Comm/4(b) D. Stafford 4/12

December, 1963 NI/63/24

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GOVERNING BOARD

01580

Progress at the Rutherford Laboratory

Note by T. G. Pickavance

1. Proton Linear Accelerator

The machine and the associated research programmes are in full operation after the routine shut-down which ended in the middle of October. The reliability of the machine is now even higher than before, and has averaged about 90 per cent.

2. Nimrod

We decided to operate Nimrod during the daytime to speed up the commissioning work, at an additional cost for electricity of approximately £70,000 because the maximum demand element of the electricity charge is determined by the peak load during daytime in the months November to February inclusive. The £70,000 has had to be found from further restrictions, mainly in the Nimrod operations budget. We adopted this course because, in the early stages, we need to have many specialist members of staff on call during operation to clear defects and to aid in diagnostic work. It is not feasible to turn over all these members of the Laboratory staff to regular night work; they are needed during the daytime for their normal duties. Operation during daytime is restricted to half-power; otherwise the extra bill would be £150,000.

Many target mechanisims and other auxiliaries have been commissioned, and the operating conditions improved. The 1964 target intensity of 10^{11} protons per pulse has been exceeded, with plenty of scope for future improvement, and attention is now being concentrated on improving the reliability of operation. A 60-hour continuous run has been scheduled as part of this programme.

The faulty power transformer has now been rebuilt and has passed its factory tests; it is on its way back from Scotland.

3. Nimrod apparatus

We have had to abandon plans to collaborate with German groups in using their 80 cm. bubble chamber at Nimrod, because of incompatibility with their domestic programme. However, a similar chamber is operating at Saclay, and we have opened negotiations with the French. If they are able to join us, we hope to start bubble chamber experiments at Nimrod in the latter half of 1964.

4. High Energy Physics

Several more proposals for counter experiments have been received and considered by the selection panel, and four have been accepted provisionally, making a total of eight. The new proposals are:

Oxford University	charge exchange scattering of π^- on protons

Imperial College Manchester University	decay of ω^0
Southampton University A.E.R.E.	decay of ξ^0 in $\pi^- + p \rightarrow n + \xi^0$
Cambridge University Rutherford Laboratory	total cross sections in nucleon-nucleon scattering

A fifth proposal was rejected because it would have required major modifications to the shielding wall and expensive new apparatus. The selection panel on this occasion were Professors R. H. Dalitz, J. Hamilton, P. T. Matthews, Professor W. D. Walker of the University of Wisconsin, and Dr. G. H. Stafford, with myself as Chairman.