



DESIGNS DEPARTMENT

FINANCE FOR DESIGN ENGINEERS

BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

FINANCE FOR DESIGN ENGINEERS

JW
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FINANCE FOR DESIGN ENGINEERS

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FINANCE FOR DESIGN ENGINEERS

1. INTRODUCTION

The object of this document is to give a general indication to design engineers how finance is handled in the BBC and, in particular, in Designs Department.

2. GENERAL

The Radio and Television Services of the BBC are funded from the licence fee payable by those possessing a television receiver. The External Services are funded separately by means of a sum of money from the Government of the day and this sum of money is called a "grant in aid". The expenditure of funds coming into the BBC is controlled by the three Managing Directors, i.e. M.D.Tel., M.D.R. and M.D.X.B. By using these funds they are able to produce the BBC's output which is programmes. Those areas of the BBC, such as Engineering Division, receive their funds from the three Managing Directors either directly or by delegation. This funding is generally referred to as being through the Shared Services system, which means that the cost of running the particular area is split between the three Managing Directors in a ratio dependent on the work done for each one of them. The control of the BBC finances is by having cost centres, i.e. the total budget is divided into manageable compartments. This method of control can be seen to be analogous to that in large industrial organisations where the control is by profit centres. The BBC's financial year runs from 1st April to 31st March of the following year.

3. CAPITAL AND REVENUE

The money available to the BBC is split into two distinct parts which are referred to as capital and revenue. Capital is that money which is available and used for the buying of equipment, plant, buildings, vehicles etc., and the control of this expenditure is by what is known as a Scheme. Revenue is that money which is used to pay the day-to-day running expenses of the organisation, such as staff salaries, expenses, rates, lighting, telephones. The control of the revenue money is via annual rates, such rates being, in our case, Establishment (covering salaries), Maintenance of Broadcasting Plant (MOBP) and Travelling and Duty Expenses (T. & D.E.).

4. BUDGETS

The initial point for the control of all money is the appropriate budget. In the case of capital expenditure a rolling budget covering five years is prepared each year. This endeavours to include all the major projects which will be undertaken in the five years under review giving the estimated cost, the year when the project will be authorised financially and the year, or years, when the expenditure will actually occur. In a similar manner each year a revenue budget is prepared to cover the rates of operating expenditure.

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5. METHODS OF FUNDING DEPARTMENTS IN ENGINEERING DIVISION

The funding of departments in Engineering Division depends on the work that they are doing. Equipment Department, for instance, is funded by means of cost recovery. This means that its costs are obtained by charging for the services it provides. Consequently it operates like a private firm except that the BBC centrally is its banker.

The Capital Projects Departments are funded as regards their staff costs from money which has been approved, via the capital budget, and consequently their running cost is part of the money which has been allocated to provide a facility called for in the capital budget.

Other departments, such as Research and Designs, are funded through the Shared Services route and they are a direct charge on the budgets of Radio, Television and External Services, the amount charged to each Service depending on the work done. In the case of Designs Department, each year a return is made which apportions the charge of running this Department to each of the three Services. For example in 1982 these were: Television 70.5%, Radio 26% and External 3.5%. Consequently departments which are funded via the Shared Services appear as a direct overhead on those Services.

6. FINANCE IN DESIGNS DEPARTMENT

6.1 Capital

The Capital Budget for Designs Department is quite small and an example is shown in Appendix 1. This budget covers five years and each line has a number and a title. Some of these lines are intended for replacement of plant, reference DD2, and general facilities such as building work, reference DD1, others are for the replacement of specific items in specific years.

Another point worth noting is that of the columns of figures - the left-hand block gives the sums of money which are intended to be authorised in a particular year and the right hand block gives the expenditure pattern. There is a difference between these since experience has shown that when money is authorised in a particular year it is not always spent in that same year.

The starting point for preparing the Departmental capital budget is the submission of budget bids. These are called for in January each year and the department is invited to put forward bids for capital expenditure, either to continue expenditure along existing budget lines, such as Replacement of Worn Out Plant (RWOP) and General Facilities, or for specific items in a specific year. A typical budget bid form is shown in Appendix 2. Each of these bid forms has a title and boxes which again show the authorisation and expenditure patterns which will apply if this bid is successful. These budget bids are collected together and the total bids throughout the whole Corporation are then analysed so that the money bid fits the money which is expected to be available to the BBC in a specific year for capital expenditure.

Having established the budget, when it has been approved it can be used for the purpose for which it is intended. In order to use the money in the

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capital budget it is necessary to prepare a case, known as a 'White Form' or financial proposal, which is submitted to a Finance Meeting. The case is prepared giving the reason why the equipment is needed, as well as referring to the part of the budget from where the money is to be found. In some cases, such as RWOP, there is only a capital cost. In others there may be a revenue or operating cost associated with the acquisition and provision must be made for this. These White Forms can take one of two routes. If the amount involved is above £25K then the case described on the White Form must be submitted to D.E.'s Finance Meeting. This is done by sending a draft proposal to H.E.S. who then prepares the White Form for submission to the Finance Meeting. If the amount of money is less than £25K the documentation is greatly simplified and the White Form is prepared within the Department for signature by the Head of Department. The resulting White Form is submitted by H.E.S. to a delegated Finance Meeting, chaired by D.D.E. The difference between these two methods is that in the case of the full White Form several weeks elapse between submitting the draft case and it appearing at the Finance Meeting. In the second case it is possible to start the paper-work at the beginning of a week for submission to the delegated Finance Meeting on the following Monday. Generally it can be said that the elapsed time from writing the case to approval by the delegated Finance Meeting is, at the maximum, two weeks.

Since 1980 Heads of Departments have been permitted to approve minor capital proposals within their area up to a limit of £2,500 providing budget provision exists. This is the only case where a Head of Department can approve funds without seeking approval from a Finance Meeting. This approval is minuted at the delegated Finance Meeting and recorded on the Pink Form.

In addition to being submitted to either of these Finance Meetings some large proposals must go to the Finance Meeting of the appropriate Managing Director and in some cases, for extremely large proposals, to D.G.'s Finance Meeting and the Board of Governors. The levels at which a proposal goes to these meetings is clearly laid down but is really of no concern to us in Designs Department since most of our schemes are very small. When the proposal has been approved by the appropriate Finance Meeting or Meetings, some days after the meeting a Pink Form is circulated which gives the title of the proposal, as well as the scheme number allocated to it. This particular form is the authority to proceed with the use of the money. In addition to the Pink Form there are the Minutes of the appropriate Finance Meeting which will record the approval given to this scheme, as well as any conditions which may have been attached to the approval.

6.2 Plant Money

In addition to the main capital budget lines available to Designs Department for capital expenditure, there is a yearly allocation of a small amount of money which is referred to as "plant money". This sum of money can be spent without reference to a Finance Meeting and is intended for use in buying items of equipment of small value. The maximum value allowed in this category is £2,500 but, in general, items approaching this value should be bought against the Replacement of Worn Out Plant (RWOP) budget line, reference DD2.

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7. AUTHORISATION, COMMITMENT AND EXPENDITURE

Associated with all financial matters are three terms which crop up from time to time and it is important that one should be aware of their meanings. These three terms are authorisation, commitment and expenditure.

7.1 Authorisation

Authorisation means that permission has been given for the money to be used to provide the facility requested.

Authorisation is sought by submitting the proposal on a White Form to the appropriate Finance Meeting. When the proposal has been approved by the appropriate Finance Meeting a Pink Form is issued giving authorisation for the expenditure of the money for the equipment or resources outlined on the White Form. If after authorisation there is a need to change the equipment or alter the services which were called for, then reference back to the appropriate Finance Meeting must be made before proceeding to spend the money.

7.2 Commitment

Having obtained authorisation for a particular proposal we can then implement that proposal which will mean spending the money outlined on the proposal. The first step is to place orders against the particular scheme. These orders are logged against the scheme and appear as commitments. The amount of money left on a scheme at any time which can be used is the original amount of the scheme less the commitments. At the very early stages in the life of a scheme it is possible that no money has actually left the BBC. From this it will be seen that commitments on a scheme means that money has been ear-marked to pay the bills which the BBC will receive when the goods or services ordered are delivered. Consequently as far as the person responsible for a scheme is concerned money committed is really money spent.

7.3 Expenditure

The third term appearing in financial matters is expenditure which means that money has actually been spent and in many cases this means that the money has left the BBC.

In handling any particular scheme if an enquiry is made as to the state of the scheme, the most likely response is that the commitments on the scheme are x pounds, the expenditure is y pounds. Generally x is greater than y. Of these various terms, expenditure is the one which needs to be watched very carefully since if the total expenditure on a scheme exceeds the amount of money authorised then a supplementary estimate needs to be submitted to the Finance Meeting for approval, and this should be done before the state of affairs mentioned above occurs.

There are many reasons why expenditure can exceed commitment. Some of these reasons are block increases in prices which can be levied by a firm without notice, as well as changes in tax rates, exchange rates or other such items.

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8. REVENUE

Another form of finance found in Designs Department and elsewhere is the revenue expenditure. This is handled via the Engineering Management Information and Accounting System (EMIAS) and at the end of each quarter the Department is presented with accounts. A typical sheet showing the revenue account for Designs Department is shown in Appendix 3. Examining Appendix 3 shows it to be split into various areas. The first section at the top refers to staff costs, and to the left of the titles are sums of money which are the annual rates which have been approved for that particular item. On examining the sheet it is seen that for most of the items there is a rate and a budget allocated for that particular activity. In the case of premises, rent and rates, telephones, building maintenance, power, light and heat etc., we do not have a rate since they are dealt with centrally.

Turning now to the area to the right of the titles, there are a number of columns of figures. The column of figures nearest the titles shows the expenditure in the quarter covered by the particular account. These figures can then be compared with those in the next column to the right which shows the budget for the particular quarter. Any difference between these two columns of figures is shown in the third column as a variation which is either positive or negative. In the case of a negative variation this indicates an underspending. In the case of a positive figure in the variation column, this indicates an overspending. This overspending can either be that more has been spent than was in the budget or, as in the case of supernumeraries where there is no budget, if there is expenditure, it is by definition an overspending. On the extreme right of the particular page is shown the expenditure, budget and variation for the year to date. This enables the manager to keep track of the pattern of the expenditure for the financial year.

From the point of view of overall control, the most important figure is the bottom right hand figure on the sheet under the column variation. If this is negative, then it shows an underspending; if it is positive it indicates an overspending and generally a justification for this overspending is required. A zero in this column should mean that budget and expenditure equated exactly.

9. RATES

The authorised annual rates for each item on the revenue budget are reviewed each year and adjusted in line with inflation and pay settlements. Any other changes to these rates have to be made by submitting a financial proposal giving reasons for the change. Most of the rates shown on Appendix 3 are self-explanatory but one of them - Maintenance of Broadcast Plant (MOBP) - probably needs some further explanation. Generally in the BBC MOBP is the money which is used for the maintenance of equipment and plant. However, in Designs Department in addition to being used for this purpose it is also the sum of money which is available each year to provide the components and any other services that we require in connection with our design work such as the work involved in the production of breadboards in order to obtain manufacturing information.

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Originally this rate was also used to cover the cost of the pre-production units which were made for the Output Services and eventually funded by a capital scheme put forward by one of the Capital Projects Departments. This procedure has now been changed since it led to too violent a variation in the rate of expenditure of Maintenance of Broadcast Plant (MOBP) and consequently it was impossible to assess whether the expenditure was reasonable or not against this particular rate.

Looking at the other rates, in the case of Travelling and Duty Expenses (T. & D.E.) this rate is charged every time a T. & D.E. form is authorised.

Expenditure and commitments against all of these rates are continually monitored by the Finance Assistant in Section 4 and a report is given to H.D.D. each month so that the control of these rates can be monitored.

10. ENGINEERING DIVISION AUTHORISATION PROCEDURES

These procedures apply to the whole of Engineering Division and the following lists those parts which are applicable to Designs Department.

Most engineers in the Department encounter the financial procedures once they start to order equipment or services. This gives rise to who can give authority for placing orders and for the acceptance of tenders and contracts.

10.1 Authority for Acceptance of Tenders and Contracts Against Approved Funds

Before an order can be placed with a supplier, acceptance of the tender price must be authorised within the following limits depending on whether a contract is competitive or non-competitive.

A contract is competitive when the lowest tender price is accepted;

A contract is non-competitive when the lowest tender price is not accepted or when less than 3 suppliers were asked to supply a tender.

In Designs Department the limits for capital expenditure are as follows:

	<u>Competitive</u>	<u>Non-Competitive</u>
H.D.D.	Up to £40K	Up to £15K
Group Heads and Head of General Services Section	Up to £20K	Up to £5K
Section Heads and Head of Production unit	Up to £5K	Up to 1K
Engineers 3M5 and above	Up to £1K	Nil

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10.2 Authorised Signatures on Contracts and Orders

When an order is placed on a firm a signature is required on the order in the part marked "for Head of Purchasing". The person authorised to sign the order depends on the amount of money being committed by the order. Those authorised in Designs Department to sign orders, and the limits applying to each, are given below:

H.D.D.	Up to £100,000
Group Heads and Head of General Services Section	Up to £50,000
Section Heads	Up to £25,000
Head of Production Unit (Up to £50,00 in the absence of Head of General Services Section)	Up to £25,000
Engineers 3M5 and above	Up to £5,000

10.3 Authorisation of Orders against Approved Funds

After an order has been signed in accordance with 10.2 it cannot be sent to the supplier until it has had the appropriate authorisation. This is given by the appropriate person placing initials in the box marked "authorities" found at the bottom of the order form. In Designs Department those allowed to authorise orders and the limits applying to each are given below:

	<u>Competitive</u>	<u>Non-Competitive</u>
H.D.D.	Up to £40K	Up to £15K
Group Heads and Head of General Services Section	Up to £20K	Up to £5K
Section Heads and Head of Production Unit	Up to £5K	Up to £1K
Engineers 3M5 and above	Up to £1K	Nil

10.4 Authorised Signatures and Limits for Home T. & D.E.

In the case of T. & D.E. which has been expended entirely in the U.K the following members of the Department are allowed to authorise these claims and the limit of authorisation is given below:

H.D.D.	£1,000
Group Heads	£500
Head of General Services Section	£250
Head of Production Unit	£100

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10.5 6X Engineering Designs Department Account - Cheques

The Department has cheque issuing facilities and can issue a cheque up to a value of £200 providing it carries two signatures. The list of signatures is as follows:

H.D.D.
Head of Transmission Group
Head of Studio Group
Head of General Services Section
Head of Production Unit
Finance Assistant
Admin. Unit Supervisor

Of these names, any two of the first five can be first or counter-signatures on a cheque. In the case of the remaining two, only one of their names can appear on a cheque and the other must be one of the first five.

10.6 Petty Cash

Facilities exist for buying small items on petty cash provided they are of a value less than £25. Authority for this is given by the Section Head.

11. FINANCE ASSOCIATED WITH JOB NUMBERS

The finance associated with Designs Department projects is in two parts. One of these parts represents the cost of the man-days used on the project and the other part is the actual money spent on components or on the services needed to complete the project. The monitoring of man-days is by using the Department's Management Information System, the Work Record Form DD1, Appendix 4, and the Section Work Summary Form DD3, Appendix 5.

Each project has a job number and if it is other than a Design job this job number is in the 10,000 series indicating that it is a manufacturing job. In all cases as components are drawn from the Stores the cost of these is allocated to the appropriate job number. If there are processes needed which cannot be undertaken in Designs Department then the cost of these, which will be invoiced to us by the firm undertaking the job, is also allocated to that job number. At the end of each month the position as regards the expenditure on each job number is reported via the DD3 which shows how much money has been committed against that job number as well as the amount of money which it was estimated would be spent on it. This figure is obtained from the Designs Department Job Estimate Form DD2, completed by the responsible engineer at the start of the job. It should be noted that the figures on the DD3 under EC£ and Comm£ do not include man-day costs. The control of the expenditure against estimate is the responsibility of the design engineer who is the responsible engineer for that particular job. The inter-linking of the money associated with job numbers and the overall money of the BBC is undertaken by Section 4. As regards the Design jobs, these are eventually charged to MOBP since all items drawn from the Stores are replaced by ordering replacements against the MOBP rate. Also any bills for services specific to a design job are charged directly to MOBP.

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For design jobs, the man-day costs are recovered through the Shared Services system, consequently their recording and costing is for control purposes as well as to enable the real cost to the BBC of any development project to be determined.

When a pre-production batch of equipment is to be manufactured in Designs Department, the engineer agreeing to the manufacture produces on his DD2 an estimate of the component costs as well as an estimate of the cost of the man-days to be used on that job. This gives a total cost of the particular manufacturing batch. Arrangements then need to be made for the capital scheme requiring this equipment to accept this total charge, which consists of the component costs and the man-day costs.

In the case of manufacturing jobs involving a pre-production batch of units, the components and other costs, but not man-day costs, are allocated to the job number concerned and charged to a work-in-progress scheme 951276 DDZ. This scheme is then reimbursed quarterly from the particular capital project scheme requiring the equipment.

At the completion of the manufacturing job the total estimated cost including man-day costs is charged to the appropriate scheme less any progress charges made in the interim quarters of the project. Scheme 951276 DDZ is reimbursed with the component costs incurred and any under- or over-estimate is transferred to a holding scheme 611540 DDZ. The Designs Manpower Recovery Rate is credited with the estimated man-day costs and this is then reported quarterly within the Designs Department accounts (Appendix 3).

Considering the reason for using this method of dealing with manufacturing jobs, if only the component costs were charged to the scheme requiring the equipment, there would appear to be a significant difference between the cost of a pre-production unit from Designs department and a production unit from Equipment Department. In fact the real cost to the BBC is about the same for both as the cost of Designs Department man-days must be paid for. Although the man-days used in Designs Department on manufacturing jobs are in effect charged twice, once to the capital scheme and also via the Shared Services system, arrangements are made to return the man-days charge to the appropriate service through the Manpower Recovery Rate.

12. MAN-DAY COSTS

The cost per man-day of Designs Department effort is calculated by using the man-day returns from the Management Information System and the financial figures from the EMIAS accounts.

At the end of each financial quarter the Section Quarterly Summary Form DD4/A, Appendix 6, is produced for each of the Design Sections using the man-day information gathered by the Form DD1.

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The Form DD4/A is divided into sections of which the top one, Section A, deals with the man-days used on all job numbers and is referred to as the direct effort since this is the effort which contributes directly to the Department's output. Section B records the total man-days used on overheads as well as the sum of money spent on the maintenance of equipment. Section C is self-explanatory and Section D gives the figure for the total effort available which is the sum of the man-day figures given in Sections A and B. Below this is a ratio which is the ratio of direct effort to total available effort and can be regarded as an indication of productivity.

The sum of the four quarters figure of direct effort for each Section summed for all the Design Sections gives the grand total of direct effort for the Department. This figure is then divided into the cost of running the Department which is obtained from EMIAS accounts to give the cost per man-day. This calculation for the financial year 1982-1983 is shown in Appendix 7. In considering this cost per man-day, it should be noted that in order to simplify the accounting system only 98 of the 198 staff in Designs Department complete work record forms which form the basis of the costing system. This means that large areas such as the Drawing Office, Production Unit and Management are treated as overheads.

Also missing from the figures is the cost of the accommodation occupied by Designs Department and if this charge is added then the cost per man-day is raised by £25 above the figure shown in Appendix 7.

13. ACKNOWLEDGEMENT

The help given by C.A.Eng. and his staff in the preparation of this document is gratefully acknowledged.

CAPITAL BUDGET BID FORM

RECORD TYPE ADBF

ACTION

FORM NO. D.D. 2

From: Name R.P. Marie

Budget Address: Last Year: Page 43 Line 23

Ext. 4058

This Year: Section _____

Title T, E, S, T, G, E, A, R, R, E, P, L, A, C, E, M, E, N

Shared Service Apportionment:

T

Radio _____%

Television _____%

Corporate _____%

PROJECT DETAILS

This project involves: a significant increase in operating costs ; or additional funds for an existing scheme

Involvement: Building: Att Archit. Ventil. Other: Site

Plant: Proc. SCPD Wiring TCPD Power Comms.

Timetable: Start Date _____ Completion Date _____ Maximum Cost _____ (£000)

Specialist Department Costing

EXPENDITURE

Department Code

Section Code

Year 1	Year 2	Year 3	Year 4	Year 5	After	Total
£000	£000	£000	£000	£000	£000	£000

TOTAL

90	95	95	95	95	-	470
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Year 1	Year 2	Year 3	Year 4	Year 5	Total
£000	£000	£000	£000	£000	£000
90	95	95	95	95	470

AUTHORISATION PATTERN

FOR ACCOUNTS USE ONLY

PAGE	LINE	%	PAGE	LINE	%	PAGE	LINE	%
R			T			S		

Proposed Circulation: S.C.P.D. T.C.P.D. A.C.E.D. COMMS. C.S.D. OTHER

6 MONTHS TO SEP. 1983

AUTHORISED ANNUAL RATE	TOTAL	CURRENT PERIOD			YEAR TO DATE		
		EXPENDITURE	BUDGET	VARIATION	EXPENDITURE	BUDGET	VARIATION
		£000	£000	£000	£000	£000	£000
	STAFF COSTS:-						
2078.0	ESTABLISHMENT	501.2	532.7	-31.5	999.1	1063.1	-64.0
0.9	CONT ALLOWANCES	0.2	0.2		0.7	0.6	0.1
15.1	N.C.A. (OVERTIME ETC.)	3.9	3.7	0.2	11.2	7.4	3.8
	SUPERNUMERARIES	12.9		12.9	26.3		26.3
409.5	PENSIONS	104.8	104.8		211.0	211.0	
159.9	STATE INSURANCE	39.3	39.3		79.4	79.4	
13.6	T&D.E	3.5	3.4	0.1	5.3	6.9	-1.6
	T&D.E ADVANCES	0.4		0.4	0.4		0.4
0.7	HOSPITALITY	0.2	0.1	0.1	0.3	0.3	
	CATERING						
	MISCELLANEOUS STAFF COST						
	DSE'S AVLBLE/BONUSES PD.	2.7	2.7		2.7	5.1	-2.4
2677.7	TOTAL STAFF COSTS	669.1	686.9	-17.8	1336.4	1373.8	-37.4
	ENGINEERING:-						
207.3	M.O.B.P.	56.4	51.8	4.6	91.3	103.6	-12.3
	VALVE REPLACEMENTS						
	CAMERA TUBES						
6.5	COMPUTER MAINTENANCE	2.2	1.6	0.6	3.0	3.3	-0.3
4.5	COMPUTER FACILITIES	1.4	1.1	0.3	1.9	2.2	-0.3
1.5	TRANSPORT	0.6	0.4	0.2	1.0	0.7	0.3
219.8	TOTAL ENGINEERING	60.6	54.9	5.7	97.2	109.8	-12.6
	PREMISES:-						
	RENT & RATES						
	RENT & RATES (REC)						
	HOUSEHOLD MAINTENANCE	0.1		0.1	0.5		0.5
	TELEPHONES						
	BUILDING MAINTENANCE						
	POWER LIGHT & HEAT						
	POWER LIGHT & HEAT (REC)						
	TOTAL PREMISES	0.1		0.1	0.5		0.5
	SUNDRIES:-						
	S.B.& I./ EURO / SAT						
	OTHER						
22.6	MISCELLANEOUS	5.2	5.7	-0.5	10.9	11.3	-0.4
	STATIONERY						
22.6	TOTAL SUNDRIES	5.2	5.7	-0.5	10.9	11.3	-0.4
	INCOME:-						
	PATENTS, LICENCES ETC.						
	OTHER						
	TOTAL INCOME						
2920.1	TOTAL DESIGNS DEPT.	735.0	747.5	-12.5	1445.0	1494.9	-49.9

Work Record

Name: J.B. LOGGS

Week ending: 16.9.83

Section: 1

Job No.	Theoretical Study	Breadboard Const. & Test.	Printed Circuit Layout	Prototype Construct.	Prototype Testing	Checking Drawings	Testing Final Model	Writing Specs.	Writing Tech. Mem.									Individual Total Half Days
1/2658					5													5
1/2615						2												2
Sub Total on Job Nos.																	7	Half Days

1998																			Sub Total on 998	Half Days
1999																			Sub Total on 999	Half Days

Notes

All effort to be recorded in half days

Please give above the Job No. on which you worked, together with the number of half days spent on the particular activity or activities associated with that Job.

All other design work should be put under Job No. 1998 or 1999.

Job No. 1999 is for work undertaken for a specific customer request.

Job No. 1998 is for other work undertaken without a specific customer request.

The blocks "Overheads" and "Ineffective" are for all non-design activities.

Overheads

Administration		
External Activities		
Exchange with Manufacturers		
Training (general, courses, etc.)		
Stat. training (day release etc.)		
Maintenance 1997	1	
SUB TOTAL OVERHEADS		Half Days

Ineffective

Leave (annual, sick, etc. & public holiday)	2	
SUB TOTAL INEFFECTIVE		Half Days

GRAND TOTAL		Half Days
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Section Work Summary			Significant Events	Estimated Dates	Actual/Forecast Dates	Remarks	Resources		
Section	One	Month					October 1983		
Job No.	1/2819/1	R - %	T 100 %	Start	Jul 83	Jul 83	% Complete...8%... Forecast Completion Date...Dec. 84..	E.M.D.	250
Product	Design	X - %	C - %		F.M.D.			250	
Code No.		Est. Issue	1		R.T.			20	
Title	DIGITAL PAL DECODER			Ready for D.O. Orgs. Approved M.I./H.B./E.D.I. Finish		Dec 84	Chrominance demodulator designed and ready for wire-wrapping.	M.D.T.C.	230
Desc.	To design a Digital Burst Locked Oscillator				Month M.D.			6	
					E.C.			4525	
Engineer		S E J Aglionby			Dec 84	Dec 84		Comm. E	390
								Month E	271
								D.O.E.M.D.	
								D.O.R.T.	
								Month M.D.	
Job No.	1/2819/2	R - %	T 100 %	Start	Jul 83	Jul 83	% Complete...15%... Forecast Completion Date...Dec 84..	E.M.D.	277
Product	Design	X - %	C - %		F.M.D.			277	
Code No.		Est. Issue	1		R.T.			44.5	
Title	DIGITAL PAL DECODER			Ready for D.O. Orgs. Approved M.I./H.B./E.D.I. Finish		Dec 83	Comb-filter processing logic designed, awaiting wire-wrap prototype for testing.	M.D.T.C.	232.5
Desc.	Design of the Comb Filter and YUV to RGB Matrix				Month M.D.			17	
					E.C.			6800	
Engineer		P G Randall			Dec 84	Dec 84		Comm. E	1975
								Month E	232
								D.O.E.M.D.	
								D.O.R.T.	
								Month M.D.	
Job No.	1/2819/3	R - %	T 100 %	Start	Oct 83	Sep 83	% Complete...5%... Forecast Completion Date...Dec. 84....	E.M.D.	252
Product	Design	X - %	C - %		F.M.D.			252	
Code No.		Est. Issue	1		R.T.			33.5	
Title	DIGITAL PAL DECODER			Ready for D.O. Orgs. Approved M.I./H.B./E.D.I. Finish		Jul 84	Familiarisation and preliminary studies prior to start of design work.	M.D.T.C.	218.5
Desc.	Design of Blanker Parallel Interface Generator and Analogue Sync Regeneration				Month M.D.			1.5	
					E.C.			3375	
Engineer		D C Read			Dec 84	Dec 84		Comm. E	323
								Month E	192
								D.O.E.M.D.	
								D.O.R.T.	
								Month M.D.	
Job No.	1/2819/4	R - %	T 100 %	Start	May 83	May 83	% Complete...50%... Forecast Completion Date...Dec. 84....	E.M.D.	
Product	Design	X - %	C - %		F.M.D.				
Code No.		Est. Issue	1		R.T.				
Title	DIGITAL PAL DECODER			Ready for D.O. Orgs. Approved M.I./H.B./E.D.I. Finish		Nov 83	Production of crate wiring schedules well advanced. One crate (of three) ready for wiring.	M.D.T.C.	
Desc.	Design assembly and testing of ADC, DACs Clock, PSU and Crates				Month				
					E.C.				
Engineer		D C Read			Dec 84	Dec 84		Comm	
								Month	
								D.O.E	
								D.O.R	
								Month M.D.	

DATE Apr - Jun SECTION 1

A DIRECT EFFORT

Man Days

Effort on Job No's.	527.5
Effort on /998 & /999	98.5
Total Direct Effort	626

B OVERHEADS

Man Days

General Overheads	131.5	£
Maintenance /997	33	3.45
Total Overheads	164.5	3.45

C LEAVE

121.5 Man Days

D ANALYSIS

Total Effort	790.5	Man Days
Ratio	79.19%	

MAN-DAY ANALYSIS FOR 1982-83

	Section	1	2	3	5	6	7	8	9	TOTAL
Direct Effort	Quarter 1	618.5	727.5	579.0	686.0	624.0	641.5	579.0	448.0	4903.5
	2	533.5	710.0	602.0	674.0	619.0	556.0	522.5	453.0	4670.0
	3	375.0	697.5	536.0	674.0	581.0	513.5	525.0	455.0	4357.0
	4	669.5	691.0	568.5	807.5	634.0	625.5	666.5	438.5	5101.0
	Total md	<u>2196.5</u>	<u>2826.0</u>	<u>2285.5</u>	<u>2841.5</u>	<u>2458.0</u>	<u>2336.5</u>	<u>2293.0</u>	<u>1794.5</u>	<u>19031.5</u>
Overheads	Quarter 1	53.5	93.5	86.5	82.5	127.5	78.5	106.0	72.5	700.5
	2	66.5	82	87.5	115.5	138.0	64	70.0	75.0	698.5
	3	94.0	45.0	92.0	116.5	152.5	122.5	89.0	63.0	774.5
	4	12.5	63.5	140.5	105.0	103.0	101.5	75.5	69.0	783.0
	Total md	<u>339.0</u>	<u>284.0</u>	<u>406.5</u>	<u>419.5</u>	<u>521.0</u>	<u>366.5</u>	<u>340.5</u>	<u>279.5</u>	<u>2956.5</u>
Leave	Quarter 1	115.0	113.5	145.0	121.5	139.5	123.5	104.5	104.5	967.0
	2	148.0	114.0	165.5	177.0	103.5	170.5	155.5	103.5	1137.5
	3	132.5	169.5	205.5	185.5	137.5	149.5	138.0	101.5	1219.5
	4	115.0	158.5	180.0	125.0	115.5	110.5	69.5	64.5	938.5
	Total md	<u>510.5</u>	<u>555.5</u>	<u>696.0</u>	<u>609.0</u>	<u>496.0</u>	<u>554.0</u>	<u>467.5</u>	<u>374.0</u>	<u>4262.5</u>
<u>GRAND TOTAL</u>		<u>3046.0</u>	<u>3665.5</u>	<u>3388.0</u>	<u>3870.0</u>	<u>3475.0</u>	<u>3257.0</u>	<u>3101.0</u>	<u>2448.0</u>	<u>26250.5</u>

ANALYSIS

Total Direct Effort 19031.5 man days
 Total Overheads 2956.5 man days
 Total Leave 4262.5 man days
 Grand Total Effort 26250.5 man days

Total available effort = Total Direct + Total Overheads
 = 19031.5 + 2956.5
 = 21988 man days

Ratio $\frac{\text{Total Direct}}{\text{Total Available}} = \frac{19031.5}{21988} = 86.55\%$

Ratio $\frac{\text{Total Direct}}{\text{Grand Total}} = \frac{19031.5}{26250.5} = 72.5\%$

Ratio $\frac{\text{Total Overheads}}{\text{Grand Total}} = \frac{2956.5}{26250.5} = 11.26\%$

Ratio $\frac{\text{Leave}}{\text{Grand Total}} = \frac{4262.5}{26250.5} = 16.24\%$

Cost of Department for 1982-83 = £2808900

Total Direct Effort = 19031.5 Man-days

Cost Per Man-day = £147.59

