What was found by setting LILV with values obtained from calculation.

NOTE PS/LP 88-28

PS-LP, 28.03.88

What was found by setting LILV with values obtained from calculation.

A.Riche,L.Rinolfi,K.Priestnall,G.Rossat.

Optimization of the beam transport by calculation from the end of the buncher to the target has shown that the focusing forces in this part of LIL V were too high during operation in 1987. The performances obtained when the machine is operated with these calculated values are presented.

1. Gun to the end of the buncher.

From gun to the end of the buncher, the settings were modified on a pure experimental basis,looking at monitors WCM 11,12,14 and UMA 13 & 15. We set the gun for a 0.4 A current at ECM01. We tried to optimize the transmission and we iterate 2 or 3 times. All solenoids and steering elements were checked and several settings were changed. We found the best transmission T with the solenoid SNB2, placed just after the cathode, at the maximum current I allowed by the command from the control desk(25 A).The dT/dI is important for this value, and it is interesting to see if any further increase would be possible.

The transmission is obtained from LIL UMA displays,which are presented here together with the corresponding machine parameters setting lists.

2. Buncher to beam converter.

First experiment, 22-03-88. 0.4 A at ECM01.

From calculations,we knew that the focusing forces used in 1987 should be reduced: solenoid SNF11,by a factor 2 (180 A--> 90 A),quadrupoles of the triplets,by about 1/3.

For the elements following the buncher, we tried directly the settings given by the calculations,[1]. The pre-buncher phase and attenuation were optimized. We tried also to find the best phase for klystrons 03 and 13.

In this preliminary try,we found the best current for SNF11 at 140 A (theoretical :90 A, and operation 1987:180 A) .Some apparent aperture restriction between buncher and second TW structure would oblige to more focalization by SNF 11, and also by consecutive triplets. This restriction could be due to misalignment or to misteering. The next experiment shows that higher field in SNF 11 was not necessary.

The beam through target hole was not steered, but we looked at MSH 15 (with the spectrometer BSP 15 on).

Fig. 1 and 2 show that when observing the dispersion on SEM grid SLH 15, we must modify the focalisation in order to get the effect of the dispersion due to dipole BSP 15 and not the beam size. The calculated current for a waist in x on the SEM grid is slightly over 10 A, max for these quadrupoles. When fixing QLA 14 at 10 A, the calculation gives QSA 14 at 9.435 A. A clear decrease of the spot width can be observed. If necessary, one could install some more power for these quadrupoles to increase their strength.

The low energy tail ,which was observed before the new settings were installed,has considerably decreased.

Second experiment, 25-03-88. 0.28 A at ECM01.

The quadrupole forces were still those from calculation.We tried again to optimize the transmission,varying the currents of the solenoids placed in the region of the gun,and steering the trajectory with the correctors. 90 A in SNF 11 gave the best transmission (theoretical expectation),while the currents in the solenoids near the gun were still those of the 22-03. Results are shown on Tab. 2. After some further steering,we obtained a good transmission in LIL W up to UMA 29. We did not try to change the LIL W settings.

We presume that the reason for 1987 operation with high field in SNF 11 was the use of the solenoid to compensate for a trajectory shift compared to the linac axis.

3. Positrons.

For comparison,we set a high current (ECM01 : 6677 E8),close to the current which was used by B.Frammery and J.P.Potier on 24-03,when they succeed in restoring the best operating performances obtained last year(ECM01 : 6485 E8). We could not observe the electron beam at the target (fault on WBS),but we trimmed the LIL V steering to get the maximum transmission up to UMA 25 and maximum signal on HIP UMA 22,in the transfer line to EPA. (Tab.3 and settings Tab.4). Optimum phase was easy to find.

We had 10.8 E8 at HIE 22, compared to 12.8 E8,obtained by B.Frammery and J.P.Potier,with LIL V set with its focusing values of 1987,(transmission Tab.5 and settings Tab.6),thus less positrons.

However the overall transmission in LIL was better by about 18% with the new settings, (Tab.7).

As we did not try any change of focusing or steering in LIL W (apart pulsed high field SNP15,which was of no effect),there is rather a good chance that higher transmission up to the target would lead to higher positron current in EPA transfer line,if LILW transmission were also carefully trimmed. The image of the beam on MTV22,where the dispersion is maximum, shows a reasonable beam size(the figure is given with Tab.3)

4. Transmission of the electron beam with klystron 13 off.

It is possible to transport the beam at the energy given by the buncher through the LIL V TW structures,even if they are not powered by klystron. LIL V quadrupoles were excited with currents given by calculation for an energy of 26.5 MeV along LIL V. Some trimming of the steering elements permitted to see the beam up to UMA 29 of LIL W, (24 E8 for 1800 E8 at ECM01, as represented Tab.8 with settings Tab.9). The long solenoids were still at 640 A, high field coil SNP 25 was pulsed,the linac W was unchanged.

There is no doubt that an electrom beam could be accelerated in the TW structures of LIL W only,and delivered at the correct energy even if the beam is not accelerated in LIL V TW cavities. For the first time,the energy of the beam with klystron 13 off (buncher energy) was measured on MSH 15,using the spectrometer BSP 15. The image (Fig.3) shows a spectrum from 21.4 to 24.6 MeV,BSP 15 was at 28 A (21 MeV).

BSP 15 was not demagnetized,and part of the width comes from the pure beam emittance.

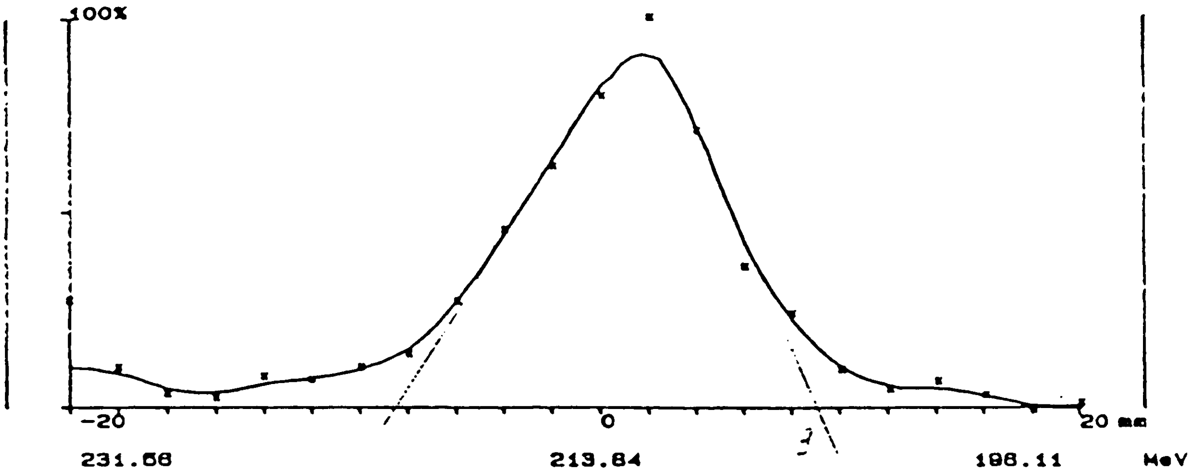
References

1. Optics of Linacs V, PS/LP,note 88-22

Ref. LOG LILV 220388 04:36:00

Fig 1

BEAM PROFILE MEASUREMENT - VL.MSH15



Central Energy 213.84 MeV

Digital Value at 100% 310 (sat. 2047)

Intensity (UMA meas.) -103.288 1E8 part.

Number of measurements 87

2*sigma 13.86mm

Residual is 27 % of maximum

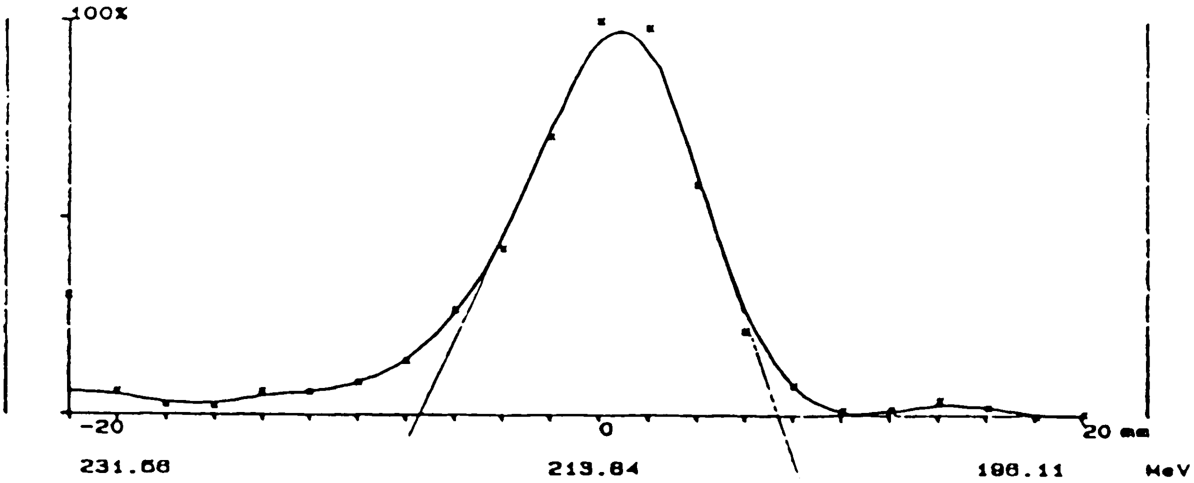
Scraper VL.SLV12 (Aperture) : 48.87 (50) mm

(Position) : 0 (0) mm

normal settings of QL14 (3.99A) QS14 (3.44A) (from calculations).

Fig 2

BEAM PROFILE MEASUREMENT - VL.MSH15



Central Energy 213.84 MeV

Digital Value at 100% 662 (sat. 2047)

Intensity (UMA meas.) -183.881 1E8 part.

Number of measurements 98

2*sigma 11.61mm

Courants QL14 = 10A
QS14 = 5.435A
special
(fotalisation x on

Table 1

IL LOG ** *Nouvelle optique du Linac Référence..*

...118 *G. Rossat A. Riche L. Rinolfi* 22-03-1988 04:36:00

SOLENOIDS AND CORRECTIONS.

	VL.SNB02		VL.SNC02		VL.SNDE02	
(5.01)	24.82 AMP	(24.97)	5.01 AMP	(5.01)	119.31 AMP	(119.50)
	VL.DHG031		VL.DVG031		VL.DHG032	
(70.19)	2.98 AMP	(3.00)	0 AMP	(0)	3.00 AMP	(3.00)
BAD STATUS	VL.SNF11					
(0)	140.11 AMP	(140.03)				

FOCUSING

	VL.QLA12		VL.QSA1312		VL.QLA13	
(2.44)	2.67 AMP	(2.73)	2.38 AMP	(2.40)	2.67 AMP	(2.70)
	VL.QSA1412		VL.QLB1514 0		VL.QLB1523	
(3.98)	4.34 AMP	(4.43)	49.55 AMP	(49.57)	47.21 AMP	(47.16)

STEERING AND SCRAPERS

	VL.DVT11		VL.DHG1199		VL.DVG1199	
(0)	0 AMP	(0)	0 AMP	(0)	0 AMP	(0)
	VL.DQS121H		VL.DQL13V		VL.DQS132H	
(-.60)	5.22 AMP	(5.27)	1.09 AMP	(1.09)	5.69 AMP	(5.70)
	VL.DQS141H		VL.DHZ14		VL.DVT14	
(0)	-1.39 AMP	(-1.39)	8.01 AMP	(8.00)	1.99 AMP	(1.99)
STANDBY	VL.DQL152H		VL.DQL153V			
(266.00)	.99 AMP	(.99)	-3.96 AMP	(-3.98)		

...E	79 V	16,5 A
	72 KV	1,6 mA
...TION	1,2 KV	
	2,2 KV	
IMP.	25 nS	

- GUN . OSC. & BUNCHER . SOLENOID . RF

9881(FAST RF)	VX.WGUNP	30008(FAST RF)	VX.TAS	19000(FAST RF)	VX.SGUNPC	30000(FAST RF)
0000(FAST RF)	VX.SGUNPF	61(1 MHZ)	VX.SKLY03	29911(FAST RF)	VX.SRFP03	29967(FAST RF)
9881(FAST RF)	VX.SKLY13	29885(C/D TR.)	VX.SRFP13	29920(C/D TR.)	VX.ERFP13	30005(C/D TR.)
9978(C/D TR.)	VX.SRFI13F	2(1 MHZ)				

Table 2

e⁻ transmission with new settings.

LIL UHA

1988-03-25 18:47:48

TRAJ. ELECTRONS

	Intensite (E8)		Horizontal (mm)	Vertical (mm)
LIA 13	-120.7		1.6	1.8
LIA 15	-121.8	78%	3.5	3.7
LIA 22	-80.3		1.2	.4
LIA 25	-73.3		.6	1.9
LIA 27	-79.9		-.6	6.6
LIA 29	-78.3		2.0	3.6
UHA 30	-83.4		.1	-1.6
UHA 31	-82.2		-1.5	.9
UHA 32	-80.5		1.6	3.1
UHA 33	-82.0		1.0	-1.4
UHA 34	-81.1		.1	1.7
UHA 35	-82.4		.5	-3.0
UHA 36	-73.4		1.0	1.8
UHA 37	-68.2	43%	-4.1	6.4
HIH 00	-.1		111.1	111.1
HIE 22	0.0		111.1	111.1
HIP 22	0.0		111.1	111.1

WCM	Intens. (E8)	
BCM01	-360.3	
WCM11	-156.9	100%
WCM12	-156.9	100%
WCM14	-104.6	66%
WCM221	-3.4	
WCM37	-55.7	
HIH00	.3	

MMEAS 11
TRIG 1
DT 0

Settings Ref. LIL LOG 25.03.88 18:59:23
(SNF11 90 A)

		e⁻
phases	03	75
	13	177
	25	338
	27	(69)
	31	90
	35	121

Canon off → | UMA 22 -320
UMA 25 +825

Table 3

Positrons new settings { Steering not corrected in LILV (25-03-88)
compared to old settings (24 03-88)

UMA 22 -2492 +320 = 2172
UMA 25 -1368 -825 = 2193

LIL UMA

1988-03-25 19:4

TRAJ. POSITRONS

	Intensite (EB)		Horizontal (mm)	Vertical (mm)
UMA 13	~~-2541.0~~	2130	2.8	-.8
UMA 15	~~-2477.6~~	2032	-.2	.2
UMA 22	~~-2492.3~~	1856	7.2	-0.0
UMA 25	~~-1368.0~~	1797	-16.2	24.6
UMA 27	-31.4	-25.9	-3.2	-2.1
UMA 29	-2.5	1.1	8.6	1.0
UMA 30	-1.4	2.5	36.9	-27.1
UMA 31	.1	3.0	111.1	111.1
UMA 32	.4	3.5	111.1	111.1
UMA 33	-.2	3.5	111.1	111.1
UMA 34	.2	3.5	111.1	111.1
UMA 35	.5	3.5	111.1	111.1
UMA 36	-.5	3.7	111.1	111.2
UMA 37	0.0	3.8	111.1	111.1
HIH 00	.1	.1	111.1	111.1
HIE 22	-3.7	-4.	11.6	2.7
HIP 22	10.8	12.8	-.4	1.3

WCM	Intens. (E	
ECM01	~~-6677.6~~	6 4..
WCM11	~~-3468.6~~	3.24.
WCM12	~~-2631.9~~	2 30.
WCM14	~~-2509.9~~	2 09.
WCM221	-1.7	
WCM37	.3	3.
HBM08	8.7	10.4

NMEAS 14
TRIG 1
DT 0

Settings Ref. LIL LOG 25 03 88 19.55.09
(SNF11 90A)

Phases ↓ ↓

03	74.5	(74.5)	31	90	(27
13	177.1	(192.6)	35	120	(11
25	337.5	(337.5)			
27	68.9	(70.3)			

Positons sur MTV 22

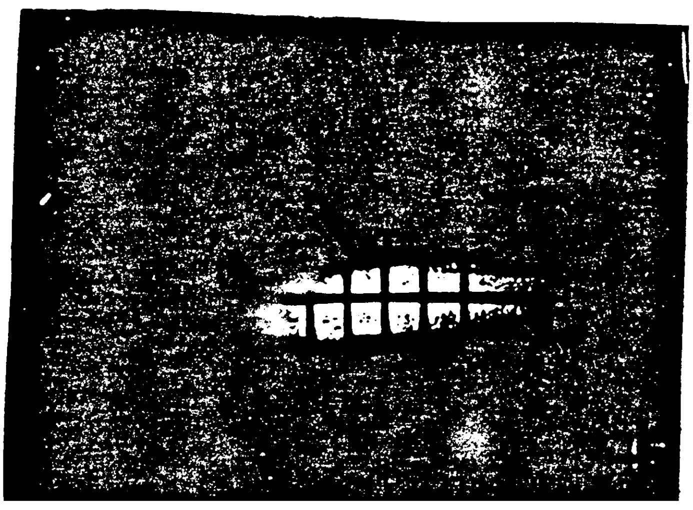


Table 4 Log for new settings

USER [illegible] 25-03-1988 10:59

GUNW ELEMENTS .. NORMALLY OFF ..

WL.DHZ221	OFF	0 AMP	(-.03)	WL.DVT221	OFF	0 AMP	(0)	WL.SNG221	OFF	0 AMP	(5.09)	WL.BHZ22	OFF	0 AMP	(19.00)
WL.SNG222	OFF	0 AMP	(.67)	WL.DHZ222	OFF	0 AMP	(-.04)	WL.DVT222	OFF	0 AMP	(.21)	WL.DHZ223	OFF	0 AMP	(.09)
WL.DVT223	OFF	0 AMP	(.50)	WL.SNG21	OFF	0 AMP	(7.67)	WL.SNG23	OFF	0 AMP	(3.97)	WL.SNW23	OFF	.33 AMP	(67.09)

LILW HORIZONTAL STEERING

VL.DHG031		1.99 AMP	(1.99)	VL.DHG032	0	2.40 AMP	(2.40)	VL.DHZ11		0 AMP	(0)	VL.DHG1199		-.50 AMP	(-.50)
VL.DOS121H		5.24 AMP	(5.30)	VL.DQS132H		5.29 AMP	(5.31)	VL.DOS141H		-1.39 AMP	(-1.40)	VL.DHZ14		9.81 AMP	(9.80)
VL.BSP15	STANDBY	.30 AMP	(290.97)	VL.DQL152H		.99 AMP	(.99)	WL.DHZ25		1.00 AMP	(.99)	WL.DHG251		-18.46 AMP	(-18.50)
WL.DHG252		-18.46 AMP	(-18.49)	WL.DHG261		-17.87 AMP	(-18.00)	WL.DHG262		18.00 AMP	(18.00)	WL.DQL272H		0 AMP	(0)
WL.DQNF271H		1.00 AMP	(1.00)	WL.DQL28H	BAD STATUS	0 AMP	(0)	WL.DQNF284H	BAD STATUS	0 AMP	(0)	WL.DQNF292H		0 AMP	(0)
WL.DQNF302H		0 AMP	(0)	WL.DQNF313H		0 AMP	(0)	WL.DQNF331H		0 AMP	(0)	WL.DQNF342H		-4.03 AMP	(-4.00)
WL.DQNF362H		4.02 AMP	(4.00)	HI.BSH00		173.41 AMP	(173.41)	HI.BHZ		386.55 AMP	(384.25)				

LILW VERTICAL STEERING → voir copies jointes

VL.DVG031		0 AMP	(0)	VL.DVG032		0 AMP	(0)	VL.DVT11		0 AMP	(0)	VL.DVG1195		0 AMP	(0)
VL.DQL12V	Pb de PPM ?	0 AMP	(-2.60)	VL.DQL13V		0 AMP	(1.09)	VL.DQL14V		0 AMP	(0)	VL.DVT14		0 AMP	(4.00)
VL.DQL153V		0 AMP	(-4.00)	WL.DVT25		0 AMP	(1.00)	WL.DVG251		0 AMP	(10.00)	WL.DVG252		0 AMP	(9.99)
WL.DVG261	0	0 AMP	(10.49)	WL.DVG262		0 AMP	(10.49)	WL.DQL271V		.98 AMP	(.99)	WL.DQNM273V		0 AMP	(0)
WL.DQNF274V		5.01 AMP	(4.99)	WL.DQNF283V	BAD STATUS	4.04 AMP	(5.99)	WL.DQNF291V	BAD STATUS	0 AMP	(0)	WL.DQNF301V		0 AMP	(0)
WL.DQNF312V		1.00 AMP	(1.00)	WL.DQNF323V		3.02 AMP	(2.99)	WL.DQNF341V		-5.03 AMP	(-5.00)	WL.DQNF361V		2.00 AMP	(1.99)
HI.BVT00		71.84 AMP	(72.01)												

LILW FOCUSING

VL.SNA01	4.99 AMP	(5.00)	VL.SNB02	24.44 AMP	(24.59)	VL.SNC02	5.01 AMP	(5.01)	VL.SNDE02	119.30 AMP	(119.49)
VL.SNVU03	70.30 AMP	(70.19)	VL.SNF11	90.03 AMP	(90.00)	VL.QSA1212	2.40 AMP	(2.40)	VL.QLA12	2.66 AMP	(2.72)
VL.QSA1312	2.38 AMP	(2.40)	VL.QLA13	2.67 AMP	(2.70)	VL.QSA1412	4.30 AMP	(4.39)	VL.QLA14	3.97 AMP	(4.00)
VL.QLB1514	49.57 AMP	(49.60)	VL.QLB1523	47.24 AMP	(47.19)	WL.SNT25	.03 AMP	(0)	WL.SNP25	2713.55 AMP	(2467.4)
WL.QLA271	6.45 AMP	(6.50)	WL.QLA272	8.91 AMP	(8.99)	WL.QLB2829	54.35 AMP	(55.00)	WL.SNL25	661.35 AMP	(660.01)
WL.SNL26	661.4 AMP	(660.31)	WL.QNM271	95.12 AMP	(94.97)	WL.QNM272	103.47 AMP	(104.08)	WL.QNM273	105.49 AMP	(104.52)
WL.QNFA	134.88 AMP	(134.91)	WL.QNFB	135.36 AMP	(135.10)	WL.QNFC	125.25 AMP	(124.97)	WL.QNM36	74.33 AMP	(75.01)
HI.QFD1	95.64 AMP	(97.00)									

LIL TIMING

VI.SBKLY	29874(FAST RF)	VI.WGUNP	29990(FAST RF)	VI.TAS	19000(FAST RF)	VI.SGUNPC	30000(FAST RF)
VI.SGUND	50000(FAST RF)	VI.SGUNPF	61(1 MHZ)	VI.SKLY03	29911(FAST RF)	VI.SRFP03	29967(FAST RF)
VI.ERFP03	29881(FAST RF)	VI.SKLY13	29885(C/D TR.)	VI.SRFP13	29917(C/D TR.)	VI.ERFP13	30010(C/D TR.)
VI.SRF113C	29983(C/D TR.)	VI.SRF113F	2(1 MHZ)	WI.TAS	11000(C/D TR.)	WI.FSNP25	50000(1 MHZ)
WI.ASNP25C	30000(1 MHZ)	WI.WSNP25P	20461(1 MHZ)	WI.WSNP25D	20461(1 MHZ)	WI.SSNP25PC	29852(1 MHZ)
WI.SSNP25DC	29986(1 MHZ)	WI.ASNP25F	0(1 MHZ)	WI.SSNP25PF	0(1 MHZ)	WI.SSNP25DF	0(1 MHZ)
WI.SKLY25	29943(C/D TR.)	WI.SRFP25	29967(C/D TR.)	WI.ERFP25	29900(C/D TR.)	WI.SKLY27	29888(C/D TR.)
WI.SRFP27	29919(C/D TR.)	WI.ERFP27	30011(FAST RF)	WI.SRF127EC	29985(C/D TR.)	WI.SRF127PC	29984(C/D TR.)
WI.SRF127EF	20(C/D TR.)	WI.SRF127PF	20(C/D TR.)	WI.SKLY31	29885(C/D TR.)	WI.SRFP31	29932(C/D TR.)
WI.ERFP31	30007(FAST RF)	WI.SRF131EC	29970(C/D TR.)	WI.SRF131PC	29982(C/D TR.)	WI.SRF131EF	27(C/D TR.)
WI.SRF131PF	20(C/D TR.)	WI.SKLY35	29937(C/D TR.)	WI.SRFP35	29978(FAST RF)	WI.ERFP35	30004(C/D TR.)

MODULATOR PHASES

MDK03	74.5	(74.5)
MDK13	177.1	(177.1)
MDK25	337.5	(337.5)
MDK27	69.9	(70.3)

Table 5 e+ production, 1987 LILV settings
(B. Frammery, J.P. Potier)

LIL UHA

TRAJ. POSITRONS

1988-03-24-21:05:36

	Intensite (E8)	Horizontal (mm)	Vertical (mm)		
UHA 13	-2130.0	2.9	-1.2		
UHA 15	-2022.3	-.3	-2.0		
UHA 22	-1856.4	-.2	-2.9		
UHA 25	-1797.6	-.1	-1.0		
UHA 27	-25.9	-7.5	0.0		
UHA 29	1.1	13.4	9.5	WCM	Intens. (E8)
UHA 30	2.5	.6	2.2		
UHA 31	3.0	-7.9	-7.4		
UHA 32	3.5	11.6	17.0	ECM01	-6435.4
UHA 33	3.5	-.6	10.3	WCM11	-3242.0
UHA 34	3.5	-13.1	-15.8	WCM12	-2300.8
UHA 35	3.5	-0.6	-14.6	WCM14	-2091.6
UHA 36	3.7	8.9	9.5	WCM221	0.0
UHA 37	3.8	8.7	5.7	WCM37	3.0
HIM 00	.1	111.1	111.1	HIM00	10.4
HIE 22	-4.0	21.8	0.0		
HIP 22	12.8	6.0	1.1		

NMEAS 100
TRIG 1
DT 0

Table 6 e+ production, 1987 LILV setting (B. Frammery, J.P. Potier).

USER POSIT — 24-03-1988 21:27:28

GUNW ELEMENTS .. NORMALLY OFF ..

WL.BHZ221 OFF	0 AMP (-.03)	WL.BVT221 OFF	0 AMP (0)	WL.SNG221 OFF	0 AMP (5.09)	WL.BHZ22 OFF	0 AMP (19.00)
WL.SNG222 OFF	0 AMP (.47)	WL.BHZ222 OFF	0 AMP (-.08)	WL.BVT222 OFF	0 AMP (.21)	WL.BHZ223 OFF	0 AMP (.09)
WL.BVT223 OFF	0 AMP (.50)	WL.SNG21 OFF	0 AMP (7.47)	WL.SNG23 OFF	0 AMP (3.97)	WL.SNW23 OFF	.35 AMP (67.09)

LILW HORIZONTAL STEERING

VL.BHG031	-3.97 AMP (-3.99)	VL.BHG032	-.99 AMP (-.99)	VL.BHZ11	.20 AMP (.20)	VL.BHG1195	1.99 AMP (1.99)
VL.BQS121H	1.26 AMP (1.28)	VL.BQS132H	5.69 AMP (5.70)	VL.BQS141H	-1.39 AMP (-1.40)	VL.BHZ14	8.00 AMP (7.99)
VL.BSP15 STANDBY	.30 AMP (255.99)	VL.BQL152H	-1.99 AMP (-1.99)	WL.BHZ25	0 AMP (0)	WL.BHG251	-18.46 AMP (-18.50)
WL.BHG252	-18.46 AMP (-18.49)	WL.BHG261	-17.87 AMP (-18>00)	WL.BHG262	18.00 AMP (18.00)	WL.BQL272H	-2.70 AMP (-2.69)
WL.BQNF271H	-.99 AMP (-1.00)	WL.BQL28H BAD STATUS	5.03 AMP (5.00)	WL.BQNF284H BAD STATUS	0 AMP (0)	WL.BQNF292H	0 AMP (0)
WL.BQNF302H	0 AMP (0)	WL.BQNF313H	-.02 AMP (-.01)	WL.BQNF331H	0 AMP (0)	WL.BQNF342H	0 AMP (0)
WL.BQNF362H	0 AMP (0)	HI.BSH00	173.38 AMP (173.41)	HI.BHZ	384.55 AMP (384.25)		

LILW VERTICAL STEERING

VL.BVG031	0 AMP (0)	VL.BVG032	0 AMP (0)	VL.BVT11	6.69 AMP (6.69)	VL.BVG1199	-.78 AMP (-.78)
VL.BQL12V	.30 AMP (.29)	VL.BQL13V	1.10 AMP (1.09)	VL.BQL14V	0 AMP (0)	VL.BVT14	1.99 AMP (1.99)
VL.BQL153V	-2.96 AMP (-2.98)	WL.BVT25	.99 AMP (.99)	WL.BVG251	10.00 AMP (10.00)	WL.BVG252	9.99 AMP (9.99)
WL.BVG261	10.50 AMP (10.49)	WL.BVG262	10.49 AMP (10.49)	WL.BQL271V	0 AMP (0)	WL.BQNM273V	0 AMP (0)
WL.BQNF274V	0 AMP (0)	WL.BQNF283V BAD STATUS	0 AMP (0)	WL.BQNF291V BAD STATUS	0 AMP (0)	WL.BQNF301V	0 AMP (0)
WL.BQNF312V	0 AMPO (0)	WL.BQNF323V	0 AMP (0)	WL.BQNF341V	0 AMP (0)	WL.BQNF361V	6.03 AMP (5.99)
HI.BVT00	64.82 AMP (65.00)						

LILW FOCUSING

VL.SNA01	6.88 AMP (6.89)	VL.SNB02	14.87 AMP (14.98)	VL.SNC02	18.00 AMP (17.96)	VL.SNDE02	0 119.33 AMP (119.50)
VL.SNVU03	130.42 AMP (130.19)	VL.SNF11	180.11 AMP (180.03)	VL.QSA1212	3.03 AMP (3.03)	VL.QLA12	3.11 AMP (3.14)
VL.QSA1312	2.69 AMP (2.72)	VL.QLA13	3.41 AMP (3.44)	VL.QSA1412	5.92 AMP (6.03)	VL.QLA14	6.46 AMP (6.49)
VL.QLB1514	58.34 AMP (58.33)	VL.QLB1523	54.74 AMP (54.69)	WL.SNT25	.03 AMP (0)	WL.SNP25	2700.36 AMP (2467.4)
WL.QLA271	6.45 AMP (6.50)	WL.QLA272	8.91 AMP (8.99)	WL.QLB2629	54.34 AMP (55.00)	WL.SNL25	661.35 AMP (660.01)
WL.SNL26	661.6 AMP (660.31)	WL.QNM271	95.12 AMP (94.97)	WL.QNM272	103.62 AMP (104.08)	WL.QNM273	105.47 AMP (106.52)
WL.QNFA	134.88 AMP (134.91)	WL.QNFB	135.36 AMP (135.10)	WL.QNFC	125.25 AMP (124.97)	WL.QNM36	74.33 AMP (75.01)
HI.QFD1	95.64 AMP (97.00)						

LIL TIMING.

VI.SBKLY	29874(FAST RF)	VI.WGUNP	29990(FAST RF)	VI.TAS	19000(FAST RF)	VI.SGUNPC	30000(FAST RF)
VI.SGUND	50000(FAST RF)	VI.SGUNPF	61(1 MHZ)	VI.SKLY03	29911(FAST RF)	VI.SRFP03	29967(FAST RF)
VI.ERFP03	29881(FAST RF)	VI.SKLY13	29885(C/O TR.)	VI.SRFP13	29917(C/O TR.)	VI.ERFP13	30010(C/O TR.)
VI.SRFI13C	29983(C/O TR.)	VI.SRFI13F	2(1 MHZ)	WI.TAS	11000(C/O TR.)	WI.FSNP25	50000(1 MHZ)
WI.ASNP25C	30000(1 MHZ)	WI.WSNP25P	20461(1 MHZ)	WI.WSNP25D	20461(1 MHZ)	WI.SSNP25PC	29852(1 MHZ)
WI.SSNP25DC	29986(1 MHZ)	WI.ASNP25F	0(1 MHZ)	WI.SSNP25PF	0(1 MHZ)	WI.SSNP25DF	0(1 MHZ)
WI.SKLY25	29943(C/O TR.)	WI.SRFP25	29967(C/O TR.)	WI.ERFP25	29900(C/O TR.)	WI.SKLY27	29888(C/O TR.)
WI.SRFP27	29919(C/O TR.)	WI.ERFP27	30011(FAST RF)	WI.SRFI27EC	29985(C/O TR.)	WI.SRFI27PC	29984(C/O TR.)
WI.SRFI27EF	20(C/O TR.)	WI.SRFI27PF	20(C/O TR.)	WI.SKLY31	29885(C/O TR.)	WI.SRFP31	29932(C/O TR.)
WI.ERFP31	30007(FAST RF)	WI.SRFI31EC	29970(C/O TR.)	WI.SRFI31PC	029982(C/O TR.)	WI.SRFI31EF	27(C/O TR.)
WI.SRFI31PF	20(C/O TR.)	WI.SKLY35	29937(C/O TR.)	WI.SRFP35	29978(FAST RF)	WI.ERFP35	30004(C/O TR.)

MODULATOR PHASES

MDK03	57.6	(57.6)
MDK13	178.5	(178.5)
MDK25	327.6	(327.6)
MDK27	324.8	(324.2)

Table 7: Transmission for LIL V new settings,

compared with what give the old ones re-established.(2 A at WCM 14)

	new settings		old settings	
ECM01	1.		1.	
WCM11	0.504		0.500	
WCM12	0.394	1.	0.355	1.
UMA13	0.380	0.964	0.328	0.924
WCM14	0.387	0.982	0.323	0.910 (2A)
UMA15	0.371	0.941	0.313	0.88
UMA22	0.325	0.825	0.286	0.806
UMA25	0.328	0.832	0.278	0.783
HIP UMA 22 absolute values:				
	10.8 E8		12.8 E8	

Table 8

e⁻ beam, buncher energy (MDK13 H).

LIL UHA

TRAJ. ELECTRONS

1988-03-25-15:26:53

	Intensite (EB)		Horizontal (mm)	Vertical (mm)
UHA 13	-425.2	47%	4.2	0.0
UHA 15	-285.9	23%	-2.1	-2.2
UHA 22	-64.8	7%	4.3	-3.0
UHA 25	-53.5	6%	1.2	2.3
UHA 27	-26.2	3%	-.7	-.5
UHA 29	-24.1	3%	.8	4.5
UHA 30	-1.6		.6	.3
UHA 31	0.0		111.1	111.1
UHA 32	0.1		111.1	111.1
UHA 33	0.0		111.1	111.1
UHA 34	0.0		111.1	111.1
UHA 35	0.0		111.1	111.1
UHA 36	0.1		111.1	111.1
UHA 37	0.0		111.1	111.1
HIH 00	-.1		111.1	111.1
HIE 22	0.0		111.1	111.1
HIP 22	0.1		111.1	111.1

WCM	Intens. (EB)	
ECM01	-1001.5	
WCM11	-906.4	100%
WCM12	-505.5	56%
WCM14	-209.2	23%
WCM221	-3.4	
WCM37	0.0	
HIM00	.3	

NMEAS 11
TRIG 1
DT 0

Settings Ref. LIL LOG 25.03.88 15:29:07

Table 9 beamat buncher energy

USER ELECT 25-03-1988 15:29:07

LINW ELEMENTS .. NORMALLY OFF ..

WL.DHZ221	OFF	0 AMP	(-.03)
WL.DVT221	OFF	0 AMP	(0)
WL.SNG221	OFF	0 AMP	(5.09)
WL.DHZ22	OFF	0 AMP	(19.00)
WL.SNG222	OFF	0 AMP	(.67)
WL.DHZ222	OFF	0 AMP	(-.08)
WL.DVT222	OFF	0 AMP	(.21)
WL.DHZ223	OFF	0 AMP	(.09)
WL.DVT223	OFF	0 AMP	(.50)
WL.SN621	OFF	0 AMP	(7.67)
WL.SN623	OFF	0 AMP	(3.97)
WL.SNW23	OFF	.36 AMP	(67.09)

LILW HORIZONTAL STEERING

VL.DH6031		2.98 AMP	(2.99)
VL.DH6032		3.00 AMP	(3.00)
VL.DHZ11		1.20 AMP	(1.20)
VL.DH61199		-.30 AMP	(-.30)
VL.DQS121H		3.77 AMP	(3.81)
VL.DQS132H		5.29 AMP	(5.31)
VL.DQS141H		1.52 AMP	(1.52)
VL.DHZ14		7.01 AMP	(7.00)
VL.BSP15		.30 AMP	(0)
VL.DQL152H		7.99 AMP	(7.99)
WL.DHZ25		0 AMP	(0)
WL.DH6251		-18.46 AMP	(-18.50)
WL.DH6252		-18.46 AMP	(-18.49)
WL.DH6261		-17.87 AMP	(-18.00)
WL.DH6262		18.00 AMP	(18.00)
W\.DQL272H		0 AMP	(0)
WL.DQNF271H		1.00 AMP	(1.00)
WL.DQL28H	BAD STATUS	0 AMP	(0)
WL.DQNF284H	BAD STATUS	0 AMP	(0)
WL.DQNF292H		0 AMP	(0)
WL.DQNF302H		0 AMP	(0)
WL.DQNF313H		0 AMP	(0)
WL.DQNF331H		0 AMP	(0)
WL.DQNF342H		-4.03 AMP	(-4.00)
WL.DQNF362H		4.02 AMP	(4.00)
HI.BSHOC		173.41 AMP	(173.41)
HI.DHZ		386.55 AMP	(386.25)

LILW VERTICAL STEERING

VL.DV6031		0 AMP	(0)
VL.DV6032		0 AMP	(0)
VL.DVT11		-2.40 AMP	(-2.40)
VL.DV61199		0 AMP	(0)
VL.DQL12V		.06 AMP	(.06)
VL.DQL13V		0 AMP	(0)
VL.DQL14V		0 AMP	(0)
VL.DVT14		-1.99 AMP	(-1.79)
VL.DQL153V		0 AMP	(0)
WL.DVT25		1.00 AMP	(1.00)
WL.DV6251		10.00 AMP	(10.00)
WL.DV6252		9.99 AMP	(9.99)
WL.DV6261 D		10.50 AMP	(10.49)
WL.DV6262		10.49 AMP	(10.49)
WL.DQL271V		.98 AMP	(.99)
WL.DQNM273V		0 AMP	(0)
WL.DQNF274V		5.01 AMP	(4.99)
WL.DQNF283V	BAD STATUS	6.04 AMP	(5.99)
WL.DQNF291V	BAD STATUS	0 AMP	(0)
WL.DQNF301V		0 AMP	(0)
WL.DQNF312V		1.00 AMP	(1.00)
WL.DQNF323V	C	3.02 AMP	(2.99)
WL.DQNF341V		-5.03 AMP	(-5.00)
WL.DQNF361V		2.01 AMP	(1.99)
HI.BVTOC		71.85 AMP	(72.01)

LILW FOCUSING

VL.SNA01	6.38 AMP	(6.39)
VL.SNB02	24.82 AMP	(24.99)
VL.SNC02	5.73 AMP	(5.72)
VL.SNDE02	119.30 AMP	(119.49)
VL.SNVU03	70.33 AMP	(70.19)
VL.SNF11	90.10 AMP	(90.04)
VL.QSA1212	2.04 AMP	(2.04)
VL.QLA12	2.22 AMP	(2.27)
VL.QSA1312	1.81 AMP	(1.83)
VL.QLA13	2.02 AMP	(2.03)
VL.QSA1412	0 2.60 AMP	(2.66)
VL.QLA14	2.72 AMP	(2.74)
VL.QLB1514	8.83 AMP	(8.98)
VL.QLB1523	8.38 AMP	(8.43)
WL.SNT25	.04 AMP	(C)
WL.SNP25	2704.76 AMP	(2467.4)
WL.QLA271	6.45 AMP	(6.50)
WL.QLA272	8.91 AMP	(8.99)
WL.QLB2829	54.33 AMP	(55.00)
WL.SNL25	661.35 AMP	(660.01)
WL.SNL26	661.66 AMP	(660.31)
WL.QNM271	95.11 AMP	(94.97)
WL.QNM272	103.58 AMP	(104.08)
WL.QNM273	105.50 AMP	(106.52)
WL.Q-FA	134.86 AMP	(134.91)
WL.QNFB	135.36 AMP	(135.10)
WL.QNFC	125.25 AMP	(124.97)
WL.QNM36	74.34 AMP	(75.01)
HI.QFD1	95.64 AMP	(97.00)

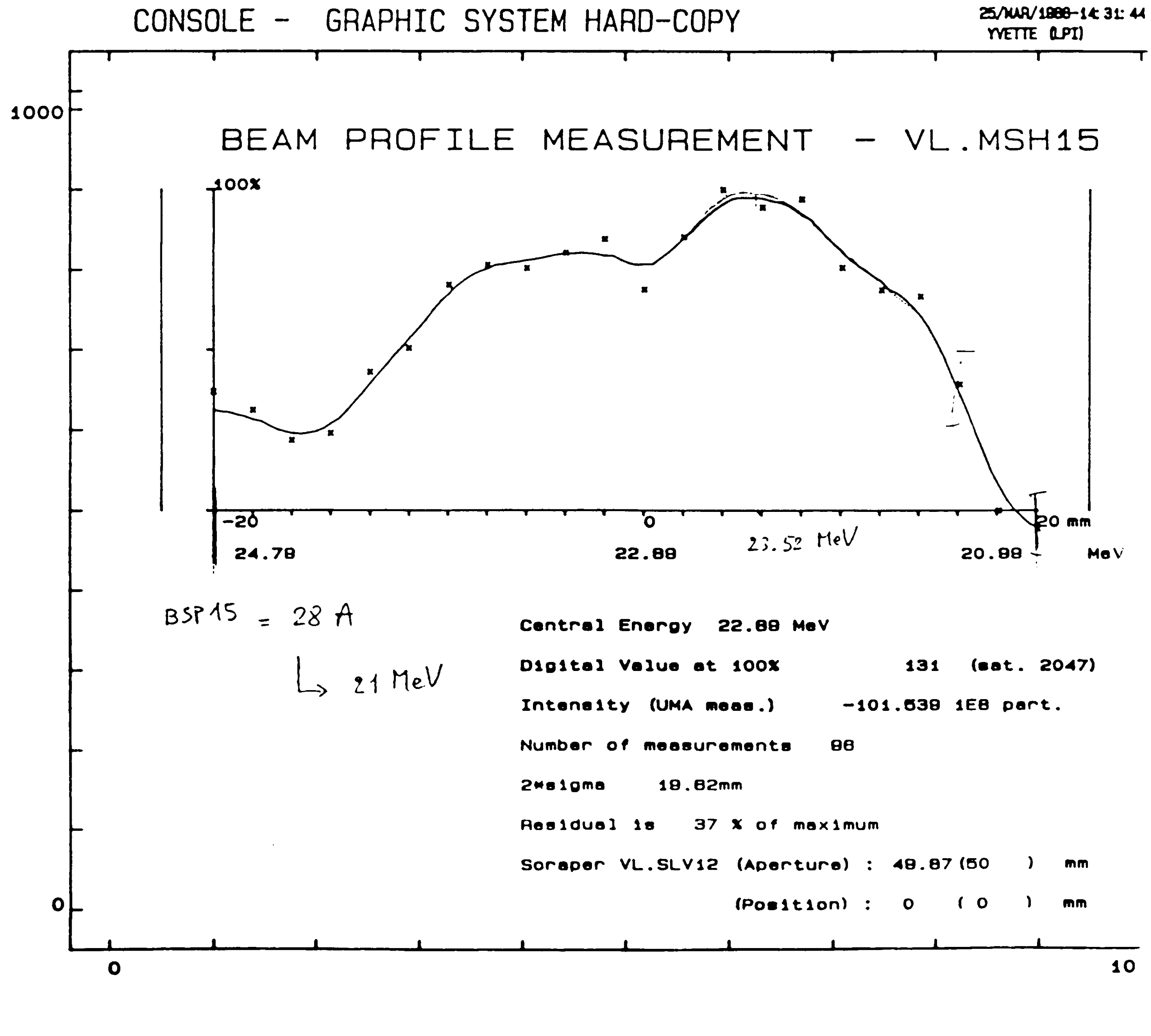
LIL TIMING.

VI.SBKLY	29874(FAST RF)	VI.WGUNP	29990(FAST RF)	VI.TAS	19000(FAST RF)	VI.SGUNPC	30000(FAST RF)
VI.WGUND	50000(FAST RF)	VI.SGUNPF	61(1 MHZ)	VI.SKLY03	29911(FAST RF)	VI.SRFP03	29967(FAST RF)
VI.ERFP03	29881(FAST RF)	VI.SKLY13	29885(C/D TR.)	VI.SRFP13	29917(C/D TR.)	VI.ERFP13	30010(C/D TR.)
VI.SRF113C	29983(C/D TR.)	VI.SRF113F	2(1 MHZ)	WI.TAS	11000(C/D TR.)	WI.FSNP25	50000(1 MHZ)
WI.ASNP25C	30000(1 MHZ)	WI.WSNP25P	20461(1 MHZ)	WI.WSNP25D	20461(1 MHZ)	WI.SSNP25PC	29852(1 MHZ)
WI.SSNP25DC	29986(1 MHZ)	WI.ASNP25F	0(1 MHZ)	WI.SSNP25PF	0(1 MHZ)	WI.SSNP25DF	0(1 MHZ)
WI.SKLY25	29943(C/D TR.)	WI.SRFP25	29967(C/D TR.)	WI.ERFP25	29900(C/D TR.)	WI.SKLY27	29888(C/D TR.)
WI.SRFP27	29919(C/DOTR.)	WI.ERFP27	30011(FAST RF)	WI.SRF127EC	29985(C/D TR.)	WI.SRF127PC	29984(C/D TR.)
WI.SRF127EF	20(C/D TR.)	WI.SRF127PF	20(C/D TR.)	WI.SKLY31	29885(C/D TR.)	WI.SRFP31	29932(C/D TR.)
WI.ERFP31	30007(FAST RF)	WI.SRF131EC	29970(C/D TR.)	WI.SRF131PC	29982(C/D TR.)	WI.SRF131EF	27(C/D TR.)
WI.SRF131PF	20(C/D TR.)	WI.SKLY35	29937(C/D TR.)	WI.SRFP35	29978(FAST RF)	WI.ERFP35	30004(C/D TR.)

MODULATOR PHASES

MDK03	30.9	(35.1)
MDK13	90	(177.1)
MDK25	337.5	(337.5)
MDK27	68.9	(70.3)
MDK31	90	(270)
MDK35	120.9	(119.5)

Fig 3. beam at buncher energy on spectrometer



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