

4/25/01 Flag Position cross calibration

13:00

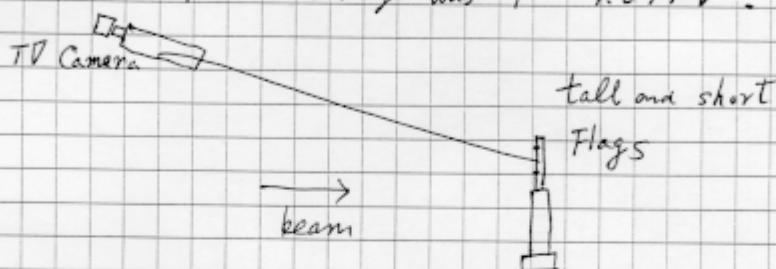
Used OLD Tall Flag at  $X = -3.434 \text{ V}$ 

$$Y = 0 \text{ V}$$

marked corners on TV

Replace with the short FLAG

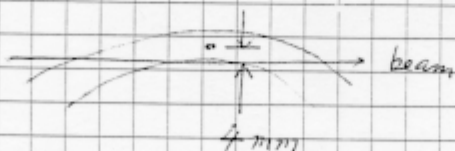
moved up to overlap the corners

Y DVM voltage was  $Y = 1.671 \text{ V}$ .

New Flag Position

$$X = -3.434 \text{ V}$$

$$Y = +1.671 \text{ V}$$

16:23 Set table at  $\begin{cases} X = -0.001 \text{ V} \\ Y = 0.000 \text{ V} \end{cases}$ 

If we want to shoot 4 mm above the beam level,  
we move the table down to the position

$$Y = -0.066 \text{ V} \text{ at } X = 0 \text{ V}$$

4/25/01

1st proton shot

3.8

shot #

$$X = -0.001 \text{ V}$$

16:46

~~3.7~~ TP

43582

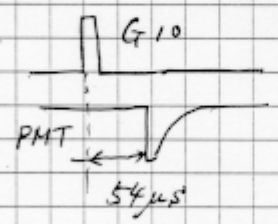
$$Y = 0.000 \text{ V}$$

First explosion of mercury was seen.

|         |          |         |                        |
|---------|----------|---------|------------------------|
| 4/25/01 | 2nd      |         |                        |
|         | Shot #   | shot #  |                        |
| 17:01   | 3.8 TP   | 43909   |                        |
| 17:10   | 3rd shot | 0.8 TP  | shot # 44093           |
| 17:16   | 4th shot | 1.0 TP  | shot # 44191           |
| 17:19   | 5th shot | 2.0 TP  | shot # 44260           |
| 17:49   | 6th shot | 2.1 TP  | shot # 44821           |
| 17:52   | 7th shot | 3.0 TP  | shot # 44894 (2.73 TP) |
| 17:59   | 8th shot | 2.96 TP | shot # 44976           |

18:05  
 moved to  $\begin{cases} X = -3.434 \text{ V} \\ Y = 1.673 \text{ V} \end{cases}$   
 flag position to check beam size with a frame grabber.

18:49 moved to  $\begin{cases} X = 0.000 \text{ V} \\ Y = -0.001 \text{ V} \end{cases}$



fast camera data

file name filename A delay TP laser intensity

|       |                |      |       |        |           |              |
|-------|----------------|------|-------|--------|-----------|--------------|
| 22:01 | jet-data-1     | 1 ms | 53 μs | None   | -10 volt. |              |
| 18    | jet-data-00001 | 1 ms | 53 μs | 3.8 TP | -10 volt  | Hg jet       |
|       |                |      |       |        |           | shot # 49611 |

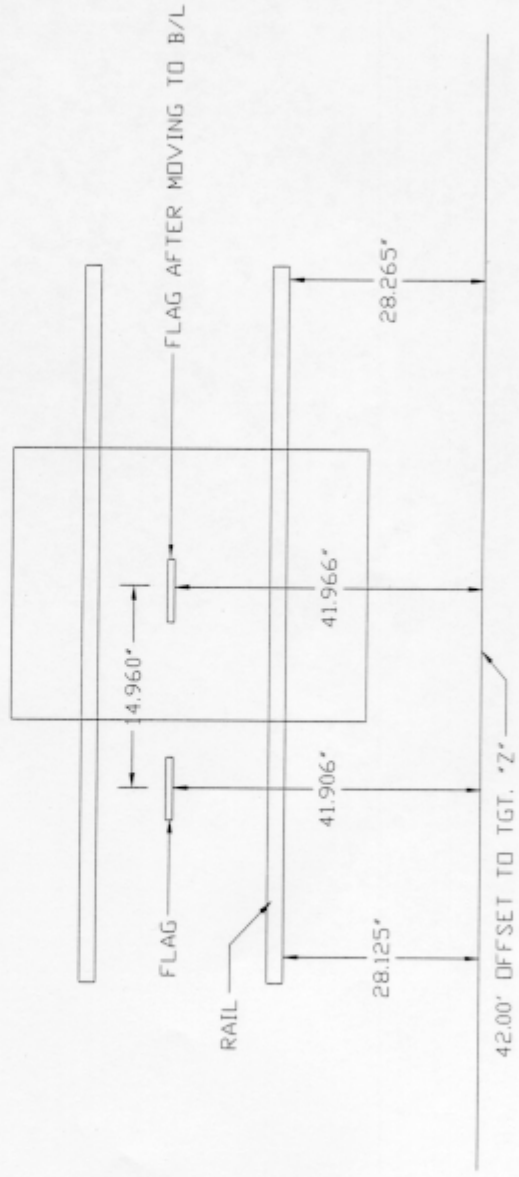
21:00 1 beam pulse was on, but Fast Camera did not fire.

it needs 2 trigger pulses to trigger the optics  
 (the 1st was triggered manually, 2nd was on

| 4/25/01<br>22:10                | file name<br>frame<br>note                       | energy         | Ar delay    | laser<br>intensity     |
|---------------------------------|--|----------------|-------------|------------------------|
|                                 | jet-data-11001.tif<br>shot # 49807               | 3.6 TP         | 53 μs       | <del>10</del> -10 volt |
|                                 | changed to 100 μs interval                       |                |             |                        |
| 22:23                           | jet-data-13001.tif                               | 3.8 TP         | shot #50010 | -15 volt               |
| 23:30                           | jet-data-14001.tif                               | 3.6            | shot #50207 | 53 μs -15 volt         |
| 23:40                           | jet-data-15001.tif                               | 3.6            | #50265      | 53 μs -15 volt         |
|                                 | change to 20 μs interval                         |                |             |                        |
| 22: <del>42</del> <sup>44</sup> | jet-data- <del>17001</del> <sup>17001</sup> .tif | no mercury     |             | -20 volt               |
|                                 | jet-data-18001.tif                               | no splash seen | 3.7 TP      |                        |
|                                 | -19001.tif                                       | no splash seen | 3.4         | #50570                 |
|                                 | change to 50 μs interval                         |                |             |                        |
|                                 | 20001.tif  | no splash      |             |                        |
|                                 | changed to 100 μs                                |                |             |                        |
| 22:57                           | 21001.tif  | overwritten    |             | -20 Volt               |
|                                 | change to 1 ms interval                          |                |             |                        |
|                                 | jet-data-22001.tif                               |                |             | -15 Volt               |
| 23:23                           | changed to 100 μs                                |                |             |                        |
|                                 | jet-data-23001.tif                               |                | 3.9 TP      | <del>51150</del>       |
| 23:27                           | jet-data-24001.tif                               |                | 3.5 TP      | 51273                  |

Needed a fake manual trigger to get fast camera armed.

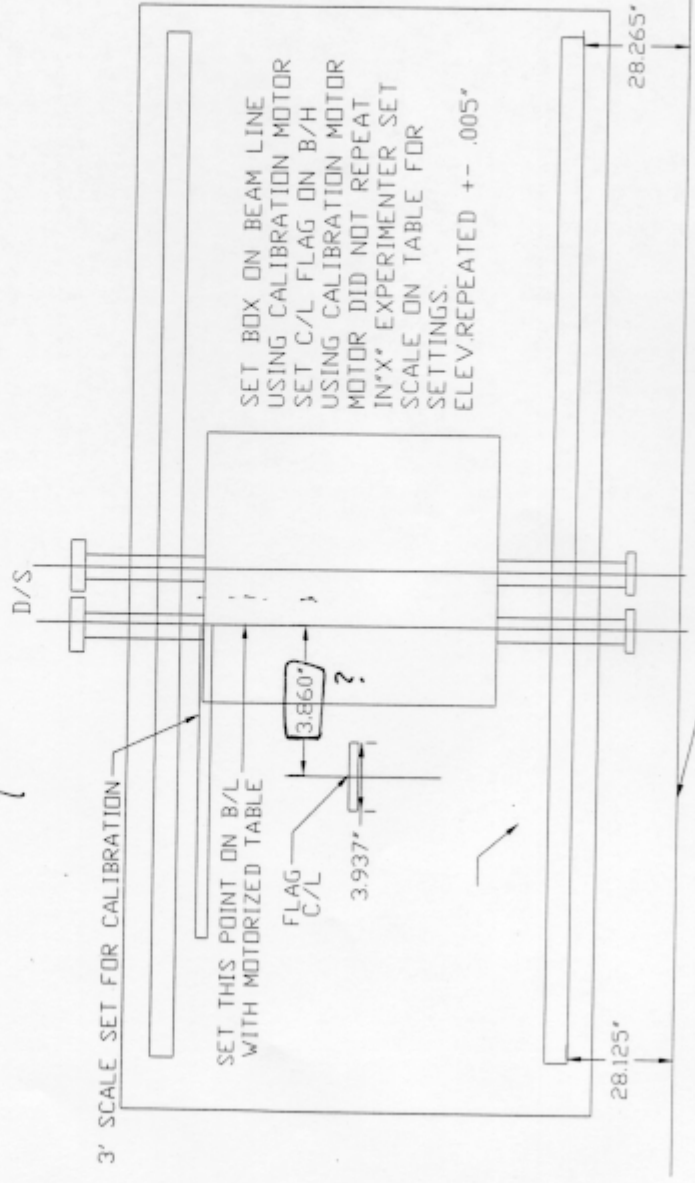
A3 EXP 951  
CHECK PERPENDICULAR OF TRACK  
AND FLAG IN 'Z' POSITION  
3/2001 JCR DWG  
CAD SURVEY GRP 4753,4661



A3 LINE (J. SCADUTO)  
 SET FLAG AND INST. BOX CALIBRATIONS  
 3-19-2001 JCR,DWG  
 CAD SURVEY GRP. 4753, 4661

BEAM HGT=900.000"

*Handwritten:* 15.361  
 " D/S



3' SCALE SET FOR CALIBRATION

SET THIS POINT ON B/L WITH MOTORIZED TABLE

FLAG C/L

3.937"

3.860"

?

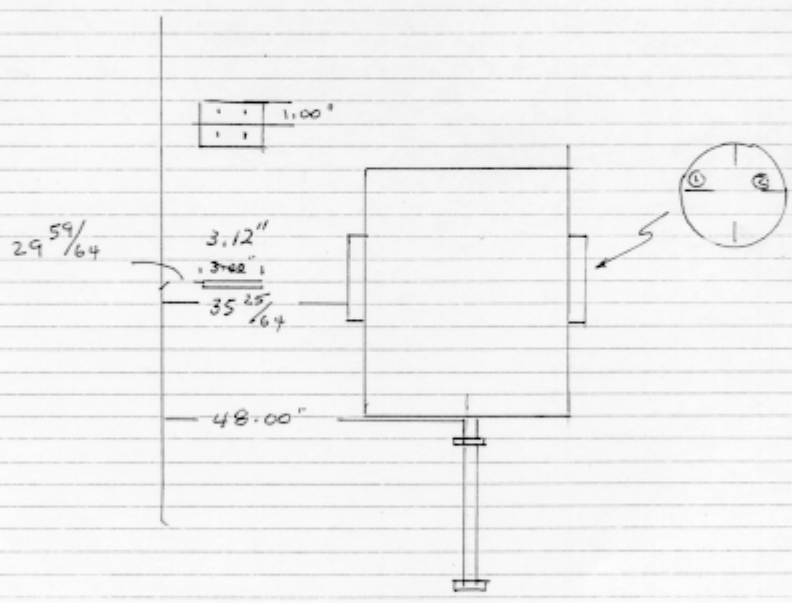
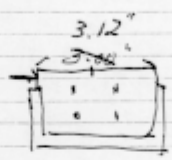
42.00" OFFSET FROM TGT. IN <sup>Z</sup>

28.125"

28.265"

4-25-2001 JCR DWG HAROLD KIRK

| STA        | +    | HI | -     | EL      | CHUCK | FINFROCK          |
|------------|------|----|-------|---------|-------|-------------------|
| ± QUAD     | .263 |    |       | 900.000 |       | 4018, 1900        |
| SCRIBE BOX |      |    | .263  |         |       |                   |
| TOP FLAG   |      |    | 3.209 |         | 3     | FINFROCK, BXL GOV |
| ± CLASS    |      |    | .111  |         |       |                   |
| ± QUAD     | .275 |    |       |         |       |                   |
| + ①        |      |    | .329  |         |       |                   |
| + ②        |      |    | .341  |         |       |                   |



4/26/01 A surveyer Joe (JCR) re-measured the distance  
 14:19 from the 48" line to the west side of the FLAG which was  
 YASUO FUKUI consistent with the 4/25/01 measurement. He got  
 (same as)  
 3.12" FLAG width insted of 3.00".

4/26/01

82

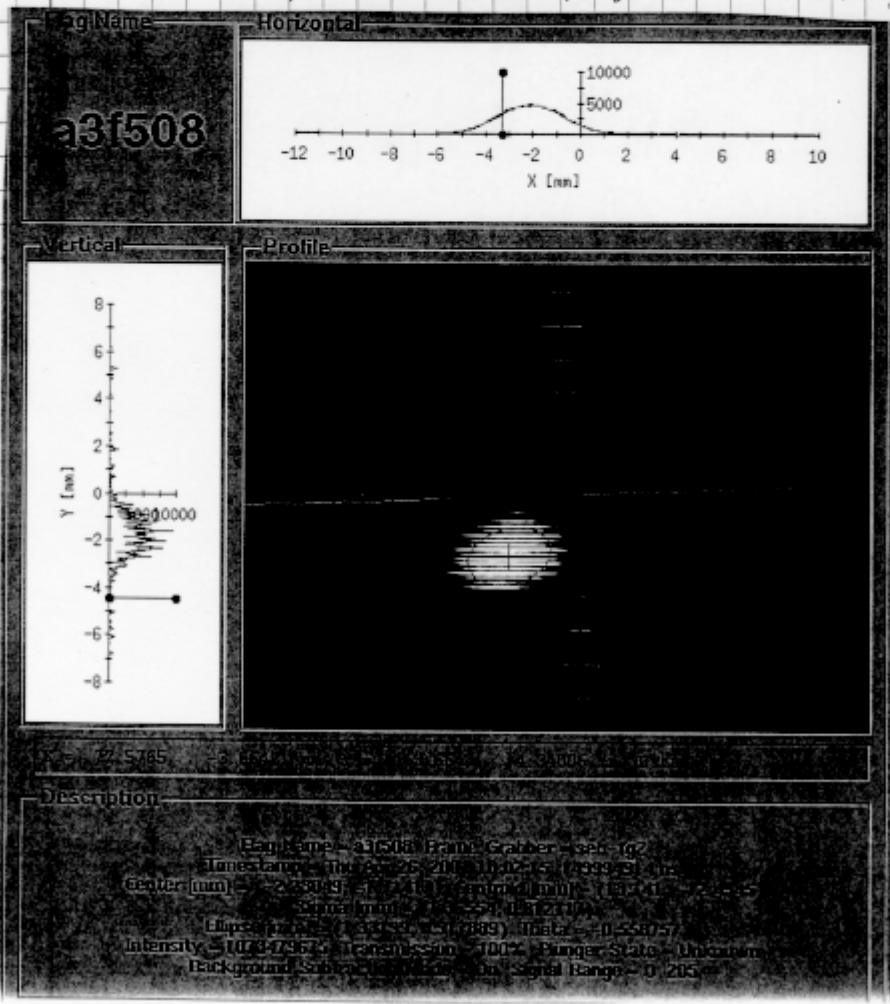
15:14 move to  $X = 1.511 \text{ V}$  7.2" (transparent grid sheet in the beam line)

4A500  
 $Y=0$

19:00 MCR called and says they are ready to power up the A3 line

17:10 1ST PULSES ON OUR BEAM PLAC.

It is noticed that the fly image has been shifted to the left (away from the target box) by 25-30 mils. Is this our translation stage, our readout, or due to the fly camera shifting?





Optics view expanded to  $\sim 3.5$  times.

83

4/26/01 moved the Table back to  $X = 0.000 \text{ V}$   
YASUO  $Y = 0.000 \text{ V}$   
20:20

20:22 Fake trigger mercury jet

| shot #       | filename  | frame<br>rate | A delay | proton<br>energy | laser<br>intensity | Hg<br>jet |
|--------------|-----------|---------------|---------|------------------|--------------------|-----------|
| 8:20 pm<br>? | jet-1.tif | 100ps         | 53ps    | none             | -20 volt           | no jet    |

frame size  $\approx \sim 4 \text{ cm} \times 4 \text{ cm}$   
(previously  $13.2 \times 13.2 \text{ cm}$ ).

4/26/01  
22:31 Horizontal scale is at 26.360" with  $X = -0.001 \text{ V}$  (same as 4/25/01)  
YASUO FUKUI Base moved to East by 40 mil (1 mm)  
compared to the reading of 4/25/01 (See p.75)

Chover Tsang's Week end phone #  
516-707-5460

23:00 we have been asked by MCR to stand down - Lab power levels do not permit powering up the A3 line at this time. We will try again tomorrow.

4/27/01

6:45 Called MCR - again no permission to power up. The current plan is to try at around 9:00 AM after the re line for g-2 is powered down for g-2 qual test.

|        |           |       |      |          |           |           |
|--------|-----------|-------|------|----------|-----------|-----------|
| Siiban | jet-2.tif | 100ps | 53ps | -20 volt | NO proton | Hg jet    |
|        | jet-3.tif | "     | "    | "        | NO proton | NO Hg jet |



4/27/01 (Fri)

84

move to  $\begin{cases} X = -3.433 \text{ V} \\ Y = 1.671 \text{ V} \end{cases}$  Flag in position

move to  $\begin{cases} X = 0.000 \text{ V} \\ Y = 0.001 \text{ V} \end{cases}$  beam center

| Time  | TP   | File Name              | Interval       | Delay             | Shot # | Notes           |
|-------|--|------------------------|----------------|-------------------|--------|-----------------|
| 10:03 | 1.6 TP   | jet-4.tif              | 100 $\mu$ s    | Adelay 53 $\mu$ s |        |                 |
|       | <del>3 TP</del>  | <del>(HER claim)</del> |                |                   |        |                 |
| 10:08 | 3 TP   | jet-5.tif              | 100 $\mu$ s    |                   |        |                 |
| 10:13 | 2.8 TP   | jet-6.tif              | 100 $\mu$ s    |                   |        |                 |
| 10:18 | 2.7 TP   | jet-7.tif              | 100 $\mu$ s    |                   |        |                 |
| 10:23 | 2.8 TP   | jet-8.tif              | 100 $\mu$ s    |                   |        |                 |
| 10:25 | moved to $\begin{cases} X = -3.432 \text{ V} \\ Y = 1.671 \text{ V} \end{cases}$ |                        |                |                   |        |                 |
|       |  |                        | frame interval |                   | shot # |                 |
| 10:26 | 3.5 TP   | jet-9.tif              | 100 $\mu$ s    |                   | 26387  |                 |
| 11:03 | 3.7 TP   | jet-10.tif             | 100 $\mu$ s    |                   | 26470  |                 |
| 11:09 | 0 TP   | jet-11.tif             | 100 $\mu$ s    |                   | 26546  |                 |
| 11:19 | 2.6 TP   | jet-12.tif             | 100 $\mu$ s    |                   | 26744  |                 |
| 11:21 | 3.7 TP   | jet-13.tif             | 100 $\mu$ s    |                   | 26788  |                 |
| 11:30 | 1.0 TP   | jet-14.tif             | 100 $\mu$ s    |                   | 26974  |                 |
| 11:32 | 0.8 TP   | jet-15.tif             | 100 $\mu$ s    |                   | 27047  |                 |
| 11:36 | 3.5 TP   | jet-16.tif             | 100 $\mu$ s    |                   | 27111  |                 |
| 11:40 | 3.7 TP   | jet-17.tif             | 20 $\mu$ s     |                   | 27190  |                 |
| 11:44 | 3.5 TP   | jet-18.tif             | 20 $\mu$ s     |                   | 27259  | 16 frames saved |
| 11:47 | 3.6 TP   | jet-19.tif             | 10 $\mu$ s     |                   | 27315  |                 |

4/1/01

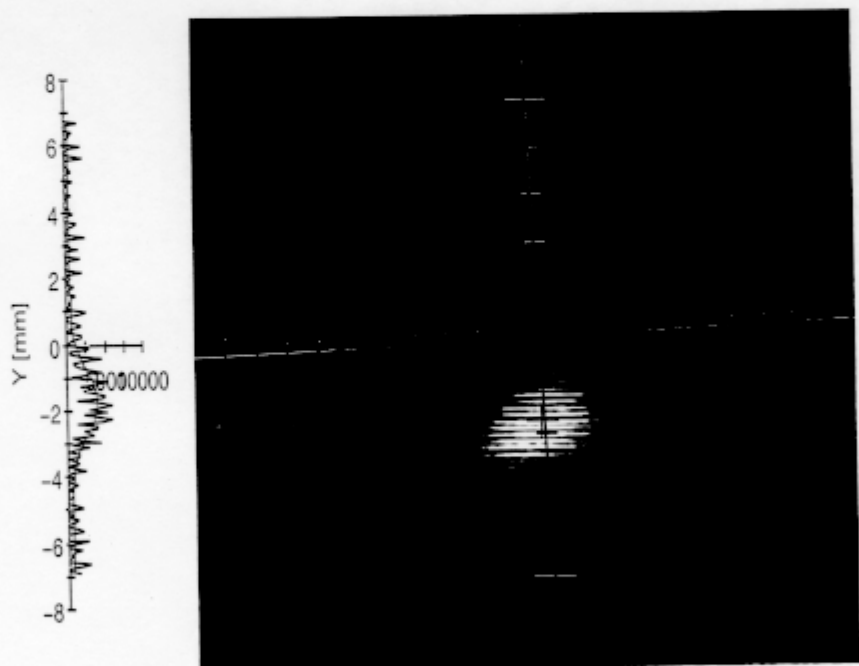
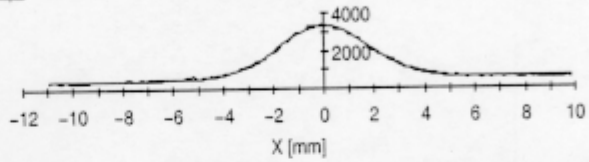
| Time  | TP                 | File Name  | Delay                                | Shot # |
|-------|--------------------|------------|--------------------------------------|--------|
| 11:50 | 3.7 TP             | jet-20.tif | 10 $\mu$ s                           | 27363  |
| 11:52 | 3.6 TP             | jet-21.tif | 10 $\mu$ s                           | 27422  |
|       |                    |            | delay 200 $\mu$ s                    |        |
|       |                    |            | 10 $\mu$ s                           |        |
|       |                    |            | A delay = <del>253</del> 253 $\mu$ s |        |
|       | 3.6 TP             | jet-22.tif | 10 $\mu$ s                           | 27485  |
|       |                    |            | A delay = 1553 $\mu$ s               |        |
| 12:02 | 3.6                | jet-23.tif | 10 $\mu$ s                           | 27597  |
| 12:04 | 0 TP               | jet-24.tif | A delay = 1253 $\mu$ s               |        |
|       |                    |            | 10 $\mu$ s                           |        |
| 12:06 | 3.4 TP             | jet-25.tif | 10 $\mu$ s                           |        |
| 12:10 | 3.5 TP             | jet-26.tif | A delay = 953 $\mu$ s                | 27761  |
|       |                    |            | 10 $\mu$ s                           |        |
| 12:13 | 3.5                | jet-27.tif | 1 $\mu$ s                            | 27824  |
| 12:17 | 3.3                | jet-28.tif | A delay 553 $\mu$ s                  | 27894  |
|       |                    |            | 1 $\mu$ s                            |        |
|       |                    |            | A delay = 63 $\mu$ s                 |        |
| 12:25 | 3.3                | jet-29.tif | 1 $\mu$ s                            | 28022  |
| 12:27 | 3.8                | jet-30.tif | 1 $\mu$ s                            | 28083  |
| 12:31 | 3.7                | jet-31.tif | 5 $\mu$ s                            | 28165  |
| 12:33 | <del>3.7</del> 3.3 | jet-32.tif | 10 $\mu$ s                           | 28219  |

4/29/01

8p

08:00 — Tuning 6 Bunch mode extraction by Kevin Brown  
Kirk, Harold, Chuck, Steve, Peter, Yasuo  
18:44 3.9 TP at A3 flag

**a3f508**



Flag Name = a3f508 Frame Grabber = seb-fg2  
Timestamp = Sat Apr 28, 2001 18:40:45 749999650 ns  
Center [mm] = (-0.101962, -1.72383) Centroid [mm] = (14.8674, -11.9507)  
Sigma [mm] = (1.80204, 0.915082)  
Ellipse [mm] = (1.87947, 0.984007) Theta = -0.443009  
Intensity = 1073479675 Transmission = 100% Plunger State = Unknown  
Background Subtraction Mode = On Signal Range = 0 131

4/29/01

KEVIN SET UP 2 TUBES

|   | $\sigma_x$ | $\sigma_y$ | $\Phi_7$ | DUG  |                     |
|---|------------|------------|----------|------|---------------------|
| 1 | 1.8 mm     | 0.9 mm     | 800      | 122V | (SEE PLOT ON P. 86) |
| 2 | 3.0        | 1.4        | 1200     | 1215 |                     |

18:58  
YASUO FUKUMImoved the box to  $\left\{ \begin{array}{l} X = 0.000 \text{ V} \\ Y = +0.001 \text{ V} \end{array} \right.$  beam centerbeam size  
1.8 x 0.9

file location D:\E951-optics\Hg-jet-4-29-01\

|       |        |               |             |                      |
|-------|--------|---------------|-------------|----------------------|
| 19:14 | 3.9TP  | 6bunch001.tif | 100 $\mu$ s | A delay = 53 $\mu$ s |
|       | 3.85TP | 6bunch002.tif | 1 ms        |                      |

0.083V  $\Leftrightarrow$   $\Delta y = 5 \text{ mm}$ .  $\downarrow$   $Y = +0.083 \text{ V}$  box is 5 mm up

3.9TP 6bunch003.tif 1 ms

19:31

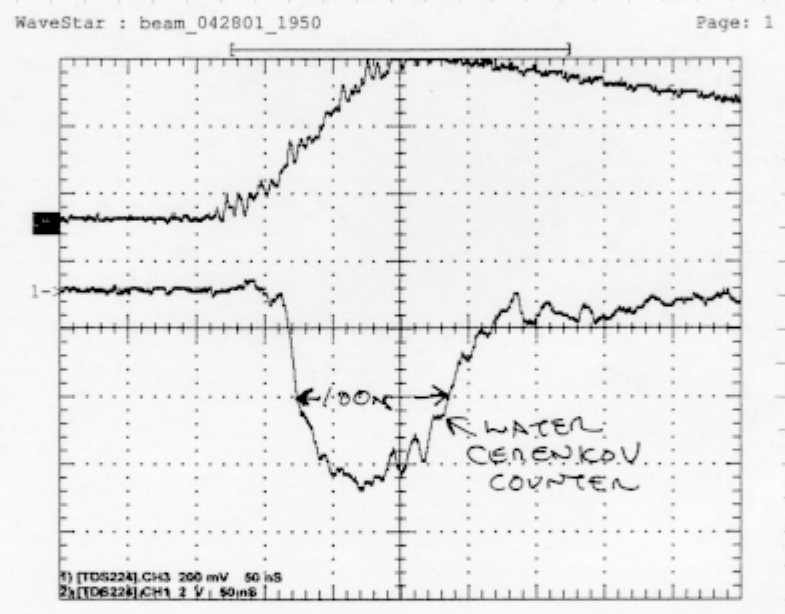
3.7TP 6bunch004.tif 1 ms  $Y = +0.166 \text{ V}$  box is 10 mm up19:35 3.7TP 6bunch005.tif 100  $\mu$ s Set  $Y = +0.082 \text{ V}$   
 $Y = +0.041 \text{ V}$  box is 2.5 mm up

|       |                       |               |             |                                |
|-------|-----------------------|---------------|-------------|--------------------------------|
|       | 0TP <del>empty?</del> | 6bunch006.tif | 100 $\mu$ s | $Y = 0.041 \text{ V}$          |
|       | 4.0TP                 | 6bunch007.tif | 100 $\mu$ s | $Y = 0.041 \text{ V}$          |
|       | 3.8TP                 | 008.tif       | 1 ms        | $Y = 0.041 \text{ V}$          |
| 19:50 | 0TP                   | 009.tif       | 1 ms        | $Y = -0.041 \text{ V}$         |
|       | 3.75TP                | 010.tif       | 1 ms        | $Y = -0.041 \text{ V}$         |
|       | 3.7                   | 011.tif       | 1 ms        | $Y = +0.082 \text{ V}$ 5 mm up |

beam spot #2 Setup (Bigger beam size)

|       |        |               |             |                        |
|-------|--------|---------------|-------------|------------------------|
| 20:04 |        | 6bunch012.tif | 100 $\mu$ s | $Y = +0.082 \text{ V}$ |
| 20:07 |        | 6bunch013.tif | 100 $\mu$ s | $Y = +0.082 \text{ V}$ |
|       | 0TP    | 6bunch014.tif | 100 $\mu$ s | $Y = 0.041 \text{ V}$  |
|       | 3.65TP | 015.tif       | 100 $\mu$ s | $Y = 0.041 \text{ V}$  |
| 20:21 | 3.95TP | 016.tif       | 1 ms        | $Y = 0.041 \text{ V}$  |

|         |        |               | frame interval | Y position |    |
|---------|--------|---------------|----------------|------------|----|
| 4/29/01 |        |               |                |            | 88 |
| 20=23   | 3.77TP | 6bunch017.tif | 1ms            | Y=0        | ∇  |
| 20=27   | 0TP    | 018.tif       | 100μs          | Y=0        | ∇  |
|         | 0TP    | 019.tif       | 100μs          | Y=0        | ∇  |
| 20=34   | 3.75TP | 6bunch020.tif | 100μs          | Y=0        | ∇  |



Kirk, Chuck, Nick, Yasuo