

FY01 Fast Extracted Beam To A3 Line

I. Fast Extraction to A3

- i. Basic Principle
- ii. Results from FY00 Studies
- iii. Transport to A3
- iv. A3 Optics

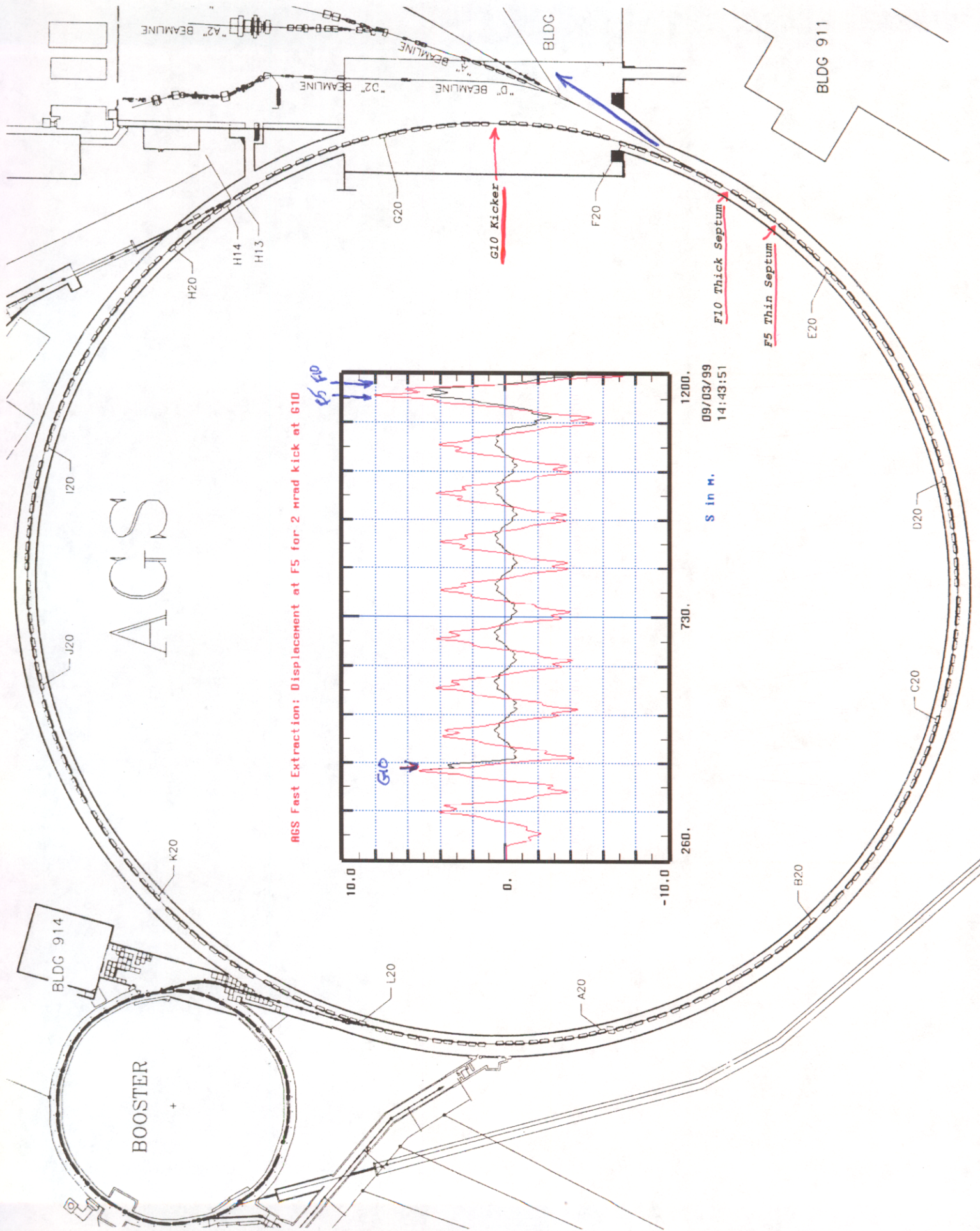
II. FY01 Plans

- i. Commissioning Plan for C Line run
- ii. Possible Problem Areas and Solutions
- iii. A3 Setup
- iv. Bunch Manipulations and Context Switching

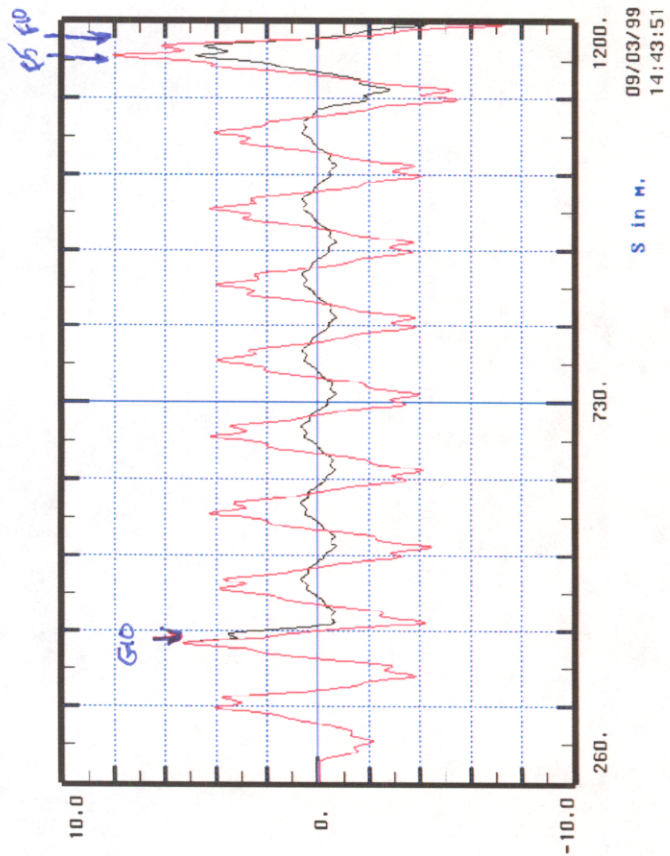
III. A3 Instrumentation

- i. Listing
- ii. Current Status
- iii. Commissioning New Instrumentation

IV. Summary

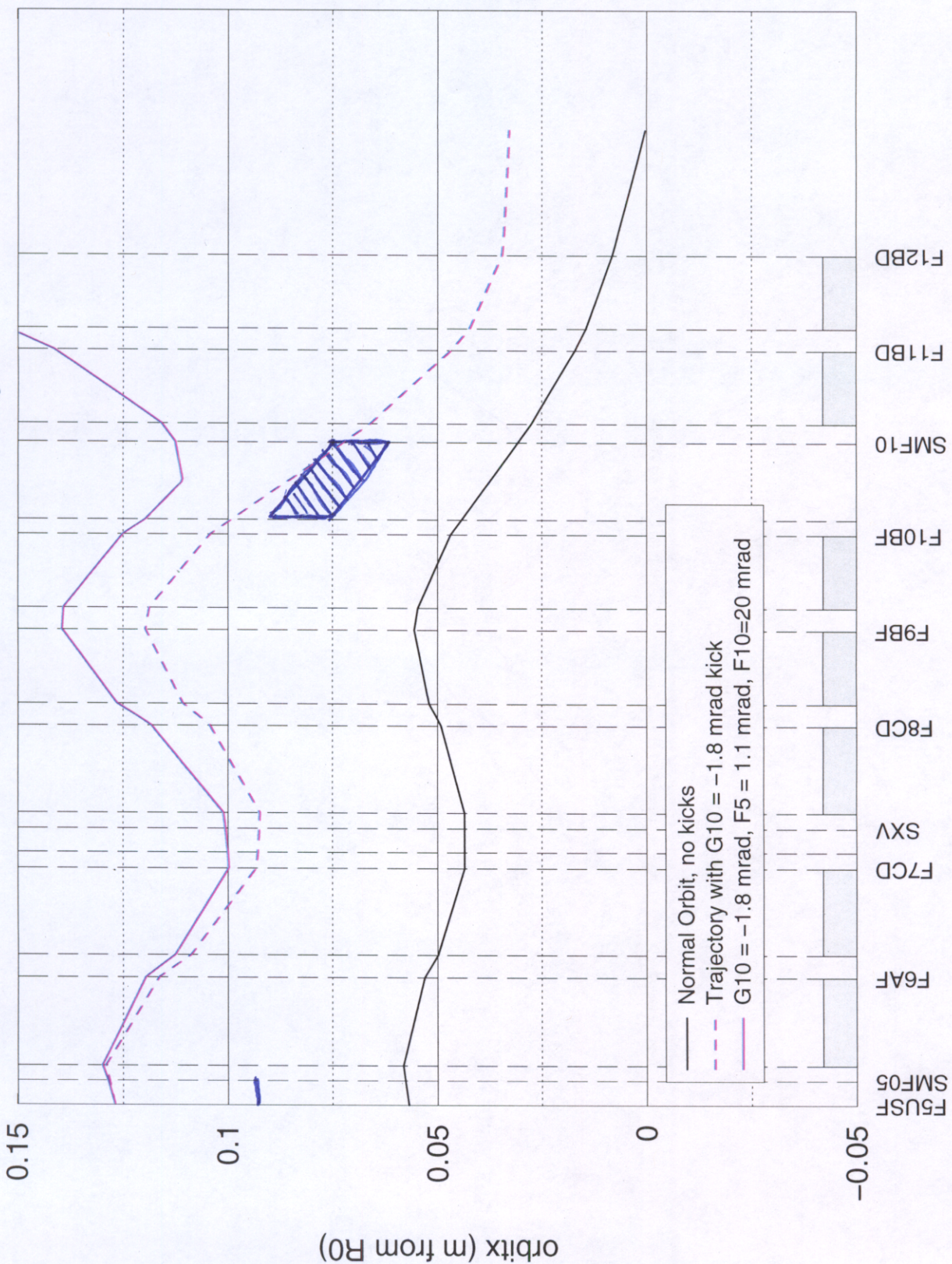


ACS Fast Extraction: Displacement at F5 for 2 mrad kick at G10



Central Trajectory from F5 to F13

fast extracted beam to switchyard



Setup Data Files Diagnostics

Wed Feb 16 11:53:52 2000

Cycles: 58227

Gate Width: 200 us

Trod File: SA_Active_Feb8_0

Horz Overall Gain: 0.0423

Vert Overall Gain: 0.05

Average Position:

Scan Times--Horz--Vert--

1715025 us -2.979 -1.063

1728025 us -1.837 -0.967

BAD HORIZONTAL BPMS:

A12 A14 A18 B04

B18 C02 C12 E04

E14 F08 F12 G14

H02 I12 J02 J14

L02

BAD VERTICAL BPMS:

A02 A12 A14 A18

B04 B08 B18 C02

C04 C12 F08 F14

G14 J02 J14 K08

K18

Page Device Setpoint

Device Name

SEB.F10_FINE_ADJ

SFL.CF011_FLAG

SCP.CD1

SCP.CQ1

SCP.CP020

SCP.CQ2

SCP.CQ3

SCP.CQ4

SCP.AB1

SDR.AB1_TRANSVR

SDR.AB1_SKEW

SCP.DB2

SDR.DB2_TRANSVR

SDR.DB2_SKEW

SCP.BB3

SDR.BB3_TRANSVR

SDR.BB3_SKEW

SCP.CP075

SCP.AP1

SDR.AP1_TRANSVR

SDR.AP1_SKEW

SCP.CP1

SDR.CP1_TRANSVR

SDR.CP1_SKEW

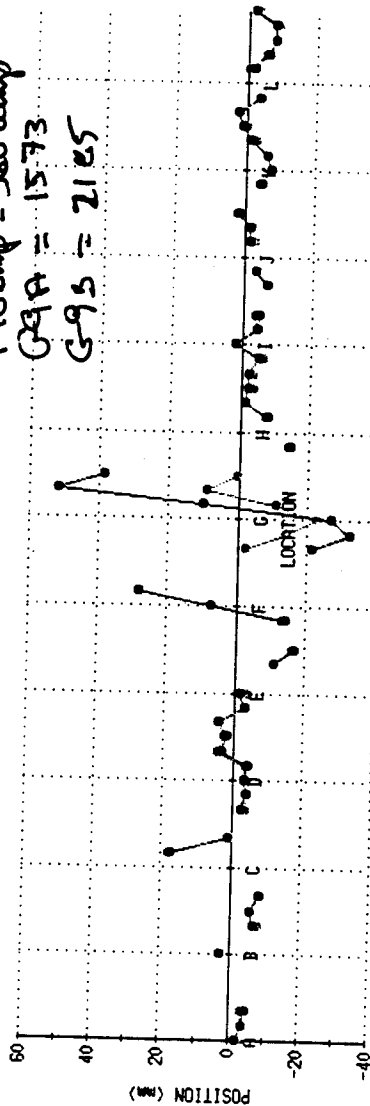
SFL.CF100_FLAG

SCP.CD101

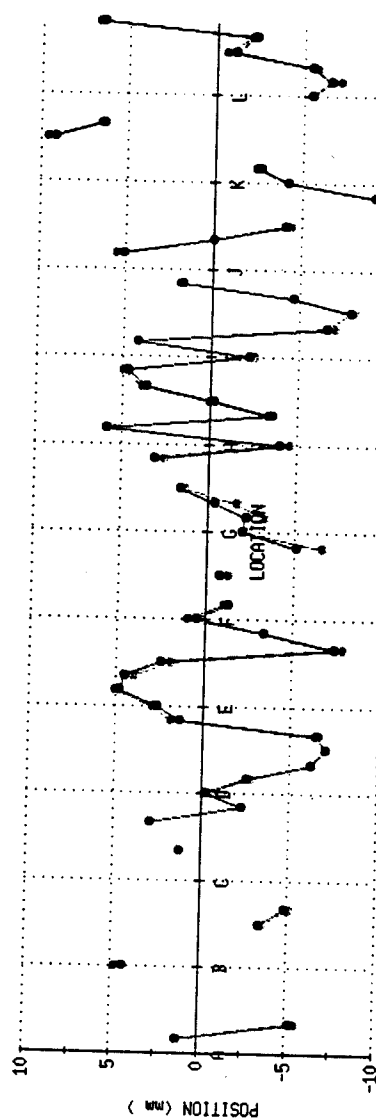
SCP.CP103

SAP.AD2&3

HORIZONTAL



VERTICAL



ScanGateWidth(us): 100 ScanTimes... No.Cycles: 11 Avg: No Sigmas: No

Graph: Data<Loc Data Source: Current Data Type: Hor&Ver Disptimes: All Scale

DiffOrbit: No RedisplayData AcquireOnce AcquireCont StopAcquiring

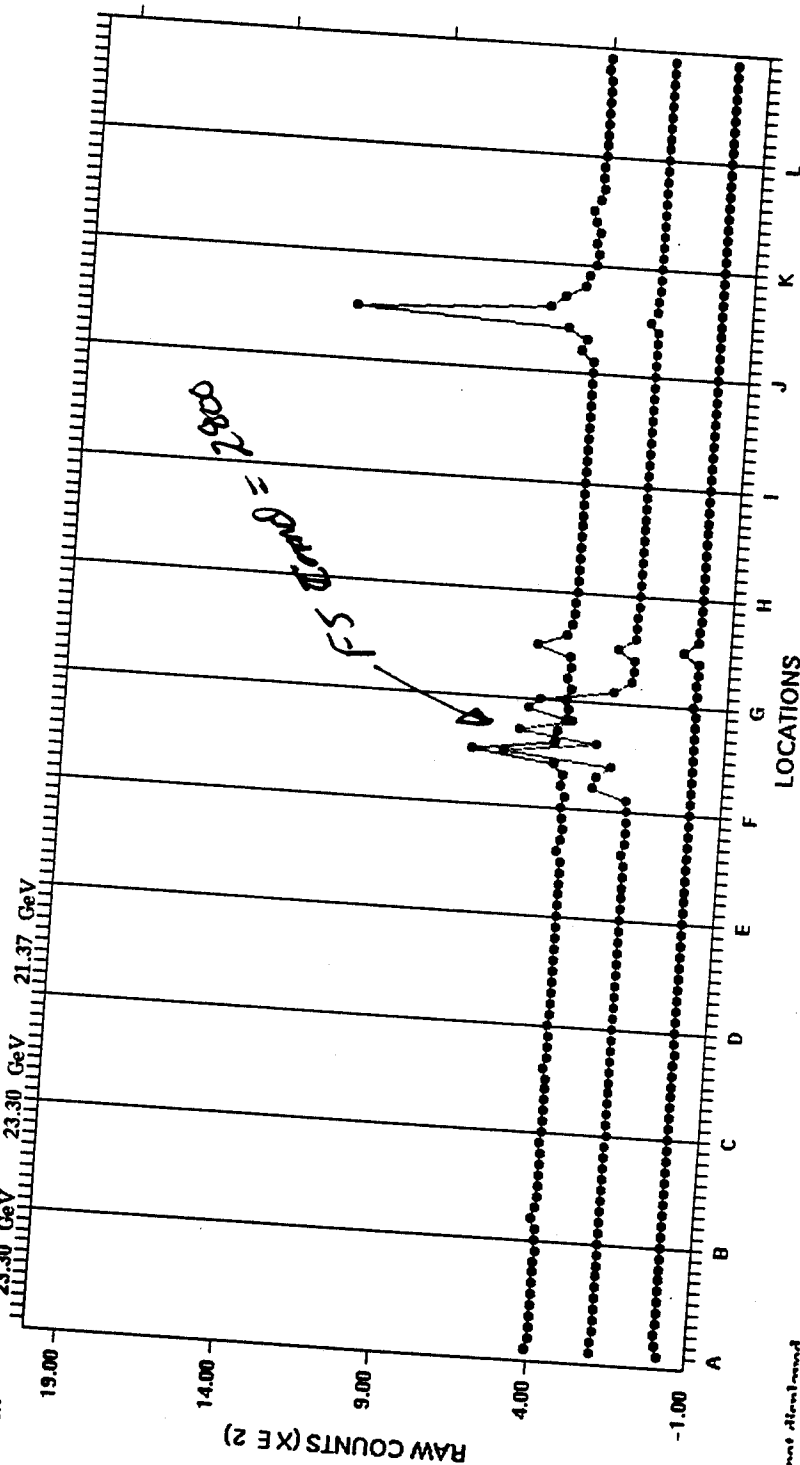
RefFile: ext SaveRef DataFile: Ref_7 SaveData SetupFile: default SaveSetup

at best we have ~ 400 cuts in "normal" set-up. This gives ~ 83% extraction.

Printed: Wed Feb 16 20:27:33 2000

Setup Data Files EngineeringOptions

DATA: CURRENT - REFERENCE FILE febswbk
 GAIN SETTING: LOW AGS CYCLE: 4921
 WINDOWS: 1600 ms. 1800 ms. 2000 ms.
 SUMS: 100 cts. 2199 cts. 2118 cts.
 XF DIFF: 14 cts. -190 cts. -74 cts.
 K.E.: 23.30 GeV 23.30 GeV 21.37 GeV



* not normalized

-1.00

A

B

C

D

E

F

G

H

I

J

K

L

* not normalized

Setup Data Files Diagnostics

Help

Wed Feb 23 19:40:54 2000

Cycles:
26214

Gate Width: 200 us

Trod File: SA_Active_Feb8_0

Horz Overall Gain: 0.0423

Vert Overall Gain: 0.05

Average Position:

Scan Times--Horz--Vert--
1728025 us -1.118 -1.016
1728025 us -0.689 -1.021

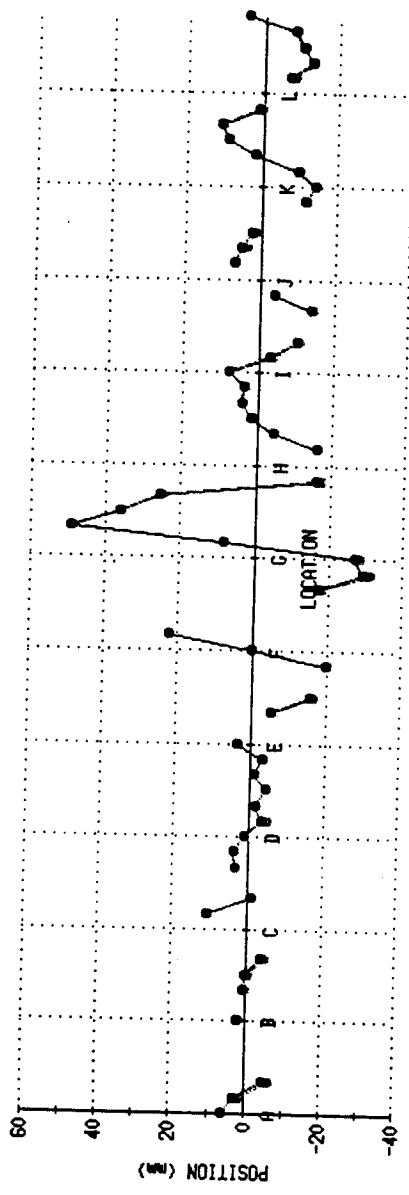
BAD HORIZONTAL BPMS:

A12 A14 A18 B04
B18 C02 C12 E04
E14 F08 F12 H02
J12 J02 J14 L02

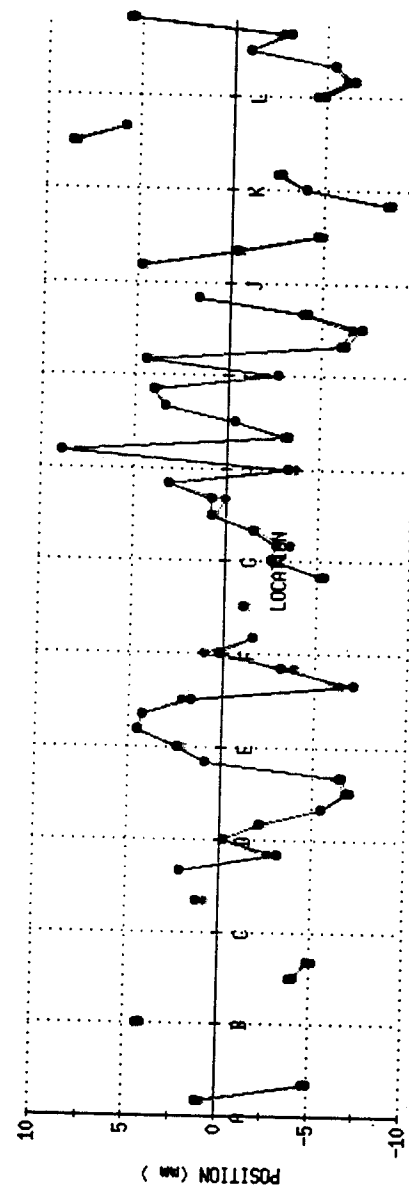
BAD VERTICAL BPMS:

A02 A12 A14 A18
B04 B08 B18 C02
C04 C12 F08 F14
J02 J14 K08 K18

HORIZONTAL



VERTICAL



Key parameters in final setup:

G10 width = 2000 cnts

G09 A = 1694 cnts

G09 B = 1676 cnts

C02 = 35m

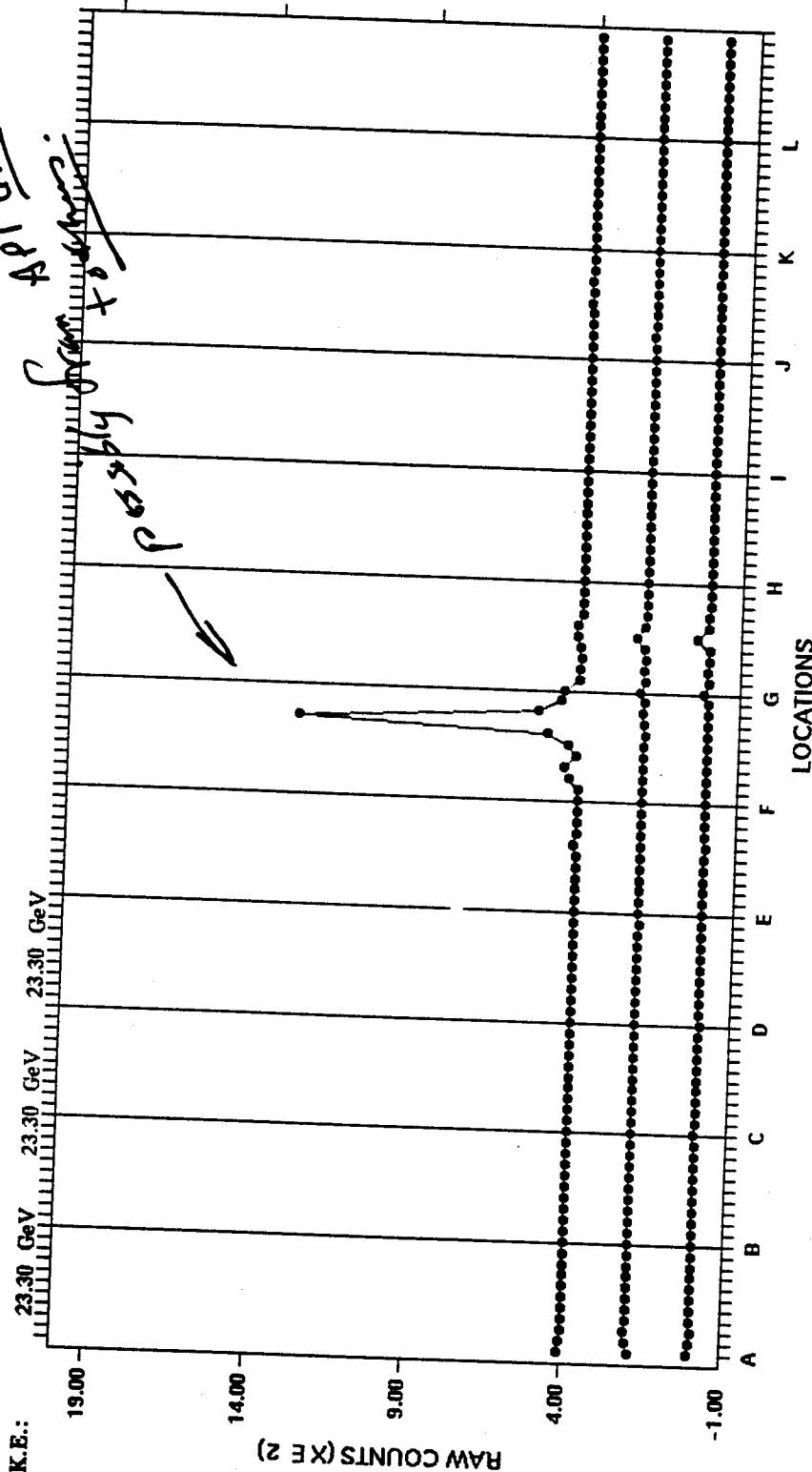
} JWG's trick to reduce FS/F10 loss
- Go faster?

Printed: Wed Feb 23 20:37:34 2000

Setup Data Files EngineeringOptions

Help

DATA: CURRENT - REFERENCE FILE febswbk ACQUISITION DATE: Wed Feb 23 20:36:48 2000
GAIN SETTING: LOW AGS CYCLE: 27426
WINDOWS: 1450 ms. 1600 ms. 1800 ms.
SUMS: 87 cts. 83 cts. 1452 cts.
XF DIFF: -4 cts. 36 cts. -68 cts.
K.E.: 23.30 GeV 23.30 GeV 23.30 GeV



* - not displayed

Setup File: scratch

Save Setup

Save as. . .

Setup Mode: Operations

Data: Current

No. Groups: 1

Display Sigmas: No

Max Y: 2000

Windows. . . Window Display:

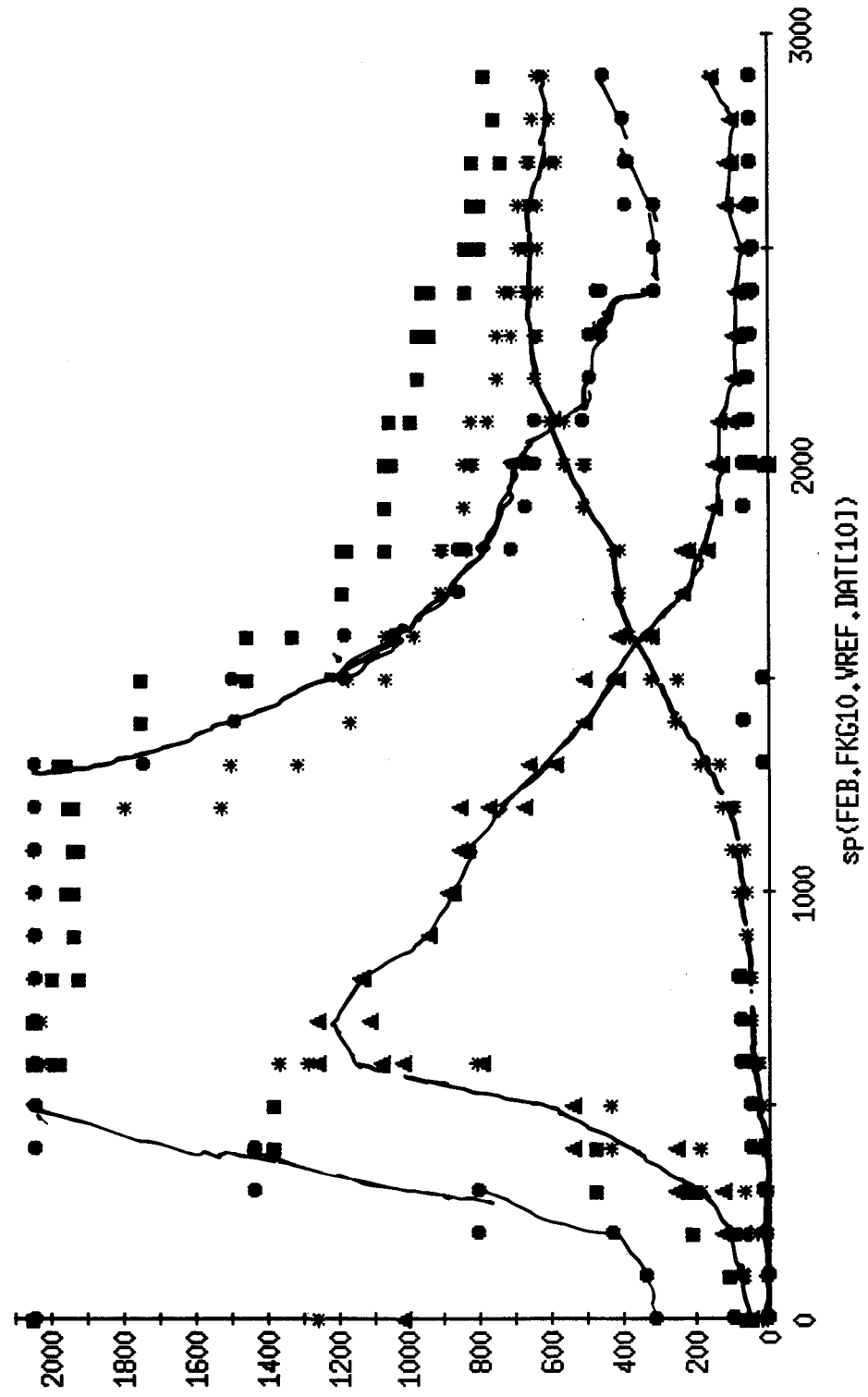
wldw_2_3_4

Monitor Group Setup:

ALL MONITORS

File: Setup, Page: 66 of 66

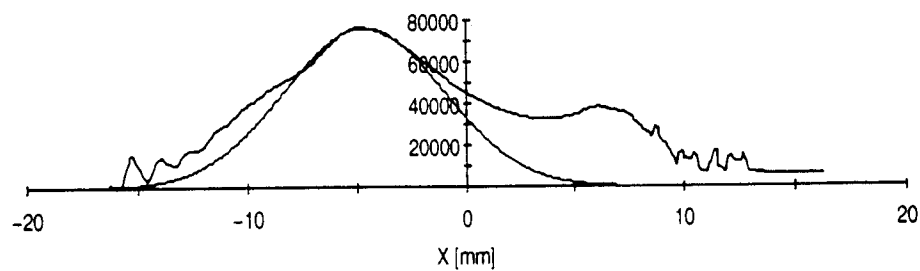
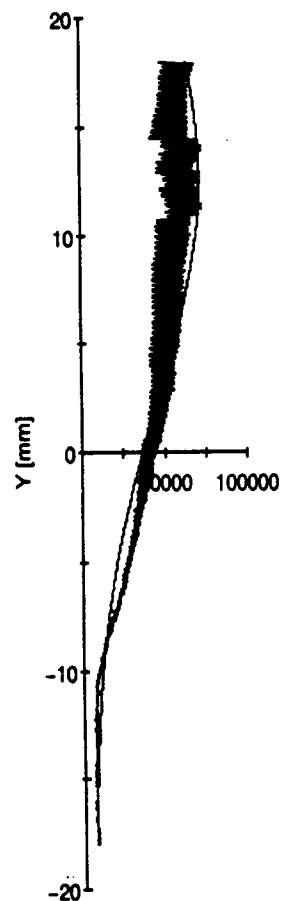
Wed Feb 23 13:18:50 2000



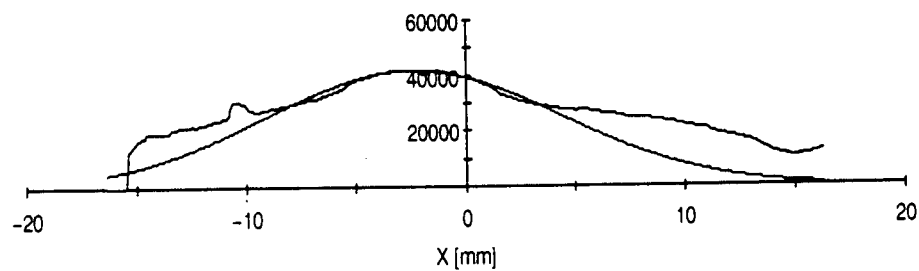
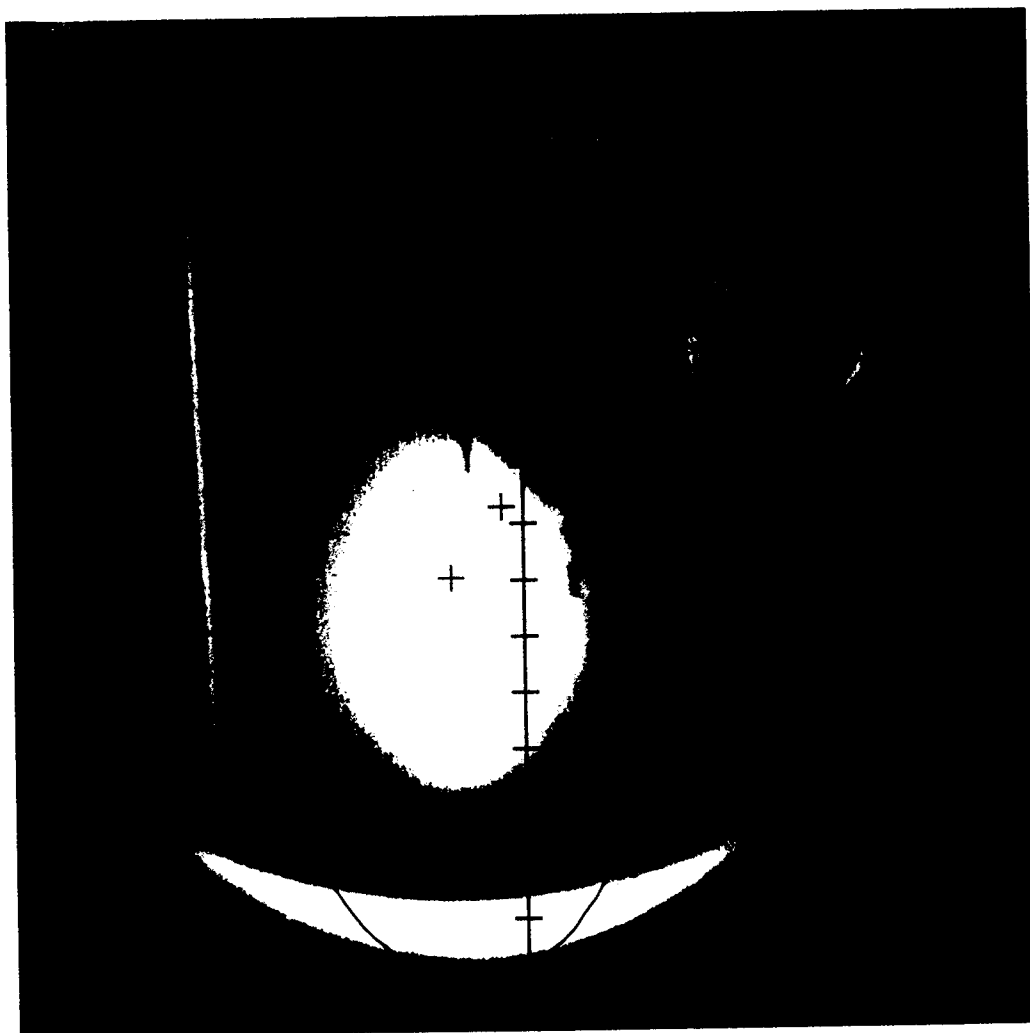
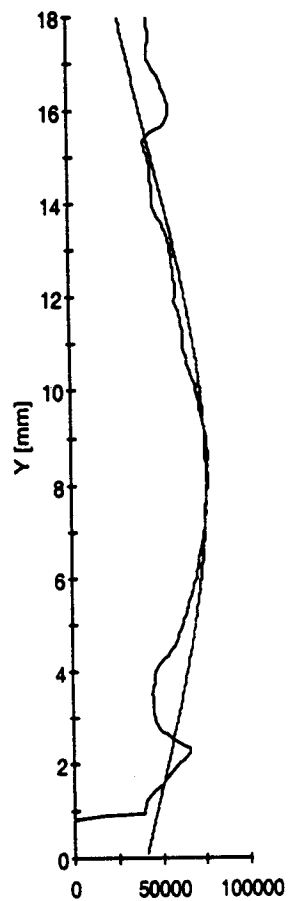
● rRLMS
■ AMD.F10_DN_LOSS.ES
* rCE010
● AMD.F5_UP_LOSS.ES
▲ AMD.F5_DN_LOSS.ES
* AMD.F10_UP_LOSS.ES

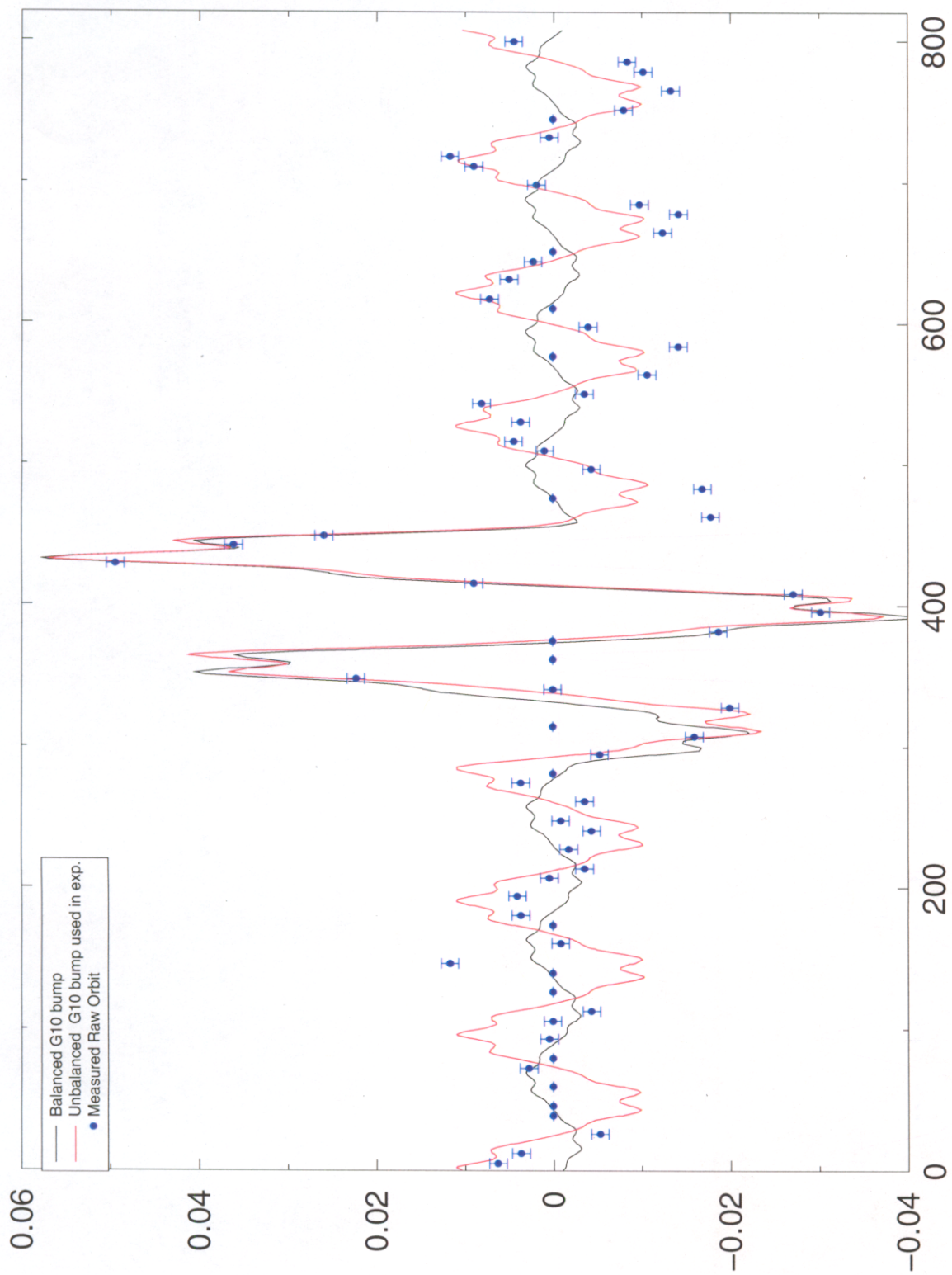
Stop

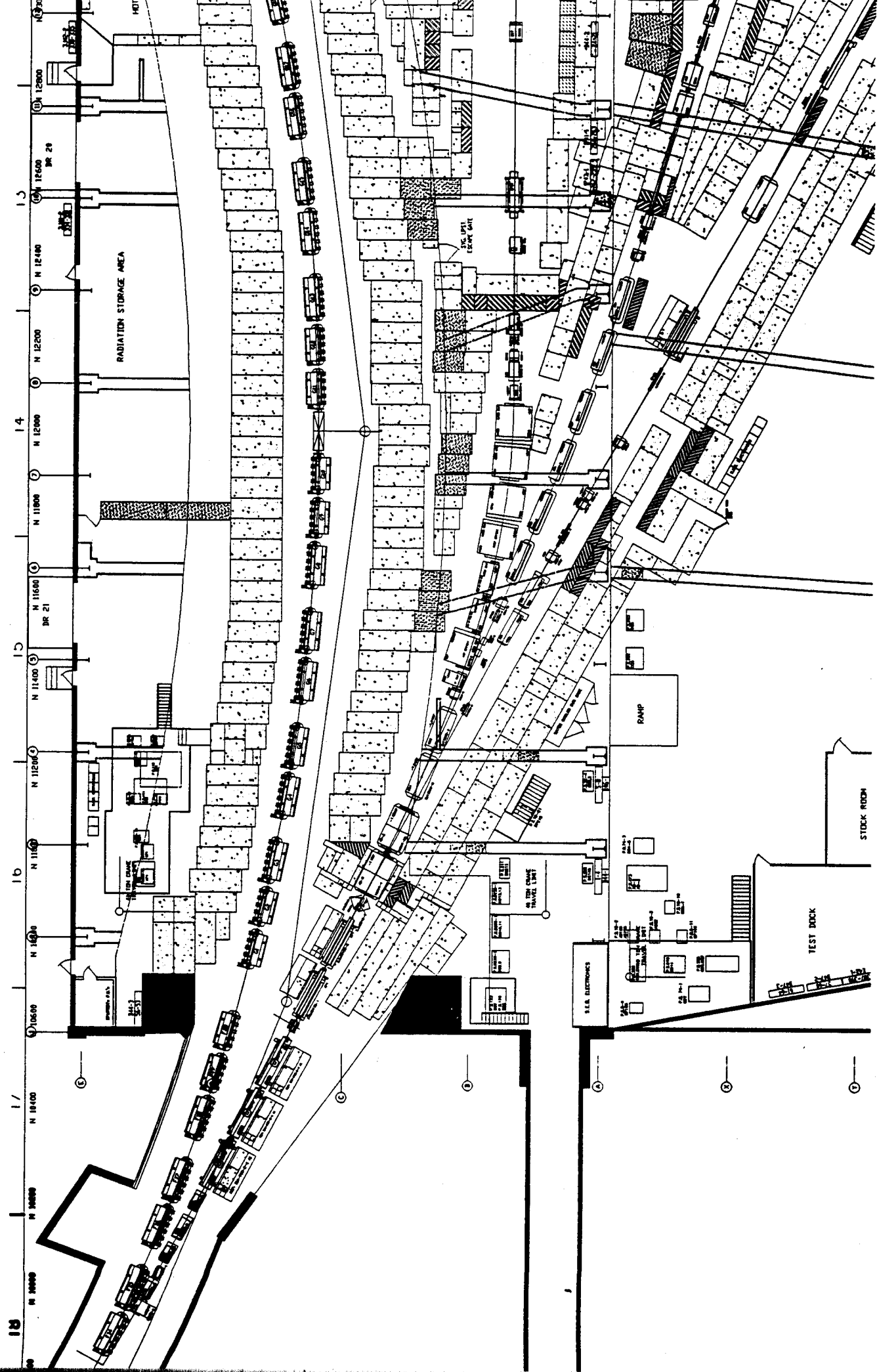
-- offLine Wed Feb 16 16:25:29 2000 --
Framegrabber = seb-fg2
Signal Range = 0 255
Centroid = -1.85541 5.63072 mm
Center = -4.67176 12.7777 mm
Sigma = 3.65104 10.2891 mm
Ellipse = 29.7501 3.48482 mm
Theta = 1.24561
Intensity = 17271673
Attenuation = 0%

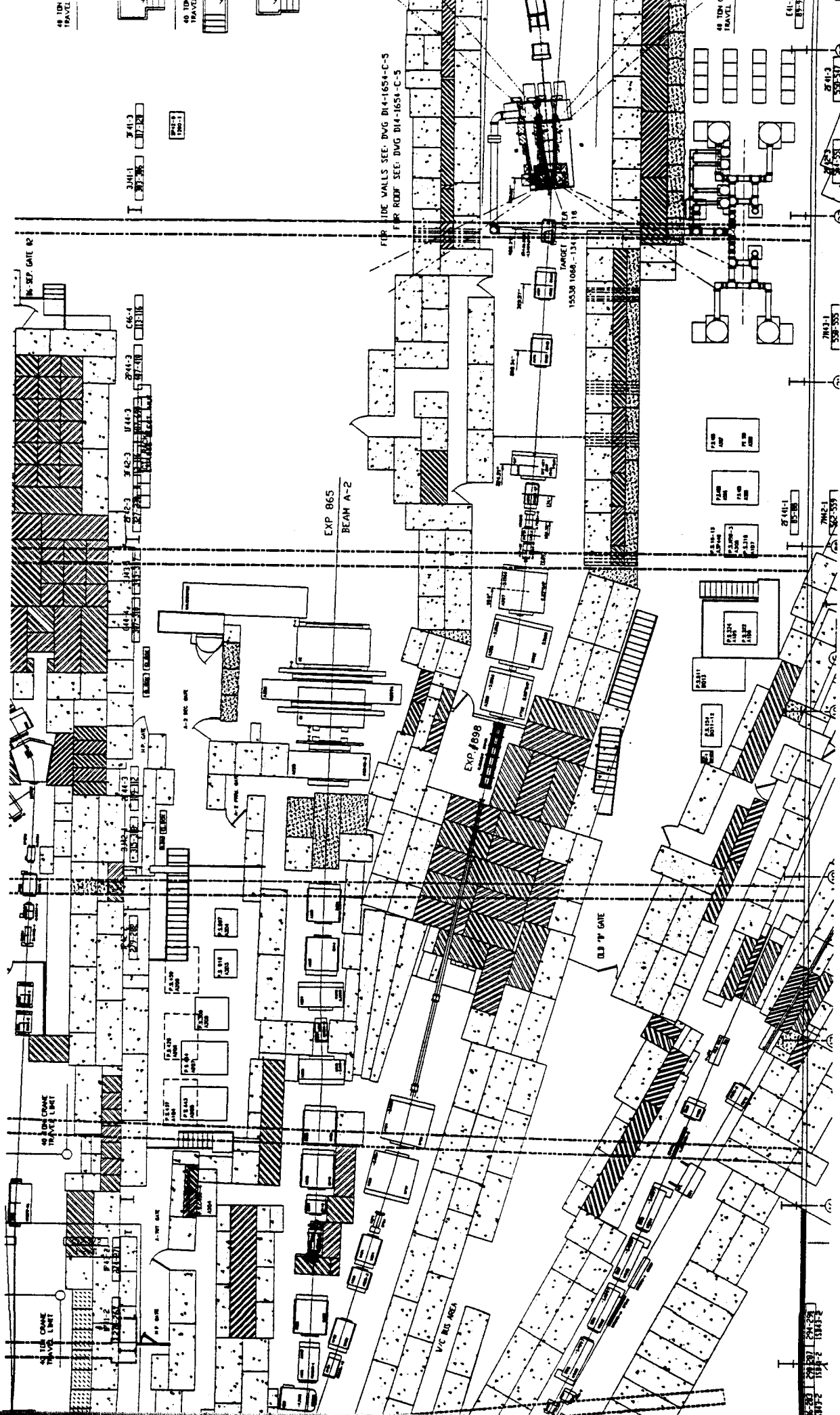


-- OnLine Wed Feb 16 17:17:52 2000 --
Framegrabber = seb-fg1
Signal Range = 0 255
Centroid = -0.676966 9.28555 mm
Center = -2.37081 8.04326 mm
Sigma = 6.73264 7.13382 mm
Ellipse = 7.0092 6.91537 mm
Theta = -0.410266
Intensity = 13545842
Attenuation = 0%









40 TON TRAVEL

40 TON TRAVEL

40 TON TRAVEL

40 TON TRAVEL

341-1 341-2 341-3 341-4 341-5 341-6 341-7 341-8 341-9 341-10 341-11 341-12 341-13 341-14 341-15 341-16 341-17 341-18 341-19 341-20 341-21 341-22 341-23 341-24 341-25 341-26 341-27 341-28 341-29 341-30 341-31 341-32 341-33 341-34 341-35 341-36 341-37 341-38 341-39 341-40 341-41 341-42 341-43 341-44 341-45 341-46 341-47 341-48 341-49 341-50 341-51 341-52 341-53 341-54 341-55 341-56 341-57 341-58 341-59 341-60 341-61 341-62 341-63 341-64 341-65 341-66 341-67 341-68 341-69 341-70 341-71 341-72 341-73 341-74 341-75 341-76 341-77 341-78 341-79 341-80 341-81 341-82 341-83 341-84 341-85 341-86 341-87 341-88 341-89 341-90 341-91 341-92 341-93 341-94 341-95 341-96 341-97 341-98 341-99 341-100

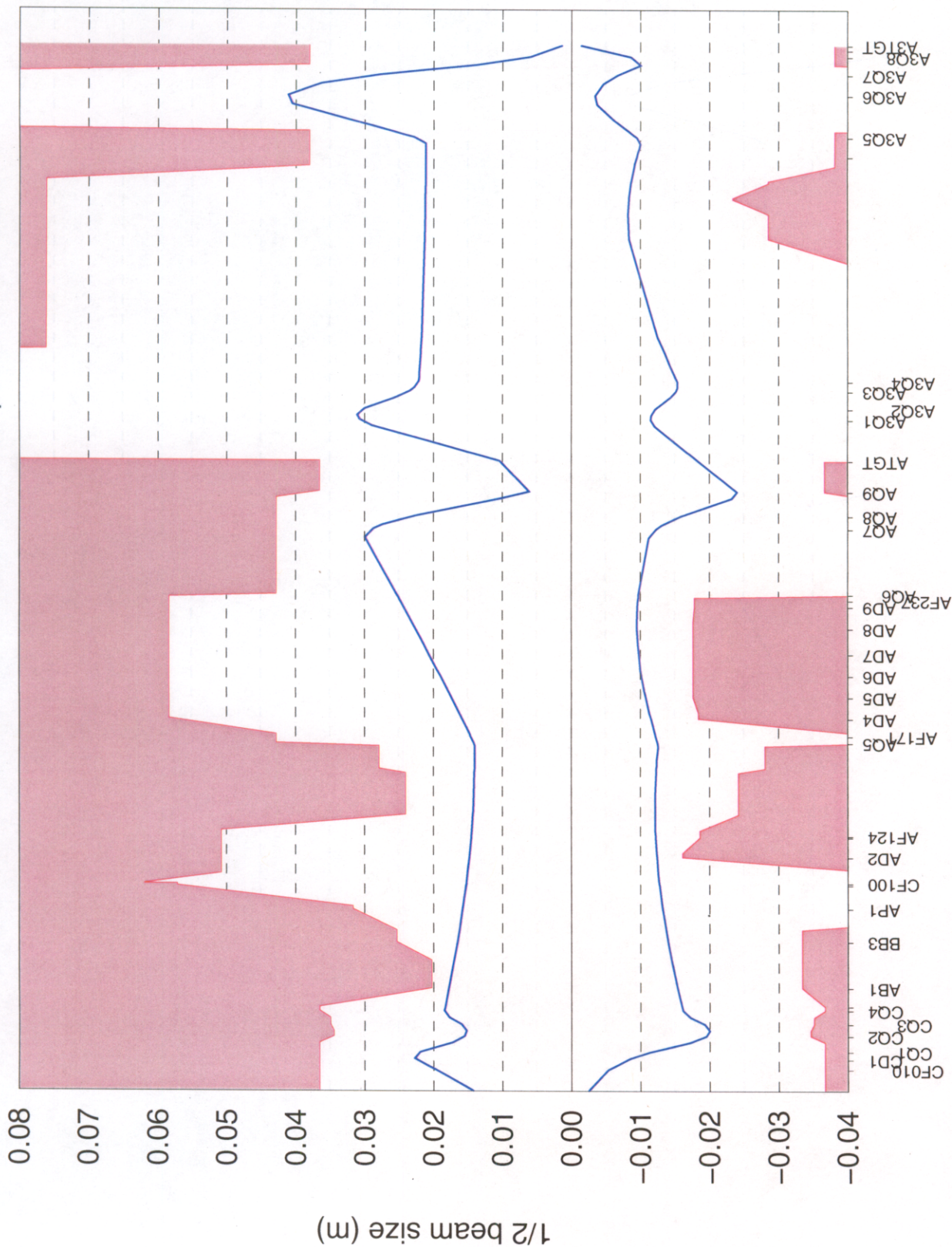
EXP 865 BEAM A-2

GATE 79

40 TON TRAVEL

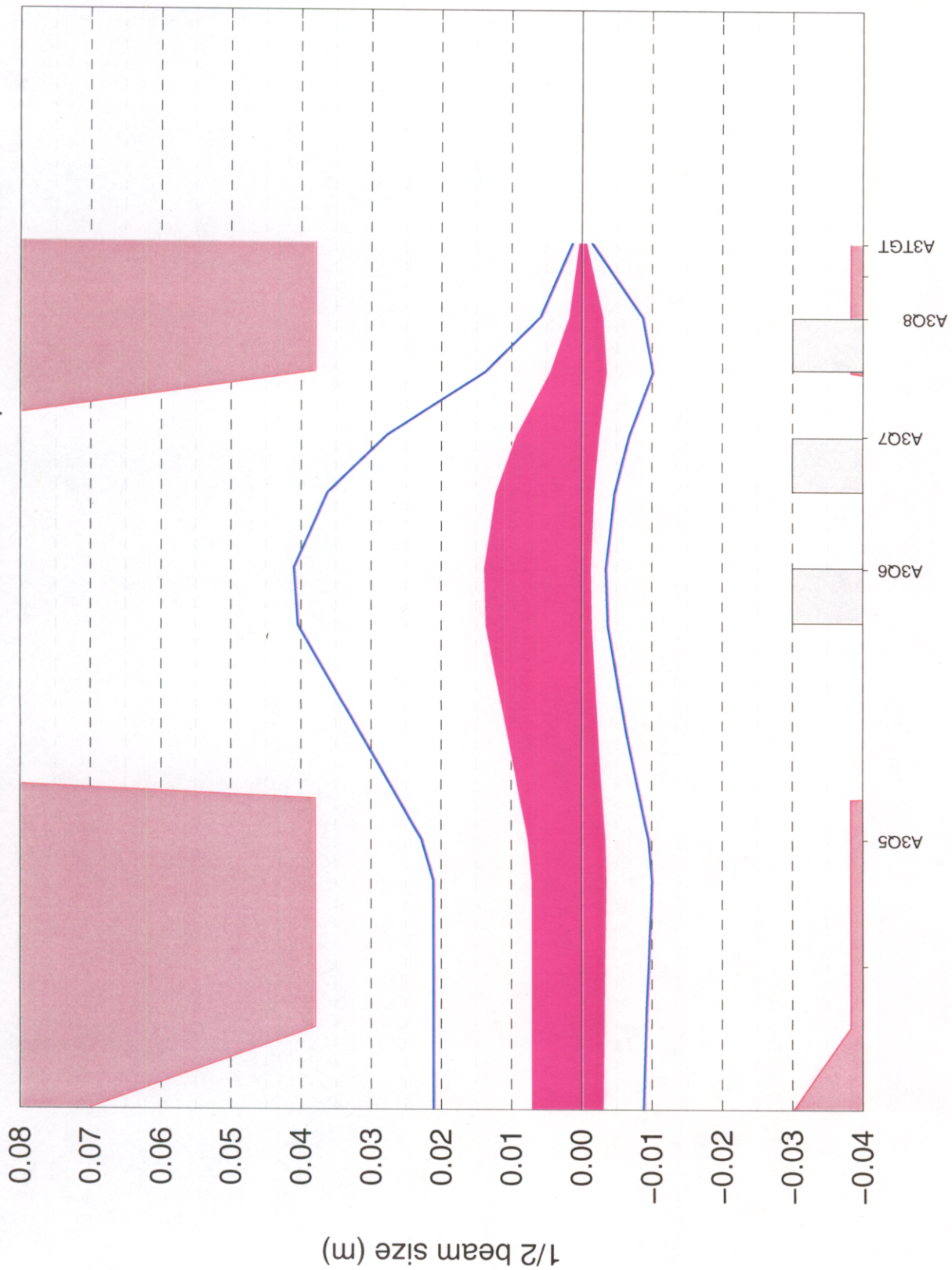
Mad Model of A → A3 Line

25.5 GeV/c Non-Resonant Beam for 120 pi mm-mrad Particle



Mad Model of A → A3 Line

25.5 GeV/c Non-Resonant Beam for 120 pi mm-mrad Particle



Commissioning Plan for C Line run

17 Jan. - 24 Jan.: Radiography to Uline

1. Work on Rad. Check Lists for Cline and Switchyard
2. Test Magnets and Power supplies.
3. Establish Super Cycle User for Fast beam to switchyard (FEBS)
4. Establish Extracted 24 GeV Beam (Context Switching)

24 Jan. - 31 Jan.: C/C7 setup

- | | |
|---|----------|
| 1. Establish Beam to CF100 | 2 shifts |
| 2. Bring Low Intensity to C Tgt Area | 1 shift |
| 3. Bring Low Intensity to C7 Tgt Area | 2 shifts |
| 4. Measure Emittance and Beam Sizes (Document) | 1 shift |
| 5. Work Intensity up > 2 TP/1 bunch | 1 shift |
| 6. Debug losses/ Commission New Instrumentation | 2 shifts |
| 7. Tune to minimize losses | 1 shift |
| 8. Raise Intensity & increase number of bunches | 2 shifts |

Commissioning Plan for A Line run

(Assumes we learn from C7 experience.)

- | | |
|---|------------|
| 1. Bring Low Intensity to A Tgt Area | 1 shift |
| 2. Bring Low Intensity to A3 Tgt Area | 1-2 shifts |
| 3. Tune for small spot on target | 1 shift |
| 4. Work Intensity up > 2 TP/1 bunch | 1 shift |
| 5. Debug losses/ Commission New Instrumentation | 2 shifts |
| 6. Tune to minimize losses | 1 shift |
| A3 Fault Studies... | |
| 7. Raise Intensity & increase number of bunches | 2 shifts |