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Saudi Arabia.

ESTABLISHMENT OF A COMPUTERIZED INDUSTRIAL DATA BANK AT THE MINISTRY OF INDUSTRY AND ELECTRICITY

DP/SAU/81/008

SAUDI ARABIA

Technical Report: Industrial Information System

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

Based on the work of Dr. Mohammed M. Aman,
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United Nations Industrial Development Organization

Vienna

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VAX computers are distributed and serviced locally in the Kingdom through the National Computers Systems Company (NATCOM). The computer is one of the best minicomputers available on the Saudi market today. Its price is very reasonable and even cheaper than other similar mini-computers such as IBM. VAX surpasses IBM in terms of its capabilities and flexibility.

VAX is bilingual (Arabic-Latin) and has an excellent communication system. Applications software packages can be found in both Arabic and English. It can be expanded from its present capacity of two million bytes to five million bytes. The number of terminals can also be increased to 30 terminals. It is also possible to replace VAX/11-730 with a more powerful VAX/11-750 or 780 as the computing demands of the MOIE increase.

Estimated cost of purchasing the VAX/11-730 is 395,000 S/R in addition to 93,000 S/R for annual maintenance. This is a far better alternative than the continuing maintenance of the old DG 350C computer which costs the ministry 200,000 S/R annually for hardware maintenance alone. If a new minicomputer is not purchased by the MOIE, then the present DG 350c should be upgraded. The cost for that will be about 200,000 S/R which includes buying the latest versions of COBOL and DG operating system.

Total cost of required programs and operating systems are estimated at 274,460 S/R for first year and 55,000 S/R for their annual maintenance. The most suitable data base management system is the ORACLE or ULTRA which operate on the VAX minicomputer.

In order to install and operate the VAX system and the required software and operating systems, the MOIE will need to hire a team of experts to perform these tasks. This team will include a systems analyst/designer for a period of 18 man/months, two computer programmers for 12 man/months and a third one for 18 man/months. In addition, two data input operators will be hired for six man/months.

Total cost for these temporary employees is estimated at 492,000 S/R for 18 man/months. The IAA may seek UNIDO's assistance in recruiting an expert in systems analysis and design for 18 man/months.

After the retrospective conversion of industrial licensing information to machine format is completed for all 3,000 licenses, the regular staff from the IAA departments will take over the responsibility of adding new information on

a regular basis. Each department will be responsible for entering, updating and retrieving its own data online. This will require training of at least one staff member and the availablity of at least one terminal in each department.

The core of the MOIEDAB will be the 3000 industrial licenses which the IAA has granted during the past years, in addition to follow-ups and updates to these licenses. More than 50 licenses are approved by the IAA each month, which brings the estimated total to about 600 licenses per year.

The information contained in license applications provide a wealth of material that can help the IAA in monitoring industrial projects in the Kingdom. In addition, foreign capital investment applications provide very valuable information on non-industrial projects (service sector) and foreign capital investment. The other departments which contribute to the wealth of industrial information available in the IAA are: Industrial Cities, Engineering and Projects, Protection and Encouragement.

Together, these departments are responsible for inputting data in the MOIEDAB which this study proposes. Among the information that will be entered and retrieved from the proposed MOIEDAB are: Projects' owners and detailed information about them and their projects; products to be produced, materials, equipment and manpower requirements; detailed information on projects' management, physical and energy requirements, operating expenses and other financial data.

Information on foreign investments will be equally detailed and will provide information on: types of projects, manpower requirements, financial requirements, project status, nationalities of investors, parent organizations, and other related data.

Information on protection and encouragement will include: amounts of local production, quality, prices, marketing, imports, raw materials, export markets, economic indicators and other useful data. Statistical information will be generated at any time and prepared for publication, duplication and distribution.

The resulting computerized industrial data bank at the IAA will have the following file

1. Industrial license

2. Foreign capital investments and non-industrial projects
3. Industrial cities
4. Industrial statistics
5. Protection and encouragement
6. Engineering and industrial projects

The MOIEDAB will contain information on industrial and non-industrial projects at the various stages of development, e.g.

1. Projects in operation/production
2. Projects under implementation/construction
3. Projects not yet implemented

It is estimated that approximately eighteen man/months will be needed to implement the MOIEDAB project from the first stage of selecting a new minicomputer to the last stage of testing and successfully operating the MOIEDAB.

1. Introduction

This is the English translation of my report which was submitted to the Deputy Minister for Industrial Affairs at the Ministry of Industry and Electricity. At the Deputy Minister's request a copy of the report was written in Arabic so that his staff could use it more effectively.

The main objectives of my Mission were as follows:

1. To examine the type of management information/industrial data that may be required by the different departments of the Industrial Affairs Agency (IAA), namely: Foreign Capital Investment Bureau, Licensing Department, Protection and Encouragement Department, Engineering and Projects Department, Planning and Budgeting Department, and Industrial Cities Department, for their effective management of these departments.

2. On the basis of this, to recommend the nature and scope of a computerized central Industrial Data Bank (MOIEDAB) that should be developed in the IAA to be operated by the department of Planning and Budgeting to serve the requirements of the different departments.

3. To indicate the types of software systems that should be developed for the Data General 350C hardware system at the MOIE and for the establishment and operations for the proposed MOIEDAB.

4. In case of any limitations of existing hardware system to effectively operate the above recommended system, to provide guidelines and recommendations for supplementing the present hardware system.

5. To indicate the nature of primary data that are required for the operation for this proposed MOIEDAB and the related management information systems; their sources, and the procedures for their collection.

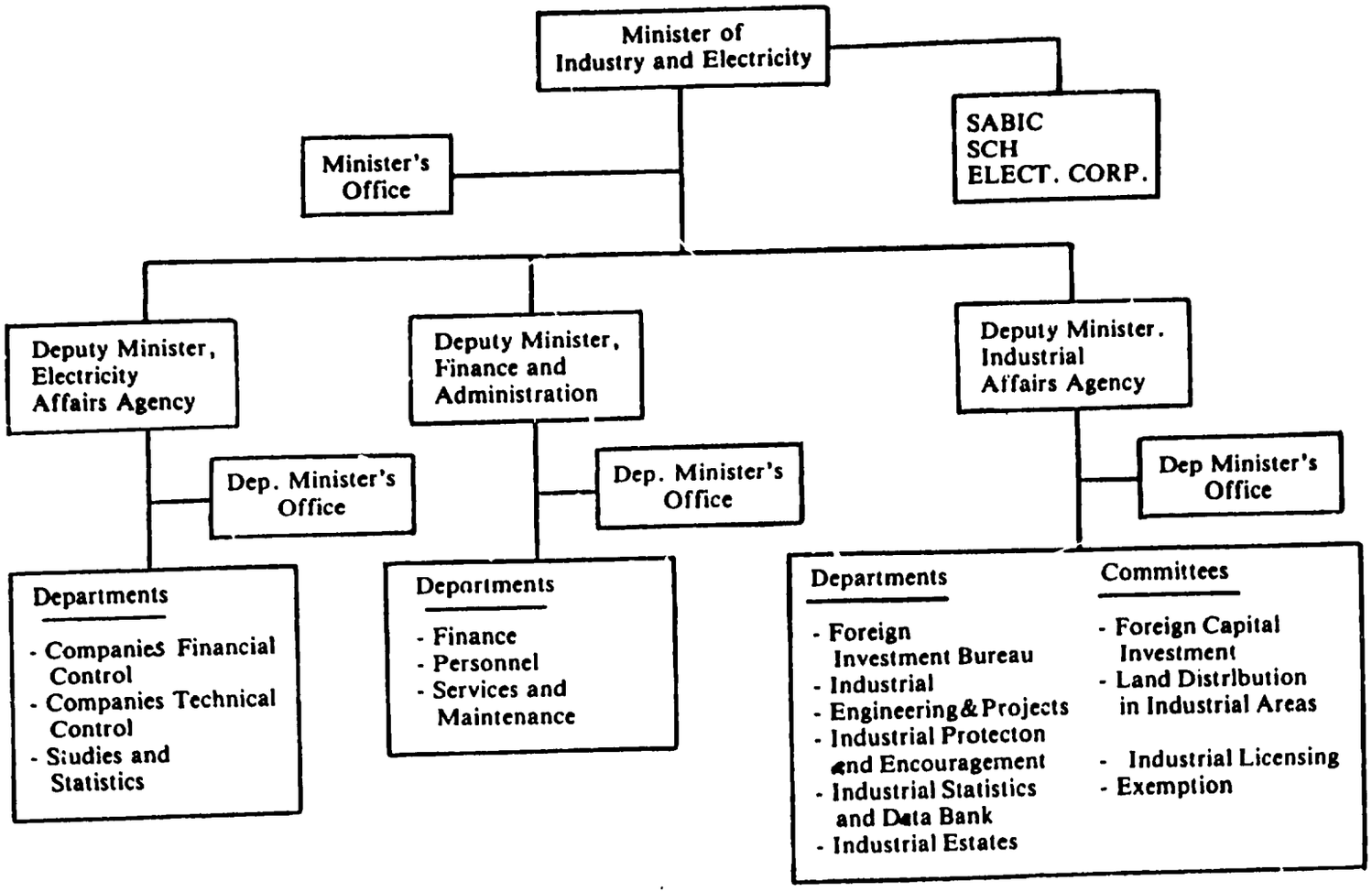
Over a three-week period in Riyadh, I met with officials and administrators in the Industrial Affairs Agency (IAA). During the course of my mission, I met with various administrators in order to gather information on the flow of information in the IAA. I also met with the Deputy Minister for Industrial Affairs twice during my three week stay and gave him a progress report on my work and the preliminary recommendations. I also incorporated recommendations from His Excellency the Deputy Minister and Department heads in this final report.

After defining the goals and objectives, this report begins with the analysis and description of the present system, then proceeds with the presentation of the requirements of the information system which can satisfy the information needs of the Ministry. This is followed by a presentation of a plan for the proposed Industrial Data Bank (MOIEDAB), its subsystems and input requirements. The study then proceeds with a discussion of how to begin with the installation of the MOIEDAB and its operation. Recommendations have been made with regard to hardware requirements, systems output and the requirements for applying the automated system in order to establish an industrial databank which will be responsible for the gathering, analysis and retrieval of industrial information originating from the IAA. The proposed MOIEDAB relies on the latest technologies and concepts which are known in the design of industrial data banks.

In order to get the necessary data, I met with the directors of the various departments in the Industrial Affairs Agency, gathered the various applications and forms used by the various departments, examined the samples of completed license applications, and gathered the information on the departments' requirements for information and the flow of work in these departments. These requirements were translated into system requirements. I also studied the existing hardware in the Computer Center and evaluated the hardware in order to reach a conclusion as to its suitability for the proposed MOIEDAB and to determine whether or not this equipment needed updating or total replacement.

As the following organization chart for the Ministry of Industry and Electricity shows, the Ministry is divided into three major units. They are the Industrial Affairs Agency, the Electricity Affairs Agency, and the Financial and Administrative Affairs Agency. What concerns us here is the Industrial Affairs Agency which is headed by a Deputy Minister. The Agency is divided into five main departments: Industrial Licensing Department, Industrial Cities Departments, Engineering and Projects Department, Protection and Encouragement Department, and Industrial Statistics Department. In addition there is a Foreign Investment Bureau. These departments are highlighted on the following organization chart.

Ministry of Industry and Electricity
Organisation Chart



2. Analysis and Evaluation of the Present System

2.1 The Information System Environment

I was able to conclude from the preliminary studies that in spite of the fact that the IAA has an information center in the Department of Industrial Statistics, and in spite of the fact that the Ministry has tried previously to introduce a computerized system for industrial licenses, it was clear that from the beginning these attempts suffered from technical as well as administrative difficulties, some of which are described below:

a. The poor quality of the system which was designed by CAP in 1979. The system depended on old technology such as punch cards and input operating systems, which aimed primarily at storing data in the computer and printing this data without any attempt to manipulate this data by the user in an online interactive mode. The CAP designed the following systems: Industrial Licensing System, Foreign Investment System, Industrial Statistics System.

b. In addition to the admitted failure of CAP system, information was not provided to the Computer Center in a timely fashion and when provided, the information was incomplete. Furthermore, the death of one of the two employees, who was responsible for the input and revision of licensing data, resulted in the abandonment of the work that was performed by the Information Unit within the Statistics Department. Thus, the system has become antiquated and useless, resulting in the reduction in the amount of work that is performed by the Computer Center and the reliance on manual methods to compile and produce the various statistical bulletins published by the Statistics Department. These printed bulletins are then forwarded to the Computer Center for input into the system without providing reasonable explanation as to why this should be done. Due to the failure of CAP system, the hope of establishing an industrial data bank in the IAA did not materialize. Furthermore, the limited storage capacity of the present computer was also a hindrance.

Almost everyone in the IAA agreed that the system has not been in operation since its inception and therefore, all the work that was done in the design of the CAP system and the design of the input and the actual input of information from the industrial data base was in vain.

The CAP system was an equal failure as far as the Personnel and Financial Affairs Department are concerned. Therefore, an in-house system was introduced in order to meet the needs of the Ministry in these two areas.

In addition to the problem that the IAA faced with regards to the system designed by CAP and the antiquated hardware, the following problems also contributed to the failure of the projected industrial data bank:

a. Lack of current information on industries in the Kingdom.
b. Redundancy of information originating from the industrial licenses and foreign investment committee which contributed to waste of time and effort.
c. Lack of available, correct and current information.
d. Complete reliance on the information available in the IAA records when the license was issued.
e. The users limit their request for information about licenses which have been granted using the license number. Other types of report and information are not asked for as frequently.
f. The present administrative organization which places the information unit within the Industrial Statistics Department has resulted in the isolation of that unit from the rest of the departments in addition to the Computer Center. This has become detrimental to the work of the unit as well as to the various departments which are the main sources for, and prime users of, information about industries in the Kingdom.

The study showed that there are about 3,000 licenses that are available in the IAA, some of which were entered previously using the CAP system. Information from about 2,000 licenses were entered into the CAP system as of November 1983. The completed input forms are kept in the Information Unit in the Industrial Statistics Department. There is also a printout which is

arranged according to the industrial license number and a printout for codes for cities, codes of countries, and the International Standard for Industrial Classification (ISIC). It is estimated that about 50 licenses are filed monthly or roughly 600 licenses per year.

2.2. Computer System Environment

The MIOE has a Data General Computer 350C with a 1023K capacity. The System consists of:

1. Computer Configuration
   DATA General C 350 Eclipse series
   CPU: Internal memory- 1 Megabytes
   Peripheral Devices:
   a. Magnetic tape drives: 1
      9 Tracks, 800/1600 BPI Density

   b. Disk drives: 3 disk drives
      capacity/drive = 190,279,680 Bytes

   c. Printers: 2 line printers
      English printer - 500 lines/min.
      Arabic printer - 300 lines/min.

   d. Console typewriter: 1
   e. Card reader: 1
   f. Keypunching machine: 2

   g. Online terminals: 16
      System software used: AOS

Terminals are distributed as follows:

Location	No. of Terminals
Computer Center	3
CIAME	2
H.E. The Minister	1
H.E. Deputy Minister for IAA	1
H.E. Deputy Minister for Financial and Administrative Affairs	1
Director of Statistics Department	1
Director of Personnel	1
Director of Licensing Department	1
Director of Financial Affairs	1
Director of Industrial Projects	1
Information Center	1
Director of Protection and Encouragement Department	1
Secretary of Foreign Investments	1
TOTAL	16

DG 350C operates in separate Arabic and Latin modes. The system cannot produce texts in Arabic and English together. Therefore, if the present system is retained, modifications must be made so that the system can generate reports in both languages.

From an administrative point of view, the Computer Center is supervised by the Director of the Department of Planning and Budgeting. The Center's staff includes:

Category	Number
Systems Analyst	1
Programmer	1
Computer operator	2
Data Input operator	2

In addition, there are two systems analysts and one computer operator who are on contract from CIAME, a computer consulting firm.

3. Recommended Industrial Information Bank for MOIE (MOIEDAB)

In this section I will identify the following:

3.1 MOIEDAB Requirements
- 3.1.1 Administrative Requirements
- 3.1.2 Staffing Requirements
- 3.1.3 Hardware Requirements
- 3.1.4 Software Requirements
- 3.1.5 Additional Requirements

3.2 Stages of Implementation
- 3.2.1 Coding
- 3.2.2 Data Preparation
- 3.2.3 Structure and update of the Mainfiles

3.3 MOIEDAB Input

- 3.3.1 Industrial Licenses
- 3.3.2 Foreign Capital Investment
- 3.3.3 Industrial Cities
- 3.3.4 Engineering and Industrial Projects
- 3.3.5 Industrial Protection and Encouragement

3.4 MOIEDAB Output:

- 3.4.1 Industrial Licenses
- 3.4.2 Foreign Investment
- 3.4.3 Protection and Encouragement
- 3.4.4 Industrial Statistics
- 3.4.5 Industrial Cities and Engineering Projects
- 3.4.6 Forms of Input

3.1. MOIEDAB Requirements

3.1.1. Administrative Requirements

In spite of the fact that there is an Information Unit in the Statistics Department, this unit is concerned first and foremost with the gathering of the statistical data and publishing it. All of this is done in a manual fashion. The unit is also considered an archives unit concerned mostly with the preservation of retrospective information, rather than current information. This impression has lead other departments to disassociate themselves from this unit and not to involve it in the day to day work of gathering and disseminating current information on industrial licenses, investments, and other related subjects.

Since most departments in the IAA are concerned with the gathering, analysis, storage and retrieval of industrial information originating from the Kingdom, one can safely conclude that each department can be considered a center for the gathering, analysis, storage and retrieval of this type of information and its updating.

If the Industrial Affairs Agency adopts the above method it will be necessary to appoint and train a specialist in each department who will be responsible for adding, manipulating, retrieving and following up on the data from each of the following departments: Industrial Licenses, Foreign Capital Investment, Protection and Encouragement, Engineering and Projects, and Industrial Cities. In this case the Computer Center will take on a different function than is presently known and will be concerned primarily with the maintenance of the system, i.e. its update, modification, and improvement according to the needs and requirements of the different departments in the Agency. The Computer Center also will be responsible for maintaining the equipment, whether it is the mainframe, microcomputers, or the terminals available in the various departments within the MOIE. The Center will also be responsible for the training of the staff in each department so that they can become true information and liaison officers between their departments and the Computer Center.

The advantages of this structure is that it will facilitate supervision and direct follow up from the various departments and it will also ensure that the moral and financial support will be provided in each department. Since these departments are integral parts of the industrial information bank that the IAA hopes to establish, they also will be directly responsible for entering the correct and up-to-date information dealing with their area of specialization. In addition, they will be concerned with the follow up and the production of periodic reports in a timely fashion.

The second organizational alternative will require the establishment of an Information Center (IC), which is not affiliated with any particular department in the IAA, but will be an independent center which serves all the various departments and units of the Ministry. This Center will come directly under the Office of the Deputy Minister for Industrial Affairs. The Center will be responsible for gathering all types of information originating from the various departments as well as the analysis, storage, retrieval and dissemination of this information to any department or outside agency that

requests such information. Such an organization will have the advantage of guaranteeing the independence and autonomy of the IC from all other departments. The proposed IC will be staffed by qualified information specialists and individuals who have expertise in computerized information systems and management. The Center's staff will be responsible for the gathering of primary information which emanates from the Ministry and its affiliated agencies and secondary information which is necessary for decision makers. The latter type of information would require special skills and training in the use of other sources of information and computerized information systems and the access to these information systems and databases. Thus, the IC will be responsible for two types of information: information about industry, and information for industry.

3.1.2. Staffing Requirements

If the industrial agency decided to choose the first alternative, which requires departments to be responsible for gathering and inputting their information in the MOIEDAB, then the following staffing requirements will be needed:

a. The appointment or the designation of a reliable and qualified staff member who will be responsible for the gathering, organizing and inputting of information into the system, and the manipulating and retrieving of this information.

b. The staff member does not need to have expertise in programming or operating computers since the design of the information system as we envision it would not require this expertise from the users of the system.

c. There must be a terminal available on regular basis to the staff member who has been designated by his department to be responsible for inputting data into the MOIEDAB. This staff member should also be

responsible for training other personnel in his department so that they will be able to take over in case he is unable to perform this function. This training also will help in eradicating computer illiteracy from each department in the IAA.

If, on the other hand, the IAA follows the second alternative, which calls for the establishment of an independent information center within the agency affiliated with the Office of the Deputy Minister, then in this case, a head or a director of the proposed Information Center should be appointed along with the experienced staff that will be able to accomplish the tasks of gathering and storing information which will be obtained from the various departments. This staff should also include an information specialist who will be able to assist the staff and administrators in the IAA with their information needs, utilizing commercial as well as non-commercial information resources and systems within and outside the Kingdom.

Whether the IAA adopts the first or the second proposal, the Ministry should hire a systems analyst/designer who should work for a minimum of 18 man/months. In addition there is a need for two programmers, who should work for a minimum of 12 man/months and a third programmer who should work for 18 man/months. These individuals should be given the necessary training on the use of minicomputers, database management and operating systems. Another category of staff would include three data input operators who will be responsible for inputting data from the license applications which are available at the present time in the IAA. These license applications are estimated at about 3,000 licenses. In addition, there are more licenses that are being added on monthly basis at an estimate of about 50 license applications per month.

The following table shows the staffing requirements needed for the industrial information system at the IAA:

Staff Requirements	# of Staff	# of Progs. Req.	Period Req.	Estimated Cost
1. System's Analyst and Designer: Design of the system and follow-up (this includes the input and output design, file design, design of documentation and the database management design). Testing and Implementing the System	1		18 m/mo	8000/m x 18m = 144000 + 75000 housing expense + 10000 travel expense TOTAL = 229000 S/R
2. Programmers: Programming (Design of the Program and the Flow Charts, Coding, Programming testing, operating instructions)	1	10 complex programs	18 m/mo	6000/m x 18 m = 108000 + 18000 housing expense + 10000 travel expense TOTAL = 136000 S/R
	1	50 simple programs	12 m/mo	6000/m x 12m = 72000 + 18000 housing expense + 10000 travel expense TOTAL = 100000
3. Data Entry Operators	2		6 m/mo	3000/m x 6m = 18000 + 9000 housing expense TOTAL = 27000
4. TOTAL	5	60	54 m/mo	492000 S/R

This estimate is based on the assumption that a system analyst and designer will be hired and that two programmers, will be hired on temporary basis. The Systems Analyst will be hired for 18 man/months, for the design testing and follow-up of the system after its implementation and, that one of the two programmers will be appointed for 12 man/months and the second programmer for 18 man/months to assist the Systems Analyst until the completion of the 18 months project. This is the period required for the design of the programs in order to develop a database management system and the preparation of the system for receiving inputs, processing of these inputs and the generations of outputs. The input operators will be appointed after the system has been completely designed, tested and implemented.

This cost estimate is based on the assumption that a systems anaylst/-designer will be hired and that three programmers will be hired on temporary basis. The systems analyst will be hired for 18 man/months, for the design testing and follow up of the system after its implementation and the two programmers will be appointed for 12 and a third for 18 man/months to assist the systems analyst until the completion of the 18 months project. This is the period required for the design of the programs in order to develop a database management system and the preparation of the system for receiving inputs, processing of these inputs and the generations of outputs. The input operators will be appointed after the system has been completely designed, tested and implemented.

A choice could be made between the appointments of these staff members to the IAA on temporary contracts according to the requirements stated above or by contracting with a consulting firm for the completion of the work and guaranteeing its satisfactory performance for a minimum of six months after installation. If the latter option is adopted, the Ministry would not be responsible for any staffing responsibilities and the operation would be strictly a turn-key operation staffed and guaranteed by a commercial consulting firm.

I would also recommend the formation of an MOIEDAB Committee. The major function of this committee would be to facilitate exchange of ideas, investigate problems dealing with the design of the MOIEDAB, recommend solutions to these problems and provide suggestions that would ensure the continuing improvement of the system and to avoid duplication in entering data. The Committee will also contribute to the coordination among the various departments and the Computer Center.

This committee would consist of staff members who are responsible for entering and retrieving data and directly updating it from their departments. In addition, the systems analyst would also serve on that committee since he would play an important role in responding to the recommendations which are made by the users of the MOIEDAB. It is hoped that he will take these recommendations into consideration when developing the system and also in generating reports that will be needed by the directors of the departments and other users.

It may be beneficial to the IAA to contact UNIDO with regard to the selection of an expert in systems analysis and design. To facilitate this task, I have included a job description for a systems analyst, in the hope that the IAA and UNIDO will decide on a selection of a candidate as soon as possible so that he can begin work on the preparation of the IDB and assist the IAA with the selection of the necessary hardware, software and peopleware.

Proposed job description for a systems analyst

Duties

- Design, coding, testing and documentation of on-line system utilizing IDMS;
- Design systems for:
  - Human Resources/Payroll/Accounting applications
  - Manufacturing Operations
  - Purchasing/Inventory
- Oversee installation, maintenance, and tuning of MVS/SP, NCP, CICS, IDMS on a VAX or IBM minicomputer system.
- Strategically plan, recommend and implement system;
- Database design support;
- Consult for office automation and business systems development;
- Consult for online access to industrial information systems such as GOIC, DIALOG, INFOLINE, and others;
- Consult, guide and support mainframe Information Center users;
- Develop and implement an automated system for recording, maintaining, and retrieving information;
- Data verification methods, equipment recommendations, system security, testing and conversion plans;

Qualifications

Computer experience:

- CICS and IDMS Database design;
- Working knowledge of CICS and knowledge of relational database systems, data dictionary, and data administration;

- Experience with business applications and database applications, spreadsheet applications, networking, multiuser systems, UNIX, PC-DOS, and other PC operating systems;
- Computer operations/programming experience;
- Microcomputer hands-on experience (including knowledge of hardware, software and operating system);
- Experience with micro and mainframe computers;
- Experience with TPF operating system;
- Experience in programming and analysis in a large IBM mainframe environment using COBOL, BAL, MACRO CICS;
- Assembler language skills;
- Knowledge of microcomputer higher level language;
- Knowledge of 'C' language;
- COBOL programming, JCL.

Educational Requirements:

- BS or MS degree in Information Science or Computer Science

Practical Work Experience

- Minimum of two years of practical experience in systems analysis and design in a major government or international agency or private enterprise.

3.1.3. Hardware Requirements

After studying the existing hardware configuration in the Computer Center in the MOIE, and after evaluating the existing hardware according to the requirements for the proposed MOIEDAB, I would recommend the following options:

a. Retaining the Present Computer System

The first option is to use the existing computer hardware configuration (Data General 350C) which was described in the beginning of this report.

I have also described how old and obsolete this type of minicomputer is. It is a known fact that Data General has not manufactured this type of computer for the last five years and that this type has been replaced by a new, better and faster type which has a larger storage capacity and includes the latest in computer technology.

If the Ministry decides to retain this old system, it will be necessary to design an information system or a database management system and to program it, right from the beginning, since there are no database management systems available on the market to support the Data General 350C.

Design of an information bank would require extensive amount of labor and financial support which may not produce a program that can satisfy the needs of the IAA. This is in contrast to the purchase of off-the-shelf software packages, which enable one to modify them and design a system that in the final analysis would be a very successful one.

In the event that the agency decides to retain the existing DG350C, the hardware should be upgraded and a new operating system and revised versions of the programs should be acquired. This will cost about 100,000 S/R.

b. Installing a New Computer System

In selecting a new computer, the industrial agency should take into account the following considerations:

1. The computer memory should be capable of reaching a storage capacity of about 3 million bytes.
2. The computer should be suitable to meet present as well as future needs of the IAA.
3. Availablity of off-the-shelf software, which is necessary for operating the computer and the ability of the computer distributor to provide support.

4. The systems software and operating system should be capable of meeting present needs and requirements of the Agency.

5. Availability of local maintenance for the computer and also the software and operating systems. Also, availability of supporting services for those who are working on the machine, especially in the areas of developing software packages that are needed for the operation of the system.

6. Local availability of supporting services such as training for the users of the systems.

Since the present computer serves the entire MIOE, and since any proposed change in the hardware must be approved by the other two agencies in the Ministry, I am recommending the establishment of an Advisory Committee to evaluate proposals for a new minicomputer. It should be noted that the Electricity Corporation has already purchased its own minicomputer and is now in the process of transferring its files from Data General 350C to the new VAX/11-730 computer.

This Committee will be responsible for evaluating proposals on the basis of a gradual evaluation system which begins from zero and ends with five (with zero meaning very bad and five meaning excellent or meeting/exceeding all of the requirements).

In order to expedite matters, I have decided to use the comparison that has been made of the various computer systems which were recommended for the Electricity Corporation. These comparisons are provided in a report dated 13/3/1405 A. H. From the comparisons that I have read, and based on the final decision that was made by the Electricity Corporations, it seems that the VAX/11-730 computer was found to be the best one suited for the needs of the Agency. The VAX/11-730 surpassed all the other minicomputers such as, IBM, ICL, HT, Wang, NCR. The VAX/11-730 is manufactured by Digital Equipment Corporation. This minicomputer was described by the committee as a very good computer using the evaluation scale mentioned above. The Committee also

concluded that the minicomputer is suited for the needs of the Corporation for the present and the expected future.

The VAX/11-730 minicomputer has the following advantages:

1. It is one of the best minicomputers available on the Saudi market today and its price is considered to be very reasonable and even more inexpensive than similar minicomputers such as IBM. It surpasses the IBM minicomputer in terms of capabilities and flexibility.

2. The VAX minicomputer is bilingual in the sense that it can perform computations and functions using Arabic and English. It also has an excellent communication system.

3. Applications software packages can be found in both Arabic and English.

4. The VAX minicomputer is used in many of the corporations, institutions, and universities, within as well as outside the Kingdom, especially in the Gulf Organization for Industrial Consulting (GOIC).

5. VAX minicomputer enjoys the local technical support for the computer as well as for the software programs and these support services can be found locally in Riyadh.

6. It is easy to connect VAX minicomputer with other VAX minicomputers or other types of minicomputers thus, establishing a more powerful computer network as the needs of the MOIE continue to grow.

(Source: Public Electricity Corporation. Committee for the analysis of the quest for proposals that were submitted to the corporation for the purchase of a computer. Technical Report. Riyadh, 13/3/1405AH, 10 pages)

3.1.3.1. Detailed Information on the VAX/11-730

1. The local distributor for VAX/11-730 in the Kingdom is the National Computers Systems Company (NATCOM).

2. It is expandable from two million bytes, which is the present capacity, to five million bytes. This could be accomplished by additional memory type MS730.

3. The number of video display units (VDU) and printers can be increased to 30 terminals and printers.

4. Storage capacity on the magnetic disks can be increased to 1368 million characters.

5. Parallel printers can be used.

6. A magnetic tape drive can be added.

7. Remote terminals can be added by using regular telephone lines or by adding an information networking system to connect the computer with other compatible computers.

8. It is possible to add a second minicomputer such as VAX/11-750, which could operate additional 30 terminals and printers. Thus, it is possible to use the storage devices as well as the printers and the terminals connected to each of the computers.

9. It is possible to replace VAX/11-730 with the more powerful VAX/11-750, whenever the MOIE deems it to be appropriate because of future expansion.

10. It is possible to connect the VAX minicomputer with other VAX computers within as well as outside the Kingdom.

3.1.3.2. Recommended Hardware

1. A minicomputer VAX/11-730 with a core memory of two million bytes and 10 digit display units and line printers, connected via networking system DMF32.

2. Disk drive unit (RAU 80) with a capacity of 121 million characters.

3. Magnetic tape drive unit type TU 80 capable of using standard magnetic tapes of 2400 feet length and capacity of 1600 BPI.

4. A bilingual Arabic/English line printer with a speed of 1600 lines/minutes.

5. Ten bilingual Arabic/English line printers with a speed of 140 characters per second.

6. Graphic plotter (black & white and color) for printing charts, diagrams and other graphics that will be needed by the Statistics Department.

The printers and the monitors should be bilingual and capable of selecting the appropriate characters and shapes, according to the specifications recommended by the Saudi Organization for Measurements and Standards and ASMO. Therefore, we recommend that the agency purchase AL-ARABI terminals. The Al-ARABI terminals is preferred over others because it uses the ASMO code for Arabic characters representation in computerized information interchange. It is known that the price of Al-ARABI will continue to decrease from the current price of 15,000 S/R as the terminal gains wider popularity in the Arab World.

I would recommend that a committee representing the various departments in the Ministry be established in order to study the needs of each department and to make final and official recommendations for hardware and software to H.E. the Deputy Minister. The committee should also be charged with the responsibility of determining the number of terminals and printers that will be needed by the various departments in the Ministry. Also, the committee should come up with a general estimate of the volume of inputs and outputs that are being done on daily and annual basis. This type of information will be useful in determining the capacity of the computer memory and auxilary storage that will be needed for now and the immediate future.

Since the Industrial Affairs Agency does not seem to be making extensive use of its present minicomputer and since the new VAX minicomputer will be more powerful and faster than the existing computer, I do not recommend that the Agency purchase a large number of microcomputers. Perhaps only in some secreterial work where English is used extensively in typing technical reports and statistics could an IBM PXT be purchased and used by the present English typists. An IBM P/C can also be used in operating UNIDO's COMFAR. COMFAR is a program package, designed to be used on a micro-computer. It is an important tool for project analysts and decision makers preparing and evaluating industrial investment projects, following the methodology as described in the UNIDO manual.

3.1.3.3. Estimated Cost of the Minicomputer

The total estimated cost for the new minicomputer will be about 488,000 S/R divided as follows:

	Annual Cost for 1st Year	Annual Cost for 2nd yr. S/R
Essential hardware Configuration:	395,000 S/R	None
Maintenance:	93,000 S/R	93,000
Total Cost	488,000 S/R	93,000 S/R

The above costs include delivery and installation charges.

It should be noted that the Ministry spends about 200,000 S/R annually, just for maintaining the old Data General 350C Minicomputer, which should be discarded as soon as possible.

The Ministry also should take a second look at the budgeted amount for 1985-86 of 430,000 S/R, which has been allocated for the maintenance of the present computer configuration. I believe that the best solution for the Ministry is to discard the Data General 350C computer, which costs the Ministry about half the price of a new minicomputer just for maintenance alone. By refusing to buy a new minicomputer, I believe that the Ministry

would not be saving money either in the short run or in the long run.

3.1.3.4. Site Preparation

The VAX minicomputer system does not require any special preparation for space except the need for an electrical regulator with the power of 13KVA and the need for a cooling system, which can be either central or split-unit. Also the equipment does not need space exceeding 250 square meters which is less than the 350 square meters presently occupied by the DG350.

3.1.3.5. Training

1. Training sessions on the operation of the minicomputer for four days for two people.

2. Training sessions on the use of VMS for four days for five persons.

3. Training sessions on the management of VMS system for four days for four persons.

4. Training sessions on the use of the Database Management System known as ORACLE for four days for five persons, Selected from each of the departments in the IAA.

3.1.4. Software Requirements

Computer operating systems can be divided into two types:

3.1.4.1. The first type is Off-The-Shelf-Software. These are general programs which are used in more than one function or they could be specialized programs used for specific functions.

What concerns us here are the Off-The-Shelf programs such as DBMS. These programs are designed specifically for the establishment of databases within organizations or companies of various sizes and with different operational levels. These programs have a very high capacity for storing and retrieving numeric as well as textual data. They also provide for a direct communication system and interactive applications facility (IAF) with the computer. In addition, they provide for: full documentation, including online help commands, processing data in a wide variety of forms and shapes, and updating this data. The user interaction with the system and simplification of programming procedures for the experienced programmer as well as the novice, variation in applications which range from marketing to financial, accounting, engineering, design, and other administrative functions.

DBMS programs provide for the following optional applications:

1. Information systems concerned with personnel and salary management.
2. Management inventory system.
3. Financial management system.
4. Budget control system.
5. Project controls system.
6. Information and Database Management, Design and Management System.

Most of these bilingual systems are designed by NATCOM.

Cost of the Req.- Progs. for VAX/11-730	Annual Costs for 1st yr. S/R	Annual Costs for 2nd yr. S/R
Systems Programs including multi use Systems	20,000	None
Translators for programming languages COBOL and Fortran	63,000	None
Support Programs	18,460	None
Programs for Database Management System (DBMS) ORACLE System or Ultra System (CINCOM Systems)	90,000 (licenses)	12,000 (Maintenance)
VAX Common Data Dictionary (CDT)	15,000	None
Terminal Data Management Sys. (TDMS)	15,000	None
Basic Operating System	None	None
Installation of Programs	None	None
Annual Programs Maintenance	53,000	53,000
Total Costs for programs	274,460	65,000

3.1.4.2. Second Option: Locally Designed Programs

These are programs that are designed by systems designers and programmers in the agency or corporation. They cost a great deal more than off-the-shelf programs, since designing programs is a labor intensive operation which

requires skillful labor and prerequesite salaries to attract these skilled programmers and systems designers. It is also a time consuming process which takes several months, if not years to develop programs, test and implement them. This is in contrast to the purchase of software programs that can be put to use as soon as they are acquired. Furthermore, they cost less than the originally and locally designed programs.

This method of designing programs in house is useful in cases where old computers are available and the off-the-shelf software for these computers are not available on the market. These programs can also be designed and tailor-made for specific functions that are needed by the agency.

Since the IAA is in need of a new computer program which can use modern operating systems, and since I have already recommended the purchase of the VAX/11-730 minicomputer, I shall limit my description of programs to those which operate on this type of computer.

It is expected that in designing the new database, it will be a relational one which allows for searching all fields. Furthermore, this system should be flexible enough so it can handle information contained in the system from any angle and according to present or future needs.

3.1.5. Additional Requirements

Added to the above are some additional requirements which can enhance the viability of the system. Some of these requirements are:

a. The necessity for having a follow up system in which forms can be defined and responsibilities can be identified.

b. The necessity for effective utilization of information found in other organizations and institutions such as, Al-Dar Al-Saudia, Sunduq Al-Tanmiya Al-Sina'iya (industrial development fund), Maslahat Al-Zakata Wal-Dakhal (Department of Title and Income), Ministry of Finance and Economy, Ministry of Planning, The Chambers of Commerce.

c. The necessity of computerizing the operations of and data input by the various departments in the IAA. This can be accomplished by storing the information as soon as it is received by the various departments and continuously updating this information. This information will then be intergrated in the MOIEDAB and thus, become available to all participants and units in the Ministry.

d. The necessity for coordinating the exchange of information among departments in the IAA to avoid duplication and redundancy.

e. The necessity for obtaining information every six months on factories that are in operation.

f. The necessity for making the information which has been gathered about factories and industrial cities available to interested parties in order to avoid the repetitious survey.

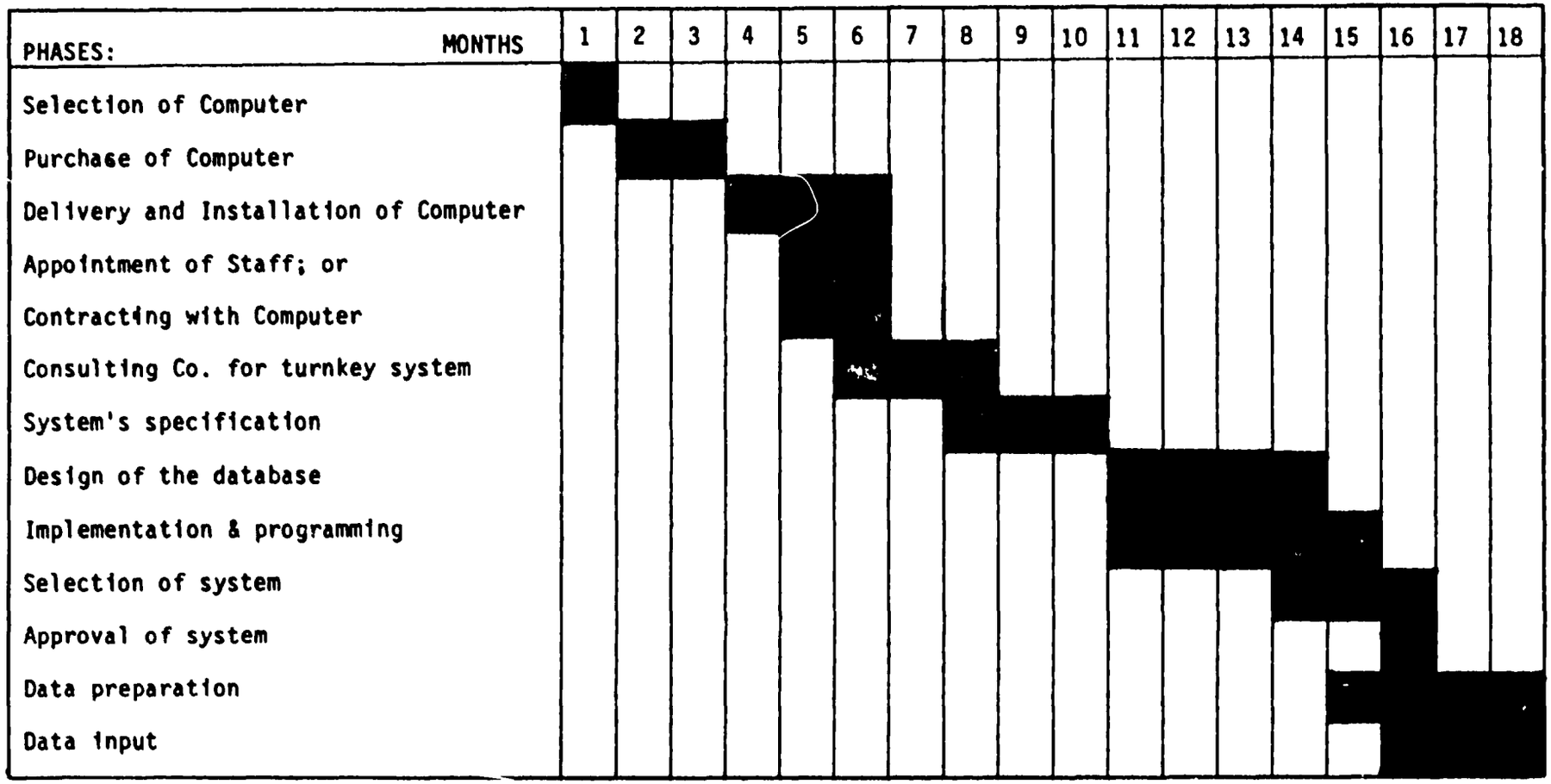
3.2. Stages of Implementation

In addition to the phases for the selection, purchase and installation of the computer and the appointment of staff, I will divide the phases of implementing the industrial data bank into five phases, each of which consists of a group of programs which aim at satisfying the requirements for each phase. I shall describe in greater detail each of these phases.

1 Design and updating of code files.
2. Preparation of data.
3. Preparation and updating of basic files .
4. Report generation.
5. Preparation of files for use in on-line access and user interface.
6 On-line access and user interface.

The following Gantt Chart shows the different phases of implementing the project.

PHASES OF SYSTEM IMPLEMENTATION



3.2.1. Code Files Structure and Updating Phase

In this phase a schedule for generating code files for the following areas will be established: Industrial Licenses, Foreign Capital Investment, Industrial Statistics, Industrial Cities. These codes would be identified, standardized, and used as access points for interacting with information files stored in the computer. The codes will also be used for the modification or cancellation of data, retrieval of information about a particular factory, company, or industrial city. Among the codes that will be stored in the MOIEDAB are:

1. International Standard Industrial Classification (ISIC).
2. Non-industrial classification.
3. Code for foreign countries.
4. Code for regions.
5. Code for cities.
6. Code for raw material.
7 Code for equipment and machinery.
8 Code for types of manpower.

I should emphasize the importance of arabizing and translating the International Standard Industrial Classification (ISIC), in order to facilitate the use of the system by the various staff members in the departments of the IAA, especially those who will play a vital role in inputting data from their departments in the MOIEDAB. Since the ISIC is an internationally standardized code, each code will be unchanged regardless of the language in which the name of the industry is written. I urge the IAA to contract with an expert, preferably from UNIDO, to translate the ISIC and to add to the corresponding Arabic industrial code as needed.

The bilingual ISIC code will be stored in a special file in the MOIEDAB. This file will be retrieved online by the user of the data bank. The file will include an inverted file by code as well as type of the industry and it will refer to both in Arabic as well as English. The code should be numeric in order to facilitate programming input and retrieval of data both in Arabic as well as English.

The following is an example of some of the codes that are recommended for use in the database MOIEDAB:

Examples of Codes for Saudi Industries

Name of Product or Industry	Code
Factory for Mfg. Leather Bags	35600014
Saudi Bahrain Cement Factory	36921252
Saudi Cables	38390001
Saudi Cement Factory	36920254
Saudi Factory for Mfg. cold drinks	31340003
Saudi Gas Company	35111004
Saudi Co. for Iron and Steel	37101003
Saudi Co. for Plastic Mfg.	35600022
Saudi Co. for Mfg. Plastic	35600006
Saudi Co. for Steel	37101508
Saudi & Kuwaiti Co. for Cement	36921500
Steel Products	37102506
Yamama for Cement	36922003
Yunbu' for Cement	36922250
Saudi Co. for Fertilizers	35110121
SABIC/Shell	35110501
SABIC project/Mobil	35110261
SABIC project/Exxon Petro Chemicals	35110253

Examples of Product Code

Product Name	Code
Fuel Oil	3324003
Gasoline	3321006
High Density Polethylene	5812089
Husk (Wheat)	5995202
Hydraulic Acid	5133116
Hydrogen Sulphide	5149216
Ice Cream	0990903
Iron & Steel Products	6725109
Kerosene	3322014
Lime	6611008
Liquid Natural Gas (LNG)	3411007
Liquified Petroleum Gas (LPG)	3411016
Magnaseum Compounds	5133919
Melamine	5811099
Mercury	5132509
Methane	3310213
Methanol (Alcohol)	5122100
Milk	0221012
Nylon	5820016
Oxygen	5131551

Examples of Codes for Saudi Cities

City	Code
al-Qusaim	1000
al-Riyadh	1001
al-Kharj	1004
al-Zulqa	1006
al-Mujamma'a	1007
Shaqra	1008
al-Duwahmi	1009
'Ufaif	1010
al-Aflaj	1011
al-Sulail	1015
Thadiq	1062
al-Sadd	1063
al-Dar'iya	1100
al-Hayer	1101
wadi al-Dawasir	1102
al-Quwai'iya	1104
Harimla'	1105
al-Khamsin	1108
al-Ta'if	2020
al-Dammam	4026
al-Hufuf	4028

Examples of Codes for Countries and Nationalities

Nationality	Code
France	001
Belgium	002
Holland	003
West Germany	004
Italy	005
Great Britain	006
Ireland	007
Denmark	008
Spain	042
Yugoslavia	048
Greece	050
Turkey	052
Soviet Union	056
East Germany	058
Czechoslovakia	062
Almaghreb (Morocco)	204
Algeria	208
Tunisia	212
Libya	216
Egypt	220
The Sudan	224

Examples of Codes for Industrial Classification based on ISIC

Industry	ISIC
Animal production	111000
Sheep breeding	111210
Chicken breeding	111221
Poultry hatching	111230
Agricultural and animal services	112000
Hunting	113000
Forestry	121000
Lumber	122000
Fishing	130000
Coal mines	210000
Petroleum extraction and natural gas	220000
Petroleum extraction	220001
Natural gas extraction	220010
Iron raw material	230101
Copper	230201
Frozen Foods	311125
Meat packaging	311128
Dry milk	311204
Bread manufacturing	311704
Soda manufacturing	313000

3.2.2 Data Preparation

The accuracy of the data and the effectiveness of the system depends to a large extent on what happens during the preparation of data. If preparation of data was not done properly it will be extremely difficult to find an information system that can achieve its stated goals and objectives.

The process of preparing data can be divided into the following:

a. Gathering of data and direct input of this data into the computer through an online interactive mode. I have discovered that most of the data that originates from the departments, particularly departments of licensing and foreign capital investments, is incomplete and in desperate need of revision. Furthermore, the data is prepared after a long period of time has elapsed. Therefore, I recommend that the data should be revised before being input into the system and should be added as soon as possible and through an online interactive mode.

b. Editing and updating information must be done online.

c. Information should be stored in the computerized data bank.

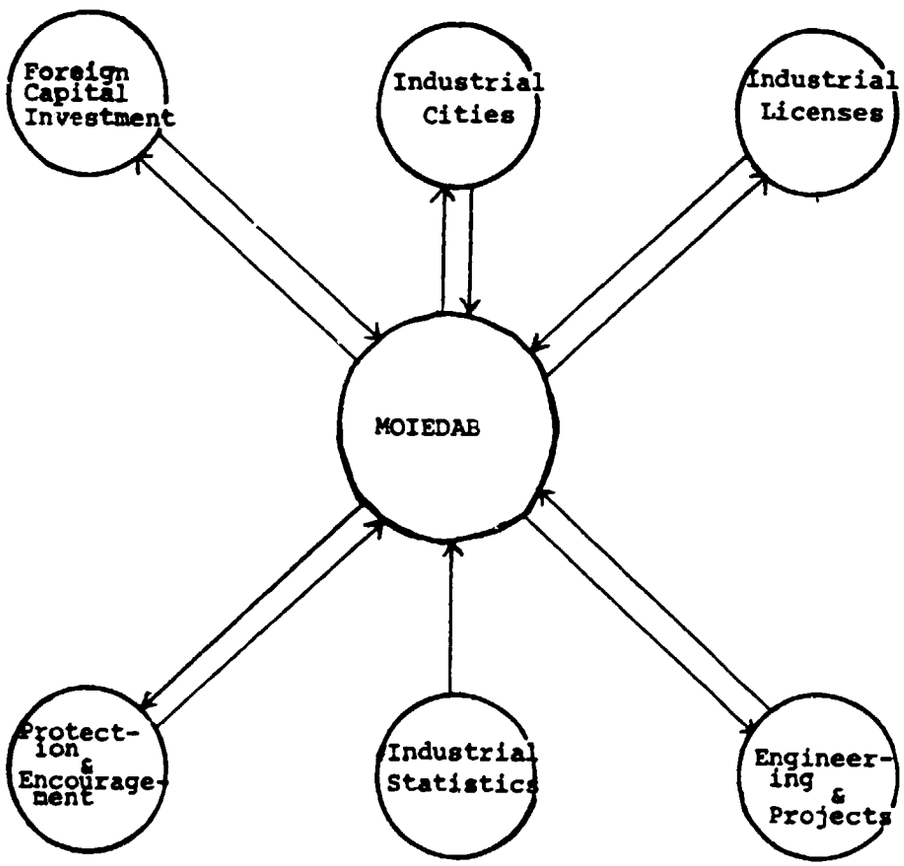
d. All departments should input their information as well as edit it and update it by using terminals that are located in these departments. Some auxiliary files or subfiles may include some specific information that is not used as frequently as the main file, such as: industry specifications, pricing of comodities, local pricing and international pricing of comodities.

e. The departments should identify units and particular staff members who will input and output data from the MOIEDAB.

3.2.3. Structure and Update of the Mainfiles

In this stage, the essential information is gathered and subfiles should be generated and updated on regular basis. These files will later be integrated with the master file so that periodic reports can be generated in a variety of forms printed or otherwise, and they can also be retrieved from the MOIEDAB.

The following illustration shows the role of the various departments in inputting and manupulating data (editing, revision and addition) referred to by (I) and outputing (O) data whether online or in a printed form. The directional arrows $\rightleftarrows$ refer to Input and/or Output functions.



3.3. MOIEDAB Input

The IAA depends in its daily work on information which is generated from its various departments in order to achieve the objectives of the MOIE which are:

1. To coordinate and administer the industrial development policies and programs relating to the private sector in the Kingdom.

2. To create the necessary framework for development, and to protect and encourage private sector domestic industries, so as to ensure the achievement of industrial targets and development programs in the National Development Plans.

3. To administer the Foreign Capital Investment Law (FCIL) and to license all foreign investments in the Kingdom.

4. To evaluate license applications, issue licenses and to follow-up on licensed industrial projects, and to administer the incentive schemes.

5. To plan, develop and operate industrial cities with the necessary infrastructure and utilities.

In order to achieve these objectives the agency has been divided into the following specialized departments:

1. Industrial Licensing Departments.
2. Foreign Capital Investment Bureau.
3. Industrial Protection and Encouragement Department.
4. Industrial Statistics Department.
5. Engineering and Projects Department.
6. Industrial Cities Department.

Each department plays a very vital role in the generation of information about an industrial or non-industrial project, foreign investment in a given project, establishment of an industrial city, granting of exemptions, or the gathering of statistics and information on the various industrial projects in the Kingdom.

As I stated before, the IAA is an information gathering agency. It collects and organizes information and is responsible for the dissemination of information on industry and industrial projects in the Kingdom. Therefore, what applies to other agencies and organizations which deal with information applies equally to the IAA and the MOIE. For these and similar organizations, it is imperative that the correct, accurate and current information be obtained and gathered and added into the system as soon as it is received. In other words the IAA must consume information in order to produce information which is essential for national development and industrial planning.

3.3.1. Industrial Licenses

The Industrial Licensing Department depends on information that comes to it in the form of completed applications for industrial licenses. These applications are usually accompanied by a detailed feasibility study on the project which contains information on the viability of the project and economic as well as financial data, manpower requirements, productivity and so on.

After the project is evaluated and approved the decisions for issuing the licenses are recorded. The follow-up on the project must be done within six months from the date the industrial license was issued. All various stages of development of the project during its implementation should be recorded, whether the information is obtained from the factory or through field visits to the project, regardless whether the project is under implementation or has already been implemented.

The Industrial Licensing System depends on the license applications and the follow-up, which is conducted by the follow-up unit within the Industrial Licensing Department. This information constitutes the systems input for the Industrial Licensing. Therefore, we can assume that the Industrial Licensing System is a very important informtion system which depends on the input/output and processing of data that has been received in the Industrial Licensing Department, and the issuance of reports and follow-ups which constitute an important component of the information system in the IAA.

3.3.1.1. Components of the Industrial Licensing System:

1. A main file with all the completed license applications.
2. License details.
3. Project owners and their capital.
4. Similar projects licensed by the ministry.
5. Amount of material imported during the past three years.
6. Products to be produced.
7. Materials needed in production.
8. Machinery and equipment needed in the project.
9. Manpower requirements.
10. Details of project management.
11. Plans for training Saudi employees.
12. Equipment for environmental protection.
13. Requirements for land and buildings.
14. Requirements for electricity and water supply.
15. Total capital required for the project.
16. Project financing.
17. Annual operating expenses.
18. Project profitability.

The license details will include information such as the license number, company name, both in Arabic and Latin characters, the region where the company is located, and the city and town, the license date, the type of investment, and the project status whether implemented or under implementation or not yet implemented, ISIC classification code and the Statutory entity.

3.3.2. Foreign Capital Investment

The Foreign Capital Investment Bureau prepares a license application form for Foreign Capital Investment and specifies what data and documents are to be attached to the application. This form, as well as any necessary amendments are to be approved by the Foreign Capital Investment Committee and ratified by the Minister of Industry and Electricity. The Foreign Capital Investment Bureau maintains a special register, in which license applications for foreign capital investments are recorded immediately after they are submitted. The Bureau also establishes an individual file for each application an all matters related to that application. Each file is given an independent number. One can safely conclude that the application for Foreign Capital Investment constitutes a valuable input in the Industrial Information System at the IAA.

3.3.2.1. Components of the Input for Foreign Capital Investment

The following components constitute the Foreign Capital Investment:

1. License number
2. Record type
3. License details:
    - Type of project licenses applied for
    - Project category
    - Place of application
    - Date of application
    - Date of approval of license
4. Technical and Administrative staff (outside the Kingdom):
    - Type of staff
    - Technical
    - Administrative
5. Job Title
6. Number of positions

7. Investors machinery and equipment (inside the Kingdom):

   Machine name and model

   Yr. of Mfg.

   Quantity

   Value

   Remarks

8. Project currently being implemented:

   Project name

   Value in S/R (million)

   Date project began

   Date of completion

   Affiliation

   Remarks

9. Total Finance for the Project

   Fixed Capital:

   Value of machinery and equipment

   Value of vehicles

   Value of furniture

   Other expenses

   Total fixed capital

10. Total Finance for the Project

    Working Capital:

    Building rental for one year

    Wages, salaries for three months

    Cost of fuel and electric power for three months

    Cost of maintenance for three months

11. Distribution of project's capital

12. Partners Name:
    Nationally
    Permanent Address
    Partners Capital Share (NSR)
        Cash
        Physical
        Total
    Percentage of total capital

13. Partner's other activities:
        Name of firm he participates in
        Activities of firm
        Address of firm

14. Project Status:
        Project's proposed name
        Project's headquarters
        Statutory entity (1-5)

15. Investor's Personnel Details:
        Name
        Nationality
        Passport number, date of issue
        Permanent address
        Telephone number
        Role of investor in the project
        Saudi partner's address

3.3.3. Industrial Cities

This department receives applications from investors requesting land for the establishment of industrial cities. These applications contain information that shows the relationship of the project to the needs of the Kingdom. The size of the requested land project specification charts,

diagrams for the proposed factory and other important information. This information is constantly being updated as soon as follow-up report from the directors of these industrial cities are received at the Industrial Cities Departments.

3.3.4. Engineering and Industrial Projects

There is a great deal of similarity between the type of information which is added into the Industrial Cities Information system and the Engineering and Projects Information System. This is in addition to other types of inputs such as, lands for factories, steps taken by the owners of these projects to ensure building safety, and environment protection.

Requests for exemption for equipment and raw material.

Technical problems that these factories may face in the future.

3.3.5. Industrial Protection and Encouragement

The information system input can be summarized as follows:

Information on local production, its quality, prices, and how efficient the price is to meet the local demand.

Information on the size of the market of a special product.

Information on types and size of imports and special products or industry.

Information on the types of industries that can be allowed into the Kingdom.

Information on the availability of raw material and other needed equipment for the production of a special industry.

Information on export markets.

Information on markets available for the Gulf Cooperation Council.

Other special indicators such as growth ratio or growth volume.

Economic indicators based on the five-year plan.

3.4. MOIEDAB Output

The importance and value of an information system depends to a large extent on the quality and accuracy as well as up-to-dateness of the information being entered into the system and also on the ability of the computerized system to manipulate and process these inputs according to the latest techniques known in the field of database management systems.

This system should also be capable of producing regular reports according to the needs and requirements of the various departments. According to what we described previously in the section on system's inputs and outputs and according to my study of user requirements, the information system and subsystems requirements can be described as follows:

3.4.1. Industrial Licenses

Information on industrial licenses which can be retrieved by the industrial license number or by the ISIC number.

Information on additions and modifications to the essential information contained in the license and information on the status of the factory (in operation, under implementation, or not yet operating).

Information on local industries.

Information on factories which have foreign investments (addresses, parent organization, percentage of capital, nationality of the partners, and other pertinent data).

Information on capacity and kind of product produced by the factory.

Information on industrial licenses issued within a specific date or period and in specific industry.

Information on investments in specific industries.

Information on production capacity in each type of industry.

Information on invested capital in each type of industry and each city in the Kingdom.

Information on investments by foreign countries in each industrial sector in the Kingdom and the percentage of these investments according to nationalities and countries.

Information on the manpower required for planned industries and industries that are under implementation and development of manpower in the licensed factories according to type of manpower in each of the industrial activity.

Information on the percentage of foreign capital in industrial and non-industrial sectors.

Information on the distribution of licensed factories according to industrial activities and non-industrial activities.

Information on the distribution of industrial or non-industrial investments in various regions of the Kingdom.

Generation of follow-up letters and notices in a regular and automatic fashion.

Generation of various statistics according to the topics mentioned above in a regular and automatic fashion, examples: total number of factories which have an operating capital of less than 20 million S/R located in the southern region and that has foreign capital investment.

Generation of a directory of licenses containing detailed information on each license which has been granted by the Ministry.

3.4.2. Foreign Capital Investment

Information on licenses issued for foreign capital investments (similar to the Industrial License System).

Information on industries that have foreign investments and non-industrial projects including addresses, capital, parent organization, nationality of partners and share of partners, and similar data.

Information on investments of foreign countries in each industrial sector in the Kingdom and the percentages of these investments according to countries.

Information on investments of foreign countries in each industrial project in the Kingdom and the percentages of these investments according to the countries.

Information on nationalities and the percentage of their capitals in the industrial and non-industrial sectors.

Statistical data and mathematical tabulations for variety of statistical reports.

3.4.3. Protection and Encouragement

a. Information on local production (size of the market, similar imports, quality of product, etc.). This depends on the information obtained from imports, customs, and other information files maintained by the factory which enjoys exemptions.

b. Annual statistics on financial assistance given to industrial projects and its effect on local industries.

c. Annual statistics on exempted production requirements.

d. Information on products that have been given custom and duty exemption and the factories which enjoy this kind of protection.

e. Listing of products that enjoy priorities in government purchasing, including information on names and addresses of these factories.

3.4.4. Industrial Statistics

The basic function of the Industrial Statistics Department is the manipulation of information and data which has been stored by other departments and the retrieval of this information and data for publication and other purposes.

Information on each individual factory or industrial project which received a license number, the date of this license and other related information.

Information on each industry similar to the information retrieved from the license and foreign investments system, such as: name of the factory or industrial project, address, industrial activity, annual production capacity according to the license granted, date, capital, and total capital, manpower, numbers of employees, types of employment, percentage of foreign capital, and nationality of the foreign partner.

Updates and follow-ups on each industrial factory or establishment which has been licensed and received approval from the Ministry for modification.

Statistical forecast. Statistical data in charts, tables, diagrams, etc. for each licensed industry, or project.

3.4.5. Industrial Cities and Engineering Projects

Information and data on each industry in the Kingdom, whether licensed or not, and the requirements for maintaining confidentiality of this information by requiring the user to use an authorized password, due to the highly confidential nature of this information in terms of national industrial planning.

Engineering data: such as size of the land, date of its acquisition, water consumption, electricity consumption, effect on environment, reference to engineering, drawings and diagrams which have been approved by the Ministry.

According to my estimates, the number of programs needed to implement this system can reach about 60 programs including those required for operating and displaying programs and data.

3.4.6. Forms of Input

The industrial information database should enable users as well as technical staff in the Ministry to obtain information from the previously described files according to any of the categories that have been specified in this report or categories which may be required by users. These categories should be combined together in a relational format similar to what is being used in other modern information banks including the use of boolean operators which will connect and combine the required data from various fields and exclude data and information which are not needed.

This method cannot be implemented until all the files can be related together in a relational logic, utilizing codes for classification of industries, factories, regions, industrial cities and other industrial projects in the Kingdom. All of this information should be retrieved online in order to facilitate its use by the searcher or by the end user and enable him to refer to other documents that contain detailed information.

I would recommend that the system utilize the minimum number of screens for inputting data and should avoid the duplication and redundancy as much as possible between one system and another so that the Agency will have a complete and intergrated information system supported by the appropriate subsystems.

Types of screens used in the industrial information system:

a. Input screen
b. Screens concerned with the various codes
c. Operating screens
   c.1 Program operation
   c.2 Information and Modification of main files
d. Screens for operating printing programs
e. Systems menu and user assistance programs

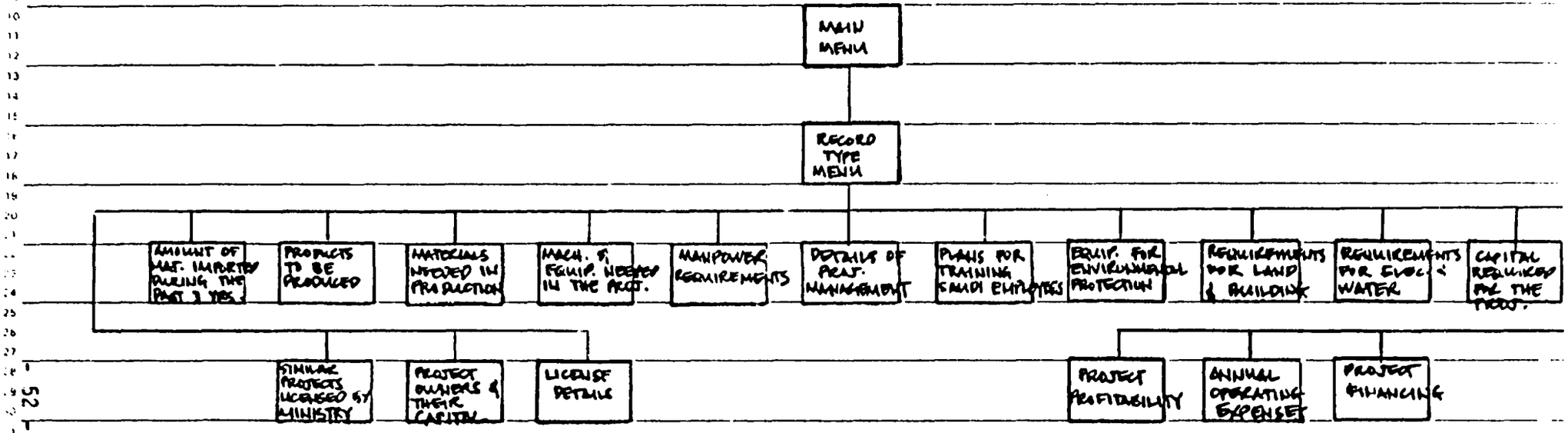
These programs should enable the user to operate the system and retrieve information online by using the CRT or VDU's in an online interactive mode. For example, if an operator wishes to retrieve data from the system, he must follow certain steps which will result in the display, on the screen, of information describing the MOIEDAB system and its subsystems, such as those dealing with industrial licensing, foreign capital investments, industrial cities, and engineering projects. The user presses the return key and the system responds by asking the user for his password. The user enters his password which does not appear on the screen and it enables him to enter the system. The user then presses the return key. If he has entered the wrong password, the following message will appear on the screen: "unauthorized

password." The statement "enter your password" will appear once more. The user then enters the correct password. When the password is accepted by the system, the next message will ask the user to enter his user number. The user then is required to enter his user number, which provides the system's manager with a control system with which to monitor the use of the system: for example, the amount of time and the type of information that has been added to or retrieved by a given user. After the user number is entered, a message will appear on the screen to indicate that the operator is now online with the MOIEDAB. The system then asks the user to identify the file number which he wishes to access. After the user selects the appropriate file, he then presses the return key, which will prompt the system to display some useful information, help commands, and give information on the contents of the files such as frequency of update, last time the files were updated and other relevant information which the administration decides to add to the system on regular basis. The user then presses the return key which prompts the system to display its menu which contains numbers for the various functions and operations. Appendix-I provides examples of illustrative screens which show the kind of commands and functions that the user will be able to see displayed on the screen in order to facilitate the user's interaction with the system in what is known as user friendly and menu-drivern system.

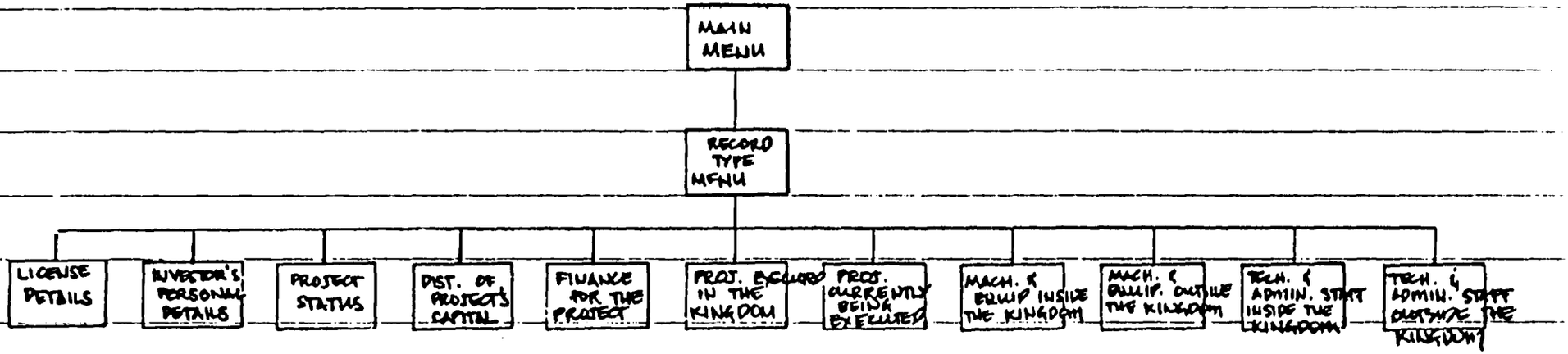
4. System's Charts

The following two charts for the industrial license system and the foreign investment system are provided only as examples of what the system's charts will be like, and what is expected in the second stage of implementation of the project. In the second stage, charts will be designed for the system based on the expertise of the system analyst/designer and computer programmers in order to accomodate the system's requirements which I have described in this report.

INDUSTRIAL LICENSE SCREEN HIERARCHY



FOREIGN CAPITAL INVESTMENT SCREEN HIERARCHY



5. Samples of Input Screens

The following pages are examples of input screens that will be utilized in the design of the MOIEDAB.

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المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

LICENSING SYSTEM

FOREIGN CAPITAL INVESTMENT

MAIN MENU

1 RECORD ADDITION

2 RECORD DELETION

3 DATA CHANGE

4 VIEW A RECORD

5 FILE EDITING

6 FILE PRINTING

PLEASE ENTER SELECTION NO. =

F1 - EXIT F2 - HELP

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Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

REPORT OPERATION ______ PAGE ___ OF ___
DATE ______
VERSION ______ PREPARED BY ______

FOREIGN CAPITAL INVESTMENT
RECORD ADDITION

LICENSE NO.:

RECORD TYPE MENU

1 LICENCE DETAILS
2 INVESTOR'S PERSONAL DETAILS
3 PROJECT STATUS
4 DISTRIBUTION OF PROJECT'S CAPITAL
5 TOTAL FINANCE FOR THE PROJECT
6 PROJECTS EXECUTED IN THE KINGDOM DURING THE LAST 8 YRS
7 PROJECTS CURRENTLY BEING EXECUTED
8 MACHINERY & EQUIPMENT (OUTSIDE THE KINGDOM)
09 MACHINERY & EQUIPMENT (INSIDE THE KINGDOM)
10 TECHNICAL & ADM. STAFF (OUTSIDE THE KINGDOM)
11 TECHNICAL & ADM. STAFF (INSIDE THE KINGDOM)

PLEASE ENTER RECORD TYPE NO. =

F1 TO GO TO MAIN MENU

ESC TO EXIT

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

```
1 - 10    11 - 20    21 - 30    31 - 40    41 - 50    51 - 60    61 - 70    71 - 80
01                    FOREIGN CAPITAL INVESTMENT
02                    RECORD ADDITION
03
04  LICENSE NO.:
05  RECORD TYPE : &
06
07  LICENSE DETAILS
08
09      TYPE OF PROJECT LICENSE IS APPLIED FOR : _
10
11      PROJECT CATEGORY (1-6) : _
12
13      PLACE OF APPLICATION
14          CITY OF : XXXXXXXXXXXXXXX
15
16      DATE OF APPLICATION : mm/dd/YY
17                            XX/XX/XX
18      DATE OF APPROVAL OF LICENSE : mm/dd/YY
19                                    XX/XX/XX
20
```

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____
PROGRAMMER _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

```
                    FOREIGN CAPITAL INVESTMENT

                         H E L P   M E N U

                 1. OPERATING THE FOREIGN CAPITAL INVESTMENT
                 2. CODES USED
                 3. CONTROL KEYS NEED
                 4. BACKING UP PROCEDURES

                 ENTER SELECTION NO. F

F1 - TO EXIT                          F2 - TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

```
1 - 10    11 - 20    21 - 30    31 - 40    41 - 50    51 - 60    61 - 70    71 - 80
01                    FOREIGN CAPITAL INVESTMENT
02                    RECORD DELETION
03
04  LICENSE NO. :
05  RECORD TYPE : 1
06
07  LICENSE DETAILS
08
09      TYPE OF PROJECT LICENSE IS APPLIED FOR : X
10
11      PROJECT CATEGORY (1-6) : X
12
13      PLACE OF APPLICATION
14          CITY OF : XXXXXXXXXX
15
16      DATE OF APPLICATION : XXX XX XX H
17
18      DATE OF APPROVAL OF LICENSE : XXX XX XX H
19
20          IS THIS THE RECORD YOU WANT TO DELETE (Y OR N)? _
21              RESULT : "RECORD DELETED"
22
23
24  F1 TO DELETE OTHER RECORD          ESC TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE ___ of ___
RECEIPT NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

01 FOREIGN CAPITAL INVESTMENT
02 DATA CHANGE
03
04 LICENSE NO. :
05 RECORD TYPE : 1
06
07 LICENSE DETAILS
08
09 TYPE OF PROJECT LICENSE IS APPLIED FOR : X
10
11 PROJECT CATEGORY (1-6) : X
12
13 PLACE OF APPLICATION
14 CITY OF : XXXXXXXXXXXXXXX
15
16 DATE OF APPLICATION : XXX XX/XX
17
18 DATE OF APPROVAL OF LICENSE : XXX XX/XX
19
20
21
22

F1 TO CHANGE A NEW RECORD F2 TO CHANGE OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM ______ REPORT OPERATION ______ PAGE ___ of ___
PROGRAM NAME ______ DATE ______
MODULE ______ VERSION ______ PREPARED BY ______

FOREIGN CAPITAL INVESTMENT
VIEW A RECORD

LICENSE NO. :
RECORD TYPE : 1

LICENSE DETAILS

TYPE OF PROJECT LICENSE IS APPLIED FOR : X

PROJECT CATEGORY (1-6) : X

PLACE OF APPLICATION
CITY OF : XXXXXXXXXX

DATE OF APPLICATION : XXX XX XX

DATE OF APPROVAL OF LICENSE : XXX XX XX

F1 TO VIEW A NEW RECORD F2 TO VIEW OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT/OPERATION: _____ PAGE ___ of ___
SUBSYSTEM: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01 FOREIGN CAPITAL INVESTMENT
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 2
06
07 INVESTOR'S PERSONAL DETAILS
08
09 NAME :
10 NATIONALITY :
11 PASSPORT NO. : DATE OF ISSUE : mm/dd/YY XX/XX/XX
12 PERMANENT ADDRESS : _____
13 _____
14 _____
15 TELEPHONE NO. : XXX-XXXX
16
17 ROLE OF INVESTOR IN THE PROJECT :
18
SAUDI PARTNER'S ADDRESS
BOX NO. : P.O. BOX ____ CITY/TOWN : _____
POSTAL CODE : _____ COUNTRY : _____

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ OF ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0
01		FOREIGN CAPITAL INVESTMENT					
02		RECORD ADDITION					
03							
04 LICENSE NO. :							
05 RECORD TYPE : 3							
06							
07 PROJECT STATUS							
08							
09 PROJECTS PROPOSED NAME :							
10							
11 PROJECT'S HEADQUARTERS :							
12							
13 STATUTORY ENTITY (1-5) : X							
14							
15							
16							
17							
18							
19							
20							
21							
22							

F1 TO ENTER NEW RECORD . . . F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

REPORT OPERATION _____ PAGE ___ of ___

DATE _____

VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

FOREIGN CAPITAL INVESTMENT

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 4

DISTRIBUTION OF PROJECTS CAPITAL

PARTNER'S NAME :

NATIONALITY :

PERMANENT ADDRESS :

PARTNER'S CAPITAL SHARE (IN SR)

CASH : # PHYSICAL : # TOTAL : #

PERCENTAGE OF TOTAL CAPITAL : %

PARTNER'S OTHER ACTIVITIES

NAME OF FIRM HE PARTICIPATES IN :

ACTIVITIES OF FIRM :

ADDRESS OF FIRM :

OTHER ACTIVITIES PARTNER IS ENGAGED IN (Y OR N)? _

F3 TO ENTER OTHER PARTNERS
F2 TO ENTER OTHER RECORD TYPES
F1 TO ENTER NEW RECORD
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

FOREIGN CAPITAL INVESTMENT

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 6

TOTAL FINANCE FOR THE PROJECT

FIXED CAPITAL

VALUE OF MACHINERY & EQUIP. : #

VALUE OF VEHICLES : #

VALUE OF FURNITURES : #

OTHER EXPENSES : #

TOTAL FIXED CAPITAL : #

WORKING CAPITAL

BUILDING RENTAL FOR ONE YEAR : #

WAGES, SALARIES FOR 3 MONTHS : #

COST OF FUEL & ELECTRIC POWER FOR 3 MONTHS : #

COST OF MAINTENANCE FOR 3 MONTHS : #

TOTAL FINANCE FOR THE PROJECT : #

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM ____ REPORT OPERATION ____ PAGE ___ of ___
PROGRAM NAME ____ DATE ____
MODULE ____ VERSION ____ PREPARED BY ____

FOREIGN CAPITAL INVESTMENT
RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 6

PROJECTS EXECUTED IN THE KINGDOM FOR THE LAST 3 YRS.

PROJECT NAME :

VALUE IN SR (MILLION) : #

DATE STARTED : XX/XX/XX (mm dd yy)

DATE COMPLETED : XX/XX/XX (mm dd yy)

BELONGING TO :

REMARKS :

ANY OTHER PROJECTS (Y OR N)? _

F1 TO ENTER NEW RECORD   ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ OF ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

01 FOREIGN CAPITAL INVESTMENT
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 7
06
07 PROJECTS CURRENTLY BEING EXECUTED
08
09 PROJECT NAME :
10
11 VALUE IN SR (MILLION) : $
12
13 DATE STARTED : XX/XX/XX (mm/dd/YY)
14
15 DATE OF COMPLETION : XX/XX/XX (mm/dd/YY)
16
17 BELONGING TO :
18
19 REMARKS :
20
ANY OTHER PROJECT (Y OR N)? _

F1 TO ENTER NEW RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: ______ REPORT OPERATION ______ PAGE ___ of ___
PROGRAM NAME ______ DATE ______
MODULE ______ VERSION ______ PREPARED BY ______

FOREIGN CAPITAL INVESTMENT
RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 8

INVESTOR'S MACHINERY & EQUIPMENT (OUTSIDE THE KINGDOM)

MACHINE NAME :

MODEL : YEAR OF MANUFACTURE :

QUANTITY :

VALUE : $

REMARKS :

ANY OTHER EQUIPMENT (Y OR N)?

F1 TO ENTER NEW RECORD ESC TO GO. TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

01 FOREIGN CAPITAL INVESTMENT
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 9
06
07 INVESTOR'S MACHINERY & EQUIPMENT (INSIDE THE KINGDOM)
08
09 MACHINE NAME :
10
11 MODEL : YEAR OF MANUFACTURE :
12
13 QUANTITY :
14
15 VALUE : $
16
17 REMARKS :
18
19 ANY OTHER EQUIPMENT (Y OR N)? _

F1 TO ENTER NEW RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT CREATION: _____ PAGE: __ of __
PROGRAM NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

```
                    FOREIGN CAPITAL INVESTMENT
                       RECORD ADDITION

LICENSE NO.
RECORD TYPE : 10
TECHNICAL & ADMIN. STAFF (OUTSIDE THE KINGDOM)

     TYPE OF STAFF :
          1 TECHNICAL  2 ADMINISTRATIVE
     JOB TITLE :
     NO. OF POSITIONS :

          ANY OTHER STAFF (Y OR N) ? _
```

F1 TO ENTER NEW RECORD

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01 FOREIGN CAPITAL INVESTMENT
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 11
06
07 TECHNICAL & ADMIN. STAFF (INSIDE THE KINGDOM)
08
09 TYPE OF STAFF :
10 1 TECHNICAL 2 ADMINISTRATIVE
11
12 JOB TITLE :
13
14 NO. OF POSITIONS :
15
16
17
18
19
20 ANY OTHER STAFF (Y OR N) ? _
21
22

F1 TO ENTER NEW RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM ______ REPORT OPERATION ______ PAGE ___ OF ___
PROGRAM NAME ______ DATE ______
MODULE ______ VERSION ______ PREPARED BY ______

Line	Columns 1–80
01	INDUSTRIAL LICENSE
02	RECORD DELETION
03	
04	LICENSE NO. :
05	RECORD TYPE : 1
06	
07	LICENSE DETAILS
08	
09	COMPANY NAME
10	ARABIC : x———————————x
11	
12	LATIN : x———————————x
13	
14	REGION : x CITY/TOWN : xx
15	
16	LICENSE DATE : xxx xx xx
17	
18	TYPE OF INVESTMENT (1-3) : x PROJECT STATUS : x
19	
20	CLASSIFICATION CODE : xxx STATUTORY ENTITY (1-6) : x
21	
22	IS THIS THE RECORD YOU WANT TO DELETE (Y OR N)? _
23	
24	F1 TO DELETE OTHER RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE ___ of ___
PROGRAM NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

INDUSTRIAL LICENSE
RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 8
MANPOWER REQUIREMENTS FOR THE PROJECT

JOB CLASSIFICATION :
NO. OF EMPLOYEES
SAUDI :
NON-SAUDI :
TOTAL :
AVERAGE MONTHLY WAGE : #
TOTAL MONTHLY WAGE : # TOTAL ANNUAL WAGE : #
BENEFITS : #

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION _____ PAGE ____ of ____

PROJECT NAME: _____ DATE: _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01 INDUSTRIAL LICENSE
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 9
06
07 DETAILS OF PROJECT MANAGEMENT
08
09
10
11
12
13
14
15
16
17
18
19
20
21
22

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE: ____ of ____

PROGRAM NAME: _____ DATE: _____

MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 10

PLANS FOR TRAINING SAUDI EMPLOYEES

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

01 INDUSTRIAL LICENSE
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 11
06
07 PROPOSED EQUIPMENT FOR ENVIRONMENTAL PROTECTION
08
09
10
11
12
13
14
15
16
17
18
19
20
21

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE ___ of ___
PROGRAM NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 12

REQUIREMENTS FOR LAND & BUILDING

A. LAND

TOTAL AREA (SQ. MILES) :

COST PER SQ. MILES (IF OWNED) : #

COST OF RENTAL PER SQ. MILES : #

TOTAL VALUE OF LAND : #

TOTAL ANNUAL RENTAL : #

B. BUILDING

TOTAL FLOOR AREA (SQ. MILES) :

PRODUCTION AREA

TOTAL AREA :

TYPE OF CONSTRUCTION :

COST/SQ. MILES : $ TOTAL COST : #

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

F8 TO GO TO CONT. SCREEN ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT/OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 12

REQUIREMENTS FOR LAND & BUILDING (CONTINUATION)

WAREHOUSES

TOTAL AREA (SQ. MILES):

TYPE OF CONSTRUCTION :

COST/SQ. MILES: TOTAL COST : #

ADMINISTRATION BUILDING

TOTAL AREA (SQ. MILES):

TYPE OF CONSTRUCTION :

COST/SQ. MILES: #

TOTAL COST : #

TOTAL COST OF BUILDING : #

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ RECORD OPERATION _____ PAGE ____ of ____

REC. REFERENCE _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 19

REQUIREMENTS FOR ELECTRICITY & WATER SUPPLY

A. ELECTRICITY

SOURCE (1-2) :

1-PRIV. GENERATOR 2-

AMOUNT OF VOLTAGE REQUIRED :

1-LOW CONSUMPTION 22/380 VOLTS 60 HERTZ

2-HIGH CONSUMPTION 13,800 VOLTS 60 HERTZ

EXISTING CAPACITY

CAPACITY FOR OPERATION :

TOTAL CAP. FOR LIGHTING & AIRCON :

ANNUAL ELECTRIC CONSUMPTION :

F1 TO ENTER NEW RECORD
F2 TO ENTER OTHER RECORD TYPES
F3 TO GO TO CONT. SCREEN
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ___ OF ___
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01
02 INDUSTRIAL LICENSE
03 RECORD ADDITION
04
05 LICENSE NO. :
06 RECORD TYPE : 13
07
08 REQUIREMENTS FOR ELEC. & WATER (CONTINUATION)
09
10 B. WATER
11 SOURCE (1-3)
12 1-CITY WATER(DISTRIBUTED) 2-WELLS 3-TRANSPORTED BY TRUCKS
13 TOTAL ANNUAL CONSUMPTION (TONS) : $
14
15 TOTAL COST PER TON (SR) : $
16
17 TOTAL ANNUAL COST (SR) : $
18
19
20
21
22

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE ____ of ____

PROGRAM NAME: _____ DATE: _____

MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 14

TOTAL CAPITAL REQUIRED FOR THE PROJECT

A. FIXED CAPITAL :

LAND VALUE : ﷼

BUILDING COST : ﷼

VALUE OF MACHINERY & EQUIPMENTS : ﷼

INSTALLATION WAGES BASED ON 1 % TO TOTAL

VALUE OF EQUIP & MACHINERY : ﷼

VALUE OF TRUCKS & OTHER MOTOR VEHICLES : ﷼

VALUE OF FURNITURE : ﷼

TOTAL FIXED CAPITAL : ﷼

F1 TO ENTER NEW RECORD
F2 TO ENTER OTHER RECORD TYPES
F3 TO GO TO CONT. SCREEN
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

```
                                INDUSTRIAL LICENSE
                                RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 14

TOTAL CAPITAL REQUIRED FOR THE PROJECT (CONTINUATION)

   B. WORKING CAPITAL
      LAND RENTAL FOR 1 YEAR : #
      RENTAL OF BUILDING FOR 1 YEAR : #
      VALUE OF RAW MATERIAL INCL. PACKAGING & WRAPPING : #
      SALARIES & WAGES : #
      VALUE OF FUEL : #
      COST OF ELECTRICITY : #
      COST OF WATER : #
      COST OF MAINTENANCE : #
      COST OF MARKETING : #
      TOTAL WORKING CAPITAL : #
   C. TOTAL CAPITAL NEEDED FOR THE PROJECT : #
```

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE: __ OF __
PROGRAM NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

INDUSTRIAL LICENSE
RECORD ADDITION

LICENSE NO.:
RECORD TYPE : 16

ESTIMATED ANNUAL OPERATING EXPENDITURE

A. CONSUMPTION
BUILDING INSTALLATION: #
MACHINERY & EQUIPMENT : #
INSTALLATION WAGES : #
TRUCKS, CARS & OTHER VEHICLES: #
FURNITURE : #
INSTALLATION EXPENSES : #
TOTAL COST OF CONSUMPTION: #

B. RENTS
BUILDINGS: #
LAND: #
TOTAL RENTAL: #

F1 TO ENTER NEW RECORD
F2 TO ENTER OTHER RECORD TYPES
F3 TO GO TO CONT. SCREEN
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01 INDUSTRIAL LICENSE
02 RECORD ADDITION
03
04 LICENSE NO. :
05 RECORD TYPE : 16
06
07 ESTIMATED ANNUAL OPERATING EXPENDITURE (CONTINUATION)
08
09 C. MAINTENANCE COST
10 BUILDINGS & INSTALLATIONS: #
11 MACHINERY & EQUIPMENT: #
12 TRANSPORT: #
13 FURNITURE & OFFICE SUPPLIES: #
14 TOTAL COST: #
15 D. SALARIES & WAGES
16 SALARIES: #
17 FRINGE BENEFITS: #
18 SOCIAL SECURITY: #
19 TOTAL SALARIES & WAGES : #
20 E. RAW MATERIALS : #
21 F. ELECTRICITY CONSUMPTION : #

F1 TO ENTER NEW RECORD — F2 TO ENTER OTHER RECORD TYPES
F3 TO GO TO CONT. SCREEN — ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ___ of ___
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

01
02 INDUSTRIAL LICENSE
03 RECORD ADDITION
04
05 LICENSE NO. :
06 RECORD TYPE : 16
07
08 ESTIMATED ANNUAL OPERATING EXPENDITURE (CONTINUATION)
09
10 G. WATER : #
11 H. FUEL : #
12 I. MARKETING COST : #
13 J. OTHER EXPENSES : #
14 K. TOTAL ANNUAL OPERATING EXPENSES : #
15
16
17
18
19
20
21
22
23
24

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT/OPERATION: _____ PAGE: ___ of ___

PROGRAM NAME: _____ DATE: _____

MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 17

PROJECT PROFITABILITY

VALUE OF PRODUCT ACC. TO SALES : #

ANNUAL PROFIT : #

RETURN ON CAPITAL INVESTMENT : #

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES

ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OF FEATURE _____ PAGE ___ OF ___
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

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                    MINISTRY OF INDUSTRY & ELECTRICITY
                    DATABASE (MOIEDAB)

                    INDUSTRIAL LICENSE
                    MAIN MENU

                    1 RECORD ADDITION
                    2 RECORD DELETION
                    3 DATA CHANGE
                    4 VIEW A RECORD
                    5 FILE EDITING
                    6 FILE PRINTING

                    ENTER SELECTION NO. =
```

F1 - EXIT F2 - HELP

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

REPORT OPERATION _____ PAGE __ of __

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

INDUSTRIAL LICENSE

LICENCE NO. :

RECORD TYPE MENU

1 LICENSE DETAILS	10 PLANS FOR TRAINING SAUDI EMPLOYEES
2 PROJ. OWNERS & THEIR CAPITAL	11 EQUIPMENT FOR ENVIRONMENTAL PROTECTION
3 SIMILAR PROJ. LICENSED BY THE MINISTRY	12 REQUIREMENTS FOR LAND & BUILDING
4 AMOUNT OF MAT. IMPORTED DURING THE PAST 3 YRS.	13 REQUIREMENTS FOR ELECTRICITY & WATER SUPPLY
5 PRODUCTS TO BE PRODUCED	14 TOTAL CAPITAL REQUIRED FOR THE PROJECT
6 MATERIALS NEEDED IN PRODUCTION	15 PROJECT FINANCING
7 MACHINERY & EQUIP. NEEDED IN THE PROJECT	16 ANNUAL OPERATING EXPENSES
8 MANPOWER REQUIREMENTS	17 PROJECT PROFITABILITY
9 DETAILS OF PROJ. MANAGEMENT	ENTER RECORD TYPE = __

F1 TO GO TO MAIN MENU

ESC TO EXIT

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE _____

PROGRAM _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

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                    INDUSTRIAL LICENSE

                    H E L P   M E N U

          1. OPERATING THE INDUSTRIAL LICENSE SYSTEM
          2. CODES USED
          3. CONTROL KEYS USED
          4. BACKING UP PROCEDURES

          ENTER SELECTION NO.=

F1 - TO EXIT                          F2 - TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

INDUSTRIAL LICENSE
DATA CHANGE

LICENSE NO. :
RECORD TYPE : 1

LICENSE DETAILS

COMPANY NAME
ARABIC : X————————X
LATIN : X————————X

REGION : X CITY/TOWN : XX

LICENSE DATE : XXX XX XX

TYPE OF INVESTMENT (1-3) : X PROJECT STATUS : X

CLASSIFICATION CODE : XXX STATUTORY ENTITY (1-6) : X

F1 TO CHANGE A NEW RECORD F2 TO CHANGE OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE: 01
PROGRAM NAME: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

```
                    INDUSTRIAL LICENSE
                    VIEW A RECORD

LICENSE NO. :
RECORD TYPE : 1

LICENSE DETAILS

        COMPANY NAME
        ARABIC : X----------X
        LATIN  : X----------X

        REGION : X          CITY/TOWN : XX

        LICENSE DATE : XXX XX XX

        TYPE OF INVESTMENT (1-3) : X   PROJECT STATUS : X

        CLASSIFICATION CODE : XXX      STATUTORY ENTITY (1-6) : X

F1 TO VIEW A NEW RECORD        F2 TO VIEW OTHER RECORD TYPES
                ESC TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE: ___ of ___
PROGRAM: _____ DATE: _____
MODULE: _____ VERSION: _____ PREPARED BY: _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

INDUSTRIAL LICENSE
RECORD ADDITION

LICENSE NO. :
RECORD TYPE : A

LICENSE DETAILS

COMPANY NAME
ARABIC :
LATIN :

REGION : CITY/TOWN :

LICENSE DATE :

TYPE OF INVESTMENT (1-3) : PROJECT STATUS :

CLASSIFICATION CODE : STATUTORY ENTITY (1-6)

F1 TO ENTER NEW RECORD F2 TO ENTER OTHER RECORD TYPES
ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE __ OF __

PROGRAM NAME _____ DATE _____

SCREEN # _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80
1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0	1 2 3 4 5 6 7 8 9 0

```
                              INDUSTRIAL LICENSE
                              RECORD ADDITION

LICENCE NO. :
RECORD TYPE : 2

PROJECT OWNERS & THEIR CAPITAL

        NAME
        ARABIC :
        LATIN :
        NATIONALITY :
        ADDRESS :

        TELEPHONE : (XXX)XXX-XXXX    TELEX :
        TELEGRAM :                   SHARE TO TOTAL CAPITAL (%) : __ %

        ANY OTHER OWNER (Y OR N)? _

F1 TO ENTER NEW RECORD                    ESC TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE __ OF __
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

INDUSTRIAL LICENSE
RECORD : ADDITION

LICENSE NO. :
RECORD TYPE : S

SIMILAR PROJECTS LICENSED BY THE MINISTRY

NAME OF PROJECT
ARABIC :
LATIN :
LOCATION
REGION : CITY/TOWN :
ANNUAL PRODUCTION OUTPUT :
FOLLOW-UP STATUS :
ANY OTHER PROJECT (Y OR N) : _

F1 TO ENTER NEW RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ OF ____
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

INDUSTRIAL LICENSE
RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 4

AMOUNT OF MATERIALS IMPORTED DURING THE PAST 3 YRS.

TYPE OF MATERIAL :
AUTHORIZATION NO. :
UNIT OF MEASURE :
IMPORTED AMOUNT
YEAR 1 : #
YEAR 2 : #
YEAR 3 : #
ANY OTHER MATERIALS (Y OR N)? _

F1 TO ENTER NEW RECORD ESC TO GO TO MAIN MENU

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT DESCRIPTION _____ PAGE ___ of ___

PROGRAM NAME _____ DATE _____

MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

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                    INDUSTRIAL LICENSE
                    RECORD ADDITION

LICENSE NO. :
RECORD TYPE : 5

PRODUCTS TO BE PRODUCED

    TYPE OF PRODUCT :
    NO. OF WORKING HOURS :
    NO. OF WORKING HOURS FOR 1 YR. :
    ANNUAL PRODUCTION OUTPUT :

    ANY OTHER PRODUCT (Y OR N) ? _

F1 TO ENTER NEW RECORD          ESC TO GO TO MAIN MENU
```

Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM: _____ REPORT OPERATION: _____ PAGE ___ of ___

PROGRAMMER NAME: _____ DATE: _____

MODULE: _____ VERSION: _____ FREQUENCY: _____

1 – 10 | 11 – 20 | 21 – 30 | 31 – 40 | 41 – 50 | 51 – 60 | 61 – 70 | 71 – 80

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                    INDUSTRIAL LICENSE
                    RECORD ADDITION

LICENSE NO. :
RECORD TYPE : &

MATERIALS NEEDED IN PRODUCTION

        RAW MATERIAL :
        UNIT OF MEASURE :          QUANTITY :
        PRICE PER UNIT (SR) :
        TOTAL VALUE (SR) : #
        TYPE OF MATERIAL :
        SOURCE :
        ANY OTHER MATERIAL (Y OR N) ? _

F1 TO ENTER NEW RECORD          ESC TO GO TO MAIN MENU
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Kingdom of Saudi Arabia
Ministry of Industry and Electricity

المملكة العربية السعودية
وزارة الصناعة والكهرباء

SCREEN LAYOUT

SYSTEM _____ REPORT OPERATION _____ PAGE ____ of ____
PROGRAM NAME _____ DATE _____
MODULE _____ VERSION _____ PREPARED BY _____

1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70	71 – 80

INDUSTRIAL LICENSE

RECORD ADDITION

LICENSE NO. :

RECORD TYPE : 7

MACHINERY & EQUIPMENT NEEDED IN THE PROJECT

TYPE OF MACHINERY :

NO. OF MACHINERY :

PRICE PER UNIT : #

TOTAL PRICE : #

COMMENTS :

ANY OTHER MACHINERY (Y OR N)? L

F1 TO ENTER NEW RECORD

ESC TO GO TO MAIN MENU

United Nations - UNIDO / UNDP
Advisory Services Project
Ministry of Industry and Electricity

Appendix I

هيئة الامم المتحدة
مشروع الخدمات الاستشارية
وزارة الصناعة والكهرباء

Ref. .....

الاشارة .....

Date 13 April 1985

تاريخ .....

To : Dr. Mohammad Aman
UNIDO Consultant, Industrial Data Bank

From: Ranjith Withana
UNIDO Expert, Industrial Planner

Further to our discussion herewith attached a proposal for the phased development of the MOIE Industrial Data Base including outlines of the constituent data of each phase.

Also attached is a flow chart of the stages of implementation of a licensed industrial projects, which you requested.

We could discuss this in detail, after which I could elaborate on the note and send it to you for incorporation in the report.

I will also be submitting a copy of this to H.E. Deputy Minister to get his views, as mentioned by him at our meeting with him on 10th April.

UNDP
P. O. Box 558 Riyadh 11421
Telex 201018 UNDP SJ and 201154 INDEL SJ

هيئة الامم المتحدة
ص.ب ٥٥٨ الرياض ١١٤٢١
تلكس ٢٠١٠١٨ - ٢٠١١٥٤

Development of Ministry of Industry and Electricity Industrial Data Base (MOIEDAB)

The development of the MOIEDAB to take place in the following phases:

Phase I - Industrial Licence Data Bank System
Phase II - Non-Industrial Licence Data Base System
Phase III - Operational Details of Projects
Phase IV - General Industrial Statistics

Phase I

1.0 Industrial License Data Base System - LDB

The development of sub-systems of the Licensed Industrial projects, based on the available data on these projects in the License Department and Statistics Department.

All licensed industrial projects to be classified into 2 groups:

Local Investment Projects	-	LDB/L
Foreign Investment (JV) Projects	-	LDB/F

The above two groups to be further divided to form the following 6 sub-systems.

1.1 LDB/L

(a)	Projects in operation/production	LDB/L/P
(b)	Projects under implementation/construction	LDB/L/I
(c)	Projects not yet implemented	LDB/L/N

1.2 LDB/F

(d)	Projects in operation/productions	LDB/F/P
(e)	Projects under implementation/construction	LDB/F/I
(f)	Projects not yet implemented	LDB/FN

1.3 Input Data - The following data be included under each project:

1. Product group - 4 digit grouping of International Standard Industrial Classification ISIC
2. Licence No. and date of licence
3. Name of Company/Investor
4. Address - P.O. Box, City, T'phone, Telex
5. Products and Licensed capacity for each product (in tons, meters, sq. meters, cu. meters, units)

6. Capital Investment - Share Capital
   - Total Capital

7. No. of workers

8. Location of project - City/Industrial Estate

9. Nationality of foreign partner and proportion of foreign equity

10. Name of foreign partner

11. Name of foreign parent company

1.4 Output - Print-out capabilities

1. Print-outs of the 6 sub-systems separately with details indicated at para 1.3.

2. Print-out of the 6 sub-systems separately - with summing up of the following information:

   - No. of projects
   - Total capital
   - Licensed capacities
   - No. of workers

   under each 4 Digit ISIC grouping

3. Print-out of - LDB/L/P + LDB/F/P
   LDB/L/I + LDB/F/I
   LDB/L/N + LDB/F/N

   i.e. 3 separate print-outs with summing up of information at 2 above under each 4 Digit ISIC grouping.

4. Print-out under each 4 Digit ISIC grouping with summary of information under 2 above.

5. Print-out from LDB/F under each foreign investment country i.e. USA, UK, Germany, etc.

   3 separate print-out of LDB/F/P, LDB/F/I, LDB/F/M each containing details mentioned at para 1.3

6. Print out as 5 above but the 3 separate print-outs to contain summing up of information as at 2 above.

7. Print out of projects under the 6 sub-systems by location, city, industrial estate.

1.5 The above sub-systems to be updated regularly as follows:

1. Include amendments to licence.

2. Shift project from one sub-system to another depending on project status e.g. from sub-system LDB/L/N to LDB/L/I or LDB/L/I to LDP/L/P or from LDB/F to LDF/L.

1.6 Input date for the development of these sub-systems proposed in Phase I are presently available in the Licence Dept, Foreign Capital Investment Bureau and Statistics Department.

1.7 Procedure should be devised to obtain implementation status of projects in sub-systems LDB/L/I, LDB/L/N, LDB/F/I and LDB/F/N so as to update project status and to shift projects from one sub-system to another as mentioned at para 1.5.

Phase II

2.0 Non-Industrial Licence Data Base System - NIDB

These to include all non-industrial projects licensed under the Foreign Capital Investment Law

2.1 These projects to be divided into 3 following sub-systems:

(a) Projects in operation NIDB/P
(b) Projects under implementation NIDB/I
(c) Projects not yet implemented NIDB/N

2.2 Input Data

The following be included under each project:

1. Activity group - 4 digit grouping of ISIC
2. Licence No. and date
3. Name of Local Company/Investor
4. Name of Foreign Company/Investor and Parent Company
5. Address, Telephone, Telex
6. Outline of activities
7. Capital Investment and share of foreign partner
8. No. of workers
9. Location of projects

2.3 Outputs - Print-out capabilities

1. Detail list of projects under each activity group.
2. Summation of data under:
   NIDB/P
   NIDB/I
   NIDB/N
3. Summation of data under each country.
4. Further details to be developed in Phase III.

Phase III

3.0 Operational Details of Projects

This to be commenced after the Phase I - LDB System and Phase II - NIDB System have been implemented.

3.1 This would involve including regular operational/production data in the earlier referred to sub-systems, specially the industrial and non-industrial projects under implementation, and projects in operation/production.

3.2 Industrial Projects

Local Investments:

- Projects in operation LDB/L/P
- Projects under implementation LDB/F/I

Foreign Investments:

- Projects in operation LDB/F/P
- Projects under implementation LDB/F/I

3.3 Industrial Projects

The Input Data - for this to include under each project:

1. Production (quantities and value)
2. Raw material purchases
3. No. of workers
4. Sales (quantities and value)
5. Export (Value and sales)
6. Machinery imports

and any other data that could be obtained regularly from the following Depts/Organizations:

(a) Dept. of Protection and Encouragement
(b) Licence Department
(c) Manager, Industrial Estates
(d) Individual Projects

3.4 Suitable formats as well as procedures to obtain the above information have to be worked out.

Some of the information provided would be of a confidential nature and therefore provision should be made to ensure that these are not easily accessed to.

3.5 Outputs - print-out capabilities

This could be worked out depending on the input data to be available. The print-out could include:

- Analysis of industrial product group (4 digit ISIC grouping) in terms of capacity utilisation, total production, sales.
- Performance of individual projects.
- Market coverage of local products
- Export volume and values and any other analysis that would be required.

3.6 Non-Industrial Projects

The Input Data - this to be determined by the FCIB on the basis of the follow-up work that are to be initiated. It will include broadly some operational information to be obtained regularly by the FCIB from the non-industrial projects in operation and the non-industrial projects under implementation.

The Outputs - print-out capabilities also to be worked out on the basis of the type of analysis and follow-up information that may be required by the FCIB.

Phase IV

4.0 General Industrial Statistics

This phase involves a building up of general statistics relating to the industrial sector in the Kingdom, which would be useful for the Ministry both in the evaluation of licence applications as well as for other related studies. These include:

1. Import data - from the Trade statistics.
2. Local sales:

   by commodities from the sales data of licensed projects obtained in Phase III
3. Market projections; based on SCH studies and other feasibility studies.
4. Brief project profiles of potential projects that could be developed in the Kingdom.
5. Details of raw-material availability and other intermediate products.

6. Identification of potential export markets.
7. Industrial data relating to GCC markets.
8. Value of local purchases of industrial items for government purchases
9. National Economic indicators as GDP, growth rates
10. Economic indicators and forecasts in the 5 Year Plan 1985-1990.
11. Any other relevant data that could be developed.

Stages of Implementation of a Licensed Industrial Project (Local and Foreign Investment)