NI/PC/61/4

ASSESSORS REPORT ON THE CLARENDON LABORATORY PROPOSAL FOR THE CONSTRUCTION OF A HELIUM BUBBLE CHAMBER

1. We feel that the scientific case for a large helium bubble chamber presented to the Physics Committee in January 1960 still holds good. It is of interest to note that since then two similar projects have been proposed in America and Italy.

2. We endorse the proposed dimensions and recommend that the magnetic field should not be less than 15 kilogauss for maximum usefulness of the chamber.

3. While it is true that, for the very important experiments with stopping K mesons, a vertical magnetic field has definite advantages it is not certain that for high momentum measurements low enough distortion and good uniformity of sensitivity can be obtained with a chamber having horizontal windows. We therefore feel that it is desirable to design the chamber in such a way that a change to horizontal megnetic field could be made later.

4. The magnet and optical system are relatively straightforward but the cryogenics and temperature control present considerable design problems. An overall contingency figure of 20% is felt to be justified to cover unknown problems which may arise as details of design are worked out.

5. If the chamber is to be completed by the end of 1963 a strong, well coordinated team will be required. We also consider it important that the experience gained on the other two large bubble chambers should be used as much as possible in this project.

6. We recommend that a working committee to cover both policy and technical matters be formed in addition to any management committee required primarily for financial control.

7. We consider that the chamber should be regarded as a natunal facility.

8. (a) We support the proposal at a total capital cost of £295,600 and feel that it is worth the £12,000 extra to have the facility of changing to a horizontal magnetic field at a later date should this prove necessary.

   (b) We agree that an adequate sum of money for spares should be provided but the amount involved requires further consideration.

   (c) We consider that the scale of manpower suggested is satisfactory but the total sum for salaries seems to us to envisage a more rapid build-up of staff than is indicated.

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