

PS PROGRAMME  
for the period 3.10.1960 - 2.1.1961

1. Operational Frame

As proposed by the Paper PS/Int.MG 60-27, the scheme foreseen for the fourth quarter 1960 should include 60/hours/week for physics.

The Machine Group has worked out the following frame to meet the requirements:

	M	Tu	W	Th	Fr
0.00			N.P.		
7.00		N.P.			N.P.
8.30				Part tests	N.P.
13.00	Linac + setting-up	N.P.		Part tests	N.P.
17.30	Techn. Develop.	N.P.		N.P.	Techn. Devel.
24.00					

(a) Wednesday and Thursday: Maintenance, Modification to Machine. Experimental set-up.

(b) Summary: Nuclear Physics 61,5 hours  
 Technical Developm. )  
 Part tests ) 18,5 hours  
 Setting-up 6 hours (2 set-up at  
 3 hours each)  


---

 86 hours

(c) Proposed total hours for nuclear physics during this last quarter 1960: 615 hours (compared to 275 hours during 3rd quarter).

2. Shut-down and holidays

Two weeks of shut-down starting on 12 December and 19 December. The machine will be stopped between Christmas and New Year, namely during the week of 26 December.

3. Technical Development

Basic development on targets or on the machine will be taken from the time allocated to the Technical Development time.

Special measurements, studies or rehearsals for the scheduled physics runs should be taken from the experimenters' time (see below).

4. Parasites during Technical Development sessions

Due to the substantial increase of N.P. time and the generally low efficiency of the parasiting time during Technical Development sessions, there will as a rule be no parasiting during the Technical Development sessions.

5. Schedule for the period October to December 1960

In establishing the attached schedule, one of the guiding principles has been to make as many external secondary beams simultaneously available as possible, so that several experimental teams can work in parallel. This mode of operation has in particular been made possible by the flexible target arrangements developed by the PS Machine Group, which allow the internal beam to be shared by targets in different straight sections or by those suitable for bubble chamber and counter experiment operation. This parallel operation will necessarily entail some limitations on the control of the main user ("Mr.X") on the machine, since the other users are entitled to more or less equal rights. Major changes in the machine operation, such as intensity or energy, should therefore be requested by the main user only for short periods or in agreement with the other users. Under these conditions the designation of "Mr. X" becomes less important and can be left to the weekly schedule meetings when the exact character and requirements of the experiment are known. Experiments involving the use of liquid hydrogen will, for example, require control of the machine for safety reasons.

Apart from the initial and final period, the schedule foresees operation with a major fraction of the beam absorbed in target #1 under conditions suitable for counter experiments, i.e. unbunched burst of maximum length, full machine intensity, and normal machine energy, 25 GeV. In the schedule, this type of operation is designated by "1". During the period 24 - 28 October, a small fraction of the beam will be used to provide a short burst of protons or pions for the hydrogen bubble chamber, and during the runs 7 - 9 November and 21 - 23 November for the propane bubble chamber. During these runs a member of Peyrou's team (Pe) or Ramm-Lagarrigue's team (Ra) will be in control of the machine.

The beginning and end of the fourth quarter has been allotted to experiments requiring more special conditions. Hyams beam (H) uses a target in straight section 2. Part of the beam, about 30%, will, however, be dumped on target 1 to allow parasiting at reduced intensity in beams depending on this target. Bernardini's experiments use target 1, but often require the machine to be run at considerably reduced intensity. The neutrino experiments (N) may require the closing of other channels to allow the background to be properly determined.

On the whole, one shift every week will be left unscheduled in reserve for special purposes. Examples of such special cases are: short exploratory studies for future experiments, radiation measurements necessitated by the development of the experimental programme, machine studies with special bearing on the experiments, etc. If the reserve shifts are not needed for these special purposes, they will, of course, be integrated in the main run. No group should, however, count on the use of these shifts when planning the experimental programme.

The run, 28 - 30 November, and part of the run 1 - 2 December, are left as a general reserve.

In general the last 15 minutes of each week will be used for a radio-chemical exposure.

## 6. Beams

A number of beams have been developed by the various groups.

C, Scattered 25 GeV proton beam (Cocconi)  
R, Deflected 25 GeV proton or 18 GeV pion beam (Ramm-Lagarrigue)  
P, Deflected 25 GeV proton beam (Peyrou)  
B, 56 mrad neutral beam (Bernardini)  
N, Positive charged beam, parasitic on beam B (von Dardel)  
D, 111 mrad charged beam (von Dardel)  
F,  $12^\circ$  charged beam, small magnetic deflection (Fidecaro)  
L,  $12^\circ$  charged beam, large magnetic deflection (Lundby)  
H, 12 GeV pions from target 2 (Hyams)  
Beams B and D\*, beams P and D, and beams F and L are incompatible with each other. Beam H is incompatible with beams P and L.

The following table shows the periods during which these beams may be used, as far as can be foreseen now.

## 7. Liquid Hydrogen

Groups intending to use liquid hydrogen should send a written request to the Machine Group at least 3 weeks in advance. Due to the operation of the CERN 30 cm hydrogen bubble chamber and of the Bologna hydrogen bubble chamber, there will be a shortage of liquid hydrogen during the period 12 October - 11 November. The groups are requested to check on the availability of liquid hydrogen with Mr. Trembley, before planning experiments during this period involving hydrogen targets.

---

\* when H<sub>2</sub> target is used.

Distribution: (open)

J.B. Adams  
Leading Board  
PS Parameter Committee  
Scientific Staff of Experimental teams  
Scientific Staff of PS Machine Group  
F.A.R. Webb (5 copies for distribution SB)

J.B. Adams  
V.F. Weisskopf  
G. von Dardel  
P. Germain.

		Schedule										Beams						
Shifts		17 <sup>30</sup>	24	6	12	18	24	7	12	18	24	C	R	B,N	D	F	L	H
Oct.	3 - 5	-	B	B	Hy	Hy	Hy											
	6 - 7	Hy	Hy	B	B													
	10 -12	Hy	Hy	-	B	B	F											
	13 -14	1	1	1	1													
	17 -19	1 (Pe)	1	1	-	1	1											
	20 -21	1 (Pe)	1	1	1													
	24 -26	1 <sup>h</sup> (Pe)	1	1	1	1	1	1	1	1	1							
	27 -28		1 (Pe)	1	1	1	1	1	1	1	1 <sup>h</sup>							
Nov.	3 - 4	1 (La)	1	1	-													
	7 - 9	1 <sup>h</sup> (La)	1	1	1	1	1	1	1	1 <sup>h</sup>								
	10 -11	Lo	1															
	14 -15	1	1	1	-	1	1											
	17 -18	1	1	1	1													
	21 -23	1 <sup>h</sup> (La)	1	1	1	1	1	1	1	1 <sup>h</sup>								
	24 -25	Lo	-															
	28 -30	-	-	-	-	-	-											
Dec.	1 - 2	N	Hy	-	-													
	5 - 7	N	Hy	Hy	-	B	B											
	8 - 9	Hy	Hy	B	B													

Teams:

- = unscheduled
- B = Bernardini
- F = Fidecaro
- Hy = Hyams
- Pa = Ramm/Lagarrigue
- Lo = Lock (Emulsions)
- N = Neutrino (Faissner)
- Pe = Peyrou
- 1 = Standard operation with target #1.