Intro / conclusion - Gus
Bill.
Appendix
letter of support - check with
Bill Pedaski about letter of support
Nigel - Reference
Joe Lykken.

May Field offsets New 4/16/15

Probe 1 4 ft cable

x:	+0.075	+0.075
y:	-0.640	-0.540
z:	-0.665	-0.665

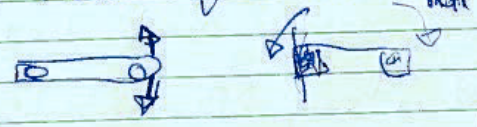
Probe 2 : 3 ft cable

x :	-0.580	-0.580
y	-0.60	-0.400
z	-0.244	-0.244

Probe 3 : 1 ft cable

x :	-0.790	-0.790
y	-0.782	-0.782
z	-0.443	-0.443

accelerometer
x along the robot forward direction
pitch is



Mack
Chris Kelly → Mac Ext 8438

BDNETSPARE03/IAWI

~~ADIM~~ ~~BDNET~~
Username "bdnetspare03\localadmin"
pw: Fermilab 0413

Chris Anderson → head of something
guy to talk to about building
beam dump absorber

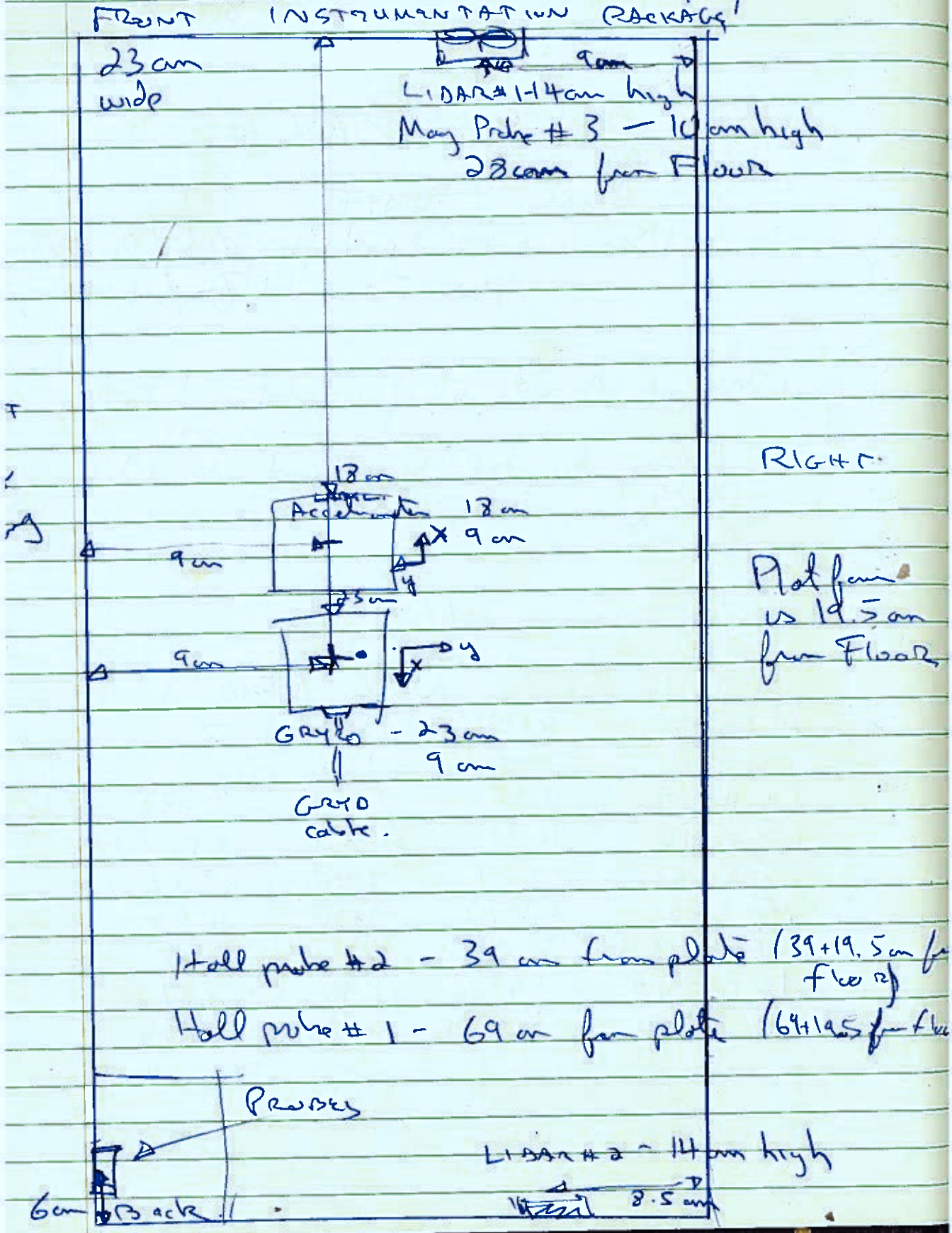
Gyro Run 4/16/15

TANK Facing North (±10°)

~~Time 14:40:27~~	x	y	z	
14:40:27	0.922	0.327	0.033	(degrees)
15:05:16	12.93	4.82	1.66	
15:20:20	20.37	7.45	3.06	
15:34:26	27.77	9.96	4.54	
15:49:35	35.86	12.60	6.23	
16:08:28	48.82	15.90	8.17	
16:31:46	58.42	20.20	10.79	

1 cm page = 2 cm Road

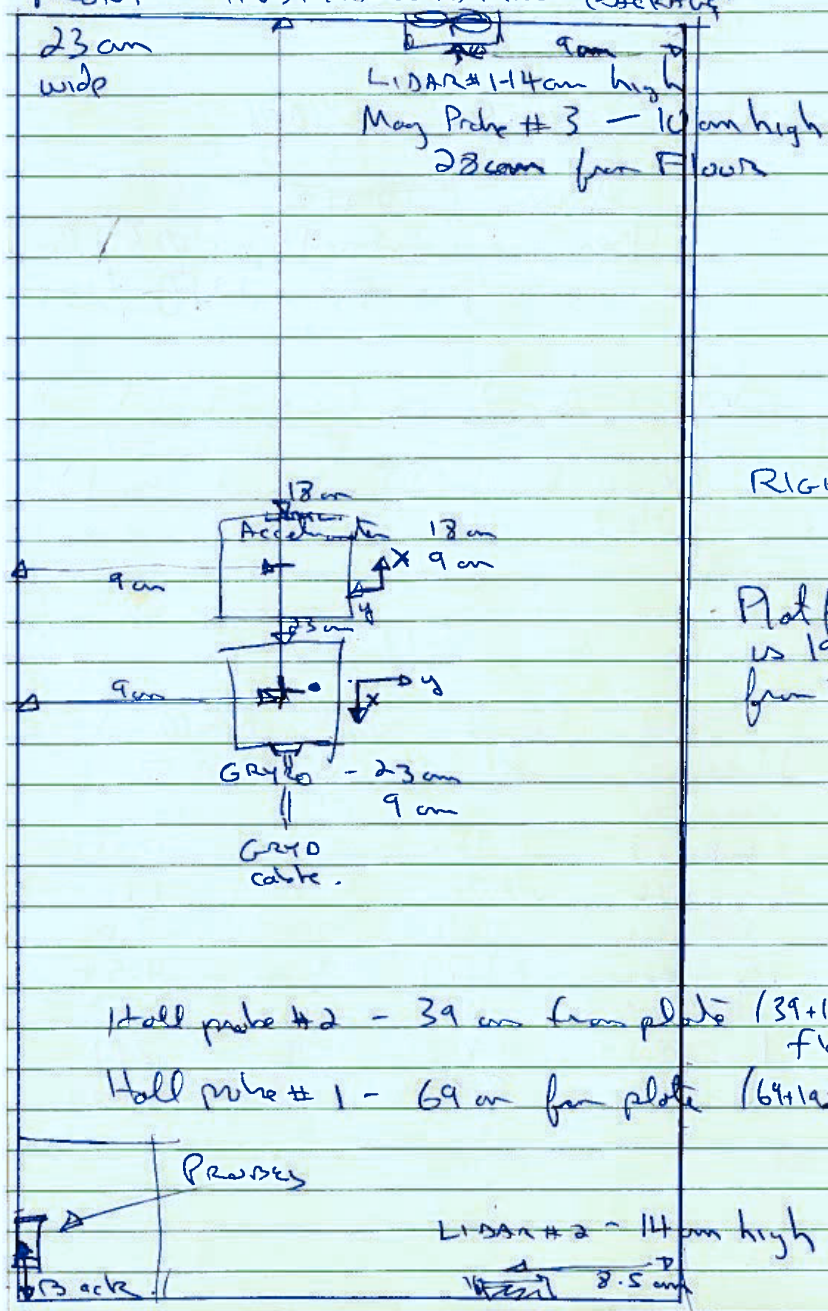
TANK LAYOUT 4/15/15



1 cm page = 2 cm Read

TANK LAYOUT 4/15/15

FRONT INSTRUMENTATION PACKAGE

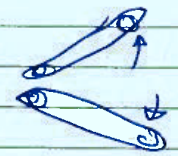


Accelerometer Rotation

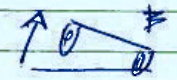
ST MICROELETRONICS

POSITIVE PITCH

NEGATIVE PITCH



POSITIVE ROLL



Accelerometer +X

NEGATIVE ROLL

GRYRO ROTATION AXIS:
+Z : UP
+X : ~~forward~~ Backwards along TANK AXIS.
+y : ~~Bean left~~ RIGHT of tank ~~Bean left~~

Hall PROBES:
+Z : UP.
+X : forward along TANK AXIS
+y : ~~Bean~~ left of TANK Bean left

GRYRO ROTATION LOOKING ALONG AXIS

Z axis ROTATION YAW

+Z

-Z

X axis ROLL

positive roll

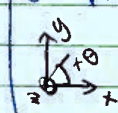
negative ROLL

y axis pitch

positive

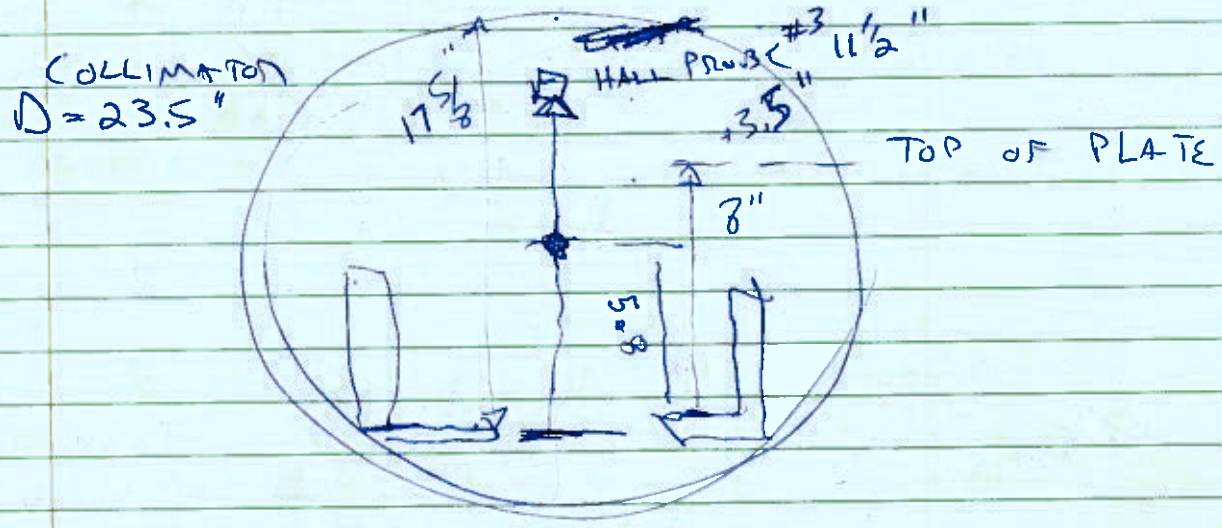
negative

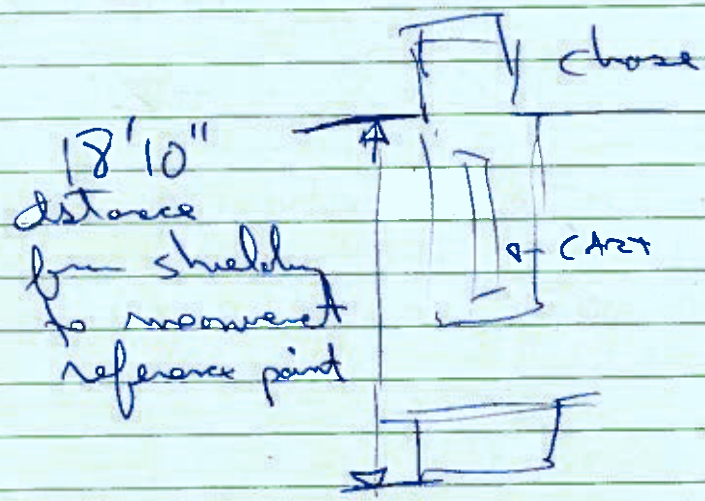
GRAPH.



definition is opposite

LIDAR test.
26'1" measured distance ⇒ 795 cm
LIDAR Read back 796 cm





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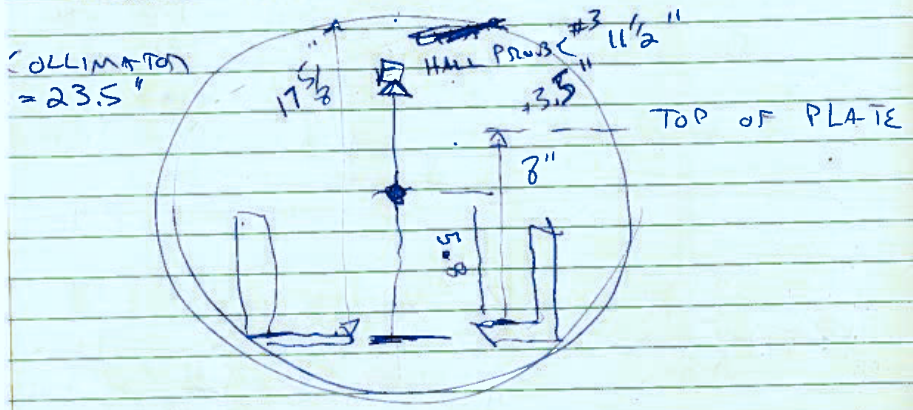

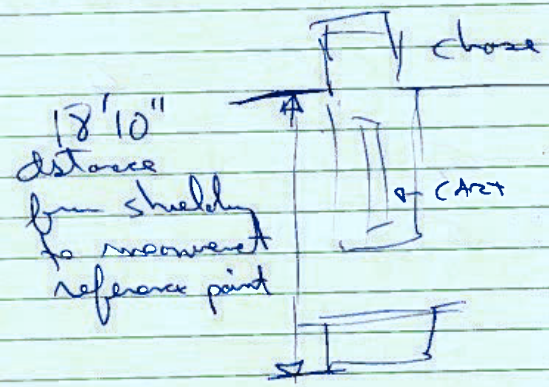

computer time +1 hour from CST

Red ethernet cable ⇒ communication
Orange ethernet cable ⇒ 5V regulator

4/17/15 6:20 am ~~CST~~ Computer TIME (MST)
← 1 hour ahead of

(1) START DRIFT RUN
6:20 TANK IN PLACE ON RAILS
FACING ALONG BEAMLINE.
START PhaseI Data ⇒ BMASK DOWN. ⇓
(2 mm outside chase)

(2) 7:15 TANK MOVED, START WORKING ON PREPARATIONS

(3) 7:45 FRED is in the chase.
LIDAR #1 is flaky, mostly zero data.
end of cart is touching collimator

(4) 7:54 STOP DAQ TO REPOWER INSTRUMENTS
RESTARTED DAQ + POWER
LIDAR 1 STILL NOT working.
LIDAR1 probably ranged out.

(5) 9:47 FRED is in the chase as cart is being pushed in

(6) 10:04 FRED/CART is outside chase back in starting position.
10:06 STOP DAQ due to CART deployment problems.
END OF PhaseI Data.

AA Portable Power, CA.

Phone & Data during second un-successful attempt to deploy Cart

4/18/15 DAT 2. 5:38 am

(1) 6:02 FRED/CART AT The front of the collimator. — Ready to start.
Cable 40'

Pt 2 6:15 measurement ~100 cm in collimator. LDA22. — relative to camera

Pt 3 6:07 - 144 cm in collimator

Pt 4 6:09 LD2 182 cm

Pt 5 6:10 LD2 - 232. at end of RAMP, ready to go down Ramp

Pt 6. Mast deployed at 90° (bright on)
6:18 FRED at Bottom on Ramp on decay pipe and level.
cable reading 51'

Pt 7 cable reading ~52'
LD2 - 139
time 6:21

Pt 8 cable ~ 56'
LD2 259
Time 6:25

AA Portable Power, CA.

Phase 2 Data during second un-successful attempt to deploy Cart

4/18/15 DAY 2. 5:38 am

~~6:02~~ 6:02

① ~~6:02~~ FRED/CART AT The front of the collimator. — Ready to start.
Cable 40'

LIDAR 2. — relative to camera

② ~~6~~:15 measurement ~100 cm in collimator.

Pt 3 ~~4~~ 6:07 - 144 cm in collimator

Pt 4 6:09 LD2 182 cm

Pt 5 6:10 LD2 ~~[illegible]~~ - 232. at end of RAMP, ready to go down Ramp

Pt 6. Mask deployed at 90° (light on)
6:18 FRED at Bottom on Ramp on decay pipe and level.
cable making 51'

Pt 7 cable making ~52'
LD2 - 139
time 6:21

Pt 8 cable ~ ~~[illegible]~~ 56'
LD2 259
Time 6:25

Fingering Radiation Evidence in Decay Pipe - FRED

Pt 9 cable 60'
6:27 LD2 357

Pt 10 cable 63'
6:29 LD2 460 cm

Pt 11 cable 69'
6:31 LD2 580 cm

Pt 12 cable 72'
6:32 LD2 670.

Pt 13 cable 78'
6:34 LD2 ~ flakey.

Pt 14 cable 81'
6:40 LD - sparatic. } Mask Brake. backs in 0° position probable ~ -10°

Pt 15 cable 87'
6:43 LD1 - 1230

Pt 16 cable 90'
6:45

Pt 17 cable 93.5'
6:46

Pt 18 cable 99'
6:47

Pt 19 cable 102'
6:50

6:53 trouble moving FRED.
cable dragging
-rolled back 10' close to edge of 25 m absorber.

PT20 cable 111' - close to upstream edge of 25 m absorber
7:13

Lost control of FRED flippers and camera.
~~loading~~ pulling FRED out to reboot and fix mast.

7:24. Stop Run FRED out. and in chase
Data saved in Phase 3 data

Phase 4 Data. Second attempt at driving ~~FRED~~ FRED down pipe.
Phase 4 Data.

7:56 start DAQ
PT21 FRED ACART IN CHASE UP AGAINST COLLIMATOR

8:03 mast deployed at 90°
⇒ Running to 50 m absorber.

PT22 upstream edge of 25 m
8:06 absorber.

6:53 trouble moving FRED.
cable dragging
-rolled back 10' close to edge of 25m absorber.

PT20 cable 111' close to upstream edge of 25 m absorber
7:13

Lost control of FRED flippers and camera.
~~loading~~ pulling FRED out to reboot and fix mast.

7:24. Stop Run FRED out.
and in chase
Data saved in Phase 3 data

Phase 4 Data. Second attempt at driving ~~FRED~~ FRED down pipe.
Phase 4 Data.

7:56 start DAQ
PT21 FRED ~~CART~~ IN CHASE UP AGAINST COLLIMATOR

8:03 mast deployed at 90°
⇒ RUNNING TO 50 m absorber.

PT22 upstream edge of 25 m absorber.
8:06

PT23 8:08 ~~top~~ Inside 25 m absorber at upstream edge.

PT24 Downstream end of absorber ~~at~~ in decay pipe
8:11

PT25. At 50 m absorber ~~[illegible]~~ at ~~[illegible]~~ plate! made it.
8:13 cable 193'

PT26. cable 192'
8:17 ~1m from plate.

* BERM COOLING OFF. PT27 at cable 192

BERM COOLING NOT AFFECT
TURN BACK ON. LDI #90

PT28 BERM COOLING BACK ON. 8:25

PT29 cable 192'
8:27 LDI 203

PT30 cable 192'
8:28 LDI 310

PT31 ~~#~~LDI 415
8:31 cable 189

PT32 LDI 510
8:33. cable 177.

PT 33 cable 174, LD1 605
8:35 am

PT 34 cable 171, LD1 705
8:37

PT 35 cable 168 LD1 805
8:38

PT 36 cable 165 LD1 920
8:39

PT 37 cable 159 LD1 unreliable
8:41

PT 38 close to LMC pipe
TURN BERM COOLING OFF

PT 39 BERM cooling back on
cable 156 LD2 1300
8:52

PT 40 cable 153 LD unreliable
8:54

PT 41 cable 150
8:55

PT 42 cable 147 8:57

PT 43 cable 144 8:58

PT 33 cable 174, LD1 605
8:35 am

PT 34 cable 171, LD1 705
8:37

PT 35 cable 168 LD1 805
8:38

PT 36 cable 165 LD1 920
8:39

PT 37 cable 159 LD1 unreliable
8:41

PT 38 close to LMC pipe
TURN BERM COOLING OFF.

PT 39 BERM cooling back on
cable 156 LD2 1300
8:52

PT 40 cable 153 LD unreliable
8:54

PT 41 cable 150
8:55

PT 42 cable 147 8:57

PT 43 cable 144 8:58

PT 44 cable 141 8:59

PT 45 cable 135 9:00
edge of ~~up~~ downstream absorber

PT 46 cable 129 9:02
edge of downstream absorber

PT 47 cable 126 9:04
inside absorber chase at downstream edge

PT 48 cable 123 9:06
PT 49 cable 120 9:06
PT 50 cable 117 9:07
PT 51 cable 114 9:09
at upstream edge of 25 m
whose wall

inside 25 m absorber chase

PT 52 cable 111
back on decay pipe at upstream edge of absorber

PT 53 cable 110 moved ~2 feet.

PT 54 cable 105 9:14
PT 55 cable 100 9:15
PT 56 cable 98 9:16
PT 57 cable 96 9:16
PT 58 cable 90 9:17
PT 59 BERM COOLING OFF.

PT60 Beam cooling back on
cable 87

PT61 cable 81 9:20
PT62 cable 78 9:21
PT62 cable 75 9:22
PT63 cable 69 9:22
PT64 cable 63 9:23
PT65 cable 60 9:24
PT66 cable 57 9:25
PT67 cable 54 9:26
PT68 cable 51 9:26
END of measurements
MASK down to 0°.
PT69 in collimator at downstream
edge of RAMP.

PT70 cable ready 39'
at upstream edge of
collimator

STOPPING THE DAQ
9:32

10:00 used hand magnet
to verify all three
probes are working