

R E V I S E D

M e m o r a n d u m

To : Members of the N.P.R.C.
From : G.L. Munday
Subject : Beam Situation for Period I 1963

I. General.

The following paragraphs summarise the possible facilities in each experimental area. Owing to a beam transport shortage, particularly 2 metre magnets, it must be understood that all beams cannot remain on the floor at the same time. The real difficulties will only be apparent when the exact nature of the experimental programme is known, the rest becomes a matter of scheduling. The appendices summarise what is known about the beam transport requirements and supplies up to date.

II. Shut-down date.

This is still determined by the neutrino experiment (G. von Dardel) and possibly by the need to remove the C.S.F. Saclay separator from the k_3 beam (Prof. Gregory to report).

III. Power on the Site.

Since this matter was raised in note MPS/EP-21. There have been some new developments :

- 1) Given the total power for CERN remains constant at 21 MVA as at present then it has been arranged that the total power available for bubble chambers and beam transport in South and East Areas would be 10.8 MVA.

VII. Electrostatic Separators and Accessories.

The situation should be as follows :

- 1) 10 metre separators complete with deflecting magnets
Totals : 2 now in m₂; 3 early 63; 4 May 1963; 5 by June/ July 1963.
- 2) 1 special 3 metre separator in k beam.
Future of C.S.F. Saclay and Padua separators is still unknown.
- 3) High tension sets. There are now 3 pairs of high stability 600 kV sets; a fourth pair should be delivered in February 1963 and the fifth and sixth pairs are due to be delivered in the course of June.

G.L. MUNDAY.

NOTES ADDED

- 1) Page 2 paragraph IV a)3. d_x beam.
This was poorly expressed and should read :
It is proposed to keep the maximum facility for the d_x beam; this means locking up in the target area for a long time (say one year) a total of 2 M2 and 4 Q2.
- 2) Target sharing; short burst (~10 %), long burst has shown encouraging results but there is need to increase the stability of the short burst percentage. This work is being pursued.

REMARK CONCERNING APPENDICES II, III and IV.

These are rough estimations; some details are unknown at the time of writing. Some interchange of apparatus between areas will have to be made but this will inevitably decrease the flexibility of scheduling and limit the possibilities of standby experiments whilst at the same time increasing the work load on the ALO group of the MPS Division.

APPENDIX I

P.S. Beam Transport (Standard Elements ^{##})

	End 1962	End Feb. 1963	End April 1963	End June 1963	End Aug. 1963	End 1963	End March 1963
^{##} Q _{SC}	1	—	—	sent back to SC.	—	—	—
Q ₃₀	6	6	6	6	6	6	6
Q ₅₀	0	1	5	16	16	16	16
Q ₁	22	22	22	24	27	42	42
Q ₂	16	16	16	16	16	16	26
M ₁	9	13	13	13	13	13	13
M ₂	18	18	18	18	22	23 (Mid.Sept.)	23

^{##} Information given as best estimate by Dr. Asner (Eng).
 Dates are meant to be those when apparatus is available for use.

^{###} At present on loan from S.C. to P.S. (k₃ beam).

NOTE : All figures are total.

APPENDIX II

Estimated requirements beam transport Period I 1963 early part.

() indicate items in target area and difficult to remove.

BEAM ELEMENT	k_4 ^{xxx}	a_2 **	q_2 ^{††}	m_2	c_x			d_x ***	ν	o_1	o_4	Total see footnotes for qualifications	Δ
					SH	EA(1)	EA(2)						
Q_{SC}	-	-	-	-	-	-	-	-				-	?
$Q_{0.3}$	4 (2)	-	-	-	-	-	-	-				4	+ 2
$Q_{0.5}$	1	-	-	-	-			-	-	^{xx} 1 (1)	-	2	0 or - 1
Q_1	-	3 (3)	4	9 (3)	-	-	-	-		^{xx} 3 (3)	-	19	+ 3
Q_2	-	-	-	-	^{†††} 4(2)	4(2)	4(2)	6 (4)		^{xx} 3 (3)	-	13	+ 3
M_1	2 (1)	1 (1)	1	-	-	-	-	-	4	-		8	+ 5
M_2		1 (1)	-	4 (1)	[*] 6(2)	[*] 7(3)	[*] 6(2)	[†] 4 (2)		^{xx} 4 (4)		19 or 20	- 1 or - 2

* Assumes 4 M2 in experimental set-up (Taylor). [$g-2$ magnet not yet fully investigated but it might be useful for E.A. (2)].

** E11 and 11a (Σ^+ and Λ^0) an additional 1 M1 and 3 Q1 required.

*** For S18 d_x experiment requires 5 M2 and 10 Q2 or 9 Q2 and 2 Q1.

† Assumes 2 M2 in in experimental set-up.

†† All items in target area but not so difficult to remove.

††† c_x (South Hall) not operational with neutrino set-up.

^{xx} May only be necessary to install some of these at beginning of period.

^{xxx} Depends on separator availability C.S.F. Saclay or Padua separator.

APPENDIX III

Estimated requirements beam transport Period II 1963 mid period[‡]

() indicate items in target area and difficult to remove.

BEAM ELEMENT	k ₄	a ₂	q ₂	m ₂	c _x			d _x	γ	o ₁ final.	o ₄	Total see footnotes for qualifications	Δ
					SH	EA(1)	EA(2)						
Q _{SC}	-	-	-	-	-	-	-	-	-	-	-	-	-
Q _{0.3}	4 (2)	-	-	-	-	-	-	-	-	-	2 ?	6	0
Q _{0.5}	1	-	-	-	-	-	-	-	-	1 (1)	3 ?	5	0
Q ₁	-	3 (3)	4	9 (3)	-	-	-	-	-	3 (3)	4	23	-1
Q ₂	-	-	-	-	4(2)	4(2)	4(2)	6 (4)	-	4 (3)	-	14	+2
M ₁	2 (1)	1 (1)	1	-	-	-	-	-	4	1	-	9	+4
M ₂	-	1 (1)	-	4 (1)	6(2)	7(3)	6(2)	4 (2)	-	6 (4)	-	21 or 22	-3 or -4

[‡] Same assumptions as are given in Appendix II.

APPENDIX IV

Estimated requirements beam transport Period III 1963 end period*
 () indicate items in target area and difficult to remove.

BEAM ELEMENT	k ₄	a ₂	q ₂	m ₂	c _x			d _x	γ	o ₂ ^{***}	o ₄ ^{****}	Total see footnotes for qualifications	Δ
					SH.	EA (1)	EA (2)						
Q _{SC}	-	-	-	-	-	-	-	-	-	-	?	?	?
Q _{0.3}	4 (2)	-	-	-	-	-	-	-	-	-	2 (?)	6	0
Q _{0.5}	1	-	-	-	-	-	-	-	-	1 (1)	14 (12?)	16	0
Q ₁	-	3 (3)	4	9 (3)	-	-	-	-	-	6 (3)	4 (4)	26	- 4
Q ₂	-	-	-	-	4 (2)	4 (2)	4 (2)	6 (4)	-	7 (4)	-	17	- 1
M ₁	2 (1)	1 (1)	1	-	-	-	-	-	4	1	2 (1)	11	+ 2
M ₂	-	1 (1)	-	4	6 (2)	7 (3)	6 (2)	4 (2)	-	6 (4)	-	21 or 22	- 3 cr - 4

* Same assumptions as are given in Appendix II.

** The necessity for o₂ depends on British Chamber availability for operation and the requirements for running in the beam.

*** Likely state during mid June - July 1963.