

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GOVERNING BOARD

Minutes of the Meeting of the Governing Board held
in the Board Room, Treasury Buildings, Whitehall,
at 2.45 p.m. on Friday October 3rd, 1958.

Present:- Lord Bridges (in the Chair)
Dr. R. Aitken
Sir John Cockcroft
Mr. J. C. Gridley
Professor W. V. D. Hodge
Sir Harry Melville
Professor H. S. W. Massey
Professor R. E. Peierls
Professor N. F. Mott
Sir Donald Perrott
Professor F. H. Wilkinson
Dr. T. G. Pickavance
Dr. J. A. V. Willis (Secretary)

1. APOLOGIES FOR ABSENCE

Apologies for absence were received from Professor Blackett,
Professor Diamond, Sir James Mountford, Dr. Schonland and Sir George Thomson.

2. MINUTES OF LAST MEETING

2.1 The Board approved the minutes of their third meeting of 1958.

2.2 Research Reactors. The Secretary said that replies to the enquiries sent out had now been received from almost all the Universities and an analysis of replies was in preparation for the Research Reactor Committee.

2.3 The First Annual Report. The Secretary said that copies had now been printed separately. Copies of the Royal Charter had also been printed separately. The Chairman said that a reserve of copies of the first Annual Report should be kept to meet later needs.

2.4 The large bubble chamber. The Secretary said that as foreseen at the last meeting, the D.S.I.R. had requested an assurance that there was a requirement for this at the Rutherford Laboratory. This assurance had been given.

2.5 Appointment of a scientist for Health Physics duties (Minute 5.2)
Dr. Pickavance said that the actual type of appointment was being discussed with the A.E.A. It did not now seem that part-time secondment would be the best but no difficulty in finding a suitable arrangement was expected.

3. PROGRESS WITH THE 7 GEV ACCELERATOR

Dr. Pickavance said that as was inevitable in a project of this size and kind, many difficulties were now appearing. Although in some cases considerable changes in design were necessary to overcome these difficulties it did not yet appear that there would be any serious delay to the programme as a whole. Dr. Pickavance reported briefly on the progress with the major components:-

3.1 Magnet

Messrs. Sankeys have had difficulties in making the first full size blocks of the pre-production batch. Difficulties in insulating the laminations are being overcome with the co-operation of the A.E.A.

At present the problem is the machining of the block without destroying the insulation. Advice has been sought from many sources and valuable advice has been received from Saclay. The pre-production batch is well behind programme. The main manufacturing programme is not yet affected but it is thought that this will probably suffer a small delay since Sankeys have no margin in hand above their contracted output of 5 blocks per week, and cannot catch up if there is an initial delay.

3.2 Pole Pieces

Preliminary enquiries have shown that several firms would be capable of manufacturing the pole-pieces at reasonable prices, and enable some firms to be eliminated from the list of possible tenderers.

3.3 Magnet Power Supply

As members will have seen from papers submitted to the General Purposes Committee, the English Electric Company after receiving the order for the rotating machinery found on detailed study that their design had not met certain requirements and had to change to a 1000 r.p.m. salient pole type of machine. The A.E.R.E. design team is quite satisfied with this design. Contract negotiations are necessary since an increase in price is involved, but the area of disagreement has now been reduced to £18,000.

3.4 Vacuum System

After extensive experimental and theoretical study of the radiation damage which might be suffered by the epoxy resin vacuum chamber it has been concluded that after 6 to 12 months of operation of the machine at full intensity the damage might be serious. The vacuum chamber has therefore been entirely redesigned with a double walled arrangement. The radiation damage will not be avoided but replacements will be simpler and less costly, and the new design will also be more satisfactory in other ways. For example, it will be easier to assemble. Close collaboration with the United States laboratories especially the Argonne National Laboratory has been mutually helpful.

3.5 Injector

The first portion of the building for the Injector has just been taken over and erection of plant will be starting in a week. The vacuum vessel has been ordered from Messrs. Babcock and Wilcox after keen tendering. The design of major components of the injector by Vickers Armstrong Aircraft is almost finished. The A.E.R.E. Mercury Computer has been used for computation of particle dynamics in the injector and the results have enabled major simplifications to be made in the design of the drift tubes.

3.6 Buildings

Two buildings, the workshops and the preparation area, have been handed over and occupied by the Project Group. The main building is still 4 weeks and in some parts 6 weeks late. The contractor is now preparing for the formidable task of concreting the roof. In a recent review of the design of the main building several minor items have been deleted in order to leave more scope for possible subsequent modification to extend the experimental facilities.

With regard to the vacuum system Professor Wilkinson asked whether the new design would cut down the vertical aperture. Dr. Pickavance replied that in fact the vertical aperture would be increased since the double walled arrangement would allow that part of the vacuum chamber between the magnet pole pieces to be made with thinner walls.

The Chairman reviewed the effects of the various changes in design which he said were to be expected at this stage in the project. The effects on the efficiency of the machine were the most important and here he had great confidence in the project team. The effect on the time of completion appeared so far to be unimportant. The effect on cost appeared to be small. Dr. Pickavance pointed out that the original cost estimate was made when the design of much of the equipment could only be guessed.

4. THE FINANCING OF UNIVERSITY EXPERIMENTS AT THE RUTHERFORD LABORATORY

Sir John Cockcroft, introducing paper N.I. (58) 19, said that he had arranged the discussion requested by the Board at their last meeting and the paper gave the recommendations unanimously made by those taking part. Firstly, the division of responsibility for finances between the Institute and the Universities was recommended on the basis of the proposals drawn up by the Visiting Committee. Secondly, administrative recommendations were made about how these things should be achieved and thirdly, detailed recommendations were made about contracts to cover certain parts of the work carried out at the University. The Chairman said that he thought the proposals were generous to the Universities. This was right. It was essential that universities should feel that they were receiving full encouragement to make use of the Institute. The capital cost of the project was so high that it was essential for it to be fully used. The Chairman said that he did not think the reference to contracts between the Institute and Universities was quite right and it was agreed that the word "agreements" would be better. In discussion, it was noted that according to these proposals the Institute could support the development of a new technique but no provision was included for them to support the cost to a University of bringing over a foreign expert with an already developed technique. It was pointed out however that could be done by the D.S.I.R.

ACTION 1 The Board gave general approval to the proposals in paper N.I. (58) 19 and instructed the Secretary to prepare a combined paper for their approval incorporating with it the relevant parts of N.I. (58) 15.

5. HOUSING AND HOSTELS

The Board considered paper N.I. (GP) (58) 9, endorsed by the General Purposes Committee. The Chairman said that the essential point was that ultimately the Institute should own their own accommodation, though the A.E.R.E. might manage it. In the mean time they must rely upon A.E.R.E. to provide accommodation, and they had been most helpful. The proposals a small block of versatile flats and to take over Coseners House as a hostel seemed to him to be good.

Dr. Pickavance said that Coseners House was very pleasant house and attractively situated in Abingdon. Living accommodation could not be built in the immediate neighbourhood of the Rutherford Laboratory, owing to Health Physics policy on the Harwell site and in these circumstances Abingdon was his first choice. The Secretary said that he had received a surveyor's report showing that Coseners House was in first class structural condition and very well maintained although owing to its age and rambling nature it would require continued good maintenance estimated to cost £500 per year. A scheme for internal modification to suit the Institute's needs had already been prepared in outline as well as a scheme for possible subsequent addition of new bedroom accommodation to bring the total accommodation to about 42. The latter scheme had already been discussed with the County Planning Officer and difficulty with planning permission was not expected. The point was made that in operating the Coseners House as a hostel it must be realised that an annual deficit was inevitable.

ACTION 2 The Board gave general approval to the proposals in paper N.I.(G.P.)(58) 9 and in particular:-

- (a) asked for the preparation of a scheme for a block of about 10 versatile flats.
- (b) Decided to proceed with the proposal to take over Coseners House as an Institute Hostel and to ask the A.E.R.E. to manage it for them.

6. CAPITAL ESTIMATES 1959/60

The Board considered paper N.I.(G.P.)(58) 13 endorsed by the General Purposes Committee. In discussion of item 17(b) the opening up of a site for a possible new laboratory, it was agreed that a developed site could probably be chosen and that in any case expenditure of a very large sum in 1960/61 was most unlikely. It was agreed to reduce the total against this item from £1,500,000 to £250,000. It was decided to insert a token sum to represent possible expenditure on research reactors. It was agreed that items representing notional expenditure on the capital value of equipment transferred from the A.E.A. need not necessarily appear in the estimates. This was a matter for the A.E.A. and the Treasury. Finally, approval was given to the addition of provisions for a possible telephone exchange at the Rutherford Laboratory (£15,000), modifications to Coseners House (£2,000) and the forecast for later years, extension to Coseners House (£10,000).

ACTION 3 Subject to the above changes the Board accepted the estimates in paper N.I.(G.P.)(58) 13.

7. THE LEGAL POSITION CONCERNING RADIATION HAZARDS

The Board took note of paper N.I. (58) 18 containing a revised statement prepared by the Legal Adviser to the A.E.A. With regard to liability to visitors the Chairman suggested, and the Board agreed, that while they should not normally attempt to exclude liability for accident to visitors there might be occasions, for example at an open day, where it would be advisable to emphasise particularly that visitors were required to follow the safety regulations.

ACTION 4 The Board confirmed that they did not wish to exclude by contract liability for accident to University and other workers coming in to make use of the laboratory facilities. They also decided that they did not normally wish to exclude their liability to visitors.

8. INSURANCE

The Board approved the proposals in paper N.I.(58) 20. Sir Donald Perrott said that he did not think that it was necessary to seek Treasury approval.

ACTION 5 The Board decided that as an organisation under Vote, they would conform to Government practice in not insuring their property nor their liabilities to third parties, with the exception of boilers and motor vehicles (the latter being compulsory).

9. PROPOSED VISIT TO THE U.S.A. OF DR. G. W. GREENLEES

The Board considered paper N.I. (58) 21. Dr. Pickavance said that Dr. Greenlees would be in charge of a team working at the Rutherford Laboratory of the Proton Linear Accelerator and the proposed visit would give him experience of the operation of a very similar machine and of experimental techniques used with it. This would be most helpful in the

commissioning and early use of the Institute's machines. There was some discussion of the case and it was agreed that while the Institute have a responsibility for seeing that their machines are used to the best advantage they should avoid setting too broad a precedent before carefully considering their policy on visits abroad. Accordingly the Chairman drew a clear distinction between visits justified by their direct benefit to the Rutherford Laboratory and a possible wider class of visits proposed for the support of branches of physics with which the Institute is concerned. He thought that consideration of policy on the latter should be deferred for another occasion. Dr. Pickavance confirmed that he fully supported the proposed visit of Dr. Greenlees under the former category although of course the University of Birmingham would benefit as well as the Institute.

ACTION 6 The Board approved the proposal for the visit to the U.S.A. of Dr. Greenlees because of the direct benefit to the early work with the Proton Linear Accelerator expected to result from it.

10. NEXT MEETING

It was agreed that the next meeting would be held at 2.45 p.m. on Friday, January 16th 1959.