13:00 Anneal finished. Ran at 100K on ITC for about 45 minutes.
Cooled down frig. Taking empty Carbon data

Bypass closed → 0.01
Run valve → 0.01
Separator flow → 25.00

13:39 Got ready to polarizing (Bottom, -ve).
Moved to Bottom (1.670).

---

* Polarizing Target Target: Bottom (1.670) 02/25/2009

EV91120PID: 0.4

Time	Polarization (%)	Bellows	Frequency (GHz)	Beam (nA)
1.52 pm	-10.3	54.201	140.474	0
1.53	-12.9	54.201	140.474	0
1.57	-15.5	54.311	140.495	0
1.59	-16.3	54.346	140.499	0
2.01	-17.7	54.473	140.519	0
2.05	-20.2	54.021	140.446	0
2.07	-24.2	53.761	140.402	0
2.08	-30.3	53.761	140.403	0
2.11	-37.1	53.677	140.390	0
2.12	-40.4	53.641	140.384	0
2.13	-43.6	53.713	140.402	0
2.15	-45.6	53.713	140.403	0
2.18	-48.3	53.840	140.425	0
2.20	-49.6	53.895	140.434	0
2.22	-50.4	53.840	140.420	0
2.24	-52.5	53.767	140.409	0
2.27	-54.3	53.767	140.409	0
2.28	-55.1	53.767	140.407	0
2.31	-57.0	53.767	140.406	0
2.33	-57.2	53.767	140.407	110 ← Beam in 110 nA
2.35	-56.6	53.749	140.405	110
2.37 pm	-56.5	53.785	140.410	110

* Polarizing Target

Target: Bottom (1.670)
Run Value: 0.40

Time	Polarization (%)	Bellows Position	Frequency (GHz)	Beam (nA)
2.41 pm	-57.0	53.785	140.410	0
2.43	-57.6	53.822	140.420	0
2.46	-57.7	53.803	140.420	0
2.49	-58.1	53.967	140.440	0
2.51	-58.3	53.967	140.470	0
2.52	-58.6	53.967	140.430	0
2.55	-59.2	53.967	140.439	0
3.00	-59.4	53.968	140.440	~~95~~ 95.01
3.03	-58.8	53.732	140.401	93.89
3.05	-57.6	54.455	140.519	94.88
3.08	-57.8	54.383	140.500	95.27
3.10	-58.4	54.293	140.485	94.51
3.13	-58.6	54.239	140.476	105.64
3.16	-58.5	54.185	140.470	105.29
3.17 →			Run Value: 0.35	
3.19 pm	-58.7	54.184	140.471	106.37
3.29	-58.1	54.274	140.483	107.42
3.31 →			Run Value: 0.40	
3.33	-57.4	54.246	140.478	105.43
3.37	-57.0	54.311	140.492	88.65
3.39	-56.8	54.185	140.470	90.34
3.41	-55.4	54.420	140.514	89.64
3.47 →			IOC Rebooted	
3.49	-58.6	54.308	140.480	90.53
3.51	-58.7	54.348	140.498	88.78
3.53 pm	-59.0	54.349	140.497	90.52

$ **NOTE:** As we are increasing the current to 105 nA, the polarization is going down. So, we decided to take data @ 90 nA.

run valve = 0.10

4:25 pm	-58.4	~~a~~54.257	140.484	90.01
4:30	-59.2	54.402	140.508	90.26
4.35	-59.6	54.492	140.518	90.41
4.38	-60.0	54.456	140.510	90.40
4.42	-59.8	54.312	140.491	87.10
4.50	-57.4	54.311	140.491	90.69
4.55	-58.6	54.366	140.500	92.01
4.58 pm	-59.1	54.365	140.500	91.33
5.00 pm	-59.8	54.419	140.510	91.23
5.04 pm	-60.5	54.455	140.517	88.72

5.15 pm run valve changed to 0.15.

5.20 pm	-58.6	54.311	140.495	105.32
5.27 pm	~~-54.6~~ -60.1	54.401	140.512	103.59
5.55 pm	-58.5	54.455	140.521	105.45

5.55 pm (17:00) Trying an irradiation to boost polarization.
(18:13) We are closing the run valve.
6:13 pm Nose empty Top TC 8 K Bottom TC 12 K Requesty 100 nA Run # 72789
(18:15) Bottom is heating to ≈ 15 K according to TC
6:15 pm Bottom TC reading 19.4 K .... Consider using this to thermalize for TES

6:30 pm Top TC 13.4°K Bottom TC 20.1°K
6:40 pm Top TC 16.8°K Bottom TC 21.8°K
6:45 pm Beam off 18:47 Cold & u-waves on

Time	Polarization	Bellows	Frequency
18:49	-32%	.54058	140.460 GHz
18:52	-46%	.54184	140.480 GHz
18:54	-52.2%		140.490
19:03	-60.7%	0.54366	140.503
19:05	-61.3%	0.54366	140.506
19.40	-57.6%	0.54512	140.524
20.15	-54.3%	0.5440	140.507
20.30	-54.1%	0.54418	140.509

20.55 IOC crashed and rebooted
21:00 Team moved to the lab

21.00	-24.6	0.5431	140.506	0

21.05 run valve changed to 0.4.

21.10	-34.3	0.5431	140.506	0
21.15	-42.4	0.5431	140.506	0
21.25	-57.1	0.54366	140.514	0
21.32	-60.8	0.54348	140.511	0
21.35	-62.4	0.5438	140.517	0
21.40	-64.5	0.5436	140.513	0
21.43	-65.7	0.5434	140.509	75.29
21.45	-66.5	0.5433	140.507	70.73
21.48	-67.9	0.5435	140.511	70.77
21.50	-68.7	0.5434	140.511	84.05
21.52	-69.4	0.5434	140.509	95.00
21.53	-70.0	0.5434	140.508	93.30
21.55	-71.1	0.5431	140.501	97.34
21.56	-73.3	0.5431	140.505	94.03

22.00 polarization suddenly dropped to 0.0%.
turned off the microwave for little time (10 mints)
and opened the run valve upto 0.5.

22.10 ~~The polari~~
~~The micro~~ turned on the microwave and the
polarization is getting back.

22.10	-33.2	0.5422	140.492	0
22.15	-39.1	0.5427	140.501	0
22.18	-51.1	0.5425	140.500	0
22.20	-55.8	0.5431	140.504	0
22.25	-60.1	0.5425	140.493	0
22.28	-64.7	0.5432	140.507	73.92
22.30	-66.6	0.5433	140.508	94.60
22.35	-67.3	0.5427	140.494	94.16
22.40	-69.4	0.5433	140.509	0
22.45	-71.2	0.5429	140.500	0
22.50	-73.2	0.5431	140.503	0
22.52	-74.6	0.5429	140.500	94.73
23.00	-73.1	0.5445	140.532	95.14
23.07	-71.9	0.5433	140.505	94.76
23.15	-71.2	0.5433	140.493	87.78

Time	Polarization %	Bellows Position	Frequ. (GHz)	Curr./nA
23.25	-70.7	0.5434	140.513	88.35
23.30	-70.3	0.5440	140.523	88.81
23.45	-69.9	0.5434	140.507	89.02
23.50	-69.0	0.5445	140.531	90.67
24.00	-67.9	0.5445	140.529	91.62

Date: 02/26/2009 Target: Top (3.361)

Run Value Value 0.35

12:02	-67.9	0.54403	140.517	88.48
:09	-67.5	0.54421	.521	90.63
:13	-66.8	0.54512	.537	
:18	-67.4	0.54421	.520	90.14
:23	-66.9	.54403	.523	91.13
.27	-66.6	.54384	.512	88.56
.38	-66.4	.54390	.515	90.32
.40	-66.6	.54387	.514	91.69
.44	-66.3	.54383	.519	90.86
.46	-66.1	.54425	.527	78.87
.47	-66.3	.54420	.521	91.50
.53	-65.8	.54419	.525	90.88
.58	-65.6	.54330	.505	88.13
01.00	-65.9	.54330	.505	
01.02	-65.6	.54330	.505	91.79
01.04	-65.5	.54348	.510	89.49
01.07	-65.7	.54348	.510	86.99
01.09	-65.8	.54347	.509	88.95
01.12	-65.4	.54369	.517	94.99
01.15	-65.3	.54402	.517	91.37
01.17	-65.6	.54402	.516	79.14
01.22	-65.1	.54340	.507	89
01.23	-65.0	.54268	.511	92.10
01.24	-64.9	.54333	.512	90.45
01.26	-64.8	.54328	.506	91.59
01.27	-64.7	.54276	.498	89.91
01.28	-64.5	.54294	.503	90.67
01.35	-64.4	.54295	.503	91.84
01.37	-65.1	.54295	.503	89.0
01.44	-64.2	.54366	.515	89.27
01.45	-64.4	[illegible]	[illegible]	[illegible]

Time	Polarization %	Bellows position	Frequency (GHz)	Current (nA)
01.50	change run value to 0.30			
01.52	-64.6	0.54365	140.516	87.43
02.01	-64.5	0.54366	140.516	90.96
02.04	-64.1	0.54366	.513	90.04
02.06	-64.1	0.54402	.517	89.05
02.10	-65.0	0.54366	.513	87.42
02.11	-65.1	0.54384	.519	89.85
	-64.8	0.54384	.520	90.73
02.13	-64.2	0.54380	.506	89.40
02.15	-64.0	0.54402	.518	91.65
02.20	-63.7	0.54402	.516	91.20
02.23	-63.6	0.54383	.518	89.57
02.34	-63.2	0.54366	.515	89
02.45	-62.8	0.54402	.521	89.74
02.46	-62.9	0.54402	.520	88.69
02.53	-63.0	0.54362	.510	88.46
02.57	-62.6	0.54366	.514	90.73
03.00	-62.4	0.54366	.512	91.07
03.03	-62.2	0.54347	.514	89.00
03.04	-62.3	0.54348	.515	85.5
03.13	-62.1	0.54365	.513	91.18
03.38	-60.4	0.54349	.510	104.49
03.46	-60.0	0.54347	.509	99
04.04	-59.6	0.54330	.507	106.26
04.18	-59.4	0.54384	.514	104.06
04:40	-57.9	0.54347	.511	104.06
04:40	change run value to 0.35			
04.48	-57.5	0.54383	.518	103.18
04.53	-57.4	0.54383	.517	103.43

5:26 Start Ramp Down Procedure, Shim heaters on

Ramp up Leads

5:34 Heater On (Spike on Coil V up to ~2.5 V)

To 72 A @ 0.3 A/m

Coil V = 1.12 V, Lead V = 0.200 V, Shim V = 0.031 V

(microwaves turned off just now, oops!)

5:53 To 60 A @ 0.6 A/m

Coil V = 2.38 V, Lead V = -1.14 V, Shim V = 0.060 V

6:14 To 0 A @ 1.2 A/m

Coil V = -4.74 V, Lead V = -3.730 V, Shim V = 0.121 V

7:06 Ramp Finished, Heater off, Shim heaters off

Leads locked, tagged

12:12 Insert Bout

Insert C has level probe on.

Material Reclaimed: ~~Top: "Pulled Feb 26 2009" Bottom~~ Bottom: "

into S6 ← Top: "Pulled Feb 26 2009" "Bottom"

Bottom: "Pulled Feb 26 2009" "~~Bottom~~ Bottom"

Putting into Insert C Top: #2 Slot 4 6-28-07
Bottom: #3 Slot 4 6-28-07

Fridge has cooled down alot since Backfill

Combine Remainder of #2 & #3 into #3 from 6-28-07

14:50 Fridge cold Magnet Leads connected

Shim Heater on for 20+ min.
Switch Heater on Ramping...
Coil 1.849 Volts Lead 1.85 Volts Shim -0.05
Ramp Rate is 0.5 A/min

18:00 To 60 A @ 1.2 A/m Coil V = 4.70 V, Lead V = 4.80 V, Shim = -0.12 V
15:50 To 72 A @ .6 A/min. Coil V = 2.38, Lead = 3.44 V, Shim = -.061 V
16:10 To 77.095 .3 A/min. Coil V = 1.193, Lead = 2.5, Shim = -.03
16:28 @ 77.095 everything ok

16:50 move to top target encoder = 3.355

~~Pre~~ Prepare for TE set PV = 0.2 4He pressure = 5.74
3He = 15.77

Gain = 20
1000 sweeps

Time	Area	4He Pres	3He Pres
	-0.11112870	5.071	14.975
	-0.11199960	5.138	15.274
1235686142	-0.11167020	5.007	15.033
1235686273	-0.11141820	5.012	15.2710
1235686240	-0.11224960	5.171	15.2985
1235686306	-0.11195500	5.039	15.3961
436	-0.11200970	5.117	15.3687
502	-0.11182890	4.937	15.2069
567	-0.11283770	5.111	15.7996
633	-0.11273820	4.937	15.4608
698	-0.11299750	5.028	15.3701
763	-0.11396600	4.976	15.0330
829	-0.11415890	5.150	15.4480
894	-0.11307400	4.956	15.4171
960	-0.11344250	5.083	15.1886
1025	-0.11483910	4.906	15.3900

Top

TE = -2.8679 (with calc. 14 pts.)

TE = -2.8348 2 (one pt)

11:28 Moved target to bottom ↓

Gain 20 base line take data DC convert

17:37 1000 Sweeps

17:41:57

123568117	-0.11313337	5.131	16.5771
183	-0.113877	4.979	16.2445
248	-0.11743820	5.141	16.8304
313	-0.11676730	5.010	16.3605
379	-0.11507360	5.186	16.6748
444	-0.11226430	4.989	16.0880
510	-0.11019410	5.143	16.9556
575	-0.11575640	5.031	16.1438
641	-0.12435500	5.136	16.7103
706	-0.10923190	5.113	16.2903
771	-0.12185920	5.067	16.6870
837	-0.10967610	5.120	16.8182
902	-0.11892560	4.967	16.4124

Bottom

17:55:02

Moved to Empty (cross hair) $\boxed{TE = -2.844311}$ (calc.)

18:08 Closed run valve
Turned on Root Pump #1, wait for P reach < 2 torr.

it went from over 4 to ~2.2 torr. ~ 18:23

turned on μwave to boil off He.

18:32 turned off μwave. 3.8 → 2.4 torr

18:36 turned on μwave.

18:40 Magnet quenched, turned off μwave, turned off roots pump #1.

19:30 Access to the Hall (Jonathan & JP) to heat up re

21:00 Magnet He level flat: full.

February 27, 2007

00:03 Shim heaters on to ramp up

Upper platform fan was off, turned on now

00:09 Magnet heater on (hold 4 secs)

00:12 To 10A @ 0.5 A/m, Coil V = 1.84 V, Lead V = 1.850 V, Shim V = -0.05 V

00:25 To 60A @ 1.2 A/m, Coil V = 4.77 V, Lead V = 4.88 V, Shim V = -0.12 V
(at 6.6A now)

1:11 @ 60A, To 72A @ 0.6 A/m Coil V = 2.40 V
Lead V = 3.490 V
Shim V = -0.06 V

1:32 @ 72A, To 77.095 A @ 0.3 A/m Coil V = 1.20 V
Lead V = 2.50 V
Shim V = -0.03 V

1:50 @ 77.095 A Shim heaters off, Heater off, Leads to Zero

2:15 Nose filled, Pumps On

~~Feb 27, 2009~~

04:39 Changed run valve from 0.00 to 0.20

Feb 27

12:22 We ramped the magnet without incident we are now pumping down to try to polarize. No beam for a while in case the magnet needs a chance to settle
Field = 77.095 A

@ We are on the bottom target Encoder = 1.670

12:52 Turn off μ-wave. Wait for pressure to get below 2.00 torr

13:02 Turn on RB2

13:14 RB-Bypass opened, RB3 on

Time	Polarization	Freq (GHz)	Bellows	Beam
13:18	32.9%	140.125	.51732	off
		tried lower f's none of which performed better		
13:23	39.0%	140.129		"
13:26	43.5%	140.138	.51951	"
13:30	49.1%	140.155	.52058	"
13:33	55.8%	140.160	.52131	"
	1% difference between gain 1 & 20... clipping? no visible difference in signal			
13:38	63.3%	140.166	.52167	"

Check hole for positioning

Move to 10mm hole .171

19:20 Start Ramping to 10A @ 0.5 A/m

19:31 To 60A @ 1.2 A/m Coil V = 4.76 V

Lead V = 4.880 V

Shim V = -0.120 V

20:19 To 72A @ 0.6 A/m

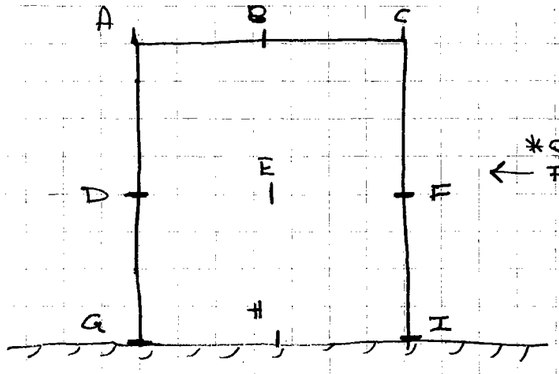
	Coil V	Lead V	Shim V
20:19	2.36	3.48	-0.06
20:39 To 77.095A @ 0.3A/m	1.19	2.86	-0.03

I am making fun of Jan.

20:57 At 77.095 Amps, Shim heaters off, heater off

Leads down, controls locked

02/27/09



Measurement of
B around iron plate
in front of Cerenkov:
*Orientation: (white magnet is full field)
← From upper (target) platform

Measure from 1", 6", 12"

#S w/ white dot facing (down on) plate

Point	Distance	B (Gauss)
A	1"	182
	6"	63
	12"	45
D	1"	87
	6"	50
	12"	37
C	1"	160
	6"	66
	12"	50
B	1"	142
	6"	74
	12"	58
E	1"	18
	6"	14
	12"	10
F	1"	80
	6"	43
	12"	40
G	1"	58
	6"	28
	12"	23
H	1"	-160
	6"	-140
	12"	-110
I	1"	-190
	6"	-170
	12"	-130

22:17 All RBs on, Run to ~~QA~~ 1, (hose empty)

23:55 μWaves On

Feb 28, 2009
owl

Bottom target encoder 1.749,

Mean polarization ~~[illegible]~~ % @ Start +73.3 %,

run value 0.5

Time	polarization %	Bellows position	Frequency (GHz)	Current (μA)
12:20	+74.6	52.299	140.181	70
12:43	+86.4	52.298	140.184	90
	+86.6	52.321	140.191	90
	+86.8	52.389	140.198	90
	+86.8	52.462	140.215	90
12:48	+86.3	52.453	140.207	90
12:56	+85.1	52.449	140.210	99
12:58	+84.6	52.461	140.210	91
	+84.4	52.448	140.213	91
	+83.9	52.406	140.200	91
1:02	+83.9	52.353	140.194	91
	+84.5	52.300	140.183	91
	+85.4	52.209	140.169	
1:14	+84.8	52.123	140.155	91
	+83.8	52.082	140.150	92
1:39	+83.2	52.099	140.160	
1:44	+84.1	52.135	140.160	91
1:47	Changed run value from 0.5 to 0.4			
2:05	+83.5	52.084	140.154	91
	+83.0	52.013		91
	+82.8	52.046	140.154	91
2:09	+82.6	52.118	140.160	91
	+82.6	52.190	140.160	91
2:14	+83.0	52.287	140.192	91

Time	Polarization	Bellows position	Frequency (GHz)	current (nA)
2:19	+82.4	52.226	140.175	86
2:22	changed run value to 0.30 (from 0.4)			
2:25	+82.8	52.154	140.154	90
2:29	+83.6	52.099	140.156	87
	+83.5	52.028	140.140	88
2:33	+83.1	52.045	140.159	88
2:51	+82.8	51.990	140.143	88
	+82.3	52.008	140.150	90
	+82.4	52.043	140.151	91
2:54	+82.3	52.117	140.167	91
2:58	+82.3	52.099		
	+82.5	52.063		
	+82.9	52.043		
3:03	+82.7	52.028		91
	+81.9	51.995		73
	+81.3	52.098		
	+81.6	52.044		
3:29	+81.6	52.080	140.163	90
3:33	+81.0	52.062		
	+80.3	51.990	140.152	90
3:39	+80.9	52.043		
3:40	[illegible]	beam off		
4:00	81.6	52.098	140.156	90
	80.7	51.938		
4:07	79.3	52.098	140.165	90
	78.6	52.170		
	78.8	52.117	140.165	90
4:14	79.7	52.098		
	79.7	52.043	140.155	90
	79.0	52.008		
4:24	79.4	52.027		
4:46	changed run value to 0.32 (from 0.30)			
5:00	+77.8	52078	140.150	90
5:10	+78.1	52005	140.156	
5:11	changed run value fm 0.32 to 0.31			
5:13	+77.0	51956	140156	
	+77.3	51990		
5:16	+71.6	[illegible]	140150	90

Time	Potength	Bellow position	Frequency	current(mA)
5:47		51985	140.149	89.57
6:03	74.5	51932	140.141	90
6:10	75.4	51932	140.145	90
6:15	74.5	51914	140.146	90
~~6:15~~ 6:20	72.9	51914	140.146	90
6:30	71.8	51933	140.146	90
6:40	73.8	51934	140.149	90
6:49	changed run value from 3.1 to 3.0			
6:51	73.6	51913	140.146	90
6:57	72.2	51898	140.137	90
	72.0	51879		
	70.8	51878		
7:20	70.0	51859		
	69.6	51839		
	68.9	51803		
7:36	68.7	51820		
	changed run value from 3.0 to 3.1			
7:41	69.6	51679	140.112	90
7:46	70.9	51589	140.103	70

28/02/09 day shift. Anusha.

8:15	71.2	0.5163	140.104	0
~~9:10~~				
9:10	IOC crashed and rebooted.			
9:15	68.6	0.51498	140.087	90
10:05	71.9	0.51857	140.140	0
10:20	75.4	0.51856	140.137	0
10:30	76.3	0.51857	140.137	0
10:45	76.6	0.51857	140.135	0
10:50	The bellows moved to [illegible]			

11:20 run valve changed to 0.25.
11:50 target moved to the 8 mm hole. Encoder = 0.657.
~~15~~
15:00 Target Moved to the 10 mm Hole. Encoder = 0.251
16:00 Open the run valve to fill nose
16:15 Chiller pumps control turned into LOCAL to prevent damage when pump trips.
18:25 Moved to Top NH_3 target encoder = 3.442.
18:30 ~~Moved to top~~ + Started polarization (Nose is filled enough)

Top NH_3

Time	Pol.	Bellows	Freq.	current (nA)	
18:40	54.1	51855	140.134	—	
18:47	72.2	51929	140.167	90	
18:57	84.5	51911	140.150	beam trip] still	
19:15	90.2	51868	140.137	beam trip	
19:50	91.8	51764	140.114	90	beam is back
20:03	89.3	51804	140.131	91	
20:1[illegible]	87.7	51873	140.140	92	
20:30	84.0	51602	140.084	91	
20:48	82.3	51728	140.119	89	
21:00	81.4	51728	140.114	90	
21:15	79.5	51763	140.129	89	
21:45	77.4	51565	140.079	90	
22:23	77.4	51692	140.106	90	
22:50	73.8	51637	140.102	86	
23:10	71.3	51780	140.120	89	
24:00	67.1	51816	140.127	87	

Owl Marchal

Top target
encoder = 3.442

pol @ start of shift = 68.1%

rm value @ 0.30

00:05	67.98	51817	140127	91
	67.7	51743	140115	
	67.8	51709	140107	
	68.0	51655	140095	
	68.1	51602	140005	
	68.1	51550	140007	
	68.2	51513	140072	
	68.3	51458	140061	
	68.3	51475		
	68.6	51530	140006	
	68.8	51584	140095	
	69.1	51619	140102	
	69.2	51674	140110	
	69.3	51710	140117	
	69.2	51727	140110	
	70.2	51744	140121	
	70.3	51727	140110	
	70.3	51674	140099	

← no beam

← Cleared manually to 0.25 from 0.3

March 1st 2009

@ 1:22 Starting anneal. Beam Down for extended period of time.
- Pumps off run valve closed.

See HallC Log. The polarization decayed too fast for Top target
This may be due to operator mistakes or a problem with the target.
Separator valve open to 1 $\xi_s = 66$

- Top Target: 3.445
- Anneal progam set to fifty° to boil off nose Level

2:15 Nose finally emptying. pause Anneal Top P <49° P <49°
Tc 44° Tc 38°

2:20 Top P 69 Bottom P 72 Pause after reaching 75°
TC 58.5 TC 71.72

2:28 @ 80° going to 85°

2:30 @ 85° going to 90°

2:31 ★ Set timer to 20min Top P 90.7 Bottom P 98.7 Hold here
TC 80.3 TC 105

@ 17min to go Pause & go to 95° - assuming Top TC right
run open to .2 & bypass to .1
Top P 95.5 P 106
Tc 83.4 Tc 110.35

3:05 Target is cold. closing run & bypass & pumping down

Much trouble pumping down. Might be a leaky ~~valve~~ valve

14:12 Polarizing top target

Pumps tripped within 5 minutes of the run valve being @ 1/2 turn.

4:40 AM Annealing finished, still no beam

top target @ 3.445 (encoder) ; run value @ 0.20

+ polarization

~~Bellows~~ ~~+ Pol(%)~~ ~~Pol(%)~~ ~~B~~

Time	Bellows	Freq	+ Pol (%)	Current (nA)
4:45	51781	140134	79.2	90
	51763	140123	79.3	90
4:55	51587	140084	79.6	91
5:00	51565	140090	79.4	89
5:15	51531	140079	78.9	88
5:18	51602	140094	78.6	88
	51657	140099	78.7	73
5:20	changed run value from 0.2 to 0.18			
5:25	51709	140.117	78.0	89
5:30	51622	140.090	77.4	89
5:35	51021	140.104	76.6	90
5:45	51551	140.078	75.4	90
6:00	51600	140.085	76.4	no beam
6:05	51600	140.087	76.0	90
6:10	51745	140.127	73.9	90
6:15	51404	140.065	71.2	
	51512	140.084	71.3	90
6:30	51582	140.095	71.9	90
[illegible]	51543	[illegible]	72.0	

6:55	51476	140.059	70.6
7:30	51565	140.090	67.8
7:40	51494	140.073	66.8

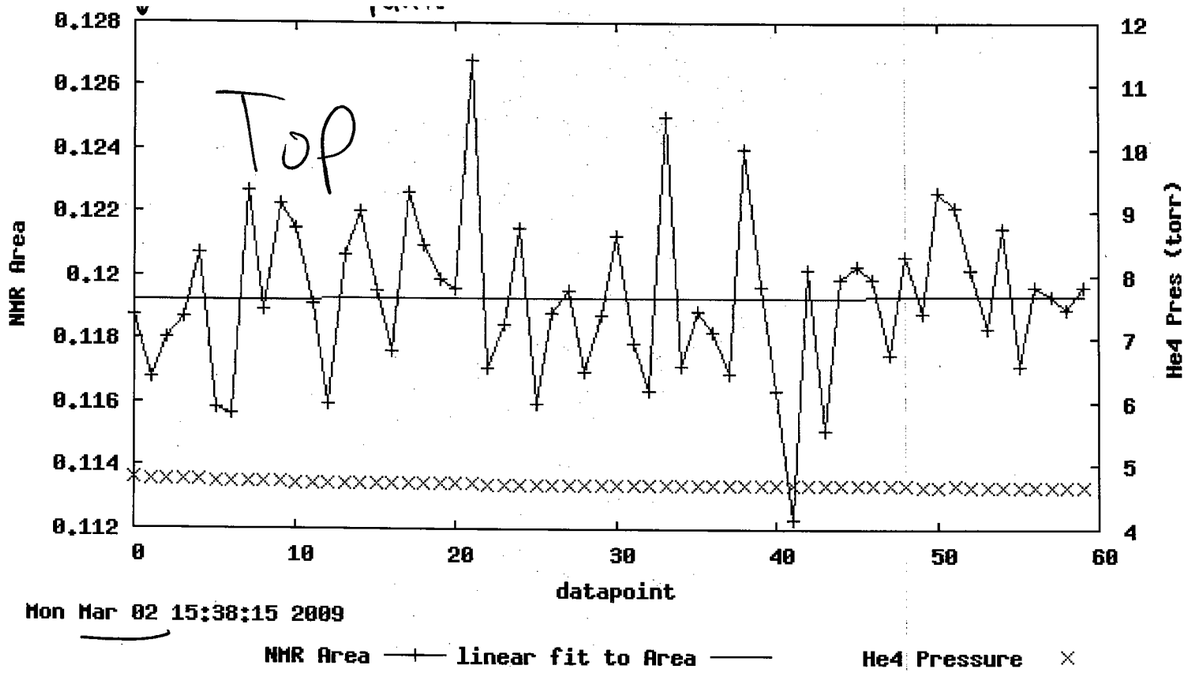
09:20 Nose is overfull. Close Run valve → 0.0. Turn on ITC to 54K for about 2 minutes then turn off. Do this more than once.

13:30 Communication problem was solved by resetting the GPIB interface box downstairs.
The run valve was actually open 1/3 of a turn when the encoder read zero. This was reset.

13:45 Polarizing top target

Time	Bellow	Freq.	#Pol (%)	Beam current (nA)
14:05	.51834	140.112	54.4	0
14:40	.51833.	141.317	68.0	84.48
16:38	0.51832	140.139	79.8%	90
19:12	0.51888	140.163	74.6%	0
22:20	0.51813	140.134	72.0%	0

03/02/09 Changed run value from 0.12 to 0.15

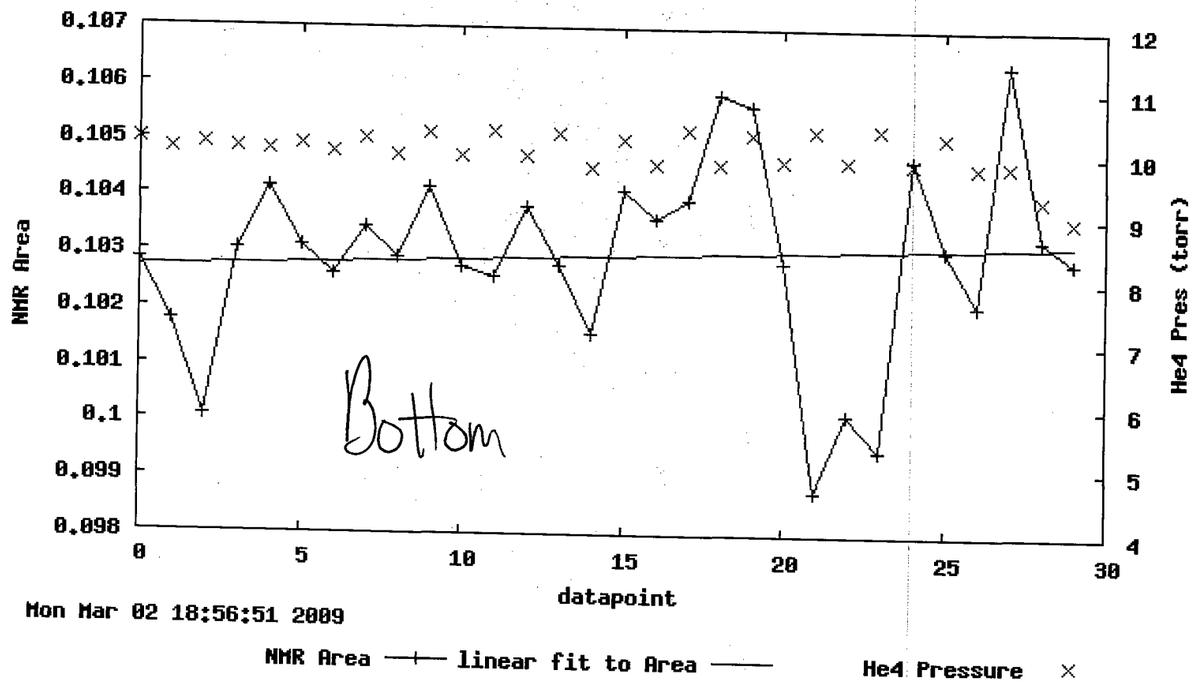


Area (arb units)	
-0.11873550	4.793
-0.11678300	4.787
-0.11803960	4.780
-0.11867740	4.774
-0.12069960	4.766
-0.11581020	4.758
-0.11562030	4.752
-0.12266930	4.746
-0.11890600	4.739
-0.12226650	4.735
-0.12148370	4.731
-0.11912850	4.731
-0.11596000	4.730
-0.12067370	4.722
-0.12200150	4.718
-0.11949550	4.718
-0.11758420	4.713
-0.12262310	4.711
-0.12093720	4.708
-0.11985680	4.705
-0.11960920	4.704
-0.12682890	4.704
-0.11708510	4.698
-0.11845850	4.699
-0.12150010	4.698
-0.11594230	4.696
-0.11881210	4.697
-0.11954980	4.697
-0.11697360	4.695
-0.11875990	4.694
-0.12124710	4.691
-0.11783770	4.687
-0.11635500	4.686
-0.12502660	4.686
-0.11711390	4.685
-0.11884870	4.684
-0.11823810	4.682
-0.11688260	4.681
-0.12401190	4.680
-0.11965180	4.683
-0.11637960	4.682
-0.11231690	4.683
-0.12015790	4.681
-0.11511630	4.679
-0.11990710	4.679
-0.12029810	4.679
-0.11990740	4.678
-0.11750950	4.675
-0.12059560	4.673
-0.11877920	4.671
-0.12262630	4.671
-0.12213760	4.673
-0.12016040	4.671
-0.11834700	4.671
-0.12151210	4.669
-0.11710730	4.669
-0.11965610	4.669
-0.11933190	4.667
-0.11895500	4.665
-0.11961900	4.663

TE CALCULATION RESULTS

Species	Proton (Spin 1/2)
Data Points	60

Target Cup	Top			
Magnetic Field	5.0033 T			
Average Area	-0.119285	+/-	0.000327	(0.274%)
Average Temp	1.561 K	+/-	0.001422	(0.091%)
TE Polarization	0.328 %			
Calibration Constant	-2.745752	+/-	0.007928	(0.289%)



Area (arb units)	
-0.10284310	10.200
-0.10175750	10.065
-0.10006750	10.145
-0.10303700	10.103
-0.10413540	10.070
-0.10310620	10.144
-0.10261480	10.027
-0.10343830	10.240
-0.10290860	9.983
-0.10413750	10.323
-0.10273270	9.959
-0.10256260	10.351
-0.10381550	9.982
-0.10276990	10.343
-0.10155840	9.805
-0.10410040	10.252
-0.10359850	9.863
-0.10395270	10.374
-0.10581880	9.854
-0.10563730	10.326
-0.10283160	9.898
-0.09878214	10.377
-0.10015980	9.918
-0.09950234	10.414
-0.10467230	9.874
-0.10306910	10.306
-0.10208380	9.826
-0.10636660	9.838
-0.10328620	9.306
-0.10287030	8.983

TE CALCULATION RESULTS

Species	Proton (Spin 1/2)			
Data Points	30			
Target Cup	Bottom			
Magnetic Field	5.0033 T			
Average Area	-0.102941	+/-	0.000316	(0.307%)
Average Temp	1.745 K	+/-	0.009971	(0.572%)
TE Polarization	0.293 %			
Calibration Constant	-2.846276	+/-	0.018460	(0.649%)

02:46 Start pumping down. Turn on RB1

03:01 RB2 + RB3 on. There is liquid in nose. Turn on μ-wave.

03:16 In process of neg-polarizing. At −13% & gaining.

Time	Pol.	Freq (GHz)	Bellows	Beam (nA)
03:40	−32.6%	140.507	0.54407	Off
03:50	−37.0%	140.514	0.54461	
04:00	−40.5%	140.500	0.54371	
04:10	−44.1%	140.502	0.54389	
04:20	−47.0%	140.508	0.54389	
04:30	−49.4%	140.512	0.54407	
04:41	−51.7%	140.515	0.54426	
04:50	−53.3%	140.520	0.54444	
05:00	−54.9%	140.522	0.54463	
05:10	−56.1%	140.550	0.54624	
05:20	−57.1%	140.524	0.54463	
05:30	−58.0%	140.504	0.54378	
05:40	−59.0%	140.4[illegible]	0.54337	
05:50	−60.3%	140.490	0.54301	
06:00	−60.8%	140.496	0.54337	
06:10	−61.0%	140.539	0.54554	
06:20	−61.4%	140.519	0.54445	
06:30	−61.7%	140.515	0.54416	
06:40	−61.9%	140.503	0.54392	← switched to Parla signal
06:50	−68.7%	140.527	0.54448	
07:00	−69.3%	140.531	0.54483	
07:10	−70.0%	140.527	0.54482	
07:20	−70.3%	140.515	0.54428	
07:30	−71.3%	140.481	0.54230	
07:40	−73.8%	140.476	0.54211	
07:50	−76.1%	140.470	0.54157	
08:25	−81.2%	140.468	0.54158	
08:47	−82.6%	140.472	0.54159	
09:05	−83.0%	140.471	0.54159	← Polariz. slowly decaying no matter what we do!
10:10	−82.0%	140.476	0.54179	
11:02	−82.3%	140.472	0.54160	
11:46	−83.4%	140.473	0.54160	
13:02	−74.0%	140.483	0.54234	100 nA beam
13:13	−73.6%	140.522	0.54433	↓

13:28	-74.4%	140.552	0.54650	90 mA
13:40	-74.0%	140.52	0.54434	90 mA ← slope improved
13:42	-74.0%	140.532	0.54489	80 mA over 140.5
13:49	-74.1%	140.545	0.54579	90 mA
13:57	-73.8%	140.552	0.54614	90 mA
14:15	-73.5%	140.541	0.54578	90 mA
14:21	-73.7%	140.541	0.54578	90 mA
14:34	-74.5%	140.541	0.54578	40-80 mA

17:00 Anneal, Doing ASK @ 25 mins

Run value to 0.2 @ 80K, Separator to 80 on flow

18:00 Anneal finished, Nose full

20:30 Magnet Ramped

22:30 finished

00:00 Re-determining target positions. Add 0.020 to target encoder values.

Time	Polarization	Freq (GHz)	Bellows	I_{beam} (nA)
00:22	−32.3 %	140.475	0.54194	0
00:30	−50.4 %	140.471	0.54194	
00:40	−66.8 %	140.470	0.54171	
00:50	−74.4 %	140.454	0.54080	70
01:00	−74.3 %	140.471	0.54171	90
01:10	−75.2 %	140.514	0.54405	90
01:20	−75.0 %	140.540	0.54550	90
01:30	−74.7 %	140.551	0.54639	90

01:38 It's being somewhat difficult keeping liquid in the nose. It seems like the liquid ^{4}He is boiling off too fast. Turned Run valve → 0.60

01:40	−74.7 %	140.573	0.54747	90
01:50	−74.2	140.579	0.54801	90
02:00	−73.4	140.565	0.54730	90
02:10	−72.8	140.591	0.54838	90
02:20	−72.3	140.583	0.54820	90
02:30	−70.9	140.544	0.54568	90
02:40	−68.6	140.523	0.54473	90
02:50	−68.5	140.535	0.54533	90
03:00	−68.1	140.534	0.54533	90
03:10	−68.0	140.542	0.54569	90
03:20	−68.8	140.551	0.54622	90
03:30	−70.1	140.570	0.54749	90
03:40	−71.0	140.597	0.54877	90
03:50	−70.9	140.595	0.54878	90
04:00	−71.9	140.604	0.54914	90
04:10	−72.4	140.612	0.54950	0
04:20	−72.2	140.558	0.54698	0
04:30	−71.4	140.595	0.54877	90
04:40	−70.5	140.592	0.54881	90
04:50	−70.4	140.598	0.54896	90
05:00	−69.8	140.592	0.54878	90
05:10	−70.0	140.594	0.54878	90
05:20	−69.4	140.587	0.54859	90
05:30	−69.0	140.591	0.54878	90
05:40	−71.4	140.580	0.54822	0
05:50	−72.7	140.561	0.54732	0
06:00	−69.9	140.604	0.54914	90

	Time	Polarization	Freq (GHz)	Bellows	I_{beam} (nA)
	06:20	-68.9	140.592	0.54879	90
	06:30	-69.0	140.585	0.54841	90
	06:41	-69.4	140.592	0.54878	90
	06:51	-67.1	140.524	0.54481	90
	07:00	-66.0	140.571	0.54751	90
	07:10	-67.7	140.579	0.54786	90
	07:20	-67.4	140.593	0.54860	90
	07:29	-66.9	140.592	0.54879	90
	07:40	-66.8	140.588	0.54842	90
	07:50	-69.8	140.597	0.54879	no beam
	08:17	-68.8	140.597	0.54879	50-90 intermittent
	08:35	-65.6	140.554	0.54642	90 nA
	08:52	-65.2	140.555	0.54642	90 nA → 105 nA
	08:55	-65.4	140.576	0.54768	105 nA
	Ca. 9:30 MCC advised beam would be off for ~15+ min. We switched from bottom to Top target.				
Target TOP	09:49	-37.2%	140.497	0.54192	0 no beam
	10:49	-70.8%	140.469	0.54086	0 - no beam
	11:04	-78.2%	140.469	0.54086	(couldn't find better freq.)
	11:13	-80.4%	140.470	0.54086	0 - no beam
	11:30	-82.9%	140.470	0.54086	still no beam
	11:47	-84.2%	140.483	0.54122	0 nA
	11:56	-84.4%	140.484	0.54122	" "
	12:37	-86.8%	140.459	0.54049	no beam
	13:30	-87.1%	140.471	0.54069	no beam
	14:40	-86.2%	140.470	0.54088	" "
	15:20	-87.1%	140.468	0.54073	(no beam - raster dead)
	15:24	-87.6%	140.474	0.54088	no beam
	15:52	-87.7%	140.487	0.54142	" "
	17:05	-77.2%	140.479	0.54142	90 nA
	17:45	-74.9%	140.520	0.54326	no beam
	16:15	-74.1%	140.532	0.54415	no beam.

MATCL 4th Anneal

19:32 RB3 off run valve closed separator @ 72 s/m
RB2 off RB7 off

19:37 Anneal heater on... emptying nose

19:37 Nose is empty Temps T P <49 B P <49
TC 40 Heater off TC 41

19:57 Temps T, P 72.3 (Heater on) B,P 72 T P 66.6 B P 66 (setpoint was 70)
TC 65 TC 80 TC 57 TC 67

20:06 @ 95° Temps B:P 95.8 T:P 104 Timer Started
TC 85 TC 112 Run valve 0.2
Bypass 0.1

20:37 Finish anneal. Begin cooling + filling frig.

Set Bypass valve → 0.5, Run valve → 1.00. Close sep. valve → 0.15 + back to PID.

21:02 Open Sep to 1 turn, Temps drop (sep must have been MT)

21:08 Nose Full, Run closed to turn on Pumps, Run opened to 0.6

Time	Rel.	Freq (GHz)	Bellows	Beam (nA)
21:23	-9.7%	140.443	53983	0
21:26	-20.5%	140.414	53802	0
21:29	-32.2%	140.407	53747	0
21:34	-46.3%	140.396	53674	0
21:40	-57.9%	140.419	53801	0
21:50	-67.9%	140.417	53801	0
22:00	-71.1%	140.415	53801	70nA
22:30	-70.1%	140.455	54037	90nA
22:45	-72.7%	140.470	54182	90nA
23:00	-73.9%	140.527	54507	90nA
23:20	-73.8%	140.557	54669	90nA
23:45	-71.6%	140.520	54459	90nA
24:00	-70.4%	140.509	54345	90nA
00:12	-71.3%	140.535	54489	77nA
00:25	-70.4%	140.559	54670	88nA
00:35	-70.4%	140.532	54545	88nA
00:45	-70.2	140.535	54545	88nA
00:55	[illegible]	[illegible]	[illegible]	[illegible]

Bottom ≈ 6.759

	TIME	POL	FREQ (GHz)	BELLOWS	BEAM (nA
	01:05	-70.00%	140.540	54544	93 nA
	01:15	-71.00%	140.540	54544	88 nA
	LOST POLARIZATION — HELIUM BOILED OFF				
	02:45	-71.5	140.450	54092	89
Beam on	02:46	-71.6	140.534	54490	89
	03:00	-70.1	140.532	54526	87
	03:15	-70.2	140.525	54454	89
	03:30	-69.0	140.538	54526	91
	03:45	-68.7	140.526	54472	91
	04:00	-70.0	140.526	54472	89
	LOST POLARIZATION — He BOILED OFF				
	04:40	-66.6	140.522	54473	90
	05:00	-65.2	140.539	54544	89
	05:20	-65.1	140.525	54508	91
	05:30	-64.2	140.542	54562	91

6:00 MICROWAVES OFF, MAGNET RAMP DOWN

Magnet rotated to longitudinal

Pump line flushed.

14:15 Start separator pumping. Open 2 turns.
Run bypass closed. R_3, R_4 ~ 300Ω η_s ~110

15:20

R_1	R_2	R_3	R_4	η_s
	7.4k	930Ω	775Ω	94

15:30 Run valve opened two turns
Bypass stuck actually opened all the way. try to reseat

15:40 Bypass open 1 turn

					η_m	VP	
	10.7k	860	770	85	10.9	4.63	
16:00	9.4K	1150	1080	80.1	12.0	5.39	
16:15	8.6K	1360	1300	75.7	12.8	5.76	
16:30	8.0K	~1640	~1570	73.8	13.9	6.36	
16:45	7.7K	~2500	~2400	70.3	16.9	8.14	
16:55	7.5K	~3100	~2800	62.7	23.8	11.3	All other Nerentors now reading

Close by-pass to 0.5.

17:00	5.0K	~4500	~4100	49.3	29.7	13.8

Close by-pass (0.0)

17:05	3.8K	~6200	~5950	30.9	24.1	11.3

Run valve to 1.0
to 0.3 Probably overfilled
Set run valve at 0.1. Flow = 23.6
Sep is at 2.0 Flow = 23.8

17:10	3.85K	~6200	~5950	30.8	23.5	11.1

Start preparing Insert.

17:35 Insert in

18:25 Both chip resistors ~1430

18:33 opened run valve to 0.5 when top dropped to ~1200.

18:40 changed run valve to 0.3 when chips ~ 1520.

19:40 chips still ~ 1510/1540.

OWL SHIFT 3/6/2009

1:15	chips ~	1457	1480	run value still	0.3
2:30	chips ~	1458	1482	run value still	0.3
3:30	chips ~	1457	1480	run value still	0.3
4:30	chips ~	1460	1483	run value	0.0
5:30	chips ~	1493	1516	run value	0.0 (Main Flow : 29.6)
6:30	chips ~	1531	1556	run value	0.2 (main flow : 16.3)
7:30	chips ~	1560	1584	run value	0.2 (main flow : 10.9)

DAY SHIFT 03/06/2009

8:30	chips ~	1564	1588	run valve	0.2 (main flow 10.0)
9:30	chips ~	1572	1595	run valve	0.2 (main flow 9.2)
10:30	chips ~	1574	1598	run valve	0.2 (main flow 9.0)
11:30	chips ~	1575	1599	run valve	0.2 (main flow 8.5)
12:30	chips ~	1538	1561	run valve	0.3 (main flow (15.9)
13:30	chips ~	1534	1558	run valve	0.3 (main flow 15.8)
14:30	chips ~	1552	1576	run valve	0.3 (main flow 15.5)
15:30	chips	1582	1605	run valve	0.25 (main flow 12.0)

16:23 Magnet is ramped to -77.145 A & the NMR signal is @ 213.00 MHz
TE on bottom finished
16:31 Moved to top target for TE
The 06 Mar 2009 15h27m08s baseline was used & found to produce a good signal.
Have to Redo ~~bottom~~ TE.
16:57 — Top TE complete
16:58 — Bottom target TE started.
The signal seems horribly sensitive to gain.

17:33 on bottom target 1.774

Pumps on

Polarizing ...

Time	f	Pol
17:38	6.57%	140.090

Whoops back to crosshairs for positioning 0.244

Bottom:

Collection started 17:11

Polarizing (Target)

Time	f	Pol

Area (arb units)	Temperature (K)
-0.06730011	5.198
-0.06765890	5.179
-0.06693473	5.204
-0.06744051	5.188
-0.06688318	5.209
-0.06701082	5.194
-0.06753059	5.207
-0.06743109	5.204
-0.06769383	5.212
-0.06759293	5.214
-0.06695421	5.219
-0.06709052	5.219

TE CALCULATION RESULTS

Species	Proton (Spin 1/2)			
Data Points	12			
Target Cup	Bottom			
Magnetic Field	5.0033 T			
Average Area	-0.067293	+/-	0.000088	(0.130%)
Average Temp	1.583 K	+/-	0.001081	(0.068%)
TE Polarization	0.323 %			
Calibration Constant	-4.797562	+/-	0.007053	(0.147%)

used baseline 06Mar2009 15h18m25s

TOP:

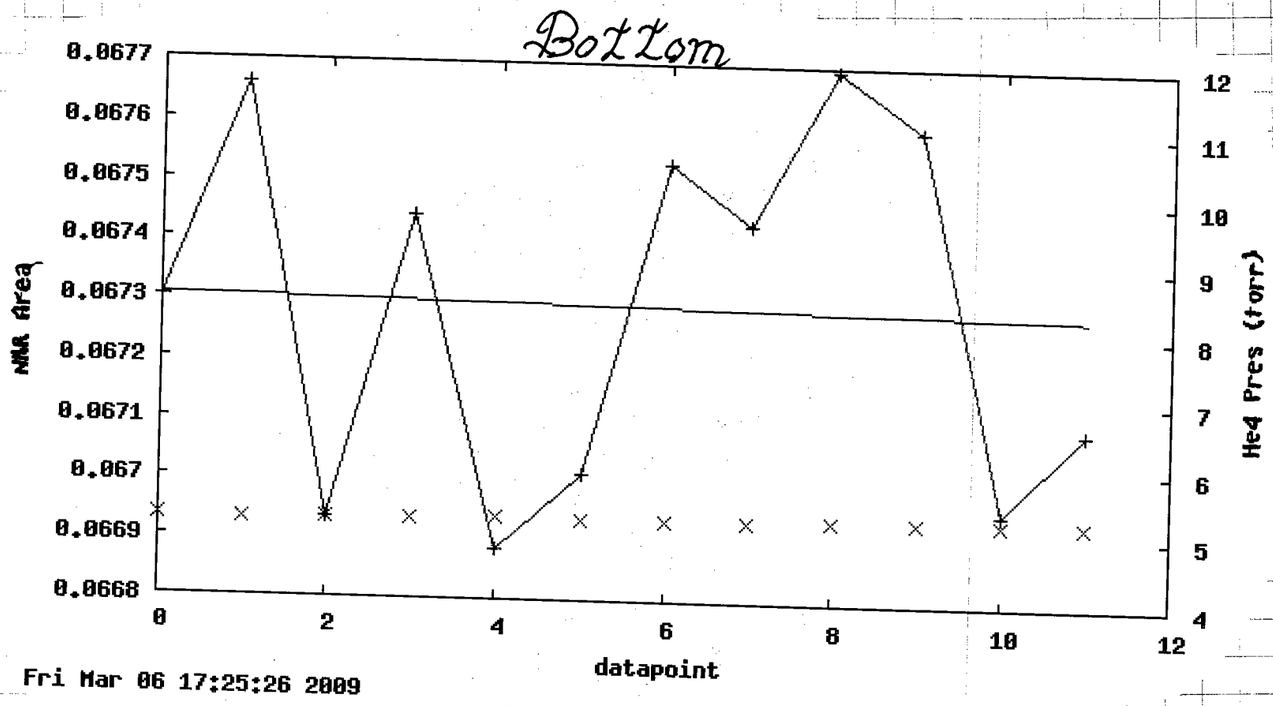
Data Collection started 3-6-2009 16:38

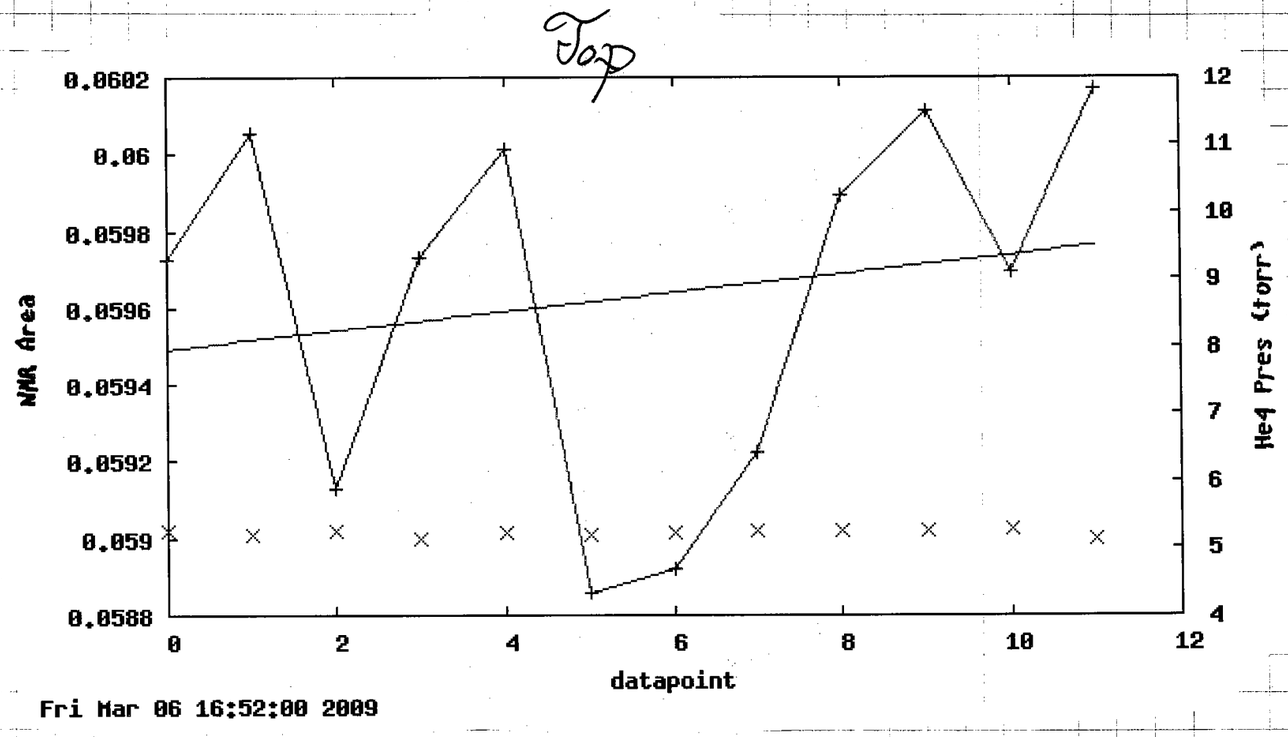
Area (arb units)	Temperature (K)
-0.05972577	5.243
-0.06005627	5.189
-0.05912830	5.249
-0.05972745	5.139
-0.06001075	5.219
-0.05885709	5.191
-0.05892231	5.236
-0.05922268	5.246
-0.05989014	5.268
-0.06011284	5.262
-0.05969217	5.269
-0.06017113	5.140

TE CALCULATION RESULTS

Species	Proton (Spin 1/2)			
Data Points	12			
Target Cup	Top			
Magnetic Field	5.0033 T			
Average Area	-0.059626	+/-	0.000136	(0.229%)
Average Temp	1.584 K	+/-	0.004050	(0.256%)
TE Polarization	0.323 %			
Calibration Constant	-5.411936	+/-	0.018572	(0.343%)

used baseline 06mar200915h27m08s


Bottom
NMR Area
He4 Pres (torr)
datapoint
Fri Mar 06 17:25:26 2009


Top
NMR Area
He4 Pres (torr)
datapoint
Fri Mar 06 16:52:00 2009

19.45 target changed to the Top NH_3.
Encoder = 3.462.

NH_3 Top

Time	Pol. %	Bellows	Frequency (GHz)	Current (nA)
19.55	22.7	0.5195	140.110	0
20.00	33.0	0.5213	140.163	0
20.05	53.2	0.5218	140.177	0
20.15	65.2	0.5211	140.152	0
20.20	69.6	0.5217	140.170	0
20.28	72.4	0.5217	140.163	93
20.32	73.3	0.5204	140.137	90
20.45	75.1	0.5209	140.158	0
20.50	76.3	0.5210	140.150	0

21.10 Target IOC rebooted.

21.10	76.0	0.5215	140.159	91

21.20 RB2 and RB2 turned off.
4He pressure went upto 3.00. and polarization suddenly decreased up to 48 %.

closed the runvalve.

21.30 turned off the microwave and. pumps are turned on manually. (still remaining to turn on the pump RB1.)

22.00 turned on the microwave and started to polarize the target again.

22.01	53.1	0.5207	140.159	0
22.05	58.9	0.5204	140.152	0
22.10	66.8	0.5207	140.157	0
22.13	71.5	0.5213	140.166	0
22.25	74.1	0.5211	140.162	0
22.30	75.0	0.5213	140.159	0
22.45	74.1	0.5213	140.160	88
23.00	73.7	0.5206	140.145	88

RUNNING ON TOP . CALIB = -5.411926 POL = +67.5

TIME	POL	BELLOWS	GHZ	BEAM CURRENT (μA)		PRESSURE	TEMP
0:18	+67.3	520	140.158	92		0.296	1.10
0:40	+66.1	520	140.151	0/90		0.279	1.10
1:00	+65.0	519	140.131	90		.280	1.11
1:20	+64.2	519	140.14	87		.298	1.11
1:40	+63.8	520	140.14	0/85		.294	1.11
2:30	+61.5	520	140.145	89	CHIP	.290	1.10
2:50	+60.9	519	140.127	89	1495	.288	1.10
3:00	+65 !	519	140.127	89	1486	.285	1.10
3:30	+71.0!	519	140.127	89	1485	.285	1.10
4:30	+68.8	519	140.129	86	1510	.288	1.10
4:55	+67.6	"	"	"		.298	1.10
5:20	+67.1	"	"	"	1533	.294	1.10
5:40	+66.4	"	"	"	1533	.295	1.10
6:20	+67.6	"	"	0	1542	.286	1.10
6:50	+71.6	"	"	90	1595	.289	1.10

AT 3:00 AM I TWEAKED THE μWAVE FREQUENCY SLIGHLY, AND SAW A SUDDEN DRAMATIC RISE IN POL.! WENT FROM +61 TO +71 IN ABOUT 15 MINUTES. ONLY REASON I CAN THINK OF IS THAT I HIT A "HOLE" IN THE OUTPUT POWER, WHICH IS 5.268 W AT 140.127 Hz, WHILE NORMALLY IT IS HIGHER. FROM PREVIOUS SCREEN SNAPSHOTS, I SEE

f	POWER
140.143	5.917 W
140.167	7.136 W
140.167	6.974 W

SO, THIS SEEMS BOGUS.

MAYBE μWAVE GUIDES NOT CONNECTED WELL, AND

06:20 NOTICED A BIT OF BEAM SCRAPING ON RASTER HISTO
TRIED MOVING TARGET
3.462 → 3.508
START RUN ~~[illegible]~~ 72923
STILL LOOKS BAD

HOT SPOT →

0635 TRIED MOVING TARGET TO 3.418. START 72925

NOW RASTER LOOKS GOOD! NO HOT SPOTS

USE 3.418 FOR TOP

NOTE COLDER CHIP TEMP WITH THIS SETTING!

~~[illegible]~~ WITH CURRENT BEAM SPECS.

TIME	P	Bellows	f	CHIP (TOP)	P	T	Current
7:05	+71.1	519	140.129	1602	.298	1.10	
7:45	+69.9	519	140.129	1604	.283	1.10	

March 7. day shift. Anusha.

8.15	+69.3	519	140.129	1583	.280	1.10	
8.50	+67.8	519	140.129	1562	.289	1.10	88

9.30 we are having the controll access and the polarization is increasing from 67% as usuall.

10.10	71.9	519	140.129	1574	.272	1.09	0
10.35	71.9	519	140.129	1581	.273	1.09	0

12.10 beam is back.

12.15	67.2	519	140.129	1554	.303	1.11	100
12.20	67.5	519	140.130	1550	.293	1.10	100
12.40	67.5	519	140.081	1508	.294	1.11	98

12.50 Target moved to NH_3 bottom. Encoder = 1.732

~~13:00~~

Time	Pol %	Bellows	freq/GHz	Chip (Top)	p	T	Curr/nA
13·00	56·2	0·5207	140·149	1371	0·306	1·11	0
13·10	67·3	0·5189	140·133	1403	0·301	1·11	0
13·20	73·5	0·5207	140·157	1400	0·328	1·12	90
13·40	77·0	0·5212	140·163	1423	0·322	1·12	90
13·45	76·8	0·5211	140·152	1432	0·320	1·11	91
13·55	77·5	0·5211	140·152	1428	0·316	1·11	91
14·05	76·2	0·5205	140·145	1416	0·315	1·11	88
14·20	78·4	0·5205	140·144	1406	0·292	1·10	0
14·30	79·7	0·5205	140·145	1408	0·292	1·10	0
14·40	79·4	0·5189	140·126	1369	0·307	1·11	90
14·50	79·7	0·5189	140·111	1365	0·300	1·11	91
13·00	80·0	0·5169	140·103	1390	0·297	1·11	91
13·10	78·0	0·5198	140·144	1355	0·298	1·11	91
13·25	79·4	0·5198	140·144	1348	0·277	1·10	0
13·30	76·8	0·5198	140·138	1354	0·298	1·10	90
13·55	75·6	0·5192	140·131	1393	0·290	1·10	90

NH_3 Bottom Swing Shift 03/07/2009 16:00 BOTTOM NH_3

16:00	+ 73.7	0.51923	140,137	1383	0.274	1.10	90
16:30	+ 76.9	0.51923	140.137	1398	0.272	1.09	0 nA
17:00	+ 76.8	0.51923	140.135	1403	0.271	1.09	0 nA
17:30	+ 76.8	0.51923	140.135	1402	0.271	1.09	0 nA
18:00	+ 77.1	0.51922	140.135	1401	0.271	1.09	0
18:30	+ 75.0	0.51886	140.126	1382	0.288	1.10	88 nA
19:00	+ 73.7	0.51814	140.119	1345	0.300	1.11	90
19:30	+ 74.2	0.51812	140.122	1351	0.283	1.10	0
20:00	+ 68.5	0.51686	140.105	1404	0.272	1.09	88
20:30	+ 68.9	0.51610	140.099	1381	0.277	1.10	89
21.00	+ 69.4	0.51505	140.081	1355	0.275	1.10	88
21:30	+ 68.6	0.51504	140.085	1364	0.280	1.10	92
22:00	+ 67.2	0.51612	140.102	1377	0.283	1.10	90
22:30	+ 66.8	0.51828	140.130	1441	0.283	1.10	90
23:00	+ 68.1	0.51556	140,091	1412	0.282	1.10	92
23:30	+ 67.7	0.51591	140.100	1410	0.279	1.10	88
24:00	+ 64.6	0.51503	140,080	1442	0.282	1.10	88
0:15	+ 67.5	0.514	140.081	1431	0.283	1.10	0
0:30	+ 66.0	0.514	140.081	1393	0.282	1.10	88
0:50	+ 66.4	0.514	140.081	1378	0.281	1.08	90

01:10 INCREASED RUN VALVE 0.3 → 0.4 AS PRESSURE < 0.25

01:20 MOVED TO CARBON (WITH He)
TURNED OFF μWAVES

TIME	RUN	PRESSURE	TEMP
1:30	0.30	0.217	1.07
2:00	0.30	0.18	1.05

OOPS - POP FROZEN!
↳ SAME AS 3:00 DUE TO SHIFT TO DAYLIGHT SAVINGS TIME

03:30 MOVED TO EMPTY TARGET (WITH He)

03:50 MOVED TO CARBON. CLOSED RUN VALVE TO BOIL OFF He

04:10 REBOOTED IOC. LOOKS LIKE He LEVEL WILL DROP BELOW BEAM ANY MINUTE NOW, SO STOP RUN 72939.

04:20 He IS NOW BELOW BEAM LINE (BASED ON CHIP RESISTORS), BOTH < 1200). ALSO, LEVEL PROBE < 70%.

BEAM WILL BE OFF 1-3 HOURS, SO DECIDE TO ANNEAL NOW AND DO C (NO He) LATER.
OOPS, BEAM, SO START 72940 FOR C NO He

04:30 STILL C TARGET. CHIPS = (1092, 1094)
LEVEL PROBE = 67.6 P = 0.103 T = 0.99). SO, He COLD BUT BELOW BEAM LINE

5:02 All RBs off now, Stop → 80

5:05 Move to Top Target

5:15 Run → 0.2

5:20 Run → 0.1, Start 20min Timer

5:24 Bypass → 0.1, Bypass → 0

→ 0.5 actually

5:50 Cold, but Bypass not working properly

When I set to 0.5, it opened 0.5, but read back 0
when I set to 0.75, it opened another 0.75, and read back 0

Access to close by hand.

6:05 RBs On

6:10 Pick up Magnet Current, Went with out a hitch

TOP TARGET USING -5.4111

TIME	POL	BELLOWS	ϕ	CHIP (TOP)	P	T	I
0620	-25	.538	140.415	1604	.134	1.01	ϕ
0625	-45	.541	140.46	1420	.172	1.04	ϕ
0630	-61	.542	140.50	1340	.193	1.04	ϕ
0637	-73	.541	140.465	1437	.195	1.05	90
0645	-76.8	.542	140.495	1372	.170	1.05	90
0700	-84.4	.541	140.483	1386	.166	1.04	90

0705 LOST POL. AS NOSE LEVEL DROPPED BELOW TARG
TRIED OPENING RUN VALVE BUT LEVEL WONT GO UP)
0718 JAMES ADVISED TO PUT SEPARATOR BACK TO PID ON 30

(IT WAS IN MANUAL ON 0.15 TURNS)

0730 WITH RUN VALVE AT 0.6, FINALLY ABLE TO POL. AGAIN

0750	-53	.541	140.497	1442	.237	1.08	ϕ
0800	-69	.546	140.473	1441	.272	1.09	90
0810	-73.4	0.542	140.517	1[illegible]	0.263	1.09	90
0822	-74.1	0.544	140.525	1392	0.289	1.10	0

POLARIZING TOP TARGET (3.429)

TIME	POLARIZATION (%)	BELLOWS POS.	BELLOWS PRES (GHz)	CHIP TEMP (TOP) (Ω)	PRESSURE (TOR)	TEMP (K)	CURRENT (nA)
08.30am	-75.4	0.544	140.531	1386	0.300	1.11	0
08:33 →		EV91127.PID decreased to 25.00 from 30.00					
08:35	-76.0	0.544	140.524	1388	0.302	1.11	0
08:40	-76.3	0.543	140.520	1387	0.280	1.10	0
08:43	-76.0	0.543	140.520	1389	0.353	1.13	90
08:46	-75.3	0.543	140.520	1394	0.291	1.10	90
08:48	-74.6	0.543	140.520	1396	0.295	1.10	90
09:02am	-71.6	0.543	140.513	1411	0.297	1.10	90
09:09	-72.1	0.543	140.512	1410	0.291	1.10	90
09:15	-71.3	0.54357	140.512	1412	0.290	1.10	90
	-70.4	54267	140.498	1411	0.310	1.1	92
09:20	-70.1	54303	140.503	1411	0.313	"	92
09:23	-71.2	0.54393	140.520	1403	0.321	"	91
09:28	-71.7	0.54375	140.515	1407	0.292	1.10	0
09:30	-72.0	0.54339	140.511	1411	0.290	1.10	0
09:38	-72.4	0.54357	140.513	1408	0.297	1.10	0
09:45	-72.9	0.54357	140.513	1410	0.299	1.10	0
09:54	-74.2	0.54429	140.524	1409	0.305	1.11	0
10:00am	-74.5	0.54501	140.533	1409	0.300	1.11	0
10:03	-74.8	0.54502	140.532	1410	0.302	1.11	0
10:07	-74.1	0.54627	140.550	1402	0.328	1.11	90
10:08 →		EV91120.PID closed to 0.38 from 0.40					
10:09	-73.3	0.54469	140.527	1421	0.304	1.11	90
10:14	-72.5	0.54470	140.527	1422	0.324	1.11	90
10:15 →		EV91120.PID closed to 0.36 from 0.38					
10:18	-71.6	0.54520	140.533	1414	0.318	1.11	90
10:20	-71.3	0.54520	140.533	1414	0.317	1.11	90
10:23	-71.2	0.54520	140.533	1414	0.319	1.11	90
10:27	-70.6	0.54591	140.544	1404	0.321	1.11	90
10:30	-70.5	0.54591	140.544	1403	0.321	1.11	90
10:32	-70.4	0.54591	140.544	1403	0.320	1.11	90
10:35	-70.3	0.54590	140.544	1404	0.327	1.11	90
10:39 →		EV91120.PID closed to 0.39 from 0.36					
10:40	-69.7	0.54590	140.544	1404	0.328	1.11	90

TIME	POLARIZATION (%)	BELLOWS POS.	BELLOWS FREQ (G.HZ)	CHIP TEMP (TOP) (Ω)	PRESSURE (TOR)	TEMP (K)	CURRENT (nA)
10:44 am	-69.5	0.54662	140.553	1401	0.315	1.11	92
10:53	-68.7	0.54626	140.547	1405	0.313	1.11	90
11:02	-68.2	0.54679	140.555	1400	0.313	1.11	91
11:07	-64.2	0.54229	140.492	1464	0.317	1.11	91
11:09	-62.9	0.54989	140.601	1374	0.310	1.11	87
11:11	-63.5	0.54987	140.602	1374	0.311	1.11	91
11:14	-64.3	0.55041	140.616	1373	0.310	1.11	92
11:17	-64.7	0.55041	140.605	1373	0.310	1.11	90
11:22	-64.6	0.54987	140.606	1374	0.312	1.11	91
11:27	-64.8	0.54986	140.600	1375	0.298	1.11	81
11:30	-64.9	0.54986	140.600	1375	0.310	1.11	88
11:33	-64.4	0.55040	140.610	1376	0.309	1.11	88
11:38	-64.3	0.54951	140.595	1376	0.290	1.10	0
11:43	-65.5	0.54951	140.595	1376	0.299	1.11	87
11:53	-64.6	0.54914	140.589	1380	0.303	1.11	87
11:58	-64.1	0.54914	140.589	1384	0.315	1.11	90
12:05	-63.3	0.55076	140.615	1384	0.295	1.11	90
12:10	-61.9	0.55094	140.618	1382	0.315	1.11	90
12:16	-62.2	0.54950	140.596	1388	0.316	1.11	89
12:22	-62.0	0.54950	140.596	1390	0.317	1.11	87
12:28	-61.5	0.55112	140.603	1382	0.298	1.11	89
12:32	-60.0	0.54985	140.616	1385	0.316	1.11	92
12:34	-60.1	0.54932	140.599	1393	0.316	1.11	90
12:36	-60.3	0.54859	140.583	1394	0.317	1.11	89
12:40	-61.3	0.54786	140.592	1399	0.317	1.11	91
12:45	-61.4	0.54786	140.592	1399	0.317	1.11	90
12:50	-61.6	0.54678	140.558	1411	0.314	1.11	94
12:55	-61.9	0.54677	140.559	1411	0.316	1.11	90
01:00 pm	-62.0	0.54677	140.559	1411	0.317	1.11	90
01:05	-61.7	0.54605	140.547	1423	0.317	1.11	91
01:10	-61.7	0.54587	140.552	1419	0.317	1.11	90
01:15	-61.2	0.54623	140.541	1418	0.316	1.11	89
01:20	-61.7	0.54623	140.541	1416	0.314	1.11	90
01:25	-61.2	0.54623	140.541	1417	0.315	1.11	90
01:30	-60.9	0.54623	140.556	1417	0.315	1.11	89
01:35	-60.1	0.54641	140.545	1418	0.313	1.11	91
01:40	-60.7	0.54641	140.558	1417	0.317	1.11	105
01:45	-59.6	0.54732	140.593	1400	0.313	1.11	102
01:50	-59.9	0.54757	140.571	1413	0.316	1.11	107

TIME	POLARIZATION (%)	BELLOWS POS.	BELLOWS FREQ (G.Hz)	CHIP TEMP (TOP) (Ω)	PRESSURE (TORR)	TEMP. (K)	CURRENT (mA)
02:20 pm	-15.4	0.54055	140.460	1285	0.262	1.11	0
2:23 pm	-22.4	0.54054	140.457	1299	0.391	1.14	0
2:25 pm	-25.9	0.54088	140.465	1286	0.381	1.14	0
2:28	-29.8	0.54088	140.465	1284	0.369	1.12	0
2:34	-35.1	0.53744	140.406	1341	0.330	1.12	0
2:37	-36.4	0.53780	140.412	1331	0.342	1.12	0
2:41	-39.9	0.53943	140.445	1297	0.350	1.13	0
2:43	-41.2	0.54034	140.457	1288	0.352	1.13	0
2:45	-42.6	0.54107	140.468	1284	0.353	1.13	0
2:50	-44.2	0.54107	140.468	1284	0.354	1.13	0
2:53	-45.5	0.54016	140.453	1292	0.353	1.13	0
2:55	-46.8	0.54016	140.453	1292	0.357	1.13	0
3:00	-48.6	0.54016	140.453	1293	0.347	1.13	0
3:05	-50.1	0.54016	140.453	1292	0.346	1.12	0
3:10	-51.2	0.54088	140.463	1284	0.352	1.13	0
3:13	-51.6	0.54058	140.459	1287	0.371	1.13	109
3:17 →			EV91120 PID increased to 0.46 from 0.40				
3:18	-51.6	0.54107	140.468	1280	0.417	1.15	108
3:21	-51.4	0.54192	140.481	1278	0.417	1.15	106
3:25	-51.2	0.53998	140.458	1292	0.421	1.15	107
3:29	-51.1	0.54088	140.464	1285	0.385	1.14	103
3:29 →			EV91120 PID decreased to 0.35 from 0.46				
3:37	-50.8	0.54070	140.450	1306	0.326	1.12	104
3:37 →			EV91120 PID decreased to 0.28 from 0.35				
3:42	-51.2	0.54144	140.476	1284	0.326	1.12	105
3:45	-52.0	0.54160	140.475	1285	0.310	1.11	101
3:46 →			EV91120 PID decreased to 0.25 from 0.28				
3:50	-52.3	0.54142	140.473	1294	0.315	1.11	107
4:19	-58.0	0.54537	140.536	1290	0.326	1.07	0
			EV91120 PID ~~decreased~~ increased to 0.25				

TIME	POLARIZATION (%)	BELLOWS POS.	BELLOWS FREQ. (GHz)	CHIP TEMP (TOP) (Ω)	PRESSURE (TORR)	TEMP (K)	CURRENT (mA)
4.31	-58.7	0.54572	140.541	1290	0.301	1.11	0
4.33	-59.0	0.54573	140.541	1289	0.317	1.11	107
4.50	-57.1	0.549	140.549				
5.05	-56.8	0.548	140.545				
5.10	-55.2	0.5466	140.554	1318	0.260	1.09	99
5.20	-57.4	0.5457	140.545	1319	0.295	1.10	98.
6.00	-58.4	0.5468	140.566	1340	0.284	1.10	100
6.10	-57.7	0.5471	140.570	1331	0.289	1.10	99.
7.10	-57.4	0.5476	140.580	1319	0.244	1.08	100
7.30	-56.1	0.5473	140.570	1318	0.219	1.07	98
7.45	-56.5	0.5473	140.568	1325	0.208	1.06	100
8.00	-56.2	0.5466	140.558	1324	0.210	1.06	99
8.30	-56.8	0.5468	140.564	1329	0.201	1.06	99
8.40	-58.2		140.564				

22:25 Anneal Start, RBS off, separator to 80, Run, bypass closed

Going to 100K for 22 mins

22:29 Moved to bottom

22:33 Temps: T.P. = 62.7 K Open Run to 0.2
B.P. = 65 K

22:35 Started 22 minute timer T.P. = 102 K
B.P. = 114 K

23:00 Timer stopped, Anneal Done, Run to 2.0, Access for bypass

0:25 Microwves on, polarizing $\boxed{\text{BOTTOM}}$

Time	Pol.	Freq (GHz)	Bellows	P	Beam	CHIP
0:27	+13°	140.124	51683		8	
0:29	+23°	140.132	51754		8	
0:50	+57.1	140.18	52215	.271	6	1329
1:02	+61	140.198	52244	290	85	1328
1:15	62.6	140.176	52169	290	85	1315

TIME	POL	BELLOWS	f	run V	sep flow	CHIPS		Pressure	Temp	I
0130	+61.3	5213	140.176	0.8	30	1345	1455	.304	1.11	85nA
0145	60.9	52[illegible]	140.189	0.8	30	1349	1463	.325	1.12	85
200	59.5	51890	140.138	0.5	25	1394	1478	.329	1.12	85
216	61.2	51770	140.124	0.35	25	1370	1438	.298	1.11	85
235	62.2	51608	140.120	0.35	25	1381	1486	.279	1.10	85
235	BEAM WENT OFF FOR AT LEAST 20 MIN. POL. NOW INCREASING NICELY!									
255	66.5	51771	140.135	0.35	25	1346	1387	.301	1.11	Ø
315	67.7	51752	140.130	0.35	25	1346	1392	.290	1.10	Ø

~~BEAM~~ AMCC CALLED TO SAY NO BEAM FOR 3 HOURS. SO LETS SEE WHAT THE TOP WILL DO. SWITCH TO TOP TARGET

325	+62.7	51799	140.127	.35	25	1329	1568	.284	1.10	Ø
345	+92.7%	51799	140.127	.35	25	1317	1544	.285	1.10	Ø
	← WOW!									
405	97.9	51799	140.127	.35	25	1315	1543	.288	1.10	Ø
455	101.1%	51798	140.126	.35	25	1321	1542	.299	1.11	Ø
	I guess TB isn't quite right!									
525	102.8	52070	140.170	.35	25	1406	1538	.310	1.11	Ø
625	102.3	52069	140.170	.35	25	1418	1542	.336	1.12	Ø

03/09/2009 DAY TARGET: TOP (3.422)

TIME	POL.	BELLOWS. POS.	BELLOWS. FBO	RUN.V	SEP.V	@ CHIPS		PRESSURE	TEMP	I
8:05 am	+99.2	0.52104	140.184	0.35	25	1482	1577	0.341	1.12	68
8:21	+88.2	0.52268	140.206	0.35	25	1515	1608	0.336	1.12	67
8:27	+83.4	0.52268	140.206	0.35	25	1518	1611	0.339	1.12	90
8:30	+84.2	0.52122	140.180	0.35	25	1493	1586	0.338	1.12	89
8:35	+86.8	0.52122	140.180	0.35	25	1485	1583	0.330	1.12	90
8:47	+84.7	0.52122	140.181	0.35	25	1487	1588	0.318	1.11	89
8:53	+83.4	0.52122	140.181	0.35	25	1486	1595	0.336	1.12	92
9:00	+82.0	0.52122	140.180	0.35	25	1491	1595	0.335	1.12	89

TIME	TOL.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9·01	+81·8	0·52068	$\boxed{140·172}$ *	$\boxed{0·35}$ *	$\boxed{25·0}$ *	1466/1586	0·333	1·12	90
9·20	+84·4	0·52068	140·171	0·35	25·0	1460/1585	0·332	1·12	90
9·30	+81·8	0·52067	140·171	0·35	25·0	1465/1591	0·334	1·12	88
9·46	+79·8	0·52068	140·171	0·35	25·0	1473/1596	0·334	1·12	91
9·52	+78·9	0·52067	140·171	0·35	25·0	1473/1598	0·334	1·12	91
10·06	+78·2	0·52067	140·171	0·35	25·0	1476/1599	0·328	1·11	90
10·15	+80·2	0·52067	140·171	0·35	25·0	1483/1608	0·342	1·12	89
10·23	+79·6	0·52067	140·171	0·35	25·0	1483/1608	0·323	1·12	0
10·33	+77·7	0·52067	140·171	0·35	25·0	1487/1611	0·350	1·13	87
10·40	+76·5	0·52067	140·171	0·35	25·0	1488/1613	0·350	1·12	89
10·50	+75·5	0·52067	140·171	0·35	25·0	1491/1615	0·352	1·12	87
11·00	+75·2	0·52048	140·168	0·35	25·0	1484/1614	0·347	1·12	91
11·10	+76·6	0·52048	140·170	0·35	25·0	1489/1616	0·323	1·12	0
11·15	+74·9	0·52011	140·164	0·35	25·0	1486/1617	0·340	1·12	89
11·24	+75·0	0·52011	140·164	0·35	25·0	1484/1618	0·338	1·12	94

11·34 → Target moved to: Empty (0·201)

13:46 Lifting magnet current

14:00 TE

14:25 Run to 0.22

14:32 Top TE finished move to bottom

19:00 Bottom TE done

* GOOD VALUES FOR THE VARIABLES

Prepping for material swap.
Overfilling the fridge with LH_2.
Prepping insert B with material #9 & #10
out of Slot #3.

Bottom #9 6-29-07 14NH3
Top → #10 6-29-07 14NH3
Material from C reclaimed & placed
21:00 in #10 6-29-07 irrad 14NH3
21:54 Fridge cold and Thermalizing taking baselines

00:37 TES done

Finished 18:32 on 3/9/09

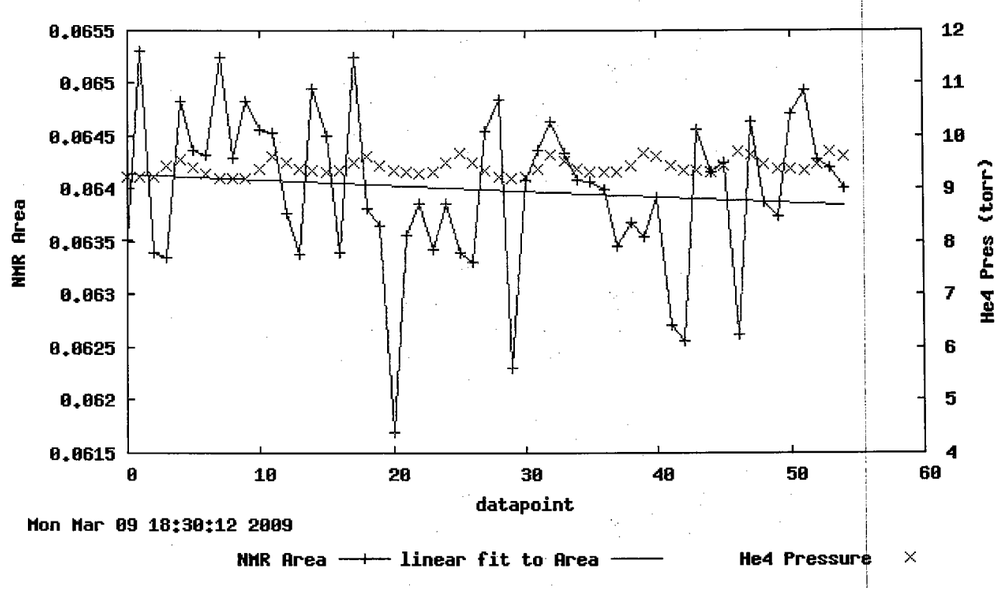
Area (arb units) Temperature (K
-0.06352183 9.224
-0.06530759 9.216
-0.06340011 9.232
-0.06335656 9.426
-0.06483158 9.545
-0.06436572 9.395
-0.06432569 9.279
-0.06524814 9.193
-0.06428817 9.183
-0.06483344 9.208
-0.06455328 9.385
-0.06452357 9.611
-0.06377466 9.502
-0.06337682 9.378
-0.06494118 9.343
-0.06450159 9.306
-0.06339534 9.336
-0.06524580 9.496
-0.06382071 9.610
-0.06365642 9.445
-0.06168691 9.337
-0.06355916 9.308
-0.06385116 9.287
-0.06341906 9.321
-0.06386324 9.490
-0.06339976 9.668
-0.06330576 9.503
-0.06453801 9.351
-0.06483980 9.238
-0.06230765 9.205
-0.06408183 9.212
-0.06436573 9.384
-0.06463875 9.632

-0.06433391 9.531
-0.06408526 9.382
-0.06407092 9.326
-0.06399768 9.304
-0.06345504 9.301
-0.06367377 9.437
-0.06353904 9.685
-0.06391282 9.613
-0.06271422 9.435
-0.06256106 9.351
-0.06456280 9.332
-0.06415545 9.322
-0.06424419 9.438
-0.06261897 9.693
-0.06463555 9.645
-0.06387335 9.474
-0.06374355 9.367
-0.06471253 9.370
-0.06493249 9.358
-0.06427434 9.458
-0.06420144 9.690
-0.06400581 9.626

TE CALCULATION RESULTS
Species Proton (Spin 1/2)
Data Points 55
Target Cup Top
Magnetic Field 5.0033 T
Average Area -0.063990 +/- 0.000101 (0.157%)
Average Temp 1.727 K +/- 0.003595 (0.208%)
TE Polarization 0.296 %
Calibration Constant -4.624355 +/- 0.012066 (0.261%)

Old Material

Top



Finished 19:00 on 3/9/09 Target: TE Results from Today

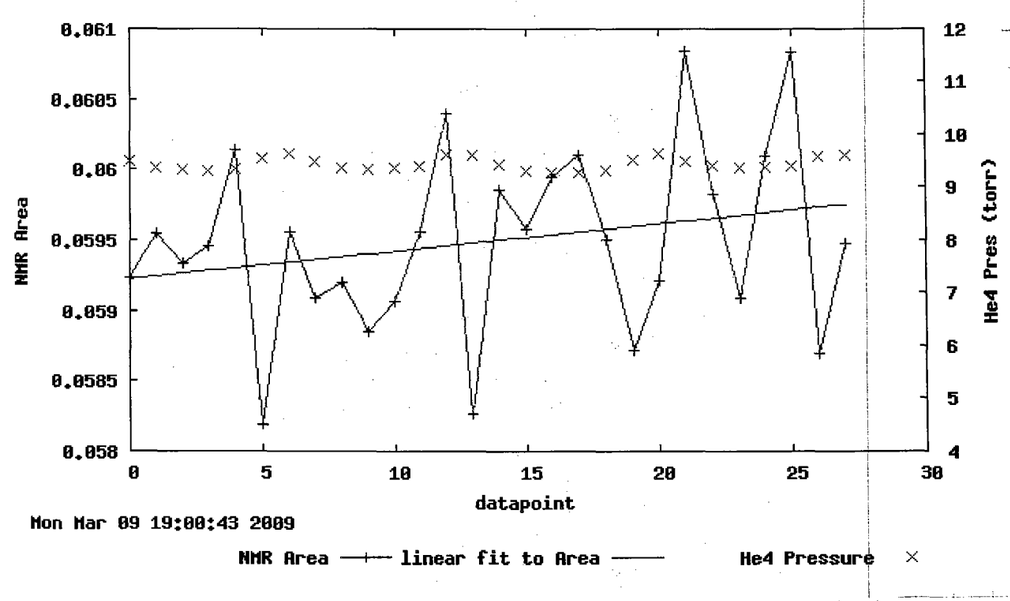
Area (arb units) Temperature (

-0.05922579 9.506
-0.05954224 9.371
-0.05933595 9.333
-0.05945231 9.327
-0.06013575 9.350
-0.05818897 9.557
-0.05956078 9.646
-0.05908496 9.486
-0.05919351 9.377
-0.05884879 9.350
-0.05906786 9.359
-0.05955057 9.408
-0.06039774 9.611

-0.05826710 9.609
-0.05986012 9.418
-0.05958065 9.326
-0.05995057 9.281
-0.06010855 9.279
-0.05950319 9.316
-0.05872104 9.522
-0.05921358 9.633
-0.06083914 9.505
-0.05982173 9.389
-0.05908653 9.376
-0.06009796 9.382
-0.06083752 9.416
-0.05869520 9.590
-0.05947776 9.626

TE CALCULATION RESULTS
Species Proton (Spin 1/2)
Data Points 28
Target Cup Bottom
Magnetic Field 5.0033 T
Average Area -0.059487 +/- 0.000124 (0.209%)
Average Temp 1.728 K +/- 0.004067 (0.235%)
TE Polarization 0.296 %
Calibration Constant -4.971622 +/- 0.015649 (0.315%)

Bottom



MARCH 10 2001 [BOTTOM NH3] P. GOTCH

Time	Pol.	Freq (GHz)	Bellows	BOTTOM CMRS	Beam	P	T
1:02	-24.6%	140.448	.53777		0		
135	-62%	140.418	.53777	1400	0	.198	1.05
OPENED RUN VALVE TO 0.5 AS P IS SO LOW							
230	-77.3	140.443	.53904	1332	0	.250	1.07
305	-79.3	140.44	.53900	1349	0	.224	1.07
350	LOST POL (NOSE LEVEL TOO LOW)						

SINCE MOST LIKELY NO BEAM FOR >2 HRS,

DECIDE TO DO MORE TE'S. WILL START WITH BOTTOM

TURNED OFF μWAVES AND RB3, 2, 1 (2 min WAITS)

SEP. FLOW = 25 RUN VALVE 0.6 3000 SWEEPS

TIME	^{4}He T	^{4}He P	^{3}He T	^{3}He P	AREA
4:10	1.71	8.899	–	22.549	-0.067199
4:20	1.72	9.247	–	22.552	-0.09125
4:30	1.73	9.501	–	–	-0.098217
4:50	1.73	9.566	–	22.257	-0.1122923
5:10	1.74	9.713	–	23.502	-0.11548
5:20	1.74	9.939		23.285	-0.121770
5:50	1.75	10.265		22.012	-0.12813
6:04	1.82	13.115	–	20.740	-0.12068
6:06	1.82	13.170			-0.12357
609	1.82	13.166			-0.11750
610	1.82	13.153			-0.13243
612		.296			11744
		259			12386
SWITCHED TO 8000 SWEEPS					
622	183	13.456			12208
630	1.83	614			12350
6:41	1.83	13.840			12228450
6:50	1.84	13.922			12224270
6:57	1.84	14.070			12393730
7:06	1.84	14.242			12256470
7:15	1.84	14.344			12160050

BOTTOM TE

Time	^{4}He T.	^{4}He P	^{3}He T	^{3}He P	Area.
9:00	1.85	14.376	-	16.830	-0.12107370
11:00	1.85	14.376	-	15.701	-0.11566750

11:00 ~~beca~~ because the ^{4}He pressure is 14.376, close the run valve in order to decrease the pressure.

11:30	1.79	11.911	-	16.116	-0.11572800
11:40	1.76	10.614	-	16.003	-0.12923270
11:55	1.73	09.324	-	16.257	-0.12783790

11:55 changed the run valve upto 0.2

12:45	1.78	11.267	-	17.303	-0.12476880
15:55	1.69	8.218	-	17.776	-0.12722620
23:25	1.66	7.248	-	19.012	-0.13310680
23:55	1.66	7.147	-	18.655	-0.13338706

MIDNIGHT MARCH 11, 2009 P. BOSTED

SINCE CHANGE OF BEAM IN A FEW HOURS,

DECIDE TO START POLARING

RB1 → ON
RUN VALVE → 0 $\boxed{\text{BOTTOM } NH_3}$
RB2 → ON
RB3 → ON (HAD TO USE "BYPASS")
μ WAVES ON, RUN → 0.4 SEPERATOR FLOW = 25 GAIN → 1

TIME	POL	RUN	BELOWS	f	Bttom CHIP	4He P	4He T
050	-2.8	0.4	.5386	140.444	1352	.342	1.12
125	-43.2	0.4	.5349	140.377	1410	.302	1.11
158	-69.0	0.35	.5340	140.356	1448	.303	1.11
415	-81.0	0.35	.53531	140.385	1400	.295	1.10
520	-81	"	"	"	1426	.315	1.12
07:30	-79.9		0.53530	140.384	1415	0.340	1.12
0805	-80.5	"	"	"	1426	.342	1.12
0930	-81.6	"	0.53457	140.374	1418	.341	1.10

1115	-83.6	0.35	0.53364	140.365	1433	0.349	1.13
11:55	-73.1	0.35	0.53977	140.450	1480	0.342	1.12

We just restored the magnetic field, changing the optimal polarization frequency.

1330	-80.7	0.35	0.54049	140.462	1396	0.342	1.12
1445	-81.1	0.35	0.54011	140.454	1418	0.344	"

16:26 Turning off μwaves to watch polarization decay.

Bottom was @ -81%. Closed run to 0.25

18:04 Run = 0.25, He4 Press = 0.239, Chip Ω = 1857, Main Flow = 12.4

18:40 Turning off RB3 Press = 0.235, Main flow = 13.4
Polarization = -60%
- pressure He4 in the nose went up to 1.64 Torr

19:00 - pressure went up to 1.75, called Jarus → suggested to close a bit He run valve
from 0.25 → 0.22 ⇒ pressure dropped to 1.6
- He pressure keep rising even I keep closing bit by bit He run valve

19:20 open He RB3 BYPASS → run valve open polarization 43.2%
run valve open : 0.22.
pressure 0.66 Torr.

19:30 pressure decrease much slower since opening the RB3 bypass valve. pressure 0.66 Torr.

20:20 TURNED OFF RB2 Pol 35% nose pressure 0.6.

21:40 Polarization -15.6% pressure 2.42 Torr, run valve 0.22

21:41 TURNED OFF RB1 TURNED ON ROGHING, pressure rose to 5.6 Torr

temperature = 1.6 K, bottom target.

03/12/2009

00:10 Moved to Top target (encoder = 3.418)
00:12 Turned All Roots pumps on. μ-wave on, start polarization

Top NH3 Time	Pol.	Run	Bellows	freq.	Top Chip	4He p (torr)	4He T (K)
00:22	-38.3	0.0	53633	140.386	1516	0.187	1.05
00:28	-52.4	0.2	53723	140.402	1475	0.222	1.07
00:44	-72.6	0.2	53796	140.417	1419	0.211	1.06
00:52	-78.0	0.25	53796	140.418	1412	0.229	1.07
01:00	-81.0	0.25	53795	140.418	1413	0.230	1.07

01:02 Turned off μwave to decay Top target, P was -81.3%
03:18 RB3 off, RB3 bypass open off P = -59.7%
4He Temp 1.17 K, Pressure 0.510 Torr, Top chip 1797 Ω, Run valve 0.25 Main flow 9.3
04:58 RB2 off P = -40.0%
4He Temp 1.20 K, Pressure 0.527 Torr, Top chip 1790 Ω, Run valve 0.25, Main flow 8.15
05:50 → 1.42 → 2.342 → 1690
05:55 RB1 off P = -20.0%, Rough valve opened
4He Temp 1.54 K, Pressure 4.405 Torr, Top chip 1645 Ω, Run valve 0.25 Main flow 10.3
06:32 Baseline was a little separated from signal, DC convert Back to normal

DAY SHIFT, March 12;

8:50 Run valve closed to 0.20 from 0.25. → The Pressure in Nose is stable at 3.500 Torr

9:00 Decay plan complete.

March 12, 2004

23:00 Adjusted Encoder, Polarizing Bottom

Time	Pol.	Freq (GHz)	Bellows	Beam (nA)	Top Chip	(torr) 4He Pres.
23:31	-19.3%	140.424	53755	0	1659	0.229
23:35	-25.4%	140.408	53665	0	1643	0.228
23:39	-30.9%	140.435	53829	0	1599	0.231
23:41	-38.2%	140.445	53901	0	1535	0.231
23:45	-44.6%	140.454	53973	0	1536	0.235
0:42	-55.9%	140.447	53955	0	1575	0.316
01:45	-62.6	140.573	54674	90 nA	1525	0.368
02:10	-57.8	140.571	54674	90 nA	1537	0.341

March 13

Moved to Top target. Starting + Polarization

Time	Pol.	Freq (GHz)	Bellows	Beam (nA)	Top chip	Press
04:07	77.7	140.162	0.51987	90 nA	1368	0.258
04:20	76.8	140.162	0.51968	90 nA	1372	0.259
04:35	75.5	140.155	0.51932	90 nA	1382	0.262
05:10	73.8	140.162	0.51967	90 nA	1386	0.286
07:10	71.5	140.168	0.52020	90 nA	1439	0.28

March 13 ; DAY SHIFT;

@ TOP Target ; Polarization 70 %

8:15	69.7	150.154	0.51954	88 nA	1498	0.247
	69.7		1948 (↓)		1498	.243
8:17	69.2	140.147	0.51912	95	99	.243
	69.1	.140	1862	90		
	69.0	.141	1876 (↑)	88		
	68.9	44	76	89		
	68.8	[illegible]	[illegible]	[illegible]	1567	[illegible]

Time	Pol %	freq	Bellows	Beam	Top Temp.	Pressure
8.29am	68.3	140.155	0.51913			
	68.1	140.150	.51948			
8.32	68.0	140.156	.51930	trip	1490	0.240
8.37	68.8	140.156	.51930	90	14.95	0.237
8.42	67.9	"	"	89	97	37
48	"	.164	1984	88	15.00	36
	67.0	57	66	89	14.94	42
	67.2	52	50	"	95	41

This freq has given very stable pol %.

9.04	67.1	.152	50	89	14.77	.232	
	HAD a LOSS of Polarization ⇒ 0% Rose back ⇐ No Reason found.						
9.27	67.2	.152	48	88	15.30	.362	(Run value 1.00)
9.35	.1	"	"	"	15.12	69	
9.40	.0	140.145	1912	91			

Run value decreased to $\boxed{0.50}$ after 10 minutes of keeping it at ~~0.4~~ 1.00

9.55	67.5	140.140	1876	90	15.12	0.329

(at a (possibly) higher temperature, the target is better polarized at lower freq.)

10.00	67.3	140.152	1913	90	15.21	.336
.05	66.8	.144	1894	~~90~~ ∅	1519	0.334

After beam off for ≥40 min.

11.22	73.4	140.136	0.51858	∅	1501	0.357	
	.3	144	"	∅	06	58	
	.2	142	"	∅	07	60	(bellow reader seems stuck!)
11.28	.1	95	0.51860		12	62	
35	.0	53	1913	∅	14	62	fell steep.
	72.9	45	1895		15	60	
	73.2	"	"	∅	12	61	- rose up -
	.0	46	"	∅	10	.386	

12.09	73.6	140.140	0.51857	1510 Ω	0.347 Torr	No Beam for long
.21	73.7	144	75	"	.339	
.40	.7	"	"	1511	.338	
.55	.8	"	"	"	"	"
~~1.06~~						

BEAM BACK!

1.05	69.1	140.147	0.51930	1502	.352	@ 90 nA
.10	68.6	154	"	09		
.12	67.9	148	.51912	31	48	@ 89
18	.7	.140	1876	31	43	@ 90
1.22	67.3	.140	"	1530	0.348 →	@ 89
	.1	138	1857	"	"	
				1527	.336	@ 91

fell down to 66.0 when I tried the freq. of ~140.150 again

1.35	66.8	140.130	0.51820	1527	0.332	@ 87 nA
	.6	125	1784			
1.45	.3	126	"	1526	0.336	@ 88
	66.0	120	1748			
2.00	65.6	.127	"			

Alarm! Run ended

Another Run restarted without HRAS!

2.15	65.2	.121	1731	1519	0.321	@ 92 nA
		115				
	64.9	← 140, 110				@ 91
2.35	64.8	140.108	0.51622	1476	0.324	
2.44	64.3	.114	0.51659	1480	0.329	@ 89.
50	64.0	.102	1623	73	.322	
	63.8	.100	1587	1476	.323	@ 90
3.14	63.2	104	59			
3.28	62.4	140.118	0.51678	1485	0.335	I = 105 nA (increased now)
	61.6	.099				

[illegible] lines under pressure. engaging rose.

16:40 Jonathan turning on ITC heater to boil faster. 40 min and rose at 11 full

16:50 ITC serial and other Comm (GPIB) problems solved by resetting ports, and aborted R&S.

Moved to Top

17:35 Anneal started. Heating to 60°K
paused at 75 Top P 71 Bottom 53.6

Move to Pid off bottom target

Open run valve to cool Top Karg. with heater "on" Top 75 Bot 60

The temps seem to be tracking Top 73 bottom 75

Got to Top 88 Bottom 89 ~~Waiting a few minutes~~
Heater off Top & Bottom steadily decaying

18:05 Temp set to 95K Top 96.2 Bottom 95 timer @ 25 min
18:25 Anneal done cooling down.

~19:00 Moved to C Target. Regulated beam.

Bottom target

Time	Pol	Freq	Bellow	Beam	Top Temp	4He Temp / Pres
02:40	65.4	140.197	52220	90	1587	1.08 / 0.238
03:20	74.4	140.181	52094	90	1551	1.09 / 0.259
03:50	71.5	140.149	51861	90nA	1565	1.09 / 0.271
05:30	64.8	140.171	52038	90nA	1577	1.10 / 0.275
05:50	65	140.142	51871	90nA	1552	1.10 / 0.278
06:15	61.8	140.142	51823	90nA	1586	1.09 / 0.269

Time	Pol	Freq	Bellows	Beam	Top Temp	4He Temp/Press
07:39	73.6	140.485	54146	90nA	1358	1.09/0.265
08:11	-76.4%	140.501	52233	88nA	1366	1.10/0286
09:24	-71.6%	140.574	54681	89.9nA	1423	1.08/0.247
09:59	-68.8%	140.548	54520	88.9nA	1420	1.08/0.250
13:32	-61.1%	140.544	54483	104nA	1445	1.12/0.348

13:57 Anneal procedure started. Pumps off, heater on run valve closed, separator open

14:09 Reached 50°K on top

14:21 Anneal started for 35 min @ "95°K" Top P 93.2 TC 80 Bottom P 95 TC 90

14:29 Top P 89.5 TC 78 Bottom P 94.8 TC 89.6

14:44 Switch to Controlling off off the top. Top P 95 TC 86 Bot P 102 TC 97

14:56 Anneal stopped cooling down

~~TIME~~ ~~POLAR~~ 2.

TIME	POLARIZATION (%)	FREQ (GHz)	BELLOW POS.	TARGET	TOP TEMP (-Ω)	^{4}He TEMP (K) / PRESSURE (TORR)	RUN VALVE	CURRENT (nA)
4:15 pm	—	—	0.54434	C = 2.865	1860	1.08 / 0.248	0.5	120
4:38	—	—	"	BOT = 1.631	1835	1.07 / 0.214	0.5	0
4:44	+14.5	140.142	0.51803	"	1596	1.08 / 0.243	0.5	0
4:56	+48.4	140.137	0.51803	"	1635	1.04 / 0.241	0.5	0
5:06	+61.9	140.137	0.51803	"	1575	1.08 / 0.241	0.5	0
5:08	+63.7	140.137	"	"	1599	1.08 / 0.263	0.5	90
5:10	+65.1	140.142	0.51803	"	1644	1.09 / 0.264	0.5	100
5:15	+68.7	140.144	0.51803	"	1623	1.09 / 0.263	0.5	100
5:25	+01.0 %	140.144	"	"	1263	1.09 / 0.270	0.7	0
5:38	+59.6 %	140.144	"	"	1611	1.10 / 0.274	0.7	0
5:41	+63.4	140.144	"	"	1584	1.10 / 0.286	"	52
5:46	+67.8	140.144	"	"	1588	1.11 / 0.302	0.6	100
6:00	+70.4	140.143	"	"	1586	1.10 / 0.291	"	100
6:08	+69.9	"	"	"	1558	1.11 / 0.299	"	98
6:13	+70.0	"	"	"	1598	1.11 / 0.304	"	92
6:18	+69.3	140.140	0.51767	"	1629	1.10 / 0.281	"	90
6:20	+69.0	140.161	0.51913	"	1631	1.10 / 0.286	"	91
6:21	+68.7	140.137	0.51751	"	1631	1.10 / 0.285	"	88
6:25	+69.4	140.140	0.51767	"	1636	1.09 / 0.263	"	0
6:34	+70.6	140.140	0.51767	"	1634	1.10 / 0.276	"	50
6:36	+70.2	140.140	"	"	1635	1.10 / 0.288	"	90
6:40	+68.9	140.137	0.51767	"	1637	1.10 / 0.291	"	90
6:47	+67.7	140.135	0.51749	"	1641	1.10 / 0.291	"	90
6:50	+67.2	140.134	0.51749	"	1642	1.10 / 0.291	"	67
6:55	+66.8	140.134	0.51749	"	1644	1.10 / 0.292	"	90
7:02	+65.8	140.135	0.51748	"	1656	1.10 / 0.293	"	91
7:17	+66.4	140.134	"	"	1634	1.10 / 0.286	"	92
7:30	+65.2	140.134	"	"	1648	1.10 / 0.295	"	91
7:35	+64.7	140.132	0.51729	"	1648	1.10 / 0.291	"	89
7:50	+63.2	140.140	0.51747	"	1669	1.12 / 0.348	"	91
7:55	+62.3	140.130	0.51713	"	1683	1.10 / 0.285	0.3	90
8:03	+61.8	140.139	0.51747	"	1694	1.10 / 0.279	"	92
8:07	+60.5	140.128	0.51712	"	1694	1.10 / 0.282	"	105
8:11	+60.1	140.136	0.51713	"	1696	1.10 / 0.280	"	103
8:14	+59.6	140.137	0.51713	"	1693	1.10 / 0.280	"	106
8:33	—	—	—	TOP = 3.324	—	—	0.6	0

TIME	POLARIZATION (%)	FREQ (G.Hz)	BELLOWS.	TARGET	TOP TEMP (Ω)	4He TEMP/PRESSURE (K) (TORR)	RUN V.	CURRENT (mA)
8:39 PM	69.7	140.137	0.51759	TOP=3.321	~~140/0.295~~ 1403	1.20/0.285	0.4	0
~~8:45~~								
8:45	76.9	140.135	0.51759	"	1396	1.11/0.309	0.4	70
8:50	79.3	140.169	0.51994	"	1427	1.11/0.316	0.4	70
8:52	80.0	140.172	0.51995	"	1434	1.09/0.251	0.3	70
8:56	81.0	140.172	"	"	1434	1.10/0.280	"	90
9:00	81.1	140.172	"	"	1435	1.10/0.280	"	90
9:02	81.1	"	"	"	1438	1.10/0.287	"	101
9:10	80.1	"	"	"	1448	1.10/0.287	"	100
9:13	80.5	140.161	0.51977	"	1433	1.101/0.286	"	101
9:16	80.4	140.161	0.51977	"	1438	1.10/0.286	"	99
9:21	~~80~~.1	140.161	0.51977	"	1443	1.10/0.284	"	90
9:26	~~80~~ 79.4	140.172	0.52032	"	1465	1.10/0.285	"	91
9:28	79.1	140.160	0.51960	"	1467	1.10/0.285	"	93
9:33	80.3	140.160	0.51960	"	1449	1.10/0.270	"	0
9:38	80.8	140.160	0.51960	"	1452	1.10/0.283	"	92
9:45	78.4	140.170	0.51996	"	1483	1.10/0.285	"	89
9:50	77.2	140.165	0.51995	"	1479	1.10/0.286	"	90
9:53	76.8	140.165	0.51996	"	1484	1.10/0.287	"	91
10:01	75.7	140.165	0.51996	"	1496	1.10/0.288	"	91
10:14	74.2	140.165	0.51996	"	1515	1.10/0.292	"	92
10:19	74.0	140.151	0.51908	"	1500	1.10/0.291	"	89
10:24	74.8	140.151	0.51908	"	1506	1.10/0.292	"	90
10:27	74.6	140.151	0.51908	"	1513	1.10/0.292	"	91
:46	73.0	.150	1905		45	0.290		
.51	72.9	.151	1869					
		47	1870					
.56	73.2	140.142	1869		1522			
.01	73.3	.138	51		19	/.287		88
	73.2	.137	1850		1539	/.288		
			1798		1540			
11.16	72.9	140.124	1759		1530	./283		92
		112						
		117						
11.29	72.5	.126	1723		1546	/.287	0.30	91
		.130						
11.32	72.4	.124	1723		1533	/.275		Ø
.36	72.1	.117	1705		53	.289		91
.42	71.9	.110	1652		1557	"		90
44	.7	.102	14		1534			

Time	Pol %	freq.	Bellows	Temp (Ω) / Pressure	Remark
11:55	71.2	140.110	0.51652	1564/0.281	91 nA.
12:00.	71.0	140.117	0.51670	1559/0.281	

3-15-2009 Owl Shift Start JRZM

run valve .4 Nose press=.303 ζ_{main} = 19 ζ_{sep} = 25 Chips 1533 1608

00:33 69.6% 140.112 GHz 0:51 68.9% 140.085 140.11 too high

01:26 67.2% 140.102 GHz He4=.272 Torr pol heavily dependent on pressure.

ζ_{main} = 16.58 runvalve .27

1:50 66.4% 140.095 GHz He4 = .273 Torr ζ_{main} =17 run valve .27

2:30 64.7% 140.090 GHz He4=.277 Torr ζ_{main} = 16.9

2:45 64.1% 140.096 GHz He4 = .278 ζ_{main} = 16.7 runvalve = .27

3:01 63.7% 140.093 He4 = .279 ζ_{main} = 16.7 runvalve = .27

3:15 63.3% 140.099 GHz He4 = .277 ζ_{main} = 16.6 runvalve = .27

3:50 62.8% 140.095 GHz He4 = .276 ζ_{main} = 14.97 runvalve = .4 (to prevent emptying briefly)

4:15 @ 61% (.75 x 81%) start annual procedure

4:27 Boiling off helium, pumps off.

4:39 He gone from nose, heating material

Checked temps by turning off heater. Everything dropped to the temp being read by the Bottom thermo couple.

4:51 ITC responds slowly run valve = .15

Setpoint 90°K heater on Top P 90 Bottom P 90 stop heater Top P 82 Bot P 85

TC 80 TC 87 TC 70 TC 80

4:55 Start 45 min timer @ Top P 93.3 Bottom P 94.4

TC 82 TC 90.5

5:00 Top P 94 Bott P 99 5:10 Top P 93 Bottom P 101 5:25 Top P 93 Bottom P 101

TC 82 TC 94 TC 82 TC 96 TC 82 TC 96

6:00 Anneal done ... Polarizing

6:24 On Bottom target / Encoder 1.642.

Material at 36.2% optimal frequency ≈ 140.2 ish GHz

6:45 65.9% 140.190 GHz He4 press .4 runvalve .2 (from .8) main flow 22

6:51 74.9% (clipping reduced the signal area) 140.2 GHz He4 = .192 run .27

ζ_{main} = 13.

6:57 78.2% 140.180% He4 .257 Torr ζ_{main} = 12 run valve .35

Beam at 79%

7:08 78.6% 140.210% GHz 140.190 is better

7:26 72.8 140.180% seems best

1 bottom target + Polarization

Time	Bellows	Freq
831	51944	140.062
903	52053	140.175
909	52052	140.176
917	52039	140.176
931	51979	140.159
946	51943	140.159
949	51927	140.
958	51889	140.158
1007	51853	140.1[redacted]47
1012	51853	140.143
1031	51816	[redacted]

Top target negative polarization

1100 Move to Top. Changed to Negative (w/out putting pend on standby)

	Bellows	Freq	
11:21	54207	140.504	
11:23	54171	140.492	+
11:25	54080	140.475	
1200	54082	140.475	
12:03	54045	140.473	−
12:04	54117	140.471	+
12:08	54153	140.492	+
12:12	54207	140.501	+
12:16	54262	140.512	+
12:21	54297	140.521	+
1223	54334	140.527	+
1225	54386	140.534	+
12:28	54422	140.540	+
12:32	54423	140.541	−
12:	54459	140.546	+
12:34	54496	140.551	+
12:36	54549	140.560	[redacted]−
1245	54603	140.567	−
12:47	54693	140.578	−
12:49	54495	140.545	+

Time	Bellows	f	
12:56	54423	140.537	+
1:01 pm	54386	140.531	~
1:03 pm	54243	140.507	—
1:04 pm	54261	140.511	+
1:08	54332	140.524	+
1:11	54368	140.532	+
1:14	54403	140.537	+
1:26	54439	140.542	+
1:30	54474	140.549	+
1:34	54548	140.558	+
1:38	54566	140.563	
	54670	140.570	
1:51	54673	140.575	+
1:55	54706	140.582	—
1:57	54654	140.575	+
2:10	Beam down		
2:24	54618	140.566	+
2:38	54618	140.566	~
3:13	54565	140.560	+
3:18	54529	140.550	—
3:23	54547	140.555	•
3:34	54583	140.562	+
3:38	54619	140.568	+
3:45	54655	140.575	~
3:52	54712	140.583	—
3:56	54710	140.	

SWING SHIFT, March 15.

4:14	0.54714	140.581

Run valve brought down to 0.45 (from 0.50).

Run valve brought down to 0.42

Time	Bellows	freq.
4:28	054565	140.563

18:40 Anneal Start Plan to do 100K for 30 mins
We believe the thermocouples are closer to actual temperature, but still PIDing on Top Plat.

Anneal

Time	Top Plat	Top T/C	Bot. Plat	Bot. T/C (K)
18:51	80.4	76.4	67.6	68.3
open Run valve to 0.2				
18:55	100.	86	85	84
Start Timer for 30 mins, Run to 0.15				
19:00	100.5	85.7	92.3	87.5
19:08	100.2	87.4	95.3	90.3
19:11	100.1	88.1	96.7	91.3
19:15	100.1	88.5	97.2	91.9
19:22	100.1	89.2	97.7	92.5
19:26	100.1	89.4	97.9	92.8

Stop Anneal, Open Run to 2.0, Sep to 1.0

20:09 Fridge Fill, Pumps on, Polarizing Bottom Negative

Polarizing Negative (bottom target)
Run value : 0.60
Separator flow 25 (PID loop).

Time	Polarization (−) ~~(+)~~ %	Bellows	Frequency	Top Chip Ω	Flow	Remark
8:30	48.1	0.53667	140.419	1690	0.269	∅
·35	56.6	703	424	90		
8.40	62.5	"	"	83		" ↓
41	3.8	757	431	88		
45	67.8	53793	437	51	·289	90 nA (took new
8.50	69.7	"	"	41	·290	
2	70.2	0.54010	469	03	·292	" ↓
4	·5	0.54047	140.475	1584	·304	100 nA

RUN VALVE INCREASED TO 0.65, ~~I in~~ Current increased to 100 nA.

8.56	70.6	0.54001	·492	65	·302	100 nA
9	70.5	4228	·507	62	09	"
	·4	08	·500	1560	"	"
	·2	0.54191	·495			

RUN VALVE DECREASED TO 0.60; Current Decreased to 90 nA.

9.06	−69.3	4263	·516	1575	0.317	@90 nA
	·2	4298	·526			
* →	68.9	4352	·525	88	30	
	−66.4	70	530			+ (increased)
9.23	−65.9	4424	·540	1626	0.355	Temp: 1.13K

RUN VALVE DECREASED TO 0.50; current at I = 90nA.
(Run valve was decreased to 0.55)

9.25	−65.6	0.54424	140.539	1621	0.334	Temp: 1.12
		78	44			
	−64.4	4514	53			
		4730	90	1623	·304	Temp: 1.11 K

RUN VALVE is at 0.32 (decreased).

10.00	−60.1	0.54298	·525	1626	·295	Temp 1.10 K

Going to stop this & start over at Top Target

Run valve to 0.35.

Switched off Microwave

Switch ON, frequency set to 140.140 Top Chip Ω flow Remark.

Started at 10.20 pm.

Time	Pol % (+)	Bellow	Freq.			
10.40 pm	83.8	0.5 18 97	140.151			
.45	85.4					
50	.2	1896	.151			(=) →
50	.1	1914				?
50	84.9	1842	45			!
53	84.4	1769	30			←
11.05	84.1	1805	45			←
	83.7	42	50			?
08	82.9	1951	.170			← worse
10	.1	1845	.154			→ better
16	80.3	79	57			? (not sure)
21	79.8	1824	140.140	1458	0.286	90nA. ✓ good spot.
3	.7	1787	32			←
	.5	87	140			←
.29	.1	71	135			?
35	78.1	51	30			→
39	77.7	"	"			?
	.1	"	28			Keep falling
	76.7	15	23			
47	76.6	1661	19			
51	75.9	1715	.124	1456	.289	
54	.7	"	"			(better) →
~~11:12~~ 1057	.3	14	.132	60	.290	←
12.00	.3	16 97	$\boxed{140.120}$	1458	.288	(seems good)!

~~00~~ 03/16/09

12:08	74.2	51697	140.120	1474	.290	
24	72.8	51661	140.123	1494	.292	
01:00	70.9	51661	140.120	1517	.290	(beam off shortly)
16	70.2	51588	140.105	1518	.288	stable
35	69.0	51679	140.117	1557	.288	
50	68.3	51661	140.120	1575	.287	
02:20	67.2	51661	140.120	1586	.287	
03:22	64.9	51681	140.120	1601	.295	
05:00	62.4	51659	140.114	1622	.282	

7:00 SANE finished

7:80 Changed Magnet PS firmware limits to:

2.0 A/m 0 → 60A
1.0 A/m 60 → 72A
0.5 A/m 72 → 78A (Shim heaters on)

7:59 To -72A @ 0.5 A/m

Time	Coil V	Lead V	Shim V	Current A
8:02	1.86 V	0.590 V	-0.05 V	-77 A
8:08	1.97 V	0.710 V	-0.05 V	-74.1 A
8:12	1.98 V	0.740 V	-0.05 V	-72.1 A
8:13	To -60A @ 1.0 A/m			
8:14	3.94 V	2.730 V	-0.100 V	-71.4 A
8:23	3.95 V	2.890 V	-0.100 V	-62.0 A

8:26 To 0A @ 2.0 A/m

8:27 Voltage on Coils above 8V, went to "Hold" automatically
The Shim made it to -0.20, but Coils @ 7.9V

8:29 to 0A @ 1.9 A/m, above 8V again, ~~[illegible]~~ to "Hold"

8:31 to 0A @ 1.6 A/m, didn't trip

8:36 7.13 6.32 -1.79 -44 A

9:03 @ 0A, Shim heaters off, heater off, looking leads

9:50 Putting insert.
Put material in 6-28-09 #8
Attached via string