

7 GeV PROTON SYNCHROTRON
QUARTERLY STATEMENT NO. 5

1. This report includes the revised cost estimate of the machine, based on a recent reassessment, as promised in the Addendum to Quarterly Statement No. 4 - NI(GP) (58) 14. The approval of the Committee to the revised estimate is sought.
2. The revised estimate is shown in Appendix I together with brief explanatory notes.

The plant estimate is increased from £5.06M to £5.15M, due to an increase in the estimated cost of the Injector.

The building estimate shows a small decrease, due to revisions in our requirements.
3. Appendix II shows predicted expenditure by years compared with the Treasury Grant.
4. Appendix III shows the expenditure and commitments up to 13th September, 1958.
5. Appendix IV shows contract action expected to be taken during the next quarter, together with action sought from the General Purposes Committee.
6. Appendix V shows the financial position in graphical form.

D. W. FRY
Chairman, Project Committee

A.E.R.E., Harwell.
24th September, 1958.

Appendix I

7 GeV PROTON SYNCHROTRON

Revised Cost Estimates - 19th September, 1958

<u>Item</u>	<u>£ Million</u>	
	<u>Last Statement (Cost Estimates dated 21.6.58)</u>	<u>Revised Cost Estimates - 19.9.58</u>
1. <u>Magnet</u>		
Sectors		1.55
Coils		.6
Pole Pieces		.3
Pole Face Windings		.05
Installation		<u>.1</u>
	2.6	2.6
2. <u>Injector</u>	0.3	0.45
3. <u>R.F. Equipment</u>	0.15	0.15
4. <u>Vacuum System</u>	0.46	0.5
5. <u>Power Supply</u>		
Rotating Machinery		0.55
Converter Equipment		0.55
Saturating Choke		<u>0.2</u>
	1.3	1.3
6. <u>Controls</u>	0.15	0.15
7. <u>Cooling System</u>	0.1	-
	<u>5.06</u>	<u>5.15</u>
8. <u>Buildings</u>		
Main and Ancillary Building Works	1.48	1.46
Engineering and Services	0.55	0.56
Fees	0.23	0.23
Furniture and Fittings	<u>0.03</u>	<u>0.03</u>
	2.29	2.28
<u>TOTAL</u>	<u>7.35</u>	<u>7.43</u>

For explanatory notes - See next page.

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Notes on Revised Cost Estimates - 19th September, 1958

1. Cooling System (Item 7)

With the progress of detailed design, it has become difficult to regard this as a separate item, and therefore the sum of £100,000 previously under this heading has now been distributed between the Injector and the Vacuum System under which headings the majority of the expense falls.

2. Injector (Item 2)

The estimate has been increased by £90,000 in the light of the latest design information and this amount, together with £60,000 transferred from the Cooling System (Item 7) gives a revised estimate of £0.45M.

3. Vacuum System (Item 4)

£40,000 has been transferred from the Cooling System (Item 7) giving a revised estimate of £0.5M.

4. Magnet (Item 1) and Power Supply (Item 5)

Estimates for these items are unchanged but the breakdown in each case has been amended in line with contracts placed and a direct comparison with the breakdown previously given is therefore not possible.

5. Buildings (Item 8)

The Bubble Chamber Room, Hydrogen Plant Room and beam tunnels have been deleted from the programme; the amount of hardstanding surrounding the experimental area has been increased. Small changes have occurred in the Estimates for some of the remaining items of the Building programme. There is a net reduction in the Building Estimate of £16,000.

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Appendix II

Actual and Predicted Rate of Expenditure and Treasury Grant

ITEM	1957 - 58 ACTUAL	1958 - 59 PREDICTED	1959 - 60 PREDICTED	1960 - 61 PREDICTED	1961 - 62 PREDICTED	TOTAL PREDICTED
PLANT	£68,586	608,414	2,520,000	1,857,000	96,000	5,150,000
BUILDINGS	£266,000	950,000	1,000,000	73,000	NIL	2,291,000
TOTAL	£336,586	1,558,414	3,520,000	1,930,000	96,000	7,441,000

ITEM	TREASURY GRANT 1958 - 59	PROVISION IN 1958/59 ESTIMATES FOR 1959 - 60
PLANT	1,425,000	1,700,000
BUILDINGS	990,000	1,135,000
TOTAL	2,415,000	2,835,000

* See Note 2 below

NOTES:

1. The actual expenditure during 1958-59 up to 13th September, 1958 is:-

Plant	-	£94,000
Buildings	-	£380,250
Total	-	<u>£474,250</u>

2. In the 1959/60 Estimates recently completed, a sum of £2,438,000 has been included for Plant and £1,000,000 for Buildings.

7 GeV Proton Synchrotron

Recorded Commitments and Expenditure up to 13th September, 1958

Item	£ Value	Firm	£ Expend- -ture	Remarks
<u>MAGNET</u>				
Magnet Yoke	1,394,000	Joseph Sankey	36,363	
Magnet Testing Power Supply	10,629	English Electric		
Copper for Magnet Coils	49,575	British Copper Refiners	49,575	
Transporter-Magnet Sectors	1,720	Carrimore Sixwheelers		
Survey Equipment & Services	11,750	N.P.L., Hilger & Watts and B.R.S.		
Miscellaneous	155			
<u>Total</u>	1,467,829		85,938	
<u>INJECTOR</u>				
Electro-Static Generators				
- 650 K.V.	15,050	S.A.M.E.S. France	7,525	
- 350 K.V.	1,989	" "	1,989	
- 3 x 125 K.V.	7,170	" "	3,585	
E.H.T. Platform	2,926	Portsmouth Aviation		
B.T.H. Modulators	15,800	B.T.H.		
H.P. Alternators (2)	1,164	Electro-Dynamic Const.		
E.H.T. Platform Mech. Equip.	1,711	Portsmouth Aviation		
D.C. Gun Vacuum Equipment	6,000	Edwards High Vacuum		
+ Miscellaneous	3,100			
x Vacuum Vessel for Linac	11,970	Babcock & Wilcox		
x D.C. Gun Stand & Rails	1,900	Talbot Ponsoby		
<u>Total</u>	68,780		13,099	
<u>R.F. EQUIPMENT</u>				
Ferrite Frames	36,822	Phillips, Eindhoven		
x Bias Supply	3,460	Hackbridge & Hewittie		
x Rectifier Transformer - Drive Chain H.P. Amplifier	1,115	English Electric		
x R.F. Cavity Cooling Equip.	11,256	J. & E. Hall, Ltd.		
x Accelerator Unit Cavity	12,000	Marston Excelsior		
+ Miscellaneous	2,357		968	
<u>Total</u>	67,010		968	
<u>VACUUM SYSTEM</u>				
Main Pumping Equipment	154,297	Edwards High Vacuum	61,718	
<u>POWER SUPPLY</u>				
Rotating Machinery	450,866	English Electric		
Converter Equipment	552,500	Brown Boveri		
<u>Total</u>	1,003,366			
<u>CONTROLS</u>				
Tektronix - Oscilloscopes	842	Livingston Labs.	842	
<u>Grand Total</u>	£2,762,124		£162,565	

NOTE:- Items marked thus x, have not previously been reported.

Items marked thus +, have changed since the last report.

Appendix III(2)

Item	£ Value	Firm	£ Expenditure	Remarks
<u>BUILDINGS WORKS</u>				
Opening up Contract	84,645	W.E. Chivers	60,000	
Exploratory Boring	2,606	The Cementation Co.	2,606	
Trial Bore Holes	1,219	W.E. Chivers	1,219	
Main Civil Contract	1,053,808	W.E. Chivers	459,197	
Arcon Building	42,000	Taylor Woodrow	36,632	
Miscellaneous	2,062		1,312	
<u>Total</u>	1,186,340		560,966	
<u>ENGINEERING & SERVICES</u>				
Electric Cables	3,728	Sterling Cables	3,728	
E.H.T. Switchgear	7,283	Reyrolles, Ltd.	46	
Transformers	2,934	Yorkshire Electric	2,934	
25 Ton Crane	9,246	Wharton Cranes	5,917	
Special Cranes (3)	34,242	" "		
Misc. Cranes (5)	39,370	" "		
Heating & Hot Water Services, Prep. Area, Control, assembly and Test Buildings	6,562	Z.D. Berry & Sons	2,505	
Shielding Block Trolleys & Traction Unit	16,833	Robert Hudson, Ltd.		
Distribution Switch Board	5,580	English Electric	1,763	
Lighting & Small Power, Prep. Area, Control, assembly & Test Bldgs.	6,800	N.G. Bailey & Co.	4,733	
Cables	11,266	Various	11,266	
Lift, Passenger & Goods, Main Building	3,790	Evans Lifts		
415V Switchgear-Alternator Bldg.	5,877	Reyrolles		
+ Miscellaneous	19,543		17,549	
x Water Treatment Plant	15,256	The Permutit Co.		
x Lighting & Small Power - Office & Lab., Magnet & Alternator Bldgs.	40,444	N.G. Bailey & Co.		
x Hand operated Cranes, Assembly & Test Bldg.	1,293	Herbert Morris, Ltd.		
x Pipework Services, Heating, Hot Water & Ventilating Installations - Main Bldgs.	65,181	Z.D. Berry & Sons		
<u>Total</u>	295,228		50,441	
<u>FEES</u>				
Consultants	106,000		32,950	
Quantity Surveyors	40,000		3,640	
Industrial Group	85,000			
<u>Total</u>	231,000		36,590	
<u>FURNITURE</u>				
	262	A.E.R.E. Stock	262	
<u>Grand Total</u>	£1,712,830		£648,259	

NOTE:- Items marked thus x, have not previously been reported.

Items marked thus +, have changed since the last report.

7 GeV PROTON SYNCHROTRON

Known and anticipated Contract Action during period 24.10.58. & 31.1.59.

Appendix IV

Item	£ Value	Firms likely to be considered	Remarks	Action sought from G.P.C.
<u>MAGNET</u> Main Pole Pieces	293,000		Technical discussions with firms are being held.	None at this stage.
Magnet Coils	180,000	English Electric G.E.C. Brush Electric Metro-Vickers	Tenders received on 15th October, now being examined.	None at this stage. A separate paper will be submitted when tenders have been examined.
Copper for Magnet Coils	85,000	James Booth & Co. Yorkshire Imperial Metals	Tenders due in on 29th October, 1958.	None at this stage. A separate paper will be submitted when tenders have been examined.
<u>PIPEWORK</u> Vacuum Equip. for Lânac Low & High Energy Drift Spaces	70,000	Competitive tender.	Tenders to be received by 1st Nov. Contract expected to be placed in November.	None at this stage. A separate paper will be submitted when tenders have been examined.
Lânac R.F. Liner	40,000	Competitive tender.	Tenders to be received by early in November and contract expected to be placed later in that month.	None at this stage. A separate paper will be submitted when tenders have been examined.
<u>R.F. SYSTEM</u> Accelerator unit vacuum vessel	3,600	Competitive tender.	Tenders to be received in October and contract placed in November.	None.
<u>BUILDINGS</u> <u>B. Engineering & Services</u> Power cables - all site services.	30,000	Aberdare Cables, Ltd. B.I.C.C. Pirelli. Crompton Parkinson Joumston & Phillips. W. T. Henleys Telegraph Works Co. Standard Telephones & Cables. Sterling Cable Co. Ltd.	Fixed price tenders will be invited from a selection of these firms and the contract is likely to be placed on 1.12.58.	Approval sought to place a contract by normal competitive tender procedure at a final price not exceeding £30,000 by more than 10%.

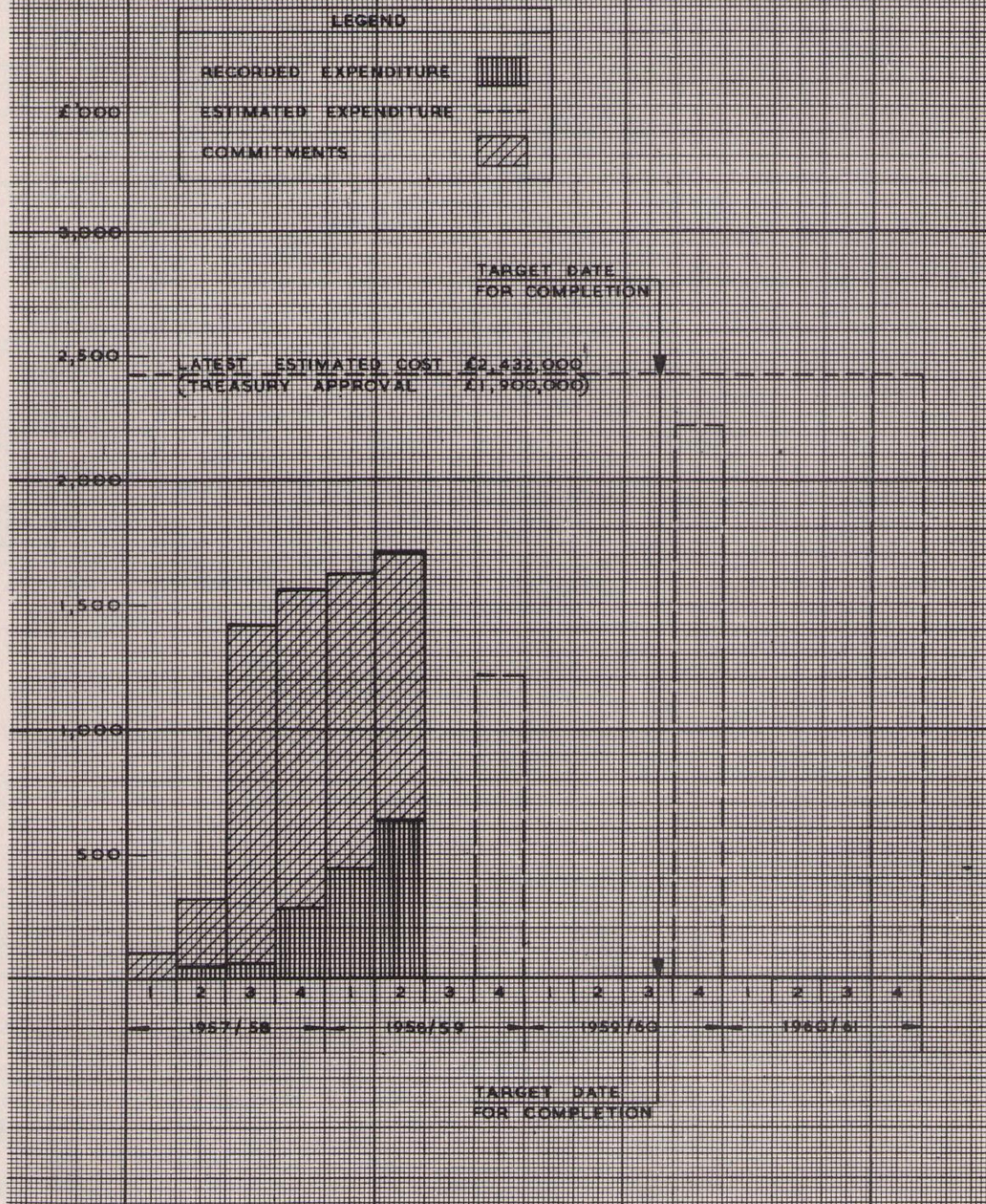
U.K.A.E.A. (R.G.)

BUILDING EXPENDITURE

QUARTER ENDING - 13th SEPT. 1958

7 GEV. PROTON

SYNCHROTRON PROJECT

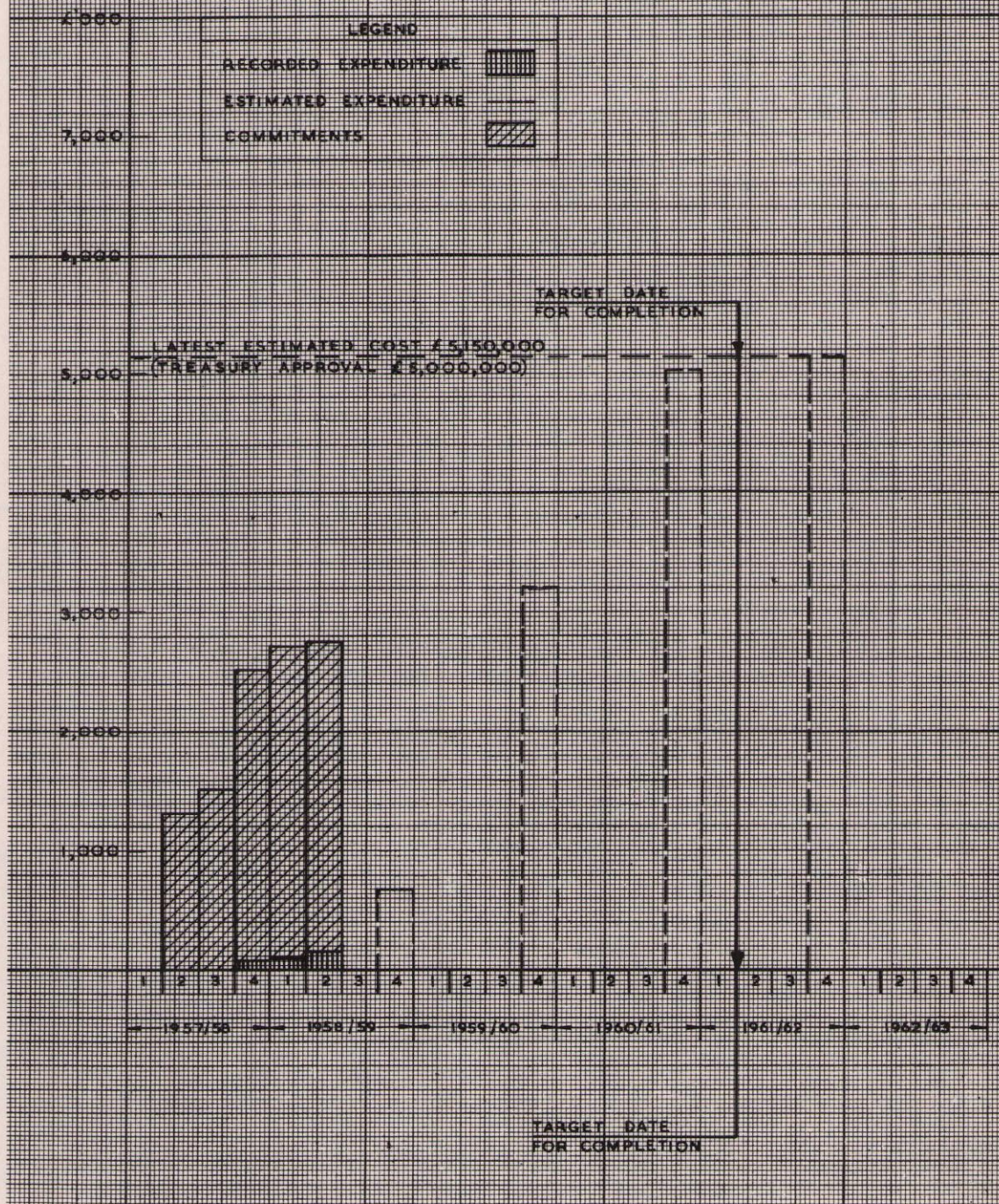


U.K.A.E.A. (R.G.)

PLANT EXPENDITURE

QUARTER ENDING 13th SEPT. 1958

7 GEV. PROTON
SYNCHROTRON PROJECT



UKAEA (R.G.)

TOTAL EXPENDITURE

QUARTER ENDING - 13th SEPT. 1958

7 GEV. PROTON

SYNCHROTRON PROJECT

