CERN/EF/EHS-CC/77-25
20 April 1977

EUROPEAN HYBRID SPECTROMETER (EHS)

Minutes of the Sixth Meeting of the Construction Committee (CC)

on 15 March 1977

Present: H. Desportes, P. Falk-Vairant, D. Güsewell, A. Minten (Chairman), L. Montanet, G. Neuhofer, R. Newport, F. Schmeissner

I. APPROVAL OF THE MINUTES OF THE FIFTH MEETING

The Minutes of the fifth meeting of CC (CERN/EF/EHS-CC/77-22) are approved after correction of an omission (G. Neuhofer) in the list of participants.

II. SITUATION OF AGREEMENTS AND CONTRACTS

P. Falk-Vairant informs the CC that the Agreement with RL and the Contract with CEN de Saclay are now definitively on the agenda of the Finance Committee of 28 April 1977 and that, after discussion with A. Minten and G. Neuhofer, letters were prepared accepting the supply of the drift chambers D_1 - D_6 by NIKHEF and Vienna as well as the sharing of work proposed in the relevant Technical Specifications (CERN/EF/EHS-CC/76-18 and 76-19). These letters will be sent very soon to the directors of NIKHEF, A. Diddens, and of HEPHY at Vienna, W. Mayerotto.

R. Newport presents a revised list of detailed cost estimates for RCBC (CERN/EF/EHS-CC/77-24) following the lines established at CC 5 and complementing the Appendices I and II of the CERN/RL Agreement. This list identifies all items estimated to more than £ 10'000. The estimate for the total CERN contribution to RCBC, which was 2.6 MSF or £ 650'000 at prices and exchange rate of 15 November 1976, is now £ 670'000, after price revision on 15 February 1977.

F. Schmeissner reviews the situation of the Finance Committee papers. Although some details are still under discussion with the CERN administration, the elements necessary for preparing and sending these documents by 25 March 1977 are available.

D. Güsewell recalls that, despite of apparent similarities, the CERN contributions to the construction of M1 and of RCBC will be handled differently. Whereas CEN de Saclay will receive for M1 a fixed global amount, subject to a price revision formula, RL will ask for quaterly payments covering the actual cost for RCBC; this cost will have to be

compared with the original cost estimates, revised according to the revision formula of the CERN/RL Agreement.

III. SPECTROMETER SIMULATION STUDIES

L. Montanet reports on EHS simulation studies undertaken by F. Bruyant and R. Plano. The aim is to optimize the layout of the spectrometer, in particular in view of minimum computing time for data processing. In addition, a group will be set up to study how the film measurement can be accelerated by best use of the down-stream information. The simulation is based on experimental data from the Fermilab 30" system. Thus realistic "events" can be produced in RCBC and the associated "tracks" followed across the EHS spectrometer. The "hits" obtained from these simulated tracks on the different EHS wire chambers are then fed into the existing reconstruction programme GEOHYB and the resulting tracks matched to the bubble chamber information. The specific properties of drift chambers have not yet been well taken into account; thus final conclusions on some drift chamber parameters, in particular a decision on the increase of the plane number from 4 to 6 for some of the drift chambers, will not be possible before end of April 1977.

G. Neuhofer agrees that no decision on plane numbers will be possible at the EHS drift chamber meeting in Amsterdam (17/18 March 1977), but hopes that other parameters, such as wire and plane spacing, will at least be finalized on this occasion.

IV. PROGRESS ON M1, RCBC AND CERN INFRASTRUCTURE

H. Desportes on M1: The specification for the M1 conductor is now sent out to potential suppliers and offers are expected by 15 April. Unless unforeseen problems arise, the successful tenderer will be selected on 18 April, in order to have this choice approved by the "Commission des marchés" of CEN de Saclay still in April and to place the order in early May.

R. Newport on RCBC: The design of RCBC is going ahead on many sub-systems. A more advanced stress analysis showed that the natural frequencies of the main chamber elements will be higher than 500 Hz, that is well above the expansion spectrum. The stresses in the beam exit window will be more favorable if an elliptical shape can be approximated. This will be discussed with the users. The vacuum tank window too was studied more thoroughly. A thickness of only 2 mm of aluminium is probably sufficient. For the iron frame, supporting M1 and RCBC, a British supplier was found, able to manufacture also the main plates of 40t in one piece and to deliver the whole assembly in less than 12 months.

The short time available between expansions and the limited space around the cameras will make it very difficult to print a complete data box on film. Agreement of the potential EHS users will be requested for a reduction of the amount of data to the strict minimum. In order to have fast cameras, it will not be possible to print trigger or post-trigger data on the film. The full physics information will be available on the magnetic tapes, and these will probably be used anyway during event measurements.

A "Management Committee" is being set up at RL for the coordination of the work on RCBC.

The coils for the downstream magnet M2 are now transported from RL to CERN, where feasibility tests will start soon.

F. Schmeissner on the RCBC refrigerator: The Technical Specification of the RCBC refrigerator is now ready (CERN/EF/CRYO of 17 March 1977) for submission to potential suppliers. Its characteristics correspond completely to the cooling requirements established in the RCBC specification. In particular, for restriction of the hydrogen safety problems to the chamber circuits proper, a helium gas refrigerator will be used, maintaining always an overpressure on the helium side of the He/H_2 heat exchangers. It is expected that this refrigerator will be available in April 1979.

D. Güsewell on installation in EHN1: The latest version of the North Hall layout is displayed showing the current SPS proposal for the system of platforms and huts to be erected along the west wall of the hall. In addition, the CC is informed that a proposal for experiments with a polarized proton beam up-stream of EHS will be submitted to the SPSC. For the second stage of these experiments, the occasional use of M1, after withdrawal of RCBC and rotation of the magnet axis by 90^{o}, may be requested. EF Division was asked to make a cost estimate for necessary modifications which should be incorporated in EHS already now in order to facilitate a futur rotation of M1.

H. Desportes stresses that the use of M1 for configurations other than the normal EHS configuration will probably require the incorporation of magnetic inserts which might detrimentally modify the forces acting on the coils. This is a point to be taken into account for any non-standard use of M1. L. Montanet expresses some doubt whether the programme of EHS during the first years of operation will be compatible with the alternating use of M1 in a second configuration; the interest in EHS pictures is increasing and 5 million pictures per year will probably have to be taken.

V. NEXT MEETINGS

It is felt that, after establishment of the different agreements and contracts, quarterly meetings of the CC will be appropriate as long as no particular problems arise. In addition to the next meeting on Tuesday, 3 May, at 9.30 a.m., three more dates are provisionally accepted for 1977:

CC 8 : Tuesday, June 28, 1977 at 9.30 a.m.
CC 9 : Tuesday, September 20, 1977 at 9.30 a.m.
CC 10: Tuesday, December 13, 1977 at 9.30 a.m.

D. Güsewell