

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCEPHYSICS COMMITTEE

Minutes of the First Meeting, held at St. Giles Court, Monday 8th April, 1957,
at 2.30 p.m.
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Present:

Sir John Cockcroft (Chairman)
Professor P. M. S. Blackett
Mr. D. W. Fry
Professor P. B. Moon (invited for this meeting)
Professor R. E. Peierls
Professor H. W. B. Skinner
Dr. D. H. Wilkinson
Dr. T. G. Pickavance (Secretary)

Apologies were received from Professor P. I. Dee, Professor H. S. W. Massey, Professor N. F. Mott, Sir George Thomson, and Professor S. Devons (invited for this meeting).

1. Terms of reference

The Chairman said that the terms of reference for this first meeting were to consider a proposal for a high energy accelerator, to make recommendations to the Board of the National Institute on this proposal and, if approved, on the action required to bring it into being. The Committee would have other functions as the work of the Institute developed, and its future terms of reference would be discussed by the Board.

2. Specification of the proposed accelerator:

Since December 1955, when a Conference had been held of representatives of University Physics Departments and the Atomic Energy Authority, there had been general agreement that the most appropriate high energy accelerator for national use would be a 6-7 GeV proton accelerator capable of producing beams of high intensity. A paper, NI(FC)(57)1, summarised the results of a Harwell design study of such a machine, and had been sent to those present. The proposal was for a 7 GeV proton synchrotron, to be constructed on a site adjacent to the Atomic Energy Research Establishment, Harwell.

The paper was discussed in detail. It was pointed out that the proposed machine would exploit a new type of magnet pole face, first proposed at Saclay, and would therefore be capable of producing energies somewhat above 7 GeV, on special occasions, at reduced intensity. This energy limit would be determined by the power supply and coil design, and was not yet known accurately; 7 GeV was the guaranteed energy. Dr. Pickavance undertook to provide for the Committee when available, a statement of the economic and technical limitations of performance.

Action
Secretary

A comparison was made between the proposed 7 GeV machine and the 10-12 GeV project at the Argonne National Laboratory, U.S.A. The American machine is comparable in size and cost, but will use a uniform guide field, with edge-field focusing, and will therefore be able to work at higher fields. However, the power requirements will be high, and the aperture small. This in turn will necessitate a lower intensity and a higher injection energy. It was concluded that the 7 GeV accelerator was more appropriate to U.K. requirements.

3. Cost estimates

The provisional cost estimates, attached as an Appendix to NI(FC)(57)1, were discussed. In no case had a fixed-price quotation been obtained, but on the two largest items (the magnet frame and the building) the estimates had been provided by the potential suppliers. An effective element of competition had already been introduced into the main industrial contribution (the magnet frame), since three

possible suppliers had been selected after informal contacts with eighteen firms.

Action Secretary It was suggested that similar action should now be taken on the magnet power supplies, and that informal discussions should be held with two firms in addition to the one already involved.

4. Approval to proceed further

No further progress could be made on the main holding item (the magnet frame) until formal requests for tenders could be sent to the three possible suppliers, and formal requests could not be made until official approval in principle had been granted for the project. This was a matter of great urgency, because the firms concerned could not for long hold themselves in readiness for such a large order. Similarly, there was embarrassment in the provision of relatively small long term items for the building programme.

5. Recommendation

The Committee decided to recommend to the Board that the proposal to construct a 7 GeV proton synchrotron, as outlined in NI(FC)(57)1, should be adopted, and that Treasury approval in principle should be sought as soon as possible to enable firm tenders to be obtained.

6. Next meeting

Action Secretary It was agreed that the date of the next meeting should be fixed when it became clear that there was further work for the Committee, and that the middle of June, 1957, would probably be a suitable time.

T. G. Pickavance

A.E.R.E., Harwell.
9th April, 1957.