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248p.  
tables  
graphs  
diagrams

**BUMAR - LABEDY  
PILOT RESTRUCTURING STUDY**

**FINAL REPORT**

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Date 1st June 1992

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**For the attention of Professor Goonatilake**

Dear Sirs

**TF/POL/90/912 - BUMAR-LABEDY: FINAL REPORT (PILOT STUDY)**

We have pleasure in submitting our final report on the pilot study for restructuring of the Polish company Bumar-Labedy.

The report has been prepared in accordance with your terms of reference dated 5 December 1991. We have also incorporated your comments on both our interim and draft final reports (your refs 12 February and 5 May respectively).

The original objectives of the exercise were, in summary:

1. To provide the company with immediate advice to help it remain in operation.
2. Evaluate the company in terms of equipment in use, products manufactured, and technical problems it faces; advise on product mix and identify new product lines.
3. Help management develop a strategy for the future and to strengthen its commercial negotiating position, leading to preliminary proposals for restructuring.
4. Facilitate transfer of British management consulting knowhow to Polish consultants and/or the IDA staff.

We feel, and are confident you will agree, that we have more than covered each of these objectives, as well as your side terms and requirements of your two review letters.

In preparing this final report we have deferred to your request to incorporate the principal findings of the interim report. We had understood that the interim report could stand as a separate volume of the final report; combining the two documents has caused a time overrun. Translation of the draft final report was interrupted while the amendments were being made but has since resumed (our Polish consultants Bipro-Bumar are handling this). This will be submitted to the IDA in due course.

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/....2

Prof. L Goonatilake  
UNIDO

1st June 1992

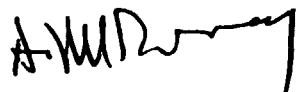
We are simultaneously dispatching the document to Bumar-Labedy (who have themselves translated the draft version), the IDA, and Bipro-Bumar.

The study essentially concludes that Bumar-Labedy is bankrupt and that it will not survive unless it either (a) succeeds in offloading the bulk of its military vehicle stock, and very soon, or (b) receives an injection of funds - presumably from the state in recognition of the military obligation. Given either of these events, the company should be able, with prodigious managerial and marketing effort, to continue in business with its existing product mix.

We are in receipt of your terms of reference for Phase 2 - Implementation - and will prepare a proposal in time for the presentation in Warsaw on 9 June.

We have enjoyed working on this project and will be keen to take it on to its next stage.

Yours faithfully  
for and on behalf of  
WS ATKINS INTERNATIONAL LIMITED



 R A F Collins  
Director

Enc.

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## **1. SUMMARY, RECOMMENDATIONS AND STUDY METHOD**

### **Acknowledgements**

- 1.1 This report has been prepared under the provisions of the United Kingdom Knowhow Fund, executed by the United Nations Industrial Development Organisation.
- 1.2 WS Atkins wish to extend grateful thanks to the management of Bumar-Labedy for their tireless efforts to satisfy the considerable demands put on them during this exercise.

### **Executive Summary**

#### **Product Portfolio, Marketing and Sales**

- 1.3 Attention has shifted at Bumar-Labedy during 1990-1991 from military to civil products. Within civil products, the stability provided by Term Contracts (subcontracting to a particular client over a term) provides for the immediate salvation of the company. There are no orders for military vehicles in hand.
- 1.4 Continued failure by the company to achieve sales of military products (there is a large stock of military vehicles on hand), and hence to obtain working capital, increases pressure on the state to decide the fate of the company (it is a state-owned company). The company is apparently being permitted time to establish its own business initiatives.
- 1.5 Given a favourable attitude from the state, short term survival lies in securing Term Contracts (e.g. Krupp, Volvo), assisted by the efforts of the individual production managers to attract revenue through small subcontract and diversified production. Longer term recovery lies in successfully entering markets for construction products (cranes, loaders and excavators).
- 1.6 But Bumar-Labedy is first and foremost a military vehicle production facility. Its production facilities and techniques declare it so. It has been set up to produce complex vehicles, on a batch basis, which require a high degree of

fabrication knowhow (welding and machining hard, large dimension, heavy specification materials), outfitting and testing, to exacting military standards.

- 1.7 Under the central planning system the company did not have to actively market its products, nor determine its own future through consolidation of a strategy (customer-orientation, investment, commitment) arrived at by its own efforts. Now, it does. And its marketing and intelligence systems have been demonstrated to be so underdeveloped as to prevent full realisation of its potential. This is the prime finding of this study.
- 1.8 This study was designed to point the way forward in terms of effort in market research and understanding customer requirements, in placing the customer first, in turning round the culture so it becomes market-led. If the company should decide tomorrow to produce say, 300 T72 M1 tanks without regard to where they could be sold it would (i) not be able to obtain the necessary working capital, (ii) not be able to sell them at a profit, and (iii) certainly be beyond redemption, not only by its own efforts, but beyond the resources of the Polish government to keep it going.
- 1.9 The specific points of contact (multi-national construction machinery manufacturers) which have been identified by the consultants should be followed up; similarly marketing channels suggested should be explored over a period of two years or so. Marketing resources should be increased, by factors of up to five over what they are now. Organisational changes should be initiated to reflect the growth in importance of marketing.
- 1.10 There is a great deal of hope and willingness residual at production management level; executive management would be foolish to ignore it.

#### **Financial Control and Management Information Systems**

- 1.11 The financial statements (consolidated balance sheet and income statement, 1991) reveal that buildings are responsible for three eighths (37.5%) of the book value of the enterprise, that stocks account for another 30%, and that accounts receivable are valued about the same as the productive equipment, at around 12.5% each. Due to valuation at historical cost, the value on the books of the military vehicle stock is only around 5% of the book value of the company. This is probably an underestimate of the realisable market value, despite the apparent lack of success of the company in disposing of them.

- 1.12 Share capital accounts for 65% of total liabilities, almost all of it stated as reserves (ie. not as 'state funds'). Of the remainder, current liabilities accounts for 28%. From a western point of view, the liabilities side of the balance sheet could be said to be favourably structured in that the level of borrowings is quite low.
- 1.13 But since liabilities (share capital plus loans) exceed net assets (total assets less current liabilities), the company is technically bankrupt.
- 1.14 Perhaps for the first time in its history the company is accruing bank interest, while also declaring losses in terms of useless inventory. The income statement shows a loss and the enterprise is in a continual loss-making situation. As time progresses and nothing is done by way of restructuring, the accumulation of interest will gradually deplete the retained earnings.
- 1.15 A comparison of financial ratios with the company's western counterparts indicates it has low debt, a good balance of capitalisation, a low cost base and holds apparent security for creditors (state-owned). It also shows low sales, is vulnerable to creditors, cannot redeem debt through sales of stocks, has a low stock turnover, and has high trade debt.
- 1.16 There is urgent need for recapitalisation of equipment and for working capital to finance operations.
- 1.17 A quick sale of finished stocks (particularly tanks) would inject a significant amount of capital into the company. Much effort is needed in this quarter. Sales of military products in 1991 completely overshadowed sales of civil products, almost entirely through factoring of spares. Profits on military sales are vastly superior.
- 1.18 There are two outlying production sites which could continue to make a positive contribution to operations, while a third should be disposed of. There seems to be no apparent gain in disposing of these sites (Zawiercie and Zabrze); on the contrary, there is probably merit in scaling down some operations at Gliwice to permit more cost-effective production at these sites.
- 1.19 Financial restructuring can be undertaken but management would first need to assign values to that part of production which they consider to be solely attributable to military production. Since this is not easily defined, and a



majority of the facilities are required for civil production, most of the main Gliwice site will have to be retained if civil production is to continue. State support is therefore best represented as a shareholding, financed through the balance sheet.

- 1.20 The accounting systems in use are crude. Overhead accounts for between a third and a half of the cost of production. Recently, overhead has been unilaterally reduced by ignoring the interest component. The company needs to concentrate effort in systematically reducing overhead. The means of achieving this should not be to blindly slash costs, but to intelligently transfer personnel from cost activities to profit activities, even if 'profit' means investment in the long term. Western cost accounting techniques should be gradually introduced. Personal computers and spreadsheet abilities should accompany this education.
- 1.21 The direct cost of wages as a proportion of total costs is between 5% and 10% of total cost of production (for final assembled products), so the apparent competitive advantage of low Polish wage rates is not so exploitable in such product lines unless the overhead can be significantly reduced. There remains an advantage in labour-intensive Term and subcontract work.
- 1.22 A management information system needs to be devised and gradually introduced. It should pervade the whole company, taking in stock and material control, production scheduling, overhead, work-in-progress.
- 1.23 Budgeting should be introduced, adopting targets for production, overhead, stock levels.
- 1.24 Company organisation should be designed round the effort of arriving at budgets.

#### **Manufacturing Resources, Planning and Control**

- 1.25 The equipment required to service the four principal manufacturing techniques (machining, welding, heat treatment and assembly) was superficially surveyed by the consultants. A quarter of main equipment is over 20 years old, while up to 60% may be either redundant and/or duplicated across and between production departments.

- 1.26 Management are advised to research this redundancy in order to revalue productive assets and to prepare the ground for future investment.
- 1.27 The floor space required for production of civil vehicles is estimated at around 40% of existing. This proportion is spread over the whole site, meaning that the remainder, which is required for military production, has to be supported as well. Given some rearrangement of facilities at some future date, it might be possible to discretely assign more of the facilities to military production.
- 1.28 Similarly, in terms of assignment of production departments to particular product lines, military vehicles require at least 50% more than civil. Once again though, departments cannot be said to be entirely dedicated to military production. The newer facilities (final assembly) are more necessary for military production.
- 1.29 The Gliwice site provides more industrial services than are either necessary or cost-effective for profitable civil manufacture. Some of these should be discontinued, others dispersed to the production departments, and others regrouped.
- 1.30 Much of the high overhead resides in the services which the centre provides (financial and technical). This should be reduced by dispersing to production departments and by increasing efficiency.
- 1.31 Planning of production exists in real terms only at the department level. There is no company-wide planning which recognises the status or productive efficiency of individual departments; obviously it should be introduced. Simultaneously, existing standard job times should be revised.
- 1.32 A reasonable system of inventory control exists (for bought-in and finished goods) but computerisation should be extended to cover ordering, in order to avoid stock-outs. Since there was no large volume production to be seen during this study it is not possible to comment knowledgeably on control of work-in-progress. The evidence indicates that this is a potential problem area, so that more control needs to be introduced here.

### **Employment, Motivation and Training**

- 1.33 There are around 4,500 people employed, of whom perhaps one third are being paid to stay at home. Morale is good, given the poor wages and uncertain future the workforce faces
- 1.34 The high overhead shows up again in that one third of the workforce supports the other two. More people should be brought into 'direct' employment, that is variable with sales.
- 1.35 There is attrition taking place in that people are leaving for better conditions elsewhere. A review of wage structures should be undertaken immediately and combined with a restructuring plan.
- 1.36 Training needs to be upgraded so it caters for management; many and much better educated and qualified managers will be needed if restructuring is to happen.

### **Product Development and Quality Management**

- 1.37 The company is embarking on a programme to introduce a range of four cranes. Unfortunately, the research and development effort which this requires is not being undertaken within the company, but at a national institute in Warsaw. Bumar-Labedy cannot therefore build a design function internally, and this is an essential ingredient for the long term. Some means of retrieving this current design programme so it is performed in-house should be found.
- 1.38 Furthermore, this design programme is being actioned without adequate basis of market acceptability. It is recommended that the programme be delayed while these two factors are redressed.
- 1.39 Quality management has two elements: quality control and quality assurance. There is adequate quality inspection going on but the data collected is not analysed to the fullest extent. In particular, the cost of quality should be analysed. The use of computers would vastly improve this situation.
- 1.40 The issue of quality management has been raised via the Volvo term contract. This contract requires implementation of ISO 9000. A draft manual has been prepared by the company but in our view it is inadequate and it is

recommended that professional assistance be sought from qualified sources. In particular, the company should avoid importing the very high military procedures which it has been accustomed to meeting, for civil product lines.

- 1.41 The maintenance function requires re-organisation as it has become fragmented with time. Too many people are involved in this activity, and insufficient attention has been paid to keeping service history records. Overall, the maintenance of buildings and equipment has been well supported over the years; it cannot be said that the buildings and equipment are in a sorry state of repair, even if much of the equipment is redundant.

### **Organisational Options and Restructuring Strategy**

- 1.42 It is suggested that the organisation be changed to reflect (i) devolvement of responsibility to production management, organised as profit and cost centres, (ii) greater interaction and involvement between middle and upper management in the introduction of new systems such as budgeting, planning and information gathering and distribution, and (iii) the creation of five executive managerial functions (Finance, Marketing, Operations, Engineering, Personnel).
- 1.43 A financial model has been developed which reflects the Bumar-Labedy perception of how the company might be arranged in profit and cost centres. Based on Bumar-Labedy cost estimates and their projections for sales, modified by the consultants, the best possible interpretation indicates that around 1,500 people would have to be shed immediately. This scenario assumes a large sale of existing military vehicle stock in 1992, which fairly evidently at the half way point, is not likely to happen. It also assumes there is no state injection of funds, apart from the working capital being supplied monthly.
- 1.44 There is therefore a very real need for much greater sales efforts of military stocks. The company should make much more use of international agents and networks to achieve this much needed revenue.
- 1.45 There is an equally real and urgent need for continued government support of the company; without it the enterprise will fail. The company needs to demonstrate its commitment to new cultures and managerial systems, and should carry out some basic exercises to revalue its assets and to assign a value to the military obligation, before it petitions the government further.

## **Implementation**

- 1.46 A table of actions is presented as the final component of the study. Feedback from the management is necessary before reasonable time frames can be established for implementation.

## **Project Methodology**

- 1.47 The consultants commenced work in the week preceding Christmas 1991, immediately upon signature of the contract between WS Atkins and UNIDO.
- 1.48 The project manager and the marketing specialist visited the Bumar-Labedy plant during this week, gathering information and setting the scene for the working party visit.
- 1.49 This second visit occurred during the first three weeks of January 1992. The team consisted of the project manager, two engineers and a cost accountant. Visits were made to all key production departments, including the three outlying plants at Zabrze, Zawiercie and Szczekociny. Also visited were the principal cost centres (supporting production) and the central service departments (offices).
- 1.50 At the same time, market research proceeded while the working party were in Labedy thus gaining a full understanding of the company's facilities, plans, strengths and weaknesses. This was handled in two ways. Export markets for the company's final assembled products were researched from the UK, while Polish markets were researched from within Poland, with the assistance of local consultants Bipro-Bumar. Additionally, ministries and other centres of policy and macro information were visited in order to establish a current picture of government policy in the areas of civil and military production.
- 1.51 A third visit was made during February by the project manager, incorporating further work at Bumar-Labedy and further research of the Polish markets for sub-contracting and for sale of assembled products. The interim report was submitted at this time.
- 1.52 The fourth visit incorporated a series of workshops, presented by the project team (project manager, marketing specialist, engineering specialist and accountant) to the middle and top management of Bumar-Labedy. These

workshops took place during the second week of March. They covered the essential elements of management as applied to a heavy engineering works of this size, and this final report is structured along the topical lines of the workshops.

- 1.53 The purpose of the workshops was to introduce middle and upper management to new concepts, being respectively the profit motive and becoming market-led, to demonstrate basic techniques, and to obtain the views and understand the needs of the hands-on people running the business. The outcome was regarded by the audience as being useful; certainly the consultants could not otherwise have established either the dialogue or collective willingness to take on fresh ideas which ensued.
- 1.54 The workshops served one further purpose: to catch the attention of top management. In this respect the consultants feel there has been a positive outcome to the restructuring effort as a whole.
- 1.55 This report should be read in conjunction with our Interim Report F/2346/R05/02 Rev 1 dated 13 February 1992. That is, basic data and information about the company, its products and external environment are provided there. This final report reproduces the more important and conclusive findings of the interim report and so stands as a summary document, supported by the interim report (referenced where reproduction of detail would become tedious).

## 2. PRODUCT PORTFOLIO, MARKETING AND SALES

### Product Portfolio

- 2.1 The company's product portfolio has changed significantly from the situation of three years ago when the commitment to Special products meant that less attention was paid to the Civilian products. Civilian products are now held by the management to be equally as important as the 'S' products. The higher financial gain of the 'S' products should of course not be ignored by the company.
- 2.2 Figure 2.1 illustrates the format of the current product portfolio: final assembled products and sub-contracting activities which have been further subdivided. The most important of these for the medium term are Term Contracts (so called as they are carried out for a relatively long term). Equally important for the short term is the one-off sub-contract work brought into the company by the departmental managers.
- 2.3 The Term Contracts bring a degree of stability to sub-contracting work and will be a major factor in the short to medium term future of the company. Final assembled products will be the major factor for the long term. The positive and negative points are highlighted in Table 2.1.

**TABLE 2.1 - POINTS FOR AND AGAINST  
SUBCONTRACTING AND FINAL ASSEMBLY**

Assembled Products	Sub Contract Work
<b>AGAINST:</b> Development Time Distribution Channels not in Place Market Education Time to establish market share	<b>AGAINST:</b> Short term solutions Difficult to identify jobs and to identify with customers Low margins and low value added Very wide field Difficult to plan operations
<b>FOR:</b> Direct to the end user Higher margin and value added Higher market profile Greater use of resources	<b>FOR:</b> Immediate cash flow Keeps employment and resources in use Remain in business

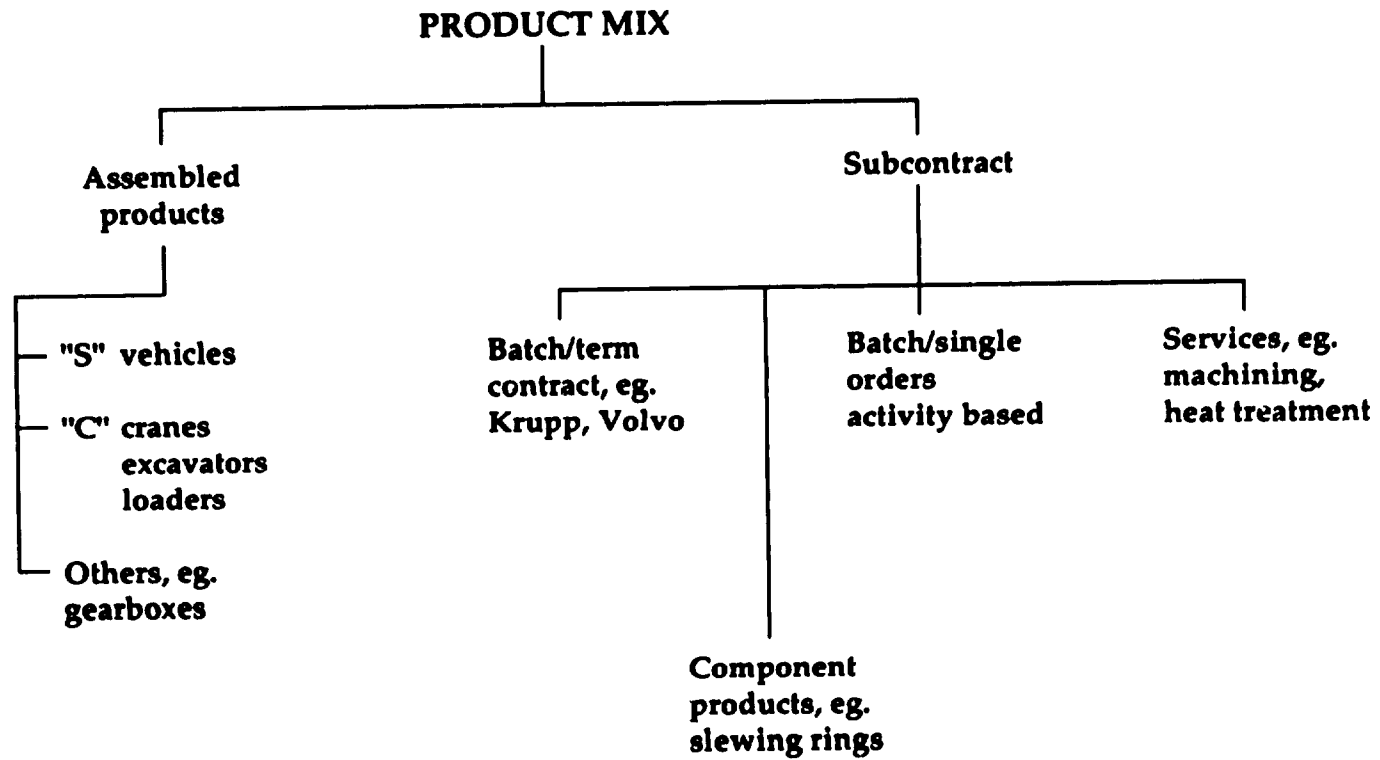


Figure 2.1 Product Mix



## Short, Medium and Long Term Future Products

2.4 Given the state of the company it must, at least for the short term, manufacture any product that, given its capabilities makes a contribution to overhead. Recommendations for planned product lines are summarised in Table 2.2.

**TABLE 2.2 - FUTURE SCENARIOS FOR PRODUCT LINES AT BUMAR-LABEDY**

Product	Short Term	Medium Term	Long Term
Tanks	Make every effort to sell the tanks from stock before the other ex Warsaw Pact countries sell their used ones	Opportunity exists for at least 400 off T72 type tanks	Update of fire control and communication systems. Find new more powerful engine.
Artillery Trucks	As above	Sell with the tanks as a package	Develop data to find out if long term world strategy is for the use of these vehicles
Recovery Vehicles	As above	As above	As above
Cranes	Continue to produce on receipt of orders as is and make every effort to find licence for either mobile cranes with safety features or telescopic handlers	Identify source for the safe load indicator to produce own crane. Compete on price basis in Europe	Develop faster working safe cranes and telescopic handlers with aid of technology transfer form earlier licensing agreement
Excavators	Continue with production on receipt of orders for Brawal with materials to screen acoustically for EC. Find licence for mini excavators	Source quieter engine and improve design for Brawal. Compete on price basis	Develop mini excavator from transfer technology gained in licence agreement
Mine Loaders	Take orders on opportunistic basis	Explore markets for mine loader in non-automated mines	
Sub Contract work	Elicit work from machine tools market in Germany and selectively in Poland, truck market in Western Europe. Contact and determine need for work in list of industries below. Continue with Krupp production and any other that present themselves taking care of non-compete agreements	Tie up long term contracts with world class companies and use as references. Gain experience in modern manufacturing techniques e.g. simultaneous engineering. Explore geographical limits to being a JIT supplier	Continue as medium term

2.5 To obtain a kick-start Bumar-Labedy should actively seek licence agreements from western companies for construction equipment products. This would produce a short and medium term revenue stream, as well as the transfer of technology the company needs to develop and produce its own products in the future.

- 2.6 From the contacts made by the consultants with the industry, price and quality are the two most important factors which both contractors and customers alike are concerned with. Bumar-Labedy must build upon the strength they have in these areas. It must also be recognized that the quality system used in the past may not be good enough for these applications, e.g. quality control of finished parts by the operator manufacturing the part. A result of this in the short term may incur costs (e.g. more inspectors) but it is essential that the company obtains a reputation as a top-quality supplier. Every contract must be seen as an opportunity to gain not only revenue but a reference for the future.

### **Final Assembled Products**

#### **Loaders**

- 2.7 In the medium term the company should explore the need for loaders in non-automated mines. The West European market has declined rapidly in the last four years and obviously is not going to recover to the levels that were enjoyed before.

#### **Cranes**

- 2.8 The crane market appears to be active. As Polish suppliers do not appear to have a negative image in the market place Bumar-Labedy could compete on the basis of price, with fewer misconceptions about quality. But there are tough barriers to entry in this market for example, safety requirements.

#### **Tanks**

- 2.9 The market for tanks appears to have a short term future. Up to 1994 there is at least the opportunity to sell approximately 400 off T72s. Along with these tanks there would be the need to supply recovery vehicles - typically it would appear that one recovery vehicle for every 13 tanks is the ratio.
- 2.10 There is also the opportunity to compete with tanks other than the T72. The Type 80 for example may be targeted, increasing the opportunity by a further 900 tanks, together with the associated recovery vehicles.
- 2.11 Against this fairly optimistic scenario, sales of ex-Warsaw Pact tanks will lower the price. The counter-argument is that the maintenance of the fleet is

important in arriving at a market value. Equally as important is the supply of spares kits for the tanks; other ex-Warsaw Pact countries may not be in a good position to supply these.

### **Subcontracting**

- 2.12 Sub-contract work is important for the company in the short term. Effectively it is keeping the company afloat at the present time and considerable effort in increasing the level of this work needs to be made. This will lead naturally into the longer term contract work such as the manufacture of parts for truck markets. Wherever possible such contracts should be related to the company's core business, but the management must take a pragmatic view and concentrate on earning revenue. Profitability will need to be assigned a lower profile in the short term.
- 2.13 The type of sub-contract work varies greatly between departments, depending on the skills and resources available. This is evident by the wide range of competitors the departments have identified (see Table 2.3) but the markets are relatively similar (see Table 2.4).
- 2.14 The spread of some of the competitors compared to the spread of markets suggests that the managers are not fully aware of their local competition. There is therefore a need for better competitive information.
- 2.15 The majority identify mining as a potential market. This reflects the geographical area in which they are looking for work - Silesia. In the future they will have to widen their search area. There is therefore a need for better market information.
- 2.16 Examples of other industries that warrant investigation are:
- Specialist shipbuilding and marine diesel engines: castings, machining and machined fabrications;
  - Road wheel-based transport and load carrying vehicles: bodies, half shafts, gearboxes, machined components, chassis and castings;
  - Specialist rail vehicles: bodies, bases, wheels, shafts and brakes;

- Aerospace: investment castings, baggage-handling systems;
- Military equipment; exploit old connections for sub-supplier opportunities;
- Cement industry: castings, kiln rings.

**TABLE 2.3 - COMPETITORS IDENTIFIED BY DEPARTMENTS**

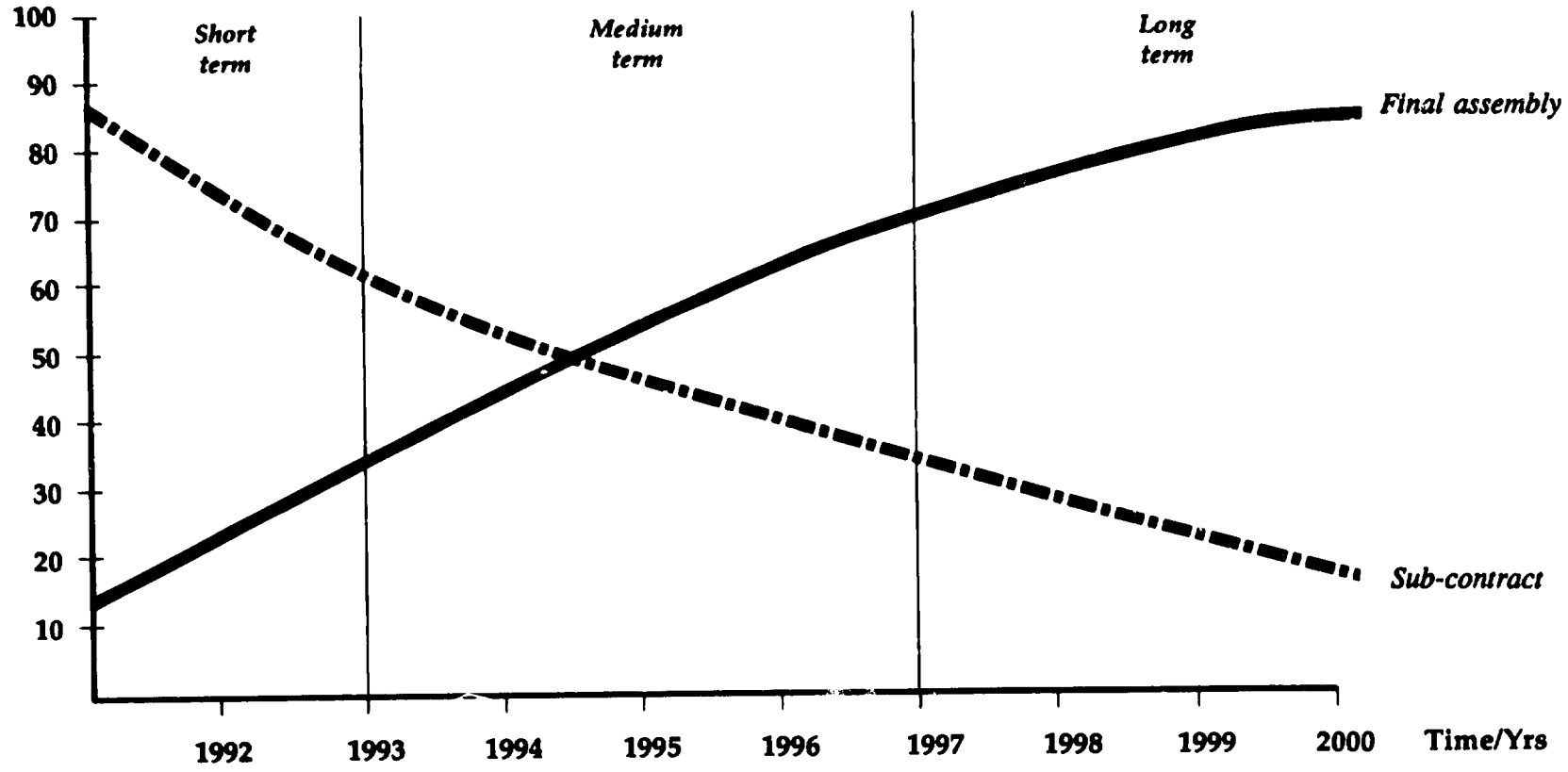
Competitor	Department Number									
	3000	4400	4100	4200	220	8100	7300	710	3600	1100
Famaba	X									
Bumar-Warynski	X									
Huta Stalowa Wola	X			X					X	
Metalchem	X									
Gimng		X								
Zamet		X							X	
Huta Zygmunt		X							X	X
Fablok		X		X						
Huta Nowotko		X								
Bumar Hydroma			X							
Fazoe			X							
ZMM (Zabrze)				X						
Stawomabud				X						
ZMB					X					
Wasko					X					
Ponar						X				
Rafamet						X				
Poruba						X				
Malspanew							X			X
Ozimek							X			
Stebrica							X			
ZNT							X			
VIS								X		
Wykromet								X		
Formet								X		
Rafako									X	
Sendzimir										
Pioma										
ABB										X
Mystal										X

**TABLE 2.4 - MARKETS IDENTIFIED BY DEPARTMENTAL MANAGERS**

Industry	Department Number									
	3000	4400	4100	4200	220	8100	7300	710	3600	1100
General Machinery	X					X		X		
Shipbuilding	X									
Mining	X	X		X	X			X	X	X
Metal		X					X	X		
Repair		X								
Construction Equipment		X	X						X	
Railways			X		X					
Automotive			X	X	X				X	
Food Machinery Industry				X						
Welding										
Steel Mills							X			

- 2.17 The forecast sales for sub-contract work is currently 14% of the planned turnover but is hoped to increase to nearer 40% by the end of the year, principally by means of the Volvo contract. It will be instrumental in the financing of the company during the year. In our opinion the cash flow of the company will rely on the sub-contract work for the short to medium term.
- 2.18 The long term future of the company lies in final assembled products; two important company aspects which this direction will underpin are maximising value-added, and motivation of the workforce (who until recently were only used to manufacture final assembled products and who may perceive the sub-contract work as a step backwards).
- 2.19 The product mix is expected to change according to Figure 2.2. These trends reflect the current thinking of middle management. The company will probably need to continue in sub-contracting even in the long term, particularly if the military demand remains soft.
- 2.20 The company nominally has two models of crane, but plans exist already for a new family. Incremental improvements have been made to existing models in order to obtain sales. This happened recently when cranes which were sold to Norway and a Polish customer were upgraded.

**% Product Mix**



2 - 8

F2346/R05/03/Rcv 1/W/932A

**Figure 2.2 Product Mix Forecast**

- 2.21 Customising of products will have to be undertaken for specific markets. Product evolution to satisfy changing markets generally, and customers specifically must become an accepted part of the company culture.

## Marketing

### Methods

- 2.22 The marketing effort needed by the company under the old central planning regime was minimal. Marketing activities were carried out by the Bumar foreign trade organisation for export markets whilst domestic sales were obtained on a planned or opportunistic basis.
- 2.23 This is reflected in the number of personnel in the Labedy marketing department (seven) in comparison to other departments. This needs to be addressed as soon as possible on a permanent basis.
- 2.24 A formal methodology for making marketing decisions will be necessary for the company if it is to capitalise on the limited opportunities available to it. Suggested models are shown in Figures 2.3 and 2.4.
- 2.25 The company still has very little market data available. This will need to change rapidly for the company to become market-led.
- 2.26 Types of market information that must be gathered are shown in Table 2.5, while pro-forma data tables are shown in Appendix I (presented and used during the recent workshops at Labedy).

**TABLE 2.5 - MARKET DATA TO BE GATHERED**

Type of Monitoring	Objective of Information
Markets by geography by product line	To help determine the areas in which effort should be concentrated and also help in the degree of differentiation of the products
Types of customer	Will help in the type of literature and other promotional material needed as well as the best way in contacting the customer and at what frequency
Competitive activities	Crucial in formulation of a strategy to gain market share
Lost business reports	This will help (especially in the short term) in analyzing where the company may be able to improve both its products and commercial aspects (price, after sales service etc.)
Buying factors	This will enable the company to find the design features perceived as benefits and rank them

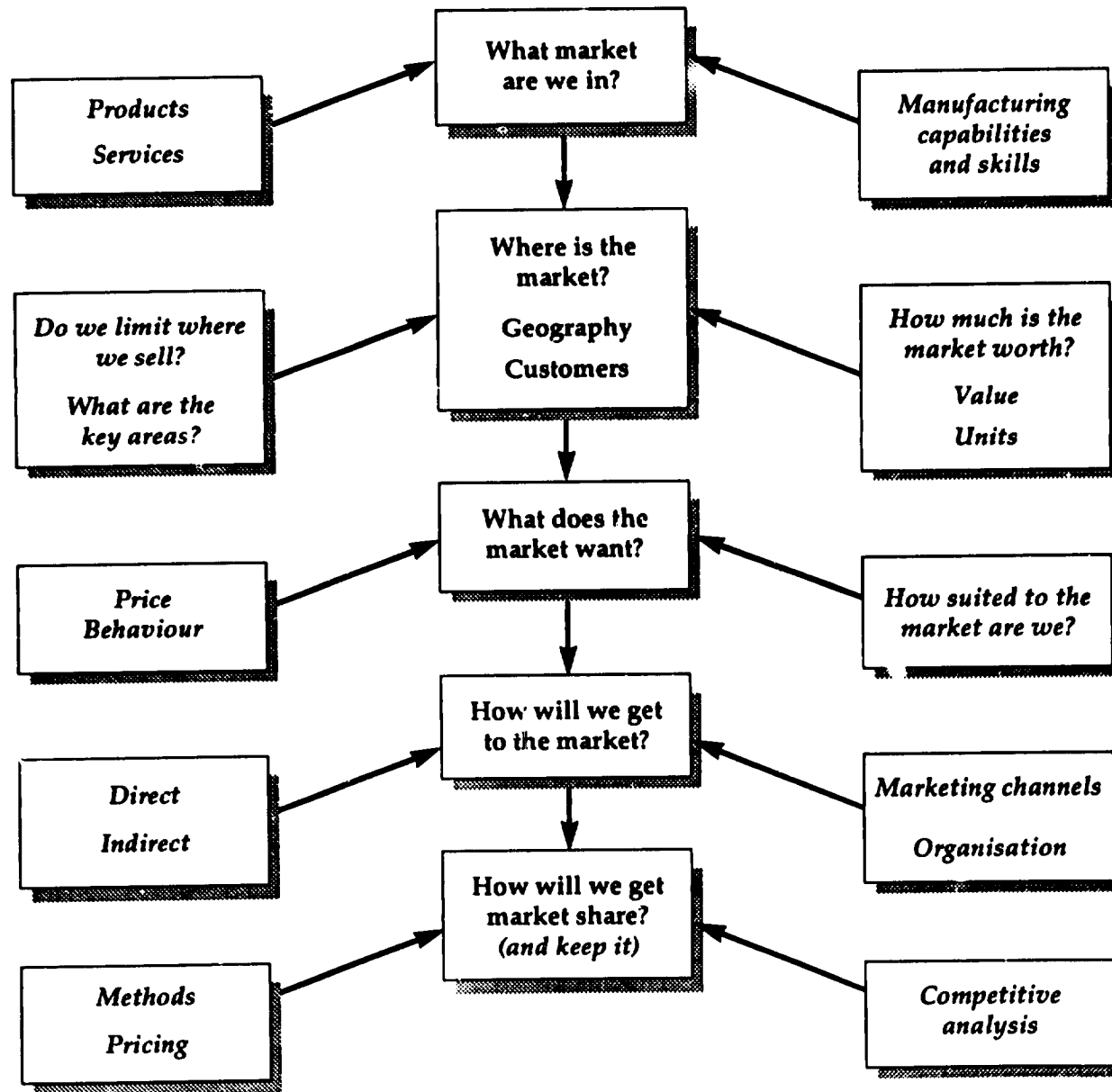


Figure 2.3 The Marketing Process



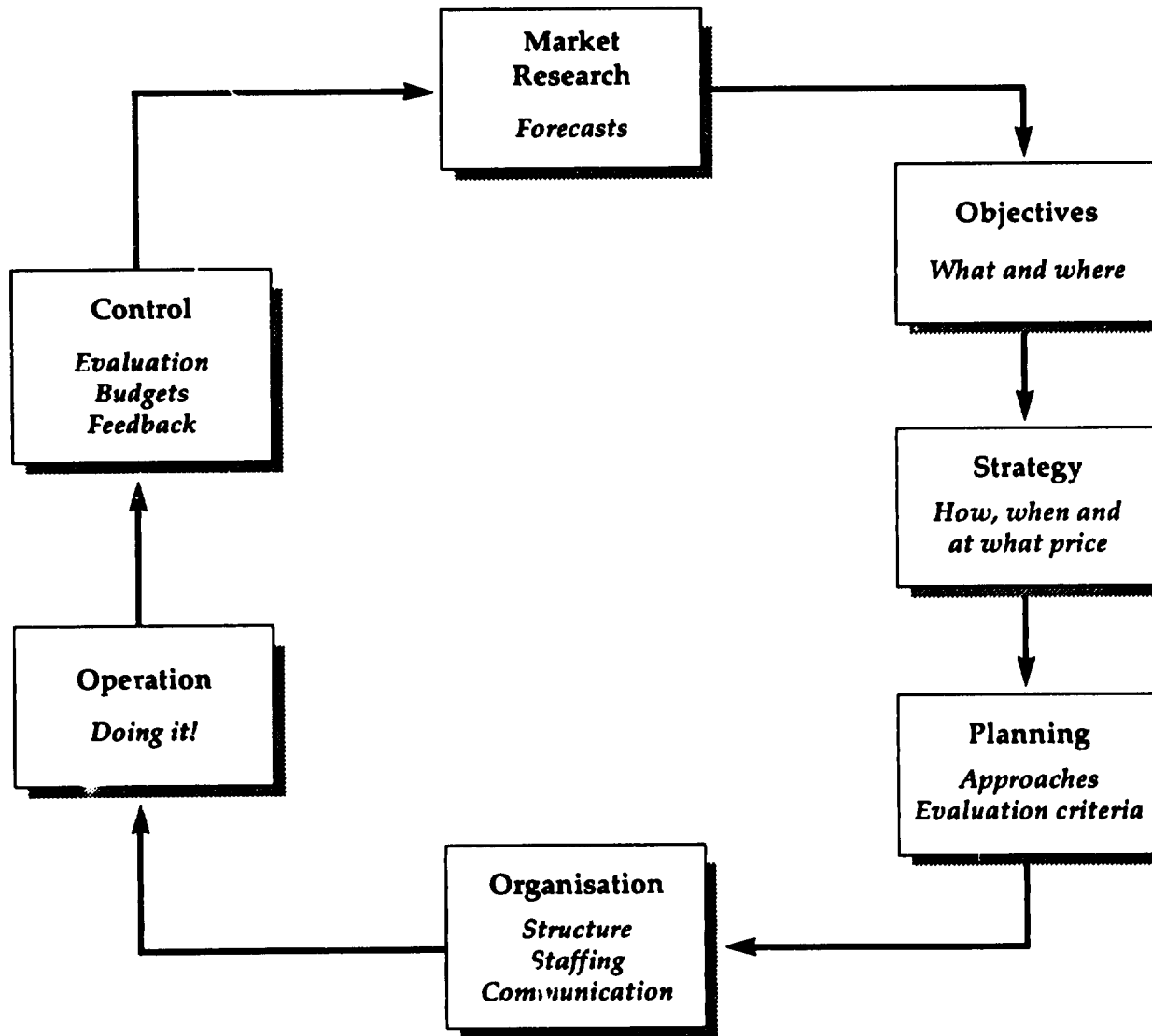


Figure 2.4 Continuous Market Data Collection and Use

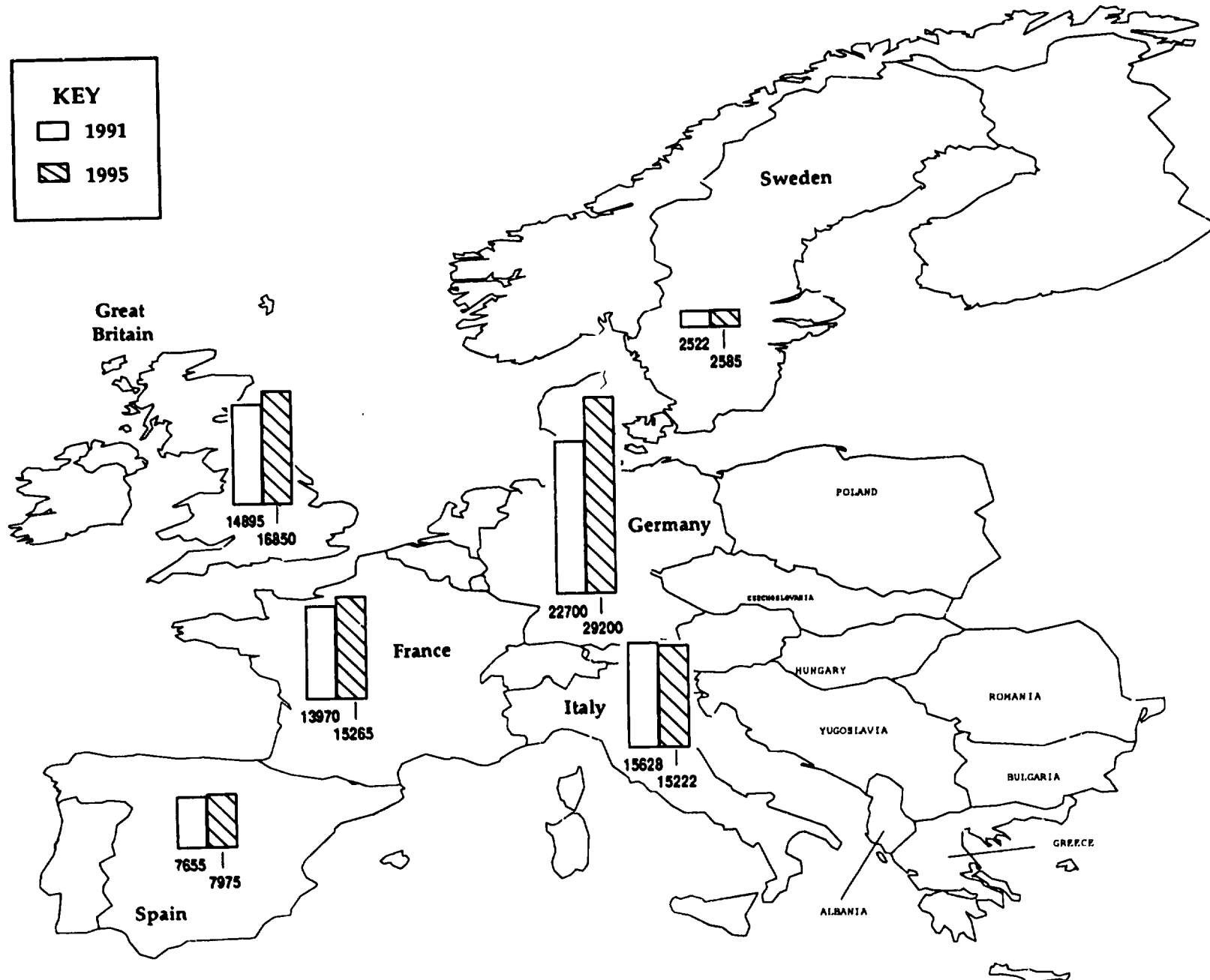
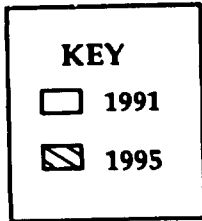


Figure 2.5 Sale of Construction Equipment (by unit)

- 2.27 The company should take note of where their opportunities lie. The map shown in Figure 2.5 illustrates growth of markets for construction equipment in Western Europe. Germany (closest to Gliwice) represents the best opportunity for Bumar-Labedy, provided they can qualify their products there.
- 2.28 The interim report gives results of market research, carried out by the consultants, see chapters 1, 2, and 3 and this will be helpful to Bumar-Labedy (who have already translated it).
- 2.29 The buying factors for Polish construction equipment have been identified. The methodology and detailed results of a survey carried out by the consultants are shown in Appendix II.
- 2.30 The conclusion of this survey is that the only real opportunity is to convince the buyer that the quality of machines and service is of the same standard as that of their current supplier but relatively cheaper.
- 2.31 The most important factors identified by this survey, in order of priority were:
- quality;
  - service;
  - safety; and
  - price.
- 2.32 Bumar-Labedy should carry out similar exercises for the Eastern European and CIS countries as it is expected that the buying factors will be different.
- 2.33 This will lead to a differentiation between the products or variants of products sold in the West and those sold in the East.
- 2.34 The stability of the markets should be calculated with respect to the cost of differentiation. This point is especially important for the CIS states who are in a state of more uncertainty even than Poland. Marketing in the West may appear to be more difficult but it provides a frame of reference and imparts expertise.

- 2.35 The demand for construction equipment in Poland is most closely linked to new housing starts. Figure 2.6 shows forecasts for new housing starts in Poland through to the year 2000. The growth of construction equipment is likely to follow this upward trend within the limits shown.
- 2.36 There will of course be other opportunities such as the planned infrastructure improvements - in particular the three principal highway proposals and rail upgrade proposals (Ministry of Transport).
- 2.37 This situation will need constant monitoring as certain projects will make a significant difference to the market. Bumar-Labedy realise they have to be ready for an upturn, and that this requires them to develop suitable designs.
- 2.38 Judgement will have to be taken if these projects are awarded to non-Polish companies as they may well bring their own equipment with them. Alternatively, they may sub-contract in Poland.

### **Channels**

- 2.39 Marketing channels may be divided by the basic businesses of the company: Construction Equipment, Military and Sub-contract work. Recommended marketing channels are shown in Table 2.6.
- 2.40 Customers in Western Europe and, progressively more so in Poland, will require more service than is currently the norm. It is therefore recommended that Response Teams (inside sales teams) should be set up to react quickly to incoming requests for quotation. See also paragraph 2.53.
- 2.41 Response teams will have to be able to translate, deal with any incoming calls in the appropriate language, identify problems, and expedite the answer. They should also be responsible for customer care, informing the customer of deliveries, and other problems. Remuneration of sales forces might usefully be tied to levels of sales and repeat orders.

Number of new dwellings per year

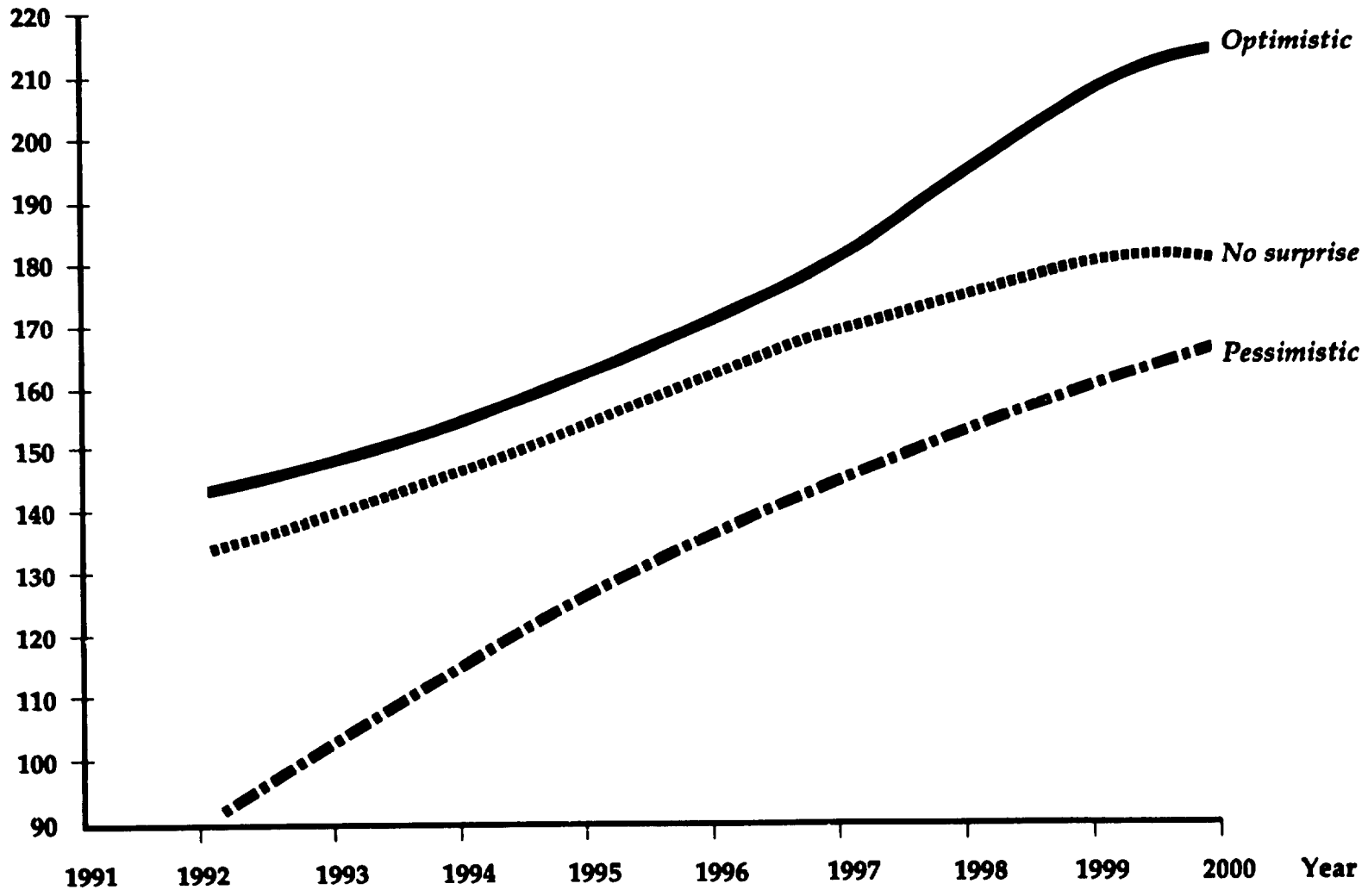


Figure 2.6 Scenarios for Increase in Construction in Poland

## **Sales Efforts and Specific Actions**

- 2.42 The company ought to aim for a network of agents, on an international scale. This is important as the language abilities in the company are not sufficient for it to carry out sales activities in all the countries. The other important factor about agents is that they tend to possess more knowledge of the current market conditions than the manufacturer.
- 2.43 Commission rates for agents in construction equipment vary between 10 - 20% of sales, in Western Europe. For this, agents are sometimes expected to hold a stock of spare parts. Such costs must be factored into pricing strategies for these markets.
- 2.44 The annual BAUMA exhibition, held in April would be an ideal place to seek out possible agents, particularly for Germany (the fastest growing market).
- 2.45 The situation in the CIS states is unknown to the consultants but clearly Bumar-Labedy are already in a position to sell in the Ukraine as the recent sales successes for cranes and excavators has demonstrated.
- 2.46 Although the company has been making efforts to promote itself, the lack of people in the marketing and sales functions is seriously hindering the expansion of the sales base. It is crucial that more emphasis be placed on this activity as soon as practically possible. We recommend that in the order of 40 people are transferred from activities in the company where the manning exceeds the required effort (for example, certain sections of the Technical Department and sections of the Commercial Department). After an initial training, given internally, they should be organised into teams to follow up on leads and start to pro-actively seek business. Figure 2.7 suggests a basis for this activity; staffing is dealt with in paragraph 2.53.
- 2.47 Simultaneously, sales activities should be set up in the most promising departments to assist the Departmental managers in their sales efforts.
- 2.48 With respect to the company's general capabilities brochure, a better approach would be to put less technical detail in it, and produce more detailed sheets designed for specific needs of various industries. This would allow targeting of companies in the West on an industry-by-industry basis.

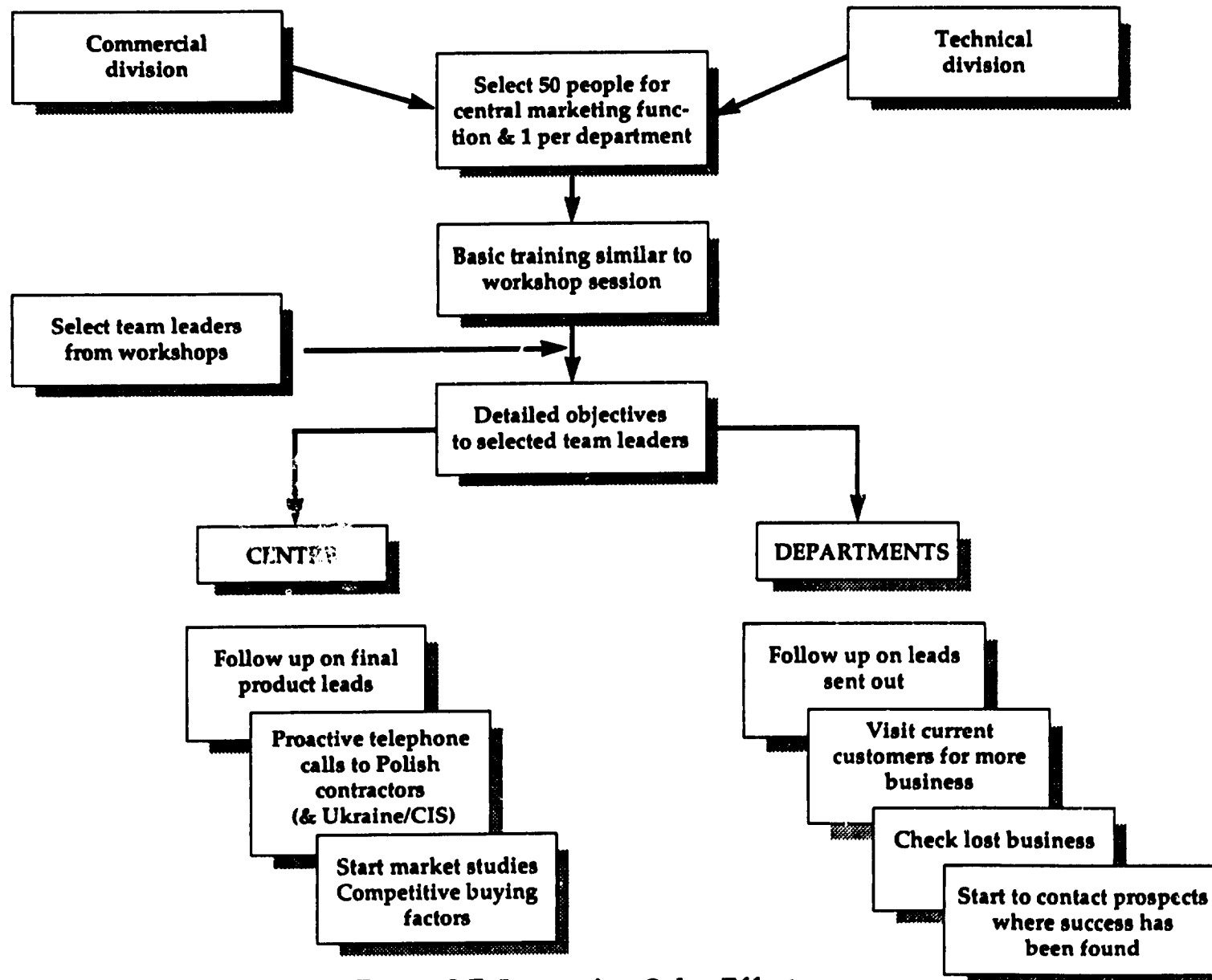


Figure 2.7 Increasing Sales Effort

TABLE 2.6 - MARKETING CHANNELS FOR PRODUCT LINES

Category	Construction Equipment	Military	Sub-contract
Agents	It would appear that in this market it is necessary to be able to have agents in place not only to sell the equipment but also to give a service to the customer	These if they are used will have to be chosen very carefully and extensive references taken as the area is so sensitive	It may be possible to find agents for this business on a commission only basis; an example may be a retired executive or someone representing Polish consumable machine tool companies abroad
Foreign Trade Organizations	Although Bumar (FTO) would be able to represent Bumar-Labedy abroad this might not be entirely a good idea as they represent competing companies to Bumar-Labedy eg Fablok, Fedroma etc.	Bumar have had the most experience at selling arms of this nature abroad and clearly have a good network of agents in each country - given the analysis on the tanks market this may need to be extended	If a FTO exists for the Polish consumable machine tool market it may be able to help
<b>Contact Generation</b>			
Letters	By presenting a well written and composed letter with some supporting literature interest may be able to be generated	This may be done (i) at highest level but it is suggested that cooperation with Bumar is sought so as not to duplicate effort or worse	This should be carried out extensively and on a regular basis throughout Western Europe
Exhibitions	Whilst there will not be funds available to exhibit abroad can be attended to select leads. Such exhibitions should be concerned with leading so that the contacts can be made with contractors. Initially it is suggested that embassy staff attend - they can at least pick up the catalogue and get some names	Military exhibitions are generally large and expensive but have captive audiences. Bumar should be actively encouraged to participate	As for construction equipment but the range can be far wider essentially anything where there are metal products
Press Releases	These are normally free and can generate a considerable amount of interest from a wide range of users. Lists of publications should be identified and contacted and kept with a press release every month		
Technical Articles	Bumar-Labedy will have to be careful in this area as their machines are not as advanced as western equivalents but fundamental articles will generate interest	Here Bumar-Labedy have an opportunity to write articles on the performance of their products and dispel claims of competitive products with unquestionable technical expertise	This would be inappropriate unless some novel approach to a familiar problem had been made
Embassies	These should be used as extensively as possible; their knowledge of the language and the local situation must be fully exploited; they should be encouraged from the highest level in Bumar-Labedy to visit their plants when visiting Poland so that prospects in their territory may be discussed		
Directories	There is a number that can be used for this specific industry	DNIS Intelligence shows the exact state of the market as well as the possible opportunities. Issues often has calls for tender on a weekly basis	Konnyan and others should be fully used as soon as there is a reference in one sector, so as to identify similar opportunities
Sales Personnel	It is clear there is a requirement for personnel in the organization capable of supporting agents in the field as well as directing sales operations; they need not only technical know-how but also knowledge of the more commercial aspects of closing deals	This should be more a technical back up role to the agents/FTO	This will require direct sales efforts in Poland as well as support to agents if used abroad. This will mean difficult negotiating and good sales techniques
Literature	Reduce the current literature to reflect only the Labedy products; at a minimum it should be in German, French and English	The literature for the tanks and recovery vehicles is adequate for the time being	A set of capabilities sheets should be put together so that they can be selected by industry. A presentation should also be prepared using slides



- 2.49 A pilot marketing exercise should be carried out in order to verify that the information is what the industry is looking for. If possible mailshot letters should be translated into the language of the destination country, checked for accuracy by mother tongue speakers, Polish emigres or staff working in the embassy of the country.
- 2.50 A list of the top 400 engineering companies in Europe has been given to Bumar-Labedy together with contact names. The relevant classifications (EC classification) are shown in Table 2.5. The sales and marketing department should be systematically breaking these classifications down into their constituent sub-groups; using trade directories (by product, by company, for each country), they should build up a market data base, in which individual companies are identified and a profile of each drawn up.

**TABLE 2.5 - MARKETS FOR SUBCONTRACTING**

Industry Description	Classification No	Classification	
Basic Metal Industries	34270	Electro-Metallurgy, Ferro-Alloys	
	34290	Electrolytic Metals	
Metal Industry	35010	Metal Forging, Stamping and Hot Pressings	
	35030	Metal Cutting, Deep Drawing	
	35110	Structural Metal Fabrications	
	35130	Metal Bridges, Tunnel	
	35150	Metal Ceilings	
	35170	Metal Cladding, Facings, Fronts	
	35190	Miscellaneous Architectural and Builders' Metalwork	
	35220	Metal Barriers, Grilles, Gates	
	35250	Locksmith's Products, Security	
	35381	Metal Packaging Goods; Tins, Cases, Drums, Etc	
	35450	Boilerwork, Plate Work Piping and Tubing, Sub-Contractors	
	Accessories	35520	Heat Exchangers, Cooling Towers
		35250	Locksmith's Products, Security Installations
35381		Metal Packaging Goods; Tins, Cases, Drums, etc	
35450		Boilerwork, Plate Work Piping and Tubing, Sub-Contractors	
35520		Heat Exchangers, Cooling Towers, Condensers and Radiators	
35810		Valves and Fittings, Industrial, Unspecified	
	35830	Cocks and Valves for Hydrocarbons, Natural Gas and Compressed Air	
	35860	Cocks, Vales and Fittings for Gas and Water Production and Distribution	

Industry Description	Classification No	Classification
	36010	Industrial Turned Metal Precision Parts, Screws and Bolts, General
	36170	Metal Springs, Shock Absorbers
	36360	Gear Wheels, Gear
	36380	Couplings, Clutches and Variable Speed Equipment
	36381	Couplings, Clutches and Variable Speed Equipment
	36400	Pulleys, Drums, Fly-wheels, Driving Gears, Rollers, Cones
	36420	Power Transmission Equipment, Drive Shafts
	39141	Ships' Superstructure Components, Marine Equipment and Signals
	39210	Locomotives, Railcars, Trams and Equipment
	39250	Railway and Tramway Carriages and Waggon
	39270	Rolling Stock Equipment and Accessories
	39350	Trucks, Lorries
	39500	Motor Vehicle Transmission Equipment
	39520	Motor Vehicle Steering, Suspension
	40010	Hydraulic Machines and Equipment, Water Turbines
	40050	Steam and Gas Engines and Turbines
	40110	Internal Combustion Engines, Diesel Engines
	40150	Internal Combustion Engine Components and Spare Parts
Heavy Industry and Metal Working Plant and Machinery	46040	Blast Furnace Charging Equipment
	46050	Gas Furnace Equipment
	46130	Kilns and Ovens
	46200	Rolling Mill Plant
	46220	Rolling Mill Machinery and Accessories
	46500	Foundry Machinery and Equipment
	46540	Foundry Mould Preparation Equipment
	46560	Foundry Moulds, Patterns and Cores
Metal and Woodmaking Machines, Machine Tools and Accessories, Special Purpose Machines, Industrial Robots	47010	Metal Turning Machines, Lathes
	47400	Forging Machinery

2.51 At least two of the contacts made during this study require a face-to-face presentation by Bumar-Labedy. The main points from the brochure should also be duplicated onto overhead projection format, or 35mm slide format for group presentations.

2.52

Several opportunities have been found for Bumar-Labedy as a result of this study both for final products and for subcontracting (see Table 2.6). These should all be followed up.

**TABLE 2.6 - OPPORTUNITIES FOUND FOR B JMAR-LABEDY**

Company	Country	Type of Work	Comments
Cincannotti Milacron	UK	Machine Tools	Presentation needed
Commins	UK	Truck Parts	Presentation needed
DAF	NL	Truck Parts	Complete Questionnaire
IVECO	UK/I	Truck Parts	Complete Questionnaire
FLS	DK	Cement Works	Contract Direct
Lana	E	Cranes	Interested in Cooperation - contact at BAUMA
Jones	UK	Cranes	Interested in Cooperation and selling B-L cranes
AVP Baker	UK/PL	Heating Systems	Contract in May for subcontract to Polish JV
Caterpillar	US/CH	Construction Equipment	Contact for visit to Labedy
Grove	US/UK	Cranes	Second meeting at BAUMA
FAMPA	PL	Welding and Heat Treatment	
KOFAMA	PL	Heat Treatment	
GLINIK	PL	Forging	
METALC HEM	PL	Plastic working	
HYDROST ER	PL	Castings & Fittings	
Wytromet	PL	Castings	
Staznis	PL	Machining, Welding, Heat Treatment & Castings	
Legmet	PL	Machining	
Huta Matapanew	PL	Gearboxes	
FSC Lublin	PL	Machining	

2.53

Further areas of opportunity might be:

- servicing, rebuild and testing of construction machinery, set up as a nationally recognised centre;
- servicing of USSR-built machinery, worldwide, providing rebuild, maintenance and spares;

- realisation of a market advantage in the manufacture of products which require hard materials.

## **Organisation**

- 2.54 Clearly there has to be a change in the organisational structure of the marketing activity. Figure 2.8 shows an alternative organisation. Approximately 40 people would be required (to include agents).
- 2.55 The organisation is designed so there is line management responsibility for all the personnel issues. Activity need not be directly related to the line manager but to an activity manager (shown as a dotted line).
- 2.56 For example the Sales and Marketing Manager has activity-based responsibility to the Sales and Marketing supervisors in the profit centres for such tasks as sales forecasting (but in conjunction with the profit centre manager).
- 2.57 Good coordination is necessary for good communication between different profit centres, who may overlap in subcontracting markets. The function of the Sub-Contracting Coordinators is to inform the different profit centres of opportunities for their services which might arise out of contacts made by other divisions.

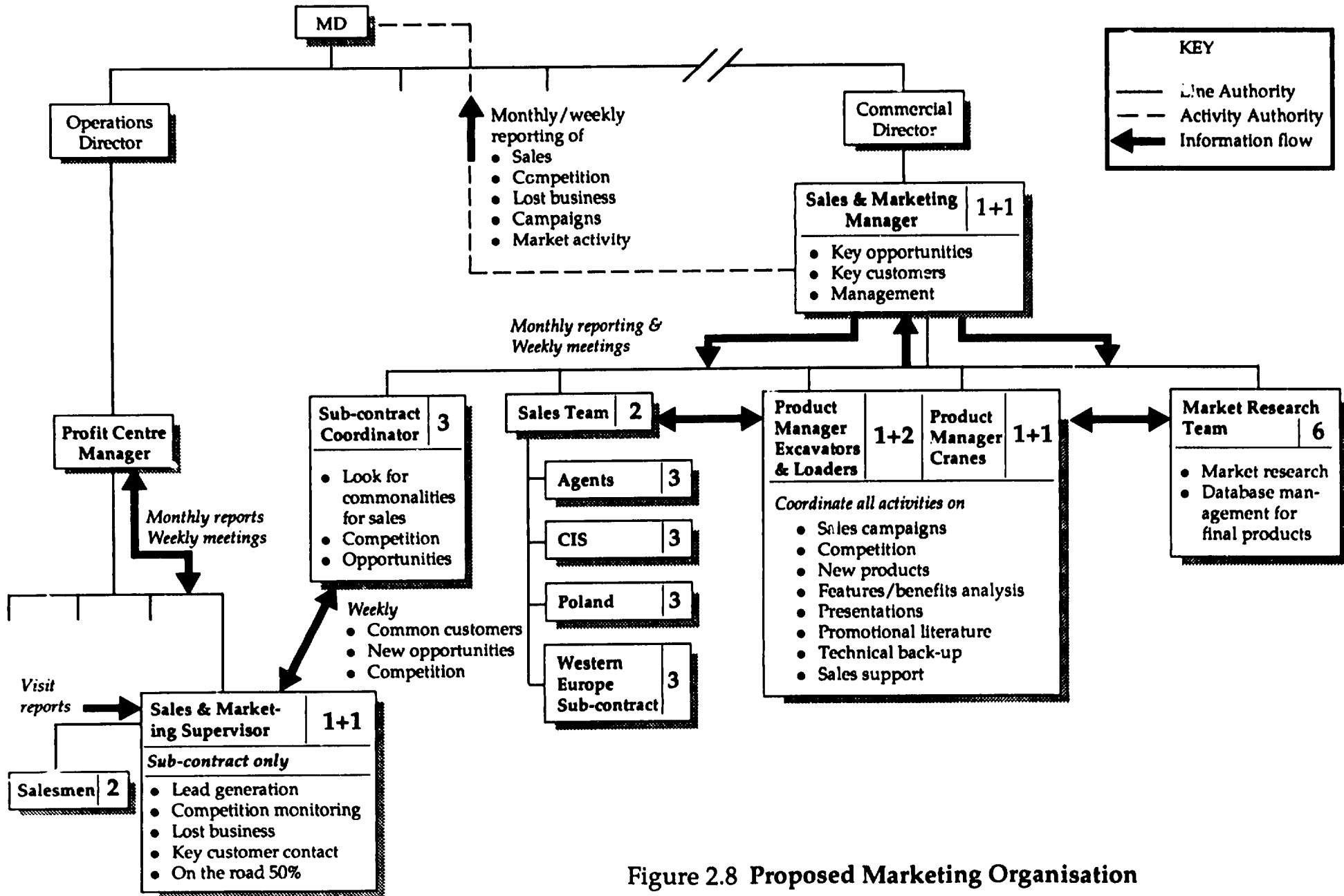


Figure 2.8 Proposed Marketing Organisation

### 3. FINANCIAL CONTROL AND MANAGEMENT INFORMATION SYSTEMS

#### Financial Statements

##### Balance Sheet

3.1 The 1991 (consolidated) balance sheet is presented as Figure 3.1; it has the following features:

On the asset side:

- there is no value for land assets (though ownership has been agreed)
- equipment is valued at one quarter of total fixed asset value, and buildings at three quarters;
- total current assets are approximately equal to total fixed assets;
- of current assets, stocks comprise 70%. Inventories may be broken out as follows:

raw materials	42%
work-in-progress	40%
finished goods	<u>18%</u>
	100%

- of stocks, materials comprise about half, and work-in-progress about 30%;
- within stocks, materials value has not changed within the year, work-in-progress has increased by nearly 40%, and finished goods have decreased by just over 40%;
- receivables have increased threefold, to about 30% of current assets.

**Figure 3.1 - Bumar-Labedy  
Consolidated Balance Sheet 1991  
(Mld Zl, 10<sup>9</sup>)**

**Sheet 1**

<b>A. ASSETS</b>	<b><u>OPENING</u></b>	<b><u>CLOSING</u></b>		
<b>FIXED ASSETS</b>				
Land	0.0	0.0		
Buildings	934	909		
Equipment	362	304		
Intangibles	9	9		
Long term paper	<u>0.9</u>	2		
			<u>1305</u>	<u>1224</u>
<b>CURRENT ASSETS</b>				
<b>Stocks:</b>				
Materials	364	357		
Work-In-Progress	164	225		
Finished Goods	259	146		
Bought-Out	<u>0.3</u>	<u>0.0</u>		
	787	728		
Receivables	101	329		
Central funds (bank)	<u>6</u>	1	<u>894</u>	<u>1058</u>
Other current	309	168	<u>309</u>	<u>168</u>
<b>TOTAL ASSETS</b>			<u>2508</u>	<u>2450</u>

**Figure 3.1 - Bumar-Labedy Consolidated Balance Sheet 1991  
(Mld Zl, 10<sup>9</sup>)**

**Sheet 2**

<b>B. LIABILITIES</b>	<b><u>OPENING</u></b>	<b><u>CLOSING</u></b>
<b>CURRENT LIABILITIES</b>		
Creditors	284	538
Deferred social taxes	39	51
Other CL	25	52
	<u>348</u>	<u>641</u>
'Special funds'	53	42
Exchange rate difference	11	9
	<u>412</u>	<u>—</u>
		<u>692</u>
<b>CAPITAL</b>		
Share Capital		
State funds	115	105
Reserves	1572	1481
Revaluation of assets	<u>(37)</u>	<u>0</u>
	<u>1650</u>	<u>1586</u>
<b>LOANS</b>		
Bank	238	191
Overdraft	100	289
Interest	<u>0</u>	<u>40</u>
	<u>338</u>	<u>520</u>
Other Reserves	19	8
		<u>8</u>
<b>FROM P &amp; L</b>	<u>89</u>	<u>(357)</u>
<b>TOTAL LIABILITIES</b>	<u>2508</u>	<u>2449</u>



On the liabilities side:

- current liabilities comprise almost 30% of total liabilities;
- within current liabilities, creditors comprise almost 80%;
- of the remaining 70% of total liabilities, loans account for just over 20%;
- loans consist 56% of overdraft, up almost threefold over the year, and there is Z1 40 mld of interest where before there was none (or a small amount)
- share capital accounts for 50% of total liabilities, and of this reserves are just over two thirds, leaving a very small portion as 'state funds'.

3.2 Raw materials consist largely of sub-assemblies and kits for 50 excavators and up to 150 artillery transporters. Other large components are steel stock, high value tool steel, forgings and castings.

3.3 Work-in-progress consists two fifths of tanks, and two thirds overall of military products.

3.4 Finished goods consist principally of military products. It must be remembered that all of these items are recorded at historical cost and so appear very cheap at today's costs of production. This explains why so many unsold tanks figure lowly in the total of the stock of finished goods. In addition, the difference between the cost price and the selling price of tanks is around two and a half times that for civil products. So although the recorded value of the store of tanks appears small, it is out of all proportion to their potential market value.

3.5 Therefore while at face value it is tempting to conclude that the company should make haste to dispose of raw materials stocks, in reality the effort is needed to dispose of tanks. The apparent profitability of tanks should allow management sufficient room for manoeuvre, even in today's depressed markets, to fix sales for quick cash flow.

## **Income Statement**

- 3.6 The 1991 (consolidated) profit and loss statement appears as Figure 3.2. The enterprise made a positive operating margin of Zl 134 mld in the year, on sales of Zl 758 mld, down from sales of Zl 3,224 mld (at 1991 prices) in 1989. Sales history was analyzed in our interim report.
- 3.7 The two items which significantly and negatively affected the statement in the year were:
- bank interest of Zl 238 mld;
  - and an extraordinary loss of Zl 312 mld (principally interest, but also written-off inventory).

## **Ratios of Financial Performance**

- 3.8 Ratios computed from the 1991 closing statements are compared with equivalent ratios of UK industry sectors making products similar to those of Bumar-Labedy. These appear in Table 3.1.

## **Financial Status**

- 3.9 Acid Test: Very low liquidity. The ratio indicates particular vulnerability to trade creditors.
- 3.10 Current Ratio: Apparently good cover of short term creditors by total current assets - principally stocks (undervalued).
- 3.11 Total Liabilities to Net Worth (Net worth defined as shareholder's equity less intangible assets): The ratio is significantly lower than all equivalent (western) industry ratios, the reason being that Bumar-Labedy is not burdened with debt. In this respect, the company has an important strength.
- 3.12 Fixed Assets to Net Worth: Greater than (western) industry average, but being at unity indicates the company is in a good balance of capitalization.
- 3.13 Current Liabilities to Net Worth: In terms of the good relative capitalization of the company, creditors can be said to have reasonable security.

**Figure 3.2 - Bumar-Labedy Consolidated Income Statement 1991  
(Mld Zl, 10<sup>9</sup>)**

**Sheet 1**

<b>SALES REVENUE</b>		
Domestic, goods	355	
Domestic, services	45	
Export, goods	356	
Export, services	2	
Resale, bought-out goods	<u>0</u>	758
<b>COST OF GOODS SOLD</b>		
Raw materials + energy	217	
<u>External services</u>	<u>0.2</u>	217
Labour, wages	110	
<u>Labour, on-cost</u>	<u>71</u>	
Total labour cost		181
Depreciation		107
Net change in finished goods/stock items		51
<hr/>		
Cost of goods sold		<u>556</u>
Gross Margin		202
<b>SELLING &amp; ADMINISTRATIVE EXPENSES:</b>		
General costs	66	
<u>Travelling costs</u>	<u>2</u>	
<hr/>		
TOTAL SGA		68
Operating Profit		134
<b>Other Income (Expenses):</b>		
Currency differences	48	
Interest on receivables	13	
Bank interest	4	
Payment to social fund	(5)	
Bank interest expense	(238)	
Turnover tax	(0.5)	—
Net Income (Loss)		(179) (45)
Extraordinary (Loss)		(312)
Add: Current Net Income (Loss)		<u>(45)</u>
Closing Retained Earnings (Loss)		<u>(357)</u>

TABLE 3.1 - FINANCIAL ANALYSIS

	Bumar-Labedy 1991	Construction Equipment 1989	Mining Machinery 1989	Fabricated Metal Products 1989	Metal Forgings 1989	Metal Working 1989	Iron + Steel Foundries 1989	Industries Average
<b>Financial Status</b>								
Acid Test (x)	0.48	0.6	0.6	0.7	0.7	0.8	0.8	0.7
Current Ratio (x)	1.77	1.1	1.2	1.2	1.2	1.1	1.2	1.16
Total Liabilities to Net Worth (%)	99.3%	192.6%	232.4%	175.4	161.6	313.0	161.7	206.1
Fixed Assets to Net Worth (%)	100%	78.0%	65%.0	76.2%	78.2	139.0	82.3	86.4
Current Liabilities to Net Worth (%)	56.6%	166.2%	169.6%	138.4	131.6	307.2	136.5	175.0
Current Liabilities to Stock (%)	88%	281.2%	223.3%	326.9	322.2	382.3	360.2	316.0
<b>Asset Utility</b>								
Stock Turnover (x)	1.04	5.6	5.7	7.5	8.4	9.0	10.5	7.78
Collection Period (D)	158.0 (D)	70.7 (D)	78.4 (D)	71.1	72.7	74.2	81.5	74.7
Asset Turnover (%)	31.0%	148.8%	159.9%	156.8	156.3	214.0	161.4	166.2
Sales to Net Working Capital	1.41	4.1	5.7	3.0	7.4	5.0	5.5	5.1
Asset to Sales (%)	323.0%	67.2%	62.6%	63.8%	64.0%	47.0%	62.0%	61.1%
Creditors to Sales (Days)	259.0 (D)	62.6	63.8	64.0	47.0	62.0	61.1	60.0
<b>Profitability</b>								
Profit Margin (%)	(6.3)%	4.0%	5.0%	4.8	5.0	4.0	5.8	4.7
Shareholders Return (%)	(3.0)%	18.4%	22.3%	30.2	21.6	35.6	24.6	25.4
Return on Capital (%)	(2.7)%	15.5%	16.7%	22.6	18.5	29.6	17.4	20.0
Return on Assets (%)	(1.9)%	5.1%	6.6%	7.2	7.5	8.3	9.6	7.4
<b>Employee Ratios</b>								
Cap Employed/Employee (£)	17.6	14.1	11.0	9.1	9.9	12.8	10.7	11.2
Sales/Employee (£)	7.2	56.0	56.1	43.1	37.4	61.7	36.4	48.5
Profit/Employee (£)	(0.4)	1.9	2.3	2.1	1.9	5.4	2.4	2.6
Costs/Employee (£)	1.72	12.4	13.6	11.1	10.7	12.3	11.5	11.9

Source: Dunn & Bradstreet (UK)  
Bumar-Labedy.

- 3.14 **Current Liabilities to Stocks:** The second indication of trouble at Bumar-Labedy: as the ratio is low, high stock retention shows up as an inability to meet debt by disposing of stock. Stocks, particularly the large stock of military vehicles are inventoried at historical value so the ratio is distorted because of this.

#### **Asset Utility**

- 3.15 **Stock Turnover:** Very low compared with (western) industry norms, indicating a major problem in moving stock.
- 3.16 **Collection Period:** Double the (western) industry average, indicating difficulty with obtaining payment by trade debtors.
- 3.17 **Asset Turnover:** Over five times below (western) industry average; management has been unable to generate reasonable sales from its asset base, so assets are extremely underused.
- 3.18 **Sales to Net Working Capital:** Again below (western) industry average by a factor of four; this low ratio underlines the difficulties management have with achieving sales.
- 3.19 **Assets to Sales:** Greater than (western) industry average by a factor of five; high ratio indicates much too low level of sales.
- 3.20 **Creditor Days to Sales:** Way out of proportion to (western) standards, indicating Bumar-Labedy has been using suppliers to finance operations, in turn pointing up the difficulty with obtaining alternative sources of funding.

#### **Profitability**

- 3.21 The company is not returning any profit.

#### **Employee Ratios**

- 3.22 **Capital Employed per Employee:** Since Bumar-Labedy's ratio is greater than (western) industry average, it may be concluded that the capital intensity is quite high, and the balance of capital employed (total assets less total current liabilities) to the number of employees is good.

3.23 Sales/Employee: As expected, the level of sales per employee is dreadfully inadequate.

3.24 Costs/Employee: This ratio - a seventh of the western counterpart average - points to one of the main strengths of the company.

#### **Conclusions from Ratio Analysis**

3.25 Strengths: Four areas of strength emerge:

- low debt;
- good balance of capitalization;
- low cost base;
- apparent security for creditors.

3.26 Weaknesses: Five areas of weakness emerge:

- low sales;
- vulnerability to creditors;
- inability to meet debt by disposing of stocks;
- low stock turnover;
- half a year's worth of trade debt uncollected.

#### **Comment**

3.27 The following comments can be made:

- the company is making inadequate use of its asset base;
- the asset base is three quarters buildings, and the fourth part - equipment - is partly useless (old, inefficient, and in the way). There is limited room for improving financial use of the asset base, and it points to the eventual requirement for capital investment;
- the company is using its suppliers to finance operations, emphasising the difficulty it faces in raising working capital from banks;
- stocks, particularly military products are inventoried at historical cost, reflecting untrue market potential value;

- even in a difficult year when most of revenue came from factored military spares, a positive operating profit is a good omen for the future.

3.28 Although the UK sector ratios chosen for comparison do not address the military products area, there is no particularly strong reason to suppose they would be much different. The industry ratios are spread over many companies; furthermore, the low stock values accorded to Bumar-Labedy's store of tanks could be said to be comparable with market values of civilian vehicles.

### **Outlying Production Sites**

3.29 Financial information from the two principal outlying production sites - Zabrze and Zawiercie - was sparse. There is a third outlying plant at Szczekociny, which used to make nuts and bolts, but it is obsolete in terms of commercial productive capacity.

3.30 Zabrze has been financially independent since July 1991. Its income statement for the five months to November 1991 is shown in Figure 3.3. Comments are as follows:

- a positive net operating profit was returned in the five months;
- a loss of Zl 290 million was obtained over the period;
- the majority of sales were achieved in the three months July to September, almost exclusively on the basis of military orders (gearboxes and shock absorbers) from the parent at Labedy;
- on an extrapolation of this performance over a twelve month period, Zabrze would contribute almost 8% of consolidated group revenue, and less than 1% of operating profit. It employs 6-7% of group employment.

3.31 Zawiercie has been financially independent for 20 years. Its income statement for 1991 and balance sheet for 1990 appear in Figure 3.4. Other salient information appears in Figure 3.5. Comments may be made as follows:

Figure 3.3 - Zabrze 1991

	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>
Revenue	7.544	15.295	22.423	23.228	24.073
Cogs		Running Total			
Depreciation	1.225	2.448	3.669	4.883	6.084
Mats & Energy	4.580	5.268	5.515	5.562	5.751
Services	0.521	0.058	0.138	0.212	0.334
Labour+ & On-Cost	-	0.999	1.542	2.417	2.612
Rent	0.045	0.090	0.134	0.178	0.223
Net Change in w-i-p	<u>0.553</u>	<u>5.495</u>	<u>10.450</u>	<u>9.067</u>	<u>7.926</u>
	7.162	14.747	22.035	22.854	23.992
Contribution	+0.382	+0.548	+0.388	+0.374	+0.081
Interest	-	-	-	0.057	0.163
Extraord Items	-	-	-	-	-
Taxes	-	-	-	-	-
PBT (loss)	0.382	0.548	0.388	0.317	(0.082)
Payment to Social Fund	<u>0.177</u>	<u>0.267</u>	<u>0.227</u>	<u>0.222</u>	-
	-	-	-	-	0.208
Net Profit (loss)	0.205	0.281	0.161	0.095	(0.290)

Notes:

- 1) Net contribution July-Nov was  $81 \times 10^4$  Zl positive.
- 2) Bottom line July-Nov was loss of  $290 \times 10^4$  Zl.
- 3) Sales were achieved in the 3 months July-Sept, presumably all from Gliwice and all military (sales other than gearboxes and shock absorbers amounted to 7.83% of the total, this period).
- 4) Employment July-Nov approx 300.
- 5) On the assumption that 12 mths sales  $\sim 12/5 \times 24 = 58$  mld, then Zabrze contributes 7.6% to KUM B-1 revenue, and less than 1% to operating profit.



- sales halved in 1991 from the 1990 value of Zl 38,000 million;
- a minimal positive net operating profit of Zl 500 million was returned in 1991;
- a loss of around Zl 14,000 million was made in the same period, 90% due to an extraordinary loss, assumed to be either penalty for non-payment and/or bad debt. Zawiercie management complained that a quarter of their own bad debt was due to the parent at Labedy;
- if the 1990 asset value is representative of the 1991 value, then the plant forms 3% of the consolidated group value;
- Zawiercie contributed 2.6% of consolidated group sales in 1991 (2.8% in 1990), and 0.4% of group operating profit. It employs 8-9% of group employment;
- its products are slewing rings (claims to be largest producer in Europe), investment castings (for many industries, by the lost-wax method), and low value-added fabrications such as excavator buckets and crane chassis;
- the management have applied to the government for the right to be privatised.

### **Current Financial Position**

- 3.32 The current financial situation of Bumar-Labedy is fairly desperate, with working capital being provided by banks on some sort of guarantee from government. The company is now under court order to settle with its creditors. Meanwhile short term interest is piling up. In the absence of a government rescue, this will lead inevitably to a restructuring of the balance sheet because the only way debts can be paid off is to relinquish shareholding.
- 3.33 Should restructuring of this nature arise, one of two things must happen. Either the lenders (or joint venture partners) take a stakeholding in the company (unlikely), or cash is realised to pay off lenders. Cash can be raised through retained earnings, and to achieve this, the company needs to sell its stock of military vehicles.
- 3.34 Loans can also be raised through donor aid, such as World Bank funding, or European Bank for Reconstruction and Development. To do so, or renegotiate existing loans the company needs to present a credible plan.

**Figure 3.4 - Zawiercie 1991 Income Statement  
(Zl mld)**

	2nd Half (Year)	1st Half
Revenue	19.764	14.796
COGS:		
Depreciation	1.779	2.697
Materials & Energy	6.548	5.363
Services	1.177	.708
Labour & On-Cost	6.121	4.022
Rent	0.913	.499
Net Change w-i-p	<u>0.494</u>	<u>-1.129</u>
	19.265	13.928
Contribution	0.499	0.868
Interest	.925	-
* Extraordinary and items	<u>(12.513)</u>	<u>(3.673)</u>
PBT (loss)	(12,013)	(2,805)
Taxes	0.220	
Payment to social fund	-	<u>.177</u>
Net Profit (loss)	(12.233) (13.965)	(2.982) (3.260)

\* Assume interest on non-payment of creditors.

**Balance Sheet 1990**

	<u>Open</u>	<u>Close</u>	
<b>ASSETS</b>	16.376	38.382	← large investment? inflation?
Fixed Assets			
Current Assets			
Materials	2.069	8.158	
w-i-p	.719	7.188	
Bought-in	<u>.001</u>	<u>0.006</u>	
	2.790	15.352	← large investment?
Other current funds	2.836	8.744	
	.048	0.387	
	<u>1.005</u>	<u>13.410</u>	
	3.889	22.541	
Total Assets	<u>23.054</u>	<u>76.276</u>	
<b>LIABILITIES</b>			
Liabilities	17.087	44.011	
Share Capital	3.841	15.887	
Credits/Loans	0.001	0.711	
Reserves	0.156	1.256	
Other Loans	<u>1.969</u>	<u>14.410</u>	
Year Result			
Total Liabilities	<u>23.054</u>	<u>76.275</u>	

Notes:

- 1) Impossible to make sense of this since there was no visible investment and we don't know what revaluation methods were used.
- 2) Assuming Dec 90 is equivalent to Dec 91, then Zawiercie forms 3% of the book value of KUM B-I.

**Figure 3.5 - Zawiercie Product Mix/Employment/Customer Base**

<u>Product</u>	<u>1990</u>	<u>1991</u>
Slewing Rings	2017	523
Buckets	0	19
Frames (cranes, etc)	91	27
Castings	205t	77t
<u>Sales</u>		
Slewing Rings	1865	387
Buckets	-	-
Frames	95	30
Castings	<u>191t</u>	<u>79t</u>
Value	38.057	19.750
<u>Employment</u>		
	<u>1990</u>	<u>1991</u>
Jan	520	468
Dec	476	394
<u>Customers (besides Gliwice)</u>		
Castings:	26	} Unsure if total base, or all served in 1990 and/or 1991.
Slewing Rings:	24	
<u>Notes</u>		
	<u>1990</u>	<u>1991</u>
% of KUM B-I Sales	2.83%	2.6%
% of KUM B-I Operating Profit	?	0.37%

- 3.35 The only item missing from the balance sheet is the value of the land. When added, this will partly offset any diminution of shareholding. It has to be presumed though that the market value of the land is fairly minimal.

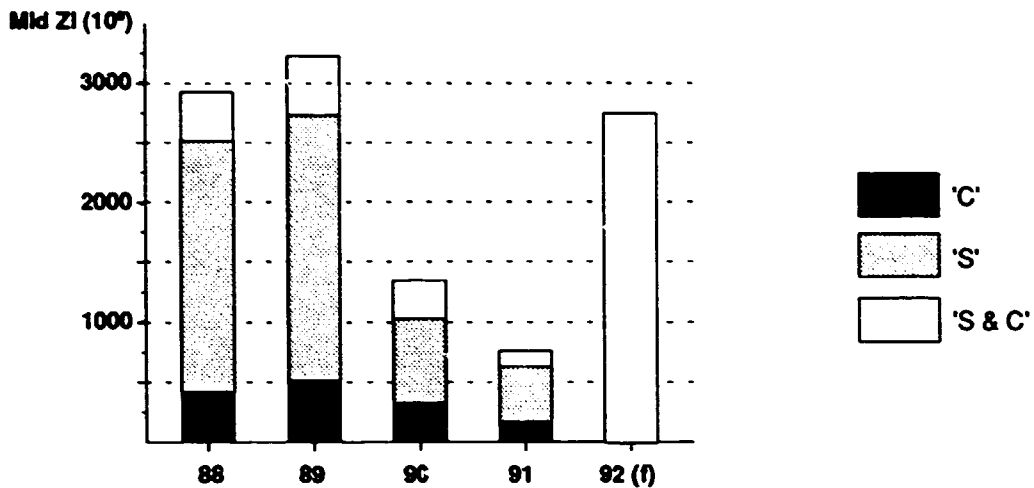
#### **Need for Financial Restructuring**

- 3.36 If working capital is available and if sales can be increased in 1992 by a factor of two over 1991 (90% tanks), and costs are cut by shedding another one and a half thousand people, then there should be no need for restructuring of the balance sheet.
- 3.37 If such a level of sales is not achieved, then the future will look grim and again there will be no need for restructuring because the company will be bankrupt.
- 3.38 There is another alternative. This involves the government taking a stand on the premise that it will require a national capacity to make main battle tanks. In this case restructuring the balance sheet would be possible along lines to be explored further in this report.
- 3.39 In the sense that the status quo is untenable, i.e. the financial director is unable to present a budget based on sound commercial argument because he cannot establish credit, then there is a need for financial restructuring. A financial model appears in Section 8 of this report, and this theme will be continued there.

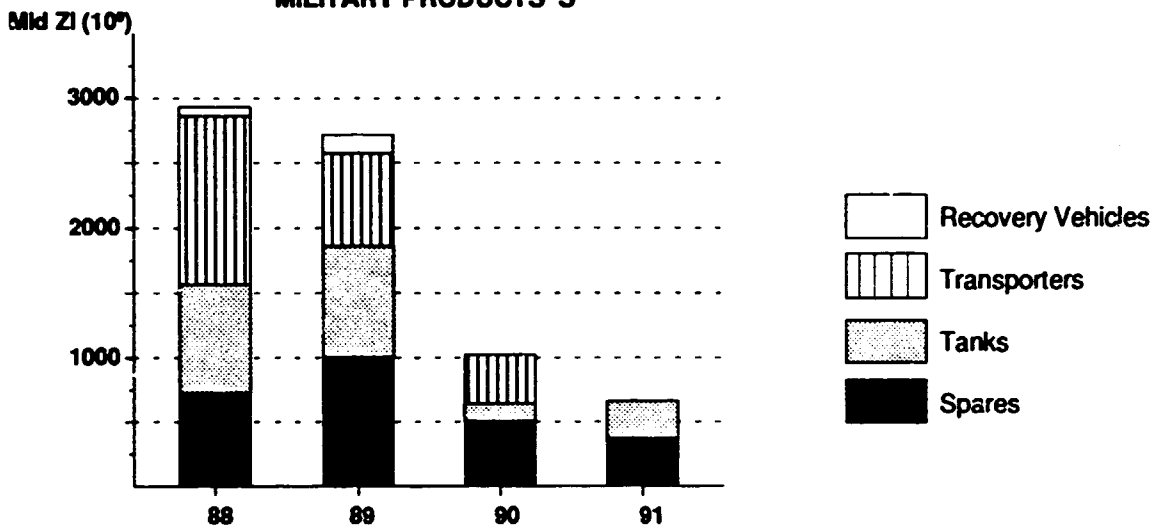
#### **Sales**

- 3.40 Figure 3.6 demonstrates the decline in sales over the past three years. The values are plotted in constant 1991 prices, arrived at by assuming one price and multiplying it by the annual volume output. The source is data obtained from Bumar-Labedy and it is worth stating that discrepancies occur in this data; since it was necessary to produce it specially in response to our request, and since, in common with all quantitative data we were given it was prepared by hand, there is wide margin for error.
- 3.41 The significance of the military sector to the company is clear.

### TOTAL SALES



### MILITARY PRODUCTS 'S'



### CIVIL PRODUCTS 'C'

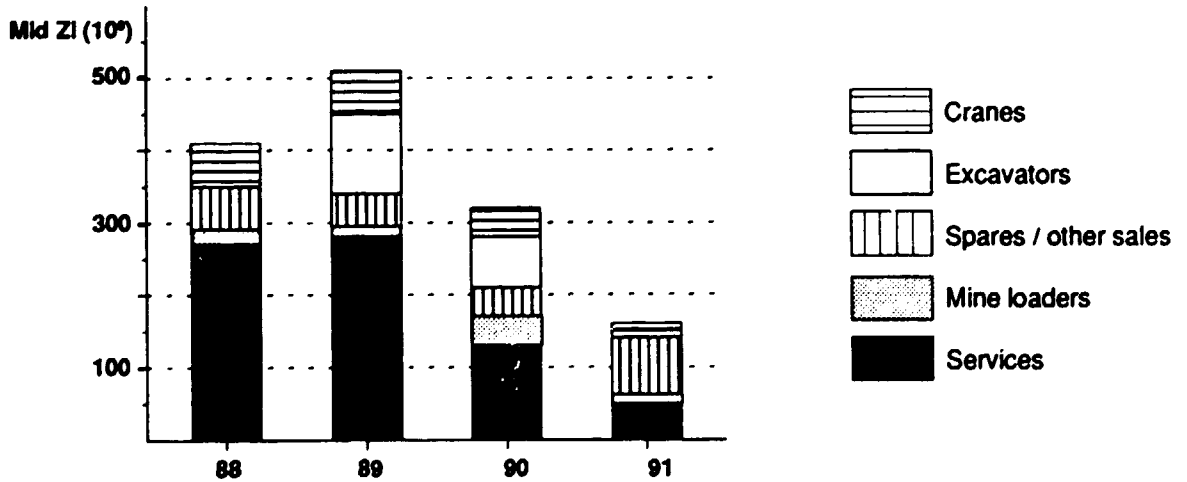


Figure 3.6 - Bumar Labedy Sales (1991 Prices)

- 3.42 Within the military products, the spares business seems the most durable, followed by tanks. Transporters (personnel and artillery) used to be of equal or slightly greater value in sales, but there were no sales in 1991. Recovery vehicles have shown minimal sales over the past two years. Sales in 1991 were 23% of the 1989 peak. Production of all types of military vehicles has been suspended; many incomplete vehicles lie in various stages of production.
- 3.43 Exports accounted for around 55% of military sales in 1991, none in 1990, and about 20% each in 1989 and 1988. The sale of tanks in 1991 was distorted by a Polish government 'purchase', amounting to 67% by value. This purchase was made on the understanding the tanks could remain in storage at Bumar-Labedy's Gliwice works, and that Bumar-Labedy were free to sell them into the export market. The revenue appears on the books.
- 3.44 Civil products accounted for 22% of total sales in 1991, 24% in 1990, and about 15% each in 1989 and 1988. While of low relative value, they are increasing in relative importance but remain overshadowed by the high value of military sales, particularly of the exported portion. Production continues in cranes; production of excavators has stopped.
- 3.45 Within civil products, the largest and most durable is services: forgings, castings and tools; forgings were mostly crankshafts. Next is spares and 'other products', followed by cranes and excavators. Sales in 1991 were one third of the 1989 peak.
- 3.46 Clearly, military products represent the best short term hope for the company, and of these, in the short term at least, the spares business appears to be where most effort should be concentrated. Sales of military spares alone were double the total of all civil products in 1991.

#### **Financial and Accounting Systems in Use**

- 3.47 Accounting systems in use at Bumar-Labedy were described in our interim report; they include:
- product costing - by centre and by department;
  - budget, or annual 'plan';
  - credit control;
  - annual auditing.

**3.48 Other information produced by the Bumar-Labedy accounting function include:**

- **monthly and annual balance sheet;**
- **monthly and annual profit and loss statement (both now in more 'western' style);**
- **gathers and analyses cost data from departments and Technological Division (see Figure 3.7, discussed in our interim report);**
- **and produces departmental overhead rates; and**
- **factory, or plant-wide overhead;**
- **personnel wage calculations and payments.**

**3.49 The budgeting system in use is not designed either for real planning purposes or for the purpose of controlling actual expenditures or for monitoring progress against agreed targets. It needs to be all of these things and it is fundamentally important to the survival of the company that a real budgeting system be put in place. On the positive side, the elements of a budget exist within the present setup, as illustrated in Figure 3.8.**

**3.50 Additionally, there exist within the present setup the elements necessary for better understanding, analysis and monitoring of costs.**

**3.51 Missing from the present setup are the techniques of financial decision-making: short and medium term, and long range capital budgeting.**

**3.52 These basic elements of management accounting are shown in Figure 3.9. Bumar-Labedy management needs to rethink its approach to cost accounting.**

**Overall, the fundamental defect is that there has been so little consultation between upper and middle management. Survival of the company requires involving those who are in daily contact with the realities of the markets, production, materials procurement, maintenance, etc. to the processes of decision-making, planning and control. There is evidence that this has begun to happen.**

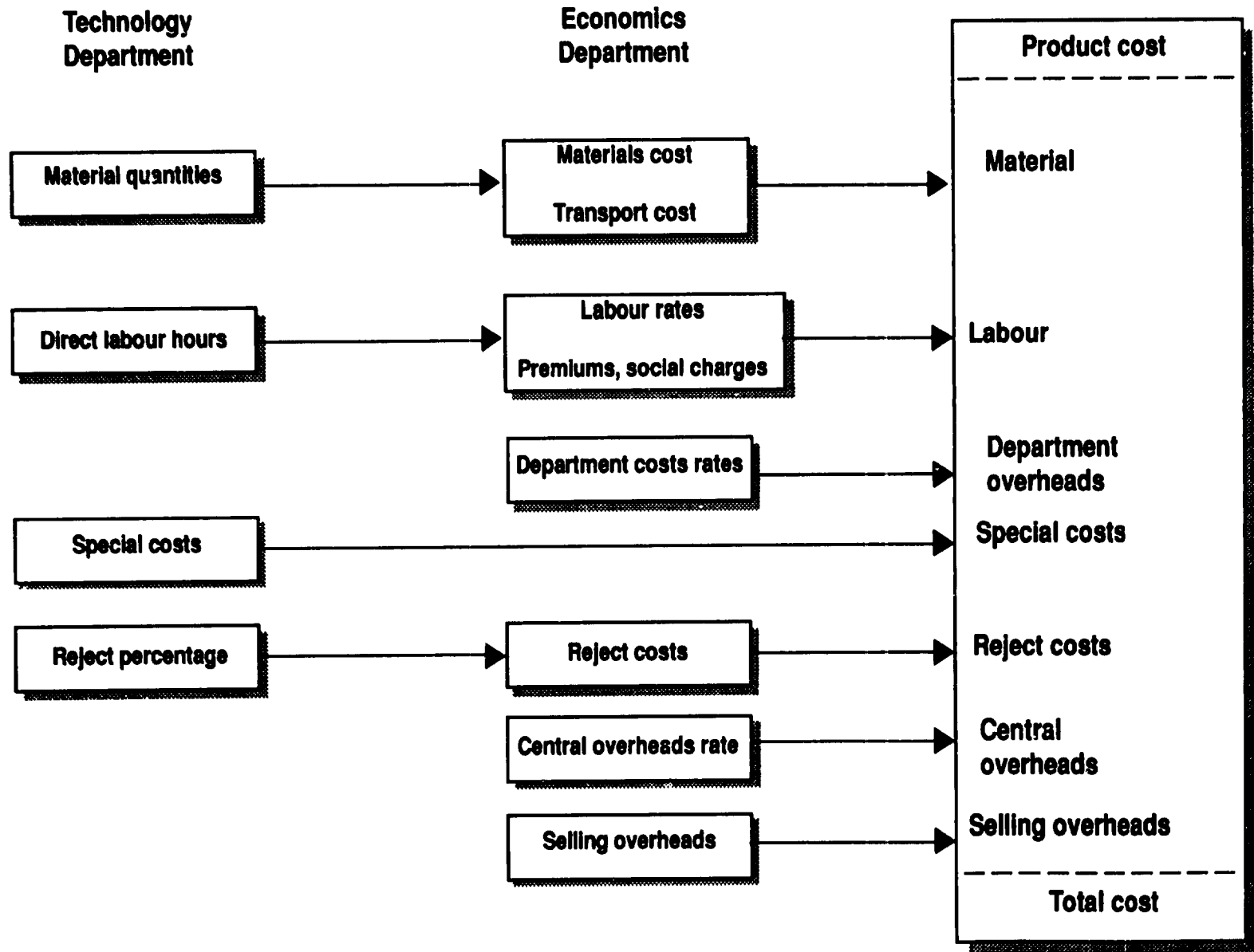


Figure 3.7 - Present Costing Methodology



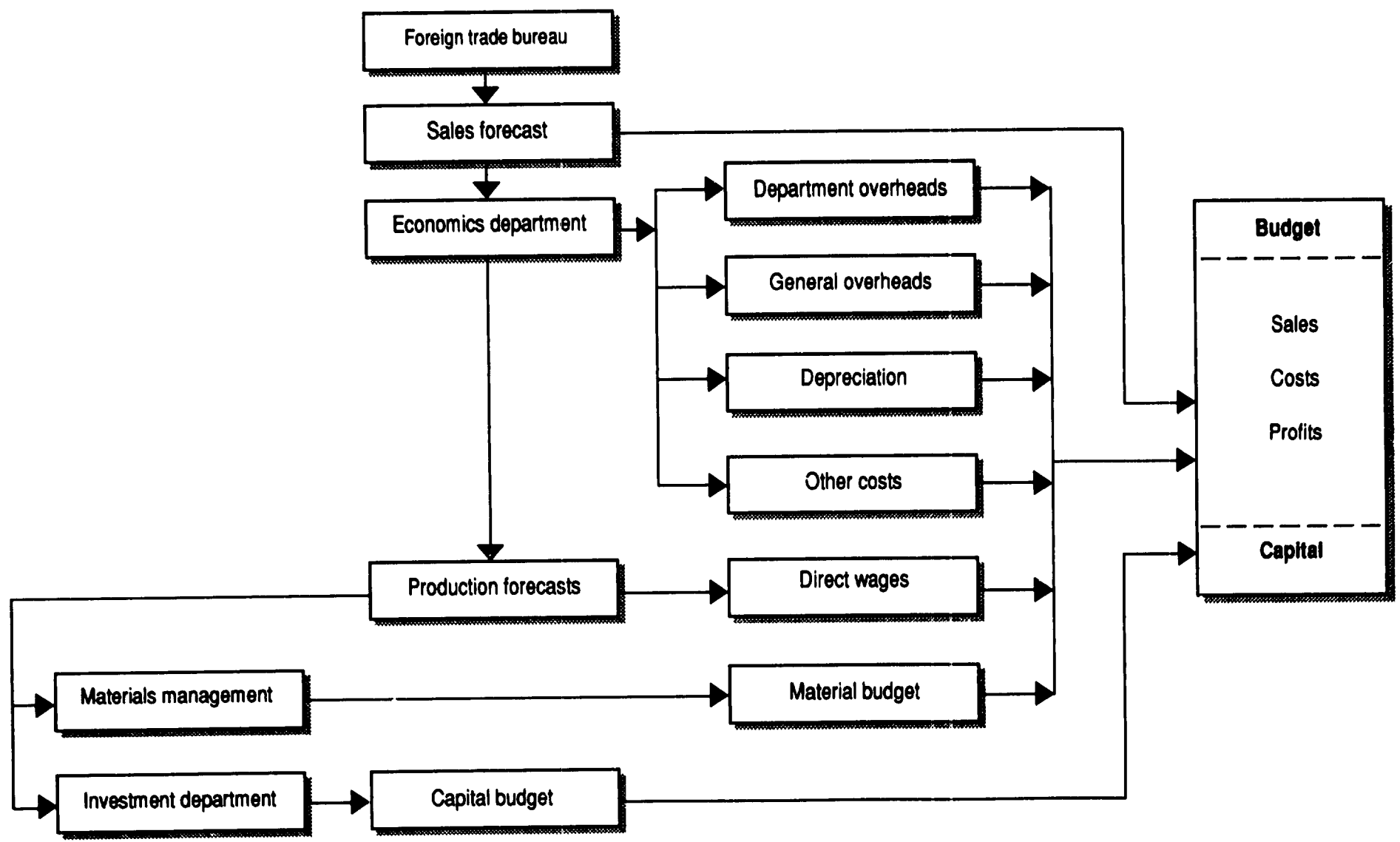


Figure 3.8 - Present Budget Methodology

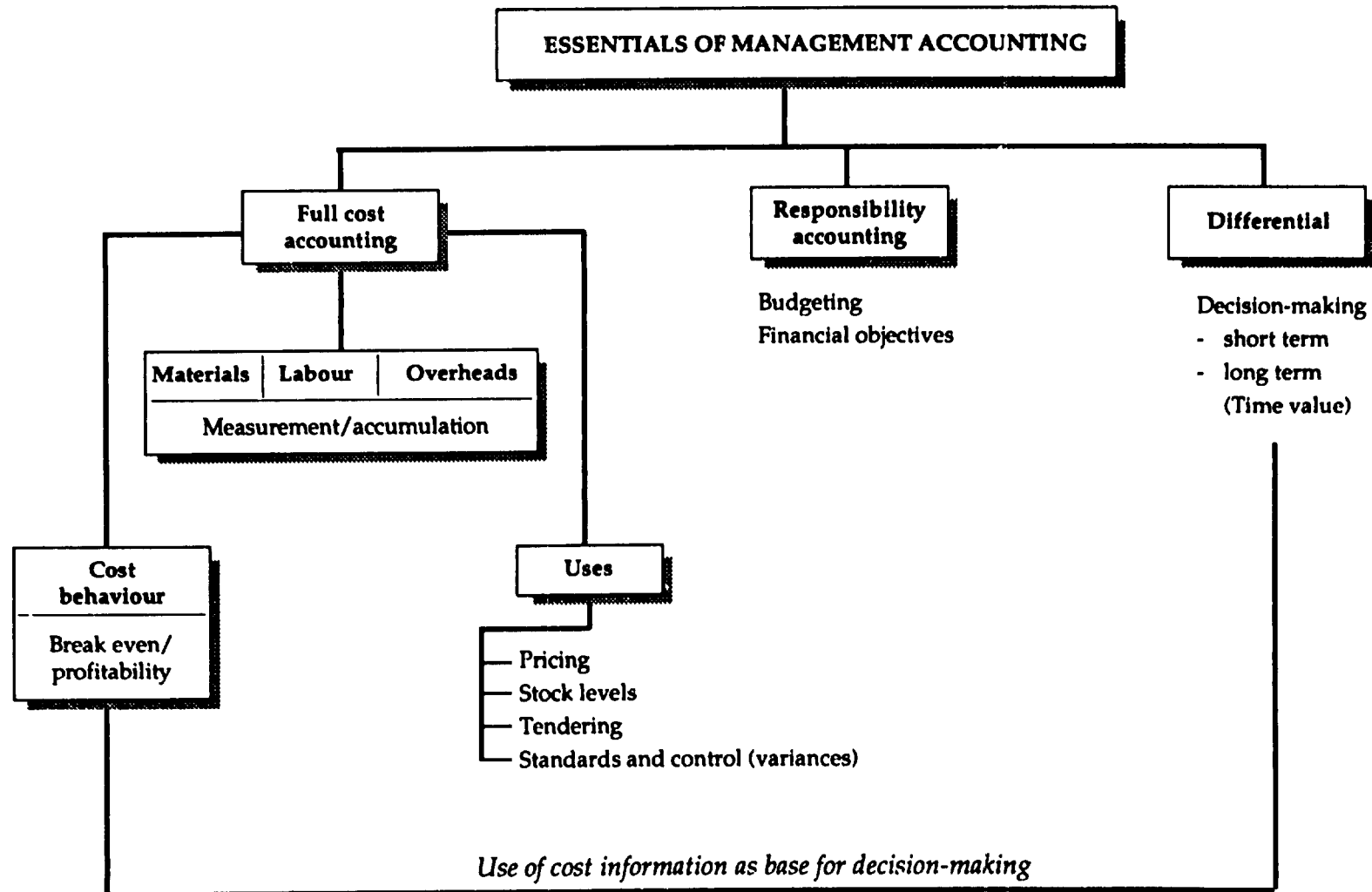


Figure 3.9 - Essentials of Management Accounting

## Product Line Cost Analysis (1991)

- 3.53 Some typical product line cost breakdowns are included by way of example; these are presented in Table 3.2 and are discussed briefly as follows. It should be noted that the corresponding selling prices were not available, and that some of the figures quoted are for batches of unknown quantities. The percentage values are assumed to be representative.
- 3.54 The cost of military vehicle production is more than half represented by materials, whereas for loaders and excavators it is around a quarter. The very high material cost of the crane chassis is assumed to be due to the fact that they were bought in from Odessa.
- 3.55 It is notable that the cost of direct wages is a tenth or less, as a proportion of total costs. This indicates that, for assembled products Bumar-Labedy cannot make much of low Polish wage structures as a competitive advantage. It even suggests that there is scope for increasing wages; as this report shows, wages is a high motivation factor. There will continue to be an advantage in sub-contract work.
- 3.56 Overhead is split roughly between costs of production departments and general overhead, together accounting for between a third (military products) and a half (civil products) of total costs. Obviously overhead is the biggest single area of controllable costs which Bumar-Labedy should tackle.

### Calculation of Department Overhead

(based on Plan 1991, production department 320)

3.57	<u>Department costs</u>	
	<u>Zlotys x 1,000</u>	
	Depreciation	4,375
	Energy	28
	Salaries, indirect	299
		208
	Miscellaneous	829
	'Zarzga'	<u>2,121</u>
	Total	7,860

TABLE 3.2 - 1991 PRODUCT LINE COST ANALYSIS

Item	T 72 MIT		Loader		Excavator		Crane Chassis	
	Zlm	% Total Cost	Zlm	% Total Cost	Zlm	% Total Cost	Zlm	% Total Cost
Materials	2218		124		596		1068	
Material Price Adjust	234		6		23		110	
Scrap	8		5		-		-	
Net Materials	976	54.3	113	25	572	26.4	957	72.9
Purchase Cost	37		2		5		7	
Prod's Startup	69		-		42		-	
Test Cost	16		-		1		-	
Jigs & Fixtures	33		6		96		10	
Tooling	25		4		71		2	
Licence	-		-		-		-	
Subcontract	-		-		12		-	
Heat Treatment	43		13		42		6	
Other Costs	-		-		16		28	
Total 'Special Costs'	<u>186</u>	<u>5.1</u>	<u>23</u>	<u>5.1</u>	<u>282</u>	<u>13.0</u>	<u>46</u>	<u>3.5</u>
Direct Wages	123	4.1	48	10.6	132	6	33	2.5
Dept Overhead	635	17.4	102	22.6	552	25.5	127	9.7
Reject Cost	<u>30</u>		<u>13</u>		<u>39</u>		<u>6</u>	
Total Cost of Production	<u>2987</u>	<u>82</u>	<u>301</u>	<u>66.6</u>	<u>1581</u>	<u>73</u>	<u>1176</u>	<u>89.6</u>
General Overhead	649	17.8	128	28.3	583	27	136	10.4
Cost of Sales	5		23		2		1	
Total Cost	3641	100	452	100	2166	100	1313	100

3.58 Direct wages costs

Basic wages	1,836
Premiums	<u>1,276</u>
Total	3,112

3.59 Percentage 252.5% (7,860/3,112 x 100)

3.60 Thus, this overhead is a cost which cannot be allocated direct to the product but which is allocated in fixed proportion to direct costs. The factor calculated above - 2.52 - we were told may range as high as 20! We saw many in the region of 6. The net effect of indiscriminately applying such high factors is that product pricing, particularly at the subcontract level, becomes inflexible and unable to respond to changes in the marketplace. This is an area requiring urgent attention. Some production managers have devised more appropriate means of allocation, in order to reflect the true cost and therefore permit some pricing elasticity. The centre needs to take account of such innovation, but as usual, it will require managerial command and resources. Personnel resources in-house may be sufficient to tackle the problem, but they should be equipped with electronic spreadsheet facilities. They will also probably be best redistributed to the various production departments, away from the centre.

**Calculation of General Overheads Percentage - 1992 Plan**

(Calculated by the Economics Department)

Zlotys million

3.61 Administration and economics costs

Salaries, including social premiums	15,711
Travel	297
Stationery and office costs	1,256
Interest costs (part only)	2
Taxes etc	17,035
Other costs	<u>1,200</u>
	35,501

3.62 General production costs

Salaries, including social premiums	29,817
Materials, oils etc	2,660
Energy, (excluding production departments)	2,977
Depreciation	11,053
Repairs and construction	1,466
Other costs (sic)	<u>35,420</u>
	83,373

3.63 Total general overheads 118,874

3.64 Adjustment (12,236)

106,638

3.65 Total direct wages costs and department costs 197,478

3.66 General overheads percentage 54%  
[106,638/197,478 x 100]

3.67 This overhead is the line item 'central overheads' in the product costing methodology described in 9.1 above. It is being used by Bumar-Labedy as a means of manipulating selling prices. By this is meant that persons preparing offers to the market are permitted to reduce the general overhead downward, in order to arrive at an acceptable selling price.

3.68 Bumar-Labedy stated that during 1991, the general overhead factor was calculated to be around 160%. The only explanation we are able to find for the difference (160% to 54%) is that interest payments are virtually excluded in the calculation as shown above. Accumulated interest, as of end November 1991, was 218,000 mZl, or put in perspective, 28% of sales for the period to November. If the interest is included in the general overhead as calculated above, the overhead comes out as 165%. Management have therefore taken the tactical decision to discount interest payments.

### Types of Accounting Systems for Consideration

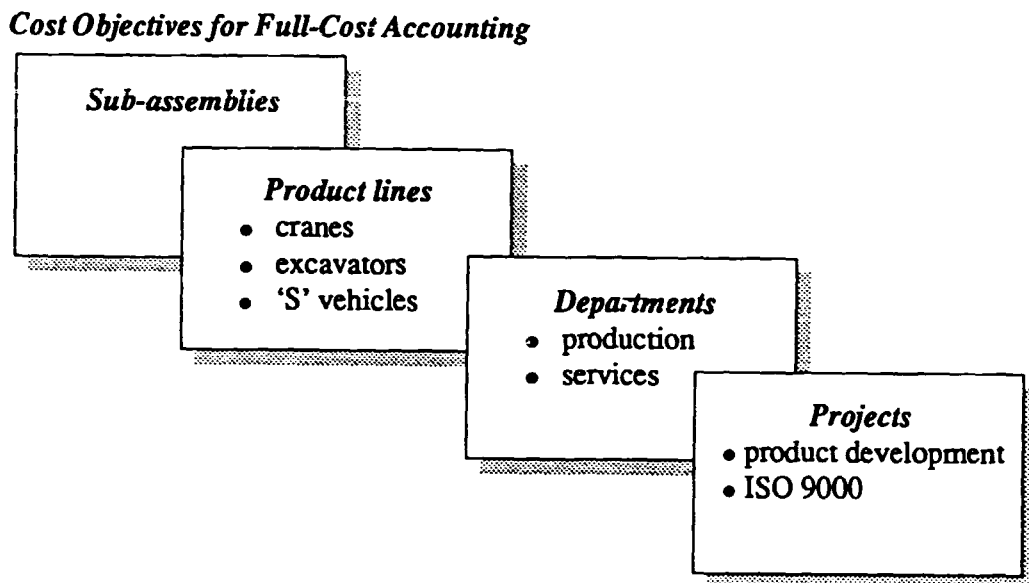
3.69 An outline description of some cost accounting techniques which need to be put in place by Bumar-Labedy is summarised as follows.

- 3.70 Product pricing may be achieved by applying either full-cost, variable cost, or differential cost accounting techniques. The principal differences between full-cost and variable accounting are illustrated in Figure 3.10.

### Cost Objectives

- 3.71 If full-cost techniques are applied, then the costs may be collected and assigned to pre-determined cost objectives, examples of which are shown in Figure 3.11.

Figure 3.11 - Types of Cost Objectives



- 3.72 The basic origins of costs are materials, labour and overhead, and the full cost is derived as shown in Figure 3.12.
- 3.73 Within Bumar-Labedy there exist systems for the collection of costs, but they are cumbersome and slow, principally because data is prepared manually. Although there are computers in use, particularly in the finance division, of the data we requested and were given, none was presented as the result of electronic spreadsheet work. This situation needs urgent attention from executive management.
- 3.74 At present, pricing mechanisms do not reflect all costs accurately. The costing methodology illustrated in Figure 3.7 will, in principle be sufficient for complete assembled products. But there are several reasons why such a system needs to be set up at department level.

## Types of Accounting System

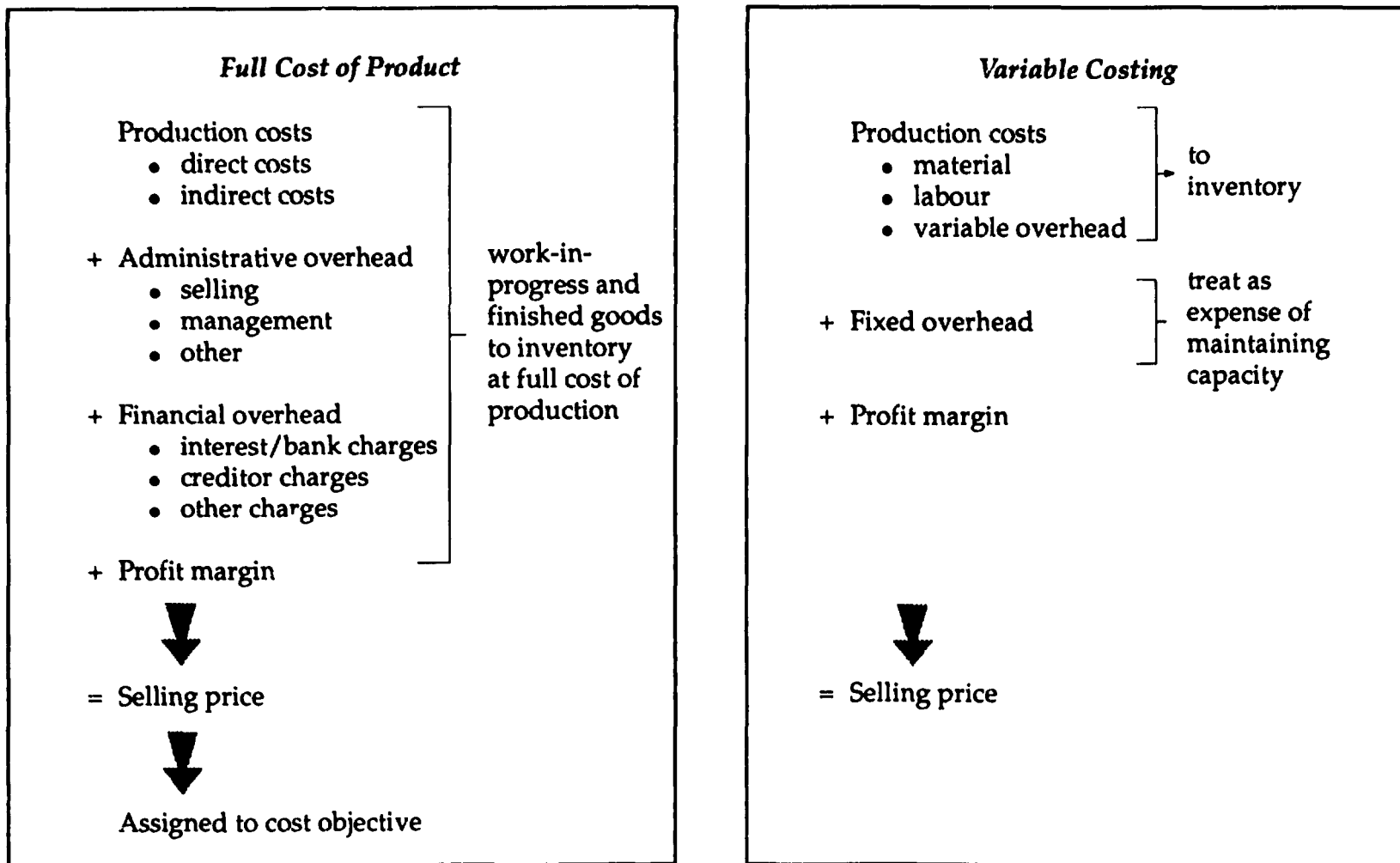


Figure 3.10



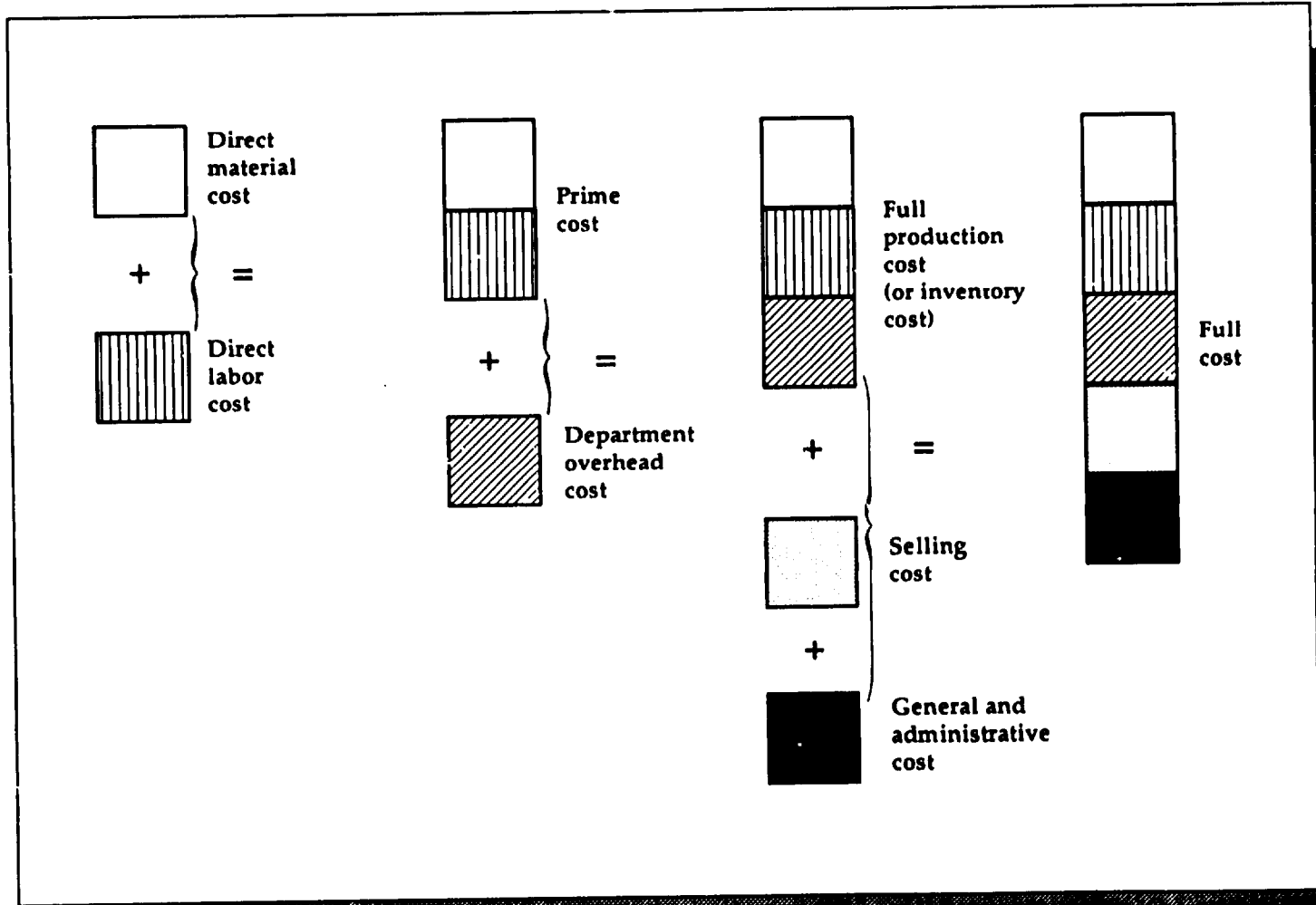


Figure 3.12 - Elements of Product Cost

- 3.75 Firstly, if the company is to be reorganised along 'profit centre'/'cost centre' lines, then each centre will need to measure its own costs. In order to maximise contribution to the enterprise as a whole, each centre will need to keep track of its own costs.
- 3.76 Secondly, subcontracting will form an important part of the survival strategy. It will be necessary to have accurate information at departmental level on elements of cost which should be minimised and which should be concentrated on, for maximum added-value and maximum profitability.
- 3.77 Thirdly, the company must maintain facilities for which there is likely to be minimal demand in the short term - military products. For some new profit/cost centres it will be necessary to define that part of cost which goes toward supporting that military capability. This would provide a solid base upon which to argue for government support of a more permanent nature than the present unsatisfactory arrangement.
- 3.78 Bumar-Labedy should assign some assets to military products, in arguing for a more structured government support for that capability. The techniques are essentially the same as those of assigning costs to products.

#### **Systems for Gathering Costs**

- 3.79 Either process costing or job costing can be applied as a means of collecting costs, and to calculate product unit prices. Figure 3.13 depicts the two systems. Currently some costs, notably labour hours, are gathered by the cost form which accompanies the operation route sheet which follows jobs through the production sequence, illustrated in Figure 3.14 (and discussed in our interim report).
- 3.80 In a process costing system, the unit costs are averages derived from the total costs of the period. Differences in the costs of individual products are not revealed. So a job order system is more appropriate if the customer is paying for specific items or services on the basis of cost (as in subcontracting, or in repair services from, say department 810, machinery maintenance/rebuild).

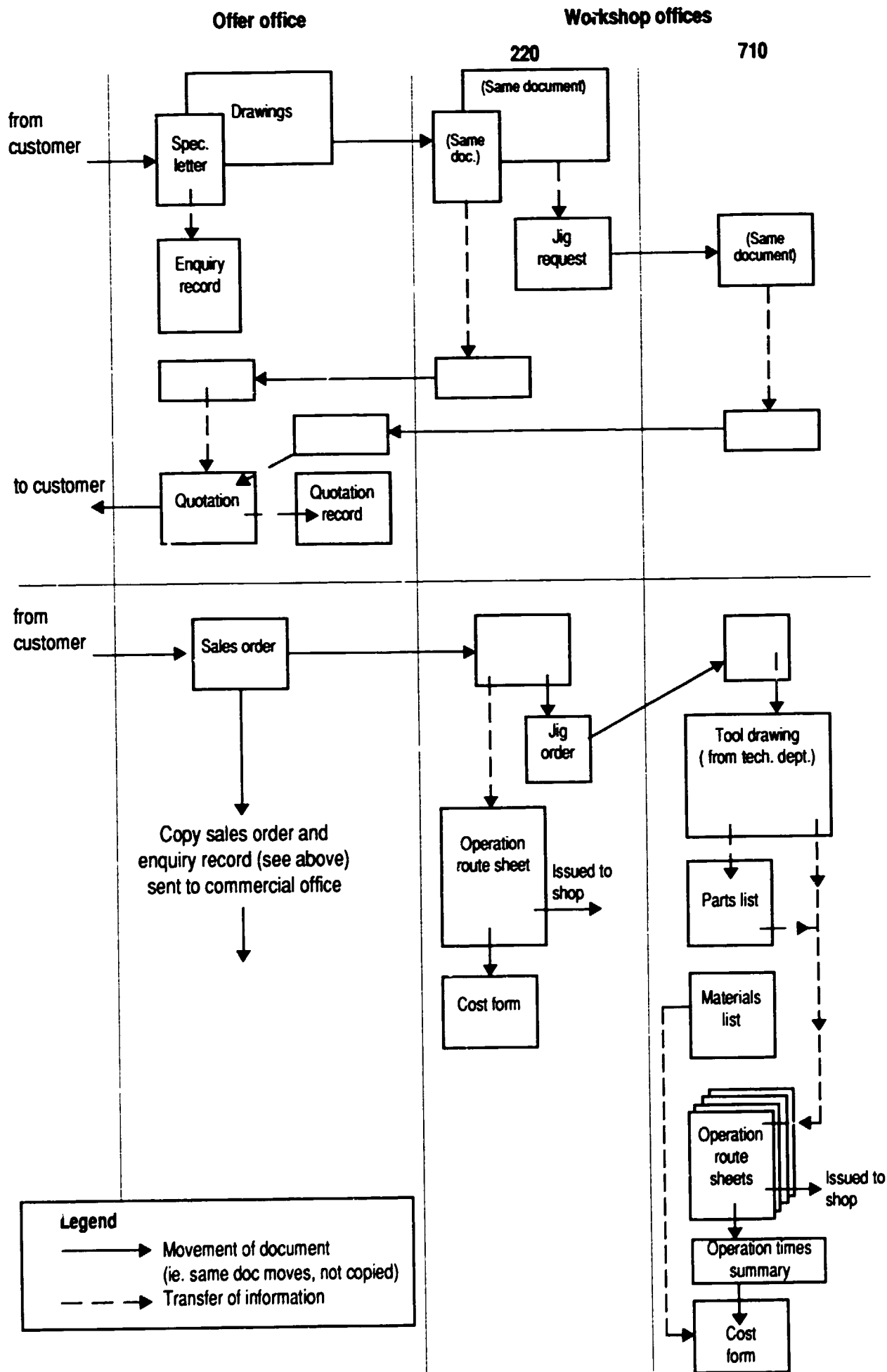


Figure 3.14 - Enquiry, Quotation and Production Planning Process for Sub Contract Work

## Figure 3 13 - Cost Gathering Systems

### *Process costing*

$$\text{unit cost} = \frac{\Sigma (\text{all costs, all manufactured units per period})}{\text{total manufactured units per period}}$$

#### *For:*

- less records

#### *Against:*

- unsuitable for high mix of products
- costs of individual products not known

### *Job costing*

$$\text{unit cost} = \Sigma (\text{all costs per unit})$$

#### *For:*

- price based on known cost of product
- identify problem areas

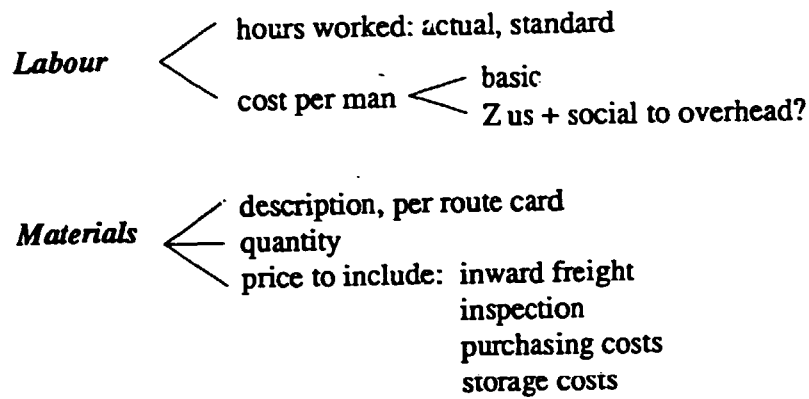
#### *Against:*

- more records
- complex allocation of indirect costs

### Measurement of Costs

- 3.81 Presently, the direct costs of labour and materials are measured through the system of operation route sheets. These route sheets collect hours (based on standard times, as assigned by the Technological Division). Without detailed review across all departments it is not possible to comment on the adequacy of this system. With respect to the price of labour hours, either the actual cost of the man must be measured, or an average cost is applied across a department; the former is more accurate but requires more data collection and analysis.
- 3.82 The direct cost of materials is also measured by Bumar-Labedy via the route sheets. As for labour, the cost is a multiple of the quantity and price. Quantity is easy to measure, price is more difficult. The data required to be measured is summarised in Figure 3.15.
- 3.83 Currently, all these costs, and others, having been collected are totalled for each department (*Rejester Kosow Wydzialowych*). This aggregation occurs too late in the chain of cost measurement to be useful for anything other than calculation of departmental overheads - which are then too coarse for department managers in setting prices - and for the overall pricing of final assembled products (vehicles). It needs to be collected and totalled much further down, so that immediate use may be made of it and the results made more credible.

Figure 3.15 - Direct Cost Measurement



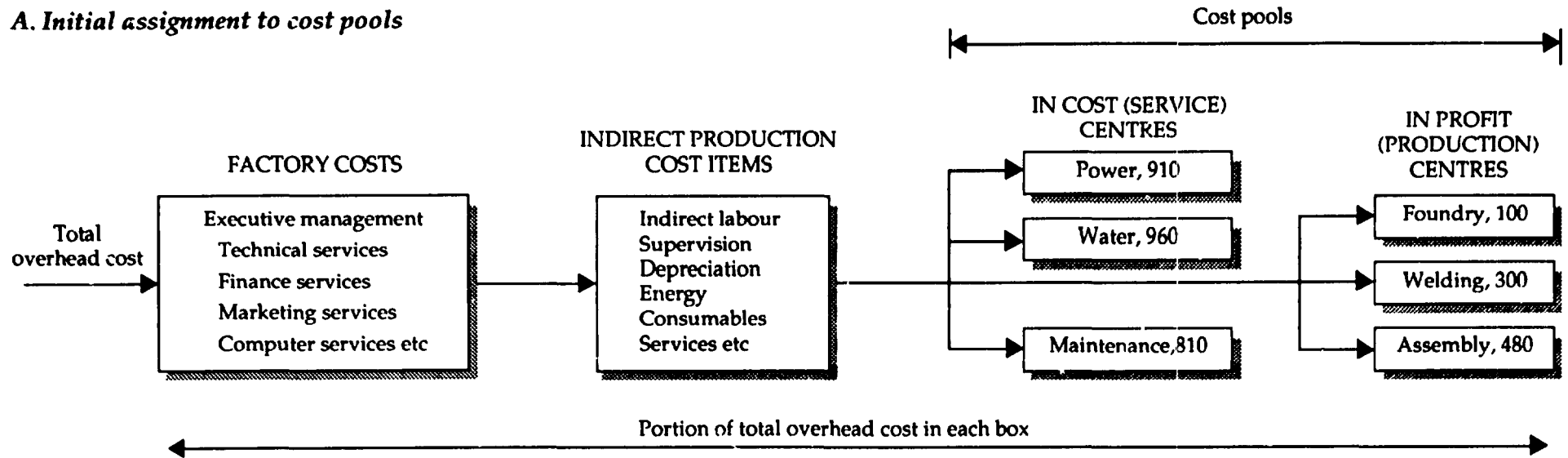
### Allocation of Indirect Costs

- 3.84 How to assign indirect costs fairly? Before the indirect costs can be assigned to products (if products are cost objectives), they must first be accumulated in pools of cost. Within production departments, a group of machines might be a pool of cost. At least one departmental manager we interviewed is already doing this. Within service departments (called 'cost centres' in this report), pools of cost might be task forces assigned to electrical maintenance, machine rebuilding, and so on. At the centre of the organisation, indirect costs can be collected in pools labelled 'depreciation', 'insurance', 'taxes', 'utilities costs', and so on.
- 3.85 Total overhead costs are assigned to production cost pools as shown in Figure 3.16.

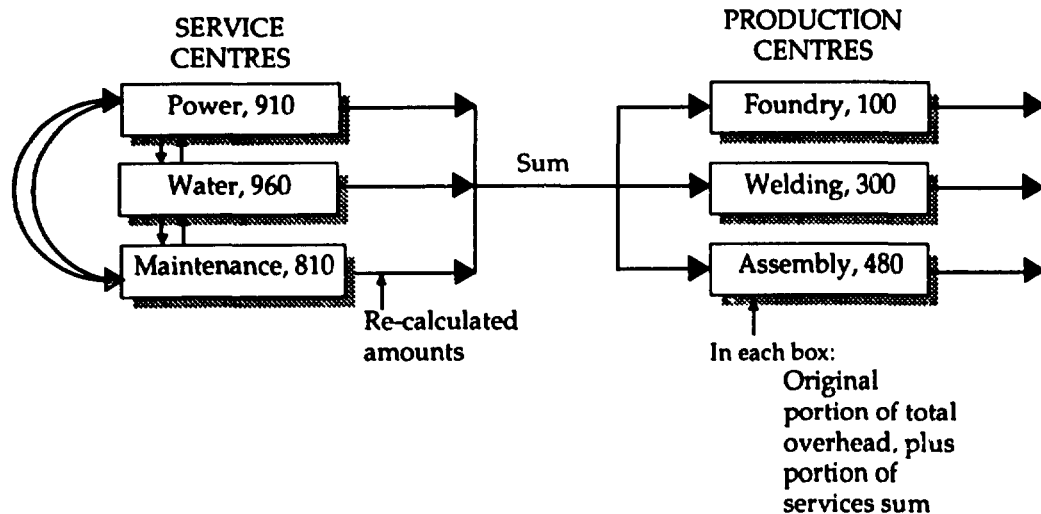
### Predetermined Overhead Rates

- 3.86 Currently, Bumar-Labedy calculate departmental overhead rate on an annual basis and it is not a satisfactory system (see interim report for detailed explanation). It is consequently recommended that new approaches be adopted to the concept of overhead distribution (and control). The overhead will need to be analyzed in depth. When this has been done, probably monthly over a one-year period, management will be able to return more confidently to using predetermined overhead rates. Using predetermined rates enables product costs to be calculated more promptly, requires less effort than going through the same calculation every month, and avoids fluctuations caused by seasonal variations and variation in activity volumes.

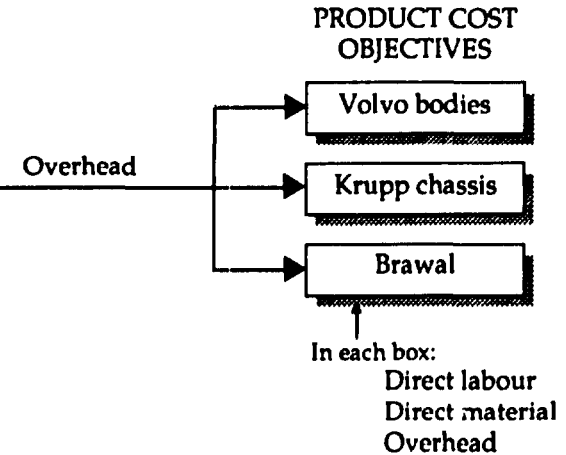
**A. Initial assignment to cost pools**



**B. Reassignment of service centre costs to production centres**



**C. Allocation to products**



**Figure 3.16 - Allocating Overhead Costs to Products**

## Overhead Budget

- 3.87 The application of predetermined overhead rates introduces the need for an overhead budget, showing what overhead costs are expected to be at various volume levels. A budget can be set up for each department, for predetermined product lines. The total budgeted overhead cost will be the sum of fixed costs plus a factor times the volume parameter (direct labour hours, say). Figure 3.17 depicts such a budget.
- 3.88 The volume level is the item which will present the most difficulty in setting. It is here that the marketing department really comes into its own. Each production manager must individually agree a range for the budgeted volume with the marketing department. Collectively, the company must agree the sum of these individual agreements.
- 3.89 We would emphasise that the recent forecasts given us by Bumar-Labedy for 1992 planning purposes do not reflect the real situation: how difficult it really is to sell the military products, and that Bumar-Labedy's range of cranes, excavators and mine loaders are virtually unknown over a wide range of markets. Once again, we stress the need to build up the marketing department so that it becomes a centre of market information.

## Analyzing Production Cost Variances

- 3.90 *Variances* - the differences between actual costs and standard costs - must be analyzed when working with budget systems; the analysis drives the bottom end of the management information system. Variances occur in production costs, in non-production costs and in gross margin. This is shown in Figure 3.18.

Figure 3.18 - Budget Variance Reporting

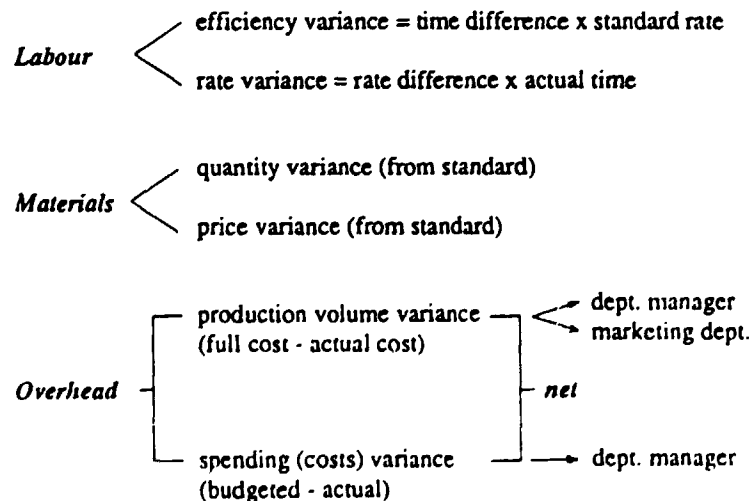
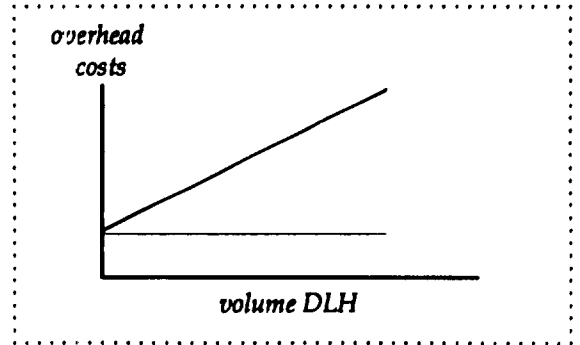


Figure 3.17 - Flexible Overhead Budget

*Per Department  
Direct Labour Hours (per product)*

		<i>Per Department Direct Labour Hours (per product)</i>			
		2,500	3,000	3,500	4,000
actual or standard	Costs				
	indirect labour				
	consumables other				
	<b>Sub-total</b>				
	From maintenance cost centre				
	From energy cost centre, etc.				
	<b>Total indirect cost</b>				

input from  
marketing





### **Differential Accounting**

- 3.91 Decisions on whether to accept subcontract jobs can be made using the concept of differential costs. The types of cost which should form the basis of such decisions are shown in Figure 3.19.
- 3.92 In designing its new cost accounting systems, Bumar-Labedy should allow that raw data can be used in estimating the differential costs for specific problems. This has to be done in close collaboration with departmental managers.

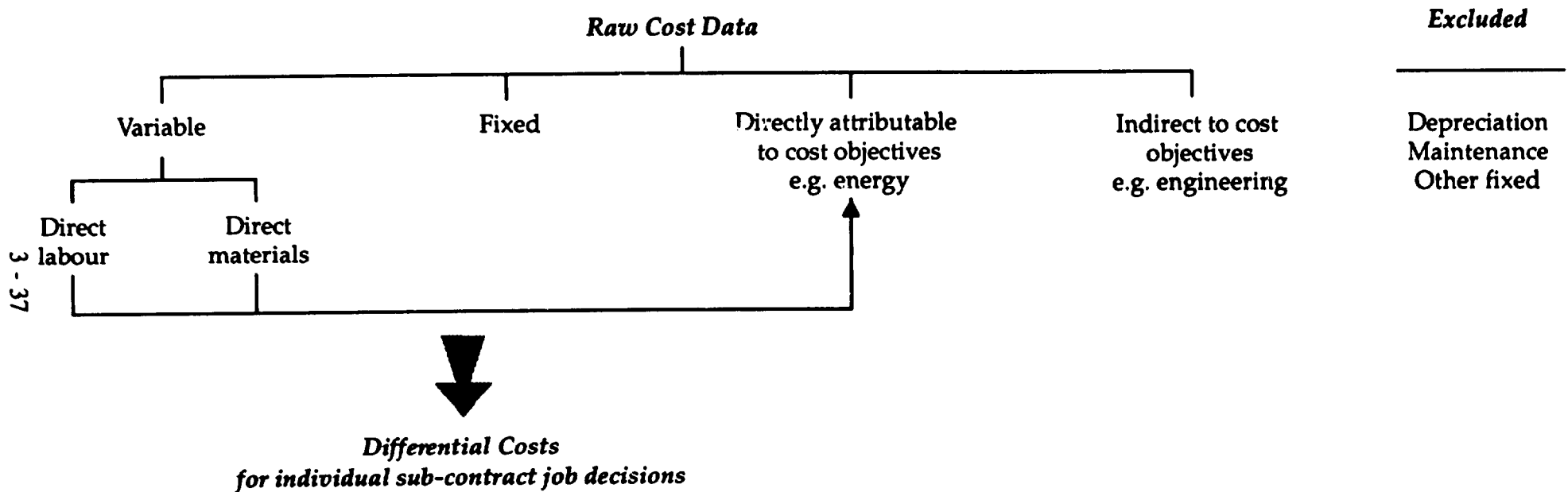
### **Contribution Analysis**

- 3.93 If the first new concept which Bumar-Labedy have to accept is being *market-led*, then the second is the notion of *profitability*. Figure 3.20 illustrates the 'profitgraph', which can be used for an analysis of breakeven volume. It is a simplified approach, in that costs do not continuously behave linearly with volume. But the assumption can be made over the 'linear range' that they do.
- 3.94 Profitgraphs can be constructed for each cost objective, that is, for each type of product a department makes, or even for the department as a whole. Extending the analysis, a profitgraph can be constructed for the company as a whole.
- 3.95 On the issue of cutting costs to match revenues, we caution strongly against reducing labour for the sake of reducing costs without first exploring all possible ways in which indirect labour can be brought closer to production. It is vital that a new culture pervades Bumar-Labedy, in which people are made to feel a part of the overall effort for survival.

### **Capital Budgeting: Long Term Decisions**

- 3.96 Short term decision-making based on the technique of differential costs and revenues may be extended into the longer term. The types of decisions to be addressed in the longer term are shown in Figure 3.21, together with the elements of the capital budgeting technique.

**Figure 3.19 - Differential Decisions**  
*(subcontract or one-off jobs)*



**Decision basis:**

- full cost of job from accounting records → REJECT JOB
- differential cost < full cost → ACCEPT JOB

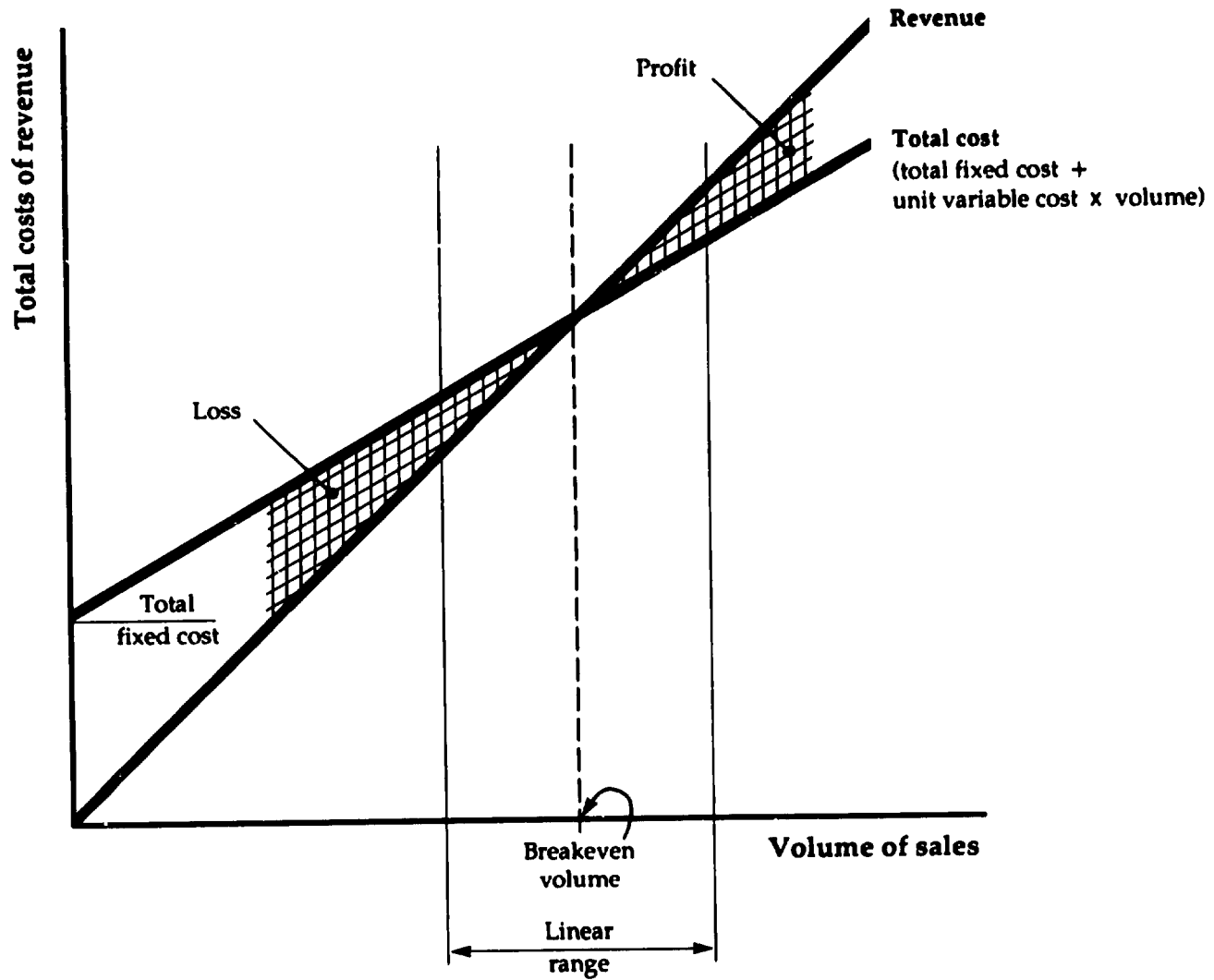


Figure 3.20 - Profit Graph (breakeven)

**Decision Types**

- *Replacement* : more productive equipment
- *Expansion* : increased future revenues
- *Cost reduction* : mechanise manual operations
- *Equipment choice* : maximum yield
- *New product* : will revenues exceed costs?

**Inputs**

- Capital spend
- Operating costs
- Life of project
- Discount rate

**Outputs**

- Net present value
  - Rate of return
  - Payback period
- } bases for alternative choices

3.97 Bumar-Labedy have not undertaken decision-making of these problems on an analytical basis; theirs is a high risk approach and is not one which is likely to instill confidence in potential financial backers. It is almost imperative that a computer is used for the analysis.

**Responsibility Accounting**

3.98 The combinations of departments chosen by Bumar-Labedy to form their prognosis for the future, as presented to us and which form the basis for our financial model may be referred to as 'responsibility centres'. Some have profit responsibility, and some have cost containment responsibility: 'profit' and 'cost' centres. They may be visualised in terms of inputs and outputs, as shown in Figure 3.22.

3.99 Responsibility centre managers need information about what has happened (historical, e.g. costs) and about what is likely to happen (future, e.g. markets). Responsibility accounting involves a continuous flow of information about the flows of inputs and outputs to/from a responsibility centre.

**Inputs**

Figure 3.22 -

**Outputs**

**Responsibility Centres**

Tangible inputs

Labour  
Materials  
Services

Service (cost)  
Centres

Profit Centres

Goods  
Services

Information inputs

Costs  
Pieces  
Tonnes  
Hours etc.

300 P

360 P

480 P

500 P

Revenues  
Quantity of products  
Costs

810 C

Responsibility for full cost of  
product passing through depts

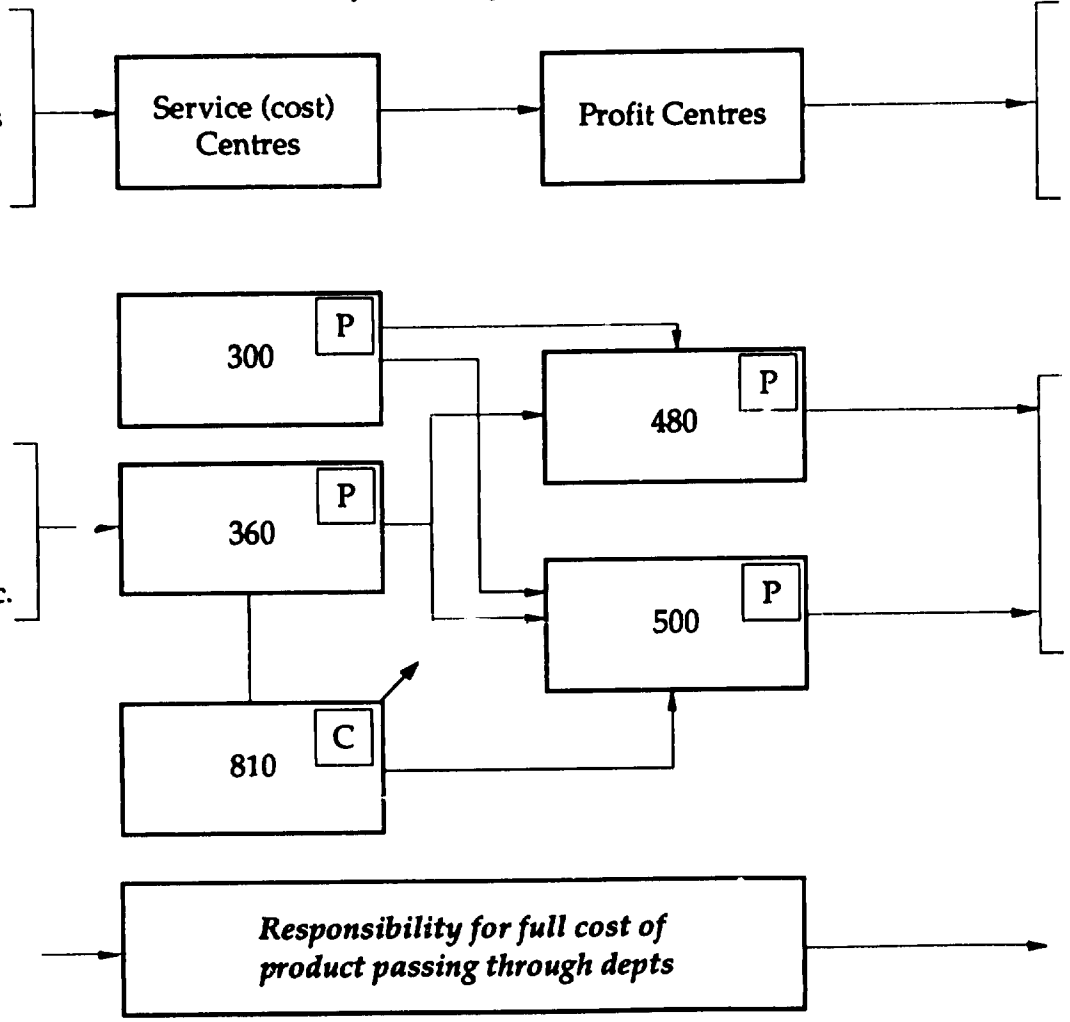
Specific Information  
Required

Interactive Information System  
Required

Specific Information  
Required

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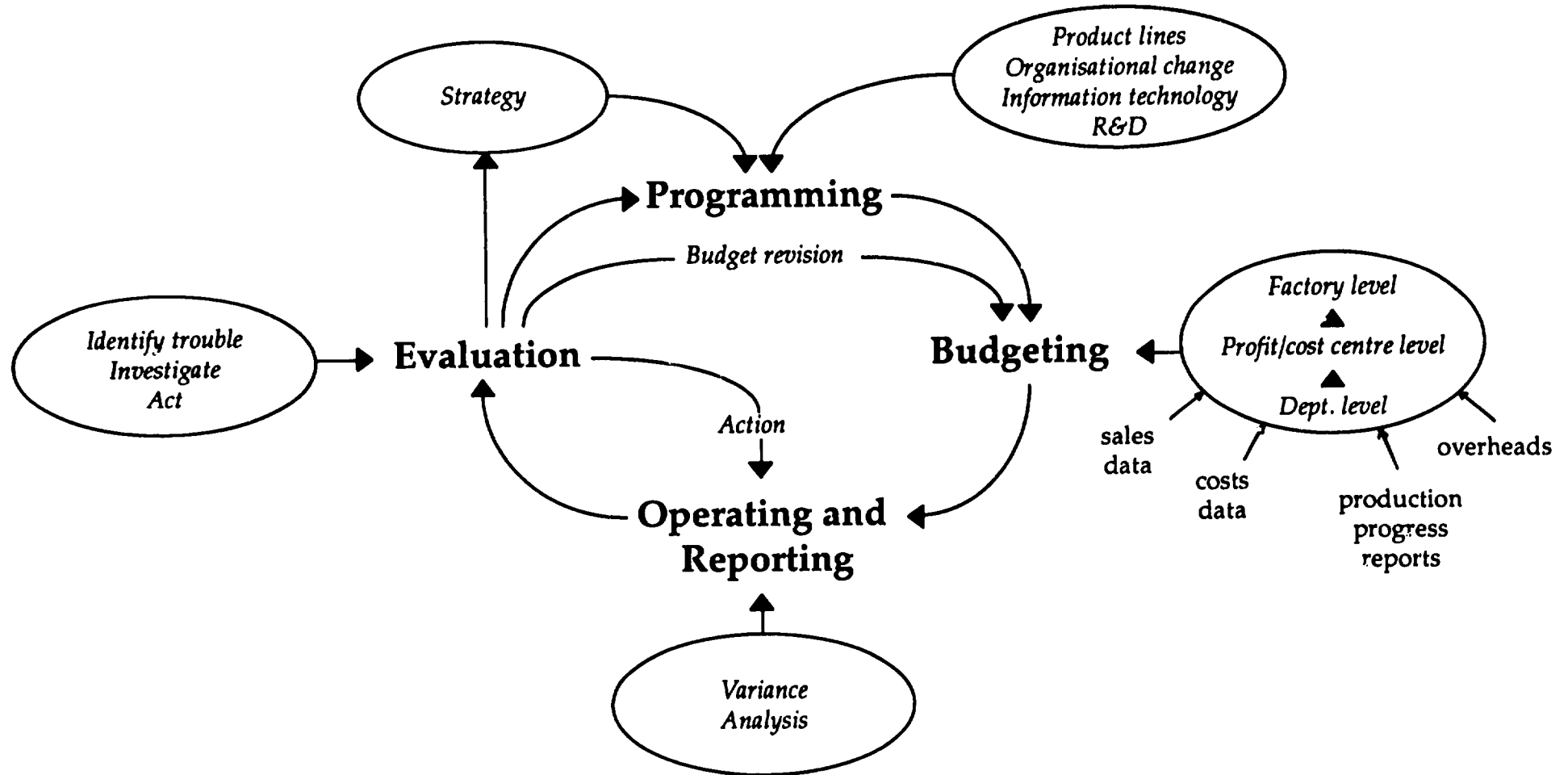


- 3.100 When a centre manager is responsible for the use of assets as well as for profits, then that centre is close to becoming independent. Zabrze and Zawiercie could be argued as being in this category. Have the executive management of Bumar-labedy set minimum criteria for a return on investment in these two plants? It does not appear so. Are the management of these two plants ready to accept responsibility - do they have the means of decision-making - for making new investments? These are questions Labedy management should be seeking answers to, together with the future importance to core business (the make/buy decision), before permitting them to become totally independent, i.e. selling them off. Is it more cost-effective to produce gearboxes for cranes and excavators in department 420 than at Zabrze? Or is it more cost-effective to buy them in from an independent Zabrze free to set its own price? The case has not been proven.

#### **Management Control: Management Information Systems**

- 3.101 The main elements of the management control system structure are the responsibility centres and the measurement techniques used in them. There are four phases of control, shown in Figure 3.23.
- 3.102 The means of translating programmes (which extend over several years) into a quantitative means of planning and control is the *budget*. Budgets are developed at profit/cost centre level, in agreement with responsibility centre managers.
- 3.103 Report procedures will need to be set up in order to (i) inform management - lower, middle and upper - of what is happening during operations, and (ii) to compare actual performance with planned, as a means of control.
- 3.104 The recent interactive workshops with middle management demonstrated that they are well aware of the purposes budgets serve, so there will be minimal need for 'indoctrination' of middle management. The one budgetary purpose which was missing from their list was motivation. Motivation of middle management - and presumably also of the workforce - is one of Bumar-Labedy's biggest single internal problems.

Figure 3.23 - Management Control Systems



3.105 As far as understanding of cost categories is concerned, there seem to be no difficulties at middle management level. Their understanding of the *behaviour* of costs was not tested, but it is probably safe to assume it has not been structured in ways required for application of cost accounting. In this case, Bumar-Labedy executive management would be well advised to initiate a training programme in the basics of cost accounting. Software and accompanying training is available in the UK for such purposes, perhaps also in Poland.

3.106 It is also worth recording that middle managers are aware of the overhead allocation parameters. There was a call for direct energy metering.

### **Types of Budgets**

3.107 Seen from company level, there are three principal elements of the overall budget at each responsibility centre:

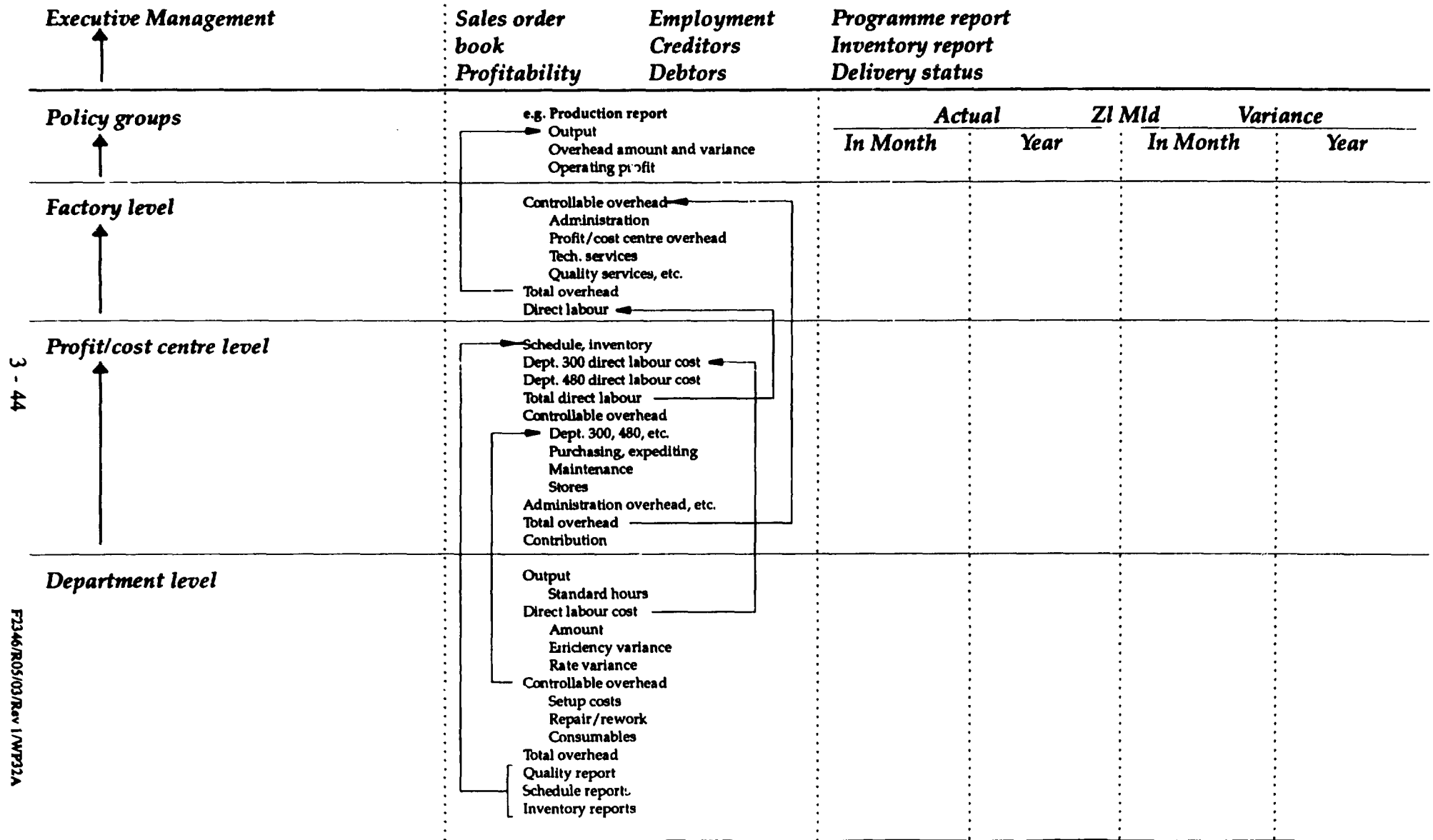
- the operating budget: revenues, costs, changes in inventory and other working capital items;
- the cash budget: showing sources and uses of funds;
- a capital expenditure budget: showing planned changes in plant and equipment.

3.108 The final ingredient in the management information system is the control report. Reports should be prepared at three levels: low, middle and top. They should show the items of cost which are controllable by managers and supervisors. See Figure 3.24 for suggestions.

3.109 Accounting information on its own is insufficient to provide adequate reference points for responsibility centres. The Bumar-Labedy management has already initiated Management by Objectives. Unfortunately, it was not tied to a monetary information system, and so has not been made to reflect progress. It can be re-started. Without it, there may be a tendency not to measure results at all. But it has to be led continuously by upper management.



Figure 3.24 - Management Information Systems



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## Organising for Preparation of Policy and Budgets

- 3.110 Restructuring must be based on coordinated decentralisation. Programming, and the setting up of budgets, cost measurement and control systems should be undertaken by a group consisting of upper and middle management. The group should consult with top management on the one hand, and middle management on the other. The group will be involved in advising top management about appointment of responsibility managers, but the decision should remain with the managing director.
- 3.111 Similar groups should be set up to coordinate other functional systems: production planning and control, production engineering, quality control and, later, quality management.
- 3.112 All groups will have common interests: personnel policy, wage and salary structures, use of internal services, training, time frames for implementation.
- 3.113 New responsibility centres must be made to, and have access for sharing ideas, e.g. for dealing with problems of like kind. Central management must set guidelines by which Divisional managers are obliged to 'convince' central management of the need for change once the organisation has been restructured. This will minimise scope for action based on intuition alone.
- 3.114 When restructuring has been completed, two policy groups should remain in place between divisional and top management, to act as the two-way conduit of ideas. One group should deal with financial matters, and the other with functional (marketing, production, engineering, legal aspects, etc) and administration. By this means, the managing director can become detached from the day-to-day decisions of the business and be free to concentrate on policy, while remaining informed of operational progress.

#### 4. MANUFACTURING RESOURCES, PLANNING AND CONTROL

##### Description of Facilities at Main Site

4.1 The principal manufacturing facilities at the Labydy site may be grouped in four categories:

- machining;
- welding;
- heat treatment;
- assembly.

These are listed in Table 4.1, together with the corresponding department numbers.

**TABLE 4.1 - MANUFACTURING FACILITIES**

Machining	300	part
	360	part
	410	some assembly
	420	some assembly
	480	part
Weld	300	
	360	
Heat Treat	300	process
	440	component
Assembly	300	
	480	
	500	

4.2 Additionally, there are manufacturing facilities which are essentially of a service nature to manufacturing, although they themselves can be producers in their own right. These are listed in Table 4.2.

**TABLE 4.2 - ANCILLARY (SERVICE) MANUFACTURING FACILITIES**

Service	Dept. No.
Casting	100, with 730 (patterns)
Forging	210, with 720 (dies)
Protective Coating	230
Pipe and Sheet Pressing	220

4.3 Other facilities are true industrial service facilities; these would form the natural 'cost' centres. They are listed in Table 4.3.

**TABLE 4.3 - INDUSTRIAL SERVICE (COST) CENTRES**

Service	Dept
Tooling	710
Machinery Maintenance	810
Building Repairs	820
Maintenance (Electrical)	940
Maintenance (Controls)	950
Water Treatment	960
Power Station	910
Gas Making	920
Maintenance (Technical)	9050

4.4 Finally, of the blue collar variety, there are the non-industrial services, also cost centres. These are listed in Table 4.4.

**TABLE 4.4 - NON-INDUSTRIAL (BLUE COLLAR) SERVICE CENTRES**

Service	Dept
Fire Service	NS 0700
Laboratory	TL 770
Prototype Centre	TS 0400
Quality Control	TJ 0500
Stores	HM 5600
Dispatch	HM 590
Guard	EAP 6500
Training School Workshop	W 6000
Rehabilitation Centre	O 6040
Transport	DT 1900

4.5 Moving to the white collar services provided at the 'centre', there are the five principal functions:

- Finance;
- Technical;
- Personnel;
- Production;
- Commercial.

4.6 The company's organisation chart, Figure 4.1, indicates how the various parts are grouped. The interim report discusses the activities of the more important divisions and departments.

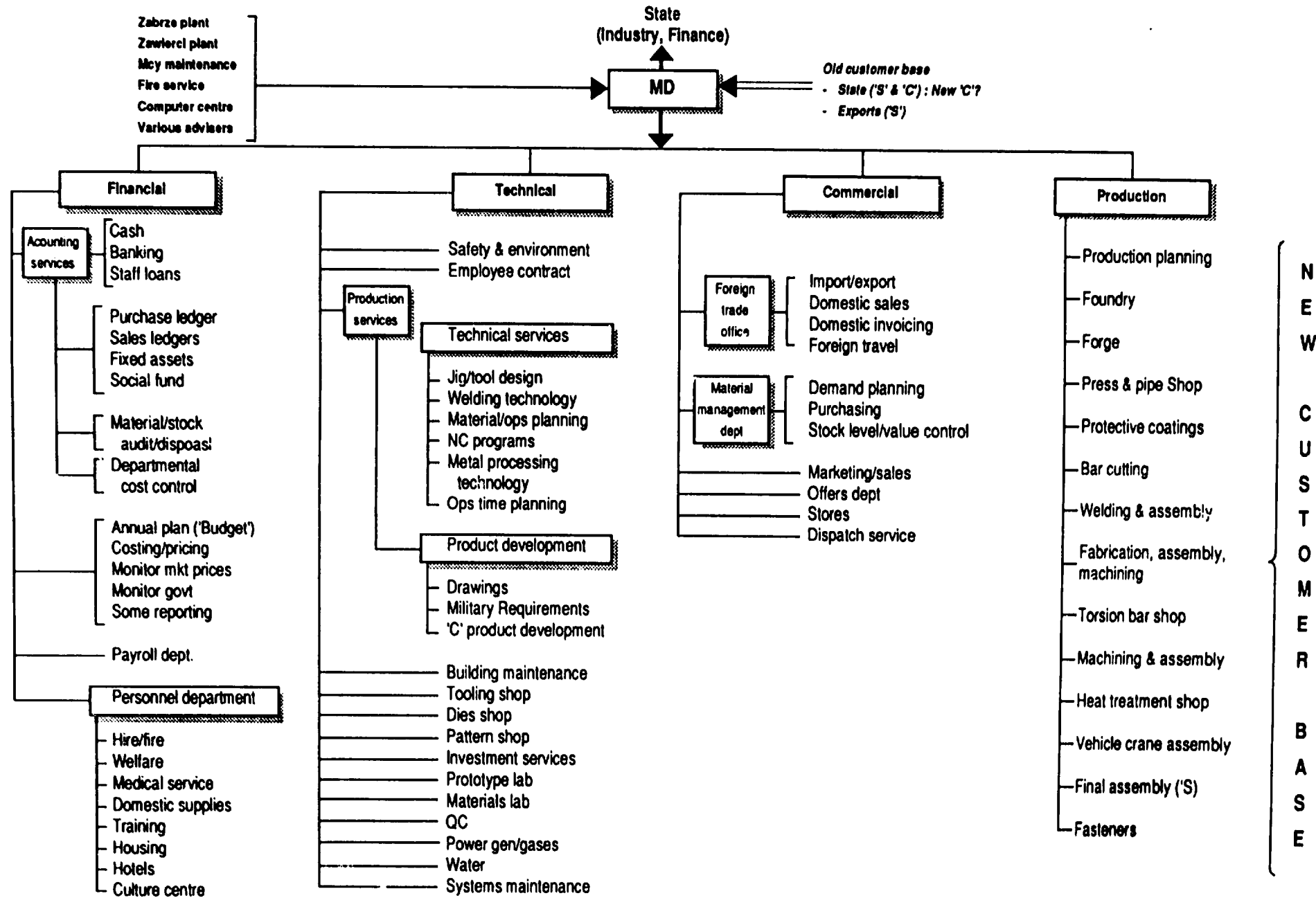


Figure 4.1 - Bumar - Labedy : Existing Organisation

## Profile of Equipment

- 4.7 The company's listing of its assets was summarised by the consultants and used to produce the following information. A selection of our assessment of production facilities appears in summary form in Appendix III.

### Age Profile

- 4.8 Table 4.5 summarises the principal classes of equipment by number of groups of machines of a certain type, number of machine per group, number of machines over 20 years old, and indicates approximate usage rate.

**TABLE 4.5 - PROFILE OF EQUIPMENT USAGE**

Dept	Number of Machine Groups	Number of Groups 50% Used or Less	Total Number of Machines	Number of Machines Over 20 Yrs Old
100	1	1	29	4
210	?	?	83	51
220	6	2	69	28
320	6	5	}	
330	1	1		
340	3	1	}	21
350	4	3		
360	5	4	21	2
410	7	4	}	22
421	8	4		
422	5	4	}	101
480	7	5		
Totals	53	34	691	247

- 4.9 The department with the greatest number of oldest machines is 420, the gears machine shop, with in excess of 100 machines over 20 years, or 40%.
- 4.10 The next most prolific department, in terms of machine numbers, is 300 - welding and assembly (collectively 320, 330, 340, and 350) - with 93 items, of which 21, or 23% are older than 20 years.
- 4.11 Close behind are departments 410 - machining with some assembly - with 85 machines, 22 over 20 years, or 26%, and department 210 - the forge - with 51 of its 83 machines, or 61% over 20 years.
- 4.12 Behind these are departments 220 - pipe and sheet products - with 28 of its 69 machines, or 40% over 20 years, and 480 - cranes assembly - with 18 of its 64 machines over 20 years, or 28%.

4.13 Not shown is department 500 - final assembly of military vehicles - which has 50 principal machines, of which 16 are over 20 years, or 32%. This is the newest of the buildings and the one which attracts most depreciation payment.

4.14 Overall, of 741 principal machines, i.e. not counting cranes, painting, washing and drying facilities, and other small service type equipment, 263 were over 20 years old, or 26%. This is not bad, considering the amount of additions there have been without a corresponding removal of redundant plant.

### **Redundancy**

4.15 In usage terms, the story is not so good. We counted 57 groups (including dept 500) of principal types of equipment. Of these, at least 34 groups were reckoned to be used 50% of the time or less in normal production (of course there was not much 'normal' production to be seen during our survey). There is therefore a considerable amount of redundant equipment.

4.16 This question was put to the production management during the workshop sessions. (Around 40 people at middle management level attended these workshops). Two premises were set up as reference:

- machines wear out, become less productive, and in relation to others are used less;
- older machines are slower compared with newer ones and those of competitor companies.

4.17 The results related particularly to departments 300, 360, 410, 420, 440, and 480. These form the core of the civilian side of the business. There was broad agreement between the four groups of managers that from 20% to 50% of equipment is actually in use, i.e. that between 50% and 80% is redundant. This is a very wide range, and one which raises significant questions about 'clutter' in workshops. Collectively, the managers thought that 30% to 40% overall was in excess of requirements to meet the current year plan.

### **Duplication**

4.18 Another form of redundancy is the extent to which machines are duplicated across departments. It is possible to perform similar sets of operational

sequences in several departments. This clutter will take years and some expenditure to sort out.

4.19 Managers were asked to consider the extent of duplication of groups of machines across manufacturing departments. The results relate to the same set of production departments as above. One of the four groups of managers estimated there was 20% duplication across departments.

4.20 The output of another group of managers is shown in Table 4.6. These results are entirely subjective, that is, there was no opportunity to count machines or carry out any kind of quantitative analysis. That said, the results indicate that a high (in the order of 70%) proportion of equipment is duplicated across five main departments.

**TABLE 4.6 - DUPLICATION OF EQUIPMENT**

Dept	Lathes	Milling	Drilling	CNC	Grinding	Boring	Welding
300	+-	+	+	+-	-	+	+
360	-	-	+	+-	-	+	+
410	+	+	+	+	+-	+	-
420	+	+	+	+	+	+	-
480	+	+	+	+	+	+	-
Usage	20%			30-50%	5%	30-50%	100%
Duplication	80%	100%	100%	80%	50%	100%	20%

Legend:

+ : duplication between, not within departments.

- : the type exists in other departments but for different purposes.

### Comments

4.21 There is an exercise to be carried out in this area by management. Three principal parameters should be applied:

- redundancy and duplication within and across departments;
- redundancy and duplication by process;
- redundancy and duplication by type of equipment.

4.22 Although some statistics on usage of machine types exist, and a list of machines has been prepared for sale, and some equipment has been removed, e.g. to set



up the nuts and bolts shop at Szczekociny, management will have to return to the theme with a more critical eye. Production flow could be radically improved for civilian product lines by a programme of rearrangement.

## Layout of Departments

### Space Usage

4.23 Based on the number of direct workers per department and the covered floor space, Table 4.7 has been devised to provide an indication of the relative usage of production space.

TABLE 4.7 - USE OF SPACE

Dept	Area m <sup>2</sup>	Number Directs	m <sup>2</sup> /Direct
110	5163	39	132
120	7884	93	106
140	776	60	125
210	14173	69	205
221	3530	27	131
222	6300	34	185
224	3100	17	182
320	8500	60	141
330	4101	60	68
340	8500	46	184
350	4100	33	124
360	11549	105	110
410	6578	52	127
421	7530	73	103
422	4902	25	196
423	3110	18	172
480	11934	64	186
510	21209	83	255
520	13020	61	213

4.24 In order, the following departments are the most lightly used:

- 510, 520 (military vehicle final assembly);
- 210 (forge);
- 422 (machining);
- 480 (cranes assembly);
- 222 (pipe and sheet products);
- 340 (welding and assembly);
- 423 (machining).

This computation reflects the number of directs presently deployed and, as such is an indication of which departments are most in need of work. The departments listed represent a fair cross-section of the plant's activities.

4.25 Managers were asked to estimate the proportion of space which was not required. The results are presented in Table 4.8.

**TABLE 4.8 - EXCESS PRODUCTION SPACE**

Dept.	% Space Not Required				Rating
	Respondent Group				
	1	2	3	4	
100	0	5	20	20	Low
210	15	30	70	30	Mid
220	11	30	60	20	Mid
300	0	10	40	25	Low
360	0	15	30	15	Low
410	-	20	80	20	High
440	-	20	30	15	Low
480	-	20	25	20	Low
500	-	40	50	40	High
<b>Mean</b>	<b>7.4%</b>	<b>21%</b>	<b>45%</b>	<b>23%</b>	

Overall Mean: 24.1%

4.26 There is a discrepancy between an overall estimate of 24% unused space and the individual group estimates for redundancy and duplication which range up to 70%. It is of course difficult to visualise how much space would become free if redundant equipment were removed. At least one group expected there would be minimal production of tanks in the future.

4.27 The implications of this assessment are:

- final assembly of military vehicles (500) and machining (410) have high (40-45%) levels of unnecessary space;
- pipe and sheet products (220) and forge (210) have relatively tolerable levels of unnecessary space;
- remaining departments (100: foundry; 300 & 360: welding and assembly; 440: heat treatment) have low (15-20%) levels of unnecessary space.

## Use of Space for Military Production

- 4.28 If assumptions are made concerning the extent to which production departments would be required for military production, given prevailing market conditions, it is possible to arrive at a proportion of the overall productive capacity which must be set aside for that purpose. Table 4.9 demonstrates this.

**TABLE 4.9 - USE OF PRODUCTION SPACE FOR MILITARY GOODS**

Dept	m <sup>2</sup>	% 'Military' Equipped	m <sup>2</sup> 'Military'
100	22,806	50	11,403
220	12,930	30	3,879
230	2,707	30	812
300	25,200	30	7,560
360	11,549	100	11,549
410	6,578	100	6,578
420	15,542	50	7,771
440	4,942	50	2,471
500	34,229	100	34,229
730	34,229	50	17,115
	170,712		103,367

$$\frac{103,367}{170,712} = 60\%$$

- 4.29 The result is that 60% of productive space is required for military production. The exercise neglects all of the service centres listed in Tables 4.3 and 4.4. The effect of their inclusion would be to increase the numerator relatively more than the denominator (example: Stores is almost all military). The result would be a greater proportion of space in favour of military production.

## Flow of Production

- 4.30 For security reasons neither layout drawings of individual departments or the site as a whole were provided. We are not therefore in a position to make quantitative comments on product flow. Neither were we provided with any figures which would indicate the proportion of facilities required for given volumes of military production.
- 4.31 Managers were asked to consider which departments they thought were required the most for four main processes across five product groups. The results are presented in Table 4.10 and analyzed in Table 4.11.

**TABLE 4.10 - DEPARTMENTAL ALLOCATION, PRODUCTION FLOW**

Product	Prep	Welding	Machining	Assy.
Cranes	1) 220, 300	480, 200	480, 220	480, 220
	2) 220, 300, 100, 210	300	480	480
	3) 220, 300	300, 360	420, 480	480
	4) 300, 480	300	220, 480, 400	480
Excavators	1) 100, 300	300, 220	300, 420	500
	2) 220, 300, 100, 250	300	420	500
	3) 220, 300	300, 360	420, 480	480
	4) 300, 240	300, 360	280, 810, 420, 440	500
Loaders	1) 300	360	320, 360	500
	2) 300	300	420	500
	3) 220, 300	300, 360	420, 250	480
	4) 300, 240	300, 360	280, 810, 420, 440	500
Tanks	1) 100, 210, 280, 300	300, 360, 220	360, 300, 410, 420, 440, 450	500
	2) 220, 300	300, 350	420, 410, 300, 360	500
	3) 300, 420, 220, 300	300, 360, 220, 350	300, 360, 350, 450, 350	500
	4) 450, 210	300, 560	410, 420, 440, 450, 350	500
Volvo	1) 500	500	500	V500
	2) 300	300	220, 410, 420, 450	-
	3) 220, 300	300	300	V350
	4) 300	300	300, 220	V500

**TABLE 4.11 - INVOLVEMENT OF DEPARTMENTS BY PRODUCT LINE**

Dept	Cranes	Excavators	Loaders	Military	Volvo	Overall Use
100	3.3	6.6	4.8	8.9	0	5.7
210	3.3	3.3	4.8	6.7	0	4.3
220	23.3	13.3	9.5	11.1	7.1	13.6
240	0	3.3	4.8	0	0	1.4
300	23.3	30.0	19.1	22.2	50	26.4
350	0	0	4.8	6.7	0	2.9
360	3.3	6.7	19.1	13.3	0	9.3
410	0	3.3	4.8	6.7	0	3.6
420	3.3	13.3	14.3	11.1	0	9.3
440	3.3	3.3	4.8	4.4	0	3.6
480	36.7	6.7	4.8	0	0	10.0
500	0	10	14.3	8.9	43*	10.0
	100%	100%	100%	100%	100%	100%
Weight	0.21	0.21	0.15	.32	0.10	1.0

\* Dept 500 would only be part-used for sub-contracting.

4.32 This is a very revealing exercise. The principal observations are as follows:

General

- Twelve departments, or parts of departments were chosen by the managers as being relevant to the four processes nominated (preparation, welding, machining, and assembly).

- Military vehicles demand the most use of facilities, being 50% in excess each of cranes and excavators. This is not surprising.
- Loaders require only half the facilities that tanks need.
- Term subcontract work such as that for Volvo requires only one third of the facilities that tanks need.

**Department involvement: Cranes**

(Note: Departments are listed in priority order)

- Departments needed most for crane construction are:
  - 480, 300, 220
- Departments not required for cranes are:
  - 240, 350, 410, 500

All others are required minimally.

**Department involvement: Excavators**

- Those needed most for excavators are:
  - 300, 220, 420, 500
- Departments not required for excavators are:
  - 350
- All others are required minimally.

**Department involvement: Loaders**

- Departments needed most for loaders are:
  - 300, 360, 420, 500, 220
- There are no departments which are not required.

### Department involvement: Term subcontracting

- Departments required are:
  - 500, 300, 220
- No others are required.

### Overall Departmental Usage

- Departments in most demand may be divided into three groups; prioritised within groups, they are:
  - (i) 300, 220
  - (ii) 480, 500, 420, 360
  - (iii) 100, 210, 440, 410, 240.

4.33 It is fair to say that the figures for tanks did not influence the results for all non-military products put together. That is, the overall groupings of departments would be much the same with or without the military products. Of course, this does not indicate the percentage use that civilian products would make of the facilities, on their own.

### **Use of Services - Devolve/Buy-in/Buy-Out?**

#### **Central Services**

4.34 Managers were asked, both at the workshop sessions and by confidential questionnaire, how they would like to use the services currently provided at the centre of the organisation.

4.35 The results of the workshop 'ballot' are shown in Table 4.12.

**TABLE 4.12 - USE OF CENTRAL SERVICES**

Service	Designation	Devolve to Departments	Retain at Centre	Balance	Total Vote
Production Planning	PP 1800	5	3	Devolve	8
Material Mgmt	HO 0119	4	2	Devolve	6
Laboratory	TL 770	0	4	Centre	4
Quality Control	TJ 0500	4	1	Devolve	5
Technical Services	TT 2600	5	4	Split	9
Financial Services	ER 0300	6	1	Devolve	7
Personnel Services	EA 0113	4	2	Devolve	6
Products Construction	TK 2500	0	6	Centre	6
General Tech Svces	TO 2000	2	3	Split	5
Organisation Office	NO 0123	1	0	Cancel?	1
'Comfort' Services		2	3	Split	5

Note: Scores are from a maximum of 6: 6 = high, 0 = low.

Observations are as follows:

- Services on which there is almost unanimous agreement are:
  - Laboratory: Retain at Centre
  - Financial Services: Devolve to departments
  - Quality Control: Devolve to departments
  - Products Construction: Retain at Centre
  - Organisation Office Apathy:cancel?
  
- Remaining services attracted split opinion, indicating that there should be some function provided either at the centre or in the departments, but with greater tendencies as follows:
  - Production Planning: More in depts
  - Purchasing: More in depts
  - Technological Services: Slightly more in depts
  - Personnel Services: More at centre
  - General Tech Services: Slightly more at Centre
  - 'Comfort' Services: Slightly more at Centre.
  
- The services that people found easier to vote on were arranged in group order as follows:
  - Technological Services
  - Production Planning
  - Financial services

Then:

- Personnel Services
- Production Construction Office
- Purchasing

Then:

- Quality Control
- General Technical Services
- 'Comfort' Services

Then:

- Laboratory

Then:

- Organisation Office

- Does this ordering imply that people felt more strongly about the services at the top of the list, or that they were less well acquainted with those at the middle and bottom? It is up to top management to find this out.

4.36 The results from the questionnaires are as follows. Eleven department managers were canvassed and they were asked whether they use services as follows:

- Offers Preparation services: 6 Yes, 3 No
- Financial Services: 6 Yes, 4 No
- Technological Services: 7 Yes, 3 No
- Purchasing: 6 Yes, 4 No
- Stores Service: 6 Yes, 4 No
- Expediting Services: 2 Yes, 8 No
- Maintenance Services: 5 Yes, 5 No
- Other Services:



- Transport: 1
- Power 2
- Tool Shop 2
- Pattern making 1
  
- Self-sufficient? 4 Yes, 3 No
- Do own design? 6 Yes, 2 No
  
- Need new resources?
  - Electronics 1
  - Accounting 6
  - Purchasing 2
  - Repairs 1
  - Marketing/Sales 4
  - Quality control 1
  
- Handle own wages? 8 Yes, 2 No
- Handle own QC? 6 Yes, 3 No
  
- Natural combinations of departments:
  - 480/410/420
  - 480/300/410/710
  - 810/480/300/500/360/420
  - 720/710
  - 360/300/480
  - 110 with construction and assemblies
  
- Strengths?
  - experience 6
  - well equipped 3
  - quality 3
  - low price 2

- Suggestions for future:

- provide computers 4
- decentralise 4
- need more than single orders 3
- pricing strategy 3
- motivation 1
- meter energy usage 1
- ISO 9000 1
- combine tech and planning 1
- sell redundant equipment 1
- rent redundant space 1
- provide training 1

### Industrial Services

4.37 Managers were asked at the workshop sessions how they would like to use industrial services currently provided by the centre. The results of the workshop 'ballot' are shown in Table 4.13.

TABLE 4.13 - INDUSTRIAL SERVICES: BUY-IN/BUY OUT

Service	Designation	Devolve to Depts	Retain at Centre	Buy In	Balance
Stores	HM 5600	2	3	0	Split In-house
Dispatch	590	2	2	0	Split In-house
Power Station	910	0	4	2	Centre
Gas Service	920	0	4	3	Centre/Buy-in
Electrical Maint.	940	5	2	3	Devolve
Control Maint.	950	1	2	2	Split 3 Ways
Water Mgmt	960	0	4	4	Centre/Buy-in
Fire Svce.	NS 0700	0	0	5	Buy-in
Machy Maint.	810	4	3	4	Split 3 Ways
Foundry	100	0	3	3	Centre/Buy in
Forge	210	0	3	4	Buy/Centre
Pattern Shop	730	1	2	2	Centre/Buy
Dies Shop	720	1	2	3	Buy/Centre
Tool Shop	710	3	3	4	Split 3 Ways
Building Repair	820	0	2	5	Buy-in
Transport	PT 1900	5	1	1	Devolve
Coatings	230	0	4	2	Centre
Heat Treatment	440	0	4	1	Centre

Note: Scores are from a maximum of 5: 5 = high, 0 = low.

4.38 Observations are as follows:

- Services on which there is almost unanimous agreement are:

- Fire Service Buy-in
  - Transport Services: Devolve to departments
- Services on which there is agreement that they should NOT be devolved to departments are:
    - Power station: Centre/Buy-in
    - Gas Service: Centre/Buy-in
    - Water Management: Centre/Buy-in
    - Foundry: Centre/buy-in
    - Forge: Buy-in/Centre
    - Building Repairs: Buy-in
    - Protective Coatings: Centre/Buy-in
  - Services for which there is a stronger preference for buying-in are:
    - Fire service
    - Building Repairs
  - Services for which there is a stronger preference for retaining on-site, but not devolved to departments are:
    - Power station
    - Gas service
    - Protective coatings
    - Heat Treatment.

4.39 The results of this exercise overall are not very clear, indicating general indecision, probably due to the novelty of the proposals, coupled with unfamiliarity with the alternatives to the status quo. Many services attracted split opinion, indicating that there should be choice of buying-in or buying on-site, or even devolving to departments. Management will need to study the situation more closely.

## **Production Planning and Control**

### **Current Arrangements**

- 4.40 Production planning for standard products is arranged as depicted in Figure 4.2 discussed in more detail in our interim report. This illustrates the relationship between the finance function, the commercial/purchasing function, the production planning function, and the offices at shop floor level. This information was obtained by following route sheets through the process.
- 4.41 The planning procedure for subcontract jobs is shown in Figure 3.14.
- 4.42 These procedures need to be adapted to the budgeting concepts outlined in section 3 above. They need also to be flexible enough so that one-off jobs can be processed on the basis of differential cost decisions by the department manager. One-off jobs are not easy to accommodate in a pre-determined budget. One-off jobs will form cost objectives (see section 3) and the manager needs a calculation format which will enable him to make optimum decisions.
- 4.43 Department managers therefore require the freedom and the resources with which to make their own planning and control arrangements for production, while at the same time being able to accommodate plans descending from the centre (for assembled product lines).

### **Material Flow Systems**

- 4.44 The entire physical flow chain of material, from supplier through production to customer is depicted in Figure 4.3. The principal point to establish here is the complexity of handling such an amount of data *across* production departments. If department managers are to correctly anticipate arrivals of materials and components then there is an obvious need for an information system to do this.
- 4.45 It is obvious since Bumar-Labedy have previously been able to produce such complex vehicles as tanks, that there is an information system which works. But how well would it cope with pressure on delivery dates? And with short lead times from suppliers?

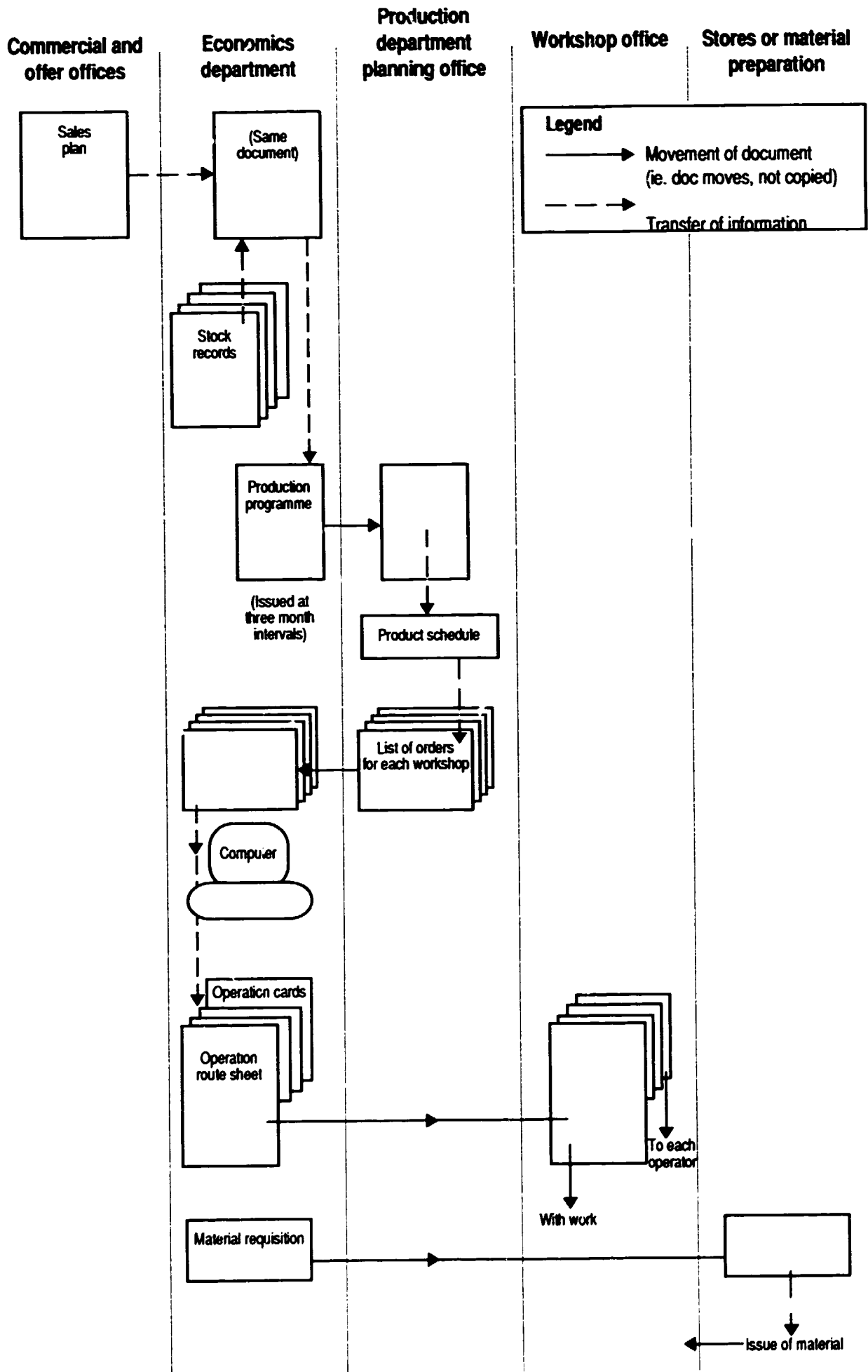
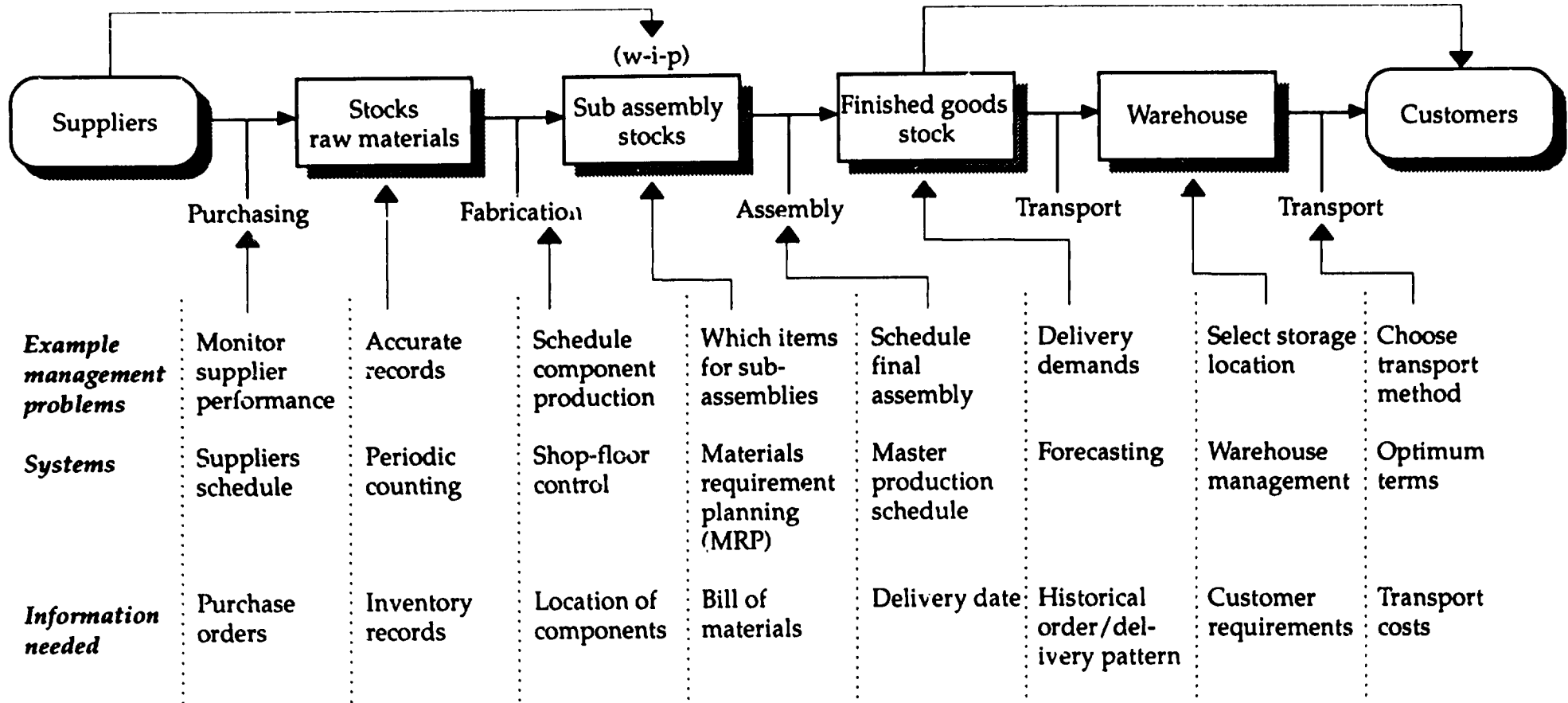


Figure 4.2 - Production planning for standard products

Figure 4.3 - Material Flows - MRP in Perspective



4.46 Within the chain of events shown in Figure 4.3, there is a sub-system called Materials Requirements Planning (MRP). The concept is that materials are ordered in batches called economic order quantities, in sufficient time to preclude a shortage, while avoiding tying up working capital in long lead times. MRP, if adopted would have to be set up as part of an information system and have inputs and outputs to/from financial information systems.

4.47 Assembled product lines may be broken down into assemblies and sub-assemblies, as illustrated in Figure 4.4. By this means the following topics can be addressed:

- nominate profit centres to take responsibility for major assemblies, in this case a road vehicle and a crane;
- assign smaller assemblies to departments, e.g. boom, turntable, outriggers;
- decide which components of such assemblies can be made in-house (and carry out a make/buy decision) and assign these to relevant departments;

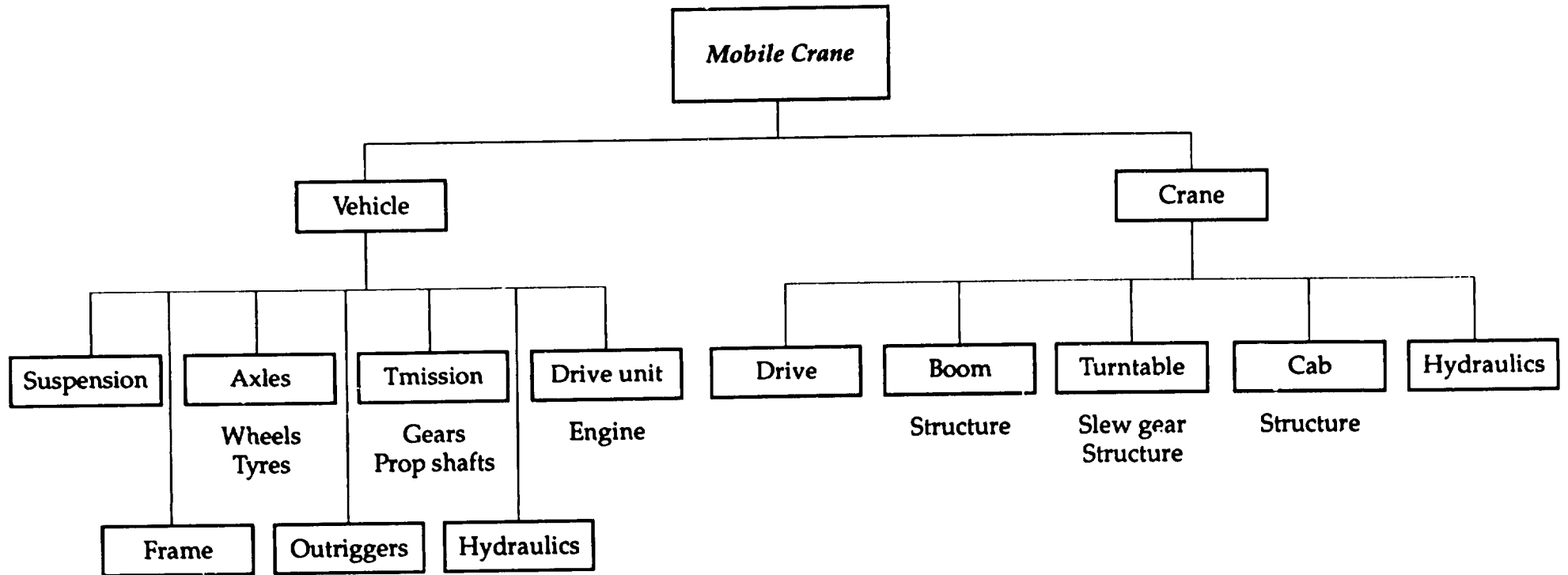
#### **Production Scheduling**

4.48 Bumar-Labedy are not using either Gantt chart type scheduling or networking techniques. Therefore they are not aware of which items of production lie along critical paths, except by intuition and good fortune. Formal planning techniques should be introduced.

4.49 The impact which the absence of formal planning has on the performance of the company was not measurable by the consultants during the course of the study, principally because there were no final assembled products moving through production. The effects can be deduced from statements by Bumar-Labedy staff about the manner in which work-in-progress used to pile up, and from the evidence provided by the current high inventory levels, that is, high working capital requirements.

4.50 At department level, the detail planning seems to be in place to permit scheduling on the shop floor, whereas at company level, planning is confined to a statement of the available labour capacity.

Figure 4.4 - Production Planning



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- 4.51 A production plan is produced each quarter by the Economics Department for the Technological Department. It is simply derived from forecasts of domestic and export sales, adjusted for stocks of finished goods. It only covers the following three months, which is less than the average lead time of the company's products. This 'forecast' is not a forecast, just a statement of capacity.
- 4.52 There is no formal system of planning forward workload. Forecasting of production hours is simply a multiple of the number of hours available from a stated number of direct workers and a stated number of days (months). There is no relationship to demand, so the workload forecast as stated is simply a nominal capacity.
- 4.53 Therefore the capacity statement is not related to shop loading (space, equipment, labour hours, machine hours, setup/loading time) and so is not linked to efficiency or performance. A formal planning system needs to be installed which recognises the capabilities and shortcomings of individual departments, and combines departmental loading with the order book.
- 4.54 The mechanism of planning and scheduling was described in the interim report and is summarised as follows.
- 4.55 A full set of documentation is prepared and issued to the workshop and allocated to operators by the workshop loading office.
- 4.56 Workshops are completing the whole planning process themselves, that is without the aid of the central Technical Department. They are also effectively ignoring the Production Department Planning office and the Economics office. This is a recipe for confusion at higher rates of production.
- 4.57 Operation route sheets for standard products are initially prepared in the Technical Department, that is heading information and workshop sequence. They are then passed to the workshop where operation details are completed. They are then returned to the Technical Department where operation times are calculated. Finally the completed Operation route sheets are sent to the Economics Department for entry on the computer and completion of cost forms. All of these activities are completed after the completion of prototypes of first-off production.

## **Standard Job Times**

**4.58** The workshops produced the following opinions concerning standard job times in use:

- Some are too loose, some too tight;
- Many are old and out of date, and were not recalculated for reasons concerning wage payment;
- Changes in type and series of production have made standard times outdated;
- They do not reflect the procedures which have been adopted recently;
- Responsibility for setting standard times is split between the Technological office and departments: the former can calculate machining time, but the latter has to guess the manipulation and handling times;
- There is no incentive at departmental level to revise standard times;
- There is insufficient monitoring of standard times at shopfloor level.

**4.59** These issues can only be overcome by giving departments the responsibility to establish more realistic standard times and to monitor them regularly.

**4.60** The consultants carried out a simple work study programme; this was discussed in our interim report. The principal conclusions were as follows:

**4.61** The technical specifications for operations, speed, feed, depth of cut and number of units for machining; operations and electrical power and wire speed and size for welding have been cross referenced by Atkins' data and are satisfactory. Thus in general terms and as observed during site visits, the machining and welding technology in use is generally satisfactory.

**4.62** Operation standard times however appear to include an excessive amount of manipulation time. If the standard times have been calculated on the basis of one-off manufacture then the manipulation time may be correct. But for repeat

work the manipulation time should be lower, since handling, location and fixing aids should be in use.

- 4.63 A detail study of job time calculation methods would be required to verify this conclusion from the initial workshop studies. Bumar-Labedy would be well advised to initiate such work-study programmes. The results would form the basis of a monitoring system, using the western management accounting system of 'variances'.

### **Inventory Control**

- 4.64 There are two purchasing functions and it is recommended that purchasing be set up so that production management have a proportionate degree of influence. This is, the control of purchase orders (specifications, quantity, source, delivery, price) should be related to the plans of production management (particularly in the case of short-term orders).

- 4.65 There are over 20,00 line items, of which 50-75% are for military product lines. From the inventory levels, it would seem that under the old central planning system, stock-outs were avoided by over-ordering. But the necessity for the purchasing manager to interpret production plans himself has resulted in material shortages.

- 4.66 While the inventory is held on computer, there is no computerised implementation of minimum order sizes, stock-out or order lead times: it is done manually. This situation is not complementary with being a well-run, responsive company. Some work has been done on computerising the ordering system and it should be restarted and put into operation.

- 4.67 If there were no military obligation there would be no appreciable change to the computerised systems.

### **Interfacing with the Centre**

- 4.68 It is clear that a layer of management will be required to interface between profit centres and executive management. The concept of forming policy groups has already been raised, but additionally, there will be a need for formal functions at the centre, with well defined terms of reference and access to

management information systems across functions and across responsibility centres.

#### **Discussion of Section 4**

4.69 The chapter covers topics as follows:

- description of facilities and outline organisation chart;
- profile of equipment (age, redundancy, duplication);
- use of space;
- flow of production (relevant to product group);
- use of services: buy-in/buy-out?;
- production planning and control;
- inventory control.

#### **Facilities**

4.70 There are four principal types of activity carried out at Gliwice which are supported by many other activities. They are: machining, welding, heat treatment, and assembly.

#### **Profile of Equipment**

4.71 In overall terms, a quarter of main equipment is over 20 years old, while 60% is either redundant and/or duplicated across and between departments.

4.72 Generally speaking, activities which have most redundancy and duplication are machining, and welding and assembly. The main categories of equipment within which redundancy and duplication occur have been listed (Table 4.6). Management are advised to investigate this situation over a period of time in order to evolve a plan for restructuring production facilities, and three investigative parameters have been suggested.

#### **Use of Space**

4.73 Two approaches were taken to arrive at a view on the use of production space (within buildings). The first was the ratio of floor space to the number of direct workers currently employed. The second was the judgement of middle management about excess space. There is agreement between the two

approaches in that final assembly of military vehicles (the newest building and equipment, and most expensive in terms of depreciation), and machining are the most lightly used departments and have relatively high levels of unnecessary space.

- 4.74 A third approach, based on assigning judgemental estimates of the proportion of space required for military production indicates that in excess of 60% might be so required. This is another exercise which management should consider, particularly for purposes of assigning asset values to military requirements.

#### **Assignment of Departments to Product Lines**

- 4.75 Military vehicles require at least 50% more of the available facilities than the two next most demanding product lines: cranes and excavators. In other words, it will be difficult to find product lines which will justify continued support of the entire Gliwice site.

- 4.76 When the departmental requirement is analysed, it can be seen that the overall groupings of departments are much the same, with or without the military products; there is a proportion of the facilities which are unnecessary for civil product lines, such as the heat treatment department (440).

- 4.77 The pattern which emerges from the analysis so far is that it is not possible to easily segregate buildings or departments into military and non-military. Given detailed study, it will likely be possible to segregate stands or groups of machines within buildings, possibly also sub-departments. Duplication and redundancy of equipment and functions permeate the entire site. A *prima facie* case can be established for support of the majority of the site if civil product lines are to be contemplated in earnest. It will be possible to 'mothball' only a small proportion of the site if continuous military production is not anticipated.

#### **Use of Services: Devolve/Buy-in/Buy-out?**

- 4.78 Middle management accept without a doubt that the organisation, as currently presented to them is unsuited to their needs. There is a great deal of desire for devolution from the centre on the one hand (particularly for financial services), and on retention at the centre, on the other (particularly for product line

development). Management should carry out further exercises to establish which services to devolve and which not.

4.79 On the question of which industrial services should be devolved, bought-in or retained at the centre, many of the more general services such as power, gas, water were agreed to be best provided either at the centre, on the basis of free choice, i.e. buy from centre or from outside. That is, production management recognise that such services should not be a part of their own production function.

4.80 With respect to specific production functions such as forging, heat treating, some types of machining, production management is unable to agree on sourcing policy. Executive management is advised to make decisions based on cost-efficiency; this will involve considerable external research into commercial availability and terms, such as price and delivery.

#### **Production Planning**

4.81 Presently, planning takes place at departmental level, there being no company-wide systems in use, not even simple bar charts. This situation has to be addressed.

4.82 A management information system should be introduced which informs (a) production management and (b) executive management (via a policy group) of:

- labour hours available (direct and indirect);
- machine hours available;
- controllable overhead;
- inventory;
- current work scheduling.

This is the basis of Figure 3.24, discussed earlier.

4.83 Standard job times should be revised.

## **Inventory Control**

- 4.84 The MIS should interface with inventory control and we have illustrated the types of problems to be overcome, and systems and information needed to implement an integrated materials flow policy.
  
- 4.85 Computerisation of inventory should be extended to include a stock order system, in sympathy with production requirements.

## 5. EMPLOYMENT, MOTIVATION AND TRAINING

### Employment

- 5.1 The status of employment at Labedy as of February 1992 is shown in Table 5.1. This number is said to be decreasing by 60 - 80 people per month. The movement is reported to be primarily to the private sector where earnings are higher and the future more stable.

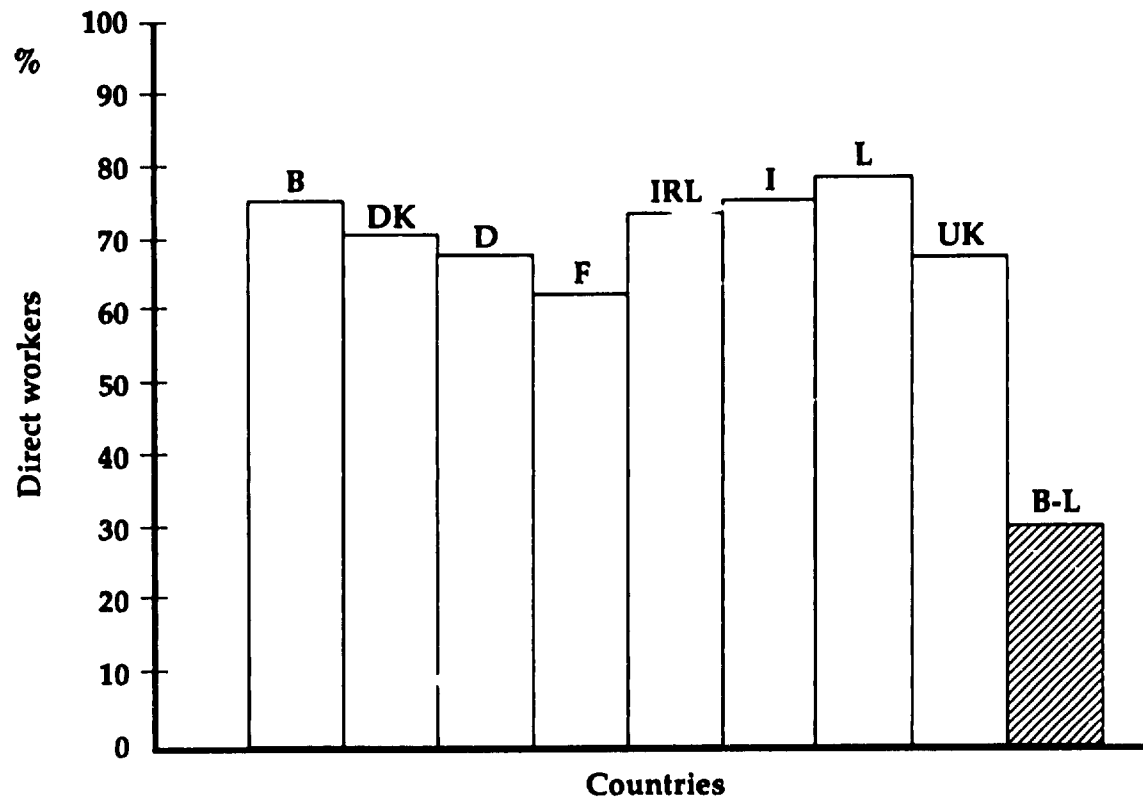
TABLE 5.1 - EMPLOYMENT SUMMARY

Function	Technical	Economy	Admin	Direct	Indirect	Total
Production	286	8	14	1110	781	2199
Commercial	51	102	5	67	147 <sup>a</sup>	372
Technical	381	11	23	164	762 <sup>b</sup>	1341
Economical	28	124	115	-	213 <sup>c</sup>	480
Others	43	9	17	-	96 <sup>d</sup>	165
Total	789	254	174	1341	1999	4557

Notes 1. Includes 130 in HM Stores  
2. Includes 126 QC TJ  
181 Machinery Rebuild (810)  
106 Electrical Shop TE (940)  
3. Includes 85 EAD Cultural Centre  
4. Includes 66 NS Fire Brigade  
694

- 5.2 There is an imbalance in the distribution of human resources as approximately one third of the workforce support the other two thirds. Typically in Western industrial companies the proportion of direct to indirect is much higher (see Figure 5.1). Executive management should address this issue in the short term, considering the proposals put forward in Section 8 of this report.
- 5.3 As stated above much more emphasis should be placed on the sales and marketing functions and, in the medium to long term, on product design.
- 5.4 The personnel department (324 staff as at 12.31.91) and technical department (789) appear to be over-manned and careful study of the contribution of these personnel to the overall productivity of the company needs to be made.





Source: Eurostat (1989) Industry Statistical Year Book

Figure 5.1 Percentage of Direct Workers to Total Employees

- 5.5 There is some evidence that the reduction in employment since 1987 has not been applied to the indirect and other employment to the same extent as for directs, see Table 5.2.
- 5.6 Just over 40% of directs are being paid to stay at home at present and overall utilisation of facilities compared with that achieved in 1987 can be no better than 25%.

**TABLE 5.2 - DIRECT EMPLOYMENT REDUCTION**

Dept	Employed		End 1991			Employed I.D
	End 1987	End 1991	Wkg	% Wkg	Efficiency % (Wkg %/1987)	
100	420	192	123	64	29	151
210	203	69	32	46	16	75
220	183	81	35	43	19	64
300	395	166	88	44	19	112
350	74	33				
360	226	105	88	84	39	57
410	138	52	37	71	27	33
420	315	116	47	41	15	67
480	160	64	46	72	29	50
500	489	168	114	68	23	93
<b>Totals</b>	<b>2603</b>	<b>1046</b>	<b>610</b>	<b>58</b>	<b>23</b>	<b>702</b>

\* Estimated

reduction in direct employees employed end '87 to end '91 = 60% (2603 to 1046)  
 reduction in total employees '1988 to end '91 = 53% (10164 to 4827)  
 reduction in indirects and others 7561 to 3781 = 50%

	1988	1991
ratio directs	$\frac{2603}{10164} = 25\%$	$\frac{1046}{4827} = 22\%$
others		

Source: B-L data

### Age Profile

- 5.7 The age profile of the entire workforce and of the 75 managers is shown in Figure 5.2 This indicates acceptable distributions. The management is beginning to age, so there should be a policy for gradual replacement. That said, 75 managers is too many.

### Motivation

- 5.8 The main motivational and demotivational parameters were determined for the middle managers and the blue and white collar workers during the interactive workshop sessions with the middle management.

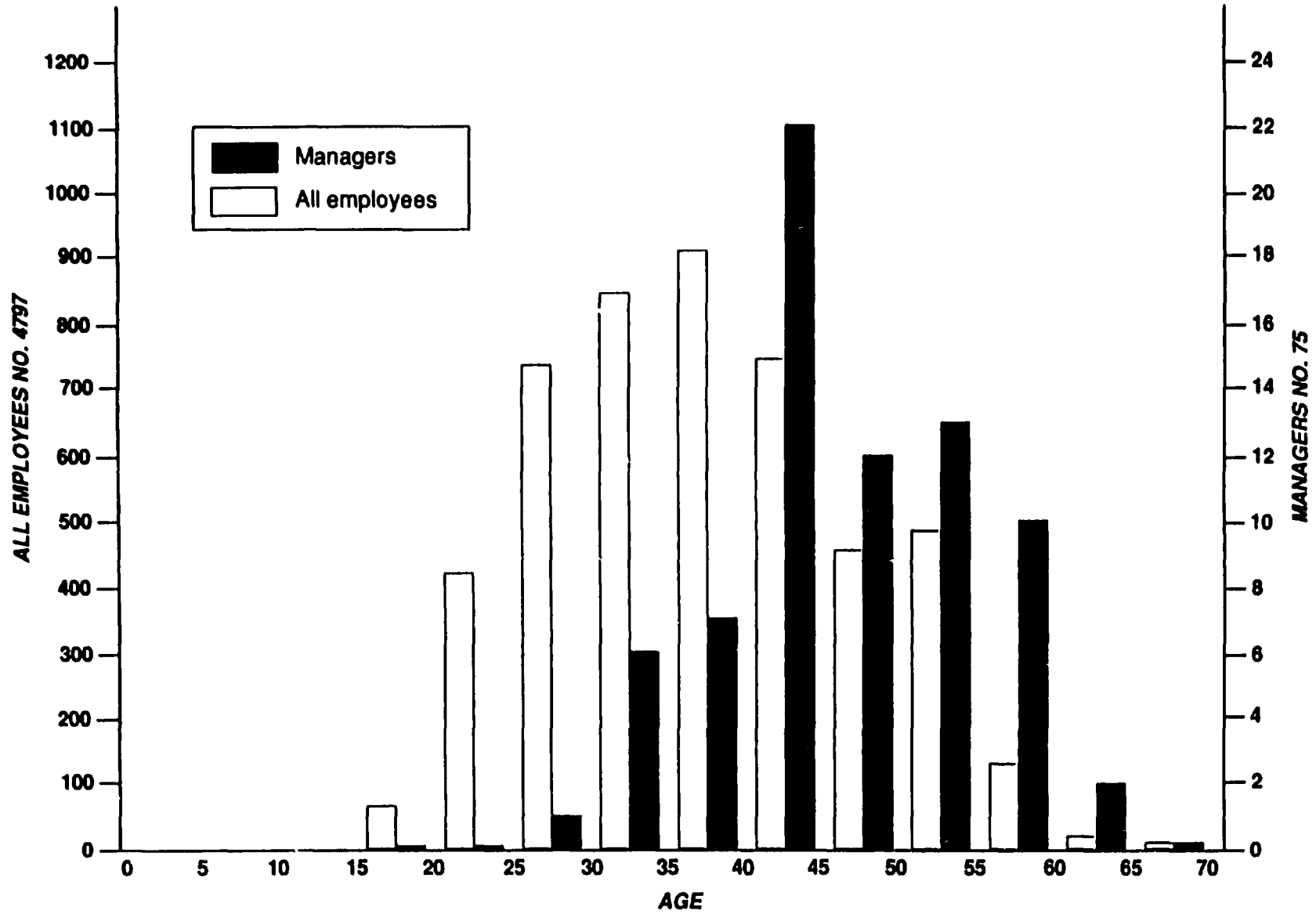


Figure 5.2 Employment Population Analysis

- 5.9 Some of the most important of the factors are out of the control of the management of the company and lie with the government. Examples are the status of the company and the uncertainty of the economy (see Figure 5.3).
- 5.10 Figure 5.3 illustrates our interpretation of the motivating and demotivating factors claimed by middle management to be influencing their lives. It states for example, that the most important factors - wages and industrial stability - which have the greatest potential for influencing change are factors over which the company has least control.
- 5.11 In common with all state enterprises in Poland, wages are artificially maintained at a low level by the imposition of a wages tax payable by the company. The reasons for the tax are probably historical, but one effect is to encourage state companies to privatise. In the case of Bumar-Labedy the government has not made the decision whether the company can be privatised, given the sensitive nature of its products.
- 5.12 This paradoxical situation has been addressed to some extent by raising the salaries of the senior management. Additionally certain staff whose skills would be difficult or impossible to find on the open market or too expensive for the company to hire in have been revalued upward (see Figure 5.4).
- 5.13 As a result of this tax the average wage of the workforce is Zl 2 million per month, compared with the local (Silesian) wage of Zl 3 million. Further efforts must be made to either raise the threshold or find ways around it.
- 5.14 The next two factors which hold the greatest potential for change are professional satisfaction and ability to influence company direction (through extent of responsibility). These are both factors which executive management can control .
- 5.15 Table 5.3 presents some possible solutions that management may wish to consider.

Potential for affecting change

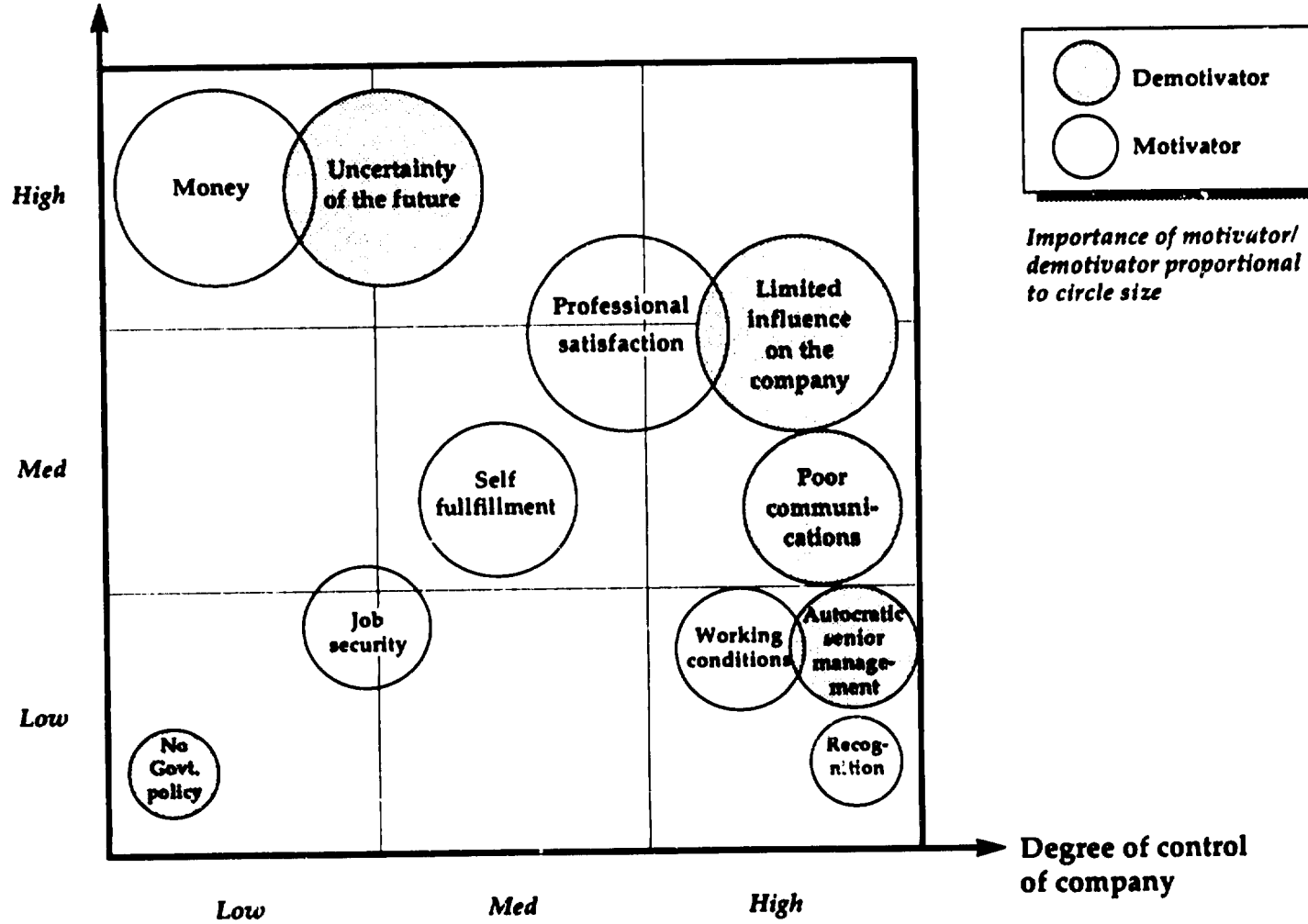
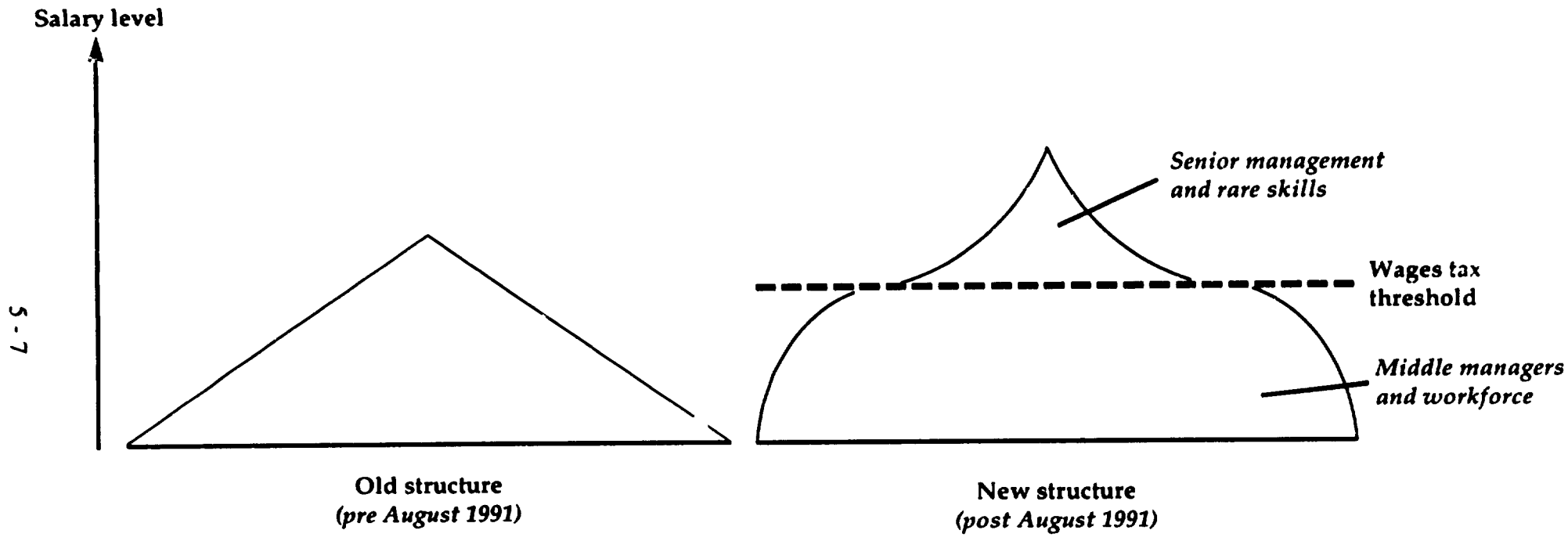


Figure 5.3 Middle Managers Motivational Factors



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Figure 5.4 Bumar - Labedy Payment Structure

**TABLE 5.3 - POSSIBLE MOTIVATIONAL SYSTEMS**

Factor	Motivational System
Money	Subsidise local shops - workforce may purchase using credits built up for such things as quality, productivity etc.
Professional Satisfaction, Better Communications, Self Fulfilment, More Influence on Company Policy, Recognition - Money, Less Autocratic Management	Budgeting system - could be linked to scheme above
Recognition	Worker of the month based on productivity, quality, income brought into the company, more effective work methods etc.
Communications, Influence on Company Policy, Self Fulfilment, Less Autocratic Management	Management Teams at all levels for Policy decisions
Self Fulfilment, Better Communications, Career, Professional Satisfaction, More Influence on Company Policy	Decentralisation in Profit/Cost Centres
Working Conditions	Use under-utilised workers in teams to clean/decorate factory
Communications	Regular newsletter endorsed by senior management containing major orders won, short descriptions of key players jobs. Public address system could be used for similar means
Money (Value), Self-Fulfilment	Free Training e.g. Languages, Management Techniques

5.16 Although we carried out no interviews with the workforce, workforce motivators were suggested by the middle management during the workshop sessions. In general these are not very different to those of middle management themselves (see Table 5.4).

**TABLE 5.4 - MOTIVATORS FOR WORKFORCE AS PERCEIVED BY THEIR MANAGERS**

<p>Motivational Factors</p> <p>Wages</p> <p>Working Conditions</p> <p>Employed according to Skills</p> <p>Recognition</p> <p>Job Security</p>
---

**Evaluation of Management**

5.17 There are currently about 75 middle managers in the organisation. If decentralisation occurs there will have to be a rationalisation of this number and there will be a need for selection.

5.18 In the new organisation the responsibilities that new managers will have will be quite different, probably more demanding, probably also calling for new thinking, altogether making past performance a poor criterion for evaluation.

5.19 In this new and uncharted environment, management might consider using psychometric-type tests as a basis of choice of key management.

5.20 Key factors often tested are:

- Creative, innovative behaviour;
- Long term focus;
- Independent behaviour;
- Wealth seeking;
- Opportunity seeking;
- Intuitive behaviour;
- High concern for quality;
- Tolerant to ambiguity;
- Focus on effectiveness;
- Risk acceptance.

5.21 Management should be aware of translation when using these tests, if not originally formulated in Polish.

5.22 The alternative to this type of evaluation would be a series of interviews, possibly using an examination panel-type approach.

5.23 Prospective profit centre manager candidates should be asked to prepare a brief business plan outlining their ideas for the profit centre which could then be graded.

### **Training**

5.24 The training needs of the middle management were considered during the interactive workshops. In order, as suggested by the managers, they are:

- Sales and marketing;
- Finance and basic accounting;
- General management;
- Production organisation and planning.



5.25 Other areas that should be addressed are:

- Organisational development and change management;
- Problem analysis and decision making;
- Innovation, technology transfer and product development (see Section 6);
- Human resource development and motivation;
- Information technology;
- Quality management (See Section 6);
- Negotiating skills.

5.26 In all cases training should be linked with job descriptions as shown in Figure 5.5.

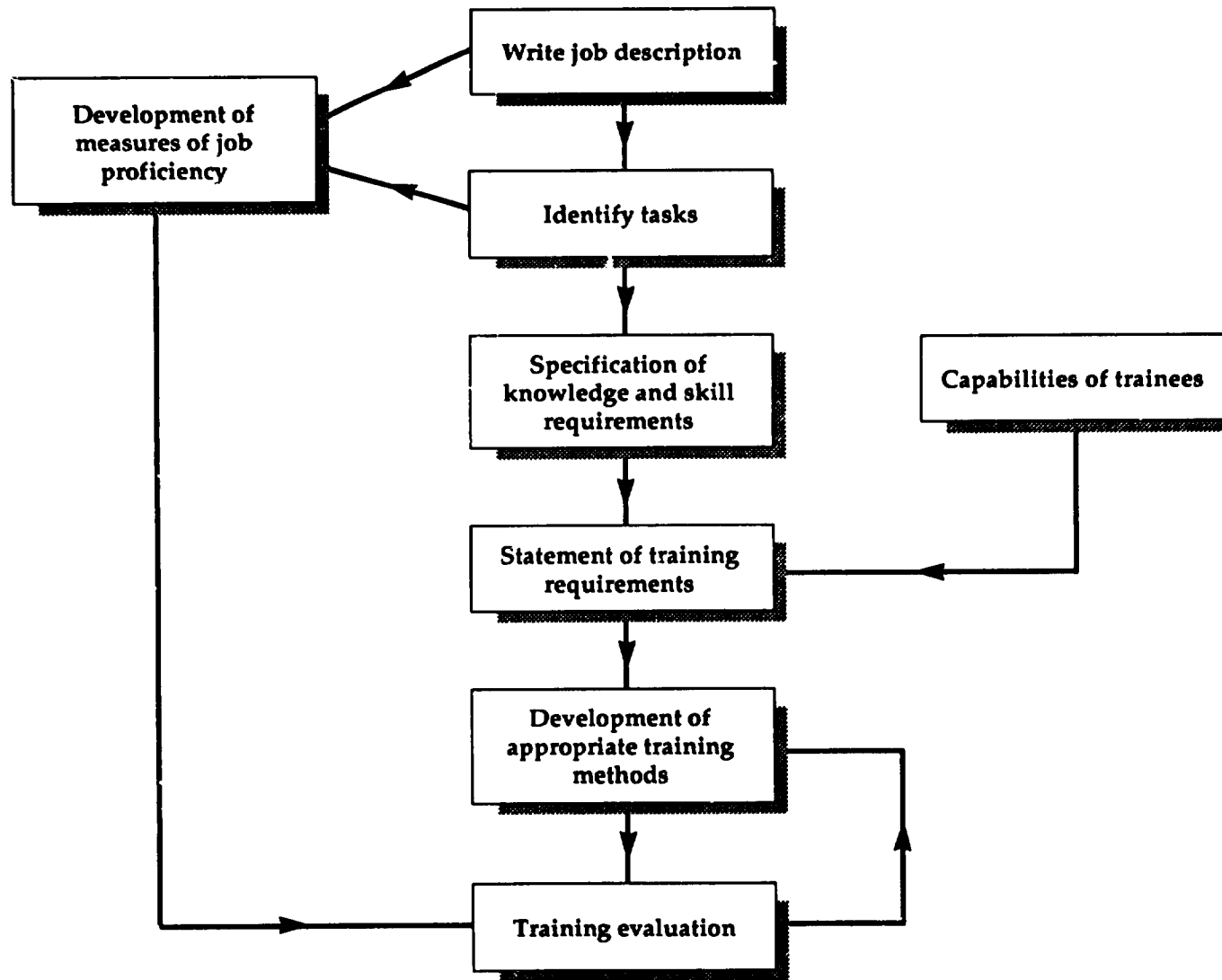


Figure 5.5 Training Objectives Methodology

## 6. PRODUCT DEVELOPMENT AND QUALITY MANAGEMENT

### Product Development

- 6.1 The company has not yet developed a product by first determining the needs and environment of the market. Figures 6.1 and 6.2 show these markets as best as can be determined. The result of this analysis shows that cranes and excavators have the most potential for revenue generation for the company. (A recent sale to Russia of excavators and cranes, the second such sale in the last six months, bears this out.)
- 6.2 Table 6.1 summarises the time taken under three activity headings for the three principal product lines at Bumar-Labedy. This information was obtained from middle management and is based on experience.
- 6.3 Time to attain market introduction varies by a factor of two between cranes and loaders. The proportion of time taken at each stage is the same order of magnitude for cranes and excavators, but much less for mine loaders.

TABLE 6.1 - TIME TO MARKET INTRODUCTION

Activity	Design		Prototyping		Production Engineering		Total
	Months	% Total	Months	% Total	Months	% Total	Months
Cranes	15	45%	10.5	31%	8	24%	33.5
Excavators	12.5	45%	9	32%	6	23%	27.5
Loaders	7.25	45%	6.5	40%	2.25	15%	16

- 6.4 The level of available in-house design skills is not high (see Figure 6.3), with the exception of loaders, for which the market growth is lowest. In the long term, the company will have to develop its own R&D function.
- 6.5 There is a need for technology transfer. This will depend on the welcoming investment climate presented by Bumar-Labedy and the economy in general (see Figure 6.4).

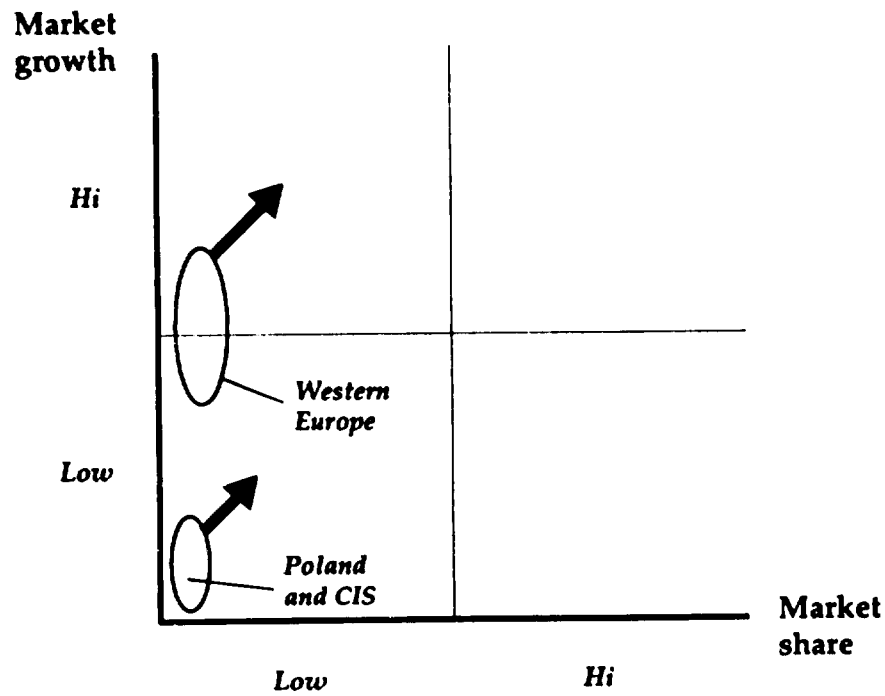


Figure 6.1 Cranes and Excavators

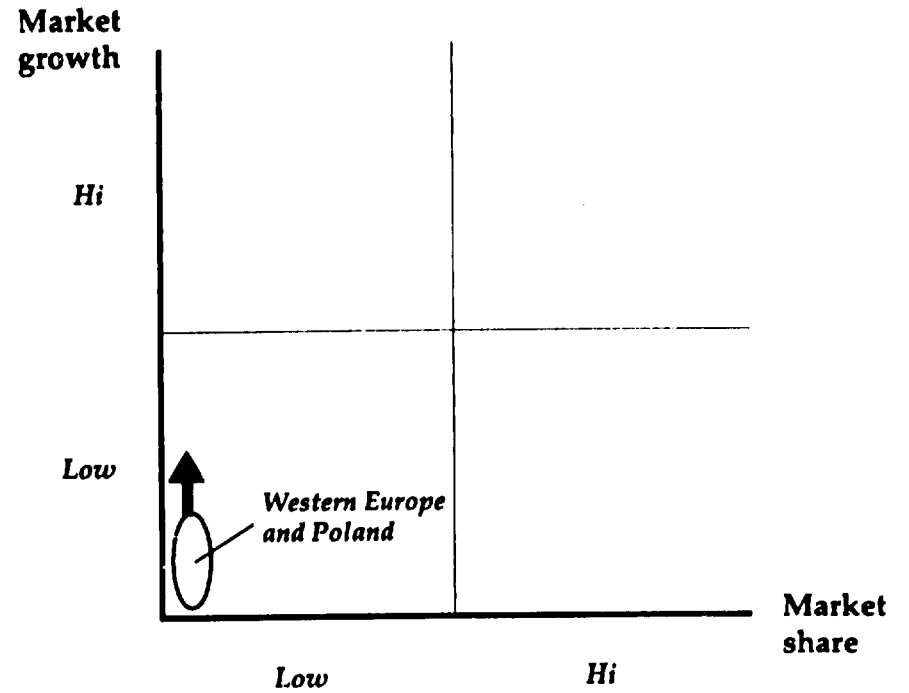


Figure 6.2 Mine Loaders

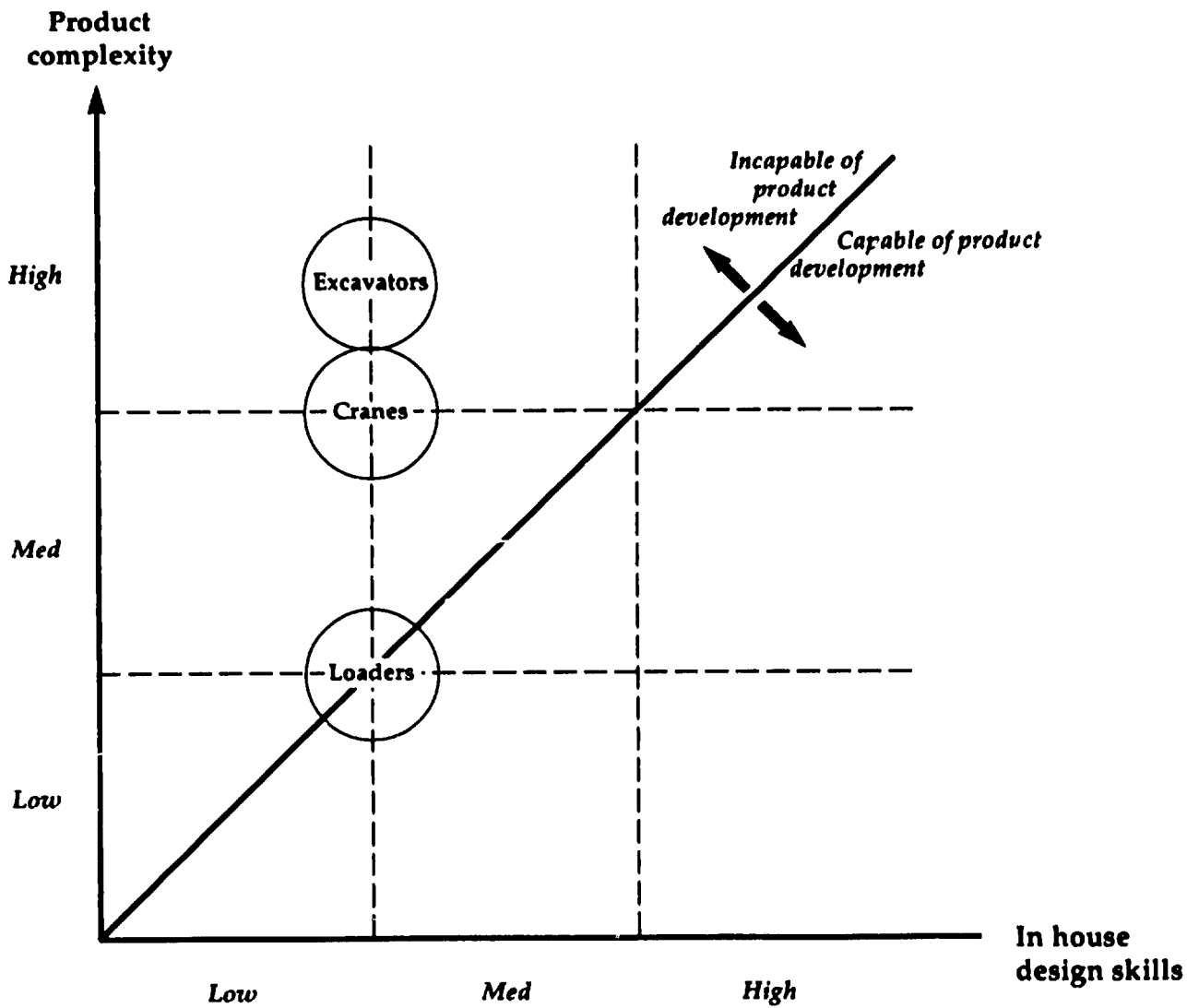


Figure 6.3 Design Skill Versus Technical Complexity

**Degree of technology transfer**

		<b>Degree of technology transfer</b>		
		<i>Low</i>	<i>Med</i>	<i>High</i>
<b>Welcoming investment climate</b>	<i>Low</i>	<b>SUB CONTRACT</b>	<b>PART ASSEMBLY</b>	<b>LIMITED LICENCE</b>
	<i>Med</i>	<b>FULL ASSEMBLY</b>	<b>COOPERATION</b>	<b>FULL LICENCE</b>
	<i>High</i>	<b>FULL ASSEMBLY &amp; SALES SUBSIDIARY</b>	<b>PARTICIPATIVE JOINT VENTURE</b>	<b>TAKE OVER</b>

**Figure 6.4 Technology Transfer Versus Welcoming Investment Climate**

- 6.6 Given these options the company needs to work from top left of Figure 6.4 to bottom right. It may wish to choose not to enter the takeover region.
- 6.7 The company has won four product development approvals (out of five applications) from the *Komitet Badan Nankowych* - a government organisation set up in 1991 to direct funds into industrial research and development. This has resulted in a contract with the Crane Research Institute in Warsaw to develop a family of four cranes. The *Komitet* will contribute Zl 18 mld, and a corresponding investment of the order of US\$ 2 million will be required of Bumar-Labedy.
- 6.8 No market research has been carried out by Bumar-Labedy to determine the possible success of these cranes. We recommend that investment plans of this nature, which effectively commit the company to the medium term be founded on a basis of confidence.
- 6.9 Given these facts, along with the lack of in-house design skills, we strongly suggest that this four-crane-family project be frozen for at least 1992, until the climate is right and the market potential is determined. This does not preclude beginning straight away to develop design skills in-house.

#### **Product Improvement**

- 6.10 Section 2.28 of this report discusses features which the marketplace demands. Table II.1, Appendix II prioritises these features. It is up to Bumar-Labedy to carry out the detailed market research.

#### **Quality Management**

- 6.11 For the company to compete in Western Europe it will need to implement ISO 9000, or equivalent. There are both disadvantages as well as advantages to this standard (see Table 6.2).
- 6.12 Given that it is unlikely that sub-contract work for Polish consumption needs ISO 9000, a decision should be taken to delay the implementation for non-critical production centres.

**TABLE 6.2 - ADVANTAGES AND DISADVANTAGES TO ISO 9000**

<b>Advantages</b>	<b>Disadvantages</b>
Potential western customers insist on it as a prerequisite	Not insignificant implementation costs
Truly international	It is restricted to only production
Reduces the requirement for individual assessment by potential customers	Does not require costs of quality calculations
Reduces supplier interface and management	Does not extend to market research
Good way of meeting customer requirements more accurately	
Good start for the philosophy of quality in the company	

- 6.13 Considerable emphasis is put on the issue of standard procedures, regulations and instructions, issued by the Technical department for control of quality. The procedure for rejected items is a 107 page manual; the equivalent for goods inwards is an 87 page manual.
- 6.14 There would appear to be a considerable amount of data collected within the organisation which is not used to its full potential. Over 60% of the 157 staff are involved in inspection operations (production), so it can be appreciated that large amounts of data are gathered. This indicates that more information could be extracted from collected data, and be used in management decision-making. One example is cost of quality.
- 6.15 From the workshop sessions with the middle management it became evident that cost of quality data is not taken. This should be implemented as soon as possible and the data used to:
- update cost-of-product data;
  - provide basis for incentive schemes;
  - analyze ways of carrying out activities better;
  - increase effectiveness of machines centres.
- 6.16 A proforma for the calculation of costs of quality is suggested in Table 6.3. This will require effort by both the Quality department and the financial department, and should be integrated with the Management Information System.
- 6.17 The data should be analyzed and used in conjunction with Corrective Action Teams (CATs).



**TABLE 6.3 - COST OF QUALITY**

AVOIDABLE COSTS OF QUALITY	YEARLY TOTAL Zl Mtd	% SALES
<b>FAILURE COSTS</b>		
Internal		
Scrap		
Rework		
Reinspection		
Sorting Inspection		
Giveaway (Free Replacement)		
Extra Operations		
Selective Reassembly		
Downtime (Quality Reasons)		
<b>EXTERNAL</b>		
Warranty		
Customer Service		
Customer Returns		
Lost orders (Poor Quality)		
<b>TOTAL</b>		
<b>NORMAL COSTS OF QUALITY</b>		
<b>APPRAISAL COSTS</b>		
Inspection & Test		
Laboratory		
Calibration		
SPC Techniques		
<b>TOTAL</b>		
<b>PREVENTION COSTS</b>		
Quality and Reliability		
Administration		
Quality and Reliability		
Engineering		
Clerical		
<b>TOTAL</b>		

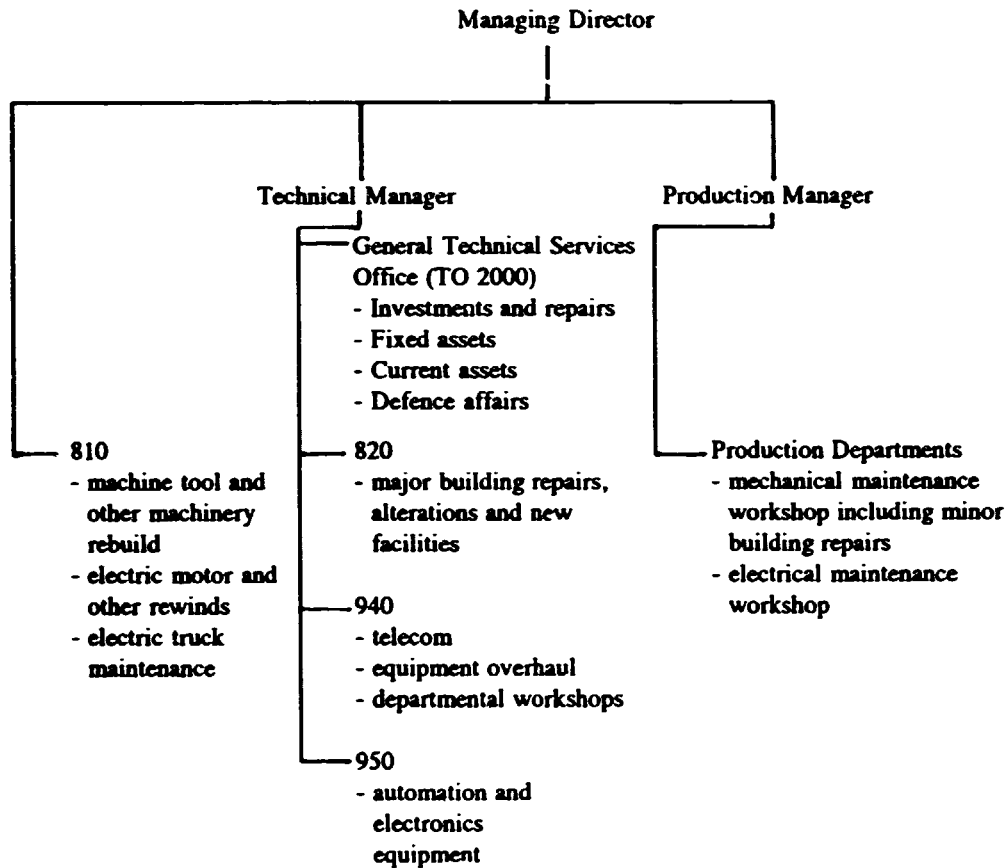
- 6.18 The CATs should consist of production supervisors, quality management staff, production engineers, design engineers and production planners. The CATs should meet on a regular basis (monthly or less) and pick out the main areas for improvement that are necessary to improve problem areas.
- 6.19 Emphasis should move from quality control to quality management - continually improving quality levels. The CATs can act as a method of doing this.
- 6.20 The quality organisation should report to the technical director but it is important that the Quality Manager has direct access to the managing director. If quality is to improve then the senior management must show complete commitment to the measure to be taken.

- 6.21 Quality control activities currently undertaken are:
- dealing with customer claims;
  - metrology, based in department 710, tooling;
  - preparation and printing of standard procedures;
  - inspection operations, production;
  - goods inward inspection, four categories.
- 6.22 The quality department claims an overall reject rate of 0.4%, and 0.2% during warranty periods. It was subsequently discovered that this rate is measured by value, not incidents. This is not a true reflection of the reject rate; the incidental rate of reject during production was not revealed.
- 6.23 The majority of the work done by the department is in the area of inspection. There was no apparent effort in the areas of prevention and/or quality engineering. Future quality control policies should recognise the merit of changing the production culture so that the cost of quality is controlled by preventive procedures, in preference to post-error correction.
- 6.24 A draft manual has been prepared for adoption of ISO 9000 but was not complete at time of viewing. The intention is to reference existing standard procedures in the manual, and it was the opinion that all requirements can be met by existing systems and procedures. The contents of the proposed manual indicate that the scope and activities of each of the company's main departments are included, with the exception of the Economics department. The need for a unified systems and procedures approach for the company as a whole does not appear to have been recognised.
- 6.25 In introducing a quality assurance scheme, the company should be careful to avoid importing unnecessary onerous military requirements in construction of civil products. For example, procedures for dealing with very hard steels, if applied to civil products, will result in time and cost penalties.
- 6.26 Generally speaking, there is a lack of understanding within the quality control department of the quality management function and the need for a quality problem-solving capability.

## Maintenance

6.27 There are several sets of maintenance workshops at the Gliwice site, as shown in Figure 6.5.

Figure 6.5 - Organisation of Maintenance



6.28 There are five distinct maintenance departments (810: machinery; 820: buildings; 940: telecoms; 950: automation and electronics; and a production maintenance department). There are five managers and two sets of supervisors within the production maintenance department - too many.

6.29 Additionally, there is a central maintenance technical office (TO 2000), whose activities have recently been devolved to the departmental maintenance supervisors, who are in future to coordinate their activities with the department manager.

6.30 Over 300 people are employed within the maintenance activities spread across the site; over half - 212 - are located within department 810. Some revenue is

being earned through external maintenance activities and this is an area which might reward some marketing effort. There are surely many factories within Silesia which formerly maintained their own maintenance facilities but which now cannot afford to.

- 6.31 Maintenance methods are based on periodic inspection and rectification of breakdowns. Record cards are completed for inspection surveys and defect work; these are used to update inspection schedules; no other records are made and no use is made of existing records to compile a service history for each item of equipment.
- 6.32 In overall terms, the organisation of maintenance clearly needs to be rationalised. Maintenance planning and control needs to be improved by the introduction of systematic recording and analysis. PC-based systems would permit analysis of defects and the planning of work programmes, greatly reducing the amount of manual preparation and increasing the scope of activities. Each production department should have control over its maintenance requirements.
- 6.33 Maintenance policy should recognise that there is little point in rebuilding out-of-date equipment; it should be evolved around a survey of equipment generally.

#### **Environment Control**

- 6.34 The company pays small amounts in permits and for excessive emissions to government and to the local voivodship. This is quite normal.

## 7. ORGANISATIONAL OPTIONS

### New Organisation

7.1 The present organisation (which was described in our interim report) is illustrated in Figure 4.1 above.

7.2 Outline suggestions for a reorganised structure are presented in Figure 7.1, based on the ideas developed in Section 3 above, summarised in paragraphs 3.82 to 3.86.

7.3 There is a need to have an executive board of management with five main functions:

- Marketing;
- Finance;
- Engineering;
- Personnel;
- Operations.

7.4 Each must have a well defined terms of reference. The following suggestions may be helpful:

- Marketing
  - see section 2.31 - 2.33 above
- Finance
  - Consolidated accounts
  - Budgets: short and long term
  - Credit control
  - Debt control
  - Responsibility centre cost control
  - Inventory audit, some control
  - Payroll
  - Banking
  - Main product line pricing
  - Main product line ledgers

TOP

POLICY GROUPS

EXECUTIVE

WORKING GROUPS

RESPONSIBILITY MANAGEMENT

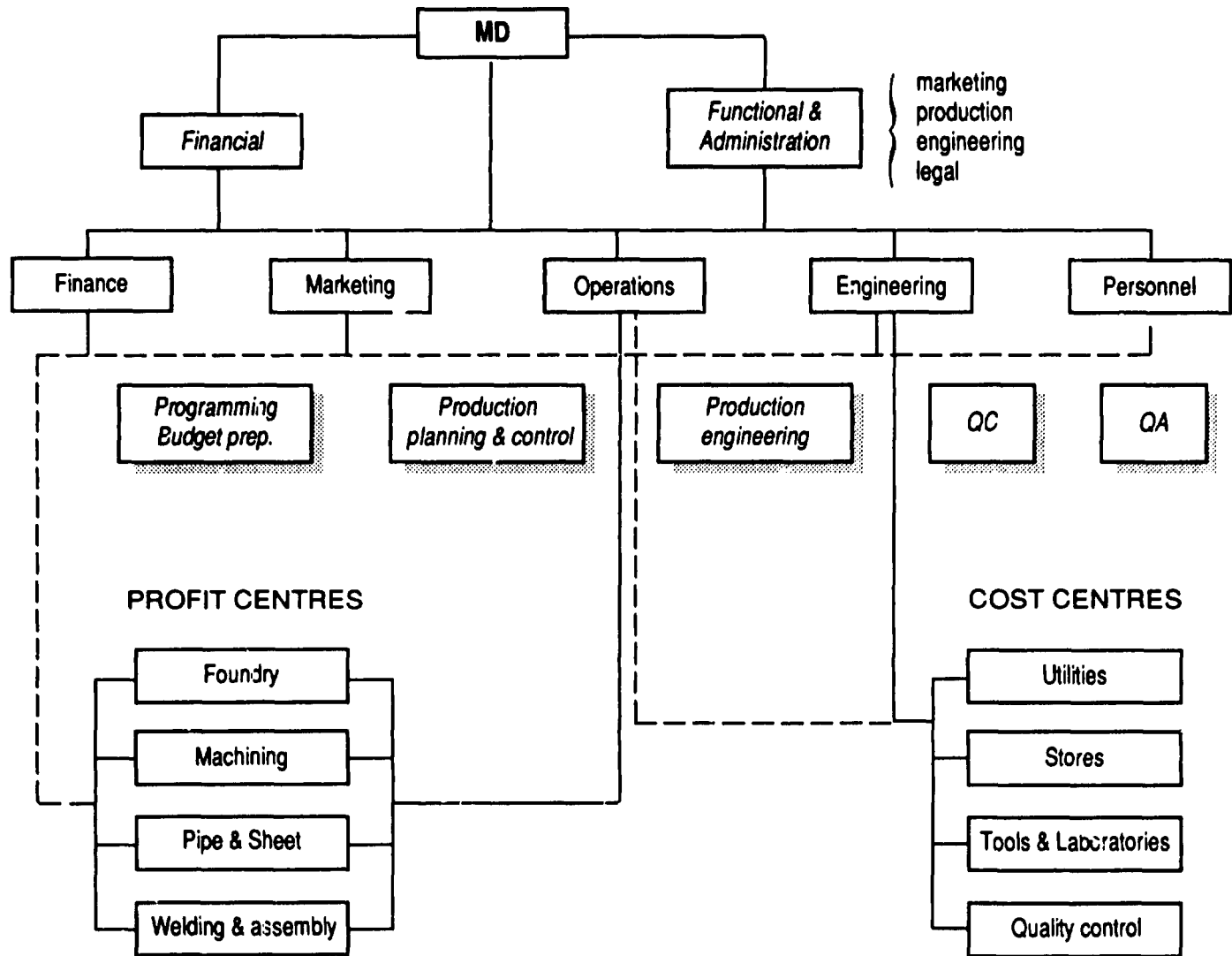


Figure 7.1 - Suggestions for New Organisation

- Fixed assets ledger
- Data processing centre

Note: ledgers to be devolved to responsibility centres: sales, purchases, cash.

- Personnel

- Group policies on hire/fire, training, arbitration, etc.
- Medical service
- Industrial guard

- Engineering

- Product development
- Laboratories
- Quality management
- Quality control policies, with input from MD
- Product line engineering
- Customer care (product lines)
- NC programming
- Specialist engineering, e.g. welding techniques
- Operations procedures, e.g. welding procedures book

- Operations

- Production planning (product lines)
- Budgets (line to Finance function)
- Capacity planning
- Control of all responsibility centres

7.5 The concepts of policy groups and working groups was outlined in Section 3 above. These should be made up of representatives from responsibility centres and the executive functions listed here. They must be the conduit for transferring ideas and current status to and from Executive management and responsibility centre management.

7.6 The content of each of the responsibility centres is developed in Section 8.

## **Labour Reduction**

- 7.7 We strongly recommend that every effort is made to avoid cutting labour and staff until all other options have been explored. There are three elements to the alternatives.
- 7.8 First, instead of paying people to sit at home and be demoralised, put them to work improving the factory. Of course this requires money and it will have to be found.
- 7.9 Secondly, consider moving personnel between positions within the organisation. Areas to consider building up are marketing; certain sections of engineering, such as product development, product engineering, production support engineering, quality assurance; and personnel.
- 7.10 Thirdly, as the organisation develops along profit/cost centre lines, it will be necessary to move people out of the central functional areas and into the profit/cost centres, within their own function. The principal areas are finance (cost accounting and offer preparation), production planning, design engineering (small products, and jigs and fixtures) material control, and personnel control.
- 7.11 The financial analysis which follows in section 8 indicates that it is necessary to shed around 1,500 people in order to reach breakeven in 1993. This assumes that significant sales of military vehicles are achieved, and that equally significant sales of subcontract work are realised. It also assumes that no funds are received from government, or any other source, which would represent a shareholding.
- 7.12 Therefore, there is a fourth alternative to shedding people and that is to assign a proportion of the workforce, together with associated maintenance costs, to a part of the company reserved for military production. Management will need to carry out some of the exercises suggested in Section 3 above, and as discussed in Section 8 below in order to arrive at a financial vale for this 'military' proportion.
- 7.13 If and when people are released, then they should be those who are least qualified, able and willing to take up different posts within the organisation, and who are least suited to the workload.



## **8. STRATEGY FOR RESTRUCTURING**

### **Financial Model**

- 8.1 A financial model was produced based on profit centre information as suggested by Bumar-Labedy in response to our request. The purposes of this model are to:
- define the parts of the enterprise that positively contribute to the overheads;
  - to project the need for financing in the short, medium and long term;
  - to predict the levels of employment in the same time frame;
  - to determine the cash flow;
  - to determine the Profit and Loss and the Balance sheets for the future.
- 8.2 The details referred to in the section may be found by reference to Tables 8.1 to 8.7 and Figures 8.1(i) to (viii) (see page 8 - 8); the results are discussed as follows.
- 8.3 The analysis has been based on the Bumar-Labedy notions of cost/profit centre division and not on any other configuration, for the simple reason that it is a major task for Bumar-Labedy to assign costs. Obviously, other configurations are possible, as discussed below (paragraphs 8.21 to 8.30).
- 8.4 The sales for department 100, foundry, are based on the degree of subcontracting work to be found in Poland. Sales of the centres Cranes and Construction Machinery are based on a modest penetration of western markets, and in the longer term, the recovery of the CIS and Polish markets.
- 8.5 The Power station is assumed to sell its services at no profit and therefore exactly covers its cost or makes no contribution.
- 8.6 Markets for tanks are clearly more difficult to predict. Sales are based on the premise that the company sells its stock of tanks in 1992, as stated in its own forecast, at a reduced price.

- 8.7 A 30% market share of the identified world market for T72 variants is assumed. In 1996 it is assumed that the Polish government will order a replacement level of tanks for the current T55 army stock.
- 8.8 The Construction Centre doubles its output in 1992 due to the Volvo work and continues to grow.
- 8.9 Raw material and labour costs will be reduced due to:
- improved standard job times;
  - better productivity due to better motivation;
  - lower reject rates;
  - better use and location of equipment;
  - better production flow.
- 8.10 Repair costs reduce dramatically by scrapping older machines where possible.
- 8.11 Savings in indirect labour come from re-allocation of people, and from rationalisation. The devolvement of accountancy and Quality Management to the profit centres also reduces labour requirements.
- 8.12 The level of direct workers in the organisation rapidly comes in line with that of western companies. Overall, the employment numbers reduce until sales begin to increase (1994).
- 8.13 Unless the demand for tanks is continued it is necessary to shed excess workers in 1997 but the number is sufficiently low that it may be dealt with by natural wastage. With the growth in cranes and construction equipment it is anticipated that from 1998 onwards employment will rise steadily.
- 8.14 The contribution for the remaining profit centres is positive, with the exception of the foundry and the forge. But by 1994 the foundry shows a positive contribution, and as it is central to many of the operations of the plant it should be kept.
- 8.15 The contribution of one tank is more than ten times the contribution of one crane. The survival of the company therefore lies with the government decision to carry on making tanks. Clearly, severe cutting would be necessary if the decision was negative.

- 8.16 Over the period, operating margin is positive but 1993 is another difficult year.
- 8.17 Given the uncertainty of the company a philosophy has been adopted of paying off debts to the bank as soon as possible.
- 8.18 Cumulative Profit Before Tax becomes positive after 1994 and remains so for the rest of the period.
- 8.19 Total Assets decline rapidly until 1995 when they build up as a result of the orders and the accumulated cash.

### **Rationalisation**

- 8.20 Consideration should be given to removing unproductive parts of the organisation, as follows:
- Szczekociny;
  - forge and die shop (210 + 720);
  - reduction of 420 (machining), devolve to Zabrze;
  - bar cutting (241), disperse to departments;
  - culture centre;
  - hotels, flats, associated services;
  - rehabilitation work centre;
  - Zawiercie: move fabrication to Gliwice, sell excess land to town;
  - Dept 480: remove general machining shop (similar to other shops);
  - move hydraulic cylinder production to Dept 480 and rationalise remaining machining facilities;
  - rationalise Dept 300 to 480/500.

## **Responsibility Centres**

- 8.21 The responsibility centres should be divided into profit centres and cost centres based upon the principles laid out in Section 3 of this report.
- 8.22 If any benefit of this restructured organisation is to be attained then there must be fewer levels of management, as well as fewer managers in the organisation. This is for three main reasons:
- to make the system of information flow more efficient;
  - to bring the management into closer contact with the operations of the business; and
  - most importantly of all reduce the overheads of the organisation.
- 8.23 Therefore to simply devolve responsibility to individual departments would be asinine. A better approach would be to group the departments together to form a single profit or cost centre.
- 8.24 The grouping of the departments within the responsibility centres could be based upon several different criteria such as:
- physical closeness within the plant;
  - activity;
  - customer base;
  - supplier base;
  - size of operations;
  - personnel.
- 8.25 Figure 8.2 (see page 8 - 23) shows one possible solution that has been evolved primarily on activity and customer base. Another major input into this model is the results of the workshop sessions with the middle managers (see Section 4).
- 8.26 Not shown on Figure 8.2 are the facilities at Zabrze and Zawiercie. These facilities pose a problem for management.

- 8.27 The problem lies in the fact that they both have a positive contribution but not nearly at the same percentage rate as the other responsibility centres. In addition being remote from the operations they will necessarily incur more management costs. Conversely if the management time is not spent on them then there might be a consequential lack of control and possible lack of effectiveness and profitability.
- 8.28 By having such a low contribution the facilities do not have any residual value if sold, if indeed a buyer could be found for them. Nevertheless the two centres are making a positive contribution to the overhead and as such are not a financial burden to the enterprise.
- 8.29 Given that at least Zawiercie is part of the core business of the enterprise the decision becomes even more difficult. Some very serious financial analysis should be carried out to determine if the enterprise could buy slewing rings cheaper and of at least equivalent quality outside the organisation. Some of the Zawiercie site could be sold off, for instance by terminating fabrication, removing that function to Gliwice.
- 8.30 Given the reports from Grove on the poor metallurgical properties of the slewing rings supplied to them a view should be taken to see if investment would be necessary to improve quality to an acceptable level. Given this scenario it is possible that the extra depreciation would make the operation unfeasible but this is for the senior management to determine.

#### **Balance Sheet Restructuring**

- 8.31 Since the stock of military vehicles was amassed by the previous management, under the old central planning regime, then it must be the duty of the government to assume responsibility until the situation is resolved. Either they close the factory and take the stock themselves (for resale or use), or they maintain the factory in the hope it will be able to sell the stock, and/or in the expectation of using the facility to build new military vehicles.
- 8.32 It is questionable whether the company will be used to build new military vehicles since it has not demonstrated a capability to develop new designs. This situation must be viewed relative to the capability of the other major Polish military vehicle provider, Huta Stalowa Wola.

- 8.33 If the company is not used to build military vehicles, then it must be viewed entirely on its capabilities to provide civilian products.
- 8.34 Should the government wash its hands of the factory once having paid for the existing stock of military vehicles - by whatever means - then management absolutely has to be in a position to keep the company afloat.
- 8.35 By all of this reasoning, management has little time in which to demonstrate that it means business in the civilian sectors and to establish sufficient competence to convince potential backers. But it does have a little time.
- 8.36 One possibility lies in restructuring the balance sheet to reflect the military obligation of the company and thus apportion financial responsibility of this part of the enterprise to the appropriate ministry.
- 8.37 One method of doing this would be to divide the company on the basis as follows:
- by space of the individual responsibility centres;
  - by the assets value of the equipment used;
  - by the level of stocks necessary;
  - by the necessary manpower (taking into account the required specialist skills).
- 8.38 Unfortunately all the data necessary to carry out this restructuring was not available to the consultants. In any case this should clearly be carried out after the exercise of excluding the redundant and duplicated machinery and space.
- 8.39 Finally, the company would be well advised to consider revaluing its asset base to reflect redundant equipment. This has to be faced sooner or later and would present a more realistic balance sheet.

#### **Feedback from Bumar-Labedy**

- 8.40 It should be noted that the organisational structure given above (Figure 8.2) is only one possibility. The enterprise management have already produced a

restructuring plan. This has not unfortunately been made available to the consultants, but is known to contain another organisational structure which although different is believed to be similar.

8.41 Equally the notion of dividing the company into these responsibility centres needs to be considered when the apportioning of financial responsibility is taken into account as clearly some of the shops are to be designated almost entirely for military purposes e.g. the torsion bar shop, heat treatment department.

8.42 Given the importance that this will have on the future of the enterprise it is essential that the consultants receive feedback from the senior management before a final decision is taken.

# Table 8.1 Sensitivity Parameters

Changes in the Costs of Investments		Changes in Revenue	1,993	1,994	1,995	1,996	1,997	1,998	1,999	2,000	2,001
Land	0.0%	Forge	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%	-100.0%
Buildings	0.0%	Foundry	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Equipment	0.0%	Power Station	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Intangibles	0.0%	Cranes	30.0%	30.0%	30.0%	30.0%	20.0%	20.0%	10.0%	20.0%	30.0%
Long term Paper	0.0%	Constr. M/C	20.0%	20.0%	20.0%	20.0%	15.0%	15.0%	10.0%	20.0%	20.0%
Other	0.0%	Arms	-70.0%	0.0%	0.0%	150.0%	0.0%	-70.0%	0.0%	0.0%	0.0%
		Press	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
		Jigs and Tools	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
		Constr. Shop	100.0%	20.0%	20.0%	20.0%	15.0%	15.0%	10.0%	10.0%	10.0%
		Average	16.67%	15.00%	15.00%	40.00%	11.67%	0.00%	8.33%	11.67%	13.33%
		Changes in Overhead Costs		1,994	1,995	1,996	1,997	1,998	1,999	2,000	2,001
		Sales	10.0%	10.0%	5.0%	5.0%	2.0%	1.0%	0.0%	0.0%	0.0%
		Labour	-75.0%	-25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Energy	-10.0%	-5.0%	-5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Repair	-50.0%	-40.0%	-20.0%	-5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Interest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Direction	-75.0%	-50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Dev. Centre	0.0%	20.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Info. Centre	5.0%	5.0%	5.0%	5.0%	2.0%	0.0%	0.0%	0.0%	0.0%
		Purchasing	-40.0%	-10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Changes in Direct Costs		1,994	1,995	1,996	1,997	1,998	1,999	2,000	2,001
		Raw Material	-20.0%	-20.0%	-10.0%	-10.0%	-10.0%	-5.0%	-5.0%	-5.0%	-5.0%
		Labour	-20.0%	-10.0%	-10.0%	-10.0%	-5.0%	-5.0%	-5.0%	0.0%	0.0%
		Special	-20.0%	-20.0%	-20.0%	-10.0%	-10.0%	-5.0%	-5.0%	-5.0%	-5.0%
		Depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Transport	-20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Repair	-50.0%	-30.0%	-20.0%	-10.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Table 8.2 Operating Margin (Constant Prices) 2mtd

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Sales</b>										
Forge	47	0	0	0	0	0	0	0	0	0
Foundry	41	45	48	54	59	65	72	79	87	95
Power Station	10	10	10	10	10	10	10	10	10	10
Cranes	61	79	103	134	174	209	251	278	331	431
Constr. M/C	15	18	22	28	31	32	41	45	54	65
Arms	1,400	420	420	420	1,050	1,050	315	315	315	315
Press	40	44	48	53	59	65	71	78	88	95
Jigs and Tools	5	5	6	6	7	8	8	9	10	11
Constr. Shop	48	66	115	138	166	190	219	241	285	291
<b>Total Revenue</b>	<b>1,866</b>	<b>717</b>	<b>773</b>	<b>841</b>	<b>1,556</b>	<b>1,633</b>	<b>967</b>	<b>1,053</b>	<b>1,158</b>	<b>1,313</b>
<b>Direct Costs</b>										
Raw Material	360	159	154	158	241	242	171	178	163	218
Labour	127	71	99	72	99	101	82	88	93	103
Special	26	15	15	15	20	21	18	19	21	23
Depreciation	72	40	39	40	51	53	46	48	52	56
Energy	40	23	23	24	31	32	28	30	32	36
Transport	1	0	0	0	1	1	0	0	0	0
Repair	32	14	14	15	17	18	19	20	21	23
Other	30	15	15	16	22	22	18	19	21	23
<b>Total Direct Costs</b>	<b>688</b>	<b>338</b>	<b>329</b>	<b>340</b>	<b>481</b>	<b>489</b>	<b>382</b>	<b>399</b>	<b>433</b>	<b>483</b>
<b>Contribution to O'head</b>	<b>978</b>	<b>379</b>	<b>444</b>	<b>501</b>	<b>1,075</b>	<b>1,143</b>	<b>605</b>	<b>654</b>	<b>725</b>	<b>830</b>
<b>Overhead Costs</b>										
Sales	250	118	128	139	257	269	163	174	191	217
Labour	32	2	2	2	2	2	2	2	2	2
Energy	3	2	2	2	2	2	2	2	2	2
Repair	4	1	1	0	0	0	0	0	0	0
Other	28	28	28	28	28	28	28	28	28	28
Interest	201	201	201	201	201	201	201	201	201	201
Direction	43	3	1	1	1	1	1	1	1	1
Dev. Centre	0	0	0	1	1	1	1	1	1	1
Info. Centre	4	5	5	5	5	5	5	5	5	5
Purchasing	15	5	5	5	5	5	5	5	5	5
<b>Total Overheads</b>	<b>581</b>	<b>366</b>	<b>373</b>	<b>384</b>	<b>503</b>	<b>515</b>	<b>409</b>	<b>420</b>	<b>437</b>	<b>463</b>
<b>Operating Margin</b>	<b>397</b>	<b>13</b>	<b>71</b>	<b>117</b>	<b>572</b>	<b>628</b>	<b>196</b>	<b>235</b>	<b>288</b>	<b>368</b>

Table 8.3 Cash Reconciliation and Short Term Interest

Zimld

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
<b>INCOME</b>											
Gross margin	442	33	90	137	599	655	219	258	314	396	
Drawdowns - LT Loans	0	0	0	0	0	0	0	0	0	0	
<b>Total Income</b>	<b>442</b>	<b>33</b>	<b>90</b>	<b>137</b>	<b>599</b>	<b>655</b>	<b>219</b>	<b>258</b>	<b>314</b>	<b>396</b>	
<b>EXPENDITURE</b>											
Investments	0	2	1	0	0	0	0	0	0	0	
Repayments - LT Loans	331	100	89	0	0	0	0	0	0	0	
Interest - LT Loans	43	17	5	0	0	0	0	0	0	0	
Increase in work. cap.	(295)	(362)	7	13	96	19	(70)	17	26	38	
Tax	51	305	13	40	63	256	293	127	148	177	
Dividends	42	0	0	0	0	0	0	0	0	0	
Extraordinary Items	0	0	0	0	0	0	0	0	0	0	
<b>Total Expenditure</b>	<b>171</b>	<b>62</b>	<b>115</b>	<b>54</b>	<b>159</b>	<b>275</b>	<b>223</b>	<b>144</b>	<b>174</b>	<b>215</b>	
<b>NET CASH FLOW BEFORE SHORT TERM FINANCING AND EQUITY INJECTIONS</b>											
Net Cash Flow	271	(29)	(25)	84	440	380	(5)	114	140	181	
<b>NET CASH FLOW BEFORE SHORT TERM FINANCING</b>											
New Equity	0	0	0	0	0	0	0	0	0	0	
Net Cash Flow	271	(29)	(25)	84	440	380	(5)	114	140	181	
<b>BANK BALANCE</b>											
Cash / (Overdraft)	(60)	217	204	195	297	779	1,236	1,331	1,556	1,826	2,159
<b>INTEREST ON SHORT TERM FINANCE</b>											
Interest Received	6	16	15	19	41	78	99	111	130	153	
Interest Paid	0	0	0	0	0	0	0	0	0	0	

Table 8.4 Profit and Loss Account

Zlmlid

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Revenue	1,666	717	773	841	1,556	1,633	987	1,053	1,158	1,313
Direct Costs	(658)	(323)	(314)	(324)	(459)	(467)	(364)	(380)	(412)	(460)
Overheads	(566)	(361)	(368)	(380)	(498)	(511)	(404)	(415)	(432)	(458)
Operating Margin	442	33	90	137	599	655	219	258	314	396
Depreciation	(62)	(58)	(55)	(52)	(49)	(46)	(44)	(42)	(39)	(37)
Earnings before interest and tax	381	(25)	35	85	550	609	175	217	274	358
Financial Charges	(37)	(0)	10	19	41	78	99	111	130	153
Profit before tax	344	(25)	45	104	591	686	274	328	404	512
Cumulative PBT	(357)	(13)	(38)	7	112	702	1,389	1,662	1,990	2,394
Tax Due	(305)	(13)	(40)	(63)	(256)	(293)	(127)	(148)	(177)	(220)
Profit after tax	39	(38)	5	42	335	393	147	180	227	292
Dividends Due	0	0	0	0	0	0	0	0	0	0
Extraordinary Items	0	0	0	0	0	0	0	0	0	0
Retained Earnings	39	(38)	5	42	335	393	147	180	227	292

Table 8.5 Sources and Uses of Funds

Zlmid

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>SOURCES OF FUNDS</b>										
Operating Margin	442	33	90	137	599	655	219	258	314	396
New Equity	0	0	0	0	0	0	0	0	0	0
Drawdowns – LT Loans	0	0	0	0	0	0	0	0	0	0
Interest Rec'd – ST Finance	6	16	15	19	41	78	99	111	130	153
Decrease in Cash	0	12	9	0	0	0	0	0	0	0
Increase in Creditors	(413)	(59)	(3)	(1)	18	(2)	(20)	(1)	1	2
<b>Total Sources</b>	<b>36</b>	<b>3</b>	<b>112</b>	<b>155</b>	<b>658</b>	<b>730</b>	<b>298</b>	<b>369</b>	<b>444</b>	<b>551</b>
<b>USES OF FUNDS</b>										
Investments	0	2	1	0	0	0	0	0	0	0
Repayments – LT Loans	331	100	89	0	0	0	0	0	0	0
Interest – LT Loans	43	17	5	0	0	0	0	0	0	0
Interest Paid – ST Finance	0	0	0	0	0	0	0	0	0	0
Increase in Cash	277	0	0	103	481	458	94	225	270	334
Increase in Stocks	(481)	(364)	(3)	5	58	5	(43)	6	13	20
Increase in Debtors	(226)	(56)	6	8	56	12	(47)	10	14	20
Tax Paid	51	305	13	40	63	256	293	127	148	177
Dividends Paid	42	0	0	0	0	0	0	0	0	0
Extraordinary Items	0	0	0	0	0	0	0	0	0	0
<b>Total Uses</b>	<b>36</b>	<b>3</b>	<b>112</b>	<b>155</b>	<b>658</b>	<b>730</b>	<b>298</b>	<b>369</b>	<b>444</b>	<b>551</b>

# Table 8.6 Balance Sheet

Zlmid

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>ASSETS</b>											
Cash	1	217	204	195	297	779	1,236	1,331	1,556	1,826	2,159
Debtors	329	103	46	52	60	116	128	81	91	105	125
Stocks	896	415	51	48	53	111	116	73	80	93	112
<b>Current Assets</b>	<b>1,226</b>	<b>734</b>	<b>301</b>	<b>295</b>	<b>410</b>	<b>1,006</b>	<b>1,481</b>	<b>1,485</b>	<b>1,727</b>	<b>2,023</b>	<b>2,397</b>
Fixed Assets at Cost	1,307	1,307	1,309	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
(less) Depreciation	(83)	(145)	(203)	(258)	(310)	(359)	(405)	(449)	(491)	(530)	(567)
<b>Net Value Fixed Assets</b>	<b>1,224</b>	<b>1,162</b>	<b>1,106</b>	<b>1,052</b>	<b>1,000</b>	<b>951</b>	<b>905</b>	<b>861</b>	<b>819</b>	<b>780</b>	<b>743</b>
<b>TOTAL ASSETS</b>	<b>2,450</b>	<b>1,896</b>	<b>1,407</b>	<b>1,347</b>	<b>1,410</b>	<b>1,957</b>	<b>2,385</b>	<b>2,346</b>	<b>2,546</b>	<b>2,803</b>	<b>3,140</b>
<b>LIABILITIES</b>											
ST Finance	61	0	0	0	0	0	0	0	0	0	0
Creditors	538	125	67	63	62	81	79	59	58	59	61
Current Part LT Loan	331	100	89	0	0	0	0	0	0	0	0
Tax Due	51	305	13	40	63	256	293	127	148	177	220
Dividends Due	42	0	0	0	0	0	0	0	0	0	0
<b>Current Liabilities</b>	<b>1,023</b>	<b>530</b>	<b>169</b>	<b>104</b>	<b>125</b>	<b>337</b>	<b>372</b>	<b>186</b>	<b>206</b>	<b>236</b>	<b>280</b>
<b>Long Term Loans</b>	<b>189</b>	<b>89</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Equity	105	105	105	105	105	105	105	105	105	105	105
Retained Earnings	1,133	1,172	1,134	1,139	1,181	1,515	1,909	2,055	2,235	2,462	2,754
<b>Shareholders Funds</b>	<b>1,238</b>	<b>1,277</b>	<b>1,239</b>	<b>1,244</b>	<b>1,286</b>	<b>1,620</b>	<b>2,014</b>	<b>2,160</b>	<b>2,340</b>	<b>2,567</b>	<b>2,859</b>
<b>TOTAL LIABILITIES</b>	<b>2,450</b>	<b>1,896</b>	<b>1,407</b>	<b>1,347</b>	<b>1,410</b>	<b>1,957</b>	<b>2,385</b>	<b>2,346</b>	<b>2,546</b>	<b>2,803</b>	<b>3,140</b>
Check Line	0	0	0	0	(0)	0	0	0	0	0	0

**Table 8.7 Key Performance Indices**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Profitability</b>										
Operating Margin/Turnover	26.5%	4.7%	11.7%	16.3%	38.5%	40.1%	22.2%	24.5%	27.1%	30.1%
EBIT/Turnover	22.8%	-3.5%	4.6%	10.2%	35.3%	37.3%	17.7%	20.6%	23.7%	27.3%
EBIT/Capital Employed	27.9%	-2.0%	2.8%	6.6%	33.9%	30.2%	8.1%	9.3%	10.7%	12.5%
Net Profit/Equity	37.1%	-36.6%	5.0%	39.8%	319.0%	374.4%	139.6%	171.6%	216.0%	278.3%
<b>Balance Sheet Ratios</b>										
Current Assets/Current Liabs.	138.4%	178.3%	284.9%	328.6%	298.8%	398.5%	799.6%	839.6%	857.3%	855.4%
LT Debt/Capital Employed	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

(a) net profit defined as profit after tax and extraordinary items

# Break Even Analysis

1992

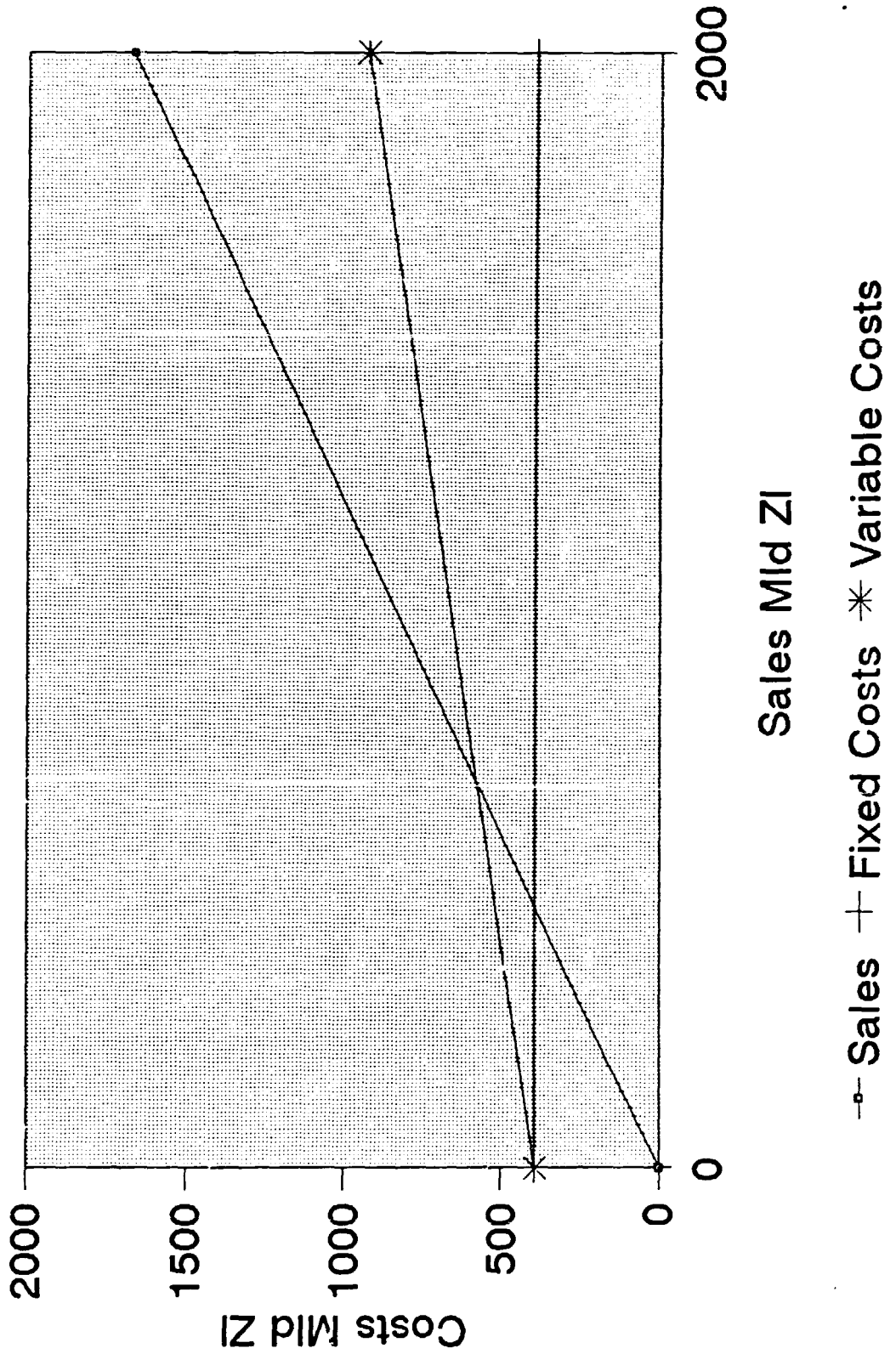


Figure 8.1 (i)

# Break Even Analysis

1993

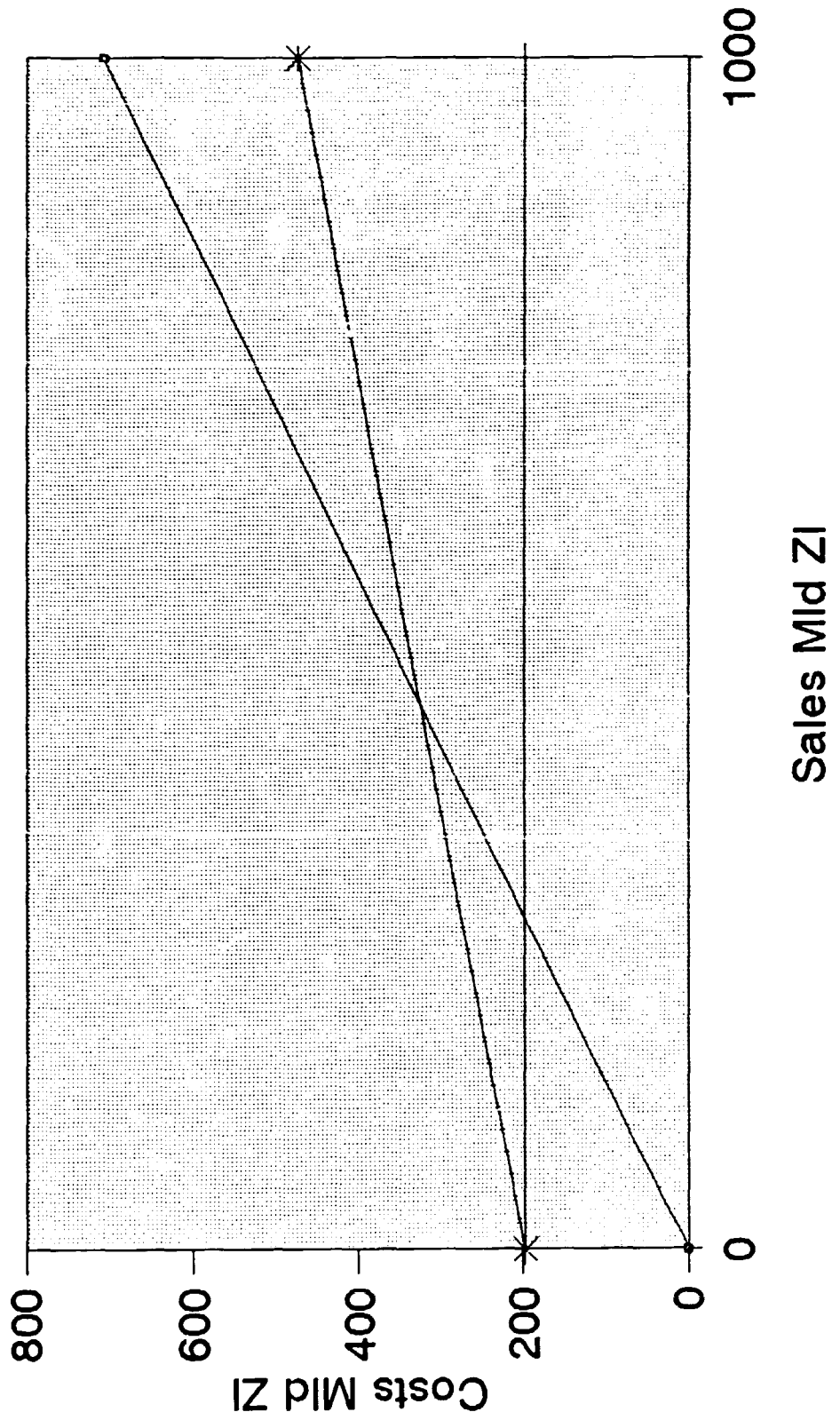


Figure 8.1 (ii)



# Break Even Analysis

1997

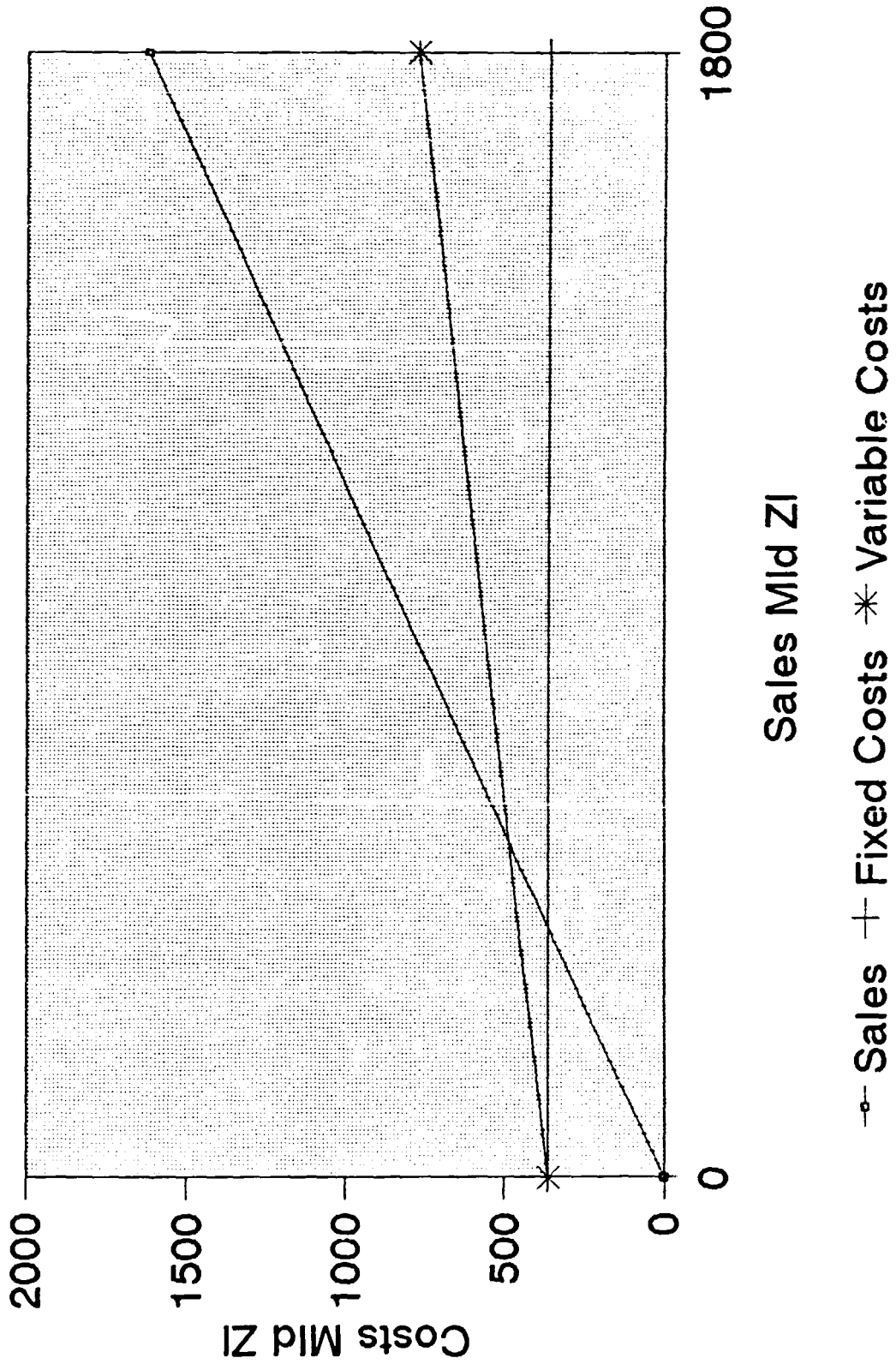


Figure 8.1 (iii)

# Break Even Analysis

2000

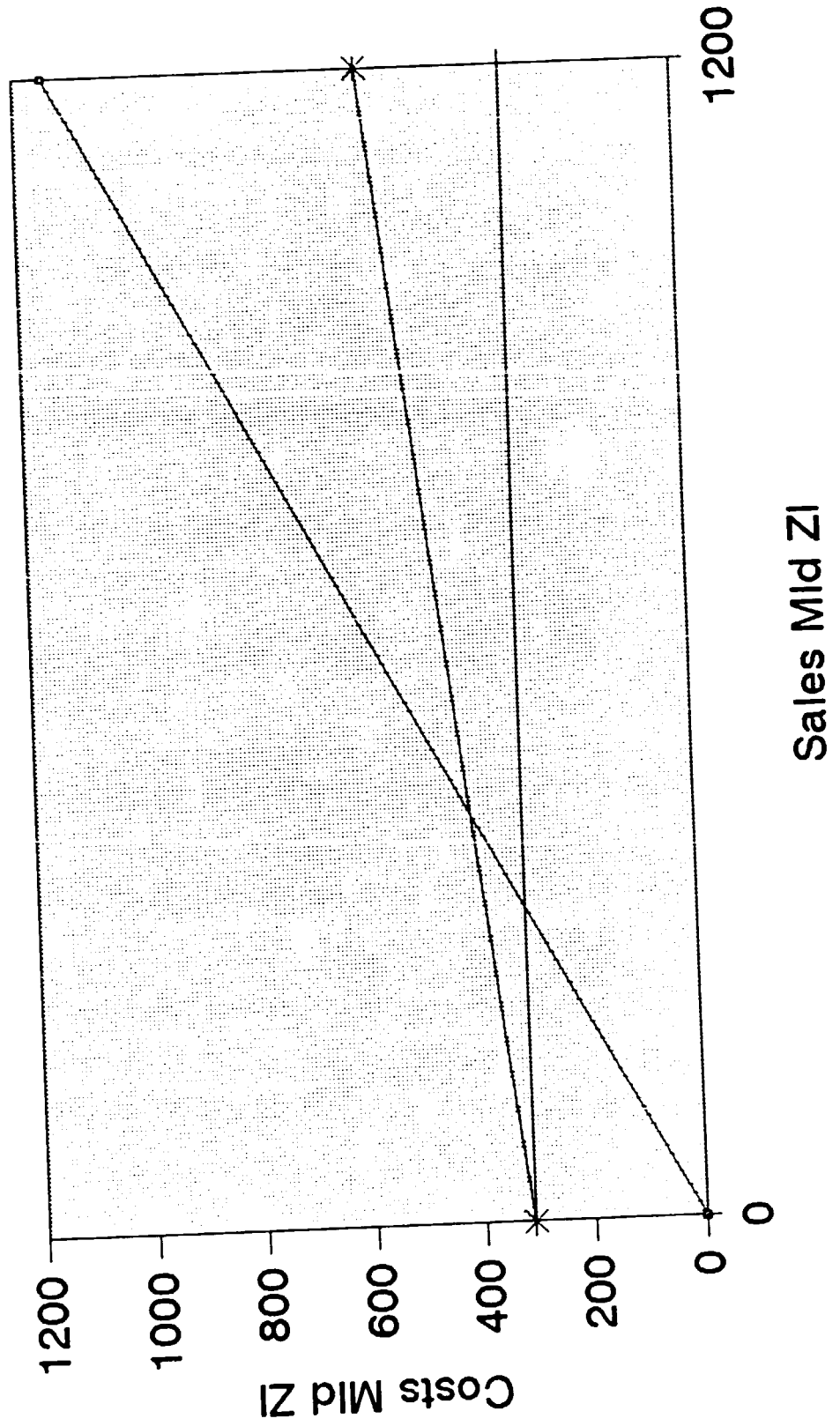


Figure 8.1 (iv)

# TOTAL CONTRIBUTION

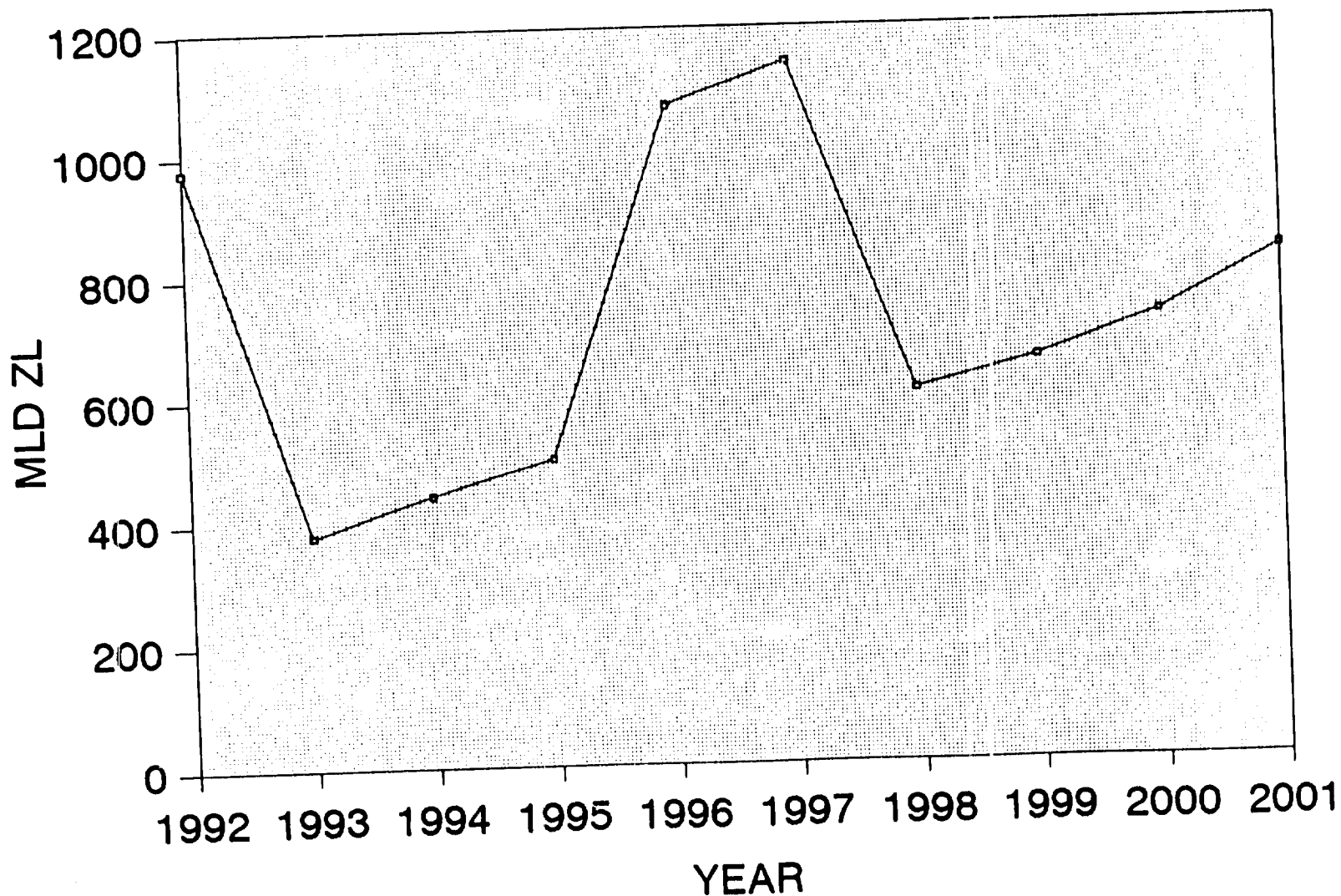


Figure 8.1 (v)

# PROFIT BEFORE TAX

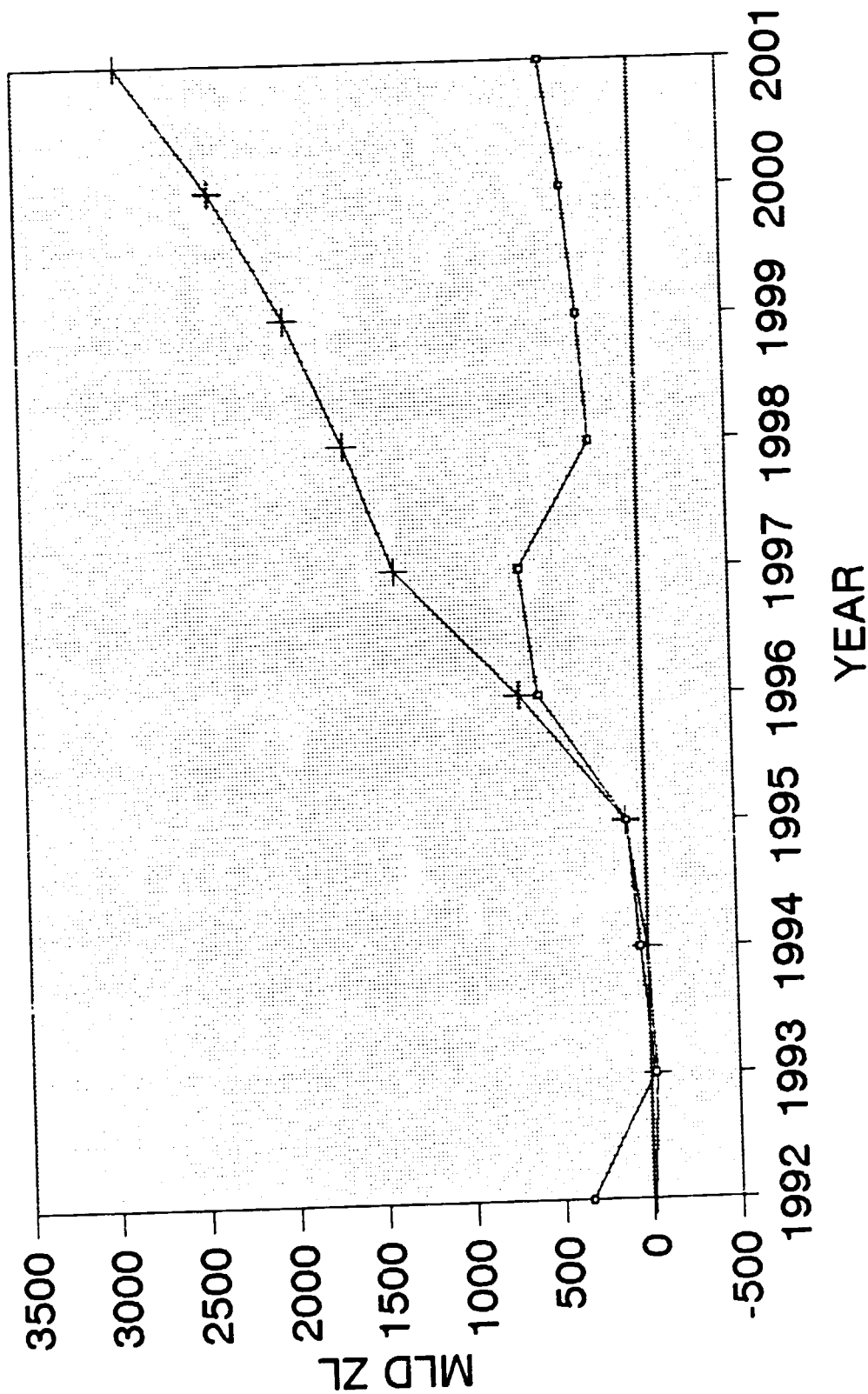


Figure 8.1 (vi)

# NET CASH FLOW

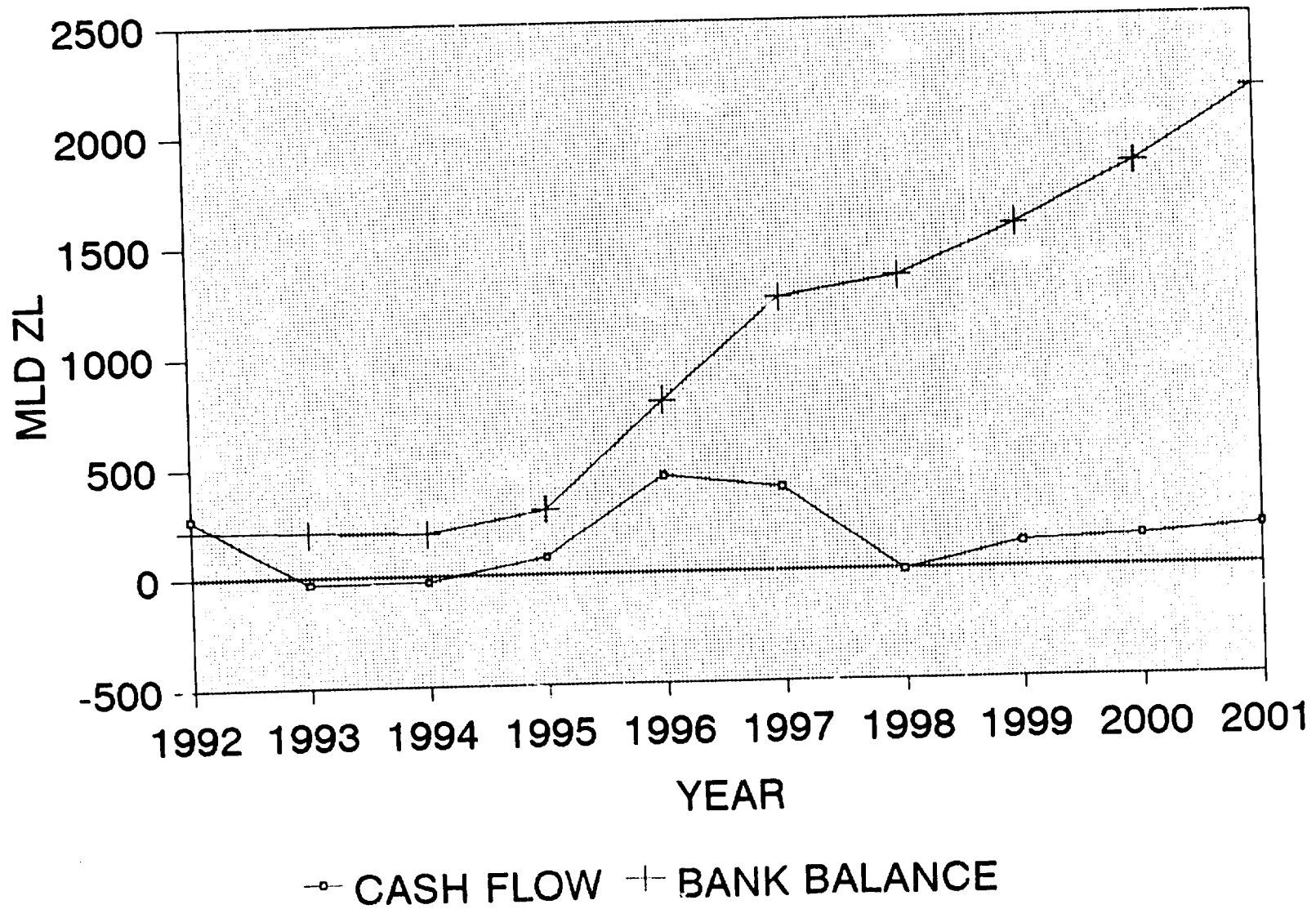


Figure 8.1 (vii)

# EMPLOYMENT

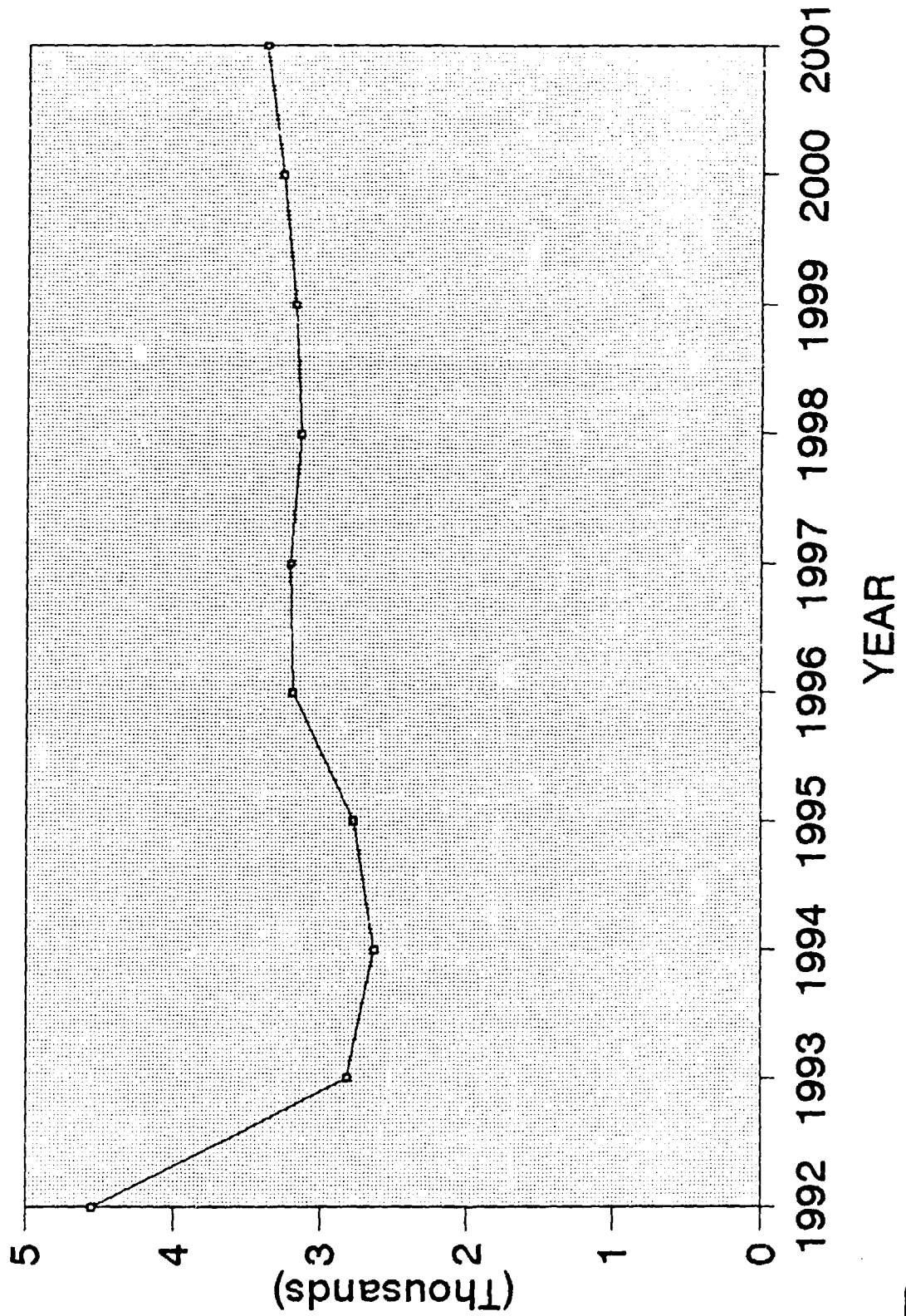
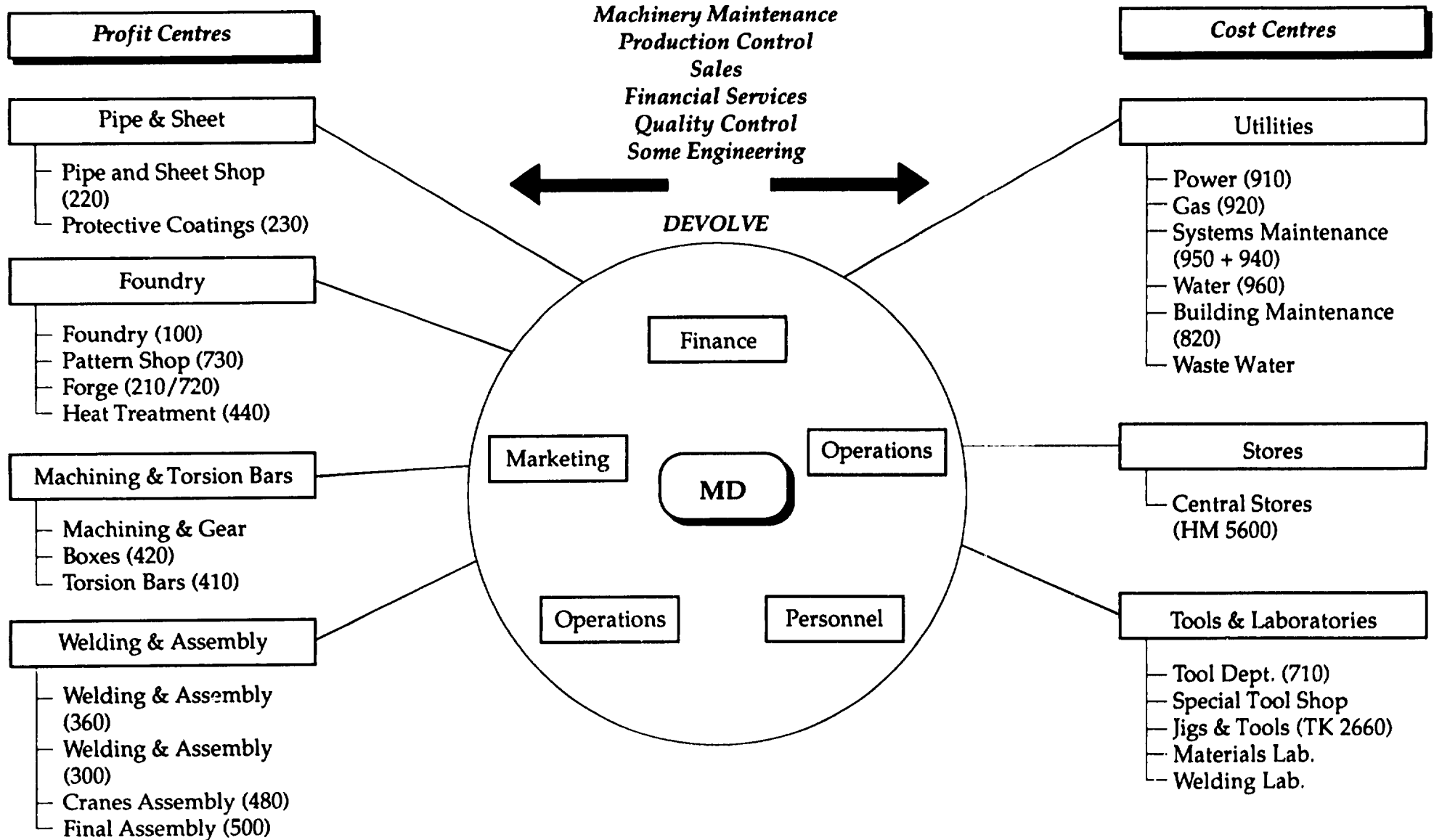


Figure 8.1 (viii)

Figure 8.2 Possible Organisation of Responsibility Centres



## **9. IMPLEMENTATION INCLUDING OPTIONS FOR FUNDING**

**9.1** Given all the facts discussed above there are many points that need to be taken into account when considering the implementation of strategies developed in this study. The timing and sequencing of the actions need to be carefully considered.

**9.2** Table 9.1 shows the actions that this report has identified. As noted, Bumar-Labedy have also prepared a restructuring plan and this should be combined with this table; once again, feedback from management would be extremely valuable.

**9.3** In outline form, the principal activities are:

- Elevate and grow the marketing function;
- Decentralise the organisation and review staffing;
- Remove unproductive parts of the organisation, and investigate selling off parts which are not cost-effective;
- Elevate the training function to include 'white collar' and managerial activities;
- Invite each operating unit (profit/cost centres) to prepare its own plan for equipment and space rationalisation and for new investment;
- Restructure the balance sheet and optimise the financial statements using the model presented; petition government for shareholding support.



**TABLE 9.1 - PROPOSED IMPLEMENTATION PLAN**

Item	Purpose	Responsibility	Timing			Relevant Section of Report
			Short Term	Medium Term	Long Term	
<b><u>MARKETING AND PRODUCT MARKETS</u></b>						
Continue to maximise one off sub contract work	Generate cash	Departmental managers/ responsibility managers	Yes - by managers and reutilised staff	Yes - by new sales and marketing organisation	Yes - to a much smaller degree	2.2, 2.12, 2.13, 2.17, 2.19, 2.50, 2.52, 2.57, 3.76, 3.80, 3.91, 4.41, 6.12, 8.4
Identify product markets	Define direction of company	Executive and Responsibility managers	Yes	Yes	Yes	2.4, 2.19, 2.20
Shelve plans for new cranes until medium term	Stop tie up in capital until at least i) it is available and ii) market research has been carried out to determine viability	Marketing Manager and Managing Director	Yes - as soon as possible	Yes - review situation		6.7 - 6.9
Gain more Term Contracts	Bring stability and longer term cash as well as technology transfer	Marketing Manager and Managing Director on a strategic basis	Yes - although the results will not be short term	Yes - building on a reputation in the various industries supplied	Yes - to a smaller extent to replace contracts that expire	2.3, 4.32
Seek licences for construction machinery	Avoid long R&D time; gain recognition	Marketing Manager and Managing Director	Yes	Yes	Develop own designs	2.5
Reorganise personnel into short term marketing teams	Improve sales base and follow up on all leads	Marketing Manager, Commercial Director, Technical Director and Managing Director	Yes - as soon as possible	Formal re-organisation will replace		2.47 - 2.49
Set up system to obtain more market information	Allow more opportunities to be capitalised upon	Marketing Manager	Yes - Use pro formas	Yes - refine for the new portfolio and start of market research	Yes - ongoing exercises leading to strategic market research	2.16, 2.24, 2.26, 2.27, 2.32, 2.35, 2.40 - 2.57
Sales Forecasting	Allow realistic levels of revenue and loading to be forecast	Responsibility centre managers with Board of Directors	Yes - as soon as responsibility			2.56
Follow up leads generated by WS Atkins	Qualify as sub-contractor	Marketing Manager	Yes	Yes	Yes - for licences	2.51, 2.52
Set up Competitive monitoring system including Lost Business reporting	Assess and monitor market share. Will allow market strategy to be built up.	Marketing Manager	Yes - use pro formas	Yes - refine	Yes - ongoing activity especially important for product development	2.26
Prepare new capabilities brochure and presentation	Allow sales on an industry basis	Marketing Manager	Yes - sub contracting is a short term opportunity	Yes - but only when change necessitates		2.48, 2.51

Item	Purpose	Responsibility	Timing			Relevant Section of Report
			Short Term	Medium Term	Long Term	
Establish International Agents Network	Enable sales and service to increase sales base	Marketing Manager, Commercial Manager	Yes - start immediately with best opportunity markets	Yes - for next best markets	Yes - ongoing exercises	2.42 - 2.44
Permanent marketing organization	Allow strategic marketing to take place	Marketing Manager, Commercial Manager, Engineering Manager and Managing Director	Yes - after evaluation of managers			2.54 - 2.57
Buying factors in Poland and CIS	Determine if they will be product differentiation and how best to market in these markets	Marketing Manager	Yes - as these markets may not be ready until this time			2.32 - 2.38
<b>FINANCIAL CONTROL AND MANAGEMENT INFORMATION SYSTEMS</b>						
Renegotiate loans	Reduce financial burden and gain goodwill with banks	Financial Director and Managing Director	Yes - for interest payments			3.34
Restructure balance sheet	Revalue equipment; prepare for investment; petition for state funds	Financial Director with Board	Yes			3.32, 3.36 - 3.39
Set up marketing system	Plan and control costs	Finance Director, Board, Responsibility Managers	Start	Finish	Improve	3.49, 3.51
New accounting techniques	Realistic pricing	Finance Director, Responsibility Managers	Start	Finish	Improve	3.52, 3.69 - 3.100
Set up MIS	Planning & Control	MD, Board, Responsibility Managers	Start	Finish	Improve	3.101 - 3.109
<b>MANUFACTURING RESOURCES PLANNING AND CONTROL</b>						
Review space and equipment requirements	Increase efficiency, assign values, plan for investment	MD, Board, Responsibility Managers	Start	Finish	Implement	4.21, 4.29
Review industrial services	Reduce costs	Operations Director, Responsibility Managers	Start	Finish	Review	4.37 - 4.39
Review control services	Increase utilization, efficiency, reduce overhead	Board, Responsibility Managers	Start	Finish	Review	4.34 - 4.36
Set up formal company - wide planning	Realistic quotes, control, credibility	Board, Responsibility Managers	Start	Finish	Improve	4.53
Computerized inventory control & purchasing	Control stocks, avoid stock-outs	Finance & Operations Director, Responsibility Managers	Start	Finish	Improve	4.46, 4.66

Item	Purpose	Responsibility	Timing			Relevant Section of Report
			Short Term	Medium Term	Long Term	
Review standard job times	Improve efficiency, better pricing, permit variance analysis	Operations Director, Responsibility Managers	Yes	Raffine	Review	4.63, 3.81 - 3.86
<b><u>EMPLOYMENT, MOTIVATION AND TRAINING</u></b>						
Job Descriptions, Management	Allow definition of key functions to allow evaluation of Managers	Board of Directors (outside help essential)	Yes - once responsibility centres defined			5.17 - 5.23, 5.26
Evaluation of management	Selection of those to hold key positions	Board of Directors (outside help essential)	Yes - once Job Descriptions complete)	Yes - refinement and ongoing assessment	Yes - ongoing assessment	5.17 - 5.23
Motivational schemes	Motivate workforce and managers to gain better productivity, quality and creativity	Board of Directors and Middle Managers	Yes - As soon as possible	Yes - with more sophistication		5.8 - 5.16
Rationalise workforce to obtain direct/indirect ratio	Reduce cost base and increase financial productivity	Board of directors and middle managers	Yes - as soon as possible	Yes - in line with forecast		5.2 - 5.4
Training	Allow i) Sales ii) Technology transfer iii) management advancement	External under Directors supervision	Yes - Sales and Marketing and Languages	Yes - ongoing plus management	Yes - ongoing	2.46, 3.105, 3.112, 4.36, 5.15, 5.24 - 5.26
<b><u>PRODUCT DEVELOPMENT AND QUALITY MANAGEMENT</u></b>						
Technology transfer schemes	Allow product development to take place	Marketing Manager, Commercial Director and Managing Director	Yes - Term Contracts	Yes - Joint Ventures		5.25, 6.3 - 6.6
Detailed market research	Define product attributes	Marketing Manager	Yes	Yes	Yes	6.10
ISO 9000	Allow upgrading of quality to meet western standards	Engineering Director (possibly outside help necessary)	Yes - for departments already involved in western operations	Yes - for the other departments on a priority basis	Yes	6.11, 6.12, 6.24, 6.25
Cost of quality	Allow areas of quality improvement to be identified	Engineering Director and Policy Groups	Yes - use pro-forma	Yes - set up CATs	Yes	6.14 - 6.19
Rationalise Maintenance	Equipment service history, reduce costs	Operations Director, Responsibility Managers	Start	Finish	Review	6.32, 6.33

Item	Purpose	Responsibility	Timing			Relevant Section of Report
			Short Term	Medium Term	Long Term	
<b>ORGANISATIONAL OPTIONS</b>						
Policy groups	Develop strategy for company	Directors and Managers	Yes - as soon as responsibility centres set up			3.110 - 3.114
Review and reorganise into responsibility centres	Allow overheads to be cut, true analysis of performance to be made, encourage entrepreneurship	Board of Directors and Middle Managers	Yes - as soon as possible	Yes - refuse as necessary e.g. close those not contributing		3.98, 3.100, 3.110 - 3.114, 4.47, 4.68, 5.18, 5.23, 8.21 - 8.30
Devolve services to the Responsibility centres	Reduce overheads and give more autonomy to the responsibility centres	Policy groups	Yes - as soon as policy groups set up			4.35 - 4.36, 7.4, 8.23

**APPENDIX I - PROFORMAS FOR MARKETING**

**APPENDIX I - PRO FORMA MARKETING INFORMATION**

**WHERE ARE OUR MARKETS?  
HOW MUCH ARE THEY WORTH?**

<b>Product</b>	<b>TANKS</b>	<b>CRANES</b>	<b>EXCAVATORS</b>	<b>LOADERS</b>
<b>Area</b>				
Domestic				
Eastern Europe				
CIS				
Western Europe				
<b>By Country</b>				
Scandinavia				
Middle East				
Africa				
India/Pakistan				
N America				
S America				
China				
Far East				

**WHAT TYPES OF CUSTOMERS DO WE HAVE?**

<b>Customer</b>	<b>% this year</b>	<b>% next year</b>	<b>% next 5 years</b>
Government			
Contractors			
Hire companies			
Small specialised companies			
Competitors			
Large multi-nationals			

**WHAT DOES THE MARKET WANT?**

	<b>CRANES</b>	<b>TANKS</b>	<b>EXCAVATORS</b>	<b>LOADERS</b>
<b>Products:</b>				
<b>features/benefits</b>				
<b>price</b>				
<b>quality</b>				
<b>delivery</b>				
<b>other</b>				
<b>Service</b>				
<b>spare parts</b>				
<b>repair</b>				
<b>warranty</b>				
<b>other</b>				
<b>How do we do it?</b>				



## COMPETITIVE ANALYSIS

### Product Line

<b>Benchmark</b>	<b>Bumar-Labedy</b>	<b>Competitor</b>
Name of brand		
Sales		
Market share (divide by country)		
Price		
Features/benefits (list)		
Agents (list by country)		
Profit margin (%)		
Sales/employee		
Strengths		
Weaknesses		

## LOST BUSINESS REPORT

**DATE:**

**PRODUCT LINE:**

**CUSTOMER:**

**ADDRESS:**

**TEL NO:**

**COMPETITOR:**

**WHY WAS THE BUSINESS LOST?:**

	BUMAR-LABEDY	COMPETITOR
PRICE		
DELIVERY TIME		
STANDARDS MET		
NOISE		
SAFETY		
OFFER TURNAROUND TIME		
OTHER FEATURES		

**WHEN WILL THE NEXT BUY TAKE PLACE?:**

**WHAT DO WE NEED TO DO TO GET THE BUISINESS?:**

**APPENDIX II: BUYING FACTORS FOR CONSTRUCTION  
EQUIPMENT IN WESTERN EUROPE**

## **APPENDIX II: BUYING FACTORS FOR CONSTRUCTION EQUIPMENT IN WESTERN EUROPE**

### **Objective and Method**

The objective of this exercise was to assess the success-factors for the market entry of Bumar-Labedy in Western Europe for construction equipment.

Twenty construction contracting companies in six European countries were interviewed. The interviews were conducted by telephone using semi-structured questionnaires.

### **Results: General**

The Eastern European construction equipment sector is generally not well known by Western European contractors.

Only one of the companies contacted (a German company) had bought equipment from Eastern Europe and only four of the twenty had been approached by Eastern European producers (from Poland, Rumania, Czechoslovakia and the former DDR, Tarkraff).

Companies that had been so approached were Danish, German and French, i.e. countries relatively near to Eastern Europe and with a reputation of having good commercial relations with the Eastern Europe.

But those approached to buy Eastern European equipment were not very impressed by either the technology or service and only a very competitive price could compensate for these flaws.

Contractors who had not yet been approached to buy equipment expressed general doubt in Eastern Europe's technological skills, quality of machines and general professional attitude.

This was especially true not only about the service and the delivery of spare-parts, but also the performance and the security of the actual deals (the ability to be able to deliver what was requested on time) appeared to be cause for concern.

Many of these statements were based on experience of other Eastern European products, on construction machines seen at trade fairs and on subjective views on Eastern European commercial capacities.

A few companies did however indicate that they would never buy from the East; about half of the contractors questioned said it would depend on the package deal and their needs at the specific time.

Because there is a distrust of East European construction equipment based more on subjective feelings rather than objective facts, fear of the unknown and language difficulties, these problems would not be easy to solve from the contractors point of view.

Mutual trust would need to be built up around personal contacts, references to former customers of construction equipment (possibly competitors) and service and spare-parts depots in the West.

Emphasis was also put on the individual package deals. The ability to be able to adapt the product to contractors' needs was important. The relative importance of specific parameters is shown in Table II.1 below.

Another important factor for market entry to the construction market is the dependence that many buyers place on one or a few contractors.

The German contractors especially underlined the importance of the long term relationship with a single contractor. By educating their employees and stocking a large amount of spare parts, they themselves could ensure the kind of quality in their product that they would demand from the producer of the machines they use. Long term relationship therefore means security but indicates a reluctance to change supplier of equipment. This is partly because of the costs of changing the depots and re-educating mechanics and partly because it takes time and therefore money to build a good relationship.

The only opportunity here is to convince the buyer that the quality of machines and service is of the same standard as their current supplier but relatively cheaper.

#### **Results: Specific Parameters**

Table II.1 reveals differences between contractors from country to country. Notable is the Danish and Spanish emphasis on quality, and British and French relative emphasis on safety. These differences were less sharp when compared with results for all of the nine parameters. Quality then came close to the top in Britain and France, and safety was very important in Spain and Denmark.

The following parameters were tested during the interviews: Quality (QA), Price,(PR), Driver friendliness (DF), Service (SE), Life time (LT), Noise (NO), Safety (SA), Spare parts (SP), Delivery time (DT).

**TABLE II.1 - COMPANIES CONTACTED AND CRITERIA CHOSEN**

	Most important	Least important
<u>UK</u>		
Trafalgar House	Safety	Delivery
Tarmac	Service	Driver-friendly
George Wimpey	Safety	Driver-friendly
<u>Germany</u>		
Biffinger Berger	Service	Delivery
Ed Züblin	Quality	Noise
Phillip Holzmann	Price	Driver-friendly
Strabag Bau	Quality	Delivery
Dykerhoff & Widmann	Delivery	Noise
<u>France</u>		
Bouygues	Service	Delivery
Ribourel (Dumez group)	Quality	Driver-friendly
Thélu Building Contractors	Safety	Delivery
Sogea	Service	Driver-friendly
<u>Spain</u>		
Dragados y Comunicaciones	Quality	Noise
Construcion Proyectos Y Diseno	Quality	Noise
<u>Denmark</u>		
Monberg & Thorsen	Quality	Delivery
Poul Larsen Ronne A/S	Life time	Safety
Jydsk Materiel Udlejning	Quality	Service
Armtom A/S	Quality	Service
<u>Sweden</u>		
Kran Elve	Spares	Noise
Skanska International Building	Quality	Delivery

Figure II.2 reveals that quality and after-sales service generally were valued 'most important' by the contractors. These two parameters reflect the challenges that Bumar - Labedy and other mid and east Europeans face when entering the Western market.

Quality of a product is often assessed by the buyer before the deal, either by test drives or (when dealing with a new producer) by borrowing a machine for a short period. Different constructors have different quality performance parameters e.g. corrosion treatment, welding, estimated lifetime of machine components, power of machine and hydraulics and facility to clean the machine (machine architecture).

Service is a highly important factor as it is the basis for the long term satisfaction. The service facility spans:

- **Buy-back stipulations** in the contract (gives a new customer a guarantee that the machine will keep its value and can be a good sales argument);
- **Professional references** from former buyers and even possibly competitors and/or other known contacts. Thus there is a role for an agent between the supplier and potential buyer. These factors may even be prerequisites for a positive reception in the first place;
- **Machine repair service or spare parts delivery.** Contractors were very concerned with the availability of spare parts. It is very expensive to stop work because of a lack of spare parts. Customers for construction equipment may demand as little as one day delivery time for spare parts. Repair service is often less important as the major contractors have their own mechanics and workshops. To summarize, there should be at least one service centre complete with repair facilities and storage for spare parts, near the customers base.

Safety was a major concern for the majority of the twenty contractors. Safety must comply with both national and European standards.

One contractor ranked price highest. Most of the companies questioned realized that there is a trade off between price and quality. Price is a parameter that can trigger interest but if the quality is too low most of the companies would be reluctant to buy. For major investments price would not be the decisive factor. The contractors raised two other concerns in this respect:

- The price of spare parts should not be too high compared with the price of the vehicle;
- The economy of the machine is also important. Gasoline consumption and maintenance costs are significant factors.

**Machine** life time is dependant on the fact that different countries operate different rules of depreciation for construction equipment so that the importance of this factor will vary accordingly.

Apart from the parameters mentioned above some companies remarked on environmental issues as a differentiating factor for equipment. Internal and external noise levels and pollution will be parameters of importance in some countries, and all of the survey contact countries in the near future, given expansion of the EC and the pace and spread of Directive-making.



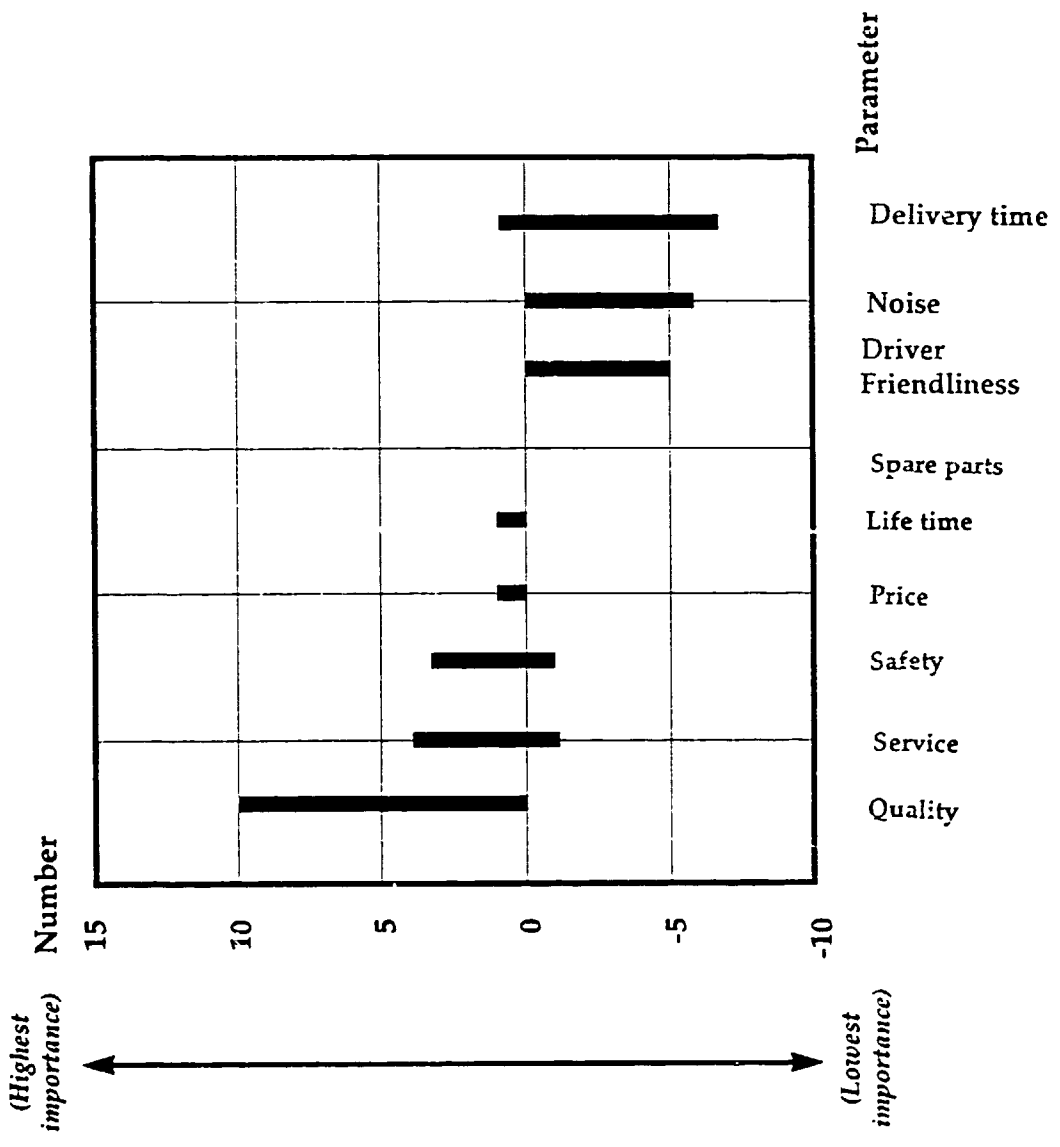


Figure II.1 Parameter hi/lo scores

**APPENDIX III - SUMMARY ASSESSMENT OF PRODUCTION FACILITIES**

### **Technology**

In summary, a wide range of equipment is installed to undertake a wide range of jobbing and small batch work ranging from 1 kg to 30 Tonne weight per item. Material flow is reasonable.

Present methods are labour-intensive, with high cost implications, due to low order book; much of the equipment is not working. Mould preparation, core manufacture and cast product all appeared to be good. A large quantity of mould bores, patterns and other equipment lay in the shop in an apparently disorganised manner which could interfere with material flow when at a higher rate of production than at present. Raw material preparation could be improved and additional knock-out equipment would be required for sustained higher output levels.

### **Condition of Equipment**

There are few items of new equipment installed and most of the equipment is 10 to 20 years of age.

There are indications of maintenance problems with some of the semi-automatic plant. Otherwise the bulk of the plant was in reasonable condition.

### **Quality Control**

Quality control of raw materials is suspect.

Quality control of product is very good, with low scrap rate, but it is possible this is being achieved with excess metal input, and not with good control of the melt.

Quality system is based on final inspection.

### **Customer Base**

Wide range of customers are ordering work from the foundry, even at the present low level of output. They include dredging ship suction heads, gear casings, earth moving bucket teeth, and heavy vehicle components of all types.

### **Product Opportunities**

Sub-contract castings of all types for wide range of engineering companies in Poland and Europe. Not high volume automotive and other castings.

**Comment**

Could be very good self-contained operation if sufficient volume of work were obtained. Will be necessary to have equipment replacement plan for longer term.

### Technology

A wide range of forging hammers are installed in this shop, ranging from 1600T hydraulic press to steam and mechanical hammers of various sizes. Much of this equipment is out of date, low-productivity machines. A comprehensive set of heat treatment furnaces is installed together with shot-blast and painting equipment.

Traditional open and closed die forgings methods are employed.

Cost effective production can only be achieved at high levels of output. According to B-L, one other forge in Poland is operating with a cost basis that is half that of department 210.

### Condition of Equipment

Over 80% of the installed equipment is over 10 years old and over 60% of it is more than 20 years of age.

Except for the newer items of equipment the condition of the plant is only fair. A new roof has been put in the workshop and two new cranes installed. Some new hammers intended to be installed have been re-sold.

### Stocks

Considerable stocks of crankshaft bar material are held in department 241.

No work in progress.

Considerable stocks of crankshaft forgings are held in the workshop.

### Customer Base

90% provided by company sales.

40% of sales are to engine manufacturers, crankshafts. 50% of sales are to other company departments.

### Product Opportunities

Without modernisation of plant opportunities are very limited.

Medium to heavy forgings cannot be produced. Limit is stated to be 300kg.

**Comment**

A sadly neglected department which should have been modernised some years ago. Forgings of the range produced here can probably be purchased from other companies at lower cost than is obtainable in this department.

**Technology**

This workshop has a set of presses installed, mechanical and hydraulic types, ranging from 1000T capacity to 20T, capable of processing sheet steel up to 10mm thick. Two press brakes, a turret punch and several hand operated sheet steel processing machines are also available. Welding equipment installed is semi-automatic CO<sub>2</sub> and some argon arc sets. Three small sand blast cabinets and a stove enamelling plant are also installed. In the pipe shop, bench bending to templates and bending machine equipment is available plus a set of general purpose machine tools for finish machining of assembled pipe fittings.

In general the manufacturing methods in this shop are labour-intensive but nevertheless reasonable for jobbing and small batch sheet metal and pipe components. Appropriate press tool sets and fixtures have to be made available for long run jobs.

**Condition of Equipment**

Over 60% of the equipment installed in this shop is over 10 years old.

Condition is reasonable.

**Quality Control**

Quality of finished product is good.

Working to DIN/Polish standards and is examining ISO 9000.

**Customer Base**

Until recently, bulk of output was to other departments.

Since November 1991 has been seeking work from outside customers with some success in a number of countries and in Poland.

Brackets for Dutch company; roller conveyor roller units for Danish company. Three types of tank for Swiss company and similar jobs including supply of units for vehicle body.

**Product Opportunities**

Capable of wide range of press, sheet metal and pipe work on a sub-contract basis.

Will need to be wary of very large quantity orders which require substantial tooling and or jigs and fixtures.

**Comment**

Good department capable of generating income in short term. Could be independent unit.



**Technology**

A substantial set of equipment is available in this shop some new and some old.  
The new equipment comprises:

- 1 phosphating line
- 3 zinc plating lines for different processes
- 2 small tank lines for chrome and copper plating.

The old department:

- 2 lines for chrome, including hard-plating
- 2 lines for nickel plating
- 1 anodizing line
- 1 etching line.

Working methods are reasonable in the old plant and good for the new plant with gantries for handling product. One of the nickel lines has the ability to complete barrel plating.

**Condition of Equipment**

45% of the installed plant is no more than 10 years of age.

The general condition of the plant is good.

**Customer Base**

Provide service to site and to outside companies.

No sales from company. 100% sub-contract at present.

Could service a wide range of companies in region of Gliwice.

**Comment**

A good department with a well motivated manager who is operating a plant with considerable excess capacity and consequent cost penalty.

**Technology**

This relatively small workshop, installed within the main stores building, has two large and one small profile shears installed, together with two guillotines, four bandsaws, and other miscellaneous equipment for preparation of bar material from the store for delivery to the user workshops. This workshop also manufactures lifting slings.

**Condition of Equipment**

50% of the installed equipment is of 10 to 20 years of age.

Conditions is reasonable.

**Comment**

Most of this department's activity could be dispersed to the user departments who could draw material from the store and prepare it themselves.

### **Technology**

This workshop has several sets of equipment related to the different processes it completes. Preparation of material for welding is completed on flame cutting machines.

There are eight machines installed ranging from old optical trace to two NC machines which can cut up to 100mm thick plate. Machining of large welded fabrication is achieved on four machining centres, together with large horizontal and vertical boring machines. Small fabrications and other cast components are machined on a set of small machine tools mainly comprising vertical boring machines and radial drills.

Welding of fabrications is achieved using semi-automatic wire-fed CO<sub>2</sub> welding equipment either in individual bays with appropriate manipulating equipment, or in jigs and fixtures arranged to suit particular products such as the hydraulic crane boom. The welding equipment installed includes boom welders and a sub merged-arc machine.

Whilst the technologies in use are satisfactory, they can be improved in some instances such as the welding of the hydraulic crane boom, which needs to be improved to yield a higher rate of production and lower costs.

Other equipment installed in the shop includes heat treatment furnaces, two large presses for flattening, two sets of rolls for straightening, three large blast tools and a paint plant with conveyor system.

Methods employed in this shop are only reasonable in some areas and can be considerably improved in others; layout and handling is not good.

### **Condition of Equipment**

Over 60% of the direct production plant installed in this shop is over 10 years old.

### **Quality Control**

Quality of finished product is good.

### **Product Opportunities**

General fabrication and or welded casings, required to be machined, as sub-assemblies for cranes of all types, large gearboxes and industrial machinery of all types.

Not lightweight fabrication.

**Comment**

Not a very impressive department, weak management, capable of considerable improvement in methods and layout.

### **Technology**

This shop is equipped with a good range of welding equipment including semi-automatic wire fed CO<sub>2</sub> welding sets, two ESAB submerged-arc welding gantries, appropriate welding fixtures for particular products, two turnover rigs and several large floor boring machines with horizontal and vertical spindles. There is a large water filled test tank. Shot-blast, paint and drying booths are available. All this equipment is installed with a layout that gives a sensible material flow through the two main bays that make up this workshop.

Welding methods were observed to be very good with adequate attention to weld sequence and fixturing of assemblies. Plate preparation, undertaken in department 310, is also good.

An excellent level of skill was observed.

### **Condition of Equipment**

Over 80% of the installed production equipment is no more than 10 years old; it is in good condition.

Very good working conditions exist in this shop. The only weakness is the lack of low level welding fume extraction but this is difficult to achieve with the range of work undertaken in the shop.

Impressive skill and know-how was demonstrated by the manager.

### **Quality Control**

Quality of finished product is very good.  
Quality control documentation and operations are poor.

### **Workforce Control**

Novel incentive scheme based on base pay for job times plus variable bonus related to quality performance.

### **Customer Base**

Bulk of present work load provided by centre sales office.

Has made some sales visits and sold some of the shop's capacity, particularly the machining of machine tool frames.

### **Product Opportunities**

This shop could fabricate vehicle-mounted equipment of many types, such as dump truck bodies and prismatic containers and load handling devices of all types, in addition to the crane equipment it is already manufacturing.

Not lightweight skips or light vehicle bodies.

### **Comment**

A very good department.

Additional manipulating machines would aid productivity improvement.

### **Technology**

A comprehensive set of equipment for manufacture of suspension torsion bars is installed comprising centring and ending machines, slant-fed lathes, NC and plug board, centreless grinding, rolling machines for surface hardening and mechanical test machine. Bars are hardened in Dept. 440 before grinding and are painted and wrapped before despatch. Magnaflux crack testing equipment is also available.

A small workshop for the assembly of special hydraulic cylinders is installed which includes two hydraulic test machines.

The remainder of this department is equipped with a set of general purpose machine tools for machining a wide range of large components. A new FMS for machining suspension rockers, formerly machined in an old transfer line has been installed but is not fully commissioned. Also one CNC lathe has been installed. A paint plant for component finishing is installed in the department.

The torsion bar production line and the rocker arm FMS were not manned and their effectiveness was not observed. The general purpose machinery was in use and machining methods seen to be reasonable except for some instances of lack of coolant and insufficient use of T.A.T. cutting tools.

### **Condition of Equipment**

Nearly half of the machine tools in this department are between eleven and twenty years of age.

Condition reasonable but with some older machines in poor condition.

Apart from work done for other departments, which is at a low level at present, the centre does not provide much work.

### **Customer Base**

Have started own selling activities and has under offer at present sufficient work to fill 50% of one shift for one year from companies in Poland. Has not started exploring foreign country opportunities.

Sources are mining equipment industry, railway wagon company.

### **Product Opportunities**

Sub-contract machining for commercial vehicle industry.

Not volume production of small items.

**Comment**

This department is at a low level of activity with much of its equipment shut down. It needs to be loaded with sub-contract work. Also the possibility of alternative products for the torsion bar line needs to be explored.



### **Technology**

A very wide range of machine tools is installed in this shop, totalling around 250 items of equipment. Over 70% of these are more than 10 years old. Machining operations range from the traditional labour-intensive turning, milling, drilling, boring and grinding operations to gear cutting of several types, broaching, NC machining and machining centre machining. Many of the NC machines are relatively old.

Machining methods in this shop are generally labour-intensive and full use of the more up-to-date NC and machining centre machines is not made. Bench assembly methods used for assembly of gearing are reasonable.

### **Condition of Equipment**

Too much old equipment remains installed at this shop. 40% of the machine tools are over 20 years old.

Swarf removal could be problematic at high levels of output.

### **Quality Control**

Quality of finished product good.

Batch inspection in stages with final inspection.

### **Product Opportunities**

Manufacture of heavy transmission gearing for other heavy vehicle and off-road equipment manufacturers. Industrial gearing.

Not car and light commercial vehicle gearing.

### **Comment**

A department that needs to be rationalised on a product basis with cellular manufacturing systems, for families of gearing products, including assembly. A majority of the other machine tools would be redundant.

**Technology**

Equipped with an excellent range of treatment equipment comprising:-

- induction hardening
- gas carburising
- inert gas hardening
- electric furnaces, with treatment press for gears and rings
- electric pit furnaces
- open gas fixed furnaces
- small salt bath shop.

All these facilities have appropriate cooling facilities and jigs and fixtures for support of components in the furnaces.

The shop was in good condition and clean and tidy but the present level of activity was obviously very low.

**Technology**

This workshop comprises two large high roofed bays, one equipped with a wide range of medium to heavy machine tools, and the other used as an assembly hall. The vehicle crane is assembled with the base frame on stands so that axles, gearing, transmission, engine and cab can be fitted to it and finally the crane itself fitted. The base frame, crane boom and a number of other items are manufactured in other company departments. The remaining main units are purchased from other companies. The machinery bay is equipped with a small number of large boring machines, for final machining of some of the crane units, and a range of general purpose medium size machines.

Working methods in this shop are in general labour-intensive. Assembly layout and methods need to be considerably developed if a high level of productivity for crane assembly is to be established. Machine shop methods are of average productivity.

**Condition of Equipment**

Over 60% of the machine tools are over ten years old.

Condition is reasonable.

**Product Opportunities**

In short term more sub-contract work, but could be competing with or has similar facilities to, other departments.

**Comment**

This department needs to be reorganised and the general machining facility removed service it is similar to that in three other shops.

### Technology

This workshop has five large bays equipped with multi-level craneage. One bay is devoted to preparation operations and a mechanical store. Two bays have elevated assembly tracks for heavy equipment assembly and the fourth bay is used for finishing and despatch operation. The fifth bay is used for the assembly of a range of excavator machines including mine excavators. A very large shot blast and painting installation is installed between the ends of the third and fourth bays. Appropriate assembly stands for sub-assembly operations are also available.

Assembly methods are reasonable and based on completion of sub-assemblies which are fed to the main assembly tracks, together with bought-out units, at the appropriate stage of the final assembly operation.

160 heavy units per year is the nominal capacity of this plant plus an unknown quantity of excavation equipment.

An excess of craneage is installed which is more than adequate for the range of work undertaken at present.

### Condition of Equipment

Half the installed plant and equipment is 10 to 20 years of age.

The condition of all plant and equipment in this shop is good.

### Customer Base

Bulk of sales achieved by central office.

Sales of wiring looms and road mending? achieved by own efforts.

Excavators sold to Russia in exchange for oil.

### Product Opportunities

Dump trucks, excavators, diggers, mechanical shovels and similar equipment could be assembled in this shop.

### Comment

Well organised and managed shop.

### Jigs, Fixtures and Special Tools for All Types

#### Technology

This department has two substantial workshop bays each equipped with a wide range of general purpose machine tools. They are arranged by process in each shop i.e. turning, milling, drilling etc. Special purpose equipment installed includes five medium and three small jig boring machines but they are not installed in a temperature controlled room. A medium size, 1m table, coordinate measuring machine is installed in a temperature controlled room. Other facilities include a small fabrication shop with optically controlled flame cutting machine and CO<sub>2</sub> welding equipment, a well equipped heat treatment shop including a small vacuum furnace, a small forge and equipment to manufacture lifting chains. Two tool grinding shops, with oil cooled machinery in one, are available and a fine finishing shop. A bench assembly area, suitably equipped, is available with space for floor-assembly of large jigs on base plates.

Manufacturing methods are labour intensive but typical for a jobbing tool manufacturing operation.

Excellent working conditions. Substantial stocks of special and tool steel are held in this department.

#### Condition of Equipment

Nearly half of the machine tools are no more than 10 years old and less than 30% are over 20 years of age.

Condition is good and well established.

#### Quality Control

Quality of finished product is good.

Quality control is generally by manual measurement and the CMM machine. Every operation has to be verified at present even though some operators are authorised to verify their own work. Inspection practice needs to be rationalised.

#### Customer Base

80% of output at present is for other departments on site.

Has started selling in Poland with some success and is advertising with some effect. Not considering foreign sales due to language problems and cash shortage.

**Product Opportunities**

Should be allowed to offer full range of services to local and foreign companies and to have own finance and sales function.

**Comment**

A very good department managed by a competent manager which could become a self-sufficient tool manufacturing company.

This workshop is used only to manufacture dies for the forge, dept 210. It is equipped with an extensive range of machine tools including large horizontal bores, vertical bores, lathes, milling machines, drills and similar labour-intensive equipment. All the equipment is very old. In addition dies are finished by hand dressing with grinding wheels and/or other abrasive media.

A large stock of high cost special steel blanks are held in an outside stockyard.

Activity in this workshop, at present, is very low with only one die set being manufactured and a small batch of a production component.

This workshop has to be considered as an annexe to the forge and therefore included in whatever action is decided to be taken for that facility.

**Technology**

A set of basic machine tools, fitting or assembly benches and a small carpenters shop and suitable craneage are installed. together with appropriate storage facilities for spare parts, lubricants and consumables.

Maintenance methods are based on periodic inspection and rectification of breakdowns. Inspection schedules for all equipment including cranes and personnel lifts were compiled by a central maintenance office, but this has been discontinued. The old schedules are being continued by the departmental maintenance supervisor. Record cards are completed for inspection surveys and defect work and are held by the maintenance supervisors. These records will be used to update inspection schedules. No other records are made and no use is made of the records to compile a service history for each item of equipment.

**Condition of Equipment**

Installed equipment is old and typical of that for the production equipment.

Condition of the equipment is only fair.

Working conditions are reasonable, but the various shops and stores are dispersed around the department and are not located in one place.

**Comment**

Apparently, a simple maintenance system has been set up in each manufacturing department which is just self-sufficient for mechanical and building maintenance. It does not cover electrical maintenance which is the responsibility of another department, 940; see separate note.



### **Technology**

This shop is equipped with a wide range of machine tools, including gear cutting. It has a small forge, a small fabrication facility and segregated bays for strip and rebuild of machinery.

No sophisticated machinery and assembly methods are used.

### **Condition of Equipment**

Reasonable; the majority of the machine tools are old.

### **Customer Base**

20% of output is for outside companies at present.

Provides machinery maintenance and strip-and-build service to centre, and to outside companies.

Has own design capability based on copying existing equipment.

### **Product Opportunities**

This workshop is set up to run as an independent unit but it does not appear to have self-sufficiency because of a lack of work. In the longer term if it can sell its services to outside companies, of a sufficient volume of work, it could attain a degree of financial independence.

The shop is contemplating obtaining sub-contract machining work for the short term future which is questionable because of cost effectiveness.

### **Comment**

This workshop cannot be contributing much income to the company at present. Furthermore, it is rebuilding out of date machine tools such as centre lathes, which with the gross surplus of equipment in the company's production workshops seems to be pointless. The feasibility of setting up an independent machinery rebuild company should be investigated.

## ELECTRICAL MAINTENANCE DEPARTMENT, 940

### Technology

This department has only a small central workshop for repair and refurbishment of switchgear and substation equipment. It is a bench-based shop with appropriate electrical test equipment. The bulk of the department's staff are distributed and work in the production departments. There are ten electrical workshops in the production departments equipped similarly to the central workshop. The department is also responsible for operation and maintenance of the telephone and tannoy system. The maintenance system used is the same as for mechanical maintenance, see maintenance function note for Department 420.

### Customer Base

Has attempted to find outside work for laboratory such as repair of calculators and typewriters. Only a small amount - 2% to 5% of workload - has been obtained because prices are not competitive. The internal hourly rate is 32,000 ZI/hour but outside competitors are quoting 20,000 ZI/hour.

### Comment

Simple maintenance system established for electrical equipment. It is surprising that separate maintenance workshops for electrical and mechanical equipment have been established in the production departments. They should be combined if the appropriate supervisory skills are available.

It should be noted that the maintenance and overhaul of electric drive motors and electric trucks is not under this department but is within department 810.

### **Note on Visit to Welding Laboratory (Subsidiary Workshop of TT2600)**

This small workshop is equipped with a set of machine tools, a small furnace and a wide range of welding equipment covering most welding processes.

Two sets of activity are undertaken in this shop; testing and approval of welders, and proving of weld procedures. Welder test records are maintained and approval for welding has been obtained from the Polish authorities, SLV in Germany and also with a number of customers, notably Volvo and Krupp. Whilst procedures for welding particular products have been prepared, sighted in the Technical Services office TT2600, this work has not been consolidated into a company welding practice manual that could be applied to a wide range of products.

Specimen welds are visually examined but have to be taken to the laboratory, TL770, for physical tests to be completed.

This small workshop should be moved and amalgamated with other test and laboratory activities.

## Notes on Visit to Laboratory, Dept TL 770

The laboratory employs 49 persons at present with 7 at home including 8 persons with Dip. Eng. and 6 with technical school graduation. 800 square metres of floor space is grossly underutilised at present.

### Facilities available are:

- metal analysis laboratory with 2 old and 1 new spectrometers and wet test and chemical test equipment
- chemical laboratories, several, for paints, solvents, other coatings, boiler water and fuels
- mechanical test with new 100T and 10T tensile test machines 2 old tensile test machines and a full range of bend, notch and hardness test machines
- a small heat treatment laboratory with a good range of microscopes including photography with appropriate etch and polish equipment
- a photo laboratory for film processing.

All NDT testing is carried out in production departments with laboratory staff located there.

The laboratory's services are used by the Zabrze and Zawiercie factories and a small amount of work is done for outside companies.

This laboratory appears to be very capable of undertaking a larger volume of routine work. It is however questionable whether it would complete any substantial investigate work.

## **Production Assessment, Zabrze Transmission Plant**

### **Technology**

The workshops of this company comprise machining shop, heat treatment and protective treatments, an assembly shop and the usual support services. The machine shop is equipped with a wide range of traditional single operation machines and a substantial number of more up-to-date machining centres and NC lathes together with gear production machines and grinding machines. Some 230 machines are installed.

A large well-equipped heat treatment shop is available equipped with gas carburising and inert gas furnaces, electric pit furnace, open furnaces and a heat treatment press, all with appropriate cooling facilities. Appropriate component baskets, fixtures and clamping equipment have been installed.

Component treatment facilities include cleaning tanks, shot blast berth and phosphating and painting equipment. The assembly shop has bench assembly equipment installed together with floor mounted assembly stands which can be moved on trolleys. A gearbox test rig, to own design, has been installed.

Other facilities include rough machining and other material preparation equipment, maintenance workshops, cutter grinding shop and tool stores.

Machining methods observed were to a good standard but the assembly shop methods and layout are capable of considerable improvement to ensure adequate work flow.

### **Condition of Equipment**

Nearly 40% of the machine tools are up to 10 years old and only 23% are over 20 years old. There are a number of old type machine tools which, with the introduction of machining centres, are redundant. Generally equipment is in good condition.

### **Quality Control**

Quality of finished product is good.

### **Customer Base**

95% Gliwice  
Is finding work in Poland and other countries.  
Mining equipment drives.

**Product Opportunities**

Other gear boxes for heavy vehicles, off-road vehicles and similar equipment.  
Medium to heavy industrial gearboxes of all types.

**Comment**

A reasonably well organised factory with a substantial amount of up-to-date equipment. It is grossly underutilized at present and needs short term work such as sub-contract machining.

**Production Assessment, Zawiercie**  
**Slew Rings, Crane Chassis, Investment Castings**

**Technology**

This company has three production workshops for fabrications, investment castings, in steel, iron, and non-ferrous materials, and slew ring manufacture. Other facilities include a small boiler house, maintenance and tool servicing, a stockyard, and an office block.

The fabrication shop is equipped with manual and optical flame cutting machines, manual and semi automatic CO<sub>2</sub> electric welding sets, turnover stands and floor mounted welding tables. Primary coat paint is undertaken in the open at one end of the shop.

The investment casting shop has a wax pattern making area with six assembly benches, two mixing and chip stands with curing oven and storage racks, five electric heated cupolas for melting, and a set of normalising ovens. A wide range of steels and irons are melted and cast. A fettling and trim shop with a limited amount of equipment is available together with a mould store.

The slew ring manufacturing shop comprises machining, heat treatment and assembly facilities. The machine shop is equipped with ten very large twin column vertical bores, five large gear hobbing and five medium gear shaping machines, six medium sized vertical grinding machines, five large radial drills and several other lesser items. Slew rings from 500mm to 3000mm diameter can be machined. The heat treatment facility comprises three sets of induction heating machines, one to take the largest rings. The assembly area contains floor mounted assembly stands for the various sizes of ring with appropriate holding devices.

Methods in the fabrication shop have some weaknesses. Weld quality could be improved and there is a notable lack of fixturing, particularly for the crane chassis. Weld preparation could be improved. Slew ring machining is labour-intensive because of the predominance of manually operated machines. Some of these could be retrofitted with NC equipment. Also lack of coolant on some machines results in sub-optimal metal removal rates.

The lost wax casting process is being used for some components that could be produced to a similar quality by ordinary casting techniques where the costs would be considerably less.

**Condition of Equipment**

Poor in fabrication shop. Adequate in slew ring shop. Reasonable in foundry.

### **Customer Base**

At present 50% to parent company and remainder to outside companies. Have marketing activities with circulation of brochures but follow-up action needed. These activities are product based. Negotiating to appoint agent in Italy.

### **Product Opportunities**

Application of slew rings to wider product range

### **Comment**

This company needs an improvement plan for all aspects of its activities. It is capable of considerable improvement. It has an apparently competent staff, including general manager, marketing manager, and accountant.



## **Production Assessment, Szczekociny Bolts Plant**

### **Technology**

This is a machine shop designed for the manufacture of precision bolts. Its equipment comprises a bar store, multi-spindle and single spindle lathes, centreless grinding machines, centre lathes, thread rolling machines and a general purpose machining line. A wash and preservative treatment facility is available together with well equipped maintenance and cutter grinder shops. All this equipment is installed in a relatively new, three-bay, high building, with offices. An additional low building has also been erected on the site, but is unfinished and unoccupied.

The methods used for bolt manufacture are satisfactory for special purpose bolts but will cost at least twice that of alternative, more up-to-date methods.

### **Condition of Equipment**

Reasonable overall.

### **Customer Base**

Present low level of sales are 50% to Labedy and remainder to outside customers, mainly sub-contract machining.

### **Product Opportunities**

Could manufacture special bolts for wide range of engineering companies but this requires tremendous sales efforts to achieve any results. Manager is seeking alternative work but this does not appear to be based on a specific development plan. Appears to be self contained but is without design and development and marketing skills. Not clear whether centre is assisting with this.

### **Comment**

A derelict company that needs immediate help.

### Technology

This shop is equipped with a small metal working shop, where a set of traditional machine tools have been installed to allow the manufacture of metal fittings for patterns, a wood machining shop and a pattern assembly shop. The wood machine shop has a comprehensive set of machines installed including lathes, hand saws, cross cut saws, planers and moulding mill. The assembly shop in addition to a substantial number of assembly benches has further machinery installed comprising lathes, router and sanding machines.

Methods for manufacture of patterns are based on the use of traditional wood working techniques. A very wide range of patterns and core boxes were observed to be in progress, indicating availability of a wide range of skills.

### Condition of Equipment

Relatively new but difficult to identify individually.

### Workforce Control

Very good; supervisors keep time sheet records. Actual time recorded and compared with planned time.

### Customer Base

40% of output is for centre and remainder is outside sales. Has five local competitors but there is not much price competition. Manager is in contact with other foundries.

Has technician from Technical Department to assist with specification of operations and material requirements; calculates work cost with labour rate of 80,000zl/hr and material price from purchase department. Price is determined by adding 25% margin. Is allowed to negotiate price with customer and can reduce price if necessary to 5% margin. Accuracy of estimates is such that actual costs are within 90% for small and medium work and 70% for large work. However occasionally for a number of jobs the actual is 5% more than the estimate.

### Comment

A very well managed department.

**Overall Observations/Proposals, Production and Service Shops  
(Permits Production of 'S'Products)**

- Szescoczini - Alternative product/s  
sell  
? market for special bolt  
JV unlikely
- Zawiercie - Move fabrication to Gliwice (360 or 480), rationalise site, sell 1 part for local development  
create 1 or 2 companies (slew rings, investment castings)
- Zabrze - Expand product range, move equipment from Gliwice (420) to enhance capability
- 710 - Privatised with jig and tool dept, together with special tool shop
- 510 - Continue as heavy equipment assembly
- 480 - Remove general machining shop as it is similar to that in other shops.  
If vehicle crane production is to continue, re-plan to include weld/sub assembly, heavy machines if fabrications and final assembly. Methods and layout need attention to detail.
- 420 - Move gear machining and assembly to Zabrze. Rationalise remaining machining in relation to future product mix.
- 410 - Alternative products for torsion bar line?  
Move hydraulic cylinders to 480. Rationalise remaining machining facilities with all other machining facilities in relation to future product mix.
- 360 - Good supply shop to 480/500, do not change.  
Does it have sufficient capacity to produce vehicle crane chassis?
- 300 - Rationalise activities in this department either by product or by process to supply 480/500.
- 241 - Disperse to user departments when rationalisation complete.
- 220 - privatise? or independent unit.
- 210 - Verify if forge capability elsewhere can manufacture full range of forgings.  
If so close down. If not possible or range is limited rationalise product range and prepare development plan.
- 100 - Establish market for steel and iron castings in Poland and nearby countries.  
If sufficient volume, then set up as independent unit, prepare development plan to introduce iron and up-date equipment; reinvest income.

- 730 - Amalgamate with 100.
- 440 - Establish market for HT in locality, reduce size of operation to suit.  
Create independent unit.
- 720 - Amalgamate with 210.
- 230 - Set up as independent unit.
- 810 - Set up as independent unit.

### **Overall Summary**

**Rationalise/amalgamate workshops as outlined above.**

**Set up independent service units, prepare for privatisation.**

**Sell part of site at Zawiercie. Set up independent units at Zabrze and Zawiercie, prepare for privatisation?.**

## Overall Proposals, Support Departments (inc Administration)

- Work Study Office TTR - Disperse to rationalised production units.
- Metal Cutting Laboratory - Merge with 710.
- Training School - Set up as independent unit if sufficient demand in locality.
- Quality Control - Disperse to rationalised production units. Set up central Quality Management functions.
- Laboratory - Set up as independent unit.
- Production Planning - Disperse to rationalised production units.
- Welding Laboratory - Merge with laboratory.
- Technical Services Office - Move J&T design to 710. Disperse remaining functions to rationalised production units.
- Products Construction Office - Provide basis for product engineering and development functions.
- Personnel Office - Rationalise but continue to provide overall service to company. Divert all other non personnel activities.
- Marketing Office - Strengthen this office as part of a new sales function.
- Materials Management Office - Disperse stock control to rationalised production units. Establish central purchase function.

### Overall Summary

Disperse support departments where possible to rationalised production units.

Revise technical operation to be based on product engineering and development.

Set up sales and marketing function.

Set up small high quality depts for quality management, personnel and purchasing.

**BUMAR - LABEDY  
PILOT RESTRUCTURING STUDY**

**FINAL REPORT**

**ADDENDUM**

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**JUNE 1992  
F2346/RO5/04/Rev 0/WP32B**

## **BUMAR-LABEDY: PILOT RESTRUCTURING STUDY IMPLEMENTATION OF RECOMMENDATIONS**

The final report identified six principal areas for action by management; timeframes are suggested as follows.

### **Expand Marketing Function**

To be approached from two points of view:

1. Elevate to Executive status.
2. Expand by creating new structure and staffing to suit.

The first action will occur in conjunction with changes to the organisational structure, and could take three to six months from time of government agreement on restructuring.

The second action can begin immediately, that is in advance of government agreement on restructuring, by new hires and reassigning personnel from within the organisation.

As it is unlikely that sufficient personnel can be found within the organisation who have either the training or the linguistic abilities to represent the company at high level abroad then it will be necessary to hire them. Hiring on the basis of say, one year renewable contracts could be an alternative to permanent employment. As the funds are not available within the company for this purpose, it will be necessary to prepare a loan application. It could take two to four months to find and appoint suitable personnel. Preparation of a loan application would be possible in four to six weeks.

### **Decentralise Organisation/Review Staffing**

New organisational structure options can be discussed at all levels straight away. Discussions with middle management, involving the same set of people who attended the Atkins seminars in March 1992 have already begun.

It will take two to three months to sort out, agree and assign new management posts, from executive level to middle management level.

This activity will coincide with creation of new profit/cost centres. Setting up these centres, including staffing and equipping them will take longer, say nine months minimum.

While it is possible to carry out paper staff and labour reviews immediately, it will not be possible to implement cuts until revenue forecasts are agreed at all levels. Since there is considerable urgency about reducing overhead expense, this sequence of actions needs to be set in place without delay. It should be possible to agree (realistic) revenue forecasts within two to four weeks. Combined with a programme of reassignment (based on the new organisation), a staff reduction programme can be designed straight away and a beginning made on its implementation. Full implementation will take the same sort of time scale as is needed to complete the changeover to profit/cost centre structure.

These activities should take place at Zabrze and Zawiercie also.

### **Remove Unproductive Parts of Organisation**

The review is already in hand and can be extended to all parts - industrial and central - immediately. A cost/benefit approach should be used, combined with the results of the revenue forecast. This will involve external research for equivalent services and assessment of them in terms of price, delivery, quality, reliability, etc. It will also involve internal analysis of unit costs. These activities will take three to four months.

Subsequent closing down of the relevant services will involve staff reassignment/reduction and this will form part of the programmes discussed above.

Effort will be required in mothballing equipment, if to be kept against future use. It is not necessary in the short term to enter into rehabilitation expenditure (removal/relocation of equipment, refurbishment of workshops).

Altogether, removal of cost-ineffective and unproductive elements may take up to twelve months.

### **Elevate/Expand Training Function**

The management personnel who attended the March seminars have been given training during the intervening period in marketing and in business management, using an external school of management studies. Training is not just a once-off affair, as with product development, better to have the expertise in-house than continually buy it in. The initiative needs to be pursued and made a feature of the internal organisation until the new organisation is functioning. As for expansion of the marketing function, it will require



hiring personnel. This should be possible within a four month period, once funds are available.

The marketing and training funds applications should be combined, together with funds required for computers and other equipment.

### **Preparation of Operating Unit Plans**

Prospective profit/cost centre managers have been invited to submit proposals by end July on how they would run their business, given more independence than at present. The terms of reference have not been copied to us so we cannot comment; the essential thing is that it is happening.

### **Restructure Balance Sheet**

In order to properly represent a government shareholding based on their requirement for a certain level of military production capability, several analyses have to be carried out (outlined in the report). These exercises could be performed within three months. There is nothing to prevent the company going ahead with the exercises straight away, using various assumptions of degree of military production. It would probably be necessary anyway to have some ideas to present as it is unlikely that anybody on the state side will have information to allow knowledgeable discussion.

Other actions necessary in financial restructuring are revaluation of assets and liabilities. Redundant equipment must be identified and written off. Value of buildings must be looked at in terms of market value, replacement value and depreciation systems. A privately-held company would presumably wish to insure its assets and this would be another consideration. Values have to be assigned to landholdings. All these exercises should be possible within a three to four month period.

Revaluation of liabilities includes appraisal of all claims on the enterprise. Since March, as a result of a court order, the company has been rescheduling its debt. It is not known to us how this affects the retained earnings statement in the balance sheet; presumably it is diminished.

Final restructuring of the balance sheet is conditional upon too many factors to put down a representative timeframe without detailed consultation with management, but it should be possible in less than two years.

## **Government Agreement**

Agreement to financial restructuring has to be obtained from the relevant ministries (Industry, Internal Affairs, Defence). Management has asked its employees through questionnaires whether they would invest in the company if it were privatised; results are being analysed at time of writing. Conditional upon the outcome of negotiations with the Workers Council, the company intends to lodge an application to become a shareholding company. An answer is expected within three months from date of submittal.

Does the agreement have to be obtained now? Is it necessary to pursue financial restructuring straight away? Does something prevent management demonstrating commitment before seeking the ultimate - shareholding status? What if it is refused: does this preclude reorganising, improving internal procedures, efficiency, morale, sales effort, even applying for additional loans/government aid? The answers to these questions must be no, and the implications of being refused shareholder status, particularly now that the workforce has been consulted, could be a sharp drop in morale and the will to survive.

## **Planning the Restructuring**

Government agreement may be necessary in order to implement a radical restructuring plan. However quite a lot can be achieved even without the ultimate of becoming a shareholding company, with or without government support. Management should evolve a master plan of activities, setting up sequences and assigning timeframes, together with acceptable slack (max and min times), discussing and publicising the plan as far down the managerial hierarchy as necessary to gain total support. It is obvious from the short discussion above that many actions are dependent on each other; they would be best represented as a network diagram, showing max and min times, the sequences, the parallels and the critical path.

Epsom,  
June 1992