

Synclite Study During the December Shutdown

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Many Thanks to everyone who helped with this study!

Idea to Study Pbar mm/pixel scale

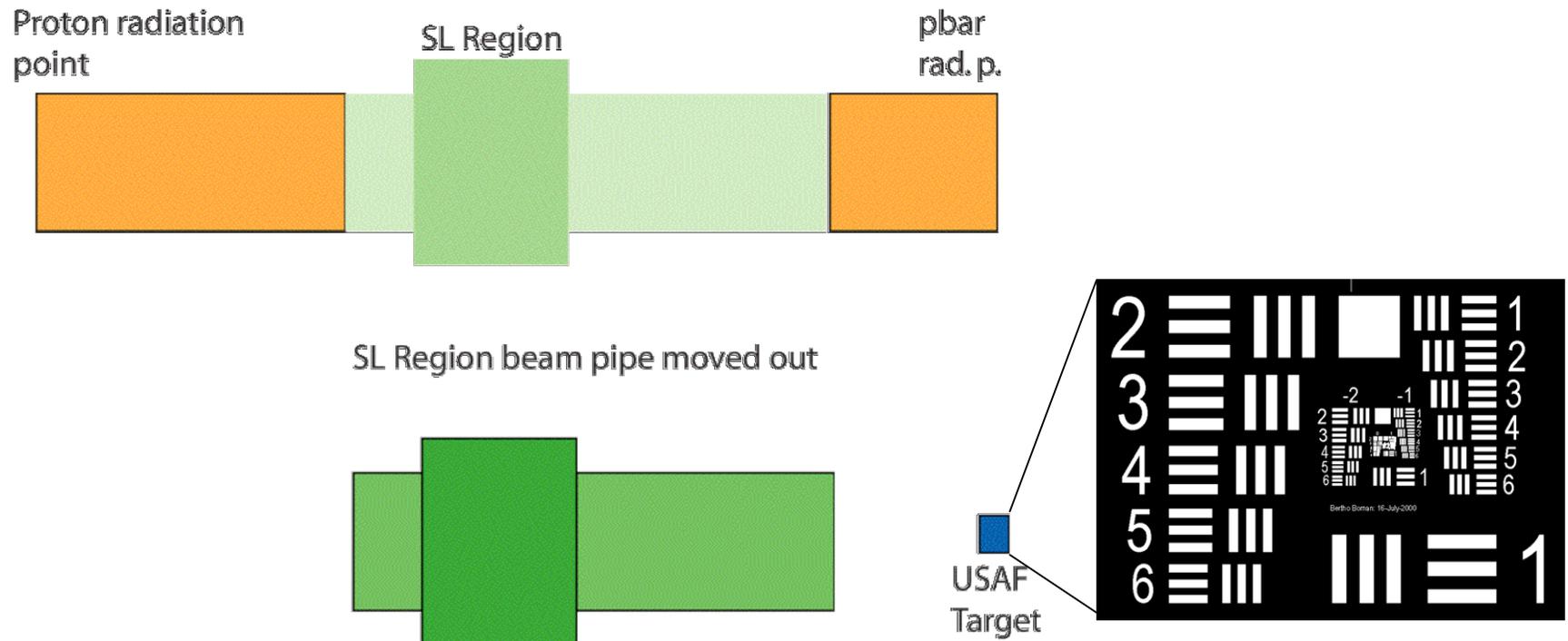


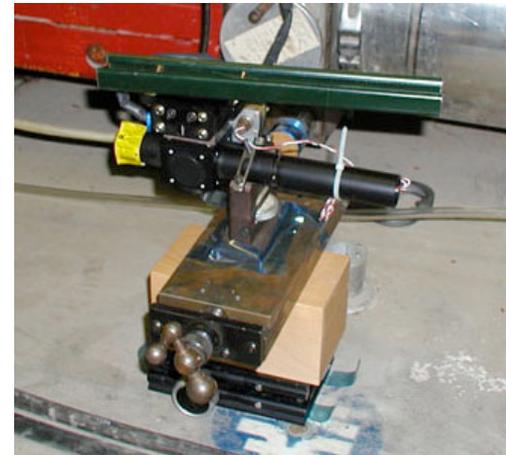
Image USAF target (precision lines/inch) at pbar radiation point
Get mm/pixel: compare to optical (0.083 mm/pixel) &
beam study (0.149 mm/pixel) scales - which is right?

Synclite Moved out Dec. 12th



Laser used to find pbar radiation point
and to position USAF target for
Imaging

Worry: Sensitivity to laser (red light)



Difficulties in Imaging Target



We failed to
Get Image!

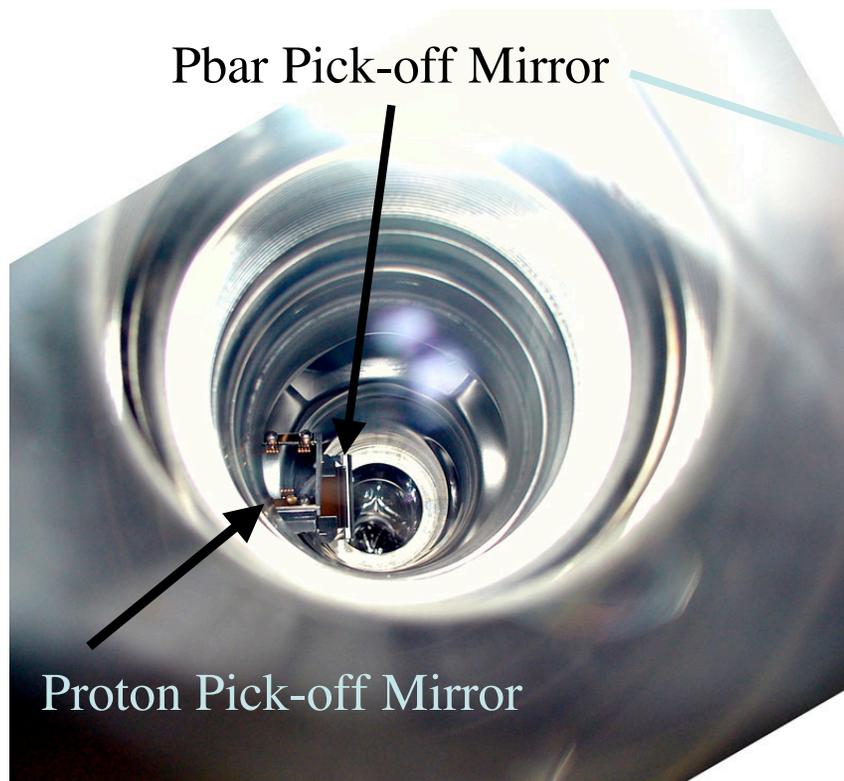
USAF Target illuminated by a slide projector

Difficult to get even laser point onto the image intensifier so we moved pbar pick-off mirror in about 0.75 inches (?)

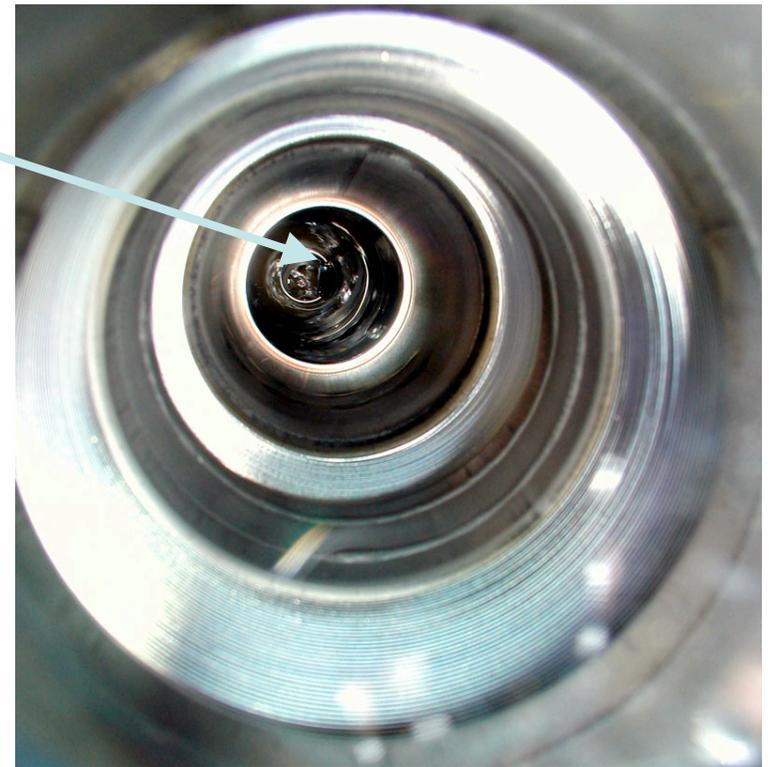
Image positioned onto image intensifier but
Could not see image in readout video.
Did not have much time to solve problems.

Followed a suggestion to move laser vertically and horizontally to get the scale (this was the backup). Still worries with imaging, e.g. HV)

With Pbar Pick-off Mirror moved in by about 0.75 inches(?)



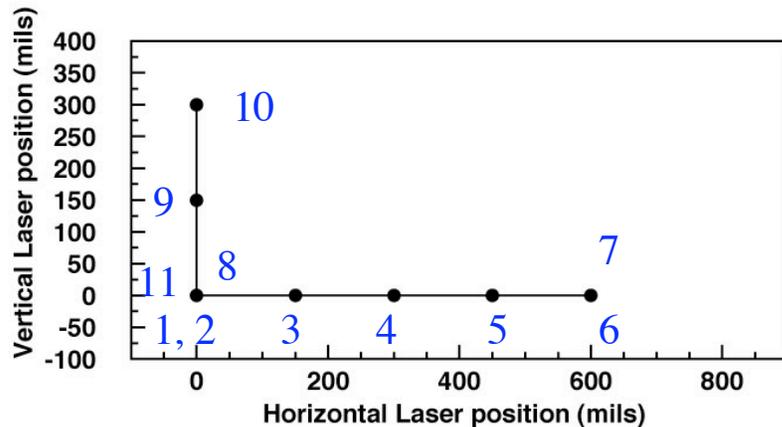
Proton's Eye View



Pbar's Eye View

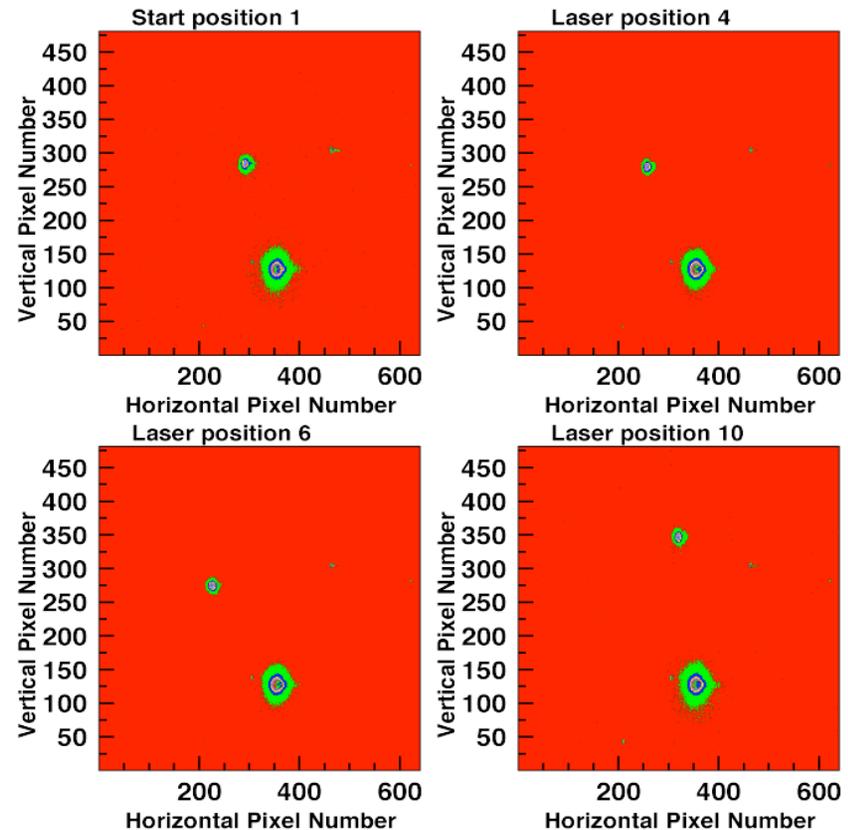
Pbar pick-off mirror looks to be too far out!

Plan B: Laser Scan to Get Scale



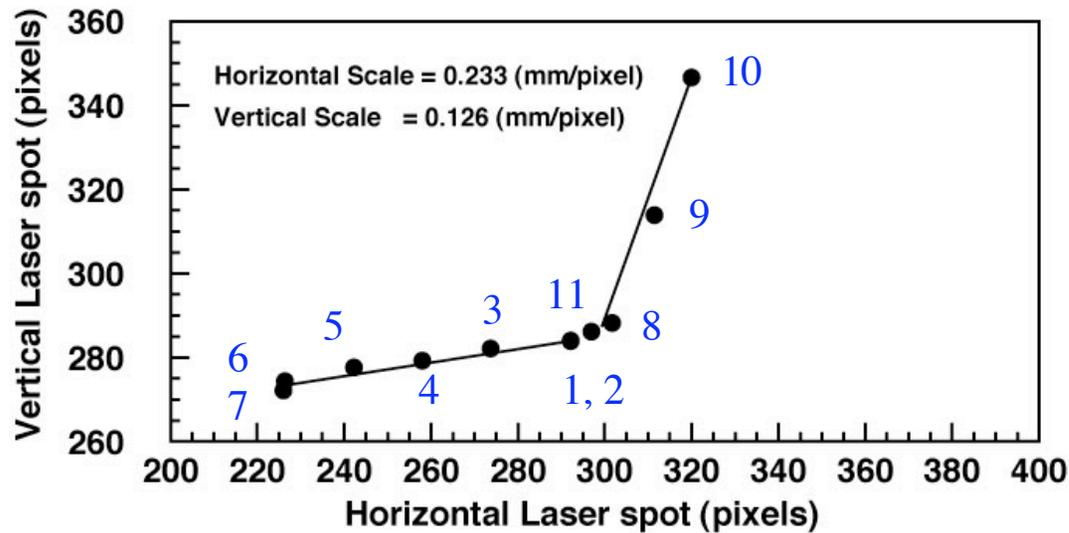
We checked laser spot by obscuring it to make sure we have the right spot!

Use projections and fit to get laser image position



Contour plots of images seen for different positions of laser

Results of Laser Scan

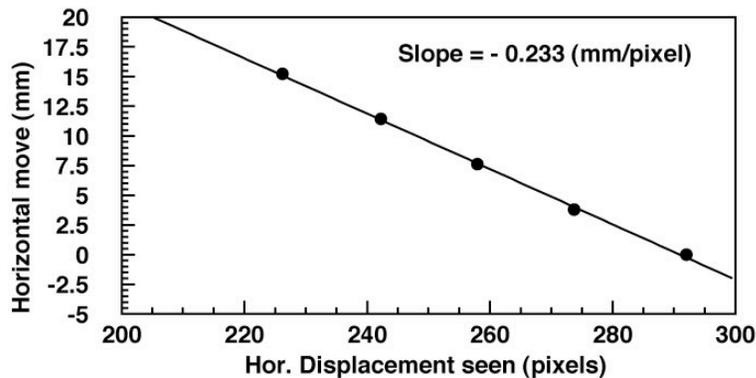


Yikes!

Not a right angle!

Different V, H Scales!

1. Laser scan motion could be incorrect?
2. Seeing a distorted image?



Hor. Scale = 0.233 mm/pixel
Vert. Scale = 0.126 mm/pixel

What Did We Learn?

- The Pbar pick-off mirror looks to be too far out. Barely get image and see reflections. *We should try to move the pbar mirror in.*
- Need a better plan for the next time we try this AND test on the bench to see what to expect. *We need spare parts.*
- We can take out Synclite, work on it, put it back and get it to work again! *We do not need section to be warm to do this test(?)*