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# SE 16 News

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## I. Component locations

At the last SIC meeting (Febr. 18, 1971) it has been decided to place:

1) the Semi-Quadrupole (SQ) in ss 53
2) the Electrostatic Septum (ES) in ss 83
3) the Thin Septum Magnet (TSM) in ss 85.

The final decision on the booster quadrupole location (ss 23 or ss 29) will be taken before the end of April.

The above choice makes it possible to eject slowly either to the west (SE 16) or to the east (SE 62) and leaves enough freedom for a later sharing scheme of the two slow ejections.

The following consequences result from this choice:

1. Enlarged vacuum chamber

   The vacuum chamber has to be enlarged between the end of ss 82 and the beginning of ss 86 to 105 mm to the outside. For the third integer slow ejection to the east the vacuum chamber from mid magnet 59 to mid magnet 60 should have an aperture of 105 mm or eventually 95 mm, if this would save the quadrupole in ss 60.

2. Septa strength

The calculated necessary kick for SE 83 and TSM 85 has to be 0.53 mrad and 1.2 mrad respectively.

3. SQ 53 current

The necessary current for SQ 53 at 26 GeV/c is 650 amps (calculated).

4. Bump

In the region of ES 83 and TSM 85 an orbit deformation will be needed. But no decision has been taken whether to use dipoles or backleg windings, and where to place these elements.

II. TSM progress (R. Bertolotto)

The prototype for the TSM 85 has been assembled and first tests have been carried out. Even under considerable overcharge the TSM prototype behaved well. The test parameters were:

| | |
|---|---|
| 5250 A | (4500 A nominal) |
| 700 ms | pulse length |
| 2 sec | repetition time (max. duty cycle specified: 1/3) |

Each of the two 50 cm magnet coils dilated under the above conditions not more than 0.12 mm, which is approximately 1/10 of the dilation of the 50 cm magnet for ss 62.

III. SM 16 progress (R. Keizer)

The first 3-turn magnet has now undergone 6 x $10^5$ pulses at specified current (12 kA), 300 msec pulse length and 1.5 sec repetition time. During these tests the water flux was only 26 l/min, which is approximately half the value expected for the final water connection. With this cooling power the above pulse parameters stress the magnet as much as the specified parameters (12 kA, 700 msec, 2.1 sec) would do with a water flux of 50 l/min.

A number of improvements have been already carried out on this prototype (especially concerning the fixation of the coils). Other improvements are being studied (e.g. insulation of the coils).

The second yoke has been assembled. Six others are ordered. The fabrication of the yokes is under good control now. 30 turns for the SM coils have been bent and soldered. The electronic protection is under construction. The vacuum behaviour is good. However, the septum magnets are the most difficult components of a slow ejection and in view of the tight time schedule we will need some luck not to meet with too many unforeseeable problems.

## IV. Vacuum tank for TSM (B. Szeless)

Good progress was made for the TSM vacuum tank construction. All detail drawings are completed, the tank, the chassis and the support are in the workshop for fabrication. The moving mechanism is just being ordered. The first assembly is expected to be ready in June, the second set in October.

## V. Cooling requirements

For both septum magnets (TSM 85 and SM 16) a heat exchanger will be needed to ensure a worst case water input temperature of 15 $^{o}$C. The nominal water flux will be 25 l/min for TSM 85 and 150 l/min for SM 16. The pressure drop should be as low as practicable. For the TSM 85 a very good filter with little pressure drop is of great importance (filtre à bougie).

## VI. Power cables (H. Reitz)

The drawings for the Al-power cables for SM 16 have been finished and the execution of the work has been started. The cabling for TSM 85 is under study. The total resistance of the cables between ss 85 and the Central Building will be about 2 m$\Omega$.

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