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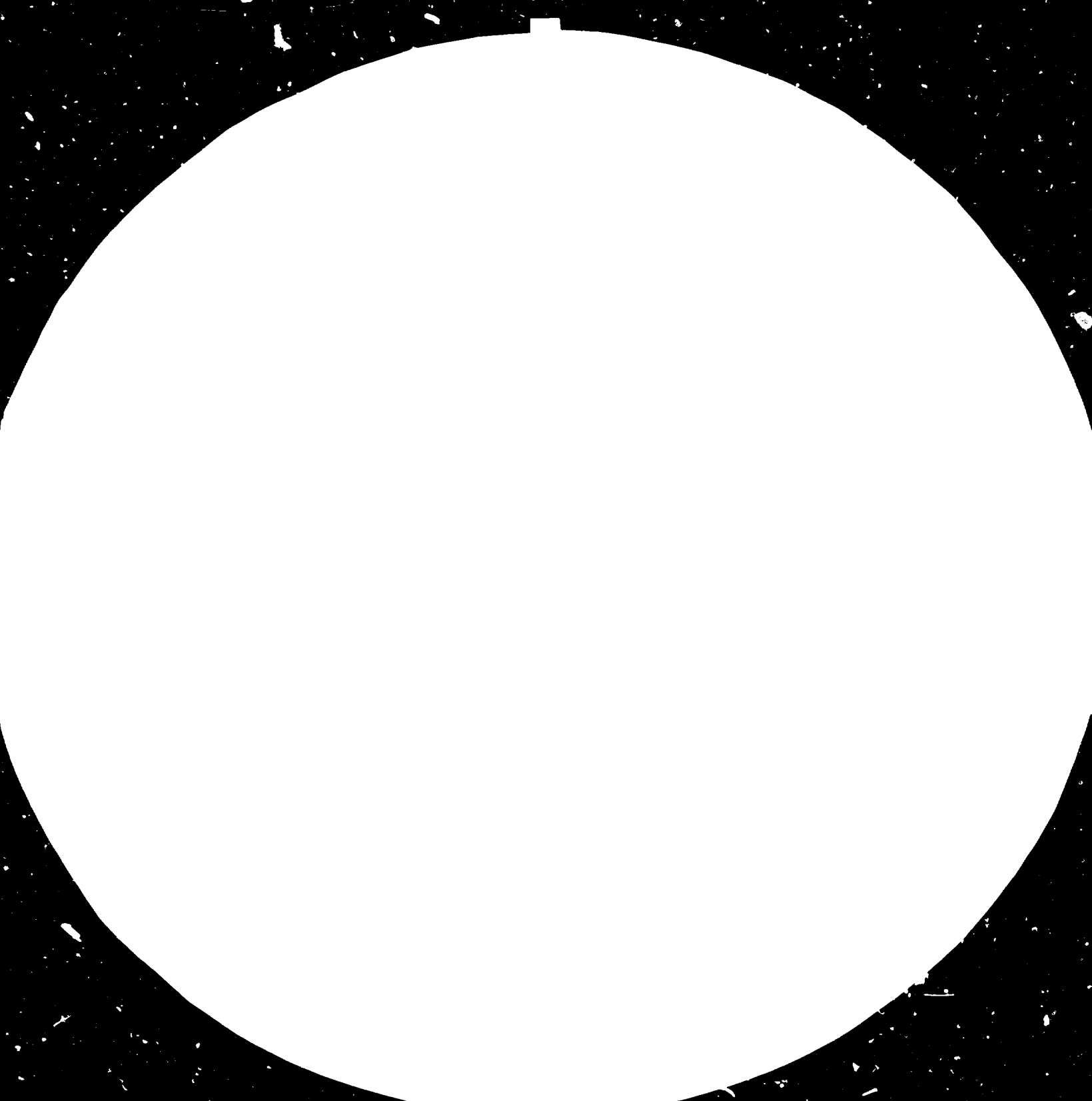

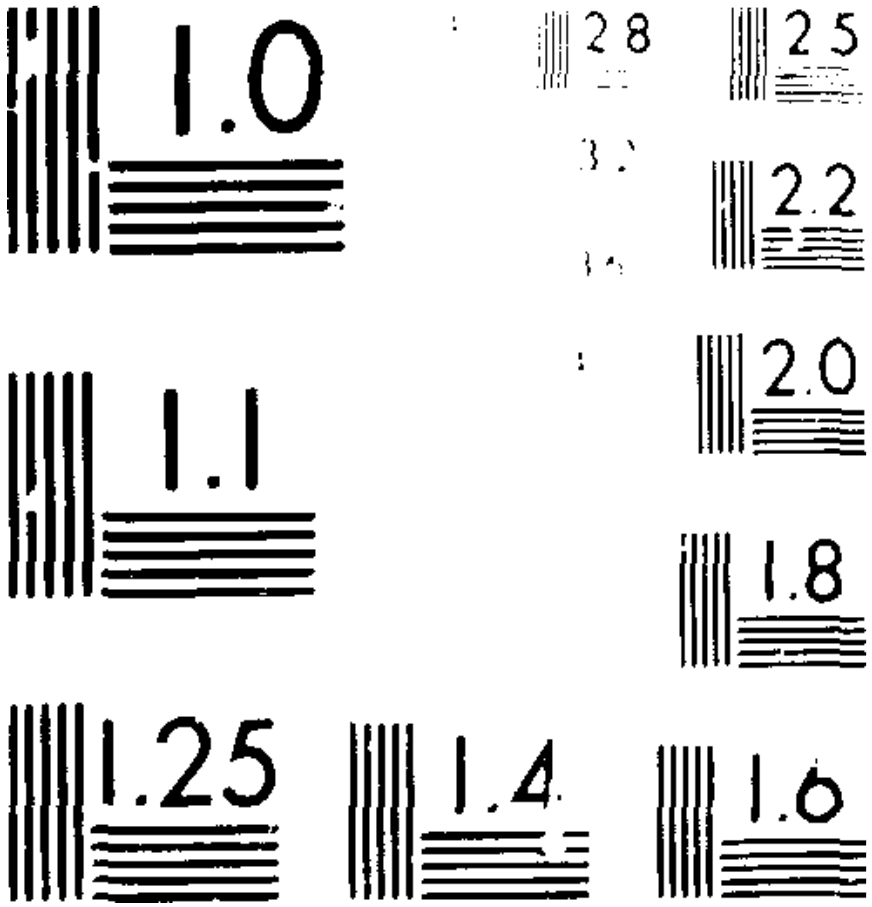

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INDUSTRIAL PROJECT PREPARATION, EVALUATION
AND IMPLEMENTATION
DP/TUR/79/024
TURKEY

Technical report*: Information systems in the Turkish state investment bank (DYB)

Prepared for the Government of Turkey
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Mr.W. Walker,
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United Nations Industrial Development Organization
Vienna

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ABBREVIATIONS

DYB The Bank	Devlet Yatirim Bankasi - the State Investment Bank, Turkey
IBRD	The International Bank for Reconstruction and Development. World Bank Group
MIS	Management Information System
SEE	State Economic Enterprise
SPO	The State Planning Office
UNIDO	United Nations Industrial Development Organization

ACHKNOWLEDGEMENT

The Author wishes to acknowledge the cooperation extended to him in the course of this study by a large number of DYB staff, particularly Deputy General Director Unal Alkan, Project Analyst and part-time counterpart Ali Dogan, whose advice and assistance were invaluable, and Secretary Betigül Ocal, who managed to produce excellent results in difficult circumstances.

CONTENTS

1. SUMMARY and BACKGROUND

1.1 SUMMARY

This report represents the outcome of a three man-month study during July-October 1981 of the Turkish State Investment Bank. The study was the third under UNDP/UNIDO contract number DP/TUR/.79/024, principally intended to advise and assist the Bank in the area of **Industrial Project Preparation, Evaluation and Implementation.**

The original terms of reference were very broad and more practical terms of reference were evolved in discussions with the Bank's senior management during the course of the study. They might be summarised as follows, in order of priority:

(1) To provide DYB with the nucleus of a management information system designed to ensure that senior managers and the Board receive a clear and timely picture of the Bank's overall situation and performance on a routine basis. The result should be as practical and detailed as possible, allowing the Bank itself to quickly refine the proposal and proceed with implementation.

(2) To suggest where and what other improvements might be made with regard to information processing within the Bank.

With regard to the first requirement, **Chapter 2** of this report details the components of a manual management information system covering important aspects of the Bank's lending operations:

- Planning Annual Credit Allocations
- Reporting and Projecting Credit Utilisation
- Summarising Actual Credit Utilisation vs. Planned
- Repayment Contracts and Schedules
- Reporting and Projecting Net Loan Disbursements
- Reporting the Total Credit Position and Arrears
- Substantive Implementation Progress
- Summarising Project Viability

The chapter includes some seventeen annotated form designs, together with many examples of their use, illustrations of how the forms are interrelated and of how the higher-level reports are compiled from more detailed worksheets.

With regard to the second requirement **Chapter 3** of this report points out that the Bank is almost exclusively an information porcessing organisation; that computers are information processing devices; that DYB is large enough, and computers inexpensive enough, that they could be economically taking

over some of the Bank's information processing functions and thereby improving productivity.

. **Section 2** of this chapter briefly reviews the pertinent characteristics of computers, their strengths and weaknesses

. **Section 3** discusses some areas within DYB likely to show immediate benefits from the use of computers:

- Project Appraisal and Evaluation
- General Accounting
- Report Production
- Payroll

and looks into the potential benefits in each case. An **appendix** to the report illustrates a 'first-cut' productivity analysis, taking Project Appraisal and Evaluation as an example

. **Section 4** discusses some important factors to be considered in evaluating computer systems for use in DYB

. **Section 5** evaluates four microcomputer systems available in Turkey against the criteria discussed in section 4. On the information currently available, the **Burroughs B20** emerges as the most attractive system.

Chapter 4 comments on some other aspects of DYB's information processing:

. **Performance Measurement.** At present DYB has no system for recording costs -- principally the cost of staff time -- and relating these costs to meaningful units of output in order to measure and control productivity. Since such measurements are also the basis for assessing the viability of proposed improvements to the information processing systems, DYB should implement such a performance measurement system.

. **An Information Services Group.** Information processing is central to the Bank's function and this fact should be reflected in the attention given to it. It is recommended that the Bank should set up an Information Systems Group to provide management and staff with specialist services in this area.

. **Presenting a Corporate 'Image'.** The Bank's present documentary output does not do justice to the substantive content nor does it present a consistent image. A number of simple and relatively inexpensive measures are suggested which could enable the Bank to significantly improve the standard of presentation and ensure that taken as a whole, its outputs project a coherent DYB 'image'.

1.2 BACKGROUND

This section is intended simply to give some background information on Turkey and the State Investment Bank, in order to provide a context in which to view the remainder of this report. Readers already familiar with this material may turn directly to Chapter 2.

Turkey.

Turkey is about the area of Germany and France combined. In 1980 the population was estimated at 45.2 million; the population density is low (78 per square kilometre of agricultural land) but is fairly highly urbanised (about 45%). Adult literacy is a relatively low 45% but increasing rapidly; population is increasing at a modest 2.2% per annum but unemployment is a high 16%.

Gross Domestic Product per capita was about US$1400 in 1980. Sector contributions to GDP were:

Agriculture	22%
Industry	23%
Services	55%

Until 1980 government policies placed emphasis on self-sufficiency through import substitution. As Turkey is agriculturally self-sufficient. this policy produced a period of rapid industrialisation; the industrial sector absorbed up to 30% of total investment of a relatively capital-intensive nature. The sector now provides over 20% of GDP but only about 14% of employment. The low priority given to exports is evidenced by the fact that in 1970 only 4% of sector output was exported but this represented nearly half of the total value of all exports.

The investment in the industrial sector principally took the form of large public investments in State Economic Enterprises (SEEs), which in some cases compete with private enterprises but which in others have a monopoly position. Much of this investment was financed from foreign borrowings. It resulted in a high growth rate, domestic production of some key basic and intermediate goods based on domestic resources, adoption of modern technology, a skilled labour force and some dispersal of industries to less developed regions. However it probably also resulted in the establishment of some uncompetetive industries, overdependent on imported inputs and with limited export potential, together with low employment generation.

Another key factor in economic developments is Turkey's energy position. The country has large underdeveloped hydropower and lignite resources but little petroleum; 25% of oil usage is imported and this consititutes nearly half of total energy consumption.

After 1974 the rapid increase in oil prices, international inflation and higher interest rates on Turkey's large foreign borrowings all combined to produce a significant deterioration in the country s terms of trade, an increased debt burden and import costs together with reduced export prospects and

emigration possibilities (with a consequent limitation on the value of remittances from Turkish workers abroad). At the same time political instabiltiy together with a predominantly centrally-planned economy thwarted effective measures to adjust to the changed international environment; the government resorted to more external borrowing, much of it short-term.

As a result of these factors, towards the end of the 70's, the cost of oil imports alone was greater than export earnings, balance of payments deficit reached 6% of a static GDP, the inflation rate exceeded 100%, a crisis of confidence developed, the inflow of external capital almost ceased altogether and Turkey faced a host of severe interlocking domestic and external problems.

Since 1980 the Military government has vigourously pursued a policy of stabilisation, correction of the imbalance of trade and re-structuring of the economy, with more emphasis on the private sector and less reliance on central funding for the public sector. Priorities have moved away from import substitution towards increased self-sufficiency in energy and the generation of exports. With its location and large endowment in natural and human resources Turkey has great potential for increased exports, particularly in labour-intensive and semi-skilled sectors and where the product value is sensitive to transport costs.

With the new emphasis on export generation, agriculture has become a focus for public investment attention at the expense of manufacturing industry. From 5.2% of GDP in 1980 exports are projected to increase at 20% per annum, reaching 10% of GDP in 1985; in 1981 alone they increased by over 50% in dollar value; export trade has moved towards the Middle-eastern countries at the expense of Europe. Agricultural products, textiles, clothing, iron and steel, current and non-electrical equipment continue to feature strongly in exports. A newcomer is income earned from construction contracts, which earned nearly $7 billion in 1981.

Although many problems remain, particularly the foreigh debt servicing burden, the new policies are working. Inflation has been reduced from over 100% in 1980 to about 25% in 1982; the overall deficit on current account was 1.5% of GDP in 1981 compared with 4.5% in the previous year.

At the time of this study the exchange rate was approximately TL167 per US dollar.

The Role of DYB.

The State Investment Bank was established in 1964 under Special Law 441 to provide long term credits, guarantees and other services to SEEs in the industrial sector. As a State Economic Enterprise itself, DYB is also subject to Law 441, which regulates the constitution and operation of SEEs. Its parent minisitry is the Minsitry of Finance. Virtually all of its capital and domestic funds are either Governement supplies or provided under Government direction.

DYB functions within the administrative procedures for provision of investment funds to SEEs:

(i) the SEEs submit their project proposals and financial requirements to the State Planning Organisation (SPO) in July each year.

(ii) SPO consults the Planning Council and the Ministry of Finance; DYB participates in these deliberations only in an advisory capacity. By the end of the year the Government approves the Annual Investment Program.

(iii) SEEs can then approach DYB for funds within the allocations made under the Annual Investment Program.

(iv) DYB conducts a financial appraisal (and in the case of a project for which World Bank funding is involved, economic appraisal) of new projects and (re)evaluation of ongoing projects. DYB is now the only outside source of investment funds available to the industrial SEEs. All World Bank and European Investment Bank funds for projects are channelled through DYB, which is empowered to modify or reject projects which it finds unacceptable. In the latter case however, DYB would be in the curious position of refusing to invest in a project previously proposed by the SPO and already accepted by its parent Ministry and the Government itself.

DYB's present role as an investment bank is therefore subject to considerable limitations, including

(i) those which follow from being an SEE itself

(ii) instead of being in a position to ensure that the Annual Investment Plan is constructed from the best selection of financially sound proposals in the first place, it is constrained to consider only those projects which have already been 'economically' approved

(iii) in effect the Government is its only source of domestic funds

However among its many concerns the Government is understood to be anxious to improve the effectiveness of the SEEs and the financial institutions, and to be considering changes to this end. Although the changes may take place in a number of stages, both the SEEs and DYB seem likely to become more independent of day-to-day central control; DYB's role in particular is expected to move towards that of a more independent development finance institution, with more control over its loan portfolio and able to raise capital independently of the Government.

Operations.

Since 1980, during which 12 new projects were appraised, there has been a decline in the number of new projects approved for financing in DYB's sector.

In 1981 the Bank disbursed TL52 billion (approximately US$650 million) in investment funds to 15 SEEs, for 72 projects. During that year 10 appraisals of new projects were carried out, 55 ongoing projects were evaluated and 7 additional loan requests were appraised.

By the end of 1981 DYB investment loan portfolio totalled TL118 billion, of which TL13 billion was contributed by the IBRD.

Organisation.

DYB has a board of five members, composed of its General Director, two Deputy General Directors and two outside members appointed by the Ministry of Finance. The Bank's senior management team is as follows:

General Director:	Tarik Kivanc
Deputy General Director, Projects & Training:	Unal Alkan
Deputy General Director, Credits & Finance:	Urtan Sakizli

An organisation chart is shown in figure 1.2.

Project appraisals, supervision activities and annual evaluations of ongoing projects are undertaken by 4 groups of financial and economic analysts supported by a group of technical analysts. Appropriate teams of technical and financial analysts are selected for each project.

In 1968 the Bank initiated training seminars on Project Preparation and Appraisal, intended partly for its own junior professional staff but principally for staff in SEEs engaged in preparing project proposals for DYB appraisal. The seminars are comprehensive, of 9 weeks duration and currently run twice a year. Over 700 SEE staff have now passed through these training seminars. A small group of full-time training specialists administer these seminars and other training activities. A number of more experienced SEE and DYB staff are sent on advanced seminars and courses abroad in the same or related subjects.

The Resources Department is 'lender-oriented'; it is principally concerned with arranging the timely availability of investment funds for the investment program and repayments on DYB's borrowings. In this role it acts as coordinator between the SEEs, the Ministry of Finance, the World bank Group, the European Investment bank and other Banks, as appropriate.

The Credits Department is 'borrower-oriented'; it administers the disbursement of investment funds to projects against qualifying invoices, usually submitted by SEEs on a quarterly basis, and the timely receipt of loan repayments according to contractual schedules.

The Joint Office, also responsible to the Deputy Director General, Projects and Training, is responsible for the typing and reproduction of the Bank's documentary output, principally Appraisal, Supervision and Evaluation reports. Correspondence is usually handled by individual secretaries.

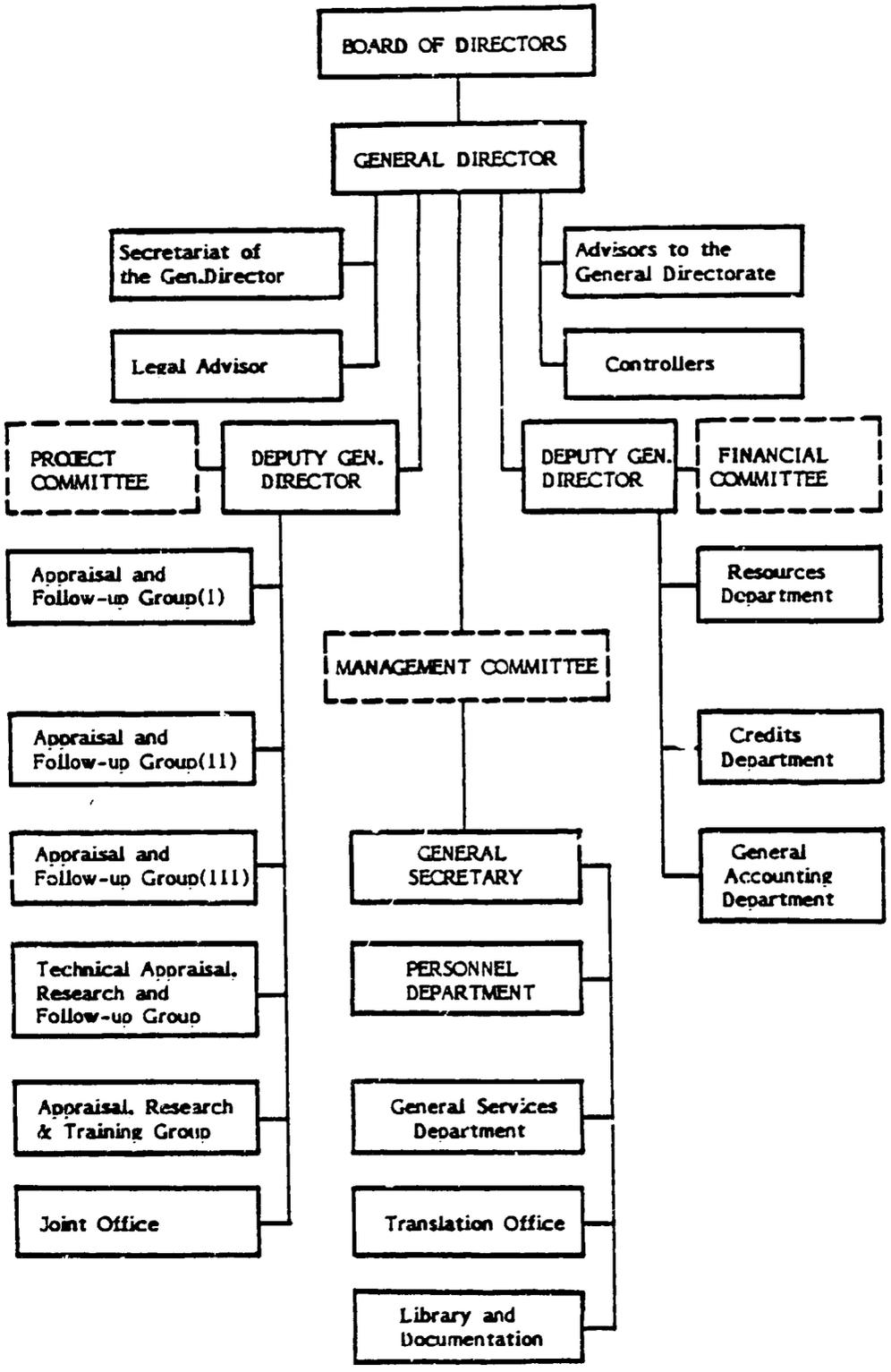
Translation work to and from English is handled by the Translation Office. Their workload is principally the translation of project reports into English where the project has a World Bank component, but many other documents, including the Bank's own Annual Report and the High Control Board's Annual Audit Report are also translated.

In 1981 the Bank had a staff total of 190, including some 50 professionals. Owing to a hiring and remuneration freeze since September 1980, at the time

of this study in the 3rd quarter of 1982, this figure had fallen to approximately 150. However the freeze was discontinued as the study ended and DYB expected to selectively recoup its staff losses relatively quickly.

Figure 1.2

DYB ORGANISATION CHART



2. THE MANAGEMENT INFORMATION SYSTEM

2.1 INTRODUCTION

The Present M.I.S.

DYB is currently staffed by about 150 people and is, in this measure, not a large organisation. Its current portfolio of projects numbers about 70 and each is typically of 5-10 years duration -- ie. its investment period is 5-10 years long --- so that each project is relatively well known to those concerned.

In this environment it is not surprising that very informal information systems have sufficed. At the operational level some formalised information handling procedures exist, but above that level there is very little. A number of Supervisors and the Deputy Directors maintain individualised lists and tables which reflect their own needs and pattern of operation; other information required from time to time can be quickly obtained by calling into another office a few metres away or by making a phone call or two.

What is Required

While the present approach has proved adequate in the past, few would suggest that it is satisfactory at present and it is clearly inadequate to properly deal with a significantly expanded project portfolio; such has been the case once in the past and will almost certainly be the case again in the future.

While computer facilities are likely to be available in the near future, those facilities will be specifically intended for assisting with project appraisal and evaluation. Not only will that application keep the computer fully loaded but the software supplied with it is specifically oriented to that purpose. While in principle it would be possible to implement a new MIS on such a computer, this approach is inadvisable. Not only would the design and implementation of a computer-based MIS be considerably more expensive at this stage of DYB's development than that of a manual system, it would take longer to get it into operation. Also, because such a system would be new and untried, it would be in a constant state of modification and development with a consequent high cost of programming support.

Clearly, in this situation it would be a more sensible approach to first define and implement a manual system, based on a number of formalised reports. Once in use, experience would suggest changes and new additions which could be incorporated as they arose. Only when such a manual system has matured and become relatively stable in form should computerisation be considered. This approach would also allow DYB time to gain experience of computers in other applications and thus be in a better position to assess the pros and cons of computerisation of the MIS, particularly with regard to the high proportion of MIS data drawn, or potentially drawn, from the accounting system --- the latter being a likely candidate for earlier computerisation.

The remainder of this section of the report is therefore concerned with the structure, contents and operation of a manual Management Information

System. Since the scope of information potentially of interest to management is very wide, in order to put forward a proposal of sufficient detail it is necessary to restrict the range of coverage and to concentrate on a limited area of interest.

What is Provided

The classical "bottom up" approach to the task of installing a management information system consists of the following stages:

(i) Conduct a detailed investigation of all existing information processing --- the inputs to each stage of processing, the processing procedures carried out and the outputs of each procedure --- and document everything;

(ii) From a series of in-depth interviews with all managers, obtain a clear picture of their roles, their decision processes and hence their information needs;

(iii) As a result of (ii) formulate a pattern of reports which appear to meet managers' information needs and discuss these with the managers; modify the reports according to their reactions and continue with this iterative procedure until there is agreement on the outputs to be produced by the system;

(iv) Armed with the results of (iii) and detailed knowledge of the existing systems from (i), design a system to provide the new outputs;

(v) Implement the new System.

The total effort involved is in the order of several man-years, fairly evenly divided between the systems analysts, the managers and other staff. This is evidenced by DYB's own experience of some 2-3 year ago when, in an earlier attempt to tackle this task, some 24 man-months of analyst and staff time were consumed without concluding stage (i) --- some working papers have been sighted but no coherent set of documentation appears to have been produced. The particularly important stages (ii) and (iii) might be expected to require at least a week of each manager's time, about half of which would be face-to-face time and the rest would be spent condidering the analyst's proposals and preparing required modifications for the next meeting.

In the situation in which only a few man-weeks of consultant and counterpart time is available, and in a period in which senior managers are under particularly heavy pressure and able to make available only an extremely limited amount of time, such an approach is clearly out of the question.

In order to provide the Bank with a 'starting basis', a nucleus of material from which it could proceed to refine and implement its own MIS, the reverse 'top-down' approach has been adopted:

Since loans outstanding represent the Bank's major asset and because

much of the Bank's day to day work concerns these loans, this area has been selected for the more detailed examination.

Within this area, a number of factors of interest to management have been hypothesised and, from them, a series of possible report forms have been designed which could provide the Bank's managers and Board with that information. The forms themselves and the relations between them are described in some detail.

While the result should provide the Bank's managers with a nucleus of ideas and practical examples, the shortcomings are evident -- the material put forward here is based on sparse knowledge of the Bank's existing operational systems and even less knowledge of managers' day-to-day information needs for internal and external reporting. Consequently DYB managers will undoubtedly be able to improve the pattern and contents of the reports shown here and thus to move one stage closer to implementation.

2.2 THE LENDING SECTOR of the M.I.S.

The levels of Reporting

The Bank's borrowers are the State Economic Enterprises in the industrial sector. Of these DYB is currently involved with about 15. Each SEE may have one or more projects for which DYB provides funds; in the case of the larger SEEs each may be responsible for as many as 13 or 14 projects. Figure 2.2A illustrates the natural hierarchy that exists in the lending side of DYB's operation. At the top, the lending operation as a whole; at the next level, the institutions to which DYB makes loans, the SEEs; under SEEs, the individual projects for which each SEE is responsible. These levels in the lending operation suggest a parallel pattern in the MIS, with an overall total at the top of the MIS structure. The next level down of reporting could show the corresponding total for an individual SEE; the next level down again could show the appropriate figures for each individual project being carried out by that SEE. (In the case of larger SEEs, it might be found useful to employ a 'sub-sector' level of reporting, intermediate between that of the SEE and the individual projects.) Conversely, if data at the project level is to be aggregated for management reporting purposes then the first level of aggregation should be to collect together all of the projects under one SEE; finally, the information for individual SEEs should be aggregated into an overall total.

This structure of reporting will be observed frequently in the material which follows.

Areas of Management Interest

Even within the limited area of the Bank's lending operation, the possible range of information of management interest is wide and the possible permutations and combinations of data which would best convey that information are endless. In order to make some significant progress, we have concentrated on a limited number of subjects felt to be among those of prime management interest, as follows:

Planning Annual Credit Allocations. Principally during the last quarter of each year, the process of determining DYB's credit allocation to each project takes place. This process calls for the balancing of a SEE claim for its projects against both credit limitations set by the Ministry of Finance and DYB's possibly different views as to how much credit should be extended. With regard to ongoing projects, DYB has prior information on which to base its assessment and its negotiating position. However in the case of new projects, because of the S.P.O.'s dubious practice of including projects in the Annual Plan before they have been appraised by DYB, the Bank may have no more information to go on than the SEE's own claim for finance. In any event this process leads to the Credit Allocation for the following year, and this is a prime point of reference for management reporting during that year.

Reporting and Projecting Credit Utilisation. Credit Allocations having been made by the beginning of the year, it is in the nature of things that the actualities will differ from the plans. New projects will start late,

existing projects will run late and neither will utilise their credit allocation; other projects may stay very close to their implementation schedules but find costs higher than expected and therefore require an increased allocation. It seems essential that DYB management should have a clear picture throughout the year of the funds actually disbursed to date and, based on those disbursements, the likely total credit requirement for future periods and for the year as a whole.

Summarising Actual Credit Utilisation vs. Planned. Full utilisation of the funds available requires an early and clear indication of likely credit utilisation as compared with the planned allocations so that credits which are unlikely to be utilised can be redistributed to other projects, within overall credit limitations.

Repayment Contracts and Schedules. As a project proceeds through the implementation phase, the actual credit utilised during each year forms the basis of a separate loan agreement (though funds may not actually be disbursed by DYB until the earlier part of the following year, these are included). The repayment schedule of each agreement normally consists of annual interest-only payments through what is anticipated to be the remainder of the implementation phase, followed by a number of annual principal and interest payments through the repayment period of the loan. Thus as the project proceeds DYB's income from the project increases annually. In order to form a picture of this income stream, it is important to collect and maintain repayment contract information in a convenient form.

Reporting and Projecting Net Loan Disbursements. Utilisation of the year's credit allocation is a major aspect of DYB's loans operation, but from the viewpoint of DYB's own cash management it is important to know the net disbursement, i.e. the difference between the disbursement of additional loan capital and the income from earlier loans. This, together with corresponding projections of DYB's borrowing operations and other income and expense items, can give an early indication of the amount and timing of DYB's need for additional resources.

Reporting the Total Credit Position and Arrears. While the above areas cover utilisation of additional credit allocations and net (loan) funds flow, still missing are references to the total loan outstanding, movements during the current reporting period and the highlighting of payments arrears. These considerations are brought together on one set of reports.

Substantive Implementation Progress. It is axiomatic that on any reasonably complex project the rate of expenditure is an unacceptable indicator of real implementation progress and yet the Bank's present information systems appear to rely on it; any other measure of true implementation progress seems to be absent from the management summary

tables observed. Since the viability of investments made by the Bank on behalf of its investors --- principally the Turkish Public --- is vitally dependent on substantive progress during the implementation phase being as close to the original timescale as possible, the measurement and reporting of a simple but reliable indicatior of the divergence between the planned and actual rates of progress would be prudent.

Summarising Project Viability. The Bank's initial decision to fund a project is based on a number of criteria, both financial (NPV, IRR, etc.) and economic (employment generated, foreign exchange earning capacity and so on), which necessarily change during the course of the implementation phase. While many of these criteria are re-calculated as a result of the supervision/evaluation cycle, there is a need to standardise the criteria used and to present them at Management and Board level in such a way that comparisons can more easily be made between both the current situation and the original (on which the investment decision was based) and between one project and another.

Each of these perceived needs is addressed in more detail in the following sections of the report.

THE NATURAL HIERARCHY OF THE LENDING OPERATION

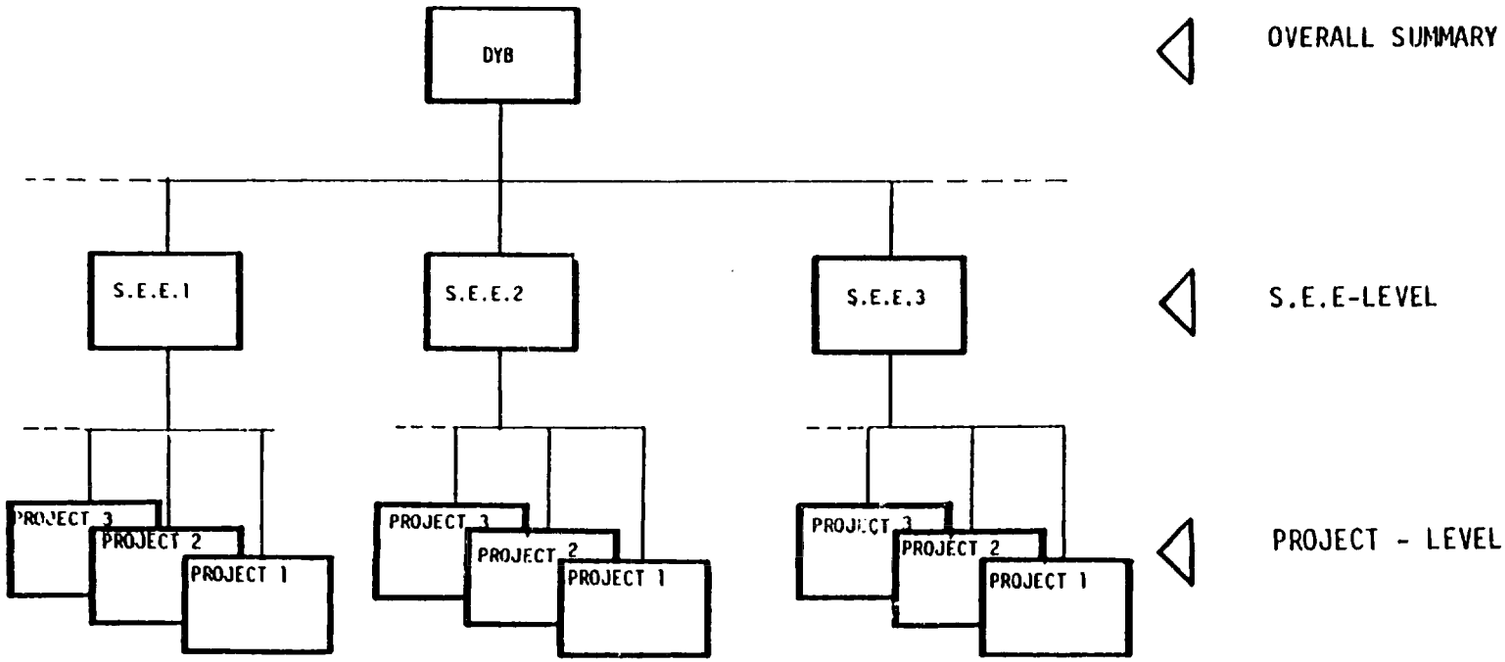


FIGURE 2.2A

2.3. PLANNING ANNUAL CREDIT ALLOCATIONS

The objective here is to determine a set of reports which provide comprehensive information on the overall financing of individual projects -- both in terms of the distribution of funding between the SEE's own resources, DYB and other sources, and in the context of the total investment required, the amount invested to date and the allocation for the year.

Figure 2.3A shows an annotated example of a possible format, in which one or more sheets would bring together this information for all projects for which one SEE is responsible. Each project forms a 'row' entry of the form; each row consists of 4 lines, showing the individual figures for the funding provided from the SEE's own resources, from DYB, from other sources and finally a total line. The 3 main columns show the currently estimated total investment for the project, the actual amount invested to date and the allocation for the forthcoming year. Each of these main columns is sub-divided into the foreign exchange component of funding, the total, (the domestic currencies component is therefore the total minus the foreign exchange component) and the percentage which each source of funding represents of the total for all sources of funding.

This format would facilitate the aggregation of individual project figures into a total for all projects, so that the final row entry could be used to show the totals for the SEE, as illustrated in figure 2.3A.

Clearly it would be advantageous to be able to summarise this information at a higher level and Figure 2.3B. shows an exactly similar format designed for this purpose. On this report an SEE now constitutes a row entry; again, these individual row entries could be easily totalled to provide overall figures for DYB's whole lending operation.

Figure 2.3C illustrates that the row entries of the Overall Summary are obtained by simply transcribing the SEE totals from the foot of the corresponding SEE level form. In this way, some 2 or 3 sheets of the Overall Summary report provide the totals for DYB as a whole and the figures for individual SEEs, in a format which facilitates comparison between SEEs. The information for a more detailed examination of an individual SEE and the projects for which it is responsible are automatically available in the form of the SEE-level reports, from which the Overall Summary is constructed.

A Variation

Figure 2.3D illustrates another format of this type which might be found useful as a worksheet during the process negotiating the Annual Credit Allocations. Here, instead of using the 3 main columns available for the Total Investment, the Investment to Date and the Annual Allocation, the first 2 columns might be used instead for the SEE's proposed allocation and DYB's proposal, leaving the 3rd column free for noting the finally agreed figure, where that differs from the DYB proposal.

ANNUAL FINANCIAL PLAN: S.E.E.-LEVEL REPORT

FIGURE 2.3A

(1) (4) (2) (5)

DEVLET YATIRIM BANKASI

ANNUAL FINANCIAL PLAN: S.E.E. LEVEL (3)

DATE 22.82 S.E.E. T.S.F

UNITS 1.000 TL. PAGE 2 OF 2 YEAR 1983

(6) PROJECT NAME and S.P.O. NUMBER (9)	SOURCE OF FINANCE (8)	ESTIMATED TOTAL INVESTMENT (7) FOREIGN	TOTAL	%	INVESTED TO-DATE FOREIGN	TOTAL	%	ALLOCATION FOR YEAR FOREIGN	TOTAL	%
ELBISTAN SUGAR FACTORY	OWN	-	3.360.000	67	-	1.340.000	64	-	670.000	64
	OYB	1.060.000	1.680.000	33	420.000	760.000	36	190.000	370.000	36
	OTHER	-	-	-	-	-	-	-	-	
	TOTAL	1.060.000	5.040.000	100	420.000	2.100.000	100	190.000	1.040.000	100
SUGARLUK SUGAR	OWN	-	5.440.000	71	-	2.080.000	62	-	890.000	59
T.S.F. TOTAL	TOTAL			100			100			100
	OWN	-	36.960.000	66	-	12.270.000	67	-	7.760.000	69
	OYB	11.660.000	18.650.000	34	3.240.000	5.970.000	33	2.920.000	3.540.000	31
	OTHER	-	-		-	-		-	-	
	TOTAL	11.660.000	55.610.000	100	3.240.000	18.240.000	100	2.920.000	11.300.000	100

(1) DATE The date on which this plan was prepared

(2) S.E.E. The name of the S.E.E. to which this information applies

(3) UNITS The units of currency used on the form

(4) PAGE OF

(5) YEAR The year in which the allocation is being planned

(6) PROJECT NAME Self Explanatory
AND S.P.O. NUMBER

(7) For each Project there are 3 main columns of data:

ESTIMATED TOTAL INVESTMENT The current estimate (the SEE's own estimate or OYB's, as appropriate) of the total investment required to complete the project

INVESTED TO DATE The actual amount invested up to the end of the year preceding that for which the allocation is being planned. Eg. if the allocation is being planned for 1983 'INVESTED TO DATE' would be the actual investment made to the end of 1982 (of course since this planning stage would be taking place in the later months of 1982, INVESTED TO DATE would in fact be composed of actuals up to the 3rd. quarter of 1982 and an estimate for the 4th. quarter of 1982).

ALLOCATION FOR YEAR The allocation for the forthcoming year-here, 1983. Depending on what stage of the planning process the form is being used for, this might be OYB's proposed or the finally agreed allocation.

(8) Each of these 3 main columns is divided into 3 sub-columns:

FOREIGN The foreign-exchange component of the main column heading (this would normally be expressed as TL equivalent).

TOTAL The sum of foreign exchange and domestic currency. The domestic currency component can be found by subtracting FOREIGN from TOTAL.

% The percentage that TOTAL column figure represents of the TOTAL row figure for each project. (see (9) below).

(9) SOURCE of FINANCE For each project, a row is provided to enter a figure for each of the following sources of funds:

OWN Funds provided from the S.E.E.'s own resources.

OYB Funds provided by OYB

OTHER Funds provided from sources other than the S.E.E. itself and OYB, e.g, working capital from commercial banks.

TOTAL The total of the 3 figures above.
Note that the % column (see (8) above) expresses the percentage of this Total contributed by each of the 3 sources of funds.

FIGURE 2.3B

ANNUAL FINANCIAL PLAN: OVERALL SUMMARY REPORT

DEVLET YATIRIM BANKASI — ANNUAL FINANCIAL PLAN: OVERALL SUMMARY — (1) DATE DEC. 82 — (2) UNITS 1.000 TL — (3) PAGE 2 OF 2 — (4) YEAR 1983 — S.E.E. TOTALS

(5) S.E.E. NAME	(8) SOURCE OF FINANCE	(7) ESTIMATED TOTAL INVESTMENT FOREIGN	TOTAL	%	INVESTED TO-DATE FOREIGN	TOTAL	%	ALLOCATION FOR YEAR FOREIGN	TOTAL	%
T.S.F.	OWN	-	36.760.000	66	-	2.270.000	67	-	7.760.000	69
	DYB	11.660.000	18.650.000	34	3.610.000	5.970.000	33	2.920.000	3.540.000	31
	OTHER	-	-		-	-		-	-	
	TOTAL	11.660.000	55.610.000	100	3.610.000	18.240.000	100	2.920.000	11.300.000	100
T.E.K.	OWN	-	69.540.000		-	29.051.000	62	-	15.300.000	66
	DYB	19.260.000	34.730.000		7.540.000	17.470.000	38	4.020.000	7.990.000	34
OVERALL TOTALS	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100

(1) DATE. The date on which this plan was prepared.

(2) UNITS. The units of currency used on the form

(3) PAGE OF.

(4) YEAR. The year in which the allocation is being planned

(5) S.E.E. NAME. Self Explanatory

(6) For each S.E.E. there are 3 main columns of data:

ESTIMATED TOTAL INVESTMENT. The current estimate (the SEE's own estimate or DYB's, as appropriate) of the total investment required to complete all of the S.E.E's Projects.

INVESTED TO DATE. The actual amount invested up to the end of the year preceding that for which the allocation is being planned. Eg. if the allocation is being for 1983, 'INVESTED TO DATE' would be actual investment made to the end of 1982 (of course, since this planning stage would be taking place in the later months of 1982, INVESTED TO DATE would be in fact be composed of actuals up to the 3rd. quarter of 1982 and an estimate for the 4th. quarter of 1982).

ALLOCATION FOR YEAR The allocation for the forthcoming year -- eg.1983. Depending on what stage of the planning process the form is being used for, this might be DYB's proposal or the finally agreed allocation.

(7) Each of these 3 main columns is divided into 3 sub-columns:

FOREIGN The foreign-exchange component of the main column heading (this would normally be expressed as TL equivalent)

TOTAL The sum of foreign exchange and domestic currency. The domestic currency component can be found by subtracting FOREIGN from TOTAL.

% The percentage that each TOTAL column figure represents of the TOTAL row figure for each project. (see (8) below).

(8) SOURCE of FINANCE For each S.E.E. a row is provided to enter a figure for each of the following sources of funds:

OWN Funds provided from the S.E.E's own resources.

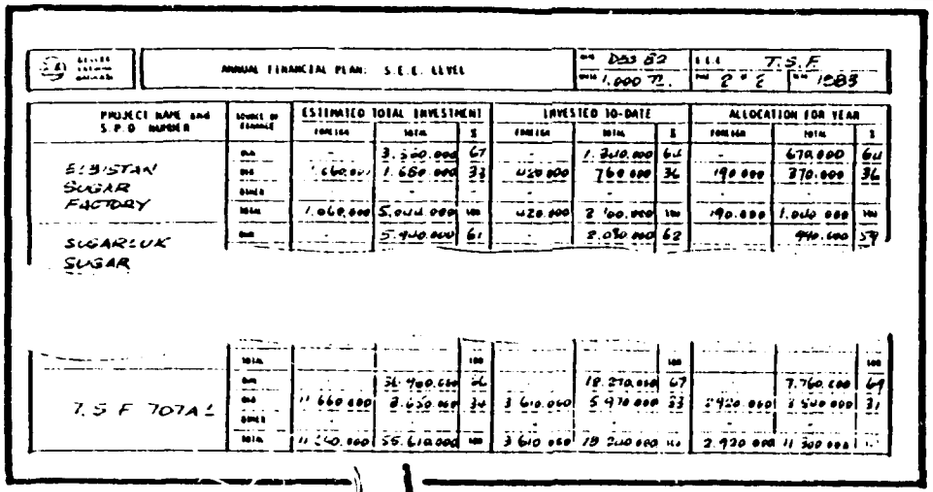
DYB Funds provided by DYB

OTHER Funds provided from sources other than the S.E.E. itself and DYB, eg. working capital from commercial banks.

TOTAL The total of the 3 figures above.

Note that the % column (see (7) above) expreses the percentage of this total contributed by each of the 3 sources of funds.

ANNUAL FINANCIAL PLAN: FORMATION of the OVERALL SUMMARY



Totals from the SEE-Level Report...

..... become a row entry in the Overall Summary

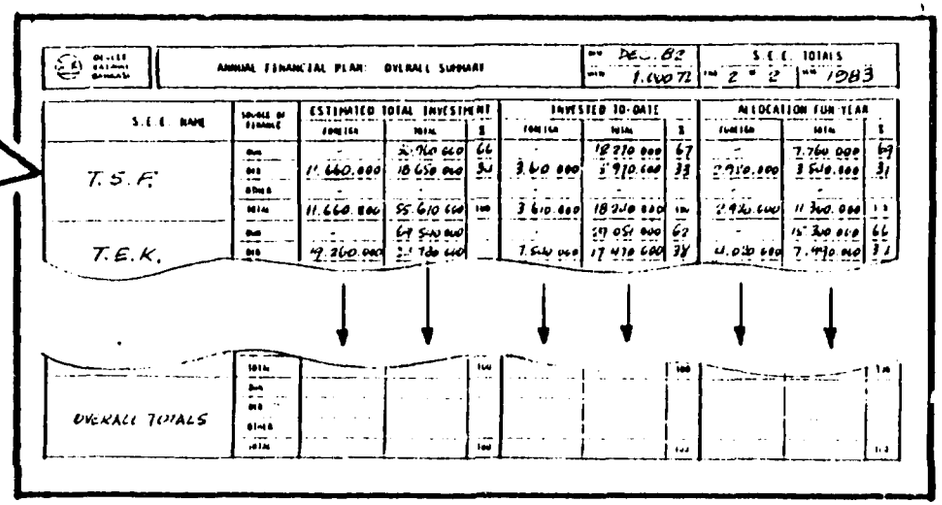


FIGURE 2.3C

ANNUAL FINANCIAL PLAN: A VARIATION on the FORMAT

DEVLET YATIRIM BANKASI	ANNUAL ALLOCATION PROPOSALS: S.E.E. vs D.Y.B.	DATE	S.E.E.
		UNITS	PAGE OF / YEAR

PROJECT NAME and S.P.O. NUMBER	SOURCE OF FINANCE	S.E.E. PROPOSAL			D.Y.B. PROPOSAL			AGREED ALLOCATION		
		FOREIGN	TOTAL	%	FOREIGN	TOTAL	%	FOREIGN	TOTAL	%
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100
	OWN									
	DYB									
	OTHER									
	TOTAL			100			100			100

FIGURE 2.3D

2.4 REPORTING and PROJECTING CREDIT UTILISATIONS

The project-level basic worksheet for this component of the MIS is shown in figure 2.4A. The initial essential is a beginning-of-year estimate of the project's likely need for principal payments, by month, through the year. A suggested source of this information would be DYB's own Supervision teams, possibly supplemented by the SEE's estimates, the latter to be supplied as part of their request for finance in the coming year. In the case of new projects then the SEE itself would be the only possible source. This estimate would be entered in the appropriate box at the head of the worksheet, as illustrated in Figure 2.4B panel 1.

After the close of each month during the year, the actual amount paid to the project would be entered in the appropriate row and column of the form; based on prior knowledge of the project's actual demand compared with its plans (or simply on the basis of the actual vs. estimated demand for the current year-to-date), the estimates for the remainder of the year would be revised accordingly. This is illustrated in Figure 2.4B panel 2. In this fictitious example, TL1.650m was paid to the project in January compared with the original estimate of TL1.900m, so that the actual payment made was 87% of the estimated figure. Accordingly the future monthly estimates originally made have been factored by 87% and entered in the January 'M' row; the corresponding cumulative total has been calculated and entered in the 'C' row. This method leads to a new total for the year of TL35.430m, compared with the original estimate of TL40.800m.

Panel 3 of figure 2.4B illustrates the situation after the closure of the February accounts. A further payment of TL2.250m was made during the month, bringing the cumulative total to TL3.900m or 93% of the original estimate of TL4.200m. The same forward projection calculation has been repeated, leading to a new projected total for the year of TL37.800m, intermediate between the original estimate and that of January owing to the increased rate of payment in February.

Figure 2.4C illustrates the corresponding SEE-level report format, in which each project forms a row entry and the SEE totals are formed by simply aggregating the individual project figures.

Figure 2.4D shows the corresponding Overall Summary format, in which each SEE forms a row entry and the Overall Totals are formed by totalling the individual SEE figures.

Figure 2.4E illustrates the completion of the SEE-level report by transcription of the project-level data to each row on the SEE-level report, and the completion of the Overall Summary by transcription of the SEE totals calculated on the SEE-level form to each row on the Overall Summary. The Overall Totals calculated by aggregating the individual SEE figures would then give a concise indication of the extent to which DYB's total credit allocation is likely to be utilised.

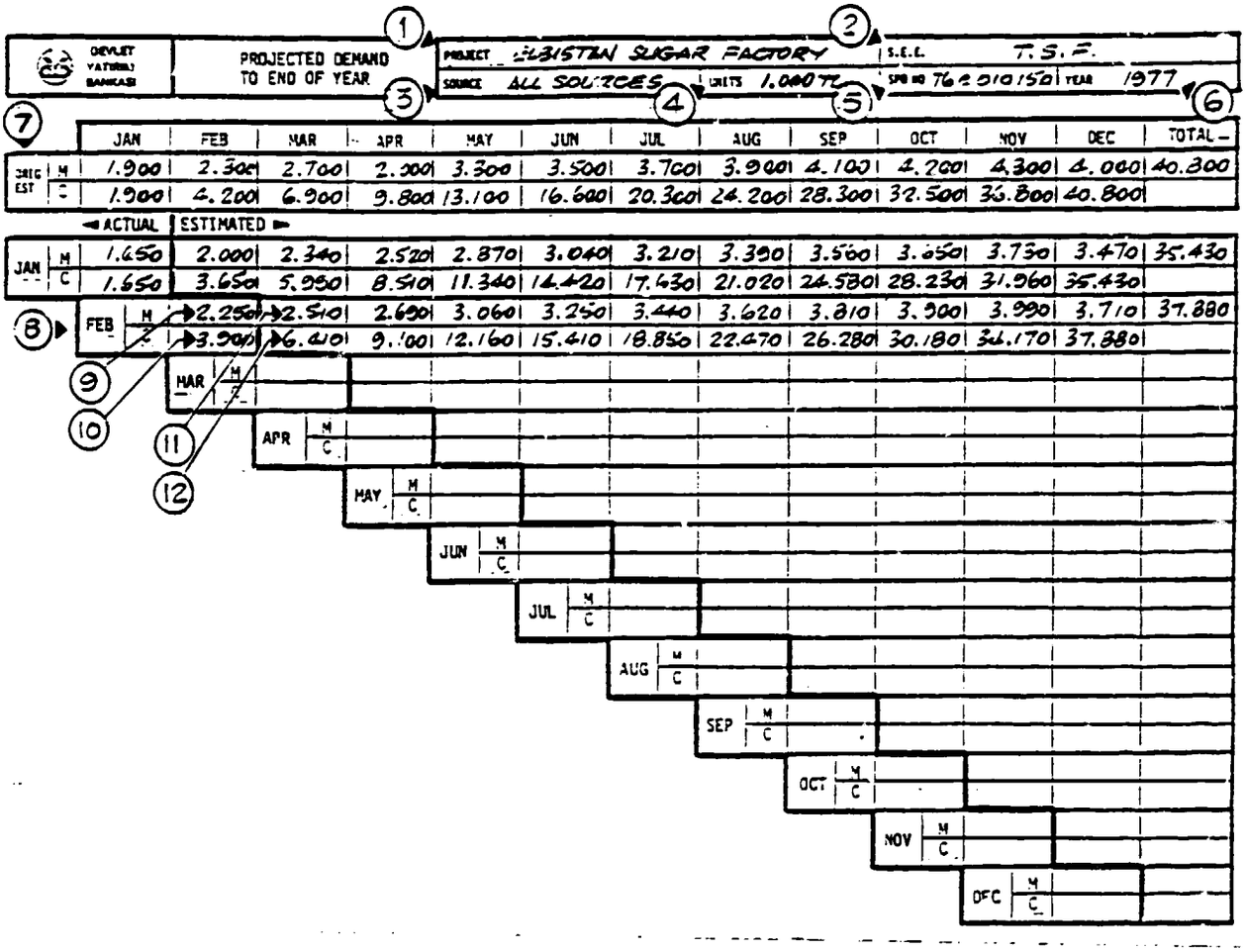
Notes

1. The formats illustrated assume that the required reporting interval is monthly --- typical practice. However in DYB's case, SEEs apparently submit credit claims on an ad-hoc basis at approximately quarterly intervals. In this situation monthly reporting would have little justification and quarterly reporting would be more appropriate. Figure 2.4E illustrates an alternative format for this series of reports which would be more suitable in DYB's present situation.

2. The example starts from an 'ALL SOURCES' estimate for each project. For those DYB projects in which IBRD and/or EIB are involved, such a total would itself be aggregated from a number of worksheets, one for each such source of funds. These could of course be aggregated separately, giving SEE and DYB totals for all IBRD loans for example.

FIGURE 2.4A

CREDIT UTILISATION: PROJECT-LEVEL WORKSHEET



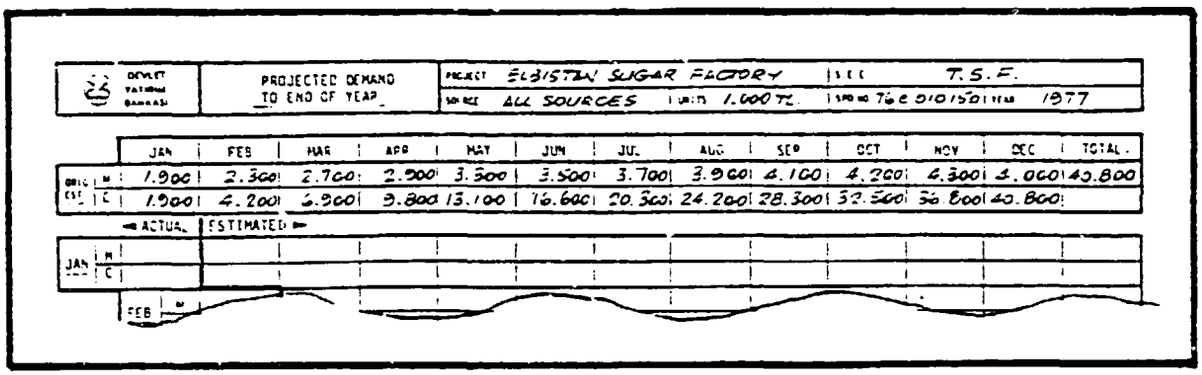
(1)	PROJECT	The name of the project.
(2)	S.E.E.	The name of the State Economic Enterprise responsible for the project.
(3)	SOURCE	The source of funds for which the demand is being estimated, eg. Ministry of Finance, IBRD, EIB.
(4)	UNITS	The units of currency used on the form
(5)	SPO.No.	The State Planning Organisations identification number for this project.
(6)	YEAR	The year to which the data refers.
(7)	ORIGINAL ESTIMATE	Estimate made at the end of the previous year of this project's finance requirements, both as individual monthly amounts (M) and a cumulative year-to-date total (C)
(8)	MONTHLY RE-ESTIMATES	At the end of each month the ACTUAL amount paid by DYB to the project is entered (9) and the ACTUAL year-to-date total calculated (10) Then, taking say the ratio

$$\frac{\text{ACTUAL Y.T.D Expenditure}}{\text{ORIGINAL ESTIMATE Y.T.D Expenditure}}$$

each ORIGINAL MONTHLY ESTIMATE is multiplied by this ratio and entered in the 'M' row of the month just completed (11) and the corresponding cumulative year-to-date total is calculated and entered in the 'C' row (12).

CREDIT UTILISATION: COMPLETION of the WORKSHEET FIGURE 2.4B

1.At the Beginning of the Year



DEVLET YATIRIM BANKASI — PROJECTED DEMAND TO END OF YEAR

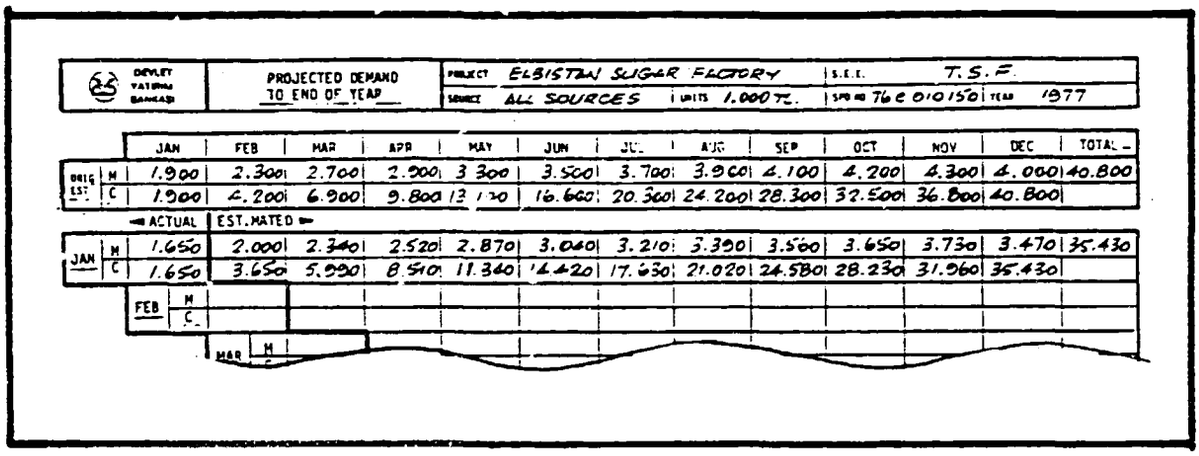
PROJECT: ELBISTAN SUGAR FACTORY | S.E.E.: T.S.F.
SOURCE: ALL SOURCES | UNITS: 1.000 TL. | SPO NO: 76 E 010150 | YEAR: 1977

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ORIG EST	M	1.900	2.300	2.700	2.900	3.300	3.500	3.700	3.900	4.100	4.200	4.300	4.000	40.800
	C	1.900	4.200	6.900	9.800	13.100	16.600	20.300	24.200	28.300	32.500	36.800	40.800	

◄ ACTUAL | ESTIMATED ►

JAN	M													
	C													
FEB	M													

2.At the End of January



DEVLET YATIRIM BANKASI — PROJECTED DEMAND TO END OF YEAR

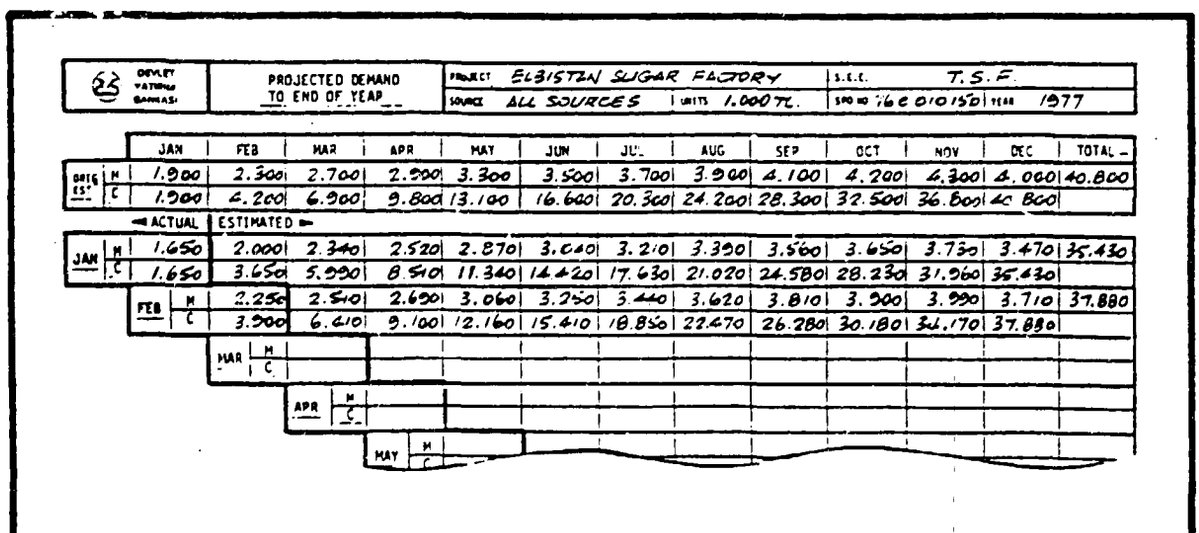
PROJECT: ELBISTAN SUGAR FACTORY | S.E.E.: T.S.F.
SOURCE: ALL SOURCES | UNITS: 1.000 TL. | SPO NO: 76 E 010150 | YEAR: 1977

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ORIG EST	M	1.900	2.300	2.700	2.900	3.300	3.500	3.700	3.900	4.100	4.200	4.300	4.000	40.800
	C	1.900	4.200	6.900	9.800	13.100	16.600	20.300	24.200	28.300	32.500	36.800	40.800	

◄ ACTUAL | ESTIMATED ►

JAN	M	1.650	2.000	2.340	2.520	2.870	3.040	3.210	3.390	3.560	3.650	3.730	3.470	35.430
	C	1.650	3.650	5.990	8.510	11.340	14.420	17.630	21.020	24.580	28.230	31.960	35.430	
FEB	M													
	C													
MAR	M													

3.At the end of February



DEVLET YATIRIM BANKASI — PROJECTED DEMAND TO END OF YEAR

PROJECT: ELBISTAN SUGAR FACTORY | S.E.E.: T.S.F.
SOURCE: ALL SOURCES | UNITS: 1.000 TL. | SPO NO: 76 E 010150 | YEAR: 1977

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ORIG EST	M	1.900	2.300	2.700	2.900	3.300	3.500	3.700	3.900	4.100	4.200	4.300	4.000	40.800
	C	1.900	4.200	6.900	9.800	13.100	16.600	20.300	24.200	28.300	32.500	36.800	40.800	

◄ ACTUAL | ESTIMATED ►

JAN	M	1.650	2.000	2.340	2.520	2.870	3.040	3.210	3.390	3.560	3.650	3.730	3.470	35.430
	C	1.650	3.650	5.990	8.510	11.340	14.420	17.630	21.020	24.580	28.230	31.960	35.430	
FEB	M	2.250	2.540	2.690	3.060	3.250	3.440	3.620	3.810	3.500	3.990	3.710	37.880	
	C	3.900	6.410	9.100	12.160	15.410	18.850	22.470	26.280	30.180	34.170	37.880		
MAR	M													
	C													
APR	M													
	C													
MAY	M													

CREDIT UTILISATION: S.E.E-LEVEL REPORT

DEVLET YATIRIM BANKASI	PROJECTED DEMAND TO END OF YEAR	SOURCE ALL SOURCES	S.E.E. T.S.F.
		UNITS 1.000.000 T.L.	YEAR 1977

PROJECT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
ACTUAL														ESTIMATE
SUSARLUK	M	5,21	5,43	6,07	5,90	6,10	6,25	5,81	5,93	6,20	6,31	5,72	4,90	60,83
	C	5,21	10,64	16,71	22,61	28,71	34,96	40,77	46,70	52,90	59,21	64,93	69,83	
ELBISTAN	M	1,65	2,25	2,51	2,69	3,06	3,25	3,44	3,62	3,81	3,90	3,99	3,71	37,88
	C	1,65	3,90	6,41	9,10	12,16	15,41	18,85	22,47	26,28	30,18	34,17	37,88	
MUŞ	M	3,54	3,41	3,70	3,62	3,68	3,75	3,65	3,66	3,73	3,49	3,26	3,21	42,70
	C	3,54	6,95	10,65	14,27	17,95	21,70	25,35	29,01	32,74	36,23	39,49	42,70	
S.E.E. TOTALS	M	18.05	17,39	18,87	18,46	18,77	19,13	19,38	18,72	19,21	20,15	19,61	18,87	226,61
	C	18.05	35,44	54,31	72,77	91,54	110,67	130,05	148,77	167,98	188,13	207,74	226,61	

FIGURE 2 4C

CREDIT UTILISATION: THE OVERALL SUMMARY REPORT

DEVLET YATIRIM BANKASI	PROJECTED DEMAND TO END OF YEAR	SOURCE ALL SOURCES	S.E.E. TOTALS
		UNITS 1.000.000 TL.	YEAR 1977

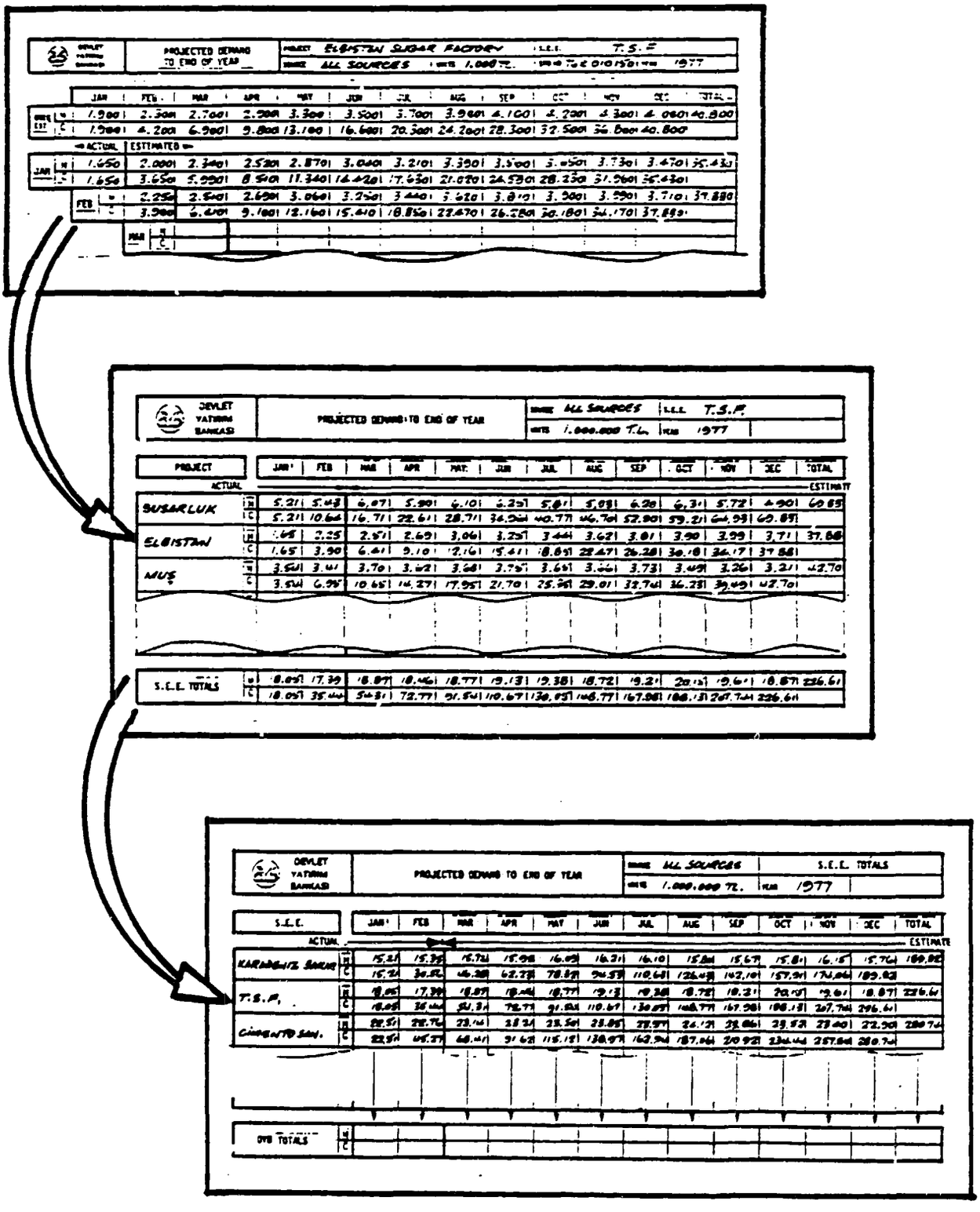
S.E.E.		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
		ACTUAL												ESTIMATED
KARADENIZ BAKIR	M	15,21	15,35	15.72	15,95	16,09	16,21	16,10	15,80	15,67	15,81	16,15	15,76	189,82
	C	15,21	30,56	46,28	62,23	78,32	94,53	110,63	126,43	142,10	157,91	174,06	189,82	
T.S.F.	M	18,05	17,39	18,87	18,46	18,77	19,13	19,38	18.72	19,21	20,15	19,61	18,87	226,61
	C	18,05	35,44	54,31	72,77	91,54	110,67	130,05	148,77	167,98	188,13	207,74	226,61	
CIMENTO SAN.	M	22,51	22,76	23,14	23,21	23,50	23,85	23,97	24,12	23,86	23,52	23,40	22,90	280,74
	C	22,51	45,27	68,41	91,62	115,12	138,97	162,94	187,06	210,92	234,44	257,84	280,74	
DYB TOTALS	M													
	C													

FIGURE 2.4D

FIGURE 2.4E

CREDIT UTILISATION: FORMATION of the S.E.E-LEVEL

and OVERALL SUMMARY REPORTS



CREDIT UTILISATION: AN ALTERNATIVE FORMAT

DEVLET YATIRIM BANKASI	CREDIT UTILISATION: PROJECT LEVEL	PROJECT	S.E.E.	
			UNITS	S.P.O. NUMBER

		PERIOD ▶	1ST. QTR 83	2ND. QTR 83	3RD QTR 83	4TH. QTR 83	TOTAL 83	1st QTR '84	2ND QTR '84
ORIG. EST.	PERIOD								
	CUMUL.								

ACTUAL ▶ ◀ ESTIMATED

1ST. QTR 1983	PERIOD								
	CUMUL.								
2ND QTR 1983	PERIOD								
	CUMUL.								
3RD QTR 1983	PERIOD								
	CUMUL.								
4TH. QTR 1983	PERIOD								
	CUMUL.								
TOTAL 1983	PERIOD								
	CUMUL.								
1ST QTR 1984	PERIOD								
	CUMUL.								
2ND QTR 1984	PERIOD								
	CUMUL.								

FIGURE 2.4F

2.5 SUMMARISING CREDIT UTILISATION vs. PLAN

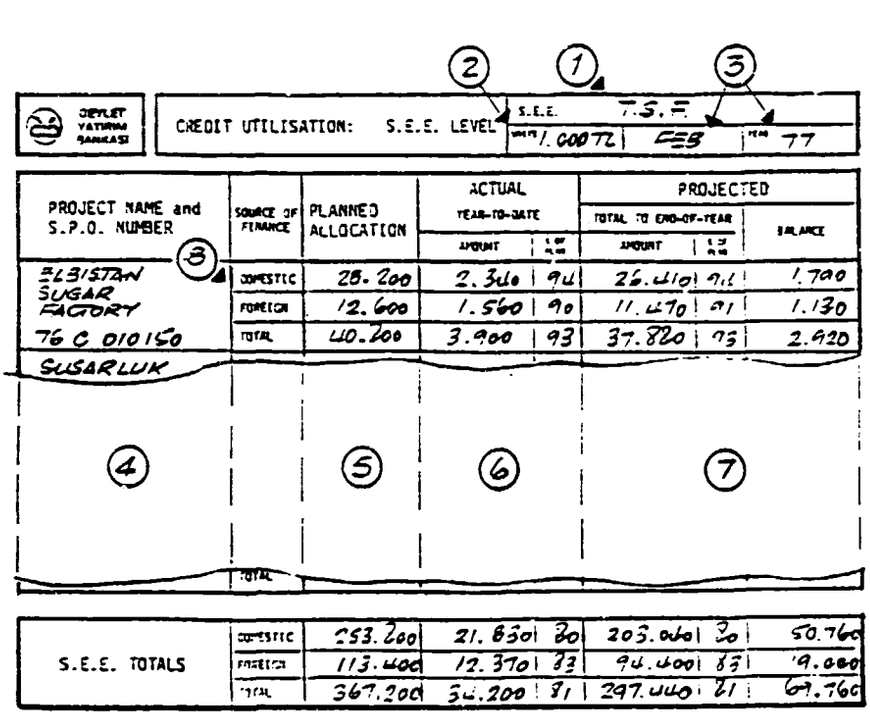
The Credit Utilisation Worksheet and Reports described in the previous section are directed towards providing a month-by-month (or quarter-by-quarter) indication of the extent to which credit allocations are likely to be taken up through the remainder of the current year. This is desirable for funds-flowanalysis purposes (see section 2.7). However for the immediate purpose of projecting the likely final outcome with a view to adjusting credit allocations, the detailed period-by-period figures during the year are of less interest. In this case a more suitable format of report is illustrated in Figure 2.5A. Here, each project forms a row entry, with the main columns showing the Planned Alllocation for the year, the Actual Year-to-date Utilisation and the projected End-of-Year Utilisation, together with the implied End of Year Balance --- the difference between the planned allocation and the projected utilisation. For each project, the Domestic and Foreign components of these column figures are shown, together with their total.

Figure 2.5B illustrates the assembly of this information from other sources. The planned Allocation figures would be taken from the DYB entries of the Annual Financial Planning reports; both the Actual Year-to-Date and Projected End-of-Year Totals would be taken from the corresponding Credit Utilisation Worksheets; the Balance would then be calculated by differencing the Planned and Projected figures.

Figure 2.5C illustrates the corresponding Overall Summary Report format. Once again the SEE row entries of this report would be obtained by transcribing the SEE totals from the foot of the SEE-level Report (figure 2.5D) and the Overall Totals calculated by aggregating the individual SEE figures.

FIGURE 2.5A

CREDIT UTILISATION SUMMARY: S.E.E-LEVEL REPORT



DEVLET YATIRIM BANKASI

CREDIT UTILISATION: S.E.E. LEVEL — S.E.E. T.S.F. — UNITS 1.000 TL — DATE FEB — YEAR 77

PROJECT NAME and S.P.O. NUMBER	SOURCE OF FINANCE	PLANNED ALLOCATION	ACTUAL YEAR-TO-DATE AMOUNT	ACTUAL YEAR-TO-DATE % OF PLAN	PROJECTED TOTAL TO END-OF-YEAR AMOUNT	PROJECTED TOTAL TO END-OF-YEAR % OF PLAN	PROJECTED BALANCE
ELBISTAN SUGAR FACTORY 76 C 010150	DOMESTIC	28.200	2.340	9%	26.430	94	1.700
	FOREIGN	12.600	1.560	90	11.470	91	1.130
	TOTAL	40.200	3.900	93	37.820	93	2.920
SUSARLUK							
(4)		(5)	(6)		(7)		
	TOTAL						
S.E.E. TOTALS	DOMESTIC	253.200	21.830	30	203.040	80	50.760
	FOREIGN	113.400	12.370	83	94.400	83	19.000
	TOTAL	367.200	34.200	81	297.440	81	69.760

(1) S.E.E. The name of the S.E.E. to which the data applies

(2) UNITS The units of currency used on the form

(3) DATE The period up to which the ACTUAL figures below are calculated. In this example the DATE is given as FEB 77. so the ACTUAL figures below are the total loan disbursements for January and February.

(4) PROJECT NAME Self explanatory.
AND S.P.O. NUMBER
For each project there are 3 main columns:.

(5) PLANNED ALLOCATION DYB's share of the total investment requirement for the current year. This would be taken from the DYB component of the ANNUAL FINANCIAL PLAN.

(6) ACTUAL YEAR-TO-DATE.Loan disbursements actually made up to the end of the period defined at (3) above. This would be taken from the ACTUAL figures given on the PROJECTED DEMAND TO END of YEAR sheets described earlier. This is expressed in 2 ways.
AMOUNT, eg. the amount as 1.000 TL.
% OF PLAN The AMOUNT in the preceding column expressed as a percentage of the planned allocation to the end of the same period

(7) PROJECTED.The current projection of the following end-of-year information:
TOTAL TO END-OF-YEAR Based on actual year-to-date disbursements, the estimated disbursement that will be achieved by the end of the current year.
AMOUNT as a currency figure
% OF PLAN as a percentage of the PLANNED ALLOCATION in the first major column
These 'Total to End-of-year' figures would also be taken from the PROJECTED DEMAND TO END-OF-YEAR sheets.
BALANCE The difference between the PLANNED ALLOCATION and the projected TOTAL TO END-OF-YEAR amount.

(8) For each project, a row is provided for each principal DYB source of funds:
DOMESTIC funds to be supplied by DYB in domestic currency
FOREIGN funds to be supplied by DYB in the form of foreign exchange (TL equivalent)
TOTAL The sum of both Domestic and foreign funds to be provided by DYB.

CREDIT UTILISATION SUMMARY: FORMATION OF THE S.E.E-LEVEL REPORT

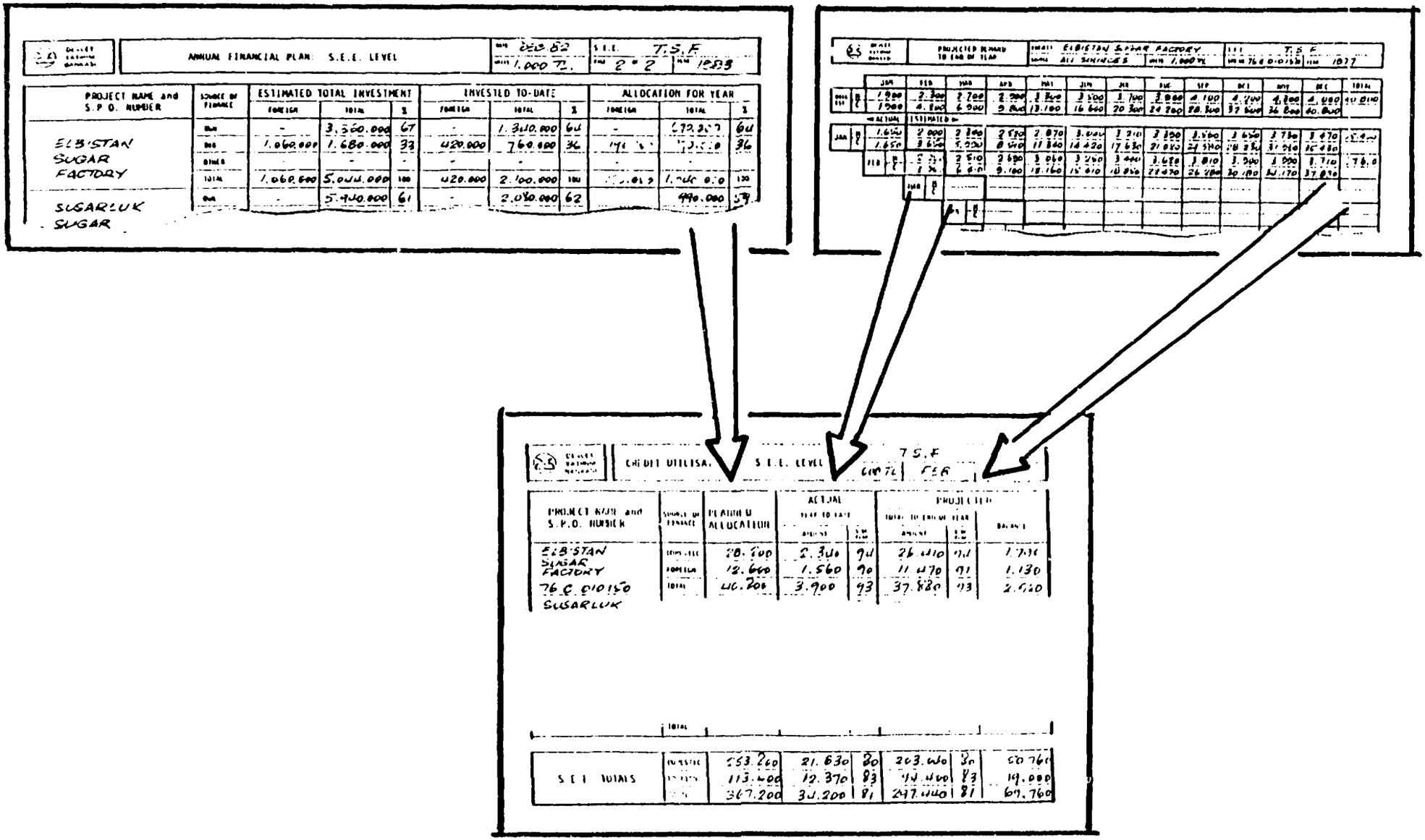


FIGURE 2.5B

FIGURE 2.5C

CREDIT UTILISATION SUMMARY: OVERALL SUMMARY REPORT

DEVLET YATIRIM BANKASI — CREDIT UTILISATION: OVERALL SUMMARY — S.E.E. TOTALS — (1) UNITS: 1.000 TL — (2) DATE: FEB 77

S.E.E. NAME	SOURCE OF FINANCE	PLANNED ALLOCATION	ACTUAL YEAR-TO-DATE AMOUNT	ACTUAL YEAR-TO-DATE % OF PLAN	PROJECTED TOTAL TO END-OF-YEAR AMOUNT	PROJECTED TOTAL TO END-OF-YEAR % OF PLAN	PROJECTED BALANCE
T.S.F.	DOMESTIC	253.800	21.830	30	203.960	80	50.760
	FOREIGN	113.400	12.370	73	94.400	83	19.000
	TOTAL	367.200	34.200	81	297.400	81	69.760
T.E.K.							
(3)	(7)	(4)	(5)		(6)		
	TOTAL						
OVERALL TOTALS	DOMESTIC						
	FOREIGN						
	TOTAL						

(1) UNITS The units of currency used on the form

(2) DATE The period up to which the ACTUAL figures below are calculated. In this example the DATE is given as FEB 77, so the ACTUAL figures below are the total loan disbursements for January and February.

(3) S.E.E. NAME Self explanatory

For each S.E.E. there are 3 main columns:.

(4) PLANNED ALLOCATION OYB's share of the total investment requirement for the current year. This would be taken from the OYB component of the ANNUAL FINANCIAL PLAN.

(5) ACTUAL YEAR-TO-DATE Loan disbursement actually made up to the end of the period difined at (2) above.

This is expressed in 2 ways:

AMOUNT, eg. the amount as 1.000 TL.

% OF PLAN The AMOUNT in the preceding column expressed as a percentage of the planned allocation to the end of the same period.

(6) PROJECTED The current projection of the following end-of-year information:

TOTAL TO END-OF-YEAR Based on actual year-to-date disbursements, the estimated disbursement that will be achieved by the end of the current year.

AMOUNT as a currency figure

% OF PLAN as a percentage of the PLANNED ALLOCATION in the first major column

BALANCE The difference between the PLANNED ALLOCATION and the projected TOTAL TO END-OF-YEAR amount.

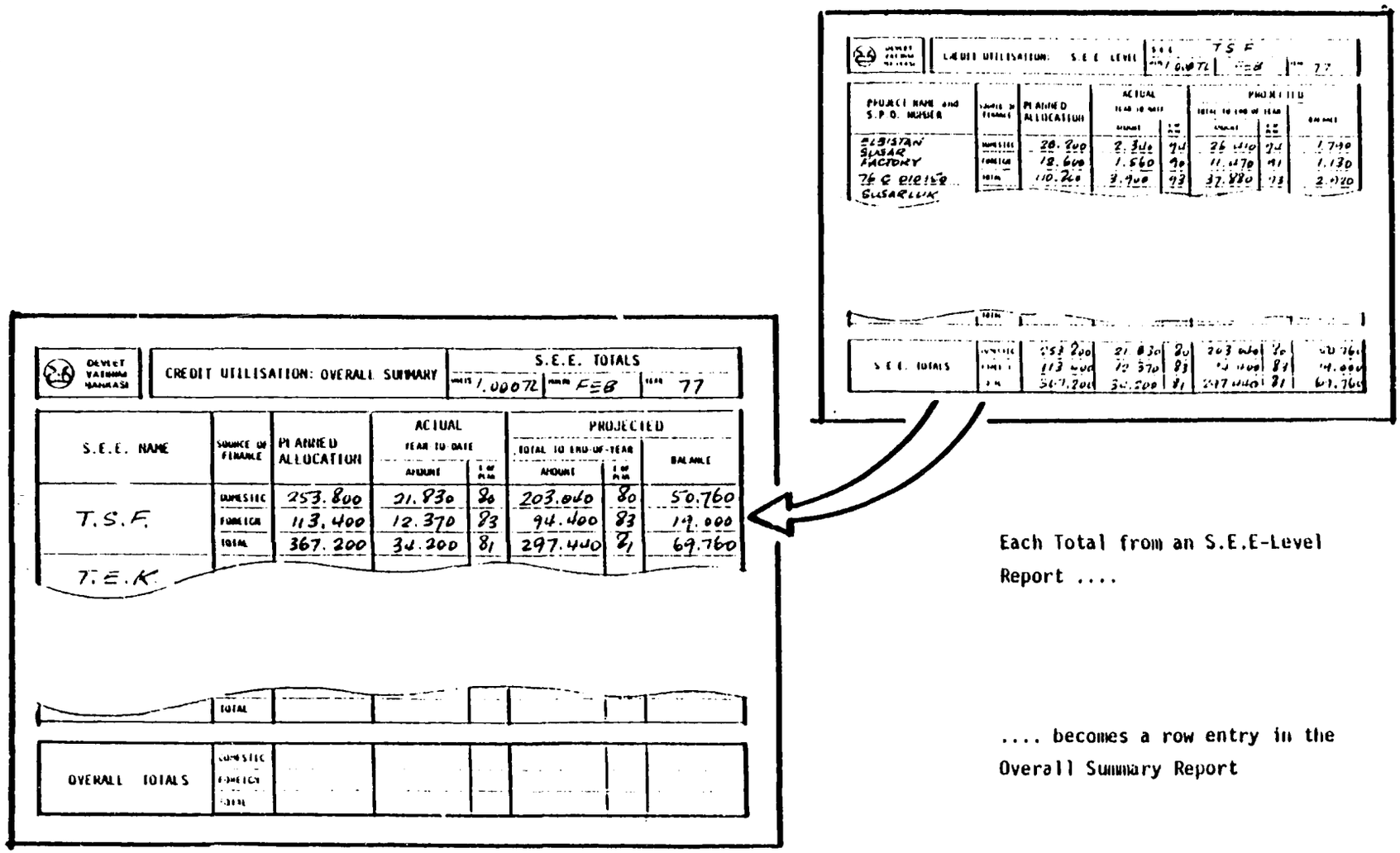
(7) For each S.E.E., a row is provided for each principal OYB source of funds:

DOMESTIC funds to be supplied by OYB in domestic currency

FOREIGN funds to be supplied by OYB in the form of foreign exchange (TL equivalent)

TOTAL The sum of both Domestic and foreign funds to be provided by OYB.

CREDIT UTILISATION SUMMARY: FORMATION OF THE OVERALL SUMMARY



Each Total from an S.E.E-Level Report ....

.... becomes a row entry in the Overall Summary Report

FIGURE 2.5D

2.6 RECORDING LOAN PAYMENTS

The objective here is to provide a record format that would facilitate the collection of loan agreement details at the project level and also the determination of the period-by-period payments expected in any year.

Figuyre 2.64 provides an annotated example of a suitable format for this purpose. One such record sheet would be opened for each project. As loan agreements are finalised for the previous year's disbursement, details would be entered on the first panel of the form. Each such agreement implies a series of repayments beginning in the following year. Thus, in the second panel of the form, the scheduled repayments for that following year can be completed by adding in the new repayment.

This second panel on the form therefore presents an immediate picture of the period-by-period payments expected from the project during the year.

2.7 REPORTING and PROJECTING NET DISBURSEMENTS

A suitable format for a Project-Level Worksheet is illustrated in figure 2.7A. This format is similar to that of the Credit Utilisation Worksheet (figure 2.4A) except that:

(i) this Net Credit form incorporates quarterly periods for the current year, together with a total for the year, for the next year and a final total column. Of course, columns which are not of interest need not be used.

(ii) The 'Origina' Estimate' panel includes two extra lines: one for the scheduled payments (RECVD) and another for the calculation of the NET disbursement from the actual/projected (gross) disbursement less the scheduled payments. The remainder of the form includes only the extra NET line in each 'row', as the repayment figures remain the same throughout the year.

Figure 2.7B illustrates the assembley of the data required for this worksheet. The RECVD line of the 'Original Estimate' panel would be taken from the appropriate line in the second panel of the Loan Repayments record (figure 2.6A).
The (gross) Credit Utilisation figures would be obtained from the corresponding row of the Credit Utilisation Project-Level Worksheet (figure 2.4A).

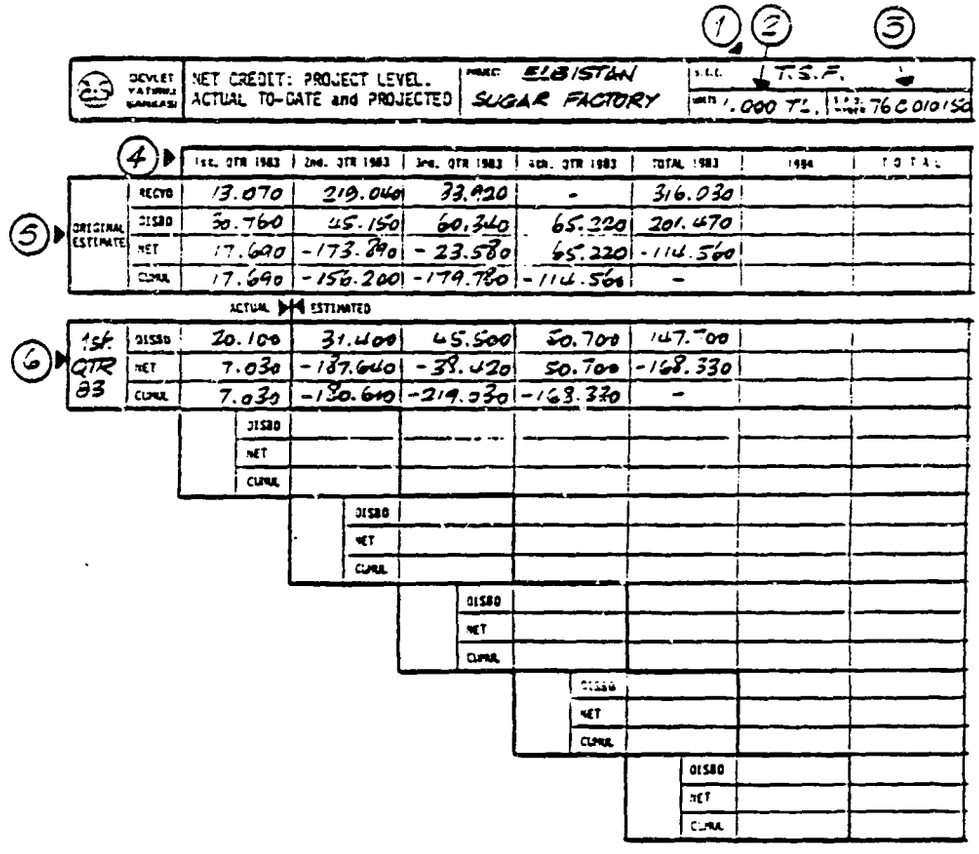
Figure 2.7C is an annotated example of the corresponding SEE-level Report, in which each Project forms a row entry in the report; SEE totals are calculated by aggregating the individual project figures.

Figure 2.7D shows the Overall Summary Report format, in which each SEE becomes a row entry, so that overall DYB totals can be calculated in the usual way.

Figure 2.7E illustrates again the aggregation hierarchy; the SEE-level Reports is accumulated by transcribing Project-level figures from the Worksheet and calculating SEE totals; the Overall Summary is built up by transferring SEE totals from the SEE-level forms and then calculating the Overall Totals.

FIGURE 2.7A

NET CREDIT DISBURSEMENTS: PROJECT-LEVEL WORKSHEET



DEVLET YATIRIM BAKANLIĞI	NET CREDIT: PROJECT LEVEL. ACTUAL TO-DATE and PROJECTED	PROJECT: ELBISTAN SUGAR FACTORY	S.E.E. T.S.F. (1) (2) (3)	UNITS 1.000 TL.	S.P.O. NUMBER 76C010150

(4) PERIOD

		1st. QTR 1983	2nd. QTR 1983	3rd. QTR 1983	4th. QTR 1983	TOTAL 1983	1984	TOTAL
(5) ORIGINAL ESTIMATE	RECVD	13.070	219.040	33.920	-	316.030		
	DISBD	30.760	45.150	60.340	65.220	201.470		
	NET	17.690	-173.890	- 23.580	65.220	-114.560		
	CUMUL	17.690	-156.200	-179.780	-114.560	-		
ACTUAL ⋈ ESTIMATED								
(6) 1st QTR 83	DISBD	20.100	31.400	45.500	50.700	147.700		
	NET	7.030	-187.640	- 38.420	50.700	-168.330		
	CUMUL	7.030	-180.610	-219.030	-168.330	-		
	DISBD							
	NET							
	CUMUL							
	DISBD							
	NET							
	CUMUL							
	DISBD							
	NET							
	CUMUL							
	DISBD							
	NET							
	CUMUL							
	DISBD							
	NET							
	CUMUL							

(1) S.E.E. The name of the S.E.E. responsible for the project.

(2) UNITS The units of currency used on the form.

(3) S.P.O. NUMBER The State Planning Office's identification number of the project.

(4) PERIOD The remainder of the form has a column for each reporting period - assumed to be quarterly in this case - together with a total for the current year, a column for the next year and a final total column.

(5) ORIGINAL ESTIMATE The next panel on the form is for the beginning of-year estimates of the following figures:

RECVD The amounts scheduled to be received as payments due under loan agreements for previous years of the project. This information would be taken from the LOAN AGREEMENT DETAILS and AGGREGATED REPAYMENTS form.

DISBD The amounts expected to be disbursed to the project under the years allocation. These would be taken from the CREDIT UTILISATION form.

NET The net disbursement, ie. DISBD - RECVD

CUMUL The cumulative total of the NET figure above.

(6) The third panel on the form is for use at the end of each reporting period. For each period, the following figures are given:

DISBD The actual amount disbursed during the period, together with (possibly) revised estimates for disbursements for subsequent periods. This information would be taken from the CREDIT UTILISATION form.

NET and CUMUL rows derived as above.

The RECVD row is not repeated on this panel of the form on the basis that it remains constant through the year.

NET CREDIT DISBURSEMENTS:

FORMATION of the PROJECT LEVEL WORKSHEET

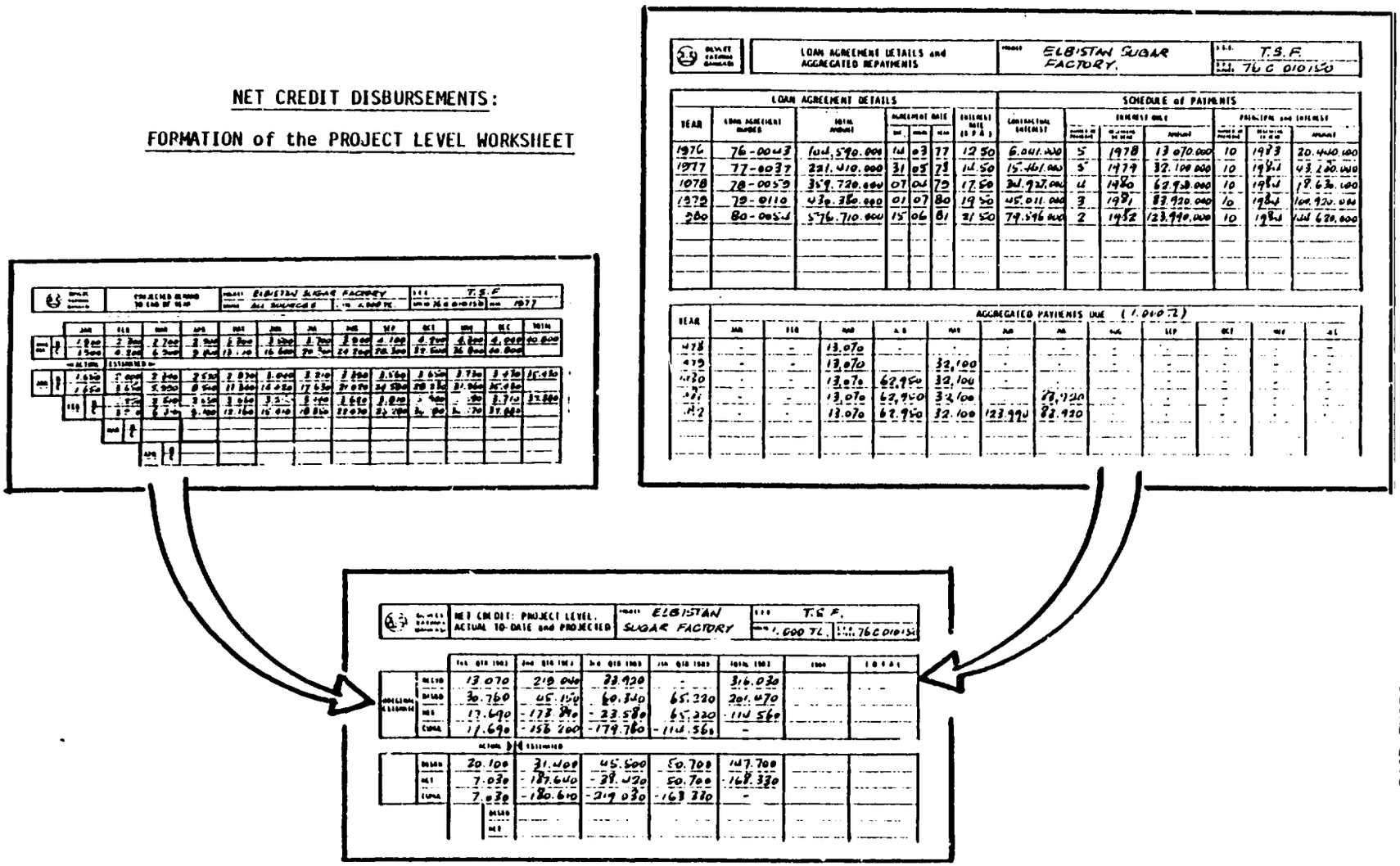
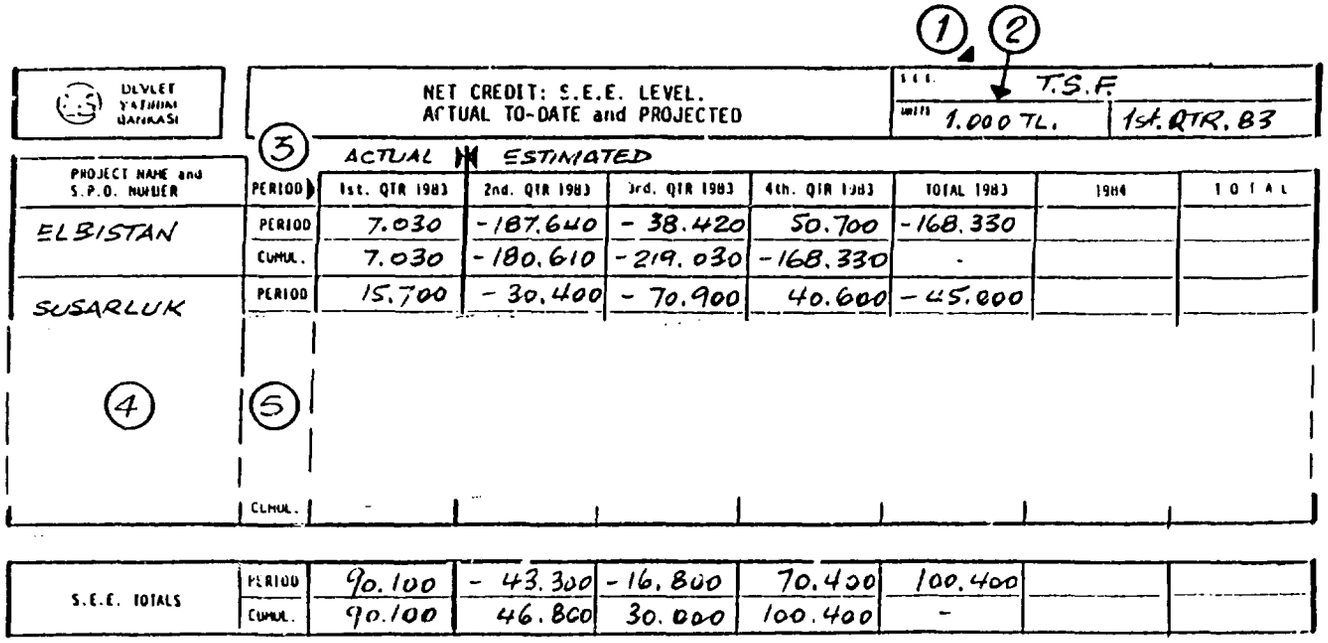


FIGURE 2.7B

NET CREDIT DISBURSEMENTS: S.E.E-LEVEL REPORT



DEVLET YATIRIM BANKASI

NET CREDIT: S.E.E. LEVEL.
ACTUAL TO-DATE and PROJECTED

① S.E.E. T.S.F.
② UNITS 1.000 TL. | 1st. QTR. 83

③ ACTUAL / ESTIMATED

PROJECT NAME and S.P.O. NUMBER	PERIOD	1st. QTR 1983	2nd. QTR 1983	3rd. QTR 1983	4th. QTR 1983	TOTAL 1983	1984	T O T A L
ELBISTAN	PERIOD	7.030	-187.640	- 38.420	50.700	-168.330		
	CUMUL.	7.030	-180.610	-219.030	-168.330	-		
SUSARLUK	PERIOD	15.700	- 30.400	- 70.900	40.600	- 45.000		
④	⑤							
	CUMUL.	-						
S.E.E. TOTALS	PERIOD	90.100	- 43.300	- 16.800	70.400	100.400		
	CUMUL.	90.100	46.800	30.000	100.400	-		

① S.E.E. The name of the S.E.E. responsible for the projects

② UNITS. The units of currency used on the form

③ PERIOD. The remainder of the form has a column for each reporting period — assumed to be quarterly in this case — together with a total for the current year, a column for the next year and a final total column.

④ PROJECT NAME and S.P.O. NUMBER. Self explanatory.

⑤ For each project, the following figures are given:

PERIOD. The NET disbursement — i.e. the gross disbursement of loan allocation, less the repayments received under earlier loan agreements — for each individual period

CUMUL. The cumulative total of the Net period disbursements above.

These figures would be taken from the NET CREDIT: PROJECT LEVEL form for each project. These figures would be ACTUALS up to and including the period being reported — 1st. quarter 1983 in this example — and PROJECTED values thereafter.

FIGURE 2.7C

NET CREDIT DISBURSEMENTS: OVERALL SUMMARY REPORT

DEVLET YATIRIM BANKASI

NET CREDIT: OVERALL SUMMARY.
ACTUAL TO-DATE and PROJECTED

(1) S.E.E. TOTALS — UNITS 1.000 TL — 1st. QTR. 83

(2) ACTUAL ▶◀ ESTIMATED

S.E.E. NAME	PERIOD	1st. QTR 1983	2nd. QTR 1983	3rd. QTR 1983	4th. QTR 1983	TOTAL 1983	1984	TOTAL
T.S.F.	PERIOD	90.100	- 43.300	- 16.800	70.400	100.400		
	CUMUL.	90.100	46.800	30.000	100.400	-		
T.E.K.	PERIOD	163.600	73.500	- 40.900	86.700	282.900		
(3)	(4)							
	CUMUL.							
OVERALL TOTALS	PERIOD							
	CUMUL.							

(1) UNITS. The units of currency used on the form

(2) PERIOD. The remainder of the form has a column for each reporting period — assumed to be quarterly in this case — together with a total for the current year, a column for the next year and a final total column.

(3) S.E.E. NAME. Self explanatory.

(4) For each S.E.E. the following figures are given:

PERIOD The NET disbursement — i.e. the gross disbursement of loan allocation, less the repayments received under earlier loan agreements — for each individual period

CUMUL The cumulative total of the Net period disbursements above.

These figures would be taken from the NET CREDIT: S.E.E. LEVEL form for each S.E.E. These figures would be ACTUALS up to and including the period being reported — 1st. quarter 1983 in this example — and PROJECTED values thereafter.

FIGURE 2.7 D

NET CREDIT DISBURSEMENTS :

THE AGGREGATION HIERARCHY

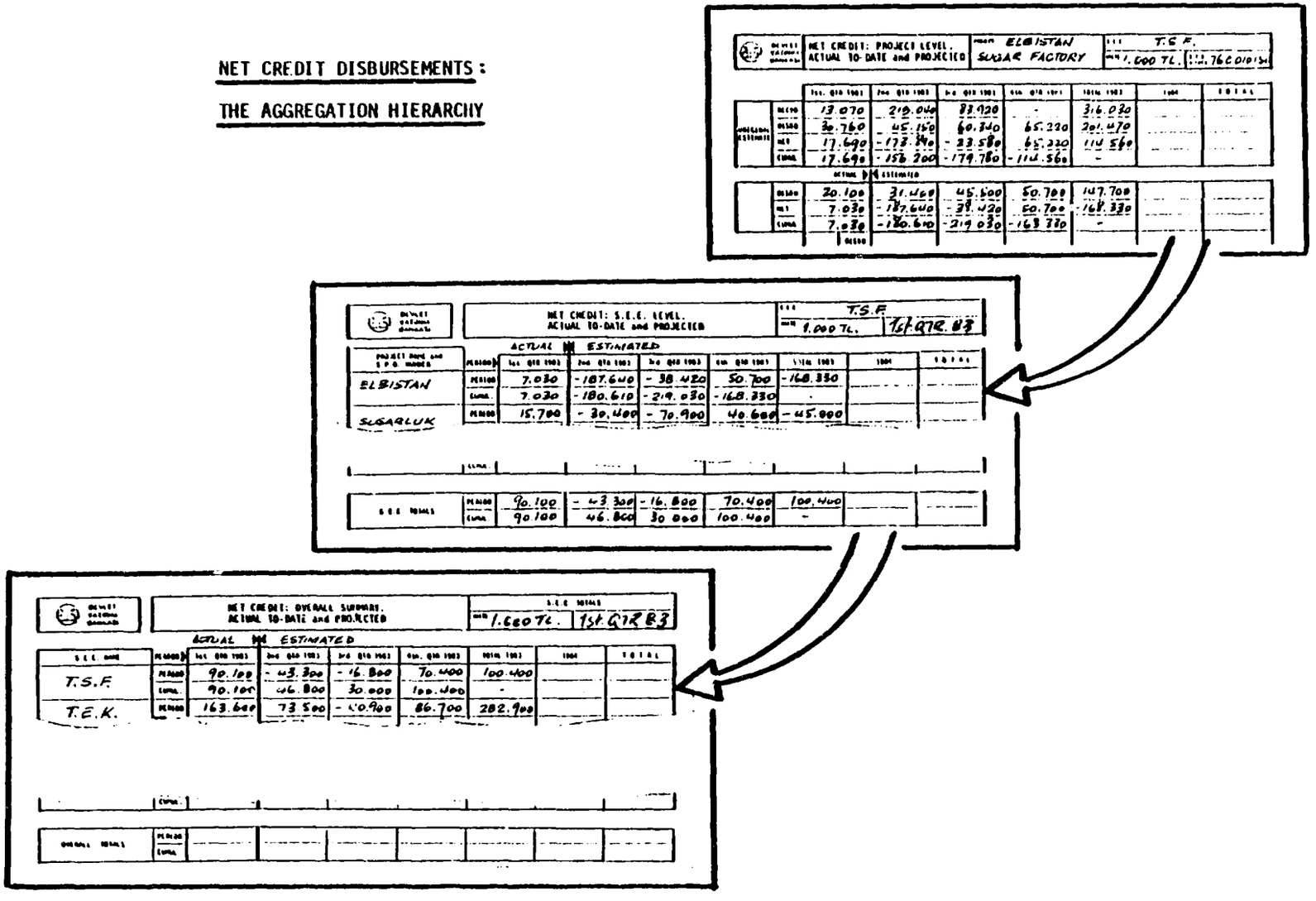


FIGURE 2.7E

2.8 REPORTING THE TOTAL CREDIT POSITION and ARREARS

The preceding sections have focussed on an individual year's credit allocation, its utilisation and the net funds flow. What is now required is a periodic report which shows the total loan outstanding, movements during the period being reported and the closing situation, and which highlights any arrears.

Figure 2.8A illustrates a possible format for this report at the SEE-level. Each project is a row entry and includes individual lines for Domestic currency, Foreign exchange and total figures. The principal columns are the overall Credit Limit, the Balance Brought Forward from the previous period, Disbursements, Receipts and Net transaction totals for the period being reported 'Current Period' on the form), the resulting Balance to be Carried Forward to the next period and any Arrears ('Overdue' on the report).

Regarding the assembly of the data for this report, the Balance Brought Forward would of course be taken from the Balance Carried Forward of the previous period's report; Current Period Disbursement totals would be transferred from the corresponding Credit Utilisation worksheets; Receipts totals would be obtained from routine accounting records; Overdue amounts would be obtained by comparing actual receipts with the payment schedule data of the Loan Payments Record Sheet (figure 2.6A).

Figure 2.8C shows the corresponding Overall Summary Report format. Once again, this would be assembled by transcribinbg SEE Totals from each SEE-level form and then aggregating to obtain DYB Overall Totals.

FIGURE 2.8A

TOTAL CREDIT POSITION and ARREARS: S.E.E-LEVEL REPORT

(1) (2) (3)

DEVLET YATIRIM BANKASI

TOTAL CREDIT POSITION: S.E.E. LEVEL

S.E.E. : T.S.E. | UNITS : 1.000 TL. | PERIOD : 1st. QTR. 82

PROJECT NAME and S.P.O. NUMBER		CREDIT LIMIT	BALANCE BROUGHT FWD	CURRENT PERIOD			BALANCE CARRIED FWD		OVERDUE
				DISBURSED	RECEIVED	NET	AMOUNT	% LIMIT	
ELBISTAN SUGAR FACTORY	DOMESTIC	2.220.000	1.775.765	69.504	43.070	26.434	1.302.199	32	-
	FOREIGN	800.000	329.110	-	12.811	- 12.811	316.299	40	-
76 C 010150	TOTAL	3.000.000	2.104.875	69.504	55.881	13.623	2.118.498	71	-
SUSARLUK	DOMESTIC	1.600.000	1.031.223	27.451	10.334	17.117	1.048.340	66	-
(4)		(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	TOTAL								--
S.E.E. TOTALS	DOMESTIC	21.000.000	16.181.800	1.648.094	688.590	1.009.504	17.390.504	83	114.550
	FOREIGN	14.000.000	10.940.000	773.500	521.500	252.000	11.192.000	80	-
	TOTAL	35.000.000	27.121.800	2.421.594	1.210.090	1.261.504	28.582.504	82	114.550

(1) S.E.E. The name of the S.E.E. concerned

(2) UNITS The units of currency used on the form.

(3) PERIOD The time period to which the data below relates

(4) PROJECT NAME and S.P.O. NUMBER Self explanatory.

(5) CREDIT LIMIT The upper limit of credit to be extended to the project. This would normally be the Ministry of Finance's figure or OYB's which ever is the lower.

(6) BALANCE BROUGHT FWD The total amount outstanding on the project at the close of the previous period (and therefore at the current period)

The following 3 items relate to the CURRENT PERIOD being reported —— in this case the 1st. quarter of 1983.

(7) DISBURSED The amount paid to the project as part of its annual loan allocation. This would be the same figure as that on the CREDIT UTILISATION form.

(8) RECEIVED The actual amount received from the project in the form of payments under previous loan agreements. This would normally be the same as that in the ORIGINAL ESTIMATE panel on the NET CREDIT form if payments have been received on schedule, but see 12 below.

(9) NET The net disbursement during the period, ie. DISBURSED - RECEIVED.

(10) BALANCE CARRIED FORWARD The balance at the close of the period being reported —— ie. the BALANCE BROUGHT FORWARD NET DISBURSEMENT —— and therefore the amount which will be the BALANCE BROUGHT FORWARD for the next period.

(11) % LIMIT The BALANCE CARRIED FORWARD AMOUNT expressed as a percentage of the CREDIT LIMIT.

(12) OVERDUE Amounts expected to be paid to OYB as payments under earlier loan agreements but which were not received.

FIGURE 2.8B

TOTAL CREDIT POSITION and ARREARS: OVERALL SUMMARY REPORT

DEVLET YATIRIM BANKASI	TOTAL CREDIT POSITION: OVERALL SUMMARY	(1) S.E.E. TOTALS: UNITS 1.000 TL	(2) PERIOD 1ST. QTR. 82

S.E.E. NAME		CREDIT LIMIT	BALANCE BROUGHT FWD	CURRENT PERIOD			BALANCE CARRIED FWD		OVERDUE
				DISBURSED	RECEIVED	NET	AMOUNT	% LIMIT	
T.S.F.	DOMESTIC	21,000	16,381	1,693	0,637	1,010	17,391	83	0.115
	FOREIGN	14,000	10,940	0.779	0.522	0.252	11,192	80	-
	TOTAL	35.500	27.321	2.472	1,209	1,262	28,583	82	0.115
T.E.K.	DOMESTIC	37.000	32.040	5.366	2,911	2,455	34,495	93	-
(3)		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	TOTAL								

OVERALL TOTALS	DOMESTIC								
	FOREIGN								
	TOTAL								

(1) UNITS The units of currency used on the form

(2) PERIOD The time period to which the data below relates.

(3) S.E.E. NAME Self explanatory.

(4) CREDIT LIMIT The upper limit of credit to be extended to the S.E.E. This would normally be the Ministry of Finance's figure or OYB's whichever is the lower.

(5) BALANCE BROUGHT FWD The total amount outstanding to the S.E.E. at the close of the previous period (and therefore at the start of the current period).

The following 3 items relate to the CURRENT PERIOD being reported —— in this case the 1st. quarter of 1983.

(6) DISBURSED The amount paid to the S.E.E. as part of its annual loan allocation . This would be the same figure as that on the CREDIT UTILISATION form.

(7) RECEIVED The actual amount received from the S.E.E. in the form of payments under previous loan agreements. This would normally be the same as that in the ORIGINAL ESTIMATE panel on the NET CREDIT form if payments have been received on schedule, but see 11 below.

(8) NET The net disbursement during the period. ie. DISBURSED - RECEIVED

(9) BALANCE CARRIED FORWARD The balance at the close of the period being reported - ie the BALANCE BROUGHT FORWARD NET DISBURSEMENT —— and therefore the amount which will be the BALANCE BROUGHT FORWARD for the next period.

(10) % LIMIT The BALANCE CARRIED FORWARD AMOUNT expressed as a percentage of the CREDIT LIMIT

(11) OVERDUE Amounts expected to be paid to OYB as payments under earlier loan agreements but which were not received.

2.9 REPORTING SUBSTANTIVE IMPLEMENTATION PROGRESS

The objective is to be better able to produce a justifiable, quantitative estimate of a project's substantive progress as compared with the original plan and to show this clearly in management reports, together with its effect on the return to be expected from loans made by DYB on behalf of its investors.

Since better, more quantitative, progress information is necessarily based on a more detailed initial plan, it is clear that in order to better safeguard its investors funds, DYB should take the initiative here and, regardless of the quality of the implementation schedule put forward by a SEE, prepare a schedule that will at least ensure that DYB can obtain a reasonably accurate estimate of progress from information gathered on Supervision visits.

The minimum requirement for such an implementation schedule is that it should include between 6 and 12 events per year through the implementation phase of the project; each event should be chosen as being a good indicator of progress on the project as a whole (i.e., in network terms, each should be on or near the critical path). Thus, for a project with a 5 year implementation period, such a schedule would list 40-60 'milestone' events; these should be recorded on a "Project Schedule and Progress Details" form, a version of which is illustrated in Figure 2.9A. For future projects, this schedule should be prepared as part of the Bank's Appraisal procedure; for ongoing projects, a list of the remaining milestone events should be prepared by the supervision team on their next visit.

On a subsequent visit, the team equipped with such a schedule would have a specific number of events whose **actual** date of achievement they had to verify. From the simple analysis of scheduled and actual times of these events from the start of the project indicated in Figure 2.9A, the Bank could obtain a reasonably accurate, quantitative estimate of implementation progress compared with the plan and hence directly estimate the inpact of time overrun on the project's NPV, IRR and other indicators. Figure 2.9B shows a (fictitious) example of the use of this form.

Panel 1 of this figure shows part of the original schedule of events drawn up at appraisal of the Elbistan Sugar Factory project. Note that the events are listed in (scheduled) date order, that the project was scheduled to start in January 1976 and that commercial operation was scheduled to commence 66 months later, in August 1981.

Panel 2 illustrates the result of the first supervision visit carried out by Dogan and Erden in June of 1977. They record that the project did not in fact start until June 1976, that the detailed study was completed in March 1977, the Construction Plan was finalised in May 1977 but the Land Purchase, scheduled to be achieved 9 months after the start of the project, had not been achieved. Taking the last achieved event, they calculate that the project is running 22% late and that if this rate of implementation is maintained, the project will take 81 months to commercial opoeration (c.f. the original 66 months), implying completion in February 83.

Panel 3 illustrates result of the Second Supervision Visit in July 1978 by the

same team. They found that site preparation had been completed in 25 months from the start compared with the original estimate of 21 months; although the project is thus 3 months behind schedule compared with 2 months the previous year, in fact the overrun rate is down to 19% and the projected date of commercial operation has come forward to December 1982, 3 months earlier than estimated the year before.

FIGURE 2.9A

REPORTING PROJECT SUBSTANTIVE PROGRESS - THE WORKSHEET

DEVLET YATIRIM BANKASI	PROJECT SCHEDULE & PROGRESS DETAILS

PROJECT TITLE	ELBISTAN SUGAR FACTORY	SEE	TSF
		SPO NO.	76 C 010150

EVENT	ORIGINAL ESTIMATE		ACTUAL			PROJECTED		SUPERVISION		
	MTHS FROM START	DATE	DATE	MTHS FROM START	OVERRUN RATE	MTHS TO OPERATION	OPERATING DATE	DATE OF VISIT	TEAM	REPORT NUMBER
START	0	JAN. 76								
PROJECT STUDY COMPLETED	8	AUG. 76								
CONSTRUCTION PLAN FINALISED	9	SEP. 76								
LAND PURCHASE COMPLETED	11	NOV. 76								
ACCESS-ROAD COMPLETED	16	APR. 77								
SITE PREPARATION COMPLETED	21	SEP. 77								
FOUNDATION PREPARATION COMPLETED	24	DEC 77								
FOUDATIONS COMPLETED	31	JUL. 78								
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
PLANT INSTALLATION COMPLETED	59	DEC. 80								
OPERATIONAL TRIALS COMPLETED	64	JUN. 81								
FULL OPERATION	66	AUG. 81								

① EVENT. A short description of a significant event during the implementation stage of the project - significant in that its achievement is a good indicator of progress on the project as a whole(i.e. it is on or near critical path of the project). Between 6 and 12 such 'milestone' events per year should be identified at the Appraisal stage and arranged in order of time from the start of the project, as illustrated. The first event should always be START, at time zero. The last event should always be the date at which the plant will commence commercial operation.

② MONTHS FROM START-ORIGINAL ESTIMATE and hence, from the scheduled date of START,

③ DATE The estimated month and year in which the event is expected to be achieved.

The following 3 items of data would be then be gathered as part of a subsequent supervision visit:

④ ACTUAL DATE The actual month and year in which the event was achieved

⑤ ACTUAL MONTHS FROM START, calculated by subtracting ACTUAL DATE of the event from the ACTUAL DATE of START (Not from ESTIMATED Date of START)

⑥ OVERRUN RATE, calculated as follows:

$$\text{OVERRUN RATE} = \left[\frac{\text{ACTUAL MONTHS FROM START (5)}}{\text{ESTIMATED MONTHS FROM START (2)}} - 1\right] \times 100$$

This is a key indicator of the rate at which actual progress on the project is slipping behind the original schedule and, in combination with the interest rate and the estimated time to completion, is a direct predictor of the additional interest charge that will accrue up to completion, and hence reduction that will occur in the Rate of Return on the investment

⑦ PROJECTED MONTHS TO OPERATION. Calculated by applying the Overrun Rate to the original estimate of time to completion, i.e.

$$\text{MONTHS TO OPERATION} = \left[\frac{\text{OVERRUN RATE (6)}}{100} + 1\right] \times \text{ESTIMATED MONTHS FROM START (2) of Commercial Operation}$$

⑧ PROJECTED OPERATING DATE, calculated by adding PROJECTED MONTHS TO OPERATION (7) to the ACTUAL DATE of START.

The following 3 items simply record details of the Supervision Visit:

⑨ DATE of VISIT

⑩ TEAM, i.e. the names of the Analysts who carried out the Supervision Visit

⑪ REPORT NUMBER. The number of the resulting Supervision Report.

FIGURE 2.9B

REPORTING PROJECT SUBSTANTIVE PROGRESS: EXAMPLE

1: AT APPRAISAL

DEVLET YATIRIM BANKASI | PROJECT SCHEDULE & PROGRESS DETAILS

PROJECT TITLE: ELBISTAN SUGAR FACTORY | SEC: TSF | LOAN NO.: 76 C 010 150

EVENT	ORIGINAL ESTIMATE		ACTUAL			PROJECTED		SUPERVISION		
	MONTHS FROM START	DATE	DATE	MONTHS FROM START	OVER/UNDER DATE	MONTHS TO OPERATION	OPERATING DATE	DATE OF VISIT	TEAM	REPORT NUMBER
START	0	JAN. 76								
PROJECT STUDY COMPLETED	8	AUG. 76								
CONSTRUCTION PLAN FINALISED	9	SEP. 76								
LAND PURCHASE COMPLETED	11	NOV. 76								
ACCESS ROAD COMPLETED	16	APR. 77								
SITE PREPARATION COMPLETED	21	SEP. 77								
FOUNDATION PREPARATION COMPLETED	24	DEC 77								
FOUDATIONS COMPLETED	31	JUL. 78								
PLANT INSTALLATION COMPLETED	53	DEC. 80								
OPERATIONAL TRIALS COMPLETED	64	JUN. 81								
FULL OPERATION	66	AUG. 81								

2: SUPERVISION VISIT 1

DEVLET YATIRIM BANKASI | PROJECT SCHEDULE & PROGRESS DETAILS

PROJECT TITLE: ELBISTAN SUGAR FACTORY | SEC: TSF | LOAN NO.: 76 C 010 150

EVENT	ORIGINAL ESTIMATE		ACTUAL			PROJECTED		SUPERVISION		
	MONTHS FROM START	DATE	DATE	MONTHS FROM START	OVER/UNDER DATE	MONTHS TO OPERATION	OPERATING DATE	DATE OF VISIT	TEAM	REPORT NUMBER
START	0	JAN. 76	JAN. 76	0	-	-	-			
PROJECT STUDY COMPLETED	8	AUG. 76	MAR. 77	9						
CONSTRUCTION PLAN FINALISED	9	SEP. 76	MAY 77	11	22%	81	FEB 83	JUN 77	SOGAN AKDEN	
LAND PURCHASE COMPLETED	11	NOV. 76								
ACCESS ROAD COMPLETED	16	APR. 77								
SITE PREPARATION COMPLETED	21	SEP. 77								
FOUNDATION PREPARATION COMPLETED	24	DEC 77								
FOUDATIONS COMPLETED	31	JUL. 78								

3: SUPERVISION VISIT 2

DEVLET YATIRIM BANKASI | PROJECT SCHEDULE & PROGRESS DETAILS

PROJECT TITLE: ELBISTAN SUGAR FACTORY | SEC: TSF | LOAN NO.: 76 C 010 150

EVENT	ORIGINAL ESTIMATE		ACTUAL			PROJECTED		SUPERVISION		
	MONTHS FROM START	DATE	DATE	MONTHS FROM START	OVER/UNDER DATE	MONTHS TO OPERATION	OPERATING DATE	DATE OF VISIT	TEAM	REPORT NUMBER
START	0	JAN. 76	JUN. 76	0	-	-	-			
PROJECT STUDY COMPLETED	8	AUG. 76	MAR. 77	9						
CONSTRUCTION PLAN FINALISED	9	SEP. 76	MAY. 77	11	22%	81	FEB 83	JUN 77	SOGAN AKDEN	77-016
LAND PURCHASE COMPLETED	11	NOV. 76	JUL. 77	13						
ACCESS ROAD COMPLETED	16	APR. 77	JAN. 78	19						
SITE PREPARATION COMPLETED	21	SEP. 77	JUL. 78	25	19%	79	DEC 82	JUL 78	SOGAN AKDEN	78-021
FOUNDATION PREPARATION COMPLETED	24	DEC 77								
FOUDATIONS COMPLETED	31	JUL. 78								

2.10 REPORTING PERFORMANCE INDICATORS

The objective here is to show in a concise form both how 'well' the project is --- in terms of financial, economic and other indicators --- on current estimates as compared with the original DYB estimates and the change since the last report. Since in the main Supervision/Evaluation is carried out annually, then updating this report would normally be an annual excercise. However, in those cases where the cycle is of shorter duration, then of course the relevant figures for the projects concerned would be of interest to DYB management.

A possible format for an SEE-level report is shown in Figure 2.10A, which also explains the indicators included. At this level, each project consitiutes a row entry, with a line for the original value of the indicator, the current estimate and the change since the last report; i.e. over the preceding year.

The indicators and other parameters of interest --- e.g. Total Investment --- form the columns of the report. Aggregate values for the SEE as a whole would be calculated where appropriate and included in the usual panel at the foot of the form.

The corresponding Overall Summary Report would be of an exactly similar format; the SEE total value from each SEE-level form would be transferred to become a line entry on this form. Again, aggregate total indicators could be calculated for all SEEs together, giving an overall indication of the health of DYB's entire development investment.

FIGURE 2.10A

REPORTING PERFORMANCE INDOCATORS: S.E.E-LEVEL REPORT

DEVLET YATIRIM BANKASI	PERFORMANCE INDICATORS: S.E.E. LEVEL	S.E.E.
		UNITS / DATE

PROJECT NAME and S.P.O. NUMBER		TOTAL INVESTMENT		TIME OVERRUN RATE (%)	NPV		IRR		TEG	EGR	DSCR
		FOREIGN	TOTAL		FOREIGN	TOTAL	FOREIGN	TOTAL			
	ORIGINAL										
	CURRENT										
	CHANGE(%)										
	ORIGINAL										
	CURRENT										
	CHANGE (%)										
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

(1) Name of the Project and the S.P.O's idendification number.

(2) Amount of foreign currency in the Total Investment Amount of the project.

(3) Total amount of investment made in the project.

(4) Time Overrun Rate. See Section 2.9

(5) The Difference between the discounted (by average interest rate of foreign Credits) foreign currency inflows (to Turkey) and outflows (to abroad) for the project.

(6) The difference between the discounted (by average Cost of Credits) Cash inflows and outflows (or the Revenues and Costs of the project) throughout its useful life.

(7) The discounting rate which is equalising the foreign currency inflows (To Turkey) to outflows (to abroad) of the project throughout its useful life.

(8) The discounting rate which is equalising the Cash inflows to outflows (or the Revenues and Costs) through the project's useful life.

(9) Total amount of new joos (Employment) generated i.e. Total Employment Generated (TEG)

(10) Emplo;ment Generating Ratio (EGR) i.e. TEG/Total Investment.

(11) Dept Service Coverage Ratio (DSCR), i.e. $DSCR: \frac{\sum \text{Disposible Income} + \sum \text{Depriciation} + \sum \text{interest payments}}{\sum \text{Credit Repayments} + \sum \text{interest payments}}$

3. POTENTIAL COMPUTER APPLICATIONS

3.1 INTRODUCTION

In an organisation such as DYB the bulk of the day to day work is information processing, as distinct from that in say a manufacturing or distribution organisation, which would be more concerned with the physical processing of goods and materials. This information processing work can be broadly divided into three classes:

- **Technical Analysis** - for example the bulk of the work associated with project appraisal, characterised by a relatively large amount of calculation on a relatively small amount of data

- **Administrative data-processing** - for example the maintenance and reporting of debtors and creditors ledgers, invoicing, inventory accounting, payroll and so on, which are characterised by relatively trivial amounts of calculation on larger amounts of data

- **Text or word-processing.** In contrast to the two types of processing above, which are concerned with highly-structured files and tables of data, word-processing is the term used to describe the production of 'plain-language' documents such as memoranda, letters, circulars and reports.

Computers --- more specifically, general-purpose digital computers --- are information processing devices. Early computers were extremely expensive compared with their principal competition -- people -- but still extremely fast and relatively reliable. These characteristics saw them take over a lot of complex analytical work where they could do more reliably in a few minutes, work which would take skilled analysts days and weeks of calculation.

The next two generations of computers, which spanned the 1960's, each produced greater data storage capacity and greater reliability at a lower initial cost. These improvements took computers into the administrative data-processing area, a market which rapidly dwarfed that of technical applications.

The early seventies saw another major development which although simply a continuation of the previous trend of greater computing power per dollar, produced a generation of computers quite distinctly smaller (and cheaper) than their predecessors of the same power. These were christened 'mini-computers', a term mistakenly assumed by many to refer to their power rather than their physical size.

In the later 70's the next development along the same lines produced a range of computers which, equipped with all of the data-input, storage and output devices of their predecessors of equivalent power, would fit on an average sized desk. These were dubbed 'micro-computers'.

Thus in the space of little over 20 years, the cost of the smallest available general-purpose computer has fallen from about $600,000 (TL100 million) to about $6,000 (TL1 million), a hundredfold reduction in cost. Since over the same period the cost of human information processors has risen by a factor

of about 5, the economic justification for the ever-increasing substitution of computers in place of people for information processing is readily apparent, quite apart from the computer's other advantages of very high speed and, given the correct data, unflagging accuracy of results.
Now a TL100 million computer system would cost perhaps TL60 million/year in interest, depreciation, staff, maintenance and other expenses. Assuming a representative staff cost of TL84,000/month (salary plus other expenses and overheads) such a computer would have to do the work of at least 60 people in order to pay its way. Only very large organisations would have sufficient work of a computerisible nature to be able to justify one.

However the rapid decline in the cost of starting-level computer systems has brought about a corresponding fall in the size of the organisation which can economically employ them. On the same basis of calculation, a microcomputer system costing TL1 million would only have to do the work of 60% of 1 person to pay its way. DYB, with a workforce of some 150 people largely concerned with information processing, is now well within the range of organisations which could expect to profitably employ computers, both to simply reduce the amount of staff time consumed by the more routine aspects of some of this work and, in other cases, utilise the staff time so released in order to increase their output.

With this in view the remainder of this chapter discusses some characteristics of computers themselves (section 3.2), some **prima faciae** DYB applications (section 3.3), considerations in selecting a computer system (section 3.4), and an evaluation of available computer systems in the context of (section 3.5).

3.2 MICROCOMPUTERS

This section is directed towards those relatively unfamiliar with the characteristics of computers. It is intended to impart some idea of their strengths and weaknesses as compared with humans, and thus to give the reader some basis for appreciation of the DYB applications which are suggested later.

This section also introduces some computer terminology, knowledge of which will facilitate subsequent discussion.

The essential characteristics of computers --- *maxis, minis or micros* --- are much the same; only the speed, capacity (and hence the physical size) and cost vary significantly from one to another. Thus, although the following description refers to microcomputers, the same applies to all computers if the appropriate scale factors are applied.

Figure 3.2A illustrates a typical microcomputer system. It consists of:

(1) **A Keyboard** - usually identical to a standard typewriter keyboard, together with additional keys to facilitate special tasks eg. a cluster of numeric keys to make it easier to enter large amounts of numeric data (instead of having to utilise the top row of the standard keyboard with SHIFT on) and a group of keys to control movement of the cursor on the screen (see below).

This is the computer's **input** device --- all information from the outside world enters the computer through this keyboard.

(2) **A Screen** - physically the same as those used in television sets -- which in effect acts as a transcript of the dialogue between the user and the computer. As the user types on the keyboard, the text appears on the screen; likewise the computer's responses, in the form of prompts to the user or a table of results for example, appear on subsequent lines of the 'page' visible on the screen. The information displayed automatically moves up so that the last 20 or so lines of the dialogue are always visible on the screen, as though it were a'window' held over a continuous roll of paper in a typewriter. As dialogue is added at the bottom of the screen ,earlier dialogue moves out of view at the top. The screen is therefore both an **input** and an **output** device.

(3) **A Printer** - The combination of keyboard and screen is sufficient for many 'intermediate' purposes, for example entering and editing the text of a letter, recording financial transactions, looking up account details stored in computer files, seeing the results of a discounted cash flow calculation. However at the end of a session on the computer the user usually requires a 'hard' copy of the end result -- the letter to be mailed to the addressee, a printed record of the financial transactions entered and so on -- as distinct from the 'soft' copy which appeared temporarily on the screen.
A typical microcomputer's printer is in effect a high-speed typewriter without a keyboard. Although the method by which the characters are reproduced on the sheet of paper varies widely, printers fall into two

main classes:

(i) Normal printers, which operate at perhaps 10-100 times the speed of the fastest typist but which produce a result which is quite obviously computer-generated -- the characters are usually composed of a pattern of appropriately arranged dots. While entirely legible and staisfactory for most purposes, this is not generally regarded as satisfactory for correspondence, reports and other external communications. These are known as 'dot-matrix printers'.

(ii) Correspondence quality printers, which produce a result indistinguishable from that of the highest quality typewriters. However these are generally more expensive and certainly slower than 'normal' printers. Typically their maximum speed is about 5-10 times that of the fastest typist. Because the characters to be printed are actually embossed on the spokes of a wheel that rotates at 30-50 revolutions/second, these are known as 'daisy wheel' printers.

Thus if the computer is to be used to produce both normal and correspondence quality output, unless the total volume of output is relatively small so that the speed of a correspondence quality printer would be sufficient to cope with all requirements, then two different printers would normally be required.

However a new generation of dot-matrix printers is now beginning to appear, which is capable of operating in two 'modes':

* **Normal** mode, in which it operates at its usual high speed and produces visibly 'dotty' characters

* **Near-letter-quality (NLQ)** mode, in which it can produce a very good output, though to do this its speed drops to about that of a daisywheel printer.

As the cost of such 'dual mode' printers is typically comparable to that of daisywheel printers, they offer an attractive solution when one workstation is required to handle both types of work.

(4) **Data Storage** - The computer has a limited amount of internal memory -- on a microcomputer this is typically about 64,000 characters, equivalent to perhaps 10-12 typewritten pages of text. Not only is a significant proportion of this memory set aside for various internal purposes but its contents are lost when power is turned off. Clearly a computer equipped with only this type of memory would be of extremely limited usefulness. For the computer to be able to record financial transactions, update the accounts, calculate salaries, produce salary advices, print long reports and so on, then it must be able to store and retrieve much larger amounts of data than can be held in internal memory at any one time. On a microcomputer this is generally achieved by recording the data on a diskette, rather like a long-playing record but much thinner and more flexible, only 20cm in diameter and permanently enclosed in a protective cover. Like a magnetic tape

cassette (and unlike a record) it is re-usable; the data recorded on it can be changed individually or, if its contents are no longer required, the whole diskette can be erased and used again. When the data on a diskette is required by the computer, the diskette is inserted into one of the computer's **diskette drives** . The computer can then retrieve the data, carry out calculations based on it, display the results on the screen, print them or whatever. Much of the computer's utility comes from this ability to act as a large and very efficient information filing and retrieval system. Also, in a well-designed computer system it should be necessary to enter an item of data -- a project title, a staff-member's address, a financial transaction -- once only; all tables and reports subsequently produced could be compiled from a 'data-base' of such information.

This contrasts with manual systems, in which such items of information may be recorded in several different places in the organisation and in slightly different forms. This results in not only inconsistencies between reports from different parts of the organisation but also the excessive effort which goes into keeping such information up-to-date in several separate manual systems.

(However it should be noted that an integrated, organisation-wide, information system centred on such a computer-maintained data base not only demands capabilities beyond those generally provided by the type of microcomputers under discussion here, but it also demands organisation-wide standards and disciplines for the data concerned. The usual approach is to computerise functions one at a time, realising other benefits in the process and accepting the fact that some duplication of data will occur. Subsequently these anomalies are addressed and eliminated as priorities suggest and the originally separate systems evolve towards an integrated whole, typically over a period of years.)

The **Central Processing Unit** (CPU), which includes the main memory and the logic circuitry that actually interprets instructions and operates on the data, is physically small compared with these other devices. It is typically contained under the keyboard or inside the same cabinet as the screen. Note also that the two diskette drives, which here are shown as separate devices, are also often incorporated into the same cabinet as the screen.

Certainly the computer's most well-known and dramatic characteristic is its speed of operation: calculations that would take a person with a desk calculator hours of work are done in seconds; reports that would take days to prepare manually are done in minutes. Add to this its reliability -- the computer is thousands of times less likely to make a mistake than a human processor -- and it seems to be the panacea for all information processing situations. A microcomputer costs only about as much as half a person to run but works at ten or a hundred times the speed, so why then are they not more widespread? The answer lies in the initial investment required to enable the computer to carry out each specific task.

To take payroll as an example, in a manual system the staff concerned actually learn the various steps in the overall procedure from a written explanation in a procedure manual and/or from a demonstration by someone already familiar with the process. As exceptions occur which have not arisen

before, a decision as to how to handle the case is arrived at and the staff concerned remember it. The procedure to be used in such a case may also be included in the procedure manual, so that the next time the same situation occurs everyone knows (or can quickly find out) what to do. Manual procedures then are typically very informal: there may be a written procedure of some kind but almost inevitably it only covers 'run of the mill' cases; much of the procedure actually in use exists only in peoples' memories; the procedure does not initially cover all of the possibilities which may arise, many of these being added as they occur in practice.

In contrast, computers certainly operate at great speed and with unflagging accuracy but they have no native experience or intelligence whatever. They have an extremely small vocabulary of perhaps 100 or so instructions that they can understand and each of those instructions does a very specific, small item of useful work (for example it may require several hundred instructions to display a list of projects on the screen or to print a list of staff members' names and addresses). Each such sequence of instructions constituting a self-contained part of a procedure is called a **program** in computerese; the collection of programs that handles all of the various aspects of the entire payroll procedure would be called the payroll **system.** Moreover the computer has no way of learning by experience. If a situation arises which is not covered by the instructions in the program it is obeying, then the result is unpredictable. At the best it will simply stop and everyone's pay will be delayed until the error is found and corrected; sometimes however it may be found that the payroll file has been corrupted or TL10,000 has been subtracted from everyones' pay, or even worse mischief has occurred.

As a result of these characteristics:

(i) whereas it may take say 10 hours to write 10 pages of instructions covering some part of the manual payroll procedure, to write the corresponding program for the computer would take perhaps 100 hours and involve thousands of individual instructions. Moreover the work of writing good computer programs is a demanding business, requiring a lot of training and experience. Consequently the people who can do it -- **programmers** -- are a scarce and expensive resource.

(ii) All forseeable combinations and permutations of data which may arise must be identified, analysed and the action to be taken in each case must be specified before programming can even start. This is the job of the **systems analyst,** working in conjunction with the staff concerned. The output of this process is a series of computer program **specifications,** from which the programmer writes the actual instruction code. Since systems analysis calls for knowledge both of business procedures and of computers, systems analysts are an even more scarce and expensive resource that programmers.

Consequently it requires a considerable initial investment to get to the point at which the computer has taken over from the manual system and the potential savings are being realised. A complete payroll system might easily involve man-years of analysis and programming and cost upwards of TL2 million. This investment is virtually **independent** of the volume of data to be processed -- whether you have 100 or 1,000 people on the payroll, the intitial

investment is much the same -- which of course is also true of writing a manual procedure.

On the other hand, the weekly or monthly savings which accrue from transferring the processing work to the computer are **proportional** to the volume of data involved. For example, assume that it takes 10 minutes to manually process all aspects of one employee's monthly pay and that the payroll clerk's time costs TL300 per hour; then the manual system cost is TL50 per employee. If the microcomputer also costs TL300 per hour to run but takes only 1 minute to do the same processing, then it costs TL5 per employee on the computer, a net saving of TL45 per employee per month. This leads to the annual savings shown in figure 3.2B.

On these figures, an initial investment of TL 2 million would not be justified for an organisation of less than about 800 staff. Clearly a smaller organisation would have to either continue to process its payroll manually or to find some more economical way to computerise it.

The solution lies in the fact that payroll processing is much the same from one organisation to another. Although the **data** -- staff members' names, rates of pay, allowances, etc. -- are entirely different from one bank to another, the **procedures** which are applied to them are very similar, with only variations between say how holiday pay entitlement or pension fund contributions are calculated. Consequently some computer suppliers and independent computer organisations will invest perhaps TL 4 million or more in producing a generalised computer payroll system that will be able to handle many of these inter-organisation differences. Such a payroll **package** as it is called, can then be sold to many client organisations for say TL 300,000 -- a fraction of the cost each client would have to pay to create such a system itself. At such a price, computerisation of the payroll procedure might be economic for organisations with as few as 100 employees and could be achieved in a fraction of the time it would otherwise take. Consequently it is most important that small and medium-sized organisations such as DYB become skilled at finding and evaluating such packages. To put the same thing another way, DYB should first look for packages which match its processing needs because it is they that really do the work and provide the benefits; the actual computer hardware is simply a general purpose device that carries out their instructions. Its characteristics are generally of much less significance than those of the applications **software**, as programs and packages are generically called.

The following section discusses some areas of DYB's information processing that appear most amenable to computer assistance.

Figure 3.2

A TYPICAL MICROCOMPUTER SYSTEM

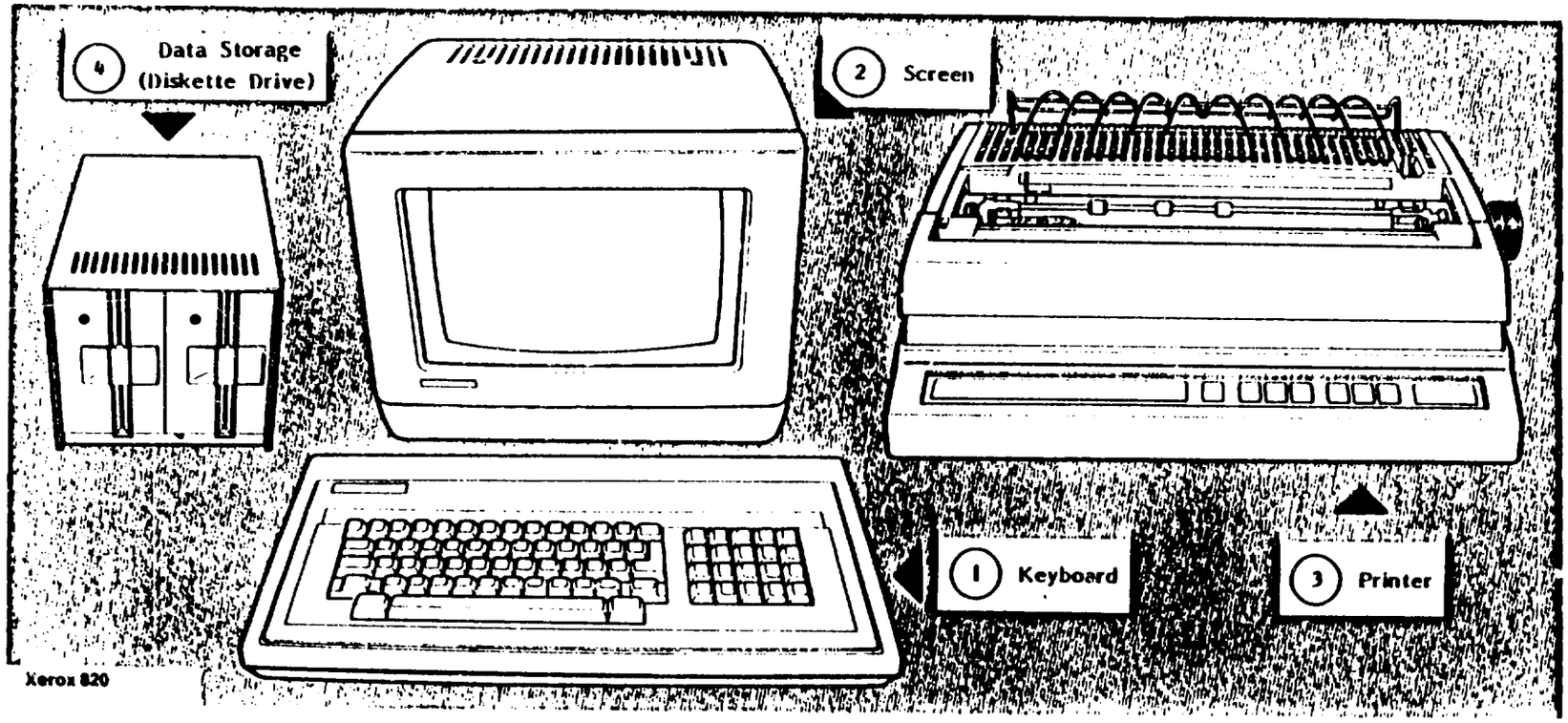


Figure 3.2

Figure 3.2B

PAYROLL SYSTEM EXAMPLE:
SAVINGS AS A FUNCTION OF NUMBER OF EMPLOYEES

No. of Employees	Annual Savings (TL)
10	5.400
100	54.000
1,000	540.000
10,000	5.400.000

3.3 SOME POTENTIAL DYB APPLICATIONS.

Project Appraisal and Evaluation

These functions naturally consume a major proportion of the time of DYB's analysts. At the time of this study no data were available with which to do an accurate analysis nor did time permit the collection of such data, but a rough analysis suggests that some two-thirds of aggregate analyst working days per year are spent on these activities -- the remainder being consumed by staff supervision, Active training (ie. attending seminars, courses, etc.) Supervision Visits and other activities. Further examination of the steps involved in the appraisal/evaluation process -- gathering technical data, technical analysis, gathering financial and economic data, financial analysis, report preparation and so on -- indicated that about 55% of aggregate analyst time spent on these activities is concerned with technical and financial analysis and a further 17% is spent on preparing the report. (See the Appendix for details of this analysis.)

DYB is of course well aware that the appraisal and evaluation processes are amenable to computer assistance. UNIDO is developing a software package that will automate the procedures given in its **"Manual for the Preparation of Industrial Feasibility Studies"**, and this package is scheduled to be available before the end of 1982. It is planned to supply DYB with this software together with an Apple III microcomputer, on which the package is being implemented. However it is worth examining the potential benefits more closely. Again the absence of hard data necessitates a degree of educated guesswork but the analysis suggests the following benefits:

- **Productivity Improvement.** Use of the UNIDO package might reduce the total analyst time required for project appraisals and evaluations by about 40%. Based on the figures used in the appendix, this would release some 1500 analyst-days per year. If these were applied to additional appraisals and evaluations, the same number of analysts could process 67% more projects. Alternatively some proportion of the freed resources could be put to other tasks. To take project supervision activities as an example, assuming 5 person-days per supervision visit/report cycle and a portfolio of 55 ongoing projects, then an additional 3 supervision visits per year per project would require 825 analyst-days, little more than half of the time freed from analysis work.

- **Greater standardisation.** If the UNIDO package adheres to the model discribed in the **Manual for the preparation of Industrial Feasibility Studies**, it would expect input data in the form of standardised schedules of Investment, Production and Overhead Costs, and Revenue and Revenue Costs; the results would be produced in the form of a number of intermediate schedules --Initial Fixed Investment, Pre-Production Capital Costs, Total Initial Investment and so on -- and final schedules of Cash Flow, Net Income, Balance Sheet and NPV calculations. This would automatically provide standardisation of analysis and presentation of the results produced by all project teams.

- **Improved Quality.** By relieving the analysts of the calculation and presentation of results, such a package should provide other benefits:

- arithmetic errors would be virtually eliminated; an unexpected result would therefore focus the analysts' attentions on their input data and thereby encourage the acquisition of greater insight into the financial and economic nature of projects, rather than on the mechanics of the calculation.

- by the same token, the discouraging burden of recalculation required in order to carry out a sensitivity analysis would be removed; it would simply be necessary to adjust the appropriate input values and the computer would recalculate the result schedules. Sensitivity of the results to a number of input variables could therefore become standard practice, with little additional demand on analyst and computer time. Some packages include special sensitivity analysis facilities, which allow the input of a list of input variable names and the percentage change to be applied to each of them. The package then automatically factors the input data accordingly and prints the recalculated results and the corresponding changes from the 'base-case' values. However it is not known whether the UNIDO package includes such facilities; it would seem unlikely at its present early stage of development.

. **Simplified Final Report Production.** Because the computer package prints formatted input, intermediate and output schedules, those required for inclusion in the final Appraisal/Evaluation report would not need to be typed. Using the reduction facility of DYB's Xerox 3107 photocopier where necessary, the schedules could instead go straight into the final report.

. **SEE Portability.** The benefits described above which would accrue to DYB from use of such a package would also apply to DYB's borrowers, the industrial State Economic Enterprises. Therefore, once DYB's project analysts had gained sufficient experience in the use of the package the Bank would be in a position to train SEE project preparation staff in its use and thereby extend the benefits throughout the state industrial sector. This in turn could provide DYB with a secondary benefit: projects prepared by SEEs using the package would reach DYB in a form more closely aligned with its own appraisal procedures. If, in addition, SEEs could supply the input data in a computer-readable form -- eg. on a compatible diskette -- then appraisal work would be further simplified: the diskette could be inserted in DYB's computer diskette-drive and the manual keying-in of the input schedules would be eliminated; the Bank's analysts would only need to enter changes to the input schedules.

General Accounting.

Of all information processing activities, accounting is probably that with the greatest commonality between one organisation and another. While the detailed structure of the Chart of Accounts is likely to reflect the unique function and approach of each individual organisation, every organisation generates a constant stream of transactions that affect its financial position and which must be correctly recorded, at least in order to satisfy the usually mandatory requirement to produce annual Profit & Loss Statements and a Balance Sheet, but principally to provide its own management with an up to

date and meaningful picture of its financial position.

Carried out manually, the accounting function tends to be slow, error-prone and labour-intensive -- there is usually much transcription of information from one piece of paper to another; because this all takes time, different parts of the organisation tend to maintain their own records of accounts of interest to them, leading to multiple recording of information with all of the attendant problems.

Because the computer's benefits are particularly easy to realise in this area, general accounting has been traditionally the first administrative application of computers in most organisations and this function is particularly well supplied with proprietary package offerings. Apart from accepting transaction postings, maintaining an audit trail and producing say monthly Profit & Loss and Trial Balance Sheets, much of such a package's usefulness comes from the ease with which a variety of informative reports can be produced on demand. A typical General Ledger package can list opening balances, transactions during the period and closing balances for any one account or a selection of accounts; produce such reports for the current month, previous month, previous quarter or year-to-date; provide many combinations of summary-level accounting information.

Assuming that a satisfactory package could be found, the advantages should be:

- **Productivity Improvement.** Time and resources have not permitted sufficient investigation of DYB's accounting functions even to make the rough analysis used to illustrate the potential improvement offered by the UNIDO package for project appraisal and evaluation. However on an overall basis, the Credits, Resources and General Accounting Departments are all concerned with aspects of the accounting function -- the Credits Department with the provision of loan capital and repayments to lenders, the Resources Department with loan capital disbursements and repayments from borrowers, both often considered to be aspects of the accounting function -- and it does not seem unreasonable to assume that economies of a similar order to those from the use of a project appraisal package are also available here through the use of a general accounting package. If the current aggregate staff of these Departments is taken to be about 45 then a 40% reduction in the manual effort required to carry out this processing would imply that the current staff of 45 could handle a 67% increase in workload.

- **Quality Improvement.** A number of potential benefits fall into this category:

  - a manual accounting system involves much transcription, both in actual transaction posting and in reporting, and it is these more routine functions that are taken over by a computer-based system. Hence staff concerned are relieved of this mechanical component of the work and can be applied to the more substantive aspects of the system, both to their own and the Organisation's benefit.

  - typically in a compter-based accounting system, authorised transactions are entered by the originating department -- eg. Credits Department

would enter all capital receipt and repayment transactions -- at least on a daily basis, though in many banking situations the sums involved justify continuous updating as the transactions arise during the day. Thus up-to-date figures on accounts could be available some time after the close of business on that day or, more practically, early the following morning. Given the reporting facilities mentioned earlier, it should be possible for the accounting departments to provide other departments and DYB senior management with a considerably improved flow of information, and in a form more immediately useful to the recipient.

Report Production.

The unit principally responsible for the typing and reproduction of DYB's routine documentary output is the Joint Office. The Office is staffed by 4-5 typists, supplemented from time to time by secretaries from elsewhere in DYB. The typists are equipped with a variety of manual typewriters. Documents are typed on stencils and reproduced on rotary duplicators. As an example of the Office's output, in the first 6 months of 1982 they typed some 45 Appraisal, Evaluation and Supervision reports totalling over 1000 pages of text and tables, each of which was reproduced in 25 copies.

This work is precisely that covered by the computer term 'word processing'. Word processing microcomputers began to appear in the second half of the seventies as a natural development of the electric typewriter, and were 'single purpose' devices, but the more recent computer systems provide both data-processing and word-processing facilities. Although a relatively recent addition to the growing ranks of computer applications, it is potentially the most widespread and some explanation might clarify why this is so.

In the 'normal' typewriting process, when the typist strikes a key the corresponding character is immediately reproduced on the paper. If all goes well, this is a rapid process; the problems arise when it does not:

- a mis-spelling requires the erasure of the error, either with an eraser or by painting it over with 'Blanco' and retyping

- omission of a word or two can necessitate at least the retyping of several lines of text to make room for the omission; sometimes the whole page will have to be retyped

- omission of a sentence or paragraph can lead to the retyping of several pages of text.

Whether these are errors on the part of the typist or changes introduced by the author, they are very common. It would probably be true to say that in the majority of cases, more time is spent making such corrections and changes than is spent typing the rest of the document.

For a typist carrying out the same task on a microcomputer however there are some crucial differences:

- when the typist strikes a key, the corresponding character appears on the

screen only. No printing takes place at this stage.

- As she types, the lines of text accumulate on the screen; a special symbol called the cursor always indicates the current typing position; instead of having to wind the paper up and down or move the carriage left and right on a typewriter, special keys on the keyboard move the cursor over the screen in the appropriate direction.

- Additional special keys are provided for the deletion, insertion or replacement of text; these actions can be applied to individual characters, words, sentences and even whole paragraphs; the computer automatically adjusts the following text to compensate for the corrections and changes made.

Once satisfied with the text, the typist saves a copy of the text on the computer's diskette and then issue the command to print the text via the printer. Not only does this take place at 5-10 times the speed of the fastest typist but also, depending on the sophistication of the software provided, some or all of the following facilities would be available:

- **Smooth right-hand margin.** All full lines reach the right hand margin, giving the appearance of typeset text. The computer adjusts the spacing between words to achieve this effect.

- **Automatic Pagination.** The computer starts a new page when the previous one is full, automatically printing the page number, centred, at the head of the page before continuing with the text.

- **Footnoting.** The computer automatically includes footnotes on the same page as the references to them.

- **Customising.** By inserting the appropriate 'wait' signals in the text of a routine letter -- a "forthcoming seminar" advice to a SEE for example -- printing of the letter stops at the wait signal, allowing the typist to insert the name of the addressee and other individual details; the remainder of the letter would be printed at full speed. A powerful extension of the same idea allows the variable information to be retrieved from another diskette file and automatically inserted in the letter. Thus, if a file were set up to contain the Names and Addresses of all SEEs and the Name and Title of the approporiate official in each case, then the computer could print all of the letters without further intervention.

Even from this very brief description of modern computer facilities for text and document preparation, it should be evident that they offer a number of advantages.

. **Productivity Improvement.** The improvements likely to be achieved depend upon many factors and the work mix in each situation is different. Figure 3.3A shows typical productivity improvements quoted for 3 different types of work. In 'one-time' typing the word processor's very rapid and powerful editing/correcting facilities can show very significant time savings. For longer documents where the first draft is returned to the author and a round of changes and amendments results, the savings are much more significant because the typist can now call up the original text

from the diskette, quickly effect the changes on the screen, issue a print command and her work is finished. The computer automatically rearranges the text to accomodate the changes and prints the result, relieving the typist of the considerable amount of retyping that would be necessary manually. Even greater savings are available for customised repetitive text.

In DYB's case it would not seem optimistic to expect an overall productivity improvement of 50%. However probably more significant advantages would come in other ways.

- **Quality Improvement.** The finished appearance of word-processor-produced text is undoubtedly more professional and pleasing to the eye than that produced by a mixture of manual typewriters. Moreover a wide range of type styles and sizes are available on computer letter-quality printers, and changing from one to another is a simple matter of changing the 'daisy-wheel' printing head, the work of seconds. A little ingenuity can produce a quite startlingly more professional and therefore more effective result.

- **Job Satisfaction.** By relieving the typist of the more repetitive and less satisfying aspects of the work -- erasing and retyping errors, retyping correct text to accomodate changes and so on -- by producing a visibly more attractively formatted result and by adding new expertise to the typist's existing skills and experience, the introduction of word processing can be expected to produce a significant improvement in the morale of the staff concerned, if correctly handled.

Payroll.

Payroll processing -- maintenance of staff details, pay rates, allowances; calculation of gross pay, tax and other deductions, net pay; printing of individual pay advices and/or cheques and so on -- is probably the second most common computer application and here again there are likely to be a number of packages available from which to choose. In DYB, with some 150 staff, whether or not the benefits outweigh the costs will depend very much on the availability and cost of such packages; it is unlikely to be a viable proposition for DYB to finance the development of its own system.

Figure 3.3A

WORD PROCESSING: PRODUCTIVITY IMPROVEMENT

Type of document	Improvement
'One-time' typing: individual letters, memos and other short correspondence	25-50%
Longer and more complex documents subject to one or more checking/revision cycles	100-300%
Semi-standard (customised) **typing.**	300-500%

3.4 SELECTING A MICROCOMPUTER SYSTEM.

A number of important criteria to be born in mind when selecting a computer system are discussed below.

Maintenance. No matter how sophisticated and powerful a piece of equipment is when it is working, it is useless when it is not. It is highly desirable that equipment should be able to function for a very high proportion of the time during which it may be called upon, ie. throughout every working day. There are two factors of interest here:

- the inherent reliability of the equipment should be such that it fails as rarely as possible, ie. its **Mean Time Between Failures** (MTBF) should be high. Not unnaturally the more reliable the equipment the higher the cost, but in DYB's situation the additional cost of more reliable equipment is likely to be a good investment. In this regard the 'traditional' computer manufacturers -- IBM, Digital, Burroughs, Sperry-Univac, Hewlett Packard and so on -- have been made aware of their customers' needs over many years and take pains to produce equipment with a good price/reliability factor. On the other hand manufacturers such as Apple, Tandy, Sinclair and other companies have only joined the industry in the last 5 years or so, originally on the basis of very small and inexpensive microcomputers designed for home and hobby use. This is a much more price sensitive and less reliability-concious market. While their 'second generation' models now available are more sutiable for small businesses, the reliability of the traditional manufacturers' equipment is likely to remain superior for some time to come.

- No matter how inherently reliable a piece of equipment is, it **will** fail at some time or another. The objective then is to get it working again as quickly as possible -- its Mean Time to Repair (MTTR) is of crucial importance. This depends upon the nearby existence of a service function staffed and equipped to rapidly diagnose and correct the failure. **'Nearby'** is most important: as DYB is well aware from its experience with the Xerox 3107 photocopier funded by UNIDO, such a service facility in Istanbul is of little comfort to a bank in Ankara. **'Staffed and Equipped'** is also crucial: a local sales office without diagnostic equipment, qualified staff and a stock of spares is equally ineffective in getting the equipment going again. In this respect also, the traditional suppliers have a distinct advantage over the newcomers. Over 10 or 20 years these large organisations have established a worldwide network of their own offices, with staff trained to provide this maintenance function. The newcomers on the other hand, although growing rapidly, are as yet relatively small and have established few offices outside their home countries; abroad they tend to appoint agents, whose depth of computer expertise and quality of service is decidedly variable.

These aspects of maintenance have been discussed in relation to the computer hardware, but exactly the same considerations apply to the software -- the word-processing, general accounting, project appraisal and other packages and programs that actually get the computer to do useful work -- one without the other is of little or no use. By its nature however, software is far more likely to contain undiscovered errors and ommissions of design than is the

hardware, and the availability of analyst/programmers able to fix such 'bugs', as they are called, is probably even more important to a user such as DYB than that of hardware maintenance engineers. In this respect the newcomers are far inferior to the traditional suppliers. While an IBM or Burroughs may typically take much longer to find and fix a software bug than a hardware problem -- simply because the number and complexity of software packages is far greater then that of hardware devices -- they will do it. On the other hand it is rare to find an Apple or Tandy agent whose expertise extends to software at all; the chances of finding someone who can fix a bug in a software package are slight indeed. A point in favour of the 'new' suppliers however is that the packages available on their machines are typically cheaper than the equivalent product from the traditional suppliers.

Application Packages. As was discussed earlier, the cost-effective use of a computer in a medium sized organisation such as DYB is largely determined by the application packages available for use on that computer and their cost. The existence of third-party suppliers of packages (eg. UNIDO) and the question of which packages can be run on which computer complicates the issue, but in order of preference the options are these.

1 - Packages supplied and maintained by the hardware vendor

2 - Third-party packages specifically designed to run on the proposed computer

3 - Third-party packages which can be modified to run on the proposed computer without excessive difficulty

4 - Others, ie. any packages that would be more difficult to convert for operation on the proposed machine

Growth Path. The task of reaching the point at which a computer is doing useful work is difficult and time-consuming enough; a distraction to be avoided is to find that within a year or two, growth in the use of the computer demands a move to a larger system which entails a major change in hardware and, worse, wholesale changes in the software. In other words it is most important that large increases in workload can be accomodated with minimal increments of hardware expenditure and preferrably no changes whatever to existing software.

To take an example, let us assume that the UNIDO package has been supplied to DYB, together with a microcomputer at a cost of say TL2.5 million. Within a few months several project teams are using it and the computer is occupied for most of the working day. However other project teams want to use the computer on their projects also. The obvious solution is to buy another microcomputer at a cost of TL 2.5 million, and so on. This is a simple but expensive solution because for each hour that an analyst has been occupying the computer:

- the analyst has probably been active for about 45 minutes, typing in data, considering the computer's responses, typing in his next command, and so on; for the remainder of the time

- the computer itself has been busy for about 5 minutes, responding to the analyst's input, retrieving data from the diskettes and displaying the results on the screen;

- the printer has been busy for 10 minutes printing the results of the calculations.

Now these times vary condiderably with the nature of the work in hand but the net result is the same: while the analyst has been busy for most of the time, the computer has been heavily underemployed. The corollary is that one computer should be able to handle several users at the same time. Since every user needs at least a keyboard/screen unit, called a **workstation** or **terminal**, through which to communicate with the computer, this fixes the minimum requirement. In practice, increments of memory and additional diskette drives and printers are needed at intervals. Nevertheless, on average it should be possible to add workstations for about one-third or less of the cost of another complete microcomputer, or say about TL 800.000 each.

Clearly, a microcomputer with such a **multi-user** expansion capability offers the customer a very economical growth path compared with the alternative of a number of single-user microcomputers. Of course multi-user automatically implies that each user may work on a different task. One terminal might be in use by an analyst using the UNIDO package, another by a typist preparing a report using the word-processing software, while a third was being used by the Accounting Department for example. Also, since such terminals typically can be up to 60 metres away from the main computer, then by locating the computer on say the 6th floor and placing terminals in the rooms vertically above and below it, all floors of the Bank could be serviced by the same computer.

Single-Source. For a modest-size organisation such as DYB, venturing into the use of equipment and techniques with which it is relatively unfamiliar, the usual case for minimising the number of suppliers involved holds good:

- standardisation of equipment minimises the problems of moving staff and equipment between one area (or one application) and another. For example if the 9th floor terminal being used for project appraisal fails and the terminal on the 4th floor, normally used for the Credit Department's accounting work, is free, then the project team can move down to the 4th floor and carry on. The same is true if the two floors use separate but identical computers provided that the team take their diskettes with them. This is highly **unlikely** to be possible if the two computers are of different manufacture.

- If DYB buys 3 microcomputers (or one large one) from one supplier, it is clearly a more significant customer than it is to each of 3 suppliers, from which it bought 1 microcomputer. This seems to have an unquantifiable but discernible effect on the degree of help and support provided by the supplier. Also, sales discounts might be available which would not apply to single purchases.

- The number of communications channels between DYB's computer users and

the suppliers' service personnel is minimised.

. If each area of the organisation uses a different type of computer system, then the future realisation of benefits from potential commonalities will be much more difficult to realise. For example the Management Information System calls for technical and progress information on projects as well as financial details which would originate in the accounting system. If the project information and accounting information reside on different computer systems, then the implementation of a computer-based MIS would clearly be more difficult than if the two databases were on the same computer system.

In the next section of this chapter we shall use these criteria to evaluate some microcomputer systems of potential interest to DYB.

3.5 EVALUATION OF AVAILABLE SYSTEMS.

During the study an investigation was carried out to determine which computer system vendors were represented in Ankara and whether or not they offered systems that would be of interest to DYB. The results of this brief survey are outlined below.

Apple. One of the relative newcomers to the industry, Apple are of particular interest because the UNIDO package is being implemented on the Apple III microcomputer, the software being written in PASCAL.

Apple are apparently represented in Turkey by Komili Sinai Mamuller Parzarlama A.S., a soap company with headquarters in Istanbul. They are represented in Ankara by a salesman with minimal computer knowledge and documentation. No professional computer hardware or software support personnel appear to be provided. A letter from DYB to their headquarters in Istanbul elicited no reply. As far as is known the Apple III is a sinle-user system with a cost of TL 2.0 - 2.5 million; it is not expandable to a multi-workstation configuration. Worldwide a very large number of applications packages have been written for Apple computers, though almost all are provided by third-party suppliers. There is no information as to the availability of such software in Turkey.

Burroughs Corporation. Like IBM one of the largest and earliest suppliers of computers and with a particularly strong presence in the Banking sector, also represented in Ankara with (as far as is known) a full complement of sales, support and maintenance staff. It is understood that they plan to introduce shortly their B20 microcomputer system, already released in several other countries from July 1982. Again a starting configuration of this system might cost TL 2.0-2.5 million; the system is specifically designed to be expandable with up to 16 workstations; word-processing facilities are included as standard; according to the American documentation an extremely comprehensive range of applications software is either available or planned including a full Budgetary Accounting System, though whether or not Turkish versions are planned is not known. A powerful applications develoment facility known as the B20 Data Manager is provided which, according to the facilities described in the documentation, would be of considerable benefit to DYB in developing its own reporting, inquiry, data entry and file maintenance applications. Programming languages provided include COBOL, FORTRAN, BASIC, and PASCAL.

IBM (International Business Machines). The world's largest computer supplier, IBM has a full representation of sales, support and service personnel in their Ankara office. During August 1982 they introduced their **System 23/Datamaster** microcomputer system to the Turkish market. A starting configuration of this system is estimated to cost approximately TL 2.5 million; it is expandable to a multi-terminal system (certainly with 4 workstations, though it may be possible to add more); word-processing facilities are optionally available, though a decision on whether or not to offer these facilities on the Turkish market had not been taken at the time of the study; numerous software products are offered with this system in its home market (USA), including a full Business Management Accounting System, (BMAS). During the study a Turkish **'Business Accounting System'** was

demonstrated to some DYB executive officers, though it is not known to what extent this product meets the needs of DYB's accounting system. An applications development package known as BRADS (Business Report/Applications Development System III) is also offered, though no further details were available at the time of the study. BASIC language facilities are offered though others, including PASCAL, are not.

Rank-Xerox. A very large and well-known supplier of photocopiers and related equipment, Rank Xerox now have a sales and service office in Ankara. Xerox were a late entry into computers, achieved through aquisition of Scientific Data Systems (SDS) in the 1960s. This was not a very successful venture and Xerox withdrew from the computer industry some years later. They rejoined the industry only relatively recently with a word-processing system. Thus, while they are a large corporation with an extensive sales and service network, this network is relatively inexperienced in computer terms. They have recently announced their **Xerox 860 Information Processing System,** in effect a more powerful version of their 820 Word Processing System, with the ability to handle normal data files. This is a single-user system; it does not appear to offer a general accounting package or integrated application development aids such as the Burroughs B20's Data Manager, though **'Analyst'** appears to be a small database management system; languages include BASIC, COBOL & PASCAL; the system lacks the optional fixed-disk with 5 million characters of storage and upwards, which is available on the other systems.

Sperry-Univac. A founder member of the computer industry, this company is represented in Ankara, though the level of staffing is not known because they were contacted through one of their major customers, Is Bank, whose online network is based on Sperry-Univac computers. At the time of the study they did not appear to have a small system comparable with those of Burroughs and IBM.

In order to compare the available computer systems, a subjective **weight** has been associated with each of a number of factors, according to the perceived importance of each to DYB:

(1) The **sales, support and service representation in Ankara** of the supplier concerned. This is vital to DYB and has been allocated a weight of 10 **points.** An otherwise admirable computer system's utility is reduced to near-zero if it and the applications software cannot be relied upon to function for a very high proportion of the working year.

(2) A computer system is clearly more attractive if it can be applied to useful work in DYB as quickly as possible; it is less attractive if it might take some time to apply it to the task in view or if it would prove extremely difficult for DYB to do so. However not all applications have the same value: the potential benefits vary from one to another. Accordingly the following weights have been allocated to the applications discussed previously:

Project Appraisal/Evaluation (the UNIDO package)	10
General Accounting	7
Report Production (word-processing)	4

On this scale then, the ability to use the UNIDO package immediately is given an equal weight to that of support and service; applications as a whole are given just over twice the weight of support and service.

(3) the **ability** of the initial computer system **to be economically expanded** to meet the needs of all applications and/or major increases in the workload demanded of it, has been allocated **7 points;**

(4) features of the computer systems that would **simplify the task of enhancing existing applications or of developing new ones** have been allocated a total of **8 points:** 1 point each for the availability of the industry-standard languages, COBOL, BASIC & FORTRAN, which could provide DYB with the ability to use software obtaioned from other development banks; 5 points for more advanced development tools that could considerably reduce the cost of future developments, whether carried out by DYB itself or by software suppliers on its behalf.

For each of these factors, the best of the 4 contending systems has been allocated maximum points, the others receiving a lower score according to their relative deficiencies. Once again these scores are entirely subjective and a low score may reflect lack of information about a facility rather than definite knowledge that it does not exist.

The results are shown in figure 3.5A. Against a maximum possible 46 points, the systems score as follows:

Burroughs B20	36 points
IBM Datamaster	29 "
Apple III	18 "
Xerox 860	18 points

On this rough analysis the **Burroughs B20** microcomputer system does appear to be the most promising. It exceeds both of the other systems in its overall ability to be applied to useful work in DYB (factor 2) largely because it can be applied to all 3 areas (though the UNIDO package would have to be adopted to run on it); its expandability to 16 workstations is an advantage; it seems better provided with software development tools and languages.

The **IBM Datamaster** scores well on support and service and the demonstrated existence of a Turkish Business Accounting System. However it does not appear to be expandable to the same extent as the Burroughs B20 and it suffers from limited availability of computer languages, in particular the lack of PASCAL implies that the UNIDO package would have to be completely re-written in BASIC to run on this system. This would be a much more difficult and expensive task than simply adapting the package from its initial Apple III/PASCAL configuration to a Burroughs B20/PASCAL version.

The **Apple III** scores well in being able to provide DYB with the immediate use of the UNIDO Project Appraisal and Evaluation package, but support and service backup is of very doubtful substance and the availability of software packages for other DYB applications is unknown. It is a single workstation system, so that expansion to handle increased workload and additional

applications would have to be dealt with by the simple but relatively expensive method of aquiring additional complete Apple III systems.

The **Xerox 860** scores overall on a par with the Apple III. It is likely to be better supported than the Apple but, not being the machine for which the UNIDO package was designed, the package would need to be adapted to run on it. This exercise would probably be more difficult than conversion to the Burroughs B20, owing to the Xerox's smaller disc capacity. It is likely to be one of the best machines as regards word-processing faciiities, but its single-workstation chatacteristic and lack of general accounting software are other weaknesses which combine to give it an 'equal 3rd' rating.

Thus on the information available at the time of this study the **Burroughs B20** recommends itself as the best overall choice, offering as it does the possibility of keeping all of DYB's applications on one common system with less difficulty and expense than would be necessary to achieve the same end with the other systems. However the Burroughs B20 has yet to be seen in Turkey and this recommendation depends on Burroughs' ability to deliver the **potential** superiority of their product as **actualities** in the context of DYB, particularly with regard to general accounting software.

Also it should be noted that in the absence of firm cost information this analysis has assumed that the costs of the systems are similar: in effect, all of the systems have been given the same score in this respect. As cost information becomes available, DYB should include this information and weight the relative scores of the systems accordingly if significant differences emerge.

FIGURE 3.5A. COMPARISON OF AVAILABLE MICROCOMPUTER SYSTEMS

		APPLE III		BURROUGHS B20		IBM DATAMASTER		XEROX 860	
FACTOR	WEIGHT	COMMENT	SCORE	COMMENT	SCORE	COMMENT	SCORE	COMMENT	SCORE
1. Sales, Support & Service representation in Ankara	10	Poor	1	Good	8	Good	10	Inexperienced	4
2. Potential immediate applications in DYB:									
* Project Appraisal & Evaluation (UNIDO package)	10	Designed for	10	Some difficulty	5	Very difficult	1	Difficult	3
* General Accounting	7	?	1	American version only?	4	Turkish version available	7	?	1
* Report Production (Word Processing)	4	?	1	Good	4	Optional	2	Good	4
Sub-Total	21		12		13		10		8
3. Growth Path: multi-user capabilities	7	1 workstation only	1	Up to 16 workstations	7	Up to 4 workstations	4	1 workstation only	1
4. Application Development:									
* Advanced features	5	?	1	B20 DATAMASTER	5	BRADS	4	ANALYST	2
* Industry standard languages	3	BASIC, COBOL, PASCAL, FORTRAN	3	BASIC, COBOL, PASCAL, FORTRAN	3	BASIC	1	BASIC, COBOL, PASCAL	3
TOTAL SCORE	46		18		36		29		18

4. OTHER ASPECTS OF DYB INFORMATION SYSTEMS DEVELOPMENT

4.1 PERFORMANCE MEASUREMENT.

Before making an investment on behalf of its shareholders, the Bank naturally goes to some lengths to ensure that the proposed investment is a viable one -- that both in a financial and economic sense, the benefits will outweigh the costs and that the investors will realise an adequate return on their investment. The sums involved are large and this process of project appraisal involves a considerable amount of research and analysis; projects which on first examination do not seem to be viable may be modified until a viable alternative is found; some projects may have to be rejected if they cannot be modified to a viable form. As a result of this process the borrower, the Bank and the investors are all equipped with a clear idea of what is proposed and what returns are to be expected from the investment to be made.

As has been pointed out earlier, the Bank is very largely occupied in information processing. From time to time changes such as those in this report are proposed and although the sums involved are small compared with those of the Bank's borrowers' projects, there are investments, benefits and costs involved; it would seem anomalous in an organisation like DYB not to apply the same appraisal disciplines to these internal projects as are applied to its borrowers' projects. Other considerations apart, the Bank's Board, management and the staff concerned should benefit from a clear statement of what is proposed, the investment, benefits and costs involved. Certainly, as a result of such analyses, the Bank's management would be armed with a much stronger case for investing in the improvement of its own internal systems than would otherwise be the case. A secondary benefit would be the utilisation of the Bank's own experience in appraising information processing proposals in SEEs and in passing on the techniques involved to the SEEs, in the form of seminars and short courses.

At the present time DYB's systems are almost entirely manual and whether a proposed change involves simply a modification of the manual system or whether it involves the substitution of computer processing, there must be some benefits in view and these benefits must outweigh the costs involved or there would be no point in making the investment at all. In a commercial context, these benefits are usually classified under 3 headings:

(i) Increased Revenues
(ii) Decreased Expenses
(iii) Performance Improvement.

The first two are the so-called 'hard' benefits that would justify a proposal on financial grounds alone. The third, 'performance improvement', includes such qualitative items as 'improved staff morale', 'better presentation of results', 'more reliable output' and so on. These are regarded as 'soft', unquantifiable benefits that would not on their own justify the investment but that are positive aspects of the proposal.

It would be surprising to discover a change to the Bank's internal procedures that would itself produce an increase in revenues, though in commercial organisations operating in a competitive market, such examples are not uncommon. In DYB's case, the investment would generally be justified by

showing that it would **reduce the cost** of producing some specific output(s) -- financial and economic analysis results, written reports and so on. Since the principal cost in a manual system is that of people's time, the analysis usually reduces to one of showing that the reduction in staff time required to produce the result would outweigh the additional cost of, say, computer equipment. This in turn calls for knowledge of how much staff time is presently consumed by each stage of processing.

In section 3 of this report a very rough indication of the benefits that might be expected from a number of possible computer applications is given; appendix A both illustrates the analytical approach and highlights an important deficiency in the Bank's internal information systems: at the present time there is no formal mechanism for recording the amount of time spent on each activity within the Bank. Hence it is not known with any degree of precision, what is the cost of: an appraisal analysis; training (either giving or receiving); the various stages of processing an SEE invoice or a World Bank credit advice; preparing a page of text for a report; one hour of seminar presentation; the cost per staff member of payroll processing.

These are simply some examples of costs which would not only provide the basis for comparisons between the performance of similar groups within the Bank, or between DYB and other banks; such data also forms the basis of comparison between the present system and some new procedure.

As was indicated earlier, the Bank is now entering a period in which the cost of staff time vis-a-vis computers will be steadily changing in favour of computers and it must take steps to keep abreast of and utilise such developments. However DYB should be in a position to put forward a similarly rigourous justification for such investments as those submitted for its borrowers' projects.

To do so the Bank should implement a system to record and monitor internal cost and performance data. This is not a trivial undertaking and the details are beyond the scope of this report. It could fruitfully form the basis of a 1-2 month study, similar to the present one. Initially such a system should be introduced on a manual basis. After a period of test and adjustment in the practical situation, part or all of it might become a candidate for computerisation.

4.2 AN INFORMATION SERVICES GROUP.

If the recommendations of the preceding sections of this report are adopted then DYB managers will become, as they should, much more concerned with the improvement of their own systems and procedures and with the economics of that process. However their primary responsibilities and skills lie elsewhere and, while it is all managers' responsibility to keep abreast of developments which affect their activities, to expect them to become equally expert in their own field and that of information processing is unrealistic.

Also, while initially each computer application might fall within one manager's area of responsibility, as time passes other layers of information needs will be superimposed, drawing upon the data in two or more individual systems. For example, it will not be long before the need is perceived for the MIS to draw upon the project appraisal/evaluation, accounting and payroll systems. It is most important that such developments take place -- in a sense they constitute a valuable return from the initial investment in computerisation of the operational systems.

The organisational structure of responsibility for information processing should not impede the progress of such later integration. Clearly, to assign full responsibility for each individual operational system to the manager currently responsible for that function might do just that: managers preoccupied with the day-to-day problems of running and developing their own information systems would be unlikely to react with enthusiasm to subsequent developments which might call on them to divert signinicant amounts of effort in order to provide only other areas of the organisation with additional information.

On the other hand fully centralised responsibility for, and authority over, all aspects of information systems development has been found to suffer from other, equally disadvantageous characteristics: the developments proposed by such a group tend to be theoretical, designed more for the convenience of themselves than to meet the real needs of each functional area. The managers of the functions concerned, being without authority in the matter, become discouraged and fail to involve themselves in the design process and to ensure that the systems meet their needs. As a result a body of information systems develops that does not properly serve the needs of front-line managers and staff. Consequently those areas have little incentive to ensure that the data they put into the system is accurate and up to date; subsequently it is not uncommon to find that a hotchpotch of more responsive manual systems have developed to supplement (and often duplicate) the computer systems. These manual systems steadily aquire desk calculator and small computer support; eventually the result is a monolithic, unresponsive and expensive central system which seems to demand far more attention than it provides assistance, surrounded by an assortment of individual systems that do provide local assistance and which overlap but do not directly communicate with either their neighbouring small systems nor with the central system. In effect, at huge expense, all of the disadvantages of mannual systems have been transferred onto computers.

What is required then is a distribution of responsibilities such that:

- a sensible and effective balance is maintained between the needs of

individual functions and the needs of the organisation as a whole;

- scarce and expensive systems analysts, programmers and other information processing specialists are effectively and efficiently applied to the task of developing and implementing new systems (and enhancing existing ones);

- access to computer hardware and software resources is provided which offer the users an effctive service while minimising the present and future costs of doing so.

The solution to this seemingly simple requirement has proved to be extremely elusive. It is the subject of endless discussions both within the computer world and that of business; it undoubtedly varies not only from one organisation to another, but from time to time and also depends upon the management styles of the principals concerned.

As a first step however, DYB should consider the formation of a small group who are free of day-to-day responsibilities of project appraisal, report porduction, accounting and so on and who can concentrate on the development and implementation of information systems.

Because they must be in a position both to offer and be seen to offer assistance to most other functional areas in an even-handed way, it would not be approporiate that such a group should be responsible to the management of any of those functions. Instead the Group should report to the same level of management as do those functions. In DYB's case this would be to the General Director or, possibly, the Management Committee to which the General Secretary currently reports.

A full delineation of the responsibilities, qualifications, experience and numbers of the staff of such a group is beyond the possibilities of the present study, but the following observations might be helpful:

* the Bank should seek to recruit a Head of the Information Systems Group equipped with sufficient experience as to be able to rapidly establish effective working relationships with his fellow managers -- his clients -- and to get new systems working quickly. An appropriate person might have a first degree in Business Administration with 5 years postgraduate experience of the analysis, design and implementation of information systems both manual and computer-based. Preferrably at least 3 of the 5 years should have been spent in a bank or similar institution.

* the Group should be responsible for:

  Feasibility Studies - Establishing a list of projects in priority order, the priority of each project being determined by the relative benefits and costs of each proposal, unless otherwise decided by DYB management.

  System Specifications - In concert with the managers and staff of the functional areas concerned in each case, the preparation of an agreed system specification, including the contents, and frequencies of all

inputs and outputs.

System Design and Testing - In the case of manual systems, prepare form designs and the appropriate written procedures and other explanatory documentation; for computer-based systems or procedures, the specification, coding and testing of the necessary programs together with explanatory documentation for the user.

Ongoing Service - Ensure that users are provided with manuals, forms, computer access and other facilities in order to enable the information systems to function as intended on a day-to-day basis.

Note that it is not suggested that the central group should exclusively provide all of these services. The Project Appraisal and Evaluation functions in particular already possess computer expertise -- some 4-6 of the project analysts have received some education in systems analysis and/or programming -- and in the future this area is likely to become even more potentially self sufficient in this regard. What is important is that a central service should be available to assist those functions who do not possess these skills. However there is a strong case for a centralised **ongoing service** function, provided that it proves responsive to its users' needs, and for central assessment of the benefits and costs of departmental proposals.

4.3 PROJECTING an IMAGE

The Bank plays a key role in the development of Turkey's economy, it is a member of a worldwide 'club' of development banks and it seeks to maintain and enhance the highly professional and responsible reputation that goes with such a role. Clearly, in order to cultivate such an image, it must project it.

To the vast majority of individuals and organisations with which DYB has dealings, their impression of DYB is necessarily obtained almost exclusively from the written communications they receive from the Bank -- the correspondence, appraisal and evaluation reports, training seminar material and so on. If this material is professionally presented and projects a clear corporate personality, that is the impression that will be retained by the reader. On the other hand, no matter how professionally an analysis has been carried out or a report has been written, if the results are presented in an unimpressive manner then the reader will be left with a poor impression and the Bank will have failed to project its professional image. In short, quality of presentation has a disproportionate effect on the impression given -- poor work beautifully presented will not succeed, but good work poorly presented will certainly not convey the impression it should.

Inspection of some of the Bank's documentary output reveals the following:

- **Correspondence:** of the two types of letterhead stationery found, neither carried the Bank's logo; each used an entirely different type style; DYB's standard envelope carries one version of the logo; the only other document sighted which carried the logo used another version (see figure 4.3A).

- **Reports:** none carried the Bank's logo; the paper is of poor quality; the text is exclusively typewritten and of uneven appearance; no effort is made to break up the monotony of the text with charts or diagrams; 'binding' consists of one staple in the top left-hand corner; 'house' covers were not utilised.

- **English:** some of the Bank's reports are published in English. Although the general standard of translation is very good, the resulting manner and style of expression is often not that which would be used in English, and occasionally the meaning is unclear. This is somewhat disconcerting to the reader and detracts from the effectiveness of the documents concerned.

In short, the same professionalism which goes into the substance of the Bank's output is not being applied to its presentation. As a result it gives an indifferent impression and, taken as a whole, it lacks any coherent corporate identity.

Listed below are a few simple changes that would go some way towards improving the image the Bank projects through its documentary output. Each suggestion is likely to have an associated cost, but the sum of these costs is certainly small compared to those of preparing the substance of the documents, and it can be expected to produce a disproportionate improvement in the effectiveness of the results.

- **Develop a Corporate 'Image'.** In documentary terms the aim here is to ensure that all output has a characteristic, good-quality appearance and that it is easily recognised as coming from the Bank. Some ways of achieving this are:

  - **Utilise the Logo.** A logo is a simple and potentially most effective way of developing rapid recognition of an organisation's written material. To be effective it should appear in a prominent position in **every document produced:** letters, forms, reports and so on.

  - **Standardise the letterhead.** Include the logo and choose one basic design for the text of the letterhead; use that letterhead on all correspondence and reports. If Turkish and English versions are required, ensure that as far as possible they have the same appearance, ie. that the typestyles and layouts are very similar.

  - **Use 'House' Covers.** Relatively stiff front and back covers, incorporating the House letterhead and a 'window' in the front coversheet, not only establish the source of the document but helps to protect the contents; they are particularly useful on thicker documents such as reports and seminar material. In black and white, they need be little more expensive than letterhead stationery.

  - **Develop a House Style.** The utilisation of the computer's word-processing capabilities could itself eliminate some shortcomings of the present manual typewriter methods: changes of typeface within one document could be avoided and the typists would be able to produce a much better and uniform layout of the text. Beyond that however, the Bank should develop standards for the format of correspondence and reports for the guidance of the typists.

- **Use Better Reproduction Techniques.** The stencil/roneo technique presently used to reproduce reports is labour intensive (correcting typing errors and making changes to the text takes even longer with stencils than with normal typing), restrictive (it is difficult to reproduce graphs and charts) and, owing to the paper used, produces a poor quality result.

  A simpler and more effective method for all but the shortest documents would be the following two-stage process.

  (i) Produce the masters on normal good-quality paper. This would allow the relatively rapid incorporation of corrections; even without the use of a word processor, the insertion and deletion of sections of text can be handled by simple cut-and-paste methods; charts, graphs and photos can be included; oversize tables (results from the UNIDO package for example) and other material can be reduced using the reduction facilities of the 3107 copier.

  (ii) Reproduce the requisite number of copies on the Xerox photocopier. Since the number of copies required is not large -- reports are understood to be reproduced in 25 copies -- and the

UNIDO-supplied copier is presently underutilised, the cost per copy should be competitive. For significantly longer print runs, commercial printers should be able to offer a rapid service at competitive rates, using offset printing techniques (by using special sheets, the Xerox copier can directly produce offset masters).

- **Upgrade English Translation.** No doubt the Bank would have seen many examples of text translated from other languages into Turkish by someone proficient in Turkish but quite clearly not a Turk because the result, although using Turkish words, is simply not the way that the thought would be expressed in Turkish. The same applies in reverse. It is axiomatic in language translation that for best results the task should be carried out by someone with 'mother tongue' command of the **target** language -- ability in the **original** language is iess important.

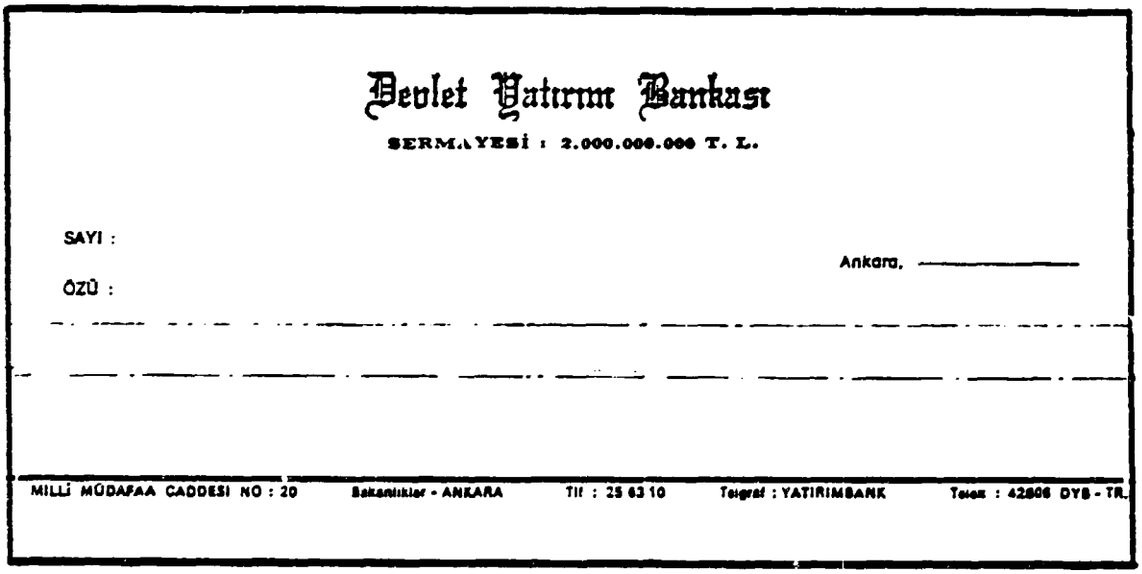
  So, for Bank documents to be produced in English the bulk of the translation task should continue to be carried out by the present staff, but it is suggested that final editing might be carried out by a person whose mother tongue is English. This would not only improve the result itself but it might also benefit the present staff of translators, who have little or no day-to-day exposure to native English, a subtle and difficult language. For the volume of the work involved it would probably be sufficient to engage someone on a part-time basis; suitably qualified spouses of employees of the English-speaking embassies and legations would seem to be a promising area for recruiting.

A final comment on this subject. Organisations smaller than DYB but which perceive that their standing among their peers is significantly affected by the quality of presentation of their output, often either employ editors to maintain and improve that quality and/or hire the services of specialist organisations for the same purpose. If DYB feels that such measures might be justified then it could investigate these possibilities.

PROJECTION OF A HOUSE 'IMAGE'

There are two different versions of the Bank's logo .....

..... and two entirely different styles of letterhead .....



..... neither of which carries a logo.

5. REFERENCES

Listed below are some publications to which reference has been made in the preparation of this report and which might prove of use to those conducting related studies.

(1)	State Investment Bank: 1981 Annual Report (English)	DYB 1982
(2)	High Control Board Report on Devlet Yatirim Bankasi (English): 1980	HCB/DYB 1980
(3)	Preparation and Appraisal of Public Investment Projects submitted to the State Investment Bank. (Barnerias)	UNIDO DP/ID/SER.A/355 1.4.82
(4)	Manual for the Preparation of Industrial Feasibility Studies	UNIDO E 78.II.B.5 1978
(5)	Research and Intelligence in the State Investment Bank. Review & Recommendations (Kastegren)	OECD CT 2922 2.2.81
(6)	Recommendations Regarding Project Management Training at the State Investment Bank, Ankara. (Cullen)	OECD CT A641 3.8.81
(7)	Turkey: State Industrial Enterprise Finance Project: Staff Appraisal Report.	World Bank 3390-TU 20.4.81
(8)	Turkey: Export-Oriented Industries Project: Report & Recommendations	World Bank P-3199-TU 29.1.82
(9)	Turkey: 1982 Almanack	Daily News Ankara 1982

APPENDIX.

THE UNIDO PROJECT APPRAISAL/EVALUATION PACKAGE:

ESTIMATED PRODUCTIVITY IMPROVEMENT IN DYB

ILLUSTRATIVE ANALYSIS

First Stage.

To make an estimate of the potential benefits from computerisation (or any other change in procedures), it is necessary to examine the overall system under review and divide it into its component procedures in sufficient detail for the impact of computerisation on each procedure to be estimated with some degree of confidence. More specifically, it is necessary to have estimates of

(i) the staff time currently expended on a procedure,

(ii) the staff time that would be expended on the same procedure if a computerised system were in place.

The difference between these two is the net saving on staff time due to computerisation. Since the objective is to increase the amount of output that can be produced with existing staff levels, the potential benefits from computerisation are expressed as productivity improvements in the following analysis.

In order to examine the impact of computerisation on the Appraisal and Evaluation procedures then, an estimate must first be made of the amount of staff time spent on these activities with the present procedures. According to the Bank's Annual Report for 1981, some 23 staff were employed by the Appraisal, Evaluation and Training Groups during the year. [Note: if this figure understates the staff resources involved (and there is some evidence to suggest this) then the results which follow should be factored accordingly.] Since each such staff member contributes some 231 person-days per year (365 less weekends and holidays), the total person-days expended was 5313.

These resources were expended on a number of activities: supervision of staff, project Appraisal and Evaluation; project supervision visits and reports; giving training (ie. preparing and presenting training material); receiving training (ie. attending seminars, courses and other activities of a training nature); working on promotional theses; SEE invoice monitoring.

In the absence of any firm data on the distribution of effort between these activities, informal discussions were held with a number of analysts; after some iterative adjustments, the result is shown in figure A1. This suggests that Project Appraisal consumes some 2460 or 46% of the total person-days; Evaluation consumes some 1100 person-days or 21% of the total; together they consume about 3560 person-days per year.
During the same year some 17 project Appraisals and 55 project evaluations were carried out. By simple division, an average appraisal takes some 145 person-days, an evaluation about 20 person-days.

Second Stage.

We now have a rough idea of the person-days consumed by a 'typical' project appraisal, but it is not yet possible to estimate the extent to which use of the UNIDO package might reduce this workload. To do this the appraisal process must be further broken down into a number of distinct stages until it becomes clear which stages would be unaffected by computerisation and, of the remainder ,the extent to which they would be affected.

Discussion with some of those concerned suggests that an appraisal team goes throught the following cycle of activities:

- after the appraisal team has been identified, the technical analysis is carried out. First the technical analyst familiarises himself with the project and **gathers the data** that will be required for the next stage.

- having assembled the data, the analyst carries out the **technical analysis** itself.

- similarly the financial analysts familiarise themselves with the project and **gather the financial** (and economic) **data** they will need.

- with the technical analysis complete, the financial analysts can add their data and complete the **financial and economic analysis** of the proposed project.

- based on the result of the Bank's technical and financial analysis, an **Appraisal Report is drafted** by the analysts.

- after typing, the report is checked and corrected. The final report is then submitted to, and considered by, the Credit Committee and the Committee's recommendation is added for submission to the Bank's Board of Directors.

Again by discussion with some of the analysts concerned, estimates of the way in which the total time of 145 person-days is distributed between these activities were obtained. The net result is shown in figure A2. According to this distribution technical analysis (35 person-days) and financial analysis (45 p-d) consume 62% of the total time.

At this level of detail an estimate of the potential impact of the UNIDO package can more easily be made, as follows:

- Activities 1 and 3, Gathering technical, financial and economic data, are activities that take place as a necessary preliminary to the analyses, whether the analyses are carried out by hand or by computer, and would therefore be unaffected by computer processing.

- The analyses themselves however (Activities 2 and 4) would be markedly affected. Only the initial keying-in of the data, together with any corrections and changes, would fall to the analyst; all of the subsequent calculations and tabulation of the results would be carried out by the computer. It would seem reasonable to expect that the time spent by the analysts on these stages might be reduced by 70%.

- Since the tables of results produced by the computer could probably be used directly in the appraisal report, the analysts would be relieved of the task of preparing these tables in final report form; so assume a 30% reduction in the time spent drafting the report for this reason.

- Activities 6 and 7, report checking, correcting and Credit Committee consideration would be unaffected by the UNIDO package.

By applying these estimated savings to the analyst days in figure A2, the new 'with computer' times and net savings can now be estimated. This is illustrated in figure A3, which shows the present person-days, the estimated percentage savings, the days saved and the 'new' person-days for each of the stages. For example Activity 4, Financial (& Economic) Analysis, is typically estimated to take 45 person-days at present; the 70% saving estimated above would save 31 person-days and reduce the time to 14 person-days. Aggregating these results for all stages leads to the conclusion that the UNIDO package could reduce the person-days required for a typical appraisal from 145 to 83, a saving of 62 person-days or 43% of the total.

Assuming that similar savings could be achieved in the project evaluation cycle, (which is very similar to that of appraisal though considerably shorter -- typically about 20 p-d versus 145 for appraisal) the overall annual savings would be 43% of their aggregate time (3560 p-d/year). This would save some 1530 person-days per year at the assumed staffing levels and project workload.

If these savings could be achieved, then the implication is that with the UNIDO package installed and in use for all appraisals and evaluations, the same number of staff could handle a 75% greater workload than they can using the present manual methods.

The reader is cautioned against attaching unjustified significance to these results, which are based on a concensus of representative opinion rather than actual measurements. Rough analyses of this kind are typically used to make an initial assessment of the possibilities before committing resources to a more detailed and accurate investigation.

Figure A1

APPRAISAL, EVALUATION & TRAINING GROUPS: ESTIMATED DISTRIBUTION OF STAFF TIME

Activity	Estimated person-days	% of Total
Staff Supervision	690	13%
Project Appraisal	2460	46
Project Evaluation	1100	21
Project Supervision	380	7
Giving Training	280	5
Receiving Training	200	4
Promotion Thesis	60	1
SEE Invoice Control	140	3
TOTAL	5310	100%

Table shows estimated person-days spent on each activity during a typical year. This distribution is the 'average' of a number of estimates supplied by analysts involved in these activities.

Based on an assumed complement of 23, approximately the professional staffing level in 1981 (source: DYB Annual Report, 1981; p. 39)

Working days per year per person:

Total days:		365
Less Weekends	104	
Public holidays		
Annual holidays	30	
Other		
Total	134	
Net working days		231

Figure A2.

PROJECT APPRAISAL: ESTIMATED DISTRIBUTION OF STAFF TIME BY ACTIVITY

Activity No.	Description	Person-days
1	Gather Technical Data	15
2	Technical Analysis	35
3	Gather Financial Data	20
4	Financial (& Economic) Analysis	45
5	Prepare Report	25
6	Check/Correct Report	3
7	Add Credit Recommendations	2
	TOTAL	145

Based on:

(1) a typical project appraisal aggregate analyst effort of 145 man-days

(2) distribution obtained from averaging a number of estimates made by analysts involved in this work.

Figure A3

PROJECT APPRAISAL : ESTIMATED SAVINGS WITH UNIDO PACKAGE

		Present System	with UNIDO Package		
	ACTIVITY	Person -days	% saving	Days saved	New person -days
1	Gather Technical Data	15	0	0	15
2	Technical Analysis	35	70	24	11
3	Gather Financial Data	20	0	0	20
4	Financial (& Economic) Analysis	45	70	31	14
5	Prepare Report	25	30	7	18
6	Check/Correct Report	3	0	0	3
7	Add Credit Recommendations	2	0	0	2
	TOTAL	145	-	62	83

Present System person-days from figure A2.

Percentage savings of each stage as discussed in the text.

Days saved = (Present system p-d) x (% saving) / 100

New Person-days = (Present System p-d) - (days saved).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