

MACHINES AND AREAS COMMITTEE

Summary of Meeting No. 60 - 31st May, 1976

Present

O. Barbalat, D. Dekkers, B. Frammery, J. Gareyte, M. Georgijevic,  
C. Germain, W. Hardt, L. Hoffmann, B. Kuiper, P. Lefèvre,  
G.L. Munday (Chairman), G. Nassibian, J.P. Potier, K.H. Reich,  
W. Remmer, C.E. Rufer, K.H. Schindl, F. Völker.

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1. STATUS OF THE PULSE TO PULSE BEAM MODULATION (PPM)

a) Booster (Project BO 14)

The present status of the project is given in Table 1 of  
CERN/PS/BR/76-3 presented by K.H. Reich.

Essentially one has done so far what was the minimum  
required to start operating the SPS while continuing to serve the  
other users. Four independent intensity programmes are now  
available.

b) PS (Project BO 13)

The present status is given in the first part of  
CERN/PS/OP/76-3 by J.P. Potier. As for the PSB one has done  
the minimum required for the SPS running-in. The equipment is  
in place and works satisfactorily.

The flexibility introduced by being able to program the  
machine parameters from pulse to pulse allows now to perform machine  
studies on alternate pulses. In particulier on the A cycle when the  
SPS is not using it or on one B cycle out of three. Although there  
are still various hardware limitations mainly on the power supplies  
side, this new feature has proven to be extremely useful in speeding  
up some studies.

The limitations are more severe on the Booster as the Varian function generator is less flexible\* than the GFA (Générateur de fonction autonome) used for the PS equipment.

One remaining problem is the maintenance of the PDP 11/40 computer which drives the Programme Line Sequencer (PLS). As CCI Group agreed to supply a spare 11/40 in case of failure, a 24 hour maintenance does not seem necessary for the PLS but is needed, for the time being for the CT and TT2 computers which are located in other buildings.

## 2. SECOND PHASE OF PPM

### a) Booster

The scope of this phase covering the years 1977/78 is described in Table 2 of CERN/PS/BR 76-3.

The broad lines had already been approved at the start of the project (MAC No. 44) but it had then been decided to review it after the implementation of the first part.

This second part concerns largely facilities for beam observation and equipment monitoring. The discussion was devoted to clarify which items were or were not included in the CCI controls improvement project.

It was agreed that:

- The replacement of the stepping motors by DAC's to control the I-Q power supplies is covered by CCI.
- Part of the beam observation facilities will be included in the new consoles and therefore budgeted elsewhere.

The cost of the second phase of the project amounts then to 550 kFr. The major part of the increase over the 1975 estimate is due to the provision of 140 kFr. for temporary labour to substitute for staff members who have since left without being replaced.

As to the supplies for the injection line steering dipoles which had to be momentarily derated because of the higher repetition rate introduced by the supercycle they are outside the scope of this project. As the amount involved for the restoration of their nominal characteristics is moderate (100 kFr.) it was suggested to start to carry this modification on the current budget in 1976. The remaining part could be included in the multipulsing project for SPS if it is approved.

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\*) The replacement of the Varian by GFA in the Booster is included in the controls improvement project discussed at the previous MAC meeting.

A remaining item is the insufficient magnetic shielding of the 50 MeV injection line. The Linac Group responsible for this equipment will be asked to improve this shielding (or provide an equivalent solution). (The beam is perturbed in a different way according to the value of the field in the main PS magnet when it passes between the Linac and the Booster).

b) PS part

As for the Booster, the second part covers mainly observation equipment adapted to supercycle and pulse to pulse modulation and adaptation of the timing system and its distribution. The discussion did also clarify the items included and not included in the CCI controls improvement project. This amounts finally to 320 kFr. (see Table 3 in CERN/PS/OP/76-3).

c) Overall project

This work\* totalling 870 kFr. for the 1977/78 period was approved under the continued leadership of J.P. Potier.

3. HIGHER INTENSITY IN THE EAST HALL

Intensity in the East Hall has been limited by tolerable losses to  $2 \cdot 10^{12}$  p/p. Users are however requesting higher intensities in the  $3 \cdot 10^{12}$  p/p range at present and for 1977. Conditions have changed since these loss limitations were established. Development sessions with a smaller beam fraction on target 1 ( $2 \cdot 10^{11}$  p/p) and with the new PFW programming which avoids vertical blow up, so as to determine the present intensity limit are already planned. Further improvements will be possible only after Easter 1977 with the larger aperture (30 mm) septa in 61/62.

O. Barbalat

Distribution:

PS Scientific Staff

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\* The Booster part (550 kFr) is the continuation of a previously authorized 4 year project (B 014) which will be updated, while the PS part (320 kFr) constitutes a new project since the authorized part (B 013) only covers the 1975/6 period.