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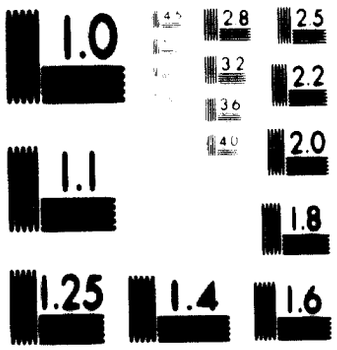

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UNIDO CONTRACT No 71/46
PROJECT No SF 71/3329

# FINAL REPORT

## Viability Study for the Establishment of a Central Workshop to Service Industrial Enterprises in the Federal Republic of Cameroon

October 22, 1971

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SYNOPSIS

During August and September 1971 a team from H. B. Maynard-Europe carried out a viability study for the establishment of a central workshop to service industrial enterprises in the Federal Republic of Cameroon. The viability study was a part of a UNDP/SF project (CMR-19), the purpose of which is to assist the Government in surveying the maintenance and repair (m and r) needs of small and medium-sized enterprises. If deemed feasible, the intention was to establish a pilot workshop.

The project is divided into two distinct phases and the viability study is a part of the first phase. In connection with the viability study, the team was asked to: a) identify enterprises which could use services from a m and r workshop; b) survey the kind of production facilities installed in the enterprises concerned; c) study and evaluate existing m and r facilities within the enterprises as well as locally available from service type workshops; d) determine which additional workshop services are required; e) recommend an implementation programme in the m and r field.

Based on its investigation in Cameroon, the team has come to the conclusion that the intended workshop will not be viable. The team has also concluded that a pilot workshop is not necessary to achieve the principal objectives of the project as specified in the Plan of Operation.

The reasons for these conclusions are:

A. The revenue the workshop staff may generate will not be able to cover even direct cash expenses. An annual deficit of CFA 15 - 17 million francs ($ 55 - 60,000) is to be expected.

B. Existing m and r facilities and available service type workshops in Douala cover sufficiently the local m and r needs.

C. A central m and r workshop may obstruct the development of existing and potential small Cameroonian service type workshops.

The team firmly believes in the principal objectives of the PPER and recommends an intensive action programme for the implementation of the required m and r services.

The m and r services should concentrate on helping small and medium-sized enterprises on-the-spot as described in details in chapter 9.

The team also recommends a widening of the principal objectives of the project to cover engineering aspects and problems, in general.

When the extension services have been in operation for about one year, a meeting should be held to review whether the conditions observed in this study have changed and if the conclusions should be modified.

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## LIST OF APPENDICES

## CHAPTER 1

## DEVELOPMENT OF THE STUDY

### 1.1 Invitation for Proposals, and Terms of Reference

1.1.1 The UNIDO invitation for proposals was dated 13 May 1971 and the attached terms of reference gave the following description of the project:

> "Viability study for the establishment of a central workshop to service industrial enterprises in the Federal Republic of Cameroon."

1.1.2 The terms of reference also described the Study as the first phase in the Special Fund project (CMR - 19) Pilot Programme in Maintenance and Repair (PPER) for which UNIDO is the Participating and Executing Agency. The purpose of the PPER as described in the terms of reference is: "to assist the Government in surveying the maintenance and repair needs of small and medium-sized enterprises, both public and private, and if deemed feasible, to establish a pilot workshop in this field to initiate repair and maintenance programme." The full text of the purpose and objectives of the SF project as given in the terms of reference are reproduced in Appendix 1-A.

1.1.3 The background material also indicated that: "An initial study has been completed by the Project Manager which will be supplemented by a survey to be implemented through the services of a consulting firm."

1.1.4 In the terms of reference it was emphasized that: "The consultants should work in close cooperation with the Government authorities, the Project Manager of the Pilot Programme in Maintenance and Repair (CMR - 19) and the Project Manager of the Centre for Assistance to Small Industries (CMR - 12).

1.1.5 The Maynard-Europe Proposal was sent to UNIDO on 10 June 1971. A telex from Vienna on July 21 indicated that Maynard-Europe had been awarded the contract.

1.1.6 The terms of reference for the assignment were based on those given in the invitation with some minor modifications suggested by Maynard-Europe. Paragraph 2.01, Statement of work in the UNIDO contract no 71/45 are reproduced in Appendix 1-B.

### 1.2 The Two UNDP/SF Projects, CMR - 12 and CMR - 19

1.2.1 The UNDP Office in Copenhagen assisted Maynard-Europe in

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obtaining copies of the Summaries for the two projects.

1.2.2 The objective of CMR - 12, for which ILO is the Participating and Executing Agency, is to assist the Government of Cameroon in establishing a Centre of Assistance to Small Industries at Douala. The activities of the ILO Centre are described in the Summary presented to the Governing Council (DP/SF/R.7/Add.10 dated October 4, 1968) in paragraphs 9 and 10:

> "The Centre will provide consultant services to small and medium-sized industry; management training to entrepreneurs and training to foremen. In the context of its consultant services, the Centre will:
>
> a) Select small firms which could benefit the most and set examples as pilot enterprises;
>
> b) Develop close cooperation between complementary firms;
>
> c) Stimulate new small industries;
>
> d) Collaborate on the technical level with administrative services;
>
> e) Undertake technical surveys required for bank credits; and
>
> f) Encourage the application of techniques it will seek to disseminate in its training activities."

1.2.3 The ILO/SF project was started in late 1968 when the Chief of Project arrived in Cameroon.

1.2.4 The Summary (DP/SF/R.9/Add.20, dated September 8, 1969) presented to the Governing Council, gave (para 3) the following background for the Pilot Programme in Maintenance and Repair (CMR - 19) and its expected results:

> "The rapid growth of the country's economy during the last years, especially of the industrial, transport and agricultural sectors, has been accomplished by a constantly increasing quantity of imported machines and equipment. The economic life and efficiency of this machinery and equipment has been seriously reduced due to a lack of adequate maintenance programmes and repair facilities in the country, especially for the small and medium-sized enterprises. It is expected that the project's activities will result in:
>
> a) Improved utilization of existing equipment and machinery by a substantial reduction of the unnecessary time it now remains idle;
>
> b) A core of skilled technicians and labour in this field of activity, at present limited only to certain industrial sectors;

c) The local manufacture of the less complex and frsquently used spare parts."

1.2.5 The execution of the project as described in the Summary is reproduced in Appendix 1-C.

1.2.6 The UNIDO/SF project CMR - 19 was approved by the Governing Council in January 1970. Field activities started in September 1970 when the Chief of Project arrived in Cameroon. The Plan of Operation was signed on 10 February 1971.

1.3 Start of the Viability Study - Briefing in Vienna

1.3.1 The Maynard-Europe team flew to Cameroon on Thursday August 12, 1971. The team consisted of:

- Mogens Host (Danish) - team leader;
- Fredrik Engdahl (Swedish).

Personal summaries for Messrs. Host and Engdahl are attached as Appendix 1-D and 1-E.

1.3.2 On the way to Cameroon, the team leader stopped at UNIDO Headquarters in Vienna for brisfing. During the briefing various documents regarding the project were received:

a) The Plan of Operations;

b) Two lists, with names of potential clients for a central maintenance and repair workshop;

c) The drawing of an 840 $m^2$ workshop building the Government was preparing for the project.

1.3.3 Chapter I of the Plan of Operation explains the objectives of the project. Appendix 1, section A explains the two distinct phases of the project:

"1) a preliminary phase which will have a duration of approximately six to eight months to survey the requirements in the repair and maintenance field and to determine whether the establishment of a Pilot workshop can fulfill a useful purpose in meeting these needs.

2) If decided that the Pilot workshop should be set up the second phase, which will have a duration of approximately one and a half years, will consist of setting up the workshop to initiate a programme in repair and maintenance."

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1.3.4 In addition to the Chief of Project, the Plan of Operation calls for three more experts in the following fields:

a) Maintenance mechanic (Post CMR-013-8D);

b) Electro mechanic (Post CMR-013-8C);

c) Car mechanic (Post CMR-013-8B).

1.3.5 The Plan of Operation calls for the following professional counterpart staff:

a) 1 engineer;

b) 3 general mechanics;

c) 2 electro mechanics;

d) 2 car mechanics.

In addition the Government will supply 2 storekeepers, 2 drivers and 2 secretaries.

1.3.6 The UNDP has earmarked $ 37,000 for machinery and equipment, $ 10,000 for material, and $ 5,000 for two vehicles.

1.3.7 During the briefing, the team leader was informed that posts 8B and 8C were filled and that the experts would assume duty shortly. The third post (8D) had also been filled but the candidate was no longer available.

1.3.8 The fact that the intended central workshop should be viable and serve a useful purpose in order to justify its establishment was emphasised.

# CHAPTER 2

## INTRODUCTION TO MAINTENANCE AND REPAIR IN CAMEROON

### 2.1 Contact with UNDP and Government

2.1.1 When the team arrived at Douala airport, it was met by the Chief of Project, Mr. H. Mulleris. It was the intention that the group should continue directly to Yaounde. However, as two flights to Yaounde were cancelled, the team remained in Douala over night.

2.1.2 The team, accompanied by Mr. Mulleris, flew to Yaounde early Friday morning August 13 and went straight to the UNDP Office from the airport.

2.1.3 The group was received by Mr. Michael Challons, Deputy Resident Representative who was acting in the absence of the Resident Representative, Mr. Bertil Borna. Mr. M. Baumler, Programme Officer in charge of UNIDO/SF Project was introduced to the group. The Officials were well acquainted with the project and the terms of reference for the Maynard-Europe assignment.

2.1.4 The discussions focussed around the following questions:

a) Definition of medium and small-scale manufacturing industry;

b) For which industries should the services of the Centre be available?

c) What geographical area should the Centre cover?

d) Availability of industrial statistics;

e) Actual expenditure for equipment to the Centre.

2.1.5 Regarding 2.1.4 a and d, the team was referred to the Directorate of Industry and the ILO project on small industries. Regarding 2.1.4 b the answer was that the services should be essentially for enterprises owned and operated by Cameroonians. Regarding 2.1.4 c the reply was that the Centre should cover the greater Douala area.

2.1.6 Regarding the expenditures, the opinion of the UNDP was that if equipment should be procured through international tender, no actual expenditure was likely before in 1972.

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2.1.7 In the afternoon, Mr. Mulleris and the team met Mr. B. Fouda, Director of Industries, Ministry of Industrial and Commercial Development. The Director showed great interest in the project and was well acquainted with its objectives. The questions mentioned in paragraph 2.1.4 a to d inclusive were discussed.

2.1.8 Regarding question a, the Director informed the team that no official definitions existed. He had asked the ILO project to submit proposals. Regarding question b, the Director's opinion was too that the services should essentially be for Cameroonians. Regarding question c, the Director defined the area as a circle around Douala with a radius of 45 km. The Director emphasized that the Centre should not compete with existing or potential Cameroonian enterprises and that it should be a viable ("rentable") activity.

2.1.9 Regarding industrial statistics, the team was referred to a section within the Directorate (Service des Agrements). Here it received a list of privileged industries, containing names of 147 manufacturing industries.

## 2.2 The PPER Present Situation

2.2.1 The PPER is located on the ground floor of a building previously occupied by the Handicraft organization (l'artisant). The location is across the street from the Central Post Office. Five airconditioned offices, each 12 - 15 $m^2$ are at the PPER disposal. The offices are well furnished and have modern office equipment. The present office was opened on June 15, 1971. Prior to that, the office was maintained in the Chief of Project's private residence. Since two years the CAPME has its offices on the first floor in the same building. The PPER has placed its documentary material in the CAPME library.

2.2.2 In addition to the Chief of Project, Mr. H. Mulleris, the PPER has the following staff:

Mr. Joseph Okala, Project Director
Mrs. G. Garnier, Secretary, on loan from UNDP
Mr. Ngassa Andela Thomas, Bi-lingual Secretary
Mr. M. Abita, Helper
Mr. Zoa Sévérin, Driver

Mr. Okala, who is counterpart to the Chief of Project, started work in the PPER office on July 1, 1971. Mr. Okala has a degree in Mining Engineering from France.

2.2.3 The Chief of Project explained to the team that tremendous efforts had been taken to bring the PPER to where it is today. The fact that all decisions are made at Yaounde had forced him to travel to the Capital once or twice a week. Since February (when the Plan of Operation was signed) he had urged UNIDO to send consultants who could carry out the viability study, and to recruit the three experts specified for the project.

2.2.4 The Chief of Project emphasized that since he had been completely absorbed by administrative matters, there had been no time to start any maintenance and repair programmes in depth. As a matter of fact, the Chief of Project had adapted the policy not to start field activities. If interest for assistance was created, he could not satisfy the needs because no experts were available.

2.2.5 The Chief of Project said that the reference in the UNIDO terms of reference to an initial study was likely to be a mistake. He had no knowledge of such study.

2.2.6 In June 1971, the PPER had sent a letter to 94 enterprises. The enterprises comprised saw-mills and wood-working (mainly furniture) industries of all sizes. The PPER had obtained a mailing list from the Chamber of Commerce. The letter is reproduced in Appendix 2-A. The objective of the letter was to inform about the existence of the PPER and to obtain suggestions as to how it could be useful in solving maintenance and repair problems in the industry.

2.2.7 The PPER received several replies by letter and by phone. A few letters came back as the addresses were unknown. No records of the replies or compilation seem to exist.

## 2.3 Preparation for a Pilot Workshop

2.3.1 The Chief of Project took the team to a workshop building which the Government is preparing for the PPER. The building is located in the Publics Works Departments area which is in the middle of the industrial district of Douala.

2.3.2 The building covers an area of 842.4 $m^2$ (15.6 x 54 m) and is of a relatively high standard. The height to the roof structure is about 6 m. Along the walls are 5 rooms totaling 120 $m^2$. These rooms can be used for offices, test-rooms or stores. There is also a 32 $m^2$ room with sanitary installations for the workers. The building is very near completion.

2.3.3 The Chief of Project and the Project Director have made a suggestion that the pilot workshop should render services in the following fields:

a) grinding of tools used by saw-mills and wood-working industries;

b) general mechanics;

c) injection pumps for diesel engines.

2.3.4 A tentative list of machinery and equipment has been drawn up by the PPER. No exact value has been calculated, but it should be within the $ 37,000 (CFA 10 million francs) earmarked by the UNDP for this purpose. No study or estimate indicating the viability of the intended services has been prepared.

2.3.5 The Chief of Project drew the team's attention to the fact that the job description for the three experts, as well as that of his own, described the objective of the project as: "to organize and establish a Pilot Workshop for maintenance and repair of machinery and equipment used in the various sectors, as well as the production of spare parts."

## 2.4 Contact with the CAPME Project

2.4.1 The CAPME project (Centre d' Assistance aux petites et moyennes entreprises - Center for assistance to small and medium enterprises) has been functioning since August 1968. The objectives of the project are described in paragraph 1.2.2. The Plan of Operation was signed on 18 August 1971. A request for a 5-year second phase of the project, dated July 1971, has recently been submitted to the UNDP.

2.4.2 Until the end of August 1971, four ILO experts have spent approximately 80 man-months on the project. The first Chief of Project worked in Cameroon from August 1968 to March 1971.

Mr. Paul R. Halbout, who has been in Cameroon since October 1970, is at the moment acting Chief of Project. Another expert is on home leave. The project has, according to Mr. Halbout, been greatly handicapped because of shortage of suitable living quarters for the experts. No counterpart staff is at the moment attached to the project.

2.4.3 One expert conducted in cooperation with AFCA (The Association for Training of Supervisory Manpower for the Industry and the Administration) a study of 111 Cameroonian enterprises employing a total of 623 persons. A

list of 78 enterprises in Douala and suburbs is attached to the report on the survey. No comprehensive registry of small and medium-sized enterprises has been established.

2.4.4 The CAPME project has conducted three courses, two in fitting and one in plombing. Each had a duration of 80 hours over a period of three months. The training took place during evening hours at the training centre operated by the Canadian Brothers (Frères Canadien).

2.4.5 The CAPME has established files on 31 small enterprises in Cameroon (15 in Douala, 7 in Yaounde, 3 in Garoua and 6 in West Cameroon), which have received consulting assistance.

2.4.6 The request for a second phase of the CAPME project asks for 421 man-months of expert assistance over a period of five years. 16 counterparts (homologues) and 24 assistants (Agents Techniques) are supposed to work with the experts.

2.4.7 There exists a good and cordial cooperation between the CAPME project and the PPER, with the latter working as a technical wing of the first.

## 2,5 Contacts in West Cameroon

2.5.1 The team made two full-day official visits to West Cameroon, the English speaking part of the Federal Republic of Cameroon. Buea as well as Victoria and Tiko were visited. Buea and Victoria are just within the radius of 45 km from Douala, although they are about 80 km (50 miles) by road. Tiko is situated approximately halfway between Victoria and Douala. The map reproduced in Appendix 2-B illustrates the administrative districts of Cameroon.

2.5.2 In Buea, the Capital for West Cameroon, the team met with Mr. Thaddeus F.S. Kinga, General Manager of the West Cameroon Development Agency, and Mr. O.S. Ebanja, Head of Commerce and Industries Department. The team received valuable information about the situation of manufacturing industries in West Cameroon. Mr. Kinga accompanied the team as well as the PPER Chief of Project and Project Director on visits to 14 enterprises.

2.5.3 The General Manager, Mr. Kinga, explained that with the exception of the Cameroon Development Corporation (CDC) most enterprises were small. The Cameroonization in West Cameroon had been the policy of the

State Government for the last 6 - 8 years. The difference between West and East Cameroon was explained to the team together with an appeal that the PPER and CAPME did not forget West Cameroon. A suggestion was made to locate an English speaking PPER expert in Buea or Victoria.

## 2.6 Acknowledgements

2.6.1 The team would like to thank everybody who assisted in and contributed to the collection of facts and figures required for the viability study. A special thank goes to the PPER Chief of Project and the Project Director for their continuous efforts to facilitate the work of the team. This special thank covers in fact the secretarial staff of PPER as well as CAPME who helped to prepare drafts for this report in both French and English.

2.6.2 The many visits to manufacturing industries helped to give the team a broad view of the maintenance and repair problems as well as the industrial structure of Cameroon. The team greatly appreciated the friendly welcome it received in all Cameroonian enterprises.

# CHAPTER 3

## INDUSTRIES IN CAMEROON

### 3.1 The Pattern of Industry

3.1.1 Documentation regarding industries and industrialization in Cameroon is plentiful. The team found that the recent World Bank Report (December 1970, Volume V, chapter II) gives a good description of the pattern of industry:

> "The industrial sector in Cameroon, contributing 13% to GDP in 1968/69, represents the pattern common to many African countries, with processing of local agricultural products (cotton, cocoa, palmnuts, etc.) and production of consumer goods and intermediate products for the local market, in replacement of imports, accounting for the majority of the enterprises. The major exception to this pattern has been the aluminium smelting operation at Edea.
>
> At present, industry is heavily concentrated in the Douala area. Despite some efforts to spread industrial development to other parts of the country, Douala has continued to attract most of the investment mainly because the basic industrial facilities - electricity, labor distribution network - and the most populous and affluent urban market are centred on the city. Nevertheless, continued development of industry in the Douala area is showing signs of strain because of shortage of suitable land and skilled workers.
>
> A dominant characteristic of the Cameroon industrial sector is that it is almost wholly expatriate. Many of the enterprises are subsidiary companies of foreign, predominantly French, firms. Investment in industry by Cameroonians (other than the Government financial institution) either directly through promotion and ownership, or indirectly through share participation, has been very small."

3.1.2 The "Europe France Outremer" issue of May 1971 (no 496) gave the following information on the turnover of the various industrial sectors:

| Sector | Turnover CFA Million Francs 1969 | 1970 | Index 100 1969 |
|---|---|---|---|
| Food, beverages, tobacco | 17,124 | 18,163 | 106,1 |
| Textiles, garments, shoes | 5,778 | 7,159 | 123,9 |
| Wood-working industries | 321 | 815 | 253,8 |
| Printing | 475 | 439 | 92,5 |
| Chemical industry, cement | 2,252 | 2,886 | 128,1 |
| Mechanical & metallurgical | 8,761 | 10,110 | 115,3 |
| Electricity, radios | 1,320 | 1,868 | 141,5 |
| Total | 36,031 | 41,440 | 115 |

3.1.3 The above figures are based on enterprises, which are members of SYNDUSTRICAM as described in further detail in sub-chapter 3.3.

## 3.2 Industrial Statistics

3.2.1 The team could not obtain any recent comprehensive industrial statistics where it was possible to get information on e.g. employment, turnover and investment by sector of manufacturing industries and by geographical regions. Very elaborate statistics are collected by the "Direction de la Statistique et de la Comptabilité" (Directorate for Statistics and Accounting). The Regional Statistical Office at Douala made all its information from the 1969/70 exercise available to the team. Thanks to this, it was possible to compile the table shown in Appendix 3-A for manufacturing industries in the Douala area covering the departments of Wouri, Mungo, Sanaga Maritime and Nkam, all in East Cameroon.

3.2.2 The Direction de la Statistique uses the principles of the CITI coding system (Classification Internationale Type par Industries) for economic activities as described in UN Statistical Paper, Series M no 4, Rev. 1. The equivalent English term is ISIC (International Standard Industrial Classification). In this system, manufacturing industries are grouped in Division 2 and 3, each divided in ten major groups. The 20 major groups for manufacturing industries are reproduced in Appendix 3-B. The most recent ISIC grouping (Series M no 4 Rev. 2) has not yet been adopted in Cameroon.

3.2.3 In several cases, enterprises are involved in a number of different economic activities, e.g. logging and saw-milling; manufacturing, wholesale and retail (e.g. shoes and bicycles); import and manufacturing (e.g. assembly of cars). The team attempted to extract from the original returns the employment and turnover figures related to the manufacturing

activities only. In several cases it was, however, difficult to decifer the information in the returns. The team therefore does not guarantee for the absolute exactness of Appendix 3-A. For guiding purposes it should, however, be good enough. In the case of group 25, seven sawmills have been added with data based on information available from returns provided in group 022, logging, No attempts have been made to extract data regarding manufacturing units "hidden" in other major groups.

3.2.4 If not already conducted, in the process, or suggested by other sources, the team recommends a detailed industrial census for Cameroon with thorough checking, on-the-spot, of the data provided in questionnaires. The booklet (dossier) used by the Statistical Directorate for collection of data is extremely elaborate. Many industrialists, in particular in the small and medium-sized industry sector, seem to have difficulties in supplying the correct information in the right columns and to supply all the information desired.

3.2.5 L'Usine Africaine, 1 edition, 1970/1971, Volume I, lists 125 manufacturing industries, mainly large and medium-sized enterprises in its section on Cameroon. Information is provided on the share capital, turnover, activity, location, production (actual and capacity), employees and extension plans.

3.2.6 The Directorate of Industries in the Ministry of Industrial and Commercial Development has a list of industries which have obtained various privileges (liste des industries privilégiées Camerounaises Classées par secteurs d'activités) as of 31 December 1970. The list contains information on 157 manufacturing industries for the entire country.

3.2.7 The Statistical Office at Buea and the Department of Industry and Commerce at Buea helped the team to set up a list of 46 manufacturing enterprises in West Cameroon. The list is reproduced in Appendix 3-C.

## 3.3 Large Industries

3.3.1 The "Syndicat des industries du Cameroun" (SYNDUSTRICAM) represents 72 larger industries in Cameroon with an average turnover of CFA 600 million francs (US $ 2.2 million) in 1970. A number of large enterprises, e.g. several large logging firms and the Cameroon Development Corporation are not members of SYNDUSTRICAM. The Syndicat issues an annual report and the most recent issue is: "L'Industrie Camerounaise au 1er Janvier 1971."

3.3.2 The "Europe France Outremer" had a special issue (May 1971, no 496) entitled "Le Cameroun à la veille du IIIème Plan" with a comprehensive description of the industrial sector and statistics on the 2o largest enterprises in respect of share capital, investment, turnover, employment and exports. The statistics are reproduced in Appendix 3-D. The five classifications include in all 35 enterprises which are listed in Appendix 3-E. The enterprises listed are all members of SYNDUSTRICAM. Approximately 15 - 20 manufacturing enterprises, who are not members, might qualify for a position in one or more of the five rating groups. A list of such enterprises is shown in Appendix 3-F.

## 3.4 Medium-sized and Small Industries

3.4.1 As mentioned earlier, no official definition of upper and lower limits for small and medium-sized industries seems to exist. Although exact definitions are not too important to the work of the team, it would be useful to have guidelines. This would help to identify enterprises which could use services from the intended centre workshop.

3.4.2 In Cameroon's neighbour to the south, Gabon, definitions regarding size of industries have recently been established as such:

a) Medium-sized industries are those with an annual turnover between CFA 100 and 250 million francs (US $ 360,000 - 910,000).

b) Small industries are units with a turnover not exceeding CFA 100 million francs (US $ 360,000), investment not exceeding CFA 30 million francs (US $ 110,000) and an employment not exceeding 100 persons. The unit is supposed to work with power and have more than ten employees.

3.4.3 As mentioned in paragraph 3.2.1 the team compiled a table, Appendix 3-A, indicating the manufacturing industry structure in four departments in East Cameroon with the help of the information available in the Regional Statistical Office at Douala. Although the table does not include all manufacturing industries in the area, it can be considered an indication of the structure of industries in the part of East Cameroon to be covered by the PPER. A summary of Appendix 3-A takes this form:

| Category | Units | | Employees | | | | Turnover | |
|---|---|---|---|---|---|---|---|---|
| | | | Africans | | Expatriates | | | |
| | Nos. | % | Nos. | % | Nos. | % | CFA F. | % |
| Small | 84 | 62 | 1,658 | 13 | 78 | 13 | 2,495 | 8 |
| Medium | 23 | 17 | 2,178 | 18 | 109 | 18 | 3,832 | 11 |
| Large | 29 | 21 | 8,661 | 69 | 421 | 69 | 27,344 | 81 |
| Total | 136 | 100 | 12,477 | 100 | 608 | 100 | 33,701 | 100 |

3.4.4 The small and medium-sized industries constitute 79% of the number of units, 31% of the employment, and 19% of the turnover. The large industries constitute 21% of the number of units, 69% of the employment and 81% of the turnover.

3.4.5 In West Cameroon most industries are located in Victoria, Buea and Tiko which are all within the geographical area to be covered by the PPER. Of the industries in West Cameroon, two qualify as large enterprises (CDC and EMEN) and one as medium-sized enterprise. The rest are all small enterprises, most of them even in the bottom quarter of their group.

## 3.5 Setting Up a PPER Register

3.5.1 As mentioned in paragraph 3.2.1, the Statistical Offices at Douala and Buea made their material available to the team. Based on this information, a card system has been established and left with the PPER Office. The system contains 244 cards covering industries. Each card covers one enterprise and intends to give the following information:

a) CITI code
b) Name and address
c) Turnover
d) African employees
e) Expatriate employees
f) Investment

3.5.2 As all enterprises have to register with the Organization for Social Security (Caisse Nationale de Prévoyance Sociale CNPS), it should be possible to get a check on the established card system. The team made an attempt to get a list of manufacturing enterprises (CITI 200-399) in the departments covered, with name and employment figures for each unit. The list could, however, not be made until after October 15, as the computer was occupied with other tasks.

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3.5.3 The list from the CNPS should be a great help for the PPER to complete a comprehensive register on all manufacturing industries in the initial area to be covered. However, as no official list may be quite complete, the PPER staff should always be observant regarding additional enterprises, e.g. while driving for visits, and when talking to Cameroonian entrepreneurs, suppliers of machinery etc. The new telephone directory, just issued, may also provide some leads. Getting a complete list of medium and, in particular, small industries, requires a true exploratory mind.

3.5.4 The team recommends a filing system being established with one file for each enterprise. The file is to contain basic information on the enterprises as well as reports and copies of correspondence regarding the enterprise, etc.

CHAPTER 4

# INDUSTRIES WHICH COULD USE SERVICES FROM A CENTRAL WORKSHOP

## 4.1 Introduction

4.1.1 The first task specified in the Statement of Work (contract paragraph 2.01 a) required the consultants to:

> "Identify small and medium-sized manufacturing enterprises who could use services from a central maintenance and repair workshop."

4.1.2 As mentioned in chapter 2, the Director of Industries, as well as the UNDP officials, emphasized that the services of the intended workshop should be available essentially to enterprises owned and/or operated by Cameroonians.

4.1.3 With the above constraint in mind the analysis required to identify small and medium-sized manufacturing industries which could use services from a central maintenance and repair workshop should be divided in four:

a) Small Cameroonian Enterprises
b) Other Small Enterprises
c) Medium-sized Cameroonian Enterprises
d) Other Medium-sized Enterprises

4.1.4 In chapter 2, it was also mentioned that the intended central workshop in Douala should service an area with a radius of 45 km from Douala. This area includes Douala with suburbs and Edea in East Cameroon, and Buea, Victoria and Tiko in West Cameroon. The analysis has consequently been limited to industries in these locations. Appendix 3-A and 3-C include a few enterprises in locations like Loum, Manjo and Nkongsamba in East Cameroon, and Bamenda in West Cameroon which are eliminated from the analysis.

## 4.2 Small Cameroonian Enterprises

4.2.1 The small Cameroonian enterprises, for which data was available in East Cameroon, number 19 with a total employment of 299 and a turnover of CFA 313 million francs. This gives an average employment per enterprise of 16 and an average turnover of CFA 16.5 million francs per enterprise or CFA 1.04 million francs ($ 3,800) per employee. Details are provided in Appendix 4-A.

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4.2.2 CITI (ISIC) sector 243, Manufacture of wearing apparel, is represented with six units and sector 334, Manufacture of concrete blocks, etc. with three units.

4.2.3 32 enterprises in the area of East Cameroon to be covered by the PPER had not submitted returns to the Statistical Office in Douala. The majority, if not all, of these 32 units are likely to be small Cameroonian enterprises. If one estimates that the turnover of the units, which have not responded to the statistical survey, is 1/2 to 2/3 of the average of the known units, the total turnover of small Cameroonian enterprises is in the order of CFA 500 million francs ($ 1.8 million).

4.2.4 The number of small Cameroonian enterprises in the part of West Cameroon to be covered by PPER is difficult to say exactly, as the necessary data is missing. Based on Appendix 3-C, the number of known small Cameroonian enterprises must be in the order to 25. The corresponding turnover is also difficult to estimate. Based on observations by the team, the small enterprises in West Cameroon appear to be even smaller than the ones in East Cameroon. Their turnover is not likely to exceed CFA 300 million francs ($ 1.1 million) per annum.

4.2.5 The total turnover of small Cameroonian enterprises within the area to be covered by the PPER is in the order of CFA 800 million francs ($ 2.9 million). The corresponding number of employees is around 750 in about 70 enterprises.

## 4.3 Other Small Enterprises

4.3.1 The other small enterprises, for which data was available in the PPER area of East Cameroon, number 37 with a total employment of 970 and a turnover of approximately CFA 1,300 million francs ($ 4.7 million). The average turnover per employee is CFA 1.3 million francs ($ 5,000) per annum. Appendix 4-B gives a detailed list.

4.3.2 The CITI sector with the most enterprises represented is 243, Manufacturers of wearing apparel and 352, Mechanical industries with 5 each. Sector 209, Bakeries, has four enterprises.

4.3.3 It is not likely that very many of the other small enterprises are among those which have not submitted statistical returns. If the number is estimated at six, the annual turnover of this group increases to approximately CFA 1,500 million francs ($ 5.4 million).

4.3.4 The characteristic of other small enterprises in East Cameroon is the ownership and/or employment of expatriates, on the average two per enterprise. The percentage of expatriates to Africans is approximately 8%.

4.3.5 The number of other small enterprises in West Cameroon, for which data is available, is not likely to exceed five. The turnover may be in the order of CFA 150 million francs ($ 540,000).

4.3.6 The turnover of other small enterprises in the total area covered by PPER is in the order of CFA 1,700 million francs ($ 6.3 million) from approximately 45 enterprises with around 1,100 employees.

4.4 Medium-sized Cameroonian Enterprises

4.4.1 The team has not been able to trace any manufacturing enterprise with a turnover between CFA 100 and 250 million francs which was exclusively owned and managed by Cameroonians within the PPER area.

4.4.2 The statistical data made available to the team indicated only one industry in this group: Tchamo Ambroise, which has a coffee plantation and a coffee treatment plant at Nkongsamba. This is, however, outside the PPER area.

4.5 Other Medium-sized Enterprises

4.5.1 The other medium-sized enterprises, for which data was available in the PPER area of East Cameroon, number 18 with a total employment of 2,192 and an annual turnover of approximately CFA 3,400 million francs ($ 12 million). Appendix 4-C gives a detailed list of the enterprises.

4.5.2 The CITI sector with most enterprises represented is 243, Manufacturers of wearing apparel, with four units.

4.5.3 The percentage of expatriates within other medium-sized enterprises is 5.1%. The average number of expatriates per enterprise is six.

4.5.4 The number of other medium-sized enterprises in West Cameroon, for which data is available, is two: EMEN Industries and BRITIND. The aggregate turnover is approximately CFA 400 million francs. The two enterprises employ 425 Africans and 16 expatriates.

4.5.5 The turnover of other medium-sized industries in the total area covered by PPER is in the order of CFA 4,000 million francs ($ 14.4 million).

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The number of enterprises are 20 with an employment of 2,500 Africans and 120 expatriates.

4.6 Identifying Potential Service Areas

4.6.1 In principle, any small and medium-sized manufacturing enterprise could use services from a central maintenance and repair workshop. If they in reality will make use of the services depend on a number of factors, e.g. do they have capacity to do it themselves, can the central workshop attend to their needs (qualitywise and timewise), is the cost of the services reasonable?

4.6.2 With the limited amount available for machinery and equipment ($ 37,700) CFA 10 million francs, and the limited number of seven skilled workers, the volume and kind of services the intended central workshop can attend to becomes extremely limited.

4.6.3 In identifying enterprises which could use services from a central maintenance and repair shop, the above limitations must be kept in mind. This raises the question: Should the workshop specialize on one or a few sectors of industry (with related maintenance and repair problems) or should it specialize in one or a couple of the basic maintenance and repair trades, such as mechanical, electrical, electronic, plumbing or building?

4.6.4 An additional criteria consideration may be the selection of industrial sectors and/or maintenance trades where the actual services rendered have the optimal effect on industrial production and economic development.

4.6.5 The descriptive material, as well as the statistical data available on small and medium-sized industries does not give any clear-cut indication as to which sectors a central workshop should concentrate on.

4.6.6 There are a reasonable number of saw-mills and wood-working industries among the small and medium-sized industries. The raw materials arelocally available and there is a considerable construction activity in the country. This may be one sector to concentrate on, as already suggested by the Chief of Project.

4.6.7 The manufacture of wearing apparel and the printing industry are also sectors of some size and importance. Many enterprises and villages are said to generate their own power with diesel engines. The uninterrupted performance of these engines is consequently of great importance. The servicing of diesel injection pumps has also been suggested by the Chief of Project.

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4.6.8 Of the various maintenance and repair trades, the mechanical is one of the most important and required by all industries using mechanized machinery and equipment. One possibility for the intended workshop is to concentrate on general mechanical work. The Chief of Project has also drawn attention to this service.

4.6.9 The team has consequently decided to concentrate its further analysis on the three areas:

a) Services to sawmills and wood-working industries

b) General machineshop services

c) Service of injection pumps for stationary diesel engines.

# CHAPTER 5

# SITUATION IN THE ENTERPRISES CONCERNED

## 5.1 Introduction

5.1.1 The two next tasks specified in the Statement of Work (Contract paragraph 2.01 b and c) required the consultants to:

> "Survey the kind of production machinery and equipment installed in the enterprises concerned", and
>
> "Study and evaluate the existing maintenance and repair facilities within the enterprises concerned and determine which additional workshop services are required."

5.1.2 While task b and the first half of task c can be delt with right away in light of the conclusions of chapter 4, the second half of task c: "Determine which additional workshop services are required", should be postponed until the next task: "Study the maintenance and repair services locally available and the existing service type workshops", has been carried out.

5.1.3 Consequently, and as a result of the findings in chapter 4, the survey and study will concentrate on the three sectors:

> Sawmills and wood-working enterprises
> Enterprises needing general mechanical services
> Enterprises needing services in injection pumps.

5.1.4 None of the small or medium-sized enterprises visited kept any records of production down-time caused by maintenance and repair. Nor were any records kept on the cost of maintenance and repair, or any other data that could indicate part performance of production machinery and equipment.

5.1.5 The team concentrated on maintenance and repair facilities and problems. At each enterprise visited, the team inquired about maintenance organization and facilities. Policies and schedules for daily, weekly and monthly, as well as long-term, maintenance and repair activities were looked into and discussed with the management.

## 5.2 Sawmills and Wood-working Enterprises

5.2.1 In order to obtain a realistic starting point regarding the kind of machinery and equipment installed as well as the level of maintenance and

repair facilities used in Cameroon, the team visited a large scale enterprise: SEFIC, which employs approximately 800 persons in their plant at Douala-Bassa. The management group consists of 20 Africans and 15 expatriates.

5.2.2 The production machinery and equipment is selected with due consideration to conditions prevailing in Cameroon, e.g. climate, manpower, qualifications, internal and external repair resources, availability of spare-parts. The choise has been for heavy machinery of low complexity and avoidance of electronic controls. The enterprise has its own maintenance and repair workshop with nine machine tools, a section for grinding and sharpening of saw-blades and cutters, etc., and a section for building maintenance. Twentyfive Africans were engaged for maintenance and repair.

5.2.3 A permanent routine existed whereby each production group was closed down once a week for a complete inspection and lubrication. A team from the maintenance department took care of this together with a thorough inspection. Detailed check-lists were established for each group. If the maintenance department could not cope with certain tasks, the enterprise would call on enterprises in Douala which were specialized in maintenance and repair.

5.2.4 Considering economic, social and cultural conditions in Cameroon, the team is of the opinion that the machinery and equipment installed at SEFIC, as well as the maintenance and repair organization established, secures a constant and well balanced availability of all production resources. If the PPER gets involved in maintenance and training programs, the SEFIC may well be used for study visits.

5.2.5 When it comes to medium-sized, and in particular small, sawmills and wood-working enterprises, the maintenance and repair functions become less organized. No small Cameroonian enterprises employ manpower exclusively for maintenance and repair.

5.2.6 Most medium-sized enterprises attempt to have machinery and equipment for grinding and sharpening. In some cases the enterprises accept grinding and sharpening work for others. Very few small Cameroonian enterprises have machinery and equipment for grinding and sharpening. Some have home-made machines, some use filing by hand and some have the work done by outside workshops.

5.2.7 General maintenance and repair within the small Cameroonian enterprises is mostly done by the proprietors themselves. The normal process in such cases is a weekly (Saturday or Sunday) inspection and

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greasing of the machines. No formal plan for this work was in existence. In some cases the team found that the quality and performance of machinery and equipment was below average. The reason for this was neglected maintenance and repair as well as improper operation of the machines including poor setting of tools.

5.2.8 In the small Cameroonian enterprises the team found that the installation of machines and electric connections were not properly made. The team also found that the selection of machines was not always the best for the actual production. Vibrations and poorly sharpened tools often resulted in bad quality of the surface of the machined wood. All small Cameroonian enterprises are in urgent need of practical advice and assistance on technological problems and production techniques far beyond the field of just maintenance and repair.

5.2.9 The need for a comprehensive engineering assistance to Cameroonian sawmills and wood-working enterprises is obvious.

## 5.3 Enterprises Needing General Mechanical Services

5.3.1 Most, if not all small Cameroonian enterprises, need general mechanical services. The team has not observed any lathe milling machine or grinding machine in any of the Cameroonian enterprises visited. An old drilling machine and a bench grinder was noticed in a few cases.

5.3.2 The conditions of production machinery and equipment in Cameroonian enterprises in general are very much like those described for the sawmills and wood-working sector: poor maintenance, unsuitable for production needs, wrong tooling, poor installation, bad house-keeping, etc. Most of these shortcomings date from insufficient technical knowledge and, in particular, technical experience.

5.3.3 The team is of the opinion that many of the shortcomings can be rectified on-the-spot with hand tools and portable power tools. The urgent need for the assistance of qualified mechanics to Cameroonian enterprises is without doubt.

## 5.4 Enterprises Needing Services for Injection Pumps

5.4.1 In order to study and evaluate the needs for this kind of service it would be natural to establish a list indicating the exact location of the stationary diesel engines installed in the PPER area, the horsepower (or KVA) of each engine as well as the make and model of injection pump, or pumps, used on each engine.

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5.4.2 No list of the above kind is available within the PPER Centre according to the Chief of Project. The team consulted a couple of suppliers of diesel engines and was told that rather few stationary diesel engines were installed in the area that would be covered by the PPER. The team was also told that service and repair for injection pumps was well taken care of by the suppliers.

5.4.3 As indicated in the following chapter: "Local Maintenance and Repair Facilities", the team studied facilities for injection pumps. The team found that facilities for this work are of a high quality and cover all major makes of injection pumps for stationary diesel engines.

5.4.4 The team consequently refrained from a separate study of the kind outlined in paragraph 5.4.1. Although the team does not doubt that certain owners of odd injection pumps may be in need of service, it does not think the volume of work will justify this service area to be covered by PPER.

## 5.5 Comments

5.5.1 From the many visits made by the team to Cameroonian enterprises it has become obvious that the need for assistance and advice in the field of maintenance and repair including general mechanical/electrical engineering is great. Even at the Technical College at Ombe seven machine tools and wood-working machines are out of order because the electrical motors have failed.

5.5.2 Even in many small and medium-sized enterprises, which benefit from the presence of expatriate owners and/or managers, there are some needs for improved maintenance and repair. However, it is a question of how these groups of enterprises will be interested in help from PPER. The managers visited were rather sceptical of what the PPER could accomplish.

5.5.3 In principle the team must say that all medium-sized and small industries could use services from the PPER. The question is what kind of services, and how to provide the services. Before continuing on that line it is necessary to attend to the task of studying the maintenance and repair services locally available and the existing service type workshops.

5.5.4 A comprehensive list of all enterprises visited by the team is given in Appendix 5-A.

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# CHAPTER 6

# LOCAL MAINTENANCE AND REPAIR FACILITIES

## 6.1 Introduction

6.1.1 As mentioned in paragraph 5.1.2, the next task that confronted the consultants according to the Statement of Work (contract paragraph 2.01, d) was to:

> "Study the maintenance and repair services locally available and the existing service type workshops."

6.1.2 The maintenance and repair activities to be studied in this connection basically originate from two sources:

a) Suppliers of machinery and equipment who have established facilities for maintenance and repair;

b) Entrepreneurs who have established service type workshops to cater to certain kinds of maintenance and repair needs.

6.1.3 When the team visited manufacturing industries it inquired who had supplied their production machinery and equipment. This information was combined with information extracted from local directories, advertisements in newspapers and publications in order to compile a list of suppliers of industrial machinery and equipment. The list is reproduced in Appendix 6-A.

6.1.4 During the visits to manufacturing enterprises, the team also inquired if the enterprises made use of outside service type workshops for repair and maintenance. If so, the team noted the names of the workshops. This together with an extraction of the enterprises listed in CITI sectors 35 and 36 resulted in a list of service type workshops as reproduced in Appendix 6-B.

## 6.2 Suppliers of Machinery and Equipment

6.2.1 During the visits to manufacturing enterprises, the team inquired about the availability and quality of after-sale-service from the suppliers, and of the possibilities for obtaining spare parts.

6.2.2 The general comment in and around Douala was that most suppliers had a comprehensive service organization including workshops for repair

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and overhaul of machines. Most commonly used spare parts were generally available from the suppliers stores. In West Cameroon, however, a large scale enterprise expressed some concern about the supply of spare parts, in particular for old machines and old equipment, and the pricing of such parts.

6.2.3 The team visited a number of suppliers to obtain information on the kind of machinery and equipment they were marketing in Cameroon, the existing sales and service organization including spare parts supplies. Most suppliers represent several foreign manufacturing of industrial machinery and equipment, mainly of French, German and English origin. Most suppliers have their main office at Douala with one or more branch offices through the country.

6.2.4 The team became convinced that the majority of suppliers possess resources to provide an efficient after-sale-service and supply spare parts from stock. The quantity of spare parts on stock is generally larger than one would find in Europe. Most suppliers have well equipped workshops for inspection, repair and maintenance. Several large suppliers have in addition direct telex connection with Europe. The workshops are supervised by highly qualified expatriate staff. Below are some examples of observations made by the team during its visits to suppliers.

6.2.5 One supplier offered a complete program of wood-working machinery. A supply of the machines most commonly used in Cameroon was kept in stock in Douala. Spare parts as well as saw-blades, planing-knives and cutting tools for these machines were readily available from stock. The supplier had own mechanical workshop, a staff of service men and two service vehicles. Repair work is carried out on-the-spot in the client's factory as well as in the supplier's own workshop. When new machines are sold, it happens that old machines are reconditioned in the supplier's workshop and then offered for sale.

6.2.6 Another supplier, who sells machinery and equipment to coffee plantations, has a well established service network. Some planters have a contract with the supplier for an annual inspection and service visit before the coffee season starts. The supplier makes it a point even to visit planters who have no service contracts in order to give on-the-spot advice. Most, if not all, coffee plantations and treatment plants are outside the PPER coverage area.

6.2.7 One supplier is marketing stationary diesel engines and heavy earth-moving equipment. The make represented has established a world renown

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reputation for maintenance and repair of its equipment. The supplier at Douala has a large workshop for repair and overhaul, and elaborate stores with spare parts. The workshop has a separate section for renovation, calibration and testing of diesel injection pumps. The supplier maintains smaller workshops and stores at several locations throughout Cameroon. Four Land Rovers are at the disposal for service men. Each year, 12 - 15 young Cameroonians are accepted for a 5-year training program. The quality of maintenance and repair work performed by this supplier is at par with the performance in any industrialized country.

6.2.8 One supplier sells engineering hardware, accessories and equipment (perishable cutting tools and hand tools) for mechanical industries. The assortment of hand tools and accessories in the Douala store is extremely large. Smaller stores are maintained at several other locations in the country.

6.2.9 Another supplier represents a manufacturer of diesel injection pumps, which are used in several makes of diesel engines. The supplier has established a separate workshop for testing, reconditioning and calibration of injection pumps. Two skilled mechanics from the manufacturer's plant in Europe work in Douala. Several Cameroonians have also been to the manufacturer's plant for training.

## 6.3 Public Service Type Workshops

6.3.1 The team visited three such establishments, the Railway workshop, and the workshops belonging to the Port Authority and the Public Works Department. The two first operate under a Government policy that they must not, repeat not, accept jobs from outside parties if the work can be done by private workshops in Douala. The amount of work the Railway workshop has done for outside parties during the last year was given as CFA 28 million francs ($ 100,000). No figure was available from the Port Authority, but it was estimated at a few million francs only. The PWD work for outside parties was estimated at CFA 12 million francs ($ 43,000).

6.3.2 The Railway workshop has a total employment of 1,200, of which 210 are engaged in a special department for production of spare parts and general maintenance (Atelier de Fabrication et d'Entretien général). The department is divided in three sections: sheet metal work, general maintenance and mechanical (Chaudronnerie, Entretien général et Méchanique). The department even operates a small foundry with a cupola. An organization chart for the department is shown in Appendix 6-C.

6.3.3 The jobs the workshop would do for outside customers were for example turning and grinding of pieces with big diameters or great lengths.

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The mechanical workshop has an extremely elaborate set-up of machine tools, numbering close to one hundred.

6.3.4 The team was impressed with the work carried out at the Railway workshop in general and its machineshop in particular. From the Chief of Section and downwards, the entire staff was Cameroonian and very effective. The morale and discipline seemed to be of a high order.

6.3.5 When doing work for outside the following rates for cost estimation were used:

| Personnel | Personel | CFA francs/hour |
|---|---|---|
| Superintendent | (Technicien supérieur) | 2,000 |
| Foreman | (Chef de Brigade) | 2,000 |
| Skilled Worker | (Ouvrier qualifié) | 900 |
| Semi-skilled worker | (Ouvrier normal) | 500 |
| Helpers | (Aide ouvrier) | 300 |

6.3.6 The workshop operated by the Port Authority maintains all equipment used in the port, tugboats, customs control boats, trucks, fork-trucks and other heavy material handlings equipment. The workshop is set up to repair all the equipment mentioned including the diesel engines used in powering the equipment. The utilization of the installed machine tools and equipment appeared to be low. The methods used for disassembling diesel engines and to clean the parts are primitive and gave an impression of poorly planned activities.

6.3.7 Work in process seemed to be rather high, perhaps depending on shortcomings in scheduling, supervision and the absence of systematic principles for workshop management. Risks for delayed deliveries and sub-quality work would probably keep most private parties away from the Port Authority's workshop.

6.3.8 The organization of PWD plant at Bassa is working in two parts - the selling of services and rental of equipment to own or outside contractors' works all over Cameroon, and the maintenance and repair of that equipment. The total number of tractors and other machines in work is about 600 and an additional 600 machines have been ordered. The maintenance and repair department has a total employment of 130, of which 100 are in the different workshops, 20 in the spare part supply, and the other 10 are technical and administrative personnel. Of the employment were all except three Africans.

6.3.9 The maintenance and repair department has separate sections for mechanical work, welding and forging, truck repair, repair of heavy-working

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machines, renovating of gas and diesel engines, electrical work and even for daily service and repair of trucks. The machines and equipment installed in the different sections were relatively new and in good order. The mechanical workshop has eleven machine tools and the motor section a complete set-up of equipment for renovating of diesel engine blocks and even for service and testing of injection pumps. The maintenance department uses the following rates by charging its services on the selling department:

| | |
|---|---|
| Service men | 650 francs/hour |
| Machine worker | 1,000 -"- |

## 6.4 Private Service Type Workshops

6.4.1 Private service type workshops are mainly to be found within CITI sectors 35 and 36. As mentioned in paragraph 6.1.4, a list of firms in these sectors is reproduced in Appendix 6-B. The list is based on information obtained from the Regional Statistical Office in Douala.

6.4.2 In most cases these enterprises manufacture certain products at the same time as they operate mechanical and electrical workshop for maintenance and repair.

6.4.3 The service type workshop enterprises visited by the team are marked in Appendix 6-B. The team was impressed by the kind and the volume of repair and maintenance work these enterprises could handle. Below are some brief observations from visits made.

6.4.4 One service type workshop in Douala is equipped for a complete overhaul of diesel engines. It receives engines from all over Cameroon. The workshop is equipped with 25 machine tools: lathes, milling machines, sharpers, grinding machines, drilling machines, boring and honing machines and a crank-shaft grinder. The workshop also accepts general machining jobs. The workshop does not do adjustment and testing of injection pumps. This work is sub-contracted to one of three specialized workshops for that purpose existing in Douala. The latter is an interesting example of the industrial division of labour that is in the process in the Douala area. The enterprise employs 10 expatriates and 65 Africans. The annual turnover is in the order of CFA 150 million francs ($ 550,000).

6.4.5 One enterprise, specialized in making equipment for oil companies and chemical industries, has three workshops in Cameroon (Douala, Yaounde and Garoua). To each workshop is attached 3 - 5 traveling service men, each equipped with basic tools, spare parts and various sub-assemblies. If one of the latter is exchanged, the one removed is taken to the workshop for re-

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conditioning. The enterprise is also marketing a diesel engine for stationary and mobile use (trucks and fishing boats). In order to keep the fishing boats operational all the time, the company has established stores of spare engines and components at various port locations.

6.4.6 One enterprise in Douala is manufacturing sheet-metal boxes (suitcases). The production layout is made according to reasonable industrial engineering principles. In order to maintain its production machinery and tools, the enterprise operates a small machineshop with five machine tools. Work for the machineshop is accepted from the outside.

6.4.7 The Cameroon Development Corporation (CDC), which owns large plantations and processing plants in West Cameroon, operates a central engineering workshop at Tiko. It employs 581 Africans and 3 expatriates. Its main task is to maintain 40 diesel locomotives and a large number of trolleys. It also functions as a central workshop for the 12 plantations, all of which have smaller workshops for their own use. The CDC engineering workshop at Tiko has all facilities for mechanical and electrical repair and maintenance, as well as a joinery shop with own sawmill and a grinding section. The machineshop has 21 machine tools and is also engaged in spare parts production. The CDC accepts work from outside, and the volume for the last 12 months was given to around CFA two million francs.

## 6.5 Manpower for Maintenance and Repair

6.5.1 As more and more production machinery and equipment is installed in Cameroon in connection with plans for industrial and economic development, the need for trained and qualified maintenance manpower also increases. This is further amplified by the fact that new machinery and equipment has a tendency to become more complex.

6.5.2 The supply of skilled Cameroonian technicians and workers for maintenance and repair is rather limited. This was pointed out to the team at almost all its visits to medium-sized and large enterprises. However, the team was in general impressed by the performance shown by Cameroonian maintenance and repair manpower, in particular at the Railway workshop in Douala and the CDC engineering works at Tiko. The problem appears to be more of a quantitative than of a qualitative nature.

6.5.3 While the management of most large and medium-sized enterprises understand the interrelation between maintenance and repair on the one side and the uninterrupted availability of production machinery and equipment on the other side, a similar appreciation is lacking in most small enterprises.

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6.5.4 The team has visited two establishments for technical training, Canadian Brothers (Frères Canadiens) in Douala and Ombe Technical College in West Cameroon. The team feels that the training could be reinforced as regards maintenance and repair. Specialists should be brought in to lecture a maintenance and repair technique and supervise practical exercises in this field. The specialist may be from the PPER, the Railway workshop, the CDC engineering workshop, or similar organisations with expert know-how and experience.

# CHAPTER 7

# ADDITIONAL SERVICES REQUIRED

## 7.1 Introduction

7.1.1 As described in paragraph 5.1.2, the second half of task c: "determine which additional workshop services are required", was postponed until the study of "maintenance and repair services locally available and the existing service type workshops" was completed.

7.1.2 Although only additional workshop services are mentioned in the task, the team feels that it should also deal with additional services which might be rendered by the PPER.

## 7.2 Additional Workshop Services

7.2.1 In chapter 6, the team reported on its findings regarding maintenance and repair services locally available and the existing service type workshops.

7.2.2 The team was impressed with the quantity of local maintenance and repair facilities and services available. From the physical aspects of workshop services, the team does not think it is necessary to add anything to the intended PPER workshop. In reality, the services suggested by the Chief of Project are already available.

7.2.3 The team has given great thought to the problem whether other workshop services than those already analyzed in depth should be needed. The team has not been able to identify any. This may not necessarily mean that such needs do not exist. But if they do, the needs are most likely to be so limited that the related services will be utilized only to a fraction of their capacity and consequently become greatly uneconomical.

7.2.4 Technical and financial shortcomings seemed in some cases to prevent small Cameroonian entrepreneurs from making use of available workshop services. The team, however, does not think this could be used as justification for establishing, or adding to, a PPER workshop. The PPER staff could help bridging the technical gap, it could control the pricing of the work, and it could advise the small entrepreneurs as to where to obtain financial assistance, if required.

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7.2.5 As the team has found that no direct needs exist for establishing a PPER central workshop, the study could have come to an end with this conclusion. The team felt, however, that it was necessary to continue, partly because services other than workshop services are required, and partly because the financial implications of the PPER activities needed an analysis.

## 7.3 Other Services Required

7.3.1 As mentioned above, the team doubts the need for a PPER workshop because of already existing facilities and capacities. However, this does not mean that small and medium-sized industries in Cameroon are not much in need of technical assistance.

7.3.2 Most Cameroonian entrepreneurs have limited engineering knowledge and experience. They need assistance in selection of production machinery and equipment, in its installation and operation, etc. etc. The team feels that maintenance and repair should not be isolated from related problems. The project could widen its objectives and scope. One obvious possibility is to provide assistance in mechanical/electrical engineering problems in general.

# CHAPTER 8

## CONDITIONS FOR A PILOT WORKSHOP VIABILITY

### 8.1 Introduction

8.1.1 Task e in the Statement of Work, paragraph 2.01, reads: "Determine under what conditions a pilot workshop for maintenance and repair for small and medium-sized industries would be viable."

8.1.2 In specifying the conditions it is important to know exactly the meaning of "viable". When the team met the Director of Industries, Mr. B. Fouda, in Yaounde, he emphasized that the workshop should not compete with existing or potential enterprises and that it should be a "rentable" activity.

8.1.3 The team has concluded that a primary condition for the establishment of a pilot workshop must be that it is able to pay its own way - at least after an initial period of time (say one to two years). In other words, the costs of running the workshop must at least be equalized by its income from services rendered.

8.1.4 During visits to the Railway workshop and the workshop of the Port Authority, which have extensive maintenance and repair facilities, the team also learned that according to Government policy, these public enterprises are not allowed to accept jobs which can be carried out by private workshops in Douala.

8.1.5 The team considers it important that the intended workshop does not compete with existing or potential local enterprises. The activities of a PPER workshop should not create undue competition, nor should it block any initiative from local entrepreneurs to set up service type workshops. This could also lead to the PPER working against the CAPME promotional activities to establish new small and medium-sized enterprises.

8.1.6 When analyzing the viability of the intended workshop it is necessary to answer the following questions: What is the workshop's

a) potential capacity, charges and revenue?

b) potential business (turnover)?

c) Estimated costs?

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8.1.7 It is the answers to the above questions and the proper balancing of the figures that will decide whether or not the intended workshop is economically viable.

## 8.2 Potential Capacity, Charges and Revenue

8.2.1 The capacity of the workshop depends on the number of productive workers and the number of working hours per year. With seven qualified mechanics and 1,720 working hours each (excluding vacation, holidays, and sickness, etc.), the maximum available capacity becomes 12,000 hours per annum. This and the subsequent calculations were made in cooperation with the Chief of Project and the Project Director.

8.2.2 In practice not all the above 12,000 hours will be productive and chargable to customers. In service type workshops it is common to calculate with an actual utilization between 40 and 70%. When the highest level of 70% is used, the number of chargable working hours in a year becomes 8,400.

8.2.3 The Chief of Project and the Project Director estimated that it would be possible to charge CFA 950 to 1,200 francs per hour for services rendered. This range checks quite well with the figures the team learned about in the market. If any deviation, the range is rather on the high side.

8.2.4 With 8,400 hours chargable at CFA 1,200 francs per hour, the PPER can generate an annual revenue of CFA 10 million francs.

## 8.3 Potential Business

8.3.1 Chapter 4 dealt with industries which could use services from a central workshop. The analysis covered four groups of industries within the PPER geographical area of activity. For each group the number of enterprises and their turnover was estimated. The total for the four groups were 135 enterprises with a turnover of CFA 6,500 million francs ($ 23 million) per year.

8.3.2 The relation of cost of maintenance and repair to turnover varies somewhat from industry to industry. In order to obtain an approximate figure for the volume of maintenance and repair in the enterprises concerned, an overall figure of 8% can, however, be used. A part of this maintenance and repair work is done within the enterprises with own resources, and a part is bought from outside. Smaller enterprises generally buy more from the outside than larger enterprises. Since the PPER workshop will not cater to all sectors

of industry or all kinds of maintenance and repair services, the PPER cannot expect more than a limited part of the possible business. The medium-sized enterprises with expatriate ownership and/or management are not likely to use any services from the PPER while small Cameroonian enterprises are more likely to be interested.

8.3.3 The volume of business the PPER can expect may now be calculated as shown in the table below:

| | Small Enterprises | | Medium Enterprises | |
|---|---|---|---|---|
| | CAM | Others | CAM | Others |
| Number of enterprises | 70 | 45 | 0 | 20 |
| Turnover (CFA million) | 800 | 1,700 | 0 | 4,000 |
| Maintenance cost, 8% | 64 | 136 | 0 | 320 |
| Outside maintenance % | 70 | 50 | 0 | 40 |
| Outside M. (CFA million) | 45 | 68 | 0 | 128 |
| PPER share, % | 20 | 10 | 0 | 0 |
| PPER business (CFA million) | 9 | 7 | 0 | 0 |

8.3.4 Based on the above table and estimates, the potential business for the intended PPER workshop is CFA 16 million francs. Of this 9 million is to be expected from small Cameroonian enterprises and 7 million from other small enterprises.

## 8.4 Annual Costs

8.4.1 The costs of the workshop originate partly from recurring costs (supervision, labour, tools, material, electricity and water, etc.) and partly from initial investments (land, buildings, machinery and equipment, and working capital). x)

8.4.2 The Government will recruit one engineer (already in position) and seven mechanics plus six other staff members. The annual cost for this staff is approximately 12 million francs ($ 43,000) when the rates in the signed Plan of Operation are used. If a suggested increase in the salary of the engineer is approved, the costs will increase to almost CFA 13 million francs ($ 47,000). The details of the staff costs are as such:

x) The figures used in the following cost estimates have been taken from the PPER Budget for the period 1 July 1971 to 30 June 1972, as prepared by the Chief of Project, and from the signed Plan of Operation.

/...

| Staff | | Yearly Salary | Total |
|---|---|---|---|
| Engineer | 1 | 2,040,000 | 2,040,000 |
| Mechanics | 7 | 720,000 | 5,040,000 |
| Storekeepers | 2 | 432,000 | 864,000 |
| Drivers | 2 | 228,000 | 456,000 |
| Secretaries | 2 | 432,000 | 864,000 |
| | | | 9,264,000 |
| Social costs, 30% | | | 2,779,200 |
| Grand total | | | 12,043,200 |
| Suggested increase for engineer 600,000 + 30% | | | 780,000 |
| Probable Grand Total | | | 12,823,200 |

8.4.3 Miscellaneous operating expenses are in the order of CFA 4,256,000 francs ($ 15,000) according to the PPER budget for 1971/72. The break-down is as follows:

| | |
|---|---|
| Maintenance of aircondition and office equipment | 100,000 |
| Maintenance of vehicles | 180,000 |
| Petrol and lubricants | 500,000 |
| Electricity and water | 480,000 |
| Gas | 450,000 |
| Telephone, telegrams, stamps | 600,000 |
| Custom charges reimbursed | 1,940,000 |
| Total Operating Expenses | 4,256,000 |

8.4.4 Other administrative expenses are according to the budget CFA 3,570,000 francs ($ 13,000) with the following break-down:

| | |
|---|---|
| Transportation and transfers | 720,000 |
| Insurance | 990,000 |
| Taxes | 150,000 |
| Housing for the engineer | 960,000 |
| Information | 750,000 |
| Total Administrative Expenses | 3,570,000 |

8.4.5 The land and building the Government is preparing for the PPER is valued at CFA 26,668,000 francs ($ 97,000) in the signed Plan of Operation. If this is the true value of the land and building is not known to the team. The value has been unchanged in the Plan of Operation since the English version dated 8/1970. Considering the quality of the building, the

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land surrounding it and the location, the team would not be surprised if the real value is much higher. Although the value has importance in calculating the rent, the team has used the figure from the Plan of Operation. The rent, or annual cost of using the building, is estimated at 1/10 of its value, or CFA 2.7 million francs ($ 9,700).

8.4.6 Two more cost elements have to be included in the cost estimate, depreciation of machinery and equipment, and interest on the capital invested. Depreciation on machinery and equipment is set at 10% of CFA 10 million francs ($ 37,000, approved by the UNDP. For tax purposes, 20% is allowed). Depreciation of the building is considered included in the rent. The invested capital, including working capital, is estimated at CFA 50 million francs. The present interest rate is 10%, so the interest cost amounts to CFA 5 million francs ($ 18,000).

8.4.7 The team does not understand the inclusion of reimbursable custom charges (CFA 1,940,000 francs) under the heading of Operating Expenses. It may rather be added to the investment in machinery, and depreciated together with the machinery. This brings the Operating Expenses down to CFA 2.3 million francs.

8.4.8 Based on the figures available, it is now possible to make a businesslike calculation of the annual costs of the PPER as envisaged in the Plan of Operation:

| | |
|---|---|
| Salaries to staff | CFA 12.8 million francs |
| Operating expenses | 2.3 |
| Administrative expenses | 3.6 |
| Rent | 2.7 |
| Depreciation of machinery | 1.0 |
| Interest on capital | 5.0 |
| Total Annual Cost | CFA 27.4 million francs |

8.4.9 The above estimate does not include any expatriate staff as this will be temporary and paid for by the UNDP. Nor does it include any cost of material as this is considered accounted for and charged separately.

## 8.5 Viability Considerations

8.5.1 The elements to compare for the viability analysis are:

/...

| | |
|---|---|
| Potential revenue | CFA 10 million francs |
| Potential business | CFA 16 million francs |
| Total costs | CFA 27 million francs |

8.5.2 This is, indeed, not an encouraging situation. The Chief of Project expects, however, that if more productive manpower is added to the workshop, the revenue can be increased without increasing the costs proportionally. Before looking into this, one may take a second look at the annual costs of the PPER estimated at CFA 27.4 million francs. As mentioned in 8.4.7 this was a businesslike estimate the way a private entrepreneur would have to do it.

8.5.3 Government accounting principles may be different from commercial (private) accounting principles. This does not imply that certain cost items do not exist for a Government (public) workshop. It just means that the cost items appear somewhere else. Depreciation of machinery and equipment, or rent (or costs) of a building etc. may be charged to other accounts. If the PPER considers actual expenses in its accounting only, the annual costs may be reduced by approximately CFA 8 million francs (Depreciation of machinery: 1 million, Rent of building (minus maintenance): 2 million, Interest on invested capital: 5 million). These CFA 8 million francs are by no means savings, but an indirect Government subsidy to the PPER.

8.5.4 With the elimination of the above costs the direct annual expenses of the PPER will be in the order of CFA 19 million francs. As the estimated revenue was CFA 10 million francs, the direct cash deficit will be CFA 9 million. To this comes the above mentioned 8 million francs indirect Government subsidy.

8.5.5 Now the question from 8.5.2 what will happen if more manpower is added to the workshop can be taken up. The potential business was estimated at CFA 16 million francs. This is an increase of 60% in comparison with the revenue 7 mechanics could generate. 4 more mechanics should be able to increase the revenue by 57% if utilization is kept at 70%. 4 mechanics means an additional salary of CFA 3.75 million francs (2.9 + 30%). The result can be summarized as such:

| | |
|---|---|
| Total revenue | CFA 16 million francs |
| Total cash expenses | CFA 23 million francs |
| Total cash deficit | CFA 7 million francs |
| Indirect subsidy | CFA 8 million francs |

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8.5.6 What is it that makes the operation of the PPER so uneconomical? The many private enterprises that deal in maintenance and repair in Douala seem to have a thriving business. Salaries are the largest single cost item in the PPER cost structure. CFA 2 - 3 million francs per year plus around 1 million for housing and transportation for an engineer, as well as CFA 720,000 francs per year for each mechanic seems high. One way towards financial viability for the PPER would be to operate with less expensive staff while maintaining the hourly charges of CFA 1,200 francs and the rate of utilization at 70%. In order to break-even cash-wise at a turnover of CFA 16 million francs, the salaries should be reduced by nearly 50%.

8.5.7 The Government, UNDP and UNIDO must realize that a PPER workshop with the planned staffing and cost structure will require an annual cash subsidy of CFA 7 - 9 million francs - most probably more. In addition comes an indirect subsidy, because omitting ordinary commercial cost items like rent, depreciation and interest on invested capital amounts to another app. CFA 8 million francs per year.

8.5.8 Even though the rent for the intended workshop building has been excluded from the direct costs, the team feels it is necessary to make some comments. The building is far too big for the machinery and equipment that can be obtained for $ 37,000. The building is also far too big and elaborate to serve as a pilot workshop and model for Cameroonian entrepreneurs and clients. The building is furthermore far too big considering the strength of the staff contemplated in the Plan of Operation. The location of the building in the PWD compound and near the industrial area for large and medium-sized expatriate industries may have some adverse effects on the primary objectives of the PPER.

The team learned from the Chief of Project that it was the intention to keep the present office even if activities started in the suggested workshop. In the team's opinion it would be unfortunate to separate the PPER staff and activities in two widely separated locations within the same city.

8.5.9 Considering that the team did not find any physical needs for establishing a PPER central workshop (see 7.2) and since its operations will cost the Government CFA 15 - 17 million francs per year as described above, the team recommends that the establishment of a workshop should be given up, or at least postponed. A postponement may make it possible to clarify the cost structure and expenses of the operations as well as it will give the experts an opportunity to make a further assessment of the situation and the practical problems while they provide extension services.

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## 8.6 Meeting Principal PPER Objectives

8.6.1 The team feels that far too much emphasis has been laid on the establishment of a PPER workshop. This is so, not only when one considers the industrial infrastructure in the Douala area, but also when one considers the principal objectives of the PPER project.

8.6.2 The principal objectives of the project are mentioned in chapter 1 and reproduced in Appendix 1-A. In short, and using m and r for maintenance and repair, the principal objectives are to:

introduce a m and r consciousness in management;

establish and provide training in m and r programmes;

assure improved utilization of machinery and equipment;

carry out on-the-spot repairs to demonstrate modern m and r methods;

study feasibility of local manufacture of spare parts;

study possible needs for additional machine tools.

8.6.3 Few, if any, of the above objectives need a PPER workshop to be achieved. What matters is the quality and experience of the PPER staff, Cameroonians as well as expatriates. If, and when, workshop facilities are required, they are easily available in plenty from private as well as public sources. The PPER staff definitely needs some tools and equipment, but not a complete workshop of their own.

8.6.4 The team is in full agreement with the principal objectives of the PPER project and also realizes the needs for a close cooperation with the CAPME.

8.6.5 The team feels that the character of a pilot project has faded. Like in industry, the PPER should start on small scale, test ideas and methods, make necessary adjustments based on actual experience. This is the path that the PPER should follow on its road to a viable operation.

CHAPTER 9

# AN IMPLEMENTATION PROGRAMME

## 9.1 Introduction

9.1.1 Task h of the Statement of Work (contract paragraph 2.01) asks the consultants to: "recommend an implementation programme in the maintenance and repair field as well as a schedule of priority work".

9.1.2 The team suggested in the previous chapter to widen the objectives of the project to cover a broader aspect of engineering and production problems in general. The team feels that this is indirectly thought of in the original objectives of the project and rather clearly expressed in the job descriptions for the three practical experts. Amongst the tasks they will have to do is mentioned: "participate in the stablishment of a planning office for design, and production techniques".

9.1.3 The PPER has by now a well established office with good equipment. A base for starting field activities exists. What is needed is an implementation philosophy - a concept for a practical approach for achieving the objectives under the conditions as they exist within the PPER area of operation.

## 9.2 An Implementation Philosophy

9.2.1 A basic part of an implementation philosophy is that it should be action oriented. The PPER should gain acceptance and recognition through the results it helps small and medium-sized industries to achieve.

9.2.2 The PPER should concentrate on rendering service on-the-spot in the workshops of the small and medium-sized industries. The PPER staff should visit its potential customers, inform about the tasks and promote their services. In many cases several visits will be required before settling down to practical assistance.

9.2.3 The PPER should make itself known. Not a single industry the team visited knew about PPER. Some knew about CAPME and thought the team came from that organization.

9.2.4 The PPER should become fully acquainted with the industrial structure in its area, existing industries, present production, infrastructural problems, etc. etc. Data on potential customers should be collected as well as other industries within the PPER area. A comprehensive register and filing system has to be established and properly maintained.

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9.2.5 The PPER should develop procedures for field visits and on-the-spot investigation. For example design forms for collecting:

General data on the enterprise;
Production facilities and main products;
Production machinery and equipment;
Maintenance and repair procedures;
Inspection of individual machines, etc.

9.2.6 The PPER should formalize its cooperation with related organizations, in particular CAPME but also others, e.g. SATEC, AFCA and the Fabre project. It might be an idea to establish a coordination committee with regular meetings.

9.2.7 The PPER should constantly keep in mind that its objective can only be achieved if it:

a) creates tangible results for industrial enterprises;

b) upgrades and develops Cameroonian counterpart staff and Cameroonian manpower;

c) records (and evaluates) the services rendered for self-improvement and training purposes.

9.2.8 The PPER should define the scope of its activities. The team suggests the following:

a) Improve performance of existing machinery and equipment;

b) Assist in procurement and introduction of new machinery and equipment;

c) Attention to selected enterprises;

d) Promotion and training.

9.2.9 The PPER should recruit staff and acquire facilities which can help to implement the above philosophy.

## 9.3 Scope of Activities

9.3.1 As mentioned in paragraph 9.2.8, the PPER should define its scope of activities and four areas were mentioned. Below is a little more detailed description of each area.

9.3.2 Improving the performance of existing machinery and equipment in small and medium-sized enterprises was the first area. The more important

elements in this process are:

Trace original technical data;
Study machine in operation;
Control machine during period of rest;
Check production figures;
Discuss with everybody concerned;
Calculate if repair is justified;
Prepare plans for repair;
Follow and control repair;
Instruct in proper use;
Control performance.

9.3.3 The assistance in procurement and introduction of new machinery and equipment should include elements such as:

Selection (suitability to needs and resources);
Drafting procurement specifications (including accessories and spare parts);
Encourage standardization of machinery and equipment;
Assisting in procurement negotiations;
Advise on financing institutions;
Inspect machinery upon arrival;
Suggest machine location and layout;
Specify installation requirements;
Control installation and test machine when installed;
Devise operating instructions;
Plan maintenance specifications;
Instruct management and labour in maintenance requirements.

9.3.4 The idea of "nothing like a good example" should be applied in the field activities. The team has met several Cameroonian industrialists with a good entrepreneurial spirit. These individuals should receive special treatment, encouragement and help to create "model enterprises". The models may be a radical improvement of existing operations or it may be a help to start new enterprises, or new sections within present ones. Sharpening and grinding of tools for wood-working industries is e.g. started by one Cameroonian entrepreneur. He wants to expand and improve his operations. The team expects that special attention to selected industrialists will have a great multiplying effect.

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9.3.5 The PPER staff shall work as initiators and catalysts. The staff must use any opportunity to convey the PPER message. The staff must ignite any latent forces in management, supervision and workers to improve production. There are many opportunities that can be used:

a) Lectures at professional gatherings, such as engineering societies, management associations, chambers of commerce, etc.;

b) Specialized courses at existing training institutions and centres. The Frères Canadiens would e.g. like to include a special course in m and r for their last year trainees;

c) In-plant information and/or training programmes to joint groups of management, supervisors and workers;

d) Groups for exchange of experience. The staff may initiate the establishment of groups with members from different industries for joint discussions of common ideas and problems.

## 9.4 Staff Requirements

9.4.1 As mentioned in chapter 2, the PPER professional staff consist of four experts, the Chief of Project and three maintenance and repair specialists, the Cameroonian Project Director and seven Cameroonian counterpart mechanics. The question is if there is a need for the full strength when the viability study has found that the workshop will not be viable.

9.4.2 The team does not see any reason to reduce neither the number of expert man-month, nor the number of the Cameroonian staff. What may be required is to phase their services over a longer period in order to reach full strength gradually. The total number of expert man-month is 54.

9.4.3 As mentioned in paragraph 1.3.7, two experts for the posts CMR-013, SB and SC have been recruited and will assume duty shortly. According to the job description the two expert engineers are specialists in maintenance and repair of:

diesel engines and equipment used by the Public Works (post SB);
electrical and electro-mechanical equipment (post SC).

9.4.4 The first speciality is not exactly what the PPER needs in the light of the findings of the team (e.g. many service facilities for diesel engines and injection pumps exist in Douala, and the operations of the Public Works

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maintenance workshop in Douala are rather large and employ three expatriates). However, the performance of the expert will depend more on his personal qualifications than his formal background. Flexibility, enthusiasm, drive, all-round mechanical experience is what matters under the prevailing conditions. Knowledge of industrial engineering, small business management and industrialization in developing countries would be an invaluable asset to the project.

9.4.5 The teamassumes the field activities can and have to start with the two experts already recruited. The assignment of the third expert may either be postponed 6 - 9 months, or the 18 man-months divided between the two already recruited experts.

9.4.6 The experts should have one counterpart right from their arrival a second one may be added after six months. The third counterpart after another six months, when the first one starts on his fellowship abroad.

9.4.7 A Gantt chart schedule is shown in Appendix 9-A. After six months each expert will always have two counterparts actually working with them. This means that the two experts have a need for six counterparts. The seventh counterpart may be assigned to the Chief of Project and the Project Director to work on administrative and organizational matters.

9.4.8 One expert (bilingual English/French a must) should be stationed in West Cameroon. The West Cameroon Development Agency might be willing to provide the base for him.

## 9.5 Building Space Required

9.5.1 In addition to the present office accommodation, the PPER will need space for the experts and the counterpart staff. The area required is estimated at 140 $m^2$, depending on the number of experts and counterparts finally assigned to the project and their location in Douala and/or West Cameroon.

9.5.2 Briefly, the space required is as much:

Two offices, each for one expert and two counterparts. The offices may be equipped with necessary desks, auxiliary tables and a drawing board (each office approximately 30 $m^2$);

One office (20 $m^2$) for clerical help who can assist in the preparation of technical specifications. The office must be equipped with desks, tables and a drawing board, filing cabinets

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for specification, correspondence and the industry register, as well as copying equipment and typewriters;

One test room (20 $m^2$) with tables and cabinets for the measuring equipment of the PPER;

One storeroom (20 $m^2$) for tools and equipment to be used on field visits

9.5.3 Unless the additional space can be acquired in the present building where the PPER shares library and conference room with CAPME, approximately 80 $m^2$ more will be needed for these functions.

## 9.6 Equipment Required

9.6.1 In the previous sections there has been brief references to the equipment the experts will need for their operations. A complete specification of equipment requirements is given in Appendix 9-B. The specification has been divided in the following groups:

Technical documentation material;
Drawing room equipment;
Maintenance and methods study supplies;
Hand tools and mobile equipment;
Test room equipment;
Cleaning equipment;
Safety equipment.

9.6.2 The approximate value of the equipment is CFA 4 million francs ($ 15,000). The team recommends that all equipment that can be purchased locally is procured in Douala. This will make replacement, maintenance and repair easy - a sound demonstration of good purchasing practices with due consideration to servicing and availability of spare parts in Cameroon.

## 9.7 Follow-up Procedures

9.7.1 The team feels it is important to introduce, as soon as possible, procedures which will facilitate a close follow-up of the PPER activities and the costs involved.

9.7.2 Each expert and counterpart should keep weekly records of their activities indicating field of activity, the client served, problems encountered, remidias recommended and results achieved, as well as the time and material used. These records should be combined with the client filing system, making

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it possible to trace in detail the case history of each client.

9.7.3 A proper cost accounting system should be installed in order to get a true and detailed picture of costs, revenue and utilization.

9.7.4 The PPER should be operated according to the best principles of small business management. It should in itself be a model enterprise.

9.7.5 Performance statements should be sent to UNIDO every three months. Review meetings should be held in Douala every 6 - 9 months. In this way it may be possible gradually to establish a viable activity, which may be able to stand on its own when the UNDP assistance comes to an end.

9.7.6 10 - 12 months after the arrival of the two experts on maintenance and repair a review meeting should be held in order to discuss the situation and the problems encountered. This, together with realistic cost figures on the PPER operations, should be used to assess if any needs for a workshop have developed.

9.7.7 The possibilities for assisting existing or potential Cameroonian entrepreneurs in expanding or setting up service and repair type workshop should always be kept in mind.

9.7.8 Each PPER expert should receive a copy of this report.

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Purpose and Principal Objectives of the UNDP/SF project (CAM - 19) as described in the terms of reference attached to UNIDO Request for Proposals, dated May 13, 1971:

The purpose of the project is to assist the Government in surveying the maintenance and repair needs of small and medium-sized enterprises, both public and private, and if deemed feasible to establish a pilot workshop in this field to initiate repair and maintenance programme. The principal objectives of the project will be:

a) to introduce a maintenance and repair consciousness in management and to establish and provide training in proper equipment maintenance programmes;
b) to assure an improved utilization of existing equipment and material by a substantial reduction of downtime;
c) to carry out on-the-spot repairs in order to demonstrate modern maintenance and repair methods;
d) to study the feasibility of the local manufacture of certain simple replacement parts;
e) to study eventual requirements for additional tools and machinery.

An initial study has been completed by the Project Manager which will be supplemented by a survey to be implemented through the services of a consulting firm.

## RESPONSIBILITIES OF THE CONTRACTOR

## STATEMENT OF WORK

" Having in mind the aim of the Project and based on an initial study completed by the UNIDO Project Manager in the Project Area, the Contractor shall under the terms hereinafter set forth, undertake and carry out the following work:

a) identify small and medium-sized manufacturing enterprises which could use services from a central maintenance and repair workshop;

b) survey the kind of production machinery and equipment installed in the enterprises concerned;

c) study and evaluate the existing maintenance and repair facilities within the enterprises concerned and determine which additional workshop services are required;

d) study the maintenance and repair services locally available and the existing service-type workshops;

e) determine under what conditions a pilot workshop for maintenance and repair for small and medium sized industries would be viable;

f) determine and recommend the type of equipment which would be required to establish a central maintenance and repair workshop;

g) prepare neutral specifications suitable for international calls for tender for the recommended workshop equipment. Specifications shall include utility requirements, overall dimensions, estimated costs, possible sources of supply taking into account servicing and availability of spare parts in the country;

h) recommend an implementation programme in the maintenance and repair field as well as a shedule of priority work."

Execution of the UNIDO/SF Project (CAM-19) as described in document DP/SF/R.9/Add.20, dated September 8, 1969.

Project activities will:

(a) Survey, in co-operation with Government authorities the requirements and establish an initial programme in repair and maintenance;

(b) Determine the type and quantity of equipment necessary for the repair and maintenance programme which could be established through a pilot workshop;

(c) Determine which public and private enterprises could utilize the workshop's facilities;

(d) Assure the availability of the Government's counterpart contribution to the project;

(e) Prepare the specifications of the equipment to be furnished by the UNDP (Special Fund).

Following this preliminary stage, project activities, if so justified, will:

(a) Establish repair and maintenance programmes for selected enterprises including preventive maintenance, and assist in the implementation of such programmes;

(b) Appraise the demand for spare parts and advise specific enterprises on the equipment and techniques needed to begin the production of certain of their own spare parts;

(c) Train counterpart staff, including selected personnel from enterprises, in proper techniques and programmes for repair and maintenance of equipment.

# THE MAYNARD GROUP, EUROPE
# PERSONNEL REFERENCE MANUAL

APPENDIX 1 - D

Personal Summary

| | |
|---|---|
| Name: | Høst, Mogens Andreas Frederik |
| Address: | Strandvejen 258, DK-3140 Aalsgaarde, Denmark |
| Date of birth: | 1916-02-22 |
| Citizenship: | Danish |
| Family Status: | Married |
| Languages: | Danish, mother tounge<br>English, Swedish, fluent<br>German, near fluent<br>French, slight |
| Education: | The Technical University of Denmark, Copenhagen<br>1941 M. Sc. Mechanical Engineering<br><br>Royal Technical University, Stockholm, Sweden<br>1942 Post graduate studies in industrial economics and organization<br><br>Harward Graduate School of Business Administration<br>Boston, Massachusets<br>1948 Advanced Management Program |
| Experience: | The Maynard Group - European Headquarters<br>1969- Director of Planning<br><br>United Nations Industrial Development Organization, Vienna, Austria<br>1967-1969 Senior Industrial Development Field Adviser covering seven Asian countries. Supervised the Management and Training Sections for six months.<br><br>The Ford Foundation, New York, U.S.A.<br>1962-1967 Consultant on Industrial Development for Middle East and Africa Program, serving F.F. offices in Beirut, Cairo, Lagos, Nairobi and Tunis on planning, follow-up and evaluation of F.F. sponsored projects.<br>1957-1962 Ford Foundation consultant to the Government of India, New Delhi assisting in organizing and setting up an All-India Industrial Extension Service.<br><br>Management Consulting Service, Denmark.<br>1948-1959 Independent consultant, advising clients on organization development, coordination of sales and production, inventory control, production planning and control, work simplification and wage incentives.<br><br>Federation of Danish Industries, Copenhagen.<br>1946-1947 Head of the industrial management department. Established the department, initiated an advisory service and organized training courses.<br><br>Industribyrån, Federation of Swedish Industries, Stockholm<br>1943-1946 Industrial management and engineering consultant. Assignments in engineering, wood working, chemical and, pulp and paper industries. |

# THE MAYNARD GROUP, EUROPE
# PERSONNEL REFERENCE MANUAL

APPENDIX 1 - E

Personal Summary

Name: Engdahl, Gustaf Fredrik

Address: Roburvägen 33, Lidingö, Sweden

Date of birth: 1919-03-19

Citizenship: Swedish

Family status: Married, 2 childern (1946, 1949)

Languages: Swedish mother language,
English fluent,
German & French working ability

Education: Royal Institute of Technology, Stockholm, Sweden
MSc. Mechanical Engineering 1946

Experience:

- The Maynard Group (AB Svenska MEC), Sweden, 1970 -
  Senior Consultant and Management Specialist,
  Maintenance Division.

- Civ.ing. F. Engdahl Consult AB, 1967-1969
  Management consultant in various industries including printing, paper and saw mills, chemical, mechanical and electrical

- Konsultpartner AB, Gothenburg, Sweden
  1965-1966. Management consultant in various industries in Sweden.

- Sveriges Litografiska Tryckerier AB, Esselte
  1957-1963. Chief Industrial Engineer, printing
  1963-1965. Assistant Technical Manager

- AB Svenska Fläktfabriken, Jönköping, Sweden
  1952-1957. Assistand Works Manager and
  Chief Industrial Engineer, mechanical industry

- Studies and employment in USA, 1952

- Ekonomisk Företagsledning AB, Solna, Sweden
  1944-1947, 1949-1952 Consultant

GOUVERNEMENT DE LA RÉPRBLIQUE FÉDÉRALE DU CAMEROUN

PROGRAMME PILOTE D'ENTRETIEN ET DE RÉPARATION

avec le concours du Programme des Nations Unies pour le Développement

Organisations des Nations Unies
pour le développement industriel

Adresse Télégraphique : [redacted]
B. P. 1.188 DOUALA Tél.: 42-41-11

Date
Votre Référence 71-205
Notre Référence

Sir,

The Government of the Federal Republic of Cameroon has decided to create, with the assistance of the United Nations Organization for Industrial Development (UNIDO), a pilot project for Maintenance and Repair (PPER) of industrial equipment for small and medium-sized industries.

Our offices are located in the former handicraft building at Douala and our workshop is being remodelled and equiped within the Public Works Department premises at Douala-Bassa.

We shall have a very qualified and polivalent group composed of four United Nations experts and Cameroonian Counterparts who shall be occupied with maintenance and repair of machinery equipment.

We would be very grateful to you if you could tell us in what measure we could be useful and helpful in solving your problems of maintenance and repair.

Accept Sir, the expression of my sincere gratitude.

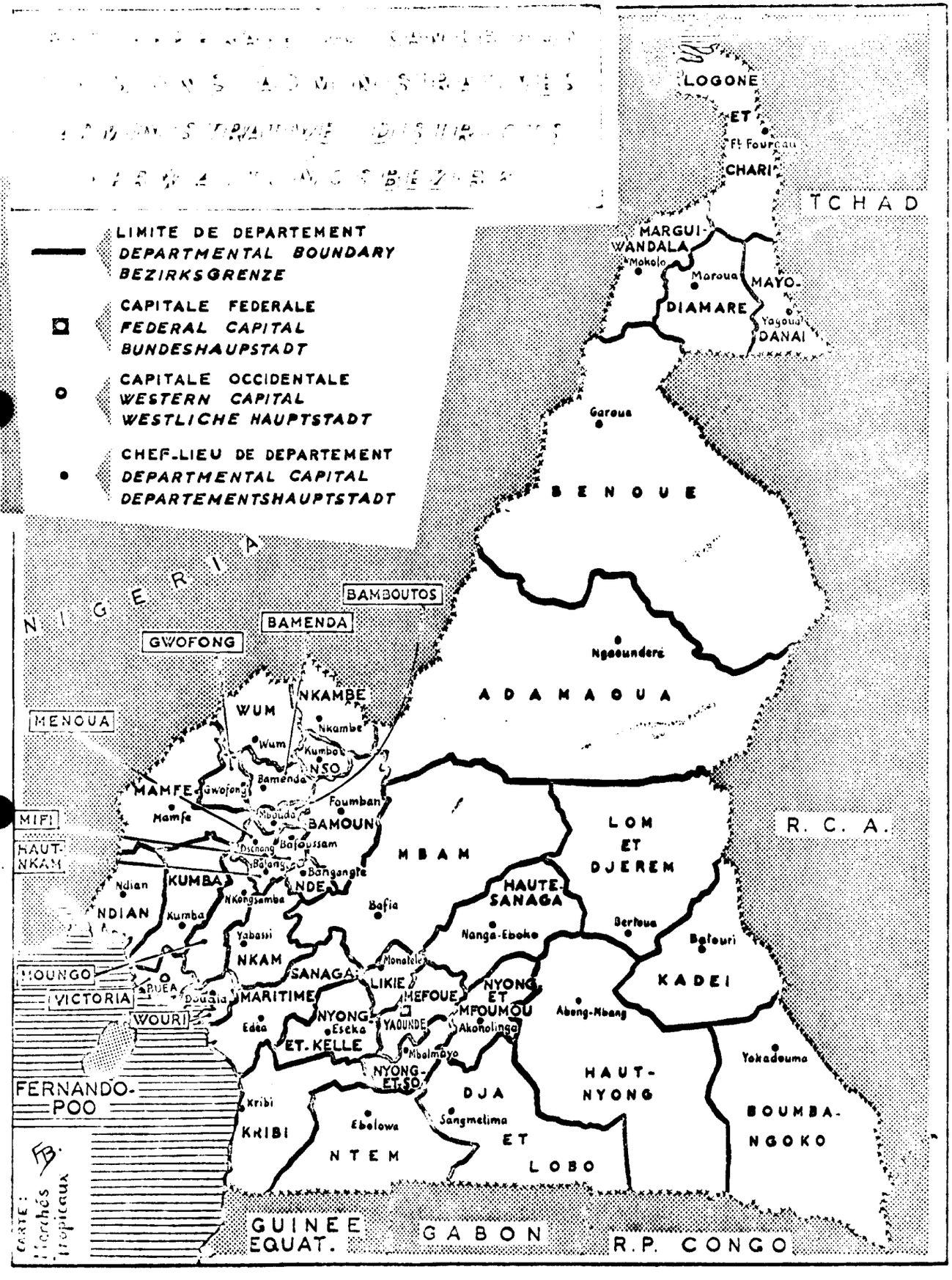
Chief of Project

H. Malleris

Project Director

Onala Joseph

The above text is translated from the French original.


LIMITE DE DEPARTEMENT
DEPARTMENTAL BOUNDARY
BEZIRKSGRENZE
CAPITALE FEDERALE
FEDERAL CAPITAL
BUNDESHAUPTSTADT
CAPITALE OCCIDENTALE
WESTERN CAPITAL
WESTLICHE HAUPTSTADT
CHEF-LIEU DE DEPARTEMENT
DEPARTMENTAL CAPITAL
DEPARTEMENTSHAUPTSTADT
LOGONE ET CHARI
Ft Foureau
TCHAD
MARGUI-WANDALA
Mokolo
Maroua
MAYO-DIAMARE
Yagoua
DANAI
Garoua
BENOUE
NIGERIA
BAMBOUTOS
BAMENDA
GWOFONG
Ngaoundere
ADAMAOUA
MENOUA
WUM
NKAMBE
Nkambe
Wum
Kumbo
NSO
MAMFE
Gwofong
Bamenda
Foumban
Mamfe
Mbouda
BAMOUN
MIFI
HAUT-NKAM
Dschang
Bafoussam
Bafang
Bangangte
MBAM
LOM ET DJEREM
R. C. A.
Ndian
KUMBA
NDE
N'Kongsamba
HAUTE-SANAGA
NDIAN
Kumba
Bafia
Nanga-Eboko
Bertoua
Batouri
Yabassi
NKAM
SANAGA-MARITIME
Monatele
LIKIE
MEFOUE
NYONG ET MFOUMOU
KADEI
MOUNGO
VICTORIA
WOURI
Douala
Edea
NYONG ET KELLE
Eseka
YAOUNDE
Akonolinga
Abong-Mbang
Mbalmayo
NYONG-ET-SO
HAUT-NYONG
Yokadouma
FERNANDO-POO
Kribi
KRIBI
Ebolowa
NTEM
DJA ET LOBO
Sangmelima
BOUMBA-NGOKO
GUINEE EQUAT.
GABON
R.P. CONGO
CARTE: Marchés Tropicaux

CAMEROON MAINTENANCE AND REPAIR STUDY
ETUDES D'ENTRETIEN ET DE REPARATION AU CAMEROUN

APPENDIX 3 - A
ANNEXE 3 - A

MANUFACTURING INDUSTRIES IN THE DOUALA REGION
INDUSTRIES MANUFACTURIERES DANS LA REGION DE DOUALA

| CITI Secteur ISIC Sector | ND | Petites Entreprises Small Entreprises CA < 100 mill. francs | | | | Moyennes Entreprises Medium Entreprises 100 < CA < 250 mill. francs | | | | Grandes Entreprises Large Entreprises CA > CFA 250 mill. francs | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Emploi | | | CA (mill CFA) | Emplois | | | CA (Mill CFA) | Emplois | | | CA (mill CFA) |
| | | N | A | E | N Total | N | A | E | N Total | N | A | E | N Total |
| 20 | 13 | 26 | 385 | 12 | 29 1076 | 5 | 91 | 4 | 5 877 | 4 | 616 | 19 | 4 776 |
| 21 | - | - | - | - | - - | - | - | - | - - | 2 | 817 | 40 | 1 1631 |
| 22 | - | - | - | - | - - | - | - | - | - - | - | - | - | - - |
| 23 | 1 | - | - | - | - - | - | - | - | - - | 1 | 328 | 16 | 1 1653 |
| 24 | 8 | 14 | 355 | 13 | 14 396 | 6 | 857 | 47 | 5 937 | 4 | 2228 | 115 | 4 3467 |
| 25 | 3 | 7 | 234 | 4 | 7 188 | 2 | 288 | 5 | 2 185 | 3 | 1267 | 28 | 3 1639 |
| 26 | 1 | 2 | 12 | - | 2 6 | 2 | 213 | 10 | 2 279 | - | - | - | - - |
| 27 | - | - | - | - | - - | - | - | - | - - | - | - | - | - - |
| 28 | 2 | 6 | 115 | 8 | 6 172 | 1 | 90 | 7 | 1 146 | - | - | - | - - |
| 29 | 3 | - | - | - | - - | 1 | 207 | 2 | 1 214 | - | - | - | - - |
| 30 | - | 1 | 16 | 1 | 1 16 | - | - | - | - - | - | - | - | - - |
| 31 | 2 | 4 | 109 | 10 | 4 82 | 2 | 83 | 5 | 2 451 | 4 | 605 | 50 | 4 1765 |
| 32 | - | - | - | - | - - | - | - | - | - - | - | - | - | - - |
| 33 | 3 | 4 | 42 | 1 | 4 29 | - | - | - | - - | 1 | 107 | 7 | - - |
| 34 | - | - | - | - | - - | - | - | - | - - | 2 | 686 | 68 | 2 6336 |
| 35 | 5 | 8 | 210 | 20 | 8 251 | 2 | 250 | 10 | 2 396 | 4 | 993 | 52 | 4 1425 |
| 36 | 2 | 3 | 51 | 3 | 3 101 | 2 | 99 | 19 | 2 353 | 1 | 181 | 7 | 1 318 |
| 37 | 1 | - | - | - | - - | - | - | - | - - | 1 | 91 | 4 | 1 361 |
| 38 | 1 | 8 | 104 | 6 | 8 173 | - | - | - | - - | 1 | 191 | 6 | 1 311 |
| 39 | 2 | 1 | 5 | - | 1 5 | - | - | - | - - | 1 | 251 | 91 | 1 707 |
| Total | 47 | 84 | 1638 | 78 | 87 2.495 | 23 | 2.178 | 109 | 22 3.832 | 29 | 8361 | 421 | 29 27.374 |

ND : Non Déclaré - No information supplied
CA : Chiffre d'affaires - Turnover (CFA million Francs.)
N : Nombre d'entreprises - Number of enterprises
A : Effectif personnel Africains - Employment, African
E : Effectif personnel , Européens - Employment , Europeans.

List of Major Group in Division 2 and 3.

Divisions 2 - 3, Manufacturing

20 Food manufacturing industries, except beverage industries

21 Beverage industries

22 Tobacco manufactures

23 Manufacture of textiles

24 Manufacture of footwear, other wearing apparel and made-up textile goods

25 Manufactures of wood and cork, except manufacture of furniture

26 Manufacture of furniture and fixtures

27 Manufacture of paper and paper products

28 Printing, Publishing and allied industries

29 Manufacture of leather, and leather and fur products, except footwear and other wearing apparel

30 Manufacture of rubber products

31 Manufacture of chemicals and chemical products

32 Manufacture of products of petroleum and coal

33 Manufacture of non-metallic mineral products, except product of petroleum and coal

34 Basic metal industries

35 Manufacture of metal products, except machinery and transport equipment

36 Manufacture of machinery, except electrical machinery

37 Manufacture of electrical machinery, apparatus, appliances and supplies

38 Manufacture of transport equipment

39 Miscellaneous manufacturing industries

Taken from the United Statistical Papers, Series M M04, Rev.1.

## MANUFACTURING INDUSTRIES IN WEST CAMEROON

## INDUSTRIES MANUFACTURIES EN CAMEROUN OCCIDENTAL

| CITI | Name - Nom | Location | Emploi A | Emploi E | Turnover Ch d'Aff Millions |
|---|---|---|---|---|---|
| 205 | Santa Coffe Factory | Bambenda | | | |
| 206 | Boulangerie Hilas | Victoria | | | |
| 206 | Boulangeries Reunis | Tiko | 24 | 1 | 30 |
| 209 | CDC - Tea factory | Bouea | | | |
| 209 | Ndu Tea Estate | Nkambe | | | |
| 213 | Brasserie du Cameroun | Ombe | | | |
| 241 | Chinenge & Bros. - Shoe factory | Bambenda | | | |
| 241 | Chinenge & Bros. - Shoe factory | Victoria | | | |
| 243 | EMEN Industries | Victoria | 315 | 6 | 250 |
| 243 | IDIOK Tailoring Workshop | Buea | closed | | |
| 243 | MOUNTCAM Tailoring Service | Victoria | closed | | |
| 249 | BRITIND Industries (CAM) Ltd. | Victoria | 109 | 8 | 160 |
| 251 | ? Sawmill | Etam | | | |
| 251 | West Cam. Dev. Agency - Sawmill | Muyuka | | | |
| 261 | Destiny Woodwork Centre | Victoria | 8 | 0 | 20 |
| 261 | Modern Furniture Company Ltd. | Victoria | 14 | 0 | 10 |
| 261 | NANGAH Co. Ltd. - Joinery | Tiko | | | |
| 261 | West Cam. Dev. Agency - Joinery | Buea | | | |
| 280 | Basel Mission Printing Press | Victoria | 16 | 2 | 20 |
| 280 | Cameroon Printing and Publish. | Victoria | | | |
| 281 | Atlantic Printers | Victoria | | | |
| 281 | Express Publications | Victoria | closed | | |
| 281 | Government Printing Press | Buea | | | |
| 281 | Longla Printing Press | Bamenda | | | |
| 281 | New Africa Press | Bamenda | | | |
| 282 | FAKO Publications | | | | |

| CITI | Name - Nom | Location | Emploi A | Emploi E | Turnover Ch d'AFF Millions |
|---|---|---|---|---|---|
| 301 | CDC - Rubber factory | Tiko | 855 | 1 | |
| 304 | Cameroon Tyre Retreading Ind. | Tiko | closed | | |
| 312 | CDC - Bota Mill | Victoria | 208 | 0 | |
| 312 | CDC - Oil Mill (Iden) | Victoria | 116 | 0 | |
| 312 | PAMOL du Cameroun | Lobe | | | |
| 334 | S.A. Arrey & Sons (Block Ind.) | Victoria | | | |
| 334 | DIFO's Block Industry | Victoria | closed | | |
| 334 | Longlia Block Industry | Bamenda | | | |
| 334 | NANGAH Co. Ltd. | Buea | | | |
| 334 | NANGAH CO. Ltd. Block Ind. | Victoria | | | |
| 352 | Nkweata's Metal Enterprise | Victoria | 2 | 0 | 10 |
| 352 | Welding and Metals Works | Victoria | 9 | 0 | 6 |
| 384 | CDC - Ekona Motors | Muyuka | | | |
| 384 | CDC - Muliwe Motors | Victoria | 118 | ? | |
| 384 | Cameroon Forsts Products | Tiko | closed | | |
| 384 | S.C.O.A. | Tiko | | | |
| 387 | CDC - Bota Engineering | Victoria | 262 | 1 | |
| 387 | CDC - Ekona Engineering | Muyuka | 115 | 0 | |
| 387 | CDC - Tiko Engineering | Tiko | 581 | 3 | |

The above list is extracted from the List of Industrial and Commercial Establishments IC1 by Sector and by District registered in West Cameroon as at 20 April 1970. The Department of Commerce and Industry has added seven enterprises to the original list. Figures on employment and turnover are from the 1968/69 survey.

ETUDES D'ENTRETIEN ET DE REPARATION AU CAMEROUN — ANNEXE 3 - 9

CAMEROON MAINTENANCE AND REPAIR STUDY — APPENDIX 3 - 9

## CLASSEMENT DES VINGT PREMIERES ENTREPRISES INDUSTRIELLES CAMEROUNAISES

## CLASSIFICATION OF THE TWENTY LARGEST INDUSTRIAL CAMEROONIAN ENTERPRISES

### En fonction du PERSONNEL EMPLOYE au 1er janvier 1971 (en unités)

| | | |
|---|---|---|
| 1 | Brasseries du Cameroun | 2 044 |
| 2 | SFID | 970 |
| 3 | Electricité du Cameroun | 905 |
| 4 | Bata | 751 |
| 5 | Socatex | 730 |
| 6 | Cicam | 700 |
| 7 | Alucam | 632 |
| 7' | Mansuy | 632 |
| 8 | Entrelec | 410 |
| 9 | Emaillerie Nouvelle Afrique | 350 |
| 10 | Vasnitex (confection) | 330 |
| 11 | Marty (construction métallique) | 285 |
| 12 | CCC | 280 |
| 13 | Plasticam | 260 |
| 14 | Guinness Cameroun | 250 |
| 15 | Maison du Cycle | 247 |
| 16 | Florence Actualité (confection) | 234 |
| 17 | Soparca (parfumerie) | 223 |
| 18 | Alubassa | 200 |
| 18' | SIC | 200 |
| 18" | Ent. Nationale de Confection | 200 |

### En fonction du CHIFFRE D'AFFAIRES A L'EXPORTATION 1969 - 1970 (millions de F CFA)

| | | |
|---|---|---|
| 1 | SIC | 4 700 |
| 2 | Alucam (1) 1968-1969 | 2 500 |
| 3 | Chococam | 1 000 |
| 4 | Socacao | 710 |
| 5 | SFID | 651 |
| 6 | Socatral 1968-1969 | 622 |
| 7 | Bata | 347 |
| 8 | Socatex | 314 |
| 9 | Entrelec | 270 |
| 10 | Brasseries du Cameroun | 202 |
| 11 | Mansuy | 170 |
| 12 | Unalor | 137 |
| 13 | Forges Tropicales | 120 |
| 14 | Maison du Cycle | 100 |
| 14' | CCC | 100 |
| 15 | Cicam | 86 |
| 16 | SACC (valises et chaussures) | 85 |
| 17 | Emaillerie Nouvelle Afrique | 84 |
| 18 | Soparca | 75 |
| 19 | Société Camerounaise de Minoterie | 72 |

### En fonction du CAPITAL SOCIAL au 1er janvier 1971 (millions de F CFA)

| | | |
|---|---|---|
| 1 | Alucam | 4 500 |
| 2 | Brasseries du Cameroun | 1 782 |
| 3 | Energie électriq. du Cameroun | 1 428 |
| 4 | Bastos | 839 |
| 5 | Cicam | 650 |
| 6 | Cimencam | 560 |
| 7 | SIC (cacao) | 500 |
| 7' | Electricité du Cameroun | 500 |
| 8 | Bata | 420 |
| 9 | Socatral | 340 |
| 10 | Unalor | 325 |
| 11 | Guinness Cameroun | 300 |
| 12 | Union cam. des brasseries | 275 |
| 13 | Forges tropicales | 270 |
| 13' | Air liquide (CAMOA) | 270 |
| 14 | CCC (oléagineux) | 210 |
| 15 | Socatex (confection) | 200 |
| 15' | Socaver | 200 |
| 16 | Chococam | 150 |
| 17 | Société cam. de minoterie | 125 |

### En fonction du montant des INVESTISSEMENTS cumulés au 1er janvier 1971 (millions de F CFA)

| | | |
|---|---|---|
| 1 | Energie électriq. du Cameroun | 11 264 |
| 2 | Alucam | 9 130 |
| 3 | Brasseries du Cameroun | 3 975 |
| 4 | Electricité du Cameroun | 3 830 |
| 5 | Cicam | 2 400 |
| 6 | Cimencam | 1 550 |
| 7 | Guinness Cameroun | 1 400 |
| 8 | Socatral | 1 080 |
| 9 | SIC | 1 000 |
| 10 | Bastos | 900 |
| 11 | Bata | 819 |
| 12 | Union cam. des brasseries (2) | 800 |
| 13 | CCC | 602 |
| 14 | SFID (bois) | 600 |
| 15 | Socacao | 483 |
| 16 | Socaver | 457 |
| 17 | Unalor | 327 |
| 18 | Société cam. de minoterie | 324 |
| 19 | Socatex | 315 |
| 20 | Chococam | 284 |

### En fonction du CHIFFRE D'AFFAIRES 1969-1970 Taxes comprises (millions de F CFA)

| | | |
|---|---|---|
| 1 | Brasseries du Cameroun | 7 006 |
| 2 | SIC | 4 700 |
| 3 | Alucam (1) | 3 685 |
| 4 | Electricité du Cameroun | 2 479 |
| 5 | Socatral | 2 400 |
| 6 | Cicam | 1 866 |
| 7 | Bastos | 1 847 |
| 8 | Bata | 1 670 |
| 9 | Chococam | 1 600 |
| 10 | Energie électriq. du Cameroun | 1 244 |
| 11 | Socatex | 1 187 |
| 12 | Maison du cycle | 1 100 |
| 13 | Société cam. de minoterie | 1 065 |
| 14 | Entrelec | 933 |
| 15 | CCC | 770 |
| 16 | R & W King (montage auto) | 768 |
| 17 | Mansuy (confection) | 750 |
| 18 | SFID | 736 |
| 19 | Socacao | 710 |
| 20 | Plasticam | 706 |

(1) Valeur de transformation.
(2) Investissements prévus.

(1) Estimation de la valeur de transformation exportée.

## LARGE ENTERPRISES - MEMBERS OF SYNDUSTRICAM

## GRANDES ENTREPRISES - MEMBRES DU SYNDUSTRICAM

| SOCIETES<br>COMPANIES | CITI<br>ISIC | LOCALISATION<br>LOCATION |
|---|---|---|
| Alubassa | 357 | Douala - Bassa |
| Alucam | 343 | Edéa |
| Bastos | 222 | Yaoundé |
| Bata | 241 | Douala - Bassa |
| Brasseries du Cameroun | 213 | Garoua, Douala, Yaoundé |
| CAMOA (Air liquide) | 316 | Douala - Bassa |
| C C C | 312 | Douala - Bassa |
| Chococam | 208 | Douala - Bassa |
| CICAM | 831 | Douala- Garoua |
| Cimencam | 336 | Douala Figuil |
| Emaillerie Nouvelle Afrique | 353 | Douala - Bassa |
| Ent. Nationale de Confection | 283 | Douala |
| Entrelec | 371 | Douala |
| Electricité du Cameroun | 511 | Douala - Yaoundé |
| Energie Electric du Cameroun | 511 | Edéa |
| Florence Actualité | 243 | Douala |
| Forges Tropicales | 352 | Douala |
| Guinness Cameroun | 213 | Douala |
| King ltd,Richard William | 385 | Douala |
| Maison du cycle | 385 | Douala Bassa |
| Marty | 352 | Douala |
| Mansuy | 243 | Douala |
| Plasticam | 396 | DOuala - Bassa |
| SACC | 241 | Douala - Bassa |
| SIC | 208 | Douala - Bassa |
| SOCACAO | 208 | Yaoundé |
| Socatex | 232 | Douala |
| SOCAVER | 332 | Douala - Bassa |
| Socatral | 357 | Edea |
| SOPARCA | 319 | Douala |
| Union Cam. des Brasserie | 213 | Douala |
| Unalor | 319 | Douala |
| Vasnitex | 243 | Douala |

CAMEROUN MAINTENANCE AND REPAIR STUDY — APPENDIX 1 - F

ETUDES D'ENTRETIEN ET DE REPARATION — ANNEXE 1 - F

## OTHER LARGE ENTERPRISES
## AUTRES GRANDES ENTREPRISES

| ENTREPRISES | CITI | LOCALISATION |
|---|---|---|
| Crevettes du Cameroun | 204 | Douala |
| SBAC (Jean Bastos ) | 222 | Yaoundé |
| CFDT | 234 | Kaélé e,a. |
| LBC | 251 | EDEA |
| COCAM | 251 | M'balmayo |
| Bois de Kribi | 251 | Kribi |
| AZZIZ Hajj | 251 | Yabassi |
| SAB | 251 | Yaoundé |
| Entreprise Corren | 251 | Yaoundé |
| EFC | 251 | Sangmélima |
| SEFIC | 251 | Douala |
| La Forestière de Campo | 251 | Ipono (Campo) |
| CFOG | 251 | Douala |
| SFIA | 251 | Douala e. a. |
| SNC | 251 | Douala, Manoka |
| Timber Industries Ltd | 251 | Muyuka |
| SAFACAM | 301 | Dizangué |
| Pamol | 312 | Mai, Bwinga |
| CAMDEV | 312 | Victoria e.a. |
| BEBECA | 336 | Douala - Bassa |
| SOCAPAR | 352 | Yaoundé - Bassa |
| SCI | 369 | Douala |

PS. The "Crevettes du Cameroun" and perhaps some more of the above enterprises have recently become members of SYNDUSTRICAM.

Les Crevettes du Cameroun et peut être la plus part des entreprises ci-dessus sont recemment devenues membres de la SYNDUSTRICAM.

SMALL CAMEROONIAN ENTERPRISES IN THE PPER AREA IN EAST CAMEROON
PETITES ENTREPRISES CAMEROUNAISES DANS LA REGION DU PPER AU CAMEROUN ORIENTAL

| CITI | Name - Nom | Location | EMPLOYEES A | EMPLOYEES E | Turnover Chiffre d'aff. CFA mil. F |
|---|---|---|---|---|---|
| 206 | S.C.I.W | Douala | 37 | | 62 |
| 243 | Basile Pièrre | Douala | 2 | | 2 |
| 243 | COOPTAICAM | Douala | 13 | | 3 |
| 243 | Diakoumeas | Douala | 2 | | 2 |
| 243 | Evangelas | Douala | 58 | | 77 |
| 243 | Papasian | Akwa | 11 | | 9 |
| 243 | SIVA | Douala | 71 | | 59 |
| 259 | Kwa Jean | Douala | 10 | | 11 |
| 261 | Afrique Meuble | Douala | 7 | | 2 |
| 281 | Imprimerie Mission Catholique | Douala | 13 | | 22 |
| 334 | Briquetterie Moderne | Deido | 6 | | 7 |
| 334 | Ets. Dioka Mballa Louis | Akwa | 3 | | 2 |
| 334 | Ets. Ngangué David | Douala | 17 | | 14 |
| 352 | Ets. Hangouan Albert | Douala | 3 | | 2 |
| 352 | Ets. Ndikoum Ndina George | Douala | 19 | | 7 |
| 353 | Ets. Minas Tsilicas | Douala | 5 | | 4 |
| 365 | Entreprise Africaine Radiateur | Douala | 15 | | 8 |
| 384 | Freins Service | Douala | 2 | | 14 |
| 394 | Et. Djengane Louis | New-Bell | 5 | | 6 |
| | Total | | 899 | | 313 |

OTHER SMALL ENTERPISES IN THE PPER AREA IN EAST CAMEROON

AUTRES PETITES ENTREPRISES DANS LA REGION DU PPER AU CAMEROUN ORIENTAL

| CITI | NAme - Nom | Location | Employees A | Employees E | Turnover chiffre d'affaire CFA mil. F |
|---|---|---|---|---|---|
| 201 | Viadre Daniel | Douala | 4 | 1 | 23 |
| 206 | Boulangerie Pal-Lepal | Douala | 50 | 2 | 75 |
| 206 | N.B.R | Edea | 20 | 1 | 37 |
| 209 | Brûlerie Moderne | Douala | 7 | 2 | 21 |
| 209 | La Cascade glacée | Douala | 8 | 1 | 5 |
| 209 | Milliat Frères | Douala | 30 | 1 | 56 |
| 209 | NOCOCA | Douala | 31 | 1 | 77 |
| 241 | Sté. Mylan | Douala | 17 | 1 | 20 |
| 243 | Anlonios Hantzis | Douala | 48 | 2 | 65 |
| 243 | Mentzas Georges | Douala | 35 | 2 | 38 |
| 243 | Mentzas Elly | Douala | 49 | 2 | 61 |
| 243 | Madame Lavilette Christine | Douala | 1 | 1 | 1 |
| 243 | SOCOCHA | Douala | 26 | 1 | 12 |
| 245 | Ets Armangan | Douala | 11 | 1 | 21 |
| 246 | MANUCAM | Douala | 11 | 3 | 28 |
| 253 | G.I.C | Douala | 8 | 1 | 26 |
| 259 | Technibois | Douala | 27 | 1 | 29 |
| 281 | Nouvelle Imprimerie | Douala | 48 | 3 | 76 |
| 282 | La Presse du Cameroun | Douala | 7 | 3 | 42 |
| 282 | Imprimerie Moderne | Douala | 20 | 1 | 16 |
| 311 | Soumpos | Douala | 32 | 2 | n.d. |
| 311 | ISOCAM | Douala | 15 | 1 | 12 |
| 312 | SPROA | Edea | 37 | 4 | 27 |
| 319 | SAPCAM | Douala | 25 | 3 | 43 |
| 339 | CARO | Douala | 16 | 1 | 5 |
| 352 | SAPS | Douala | 40 | 1 | 15 |
| 352 | Ets. Lyko | Douala | 40 | 2 | n.d. |
| 352 | SIPEC | Douala | 11 | 1 | 15 |
| 352 | SOCAMETA | Douala | 45 | 3 | 38 |
| 352 | SACAM | Douala | 48 | 9 | 69 |
| 352 | Fermetures Niecheler | Douala | 39 | 5 | 82 |

/...

OTHER SMALL ENTERPRISES IN THE PPER AREA IN EAST CAMEROON
AUTRES PETITES ENTREPRISES DANS LA REGION DU PPER AU CAMEROUN ORIENTAL

| CITI | Name - Nom | Location | Employees A | Employees E | Turnover chiffre d'affaire CFA mil. F. |
|---|---|---|---|---|---|
| 362 | Ets. Palacin Roger | Douala | 10 | 1 | 46 |
| 362 | SCEM | Douala | 26 | 2 | 47 |
| 384 | CMA | Douala | 21 | 3 | 53 |
| 384 | Garage Chanas § Cie | Douala | - | 1 | 5 |
| 384 | Garage de la Sanaga | Edéa | 12 | 1 | 13 |
| 389 | SORECAM | Douala | 23 | 1 | 17 |
| | Total | | 898 | 72 | 1,237 |
| | Total minus Scampes and Lyne | | 886 | 68 | 1,837 |

## OTHER MEDIUM-SIZED ENTERPRISES IN THE PPER AREA IN EAST CAMEROON
## AUTRES MOYENNES ENTREPRISES DANS LA REGION DU PPER AU CAMEROUN ORIENTAL

| CITI | Name - Nom | Location | Employees Employés | | Turnover Chiff.d'Aff. CFA millionf. |
|---|---|---|---|---|---|
| | | | A | E | |
| 241 | SACC | Douala | 139 | 31 | 248 |
| 243 | SIditex | Douala | 117 | 5 | nd |
| 243 | M.F.A | Douala | 229 | 4 | 222 |
| 243 | Lamias Basile | Douala | 44 | 1 | 117 |
| 243 | BMAC | Douala | 181 | 3 | 198 |
| 246 | M.C.D. | Douala | 147 | 3 | 152 |
| 251 | C. P.A. | Douala | 115 | 3 | 129 |
| 251 | E.P.C | Douala | 173 | 2 | 107 |
| 261 | La Limba | Douala | 103 | 5 | 117 |
| 291 | I.C.C. | Douala | 90 | 7 | 146 |
| 294 | M.A.V.E.M. | Douala | 207 | 2 | 214 |
| 313 | C.EP. | Douala | 33 | 3 | 229 |
| 319 | SIPCA | Douala | 50 | 2 | 223 |
| 352 | SOCAFER | Douala | 171 | 9 | 186 |
| 352 | Sté des Ets Freumem. | Douala | 110 | 5 | 163 |
| 353 | CTCM | Douala | 79 | 1 | 210 |
| 362 | FROID-CAM | Douala | 36 | 8 | 208 |
| 365 | SOCAREC | Douala | 63 | 11 | 145 |
| | Total | | 2067 | 105 | 3,014 |
| | Total minimum Siditex | | 1970 | 100 | 3,014 |

A Personnel Africains - African Employees
E Personnel Expatriés - Expatriate Employees
nd Non declaré - Not declared

Liste des enterprises visitées.
List of visited enterprises.



| Enterprise | Location Address | Type d'activité Field of Activity |
|---|---|---|
| SEFIC | Mbopi Douala | Scieri du bois<br>Sawmill |
| Afrique-Meuble | Doula | Menuiserie bois<br>Joinery Workshop |
| ME.MO.ACAM | BP 5228<br>Akwa-Doula | Menuiserie bois<br>Joinery Workshop |
| Atelier de Port Douala | Douala | Entretien et réparation des engins portuanes<br>Shipyard. Maint. & Rep. Shop |
| Sté Anflo | BP 659<br>Douala | Ebenisteri<br>Menuiserie<br>Joinery Workshop |
| Meubles et Carousserie | BP 84<br>Bassa-Douala | Menuiserie bois<br>Joinery Workshop |
| Atelier Mischler | Douala-Bassa | Menuiserie bois et aluminium<br>Fermetures Join. Workshop<br>Metal Welding Works |
| Menuiserie Pour Tous | Douala | Menuiserie bois<br>Joinery Workshop |
| Menuiserie Moderne | Douala | Menuiserie bois<br>Joinery Workshop |
| Enterprise Forestière Africaine | Douala | Sierie du bois<br>Joinery Workshop |
| SAPS | Rue Dibamba | Constructions Metalliques<br>Chaudronnerie<br>Metal Workshop |
| SOCAMETA | Douala | Cantines Metalliques<br>Mecanique Generale<br>Metal Workshop |
| SOCAFER | Bassa-Douala | Constructions Metalliques<br>Metal Workshop |
| SACM | Bassa-Douala | Constructions Metalliques<br>Chaudronnerie<br>Metal Workshop |
| SOCAPAR | Bassa-Douala | Construotions Metalliques<br>Chaudronnerie<br>Metal Workshop |
| Scierie de Wouri | Douala | Scierie du bois<br>Sawmill |
| MAMC | BP 319 | Miroiterie<br>Glazier |
| Ets Albert Mangouan | BP 71 | Menuiserie Metalliques<br>Ferronnerie d'art<br>Metal Welding Works |

Liste des enterprises visitées.
List of visited enterprises.

| Enterprise | Location Address | Type d'activité Field of Activity |
|---|---|---|
| Ets Ndikoum Ndima Georges | Ave 27 août Douala | Menuiserie Metalliques<br>Metal Welding Works |
| CIPEC | BP 1014 | Atelier de réparation balances et bascules<br>Rep. Shop, balances and scales |
| SORECAM | BP 32 Douala | Reckapage<br>Vulcanization |
| SCEM | BP 979 | Entretien et réparation refrigarateurs climatiseurs<br>Main. &Rep. refrigerators |
| West Cameroon Development Agency (WDCA): Menuiserie Mobilier | Buea | Menuiserie bois<br>Joinery Workshop |
| WDCA: Sawmill | Muyuka-Njoko | Scierie<br>Sawmill |
| Auto Repair Shop Mercedes | Dibanda | Garage<br>Auto Repair Shop |
| Auto Repair Shop (WDCA) Opel | Dibanda | Garage<br>Auto Repair Shop |
| Auto Repair Shop | Moutenjete | Garage<br>Auto Repair Shop |
| Joinery Workshop | Moutenjete | Menuiserie bois<br>Joinery Workshop |
| Building Enterprise: Joinery Workshop | Moutenjete | Menuiserie bois<br>Joinery Workshop |
| Cameroon Printing and Publishing Co Ltd | Victoria | Imprimerie<br>General Printing |
| Metal Welding Works | Victoria | Constructions Metalliques Ferronnerie<br>Metal Welding Works |
| Metal Work Shop | Victoria | Ferronnerie<br>Metal Welding Works |
| Joinery Workshop | Victoria | Menuiserie bois<br>Joinery Workshop |
| WDCM: Foundrerie | Tiko | Foundrérie<br>Foundry |
| CDC Engineering Works | Tiko | Entretien et rèparation<br>Maintenance and Repair Workshop |

Liste des fournisseurs d'équipements industriels etc.

List of Suppliers of Industrial Machinery and Equipment etc.

| Fournisseur Supplier | Location Address | Equipements etc. Machinery and Equipment etc. |
|---|---|---|
| AFCODI | Avenue Poincaré B.P. 941 Tel. 42-67-08 | Materiel industriel, atelier de montage et de réparation. |
| Bernabé | Rue Silvani B.P. 529 Tel. 42 - 40 - 20 | Quincaillerie générale Produit métallurgiques |
| CAMER | Rue Castelnau B.P. 444 Tel. 42 - 22 - 67 | Materiel industriel Moteur marin et diesel Compresseurs, Materiel TP groupe électrogen |
| Cameroun-Auto | Avenue Bonnecarrère B.P. 331. Tel. 42 - 46 - 54 | Auto Cameroun, materiel industriel et autos garages |
| CAMOA | Douala - Bassa B.P. 386 Tel. 42 - 24 - 34 | Materiel industriel |
| CARIC | Avenue Poincaré (face poste Akwa) B.P. 1 376 Tel. 42 - 23 - 52 | Materiel industriel |
| CIACAM (W.King Ltd) | Avenue Poincaré B.P.4025 Tel. 42 - 46 - 66 | Equipement industriel Quincaillerie materiel électricité et agricol |
| CFA | Bassa-Douala B. P. 976 Tel. 42 - 13 - 87 | Scierie Atelier des pièces détachées |
| CFAO | Boulevard Leclero B.P. 4005 Tel. 42 - 36 - 86 B.P. 911 Tel. 42 - 54 - 80 | Camions moteurs diesèl, Equipement industriel |
| DAVUM | B.P. 4028 Tel. 42 - 50 - 27 | Camions, Moteurs, Groupes éleotrogenes materiel industriel, materiel de construction |
| Entrelec | Rues de l'Union Française Tel. 42 - 51 - 51 B.P. 307 Tel. 42 - 52 - 55 | Installations industrielles, materiel éleotrique |
| Hamelle Afrique | Angle Rue Ponty et Castelnau B.P. 4041 Tel. 42 - 26 - 12 | Tracteurs et équipements agricoles |
| MARTY ANDRE | Avenue Poincarré B.P. 1133 Tel. 42 - 51 - 40 | Charpentes métalliques, installations d'usines Materiels roulants |

X Fournisseur visité — Visited Supplier

Liste des fournisseurs d'équipements industriels etc.
List of Suppliers of Industrial Machinery and Equipment etc.

| Fournisseur Suplier | Location Address | Equipements etc. Machinery and Equipment etc. |
|---|---|---|
| PATERSON ZOCHONIS & Ci | Boulevard Leclerc B.P. 4009 Tel. 42 - 44 - 53 | Département technique, camions, machines à café, Moteurs diesèls |
| SCI | Rue Quillien(à côté Pezan voir loin salle de fête Akwa B.P. 607 Tel. 42- 13-20 | Mécanique générale produit industriel atelier de réparation |
| SIEMI | Angle Rue Sourcouf & Laprouse B.P. 252 Tel. 42 - 39 - 36 | Materiel industriel, Machine de bois |
| SOCAFER | Douala - Bassa B.P. 439 Tel. 42 - 27 - 47 | Fonderie et plomberie |
| SOCAFIC | Avenue du 27 Août B.P. 1146 Tel. 42 - 36 - 80 | Equipement industriel |
| SOCAPAR | Avenue Bonnecarrère (Anciens Etablissements J. Paris) B.P. 261 Tel. 42 - 68 - 86 | Construction métallique, chaudronnerie |
| SOCAREC | Avenue Bonnecarrère B.P. 331 Tel. 42 - 61 - 31 | Rénovation des moteurs essence et diesèl |
| SOFIMEC | B.P. 449 Tel. | Equipement industriel et agricol |
| SOCOMI | Rue Jamot B.P. 609 Tel. 42 - 35 - 40 | Materiel industriel Quincaillerie outillage moteurs diesèls |
| Sté Tropic | Bassa - Douala B.P. 706 Tel. 42 - 42 - 56 | |
| Tractafric | Douala - Bassa BP 4017 Tel. 42 - 40 - 83 | Quincaillerie, Caterpillar-Bosch-Fiat-B.M.W Materiel industriel |
| SHO-Camercun | | Machines à bois |

X Fournisseur visité Visited Supplier

Liste des ateliers de mécanique générale.
List of Service-type Workshops.

| | Atelier Workshop | BP | Loc. Adr | CITI | Inv. Fr. CFA | Empl. Afr. | Empl. Exp. | Ch des aff. Turnover 1000 Fr CFA |
|---|---|---|---|---|---|---|---|---|
| | SICC | 251 | Douala | 352 | - | - | - | - |
| | SFOM | 2179 | " | 352 | - | - | - | - |
| | Ets Edimo Théodore | 5494 | " | 352 | - | - | - | - |
| X | Ets Hangouan Albert | | " | 352 | 115 | 3 | 0 | 1,418 |
| X | Ets Ndikoum Ndima Georges | 5132 | " | 352 | 14,323 | 19 | 0 | 6,725 |
| X | SAPS (Ets Lyko) | 254 | " | 352 | 10,444 | 40 | 1 | 14,543 |
| X | CIPEC | 1016 | " | 352 | 4,056 | 11 | 2 | 35,518 |
| X | SOCAMETA | 5167 | " | 352 | 9,731 | 45 | 3 | 38,426 |
| X | SACM | 5270 | " | 352 | 34,110 | 48 | 9 | 69,209 |
| X | Fermetures Mischelers | 807 | " | 352 | 17,751 | 39 | 5 | 81,706 |
| | Sté des Ets Froumentin | 267 | " | 352 | 29,868 | 110 | 5 | 162,707 |
| X | SOCAFER | 439 | " | 352 | 43,967 | 171 | 9 | 186,296 |
| | Sté A. MARTY | 1133 | " | 352 | 105,638 | 278 | 17 | 297,000 |
| X | SOCAPAR | 261 | " | 352 | 104,293 | 255 | 10 | 434,430 |
| | Ets Minas Tailleas | 763 | " | 353 | 911 | 5 | 0 | 3,640 |
| | C T M C | 563 | " | 353 | 67,886 | 79 | 1 | 209,692 |
| | Forges Tropicales | 106 | " | 353 | 273,000 | 200 | 7 | 295,000 |
| | Ets Palacin Roger | 27 | " | 362 | 4,699 | 10 | 1 | 45,637 |
| X | S C E M | 979 | " | 362 | 3,474 | 26 | 2 | 47,327 |
| | FROID-CAM | 195 | " | 362 | 11,320 | 36 | 8 | 208,213 |
| | Technic Diéselaire | | | 365 | - - | - | - | - - |
| | Ets Bilogop Aloys | 237 | N'samba | 365 | - - | - | - | - - |
| | Ent. Africaine de radiateur | | Douala | 365 | 1,280 | 15 | 0 | 8,107 |
| X | SOCAREC | 331 | " | 365 | 80,541 | 63 | 11 | 145,016 |
| X | S C I | 607 | " | 365 | 97,898 | 181 | 7 | 318,512 |
| | ENTRELEC | 306 | " | 371 | 112,000 | 250 - 400 | | 6-900,000 |
| | ELECTRO-HALL | | " | 372 | - | - | - | - - |
| | Equatoriale Electronique | 1076 | " | 372 | 53,325 | 91 | 4 | 360,820 |
| | Garage Chanas & Cie | 32 | " | 384 | 20,930 | - | 1 | 4,524 |
| | SORECAM | 32 | " | 389 | 8,247 | 23 | 1 | 16,723 |

X Atelier visité — Visited Workshop

CAMEROON MAINTENANCE AND REPAIR STUDY

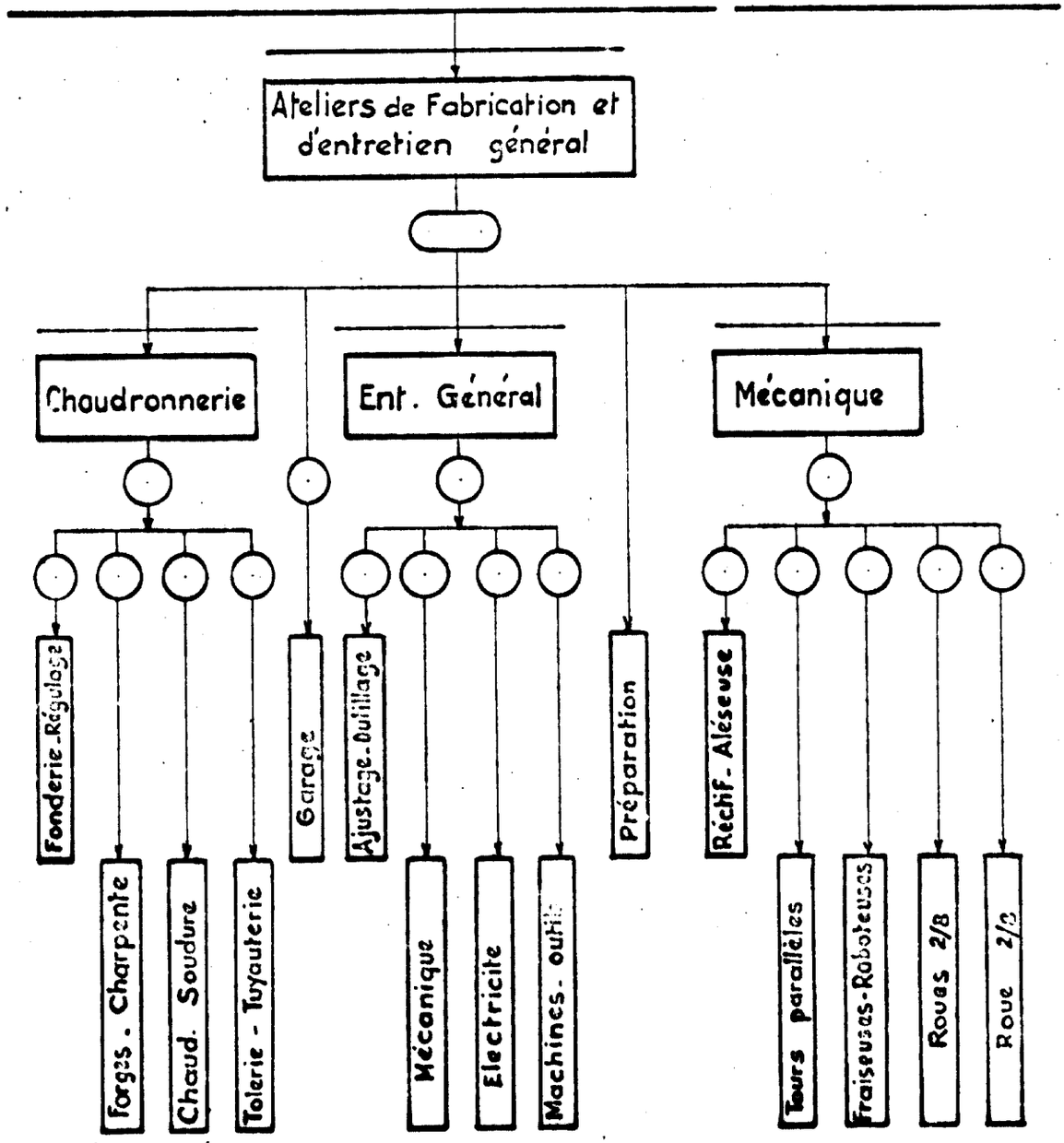
ETUDE D'ENTRETIEN ET DE REPARATION AU CAMEROUN

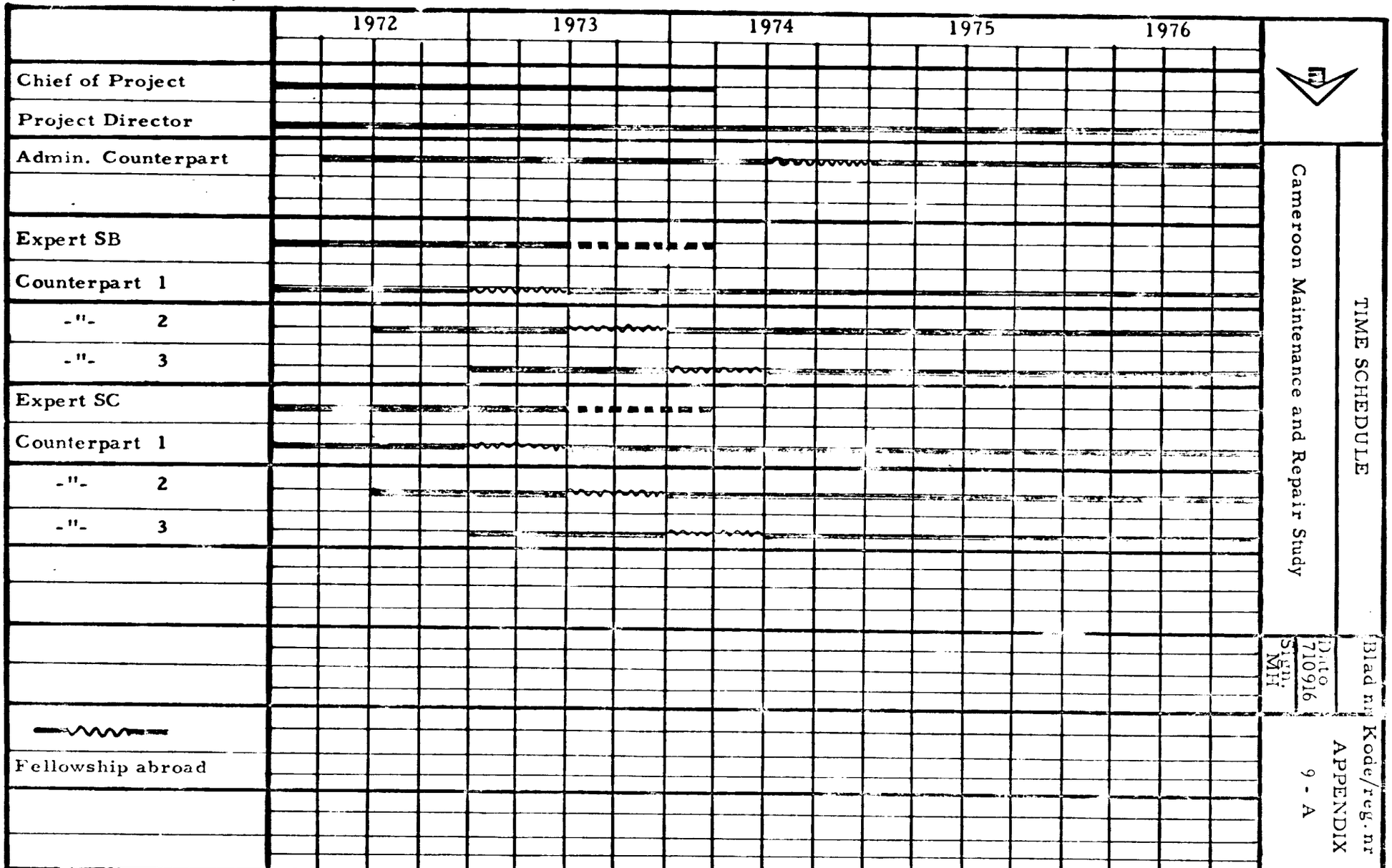
APPENDIX 6 - C

ANNEXE 6 - C

RAILWAY ORGANIZATION CHART M & R WORKSHOP

ORGANIGRAMME DES ATELIERS D'ENTRETIEN DU CHEMIN DE FER






TIME SCHEDULE

Cameroon Maintenance and Repair Study

Date 710916
Sign. MH

Blad nr Kode/reg. nr

APPENDIX 9 - A

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipment Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions / Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Documentation technique | Technical Documentation | | | | |
| | Catalogues généraux pour | General catalogues for | | | | |
| 1.01 | - machines-outils | - machines | 1 | C | B | |
| 1.02 | -outils, instruments | - tools | 1 | C | B | |
| 1.03 | - accessoires | - supplies etc | 1 | C | B | |
| 1.04 | Biblioteque avec littérature technique d'actualité | Library with actual technical literature | - | C | B | |
| 1.05 | Revues techniques | Periodicals, technical | 10 | C | B | |
| | Catalouges speciaux pour toutes les machines-outils utilisées | Special catalouges for all actual production machines | | | | |
| 1.06 | - Listes de pièces détachées | - Sparepart lists | 2 | C | B | |
| 1.07 | - Liste de contrôle pour l'entretien préventif | - Preventive mainten. check lists | 2 | C | B | |
| 1.08 | - Manuel de travail | - Working manuals | 2 | C | B | |
| 1.09 | - Specification des outils et instruments | - Tool specifications | 2 | C | B | |
| 1.10 | - Plans et descriptions techniques | - Drawings and technical descriptions | 2 | C | B | |
| 1.11 | - Tableaux de graissage | - Lubrication charts | 2 | C | B | |
| 1.12 | Registre de toutes les industries concernées | Register and Files for all actual industries | 1 | C | B | |
| 1.13 | Etageres pour documentation technique | Shelves for technical documentation | 4 | C | B | |
| | | Total Fr CFA | | | | 0 |
| | | $ | | | | 0 |

| | | | | |
|---|---|---|---|---|
| A | Pays fournisseur | Possible Sources | C = Cameroun | Cameroon |
| | | | E = Etranger | Abroad |
| B | Entretien et réparation et pièces détachées disponibles au Cameroun | Servicing and Sparepart Availability in Cameroon | B = Bon | Good |
| | | | N = Néant | None |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipments Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions / Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Equipement de salles de dessin | Drawing Room Equipment | | | | |
| 2.01 | Tables à dessin | Drawing Tables, 120 x 80 cm | 2 | C | B | |
| 2.02 | Appareils à dessiner | Drawing Machines | 2 | C | B | |
| 2.03 | Trousses de compas | Case of drawing instruments | 2 | C | B | |
| 2.04 | Selection de crayons | Set of pencils | 2 | C | B | |
| 2.05 | Règles graduées | Metric Type Scales | 2 | C | B | |
| 2.06 | Rapporteurs | Semi-circular Protractor | 2 | C | B | |
| 2.07 | Sélection d'équerres | Set Squares | 4 | C | B | |
| 2.08 | Taille-crayons | Pencil Sharpener | 2 | C | B | |
| 2.09 | Pistolets pour: Symboles | Patterns Symbols | 4 | C | B | |
| 2.10 | Machines | Machine Parts | 4 | C | B | |
| 2.11 | Lettres | Letters | 4 | C | B | |
| 2.12 | Chiffres | Figures | 4 | C | B | |
| 2.13 | Balance, simple, 0-1000 gr | Scale, simple, 0-1000 gr | 1 | C | B | |
| 2.14 | Duplicateur | Copying Machine, 600 x 1000 mm | 1 | C | B | |
| 2.15 | Appareil photographique avec objectifs et accessoires, complet | Camera with full set attachments and accessoires, 24 x 36 mm | 1 | C | B | |
| 2.16 | Spotlights | Spotlights | 3 | C | B | |
| 2.17 | Projecteur pour diapositives | Slide projector | 1 | C | B | |
| 2.18 | Retroprojecteur | Overhead projector | 1 | C | B | |
| 2.19 | Projecteur de contours | Profile projector | 1 | C | B | |
| 2.20 | Flip-over block | Flip-over block | 2 | C | B | |
| 2.21 | Tableaux noires | Black Board | 2 | C | B | |
| 2.22 | Verificateur de dureté | Hardness Tester | 1 | C | B | |
| | | Total Fr CFA | | | | 1.860.000 |
| | | $ | | | | 7.000 |

| | | | | | |
|---|---|---|---|---|---|
| A | Pays fournisseur | Possible Sources | C = Cameroun<br>E = Etranger | Cameroon<br>Abroad |
| B | Entretien et réparation et pièces détachées disponibles au Cameroun | Servicing and Sparepart Availability in Cameroon | B = Bon<br>N = Néant | Good<br>None |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipments Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions / Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Materiel pour l'étude de l'entretien et des méthodes. | Maintenance and Methods Study Supplies | | | | |
| | Formulaires et liste de contrôle pour: | Forms an checklists for | | | | |
| 3.01 | | -Work Studies | - | C | B | |
| 3.02 | | -Job Investigation Studies | - | C | B | |
| 3.03 | | -Machine Investigation St | - | C | B | |
| 3.04 | Planification des travaux d'entretien | -Maintenance Work Schedules | - | C | B | |
| 3.05 | Travaux d'entretien préventifs | -Preventiv Maintenance Work | - | C | B | |
| 3.06 | Tableaux de graissage | -Lubrication charts | - | C | B | |
| 3.07 | | Job Study Boards | 2 | C | B | |
| 3.08 | | Job Study Equipment | 2 | C | B | |
| 3.09 | Chronomètres | Stopp Watches | 4 | C | B | |
| | | **Total Fr CFA** | | | | **140.000** |
| | | **$** | | | | **500** |

| | | | | |
|---|---|---|---|---|
| **A** | **Pays fournisseur** | **Possible Sources** | **C = Cameroun** | **Cameroon** |
| | | | **E = Etranger** | **Abroad** |
| **B** | **Entretien et réparation et pièces détachées disponibles au Cameroun** | **Servicing and Sparepart Availability in Cameroon** | **B = Bon** | **Good** |
| | | | **N = Néant** | **None** |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipment Required to Establish the Maintenance and Repair Services

| No Ref | Equipment, Type, Dimensions / Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Outils et equipement mobile | Hand Tools and Mobile Equipment | | | | |
| 4.01 | Boîte à outils | Tool Chest with lock | 2 | C | B | |
| 4.02 | Selection de tournevis | Set of screwdrivers | 2 | C | B | |
| 4.03 | Selection de clé à moulette | Set of wrenches | 2 | C | B | |
| 4.04 | Selection de clé à fourche | Set of double open spanners | 2 | C | B | |
| 4.05 | Clé dynamometrique | Torque wrenches | 2 | C | B | |
| 4.06 | Limes de contact | Files | 6 | C | B | |
| 4.07 | Étau à main | Filing Block | 2 | C | B | |
| 4.08 | Grattoir | Scraper | 2 | C | B | |
| 4.09 | Tenailles | Pliers | 6 | C | B | |
| 4.10 | Pinces coupante | Nippers | 6 | C | B | |
| 4.11 | Compas a calibrer | Calipers | 2 | C | B | |
| 4.12 | Pointes carrées | Trammels | 2 | C | B | |
| 4.13 | Pointeaux | Centre punches | 2 | C | B | |
| 4.14 | Chaise-clous | Drifts | 4 | C | B | |
| 4.15 | Serre-tubes | Tube wrenches | 2 | C | B | |
| 4.16 | Marteaux | Hammers | 2 | C | B | |
| 4.17 | Burins | Chisels | 6 | C | B | |
| 4.18 | Monture de scie à main | Hack saw with blades | 2 | C | B | |
| 4.19 | Masettes | Clubs | 2 | C | B | |
| 4.20 | Masettes en plomb | Lead clubs | 2 | C | B | |
| 4.21 | Selection de mèches, W | Set of drills, W | 2 | C | B | |
| 4.22 | Selection de mèches, M | Set of drills, M | 2 | C | B | |
| 4.23 | Coins de sernage | Wedge | 2 | C | B | |
| 4.24 | Lettres et chiffres pour marquage | Marking letters and figures | 2 | C | B | |
| 4.25 | Bidons à huile, grands | Oil cans, bigger | 2 | C | B | |
| 4.26 | Bidons à huile, petits | Oil cans, smaller | 2 | C | B | |
| 4.27 | Clés à douilles | Socket Sets | 2 | C | B | |

| | | | | |
|---|---|---|---|---|
| A | Pays fournisseur | Possible Sources | C = Cameroun<br>E = Etranger | Cameroon<br>Abroad |
| B | Entretien et réparation et pièces détachées disponibles au Cameroun | Servicing and Sparepart Availability in Cameroon | B = Bon<br>N = Néant | Good<br>None |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipment Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions<br>Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Outils et equipement mobile (suite) | Hand Tools and Mobile Equipment (continued) | | | | |
| 5.01 | Extracteurs | Wheel Pullers | 2 | C | B | |
| 5.02 | Extracteurs hydraulic | Hydraulic pullers | 1 | C | B | |
| 5.03 | Trousse pour extracteur | Leg puller kit | 1 | C | B | |
| 5.04 | | Housing Heater | 1 | C | B | |
| 5.05 | Extracteurs interieur | Screw extractor | 2 | C | B | |
| 5.06 | Lampes d'inspection | Inspection Handlamp | 2 | C | B | |
| 5.07 | Leviers, petits | Iron bar, smaller | 2 | C | B | |
| 5.08 | Niveaux de precision | Precision block level | 2 | C | B | |
| 5.09 | Selection de tarauds, W | Set of taps, W | 2 | C | B | |
| 5.10 | Selection de tarauds, M | Set of taps, M | 2 | C | B | |
| 5.11 | Selection d'alésoirs | Set of reamers | 2 | C | B | |
| 5.12 | Perceuse portative, 13 mm avec accessoires | Electric drill, 13 mm with accessoires | 1 | C | B | |
| 5.13 | Perceuse portative, 25 mm avec accessoires | Electric drill, 25 mm with accessoires | 1 | C | B | |
| 5.14 | Cric de levage | Lifting jack | 2 | C | B | |
| 5.15 | Vérins, 2 tonnes | Jack, 2 ton | 2 | C | B | |
| | | **Total Fr CFA** | | | | 800.000 |
| | | **$** | | | | 3.000 |

| | | | | |
|---|---|---|---|---|
| **A** | **Pays fournisseur** | **Possible Sources** | **C = Cameroun** | **Cameroon** |
| | | | **E = Etranger** | **Abroad** |
| **B** | **Entretien et réparation et pièces détachées disponibles au Cameroun** | **Servicing and Sparepart Availability in Cameroon** | **B = Bon** | **Good** |
| | | | **N = Néant** | **None** |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipment Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions / Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Equipement pour laboratoire d'essai | Test-room Equipment | | | | |
| 6.01 | Micromètre, 0-25 mm | Outside Micrometer Set | 1 | C | B | |
| 6.02 | Micromètre, 25-50 mm | Outside Micrometer Set | 1 | C | B | |
| 6.03 | " d'intérieur | Inside Micrometer Set | 1 | C | B | |
| 6.04 | " de profondeur | Depth Gauge Micrometer | 1 | C | B | |
| 6.05 | | Dial Test Indicator Set | 1 | C | B | |
| 6.06 | Jange de profondeur | Depth Gauge | 1 | C | B | |
| 6.07 | Équerre de précision | Master Reference Squares | 1 | C | B | |
| 6.08 | Compes de précision | Calipers | 2 | C | B | |
| 6.09 | Jauge de filetage | Screw Pitch Gauges | 1 | C | B | |
| 6.10 | Jauge pour petits trous | Small hole Gauges | 1 | C | B | |
| 6.11 | Jauge pour rayons | Radius Gauges | 1 | C | B | |
| 6.12 | Jauge d'epaisseur | Feeler Gauges | 1 | C | B | |
| 6.13 | Jauge a coulisse | Caliper Gauge, 150 mm | 1 | C | B | |
| 6.14 | Jauge a coulisse | Caliper Gauge, 300 mm | 1 | C | B | |
| 6.15 | Règles graduées, acier | Metric Steel Scale, 300 mm | 2 | C | B | |
| 6.16 | Règles graduées, acier | Metric Steel Scale, 600 mm | 2 | C | B | |
| 6.17 | Jauge de précision à coulisse | Precision Slip Gauges | 1 | C | B | |
| 6.18 | Rubans d'acier, 25 m | Black Etched Steel Tapes | 2 | C | B | |
| 6.19 | Tachymètres a main | Hand Tachometer | 2 | C | B | |
| 6.20 | Compteurs a main | Hand Tally Counter | 2 | C | B | |
| 6.21 | Stethoscope industriel | Industrial Stethoscope | 1 | C | B | |
| 6.22 | Jauge de prèssion | Pressure Tester | 1 | C | B | |
| 6.23 | Thermomètre électronique | Electronic Thermometer | 1 | C | B | |

| | | | | |
|---|---|---|---|---|
| A | Pays fournisseur | Possible Sources | C = Cameroun<br>E = Etranger | Cameroon<br>Abroad |
| B | Entretien et réparation et pièces détachées disponibles au Cameroun | Servicing and Sparepart Availability in Cameroon | B = Bon<br>N = Néant | Good<br>None |

Description de l'Equipement Nécessaire en vue d'Etablir les Services d'Entretien et de Réparation

Specification of Equipment Required to Establish the Maintenance and Repair Services

| No Ref | Equipement, Type, Dimensions<br>Equipment, Type, Dimensions | | Quant. | A | B | Coût Approx. Estim. Cost Fr CFA |
|---|---|---|---|---|---|---|
| | Equipement pour laboratoire d'essai (suite) | Test-room Equipment (continued) | | | | |
| 7.01 | Plaque de dressage, 400x300 mm | Engineers Surface Plate | 1 | C | B | |
| 7.02 | | Box Angle Plates | 2 | C | B | |
| 7.03 | | V-Blocks | 2 | C | B | |
| 7.04 | Volt-ampèremètres | Volt-am-meter | 2 | C | B | |
| 7.05 | Potentiomètre | Tension Indicator | 1 | C | B | |
| 7.06 | Cables électriques | Power Flexis | 4 | C | B | |
| 7.07 | Établis avec étau | Work Benoh with vice | 2 | C | B | |
| 7.08 | Tables de travail | Work Table | 2 | C | B | |
| 7.09 | Etagères | Shelves for equipment | 2 | C | B | |
| 7.10 | Armoires | Cabinet for equipment | 2 | C | B | |
| | Materiel de nettoyage | Cleaning Equipment | | | | |
| 7.11 | Brosses de nettoyage | Cleaning Brush | 2 | C | B | |
| 7.12 | Etoupes | Twist | 2 | C | B | |
| 7.13 | Torchons | Cleaning Cloth | 6 | C | B | |
| 7.14 | Produit de nettoyage | Cleaning Fluid | 4 | C | B | |
| | Materiel de sécurité | Safety Equipment | | | | |
| 7.15 | Lunettes de soudeur | Protective Glasses | 4 | C | B | |
| 7.16 | Vêtements de protection | Protective Clothing | 2 | C | B | |
| 7.17 | Bottes en caoutchouc | Rubber Boots | 2 | C | B | |
| 7.18 | Petites hâches | Smaller Tarpaulin | 2 | C | B | |
| 7.19 | Trousses de premier secours | First Aid Kit | 2 | C | B | |
| | | **Total Fr CFA** | | | | 1.200.000 |
| | | **$** | | | | 4.500 |

| | | | | |
|---|---|---|---|---|
| **A** | **Pays fournisseur** | **Possible Sources** | **C = Cameroun** | **Cameroon** |
| | | | **E = Etranger** | **Abroad** |
| **B** | **Entretien et réparation et pièces détachées disponibles au Cameroun** | **Servicing and Sparepart Availability in Cameroon** | **B = Bon** | **Good** |
| | | | **N = Néant** | **None** |

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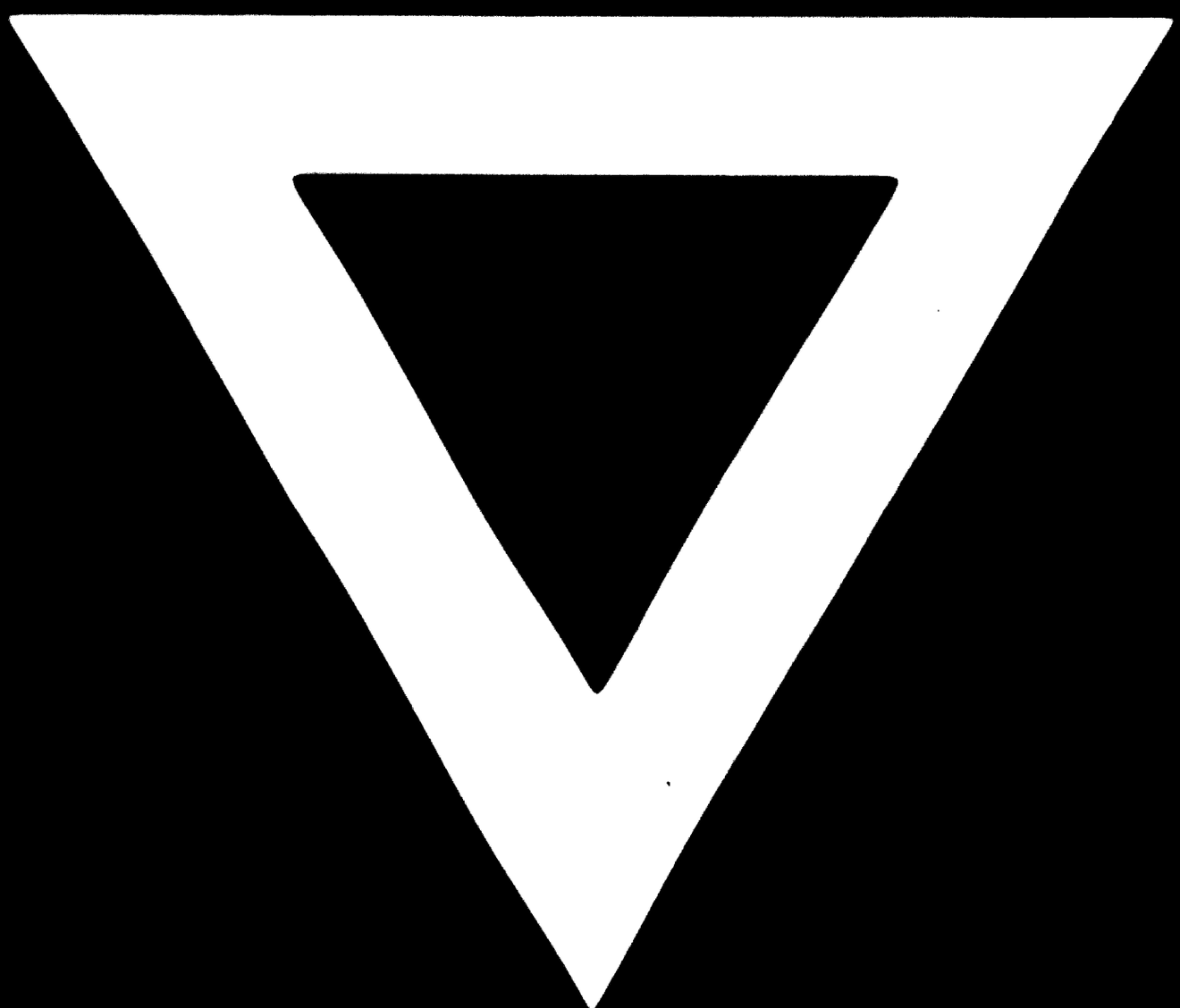

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