An Economic Appraisal of Management Information.

by

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VOLUME 2

CONTAINS

PULLOUTS

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A Company Information Study

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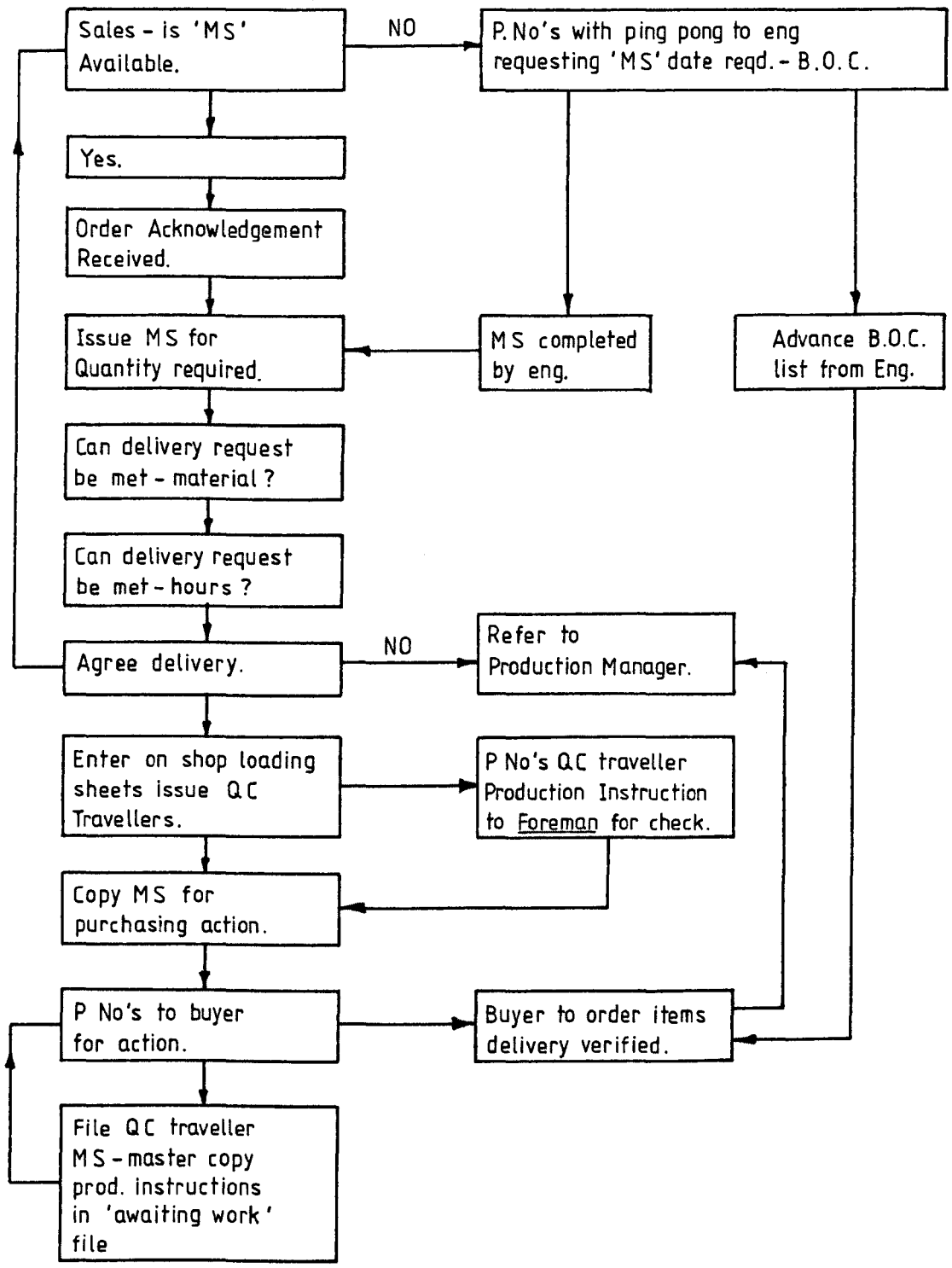


3) PRODUCTION CONTROL SYSTEM - 1:3

The system described below replaces all previous issues.

1) AIMS.

1:1 To fully load the Shop Floor with work.
1:2 To provide a smooth workflow in line with Customer requirements.
1:3 To give the Foreman certain flexability in Job loading order.
1:4 To equate allowed hours to Shop Floor skills and identify overloading on any skill level - in a particular period.
1:5 To enable the Foreman and Group Leaders to plan jobs in advance.

2) PERSONNEL INVOLVED.

2:1 Production Control Clerk.
2:1:1 To assemble manufacturing information.
2:1:2 To allocate hours on the Shop Loading Sheets and to amend the Hours Loading Sheets in the case of re-schedules.
2:1:3 To provide acknowledgement deliveries to the Sales Department.
2:1:4 To assist the Foreman/Controller in clerical aspects as required.
2:1:5 To give the Customer/Sales Department a progress or delivery estimate on any job when requested.
2:1:6 To maintain phased Acknowledgement Order (P.A.O.) Ledger.

2:2 Production Analysis Clerk.
2:2:1 To maintain Stock Record Cards.
2:2:3 To issue and record Production Stationery as required.
2:2:4 To provide and maintain the Material Shortage List.
2:2:5 To maintain M.S. Cost Index.
2:2:6 To maintain Hours Variance Analysis.
2:2:7 To analyse Job Record Sheet and prepare 4 weeks cycle.
2:2:8 To maintain Perpetual Inventory.

2:3 Materials Controller.
2:3:1 To ensure that materials are ordered from the Material Schedule (M.S.) and progressed for delivery at the optimum time to meet Production requirements - or from advance information from Engineering in the case of new jobs when an M.S. has not been prepared.
2:3:2 To ensure that materials are purchased at the best possible price advantage for the Company.
2:3:3 To ensure that Stock Records are maintained with respect to:-
(i) Accurate Stock figures.
(ii) Re-order levels on regular lines.
(iii) E O Q stated.

2:3:4 To advise Production Control Clerk of best estimates of deliveries when order acknowledgement deliveries are being compiled - based on informed fact (i.e. checking with Suppliers before action.)

2:4 Foreman/Works Controller.

2:4:1 To keep an up-to-date record of jobs in work on the Shop Floor.
2:4:2 To keep an up-to-date record of the exact status of part worked or part completed jobs.
2:4:3 To keep an up-to-date record of jobs recently completed.
2:4:4 To determine the job priority order - where different from Standard Weekly Production Schedule due to Sales request.
2:4:5 To provide the Production Control Clerk with a progress or delivery estimate as requested.

2:5 Storekeeper.

2:5:1 To make up job kits as soon as possible after parts delivery.
2:5:2 To advise Production analysis Clerk of any Material Shortages preventing kits being completed by due date.
2:5:3 To advise the Foreman of jobs which are kitted awaiting labour only.
2:5:4 To check Goods received against Purchase Order Copy.

3) PRODUCTION CONTROL - PAPERWORK ROUTING.

3:1 On receipt of Acknowledgement of Order from Sales (Appendix 3:1) Production Control Clerk stamps Production Instructions copy and enters date received. If returned to Sales e.g. insufficient information for action, the relevant dates returned and re-received will be entered also.

3:2 The Production Control Clerk completes the Material Schedules with respect to quantities required. If new work a check will be made with Engineering that the M.S. is complete or is being action (N.B. Previously requested direct to Engineering from Sales). A completion date is the entered in date FROM box on order acknowledgement - Production Instruction.

3:3 The delivery date is now computed with respect to Labour and Materials.
3:3:1 The Availability of materials is assessed by (a) receiving the relevant M.S.'s if they exist or (b) by reference to Engineering.

(a) will be achieved by assembling the relevant manufacturing M.S.'s (copies made from Master) and passing to the Materials Controller for delivery date to be entered and initialled on the Production Instruction (an estimate only based on informed fact - by reference to Stock Control/Supplier.)
Scheduled deliveries will require an M.S. per delivery/kitting is required. When items are ordered confirmation must be referred to the Production Control Clerk that the original due date will be achieved i.e. 2 weeks prior to acknowledged customer delivery date. If not the matter must be raised with the Production Manager. As items are ordered, copy orders are passed to Stores for kitting (Procedure 7/4/78).
(b) will be achieved by asking Engineering for B.O.C. lead time list for any new work. This document will double for advance ordering information, the objective will be that materials will be available one week before loading i.e. 3 weeks prior to delivery date.

3:3:2 The total labour time is calculated by multiplying the Sales estimated time per item by the number of items or by referring to the Hours Record File. If the information is not available from either source reference must be made back to Sales. No work to be loaded until required hours are made available. The labour hours required are then booked on to the Shop Loading Sheets as available to allow 2 weeks prior to requested delivery date.

3:3:3 The customers requested delivery date is now reviewed based on information collated as above.

3:4 The Production Control Clerk on comparing availability of materials and labour with customers request either:-

(a) verifies delivery by signing green copy and returning to Sales, or

(b) entering Production delivery offer in box 3 on green copy and returning to Sales stating reason i.e. either labour or materials. If (b) is not acceptable to Sales it will be the subject of a Production/Sales priority meeting between Production Manager and Sales Manager.
A note will be made in the appropriate column of the Weekly Production Schedule of the date the customer requests delivery i.e. the preferred date.

3:5 Once delivery date is resolved labour details are entered on the Shop Loading Sheets. (Appendix 3:2). Production QC Travellers are allocated - one per item on the order, or on a schedule basis, and the traveller completed in issue details (Appendix 3:3). Rubber stamps will be used on all Production paperwork indicating:-

(a) Priority
(b) Export
(c) Repair

Stamps will be shown in red.

3:6 On completion, M.S's and QC Travellers will be checked by the Foreman, the purpose being to identify errors made in ascertaining quantities and lengths.

3:7 Coincidental with above, the Production Control Clerk then files the Production Instructions in its file in the Foremans Office. The QC Traveller is given to a Group Leader and is then put into the "Awaiting Work" file.
The M.S's are passed through to the Storekeeper.

3:8 The Foreman holds on file the Production Instructions until goods completed at the despatch stage. The Despatch Clerk then retrieves Production Instruction for despatch purposes.
When job is completed, all production documents are passed to the Production Control Clerk for filing in the Completed Order File.

3:9 If a Production Instruction is held up on W.I.P. e.g. work stops at the discretion of the Foreman, it will be returned from Despatch to "awaiting work" - hold file in Production Control and the stop reason noted and dated.
When work can recommence it will be re-issued as above plus copy of M.S. to the Materials Controller listing materials shortage requirements.

4) MATERIALS CONTROL. 1:4

OBJECTIVES.

1) To ensure that Production Materials, equipment and services are available at an acceptable time, price and quality to comply with the Company's Production Programme.

2) To ensure that all departments under the supervision of Materials Control work towards the common objectives in 1) above i.e. Purchasing, Stores, Progress, Goods Receiving and Stock Control.

3) To ensure that Stock Levels are held to agreed value levels and quantities as determined by the Production Manager.

4) a) PURCHASING PROCEDURE. 1:4:1

OBJECTIVES.

1) To ensure that materials of an acceptable standard, quantity, quality and price are available at the optimum time to meet Production requirements.

2) To provide a central Purchasing Dept, for main factory plus other Group divisions as and when required.

Procedure.

1) On receipt of purchase requisition/MS the Materials Controller will obtain a quotation. Consideration will be given to:-

1:1 Price.
1:2 Specification.
1:3 Delivery.
1:4 Payment Terms.
1:5 Discount.

2) Having decided upon Supplier - quotation acceptable a purchase order is prepared (Appendix 3:4). An Amendment to Purchase order form (Appendix 3:4) will be used if corrections are to be made.

2:1 Purchase Orders are on NCR pads. No carbon paper is required. Copies are as follows:-

2:1:1 Original Copy - delivered by post/had to supplier. This is the Company's contractual agreement with the supplier. It is essential that it contains all agreed elements price, delivery, date, quantity and an adequate description for the supplier to meet requirements.

2:1:2 Originator Copy - White - retained on file by Purchasing Department.

2:1:3 Goods Receiving Copy - Blue - held in Goods Receiving file and jointly used by the Goods Receiving Clerk/Inspection. Responsibility for checking goods received against Purchase Order rests with the Goods Receiving Clerk and hence for maintaining purchase order copy file.

2:1:4 Accounts - Pink - post to Accounts Department.

2:1:5 Daily File - Yellow - pass to typing office - daily file tray.

2:2 Each purchase order will carry the following information.

2:2:1 Accounts code or company part number.

2:2:2 Routing - on arrival.

2:2:3 Total value of order and item price to enable to check invoice accuracy.

2:3 A Company Purchase order will be used for every purchase made for the Company and distributed so that a complete record is held of all Company purchases.

2:4 A log of Purchase Order numbers and pads will be maintained by the Production Analysis Clerk.

2:5 Invoice Clearance.

2:5:1 When the invoice corresponds exactly with the Purchase order copy in terms of description, quantity and price, clearance will be authorised by the Accounts department invoice clerk.

2:5:2 In a discrepancy arises on price, quantity, etc. then invoices in question will be referred back to the Materials Controller for investigation and subsequent settlement. "Problem" cases will be referred to the Production Manager for a decision.

3) Progress

3:1 A progress system based on the Material Shortage list will be maintained and actioned by the Materials Controller.

3:2 Due dates will be set and achieved with the sole objective of providing materials one week in advance of shop loading date i.e. 2 weeks prior to Customer due date.

4) Purchase requisition (Appendix 3:5)

4:1 A purchase order will not be raised unless requested by either a Purchase requisition or an M.S. instruction from the Production Control Clerk.

4:2 Purchase Requisitions will be raised by:-

4:2:1 The storekeeper - for all standard materials which need replenishment.

4:2:2 The Foreman - tools and equipment required for production.

4:2:3 The Engineering department - materials required for new methods, tooling, capital expenditure,etc.

4:2:4 The Head of Department - indirect materials.

4:3 The requisitions are prepared by the originator in duplicate form and distributed as follows:-

4:3:1 To the Materials Controller for ordering.

4:3:2 Retained by originator.

5) Material Request Procedure (MR) (Appendix 3:13)

Material requested from Unit 5 will be requested on a standard MR request form only. Procedure is as follows:-

5:1 Ascertain requirements from Material specification (MS).

5:2 Check with the Unit 5 Works Controller on availability.

5:3 Obtain agreed delivery date from the Works Controller.

5:4 Enter agreed delivery date on to MR form together with full information required (self-explanatory).

5:5 MR form will then be despatched by internal post to the Unit 5 Works Controller no later than 48 hours after agreeing verbal delivery date.

4 b) PURCHASE REQUISITION (APPENDIX - 3:5) - PROCEDURE 1:4:2

4:1 Purchase Orders will normally only be raised by the Materials Control Department on receipt of:-

4:1:1 Purchase Requisition, or

4:1:2 Material Specification (M.S.) from Production Control, or

4:1:3 Purchase Order Card from Stock Control

4:2 Purchase Requisitions will be raised by:-

4:2:1 Storekeeper - for Operating Supplies

4:2:2 Foreman - tools and equipment for Production

4:2:3 Engineering Department - materials required for new methods, tooling, capital expenditure, prototype work, etc.

4:2:4 Departmental Manager - indirect materials

4:2:5 Other Departments within the Group.

4:3 Purchase Requisition pads are NCR and require no carbon paper. Copies as follows:-

4:3:1 Originator copy (top copy - white) - retained by Originator

4:3:2 Materials Control Copy (2nd copy - pink) - passed to Material Control for ordering together with 3rd copy.

4:3:3 Originator - Acknowledgement copy (3rd copy - white) - returned to originator by Material Control advising action taken

N.B. Originator must pass 2nd - pink copy and 3rd - white copy to Material Control

4:4 Completion of Purchase Requisition requires certain discipline by users, as any system does, to ensure efficiency on a routine basis. Full information must be supplied by the Originator, as follows:-

4:4:1 At A - Originator name
At B - Date Requisition raised
At C - Accounts Code - from circulated list. It is extremely important that the correct code is used. If in doubt ask.
At D - Routing required
At E - Item No. i.e 1,2,3,4,5, etc.

At F - Quantity required
At G - Description of Requirements
At H - Date goods are required
At M - Signature of Departmental Manager

FOR MATERIAL CONTROL OFFICE USE ONLY

At I - Order Number given against purchase Requisition request
At J - Date goods will be available
At K - Unit price
At L - Address goods are to be delivered to, e.g. UNIT 1, UNIT 2, UNIT 5.

N.B. (1) - The Materials Controller must check all information carefully before processing further

(2) - Recommended Supplier

Until (PR) Stocks are exhausted, the Recommended Supplier and address must be entered at (G) as a note. When new pads are ordered space will be allocated on (PR).

4)c) Goods Receiving Procedure. 1:4:3

Objective.

1. To ensure that goods received correspond exactly with the Purchase Order.

2. To ensure that discrepancies are handled in a systematic documentated manner.

3. To ensure that invoices are cleared and paid for goods received only.

Procedure

1. The nominated goods receiving/despatch clerk will complete a goods received note (GRN) appendix 3:6 for all goods received into the Company completion will be as follows:-

1:1 At A - fill in suppliers name, address and reference.
1:2 At B - fill in description of goods received.
1:3 At C - enter quantity ordered.
1:4 At D - enter quantity received.
1:5 At E - enter difference between C and D and complete a DISCREPANCY note following procedure already circulated.
1:6 At F - enter the number of packages received.
1:7 At G - enter company order no.
1:8 At H - enter the carriers name.
1:9 At I - the clerk receiving the goods must sign here.
1:10 At J - Inspection will enter brief details and follow established procedure/or sign for acceptance.
1:11 At K,L,M - self explanatory and for completion by Purchasing Department.

2. Goods will be received at the goods received/ despatch area only, and not at Reception counter.

3. The goods receiving/despatch clerk will check goods for:-

3:1 Quantity advised correct.

3:2 Obvious damage in transit.

3:3 If discrepancies are found a discrepancy note (appendix 3:7) will be attached to the purchasing copy of the GRN and passed to the materials controller for action.

3:4 The goods will then be distributed to the routing indicated/or as instruction by the controller and all GRN's posted to departments concerned.

4. The materials controller is responsible for ensuring that goods are cleared of:-

4:1 Discrepancies) current procedure to be followed -
4:2 Inspection) accounts copy with GRN to accounts.

4:3 Routed to stores or originator.

4:4 Passing GRN to the account dept. to assist with invoice clearance.

5. GRN pads are NCR and require no carbon paper. Copies are as follows.

5:1 Purchase order originator (White) - notification of goods received.

5:2 Accounts copy (Pink) - for checking against purchase order and invoice.

5:3 Stores copy (White) - to check against purchase order copy/goods and file.

5:4 Goods receiving copy (Blue) - check goods for quantity etc. fill in GRN and retain on file.

Note.

Incoming goods requiring inspection - goods receiving clerk will pass all copies of GRN to inspection for comments/ clearance. The copies will then be circulated as indicated by the inspector.

MEMO

TO: WORKS CONTROLLERS.
etc.

GRN Procedure - Further Clarification

Completion of GRN note.	Completed/action by
1. Enter at C - Quantity ordered (from purchase order copy).	Goods receiving clerk.
Enter at D - Quantity received - signify with P/S is part shipment against scheduled delivery.	Goods receiving clerk.
Enter at E - i) short delivery against order quantity.	
ii) Balance outstanding.	" " "
NB To ensure that control is maintained of scheduled deliveries - mark up Purchase Order copy with quantity delivered, date delivered and GRN number.	" " "
2. For Office Use.	
To be completed by Invoice clerk only.	Invoice clerk.
3. Enter at J - Inspection comments/ signature for acceptance.	Inspector.
NB All incoming goods will be routed through Inspection for clearance together with GRN notes. Goods and GRN notes will then be returned to the Goods receiving clerk for distribution.	Goods receiving clerk.
4. Purchase Requisition Number	
At K - leave blank until further instructions.	
5. Noted on Progress Chart.	
At L - Entry to be recorded by materials controller.	Materials controller.
6. Bin Number.	
At M - enter bin no./P no. information on Purchase order copy.	Goods receiving clerk.
7. Stores Ledger	
To be completed by stock control clerk only - after receipt of stores copy.	Stock control clerk.

8. Invoice number.

At N - to be completed by invoice clerk. Invoice clerk.

General Points.

The new GRN Procedure will replace the existing system as follows:-

1. The GRN note will be the master reference document upon which the Company will act for payments of invoices.

2. Advice Note/Delivery Note.

Experience shows that some suppliers will deliver goods with an Advice/Delivery note - some will not. Some, in fact, forward the note by post. This note must be treated as support information only, and requires stapling to the back of the appropriate GRN. (STORES COPY)

3. Existing Paperwork.

3:1 Goods inwards daily log - discontinue.
3:2 Main factory receipt voucher log - discontinue.
3:3 Pro-forma note - discontinue.

4. Control

4:1 Control will be maintained by filing (box file) all GRN notes (Goods receiving copy) in numerical order.

4:2 Noting scheduled deliveries on Purchase Order copy.

PRODUCTION MANAGER.

GOODS INWARDS PROCEDURE.

Final Procedure - additions to instruction 28.6.79 and memo headed GRN Procedure - further clarification.

Goods Received Clerk - Duties.

1. To accept, and check quantities on all goods received.

2. Fill in all details as previously noted on GRN's.

3. Enter GRN no. onto goods received copy of purchase order, noting date and quantity received.

4. Pass all copies of GRN (except goods-in file copy - keep in numerical file) and customers paperwork, together with goods received purchase order copy (when sufficient material received to clear outstanding balance) to inspection with the goods.

5. On receipt of the paperwork and goods from inspection, (suitably endorsed to show inspection action and results). The materials are to be passed to the destination shown on the goods inwards copy of the purchase order, (where no specific destination is call up - pass to stores). The stores copy to go with goods destined for stores, and all other copies passed to material control for distribution.

Goods Inwards Inspection Personnel - Duties.

1. To establish that goods received are as ordered(are they what we ordered)?

2. To check that goods conform to specification.

3. Endorse GRN copies, noting reject quantities and reject note numbers accordingly.

4. Pass materials and paperwork back to goods received clerk.

Store Keeper - Duties.

1. To receive goods from goods inwards clerk accepting the correctness of the information shown on the GRN copy (do not accept materials without the stores copy GRN). There will be no need to count items or check in any way.

2. Place materials in the appropriate bin or kit.

3. Pass stores copy GRN to materials controller.

Materials Controller - Duties.

1. Pass stores copy GRN and suppliers paperwork, together with goods inwards copy of the purchase order, when

completed, to the stock control clerk.

2. Attach order originator copy to the order originator copy purchase order, for progress use. (where the order has not been raised/progressed by the materials controller pass GRN copy to order originator.

3. Pass account copy to accounts office.

Stock Control Clerk - Duties.

1. Enter GRN details onto stock record cards and amend records accordingly.

2. Cost delivery and enter value onto weekly perpetual inventory records.

3. File Suppliers paperwork in alphabetical order.

4. File stores copy GRN in numerical order noting date entered onto stock in store ledger box.

Purchase Ledger Clerk - Duties.

As detailed by accounts manager.

5) Appendix 3:1. Acknowledgement of Order.

COMPANY NAME	ACKNOWLEDGEMENT OF ORDER PRODUCTION INSTRUCTION PROD. CONTROL/SHOP FLOOR	Company Address Telephone Telex

VAT Registration number	Company Registration number

Your order no: Dated:	Date	Our order no: P /

Invoice Address:	Consignment Address:

Quantity	Description	INSTRUCTIONS
		To: From: Material code: Labour code:
		Issue date: Load date:
		Allowed hrs/item completion by
	delivery:	Notes:

PAYMENT TERMS:

6) Appendix 3:2 Production Loading

PRODUCTION LOADING						W/C			
P. No	CUSTOMER	ITEM	BATCH	QTY	M.S.	DELIVERY PROMISED	Q.C. TRAV	HRS	TOTAL
B/F								B/F	
C/F								C/F	

COMPANY NAME PRODUCTION Q.C.TRAVELLER			NO 14120	Allowed hrs this traveller ----------
P	Customer Item No Qty Required	QTY THIS TRAVELLER	ISSUE DATE	ASSY PART COMPLETE COMPLETE

	PROCESS OPERATIONS	OP'TOR	NoOFF	DATE	QTY ACC	QTY REJECT	Q. C. COMMENTS	INSP SIGNATURE	DATE
1	CABLE ASSEMBLY								
2	TERMINATION (1)								
3	TERMINATION (2)								
4	INJECTION MOULDING								
5	RESIN POTTING								
6	ADHESIVE BONDING								
7	ASSEMBLY								
8	OTHERS								
9	SERIAL NUMBERING								
10	REWORK (QUOTE TIME) --------HRS -------MIN								

FINAL INSPECTION NOTES	FINAL INSP STAMP DATE & SIGN	FULL SPEC(TO BE QUOTED ON WES NOTE)

No SHIPPED	WES No	DATE SHIPPED	SERIAL NUMBERS PACKED (indiv)	SIGNATURE

8) Appendix 3:4 Purchase Order

COMPANY NAME	PURCHASE ORDER A/	Company :- Address Telephone Telex

Account	Date:	routing: WIP STK / P /ORIG
To:	deliver to:	

Item	Qty	Please supply the following	Date Req	Unit Price	Total Amount

Your telephone contact is	For and on behalf of COMPANY	TOTAL this Order	
reference			

Registered Office as above Registration No

AMENDMENT TO PURCHASE ORDER

COMPANY NAME	AMENDMENT TO PURCHASE ORDER A	Company :- Address Telephone Telex

Account Ref No:	Date :	routing : WIP STK/P /ORIG

To :	Consignment Address :

Item	Qty	Description	Date Req	Unit Price	Total

Your telephone contact is	For and on behalf of COMPANY	TOTAL this Order	

Registered Office as above Registration No

9) Appendix 3:5 Purchase Requisition

Company Name PURCHASE REQUISITION

PR

ORIGINATOR A

MATERIALS CONTROL,
PLEASE PURCHASE ITEMS AS FOLLOWS :-

Date B

Account Ref.No C

routing WIP
STK / P D / ORIG

MATERIAL CONTROL USE ONLY

Item	Quantity	Description	Date Required	ORDER No	Date Available	Unit Price £ p
E	F	G	H	I	J	K

Consignment Address :

L

Authorising Signature M

(Manager)

10) Appendix 3:6 Goods Received Note

ORDER ORIGINATOR COPY

COMPANY NAME

GOODS RECEIVED NOTE

FROM A

SUPPLIER REF:

GRN / 2952

date:

WES ☐ FED ☐

GOODS	QUANTITY			PACKAGES	OUR ORDER No	FOR OFFICE USE	
	ORDERED	RECEIVED	DIFF			RATE	£
B	C	D	E	F	G		

CARRIER	RECEIVED BY:-	GOODS INSPECTION REPORT:-			
H	I	J			
Purchase Req No: K	Noted on Progress Chart:- L	BIN No:- M	STORES LEDGER	INVOICE No:- N	A/C's REF:- O

3 Part NCR Form

Order Originator Copy

Stores Copy

Goods Receiving Copy

11) Appendix 3:7 Discrepancy Advice

CUSTOMER COPY

COMPANY NAME

DISCREPANCY ADVICE

No *1451*

DATE .....

RE OUR ORDER No

.....

TO

SUPPLIER .....

Your Advice Note No .....

Method of Shipment Air
Road
Rail
Post

Shipper .....

Date Received .....

Qty Ordered	Qty Received	Qty Damaged	Qty Short	Qty Surplus	Remarks
A	*B*	*C*	*D*	*E*	*F*

FOR INTERNAL USE ONLY

PREPARED BY (Signature) ..... *G*

ACTION REQUIRED BY SUPPLIER

H

3 Part NCR Form
Customer Copy
Goods Receiveing Copy
Sales / Purchasing Copy

12) Appendix 3:10 Monthly Shortage List

MATERIALS SHORTAGE LIST

SHEET _____

FACTORY _____ MONTH _____ WEEK COMMENCING _____

P. No	TRAV	CUSTOMER	DATE PROMISED	ALLOWED HRS	MATERIAL SHORTAGES (M/S)								
					BIN NO	DESCRIPTION	QTY SHORT	ORDER NO	DATE PROMISED	DATE DEL	DATE CLEARED	DATE KITTED	REMARKS / ACTION BY

13) Appendix 3:11 Weekly Production Schedule

WEEKLY PRODUCTION SCHEDULE

P.No	TRAV	CUSTOMER	CUSTOMER REQ'D DATE	ITEM	BATCH	QTY	HRS	KITTED DATE	1ST INSP	POT & PLUG	FINAL INSP	DESPATCH DATE	TOTAL PRICE		LOADED W/C

14) Appendix 3:12 Job Kitted List

JOBS KITTED LIST

UP-DATED / /

P. No	CUSTOMER	TRAVELLER NUMBER	HOURS	DATE LOADED	DATE KITTED	DATE ISSUED

1) INDEX OF SALES MANUAL.

(* indicates that this section is given in full in this Appendix).

Sales Official File Index

DISTRIBUTION

All amendments/inclusions are originated from mater file.

MASTER	Sales Manager
COPY 1	Sales Office Supervisor
COPY 2	Senior Sales Clerk

2) Processing of Orders. Section 1.

1. On receipt of Order from Customer check that any copies are duplicates and not additional orders by checking order no. on each sheet.

1A. Take a copy of the original and after checking that all the details required to acknowledge same are on copy (e.g. no. clauses referred to overleaf) and that order has been date stamped on receipt, sign the original and pass on to be entered into Sales Ledger, make out a new customer order file, clip the Purchase order master to the file RHS and label the file accordingly i.e. Customer's name & order No. and file in the relevant filing cabinet in alphabetical order.
N.B. A check must be made to see if a file has already been made because of a phoned (handwritten acknowledgement) or telexed order. (See Receiving/Accepting orders).

1B. Retain the photostat copy of the Purchase order. Check orders pending or general file for quotation or relevant sales enquiry slip.

1C. Check details of order, Customer drawing no. - Part No. SD issue level - Delivery - Payment Terms - and particularly quantity ordered against quotation.

1E. If customer is unknown or does not order regularly check credit worthiness with credit factoring list.

1F. If customer is not specified on credit factoring list, determine from delivery whether a proforma invoice is appropriate to ensure availability of goods. If delivery is not critical, get Banker's name and address and pass to Accounts along with request for "Specific order approval" (SOA).

1G. New Product Identification.

Where an order is received for a product not previously produced, an SD (Sales Description) must be raised by Sales. Sales having ensured that we have not previously manufactured the product, request a new no. from engineering and in turn give product/customer description, and customer drawing no. (see SD Generation - section 4).
On receipt of typed SD check original, ticking off appropriate details and pass both to Sales Manager for approval signatures. These must be logged in SD index file, both when new or issue level raised. When issue level raised for SD, previous issue must be filed in "PREVIOUS ISSUE SD FILE".

This information to be passed to engineering within shortest possible timescale (handwritten if necessary) along with estimated time and that the MS (Material Schedule) will be required - sensitivity to customer requirements, other customers current requirements and

material availability to be appreciated. This information to be accompanied by a Ping Pong request - Sales copy to be filed in "SD requested file".

Copies of SD to be produced.

1 - to Engineering - with Ping Pong.
1 - to Inspection.
1 - to Sales Manager duplicate file (where SD or issue level raised).
1 - to accompany Ack. of order.

1H. Acknowledgement of Order.

Using form attached fill in P. as P xxxx (to be allocated at Typing stage) Sales Accounts code/ Sales Rep's initials. Example sheet 1 H (i).

1J. Indicate invoice address, delivery address and purchase dept. address (if different from previous as per example H 1, along with customers order no. and the actual date of the order.

1K. If customers known, check that their address is identical to that in C.F. list and that credit limit is valid for the order, also check stop and refer for current status.

(i) If credit limit valid and customer not on stop and refer list (S & R list) put credit factoring no. only on Ack. of order form, if customer account large, and orders currently being processed, apply to Accounts for SOA on monthly shipments and put this no. on form.

(ii) If credit limit not valid and customer not on S & R list, apply to Accounts for increased credit and S.O.A. for difference on monthly shipments for particular order.

(iii) If credit limit valid and customer on refer only, apply to accounts for S.O.A.

(iv) If credit limit valid and customer on Stop, Process order, without S.O.A. after checking with Sales Manager customer viability.

(v) If credit limit not valid and customer on refer apply to Accounts for increased credit and S.O.A.

(vi) If credit limit not valid and customer on stop, Accounts to be advised and order not taken without Director approval. Note. Proforma could be used in certain cases only with Sales Manager approval. Note. All SOA's to be applied for at the specific time per day to enable accounts to ring CF once only. Nominated time 1.15 - 2.30.pm.

1L. Write out quantity ordered against Company description for goods against price. If this value exceeds £1·5K notify Sales Support Controller for "acid test" cost sheet; this to be done by use of additional copy of P. Instruction with words "1·5K order" written on. This description must contain full Company code AND Company part no. which is a unique code only requiring length L to be added in the case of harnesses.
Where an SD is used for description this must be accompanied by its appropriate issue level.
Note. It is essential in the case of STOCK HARNESSES to also quote bin no. for the specified length. This enables production to ship immediately.
Where a customer drawing no. or part no. is appropriate this must be added on "(firm's name) drawing no. issue refers". Where more than one item ordered these should be listed ALPHABETICALLY. If more than one account code required this should be referred to as a separate P No.

e.g.

item (a) / 100 meters/ FibaTEK ribbon cable
MPV 20/7-0.12(2)
part no. 360 1205

item (b) / see P xxxxx / 015/RERB.

Similarly if an item is for other party of Group this should be treated similarly.

1L. (ii) See sheet A.37.

1M. Production or Customer Notes.

These must be situated neatly below description and numbered. For example all ribbon and multiflat orders must contain the following phrase.

(i) guaranteed length of each piece to exceed X meters minimum.

Read Purchase order carefully and indicate any requirements specified e.g.

(A) Invoice & Advice notes in duplicate.
(B) A separate advice note to be sent by post to the consignee.
(C) Free issue material.
(D) Relevant inspection requirements such as:- Certificate of conformance UL certification etc.

1L (ii) Cross ref to quote no.

On P instruction under description write in:-

quote no:- XXXX dated XXXX refers

This to refer also to telex quotes

1L (iii) Telephone no:-

Telephone of department most likely to progress order to be included under payments terms.

e.g. Purchase Department - XXX XXXX.

1L (iv) Quote "Bible" to be updated by putting P no on copy plus date received plus quantity of individual type plus associated value plus SD no when new one raised.

Processing of Orders.

1N. Calculate total price excluding VAT and delivery charges.

1P. Indicate payment terms.

(i) Refer to CF list for approved accounts
(ii) Where account is not approved see note 1F.
(iii) Agents - strictly Nett 30 days.
(iv) Overseas order - check with Sales Manager.

1Q. Point of Delivery. "Carriage charged to (customers name)
Ex. works - Any order less than £200 value
C.I.F. - "Carriage paid by normal carrier" or any order greater than £200 unless special conditions occur e.g. low value item - awkward packing - check with S.M.
F.O.B. - "Carriage charged to (customer name)
Where customer specify particular shipping details e.g. SECURICOR 'A' SERVICE
EX. WORKS - See 'A' to be charged to (customer name)

1R. Typing and distribution of Ack. of order documents.

(i) Pass to typing where a P No. is allocated from the book.

(ii) Type all information on all copies except prod. Instruction copy (top copy) where the prices are omitted. Type envelope to purchase dept.

(iii) Typing must be checked by ticking original copy at all salient points e.g. date, order no, addresses, prices, purchase dept. address on associated envelope.

(iv) separate papers and send Prod. Ins. and Sales copy (green) to Production with the following information hand written on each copy.

1.CUST.REQ	
2.SALES QUOTE	
3.PRODN. OFFER	
REASON	ACCEPTED

Also indicate BOC - £ - Actual BOC - (no mark ups)

Ribbon/Cable - £

Assembly HRS -

Moulding HRS -

Processing of Orders.

This information to be obtained from STD Product Cost File or SD Cost Build File. Prod. Instruction, green copy, invoice copy passed to Sales Office Clerk, for hours logging in day book plus P. No. and order value against account code. Prod. Ins. & green copy with date sent added in bottom r.h. corner to Prod. Control. Accounts copy to accounts.

1R. (v) All orders requiring Engineering Department action (all new SD orders, all amendment of SD orders, all reject harness orders,) should have a copy of the Prod. Instruction Acknowledgement of Order routed directly to engineering. Prod. Instruction copy and green sales copy should state "copy to Engineering - date -". At the time of despatch of the Engineering copy the green copy should be initialled alongside the date for check purposes.

1R. (vi) On receipt of the green copy from Production check that delivery offered will be acceptable to customer requirement and if not, refer to Sales Manager. A check should also be made to ensure that Production Control signature is indicated in PRODUCTION OFFER BOX.
A check should also be made that on all 015, 016, 001, 025, 007 harnesses and 004 jobs that a traveller number is indicated by each item.
If delivery promise deemed acceptable, sign ACCEPTED BOX and write delivery schedule on customer copy, PAO copy and distribute as follows:-

PAO Copy - Production Control
Customer copy, Green copy, Envelope, 2 back up sheets, Price Build up - Sales Manager signing tray.

When signed, the customer copy is sent out after checking that £1·5K acid test sheet has been approved where appropriate. All other papers passed to Sales Office Clerk for checking original information against green copy prior to filing with original customer order on right hand side of file.

1R. (vii) PROCESS OF ORDERS - "ONE TIME PART ENGINEERING TOOLING CHARGE".

Any separate tooling charges on an acknowledgement of order must be photostated and passed to A/C dept with a handwritten Instruction beside relevent item -" please invoice".
Copy of Instruction to A/C dept to be filed in Customer Order file to indicate action taken.

1S. AMENDMENT TO ORDER.

Follows procedure applicable to Ack of order

including

1S. (i) AMENDMENT NO. _____ Dated._____

must be typed at top of sheet

AND

Reason for amendment must be included on P. Instruction:

e.g.

"Quantity amended from 52 pcs,

Total order value reduced from £10,052

1T. CANCELLATION OF ORDER

"CANCELLATION Dated _____" MUST BE TYPED IN RED on P. INS. and appear on all copies. Copy must be sent to customer. Any WIP must be considered before accepting cancellation. This to be authorised by Sales Office Supervisor.

1U. Sales Day Book.

Reduction in Order Intake must be put through the book for amendment and Cancellation in red.

Revised. 1.8.80.

Example Sheet 1 H(i)

Yr ORDER No DATED		
INV ADDRESS	PURCHASE ADDRESS	DEL
CREDIT FACTORING No		

QUANTITY	DESCRIPTION	UNIT PRICE
	TOTAL	

PAYMENT TERMS	POINT OF DELIVERY

3) Receiving and Accepting Orders. SECTION 2.

2A. A written purchase order on customer official form follow procedure for Order Processing.

2B. Telexed Orders. An order can be treated as actionable only where relevant authorisation signature exists - ie Sales Office Supervisor or similar.

The Telex must contain the following details

(i) Customers order no.
(ii) Customers address (if not known previously).
(iii) Name of contact.
(iv) Quantity and description of goods
(v) Delivery requested.

If any of the above points are in doubt e.g. description
(i) If the order is urgent - telex the customer to ascertain correct details.

(ii) If order is not urgent - file papers in customer order file (see 2CB below) until confirmation order arrives.

2C. Phoned Order.

A telephone order will only be accepted if it is to be supported by a written confirmation order from the customer. The order No. should be taken from the customer and recorded. If the customer will not quote order No., file relevant papers in "Orders Expected" file.

a) If Delivery is urgent. - The customer must send a cheque (NB for the order amount, delivery charge and VAT) immediately with an order. If the customer is an approved account we can accept a telexed or cabled order (see above). On no account can orders be shipped to any customer based on solely a telephoned order.

b) If Delivery is not urgent - File relevant paper in the customer order file and await confirmation paperwork.

Where an urgent telephoned order is received from a Regular customer, this can be treated as telexed order only with a signature from Sales Manager.
Note:- Where no confirmation follows a telephoned order, this should be requested not later than 1 week explaining to the customer that we cannot action without written confirmation.

2D. Cash with order

For urgent delivery requirements and orders less than £25·00 a customer cheque can be actioned as a normal

order. This order must be accompanied by PRIORITY stamp where necessary.

Payments terms - "Cash with order"

2E. Proforma Orders.

Accepted from customer who do not have an account with us and require goods before a Credit Limit is likely to be approved.
Process as normal but for payment terms state "PROFORMA"

2F. Reserving Stock for customer order.

Ribbon and Multiflat only.
If delivery is ex-stock on a telephoned order and the purchase order no. is quoted. Sales may reserve the ribbon by quoting to production the customer name and order no.

2G. Manufacture to customer requirements.

This can only proceed with a Directors written approval.

e.g. manufacture of a ribbon or cable in advance of an anticipated harness order with tight delivery schedule. A copy of this instruction to be placed in ORDERS. PENDING file.

Export Stamp Procedures

2H. All export orders with codes e.g. 060-061-065 must carry the export stamp on the Production instruction & Sales copy before being passed to Production.

EXPORT

2J. Priority Stamp Procedures.

Orders with an urgent delivery or have been processed on a handwritten production Instruction must be agreed by the Sales Manager/Production Manager before priority stamp, is used to highlight the urgency of the order.

PRIORITY

4) GENERATION, DISTRIBUTION AND FOLLOW UP OF QUOTATIONS

7. Generation of Quotations.

7A. The Company quotations are typed and sent on a standard numbered form and should be set out as per example 7A(i).
The following information must be contained

(ii) Customer ref.
(iii) Our ref: telephone contact initials/Rep's initials/typist initials.
(iv) quotation date.
(v) Company name, division and name of person. requiring quote.
(vi) Quantity required related to delivery and price.
(vii) Full description of product taking into account the following information :-
- (a) wire specification and colours
- (b) minimum guaranteed lengths
- (c) part nos. SD nos. and issue levels and stock bin no. where stocked harnesses concerned.
- (d) free issue materials from customer
- (e) wiring schedules
- (f) length of free cable and associated tolerances.
- (g) Related data sheets.

(viii) Telephone contact
(ix) Telephone no. (bottom left hand corner)
(x) Payment terms (See exceptions list to Net 30 days).
(xi) Enclosures - e.g. SD, data sheet.
(xii) Point of delivery. (see ack. of order section)
(xiii) Validity period (normally 45 days).

7B. Distribution of Quotations:-

Top copy with associated data sheets plus SD's (where applicable) after signature to customer.

Green copy with build up plus any associated correspondence into customer file (and orders pending if guaranteed within 1 month).

Field Sales copy - to rep.

Yellow copy to quote file. This is to be updated with P. No as per procedure 1L (iv).

7B1. TELEXED QUOTATIONS.

Should be used only where time is essential in quoting eg overseas.

(Note a telex is not a legally binding document)

Information as 7A (ii) should be contained except (iii), (viii), (ix), (x), (xi).

Note a telexed price should be followed up by a written note. This is essential on quotes greater than 1K.

7B2. Telephone Quotes.

Information as quoted should be documented on Sales Enquiry form and followed up by written quotation. If necessary a copy of Sales Enquiry should be sent to the rep to follow up before quotation is effected.

Note: the importance of customer Dept, and persons initials title and telephone no.

Section 7 Quotation

COMPANY NAME	QUOTATION	Company :- Address Telephone Telex

VAT Registration number	Company Registration number	
your ref	our ref	date
	Dear Sirs, Further to your enquiry referenced above we have pleasure in submitting our quotation as below	

Quantity	Description	Unit price	Total price

	Conditions : Valid days from the above date. All prices exclusive of VAT. Company Standard Terms and Conditions of Sale apply. (see overleaf) Delivery :	your telephone contact is for and on behalf of Company Sales Manager

	PAYMENT TERMS :	POINT OF DELIVERY FOB CIF EX WORKS
	enclosures :	

7C.

MEMO: SALE PERSONNEL.

Quotations - valuation estimations.

1. It is intended to establish for each quotation three measures of business potantial:

   (a) maximum value of quote (max)
   (b) minimum value of quote (min)
   (c) estimated value of likely order resulting from quote (est).

2. Items (a) and (b) assume various quantities/items are quoted. If a single item/qty then (a) only would apply.

3. Item (c) has to be the best estimate by the commercial negotiator in the office involved in the prospect business details - it will therefore not normally be the estimator.

4. The information will be recorded in the rubber stamp below placed on each copy quote:

£
max.
min.
est.

The stamp may be used more than once on a quote in special circumstances where differing items are for convenience included on the same quote and have different 'likely resulting order' potentials.

5. The monthly sales office statistics will be supplemented in future by an analysis:

   Total O/S business on quote -max
   at month end -min
   -est

   This will necessitate removal of 'matured' (to an order) or 'discarded' quotes from the quotes file on a regular basis so that at the month end the 'real' O/S business is known.

6. As a one time start up exercise it is necessary to up date the current outstanding valid quotes in the above manner.

7. The first such 'O/S quote" statistic will be available at the end of August 1980.

MANAGING DIRECTOR.

Follow up Quotations.

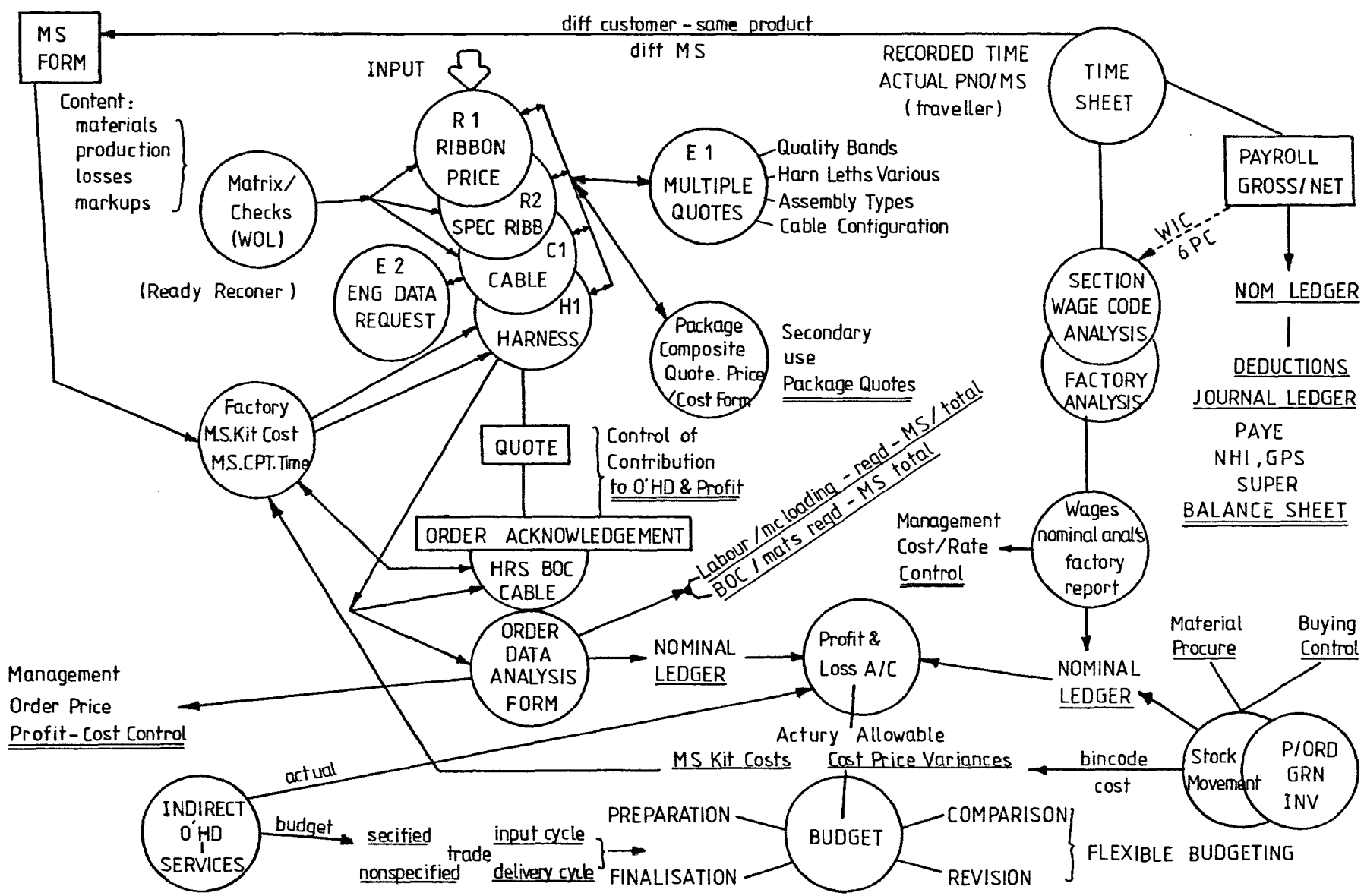
The following points are essential though a individual style can be adopted.

To speak to the person to whom the quote was addressed.

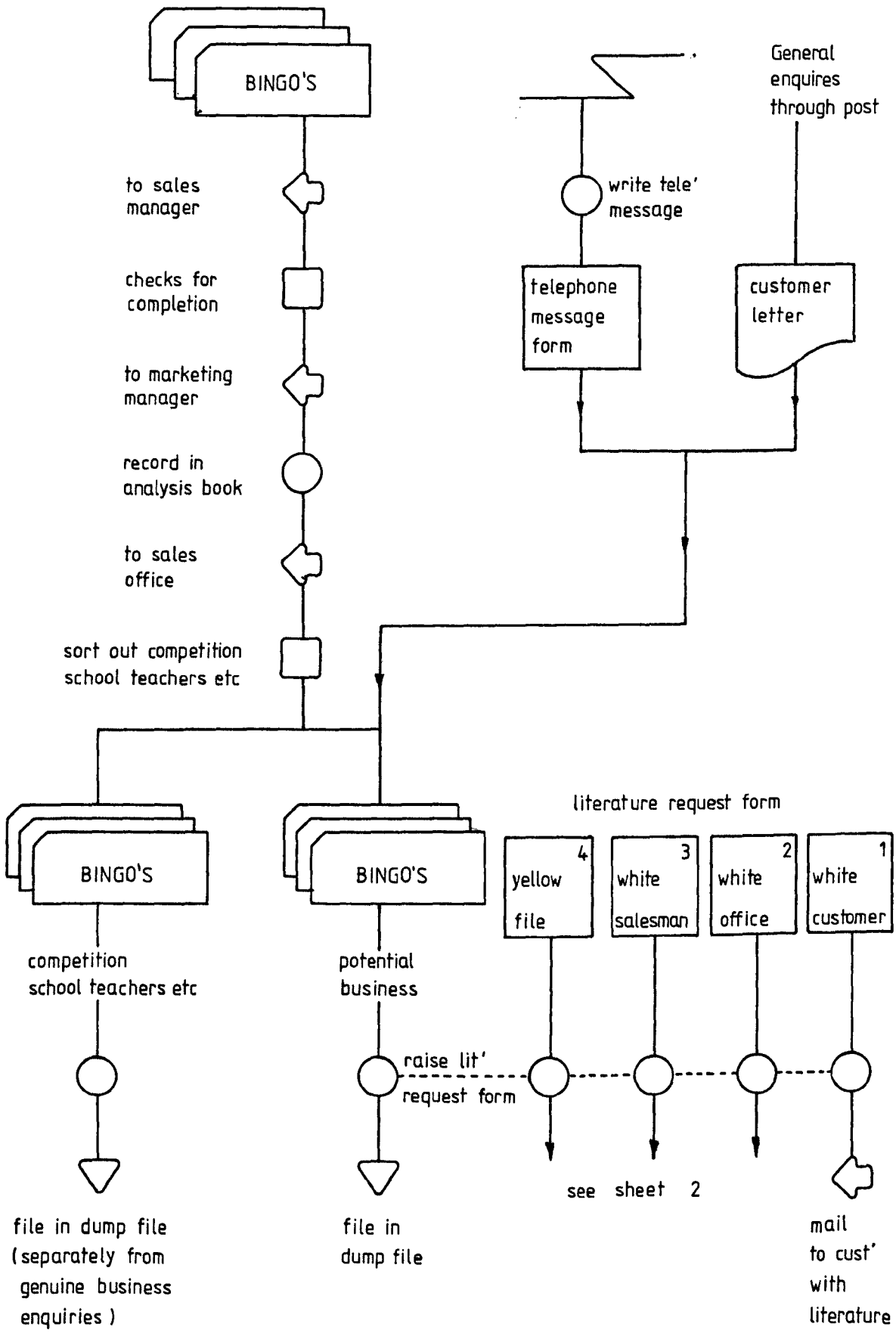
Did you receive our quotation dated ?

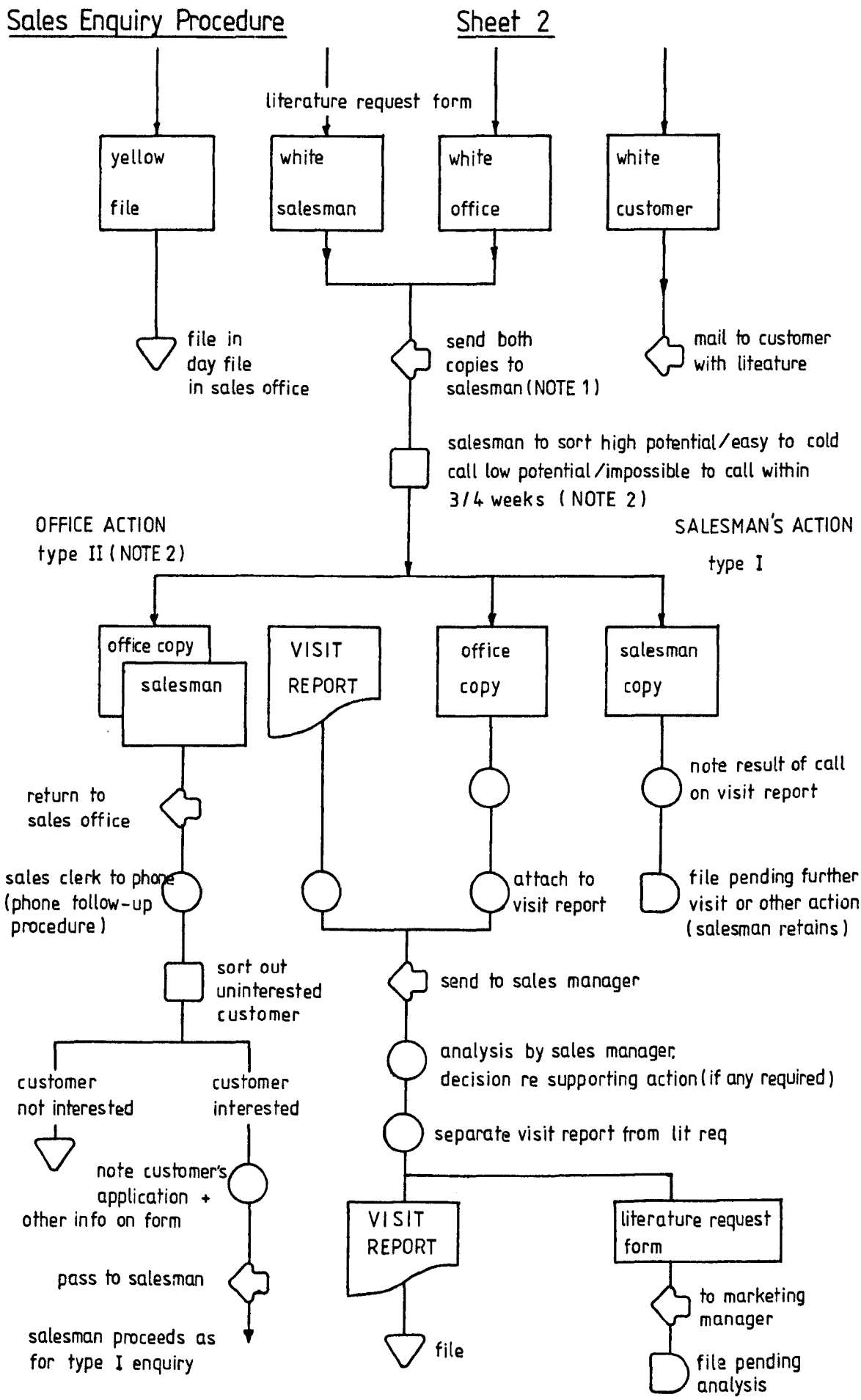
- Yes
  - Was it of interest to you?
    - Yes
      - Will you be placing an order.
        - Yes
          - When is that likely to be
            - Do you require further information at this stage
    - No
      - Can you tell why
        - your price or del.were not acceptable
          - Would you like us to look at quotation
            or
            Would it be possible for our rep to see you regarding this?
            - Yes
              - Make provisional visit
            - No
              - Is there anything else we can do at this stage.
- No
  - I'm sorry, I have a copy here. May I check your address and dept. Is this application still valid? If so send copy.

MANAGEMENT CONTROL FLOWCHART.



Sales Enquiry Procedure Sheet 1




Sales Enquiry Procedure
Sheet 2
literature request form
yellow file
white salesman
white office
white customer
file in day file in sales office
send both copies to salesman (NOTE 1)
mail to customer with liteature
salesman to sort high potential/easy to cold call low potential/impossible to call within 3/4 weeks (NOTE 2)
OFFICE ACTION type II (NOTE 2)
SALESMAN'S ACTION type I
office copy
salesman
VISIT REPORT
office copy
salesman copy
return to sales office
note result of call on visit report
sales clerk to phone (phone follow-up procedure)
attach to visit report
file pending further visit or other action (salesman retains)
sort out uninterested customer
send to sales manager
analysis by sales manager, decision re supporting action (if any required)
customer not interested
customer interested
separate visit report from lit req
note customer's application + other info on form
VISIT REPORT
literature request form
pass to salesman
to marketing manager
salesman proceeds as for type I enquiry
file
file pending analysis

NOTE 1.

Daily mailings will be made to salesmen.

NOTE 2.

The objectives are (a) to ensure that a strong, positive sales approach is adopted, and (b) to enable better territory management and route planning, also (c) in some cases cold calling may be quicker and more effective than telephoning.

The enquiries should be sorted into (I) those for personal follow-up and (II) to be returned to sales office for sales-clerk telephone follow up.

(I) for personal follow up (by telephone or personal visit.

These customers will be geographically situated such that they can be fitted into the next 3 to 4 weeks journey pattern.....or they seem sufficiently important for a personal phone call from the salesmen. MOST ENQUIRIES WILL BE DEALT WITH BY PERSONAL FOLLOW-UP.

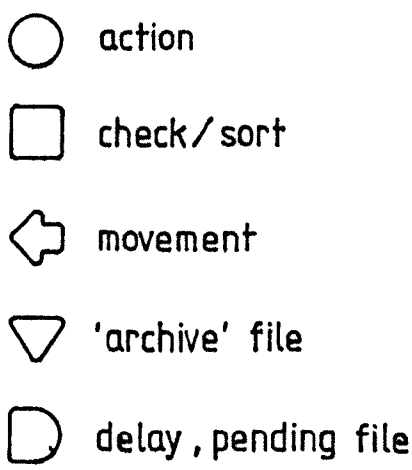
(II) for office telephone follow up. These will mostly be small, "unknown" firms in the extremities of the Salesman's territory.

NOTE 3.

It is important that the sales office marks all telephone numbers on LITERATURE REQUEST FORMS.

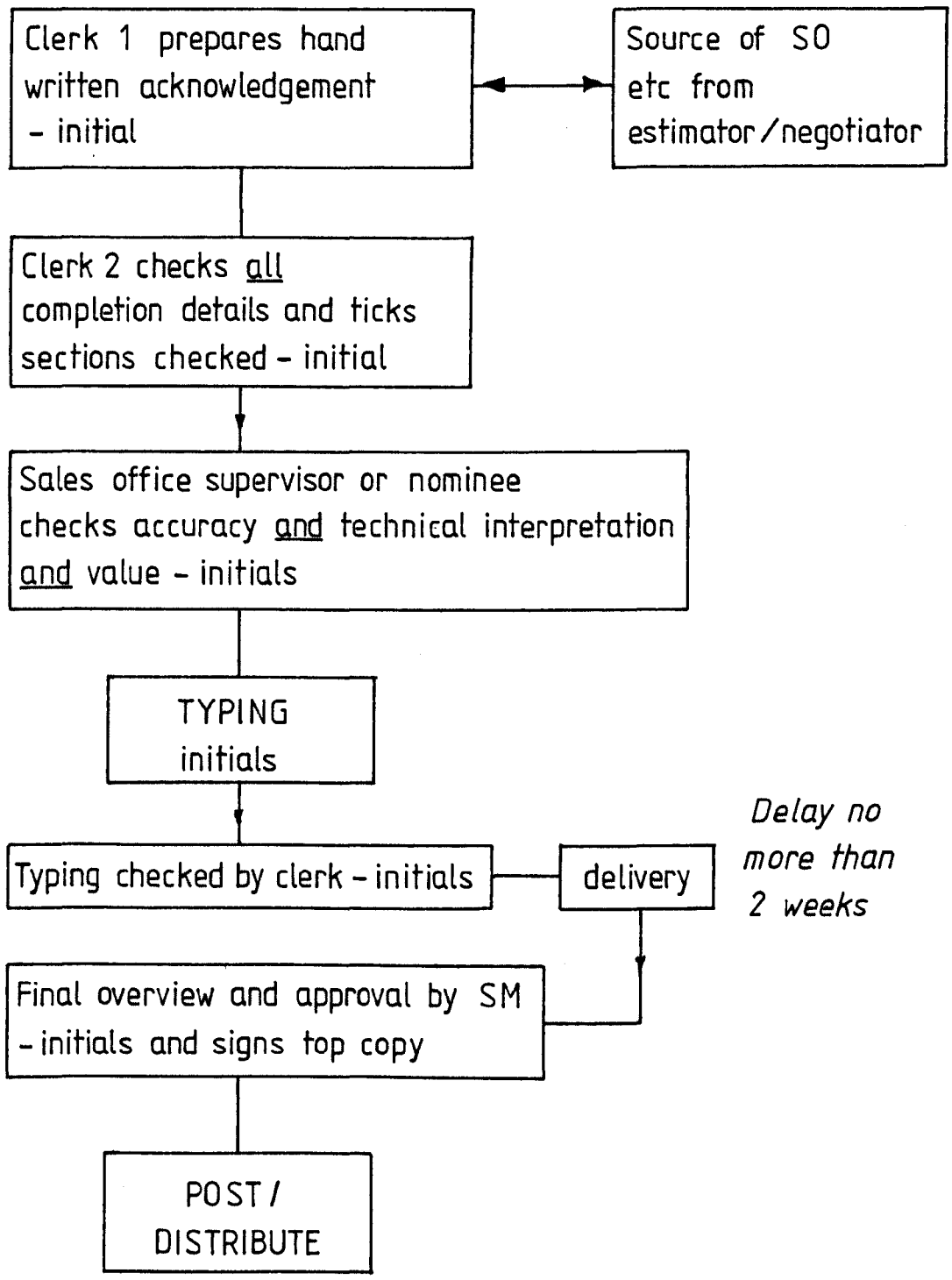
These forms will always be typed.

Key



ACKNOWLEDGEMENTS

Order Checking Procedure Flowchart



Appendix B

Personnel Information Study

Contents | Page

Group A (1980)

Report from Personnel Information Study

PART I. INDUSTRIAL RELATIONS.

a) REMUNERATION.

Information Required.	Source	Cost	Value.
Relativities/ Differentials	Wage Agreements internal or NJC D of E Gazette	Time £1.25.pm.	Enables judgement on existing circumstances for labour market and national indices.
Management Policy	Board Meetings formal communication. Informal communication.	Time	Information re; budgetary resources available
Job Evaluation	Job descriptions. Personnel (job holders and managers) O and M Personnel Dept.	Time	Enables objective job evaluation
Trade Unions	National and local pay bids which determine the climate	Time spent gathering information	Measurement of climate
Incentives	Existing situation work study (theory) on group, individual basis. other companies.	Time	Effect on production and as a method of bargaining.

Information Required	Source	Cost	Value
Fringe benefits	Existing Policy (pensions, overtime, car, expenses, etc. other companies Government constraints, T.Us.		Status

b) COLLECTIVE BARGAINING

Information Required	Source	Cost	Value
Legislation	Croners	£25 p.a.	Obeyance of law
Existing Agreements (incl. procedures for avoiding disputes)	Internal and External NJC	Employee's Time Membership of Employer's feds.	"knowing the rules of the game"
Union Organisation	Local, District, National Organisation	Time	Familiarity
Macro-economic Trends	Press National Indices Academics (!)	Staff Time and cost of indices books, etc., STATS.	Tactics

c) LEGISLATION.

Information Required	Source	Cost	Value
Legislation	Croner's Law Reports	£25 p.a. Up to £16,000 for unfair dismissal claim	Enlightenment
Codes of Practice Disciplinary and Grievance Procedure	ACAS	As above if code is poor. Could be poor working climate	

PART II EDUCATION, TRAINING AND DEVELOPMENT

a) TRAINING POLICY.

Information Required	Source	Cost	Value
Business objectives of Company. Manpower Plan (dealt with separately)	Company + Training Board The Plan	Time Training Levy	Identifications of training needs and general development

b) APPRAISAL AND INFORMAL COUNSELLING.

Information Required	Source	Cost	Value
Staff appraisal policy + procedure. Knowledge of Dept.+ individual objectives+ attainment. Inter-personal Relationships Personnel records Working Relationships	Formal guidance and interper-sonnel cues	Time personnel may be unaware of Co. require-ments ineffective work, unproductive work	Organisational and Individual Development.

c) ORGANISATIONAL DEVELOPMENT

Information Required	Source	Cost	Value
Perceived need via organisational problem Data collection in this respect.Feedback + discussion	Stats. Inter-Co. reports.	Time and systems employed specialist staff	Allows for realistic organisation change. Appropriate strategy can be formulated.

d) JOB DESIGN

Information Required	Source	Cost	Value
Company policy/prop-osed changes. Changes in technology.	Meets + written guidance	Time Cost of written guidance	Identification of Training and recruitment needs. Flexibility + efficiency.
Job descrpt. Accdnt) analysis.Job Anlsys) Skills,etc)	Company records		
Tus. Motivation & Attitude Theories	Interperonnal ques + textbooks		

PART III WORKING CONDITIONS, EMPLOYEE SERVICES

a) HEALTH + SAFETY

Information Required	Source	Cost	Value
Current and New Legislation	Various acts of Parl. Croners.	£20 pa.	Ensure company remains within guidelines.
Trade Union Requirements	Meetings Discussions	Time	Ensure smooth exchanges
Company Policy	Policy		Guidelines
Factory Policy	Policy		Guidelines
Factory safety hazards	Accident feedback Committee discussion		Prevention of accidents and abeyance of law.
Insurance Co. Requirements	Insurance Co. Reports	Cost of reports (if applicable)	as above. reduction of claims.
Knowledge of safety health legislation (forms, registers, code of practice,etc.)	H +SE	Reputation	Compliance with requirements.

b) SALARY AND WAGE ADMINISTRATION

Information Required	Source	Cost	Value
Existing Salary + Pay Policy Information on Alternative Systems	Payroll Employers Assoc. IPM Company contacts	Possible Savings in Long Term	Saving Company Costs. Improving employee services.

c) PENSIONS

Information Required	Source	Cost	Value
Government scheme Alternatives	D. of E. finance Insurance Co. BIM, IPM & others.	Time Lowering labour Turnover.	Control against proposed system Advice to employees. Improve employee services.
Pension policy	Handbook	printing	Credibility. Advice.
Employees eligible to join	Payroll personnel records	Time lost spurious claim Pensions contri-bution,savings.	Giving correct advice.
Age + Health	Medical Dept. Personnel	Time. Tel.cost	Balanced Pension Membership

d) PERSONNEL RECORDS

Information Required	Source	Cost	Value
Personnel + factory absenteeism stats.	Departmental absenteeism stats.	Time	Ensure consistency in disciplinary procedure. Manpower planning
Turnover stats.	Personnel records	Prevent unfair dismissal up to £16,000 pa. Provide saving.	Identifying high turnover areas which affect remuneration. Satisfy Government info. requests.
Personal details, history, age,sex,etc.	Personnel records	Time	"
Accident Statistics	Accident book Health & Safety Committee. Health & Safety Rep. General Register.		Satisfy Government info. requests.
Factory Layout - Fire plan	Fire Brigade	Nil	Insurance cost. Safety of personnel.
Training Records	see training.		
Vacancies	see Manpower.		

e) COMMUNICATIONS

Information Required	Source	Cost	Value
Formal structure of communication	Co. Policy Org.Development	Possible bad will if not used	Company Policy communicated and ensured not misinterpreted less confusion encourages info. feedback.
Information communication	Grapevine	Bad will caused if not identified.	Attempted control, diversion or use of info.

f) SOCIAL FACILITIES

Information Required	Source	Cost	Value
Internal facilities available. Internal management/employee attitudes. Cost of facilities.	Social Committee Comp. personnel accounts.	Depends on company subsidy policy.	Employee relations. Public relations.
External facilities of competitors - trends in facilities	Contacts national trends.		

PART IV MANPOWER PLANNING

1. INTERNAL INFORMATION

Information Required	Source	Cost	Value
a) Information on jobs:			
Company policy, number of jobs, temporary or permanent, daywork or shiftwork, dept. or section, job title and organisational level, skill/education/knowledge required.	Meetings/memos/ JOB DECRIPTION JOB ANALYSIS	Saving in avoiding skill/knowledge shortfall	Long term planning. Manpower gap identified. Company Co-ordination.
b) Information on people:			
No. of people,temp./perm, shift/daywork, skill/ education level, grade/ salary, sex, age, length of service.	PERSONNEL STATISTICS	Time Training costs	Manpower plan identified. Renumeration policy info-identified. Reduction in recruitment/selection costs.
c) Information on leavers:			
No. of leavers, reason for leaving, date of leaving, age,sex,amount of service on leaving.	LEAVERS REPORTS & INTERVIEWS.	Time	Identifying personnel problem areas.

Information Required	Source	Cost	Value
d) Overtime and Contract/Agency Workers:			
Occupation, hours, salary, reason for use.	STARTING PROCEDURE, PAYMENT BREAKDOWN, INFORMATION DISCUSSION WITH USER MANAGER.	As identified by breakdown.	Economies.
e) Vacancies:			
Length of time unfilled if fill by agency staff why?, why vacant?, grade /wage, dept, temp/perm, advertised or not.	PERS. RECORDS.	Time	Identifying problem vacancies. Identifying advertising costs.

2. EXTERNAL INFORMATION

Information Required	Source	Cost	Value
a) Education/trends forecasts:			
School leavers, O'/A' certificate leavers, Supply from technical college by subject, future trends.	Colleges, Universities, D of E Gaz.	Gaz. £1.25 pm.	Assessment of potential labour market.
b) Labour Market. National/Regional/Local:			
Total in market, age, sex growth/decline in market, occupation, shortages and surpluses.	D of E gaz.	Gaz. £1.25 pm.	Mobility of labour.

Information Required	Source	Cost	Value
c) Unemployment:			
Total unemployed, short time working, sex, age, length of time unemployed, occupation.	D of E		
d) Employers in area:			
Activity of competing employers, growth/contraction of major firms, occupations surplus/demand, future plans, labour/capital intensive.	Local press, Manufacturers federations Informal dinners	Membership of Federations.	Inter company co-operation
e) Migration:			
Employees moving to/from areas, availability of employees in other areas, age, sex, occupation.	D of E Gaz.	£1.25	Product, age, area breakdown.
f) Economic and Political:			
Plans for the region, level of economic activity, regionall/locally national economic trends, govt.policy, investment grant availability, grant availability for expansion.	Local press, Local Govt.Office. Nat. press.	Time.	Potentially cheaper labour land, materials, from grants Forewarning of closure, etc.

Information Required	Source	Cost	Value
g. Information on recruits:			
No. of recruits, starting date, age on starting, temp/perm trial, source and method of entry, sex, occupation and organisational level, skill + education required.	Induction Procedure Selection/Aptitude tests results.	Time	Labour turnover, Sources of certain labour.
h. Information on promotions:			
No. of promotions, temp/perm., shift/daywork, date of promotion, reason, grade/salary and occupation and organisational level promoted from and to, length of service, skill and education level.	Personnel records	Time	Department harmony. Fairness.
i. Absenteeism:			
No. of employees absent, days lost, occupation and organisational level, grade/salary, age, sex, length of service.	Personnel statistics	Time	Distribution of stats. to poor departments as form of motivation.

Information Required	Source	Cost	Value
j) Marketing/Financial Information:			
Capital Investment plan, automation plan, sales campaign, market strategies, centralisation/decentralisation, acquisitions/mergers/selling off, product diversification, financial and profit targets, competitors position.	Board meetings, Internal memos, Company policy.	Time.	The main single determinant of manpower requirements.

Group B (1980)

Report from Personnel Information Study

We used the following process to determine the information requirements of a P.D. A problem that emerged at an early stage was the difficulty of analysing these needs without reference to a particular industry. However, we decided that whilst details would vary, the overall needs would remain the same, irrespective of the various industries under consideration. Now we will go on to how we divided it up.

We broke the information down into 7 categories primarily:-

1) Personal
2) Information in
3) Information out
4) Training
5) Company information
6) Informal information
7) Safety

Under 'Personal' we placed elements such as; sickness, accidents, references, holidays, to name but a few. Under 'Information In' we placed, for example; salary surveys, government legislation, applications pending. Under 'Information Out', notification of redundancies and short-time working, disablement register, training board returns, company reports, etc. Under 'Training' we dealt with apprentices, appraisals, courses, etc. 'Company Information', head-counts, e.g. transfers, etc., absence records, timekeeping, salary surveys. 'Informal Information' - House magazine, employee sales, nursery, social club - informal information is a grass roots contact between the P.D. and the shop floor. 'Safety' - accidents, safety, legislation, security, etc.

We then proceeded to examine in greater detail each category and decided to group them all under the following 3 headings:-

1) Personal.
2) Information Provided.
3) Information Received.

PERSONAL

We looked at the information needed about an individual employee from application to termination of employment, determining the source, content, storage and uses of this information. An example of this is absenteeism and time keeping, the source being departmental records, content being - nature of absence of lateness - storage being in the personal file, uses being disciplinary procedures and also statistical with regard to statistical returns and manpower planning.

PERSONAL INFORMATION

FROM	CONTENT	TO	USES
Interview/ Application Form/ References	Personal Circumstances, Health, Work History, Union Membership	Personnel Records	To Assess the Candidate suitability, and for reference purposes.
Job Description and personnel specification	Details of job details of person deemed suitable for job.	Personnel Records	To give an employee profile
Engagement details (offer letter)	Date starting conditions of employment	Applicant and personnel records	To cover legal requirements and reference purposes.
Absence and Timekeeping	Nature of Absence or Lateness	Personnel Records D.H.S.S.	Statistical,disciplin-ary, manpower planning sick pay, welfare.
Accidents	Details in accident book	Health and safety officer, factory inspector	Legal, insurance, prevention, accident stats.
Terminal Interview	Why the employee is leaving:- dismissal, change of job, redundancy,maternity, death.	Personnel records. production management.	Reference, job restructuring, employee relationships, welfare.

Information Provided

In this case an example is training reports and returns which go to the Training Board and Head Office - uses being, assessment of training needs, manpower planning and labour turnover.

INFORMATION PROCESSING

Information Out:

Subject	To	Uses
Governement Legislation	Internal distribution as applicable	Policy and practice (e.g. safety)
Training returns	Industrial training boards Head Office.	Analysis training training planning manpower planning
Short time redundancy,maternity	Relevant Gov't Departments.	Statutory requirements, rebates, etc.
Register disabled persons registered young persons	Department of Health and Social security	Government information requirements.
Recruitment advertising	Local/national press professional journals	Recruitment
Salary surveys	Head Office Gov't Depts. Other Companies	National/Regional Comparisons.Inter-company comparisons.
Company Reports to employees	All employees	Improve communication. Improve Industrial climate.
House Magazines.	All employees	Improve communications. Improve industrial climate.

Information Received

For example, applicants pending from job seekers, agencies, uses - labour pool. Indices - govt. stats. - uses - wage negotiations, keeping upto date with salaries, trends and legislation.

INFORMATION PROCESSING.

Information In:

Subject	From	Uses
Applications Pending	Job Seekers Govt. Agencies Private Agencies.	Labour Pool.
Production Plans and Sales Plans	Sales and Marketing and Production Management.	Manpower Planning.
Salary Surveys	Group other companies M.S.C. Privateers.	Company salary structure.
Government Stats. and Other Stats.	D.E. Gazette Monthly Digest Employment News Press.	Reference Information.

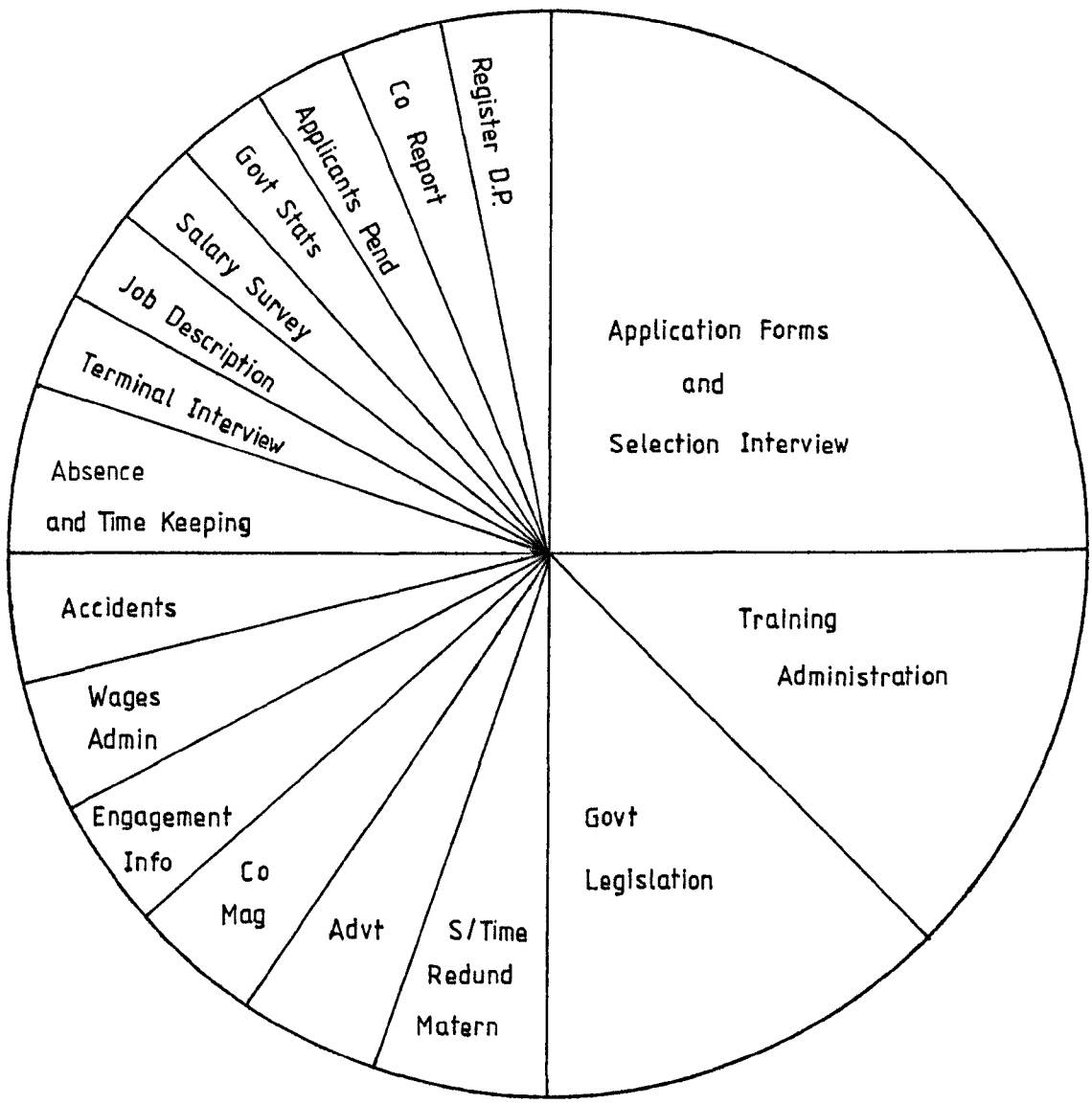
The value of this information to the P.D. is to give a comprehensive profile of the employee and the organisation so that accurate information is readily available about each employee in order that the needs of the company and the employee can be matched to maximise the efficient use of the available human resources.

The information we provide to Government Departments is collated and published in the form of Government Statistical tables for use, ultimately by the Personnel Dept.

Other information we provide, such as house magazines, company reports, etc., are used to ensure that there is good employee P.R. Recruitment advertising is necessary for the efficient functioning of the organisation and the attraction of suitable applicants.

Information we receive - such as salary surveys compiled by other companies, Manpower Services, Commission, etc., is used to keep abreast of salary trends. Production and sales plans are used as an aid in manpower planning. Government legislation and Government Statistics, are of value for reference purposes, maintenance and development of policies and practices. E.g. in the field of safety, employment legislation, etc.

Relative Cost (in man hours per 40 hour week) of Information Requirements



We came up with a large number and variety of information requirements. As we continued to examine them and attempted to categorise them for ease of description and display, it emerged that they were in a large number of cases inter-related. This led us to abandon our initial seven categories and narrow them down to three. The most comprehensive information was available for the individual employee. The information requirements of the Personnel Department need to be seen as a whole rather than in isolation.

Group C (1980)

Report from Personnel Information Study

NOTE: Due to personality conflict within the group the written report produced was disjointed. It has been produced in this section from a series of scribbled notes produced by individuals from this group.

OBJECTIVES OF KEEPING OR GAINING INFORMATION

Formal: 1. To ensure compliance by organisations to the legal constraints imposed by legislation.

2. To enable organisations to effectively plan monitor and control their employees both for current and future requirements.

Informal: To ensure the smooth running of an organisation by co-ordinating and advising on all matters with personnel implications.

Noted importance of cost.

Manpower Planning
Recruitment and Selection.
Conditions of Employment.
Unions.
Training.
Health, Safety and Welfare.

Cost, Sources, formal information, value.

1) Manpower planning.
2) Health Safety and Welfare.
3) Conditions of Employment.

Man.Plan. Jenette.
Ind.Training. John.
Cond. of Employment Sheena.
Recruitment and Selection. Clive.
Unions. Karen.
Conclusion. Jenette.

Agency works more expensive?

Recruitment and Selection.

There are two areas which will generate a need for recruitment.

1. The movement of staff to higher jobs or out of the company.
2. Planned expansion of the organisation normally the requirements of which will be detailed in the manpower plan.

Before automatically recruiting it is important to consider the reason for the replacement. Also to examine the reasons why people leave the organisation. Information required would include:-

a) Start and leaving statistic, by department, age, skill, wage. This may highlight a problem area.

b) A leaving interview would help to determine why a person left and may again uncover a problem.

Job Vacancy.

In planning the recruitment it is vital to gain sufficient information about the position, to be filled. e.g.

1) A job description or personnel specification.
2) What the manager of the department requires.
3) The people and environment within which the incumbent will have to work.
4) Salary and conditions of employment of the post.
5) Opportunities for advancement.
6) Any particular skills or knowledge required.
7) The type of individual required.

Finding Suitable Candidates.

Once all possible information has been gathered about the requirements, the method of finding such a person need to be explored.

Information required at this stage is:-

1. Have we anyone suitable within the organisation.
   Consult - personnel records
   - management development system
   -departmental managers and supervisors.
2. Where do we need to advertise externally?
   Consider- how effective is the local press
   - what professional journals would the required individual read.
   - what consultants are available.
   - what previous experience have we had with the above areas.
3. How scarce is the individual we require?
   Consult - Government statistics.
4. What is the market value of such persons.
   - Government statistics.

Selecting Candidates for Interview.

Prior to the interview as much information as possible should be gleaned about applicants. This can be done by sending out application forms which ask for the sort of information required. Careful scrutiny will ensure only suitable candidated are interviewed.

Interview Technique.

A standard technique based on the seven point plan or similar will ensure that all candidates are given the same opportunity. Aptitude testing would check that candidates have any relevant skills required.

Any recruitment and selection will need to take into consideration the planned development of the company, the market situation at the time and any other wider factors.

Manpower Planning:-

It is the purpose of manpower planning to ensure cost effective manpower usage by monitoring manpower distribution against predetermined budget levels. To carry out this function effectively it is necessary to maintain accurate manpower records and obtain related information, for example to comply with Government legislation in such areas as the, disabled persons register and returns for the D.O.E. Manpower planning as a function is also initial information in the area of succession plans, recruitment activity (planning and budgeting) and the assessment of training needs.

To acquire manpower planning information there is a need for the following:-

a) Budgets - A manpower plan by department for the coming year, based on the existing headcount, and planned development. Budget information is useful again in the planning and budgeting of training and recruitment.

b) Personnel Returns - Monthly statistics on the distribution of personnel taken from Personnel records.

1) These will be used to monitor the actual headcount against the budget, to assess cost effectiveness (i.e. production against manpower)

2) These stats. could also show personal details such as employment with first aid qualifications and their locations.

3) These stats. can also show areas where recruitment has exceeded the planned budget and which may therefore require further training plans. These stats. will really show variation against budget and their usefulness is solely related to that.

c) Labour Turnover Analysis - Collated periodically from an anlysis of leavers and their reasons for leaving may bring to light areas with management problems or generally poor conditions of employment which may be subsequently reconsidered.

d) Absenteeism records - Maintained to calculate,

1) Cost of absenteeism, areas of high absenteeism which again may reflect I.R. problems -

2) This info. may also be useful when production targets are not reached although manning levels have been maintained (i.e. manpower budgets filled)

e) Employees approaching retirement. Information of the numbers of employees and their length of service. This may be useful to

a) plan firm recruitment
b) Long service awards.
c) pension details
d) retirement counselling, gradual retirement.

Conditions of Employment

Information is needed
1) To ensure a consistent approach to employee relations.
2) To avoid unnecessary Industrial Relations, problems.
3) To attract the correct calibre of applicants and to keep good employees.

What information do we need?
1) To know the legal requirements of Contracts of Employment (1978 Employment Protection Act). This can be found from Croners Guide and DOE leaflets.
2) To know Union agreements on such matters as-holidays disciplinary procedures - greivances.
3) All employment legislation on such matters as maternity leave, unfair dismissal, redundancy, can be found from Croners Guide.
4) To know how we compare with other companies in the same industry and locality on pay and benefits i.e. we need to know how competative we are. This information can be found on an informal basis by personal contact with other personnel managers. Other ways of finding out are via the press i.e. adverts for similar posts, and from publications such as wage surveys, Govt. statistics, various indices (Retail Price Index) and Incomes Data Service.

Nearly all the above information comes from formal sources, and are now required by law. We also need to provide a safe working environment, therefore, the Personnel Manager needs information on Health and Safety need this information in order that he e.g.:-

1. Information can be obtained from H + S at Work Act - PM should have copy.
2. H + S Committees -
3. Accident records - Co.+ often PM manager is required to keep these - can reveal problem areas and

reveal whether sufficient safety training is being given.

4. Peripheral sources - e.g. advertising for safety aids and protective clothing PM often responsible for purchase and distribution and must compare costs of various suppliers.
5. Directories of courses available, e.g. first aid courses - PM often responsible for organisation of first aid training and ensuring that there are sufficient people with first aid certificates to cover for absenteeism.

Unions

When dealing with organised unions there is a need for Personnel Managers to be aware of the importance of developing formal and informal channels of communication and information.

In the formal situation this could consist of written agreements between management and Union such as discipline and grievance procedures, holidays, hours of work, pay scales, manning levels, even Membership of the Union. A large element of the Personnel Manager's job is interpretation of this information both at the negotiating level and in the management advisory capacity and will frequently involve reference to case law (ACAS) - Employment legislation.

In all dealings with Unions informal relationships can play an important part in the collation of information. Many disputes - Labour on shop-floor grievances over a particular issue and the awareness of the Personnel Manager of these issues can be instrumental in the prevention of serious unrest.

Prior to any negotiation, P.M's must have access to have a thorough understanding of all information relevant to that negotiation. This could include company policy in relation to profitability or staffing levels; Govt. policy on wage restraints; other comparable local industry settlements; differentials, etc. Written records of previous disputes or negotiating patterns could also be relevant. Whilst disputes could range from holiday periods and working hours to periods of notice, wage negotiations is probably a crucial area in contemprary industries.

Induction and Training.

Two types of induction:
Company induction: Informal procedure of giving information to starters. This will include (apart from the wider policies of the company) the more specific aspects possibly laid out in handbook or given verbally - such as details of holidays, sickness benefit, bereavement policy, canteen facilities, etc.

Job induction: Knowledge of actual function. Report on

capabilities and skills and limitations of new employee from interview. Liaison with appropriate dept. in assessment of performance and evaluation of training needs.

Training: New considerations, new requirements owing to legislation and technology. Information of contemporary situation in both areas vital.
e.g. (Tr. Bds.: require records of all training - evidence of training policy). Also future trends, e.g. need for computer technicians.

Thus apart for recording training there is also a need for information related to:

1) the assessment of training needs.
2) a training plan or blueprint related to aims - objectives (which may be short or long-term, individualistic or corporate).
3) evaluation and monitoring of success of the training in terms of efficiency.
4) Sources of training.

In order to measure these aspects there are several information requirements.

a) To assess training needs we must know the skills involved in the task and be able to isolate regions of weakness in the background skills of the trainee.
b) We must have access to planning arrangements/ budget controls, etc., in order to set priorities of training need i.e. is the climate one of contraction/expansion? Is the training vital?
c) Records and evidence of success or failure of training, personal and corporate. (Possibly linked to labour turnover, wage/salary?). Has the training paid its way in terms of efficiency?
d) Alternatives: based around cost - suitability in the selection of the best training course within a cash limit. How much can the internal departmental skills be utilised as opposed to external training.

Group A (1981)

Report from Personnel Information Study

Initially we decided it would be helpful to define the functions we see as necessary to the Personnel Dept's Work. Personnel Management is concerned with recruiting and selecting people; training and developing them for their work; ensuing that their conditions of employment are appropriate, where necessary negotiating such terms of employment with T.U's, advising on healthy and appropriate working conditions; the organisation of people at work and the encouragement of the most appropriate climate of relations between management and work people.

i.e. Employment and recruitment
Training and Development
Industrial Relations
Salary policy and administration.
Employee services - welfare, etc.
Organisation and manpower planning.

In order that we are able to carry out these functions efficiently we require the following information:-

For Selection and Recruitment

Job Analysis.
Employee Specification
Job Descriptions
Training programmes
Advertising analysis
Previous applicants
Links with job centres
References, including medical
Induction checklist

Employees Information

Name
Address
Sex
Maritial Status
Date of Birth
Job
Salary
Previous Employees
N.I. Numbers
Starting date
Disabled
Qualifications
Tel. No.
Next of Kin.
Special Needs.

On-going Performance

Attendance records
Disciplinary
Medical Records
Internal and external training
Job Appraisal Reviews

Termination of Employment

Leavers details - dates, period of notice
Exit interview
Reasons for leaving
New employer
(Contribution decisions)
Retirement Benefits
Redundancy.

Legislation

Health and Safety
Employment Act
Salary Agreements
Conditions of Service
Grievance and Disciplinary procedure
Trade Union Rights.

In order to keep cost at a minimum the main problem was one of the getting of standard information at the right stage, in the easiest manner, without ambiguity. Building up definite information channels and access systems, and making updating records a matter of simple routine. It was seen as essential to avoid duplication of records by several departments.

The standard source of information being:-

1. Application form
2. Duplicated starter cards forwarded to salaries, pensions, etc.
3. Regular liaison with depts. - e.g. absence, sickness, A/C.
4. Govt. publications - Employment Acts, etc.
5. That generated from within the Personnel Department e.g. job descriptions, redundancy policy.

Information to the Organisation

To:
Salaries

Starter Details	Details of:
Promotions	National and Local Agreements
Regrading	Terminations
Transfers	Redundancies
Maternity	Short-Time Working.
Sickness	
Holidays	

Information to the Organisation

To:

Employees

Salary Information
Subsistence/Expenses
Annual Leave
Pensions
Grievance Procedure
Terms and Conditions
Health and Safety
Staff Benefits
Welfare.

Production Departments

Workloading
Work Study
O & M
(Internal Statistics - sickness absence)
(as required)
National and Local Agreements
Discipline and Grievance advice
Advice on special leave.
" " Promotions Procedure
" " Appraisals
Training Programmes

General Policy

Health and Safety
Conditions of Service
Redundancies
Staff Consultation
Budgetary Control
Employee Newsletter.

Conclusion

Some of the information needs outlined above are for routine use, some for occasional (or problem solving) use. For example routine record-keeping is necessary as follows

1. Records of staff in past, and at what grades will be required for establishment control.
2. Records of salaries/wages and incentive payments will be required for budgetary and financial control and persons, etc.
3. Job descriptions and employee specifications will be required routinely for management control purposes.
4. Performance, attendance and disciplinary records will be required routinely - for assessment of employees, and for responding to requests for references.

Other information needs are of a more problem-solving nature. This sort of information will need to be able to be produced as and when necessary. This will rely on a good information-base, from which certain kinds of statistics can be extracted.

For example:

1. Sickness and absenteeism statistics may be required where requested by the manager due to a particular problem in his department.
2. Staff turnover statistics similarly.
3. Analysis of advertising media used.
4. Analysis of an individual employee's training needs
5. Analysis of age structure of the workforce, for estimating retirement dates, and likely recruiting needs.
6. Analysis of racial mix in workforce (with a view to ensuring no ratial discrimination).

The cost of extracting this sort of information will have to be weighed against the benefits, and the particular problems which we are trying to solve.

Starting and Termination information will be given as required. Statistics will be kept by the Department, should problems arise, the people concerned should be notified. Such information would be available on request.

Group B (1981)

Report from Personnel Information Study

We recognise that no two Companies are the same, therefore no two Personnel Departments/Functions are the same. Factors such as size, complexity and nature of business will place different demands upon the Personnel Specialist. We have therefore approached the problems in the broadest possible sense so as to embrace all the likely activities in which the Personnel Department is likely to become involved.

We address ourselves to the importance of Company Policy which would, of course, impact upon the Personnel Department. Such items as a legal and ethical approach to business would be included along with the stated policy that the company is an equal opportunities employer. Cognisance will also be required of the Company aims and objectives. Against this background then we developed four principal areas of activity representing the theatre of operation of the Personnel function. We believe that the Personnel activity may be paraphrased thus:-
A continuous interchange with :-

a) The individual employee.
b) The Government/Legislators.
c) The Environment including competitors and the "market".
d) The individual operating units of the Company.

INFORMATION	SOURCE	COST	BENEFIT
Individual Employee			
Personal details:			
Name Address d.o.b. sex Family background Vocational qual. Academic qual experience Health record Nationality N.I. no.P.45. Tax code References.	Application Form/ verbal commencement	Minimal	Essential

INFORMATION	SOURCE	COST	BENEFIT
Employee Attitudes/Performance			
Motivation Identification with company Ambitions Religious bias Political aspirations.	Two way appraisals	Man hours high	Control over manpower planning and development, and influence on interpersonal relations.
	Management observation	continual and not costly	effectiveness/ efficiency.
Control Elements			
Absentee reports output/records efficiency training records medical care	Dept. Mngr. " " Trainee/ Supervisor (validation)	High admin costs.	Trend spotting, highlighting weak points
	Personnel records/ surgery.	Continual specialist exp.	Attainment of production standards preventative measures.
Government	**Legislation**		
Accident Prevtn. Dismissal Employment Equal Paymnts. Retention of Application forms No. of toilets relevent to workforce. Closure of business levy exemption.	HASAW E.P.A. C of E.A. Equal Opp. Race Relations. Office,shops R.W.premises Red.payments Ind.Tr.Act.	Negligible to obtain costly to implement	No choice but keep within minimum requi-sits. Surpass if company policy so states.
	Codes of Practice		
Precedent picketing. Secret ballots	A.C.A.S. Employment bill.	Loss of production time.cost dep.on Govt. sup.	Binding decision. Beyond the minimum requi-sits. Good industrial relations.

INFORMATION	SOURCE	COST	BENEFIT
Operating Units			
Numbers employed (establishment lists)	Mngment.	Moderate	Essential for monitoring control.
Operating Stats. e.g. Absence Pay Performance, etc.	Mngment.	Moderate	Essential for monitoring control.
Long term manpower planning.	Combination of dept. Corporate	Insigni- ficant in carrying out est. Steep in cost	Great.
Employee Relations.	I.R. Man Union Reps Verbally Admoc. consultation and conciliation works councils staff associations	costly	Great to effectiveness.

Group C (1981)

Report from Personnel Information Study

Note:

Written report produced by this group disjointed but it has been produced in this appendix as handed in. It is interesting that this group produced the information needs around a fictitious company employing 5,000 people.

1. Recruitment and Selection Officer.

Information	Source	Cost Eff.
Manpower Neg. Job Des.	Line Mngt./ MS + finance Direct Boss.	Get people you want and keep them. No dispute as to what they do.
Selection techniques -type of people -skills -education,etc.	Direct Boss	"
Knowledge of interview + aptitude testing.	Contact with Prof. bodies + Journals.	"

2. Training, Development + Manpower Planning.

3. Absence Control + Welfare.

TRAINING AND DEVELOPMENT. 1 Man.

Information Required	Source	Cost Effective/ Benefits.
Identify Training Required-	O & M study of Task. - Previous experience for requirements. - Need to keep ahead of the times	
Training Board	- Must fulfil certain training - requirements so as not to pay a levy	Always have trained people no need to pay levy
Budget Limitations	- Must be today limitations on what we spend on training	Make the best use of money available spend what you can to get more next year.

Information Required	Source	Cost Effective/ Benefits.
Legal Requirements	- . Certain people i.e. safety reps. first aid staff,etc. must be trained	Keeps people happy saves any expensive court dispute.
Induction/Preliminary Training.	- Also a legal requirement under the health and safety act.	
Specific Training Techniques.	- Recognise ability within a person to use him to his full.	
Refresher Courses	- Must take place when new technology introduced or someone has been off sick for a long period of time.	
Records	- Personal details of qualifications, courses attended, training received promotions made.	

ONGOING - UP TO DATE RECORDS.

MANPOWER PLANNING AND JOB EVALUATION

Information Required	Source	Cost Effectiveness
1. Evaluation of individual. Task/job and grading structure	Line Manager, Personnel Manager, Liaison.	
2. Charts of Organisation	Line Managers, Personnel Manager, Liaison.	
3. Scheme/process developments, ind. (Environmental/ Technological) factors).	Line Manager, P & D, Personnel Manager, Liaison.	
4. Age profiles/grades	Abstraction from basic manpower records/computerised records.	Incorporation in computerised record/paybill etc., system.
5. Wastage analysis	Manual abstraction computer records.	"
6. Recruitment possibilities.	Job Centres, Careers Officer.	

OUTGOING + QUARTERLY REPORT.

ABSENCE CONTROL AND WELFARE

Information Required	Source	Liaison	Cost Effect
Fully conversant with disciplinary procedure re: absence, medical retirement, termination, sick, abs.	Agreed procedures.		
Personal information - name, age, address, length service, job/place of work.	Sick,abs, card updated regularly from central personnel record.	Records dept.	With regular record reviews, sick visits by Personnel Officer. Reviews by factory Doctor, sick abs, should be less than 5%.
Details of absence	Shopfloor time office. Updated daily by clerk in Personnel.	Time office.	
Diagnosis (sickness)	Surgery	Surgery	
Prognosis	Surgery (factory Dr.)	Doctor	
Sickness benefits, Social security payments, Social services assistance.	DHSS. Social services	DHSS. Social services.	DAILY.

From employee

Develop relationship

Illness, Problems, attitude to work. Intentions re: resuming work.

Industrial Relations.

Preparing procedures and Agreements.
Good working relations with TU.
Knowledge of national and local settlements.
Manual or file of agreement, grievance, minutes, etc.
Current cases and legislation.

Absence
Records and procedures.
Know Dr's and people.

H + S

1 IR MANAGER.

Information Required.	Source	Cost Effectiveness
Knowledge of law and current cases.	Media/Journals etc.	Saves silly mistakes in getting rid of people,making changes, etc.
National and local settlements.	Local PM meetings,etc.	Need comparative rates etc., to keep staff and have a contented workforce.
Complete knowledge of procedures and agreements	Manual or file.	Allows all Mgnt. to know what rules they can work within.
Knowledge of TU thoughts and plans.	Good relts. with TU's.	Know what is coming up and can pre-empt trouble.

HEALTH AND SAFETY

Information Required	Source	Cost Effectiveness
1. Legal Requirements for general safety. i.e. Safety policy Protective clothing Preventive measures. Co. requirement.	HASAWA 1974 Factories Act 1950 Shops, Railways and Premises Act 1961. Committee.	
2. Working knowledge of all process carried out in the company, with view to:-	Line Managers	Reduction in time lost due to absence of employees sustaining injuries from work.
a) Machinery used - safety precautions enforced.	Managers	Reduction in liability cost from injuries caused by dangerous machinery.
b) Hazzardous substances used and precautions taken.	Prec.Manufacturers.	
3. Safety Equipment on Market.	Safety journals and other industrial publications.	Morale.

SALARIES, WAGES, PENSIONS AND SUPERANNUATION.

Information	Sources	Cost Effectiveness
1. Knowledge of Pay Structure.	Company rates of pay. Union official rates of pay. Incentive scheme details piece rates. weekly. Leave entitlements. Sick leave details. Deductions - statutory- Tax codes. N.I. superann. Non-statutory - union fees Hours worked, clock cards, time sheets - weekly. Payroll - weekly, monthly.	Minimisation of unit costs. Contentiveness of the workforce. Ensure that correct individual deductions are made from employee's wages. (lack of complaints may signify effectiveness of procedure !!)
2. Knowledge of Pensions legislation and operation of the occupational pension scheme.	Social security Act 1975. Pensions payroll.	

Appendix C

Marketing Information Study

Contents | Page

PLAS-TEX LTD.

The Case Study.

CONTENTS.

1. ABSTRACT.

Plas-Tex Limited is a Case Study concerned with the re-design of a marketing information system. The student is placed in the position of a newly appointed marketing manager for Plas-Tex Limited. The information system inherited by the Marketing Manager is incomplete and causes problems to other areas of the organisation. The student within a syndicate is expected to redesign the information system to make it more complete and to attempt to solve the problems created by the old system.

2. PLAS-TEX LTD.

2.1. THE COMPANY AND PRODUCTS.

Plas-Tex Limited is a well established company in the plastic moulding industry, it specialises in the production of plastic package supports for the textile industry and is part of a larger holding company. The turnover for the company last year was fractionally under £5 million with a nett profit of 16%. The plastic moulding industry is high capital intensity by nature and this is reflected in Plas-Tex Limited in that it only employs 63 personnel in total.

The principal product of the company is plastic yarn cones of which there are two basic configurations.

TYPE ONE 9° 15' CONES.

These are cones which provide support for the traditional textile package. They are produced in two sizes 5" and 7" high, the latter being the most popular, and in 12 standard colours. The usual production material is polythene but they can be produced in impact polystyrene for greater strength and stability, the range of colours in impact polystyrene drops to 6. There are two types of surface finish offered as standard for 9° 15' these being studded or knurled. With 9° 15' cones there is also a specials market. The variations being customers own colours or surface finish and the embossing of the customers name or logo on the

product. The last two variations requiring the production of special moulds. The market for 9° 15' cones produced by Plas-Tex Limited has been steadily increasing which is against the downward trend for textiles in general in the U.K. market. The reason for this is thought to be the replacement of cardboard cones with the superior plastic variety.

TYPE TWO 4° 20' CONES.

These cones provide support for the more modern type of textile package. They are produced in three sizes 5", 7" and 9", the latter being the most popular. These cones are usually made in impact polystyrene because of the strength and stability required although the 5" and 7" can be produced in polythene. Due to the way in which the market for 4° 20' cones has developed there is one type of surface finish produced as standard, and 6 standard colours (in impact polystyrene). There is also a market for specials with 4° 20' cones, the variations being the same as for the 9° 15' cones. The market for 4° 20' cones produced by Plas-Tex Limited has also been steadily increasing which is probably due to the change over by manufacturers of yarn to the newer type of cone. There is little or no competition from the cardboard cone producers in this sector of the market.

The company has just launched a new product, a tubular plastic yarn package support. It is only

thought to have a limited market potential and it is too early to decide how successful it has been. This product is different to the cone in that it will never leave the factory of the yarn producer. The cones are packages on which yarn will leave the factory to go to customers. The tubes are used internally at one of the production stages, the yarn finally being put on a cone before its despatch.

The development department is at present working on a plastic package to be used again internally but this one being specialised to be used in the dyeing operation of yarn processing. By the nature of the dyeing process the package will only be used once not like the other packages.

2.2. THE MARKETING DEPARTMENT.

The Marketing Department of Plas-Tex Limited has received mounting criticism from other senior managers culminating in the resignation of the Marketing Manager. It had been 'felt' by other managers that the company had been missing sales opportunities due to a poorly managed and co-ordinated sales force and a misdirected sales effort. The company had also lost money and goodwill due to inaccuracies in the filling out of the order forms. Mistakes with standard products cause little direct loss, only an inventory charge until the package supports can be resold. The major loss with such a mistake is a loss of goodwill when

incorrect orders arrive at the customers factory. Mistakes that occur with special orders by their nature will incur greater losses. With the orders being specials it will be unlikely that the goods can be resold at their full market value. If the mistake was to occur on the special embossing of the customers name or logo then the product would be a total write-off and the special mould cost incurred would also be lost. With a mistake on a special order the loss of goodwill is also likely to be higher.

The Marketing Department consists of the following personnel, the Marketing Manager (now left the company), 6 Field Sales Representatives and 2 Sales Clerks. The six representatives cover the whole of England, Wales and Scotland: Three cover the Lancashire, Cheshire and Staffordshire area (not one per county); two cover the Yorkshire, North of England and Scotland; and one covering the Midlands, South of England and Wales. The two sales clerks work at the company head office and factory with the Marketing Manager. There are no sub-structures within the marketing department all members of the staff report directly to the Marketing Manager.

There are four documents used within the sales department these being the Quota Form, Order Form, Expense Form and a Card Index of Customers.

QUOTE FORM:- This form is to send quotes to customers and is used in a large proportion of cases. Some salesmen fill in the quota form and send them or bring them to Head Office to be typed by a sales clerk, to be sent to the customers. Other salesmen fill in the forms and give them or send them direct to the customer. An example of a completed quote form is given in Appendix I.

ORDER FORM:- This form must be filled out in all cases and is the standard instruction for the order to be met from stock or if there is no stock for a production order to be raised. The order form is filled in by salesmen and then sent or brought to Head Office where it is typed by a sales clerk. The order is then dealt with by the production department. Some orders are sent direct to Head Office these are then typed by a sales clerk and sent to the production department. It has been known in the past for orders to be met twice one from a salesmans order and one from the order sent direct to Head Office. An example of a completed Order Form is given in Appendix II.

EXPENSE FORM:-This form is used for the reimbursement of out of pocket expenses to the salesmen. All the salesmen have company cars therefore expenses are limited to petrol, meals, accommodation, etc. All expenses forms must be accompanied by receipts and be signed by the Marketing Manager, they will then be paid out of petty cash by the Accounts Office Manager. An example of a completed expenses form is given in Appendix III.

CARD INDEX OF CUSTOMERS:- The card index is kept for reference purposes. The index is a 6" x 4" card system, each card contains the customers name and address, and they are kept in alphabetical order. When an order is typed by a sales clerk the card index is compared to the order to check details if the order is from an existing customer if not then a new card is added to the index. An example of a completed index card is given in Appendix IV.

There is one other document within the company as a whole, that is of special interest to the marketing department. This is a limited sales analysis produced monthly by the accounts department. The sales analysis

is produced from orders invoiced in the particular month and is split down into main product groups: 9° 15' cones, 4° 20' cones and the recently added parallel tubes.

3. THE SYNDICATE ROLE.

The syndicate is to consider itself in the role of a newly appointed marketing manager. The aim of the syndicate is to design a marketing information system for Plas-Tex Limited. The syndicate is asked to consider both formal and informal information in conjunction with both internal and external information sources.

The information needs of the situation will have to be considered, the costs of obtaining such information and the benefits accruing from the information. Detailed plans should be produced on how the information should be collected, who should collect the information, procedures required to collect and process the information, reports that need to be produced, the timing and circulation of such reports, etc.

There will be a two part presentation at the end of the exercise. The first part a detailed written plan of the information system including procedure manuals etc. The second part a fifteen to twenty minute syndicate presentation to the other members of the residential. This part of the presentation should be thought of as the marketing manager giving a presentation to the rest of the Plas-Tex management team. Various visual aids are available to aid your presentation.

APPENDIX I.

QUOTE FORM.

The Quote Form is a three part N.C.R. form.

White copy to be sent to customer.

Pink copy to be retained by the marketing department (these being filed by date order).

Green copy to be sent to accounts department.

There is a single copy white form available for use by the representatives. To be used only when sending a quote into Head Office to be typed up and sent to a customer.

NOTE. For convenience of binding the form illustrated has been reduced in size. The normal size of the form being A.4.

Example of a completed Quote Form.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

QUOTATION FORM

Date: *1 - 12 - 80*

Quote to:

Robert Livesey & Sons Ltd.,
Field House Lane,
Accrington,
Lancs,

Quantity	Description	Unit Price	Total Price
6000	*4° 20' Cones 9" Red (1) I.P.*	*48p*	*£2880*
5000	*9° 15' Cones 7" Studded P.* *3000 Red (1)* *1000 Black (3)* *500 Orange (2)* *500 Yellow (6)*	*30p*	*£1500*
	Total Price of Quote		*£4380*

Quotation valid for *30* days after date
All prices exclusive of V.A.T.

APPENDIX II.

ORDER FORM.

The order form is a four part N.C.R. form.

White copy to be retained by the marketing department (these being filed in date order).

Green and blue copy to be sent to production.

Pink copy to be sent to accounts department.

The Plas-Tex order number being determined in the following manner. The first digit being the last number of the present year. The next two digits being the month of that year in which the order is placed starting at 01 for January. The last four digits being the individual order number. Each month this number would be started at 0001 for the first order processed and then advanced one for every order processed to the end of the month. The number being added to the form by a special punch. The first three digits of the punch can only be changed with a special key held by the Marketing Manager. The last four digits advanced one number automatically after each use and these can only be zeroed with a special key held by the Marketing Manager.

NOTE. For convenience of binding the form illustrated has been reduced in size. The normal size of the form being A.4.

Example of a completed Order Form.

PLAS-TEX LTD. ORDER FORM

Order No: *0 12 0149*

Date: *9 - 12 - 80*

Order from:
Robert Livesy & Sons Ltd.
Field House Lane,
Accrington,
Lancs.

Delivery to (if different):

Quantity	Description	Unit Price
6000	*4° 20' Cones 9" Red (1) I. P.*	*48p*
5000	*9° 15' Cones 7" Studded P.* *3000 Red (1)* *1000 Black (3)* *500 Orange (2)* *500 Yellow (6)*	*30p*

Production Notes:

All to be met from stock.

APPENDIX III.

EXPENSE FORM.

The expense form is a single part form.

The expense form is a standard form used throughout the organisation. The size of this form is A.5.

Example of a completed Expense Form.

PLAS-TEX LTD.

EXPENSE FORM

Name: *J. Smith.* Date: *6 - 12 - 80*

Department: *Marketing.*

Item	£	p
5 gallons petrol	*6*	*75*
Meal for two	*12*	*85*
Total Claim.	*19*	*60*

Claimant Signature J. Smith

H.O.D. Signature

APPENDIX IV.

EXAMPLE OF CARD INDEX.

Example of a completed card for the Card Index.

Company Name: *Robert Livesey & Sons Ltd.*

Address: *Field House Lane,*
Accrington,
Lancs.

Note: Two other factories in group, all buy separately so on separate cards.

APPENDIX V.

SALES ANALYSIS

The sales analysis is produced at the end of each month by the accounts department. The sales figure quoted being sales invoiced in that month. The analysis also includes budgeted sales figures and last years sales figures. The financial year of the company runs from April to April. The budgeted sales figures for this year are 10% higher than last year as this was thought a reasonable increase in sales by the previous Marketing Manager.
The analysis is typed each month to the same standard format.

PLAS-TEX LIMITED.

ACCOUNTS DEPARTMENT: SALES ANALYSIS.

DECEMBER 1980.

		£
Sales this month	9° $15'$ Cones	315,632
	4° $20'$ Cones	169,513
	Parallel Tubes	6,555
	Total	491,700
Budgeted sales this month.	9° $15'$ Cones	289,339
	4° $20'$ Cones	168,597
	Parallel Tubes	5,000
	Total	462,936

****

Sales to-date this year.	9° $15'$ Cones	2,675,354
	4° $20'$ Cones	1,714,314
	Parallel Tubes	9,113
	Total	4,398,781
Budgeted sales to-date	9° $15'$ Cones	2,604,051
	4° $20'$ Cones	1,517,373
	Parallel Tubes	10,000
	Total	4,131,424

****

Last years Sales 1979	9° $15'$ Cones	3,156,425
	4° $20'$ Cones	1,839,245
	Total	4,995,670

APPENDIX VI

ADDITIONAL INFORMATION.

CONTENTS.

PLAS-TEX LTD.

PRICE LIST: December 1980.

PRODUCT TYPE		POLYTHENE	IMPACT POLYSTYRENE.
9° $15'$ CONE	5"	28p	37p
(any STD colour)			
(any STD finish)	7"	30p	40p
4° $20'$ CONE	5"	33p	42p
(any STD Colour)	7"	35p	45p
	9"	-	48p
PARALLEL TUBES		33p	43p
(any standard colour)			

DISCOUNTS

5% Discount on orders in excess of 10,000 per type of one colour.

7% Discount on orders in excess of 20,000 per type of one colour.

9% Discount on orders in excess of 30,000 per type of one colour.

SPECIALS.

SPECIAL COLOURS.

Only considered on orders of over 10,000 per type per colour.
Add £20 to cost of order.

SPECIAL SURFACE FINISHES OR NAME OR LOGO EMBOSSING.

Only considered on orders of over 10,000 per type (min. 5,000 per colour)
Add £150 to cost of order.
Special terms may be applicable for repeat orders.

PLAS-TEX LTD.

STANDARD COLOUR LIST: December 1980.

POLYTHENE.

1. RED
2. ORANGE
3. BLACK
4. PURPLE
5. GREEN
6. YELLOW
7. BLUE
8. WHITE
9. INDIGO
10. BROWN
11. FAWN
12. PINK

IMPACT POLYSTYRENE.

1. RED
2. BLACK
3. GREEN
4. YELLOW
5. BLUE
6. WHITE

PRODUCTION/ACCOUNTS SYSTEM OF ORDER PROCESSING.

The production department upon receipt of a standard order (green and blue copies) checks the availability of the items against the stock held. If the order can be met from stock this fact is noted on the bottom of the order form, both copies, and the stock records adjusted accordingly. The green copy is filed in order number sequence and the blue copy is used to raise an Advice Note. If the order cannot be met from stock then a production order is raised this normally entails the production of 50,000 items per type of any colour required, the surplus being put in stock. This is the economic production batch quantity of any colour. The items on the order that can be met from stock are noted on the bottom of the order form, both copies, and the stock records adjusted accordingly. The items to be met from the production order are noted on the bottom of order form, both copies, and the stock records adjusted to take account of the new production and the call off for the order. The green copy of the order form is filed in order number sequence and the blue copy is used to raise an Advice Note.

The advice note is a four part N.C.R. form.

White copy to be sent to customer.

Pink copy to be filed in despatch office.

Green copy to be sent to accounts.

Blue copy to be filed in production office.

a speciman completed form has been included at the end

of this section.

When the advice note has been completed in the production office the blue copy is detached and filed in order number sequence the remaining copies and blue copy of the order form are sent to the despatch office. These are used in the despatch office while the order is put together, (this may involve waiting while goods come through from production). The goods are then despatched, if local they are delivered in our own vans, the long distance orders being sent by carrier. The white copy of the advice note goes with the goods to the customer. The pink copy is filed in the despatch office in order number sequence. The green copy is sent to the accounts department and becomes the trigger to send out the invoice.

The invoice is a two part N.C.R. form.

White copy to be sent to the customer.

Pink copy to be retained by the account department.

a speciman completed invoice has been included at the end of this section.

The accounts department produces the invoice from the order form and the quote form and sends out the invoice when the advice note is received from despatch. The top copy of the invoice is sent to the customer, the other copy is retained by the accounts department and is filed in order number sequence when payment has been received. The sales analysis is produced from invoices

sent out.

Special orders will follow basically the same route, they will however take longer at the production stage and only the amount required will be produced.

Example of a completed Advice Note.

Note: For convenience of binding the form illustrated has been reduced in size. The normal size of the form being A.4.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

ADVICE NOTE

Date: *15 - 12 - 80*

Order No: *0 12 0149*

Invoice Address:
Robert Livesey & Sons Ltd.
Field House Lane,
Accrington,
Lancs.

Delivery to (if different)

Quantity	Description
6000	*4° 20' Cones 9" Red(1) I.P.*
5000	*9° 15' Cones 7" Studded P.* *3000 Red(1)* *1000 Black(3)* *500 Orange(2)* *500 Yellow(6)*

Delivery by

Own Van

Example of a completed Invoice.

Note: For convenience of binding the form illustrated has been reduced in size. The normal size of the form being A.4.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

INVOICE

Date: *15 - 12 - 80*

Order No: *0 12 0149*

Invoice to
Robert Livesey & Sons Ltd.
Field House Lane,
Accrington,
Lancs.

Delivery made to (if different)

Quantity	Description	Unit Price	Total Price
6000	*4° 20' Cones 9" Red (1) I.P.*	*48p*	*£2880·00*
5000	*9° 15" Cones 7" Studded P.* *3000 Red (1)* *1000 Black (3)* *500 Orange (2)* *500 Yellow (6)*	*30p*	*£1500·00*
	Total		*£4380·00*
	+ V.A.T at 15%		*£657·00*
	Total Amount Now Due		*£5037·00*

V.A.T. Registration Number 056 2159 23

FURTHER INFORMATION.

Staff Breakdown.

MARKETING	PRODUCTION/ DISTRIBUTION.	ACCOUNTS.	ENGINEERING.	PERSONNEL.
9	36	6	10	2

6 competitors in plastics industry supplying yarn package supports.

Number of cards in card index = 5315

95% chance of order being met from stock in 3 days from order reaching production department.

95% chance of order being met in 2 weeks if not from stock (specials not included).

Last price increase - August 1980 of 7½%.

Average number of orders per week = 100

Company approximately 8 years old.

Specials only a small part of business.

Group A

Report on PLAS-TEX LTD Marketing Information System

PROPOSAL FOR REVISED INFORMATION SCHEME.

1. INTRODUCTION

PLASTEX LIMITED.

Initial Impression: December 1980.

It is important in taking up any new post to try as far as possible to assess the existing situation with an 'open' mind.

Primary Task

(A) To maintain status-quo and ensure smoothing running of existing business.

(B) To take opportunity to fully aquaint with all formal and informal systems within marketing department, in the field, and in other departments directly related to the "customer satisfying" system (viz. production control, inventory planning, accounts, despatch and invoicing). In meetings with various personnel the advantage of informal contact is utilised and will greatly contribute towards the psychological acceptance of the new arrival.

(C) To look critically at existing systems, formal and informal and to decide where the loopholes are and their effects.

What has to be realised is that the system basically works. Goodwill is the most difficult thing in the world to build up and the easiest thing to lose, therefore, the errors are due to loopholes. It is a very brave man who wholly changes his system since a departmental system must inter-relate with other systems outside his direct control or influence. A new broom lays himself open to much criticism and often non-co-operation which may lead to disaster before the experiment has had time to be tested fully: this is not to mention the cost of disruption.

It can be seen that the aim, therefore, is to improve on the existing framework and to justify the change in terms of cost, efficiency results and effect on existing short-term business.

A cursory look at the existing "Marketing Information" system would reveal that much of the intelligence is informally kept and the formal system has not kept pace with the expansion of the business. Marketing information in its broadest sense relies on information generated from various aspects of the business as mentioned in point(B) on page C.32., and it is unwise to believe that departments develop at the same rate. Information systems must take this into account and be reviewed accordinly from time to time.

By tightening up with respect to the existing system, this will benefit existing customers, increase administrative accuracy, maintain stocks, more economically, streamline despatch and improve market intelligence and co-ordination within the salesforce and ultimately within the company.

(Short Term) General assessment/appraisal of company (Marketing). December 1980.

The company is at present successful in supplying yarn cones to the textile market. (Material based industry). The three basic product types show the following features:

(1) The 9° 15' cones has 72 different standard types. U.K. customers are generally still replacing cardboard versions with the plastic type. (Growth rate is upward at decreasing rate). The eventual market will decline although less slowly if new customers and former customers can be persuaded to use the Plas-tex product.

(2) The 4° 21' cone has 42 different standard types and has been geared to support the modern textile market.

(3) Tubular plastic yarn package support, market increasing but limited.

(4) Product Identification/Analysis

In conjunction with existing paperwork in the short term a coding system by item could be developed to relate product preference on the part of the customer to costing/selling patterns as viewed by the company. This would act as a support system capable of being "backdated" through existing records or made ready to relate immediately to sales/quotes in the future.

Advantages:

(A) To aid control and co-ordination between departments.
(B) As a marketing tool to spot trends.
(C) As a tool for inventory control and production planning.
(D) As a tool to rationalise the range into possible "stock", "non-stock" and "special" production schemes.

(5) Satisfaction/Achievement (at least) of existing budget.

If necessary this must take into account existing systems. Any disruption for change must be considered in the light of these inherited, pre-set targets.

(6) Improvement and analysis of sales administration and in particular the order processing system.

(7) Consider and establish liaison with other departments in light of anticipated policy.

Medium Term Objectives (4 months and in future).

(1) Establish or substantiate claims that company is losing or missing business and leaving too much to chance. Act upon results.

(2) Having established situation, consider training, relocation or recruit policy in light of envisaged changes.

(A) This will help staff to understand the need for change.
(B) Help staff to cope with changes and make the cost and effort, efficient and worthwhile.

(3) Examine existing market policy. (share,total, etc.).

Long-Term Objectives. (Diversification).

(1) Analysis of alternative methods of productive capacity by looking at alternative applications.

(2) Export considerations/import component (direct/indirect costs).

(3) Exchange Rate and Government Intervention. APPENDIX I. for further details.

Implementation of formal marketing intelligence system including modification of existing forms of paperwork and communication.

2. MARKETING MANAGER. OBJECTIVES. Appendix I.

1. To satisfy or improve upon current budget.

2. Stop mistakes order forms.

3. Stop wrong orders being delivered.

4. Having established objectives. Measure existing staff against these needs:
   (a) Train.
   (b) Move.
   (c) Recruit.

5. Follow up claims that business has been missed in the past.

6. Examine existing market.
   (a) Total markets.
   (b) Share of market.
   (c) Share of existing customers business.
   (d) Follow up machine builders.
   (e) Information on competition.

7. Consider Diversification.
   (a) Against present production.
   (b) Company skills e.g.
      (i) Tool making.
      (ii) Calling on hosiery trade, etc.
   (c) Through Government Agencies. Export potential.

8. Restore Confidence.
   (a) In company.
   (b) External.

9. Devise system to process smoothly.
   (a) Enquiry.
   (b) Quotation.
   (c) Order.
   (d) Despatch.

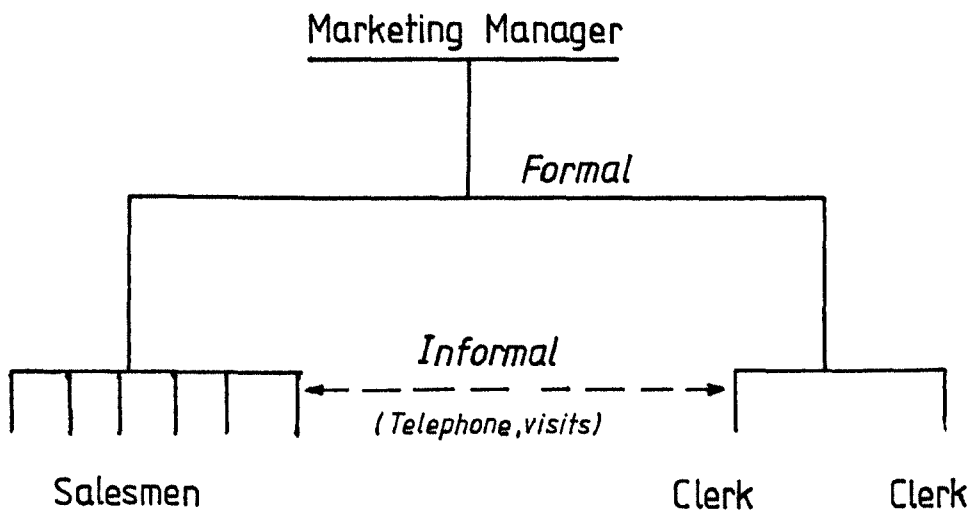
   Additional Control through, credit control, working progress, delivery dates.

10. Obtain. Breakdown.
   (a) Sales by salesman.
   (b) Sales by product type/style.
      (i) numeric. (ii). value.

Appendix II

3. Departmental Structure

PLAS-TEX LTD Marketing Department



Initial (Dec 80)

To Be Revised

As Necessary

4. REVISED CUSTOMER VISIT SYSTEM.

Customer Visit Report.

General

Used by Salesman to identify actions to be taken by Sales Department.

1 (i) to be completed after every visit.

Example of completed sheet - see Example 1.

VISIT REPORT MAY BE HANDWRITTEN AND SHOULD BE SUBMITTED WEEKLY TO MARKETING MANAGER.

1 (ii) All activities should be clearly stated alongside a date required for that action to have been completed.

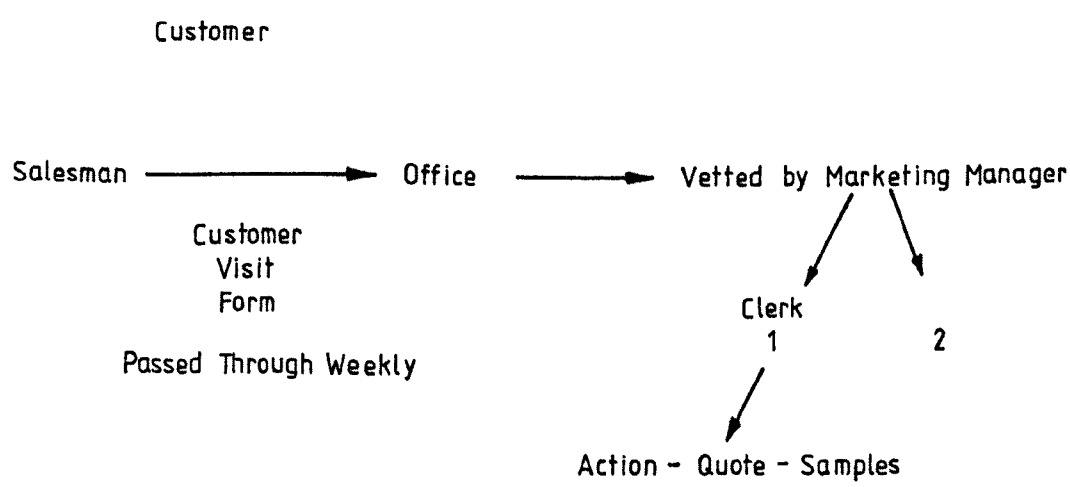
e.g. ACTION - QUOTE. by w/c 2/2/83

2 DISTRIBUTION

2 (i) VISIT REPORT. 1 copy to be retained by Salesman.
1 copy to Marketing Manager.

2 (ii) Marketing Manager decides who handles each report. Sales Clerk or himself. He initials each report before passing on to relevant clerk to action. These are retained in a customer visit report file so that a clerk can be affected on outstanding actions as required.

Completed forms should be initialled before filing in customers alphabetical order after action has been taken.



4 (Contd) Example 1

Salesmans Visit Report

Customer

Date

Name: *J. Ripley*

Address: *131, Barnsley Rd*
Bolton

Phone No:
Extn:

Persons Seen :- *John Smith, Eric Jones*

Reason for Visit

Routine:

Enquiry: ✓

Details of Visit:

Demonstrated full product range

Competition:

Bloggo cones

Action:

Quote 9" 15" 7"

to J. Smith. colour not important

During Visit:

Quotation Given: ✓

Order Received: ✓

5. QUOTATIONS.

Quotations.

1 (i) Quotations are generated on the Company standard form which contains conditions of sale on reverse side. An example of a correctly filled in form is shown in Example.

1 (ii) Generation of Quotations.

A quotation is generated from a customer visit form completed by the representative following a customer visit. The customer requirements are checked against previous order for both type required and previous price quoted - the card index system.

The quote should contain:-

The customers name and address.
The person with that company who requires the information.
The no. of items required specified individually against quantity, cross referencing to stock code no.
The selling price including discounts.
The name of representative who called/reason for quote (e.g. letter).
The telephone contact at H/Q who refers.
Delivery information.
'CONFIRMATION' IF INFORMATION ALREADY GIVEN by Salesman should be included.

2 (i) All information should be hand written and checked by someone else and indicated by signature and checked. Delivery information should be obtained from Production Control Department.

2 (ii) Quotation is typed and the serial number of the quotation is entered into the quote index file (retained in filing cabinet A). The typed quote is checked against the original and the office copy signed by originator as being checked for accuracy.

2 (iii) The quotation must be authorised by Marketing Manager.

DISTRIBUTION

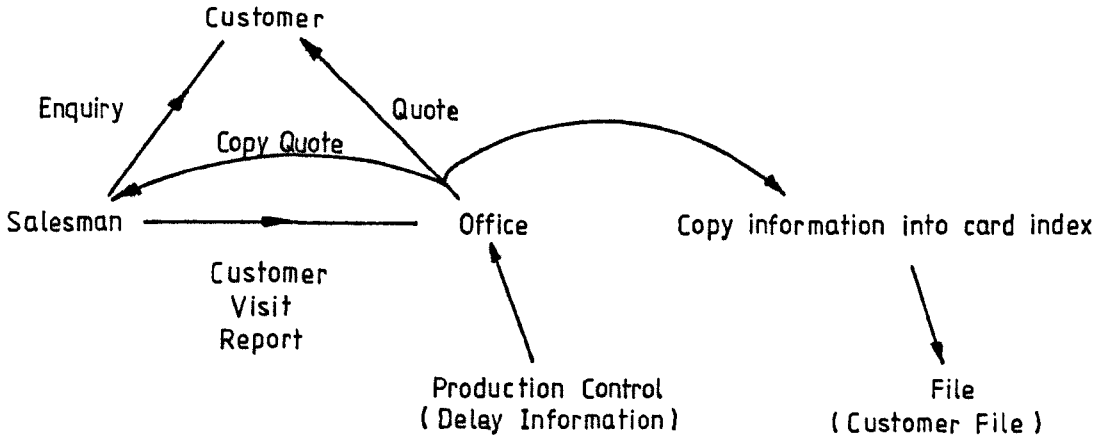
3 (i) Top copy of quote is sent to customer (ensure both company name and INDIVIDUAL on envelope).

(ii) Copy quote to representative (green copy)

(iii) Pink copy to marketing department file - to be filed. (Information from quote to be included on card index system).

QUOTE ANALYSIS

4 (i) Each month the date order quote file is analysed to obtain:
Total value of business quoted/months/rep.



5(Contd) Quotation Form

3 Copies Office
Customer
Salesman

PLAS-TEX LTD

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

QUOTATION FORM

Serial Number 0001
Date 27-01-81
Area Code 03
Salesman J. Blogg
Authorised by ABC

Quote to: Robert Livesey & Sons Ltd.,
Field House Lane,
Accrington,
Lancs.

For conditions of sale see overleaf

Quantity(Singles)	Code Number	Description	£ Unit Price	£ Total Price
15,000	A 21106 R	Cone 9° 15' , 7" Polythene, Studded Yellow	0·30	4,500
		Less 5% Discount		4,250
Delivery Date	4 weeks	From Recipt of Order		

Total Price Of Quote (Excluding V.A.T. 4,250

Quotation Valid For 30 Days

Please specify quotation serial number when ordering

6. REVISED INTERNAL ORDER FLOW/INVOICE PROCEDURE.

1. The old system of raising three separate sets of documents is to be replaced with a system designed around two sets.

   This was achieved by combining the Order set and Advice note plus reducing the number of copies cutting out some of the unnecessary filling in some areas.

Stage 1.

The new Advice note will be raised as a six part set by the Sales office and a check made and cross reffered to the Quotation forms.

One order received, quotation form filled in order received filed leaving only Quotations which no orders are received against for analysis purposes.

One copy of order set is retained by Sales/Marketing office.

Five copies are to be sent to Production stock control for:

a) endorsing and stock control card amendment should all order be met from stock. Four copies then will be passed to Warehouse for despatch and a fifth back to sales office to be sent to customer.

b) If only part of order can be met the order set is sent to sales office with the information of what can be met and production times on remainder.

c) Decision is made by sales who on whether part shipment is to be made or oder held until production produce stocks.

   If part shipment made the original order is cross referred to new advise note on items not being supplied and vice versa on new order.

d) Upon knowledge of stock situation confirmation copy of Advice note sent to customer.

e) Warehouse receive four copies, once order picked and packed and signed by carrier.

   One copy to go to accounts. One copy to be filled in warehouse in number order.

   Two copies go with carriers:- Carriers copy and customers copy.

f) Accounts copy to raise Invoice and invoice procedure

to stay the same.

g) Copy of Advice note and how it is to be actioned on next page.

6 (Cont)

PLAS-TEX LTD. Head Office, Fulford Trading Estate, Burnley, Lancs. Telephone: 0282 576342 Telex: 45634 PLA BUR A	ORDER / ADVICE NOTE Serial Number * * ** * Copy *Customers*
Invoice Address	Delivery To (If Different)

Quote No	Order No	Date Made Out	Date Received	Date Due Out

Item	Quantity Ordered	Code Number	Description	Stores Loca'n	Unit Price	Qty Supp'd	Total Price

Packing Specification	Carrier	Signature of Carrier
		Date
		Signature of Customer
		Date

7. Product Code System

Code Number

A	2	1	1	0	6	R

Cone Angle

- 9° 15' - A
- 4° 20' - B
- Tube - C

Size

- 5" - 1
- 7" - 2
- 9" - 3

Material

- Polythene - 1
- Impact Polystyrene - 2

Finish

- Studded - 1
- Knurled - 2

Colour

Red	- 01	Blue	- 07
Orange	- 02	White	- 08
Black	- 03	Indigo	- 09
Purple	- 04	Brown	- 10
Green	- 05	Fawn	- 11
Yellow	- 06	Pink	- 12

Classification

- Standard - R
- Special - S

8 Market Analysis

PRODUCT TYPE	Qty Bud 000	Qty Act 000	Qty Var	Qty Cum Bud	Qty Cum Act	Qty Var	Invoice Total £000	Av Price	Av Cost	Contrib	Contrib × Cum Act
9° 15' All types except most popular											
9° 15' Most popular ---------											
4° 20' All types except 9"											
4° 20' 9" except most pop colour											
4° 20' 9" most pop colour											
Yarn Bobbins except most popular colour											
Yarn Bobbins most popular colour											
TOTALS											

1. Trading Statement.

Costs	Monthly Actual	Monthly Budget	Cumulative Actual	Cumulative Budget
Cost of Production				
Profit (Loss) on Production				
Cost of Sales				
Profit (Loss) on Sales				

2. Sales by Area (Value)

Area A - F

List Types	Actual by Month	Budget by Month	Last Years Cumulative for Corresponding Period.
Total Revenue			
Cost of Sales			
Profit (Loss)			

3. Notes on Variances (Sales)

(a)

(b)

(c)

ETC

10 PROCEDURE FOR COMPLETION OF EXPENSE FORM.

The expense form is a single part form used throughout the organisation.

The form is used for the reimbursement of out of Pocket expenses; all expenses forms having to be accompanied by receipts and signed by both the claimant and the Marketing Manager.

The expense items are Categorised under the following headings:-

a) Petrol and general motoring expenses.

b) Meals.

c) Accommodation.

d) Entertainment.

e) Miscellaneous.

Each claim must be described in detail thus enabling the Marketing Manager to extract any applicable information which may be used for budgeting purposes.

On completion of the form payment will be paid out of petty cash by the Accounts Office Manager.

10 (Cont)

Example of an Expense Form

PLAS-TEX LTD.

EXPENSE FORM

Name: Date:

Department:

Area:

Item	Details	Accounts use only		£	P
		Rate	VAT		
Petrol and General Motoring Expenses					
Meals					
Accommodation					
Entertainment					
Miscellaneous					
		Total VAT			
		Total Expenses Received			

Claimant Signature

H.O.D. Signature

SALESMAN

11. JOB DESCRIPTION.

1. To operate in a clearly defined area.

2. To determine sales targets (budget).

3. To receive monthly extracts from:
Management Accounts - setting out performance against budget. Accountable for variances.

4. To be looking continuously for sales opportunities in the plastic moulding field.

5. Monthly meetings with Marketing Manager.

6. Be familiar with system for dealing with:
Enquiries, Quotes, Orders.

7. Report serious problems to Marketing Manager.

8. Aware of Company policy to rationalise sales:
a) Type
b) Size
c) Colour, etc., if possible.

9. Reports direct to Marketing Manager.

10. Relates to:
Sales office.
Production Dept.
Despatch.
Accounts.
Progress.
Development.

11. Awareness of Credit Control.

12. INFORMAL INFORMATION SERVICES

The need for an informal information system is extremely important in an industry in a basically declining market.

Can be dealt with by:-

1. Regular salesman monthly meetings co-ordinated by Marketing Manager:-
   to assess i) Product enhancement/development.
   ii) Potential large contracts to existing customers from their customers.
   iii) Current competition.
   iv) Product trends.
   v) Price reaction.
   vi) Why customers do not place orders.

2. New product meeting to be held by Production/Sales inviting those applicable for new product development.

3. Training of Salesman: - to encourage sale of standard products (e.g. limit of colour range) to existing customers, in return for discounting structure on certain product types.

4. Current informal information - how is current information carried.

5. Investigate viability of telesales activity to follow up formal quote. This would be carried out on a good potential enquiry and this follow up could be obtained on a 2 week old enquiry obtained from Quote index file.

6. Spend time with reps. - doing weekly calls to assess current market situation.

Group B

Report on PLAS-TEX LTD Marketing Information System

PLAS-TEX MARKETING POLICY

To review the current market situation, which will enable us to make proposals for the reorganisation of the sales function. This may, obviously, have implications to other depts., such as, accounts, prod., and work study. The success of the project will be, in part, dependant upon your support and co-operation.

Our long term strategy will be to consider the trends within the UK. textile industry. You will all be aware that this particular industry is in irrevocable decline. In order to fill our existing production capacity, we shall have to look at ways of diversifying. This can take the form of expanding our market world wide, rather than home based. Alternatively, we should identify what industry Plas-Tex are in. We have always seen ourselves as suppliers to the yarn manufacturers, but more fundamentaly we are manufacturers of plastic components, utilising injection moulding techniques.

Part I - Sales Reorganisation.

A study of the existing organisation has highlighted certain problem areas. These range over:-

i) possible confusion arising in the order processing system.
ii) inadequate sale analysis.
iii) lack of market information gathered by sales force.
iv) lack of co-ordination and supervision given to the sales force.

A clearer approach to these points, will allow us to reassess the important production aspects of stock control and product rationalisation. Leading to a reappraisal of the company's pricing policy.

Order processing system

The proposed redesign for the order processing documents will allow for more comprehensive sales analysis. Ref. report on design system. Appendix I.

The benefits will be that:

a) Marketing copies analysed for:-
   Product type)
   product quantity) Revealing product trends.
   special orders)

b) Stock records analysed for:-
   product type
   product quantity

Revealing regular/seasonal shortfalls, overstocking.

c) Product records analysed for:
Product type.
Product quantity.
Production batch times
Production costs.

d) Accounts records analysed for:
Product type/quantity
Product cost/revenue contribution

It would be envisaged that there would be no extra work load involved, parts of the old system would be replaced, e.g. Quotations replaced with standard price list, card index incorporated into new filing system.

The only initial cost would involve stationery.

Information required for Rationalisation of Product Lines.

Sales analysis and internal production analysis could show the volume over a period time for each product line. On the face of it, we are simply producing two types of cones. In fact we are manufacturing at least 192 lines, without taking specials into consideration.

Product type:- 9° 15' + 4° 20' + Parrallel Tubes.
Colours
Surface texture
Material
Special customer requirements

Trends revealed from this analysis will allow a stronger relationship between customer demands/stock level/ economic production runs. The eventual phasing out of some options may be possible. It could be possible to structure the pricing so as to encourage the choice of options towards the most popular lines.

Pricing Structure.

Material and Labour and O/H and Profit = Selling Price.

Material price will be a critical factor in the costing. Plastics are part of the petro chemical industry, and therefore determined by oil prices. These are showing continuous and rapid increases.

Quest:- Is it more economical to use polythene or polystyrene.
Material price trends - Material supplier.

If production reationalisation is feasible then pricing structure should be shaped in such a way as to encourage a rationalisation programme.

Discounts:-

Using the present example of 50,000 units per economic

prod batch quantity, why are discounts offered below this figure? To offer 9% discount on runs smaller than this production requirement is questionable.

The basic price could be offered at the prod batch quantity. Surcharges could be made on smaller quantities and offer discounts on larger runs.

Specials.

What are the actual cost implications of specials - information received from:-

Accounts and Work Study
Cost of pigmentation
Does it hold up normal running lines
Tooling up of machinery - cost of special moulds.
Does the price reflect the extra risk involved:-

Is £150 a realistic figure over 10,000 unit run i.e. £0·015 per unit. This figure should be more like 5 - 10% on selling price.

Sales Re-structuring and information gathering.

In an effort to consolidate over views on the market, we shall present a questionnaire to our customers. The benefits of such are to reaffirm our views on our sales effort. See Questionnaire Appendix (2).

The questionnaire can only be part information gathering. This must be backed up by a co-ordinated sales force.

Sales Representatives.

Present situation, six representatives.
1. 3 covering Lancashire, Cheshire and Staffordshire.
2. 2 covering North of England, Scotland.
3. 1 covering Midlands, South of England and Wales.

Objective.

1. Redefine areas, and allocate a representative to each area. This would be achieved by giving each rep. an equal number of Companys in each area.

2. All transactions within a rep's area will either be, placed by the rep himself, or if the factory is contacted direct by the customer, notification of this should be relayed to the representative.

3. Each representative is responsible for the development of their own areas.

4. A customer profile to be drawn up by each rep. for all the customers in their areas.

Items of Interest.

1. General description of company. (How large, no.s. employes, how long been trading).

2. Quantity of products purchased (each month, year).

3. Type of products.

4. Type of machinery use by customer.

5. Personal contact, within company.

6. Identification of competitors produce and type, and quantity being used by customers.

All the above topics are ever changing and all representatives must, continually change and update each individual customers profile.

Sales Manager:-

Due to the past chaos that seems to surround the sales-force, and the fact that, there will now be more information passing to and from the sales areas.

1. Communication link between factory and sales representatives.

2. Co-ordination and motivation of sales reps.

3. Monitor customer requirements and quantity.

4. Gather and relay information of competitors activities.

5. Compiling and analysing sales information.

6. Releases marketing manager for other activities.

7. Expand markets for the products being offered and identifying opportunities to develop into other fields using plastic pressure forming techniques.

Cost of System.

1. Added cost of a new appointment to the sales force. The position of a Sales Manager.

2. Increase in communication between sales forces and parent company would result in more paper work being produced and more files being kept.

3. Due to increased effort being channelled into sales, a resulting increase in representatives expenses.

Benefits of System.

Having redefined the objectives and aims of the sales forces benefits will result.

1. Each representative will have a clearly outlined area in which to operate.

2. Having all customer transactions related to the representative for that area, will enable them to keep in touch with the total order required, how much has been supplied ex-stock and what is left on balance. All specials can be for his special attention.

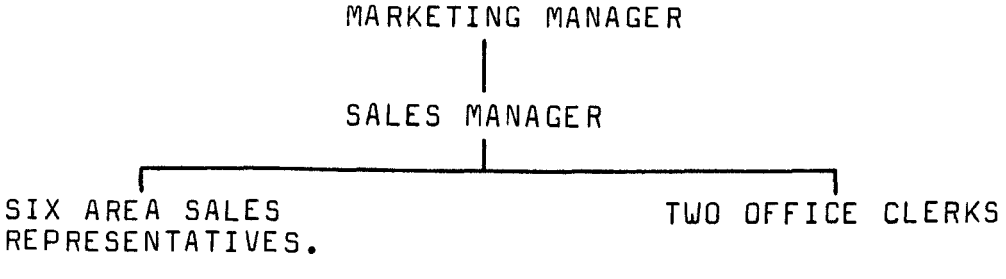
3. A benefit of an early defined area each representative can be responsible for the development of that area and servicing of existing customers.

4. A customer profile will be kept by, the representative and a copy and the factory, this will communicate the customers needs and requirements to the factory. (this will help to eliminate problems over specials). Note This file must always be kept up to date.

5. All above factors will head to increased efficiency when placing an order, greater dillegence in monitoring the order through the factory.

6. Increase communication must head to greater customer service and satisfaction.

SALES DIVISION



OBJECTIVES

1. Redefined areas.
2. Representatives notified of all orders placed.
3. Representatives responsible for the development of areas.
4. Information of Competitors activities.
5. Identification of Customers needs.

Part II - Diversification

It is obvious to us all that the textile industry within the UK is presently under strong competition from abroad. Predominantly third world countries with lower labour costs are forcing the market into decline. This situation leaves our company with three alternatives.

1. To stay in the present contracting home market.
2. To expand our sales worldwide.
3. To diversify into other products.

If we decide to stay within the home market, which we agree is declining we will in the future face stronger competition for fewer and fewer orders. Profit margins will have to be cut and it would be advisable to conduct a survey to discover which sectors of this market will be able to withstand the competition better, so that we can concentrate our efforts in the right directions.

Our second alternative, to expand sales of our present product into export markets would require that we conduct surveys to enable us to identify markets in which we can compete. It may be that the countries which are presently attacking our current home market would provide us with our export market, but it would be necessary for us to expand into these markets, before these countries began production of our products themselves.

For our third alternative we must do away with the idea that we are merely producers of plastic cones, and except the fact that we are producers of injection moulded products. The machinery which we have is highly flexible, and with a modest outlay for new tools, we can produce a wide variety of injection moulded products. In order that we can decide which markets we may possibly diversify into we would need to obtain information on the various markets for the products which we could produce. We may obtain this information by:-

1. Contacting machinery manufacturers to find out where else they sell injection moulded machinery.

2. Contacting suppliers of raw materials to find out where they sell.

3. Contacting Tooling manufacturers to find out where their expanding markets are.

4. Contacting a trade association connected with injection moulded machinery to find information on expanding markets.

The gathering of information is a costly procedure and would involve a great deal of effort by ourselves, but without this information it would be impossible for us to plan with any certainty our long term strategy.

APPENDIX 1.

REDESIGNING OF FORMAL SYSTEM.

Format enclosed in this system is a proposal only, final details to be discussed with the relevant departments to avoid errors and gain co-operations.

Aim was to rationalise the formal records systems by reducing the multiplicity of forms to one basic format modified for each purpose i.e. order form, invoice, records form. The revised system to allow easier extraction of useful information and reduce the possibility of errors.

This would necessarily be a medium term aim to be introduced as soon as the marketing department gained enough credibility to persuade other managers that a system revision is vital unless the M.D. can be persuaded to give his full support.

The different forms would be standardised to one basic type with the necessary variations gained through a NCR or overlay system as illustrated. Basic form need only be typed once by the marketing department order clerks which reduces the chance of copy typing errors and reduce copy typing costs.

Introduction of a logical coding system with the revised form to aid cross checks on accuracy and facilitate the extraction of information at any point in the system. Costly practice initially in training and persuading staff to adopt coding but long term benefits in error elimination and information extration justify revisions.

Change the filing orders in the marketing department to by client and then area of orders issued. Weekly analysis by Marketing Manager can aid production department and a monthly compound of figures can be used for forecasting. product trends and sales levels. Cost of revision is negligable and the immediate benefit allows crosschecking of new orders received to avoid duplication and easier access to item/quantity information by customer and area by the marketing department. May also indicate area for rationalisation.

The revised files would also hold details of the clients name, address, etc., and any special order requirements obviating the need for a card index.

Monthly analysis by the Production department of stock levels in conjection with sales forecasts by the marketing department will benefit by revealing understocking, overstocking, order completion times from stock, redundant stocks, and seasonal variations, costs in personnel time - benefits through economic stocking levels, elimination of redundant stock (possibly by special bargains) customers

order servicing through adequate stocking.

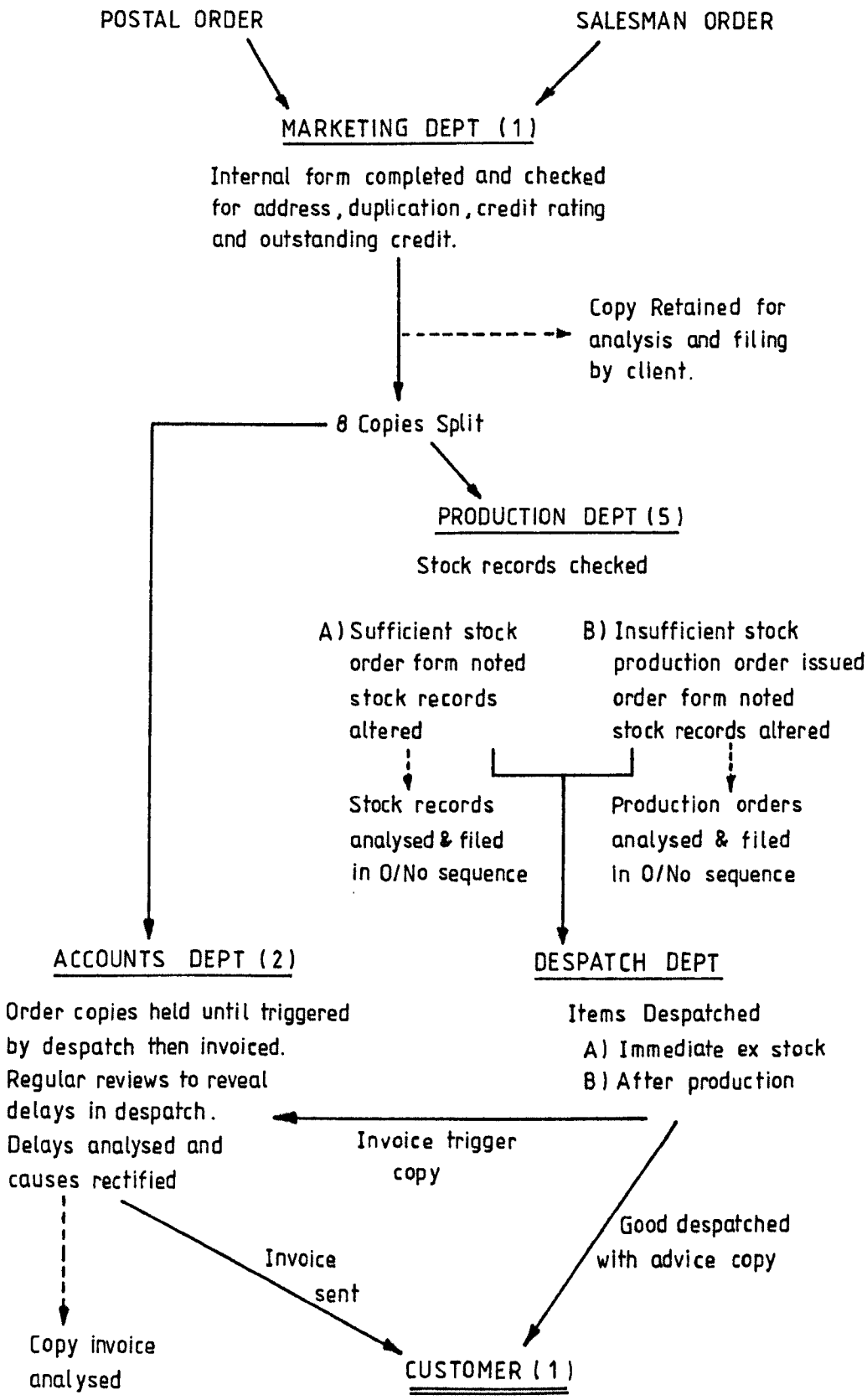
Production department produce a weekly analysis to high light problem areas such as special order production times and costs. Information on production costs to accounts and in co-operation to produce a monthly operating statement for their own use and in addition for the monthly sales analysis. Benefits in providing a speedier analysis of problem causes, costs and production times.

Analysis by the accounts department of monthly sales with a detailed breakdown to Marketing Manager of sales by quantity and sterling linked into profit margins to indicate areas for exploration or rationalisation. Assistance to the production department in providing their operating statements. Detailed breakdowns to be summarised in a simplified format for use at monthly management meetings to aid comprehensive decision making. This analysis is the most important and provides the greatest contribution to marketing decisions.

Accounts would also advise in the formulation of budgets and forecasts for the coming term in co-operation with the departments concerned.

Expenses sheets to be analysed weekly for payment authorisation by the marketing manager and on a monthly basis in conjunction with the sales report to ensure sales effort and expense is being expended on the areas which will yield the best return. Costs are in personnel time for form completion, analysis and discussion benefits through selected order maximisation, planning of cost effective calls schedules and avoidance of call duplication.

Production / Accounts System of Order Processing



8 copy internal form.

1. Marketing Department - filed in customer files.

2. Production Department.
   copy a) Stock issues only - filed on stock records by o/No
   b) Production (and stock) issues - filed on production records by o/No.

3. Despatch Department - filed on o/No.

4. Despatch/Accounts Trigger Copy - filed in accounts on o/No.

5. Despatch client copy.

6. Accounts Invoice copy filed by Invoice No. + x referenced to o/No.

7. Invoice copy to client.

Quote forms to be discontinued and a standard price list issued.

Card index to be discontinued per se and details to be held in future on Marketing department orders files. Also to record information regarding special orders requirements.

CODING SYSTEM:-

ITEM:-

9 15 5	9° 15' cone 5"
9 15 7	9° 15' cone 7"
4 20 5	4° 20' cone 5"
3 00 0	Parrallel tube

MATERIAL TYPE:-

I.P.	Impact Polystyrene
P.	Polythene

Finish Type:-

S	Studded
K	Knurled

COLOUR:-

Re	Red	All Materials.
Bk	Black	All Materials.
Gr	Green	All Materials.
Ye	Yellow	All Materials.
Be	Blue	All Materials.
Wh	White	All Materials.
Or	Orange	Polystyrene only.
Pu	Purple	Polystyrene only.
In	Indigo	Polystyrene only.
Br	Brown	Polystyrene only.
Fa	Fawn	Polystyrene only.
Pi	Pink	Polystyrene only.

Internal order numbers need only be serialised as the date information is already shown.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

Date:

Order Number:

V.A.T. No 056 2159 23

Invoice Address:

Account Number:

Delivery to:

Delivery Method:

Item Code	Description	Material Type	Colour	Finish	Special Order	Order Quantity	Unit Price	Total

Special Order Details:-

Production Notes:-

Total

+ VAT 15%

Total Amount Due

Invoice Terms:-

PLAS-TEX LTD.

EXPENSE FORM.

Name :

Department :

Date	Milage	Company Visited	Duration of visit	Description of expense	Amount Claimed

Claimant Signature :- Date

Authorised by :- Date

Appendix 2.

PLAS-TEX LTD. - QUESTIONNAIRE.

CUSTOMERS NAME:-

INTERVIEWEE:-

PLEASE TICK AS APPROPRIATE.

1. ARE YOU SATISFIED WITH THE OVERALL SERVICE OFFERED BY PLAS-TEX.

   SATISFIED ☐

   DISATISFIED ☐

2. DOES THE QUALITY OF OUR PRODUCT MEET YOUR REQUIREMENTS.

   YES ☐

   NO ☐

3. HAVE YOU A PREFERENCE FOR POLYTHENE OR HIGH IMPACT POLYSTYRENE CONES.

   YES ☐

   NO ☐

4. WHAT LIFE DO YOU EXPECT FROM A CONE.

   SINGLE ☐

   2 - 3 ☐

   4 - 5 ☐

   OVER 5 ☐

5. WHAT ARE YOUR COLOUR CODING REQUIREMENTS.

6. WOULD A NUMERIC FORM OF CODING SYSTEM BE ACCEPTABLE TO YOU.

YES ☐

NO ☐

7. IN THE FORSEEABLE FUTURE DO YOU SEE YOUR REQUIREMENTS FOR OUR PRODUCT.

a) INCREASING.

b) REMAINING CONSTANT

c) DECLINING.

PLEASE SPECIFY.

<u>9° 15' CONE</u>

5"

7"

<u>4° 20' CONES</u>

5"

7"

9"

SPECIALS

<u>TUBULAR PLASTIC YARN SUPPORT</u>

8. <u>DELIVERIES</u>

IN THE PAST HAVE YOU FOUND THAT PLAS-TEX HAVE QUOTED AND DELIVERED REGULARLY.

a) ON TIME ☐

b) LATE ☐

c) EARLY ☐

9. HAVE THE DELIVERY TIMES QUOTED BY PLAS-TEX BEEN

a) TOO-LONG ☐

b) ABOUT RIGHT ☐

c) FASTER THAN YOU REQUIRED ☐

10. HAVE YOU EXPERIENCED PROBLEMS REGARDING THE PLACEMENT OF ORDERS WITH OUR COMPANY.

YES ☐

NO. ☐

11. WOULD YOU PREFER A DIRECT ORDERING SYSTEM. THAT IS COMPLETION OF AN ORDER FORM SUPPLIED BY PLAS-TEX.

YES ☐

NO ☐

12. WOULD YOU PREFER A PRICE LIST RATHER THAN A SEPARATE QUOTATION.

YES ☐

NO ☐

13. IN RELATION TO OTHER SUPPLIERS DO YOU CONSIDER OUR PRICES TO BE.

i) EXCESSIVE ☐

ii) MODERATE ☐

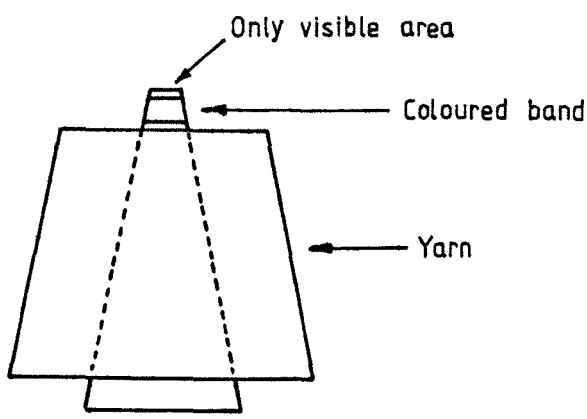
BENEFITS TO BE GAINED FROM THIS QUESTIONNAIRE.

An idea of our current market reputation,indication of possible trends in customer requirements, gaining approval for possible streamlining of ordering systems rationalisation of product range.

Appendix 3.

Alternative Colour Coding.

Present Scheme	Proposed Scheme
Coloured plastic chip stock (12 varieties)	Unpigmented plastic (bulk discount)
↓	↓
Injection moulder (Min. order run 50,000)	Injection moulder (Allow longer runs)
↓	↓
	Direct Silkscreen mach.
↓	↓
Coloured cone stock	Coded cone stock
↓	↓
Customer	Customer



Cost

Capital cost of installing S/S machine.

Benefits

1. Bulk purchase of unpigmented plastic.
2. Only size and type of plastic prod. considered.
3. Allows for smaller stock level.
4. Allows customer to retain colour coding.

Group C

Report on PLAS-TEX LTD Marketing Information System

PLAS-TEX LIMITED.

MARKETING INFORMATION SYSTEM

Since the company is well established in the plastic moulding industry and enjoys the advantage of no major competitors in the same field, there is a grave need for a dynamic Marketing Manager coupled to a well-directed, high-motivated and active sales force, who will provide first class service to existing customers and develop new clients for the future growth and expansion of the company.

A Marketing Information System is therefore essential to furnish a link between the market place and the resources which we have at our disposal. Such a system must exist if the organisation is to develop the right products set up an effective communications programme and design plans to achieve both our short and long-term objectives.

We feel that in the short-term our aim must be to preserve our market share and improve the performance of all our staff, before wishing to expand and possibly diversify into new product lines in the long term.

Our Marketing Information System would consist of both formal and informal procedures:-

FORMAL PROCEDURES.

1. SALES' VISIT REPORTS - The Sales Force will be expected to complete a sales visit report on each visit made to either a regular or prospective customer. The object of these reports is to help to build up a profile of the customers and identify needs and trends. Reports are to be submitted each week and must reach the Marketing Manager by not later than Wednesday of the following week (App.3.).

2. Each Salesman will be allocated and be responsible for a specific area. He will have budgets to meet. Areas to be coded by representatives.

3. A programme of planned calles to be made based on key accounts identified by marketing surveys.

4. Monthly Sales meetings and Inter Departmental Meetings proposed at regular intervals.

5. Expense claim forms to be submitted with sales reports, the name of the person entertained together with his company to be shown on the form.

6. Regular visits to key customers.

7. Orders to be confirmed (backed up by customer's order numbers) by the representatives as soon as possible.

8. Data Store/Date Process. Historical information from the card index, monthly sales analysis about customer's purchases, general information on customers, sizes and types of orders, methods of payment and credibility.

INFORMAL PROCEDURES.

1. Specific market surveys carried out internally.

2. Technical journals trade magazines statistics, etc., KOMPASS - YARN PROCESSORS, KELLY'S MANUFACTURING GUIDE.

3. Personal contact with the customers.

4. Trade Association functions which the Marketing Manager should attend.

5. Personal contact with moulding toolmakers to find out state of plastic moulding market.

6. Day-to-day contact with other departments - i.e. Research and Development, Production Department, etc.

7. Feedback on Competitor's activity from the Sales Force.

Initial market surveys will be carried out to establish basic data about the number and size of customers, what products they are buying which representative visits them, how often they buy and in what quantities, how effective our service is with the intention of drawing up a territory plan for each representative (See appendix I).

ORDERS.

A new system of ordering would have to be devised in order to eradicate any duplication or errors in the processing of orders. Formal training of clerical staff may have to be undertaken so that they are au-fait with the new system. (See Appendix 2).

Better feedback from the Accounts Department providing the Marketing Manager with more up-to-date and more accurate information on actual sales would greatly help him to forecast demand for the entire product range.

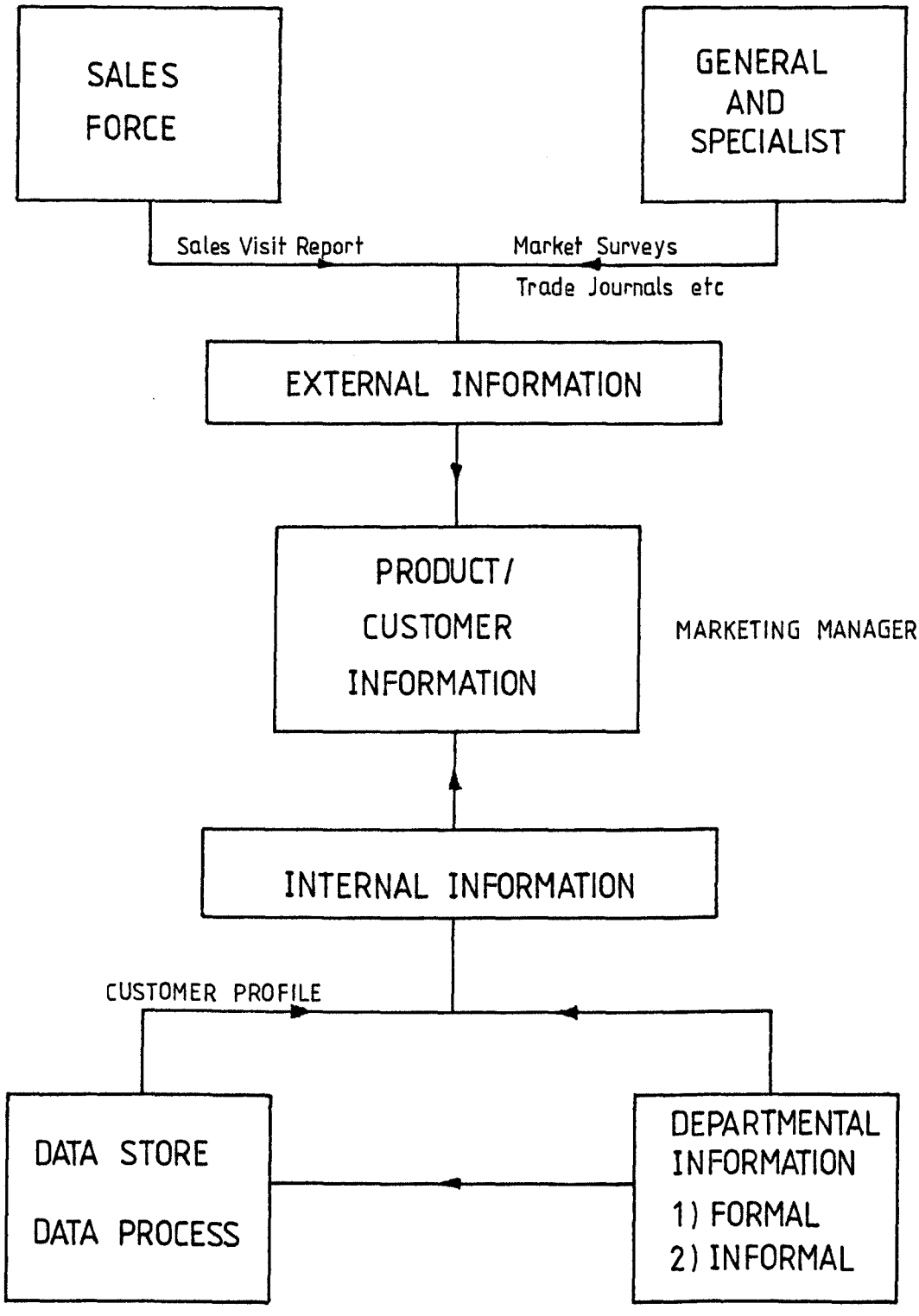
In order to save costs the basic paperwork system only needs revamping, not completely changing. (See Appendix 2).

MARKETS

With regard to New Products the feasibility of external Market Surveys will be looked into by the Market Manager tubular plastic yarn would be a good example here. Possibly in this case old established customers could be test marketed first of all before new contacts are sought.

Although our share of the market for 9° 15' and 4° 20' cones has been increasing during recent years there is no certainty that it will continue to do so therefore the sooner our Marketing Information System is effectively working the quicker we may be able to diversify into new products so that we can expand our business.

Marketing Information System



MARKET SURVEYS. APPENDIX I.

The object of the market surveys is to provide the necessary base data to make the introduction of a marketing information system effective.

The market surveys will be in two parts both intended to be carried out internally.

PART I.

A retrespective market survey from existing sources of information.

i) Old orders.
ii) Card index of customers.
iii) Information from the sales force.

The aim is to provide an analysis of demand by colour-type, etc., of our product range over the past 12 months. The index will help in identifying our current customers and provide the initial information for a customer profile.

PART II.

Market Survey of the industry we currently supply to.

The survey will be carried out using such sources as Kompass, Kelly's and digests of statistical information.

The survey will provide:-

i) Number of companies active in the industry.
ii) Size of each company.
iii) Range of activity of each company within the industry.
iv) Concentration and disposition of the industry.

It is expected that this survey will take longer than the retrospective survey but the concentration and disposition of the industry and a list of the potential key accounts could be identified in a relatively short time.

From the key accounts and concentration and disposition a territory plan can be established.

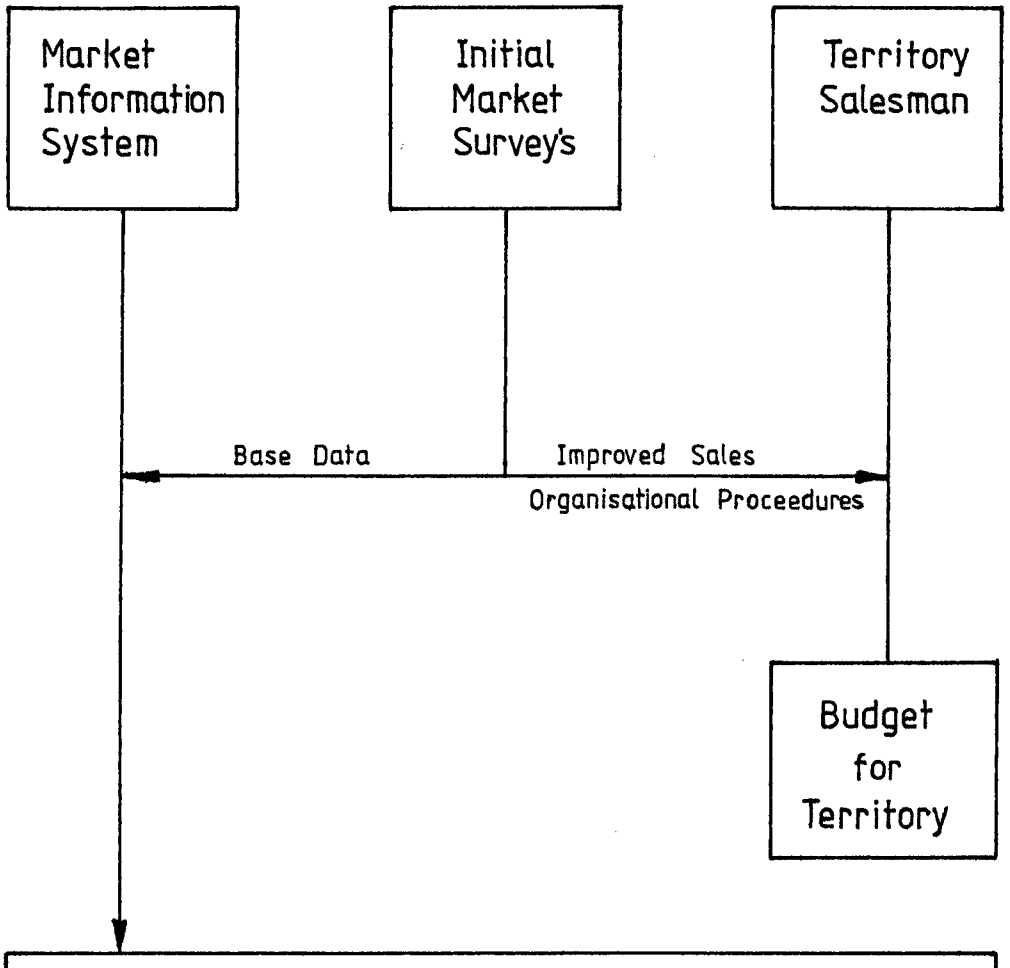
Territory Plan.

i) Will divide the country into sales areas. Each salesman will have an area.

ii) A budget will be established for each area based on the expected potential for each individual area.

Customer Profile

This would be built up as the information and data gained by the adoption of a MIS.



The initial market surveys will provide the foundation for the base data for the market information system and also provide the detail for establishing more formal organisational control of the sales force.

QUOTES

Appendix II.

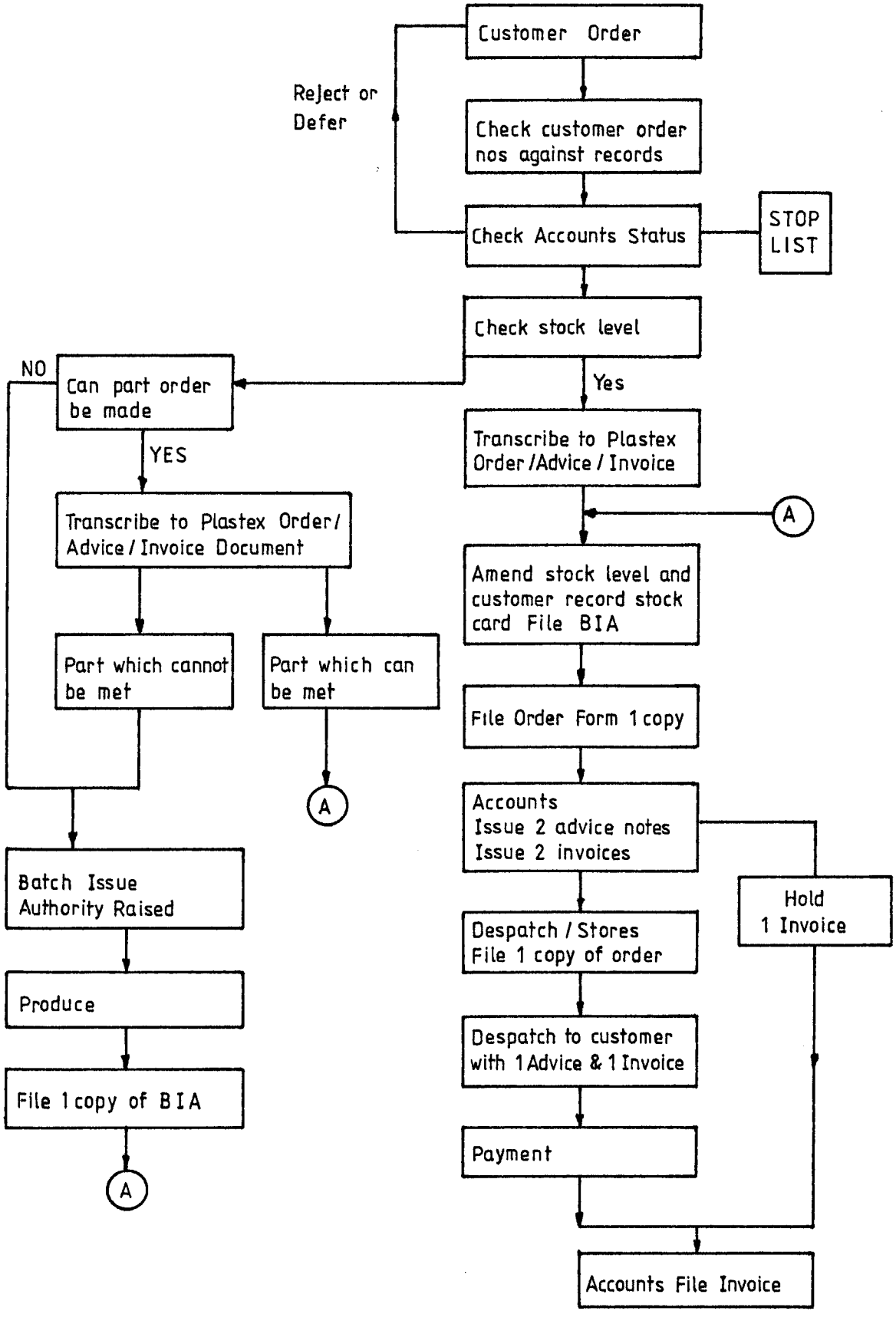
Quotes should be typed and have the following additional information.

1. The customer/Area code, e.g. A.1000.

2. The description should also include the component code - when it exists.

CUSTOMER)
MARKETING) Copies
ACCOUNTS)
AREA SALESMAN)

Proposed Production System.



Order/Advice/Invoice Form.

6 copies	Pink - Marketing - Order
	Green - Accounts - Invoice
	White - Customer - "
	White - Customer - Advice
	Blue - Despatch - Order
	Green - Accounts - Advice

See flow chart and forms shown on next three pages.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

ORDER FORM

Date:
Your order No:
Our order No:

Customer Name	Delivery to (if different)

Code	Description	Qty	Ex Stock

SPECIAL INSTRUCTION:
Delivery By:

PLAS-TEX LTD.

Head Office.
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

ADVICE NOTE

Date:
Your order No:
Our order No:

Customer Name	Delivery to (if different)

Description	Qty

Delivery By

PLAS-TEX LTD.

Head Office.
Fulford Trading Estate,
Burnley,
Lancs.

Telephone: 0282 576342
Telex: 45634 PLA BUR A

INVOICE

Date:
Your order No:
Our order No:

Customer Name	Delivery to (if different)

Code	Description	Qty	Ex Stock	Desp	Unit Price	Total Price

Accounts

Customer Record Card

Name

Customer No *eg A 1000*

Address

Contact

General Information *eg employed in*

Discounts

Credit

Our order No	Customer order	Date

Stock Record Card

Part no code | Min stock level

Description

Date	Order No	Quantity	Stock	Balance	Remarks
	Cross reference only				*ie Issue of BIA*

Batch Issue Authority 2 copies

Batch Issue Authority

Part Code _____ Batch nos _____

Description _____ Date _____

Number to be produced _____

Delivery date _____

Authority _____

Code Numbers

Summary

1) Order Numbers

eg A 1000 I I I I □

Territory Code A - F	Customer Code No	Plastex Order No	Split Batch A = Complete order B = Part order

2) Stock Codes

eg A, 11, P, 5, K.

A = 9° 15' B = 4° 20' C = Tubular Pkg	Colour 00-11	Material P = Polythene S = Impact Polystyrene	Size in inches	Finish K = Knurled L = Studded

Appendix 3.

Sales Visit Report.

The object of the sales visit report is to provide the marketing department with information on

i) Current customers
ii) Potential customers
iii) Product details
iv) General Trends

The completion of these reports is an essential part of the Marketing Information System and the following procedure must be adopted.

a) The form to be completed after each visit to a customer even if there is no order.

b) At the end of each week all visit reports are to be sent to the marketing manager to arrive not later than Wednesday morning, of the following week.

c) Other comments:- These are to provide a background to the customer and the industry and should include such items as any planned expansion or closures, product changes or possible organisational/policy changes.

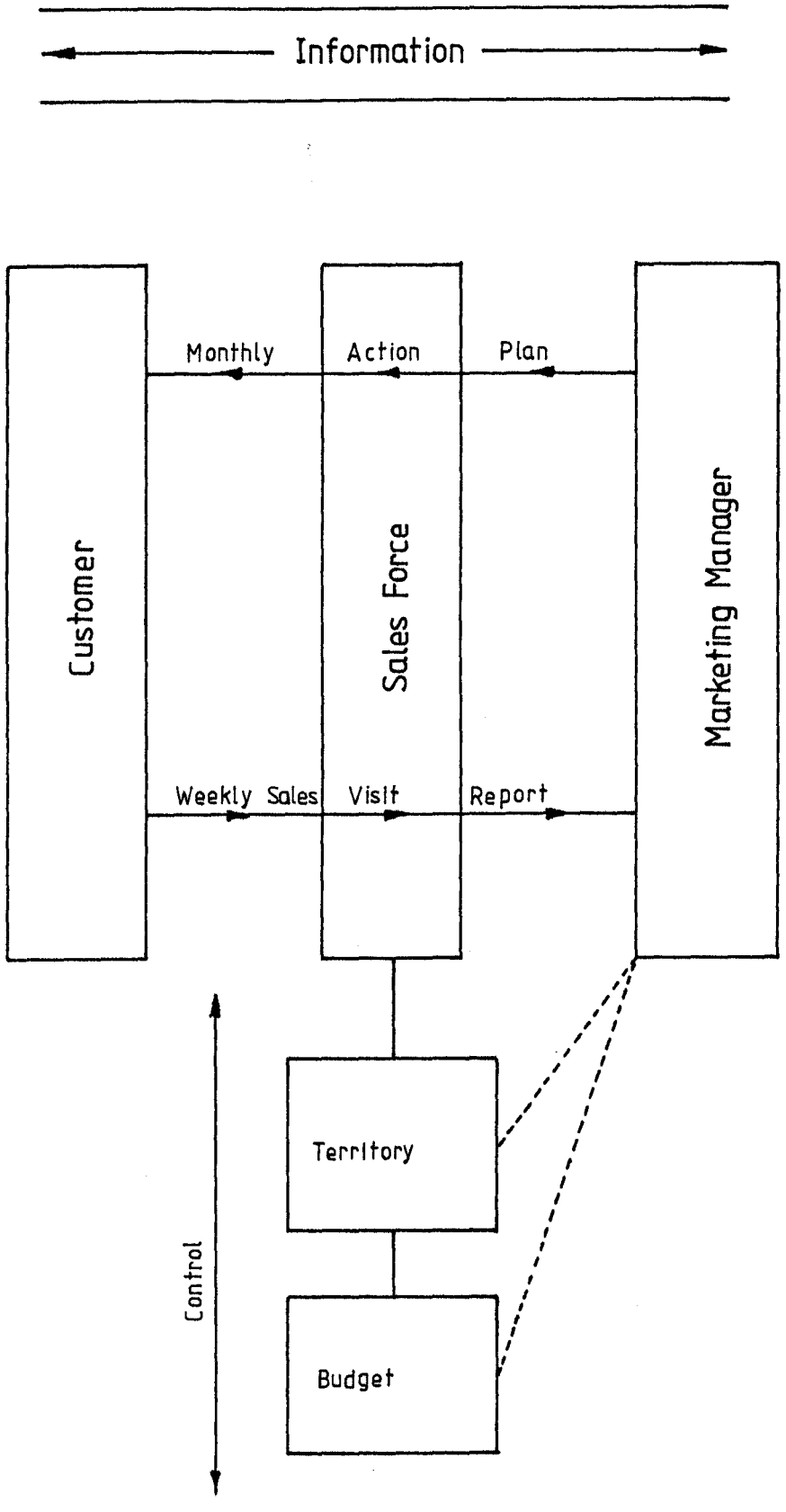
Sales Rep Report

Customer Name.		Location. *Address*												
		Cust Code *eg 00071*											Terr Code *A - F*	
Industry.														
Products of Interest	Colour / Material	1	2	3	4	5	6	7	8	9	10	11	12	other
	Type 1						*P*							
	Type 2								*S*					
	Tubular Pkage Support													
	Other Detail													
Quantities	Type 1 Type 2 Tube Pkg Support													
Complaints. Detail	*Delivery Times* *Quality etc*													
Competitors Products	*Any in Evidence* *Any Information gleaned on products*													
Other Comments	Signature ----------													

Monthly Action Plan.

This is an instruction from the marketing manager to each individual salesman to direct action on key accounts. It would be expected that this would be an agreed plan of action between the manager and the salesman.

Marketing Information System



Group D

Report on PLAS-TEX LTD Marketing Information System

PROBLEMS WITH PRESENT SYSTEM.

1. Double ordering - referal to card index.

2. Transposition of Information:
   a) Salesman Quotes - verbal only
   b) No order acknowledgement - from sales clerk.

3. Need to improve interdepartmental co-ordination - hold interdepartmental meetings.

4. Misdirection of sales force - tighter control of sales activities. Greater emphasis on market information.

5. Absence of data base in marketing department -
   Create customer files.
   Expand card index.
   Improve sales analysis system.
   Develop departmental trend, analysis, etc.

MARKET RESEARCH INTO NEW PRODUCTS.

1. Head Office - Information on any company in group associated with thermoplastics.

2. Government Agencies - Department of industry. Department of science, and technology. Department of trade.

3. Universities, etc.

4. Trade association and possible membership to confederations and commercial research organisations.

5. Chambers of commerce.

6. Trade press.

7. Special emphasis on U.K's fastest growing industries.

Review of Sales Force Activities.

It is clear that the future of our traditional markets is at best uncertain and at worst likely to follow a steady decline as the current outlets reach saturation.

There is therefore needed a new direction for sales force activity designed to ensure an expanding market for the output from this company; whatever that output may be.

Certain areas of activity can already be identified as being in need of review and these will be discussed below.

1. Ordering/Quoting Procedure.

There is evidently a need to streamline the present ordering and quantity procedures in order to eliminate errors, duplication and cost penalties both in financial and goodwill terms with the customer.

The detail of the new procedure is fully explained in Section I if this report and the objective has been to provide a better service to the customer, consistant with company efficiency.

2. Control of the Sales Force.

A control system has been designed to fulfill two objectives. Firstly to provide an account of day to day sales force activities in terms of visits made, action required, etc., which will also enable a cross check to be made on expense claims for the period. Secondly the system will provide information which will keep the marketing manager up to date with activity in the field and also provide data for updating company records and supplementing the informal data collection system.

The system will consist of a weekly report on each customer/ potential customer visted during the week. A typical layout for this report is shown in Appendix I and the incorporated statement of expenses will be summarised on the existing claim form for authorisation.

3. Policy on Existing Markets.

Increased effort will be made to expand markets for existing product lines and in general to cater for our traditional outlet areas. This policy will be needed to bridge the gap until our products can be developed.

This policy will be greatly assisted by a new emphasis on market research by the sales force both formally and informally; and also by improved data held in the marketing office.

Data on existing customers will be held on two basic formats. Firstly a customer file will be established which will contain all information and correspondence

relevant. Secondly the card index will be expanded to provide a rapid data source for clerical purposes.

4. Policy on New Markets.

To ensure the long term survival of the company there is a need to diversify the product range. The sales force must play a big role in the initial market research both in seeking alternative uses for our existing product type and also in obtaining information on sales opportunities within the general field on plastic mouldings, initially constrained by our technical limitations.

5. Formal/Informal Information Systems.

A certain amount of information will be generated by the weekly customer reports. However, there is a need for a more detailed submission by our sales representatives so that important information is transmitted and recorded.

For this purpose a monthly report and be required from each salesman. This will be received by the marketing manager one week prior to a general sales meeting including all salesmen and the manager. A proposal content for this report is shown in Appendix II.

It will be up to the marketing manager to analyse the information received and to initiate and control any further action required.

Other Information Sources.

As it is our objective to diversify our product range extensive market research will be required to identify opportunities for using our expertise as plastic moulders.

Sources of information will include:

Trade journals and directories.
Exhibitions and conferences.
Head office - for group activities.
Government agencies.
Universities.
Trade associations.
Chamber of Commerce.

Emphasis will be placed on industries where rapid expansion is anticipated?

APPENDIX I.

GUIDELINES RELATING TO SALES.

1. Weekly Report.

Forming part of expense reclaim forms.

Front Sheet:- As detailed in appendix to this exercise but with additional lines divisions and to be submitted as a weekly summary.

Appended Sheets:- One sheet related to each visit to be attached to the weekly form and to include:

Destination:- Marketing Manager.

Appendix I

WEEKLY REPORT (Expense Form)

Date

Name / Address

Reason for call

Discussion / Outcome

Action Required

Expenses
- Mileage
- Meals
- Other

Date ..... Signed .....

APPENDIX II.

MONTHLY REPORT.

Items to be included.

1. General summary of activity in Area.

2. Specific comment on major customers, to include:- E.G., Relocation, State of Company, Redundancies, Contraction, Expansion, etc.

3. Comment on items of interest concerning minor customers.

4. Feedback on new product potential.

5. Feedback on Product performance: e.g. durability, delivery, price, technical aspects.

6. Competitors activities.

7. Problems - Area, internal, general.

8. Other comments thought to be relevant or requested.

Procedure Manual for our Proposed System.

Sales Clerk - Enquiries may be received direct from the customer or on occasion from the field sales representative. The response is as follows:
If no delivery promise is required reply with quotation (white copy).
Retain pink copy in customers file.

If delivery promise is required liaise with production department who should formally reply in writing of production time.

ORDERS.

Orders may be received direct from customer or from field sales representative. All orders must be first checked against the recent order entries on the index system to ensure the order is not duplicated.
If duplication is suspected the order should be queried with the source of the order.
Once order is confirmed the relevant details must be entered onto the cardex. Order is subsequently typed on the appropriate form.
The white copy is to be filed in the customer file. The pink copy of the order is to be supplied to the accounts department. The green and blue copies are to be forwarded to the production department.

If required the delivery time is quoted on the order acknowledgement which is raised by the sales clerk and forwarded to the customer.

The sales clerk may also be involved in analysis of data, as directed by the marketing manager.

Field Sales Representative - The sales representative is responsible for writing current and potential customers within his area or as directed by the marketing manager. His responsibilities include discussion of technical aspects, promotion of sales and general customer relations. He may accept orders which must be forwarded to the sales clerk as promptly as possible. He may give estimates of prices but must make it clear this is only an estimate. He may not give formal quotation direct to the customer. He should direct any quotes, either via himself or direct from the customer to the sales clerk.

His duties also include the provision of weekly and monthly reports as outlined in Appendix.

Marketing Manager - The duties of the marketing manager include the supervision of the Six Sales Representatives and Two Sales Clerks. He/She is responsible for the effective performance of the sales representatives, specifically the analysis of data generated by weekly reports, the processing of monthly reports and the co-ordination of the monthly meeting (including providing the sales force with a synopsis). He/She is also responsible for the co-ordinating/direction of sales effort within the market. The marketing manager's more general role is to assess the state of the market (both within and outside the 'traditional' (one market), to define market opportunities and prediction trends. He/She should liaise as appropriate with Production, Financial and Development departments and outside bodies in order to achieve their objectives.

Systems relating to the smooth and efficient running of the Marketing Department must be established and maintained.

Group E

Report on PLAS-TEX LTD Marketing Information System

PLAS-TEX LTD.

MARKETING SYSTEMS OPERATIONS MANUAL.

CONTENTS.

THE NEED FOR MARKETING INFORMATION SYSTEMS.

INTRODUCTION:

Since joining the company, the marketing manager has been looking at the effectiveness of the department, its strength and weeknesses, the information flow and information needs. It is evident that few changes can be made because of a basic lack of information. This is not a lack of data, since this is in existence, but a lack of collation into meaningful information.

The present sales analysis report does not provide sufficient information on which to plan; salesmens routes, geographical coverage, product/customer interface, order frequency, or desirability of the extension standard product options. It is therefore necessary to implement a Marketing Information System. (M.I.S.).

ADVANTAGES:

It is envisaged that M.I.S. can be best obtained by use of a data processing facility encompassing a microprocessor with video display unit and a word processor. However, for this hardware to be of greatest value to the Company it must be available to other departments, other than marketing. It is therefore proposed that all departmental managers should form a project team to evaluate and compile a feasability study. The M.I.S. will proceed from data which is available but which is currently not captured and used.

We need to look closely at our product catalogue, which currently offers 114 different standard options, plus specials. Unless we capture the sales by product we cannot see if this catalogue can be reduced in its standard options.

It is essential that sales effort must be directed towards order maximisation. The M.I.S. will provide sales analysis by customer to direct our salesmen to our better customers, sales analysis by geographical area to check where the present split of salesmens areas is effective, order frequency by customer helps to plan the regularity of salesmens journeys and order confirmation which tells the salesman immediately when his customers orders have been placed.

M.I.S. will highlight variations, favourable and adverse from the budget shows that corrective action can be based on up to date information. Sales analysis will determine causes of variances and highlight the responsibility for the variances.

STANDARD PRODUCT OPTIONS AT DEC. 1980.

9° 15' CONES.

5" or 7"	2		
Standard Colours (Polythene)	12		24
Standard Colours (Impact Polystyrene)	6		12
			36
Finish, studded or Knurled		x	2
			72

4° 20' CONES

5", 7" or 9"	3		
Impact Polystyrene in 6 colours	6		18
5" or 7"	2		
Polythene in 6 colours	6		12
			30

PARALLEL TUBES

12 standard colours			12

STANDARD OPTIONS		114

PLUS SPECIALS.

RESOURCES:

It is envisaged that the Marketing Department through these proposals can reduce from 2 to 1, the number of sales clerks. However, either through data processing or through manual analysis it is envisaged that one more person will be required. The net difference therefore is NIL in manpower.

To meet the information needs of the Marketing Department alone, a leased microprocessor facility with word processing and input from keyboard and visual display unit, would cost no more than £400 per month. This would be subject to other managers requirements.

CONCLUSION:

The M.D. is requested to approve the following items:

- The establishment of a feasibility study into data processing requirements.
- The establishment of a Marketing Information System, allowing for manual or computer systems.

MARKETING STRATEGY

INTRODUCTION:

Plas-tex is an established company producing plastic injection moulded products to the British Textile Industry with an annual turnover close to £5m per annum. At present the company has no plans to produce products which are applicable to other markets and there is now a need to review the future market plans of the company.

ECONOMIC REVIEW.

There is a need for the following subjects to be viewed in the light of producing a marketing plan.

- British textile industry

  This industry is undoubtedly declining due to increased cheap imported goods. Whilst Britain has imposed some Quotas against imports this has had little effect on the decline of the industry.

- World textile industry.

  All of the growth in the world is currently in Third World Countries.

- Petro chemical industry.

  Past experience and future trends suggest that petro chemical material costs will escalate at more than the average rate of inflation.

- Plastic injection moulding

  This industry has grown in recent years and its future seems only to be insecure through material costs. However the industry is likely to grow as ferrous based industries continue to decline.

THE COMPANY'S POSITION.

The following suggestions would appear to be the alternative strategies open to the company.

1. Increase market share within the UK textile industry by developing new products which can be applied, particularly of a "throw-away" nature, such as the development product used in the dying operation.

2. Concentrate increased sales activity in establishing an export potential with particular reference to Third World Countries.

3. Develop product potential for use in other industries for which the company's existing production facilities can be used.

IMMEDIATE INFORMATION NEEDS

1. Present productive capacity.

2. Current utilisation of capacity.

3. Product development lead times.

4. Cash available for long and short term capital investment.

5. Production lead times.

MARKET RESEARCH REQUIREMENT.

Information is needed in the following areas before a marketing strategy can be determined.

- Size and nature of our existing market, scope of competitors and future requirements of the British Textile Industry.

- Potential overseas markets for our existing products.

- Survey of the plastic injection mould industry, current markets and future product requirements.

CONCLUSION.

With the approval of the M.D., the marketing manager will establish the source of research facilities available and report back with recommendations in one months time.

ORDER FLOW.

We have redesigned our order flow and associated paperwork systems to:

a) Enable micro processing or long hand logging.

b) Avoid double ordering, etc.

WHILST

c) Retaining salesman flexibility.

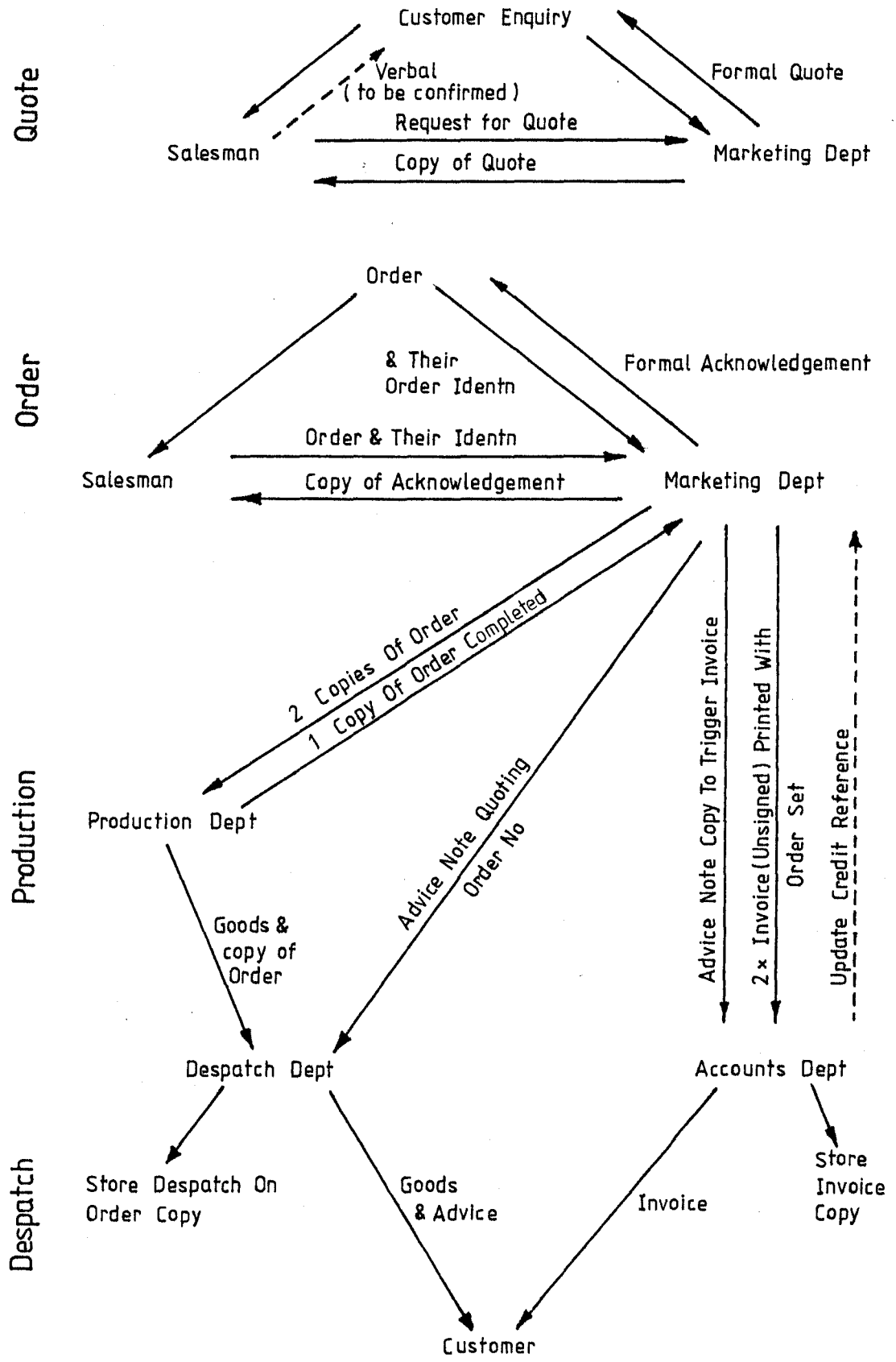
d) To inform salesman.

e) To collate marketing information for analysis.

f) To prepare a system for growth.

g) To maintain good customer relations.

Proposed Order Flow Chart



OPERATIONS MANUAL - QUOTATION SYSTEM.

1. It is envisaged that an enquiry may be received either by the SALESMAN or the MARKETING DEPT. office.

VIA SALESMAN

A quotation request form to be filled in and passed to MARKETING DEPT. for formal quotation to be raised. Verbal or carbon copy of quotation request stating price to be given to customer.

Information for this drawn from std. price list.

Alternative to sending quotation request sheet in, SALESMAN may phone in request to the DICTAPHONE terminal.

MARKETING DEPT.

Received enquiries from SALESMAN or direct from CUSTOMER.

Quotation details typed into data bank terminal which will then produce quotation set,

CUSTOMERS COPY= Top copy - to customer

SALESMANS COPY= 2nd copy - to salesman for area.

NOTE:- Salesmans copy would have the customers credit limit and credit balance not taking account of current quotation. In the masked box.

NOTE DATA BANK PROCEDURE.

1. Generate customer code and feed in.

2. Compare terminals records with name, addresses, etc.

3. If new customer trigger credit checks to accounts dept.

4. Print quotation. (details automatically stored at terminal).

5. Obtain Marketing Managers signature and dispatch date estimate.

6. Copy to salesman and quote to customer.

7. Further reference to this transaction can be either by quotation number via customer code and the terminal memory of recent transactions and quotes.

An example of a Quotation Form. 'Salesman's Copy would be printed on the second sheet in the Quotation Set instead of 'Quotation'

PLAS-TEX LTD.

QUOTATION

Head Office,
Fulford Trading Estate,
Burnley,
Lancs

Telephone: 0282 576342
Telex: 45634 PLA BUR A

Quotation No:

Date:

Quote to: Attn of
Co Name _____ Acc Code _____
Inv Add Del Add

Territory Code _____ _____

Dear Sir. We are pleased to submit this Quotation for your consideration:

Item No	Qty	Type	Size	Colour	Finish	Mat'l	Other Information	Unit Price
Special Instructions							Total Price	

Delivery is expected to be on _____. If you have any queries please contact the Marketing Manager on the above tel no ext 107

Yours Sincerley _____ (Marketing Manager)
on behalf of PLAS-TEX LTD

Quotation valid for..... days from above date
All prices exclusive of V.A.T. P.T.O. for terms

OPERATIONS MANUAL - ORDERING SYSTEM.

Again it is envisaged that orders may be received through the SALESMAN or the MARKETING DEPT. office.

IMPORTANT

a. In order that both these imputs may be used without fear of confusion it is imperitive that each order is received with a discrete and identifiable, CUSTOMERS supplied order number. This order number will be displayed along side our order number and will be the trigger to eject double orders.

b. Order description must also be completed carefully non-completion of a box or column will indicate a non-critical feature which will attract improved discounts and facilitate speedier order completions.

SALESMAN. Order imput:- obtains customers orders and his order identification and transmit this (via blank order sheet or telephoning our DICTAPHONE terminal) to the MARKETING DEPT.

MARKETING DEPT. order imput:- again obtain order and customers order number. Using customer code call up details from data terminal and compare.

Type in order and terminal will produce the 6 sheet set order form:

CUSTOMERS COPY = Top copy - acknowledgement to customer.

INVOICE
INVOICE COPY = 2nd and 3rd copies - to accounts dept.
2nd copy = invoice.
3rd copy = copy.

PRODUCTION
PRODUCTION DES.= 4th and 5th copies - to production dept.

SALESMAN'S COPY= 6th copy - to area salesman.

NOTE:- The copies for accounts and the salesmen would have customer credit limit and credit balance. Taking account of the current order in the masked box.

OPERATIONS MANUAL - PRODUCTION CONTROL.

Production dept. will receive two copies of an order
- 1 copy to stay with the completed order for transmission to despatch or during storage.
- 1 copy to be used as a control document for stock adjustments and as a manufacture trigger.

When order is completed as stated 1 copy proceeds with order to dispatch and the other copy is returned to the MARKETING DEPT.

NB. It is clear that some action is needed to rationalise the production procedure. With a possible 114 identifiably different products and specials - coupled with economic batch sizes of 50,000 it is the intention of the MARKETING DEPT. to rationalise the product range with the following aims:

REDUCING COLOUR RANGE (ie. to the I.P. range)
RATIONALISING MATERIAL USAGE (ie. smaller pieces in P larger pieces in I.P.).
ELIMINATION OF SPECIAL LOGO'S - or requesting our engineers to devise a post manufacture op. for its application.

The above objectives will be achieved by analysis of ordering patterns and by sales promotions. A reduction in our product range by 60% or over will enable the economic batch size to be met without excessive stocks.

OPERATIONS MANUAL - DISPATCH AND INVOICING.

Upon receipt of the production control copy of the order form the MARKETING DEPT. will now update the data terminal indicating "order completed" and simultaneously generate the 2 sheet advice note.

ADVICE NOTE. - Top copy - to dispatch.

ADVICE NOTECOPY - 2nd Copy - to accounts dept. to trigger invoice. (allow invoice to be sent).

DISPATCH

Will store goods from production with identifying order.

Upon receipt of advice note dispatch goods with advice note.

Store order copy with dispatch date for record until transaction is completed.

INVOICING

Upon receipt of copy of advice note customers copy of invoice is sent out. One copy retained for record until transaction is completed.

Accounts data is fed back to the MARKETING DEPT. terminal.

An example of an Order Form. 'Invoice','Invoice Copy','Production',' Production / Despatch','Salesmans Copy' would be printed on sucessive sheets in the Order Acknowledgement Set instead of 'Order Acknowledgement'.

PLAS-TEX LTD.

Head Office,
Fulford Trading Estate,
Burnley,
Lancs.

Telephone : 0282 576342
Telex: 45634 PLA BUR A

ORDER ACKNOWLEDGEMENT

Our Order No
Customers Order No
Date

Quote to : Attn of
Co Name _____ Acc Code _____
Inv Add
Del Add

Territory Code _____ _____

Dear Sir, Thank you for your order as specified below.

Item No	Qty	Type	Size	Colour	Finish	Matl	Other Information	Unit Price

Special Instructions	Total Price	
	+ VAT at 15%	
	Total amount now due	

Delivery is promised for and payment is due in days from above date, the Marketing Manager is available on the above Tel No ext 107

Yours Sincerely (Marketing Manager)
on behalf of PLAS-TEX LTD.

V.A.T. Registration No: 0562159 23

P.T.O. for terms

The Advice Note set is exactly the same as the Order Acknowledgement Set except in name ie 'Advice Note' &'Advice Note Copy' instead of Order Ack'ment

EXTERNAL SOURCES OF INFORMATION

1. When conducting a sales interview (call) the salesman asks the customer what:-

   a) His plans are for the future in our field or a field close too.
   b) If he knows of any other company, through his contacts, which may be in a position to use our products.

2. Local Chambers of Trade or Commerce. These usually contain a cross-section of businessman.

3. Regional or County Development officers who are involved in bringing new industry to an area.

4. Kompass - A publication usually found in public library which lists companies names and address, directors, etc.

5. Trade journals.

6. Yellow pages and Telephone directories.

7. Local Authority Planning Registers to find new factories, etc., setting up in an area.

8. Manufacturers Trade Associations.

9. Purchased Market Location details, showing companies by type, industry, location, size, and giving names of contacts, etc.

SALES ACTIVITY ANALYSIS.

A daily analysis of a salesmans activity designed to show:-

1. Total miles covered and in which areas. This enables management to check the effectiveness of the calling pattern and costs.

2. Individual and Total calls made. Each call is noted with companies present account code (if any) (New customer identified by "N") Enables management to check effectiveness with MILES TO CALL RATIO.

3. Contacts name. Useful for mailing shots and invitations, etc. Useful also to check that salesmen are calling on the "correct" level" i.e. people within the company who are empowered to give us an order.

4. Product discussion analysis.
   The Salesman would simply tick the relevant box on which the customer was interested and which was

discussed. This would help to show any preferences in type or colour. It could also show that the salesman is infact talking about all the lines that we manufacture i.e. cones with standard colours, parrellel tubes and specials.

5. New Products.
This is designed to make the salesman aware that we may infact be able to manufacture some plastic moulded items on a jobbing basis if they are of the correct size, etc.

6. Number of Enquiries taken.
Quotations presented.
On the spot orders taken.

7. Additional Activities such as, Lunch engagements, seminars, stands at exhibitions, etc.

8. Comments on individual call, i.e. Potential for future business.
The marketing manager is now in a position to measure to a degree, the effectiveness of each salesman.
Such details as:
a) Miles covered per call.
b) Calls made per, Enquiry, Quote or Order.
c) Costs per call.
d) A complementary check with the salesmans expenses claims.

Sales Activity Analysis

Name	Area Code	Mileage at end	Miles	Date	
		Mileage at start			

Additional Activities

No	Call	A/C Code	Contact	9° 15' Cone												4° 20' Cone												Pll Tube	New Product	Enquiry	Quote	On spot order	Comments
				R	O	B	P	G	Y	L	W	I	N	F	K	R	O	B	P	G	Y	L	W	I	N	F	K						
	Totals																																

Areas Visited

INFORMAL INFORMATION SYSTEM.

In a modern industry it is necessary to take the utmost advantage of available informal information and it is essential that this information becomes available to those who make the relevant decisions.

The informal information can be divided arbitarily into two sources.

1. Internal - Production Problems. Dispatch Problems one perhaps the most relevant.

2. External - Markets available, Location. Technical developments. Competitors performance and plans.

Internal Information.

In order to collate and dissemination relevant internal information it is proposed to hold meetings and regular intervals with planned agendas. For example the Sales Manager will meet weekly with production staff, to ensure that there is a regular exchange of information between the two departments to discuss the day to day production sales problems. However, it is invisaged with the increased formal information analysis available that once a month the meeting will be required to produce a monthly production plan (with the Co-operation of the production dept.). The scheduling of the meetings to be by mutual agreement between the two departments at a regular time convenient to both departments and relevant to the purpose of the meeting.

It is also proposed to have regular, weekly, meetings of the Marketing Department where it is intended that information gathered by the sales force can be discussed, as well as the internal information, both formal and informal.

External Information.

The Marketing Department will also become responsible for the collation and presentation of external information from the sales force and such sources as journals, surveys, etc. The precise nature of how the information is to be stored and presented must be the subject of further discussion when the precise nature of our operation is decided upon. It is anticipated that new markets will be investigated and as such information in regard to Industrial Enterprise zones where new business may be obtained should be born in mind. A valuable source of information will be the specialised journals directed at the textile trade and such publications will now be purchased as a consequence. In order to assess the trends and potential of companies in the textile trade it will also be advantageous to obtain fuller extracts of company reports, in particular those of our topten customers.

TRAINING

To effectively bring into operation a Marketing Information System some training of staff will become essential. The training necessary will be in two main areas.

1. Data Analysis /Computer Operator.

Dependant upon whether it is expediant to purchase/hire a computor then the existing Marketing Clerks will need to undergo training. Modern computors using 'basic' programmes are relatively simple to operate and a relatively short course to train both clerks to operate the computor would be essential and the cost of these courses must also be born in mind.

Alternatively if the Marketing clerks function is to be expanded into Data analysis and the preparation of projections then a course of an external nature appropriate to the skills required should also be contemplated. In addition it would be necessary to reward the extra skills with an appropriate increase in renumeration.

2. Sales Representative.

A one day seminar would in my opinion cope with the training of salesmen for the Management Information and use of the sales order forms.

CONCLUSION

It is the intention of this document to suggest not only a Marketing Information system but also a change of attitude to improve our Marketing drive. The aims of the project are to achieve.

1. Clear corporate strategy.
2. Full sales analysis.
3. A better customer service.
4. Identification of future or potential markets.
5. Planned consistent production.
6. Fully involved workforce fully conversant with the aims of the company.

Group F

Report on PLAS-TEX LTD Marketing Information System

MARKETING INFORMATION SYSTEM.

THE INFORMATION REQUIRED:

* Who are our past and present customers?
* How much do they buy of what products from us?
* " " " " " " " " from our competitors?
* What are they likely to buy in the future?
* Is our method of supplying satisfying their needs?

* Who are our future customers going to be?

At present we have knowledge and machines to produce plastic mouldings, contacts in the textile industry, and an established product - plastic cones.

Cones are used in "Looms" (and other textile machinery).

* What is the present UK/EEC/WORLD population of looms?
* Who is making looms? How many? Which cones are the newest looms using.
* Who is buying and using these looms?
* Is there a second-hand market in looms?
(Is there a second-hand market in cones?)
* Do we supply via loom manufacturers?
* Do we talk to loom manufacturers?

Yarn is wound on cones:

* What else can be wound on cones?
* Who makes yarns?
* Who uses yarns?
* How much yarn is imported/exported?
* Is it imported/exported on cones? Whose?
* How much yarn is used UK/EEC/WORLD?
* How long is the life of a cone?

Yarn is made into textiles:

* What are the trends in the textile business?
* Ratio synthetic to natural and changes.
* World distribution of textile manufacture.
* What about non-woven textiles?

We visit customer:

* Is there anything else customer would like to buy from us while talking to our salesman?
* What other consumables does he use?
* Is there anything else we can mould for him?
* Is there anything else we can mould for anybody.

WHERE ARE WE GOING TO GET THE INFORMATION

Internal Sources: Marketing Dept. have date order files of past orders. Production have files

of production orders. Accounts have files of monthly invoice values.

Our salesmen have visited customers and talked to them in the past, and will visit them in the future.

New quotations and orders arrive daily.

External Sources: (Secondary)

Trade Federations exist in loom, yarn, and textile industries, and general plastics mouldings, who monitor and record market activity.
Government, EEC, & UN, bodies monitor and report imports, exports, and international market activity.

External Sources: (Primary)

The Marketing Manager can establish personal contact with the Management of our trade customers direct contact can also be made with textile machine manufacturers, importers and exporters, both in this country and overseas.
Direct contacts can be made with distributors supplying sundries to yarn and textile manufacturers at home and overseas.

COLLECTION AND ANALYSIS OF INFORMATION.

Internal Information:

We can refile the present years (last 9 months) orders into individual customer files, while doing so extracting figures for each customers monthly requirements of 4°,9°, and parallel cones, together with total monthly demands. This will identify our most active customers, and allow us to start plotting detailed demand curves for our three product ranges.

From the Production Department, we can find the numbers of each size of cone moulded in the last five years, and plot trends over that longer period.

Visit reports from Salesmen will be filed, after being seen by the Marketing Managers, in the customers file. Quotations and orders will also go in the customer's files, having provided information to update the detailed monthly demand curves. A ratio of quotation value/order value can be derived from each customers files to identify those requesting quotations but then buying elsewhere.

The seconding of a statistician from Head Office is suggested to supervise the processing of historical internal information, and prepare ongoing forecasting methods which can regularly be applied (probably quarterly) to the new order information. The statistician should only be required for 2/3 months to establish the

system.

All visit reports submitted by salesmen will be seen by the Marketing Manager, prior to being included in the customer file, for him to be aware of salesman's performance, current and developing demands, and any interesting requests/comments.

External Information:
(Secondary)

The Marketing Manager will, from Trade Federations' and Government Publications, etc., obtain answers to as many of the listed questions as possible. He will also identify suppliers of allied products with whom he will seek direct contact.

External Sources:
(Primary)

The analysis of our customer files will have shown who are most active customers, and the research above identified other bodies with whom the Marketing Managers can usefully enter into direct dialogue to obtain as much information and feel for the market as is available.

REPORTING OF MARKETING INFORMATION

1. From the incoming order data supplied by the sales office clerks, a monthly comparison of orders received for each product line, against forecast demand, will be prepared and circulated to the management team, any specific customer comments regarding product quality, special varients requested, etc., that have not already been circulated immediately upon receipt, would be included in this report.

2. From the forecasts derived by adding latest order data into the forecasting system developed by the statistician, reports updating forecasts for the coming twelve months, or each product group, will be prepared and issued to the Management Team on a quarterly basis.

   These forecasts will also take into account trends identified from other sources that are likely to influence the demand in the coming twelve months.

3. Annually, and additional report will be issued by the Marketing Manager, indicating the market potential for the coming five years, and beyond. This report will not only consider existing products, but will form the basis of management discussion on new product possibilities, as identified by the marketing

effort over the previous year.

4. The existance of the three regular reports described above will not prevent the immediate communication of complaints, comments, opportunities, etc., to other members of the management team as they arise.

Plastex Procedure File. 1. Quotations.

1. Origin.

All quotations will be raised at Head Office on the company standard quote form, to establish uniformity of presentation and to prevent loss of information.

Quotes will only be raised on receipt of:-

i) Sales rep. customer visit report.
ii) Telephone request from sales rep. request must be noted on visit report when produced.
iii) Customer request to the sales office.

2. The Quote Form.

The basic form will remain as present but the following additional information will be added.

i) A unique quotation number appended by a number for product code and a number for rep. code.
ii) An indication of delivery date.
iii) In bottom panel a statement that "All prices are delivered in the UK."

3. Distribution

Copy 1 - To customer.
Copy 2 - To customer historical file in "sales" office.
Copy 3 - To rep.
Copy 4 - To daily file.

Plastex Procedure File. 2. Order Form.

1. An internal order form can only be produced on receipt of either:-

1. Customers written order.
2. Telex from customer with order number.
3. Telephone call from the customers purchasing department giving requirement and order number.

2. On receipt of an order the details are entered in a "Sales order day book" against the next sequentially allocated internal order No. eg.

Internal Order No	Customer Name	Customer Order No	Total Order Value	Product Code	Rep
0 12 0149	*R.Livesey & Sons*	*1234*	*10,000*	*1/2/5*	*1*
0 12 0150	———	——	———	———	—
0 12 0151	———	——	———	———	—

3. The internal order No. is stamped onto the customer order form.

4. Check availability of item on the order, with the production dept. and note delivery against each item.

5. The internal order form is then typed using the information on the customer order form and the completed internal order number is completed using 1-the allocated number, 2-the product code, and 3-the rep. code.

Note:- (i) The customer order number will be typed on the order form, below the invoice address.

Note:- (ii) The delivery promise will be typed in the body of the order.

Note:- (iii) If part or all of the order is to be supplied from production rather than stock "Production order Number....."will be typed at the bottom of the description panel. (The numbers will be left blank.

6. Distribution

1. Customer (acknowledgement) copy.
2. "Sales" office copy is filed in a current open order file (4 drawer filing cabinet with "crystal" files), with the original customer order form.

   Each order file will have a crystal tab with
   (i) The customers name.
   (ii) The internal order number,
   and will be filed in the cabinet in alphabetical order by customer name.

3. Accounts copy.

4. Two copies to production dept.

5. Rep. copy.

See appendix overleaf.

Order form appendix.

Proposed changes to production ordering system.

1. On receipt of an internal order form from the sales dept. production will recheck the delivery promise, and amend if required -, AND MUST ADVISE 'SALES' IF DELIVERY IS CHANGED.

2. i)If goods are in stock both production copies are anotated 'IN STOCK', production copy is filed and the despatch is sent to the despatch dept., who will ship goods and raise the Advice Note.

ii)If all or part of the required goods are not in stock a production order will be raised to produce an EBQ of 50,000 from which the balance will be shipped. The production order Number is noted on both the copies of the internal order form, the production copy is filed with the production order and the despatch copy is sent to the despatch dept. who will ship any part in stock if so required.

When the production batch is received in the stores, with a copy of the production order which will show the internal order form number the batch has been prepared for, despatch will pull the relevant order from their open order file, ship the balance of the order (on a new advice note), and will place the balance of the batch into stock.

Plastex procedure file. 3. Despatch advice note.

1. The advice note form remains basically the same but will have the following additions.

i) The customer order number is included below the customer address.

ii) The original quantity column becomes "Quantity Ordered."

iii)On the right margin is to be added a column marked "Quantity shipped." Here will be shown the quantity of each item shipped on this advice note only.

iv) The bottom panel is divided to show a) the method of shipment, and b) the quantity O/S of each item.

2. The advice note will be raised in the despatch department and attached to the despatch copy of the internal order form.

Note. Any order not completed will be held in an open order file in the despatch dept. until the order is completed, when complete the order and advice notes will be filed in a despatch closed order file in numerical sequence.

3. Distribution.

Copy 1 - To customer with goods.
Copy 2 - To accounts, for invoice to be raised.
Copy 3 - To despatch open/closed order files.
Copy 4 - To production open/closed order files.

Plastex procedure file. 4. The Invoice.

1. The invoice form remains basically the same but with the following additions.

   i) The advice note number against which the invoice is being raised will be added under the internal order form.

   ii) Customer order No. is added beneath the customer address.

   iii) The original quantity column becomes "Quantity Ordered".

   iv) At the right margin, next to unit value column, will be added a column showing the quantity shipped and to be invoiced.

2. Distribution.

Copy 1 - To the customer.
Copy 2 - To accounts records.
Copy 3 - To 'sales' dept. - on receipt of an invoice the invoice will be added to the relevant open order file, until the order is complete. The customer order, internal order form and invoice copies will be transfered to the relevant customer history file.

Plastex procedure file. 5. Product and Rep. Codes.

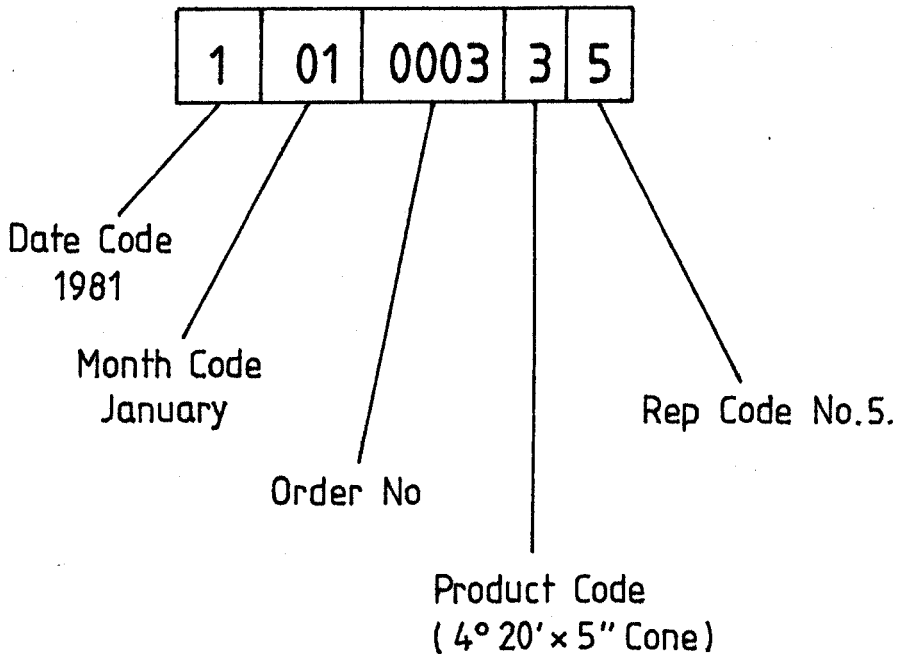
1. Product Codes.

CODE.	PRODUCT.
1	9° 15' x 5" Cone.
2	9° 15' x 7" "
3	4° 20' x 5" "
4	4° 20' x 7" "
5	4° 20' x 9" "
6	Tubular Support.

2. Rep. Codes.

Each rep. will be allocated a number, at present 1 & 6.

Complete order No. will now be eg:-



Plastex procedure file. 6. Customer Record Files.

1. The customer files will be stored in 4 drawer filing cabinets. Each customer will have a folder which will be held in a crystal hanging file and the file tab will be labelled with the customer name, and address if @ more than one site. The files will be arranged in alphabetical order by customer name.

2. The customer files will contain.

   1. Copies of each visit report raised by rep.
   2. Copies of quotes sent to customer.
   3. Sundry correspondence with customer.
   4. On the inside front cover of the file will be attached the closed orders relating to that customer.
   5. Sundry other information collected about the customer.
   6. The card from the card index file with company name, address and names of major contacts will be attached to the front, outside cover of the folder.

Note:- Customers with no information other than the index card will not have a file opened until further information is received.

Plastex procedure file. 7. Accounts Monthly Report.

1. The accounts monthly report will be extended to give information by the 6 new product codes rather than the old three groups system and will also show the quantity of each product group shipped per period.

Plastex procedure file. 8. Customer visit form.

CUSTOMER VISIT FORM.

This form is designed in order to provide a realistic feedback from the sales representatives to the marketing manager upon which changes in sales and pricing policy may be based. The representatives should be advised collectively of the type of information required and its importance to the organisation.

When calling upon a possible customer three alternatives exist:-

i) Sale made.
ii) No sale made but market information obtained.
iii) No sale but introduction effected.

Whilst the first situation is preferable the other two aspects provide a realistic fall back position.

The report may form the basis for a further contact in a few months time by a different representative which would establish an introduction and direct comparisons. In addition the form will provide a means of assessing representatives performance by the number of visits made and orders resulting.

Each report would be examined by the marketing manager in order to provide a "market feel" and where necessary followed up by a visit. Upon completion of any action required the report would be filed against the customer for future reference.

Attached is an example of the format.

PLAS-TEX LTD. Customer Visit Form.

Company Name

Address

Telephone No

Date of Visit

Names of Contacts

Comments

Quote Required ☐ Follow up Rep ☐ Office ☐

Product Used ☐ Is customer buying now ☐

Competition

Total Annual Usage

_____

_____

_____

_____

Group G

Report on PLAS-TEX LTD Marketing Information System

ORDERING SYSTEM.

A product summary can be given to customers when a salesman calls or when the customer requests data. The potential customer may phone the sales office to ask for prices or may be visited by a salesman as a matter of course. Any new enquiries should be reported to the salesman such that he can fit these company's into his visiting schedule.

A verbal quotation, as per the standard, current price list can be given to the customer on request, either by the sales clerks or the salesman. If a customer requests a written quotation, he may do so, to the salesman during a visit, or by telephone to the sales office. In either case the quotation should be prepared by the sales clerks, typed and sent to the customer.

The quotation form will show types of product prices, and discounts allowed, together with expected delivery time. The sales clerk will check on the expected delivery time by referring to stock cards, prepared by the stock controller.

Each quotation will consist of two parts, one being sent to the customer, and the other filed in the outstanding quotation file. On receipt of an order the outstanding quotation file should be checked to see if a quotation is relevant to the order. If there is a relevant quotation this should be married up with the order.

At the end of each week the outstanding quotation file will be checked and any quotations, over one week old should be sorted into sales areas such that on reports sent to salesmen, a list of outstanding quotes can be given. These should be followed up by the salesman as soon as possible.

If a quotation is not successful the salesman should fill in a FAILED QUOTATION form which will be discussed at the next monthly sales meeting.

When an order is received.

Verbal orders should be confirmed, and each order should have an official customers order number. When the sales clerk receives the order she should check the order against the customer file in regards of order value type of product. If there is any drastic variation from the norm the customer should be telephoned to check that this is O.K. The outstanding quotation file should be checked to see if a quotation is relevant to the order, if so this will be married up to it. The order will then be transcribed onto an INTERNAL SALES Document. One copy of this document will be sent to the customer as an ORDER ACKNOWLEDGEMENT. Another copy will be sent to the stock controller to enable the required goods to be procured from stock or production.

The final copy is filed in the customer file along with the customer order and quotation (if one was sent).

The information on this order should be entered onto the analysis sheets for each salesman e.g. Customer - quantities of each type ordered, etc.

This information will also be entered onto the departmental analysis sheets.

When the stock controller receives the internal order from the marketing dept. he decides on whether stock is available or not. If stock is not available he checks when the required items are due on the present production schedule. If the items are under production the order is held pending their completion. If the items are not scheduled he places a production order. In the case of specials; a production order will always be required.

When all stock is available he arranges for the required amounts to meet the order to be taken from stock and raises an advice note.

If several orders require the same items and not all orders be met from stock, the one with the earliest delivery date will be satisfied first.

The advice notes are numbered as per the order. The advice note is a multipart document. One part will be filed by the stock controller together with the internal order form in numerical order. The other copies will be transferred to the despatch department, who arrange for the goods to be sent to the customer with a copy of the advice note (delivery note).

The despatch department files a copy of the advice note and sends the final copy of the accounts department who raise the necessary invoice which is sent to the customer.

Jobs to be done.

Existing data.

This consists of approximately 5500 record cards and about 4 years of invoices (approximately 5000).
The last two years invoices should be taken out.
This can easily be done because the invoices are filed in date order.
These should be checked against the record cards such that only 'live' record cards are left in the system. The data on these live cards should be transferred to the new customer files. The information on all these invoices should be analysed into sales by customer, product (type colour, size, etc). The Value of each invoice should also

be noted per customer.

This will give access to the following data:
Sales per product per month.
Sales per product cumulative.
Sales per product per year.
Sales per customer per product.
Value of order per customer/per product/per order.

The customer index cards (LIVE) will be organised into regional areas. These will be organised into sales area. Each of which will be assigned to a salesman. These will be organised such that each salesman will have a similar number of potential customer in his area.

The 'dead' customer index cards will again be organised into the same sales areas, such that the salesmen can check on the dead accounts in his area. After each salesman has had a chance to check on his 'potential customers', a meeting will be held to discuss the possibilties of sales to these companies and if we have lost the business totally - why.

Customer files will be set up into which will go - Marketing Copies of quotes, orders and invoices together with data about the company. Each customer file will contain an analysis sheet of his business with our company for the past two years. The initial information for this will be drawn from the past invoices as stated before. The information will be updated as new orders/invoices are received by the marketing office.

The monthly information contained in these files for the past two years can be used with information gained from salesmen, about potential business with customers, may be used to forecast future sales with a customer.

A monthly sales meeting will be organised at which any unsuccessful quotes, new business ideas, customers potential, etc., will be discussed.

Each salesman on visiting a customer must fill in a report giving as much information about future business, present business, etc., with the customer as possible.

Information will be given to the salesman weekly. This will be of the form:-

New enquiries/literature prices.
Quotes not taken up.
Dead accounts.
Order schedules/delivery times.
Orders received.

The analysis of the past invoices and customer index cards is likely to take one person about 3 to 4 weeks. Because of the new system the sales clerks will need to operate it is envisaged that a temp. be brought in to do this task.

When this data is sorted out the sales manager must work with the salesman to arrive at suitable division of the areas. The sales data and 'dead' customer data can now be analysed for these areas.

A regular monthly meeting of salesmen and sales manager should take place where free exchange of ideas should take place. These ideas can be about future business, present business new ideas for products, etc.

After the initial drawing up of documents/analysis has taken place, they can be kept up to date by the sales clerks from information received on the order forms or invoices.

Because the present amount of orders being processed is low (approx. 100 per month on average) it is envisaged that the two clerks can cope with the extra burden placed on them. Should the level of business increase due to the rearranged system or due to new markets entered into, then maybe another sales clerk may be required.

When the new sales areas are arrived at an analysis of the frequency of visits made by any salesman to each customer may be carried out. If the salesman cannot adequately cope with the customers in his area because of distance or quantity, it may be required to take on more salesmen and to subdivide the areas further. This is not envisaged immediately unless any further diversification increases the customer base considerably.

A suggestion scheme for new ventures can take place.

MEMO

TO: THE SALESFORCE.

FROM: MARKETING MANAGER.

SALES MEETING.

As you are aware I took up my appointment with the company only recently and I should like to take the earliest possible opportunity to get together with you all to discuss the current situation.

For this reason I have scheduled a meeting for Wednesday of next week, 4th February, commencing at 10.30.a.m. in the Board Room.

The agenda for discussion is attached, but if you have any additional items you wish to see raised please let me know in advance so that time can be allocated to them on the agenda.

I look forward to seeing you then.

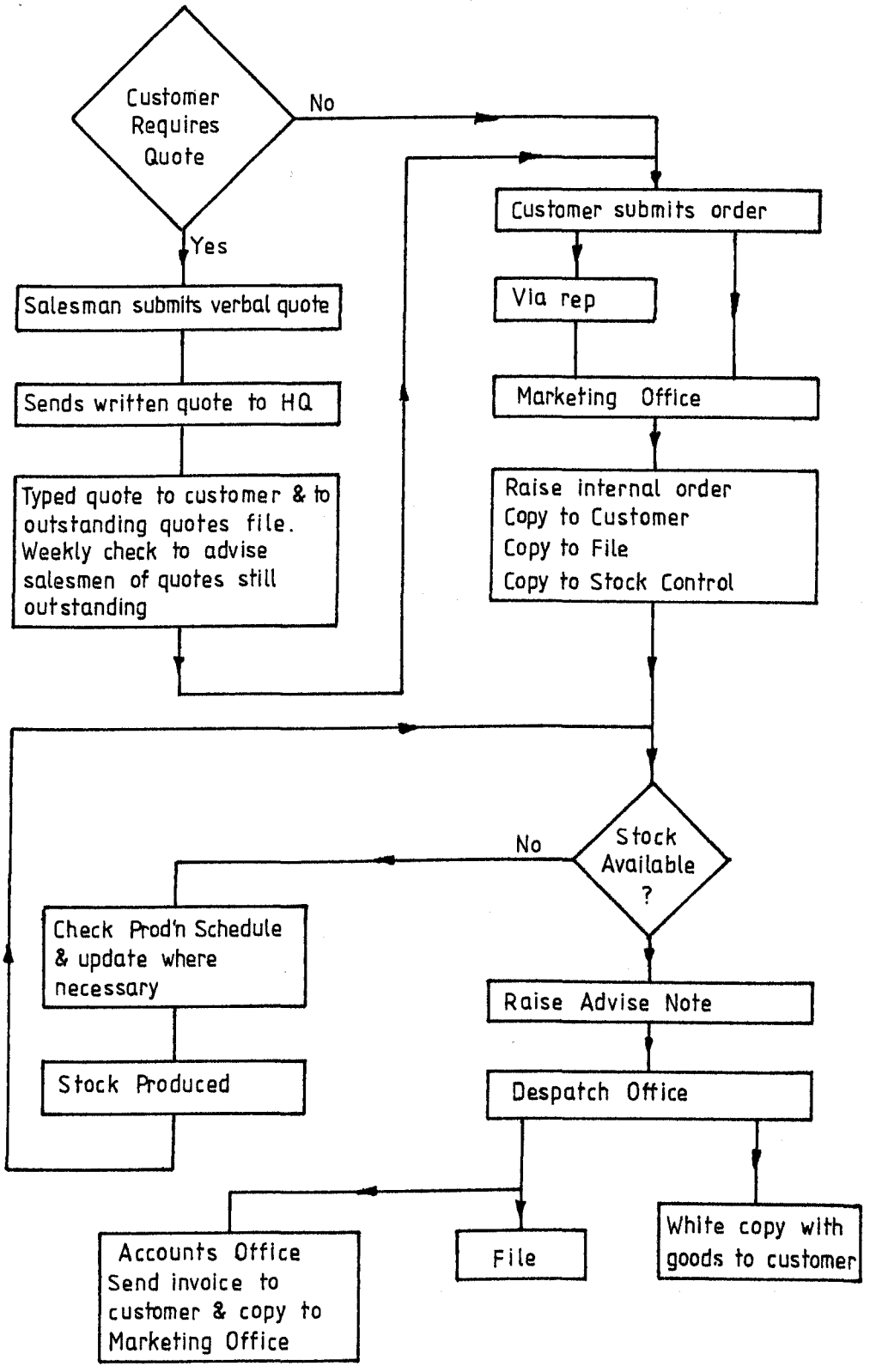
G. Group.
MARKETING MANAGER.

AGENDA

SALES MEETING - 4TH FEBRUARY, 1980. AT 10.30.a.m.

1. The Company Situation.
2. Sales Report - one from each Salesman.
3. Revised quotation and ordering system.
4. Customer File updates.
5. New Business Opportunities.
6. Any other business.

Proposed New System.



To Marketing Manager

From Salesman _____

Failed Quotation Report

RE: Quotation Reference _____ Dated _____

Addressed To: Customer _____

Address _____

_____

_____

_____

This Quotation was unsuccessful due to:

Price Quoted	
Discounts Allowed	
Delivery Quoted	
Technical Specification	
Other Reason	

Details

_____

_____

_____

_____

_____

_____

_____

Estimate of future business prospects:

_____

_____

_____

_____

ORDER FORM

		Red	Blk	Gm	Yell	Blue	White	Orng	Purple	Inde	Brn	Fawn	Pink	Total Units	Unit Price	Dis-count	Total Price
Studded 9° 15' -5"	P																
9° 15' -5"	IP																
9° 15' -7"	P																
9° 15' -7"	IP																
Knurled 9° 15' -5"	P																
9° 15' -5"	IP																
9° 15' -7"	P																
9° 15' -7"	IP																
4° 20' -5"	P																
4° 20' -5"	IP																
4° 20' -7"	P																
4° 20' -7"	IP																
4° 20' -9"	IP																
Tubes	P																
	IP																

Specials	Material	Colour	Finish	Special Requirement

Special Charges	
Total	

Order for

Co. Name , Account No.

Delivery Address.

Customer Record Card

Customer Record Card

A/C No

Company Name

Address

Industry

Size of Firm

Contact

Ad Dest

Area Code

Misc

Usual Order

Reverse Side

Last Invoice No

Date

Accounts Dept:- Monthly Sales Analysis Summary

	This Month					The Year to Date				
	Sales	Budget	+/-	Prev Yr	+/-	Sales	Budget	+/-	Prev Yr	+/-
9° 15' Poly 5"										
IP 5"										
Poly 7"										
IP 7"										
Sub Ttl										
4° 20' Poly 5"										
IP 5"										
Poly 7"										
IP 7"										
Poly 9"										
IP 9"										
Sub Ttl										
Tubes Poly										
IP										
Sub Ttl										
Grand Ttl										

Two copies of the above form to be completed at each month end one detailing units and the other detailing sterling

Sales / Stock / Production Analysis

	9° 15'				4° 20'			Tubes	Specials					Totals
	Studded		Knurled		Standard Finish				9° 15'		4° 20'			
	5"	7"	5"	7"	5"	7"	9"		5"	7"	5"	7"	9"	
Polythene														
Red														
Orange														
Black														
Purple														
Green														
Yellow														
Blue														
White														
Indigo														
Brown														
Fawn														
Pink														
Special Cols														
Sub Total														
Impact Polystyrene														
Red														
Black														
Green														
Yellow														
Blue														
White														
Special Cols														
Sub Total														
Grand Total														

To be submitted to Marketing Manager every Friday Night.

Salesmans Weekly Report

Day	Customer Seen	Quotation Request Followed up	Order Taken	Order Value	Miles Travelled
		If no complete Failed Quotation Form			

Business Outlook: (Give details of customers future prospects and requirements)

Competitors Activities: (Detail competitors prices / offers / promotions obtained)

Appendix D

Small Business Information Study

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REPORT OF GROUP A.

Column Services Ltd.

(Financial calculation, cash flows etc have not been included)

Column Services L.T.D.

Corporate Objective.

To enter the H.P.L.C. column market by selling new columns and providing a column repacking service. To establish the company name in the market over the first two years to provide a basis for expansion and growth in subsequent years.

Corporate Strategy

The service provided will be restricted to:

1) Column packing to customers requirements - starting in year one and continuing thereafter.

2) Providing a column repacking service - starting in year one and continuing thereafter.

3) A preperative column repacking service will be offered in year two - and continuing thereafter.

4) An application service will be offered in year three and continuing thereafter.

Company Policies

1) Financial Policy.

a) The seven shareholders will provide £1 share capital each on day one of the company operation.

b) Each shareholder will loan £2000 to the company, to be available on day one.
The loan will be repaid over two years at 15% interest.

c) A bonus from profits will be paid to the shareholder directors at the end of year two. The payment of the bonus will be such that a strong financial basis will be maintained.

d) Bonus - paid as directors fees as 30% of profits distributed equally.

e) Rest of the profit to be used for investment purposes.

Marketing Policy.

1) Customers will be obtained by personal visits from the salesman and analytical chemist in the early months. No media advertising will be used. This will serve to keep the company activities at a low profile to ensure supplies from agents until sufficient cash is built up to allow direct buying from suppliers.

2) Aim for a 3 - 4% market share in the first year to be

maintained in years 2 and 3. This will require some growth to maintain market share in a growing market.

3) Advertising will be introduced in the 2nd year at a similar level to our major competitors.

4) Price increases will be kept in line with inflation however competitors prices will be monitored and account taken with respect to pricing policy from year three onwards.

5) Promote application service in year three - use media advertising, i.e. journals. The service will include methods development for companies without in house expertise and to offer testing facilities for companies with short term labour/equipment shortfalls.

Manufacturing Policy.

1) Column packing, both new and repacked columns to be carried out only, in the first year.

2) Each column to be tested to a specification of not less than 5,000 theoretical plates per meter.

3) Predict 50% new columns to be sold in year 1.

4) Manufacture at a rate of 6 columns per day for months 1 and 2, - based upon a 5 day week, 9 per day for month 3 building to 12 per day to the year end.

5) 20% increase in manufacture in years 2 and 3.

6) Preparative columns will be manufactured in the second year at a volume at 120 units in the year. Manufactured at 10 per month.

7) Sales of preparative columns require 10% increase in year 3 and 4 - i.e. 132 and 145 units per year.

DESCRIPTION OF HIGH PERFORMANCE LIQUID CHROMATOGRAPHY.

Over the last decade chemical analysis has changed direction, from looking at the chemical properties of compounds to analysis involving physical characteristics of compounds. New technology has given rise to increasing use of chromatographic techniques for analysis, the most important branch of chromatography having the widest range of application is liquid chromatography and in particular High Performance Chromatography.

Although this technique has been available for at least 15 years, inovation of column packing materials have resulted in this technique only becoming popular in the last 5 years.

The advantages of HPLC can be summarised as follows:

1) Rapid Analysis Times Increases the turnround in results.

2) Shorter Analysis Times Required less Manpower per Analysis.

3) The Technique often Produces an Increase in the Accuracy and Precision of the Analytical method.

4) The technique is easy to automate, with auto sampling systems.

5) H.P.L.C. lends itself to Multi-Compound Analysis.

The packing material has only been of suitable quality for the last 5 years when the chemical industry was able to improve the quality and the number of different packing compounds to give consistent results. There are now over 100 different types of H.P.L.C. packings on the market compared to 20 five years ago. The packing material for the column is very expensive to produce with only a few major suppliers in the world, in Japan, USA and W.Germany.

H.P.L.C. ANALYSIS TECHNIQUE.

HPLC encompasses a variety of separation techniques which depend upon the physical characteristics of the compounds under test. The sample is dissolved in a suitable solvent and introduced to the column which has been packed with a solid support. Each compound will have a different affinity for the support which results in a specific solution pattern for each component. A large variety of supports are available for many different analysis. The supports deteriorate in use and are consumable items. A typical HPLC system consists of a solvent reservoir, a pump to pass solvent through the system, the analytical column, a detector to quantify the components and a recorder to provide a permanent record of the analysis.

COMPANY OBJECTIVE.

Column Services Limited aims to serve the chemical industry by supplying high quality packed HPLC columns and providing a repacking service.

As we grow in the future it is our intention to offer an HPLC consultancy based on customers individual needs which will include an application service.

TYPE OF COMPANY

LIMITED LIABILITY.

Consisting of 7 Shareholders.

LOCATION + PREMISES.

The company has no special trained labour requirements, no special industrial site requirement. Our customers are dispersed around the country with no one area having a large concentration of chemical firms. We have therefore decided to locate our firm in the West Midlands, for two basic reasons, (1) it is near to the homes of the shareholders, and (2) industrial sites are available and relatively cheap.

For a site in Stone, (STAFFS) 4,000 sq.ft. is available for £3,000 per annum.

The W.Midlands also gives easy access to the Motorway Network.

The premises required need only enough room for

LABORATORY
OFFICE
STORAGE FACILITY
TOILET FACILITY
MACHINE SHOP

We estimate that 4,000 sq.feet will give us ample room with also room for expansion if and when required.

ORGANISATION.

3 - FULL TIME STAFF.

	JOB FUNCTION.
1 - CLERK TYPIST	* File Records * Type Invoices * Help in Post and Packaging * Answer Phone * Make tea and coffee
2 - CHEMIST	* Run the Lab. ADMIN * Pack the Columns * Purchase packing materials * Write publications * Give practical advice on Analytical techniques as Reqd. * Control stock of columns and parts.
3 - SALESPERSON.	* Direct contact with customer to sell product * Give scientific advice on Analytical techniques - customer * Test the market for new customers and new methods of HPLC (Market Research).

The chemist in the lab. would be one of the shareholders,

who we know and feel is capable of the demands on that job. We would employ a salesperson to work for the company who would be paid a monthly salary. At the onset we have no plans for sales bonus. The salesperson would have a Chemistry degree with up to two years practical experience in analytical chemistry.

Two of the major shareholders are accountants and would therefore share the task of the firms accounts.

Future Re-Organisation.

If we can expand the business to the size we are aiming for, we would employ two young persons to train as lab. technicians and pack the columns.

This would give the chemist more time to spend on applications and administration.

MATERIAL MANAGEMENT.

(1) We aim to keep initial stocks of packing materials low, by buying from agents, and not from the suppliers. This policy keeps outlay on stocks at a mimimum. We would not be able to receive any discounts at this low level of purchasing, but after some experience on which particular compounds were selling at the fastest rate, we shall be in a similar situation where we could get a discount for a large quantity ordered.

(2) We aim to look at new packing materials arriving on the market, to test their validity for use in industry, and if found to be successful, press to gain the only agency for supply in the country.

(3) At present we have been quoted £22 for purchasing the actual column including the end fittings. Although this would suffice while we first entered into the market, we would actively look at finding a supplier for the column. In fact we were quoted £5 per meter for the columns tubing, but this does mean having to buy or own cutting machinery.

The lock nuts at either end are produced on special purpose automaters, it is not unfeasible in the present climate to be able to purchase such a M/C at a reasable price and manufacture at very low unit cost approx. £1,000.

(4) Provided we had the growth required we would increase our range of stocked packing materials to still improve our service to customers.

MANUFACTURE.

PLANT REQD.

4 Packing M/C
1 Analytical pump

1 Analytical detector
1 Recorder
1 Ultrasonic Bath
1 Expel Air
Glass Ware

It takes 2 hours to pack one column, with 15 minutes testing time.

We estimate allowing for rejects and faults that we could maintain level of 12 columns/day, although we first go into production we estimate a level of 6/day for 2 months before going on to 9/day for the third month. After the third month we will buy the last of column packers to enable to achieve 12 columns/day.

It requires 3g on average of packing material to fill one column.

PACKING MATERIAL STOCKED.

Sherisorb	5 Silica	Spherisorb	5 Amind
"	10 Silica	"	5 Heml
"	5 ODS	"	G P Silica
"	10 ODS		
Partsil	5 Silica	Hypersil	Silica
"	10 Silica	"	ODS
"	20 Silica	"	C22 super
		"	3mm Silica
Lichrosorb	5 Si 60 Silica	"	3mm ODS
"	10 Silica		
"	20 Silica		
"	30 Silica	Lichosphere	5 Si 100 Silica
"	40 Silica	"	10 Silica
"	5 Si 100 Silica	"	5 Si 300 Silica
"	10 Silica	"	10 Silica
"	30 Silica	"	10 Si 500 Silica
"	N/½	"	10 Si 1000 Silica
"	10 AN	"	10 Si 4000 Silica
"	10 KAT		
"	5 RP 2	Zorbax Silica	

Lichrosorb	10 RP 2	Zorbax	ODS
"	5 RP 8	"	CN
"	10 RP 18	"	C 8
"	5 RP 18	"	SAX
"		"	TMS
"	10 RP 18		
"	10 RP CN	Techsphere 5 Silica	
		"	10 Silica
		Bondpack	

SECOND YEAR

In the second year we intend to manufacture our tubes. This means purchasing a cutting machine.

MARKETING POLICY

1. OBJECTIVE To enter the market for re-packing HPLC columns and supplying new ones.

2. MARKET SIZE. This is the number of HPLC kits on the market.

YRS	TOTAL SALES	APPROX. NO. OF UNITS.
1976	£2 m	286
1977	£4 m	570
1978	£6 m	850
1979	£9 m	900
1980	£10m	1000
		3606
81	PESSIMISTIC ESTIMATE	1000
		4606

No. HPLC KITS/M/C in use 4606.

1 column used per machine + 5 columns on are in stock.

Expected life span of column 3 - 6 months.

Therefore (a) This gives a total number of columns used 27,600.

(b) Each column will be packed twice a year, giving a total market requirement for packed columns 2 x 27,600 = 55,272

(c) At an average charge of £100/column this gives an approximate value of market size of £5,527,200.

In our first year

Sales Objective. 6 per day July/August
9 per day Sept.
12 per day for next 9 months.

TOTAL YEARS SALES 2505

2505 @ Sales Price £90.00 each
(no allowance has been made for self cancelling effect re-packing).

= TOTAL SALES £225,450

APPROX MARKET SHARE. 4% for the year.

3) ADVERTISING POLICY no trade advertising. (this will screen our initial entry into the market from our competitors). When at the point of sale leave a glossy brochure.

4) PRICING POLICY. High mark ups in the industry by our competitors, will enable us to price just below our competitors and still make a good mark up.

5) SELLING POLICY Direct Selling.
(a) Locate decision makers. i.e. chief of analytical chemist/Quality Control Manager.
(b) Meet and sell person to person.
(c) Call target 4 PER DAY.
16 PER WEEK.

Conversion into order target 30% = 5 per week.

6) (a) Customers. Approximately 60% of business should come from pharmaceutical companies. Food,paint, brewing, water industry and University's making up the rest of the customers.

(b) Target customers - Consult ABP, Index.

Water Authority	Huing	Bass
ICI Pharmaceuticals	Public Analyst	Watneys
Welcome Foundation	Hospital Research Lab.	Double Diamnd.
Distra Chemicals	Teaching Hospitals	Courage
Allen and Handburys	B.P.	Whitbread
Stirling Health	Fisons	WEM
Beechams	Smith Kleen + French	H.P.Sauce
Boats	Ciba Giegy	
Reckitt and Coleman	Squibb	
Glaxo	Rikeo	
Roche	Laportes	
United Biscuits	Roberts	
RHM	Batchelors Foods	

(c) Center Europe and investigate Western Europe, Common Market customer potential. France, Germany, Switzerland in particular.

7) Competitors. Most suppliers of equipment sell new columns, but high overheads mean high prices.

Competitors:- New Columns/Loose packing.

Phase seperators
Pre-packed Whatman

Expensive (Pye Unicorn
(Perkin Etmer
(Waters

New Columns/Repacking Service.

HPLC technology
Jones Chromatography
Magnus Scientific
Owen Polyscience.

Looking at our competitors, they are relatively small with small market shares, but their high growth level indicating the potential for a new entrant into the market, who can match and undercut their price.

A preliminary contact with customers revealed strong interest and in both cases sales could have been made at the target price level.

8) Our Competitors are mostly small, local parochial. Column services objectives is to sell nationally.

(a) Distribution
We intend to use the Post Office for distribution.

Medium and Long Term Objectives.

1. Maintain a steady growth of approximately 20% - 30% per annum. This growth to be gained by penetration into the European market whilst maintaining our domestic market share.
2. The European operation would operate through reps.
3. As cash is acrued, stock levels will be increased in order to enter the column packing supply market, ie. sell the packing material to customers who have the expertise to pack their own columns.
4. As new packing materials come onto the market, look for a sole UK agency agreement.
5. Extend the range of column fittings and accessories to be supplied along with column packing materials.
6. Expand the applications/consultancy aspects of the business, by increasing related advertising.
7. Keep up with new developments in the field of HPLC in order to take advantage of new markets being created by new inovations.

REPORT OF GROUP B.

Brew-Ware.

(Detailed sales forecasts, financial analysis, job descriptions, factory layouts etc have not been included.)

BREW-WARE

Brew-Ware is to be a modern pottery based in Stoke-on-Trent.

The Pottery will initially employ 56 people and produce 28,000 best finished items a week.

It is budgeted to yield at least 85% of ware originally made, and will initially produce the following items.

Teapots - 6 cup and 2 cup
Jugs - Large size and small size
Tea cream
Covered sugar
Mug

All items will be produced by slip casting and once fired through the electric intermittent kilns. The glaze will be applied to the clay body and will be offered in a variety of colours. The ware is sold directly to wholesales and the basic operation will be aimed at producing a low cost, high margin product.

The idea for the factory came from realising that there was a market for the type of ware Brew-Ware will be producing, created by the closure of a small but profitable factory within Stoke-on-Trent. Although some existing manufacturers have begun to produce similar ware there is still a large unsatisfied market, which is very price sensitive.

The information used to formulate the project has come from:-

Product Information:-

a) Raw materials and kilns - local suppliers.
b) Buildings - Newspaper advertising.
c) Production costings - local company information.
d) Product Technical Specification - Company Information.
e) Production rates - local company information.

MARKETING INFORMATION.

a) Previous market demand - confidential documents from existing ceramic manufacturers.
b) Future market demand - confidential documents from existing ceramic manufacturers.
c) Market outlets - own research and information from existing manufacturers.
d) Product price - Own research and confidential information from existing manufacturers.

Financial Information.

a) Own research and information deduced from manufacturing and marketing information.

A REPORT ON THE ESTABLISHMENT OF 'BREW-WARE' POTTERY MANUFACTURE.

1.0. OBJECTIVES.

1.1. To set up and operate a pottery manufacturing company, operating with minimum overheads and stock levels based on market potential.

1.2. To set up a formal partnership comprising five directors within a legal framework apportioning an equal stake in the company.

1.3. To develop the operation to such a level that a viable workers co-operative may be created after 3 - 5 years, allowing the present directors to enter an agreement based on consultancy fees and a retainer based on profits.

2.0. POLICY.

2.1. To manufacture pottery from a factory based in Stoke-on-Trent and sell to retail dealers in all parts of the U.K. Export sales to be initially Limited to regulation of surplus stock via selected outlets.

2.2. To reduce manufacturing costs by operating on a low finished stock, high liquidity basis.

2.3. To operate at highest profit margin where possible consistent with marketing and selling policy.

2.4. To transfer company to the ownership of employees by the issue of optional shares after three years service, with no profit sharing in the first year.

3.0. FINANCIAL POLICY.

3.1. To operate a high return/high margin business based initially on cash sales/seven day credit.

3.2. To pay off initial finance within 3 years.

3.3. To generate sufficient finance to broaden the range of the business whilst maintaining profit levels.

3.4. To operate within the financial constraints of low priced products.

3.5. To maintain high liquidity and maximise cashflow.

4.0. FINANCIAL STRATEGY.

4.1. Obtain accurate production costs for each item.

4.2. Set price on competitors equivalent price and percentage profit margin required.

4.3. Obtain sufficient finance to establish company from own resources.

4.4. Obtain future finance for expansion from available resources.

4.5. Take advantage of any Local Authority and Government grants, loans and tax exemptions.

4.6. Maintain tight control on factory budgets with particular reference to cash flow.

4.7. Forecast future financial needs based on market forces and establish control and monitoring systems.

4.8. Pay all creditors within terms of sale to establish good credit rating.

4.9. Bank sales revenue nightly on deposit account.

4.10. Operate debt ledger and strict bad debt control using trade references.

4.11. Use all profits to finance company for initial operating period and then pay off additional finance.

5.0. MARKETING POLICY.

5.1. To sell all ware produced and to operate on a finished stock level dictated by market demand.

5.2. To sell primarily through selected outlets in the U.K. and on a sale from factory basis.

5.3. To generate sales by advertising and promotion offering a discount to outlets placing advertisments.

5.4. All sales initially to be either cash or seven day credit basis with policy received after introduction of new range.

6.0. MARKETING STRATEGY.

6.1. Establish wholesale contacts and determine demand forecasts.

6.2. Promote sales in other areas by advertising in:-
Trade Journals eg. Tableware International.
Ceramics Today.
General Press eg. Exchange and Mart.
Local Press.

6.3. Commission design for new range, establish outlets and promote sales of range through existing and new contacts.

6.4. Establish via existing wholesalers for surplus stock (where position occurs) via export sales (ie. outside usual market).

7.0. MANUFACTURING POLICY.

7.1. To fabricate from bought in materials tea ware by slip casting initially, altering the manufacturing process to suit new range as finances available.

7.2. To keep costs at a low level by operating at a minimum quality level and minimum quality control expenditure pending new range.

7.3. To develop within 12 months an improved quality range capable of maintaining profit margin.

7.4. To increase scope of production by introducing new methods suitable for manufacture of the new range.

7.5. To maintain cost per piece at low level by introducing an incentive scheme.

8.0. MANUFACTURING STRATEGY

8.1. Buy in ready made casting slip and prepared colour glazes.

8.2. Establish incentive system based on factory performance.

8.3. 'Once fired' production minimising firing cost.

8.4. Quality control consisting only of selection at packing/despatch stage.

8.5. Introduce new manufacturing process while maintaining factory efficiency while developing and introducing new range.

8.6. Produce at required level and mix in order to satisfy market demand.

9.0. PERSONNEL POLICY.

9.1. Recruit skilled labour. (At present in surplus).

9.2. Train labour to achieve required output level and quality standards.

9.3. Carefully select and recruit working foreman with a view to future management training.

9.4. Allow C.A.T.U. to organise and operate within framework of BCMF and CATU agreed procedures and wage rates.

9.5. Retrain labour force to introduce new produce when introduced.

9.6. Promote managerial skills and establish succession to cope with proposed co-operative scheme.

9.7. Operate a phased introduction of personnel to factory to cope with production flow on start-up.

REPORT OF GROUP C.

Newcastle Tyre and Exhaust.

(Financial analysis,cash flows etc have not been included.)

NEWCASTLE TYRE AND EXHAUSTS.

Newcastle Tyre and Exhausts is a new venture being considered by three people who are currently employed in local industrial concerns. With fourty one years cumulative experience in manufacturing industry, twenty five of which are in managerial roles, the principals consider themselves suitably qualified to succeed in this enterprise.

The report will demonstrate the viability of the operations through an analysis of national and local market conditions, the formulations of a marketing plan, an approval of capital resource requirements, and statements of profit and loss, cash flow and cost structure for the first three years operation.

An overdraft facility is required at the commencement of the venture, after which the principals intend to place the positive cash flow through their selected bank in short term investments.

1. BUSINESS VENTURE - OBJECTIVES.

i) Minimal personal financial risk and committment.
ii) Low dependance upon banks and financial institutions. Low break-even point.
iii) Early positive cash flow in the life of the business.
iv) No manufacturing investment - offer service.
v) Low labour cost - initially no recruitment of staff.
vi) To be a realistic venture which could involve all of the participants equally.
vii) No specialist knowledge required.
viii) High personal rewards within the first 3 years.

2. NATURE OF BUSINESS - SATISFACTION OF BASIC OBJECTIVES.

Replacement tyres, exhausts and batteries - quick fit service operation at discount prices.

i) Low capital needs for both equipment and premises.
ii) Stock sold before suppliers paid ensuring good positive cash flow. Cash sales.
iii) Quick turn round of work with low labour content. Low break-even point.
iv) Little specialist knowledge required - emphasis on personal service.
v) No distribution costs - serve local area.
vi) Minimal supply difficulties - local distributors.
vii) Minimal stock carried, fast moving lines only. Distributors carry most of stock and the slow moving lines. Sale or returns available. Very quick delivery of stock possible when required.
viii) Tyres, exhausts and batteries are all distress purchases reinforced by legal requirements.

3. SALES/MARKETING.

3.1. Description of Service.

i) Replacement tyres, exhausts and batteries.
ii) Quickfit while you wait service.
iii) Full range of tyres and exhausts offered.
iv) Free fitting offered.
v) Only bolton type work carried out at cheaper, more competitive prices than normal garage prices.
vi) Service offered from early morning through to evenings plus weekends.

3.2. Nature and Size of Market - National Situation.

3.2.1. Nature of Market Replacement tyres, exhausts, and batteries are necessary exchange purchases. The timing of the need is usually characterized as a distress purchase and is reinforced by MOT and other legal requirements.

The vast majority of these services is carried out by quickfit establishments specialising in this business, where price competitiveness is an important factor.

3.2.2. Size of Market (after Neilson Mktng Agency).

Tyres - value £350m equivalent to 12 million tyres market shares of leading brands:

Michelin - 25%
Dunlop - 20%
Goodyear - 15%
Pirelli - 8%
Uniroyal, Avon, Firestone less than 8%

Of new tyres sold 90% are radial, 10% crossply. Remoulds are now largely replaced by second quality brands manufactured by the leading makers.

Life expectancy of tyres now 35,000 - 40,000 miles.

3.2.3. Distribution Through 2500 outlets of which 1500 are tied to manufacturers and 1000 are indiependents.

The national distribution of tyres from the manufacturers is through local distributors as well as direct.

Associated Tyre Specialists	- Michelins.
National Tyres	- Dunlop.
Tyreservices G.B.	- Good Year.
Central Tyres.	- Pirelli.

UniRoyal distributes direct to independents - often on favourable credit terms, even on initial purchases if agreement given to become a regular stockist.

Independents obtain other brands from the local distributor or direct from manufacturer if order large enough.

Local distributors have daily call off as required.

Manufacturer has weekly call off.

3.2.4. Competitors Activities.

i) National distributors - their major task is to achieve volume sales, each distributor being given quotas to sell per month from the manufacturer. Thus they often offer larger discounts to the independents towards the end of the month in order that they can achieve their targets.

They operate tyre fitting services, although their opening times are usually less than those of the independent.

ii) Independent tyre service outlets usually offer better discounts than the tied outlets, since they operate on lower overheads, they can be more flexible and take their own decisions in relation to local market conditions.

They often offer a wider range of brands having no specific committment. Usually more service orientated.

3.3. Exhausts. (Source Neilson)

National market size £180m equal to 6m units.
Life expectancy 1½ to 2 years.
Major manufacturers/distributors:

GKN Armstrong Automotive.
Quinton Hazell
T.I. Bainbridge
Grundy Stainless

Distribution is through own local agents or direct from manufacturer (as per tyres).
Local distributor - exhausts available daily.
Manufacturer delivers on weekly basis.

3.4. Market Situation - Locally (Source Govt.Stats.Service).

i) Population for Potteries ares - Newcastle 76000
S.O.T. 257000

ii) Number of households. Consume 2·7 persons/household.

Newcastle 28000
S.O.T. 95000

iii) Estimate of no. cars in area based on 75% of households for Newcastle and 65% households for Stoke.

Newcastle	21000 cars
S.O.T.	62000

iv) Estimate of annual demand for tyres is:

$$\frac{\text{no. cars x annual average mileage x 4}}{\text{mileage life of tyre}}$$

therefore for Newcastle $= \frac{21000 \times 12000 \times 4}{35000} = 28800$ tyres

and for S.O.T. $= \frac{62000 \times 12000 \times 4}{35000} = 85000$

v) Estimate of annual demand for exhausts is: (based on exchange every two years).

Newcastle	10500 exhausts
S.O.T.	31000

vi) Number tyre outlets operating in area (source Yellow Pages)

Newcastle - tied 2 (ATS, NTS)
independent 3
total 5

S.O.T. - tied 6 (ATS, NTS, TS, CT, Kenning)
independent 16
total 22

vii) Number quickfit exhaust outlets operating in area:

Newcastle	4 outlets
S.O.T.	9

viii) Estimate of available demand per outlet.

Tyres	-	Newcastle	5760 units
		S.O.T.	3864
Exhausts	-	Newcastle	2625
		S.O.T.	3444

3.5. <u>Investigation into Operating Practices of Local Establishments</u>.

(tyre services, Market Drayton; Central Tyres, Market Drayton; Alsager Tyre and Battery, Alsager).

<u>Tyre services - Market Drayton</u>.

Turnover £170,000 p.a.
Tyre sales £150,000 p.a.
£12,500 per month (or 400 units).

Cost £5000 (40%).

lab, O/H £3000 (24%)

Gross profit £4500 (36%)

Discounts £3500 (28%)

Net profit £1000 (8%)

Market Size - population 8000
Competition - 1 outlet (Central Tyres)
Stock holding - avg. 40 days.
Payment terms -60 days.
Discount off retain price to purchase - 60% norm.
Discount offered at retail sale - 25% to 35% off list.
Discount offered as distributor - 50% to 75% off list.

Range stocked, approx. 600 tyres most popular sizes only.
Three main brands Good Year, Dunlop and Michelin, 1 second brand Lee.
Advertising local papers £250/month.

Other services offered	valves	£1·10,	Cost £0·15
	wheel balance	£1·75,	" £0·25
	puncture	£2·10,	" £0·15
	alignment	£6·00,	
	battery charge	£2·00,	" £0·40

Exhaust sales £12,000 p.a.
£1,000 per month or 35 units.

Cost 50 - 60% off retail price.
sell at 15% - 20% off retail price.
Payment terms 30 days from invoice.
Stocks only volume makes Ford Cortina, Escort, BL Marina, Allegro, Mini, Vauxhall Viva.

Battery Sales £420 p.a.
mainly winter sale.
Stock one brand only.
Cost avg. £15.
Mark up £5.

3.6. Location of Business.

The choice of site of the business is Newcastle, since this area has been identified as having fewer quickfit outlets in proportion to local population. (cars and persons) than the rest of the Potteries, fewer tied outlets (Michelin and Dunlop only represented, a higher proportion of cars per household and a higher level of income than the rest of the potteries.

Therefore we believe there to be room for at least one additional outlet in the area.

3.7. Marketing Policy Outline.

i) To concentrate on satisfying the needs of the immediate local area of Newcastle, with a larger potential market area being available for development throughout the potteries.

ii) Product policy - to offer an average three main tyre brands (Good Year, Uniroyal and Pirelli not represented) one second cheaper brand (Lee ex. Good Year). Other brands will be available to suit customer requirements, and when high purchasing discounts can be obtained. No remoulds will be stocked. Maximum stock level to be 4 weeks and the aim to turn over stock at least once per month prior to payment. Only popular sizes will be stocked. To offer any replacement exhaust but to stock only very popular models (Ford and BL). Others will be obtained weekly as required.

iii) Pricing policy - to offer an average 30% discount off retail list price for car tyres in order to remain very competitive. This compares with existing outlets offering between 20 and 30% discount.

To offer on average 15% discount off retail prices for car exhausts - this being comparable to current practice of the competition.

Each month to have at least one price leading brand in the area.

iv) Service Policy (Consumer Relations) - to major on the standard of service offered, and to be responsible and flexible in satisfying the needs of the customers.

To gain their confidence through a professional approach to the business with modern equipment, bright clean decor and working environment and fast, polite service.

It has been observed that the majority of outlets lack the ability and means to fully respond to the customers needs and that this is a key factor in the new venture gaining market share.

v) Advertising and Promotion - as most purchases are made when the need arises it is essential to maintain a continuing presence in the local press (weekly). This medium would also be used to advertise special promotions offered at least every two months. These promotions would be paid for by passing on additional purchase discounts achieved, or by utilising profits gained from fitting tyre valves and from wheel balancing.

Display advertisments will be placed in both tyre and exhaust sections of Yellow Pages and local advertising hoardings used. National advertising of the manufacturer covers the basic product itself.

vi) Market Share - to gain a mimimum one sixth of the estimated demand for tyres and exhausts in the Newcastle area by the end of the 2nd years trading.

vii) Strategy for Launch of Business - to advertise the presence and services of the new business by:

a) distributing £1 discount hand bills to every household in Newcastle, to be redeemable on purchases made during the first 6 months.

b) Press release for Advertiser.

c) Nightly advertisements in the Evening Sentinel for the first two weeks of trading.

d) Advertise free wheel alignment, balancing, exhaust battery and tyre inspection during first six weeks operation - not conditional on a purchase.

3.8. Future Strategy.

i) As break-even point is low (160 tyres only/month), attempt is made to fill available time with new business of the fast turn-round, replacement bolt-on type (eg. shock absorbers, brake pads, radios where no new tooling is needed, and minimal stock holding of parts is required.

ii) Canvas local area for fleet car/company car accounts.

iii) After approximately 18 months trading and when desired market share has been gained, start similar venture in a new location.

iv) When reputation and market share established, examine possibilities for increasing margins.

REPORT OF GROUP D.

Leisure Centre Ltd.

(Financial analysis, cash flow, layout drawing etc have not been included.)

LEISURE CENTRE LTD.

1.0. DETAILED DESCRIPTION OF THE SERVICES.

1. To establish, maintain, conduct and carry on a leisure centre for the accommodation and convenience of the members of the centre and their friends; to encourage and promote the welfare of members and to promote social intercourse and friendship between the members of the centre, their friends and visitors.

2. To acquire any land, buildings and hereditaments on any tenure, and to adapt, alter, construct or retain the buildings thereon for the use of the members of the centre, and to provide suitable accommodation for the members including squash, badminton and other hardcourt activities and recreation rooms with all the necessary and convenient offices, outbuildings and adjunts for the use of the members of the centre.

3. To carry on the business of licensed victualers, cigar, cigarette and tobacco dealers, restaurant keepers, dance and concert hall proprietors.

4. To promote, carry on, assist to promote or carry on and to maintain centres, organisations and associations for the playing of and encouragement of the aforesaid activities and other sports or pastimes.

2.0. THE NATURE AND SIZE OF THE MARKET.

In "Planning for Sport" * the sports council working party was not prepared to make precise recommendations of the scale of provision for indoor sports facilities, for two main reasons:-

1. The working party was conscious of the wide regional and local variations in demand which could not be met by a rigid application of national standards for the provision of facilities and
2. Insufficient information was available in 1966 about the few existing indoor sports centres to enable more than general advice to be given on the scale of provision of these facilities.

The working party therefore recommended in "Planning for Sport" that further research should be carried out into the use of existing centres.

The study of indoor sports centres published in 1971+ was a first step and the national assessment of 817 indoor sports centres being required, was based on the following two main assumptions:-

---

* The sports council, CCPR 1968.

\+ Indoor sports centres sports council study No.1. The Sports Council HMSO 1971.

1. A catchment population of 40,000 would be sufficient to support an indoor sports centre.

2. The catchment area can normally be described as the area accessible within a car journey of 20 minutes duration from the centre. (7 miles estimated).

The report also went on to say that the application of the broad criteria listed above has shown that this method of assessment is realistic for much of the country, particularly for the smaller towns which have clearly defined catchment areas.

From these guidelines we were able to obtain maps of the locality around the proposed leisure centre (as per attachment) and split it down into the boundries shown ++

From this information we identified the number of houses in the area, multiplied by 3 (being the average number of occupants/house) which gave a total catchment area figure of 189,000.

This would be sufficient to support our new leisure centre including the competitors who already exist in the catchment area and are shown on attachment.

The viability of the leasure centre is based on recruiting 400 members per year and a court usage of 90% of available playing time.

Fees will be on the basis of an annual membership fee payable on joining the centre and a court fee when booked.

COMPETITION.

Covering the area of 7 miles from the proposed leisure centre limited.

These are:-

Sammi Bells - Newcastle.

Booth St. - Stoke.

Longton C.C. - Blurton.

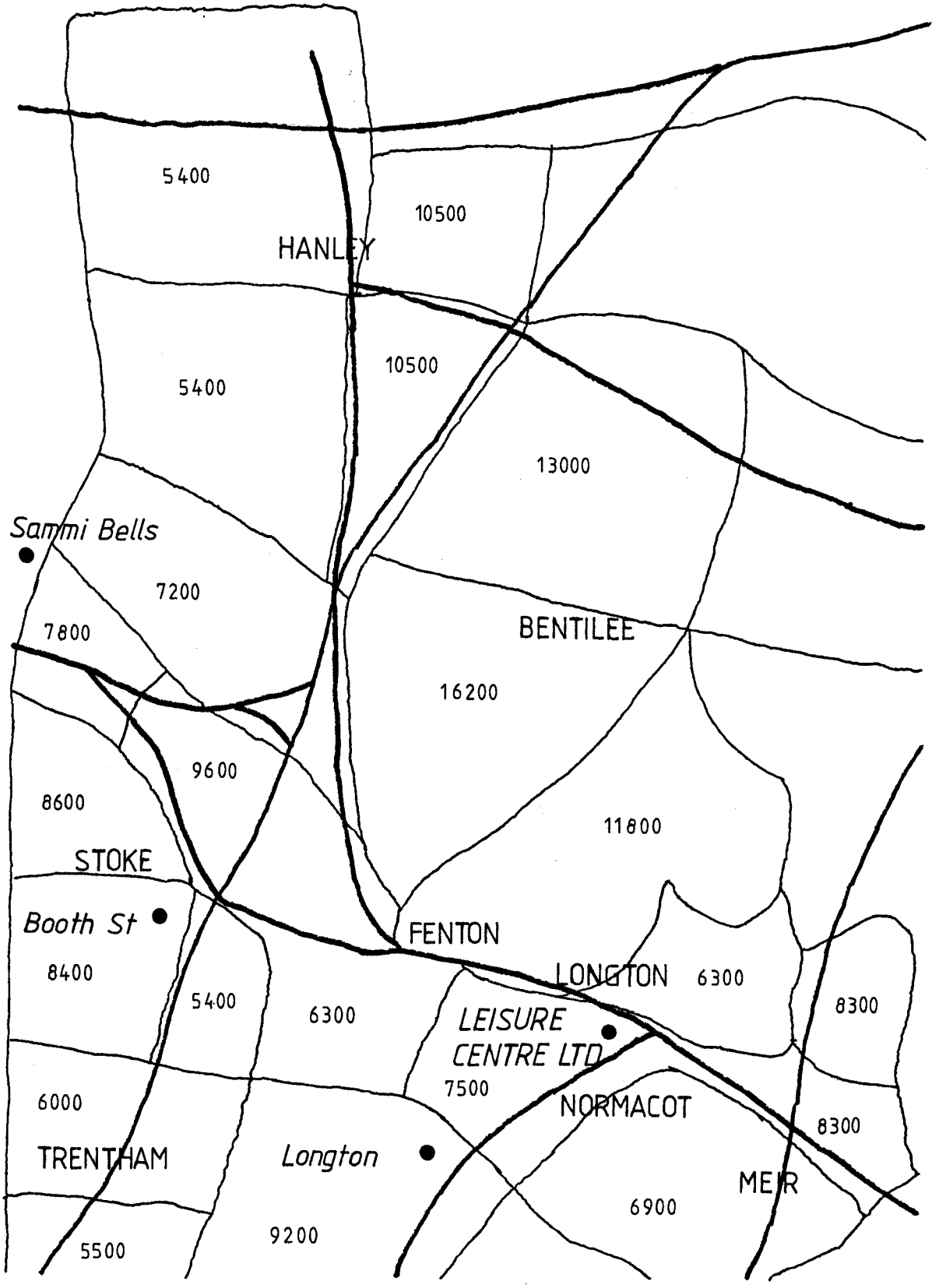
++ Supplied by Marketforce (Dist.) Ltd.,
98 Dalston Lane,
London.

Size of Market

56 Identifies Segment Population

Main Road

Leisure Centre Sites



3.0. OUTLINE MARKETING POLICY.

OBJECTIVES.

Leisure Centre Ltd's marketing policy is to encourage and promote membership and maximum usage of the leisure centre facilities by the public on a profitable basis.

These objectives to be achieved by:

1. The aquisition of any land, buildings and hereditaments on any tenure, and to adapt, alter construct or retain the buildings thereon for the use of the members of the centre, and to provide suitable accommodation for the members to use the facilities.

2. The provision of a spacious comfortable licenced refreshment lounge and spectating area for the use of members and associates.

3. The constant monitoring of market trends and requirements and to react accordingly where ever viable and beneficial to members and the public and leisure centre ltd.

4. A membership level of 400 playing members based on the following time scale:

   Jan 250
   Feb 150

   Based on commencement of promotional activities from September 1981.

ATTACHMENT.

COMPETITORS MEMBERSHIP FEES.

CENTRE	JOINING FEE £	RENEWAL FEES £	PLAYING FEES. £
Giants Wood	-	28	1·30
Vagrants	10	18	0·75
Alsager) Congleton) Sandbach)	-	2	1·75
Sammi Bells *	-	25	1·00
Draycot	-	46	0·80
Shavington	-	-	1·60
Northwood *	-	-	1·40
Stone	-	48	1·25
Leisure Centre Ltd.	40	40	1·00
Booth Street *	-	-	1·40

* Competitors within catchment area.

4.0. THE LOCATION OF LEISURE CENTRE LTD.

LOCATION: UPPER NORMACOT ROAD, LONGTON, STOKE-ON-TRENT.

Close scrutiny of the area in and around North Staffordshire has been carried out to identify potential locations in relation to catchment, access and roads, schools, competitive facilities and potential support.

Consultation with the local authority reveals the following information:

1. Much of the area local to Normacot is due for redevelopment over the next 15 years and referred to as the Normacot Corridor.

2. This rezoning will bring a further 2oo dwellings to the area as well as industry, schools and commerce.

3. A new roadway is proposed which will link Normacot Road, Uttoxeter Road, and Derby Way (East) giving valuable support to the major route between Longton and Meir.

4. 2 Competitive organisations are attempting to build squash courts in this area but todate have been unable to obtain planning permission for new buildings because of ground site conditions.

5. The local authority have stated that planning permission will be granted for the conversion of the Alambra Cinema, Upper Normacot Road, Longton, Stoke-on-Trent. To Leisure Centre Ltd's squash courts and bar facilities.

LAYOUT OF BUILDINGS.

The design of the existing structure has to be taken into consideration together with relative costs when determining the internal layout. The most suitable layout which will provide all the desired amenities at the lowest cost is as per the attached plan.

PLAN OF IMPLEMENTATION.

See attached time scale.

PHASE II FUTURE EXPANSION POSSIBILITIES.

The building provides potential for expansion as and when resources allow it to be viable. Phase II expansion scheduled for 1984 is to build an abutting sports hall with a floor area of 600 sq. m. and access via doors in the existing wall with viewing from the existing gallery. This sports hall will cater for activities including:

Badminton. (Area sufficient for 5 courts)
Basket Ball.
Bowls.
Cricket.
Hockey.
Tennis.
Netball.
Football.
Volley Ball.
Sports Shop.
Fire Exits.
Beer Cellar.
Heating Facilities.
Car Parking Area.

MODIFICATIONS AND COSTS.

The building has been surveyed by the local authority who have confirmed that the structure is sound and requires only minor rennovation. The following work will need to be carried out for the conversion to a leisure centre.

	WORK	COST /£
1.	Remove sloping wooden false floor and build up the level using hard core.	910
2.	Remove sloping balcony floor	2780
3.	Install level upper floor extending along rear wall and install suspend ceiling	7000
4.	Carry out general work to make good	600
5.	Install 4 squash courts	29300
6.	Install changing rooms and toilets	5000
7.	Install electricity and heating units	10000
8.	Carry out external land work for car park	1200
9.	Carry out work for site services (drainage)	5500
		62390
	Purchase of premises	40000
		102390

THE TYPE OF PREMISES REQUIRED AND THE AVAILABILITY OF THESE IN THE AREA OF LOCATION.

REQUIREMENTS IN TERMS OF PREMISES.

The main criteria for premises for the 1st phases of the organisation are as follows:

1. A sound structure with a floor area of 1000 sq. meters min.
2. A ceiling height of at least 5 meters.
3. Availability of mains services.
4. Provision for car parking.
5. Easily accessible.
6. Easily maintainable.

AVAILABILITY OF PREMISES.

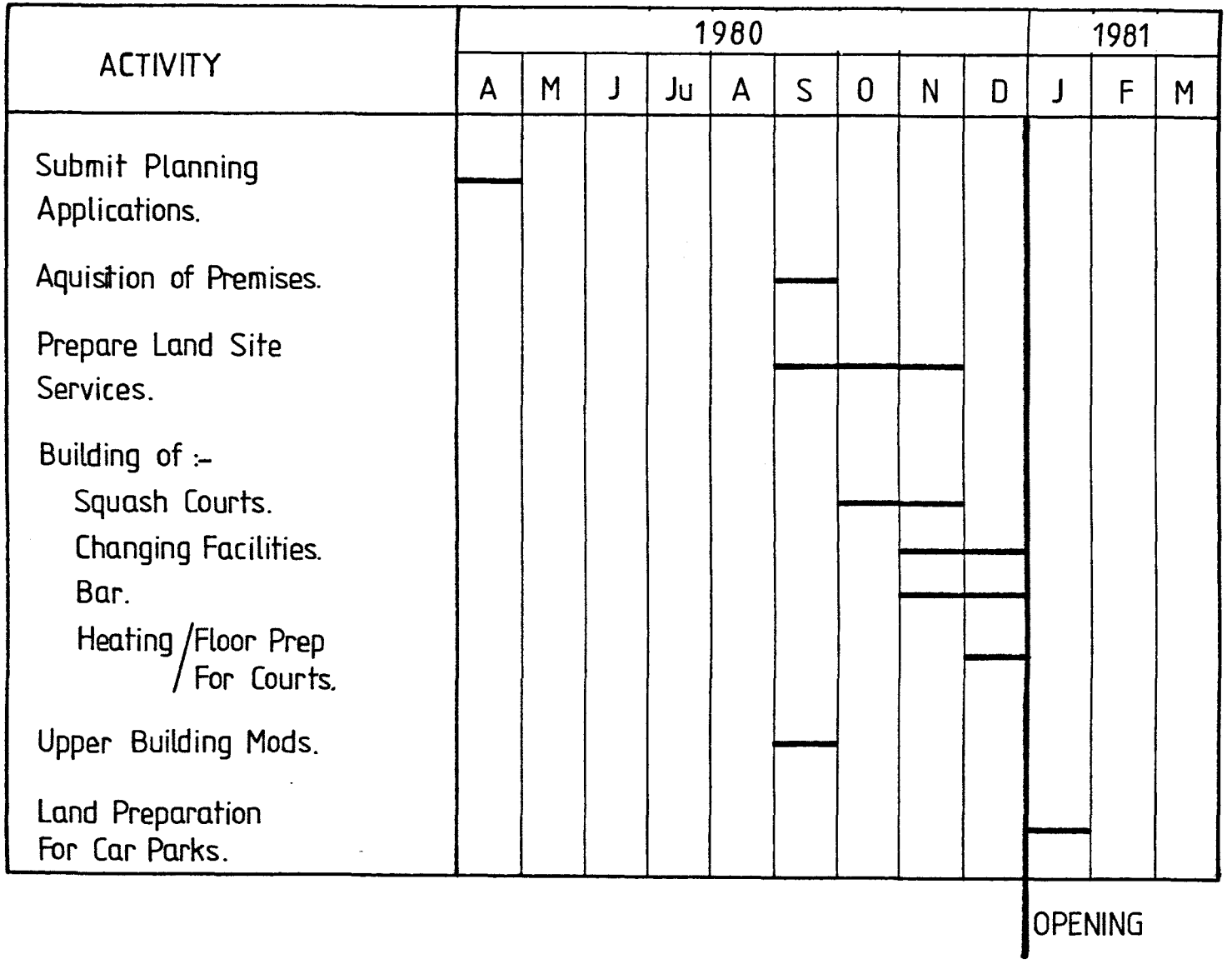
Availability of land for either a new structure or an existing structure have been considered in terms of area and financial viability. In financial terms the best proposition was to utilise an existing structure which could be converted easily to accommodate our layout.

The Alambra cinema, Upper Normacot Road, Longton, is approximately 60 years old and is currently available for purchase as a shell. It is suitably situated for our requirements and will accommodate the following facilities:

4 squash courts (Banbury Design Mark II).
Changing rooms for male and female players.
Showers and toilets.
Office and reception area.
Recreation area.
Storage area.
Bar and lounge area.
Viewing gallery.

ALAMBRA CINEMA

Plan of Implementation for Modifications.



Appendix E

Concord Insulators Ltd. (A Case Study)

Contents | Page

1. ABSTRACT.

Concord Insulators is a Case Study concerned with the taking of an operational level decision whether to hire or buy given the choice of two different types of machinery. It is a large decision analysis problem and involves the construction and interpretation of decision trees. It was written to develop the valuation of information but can be used as an exercise in the construction and interpretation or just the interpretation of decision trees as well as an exercise in Production Management Decision Making.

2. CONCORD INSULATORS LTD.

2.1. THE COMPANY AND PRODUCTS.

The company is well established in the Industrial Ceramics Market. It has a good reputation for producing well finished goods on schedule. The company is independent of any of the large ceramic groups or holding companies and could be classed in the smaller medium sized companies. It produces a wide range of industrial ceramics although 60% to 70% of their business is in the Ceramic Insulator Market, ranging from small insulators used in telecommunications to large insulators used in the power generation industry.

In recent months the business in the telecommunication insulators so far produced has been falling off due to technology developing in this area (the changeover from electro mechanical to electronic exchanges) thus leaving spare capacity on the production facilities. Anglo Electric are about to market a new generation of telecommunication equipment with a product life of three years. This equipment requires fewer insulators, but of a much higher standard (see fig.1 for drawing of the insulator). The strategic decision has already been taken by the Board of Concord Insulators that for the long term safety of the company this market must be entered.

Also the board considered it to be a suitable market because Concord products are high quality goods and the insulators concerned need to be produced to a

higher standard than before. Agreement between Concord and Anglo Electric has been reached and it has been decided that Concord shall produce the number of insulators required by Anglo Electric at a unit price of £20 per insulator.

It now remains for the production department to implement these strategic plans and produce the operational plans required to carry them out.

2.2. THE PROBLEM.

The production department when drawing up the operational plans find the majority of the operations in producing the insultor can be carried out with the existing equipment but because of the tighter tolerances on the new insulators some new specialised equipment must be obtained.

There is one company producing the specialised equipment, Applebye Ceramic Engineers. Applebye produce two types of the equipment:

Machine Type B.

This type of machine has been in production for some time, it is well tried and tested and is used by a number of other ceramic companies.

Machine Type A.

This type of machine is a recent development of Applebye's and so far only small numbers have been produced. It is more expensive than type B but produces the product more efficiently.

Both machines will produce the insulator to the required standard and both are capable of producing the required number of the product although M/C A produces items at a lower production cost.

Applebye will sell the machines to Concord Insulators Limited or they offer a hire service. The period of the hire agreement will be one year and at the end of that period it is possible to change the type of M/C hired if required. As part of the hire agreement Concord Insulators Limited must be responsible for all the maintenance and servicing as if they had purchased the machine.

The following information is available. The sales department have produced estimates of sales given in Fig.2. The sales are independent from year to year. These estimates of sales have been extended in Appendix II to produce a probability distribution of sales over the three year period, the average sales over this period being 6600 insulators. Given in fig.3. is various information concerned with the new machinery. Here the cost per unit production of the insulators is given. This cost includes all raw material, production, distribution, administrative cost, etc., the only cost not included is the cost of purchase or hire of the machine. The unit cost remains the same irrespective of whether the machine is purchased or hired because in both cases Concord Insulators is responsible for the servicing and maintenance of the machine. Also given in Fig.3. are the purchase price

of the machine, the scrap value of the machine at the end of the three year period and the hire charge per year of the two types of machine.

Production Management require an outline of the decision strategy open to them and a value of such an analysis.

FIG 1 CERAMIC INSULATOR TO BE PRODUCED

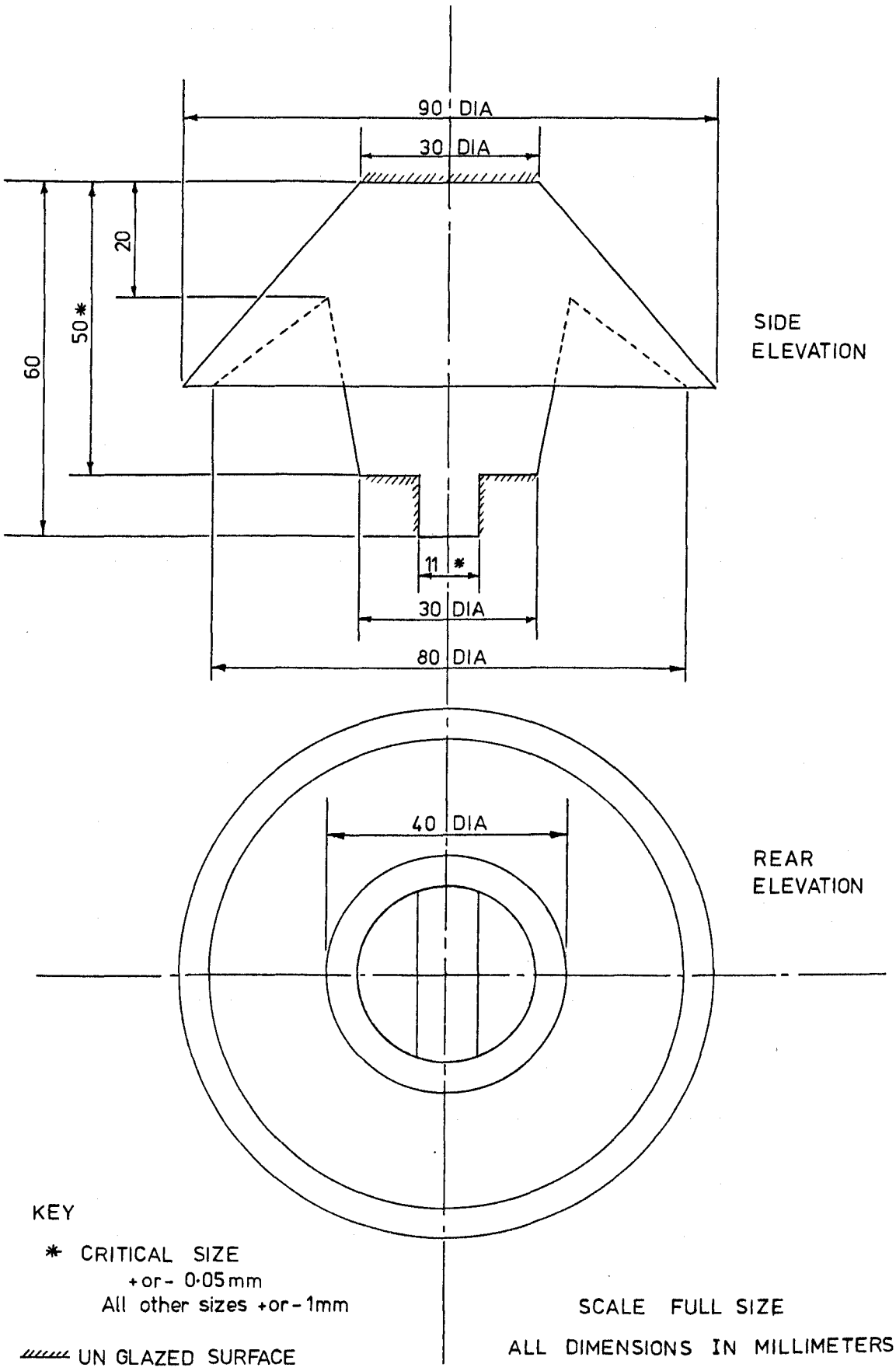


FIG 2 PROBABILITY OF SALES

PROBABILITY	SALES (UNITS)		
	1000	2000	3000
YEAR 1	0·3	0·5	0·2
YEAR 2	0·1	0·5	0·4
YEAR 3	0·1	0·4	0·5

FIG 3 MACHINE INFORMATION

	M/C A	M/C B
COST / UNIT PRODUCED	£10·50	£12·50
PURCHASE PRICE	£13380	£10300
SCRAP VALUE AT END OF THIRD YEAR	£500	£400
HIRE CHARGE / YEAR	£5400	£4200

FIG 4 MAIN DECISION TREE

NOTE:- Range of Profits for Buying
(Hiring becomes to complex)

Purchase M/C A
Expected Profit = £38656
in the range £10650 to £57960

Purchase M/C B
Expected Profit = £30785
in the range £8675 to £46025

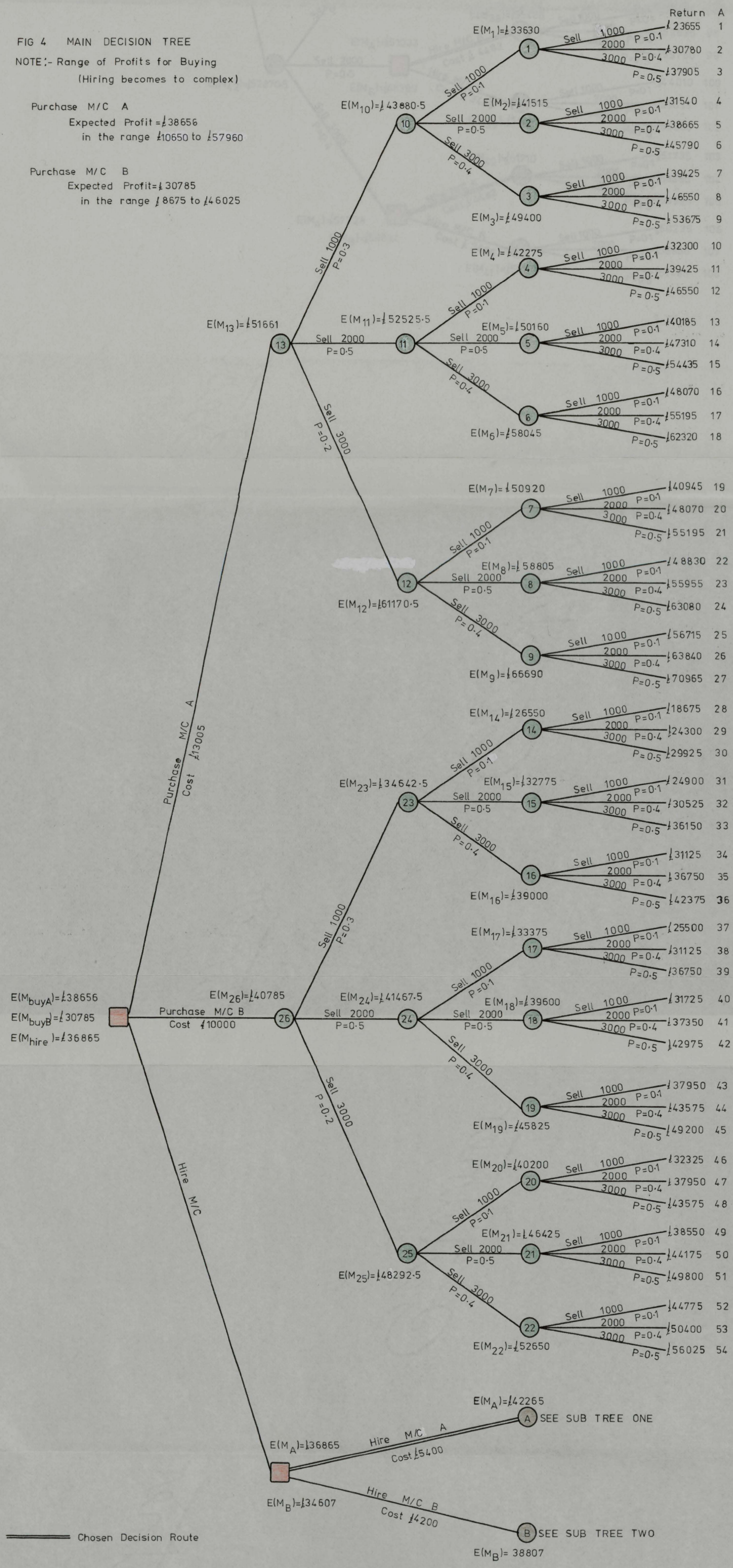
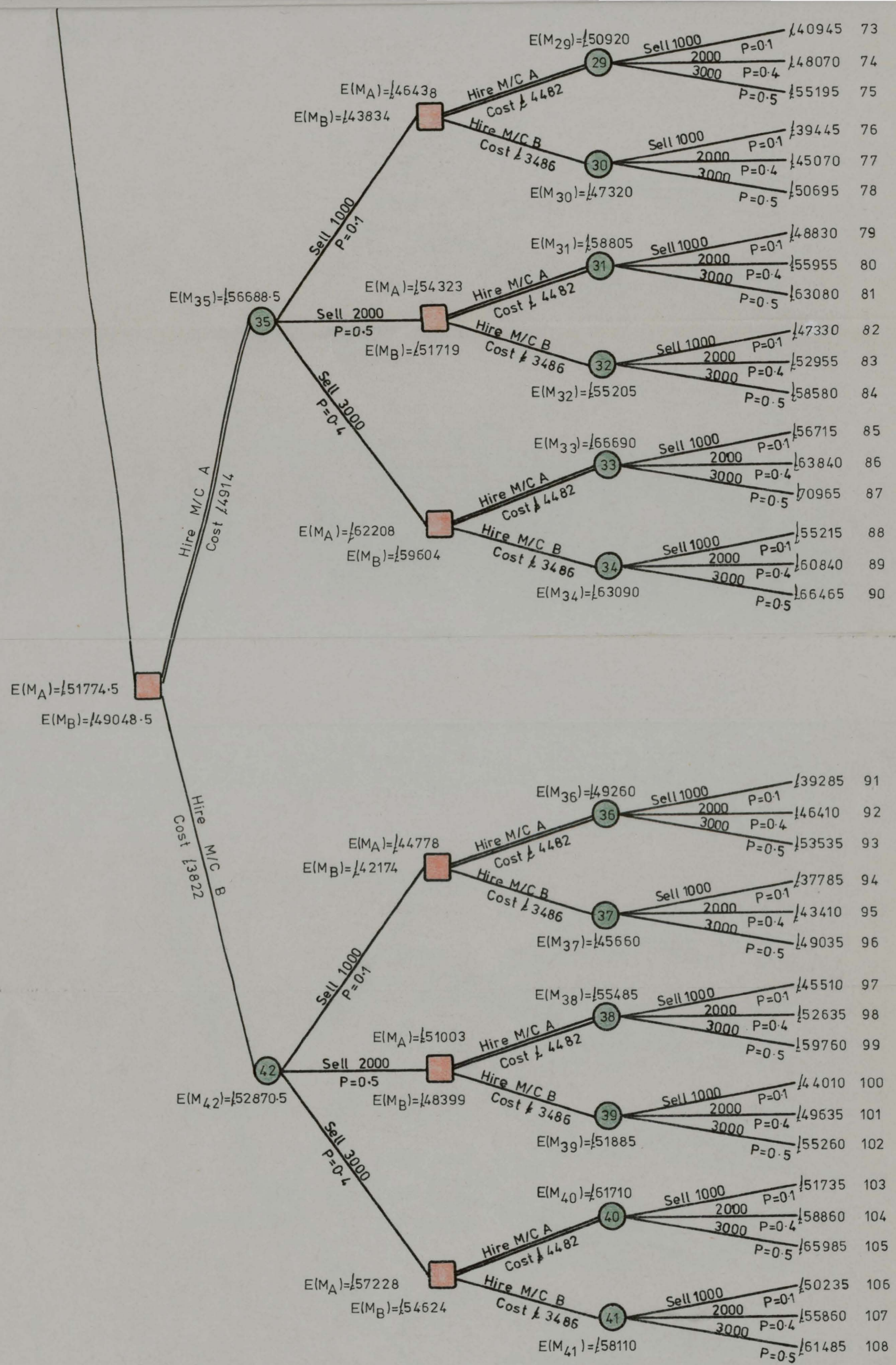


FIG 5 SUB TREE ONE


E(M_A)=£51774·5
E(M_B)=£49048·5
Hire M/C A
Cost £4914
Hire M/C B
Cost £3822
E(M_35)=£56688·5
35
Sell 1000
P=0·1
Sell 2000
P=0·5
Sell 3000
P=0·4
E(M_A)=£46438
E(M_B)=£43834
E(M_A)=£54323
E(M_B)=£51719
E(M_A)=£62208
E(M_B)=£59604
Hire M/C A
Cost £4482
Hire M/C B
Cost £3486
E(M_29)=£50920
29
E(M_30)=£47320
30
E(M_31)=£58805
31
E(M_32)=£55205
32
E(M_33)=£66690
33
E(M_34)=£63090
34
Sell 1000
2000
3000
P=0·1
P=0·4
P=0·5
£40945 73
£48070 74
£55195 75
£39445 76
£45070 77
£50695 78
£48830 79
£55955 80
£63080 81
£47330 82
£52955 83
£58580 84
£56715 85
£63840 86
£70965 87
£55215 88
£60840 89
£66465 90
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E(M_B)=£42174
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E(M_B)=£48399
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£52635 98
£59760 99
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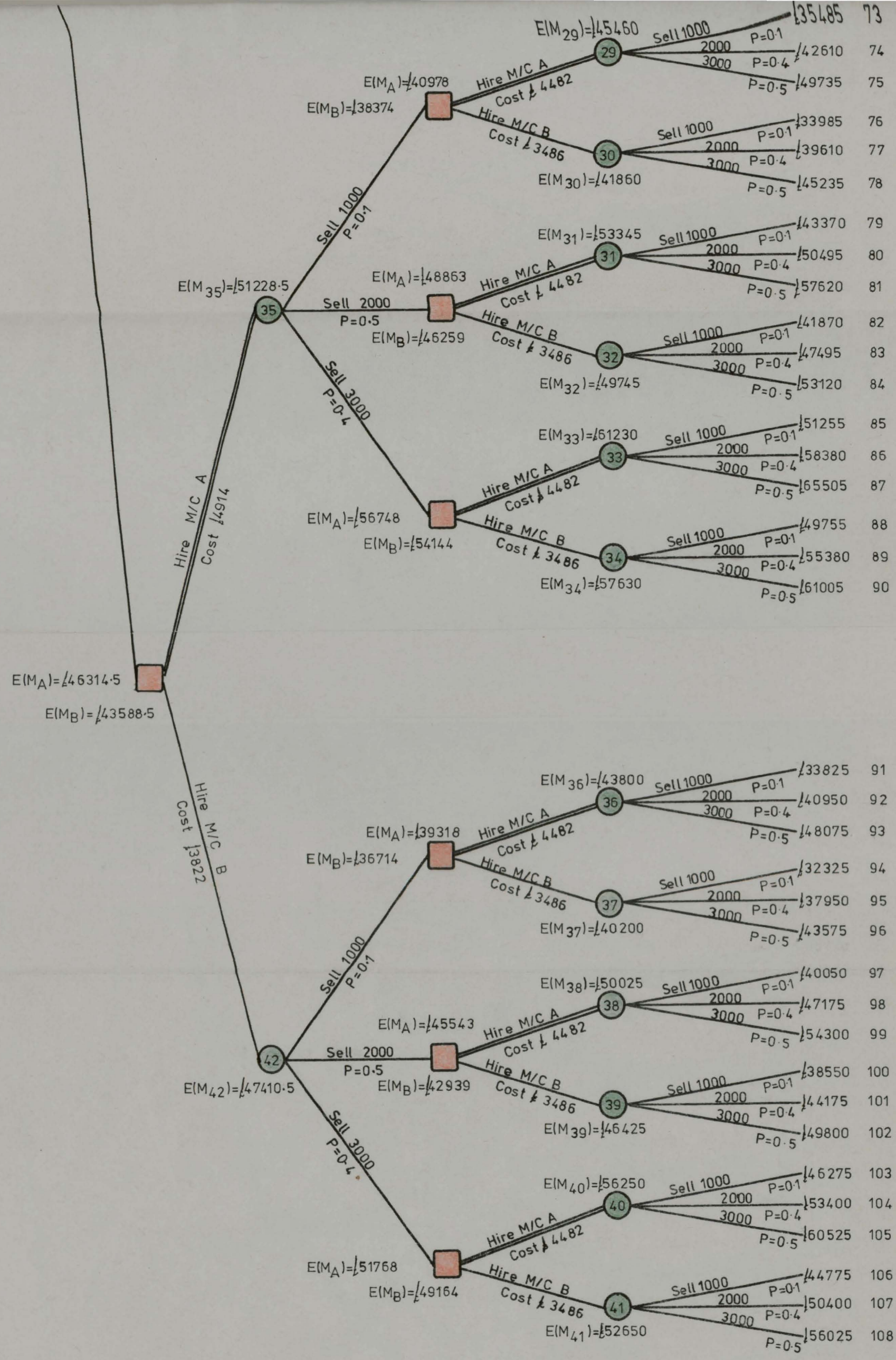
£49635 101
£55260 102
£51735 103
£58860 104
£65985 105
£50235 106
£55860 107
£61485 108

FIG 6 SUB TREE TWO


E(M_A)=£46314·5
E(M_B)=£43588·5
Hire M/C A
Cost £4914
Hire M/C B
Cost £3822
E(M_35)=£51228·5
35
Sell 1000
P=0·1
Sell 2000
P=0·5
Sell 3000
P=0·4
E(M_A)=£40978
E(M_B)=£38374
E(M_A)=£48863
E(M_B)=£46259
E(M_A)=£56748
E(M_B)=£54144
Hire M/C A
Cost £4482
Hire M/C B
Cost £3486
E(M_29)=£45460
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E(M_30)=£41860
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E(M_31)=£53345
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E(M_32)=£49745
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E(M_33)=£61230
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E(M_34)=£57630
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Sell 1000
2000
3000
P=0·1
P=0·4
P=0·5
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£49735 75
£33985 76
£39610 77
£45235 78
£43370 79
£50495 80
£57620 81
£41870 82
£47495 83
£53120 84
£51255 85
£58380 86
£65505 87
£49755 88
£55380 89
£61005 90
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E(M_A)=£39318
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E(M_A)=£45543
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E(M_B)=£49164
E(M_36)=£43800
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E(M_37)=£40200
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E(M_38)=£50025
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E(M_39)=£46425
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E(M_40)=£56250
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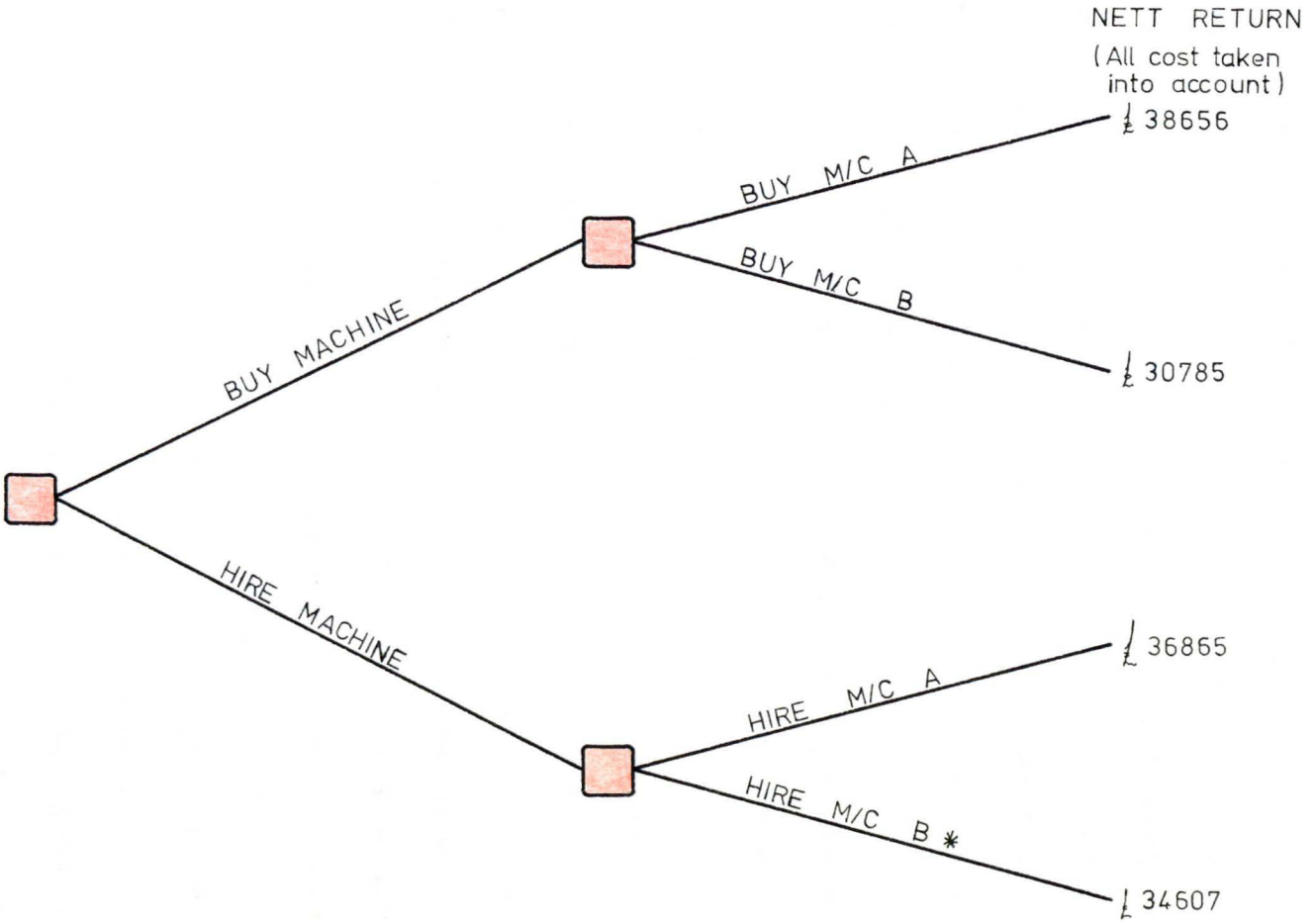
E(M_41)=£52650
41
£33825 91
£40950 92
£48075 93
£32325 94
£37950 95
£43575 96
£40050 97
£47175 98
£54300 99
£38550 100
£44175 101
£49800 102
£46275 103
£53400 104
£60525 105
£44775 106
£50400 107
£56025 108

3. CONSTRUCTION OF DECISION TREE.

The basic decision is to buy a machine or to hire a machine and to determine the type of machine. In the case of a hire machine the type must be determined each year. The alternative outcomes are the three levels of sales in each of the three years operation. Fig.4. shows the main decision tree but because of the complexity and size, two sub trees have had to be produced (fig.5 and 6) to show the hire parts of the decision, the two sub trees being brought together on the main tree. All the returns and the appropriate costs have been discounted at a rate of 10%. The returns have been discounted as if the income arrives at the end of each of the three years. The cost of purchase has been taken at the beginning of the three year period and the scrap value taken at the end of the three year period and the cost of hire at the beginning of each year of hire. The calculations associated with the tree are given in full Appendix I. A summary of the decision tree in fig.7.

PULLOUTS



* Best decision then to hire M/C A for remaining two years

FIG 7 SUMMARY OF DECISION TREE

4. ANALYSIS OF DECISION STRATEGY.

The decision giving the greatest return is the decision to purchase machine A. The rate of return on both purchases is approximately the same (£3 profit per £ invested) so this will not change the best decision. Although this decision is the best Quantifiable Solution, decision trees are not automatic decision takers. On this particular tree these are no loss making routes but if there were then this could be an important factor for the decision maker to take into consideration. Concord not being a large company could well not stand a loss. Also shown on the tree are the ranges the profit could take for the purchases of machines, the hire range has not been shown due to the combinatorial problems encountered with the more complex decision of which machine to hire each year. The decision trees outline all the possible decisions and their outcome and it must now be up to Production Management to take into account all the non-quantifiable aspects of the decision. For example Production Management may feel that the new type of machine (type A) is not fully tested and because of this it would be better to purchase machine type B. Such a decision would cost the company £7,871 lost profit (in percentage terms a 20% reduction in possible profit). It must therefore, follow that management feel that such a reduction is justified and estimate that breakdowns, etc., on the new machine will cost the company at least this amount.

Management may not have capital available or may require to use the available capital on other projects and so may prefer to hire rather than purchase a machine. Hiring Machine A as opposed to purchasing it will cost the Company £1,791 lost profit (in percentage terms a 5% reduction in possible profit). Management may feel this is an acceptable reduction for not using its capital but then again it must be worth at least £1,791 (in estimated terms) to take such a decision. It would be wrong to justify such a decision by saying that the capital so released could earn money elsewhere as this factor has been taken into account by discounting the costs to hire the machine.
It must also be remembered that the sales figures and costs (mainly costs of production, distribution, etc.,) are only estimates. When management are making their decision based on the tree and other non-quantifiable facts they should take this into account and also considering the reliability of the estimates (based possibly on past results or on some other factors).

It is now up to <u>management</u> to take the decision based on all the factors at their disposal, but remembering that some of the values to construct the decision trees are only estimates. So the final values on the tree are not absolute but must be considered within limits.

5. VALUE OF INFORMATION.

In valuing the information it is best to consider the whole of the information and knowledge that goes into the production of the best decision. If there was no information or knowledge available then the only option open to management would be to take random decisions at each decision point (each decision path having an equal probability of being chosen). Such a tree has been produced in Fig.8, the calculations and the figure given in Appendix III. The expected return from such random decision taking is £33,895.75. The expected return from the best decision using the tree is £38,656. The value of information is therefore the difference between the two.

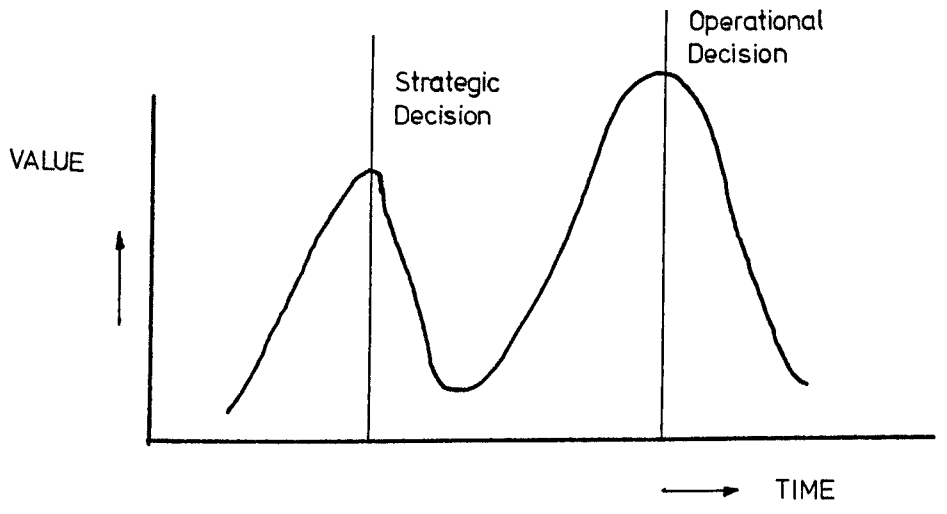
VALUE OF INFORMATION = 38656 - 33895.75
(ALL INFORMATION AND KNOWLEDGE)
= £4760.25

In addition the range of values can be determined. If the best decision was chosen at random then the value of the information would be £0, the lower limit. The upper value of the information is given by the difference of the two extremes of returns i.e. £7871.

∴ VALUE OF INFORMATION = £4760.25
within the range £0 to £7871

There are more factors which must be taken into consideration along with the £4760.25. These are Time, Knowledge, Prior Information, Accuracy of Information, Quantity and Power.

1) TIME:- In assessing this value of £4760.25 no account has been made of time. Time is an important factor when considering the value of such information. The value of £4760.25 will not remain constant for all time. The value will rise to its full value at the time when the decision is taken (this time will include preparing to take the decision) and then will fall away after the decision has been taken, the rate of fall being dependant on the repeatability of the decision. The value of the information so far considered is only taking into account the value of it in taking the operational level decision, concerned with the type of machine to hire or buy. This information should have been used and probably would have been used to help decide on the strategic level decision whether or not to move into this market. This might be shown diagramatically as below.



The value of this information at the strategic level would probably be less than at the operational level because the company feels it is important for long term marketing reasons to enter this particular market. This would probably mean that other information and factors would be more important to a decision at this level than purely monetary values and so this particular information will be of less importance and hence less value.

The value of this piece of information will be the total value of its use under both decisions and so will be in excess of the £4760.25 figure.

2) KNOWLEDGE:- The knowledge of the managers needs to be taken into account within this value. It will not add to the value but a lack of knowledge could reduce the value because there will be a lack of understanding and use of the information.

3) PRIOR INFORMATION:- Prior information could affect the value of the information;again it will not add anything to the value but could reduce it. If there is some information concerned with prior probabilities then a more sophisticated decision analysis could be produced using Bayesian Statistics.

4) ACCURACY OF INFORMATION:- In this value of the information little account has been taken of the accuracy. Along with the value also is given a range of values, but this value and range is given based on the estimates of values of probability, cost, etc., used within the construction of the tree. To get a true range of the value it would be necessary to obtain three estimates for the base data as in P.E.R.T., a pessimistic, a most likely, and an optimistic estimate and so produce three decision trees, (the trees actually constructed being the most likely). The pessimistic and the optimistic tree would give the range of values but this would considerably increase the amount of work in the production of final values.

5) QUANTITY:- The size of a particular piece of information can affect the value of that piece of information. If a piece of information is too large then this could reduce its value. All managers suffer under a time constraint and therefore there is the chance that some of the value of a large piece of information may be lost because of insufficient time to study it. The more complex the decision becomes the larger becomes the decision analysis and therefore this problem may start to occur.

6) POWER:- Power could well be a factor that overrides the value of the information. Power cannot affect the value with regard to the organisation but it can with regard to the individual. If an individual thinks that the presentation of such information is likely to increase his status within the organisation then no matter what the value it may still be collected and developed. Such things may not be desirable for the organisation, but as any organisation is made up of individuals most of which will see their relationship with the organisation in power terms such events must be accepted as a fact of life.

Having taken these six factors into consideration along with the first estimate it should be possible in conjunction with management to arrive at a reasonable value for the total piece of information, i.e. the total decision analysis.

This leaves the estimation of the value of the component parts of this information. In this case there are three items that constitute the value. There are two sets of data, the sales data and the estimates of costs and there is the analysis. Once estimates of the value of the two pieces of data have been produced the difference between their value and the value of the total piece of information will be the value of the analysis. Probably the best way of obtaining a value for these two sets of data is to ask management to produce estimates of their value taking into consideration the value of the total

piece of information.

This last step of trying to produce individual estimates for the individual pieces of data and the analysis which produces a given piece of information is in most cases not necessary. It is sufficient just to consider a value for the total piece of information.

APPENDIX I

DECISION TREE CALCULATIONS.

CONTENTS.

MAIN TREE RETURNS. SHEET ONE.

	YEAR 1 (0.91)		YEAR 2 (0.83)		YEAR 3 (0.75)	
1)	(1000x9.50x0.91)	+	(1000x9.50x0.83)	+	(1000x9.50x0.75)	
	8645	+	7885	+	7125	=£23655
2)	8645	+	7885	+	(2000x9.5x0.75)	
				+	14250	=£30780
3)	8645	+	7885	+	(3000x9.5x0.75)	
				+	21375	=£37905
4)	8645	+	(2000x9.50x0.83)	+	7125	
		+	15770			=£31540
5)	8645	+	15770	+	14250	=£38665
6)	8645	+	15770	+	21375	=£45790
7)	8645	+	(3000x9.50x0.83)	+	7125	
			23655			=£39425
8)	8645	+	23655	+	14250	=£46550
9)	8645	+	23655	+	21375	=£53675
10)	(2000x9.50x0.91)	+	7885	+	7125	
	17290					=£32300
11)	17290	+	7885	+	14250	=£39425
12)	17290	+	7885	+	21375	=£46550
13)	17290	+	15770	+	7125	=£40185
14)	17290	+	15770	+	14250	=£47310
15)	17290	+	15770	+	21375	=£54435
16)	17290	+	23655	+	7125	=£48070
17)	17290	+	23655	+	14250	=£55195
18)	17290	+	23655	+	21375	=£62320
19)	(3000x9.50x0.91)					
	25935	+	7885	+	7125	=£40945
20)	25935	+	7885	+	14250	=£48070
21)	25935	+	7885	+	21375	=£55195
22)	25935	+	15770	+	7125	=£48830
23)	25935	+	15770	+	14250	=£55955
24)	25935	+	15770	+	21375	=£63080
25)	25935	+	23655	+	7125	=£56715
26)	25935	+	23655	+	14250	=£63840
27)	25935	+	23655	+	21375	=£70965

MAIN TREE RETURNS. SHEET TWO.

	YEAR 1 (0.91)		YEAR 2 (0.83)		YEAR 3 (0.75)	
28)	(1000x7.50x0.91)	+	(1000x7.50x0.83)	+	(1000x7.50x0.75)	
	6825	+	6225	+	5625	=£18675
29)	6825	+	6225	+	(2000x7.5x0.75)	
					11250	=£24300
30)	6825	+	6225	+	(3000x7.5x0.75)	
					16875	=£29925
31)	6825	+	(2000x7.50x0.83)	+	5625	
			12450			=£24900
32)	6825	+	12450	+	11250	=£30525
33)	6825	+	12450	+	16875	=£36150
34)	6825	+	(3000x7.50x0.83)	+	5625	
			18675			=£31125
35)	6825	+	18675	+	11250	=£36750
36)	6825	+	18675	+	16875	=£42375
37)	(2000x7.50x0.91)	+	6225	+	5625	
	13650	+				=£25500
38)	13650	+	6225	+	11250	=£31125
39)	13650	+	6225	+	16875	=£36750
40)	13650	+	12450	+	5625	=£31725
41)	13650	+	12450	+	11250	=£37350
42)	13650	+	12450	+	16875	=£42975
43)	13650	+	18675	+	5625	=£37950
44)	13650	+	18675	+	11250	=£43575
45)	13650	+	18675	+	16875	=£49200
46)	(3000x7.50x0.91)	+	6225	+	5625	
	20475					=£32325
47)	20475	+	6225	+	11250	=£37950
48)	20475	+	6225	+	16875	=£43575
49)	20475	+	12450	+	5625	=£38550
50)	20475	+	12450	+	11250	=£44175
51)	20475	+	12450	+	16875	=£49800
52)	20475	+	18675	+	5625	=£44775
53)	20475	+	18675	+	11250	=£50400
54)	20475	+	18675	+	16875	=£56025

MAIN TREE EXPECTATION CALCULATIONS. SHEET ONE.

$E(M_1)$ = (0.1x23655) + (0.4x30780) + (0.5x37905)
= 2365.5 + 12312 + 18952·5
= £33630

$E(M_2)$ = (0.1x31540) + (0.4x38665) + (0.5x45790)
= 3154 + 15466 + 22895
= £41515

$E(M_3)$ = (0.1x39425) + (0.4x46550) + (0.5x53675)
= 3942·5 + 18620 + 26837·5
= £49400

$E(M_4)$ = (0·1x32300) + (0·4x39425) + (0·5x46550)
= 3230 + 15770 + 23275
= £42275

$E(M_5)$ = (0·1x40185) + (0.4x47310) + (0·5x54435)
= 4018·5 + 18924 + 27217·5
= £50160

$E(M_6)$ = (0·1x48070) + (0·4x55195) + (0·5x62320)
= 4807 + 22078 + 31160
= £58045

$E(M_7)$ = (0·1x40945) + (0·4x48070) + (0·5x55195)
= 4094·5 + 19228 + 27597·5
= £50920

$E(M_8)$ = (0·1x48830) + (0·4x55955) + (0·5x63080)
= 4883 + 22382 + 31540
= £58805

$E(M_9)$ = (0·1x56715) + (0·4x63840) + (0·5x70965)
= 5671·5 + 25536 + 35482·5
= £66690

$E(M_{10})$ = (0·1x33630) + (0·5x41515) + (0·4x49400)
= 3363 + 20757·5 + 19760 = £43880·5

$E(M_{11})$ = (0.1x42275) + (0·5x50161) + (0.4x58045)
= 4227·5 + 25080 + 23218 = £52525·5

$E(M_{12})$ = (0.1x50920) + (0·5x58805) + (0·4x66690)
= 5092 + 29402·5 + 26676 = £61170·5

$E(M_{13})$ = (0·3x43880·5)+ (0·5x52525.5)+ (0·2x61170·5)
= 13164·15 + 26262·75 + 12234·1
= £51661

MAIN TREE EXPECTATION CALCULATIONS. SHEET TWO.

$E(M_{14}) = (0{\cdot}1 \times 18675) + (0{\cdot}4 \times 24300) + (0{\cdot}5 \times 29925)$
$= 1867{\cdot}5 + 9720 + 14962{\cdot}5$
$= £26550$

$E(M_{15}) = (0{\cdot}1 \times 24900) + (0{\cdot}4 \times 30525) + (0{\cdot}5 \times 36150)$
$= 2490 + 12210 + 18075$
$= £32775$

$E(M_{16}) = (0{\cdot}1 \times 31125) + (0{\cdot}4 \times 36750) + (0{\cdot}5 \times 42375)$
$= 3112{\cdot}5 + 14700 + 21187{\cdot}5$
$= £39000$

$E(M_{17}) = (0{\cdot}1 \times 25500) + (0{\cdot}4 \times 31125) + (0{\cdot}5 \times 36750)$
$= 2550 + 12450 + 18375$
$= £33375$

$E(M_{18}) = (0{\cdot}1 \times 31725) + (0{\cdot}4 \times 37350) + (0.5 \times 42975)$
$= 3172.5 + 14940 + 21487{\cdot}5$
$= £39600$

$E(M_{19}) = (0{\cdot}1 \times 37950) + (0{\cdot}4 \times 43575) + (0{\cdot}5 \times 49200)$
$= 3795 + 17430 + 24600$
$= £45825$

$E(M_{20}) = (0{\cdot}1 \times 32325) + (0{\cdot}4 \times 37950) + (0.5 \times 43575)$
$= 3232{\cdot}5 + 15180 + 21787{\cdot}5$
$= £40200$

$E(M_{21}) = (0{\cdot}1 \times 38550) + (0{\cdot}4 \times 44175) + (0{\cdot}5 \times 49800)$
$= 3855 + 17670 + 24900$
$= £46425$

$E(M_{22}) = (0.1 \times 44775) + (0{\cdot}4 \times 50400) + (0{\cdot}5 \times 56025)$
$= 4477{\cdot}5 + 20160 + 28012{\cdot}5$
$= £52650$

$E(M_{23}) = (0{\cdot}1 \times 26550) + (0{\cdot}5 \times 32775) + (0{\cdot}4 \times 39000)$
$= 2655 + 16387{\cdot}5 + 15600$
$£34642{\cdot}5$

$E(M_{24}) = (0{\cdot}1 \times 33375) + (0{\cdot}5 \times 39600) + (0{\cdot}4 \times 45825)$
$= 3337{\cdot}5 + 19800 + 18330$
$= £41467{\cdot}5$

$E(M_{25}) = (0{\cdot}1 \times 40200) + (0{\cdot}5 \times 46425) + (0{\cdot}4 \times 52650)$
$= 4020 + 23212{\cdot}5 + 21060$
$= £48292{\cdot}5$

$E(M_{26}) = (0{\cdot}3 \times 34642{\cdot}5) + (0{\cdot}5 \times 41467{\cdot}5) + (0{\cdot}2 \times 48292{\cdot}5)$
$= 10392{\cdot}75 + 20733{\cdot}75 + 9658{\cdot}5$
$= £40785$

HIRE M/C RETURNS.

YEAR 1 (0•91)

SALES	M/C A	M/C B
1000	(1000x9•50x0•91)= 8645	(1000x7.50x0•91)= 6825
2000	(2000x9•50x0•91)=17290	(2000x7•50x0•91)= 13650
3000	(3000x9•50x0•91)=25935	(3000x7.50x0•91)= 20475

YEAR 2 (0•83)

SALES	M/C A	M/C B
1000	(1000x9•50x0•83)= 7885	(1000x7•50x0•83)= 6225
2000	(2000x9•50x0•83)= 15770	(2000x7•50x0•83)= 12450
3000	(3000x9•50x0•83)= 23655	(3000x7•50x0•83)= 18675

YEAR 3 (0•75)

SALES	M/C A	M/C B
1000	(1000x9•50x0•75)= 7125	(1000x7•50x0•75)= 5625
2000	(2000x9•50x0•75)= 14250	(2000x7•50x0•75)= 11250
3000	(3000x9•50x0•75)= 21375	(3000x7•50x0•75)= 16875

SUB TREE A RETURNS. SHEET ONE.

B	YEAR 1		YEAR 2		YEAR 3		
1)	8645	+	7885	+	7125	=	£23655
2)	8645	+	7885	+	14250	=	£30780
3)	8645	+	7885	+	21375	=	£37905
4)	8645	+	7885	+	5625	=	£22155
5)	8645	+	7885	+	11250	=	£27780
6)	8645	+	7885	+	16875	=	£33405
7)	8645	+	15770	+	7125	=	£31540
8)	8645	+	15770	+	14250	=	£38665
9)	8645	+	15770	+	21375	=	£45790
10)	8645	+	15770	+	5625	=	£30040
11)	8645	+	15770	+	11250	=	£35665
12)	8645	+	15770	+	16875	=	£41290
13)	8645	+	23655	+	7125	=	£39425
14)	8645	+	23655	+	14250	=	£46550
15)	8645	+	23655	+	21375	=	£53675
16)	8645	+	23655	+	5625	=	£37925
17)	8645	+	23655	+	11250	=	£43550
18)	8645	+	23655	+	16875	=	£49175
19)	8645	+	6225	+	7125	=	£21995
20)	8645	+	6225	+	14250	=	£29120
21)	8645	+	6225	+	21375	=	£36245
22)	8645	+	6225	+	5625	=	£20495
23)	8645	+	6225	+	11250	=	£26120
24)	8645	+	6225	+	16875	=	£31745
25)	8645	+	12450	+	7125	=	£28220
26)	8645	+	12450	+	14250	=	£35345
27)	8645	+	12450	+	21375	=	£42470
28)	8645	+	12450	+	5625	=	£26720
29)	8645	+	12450	+	11250	=	£32345
30)	8645	+	12450	+	16875	=	£37970
31)	8645	+	18675	+	7125	=	£34445
32)	8645	+	18675	+	14250	=	£41570
33)	8645	+	18675	+	21375	=	£48695
34)	8645	+	18675	+	5625	=	£32945
35)	8645	+	18675	+	11250	=	£38570
36)	8645	+	18675	+	16875	=	£44195

SUB TREE A RETURNS. SHEET TWO.

B	YEAR 1		YEAR 2		YEAR 3	
37)	17290	+	7885	+	7125	= £32300
38)	17290	+	7885	+	14250	= £39425
39)	17290	+	7885	+	21375	= £46550
40)	17290	+	7885	+	5625	= £30800
41)	17290	+	7885	+	11250	= £36425
42)	17290	+	7885	+	16875	= £42050
43)	17290	+	15770	+	7125	= £40185
44)	17290	+	15770	+	14250	= £47310
45)	17290	+	15770	+	21375	= £54435
46)	17290	+	15770	+	5625	= £38685
47)	17290	+	15770	+	11250	= £44310
48)	17290	+	15770	+	16875	= £49935
49)	17290	+	23655	+	7125	= £48070
50)	17290	+	23655	+	14250	= £55195
51)	17290	+	23655	+	21375	= £62320
52)	17290	+	23655	+	5625	= £46570
53)	17290	+	23655	+	11250	= £52195
54)	17290	+	23655	+	16875	= £57820
55)	17290	+	6225	+	7125	= £30640
56)	17290	+	6225	+	14250	= £37765
57)	17290	+	6225	+	21375	= £44890
58)	17290	+	6225	+	5625	= £29140
59)	17290	+	6225	+	11250	= £34765
60)	17290	+	6225	+	16875	= £40390
61)	17290	+	12450	+	7125	= £36865
62)	17290	+	12450	+	14250	= £43990
63)	17290	+	12450	+	21375	= £51115
64)	17290	+	12450	+	5625	= £35365
65)	17290	+	12450	+	11250	= £40990
66)	17290	+	12450	+	16875	= £46615
67)	17290	+	18675	+	7125	= £43090
68)	17290	+	18675	+	14250	= £50215
69)	17290	+	18675	+	21375	= £57340
70)	17290	+	18675	+	5625	= £41590
71)	17290	+	18675	+	11250	= £47215
72)	17290	+	18675	+	16875	= £52840

SUB TREE A RETURNS. SHEET THREE.

B	YEAR 1		YEAR 2		YEAR 3		
73)	25935	+	7885	+	7125	=	£40945
74)	25935	+	7885	+	14250	=	£48070
75)	25935	+	7885	+	21375	=	£55195
76)	25935	+	7885	+	5625	=	£39445
77)	25935	+	7885	+	11250	=	£45070
78)	25935	+	7885	+	16875	=	£50695
79)	25935	+	15770	+	7125	=	£48830
80)	25935	+	15770	+	14250	=	£55955
81)	25935	+	15770	+	21375	=	£63080
82)	25935	+	15770	+	5625	=	£47330
83)	25935	+	15770	+	11250	=	£52955
84)	25935	+	15770	+	16875	=	£58580
85)	25935	+	23655	+	7125	=	£56715
86)	25935	+	23655	+	14250	=	£63840
87)	25935	+	23655	+	21375	=	£70965
88)	25935	+	23655	+	5625	=	£55215
89)	25935	+	23655	+	11250	=	£60840
90)	25935	+	23655	+	16875	=	£66465
91)	25935	+	6225	+	7125	=	£39285
92)	25935	+	6225	+	14250	=	£46410
93)	25935	+	6225	+	21375	=	£53535
94)	25935	+	6225	+	5625	=	£37785
95)	25935	+	6225	+	11250	=	£43410
96)	25935	+	6225	+	16875	=	£49035
97)	25935	+	12450	+	7125	=	£45510
98)	25935	+	12450	+	14250	=	£52635
99)	25935	+	12450	+	21375	=	£59760
100)	25935	+	12450	+	5625	=	£44010
101)	25935	+	12450	+	11250	=	£49635
102)	25935	+	12450	+	16875	=	£55260
103)	25935	+	18675	+	7125	=	£51735
104)	25935	+	18675	+	14250	=	£58860
105)	25935	+	18675	+	21375	=	£65985
106)	25935	+	18675	+	5625	=	£50235
107)	25935	+	18675	+	11250	=	£55860
108)	25935	+	18675	+	16875	=	£61485

SUB TREE B RETURNS. SHEET ONE.

C	YEAR 1		YEAR 2		YEAR 3		
1)	6825	+	7885	+	7125	=	£21835
2)	6825	+	7885	+	14250	=	£28960
3)	6825	+	7885	+	21375	=	£36085
4)	6825	+	7885	+	5625	=	£20335
5)	6825	+	7885	+	11250	=	£25960
6)	6825	+	7885	+	16875	=	£31585
7)	6825	+	15770	+	7125	=	£29720
8)	6825	+	15770	+	14250	=	£36845
9)	6825	+	15770	+	21375	=	£43970
10)	6825	+	15770	+	5625	=	£28220
11)	6825	+	15770	+	11250	=	£33845
12)	6825	+	15770	+	16875	=	£39470
13)	6825	+	23655	+	7125	=	£37605
14)	6825	+	23655	+	14250	=	£44730
15)	6825	+	23655	+	21375	=	£51855
16)	6825	+	23655	+	5625	=	£36105
17)	6825	+	23655	+	11250	=	£41730
18)	6825	+	23655	+	16875	=	£47355
19)	6825	+	6225	+	7125	=	£20175
20)	6825	+	6225	+	14250	=	£27300
21)	6825	+	6225	+	21375	=	£34425
22)	6825	+	6225	+	5625	=	£18675
23)	6825	+	6225	+	11250	=	£24300
24)	6825	+	6225	+	16875	=	£29925
25)	6825	+	12450	+	7125	=	£26400
26)	6825	+	12450	+	14250	=	£33525
27)	6825	+	12450	+	21375	=	£40650
28)	6825	+	12450	+	5625	=	£24900
29)	6825	+	12450	+	11250	=	£30525
30)	6825	+	12450	+	16875	=	£36150
31)	6825	+	18675	+	7125	=	£32625
32)	6825	+	18675	+	14250	=	£39750
33)	6825	+	18675	+	21375	=	£46875
34)	6825	+	18675	+	5625	=	£31125
35)	6825	+	18675	+	11250	=	£36750
36)	6825	+	18675	+	16875	=	£42375

SUB TREE B RETURNS. SHEET TWO.

C	YEAR 1		YEAR 2		YEAR 3		
37)	13650	+	7885	+	7125	=	£28660
38)	13650	+	7885	+	14250	=	£35785
39)	13650	+	7885	+	21375	=	£42910
40)	13650	+	7885	+	5625	=	£27160
41)	13650	+	7885	+	11250	=	£32785
42)	13650	+	7885	+	16875	=	£38410
43)	13650	+	15770	+	7125	=	£36545
44)	13650	+	15770	+	14250	=	£43670
45)	13650	+	15770	+	21375	=	£50795
46)	13650	+	15770	+	5625	=	£35045
47)	13650	+	15770	+	11250	=	£40670
48)	13650	+	15770	+	16875	=	£46295
49)	13650	+	23655	+	7125	=	£44430
50)	13650	+	23655	+	14250	=	£51555
51)	13650	+	23655	+	21375	=	£58680
52)	13650	+	23655	+	5625	=	£42930
53)	13650	+	23655	+	11250	=	£48555
54)	13650	+	23655	+	16875	=	£54180
55)	13650	+	6225	+	7125	=	£27000
56)	13650	+	6225	+	14250	=	£34125
57)	13650	+	6225	+	21375	=	£41250
58)	13650	+	6225	+	5625	=	£25500
59)	13650	+	6225	+	11250	=	£31125
60)	13650	+	6225	+	16875	=	£36750
61)	13650	+	12450	+	7125	=	£33225
62)	13650	+	12450	+	14250	=	£40350
63)	13650	+	12450	+	21375	=	£47475
64)	13650	+	12450	+	5625	=	£31725
65)	13650	+	12450	+	11250	=	£37350
66)	13650	+	12450	+	16875	=	£42975
67)	13650	+	18675	+	7125	=	£39450
68)	13650	+	18675	+	14250	=	£46575
69)	13650	+	18675	+	21375	=	£53700
70)	13650	+	18675	+	5625	=	£37950
71)	13650	+	18675	+	11250	=	£43575
72)	13650	+	18675	+	16875	=	£49200

SUB TREE B RETURNS. SHEET THREE.

C	YEAR 1		YEAR 2		YEAR 3		
73)	20475	+	7885	+	7125	=	£35485
74)	20475	+	7885	+	14250	=	£42610
75)	20475	+	7885	+	21375	=	£49735
76)	20475	+	7885	+	5625	=	£33985
77)	20475	+	7885	+	11250	=	£39610
78)	20475	+	7885	+	16875	=	£45235
79)	20475	+	15770	+	7125	=	£43370
80)	20475	+	15770	+	14250	=	£50495
81)	20475	+	15770	+	21375	=	£57620
82)	20475	+	15770	+	5625	=	£41870
83)	20475	+	15770	+	11250	=	£47495
84)	20475	+	15770	+	16875	=	£53120
85)	20475	+	23655	+	7125	=	£51255
86)	20475	+	23655	+	14250	=	£58380
87)	20475	+	23655	+	21375	=	£65505
88)	20475	+	23655	+	5625	=	£49755
89)	20475	+	23655	+	11250	=	£55380
90)	20475	+	23655	+	16875	=	£61005
91)	20475	+	6225	+	7125	=	£33825
92)	20475	+	6225	+	14250	=	£40950
93)	20475	+	6225	+	21375	=	£48075
94)	20475	+	6225	+	5625	=	£32325
95)	20475	+	6225	+	11250	=	£37950
96)	20475	+	6225	+	16875	=	£43575
97)	20475	+	12450	+	7125	=	£40050
98)	20475	+	12450	+	14250	=	£47175
99)	20475	+	12450	+	21375	=	£54300
100)	20475	+	12450	+	5625	=	£38550
101)	20475	+	12450	+	11250	=	£44175
102)	20475	+	12450	+	16875	=	£49800
103)	20475	+	18675	+	7125	=	£46275
104)	20475	+	18675	+	14250	=	£53400
105)	20475	+	18675	+	21375	=	£60525
106)	20475	+	18675	+	5625	=	£44775
107)	20475	+	18675	+	11250	=	£50400
108)	20475	+	18675	+	16875	=	£56025

SUB TREE ONE. EXPECTATION CALCULATIONS. SHEET ONE.

$E(M_1)$ = (0·1x23655) + (0·4x30780) + (0·5x37905)
= 2365·5 + 12312 + 18952·5
= £33630

$E(M_2)$ = (0·1x22155) + (0·4x27780) + (0·5x33405)
= 2215·5 + 11112 + 16702·5
= £30030

$E(M_3)$ = (0·1x31540) + (0·4x38665) + (0·5x45790)
= 3154 + 15466 + 22895
= £41515

$E(M_4)$ = (0·1x30040) + (0·4x35665) + (0·5x41290)
= 3004 + 14266 + 20645
= £37915

$E(M_5)$ = (0·1x39425) + (0·4x46550) + (0·5x53675)
= 3942·5 + 18620 + 26837·5
= £49400

$E(M_6)$ = (0·1x37925) + (0·4x43550) + (0·5x49175)
= 3792·5 + 17420 + 24587·5
= £45800

$E(M_8)$ = (0·1x21995) + (0·4x29120) + (0·5x36245)
= 2199·5 + 11648 + 18122·5
= £31970

$E(M_9)$ = (0·1x20495) + (0·4x26120) + (0·5x31745)
= 2049·5 + 10448 + 15872·5
= £28370

$E(M_{10})$ = (0·1x28220) + (0·4x35345) + (0·5x42470)
= 2822 + 14138 + 21235
= £38195

$E(M_{11})$ = (0·1x26720) + (0·4x32345) + (0·5x37970)
= 2672 + 12938 + 18985
= £34595

$E(M_{12})$ = (0·1x34445) + (0·4x41570) + (0·5x48695)
= 3444·5 + 16628 + 24347·5
= £44420

$E(M_{13})$ = (0·1x32945) + (0.4x38570) + (0·5x44195)
= 3294·5 + 15428 + 22097·5
= £40820

SUB TREE ONE. EXPECTATION CALCULATIONS. SHEET TWO.

$E(M_{15}) = (0{\cdot}1 \times 32300) + (0{\cdot}4 \times 39425) + (0{\cdot}5 \times 46550)$
$= 3230 + 15770 + 23275$
$= £42275$

$E(M_{16}) = (0{\cdot}1 \times 30800) + (0{\cdot}4 \times 36425) + (0{\cdot}5 \times 42050)$
$= 3080 + 14570 + 21025$
$= £38675$

$E(M_{17}) = (0{\cdot}1 \times 40185) + (0{\cdot}4 \times 47310) + (0{\cdot}5 \times 54435)$
$= 4018{\cdot}5 + 18924 + 27217{\cdot}5$
$= £50160$

$E(M_{18}) = (0{\cdot}1 \times 38685) + (0{\cdot}4 \times 44310) + (0{\cdot}5 \times 49935)$
$= 3868{\cdot}5 + 17724 + 24967{\cdot}5$
$= £46560$

$E(M_{19}) = (0.1 \times 48070) + (0{\cdot}4 \times 55195) + (0{\cdot}5 \times 62320)$
$= 4807 + 22078 + 31160$
$= £58045$

$E(M_{20}) = (0{\cdot}1 \times 46570) + (0{\cdot}4 \times 52195) + (0{\cdot}5 \times 57820)$
$= 4657 + 20878 + 28910$
$= £54445$

$E(M_{22}) = (0{\cdot}1 \times 30640) + (0{\cdot}4 \times 37765) + (0{\cdot}5 \times 44890)$
$= 3064 + 15106 + 22445$
$= £40615$

$E(M_{23}) = (0{\cdot}1 \times 29140) + (0{\cdot}4 \times 34765) + (0{\cdot}5 \times 40390)$
$= 2914 + 13906 + 20195$
$= £37015$

$E(M_{24}) = (0{\cdot}1 \times 36865) + (0{\cdot}4 \times 43990) + (0{\cdot}5 \times 51115)$
$= 3686{\cdot}5 + 17596 + 25557{\cdot}5$
$= £46840$

$E(M_{25}) = (0{\cdot}1 \times 35365) + (0{\cdot}4 \times 40990) + (0{\cdot}5 \times 46615)$
$= 3536{\cdot}5 + 16396 + 23307{\cdot}5$
$= £43240$

$E(M_{26}) = (0{\cdot}1 \times 43090) + (0{\cdot}4 \times 50215) + (0{\cdot}5 \times 57340)$
$= 4309 + 20086 + 28670$
$= £53065$

$E(M_{27}) = (0{\cdot}1 \times 41590) + (0{\cdot}4 \times 47215) + (0{\cdot}5 \times 52840)$
$= 4159 + 18886 + 26420$
$= £49465$

SUB TREE ONE. EXPECTATION CALCULATIONS. SHEET THREE.

$E(M_{29})$ = (0·1x40945) + (0·4x48070) + (0·5x55195)
= 4094·5 + 19228 + 27597·5
= £50920

$E(M_{30})$ = (0·1x39445) + (0·4x45070) + (0·5x50695)
= 3944·5 + 18028 + 25347·5
= £47320

$E(M_{31})$ = (0·1x48830) + (0·4x55955) + (0·5x63080)
= 4883 + 22383 + 31540
= £58805

$E(M_{32})$ = (0·1x47330) + (0·4x52955) + (0·5x58580)
= 4733 + 21182 + 29290
= £55205

$E(M_{33})$ = (0·1x56715) + (0·4x63840) + (0·5x70965)
= 5671·5 + 25536 + 35482·5
= £66690

$E(M_{34})$ = (0·1x55215) + (0·4x60840) + (0·5x66465)
= 5521·5 + 24336 + 33232·5
= £63090

$E(M_{36})$ = (0·1x39285) + (0·4x46410) + (0·5x53535)
= 3928·5 + 18564 + 26767·5
= £49260

$E(M_{37})$ = (0·1x37785) + (0·4x43410) + (0·5x49035)
= 3778·5 + 17364 + 24517·5
= £45660

$E(M_{38})$ = (0·1x45510) + (0·4x52635) + (0·5x59760)
= 4551 + 21054 + 29880
= £55485

$E(M_{39})$ = (0·1x44010) + (0·4x49635) + (0·5x55260)
= 4401 + 19854 + 27630
= £51885

$E(M_{40})$ = (0·1x51735) + (0·4x58860) + (0·5x65985)
= 5173·5 + 23544 + 32992·5
= £61710

$E(M_{41})$ = (0·1x50235) + (0·4x55860) + (0·5x61485)
= 5023·5 + 22344 + 30742·5
= £58110

SUB TREE ONE. EXPECTATION CALCULATIONS. SHEET FOUR.

$E(M_7) = (0{\cdot}1 \times 29148) + (0{\cdot}5 \times 37033) + (0{\cdot}4 \times 44918)$
$= 2914{\cdot}8 + 18516{\cdot}5 + 17967{\cdot}2$
$= £39398{\cdot}5$

$E(M_{14}) = (0{\cdot}1 \times 27448) + (0{\cdot}5 \times 33713) + (0{\cdot}4 \times 39938)$
$= 2744{\cdot}8 + 16856{\cdot}5 + 15975{\cdot}2$
$= £35576{\cdot}5$

$E(M_{21}) = (0{\cdot}1 \times 37793) + (0{\cdot}5 \times 45678) + (0{\cdot}4 \times 53563)$
$= 3779{\cdot}3 + 22839 + 21425{\cdot}2$
$= £48043{\cdot}5$

$E(M_{28}) = (0{\cdot}1 \times 36133) + (0{\cdot}5 \times 42358) + (0{\cdot}4 \times 48583)$
$= 3613{\cdot}3 + 21179 + 19433{\cdot}2$
$= £44225{\cdot}5$

$E(M_{35}) = (0{\cdot}1 \times 46438) + (0{\cdot}5 \times 54323) + (0{\cdot}4 \times 62208)$
$= 4643{\cdot}8 + 27161{\cdot}5 + 24883{\cdot}2$
$= £56688{\cdot}5$

$E(M_{42}) = (0{\cdot}1 \times 44778) + (0{\cdot}5 \times 51003) + (0{\cdot}4 \times 57228)$
$= 4477{\cdot}8 + 25501{\cdot}5 + 22891{\cdot}2$
$= £52870{\cdot}5$

$E(M_A) = (0{\cdot}3 \times 34484{\cdot}5) + (0{\cdot}5 \times 43129{\cdot}5) + (0{\cdot}2 \times 51774{\cdot}5)$
$= 10345{\cdot}35 + 21564{\cdot}75 + 10354{\cdot}9$
$= £42265$

SUB TREE TWO. EXPECTATION CALCULATIONS. SHEET ONE.

$E(M_1)$ = (0·1x21835) + (0·4x28960) + (0·5x36085)
= 2183·5 + 11584 + 18042·5
= £31810

$E(M_2)$ = (0·1x20335) + (0·4x25960) + (0·5x31585)
= 2033·5 + 10384 + 15792·5
= £28210

$E(M_3)$ = (0·1x29720) + (0·4x36845) + (0·5x43970)
= 2972 + 14738 + 21985
= £39695

$E(M_4)$ = (0·1x28220) + (0·4x33845) + (0·5x39470)
= 2822 + 13538 + 19735
= £36095

$E(M_5)$ = (0·1x37605) + (0·4x44730) + (0·5x51855)
= 3760·5 + 17892 + 25927·5
= £47580

$E(M_6)$ = (0·1x36105) + (0·4x41730) + (0·5x47355)
= 3610·5 + 16692 + 23677·5
= £43980

$E(M_8)$ = (0·1x20175) + (0·4x27300) + (0·5x34425)
= 2017·5 + 10920 + 17212·5
= £30150

$E(M_9)$ = (0·1x18675) + (0·4x24300) + (0·5x29925)
= 1867·5 + 9720 + 14962·5
= £26550

$E(M_{10})$ = (0·1x26400) + (0·4x33525) + (0·5x40650)
= 2640 + 13410 + 20325
= £36375

$E(M_{11})$ = (0·1x24900) + (0·4x30525) + (0·5x36150)
= 2490 + 12210 + 18075
= £32775

$E(M_{12})$ = (0·1x32625) + (0·4x39750) + (0·5x46875)
= 3262·5 + 15900 + 23437·5
= £42600

$E(M_{13})$ = (0·1x31125) + (0·4x36750) + (0·5x42375)
= 3112·5 + 14700 + 21187.5
= £39000

SUB TREE TWO EXPECTATION CALCULATIONS. SHEET TWO.

$E(M_{15})$ = (0·1x28660) + (0·4x35785) + (0·5x42910)
= 2866 + 14314 + 21455
= £38635

$E(M_{16})$ = (0·1x27160) + (0·4x32785) + (0·5x38410)
= 2716 + 13114 + 19205
= £35035

$E(M_{17})$ = (0·1x36545) + (0·4x43670) + (0·5x50795)
= 3654·5 + 17468 + 25397·5
= £46520

$E(M_{18})$ = (0·1x35045) + (0·4x40670) + (0·5x46295)
= 3504·5 + 16268 + 23147·5
= £42920

$E(M_{19})$ = (0·1x44430) + (0·4x51555) + (0·5x58680)
= 4443 + 20622 + 29340
= £54405

$E(M_{20})$ = (0·1x42930) + (0·4x48555) + (0·5x54180)
= 4293 + 19422 + 27090
= £50805

$E(M_{22})$ = (0·1x27000) + (0·4x34125) + (0·5x41250)
= 2700 + 13650 + 20625
= £36975

$E(M_{23})$ = (0·1x25500) + (0·4x31125) + (0·5x36750)
= 2550 + 12450 + 18375
= £33375

$E(M_{24})$ = (0·1x33225) + (0·4x40350) + (0·5x47475)
= 3322·5 + 16140 + 23737·5
= £43200

$E(M_{25})$ = (0·1x31725) + (0·4x37350) + (0·5x42975)
= 3172·5 + 14940 + 21487·5
= £39600

$E(M_{26})$ = (0·1x39450) + (0·4x46575) + (0·5x53700)
= 3945 + 18630 + 26850
= £49425

$E(M_{27})$ = (0·1x37950) + (0·4x43575) + (0·5x49200)
= 3795 + 17430 + 24600
= £4582·5

SUB TREE TWO EXPECTATION CALCULATIONS. SHEET THREE

$E(M_{29})$ = (0·1x35485) + (0·4x42610) + (0·5x49735)
= 3548·5 + 17044 + 24867·5
= £45460

$E(M_{30})$ = (0·1x33985) + (0·4x39610) + (0·5x45235)
= 3398·5 + 15844 + 22617·5
= £41860

$E(M_{31})$ = (0·1x43370) + (0·4x50495) + (0·5x57620)
= 4337 + 20198 + 28810
= £53345

$E(M_{32})$ = (0·1x41870) + (0·4x47495) + (0·5x53120)
= 4187 + 18998 + 26560
= £49745

$E(M_{33})$ = (0·1x51255) + (0·4x58380) + (0·5x65505)
= 5125·5 + 23352 + 32752·5
= £61230

$E(M_{34})$ = (0·1x49755) + (0·4x55380) + (0·5x61005)
= 4975·5 + 22152 + 30502·5
= £57630

$E(M_{36})$ = (0·1x33825) + (0·4x40950) + (0·5x48075)
= 3382·5 + 16380 + 24037·5
= £43800

$E(M_{37})$ = (0·1x32325) + (0·4x37950) + (0·5x43575)
= 3232·5 + 15180 + 21787·5
= £40200

$E(M_{38})$ = (0·1x40050) + (0·4x47175) + (0·5x54300)
= 4005 + 18870 + 27150
= £50025

$E(M_{39})$ = (0·1x38550) + (0·4x44175) + (0·5x49800)
= 3855 + 17670 + 24900
= £46425

$E(M_{40})$ = (0·1x46275) + (0·4x53400) + (0·5x60525)
= 4627·5 + 21360 + 30262·5
= £56250

$E(M_{41})$ = (0·1x44775) + (0·4x50400) + (0·5x56025)
= 4477·5 + 20160 + 28012·5
= £52650

SUB TREE TWO EXPECTATION CALCULATIONS. SHEET FOUR.

$E(M_7)$ = (0·1x27328) + (0·5x35213) + (0·4x43098)
= 2732·8 + 17606·5 + 17239·2
= £37578·5

$E(M_{14})$ = (0·1x25668) + (0·5x31893) + (0·4x38118)
= 2566·8 + 15946·5 + 15247·2
= £33760·5

$E(M_{21})$ = (0·1x34153) + (0·5x42038) + (0·4x49923)
= 3415·3 + 21019 + 19969·2
= £44403·5

$E(M_{28})$ = (0·1x32493) + (0·5x38718) + (0·4x44943)
= 3249·3 + 19359 + 17977·2
= £40585·5

$E(M_{35})$ = (0·1x40978) + (0·5x48863) + (0·4x56748)
= 4097·8 + 24431·5 + 22699·2
= £51228·5

$E(M_{42})$ = (0·1x39318) + (0·5x45543) + (0·4x51768)
= 3931·8 + 22771·5 + 20707·2
= £47410·5

$E(M_B)$ = (0·3x32664·5) + (0·5x39489·5) + (0·2x46314·5)
= 9799·35 + 19744·75 + 9262·9
= £38807

MACHINE COSTS.

COSTS OF MACHINES TO PURCHASE.

M/C COSTS

	Cost	
M/C A	£13380	Cash Price
M/C B	£10300	Cash Price

ESTIMATED SCRAP VALUES

These values must be discounted as they will not be received until the end of the three year life of the product.

SCRAP VALUES

	Actual	Discounted (0·75)
M/C A	£500	£375
M/C B	£400	£300

M/C COSTS (ADJUSTED TO TAKE ACCOUNT OF DISCOUNTED SCRAP VALUE).

	Cost		
M/C A	£13380 - 375	=	£13005
M/C B	£10300 - 300	=	£10000

COST OF MACHINES TO HIRE

M/C A	£5400	per year.
M/C B	£4200	per year.

These figures must be discounted at the same rate as all the other figures. Due to the interest earned by not spending on machine and reduction in real value of payments. (payment made at beginning of year).

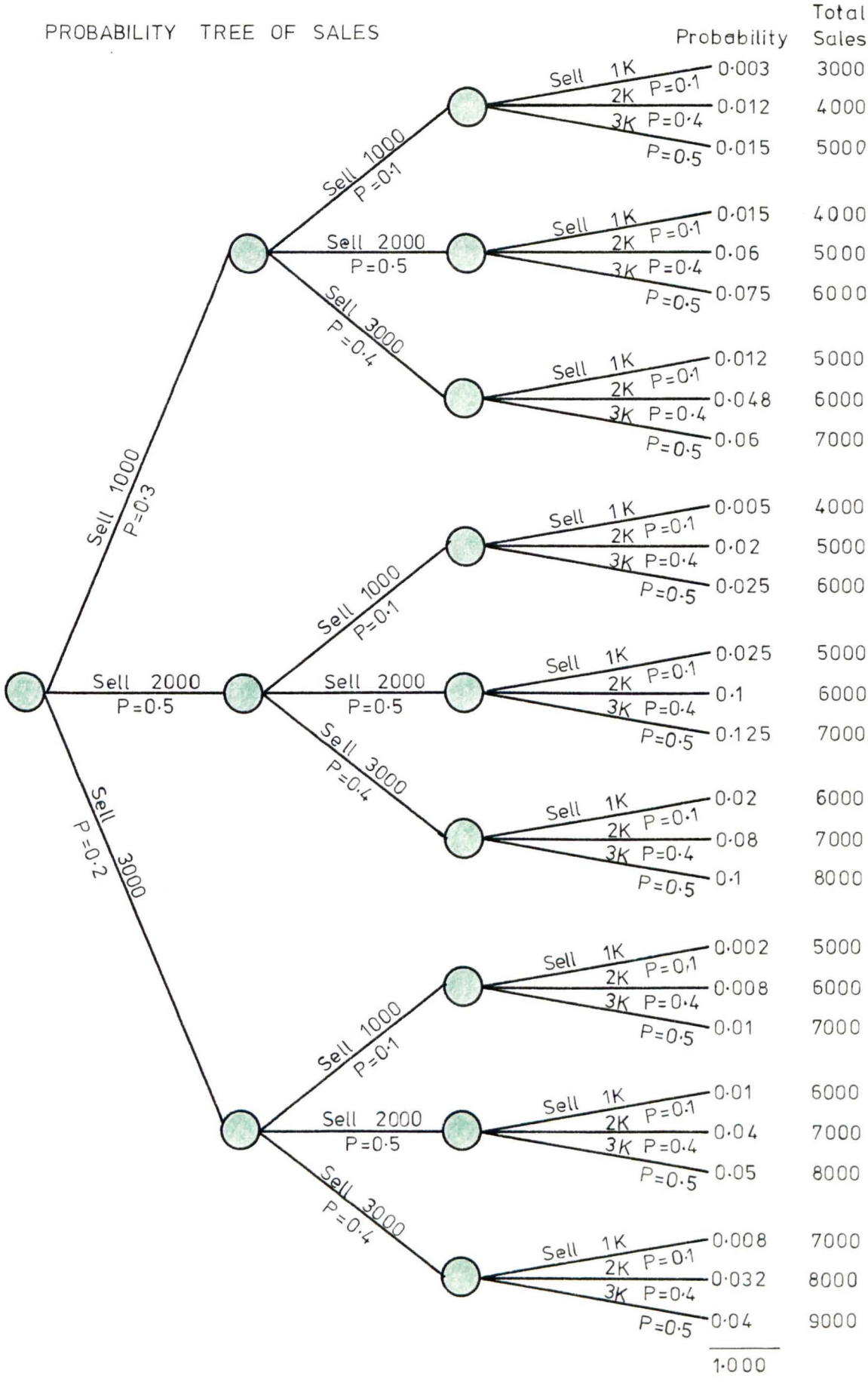
	Year 1 (1·0)	Year 2 (0·91)	Year 3 (0·83)
M/C A	5400	4914	4482
M/C B	4200	3822	3486

APPENDIX II

EXTENSIONS OF SALES PROBABILITIES.

CONTENTS.

PROBABILITY TREE OF SALES



DISTRIBUTION CALCULATIONS FROM PROBABILITY TREE.

SALES OVER 3 YEARS.	PROB	TOTAL PROB.	CUM
3000	0·003	0·003	0·003
4000	0·012,0·015,0·005	0·032	0·035
5000	0·015,0·06,0·012,0·02, 0·025,0·002	0·134	0·169
6000	0·075,0·048,0·025,0·1, 0·02,0·008,0·01	0·286	0·455
7000	0·06,0·125,0·08,0·01, 0·04,0·008	0·323	0·778
8000	0·1,0·05,0·032	0·182	0·960
9000	0·04	0·040	1·000
		1.000	

AVERAGE SALES = 6600 units over 3 years.

M/C A RETURNS (NOT DISCOUNTED)

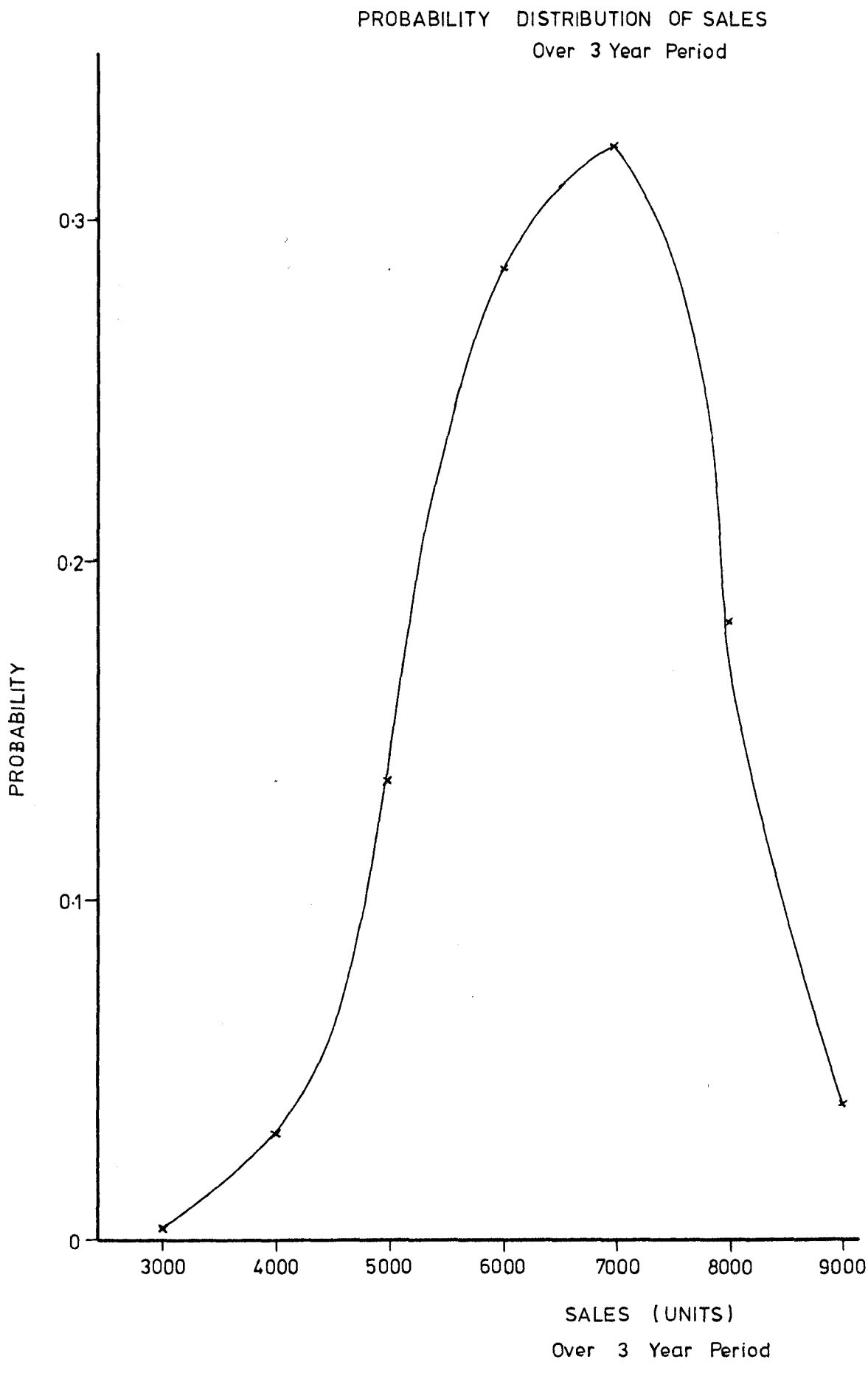
£	PROB.	PROB. x RETURN.
3000x9·50 = £28500	0·003	85·5
4000x9·50 = £38000	0·032	1216
5000x9·50 = £47500	0·134	6365
6000x9·50 = £57000	0·286	16302
7000x9·50 = £66500	0·323	21479·5
8000x9·50 = £76000	0·182	13832
9000x9·50 = £85500	0·040	3420

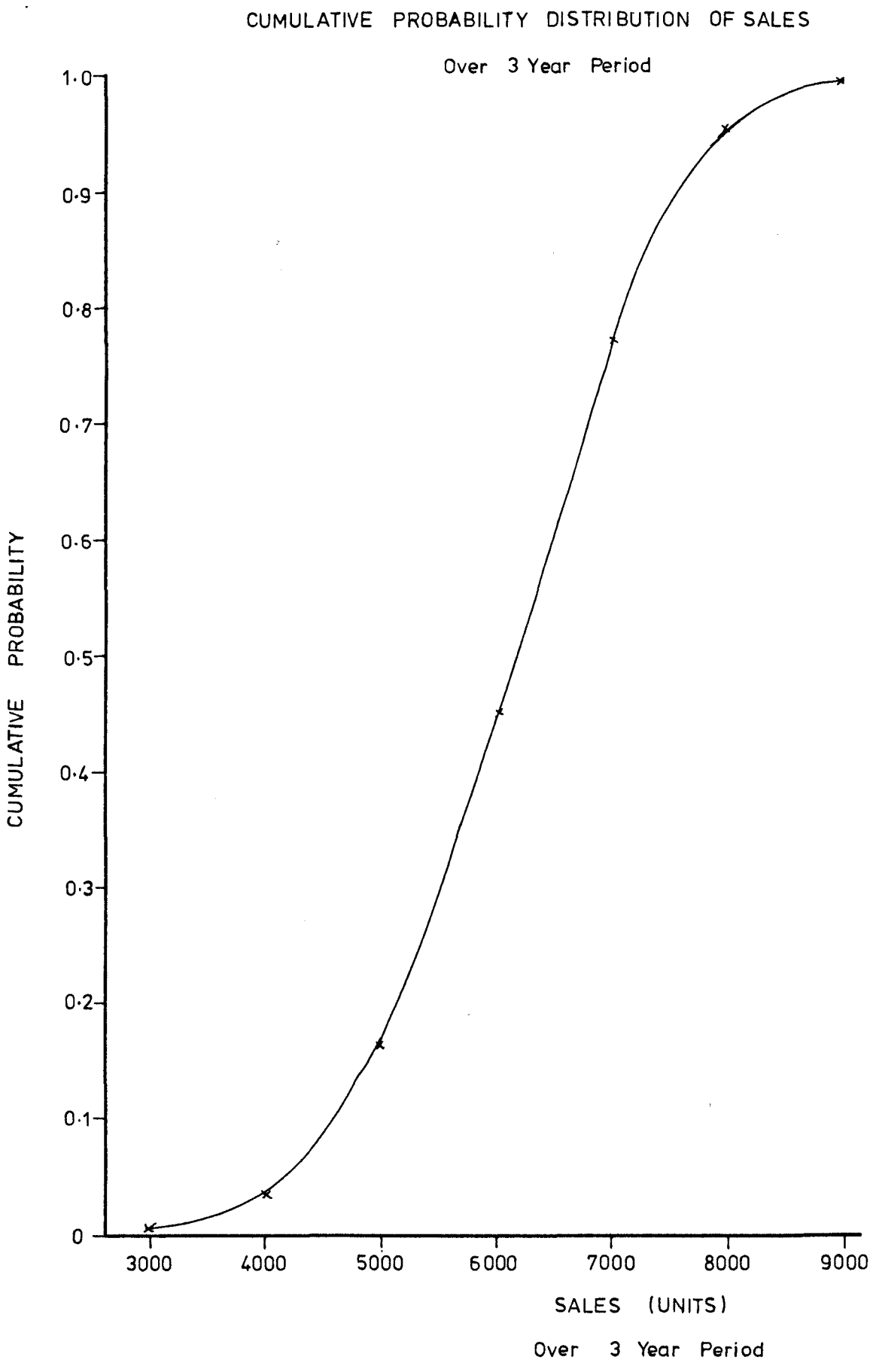
AVERAGE RETURN(NOT DISCOUNTED) £62700 - cost of M/C

M/C B (NOT DISCOUNTED)

£	PROB.	PROB. x RETURN.
3000x7·50 = £22500	0·003	67·5
4000x7·50 = £30000	0·032	960
5000x7·50 = £37500	0·134	5025
6000x7·50 = £45000	0·286	12870
7000x7·50 = £52500	0·323	16957·5
8000x7·50 = £60000	0·182	10920
9000x7·50 = £67500	0·040	2700

AVERAGE RETURN (NOT DISCOUNTED) £49500 - Cost of M/C


PROBABILITY DISTRIBUTION OF SALES
Over 3 Year Period
PROBABILITY
0·3
0·2
0·1
0
3000
4000
5000
6000
7000
8000
9000
SALES (UNITS)
Over 3 Year Period


CUMULATIVE PROBABILITY DISTRIBUTION OF SALES
Over 3 Year Period
CUMULATIVE PROBABILITY
1·0
0·9
0·8
0·7
0·6
0·5
0·4
0·3
0·2
0·1
0
3000
4000
5000
6000
7000
8000
9000
SALES (UNITS)
Over 3 Year Period

APPENDIX III

INFORMATION VALUE TREE CALCULATIONS.

CONTENTS.

PLUS INFORMATION VALUE TREE FIG.8.

INFORMATION VALUE TREE. EXPECTATION CALCULATIONS.
SHEET ONE.

$E(M_1) = (0{\cdot}5 \times 29148) + (0{\cdot}5 \times 26544)$
$= £27846$

$E(M_2) = (0{\cdot}5 \times 37033) + (0{\cdot}5 \times 34429)$
$= £35731$

$E(M_3) = (0{\cdot}5 \times 44918) + (0{\cdot}5 \times 42314)$
$= £43616$

$E(M_4) = (0{\cdot}5 \times 27488) + (0{\cdot}5 \times 24884)$
$= £26186$

$E(M_5) = (0{\cdot}5 \times 33713) + (0{\cdot}5 \times 31109)$
$= £32411$

$E(M_6) = (0{\cdot}5 \times 39938) + (0{\cdot}5 \times 37334)$
$= £38636$

$E(M_7) = (0{\cdot}5 \times 37793) + (0{\cdot}5 \times 35189)$
$= £36491$

$E(M_8) = (0{\cdot}5 \times 45678) + (0{\cdot}5 \times 43074)$
$= £44376$

$E(M_9) = (0{\cdot}5 \times 53563) + (0{\cdot}5 \times 50959)$
$= £52261$

$E(M_{10}) = (0{\cdot}5 \times 36133) + (0{\cdot}5 \times 33529)$
$= £34831$

$E(M_{11}) = (0{\cdot}5 \times 42358) + (0{\cdot}5 \times 39754)$
$= £41056$

$E(M_{12}) = (0{\cdot}5 \times 48583) + (0{\cdot}5 \times 45979)$
$= £47281$

$E(M_{13}) = (0{\cdot}5 \times 46438) + (0{\cdot}5 \times 43834)$
$= £45136$

$E(M_{14}) = (0{\cdot}5 \times 54323) + (0{\cdot}5 \times 51719)$
$= £53021$

$E(M_{15}) = (0{\cdot}5 \times 62208) + (0{\cdot}5 \times 59604)$
$= £60906$

$E(M_{16}) = (0{\cdot}5 \times 44778) + (0{\cdot}5 \times 42174)$
$= £43476$

$E(M_{17}) = (0{\cdot}5 \times 51003) + (0{\cdot}5 \times 48399)$
$= £49701$

$E(M_{18}) = (0{\cdot}5 \times 57228) + (0{\cdot}5 \times 54624)$
$= £55926$

INFORMATION VALUE TREE. EXPECTATION CALCULATIONS.
SHEET TWO.

$E(M_{19})$ = (0·1x27846)+(0·5x35731)+(0·4x43616)-4914
= 2784·6 + 17865·5 + 17446·4 -4914
= 38096·5 - 4914
= £33182·5

$E(M_{20})$ = (0·1x26186)+(0·5x32411)+(0·4x38636)-3822
= 2618·6 + 16205·5 + 15454·4 -3822
= 34278·5 - 3822
= £30456·5

$E(M_{21})$ =(0·1x36491)+(0·5x44376)+(0·4x52261)-4914
= 3649·1 +22188 + 20904·4 -4914
= 46741·5 - 4914
= £41827·5

$E(M_{22})$ = (0·1x34831)+(0·5x41056)+(0·4x47281)-3822
= 3483·1 + 20528 + 18912·4 -3822
= 42923·5 - 3822
= £39101·5

$E(M_{23})$ = (0·1x45136)+(0·5x53021)+(0·4x60906)-4914
= 4513·6 + 26510·5 + 24362·4 -4914
= 55386·5 - 4914
= £50472·5

$E(M_{24})$ = (0·1x43476)+(0·5x49701)+(0·4x55926)-3822
= 4347·6 + 24850·5 + 22370·4 -3822
= 51568·5 - 3822
= £47746·5

$E(M_{25})$ = (0·5x33182·5) + (0·5x30456·5)
= £31819·5

$E(M_{26})$ = (0·5x41827·5) + (0·5x39101·5)
= £40464·5

$E(M_{27})$ = (0·5x50472·5) + (0·5x47746·5)
= £49109·5

$E(M_{28})$ = (0·3x31819·5)+(0·5x40464·5)+(0·2x49109·5)-5400
= 9545·85 + 20232·25 + 9821·9 -5400
= 39600 - 5400
= £34200

INFORMATION VALUE TREE. EXPECTATION CALCULATIONS.
SHEET THREE.

$E(M_{29}) = (0{\cdot}5 \times 27328) + (0{\cdot}5 \times 24724)$
$= £26026$

$E(M_{30}) = (0{\cdot}5 \times 35213) + (0{\cdot}5 \times 32609)$
$= £33911$

$E(M_{31}) = (0{\cdot}5 \times 43098) + (0{\cdot}5 \times 40494)$
$= £41796$

$E(M_{32}) = (0{\cdot}5 \times 25668) + (0{\cdot}5 \times 23064)$
$= £24366$

$E(M_{33}) = (0{\cdot}5 \times 31893) + (0{\cdot}5 \times 29289)$
$= £30591$

$E(M_{34}) = (0{\cdot}5 \times 38118) + (0{\cdot}5 \times 35514)$
$= £36816$

$E(M_{35}) = (0{\cdot}5 \times 34153) + (0{\cdot}5 \times 31549)$
$= £32851$

$E(M_{36}) = (0{\cdot}5 \times 42038) + (0{\cdot}5 \times 39434)$
$= £40736$

$E(M_{37}) = (0{\cdot}5 \times 49923) + (0{\cdot}5 \times 47319)$
$= £48621$

$E(M_{38}) = (0{\cdot}5 \times 32493) + (0{\cdot}5 \times 29889)$
$= £31191$

$E(M_{39}) = (0{\cdot}5 \times 38718) + (0{\cdot}5 \times 36114)$
$= £37416$

$E(M_{40}) = (0{\cdot}5 \times 44943) + (0{\cdot}5 \times 42339)$
$= £43641$

$E(M_{41}) = (0{\cdot}5 \times 40978) + (0{\cdot}5 \times 38374)$
$= £39676$

$E(M_{42}) = (0{\cdot}5 \times 48863) + (0{\cdot}5 \times 46259)$
$= £47561$

$E(M_{43}) = (0{\cdot}5 \times 56748) + (0{\cdot}5 \times 54144)$
$= £55446$

$E(M_{44}) = (0{\cdot}5 \times 39318) + (0{\cdot}5 \times 36714)$
$= £38016$

$E(M_{45}) = (0.5 \times 45543) + (0{\cdot}5 \times 42939)$
$= £44241$

$E(M_{46}) = (0{\cdot}5 \times 51768) + (0{\cdot}5 \times 49164)$
$= £50466$

INFORMATION VALUE TREE. EXPECTATION CALCULATIONS.
SHEET FOUR.

$E(M_{47})$ =(0·1x26026)+(0·5x33911)+(0·4x41796)-4914
= 2602·6 + 16955·5 + 16718·4 -4914
= 36276·5 - 4914
= £31362·5

$E(M_{48})$ =(0·1x24366)+(0·5x30591)+(0·4x36816)-3822
= 2436·6 + 15295·5 + 14726·4 -3822
= 32458·5 - 3822
= £28636·5

$E(M_{49})$ =(0·1x32851)+(0·5x40736)+(0·4x48621)-4914
= 3285·1 + 20368 + 19448·4 -4914
= 43101·5 - 4914
= £38187·5

$E(M_{50})$ =(0·1x31191)+(0·5x37416)+(0·4x43641)-3822
= 3119·1 + 18708 + 17456·4 -3822
= 39283·5 - 3822
= £35461·5

$E(M_{51})$ =(0·1x39676)+(0·5x47561)+(0·4x55446)-4914
=3967·6 + 23780·5 + 22178·4 -4914
= 49926·5 - 4914
= £45012·5

$E(M_{52})$ = (0·1x38016)+(0·5x44241)+(0·4x50466)-3822
= 3801·6 + 22120·5 + 20186·4 -3822
= 46108·5 - 3822
= £42286·5

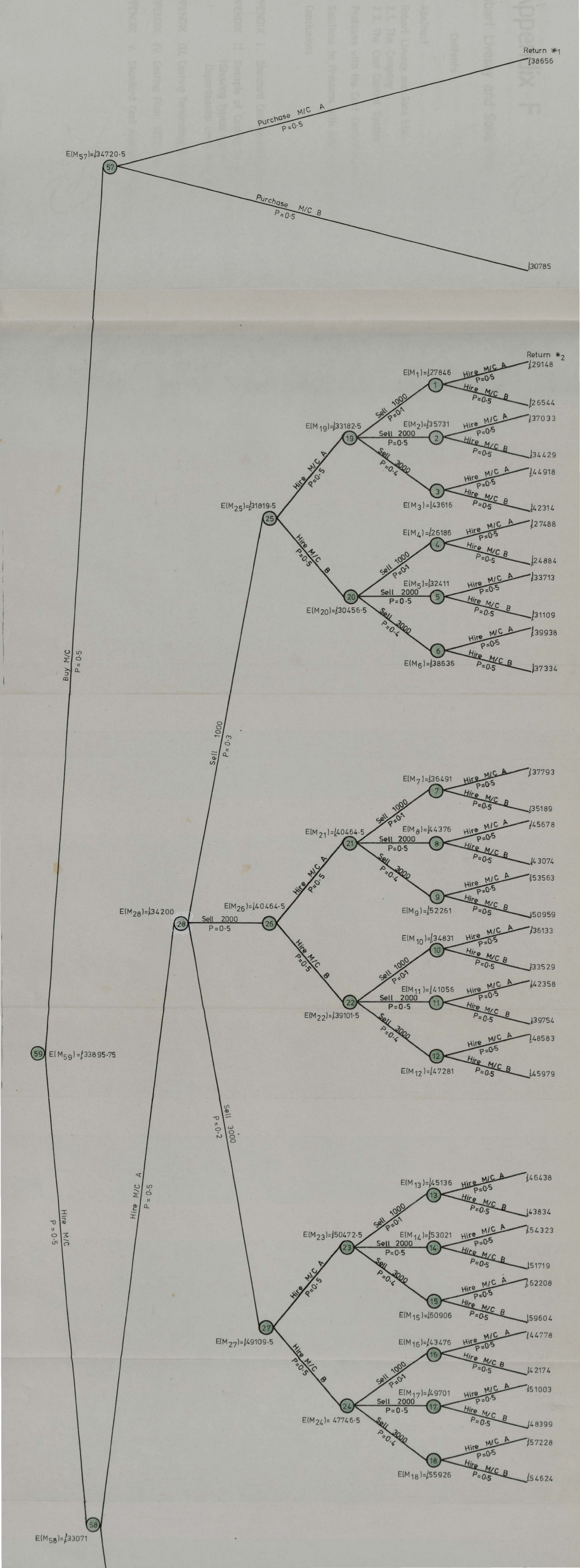
$E(M_{53})$ =(0·5x31362·5) + (0·5x28636·5)
= £29999·5

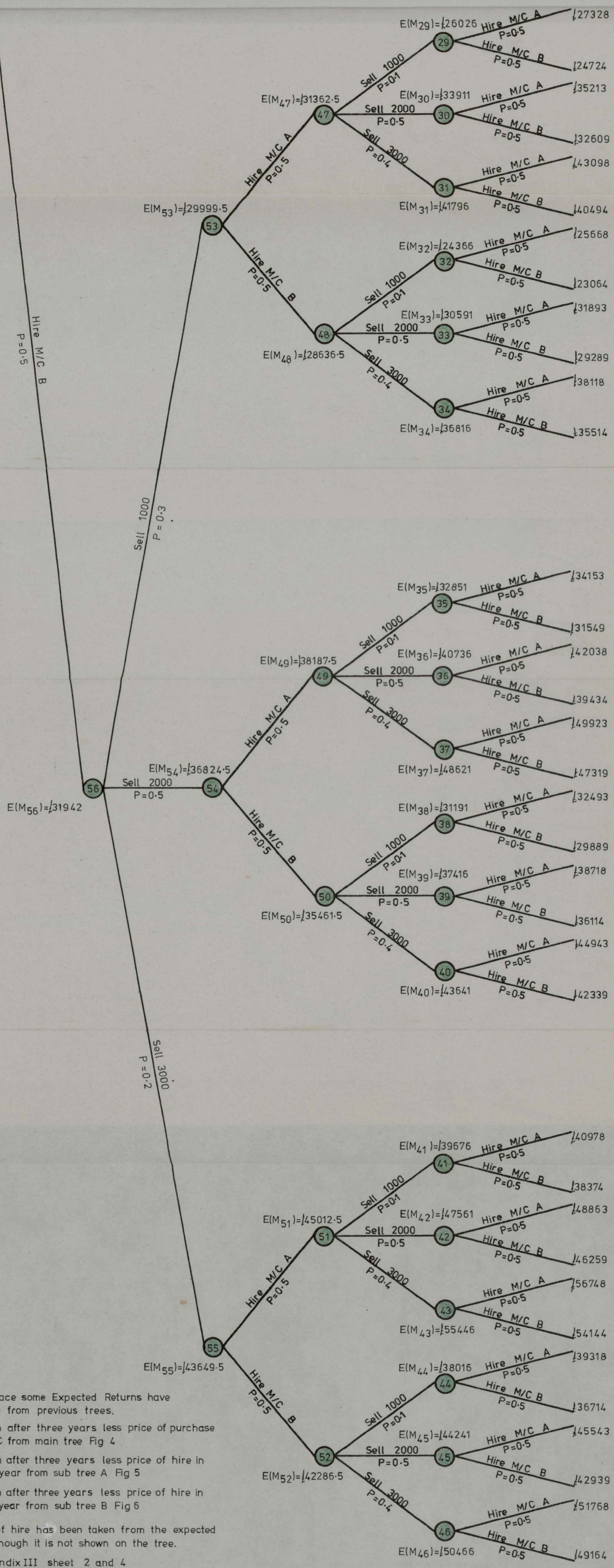
$E(M_{54})$ =(0·5x38187·5) + (0·5x35461·5)
= £36824·5

$E(M_{55})$ =(0·5x45012·5) + (0·5x42286·5)
= £43649·5

$E(M_{56})$ =(0·3x29999·5)+(0·5x36824·5)+(0·2x43649·5)-4200
= 8999·85 + 18412·25 + 8729·9 -4200
= 36142 - 4200
= £31942

FIG 8 INFORMATION VALUE TREE





NOTE (1) To save space some Expected Returns have been taken from previous trees.

$*_1$ Return after three years less price of purchase of M/C from main tree Fig 4

$*_2$ Return after three years less price of hire in third year from sub tree A Fig 5

$*_3$ Return after three years less price of hire in third year from sub tree B Fig 6

(2) The price of hire has been taken from the expected returns although it is not shown on the tree.

See Appendix III sheet 2 and 4
Calculations $E(M_{19})$ to $E(M_{24})$ and $E(M_{28})$
$E(M_{47})$ to $E(M_{52})$ and $E(M_{56})$

INFORMATION VALUE TREE. EXPECTATION CALCULATIONS.
SHEET FIVE.

$E(M_{57}) = (0{\cdot}5 \times 38656) + (0{\cdot}5 \times 30785)$
$= 19328 + 15392{\cdot}5$
$= £34720{\cdot}5$

$E(M_{58}) = (0{\cdot}5 \times 34200) + (0{\cdot}5 \times 31942)$
$= 17100 + 15971$
$= £33071$

$E(M_{59}) = (0{\cdot}5 \times 34720{\cdot}5) + (0{\cdot}5 \times 33071)$
$= 17360{\cdot}25 + 16535{\cdot}5$
$= £33895{\cdot}75$

INFORMATION VALUE CALCULATION.

AVERAGE INFORMATION VALUE = BEST DECISION E.R. - RANDOM DECISION E.R.
= 38656 - 33895·75
= £4760·25

in the range £0 to £7871

PULLOUT

Appendix F

Robert Livesey and Sons Ltd.

Contents | Page

1. ABSTRACT.

Robert Livesey and Sons is a case study concerning the implementation of a cost control system. It deals with the problems that can occur when a cost control system is designed in isolation from the managers who are going to use it. It considers two principle problems that can occur with specialist systems; First a lack of understanding of the information by the managers who are meant to use it, and secondly the problems that can occur when a specialist system produces information that lacks credibility.

2. ROBERT LIVESEY AND SONS LTD.

2.1. THE COMPANY

The company is part of a larger group involved in the textile industry and is operating a medium sized organisation operating in the textile processing market. It employs around two and a half thousand people in total at three factories, one each at Accrington, Nelson and Blackburn. The company's Head Office centralise the marketing, accounting, purchasing and service functions and is located at Accrington. There are production units at Nelson Blackburn and Accrington.

2.2. THE COST CONTROL SYSTEM.

The production of a cost control system for the company was a requirement of the group, to provide the group management with certain information. The Managing Director of the company considered that work required in the provision of this information would be more beneficial to the company if it was extended to produce cost control information to the management team within the company. It was envisaged that the system would provide detailed cost control information for department managers and then summaries for works managers and the senior management team. The system was envisaged to take account of production units only Head Office functions being controlled against budget in a more informal way. A cost accountant was then employed by the company in late 1976 to design a cost control system to come on stream in April (start of a company financial year) 1977, his job title being company

accountant. The accountant employed had a good knowledge of cost control systems and designed a system to meet the requirements of the group and those of the managing director. It was decided that the initial system would be manual with a cost control clerk producing the information for each factory, these cost control clerks being responsible to the company accountant. An additional accountant was employed to carry out costing investigations throughout the organisation, he was responsible to the company accountant. The system was designed and the cost office personnel trained in readyness for the system to come on line for April 1977. On the 15th March 1977 the company accountant sent out to all people who were to receive outputs from the new system (i.e. departmental managers, works managers and the senior management team) a copy of the standard cost accounts memo. This memo is reproduced in full in Appendix I and was to introduce the system to the recipient. From the first week in April managers received information from the system. The information arrived at least one week after the end of the time period to which it related. An example of the forms on which the information was produced and sent out has been given in Appendix II. These sheets show a typical week for a department and a typical week's summary for works managers and senior management.

On the 11th June 1977 the company accountant circulated a report entitled Costing Terminology. The circulation of this report was to senior management and works managers only although copies were available to departmental

managers if the works manager thought this was necessary. This report has been reproduced in Appendix III along with the memo that accompanied it. The report was produced to explain the costing terms used on the cost control statement.

The next major document produced as part of the cost control system was the Costing Plan 1977-79 dated 9th August 1977. This document had limited circulation to the senior management and so did not really affect the system. It is an important document though in that it gives great insight into the thinking behind the system. This costing plan is given in Appendix IV.

The final major documentation to the system was produced on the 21st August 1977 this being the Standard Cost Accounts System Manual. The System Manual is reproduced in Appendix V. The System Manual was produced principally for use within the cost office, but was available to managers when visiting the cost office.

3. PROBLEMS WITH THE COST CONTROL SYSTEM.

There were two principal problems with the cost control system; the first was a lack of understanding of the information by some managers and the second was a lack of credibility of the information to the managers who did understand it.

Given the way in which the system was installed it is not

surprising the first problem occurred. The first that most managers knew about the system was the standard cost accounts memo (given in appendix I). This memo did not explain the aims and uses of the cost control system, it only explained the way in which the system was to operate. Unfortunately this was done in accounting jargon so it was useless to any managers without some knowledge of accounting. The next thing the managers knew of the system was when the completed forms started to arrive (these forms given in appendix II), the information on the forms being at least a week late and in some cases up to three weeks late. These forms provided a considerable amount of information but again a lot of accounting jargon was used on them and also a large number of abbreviations. The forms were designed to carry out two functions. The first function was to provide a framework for the cost clerk to carry out the calculations to produce the information. The second function was the presentation of the information to managers. The forms were photocopied and sent out to managers, the department manager being given the forms for his department and the works manager being given a complete set for his factory and the summary. The senior management team were given the summaries. The problem with using these forms for two functions is that the information is hidden amongst the calculations. This combination of problems led to the majority of managers disregarding the forms because they appeared too complex.

The terminology used within the system was not explained

until two and a half months after the system went on line. This explanation was produced in a report entitled Costing Terminology (given in appendix III). The circulation of this document was limited to the senior management team and works managers although it was available to departmental managers at their works manager's discretion. The document itself is a good explanation of all the terms used and can be understood by managers with or without accounting knowledge. The systems manual was produced five months after the system went on line, (given in Appendix V). This document provides a good description of how the system was to operate but it does not consider its aims.

The Costing Plan produced at the beginning of August gives an insight into the thinking behind the cost control system, (the costing plan is given in Appendix IV). If part 2a of this report is considered it can be seen that the company accountant accepted that the major part of the work in installing the system (this being the explanation and interpretation of the cost information by works management) was still to be carried out. Unfortunately this was a little late since management had already acquired a prejudice that they could not understand the system.

The second major problem encountered with the system was that of credibility of the information provided. The reaction from management that did understand the system was one of consternation and amazement to the variances shown by the system. The company itself was making a substantial

profit,levels of production were above budget and departments were showing sign of efficiency and yet the cost control system was showing massive variances. With this situation either all the other indicators within the company were wrong or the new cost control system was in error. Managers tended to consider the latter to be true.

4. SOLUTIONS TO PROBLEMS WITH COST CONTROL SYSTEM.

There are two sets of solutions that will be considered. The solutions to the problems employed by the company and a solution that is considered would have been more effective.

The company never completely solved the first problem of lack of understanding of the information by managers. This is not really surprising as once barriers to understanding are created they are very difficult to remove. This problem was made worse when the managers not understanding the system were in conversation with the managers understanding the system but not believing any of the information coming out of the system. The only really effective way to remove barriers to understanding is not to allow those barriers to form in the first place. Considerable time was spent by the company accountant and other accounts personnel talking to managers to explain the information. Senior Management and works managers eventually accepted and used the system to the full, but few departmental managers did this.

The subsidiary problem of delay in processing the information was improved. As the cost control clerks became more familiar with the system the time taken producing the information fell. With practice this information was produced within a week of the point in time it was concerned with. This was further improved when the system was computerised and the delay reduced by issuing the information on the Monday or Tuesday in the week after the point in time it was concerned with.

The second major problem encountered was that of lack of credibility of information. An investigation by the Company Accountant determined the cause of the large seemingly unexplainable variances. Examination showed the fault did not lie within the mechanics of the system but from external imputs. The cost control system operated by means of comparison with standards, these being the Budgets. It was the use of incorrect variances. The system of the production of budgets was improved the next year and the false variances were eliminated. The problem of distrust of the information remained but was found to diminish with time.

We can now consider possible solution to the problems. The main problem was the implementation of the system and an alternative method of implementation is as follows. It is essential that the writing of a systems manual be an integral part of designing the system. This would not only include the mechanics of the system but its uses,

benefits, limitations, etc. Along with this the Costing Terminology document would also be produced for general circulation. The system would not go on line until it had been thoroughly operationally tested i.e. not in April 1977. The system would be operated within the cost office but the information would not be circulated. This would allow time for the cost clerks to become confident and efficient in the operation of the system. It would also allow time for the company accountant to eliminate as many errors in the system as possible. This should have found the error with the budgets.

When the company accountant was satisfied that the system was operating correctly, that would have been some months after April, the information would start to be released from the cost office. The forms used to carry out the calculations would not be used to send out the information to managers and no information would be sent to managers until some attempts had been made to ensure the manager understood it. Seminars and discussions would be held with the managers to explain the system and its terminology. If this stage were carried out carefully then virtually all managers should be able to understand and use the information they receive. It is at this stage that the system can truly come on line and provide managers with information they can use and understand. Such an approach will postpone the full introduction of the system but never the less bring forward the time of full understanding of the information by the managers.

5. CONCLUSION.

This case study concerns the implementation of a cost control system and is typical of the situation that can arise when a specialist system (cost control, production control, forecasting, etc.) is implemented. There are two basic problems that can occur either together or separately. These being the lack of understanding by managers of the information produced and the lack of credibility of the information to the managers that do understand. In the case outlined in Robert Livesey and Sons Ltd., both problems have occurred. Such problems can be greatly reduced and possibly eliminated by carrying out correct implementation and ensuring the following two rules are followed.

1) The system should be verified and validated. The first stage the verification checks the mechanics of the system ensuring that it behaves in the manner that the system designer requires. This stage is usually carried out reasonably well but the next stage is sometimes omitted. The second stage, validation, checks how the system under test relates to other systems and the environment. Data is inputed into the system and the resulting information is checked for consistency. This second stage can delay the time when managers receive information for the first time but it greatly increases the chance it will be correct information. It is difficult and takes a long time for a system to live down a reputation for producing bad information.

2) Knowledge should be provided before information. To provide information and then at a later stage try to provide the knowledge to understand it can create many problems and build mental barriers to understanding. Worse still is the case where the manager is just given specialist information and expected to understand it. It saves problems and significantly reduces the chance of mental barriers being produced if the knowledge is provided before the information. Care should be taken to avoid specialist jargon and abbreviations as these are not easily understood by the layman.

APPENDIX I.

STANDARD COST ACCOUNTS MEMO.

15th March 1977.

STANDARD COST ACCOUNTS.

The inclusion of standard costs and actual variances there from in the Division's Periodic Operating Report is specified as a Group requirement. The attached documents are an attempt to explain the system necessary to achieve this objective. The system as outlined in detail differs from that requested by Group but it is felt that the proposed system accords more accurately to conventional accounting techniques whilst at the same time providing the information needed by the Group.

It should be emphasised that this does not represent an entirely new departure from our accounting system as the Departmental Cost Control Accounts which I have already devised and included in the Management Plan for 1977/78 are essentially Standard Cost Accounts. These will provide all the necessary information on cost variances. Group requirements also specify a standard profit on sales which will not be revealed by the Departmental Cost Control Accounts until it is possible to ascertain from production records the origin, destination and stocks of all yarns in and between process departments.

Standard profit will be arrived at by costing all yarns transferred to finished stores at standard works cost. Yarn will be transferred from F.Goods A/c to Cost of Sales A/c at standard works cost plus standard administration, selling and distribution by pricing all copy invoices.

In this way Total Company Standard Cost Accounts will be created. In detail these accounts will only be integrated up to the Work in Progress A/c viz through the Departmental Cost Control Accounts. It is hoped that with the provision of further information on the production side to create a completely integrated system of Standard Cost Accounts in the foreseeable future.

Advantages of Standard Cost Accounts.

Costs incurred will be related to the level of production achieved.

Complete analysis of costs by department.

Comparison of these costs with pre-determined standards.

Revelation of cause of any variance from standard.

Revelation of Causes of profits - losses.

Provision of departmental costs on a weekly basis so facilitating cost control.

Running weekly total of S.C. and weight of raw yarn and finished stock.

Simplification of stock valuation work if done on a Standard Cost basis.

Additional Information Necessary.

1. Material Issue Summary for raw yarn and other direct materials issued to production.
2. Finished Stores Summary for all yarn received by Stores.
3. Analysis of Direct Labour Hours in each department.
4. Complete list of Standard Costs for all yarns.
5. Production Record of weight produced of each yarn type in each department. This is already provided in some cases.
6. Analysis of lost spindle hours in each department. This item is or has been produced for most departments in the past.

COMPANY ACCOUNTANT.

STANDARD COST DOUBLE-ENTRY SYSTEM.

Dr. Cr.

Raw Yarn Control A/c.

Purchases (AP x AQ)	W-in-Progress (SPxAQ)
Material Price Variance A/c	

Direct Wage Control A/c.

Direct Wages Paid (AR x AH)	W-in-Progress (SR x AH)
Direct Labour Rate Variance A/c.	

Production Overhead Control A/c.

Production Expenses (Actual Overheads)	W-in-Progress (Budgeted Prod. O/Hs)
Overheads Expenditure Variances A/c.	

W-in-Progress Control A/c.

Raw Yarn Control A/c (SP x AQ)	Finished Goods Control A/c (SP x SQ) DM
Direct Wage Control A/c (SR x AH)	Finished Goods Control A/c (SR x SH) DL
Prod. O/H Control A/C (Bud. Prod. O/H)	Finished Goods Control A/c (SR x S.Hrs Prod) O/H's

D.Material Usage Variance A/c
D.Labour Efficiency Variance A/c
Overhead Efficiency Variance A/c
Overhead Capacity Variance A/c

Dr. Cr.

Finished Goods Control A/c

Opening Stock (Std. Works Cost)	Cost of Sales A/c (Std W.Cost of Sales)
W-in-Progress Control A/c (Std Works Cost)	Closing Stock (Std Works Cost)

Administrations, Distribution & Selling Overhead Control A/c.

Expenses (Actual Overheads)	Cost of Sales A/c (Std Cost)
Overhead Expenditure Variance A/c	

Cost of Sales A/c

Finished Goods Control A/c (Std W.C. of Sales)	Actual Sales (AP x AQ)
Admin.Distrib & Selling)/H Control A/c (Std of Distrib)	Std Cost of Returns
Standard Profit on Actual Sales	

NOTE that all variances have been shown as debits but could equally be credits.

APPENDIX II.

EXAMPLE OF COSTING FORMS USED.
(SHOWING TYPICAL SET OF FIGURES SENT TO
DEPARTMENTAL LEVEL MANAGEMENT).

DEPARTMENTAL COST CONTROL STATEMENT

FORM D.L.

DEPARTMENT C.S.6 WEEK 1 PERIOD 3

DIRECT LABOUR

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Direct Labour	143	143		1924	
Standard Hours at Std. Rate	564	564		5762	
Actual Hours at Std. Rate	-	-		-	
Actual Wages	597	597		7833	
Direct Labour Effic. Variance	-	-		-	
Direct Labour Rate Variance	-	-		-	
Total Direct Labour Variance	(33)	(33)		(2071)	
Standard Direct Labour Cost per lb.	6.21	6.21		4.93	
Actual D.Labour Cost per lb.	6.58	6.58		6.71	
Over/under cost per lb.	(0.37)	(0.37)		(1.78)	
Standard D.Labour cost per unit	2.07	2.07		2.07	
Actual D.Labour Cost per unit	-	-		-	
Over/under Cost per unit	-	-		-	

PERIODS lbs WT = 21781 YEARS lbs wt 280332

Yarn Type	Production	Standard Work Content	Std Hours	Std Rate	S.H. x S.R.	Actual Hours	A.H. x S.R.	Actual Wages
	21781							

DEPARTMENTAL COST CONTROL STATEMENT — FORM D.M.

DEPARTMENT C S 6 WEEK 1 PERIOD 3

DIRECT MATERIALS

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Direct Materials					
Standard Quantity at Standard Price	12283	12283		155,316	
Actual Quantity at Standard Price	12437	12437		156,660	
Actual Quantity at Actual Price	12437	12437		156,660	
Direct Material Usage Variance					
Direct Material Price Variance					
Total Direct Material Variance	(154)	(154)		(1344)	

Yarn Type	Actual Good Prod-uction	Standard %			Std Price	SQ x SP	Actual %			A Q x SP	Price	A Q x A P
		Waste	S/S	Total			Waste	S/S	Total			

DEPARTMENTAL COST CONTROL STATEMENT — FORM O/H

DEPARTMENT C56 WEEK 1 PERIOD 3

OVERHEADS

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Standard Overheads Recovered	£966	£966		£9820	
Standard Overheads Recoverable	£1111	£1111		£11549	
Budgeted Overheads	£1152	£1152		£13101	
Actual Overheads					
Overhead Effic. Variance	£(145)	£(145)		£(1729)	
Overhead Capacity Variance	£(41)	£(41)		£(1552)	
Overhead Volume Variance	£(186)	£(186)		£(3282)	
Overhead Expenditure Variance					
Total Overhead Variance					
Gross Spindle/hr Available	268800	268800		3897600	
Available Sp/hrs. after downtime	247750	247750		3324812	
Spindle Hours Produced	200405	200405		2621596	
% Activity	92.17%	92.17%		85.30%	
% Efficiency	80.89%	80.89%		78.85%	
% Not Activity/Efficiency	74.56%	74.56%		67.26%	
Standard Overhead Cost per lb	10.64	10.64			
Actual O/H Cost per lb					
Over/Under cost per lb					

Analysis of Downtime this Week

Gross Spindle Hours Available 268800

LESS

Mechanical Faults	5440	
Maintenance/Cleaning	1900	
Breakdown	1600	
Specification Change	2300	
Samples		
No Labour	2400	
Retreading	3400	
Faulty Control	1200	
Electrical Faults	2810	21050

Sp Hrs Available after Down Time 247,750

DEPARTMENTAL COST CONTROL STATEMENT — FORM I.L.

DEPARTMENT CSb WEEK 1 PERIOD 3

INDIRECT LABOUR

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Production (lbs)	11085	11085		93670	
Actual Production (lbs)	21781	21781		163245	
Budgeted Indirect Wages	29.00	29.00		229.75	
Budgeted Indirect Wages of Actual Prod.	56.84	56.84		400.70	
Actual Indirect Wages	31.15	31.15		464.43	
Indirect Wages Variance	(2.15)	(2.15)		(234.68)	
Budgeted Indirect Labour cost per lb.	0.32	0.32		0.59	
Actual Indirect Labour cost per lb.	0.34	0.34		0.68	
Over/under cost per lb.	(0.02)	(0.02)		(0.09)	

Function	Actual	Budget	Variance	Actual Cost Per lb.	Budgeted Cost Per lb.	Over/Under Cost Per lb.
Tare Service						
Yarn Service						
Waste Service	0.63		(0.63)	0.01		(0.01)
Maintenance	7.40	6.00	(1.40)	0.08	0.07	(0.01)
Quality Control	9.99	10.00	0.01	0.11	0.11	(0.00)
Grading & Pack.						
Production Mngmt	8.58	8.00	(0.58)	0.09	0.09	(0.00)
Administration	0.22		(0.22)	0.00		
General Process	4.33	5.00	0.67	0.05	0.05	(0.00)
	31.15	29.00	(2.15)	0.34	0.32	(0.02)

DEPARTMENTAL COST CONTROL STATEMENT — FORM O.M.D.L.

DEPARTMENT C56 WEEK 1 PERIOD 3

			Overheads		Direct Labour		Direct Materials					
Spec No.	Yarn Type	Prod	Sp.Hrs. per. lb.	Prod x Sp.Hrs.	Std. Work Cont.	Std. Hours	Std. Price	Actual Price	Prod. x.Sp.	Prod. x.AP	Target %	Actual %
9809	2/70/20	1259	34.46	43385	3.156	3973	134		163706			
9802	2/100/34	1056	21.759	22977	2.252	22970	134		141504		Waste	
7907	1/250/48	19466	6.886	134043	2.491	48490	134		2608446			105/22276
									2913656			
									£12160		0.35	0.47
Good Production		21781									Sub. Std.	
												390/22276
Sub Standard		390									0.65	1.76
											Total.	
Waste		105									1.00	2.23
							1) $\frac{100}{99}$ x £12160 = £12283					
							2) $\frac{100}{97.77}$ x £12160 = £12437					
Gross Production		22276										
Totals.		21781		200405		75433						
		O/H Rates										
		Flat	0.197	Std.Rte.	2.070							
		Fixed Var.	1.136	SHxSR	£564							
				Act.Hrs. AHxSR								
		SH x Rte	£966									
	Flat	£17.8										
	Fixed Var	£948.5										

COST CONTROL STATEMENT

FACTORY Blackburn PERIOD 3 SUMMARY WEEK 1

DEPARTMENT	CS6	CS9	Dyehouse	Steaming	Coning		TOTALS
DIRECT LABOUR							
Budgeted D.L.	143	2692	1130	183	4407		8555
Std Hrs Prod at S.R.	564	1809	760	167	2150		5450
Actual Wages	597	2875	942	160	3574		8148
D L Variance	(33)	(183)	(182)	7	(1424)		(1815)
DIRECT MATERIALS							
Std Qty at S. Price	12283	124724	58927	150834	137645		484413
Act Qty at A. Price	12437	124825	59125	151047	139550		486984
Usage Variance	(154)	(101)	(198)	(213)	(1905)		(2571)
OVERHEADS							
Std OHs Recovered	966	6859	2717	454	3463		14459
Std OHs Recoverable	1111	7316	3244	-	4375		16046
Budgeted OHs	1152	7340	3979	518	5188		18177
Actual OHs	-						
O/H Eff. Variance	(145)	(457)	(527)	-	(912)		(2041)
O/H Cap. Variance	(41)	(24)	(735)	-	(813)		(1613)
O/H Vol. Variance	(186)	(481)	(1262)	(64)	(1725)		(3718)
TOTAL VARIANCE	(373)	(765)	(1642)	(64)	(5054)		(7898)
TOTAL PRODUCTION (lbs)	21781	221154	103622	267953	239907		
INDIRECT LABOUR							
Budgeted I.L.	29	535	134	82	1193		1973
Budgeted Indirect Wages of Actual Production	57	567	115	73	944		1756
Actual I.L.	31	585	144	155	1562		2477
I.L. Variance	(2)	(50)	(10)	(73)	(369)		(504)

MACHINE UTILISATION STATEMENT

FACTORY BLACKBURN PERIOD 3 SUMMARY WEEK 1

DEPARTMENT	CS6		CS9		DYEHOUSE		CONING					
	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week
Actual Gross Available Sp/Hrs	268800	268800	1231776	1231776	2382240	2382240	685440	685440				
Actual Available after downtime	247750	248715	1163974	1157605	1871488	1907698	403718	395797				
Actual Sp/Hrs Produced	200405	199397	1047659	1017703	12331102	1308905	277987	296273				
Actual M/C Utilisation	92.17	92.53	94.50	93.97	78.56	80.08	58.90	57.74				
Actual M/C Efficiency	80.89	80.17	90.01	87.91	65.89	68.61	68.86	74.85				
Actual Net Activity	74.56	74.18	85.05	82.62	51.76	54.94	40.56	43.22				
Budgeted M/C Utilisation	95.00		95.00		95.00		95.00					
Budgeted M/C Efficiency	93.00		96.00		80.00		87.00					
Budgeted Net Activity	88.35		91.20		76.00		82.65					

APPENDIX III.

COSTING TERMINOLOGY BOOKLET.

11th June 1977.

COSTING TERMINOLOGY.

Attached are difinitions of Costing terms used in the new Cost Control Statements. It is felt that the numerous terms used may be unfamiliar and to help in an understanding of the new information a list of definitions has been prepared to be used in connection with Cost Control Statements.

Further copies are available if for instance Works Managers feel that Departmental Managers should possess a copy.

COMPANY ACCOUNTANT.

DISTRIBUTION

MANAGING DIRECTOR.
FINANCIAL DIRECTOR.
PRODUCTION DIRECTOR.
WORK STUDY.
WORKS MANAGERS.
FACTORY ACCOUNTANTS.
COST OFFICE (5)

COSTING TERMINOLOGY.

OVERHEADS

1. Spindle Hours = one spindle running for one hour.

2. Gross Spindle Hours Available = number of spindles per machine x number of machines x number of machine hours per week.

   e.g. AMI = 192 x 11 x 168 = 354,816 gross spindle hours.

3. Available Spindle Hours after downtime = Gross Spindle Hours minus sum of stopped spindle hours.

   e.g. AMI =

	Mechanical Failure	20,000
	Electrical Failure	5,000
	No Labour	5,000
	Downtime OR Activity Loss	30,000 spindle hours
	Gross Spindle Hours	354,816
	Minus Activity Loss	30,000
=	Available SH after downtime	324,816

4. Spindle Hours Produced = the actual lbs. wt. production per specification x the standard spindle hours per lb. allowed for that specification. The standard spindle hours per lb. allowed is determined by Work Study measurement.

4. cont.

e.g. AMI 1/100/34 T.7839 40,000 lbs. production at 6.710 SH per lb. = 268,400

1/40/13 T.7803 2,000 lbs. production at 16.33 SH per lb. = 32,660

Spindle Hours Produced = 301,060

5. <u>% Actual Activity</u> = the actual available spindle hours after downtime expressed as a percentage of actual gross available spindle hours.

e.g. AMI $\frac{324,816}{354,816} \times 100 =$ 91·55% Activity

6. <u>% Actual Efficiency</u> = the actual spindle hours produced expressed as a percentage of actual available spindle hours after downtime.

e.g. AMI $\frac{301,060}{324,816} \times 100 =$ 92·69% Efficiency.

7. <u>% Actual Net Activity/Efficiency</u> = actual spindle hours produced expressed as a percentage of actual gross spindle hours.

e.g. $\frac{301,060}{354,816} \times 100 =$ 84·85% Net Activity/Efficiency

8. <u>% Budgeted Activity</u> = the budgeted available spindle hours after downtime expressed as a percentage of the budgeted gross spindle hours available.

e.g AMI - budgeted activity for 1968-9 is 95%

$= \frac{95}{100} \times 354,816 \times 337,075$ Available SH after downtime

9. <u>% Budgeted Efficiency</u> - the budgeted spindle hours to be produced expressed as a percentage of the budgeted spindle hours after downtime.

e.g. AMI budgeted efficiency for 1968-9 = 95%

$$= \frac{95}{100} \times 337{,}075 = 320{,}221 \text{ Budgeted SH produced}$$

10. <u>% Budgeted Net Activity/Efficiency</u> = the budgeted spindle hours to be produced expressed as a percentage of the budgeted gross available spindle hours.

e.g. AMI = 95% Activity x 95% Efficiency = 85·50%

$$= \frac{85{\cdot}50}{100{\cdot}00} \times 354{,}816 = 303{,}677 \text{ Budgeted Net Spindle Hours.}$$

11. <u>Budgeted Overheads</u> = the aggregate of indirect material cost, indirect Wages and salaries and indirect expenses.

a) <u>Fixed Overhead</u> - a cost which tends to be unaffected by variations, in the volume of output. Fixed costs depend mainly on the effluxion of time.

b) <u>Variable Overhead</u> - a cost which tends to vary directly with the volume of output.

c) <u>Flat Overhead</u> - is a term used specifically at Robert Livesey and Sons Limited and includes those variable overhead costs which tend to vary with lbs. wt. rather than with spindle hours e.g. packing, materials handling. Flat Overheads are thus included in Variable Overheads.

12. Overhead Recovery Rate is the cost rate per spindle hour (cost rate per lb. wt. for flat overheads).

It is calculated -

$$\frac{\text{Budgeted Overheads}}{\text{Budgeted Net Spindle Hours}} = \text{Fixed/Variable rate per spindle hour}$$

$$\frac{\text{Budgeted Flat Overheads}}{\text{Budgeted lbs. wt.}} = \text{Flat rate per lb.}$$

13. Standard Overheads Recovered - The actual production achieved evaluated in standard spindle hours per specification x overhead production lbs. wt. x flat overhead recovery rate.

e.g. 301,060 as at 4) x.811d. variable and 1.008d fixed = £2,281

AMI 42,000 as at 4) x.642d. per lb = £ 112

Standard Overheads Recovered = £2,393

14. Standard Overheads Recoverable - the standard overheads which could have been recovered if the actual available spindle hours after downtime had been used at bugeted efficiency e.g. in the case of AMI this is 92·69% as at 6).

15. Actual Overheads - the actual overheads incurred during a specified period.

16. Overhead Efficiency Variance - the difference between actual spindle hours and lbs.wt. produced and spindle hours and lbs.wt. which could have been produced if the actual available spindle hours after downtime had been used at budgeting efficiency. This is the difference between standard overheads recovered and standard overheads recoverable.

17. Overhead Capacity Variance - the difference between the spindle hours which could have been produced if the actual spindle hours available after downtime had been used at budgeted efficiency and the budgeted spindle hours which should have been produced. This is the difference between standard overheads recoverable and budgeted overheads.

18. Overhead Volume Variance - the difference between actual spindle hours and lbs.wt. produced and budgeted spindle hours which should have been produced. This is the difference between budgeted overheads and standard overheads recovered OR Efficiency Variance + Capacity Variance.

19. Overhead Expenditure Variance - the difference between actual overheads and budgeted overheads.

20. Standard Overhead Cost per lb. - the actual production x standard spindle hours for each specification x overhead recovery rate divided by the total actual lbs.wt. production OR standard overheads recovered divided by actual lbs.wt. production.

21. Actual Overhead Cost per lb. - the actual overheads divided by the actual lbs.wt. production.

22. Over/Under Cost per lb. - the difference between the standard overhead cost per lb. and the actual overhead cost per lb.

NOTE

The actual production which is taken for the evaluation of overhead recovery in all cases above is actual good production only. Since all sub-standard costs must be recovered on good production.

For information the spindle hours produced on sub-standard production plus good production will be elavuated and an actual efficiency and not activity/efficiency percentage calculated. The difference between the efficiency and not activity/efficiency percentage as shown in the main part of the statement and those shown below the line will indicate the loss in efficiency and not activity/efficiency due to sub-standard production.

DIRECT MATERIALS.

1. Direct materials is the cost of materials which can be allocated or associated with a cost centre. It includes the cost of raw yarn, dyestuffs and chemicals and coning oils. It does not include indirect materials such as consumable stores.

2. Budgeted Direct Materials is the cost at which it is budgeted direct materials will be produced plus a standard allowance for waste and sub-standard. This allowance is based on standard allowances per department/cost centre as established by Works Managers.

The unit cost per lb. as calculated above x budgeted lbs. wt. production.

e.g.	AMI budgeted lbs. 70/20 100lbs. at 13/- per lb.	=	£65
	plus standard allowance:		
	Sub Standard ·78%	=	.51
	Waste ·66%		·43
			£65·94

3. <u>Standard Cost of Direct Materials</u> is the actual good production plus a standard allowance for waste and sub-standard x standard price of raw yarn. The figure will not coincide with 2) above unless actual production = budgeted production. The standard of D.M. is the flexed budget for the actual level of production achieved.

e.g. AMI good production of 70/20 = 100 lbs.

standard allowance = ·78% + ·66%=1.44%

standard cost $= \frac{100}{(100 - 1{\cdot}44)} \times 100$ at 13/-

= <u>£65.94</u>

4. <u>Actual Quantity at Standard Price</u> is the actual good production + actual waste + actual sub-standard x standard price of raw yarn.

e.g. AMI actual production 70/20 100 lbs. good + 5 waste + 10 sub-standard

= 115 lbs. at 13/- = <u>£74.75</u>

5. <u>Actual Quantity at Actual Price</u> is the actual good production + actual waste + actual sub-standard x actual price of raw yarn.

e.g. AMI actual production 70/20 100 lbs. good + 5 waste + 10 sub-standard

= 115 lbs. at 13/1d. = <u>£75.23</u>

6. <u>Direct Material Usage Variance</u> is the difference between the gross yarn which should have been used for the net good production achieved based on the standard allowance and the actual quantity which was used x standard price of raw yarn.

It is the difference between the standard cost of direct materials and the actual quantity used at standard price.

e.g.	AMI standard cost as at 3)	=	£65.94
	LESS A.Q. at S.P. as at 4)	=	£74.75
			£ 8.81

7. <u>Direct Material Price Variance</u> - is the difference between the actual quantity used x standard price of raw yarn and the actual quantity used x actual price of raw yarn. It is the difference between 4) and 5) above.

e.g.	AMI	A.Q. at S.P. as at 4)	=	£74.75
		A.Q. at A.P. as at 5)	=	£75.23
				£ 0.48

8. Total Direct Material Variance is the difference between the standard cost of actual production and the actual cost of actual production. It is the difference between 3) and 5) above OR the Direct Material Usage Variance + Direct Material Price variance.

e.g.	AMI	S.Q. at S.P. as at 3)	=	£65.94
		A.Q. at A.P. as at 5)	=	£75.23
				£ 9.29

NOTE

The Cost Control Statements calculate Material Variance on the raw yarn cost only. In strict practice such variance should be calculated on the aggregate cost of raw yarn + processing cost transferred from preceding cost centres + processing cost of the cost centre under review, but this is impossible until the origin of all work-in-progress can be determined.

DIRECT LABOUR

1. Budgeted Direct Labour - is the direct labour wages which it is budgeted will be incurred at the budgeted level of production.

2. Standard Hours Produced - the actual production lbs. wt. per specification x standard work content per lb. per specification. The standard work content per specification is arrived at by Work Study measurement.

3. Standard Rate - the standard direct wage rate per minute. This is arrived at by calculating an average rate per minute per cost centre based on the average weighed mix of labour grades employed over a specified period. It includes a weighted average basis rate plus a weighted average bonus rate over a specified period together with a standard allowance for wage increase etc.

4. Standard Direct Labour Cost - the actual production x standard work content per specification x standard rate per minute. The figure will net equal budgeted direct labour cost unless budgeted production = actual production. It is the flexed budget allowance for the actual level of production achieved.

   e.g. AMI actual production 70/20 = 100 lbs at 1·594 per lb. x 2·47d per min.

   = standard direct labour cost of £1,640.

5. Actual Hours at Standard Rate = the actual direct labour hours which were used evaluated at standard rate.

e.g. AMI - 100 lbs. of 70/20 took 3 hours = 3x60x2·47
= £1.850

6. Actual Wages - the actual direct labour wage bill OR actual hours worked x actual rate paid.

e.g. AMI = 100 lbs. at 70/20 took 3 hours at 3d per min. = £2.250

7. Direct Labour Efficiency Variance is the difference between standard hours allowed for the actual production and actual hours taken evaluated at the standard rate. It is the difference between the standard direct labour cost and actual hours at standard rate i.e. 4) - 5).

e.g. Standard Direct Labour Cost as at 4)= £1.640
Actual Hours at Standard Rate as at 5)=£1.850
Direct Labour Efficiency Variance = £0.210

8. Direct Labour Rate Variance is the difference between the standard rate allowed for the actual hours worked and the actual wages paid for the actual hours worked i.e. 5) - 6).

e.g. Actual Hours at Standard Rate as at 5) = £1.850
Actual Wages Paid as at 6) £2.250
Direct Labour Rate Variance = £0.400

9. Total Direct Labour Variance is the difference between the standard direct labour cost of the actual production and the actual wages paid for the actual production i.e. 4) - 6) or the Direct Labour Efficiency Variance + the Direct Labour Rate Variance.

e.g. Standard Direct Labour Cost as at 4)= £1.640

Actual Wages Paid as at 6)= £2.250

Total Direct Labour Variance = £0.610

10. Standard Direct Labour Cost per lb. is the standard direct labour cost for the actual production as at 4) divided by the actual lbs.wt. produced.

e.g. $\frac{£1.640}{100}$ = £ .016 per lb.

11. Actual Direct Labour Cost per lb. is the actual wages paid for the actual production as at 6) divided by the actual lbs.wt. produced.

e.g. $\frac{£2.250}{100}$ = £ .022 per lb.

12. Over/Under Cost per lb. is the difference between the standard direct labour cost per lb. and the actual direct labour cost per lb.

e.g. £ .022 as at 11) minus £ .016 as at 10)= £ .006 per lb.

NOTE

The actual production taken as with overheads is good production only. This means that direct labour cost expended on sub-standard and waste production is entirely recovered on good production as is the case with overheads.

INDIRECT LABOUR

1. Budgeted Production is the amount of good yarn which it is budgeted to produce during the specified period. The figure is derived from the Sales Budget which is routed by Planning through cost centres.

2. Actual Production is the actual good production of yarn as indicated by the completed Production Programme.

3. Budgeted Indirect Wages is the level of wages fixed for the budgeted production after consultation with Works Managers and Work Study.

4. Budgeted Wages at the Actual level of production is the standard allowance for the actual production achieved. It will not agree with Budgeted Wages unless budgeted production = actual production. It is the flexed budget for the actual production achieved.

5. Actual Indirect Wages are the actual indirect wages paid. The item includes all indirect labour costs which can be readily associated with a cost centre but excludes general indirect labour costs which cannot readily be associated with a cost centre.

6. Indirect Wage Variance is the difference between the actual indirect wages paid and the budgeted indirect wages. Because the variance is affected by difference in actual and budgeted levels of production and does not relate costs to the level of production, a better indicator of efficiency is to compare 4) with 5).

7. Budgeted Indirect Labour Cost per lb. is the budgeted wages as at 3) divided by the budgeted production as at 1).

8. Actual Indirect Labour Cost per lb. is the actual wages paid as at 5) divided by the actual production as at 2).

9. Over/Under Cost per lb. is the difference between the budgeted cost per lb. and the actual cost per lb. of indirect labour i.e. 7) - 8). The calculation of a cost per lb. does adjust for the differences between actual and budgeted production and a comparison of 7) with 8) does reflect relative efficiency.

NOTE

The total indirect labour cost as at 3)and 5) is analysed in detail by function at the foot of the indirect labour sheet.

All production figures above are for good production so that the indirect labour cost of sub-standard and waste production is fully recovered against good production.

APPENDIX IV

COSTING PLAN 1977 - 78.

9th August 1977.

COSTING PLAN 1977-9

As an extension of the Financial Branch objectives stated in the Management Plan, subsidiary objectives have been established for the Costing Branch. These objectives are listed below and will be developed in more detail with affected parties as they are taken up. Any comments would be most welcome.

1. Product Costs

a) comprehensive coverage of all current specifications and notification to Sales. This has already been done for Hosiery Sales and work should now begin on Weaving Sales.

b) Calculation of over/under costs per lb. from the standard product costs as calculated at a) and periodic notification to Sales. Information for this is derived from the Departmental Cost Control Statements and if needed is available per cost centre each week.

c) improving the speed and explanation of Product Cost preparation. To this end a revised product cost form has been introduced.

d) development of a systematic product system for warping and dyeing. These costs are affected by additional variables compared to the normal cost e.g. shade type, endage of yardage, etc. and to recognise these factors a more detailed approach than normal costing is necessary.

e) the examination of a Sales pricing basis from the costing angle. Although pricing will especially in the short run be determined by market forces, consideration of return on Capital Employed should always be taken into account. Work on the latter basis when completed will allow costing to propose a selling price to sales which can then be modified according to market factors but in the light of the affect on Company profitability.

2. Cost Control Statements.

The Cost Control Statements which were introduced at the beginning of the financial year are intended to form the basis of a completely integrated standard costing system. Although much valuable information is now being provided by the present statements, further steps are necessary before the system can be regarded as complete.

a) the most important part of the work has yet been tackled only superficially i.e. the explanation and interpretation of Cost information to Works Management. To secure full acceptance of these statements, firmer contacts must be established between Central Costs Office and local mill controllers and to this end regular visits by myself have already been proposed to Works Managers.

b) the development of Cost Control Statements to integrated standard cost accounts is now dependent upon accurate stock records being established on E.D.P. A trial run to establish one mill on this basis is proposed subject to

availability of cost office personnel at the half-year point.

3. Costing Profit and Loss Accounts.

The introduction of Cost Control Statements makes possible the development of profit and loss accounts on a cost centre basis. Attempts on these lines have in the past only been spasmodic but future development in the direction is only limited by the availability of costing personnel.

Proposed costing Profit and Loss Accounts for the near future are:-

a) Doubling.

b) Dyeing.

Indications of particular preferences would be welcomed.

4. Special Investigations.

As a logical extension of costing work, special investigations should be carried out on a continuing basis. The use of costing as a Central Service function by Production, Sales and Technical Development should be encouraged. Initially the impetus will probably rest on Costing itself but it is emphasised that to be successful the initiative must eventually rest with other functions.

Such work might involve for example - examination into high costs as revealev by the Cost Control Statements, of large discrepancies between standard values quoted for work and actual time taken, measurement of departmental profitability, establishing Break Even Points and optimum throughput.

5. Extension of Cost Office Systems.

Cost Control Statements provide the basic system into which other subsidiary routines are fed. Many of these subsidiary routines are now inadequate and inconsistent with modern needs and work should begin on their revision and extension.

a) a new wage and salary analysis has already been developed.

b) waste and sub-standard recording is incomplete in coverage and not uniform between mills. Extension and revision is essential to provide adequate and reliable information.

c) production summaries are badly developed and within the Cost Office limited to end product analysis which is itself based on an antiquated classification. The introduction of a new system which will complement Cost Control Statements, provide a full analysis of production and reconcile with production programme is essential.

d) standard stock records are as mentioned necessary to establish a completely integrated standard costing system but in themselves will provide running weekly totals of book stocks at standard cost.

6. Budgetary Control.

The erection of Annual Budgets is still a recent inovation and much work remains to be done before the principle of Budgetary Control is accepted.

The involvement of Works Management in the preparation of these budgets against which their performance will be measured is essential. The lack of success of budgetary control within the company is probably the result of the failure to involve relevant personnel. A Budget Committee supplemented by local meetings will be protected when preparation of 1977-78 budgets begin.

7. Systems Manual

The efficiency and moral of personnel within the Cost Office would be enhanced by the introduction of a systems manual. Such a manual containing full descriptions of the steps to be followed in performing each and every job within the office would -

a) reduce supervisory time, cut down on mistakes and establish the most efficient means of performing a task.

b) provide a basis for training personnel and increasing flexibility within the office.

c) provide a systematic introduction for those personnel who visit the Cost Office as part of a general induction course to the company.

COMPANY ACCOUNTANT.

APPENDIX V.

STANDARD COST ACCOUNTS.

SYSTEM MANUAL.

21st August 1977.

STANDARD COST ACCOUNTS.

Definition: Standard Cost Accounts are those accounts which are kept on the principle of double entry as with normal accounts but one side of the double entry is at standard and the other at actual. The difference or variance is then posted to the relevant variance account so that all entries balance.

e.g.

During a period actual wages of £1,500 were paid; actual production was 1,450 units the standard labour cost per unit being £1.

DR. CR.

Wages Control Account

		Dept B	1,500

Department B Account

1,500	Wages Control A/C	F. Goods A/C	1,450
		Labour Variance A/C	50

Finished Goods Account

1,450	Dept. B.

Labour Variance Account

50	Dept. B.

Thus, the wages paid are credited out of the Wages Account at actual and debited to the Work-in-Progress Account of Dept. B. at actual but are subsequently transferred from Dept. B. to Finished Goods at standard. This leaves a

a variance of £50 which is therefore transferred to the Labour Variance Account so that all entries balance.

(1) '<u>A Standard Cost</u> is an estimated cost prepared in advance of production or sales correlating a technical specification of materials and labour to price and wage rates estimated for a selected period of time together with the addition of apportioned overhead expenses estimated for the same period within a prescribed set of working conditions.'

(2) '<u>Standard Costing</u> is the preparation of Standard Costs and their use to clarify financial results of the firm especially by the measurement of variance of actual cost from standard cost and the analysis of causes of variances for the purpose of maintaining maximum efficiency by executive action.

<u>Procedure</u> A simplified procedure is outlined below for a complete set of entries for standard cost accounts. In practice there will be a Work-in-Progress Account for every cost centre.

e.g.

Purchase of raw materials	=	1000 units at 10/- each.
Standard Cost of raw materials	=	9/- per unit.
Finished Goods Production	=	860 units.
Raw Materials used in Production	=	900 units.
Direct Wages Paid	=	£950
Actual Hours Worked	=	950
Standard Direct Labour Cost per unit	=	18/-
Actual Overhead Expenditure	=	£750
Budgeted Overhead Expenditure	=	800 units at £1 = £800

Standard Cost of Finished Product 32/- per unit.

Actual Admin, Selling, Distrib. O/H £180

Budgeted Admin, Selling Distrib O/H	=	800 units at 5/- = £200.
Sales 820 units at £3	=	£2460.

Raw Yarn Control A/C.

DR.		CR.	
Purchases (APxAQ)	500	W. in P (SPxAQ)	405
		Direct Material Price Var.	45
		Closing Stock (APxAQ)	50
	500		500

Direct Wage Control A/C.

Cash (ARxAH)	950	W. in P (SRxAH)	855
		Direct Labour Rate Variance.	95
	950		950

Production Overhead Control A/C.

Production Expenses (Actual)	750	W. in P (Budget)	800
Prod. O/H Expenditure Variance.	50		
	800		800

Work-in-Progress Control A/c.

Raw Yarn Control A/C (SPxAQ)	405	F. Goods Control A/C (SC)	2021
Direct Wage Control A/C (SRxAH)	855	(DM = 860 x 9/- DL =860 x 18/- OH = 860 x £1)	
Prod O/H Control A/C (Budget)	800		
Prod O/H Capacity Variance	150	Direct Material Usage Var.	18
		Direct Labour Efficiency Var.	81
		Prod. O/H Efficiency Var.	90
	2210		2210

Finished Goods Control A/c

DR.			CR.
W-in-Progress Control A/c (SC)	2021	Cost of Sales (820 at SC of 47/-)	1927
		Closing stock(SC)	94
	2021		2021

Admin. Selling, Distrib O/H Control A/c.

Actual Overheads	180	Cost of Sales (820 at SC of 5/-)	205
Overhead Expend. Variance.	20		
Overhead Capacity Variance.	5		
	205		205

Cost of Sales A/C

Finished Goods Control A/C.	1927	Sales a/c	2132
Admin. Selling, Distrib O/H Control A/c	205		
	2132		2132

Sales A/c.

Cost of Sales A/c.	2132	Sales.	2460
Standard Profit	328		
	2460		2460

Direct Material Variance A/c.

DR.		CR.	
Direct Material Price Var.	45	Profit & Loss A/c	63
Direct Material Usage Var.	18		
	63		63

Direct Labour Variance A/c.

Direct Labour Rate Var.	95	Profit & Loss A/c	176
Direct Labour Eff. Var.	81		
	176		176

Overhead Variance A/c.

Prod. O/H Efficiency Var.	90	Prod. O/H Expend Var.	50
Profit and Loss A/c	135	Admin. Selling, Distrib O/H Expend. Variance.	20
		Prod. O/H Capacity Variance.	150
		Capacity Variance	5
	225		225

Objects and Advantages The objects and advantages of a Standard Cost system are:-

1) Standard costs represent the cost which should have been incurred at a given level of production of performance. c.f. a budgeted cost is often based on one level of output only so that it is unrealistic to compare this cost with an actual cost incurred at a different level of production than budgeted. The Standard Cost therefore allows a realistic comparison with actual cost.

2) Since standard costs must be established by cost centre, a complete analysis cost by standard and actual is available by production cost centre.

3) Comparison of actual cost with standard enables the calculation of variances and the ascertainment of the cause of such variances e.g. a variance on Direct Labour will be analysed into a rate and an efficiency variance.

4) The information so provided should allow a more efficient system of cost control to be established e.g. if direct labour efficiency variances are high for a particular department over a number of weeks, the appropriate action can be taken.

5) A running weekly total of stocks at standard cost is available from the standard cost accounts.

6) Stock valuation procedures together with any other cost evaluation procedure is simplified by the prior preparation of standard costs so reducing clerical effort.

7) Integration between financial and cost accounts if facilitated and once achieved clerical effort reduced accordingly.

COST CONTROL STATEMENTS.

Comparison with Standard Cost Accounts The Cost Control Statements differ from Standard Cost Accounts:-

1) The statements represent the books of prime entry and are not kept on the double entry system as strictly interpreted. Standard cost accounts would be kept in ledger accounts on a double entry system and integrated with the financial accounts. The documents from which postings would be made to the ledger would be the books of price entry i.e. the present Cost Control Statements.

2) The Cost Control Statements provide all the basic information for standard cost accounts except the adjustments for raw yarn, Work-in-Progress and Finished Stocks. Until accurate weekly stock figures are recorded at each stage, information is incomplete and standard cost accounts are impossible to achieve.

Procedure.

It is important that the procedure as outlined is strictly adhered to. Definitions of terms are contained in the 'Costing Terminology'.

1) Budgeted Figures

A) Budgeted Direct Labour.

The budgeted direct labour cost per cost centre is listed in the mill Direct Labour Budget by period.

a) To calculate the budgeted figure for the week, take the period total and divide by the number of Working Weeks for the current period e.g.

Period 3 = 8 calendar weeks, 6 working weeks.

Period 3 Budgeted Direct Labour = £600

Weekly Budgeted Direct Labour = $\frac{600}{6}$ = £100

b) If the period's figure is not exactly devisable by the number of working weeks, the balance is to be added to the first week's figures in each period. e.g.

Period 3 = £604 Direct Labour Budget

Weekly Budgeted Direct Labour = $\frac{604}{6}$ = £100 Weeks 2 - 6

= £104 Weeks 1

c) Where a Budgeted Direct Labour relates to a department only, the total will first be split across the cost centres in that department on the basis of budgeted pounds weight for the current period for each cost centre.

e.g.

Budgeted Direct Labour for CS = £1000 Period 3

Budget lbs. wt for CS9 = 80000 Period 3

Budgeted lbs. wt for CS12 = 20000 Period 3

Budgeted Direct Labour for CS9 $= \frac{£1000}{100000} \times 80000 = £800$ Period 3

Budgeted Direct Labour for CS12 $= \frac{£1000}{100000} \times 20000 = £200$ Period 3

These figures are then calculated on a weekly basis as at a) - b).

B) Budgeted Production

The budgeted production (lbs.wt) per cost centre is listed in the mill Production budget by period.

a) To calculate the budgeted figures per week, take the period total and divide by the number of working weeks for the current period.

b) If the period's figure is not exactly devisable by the number of working weeks, the balance is to be added to the first week's figure in each period.

c) The same figure is also used on the Indirect Wage Statement.

C) Budgeted Indirect Wages.

The budgeted Indirect Wages per cost centre are listed in the mill Indirect Wage Budget by period.

a) To calculate the budgeted figure for the week, take the budgeted figure for the period and divide this by the number of working weeks, the balance is to be added to the first week's figure in each period.

b) If the period's figure is not exactly devisable by the number of working weeks, the balance is to be added to the first week's figures in each period.

c) Where a budgeted indirect wage figure relates to a department only, the figure is again apportioned to cost centres on the basis of the current period's production for each cost centre.

d) the calculations at a) - c) are carried out by functional analysis, finally totalled and the total figure inserted in the main part of the statement.

D) Budgeted Cost per lb.

a) To calculate the budgeted cost per pound:-

$$\frac{\text{Budgeted Wages for period as calculated at Ca) or Cc)}}{\text{Budgeted Lbs. Wt. Production.}}$$

This figure must be recalculated each period.

b) Check that the functional analysis of budgeted costs per lb. reconcile with the total budgeted cost per lb. Small differences may occur due to rounding but substantial differences arising from calculation errors must be located and corrected before proceeding.

c) Cost per lb. figures are calculated to 2 places of decimals.

E) Reconciliation.

The budgeted wages and lbs. wt. figures must be finally checked to balance back with the period's total so verifying the above calculations.

Since adjustments are taken up on the first week it is easier to complete Weeks 1 and 2 at the same time and using these figures prepare a reconciliation:-

i) Direct Wages W1 + (Direct Wages W2 x remaining weeks in period excl. W1)

ii) Indirect Wages W1 + (Indirect Wages W2 x remaining weeks in period excl. W1)

+ indirect wages not included in Statements e.g. Office cleaners.

iii) Production W1 + (Production W2 x remaining weeks in period excl. W1)

Work on Section 1 should be carried out on Monday/Tuesday each week and completed before information from mills comes through.

For a complete definition of terms used refer to Costing Terminology.

2) Form O.M.D.L.

A. Production.

Form O.M.D.L. is the working sheet on which all detailed calculations are carried out, Because it is merely a working sheet, it is not issued with Forms, DM, DL, IL, and O/H to departments.

a) From the completed Production Programme the following details are listed:-

specification number of any yarn produced	e.g. 7927
yarn type description	e.g. 1/150/30
actual good production in lbs. wt.	e.g. 10,500

This is done for each specification type on the programme until all good production has been itemised.

b) The quantity of good yarn production is sub-totalled.

c) Sub-standard yarn which is merely processed by a cost centre having been produced by a preceding process is next listed from the production programme as for good production at a).

Sub-standard Processed is distinguished on the programme by the printed word 'Sub-Standard' following the yarn type description.

d) the quantity of sub-standard processed is then sub-totalled.

e) the quantity of waste produce in a cost centre is recorded on a Weekly Waste Report prepared by the respective mill.

The total quantity of waste produce is entered from the Waste Report and entered in the Production column of Form O.M.D.L. and underlined as a sub-total.

f) the quantity of sub-standard produce in a cost centre is recorded on a Weekly Sub-Standard Report prepared by the respective mill.

The total quantity of sub-standard produced is entered from the Sub-Standard report and entered in the Production column of Form O.M.D.L. and underlined as a sub-total.

g) production under items a) - f) is added to give a gross production figure.

h) the production programme is totalled separately and sub-totals inserted for good production, waste, sub-standard produce and sub-standard processed.

i) the production totals as at b) and d) on the Cost Control Statement are checked against the programme to check correct extraction, totals at c) and f) are checked against the programme to check the agreement of Weekly Waste and Sub-Standard reports, totals b) d) and e) and f) are checked against Mill Production Summaries.

Any discrepancies revealed should immediately be itemised and taken up with the relevant person before proceeding further with work.

If discrepancies cannot be reconciled, these should be notified to the Management Accountant.

B. Standard Hours.

Standard Hours produced include machine hours and labour hours each of which are calculated separately on the Form O.M.D.L.

a) By reference to Work Study cards, extract the spindle hours per lb. for the relevant specification number as entered in the first column and insert this for each number in the spindle hours per lb. column. This includes all good production and sub-standard processed but excludes waste and sub-standard produced.

b) Again, by reference to Work Study cards, extract the work content per lb. for the relevant specification number and insert this for each number in the standard work content column. This includes all good production and sub-standard processed but excludes waste and sub-standard produced.

c) any specification numbers for which no work study values are given on the Work Study card should immediately be itemised and figures requested from Work Study before proceeding further with work.

If because of time available, figures are not obtained when Form O.M.D.L. is being finalised, estimated figures should be requested from Work Study and the prefix 'E' marked clearly against such items on the form.

The same estimated figure should not be used in the following week until the usual request has been made to Work Study without success.

If an estimated figure is used for four weeks continuously without obtaining an actual figure, notification to the Management Accountant should be made.

C. Prices.

Prices used on form O.M.D.L. include standard price and actual price of Direct Materials.

a) standard price is the price at which it was anticipated each yarn type would be bought in the Direct Material Budget and this price will therefore remain the same throughout the year unless a detailed Budget Revision is carried out.

By reference to Raw Yarn Price List held by the Management Accountant, obtain standard prices for each raw yarn type.

b) actual price is the price at which the yarn type was actually bought. By reference to Raw Yarn Price List held by the Management Accountant, obtain actual prices for each raw yarn type.

c) If estimated prices are quoted for a raw yarn type, these prices should not be used in the following week until the usual request had been made to the Management Accountant.

d) any yarn type for which prices are required should immediately be referred to the Management Accountant before work is continued.

D. Evaluation.

To arrive at standard hours produced and the actual and standard value of direct materials used, the figures as entered on Form O.M.D.L. are evaluated:-

S. Hours a) good production of each specification x spindle hours per lb. Each figure is entered in the column 'Prod x sp. Hours'

b) Sub-standard processed of each specification x spindle hours per lb. Each figure is entered in the column 'Prod x Sp Hours'

c) sub-total spindle hours produced for a) and for b)

W.Content d) good production of each specification x work content per lb. Each figure is entered in the column 'Std Hours'

f) sub-total spindle hours produced for d) and for c)

Prices g) good production of each specification x standard price per lb. Each figure is entered in the column 'Prod XSP'

h) good production of each specification x actual price per lb. Each figure is entered in the column 'Prod x AP'

i) total values of production at Standard price as at g)
total values of production at Actual price as at h)

j) The raw yarn values of the actual yarn used must now be calculated.

Calculate the waste and sub-standard produced as a percentage of good production + waste produced + sub-standard produced and enter these percentages in the 'ACtual %' column under Direct Materials.

The standard percentages will already have been entered in 'Target %' column under Direct Materials.

The Actual Raw Yarn values of yarn used is then calculated:-

$$\frac{\text{RY value of good production at AP}}{(100 - \%\text{ actual waste \& sub-standard}} \times 100$$

E. Allowances

The spindle hours produced as at Da) and Dd) refer to good production weighted via the overhead rate for standard waste and sub-standard percentages. Sub-standard which is merely processed is evaluated in spindle hours separately and added to the spindle hours produced already calculated so giving a new total. These two figures are then used in the main statements for calculating two separate efficiency percentages. viz.

a) Standard SH produced on good production

$$+ \frac{\text{SH Prod. on Sub Std Processed as at Db}}{\text{Total Standard SH Produced.}}$$

b) The same calculation as at a) is then carried out for standard labour hours produced since, good production is again weighted via the direct labour rate for standard waste and sub-standard percentages, but a separate calculation is necessary for standard hours produced on sub-standard processed viz.

$$\frac{\text{Standard Labour Hours Prod. on good production.} + \text{Std. Labour Hours Produced on Sub-std. Processed as at Dc)}}{\text{Total standard Labour Hours Produced.}}$$

c) The value of direct materials used as calculated at g) and h) again refers only to good production and must be adjusted accordingly to the allowances for waste and sub-std.

$$\frac{\text{RY Value of good production at AP}}{(100 - \%\ \text{waste} + \text{Sub/Std}\ \%\ \text{allow})} \times 100$$

d) $$\frac{\text{RY Value of good production at AP}}{(100 - \%\ \text{waste} + \%\ \text{sub/std allow})} \times 100$$

The Working Sheet is now almost complete and work can begin on the insertion of figures on the DL, DM, IL, and O/H sheets.

3) Direct Labour.

Before commencing work on the main cost control statements, enquiries should be made to establish if actual wages are available for the current week from EDP and if so the sheets for Direct Labour and Indirect Labour should be completed first since there will then be time to raise any queries before completion of the Statements.

If actual wages are not available at this point, work should proceed with Overhead and Direct Material Statements.

A) Standard Hours at Standard Rate = Standard Hours produced on good production as at 1E b) on Form O.M.D.L. x SR per minute as in Direct Labour Budget.

This represents the cost which it is anticipated should have been incurred at the actual level of production achieved.

a) where standard hour figures are not available for a cost centre e.g. Steaming, Warping, the standard cost is arrived at by flexing the budgeted direct labour cost for that cost centre -

$$\frac{\text{Budget O/H Wages}}{\text{Budgeted Production}} \times \text{Actual Good Production}$$

B) Actual Hours at Standard Rate The Actual Hours of direct labout used for the actual production is supplied by E.D.P.

a) Using the same standard rate as at a) calculate the cost of the actual hours if those hours had been paid at standard rate.

b) for cost centres where standard rate per minute are not available, this section if left blank.

C) Actual Wages are extracted from the E.D.P. analysis and posted direct to the Direct Labour statement for the cost centre.

D) Variances. Calculation of the variances is:-

a) DL Efficiency Variance = (SH x SR) - (AH x SR)

b) DL Rate Variance = (AH x SR) - Actual Wages

c) Total DL Variance = (SH x SR) - Actual Wages

If the second item in the equation exceeds the first, the variance is negative i.e. actual hours taken or the actual rate paid exceed the standard hours or rate and the cost centre has overspent c.f. if the second item in the equation is less than the first, the variance is positive and the cost centre has saved against standard.

Negative variances are shown as Red figures or in brackets.

Positive variances are shown as Black figures or without.

Having calculated the variances as at a) b) and c), check that a) + b) add through to the total variance as already calculated.

E) Costs per unit.

a) The standard direct labour cost per unit or per minute is already known from the Direct Labour Budget and is fixed throughout the year unless any budget revisions are carried out.

b) The Actual Direct Labour cost per unit is calculated:-

$$\frac{\text{£ Actual Wages Paid} \times 240}{\text{Actual Hours worked} \times 60}$$

Figures are calculated to 2 places of decimals.

c) The over/under cost per unit is the difference between standard and actual cost per unit. If the cost of actual exceeds standard, the cost centre is overspent and the variance is negative = Red or ( ).

F) Costs per lb.

a) The standard labour cost per lb. is calculated:-

$$= \frac{\text{Standard Hours x Standard Rate}}{\text{Actual Good Production}}$$

b) Actual direct labout cost per lb.

$$= \frac{\text{Actual Wages}}{\text{Actual Good Production.}}$$

c) The over/under cost per unit is again the difference between standard and actual cost per lb. Overspending = negative and is shown as a red figure or in brackets.

G) Efficiency %.

To calculate the efficiency of direct labour, the following formula is applied.

a) $$\frac{\text{Standard Hours Produced}}{\text{Actual Hours worked}} \times 100$$

b) The standard hours produced figure used above does not include standard hours produced on sub-standard processed which although correct from a costing point of view is not entirely fair to the Departmental Manager.

A separate standard hours produced figure is therefore used as the foot of the statement to calculate a separate efficiency percentage to that at G b). This figure includes standard hours produced on good production (as at Ga) + standard hours produced on

Sub-Standard processed = the total figure as calculated at 1Eb) on form O.M.D.L.

<u>For a complete definition of terms refer to 'Costing Terminology'</u>.

4) Indirect Labour.

The Indirect Labour statement should be completed after Direct Labour subject to the availability of E.D.P. Wage Analysis.

If the wage analysis is not available by Friday lunch-time notification should be made to the Management Accountant.

In the case of delay, work should be started on Direct Material and Overhead Statements.

A) Actual Production = actual good production only as calculated on Form O.M.D.L.

B) Budgeted Indirect Wages of Actual Production is the budgeted indirect labour cost flexed to the actual level of good production achieved viz

$$\frac{\text{Budgeted Wages}}{\text{Budgeted Production}} \times \text{Actual Good Production}$$

C) Actual Indirect Wages

a) the total indirect wages for the cost centre are only entered after the subsidiary analysis by function has been completed at the foot of the sheet.

b) Having completed the subsidiary analysis by function, this is next totalled and checked against the E.D.P. Wage Analysis. Any discrepancy at this stage should be immediately notofied to the Management Accountant before proceeding further.

D) Variances The total variance and the variances by function between budget and actual are the differences between Actual wages and budgeted wages not budgeted wages flexed to the actual production.

E) Costs per lb.

a) The Actual Indirect Cost per lb. = $\frac{\text{Actual Indirect Wages}}{\text{Actual Good Production}}$

b) The Standard Indirect Cost per lb. = $\frac{\text{Budgeted Indirect wages}}{\text{Budgeted Production}}$

c) The functional analysis of indirect costs per lb. are totalled and checked against the total cost per lb. as calculated in the main part of the statement. Slight differences may occur due to rounding but any substantial discrepancy which will be a calculation error must be corrected before proceeding.

d) Costs per lbs. are calculated to 2 places of decimal.

F) Wages Check It is important, that having posted actual wages to the Cost Control Statements, a reconciliation is made with the E.D.P. Wage Analysis.

a) add all actual and indirect wages posted to Cost Control Statements.

b) working from the E.D.P. analysis itemise those wages not posted. This will include wages which cannot be allocated to a specific cost centre, e.g. Office cleaners.

c) the total of a) + b) should be checked against the E.D.P. Wage Analysis total. Any discrepancy should be investigated before proceeding.

d) if a discrepancy exists after having checked the extraction from the computer printout and thereby indicating a mistake in the E.D.P. Analysis, notification should be made immediately to the Management Accountant. Work should not proceed until this has been done.

For a complete definition of terms used refer to Costing Terminology.

5) Overheads

A) Available Spindle Hours after downtime.

a) Details of lost spindle hours are supplied by departments each week.

b) The lost splindle hours are analised by cause at the foot of the statement, totalled and deducted from Gross Available spindle hours to give Available Spindle Hours after downtime.

c) Summaries are produced by Statistics Office and the figures as calculated are checked against this statement. Any discrepancy should be taken up with the Statistics Office and reconciled before continuing.

B) Gross Available S. Hours.

In some cases the discrepancy may result from taking a different figure for Gross Available Spindle Hours. Careful attention to mill activities is necessary and adjustments made for any changes in machine dispositions. Any such changes should be notified immediately to the Management Accountant.

C) New Overhead Rates.

a) If a change has occurred the overheads apportioned to that cost centre will now be incorrect and a new set of rates has to be calculated by re-apportioning overheads across all centres. Requests for new rates is made simultaneously with the notification of a change in Gross Available Spindle Hours.

b) If because of time, new rates cannot be calculated for the current week, change the existing rates:-

$$\frac{\text{Existing Fixed O/H}}{\text{New Gross Avail SH}} = \text{Fixed Rate per SH}$$

$$\frac{\text{Existing Variable O/H}}{\text{New Gross Avail SH}} = \text{Variable Rate per SH}$$

To recalculate the flat rate per lb., adjust the flat rate:-

i) $\frac{\text{Budgeted Spindle Hours}}{\text{New Gross Available SH}} \times 100$

ii) $\frac{\text{Budgeted lbs. wt.}}{\text{\% as calculated at i)}}$ x standard net activity/ efficiency %

iii) $\frac{\text{Existing flat Overheads}}{\text{New lbs. wt. as calculated at ii)}}$

D) Spindle Hours Produced

The spindle Hours produced figure taken in the main part of the statement is the spindle hours produced on good production but excludes spindle hours produced on sub-standard process.

E) Percentages.

The percentages calculated are:-

a) % Activity = $\frac{\text{Available SH after downtime}}{\text{Gross Available S. Hours}} \times 100$

b) % Efficiency = $\frac{\text{Spindle Hours Produced}}{\text{Available Spindle Hours after downtime}} \times 100$

c) % Net Activity/Efficiency = $\frac{\text{Spindle Hours Produced}}{\text{Gross Avail. S. Hours.}} \times 100$

check that a) x b) = c) having calculated each one separately.

F) Sub-standard Processed

a) In costing all waste and sub-standard costs exceeding the standard allowance are variances but from a departmental managers point of view, this tends to be unfair if he is processing the sub-standard production of proceeding departments.

b) The spindle hours produced figure, therefore includes spindle hours produced on sub-standard processed and the total figure taken is the total figure as calculated at 1E) a) in form O.M.D.L.

c) The efficiency percentage and net activity/Efficiency percentage are calculated as at F) above based on the spindle hours produced figure which includes sub-standard processed.

G) Standard Overheads Recovered.

Spindle Hours Produced (excl. S/Std processed) x Fixed & Variable Rates

+ Actual Good Production x 100 x Flat Rate per lb.

-

This figure is the overheads recovered on the actual production achieved.
sub-standard allowance.

H) Standard Overheads Recoverable.

a) Available Sp Hours after downtime x Standard Efficiency %.

7/8ths = Spindle Hours which could have been produced if the available spindle hours had been used at Standard efficiency. The figure at G) represents the actual efficiency at which the available spindle hours were used.

b) $\frac{\text{SSp/hrs which could have been prod. as at Hd)}}{\text{(Spindle Hours Produced as at G)}}$

x Actual Good Prod. as adjusted at G.

This represents the lbs. wt. which could have been produced if available spindle hours had been used at standard efficiency.

c) Spindle Hrs. which could have been produced as at Ha) x fixed and variable rates.

d) Lbs. Wt. which could have been produced as at Hb) x Flat Rate.

e) The addition of c) and d) represents the standard overheads which could have been recovered if available spindle hours had been used at standard efficiency.

I) Budgeted Overheads

The budgeted overheads represent the overheads which should be recovered working at standard activity and standard efficiency.

J) Variances.

The variances are calculated:-

a) Overhead Efficiency Variance = Standard O/H Recovered - Standard O/H Recoverable

The standard overheads recovered represent actual activity and actual efficiency.

whilst standard overheads recoverable represent actual activity and standard efficiency.

the difference therefore being efficiency.

b) Overhead Capacity Variance = Standard O/H Recoverable - Budgeted Overheads.

The standard overheads recovered represent actual activity and standard efficiency.

whilst the budgeted overheads represent standard activity and standard efficiency.

the difference therefore being activity.

This variance is often called a Utilisation or Activity Variance.

c) Total O/H Volume Variance = Standard O/H Recovered - Budgeted O/Hs.

check that a) + b) = c) having calculated each separately.

K) Costs per lb.

a) Standard Overhead Cost per lb. = $\frac{\text{Budgeted Overheads}}{\text{Lbs.wt at Standard Activity/Efficiency}}$

The lbs. wt. at standard activity/ efficiency

i) = $\frac{\text{Budgeted S.Hours}}{\text{Gross Avail. S.Hours.}} \times 100$

ii) $\frac{\text{Budgeted lbs. wt.}}{\text{\% as at i)}}$ x standard activity/efficiency %

This represents the overhead cost per lb. which should have been incurred working at budgeted expenses and standard net activity/efficiency.

b) Actual O/H Recovery Cost per lb. = $\frac{\text{Budgeted Overheads}}{\text{Actual Good Production}}$

This represents the overhead cost per lb. which was incurred working at budgeted expenses and actual net activity/efficiency.

c) Actual O/H Cost per lb. = $\frac{\text{Actual Overheads}}{\text{Actual Good Production}}$

This represents the overhead cost per lb. which was actually incurred working on actual expenses and actual net activity/efficiency. Since actual overheads are not calculated by cost centre on a weekly basis this figure is not used.

L) Packing Centres. Materials In and Out etc.

a) These cost centre overhead rates are calculated per lb. c.f. per SH production cost centres. The standard overheads recovered in these centre = Actual Good Production lbs. wt. x Standard Rates per lb.

b) It is impossible to calculate a standard overheads recoverable figure and the total volume variance should be analised to the capacity variance only.

c) The same applies to steaming, warping and sizing centres where machine hour figures and standard work values are not available.

d) if separate grading and packing figures are not available, the weight of the preceding process (es) is taken.

e) Materials In and Materials Out figures are obtained from the Management Accountant. These figures include home trade, export and Group invoices raised for the current week.

6) Direct Materials.

The calculations for Direct Materials have already been completed on Form O.M.D.L. and should now be transferred to the Direct Material sheet.

A) Values of Yarn Transfer these values from Form O.M.D.L. Unless notification is made by the Management Accountant that actual prices have changed from the standard prices of raw yarn per lb., the calculation of AQ x SP and AQ x AP will be the same and there will be no Material Price Variance.

B) Variances The variances are next calculated :-

a) (SQ x SP) - (AQ x SP) = Material Usage Variance

If the actual quantity used exceeds the standard quantity, the cost centre has overspent and the variance will be negative.

b) (AQ xSP) - Actual Price = Material Price Variance.

c) (SQ x SP) - Actual Price = Total Material Variance

C) check that the usage + price variance = total variance as calculated separately.

D) Production. The production figures are transferred from Form O.M.D.L. check that the sub-totals add through to Total Production. Any discrepancy will merely be a calculation error and should be corrected immediately.

E) Percentages The percentages are calculated as:-

a) Waste% = $\frac{\text{Waste Produced}}{\text{Good Production + Waste +S/Std Produced}} \times 100$

b) Sub Std. Produced % = As above.

c) Sub Std. Processed % = $\frac{\text{Sub Standard Processed}}{\text{Total Production}} \times 100$

The reason for the different method of treatment is that waste and sub-standard cannot be declared again on sub-standard which is being processed.

For a complete definition of terms used refer to Costing Terminology.

7) Cumulative Figures

The statement is now completed for the current week and it merely remains to insert cumulative figures.

A) This Period Todate.

This period todate = the total of all weekly figures for the current period up to and including the current week. It is sufficient to add the current week's figure to the previous week's this period todate figure.

At the end of the period, the sheets should be totalled again week by week to check that the period's total is correct.

B) Last Period Todate.

This figure is the total of all weekly figures for the previous period up to and including the corresponding week to the current week.

e.g. at W3 P 2, the cumulative figure for Period I up to and including Wk 3 would be used.

e.g. at Wk 7 P 2 and where Period I was only 6 weeks long, the cumulative figures for Wk 6 P I would be repeated at both Wk 6 and Wk 7 in P.2.

C) This Year Todate.

This year todate is total of all weekly figures for the current year up to and including the current week. It is sufficient to add the current week's figure to the previous week's this year todate figure.

D) Last Year Todate.

Last year todate is the total of all weekly figures for the previous year up to and including the current week. These figures are merely transferred from the previous year's statement.

Take care that the corresponding week is taken which is the corresponding working week.

e.g. If during the first 16 weeks of the previous year 2 weeks holiday had been taken compared to only 1 for the current year, it is not correct to take W16 for the previous year as the corresponding working week on a cumulative basis will be Week 17.

Statements should be completed by Friday afternoon at 4.p.m. If the information is not available by this time, the timetable will be amended accordingly.

COMPANY ACCOUNTANT.

8. Work Order Sequence, Check Procedure and Notifications.

The order in which work is to be carried out together with check procedures and notification at each stage is listed below.

SEQUENCE		CHECK	NOTIFICATION
1) Budgeted Wages (Direct & Indirect), Production & Cost per lb (Indirect) Gross Available Spindle Hours		C.C. S/T - Budget C.C. S/T with Dept	Management Accountant If new rates required
2) Complete Form OMDL -	a) Production	C.C. S/T - Programme S/S Report - Programme C.C. S/T - Mill Summary	Planning Planning S/S Controller Mill } Management A/c if unable to reconcile
	b) Standard Hours	Estimates used previously Estimates used for 4 weeks	Work Study Management Accountant
	c) Prices	Estimates used previously	Management Accountant
3) Direct Wages Statement 4) Indirect Wage Statement	Actual Wages Standard Wages Variances	Actual Wages = EDP Analysis Addition of Variances	Management Accountant if a) not available by Friday 12·00 noon b) if cannot reconcile
5) Overheads	Overhead Recovery Variances Costs per lb %	 Addition of Variances Calculation of percentages	
6) Direct Materials	Values of materials Variances Production Figures	 Addition of variances	
7) Cumulative figures		Weekly C.C. S/T = Period's Figure	

DEPARTMENTAL COST CONTROL STATEMENT

FORM O/H

DEPARTMENT..... WEEK..... PERIOD.....

OVERHEADS

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Standard Overheads Recovered					
Standard Overheads Recoverable					
Budgeted Overheads					
Actual Overheads					
Overhead Effic. Variance					
Overhead Capacity Variance					
Overhead Volume Variance					
Overhead Expenditure Variance					
Total Overhead Variance					
Gross Spindle/hr Available					
Available Sp/hrs. after downtime					
Spindle Hours Produced					
% Activity					
% Efficiency					
% Not Activity/Efficiency					
Standard Overhead Cost per lb					
Actual O/H Cost per lb					
Over/Under cost per lb					

Analysis of Downtime this Week

Gross Spindle Hours Available

LESS

_____

DEPARTMENTAL COST CONTROL STATEMENT

FORM D.L.

DEPARTMENT..... WEEK ..... PERIOD.....

DIRECT LABOUR

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Direct Labour					
Standard Hours at Std Rate					
Actual Hours at Std. Rate					
Actual Wages					
Direct Labour Effic. Variance					
Direct Labour Rate Variance					
Total Direct Labour Variance					
Standard Direct Labour Cost per lb					
Actual D.Labour Cost per lb					
Over/under cost per lb					
Standard D.Labour cost per unit					
Actual D Labour Cost per unit					
Over/under Cost per unit					

Yarn Type	Production	Standard Work Content	Std Hours	Std Rate	S.H. x S.R.	Actual Hours	A.H. x S.R.	Actual Wages

DEPARTMENTAL COST CONTROL STATEMENT

FORM D.M.

DEPARTMENT..... WEEK ..... PERIOD.....

DIRECT MATERIALS

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Direct Materials					
Standard Quantity at Standard Price					
Actual Quantity at Standard Price					
Actual Quantity at Actual Price					
Direct Material Usage Variance					
Direct Material Price Variance					
Total Direct Material Variance					

Yarn Type	Actual Good Prod-uction	Standard %			Std Price	SQ x SP	Actual %			A Q x S P	Price	A Q x A P
		Waste	S/S	Total			Waste	S/S	Total			

DEPARTMENTAL COST CONTROL STATEMENT FORM I.L.

DEPARTMENT..... WEEK..... PERIOD.....

INDIRECT LABOUR

	This Week	This Period Todate	Last Period	This Year Todate	Last Year
Budgeted Production (lbs)					
Actual Production (lbs)					
Budgeted Indirect Wages					
Budgeted Indirect Wages of Actual Prod.					
Actual Indirect Wages					
Indirect Wages Variance					
Budgeted Indirect Labour cost per lb.					
Actual Indirect Labour cost per lb.					
Over/under cost per lb.					

Function	Actual	Budget	Variance	Actual Cost Per lb.	Budgeted Cost Per lb.	Over/Under Cost Per lb.
Tare Service						
Yarn Service						
Waste Service						
Maintenance						
Quality Control						
Grading & Pack.						
Production Mngmt						
Administration						
General Process						

DEPARTMENTAL COST CONTROL STATEMENT

FORM O.M.D.L.

DEPARTMENT _____ WEEK _____ PERIOD_____

			Overheads		Direct Labour		Direct Materials					
Spec No.	Yarn Type	Prod	Sp.Hrs per. lb.	Prod x Sp.Hrs	Std. Work Cont.	Std. Hours	Std. Price	Actual Price	Prod. x.Sp.	Prod. x.AP	Target %	Actual %
											Waste	
											Sub. Std.	
											Total.	
Totals.												
		O/H Rates										
		Flat Fixed Var.		Std.Rte SHxSR								
				Act.Hrs AHxSR								
		SH x Rte										

COST CONTROL STATEMENT

FACTORY _____ PERIOD _____ SUMMARY WEEK _____

DEPARTMENT							TOTALS
DIRECT LABOUR Budgeted D.L. Std Hrs Prod at S.R. Actual Wages D L Variance							
DIRECT MATERIALS Std Qty at S. Price Act Qty at A. Price Usage Variance							
OVERHEADS Std OHs Recovered Std OHs Recoverable Budgeted OHs Actual OHs O/H Eff. Variance O/H Cap. Variance O/H Vol. Variance							
TOTAL VARIANCE							
TOTAL PRODUCTION (lbs)							
INDIRECT LABOUR Budgeted I.L. Budgeted Indirect Wages of Actual Production Actual I.L. I.L. Variance							

MACHINE UTILISATION STATEMENT

FACTORY ---------- PERIOD ---------- SUMMARY WEEK -----

DEPARTMENT												
	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week	This Week	Last Week
Actual Gross Available Sp/Hrs												
Actual Available after downtime												
Actual Sp/Hrs Produced												
Actual M/C Utilisation												
Actual M/C Efficiency												
Actual Net Activity												
Budgeted M/C Utilisation												
Budgeted M/C Efficiency												
Budgeted Net Activity												