

LABORATORY NOTEBOOK

**Seven Percent Critical Experiment
7uPCX**

Laboratory Notebook #1

**Configurations 800B0000, 800B0000A and 800B0000B
May 11, 2009 through November 2, 2010**



Sandia National Laboratories

Operated for the United States Department of Energy by

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U.S. DEPARTMENT OF
ENERGY



**Sandia
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INSTRUCTIONS

1. **The primary purpose of this notebook is to protect your and the Company's Patent-Rights by keeping records of all original work in a form acceptable as evidence if any legal conflict arises.**
2.
 - When starting a page, enter the title, project number, and book number.
 - Use ink for permanence -- avoid pencil.
 - Record your work as you progress, including any spur-of-the-moment ideas which may be developed later.
 - Avoid making notes on loose paper to be recopied.
 - Record your work in such a manner that a co-worker can continue from where you stop. You might be ill and to protect your priority it could be urgent that the work continue while you are absent.
3.
 - Give a complete account of your experiments and the results, both positive and negative, including your observations.
 - Record all diagrams, layouts, plans, procedures, new ideas, or anything pertinent to your work including the details of any discussions with suppliers, or other people outside the Company.
 - Do not try to erase any incorrect entries; draw lines deleting them, note the corrections, sign and date the changes. This extra care is worthwhile because of the necessity of original data to prove priority of new discoveries.
4.
 - After entering your data, sign and date the entries.
 - Explain your work to at least two witnesses who are not co-inventors, and have them sign and date the pages in the place provided.
- Record the names of operators and witnesses present during any demonstration and have at least two witnesses sign the page. If no witnesses are present during an experiment of importance, repeat it in the presence of two witnesses.
5. Since computer programs can be patented these instructions apply to the development of computer software. In this case a description of the structure and operation of the program should be recorded in the notebook, together with a basic flow diagram which illustrates the essential features of the program. In the course of developing the code, the number of lines of code written each day should be recorded in the notebook, together with a statement of the portion of the flow diagram to which the section of code is directed.
6. This notebook and its contents are the exclusive property of the Company. It is confidential and the contents are not to be disclosed to anyone unless authorized by the Company. You must return it when completed, upon request, or upon termination of employment. It should be kept in a protected place.
If loss occurs, notify your supervisor immediately, and make a written report describing the circumstances of the loss.

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4	5/13/2009	1059	800B0000	
4	5/14/2009	1059	800B0000	
5	5/14/2009	1089	800B0000	
5	5/14/2009	1115	800B0000	
6	5/14/2009	1127	800B0000	
7	5/14/2009	1136	800B0000	
8	5/15/2009	1136	800B0000	
9	5/15/2009	1140	800B0000	
12	5/15/2009	1144	800B0000	
12	5/15/2009	1148	800B0000	
13	5/19/2009	1148	800B0000	Assembled Channel 3
14	5/20/2009	1120	800B0000	
15	5/21/2009	1120	800B0000	Fixed Channel 3
16	5/21/2009	1120	800B0000	
17	5/21/2009	1128	800B0000	
17	5/21/2009	1136	800B0000	
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21	8/18/2009	1120	800B0000	
22	8/18/2009	1128	800B0000	
23	8/19/2009	1128	800B0000	
24	8/19/2009	1136	800B0000	
25	2/9/2010	808	800B0000A	source in W23 (center)
26	2/10/2010	892	800B0000A	source in W23 (center)
27	2/10/2010	1144	800B0000A	source in W23 (center)
28	2/11/2010	1144	800B0000A	source in W23 (center)
28	2/11/2010	1224	800B0000A	source in W23 (center)
29	2/11/2010	1304	800B0000A	source in W23 (center)
29	2/11/2010	1360	800B0000A	source in W23 (center)
30	2/11/2010	1404	800B0000A	source in W23 (center)
30	2/15/2010	1404	800B0000A	source in W23 (center)
31	2/15/2010	1424	800B0000A	source in W23 (center)
32	2/15/2010	1442	800B0000A	source in W23 (center)
32	2/16/2010	1442	800B0000A	source in W23 (center)
33	2/16/2010	1449	800B0000A	source in W23 (center)
34	2/16/2010	1452	800B0000A	source in W23 (center)
35	2/16/2010	1456	800B0000A	source in W23 (center)
36	2/16/2010	1460	800B0000A	source in W23 (center)
37	2/17/2010	1436	800B0000A	source in W23 (center)
37	2/17/2010	1444	800B0000A	source in W23 (center)
38	2/17/2010	1452	800B0000A	source in W23 (center)
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41	2/19/2010	1444	800B0000A	source in W23 (center)
42	2/19/2010	1452	800B0000A	source in W23 (center)
43	5/13/2010	1436	800B0000A	source in W23 (center)
44	5/13/2010	1436	800B0000A	source in W23 (center)
44	5/13/2010	1444	800B0000A	source in W23 (center)
45	5/13/2010	1452	800B0000A	source in W23 (center)
46	8/4/2010	1436	800B0000A	source in W23 (center)
47	8/4/2010	1444	800B0000A	source in W23 (center)
47	8/4/2010	1452	800B0000A	source in W23 (center)
49	8/5/2010	1436	800B0000A	source in W23 (center)
50	8/5/2010	1444	800B0000A	source in W23 (center)
50	8/5/2010	1452	800B0000A	source in W23 (center)
52	8/5/2010	1436	800B0000A	source in U1
53	8/6/2010	1436	800B0000A	source in U1
54	8/6/2010	1437	800B0000B	
54	8/6/2010	1445	800B0000B	
55	8/6/2010	1453	800B0000B	
57	8/9/2010	1453	800B0000B	
58	8/9/2010	1445	800B0000B	
59	8/9/2010	1437	800B0000B	
59	8/9/2010	1433	800B0000B	
60	8/10/2010	1437	800B0000B	
61	8/10/2010	1445	800B0000B	
62	8/10/2010	1453	800B0000B	
63	8/11/2010	1437	800B0000B	
64	8/11/2010	1445	800B0000B	
65	8/11/2010	1453	800B0000B	
67	8/12/2010	1437	800B0000B	
67	8/12/2010	1445	800B0000B	
68	8/12/2010	1453	800B0000B	
70	8/16/2010	1437	800B0000B	
71	8/16/2010	1445	800B0000B	
72	8/16/2010	1453	800B0000B	
73	8/17/2010	1436	800B0000A	source in U1
74	8/17/2010	1444	800B0000A	source in U1
75	8/17/2010	1452	800B0000A	source in U1
77	8/18/2010	1424	800B0000A	source in W23 (center)
78	8/18/2010	1432	800B0000A	source in W23 (center)
79	8/18/2010	1436	800B0000A	source in W23 (center)
80	8/18/2010	1444	800B0000A	source in W23 (center)
81	8/19/2010	1425	800B0000B	
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86	8/20/2010	1461	800B0000B	
87	8/20/2010	1465	800B0000B	
87	8/24/2010	1463	800B0000B	
88	8/24/2010	1462	800B0000B	
89	8/25/2010	1425	800B0000B	
90	8/25/2010	1433	800B0000B	
90	8/25/2010	1437	800B0000B	
91	8/25/2010	1445	800B0000B	
93	8/26/2010	1460	800B0000A	source in U1
94	8/26/2010	1461	800B0000A	source in U1
94	8/26/2010	1462	800B0000A	source in U1
95	8/26/2010	1463	800B0000A	source in U1
95	8/26/2010	1464	800B0000A	source in U1
96	8/26/2010	1465	800B0000A	source in U1
97	8/31/2010	1465	800B0000B	
98	8/31/2010	1464	800B0000B	
99	8/31/2010	1460	800B0000A	source in W23 (center)
99	8/31/2010	1459	800B0000A	source in W23 (center)
100	9/1/2010	1459	800B0000A	source in W23 (center)
101	9/1/2010	1460	800B0000A	source in W23 (center)
102	9/1/2010	1460	800B0000A	source in U1
103	9/1/2010	1459	800B0000A	source in U1
103	9/1/2010	1458	800B0000A	source in U1
104	9/3/2010	1459	800B0000A	source in U1
105	9/3/2010	1458	800B0000A	source in U1
106	9/3/2010	1457	800B0000A	source in U1
106	9/3/2010	1460	800B0000A	source in W23 (center)
107	9/3/2010	1459	800B0000A	source in W23 (center)
108	9/7/2010	1459	800B0000A	source in W23 (center)
109	9/8/2010	1458	800B0000A	source in W23 (center)
111	9/8/2010	1458	800B0000A	source in U1
112	9/9/2010	1464	800B0000B	
113	9/9/2010	1463	800B0000A	source in U1
114	9/15/2010	1464	800B0000B	
114	9/15/2010	1463	800B0000B	
115	9/15/2010	1464	800B0000B	
116	9/16/2010	1458	800B0000A	source in W23 (center)
117	9/16/2010	1457	800B0000A	source in W23 (center)
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124	10/7/2010	1433	800B0000B	+4
125	10/7/2010	1441	800B0000B	+4
126	10/7/2010	1445	800B0000B	+4
127	10/7/2010	1444	800B0000B	+4
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132	10/11/2010	1433	800B0000B	+8
133	10/12/2010	1441	800B0000B	+8
134	10/12/2010	1446	800B0000B	+8
135	10/12/2010	1445	800B0000B	+8
136	10/12/2010	1421	800B0000B	+12
138	10/12/2010	1429	800B0000B	+12
141	10/12/2010	1433	800B0000B	+12
142	10/13/2010	1441	800B0000B	+12
144	10/13/2010	1448	800B0000B	+12
146	10/13/2010	1447	800B0000B	+12
146	10/13/2010	1421	800B0000B	+16
147	10/13/2010	1429	800B0000B	+16
150	10/13/2010	1433	800B0000B	+16
151	10/14/2010	1441	800B0000B	+16
153	10/14/2010	1450	800B0000B	+16
154	10/14/2010	1451	800B0000B	+16
155	10/14/2010	1397	800B0000B	+4x3
158	10/15/2010	1405	800B0000B	+4x3
159	10/15/2010	1409	800B0000B	+4x3
160	10/15/2010	1417	800B0000B	+4x3
162	10/18/2010	1425	800B0000B	+4x3
164	10/18/2010	1431	800B0000B	+4x3
165	10/18/2010	1430	800B0000B	+4x3
165	10/18/2010	1429	800B0000B	+4x3
167	10/19/2010	1397	800B0000B	+8x6
168	10/19/2010	1405	800B0000B	+8x6
169	10/19/2010	1409	800B0000B	+8x6
171	10/19/2010	1417	800B0000B	+8x6
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180	10/20/2010	1425	800B0000B	+16x11
181	10/21/2010	1429	800B0000B	+16x11
183	10/21/2010	1439	800B0000B	+16x11
184	10/21/2010	1440	800B0000B	+16x11
184	10/21/2010	1441	800B0000B	+16x11
186	11/2/2010	1145	800B0000B	k=0.95 config.
187	11/2/2010	893	800B0000B	k=0.90 config.

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4	5/13/2009	1059	800B0000	
4	5/14/2009	1059	800B0000	
5	5/14/2009	1089	800B0000	
5	5/14/2009	1115	800B0000	
6	5/14/2009	1127	800B0000	
7	5/14/2009	1136	800B0000	
8	5/15/2009	1136	800B0000	
9	5/15/2009	1140	800B0000	
12	5/15/2009	1144	800B0000	
12	5/15/2009	1148	800B0000	
13	5/19/2009	1148	800B0000	Assembled Channel 3
14	5/20/2009	1120	800B0000	
15	5/21/2009	1120	800B0000	Fixed Channel 3
16	5/21/2009	1120	800B0000	
17	5/21/2009	1128	800B0000	
17	5/21/2009	1136	800B0000	
19	5/21/2009	1138	800B0000	
21	8/18/2009	1112	800B0000	
21	8/18/2009	1120	800B0000	
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27	2/10/2010	1144	800B0000A	source in W23 (center)
28	2/11/2010	1144	800B0000A	source in W23 (center)
28	2/11/2010	1224	800B0000A	source in W23 (center)
29	2/11/2010	1304	800B0000A	source in W23 (center)
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32	2/15/2010	1442	800B0000A	source in W23 (center)
32	2/16/2010	1442	800B0000A	source in W23 (center)
33	2/16/2010	1449	800B0000A	source in W23 (center)
34	2/16/2010	1452	800B0000A	source in W23 (center)
35	2/16/2010	1456	800B0000A	source in W23 (center)
36	2/16/2010	1460	800B0000A	source in W23 (center)
37	2/17/2010	1436	800B0000A	source in W23 (center)
37	2/17/2010	1444	800B0000A	source in W23 (center)
38	2/17/2010	1452	800B0000A	source in W23 (center)
39	2/18/2010	1468	800B0000A	source in W23 (center)
40	2/19/2010	1432	800B0000A	source in W23 (center)
40	2/19/2010	1436	800B0000A	source in W23 (center)
41	2/19/2010	1444	800B0000A	source in W23 (center)
42	2/19/2010	1452	800B0000A	source in W23 (center)
43	5/13/2010	1436	800B0000A	source in W23 (center)
44	5/13/2010	1436	800B0000A	source in W23 (center)
44	5/13/2010	1444	800B0000A	source in W23 (center)
45	5/13/2010	1452	800B0000A	source in W23 (center)
46	8/4/2010	1436	800B0000A	source in W23 (center)
47	8/4/2010	1444	800B0000A	source in W23 (center)
47	8/4/2010	1452	800B0000A	source in W23 (center)
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50	8/5/2010	1452	800B0000A	source in W23 (center)
52	8/5/2010	1436	800B0000A	source in U1
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75	8/17/2010	1452	800B0000A	source in U1
77	8/18/2010	1424	800B0000A	source in W23 (center)
78	8/18/2010	1432	800B0000A	source in W23 (center)
79	8/18/2010	1436	800B0000A	source in W23 (center)
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94	8/26/2010	1462	800B0000A	source in U1
95	8/26/2010	1463	800B0000A	source in U1
95	8/26/2010	1464	800B0000A	source in U1
96	8/26/2010	1465	800B0000A	source in U1
99	8/31/2010	1460	800B0000A	source in W23 (center)
99	8/31/2010	1459	800B0000A	source in W23 (center)
100	9/1/2010	1459	800B0000A	source in W23 (center)
101	9/1/2010	1460	800B0000A	source in W23 (center)
102	9/1/2010	1460	800B0000A	source in U1
103	9/1/2010	1459	800B0000A	source in U1
103	9/1/2010	1458	800B0000A	source in U1
104	9/3/2010	1459	800B0000A	source in U1
105	9/3/2010	1458	800B0000A	source in U1
106	9/3/2010	1457	800B0000A	source in U1
106	9/3/2010	1460	800B0000A	source in W23 (center)
107	9/3/2010	1459	800B0000A	source in W23 (center)
108	9/7/2010	1459	800B0000A	source in W23 (center)
109	9/8/2010	1458	800B0000A	source in W23 (center)
111	9/8/2010	1458	800B0000A	source in U1
113	9/9/2010	1463	800B0000A	source in U1
116	9/16/2010	1458	800B0000A	source in W23 (center)
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57	8/9/2010	1453	800B0000B	
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63	8/11/2010	1437	800B0000B	
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67	8/12/2010	1437	800B0000B	
67	8/12/2010	1445	800B0000B	
68	8/12/2010	1453	800B0000B	
70	8/16/2010	1437	800B0000B	
71	8/16/2010	1445	800B0000B	
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87	8/24/2010	1463	800B0000B	
88	8/24/2010	1462	800B0000B	
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90	8/25/2010	1437	800B0000B	
91	8/25/2010	1445	800B0000B	
97	8/31/2010	1465	800B0000B	
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114	9/15/2010	1464	800B0000B	
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124	10/7/2010	1433	800B0000B	+4
125	10/7/2010	1441	800B0000B	+4
126	10/7/2010	1445	800B0000B	+4
127	10/7/2010	1444	800B0000B	+4
128	10/11/2010	1421	800B0000B	+8
130	10/11/2010	1429	800B0000B	+8
132	10/11/2010	1433	800B0000B	+8
133	10/12/2010	1441	800B0000B	+8
134	10/12/2010	1446	800B0000B	+8
135	10/12/2010	1445	800B0000B	+8
136	10/12/2010	1421	800B0000B	+12
138	10/12/2010	1429	800B0000B	+12
141	10/12/2010	1433	800B0000B	+12
142	10/13/2010	1441	800B0000B	+12
144	10/13/2010	1448	800B0000B	+12
146	10/13/2010	1447	800B0000B	+12
146	10/13/2010	1421	800B0000B	+16
147	10/13/2010	1429	800B0000B	+16
150	10/13/2010	1433	800B0000B	+16
151	10/14/2010	1441	800B0000B	+16
153	10/14/2010	1450	800B0000B	+16
154	10/14/2010	1451	800B0000B	+16
155	10/14/2010	1397	800B0000B	+4x3
158	10/15/2010	1405	800B0000B	+4x3
159	10/15/2010	1409	800B0000B	+4x3
160	10/15/2010	1417	800B0000B	+4x3
162	10/18/2010	1425	800B0000B	+4x3
164	10/18/2010	1431	800B0000B	+4x3
165	10/18/2010	1430	800B0000B	+4x3
165	10/18/2010	1429	800B0000B	+4x3
167	10/19/2010	1397	800B0000B	+8x6
168	10/19/2010	1405	800B0000B	+8x6
169	10/19/2010	1409	800B0000B	+8x6
171	10/19/2010	1417	800B0000B	+8x6
172	10/19/2010	1425	800B0000B	+8x6
173	10/19/2010	1430	800B0000B	+8x6
174	10/19/2010	1431	800B0000B	+8x6
175	10/20/2010	1432	800B0000B	+8x6

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178	10/20/2010	1409	800B0000B	+16x11
179	10/20/2010	1417	800B0000B	+16x11
180	10/20/2010	1425	800B0000B	+16x11
181	10/21/2010	1429	800B0000B	+16x11
183	10/21/2010	1439	800B0000B	+16x11
184	10/21/2010	1440	800B0000B	+16x11
184	10/21/2010	1441	800B0000B	+16x11
186	11/2/2010	1145	800B0000B	k=0.95 config.
187	11/2/2010	893	800B0000B	k=0.90 config.

TITLE 7u PCX

From Page No.

11 May 2009 (written on 12 May)

Began loading Core 800 B0000 after lunch ~ 12:30

384 positions were filled including the 12 positions occupied by the CE/SEs. Rod # 0158 was bent during handling.

12 May 2009

Continued loading. First load will be 740 elements including CE/SEs. Loading order from "Seven Percent Critical Experiment Core Analysis Core Configuration 800 B0000 Rev. 2".

When the loading reached the CE/SE it was found that the ~~last~~ CE/SE magnets interfered with the fuel elements (some of them) in the fourth row out from the CE/SE at this pitch. The loading order needs redesign to load four ~~rows~~ rows of elements around CE/SEs at the beginning.

an NCR of fuel element 0158 was started

1440 loaded to 740 elements

145 g CE ~~ant~~ ^{Down} water in

Ch	A	B	
	604	616	10 sec count
	637	630	"
	612	641	
	616	649	
	639	649	

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Witnessed & Understood by me,

Date

Invented by:

Date

Recorded by:

Project No. Core 800 B0000Book No. _____ TITLE 7u pcxFrom Page No. 1

12 May 2009

CE up @ 15:05:25

T1 = 27.8 T2 = 25.7 T3 = 26.3 T4 = 26.5 T5 = 28.2 TD = -

Time	A	B	60 sec counts
15:06:46	4416	4274	
15:08:16	4382	4346	$\sigma \sim 65$
15:09:48	4297	4267	
15:11:29	4343	4232	
15:13:06	4456	4285	

Now load to 956 elements

Shut down @ 1638 with 908 elements in the array including CE/SES. Restart @ 1300 tomorrow

13 May 2009

Loaded to 956 elements @ 1340

Water in @ 13:56:40

CE Down

Time	A	B	10 sec counts
13:59:17	1540	1648	
14:00:11	1612	1646	
14:00:52	1600	1656	

CE up @ 14:04:50

T1 = 27.2 T2 = 24.1 T3 = 24.7 T4 = 25.2 T5 = 27.6 TD = -

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TITLE Tu PCx

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13 May 2007

Time	ch A	ch B	60 sec. Counts
14:07:03	13344	13077	
14:08:39	13118	12868	
14:10:14	12969	12880	
14:11:57	13204	13018	
14:13:30	13085	12831	
Sum	65720	64674	

Predicted DC 1063.9 1062.8
Loading to 1009 elements
1009 elements loaded @ 14:55
water in @ 15:12:40
CE Down

	A	B	10 sec Counts
15:14:40	2229	2	
15:15:08	2187	2347	
not recorded	2136	2259	
	2154	2397	
	2167	2214	

Time	Ch A	Ch B	60 sec Counts
15:20:43	19819	19699	
15:22:04	19507	19467	
15:23:30	19896	19805	
15:24:54	19935	19564	
15:26:13	19902	19486	
15:27:56	19600	19676	
15:29:21	19744	19472	
Projected DC	1115.6	1119.9	
Avg.		1113.7	
Next load from average		1060	
Loading to	1059		

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Witnessed & Understood by me,

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Project No. Core 800B0000

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TITLE

7u PCX

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13 May 2009

Loaded to 1059 @ 16:00

Water in @ 16:17

CE Down

A	B	10 sec counts
3234	3300	
3133	3332	
3335	3432	
3294	3363	

CE up @ 16:23:07

T1 = 27.2 T2 = 25.2 T3 = 25.2 T4 = 25.7 T5 = 27.6 TD = —

Time

A

B

16:24:16

36052

35527

60 sec
counts

16:25:46

35797

35489

16:27:07

36123

35565

16:28:30

35711

35173

16:29:52

3596735535

Total

179650177288

Projected DC (elements) 1119.6

1120.8

avg 1120.2

Next load to 1089

14 May 2009

Starting up by repeating count rate measurements with
1059 elements

Water up @ 9:14 ~ 9:30

CE up @ 9:36:45

T1 = 26.8 T2 = 25.5 T3 = 26.8 T4 = 25.1 T5 = 27.2 TD = —

Time

ch A

ch B

9:39:16

36009

35720

60 sec
counts

9:40:41

36313

35434

9:42:10

36246

35783

9:43:33

36232

35807

9:45:58

3627035504

Sum

181070178248

1118.5

1120.0

avg 1119.3

CRs compared to 5/13 ^{count} 0.79 @ 0.87, higher

0.54% higher

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14 May 2009

Loading to 1089 elements

1089 elements in array

Water in @ 10.32

CE up @ 10:36:35

T1 = 26.9 T2 = 25.0 T3 = 27.0 T4 = 25.8 T5 = 27.4

Time	ch A	ch B	60 sec counts
10:37:44	56847	55934	
10:39:16	56195	56078	
10:40:43	55534	56129	
10:42:09	56423	56235	
10:43:35	55658	55799	
10:44:58	55937	55617	
10:46:18	56603	55887	
10:47:38	55905	55308	
10:48:59	56313	55862	
10:50:36	56188	56410	
Sum	561603	559259	
Projected DC@	1143.5	1141.7	
avg.		1142.6	

Load to 1115 elements

1115 elements in the array

Water in @ 11:35

CE up @ 11:40:25

T1 = 27.0 T2 = 25.0 T3 = 27.1 T4 = 26.0 T5 = 27.5

Time	ch A	ch B
11:42:06	116495	114870
11:43:28	117217	115610
11:45:00	116483	116493
11:46:34	117521	116428
11:48:07	116393	115081
11:50:58	117140	116669
11:51:29	116811	116094
11:52:58	117109	115933
11:55:14	117308	117093
11:56:49	116505	116477
Sum	1168982	1160748

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Date _____

Invented by: _____

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Project No. Core 800 B0000

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TITLE 7upcx

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14 May 2009

Projected DC @ 1139.0 (chA) 1139.2 (chB) Avg. 1139.1

Next load to 1127 elements

Restarting after lunch with repeat counts @ 111521.
water in

CE up @ 14:26:20

A

B

116201

114771

116862

116311

14:28:30

T1=27.6 T2=25.7 T3=27.6 T4=26.2 T5=28.0

Loading to 1127 elements

Array has 1127 elements loaded

water in @ 1505

CE up @ 15:10:10

T1=27.5 T2=25.0 T3=27.6 T4=26.3 T5=28.0

Time

ch A

ch B

15:11:30

187641

187325

15:12:56

187738

187337

15:14:23

189089

187878

15:15:48

189525

187688

15:17:12

189135

188431

15:18:50

189896

188501

15:20:16

191208

189719

15:21:41

188780

188371

15:23:06

189596

188451

15:24:31

189655

188369

15:25:53

190030

188480

15:27:19

189687

189539

Sum

2271980

2260089

Projected DC @

1146.4

1146.3

Avg

1146.3

Next load to 1136 elements

Loaded to 1136 elements

Water in @ 1604

CE up @ 16:09:05

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Witnessed & Understood by me,

Date

Invented by:

Date

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TITLE 7uPCx

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14 May 2009

1136 elements in the core

T1 = 27.6 T2 = 25.7 T3 = 27.6 T4 = 26.3 T5 = 28.0

Time	Ch A	Ch B
16 : 10 : 09	363978	358581
16 : 11 : 38	373892	369428
16 : 13 : 04	378158	374993
16 : 14 : 43	380964	377276
16 : 16 : 10	382103	378966
16 : 17 : 37	381898	378992
16 : 19 : 04	380832	376791
16 : 20 : 37	381237	377839
16 : 22 : 02	382678	379672
16 : 23 : 28	383827	379007
16 : 24 : 59	382963	379551
16 : 26 : 26	383885	379306
16 : 27 : 56	384856	380790
16 : 29 : 25	385133	381688
16 : 31 : 40	383784	381284
16 : 33 : 12	385859	381627
16 : 34 : 42	387359	384709
16 : 36 : 27	386861	384110
16 : 37 : 52	385618	382947
16 : 39 : 19	388925	384460
16 : 40 : 47	387144	382014
16 : 42 : 17	389242	385122
16 : 43 : 45	386921	383213
16 : 45 : 23	386144	384303
16 : 46 : 48	385422	382248
16 : 48 : 23	386110	383368
16 : 49 : 47	385623	381044
Sum last 10	3868508	3833428
Projected DC @	1144.6	1144.7

↑
Skip

use the last 10

avg 1144.7
Next load to 1140 elements

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7upCX

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15 May 2009

restarting with counts @ 1136 elements
water in

CE up @ 9:14:00

T1 = 28.1 T2 = 23.4 T3 = 28.2 T4 = 24.1 T5 = 28.5

Time

Ch A

Ch B

60 sec.
counts

9:16:29

409510

402527

9:18:00

413950

406659

9:19:24

415614

408719

9:20:44

414933

406921

9:22:05

413463

405529

9:23:24

415212

407188

9:24:50

414288

405608

9:26:07

415200

406680

9:27:25

415523

406970

9:28:44

415428

408741

9:30:04

417333

409994

9:31:24

416622

407905

9:32:44

419109

410008

9:34:05

418653

409378

9:35:29

419658

411120

9:36:49

418299

410455

9:38:07

416891

408517

9:39:25

416759

409118

9:40:41

419486

411756

9:41:58

418397

411115

9:43:10

420472

411507

9:44:34

418958

411459

9:45:51

420608

412589

9:47:11

420465

412252

9:48:28

420723

411747

9:49:44

417691

410599

9:51:01

422411

413131

9:52:23

421766

413341

9:53:46

4211063

413430

9:55:31

422737

414546

9:57:00

423711

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Witnessed & Understood by me,

Date

Invented by:

Date

Recorded by:

TITLE 7upCx

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Time	Ch. A	Ch. B
9:58:20	420900	413664
9:59:39	423062	414371
10:01:00	424452	415511
10:02:24	426228	417813
10:03:40	424973	417404
10:04:56	424875	416924
10:06:13	426740	418198
10:07:31	425065	416312
10:08:50	423595	415509
10:10:08	429165	419523
10:11:28	428969	419961
10:12:46	427824	421169
10:14:04	429280	420496
10:15:22	432588	423349
10:16:46	429834	420645
10:18:06	429761	421465
10:19:39	429658	422010
10:20:58	428324	420084

Loaded to 1140 elements

10:42 Dump tank thermocouple read 21°C

Water in @ 1058

CE up @ 1104:37

T1 = 26.9 T2 = 23.2 T3 = 27.0 T4 = 23.7 T5 = 27.4

Time	Ch. A	Ch. B	
11:05:49	691954	670634	60 sec
11:07:09	743494	720793	counts
11:08:28	776304	752055	
11:09:46	795109	770120	
11:11:07	808928	783086	
11:12:25	818688	792254	
11:13:45	821062	797942	
11:15:02	828987	802687	
11:16:31	835249	807125	
11:17:49	836438	809474	
11:19:05	839525	813683	
11:20:23	839096	811714	

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Invented by: _____

Date _____

Recorded by: _____

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15 May 09

Continuing counts @ 1140 elements

Time	Ch A	Ch B	60 sec counts
11:21:41	846669	817372	
11:23:07	844769	816916	
11:24:32	843975	815909	
T1 = 26.7 T2 = 22.4 T3 = 26.8 T4 = 22.4 T5 = 27.2			
11:25:59	843272	817027	
11:27:19	846818	816992	
11:28:36	847393	818891	
11:30:13	848432	821426	
11:31:30	852887	823442	
11:32:51	854760	824744	
11:34:10	855369	827761	
11:35:43	851559	824051	
11:37:07	855743	827529	
11:38:27	862492	82442 835826	
11:40:01	867039	838626	
11:41:39	866076	836630	
11:43:02	870151	839278	
11:44:22	872505	844280	
11:45:43	874453	842862	
T1 = 26.6 T2 = 23.0 T3 = 26.6 T4 = 23.1 T5 = 27.0			
11:47:06	873205	843494	
11:48:39	879780	848763	
11:50:57	877993	849561	
11:51:17	877347	848774	
11:52:37	881613	851225	
11:53:57	881943	851540	
11:55:22	882818	851933	
11:56:58	887778	856203	
11:58:28	885983	855397	
11:59:58	888965	860399	
12:01:26	892406	861245	
12:02:58	894133	863001	
12:04:32	898027	867700	
12:05:43	898535	870034	

Witnessed & Understood by me,

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Invented by:

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TITLE 7upcx

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15 May 2009

continuing counts @ 1140 elements

Time	ch A	ch B
12:07:07	897189	865213
T1 = 26.4 T2 = 23.8 T3 = 26.5	T4 = 23.7	T5 = 26.9
12:08:26	898436	866978
12:09:49	904310	875576
12:11:10	906626	875133
12:12:32	905684	877048
12:13:55	905800	872583
12:15:15	905222	874821
12:16:40	908796	878005
12:18:00	911103	879747
12:19:20	915447	883772
12:20:49	917085	886156
12:22:09	920350	888978
12:23:30	918271	887552
12:24:50	921183	890340
12:26:09	918078	884813
12:27:29	922070	890741
T1 = 26.3 T2 = 23.0 T3 = 26.4 T4 = 23.0 T5 = 26.8		
12:28:58	920820	889810
12:30:15	919771	886799
12:31:36	918832	888409
12:33:02	926802	892943
12:34:27	929832	898062
12:35:54	935948	903851
12:37:12	936675	902288
12:38:32	939733	906828
12:39:59	939252	905969
12:41:23	941882	910419
12:42:44	943335	909780
12:44:06	946581	910440
12:45:31	940194	907554
12:46:55	944123	909000
12:48:33	945053	910364
T1 = 26.2 T2 = 23.7 T3 = 26.2 T4 = 23.7 T5 = 26.6		

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		Recorded by:	

Project No. Core 800B0000
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~~14~~ MAY 2009

15 continuing counts @ 1140 elements

Time	ch A	ch B
12:49:53	945164	913289
12:51:36	950250	915206
12:53:02	950578	916336
12:54:25	954588	919161
12:55:51	950175	918033
12:57:21	952621	917500
12:58:44	951162	918403
13:00:05	951249	917838

No projection to critical.

Loaded 4 more elements to 1144 elements in the array

Water in @ 1345

CE insertion started ~13:45:30

T1=25.6 T2=23.3 T3=25.7 T4=23.6 T5=26.0

	ch A	ch B	
13:57:35	539423	493753	10 sec
13:58:14	566669	516184	counts
13:58:55	597363	542556	
13:59:33	623470	565445	
14:00:10	650790	588587	
14:00:47	677437	609798	
14:02:31	745800	669139	
14:04:23	817356	727971	
14:05:36	862351	767551	
14:06:43	904508	799250	
14:08:18	957272	843016	
14:09:39	1001947	880542	
14:11:17	1060050	927142	
14:13:26	1130294	982048	

The curve indicates the array is just subcritical

Adding 4 more rods

Array now has 1148 elements

Water in @ 14:43

CE Started up @ 1444

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TITLE 7u PCp

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14 May 2009

15 CE up @ 14:47:47

T₁ = 25.2 T₂ = 23.1 T₃ = 25.3 T₄ = 24.6 T₅ = 25.7

Time	ch A	ch B	
14:48:20	660807	595715	
14:49:15	1205523	1040658	
14:50:29	Switch 1986901	2400254	
14:51:39	3835014	3232352	
14:53:14	5131987	4737346	Z W
14:54:28	5383811	5084822	

CE started down 14:55:38

Temps @ ~15:02

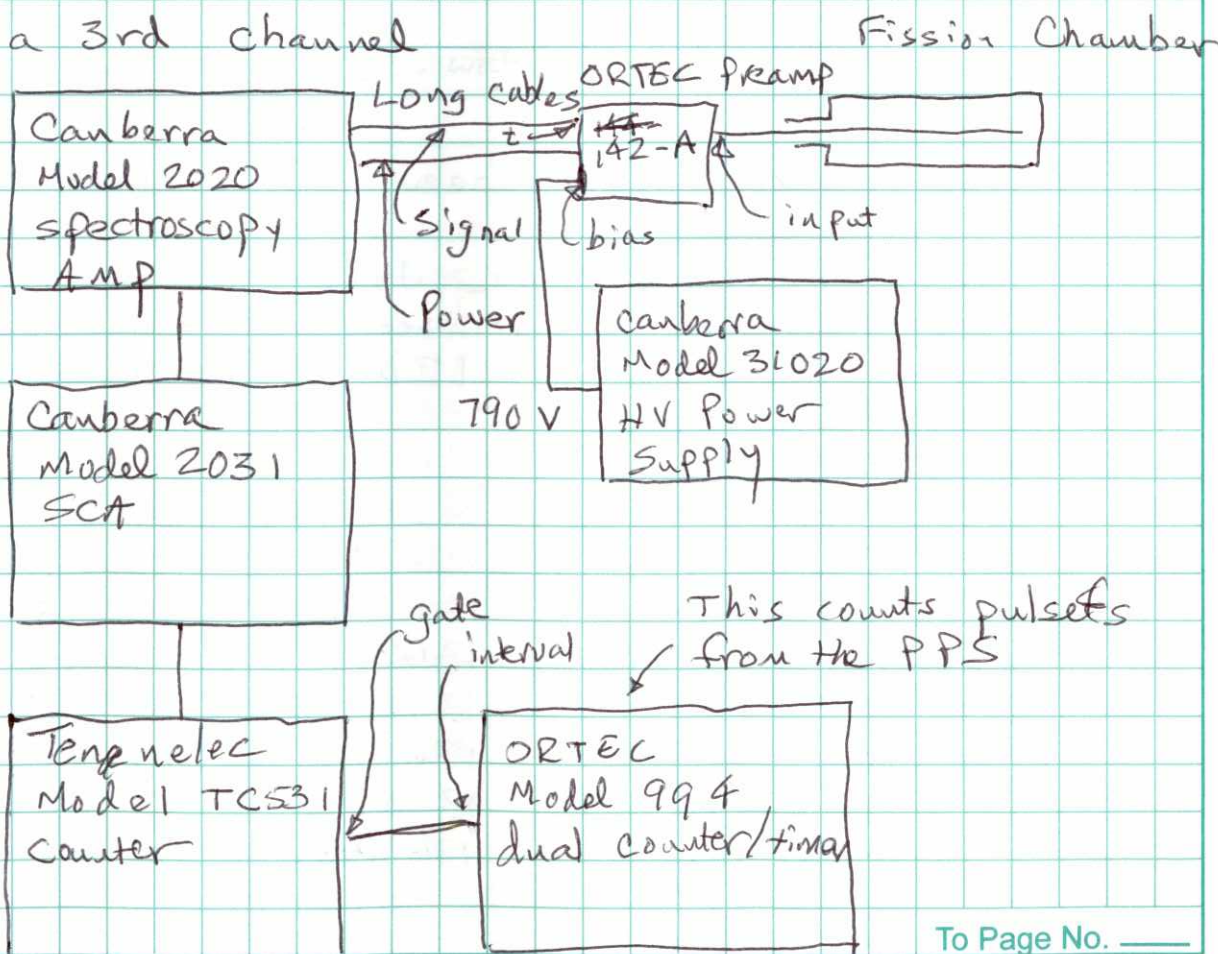
T₁ = 25.2 T₂ = 23.9 T₃ = 25.3 T₄ = 24.5 T₅ = 25.7

Shut down at ~15:04

1148 was supercritical in most reactive position

19 May 2009

Assembled a 3rd channel

connector for
power line is
on the back of
the amp

Witnessed & Understood by me, _____

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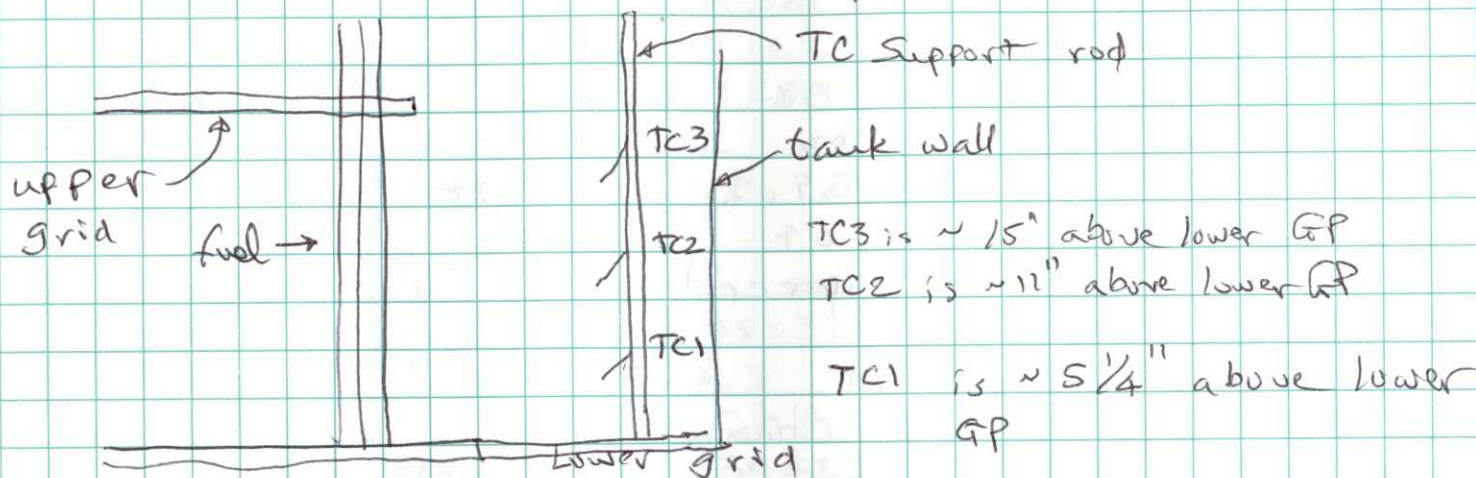
20 May 2009

Today we will unload to 1120 elements.

The plan is to measure count rates at 1120, 1128, 1136, and above 1136.

The thermo couples in use previously were all removed and replaced with three new thermo couples.

The new thermo couples are spaced approximately evenly between the grid plates.

11:00 array has been downloaded to 1120 ~~elements~~ ^{array}

after 1300 gave tour for Lockheed Martin safety oversight committee (advises Sandia board)

Starting up with 1120 elements in the core
water is @ 14:23

CE up @ 14:27:49

T1 = 24.5 T2 = 24.4 T3 = 24.5 TD = 25

Time	Ch A	Ch B	Ch C
14:29:21	134701	134833	2003
14:30:10 14:30:10	136817	136114	1220
14:33:59	137651	136475	1971
14:34:34	136939	135799	- Not recorded
14:36:16	136968	135694	631
14:38:55	136848	135672	610
14:39:29	137476	136314	636
14:41:04	136489	135991	578

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20 May 2009

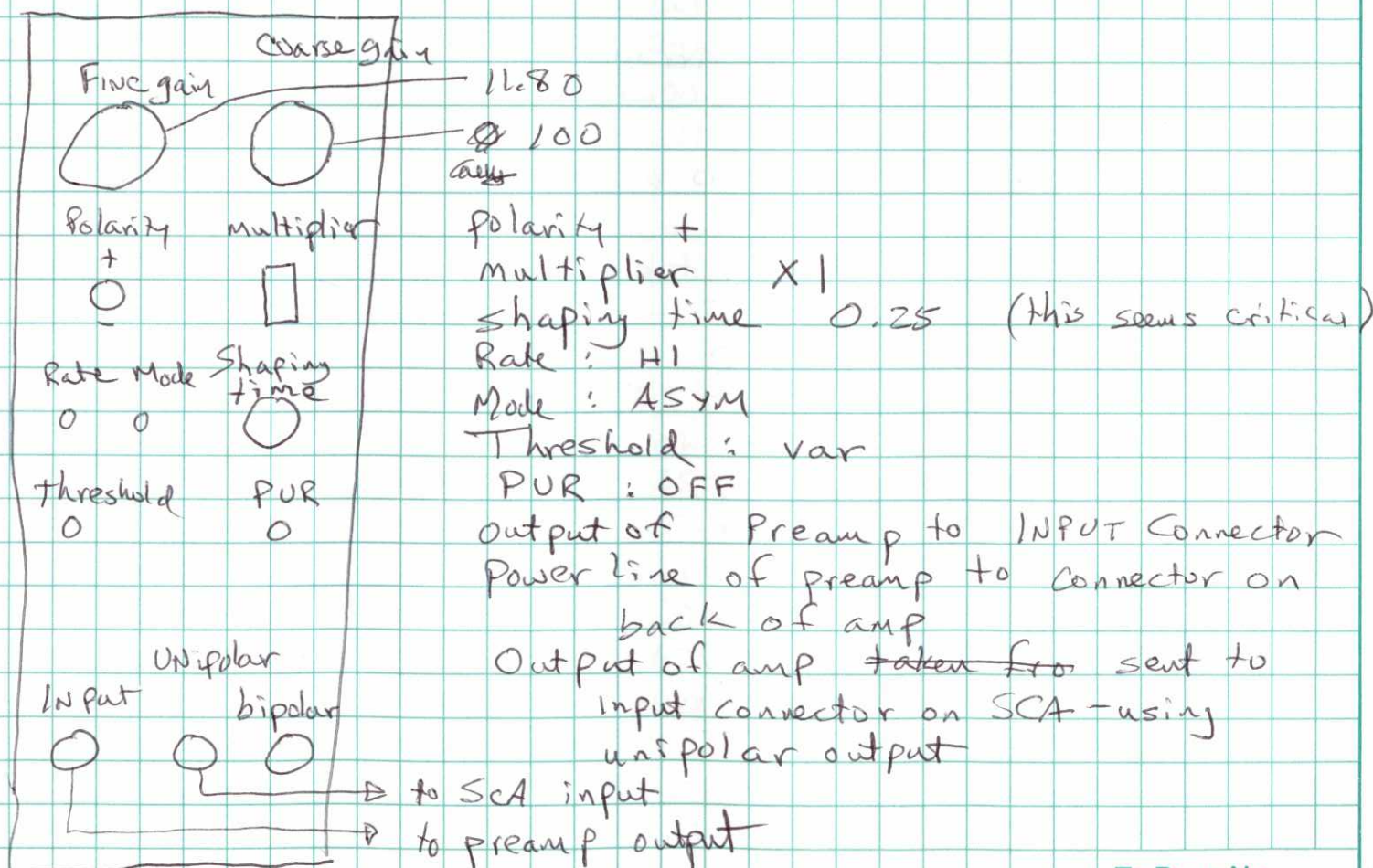
1120 elements in the core

Time	Ch A	Ch B	Ch C
14:42:42	137779	137111	632
14:44:21	136892	136474	547
14:47:24	138571	137220	556
14:50:14	137751	136255	576
14:51:46	137758	136999	629
14:53:26	137883	137844	545

21 May 2009

The data from channel C above are clearly busted. After the counts were taken, work ensued on the electronics in the channel yesterday afternoon. The work appears to be successful.

The Amplifier setup:



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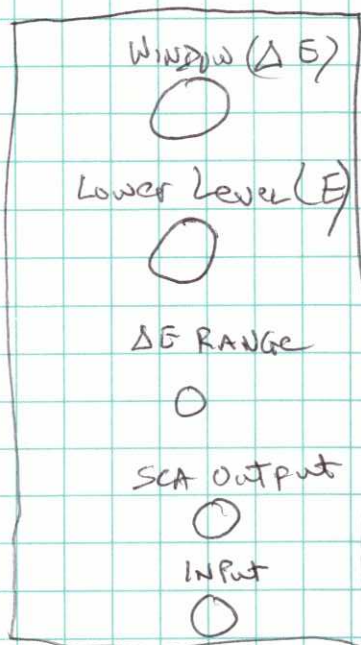
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²¹
MAY ~~20~~ 2009
SCA Setup

Window ΔE : MAX - 10.0

Lower Level (E): 0.33

 ΔE Range: 1V

SCA Output to Counter input

SCA INPUT from Amp unipolar output

1120 elements in the array

Water in @ 9:51

CE up @ 9:54:48

T1 = 24.1

T2 = 24.0

T3 = 24.2

TD = 24

TIME	Ch A	Ch B	Ch C
9:55:37	139260	138253	1050
9:57:20	141655	140669	228
9:58:54	142010	140814	206
10:00:26	142028	140571	213
10:02:14	142380	141345	199
10:03:40	141075	140727	242
10:05:07	141389	140604	226
10:06:40	142226	139616	215
10:08:09	141880	139987	205
10:09:42	142707	141240	243
10:11:09	141697	139997	206
Sum excluding 1 st	141905	1405570	2183

was not reset ~~call~~
60 sec counts
counts

Now loading to 1128

1128 elements in the core

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21 May 09

1128 elements in the array

Water in @ 10:48

CE up @ 10:52:31

T1 = 23.9

T2 = 23.8

T3 = 23.9

TD = 24 (Dump Tank)

Time

Ch A

Ch B

Ch C

10:53:16

197231

194275

305

60 Sec

10:54:47

200345

198684

316

Counts

10:56:15

202377

199695

324

10:57:43

201974

199421

311

10:59:07

201226

199553

319

11:00:33

201676

200009

318

11:02:02

202897

199838

306

11:03:30

202117

200834

333

11:05:58

201815

200780

330

11:06:22

202114

200385

296

11:07:44

201857

200348

298

11:09:11

202751

200826

336

Sum excluding 2

2020804

2001689

3171

Projected DC

1146.9

1146.9

1145.7

Avg of A & B

1146.9

considers sum of all counts

Loaded to 1136 elements

water in @ 11:45

CE up @ 11:50:18

T1 = 23.7

T2 = 23.6

T3 = 23.8

TD = 24

Time

Ch A

Ch B

Ch C

11:51:17

349400

345241

513

11:52:43

359455

354502

553

11:54:21

365391

360079

593

11:55:47

369423

363464

568

11:57:10

369553

362869

585

11:58:35

367635

360967

521

12:00:00

367869

362631

582

12:01:26

367949

363445

539

12:02:55

370593

364454

575

12:04:20

370659

365468

534

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Counts @ 1136 elements

T1 = 23.8 T2 = 23.7 T3 = 23.8 TD = 24

Time	Ch A	Ch B	Ch C
12:05:44	371368	365382	516
12:07:13	371652	365478	558
12:08:37	368710	364859	560
12:10:01	370866	364987	618
12:11:29	371200	365916	573
12:12:51	372561	366747	534
12:14:15	371190	366733	574
12:15:38	371666	365393	610
12:17:02	372451	368785	589
12:18:27	374972	369904	620

T1 = 23.8 T2 = 23.7 T3 = 23.8 TD = 24

12:19:59	372452	368615	599
12:21:38	373096	368413	571
12:23:14	374201	370674	597
12:24:41	371814	367160	559
12:26:04	373483	368396	581
12:27:28	373621	369031	602
12:28:53	374295	369271	604
12:30:22	373995	368998	556
12:31:47	373774	370032	590
12:33:10	375456	371067	558
12:34:50	374925	369711	655
12:36:16	377611	372965	588

T1 23.8 T2 23.7 T3 23.8 TD 24

12:37:46	377815	371016	551
12:39:10	376342	372377	612
12:40:41	374909	370893	580
12:42:09	377425	372020	593
12:43:33	378141	373462	570
12:44:57	377057	373491	586
12:46:23	377368	373090	647
12:47:49	377378	373107	613
12:49:12	377197	372277	599
12:50:36	379230	374465	556

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21 May 18 09

Counts @ 1136

Time	Ch A	Ch B	Ch C
12:52:08	375259	372659	622
T1 = 23.8	T2 = 23.7	T3 = 23.8	TD = 24
12:53:34	376154	372494	611
12:55:03	375789	371464	612
12:56:33	376633	372571	574
Sum of last 15	5654308	5588351	8913
Projected DC	1145.2	1145.3	1145.2

avg

1145.3

loading 2 elements to 1138
array loaded to 1138 elements

Water in @ 1338

CE up @ 13:43:25

T1 = 23.7 T2 = 23.6 T3 = 23.8 TD = 24

Time

Ch A

Ch B

Ch C

13:45:10 Switch 430004 438162 43681 A & B are switched

13:46:53 456628 450863 689

14:01:30 475857 469034 728

T1 = 23.7 T2 = 23.7 T3 = 23.8 TD = 24

14:08:18 478736 472514 762

14:13:48 479836 474010 733

14:23:08 486390 478380 719

14:28:46 488030 481970 822

T1 = 23.8 T2 = 23.7 T3 = 23.8 TD = 24

14:36:00 487718 479225 728

14:39:20 488197 481682 759

14:40:47 492270 483612 782

14:42:12 491733 483309 733

14:44:04 490071 482355 737

14:46:06 494170 486980 753

14:51:14 494496 487350 728

14:52:43 494214 486090 752

14:54:23 495387 487302 719

14:55:56 496576 488583 758

15:08:29 495143 490421 720

15:10:03 500042 491889 765

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21 May 09

~~21 May~~ H36 1138 elements

T1 = 23.8

T2 = 23.8

T3 = 23.9

TD = 24

TIME

ChA

ChB

ChC

15:15:14

502080

493964

724

15:20:26

505022

496367

702

15:25:49

502209

494481

763

15:27:18

504906

496912

770

15:28:43

502693

495621

757

15:30:11

504921

495392

753

15:31:53

504082

497009

773

15:33:45

507362

498508

767

15:38:24

506039

497925

801

15:39:47

509287

500705

802

15:44:42

505919

498624

734

15:46:07

505843

498722

834

T1 = 23.8

T2 = 23.8

T3 = 23.9

TD = 24

15:47:31

509084

5008228

809

15:49:02

509711

502571

803

15:50:29

509287

502605

777

15:51:54

509381

502045

769

15:53:23

510646

502713

776

15:54:51

512425

503241

773

15:56:17

512277

503508

841

15:57:44

509489

502601

794

15:59:11

511234

502474

760

15:47:42

514829

506716

772

16:02:17

515198

504745

848

16:04:58

512372

503867

857

16:05:24

510834

503649

803

16:06:52

513996

506345

753

16:08:20

514721

507122

783

16:09:49

516074

507522

795

16:11:21

513453

505072

837

16:13:00

514201

505627

748

T1 = 23.9

T2 = 23.9

T3 = 24.0

TD 24

Sum of last 15

7691036

7567807

11917

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21 May 09 1138 elements

	Ch A	Ch B	Ch C
Projected DC	1143.6	1143.6	1143.9
Aver Combined	1143.6		

These values were obtained using the last 15
Counts that were taken

17 August 09

Continuing core 800 B0000

The assembly will be unloaded to 1112 elements

18 August

Assembly now has 1112 elements inserted.

Water in @ 10:42

CE up @ 10:49:02

T1 = 17.4 T2 = 17.4 T3 = 17.6 TD = 18

Time	Ch A	Ch B	Ch C
------	------	------	------

T1 = 17.5

T2 = 17.5

T3 = 17.6

10:55:10

97623

97266

145

60 sec

10:56:46

98144

97505

152

Counts

10:58:21

98165

97640

177

10:59:50

97681

97480

137

11:01:30

97589

97800

142

11:03:25

97472

97908

165

11:04:54

98229

98011

152

11:06:22

98078

98180

145

11:07:49

98245

97160

151

11:09:17

98415

97334

179

Sum

979641

978284

1545

Load to 1120

Loaded to 1120

Water in @ 11:55

CE up @ 12:01:00

T1 = 17.9

T2 = 17.8

T3 = 17.9

TD 18

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18 August 09

1120 elements in the assembly

Time	Ch A	Ch B	Ch C
12:07:04	125840	124703	193
12:08:48	125279	125123	189
12:10:13	125226	124614	203
12:11:42	126319	125514	197
12:13:18	125812	124976	215
12:14:42	125203	126169	231
12:16:12	125841	124547	195
12:17:41	125365	125079	213
12:19:04	125604	125772	185
12:20:35	126309	125435	221
T1 = 17.9	T2 = 17.9	T3 = 18.0	TD = 18
Sum	1256798	125132	2042
Projected DC	1148.3	1148.3	1149
Weighted Mean		1148.3	

Load to 1128

1128 elements in the assembly

Water in @ 13:10

CE up @ 13:14:45

T1 = 18.0	T2 = 18.0	T3 = 18.2	TD = 18
Time	Ch A	Ch B	Ch C
13:17:56	180510	179871	294
13:19:28.45	1811852	179874	278
13:21:25	181115	181040	286
13:22:58	181791	180218	280
13:24:28	182342	181080	286
13:26:04	183871	181794	281
13:27:30	183190	181318	283
13:28:58	182496	180986	293
13:30:21.49	183643	182693	289
13:32:49	181475	181435	290
13:34:30	181769	180310	278
13:35:58	182937	181739	291
13:37:21	182337	181982	292
13:38:54	183496	182002	305

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18 August

ChA

ChB

ChC

T1 = 18.2

T2 = 18.2

T3 = 18.3

TD = 18

Sum of last ten

1827556

1815339

2888

Projected DC

1145.6

1145.8

1147.3

Assembly shutdown

with

1128 elements

loaded

19 August 2009

Repeat counts from previous day with 1128 fuel elements

water in core tank

9:48:21

control element up

T₁ = ^{17.0}~~17.2~~T₂ = 17.0T₃ = 17.2

DC = 17

Time

Ch.A

Ch.B

Ch.C

9:49:50

176646

174694

306

9:52:57

177336

175971

286

9:55:50

178744

176649

297

9:58:05

178894

177722

302

10:00:40

177551

176075

287

10:01:51

177973

176827

258

10:04:32

177567

175785

273

10:06:37

178759

177810

268

10:22:19

178292

176005

298

10:26:04

178939

177863

255

Core tank emptied 10:30

Control element down 10:36.

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19 August 09

Load to 1136

1136 fuel elements in assembly 11:31

Water in Core tank 11:47:16

Control element up 11:52:25

 $T_1 = 17.3$ $T_2 = 17.2$ $T_3 = 17.4$

D.C. = 18.

Time	Ch. A	Ch. B	Ch. C
11:53:59	327387	324658	541
11:55:43	337044	332743	499
11:57:22	339555	336470	509
12:00:57	342797	338572	562
12:02:47	343299	339340	547
12:04:25	345310	341167	544
12:06:41	344069	340416	566
12:08:19	344074	341183	514
12:10:27	344782	340396	531
12:12:11	344880	341190	521
12:14:32	346244	342477	504
12:16:58	345897	342831	559
12:19:07	346417	342154	567
12:20:44	346947	343408	566
12:22:34	348074	344777	570
12:24:37	346494	343253	544
12:26:51	348101	343253	506
12:29:08	349639	345229	521
12:33:12	347150	344212	569
12:34:48	347921	343524	564
12:36:33	350688	345066	516
12:38:20	348682	343611	550
12:40:26	347486	344495	571
12:42:16	346220	342673	516

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$$T_1 = 17.1$$

$$T_2 = 17.4$$

$$T_3 = 17.5$$

$$D.C = 18$$

9 Feb 2010

The core is currently loaded to 1148 elements in core 800B0000. We are starting on core 800B0000A which will be an approach with no water holes in the core. The first core loading on core 800B0000A will be 892 fuel elements with the source in the central location - a water hole. To get there the 1148 elements in the core will be downloaded to the outline of 892 elements in core 800B0000A. Because there will be water holes present, there will be 808 rods in the core, the difference being 84 unfilled water holes.

The intent will be to measure count rates at 808 elements, fill the 84 water holes and measure count rates again to demonstrate the effect of adding fuel rods to an undermoderated core. Core loaded with 808 elements in loading pattern for core water in @ 1625

Ch A

Ch B

686

692

10 sec counts

693

728

707

715

692

654

677

705

CE up @ 1636

$$T_1 = 11.3^\circ C \quad T_2 = 11.3 \quad T_3 = 11.4 \quad T_4 = 12$$

16:37:49

Ch A

Ch B

Ch C

30 sec

16:37

2502

2418

-

counts

16:38:50

2441

2447

2

16:39:45

2531

2441

4

16:40:42

2490

2413

3

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808 elements 9 FEB 10 Core 800B0000
 Ch A Ch B Ch C 30 sec
 16:41:46 2571 2353 6 Counts
 C 17:00:58 water dumped

10 FEB 10

Starting Core 800B0000 A - approach on a Core with all positions occupied. The center location is occupied by the source for now and will be moved once DC is found in the current configuration. The core has been loaded to 892 rods which is the $k \sim 0.9$ configuration.
 Water in @ 11:29

CE up @ 11:34:26

T1 = 13.0 T2 = 12.9 T3 = 13.0 TD = 13

Time	Ch A	Ch B	Ch C	30 Sec. Counts
11:35:36	1879	1860	9	
11:36:35	1966	1955	4	
11:37:40	1924	1903	2	
11:39:11	1916	1918	1	
11:40:22	1928	1866	4	
11:41:16	1952	1913	2	
11:42:05	1960	1808	3	
11:42:55	1914	1862	0	
11:44:00	1882	1929	2	
11:44:54	1966	1894	3	
Sum	19287	18908	30	

The assembly was shut down for lunch and training. The assembly was restarted after lunch still with 892 rods and the following counts were taken

Time	Ch A	Ch B	Ch C	30 Sec. Counts
13:33:11	1850	185 1873	2	
13:34:17	1927	1882	2	
13:35:09	1809	1826	2	
13:37:14	1871	1855	4	
13:38:06	1893	1830	3	
13:38:52	2011	1853	0	

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10 Feb 10

Continuing counts @ 892 rods

T1 = 13.2 T2 = 13.2 T3 = 13.2

Time	Ch A	Ch B	Ch C
13:39:47	1960	1879	7
13:40:42	1867	1903	12
13:41:30	1929	1848	2
Sum	19042	18649	35

Before these counts, the core tank was full @ 13:28:31

The CE was up @ 13:32:19

Loading to 1144 rods with the source in the center

Loaded to 1144 rods

water in @ 16:16

CE up @ 16:20:21

T1 = 13.6 T2 = 13.5 T3 = 13.6 TD = 14

Time	Ch A	Ch B	Ch C	
16:21:21	425 4725	4659	10	30 sec
16:22:19	4859	4817	11	counts
16:23:09	4880	4697	8	
16:24:15	4809	4725	4	
16:25:07	4910	4751	9	
16:25:59	4814	4758	11	
16:26:57	4760	4712	8	
16:27:54	4941	4733	4	
16:28:55	4902	4671	1	
16:29:50	4825	4852	5	
Sum	48425	47375	74	

These data predict a critical load of 1307.5 ± 1.6 for a change of 81 rods to the next load of 1225

We will load 80 rods for a total of 1224 to keep the core symmetrical.

Critical loads: Ch A 1307.3 ± 2.3 Ch B 1307.6 ± 2.3
(predicted) Ch C 1370.2 ± 68 (few counts)

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11 Feb 10

We will repeat the count @ 1144 rods to start the day

Water in @ 9:49

CE up @ 9:53:55

T1 = 14.2 T2 = 14.1 T3 = 14.2 TD = 14

Time	Ch A	Ch B	Ch C	60 sec Counts
9:54:41	9699	9387	13	
9:56:03	9808	9451	19	
9:57:26	9522	9530	13	
9:58:44	9566	9630	21	
10:00:11	9752	9542	12	
10:01:33	9549	9590	48	
10:02:59	9723	9434	200	Noise
10:04:26	9630	9462	1241	
10:05:50	9950	9725	2231	
10:07:13	9758	9579	1216	
Sum	96974	95370	4987	

These count rates are close to those from yesterday afternoon. ADD 80 rods for a total of 1224.

The core is now loaded to 1224 rods.

Water in @ 11:23

CE up @ 11:31:37

T1 = 14.4 T2 = 14.3 T3 = 14.3 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
11:32:28	14193	14033	27	
11:33:49	14210	13740	23	
11:35:13	14333	13963	26	
11:36:40	14035	13919	14	
11:38:16	13890	13900	21	
11:39:42	14024	13795	20	
11:41:01	14108	13921	27	
11:42:24	13945	13848	19	
11:43:47	14061	14086	27	
11:45:05	13979	13871	26	
Sum	140778	139076	240	
Predicted DC	1401.1 ± 2.4	1398.6 ± 2.3	1352.7 ± 44.6	To Page No. _____

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11 Feb 10

In the next step we will add 80 rods to 1304 rods in the core.

1304 rods in the core

Water in @ 13:07

CE up @ 13:11:03

T1 = 14.5 T2 = 14.4 T3 = 14.5 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
13:17:14	23385	23179	42	
13:18:42	23347	23079	33	
13:20:12	23190	23228	26	
13:21:36	23491	23095	27	
13:23:07	23478	23157	44	
13:24:37	23570	23440	34	
13:26:01	23509	23261	39	
13:27:31	23391	23099	32	
13:28:59	23477	23260	39	
13:30:22	23466	23059	25	
Sum	1424.4 1424.4	231857	341	

Projected DC 1424.4 ± 1.0 1423.9 ± 1.0 1494.1 ± 54

These data indicate the next loading is 1363 → 59 more

We will add 56 rods to 1360 total

The average DC Load from Ch A & Ch B is 1424.2 ± 0.7

Loaded to 1360 Rods

Water in @ 14:44

CE up @ 14:49:18

T1 = 14.6 T2 = 14.4 T3 = 14.6 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
14:50:33	37573	37540	-	Not reset
14:52:06	37163	37688	46	
14:53:33	37628	37065	71	
14:54:59	37552	37565	71	
14:56:27	37404	37461	64	
14:57:54	37608	37173	68	
14:59:17	37519	37265	53	
15:00:42	37511	37105	74	

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Fin Counts @ 1360

Time	Ch A	Ch B	Ch C
15:02:22	37398	37077	50
15:03:47	37391	37188	65
Sum	374747 .7	373127	562

Projected DC 1453.4 ± 6 1451.9 ± 6 1427.4 ± 10

The projections want a load of 1405 rods

We will add 44 rods to 1404 total

The average projected critical load from Ch A & Ch B is 1452.7 ± 0.5

The core is loaded to 1404 rods

Water in @ 16:00

CE up @ 16:04:04

T1 = 14.8 T2 = 14.7 T3 = 14.8 TD = 15

Time	Ch A	Ch B	Ch C	60 second counts
16:05:05	70207	69726	109	
16:06:28	70383	69764	111	
16:07:54	70477	70079	120	
16:09:18	70585	69866	109	
16:10:40	70477	71195	112	
16:12:08	69941	70184	97	
16:13:34	70562	69758	94	
16:15:10	70679	70458	122	
16:16:42	70447	69951	108	
16:18:10	70552	70167	97	
Sum	704310	701148	1079	

Projected DC 1454.0 ± 0.2 1454.1 ± 0.2 1464.0 ± 7.5

Ch A & Ch B average DC 1454.0

The data want 1429 load for a delta of 25 elements

We will load 20 rods to 1424 for our next step

15 Feb 10

Repeating counts at 1404 rods

Water in @ 15:06

CE up @ 15:11:51

T1 = 14.7 T2 = 14.7 T3 = 14.8 TD = 15

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Time	Ch A	Ch B	Ch C	
15:13:03	68882	69038	125	60 Sec
15:14:30	69081	69067	96	Counts
15:15:53	68915	69257	113	
15:17:17	69254	68844	119	
15:18:48	69203	68999	97	
15:20:14	68878	68793	98	
15:21:46	70347	69116	117	
15:23:11	69122	69473	105	
15:24:37	70050	69161	101	
15:26:01	69550	69242	95	
Sum	693282	690990	1066	

Combined with the count @ 1360 rods on 11 Feb

Projected DC $1455.8 \pm .2$ $1455.6 \pm .2$ 1466.2 ± 7.8 Average of Ch A & Ch B: $1455.7 \pm .2$

Can load 25 rods to 1429

Loading 20 rods to 1424

Core loaded to 1424 rods

Water in @ approx. 16:11

CE up @ 16:14:35

T1 = 14.9 T2 = 14.8 T3 = 14.9 TD = 15

Time	Ch A	Ch B	Ch C	
16:15:41	105456	105985	164	60 Sec
16:17:12	106817	106177	186	Counts
16:18:37	106997	106477	144	122
16:20:13	106778	106435	164	
16:21:37	106340	105775	157	
16:23:03	107268	106270	141	
16:24:50	106901	106382	146	
16:26:33	106977	106537	173	
16:27:58	106575 106926	106575	185	
16:29:31	107227	107038	176	
Sum	1067687	1063651	1614	

Projected DC $1461.0 \pm .2$ $1461.1 \pm .2$ 1462.9 ± 4.5 Average of channels A & B: 1461.1 ± 0.1

We will add 18 rods to 1442 in the core

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15 Feb 10

Core Loaded to 1442 rods

Water in @ 17:15

CE up @ 17:20:14

T1 = 14.9 T2 = 14.8 T3 = 14.9 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
17:20:58	222060	221079	348	
17:22:26	226628	226953	357	
17:23:51	229152	228179	320	
17:25:15	229588	229156	358	
17:26:41	230510	229401	304	
17:28:04	230122	228356	325	
17:29:29	230656	230156	334	
17:30:54	231287	229584	365	
17:32:19	232119	231917	337	
17:33:46	231968	230476	357	
17:35:07	231485	231229	354	
17:36:33	230380	228946	364	
17:37:57	231431	230196	352	
17:39:19	231925	229675	337	
Sum of last 10:	2311883	2299936	3429	

Projected DC 1457.4 ± .03 1457.5 ± .03 1458.0 ± .9

These data want a fuel step of 7 rods

We will load to 1449

Average of Ch A & Ch B Projects to 1457.5 ± .02

16 Feb 10

Repeating counts at 1442 rods

Water in @ 9:40

CE up @ 9:45:09

T1 = 14.9 T2 = 14.8 T3 = 14.9 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
9:46:14	216492	215515	354	
9:47:49	not reset			
9:48:07	221932	220778	306	
9:49:42	222718	221006	334	
9:51:18	221992	221491	380	
9:52:47	221801	221784	346	

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16 Feb 10

IF Counts @ 1442 Rods continued

Time	Ch A	Ch B	Ch C
9:54:13	222959	220831	347
9:55:42	222326	221577	381
9:57:08	224858	223304	358
9:58:36	222535	222110	326
10:00:05	224416	223467	320
10:01:29	224286	222327	347
10:02:53	224121	222230	342
10:04:24	223129	221385	334
10:06:01	<u>224345</u>	<u>222650</u>	<u>339</u>
Sum of last 10	2234776	2221665	3440
Projected DC	1458.5 ± .04	1458.5 ± .04	1457.9 ± .9

Mean of Ch A & Ch B : 1458.5 ± 0.3

These data with the data taken yesterday at 1424 indicate a maximum increment of 8 rods

We will load 7 rods to 1449 as indicated by the data from yesterday.

Core loaded to 1449 rods

Water in @ 10:47

CE up @ 10:53:18

T1 = 15.0 T2 = 15.0 T3 = 15.0 TD = 15

Time	Ch A	Ch B	Ch C	60 sec Counts
10:54:27	385828	383311	548	
10:55:57	408163	403325	613	
10:57:22	417159	412623	634	
10:58:55	421922	416851	648	
11:00:21	422484	418375	643	
11:01:55	429450	423828	640	
11:03:22	429186	424294	670	
11:04:43	428973	425005	696	
11:06:18	428787	426105	628	
11:07:41	431159	426302	654	
11:09:04	430285	427035	625	
11:10:27	429558	425486	648	
11:11:53	430899	426752	669	

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16 Feb 10

Continuing counts at 1449 rods

Time	Ch A	Ch B	Ch C
11:13:23	431494	426293	625
11:14:49	427949	423681	680
11:16:12	431260	427913	622
11:18:33	431547	428485	667
11:20:06	432354	427289	608
Sum of last 10	4305292	4265341	6426

Projected DC $1456.6 \pm .01$ $1456.6 \pm .01$ $1457.1 \pm .4$

Mean of Ch A & Ch B $1456.6 \pm .01$

These data want 3 more elements

We will add 3 rods to get us to a symmetrical core

The core is loaded to 1452 rods

Water in @ 11:59

CE up @ 12:05:54

T1 = 15.2 T2 = 15.2 T3 = 15.2 TD = 15

Time	Ch A	Ch B	Ch C	60 sec Counts
12:06:40	535080	526828	769	
12:10:57	640705	630819	901	
12:13:06	669204	656738	1013	
12:16:10	683708	669740	1056	
12:19:21	687734	673008	1019	
12:22:50	686687	674101	972	
12:26:26	696318	680215	1035	
12:30:11	699542	684587	1016	
12:33:55	697605	684941	1074	
12:37:10	697330	684858	1020	
12:40:56	701289	686796	1032	
12:45:59	703793	690181	1049	
12:52:29	706663	690085	1042	
12:57:35	706236	692732	1066	
12:59:16	704911	692800	1036	
13:00:40	707913	694410	1040	
13:02:04	706469	690380	1078	
13:03:34	710075	696448	1039	
13:05:02	708497	692880	1107	

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16 Feb 10

Counts @ 1452 rods

Time	Ch A	Ch B	Ch C
13:06:29	710838	695417	1053
13:07:54	710150	694920	979
13:09:27	708929	695461	983
13:10:52	710058	694902	1061
13:12:24	707718	694544	1073
13:13:55	712051	696142	1090
13:18:08	713290	699077	1058
Sum of last 10	7093706	6945134	10546

Projected DC 1456.6 ± 0.007 1456.8 ± .008 1456.7 ± .2

Mean of Ch A & Ch B 1456.7 ± .005

These Data want 2 more rods

We will add 4 to 1456 in the core

Core is loaded to 1456 rods

Water in @ 13:59

CE up @ 14:04:05

T1 = 15.3 T2 = 15.2 T3 = 15.3 TD = 15

Time	Ch A	Ch B	Ch C	60 Sec counts
14:04:54	803606	783868	1218	
14:08:21	1115375	1077484	1583	
14:12:08	1276566	1230018	1787	
14:17:02	1364190	1310865	1950	
14:21:23	1401071	1342907	1997	
14:26:21	1421142	1363111	1980	
14:31:24	1441057	1382226	2135	
14:35:45	1451762	1391249	2101	
14:40:42	1455022	1396074	2094	
14:46:56	1467594	1406510	2141	
14:52:23	1476906	1414264	2068	
14:58:02	1482740	1423638	2080	
15:05:08	1498818	1434915	2088	
15:06:46	1501299	1440396	2077	
15:08:13	1507550	1440604	2146	
15:09:43	1499684	1434103	2155	
15:11:09	1504633	1437748	2211	

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16 Feb 10

Continuing

counts at 1456 rods

Time	Ch A	Ch B	Ch C
15:12:43	1509657	1444957	2115
15:14:17	1515248	1449582	2244
15:15:50	1528753	1460861	2274
15:17:40	1522681	1455844	2212
15:19:52	1528052	1459104	2163
Sum of last 10	15116375	14458114	21685

The projections are from the last 10 measurements which were not entirely stable.

Projected DC: $1459.5 \pm .003$ $1459.7 \pm .003$ $1459.8 \pm .09$

We will add 4 rods to 1460

The core is loaded to 1460 rods

The mean of Ch A & Ch B is $1459.6 \pm .002$

Water in @ 15:58

CE ~~is~~ up @ 16:02:35

T1 = 15.4 T2 = 15.4 T3 = 15.4 TD = 15

Time	Ch A	Ch B	Ch C
16:03:35	1471041	1411628	2149
16:05:05	2048417	1939915	2841
16:06:32	2631774	2461489	3655
16:07:56	3177705	2936145	4493
16:09:23	3749801	3430994	5323
16:10:58	4404384	3986511	6350
16:12:32	5031302	4516030	7215
16:14:03	5683565	5056254	7955
16:15:29	6311825	5571926	8987
16:18:13	7502696	6541002	10588
16:19:36	8123476	7034608	11502
16:20:59	8741855	7530630	12639
16:22:33	9429866	8079133	13610
16:24:03	10109963	8620036	14891
16:25:29	10762400	9143036	15856
16:26:55	11416236	9666761	16691
16:28:24	12180025	10212067	18088

This core is supercritical but just barely

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Today we will work with symmetrical arrays

The core is bared to 1436 rods

Water in @ 10:43

CE up @ 10:47:55

T1 = 15.0 T2 = 15.0 T3 = 15.0 TD = 15

Time	Ch A	Ch B	Ch C	60 sec counts
10:48:37	165081	164040	234	
10:50:06	165862	165393	240	
10:51:31	165542	164588	238	
10:52:57	166693	165851	261	
10:54:24	166658	166451	236	
10:55:45	166809	165837	244	
10:57:07	166226	165133	268	
10:58:38	167433	166282	258	
11:00:06	167917	166253	252	
11:01:26	166798	164984	230	
11:02:48	167462	165846	251	
11:04:10	167006	166034	215	
11:05:48	166870	166013	247	
11:08:28	166252	165438	216	
11:09:54	167387	166555	239	
Sum of Last 10	1670160	1658365	2420	

We will add 8 rods to 1444 rods in the core

The core is loaded to 1444 rods

Water in @ 11:48 8 min

CE up @ 11:53:02

T1 = 15.0 T2 = 15.0 T3 = 15.1 TD = 15

Time	Ch A	Ch B	Ch C
11:54:51	249010	247116	345
11:56:27	251061	249091	390
12:01:27	257245	254806	376
12:06:20	256400	253923	403
12:11:28	254506	252044	406
12:12:58	257717	255003	359
12:14:24	256010	254643	368
12:16:05	256679	255582	379

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Continuing Counts at 1444 rods

Time	Ch A	Ch B	Ch C
12:17:35	256504	253737	393
12:19:39	257914	254309	407
12:21:06	256177	254339	429
12:22:29	256865	253801	374
12:23:53	256577	253481	343
12:25:26	256214	254257	364
12:26:52	256529	254717	388

Sum of last 10 2567186 2543869 3804

Projector DC 1458.9 ± .04 1459.0 ± .04 1458.0 ± 1.0

Mean of Ch A & B: 1458.9 ± .03

Loaded 8 rods to 1452 rods in the core

Preliminary K @ 1144 rods is 0.998, multiplication ~450

Water in @ 13:04

CE up @ 13:08:45

T1 = 15.1 T2 = 15.0 T3 = 15.1 TD = 15

Time	Ch A	Ch B	Ch C	60 sec Counts
------	------	------	------	------------------

13:09:51	563729	555866	833	
13:15:49	698483	685382	1017	
13:22:45	722268	708974	1066	
13:28:26	725813	712493	1064	
13:33:44	728624	712454	1101	
13:41:02	731798	715478	1007	
13:47:05	732850	716905	1075	
13:52:38	740945	722982	1077	
13:58:04	740963	723112	1017	
14:03:13	744457	726776	1088	
14:10:12	751719	735029	1066	
14:15:28	749317	733014	1136	
14:20:19	747314	730842	1086	
14:25:54	752195	736257	1059	
14:31:23	756397	737788	1109	
14:39:24	759242	739325	1109	
14:48:08	762164	743521	1129	
14:53:36	760804	744453	1179	

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Continuing counts at 1452 elements

Time	Ch A	Ch B	Ch C
14:59:27	763564	746034	1099
15:05:24	760742	745652	1142
15:10:47	769163	751636	1095
15:17:13	768031	748142	1065
T1 = 15.3	T2 = 15.2	T3 = 15.4	TD = 15
15:20:39	764159	746793	1066
15:22:03	764008	747542	1099
15:23:40	767151	750373	1136
15:25:39	773228	755176	1096
15:27:10	772147	753737	1110
15:28:39	768306	749245	1130
15:30:09	765554	747640	1116
15:31:52	773114	755622	1163
15:33:27	772843	757163	1132
15:35:56	769680	754194	1125
T1 = 15.3	T2 = 15.3	T3 = 15.4	TD = 15
Sum of last 10	7690190	7517485	11173
Projected DC	1456.0 ± .004	1456.1 ± .005	1456.1 ± .1
Mean Ch A + Ch B	Projected DC: 1456.0 ± .003		

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Loading to 1468 rods to do supercritical operations
water in @ 1636

CE up @ 16:41: 20

T1 = 15.4 T2 = 15.4 T3 = 15.4 TD = 14

Time	Ch A	Ch B	Ch C	
16 14 :49:34	655965	600951	959	10 sec
16 14 :50:03	936767	835694	1342	Counts
16 14 :50:35	1319657	1148482	1905	
16 14 :51:10	2891944	1609631	2815	
16 14 :51:38	2435982	2052647	3657	
16 14 :52:07	3051959	2576854	5111	
16 14 :52:38	3695242	3169924	7181	
16 14 :53:10	4282506	3784645	9919	
16 14 :53:39	4692983	4274210	13494	

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Continued counts AFTER starting insertion of the CE

Time

Ch A

Ch B

Ch C

16:54:50

5167142

4932425

28862

16:55:21

4885220

4538180

16555

19 Feb 10

The core is loaded to 1432 elements. The plan is to
 Measure count rates at 1432, 1436, 1444 and 1452
 Water in @ 9:53

CE up @ 9:57:36

T1 = 15.2

T2 = 15.2

T3 = 15.3

TD = 15

Time

Ch A

Ch B

Ch C

9:58:25

130541

130028

205

60 sec counts

9:59:49

131278

131043

185

10:01:12

131761

130955

167

10:02:37

132423

131260

192

10:04:06

132238

132209

204

10:05:28

132313

132051

201

10:06:52

132858

131454

201

10:08:17

132092

131220

186

10:09:38

132132

131307

209

10:10:56

132172

131122

184

10:12:13

131804

132627

217

10:13:36

133075

131480

195

10:14:55

132640

132708

178

10:16:13

131562

131787

184

Sum of last 10 1322886

1317695

1943

The core is loaded to 1436 rods
 Water in @ 11:01

CE up @ 11:05:42

T1 = 15.3

T2 = 15.3

T3 = 15.4

TD = 16

Time

Ch A

Ch B

Ch C

11:06:29

164462

163446

255

60 sec counts

11:07:53

166326

165979

266

11:09:14

167344

165797

226

11:10:36

167462

166765

215

11:11:56

167554

166570

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Continuing counts @ 1436 rods

Time	Ch A	Ch B	Ch C
11:13:16	167494	166994	231
11:14:36	167504	166623	265
11:16:58	168718	167242	250
11:17:14	167744	166100	282
11:18:48	167479	165693	251
11:20:11	167188	166461	243
11:21:29	168309	167970	252
11:22:48	168613	167025	249
11:24:06	168454	167863	252
11:25:34	167868	166242	268
Sum of last 10:	1679371	1668213	2543

~~Projected DC 1456.0 ± .004 1456.1 ± .005 145~~ ~~avg~~

Projected DC 1450.8 ± .08 1451.1 ± .08 1449.0 ± 1.7

Loading to 1444

The core is loaded to 1444 rods

Water in @ 12:04

CE up @ 12:07:51

T1 = 15.4 T2 = 15.3 T3 = 15.4 TD = 15

Time	Ch A	Ch B	Ch C	60 sec Counts
12:08:39	243613	242031	323	
12:11:10	255423	253472	361	
12:16:21	257356	254624	350	
12:21:29	260055	256348	348	
12:27:52	259924	257684	358	
12:32:13	260436	257439	395	
12:34:06	260037	257361	380	
12:35:33	260773	258812	374	
12:36:53	261008	258885	357	
12:38:13	261071	258365	364	
12:39:47	261547	258833	375	
12:41:08	260120	257969	391	
12:42:30	261917	259102	369	
12:44:06	261802	259081	398	
12:45:32	259973	258483	385	

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19 Feb 10

Counts @ 14 44

Time	Ch A	Ch B	Ch C
Sum of last 10	2608684	2584330	3788
Projected DC	1458.5 ± .04	1458.6 ± .04	1460.3 ± 1.3

Mean of Ch A & B: 1458.5 ± .03

The core is loaded to 1452 rods

Water in @ 13:40

CE up @ 13:45:45 T1 = 15.4 T2 = 15.4 T3 = 15.5 TD = 16

Time	Ch A	Ch B	Ch C	
13:46:43	573066	562318	857	60 Sec
13:51:43	653475	638994	955	Counts
13:56:48	666815	653072	992	
14:01:47	674363	662407	1014	
14:07:11	678194	664179	974	
14:11:40	683427	668500	999	
14:16:41	686039	670732	1006	
14:22:35	683889	670257	951	
14:28:13	689288	675717	999	
14:32:17	694910	678776	986	
14:38:10	696359	681470	1004	
14:42:37	696259	682442	1059	
14:47:25	699043	684151	1054	
14:52:38	698813	685365	1039	
14:58:13	703926	687453	1070	
15:02:21	708444	693968	1050	
15:07:51	705563	690186	1005	
15:13:20	712126	695334	994	
T1 = 15.6	T2 = 15.6	T3 = 15.6	TD = 16	
15:19:16	713027	695350	1055	
15:24:09	716070	700355	1028	
15:29:21	715714650	700176	1013	
15:35:14	717470	701674	1037	
15:41:32	721297	703427	1015	
15:47:13	718152	702154	1014	
15:50:49	719567	703546	1068	
15:52:12	717409	700957	1012	

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19 Feb 10

Continuing counts at 1452 rods

Time	Ch A	Ch B	Ch C
15:53:49	716291	702436	1048
15:55:20	718963	704518	1018
15:56:48	721180	703999	1083
15:58:21	721248	704347	1052
15:59:49	721186	706030	1023
16:01:27	722044	705200	1042
16:02:51	<u>724773</u>	<u>708237</u>	<u>1017</u>
Sum of last 10	7200813	7041424	10377
Projected DC	1456.5 ± .005	1456.6 ± .0053	1456.6 ± .1

Mean Ch A + Ch B projection: 1456.6 ± .004

13 May 10

We are doing runs to update operator proficiencies.
 The core will be downloaded to 1436 elements
 and we will do an approach in symmetrical
 arrays to gather repeatability data.

The dump tank temperature is currently (69.45) at
~~18°C~~ 22°C

The core is loaded to 1436 rods

The computerized counting system is not set up.

Water in @ 10:56

CE up @ 11:05:40

T1 = 21.6 T2 = 21.6 T3 = 21.7 TD = 22

Time	Ch A	Ch B	Ch C	60 sec counts
11:07:40	150826	151592	224	
11:09:36	153397	153088	242	
11:11:03	1532892	153171	234	
11:12:36	153796	152780	243	
11:14:51	152052	153274	236	
11:16:12	153581	152978	237	
11:17:57	153277	153799	236	
11:19:27	154378	153934	202	
11:20:55	153225	153067	214	
11:23:12	154648	154134	228	
11:24:44	153533	153472	232	

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13 May 10

Counts

Time	Ch A	Ch B	Ch C
11:26:20	152651	153403	234
11:27:52	154613	154622	204
Sum of last 10	1535754	1535463	2265

We are shutting down for lunch.

Counts at 1436 will be repeated

Core still loaded to 1436 rods

Water in @ 1425

CE up @ 1430:05

T1 = 21.6 T2 = 21.6 T3 = 21.7 TD = 22

Time	Ch A	Ch B	Ch C	60 sec counts
14:31:55	152799	153628	260	
14:33:48	153335	154801	248	
14:35:27	154380	154796	228	
14:36:51	153893	153793	228	
14:38:20	154504	154444	222	
14:40:07	153634	153855	225	
14:41:32	153862	155301	239	
14:43:58	154472	154776	246	
14:44:24	154527	155275	214	
14:46:04	153637	154737	225	
14:48:07	155706	155981	265	
14:49:41	154012	154708	234	
14:51:15	154287	154507	206	
14:52:45	155552	155013	239	
14:54:18	155358	155161	207	
14:55:54	154639	154728	225	
Sum of last 10	1546052	1550187	2300	

We will now load to 1444 rods

Core is loaded to 1444 rods

Water in @ 1538

CE up @ 1542

T1 = 21.6 T2 = 21.6 T3 = 21.6 TD = 22

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13 May 10

Counts @ 1444 rods

Time	Ch A	Ch B	Ch C	60 Sec Counts
15:42:45	232702	231602	356	
15:44:16	240372	240972	367	
15:45:40	241771	241857	365	
15:47:05	244505	242863	367	
15:48:30	243222	242300	414	
15:50:11	242837	241997	343	
15:51:38	244610	244513	393	
15:53:03	244871	244696	383	
15:54:34	245903	246229	347	
15:55:55	244446	245073	396	
15:57:25	244822	244207	443	
15:58:50	246969	246670	388	
16:00:16	245631	245319	402	
16:01:43	246660	245897	356	
16:03:07	244492	242747	388	
16:04:38	245226	245692	357	
16:06:03	245653	244055	395	
16:07:25	245094	245139	346	
Sum of last 10	2454896	2451028	3818	

Projected DC 1457.6 ± 0.04 1457.8 ± 0.04 1456.1 ± 0.8 Mean Projected DC from ch A & B: 1457.7 ± 0.03

Next load is 1452 rods

Loaded to 1452 rods

water in @ 1644

CE up @ 16:48:18

T1 = 21.6 T2 = 21.6 T3 = 21.6 TD = 22

Time	Ch A	Ch B	Ch C	60 Sec Counts
16:49:17	548483	542461	772	
16:50:53	630470	623962	952	
16:52:20	671627	662693	1081	
16:53:52	704811	693931	1049	
16:55:24	720153	708045	1071	
16:57:05	728954	718464	1137	
16:58:29	734011	724175	1125	

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13 May 10

Continuing counts @ 1452 rods

Time	Ch A	Ch B	Ch C
16:59:53	736136	724947	1180
17:01:18	742379	731218	1171
17:06:53	749660	737615	1185
17:11:59	759703	743268	1154
17:16:57	759442	748744	1197
17:23:01	763314	752286	1162

Proficiencies established
 shutting down @ 1730

4 August 10

The plan today is to gather data at 1436, 1444 and 1452 to test repeatability

The core is loaded to 1436 rods
 water in @ 11:14

CE up @ 11:19:03

T1 = 25.3 T2 = 25.3 T3 = 25.4 TD = 25

Time	Ch A	Ch B	Ch C	
11:19:52	144589	146478	201	60 sec Counts
11:21:29	145502	146623	201	
11:23:02	145146	146903	216	
11:24:37	144804	146304	233	
11:26:11	145666	147807	202	
11:27:43	145176	146608	206	
11:29:15	146976	148021	206	
11:30:46	145927	147179	214	
11:32:21	146308	147362	205	
11:33:52	145706	147644	208	
11:35:23	145442	148389	242	
11:36:54	144611	146780	220	
11:38:24	145792	147643	203	
11:39:55	145564	147319	198	
T1 = 25.4	T2 = 25.3	T3 = 25.4	TD = 25	

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4 Aug 10

Counts @ 1436

	Ch A	Ch B	Ch B C
Sum of last 10	1457168	1474802	2104

Core now loaded to 1444 rods

Water in @ 13:49

CE up @ 13:54:00

T1 = 25.1 T2 = 25.1 T3 = 25.1 TD = 25

Time	Ch A	Ch B	Ch C
------	------	------	------

13:55:26	229705	228506	933 60 sec counts
----------	--------	--------	------------------------------

13:56:59	232444	232634	333
----------	--------	--------	-----

13:59:14	232729 ⁰⁵⁰	232129	333
----------	----------------------------------	--------	-----

14:01:10	230808	232215	322
----------	--------	--------	-----

14:02:35	231753	230814	311
----------	--------	--------	-----

14:04:04	232754	232959	345
----------	--------	--------	-----

14:05:36	233097	232773	336
----------	--------	--------	-----

14:07:04	232329	232115	352
----------	--------	--------	-----

14:08:31	230691	231370	321
----------	--------	--------	-----

14:10:08	230165	231261	320
----------	--------	--------	-----

14:11:41	230660	230648	337
----------	--------	--------	-----

14:13:05	231669	231568	341
----------	--------	--------	-----

14:14:34	230363	230073	353
----------	--------	--------	-----

14:16:15	231507	232178	384
----------	--------	--------	-----

14:19:36	229939	230637	345
----------	--------	--------	-----

14:22:44	231151	230925	334
----------	--------	--------	-----

14:24:11	232130	231280	365
----------	--------	--------	-----

14:26:47	229538	228570	354
----------	--------	--------	-----

T1 = 25.0 T2 = 24.9 T3 = 25.0 TD = 25

Sum of last 10	2307813	2308510	3454
----------------	---------	---------	------

We will load to 1452 elements

Projected DC	1457.7 ± .04	1458.2 ± .04	1456.5 ± .88
--------------	--------------	--------------	--------------

Mean Ch A + Ch B 1457.9 ± .03

Core loaded to 1452 rods

Water in @ 15:11

CE up @ 15:14:20

T1 = 24.6 T2 = 24.5 T3 = 24.5 TD = 25

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Core loaded to 1452 rods

Time	Ch A	Ch B	Ch C	60 Sec counts
15:15:42	574747	508465	820	
15:22:16	618857	609687	920	
15:26:37	628173	618290	904	
15:30:54	629433	620936	911	
15:36:22	629667	619459	930	
15:42:01	630346	620752	950	
15:48:37	634448	623830	910	
15:55:23	641153	632539	939	
16:00:17	646386	635438	933	
16:06:14	646275	635347	930	
16:11:11	647531	637798	997	
16:18:53	648630	638782	965	
16:22:45	646090	635795	951	
16:28:02	652623	642931	920	
16:33:48	656128	644341	949	
16:39:17	657876	644453	1010	
16:48:18	662746	651080	921	
16:53:31	665782	653400	1007	
16:59:39	664208	651817	971	
17:01:05	662837	649358	992	
17:02:30	662973	651574	956	
17:04:57	665277	653129	1043	
17:06:00	670648	660071	907	
17:07:37	668664	655505	987	
17:09:15	668675	657989	955	
17:11:37	673731	661506	935	
17:13:01	672987	658389	937	
17:15:57	671405	658967	1035	
17:17:22	668685	656578	909	
17:19:05	677905	664414	1065	
17:20:44	676309	665958	951	
17:22:33	674082	661467	1034	
T1 = 23.8	T2 = 23.7	T3 = 23.8	TD = 24	
17:24:29	676387	663535	995	

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4 Aug 10

counts at 1452 rods

	Ch A	Ch B	Ch C
Sum of last 10			
Projected DC	1456.2 ± .005	1456.3 ± .005	1456.4 ± .13
Mean Projected DC	Ch A+B		1456.2 ± .004

5 Aug 10

We left the air conditioner on in the reactor room.

Current dump tank temperature is 20°C

The core is loaded to 1436 rods

Water in @ 9:39

CE up @ 9:42:35

T1 = 19.9 bottom T2 = 19.8 T3 = 19.9 TD = 20

T1 is the ~~top~~ ^{bottom} thermo couple in the core tank, reads in °C. T2 is the middle one, T3 is the ~~bottom~~ ^{top} one. TD is the thermocouple in the dump tank. T1 is actually the bottom TC, T3 is the top.

Time	Ch A	Ch B	Ch C	
9:43:17	151883	150243	235	60 sec counts
9:45:49	156072	154603	212	
9:47:18	156224	153884	236	
9:49:54	156281	154216	229	
9:51:22	155295	154006	242	
9:52:49	156325	154578	217	
9:54:16	156485	154720	236	
9:55:49	154872	153477	238	
9:57:17	155639	153950	238 258	
9:58:52	155904	153357	256	
10:00:23	156480	154162	225	
10:01:58	156553	154123	217	
10:03:26	155889	155038	236	

T1 = 19.8 T2 = 19.8 T3 = 19.8 TD = 20

Now load 8 rods to ~~244~~ 1444 rods

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5 Aug 10

Core is loaded to 1444 rods

Water in @ 10:46

CE up @ 10:50:10

T1 = 19.5 T2 = 19.4 T3 = 19.5 TD = 20

Time

Ch A

Ch B

Ch C

60 sec

counts

10:51:00	234406	230887	331	
10:52:24	243443	239593	316	
10:53:45	245468	242582	347	
10:55:16	248271	243333	362	
10:57:05	249437	246483	358	
10:58:26	247676	245649	365	
10:59:44	250016	247147	380	
11:01:05	249572	246133	327	
11:02:40	248944	246122	357	
11:04:04	250160	246662	351	
11:05:24	250937	247684	377	
11:06:48	249083	244832	344	
11:08:10	249346	245916	362	
11:09:28	250378	246210	381	
11:10:49	250254	246877	367	
11:12:46	250484	246464	333	
11:14:09	250575	246794	350	
11:15:51	251400	246944	372	
11:17:28	251038	247573	347	
11:19:57	251803	247923	335	

T1 = 19.4

T2 = 19.4

T3 = 19.4

TD = 20

Sum of the last 10:

Projected DC 1457.2 ± .04 1457.3 ± .04 1459.5 ± 1.2

Projected DC (Ch A + Ch B) 1457.3 ± .03

Core loaded to 1452 rods

Water in @ 13:44

CE up @ 13:46:58

T1 = 18.8

T2 = 18.8

T3 = 18.8

TD = 19

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5 Aug 10

1452 rods in core

Time

Ch A

Ch B

Ch C

13:50:53

689134

668392

976

60 Sec counts

14:01:33

751842

729930

1089

14:06:48

753913

732207

1107

14:11:45

755130

733704

1088

14:16:39

754778

735278

1070

14:21:31

756534

734369

1079

14:26:37

759286

739354

1062

14:32:16

758213

736748

1075

14:39:17

761195

741502

1055

14:45:23

766423

744896

1079

14:50:32

762510

743588

1028

T1= 18.7

T2= 18.6

T3= 18.7

TD= 19

14:56:32

768974

745314

1062

15:01:21

774773

751789

1084

15:06:51

778318

755694

1130

15:11:34

776292

755731

1062

15:17:39

779316

757026

1079

15:28:07

774378

751305

1103

15:31:33

773918

753256

1084

T1= 18.6

T2= 18.6

T3= 18.6

TD= 19

15:33:58

776756

753560

1068

15:35:23

776231

753211

1088

15:36:48 56

775859

752245

1095

15:38:56

779617

758182

1063

15:40:44

780976

759231

1046

15:42:08

783174

761031

1122

15:43:25

784754

762364

1074

15:45:04

783274

759508

1126

15:46:25

779233

758597

1141

15:47:56

779340

757933

1098

15:49:16

780880

760783

1086

15:51:08

780342

759828

1045

15:53:01

783080

758679

1127

15:54:26

782458

759552

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5 Aug 10

1452 rods in

T1 = 18.6

T2 = 18.5

T3 = 18.6 TD = 19

Time

Ch A

Ch B

Ch C

Sum of last 10

7817513

7597506

10945

Projected DC 1455.82 .004

1455.8 .004

1455.9 ± .11

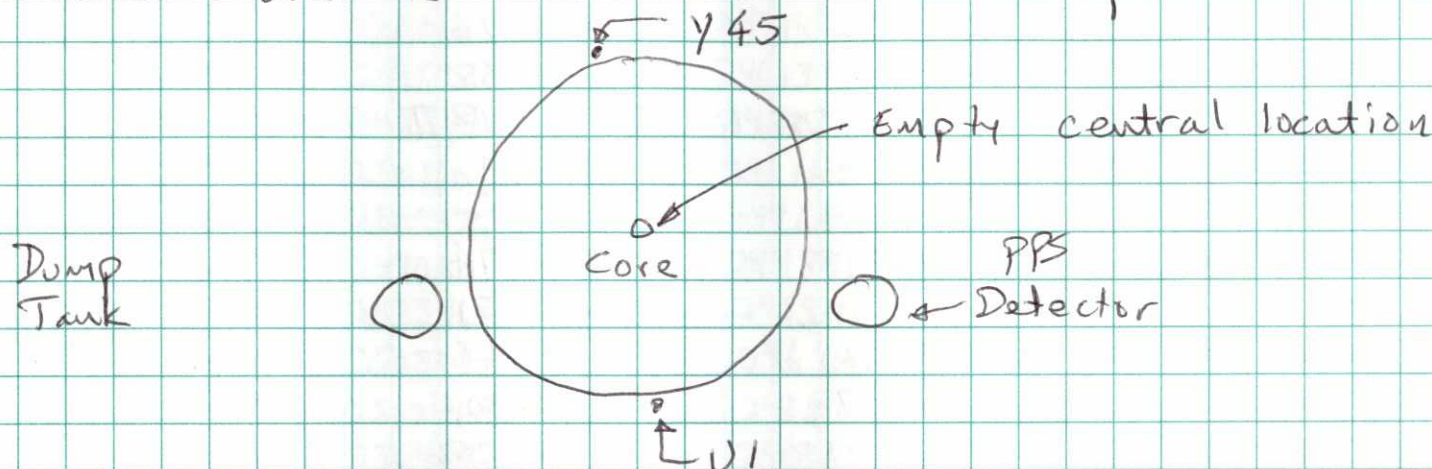
Projected DC (Ch A + Ch B) 1455.8 ± .003

The plan now is to remove fuel to 1436 and move the source to the outside of the core

The core has 1436 rods with the source in Y45

The low count-rate trip occurred with source in Y45

Source moved to U1 - now does not trip



1436 rods source in U1

water in @ 1659

CE up @ 17:02:37

T1 = 18.3

T2 = 18.2

T3 = 18.3 TD = 19

Time

Ch A

Ch B

Ch C

17:03:29

69796

69361

104

60 sec

17:05:24

71639

70213

89

counts

17:07:06

71424

70801

119

17:08:35

72000

71924

109

17:11:17

72342

71521

109

17:12:36

71058

71426

110

17:13:58

72185

71326

94

17:15:14

72490

71311

104

17:16:40

71834

70768

91

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Date

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TITLE

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5 Aug 10

Counts at 1436 rods source in U1

Time	Ch A	Ch B	Ch C
17:18:05	72340	71104	104
17:19:24	72391	71683	97
17:20:58	71982	71009	107
17:22:21	72128	71120	106
17:23:37	72635	71438	102
Sum of the last 10:	721385	712706	1024

Shutdown for the night

6 Aug 10

Today we will repeat the count we did at the end of yesterday, put a rod in the center of the array, and do an approach in that configuration.

The core configuration with no water holes or source, e.g. solid fuel rods out to periphery, is designated as core 800 B0000 B

The core is loaded to 1436 rods. The source is in U1

The central fuel rod position is unoccupied. We are still working on configuration 800 B0000 A

Water in @ 9:27

CE up @ 9:31:15

T1 = 17.2 T2 = 17.1 T3 = 17.2 TD = 17

Time Ch A Ch B Ch C

~~5 52~~

60 sec

~~9:31:52~~

Counter not set correctly

Counts

9:35:44 36

70216

69481

97

9:37:00

70773

70270

83

9:38:21

70252

69600

87

9:40:10

70361

69761

114

9:41:42

71074

69999

124

9:43:19

70240

69535

84

9:44:41

70397

69594

108

9:45:58

70621

70093

93

9:47:19

70375

69488

99

9:48:47

69966

69310

86

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6 Aug 10

1436 rods in core 800 B0000 A, source in U1

	Ch A	Ch B	Ch C
Sum of 10 counts	704275	697131	975

We will now put a fuel rod in the central position
 This will begin core 800 B0000 B

Central location is filled - 1437 rods in the core
 Water in @ 10:24 Rod 2058 is in position # W23

CE up @ 10:27:24

T1 = 17.0	T2 = 17.0	T3 = 17.1	TD = 17
-----------	-----------	-----------	---------

Time	Ch A	Ch B	Ch C	
10:28:20	61207	60545	69	60 Sec
10:29:51	61499	60502	96	Counts
10:31:14	61738	60802	62	
10:32:42	62248	61515	96	
10:34:05	62472	61472	83	
10:35:31	62435	61306	98	
10:37:07	61789	61778	95	
10:38:30	62285	61719	81	
10:39:51	61813	61086	84	
10:41:13	62816	61518	102	
10:43:58	62092	61429	77	
10:45:25	61538	60432	85	
10:46:49	62065	61518	95	
Sum of the last 10	621553	613823	896	

The core is loaded to 1445 rods

Water in @ 13:29

CE up @ 13:33:04

T1 = 16.8	T2 = 16.7	T3 = 16.8	TD = 17
-----------	-----------	-----------	---------

Time	Ch A	Ch B	Ch C	
13:33:56	87778	86545	115	60 Sec
13:36:00	91904	90270	126	Counts
13:37:27	90573	90043	113	
13:38:48	91576	89995	123	
13:40:09	92109	91191	133	
13:41:34	91049	90381	136	
13:42:59	91039	89940	133	

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6 Aug 10

Core loaded to 1445 rods

Time	Ch A	Ch B	Ch C
13:44:22	90807	89915	127
13:45:43	92315	90710	123
13:47:02	92097	91080	127
13:48:18	92063	90418	145
13:49:33	91625	90091	128
13:51:11	91620	89599	127
13:52:38	91049	89895	124
13:54: ⁰² 57	91280	89704	115
13:55:56	90302	89751	127
13:57:22	91347	90193	130
13:58:52	90723	89431	119
14:00:12	91499	90088	122
14:01:26	90672	90131	147
14:02:45	91639	90369	112
Sum of last 10	1462.1 ± .09	1462.2 ± .09	1465.2 ± 3.1
Projected DC	911756	899252	1251

Projected DC (Ch A + Ch B) 1462.2 ± 0.06

T1 = 16.7 T2 = 16.7 T3 = 16.8 TD = 17

The core is loaded to 1453 rods

Water in @ 14:37

CE up @ 14:41:05

T1 = 16.7 T2 = 16.6 T3 = 16.7 TD = 17

Time	Ch A	Ch B	Ch C	
14:42:01	173452	170401	240	60 sec
14:43:25	186523	184319	267	counts
14:44:43	192841	189647	268	
14:46:03	195938	193031	250	
14:47:22	197955	195700	289	
14:48:45	199401	195799	258	
14:50:19	201156	197390	298	
14:51:44	202423	199102	284	
14:53:19	200559	197191	263	
14:54:48	199237	196709	255	
14:56:26	202852	198668	281	

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6 Aug 10

Counts @ 1453 rods

Time	Ch A	Ch B	Ch C
14:57:45	203262	200071	289
15:00:21	201610	198768	292
15:02:18	201606	198006	300
15:03:46	201708	199133	280
15:05:08	201956	200343	295
15:06:30	203895	201097	296
15:08:34	204710	202957	256
15:10:20	203341	199683	252
15:11:50	203100	200910	285
15:13:13	205065	202061	285
15:14:37	205647	202323	297
15:16:00	203840	201593	272
15:17:38	202981	200042	269
15:19:00	202405	200214	289
15:20:41	205393	202435	329
15:22:03	205316	202625	299
15:23:46	206466	202843	311
15:25:08	204401	200975	311
15:26:31	204980	201941	311267
15:28:11	204373	200845	272
15:29:35	204496	200744	306
15:31:07	205140	202553	277
15:32:32	205073	202514	304
15:33:55	206338	204237	319
Sum of last 10	2051976	2021712	2995
Projected DC	1459.4 ± .01	1459.4 ± .01	1458.7 ± .33
Projected DC (Ch A + Ch B)		1459.4 ± .01	

9 Aug 10

We will repeat the counts done on 8/6/10 at a different temperature. The air conditioning was off over the weekend. The dump tank temperature is 23°C. The plan is to start at 1453 elements (where we stopped on 8/6) and work

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9 Aug 10

Backward to 1445, 1437 and, if time allows, 1433
The core is loaded to 1453 rods

Water in @ 10:08

CE up @ 10:12:06

T1 = 23.0 T2 = 22.9 T3 = 23.0 TD = 23

Time	Ch A	Ch B	Ch C	
10:12:42	153258	153096	229	60 sec
10:18:24	177219	176711	267	counts
10:24:09	176676	178028	277	
10:29:02	177775	178218	233	
10:35:19	178642	178337	261	
10:40:49	179038	178413	249	

T1 = 23.0 T2 = 23.0 T3 = 23.0 TD = 23

10:45:42	178846	180224	256
10:50:52	178935	179725	238
10:55:33	178953	180208	265
11:00:41	178285	179328	255
11:05:22	179328	179109	266
11:10:20	179626	179913	255

T1 = 23.0 T2 = 23.0 T3 = 23.1 TD = 23

11:15:26	176359	177544	243
11:20:55	177582	178022	272
11:25:30	179303	180555	263
11:30:41	175808	177826	247
11:35:33	178617	178755	252
11:40:31	177077	178298	248
11:41:51	176495	176418	246
11:43:11	177702	178017	281
11:44:48	174370	179649	237
11:46:51	178168	178682	269
11:48:21	179188	180278	272
11:50:20	179774	180738	264
11:51:42	179372	179512	276
11:53:23	179040	180156	272

T1 = 23.1 T2 = 23.0 T3 = 23.1 TD = 23

11:55:27	178645	179518	250
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9 Aug 10

counts with 1453 rods in the core

Time	Ch A	Ch B	Ch C
11:56:47	177943	178130	287
11:58:23	179200	179881	251
12:00:22	178668	179108	258
12:02:04	179081	179503	260
Sum of last 10	1789079	1794506	2661

We will download to 1445 rods

Core loaded to 1445 rods

Water in @ 12:43

CE up @ 12:48:04

T1 = 23.0 T2 = 23.0 T3 = 23.1 TD = 23

Time	Ch A	Ch B	Ch C	@ 0 sec counts
12:48:55	83442	84183	114	
12:50:27	85634	86139	113	
12:51:48	86152	86459	125	
12:53:11	85581	86053	130	
12:54:30	86565	86665	133	
12:55:57	86029	86189	116	
12:57:27	86625	87310	116	
12:58:51	86788	87022	128	
13:00:22	87147	87896	128	
13:01:52	86861	87029	106	
13:03:16	86222	87183	131	
13:04:43	87318	87416	116	
13:06:07	86358	86530	139	
13:07:32	85636	86517	133	
13:09:00	86496	87355	127	
13:10:26	8390 86390	87525	128	
13:11:54	86429	87137	144	
Sum of last 10	865482	871610	1280	
Projected DC (1453-1455)	1461.4 ± .02 1460.5	1461.8 ± .02 1460.6	1461.3 ± .55 1460.4 ± .49	

Projected DC (Mean of Ch A + B) 1460.5 ± .01

We will download to 1437 rods in the core

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9 Aug 09

Core is loaded to 1437 rods

Water in @ 13:58

CE up @ 14:02:04

T1 = 23.1 T2 = 23.1 T3 = 23.2 TD = 23

Time	Ch A	Ch B	Ch C	60 sec counts
14:02:53	58557	58823	93	
14:04:47	59154	59392	97	
14:06:13	59081	59644	92	
14:07:41	59497	59725	74	
14:09:16	59275	59671	90	
14:10:57	58944	59423	95	
14:12:26	59335	59752	92	
14:13:59	58906	59363	85	
14:15:30	58837	59680	81	
14:17:17	59201	59121	82	
14:19:20	58940	59847	84	
14:21:10	58708	59270	101	
14:23:46	58977	60026	88	
14:24:29	59586	59440	88	

Sum of last 10

Projected DC 1462.2 ± .09 1462.3 ± .09 1463.0 ± .09 2.6

Projected DC (Ch A + Ch B) 1462.2 ± .06

We will download to 1433 rods

Above projections done based on counts at
1437 $\frac{1}{2}$ 1445 rods

Core loaded to 1433 rods

Water in @ 15:10

CE up @ 15:14:17

T1 = 23.2 T2 = 23.2 T3 = 23.3 TD = 23

Time	Ch A	Ch B	Ch C	60 sec counts
15:15:10	47140	47366	44	
15:16:33	47056	47248	68	
15:17:53	47384	47441	77	
15:19:45	46741	47353	73	
15:21:10	47281 46924	47281	66	
15:22:53	47250	47320	58	

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9 Aug 10

Counts @ 1433 rods

Time	Ch A	Ch B	Ch C
15:24:24	47659	47671	69
15:25:52	47032	47140	78
15:27:37	46692	47273	73
15:29:00	47008	47840	68
15:30:37	47105	47467	70
15:31:59	47536	48115	68
Sum of last 10	471331	474901	700
Projected DC	1452.8 ± .15	1452.7 ± .15	1452.1 ± 3.6
Projected DC (Ch A + B)	1452.8 ± .11		

10 Aug 10

The Dump Tank temperature is now 37C

The core is loaded to 1437 rods

We left the Dump tank heater on overnight set for ~ 35 C. we will do an approach at 1437, 1445 and 1453 rods

Water in @ 10:10

CE up @ 10:14:40

T1 = 35.8 T2 = 35.7 T3 = 35.5 TD = 37

Time	Ch A	Ch B	Ch C	
10:15:37	58996	58323	102	60 sec
10:17:09	59648	58673	82	Counts
10:18:47	59163	58690	102	
10:20:15	58808	58827	86	
10:21:48	58997	58631	84	
10:23:48	58710	58493	86	
10:25:23	59050	58303	93	
T1 = 35.6	T2 = 35.6	T3 = 35.4	TD = 36	
10:27:06	59143	58580	76	
10:28:37	59352	58004	80	
10:30:04	59537	58651	87	
10:32:03	58528	58475	86	
10:33:50	58751	59081	86	
10:35:34	59229	58552	88	
T1 = 35.6	T2 = 35.4	T3 = 35.3	TD = 36	

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Date

Sum of last 10: 59010 ± 5

585597

852

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90 Aug 10

We will load to 1445 rods in the core

The core is loaded to 1445 rods

Water in @ 11:27

CE up @ 11:31:08

T1 = 34.4 T2 = 34.3 T3 = 34.2 TD = 35

Time	Ch A	Ch B	Ch C	
11:32:11	80747	80658	145	60 sec
11:33:50	81847	81199	122	counts
11:35:31	82564	81581	136	
11:37:22	82735	82129	128	
11:38:54	82949	82687	150	
11:40:26	83512	83310	142	
11:42:04	83065	83138	131	
11:43:46	83220	82717	142	
11:45:38	83386	83547	113	

T1 = 34.4 T2 = 34.2 T3 = 34.1 TD = 35

11:47:11	83633	83564	133
11:49:16	83472	83770	140
11:50:58	83929	84094	150
11:52:35	84312	83779	132
11:54:32	83216	84086	137
11:56:25	82977	83293	140
11:58:05	82580	82695	133
12:00:01	84338	84877	126
12:01:36	85165	84635	135
12:03:10	83468	83186	135

Bad data
Not reset

T1 = 34.4 T2 = 34.3 T3 = 34.2 TD = 35

12:05:07	83872	84484	127
12:07:24	84255	84677	123
12:09:03	83203	83920	132
12:10:42	84361	84617	129

Sum of last 10: 838279 840463 1314 w/o 12:03:10

Projected DC 1464.0 ± .11 1463.4 ± .10 1459.8 ± 1.8

Projected DC (Ch A + Ch B): 1463.7 ± .08

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10 Aug 10

Core is loaded to 1453 rods

Water in @ 14:03

CE up @ 14:07:50

T1 = 34.4 T2 = 34.3 T3 = 34.2 TD = 35 AR = 19.6

Time	Ch A	Ch B	Ch C	
14:09:04	170703	168980	256	60 sec
14:15:18	183137	182397	283	counts
14:19:51	184246	182600	292	
14:25:03	185479	183535	292	
14:30:01	184406	182649	300	
14:35:07	187058	185828	303	
14:40:01	185547	184993	271	

T1 = 34.4 T2 = 34.2 T3 = 34.1 TD = 35

14:45:03	188683	187699	279
14:50:16	187767	187677	306
14:55:10	188438	188362	274
15:00:24	189780	189867	295
15:05:05	189129	188475	283
15:10:01	188796	187901	314

T1 = 34.3 T2 = 34.2 T3 = 34.0 TD = 35

15:15:06	189157	190055	279
15:20:13	193937	193829	282
15:25:01	191275	190862	292
15:30:07	191072	190549	320
15:35:22	194906	194265	296
15:40:05	194091	193177	301

T1 = 34.3 T2 = 34.2 T3 = 34.1 TD = 35

15:45:12	194489	194275	310
15:50:05	194943	194597	301
15:52:20	194123	194151	296
15:53:44	194647	194161	295
15:55:14	193169	192883	290
15:56:43	196223	196913	301
15:58:14	195654	194616	320
15:59:49	196248	195139	284
16:01:28	195636	195966	302

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10 Aug 10

Counts at 1453 rods

Time	Ch A	Ch B	Ch C
16:03:01	196755	196308	343
16:04:43	195772	196248	333
16:06:18	194640	194671	295
16:07:51	195771	195311	265
16:09:18	197335	197071	304
16:11:00	195479	195576	324
16:13:00	193873	193725	292
T1 = 34.3	T2 = 34.2	T3 = 34.1	TD = 35

Sum of last 10

Projected DC	1459.0 ± .01	1459.0 ± .01	1459.0 ± .35
Projected DC (Ch A + Ch B)	1459.0 ± .01		

11 Aug 10

Core is loaded to 1737 rods

Water in core at 9:27:25

CE Up at 9:31:05

T₁ = 35.9 T₂ = 35.8 T₃ = 35.6 DT = 37 Air = 19.3

Time	Ch. A	Ch. B	Ch. C	
9:32:21	58098	57804	80	60 sec counts
9:33:49	58592	58100	92	
9:35:17	58606	58016	91	
9:36:39	58441	58004	76	
9:38:24	58178	58309	99	
9:39:55	58562	58003	105	
9:41:28	58583	57773	88	
9:43:00	58084	57838	95	
9:44:55	58677	58149	90	
9:46:33	59044	57979	79	
9:48:03	58877	58486	83	
9:49:38	58048	58275	92	
9:51:18	58000	57730	95	

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11 Aug 10

Counts @ 1437 rods

Time Ch A

Ch B

Ch C

Sum of last 10 584494

580545

902

The core is loaded to 1445 rods

Water in @ 10:40

CE up @ 10:43:45

T1 = 34.6

T2 = 34.5

T3 = 34.3

TD = 35

Time

Ch A

Ch B

Ch C

10:44:34

81308

81473

130

60 sec

10:46:10

82896

82585

146

Counts

10:47:43

83593

82810

140

10:49:11

84424

84353

126

10:50:54

83463

83133

128

10:52:28

83350

82852

123

10:53:57

82888

82990

145

10:55:41

83229

82375

121

10:57:54

83062

82564

119

10:59:48

83795

84605

122

11:01:28

84065

84207

122

11:03:09

83950

83568

127

11:04:46

83384

82931

139

11:06:17

83709

84100

145

11:07:49

83941

84171

163

11:09:17

85007

84999

124

11:11:02

83605

83590

137

T1 = 34.5

T2 = 34.4

T3 = 34.2

TD = 35

Air = 19.4

11:12:46

83478

83415

127

11:14:08

84387

84028

114

11:15:39

85336

84849

131

11:17:12

84088

83834

125

11:18:38

84692

84677

132

11:20:19

84715

83912

138

11:22:09

84714

84265

132

11:23:41

84038

84223

128

Sum of last 10

844060

841792

1288

T1 = 34.4

T2 = 34.3

T3 = 34.2

TD = 35

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Counts @ 1445 rods

ch A

ch B

ch C

Projected DC 1463.0 $\pm$.1 1462.8 $\pm$.1 1463.7 $\pm$ 2.7Projected DC (ch A + ch B) 1462.9 $\pm$.1

The core is loaded to 1453 rods

Water in @ 1355

CE up @ 13:58:57

T1 = 34.5 T2 = 34.5 T3 = 34.3 TD = 36

Time

ch A

ch B

ch C

14:00:07

169601

167608

251

60 sec counts

14:05:05

187723

186540

260

14:10:04

187357

186646

288

14:15:07

187132

185600

310

14:20:25

189601

187850

312

14:25:04

188613

187768

309

14:30:03

189579

188686

292

14:35:09

190916

190677

284

14:40:09

190568

189784

328

T1 = 34.4

T2 = 34.3

T3 = 34.2

TD = 35 Air = 19.6

14:45:07

192074

191688

297

14:50:11

193770

191617

298

14:55:21

193803

193510

287

15:00:30

195243

192802

283

T1 = 34.3

T2 = 34.2

T3 = 34.1

TD = 35 Air = 19.6

15:06:11

195012

194904

302

15:10:39

198066

196794

276

15:15:51

195942

195081

296

15:20:11

197369

197026

287

15:25:04

197428

197187

309

15:30:15

198944

198435

298

T1 = 34.2

T2 = 34.1

T3 = 33.9

TD = 35

15:35:18

199727

199608

292

15:40:35

201232

201027

346

15:45:22

200783

199505

278

15:50:13

203554

202751

304

15:55:22

203412

202859

304

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Counts @ 153 rods in the core

Time	Ch A	Ch B	Ch C
16:00:24	203887	202273	297
T1 = 34.2	T2 = 34.0	T3 = 33.9	TD = 35
16:05:19	202959	202288	356
16:10:32	205049	203240	318
16:15:13	204403	204152	329
16:20:47	205450	205101	337
16:25:26	205149	204743	287
16:30:17	204181	205206	305

T1 = 34.1

T2 = 34.0

T3 = 33.9

TD = 35

16:35:27

204587

204744

326

16:40:19

208460

208144

312

16:45:47

206264

205300

319

16:50:41

207104

206475

315

16:55:58

206739

206218

303

17:00:25

209005

208358

321

T1 = 34.1

T2 = 33.9

T3 = 33.8

TD = 35

17:05:29

208594

208970

315

17:10:23

207047

206359

297

17:11:41

206872

206317

321

17:12:58

208000

206400

285

17:14:19

207740

207589

316

17:15:38

206509

206431

334

17:16:56

209875

210266

333

17:18:19

207006

206236

292

17:19:37

207730

207357

317

17:20:53

208674

207611

335

17:22:13

207549

207351

336

T1 = 34.1

T2 = 34.0

T3 = 33.9

TD = 35

A in 19.8

Sum of last 10

Projected DC

1458.5 ± .01

1458.5 ± .01

1458.6 ± .32

Projected DC

(Ch A + Ch B)

1458.5 ± .01

The controller on the dump tank heater was adjusted. The target temperature is 25°C

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12 Aug 10

The tank temperature is $\sim 28^{\circ}\text{C}$

1437 rods in the tank

Water in @ 9:24

CE up @ 9:28:29

T1 = 27.4 T2 = 27.3 T3 = 27.2 TD = 28

Time	Ch A	Ch B	Ch C	
9:29:31	62810	62034	92	60 Sec counts
9:32:18	63153	62952	106	
9:33:45	63611	62369	92	
9:35:08	62973	62411	85	
9:37:01	63368	62564	85	
9:38:30	63564	62862	89	
9:41:50	62782	62171	101	
9:43:11	63210	62163	113	
9:44:45	63236	62882	110	
9:46:10	63215	62371	96	
9:47:53	63346	62622	81	
9:50:24	63504	62860	108	
9:51:48	63704	63242	101	
Sum of last 10	632902	626148	969	

We will add 8 elements to ~~1437~~ rods in the core

1445 rods in the core

Water in @ 10:25

CE up @ 10:28:05

T1 = 26.5 T2 = 26.4 T3 = 26.4 TD = 27

Time	Ch A	Ch B	Ch C	
10:29:54	88634	87151	136	60 Sec counts
10:31:34	89391	88016	119	
10:33:02	90292	89981	129	
10:34:33	90848	90179	113	
10:37:57	92053	90922	132	
10:40:08	92020	90808	112	
10:42:00	91824	91303	141	
10:43:33	92017	91354	133	
10:44:58	92255	91368	120	
10:46:23	92600	91426	133	

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12 Aug 10

Core loaded to 1445 rods

Time	Ch A	Ch B	Ch C
10:49:59	92664	91451	133
10:51:49	91089	90358	128
10:53:15	93146	91958	115
10:54:57	92750 05	91915	138
10:56:29	92332	91494	118
10:59:15	92932	92283	142
11:02:07	91582	90849	143
T1 = 26.4	T2 = 26.3	T3 = 26.2	TD = 27
11:04:09	91863	91321	158
11:05:31	93229	91899	133
11:07:49	92087	91834	127
11:09:59	92056	91560	130
11:11:42	93890	93270	159
11:13:11	92051	91903	134
11:14:40	91980	91793	153
Sum of last 10	924002	918206	1397
Projected DC	1462.4 ± .X1	1462.2 ± .X1	1463.1 ± 2.5
Projected DC	(Ch A + B)	1462.3 ± .X1	

The core is loaded to 1453 rods

Water in @ 13:19

CE up @ 13:23:25

T1 = 26.1 T2 = 26.0 T3 = 25.9 TD = 27

Time	Ch A	Ch B	Ch C
13:24:54	194566	190998	277
13:30:05	219477	215513	296
13:35:01	222528	219386	297
13:40:00	222326	220255	328
13:45:10	225432	222599	336
13:50:42	225109	221668	334
13:55:25	226254	223360	310
T1 = 26.0	T2 = 25.9	T3 = 25.8	TD = 26 Air 18.4
13:59:58	226611	223998	331
14:04:50	227821	224816	332
14:10:13	229157	227023	341

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12 Aug 10

Counts @ 1453 Rods

Time chA chB chC

14:15:02 230879 227066 327

14:20:34 231352 228809 339

14:24:55 231372 228666 347

T1 = 26.0 T2 = 25.8 T3 = 25.8 TD = 26

14:29:57 231327 227991 328

14:35:09 231381 228178 349

14:39:57 233980 232470 372

14:45:01 235628 232666 347

14:50:13 235218 233338 344

14:55:07 234701 233087 369

T1 = 26.0 T2 = 25.8 T3 = 25.8 TD = 26

15:00:10 237044 234654 310

15:05:04 235184 232962 319

15:11:06 237376 235370 357

15:15:11 238466 235044 351

15:19:56 239180 237227 365

15:24:50 240224 237395 347

T1 = 25.9 T2 = 25.8 T3 = 25.7 TD = 26 Air = 18.5

~~15:30:07~~

The Air temp is from the RTD under the core tank

15:30:07 241596 239282 353

15:31:28 239939 238023 348

15:33:03 238539 236696 356

15:34:22 241943 239396 362

15:36:17 240093 239813 359

15:38:00 239733 237366 337

15:39:51 241515 238811 360

15:41:14 241115 238456 313

15:42:36 242738 240034 337

15:43:53 242228 241071 353

T1 = 25.9 T2 = 25.8 T3 = 25.8 TD = 26

Sum of last 10 2409439 2388948 3478

Projected DC 1458.0 $\pm$.01 1458.0 $\pm$.01 1458.4 $\pm$.3Projected DC (Ch A + B) 1458.0 $\pm$.007

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16 Aug 10

The core is loaded to 1437 rods

Water in @ 9:56

CE up @ 9:59:39

T1 = 26.0 T2 = 25.9 T3 = 26.0 TD = 26

Time	Ch A	Ch B	Ch C
10:00 : 23	55807	56454	103
10:02 : 15	56800	57464	100
10:03 : 35	56485	57099	92
10:04 : 59	57387	57268	83
10:06 : 14	56170	57165	86
10:08 : 13	57180	57227	91
10:09 : 53	56924	57515	89
10:11 : 10	57133	57279	73
10:12 : 30	57060	57710	83
10:13 : 50	57711	57986	83
10:15 : 07	57691	58151	88
10:16 : 25	56949	57866	80
10:17 : 46	57302	57260	74
T1 = 26.0	T2 = 25.9	T3 = 26.0	TD = 26
10:20 : 57	57543	57628	82
10:22 : 14	57114	57446	79
10:23 : 31	57461	57884	71
Sum of last 10	57288	576725	802

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26 Aug 10

The core is loaded to 1415 rods

water in @ 11:02

CE up @ 11:06:18

 $T_1 = 25.8$ $T_2 = 25.8$ $T_3 = 25.8$

DT = 26

Time	Ch. A	Ch B	Ch C
11:08:28	83418	84157	131
11:10:11	82843	83682	122
11:11:45	83148	83651	124
11:13:13	82340	83471	126
11:14:43	83345	84188	135
11:16:18	84070	84874	122
11:17:42	83923	84974	129
11:19:26	83452	84049	124
11:21:05	83116	83651	130
11:22:36	83237	84814	133
11:24:03	83135	84565	131
11:25:45	83382	84518	116
11:27:22	83550	84978	128
11:29:00	83544	84768	115
11:30:23	83615	85095	146
11:32:06	84056	84941	126
11:33:34	83817	84717	131
11:35:21	83578	85123	125
11:37:01	83697	84914	126
$T_1 = 25.9$	$T_2 = 25.8$	$T_3 = 25.9$	DT = 26
11:38:40	84955	85580	125
11:40:17	84233	85161	116
11:41:49	84057	84757	121
11:43:26	84034	85335	131
11:45:04	83290	84221	103
11:46:34	84210	84607	114
11:48:03	84410	84851	125
$T_1 = 25.9$	$T_2 = 25.8$	$T_3 = 25.9$	DT = 26

Sum of last 10 840281

849268

1237

Projected DC 1462.1 ± 0.1

1461.9 ± 0.1

1459.7 ± 1.9

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26 Aug 10

Core loaded to 1445 rods

Projected DC (Ch A + Ch B) 1462.0 ± 0.1

Core loaded to 1453 rods

Water in @ 1414

CE up @ 1448:06

T1 = 25.8 T2 = 25.8 T3 = 25.8 TD = 26

Time	Ch A	Ch B	Ch C
------	------	------	------

14:19:22	174370	175872	236
----------	--------	--------	-----

14:24:53	194145	196407	292
----------	--------	--------	-----

14:29:52	193102	195094	263
----------	--------	--------	-----

14:35:11	193462	196697	287
----------	--------	--------	-----

14:39:51	194924	196789	293
----------	--------	--------	-----

14:45:53	196686	198151	268
----------	--------	--------	-----

14:49:50	197138	198897	294
----------	--------	--------	-----

T1 = 26.0 T2 = 25.9 T3 = 26.0 TD = 26

14:55:15	198413	199740	313
----------	--------	--------	-----

14:59:55	196712	199022	303
----------	--------	--------	-----

15:06:23	197400	199005	302
----------	--------	--------	-----

15:11:24	199607	201080	272
----------	--------	--------	-----

15:16:40	199921	202369	270
----------	--------	--------	-----

15:20:30	199197	202185	268
----------	--------	--------	-----

T1 = 26.0 T2 = 25.9 T3 = 26.0 TD = 26

15:25:10	199702	201027	279
----------	--------	--------	-----

15:29:58	202742	205018	324
----------	--------	--------	-----

15:34:57	202098	203073	289
----------	--------	--------	-----

15:39:54	201543	203108	278
----------	--------	--------	-----

15:44:49	200670	202518	294
----------	--------	--------	-----

15:51:05	204084	205745	315
----------	--------	--------	-----

15:54:54	204214	206425	308
----------	--------	--------	-----

T1 = 26.0 T2 = 26.0 T3 = 26.0 TD = 26

16:00:14	202173	205859	311
----------	--------	--------	-----

16:05:19	206773	208411	337
----------	--------	--------	-----

16:10:06	203359	205847	318
----------	--------	--------	-----

16:14:50	205087	206679	290
----------	--------	--------	-----

16:19:50	204395	206936	271
----------	--------	--------	-----

16:24:47	205799	207677	333
----------	--------	--------	-----

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16 Aug 10

Counts @ 1453 rods

Time	Ch A	Ch B	Ch C
T1 = 26.0	T2 = 26.0	T3 = 26.1	TD = 26
16:29:47	206356	208780	299
16:35:53	204279	206882	302
16:39:48	205071	207478	332
T1 = 26.0	T2 = 26.0	T3 = 26.1	TD = 26
16:41:11	206392	207682	302
16:42:42	204859	207718	329
16:44:11	203548	206352	332
16:45:47	205953	207620	315
16:47:16	206917	209014	316
16:48:50	204736	207189	327
16:50:20	205724	208488	308
16:52:16	203210	204991	324.9
16:53:51	204138	205887	294
16:57:14	205712	208245	311
T1 = 26.0	T2 = 26.0	T3 = 26.1	TD = 26
16:58:49	206020	208667	341
17:00:21	207934	209408	288
Sum last 10	2053892	2075861	3161
Projected DC	1458.5 ± 0.01	1458.5 ± 0.01	1458.1 ± 0.28
Projected DC (Ch A + Ch B)	1458.5 ± 0.01		

17 Aug 10

Returning to configuration 800B0000A

August 17, 2010

Unloaded Fuel to 1436, source in U4.

Removed Fuel Rod in CENTER location

will count 1436, 1449 & 1452 with water hole in center

Water in CORE 9:57
CE up 10:01:37

T₁ = 26.0 T₂ = 26.0 T₃ = 26.0 DT = 26

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Time	Ch. A	Ch. B	Ch. C	
17 Aug 10				
10:02:34	62726	63701	99	60 second counts
10:04:04	63861	64258	96	
10:05:29	63609	64142	104	
10:06:51	64346	64805	101	
10:08:16	64794	65320	101	
10:09:38	64528	64957	96	
10:11:01	64925	65677	87	
10:12:24	64269	65106	89	
10:13:47	64633	65116	105	
10:15:11	65379	66217	105	
10:16:38	65386	65973	105	
10:18:12	65759	65806	107	
10:19:38	65230	66414	103	
10:21:17	66085	65966	92	
10:23:10	65170	65698	113	
10:24:38	66268	66274	90	
10:26:07	65321	65828	92	
10:30:14	65762	65990	111	
10:31:53	65015	66617	103	

 $T_1 = 26.0$ $T_2 = 26.0$ $T_3 = 26.1$ $\overline{DT} = 26.$

Sum of 10 655705 660783 1021

Will read 8 fuel Elements

1444 fuel Rods in CORE

WATER IN CORE 11:12

Ce up 11:15:20

 $T_1 = 25.8$ $T_2 = 25.8$ $T_3 = 25.9$ $\overline{DT} = 26$

Time	Ch. A	Ch. B	Ch. C	60 second counts.
11:16:19	98647	100327	152	
11:17:46	102693	103120	172	
11:19:09	104296	105800	172	

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Time	Ch. A	Ch. B	Ch. C	
11:20:43	105300	106296	160	
11:22:12	105726	105786	146	
11:23:44	105142	105152	159	
11:25:31	106639	107119	157	
11:27:03	106029	107058	184	
11:28:28	105074	105896	148	
11:29:56	104948	106769	145	
11:31:21	104283	105136	153	
11:32:44	105942	106844	161	
11:34:08	105817	106223	144	
11:35:30	105546	106443	158	
11:36:51	104915	107026	143	
11:38:18	105849	106604	166	
11:39:45	106180	107646	168	
11:41:17	106225	107800	161	
11:42:49	106245	107277	138	
11:44:09	105740	106355	158	
11:45:50	107060	108345	171	
11:47:27	106581	107358	174	
11:49:34	106975	107958	141	
11:51:34	106281	107177	172	
11:53:01	107762	108155	155	
11:54:36	106763	107899	142	
T ₁ = 25.9	T ₂ = 25.8	T ₃ = 26.0		DT = 26
11:57:40	105985	107013	142	
11:59:04	106211	107327	155	
12:00:36	106816	108154	171	
Last 10	1066174	1075721	1581	
1452 rods in the core				
Water in @ 1338				
CE up @ 1342:30				
T ₁ = 25.8 T ₂ = 25.7 T ₃ = 25.7 T _D = 26				
Time	Ch A	Ch B	Ch C	
13:43:17	259951	262062	386	60 sec
13:48:18	305141	305173	472	counts

1456.8 ± .05
1456.7 ± .05
1458.6 ± 1.7
1456.8 ± .04

ChA projected DC
ChB " "
ChC " "
Ch (A+B)

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17 Aug 10
 Counts @ 1452 rods

Time	Ch A	Ch B	Ch C
13:55:04	319627	320550	450
14:00:00	323119	323158	483
14:05:01	328172	327677	505
14:10:03	331235	330680	531
14:15:04	328729	328507	489
14:20:00	332512	331185	495
14:25:02	334913	332147	479
14:30:02	337287	337036	518
$T_1 = 25.6$	$T_2 = 25.5$	$T_3 = 25.5$	DT = 25
14:35:01	342323	340462	484
14:40:04	344368	342248	497
14:45:05	348546	346404	564
14:50:04	350376	346934	503
14:55:03	349799	346355	507
14:59:46 145946	352260	349972	576
15:04:47	351763	350106	535
15:09:59	353090	350397	509
15:14:48	358678	354251	520
$T_1 = 25.2$	$T_2 = 25.2$	$T_3 = 25.2$	TD = 25
15:19:48	358928	356893	563
15:24:53	358775	354944	548
15:29:50	363748	359769	546
15:34:52	366364	363091	547
15:39:54	364976	362947	531
15:44:49	369880	367656	581
$T_1 = 25.0$	$T_2 = 25.0$	$T_3 = 25.0$	TD = 25
15:50:02	369254	365365	541
15:54:48	372199	367999	562
15:59:50	378370	375583	534
16:04:50	382159	377975	559
16:09:50	377378	374356	554
16:14:50	378558	373477	578
$T_1 = 24.8$	$T_2 = 24.8$	$T_3 = 24.8$	TD = 25
16:19:50	380076	377566	531

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17 Aug 10 Counts @ 1452 rods

Time

Ch A

Ch B

Ch C

16:24:47

384543

380025

564

16:30:08

381214

377990

561

16:31:25

383634

379509

567

16:32:57

383588

38034

543

16:34:23

387198

381813

596

16:35:56

386647

383766

556

16:37:20

388741

384103

600

16:38:52

384704

381551

547

16:40:27

388674

383000

601

16:41:57

390625

385917

608

16:43:36

390363

387385

556

16:45:04

390288

386446

560

16:46:34

390322

386314

575

Sum of last 10

3881150

3840359

5742

Projected DC

1455.0 ± .005

1455.1 ± .005

1455.0 ± .12

Ch(A+B) Projected DC 1455.1 ± .003

18 Aug 10

Core is loaded to 1424 rods.

Source is in W23 - center of the core

Water in @ 9:41

CE up @ 9:45:17

T1 = 24.6 T2 = 24.6 T3 = 24.6 T_D = 25 Air = 26.4

Time

Ch A

Ch B

Ch C

9:46:43

91365

93828

153

60 sec counts

9:48:47

92693

93127

141

9:50:15

91657

92691

136

9:51:40

93285

93622

141

9:53:18

93445

93344

125

9:54:56

91864

93067

150

9:56:36

92496

93748

134

9:58:03

93453

93551

144

9:59:47

92457

93284

132

10:01:17

93283

93409

151

10:03:55

92847

93239

139

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18 Aug 10

Counts @ 1424

Time	Ch A	Ch B	Ch C
10:04:23	93130	942851	152
10:06:05	92959	93755	151
10:07:41	9103	93347	127
10:09:11	93094	94477	135
10:10:40	93735	94495	129
T1 = 24.7	T2 = 24.6	T3 = 24.7	TD = 25
Sum of last 10	930557	937556	1394

Air 26.5

We will add 8 rods to 1432 rods in core

The core is loaded to 1432 rods

Water in @ 10:49

CE up @ 10:53:04

T1 = 24.6 T2 = 24.5 T3 = 24.6 TD = 25 Air 26.6

Time	Ch A	Ch B	Ch C	60 Sec counts
10:54:03	114239	114986	188	
10:55:31	114887	115859	187	
10:56:58	115615	116847	164	
10:58:33	115775	117156	165	
11:00:04	115869	116295	172	
11:01:33	116483	116936	166	
11:03:03	115433	116318	164	
11:04:36	116288	117797	172	
11:06:06	115584	117087	165	
11:07:44	116671	116815	188	
11:09:18	116101	116843	194	
11:10:53	116455	117368	171	
11:12:28	116125	117153	163	
11:13:59	115481	117383	155	
11:15:42	115746	117700	171	
11:17:15	116559	118278	199	
11:18:50	116732	117419	188	
11:20:18	116098	117747	173	
T1 = 24.5	T2 = 24.4	T3 = 24.5	TD = 24	
Sum of last 10	11627	1173793	1767	

1161552

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18 Aug 18

Core loaded to 1432 rods

Ch A

Ch B

Ch C

Projected DC ~~1462.7~~

1463.7 ± .22

1461.9 ± 5.1

1464.2 ± .23

Projected DC (Ch A+B) 1464.0 ± .16

We will add 4 rods to 1436 rods in the core

Core loaded to 1436 rods

Water in @ 13:25

CE up @ 13:29:14

T1 = 24.5 T2 = 24.5 T3 = 24.5 TD = 24

Air 26.9

Time

Ch A

Ch B

Ch C

13:30:41

142509

144012

215

60 sec counts

13:32:17

144330

145440

225

13:33:55

144892

146668

215

13:36:17

143762

145089

218

13:37:50

144184

145638

237

13:39:18

145675

146668

190

13:41:00

144716

146557

205

13:42:28

144503

146050

220

13:44:03

145041

146190

236

13:45:43

145469

146999

217

13:47:29

144099

146505

228

13:48:58

145047

147162

221

13:50:28

145684

147157

228

13:51:57

144375

145528

196

13:53:28

144635

147310

219

13:55:02

146649

146670

219

13:56:47

145929

146297

252

13:58:17

145414

147545

217

Last 10 Sum

145234 ± 2

1467363

2233

Projected DC

1452.0 ± .1

1452.0 ± .1

1451.2 ± 2.3

T1 = 24.6

T2 = 24.6

T3 = 24.6

TD = 24

Projected DC (Ch A+B)

1452.0 ± 0.07

14:05:39

146137

147642

232

check count

We will load to 1444 rods

(add 8 rods)

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18 Aug 10

Core loaded to 1444 rods, source in W23 (center)
 Water in @ 14:43

CE up @ 14:47:10

T1 = 24.6 T2 = 24.5 T3 = 24.6 TD = 24

Time	ch A	ch B	ch C
14:48:29	218686	219788	339
14:49:54	224109	226250	345
14:51:19	226234	228139	325
14:52:39	227666	228391	364
14:53:38	229564	230251	334
14:56:45	228545	229245	372
14:58:05	229818	230719	364
14:59:42	229133	231688	363
15:01:29	230263	231942	351
15:03:05	230213	231244	345
15:05:45	230605	233240	363
15:07:34	229084	231186	341
15:08:50	230727	230896	367
15:10:20	230883	232789	320
15:11:49	230256	213785	217 cable issue?
15:13:47	230317	230724	360
15:15:14	231454	232911	347
15:16:35	229952	232439	342
15:17:58	230887	0	365 ?
15:19:57	231513	233284	370
15:21:40	231205	232843	345
15:23:14	233431	234822	386
15:24:36	231020	233760	356
15:26:31	231693	233630	345
15:28:03	232469	233189	350
15:29:24	231875	234511	365
15:30:54	232839	235010	334
15:32:20	232291	234013	327
15:34:58	231807	233186	333
Sum of last 10	2320143	2338248	3511

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18 Aug 10

Core loaded to 1444 rods

	Ch A	Ch B	Ch C
Projected DC	1457.4 ± .04	1457.5 ± .04	1458.0 ± 1.0
Projected DC (Ch A+B)	1457.4 ± .02		

19 Aug 10

The core is now loaded to 1425 rods with a fuel rod in the center and the source in U1. This is configuration 800B0000B

The cabling to all count rate channels was re-arranged after operations yesterday. The signals on channel C are very noisy. We are continuing with operations because the approach data come from channels A & B.

Water in @ 10:05

CE up @ 10:09:14

T1 = 25.0 T2 = 24.9 T3 = 25.0 TD = 25

Time	Ch A	Ch B	Ch C
10:10:22	37807	37725	1173
10:12:21	38557	38314	1100
10:13:48	38436	37987	1056
10:15:19	37786	38193	1117
10:16:47	38214	38372	1071
10:18:14	37385	37802	1045
10:19:38	38104	38155	1093
10:21:06	38371	37909	1074
10:22:30	37913	37525	1185
10:24:02	38167	38232	1104
10:25:36	38557	38711	1070
10:27:06	38251	38244	1048
10:28:36	38720	38219	1063
10:30:07	38032	38270	1131
10:31:40	38462	38475	1075
10:33:03	38182	38326	1074
Sum of 10	382759	382066	11016

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19 Aug 10

Core is now loaded to 1433 rods
 Water in @ 11:13

CE up @ 11:17 :20

T1 = 24.8 T2 = 24.8 T3 = 24.8 TD = 25

Time	Ch A	Ch B	Ch C
11:18:00	45675	45801	1227
11:19:27	46050	45766	1288
11:20:53	46208	46504	1374
11:22:21	46483	46141	2108
11:24:13	46129	46591	89223
11:25:57	46966	46567	1310
11:27:35	46265	46175	6998
11:29:00	46725	46054	1176
11:30:39	46528	46311	1303
11:32:08	47025	46664	1260
11:33:47	46847	46183	1224
11:35:16	46948	46338	1255
11:36:44	46579	46304	1253
11:38:18	47381	46646	1220
11:40:02	46849	46246	1269
11:41:32	46865	46206	1254
11:43:12	47104	46614	1211
11:44:51	46050	46262	1307
11:46:20	46569	46344	1207
11:48:02	46667	46297	1263

Sum of last 10

Projected DC 1469.0 ± .4 1470.3 ± .5 1493.9 ± 6.8

Projected DC (Ch A + B) 1469.6 ± .3

Core is loaded to 1437 rods

Water in @ 14:43

CE up @ 14:46:17

T1 = 24.8 T2 = 24.7 T3 = 24.8 TD = 25

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19 Aug 10

Counts @ 1437 rods

Time	Ch A	Ch B	Ch C
14:47:33			
14:48:50	57503	56992	198
14:50:20	57699	57354	200
14:51:48	57303	57157	206
14:53:17	57670	56691	188
14:54:38	57890	57592	163
14:56:04	57604	57168	184
14:57:24	58354	57696	161
14:58:44	58294	57172	193
15:00:07	57934	57270	187
15:02:24	57649	57123	187
15:03:43	57598	56693	229
15:05:03	58252	57228	632
15:07:00	58175	57164	36181
15:08:41	57544	56918	181
15:09:58	58392	57643	2685
15:11:26	58412	57335	1424
15:12:50	58145	57390	200
15:14:33	58122	57606	164
15:15:51	57843	57519	199
15:17:24	57227	57346	186
15:18:58	58065	57796	185
15:20:33	5460	57871	194
15:21:52	57610	57459	167
T1 = 24.9	T2 = 24.8	T3 = 24.9	TD = 25
Last 10 sum			
Projected DC	1453.7 ± .17	1453.7 ± .17	—
Projected DC (Ch A + B)	1453.7 ± .12		

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1920 Aug 10

1415 fuel rods in core

Water in core 15:55

CE up 15:58:41

$T_1 = 24.8$ $T_2 = 24.8$ $T_3 = 24.8$ DT-25

Time	Ch. A.	Ch. B	Ch. C	
15:59:16	81089	80803	285	60 sec counts
16:01:14	81151	83285	269	
16:04:01	85311	84035	248	
16:05:53	84888	83128	278	
16:08:11	85285	84667	241	
16:10:02	83834	83468	266	
16:17:19	85376	84674	276	
16:20:37	85454	84205	245	
16:22:12	85441	84448	293	
16:23:38	85178	84984	253	
16:25:06	85115	83788	273	
16:27:06	86089	84995	276	
16:28:28	85111	84637	273	
16:29:46	86337	85373	279	
16:31:17	85075	84801	278	
16:32:35	86413	85007	247	
16:34:28	86099	85292	284	
16:36:43	86305	85608	260	
16:38:21	86139	85026	288	
16:39:58	85960	85560	284	
16:43:29	85652	84400	269	
16:45:19	86311	85554	294	
16:46:52	86214	86214	311	
	86327			

$T_1 = 24.9$ $T_2 = 24.9$ $T_3 = 25.0$ $TD = 25$

Sum of last 10 86618 852835 2794

Projected DC 1461.5 ± .1 1461.5 ± .1

Projected DC (Ch A+B) 1461.5 ± .1

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20 Aug 10

The plan for the day is to load to critical and find the critical bad to within a few rods. The core is loaded to 1453 rods, source in V1. We will count long enough to determine whether the core is sub/super critical. We will not wait for λ count rates to stabilize for the subcritical cores.

1453 rods in core

Water in @ 9:23

CE up @ 9:26:51

T1 = 25.3 T2 = 25.2 T3 = 25.2 TD = 25

Time	Ch A	Ch B	Ch C	
9:27:18	153983	153381	498	60 sec counts
9:28:40	168906	169375	550	
9:29:56	176021	175509	586	
9:31:10	179559	179025	590	
9:32:25	182690	182869	607	
9:33:40	184391	184366	624	
9:34:55	183583	183186	594	

Core is subcritical - second derivative of count rate is negative (concave downward)

We will load 4 rods to 1457

The core is loaded to 1457 rods

Water in @ 10:17

CE up @ 10:20:30

T1 = 25.1 T2 = 25.0 T3 = 25.0 TD = 25

Time	Ch A	Ch B	Ch C
10:21:37	229777	229030	731
10:23:00	254228	254868	819
10:24:17	269565	268563	845
10:25:39	279996	279281	934
10:27:15	288712	288550	960
10:28:38	292572	293623	914
10:30:09	296817	296480	974
10:31:29	298528	299241	1022
10:33:09	300464	300285	979

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Counts @ 1457

Time	Ch A	Ch B	Ch C
10:34:35	300106	300094	908

The count rate curve is concave downward - the core is subcritical

We will load 4 rods to 1461 rods in the core
Core loaded to 1461 rods

Water in @ 11:08

CE up @ 11:25:56

T1 = 25.0 T2 = 24.9 T3 = 25.0 TD = 25

Time	Ch A	Ch B	Ch C
------	------	------	------

11:16:23	314029	314074	943
----------	--------	--------	-----

11:17:47	404408	404494	1260
----------	--------	--------	------

11:19:23	487878	489203	1606
----------	--------	--------	------

11:20:42	549791	552233	1778 ~ X0.1 W
----------	--------	--------	---------------

11:22:01	596758	593017	1890
----------	--------	--------	------

11:23:20	628971	632048	2023
----------	--------	--------	------

11:24:41	658935	663536	2079
----------	--------	--------	------

11:26:13	692422	696761	4275
----------	--------	--------	------

11:27:39	713948	721113	2320
----------	--------	--------	------

11:29:15	734735	742089	2371
----------	--------	--------	------

11:30:34	750028	757804	2433
----------	--------	--------	------

the count rate curve is concave downward - the core is ~~sub~~ subcritical

Repeating count @ ~~1457~~¹⁴⁶¹ rods after lunch

Water in @ 13:27

CE up @ 13:30:36

T1 = 24.9 T2 = 24.8 T3 = 24.9 TD = 25

Time	Ch A	Ch B	Ch C
------	------	------	------

13:31:12	316503	315600	987
----------	--------	--------	-----

13:32:49	416487	416005	1344
----------	--------	--------	------

13:34:13	484593	486756	1618
----------	--------	--------	------

13:35:39	532966	533099	1741
----------	--------	--------	------

13:37:01	574086	577488	1891
----------	--------	--------	------

13:38:19	608104	612984	2001
----------	--------	--------	------

13:39:37	634476	639569	2019
----------	--------	--------	------

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20 Aug 10

The core is loaded to 1465 rods

Water in @ 14:09

CE up @ 14:18:27

T₁ = 24.9 T₂ = 24.8 T₃ = 24.9 TD = 25

Time	Ch A	Ch B	Ch C
14:19:03	545828	547041	1783
14:20:25	805045	814856	2623
14:21:51	1103307	1126083	3574
14:23:14	1430399	1477283	4750
14:24:45	1833450	1909485	5976
14:26:39	2401146	2538782	8143
14:28:17	2923806	3185405	9838
14:29:44	3521379	3811491	11742
14:31:06	4120574	4521077	14060
14:32:56	5011378	5591684	17518
14:34:25	5845126	6598357	20468
14:36:09	6921947	7935576	24969
14:37:44	8005383	9290709	29244

The count rate plot is concave upward. This core is supercritical

24 Aug 10

August 24, 2010

1463 Rods in core

WATER in core 9:13

CE Up: 9:16:38

T₁ = 23.6 T₂ = 23.6 T₃ = 23.6 DT. 24

Time	Ch. A	Ch. B	Ch. C
9:17:40	627778	642740	1977
9:19:08	910723	938722	2872
9:20:42	1257806	1305943	4019
9:22:23	1668831	1754149	5382
9:23:54	2129298	2268522	6926

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Counts @ 1463

August. 24, 2010

Time	Ch. A	Ch. B	Ch. C
9:25:26	2650983	2855703	8674
9:26:57	3224972	3518525	10418
9:28:25	3865927	4273028	12958
9:30:02	4657901	5218061	15864
9:31:35	5511369	6266787	18894
9:33:08	6474276	7462254	22210
9:34:37	7470153	8700927	26326
9:36:12	8670741	10218790	31657
9:37:40	9937910	11821259	37059
9:39:17	11373520	13627090	43910
9:40:54	12989870	15625543	51921
$T_1 = 23.7$	$T_2 = 23.6$	$T_3 = 23.7$	DT = 29

Core configuration was Super antihel.

Unleaded # 1 fuel Rod.

1462 rods in core

Water in core 10:26

CE Up: 10:30:01

 $T_1 = 23.5$ $T_2 = 23.4$ $T_3 = 23.4$ DT = 24

Time	Ch. A	Ch. B	Ch. C
10:31:40	473235	474886	1513
10:33:31	591666	597091	1873
10:34:38	685508	690927	2092
10:36:29	799160	809566	2525
10:39:23	947221	967740	25 3056
10:41:40	1041134	1062414	3296
10:43:04	1096882	1121925	3488
10:44:30	1145111	1174350	3720
10:45:58	1178099	1210442	3695

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Counts @ 1462

August 24, 2010

Time	Ch. A	Ch. B	Ch. C
10:47:21	1221420	1259002	3846
10:48:49	1260649	1293429	4098
10:50:11	1292480	1325032	4225
10:51:52	1328179	1367000	4296
10:53:16	1353160	1393689	4357
10:54:58	1384777	1428499	4502
$T_1 = 23.6$	$T_2 = 23.5$	$T_3 = 23.6$	DT = 24

Plots show configuration is sub critical.

25 Aug 10

August 25, 2010

1425 fuel loading, will repeats 1425, 1433, 1437 & 1445 sequence.

Water in core 10:30

CE Up: 10:34:52

$T_1 = 24.4$ $T_2 = 24.4$ $T_3 = 24.4$ DT = 25

Time	Ch. A	Ch. B	Ch. C
10:37:00	38063	37511	134
10:38:30	37844	38314	138
10:39:53			
10:41:46			
10:48:17	37792	37609	113
10:49:39	37825	38021	121
10:51:03	38459	38024	103
10:52:23	38042	37747	126
10:53:44	37611	37563	131
10:55:07	38362	38159	108
10:56:28	38228	37881	124
10:57:52	38711	38122	136

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August 25, 2010

loaded 8 fuel Rods, 1433 fuel Rods in Core.

Water in Core 11:30

CE Up: 11:33:53

 $T_1 = 24.4$ $T_2 = 21.3$ $T_3 = 24.4$ $DT = 25$

Time	Ch. A	Ch. B	Ch. C
11:34:18	46545	46010	140
11:35:40	46711	46237	133
11:37:27	46998	46585	126
11:38:44	46565	46904	149
11:40:11	47380	46948	153
11:41:31	47263	46989	166
11:42:51	47390	4	
11:45:48	47691	47284	164
11:47:05	47603	47623	126
11:48:42	46987	47238	127
11:51:50	47633	47092	166
11:53:53	47574	47096	143
11:55:17	47582	46986	138
11:57:17	47867	47329	160
11:58:54	47513	47205	148
Sum of 10	475093	471790	1491

Projected DL 1465.37 / 1465.79 1471.71 (Ch A+B)
 " GAH 1465.4 ± .36 1465.8 ± .36 1471.4 ± 8.6 1465.6 ± .25
 Load to 4 fuel Rods for core loading of 1433 1437 and

Water in Core 14:18

CE Up: 14:21:37

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August 25, 2010

25 Aug 10

 $T_1 = 24.4$ $T_2 = 24.4$ $T_3 = 24.4$

DT = 25

Time	Ch A	Ch B	Ch C
14:22:14	56561	56750	163
14:23:33	58067	57375	195
14:24:51	58263	58477	179
14:26:10	58097	58137	187
14:27:27	58282	57896	182
14:28:47	59170	58350	176
14:30:16	58970	57792	170
14:31:34	57925	57701	192
14:32:54	58247	↔ Switch ↔ 58592	216
14:35:46	58569	57810	176
14:37:08	59703	58604	199
14:38:36	58894	58306	201
14:40:34	58009	57896	192
14:41:48	58489	↔ Switch ↔ 58617	181
14:43:17	58141	58233	192
14:45:03	58351	57964	160
14:47:13	59230	58330	205
14:49:51	58356	58326	205
14:52:30	58148	↔ Switch ↔ 58600	166
14:56:43	58153	57594	209
14:58:11	58897	58237	168

 $T_1 = 21.5$ $T_2 = 21.5$ $T_3 = 24.5$

DT = 25

Sum of last 10

585243

581423

1874

5852385826491836

Projected DC

1459.25

1459.02

1459.29

"

"

GAH 1454.3 ± 0.2

1454.2 ± 0.2

1452.6 ± 0.6

will need 8 more fuel elements for core loading. 1495

Projected DC (Ch A+B) 1454.2 ± 0.13

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25 Aug 10

Water in bar 15:30

Cuts @ 1445

CE Up: 15:34:15

 $T_1 = 24.5$ $T_2 = 24.4$ $T_3 = 24.5$

DT - 25

Time

Ch. A

Ch. B

Ch. C

15:35:26

81306

80566

228

15:36:48

83989

82798

269

15:38:21

84894

84157

299

15:39:42

86038

84836

308

15:41:12

85330

84351

262

15:42:36

85375

84382

280

15:44:08

84974

85128

309

15:45:27

85579

84723

256

15:46:47

85495

84795

296

15:48:16

85646

84527

257

15:50:03

86122

84732

250

15:51:22

85800

~~84886~~ 84186

274

15:52:43

85460

84483

279

15:55:12

85174

84751

267

15:57:33

85970

85252

273

15:59:00

86175

85259

281

16:00:39

86206

85201

267

16:02:12

86693

85468

283

16:03:33

86772

85617

288

 $T_1 = 24.6$ $T_2 = 24.5$ $T_3 = 24.5$

DT - 25

16:05:01

86839

85649

248

16:06:22

85247

85279

249

16:07:50

86301

85357

269

16:09:21

85765

84887

262

16:11:02

86496

85603

278

16:12:23

86170

~~85582~~ 85552

226

16:13:51

86592

85509

260

16:15:15

86427

85254

294

 $T_1 = 24.6$ $T_2 = 24.5$ $T_3 = 24.6$

DT - 25

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Date

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25 Aug 10

Sum of last 10 8632.52 854165 2657

Projected DC 1461.84 1462.17 1462.89
" " GAH 1461.8 ± .1 1462.1 ± .1 1464.1 ± 2.0
Projected DC (Ch A+B) 1461.9 ± .06

26 Aug 10

August 26, 2010

Loaded core to 1460 fuel Rods,
Source in U1, no fuel rod in W23 (center)

This is core 800 B0000 A

Water in core 9:46:30

CE Up: 9:50:18

T₁ = 25.1

T₂ = 25.0

T₃ = 25.1

DT = 25

Time	Ch.A	Ch.B	Ch.C
9:52:04	745015	753559	2353
9:53:26	1019897	1037682	3391
9:55:03	1375363	1416723	4477
9:56:25	1724152	1788362	5816
9:57:40	2119602	2226018	7052
9:59:11	2542075	2691900	8492
10:00:39	3033305	3253873	10231
10:02:19	3677114	3992635	12517
10:03:44	4283316	4716066	14856
10:05:06	4940273	5491233	17243

Plot showed Super critical.

will remove center pin & count 1461

[Note: The top thermocouple was bouncing around temperatures while ~~fuel~~ water was going into the core. Looked ok with others while operating.]

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26 Aug 10

1461 fuel Rod in Core, 2058 in center ~~fuel~~
Source in U1.

Water in Core 10:39

CE Up: 10:43:30

 $T_1 = 25.0$ $T_2 = 25.0$ $T_3 = 25.0$

DT = 25

Time	ChA	ChB	ChC
10:45:36	416387	415716	1340
10:47:02	481228	481696	1496
10:48:39	537950	539004	1726
10:50:02	575286	578338	1857
10:52:11	623634	626168	2029
10:53:40	650760	21659900	2119
10:55:11	671306	677091	2249
10:56:43	696964	691889	2261
10:58:11	700285	705219	4482 - 2261 - 2221
10:59:44	716557	720752	2370
10:01:12	727951	732657	2336

Plot showed Subcritical.

Load + more fuel Rod, 1462 core loading.

1462 Fuel Rods in Core

Water in Core 11:31

CE Up: 11:34:40

 $T_1 = 25.0$ $T_2 = 24.9$ $T_3 = 21.9$

DT = 25

Time	ChA	ChB	ChC
11:35:09	825396	322870	1106
11:36:29	436401	435681	1417
11:37:57	527026	527171	1766
11:39:18	659807	600742	1947

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Time	Ch. A	Ch. B	Ch. C
11:40:58	672288	678500	2180
11:42:41 11:42:18	722788	728252	2369
11:43:41	762959	767794	2573
11:45:04	800590	806303	2582
11:46:25	836889	849340	2719
11:48:04	873815	883905	2872
11:49:25	904454	915548	2991

Plot showed subcritical, Next step to ~~to~~ load
one fuel Rod, for 1463 core loading.

Water in Core 13:28

CE Up: 13:31:34

 $T_1 = 25.0$ $T_2 = 29.9$ $T_3 = 25.0$ $DT = 25$

Time	Ch. A	Ch. B	Ch. C
13:32:29	421090	421038	1355
13:33:44	535971	538896	1736
13:35:19	673306	677298	2189
13:36:40	773519	780653	2513
13:38:22	891935	902634	2937
13:40:19	1002367	1020327	3177
13:43:25	1166173	1191754	3889
13:45:15	1252193	1283266	4044
13:46:48	1320327	1353728	4388
13:48:41	1396226	1435019	4757
13:50:43	1469123	1508506	4901
13:55:43	1623529	1677890	5301

Loaded 1 fuel Rod, 1464 Rods in core

This configuration is subcritical

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Counts @ 1464 ✓

August 26, 2010

Water in core 14:23

OE Up: 14:28:07

 $T_1 = 25.0$ $T_2 = 24.9$ $T_3 = 25.0$

DT = 25

Time	Ch. A	Ch. B	Ch. C
14:28:59	150272	449898	1455
14:30:27	615827	617944	2050
14:32:13	811187	819018	2637
14:33:32	952226	969236	3144
14:34:56	1088942	1108220	3622
14:36:24	1232599	1259383	4105
14:37:56	1387509	1423796	4598
14:39:22	1523578	1570129	5064
14:40:47	1639057	1697673	5494
14:42:11	1760896	18261873	5923
14:43:41	1887173	1965095	6297
14:45:08	2010365	2098617	6639

Plot was subcritical

Added one fuel Rod, 1465 fuel rods in core.

Water in core 15:44

OE Up: 15:48:00

 $T_1 = 25.0$ $T_2 = 24.9$ $T_3 = 24.9$

DT = 25

Time	Ch. A	Ch. B	Ch. C
15:49:16	644053	649179	2001
15:50:38	911142	923270	4881 - 2001
15:52:13	1235030	1265893	4057
15:53:42	1567536	1621159	5203
15:55:05	1926598	2010698	6402
15:56:27	2322882	2450439	7719
15:57:52	2762919	2941719	9440
15:59:20	3305879	3563266	11176
16:00:47	3826014	4165357	13045

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count @ 1465

Time	ch. A	ch. B	ch. C
16:02:12	4418119	4878521	15973
16:03:39	5056837	5640008	17825

Plot was Super critical.
END of Day

31 Aug 10

The core is loaded to 1465 rods with center hole filled, source in U1. The Dump tank temperature is 28°C. We will determine whether this core is critical at this temperature and try to find cores that are just critical and just subcritical

Water in @ 9:40

CB up @ 9:43:52

T1 = 27.4 T2 = 27.3 T3 = 27.4 TD = 27

Time	Ch A	Ch B	Ch C	
9:44:40	483966	482015	1591	60 sec counts
9:46:02	676335	679199	2209	
9:47:21	867726	877719	2883	
9:48:40	1058354	1077003	3508	
9:50:11	1283780	1311062	4239	
9:51:40	1509997	1554019	4933	
9:52:58	1723019	1781408	5710	
9:54:18	1940563	2019024	6469	
T1 = 27.4	T2 = 27.4	T3 = 27.4	TD 27	
9:55:44	2184674	2286411	7301	
9:57:03	2409721	2540732	8073	
9:58:25	2649826	2808514	8947	
9:59:46	2908240	3096568	9949	
10:01:09	3186572	3420287	10703	
10:02:39	3494249	3768211	11859	
10:04:00	3779844	4107980	13005	
10:05:31	4142695	4535624	14427	
T1 = 27.4	T2 = 27.3	T3 = 27.4	TD = 27	

This core is super critical

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31 Aug 10

We will remove 1 fuel rod
 The core is loaded to 1464 rods with rod in center position
 and Source in U1.

Water in @: 10.44

CE up @: 10:48:00

T1 = 27.2 T2 = 27.2 T3 = 27.2 T4 = 27

Time	Ch A	Ch B	Ch C	
10:48:32	424110	424187	1382	
10:50:15	610420	611828	2672	60 sec counts
10:51:41	751882	758206	2455	
10:53:12	900220	911748	3004	
10:54:40	1033994	1050129	3362	
10:56:14	1177248	1200365	3883	
10:57:43	1303323	1336456	4292	
10:59:18	1435686	1477939	4706	
11:00:46	1554580	1603076	5159	

T1 = 27.2 T2 = 27.2 T3 = 27.2 T4 = 27

11:02:14	1676864	1733080	5765
11:03:48	1799437	1869535	6030
11:05:25	1943775	2027716	6542
11:07:23	2096523	2193348	7072
11:08:49	2214556	2324152	7432
11:10:22	2337792	2462220	7872
11:11:51	2448413	2585932	8138
11:13:17	2556489	2705425	8623
11:14:42	2673806	2837433	9037
11:16:13	2783294	2960657	9445
11:17:40	2884272	3075685	9635
11:19:15	3007286	3214375	10281
11:20:59	3123075	3350736	10661
11:22:36	3241576	3482454	11093

T1 = 27.2 T2 = 27.1 T3 = 27.2 T4 = 27

11:24:16 3371236 3637396 11652

This core is subcritical

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The core now is in configuration 800 B0000 A with the source in the center (W23) and 1460 rods in the core

Water in @ 13:19

CE up @ 13:22:50

T1 = 27.0 T2 = 26.9 T3 = 27.0 TD = 27

Time	Ch A	Ch B	Ch C
13:23:23	1154215	1172995	3846
13:25:17	1777658	1840802	5942
13:26:46	2312370	2428045	7740
13:28:17	2885929	3071981	9799
13:29:54	3498096	3776210	11925
13:31:29	4140776	4523300	14317
13:33:03	4790398	5297851	16625
13:34:38	5494909	6145815	19278

P ~ .08 W

T1 = 27.0 T2 = 26.9 T3 = 27.0 TD = 27

13:36:13	6225459	7039814	22027
13:37:53	7012191	8014706	25164
13:39:28	7808652	9012181	28232

T1 = 27.0 T2 = 27.0 T3 = 27.0 TD = 27

This core is supercritical

The core is loaded to 1459 rods (removed 1)

Water in @ 14:14

CE up @ 14:18:05

T1 = 26.9 T2 = 26.8 T3 = 26.9 TD = 27

Time	Ch A	Ch B	Ch C
14:18:38	922927	933150	3076
14:20:16	1325065	1352236	4430
14:21:49	1677100	1731104	5677
14:23:16	1987075	2069594	6703
14:25:02	2368058	2491192	7908
14:26:32	2668993	2821882	8872
14:28:00	2945345	3137818	10194
14:29:32	3233404	3466435	11082
14:31:08	3512260	3782935	11809
14:32:41	3768171	4087549	13060

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Counts @ 1459

Time	Ch A	Ch B	Ch C
14:34:23	4051599	4419093	13910
14:36:05	4337052	4754681	15237
14:37:35	4559829	5015635	15769
14:39:14	4822934	5328856	16822
14:40:58	5083526	5644451	17922
14:42:30	5317098	5923921	18542
T1 = 26.9	T2 = 26.9	T3 = 26.9	TD = 27

This core is subcritical

1 Sept 10

We are starting with 1459 rods in 800B0000A with the source in W-23. Next is 1460. Then 1460 with source in W-41 to check worth of source.

1459 rods in core Source in W23 configuration 800B0000A
Water in @ 10:30

CE up @ 10:34:15

T1 = 26.8 T2 = 26.7 T3 = 26.7 TD = 27

Time	Ch A	Ch B	Ch C	60 sec counts
10:34:45	953442	970026	3195	
10:36:19	1274934	1307435	4338	
10:37:50	1556581	1602964	5233	
10:39:17	1794631	1870877	6081	
10:40:45	2021893	2117517	6896	
10:42:12	2227175	2347466	7589	
10:43:43	2408713	2550910	8167	
10:45:10	2523831	2736818	8709	
10:46:44	2744914	2928613	9610	~ + w
T1 = 26.8	T2 = 26.6	T3 = 26.6	TD = 27	
10:48:18	2930487	3140209	9767	
10:49:52	3132352	3377899	10616	
10:51:26	3320004	3594254	11477	. 1 w
10:53:00	3495280	3799968	12041	
10:54:40	3685459	4013794	12919	
10:56:13	3856441	4217461	13381	

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1 Sept 10

Counts @ 1459 rods

Time	Ch A	Ch B	Ch C
10:57:50	4013793	4409584	13952
10:59:16	4174889	4597758	14699
11:00:50	4333699	4788632	15239
11:02:24	4489700	4976118	15678
T1 = 26.6 T2 = 26.5 T3 = 26.5 TD = 26			

The core is loaded to 1460 rods with source in the
Center (W 23) 800 B0000 A

Water in @ 1244

CE up @ 12:47:56

T1 = 25.5 T2 = 25.4 T3 = 25.4 TD = 26

Time	Ch A	Ch B	Ch C
12:48:33	1202796	1245768	3953
12:50:54	2259578	2410068	7351
12:52:16	2978220	3227633	10134
12:54:04	4062345	4498276	14078
12:55:38	5117217	5774542	18119
12:57:04	6181411	7083018	22134
12:58:30	7401421	8611949	26949
12:59:50	8582945	10090977	32197
13:01:56	10693130	12751298	42333 ~.5W
13:03:17	12165352	14574643	49513

T1 = 25.4 T2 = 25.3 T3 = 25.3 TD = 26

13:04:40	13732231	16484670	57388
13:06:02	15394100	18460708	68125

T1 = 25.4 T2 = 25.3 T3 = 25.3 TD = 25

The core is Supercritical

Dropped SE 2

13:09:01	493190	478820	1602
13:10:31	128364	122522	412
13:12:02	67649	64959	207
13:14:03	47849965	47849	662
13:16:09	46441	44132	179

SE CE drop 13:17:33

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1 Sept 10

CF Dropped

Time

ChA

13:17:40

235723987

21357

104

13:19:00

22809

20795

132

13:20:20

23201

20825

552

We will move the source to U-1 and leave the center position open

Source in U1 1460 rods in configuration 800B0000A

Water in @ 13:59

CF up @ 14:02:37

T1 = 24.7 T2 = 24.6 T3 = 24.6 TD = 25

Time

ChA

Ch B

Ch C

60 sec counts

14:03:07

580057

568794

1886

14:04:37

946515

919296

3006

14:06:09

1398968

1342405

4351

14:07:44

1971827

1869821

6107

14:09:15

2648042

2471148

8135

14:10:43

3441538

3158868

10589

14:12:11

4396153

3969157

13805

14:13:50

5693788

5054862

17488

14:15:25

7183219

6259596

22348

14:16:53

8851394

7598356

27918

T1 = 24.6

T2 = 24.5

T3 = 24.5

TD = 25

14:18:22

10779638

9126780

34032

14:19:53

12999690

10895787

42407

~.5W

14:21:28

15572670

12964744

53448

14:23:10

18469443

15400052

67422

14:24:44

21200183

17810319

84093

T1 = 24.6

T2 = 24.5

T3 = 24.5

TD = 25

This core is supercritical

The input cables to channels A and B were switched before this run - thus A is now higher than B (B was higher before). This is actually the correct hookup

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1 Sept 10

removing one rod to 1459 rods in the core
Core loaded to 1459 rods, source in U-1, config. 800B0000A
Water in @ 15:01

CE up @ 15:04:41

T1 = 24.2 T2 = 24.1 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C	
15:05:11	478095	472985	1513	60 sec
15:06:43	737928	723221	2339	
15:08:11	1004523	982080	3245	
15:09:43	1321030	1275562	4089	
15:11:10	1635737	1566470	5135	
15:12:43	1996594	1895273	6181	
15:14:12	2377722	2237258	7415	
15:15:39	2774449	2588609	8594	
15:17:16	3269867	3023292	9982	
15:19:16	3934371	3594989	12061	
15:20:45	4468092	4048465	13686	
15:22:23	5144550	4615000	15818	
T1 = 24.2	T2 = 24.1	T3 = 24.2	TD = 24	
15:24:02	5866204	5211320	18048	
15:25:29	6572429	5785330	20254	
15:26:56	7326939	6401314	22643	
15:28:25	8170111	7077244	25269	
T1 = 24.2	T2 = 24.1	T3 = 24.2	TD = 24	

This core is supercritical

We will pull one rod to 1458

Core is now loaded to 1458 rods, source in U-1, 800B0000A
Water in @ 15:59

CE up @ 16:02:28

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
16:03:10	413474	410708	1320
16:04:46	589741	579546	1868
16:06:15	729482	720887	2378
16:07:42	860603	846072	2669
16:09:06	980197	962867	3086

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1 Sept 10

counts @ 1458 rods

Time	Ch A	Ch B	Ch C
16:10:41	1104759	1080075	3552
16:12:13	1226504	1292961	3849
16:13:43	1336518	1297761	4147
16:15:23	1454070	1408707	4653
16:17:00	1560930	1507500	4742
16:18:31	1655889	1595332	5206
16:20:15	1767650	1698769	5562
16:22:18	1877170	1796654	5792
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24
16:23:51	1963857	1877812	6180
16:25:26	2056223	1962673	6377
16:26:58	2141279	2038929	6651
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

This core is subcritical

3 Sept 10

The core is loaded to 1459 rods, source in U-1, 800B0000A
 We will bracket critical with source in U-1 then with
 source in W-23 (the center)
 Water in @ 9:47

CE up @ 9:50:33

T1 = 24.2 T2 = 24.1 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C
------	------	------	------

~~9:51:07~~~~9:53:29~~

9:55:17	1151557	1125786	38729
9:56:57	1469498	1423342	4717
9:58:24	1766291	1699726	5641
9:59:56	2106966	2010787	6682
10:01:22	2450880	2319344	7727
10:02:45	26422810775	2642204	8914
10:04:15	3229526	3009398	10090
10:05:41	3669427	3395487	11548
10:07:33	4296821	3929342	13445

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3 Sept 10

Counts @ 1459

Time	Ch A	Ch B	Ch C
10:09:18	4918772	4453355	16544
T1 = 24.2	T2 = 24.2	T3 = 24.2	TD 24
10:10:57	5611637	5035861	17619
10:12:20	6313743	5613752	19563
10:14:16	7401532	6497157	23356
10:15:39	8276769	7196465	25933
10:18:15	10141065	8685466	32529

This configuration is super critical
Unload 1 rod to 1458

The core is loaded to 1458 rods, source in U-1, 800 B0000A
Water in @ 10:54

CE up @ 10:58:04

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
10:58:58	505817	502072	1603
11:00:15	686281	679484	2171
11:01:59	925792	910793	2931
11:03:49	1196731	1168589	3824
11:05:21	1433524	1392628	4604
11:06:49	1662429	1603986	5329
11:08:17	1883703	1810266	5935
11:10:20	2213988	2108387	7063
11:12:57	2493366	2386918	8004
11:13:20	2728774	2569861	8704
11:14:49	3008951	2816684	9574
11:16:44	3378920	3141003	10641
11:18:11	3665145	3386800	11507
11:20:21	4111635	3773542	12978
11:21:50	4444704	4057162	13998
11:23:27	4809706	4364007	15065
11:24:52	5159431	4653468	16132
T1 = 24.1	T2 = 24.0	T3 = 24.0	TD 24
11:26:16	5511678	4952112	17167
11:27:49	5359582	5301645	18754

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Counts @ 1458 rods

Time	Ch A	Ch B	Ch C
11:29:32	6419756	5695255	20259
11:31:08	6893575	6082830	22676

This core is supercritical
 We will remove 1 rod to 1457 rods
 The core is loaded to 1457 rods, source in U-1, 800B0000A
 Water in @ 13:40

CE up @ 13:43:16

T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
13:43:50	396843	396983	1290	
13:45:10	530593	531166	1775	
13:46:39	662624	658758	2102	
13:48:06	776051	770368	2528	
13:49:26	884890	874531	2940	
13:50:57	990784	975913	3224	
13:52:39	1100785	1082283	3528	
13:54:25	1204966	1180147	3964	
13:55:44	1282088	1251795	4197	
13:57:15	1358123	1325150	4323	
13:58:39	1421746	1387606	4617	
14:00:07	1492053	1454081	4792	
14:01:53	1574000	1524887	5024	
14:04:03	1663691	1611668	5223	
14:05:23	1717867	1663865	5480	

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

We will load to 1460 rods and move the source to the
 center of the array (W-23)

The core is loaded to 1460 rods, source in W23(center) 800B0000A
 Water in @ 14:40

CE up @ 14:43:50

T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
14:44:16	1138829	1115296	3721
14:46:05	1935707	1862982	6256 6256
14:47:30	2648585	2498917	8353

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3 Sept 10 counts @ 1460

Time	Ch A	Ch B	Ch C	60 sec counts
14:48:59	3490202	3240680	10939	
14:50:42	4601725	4191873	14412	
14:52:04	5596112	5018841	17523	
14:53:29	6739573	5956406	21448	
14:54:50	7942358	6931478	25069	
14:56:42	9745454	8376108	30952	
14:58:05	11252503	9571562	36320	
14:59:32	12900638	10881202	42351	
15:01:13	14543412	12530122	50390	
15:02:50	16959137	14128199	59398	
15:04:14	18751478	15681303	68470	
15:05:59	20969403	17618593	80812	
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24	

This core is supercritical

We will remove one rod to 1459

Core is loaded to 1459 rods, source in center (W-23) 800B0000A

Water in @ 15:40

CE up @ 15:44:15

T1 = 23.9 T2 = 23.9 T3 = 23.9 TD = 24

Time	Ch A	Ch B	Ch C
15:45:22	1161836	1137550	3791
15:47:59	1664319	1603356	5273
15:48:40	2183543	2084624	6739
15:50:12	2657412	2508847	8257
15:51:31	3072580	2875955	9652
15:52:57	3519707	3263986	10941
15:54:21	3662641 3980252	3662641	12426
15:56:00	4503790	4109333	13909
15:57:29	5012804	4538603	15687
15:58:53	5479390	4923878	17134
16:00:32	6024829	5377100	18713
16:02:10	6591262	5842967	20526
16:04:04	7231092	6354705	22650
16:05:42	7814972	6827960	24177
16:07:12	8358750	7269838	26365

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3 Sept 10

Counts @ 1459

Time	Ch A	Ch B	Ch C
16:08:51	8961183	7736843	28187
16:10:19	9490212	8172761	30034
16:22:00	10127443	8678970	32292
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24
16:13:13.34	10712859	9146870	66518 34226
16:15:15	11369753	9665438	103124 36606
16:17:44	12368111	10461469	40337
16:19:11	12950555	10919468	42414
16:20:45	13564922	11419725	44547
16:22:15	14184410	11913449	47302
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

This core is supercritical

7 Sept 10

We will take another look at 1459 elements and bracket DC

The core is loaded to 1459 rods, Source in W-23 (center) 800B0000A
Water in @ 11:09

CE up @ 11:12:30

T1 = 26.1 T2 = 26.1 T3 = 26.1 TD = 26

Time	Ch A	Ch B	Ch C
11:13:30	1089298	1062740	3452
11:14:53	1467366	1419799	4696
11:16:28	1920752	1832962	6164
11:17:50	2295063	2176076	7398
11:19:20	2714654	2548195	8626
11:20:51	3139315	2926054	9956
11:22:13	3527193	3262386	11087
11:23:52	3998335	3665293	12637
11:25:18	4458336	4056977	14165
11:26:41	4910128	4437723	15425
11:28:11	5426274	4865636	17114
11:30:04	6079431	5405164	19088
11:31:27	6603769	5834244	20972

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7 Sept 10

Counts @ 1459

Time

Ch A

Ch B

Ch C

11:32:53

7132817

6263043

22437

11:34:31

7791365

6796184

24607

11:35:54

8362462

7250757

26831

11:37:18

8943261

7723531

28619

11:38:44

9561554

8211626

30559

T1 = 26.1

T2 = 26.0

T3 = 26.0

TD = 26

11:40:10

10191279

8709557

32593

11:41:36

10851630

9239399

35183

11:43:03

11571474

9809612

37787

11:44:37

12467372

10517446

41011

11:46:06

13354638

11229788

44542

11:47:35

14278197

11960699

48400

11:49:09

15260019

12757399

52635

11:50:39

16216941

13538317

56876

11:52:14

17209861

14359408

61329

T1 = 26.1

T2 = 26.0

T3 = 26.0

TD = 26

this core is supercritical

One fuel rod was removed - now have 1458 rods in the core.

8 Sept 10

The core is loaded to 1458 rods, source in W-23 (center)

800B0000A

Water in @ 11:33

CE up @ 11:37:03

T1 = 24.4

T2 = 24.3

T3 = 24.4

TD = 25

Time

Ch A

Ch B

Ch C

11:38:13

1003111

984724

3156

60 Sec. Counts

11:40:14

1450876

1409483

4614

11:41:48

1797935

1725752

5604

11:43:15

2127476

2031788

6582

11:44:43

2466596

2335875

7570

11:46:05

2775375

2613151

8730

11:47:42

3141732

2936388

9832

11:49:04

3455936

3211873

10605

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8 Sept 10

Counts @ 1458

Time	Ch A	Ch B	Ch C
11:50:47	3876115	3575992	12030
11:52:42	4334489	3964555	13379
11:54:22	4743647	4312992	14675
11:55:46	5078602	4595097	15591
11:57:18	5450469	4904919	16722
12:00:02	6110582	5445659	19091
12:01:26	6442094	5721415	19814
12:03:07	6854018	6052372	21290
12:04:34	7172999	6315902	22402
12:06:05	7519667	6592593	23413
12:07:34	7867928	6867418	24592
12:09:36	8321780	7239746	26012
12:10:58	8660712	7513853	27085
T1 = 24.4	T2 = 24.3	T3 = 24.4	T4 = 24
12:12:20	8974345	7765947	28252
12:14:11	9402285	8106743	29693
12:15:34	9740023	8376369	30635
12:16:57	10068567	8643372	31944
12:18:27	10449772	8941043	33093
12:19:53	10779291	9200140	34578
12:21:48	11236365	9572766	35803
12:23:18	11601466	9858952	37132
12:25:01	12019225	10188751	38661
12:26:59	12490181	10566726	40292
12:28:33	12880960	10888197	42359
12:30:10	13303313	11218630	43621
12:31:58	13771148	11592147	45386
12:33:27	14168556	11912349	46788
12:35:01	14540573	12209949	48747
12:36:43	14982771	12572414	50261
12:38:18	15379847	12898268	52157
T1 = 24.4	T2 = 24.3	T3 = 24.4	24

This core is very close to critical

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8 Sept 10

The source was moved to U-1

1458 rods in the core, source in U-1, 800 B0000A

Water in @ 15:13

CE up @ 15:16:45

T1 = 24.3 T2 = 24.2 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C
15:17:16	426361	426820	1358
15:19:55	765400	758075	2457
15:21:12	929696	917273	2907
15:22:40	1125829	1105219	3563
15:24:06	1310174	1277991	4207
15:25:29	1455269	1435490	4661
15:26:56	1667925	1613067	5290
15:28:22	1868568	1799105	5742
15:30:26	2142977	2047072	6634
15:32:07	2374245	2259327	7482
15:33:28	2561685	2427738	8314
15:35:07	2789543	2634136	8669
15:36:50	3047474	2856547	9586
15:38:25	3272571	3056375	10214
15:40:22	3580019	3326530	11058
15:41:48	3798789	3512593	11818
15:43:19	4044883	3724328	12669
15:44:40	4267400	3917246	13239
15:46:06	4498792	4113015	14081
15:47:48	4806384	4374923	15042
15:49:10	5049375	4570444	15833
15:50:35	5281103	4771748	16419
T1 = 24.3	T2 = 24.2	T3 = 24.3	TD = 24
15:52:00	5558374	5003000	17376
15:53:46	5904783	5290253	18505
15:56:20	6429924	5716037	19950
15:58:02	6771190	5992335	21078
15:59:27	7094466	6253055	22056
16:01:01	7523659	6608954	23486
16:02:37	7980453	6975708	24989

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8 Sept 10

Counts @ 1458 Source in U-1 800B0000A

Time	Ch A	Ch B	Ch C
16:04:21	8531388	7414035	26810
16:05:48	8997050	7794915	28173
16:07:19	9504491	8191980	30031
16:08:50	10034766	8617877	31986
16:10:13	10550974	9023401	33801
16:11:52	11172782	9527976	35381
16:13:22	11782378	10007357	37669
16:14:43	12346491	10455154	40077
16:16:16	13006072	10986150	42740

T1 = 24.4 T2 = 24.3 T3 = 24.4 TD = 24

This core is supercritical

9 Sept 10

The core is loaded to 1464 rods, source in U-1, config. 800B0000B
 (center location has rod in it.)

Water in @ 14:27

CE up @ 14:30:50

T1 = 24.8 T2 = 24.7 T3 = 24.8 TD = ~~24.8~~ 25

Time	Ch A	Ch B	Ch C	
14:31:46	471382	470550	1567	6050 counts
14:33:12	656953	651451	2091	
14:34:37	850081	837112	2694	
14:36:02	1043426	1020838	3408	
14:37:28	1246258	1212503	3982	
14:39:02	1463993	1422200	4518	
14:40:30	1684140	1624678	5248	
14:42:01	1896286	1821166	6010	
14:43:37	2136807	2036140	6664	
14:45:09	2352501	2231258	7336	
14:46:39	2593432	2448869	8179	
14:48:04	2838702	2669754	8787	
14:49:29	3120887	2912327	9600	
14:51:00	3403569	3158414	10653	
14:52:42	3766940	3472912	11579	

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Counts @ 1464 800B0000B

Time	Ch A	Ch B	Ch C
14:54:48	4229004	3872138	12796
14:56:35	4654553	4231989	14466
14:58:35	5150890	4642683	16091
15:00:12	5577195	4996166	17119
15:01:40	5988921	5335658	18502
15:03:07	6436728	5699732	19927
T1 = 24.8	T2 = 24.8	T3 = 24.8	TD = 25

This core is supercritical
We have removed the fuel rod in the center of the array
Core loaded to 1463 rods, source in U-1 Config 800B0000A
Water in @ 16:23

CE up @ 16:26:54

T1 = 24.7 T2 = 24.6 T3 = 24.6 TD = 25

Time	Ch A	Ch B	Ch C
16:27:34	999160	977642	3184
16:29:47	2887360	2706116	8869
16:31:08	5083348	4580353	15539
16:32:37	9083035	7818190	28187
16:34:02	14707580	12291047	48597

Lowering CE

We will pull the CE and count again

~~CE up @~~ T1 = 24.7 T2 = 24.6 T3 = 24.7 TD = 25

withdrawing CE @ 16:44:37

CE up @ ~~16:44:37~~ 16:47:25

Time	Ch A	Ch B	Ch C
16:47:32	742762	735063	2368
16:48:59	1623276	1567149	5133
16:50:23	3141482	2927944	9818
16:51:49	5805397	5179865	17903
16:53:13	10058842	8595447	31380
16:54:45	18842442	14031822	58003
16:56:13	24123103	20469453	104334

T1 = 24.7 T2 = 24.6 T3 = 24.7 TD = 25

this core is supercritical. Honest.

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15 sept 10

The core is loaded to 1464 rods, source in U-1, rod in the center, source in U-1 configuration 800B0000B

Water in @ 11:45

CE up @ 11:48:40

T1 = 24.1 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
11:49:13	477594	473842	1518	
11:50:36	710866	700699	2302	
11:51:56	971875	950483	3186	
11:53:17	1268149	1230978	4046	
11:54:39	1618073	1555835	4985	
11:56:04	2048382	1947734	6345	
11:57:25	2522547	2379106	7836	
11:58:54	3140524	2919761	9629	
12:00:17	3792165	3478354	11754	
12:01:45	4572535	4144116	13900	
12:03:26	5636374	5031690	17026	
12:04:58	6742750	5927361	20541	
12:06:26	8041519	6972445	25032	
12:08:22	10030852	8560363	31543	
12:09:46	11674142	9859991	36848	
12:11:34	14030569	11731012	45976	
12:13:11	16312365	13589156	56022	
12:14:41	18510665	15417556	66330	
T1 = 24.1	T2 = 24.0	T3 = 24.1	TD = 24	

This core is supercritical

One fuel rod was removed

the core is loaded to 1463 rods, source in U-1, rod in central position, source in U-1, configuration 800B0000B

Water in @ 14:05

CE up @ 14:09:14

T1 = 23.8 T2 = 23.6 T3 = 23.7 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
14:10:04	447388	444376	1396	
14:11:35	625873	608580	2035	
14:13:12	782084	770858	2534	

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15 Sept 10

Counts @ 1463 rods

Time	ChA	ChB	ChC
14:14:40	919080	904133	2920
14:16:11	1057668	1034353	3342
14:17:44	1184464	1155403	3725
14:19:16	1318457	1280947	4161
14:20:46	1444139	1398794	4625
14:22:25	1573831	1515965	5046
14:23:52	1681877	1617845	5327
14:25:29	1792051	1718538	5623
14:26:57	1883306	1801367	5845
14:28:31	1977072	1890363	6135
14:30:02	2079842	1977906	6560
14:31:41	2175884	2069831	6855
14:33:15	2264680	2149894	7105
14:34:47	2354776	2229855	7325
14:36:22	2449101	2315210	7641
14:38:21	2568940	2421993	8189

T1 = 23.8 T2 = 23.7 T3 = 23.8 TD = 24

This core is subcritical

One rod was added

Core loaded to 1464 rods, Source in U-1, rod in central position, Configuration 800B0000B

Water in @ 15:49

CB up @ 15:52:23

T1 = 23.6 T2 = 23.5 T3 = 23.5 TD = 24

Time	ChA	ChB	ChC
15:52:52	447015	445214	1450
15:54:26	680565	671457	2177
15:55:57	913823	893889	2901
15:57:24	1138663	1105738	3612
15:58:52	1383000	1338528	4386
16:00:27	1663255	1597510	5084
16:01:55	1929472	1843116	6052
16:03:26	2226512	2109856	6935
16:04:58	2553344	2399240	8129

60 sec. counts

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15 Sept 10

Counts @ 1464

Time	Ch A	Ch B	Ch C
16:06:30	2893124	2707019	9050
16:08:09	3278073	3042285	10188
16:09:42	3664042	3377581	11234
16:11:23	4128412	3771806	12817
16:12:59	4588196	4159320	14177
16:14:36	5103225	4586206	15496
16:16:20	5638234	5030784	17296
16:17:58	6206037	5498822	19018
16:19:45	6865810	6040446	21044
16:21:18	7495245	6538542	22918
16:22:49	8110295	7037633	25427
16:24:51	9051380	7780171	28220
16:26:23	9782318	8368910	30487
16:27:58	10618217	9025162	33533
T1 = 23.7	T2 = 23.5	T3 = 23.6	TD = 24

This core is subcritical

16 Sept 10

The core is loaded to 1458 rods with the source in the center (W-23), configuration 800B0000A

Water in @ 11:03

CE up @ 11:07:35

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
11:08:17	1004566	981662	3215
11:09:38	1303660	1264975	4122
11:11:08	1647921	1586497	5130
11:12:34.41	1974555	1982296	6260
11:14:28	2326703	2208050	7418
11:16:07	2681132	2518968	8195
11:17:57	3101947	2890457	9715
11:19:57	3555940	3287414	11084
11:21:51	3983818	3658102	12424
11:23:15	4304429	3928430	13198

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16 Sept 10
Counts @ 1458

Time	Ch A	Ch B	Ch C
11:25:05	4734212	4294664	14574
11:26:32	5107656	4600529	16852
11:28:09	5514991	4945485	17112
11:29:44	5933582	5288801	18469
11:31:22	6363029	5634855	19788
11:32:49	6719014	5930154	20909
11:34:15	7080962	6221033	21635
11:35:40	7440906	6514863	23083
11:37:09	7843733	6839874	24453
11:38:36	8217357	7148179	25411
11:40:01	8569248	7425024	26758
11:41:42	9033947	7801041	28275
11:43:12	9406333	8092401	29288
11:44:37	9797867	8406061	31044
11:46:02	10182214	8712465	32490
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

Supercritical

One rod was removed.

Core is loaded to 1457 rods, source in W-23 (center)
Configuration 800B0000 A

Water in @ 14:32

CE up @ 14:36 ~ 110
T1 = 23.8 T2 = 23.8 T3 = 23.8 TD = 24

Time	Ch A	Ch B	Ch C
14:37:04	935719	923378	3018
14:38:25	1180472	1155036	3119
14:40:07	1443599	1406258	4582
14:41:37	1649312	1594642	5170
14:43:08	1822573	1758163	5669
14:44:30	1968997	1895082	6329
14:45:54	2105318	2018466	6589
14:47:25	2233199	2135065	7189
14:48:50	2339682	2229566	7417
14:50:39	2442683	2324072	7600
14:52:13	2535315	2408406	8028

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16 Sept 10

Counts @ 1457 rods

Time	Ch A	Ch B	Ch C
14:53:42	2608478	2573831	8304
14:55:03	2666133	2525587	8461
14:56:25	2736672	2588478	8803
14:57:48	2801844	2644175	8795
14:59:09	2847119	2684381	8837
15:00:29	2901365	2733902	9119
T1 = 23.9 T2 = 23.8 T3 = 23.9 TD = 24			

This core is subcritical

Added 1 rod and moved the source to U-1
Core loaded to 1458 rods with source in U-1
configuration 800B0000A

Water in @ 15:42

CEup @ 15:45:34

T1 = 23.7 T2 = 23.7 T3 = 23.7 TD = 24

Time	Ch A	Ch B	Ch C
15:46:12	470061	410112	1384
15:48:00	614511	610790	1955
15:49:21	759915	752106	2397
15:51:17	966375	952860	3143
15:52:49	1126198	1103471	3541
15:54:29	1291486	1258997	4119
15:57:01	1531738	1481035	4799
15:58:30	1668996	1611258	5421
16:00:19	1837680	1769972	5776
16:02:29	2038248	1949749	6490
16:04:01	2157067	2057995	6663
16:06:04	2337106	2221773	7346
16:08:36	2537961	2402080	7893
16:10:12	2679995	2527304	8467
16:12:35	2871023	2695447	9058
16:14:17	3006755	28119371 ?	9302
16:15:52	3144161	2943410	9939
T1 = 23.8 T2 = 23.7 T3 = 23.8 TD = 24			

This core is subcritical

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Date

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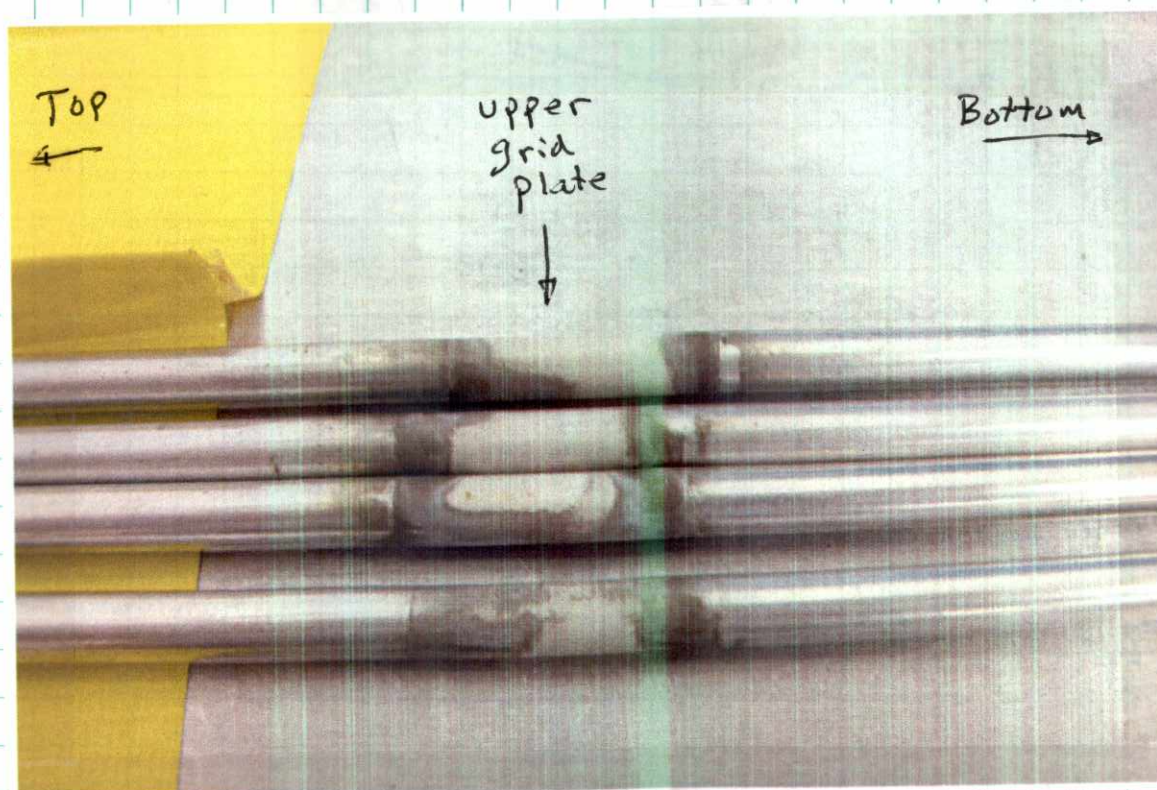
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6 Oct 10

We are now working on core 800B0000B with water holes in the core. Our first configuration will have the outline of 1425 rods with four rods removed from positions W19, W27, S23, and A23. These are the rods on the principal axes in row 4 from the center element. The central element in position W23 is in row 0 (zero) in this system.

Discoloration on the outside of the four fuel rods was observed in the area where the rods contact the upper grid plate. These rods have been in the core since 10 Feb '10 since these rods are in ~~a~~ water holes in core 800B0000.



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6 Oct 10

Core loaded to 1421 rods - 1425 in core 800B0000B
minus 4 rods in row 4 from the central fuel
rod.

Water in @ 10:38

CE up @ 10:41:56

T1 = 23.9

T2 = 23.8

T3 = 23.9

TD = 24

~~Ch A~~

Time

Ch A

Ch B

Ch C

10:42:48

53046

53456

149

60sec

10:44:28

53703

53943

175

Counts

10:45:47

53050

53478

172

10:47:09

53981

54129

190

10:48:36

54396

54015

185

10:49:51

54003

54527

159

10:51:15

54295

55189

172

10:53:12

54383

54572

179

10:54:34

54616

55347

185

10:56:16

54441

54957

185

10:57:46

54304

55098

176

10:59:11

54798

54862

173

11:00:37

54694

55238

172

11:02:00

54277

54651

182

11:03:35

54247

54589

168

11:05:06

54843

54932

155

11:06:30

53888

54966

174

T1 = 23.9

T2 = 23.8

T3 = 23.9

TD = 24

This core is supercritical

The core is now loaded to 1429 Rods - outline of
1433 rods in core 800B0000B with rods in W19,
W27, S23 and a 23 removed.

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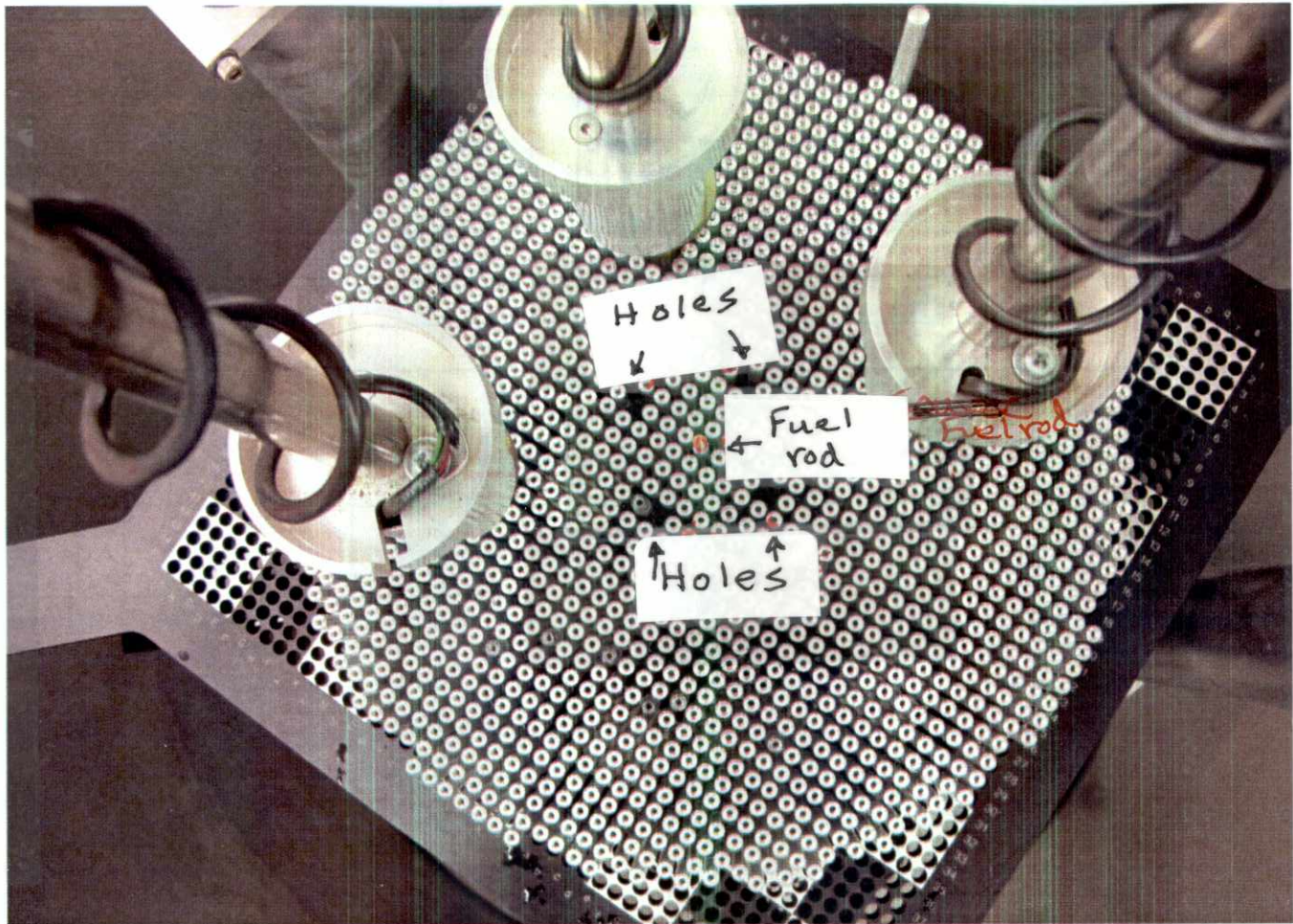
Date

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6 OCT 10



Core with 1429 rods

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6 Oct 10

1429 rods in the core

Water in @ 15:18

CE up @ 15:21 : 24

T₁ = 23.8 T₂ = 23.7 T₃ = 23.8 TD = 24

Time Ch A Ch B Ch C

~~15:21:24~~

15:22:10	74714	75262	256
15:23:46	75225	76115	227
15:25:02	76592	77116	266
15:26:25	77607	77193	508 - 266 = 242
15:28:19	77526	77809	251
15:30:30	77440	78571	235
15:32:27	76899	78398	223
15:33:49	77106	78368	202
15:35:14	77101	79481	250
15:36:43	77051	77065 77265	236
15:38:25	76779	77311	264
15:39:50	77361	77865	213
15:41:17	77993	77972	261
15:42:47	77859	78062	247
15:44:06	77935	77532	500 - 247 = 253
15:45:30	77424	78118	222
15:46:49	76999	79097	215
15:48:15	77702	78329	230

Ch A Ch B Ch C

1448.0
1448.0
1448.1T₁ = 23.9 T₂ = 23.8 T₃ = 23.8 DT = 24Sum of last 10 773704⁴⁸ 780702 2487⁴⁸

Core is Subcritical. 1458.0 ± .11 1452.0 ± .11 1452.1 ± 2.0 ← Projected DC

Projected DC (Ch A + B) 1452.0 ± .08
1448.0

7 Oct 10

The core is loaded to 1429 rods still. Count done yesterday will be repeated. This core has the outline of 1433 rods in configuration 800B0000 B with rods removed from W19, W27, S23 and a 23. See picture on page 121.

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7 Oct 10

Core loaded to 1429 rods. see above.

Water in @ 9:39

CE up @ 9:42:29

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time Ch A Ch B Ch C

9:43:07 70953 70698 250

9:44:31 71984 72500 227

9:45:48 72613 73277 246

9:47:14 72391 73195 219

9:48:29 73902 74197 242

9:49:48 74199 74435 244

9:51:26 73837 74145 248

9:52:44 74575 74831 246

9:54:13 73610 74940 248

9:57:21 74481 74928 239

9:58:47 73508 74561 229

10:00:12 74853 75424 240

10:02:25 75108 75962 237

10:03:48 74743 75151 244

10:05:04 74123 75312 263

10:06:59 74877 75373 214

10:08:25 74433 75532 241

10:10:06 75819 76582 244

10:11:37 76194 76422 268

10:13:55 75565 76334 258

10:14:34 76536 76532 262

T1 = 24.1 T2 = 24.0 T3 = 24.1 TD = 24

10:16:17 75879 76593 255

10:18:03 76307 77496 242

10:19:51 76147 76961 240

10:21:36 75668 76664 221

10:24:09 76459 77079 250

10:25:38 76490 76816 279

Sum of last 10 761016 767479 2519

Projected DC 1452.1 ± .13 1452.1 ± .13 1451.2 ± 1.9

Projected DC (Ch A + Ch B) 1453.1 ± 0.09

Ch A	Ch B	Ch C	Ch A + Ch B
1449.1	1449.1	1447.1	1449.1

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7 Oct 10

4 elements were added to the core.

Core now loaded to 1433 rods. Config. 800B0000 B with holes in row 4 as before.

Water in @ 11:04

CE up @ 11:08:42

T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C	
11:09:12	103777	105072	333	60sec counts
11:10:38	110104	111372	359	
11:11:59	111837	113782	396	
11:13:40	112485	114117	369	
11:15:01	113196	114327	4377	←
11:16:52	113931	115269	41179	←
11:18:12	114115	115793	383	
11:19:43	115199	117170	382	
11:21:04	115004	116973	371	
11:22:27	115115	117062	350	
11:24:25	114275	116395	354	
11:26:20	115238	116988	370	
11:27:46	115201	116895	356	
11:29:10	114929	116639	366	
11:30:38	115122	116289	379	
11:32:11	116067	116736	387	
11:33:30	115569	116874	343	
11:34:55	116284	117557	360	
11:36:23	116176	117969	365	
11:37:39	117061	118521	362	
11:39:24	115287	117118	393	
11:40:44	114894	117347	363	
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24	
11:42:12	116761	118216	405	
11:43:45	114949	117127	368	
11:45:04	116133	117945	357	
11:46:44	117579	119001	371	
11:48:25	115966	117201	382	
11:49:46	115451	117760	353	

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7 Oct 10

Counts @ 1433 rods

Time	Ch A	Ch B	Ch C	Ch A	Ch B	Ch C
11:51:13	116321	118413	367	1440.6	1440.5	1441.3
11:52:43	116974	118521	399			
11:54:29	116124	117989	363			
T1 = 24.1	T2 = 24.0	T3 = 24.0	TD = 24			
Sum of last 10	1161152	1179520	3728			
Projected DC	1444.6 ± .03	1444.5 ± .03	1445.3 ± .66			
Projected DC (Ch A + B)		1444.5 ± .02				
		1440.5				

we will add 8 elements to 1441 rods

The core is now loaded to 1441 rods.

This core load is above the projected DC load above but the core is not expected to be above DC because the rods in the last increment have high reactivity worth compared to the rods in the previous and next increments.

Water in @ 14:09

CE up @ 14:12:48

T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
14:13:31	225229	226595	737
14:14:53	262871	265458	804889
14:16:59	299070	301672	1003
14:18:23	310614	313351	1037
14:19:53	320469	322581	1017
14:21:35	328633	331693	1112
14:22:57	331596	334151	1076
14:24:40	333488	336073	1017
14:26:00	337403	338078	1049
14:27:20	339800	342039	1132
14:28:39	337550	340303	1140
14:30:05	340508	340948	1087
14:31:33	346169	342842	1123

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7 Oct 10

Counts @ 1441 rods

Time

Ch A

Ch B

Ch C

14:32:55

345809

347854

1170

14:34:27

344103

344200

1076

14:35:44

343969

346588

1137

14:37:52

341615

343073

1072

14:39:24

341027

342385

1153

14:41:22

343907

346359

1122

14:43:02

347028

347282

1126

14:44:32

345944

347790

1181

14:45:52

347600

348519

1160

14:47:30

345581

348255

1158

14:48:50

350009

350476

1121

14:50:12

351126

352614

1118

14:51:35

350702

352460

1128

14:53:08

355594

356583

1130

14:54:54

353592

356255

1189

14:56:15

354951

357009

1149

14:57:46

355111

356184

1134

14:59:08

357802

358371

1172

15:00:30

358702

361482

1133

T1 = 24.0

T2 = 24.0

T3 = 24.0

TD = 24

15:01:51

358552

360886

1139

15:03:12

358960

357827

1125

15:04:30

357269

359139

1178

15:05:49

355370

356141

1116

15:07:10

357008

358687

1176

T1 = 24.0

T2 = 24.0

T3 = 24.0

TD = 24

Sum of last 10

3564317

3581981

11511

Projected DC

1444.9 ± .006

1444.9 ± .006

1444.8 ± .11

Projected DC

(Ch A + Ch B) = 1444.9 ± .004

Four rods were added - 1445 rods in core - 800B0000B
 With 1449 rod outline minus the 4 rods as before

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7 Oct 10 1445 rods in the core

Water in @ 15:43

CE up @ 15:42:06

T1 = 23.9 T2 = 23.9 T3 = 23.9 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
15:47:42	495282	492244	1629	
15:49:02	735542	724854	2411	
15:50:20	1001163	979456	3222	
15:51:52	1351627	1312890	4343	
15:53:22	1752036	1683683	5453	
15:54:43	2149671	2047893	6734	
15:56:28	273951 ²⁷³⁹²⁵	2525344	8675	
15:57:55	3310473	3079196	10247	
15:59:26	3979453	3654740	12310	
16:01:22	4988496	4507535	15525	
16:03:01	5986513	5326351	18477	
16:04:29	6971020	6130913	21674	
16:06:02	8144787	7077860	25407	
16:07:27	9322738	8019845	29380	
16:08:51	10635054	9068262	33543	
16:10:16	12059047	10197014	38651	
T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24				

This core is supercritical

One rod was removed from the core - 1444 rods - 800B0000 B with 1448 rod outline minus the same 4 rods as before

Water in @ 16:45

CE up @ 16:48:59

T1 = 23.9 T2 = 23.9 T3 = 23.9 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
16:49:32	366014	364629	1181	
16:49:15	537227	532457	1712	
16:52:38	659723	648591	2119	
16:54:02	773499	761596	2431	

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20 OCT 10

Counts @ 1444 rods

Time	Ch A	Ch B	Ch C
16:55:48	915961	898256	2908
16:57:23	1032763	1007459	3278
16:58:43	1122011	1091188	3549
17:00:03	1208429	1173637	3794
17:01:30	1298052	1258629	4063
17:03:03	1378818	1332678	4285
17:04:40	1466968	1414297	4580
17:06:04	1537621	1480184	4912
17:07:26	1609584	1545777	5098
17:09:19	1690457	1620582	5377
17:10:45	1754927	1679963	5595
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24

This core is subcritical

11 OCT 10

OCTOBER 11, 2010

 CORE UNLOADED TO 1421 - 1425 Rods in 800B0000B in core
 minus the 4 water hoses

WATER in Core: 10:49

CE UP: 10:53:05

 T₁ = 24.9 T₂ = 21.8 T₃ = 21.9 DT = 25

Time	Ch A	Ch B	Ch C
10:54:13			
10:56:48	10:58:24 51132	51510	161
10:59:45	51054	51712	158
11:01:21	51076	51690	4874

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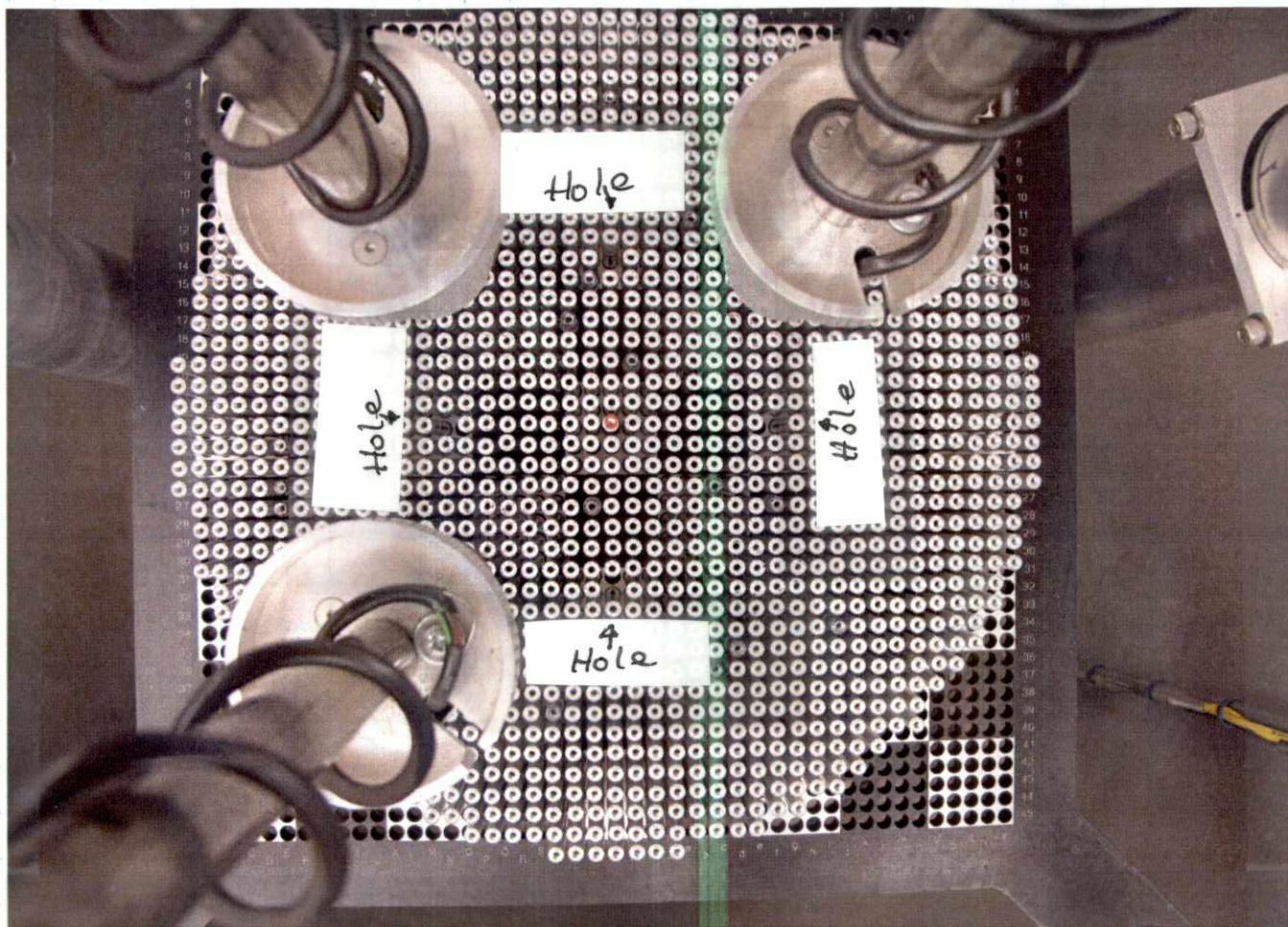
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11 Oct 10



Core with 1421 rods - water holes in
 e23, o23, w15 and w31 (row 8)

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11 Oct 10

10/11/10

Time	Q.A	Q.B	Q.1
------	-----	-----	-----

11:02:57	51009	51136	9699
11:04:33	51090	51134	19050
11:05:59	51845	51578	27454
11:07:53	51076	51855	163
11:09:37	52382	52007	7528
11:10:55	51476	52324	6398
11:12:13	51817	51622	1237
11:13:30	51126	51686	157
11:14:17	51606	51963	163
11:17:19	51504	51830	161
11:18:35	51391	51732	194
11:20:08	51334	52129	180
11:22:15	51995	52932	173
11:23:45	51397	52030	184

 $T_1 = 25.0$ $T_2 = 24.9$ $T_3 = 24.9$ DT = 25

11:25:08	51562	51686	177
11:26:27	51719	52256	169
11:27:46	51419	52533	156
11:29:03	50932	51695	164
11:32:19	51277	51736	180
11:33:30	51895	52788	165
11:35:57	51678	51807	158
11:37:18	51761	52094	157
11:38:58	51698	52319	195

 $T_1 = 25.0$ $T_2 = 24.8$ $T_3 = 24.9$ DT = 25

Sum of last 10: 515635 520957 1683

Core is Suberineose with lead TO 1933 NEXT.

1933 Full Rods in Core (1429 with water holes)
 WATER at 223 023 W15 W31 source in U1.

WATER in Core: 13:25.

CE UP: 13:29:10 (est.)

 $T_1 = 24.7$ $T_2 = 24.6$ $T_3 = 24.6$ DT = 25

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Time	Ch A	Ch B	Ch C	
13:29:49	67645	68735	207	
13:31:11	69949	70164	229	
13:32:31	70266	70558	228	
13:33:49	70259	70815	236	
13:35:11	70192	70789	221	
13:36:30	69892	70842	219	
13:38:10	70785	71183	226	
13:39:27	70119	70539	256	
13:40:44	70954	71332	214	
13:42:05	70238	70683	221	
13:43:25	70519	71263	221	
13:44:50	70881	71497	248	
13:46:52	70333	71386	231	
13:48:20	70346	70859	253	
13:50:01	71096	71920	243	
13:51:21	71354	71749	240	
13:52:38	71325	71815	219	
13:54:59	71184	71934	226	
13:55:49	71146	71389	215	441
13:57:22	71414	71457	516	
13:59:09	70856	71570	252	
14:00:30	71214	72416	243	
14:01:53	71623	72208	1330	
14:03:03	71546	72734	255	
14:04:30	70658	71995	235	
14:05:47	71323	71503	229	
T1 = 24.7	T2 = 24.6	T3 = 24.7	TD = 25	

Sum of last ten 712289 719021 3426
 Projected DC 1450.0 ± .14 1450.0 ± .14 —
 Projected DC (Ch A + Ch B) 1450.0 ± .09

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11 OCT 10

The Core is now loaded to 1433 rods - configuration
 800B0000 1437 rod outline minus rods in e23, 023,
 W15, and W31

Water in @ 14:48

CE up @ 14:57:38

T1 = 24.5 T2 = 24.4 T3 = 24.5 TD = 25

Time	Ch A	Ch B	Ch C
14:52:11	93555	94733	324
14:53:36	98311	98669	332
14:55:15	99823	100576	310
14:56:37	101840	102171	308
14:58:01	101349	101986	339
14:59:22	101574	101966	342
15:00:40	100764	101507	350
15:02:08	101573	102492	340
15:03:52	99294	100279	325
15:05:56	101541	101553	306
15:07:14	101255	102386	315
15:08:30	100914	102571	324
15:10:30	101717	102681	361
15:12:30	101285	102323	336
15:15:04	102021	103152	362
15:16:49	101148	102248	322
15:20:40	102939	103358	345
15:22:04	102658	103322	317
15:23:35	102157	103506	330
15:24:55	102065	103143	314
15:26:25	102478	103267	317
15:27:51	103199	103818	336
15:29:14	102728	103705	344
15:30:45	102874	103534	357
15:32:22	102020	103090	324
15:33:44	102631	103005	327
Sum of last 10	1025749	1033748	3311

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	Ch A	Ch B	Ch C
Projected DC	1442.1 ± .05	1442.1 ± .05	—
Projected DC (A+B)	1442.1 ± .03		

Loaded 8 rods

Core now has 1441 rods - config 800B0000B 1445 rod outline
minus rods in e23, 023, W15, W31

12 OCT 10

1441 Rods in core

Water in @ 8:38

CE up @ 8:41:19

T1 = 24.7 T2 = 24.6 T3 = 24.6 T4 = 25

Time	Ch A	Ch B	Ch C	
8:41:48	171559	172996	564	60 sec counts
8:43:30	200704	201931	654	
8:44:47	211176	211503	717	
8:46:05	216834	218076	722	
8:47:30	220228	220390	716	
8:48:55	224962	223657	714	
8:50:20	225596	225168	710	
8:52:01	229258	229115	739	
8:53:41	231048	231647	749	
8:55:01	232534	232652	745	
8:56:35	233548	234251	728	
8:57:54	234378	234326	767	
8:59:27	233342	234044	769	
9:00:46	231388	232037	734	
9:02:19	234887	235967	809	
9:04:08	235512	235763	785	
9:05:23	236645	237928	781	
9:07:11	238993	239014	772	
9:08:39	237794	237466	797	
9:10:18	239427	239968	782	
9:12:06	237668	239465	815	
9:13:45	242303	241733	795	

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Counts @ 1441 rods

Time	Ch A	Ch B	Ch C
9:15:12	242213	241754	777
9:16:36	242162	242822	816
9:18:04	243697	243156	774
9:19:27	244337	244168	788
9:20:50	245386	245507	773
9:22:22	248467	248606	779
$T_1 = 24.6$	$T_2 = 24.6$	$T_3 = 24.6$	$T_D = 25$
9:23:52	248869	249024	766
9:25:45	250441	251285	863
9:27:23	252843	254440	825
9:30:25	251571	257045	877
9:32:16	250484	251891	853
9:33:38	251926	252264	825
9:34:57	251047	251930	796
9:36:32	249409	250350	844
9:37:51	252071	253025	816
9:39:17	252517	253591	849
9:40:36	254888	256146	853
9:42:06	254092	254131	817
9:43:32	255106	255619	803
9:44:51	255303	255653	821
9:46:13	253188	254565	836
9:47:36	259053	258396	857
9:49:17	257892	259565	863
9:50:33	257612	259020	818
9:52:17	254427	255560	805
9:53:42	257140	258579	897

$T_1 = 24.7$ $T_2 = 24.6$ $T_3 = 24.6$ $T_D = 26$

Sum of last 10

DC projections 1446.4 ± .01 1446.4 ± .01 1446.2 ± .18

Projection to DC (Ch A + 1) 1446.4 ± .01

LOADED 5 FUEL RODS FOR A CORE LOADING OF 1996

WATER LEVELS AT 223, 023, W15, W31 SOURCE U1

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12 Oct 10 Counts At 1446 Rods

Water in Core : 10:26:17

CE UP: 10:29:23

$T_1 = 24.5$ $T_2 = 24.4$ $T_3 = 24.5$ DT = 25

Time	Ch A	Ch B	Ch C
10:30:18	532090	530320	1793
10:31:37	714962	735671	2496
10:32:55	971059	955769	3140
10:34:14	1217466	1189683	3933
10:35:37	1490765	1445299	4712
10:37:02			
10:39:02	2359809	2291590	7321
10:40:41	2706061	2552609	8515
10:42:35	3285920	3064988	10125
10:45:17 10:43:58	3743178	3759860 ?	11531
10:45:17	4223522	3872522	13409
10:46:39	4757615	4320296	14819
10:48:12	5410505	4867103	16959
10:49:12	6013554	5387769	19017
10:50:02	6758896	5974698	21079
$T_1 = 24.5$	$T_2 = 24.4$	$T_3 = 24.5$	DT = 25

Core is SUPERCRITICAL. WILL UNLOAD ONE FULL ROD.
CORE loading of 1445.

Water in @ 11:27

CE up @ 11:38:48

$T_1 = 24.4$ $T_2 = 24.2$ $T_3 = 24.3$ DT = 25

Time	Ch A	Ch B	Ch C
11:31:28	426522	425214	1450
11:33:02	559480	556296	1821
11:34:27	668439	662056	2203
11:35:53	771357	761218	2459
11:37:15	853727	840177	2757
11:38:44	934023	916993	2927

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1200770

Counts @ 1445 rods

Time	Ch A	Ch B	Ch C
11:40:10	1006904	985867	3282
11:41:35	1075648	1050148	3530
11:42:53	1129841	1104719	3605
11:44:35	1197848	1168150	4074
11:46:09	1254228	1222434	4133
11:47:27	1298437	1263818	4134
11:49:18	1362720	1319329	4324
11:50:52	1405699	1366169	4620
11:52:12	1444883	1399119	4690
11:53:42	1492608	1442377	4793
11:55:06	1521674	1472521	4880
11:56:35	1551312	1501154	4961
11:57:54	1585563	1528777	5014
11:59:32	1628057	1569923	5177
T1 = 24.4 T2 = 24.3 T3 = 24.4 TD = 24			

This core is subcritical

The core is loaded to 1421 rods - config. 800 B0000 B
 outline of 1425 rods with four rods in row 12
 removed - holes in K23, L23, W11, W35

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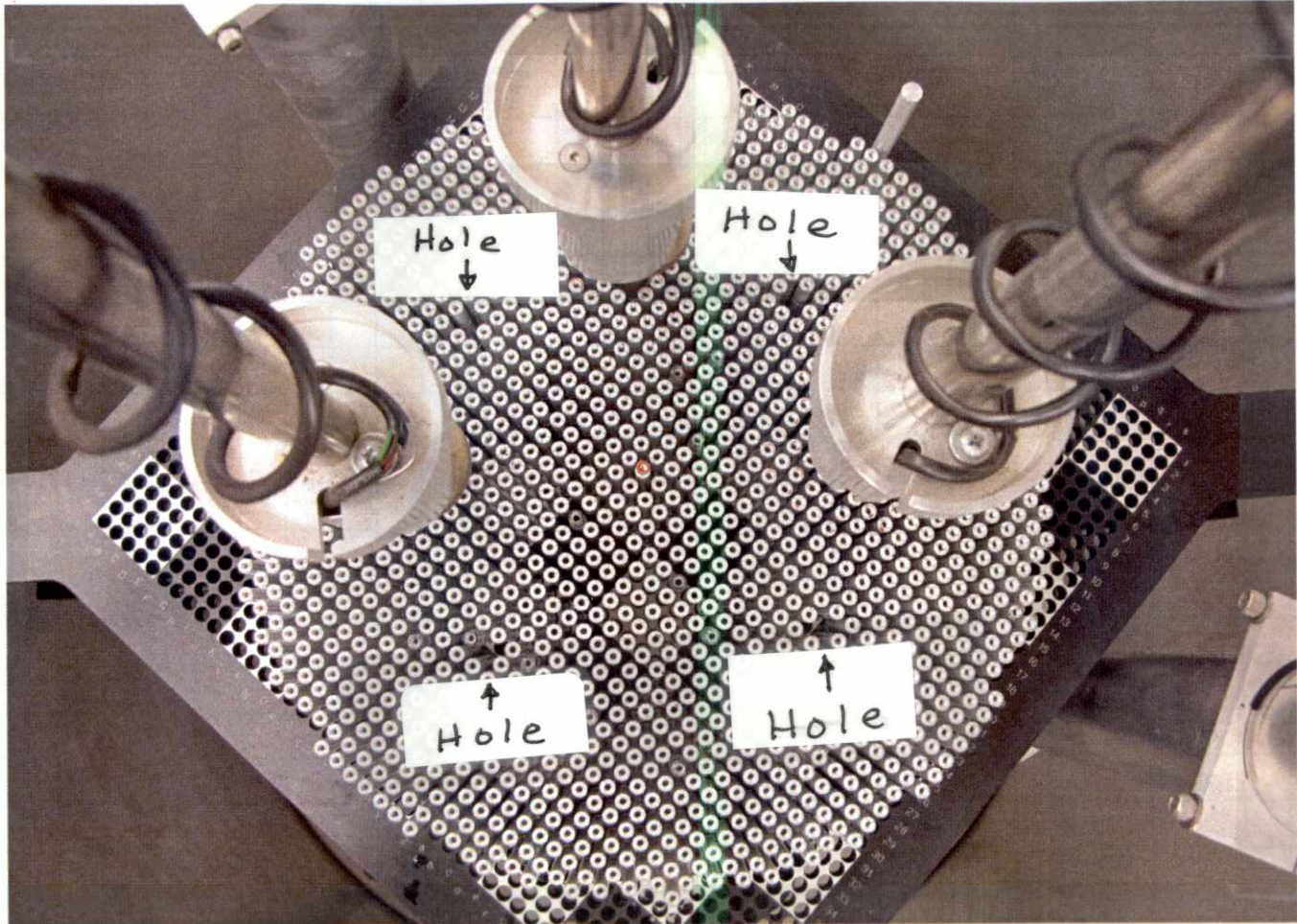
Date

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10/12/10



~~Core~~

Core with 1421 rods

800B0000 configuration with 1425 rods minus
holes in K23, i23, W11, W35 - the four
holes are in row 12 from the central element

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Core loaded to 1421 rods - 800B0000B configuration,
 outline of 1425 rods with four holes - K23, i23,
 W11, W35

Water in @ 13:47

CE up @ 13:50:22

T1 = 24.2 T2 = 24.1 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C
13:50:49	48356	48054	146
13:52:09	49184	49509	113
13:53:39	48677	48528	0
13:55:10 42	48778	48809	159
13:57:21	48328	48532	159
13:58:57	48248	48735	157
14:00:13	49039	50077	171
14:01:43	49010	49425	160
14:03:00	48969	49227	150
14:04:37	49086	49235	141
14:05:56	49503	49903	150
14:07:29	49474	50021	170
14:08:46	49871	49864	155
14:10:04	49828	50239	147
14:11:29	49228	49366	179
14:12:54	48953	49162	168
14:14:15	48983	49263	179
14:15:34	48966	49735	160
14:17:21	48840	49280	165

T1 = 24.3 T2 = 24.2 T3 = 24.3 TD = 24

Sum of last 10 492732 496068 1614

8 fuel rods were added
 Core Now has 1429 rods

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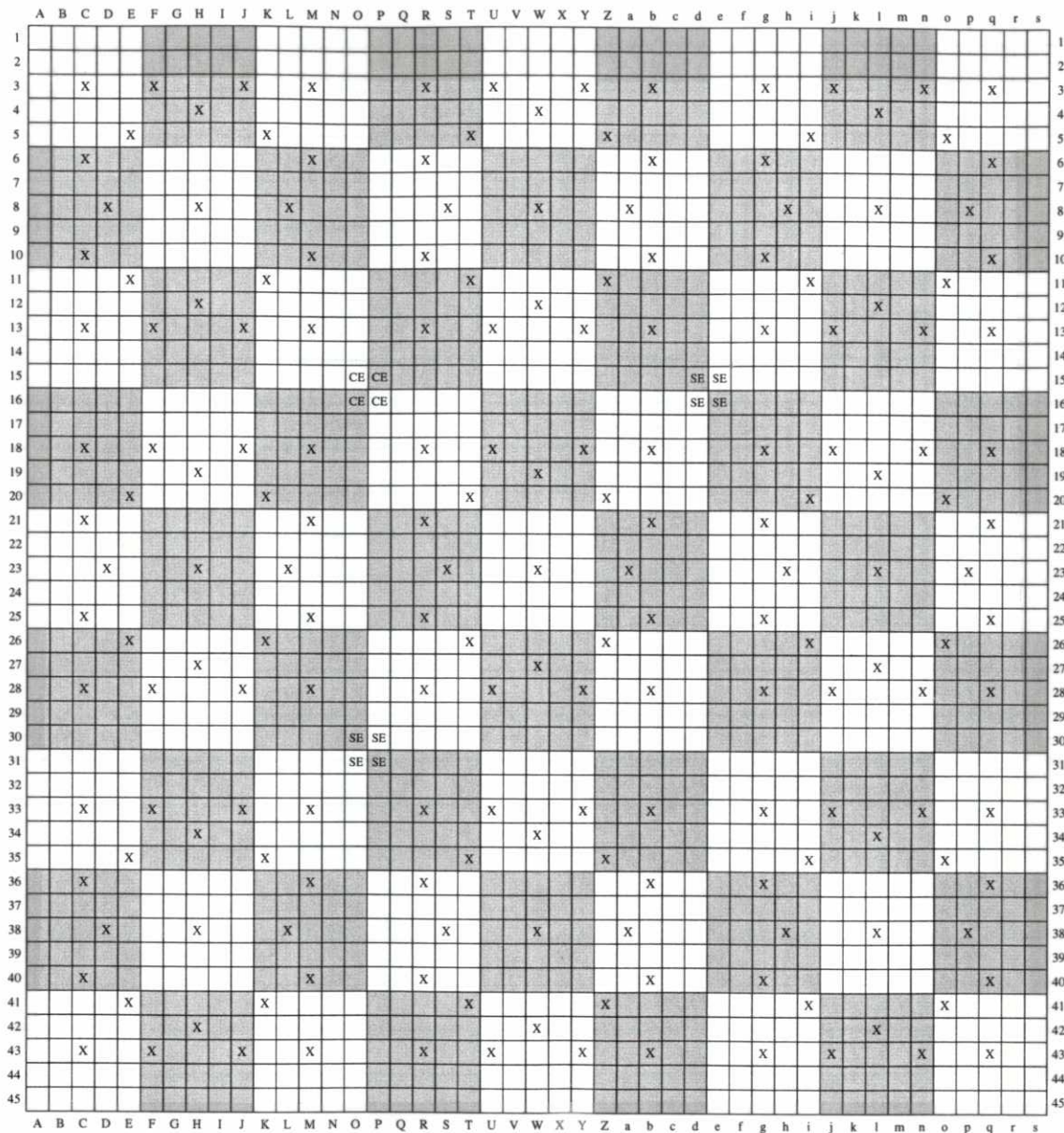
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Core location key
SE = Safety element
CE = control element
X = water hole location in core 800B0000

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1429 rods in the core - 800B0000B 1433 rod outline
with holes in K23, i23, W11, W35

Water in @ 14:53

CE up @ 14:56:27

T1 = 24.1 T2 = 24.0 T3 = 24.1 TD = 24

Time	Ch A	Ch B	Ch C
14:57:52	63022	63047	199
14:59:11	62786	63015	187
15:00:27	63191	63546	193
15:01:46	63627	64018	205
15:03:09	63734	63809	201
15:04:25	64016	64014	215
15:05:59	62648	63308	210
15:07:40	63886	63955	209
15:08:57	63311	64145	203
15:10:13	64414	64957	228
15:11:32	63808	64416	220
15:12:46	63702	63673	194
15:14:04	64107	64216	175
15:15:26	63404	63784	211
15:16:43	63962	64650 ^{2A}	220
15:18:22	63227	63749	194
15:19:40	63626	64611	203
15:21:33	63712	63821	237
15:23:06	63852	64484	215
15:24:56	63091	63375	203
15:26:19	64061	64204	231
15:27:40	63740	63790	184
T1 = 24.2	T2 = 24.1	T3 = 24.2	TD = 24

Sum of last ten	636782	640658	2073
Projected DC	1456.4 ± .23	1456.4 ± .23	1457.1 ± 4.2
Projected DC	(Ch A + B)	1456.4 ± .16	

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We will add 4 rods to 1433 rods with same water holes

Core loaded to 1433 rods

Water in @ 15:59

CE up @ 16:02:24

T1 = 24.1 T2 = 24.0 T3 = 24.1 TD = 24

Time	Ch A	Ch B	Ch C
16:03:04	82285	83712	242
16:04:34	86908	87735	288
16:05:53	87947	88088	296
16:07:29	87600	88090	269
16:08:53	88815	88972	284
16:10:24	87256	88517	265
16:11:37	88066	88789	333
16:13:00	88697	88599	260
16:14:21	88476	89081	292
16:16:01	89227	90484	270
16:17:45	89361	89412	286
16:19:05	88678	89223	306
16:20:27	88544	89144	262
16:21:54	88844	89088	266
16:23:13	88523	89378	303
16:24:40	88351	89243	278
16:25:58	89319	89838	279
16:27:19	88653	89313	309
16:28:40	89706	90262	285
16:30:03	88466	89592	276
16:31:24	89738	90453	280
16:32:48	89412	90263	271
16:34:06	90166	90332	285
16:35:27	89540	90115	265
16:36:47	89202	89977	285
16:38:07	88992	89532	306
16:39:31	89090	90343	267
16:40:58	90566	89680	310

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Counts @ 1433 rods

Time	Ch A	Ch B	Ch C
16:42:37	88893	89471	277
16:44:11	88721	89458	290
16:45:49	89046	89926	287
16:47:21	89158	90744	294
16:49:25	90227	91788	268
16:50:43	89311	89898	280
16:52:28	90350	89991	272
16:53:53	89106	88935	280
16:55:18	89873	90871	252
T1 = 24.2	T2 = 24.1	T3 = 24.2	TD = 24

Sum of last 10	895251	900162	2810
Projected DC	1442.9 ± .06	1442.9 ± .06	1442.9 ± 1444.3 ± 1.2
Projected DC (Ch A + B)	1442.9 ± .04		

We will add 8 rods to 1441 rods

~~8 rods were loaded. The core now has 1441 rods - con~~

13 Oct 10

Eight rods were added to the core. The core is loaded to 1441 rods - Configuration 800B0000B 1445 rod outline less 4 rods in row 12: K 23, i 23, W 11, W 35

Water in @ 8:33

CE up @ 8:36:14

T1 = 24.2 T2 = 24.2 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
8:36:49	146083	146346	443	
8:38:06	157960	157579	529	
8:39:22	164479	164928	535	
8:40:41	169152	168318	591	
8:41:57	169225	170849	569	

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Core loaded to 1441 rods

Time	Ch A	Ch B	Ch C
8:43:14	171386	172895	555
8:44:37	173021	173040	563
8:45:57	174234	174639	563
8:47:26	173962	176053	546
8:48:50	175209	176763	607
8:50:08	174878	175640	585
8:51:35	176437	177419	584
8:52:55	178626	178942	556
8:54:17	178194	178924	533
8:55:46	177759	178922	564
8:57:13	177636	178615	549
8:58:32	177556	178329	538
9:00:15	180086	180341	597
9:01:33	179418	180366	579
9:03:02	181108	181904	626
9:04:33	182099	183182	613
9:06:02	181385	181843	576
9:07:27	181878	181682	602
9:09:07	181802	182816	584
9:10:36	181303	182770	570
9:12:09	181632	183068	566
T1 = 24.3 T2 = 24.2 T3 = 24.2 TD = 24			
9:14:57	184504	184280	612
9:15:38	182295	184094	575
9:17:09	186150	187000	583
9:18:34	185856	185488	618
9:20:00	185667	185402	594
9:21:22	186508	187045	635
9:22:44	185876	186606	617
9:24:11	186167	185551	605
9:25:41	186640	187071	592
9:27:18	184475	185913	585
9:28:38	184921	186598	616
9:30:03	185176	185765	619

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Counts @ 1441 Rods

Time	Ch A	Ch B	Ch C
9:31:38	186280	186529	607
9:33:01	188091	188388	617
9:35:23	186771	188039	586
9:36:47	185282	185078	606
9:38:12	187659	188605	616
9:39:50	187043	187408	579
9:41:12	188170	188191	565
9:42:42	188506	189017	618
9:45:29	190018	190980	644
9:49:18	186705	187870	659
9:52:07	188668	189116	681
9:54:32	189012	189626	628
9:55:58	189160	191021	2632
9:58:13	187965	188907	590
9:59:58	189739	190869	604
10:01:29	189322	192033	602
10:02:53	189151	190145	584
T1 = 24.3	T2 = 24.2	T3 = 24.3	TD = 24
10:04:13	188328	190581	656
10:05:36	187827	189548	590
10:07:54	189004	190339	597
10:08:53	189816	190417	611

Sum of last 10 1889324 1903486 6094
 Projected DC 1448.2 ± .02 1448.2 ± .02 1447.8 ± .3
 Projected DC (Ch A + B) 1448.2 ± .01

We will add 7 rods to 1448 rods in the core

Seven rods added to core. 1448 rods in the core.
 800B0000B config. 1452 rods minus 4 rods in
 row 12 from center - K 23, L 23, W 11, W 35

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13 Oct 10

1448 rods in the core

Water in @ 10:49

CE up @ 10:53:50

T1 = 24.1 T2 = 24.0 T3 = 24.1 TD = 24

Time	Ch A	Ch B	Ch C
10:53:35	487277	489191	1621
10:55:01	697358	691715	2195
10:56:25	915683	907731	3031
10:57:44	1126443	1105615	3470
10:59:09	1377035	1346774	4538
11:00:30	1620639	1573795	5241
11:01:49	1870134	1803646	6039
11:03:12	2151390	2062996	6869
11:04:37	2458833	2343759	7776
11:06:25	2898273	2736986	8992
11:07:48	3252575	3046287	10289
11:09:26	3683802	3424403	11666
11:11:13	4192424	3862285	13146
11:12:37	4638274	4243905	1491 14519
11:14:02	5119261	4643846	16096
11:15:43	5712233	5137987	17885
11:17:05	6234082	5576604	19535
11:18:50	6963881	6172987	21858
11:20:11	7547956	6642774	236879
11:22:16	8505726	742509399	50992 27313
11:24:24	9630968	8320700	30716
11:25:53	10437418	8964780	33456

T1 = 24.2 T2 = 24.0 T3 = 24.1 TD = 24

This core is supercritical

We will remove one rod.

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13 OCT 10

One rod was removed from the core. The core now has 1447 rods in it with the holes as before

Water in @ 13:18

CE up @ 13:21:06

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
13:21:41	380588	384181	1230
13:23:38	585680	584596	1886
13:25:31	766657	762998	2503
13:26:53	892431	882249	2898
13:28:17	1017202	1003528	3325
13:29:39	1127183	1109854	3591
13:31:19	1266812	1240596	4030
13:32:43	1366557	1334957	4415
13:34:11	1472132	1436032	4721
13:35:36	1571119	1528834	5057
13:36:57	1654570	1605544	5169
13:38:17	1738887	1687222	5638
13:39:42	1828416	1765530	5809
13:41:04	1909064	1842525	6003
13:42:27	1986224	1909493	6111
13:44:55	2068531	1990732	6423
13:45:23	21517579	2059769	6661
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

This core is subcritical

We have unloaded the core ~~27~~ to 1421 rods
 Configuration 800B0000B with 1425 rods ~~to~~ minus
 4 rods in the 16th position from the center: G23,
 "little m"23, W7, W39

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13 Oct 10

1421 rods in the core as described above

Water in @ 14:29

CE up @ 14:32:30

T1 = 24.0 T2 = 23.9 T3 = 23.9 TD = 24

Time	Ch A	Ch B	Ch C
14:33:03	43380	43188	132
14:34:21	43465	43927	156
14:35:38	43853	44061	146
14:37:10	44383	44141	120
14:38:27	44114	44291	138
14:39:45	43838	43796	139
14:41:31	43974	44876	153
14:42:57	44383	44074	123
14:44:14	43772	44339	159
14:45:31	43781	43844	152
14:47:28	43708	44045	119
14:48:45	43889	44402	277 158
14:50:03	43717	44091	155
14:51:37	44022	44327	131
14:53:54	44233	44064	134
14:54:11	43519	44112	142
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24

we will add 8 rods

8 rods were loaded. Config 800B0000B 1433 rods minus rods in G23, m23, W7, W39 (4 in row 16 from center) 1429 rods in the core

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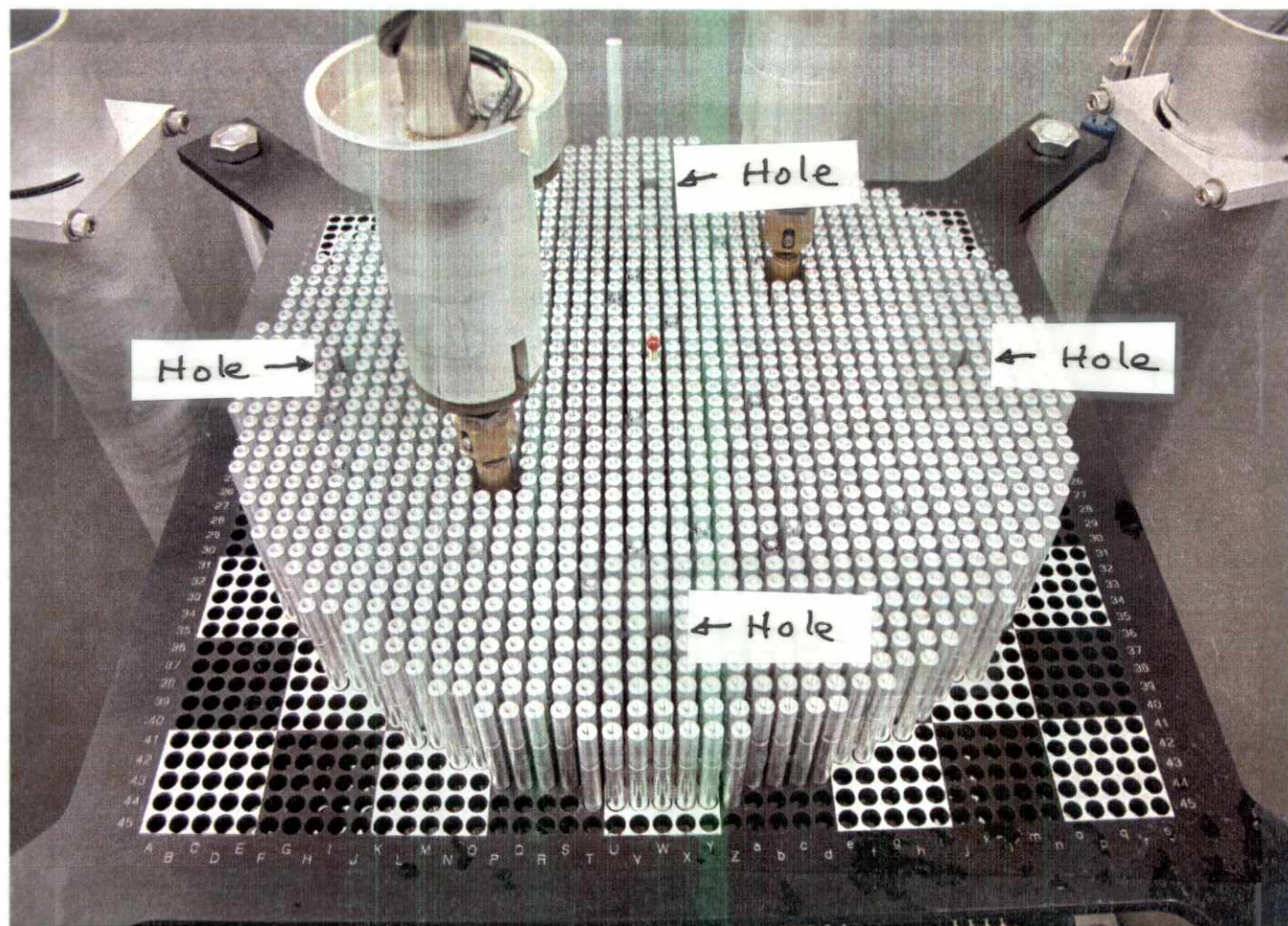
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Core with 1421 Rods
 800B0000B with 1425 rods minus 4 water holes in G23,
 m23, w7, w39 (16 positions out from center)

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13 Oct 10

1429 Rods in the Core

Water in @ 15:29

CE up @ 15:31 :57

T1 = 23.9 T2 = 23.8 T3 = 23.8 TD = 24

Time	Ch A	Ch B	Ch C
15:32:43	55077	55404	187
15:34:02	55362	55801	173
15:35:22	55210	55902	171
15:36:46	56115	56292	225
15:38:03	56474	56303	189
15:39:24	55498	56122	186
15:41:08	55588	55948	180
15:42:25	55765	56341	159
15:43:41	55726	56322	211
15:45:02	55566	56074	178
15:46:22	55267	55786	154
15:47:45	56130	56539	160
15:49:04	55150	56051	176
15:50:43	55599	55676	179
15:52:09	55957	56249	183
15:53:30	56070	56098	177
15:54:48	55498	55977	187
15:56:07	55941	55990	172
15:57:38	56192	56791	161

T1 23.8?

TD = 24

Core was dumped before T2 & T3 could be taken

Sum of the last 10	557370	561231	1727
Projected DC	1458.7 ± .28	1458.7 ± .28	1466.9 ± 2.8
Projected DC (Ch A+B)	1458.7 ± .20		

We will load 4 rods

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13 Oct 10

4 rods were loaded. Now have 1433 rods in the core
 800B0000 B 1437 rod outline with 4 holes at G23,
 m23, w7, w39

Water in @ 16:29

CE up @ 16:31:58

T1 = 23.8 T2 = 23.8 T3 = 23.8 TD = 24

Time	Ch A	Ch B	Ch C
16:32:24	71237	71896	217
16:34:06	73707	74642	235
16:35:23	74752	75239	248
16:36:42	74907	74879	239
16:38:01	74390	74571	241
16:39:31	74039	75098	217
16:40:51	75672	75421	230
16:42:07	74058	75012	215
16:43:23	75006	75889	229
16:44:40	75253	75411	243
16:45:58	75515	76133	238
16:47:17	75532	76224	236
16:48:40	74831	75435	240
16:49:57	75584	76100	213
16:51:13	75546	75678	222
16:52:43	75197	75605	245
16:54:09	75069	75287	231
16:55:28	74368	75778	235
16:56:48	75385	76060	234
16:58:08	74930	75574	272
16:59:23	74994	75541	225
T1 = 23.9	T2 = 23.8	T3 = 23.9	TD = 24

Sum of last 10

751436

757282

2353

Projected DC

1444.5 ± .08

1444.5 ± .08

1444.0 ± 1.3

Projected DC (ChA + B)

1444.5 ± .06

We will load 8 to 1441 rods in the core

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14 OCT 10

8 rods were loaded. The core is loaded to 1441 rods, Config. 800B0000B with 1445 rod outline, 4 holes in G23, m23, W7, and W39

Water in @ 8:55

CE up @ 8:58 :55

T1 = 24.1 T2 = 24.1 T3 = 24.1 TD = 24

Time	Ch A	Ch B	Ch C	60 sec Counts
8:59:33	118183	118299	369	
9:00:53	126427	127152	378	
9:02:11	128364	129066	378	
9:03:46	131397	131971	415	
9:05:07	132606	132103	446	
9:06:38	132383	132685	408	
9:08:59	132731	133605	395	
9:09:43	133015	133460	407	
9:11:07	132614	135291	411	
9:12:28	134209	135456	400	
9:14:09	135655	135214	438	
9:15:31	135744	137124	460	
9:21:37	136456	136527	428	
9:23:59	136111	136873	491	
9:25:03	135905	136421	423	
9:26:22	135808	137486	435	
9:27:41	137107	137113	438	
9:29:04	136753	135739	434	
9:31:23	138482	138761	474	
9:33:06	137772	139456	427	
9:35:01	138096	139265	431	
9:36:18	139729	140958	439	
9:37:39	140043	140763	463	
9:39:03	138982	140110	444	

T1 = 24.2 T2 = 24.1 T3 = 24.2 TD = 24

9:39:25	139985	141383	438
9:41:49	140709	140754	431
9:43:20	139208	139867	466

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1441 Rods in the core

Time	Ch A	Ch B	Ch C
9:44:43	139656	139961	471
9:47:00	139881	141353	453
9:48:24	139427	140947	435
9:49:45	137860	139188	419
9:51:27	140422	141618	430
9:52:56	141004	140866	3 rd Not recorded
9:54:27	140348	141707	465
9:55:43	140859	142111	452
9:57:58	141960	143044	462
9:59:25	142151	142307	457
10:01:01	140850	142494	490
10:02:24	141793	142406	456
10:03:47	142674	143714	479
10:05:09	142654	143218	490
10:06:28	142312	143038	451

T1 = 24.2 T2 = 24.2 T3 = 24.2 TD = 24

10:07:54	141568	142524	471
10:09:31	143168	143537	439
10:11:17	142690	143962	452
10:12:36	142998	144082	481
10:14:00	143941	143966	468
10:15:34	142463	142834	486
10:17:11	142807	143262	463
10:18:37	144047	144892	440
10:20:20	143456	144133	476

T1 = 24.2 T2 = 24.1 T3 = 24.2 TD = 24

Sum of last 10 1429450 1436230 4627

Projected DC 1449.9 ± .03 1449.9 ± .03 1449.3 ± .42
 Projected DC (Ch A + B) 1449.9 ± .02

We will add 9 rods to 1450 rods in the core.

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1450 rods in the core - Config 800B0000B 1454 rod
outline with rods removed from G23, m23, w7, w39

Source in U-1

Water in @ 10:54

CE up @ 10:57:26

T1 = 24.1 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
10:57:58	363230	364259	1192
10:59:31	576882	576115	1707
11:00:59	651696	647234	2098
11:02:32	780989	774260	2457
11:03:54	887570	877555	2960
11:05:21	991968	978492	3250
11:06:46	1088917	1072442	3588
11:08:12	1181645	1156272	3814
11:09:35	1268843	1238831	4167
11:11:21	1378803	1344327	4422
11:13:00	1471992	1432839	4739
11:14:28	1542211	1496308	4860
11:15:53	1608752	1559131	5200
11:17:18	1672629	1616430	525386
11:19:03	1766347	1705494	5812
11:21:27	1886691	1815666	6027
11:23:33	1972167	1890447	6444
11:25:02	2048201	1962004	6434
11:26:27	2105225	2013584	6712
11:27:59	2168521	2073771	6942
T1 = 24.1	T2 = 24.0	T3 = 24.1	TD = 24

This core is subcritical

We will add 1 rod to 1451 rods in the core

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14 Oct 10

 1451 Rods in the core. Config. 800B0000B 1455 rod
 outline with Holes in G23, m23, W7, W39

Water in @ 1351

CE up @ 13:55:40

T1 = 24.0 T2 = 23.9 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C
13:56 :14	440 489700	490811	1567
13:57 :38	731563	720803	2295
13:59 :04	997146	979748	3213
14:00 :23	1267663	1234897	3994
14:01 :52	1596894	1540575	4933
14:03 :15	1936820	1853171	6129
14:04 :38	2303983	2183302	7203
14:06 :05	2743954	2576647	8689
14:07 :27	3173137	2955486	9902
14:08 :49	3653722	3373348	11564
14:10 :35	4338385	3959259	13551
14:12 :05	4997623	4514523	15649
14:13 :26	5655464	5058313	17855
14:14 :48	6336018	5616596	19814
14:16 :10	7113228	6250364	22254
14:17 :33	7955757	6928387	24896
14:19 :16	9105954	7847873	53978 29082
14:20 :58	10350463	8840145	32979
14:22 :27	11519617	9762820	37078
14:23 :49	12666286	10678679	41119
14:25 :30	14158738	11878485	47120
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

This core is Supercritical

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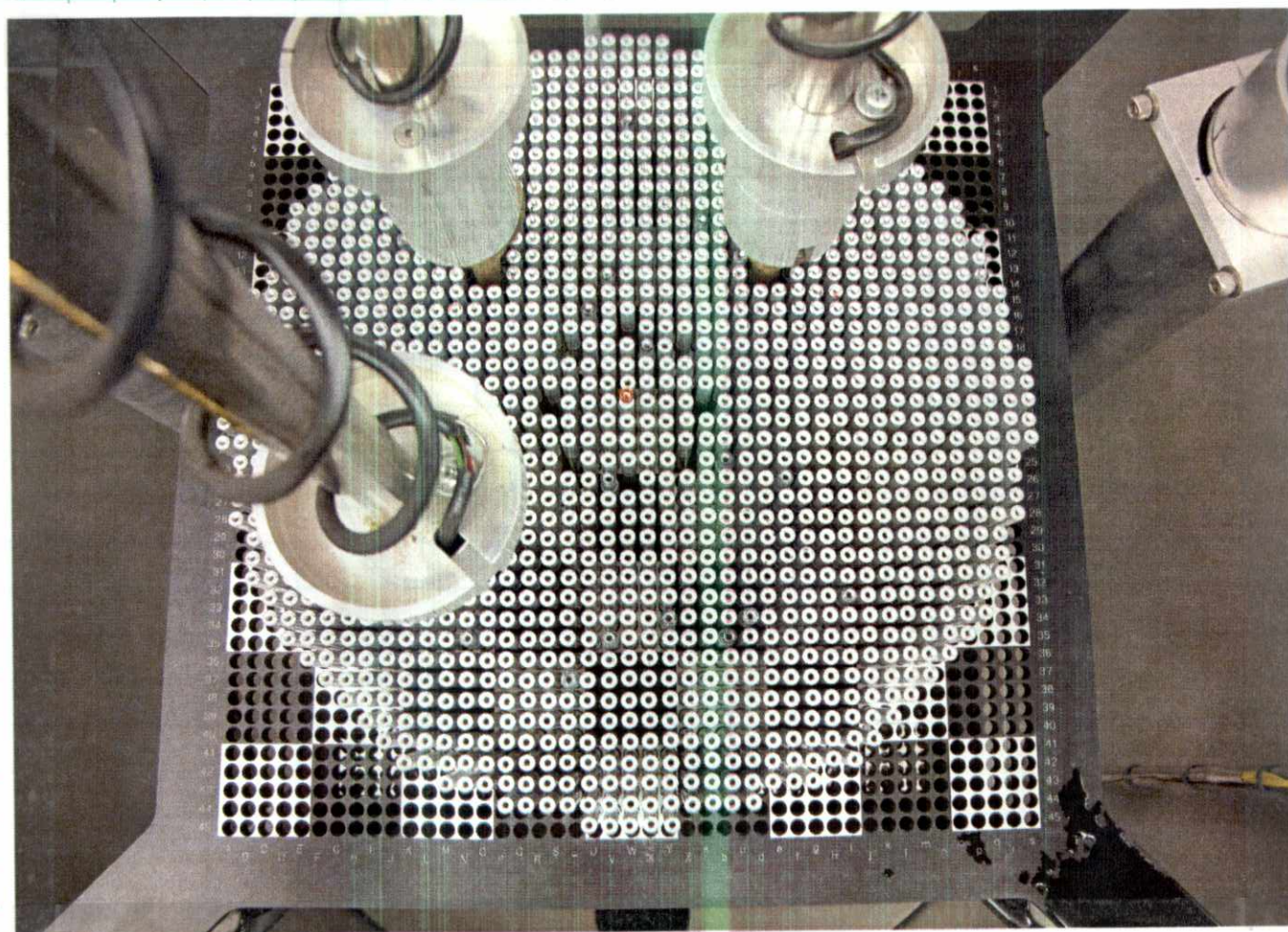
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14 Oct 10

The core was unloaded to configuration 800B0000B with 1405 rods in the core. Eight rods were then removed near the center of the array in positions W19, W27, A23, S23 - the positions 4 rows out from the center of the array - and from positions Z20, Z26, T26, and T20 - positions on the diagonals that are about the same distance from the center of the array as the other rods (3 over and 3 across).



1397 rods in the core - outline of 1405 rod core with eight rods removed as described above.

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14 OCT 10

Dump Tank

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

[illegible]

Stairs

- | | |
|---|-----------------|
| 1 | Fuel Element |
| 2 | Source |
| 4 | Safety Element |
| 5 | Safety Element |
| 6 | Control Element |
| 7 | Empty Position |

Core loading on 10/14/10
This core was run on 10/15/10

Total Fueled Positions 1397
First Use 10/14/10
Estimated k_{eff} T B D

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An intermittent short in a cord supplying power to the assembly tripped a GFCI and precluded operation the remainder of 10/14. The cord was replaced.

We are now using the core loading described on 10/14.

Water in @ 9:13

CE up @ 9:16:14

T1 = 24.2 T2 = 24.0 T3 = 24.2 TD = 24

Time	Ch A	Ch B	Ch C	
9:17:17	42802	42944	139	60 sec counts
9:18:34	42841	42864	140	
9:20:54	42912	44010	162	
9:21:15	42969	42923	138	
9:22:32	43767	44009	151	
9:24:07	43323	43558	136	
9:25:26	43239	43447	133	
9:26:46	43315	43360	140	
9:28:14	43282	43610	144	
9:29:39	43230	43890	140	
9:30:55	43317	43578	127	
9:32:12	43733	43601	131	
9:33:34	43768	43965	132	
9:34:54	43625	43616	140	
9:36:48	43154	43494	121	
9:38:11	44145	43747	130	
9:41:15	43981	44022	133	
9:42:46	44055	44293	142	
9:44:10	43747	44063	144	
9:45:47	44071	44079	165	
9:47:06	43834	43924	164	
9:48:32	44319	44066	149	
9:50:06	44207	44251	110	
9:51:24	43670	43502	138	
9:53:05	43463	44299	157	
9:54:40	44064	44456	157	

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Counts @	1397 rods	Ch A	Ch B	Ch C
Time				
9:56:22		44424	44269	140
Sum of last 10		439854	441202	1466

We will add 8 rods

The core is loaded to 1405 rods in core - 800 B0000B configuration with 1413 rod outline and 8 holes i, W19, W27, ~~X~~ a23, 523, Z20, Z26, T26, T20

Water in @ 10:32

CE up @ 10:55:47

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
10:36:21	54899	55596	178	
10:38:14	55765	56067	172	
10:39:36	56544	56724	186	
10:40:56	56314	57373	198	
10:42:15	57366	57130	191	
10:43:33	56728	56810	200	
10:44:53	57524	57266	195	
10:46:13	56757	56777	216	
10:47:31	57080	56828	182	
10:48:51	56657	56328	173	
10:50:13	56352	56788	179	
10:51:30	56554	56936	176	
10:52:53	56370	57258	193	
10:54:15	57373	57035	186	
10:55:36	56702	57143	193	
10:57:57	56723	57390	161	
10:58:21	57177	57448	197	
10:59:42	56945	57343	206	
11:01:43	57110	57830	206	
11:03:16	57594	57875	215	
11:04:55	57078	57119	197	

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15 OCT 10

Count @ 1405 rods

Time	Ch A	Ch B	Ch C
11:06:17	56903	57040	260
11:08:02	57723	57641	217
11:09:32	56558	57631	194
11:10:57	57891	57686	197
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24
11:12:22	56394	57011	181
11:13:41	56791	57229	176
11:15:20	57411	57516	189
11:16:55	56782	57158	194
11:18:17	57701	57668	189
T1 = 24.0	T2 = 24.0	T3 = 24.0	TD = 24

Sum of last 10 571232 573700 1994
Projected DC 1431.8 ± .23 1431.6 ± .23 1427.2 ± 2.9
Projected DC (Ch A + Ch B) 1431.7 ± .16

We will add 4 rods to 1409 rods

The core is loaded to 1409 rods - 800B0000B 1417 rod
outline with 8 holes: W19, W27, a23, S23, Z20, Z26,
T26, and T20.

Water in @ 13:11

CE up @ 13:14:15

T1 = 23.9 T2 = 23.8 T3 = 23.9 TD = 24

Time	Ch A	Ch B	Ch C
13:15:55	68706	68747	196
13:16:39	70514	70586	231
13:18:14	70249	70805	226
13:19:39	71057	71307	195
13:21:32	71708	71723	236
13:22:57	71317	71660	249
13:24:30	71473	71565	196
13:25:57	71232	71918	232

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15 Oct 20

1409 rods in the core

Time	Ch A	Ch B	Ch C
13:27:22	71314	71610	242
13:28:46	71440	72129	265
13:30:11	70598	70919	262
13:31:38	71826	71575	257
13:33:05	71950	72081	244
13:34:32	71242	72025	245
13:36:11	71635	71771	227
13:37:40	70755	71626	217
13:39:08	71315	71471	224
13:40:43	71926	71501	246
13:42:11	71198	71941	237
13:43:40	71947	72387	223
13:45:18	70959	71836	243
13:46:49	72100	72105	260
13:48:20	71977	72156	219
13:49:45	71491	71884	223
13:51:13	71117	71351	241
13:52:52	71500	72114	246
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24

Sum of last 10 715530 718746 2362
 Projected DC 1424.8 ± .14 1424.8 ± .14 1430.7 ± 4.2
 Projected DC (Ch A+B) 1424.8 ± .10

We will add 8 rods to 1417 rods in the core

Eight rods were added. The core is now loaded to 1417 rods.
 Config. 800B0000B 1425 rod outline with 8 holes @
 W19, W27, a23, S23, Z20, Z26, T26, T20

Water in @ 14:25

CE up @ 14:28:40

T1 = 23.9 T2 = 23.8 T3 = 23.9 TD = 24

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Counts @ 1417 rods

Time	Ch A	Ch B	Ch C
14:29:18	96709	92448	291
14:30:48	103599	103714	321
14:32:31	104904	104370	350
14:34:01	105730	106584	332
14:35:28	105689	106347	335
14:37:11	105695	106214	374
14:38:39	105863	106410	340
14:40:05	107284	107451	328
14:41:34	106792	106056	321
14:43:18	106210	106618	355
14:44:42	106655	107405	347
14:46:15	106752	107126	318
14:47:44	107190	106885	358
14:49:12	106579	106975	351
14:50:40	107138	107618	341
14:52:03	106527	107352	360
14:53:25	106848	107442	340
14:54:45	106607	106674	333
14:56:05	105893	106896	354
14:57:25	107495	107683	346
14:58:43	106890	107695	323
15:00:01	106411	106912	349
15:01:20	107943	108420	345
15:02:38	106749	106800	353
15:03:56	107623	108249	348
15:05:20	107358	108019	358
15:06:39	107413	108195	340
15:07:58	107486	107564	398
15:09:19	108025	108312	347
15:10:37	107227	108059	368
15:11:56	107808	108244	362
15:13:15	106950	107189	334
15:14:35	107465	108376	350
15:15:56	108319	109153	371

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Counts @ 1417 rods

Time	Ch A	Ch B	Ch C
15:17:24	106850	107811	379
15:18:43	108170	108758	348
T1 = 24.0	T2 = 23.9	T3 = 24.0	T4 = 24

Sum of the last 10 1075713 1081661 3597

Projected DC 1432.9 ± .07 1432.8 ± .07 1432.3 ± 1.2

Projected DC (Ch A+B) 1432.9 ± .05

We will add 8 rods to 1425 rods in the core.

The core is loaded to 1425 rods. Config. 800B0000B
 1433 rods less 8 water holes in W19, W27, a23, Z20,
 Z26, T26, T20, S23.

18 Oct 10

CORE LOAD IS AS LEFT AT END OF DAY 15 OCT 10 (1425, 8 H₂O HOLES)
 CONFIG. 800B0000B. 1433 RODS LESS 8 H₂O HOLES IN W19, W27, a23, Z20,
 Z26, T26, T20, S23.

WATER-IN @: 13:24

CE Up @: 13:28:10

T₁ = 24.3T₂ = 24.2T₃ = 24.3T₄ = 25

TIME

CHA

CHB

CHC

COUNTS @
1425

13:28:53

181106

181981

978

13:30:12

199144

100157

645

13:31:31

214244

213201

669

13:32:50

220704

221683

699

13:34:06

224817

224455

727

13:35:40

227740

228993

734

13:37:25

234239

235209

779

13:38:43

238238

238364

767

13:40:07

241115

240568

1576 → 809

13:41:40

240321

240756

781

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Counts @ 1425

Time	Ch A	Ch B	Ch C
13:42:59	243590	242866	778
13:44:29	243455	244992	819
13:46:25	249110	24 249625	792
13:48:26	249980	250268	848
13:49:46	251268	251032	839
13:51:07	253327	253261	773
13:52:40	253428	253021	820
13:54:01	253231	253675	859
13:55:20	258375	257769	853
13:56:48	257222	257386	805
13:58:07	256426	256060	873
13:59:26	258323	258323209	793
14:01:27	258112	259544	771
14:02:44	259024	259129	841
14:04:03	258002	258523	866
14:05:43	257846	257343	895
14:07:06	257663	258980	882
14:08:35	258074	256937	842
14:09:57	260993	261025	843
14:11:19	258889	259651	817
14:12:45	261881	261335	848
14:14:04	261589	261588	851
14:15:41	262079	262640	879
14:17:03	261958	261772	927
14:18:49	261601	261057	708
14:20:21	260932	262019	863
14:22:03	262538	263972	833
14:24:41	261933	2612009	896
14:26:00	261903	261899	812
14:27:18	263902	263989	877
14:28:43	260613	262559	877
14:30:11	260869	260957	903
14:31:49	260846	261934	817

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18 Oct 10 counts @ 1425

14:33:03	260948	261764	868
14:34:25	262663	262359	898
$T_1 = 29.4$	$T_2 = 29.2$	$T_3 = 29.4$	DT = 24
14:35:46	262423	262629	870
14:37:05	264150	264069	867
14:38:30	265857	266335	856
14:39:52	266743	266849	933
14:41:12	267089	267828	888
14:42:32	265607	265448	893
14:43:52	266407	267377	909
14:45:16	267291	268238	859
14:47:41	266949	266019	869
14:49:07	266176	264969	880
14:50:52	266394	267751	877
14:52:15	2656915	265363	900

 $T_1 = 29.4$ $T_2 = 29.3$ $T_3 = 29.1$ DT = 24

Sum of last 10 2664410 2666127 8914

Projected DC 1430.4 ± .01 1430.5 ± .01 1430.4 ± .18

Projected DC (Ch A+B) 1430.4 ± .007

Added 6 Fuel Rods - 1431 rods in the core, same 8 holes

WATER in core 15:27

On OP 15:30:56

 $T_1 = 24.2$ $T_2 = 24.1$ $T_3 = 24.1$ DT = 24

Time	Ch A	Ch B	Ch C
15:31:31	583838	578037	1893
15:33:43	1225030	1189408	4058
15:35:18	1874223	1788176	5992
15:36:47	2664144	2498196	8470
15:38:21	3755773	3450141	11867
15:39:53	5173764	4649619	16149
15:41:32	7210317	6312245	22986
15:43:02	9570952	8145134	30667
15:44:46	12739110	10706936	42353
$T_1 = 24.2$	$T_2 = 24.1$	$T_3 = 24.2$	DT = 24

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The core with 1431 rods is supercritical

We will pull one rod

The core now has 1430 rods in it - 1438 outline less
8 holes in W19, W27, a23, S23, Z20, Z26, T26, T20
config. 800B0000B

Water in @ 16:15

CE up @ 16:18:39

T1 = 24.0 T2 = 24.0 T3 = 24.0 TD = 24

Time	ChA	ChB	ChC
16:19:13	477221	476787	1612
16:20:39	732272	728749	2418
16:22:41	1157641	1137627	3881
16:24:20	1561683	1515140	5019
16:25:52	1995699	1920144	6257
16:27:17	2455998	2336429	7855
16:28:59	3066336	2876644	9834
16:30:24	3672904	3410751	11884
16:31:52	4378857	4016793	13942
16:33:37	5359189	4837153	17348
16:35:21	6481258	5763361	20564
16:36:50	7576537	6650944	24219
16:38:16	8736173	7577287	28011
16:39:38	9984238	8582846	32362
16:41:04	11434189	9729885	37713

T1 = 24.1 T2 = 24.0 T3 = 24.1 TD = 24

This core is supercritical

One rod was removed - 1429 rods in the core - config 800B0000B
1437 rods less 8 water holes - W19, W27, a23, S23,
Z20, Z26, T26, T20.

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1429 rods in the core

Water in @ 17:12

CE up @ 17:15:30

T1 = 23.9 T2 = 23.9 T3 = 23.9 TD = 24

Time	ChA	ChB	ChC
17:16:07	397854	398223	1337
17:17:41	576109	569872	1943
17:19:13	760342	745716	2437
17:20:50	943397	923852	3035
17:22:34	1144532	1116893	3697
17:24:04	1315362	1277207	4296
17:25:32	1495712	1443005	4837
17:26:55	1656274	1592604	5383
17:28:17	1813121	1736855	5805
17:29:53	2007471	1910441	6453
17:31:37	2199491	2083870	7039
17:33:06	2376229	2246526	7605
17:34:29	2550249	2399488	8109
17:36:10	2770901	2596739	8719
17:37:49	2984929	2785891	9697
17:39:33	3191505	2968662	10198
17:41:07	3416047	3162406	10867
17:42:41	3625660	3340071	11532
17:44:10	3829866	3519994	12149
17:45:42	4048660	3704130	12845
17:47:12	4278869	3892464	13580
17:48:41	4487257	4071263	13965
T1 = 24.0	T2 = 23.9	T3 = 24.0	TD = 24

This core appears to be very slightly supercritical

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The core is now loaded to 1397 rods in configuration 800B0000B with the outline of 1405 rods and 8 water holes in "row 8": W15, W31, e23, o23, ~~off~~ c17, c29, Q17, Q29.

Dump Tank

[illegible]

Stairs

core configuration 800B0000B ~~with~~ with eight water holes in "row 8"

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Core loaded to 1397 rods - 8 water holes in "row 8"

Water in @ 9:05

CE up @ 9:08:19

T1 = 23.9 T2 = 23.8 T3 = 23.8 TD = 24

Time	Ch A	Ch B	Ch C	
9:08:57	39965	40453	141	60 sec
9:10:29	40268	40028	119	counts
9:12:13	40182	40011	140	
9:13:52	40373	39668	125	
9:15:31	40577	39860	118	
9:17:21	40631	40334	115	
9:18:39	40318	40236	139	
9:19:57	40243	40109	120	
9:21:16	40922	40277	268 148	
9:22:34	40984	40313	126	
9:24:56	41065	40736	132	
9:25:16	41089	40653	130	
9:26:35	40646	40233	141	
9:27:53	40909	40581	121	
9:29:16	40998	40977	132	
9:31:13	40761	40784	132	
9:32:35	40834	40774	125	
9:34:18	40650	40524	145	
9:35:37	40925	40607	118	
9:37:00	40384	40848	139	
9:38:51	40967	40779	129	
T1 = 23.9	T2 = 23.8	T3 = 23.9	TD = 24	

Sum of last 10 408163 406760 1312

We will add 8 rods to 1405 rods in the core

The core is loaded to 1405 rods - holes in "row 8"

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1405 rods in the core - holes in "row 8"

Water in @ 10:17

CE up @ 10:19:58

T1 = 23.6 T2 = 23.5 T3 = 23.6 TD = 24

Time	Ch A	Ch B	Ch C
10:20:54	49767	49747	143
10:22:23	50334	50646	166
10:24:01	50734	50396	159
10:25:28	50337	50933	181
10:26:50	50688	50397	164
10:28:07	50768	50849	172
10:29:25	50592	50843	171
10:30:54	51071	51166	164
10:32:17	50656	50791	165
10:33:33	50777	50991	205
10:34:52	50592	50598	153
10:36:09	50690	50718	174
10:37:26	50802	50719	161
10:38:44	50284	50231	161
10:40:05	50305	50520	167
10:41:22	50938	50895	176
10:42:42	51073	51356	162
10:44:15	51064	51036	174
10:45:33	50265	50260	179

T1 = 23.7 T2 = 23.6 T3 = 23.7 TD = 24

	506790	507324	1712
Sum of last 10	608517	609281	2041

Projected DC 1438.1 ± .36 1437.4 ± .34 1431.2 ± 4.1

Projected DC (Ch A+B) 1437.7 ± .25

Four rods were added - core has 1409 rods with 8 holes in "row 8"

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Core loaded to 1409 rods, holes in W15, W31, e23, O23, c17, c29, Q17, Q29

Water in @ 11:16

CE up @ 11:19:51

T1 = 23.5 T2 = 23.4 T3 = 23.5 TD = 24

Time	Ch A	Ch B	Ch C
11:20:21	58531	59262	203
11:22:02	60411	60871	187
11:23:21	60629	60690	211
11:24:40	60404	61016	209
11:26:14	61153	61237	205
11:27:42	60619	61114	187
11:29:02	60419	60837	172
11:30:23	60680	61172	197
11:31:48	60922	61364	215
11:33:08	60758	60995	195
11:34:27	60870	61286	215
11:35:49	60989	61346	199
11:37:09	61325	61164	206
11:38:39	61221	61054	184
11:39:59	60913	61185	168
11:41:22	60967	61270	198
11:42:53	61805	61809	199
11:44:21	61891	61910	214
11:45:59	61145	61479	211
11:47:21	61817	62056	247
11:48:49	61108	61797	181
11:50:07	60687	61260	215
11:51:33	61809	62251	184
11:52:52	61011	61764	204
11:54:14	61322	61907	193

T1 = 23.6 T2 = 23.5 T3 = 23.6 TD = 24

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Counts @ 1409 rods

	Ch A	Ch B	Ch C
Sum of last 10	613141	616966	2080
Projected DC	1428.1 $\pm$.21	1427.5 $\pm$.20	1427.6 $\pm$ 3.4
Projected DC (Ch A + B)	1427.8 $\pm$.14		

we will add 8 rods to 1417 in the core

The core is loaded to 1417 rods - Config 800B0000B 1425 rods
less 8 water holes in W15, W31, e23, O23, c17, c29,
Q17, Q29

Water in @ 13:36

CE up @ 13:39:06

T1 = 23.4 T2 = 23.4 T3 = 23.4 TD = 24

Time	Ch A	Ch B	Ch C
13:39:58	84913	85675	299
13:41:56	88613	88950	300
13:43:19	88556	89565	321
13:44:41	89626	90036	283
13:46:58	90005	90123	287
13:47:24	88844	89437	294
13:48:52	89632	89936	326
13:50:31	88860	89225	337
13:51:53	89974	90254	295
13:53:51	90309	90846	294
13:55:10	90406	90784	276
13:56:35	89789	90062	310
13:58:17	89938	90344	286
13:59:37	89472	89908	319
14:00:59	90175	90788	283
14:02:34	89595	90638	301
14:03:58	90077	90739	318
14:05:18	89006	90077	298
14:06:46	90106	90274	309
14:08:11	90286	90992	317

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Counts @ 1417 rods

Time	Ch A	Ch B	Ch C
14:09:42	88236	89392	304
14:11:43	90295	90136	296
14:13:20	89291	89937	296
T1 = 23.6	T2 = 23.5	T3 = 23.6	TD = 24

Sum of the last 10 896539 902881 3041
 Projected DC 1434.3 ± .1 1434.3 ± .1 1434.3 ± 1.6
 Projected DC (Ch A+B) 1434.3 ± .06

Eight rods were loaded - core has 1425 rods with 8 holes in "row 8"

Water in @ 14:41

CE up @ 14:44:49

T1 = 23.5 T2 = 23.4 T3 = 23.5 TD = 24

Time	Ch A	Ch B	Ch C
14:45:22	133207	133831	439
14:46:43	147338	147565	457
14:48:08	152795	154187	497
14:49:27	155841	156695	502
14:50:47	156178	157330	489
14:52:10	156269	156978	496
14:53:41	158445	159960	566
14:55:05	160533	160843	540
14:56:25	160771	161405	675
14:57:45	163188	164183	547
14:59:06	162562	162377	1368 ?
15:00:52	162274	162727	5409
15:02:22	161641	161623	8369
15:03:49	162518	163230	551
15:05:15	162347	162353	520
15:06:36	162583	163334	542
15:08:06	162778	163373	521
15:09:27	162385	163043	531

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Counts @ 1425 rods

Time	ch A	ch B	ch C
15:10:50	164044	164943	535
15:12:24	163237	164992	529
15:13:44	164281	164463	532
15:15:08	165279	165413	532 552
15:16:35	164245	165849	490
15:17:59	164816	164700	556
15:19:19	163670	163924	548
15:20:46	164929	166388	549
15:22:07	164269	165008	492
15:23:26	164501	165036	562
15:24:52	160926	165631	561
15:26:10	165572	165570	556
15:27:36	163524	165092	528
15:29:10	165033	165342	947
15:30:57	164485	165191	538

T1 = 23.6

T2 = 23.5

T3 = 23.6

TD = 24

Sum of last 10

Projected DC 1434.6 ± 0.3 1434.6 ± 6 1433.9 ± .42

Projected DC Ch(A+B) 1434.6 ± .02

The core is now loaded to 1430 rods (added 5)

Con fig. 800B0000B with 1438 rods less 8 water holes in "row 8" - W15, W31, e23, o23, c17, c29, q17, q29

~~Water in~~

We installed new cables on channel C with the exception of the cable from the power supply to the preamp.

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19 Oct 10

1430 rods in the core

Water in @ 16:12

CE up @ 16:15:27

T1 = 23.5 T2 = 23.4 T3 = 23.4 TD = 24

Time	Ch A	Ch B	Ch C
16:15:53	283013	285953	1061
16:17:17	372336	373142	1316
16:18:40	442358	444098	1636
16:20:11	510557	510158	1876
16:21:33	561781	559521	2007
16:22:55	602759	601291	2079
16:24:16	636891	632949	2247
16:25:39	659958	657753	2305
16:27:00	678010	676079	2447
16:28:24	699384	695846	2493
16:29:55	720360	713516	2420

T1 = 23.5 T2 = 23.5 T3 = 23.6 TD = 24

This core is subcritical

We will add 1 rod

Core loaded to 1431 Rods - config 800B0000B 1439 rods less
 8 water holes in W15, W31, e23, O23, c17, c29, Q17,
 and Q29

Water in @ 17:00

CE up @ 17:03:15

T1 = 23.4 T2 = 23.4 T3 = 23.4 TD = 24

Time	Ch A	Ch B	Ch C
17:03:39	328424	327254	1061
17:05:01	457686	456155	1616
17:06:24	575934	569220	1916
17:07:44	680634	672544	2152
17:09:06	780135	767206	2612

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Counts @ 1431 rods

Time	Ch A	Ch B	Ch C
17:10:33	878476	862832	2907
17:11:52	960380	943623	3199
17:13:17	1045735	1022094	3434
17:14:42	1120183	1091536	3673
17:16:09	1194515	1159462	4013
17:17:38	1265217	1228088	4080
17:19:19	1338050	1296013	4375
17:20:47	1393941	1349490	4536
17:22:12	1449906	1401604	4650
T1 = 23.5	T2 = 23.4	T3 = 23.5	TD = 24

This core is subcritical

We will add 1 rod to 1432 rods in the core

20 Oct 10

1 rod was added - Core now has 1432 rods - 1440 rods less
8 "row 8" holes

Water in @ 8:43

CE up @ 8:46:37

T1 = 23.8	T2 = 23.7	T3 = 23.8	TD = 24
Time	Ch A	Ch B	Ch C
8:47:14	425040	423568	1520
8:48:39	600856	594863	2057
8:50:05	781575	769815	2619
8:51:24	965900	946565	3372
8:52:44	1147207	1118185	3908
8:54:09	1360007	1317836	4523
8:56:00	1644142	1584294	5369
8:57:54	1990749	1896564	6439
8:59:16	2257229	2140072	7402
9:00:53	2605162	2452068	8617
9:02:17	29050728 ?	2755386	9607

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Counts @ 1432 rods

Time	Ch A	Ch B	Ch C
9:03:40	3307574	3067752	10734
9:05:03	3719242	3423553	11936
9:06:45	4325106	3940248	13836
9:08:40	5130898	4618384	16529
9:10:14	5845088	5207431	18840
9:11:38	655083	5794883	20763
9:13:00	7327819	6409591	23440

T₁ = 23.8 T₂ = 23.7 T₃ = 23.8 TD = 24

This core is supercritical

The core is loaded to 1405 rods with eight water holes in "row 16" - on principal axes the holes are 16 positions from center, on diagonals they are 11 positions from center.

8 WATER HOLES AT W1, W39, M23, G23, H12, H34, L12, L34

Source 3 in U1.

WATER in Core: 10:29

CE UP: 10:33:09

T₁ = 23.6T₂ = 23.5T₃ = 23.6

DT = 24

Time	Ch A	Ch B	Ch C
10:34:05	37120	37364	270
10:35:42	37960	37704	279
10:37:13	37762	36937	266
10:38:35	37790	37559	308
10:39:55	37701	37739	267
10:41:13	37718	37794	277
10:42:34	37989	37703	290
10:43:52	37922	37593	312
10:45:34	37760	38520	312
10:48:26	37669	37302	312
10:49:48	37260	37592	298
10:51:08	37542	37660	282
10:52:24	37958	37894	316

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From Page No. 20 Oct 10 counts @ 1405

Time	Ch. A	Ch. B	Ch. C
10:53:14	37701	38086	306
10:54:59	37872	37889	294
10:56:16	37836	37910	291
10:57:33	37376	37747	279
10:58:52	37783	37795	302
10:59:10 11:00:10	37663	37770	300
$T_1 = 23.6$	$T_2 = 23.5$	$T_3 = 23.6$	DT = 24

4 rods were added to the core
 Core now has 1409 rods - Config. 800B0000B 1417 rods
 less 8 water Holes in W7, W39, M23, G23, h12,
 h34, L12, L34. Source is in U-1

Water in @ 13:34

CE up @ 13:37:13

 $T_1 = 23.5$ $T_2 = 23.4$ $T_3 = 23.5$ $TD = 24$

Time	Ch A	Ch B	Ch C	60 Sec counts
13:38:18	42700	42837	363	
13:39:37	42743	42904	325	
13:40:55	43343	43214	382	
13:42:13	42839	43131	383	
13:43:38	42749	43523	354	
13:44:57	43110	43207	383	
13:46:21	42924	43622	363	
13:47:44	43457	43686	374	
13:49:02	42778	43352	354	
13:50:18	42679	43152	371	
13:51:35	43385	43709	370	
13:52:52	43247	43327	374	
13:54:10	43138	43505	420	
13:55:26	43138	43595	370	
13:56:46	43272	43272	361	
13:58:17	43438	43045	707 → 346	
13:59:46	42988	43281	332	
$T_1 = 23.5$	$T_2 = 23.4$	$T_3 = 23.5$	$TD = 24$	

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Counts @ 1409

	Ch A	Ch B	Ch C
Sum of last 10	517554 ⁴³¹⁵²⁰	520753 ⁴³³⁹²⁴	4418 3672
Projected DC	1436.5 ± .48	1435.9 ± .46	1426.1 ± 2.2
Projected DC (Ch A+B)	1436.2 ± .33		

8 rods were added. Core has 1417 rods - 800B0000B
1425 rods less 8 water holes in "row 16"

Water in @ 14:34

CE up @ 14:37:36

T1 = 23.4 T2 = 23.4 T3 = 23.4 TD = 24

Time	Ch A	Ch B	Ch C	
14:38:14	53473	53783	369	60 sec counts
14:39:32	54025	54398	407	
14:41:10	54300	54895	389	
14:42:32	54551	54481	394	
14:43:47	55414	55343	428	
14:45:06	53727	54235	416	
14:46:23	55054	55254	401	
14:47:44	54914	54547	379	
14:49:00	54715	54593	398	
14:50:25	55322	55242	400	
14:51:43	55342	55709	421	
14:53:00	54771	55521	433	
14:54:18	54597	54560	394	
14:55:40	55120	55602	402	
14:57:00	55364	55088	430	
14:58:21	55290	54940	415	
14:59:44	54882	55246	385	
15:01:05	54914	55654	413	
15:02:26	55188	55370	420	
15:03:43	54995	55248	431	

T1 = 23.6 T2 = 23.4 T3 = 23.5 TD = 24

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Counts @ 1417 rods, "row 16" holes

	Ch A	Ch B	Ch C
Sum of last 10	550463	552938	4144
Projected DC	1446.0 ± .27	1446.2 ± .27	1479.2 ± 12.4
Projected DC (Ch A+B)	1446.1 ± .20		

8 rods were added

1425 rods in the Core - 1433 rod config 800B0000B
 less 8 water holes in "row 16"

Water in @ 15:37

CE up @ 15:40:14

T1 = 23.4 T2 = 23.4 T3 = 23.4 TD = 24

Time	Ch A	Ch B	Ch C	
15:40:41	72180	73153	458	60 sec
15:42:02	74943	75365	476	counts
15:43:20	75141	75310	495	
15:44:49	75295	76003	479	
15:46:06	75504	76409	481	
15:47:24	75753	75762	481	
15:48:43	76140	76941	501	
15:50:00	75421	76447	529	
15:51:17	75463	76367	530	
15:52:34	76154	76835	498	
15:53:54	75738	76377	504	
15:55:11	76715	76319	501	
15:56:30	76658	77248	+ 516	
15:57:56	77079	77222	493	
15:59:15	75679	76310	494	
16:00:35	75836	76405	520	
16:01:55	75743	76597	489	
16:03:13	75982	76633	502	
16:04:32	76122	76379	553	
16:05:51	76588	77294	524	
16:07:10	75995	75925	490	
16:08:30	76673	76788	516	

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Counts @ 1425

Time	Ch A	Ch B	Ch C
16:09:49	76151	76821	482
T1 = 23.6	T2 = 23.4	T3 = 23.5	TD = 24

Sum of last 10: 761848 766374 5063
Projected DC 1445.8 ± .13 1445.7 ± .13 1461.1 ± 4.2
Projected DC (Ch A+B) 1445.8 ± .10

We will add 4 rods to 1429

1429 rods are in the core. Config. 800B0000B 1437 rods
less 8 "row 16" water holes in W7, W39, M23, G23,
h12, h34, L12, L34

21 Oct 10

Core is loaded to 1429 rods with "row 16" holes

Water in @ 8:34

CE up @ 8:37:30

T1 = 23.7 T2 = 23.6 T3 = 23.7 TD = 24

Time	Ch A	Ch B	Ch C	
8:38:00	103801	104106	460	60 Sec
8:39:26	110771	111645	486	counts
8:41:05	113898	114574	505	
8:42:28	114707	115540	536	
8:44:14	115608	116253	533	
8:46:30	116973	117760	515	
8:47:51	116044	117475	549	
8:49:14	115846	115809	579	
8:50:43	116877	116841	564	
8:52:23	116277	117697	556	
8:53:40	117645	118539	535	
8:55:03	118010	118936	558	
8:56:30	117372	117047	525	
8:57:49	118864	119572	584	

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Counts @ 1429 rods

Time	Ch A	Ch B	Ch C
8:59:13	118796	119124	588
9:00:36	118781	118829	583
9:01:47	118394	119151	621
9:04:09	119478	119743	594
9:06:56	119718	120841	638
9:07:26	121740	122625	1220 → 582
9:09:19	121005	120382	611
9:11:11	120344	120863	632
9:13:24	119913	120448	585
9:14:46	120115	120562	593
9:16:05	119735	120437	628
9:18:09	120560	121238	603
9:19:29	120665	121301	610
9:20:50	120408	120818	596
9:22:10	120393	120849	603
9:23:40	120118	120567	658
9:25:08	120872	122244	612
9:27:10	120568	121726	657
9:28:44	120553	120561	638
9:30:25	119525	120714	631
9:31:52	121411	122481	618
9:33:25	121752	121799	620
9:34:45	120723	121003	650
9:36:04	119986	120588	607
9:37:26	119268	121758	624
T1 = 23.7	T2 = 23.6	T3 = 23.7	TD = 24

Sum of last 10	1325169	1334290	6918
Projected DC	1435.92 .03	1435.92 .03	1445.22 1.5
Projected DC (Ch A + B)	1435.92 .02		

Considering incremental fuel rod worths this approach appears to be @ DC near 1439 rods.

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We will add 10 rods to 1439 rods in the core

The core is loaded to 1439 rods - 800B0000B 1447 rods
 less 8 water holes in "row 16": W7, W39, m23, G23,
 h12, h34, L12, L34

Water in @ 1024

CE up @ 10:28:03

T1 = 23.6 T2 = 23.5 T3 = 23.6 TD = 24

Time	Ch A	Ch B	Ch C
10:28:49	325083	322875	1317
10:30:11	418105	415576	1674
10:31:33	492808	486562	1820
10:32:59	559133	553478	2072
10:34:26	7613521	605341	2268
10:35:55	660032	649971	2456
10:37:23	700050	689901	2576
10:38:47	731423	720336	2620
10:40:12	755703	742403	2648
10:41:32	782278	766377	2853
10:42:54	800687	785861	2861
10:44:20	816892	804176	2858
10:45:57	836887	821027	3069
10:47:21	849010	833675	2994
10:48:42	863058	845166	3066

T1 = 23.6 T2 = 23.6 T3 = 23.6 TD = 24

This core is subcritical

1 fuel rod was added

1440 rods in the core - 800B0000B 1448 rods less 8
 water holes in row 16

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1440 rods in the core - 8 holes in "row 16"

Water in @ 11:26

CE up @ 11:29:33

T1 = 23.5 T2 = 23.5 T3 = 23.6 TD = 24

Time	Ch A	Ch B	Ch C	60 sec counts
11:30:45	452735	447921	1707	
11:32:15	608362	600451	2148	
11:33:40	754318	741215	2748	
11:35:00	884147	864262	3012	
11:36:17	1006590	981012	3425	
11:37:37	1128698	1096872	3821	
11:39:01	1248041	1210042	4123	
11:40:22	1368472	1319970	4637	
11:41:44	1480950	1425512	5090	
11:43:23	1604127	1538848	5269	
11:44:55	1715518	1640755	5563	
11:46:23	1832126	1746292	5916	
11:47:44	1930234	1839459	6371	
11:49:15	2043805	1939202	6666	
11:50:49	2160097	2047668	7078	
11:52:09	2257368	2133698	7301	
11:53:29	2346108	2211772	7570	
11:54:53	2435126	2292569	7890	
11:56:12	2525637	2375166	8249	

T1 = 23.6 T2 = 23.5 T3 = 23.6 TD = 24

This core is subcritical

1 rod was added

1441 rods in the core - 800B0000B 1449 rods less 8
 waterholes in W7, W39, m23, G23, h12, h34, L12, L34

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21 Oct 10

141 rods in the core with "row 16" holes

Water in @ 13:31

CE up @ 13:34:34

T1 = 23.5 T2 = 23.4 T3 = 23.5 TD = 24

Time	Ch A	Ch B	Ch C
13:35:16	548965	544252	2130
13:36:36	815726	802210	2940
13:38:05	1169942	1140459	4187
13:39:25	1526785	1474073	5254
13:40:58	2018336	1926701	6695
13:42:16	2488031	2349962	8250
13:43:37	3048845	2843090	9801
13:45:57	3704422	3409859	12020
13:46:22	4487436	4076334	14351
13:47:42	53841558	47495279	16956
13:49:44	6865066	6039362	21835
13:51:35	8566116	7406222	27448
13:53:05	10141516	8666350	59999 32551
13:54:42	12063895	10185234	39763
13:56:10	13972954	11706791	46434

T1 = 23.6 T2 = 23.5 T3 = 23.6 TD = 24

This core is supercritical

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11/2/10800-B0000BCORE WAD: K_{2.95} $\frac{1144}{1145} + 1$ FUEL ELEMENT IN CENTER.

SOURCE: U-1

CORE TANK FULL: 11:15

CE UP: 11:18:29

TEMPS T_1 : 23.7 T_2 : 23.6 T_3 : 23.6

DUMP: 24

COUNTSTime:Ch.A:Ch.B:Ch.C:

11:19:00

3105

3055

59

11:20:15

3031

2956

63

11:21:31

3116

2991

62

11:22:44

3181

2944

68

11:24:08

3217

3002

73

11:25:25

3141

3010

74

11:26:40

3026

3000

77

11:27:55

3115

2958

63

11:29:10

3154

2958

67

11:30:25

3083

3011

70

11:31:39

3053

2853

68

11:32:55

3131

3012

80

11:34:09

3120

3034

73

11:35:23

3183

3001

71

11:36:37

3226

2935

79

11:37:51

3197

3012

74

11:39:05

3085

3033

73

11:40:20

3048

2965

64

11:41:37

3097

3031

82

11:42:50

3043

2953

83

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11/2/10

800-B0000B

CORE LOAD: K2.90

892 + 1 FUEL ELEMENT IN CENTER

893

SOURCE: U-1

CORE TANK FULL:

CE UP: 14:55

TEMPS

T₁:
23.4

T₂:
23.4

T₃:
23.4

DUMP:
24.0

COUNTS

TIME:

Ch. A:

Ch. B:

Ch. C:

14:56:01

1150

969

63

14:57:28

1124

949

62

14:58:43

1028

983

65

14:59:59

1055

984

62

15:01:26

1119

961

66

15:02:44

1049

945

66

15:04:00

1096

1022

64

15:05:28

1111

998

62

15:06:53

1053

909

62

15:08:11

1115

1017

59

15:09:45

1036

960

59

15:11:05

1111

1007

66

15:12:38

1069

996

79

15:14:14

1036

989

62

15:15:46

1041

977

68

15:17:05

1026

1026

~~68~~ 81

15:18:41

1150

938

70

15:20:04

1056

928

70

15:21:23

1048

960

65

15:22:45

1008

979

65

15:24:07

1067

916

75

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