

Polarized ^3He Target Lab Status

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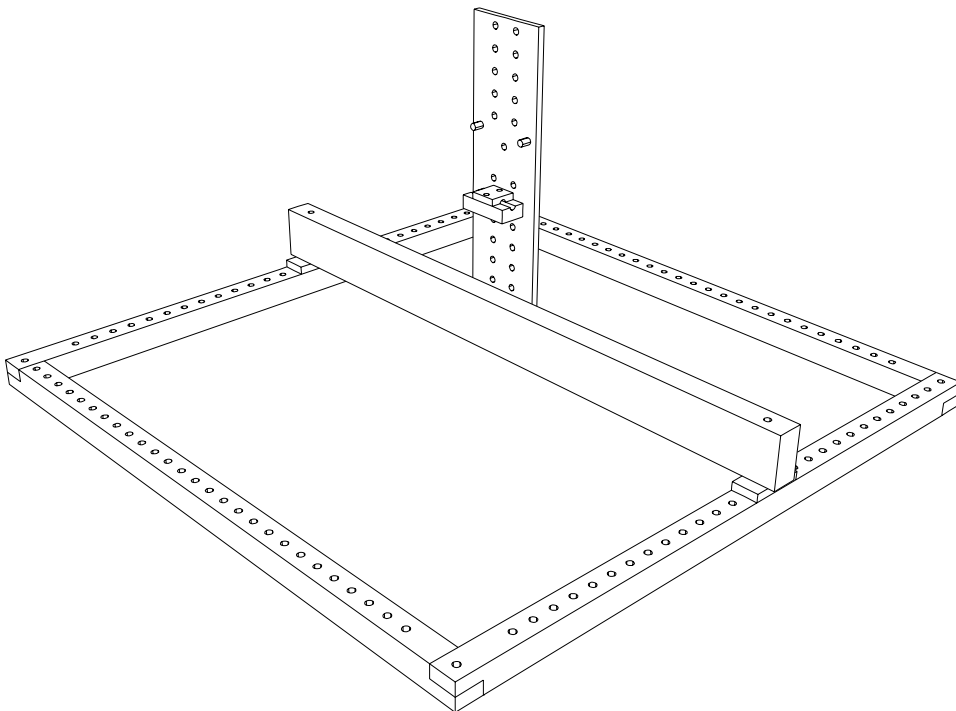
- Target Equipment Status
- Field mapping results with iron plate
- Final checks on Ice cone flux model and Q-curve gains
- NMR results
- Wall thickness

Target Equipment Status

Equipment Status

- Shipped Coherent 2 for repair
- Ordered fan for Kepco 3
- Designed field mapping system

Figure 1: Field mapping assembly



Field mapping results with iron plate

Experimental Setup

- Tests with the field at 0° and 270°
- Moved 2.5' x 4' metal plate from 50 to 150 cm away from the large coils
- Moved Gaussmeter probe along Z-axis

Results

Field direction	Plate location (cm)	Gradient (mG/cm)
0°	50	$dB_z/dz = 7.40$
0°	80	$dB_z/dz = 1.58$
270°	50	$dB_x/dz = 2.02$
270°	80	$dB_x/dz = 0.83$
270°	50	$dB_z/dz = 1.43$
270°	80	$dB_z/dz = 0.47$

Note: The gradients were calculated across the length of the scattering chamber with $z = 70$ cm.

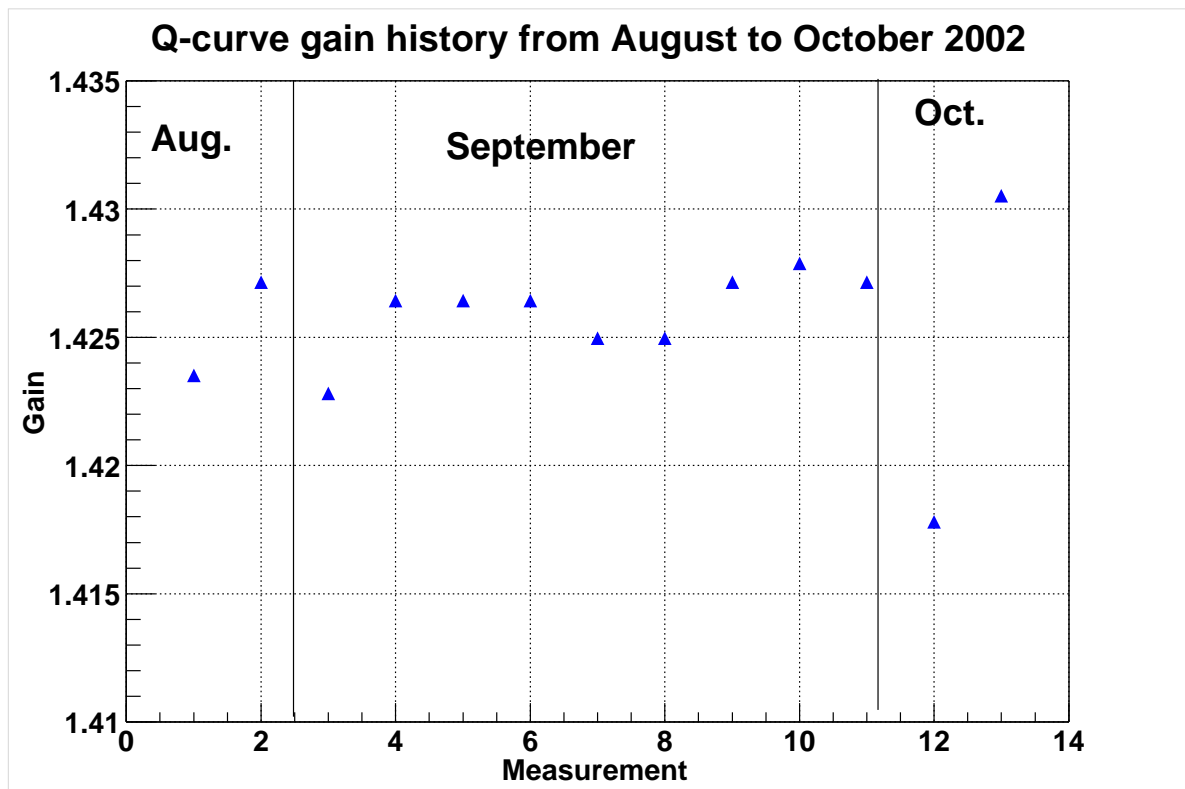
Final checks on Ice cone flux model and Q-curves gains

Flux vs Cone radius for Ice Cone cells

Cell	Coil location	Max. Cone radius (cm)	Flux (cm ²)
Ice cone (34cm)	2.5"	1.986	36.22
Ice cone (34cm)	2.5"	1.586	36.62
Ice cone (34cm)	2.5"	1.086	37.88
Ice cone (34cm)	2.5"	0.8252 (cyld)	38.30
Standard (34cm)	2.5"	0.8252 (cyld)	38.11

Note: cyld - is the radius of the cylinder for the Ice cone water cell.

Q-curve gains



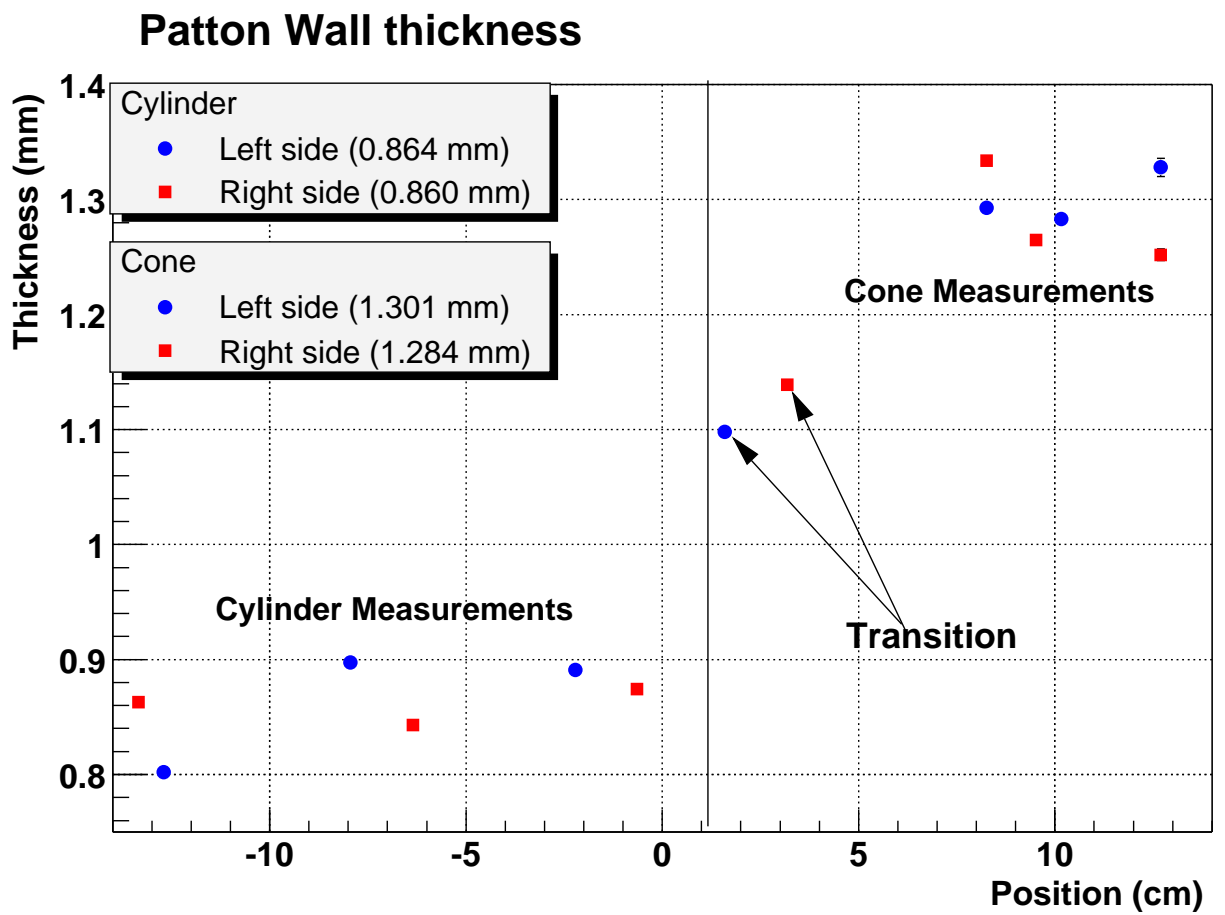
Cell Results from NMR

Patton optimization tests:

Oven (°C)	170	190	190
Lasers	3	3	3+18W
Flux (cm ²)	36.76		
T _{predicted} (°C)	207.0	235.5	238.5
TC density (amg.)	8.18	8.31	8.33
Max. NMR signal (mV)	8.28 ± 0.10	8.85 ± 0.12	9.69 ± 0.14
Calb. constant (%/mV)	4.43	4.36	4.35
NMR max. pol.	(36.70 ± 1.5)%	(38.6 ± 1.5)%	(42.2 ± 1.8)%

Note: Flux calculated using wall thickness

Wall Thickness



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Future Work

Target Work:

- Lifetime and AFP loss tests on different parts of the cell
- Test cells
- Ramp H0 from 32 G to 25 G
- Test new pick-up coils and ladder assembly
- Map H0 field in target lab
- Begin target installation in Hall A (Nov. 12th)

Detector Check Out:

- Calibrate gas cherenkov both arms
- Calibrate shower and pion rejector
- Study PID efficiency