PS/Int./MG/VA 60-39
28.11.1960.

Short glance to long run of
28 November to 2 December, 1960

You will find a rather "crazy" beam-target situation. Therefore it may be worth while to have a look at the following lines first.

Here are the bubble chamber requests :

A) From 28 November - 13.00 h. to 29 November - 19.00 h.
4 particles/burst with momentum of 18 GeV
produced at 25 GeV and $\triangle r$ = - 20 mm.

B) From 29 November - 19.00 h. to 1 December - 06.00 h.
5 particles/burst with momentum of 6 GeV (if possible)
produced at 9 GeV and $\triangle r$ = + 10 mm.

C) From 1 December - 06.00 h. to 2 December - 13.00 h.
4,5 particles/burst with momentum of 12 Gev
produced at 18 GeV and $\triangle r$ = + 10 mm.

The target used :

Fast target with finger of Al .5 mm thick and 3 mm width. It has to cut at :

A) about 7 o/o of beam intensity

B) about 70 o/o of beam intensity

C) about 15 o/o of beam intensity

to produce the requested number of particles. Unfortunately, it cannot be kept in the end position for more than 100 msec. Therefore, the beam will be swept away during the backward motion of the finger to preserve the remaining beam for the counter burst. Doing this, only at condition B) it seems to be doubtful to get a sufficient counter burst.

Brief description of the set up :

A) B_{10} = 1000 : beam step from $\triangle r$ = 0 to - 20 mm.
= 1180 : trigger fast target (burst $\sim$10 msec. later)
= 1192 : beam step back to $\triangle r$ = 0 (takes about 3 msec.)
after 1196 : debunching with RF back to programme (this has to be made with delayed X_1-trigger to get a constant counter burst)
X_1 + delay : trigger for counter target

Notes : Be careful with trigger for RF back to programme. Any trigger before B_{10} = 1195 will produce a big jitter to counter burst.

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B) B_{10} = 400 : beam step from $\triangle r$ = 0 to + 10 mm.
= 440 : trigger fast target (burst $\sim$10 msec. later)
= 460 : beam step from $\triangle r$ = + 10 to - 15 mm. (slowly)
= 520 : fast target is coming back and should not cut the beam
= 580 : beam step from $\triangle r$ = - 15 to + 10 mm. (slowly)
= 600 : beam step from $\triangle r$ = + 10 mm. to 0
finally : normal counter target set up.

Notes : The final B_{10} values are determined by sufficient number of particles in the bubble chamber. Any radial displacement of fast target should be made within $\triangle r > + 10$ mm.
Beam intensity is requested to be as high as possible, losses after fast burst (see phase signal) as low as possible.

C) Situation as B), when all B_{10} values are increased by 400.

Afraid of having a confusing cabling in Main Control Room, a "guide-post" note will be issued just after the set up. But let us hope, you will not have to make use of it.

Now, there is one point left, you should be reminded to : The set up will be rather sensitive to any changement in beam radial position. Therefore, improvement at transition by radial displacement may require to repeat the whole set up. The beam radial position during the fast burst determines the momentum of the requested particles. The fast target radial position changes the number of particles only.

Digital counter of beam intensity.

Under condition A) and C) the digital counter will show the value of the total accelerated beam. The fraction, which is taken away by the fast target can be determined from the phase signal.

Under condition B) it will show either the total intensity or the remaining part. This depends on the final trigger of the fast target.

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Distribution : (open)

All E.i.C.
H. Bingham
Ch. Brocks
J.J. Merminod
M. van Rooy
1 x Main Control Room
3 x Counting Room
1 x Central Building.

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