	472	493	504	-	-
1.00	7.7	480	498	508	-	-

Grid: 24
Jacket: T682

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.2	372	396	408	-	-
0.10	11.2	384	412	424	-	-
0.20	12.1	399	428	442	-	-
0.30	12.7	414	444	460	-	-
0.40	13.0	429	460	475	-	-
0.50	12.9	444	474	490	-	-
0.60	12.4	459	488	503	-	-
0.70	11.6	472	500	514	-	-
0.80	10.6	485	510	522	-	-
0.90	9.2	496	518	529	-	-
1.00	7.7	505	523	533	-	-

Grid: 25
Jacket: T677

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.4	372	396	409	419	602
0.10	11.5	384	412	426	437	632
0.20	12.3	400	429	443	456	660
0.30	13.0	416	446	462	474	683
0.40	13.3	431	462	478	492	700
0.50	13.1	447	478	494	508	710
0.60	12.7	463	493	508	521	715
0.70	11.9	478	506	520	532	712
0.80	10.7	491	516	529	541	703
0.90	9.4	502	525	536	546	690
1.00	7.8	513	532	541	550	670

Grid: 26
Jacket: T654

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	394	404	-	-
0.10	9.9	384	408	420	-	-
0.20	10.5	400	424	437	-	-
0.30	11.0	416	441	454	-	-
0.40	11.2	431	457	471	-	-
0.50	11.1	447	474	486	-	-
0.60	10.8	463	488	501	-	-
0.70	10.2	478	502	514	-	-
0.80	9.4	491	513	524	-	-
0.90	8.4	502	522	532	-	-
1.00	7.1	513	530	539	-	-

Grid: 27
Jacket: T671

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.8	384	410	423	-	-
0.20	11.6	399	426	440	-	-
0.30	12.1	414	442	458	-	-
0.40	12.4	429	458	473	-	-
0.50	12.3	444	474	488	-	-
0.60	11.9	459	487	501	-	-
0.70	11.1	472	498	512	-	-
0.80	10.1	485	509	521	-	-
0.90	8.9	496	517	528	-	-
1.00	7.6	505	523	532	-	-

Grid: 28
Jacket: T710

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.0	382	406	418	-	-
0.20	10.5	393	418	431	-	-
0.30	10.9	406	430	444	-	-
0.40	11.0	417	443	457	-	-
0.50	11.0	430	456	468	-	-
0.60	10.7	441	466	479	-	-
0.70	10.1	452	476	488	-	-
0.80	9.3	463	485	496	-	-
0.90	8.4	472	492	502	-	-
1.00	7.4	480	498	506	-	-

Grid: 29
Jacket: T709

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.6	382	406	420	-	-
0.20	11.2	393	420	433	-	-
0.30	11.7	406	432	446	-	-
0.40	11.9	417	445	459	-	-
0.50	11.8	430	458	472	-	-
0.60	11.4	441	468	482	-	-
0.70	10.8	452	478	490	-	-
0.80	9.9	463	486	498	-	-
0.90	8.9	472	493	504	-	-
1.00	7.7	480	498	508	-	-

Grid: 30
Jacket: T655

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	10.1	384	408	420	-	-
0.20	10.8	399	424	437	-	-
0.30	11.2	414	440	454	-	-
0.40	11.4	428	455	469	-	-
0.50	11.3	442	470	482	-	-
0.60	11.0	456	482	495	-	-
0.70	10.4	470	494	506	-	-
0.80	9.5	481	504	515	-	-
0.90	8.4	492	512	522	-	-
1.00	7.2	500	517	526	-	-

Grid: 31
Jacket: T684

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	11.0	384	410	424	-	-
0.20	11.8	399	427	441	-	-
0.30	12.4	414	444	458	-	-
0.40	12.6	429	459	474	-	-
0.50	12.5	444	474	488	-	-
0.60	12.1	459	487	502	-	-
0.70	11.4	472	500	512	-	-
0.80	10.3	485	509	522	-	-
0.90	9.1	496	517	528	-	-
1.00	7.5	505	523	532	-	-

Grid: 32
Jacket: T683

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.9	384	410	423	-	-
0.20	11.7	399	426	440	-	-
0.30	12.2	414	442	456	-	-
0.40	12.5	428	457	472	-	-
0.50	12.4	442	472	486	-	-
0.60	12.0	456	485	499	-	-
0.70	11.2	470	496	510	-	-
0.80	10.2	481	505	517	-	-
0.90	8.9	492	512	524	-	-
1.00	7.5	500	518	527	-	-

Grid: 33
Jacket: T651

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	394	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	392	417	430	-	-
0.30	11.1	404	430	442	-	-
0.40	11.2	415	442	455	-	-
0.50	11.1	426	454	466	-	-
0.60	10.8	438	464	477	-	-
0.70	10.2	450	474	486	-	-
0.80	9.5	459	482	493	-	-
0.90	8.6	468	488	499	-	-
1.00	7.5	476	494	503	-	-

Grid: 34
Jacket: T704

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	10.6	380	406	418	-	-
0.20	11.2	391	417	430	-	-
0.30	11.6	402	428	442	-	-
0.40	11.8	412	440	454	-	-
0.50	11.8	424	450	464	-	-
0.60	11.4	434	461	474	-	-
0.70	10.8	444	470	482	-	-
0.80	9.9	454	478	489	-	-
0.90	8.9	463	484	494	-	-
1.00	7.7	471	489	498	-	-

Grid: 35
Jacket: T707

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.7	372	395	406	-	-
0.10	10.5	382	406	418	-	-
0.20	11.0	393	419	432	-	-
0.30	11.4	406	432	446	-	-
0.40	11.6	417	445	458	-	-
0.50	11.6	430	456	470	-	-
0.60	11.2	441	468	481	-	-
0.70	10.6	452	478	490	-	-
0.80	9.8	463	486	497	-	-
0.90	8.8	472	493	503	-	-
1.00	7.6	480	498	507	-	-

Grid: 36
Jacket: T652

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	393	404	-	-
0.10	10.0	382	406	418	-	-
0.20	10.6	393	418	431	-	-
0.30	11.1	406	432	444	-	-
0.40	11.2	417	444	457	-	-
0.50	11.2	430	456	469	-	-
0.60	10.8	441	467	480	-	-
0.70	10.2	452	476	488	-	-
0.80	9.4	463	485	496	-	-
0.90	8.4	472	492	502	-	-
1.00	7.1	480	497	505	-	-

Grid: 37
Jacket: T705

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.1	381	404	416	-	-
0.20	10.6	391	416	429	-	-
0.30	11.1	402	428	440	-	-
0.40	11.2	412	439	452	-	-
0.50	11.1	424	450	462	-	-
0.60	10.8	434	460	472	-	-
0.70	10.2	444	468	481	-	-
0.80	9.5	454	476	488	-	-
0.90	8.6	463	483	493	-	-
1.00	7.5	471	488	497	-	-

APPENDIX H

X430B RUN-BY-RUN MAXIMUM TEMPERATURES

X430B in Run 155A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
1	T657	0.056	12.0	471	489	498	-	-
2	T663	0.077	11.5	481	498	507	-	-
3	T692	0.077	11.3	481	498	507	-	-
4	T656	0.058	11.5	471	488	497	-	-
5	T694	0.079	11.6	481	498	508	-	-
6	T664	0.006	13.3	501	519	529	537	691
7	T665	0.006	13.2	506	524	533	542	691
8	T658	0.077	11.1	501	517	526	-	-
9	T697	0.077	11.1	481	498	507	-	-
10	T698	0.080	11.7	481	498	508	-	-
11	T667	0.006	13.5	506	524	534	542	696
12	T659	0.079	11.3	514	530	539	-	-
13	T675	0.006	13.2	514	532	541	550	714
14	T670	0.031	12.2	506	523	532	-	-
15	T702	0.077	11.0	481	498	506	-	-
16	T686	0.078	12.1	471	490	499	-	-
17	T660	0.080	11.6	501	518	526	-	-
18	T668	0.006	13.4	514	532	542	550	698
19	T672	0.029	12.6	516	533	542	-	-
20	T669	0.031	12.3	514	531	540	-	-
21	T653	0.077	10.9	501	517	525	-	-
22	T689	0.080	11.0	471	488	497	-	-
23	T688	0.080	11.9	481	498	508	-	-
24	T682	0.029	13.0	506	523	533	-	-
25	T677	0.006	13.3	514	532	541	550	715
26	T654	0.078	11.2	514	530	539	-	-
27	T671	0.029	12.4	506	523	532	-	-
28	T710	0.078	11.1	481	498	506	-	-
29	T709	0.080	11.9	481	498	508	-	-
30	T655	0.080	11.4	501	517	526	-	-
31	T684	0.030	12.6	506	523	532	-	-
32	T683	0.029	12.5	501	518	527	-	-
33	T651	0.078	11.2	477	494	503	-	-
34	T704	0.079	11.8	471	489	498	-	-
35	T707	0.080	11.6	481	498	507	-	-
36	T652	0.078	11.3	481	497	505	-	-
37	T705	0.078	11.2	471	488	497	-	-

X430B in Run 155B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.058	12.0	471	489	498
2	T663	0.080	11.5	481	498	507
3	T692	0.080	11.3	481	498	507
4	T656	0.060	11.5	471	488	497
5	T694	0.082	11.6	481	498	508
6	T664	0.009	13.3	501	519	529
7	T665	0.009	13.1	506	524	533
8	T658	0.079	11.1	501	517	526
9	T697	0.079	11.1	481	498	507
10	T698	0.082	11.7	481	499	508
11	T667	0.009	13.4	506	524	534
12	T659	0.081	11.3	514	530	539
13	T675	0.009	13.2	514	532	541
14	T670	0.034	12.2	506	523	532
15	T702	0.079	11.0	481	498	507
16	T686	0.081	12.1	471	490	499
17	T660	0.082	11.6	501	518	526
18	T668	0.009	13.4	514	532	542
19	T672	0.032	12.6	516	533	543
20	T669	0.034	12.3	514	531	540
21	T653	0.079	10.9	501	517	525
22	T689	0.082	11.0	471	488	497
23	T688	0.083	11.8	481	498	508
24	T682	0.032	12.9	506	523	533
25	T677	0.009	13.2	514	532	541
26	T654	0.081	11.2	514	530	539
27	T671	0.032	12.3	506	523	532
28	T710	0.080	11.0	481	498	507
29	T709	0.083	11.9	481	498	508
30	T655	0.082	11.4	501	517	526
31	T684	0.032	12.6	506	523	532
32	T683	0.031	12.5	501	518	527
33	T651	0.080	11.2	477	494	503
34	T704	0.082	11.8	471	489	498
35	T707	0.082	11.6	481	498	507
36	T652	0.081	11.2	481	497	505
37	T705	0.081	11.2	471	488	497

X430B in Run 156B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.070	12.1	473	491	500
2	T663	0.091	11.5	482	501	510
3	T692	0.090	11.2	483	500	510
4	T656	0.071	11.4	473	490	499
5	T694	0.093	11.7	482	501	511
6	T664	0.022	13.3	503	522	532
7	T665	0.021	13.1	508	526	536
8	T658	0.090	11.1	503	520	528
9	T697	0.089	11.0	483	500	509
10	T698	0.094	11.7	483	501	511
11	T667	0.022	13.5	508	527	537
12	T659	0.092	11.3	516	533	542
13	T675	0.021	13.2	516	535	544
14	T670	0.045	12.1	508	525	535
15	T702	0.089	10.9	483	500	509
16	T686	0.092	12.1	473	492	502
17	T660	0.093	11.6	503	520	529
18	T668	0.022	13.4	516	535	545
19	T672	0.044	12.6	518	536	546
20	T669	0.045	12.3	516	534	543
21	T653	0.090	10.9	503	519	528
22	T689	0.092	11.0	473	490	499
23	T688	0.094	11.8	483	501	510
24	T682	0.044	13.0	508	526	535
25	T677	0.022	13.3	516	534	544
26	T654	0.091	11.2	516	533	541
27	T671	0.043	12.4	508	525	535
28	T710	0.091	11.0	482	500	509
29	T709	0.094	11.8	483	501	510
30	T655	0.093	11.4	503	520	529
31	T684	0.044	12.6	508	525	535
32	T683	0.043	12.5	503	521	530
33	T651	0.091	11.2	479	496	505
34	T704	0.093	11.8	473	491	500
35	T707	0.093	11.6	483	500	509
36	T652	0.092	11.3	482	499	508
37	T705	0.091	11.2	473	490	499

X430B in Run 157A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.070	11.4	469	486	495
2	T663	0.091	10.9	478	495	505
3	T692	0.091	10.7	478	495	504
4	T656	0.071	10.7	469	485	494
5	T694	0.093	11.1	478	496	505
6	T664	0.022	12.6	497	516	525
7	T665	0.022	12.4	502	520	530
8	T658	0.090	10.5	497	514	522
9	T697	0.090	10.4	478	495	504
10	T698	0.094	11.1	478	496	505
11	T667	0.022	12.7	502	521	530
12	T659	0.092	10.7	510	527	535
13	T675	0.022	12.4	510	528	537
14	T670	0.045	11.5	502	519	528
15	T702	0.089	10.3	478	495	503
16	T686	0.092	11.5	469	487	497
17	T660	0.093	11.0	497	514	523
18	T668	0.022	12.7	510	528	538
19	T672	0.044	11.9	512	529	539
20	T669	0.045	11.6	510	527	536
21	T653	0.090	10.3	497	513	522
22	T689	0.092	10.4	469	486	494
23	T688	0.094	11.2	478	496	505
24	T682	0.045	12.3	502	520	529
25	T677	0.022	12.5	510	528	537
26	T654	0.092	10.6	510	526	535
27	T671	0.043	11.7	502	519	528
28	T710	0.091	10.5	478	495	503
29	T709	0.094	11.3	478	496	505
30	T655	0.093	10.8	497	514	522
31	T684	0.044	11.9	502	519	528
32	T683	0.043	11.8	497	515	523
33	T651	0.091	10.7	474	491	500
34	T704	0.093	11.2	469	486	496
35	T707	0.093	11.0	478	495	504
36	T652	0.092	10.7	478	494	502
37	T705	0.092	10.7	469	486	494

X430B in Run 157C

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.070	11.8	471	489	498
2	T663	0.091	11.2	481	498	507
3	T692	0.091	11.1	481	498	507
4	T656	0.072	11.2	471	488	497
5	T694	0.093	11.4	481	499	508
6	T664	0.023	13.0	501	519	529
7	T665	0.022	12.8	506	524	533
8	T658	0.091	10.9	501	517	526
9	T697	0.090	10.9	481	498	507
10	T698	0.094	11.4	481	499	508
11	T667	0.023	13.1	506	524	534
12	T659	0.092	11.1	514	530	539
13	T675	0.022	12.8	514	532	541
14	T670	0.046	11.9	506	523	532
15	T702	0.090	10.8	481	498	507
16	T686	0.093	11.8	471	490	499
17	T660	0.094	11.3	501	518	526
18	T668	0.023	13.0	514	532	542
19	T672	0.044	12.3	516	533	542
20	T669	0.046	12.0	514	531	540
21	T653	0.090	10.6	501	517	525
22	T689	0.093	10.8	471	488	497
23	T688	0.095	11.5	481	498	508
24	T682	0.045	12.6	506	523	532
25	T677	0.022	12.9	514	531	541
26	T654	0.092	10.9	514	530	538
27	T671	0.044	12.1	506	523	532
28	T710	0.091	10.8	480	497	506
29	T709	0.095	11.5	481	498	507
30	T655	0.094	11.1	501	517	526
31	T684	0.045	12.2	506	523	532
32	T683	0.044	12.2	501	518	527
33	T651	0.091	11.0	477	494	503
34	T704	0.093	11.5	471	489	498
35	T707	0.094	11.3	481	498	507
36	T652	0.092	11.0	481	497	505
37	T705	0.092	11.0	471	488	497

X430B in Run 157D

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.073	11.9	472	489	498
2	T663	0.094	11.3	481	498	508
3	T692	0.094	11.2	481	498	507
4	T656	0.074	11.3	472	488	497
5	T694	0.096	11.5	481	499	508
6	T664	0.025	13.1	501	519	529
7	T665	0.025	13.0	506	524	534
8	T658	0.093	11.0	501	517	526
9	T697	0.092	10.9	481	498	507
10	T698	0.097	11.5	481	499	508
11	T667	0.026	13.2	506	524	534
12	T659	0.095	11.2	514	531	539
13	T675	0.025	13.0	514	532	541
14	T670	0.049	12.0	506	523	532
15	T702	0.092	10.8	481	498	507
16	T686	0.095	11.8	472	490	499
17	T660	0.096	11.4	501	518	527
18	T668	0.026	13.1	514	532	542
19	T672	0.047	12.3	516	533	543
20	T669	0.049	12.1	514	531	540
21	T653	0.093	10.7	501	517	525
22	T689	0.095	10.9	471	489	498
23	T688	0.097	11.6	481	499	508
24	T682	0.048	12.6	506	523	533
25	T677	0.025	12.9	514	532	541
26	T654	0.095	11.0	514	530	539
27	T671	0.047	12.1	506	523	532
28	T710	0.094	10.9	481	498	506
29	T709	0.097	11.6	481	498	508
30	T655	0.096	11.1	501	517	526
31	T684	0.048	12.3	506	523	532
32	T683	0.046	12.2	501	518	527
33	T651	0.094	11.0	477	494	503
34	T704	0.096	11.5	472	489	498
35	T707	0.096	11.3	481	498	507
36	T652	0.095	11.0	481	497	505
37	T705	0.094	11.0	471	488	497

X430B in Run 157H

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.073	11.9	470	487	496
2	T663	0.094	11.3	479	496	506
3	T692	0.094	11.1	479	496	505
4	T656	0.075	11.3	470	487	495
5	T694	0.096	11.4	479	497	506
6	T664	0.026	13.0	499	517	527
7	T665	0.025	12.9	503	522	531
8	T658	0.093	10.9	499	515	524
9	T697	0.093	10.9	479	496	505
10	T698	0.097	11.5	479	497	506
11	T667	0.026	13.1	503	522	531
12	T659	0.095	11.1	511	528	537
13	T675	0.025	12.9	511	529	539
14	T670	0.049	11.9	503	521	530
15	T702	0.093	10.8	479	496	505
16	T686	0.096	11.8	470	488	498
17	T660	0.097	11.3	499	515	524
18	T668	0.026	13.0	511	530	539
19	T672	0.047	12.2	513	531	540
20	T669	0.049	12.0	511	529	538
21	T653	0.093	10.6	499	515	523
22	T689	0.095	10.8	470	487	496
23	T688	0.098	11.5	479	497	506
24	T682	0.048	12.5	503	521	530
25	T677	0.026	12.8	511	529	538
26	T654	0.095	10.9	511	527	536
27	T671	0.047	12.0	503	520	530
28	T710	0.094	10.8	479	496	504
29	T709	0.098	11.5	479	496	506
30	T655	0.096	11.0	499	515	523
31	T684	0.048	12.2	503	520	529
32	T683	0.047	12.1	499	516	525
33	T651	0.094	10.9	475	492	501
34	T704	0.096	11.4	470	487	496
35	T707	0.096	11.2	479	496	505
36	T652	0.095	10.9	479	495	503
37	T705	0.095	10.9	470	486	495

X430B in Run 158A

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.083	11.5	469	486	495
2	T663	0.104	11.0	478	495	504
3	T692	0.103	10.8	478	495	504
4	T656	0.084	11.0	469	485	494
5	T694	0.106	11.1	478	495	504
6	T664	0.037	12.7	497	515	525
7	T665	0.037	12.6	502	520	529
8	T658	0.103	10.7	497	513	522
9	T697	0.102	10.6	478	495	503
10	T698	0.107	11.2	478	495	504
11	T667	0.037	12.8	502	520	529
12	T659	0.105	10.8	510	526	535
13	T675	0.036	12.5	510	527	537
14	T670	0.059	11.6	502	519	528
15	T702	0.102	10.5	478	494	503
16	T686	0.106	11.5	469	487	496
17	T660	0.106	11.0	497	514	522
18	T668	0.037	12.7	510	528	537
19	T672	0.058	12.0	512	529	538
20	T669	0.059	11.7	510	527	536
21	T653	0.102	10.4	497	513	521
22	T689	0.104	10.5	469	485	494
23	T688	0.107	11.2	478	495	504
24	T682	0.059	12.2	502	519	528
25	T677	0.037	12.5	510	527	536
26	T654	0.104	10.6	510	526	534
27	T671	0.057	11.8	502	519	528
28	T710	0.103	10.5	478	494	503
29	T709	0.107	11.2	478	495	504
30	T655	0.106	10.8	497	513	522
31	T684	0.058	11.9	502	519	528
32	T683	0.057	11.8	497	514	523
33	T651	0.103	10.7	474	491	499
34	T704	0.106	11.2	469	486	495
35	T707	0.106	11.0	478	495	503
36	T652	0.104	10.7	478	493	502
37	T705	0.104	10.7	469	485	494

X430B in Run 158B

Grid	Jacket	Peak Burnup	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.083	11.6	469	486	495
2	T663	0.104	11.0	478	495	504
3	T692	0.103	10.9	478	495	504
4	T656	0.084	11.0	469	485	494
5	T694	0.106	11.2	478	495	504
6	T664	0.037	12.7	497	515	525
7	T665	0.037	12.6	502	520	529
8	T658	0.103	10.7	497	513	522
9	T697	0.102	10.6	478	495	503
10	T698	0.107	11.2	478	495	504
11	T667	0.037	12.8	502	520	530
12	T659	0.105	10.8	510	526	535
13	T675	0.036	12.5	510	528	537
14	T670	0.059	11.6	502	519	528
15	T702	0.102	10.5	478	494	503
16	T686	0.106	11.5	469	487	496
17	T660	0.107	11.0	497	514	522
18	T668	0.037	12.7	510	528	537
19	T672	0.058	12.0	512	529	538
20	T669	0.059	11.7	510	527	536
21	T653	0.102	10.4	497	513	521
22	T689	0.104	10.5	469	485	494
23	T688	0.108	11.2	478	495	504
24	T682	0.059	12.2	502	519	528
25	T677	0.037	12.5	510	527	536
26	T654	0.104	10.6	510	526	534
27	T671	0.057	11.8	502	519	528
28	T710	0.103	10.5	478	494	503
29	T709	0.107	11.2	478	495	504
30	T655	0.106	10.8	497	513	522
31	T684	0.059	11.9	502	519	528
32	T683	0.057	11.8	497	514	523
33	T651	0.103	10.7	474	491	499
34	T704	0.106	11.2	469	486	495
35	T707	0.106	11.0	478	495	503
36	T652	0.104	10.6	478	493	502
37	T705	0.104	10.7	469	485	494

X430B in Run 160A

Grid	Jacket	Peak Burnup†	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.088	11.6	470	487	496
2	T663	0.111	11.1	479	496	505
3	T692	0.110	10.9	479	496	505
4	T656	0.089	11.0	470	487	495
5	T694	0.113	11.2	479	497	506
6	T664	0.039	12.7	499	517	527
7	T665	0.039	12.6	504	522	531
8	T658	0.110	10.7	499	515	524
9	T697	0.109	10.7	479	496	505
10	T698	0.114	11.2	479	497	506
11	T667	0.039	12.8	504	522	531
12	T659	0.112	10.9	512	528	537
13	T675	0.038	12.6	512	530	539
14	T670	0.063	11.7	504	521	530
15	T702	0.109	10.6	479	496	505
16	T686	0.113	11.5	470	488	497
17	T660	0.114	11.1	499	516	524
18	T668	0.039	12.7	512	530	539
19	T672	0.062	12.0	514	531	540
20	T669	0.063	11.7	512	529	538
21	T653	0.109	10.4	499	515	523
22	T689	0.111	10.6	470	487	496
23	T688	0.115	11.3	479	497	506
24	T682	0.063	12.3	504	521	530
25	T677	0.039	12.6	512	529	539
26	T654	0.111	10.7	512	528	536
27	T671	0.061	11.8	504	521	530
28	T710	0.110	10.6	479	496	504
29	T709	0.114	11.2	479	497	506
30	T655	0.113	10.8	499	515	524
31	T684	0.063	11.9	504	521	530
32	T683	0.061	11.9	499	516	525
33	T651	0.110	10.7	476	492	501
34	T704	0.113	11.2	470	487	496
35	T707	0.113	11.0	479	496	505
36	T652	0.111	10.7	479	495	503
37	T705	0.111	10.7	470	486	495

†Extrapolated from Run 158B.

X430B in Run 161A

Grid	Jacket	Peak Burnupt	Peak LHGR (kW/ft)	Maximum Temperatures (°C) Coolant	Clad Mid-Wall	Clad I.D.
1	T657	0.092	11.8	470	488	497
2	T663	0.116	11.2	480	497	506
3	T692	0.115	11.0	480	497	506
4	T656	0.094	11.2	470	487	496
5	T694	0.118	11.4	480	497	507
6	T664	0.041	12.9	500	518	527
7	T665	0.041	12.8	504	522	532
8	T658	0.115	10.9	500	516	525
9	T697	0.114	10.8	480	497	506
10	T698	0.119	11.4	480	497	507
11	T667	0.041	13.0	504	523	532
12	T659	0.117	11.0	512	529	538
13	T675	0.040	12.8	512	530	540
14	T670	0.066	11.8	504	521	530
15	T702	0.114	10.7	480	497	505
16	T686	0.118	11.7	470	489	498
17	T660	0.119	11.2	500	516	525
18	T668	0.041	12.9	512	531	540
19	T672	0.065	12.2	515	532	541
20	T669	0.066	11.9	512	530	539
21	T653	0.114	10.6	500	516	524
22	T689	0.116	10.7	470	487	496
23	T688	0.120	11.4	480	497	506
24	T682	0.066	12.4	504	522	531
25	T677	0.041	12.7	512	530	539
26	T654	0.116	10.8	512	529	537
27	T671	0.064	12.0	504	522	530
28	T710	0.115	10.7	479	496	505
29	T709	0.119	11.4	480	497	506
30	T655	0.118	11.0	500	516	524
31	T684	0.066	12.1	504	521	530
32	T683	0.064	12.0	500	517	526
33	T651	0.115	10.9	476	493	502
34	T704	0.118	11.3	470	488	497
35	T707	0.118	11.2	480	497	506
36	T652	0.116	10.8	480	496	504
37	T705	0.116	10.8	470	487	496

†Extrapolated from Run 158B.

APPENDIX I

X430B RUN-BY-RUN BURNUPS AND FLUENCES

X430B in Run 155A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.049	8.19E+22	6.85E+22	6.37	0.056	9.30E+22	7.92E+22	7.47
2	T663	0.070	1.17E+23	9.73E+22	6.41	0.077	1.32E+23	1.12E+23	7.53
3	T692	0.069	1.16E+23	9.72E+22	6.45	0.077	1.32E+23	1.12E+23	7.58
4	T656	0.051	8.57E+22	7.16E+22	6.47	0.058	9.73E+22	8.28E+22	7.61
5	T694	0.071	1.19E+23	1.00E+23	6.31	0.079	1.36E+23	1.16E+23	7.40
6	T664	0.005	8.73E+21	7.23E+21	6.36	0.006	9.90E+21	8.34E+21	7.47
7	T665	0.005	8.62E+21	7.13E+21	6.40	0.006	9.76E+21	8.22E+21	7.52
8	T658	0.069	1.16E+23	9.72E+22	6.43	0.077	1.32E+23	1.12E+23	7.56
9	T697	0.069	1.15E+23	9.60E+22	6.45	0.077	1.31E+23	1.11E+23	7.58
10	T698	0.072	1.21E+23	1.01E+23	6.25	0.080	1.37E+23	1.17E+23	7.33
11	T667	0.006	8.80E+21	7.31E+21	6.30	0.006	9.98E+21	8.44E+21	7.39
12	T659	0.070	1.19E+23	9.93E+22	6.34	0.079	1.35E+23	1.15E+23	7.45
13	T675	0.005	8.56E+21	7.09E+21	6.38	0.006	9.70E+21	8.18E+21	7.49
14	T670	0.027	4.45E+22	3.72E+22	6.40	0.031	5.07E+22	4.31E+22	7.52
15	T702	0.069	1.15E+23	9.59E+22	6.42	0.077	1.31E+23	1.11E+23	7.55
16	T686	0.070	1.18E+23	9.86E+22	6.20	0.078	1.34E+23	1.14E+23	7.26
17	T660	0.071	1.21E+23	1.01E+23	6.25	0.080	1.37E+23	1.17E+23	7.32
18	T668	0.006	8.75E+21	7.27E+21	6.29	0.006	9.93E+21	8.40E+21	7.37
19	T672	0.026	4.18E+22	3.45E+22	6.32	0.029	4.72E+22	3.97E+22	7.42
20	T669	0.027	4.43E+22	3.70E+22	6.35	0.031	5.04E+22	4.28E+22	7.46
21	T653	0.069	1.17E+23	9.71E+22	6.37	0.077	1.32E+23	1.12E+23	7.49
22	T689	0.071	1.20E+23	1.00E+23	6.39	0.080	1.37E+23	1.16E+23	7.51
23	T688	0.072	1.22E+23	1.02E+23	6.19	0.080	1.38E+23	1.18E+23	7.25
24	T682	0.026	4.22E+22	3.50E+22	6.23	0.029	4.78E+22	4.04E+22	7.30
25	T677	0.005	8.69E+21	7.22E+21	6.26	0.006	9.86E+21	8.34E+21	7.34
26	T654	0.070	1.19E+23	9.90E+22	6.28	0.078	1.35E+23	1.15E+23	7.38
27	T671	0.026	4.16E+22	3.44E+22	6.31	0.029	4.71E+22	3.96E+22	7.41
28	T710	0.070	1.17E+23	9.79E+22	6.33	0.078	1.33E+23	1.13E+23	7.44
29	T709	0.072	1.22E+23	1.02E+23	6.16	0.080	1.38E+23	1.18E+23	7.22
30	T655	0.071	1.21E+23	1.01E+23	6.19	0.080	1.37E+23	1.17E+23	7.25
31	T684	0.026	4.25E+22	3.52E+22	6.21	0.030	4.81E+22	4.06E+22	7.29
32	T683	0.025	4.12E+22	3.40E+22	6.24	0.029	4.66E+22	3.91E+22	7.32
33	T651	0.070	1.18E+23	9.79E+22	6.27	0.078	1.33E+23	1.13E+23	7.36
34	T704	0.071	1.20E+23	1.00E+23	6.12	0.079	1.36E+23	1.16E+23	7.16
35	T707	0.071	1.20E+23	1.00E+23	6.14	0.080	1.37E+23	1.16E+23	7.19
36	T652	0.070	1.19E+23	9.91E+22	6.16	0.078	1.35E+23	1.15E+23	7.22
37	T705	0.070	1.18E+23	9.87E+22	6.19	0.078	1.34E+23	1.14E+23	7.26

†DPA accumulated during this run only.

X430B in Run 155B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.052	8.60E+22	7.18E+22	1.12	0.058	9.76E+22	8.30E+22	1.31
2	T663	0.072	1.21E+23	1.01E+23	1.13	0.080	1.37E+23	1.16E+23	1.32
3	T692	0.072	1.20E+23	1.01E+23	1.13	0.080	1.37E+23	1.16E+23	1.33
4	T656	0.054	8.96E+22	7.48E+22	1.14	0.060	1.02E+23	8.65E+22	1.34
5	T694	0.073	1.24E+23	1.04E+23	1.11	0.082	1.41E+23	1.20E+23	1.30
6	T664	0.008	1.28E+22	1.06E+22	1.12	0.009	1.45E+22	1.22E+22	1.31
7	T665	0.008	1.26E+22	1.04E+22	1.12	0.009	1.43E+22	1.20E+22	1.32
8	T658	0.071	1.20E+23	1.00E+23	1.13	0.079	1.37E+23	1.16E+23	1.33
9	T697	0.071	1.19E+23	9.92E+22	1.13	0.079	1.35E+23	1.15E+23	1.33
10	T698	0.074	1.25E+23	1.05E+23	1.10	0.082	1.42E+23	1.21E+23	1.29
11	T667	0.008	1.29E+22	1.07E+22	1.11	0.009	1.46E+22	1.24E+22	1.30
12	T659	0.072	1.23E+23	1.03E+23	1.11	0.081	1.40E+23	1.19E+23	1.31
13	T675	0.008	1.25E+22	1.04E+22	1.12	0.009	1.42E+22	1.20E+22	1.32
14	T670	0.030	4.84E+22	4.05E+22	1.12	0.034	5.51E+22	4.69E+22	1.32
15	T702	0.071	1.19E+23	9.91E+22	1.13	0.079	1.35E+23	1.14E+23	1.33
16	T686	0.073	1.22E+23	1.02E+23	1.09	0.081	1.39E+23	1.18E+23	1.28
17	T660	0.073	1.25E+23	1.05E+23	1.10	0.082	1.42E+23	1.21E+23	1.29
18	T668	0.008	1.28E+22	1.07E+22	1.10	0.009	1.45E+22	1.23E+22	1.30
19	T672	0.028	4.58E+22	3.78E+22	1.11	0.032	5.18E+22	4.36E+22	1.30
20	T669	0.030	4.82E+22	4.02E+22	1.11	0.034	5.48E+22	4.66E+22	1.31
21	T653	0.071	1.20E+23	1.00E+23	1.12	0.079	1.37E+23	1.16E+23	1.31
22	T689	0.073	1.24E+23	1.04E+23	1.12	0.082	1.41E+23	1.20E+23	1.32
23	T688	0.074	1.26E+23	1.05E+23	1.09	0.083	1.43E+23	1.22E+23	1.27
24	T682	0.028	4.63E+22	3.84E+22	1.09	0.032	5.25E+22	4.43E+22	1.28
25	T677	0.008	1.27E+22	1.06E+22	1.10	0.009	1.44E+22	1.22E+22	1.29
26	T654	0.072	1.23E+23	1.02E+23	1.10	0.081	1.39E+23	1.18E+23	1.30
27	T671	0.028	4.55E+22	3.76E+22	1.11	0.032	5.15E+22	4.34E+22	1.30
28	T710	0.072	1.21E+23	1.01E+23	1.11	0.080	1.38E+23	1.17E+23	1.31
29	T709	0.074	1.26E+23	1.05E+23	1.08	0.083	1.43E+23	1.22E+23	1.27
30	T655	0.073	1.25E+23	1.04E+23	1.09	0.082	1.42E+23	1.21E+23	1.27
31	T684	0.029	4.65E+22	3.86E+22	1.09	0.032	5.26E+22	4.45E+22	1.28
32	T683	0.028	4.52E+22	3.72E+22	1.09	0.031	5.10E+22	4.29E+22	1.29
33	T651	0.072	1.21E+23	1.01E+23	1.10	0.080	1.38E+23	1.17E+23	1.29
34	T704	0.073	1.24E+23	1.03E+23	1.07	0.082	1.41E+23	1.20E+23	1.26
35	T707	0.074	1.24E+23	1.04E+23	1.08	0.082	1.41E+23	1.20E+23	1.26
36	T652	0.072	1.23E+23	1.02E+23	1.08	0.081	1.39E+23	1.18E+23	1.27
37	T705	0.073	1.22E+23	1.02E+23	1.08	0.081	1.39E+23	1.18E+23	1.27

†DPA accumulated during this run only.

X430B in Run 156B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.062	1.04E+23	8.71E+22	0.95	0.070	1.18E+23	1.01E+23	1.29
2	T663	0.082	1.39E+23	1.16E+23	0.96	0.091	1.58E+23	1.34E+23	1.30
3	T692	0.081	1.38E+23	1.15E+23	0.96	0.090	1.57E+23	1.33E+23	1.31
4	T656	0.063	1.07E+23	8.93E+22	0.97	0.071	1.22E+23	1.03E+23	1.31
5	T694	0.083	1.42E+23	1.19E+23	0.94	0.093	1.62E+23	1.38E+23	1.28
6	T664	0.019	3.11E+22	2.58E+22	0.95	0.022	3.52E+22	2.98E+22	1.29
7	T665	0.019	3.07E+22	2.54E+22	0.96	0.021	3.47E+22	2.93E+22	1.30
8	T658	0.080	1.38E+23	1.15E+23	0.96	0.090	1.57E+23	1.33E+23	1.30
9	T697	0.080	1.37E+23	1.14E+23	0.97	0.089	1.55E+23	1.31E+23	1.31
10	T698	0.084	1.43E+23	1.20E+23	0.93	0.094	1.63E+23	1.39E+23	1.26
11	T667	0.019	3.14E+22	2.61E+22	0.94	0.022	3.55E+22	3.01E+22	1.27
12	T659	0.082	1.41E+23	1.18E+23	0.95	0.092	1.60E+23	1.36E+23	1.28
13	T675	0.019	3.05E+22	2.53E+22	0.95	0.021	3.45E+22	2.91E+22	1.29
14	T670	0.040	6.60E+22	5.51E+22	0.96	0.045	7.50E+22	6.37E+22	1.30
15	T702	0.080	1.36E+23	1.13E+23	0.96	0.089	1.54E+23	1.31E+23	1.30
16	T686	0.083	1.41E+23	1.18E+23	0.93	0.092	1.60E+23	1.36E+23	1.25
17	T660	0.083	1.43E+23	1.20E+23	0.93	0.093	1.63E+23	1.39E+23	1.26
18	T668	0.019	3.12E+22	2.60E+22	0.94	0.022	3.53E+22	2.99E+22	1.27
19	T672	0.039	6.38E+22	5.29E+22	0.95	0.044	7.22E+22	6.09E+22	1.28
20	T669	0.040	6.60E+22	5.50E+22	0.95	0.045	7.49E+22	6.36E+22	1.28
21	T653	0.080	1.38E+23	1.15E+23	0.96	0.090	1.56E+23	1.33E+23	1.29
22	T689	0.083	1.41E+23	1.18E+23	0.96	0.092	1.60E+23	1.36E+23	1.29
23	T688	0.084	1.45E+23	1.21E+23	0.93	0.094	1.64E+23	1.40E+23	1.25
24	T682	0.039	6.48E+22	5.38E+22	0.93	0.044	7.34E+22	6.22E+22	1.26
25	T677	0.019	3.09E+22	2.58E+22	0.94	0.022	3.51E+22	2.98E+22	1.26
26	T654	0.082	1.41E+23	1.17E+23	0.94	0.091	1.60E+23	1.36E+23	1.27
27	T671	0.038	6.32E+22	5.23E+22	0.95	0.043	7.15E+22	6.03E+22	1.27
28	T710	0.082	1.39E+23	1.15E+23	0.95	0.091	1.57E+23	1.33E+23	1.28
29	T709	0.084	1.44E+23	1.21E+23	0.92	0.094	1.64E+23	1.40E+23	1.24
30	T655	0.083	1.43E+23	1.20E+23	0.93	0.093	1.62E+23	1.38E+23	1.25
31	T684	0.039	6.46E+22	5.37E+22	0.93	0.044	7.31E+22	6.19E+22	1.25
32	T683	0.038	6.29E+22	5.21E+22	0.94	0.043	7.11E+22	6.00E+22	1.26
33	T651	0.082	1.39E+23	1.16E+23	0.94	0.091	1.57E+23	1.34E+23	1.26
34	T704	0.083	1.42E+23	1.19E+23	0.92	0.093	1.62E+23	1.37E+23	1.23
35	T707	0.084	1.43E+23	1.19E+23	0.92	0.093	1.62E+23	1.38E+23	1.24
36	T652	0.082	1.41E+23	1.17E+23	0.92	0.092	1.60E+23	1.36E+23	1.24
37	T705	0.082	1.40E+23	1.17E+23	0.93	0.091	1.59E+23	1.35E+23	1.25

†DPA accumulated during this run only.

X430B in Run 157A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.062	1.05E+23	8.74E+22	0.41	0.070	1.19E+23	1.01E+23	0.48
2	T663	0.082	1.39E+23	1.16E+23	0.42	0.091	1.58E+23	1.34E+23	0.49
3	T692	0.082	1.39E+23	1.16E+23	0.42	0.091	1.57E+23	1.33E+23	0.49
4	T656	0.064	1.07E+23	8.95E+22	0.42	0.071	1.22E+23	1.03E+23	0.50
5	T694	0.084	1.42E+23	1.19E+23	0.41	0.093	1.62E+23	1.38E+23	0.48
6	T664	0.019	3.14E+22	2.60E+22	0.42	0.022	3.55E+22	3.00E+22	0.49
7	T665	0.019	3.09E+22	2.57E+22	0.42	0.022	3.50E+22	2.96E+22	0.49
8	T658	0.080	1.38E+23	1.15E+23	0.42	0.090	1.57E+23	1.33E+23	0.50
9	T697	0.081	1.37E+23	1.14E+23	0.43	0.090	1.55E+23	1.31E+23	0.50
10	T698	0.084	1.44E+23	1.20E+23	0.41	0.094	1.63E+23	1.39E+23	0.48
11	T667	0.020	3.17E+22	2.63E+22	0.42	0.022	3.59E+22	3.04E+22	0.49
12	T659	0.082	1.41E+23	1.18E+23	0.42	0.092	1.60E+23	1.36E+23	0.49
13	T675	0.019	3.07E+22	2.55E+22	0.42	0.022	3.48E+22	2.94E+22	0.49
14	T670	0.040	6.63E+22	5.53E+22	0.43	0.045	7.53E+22	6.39E+22	0.50
15	T702	0.081	1.37E+23	1.14E+23	0.43	0.089	1.55E+23	1.31E+23	0.50
16	T686	0.083	1.42E+23	1.18E+23	0.41	0.092	1.61E+23	1.37E+23	0.48
17	T660	0.083	1.44E+23	1.20E+23	0.42	0.093	1.63E+23	1.39E+23	0.49
18	T668	0.020	3.15E+22	2.62E+22	0.42	0.022	3.56E+22	3.02E+22	0.49
19	T672	0.039	6.41E+22	5.31E+22	0.42	0.044	7.25E+22	6.12E+22	0.49
20	T669	0.040	6.63E+22	5.52E+22	0.42	0.045	7.52E+22	6.38E+22	0.50
21	T653	0.080	1.38E+23	1.15E+23	0.43	0.090	1.57E+23	1.33E+23	0.50
22	T689	0.083	1.41E+23	1.18E+23	0.43	0.092	1.61E+23	1.36E+23	0.51
23	T688	0.085	1.45E+23	1.21E+23	0.41	0.094	1.65E+23	1.41E+23	0.48
24	T682	0.039	6.51E+22	5.41E+22	0.42	0.045	7.38E+22	6.24E+22	0.49
25	T677	0.019	3.12E+22	2.60E+22	0.42	0.022	3.54E+22	3.00E+22	0.49
26	T654	0.082	1.41E+23	1.18E+23	0.42	0.092	1.60E+23	1.36E+23	0.49
27	T671	0.039	6.34E+22	5.25E+22	0.43	0.043	7.18E+22	6.05E+22	0.50
28	T710	0.082	1.39E+23	1.16E+23	0.43	0.091	1.58E+23	1.34E+23	0.50
29	T709	0.085	1.45E+23	1.21E+23	0.41	0.094	1.64E+23	1.40E+23	0.49
30	T655	0.083	1.43E+23	1.20E+23	0.42	0.093	1.63E+23	1.39E+23	0.49
31	T684	0.039	6.48E+22	5.39E+22	0.42	0.044	7.34E+22	6.21E+22	0.49
32	T683	0.038	6.32E+22	5.23E+22	0.42	0.043	7.15E+22	6.02E+22	0.50
33	T651	0.082	1.39E+23	1.16E+23	0.43	0.091	1.58E+23	1.34E+23	0.50
34	T704	0.084	1.43E+23	1.19E+23	0.42	0.093	1.62E+23	1.38E+23	0.49
35	T707	0.084	1.43E+23	1.19E+23	0.42	0.093	1.62E+23	1.38E+23	0.49
36	T652	0.082	1.41E+23	1.18E+23	0.42	0.092	1.60E+23	1.36E+23	0.49
37	T705	0.082	1.40E+23	1.17E+23	0.42	0.092	1.59E+23	1.35E+23	0.50

†DPA accumulated during this run only.

X430B in Run 157C

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†
1	T657	0.063	1.06E+23	8.80E+22	0.77	0.070	1.20E+23	1.02E+23	0.90
2	T663	0.082	1.40E+23	1.17E+23	0.76	0.091	1.59E+23	1.35E+23	0.89
3	T692	0.082	1.39E+23	1.16E+23	0.75	0.091	1.58E+23	1.34E+23	0.88
4	T656	0.064	1.08E+23	9.02E+22	0.74	0.072	1.23E+23	1.04E+23	0.86
5	T694	0.084	1.43E+23	1.20E+23	0.78	0.093	1.63E+23	1.39E+23	0.91
6	T664	0.020	3.22E+22	2.67E+22	0.77	0.023	3.65E+22	3.08E+22	0.90
7	T665	0.020	3.17E+22	2.63E+22	0.76	0.022	3.59E+22	3.03E+22	0.89
8	T658	0.081	1.39E+23	1.16E+23	0.75	0.091	1.58E+23	1.34E+23	0.87
9	T697	0.081	1.38E+23	1.14E+23	0.73	0.090	1.56E+23	1.32E+23	0.85
10	T698	0.085	1.45E+23	1.21E+23	0.79	0.094	1.64E+23	1.40E+23	0.92
11	T667	0.020	3.25E+22	2.70E+22	0.78	0.023	3.68E+22	3.11E+22	0.91
12	T659	0.082	1.42E+23	1.19E+23	0.77	0.092	1.61E+23	1.37E+23	0.90
13	T675	0.020	3.15E+22	2.61E+22	0.76	0.022	3.57E+22	3.01E+22	0.88
14	T670	0.041	6.71E+22	5.59E+22	0.74	0.046	7.61E+22	6.47E+22	0.87
15	T702	0.081	1.37E+23	1.14E+23	0.73	0.090	1.56E+23	1.32E+23	0.85
16	T686	0.083	1.42E+23	1.19E+23	0.80	0.093	1.62E+23	1.37E+23	0.93
17	T660	0.084	1.45E+23	1.21E+23	0.79	0.094	1.64E+23	1.40E+23	0.92
18	T668	0.020	3.23E+22	2.69E+22	0.78	0.023	3.66E+22	3.10E+22	0.91
19	T672	0.039	6.49E+22	5.38E+22	0.77	0.044	7.34E+22	6.19E+22	0.89
20	T669	0.041	6.71E+22	5.59E+22	0.75	0.046	7.61E+22	6.46E+22	0.88
21	T653	0.081	1.39E+23	1.16E+23	0.74	0.090	1.57E+23	1.33E+23	0.86
22	T689	0.083	1.42E+23	1.19E+23	0.73	0.093	1.61E+23	1.37E+23	0.85
23	T688	0.085	1.46E+23	1.22E+23	0.80	0.095	1.66E+23	1.41E+23	0.93
24	T682	0.040	6.59E+22	5.48E+22	0.79	0.045	7.47E+22	6.32E+22	0.92
25	T677	0.020	3.20E+22	2.67E+22	0.77	0.022	3.63E+22	3.08E+22	0.90
26	T654	0.082	1.42E+23	1.18E+23	0.76	0.092	1.61E+23	1.37E+23	0.89
27	T671	0.039	6.42E+22	5.31E+22	0.75	0.044	7.27E+22	6.13E+22	0.87
28	T710	0.082	1.40E+23	1.16E+23	0.74	0.091	1.58E+23	1.34E+23	0.86
29	T709	0.085	1.45E+23	1.22E+23	0.80	0.095	1.65E+23	1.41E+23	0.93
30	T655	0.083	1.44E+23	1.20E+23	0.78	0.094	1.64E+23	1.39E+23	0.91
31	T684	0.040	6.56E+22	5.46E+22	0.77	0.045	7.43E+22	6.29E+22	0.90
32	T683	0.039	6.40E+22	5.29E+22	0.76	0.044	7.23E+22	6.10E+22	0.88
33	T651	0.082	1.40E+23	1.16E+23	0.75	0.091	1.59E+23	1.34E+23	0.87
34	T704	0.084	1.43E+23	1.20E+23	0.79	0.093	1.63E+23	1.39E+23	0.92
35	T707	0.084	1.44E+23	1.20E+23	0.78	0.094	1.63E+23	1.39E+23	0.91
36	T652	0.082	1.42E+23	1.18E+23	0.77	0.092	1.61E+23	1.37E+23	0.89
37	T705	0.083	1.41E+23	1.18E+23	0.75	0.092	1.60E+23	1.36E+23	0.88

†DPA accumulated during this run only.

X430B in Run 157D

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.065	1.10E+23	9.16E+22	0.94	0.073	1.25E+23	1.06E+23	1.10
2	T663	0.085	1.44E+23	1.20E+23	0.93	0.094	1.64E+23	1.39E+23	1.09
3	T692	0.084	1.44E+23	1.20E+23	0.92	0.094	1.63E+23	1.38E+23	1.07
4	T656	0.066	1.12E+23	9.36E+22	0.90	0.074	1.27E+23	1.08E+23	1.05
5	T694	0.086	1.48E+23	1.23E+23	0.95	0.096	1.68E+23	1.43E+23	1.10
6	T664	0.023	3.65E+22	3.03E+22	0.94	0.025	4.13E+22	3.49E+22	1.09
7	T665	0.022	3.60E+22	2.98E+22	0.92	0.025	4.07E+22	3.44E+22	1.08
8	T658	0.083	1.43E+23	1.19E+23	0.91	0.093	1.63E+23	1.38E+23	1.06
9	T697	0.083	1.42E+23	1.18E+23	0.89	0.092	1.60E+23	1.36E+23	1.03
10	T698	0.087	1.49E+23	1.25E+23	0.96	0.097	1.69E+23	1.44E+23	1.12
11	T667	0.023	3.68E+22	3.06E+22	0.94	0.026	4.17E+22	3.53E+22	1.10
12	T659	0.085	1.46E+23	1.22E+23	0.93	0.095	1.66E+23	1.41E+23	1.09
13	T675	0.022	3.57E+22	2.96E+22	0.92	0.025	4.04E+22	3.41E+22	1.07
14	T670	0.043	7.12E+22	5.93E+22	0.90	0.049	8.08E+22	6.86E+22	1.05
15	T702	0.083	1.41E+23	1.18E+23	0.88	0.092	1.60E+23	1.36E+23	1.02
16	T686	0.086	1.47E+23	1.22E+23	0.97	0.095	1.67E+23	1.42E+23	1.13
17	T660	0.086	1.49E+23	1.25E+23	0.95	0.096	1.69E+23	1.44E+23	1.11
18	T668	0.023	3.65E+22	3.04E+22	0.94	0.026	4.14E+22	3.51E+22	1.10
19	T672	0.042	6.91E+22	5.73E+22	0.92	0.047	7.82E+22	6.60E+22	1.08
20	T669	0.043	7.12E+22	5.93E+22	0.91	0.049	8.08E+22	6.86E+22	1.06
21	T653	0.083	1.43E+23	1.19E+23	0.89	0.093	1.62E+23	1.37E+23	1.04
22	T689	0.085	1.46E+23	1.22E+23	0.87	0.095	1.66E+23	1.41E+23	1.02
23	T688	0.087	1.50E+23	1.26E+23	0.96	0.097	1.71E+23	1.45E+23	1.13
24	T682	0.042	7.02E+22	5.83E+22	0.95	0.048	7.95E+22	6.73E+22	1.11
25	T677	0.022	3.62E+22	3.02E+22	0.93	0.025	4.11E+22	3.49E+22	1.09
26	T654	0.084	1.46E+23	1.22E+23	0.92	0.095	1.66E+23	1.41E+23	1.07
27	T671	0.041	6.83E+22	5.65E+22	0.90	0.047	7.73E+22	6.52E+22	1.05
28	T710	0.084	1.44E+23	1.20E+23	0.88	0.094	1.63E+23	1.38E+23	1.03
29	T709	0.087	1.50E+23	1.25E+23	0.96	0.097	1.70E+23	1.45E+23	1.12
30	T655	0.086	1.48E+23	1.24E+23	0.94	0.096	1.69E+23	1.43E+23	1.10
31	T684	0.042	6.98E+22	5.80E+22	0.93	0.048	7.91E+22	6.69E+22	1.08
32	T683	0.041	6.81E+22	5.64E+22	0.91	0.046	7.70E+22	6.49E+22	1.06
33	T651	0.084	1.44E+23	1.20E+23	0.89	0.094	1.63E+23	1.38E+23	1.04
34	T704	0.086	1.48E+23	1.23E+23	0.95	0.096	1.68E+23	1.43E+23	1.11
35	T707	0.086	1.48E+23	1.23E+23	0.94	0.096	1.68E+23	1.43E+23	1.09
36	T652	0.084	1.46E+23	1.22E+23	0.92	0.095	1.65E+23	1.41E+23	1.07
37	T705	0.085	1.45E+23	1.21E+23	0.90	0.094	1.65E+23	1.40E+23	1.05

†DPA accumulated during this run only.

X430B in Run 157H

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPA†
1	T657	0.065	1.10E+23	9.21E+22	0.68	0.073	1.25E+23	1.06E+23	0.79
2	T663	0.085	1.45E+23	1.21E+23	0.67	0.094	1.64E+23	1.39E+23	0.78
3	T692	0.085	1.44E+23	1.20E+23	0.66	0.094	1.63E+23	1.39E+23	0.77
4	T656	0.067	1.13E+23	9.40E+22	0.65	0.075	1.28E+23	1.09E+23	0.75
5	T694	0.087	1.48E+23	1.24E+23	0.68	0.096	1.68E+23	1.43E+23	0.79
6	T664	0.023	3.71E+22	3.07E+22	0.67	0.026	4.19E+22	3.54E+22	0.78
7	T665	0.023	3.65E+22	3.03E+22	0.66	0.025	4.13E+22	3.49E+22	0.77
8	T658	0.083	1.44E+23	1.20E+23	0.65	0.093	1.63E+23	1.39E+23	0.76
9	T697	0.084	1.42E+23	1.18E+23	0.64	0.093	1.61E+23	1.36E+23	0.74
10	T698	0.087	1.49E+23	1.25E+23	0.68	0.097	1.70E+23	1.45E+23	0.80
11	T667	0.023	3.73E+22	3.10E+22	0.68	0.026	4.23E+22	3.58E+22	0.79
12	T659	0.085	1.47E+23	1.23E+23	0.67	0.095	1.67E+23	1.42E+23	0.78
13	T675	0.022	3.62E+22	3.01E+22	0.66	0.025	4.10E+22	3.47E+22	0.77
14	T670	0.043	7.17E+22	5.98E+22	0.64	0.049	8.14E+22	6.91E+22	0.75
15	T702	0.083	1.42E+23	1.18E+23	0.63	0.093	1.61E+23	1.36E+23	0.74
16	T686	0.086	1.47E+23	1.23E+23	0.69	0.096	1.67E+23	1.42E+23	0.81
17	T660	0.086	1.49E+23	1.25E+23	0.68	0.097	1.70E+23	1.45E+23	0.80
18	T668	0.023	3.71E+22	3.09E+22	0.67	0.026	4.20E+22	3.56E+22	0.79
19	T672	0.042	6.97E+22	5.77E+22	0.66	0.047	7.88E+22	6.65E+22	0.77
20	T669	0.043	7.18E+22	5.98E+22	0.65	0.049	8.14E+22	6.91E+22	0.76
21	T653	0.083	1.43E+23	1.19E+23	0.64	0.093	1.63E+23	1.38E+23	0.75
22	T689	0.086	1.47E+23	1.22E+23	0.63	0.095	1.66E+23	1.42E+23	0.73
23	T688	0.088	1.51E+23	1.26E+23	0.69	0.098	1.71E+23	1.46E+23	0.81
24	T682	0.043	7.07E+22	5.88E+22	0.68	0.048	8.02E+22	6.79E+22	0.79
25	T677	0.023	3.68E+22	3.07E+22	0.67	0.026	4.17E+22	3.54E+22	0.78
26	T654	0.085	1.46E+23	1.22E+23	0.66	0.095	1.66E+23	1.41E+23	0.77
27	T671	0.042	6.88E+22	5.70E+22	0.65	0.047	7.79E+22	6.57E+22	0.75
28	T710	0.085	1.44E+23	1.20E+23	0.64	0.094	1.64E+23	1.39E+23	0.74
29	T709	0.088	1.50E+23	1.26E+23	0.69	0.098	1.71E+23	1.46E+23	0.80
30	T655	0.086	1.49E+23	1.24E+23	0.68	0.096	1.69E+23	1.44E+23	0.79
31	T684	0.043	7.04E+22	5.85E+22	0.66	0.048	7.97E+22	6.75E+22	0.78
32	T683	0.042	6.86E+22	5.68E+22	0.65	0.047	7.76E+22	6.55E+22	0.76
33	T651	0.085	1.44E+23	1.20E+23	0.64	0.094	1.64E+23	1.39E+23	0.75
34	T704	0.087	1.48E+23	1.24E+23	0.68	0.096	1.68E+23	1.43E+23	0.79
35	T707	0.087	1.48E+23	1.24E+23	0.67	0.096	1.68E+23	1.43E+23	0.78
36	T652	0.085	1.46E+23	1.22E+23	0.66	0.095	1.66E+23	1.41E+23	0.77
37	T705	0.085	1.46E+23	1.21E+23	0.65	0.095	1.65E+23	1.40E+23	0.75

†DPA accumulated during this run only.

X430B in Run 158A

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.074	1.27E+23	1.06E+23	0.93	0.083	1.44E+23	1.23E+23	1.09
2	T663	0.094	1.61E+23	1.34E+23	0.92	0.104	1.83E+23	1.55E+23	1.08
3	T692	0.093	1.60E+23	1.34E+23	0.91	0.103	1.82E+23	1.54E+23	1.06
4	T656	0.075	1.29E+23	1.07E+23	0.89	0.084	1.46E+23	1.24E+23	1.04
5	T694	0.096	1.65E+23	1.38E+23	0.93	0.106	1.88E+23	1.60E+23	1.09
6	T664	0.033	5.37E+22	4.46E+22	0.93	0.037	6.09E+22	5.15E+22	1.08
7	T665	0.032	5.30E+22	4.39E+22	0.91	0.037	6.00E+22	5.07E+22	1.07
8	T658	0.092	1.60E+23	1.33E+23	0.90	0.103	1.82E+23	1.54E+23	1.05
9	T697	0.092	1.58E+23	1.31E+23	0.88	0.102	1.79E+23	1.52E+23	1.02
10	T698	0.096	1.66E+23	1.39E+23	0.94	0.107	1.89E+23	1.61E+23	1.10
11	T667	0.033	5.41E+22	4.50E+22	0.93	0.037	6.13E+22	5.19E+22	1.09
12	T659	0.093	1.63E+23	1.36E+23	0.92	0.105	1.86E+23	1.58E+23	1.07
13	T675	0.032	5.25E+22	4.36E+22	0.90	0.036	5.95E+22	5.03E+22	1.06
14	T670	0.053	8.78E+22	7.31E+22	0.89	0.059	9.96E+22	8.44E+22	1.04
15	T702	0.092	1.58E+23	1.31E+23	0.87	0.102	1.79E+23	1.51E+23	1.01
16	T686	0.095	1.64E+23	1.37E+23	0.95	0.106	1.87E+23	1.59E+23	1.12
17	T660	0.095	1.66E+23	1.39E+23	0.94	0.106	1.89E+23	1.61E+23	1.10
18	T668	0.033	5.37E+22	4.47E+22	0.93	0.037	6.09E+22	5.16E+22	1.08
19	T672	0.052	8.61E+22	7.13E+22	0.91	0.058	9.74E+22	8.23E+22	1.07
20	T669	0.053	8.79E+22	7.32E+22	0.90	0.059	9.97E+22	8.46E+22	1.05
21	T653	0.091	1.59E+23	1.33E+23	0.88	0.102	1.81E+23	1.53E+23	1.03
22	T689	0.094	1.62E+23	1.35E+23	0.86	0.104	1.84E+23	1.56E+23	1.01
23	T688	0.097	1.67E+23	1.40E+23	0.95	0.107	1.90E+23	1.62E+23	1.11
24	T682	0.052	8.75E+22	7.27E+22	0.94	0.059	9.92E+22	8.40E+22	1.09
25	T677	0.033	5.33E+22	4.44E+22	0.92	0.037	6.04E+22	5.13E+22	1.08
26	T654	0.093	1.63E+23	1.36E+23	0.91	0.104	1.85E+23	1.57E+23	1.06
27	T671	0.051	8.48E+22	7.03E+22	0.89	0.057	9.60E+22	8.10E+22	1.04
28	T710	0.093	1.60E+23	1.33E+23	0.88	0.103	1.81E+23	1.54E+23	1.02
29	T709	0.096	1.67E+23	1.40E+23	0.95	0.107	1.90E+23	1.62E+23	1.11
30	T655	0.095	1.65E+23	1.38E+23	0.93	0.106	1.88E+23	1.60E+23	1.09
31	T684	0.052	8.67E+22	7.21E+22	0.92	0.058	9.82E+22	8.32E+22	1.07
32	T683	0.051	8.47E+22	7.02E+22	0.90	0.057	9.58E+22	8.09E+22	1.05
33	T651	0.093	1.60E+23	1.33E+23	0.88	0.103	1.82E+23	1.54E+23	1.03
34	T704	0.095	1.65E+23	1.38E+23	0.94	0.106	1.87E+23	1.59E+23	1.10
35	T707	0.095	1.65E+23	1.37E+23	0.92	0.106	1.87E+23	1.59E+23	1.08
36	T652	0.093	1.62E+23	1.36E+23	0.91	0.104	1.84E+23	1.57E+23	1.06
37	T705	0.094	1.61E+23	1.35E+23	0.89	0.104	1.83E+23	1.55E+23	1.04

†DPA accumulated during this run only.

X430B in Run 158B

		Element Average				Element Peak			
Grid	Jacket	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt	Burnup	Tot. Fl. (n/cm2)	Fst. Fl. (n/cm2)	Run DPAt
1	T657	0.074	1.27E+23	1.06E+23	0.00	0.083	1.44E+23	1.23E+23	0.00
2	T663	0.094	1.62E+23	1.34E+23	0.00	0.104	1.83E+23	1.55E+23	0.00
3	T692	0.093	1.61E+23	1.34E+23	0.00	0.103	1.82E+23	1.55E+23	0.00
4	T656	0.075	1.29E+23	1.07E+23	0.00	0.084	1.46E+23	1.24E+23	0.00
5	T694	0.096	1.65E+23	1.38E+23	0.00	0.106	1.88E+23	1.60E+23	0.00
6	T664	0.033	5.38E+22	4.47E+22	0.00	0.037	6.10E+22	5.15E+22	0.00
7	T665	0.033	5.30E+22	4.40E+22	0.00	0.037	6.01E+22	5.07E+22	0.00
8	T658	0.092	1.60E+23	1.33E+23	0.00	0.103	1.82E+23	1.54E+23	0.00
9	T697	0.092	1.58E+23	1.31E+23	0.00	0.102	1.79E+23	1.52E+23	0.00
10	T698	0.096	1.67E+23	1.39E+23	0.00	0.107	1.89E+23	1.61E+23	0.00
11	T667	0.033	5.42E+22	4.50E+22	0.00	0.037	6.14E+22	5.20E+22	0.00
12	T659	0.094	1.63E+23	1.36E+23	0.00	0.105	1.86E+23	1.58E+23	0.00
13	T675	0.032	5.26E+22	4.36E+22	0.00	0.036	5.96E+22	5.03E+22	0.00
14	T670	0.053	8.78E+22	7.31E+22	0.00	0.059	9.96E+22	8.45E+22	0.00
15	T702	0.092	1.58E+23	1.31E+23	0.00	0.102	1.79E+23	1.51E+23	0.00
16	T686	0.095	1.64E+23	1.37E+23	0.00	0.106	1.87E+23	1.59E+23	0.00
17	T660	0.095	1.66E+23	1.39E+23	0.00	0.107	1.89E+23	1.61E+23	0.00
18	T668	0.033	5.38E+22	4.48E+22	0.00	0.037	6.10E+22	5.17E+22	0.00
19	T672	0.052	8.61E+22	7.14E+22	0.00	0.058	9.75E+22	8.23E+22	0.00
20	T669	0.053	8.80E+22	7.32E+22	0.00	0.059	1.00E+23	8.46E+22	0.00
21	T653	0.091	1.59E+23	1.33E+23	0.00	0.102	1.81E+23	1.53E+23	0.00
22	T689	0.094	1.62E+23	1.35E+23	0.00	0.104	1.84E+23	1.56E+23	0.00
23	T688	0.097	1.68E+23	1.40E+23	0.00	0.108	1.91E+23	1.62E+23	0.00
24	T682	0.052	8.75E+22	7.28E+22	0.00	0.059	9.92E+22	8.41E+22	0.00
25	T677	0.033	5.33E+22	4.45E+22	0.00	0.037	6.05E+22	5.13E+22	0.00
26	T654	0.093	1.63E+23	1.36E+23	0.00	0.104	1.85E+23	1.57E+23	0.00
27	T671	0.051	8.49E+22	7.03E+22	0.00	0.057	9.61E+22	8.11E+22	0.00
28	T710	0.093	1.60E+23	1.33E+23	0.00	0.103	1.81E+23	1.54E+23	0.00
29	T709	0.096	1.67E+23	1.40E+23	0.00	0.107	1.90E+23	1.62E+23	0.00
30	T655	0.095	1.66E+23	1.38E+23	0.00	0.106	1.88E+23	1.60E+23	0.00
31	T684	0.052	8.67E+22	7.21E+22	0.00	0.059	9.82E+22	8.32E+22	0.00
32	T683	0.051	8.47E+22	7.02E+22	0.00	0.057	9.59E+22	8.10E+22	0.00
33	T651	0.093	1.60E+23	1.33E+23	0.00	0.103	1.82E+23	1.54E+23	0.00
34	T704	0.095	1.65E+23	1.38E+23	0.00	0.106	1.87E+23	1.59E+23	0.00
35	T707	0.095	1.65E+23	1.38E+23	0.00	0.106	1.87E+23	1.59E+23	0.00
36	T652	0.093	1.62E+23	1.36E+23	0.00	0.104	1.84E+23	1.57E+23	0.00
37	T705	0.094	1.62E+23	1.35E+23	0.00	0.104	1.83E+23	1.55E+23	0.00

†DPA accumulated during this run only.

X430B in Run 160A

		Element Average				Element Peak			
Grid	Jacket	Burnup*	Tot. Fl.* (n/cm2)	Fst. Fl.* (n/cm2)	Run DPAt	Burnup*	Tot. Fl.* (n/cm2)	Fst. Fl.* (n/cm2)	Run DPAt
1	T657	0.079	1.35E+23	1.13E+23	0.44	0.088	1.53E+23	1.31E+23	0.52
2	T663	0.100	1.72E+23	1.43E+23	0.44	0.111	1.95E+23	1.65E+23	0.51
3	T692	0.099	1.71E+23	1.43E+23	0.43	0.110	1.94E+23	1.65E+23	0.50
4	T656	0.080	1.37E+23	1.14E+23	0.42	0.089	1.55E+23	1.32E+23	0.49
5	T694	0.102	1.76E+23	1.47E+23	0.44	0.113	2.00E+23	1.70E+23	0.52
6	T664	0.035	5.73E+22	4.76E+22	0.44	0.039	6.49E+22	5.48E+22	0.51
7	T665	0.035	5.64E+22	4.68E+22	0.43	0.039	6.40E+22	5.40E+22	0.50
8	T658	0.098	1.70E+23	1.42E+23	0.42	0.110	1.94E+23	1.64E+23	0.49
9	T697	0.098	1.68E+23	1.39E+23	0.41	0.109	1.91E+23	1.62E+23	0.48
10	T698	0.102	1.78E+23	1.48E+23	0.45	0.114	2.01E+23	1.71E+23	0.52
11	T667	0.035	5.77E+22	4.79E+22	0.44	0.039	6.54E+22	5.54E+22	0.52
12	T659	0.100	1.74E+23	1.45E+23	0.43	0.112	1.98E+23	1.68E+23	0.51
13	T675	0.034	5.60E+22	4.64E+22	0.43	0.038	6.34E+22	5.35E+22	0.50
14	T670	0.056	9.35E+22	7.78E+22	0.42	0.063	1.06E+23	8.99E+22	0.49
15	T702	0.098	1.68E+23	1.39E+23	0.41	0.109	1.91E+23	1.61E+23	0.48
16	T686	0.101	1.75E+23	1.46E+23	0.45	0.113	1.99E+23	1.69E+23	0.53
17	T660	0.101	1.77E+23	1.48E+23	0.44	0.114	2.01E+23	1.71E+23	0.52
18	T668	0.035	5.73E+22	4.77E+22	0.44	0.039	6.49E+22	5.50E+22	0.51
19	T672	0.055	9.16E+22	7.60E+22	0.43	0.062	1.04E+23	8.76E+22	0.50
20	T669	0.056	9.37E+22	7.79E+22	0.42	0.063	1.06E+23	9.01E+22	0.50
21	T653	0.097	1.69E+23	1.42E+23	0.42	0.109	1.93E+23	1.63E+23	0.49
22	T689	0.100	1.72E+23	1.44E+23	0.41	0.111	1.96E+23	1.66E+23	0.48
23	T688	0.103	1.79E+23	1.49E+23	0.45	0.115	2.03E+23	1.72E+23	0.53
24	T682	0.055	9.31E+22	7.75E+22	0.44	0.063	1.06E+23	8.95E+22	0.52
25	T677	0.035	5.67E+22	4.74E+22	0.44	0.039	6.44E+22	5.46E+22	0.51
26	T654	0.099	1.74E+23	1.45E+23	0.43	0.111	1.97E+23	1.67E+23	0.50
27	T671	0.054	9.04E+22	7.48E+22	0.42	0.061	1.02E+23	8.63E+22	0.49
28	T710	0.099	1.70E+23	1.42E+23	0.41	0.110	1.93E+23	1.64E+23	0.48
29	T709	0.102	1.78E+23	1.49E+23	0.45	0.114	2.02E+23	1.72E+23	0.52
30	T655	0.101	1.77E+23	1.47E+23	0.44	0.113	2.00E+23	1.70E+23	0.51
31	T684	0.055	9.23E+22	7.67E+22	0.43	0.063	1.05E+23	8.86E+22	0.50
32	T683	0.054	9.02E+22	7.47E+22	0.42	0.061	1.02E+23	8.62E+22	0.50
33	T651	0.099	1.70E+23	1.42E+23	0.42	0.110	1.94E+23	1.64E+23	0.49
34	T704	0.101	1.76E+23	1.47E+23	0.44	0.113	1.99E+23	1.69E+23	0.52
35	T707	0.101	1.76E+23	1.47E+23	0.44	0.113	1.99E+23	1.69E+23	0.51
36	T652	0.099	1.72E+23	1.45E+23	0.43	0.111	1.96E+23	1.67E+23	0.50
37	T705	0.100	1.72E+23	1.44E+23	0.42	0.111	1.95E+23	1.65E+23	0.49

†DPA accumulated during this run only.
*Extrapolated from Run 158B.

X430B in Run 161A

		Element Average				Element Peak			
Grid	Jacket	Burnup*	Tot. Fl.* (n/cm2)	Fst. Fl.* (n/cm2)	Run DPAt	Burnup*	Tot. Fl.* (n/cm2)	Fst. Fl.* (n/cm2)	Run DPAt
1	T657	0.082	1.42E+23	1.18E+23	0.44	0.092	1.60E+23	1.37E+23	0.52
2	T663	0.105	1.81E+23	1.49E+23	0.44	0.116	2.04E+23	1.73E+23	0.51
3	T692	0.104	1.79E+23	1.49E+23	0.43	0.115	2.03E+23	1.73E+23	0.50
4	T656	0.084	1.44E+23	1.19E+23	0.42	0.094	1.63E+23	1.38E+23	0.49
5	T694	0.107	1.84E+23	1.54E+23	0.44	0.118	2.10E+23	1.78E+23	0.52
6	T664	0.037	6.00E+22	4.98E+22	0.44	0.041	6.80E+22	5.74E+22	0.51
7	T665	0.037	5.91E+22	4.90E+22	0.43	0.041	6.70E+22	5.65E+22	0.50
8	T658	0.103	1.78E+23	1.48E+23	0.42	0.115	2.03E+23	1.72E+23	0.49
9	T697	0.103	1.76E+23	1.46E+23	0.41	0.114	1.99E+23	1.69E+23	0.48
10	T698	0.107	1.86E+23	1.55E+23	0.45	0.119	2.11E+23	1.79E+23	0.52
11	T667	0.037	6.04E+22	5.01E+22	0.44	0.041	6.84E+22	5.79E+22	0.52
12	T659	0.105	1.82E+23	1.52E+23	0.43	0.117	2.07E+23	1.76E+23	0.51
13	T675	0.036	5.86E+22	4.86E+22	0.43	0.040	6.64E+22	5.61E+22	0.50
14	T670	0.059	9.78E+22	8.15E+22	0.42	0.066	1.11E+23	9.42E+22	0.49
15	T702	0.103	1.76E+23	1.46E+23	0.41	0.114	1.99E+23	1.68E+23	0.48
16	T686	0.106	1.83E+23	1.53E+23	0.45	0.118	2.08E+23	1.77E+23	0.53
17	T660	0.106	1.85E+23	1.55E+23	0.44	0.119	2.11E+23	1.79E+23	0.52
18	T668	0.037	6.00E+22	4.99E+22	0.44	0.041	6.80E+22	5.76E+22	0.51
19	T672	0.058	9.59E+22	7.96E+22	0.43	0.065	1.09E+23	9.17E+22	0.50
20	T669	0.059	9.81E+22	8.16E+22	0.42	0.066	1.11E+23	9.43E+22	0.50
21	T653	0.101	1.77E+23	1.48E+23	0.42	0.114	2.02E+23	1.71E+23	0.49
22	T689	0.105	1.81E+23	1.50E+23	0.41	0.116	2.05E+23	1.74E+23	0.48
23	T688	0.108	1.87E+23	1.56E+23	0.45	0.120	2.13E+23	1.81E+23	0.53
24	T682	0.058	9.75E+22	8.11E+22	0.44	0.066	1.11E+23	9.37E+22	0.52
25	T677	0.037	5.94E+22	4.96E+22	0.44	0.041	6.74E+22	5.72E+22	0.51
26	T654	0.104	1.82E+23	1.52E+23	0.43	0.116	2.06E+23	1.75E+23	0.50
27	T671	0.057	9.46E+22	7.83E+22	0.42	0.064	1.07E+23	9.04E+22	0.49
28	T710	0.104	1.78E+23	1.48E+23	0.41	0.115	2.02E+23	1.72E+23	0.48
29	T709	0.107	1.86E+23	1.56E+23	0.45	0.119	2.12E+23	1.81E+23	0.52
30	T655	0.106	1.85E+23	1.54E+23	0.44	0.118	2.10E+23	1.78E+23	0.51
31	T684	0.058	9.66E+22	8.03E+22	0.43	0.066	1.09E+23	9.27E+22	0.50
32	T683	0.057	9.44E+22	7.82E+22	0.42	0.064	1.07E+23	9.03E+22	0.50
33	T651	0.104	1.78E+23	1.48E+23	0.42	0.115	2.03E+23	1.72E+23	0.49
34	T704	0.106	1.84E+23	1.54E+23	0.44	0.118	2.08E+23	1.77E+23	0.52
35	T707	0.106	1.84E+23	1.54E+23	0.44	0.118	2.08E+23	1.77E+23	0.51
36	T652	0.104	1.81E+23	1.52E+23	0.43	0.116	2.05E+23	1.75E+23	0.50
37	T705	0.105	1.81E+23	1.50E+23	0.42	0.116	2.04E+23	1.73E+23	0.49

†DPA accumulated during this run only.
*Extrapolated from Run 158B.

APPENDIX J

X430B END-OF-CYCLE ELEMENT TEMPERATURES

Grid: 1
Jacket: T657

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.4	380	404	416	-	-
0.20	11.0	390	416	429	-	-
0.30	11.5	400	428	442	-	-
0.40	11.7	411	439	453	-	-
0.50	11.7	422	450	464	-	-
0.60	11.4	433	460	473	-	-
0.70	10.8	443	468	482	-	-
0.80	9.9	453	476	488	-	-
0.90	8.9	462	483	494	-	-
1.00	7.6	470	488	497	-	-

Grid: 2
Jacket: T663

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.1	382	406	418	-	-
0.20	10.6	393	418	430	-	-
0.30	10.9	404	430	444	-	-
0.40	11.2	416	443	456	-	-
0.50	11.1	428	454	468	-	-
0.60	10.9	440	465	478	-	-
0.70	10.3	451	476	488	-	-
0.80	9.6	461	484	495	-	-
0.90	8.7	470	491	502	-	-
1.00	7.6	479	497	506	-	-

Grid: 3
Jacket: T692

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	9.9	382	404	416	-	-
0.20	10.4	393	417	430	-	-
0.30	10.8	404	430	442	-	-
0.40	11.0	416	442	455	-	-
0.50	11.0	428	454	468	-	-
0.60	10.7	440	465	478	-	-
0.70	10.1	451	475	487	-	-
0.80	9.4	461	484	495	-	-
0.90	8.6	470	491	501	-	-
1.00	7.5	479	497	506	-	-

Grid: 4
Jacket: T656

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.9	380	404	416	-	-
0.20	10.5	390	415	427	-	-
0.30	10.9	400	426	440	-	-
0.40	11.2	411	438	451	-	-
0.50	11.1	422	448	462	-	-
0.60	10.8	433	458	471	-	-
0.70	10.2	443	468	480	-	-
0.80	9.5	453	475	487	-	-
0.90	8.4	462	482	492	-	-
1.00	7.3	470	487	496	-	-

Grid: 5
Jacket: T694

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	394	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	393	418	431	-	-
0.30	11.1	404	430	444	-	-
0.40	11.3	416	443	456	-	-
0.50	11.3	428	454	468	-	-
0.60	11.0	440	466	479	-	-
0.70	10.4	451	476	488	-	-
0.80	9.7	461	484	496	-	-
0.90	8.8	470	492	502	-	-
1.00	7.7	479	497	506	-	-

Grid: 6
Jacket: T664

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.2	372	396	408	-	-
0.10	11.2	384	410	424	-	-
0.20	12.0	398	426	441	-	-
0.30	12.6	412	442	457	-	-
0.40	12.9	427	457	473	-	-
0.50	12.8	442	472	486	-	-
0.60	12.4	455	484	499	-	-
0.70	11.6	468	496	510	-	-
0.80	10.7	479	505	517	-	-
0.90	9.4	490	512	524	-	-
1.00	8.0	499	518	527	-	-

Grid: 7
Jacket: T665

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.1	372	396	408	-	-
0.10	11.1	384	410	424	-	-
0.20	11.9	399	427	441	-	-
0.30	12.4	414	442	458	-	-
0.40	12.8	428	458	473	-	-
0.50	12.7	442	472	488	-	-
0.60	12.3	457	486	501	-	-
0.70	11.6	470	498	512	-	-
0.80	10.6	483	508	521	-	-
0.90	9.4	494	516	528	-	-
1.00	7.9	503	522	532	-	-

Grid: 8
Jacket: T658

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.9	372	393	403	-	-
0.10	9.6	384	406	418	-	-
0.20	10.2	398	422	434	-	-
0.30	10.6	412	438	450	-	-
0.40	10.8	427	452	465	-	-
0.50	10.8	442	466	480	-	-
0.60	10.5	455	480	492	-	-
0.70	10.0	468	492	504	-	-
0.80	9.3	479	501	512	-	-
0.90	8.3	490	510	520	-	-
1.00	7.2	499	516	524	-	-

Grid: 9
Jacket: T697

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.2	372	394	405	-	-
0.10	9.7	382	404	416	-	-
0.20	10.2	393	417	429	-	-
0.30	10.6	404	430	442	-	-
0.40	10.8	416	442	455	-	-
0.50	10.8	428	454	466	-	-
0.60	10.5	440	465	477	-	-
0.70	10.0	451	474	486	-	-
0.80	9.3	461	483	494	-	-
0.90	8.4	470	490	501	-	-
1.00	7.5	479	497	505	-	-

Grid: 10
Jacket: T698

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	395	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	393	418	431	-	-
0.30	11.1	404	430	444	-	-
0.40	11.3	416	443	457	-	-
0.50	11.3	428	454	468	-	-
0.60	11.0	440	466	479	-	-
0.70	10.4	451	476	488	-	-
0.80	9.7	461	484	496	-	-
0.90	8.8	470	492	502	-	-
1.00	7.7	479	497	506	-	-

Grid: 11
Jacket: T667

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.3	372	396	408	-	-
0.10	11.2	384	410	424	-	-
0.20	12.1	399	427	441	-	-
0.30	12.6	414	443	458	-	-
0.40	13.0	428	459	474	-	-
0.50	12.9	442	474	488	-	-
0.60	12.5	457	487	502	-	-
0.70	11.8	470	498	512	-	-
0.80	10.7	483	509	521	-	-
0.90	9.4	494	516	528	-	-
1.00	8.0	503	522	532	-	-

Grid: 12
Jacket: T659

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.7	384	408	419	-	-
0.20	10.3	399	423	436	-	-
0.30	10.8	414	440	452	-	-
0.40	11.0	430	456	469	-	-
0.50	10.9	446	472	484	-	-
0.60	10.7	461	486	499	-	-
0.70	10.1	476	500	512	-	-
0.80	9.4	489	511	522	-	-
0.90	8.4	501	521	531	-	-
1.00	7.2	511	529	537	-	-

Grid: 13
Jacket: T675

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.0	372	396	407	-	-
0.10	11.0	384	410	424	-	-
0.20	11.8	399	427	441	-	-
0.30	12.4	414	444	458	-	-
0.40	12.7	430	460	475	-	-
0.50	12.7	446	476	490	-	-
0.60	12.3	461	490	505	-	-
0.70	11.6	476	502	516	-	-
0.80	10.6	489	514	527	-	-
0.90	9.2	501	523	534	-	-
1.00	7.8	511	530	539	-	-

Grid: 14
Jacket: T670

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.3	384	408	421	-	-
0.20	11.0	399	425	438	-	-
0.30	11.5	414	440	454	-	-
0.40	11.8	428	456	470	-	-
0.50	11.8	442	470	484	-	-
0.60	11.4	457	484	498	-	-
0.70	10.8	470	496	510	-	-
0.80	9.9	483	507	518	-	-
0.90	8.8	494	515	526	-	-
1.00	7.5	503	521	530	-	-

Grid: 15
Jacket: T702

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.7	382	404	416	-	-
0.20	10.1	393	417	429	-	-
0.30	10.5	404	430	442	-	-
0.40	10.7	416	442	454	-	-
0.50	10.6	428	454	466	-	-
0.60	10.4	440	464	477	-	-
0.70	9.9	451	474	486	-	-
0.80	9.2	461	483	494	-	-
0.90	8.4	470	490	500	-	-
1.00	7.4	479	496	505	-	-

Grid: 16
Jacket: T686

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.8	372	395	407	-	-
0.10	10.5	380	404	418	-	-
0.20	11.0	390	416	429	-	-
0.30	11.4	400	428	441	-	-
0.40	11.6	411	439	453	-	-
0.50	11.6	422	450	464	-	-
0.60	11.3	433	459	473	-	-
0.70	10.7	443	468	481	-	-
0.80	10.0	453	476	488	-	-
0.90	9.0	462	483	494	-	-
1.00	7.9	470	488	498	-	-

Grid: 17
Jacket: T660

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.9	384	408	420	-	-
0.20	10.5	398	423	435	-	-
0.30	10.9	412	438	452	-	-
0.40	11.2	427	453	467	-	-
0.50	11.1	442	468	480	-	-
0.60	10.9	455	480	493	-	-
0.70	10.3	468	492	504	-	-
0.80	9.5	479	502	513	-	-
0.90	8.6	490	510	520	-	-
1.00	7.3	499	516	525	-	-

Grid: 18
Jacket: T668

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	10.1	372	396	408	-	-
0.10	11.2	384	410	424	-	-
0.20	12.0	399	427	441	-	-
0.30	12.6	414	444	458	-	-
0.40	12.9	430	460	476	-	-
0.50	12.8	446	476	491	-	-
0.60	12.4	461	490	505	-	-
0.70	11.6	476	504	517	-	-
0.80	10.7	489	514	527	-	-
0.90	9.4	501	524	534	-	-
1.00	7.9	511	530	540	-	-

Grid: 19
Jacket: T672

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.6	372	395	406	-	-
0.10	10.6	384	410	422	-	-
0.20	11.3	399	426	439	-	-
0.30	11.9	414	442	456	-	-
0.40	12.1	430	459	473	-	-
0.50	12.1	446	474	488	-	-
0.60	11.7	461	489	503	-	-
0.70	11.1	476	502	516	-	-
0.80	10.1	490	514	526	-	-
0.90	8.9	502	524	534	-	-
1.00	7.6	513	532	541	-	-

Grid: 20
Jacket: T669

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.4	384	409	422	-	-
0.20	11.1	399	425	438	-	-
0.30	11.6	414	442	456	-	-
0.40	11.9	430	458	472	-	-
0.50	11.8	446	474	488	-	-
0.60	11.5	461	488	502	-	-
0.70	10.9	476	502	514	-	-
0.80	10.0	489	513	524	-	-
0.90	8.9	501	522	532	-	-
1.00	7.5	511	529	538	-	-

Grid: 21
Jacket: T653

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.6	372	392	403	-	-
0.10	9.3	384	406	418	-	-
0.20	9.9	398	422	433	-	-
0.30	10.3	412	436	449	-	-
0.40	10.5	427	452	464	-	-
0.50	10.5	442	466	478	-	-
0.60	10.2	455	479	491	-	-
0.70	9.8	468	490	502	-	-
0.80	9.0	479	501	512	-	-
0.90	8.1	490	509	519	-	-
1.00	7.0	499	515	524	-	-

Grid: 22
Jacket: T689

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.7	380	404	414	-	-
0.20	10.1	390	414	426	-	-
0.30	10.5	400	426	438	-	-
0.40	10.7	411	437	449	-	-
0.50	10.6	422	448	460	-	-
0.60	10.4	433	457	470	-	-
0.70	9.9	443	466	478	-	-
0.80	9.2	453	475	486	-	-
0.90	8.4	462	482	492	-	-
1.00	7.4	470	487	496	-	-

Grid: 23
Jacket: T688

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	393	418	431	-	-
0.30	11.1	404	430	444	-	-
0.40	11.4	416	443	457	-	-
0.50	11.3	428	455	468	-	-
0.60	11.0	440	466	479	-	-
0.70	10.5	451	476	488	-	-
0.80	9.7	461	484	496	-	-
0.90	8.8	470	492	502	-	-
1.00	7.7	479	497	506	-	-

Grid: 24
Jacket: T682

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.7	372	395	407	-	-
0.10	10.7	384	410	422	-	-
0.20	11.5	399	426	439	-	-
0.30	12.1	414	442	456	-	-
0.40	12.4	428	457	472	-	-
0.50	12.4	442	472	486	-	-
0.60	12.0	457	486	500	-	-
0.70	11.3	470	498	511	-	-
0.80	10.3	483	508	520	-	-
0.90	9.1	494	516	526	-	-
1.00	7.7	503	522	531	-	-

Grid: 25
Jacket: T677

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.9	372	395	407	-	-
0.10	11.0	384	410	424	-	-
0.20	11.8	399	427	441	-	-
0.30	12.4	414	444	458	-	-
0.40	12.7	430	460	475	-	-
0.50	12.6	446	476	490	-	-
0.60	12.3	461	490	504	-	-
0.70	11.6	476	502	516	-	-
0.80	10.5	489	514	526	-	-
0.90	9.2	501	523	534	-	-
1.00	7.7	511	530	539	-	-

Grid: 26
Jacket: T654

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.8	372	393	403	-	-
0.10	9.5	384	407	418	-	-
0.20	10.1	399	423	435	-	-
0.30	10.6	414	439	452	-	-
0.40	10.8	430	455	468	-	-
0.50	10.7	446	470	484	-	-
0.60	10.5	461	486	498	-	-
0.70	9.9	476	499	510	-	-
0.80	9.2	489	511	522	-	-
0.90	8.2	501	520	530	-	-
1.00	7.1	511	528	537	-	-

Grid: 27
Jacket: T671

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.4	384	408	422	-	-
0.20	11.1	399	425	438	-	-
0.30	11.6	414	440	454	-	-
0.40	11.9	428	456	470	-	-
0.50	11.9	442	470	486	-	-
0.60	11.5	457	484	498	-	-
0.70	10.9	470	496	510	-	-
0.80	10.0	483	507	519	-	-
0.90	8.9	494	515	526	-	-
1.00	7.5	503	521	530	-	-

Grid: 28
Jacket: T710

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.6	382	404	416	-	-
0.20	10.1	393	417	429	-	-
0.30	10.5	404	430	442	-	-
0.40	10.7	416	442	454	-	-
0.50	10.6	428	454	466	-	-
0.60	10.4	440	464	477	-	-
0.70	9.9	451	474	486	-	-
0.80	9.2	461	483	494	-	-
0.90	8.4	470	490	500	-	-
1.00	7.3	479	496	505	-	-

Grid: 29
Jacket: T709

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	405	-	-
0.10	10.2	382	406	418	-	-
0.20	10.7	393	418	431	-	-
0.30	11.1	404	430	444	-	-
0.40	11.3	416	443	457	-	-
0.50	11.3	428	454	468	-	-
0.60	11.0	440	466	479	-	-
0.70	10.5	451	476	488	-	-
0.80	9.7	461	484	496	-	-
0.90	8.8	470	492	502	-	-
1.00	7.6	479	497	506	-	-

Grid: 30
Jacket: T655

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.8	372	393	403	-	-
0.10	9.7	384	407	418	-	-
0.20	10.3	398	422	435	-	-
0.30	10.7	412	438	450	-	-
0.40	10.9	427	453	466	-	-
0.50	10.9	442	466	480	-	-
0.60	10.6	455	480	493	-	-
0.70	10.1	468	492	504	-	-
0.80	9.3	479	502	513	-	-
0.90	8.4	490	510	520	-	-
1.00	7.1	499	516	524	-	-

Grid: 31
Jacket: T684

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.5	372	394	406	-	-
0.10	10.5	384	409	422	-	-
0.20	11.2	399	425	438	-	-
0.30	11.8	414	441	455	-	-
0.40	12.1	428	457	471	-	-
0.50	12.0	442	472	486	-	-
0.60	11.7	457	485	499	-	-
0.70	11.0	470	496	510	-	-
0.80	10.1	483	507	519	-	-
0.90	8.9	494	515	526	-	-
1.00	7.5	503	521	530	-	-

Grid: 32
Jacket: T683

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.4	384	408	422	-	-
0.20	11.2	398	425	438	-	-
0.30	11.8	412	440	454	-	-
0.40	12.0	427	455	469	-	-
0.50	11.9	442	470	484	-	-
0.60	11.6	455	482	496	-	-
0.70	10.9	468	494	506	-	-
0.80	10.0	479	503	515	-	-
0.90	8.9	490	511	522	-	-
1.00	7.4	499	516	525	-	-

Grid: 33
Jacket: T651

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.1	372	393	404	-	-
0.10	9.7	382	404	416	-	-
0.20	10.3	392	416	428	-	-
0.30	10.6	402	428	440	-	-
0.40	10.8	414	440	453	-	-
0.50	10.8	426	452	464	-	-
0.60	10.5	437	462	474	-	-
0.70	10.1	448	472	484	-	-
0.80	9.3	458	480	491	-	-
0.90	8.4	467	487	497	-	-
1.00	7.4	475	493	502	-	-

Grid: 34
Jacket: T704

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.4	372	394	405	-	-
0.10	10.1	380	404	416	-	-
0.20	10.7	390	415	428	-	-
0.30	11.1	400	426	440	-	-
0.40	11.3	411	438	451	-	-
0.50	11.3	422	448	462	-	-
0.60	11.0	433	459	472	-	-
0.70	10.4	443	468	480	-	-
0.80	9.7	453	476	487	-	-
0.90	8.8	462	482	493	-	-
1.00	7.6	470	488	497	-	-

Grid: 35
Jacket: T707

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.3	372	394	405	-	-
0.10	10.0	382	405	416	-	-
0.20	10.5	393	418	430	-	-
0.30	10.9	404	430	444	-	-
0.40	11.1	416	443	456	-	-
0.50	11.1	428	454	468	-	-
0.60	10.8	440	465	478	-	-
0.70	10.3	451	476	488	-	-
0.80	9.5	461	484	495	-	-
0.90	8.6	470	491	502	-	-
1.00	7.5	479	497	506	-	-

Grid: 36
Jacket: T652

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	8.7	372	392	403	-	-
0.10	9.5	382	404	416	-	-
0.20	10.2	393	417	429	-	-
0.30	10.6	404	430	442	-	-
0.40	10.8	416	442	455	-	-
0.50	10.8	428	454	466	-	-
0.60	10.5	440	465	477	-	-
0.70	10.0	451	474	486	-	-
0.80	9.2	461	483	494	-	-
0.90	8.2	470	490	500	-	-
1.00	7.0	479	495	504	-	-

Grid: 37
Jacket: T705

		Temperatures (°C)				
z/L	LHGR (kW/ft)	Coolant	Clad Mid-Wall	Clad I.D.	Fuel Surface	Fuel Center
0.01	9.0	372	393	404	-	-
0.10	9.7	380	404	415	-	-
0.20	10.2	390	415	427	-	-
0.30	10.6	400	426	438	-	-
0.40	10.8	411	437	450	-	-
0.50	10.8	422	448	460	-	-
0.60	10.5	433	458	470	-	-
0.70	10.0	443	466	478	-	-
0.80	9.3	453	475	486	-	-
0.90	8.4	462	482	492	-	-
1.00	7.3	470	487	496	-	-