EUROPEAN HYBRID SPECTROMETER (EHS)

Minutes of the Twentieth Meeting of the Construction Committee (CC)
held on 1st July 1980

Present: H. Desportes, A. Hervé, A. Minten (Chairman), L. Montanet, G. Neuhofer, R. Newport, H.P. Reinhard, J. Thresher, L. Ventura

In opening the meeting, A. Minten mentioned that he would like to add a last point to the agenda (EHS-CC/80-111) to discuss how many future meetings should be held by the Construction Committee.

I. APPROVAL OF THE MINUTES OF THE NINETEENTH MEETING

G. Neuhofer disagreed with the following phrase from page 2 of Annex I to EHS-CC/80-107: "As CERN will take over responsibility for the chambers in the near future....", pointing out that the NIKHEF chambers cannot yet be considered as 'operational'. A. Minten reported that he has received a letter from N. Diddens saying that Amsterdam will fulfill its commitments.

Following this, the minutes of the nineteenth meeting of the CC (CERN/EF/EHS-CC/80-110) were approved.

II. FINAL REPORT ON M1 and PROVISIONAL ACCEPTANCE BY CERN

A draft memorandum addressed to the CERN Finance Division, written by D. Güsewell and A. Hervé was presented.

A. Hervé explained that the acceptance test, held just before Easter, was quite successful and that the complete magnet behaves as expected from the test of the individual coils at Saclay. Attention was drawn to the fact that no deterioration of the helium leak has been noticed after transport, cool-down and energizing of M1, and that simple modifications had taken care of the increased consumption due to the change in the magnet suspension. A. Hervé mentioned that at the end of June, to map the central field region, the magnet was cooled again and filled in an automatic way without the need of liquid nitrogen and that an excess liquefaction power of 50 l/h was at hand. In these circumstances A. Hervé stated that the EHS CERN team is convinced that the magnet M1 is fully operational and he proposed to the CC to pronounce the provisional acceptance of M1.

A. Minten asked H. Desportes to comment on this. H. Desportes said that he fully agreed with the present report. A. Minten then asked what the responsibility of Saclay would be after the provisional acceptance. A. Hervé stressed that there was no guarantee clause in the contract and as he saw it, Saclay only had a commitment to repair the helium leak at CERN, should it get worse (letter from H. Desportes to A. Minten of 23.1.80). H. Desportes mentioned that the help of Saclay would be available should it be necessary in the near future.

At this point the CC thanked Saclay in the person of H. Desportes for the excellent work and the very good results obtained.
III. REPORT ON ON-LINE DATA HANDLING AT EHS

A written status report CERN/EF/EHS-CC/80-116 by D. Jacobs was presented. A. Minten said this report should be read and commented on, and as D. Jacobs was presently on vacation, he will invite him to the next CC to present it.

IV. EHS WIRE CHAMBERS, STATUS AND PROGRAMME FOR THE SHUT-DOWN

A written status report (CERN/EF/EHS-CC/80-113) by G. Neuhofer was presented. In the discussion G. Neuhofer stressed the following points: The production of the NIKHEF chambers has been faster than expected as the 4th module is finished. This module could replace any of the first three modules already at CERN, D1 to D3. However, all the chambers will have to be opened to replace some wires and to replace the mylar windows by Mylar-Aclar windows to limit water diffusion. In these conditions he stressed that although these chambers have shown their quality during NA16, they are clearly not fully operational and this is why he thinks that CERN has not yet to take over the responsibility of these chambers (see para. I). To open these chambers at CERN, a clean area 16 x 18 m² has to be found and personnel will be needed for 3 months. As CERN personnel will not be available before the end of the year, G. Neuhofer suggested that one chamber be opened at CERN to create an appropriate area and train CERN personnel in order to prevent a crash programme next year at CERN; but the two other chambers should be repaired at Amsterdam once the workshop there is free again for this job. The CC agreed and D. Toet will be contacted by G. Neuhofer to see if this is possible.

Several repairs also have to be done to the MWFC. However, RCBC will have priority and no CERN personnel will be available during the months to come. A. Herve pointed out that certainly no major work could be undertaken before mid October; however, small interventions will be possible on a weekly basis depending on the work-load.

V. RCBC STATUS, INSTALLATION AND TEST PROGRAMME

A written status report (CERN/EF/EHS-CC/80-112) by R. Newport is presented. The soldering and welding job at Morfax could be finished by July 4th and in these conditions the chamber could be at CERN by July 11th in time for the assembly work to begin just after the field mapping of M1. R. Newport pointed out that seven people from RL will be present at CERN, but that there seems to be a problem to get the necessary support from CERN. A. Herve answered that due to the vacation period the number of available people is limited until the end of July. In addition, there will be no support from other groups like BEBC and he sees no possibility to improve the situation on this point. However, A. Herve mentioned that with full priority given to RCBC and a good use of the available forces he feels the necessary work needed for a first cool-down this year will be done. J. Thresher asked then if a two shift system together with work on Saturdays could be implemented. A. Herve answered that, with the limited number of people available, this is out of the question but that over-time work could be envisaged for specific operations.

A. Minten pointed out that if RCBC was to do an experiment in May next year, he expected that two cool-downs were necessary before and clearly the first one must be this year as there will be no electrical power in January 1981 in the North Hall. J. Thresher agreed completely.
VI. FINANCIAL STATUS OF EHS, CONTINGENCIES

R. Newport mentioned that a Financial Statement is attached to his written report (CERN/EF/EHS-CC/80-112) showing that at 15.2.77 prices the latest cost estimate is 17% higher than the original price mentioned in the agreement. R. Newport asked then for the release of the 15% contingencies giving verbally a list of various technical and commercial reasons for the price increase.

A. Minten explained the procedure to be followed to get the contingencies which were put aside as part of the agreement. They could be liberated if technical justifications are presented to the CC. He thinks that the list presented by R. Newport is sufficiently detailed but that it should be presented in a written form at the next CC. He explained that a contingency of 15% is part of the agreement and is foreseen in the EHS budget, but the extra 2% will have to be found elsewhere.

J. Thresher stressed that the extra 2% increase is in fact entirely due to how inflation is taken care of by the formula in the agreement. In this formula there is a fixed part of 15% which is not submitted to revision.

A. Hervé mentioned that for the CERN share of part A the 15% contingencies will certainly be needed and that technical justifications will be presented to the next CC.

VII. CONCLUSIONS FROM THE "RUNNING-IN" EXPERIMENT, PARTS B AND C OF EHS, STATUS AND PROGRAMME FOR THE SPS SHUT-DOWN

L. Montanet exposed what could be learned from the "running-in" experiment, NA16. The data-taking period finished on June 16. 1.3 \(10^6\) pictures were taken \((\frac{1}{2}p, \frac{1}{2}\pi^-)\). The bubble chamber, LEBC, has worked very well (after some improvement of the optics) together with the parts which were taken from RCBC, mainly the expansion system and the stereoscopic camera. It is clear that to get an idea of the precision achieved one has to wait until the first events are reconstructed. L. Montanet said also that the \(\gamma\) detectors have worked very well and that L. Ventura will report later.

L. Montanet reported that, after some early breakdown and repair, ISIS1 has also worked very well. It was possible to combine tracks between ISIS and the spectrometer, the mean sagitta being less than 2mm. One can say that the early doubts about ISIS have disappeared as the width of the ionization signal was as expected with the actual number of sampling channels. At that point G. Neuhofer mentioned that the particle flux through the spectrometer was limited by the space charge in ISIS.

Then L. Montanet stressed that one cannot say that the spectrometer is really in a working state. The Vienna chambers seem to work, but the NIKHEF chambers will have to be opened as was mentioned earlier by G. Neuhofer. In these conditions, if we want to launch an experiment in 1981, we cannot say that we have a working spectrometer. G. Neuhofer pointed out that although only 9 planes (out of 15) were still working on June 16th, data was taken up to the end with only a small loss in precision. A. Minten said that such a loss in the number of working planes showed that the spectrometer was not yet in a working state, but this was not abnormal for the beginning of a new detector. L. Montanet mentioned also that the drift chamber supports must be revised, that the survey of the spectrometer must be improved, that the chamber VI has worked very well and that the on-line monitoring should be reviewed as it slows down too much the data-taking rate.
A written status report CERN/EF/EHS-CC/80-114 by L. Ventura was presented. In the discussion L. Ventura mentioned that he would like that the vertical drive system of FGD be replaced during the summer. A. Hervé answered that due to the difficulties in personnel already mentioned and the priority given to RCBC nobody will be available before September and that this reparation could only be finished by the end of October; however, the work will be prepared as early as possible in order that it could start as soon as a team is available. L. Ventura stressed that he does not like the idea of this job being treated as a second priority. A. Hervé said that FGD will only be needed in May next year and this reparation could well take place at the beginning of 1981. L. Ventura disagreed and A. Minten asked L. Ventura and A. Hervé to work on an acceptable schedule for both.

VIII. PART A OF EHS

A status report (CERN/EF/EHS-CC/80-117) written by D. Güsewell and A. Hervé is presented.

At this point the field levels at which the magnet M1 must be mapped are discussed. In view of the limited time available (until July 15th) it is agreed that the 10 and 30 kG levels must be mapped completely but that the intermediate level 20 kG could be mapped along a larger grid as interpolation is possible.

IX. PROGRAMME FOR THE EHS PHYSICS IN 1981

L. Montanet assumed that RCBC will be ready in May 1981. At that time, of the 72 days of available SPS beam time, 50 could be attributed to EHS. This beam time must be used to do physics; as many groups will be waiting to get data and as the people having just finished NA16 will certainly come back to continue the high resolution physics in 1982. L. Montanet explained that the aim will be to produce $10^6$ pictures in 1981 using parts A, B and C for 4 different experiments; 4 to 5 days of running-in and 10 days of data taking could be envisaged for each experiment. In 1982 the 4 experiments could ask for a total of $3 \times 10^6$ pictures. R. Newport mentioned that one million pictures seems reasonable in 1981.

H.P. Reinhard stressed that one must not be too optimistic with the SPS restart.

R. Newport asked what was the status of ISIS2. A. Hervé answered that work has stopped at CERN because some components are not available. A. Minten mentioned that a request for manpower will be presented by Oxford. L. Montanet stressed that ISIS is not strictly needed for the first experiments.

L. Ventura explained that he sees a problem for the running of the detectors next year as CERN people will not be able to operate them, he feels that the agreements should be redefined. A. Minten said that a proposal should be worked out on the operation of these detectors. He does not see how the EHS CERN group could be increased. G. Neuhofer mentioned that fellows could help run the detectors. A. Minten added that for ISIS a physicist is needed to follow the performance of the system.

X. ANY OTHER BUSINESS

A. Minten said that as the CC was formed to follow the project, it is his opinion that this committee should come to an end sometime during the middle of next year. One could foresee a meeting at the end of this year and a final one in May, just before going in operation. R. Newport said that two meetings are certainly needed next year as some physics has to be produced for the commissioning of RCBC. A final meeting will be needed to pronounce the provisional acceptance.

The next meeting (CC 21) is confirmed for December 2nd, 1980. A. Hervé