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 ECMO1. 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.

What was found by setting LILV with values obtained from calculation. page 3

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. What was found by setting LILV with values obtained from calculation. page 4

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 ECMO1, 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. What was found by setting LILV with values obtained from calculation. page 5

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



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9978(C/D TR.) VX.BRF113F	2(1 MHZ)				

Table 2

e-transmission with new seltings.

LIL UHA

TRAJ. ELETRONS

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ŧĤ	22	-89.3	1.2	.4			
ιĤ	25	-73.3	-6	1.9			
ιh	27	-79.9	6	6.6			
£ 🙀	29	-78.3	2.8	3.6	HCH :	līntens. (8	CE (E
UHA	38	-83_4	-1	-1.6			
UHA-	31	-62.2	-1.5	.9			
UHA	32	-08.5	1.6	3.1	EDH81	-368.3	
UHA	33	-82.0	1_8	-1.4 (HCH11	-156.9	100%
UHA	34	-81.1	.1	1.7	HCH12	-156.9	100%
UHA	35	-82.4	.5	-3.8	HCH14	-184.6	66 lo
UHA	36	-73.4	, 1.8	1.8	HCH221	-3.4	
UHA	37	-68.2	436 -4.1	6.4	HCH37	-55.7	
HTH	98	1	111.1	111_1	HIHEE	.3	
HIE	22	8.8	111_1	111_1			
HIP	22	8.8	111.1	111_1	M	BAS 11	
Sella	in a A	Ref. LILI	6 15.03.88	18.59.12	П	RIG 1	
(SN	F 11	90 A)				DT 9	
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Camon off- UMAIL -320 UMA25 +825

Table 3

TRAJ.

Aterning not corrected ni fositores new settings [LILV- (25.03-88 compared to old settings. (24 03-86

UMA 22 - 2452 +320 = 2172 UMA 25 - 1368 - 825 = 2153

LIL UHA

1988 83 25 19:4

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t	ĥ	36	5	3.7	111.1		111.2	HCH221	-1.7	
l	Ĥ	37	9.9	3.8	111.1		111_1	HCH37	.3	3.
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POSITRUMS

Settings Hef. LIL LOG 250388 19.55.09 (SNF11 30Å)



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Postons sur MTV 22

Table 4 Lo

Log for new settings

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(U.10.57 APP (U.20.67.4 APP (U.21.19, U.10.82.829 U.1.51.25 APP (24.57.4) (U.20.8271 U.1.01.8272 U.1.01.82.829 U.1.51.25 APP (24.57.4) (U.20.8272 U.1.01.82.829 U.1.51.25 APP (25.10) U.1.51.25 (U.20.8272 U.1.01.87.25 U.1.01.71 U.1.01.226 U.1.01.771 U.1.01.771 (U.20.8274 U.1.01.71 U.1.01.771 U.1.01.771 <td>H1.8VT00 71.84 A </td> <td>нр (7; <u>.1:О(:())) I</u> (5.00 (70.14</td> <td>1.00, 2.01) <u>(13(,</u> vt.s , vt.s , vt.o</td> <td>3.02 AMP NB02 4.44 AMP NF11 0.03 AMP ILA13</td> <td>(, ż. , •0</td> <td>2.99, VI .59, VI .00, VI</td> <td>W. POOF341V -S.03 AMP L.SNC02 5.01 AMP L.05A1212 2.40 AMP L.05A1412</td> <td>, . , .</td> <td>-5.00+ 5.01+ 5.40+</td> <td>UL.80HF361V 2.00 AHP VL.SNDEO2 119.30 AHP VL.9LA12 2.66 AHP VL.9LA14</td> <td> . :</td> <td>1.49, 2.72,</td>	H1.8VT00 71.84 A 	нр (7; <u>.1:О(:())) I</u> (5.00 (70.14	1.00, 2.01) <u>(13(,</u> vt.s , vt.s , vt.o	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP ILA13	(, ż. , •0	2.99, VI .59, VI .00, VI	W. POOF341V -S.03 AMP L.SNC02 5.01 AMP L.05A1212 2.40 AMP L.05A1412	, . , .	-5.00+ 5.01+ 5.40+	UL.80HF361V 2.00 AHP VL.SNDEO2 119.30 AHP VL.9LA12 2.66 AHP VL.9LA14	 . :	1.49, 2.72,
WL.0LA271 WL.0HA272 WL.0HA272 WL.0HA272 WL.0HA273 WL.0HA273 WL.0HA273 K.4.55 APP K.55.00 A&L.35 APP K.4.00.01/ WL.SHL26 WL.0HP271 WL.0HP272 WL.0HP273 UL.0HP273 UL.0HP273 ID5.44 APP K.106.452/ WL.0HFA WL.0HF6 WL.0HFC WL.0HP6 WL.0HP7 ID5.44 APP K.135.44 K.155.44	H1.8VT00 71.84 A 	HP (7; . <u></u>	1.00, 2.01) 	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP ILA13 2.47 AMP ILA13 1.47 AMP	(24 (10 (2	2.99) .59, ^{VI} .00, ^{VI} .70, ^{VI}	M. POMF341V -S.03 AMP L.SNC02 S.01 AMF L.0SA1212 2.40 AMP L.0SA1412 4.30 AMP	• •	-5.00+ 5.01; 5.40; 6.39;	UL.00HF361V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP NL.SNP25	· · · ·	0.49, 2.72, 4.00,
WL_SWL26 WL_OWN271 WL_OWN272 WL_OWN273 A61.4 ANP (A60.31) 95.12 ANP (96.97) 103.47 ANP (106.06) 105.48 ANP (106.52) WL_OWFA WL_OWFE 135.34 ANF (135.10) 125.25 ANP (124.97) 74.33 ANP (75.01) H1.0FD1 (97.00) (15.10) 125.25 ANP (124.97) 74.33 ANP (75.01) H1.0FD1 (97.00) (15.10) 125.25 ANP (124.97) 74.33 ANP (75.01) H1.0FD1 (97.00) (15.10) 125.25 ANP (124.97) 74.33 ANP (75.01) H1.0FD1 (97.00) (15.10) 125.25 ANP (124.97) 74.33 ANP (75.01) WI.SBKLY 29474(FAST BF) VI.UGUNP 299900(FAST BF) VI.TAS 19000(FAST BF) VI.SGUNPC 30000(FAST BF) VI.SGUNPC 30000(FAST BF) VI.SENF03 299477(FAST BF) VI.SFFP03 29483(C/D TR.) VI.SKLV13 29885(C/D TR.) VI.SENF03 299477(FAST BF) <td>H1.8VT00 71.84 A </td> <td>HP (7) <u>.1.0(1)21</u> (5.00 (70.14 (2.40 (49.40</td> <td>(1.00, 2.01) (13C,) vt.s 0, vt.s 0, vt.o 0, vt.o</td> <td>3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP</td> <td>(; 2; ; 40 ; 2 ; 2 ; 47</td> <td>2.991 .597 .007 .707 .197</td> <td>M. POOF341V -S.03 AMP -S.03 AMP L.SNC02 5.01 AMP L.OSA1212 2.40 AMP L.OSA1412 4.30 AMP L.SNT25 .03 AMP</td> <td>• • •</td> <td>-5.00+ 5.01; 5.40; 5.39;</td> <td>UL.BONFJAIV 2.00 AMP VL.SNDEO2 119.30 AMP VL.QLA12 2.44 AMP VL.QLA14 3.97 AMP UL.SNP25 2713.55 AMP</td> <td> 111 111</td> <td>, . ** , . 4*, 2. 72, 00, 7. 4*,</td>	H1.8VT00 71.84 A 	HP (7) <u>.1.0(1)21</u> (5.00 (70.14 (2.40 (49.40	(1.00, 2.01) (13C,) vt.s 0, vt.s 0, vt.o 0, vt.o	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP	(; 2; ; 40 ; 2 ; 2 ; 47	2.991 .597 .007 .707 .197	M. POOF341V -S.03 AMP -S.03 AMP L.SNC02 5.01 AMP L.OSA1212 2.40 AMP L.OSA1412 4.30 AMP L.SNT25 .03 AMP	• • •	-5.00+ 5.01; 5.40; 5.39;	UL.BONFJAIV 2.00 AMP VL.SNDEO2 119.30 AMP VL.QLA12 2.44 AMP VL.QLA14 3.97 AMP UL.SNP25 2713.55 AMP	 111 111	, . ** , . 4*, 2. 72, 00, 7. 4*,
WL.OMFA WL.OMFB WL.OMFC WL.OMFC WL.OMFA 134.44 AMP (134.91) 135.34 AMP (135.10) YESTAL YESTAL MI.OFD TS.44 AMP (17.00) YESTAL YESTAL <t< td=""><td>H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SNVU03 7C.30 AMP VL.05A1312 2.34 AMP VL.0L81514 49.57 AMP HL.0LA271 6.45 AMP</td><td>HP (7) <u>-1-0(()))1</u> (5.00 (70.14 (2.40 (49.60 (4.50</td><td>(.00, 2.01) (<u></u> vL.s , vL.s , vL.e o, vL.e o, vL.e o, vL.e</td><td>3.02 AMP NB02 4.44 AMP NF11 0.03 AMP 1.413 2.47 AMP 1.41523 7.24 AMP 1.4272 8.91 AMP</td><td>() () () () () () () () () ()</td><td>2.99) .59, Vi .00, Vi .70, Vi .19, Ui</td><td>M. POOF341V -S.03 AMP -S.03 AMP L.05A1212 2.40 AMP L.05A1412 4.30 AMP L.SNT25 .03 AMP L.0182829 54.35 AMP</td><td>• • • • •</td><td>-5.00+ 5.017 5.407 5.391 5.391</td><td>UL.00HF361V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SHL25 661.35 AHP</td><td>, 119 , 2463 , 660</td><td>2.72, 2.00, 2.01,</td></t<>	H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SNVU03 7C.30 AMP VL.05A1312 2.34 AMP VL.0L81514 49.57 AMP HL.0LA271 6.45 AMP	HP (7) <u>-1-0(()))1</u> (5.00 (70.14 (2.40 (49.60 (4.50	(.00, 2.01) (<u></u> vL.s , vL.s , vL.e o, vL.e o, vL.e o, vL.e	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP 1.413 2.47 AMP 1.41523 7.24 AMP 1.4272 8.91 AMP	() () () () () () () () () ()	2.99) .59, Vi .00, Vi .70, Vi .19, Ui	M. POOF341V -S.03 AMP -S.03 AMP L.05A1212 2.40 AMP L.05A1412 4.30 AMP L.SNT25 .03 AMP L.0182829 54.35 AMP	• • • • •	-5.00+ 5.017 5.407 5.391 5.391	UL.00HF361V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SHL25 661.35 AHP	, 119 , 2463 , 660	2.72, 2.00, 2.01,
H1.0FD1 Y5.44 ANP (97.00) UTI TIEMINASE VI.SOKLY 29874(FAST OF) VI.UGUNP 29970(FAST OF) VI.TAS 19000(FAST OF) VI.SOUNPC 30000(FAST OF VI.SOUND S0000(FAST OF) VI.UGUNPF 61(1 MMZ) VI.SKLY03 29911(FAST OF) VI.SOFP03 29967(FAST OF VI.SOFP03 29881(FAST OF) VI.SKLY13 29885(C/D TA.) VI.SOFP13 29917(C/D TA.) VI.SOFP13 30010(C/D TA VI.SOF113C 29983(C/D TA.) VI.SOF113F 2(1 MHZ) MI.TAS 11000(C/D TA.) MI.FSNP2S 50000(1 MHZ MI.ASNP2SC 30000(1 MHZ) MI.USNP2SP 20461(1 MHZ) MI.MSNP2SD 20461(1 MHZ) MI.SSNP2SPC 29852(1 MHZ MI.SSNP2SDC 29984(1 MHZ) MI.ASNP2SF 0(1 MHZ) MI.SSNP2SPF 0(1 MHZ) MI.SSNP2SDF 0(1 MHZ MI.SSNP2SDC 29943(C/D TA.) MI.SOFP2S 29967(C/D TA.) MI.SOF127FC 29984(C/D TA.) MI.SKLY27 29884(C/D TA MI.SOF127F 20(C/D TA.) MI.SOF127FF 20(C/D TA.) MI.SOF127FC 29985(C/D TA.) MI.SOF127PC 29984(C/D TA MI.SOF127FF 20(C/D TA.) MI.SOF127FF 20(C/D TA.) MI.SNF131FC 29985(C/D TA.) MI.SOF131EF 27(C/D TA MI.SNF131 AUUU7(FAST OF) MI.SOF131EC 29970(C/D TA.) MI.SNF131FC 29982(C/D TA.) MI.SNF131EF 27(C/D TA	H1.8VT00 71.84 A (NP (7) <u>ITO() </u> (5.00 (70.14 (2.40 (49.60 (49.60 (49.60 (460.3)	1.00, 2.01) 2.01) 4.4C, 0, VL.S 0, VL.0 0, VL.0 0, VL.0 1, VL.0	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LA272 A.91 AMP NH271 G.12 AMP	(; 2(; 40 ; 2 ; 47 ; 4 ; 4	2.99) .59, Vi .00, Vi .70, Vi .19, Vi .99, Vi	M. POMF341V -S.03 AMP -S.03 AMP L.SNC02 S.01 AMF L.05A1212 2.40 AMP L.05A1412 4.30 AMP L.SNT25 .03 AMP L.OL82829 S4.35 AMP L.OL82829 S4.35 AMP	、 · 、 · 、 · 、 · 、 ·	-5.00+ 5.01; 5.40; 5.39; 5.00; 5.00;	UL.00HF361V 2.00 AMP VL.SNDE02 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.97 AMP UL.SNP25 2713.55 AMP UL.SNL25 661.35 AMP UL.SNL273 105.49 AMP	, 119 , ; , 4 , 244; , 400 , 104	1.79
U	H1.8VT00 71.84 A 2.5NA01 4.99 AMP 72.30 AMP 72.30 AMP 72.30 AMP 72.34 AMP	HP (7) 	(1.00, 2.01) 2.01) (13C, VL.S 0, VL.9 0, VL.0 0, VL.0 1, VL.0 1, WL.0 1, WL.0 1, WL.0	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP NLA13 2.47 AMP NLB1523 7.24 AMP NLA272 A.91 AMP NH271 NL2.12 AMP NH5 15.34 AMP	() () () () () () () () () ()	2.99) .59, V .00, V .70, V .19, U .99, U .99, U .91, U	M. POOF 3417 -S.03 AMP -S.03 AMP L.SNC02 5.01 AMP L.OSA1212 2.40 AMP L.OSA1412 4.30 AMP L.SNT25 .03 AMP L.OLB2829 54.35 AMP L.OMP272 103.47 AMP L.OMFC 125.25 AMP	, , , , , , , , , , , , , , , , , , ,	-5.00+ 5.01; 5.40;	UL.00HF361V 2.00 AHP VL.SNDEO2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SH25 661.35 AHP UL.0HH273 105.47 AHP UL.0HH273 105.47 AHP	, 114 , 2,467 , 646 , 104 , 79	1.79 2.72 4.00 7.4 5.01 4.52 5.01
VI.SBKLY 24874(FAST BF) VI.UGUHP 24970(FAST BF) VI.TAS 14000(FAST BF) VI.SGUMPC 30000(FAST BF) VI.SGUMPC 30000(FAST BF) VI.SGUMPF 61(1 MMZ) VI.SKLY03 24911(FAST BF) VI.SBFP03 24967(FAST B VI.SGUND 24081(FAST BF) VI.SKLY13 24865(C/D TR.) VI.SRFP13 24917(C/D TR.) VI.SBFP03 24967(FAST B VI.SFI13C 24983(C/D TR.) VI.SRF113 241 MHZ VI.SBFP13 24917(C/D TR.) VI.SBFP13 30010(C/D TR.) VI.SF113C 24983(C/D TR.) VI.SBF113F 2(1 MHZ) VI.SBFP13 24041(1 MHZ) VI.SBFP13 30010(C/D TR.) VI.SBFP25 50000(1 MHZ) VI.SF113C 24983(C/D TR.) VI.SBF113F 2(1 MHZ) VI.USBF25D 20441(1 MHZ) VI.SSBP25SPC 2445(1 MHZ) VI.SSBP25SPC 2445(1 MHZ) VI.SSBP25SPC 24452(1 MHZ) VI.SSBP25DF 0(1 MHZ) VI.SSBP25DF </td <td>H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SN403 7C.S0 AMP VL.OSA1312 2.34 AMP VL.OL81514 4.9.57 AMP WL.OL8271 6.45 AMP WL.SH.26 A61.4 AMP H1.OFA 134.48 AMP</td> <td>HP (7) <u>.1.0 (1) U I</u> (5.00 (70.14 (2.40 (49.40 (49.40 (49.40 (49.40 (134.9) (97.00</td> <td>(1.00) 2.01) (JC, VL.S VL.S VL.9 VL.9 VL.9 UL.9 1, UL.9 1, UL.9 1</td> <td>3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LA272 A.91 AMP NH271 15.12 AMP NF8 15.36 AMF</td> <td>(2) (1) (2) (2) (2) (2) (2) (2)</td> <td>2.99) .59, VI .20, VI .19, UI .99, UI .97, UI .10, UI</td> <td>M. POOF 341V -S.03 AMP -S.03 AMP L.05A1212 2.40 AMP L.05A1212 4.30 AMP L.05A1412 4.30 AMP L.SMT25 .03 AMP L.0182829 54.35 AMP L.0MH272 103.47 AMP L.0MFC 125.25 AMP</td> <td>, , , , , , , , , , , , , , , , , , ,</td> <td>-5.00+ 5.01+ 5.40+ 5.40+ 5.00+ 5.00+ 5.00+</td> <td>UL.00HF361V 2.00 AMP VL.SNDED2 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.97 AMP UL.SMP25 2713.55 AMP UL.SML25 661.35 AMP UL.0HM273 105.49 AMP UL.0HM36 74.33 AMP</td> <td> 114 2463 666 104 75 </td> <td>1.79 2.72, 2.00, 7.4 , 2.01, 5.01, 5.01,</td>	H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SN403 7C.S0 AMP VL.OSA1312 2.34 AMP VL.OL81514 4.9.57 AMP WL.OL8271 6.45 AMP WL.SH.26 A61.4 AMP H1.OFA 134.48 AMP	HP (7) <u>.1.0 (1) U I</u> (5.00 (70.14 (2.40 (49.40 (49.40 (49.40 (49.40 (134.9) (97.00	(1.00) 2.01) (JC, VL.S VL.S VL.9 VL.9 VL.9 UL.9 1, UL.9 1, UL.9 1	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LA272 A.91 AMP NH271 15.12 AMP NF8 15.36 AMF	(2) (1) (2) (2) (2) (2) (2) (2)	2.99) .59, VI .20, VI .19, UI .99, UI .97, UI .10, UI	M. POOF 341V -S.03 AMP -S.03 AMP L.05A1212 2.40 AMP L.05A1212 4.30 AMP L.05A1412 4.30 AMP L.SMT25 .03 AMP L.0182829 54.35 AMP L.0MH272 103.47 AMP L.0MFC 125.25 AMP	, , , , , , , , , , , , , , , , , , ,	-5.00+ 5.01+ 5.40+ 5.40+ 5.00+ 5.00+ 5.00+	UL.00HF361V 2.00 AMP VL.SNDED2 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.97 AMP UL.SMP25 2713.55 AMP UL.SML25 661.35 AMP UL.0HM273 105.49 AMP UL.0HM36 74.33 AMP	 114 2463 666 104 75 	1.79 2.72, 2.00, 7.4 , 2.01, 5.01, 5.01,
VI.SGUND S0000(FAST RF) VI.SGUNPF 61(1 MHZ) VI.SKLY03 24911(FAST RF) VI.SRFP03 24947(FAST R VI.ERFP03 24881(FAST RF) VI.SKLY13 24885(C/D TR.) VI.SRFP13 24917(C/D TR.) VI.ERFP13 30010(C/D TR VI.SRF113C 24483(C/D TR.) VI.SRF113F 2(1 MHZ) VI.SRFP13 24917(C/D TR.) VI.ERFP13 30010(C/D TR VI.SRF113C 24483(C/D TR.) VI.SRF113F 2(1 MHZ) VI.TAS 11000(C/D TR.) VI.ERFP13 30010(C/D TR VI.SRF113C 24484(I MHZ) VI.SRF113F 2044(1 MHZ) VI.TAS 11000(C/D TR.) VI.SSNP2SPC 24452(1 MHZ) VI.SSNP2SDC 24484(1 MHZ) VI.SSNP2SP 20441(1 MHZ) VI.SSNP2SPC 24852(1 MHZ) VI.SSNP2SDC 24484(1 MHZ) VI.SSNP2SP 0(1 MHZ) VI.SSNP2SPC 24852(1 MHZ) VI.SSNP2SDC 24446(1 MHZ) VI.SSNP2SP 0(1 MHZ) VI.SSNP2SPC 24452(1 MHZ) VI.SSNP2SDC 24446(1 MHZ) VI.SSNP2SPC 24467(C/D TR.) VI.SSNP2SPC 24452(1 MHZ) VI.SSNP2SDC 24447(C/D TR.) VI.SSNP2SPC 244467(C/D TR.)	H1.8VT00 71.84 A AL.SNA01 4.99 ARP AL.SNA01 5.99 ARP AL.SNVU03 7C.30 ARP VL.05A1312 2.38 ARP VL.0L61514 49.57 ARP VL.0L6271 6.45 ARP VL.0HA271 6.45 ARP VL.0HA 134.84 ARP H1.0FD1 75.64 ARP	HP (7; 	1.00, 2.01) 2.01) 1.2 2.01) 1.2 2.01) 1.2 2.01) 2	3.02 AMP NB02 4.44 AMP MF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LA272 A.91 AMP NME271 15.12 AMP NME8 IG.36 AMP	() () () () () () () () () ()	2.99) .59, Vi .00, Vi .70, Vi .19, Vi .99, Vi .97, Vi .10, Vi	M. POMF341V -S.03 AMP -S.03 AMP L.SMC02 S.01 AMF L.OSA1212 2.40 AMP L.OSA1212 4.30 AMP L.SMT25 .03 AMP L.OL82829 54.35 AMP L.OL82829 54.35 AMP L.OMF272 103.47 AMP	, , , , , , , , , , , , , , , , , , ,	-5.00+ 5.01+ 5.40+ 5.00+ 5.00+ 5.00+ 5.00+	UL.00HF361V 2.00 AMP VL.SNDE02 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.07 AMP UL.SND25 2713.55 AMP UL.SNL25 661.35 AMP UL.SNL27 105.49 AMP UL.0HM36 74.33 AMP	 111 2467 2467 666 104 75 	0.49, 2.72, 4.00, 7.4 , 0.01, 6.52, 5.01,
VI.ERFP03 29881(FAST RF) VI.SKLV13 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 HHZ) HI.TAS 11000(C/D TR.) VI.ERFP13 30010(C/D TR.) VI.SRF113C 29983(C/D TR.) VI.SRF113F 2(1 HHZ) HI.TAS 11000(C/D TR.) UI.SRP2S 50000(1 HHZ) VI.SRF125C 30000(1 HHZ) VI.USHP25P 20461(1 HHZ) VI.USHP25D 20461(1 HHZ) VI.SSNP25PC 29852(1 HHZ) VI.SSNP25DC 29984(1 HHZ) VI.ASNP25F 0(1 HHZ) VI.SSNP25PF 0(1 HHZ) VI.SS	H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SN403 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.061514 49.57 AMP WL.0L81514 49.57 AMP WL.0L8271 6.45 AMP WL.0L8271 6.45 AMP WL.SNL26 A61.4 AMP 134.48 AMP H1.0FA 134.48 AMP	HP (7) HP (7) (5.00 (70.14 (2.40 (49.40 (49.40 (4.50 (4.50 (4.50 (134.9) (97.00 1 1.0152- 29874(FAST (1.00, 2.01) 2.01, 0, VL.S 0,	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LA272 A.91 AMP NH271 5.12 AMP NH271 5.13 AMP NH58 15.36 AMF	(2) (40 (2) (47 (47 (47 (47 (47) (2.99) .59, VI .70, VI .19, VI .99, VI .99, VI .10, VI .10, VI .10, VI .10, VI	W. POOF 341V -S.03 AMP -S.03 AMP L.05A1212 2.40 AMP L.05A1212 4.30 AMP L.05A1412 4.30 AMP L.05A229 54.35 AMP L.0MH272 103.47 AMP L.0MFC 125.25 AMP	(((5 (10 (12	-5.00+ 5.01; 5.40;	UL.00HF361V 2.00 AHP VL.SNDED2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SHL25 661.35 AHP UL.0HH273 105.49 AHP UL.0HH36 74.33 AHP VI.SEUMPC	(119 (246) (246) (104 (75	1.79 2.72, 2.00, 7.4 , 3.01, 5.01, 5.01,
VI.SRF113C 29483(C/D TR.) VI.SRF113F 2(1 HHZ) VI.TAS 11000(C/D TR.) VI.FSHP2S 50000(1 HHZ VI.ASHP2SC 30000(1 HHZ) VI.USHP2SP 20461(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20461(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20461(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20461(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHP2SPC 20461(1 HHZ) VI.USHP2SPC 20461(1 HHZ) VI.USHP2SPC 20452(1 HHZ) VI.USHACC/D TR.) VI.USHACC/D TR.) VI.USHACC/D TR.) VI.USHC/VIC/D TR.)	H1.8VT00 71.84 A 2.5NA01 4.99 ANP 7C.5NVU03 7C.30 ANP 7C.30 ANP 7C.30 ANP 7C.30 ANP 7C.30 ANP 7C.30 ANP 7C.30 ANP 7C.30 ANP 1.0L81514 49.57 ANP HL.0L8271 A.45 ANP HL.0L8271 A.45 ANP HL.0NFA 134.84 ANP H1.0FD1 75.64 ANP H1.0FD1 75.64 ANP	IP (7; IP (7; (5.00 ((70.14 ((70.14 ((70.14 ((70.14 ((70.14 ((70.14 ((49.40 ((49.40 ((446.31 ((134.91 ((97.00 (11.0111 (97.00 11.0111 (29874 (FAST)) S00000 (FAST)) ((1.00, 2.01) 2.01, 0,	3.02 AMP MB02 4.44 AMP MF11 0.03 AMP MLA13 2.47 AMP MLB1523 7.24 AMP MLA272 A.91 AMP MM271 NF5 15.34 AMP MF5 MM271 SCUMPF	(2) (90 (2) (47 (47 (47 (47 (435 20000(FA (41())	2.99) .59, V .00, V .70, U .19, U .99, U .97, U .97, U .10, U ST RF) MHZ 3	W. POOF 341V -S.03 AMP -S.03 AMP L.SNC02 5.01 AMP L.OSA1212 2.40 AMP L.OSA1412 4.30 AMP L.OSA1412 54.35 AMP L.OMP272 103.47 AMP L.OMFC 125.25 AMP	د د د د 10 د 12 140000 (24411 (-5.00+ 5.01; 5.40; 5.40; 5.00;	UL.00HF361V 2.00 AHP VL.SNDEO2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SH25 661.35 AHP UL.0HH273 105.47 AHP UL.0HH273 105.47 AHP UL.0HH273 105.43 AHP VI.SELMPC VI.SELMPC VI.SEFP03	 111 2467 460 104 75 300000 29947 	(FAST R (FAST R
WX.ASHP25C 30000(1 HHZ) WX.WSHP2SP 20461(1 HHZ) WX.WSHP2SP 20461(1 HHZ) WX.WSHP2SP 20461(1 HHZ) WX.SSHP2SPC 20463(C/D TR.) WX.SSHP2SPC 20463(C/D TR.) WX.SSHP2SPC 20466(C/D TR.) WX.SSHP2SPC 20466(C/D TR.) WX.SSHP2SPC 20464(C/D TR.)	H1.8VT00 71.84 A AL.SNA01 4.99 ANP AL.SNA01 5.99 ANP AL.SNVU03 7C.30 ANP VL.05A1312 2.38 ANP VL.0L61514 49.57 ANP VL.0L6271 6.45 ANP VL.0HA271 6.45 ANP VL.SNL26 661.6 ANP VL.0HFA 134.84 ANP H1.0FD1 75.64 ANP H1.0FD1 75.64 ANP VL.SBKLY VI.SBKLY VI.SBKLY	HP (7) 	1.00, 2.01) 1.10, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0,	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LA1523 7.24 AMP NLA272 A.91 AMP NH271 G.12 AMP NH271 IG.12 AMP NF8 IG.34 AMF 	(2) (70 (2) (2) (3) (3) (3) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4	2.99) .59, VI .00, VI .19, VI .99, VI .10,	UL. SHC02 S.03 AHP L.SHC02 S.01 AHF L.OSA1212 2.40 AHF L.OSA1212 4.30 AHF L.OSA1412 4.30 AHF L.SHT25 .03 AHF L.OLB2829 54.35 AHF L.OLB2829 54.35 AHF L.OHR272 103.47 AHF L.OHRC 125.25 AHF VI.TAS VI.SHFP13	(((5 (10 (12) 10000(20011)(20017)(-5.00+ 5.01+ 5.40+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+ 5.00+	UL.00HF361V 2.00 AMP VL.SNDE02 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.07 AMP UL.SMP25 2713.55 AMP UL.SML25 661.35 AMP UL.SML273 105.49 AMP UL.0HM36 74.33 AMP VI.SELMPC VI.SEFP13	 111 111 2447 2447 104 75 	(FAST R (C/D TR
UT.SSHP2SDC 29986(1 HHZ) UT.ASHP2SF D(1 HHZ) UT.SSHP2SPF D(1 HHZ) UT.SSHP2SDF D(1 HZ) UT.SSHP2SDF D(1 H	H1.8VT00 71.84 A 2.5NA01 4.99 AMP 72.30 AMP 72.30 AMP 72.30 AMP 72.33 AMP 72.33 AMP 72.33 AMP 72.34 AMP 72.34 AMP 74.061514 49.57 AMP 75.64 AMP 75.64 AMP 75.64 AMP 1.0FD1 75.64 AMP 1.0FD1 75.64 AMP 1.0FD1 75.64 AMP	HP (7; HP (7; (5.00 (70.14 (2.40 (49.40 (49.40 (4.50 (4.50 (4.50 (4.50 (4.50 (4.50 (4.50 (4.50 (4.50 (5.00 (70.14 (70.14) (70.14 (70.14) (70.14 (70.14) (70.14)	1.00, 2.01) 1.10, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1,	3.02 ANP NB02 4.44 ANP NF11 0.03 ANP LA13 2.47 ANP LB1523 7.24 ANP LLA272 8.91 ANP NH271 15.12 ANP NH271 15.36 ANF 	(24 (90 (2 (47 (47 (47 (47 (47 (47 (47))))))))))))))))))))))))))))))))))))	2.99) .59, VI .70, VI .19, UI .99, UI .99, UI .10, UI	W. POOF 341V -S.03 AMP L.SMC02 S.01 AMP L.OSA1212 2.40 AMP L.OSA1212 4.30 AMP L.OSA1412 4.30 AMP L.OSA1412 4.30 AMP L.OLB2829 S4.35 AMP L.OLB2829 S4.35 AMP L.OLB2829 S4.35 AMP L.OLB2829 S4.35 AMP VI.TAS VI.TAS VI.SRFP13 WI.TAS	((((10 (12 17000) (27711) (27717) (11000)	-5.00+ 5.01; 5.40; 5.00;	UL.00HF361V 2.00 AMP VL.SNDE02 119.30 AMP VL.0LA12 2.66 AMP VL.0LA14 3.97 AMP UL.SMP25 2713.55 AMP UL.SMP25 661.35 AMP UL.SML25 661.35 AMP UL.0HM273 105.49 AMP UL.0HM36 74.33 AMP VI.SEUMPC VI.SEFP03 VI.ERFP13 UX.FSMP25	 113 2463 4660 2463 6660 75 30000 29947 30010 50000 	(1.79 2.72, 2.00, 7.4 , 2.01, 5.01, 5.01, (FAST R (FAST R (C/0 TR (1 042
WI.SKLY25 29943(C/D TR.) WI.SKFP25 29967(C/D TR.) WI.EKFP25 29900(C/D TR.) WI.SKLY27 29888(C/D TR WI.SKFP27 29919(C/D TR.) WI.EKFP27 30011(FAST RF) WI.SKF127EC 29985(C/D TR.) WI.SKF127PC 29984(C/D TR WI.SKF127EF 20(C/D TR.) WI.SKF127PF 20(C/D TR.) WI.SKLY31 29885(C/D TR.) WI.SKFP31 29932(C/D TR WI.EKFP31 JUUU7(FAST RF) WI.SKF131EC 29970(C/D TR.) WI.SKF131PC 29982(C/D TR.) WI.SKF131EF 27(C/D TR	H1.8VT00 71.84 A AL.SNA01 4.99 AMP 7C.SN403 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.30 AMP 7C.45 AMP ML.0LA271 4.45 AMP ML.0LA271 4.45 AMP ML.34.4A 134.4A AMP ML.341.4 AMP L.[I.T] IF VI.SBKLV VI.SBKLV VI.SBFII3C MI.ASMP25C	HP (7: HP (7: (5.00 (70.14 (2.40 (49.40 (70.14 (70.14) (70.14 (70.14) (70.1	(1.00, 2.01) (1.00, 2.01) (1.00, 0, <td< td=""><td>3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LLA272 A.91 AMP NM271 15.12 AMP NM55 15.34 AMF </td><td>(24 (4 (4 (4 (4 (4 (4 (4 (4 (4</td><td>2.99) .59, VI .00, VI .70, VI .99, UI .99, UI .90, UI .90,</td><td>W. POOF 341V -S.03 AMP L.SMC02 S.01 AMP L.OSA1212 2.40 AMP L.OSA1212 4.30 AMP L.SMT25 .03 AMP L.SMT25 .03 AMP L.OMM272 103.47 AMP L.OMM272 103.47 AMP VI.TAS VI.SMFP13 WI.TAS WI.SMFP13 WI.USMP250</td><td>(() () () () () () () () () (</td><td>-5.00+ 5.01; 5.40;</td><td>UL.00HF361V 2.00 AHP VL.SNDED2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SH25 661.35 AHP UL.SH23 105.49 AHP UL.0HH273 105.49 AHP UL.0HH36 74.33 AHP VI.SEUNPC VI.SECUNPC VI.SEFP03 VI.ERFP13 UI.FSMP25 UX.SSNP25PC</td><td> 113 2463 4600 2467 30010 \$0000 24652 </td><td>(1.79 (</td></td<>	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LB1523 7.24 AMP LLA272 A.91 AMP NM271 15.12 AMP NM55 15.34 AMF 	(24 (4 (4 (4 (4 (4 (4 (4 (4 (4	2.99) .59, VI .00, VI .70, VI .99, UI .99, UI .90,	W. POOF 341V -S.03 AMP L.SMC02 S.01 AMP L.OSA1212 2.40 AMP L.OSA1212 4.30 AMP L.SMT25 .03 AMP L.SMT25 .03 AMP L.OMM272 103.47 AMP L.OMM272 103.47 AMP VI.TAS VI.SMFP13 WI.TAS WI.SMFP13 WI.USMP250	(() () () () () () () () () (-5.00+ 5.01; 5.40;	UL.00HF361V 2.00 AHP VL.SNDED2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SH25 661.35 AHP UL.SH23 105.49 AHP UL.0HH273 105.49 AHP UL.0HH36 74.33 AHP VI.SEUNPC VI.SECUNPC VI.SEFP03 VI.ERFP13 UI.FSMP25 UX.SSNP25PC	 113 2463 4600 2467 30010 \$0000 24652 	(1.79 (
W1.SRFP27 29919(C/D TR.) WI.ERFP27 30011(FAST RF) WI.SRF127EC 29985(C/D TR.) WI.SRF127PC 29984(C/D TR W1.SRF127EF 20(C/D TR.) WI.SRF127PF 20(C/D TR.) WI.SKLY31 29885(C/D TR.) WI.SRF931 29932(C/D TR WI.ENFP31 30007(FAST RF) WI.SRF131EC 29970(C/D TR.) WI.SRF131PC 29982(C/D TR.) WI.SRF131EF 27(C/D TR	H1.8VT00 71.84 A 2.5NA01 4.99 ANP 72.30 ANP 72	IT Q (1) (1) (1) (1) (5.00 (70.14 (70.14 (70.14 (70.14 (70.14 (70.14 (70.14 (70.14 (70.14 (49.40 (49.40 (49.40 (49.40 (49.40 (49.40 (49.7.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (97.00 (1.00, 2.01) 2.01, 0,	3.02 AMP MB02 4.44 AMP MF11 0.03 AMP MF11 0.03 AMP MLA13 2.47 AMP MLA13 2.47 AMP MLA272 A.91 AMP MF5 MM271 MF5 MF5 MF5 MF5 MF5 MF5 MF5 MF5	((()))))))))))))	2.99) .59, VI .00, VI .70, VI .99,	W. POOF 341V -S.03 ANP -S.03 ANP L.SNC02 5.01 ANF L.OSA1212 2.40 ANP L.OSA1212 4.30 ANP L.OSA1412 4.30 ANP L.OSA1412 4.30 ANP L.ONF22 103.47 ANP L.ONFC 125.25 ANP VI.TAS VI.SAFP13 WI.TAS WI.SAFP13 WI.TAS WI.SSNP25PF	(, , , , , , , , , , , , , , , , , , ,	-5.00+ 5.01; 5.40;	UL.00HF341V 2.00 AHP VL.SNDEO2 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.0H273 105.47 AHP UL.0H1273 105.47 AHP UL.0H1273 105.45 AHP UL.0H126 74.33 AHP VI.SEUP25 UL.SEUP	 111 111	(FAST R (FAST R (FAST R (C/D TR (1 042 (1 042
WT.SRF127EF 20(C/D TR.) WT.SRF127PF 20(C/D TR.) WT.SKLV31 29885(C/D TR.) WT.SRFP31 29932(C/D TR WT.EWP31 AUUU7(FAST RF) WT.SRF131EC 29970(C/D TR.) WT.SRF131PC 29982(C/D TR.) WT.SRF131EF 27(C/D TR	H1.8VT00 71.84 A (HP (7; 	1.00, 2.01) 2.01, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0,	3.02 AMP MB02 4.44 AMP MF11 0.03 AMF LA13 2.47 AMP LA13 2.47 AMP LA13 2.47 AMP MF11 0.03 AMF 10.12 AMP MF0 15.34 AMF 	(24 (90 (2 (47 (4 (4 (4 (135 299990 (FA 41(1) 29985 (C/ 20461 (1) 29967 (C/	2.99) .59, Vi .00, Vi .19, Vi .99, Vi .97, Vi .97, Vi .10,	W. POOF 341V -S.03 ANP -S.03 ANP L.SNC02 5.01 ANP L.OSA1212 2.40 ANP L.OSA1212 4.30 ANP L.OSA1412 4.30 ANP L.OSA229 54.35 ANP L.OUB229 54.35 ANP L.OUB229 54.35 ANP L.OUB229 54.35 ANP L.OUB229 54.35 ANP L.ONFC 125.25 ANP VI.TAS VI.SKLV03 VI.SKLV03 VI.SKP13 MI.TAS MI.TAS MI.SSMP25PF MI.ERFP25	(((((((((((20%1)((20%4)((((((((((((())))))))))))	-5.00+ 5.01+ 5.00+	UL.00HF341V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.07 AHP UL.0H14 3.07 AHP UL.SNP25 2713.55 AHP UL.SNP25 461.35 AHP UL.0HH273 105.49 AHP UL.0HH36 74.33 AHP VI.SGUNPC VI.SGFP03 VI.ERFP13 UX.FSNP25 UX.SSNP25DF UX.SSNP25DF UX.SSNP25DF	 114 2443 2444 2444 2444 2444 104 75 30000 29947 30010 29947 30010 29452 0 29484 	(, 79), 49, 2.72, 2.00, 7.4 , 2.01, 5.01, 5.01, 5.01, 6.52, 5.01, 6.52, 5.01, 7.4 ,
WILENFP31 JUUU7(FAST NF) WILBNF131EC 29970(C/D TA.+ WILBNF131PC 29982(C/D TA.) WILBNF131EF 27(C/D TA	H1.8VT00 71.84 A AL.SNA01 4.99 ANP 7C.SNA01 5.99 ANP 7C.TO AMP 7C.TO AMP 7C.	HP (7; 	1.00, 2.01) 1.10, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0,	3.02 AMP NB02 4.44 AMP NF11 0.03 AMP LA13 2.47 AMP LA13 2.47 AMP LA1523 7.24 AMP NL272 A.91 AMP NH271 IG.12 AMP NH271 IG.12 AMP NH271 IG.12 AMP NH271 IG.13 AMP IG.13 AMP IG.14 AMP IG.15 AMP IG.15 AMP IG.15 AMP IG.16	((1 2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	2.99) .00, Vi .70, Vi .19, Vi .99, Vi .99, Vi .10,	W. POOF 341V -S.03 ANP L.SNC02 S.01 ANF L.OSA1212 2.40 ANF L.OSA1212 4.30 ANF L.OSA1412 4.30 ANF L.OSA1412 4.30 ANF L.OLB2829 S4.35 ANF L.OLB2829 S4.35 ANF L.OLB2829 S4.35 ANF L.OLB2829 S4.35 ANF L.OLB2829 S4.35 ANF U.SAFP13 WI.SAFP13 WI.TAS WI.SAFP13 WI.SAFP250 WI.ERFP25 WI.SAF127EC	((((((((((2991)((2991)((2991)((2991)(((2991)(((((()))(((()))((((((-5.00+ 5.01; 5.40; 5	UL.00HF341V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SH25 2713.55 AHP UL.SH25 641.35 AHP UL.SH25 641.35 AHP UL.SH23 105.49 AHP UL.0HN36 74.33 AHP VI.SEMPC VI.SEFP3 UX.FEMP25 UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF UX.SEMP25 DF	 111 111 2447 2447 104 75 30000 29947 30010 50000 29452 0 29484 29944 	(1.79 2.72, 2.00, 7.4 , 2.01, 5.01, 6.52, 5.01, (FAST R (C/D TR (1 0HZ (1 0
	H1.8VT00 71.84 A AL.SNA01 4.99 AMP 72.30	HP (7: HP (7: (5.00 (70.14 (2.40 (49.40 (97.00 (97.	1.00, 2.01) 1.4C, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 1, 0, 1, 0, 1, 0, 1, 1, 0, 4, 1, 1, 1, 1, 1, 0, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4,	3.02 ANP NB02 4.44 ANP NF11 0.03 ANP LA13 2.47 ANP LB1523 7.24 ANP LA272 A.91 ANP MH271 15.12 ANP MH271 15.13 ANP MH271 15.34 ANF 15.34 ANF SECUNPF SKLV13 SAF113F .USNP25P .SRFP25 .ERFP27 .SRF127PF	((((((((((((((2.99) .59, .00, .70, .19, .19, .19, .10, .10, ST RF) D TR.) D TR.) D TR.) ST RF) D TR.) ST RF) D TR.)	UL. SHC02 S. 03 AHP L. SHC02 S. 01 AHP L. 0SA1212 2.40 AHP L. 0SA1212 4.30 AHP L. 0SA1412 4.30 AHP L. 0SA1412 4.30 AHP L. 0HR272 103.47 AHP L. 0HR272 103.47 AHP L. 0HRC 125.25 AHP VI. TAS VI. SHFP13 MI. TAS WI. SHFP13 MI. TAS WI. SHFP13 MI. TAS WI. SHFP25 MI. SHFP25 MI. SHF127EC WI. SHL27EC WI. SHL27EC	((() () () () () () () () ()	-5.00+ 5.01; 5.40; 5	UL.00HF361V 2.00 AHP VL.SNDE02 119.30 AHP VL.0LA12 2.66 AHP VL.0LA14 3.97 AHP UL.SHP25 2713.55 AHP UL.SHP25 461.35 AHP UL.SHL23 461.35 AHP UL.0HH273 105.49 AHP UL.0HH36 74.33 AHP VI.SEUNPC VI.SEFP13 UI.FSHP25 UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC UI.SSNP25PC	 111 111	(1.79 2.72, 2.00, 7.4 , 5.01, 6.52, 5.01, (FAST R (FAST R (C/D TR (1 MHZ (1

NOOTH ALOR CHASES

MOK03	74.5	¢	74.5	•	
NON 1 1	177.1	•	177.1	٠	
HOK25	337.5	•	337.5	1	
MBK27	64.9	¢	70.3	٠	

196 1-19-19-19-09-096 1	Ĵ						HCH Intens.(EB)			E2481 -6485.4	HCH11 -3242.8	HCH12 -2366.8	HCH14 -2091.6	HCH221 8.8	HCH37 3.8	HIM99 18.4		NMERS 188	TRIG 1	DT 9
STROMS	 Vertical 	-1-2	e d	с ф	-1.8	8-8	9 . 0	2-2	-7.4	17.8	18.3	-15.8	-14.6	9-5	5.7	111.1	8. 8	1.1		
TRAJ. POC	korizmtal (m	ტ ქ	ი	ป ี -	1	-7.5	13.4	.6	-7-9	11.6	9	-13.1	- 8 -6	8.9	8.7	111.1	21.8	6-9		
	stite (E3) H	-2139.0	-3822-3	-1836.4	-1797.6	6.5	1.1	2 ° 2	3.8	3 . 5	3 . 5	3 . 5	3 . 5	3 - 7	3.8	. 1	84	12.8		
러	Inter	UHD 13	THA 15	R S S S S S S S S S S S S S S S S S S S		114 27	51 51 51 51 51 51 51 51 51 51 51 51 51 5		UHA 31	Se the	ER HIN	199 - 199		98 UND	TE the	60 HIH	HE 22	HIP 23		

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

Table 6 et production, 1987 LILV setting (B.Frammery, JP. Police).

UBER P	<u> 7180</u>				24	-03-194	<u>8 21127128</u>
	LEMENTS	NORMA	ALLY OF	-			
WL. 0HZ221	OFF	WL. DVT221	OFF	WL. BH6221	OFF	ML.8H222	OFF
0 411	• (03)	O AMP	(0)		(5.09)	O AMP	(119.00)
G ANF	0++ (_47)	Q ANP	(04)	Q ANP	(.21)	G ANP	1,09)
WL.DVT223 Off		WL.8H621 OFF		WL.SN623 Off		WL.SH423 Off	
ANA D	· · · .so,	9HA D	(7.67)	G ANF	(1.97)	.35 ANP	4 47.091
LILH	HORIZON	TAL ST	EERING				
VL.8HG031 -3.97 AHF	• • • • • • • • • • • • • • • • • • • •	VL.8HG031 99 AMP	(44)	VL.OHZII .20 AMP	(.20)	VL. DHG1145 1,47 AMP	(1.99)
VL.896121H 1.26 AM	• (1.26)	VL.898132H 5.69 AMP	(\$.70)	VL.DQ5141H -1.37 AMP	(-1.40)	VL.DHZ14 8.00 AMP	(7.99)
VL.85P15	STANDBY (255.44)	VL.0QL152H -1.99 AMP	(-1.99)	ML.DHZ25 O AMP	(O)	WL.DHG251 -18.46 AMP	(-18.50)
WL.8HG252 -18.46 ANF	-18.49)	WL.DHG261 -17.87 AMP	(-16>00)	ML.DHG241 18.00 AMP	(18.00)	WL.DQL272H -2.70 AMP	(-2.69)
UL. BONF271H	• (-1.00)	ML.BQLZ6H S.Q3 AMP	CAD STATUS (S.OQ)	ML.BONF284H Q AMP	BAD STATUS	WL.DQNF292H D AMP	« C)
	. <i>.</i> .	WL.DQMF313H	(- 01)	4L.DQNF331H	<i>(</i>))	WL. DONF342H	(())
WL.DQWF362H		H1.85H00		H1.8H2		-	
0 411	• • • • • •	173.38 AMP	(173.41)	364.55 AMP	(384.25)		
LILW	VERTICA	L STEEL	RING				
VL. OVGOJI O AMI	• (0)	VL.8VG032 0 AMP	(O)	VL.DVT11 6.67 AHP	(6.69)	VL.DVG1199 78 AMP	(76)
VL.00112V .30 AN	• (.24)	VL.BQL13V 1.10 AMP	(1.09)	VL.0QL14V 0 AMP	دەن	VL.DVT14 1.99 AMP	(1.99)
VL.00L153V	(-2.94)	ML.DVT25	(.99)	WL.DVG251 10.00 AMP	(10,00)	WL.DVG251	(9.99)
WL.8VG241		WL. 8VG242		WL.09L271V		WL . DQNR273V	(0)
10.50 AN	(10.47)	10.47 MH	BAD STATUS	WL.DQNE291V	BAD STATUS	WL.DONF301V	
G AN	, (0)	0 AMP	(0)	Q ANP	(0)	O ANP	< 0 >
C ANI	• • • • •	C ANP	(0)	0 ANP	(0)	4.03 AMP	(5.99)
HI.8VTDO 64.82 AM	(65.00)						
LILH	FOCUSING	<u></u>					
VL.SNAD1 4.86 AMP	(4.89)	VL.88802 14.87 AMP	(14.98/	VL.SNC02 14.00 AMP	(17.94)	VL.6NDE02 0 119.33 AMP	(119.50)
VL.SNVU03 130.42 AMP	(130.19)	VL.5NF11 180.11 AHP	(140.03)	VL.QSA1212 J.QJ AMP	(3.03)	VL.QLA12 3.11 AMP	(1.14)
VL.0541312	(2.72)	VL.QLA13	(1.44)	VL.QSA1412	(4.03)	VL.QLA14	
VL.QL81514		VL.QL81523		WL.SNT25		WL . SHP25	
WL.QLA271	(56.44)	WL.QLA272	(34.67)	-U3 ARF		2700.36 AMP	(2447.4)
4.45 AMP	(4,50)	4.91 ARP	(4.99)	54.34 AMP	(\$5.00)	441.35 AMP	(440.01)
441.4 AMP	(440.31)	95.12 ANP	(94,97)	103.42 AMP	(104.08/	105.47 AMP	(104.52)
134.44 AMP	(134.91)	135.34 AMP	(135.10)	125.25 ANP	(124.97)	74.33 ANP	(75.01)
HI.QFD1 95.64 AMP	(17.00)						
LIL TIP	LING.						
VI.SOKLY	27874(FAST #F)	VI .WOUNP	27790(FAST 8F)	VI.TAS	17000(FAST RF)	VI. SCUNPC	30000 (FAST RF)
VI.SCUND	\$0000(FAST RF)	VI. SCUNPF	61 (1 MHZ)	VI. SKL V03	24911(FAST RF)	VI.SAFP03	27767(FAST RF)
VI.ERFP03	29681(FAST RF)	VI.841.713	29665(C/0 TR.)	VI.SRFP13	27717(C/D TR.)	VI.ERFP13	30010(C/8 TR.)
VI.58F113C	27963(C/8 TR.)	VI.88F113F	2(1 002)	WE.TAS	11000(C/D TR.)	WI .FSHP25	50000(1 ##(2)
WI.ASHP25C	30000(1 ##2)	WI. WENP 25P	20441(1 982)	WI.WSNP25D	20441(1 MHZ)	WI.SSNP25PC	29652(1 MIZ)
WX.SSMP25DC	27986(1 842)	WI.ASHP25F	0(1 ##2)	WX.SSNP25PF	0(1 MHZ)	WI. SSNP2SOF	0(1 99(2)
WE.SKLY25	27743(C/0 TR.)	WI.88FP25	29967(C/D TR.)	WI.ERF#25	24400(C/0 TR.)	WX.SKLY27	27868(C/D TR.)
WI.SAFP27	27919(C/0 TR.)	WI.EAFP27	30011(FAST RF)	WI.SRF127EC	27765(C/0 TR.)	WI.88F127PC	27764(C/0 TR.)
WI.88F127EF	20(C/# TR.)	WI.88F127PF	20(C/0 TR.)	WE. 8KL 731	29665(C/0 TR.)	WI.SRFP31	29932(C/0 TR.)
WE.EMFP31	30007(FAST @F)	WI.80F131EC	27770(C/0 TA.)	WI.SRF131PC	027742(C/0 TR.)	WI. 80F131EF	27(C/0 TR.)
WI.88f131Pf	20(C/0 TR.)	WZ.801.735	27737(C/0 TR.)	WI.SRFP35	27778(FAST #F)	WI.ERFP35	30004 (C/0 TR.)

HODULATOR PHAGES

MeK03	\$7.4	¢	\$7.4	,
ROK13	174.5	¢	174.5	2
NOK25	\$27.4	Ċ	327.4	5
MOK27	824.4	•	324.2	3

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compared wi	th what give	the old ones	re-established	.(2 A at WCM
	new settir	igs	old setti	ngs
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

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					inters. (EB)			-1881.5	-986.4	-385-5	-209-2	4. th	8-8	ຕ ຸ		395 11	1 JI:	DT 8
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ዝ 4.2	13% -2-1	72 4.3	(2 1.2	3% 7	B • 78	.6	111-1	111-1	111-1	111-1	111.1	111.1	111.1	111-1	111.1	111-1		25.03.88 AS
	6 580-	8-19-	-53-5	1 1 1		1 .6	8-8	6 .1	8-8	8-8	8-8	6.1	8 _8	- 1	8-8	e.1		Ref. LIL LOG
11 13	UHA 15	문 문		73 ANU			UHA 31	문 문 문				BE WHI	JE UNIN	HIH 88	HIE 22	EF 22	,	Settings

Settings Ref. LIL LOG 25.03,88 15:23:07

Table 8

Table 9

beamat buncher energy

USER_	ELECI_							2	5-03-198	•	15129107
GUNH	ELEMENT	<u> </u>	NORM	ALLY	OF						
WL.DHZ221 0 A	0FT MP (-	.03) W	0 AMP	0r; (• •	UL.SN6221 0 AMP	(\$.09)	0 AMP	(17.00)
WL.SHG222 0 A	OFF MP (WI .47,		OFF (04>	WL.BVT221 G AMP	OFF (.21/	WL.9H2223 C AMP	OF F L	.09/
WL.DVT223 0 A	OFF MP (.50)		0F7 (7.47)	WL.SH623 G AMP	0FF (3.97)	WL.SHU23 .36 AMP	DF7 (67.09)
<u>, , , , , , , , , , , , , , , , , , , </u>	HORL	ONTA	L SI	CERI	NG						
VL.DH6031 2.98 A	MP (2	vi . 99,		¢	3.00,	VL.8H211 1.20 AMP	ı	1.20/	VL.0H61199 30 AMP	٩	30,
VL.005121H 3.77 A	t LATP (3	VI 1.817	L.DQ5132H 5.24 AMP	c	5.31+	VL.DQ5141H 1.52 AMP	¢	1.52)	VL.DH214 7.01 AMP	•	7.00,
VL.85P15 .30 /	.HP 6 0	м 1 т	L.DQL152H 7.49 AMP	ı	7.99)	WL.DH725 Q ANP	¢	۰ ۵	WL.DH6251 -18.46 AMP	ſ	-14.50)
WL.DH6252 -18.44	MP (-14	W 1,49)	L.DH6261 -17.87 AMP	ı	-18.00/	WL.DH6262 18.00 AMP	•	18.00)	W\.DQL272H Q AMP	ſ	۰ ،
WL.DONF271 1.00 /	(H AMP (1		L.BQL28H D AMP	BAG	3TATU3 0)	ML.DONF284H D AMP	DAC (201A12 (0	WL.DQNF272H O AMP	•	0)
WL . DONF 30	2H AMP ((, u	L.89HF313H 0 AMP	¢	• •	WL.DQNF331H O AMP	¢	• •	WL.DONF342H -4.03 AMP	¢	-4.00)
WL.DQNF362 4.02	2H AMP (4	H 1.00)	1.85HOC 173.41 AMP	¢	173.41)	HL.DHZ 384.55 AMP	ć	386.25)			
		<u>,</u> .			<u>.</u>	VI. DVT11			VL. 0461177		
0 4	ынр ((, , ,	0 AMP	(، ٥	-2.40 ANP	(-2.40/	Q ANP	•	c ,
VL.09L12V .04 /	NMP C	۷ رەت.	L.DQL13V O AMP	ı	•••	VL.DQL14V D Amp	(¢,	VL.DVT14 -1.99 AMP	١	-1.79,
VL.0QL153	У АМР ()		1.00 AHP	•	1.00>	WL.DV6251 10.00 AMP	ſ	10.00,	WL.DV6252 4,44 AHP	٩	4.34)
WL.DV6261 10.50	0 AMP (1)	N. 491	10.49 AMP	(10.49)	WL.DQL271V .98 AMP	ſ	.44,	UL.DQNM273V Q AMP	٩	0 ,
WL.DQNF274 5.01	ANP (4.99) H	L.DQNF283V 6.04 AMP	74R (3(ATU3 5.99)	WL.DQNF271V D AMP	n.a⊅ • (3747:13 0)	WL.BONF301V D AMP	ť	0)
WL.DQMF31 1.00	24 AMP (1.00) N	L.BQNF323V 3.02 AMP	• •	C 2.99)	WL.DQNF341V -5.03 AMP	· ·	-5.00)	WL.DQNF341V 2.D1 AMP	C	1.99)
H1.8VTOG 71.85	AMP (/	2.01/									
	<u>rocus</u> ı	NG_	-	-							
VL.SHAD1 6.38 AMP	· 4.3	VL.9	14.82 AMP	¢ 2	4.991	VL.SHCO2 5.73 AMP	ı	5.721	ML.SHDE02 119.30 AMP	1 11	9.49)
VL.SNVUO3 70.33 AMP	(70.1	VL.1	INF11 10.10 AMP	۰ ۹	0.041	VL.05A1212 2.04 AMP	۰	2.047	/L.QLA12 2.22 AMP	۱	2.27,
VL.QSA1312 1.81 AMP	(1.4	۷L.6 11	1.02 AMF	۱	2.03/	VL.05A1412 0 2.60 AMP	í		/L.QLA14 2.72 AMP	•	2.741
VL.QL81514 4.83 AMP	¢ 4.9	VL.6	6.34 AMP	۰	A.43/	HL.SHT25 .04 AMP	۰	د ، ^۱	4SNP25 2704.76 AMP	(244	.7.4)
WL.QLA271 6.45 AMP	(4.5)	WL.6	8.91 AMP	L	A.99,	HL.QL82829 54.33 AMP	ı s	s.00,	441.35 AMP		0.017
WL.SHL26 661.66 AMP	(660.3	WL.9	NM271 5.11 AMP	(9	4.97,	UL. 0HH272 103.54 AMP	(10	4.04) 4	L.QNM273 105.50 AMP	• 10	4.52)
WL.0"FA 134.86 AMP	(134. 9	WL.9	NFB 5.34 AMP	(13	5.10,	WL.QNFC 125.25 AMP	(12	4.97, 4	N 04436 74.34 AMP	• •	5.017
HI.QFD1 95.64 AMP	(97.0										
LIL TI	MING.										
VI.SBKLY	29874 (FAST	HF) VI.		29990(F	AST RF)	VI.TAS	19000/	FAST DEL	VI.Scimer	10000	FACT DEL
VI	50000(FAST 1	IF) VI.	SGUMPF	41 (1		VI. SKL 103	299114	FAST RF)	VI.SOFPOI	2994.7	(FAST OF)
VI.ERF PO3	29881 (FAST (IF) VI.	SALV13	29845(C	/0 TR.)	VI.SRFP13	299170	C/8 TR.)	VI.EMP13	30010	(C/D TR.)
VI.8#113C	29983(0/8 1	1.) VI.	SRF 1 1 3F	2(1	энг э	WI.TAS	110000	C/0 TR.)	WI.F8#P25	50000	(1 9947)
WE.ASHP25C	30000(1 MHZ) wx.	WSNP 25 P	20461 (1	мих >	WX.W\$NP258	20461 (1 9442)	WI. 55HP25PC	29852	(1 MHZ)
WI. 85#P250C	29986(1 MHZ) WI.	ASHP25F	0(1	MHZ)	WE.SSNP25PF	0 (WI.SSHP25DF	0	(1 1142)
WI. SKL 725	29943(C/8 1	wx.	58F P 25	24467(C	/D TR.)	WI.ERFP25	29900((/D TR.)	WI. SKL 727	27844	(C/D TR.)
WE.SAFP27	29919(C/DOT	wx.	E#F#27	30011(F	AST RF)	WI. SAF 127EC	29985 ((/D TR.)	WI. SRF 127PC	29984	(C/D TR.)
WI. SAF127EF	20(0/8 10	wx.	88F127PF	20 (C	/D TR.)	WE.SKLV31	29885 ((/0 TR.)	WI.88FP31	29932	(C/D TR.)
WI.ERFP31	30007 (FAST #	IF) WI.	8#F131EC	24970(C	/D TR.)	WI.SAF131PC	29982((/0 TR.)	WI. 88F131EF	27	(C/# TR.)
WI. 887 131 PF	2010/8 11	.) WE.	BKL Y 35	2793746	/B TR.)	WI.88FP35	29978()	AST RF)	WI.ERFP35	30004	(C/D TR.)

HOULATOR PHASES

MeK03	30.9	•	35.1	>
MOK13	40	•	177.1)
NOK25	337.5	•	337.5)
HOK27	44.7	•	70.1	,
HOK 31	90	•	270	>
NOK 35	120.9	•	119.5)





distribution list:

- Y. Baconnier
- S. Battisti
- A. Bellanger
- R. Bossart
- M. Boutheon
- B. Canard
- E. Cherix
- J.P. Delahaye
- B. Frammery
- J.C. Godot
- K. Huebner
- H. Kugler
- J. Madsen
- G. Metral
- F. Perriollat
- A. Poncet
- J.P. Potier
- K. Priestnall
- A. Riche
- L. Rinolfi
- G. Rossat
- C.H. Sicard
- D.J. Warner
- D. Brandt (LEP)
- A. Verdier (LEP)