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07513

DP/ID/SER.B/96  
16 February 1977  
English

**INDUSTRIAL  
ADVISORY  
UNIT**

DP/PDY/73/002

**PEOPLE'S  
DEMOCRATIC  
REPUBLIC OF  
YEMEN**

**TERMINAL REPORT**

Prepared for the Government of the  
People's Democratic Republic of Yemen by the  
United Nations Industrial Development Organization,  
executing agency for the  
United Nations Development Programme



**United Nations Industrial Development Organization**

United Nations Development Programme

INDUSTRIAL ADVISORY UNIT  
DP/PDY/73/002  
PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

Project findings and recommendations

Prepared for the Government of People's Democratic Republic of Yemen  
by the United Nations Industrial Development Organization,  
executing agency for the United Nations Development Programme

Based on the work of N. Krishnaswami, industrial engineer

United Nations Industrial Development Organization

Vienna, 1977

### Explanatory notes

References to dollars (\$) are to United States dollars.

References to yen (Y) are to Japanese yen.

The monetary unit in Democratic Yemen is the dinar (YD). During the period covered by the report, the value of the dinar in relation to the United States dollar was \$US 1 = YD 0.343.

Use of a hyphen between dates (e.g. 1970-1975) indicates the full period involved, including the beginning and end years.

A full stop (.) is used to indicate decimals.

A comma (,) is used to separate thousands and millions.

References to "tons" are to metric tons unless otherwise specified.

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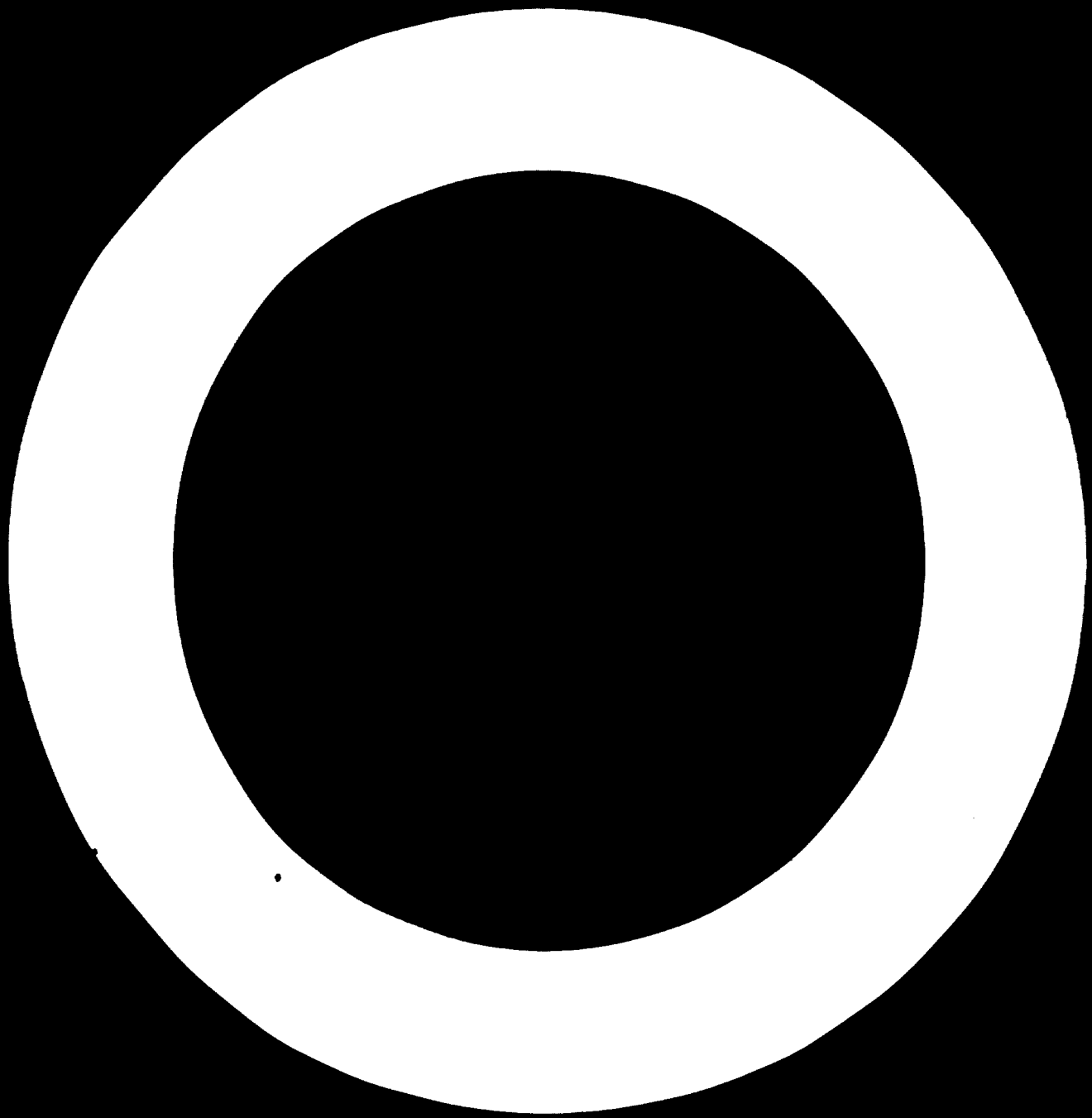
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ABSTRACT

The report describes the work done by the Industrial Advisory Unit in the People's Democratic Republic of Yemen from the time it was set up in 1974 to the end of the first phase of its work in December 1976. The Unit was set up with the assistance of the United Nations Industrial Development Organization (UNIDO), which was acting as executing agency for United Nations Development Programme (UNDP) project DP/PDY/73/002 "Industrial Advisory Unit". UNDP contributed \$US 289,930 to finance the project.

The purpose of the Advisory Unit was to advise the Government of Democratic Yemen on industrial investment, planning and management; to help factories in the country overcome their technical, economic and marketing problems; and to train local staff who would eventually run the Unit themselves.

The report is divided into sections corresponding to the items of the Advisory Unit's work plan. Each section contains an account of the work done and, where appropriate, conclusions and recommendations.



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## INTRODUCTION

### Background information

In 1972, the Ministry of Economy and Industry of the People's Democratic Republic of Yemen obtained the services of a team of experts from the Industrial Development Centre for Arab States (IDCAS) to help it evaluate offers and bids for new plants, advise industries on their problems and design new factories. After one year the Government decided to set up a central industrial advisory unit and asked for assistance from the United Nations Development Programme (UNDP).

The project was approved by UNDP on 20 August 1973 and began on 12 February 1974. The United Nations Industrial Development Organization (UNIDO) was appointed executing agency.

The project was initially to have lasted for one year but was subsequently extended until December 1976. The life of the Industrial Advisory Unit is to be extended by five years to 1981. UNDP contributed a total of \$289,930 to finance the project.

The long-range objectives of the project were to assist the Government in:

- (a) Diversifying the economy;
- (b) Accelerating the identification, preparation, evaluation and implementation of industrial projects;
- (c) Building up institutions to carry out the tasks outlined above and in training national cadres.

The main purpose of the project was to assist the Government in the establishment and initial operation of an industrial advisory unit that would function as an economic and engineering consulting body to the Department of Industry of the Ministry of Economy and Industry. The immediate tasks included:

- (a) Advising and assisting the Department of Industry in identifying investment opportunities in the industrial sector and in preparing techno-economic feasibility studies for new industrial projects;
- (b) Assisting the Department of Industry in the formulation and implementation of industrial development plans and programmes;
- (c) Advising the Government on investment promotion and financial management;



- (d) Assisting the Department of Industry in evaluating studies and/or licence applications submitted by the private sector for new projects or the expansion of existing units;
- (e) Advising the Government on the suitability of prospective foreign investors, contractors and suppliers;
- (f) Assisting the Department of Industry in working out and maintaining a proper accounting system for the control and guidance of production -cost studies;
- (g) Assisting the Government in the evaluation of case studies carried out during 1971-1972 by UNIDO experts. (The studies mainly comprise proposals for setting-up a composting plant and developing an industrial free zone in Aden.);
- (h) Assisting private industrial establishments in overcoming their day-to-day technical, economic and marketing problems;
- (i) Training national counterparts to the experts and the staff of the Department of Industry to enable them to take over the above-mentioned activities.

The project itself has no direct investment potential but will assist in identifying, preparing and evaluating industrial projects for which investment funds will be needed.

After the areas in which assistance was to be given had been defined, the Government asked for feasibility studies to be made on certain industries that were considered suitable for development. UNIDO sent out experts to investigate the possibility of setting up an industrial estate for small industries, a brewery, a date processing plant and associated distillery, a knitwear factory, a solar salt plant, a cement industry, and an industrial information centre. The integration of the various units in the national organization for aerated water was also studied. The Government is considering the experts' reports for possible investment follow-up and will be asking UNDP/UNIDO for further assistance.

Experts are still working on three other projects (tanning, finishing and marketing of leather; building materials; and re-organization of the revolution workshops), and an expert on the plastics industry has yet to be fielded.

The fielding of single experts in specific fields under the Special Industrial Services (SIS) programme of assistance, with the active co-operation of the Advisory Unit and direct supervision by the team leader of the Advisory Unit has proved to be effective and economical. It is suggested that the arrangement might usefully be employed on future projects.

The second phase of the Advisory Unit's work (up to 1981) will be particularly important because the Unit will have the responsibility of assisting the Government in improving further the work of existing units, building institutions and doing the investment follow-up work on projects for which feasibility studies have been made. National standards for industrial products will have to be established; and inspection procedures, organized and systematic maintenance programmes, and production planning will have to be introduced for the manufacturing units. The unit will also have to participate actively in the implementation of the first phase of the organic fertiliser project being financed out of the United Nations Capital Development Fund. Its assistance will be needed to establish the industrial estate for small industries in which the Government is showing considerable interest.

A final assessment of the Unit's Advisory functions will be possible after a period that may be as long as two to five years. Until then, its work may be judged on the technical reports submitted and the extent to which the recommendations contained in them have been accepted by Government. Nearly 80 reports and papers have been prepared in the less than three years for which the Advisory Unit has been in existence. The Unit also co-ordinated about 10 SIS projects and one seminar. Brief summaries of the technical reports prepared are given in the annex I.

#### Economic background

The People's Democratic Republic of Yemen lies at the south-west corner of the Arabian Peninsula. Its area is about 112,000 square miles of which only some 3,000 square miles are settled. The country is divided into six governorates. The population of the country was about 1.6 million in 1974 and is expected to increase to 1.9 million by 1980 and 3.33 million by 2000. The people are predominantly engaged in subsistence agriculture. About 10% of the population are tribal. The country is arid except for a few

agricultural patches; rocky and hilly areas extend for hundreds of miles and down to the sea coast. There is little or no rainfall. The language spoken is Arabic. Many social changes are taking place, and many women are working in offices, production centres and factories. The Government has a liberal and progressive approach to social and cultural matters.

Aden, the capital, is the centre of many economic, social and cultural activities. It used to be a free port and a tourist attraction. It is no longer a free port. It was reported that on an average about 6,000 ships used to call at Aden each year, but the number decreased considerably because of the closure of the Suez Canal. The situation improved after the reopening of the Canal.

Prior to independence in November 1967, the economy of the country centered around trading and servicing activities (including oil bunkering in Aden) and predominantly subsistence agriculture in the interior. It also depended heavily on activities connected with United Kingdom military base, which contributed directly and indirectly to employment.

After independence, the economy was subjected to severe recessionary forces, and unemployment became one of the country's main problems.

According to published statistics, industrial production generated 22% of GNP in 1970, but 85% of this was contributed by the British-owned oil refinery. Apart from electric power generation and ship repairing, the main industrial activities in the country were the production of salt, soft drinks, dairy products, aluminium ware, and cement blocks and tiles. There were also a few cottage and small-scale industries.

### CONCLUSIONS AND RECOMMENDATIONS

The achievements of the Advisory Unit during the three years or so of its existence are outlined in the report summaries in annex I of this report.

The Unit's work plan at 16 December 1975 contained the following items:

- (a) Assistance to existing factories in resolving production, managerial and other problems;
- (b) Evaluation of offers received for the projects for various industries included in the Five-Year Plan;
- (c) Evaluation of project feasibility studies carried out by various consultants;
- (d) Assistance in the evaluation of licensing applications;
- (e) Assistance in the drafting of an organizational manual for the work of the Ministry of Industry on the execution of the Five-Year Plan;
- (f) Preparation of production-cost studies for existing industrial undertakings;
- (g) Preparation of a finance manual for the control and guidance of industrial establishments;
- (h) Preparation of recommendations on a proper cost-accounting system for the control and guidance of industrial establishments;
- (i) Assistance in the application (in two phases) of the accounting system;
- (j) Assistance in the establishment (in two phases) of a technical library and industrial information unit;
- (k) Assistance in the preparation of project profiles for some medium/small-scale projects required by the Five-Year Plan;
- (l) Supervision and co-ordination of all SIS projects;
- (m) Preparation of the final report.

The following sections contain comments and recommendations concerning each item of the work plan.

A. Assistance to existing factories in resolving problems

This is an omnibus heading under which the Unit has to shoulder a variety of problems faced by industrial units. In some cases, the unit has had to help carry out some of its own recommendations where it was competent and able to do so: in many other cases assistance was requested from UNDP/UNIDO and was provided in the form of SIS projects.

The Advisory Unit is concentrating at present on production planning techniques, maintenance systems, a financial manual, and cost studies. Outlines have been prepared; after the necessary information has been collected from the units, it will be classified and tabulated for further work.

Conclusions

- (a) There is no organized production planning system in operation in many of the units;
- (b) There is no organized industrial engineering department to deal with such matters as process engineering, job evaluation and job rating;
- (c) There is no organized system for intermediate and final inspection of products, and standards to which these inspections will have to be carried out have not been established;
- (d) There are no facilities for testing production raw materials against standards for acceptance;
- (e) There are no prescribed systems for preventive and running maintenance of plant and equipment;
- (f) Financial systems and cost accounting in many units are primitive; information relating to fixed assets is often not available;
- (g) Better systems are possible for inventory control and storekeeping of all materials, including spare parts;
- (h) Migration of qualified and experienced personnel from the Ministry and industrial units creates voids which take a long time to fill.

Recommendations

The long term objective should be to train a sufficient number of local personnel, either by using fellowships in specific fields, financed from

bilateral or multilateral resources, or by holding workshops and seminars.

As a short-term measure the Unit has suggested specific fields for training in each of the existing units it is needed.

B. Evaluation of offers received for projects  
for various industries

About eighteen projects are due to be executed under the Five-Year Plan; most of them are to be financed under bilateral arrangements. External financing from friendly aid-giving countries often restricts the country's choice to supplies from one particular country, which is not always the most attractive one from a technological or financial point of view. Given adequate knowledge and the possibility of proper comparison of competitive offers, the country could negotiate with friendly donors to secure the best terms.

Conclusions

- (a) Most of the offers received for the supply of plant and equipment in the form of bilateral assistance amounted to a single tender, where the freedom to accept or reject was limited;
- (b) Some of the offers were based on skeleton pre-feasibility studies from the donor countries with no detailed projections of economic viability. (This subject is dealt with in greater detail in section C.);
- (c) Indirect inquiries had to be made to manufacturers and suppliers of equipment in other countries to obtain information that would enable the Government to evaluate the single offers received. This was necessary because there was no proper technical documentation and information centre in the Ministry;
- (d) Economic and technological process disadvantages associated with single limited tenders cannot be entirely ruled out;
- (e) The Advisory Unit noticed that the draft contract for the supply of plant and equipment lacked certain provisions, particularly in matters relating to the supply of equipment for essential services

performance guarantees of equipment, supply of spares for maintenance, training facilities for local personnel, recruitment of expatriate personnel for erection supervision and commissioning, and in-plant training of local personnel.

#### Recommendations

1. The possibility should be considered of requesting competitive offers from other reputed suppliers. The offers could be used for comparison and to create scope for negotiation with friendly countries to make their offers competitive and to have the most appropriate technological process available adopted.
2. The Ministry of Industry should have a reasonably sized technical documentation and industrial information centre to store information for use when required. The information should be kept up to date.

#### C. Evaluation of project feasibility studies

In the past many industrial projects were launched on the strength of an informal study. The investments thus made could often have been used to better effect and some of the projects proved to be uneconomic, and others created excess capacities. Projections of internal demand and its likely growth rate and export possibilities and their relation to minimum economic size were not given due attention. The main reason for this was the lack of reliable statistics in the ministries concerned.

The local technical and economic personnel in the Ministry, using the techniques adopted by the Advisory Unit, have become familiar with the evaluation process and are already fairly competent. They have conducted one or two feasibility studies independently, and follow-up action is in progress.

#### Conclusions

- (a) Some projects that skeleton studies projected as economic proved to be uneconomic. Where the units had already come into being and it was too late to abandon the project, remedial action had to be taken;

- (b) Projects started without much thought being given to demand and marketing possibilities created idle capacity in certain manufacturing units;
- (c) Some projects that had reached the tender stage had to be postponed for detailed investigations or abandoned altogether as not worthwhile, usually because of limited local supplies of raw materials or general economic considerations;
- (d) Some projects were unsuitably located. As a result, they required remedial measures and alterations or even resiting to make them economic and to avoid health hazards.

#### Recommendations

1. Satisfactory and detailed feasibility studies should be made to ensure that projects are economically viable and products have an assured market. The important considerations are adequate supplies of suitable raw materials, and the availability of internal and external financial resources.  
(The Ministry has been following this recommendation systematically for the past two years.)
2. Where idle capacity has been identified product ranges should be diversified to suit changing market conditions, particularly where mass consumer items are concerned. In some cases additional equipment and tools could be bought.
3. Training should be provided through fellowships, seminars and workshops.

#### D. Assistance in the evaluation of licensing applications

Since the public sector is chiefly responsible for industrial development in the current Five-Year Plan, the number of applications from the private and mixed sector has been negligible. It is anticipated that in the coming years, with emphasis being laid on the development of small industries, the number of such applications will increase.

The few applications received fall into three categories:

- (a) Projects where the development phase has been completed and the proposal was for a second phase involving processing equipment to convert raw material into an intermediate product;



- (b) Projects where offers had been received for rationalization, modernization and expansion to existing industrial undertakings. The work required included working out layout drawings and installation and commissioning procedures;
- (c) Projects where offers had been received for the establishment of new units.

In some cases the Advisory unit, assisted by local counterparts, not only gave a complete report on the technical steps to be taken for the execution of the project (including the revised layout of the production centre and location of the various machines) but also contributed directly to the implementation of the project.

#### Recommendations

1. For applications in category (a) above:
  - (a) The basic consideration should be that the prices of the end product to be sold in the market should be kept at the same level or reduced provided other factors contributing to the cost structure remain more or less the same. Use of local raw materials for conversion into intermediate products should be encouraged, wherever applicable;
  - (b) This would imply that the cost of conversion from raw material to the intermediate product should not exceed the price differential between the c.i.f. price of imported raw material or local raw material and the intermediate product;
  - (c) Raw materials for conversion should be secured on a long-term basis by forward purchase arrangements to ensure a stable and satisfactory procurement price;
  - (d) Concerted efforts should be made to develop local raw materials in as short a time as possible so as to cut down on imports.
2. For applications in category (b) above, where additions are to be made to existing equipment or one new machine is to take over the functions of several others that can then be used for other processes, the additional output anticipated and its quality should be weighed against cost to determine the viability of the proposal.

3. For application in category (c) above, particularly where offers from bilateral aid-giving countries are received for setting up manufacturing facilities for certain items, a thorough study should be made before further steps are taken.

E. Assistance in the drafting of an organizational manual  
for the work of the Ministry of Industry

The work plan of the project document stipulates that a manual should be prepared for the execution of the current Five-Year Plan. It was felt, however, that the preparation of a manual on the organizational structure of a ministry should not necessarily be limited to the plan period, because consideration must be given to the specific functions of each department and section of the Ministry in fostering industrial development and exercising day-to-day administrative control over the manufacturing units concerned. The scope of the manual has thus been broadened considerably. The Government has expressed a preference for a manual prepared over a longer period, because the former Ministry of Economy and Industry has been reorganized, and a Ministry of Industry with three separate technical departments has been constituted.

The preparation of the manual also had to be postponed from time to time because of more pressing tasks. The work on it will have to be done carefully and in stages so as not to disrupt the day-to-day work of the Ministry. The matter will be reviewed in 1977.

F. Assistance in the establishment of a technical library  
and industrial information unit

UNDP/UNIDO offered to help the Government establish a centre with a project to be implemented in two phases. The first phase lasting six weeks (subsequently extended to twelve weeks), was completed in February 1976. The Government has made a formal request for the implementation of the second phase, which would last for one year. Because of a lack of funds, the project has been rescheduled for early 1977.

Conclusions

A functional ministry must have its own well organized documentation centre for constant reference. The Ministry of Industry lacks such a centre; the few documents, pamphlets and brochures, offers for plant and machinery received from overseas suppliers, and some earlier feasibility studies kept were not properly organized. There were no proper indexing or cataloging systems, and retrieval of what little information was available was difficult.

Recommendations

1. The information centre should be housed in a suitable location. It should have proper furniture and equipment and reading room facilities.
2. The centre should contain the latest technical reference books, manuals and journals, and these should be docketed properly for ready retrieval. Publications from such organizations as UNIDO, FAO and ILO should also be kept in the centre.
3. All important reports (feasibility studies, detailed project reports, offers for plant and machinery, important foreign contracts) should be preserved carefully for future reference.
4. Arrangements should be made to obtain and store technical catalogues containing descriptions and specifications of foreign machinery and equipment from different overseas suppliers together with their current indicative prices. These catalogues and prices should be kept up-to-date.
5. Essential data relating to existing production units must be compiled, properly stored, maintained and kept up-to-date. Information could be collected initially by visits to production units, and arrangements could be made for statistical information to be supplied regularly.
6. Monthly production export performance and other statistics relating to the various production units should be collected and systematically filed in the centre for reference.
7. Monthly progress reports should be made on units that are being built. They should be useful for monitoring and as a guide for future expansions.
8. A complete and up-to-date list should be kept of raw materials and other auxiliary stores required by existing units for production. World market prices and sources should be ascertained.
9. Copies of all publications of the Government of People's Democratic Republic of Yemen relating directly to industrial development should be properly indexed and stored.
10. Copies of project profiles (in the form of hand-outs) for industries likely to be established should be kept in the proposed documentation centre.
11. Any other publications the Government considers useful should be procured.

G. Financial systems and costing procedures

During the first three months of the project, an expert in accounting visited selected factories and submitted a report on cost accounting in the country.

The report was based on discussions with the staff in the Ministry and factories, examination of books and documents, the writing up and closing of books, the closing of accounts, cost studies, and specific assignments in specific establishments. Support was provided by the Advisory Unit, and reports prepared by experts under bilateral agreements also provided useful information. Much of the time spent, however, was devoted to frequent visits to factories to carry out specific tasks. About 12 months' work was done in the four large factories; the rest of the time was spent on such matters as preparing cost studies, setting up pilot systems, organizing stores' accounting, and commenting on and updating reports. In one factory, spares were identified and arranged systematically. About 15 factories (roughly half of the total) were visited. Some of the visits were exploratory, and others were for advisory or executive work.

The experts submitted the synopsis of a financial manual that is now nearing completion. The final version may be approved early in 1977.

Conclusions

- (a) The bookkeeping, financial and cost accounts were either non-existent or not fully reliable. In many instances, transactions were not recorded or were recorded incorrectly. In the absence of even-year end accounts in many cases, the defects were not noticed and the accounting did not provide the guidance expected of it;
- (b) The budgetary control, stock control, document control, internal controls and checks are some of the more important areas that have not received sufficient attention;
- (c) There are too few accounting staff and they are not sufficiently skilled;
- (d) The management is not fully aware of the role of the management accounting and therefore does not have sufficient interest in it;
- (e) The audit is not vigorously followed up, and auditing systems require updating;

- (f) The few accounting staff employed in the country have become indispensable in many places - a situation that has its drawbacks;
- (g) Those accountants that had received formal training at overseas universities lacked practical experience and needed reorientation through operational and financial manuals, workshops, and on-the-job training.

#### Recommendations

1. A financial accounting system should be uniformly applied in all factories and should make use of all levels of accounting skill available locally.
2. Controls should be incorporated in the financial manual, with indications of the time over which they should be introduced.
3. Training schemes should be devised and introduced with greater emphasis on in-country and on-the-job training. (This will make it possible to train more accountants with less disturbance to the routine work.)
4. The management should be made conversant with management techniques by intensive management seminars and workshops at which each factory is appropriately represented. The courses should be carefully prepared to cater for the practical needs of the country and should cover the entire subject. Training should be systematic, moving from basic ideas to an exposition of the latest techniques. Text books and case studies should both be used.
5. Auditing should start at the factory with an internal pre-audit and post-audit. The Ministry of Industry should work in close liason with the central audit bureau. The two agencies should draw up complementary audit programmes.
6. The first batch of trainees should be attached to specific establishments to form a second force.

#### H. Preparation of production-cost studies for existing industrial undertakings

The expert carried out six cost studies, as a result of which the following improvements were made:

- (a) Pricing policy and the costs have been brought closer together;

- (b) The break-even and payback periods, rates of return and other useful indices have been worked out and evaluated. These indices are now being widely used by the technical staff of the Ministry;
- (c) Books have been written up. This required considerable investigation, and a number of outside authorities (banks, suppliers, the treasury, Ministries) were approached. The investigation revealed several areas that required attention (price revisions, investment-cost computations, stores control, studies of machinery life, spares, contracts, and the like);
- (d) Departmental production reports were introduced;
- (e) Price decisions and working capital forecasts were facilitated;
- (f) The introduction of new items for production for which costs were worked out by production trials was facilitated;
- (g) Cost systems were introduced.

#### Conclusions

- (a) The cost of production is often worked out only when there is some special need for it. Because of incomplete data, systems and knowledge, figures are at best estimates;
- (b) In some cases, the principles of allocation and apportionment are not correctly applied;
- (c) Omissions of certain cost items and lack of full absorption were noticed in some cases;
- (d) There was no evidence of any systematic cost study, investigation and control;
- (e) Pricing policies are often divorced from cost considerations.

#### Recommendations

Legislation on the introduction of cost-study systems should be brought in once accounting is established properly.

I, Preparation of recommendations on a proper cost-accounting system for the control and guidance of industrial establishments

A proper financial accounting system is essential before cost-accounting methods can be introduced. So far, systems have been suggested

for five factories. All five have become cost conscious and have made a modest start on cost systems. A separate cost-accounting manual will be prepared to elaborate the principles already propounded in the financial manual. It will contain special sections for each factory so as to take into account individual problems.

J. Assistance in the publication of the cost-accounting system

The expert held a number of discussions with local counterparts in factories to explain and demonstrate systems. The counterparts were encouraged to apply what they had learnt by direct executive assistance and periodic meetings in factories and in the office.

Conclusions

Proper financial accounting is essential.

Recommendations

Once the manual on financial accounting has been introduced, and cost-accounting systems proposed and approved, workshops should be held and followed by direct assistance.

K. Running and preventive maintenance

Visits to factories revealed that there are no arrangements or schedules for running and preventive maintenance work. There is a shortage of the experienced manpower required for maintenance work. The general practice has been to repair machines only after breakdowns have occurred. The results have been loss of production and the production of substandard goods. No proper procedure seems to have been followed for the ordering of spare parts for proper maintenance.

In the newer factories, the suppliers of equipment had supplied a stock of recommended spares. No proper procedure has been followed for the identification, storage and accounting of the spares, or for ordering spares in the future.

The Government has expressed a desire to introduce proper maintenance in factories, starting with the flour mill. A number of visits have been made to the mill to collect information about the plant and machinery installed there. Manufacturers' technical catalogues, operators' manuals, service

manuals, and spare-parts indexes were available only for a few machines. Requests have been made to manufacturers to send the missing material.

Once the necessary data has been collected, procedures will be drawn up and put into effect in the flour mill, which will be used as a model for other production units. The spare parts will be classified so that some of the simpler ones can be manufactured in the country, and this will reduce imports. The classification will also enable the manufacturing units to float a global tender for common user items or go to the suppliers of the machinery for specialized parts.

L. Manufacturing standards and inspection procedures

Only those manufacturing units that were set up recently with external assistance appear to have standards and inspection procedures for quality control. Most of the units operate without standards or inspection. There is therefore no quality control, with the result that substandard goods are offered for sale as prime goods. While such practices are possible in a protected seller's market without competitive forces operating, they might not stand up in a buyer's market. The situation is not conducive to the development of an export market for manufactured goods.

The Government will be submitting a forward request for assistance with standards and quality control.

M. Institution building

Like many of the developing countries liberated from colonial rule, Democratic Yemen had considerable difficulties in finding suitable staff to fill technical, administrative, design and management posts in factories. Even skilled operators and middle-level supervisory staff were difficult to find. Training in various disciplines related to industries is therefore one of the country's principal concerns. A number of technical graduates have been able to train abroad using scholarships provided through bilateral assistance. The contract is for the new units provided for training facilities in specific areas of operation and maintenance, and for the recruitment of expatriates.

The greatest difficulty encountered by Democratic Yemen is the lack of personnel suitable for training abroad. Greater emphasis has therefore been



laid on training within the country, using bilateral and multilateral assistance.

UNIDO/UNDP organized one workshop on project formulation and evaluation and one on factory management in 1974 and 1975 respectively. These two workshops evoked a lot of interest, and about 30 senior personnel from factories, ministries and other organizations participated in each workshop. Preparations are being made for a seminar on project construction and implementation.

The Advisory Unit's budget provided for three United Nations fellowships, two of which fellowships have been used. The Government has not been able to use the third fellowship. A fourth fellowship, offered by UNDP/UNIDO outside the indicative planning figure, has been used for small-scale industries.

#### Recommendations

1. National personnel should be sent for initial training to familiarize them with projects on which a decision has been taken to go ahead. They should come back before negotiations take place with the suppliers of plant and equipment and should then be attached to the project as counterparts to the expatriate personnel of the suppliers. (This should make it possible to build up a body of personnel trained in various disciplines, embracing both production technology and maintenance procedures.)
2. Some of the experienced personnel in the Ministry should be sent on periodical refresher courses to enable them to keep abreast with the latest technology and update their skills.
3. A workshop on financial systems and their operation should be held soon after the manual on the subject has been completed and circulated. The workshops should be attended by accountants from manufacturing units, ministries and other organizations.

#### N. Supervision and co-ordination of SIS projects and workshops

The Advisory Unit's contribution included the following:

- (a) Briefing experts on arrival, arranging for office accommodation and transport facilities;
- (b) Periodic meetings with government officials and requests to Government for counterparts;

- (c) Helping experts to draw up a work programme;
- (d) Discussions with experts on approaches and certain technical problems;
- (e) Taking stock of work done (mid-term report);
- (f) Helping the Government with extension formalities;

Supervision and co-ordination were provided for the following projects:

- (a) Small-scale Industry Survey Mission - Expert on Industrial Estates (IS/PDRY/73/005);
- (b) Assistance in the Manufacture of Knitwear (IS/PDY/74/500);
- (c) Assistance in Beer Production (IS/PDY/74/006);
- (d) Assistance in Date Packing (IS/PDY/74/004);
- (e) Establishment of an Industrial Information Service (IS/PDY/75/008);
- (f) Preparatory Work for Setting up a 50,000 ton/year Solar Salt Plant (IS/PDY/75/005);
- (g) Establishment of a Building Materials Industry (IS/PDY/75/004);
- (h) Assistance in Leather Production and Marketing (IS/PDY/75/006);
- (i) Assistance to Revolution Workshop (IS/PDY/75/007);
- (j) Training seminar in industrial project construction and implementation (IS/PDR/75/004);
- (k) Integration of the national organization for aerated water.
- (l) Cement project.

O. United Nations Capital Development Fund project

A project for the manufacture of organic fertilisers by composing town waste met the requirements for financing from the United Nations Capital Development Fund (UNCDF) and was selected for consideration and follow-up.

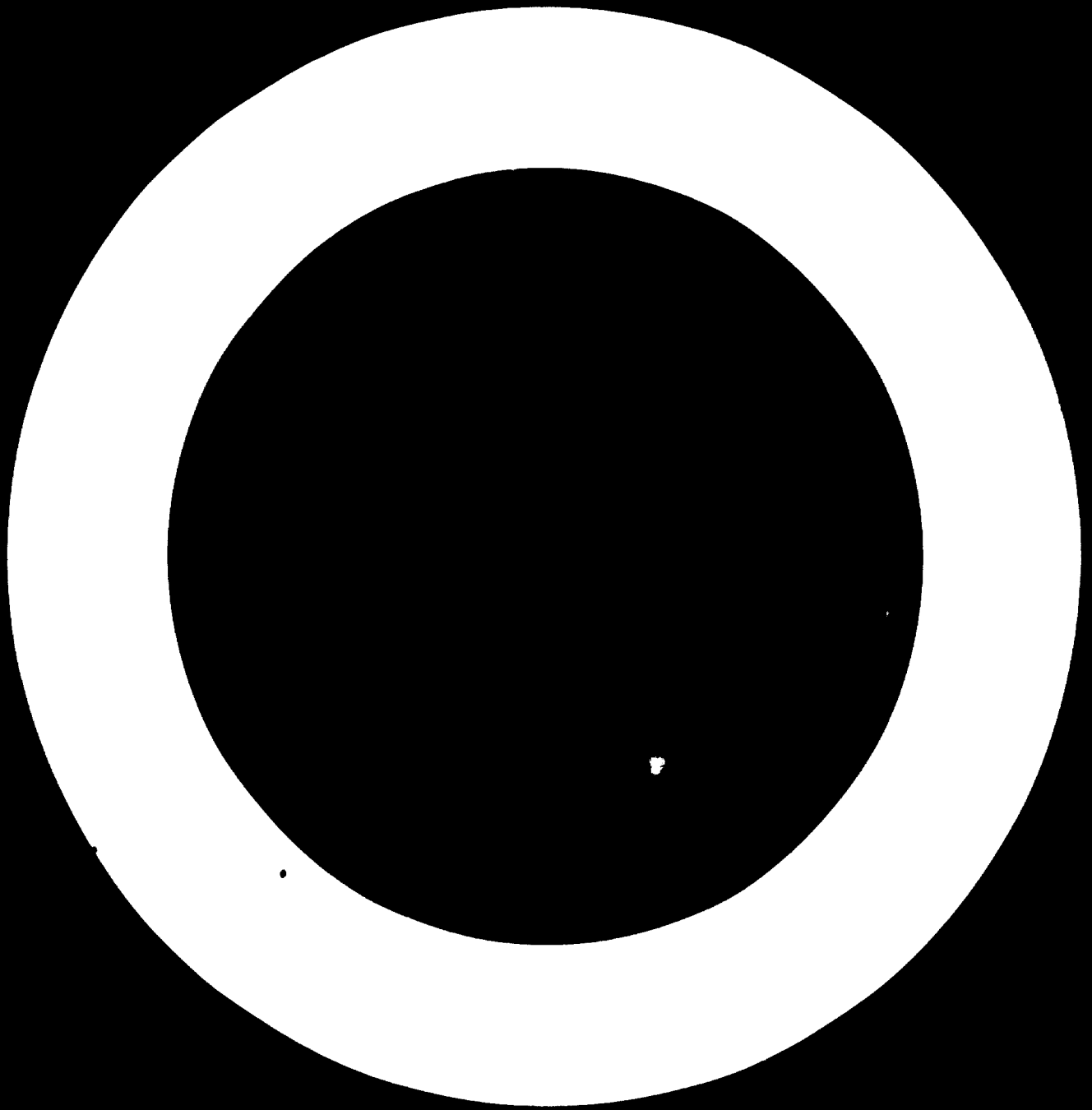
A feasibility study made in 1971 was the basic document for the project. The Fund authorities appointed consultants to update the study recommendations.

The consultants submitted their findings in a report dated June 1975. They were of the view that the process originally suggested was a sophisticated one unsuited to conditions in Democratic Yemen. The consultants recommended a simpler process that could be introduced in two phases. During the experimental first phase, lasting two years, production would be 3,000 tons

a year, and investment on plant and machinery would be \$65,000. This would enable the authorities to decide on the ratio of solids to liquids, to determine efficiency and quantity input per acre, to compare their experience with that gained during the FAO Elkhod project, and to make any modifications necessary for full-scale production. Farmers would also become familiar with the use of the fertilizers produced. Full-scale production (the second phase) would be about 50,000 tons a year, and total investment would be \$665,000 at (1975 prices).

The consultants agreed on the possibility and feasibility of producing organic fertilizer in Democratic Yemen by composting town waste. The project was considered to be a viable one, and the output of organic fertilizer during full-scale production would be sufficient for almost 3% of the total area under cultivation.

All the agencies concerned agreed that the project should go ahead using the simpler process recommended, and the Government made a formal request to UNCDF. The cost accountant of the Industrial Advisory Unit will assist the project on financial matters.



Annex I

SUMMARIES OF TECHNICAL REPORTS <sup>a/</sup>

Comments on an offer for the supply of plant and equipment for the manufacture of tomato paste

A number of omissions were pointed out.

Comments on a draft contract for the supply of plant and equipment for the manufacture of tomato paste

Clarification of several provisions was necessary. A number of additional provisions were suggested for inclusion in the contract.

Comments on a draft consultancy contract for a cement plant

It was suggested that the competence and financial standing of the consultancy firm should be checked. The contract should cover only a study of documents, investigations to complete information on suitable raw materials and services, and a feasibility study. Documents prepared under the contract should be the property of the Government.

Comments on two first-phase feasibility studies for a cement plant

Differences between the two studies, and omissions from them were pointed out. A number of items required further consideration. Provision would be needed for training.

Comments on the second-phase study on a proposed factory

Certain inconsistencies between the first- and second-phase studies were noted. The study made no mention of training for local staff or bulk transport for cement.

Report on the modernisation of the Arabian Match Factory

A survey of the match factory showed that a number of operations would be performed more efficiently by an automatic match-making machine. Since output would increase two more box-filling machines would be needed. Suitable reconditioned second-hand machines were available at attractive prices.

Second report on the Arabian Match Factory, containing revised layouts and scheme of erection for old and new machines

The layouts and erection scheme were so designed that the installation of new machines would cause minimum disruption of the factory's work.

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<sup>a/</sup> Copies of the reports are held in the UNIDO Registry.

Comments on a proposal to build a new tannery

A survey indicated that the supplies of raw skins were limited and export performance had been poor. There was therefore no immediate justification for building a second tannery. It was suggested that the existing tannery could be modernized and expanded in an effort to meet local demand.

Report on the plans of the National Tobacco and Cigarette Factory to purchase and install primary machines for processing tobacco leaves

Attention was drawn to the need for a sustained supply of suitable tobacco. An effort should be made to obtain better purchase terms, and staff should be trained in production technology and maintenance.

Preliminary report on the Revolution Workshop

It was suggested that a thorough survey of the workshop should be made as a preliminary to a complete reorganization.

Financial and cost accounting system of the Algundi plastics factory (I)

Final accounts were prepared for the year ending 31 March 1975. Suggestions were made for improving the system used. The costs of polythene bag production were calculated and suggestions made for improving performance. It was recommended that the profit from one unit should be used for modernizing another.

The financial and accounting system of the Algundi plastics factory (I)

Final accounts were prepared and profitability was calculated. Suggestions were made for improving the factory's commercial performance.

Comments on an offer for the supply of a dairy plant

Attention was drawn to a number of points that had not been dealt with in the offer, and a detailed questionnaire was prepared for the supplier to make a feasibility study.

Observations on the proposed purchase of a third cigarette making machine by the National Tobacco and Cigarette Factory

After a survey had been made of the factory's operations, the proposed purchase was endorsed. Suggestions were made on ways to ensure that

maximum benefits would be devised from the installation of a new machine.

Proposals for the expansion and modernization of the Aden Aluminium Works

After a survey of the factory, suggestions were made for a modernization programme. Changes involving substantial additional capital investment would be made only after a period of more profitable operation at full capacity.

Report on financial and accounting systems for the aluminium factory

Profits and profitability were calculated for the year ending 31 July 1974. Shortcomings in the accounting system were identified and improvements suggested.

Financial and cost accounting systems for the flour mill

The flour mill was the first factory where the proposed uniform accounting system was introduced on a trial basis. An organization chart and job descriptions were prepared. Financial systems using simple books, forms and procedures were suggested. One set of accounts, covering a period of about three years was prepared and a new set of books brought into use. A cost accounting system was suggested.

Financial and cost accounting systems for the dairy

Shortcomings in the system were identified and improvements suggested. A storage system and catalogue for maintenance spares were introduced.

A financial and cost accounting system for the training and demonstration centre for the manufacture of shoes

Financial and cost accounting systems were prepared and introduced to the staff. Costing formulae for trial runs were worked out. It was recommended that attention should be given to a number of specific cost factors.

Projection of operating costs of the flour mill

The records of the mill's operations were found to be inadequate, and recommendations were made to improve record-keeping.

The need to reconcile expenditure figures from various sources was

pointed out. The costing exercise showed several shortcomings in the mill's operations and raised a number of questions that would have to be answered before the shortcomings could be remedied.

Comments on a study made for National Foam Furniture

Attention was drawn to a number of matters that either had not been covered in the study or required further examination.

Observations on a report on the integration of bottling of aerated water

It was suggested that, contrary to the conclusion reached by the consultants, it would be advisable to concentrate operations at one location. The report was otherwise satisfactory.

Comments on an offer for the establishment of a glass industry

It was suggested that the country making the offer should be asked to test sand and quartz samples for suitability and ascertain the size of reserves of acceptable raw materials.

Observations on an offer for the supply of plant and equipment for a proposed gypsum housing elements project

A number of questions were raised that would have to be answered before the project could be started.

Report on existing accounting systems in Democratic Yemen

It was found that the accounting systems were incomplete and inadequate. Recommendations were made on the information of a suitable uniform system, appropriate training and an instruction manual.



Annex II

LIST OF FACTORIES VISITED

Aden

1. Aden Aluminium Works
2. Aden Salt Works
3. Training and Demonstration Centre for shoes and leather goods.
4. Foam rubber factory
5. Revolution Workshop
6. Knitwear factory
7. Two readymade garment factories
8. Martyr furniture factory
9. Dairy unit
10. Martyr clothing factory
11. Textile factory
12. Plastic sandal factory
13. Rubber beach sandal factory
14. Algundi plastic factory
15. Agricultural implements factory
16. Aerated water plant
17. Oil mill
18. Flour mill
19. Perfume unit
20. Cigarette factory
21. Match factory
22. National Tannery
23. Tomato paste factory
24. Raw material sites for the proposed cement plant

Mukalla

1. Boat-building unit
2. Fish-meal factory

Technical reports on specific matters have been prepared by the Advisory Unit for 14 factories.

Annex III

MAJOR ITEMS OF EQUIPMENT PROVIDED BY UNDP

1 NCA 18-36 electronic printing calculator with 100 paper rolls and 10 ink ribbons.	US 894.53
1 Sharp PC-1802 handy calculator	Y 44,280
2 Sharp PC-1802 handy calculators with mains adapters	Y 87,810

Annex IV

FELLOWSHIPS AWARDED

TO: **Salim A.R. Al Amari**  
FOR: Theoretical and practical training in industrial engineering  
AT: National Institute of Training in Industrial Engineering,  
Bombay, India  
DURATION: 10 February 1975 to 4 August 1975

TO: **Adel Jbrahim Gabel**  
FOR: Theoretical training in industrial economics practices  
including project preparation and evaluation techniques  
AT: Institute of National Planning, Cairo, Arab Republic  
of Egypt  
DURATION: 12 April 1975 to 15 November 1975  
followed by IDCAS training workshop on project preparation  
and evaluation in Libya for one month from 16 October 1975  
(Mr. Gabel did not return to Aden and did not submit a copy  
of his final report.)

TO: **M.A. Thabet**  
FOR: Handicrafts and industrial co-operatives  
AT: (a) Small Industries Extension Training Institute,  
Hyderabad, India  
(b) International Institute INIP, Rome Italy  
DURATION: (a) 23 November 1975 to 16 April 1976  
(b) 17 April 1976 to 19 June 1976

Annex V

PROJECT PERSONNEL

UNIDO/UNDP

N. Krishnaswami, industrial engineer

H. Hosny, industrial economist

S.K. Desai, cost accountant

Local Staff

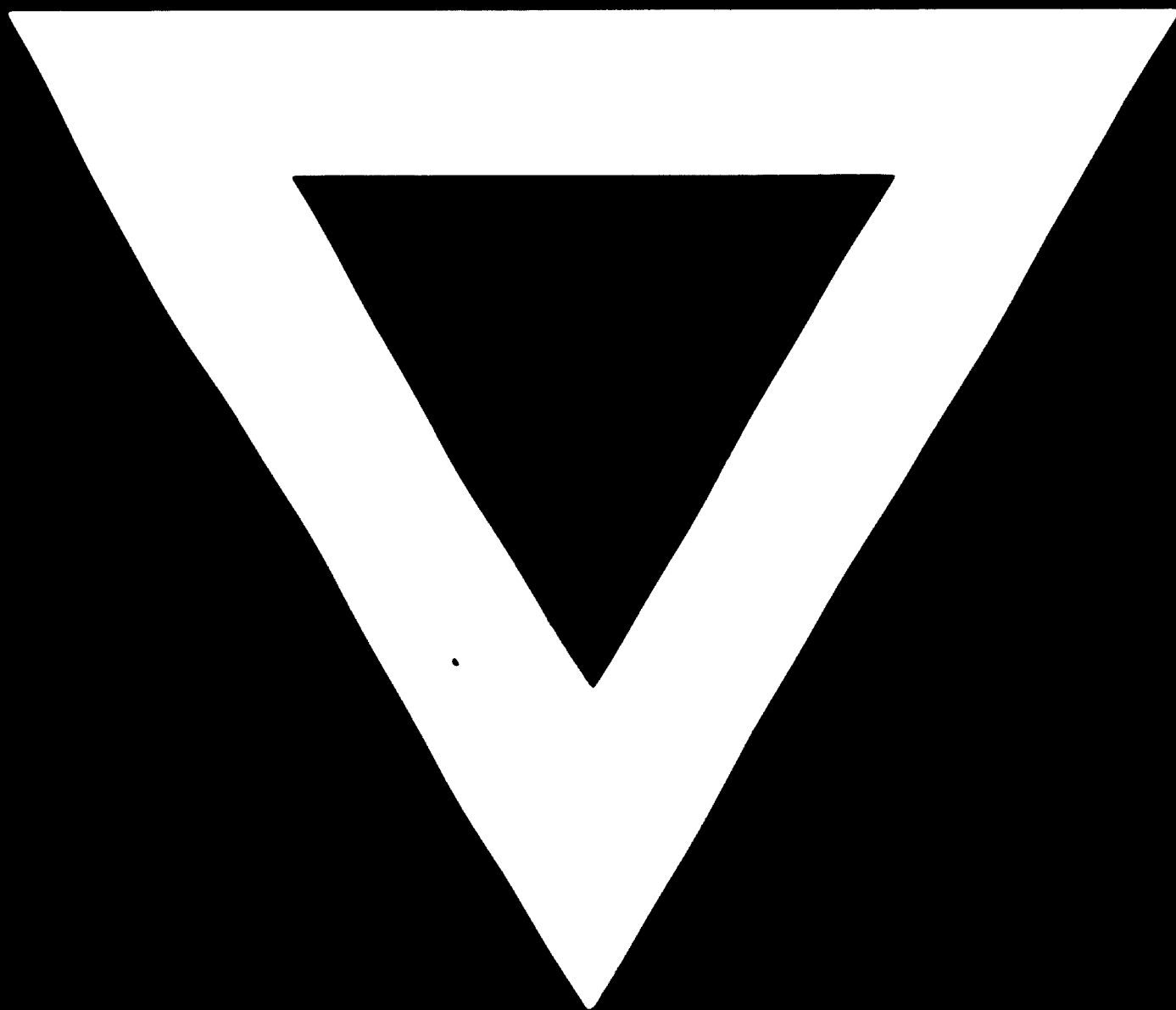
S. Al Ammari, engineer

A.J. Gabel, economist

A. Kalife, cost accountant

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche

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**77.10.06**