

MACHINES AND AREAS COMMITTEE

Summary of meeting No. 51 - November 5, 1975

Present

O. Barbalat, D. Bloess, D. Dekkers, D. Fiander, M. Georgijevic (Chairman), C. Germain, W. Hardt, B. Kuiper, P. Lefèvre, R. Mosig, B. Nicolai, G. Plass, K.H. Reich, Ch. Rufer.

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1. Hydraulics of KM 97

The hydraulics system actuating the displacement of KM 97 has been partly destroyed by the South Hall Extension fire, last August. Although this kicker is only in stand-by use since the introduction of the FAK, it constitutes nevertheless an independent back-up system for all the fast extraction channels and in particular for the ISR.

The insurance will refund the damage (MPS/AE/Note 75-8) and extensive discussions have taken place as how best to utilize the money to improve the reliability of the ejection systems.

- i) An obvious solution is to rebuild with various degrees of comfort the hydraulics of KM 97 (MPS/AE/Note 75-10). Although it is a relatively cheap and safe solution, it has several important drawbacks (occupation of a machine straight section and of space near the Power House which is badly needed for the PFW power supplies system, upkeep for an indefinite period of equipment which is no more in active use).
- ii) A careful assessment of possible failure risks to FAK magnets has been made (MPS/AE/Note 75-9) as well as cost estimates for various spare configurations (MPS/AE/Note 75-7). However, as the cost of an equipped spare tank is rather high (~ 350 kFr), it was strongly argued that a decision to spend such an amount of money should not be taken before the results of a general study on the weak points of the PS complex and the possible back-up (existing or desirable) in each case.

It was finally decided :

- a) to remove the KM 97 hydraulics (ensured by SM Group who will take over the space);
- b) to ask the ejection people to study further measures to improve the reliability and possible back-up facilities for the fast ejection system;
- c) to study the possibility of using KM 97 in a fixed position in conjunction with orbit bumps (E. Brouzet);
- d) as a first step :
 - i) PS type sector valves (i.e. slow) will be installed between FAK and SM 74 (to protect the FAK, at least partially, from contamination by a possible water leak on SM 74 which is a potential weak element located in the same vacuum sector);
 - ii) the present transformer oil in the FAK lead through chambers will be replaced by another type of insulation which would give fewer difficulties in the event of a seal failure.

2. 800 MeV Injection Kicker (TIK)

The present performance of this element is one of the main bottlenecks towards achieving 10^{13} p/p in the PS with acceptable losses.

Beam measurements performed by two different methods (MPS/DL/Note 75-16) and direct measurements on the device (MPS/AE/Note 75-16) are in reasonable agreement (in view of the possible error margin) and give an operational kick strength in the order of 3.3. mrad.

A study of the 800 MeV team (MPS/DL/Note 75-16) clearly indicates that in the short term a 10-20% increase in kick strength over the present performance is necessary (it confirms the original specification of 3.7 mrad nominal deflection and at least 4.2 mrad maximum deflection for studies).

An appraisal of the possibilities of the TIK has been made by D. Fiander (MPS/AE/Note 75-12 Draft). It suggests various improvements which could rapidly be implemented at a moderate cost.

It was decided to carry through the following recommendations :

- a) Try to adjust the active line impedance to suppress the mismatch (as early as possible in order to allow, this year still, machine studies with a larger kick).
- b) Assemble the three spare magnet modules with the already existing better grade ferrites and mount them in the machine during the annual shut-down.

- c) Purchase immediately adequate ferrites to fully re-equip the present magnet modules, including possible extension of the modules.
- d) Performs accurate magnetic measurements during the shut-down.
- e) On the basis of these measurements, decide eventually to add 2 cells on the 3rd module to increase the kick strength by 8.5 %, a modification which should not require major mechanical reconstruction. If decided in March 1976, this improvement could be available by July 1976 when high intensity is really likely to be needed by the SPS.

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