

24th January, 1961

NI/GP/61/2

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GENERAL PURPOSES COMMITTEE

Nimrod Project Quarterly Statement No. 12
and No. 13

Covering Note by the Secretary

The enclosed statements are circulated for
information.

Rutherford High Energy Laboratory,
Harwell

Circulation: to Members of the G.P.C.
to Members of the Governing Board for information.

NIMROD PROJECT

Quarterly Statement No. 12

1. This report shows in Appendix I the Nimrod Capital Estimate to the 30th September, 1960, compared with the original estimate and the present Treasury approval.
2. The estimate has not been increased since the last Quarterly Statement and remains unchanged at £10.536M.
3. Appendix II shows the actual and predicted rate of expenditure by years to the end of the Project.
4. Appendix III shows the expenditure and commitments up to the 30th June which is the end of the last Accounting Quarter for which Returns are available.
5. Appendix IV shows anticipated contract action up to 31st December, 1960.
6. Appendix V shows the rate of expenditure and commitments in a graphical form.

F. A. Vick
Chairman, Project Committee

APPENDIX I

NIMROD PROJECT

Revised Cost Estimates - 30th September, 1960

Item	£ Million		
	Original Estimate Approved by Treasury	Present Treasury Approval	Revised Cost Estimates at 30.9.60
1. <u>Magnet</u>	2.60	3.224	3.224
2. <u>Injector</u>	0.30	0.485	0.485
3. <u>R.F. Equipment</u>	0.15	0.164	0.164
4. <u>Vacuum Equipment</u>	0.40	1.249	1.249
5. <u>Power Supply</u>	1.30	1.394	1.394
6. <u>Controls</u>	0.15	0.150	0.150
<u>Cooling System</u>	0.10	-	-
<u>Contingency on Plant Items</u>	-	0.769	0.769
	<u>5.00</u>	<u>7.435*</u>	<u>7.435*</u>
7. <u>Buildings</u>			
Building Works	1.40	1.888	1.888
M & E. Services	0.40	0.701	0.701
Fees	0.10	0.303	0.303
Furniture and Fittings	-	0.030	0.030
Contingency on Building Items	-	0.179	0.179
	<u>1.90</u>	<u>3.101*</u>	<u>3.101*</u>
TOTAL	<u>6.90</u> =====	<u>10.536</u> =====	<u>10.536</u> =====

* These figures do not include the estimated effect of the cost variation clauses (CVC.2).

Allowances for CVC.2. Plant £ 100,000
 Buildings £ 35,000

NIMROD PROJECT

Actual and Predicted Rate of Expenditure as at 30.9.60.

Item	1957-58 Actual £	1958-59 Actual £	1959-60 Actual £	1960-61 Predicted £	1961-62 Predicted £	1962-63 Predicted £	1963-64 Predicted £	Total Predicted £
Plant	68,575	381,047	1,969,482	1,900,000	2,000,000	1,000,000	115,896	7,435,000
Buildings	265,187	858,578	912,807	600,000	250,000	114,428	-	3,101,000
Total	333,762	1,239,625	2,882,289	2,500,000	2,250,000	1,114,428	115,896	10,536,000

APPENDIX III

NIMROD PROJECT

Recorded Commitments and Expenditure up to 30th June, 1960

Item	Commitment £	Expenditure £	Remarks
<u>Magnet</u>			
Sectors	1,628,154	1,534,845	
Coils	553,759	-	
Pole Pieces	261,103	342	
Pole Face Windings	1,288	15	
Installation	21,111	14,348	
	2,465,415	1,549,550	
<u>Injector</u>			
D. C. Gun Supplies	37,593	25,523	
D. C. Gun	20,395	20,168	
Low Energy Drift Space	9,134	1,894	
Linear Accelerator	180,894	68,431	
R. F. Drive Power	42,515	31,405	
High Energy Drift Space	8,007	2,588	
Inflector	510	10	
Local Control System	6,824	3,483	
Misc. Equipment & Installation	21,193	11,593	
	327,065	165,095	
<u>R. F. System</u>			
Accelerator Unit	69,159	51,789	
Bias Supply	3,738	3,600	
Drive Chain	2,756	2,857	
Primary Frequency Generator	2,765	1,967	
Beam Control Unit	13,660	4,667	
Local Controls	-	-	
Installation	-	-	
	92,078	64,890	
<u>Vacuum System</u>			
Curved Sections	404,771	158,204	
Straight Sections	-	-	
Pumping Units	178,884	113,917	
Connections	5,500	-	
Ancillaries	2,002	2,022	
Installation	207	-	
	591,384	274,143	
<u>Power Supplies</u>			
Rotating Machinery	559,600	301,744	
Converter Equipment	606,277	313,200	
Miscellaneous	516	516	
Ripple Filtering Equipment	52,300	-	
Installation	-	-	
	1,218,693	615,460	

APPENDIX III

Continued :- Recorded Commitments and Expenditure up to 30th June. 1960.

Item	Commitment £	Expenditure £	Remarks
<u>Control System</u>			
Control Equipment	10,626	2,492	
Control Cabling	11,157	819	
Remote Control Panel	8,294	4,605	
Components for Advance			
Ordering	4,296	2,933	
Installation	1,013	5	
	35,386	10,854	
<u>Plant Grand Total</u>	4,730,021	2,679,982	These figures include the commitment against both the plant & Building contingencies.
<u>Buildings</u>			
Buildings Works	1,854,241	1,601,025	
M.&E. Services	676,153	471,783	
Fees	303,000	133,203	
Furniture & Fittings	11,179	11,179	
	2,844,573	2,217,190	
<u>Buildings-Grand Total</u>			

Contingencies	Approval	Commitment	Remarks
	£ M	£	
Plant	.769	122,266	
Buildings	.179	16,147	

APPENDIX III

New Commitments entered into since previous Quarterly Statement

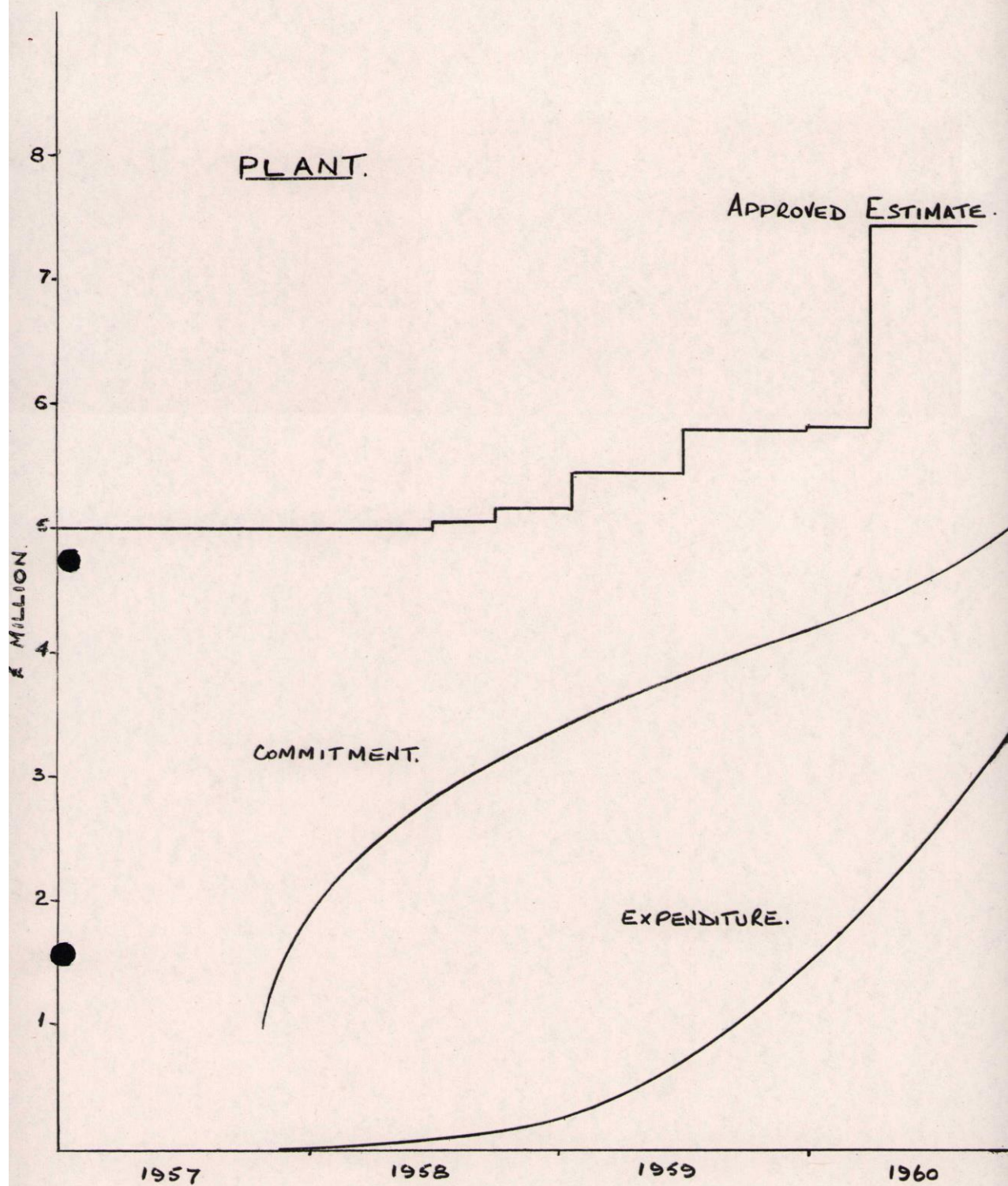
Valued at £500 and over

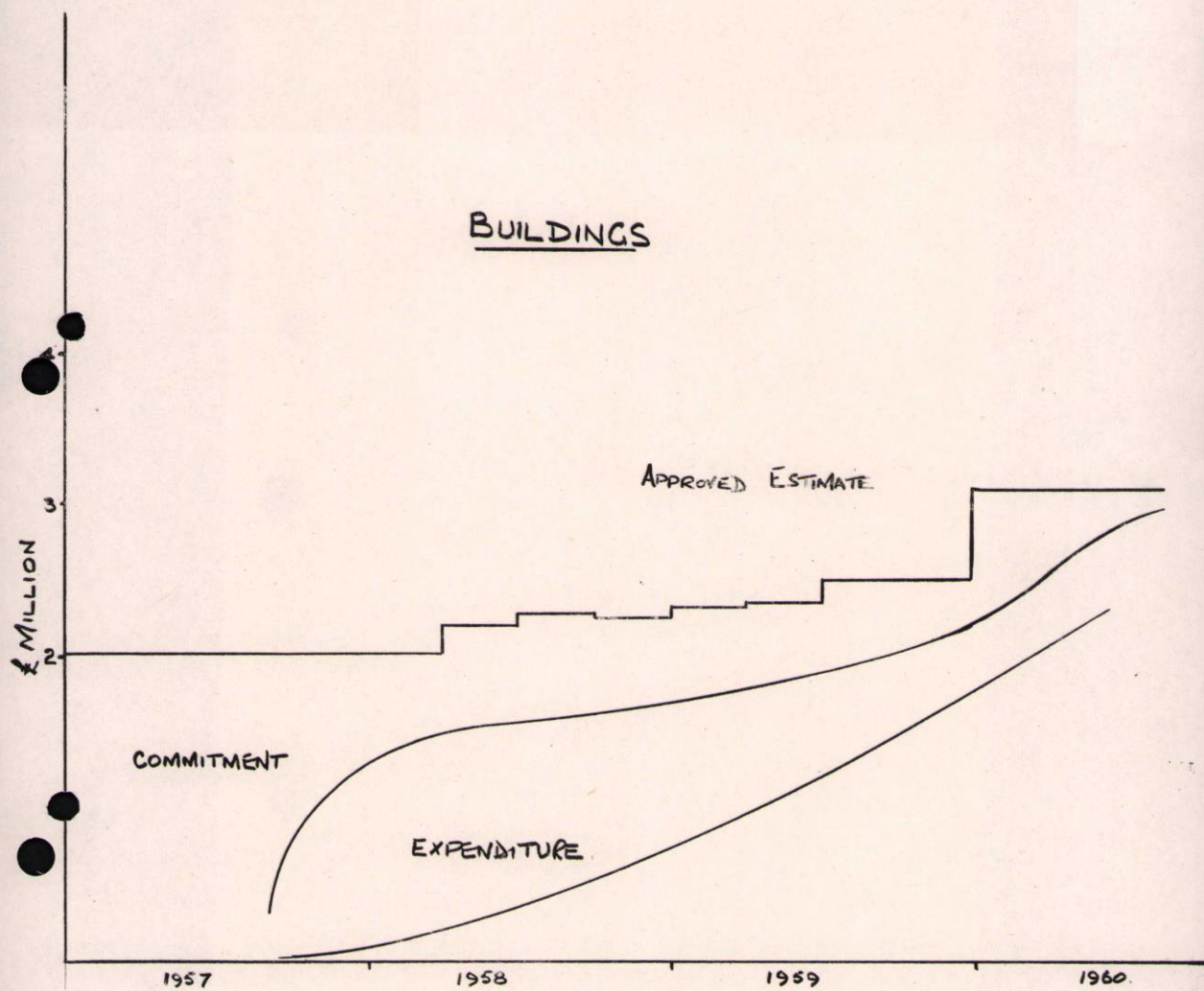
Item	Value £	Firm	Remarks
<u>Buildings</u>			
Misc. Pipework Services	10,271	Matthew Hall & Co.	
Auxiliary Air Conditioning Plant	1,393	Broom & Wade Ltd.	
Goods & Passenger Lift	5,620	Otis Elevator Co. Ltd.	
1000 K.V.A. Transformer	1,292	Yorkshire Electric Co.	
Cooling Water Treatment Plant	1,476	John Thompson	Amendment of Contract
Timber Buildings	2,733	Vic Hallam Ltd.	" " "
Cooling Towers	1,660	Film Cooling Towers(1952) Ltd.	" " "
Steam Mains	8,500	John Brown & Co.	
<u>Plant</u>			
<u>Magnet</u>			
Flow Monitors & Alarm Units	7,104	Rotameter Manufacturing Co.	
End Coil Structure	13,371	Weldall & Assembly Ltd.	
Magnet Coils	9,430	Metro-Vickers Ltd.	Amendment of Contract
Pole Piece Trunnions	5,729	Fairy Aviation Ltd.	
Main Pole Pieces	5,665	English Electric Co.	Amendment of Contract
Reinforced Concrete Beams	11,500	Southern Works Organisation	
Storage Boxes - End Conductors	740	A.E.I.	
Shims	500	Insulating Components & Mtls Ltd	
Stainless Steel	935	Firth Vickers S.S. Ltd.	
<u>Injector</u>			
R. F. Liner for Linac.	2,279	London Aluminium Co.	Amendment of Contract
Feed back Loop Drive	1,454	Gravener Manufacturing Co.	
Matching Line	1,426	J.&P. Engineering(Reading)Ltd.	
Drift Tube Assemblies	775	B. O. Morris Ltd.	Amendment of Contract
R. F. Co-axial Trombone	887	J.&P. Engineering(Reading)Ltd.	
<u>Vacuum System</u>			
Stainless Steel	5,500	Firth Vickers S. S. Ltd.	
Main Vacuum Vessel	168,000	Marston Excelsior Ltd.	Amendment of Contract
<u>Power Supplies</u>			
Rotating Machinery	23,406	English Electric Co.	Amendment of Contract
Converter Equipment	2,450	British Brown Boveri Ltd.	" " "
<u>Control System</u>			
Tektronix Oscilloscopes	688	Livingstone Laboratories Ltd.	

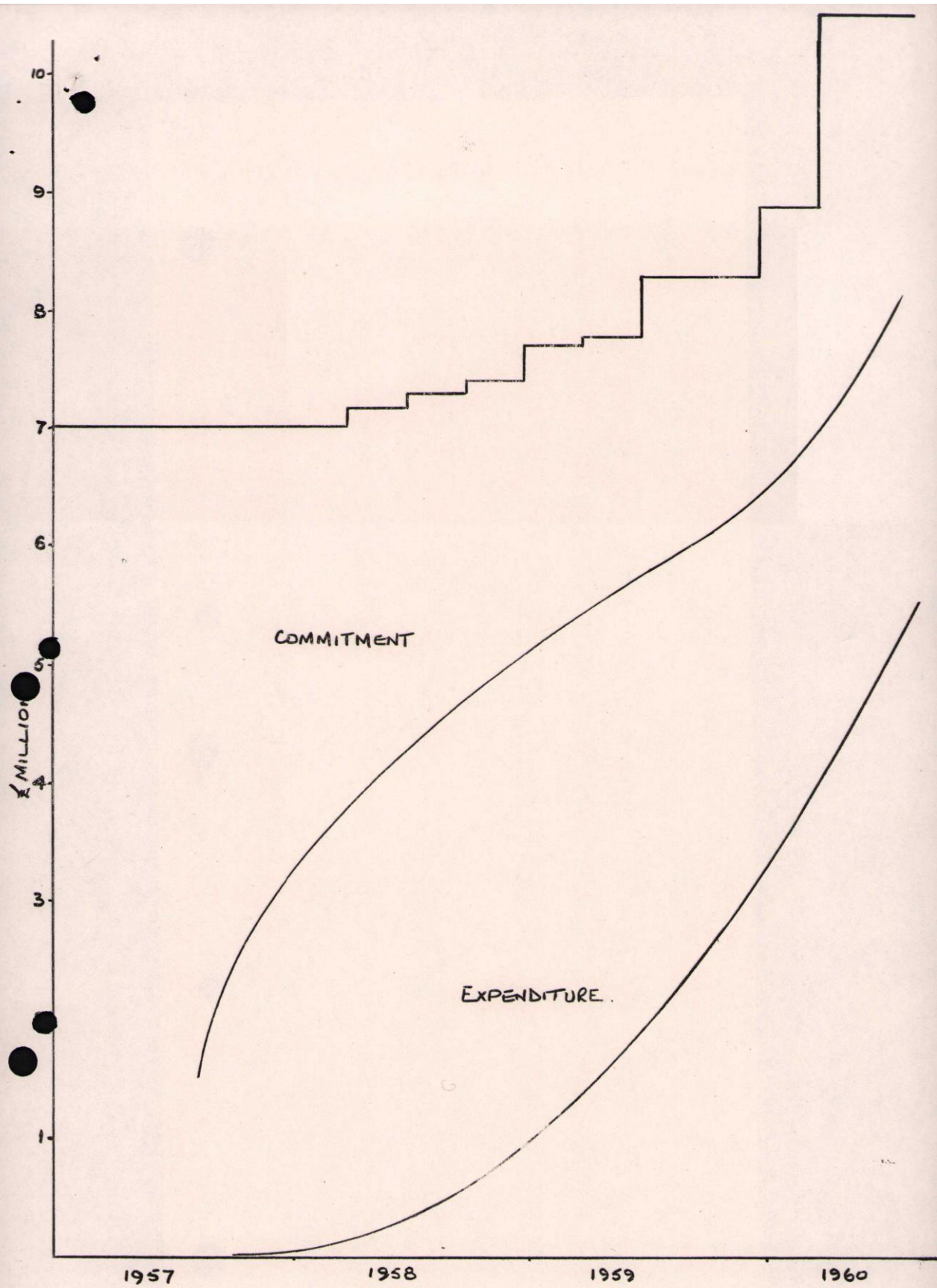
These commitments are included in the commitments shown on previous pages.

NIMROD PROJECTKnown and Anticipated Contract Action From 1.10.60 - 31.12.60

Item	Estimated Value	Firm	Remarks
Gate Valves for Vacuum Chamber	£ 15,000	Competitive Tender	Redesign has taken place to reduce the cost - Tenders due November, 1960.
Flexible Bellows Units for Vacuum Chamber.	40,000	Palatine (Surbiton) Ltd.	Revised quotation requested.
Pole Piece Jacks.	11,000	Competitive Tender	Contract to be placed shortly.
Pump Headers.	21,500	Competitive Tender	Tenders due in by 10th October, 1960.
Bolsters, Clamps and rings.	8,084	J. W. Roberts Limited.	Contract to be placed shortly.
Water Relay Boards.	6,678	F. Church Limited.	Contract to be placed shortly.
Additional Roughing Pumps.	10,000	Competitive Tender	Tender action due in November.
End Pole Piece Supports.	5,000	Competitive Tender	Tender action due in early November.
Pole Piece Positioning Trolley.	12,000	Competitive Tender	Tenders due for return 21st October.







PLANT & BUILDINGS.

NIMROD PROJECT

QUARTERLY STATEMENT No. 13

1. This report shows in Appendix I the Nimrod Capital Estimate to 31st December, 1960 compared with the original estimate and the present Treasury approval.
2. The Plant Estimate has been increased by £0.693M. from £7.435M. to £8.128M. This includes £1.35M. which is the latest estimate for the main vacuum chamber as reported in paper NI/GP/60/47.
3. The Building Estimate remains unchanged at £3.101M.
4. The total estimate has been increased by £0.693M. from £10.536M. to £11.229M. due to the increase in the Plant Estimate.
5. Appendix II shows the actual and predicted rate of expenditure to the end of the Project.
6. Appendix III shows the expenditure and commitments up to 10th December, 1960, which is the end of the last Account Period for which returns are available.
7. Appendix IV shows the known and anticipated contract action to 31st March, 1961.
8. Appendix V shows the rate of expenditure and commitments in a graphical form.

F.A. Vick
Chairman, Project Committee

APPENDIX I

NIMROD PROJECT

Revised Cost Estimates - 31st December, 1960

Item	£ Million		
	Original Estimate Approved by Treasury	Present Treasury Approval	Revised Cost Estimates at 31.12.60
1. <u>Magnet</u>	2.60	3.224	3.224
2. <u>Injector</u>	0.30	0.485	0.485
3. <u>R. F. Equipment</u>	0.15	0.164	0.164
4. <u>Vacuum Equipment</u>	0.40	1.249	1.942
5. <u>Power Supply</u>	1.30	1.394	1.394
6. <u>Controls</u>	0.15	0.150	0.150
<u>Cooling System</u>	0.10	-	-
<u>Contingency on Plant Items</u>	-	0.769	0.769
	5.00	7.435*	8.128*
7. <u>Buildings</u>			
Building Works	1.40	1.888	1.888
M & E Services	0.40	0.701	0.701
Fees	0.10	0.303	0.303
Furniture and fittings	-	0.030	0.030
<u>Contingency on Building Items</u>	-	0.179	0.179
	1.90	3.101*	3.101*
TOTAL	6.90	10.536	11.229

* These figures do not include the estimated effect of the cost variation clauses (CVC.2).

Allowances for CVC.2 are - Plant ... £100,000
Buildings £ 35,000

10.671

NIMROD PROJECTActual and Predicted Rate of Expenditure as at 31.12.60

Item	1957-8 Actual	1958-9 Actual	1959-60 Actual	1960-61 Actual PREDICTED	1961-62 Predicted	1962-63 Predicted	1963-64 Predicted	Total Predicted
Plant	68,575	381,047	1,998,382	1,900,000	2,000,000	1,793,000	86,996	8,228,000
Buildings	265,187	858,578	963,475	600,000	400,000	48,760	-	3,136,000
TOTAL	333,762	1,239,625	2,961,857	2,500,000	2,400,000	1,841,760	86,996	11,364,000

The predicted expenditure figures for 1962-63 and the totals now include the sums allowed for CVC.2 on both Plant and Buildings.

NIMROD PROJECTRecorded Commitments and Expenditure up to 10th December, 1960

Item	Commitment £	Expenditure £	Remarks
<u>Plant</u>			
<u>Magnet</u>			
Sectors	1,638,406	1,526,078	
Coils	631,347	246,632	
Pole Pieces	295,400	1,924	
Pole Face Windings	64,438	549	
Installation	66,439	12,404	
	2,696,030	1,816,368	
<u>Injector</u>			
D.C. Gun Supplies	37,182	25,686	
D.C. Gun	20,285	20,285	
Low Energy Drift Space	13,536	3,368	
Linear Accelerator	183,744	106,489	
R.F. Drive Power	43,272	35,995	
High Energy Drift Space	12,668	5,135	
Inflector	12,078	110	
Local Control System	6,714	5,167	
Miscellaneous Equipment and Installation	28,874	12,598	
	358,353	214,733	
<u>R.F. System</u>			
Accelerator Unit	68,683	51,724	
Bias Supply	3,753	3,754	
Drive Chain	2,428	-	
Primary Frequency Generator	3,376	3,376	
Beam Control Unit	10,073	4,887	
Local Controls	-	-	
Installation	120	-	
	88,433	63,741	
<u>Vacuum System</u>			
Curved Sections	555,316	364,025	
Straight Sections	-	-	
Pumping Units	178,952	121,570	
Connections	5,555	32	
Ancillaries	2,021	2,021	
Installation	1,159	2	
	743,003	487,650	
<u>Power Supplies</u>			
Rotating Machinery	598,510	317,582	
Converter Equipment	608,712	313,200	
Miscellaneous	516	516	
Ripple Filter Equipment	52,300	-	
Installation	100	-	
	1,260,138	613,298	

Appendix III

Continued:- Recorded Commitments and Expenditure up to 10th December, 1960

Item	Commitment £	Expenditure £	Remarks
<u>Control System</u>			
Control Equipment	14,061	3,022	
Control Cabling	11,857	819	
Remote Control Panels	22,290	5,680	
Components for Advance Ordering	4,624	4,624	
Installation	6,605	5	
	59,437	14,150	
<u>Charges for Reallocation</u>	20,987	20,987	
<u>PLANT GRAND TOTAL</u>	5,226,381 *	3,248,927	
<u>Buildings</u>			
Building Works	1,858,038	1,761,792	
M & E Services	637,273	627,350	
Fees	303,000	162,365	
Furniture & Fittings	11,627	11,627	
<u>BUILDINGS GRAND TOTAL</u>	2,845,938 *	2,563,134	

* These figures include the commitment against both the plant and building contingencies.

Contingencies	Approval	Commitment	Remarks
Plant	769,000	122,266	
Buildings	179,440	61,515	

APPENDIX III

New Commitments entered into since previous Quarterly Statement

(i.e. between 31.9.60 - 7.1.61) Valued at £500 and over

Item	Value £	Firm	Remarks
<u>Buildings</u>			
Road lighting columns	500	Metal Developments Ltd.	
111 0 V Cable	1,200	B.I.C.C. & Sterling Cables	
Pipe bridge	688	Foster Bros. Ltd.	
Structural Steel	14,250	} Hill & Smith Ltd.	Amendment of Contract
Extension to Control Room	350		
External Works	21,000	} W.E.Chivers Ltd.	Amendment to Existing Contract
Lab.offices & workshops	93,000		
Computer Room extension	28,000		
Structural Steel	500	Rubery Owen	
Magnet & Cable tunnel	1,167	Matthew Hall	
Air conditioning equipment	114	Matthew Hall	Amendmt.to Contract
Computer extension-felt & metal decking	700	The Ruberoid Co. Ltd.	Sub-Contract
Computer extension-duct covers	800	Dover Engineering Works	" "
" " -curtain walling	3,500	Williams & Williams	" "
CO ₂ Fire Fighting equipment	4,118	Pyrene Co. Ltd.	
Curtain Walling	7,637	Williams & Williams	
Venetian Blinds	1,662	J. Avery & Co. Ltd.	
Seed & Turf Magnet Room	1,069	Wm. Wood and Son	
Sub Station 13 Cable	963	Compton Parkinson Ltd.	
Internal Mechanical Services	600	Matthew Hall	Term Contract Order
Internal Electrical Services	1,150	Read & Partners	" " "
External Electrical Services	700	Aberfren Cables & Construction	" " "
External Mechanical Services	1,600	Constructors John Brown	" " "
Main Entrance	2,443	A. Edmonds & Co. Ltd.	Sub-contract
<u>Plant</u>			
<u>Magnet</u>			
Magnet Coils	59,355	A.E.I. Ltd.	Amendmt.of Contract
Bolster Clamps & Rings	8,083	H & E Lintott Ltd	
Water Relay board	6,678	F. Church Ltd.	
Top Retaining Structures	544	Weldall & Assembly Ltd.	Amendmt.of Contract
Polepiece Jacks	18,020	J.W. Roberts Ltd.	
Busbar Conductor Tower	4,280	B.I.C.C. Ltd.	
Polepiece positioning trolley	12,920	Graviner Manufacturing Ltd.	
Polepiece positioning components.	1,329	Speedy & Eynon Ltd.	
Thermistors	862	Standard Telephone & Cables Ltd	
<u>Injector</u>			
Vacuum Vessel for Debuncher	784	Robert Jenkins & Co.	
Debuncher	3,011	Speedy & Eynon Ltd.	
<u>Vacuum System</u>			
Main Vacuum Vessel	150,000	Marston Excelsior Ltd.	Amendmt.of Contract
<u>Control System</u>			
Control Desk	525	Saunders Patent Carding Machine Works.	
Annunciator Relay Frame	2,540	Clifford & Snell Ltd.	

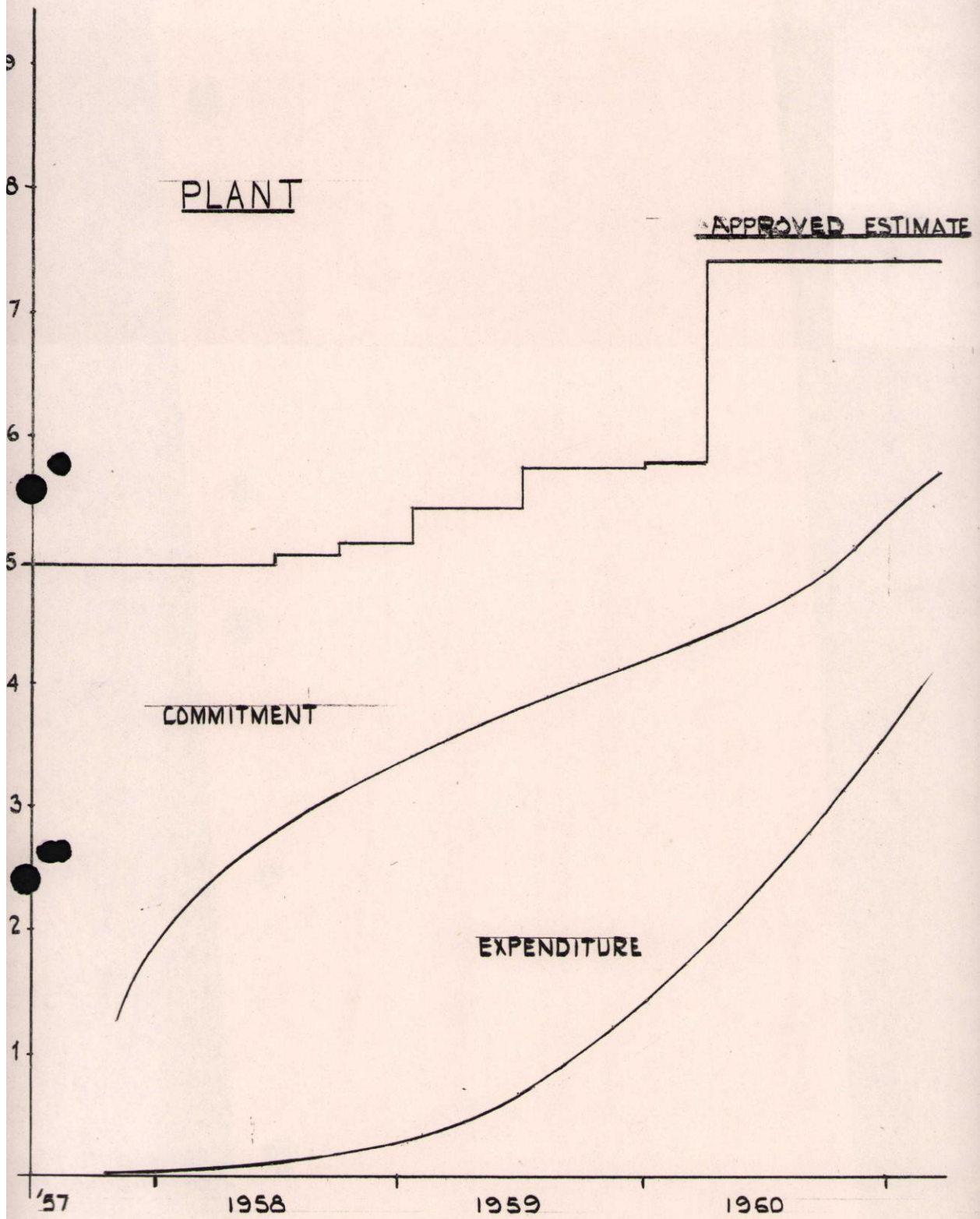
These commitments are included in the commitments shown on previous pages.

NIMROD PROJECT

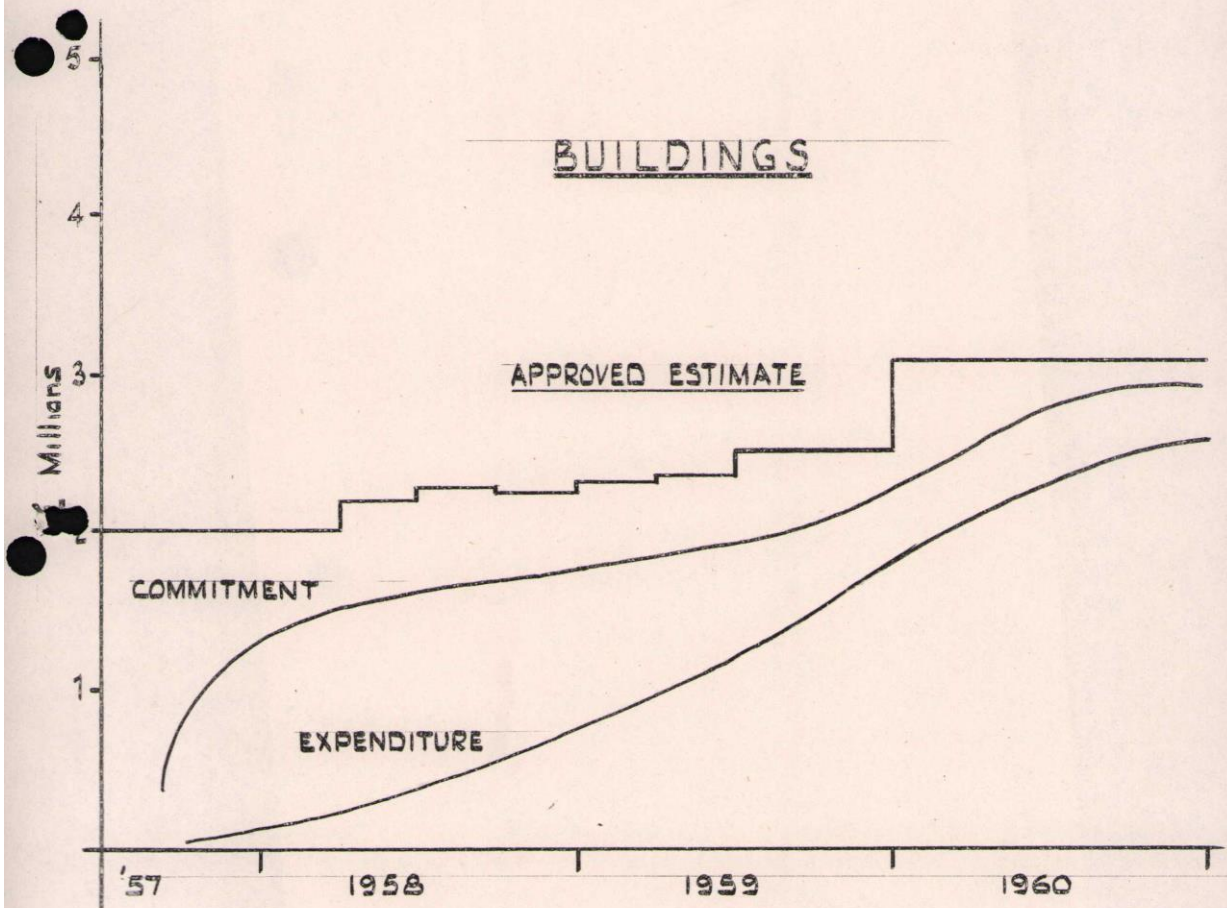
Known and Anticipated Contract Action From 1.1.61 to 31.3.61

Item	Estimate Value £	Firm	Remarks
Flexible bellows	20,000	Palatine	Contract placed for prototype bellows on 30.12.60
Pump Headers	21,500	Hall Engineering	Contract to be placed during February, 1961
Installation of Pole Pieces	15,000	Matthew Hall Ltd.	Contract to be placed during February, 1961
Roughing Pump Units	9,600	Competitive Tender	Tenders due in 30.1.61
Excitation Rectifier Equipment for Ripple Filtering	7,500	Competitive Tender	Tenders due in 1.2.61
Magnetic Shielding	9,368	Graviner Manufacturing Ltd.	Contract placed on 24.1.61
Vacuum Shut off Valves	9,070	Vacuum Research Ltd.	Contract placed on 20.1.61
High Energy Drift Space Quadrupole Power Supplies	5,500	Competitive Tender	Tender action in hand
Radiation Monitors	10,000	Plassey	Single Tender action to take place in March.
Vacuum Pump Suspension Frames	5,200	Edwards High Vacuum	Amendment to main contract to be placed shortly
Pole face winding chilling units	11,000	Competitive tender	Tender action due in February, 1961
Power Supply for Pole Face Windings	12,000	Competitive tenders	Tender action due in February, 1961

Appendix V



Appendix V



Appendix V.

