

M E M O R A N D U M



CM-P00044040

To: The EEC
From: The Omega Coordinator
Subject: Notes on the Omega schedule for June 1975

1. PS Operation

This is the last run before the closure of the West Hall for SPS preparations scheduled for 28th June 1975. As foreseen the run starts for HEP at 16.00 on 5th June until 20.00 on 24th June with an interruption of 40 hours for machine development planned to start at 16.00 on 10th June. Since the ISR is not running the total available beam time is $17\frac{1}{2}$ days less set-up time ($\sim \frac{1}{2}$ day). An incident momentum of 22 GeV/c would be required.

26 GeV available (BEBC)

2. Requests for data taking

a) The Exotic Search Experiment (S145) was allocated 12 days in the April run but lost 3 days due to magnet, computer and PS failures. A MWPC fault during the run caused them to have to redesign the trigger and they had to use lower beam intensity than foreseen. Their data taking efficiency was less than 50% and they have requested a further 4 days. Compared with their proposal estimate of ~ 12 ev/nb for a 10 day data taking period they have obtained an estimated 2 ev/nb. This would yield 50 exotic events if they are produced with a calculated cross section of 25nb. An analysis of 15% of the data shows the number of events (signal + background) for masses of the $\bar{p}p\pi^-\pi^-$ system between 2.3 and 2.8 GeV/c² to be in the region of 100 for the full sample. They would hope to double their data from the further run.

so far
20% have
[17 ev/nb hoped
originally]

or more!

b) The K⁺ interaction trigger (S138) which has to be reconsidered for approval is now designed for 10 GeV/c. Improvements to the trigger making use of multiplicity requirements lead the authors to expect 600 ev/nb in 10 days (see CERN/EEC-74/37). They have not prepared the π^0 detector mentioned in a later memorandum (CERN/EEC-74/54) and wish to use the large multiplicity chamber (MWPC2) immediately after the hydrogen target which is the most favourable position and technically possible. A reduction much below 10 days would detract from the interest of this experiment.

20-30 improv.
part ident
for use

1) ~~2-3 days~~
~~2-3 days~~
c) The K \bar{K} II proposal (Aachen-CERN-ETH-Haifa) (CERN/EEC-75/2) asks for 7 days.

They now propose to run at 16 GeV/c (incident π^-) in order to have some chance of observing η_c production and expect to achieve 6 events/nb. The experiment requires the Geometry II spark chambers to be removed and a "box" of veto counters to be placed round the target. They have been prepared. These requirements make it preferable to run this experiment last. The experiment has been tested at 10 GeV/c.

3. Tests (relevant to SPS preparations)

2-3 days
9-May 3 days
7 requested
a) Drift chamber. The test carried out in the April run was unsuccessful because of the breakage of a cathode wire which shorted out 4 planes of the 6 plane chamber. The reason for the breakage is understood. It is considered essential to test the chamber in the coming run. It can be made compatible with the exotic and K^+ interaction experiments by removing an optical module which though undesirable is not unacceptable especially if it is only for part of the run. We have tested the effect of this on the track reconstruction for the exotic experiment.

b) Hyperon trigger. A request has been received from the University of Neuchâtel to perform a one-day test of a hyperon trigger for an experiment to be proposed for the SPS. This would involve single and double V^0 triggering with a fast proton or antiproton.

c) Cerenkov tests. Further minor testing of the low pressure counter and testing of the high pressure counter are also requested, but might be accommodated in parallel with other work.

4. Possible models of running

We have considered running all three of the experiments and the 3 combinations of 2 experiments. In the model with all three the time is extremely tight and tests very difficult. Even with the machine development reduced by 8 hours we can give a bare 3 days to the exotic, 8 days to K^+ and 6 days to $K\bar{K}II$. This model would become much more reasonable if the run could be extended by ≥ 2 days.

Models with any pair of experiments can be accommodated in the proposed running time. The combination of the K^+ interaction trigger and $K\bar{K}II$ would restrict tests but the important drift chamber testing would still be possible.

We would need to adjust the position of the machine development run in order not to lose time in the changeover between experiments.