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October 4, 1984

Robert Capra
U. S. NRC
Division of Human Factors-Safety
Washington, D.C. 20555

Dear Mr. Capra:

Pursuant to your request, enclosed is a copy of the material received by Kaye, Scholer, Fierman, Hays and Handler and MPR Associates which we believe has been commonly referred to as the "Chung Report".

Please let me know if we can be of any further assistance.

Very truly yours,



John F. Wilson, Esq.

/hg

enclosure

0744u

8411010617 841022
PDR ADOCK 05000289
P PDR

: Different from Faegre & Benson report
 7 : Findings debatable
 Tor ↓ : Reactor power in transient
 * : Clock time

DATE	TIME		CHART	LEVEL TRANSMITTER SWITCH NO.	WATER ADDITION INCLUDED IN CALCULATION	CHART GALLON/TIME	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN TEMP, F	UNIDENTIFIED LEAK RATE, GPM	
	CLOCK									UNCORRECTED (1)	COLD (2) TEMPERATURE CORRECTED (3)
09/30/78	1734	1834	1914/2014	2	no	no	no	40	581.320	0.8954	0.8380
09/30/78	2323	0023	0153/0253(10/01)	2	no	no	no	40	581.316	0.6485	0.5871
10/01/78	1929	2029	0004/0104(10/02)	2	no	no	no	40	581.380	0.1775	0.1406
10/02/78	0728	0828	1258/1358	2	no	no	no	40	581.410	0.5166	0.4672
10/02/78	2305	0005	0505/0605(10/03)	2	no	no	no	40	581.824	0.4553	0.3209
10/04/78	0512	0612	1445/1545	2	no	no	no	40	581.535	0.9204	0.8215
10/04/78	2034	2134	0930/1030(10/05)	2	no	no	no	40	581.703	0.9125	0.8505
10/05/78	0029	0129	1339/1439	2	no	no	no	40	581.090	0.9168	0.7882
10/13/78	1116	1216	1121/1221	2	no	no	no	18	579.426 (unstable)	-8.5137 (bad data)	?
10/14/78	1504	1604	1509/1609	2	no	no	no	(approach to criticality)	532.082 (unstable)	-0.8787	-1.2250
10/15/78	1140	1240	1140/1240	2	no	no	no	43	581.773	0.0306	-0.5280
10/15/78	1928	2028	1928/2028	2	150/1940 (MUT level +2"; normal, -5")	no	no	41	580.777	-0.3504	1.1656
(4) 10/16/78	1935	2035	1927/2027	2	no	no	no	40	581.308	2.5645	2.0264
(4) 10/17/78	1328	1428	1323/1423	2	no	no	no	39	582.179	2.0738	1.0822
(4) 10/18/78	0514	0614	0509/0609	2	no	no	no	50F	580.738	1.7754	0.8659
(4) 10/18/78	0736	0836	0731/0831	2	no	no	no	50.5f	580.836	1.2939	0.3720
(4) 10/18/78	0859	0959	0854/0954	2	60/0937	no	no	51f	581.226	1.3219	2.3219

(1) : As given in surveillance file and logs
 (2) : Corrected for unaccounted water addition or effect of hydrogen addition on
 MUT level (1" MUT level = 30 gallons) per SP 2301-3D1, 1978.
 (3) : Temperature compensated to unit average RCS temperature for water inventory
 changes in RCDT(750F), MUT(1200F) and identified leaks(other than RCDT; 750F).
 Other wrong entries for surveillance input (wrong sign for identified leaks,
 or wrong entry for RCDT inventory change by operator) were corrected.

CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 10/18/78	1018/1118	1013/1113	2	100/1040 (Jogged)	no	no		50↑	581.305	1.0246	2.6912	2.1965
# 10/18/78	1221/1321	1216/1316	2	100/1230 100/1255 .1305	no no no	no no no		51↑	581.122	-0.2830	3.0503	4.1487
10/19/78	0746/0846	0736/0836	2	no	no	no		53↑	580.731	0.2429		0.0031
# 10/19/78	1849/1949			no surveillance, no log						0.0000(?)		
# 10/20/78	0213/0313	0203/0303	2	no	no	no	(1) 20/0214 (no effect?)	66↑	581.992	0.0844	?	-0.1255
# 10/21/78	1239/1339	1234/1334	2	50/1330	no	no		56↑	581.918	-0.5976	0.2357	0.3400
10/22/78	07:5/0855	0740/0840	2	no	no	no		70	532.351	0.0000		-0.2793
10/23/78	0405/0505	0345/0445	2	no	no	no		75	582.396	0.5528		-0.0258
# 10/24/78	0311/0411	0255/0355	2	no	no surveillance					-0.0067		
10/24/78	2230/2330	2222/2322	2	no	no	no		75	581.437	-0.0325		-0.6315
10/25/78	1627/1727	1619/1819	2	no	no	no	2/1717 (no effect)	75	580.706	0.5705		0.3380
# 10/26/78	2007/2107	1959/2059	2	60/2005 (Jogged)	no	no		75	581.203	0.9433	1.9433	2.1979
# 10/27/78	/0540	/0532	2	no	no surveillance					0.0000		
10/27/78	1703/1803	1695/1795	2	no	no	no		75	580.915	0.1761		-0.2597
# 10/28/78	1605/1705	1605/1705		system unstable, results unreliable				0	565.961	0.1761		-0.1208
# 10/29/78	0132/0232	0132/0232	2	330/0211	no	330/0211		8	568.312	0.3781	5.8781	7.5308
# 10/29/78	1520/1620	1520/1620	2	100/1618	no	no		0	564.262	-0.9004	0.7662	1.0308

{1} CRO : Vented at 0214; filled MU-T-1 with Hydrogen to 18# at 0230; added more Hydrogen at 0308.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
10/30/78	1131/1231	1131/1231	2	no	no	no		0	534.281	0.8874		0.6396
10/31/78	0341/0441	0336/0436	2	no	no	no		0	536.586	0.0480		-0.0759
11/02/78	0332/0432	0340/0440	2	no	no	no		80↑	582.668	0.8978		0.6891
11/02/78	1829/1929	1839/1939	2	no	no	no		80↑	583.441	-0.1655		-0.3279
11/03/78	0626/0726	0646/0746	2	no	no	no		90	581.680	0.4214		0.2312
11/03/78	1658/1758	1708/1808	2	no	no	no		89	582.043	0.1875		0.0388
? 11/05/78	2215/2315	2227/2327	2	no	no	no	/2230 (some effect?)	89	582.285	-0.4439		-0.6761
11/06/78	0204/0304	0216/0316	2	no	no	no		90	582.465	0.2797		0.1431
11/06/78	1931/2031	1945/2045	2	no	no	no		90	582.207	0.8275		0.7117
? 11/09/78	0409/0509	0415/0515	2 ⁽²⁾	no	no	no	2"/0415	0	533.449	0.8789	1.8789	2.0123
# 11/09/78	1954/2054	2025/2125	2	200/2120 (MUT +5"; normal, -3")	no	no		0	531.402	0.5546	3.8879	4.7024
11/22/78	0217/0317	0217/0317	2	no	no	no		0	532.655	0.5802		0.5448
12/01/78	1701/1801	2111/2211	2	system unstable	no	no		0	534.875	0.6876		0.5915
# 12/02/78	1632/1732	2042/2142	2	150/2110	no	no	/1705 ⁽¹⁾ (no effect?)	0	534.000	0.1983	2.6983	3.3122
12/02/78	1918/2018	2330/2430	2	no	no	no		0	533.652	0.5398		0.4795
12/03/78	0510/0610	0920/1020	2	no	no	no		0	529.840	0.6529		0.5965
# 12/03/78	/1045			no surveillance						0.5664		
# 12/04/78	0628/0728	1038/1138	1	100/1115	no	no		70	583.159	0.9321	2.5987	3.1604

(1) : MUT level recorder trace.

(2) : Machinery History Card: 11/06/78, LT-1 and -2 low side vented extensively and readings came to correct levels.

3 CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME	REACTOR POWER, %	MEAN TAVE, F	UNIDENTIFIED LEAK RATE, GPM	
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED
# 12/05/78	0507/0607	0917/1017	2	no	no	no		91.7	581.999	0.7294	0.6621
12/05/78	1841/1941	2248/2348	2	no	no	no		90	581.789	0.8705	0.8061
# 12/06/78	1905/2005	2305/2405	1	100 /2320 (Jogged?)	no	no		89.5	580.322	0.7713	2.4379
# 12/07/78		1120/1400	1	no surveillance, n. log							2.3864
# 12/07/78		2140/2400	1	no surveillance, no log		/2210					
# 12/08/78	/0130 or /0135			no surveillance						0.6998	
# 12/08/78		0235/0450	1	no surveillance, no log							
# 12/08/78	1617/1717	2005/2105	2	60/2010,60/2055 (Jogged)	no	no		90	581.895	0.9260	2.9260
12/08/78	2334/0034	0339/0439	2	no	no	no		90	581.769	0.4127	0.3387
12/09/78	1149/1249	1549/1649	2	no	no	no		89.5	581.965	0.6168	0.5484
# 12/09/78	1700/1800			no surveillance						-0.2607	
12/09/78	2252/2352	0252/0352	2	no	no	no		89	582.164	0.0879	0.0266
12/10/78	1820/1920	2220/2320	1	no	no	no		90	582.308	0.8676	0.8046
12/11/78	0029/0129	0429/0529	1	no	no	no		89.5	581.957	0.6875	0.6259
12/11/78	0650/0750	1050/1150	2	(MUT +2"; normal, -2")	no	no		90	581.344	-0.8972	1.1028
12/11/78	1659/1759	2059/2159	1	no	no	no		90.5	582.230	0.8440	1.8236 (bad data?)
# 12/12/78	1010/1110	1410/1510	2	150/1410,1420,1500	no	no		57↓	581.699	-0.4116	2.0884
# 12/12/78	2255/2355	0255/0355	2	(MUT +0.3"; normal, -2")	no	no		55	582.054	0.5107	1.6607

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION			HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART			INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	CHART				UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
12/13/78	1950/2050	2350/0050	1	no	no	no		55	582.288	-0.2824		-0.3778	
# 12/14/78	0454 or 0530			no surveillance						0.6995			
12/14/78	1944/2044	2344/0044	2	no	no	no		55	582.414	0.9523		0.8699	
? 12/15/78	0208/0308	0608/0708	1	no ? (100/0630, 0640)	no	no		55	582.203	0.5393	2.2059	2.7798	
# 12/15/78	1822/1922	2220/2322	1	no	no	no	100gal/1845	55	582.129	0.9561	2.6227	3.1655	
12/16/78	1328/1428	1730/1830	2	no	no	no		0	534.469	0.9757		0.9062	
12/16/78	2004/2104	0020/0120	1	no	no	no		0	534.421	0.9782		0.9176	
12/17/78	0220/0320	0220/0320	2	no	no	no		0	534.184	0.4832		0.4268	
12/17/78	1528/1628	1525/1625	1	no	no	no		0	534.004	0.9799		0.9179	
12/18/78	1815/1915	1815/1915	2	no	no	no		0	325.250	0.8830		0.8215	
# 12/19/78	NO TEST		(examples of hydrogen additions)				/1445, 1450, 1505, 1520						
# 12/20/78	0805/0905	0805/0905	2	no	no	no	/0904 ⁽²⁾ (100 gal)	0	532.403	0.0315	1.6981	2.1348	
? 12/21/78	0259/0359	0259/0359	2	150/unstable	no	no		0	532.038	0.1171	2.6171	3.4342	
# 12/22/78	0810/0910	0810/0910	2	200/0820	no	no		38 ↑	581.459	0.8288	4.1621	5.5788	
12/22/78	2326/0026	2326/0026	2	no	no	no		52 ↑	581.504	0.1444		0.0733	
? 12/23/78	2048/2148	2048/2148	2	(MUT +0.5"; normal, -2")	no	no		89 ↑	583.596	0.0451	1.2951	1.7134	
? 12/24/78	1736/1836	1736/1836	2	no	no	200/1830 ⁽¹⁾		97	581.965	0.1822		0.1008	
12/25/78	0120/0220	0120/0220	2	no	no	no		97	582.269	0.3187		0.2456	

(1) : Wrong entry in the log ; MUT chart indicated water addition at 1850, after the test.

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
12/25/78	0752/0852	0752/0852	2	no	no	no		97	581.273	-0.6105		-0.6810
# 12/26/78	0249/0349	0249/0349	2	150/0325	no	no	/0305 (2" effect)	96	581.281	0.3974	3.8974	2.0852
?# 12/26/78	0916/1016	0916/1016	1	1007/0920	no	no		95	580.824	-0.0630	1.6036	2.0852
# 12/27/78	0810/0910	0810/0910	1	1007/0835-45,0900	no	no		96	581.941	0.9516	2.6182	3.1870
# 12/30/78	0615/0715	0635/0735	1	(MUT +4"; normal, -3")	no	no	/0615,0640 (no effect?)	44	582.215	-3.8009	-1.6009	0.6735
12/31/78	0517/0617	0537/0637	1	no	no	no		81 ↑	581.406	0.8864		0.6628
# 12/31/78	1225/1325	1247/1347	2	280/1345	no	320/1330 (5 min. late entry?)		81.5	580.870	-2.4334	2.2332	3.8980
01/02/79	0103/0203	0120/0220	2	no	no	no		83	581.218	-0.4511		-0.6572
01/04/79	0302/0402	0320/0420	2	no	no	no		90	581.218	0.2121		0.0738
# 01/04/79		1245/1345	1	no surveillance, no log (LT switch from 2 to 1)								
01/05/79	0254/0354	0309/0409	2	no	no	no		90	581.668	0.5892		0.2507
# 01/05/79	1723/1823	1738/1838	2	60/1830	no	no		80.5	582.152	0.6567	1.6567	1.8586
# 01/06/79	0247/0347	0302/0402	2	100/0350 - 0400	no	no		90	581.297	-0.5029	1.1637	1.5701
# 01/06/78		0535/0640	1	no surveillance, no log (LT switch from 2 to 1)								
? # 01/06/79	1029/1129	1044/1144	1	100/1120 - 1140	no	no		90	581.722	0.8720	2.5386	3.0035
01/06/79	1920/2020	1935/2035	1	no	no	no		90	581.531	0.6200		0.4342
01/07/79	0341/0441	0356/0456	2	no	no	no		90	581.394	-0.2208		-0.3880
# 01/07/78		0850/0950	1	no surveillance, no log (LT switch from 2 to 1)								
# 01/07/78		1055/1200	1	no surveillance, no log (LT switch from 2 to 1)								
# 01/07/78		1400/1500	1	no surveillance, no log (LT switch from 2 to 1)								

(1) : CRO and SF logs; test completed at 1919

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 01/08/79	0321/0421	0336/0436	2	(MUT +1.3"; normal, -2.5")	no	no		90	581.402	-0.5391	0.8609	1.9617
# 01/10/79	0148/0248	0203/0303	2	100/0230	no	no		60	581.961	0.8350	2.5016	2.9395
# 01/11/79	2153/2253	2208/2308	2	240/2245 (MUT +4"; normal, -4")	200 gal.	200/2230		90	581.457	-0.1688	0.4978	1.7541
01 '13/79	0937/1037	0957/1057	2	117/1005	no	117/1000		90	581.785	0.2639	2.2139	2.7439
# 01/13/79	1430			CRO log only (good leak rate?)								
# 01/15/79	0024/0124	0044/0144	2	60/ 0100	no	no		0	536.027	0.9867	1.9867	2.0683
01/30/79	2206/2306	2206/2306	2	no	no	no		0	531.797	0.7003		0.4591
02/02/79	0055/0155	0225/0325	2	300/0230	no	300/0100		92 ↑	581.859	0.7513	5.7513	0.0007
02/02/79	1431/1531	1601/1701	2	no	no	no		92	582.426	-0.9506		-1.3774
02/03/79	0517/0617	0647/0747	2	no	no	no		92	582.539	-0.2942		-0.7094
02/03/79	1032/1132	1202/1302	2	no	no	no		92	582.544	-0.9894		-1.4123
02/03/79	2349/0049	0119/0219	2	no	no	no		92	582.207	0.1750		-0.3515
02/04/79	1445/1545	1615/1715	2	no	no	no		92	582.398	-0.0604		-0.4682
# 02/05/79	0312/0412			no surveillance, no log						-0.5766		
02/05/79	0835/0935	1005/1105	2	no	no	no		92	582.211	0.4838		0.0342
02/05/79	1837/1937	2007/2107	2	no	no	no		92	581.441	0.1629		-0.2947
7# 02/06/79	0025/0125	0155/0255	2	60/0215 (Jogged)	no	no		92	581.984	0.6601	1.6601	1.5816
02/07/79	0150/0250	0320/0420	2	no	no	no		82.5 ↓	581.902	0.8426		0.3444
7# 02/07/79	1352/1452	1522/1622	2	100/1535 (Jogged)	no	no		84.5 ↑	581.859	0.3520	2.0186	2.1530
02/08/79	0100/0200	0230/0330	2	no	no	no		89	581.401	0.9235		0.4175
02/08/79	2050/2150	2210/2310	2	no	no	no		88	581.433	0.5878		0.1120
# 02/09/79	0220/0320	0335/0435	2	200/0336	no	no		88	582.097	0.7634	4.0967	4.8947
02/10/79	0841/0941	1011/1111	2	no	no	no		14 ↓	571.840	0.7677		0.2464

(1) : No "rcsl" in the surveillance sheet.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
02/11/79	0241/0341	0411/0511	2	no	no	no		65 f	581.730	0.7610		0.3428
02/11/79	1808/1908	1938/2038	2	300/1950	no	300/1825		89.5	581.734	-0.0603	4.9397	6.9362
02/12/79	2120/2220	2250/2350	2	over 150/2255	no	no		90	580.894	0.8984	3.3084	4.5277
02/13/79	1236/1336	1404/1504	2	no	no	no		90	581.137	0.8104		0.2661
02/13/79	1842/1942	2012/2112	2	no	no	no		90.5	581.160	0.6864		0.1533
02/14/79	0530/0630	0700/0800	2	200/0730	206 gal.	no		92	581.160	-0.2438		0.5016
# 02/14/79	2046/2146	2220/2320	2	no	no	no	3"/2130 (2)	92	581.207	-0.0996	1.4004	1.4239
02/15/79	2026/2126	2156/2256	2	no	no	no	4"/2045-2115 (1) (marked on chart)	91.5	581.191	0.9313	2.9313	3.1019
02/16/79	0253/0353	0422/0522	2	no	no	no		92	581.420	0.8579		0.2490
02/16/79	1203/1303	1333/1433	2	30/1405, 180/1420 (MUT +3"; normal, -6.5")	204 gal.	204/1250		92	581.301	0.0482		0.6859
# 02/17/79	0411/0511	0541/0641	2	100/0610	no	no	2"/0500 (2)	91.5	581.148	0.8427	3.5093	3.7411
# 02/19/79	0001/0101	0131/0231	2	60/0220	no	no		92	581.256	0.5558	1.5558	1.1611
# 02/19/79	0136/0236	0306/0406	2	90/0330	no	no		92	581.156	0.9878	2.4878	2.3186
02/19/79	2128/2228	2258/2358	2	no	no	no		92	581.078	0.9121		0.1189
02/21/79	0836/0936	1006/1106	2	no	no	no		92	581.160	0.3463		-0.4538
02/23/79	1107/1207	1237/1337	2	150/1305	no	150/1135		92	581.406	0.3217	2.8217	3.7797
# 02/25/79	1334					CRO log (long form)				0.8700		
02/25/79	2002/2102	2117/2217	2	200/2210	150 gal.	150/2058		92	581.289	0.5921	1.4254	1.7696

(1) : CRO log entry; Hydrogen to MUT-1 at 2100.

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PSI/TIME ^a	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 02/26/79	0038/0138	0145/0245	2	120/0200 (Jogged)	no	no		92	581.269	0.3828	2.3828	2.1958
02/26/79	1839/1939	2009/2109	2	180/2052	154 gal	150/1935		94 ↑	581.246	0.7614		0.7727
02/27/79	2150/2250	2255/2355	2	150/2335	162 gal	162/2245		98	581.406	0.9507		1.0570
02/28/79	1909/2009	2159/2259	2	120/2253	100 gal	100/2005		98	581.257	0.6635		0.2891
03/01/79	0041/0141	0435/0535	2	no	no	no	3"/0119 (CRO 0130)	98	581.504	0.4044	1.9044	1.4693
# 03/02/79	0146/0246	0701/0801	2	120 /0707-0730	no	no		97.5	581.183	0.9490	2.9490	2.6419
# 03/02/79	1935/2035	0255/0355	2	100 /0350	no	no		97	581.270	0.6055	2.2721	1.8697
03/03/79	0238/0338	0238/0338	2	150/0235	152 gal	150/0335		97	581.750	0.3162		0.3299
03/04/79	0142/0242	0212/0312	2	238/0310	238 gal	238/0240		97.5	582.246	-0.0308		0.3796
03/05/79	0320/0420	0350/0450	2	60/0430, 150/0440	128 gal	128/0410		98	581.711	0.8695	2.2358	2.5028
03/06/79	0321/0421	0351/0451	2	180/0450	180 gal	180/0420		97	582.023	0.7744		0.8684
03/08/79	0306/0406	0306/0406	2	240/0403	228 gal	228/0403		98	582.047	0.4679		0.7164
03/09/79	0323/0423	0323/0423	2	180/0415	181 gal	180/0415		98	582.179	0.8551		0.6499
7# 03/10/79	0351/0451	0351/0451	2	400/0346-51	no	400/0346 (some effect: 50 gal. ?)		97	582.195	0.8050	1.6383	0.6671
# 03/12/79	0132/0232	0132/0232	2	60/0150	no	no		98	581.773	0.2620	1.2620	0.1974
# 03/13/79	0200/0300	0140/0240	2	ever 60/0230	no	no		97	582.160	-0.0155	0.9845	-0.0680
03/13/79	1105/1205	1050/1150	2	300/1145	305 gal	305/1200		97.5	582.332	0.5194		0.9963

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION ST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COED CORRECTED	TEMPERATURE COMPENSATED
03/14/79	1205/1305	1200/1300	2	300/1225, 200/1245	500 gal. (1)	300/1230, 200/1250		97.5	581.629	-0.2496	8.0837	2.2621
03/15/79	0450/0550	0445/0545	2	120/0515	no	no		96.7	581.820	0.0562	2.0562	1.3503
03/16/79	2009/2109	1944/2044	2	100/2020, 100/2025	204 gal	200/2050		98	581.592	-0.7522		0.5630
03/17/79	0248/0348	0223/0323	2	200/0300	207 gal.	200/0323		97.7	581.896	-0.9967		0.3579
03/19/79	0058/0158	0050/0150	2	100/0058, 200/0149	200 gal	200/0100, 200/0157		97.5	581.312	-0.1851	3.1483	5.7497
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal	200/0126 2"/0205		97	581.386	0.2225	1.2260	2.9444
03/22/79	0300/0400	0255/0355	2	200/0350	200 gal	200/0353		97	581.383	0.5807		1.8648
03/24/79	0540/0640	0533/0633	2	100/0553, 100/0622	206 gal	100/0600, 100/0630		97	581.906	0.1600		1.5021
03/25/79	0525/0625	0520/0620	2	300/0603	301 gal	300/0608		97	582.500	0.4318		2.3753
03/27/79 ⁽²⁾	0546/0646 ⁽²⁾		2		300 gal	300/0625		97	582.700	0.3691		1.3013
03/28/79	0134/0234	0124/0224	2	300/0140	303 gal	303/0145		97	581.570	0.0100		1.9415

(1) : 500 gallons were entered as an operator caused RCDT inventory change, instead of makeup water addition.


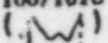
(2) : SP 2301-301 Data Sheet 3 and 4, and calculation for RCDT temperature compensation were available.

NOTE

- # : Different from Faegre & Benson report
 † : Findings debatable
 ↑ or ↓ : Reactor power in transient
 * : Clock time

Water Additions

2.

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CNO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								(1) UNCORRECTED	(2) COLD CORRECTED	(3) TEMPERATURE COMPENSATED
# 10/15/78	1928/2028	1928/2028	2	160/1940 (MUT level +2"; normal, -5")	no	no		41	580.777	-0.3504	2.1496	1.1656
#(4) 10/18/78	0859/0959	0854/0954	2	60/0937	no	no		51↑	581.226	1.3219	2.3219	1.7726
<p>(1) : As given in surveillance file and logs (2) : Corrected for unaccounted water addition or effect of hydrogen addition on MUT level (1" MUT level = 30 gallons) per SP 2301-301, 1978. (3) : Temperature compensated to unit average RCS temperature for water inventory changes in RCDT(75°F), MUT(120°F) and identified leaks (other than RCDT; 75°F). Other wrong entries for surveillance input (wrong sign for identified leaks, or wrong entry for RCDT inventory change by operator) were corrected. (4) : Surveillance tests not filed.</p>												
# 10/18/78	1018/1118	1013/1113	2	100/1040 (jogged)	no	no		50↑	581.305	1.0246	2.6912	2.1965
# 10/18/78	1221/1321	1216/1316	2	100/1230 100/1255 .1305	no no no	no no no		51↑	581.122	-0.2830	3.0503	4.1487
# 10/21/78	1239/1339	1234/1334	2	50/1330 ()	no	no		56↑	581.918	-0.5976	0.2357	0.3400
# 10/26/78	2007/2107	1959/2059	2	60/2005 (jogged)	no	no		75	581.203	0.9433	1.9433	2.1979
# 10/29/78	0132/0232	0132/0232	2	330/0211	no	330/0211		8	568.312	0.3781	5.8781	7.5308
# 10/29/78	1620/1620	1520/1620	2	100/1618 ()	no	no		0	564.262	-0.9004	0.7662	1.0308
# 11/09/78	1954/2054	2025/2125	2	200/2120 (MUT +5"; normal, -3")	no	no		0	531.402	0.5546	3.8879	4.7024

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PST/TIME ^b	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 12/02/78	1632/1732	2042/2142	2	150/2110	no	no		0	534.000	0.1983	2.6983	3.3122
# 12/04/78	0628/0728	1038/1138	1	100/1115	no	no		70	583.159	0.9321	2.5987	3.1604
# 12/06/78	1905/2005	2305/2405	1	100 /2320 (Jogged?)	no	no		89.5	580.332	0.7713	2.4379	2.3864
# 12/08/78	1617/1717	2005/2105	2	60/2010, 60/2055 (Jogged)	no	no		90	581.895	0.9260	2.9260	3.6491
? 12/11/78	0650/0750	1050/1150	2	(MUT +2"; normal, -2")	no	no		90	581.344	-0.8972	1.1028	1.8236 (bad data?)
# 12/12/78	1010/1110	1410/1510	2	150/1410, 1420, 1500	no	no		57↓	581.699	-0.4116	2.0884	2.9866
? 12/12/78	2255/2355	0255/0355	2	(MUT +0.3"; normal, -2")	no	no		55	582.054	0.5107	1.6607	2.0502
? 12/15/78	0208/0308	0608/0708	1	no ? (100/0630, 0640)	no	no		55	582.203	0.5393	2.2059	2.7798
? 12/21/78	0259/0359	0259/0359	2	150/unstable	no	no		0	532.038	0.1171	2.6171	3.4342
# 12/22/78	0810/0910	0810/0910	2	200/0820	no	no		38↑	581.459	0.8288	4.1621	5.5788
? 12/23/78	2048/2148	2048/2148	2	(MUT +0.5"; normal, -2")	no	no		89↑	583.596	0.0451	1.2851	1.7134
# 12/26/78	0249/0349	0249/0349	2	150/0325	no	no	/0305 (2" effect)	96	581.281	0.3974	3.8974	2.0852
? 12/26/78	0916/1016	0916/1016	1	1007/0920	no	no		95	580.824	-0.0630	1.6036	2.0852
? 12/27/78	0810/0910	0810/0910	1	1007/0835-45, 0900	no	no		96	581.941	0.9516	2.6182	3.1870
? 12/30/78	0615/0715	0635/0735	1	(MUT +4"; normal, -3")	no	no	/0615, 0640 (no effect?)	44	582.215	-3.8009	-1.6009	0.6735
# 12/31/78	1225/1325	1247/1347	2	280/1345	no	320/1330 (5 min. late entry?)		81.5	580.870	-2.4334	2.2332	3.8980
# 01/05/79	1723/1823	1738/1838	2	60/1830	no	no		89.5	582.152	0.6567	1.6567	1.8586
# 01/06/79	0247/0347	0302/0402	2	100/0350 - 0400	no	no		90	581.297	-0.5029	1.1637	1.5701
# 01/06/79	1029/1129	1044/1144	1	100/1120 - 1140	no	no		90	581.722	0.8720	2.5386	3.0035

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PSI/TIME ^a	REACTOR POWER, %	MEAN T _{ave} , F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 01/08/79	0321/0421	0336/0436	2	(MIT +1.3"; normal, -2.5")	no	no		90	581.402	-0.5391	0.8609	1.9617
# 01/10/79	0148/0248	0203/0303	2	100/0230	no	no		60	581.961	0.8350	2.5016	2.9395
# 01/11/79	2153/2253	2208/2308	2	240/2245 (MIT +4"; normal, -4")	200 gal.	200/2230		90	581.457	-0.1688	0.4978	1.7541
01/13/79	0937/1037	0957/1057	2	117/1005	no	117/1000		90	581.785	0.2639	2.2139	2.7439
# 01/15/79	0024/0124	0044/0144	2	60/ 0100	no	no		0	536.027	0.9867	1.9867	2.0683
02/02/79	0055/0155	0225/0325	2	300/0230	no	300/0100		92 ↑	581.859	0.7513	5.7513	6.8869
7# 02/06/79	0025/0125	0155/0255	2	60/0215 (jogged)	no	no		92	581.984	0.6601	1.6601	1.5816
7# 02/07/79	1352/1452	1522/1622	2	100/1535 (jogged)	no	no		84.5 ↑	581.859	0.3520	2.0186	2.1530
# 02/09/79	0220/0320	0335/0435	2	200/0336	no	no		88	582.097	0.7634	4.0967	4.8947
02/11/79	1808/1908	1938/2038	2	300/1950	no	300/1825		89.5	581.734	-0.0603	4.9397	6.9362
02/12/79	2120/2220	2250/2350	2	over 150/2255	no	no		90	580.894	0.8984	3.3084	4.5277
02/14/79	0530/0630	0700/0800	2	200/0730	206 gal.	no		92	581.160	-0.2438		0.5016
02/16/79	1203/1303	1333/1433	2	30/1405, 180/1420 (MIT +3"; normal, -6.5")	204 gal.	204/1250		92	581.301	0.0482		0.6859
# 02/17/79	0411/0511	0541/0641	2	100/0610	no	no	2"/0500	91.5	581.148	0.8427	3.5093	3.7411
# 02/19/79	0001/0101	0131/0231	2	60/0220	no	no		92	581.256	0.5558	1.5558	1.1611
# 02/19/79	0136/0236	0306/0406	2	90/0330	no	no		92	581.156	0.9878	2.4878	2.3186
02/23/79	1107/1207	1237/1337	2	150/1305	no	150/1135		92	581.406	0.3217	2.8217	3.7797
02/25/79	2002/2102	2117/2217	2	200/2210	150 gal.	150/2058		92	581.289	0.5921	1.4254	1.7696

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION		HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN T _{ave} , F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART			INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^W				UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 02/26/79	0038/0138	0145/0245	2	120/0200 (Jogged)	no	no		92	581.265	0.3828	2.3828	2.1958
02/26/79	1839/1939	2009/2109	2	180/2052	154 gal	150/1935		94 ↑	581.246	0.7614		0.7727
02/27/79	2150/2250	2255/2355	2	150/2335	162 gal	162/2245		98	581.406	0.9507		1.0570
02/28/79	1909/2009	2159/2259	2	120/2253	100 gal	100/2005		98	581.257	0.6635		0.2891
# 03/02/79	0146/0246	0701/0801	2	120 /0707-0730	no	no		97.5	581.183	0.9490	2.9490	2.6419
# 03/02/79	1935/2035	0255/0355	2	100 /0350	no	no		97	581.270	0.6055	2.2721	1.8697
03/03/79	0238/0338	0238/0338	2	150/0235	152 gal	150/0335		97	581.750	0.3162		0.3299
03/04/79	0142/0242	0212/0312	2	238/0310	238 gal	238/0240		97.5	582.246	-0.0308		0.3796
03/05/79	0320/0420	0350/0450	2	60/0430, 150/0440	128 gal	128/0410		98	581.711	0.8695	2.2358	2.5028
03/06/79	0321/0421	0351/0451	2	180/0450	180 gal	180/0420		97	582.023	0.7744		0.8684
03/08/79	0306/0406	0306/0406	2	240/0403	228 gal	228/0403		98	582.047	0.4679		0.7164
03/09/79	0323/0423	0323/0423	2	180/0415	181 gal	180/0415		98	582.179	0.8551		0.6499
# 03/10/79	0351/0451	0351/0451	2	400/0346-51	no (some effect: 50 gal. ?)	400/0346		97	582.195	0.8050	1.6383	0.6671
# 03/12/79	0132/0232	0132/0232	2	60/0150	no	no		98	581.773	0.2620	1.2620	0.1974
# 03/13/79	0200/0300	0140/0240	2	over 60/0230	no	no		97	582.160	-0.0155	0.9845	-0.0680
03/13/79	1105/1205	1050/1150	2	300/1145	305 gal	305/1200		97.5	582.332	0.5194		0.9963

• CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART	WATER ADDITION		HYDROGEN ADDITION PS/TIME	REACTOR POWER %	MEAN TAVE °F	UNIDENTIFIED LEAK RATE GPM		
	CLOCK	CHART			CHART INCLUDED IN LOG ENTRY	CALCULATION				UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
03/14/79	1205/1305	1200/1300	2	300/1225, 200/1245	500 gal.	300/1230, 200/1250	(1)	97.5	581.629	-0.2496	0.0837	2.2621
03/15/79	0450/0550	0445/0545	2	120/0515	no	no		96.7	581.820	0.0562	2.0562	1.3503
03/16/79	2009/2109	1944/2044	2	100/2020, 100/2025	204 gal.	200/2050		98	581.592	-0.7522		0.5630
03/17/79	0248/0348	0223/0323	2	200/0300	207 gal.	200/0323		97.7	581.896	-0.9967		0.3579
03/19/79	0058/0158	0050/0150	2	100/0058, 200/0149	200 gal.	200/0100, 200/0157		97.5	581.312	-0.1851	3.1483	5.7497
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal.	200/0126	2"/0205	97	581.386	0.2225	1.2260	2.9444
03/22/79	0300/0400	0255/0355	2	200/0350	200 gal.	200/0353		97	581.383	0.5807		1.8848
03/24/79	0540/0640	0533/0633	2	100/0553, 100/0622	206 gal.	100/0600, 100/0630		97	581.906	0.1700		1.5021
03/25/79	0525/0625	0520/0620	2	300/0603	301 gal.	300/0608		97	582.500	0.4310		2.3753
03/27/79	(2) 0546/0646			7	300 gal.	300/0625		97	582.700	0.3691		1.3013
03/28/79	0134/0234	0124/0224	2	300/0140	303 gal.	303/0145		97	581.570	0.0100		1.9415

(1) : 500 gallons were entered as an operator caused RCDI inventory change, instead of makeup water addition.

(2) : SP 2301-3D1 Data Sheet 3 and 4, and calculation for RCDI temperature compensation were available.

NOTE

- # : Different from Faegre & Benson report
 ? : Findings debatable
 ↑ or ↓ : Reactor power in transient
 * : Clock time

Hydrogen Addition

3.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY	HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 10/20/78	0213/0313	0203/0303	2	no	no	no	(1) 20/0214 (no effect?)	66 ↑	581.992	0.0844	?	-0.1255
10/25/78	1627/1727	1619/1819	2	no	no	no	2/1717 (no effect)	75	580.706	0.5705		0.3380
? 11/05/78	2215/2315	2227/2327	2	no	no	no	/2230 (some effect?)	89	582.285	-0.4439		-0.6761
? 11/09/78	0405/0509	0415/0515	2 ⁽²⁾	no	no	no	2"/0415	0	533.449	0.8789	1.8789	2.0123
# 12/02/78	1824/1932	2042/2142	2	150/2110	no	no	/1705 (no effect?)	0	534.000	0.1983	2.6983	3.3122
# 12/07/78		2140/2400	1	no surveillance, no log			/2210					
# 12/15/78	1822/1922	2220/2322	1	no	no	no	100gal/1845	55	582.129	0.9561	2.6227	3.1655
# 12/19/78	NO TEST			(examples of hydrogen additions)			/1445,1450,1505,1520					
# 12/20/78	0805/0905	0805/0905	2	no	no	no	(2) /0904 (100 gal)	0	532.403	0.0315	1.6981	2.1348
# 12/26/78	0249/0349	0249/0349	2	150/0325	no	no	/0305 (2" effect)	96	581.281	0.3974	3.8974	2.0852
? 12/30/78	0615/0715	0635/0735	1	(MUT +4"; normal, -3")	no	no	/0615,0640 (no effect?)	44	582.215	-3.8009	-1.6009	0.6735

(1) CRO : Vented at 0214; filled MU-T-1 with Hydrogen to 18#
 at 0230; added more Hydrogen at 0308.

(2) : Machinery History Card: 11/06/78, LT-1 and -2 low side
 vented extensively and readings came to correct levels.

* CLOCK TIME

DATE	CLOCK	TIME	CHART	LEVEL TRANSMITTER SWITCH NO.	CHART GALLOW/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PSI/TIME	REACTOR POWER, %	MEAN T _{ave} , °F	UNCORRECTED	COLD CORRECTED	UNIDENTIFIED LEAK RATE, GPM TEMPERATURE COMPENSATED
02/14/79	2046/2146	2220/2320		2	no	no	no	3"/2130	92	581.207	-0.0996	1.4004	1.4239
02/15/79	2026/2126	2156/2256		2	no	no	no	4"/2045-2115 (1) (marked on chart)	91.5	581.191	0.9313	2.9313	3.1019
02/17/79	0411/0511	0541/0641		2	100/0610	no	no	2"/0500	91.5	581.148	0.8427	3.5093	3.7411
03/01/79	0041/0141	0435/0535		2	no	no	no	3"/0119 (CRO 0130)	98	581.504	0.4044	1.9044	1.4693
03/21/79	0114/0214	0114/0214		2	207/0126	207 gal	200/0126	2"/0205	97	581.386	0.2225	1.2260	2.9444

(1) : CRO log entry; Hydrogen to MUT-1 at 2160.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Temp, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 02/14/79	2046/2146	2220/2320	2	no	no	no	3"/2130	92	581.207	-0.0996	1.4004	1.4239
02/15/79	2026/2126	2156/2256	2	no	no	no	4"/2045-2115 ⁽¹⁾ (marked on chart)	91.5	581.191	0.9313	2.9313	3.1015
# 02/17/79	0411/0511	0541/0641	2	100/0610	no	no	2"/0500	91.5	581.148	0.8	3.5093	3.7411
03/01/79	0041/0141	0435/0535	2	no	no	no	3"/0119 (CRO 0130)	98	581.504	0.4044	1.9044	1.4693
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal	200/0126	2"/0205	97	581.386	0.2225	1.2260	2.9444

(1) : CRO log entry; Hydrogen to MUT-1 at 2100.

WATER ADDITIONS

H₂ ADDITIONS

TOTAL

73

14

NO EFFECT

—

5

QUESTIONABLE

11

3

LOG

31


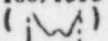
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ACCOUNTED

24

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* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 10/18/78	1018/1118	1013/1113	2	100/1040 (jogged)	no	no		50↑	581.305	1.0246	2.6912	2.1965
# 10/18/78	1221/1321	1216/1316	2	100/1230 100/1255 ,1305	no no no	no no no		51↑	581.122	-0.2830	3.0503	4.1487
10/19/78	0746/0846	0736/0836	2	no	no	no		53↑	580.731	0.2429		0.0031
# 10/19/78	1849/1949			no surveillance, no log							0.0000(?)	
# 10/20/78	0212/0313	0203/0303	2	no	no	no	(1) 20/0214 (no effect?)	66↑	581.992	0.0844	?	-0.1255
# 10/21/78	1239/1339	1234/1334	2	50/1330 ()	no	no		56↑	581.918	-0.5976	0.2357	0.3400
10/22/78	0755/0855	0740/0840	2	no	no	no		70	532.351	0.0000		-0.2793
10/23/78	0405/0505	0345/0445	2	no	no	no		75	582.396	0.5528		-0.0258
# 10/24/78	0311/0411	0255/0355	2	no	no surveillance					-0.0067		
10/24/78	2230/2330	2222/2322	2	no	no	no		75	581.437	-0.0325		-0.6315
10/25/78	1627/1727	1619/1819	2	no	no	no	2/1717 (no effect)	75	580.706	0.5705		0.3380
REDACTED												
REDACTED				2	(jogged) no	no surveillance					0.0000	
REDACTED				2	no	no	no	75	580.915	0.1761		-0.2597
REDACTED				system unstable, results unreliable								
REDACTED				2	330/0211	no	330/0211	8	568.312	0.3781	5.8781	7.5308
REDACTED				2	100/1618 ()	no	no	0	564.262	-0.9004	0.7662	1.0308

(1) CRO : Vented at 0214; filled MU-T-1 with Hydrogen to 18# at 0230; added more Hydrogen at 0308.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART BALLOON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tavg, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
								97	581.273	-0.6105		-0.6810
12/25/78	0752/0852	0752/0852	2	no	no	no						
# 12/26/78	0249/0349	0249/0349	2	150/0325	no	no	/0305 (2) (2" effect)	96	581.281	0.3974	3.8974	2.0852
7# 12/26/78	0916/1016	0916/1016	1	1007/0920	no	no		95	580.824	-0.0630	1.6036	2.0852
7# 12/27/78	0810/0910	0810/0910	1	1007/0835-45, 0300	no	no		96	581.941	0.9516	2.6182	3.1870
7# 12/30/78	0615/0715	0635/0735	1	(MUT +4"; normal, -3")	no	no	/0615, 0640 (no effect?)	44	582.215	-3.8009	-1.6009	0.6735
	12/31/78	0517/0617	0537/0637	1	no	no		81 ↑	581.406	0.8864		0.6628
# 12/31/78	1225/1325	1247/1347	2	280/1345	no	320/1330 (5 min. late entry?)		81.5	580.870	-2.4334	2.2332	3.8980
	01/02/79	0103/0203	0120/0220	2	no	no		83	581.218	-0.4511		-0.6572
	01/04/79	0302/0402	0320/0420	2	no	no		90	581.218	0.2121		0.0738
# 01/04/79		1245/1345	1	no surveillance, no log (LT switch from 2 to 1)				90	581.668	0.5892		0.2507
	01/05/79	0254/0354	0309/0409	2	no	no		89.5	582.152	0.6567	1.6567	1.8586
# 01/05/79	1723/1823	1738/1838	2	60/1830	no	no		90	581.297	-0.5029	1.1637	1.5701
# 01/06/79	0247/0347	0302/0402	2	100/0350 - 0400	no	no						
# 01/06/78		0535/0640	1	no surveillance, no log (LT switch from 2 to 1)				90	581.722	0.8720	2.5386	3.0035
# 01/06/79	1029/1129	1044/1144	1	100/1120 - 1140	no	no		90	581.531	0.6200		0.4342
01/06/79	1920/2020	1935/2035	1	no	no	no		90	581.394	-0.2208		-0.3880
	01/07/79	0341/0441	0356/0456	2	no	no						
# 01/07/78		0850/0950	1	no surveillance, no log (LT switch from 2 to 1)								
# 01/07/78		1055/1200	1	no surveillance, no log (LT switch from 2 to 1)								
# 01/07/78		1400/1500	1	no surveillance, no log (LT switch from 2 to 1)								

(1) : CRO and SF logs; test completed at 1919

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PSI/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 01/08/79	0321/0421	0336/0436	2	(MUT +1.3"; normal, -2.5")	no	no		90	581.402	-0.5391	0.8609	1.9617
# 01/10/79	0148/0248	0203/0303	2	100/0230	no	no		60	581.961	0.8350	2.5016	2.9395
# 01/11/79	2153/2253 ⁽¹⁾	2208/2308	2	240/2245 (MUT +4"; normal, -4")	200 gal.	200/2230		90	581.457	-0.1688	0.4978	1.7541
01/13/79	0937/1037	0957/1057	2	117/1005	no	117/1000		90	581.785	0.2639	2.2139	2.7439
# 01/13/79	1430			CRO log only (good leak rate?)								
# 01/15/79	0024/0124	0044/0144	2	60/ 0100	no	no		0	536.027	0.9867	1.9867	2.0683
01/30/79	2206/2306	2206/2306	2	no	no	no		0	531.797	0.7003		0.4591
02/02/79	0055/0155	0225/0325	2	300/0230	no	300/0100		92 ↑	581.859	0.7513	5.7513	6.8869
02/02/79	1431/1531	1601/1701	2	no	no	no		92	582.426	-0.9506		-1.3774
02/03/79	0517/0617	0647/0747	2	no	no	no		92	582.539	-0.2942		-0.7094
02/03/79	1032/1132	1202/1302	2	no	no	no		92	582.544	-0.9894		-1.4123
02/03/79	2349/0049	0119/0219	2	no	no	no		92	582.207	0.1750		-0.3515
02/04/79	1445/1545	1615/1715	2	no	no	no		92	582.398	-0.0604		-0.4682
# 02/05/79	0312/0412			no surveillance, no log						-0.5766		
02/05/79	0835/0935	1005/1105	2	no	no	no		92	582.211	0.4838		0.0342
02/05/79	1837/1937	2007/2107	2	no	no	no		92	581.441	0.1629		-0.2947
7# 02/06/79	0025/0125	0155/0255	2	60/0215 (jogged)	no	no		92	581.984	0.6601	1.6601	1.5816
02/07/79	0150/0250	0320/0420	2	no	no	no		82.5 ↓	581.902	0.8426		0.3444
7# 02/07/79	1352/1452	1522/1622	2	100/1535 (jogged)	no	no		84.5 ↑	581.859	0.3520	2.0186	2.1530
02/08/79	0100/0200	0230/0330	2	no	no	no		89	581.401	0.9235		0.4175
02/08/79	2050/2150	2210/2310	2	no	no	no		88	581.433	0.5878		0.1120
# 02/09/79	0220/0320	0335/0435	2	200/0336	no	no		88	582.097	0.7634	4.0967	4.8947
02/10/79	0841/0941	1011/1111	2	no	no	no		14 ↓	571.840	0.7677		0.2464

(1) : No "rcsl" in the surveillance sheet.

* CLOCK TIME

DATE	TIME		CHART	LEVEL TRANSMITTER SWITCH NO.	WATER ADDITION		CRO/SF LOG ENTRY*	HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, °F	UNIDENTIFIED LEAK RATE	
	CLOCK	CHART			CHART GALLON/TIME	INCLUDED IN CALCULATION					UNCORRECTED	COLD CORRECTED
02/11/79	0241/0341	0411/0511		2	no	no	no	65 ↑	581.730	0.7610		0.3428
02/11/79	1808/1908	1938/2038		2	300/1950	no	300/1825	89.5	581.734	-0.0603	4.9397	6.9362
02/12/79	2120/2220	2250/2350		2	over 150/2255	no	no	90	580.894	0.8984	3.3084	4.5277
02/13/79	1236/1336	1404/1504		2	no	no	no	90	581.137	0.8104		0.2661
02/13/79	1842/1942	2012/2112		2	no	no	no	90.5	581.160	0.6564		0.1533
02/14/79	0530/0630	0700/0800		2	200/0730	206 gal.	no	92	581.160	-0.2438		0.5016
02/14/79	2046/2146	2220/2320		2	no	no	no	92	581.207	-0.0996	1.4004	1.4239
02/15/79	2026/2126	2156/2256		2	no	no	no	91.5	581.191	0.9313	2.9313	3.1019
02/16/79	0253/0353	0422/0522		2	no	no	no	92	581.420	0.8579		0.2490
02/16/79	1203/1303	1333/1433		2	30/1405, 160/1420 (MUT +3"; normal, -6.5")	204 gal.	204/1250	92	581.301	0.0482		0.6859
02/17/79	0411/0511	0541/0641		2	100/0610	no	no	91.5	581.148	0.8427	3.5093	3.7411
02/19/79	0136/0236	0306/0406		2	90/0330	no	no	92	581.156	0.9878	2.4878	2.3186
02/19/79	2128/2228	2258/2358		2	no	no	no	92	581.078	0.9121		0.1189
02/21/79	0836/0936	1006/1106		2	no	no	no	92	581.160	0.3463		-0.4536
02/23/79	1107/1207	1237/1337		2	150/1305	no	150/1135	92	581.406	0.3217	2.6217	3.7797
02/25/79	1334								0.8700			
02/25/79	2002/2102	2117/2217		2	200/2210	150 gal.	150/2058	92	581.289	0.5921	1.4254	1.7696

(1) : CKO log entry; Hydrogen to MUT-1 at 2100.

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PSI/TPE ^a	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART							CHART GALLON/TIME	UNCORRECTED	COLD CORRECTED
# 02/26/79	0038/0138	0145/0245	2	120/0200 (jogged)	no	no	92	581.269	0.3828	2.3828	2.1958
02/26/79	1839/1939	2009/2109	2	180/2052	154 gal	150/1935	94 ↑	581.246	0.7614		0.7727
02/27/79	2150/2250	2255/2355	2	150/2335	162 gal	162/2245	98	581.406	0.9507		1.0570
02/28/79	1909/2009	2159/2259	2	120/2253	100 gal	100/2005	98	581.257	0.6635		0.2891
03/01/79	0041/0141	0435/0535	2	no	no	no	98	581.504	0.4044	1.9044	1.4693
# 03/02/79	0146/0246	0701/0801	2	120 /0707-0730	no	no	97.5	581.183	0.9490	2.9490	2.6419
# 03/02/79	1935/2035	0255/0355	2	100 /0350	no	no	97	581.270	0.6055	2.2721	1.8697
03/03/79	0238/0338	0238/0338	2	150/0235	152 gal	150/0335	97	581.750	0.3162		0.3299
03/04/79	0142/0242	0212/0312	2	238/0310	238 gal	238/0240	97.5	582.246	-0.0308		0.3796
03/05/79	0320/0420	0350/0450	2	60/0430, 150/0440	128 gal	128/0410	98	581.711	0.8695	2.2358	2.5028
03/06/79	0321/0421	0351/0451	2	180/0450	180 gal	180/0420	97	582.023	0.7744		0.8684
03/08/79	0306/0406	0306/0406	2	240/0403	228 gal	228/0403	98	582.047	0.4679		0.7164
03/09/79	0323/0423	0323/0423	2	180/0415	181 gal	180/0415	98	582.179	0.8551		0.6499
7# 03/10/79	0351/0451	0351/0451	2	400/0346-51	no	400/0346 (some effect: 50 gal. ?)	97	582.195	0.8050	1.6383	0.6671
# 03/12/79	0132/0232	0132/0232	2	60/0150	no	no	98	581.773	0.2620	1.2620	0.1974
# 03/13/79	0200/0300	0140/0240	2	over 60/0230	no	no	97	582.160	-0.0155	0.9845	-0.0680
03/13/79	1105/1205	1050/1150	2	300/1145	305 gal	305/1200	97.5	582.332	0.5194		0.9963

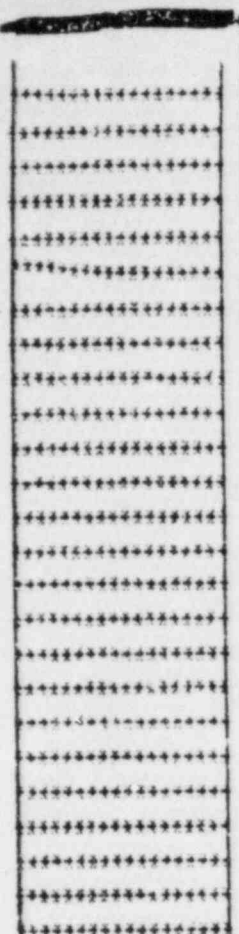
* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART	WATER ADDITION INCLUDED IN CALCULATION		CHART GALLON/TIME	HYDROGEN ADDITION PS/TIME	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM	
	CLOCK	CHART			CR/SF LOG ENTRY*	CR/SF LOG ENTRY*					UNCORRECTED	COLD CORRECTED
03/14/79	1205/1305	1200/1300	2	300/1225, 200/1245	500 gal.	300/1230, 200/1250	(1)	97.5	581.629	-0.2496	8.0837	2.2621
03/15/79	0450/0550	0445/0545	2	120/0515	no	no		96.7	581.820	0.0562	2.0562	1.3503
03/16/79	2009/2109	1944/2044	2	100/2020, 100/2025	204 gal	200/2050		98	581.592	-0.7522		0.5630
03/17/79	0248/0348	0223/0323	2	200/0300	207 gal.	200/0323		97.7	581.896	-0.9967		0.3579
03/19/79	0058/0158	0050/0150	2	100/0058, 200/0149	200 gal	200/0100, 200/0157		97.5	581.312	-0.1851	3.1483	5.7497
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal	200/0126 2"/0205		97	581.386	0.2225	1.2260	2.9444
03/22/79	0300/0400	0255/0355	2	200/0350	200 gal	200/0353		97	581.383	0.5807		1.8648
03/24/79	0540/0640	0533/0633	2	100/0553, 100/0622	206 gal	100/0600, 100/0630		97	581.906	0.1600		1.5021
03/25/79	0525/0625	0520/0620	2	300/0603	301 gal	300/0608		97	582.500	0.4318		2.3753
03/27/79	(2) 0546/0646			7	300 gal	300/0625		97	582.700	0.3691		1.3013
03/28/79	0134/0234	0124/0224	2	300/0140	303 gal	303/0145		97	581.570	0.0100		1.9415

(1) : 500 gallons were entered as an operator caused RCBI inventory change, instead of makeup water addition.

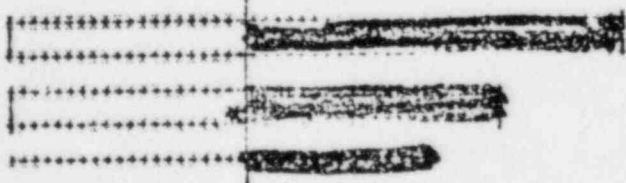
(2) : SP 2301-301 Data Sheet 3 and 4, and calculation for RCBI temperature compensation were available.

6.



10/7/78

10/14/78



10/21/78





1.00

1.00

1.00

1.00 3/22/79

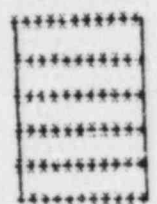
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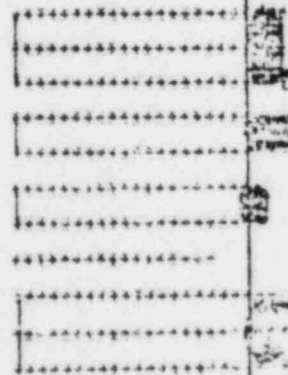
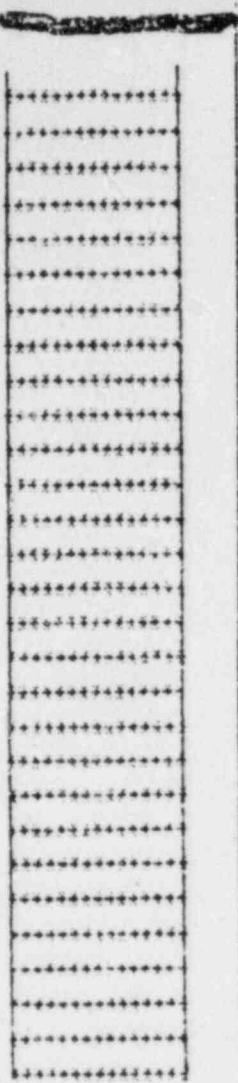
1.00

1.00

1.00



7.



(AUX : MU-F-2A/B, MU-V-229 A/B, MU-V-230 A/B, MU-V-297
MU-V-353, MU-V-236 A/B, MU-V-359)



(AUX: MU-R-7=0)

12/21/78

(AUX: MU-R-4, SEAL INJECT
FILTER DRAIN VALVE)
(RB: RCS FLOW XTMR)

(RB: MU-V-1B)

12/28/78

(RB HOT SHUTDOWN CHECK)

(RB: DH-V-1)

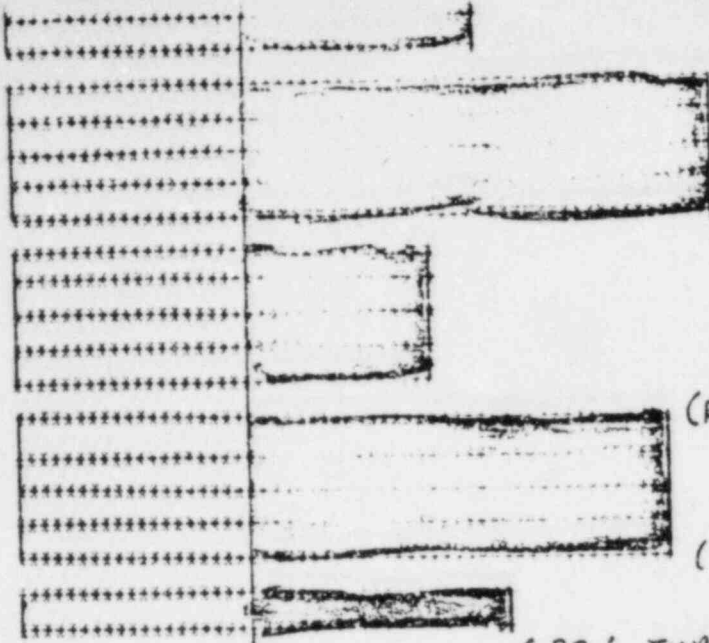
(INVESTIGATE OTSG NOISE)

(LOOKING FOR LEAKS: RB)

(RB: RC-V-133A & 135A)

1/4/79

1/11/79



(AUX: MU-R-4 SEAT)
 (RB: RC-V-135A LEAKING BAY)

(RB: RC-V-133B, 134B, & 135B)

(FURMANITE)

(RB: FURMANITE RC-V-133B, 134B, & 135B)

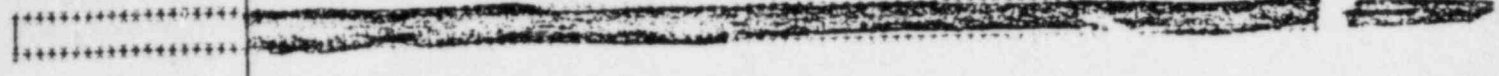
1/18/79

1/25/79

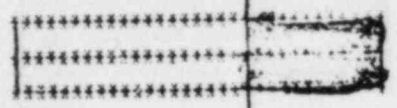
2/1/79

(AUX: MU-DPI 1576)

(AUX: IC-RT-109 ISOLATED DUE TO LEAKS)



(AUX: MU-V-294 PACKING)

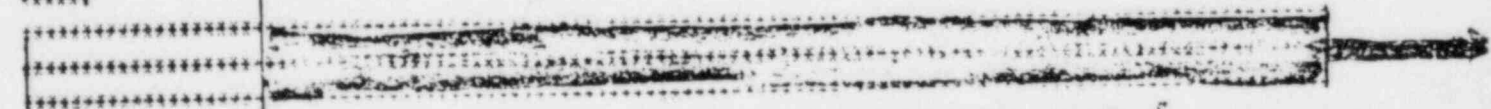
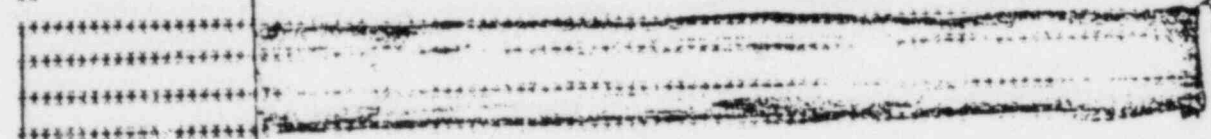


2/3/79



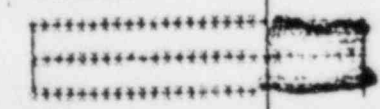
WDL-V-224, 22
247 & 248

MU-V-18,
RC-V-123
RC-R-13

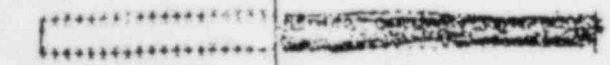
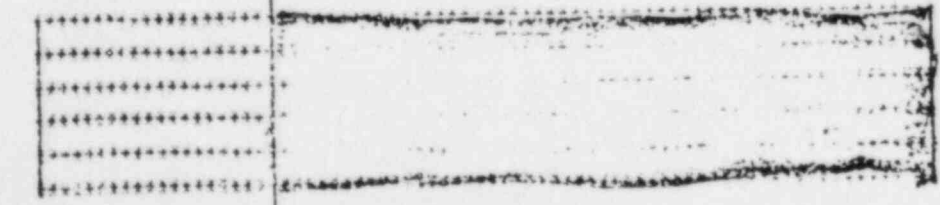
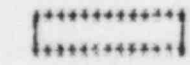


SEARCH FOR LEAK
ESTIMATE 2 GPM
TO SUMP; RCD
LEVEL DROPPIN

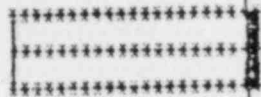
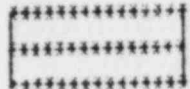
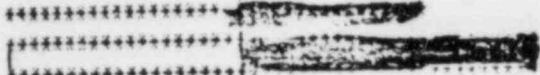
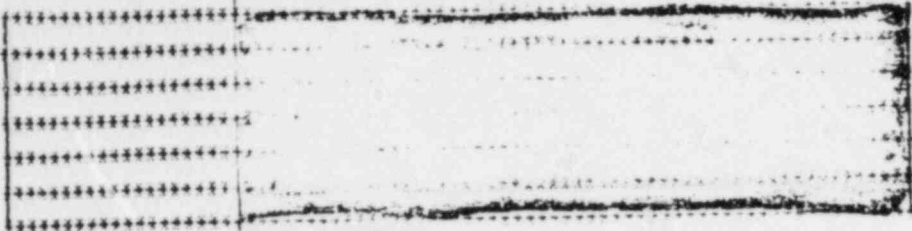
2/15/79



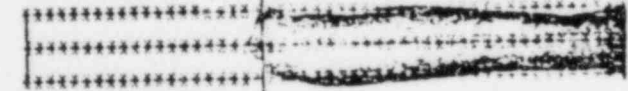
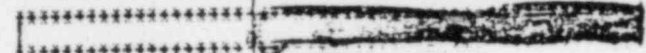
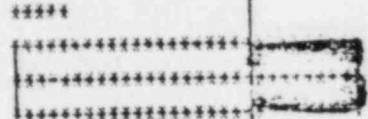
(AUX: MU-RT-720)



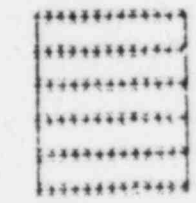
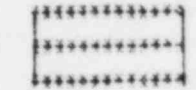
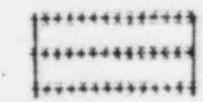
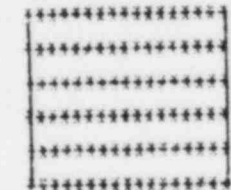
(AUX: MU-V-148, 147, 17, 155, 148A, 35, & 32)



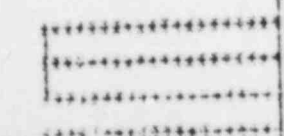
3/1/79

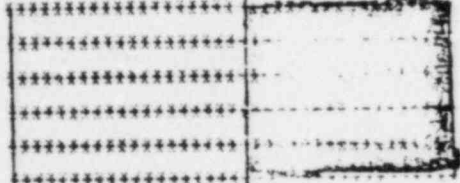
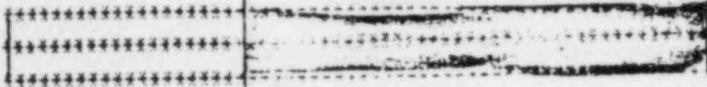
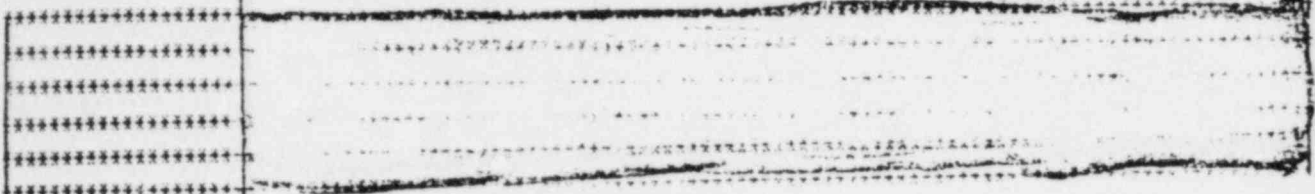
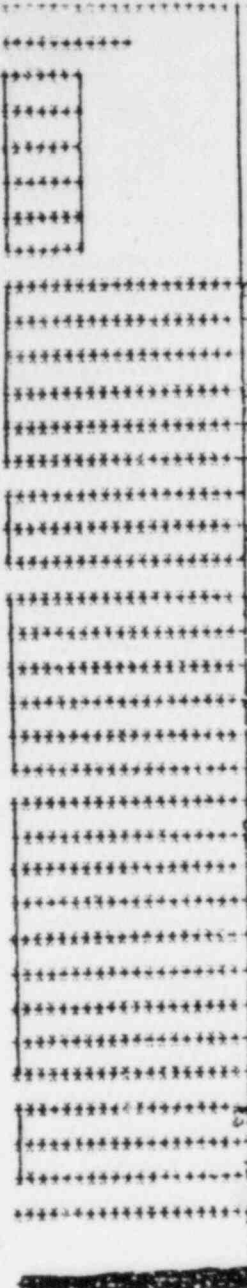


3/3/79

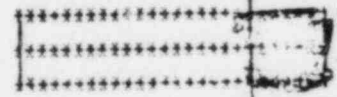
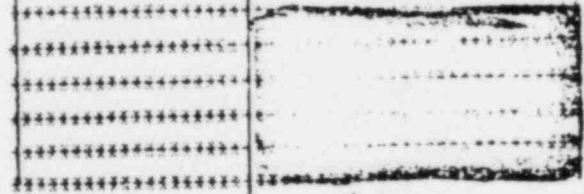
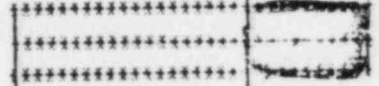


(AUX: MU-V-16A)

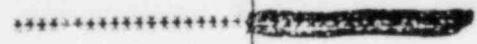




(AUX: MU-R-720, MU-V-17)



(AUX: MU-7DPT-2, MU-FI-2 FITTING)
(RB FAN COOLING COIL DRIP PAN ALARM INVESTIGATION)



3/22/79


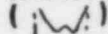
- NOTE**
- # : Different from Faegre & Benson report
 - ? : Findings debatable
 - ↑ or ↓ : Reactor power in transient
 - : Clock time

Bar Chart Data : 10/10/78 - 10/25/78, 12/20/78 - 03/28/78
 (end of second shift)

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PST/TIME	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	(1) COLD CORRECTED	(2) TEMPERATURE COMPENSATED
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
10/05/78	0029/0129	1339/1439	2	no	no	no		40	581.090	0.9168		0.7882
10/13/78	1116/1216	1121/1221	2	no	no	no		18	579.426	-8.5137		?
10/14/78	1504/1604	1509/1609	2	no	no	no	(approach to criticality)	532.082	532.082	-0.8787	(bad data)	-1.2250
# 10/15/78	1928/2028	1928/2028	2	150/1940 (MUT level +2" ; normal, -5")	no	no	(ICS in auto at 2015)	41	580.777	-0.3504	2.1496	1.1656
#(4) 10/16/78	1935/2035	1927/2027	2	no	no	no		40	581.308	2.5645		2.0264
#(4) 10/17/78	1328/1428	1323/1423	2	no	no	no		39	582.179	2.0738		1.0822
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

- (1) : As given in surveillance file and logs
- (2) : Corrected for unaccounted water addition or effect of hydrogen addition on MUT level (1" MUT level = 30 gallons) per SP 2301-301, 1978.
- (3) : Temperature compensated to unit average RCS temperature for water inventory changes in RCDT(75°F), MUT(120°F) and identified leaks(other than RCDT; 75°F). Other wrong entries for surveillance input (wrong sign for identified leaks, or wrong entry for RCDT inventory change by operator) were corrected.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY*	HYDROGEN ADDITION PST/TIME*	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
# 10/18/78	1221/1321	1216/1316	2	100/1230 100/1255 .1305	no no no	no no no		51↑	581.122	-0.2830	3.0503	4.1487
# 10/19/78	1849/1949			no surveillance, no log						0.0000(?)		
# 10/20/78	0213/0313	0203/0303	2	no	no	no	20/0214 (1) (no effect?)	66↑	581.992	0.0844	?	-0.1255
# 10/21/78	1239/1339	1234/1334	2	50/1330 ()	no	no		56↑	581.918	-0.5976	0.2357	0.3400
10/22/78	0755/0855	0740/0840	2	no	no	no		70	532.351	0.0000		-0.2793
10/23/78	0405/0505	0345/0445	2	no	no	no		75	582.396	0.5528		-0.0258
10/24/78	2230/2330	2222/2322	2	no	no	no		75	581.437	-0.0325		-0.6315
10/25/78	1627/1727	1619/1819	2	no	no	no	2/1717 (no effect)	75	580.706	0.5705		0.3380
			2	no	no surveillance					0.0000		
			2	no	no	no		75	580.915	0.1761		-0.2597
				system unstable, results unreliable				0	565.961	0.1761		-0.1208
			2	330/0211	no	330/0211		8	568.312	0.3781	5.8781	7.5308
			2	100/1618 ()	no	no		0	564.262	-0.9004	0.7662	1.0308

(1) CRO : Vented at 0214; filled MU-T-1 with Hydrogen to 18# at 0230; added more Hydrogen at 0308.

* CLOCK TIME

DATE TIME CHART LEVEL TRANSMITTER WATER ADDITION CHART HYDROGEN REACTOR MEAN UNIDENTIFIED LEAK RATE UNIDENTIFIED LEAK RATE
 _____ _____ _____ _____ SWITCH NO. INCLUDED IN GALLON/TIME ADDITION POWER, % Tave, F COLD TEMPERATURE
 _____ _____ _____ _____ _____ CALCULATION _____ PSI/TIME* _____ _____ CORRECTED COMPENSATED

[REDACTED]	[REDACTED]	[REDACTED]	1	[REDACTED]	no	no	no	55	582.288	-0.2824		-0.3778
[REDACTED]	[REDACTED]	[REDACTED]	2	[REDACTED]	no surveillance			55	582.414	0.9523	0.6995	0.8699
[REDACTED]	[REDACTED]	[REDACTED]	1	no ? (100/0630,0640)	no	no	no	55	582.203	0.5393	2.2059	2.7798
[REDACTED]	[REDACTED]	[REDACTED]	1	no	no	no	100gal/1845	55	582.129	0.9561	2.6227	3.1655
[REDACTED]	[REDACTED]	[REDACTED]	2	no	no	no	no	0	534.469	0.9757		0.9062
[REDACTED]	[REDACTED]	[REDACTED]	1	no	no	no	no	0	534.421	0.9782		0.9176
[REDACTED]	[REDACTED]	[REDACTED]	2	no	no	no	no	0	534.184	0.4832		0.4268
[REDACTED]	[REDACTED]	[REDACTED]	1	no	no	no	no	0	534.004	0.9799		0.9179
[REDACTED]	[REDACTED]	[REDACTED]	2	no	no	no	no	0	325.250	0.8830		0.8215
12/20/78	0805/0905	0805/0905	2	no	no	no	/0904 (100 gal)	0	532.403	0.0315	1.6981	2.1348
12/21/78	0259/0359	0259/0359	2	150/unstable	no	no		0	532.038	0.1171	2.6171	3.4342
12/22/78	0810/0910	0810/0910	2	200/0820	no	no		38 ↑	581.459	0.8288	4.1621	5.5788
12/23/78	2048/2148	2048/2148	2	(MUT +0.5" ; normal, -2")	no	no		89 ↑	583.596	0.0451	1.2991	1.7134
12/24/78	1736/1836	1736/1836	2	no	no	200/1830 (1)		97	581.965	0.1822		0.1008

(1) : Wrong entry in the log ; MUT chart indicated water addition at 1850, after the test.

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART BALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY	HYDROGEN ADDITION PST/TIME	REACTOR POWER, %	MEAN Tavg, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
12/25/78	0752/0852	0752/0852	2	no	no	no	(2)	97	581.273	-0.6105		-0.6810
REDACTED												
78 12/26/78	0916/1016	0916/1016	1	1007/0920	no	no		95	580.824	-0.0630	1.6036	2.0852
78 12/27/78	0810/0910	0810/0910	1	1007/0835-45,0900	no	no		96	581.941	0.9516	2.6182	3.1870
78 12/30/78	0615/0715	0635/0735	1	(MUT +4" ; normal, -3")	no	no	/0615,0640 (no effect?)	44	582.215	-3.8009	-1.6009	1.6735
REDACTED												
12/31/78	1225/1325	1247/1347	2	280/1345	no	320/1330 (5 min. late entry?)		81.5	580.870	-2.4334	2.2332	3.8980
01/02/79	0103/0203	0120/0220	2	no	no	no		83	581.218	-0.4511		-0.6572
01/04/79	0302/0402	0320/0420	2	no	no	no		90	581.218	0.2121		0.0738
REDACTED												
REDACTED												
REDACTED												
REDACTED												
REDACTED												
01/06/79	1920/2020	1935/2035	1	no	no	no		90	581.531	0.6200		0.4342
01/07/79	0341/0441	0356/0456	2	no	no	no		90	581.394	-0.2208		-0.3880
REDACTED												
REDACTED												
REDACTED												

(1) : CRO and SF logs; test completed at 1919

(2) : MUT level recorder trace

• CLOCK TIME

DATE	CLOCK	TIME	CHART	LEVEL TRANSMITTER SWITCH NO.	CHART	WATER ADDITION INCLUDED IN CALCULATION	CROSYF LOG ENTRY	HYDROGEN ADDITION PSI/TIME	REACTOR POWER, %	MEAN γ Ave. %	UNIDENTIFIED LEAK RATE GPM		
											UNCORRECTED	COLD TEMPERATURE COMPENSATED	
# 01/08/79	0321/0421		0336/0436	2	(MUT +1.3"; normal, -2.5")	no	no		90	581.402	-0.5391	0.8609	1.9617
# 01/10/79	0148/0248		0203/0303	2	100/0230	no	no		60	581.961	0.8350	2.5016	2.9395
# 01/11/79	2153/2253	(1)	2208/2308	2	240/2245	200 gal.	200/2230		90	581.457	-0.1668	0.4978	1.7541
					(MUT +4"; normal, -4")								
01/13/79	0937/1037		0957/1057	2	117/1005	no	117/1000		90	581.785	0.2639	2.2139	2.7439
# 01/15/79	0024/0124		0044/0144	2	60/0100	no	no		0	536.027	0.9867	1.9867	2.0683
01/30/79	2206/2306		2206/2306	2	no	no	no		0	531.797	0.7003		0.4591
02/02/79	1431/1531		1601/1701	2	no	no	no		92	582.426	-0.9506		-1.3774
02/03/79	1032/1132		1202/1302	2	no	no	no		92	582.544	-0.9894		-1.4123
02/04/79	1445/1545		1616/1715	2	no	no	no		92	582.398	-0.0604		-0.4682
02/05/79	1837/1937		2007/2107	2	no	no	no		92	581.441	0.1629		-0.2947
02/06/79	0025/0125		0155/0255	2	60/0215 (jogged)	no	no		92	581.984	0.6601	1.8601	1.5816
02/07/79	1352/1452		1522/1622	2	100/1535 (jogged)	no	no		84.5	581.859	0.3520	2.0186	2.1550
02/08/79	2050/2150		2210/2310	2	no	no	no		88	581.433	0.5878		0.1120
02/09/79	0220/0320		0335/0435	2	200/0336	no	no		88	582.097	0.7634	4.0967	4.8947
02/10/79	0841/0941		1011/1111	2	no	no	no		14 ↓	571.840	0.7677		0.2464

(1) : No "rcsl" in the surveillance sheet.

* CLOCK TIME

DATE	TIME CLOCK	CHART	LEVEL TRANSMITTER SWITCH NO.	CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	CRO/SF LOG ENTRY ^a	HYDROGEN ADDITION PSI/TIME ^b	REACTOR POWER, %	MEAN TEMP, °F	UNIDENTIFIED LEAK RATE, GPM		
										UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
02/11/79	1808/1908	1938/2038	2	300/1950	no	300/1825		89.5	581.734	-0.0603	4.9397	6.9362
02/12/79	2120/2220	2250/2350	2	over 150/2255	no	no		90	580.894	0.8984	3.3084	4.5277
02/10/79	1808/1908	1938/2038	2	300/1950	no	300/1825		89.5	581.734	-0.0603	4.9397	6.9362
02/13/79	1842/1942	2012/2112	2	no	no	no		90.5	581.160	0.6864		0.1533
02/14/79	2046/2146	2220/2320	2	no	no	no		92	581.207	-0.0996	1.4004	1.4239
02/14/79	2046/2146	2220/2320	2	no	no	no	3"/2130 ⁽²⁾	92	581.207	-0.0996	1.4004	1.4239
02/15/79	2026/2126	2156/2256	2	no	no	no	4"/2045-2115 ⁽¹⁾ (marked on chart)	91.5	581.191	0.9313	2.9313	3.1019
02/16/79	1203/1303	1380/1480	2	30/1405, 180/1420	204 gal.	204/1250		92	581.301	0.0482		0.6859
02/16/79	1203/1303	1380/1480	2	30/1405, 180/1420 (MUT +3"; normal, -b.5")	204 gal.	204/1250		92	581.301	0.0482		0.6859
02/17/79	0411/0511	0540/0640	2	100/0610	no	no	2"/0500 ⁽²⁾	91.5	581.148	0.8427	3.5093	3.7411
02/18/79	2128/2228	2258/2358	2	no	no	no		92	581.078	0.9121		0.1189
02/19/79	2128/2228	2258/2358	2	no	no	no		92	581.078	0.9121		0.1189
02/21/79	0836/0936	1006/1106	2	no	no	no		92	581.160	0.3463		-0.4538
02/23/79	1107/1207	1237/1337	2	150/1305	no	150/1135		92	581.406	0.3217	2.8217	3.7797
02/24/79	2002/2102	2117/2217	2	200/2210	150 gal.	150/2058		92	581.289	0.5921	1.4254	1.7696
02/25/79	2002/2102	2117/2217	2	200/2210	150 gal.	150/2058		92	581.289	0.5921	1.4254	1.7696

(1) : CRO log entry; Hydrogen to MUT-1 at 2100.

(2) : MUT level recorder trace

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	WATER ADDITION CHART GALLON/TIME	WATER ADDITION INCLUDED IN CALCULATION	HYDROGEN ADDITION CRO/SF LOG ENTRY	HYDROGEN ADDITION PSI/TIME	REACTOR POWER, %	MEAN Tave, F	UNIDENTIFIED LEAK RATE, GPM		
	CLOCK	CHART								UNCORRECTED	COLD CORRECTED	TEMPERATURE COMPENSATED
02/25/79	1839/1939	2009/2109	2	180/2052	154 gal	150/1935	94 ↑	581.246	0.7614	0.7727	1.0570	0.2891
02/26/79	1839/1939	2009/2109	2	180/2052	154 gal	150/1935	94 ↑	581.246	0.7614	0.7727	1.0570	0.2891
02/27/79	2150/2250	2255/2355	2	150/2335	162 gal	162/2245	98	581.406	0.9507	1.0570	0.2891	0.2891
02/28/79	1909/2009	2159/2259	2	120/2253	100 gal	100/2005	98	581.257	0.6635	0.2891	0.2891	0.2891
03/01/79	0041/0141	0435/0535	2	no	no	no	3"/0119 (CRO 0130)	98	581.504	0.4044	1.9044	1.4693
03/01/79	0149/0249	0255/0355	2	100/0350	no	no	97	581.270	0.6055	2.2721	1.8697	0.3299
03/02/79	1935/2035	0255/0355	2	100 /0350	no	no	97	581.270	0.6055	2.2721	1.8697	0.3299
03/03/79	0238/0338	0238/0338	2	150/0235	152 gal	150/0335	97	581.750	0.3162	0.3299	0.3299	0.3299
03/04/79	0142/0242	0212/0312	2	238/0310	238 gal	238/0240	97.5	582.246	-0.0308	0.3796	0.3796	0.3796
03/05/79	0320/0420	0350/0450	2	60, 0430, 150/0440	128 gal	128/0410	98	581.711	0.8695	2.2358	2.5028	2.5028
03/06/79	0321/0421	0351/0451	2	180/0450	180 gal	180/0420	97	582.023	0.7744	0.8684	0.8684	0.8684
03/08/79	0306/0406	0306/0406	2	240/0403	228 gal	228/0403	98	582.047	0.4679	0.7164	0.7164	0.7164
03/09/79	0323/0423	0323/0423	2	180/0415	181 gal	180/0415	98	582.179	0.8551	0.6499	0.6499	0.6499
03/10/79	0351/0451	0351/0451	2	400/0346-51	no	400/0346 (some effect: 50 gal. ?)	97	582.195	0.8050	1.6383	0.6671	0.6671
03/12/79	0132/0232	0132/0232	2	60/0150	no	no	98	581.773	0.2620	1.2620	0.1974	0.1974
03/12/79	1105/1205	1050/1150	2	300/1145	305 gal	305/1200	97.5	582.332	0.5194	0.9963	0.9963	0.9963
03/13/79	1105/1205	1050/1150	2	300/1145	305 gal	305/1200	97.5	582.332	0.5194	0.9963	0.9963	0.9963

• CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART	WATER ADDITION INCLUDED IN CALCULATION		GRO/SF LOG ENTRY	HYDROGEN ADDITIONAL PSI/TIME	REACTOR POWER, %	MEAN TAVE, F	UNIDENTIFIED LEAK RATE, GPM	
	CLOCK	CHART			CHART	GALLON/TIME					BARREL/TIME	UNCORRECTED
03/14/79	1205/1305	1700/1300	2	300/1225, 200/1245	500 gal.	300/1230, 200/1250	(1)	97.5	581.629	-0.2496	8.0837	2.2621
03/15/79	0450/0550	0448/0445	2	120/0515	no	no		96.7	581.820	0.0562	2.0562	1.3503
03/16/79	2009/2109	1944/2044	2	100/2020, 100/2025	204 gal.	200/2050		98	581.592	-0.7522		0.5630
03/17/79	0246/0346	0223/0323	2	200/0300	207 gal.	200/0323		97.7	581.696	-0.9967		0.3579
03/19/79	0058/0158	0050/0150	2	100/0050, 200/0149	200 gal.	200/0100, 200/0157		97.5	581.312	-0.1851	3.1483	5.7497
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal.	200/0126 2"/0205		97	581.366	0.2225	1.2260	2.9444
03/22/79	0300/0400	0255/0355	2	200/0350	200 gal.	200/0353		97	581.383	0.5807		1.8646
03/24/79	0540/0640	0533/0633	2	100/0553, 100/0622	206 gal.	100/0600, 100/0633		97	581.906	0.1600		1.5021
03/25/79	0525/0625	0520/0620	2	300/0603	301 gal.	300/0608		97	582.500	0.4318		2.3753
03/27/79	(2) 0546/0646	(2)		7	300 gal.	300/0625		97	582.700	0.3691		1.3013
03/28/79	0134/0234	0124/0224	2	300/0140	303 gal.	303/0145		97	581.570	0.0100		1.9415

(1) : 500 gallons were entered as an operator caused RCDI inventory change, instead of makeup water addition.

(2) : SP 2301-301 Data Sheet 3 and 4, and calculation for RCDI temperature compensation were available.

* CLOCK TIME

DATE	TIME		LEVEL TRANSMITTER SWITCH NO.	CHART	WATER ADDITION INCLUDED IN CALCULATION		CHART GALLON/TIME	CRO/SF LOG ENTRY	HYDROGEN ADDITION PSI/TIME	REACTOR POWER, %	MEAN TEMP, °F	UNIDENTIFIED LEAK RATE, GPM	
	CLOCK	CHART			no	gal						UNCORRECTED	COLD CORRECTED
03/14/79	1205/1305	1200/1300	2	300/1225, 200/1245	500 gal.	300/1230, 200/1250	(1)		97.5	581.629	-0.2496	8.0837	2.2621
03/15/79	0450/0650	0445/0646	2	120/0515	no	no			96.7	581.820	0.0562	2.0562	1.3503
03/16/79	2009/2109	1944/2044	2	100/2020, 100/2025	204 gal	200/2050			98	581.592	-0.7522		0.5630
03/17/79	0248/0348	0223/0323	2	200/0300	207 gal.	200/0323			97.7	581.896	-0.9967		0.3579
03/19/79	0058/0158	0050/0150	2	100/0058, 200/0149	200 gal	200/0100, 200/0157			97.5	581.312	-0.1851	3.1483	5.7497
03/21/79	0114/0214	0114/0214	2	207/0126	207 gal	200/0126, 2"/0205			97	581.386	0.2225	1.2260	2.9444
03/22/79	0300/0400	0255/0355	2	200/0350	200 gal	200/0353			97	581.383	0.5807		1.8648
03/24/79	0540/0640	0533/0633	2	100/0553, 100/0622	206 gal	100/0600, 100/0630			97	581.906	0.1600		1.5021
03/25/79	0525/0625	0520/0620	2	300/0603	301 gal	300/0608			97	582.500	0.4318		2.3753
03/27/79	(2) 0546/0646	(2)		7	300 gal	300/0625			97	582.700	0.3691		1.3013
03/28/79	0134/0234	0124/0224	2	300/0140	303 gal	303/0145			97	581.570	0.0100		1.9415

(1) : 500 gallons were entered as an operator caused RCDT inventory change, instead of makeup water addition.

(2) : SP 2301-301 Data Sheet 3 and 4, and calculation for RCDT temperature compensation were available.

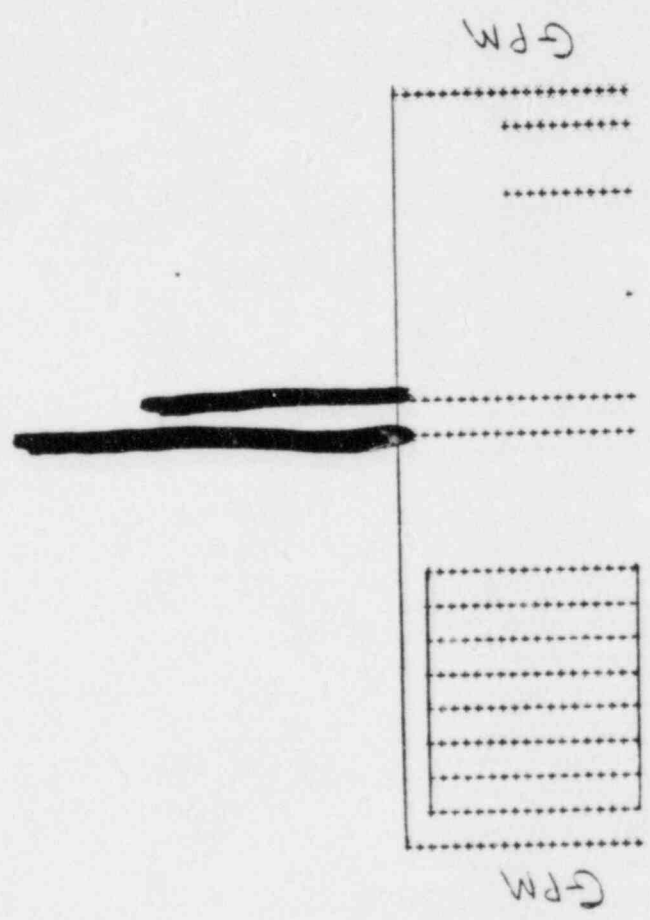
1/26/84

Uncorrected

10/5/78 - 10/25/78

RCS INVENTORY TEST

END OF 2ND SHIFT STATUS



11/26/84

Temperature Compensated

10/5/78 - 10/25/78

RCS INVENTORY TEST

END OF 2ND SHIFT STATUS

