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NI/GP/61/4

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GENERAL PURPOSES COMMITTEE

NIMROD BEAM TRANSPORT PLANT

Detailed Breakdown of Expenditure

Note by L. B. Mullett

1. The estimates for 1960/61 (Paper NI(GP)(59)24) included a sum of £1M for the initial provision of beam transport plant. The subsequent approval of this sum by the General Purposes Committee following the submission in paper NI(GP)(60)8 was granted on condition that before most of the money was committed a more detailed scheme would be submitted to the Committee for their approval. This paper presents that more detailed scheme.
2. Much theoretical and experimental work of a generalised character has been carried out on schemes and equipment for beam transport systems. Discussion groups and working parties have included potential users of NIMROD from the Universities, the A.E.A. and the Rutherford Laboratory. The particular requirements of known experiments for high intensity and highly separated beams have been considered in detail. The precise nature of these beams and their relative priorities may change before the end of 1962 as a result of further advances in nuclear physics requirements and in beam handling techniques. Nevertheless it is essential to move quickly in manufacture and installation of bulk quantities of equipment and auxiliaries if good beams are to be available soon after the machine comes into operation. In consultation with the appropriate nuclear physicists the following scheme has been chosen as representing the best forecast of the requirements:-
 - (a) A high intensity extracted proton beam.
 - (b) A 2-2.5 GeV/c highly separated K^- beam derived from (a).
 - (c) A 2-2.5 GeV/c negative particle (K^- , $\bar{p}$ etc.) beam derived from an internal target.
 - (d) One simple charged particle beam from an internal target.
3. The equipment and auxiliaries required for the above beams represents the best scheme which can be provided within the approved sum of £1M. It can be re-arranged to produce changes in the specified beams or even alternative beams, depending upon variations in the nuclear physics requirements or advances in beam handling technology.
4. For design, manufacture, and installation purposes it is essential to deal with components under common headings such as quadrupole magnets, power supplies etc. rather than the components of each specified beam. The appendix shows a break down of the estimates against such headings together with an appropriate contingency.
5. Approval is sought for continued contract action (in accordance with agreed procedure on financial control) to the limit of £1M as specified in the Appendix.

APPENDIX

NIMROD BEAM TRANSPORT PLANT

	£
Shielding and Collimators	125,000
Power Supplies	175,000
Cabling and Cooling Supplies	40,000
High Voltage Supplies	60,000
Converter room extension	5,000
Extraction system	45,000
Quadrupole Magnets	140,000
Bending Magnets	60,000
Particle Separators	130,000
Vacuum Plant and Ancillaries	80,000
	<u>£860,000</u>
Contingencies on all the above items	<u>£140,000</u>
	<u>£1,000,000</u>

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