

A.C. DESIGN GROUP

Summary record of the meeting held on 17 May 1983

Present : B. Autin, V. Chohan, S.X. Fang, W. Hardt, M. Harold, H. Horisberger, C.D. Johnson, E. Jones, H. Koziol, M. Martini, S. Maury, C. Metzger, G. Nassibian, F. Pedersen, K.H. Reich, P. Riboni, L. Rinolfi, T.R. Sherwood, E. Tollestrup, A. Sullivan, S. van der Meer, B. Williams (Secretary), E.J.N. Wilson (Chairman), A. Wrulich, M. Zanolli.

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The visitors from other laboratories, M. Harold (Rutherford), A. Tollestrup (Fermilab) and A. Wrulich (DESY) were welcomed and thanked for their presence.

1. Magnet Design

1.1. Quadrupoles

M. Harold reported that quadrupole design for costing was well advanced and detailed cost estimates were being made.

Very approximate figures were given as follows:

| | |
|---|-----------|
| 20 wide quads + 1 spare + 1 prototype + tooling | £ 357'000 |
| 32 narrow quads + 1 spare + 1 prototype + tooling | £ 523'000 |
| | £ 880'000 |
| Support systems for 52 quads | £ 91'000 |

Quadrupole cost estimates are based on delivery spread over 6-7 months. An assembly drawing of a narrow quad was presented along with details of a coil and a lamination.

The weight of a narrow quadrupole would be in the order of 2.1 t and that of a wide quadrupole 2.2 t.

Although the reference lattice of the machine had not been changed Rutherford Lab may soon be asked to study a "slim quad" design of sufficient aperture but less than 700 mm wide.

1.2. Bending Magnets

The design for costing the dipoles was less advanced than that for the quads. However, overall dimensions had been given to TESLA with a request for an early cost estimate. It was felt that 9 months would be required for the dipole tooling with delivery likely 1.5 years after the placing of a contract. Assembly drawings and cost estimates for the dipoles are expected to be available for the next "international" meeting.

Approximate dimensions for the dipoles were given as 1430 mm long × 1800 wide × 1200 high.

2. Lattice

2.1. Triangular Lattice

A drawing of this had been produced to the same scale as the AA layout. A transparency of the former was superimposed on the AA drawing and, after discussion, it was generally felt that to install the two machines, at different levels in the same hall, would pose a great number of difficult beam transfer problems, as well as requiring radical civil engineering modifications, to the hall.

Further discussion centred around the various, machine configurations that would satisfy the design conditions. E. Wilson had satisfactorily checked out the program "PATRICIA" using the AA parameters. He felt that "in flight" η was now out of fashion but that if a reference lattice could be made to work with a range of η values then he saw this as an advantage. In any case the η finally chosen would be largely dictated by the cooling system. It was noted that DESY have a program that caters for multipoles and closed orbit distortions.

A. Wrülich will try out the AA lattice on this program.

3. Injection/Ejection

3.1. S. Maury presented the latest version of numerous studies which took the ISR interaction zone II as a basis. The proposal used the race-track, lattice but required a change of quadrupole polarities in the lattice to facilitate vertical injection of the beam from the lower TT7 level. Ejection, however, would be made in the horizontal plane. Change

of polarity would also be necessary on the injection and ejection kickers, but should provide no problem if decided at the outset. H. Horisberger was asked to pursue the II solution and also in conjunction with W. Hardt to check a triangular lattice in that zone. W. Hardt and S.X. Fang will study the polarity inversion.

4. Costs

4.1. Preliminary Cost Estimate

E. Wilson listed the main cost headings of the project and filled in the estimates so far received, or estimated. The list, which should be completed before the end of the month, was as follows:

| | <u>Estimate</u> |
|---|---------------------------|
| 1) RF; Bunch rotation; Transfer to AA (W. Pirk1 to report) | - |
| 2) Transverse cooling; Longitudinal cooling (B. Autin to report) | Mech. hardware 1.0 mSF |
| 3) Magnets, power supplies, vacuum | 7.5 mSF |
| 4) Injection/Ejection systems (T.R. Sherwood to report) | - |
| 5) Beam transport (S. Maury to report) | - |
| 6) Diagnostics (H. Koziol to report) | 1.2 mSF |
| 7) Particle production equipment (T.R. Sherwood to report) | - |
| 8) Shielding | - |
| 9) Civil engineering (H. Horisberger reporting) | 4.0 mSF |
| 10) Services (H. Horisberger to report) | - |
| 11) Controls (M. Martini to report) | - |
| 12) Mods to AA | - |
| 13) Contract labour (E. Jones to report) | - |

5. Next Meetings

5.1. Ordinary Meeting : 31 MAY 1983

5.2. "International Meeting" : 21 JUNE 1983

These meetings will start at 14.00 in the Large PS Conference Room.

B. Williams