

SCIENCE RESEARCH COUNCILRESEARCH REACTOR COMMITTEEUse of Petten Reactor by Universities

Report of Visit by Dr. G. E. Peckham, Reading University, and
D. H. Saunderson, A.E.R.E., to Petten

Dr G. E. Peckham and I visited the Reactor Centrum Nederland establishment at Petten on the 23rd and 24th September, 1965. Our visit was concerned with a proposal to use the RCN triple-axis spectrometer for an experiment by Reading University on diamond. This followed from earlier discussions of the possibility of hiring beam tube facilities on the Dutch High Flux Reactor (HFR) in order to accommodate British University Groups who were unable to find space on reactors in the U.K. The only triple-axis instrument operating in the U.K. at present is on the DIDO reactor, and has a fully booked programme. The Dutch instrument has recently been installed on the HFR and the primary object of our visit was to make a technical assessment of its performance.

In discussion with Professor Goedkoop, the Managing Director for Research, and Dr. Loopstra, Leader of the Neutron and X-ray Scattering Group, it was made clear that they regarded collaboration on the diamond experiment as fundamentally different to the proposal for hiring beam tubes as they have no wish to hire out their own instruments on any formal basis. On this understanding, they said that they would be happy to invite Dr. Peckham to Petten in order to conduct his experiment on the triple-axis spectrometer when it is fully operational, and would make no charge for this service. It was recognised that they would be able to benefit from his experience of this type of work at Harwell.

A complete assessment of the spectrometer could not be made as Dr. Bergsma, who is in charge of the project, is still conducting checks on its performance. The design of the instrument is based on that of a successful two-axis machine which has been operating for a number of years. This gives cause for confidence in the mechanical reliability and in the performance of the control and data handling systems. However, neutron intensity measurements so far compare unfavourably with those of the DIDO spectrometer. These measurements are being checked and the effects of various components on the total intensity will be critically examined. An improvement by a factor of at least two is required before the diamond experiment becomes feasible. Comparison with the Swedish triple-axis spectrometer, which is mounted on a similar reactor (the R2 at Studsvik), suggests that this is possible, but final judgement must await the results of Bergsma's efforts to improve the intensity. In all other respects the spectrometer is well suited to the requirements of the experiment and all normal experimental services can be made available to Dr. Peckham.

The original scheme for hiring beam holes on the HFR was also discussed. At present five of the ten holes are occupied and another two are committed for future experiments. Application for hire of a hole would have to be made to Euratom, who own the reactor, but R.C.N. would provide, and ultimately retain, the in-pile element and standard pile-face shielding. The remaining equipment, electronics etc., would be provided by the University Group concerned. R.C.N./Euratom would expect about one year's notice of a request for a beam hole and a similar period before terminating a contract. Arrangements of this kind are already in operation on two beam holes for the Universities of Utrecht and Leiden. These are supported by the F.O.M. organisation who occupy a position roughly comparable to the S.R.C. Services available to the experimenter include those of a workshop and access to a computer. Although a comparatively small group mainly interested in solid state research, the R.C.N. personnel maintain close contact with Dutch Universities and with other European reactor laboratories. Such contacts would be available to University personnel visiting from the U.K.

D. H. Saunderson
G. E. Peckham.

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