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U N I T E D N A T I O N S

ASSISTANCE IN IRON ORE AND SCRAP PROCESSING

part: SCRAP PROCESSING DP/ANG/79/008

Establishement of the pilot scrap enterprise of Angolan System for scrap collection and processing - SUCANOR-CENTRE in Luanda, PEOPLE'S REPUBLIC OF ANGOLA

The additional Project on the basis of Contract No.86/45 between THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION /UNIDO/

and

TECHNOPROMEXPORT

Activity Code:DP/OI/3I.8

FINAL REPORT

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna

January 1987
English

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FINAL REPORT

Based on the work of Dr. Sc./tech./ Youri SOZONTOV - Expert in Industrial Projects Design/Implementation-Scrap transportation-Metallurgical Branch

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

VIENNA

BASIC SUMMARY CHARACTERISTIC OF THE PROJECT

- Project title: Assistance in Iron Ore and Scrap Processing; part: Scrap Processing
- Project number: DP/ANG/79/008
- The additional Project on the basis of Contract No.86/45
- Country: People's Republic of Angola
- Date of Contract approval: 30.07.1986
- Completion of the Project activities: 30.01.1987
- Executing agency: UNIDO IO/MET
- Contractor: TECHNOPROMEXPORT
- Direct counterpart: Directorate of SUCANOR-Centre in Luanda National Directorate of Heavy Industry, Ministry of Industry of Angola
- UNIDO input: $ 32265
- Project output: Establishment of the pilot scrap enterprise of Angolan System for scrap collection and processing - SUCANOR-Centre in Luanda
- Basic Project personnel: Dr.Sc./tech./ Youri Sozontov - Expert in Industrial Projects Design /Implementation - Scrap transportation-Metallurgical Branch/
- Volume of the established capacities for the technical service and repair on the National Metal Scrap Enterprise, SUCANOR - 3 mobil electro-mechanical repair and maintenance work shops
- volume of training the personnel - 140 hours of theoretical and practical studies
- Number of the trained national personnel, prepared for independent work - 14 persons

CONTENTS:

LIST OF APPENDICES

INTRODUCTION

In accordance with the Contract between UNIDO and V/O "Technopromexport" for rendering services under the Project of assistance in processing the iron ore and scrap iron in the People's Republic of Angola /UNIDO Contract No 86/45. Project No. ДР/АНГ 379/008. Code: ДР/ОІ/ОІ.8/ the national enterprise for processing the scrap-iron - SUCANOR - should be equipped with a complex of three ДРМ-I movable repair shops, securing the fulfilment of the required scope of repairs and restoration works for the transport facilities conveying the scrap-iron in the country /vehicles, trailers, self-propelled cranes etc./ and the main equipment of the enterprise.

The works performed by the Contractor's expert - Dr.Yuri Sozontov in the Contractor's country - the USSR - and in the People's Republic of Angola from August, 1986 to January 1987 in the full scope correspond to assignments stated in "UNIDO Reference for the Contract" approved by Mr. I. Velev on June I2, I986.

Section I.OO.
Plan for works aimed at fulfilling the Contract assignments

In accordance with the provisions of the Contract they developed the detailed plan for fulfilling, the works in the Contractor's country - the USSR - and in the country of Project - the People's Republic of Angola.

The plan of works in the Contractor's country - the USSR - stipulated two visits /in August-September 1986/ of UNIDO expert to the plant producing ДРМ-I movable repair shop, organization and direct participation in appreciating at the plant the make-up and completion of the equipment of two repair shops according to requirements of technical conditions and working

conditions in the country of the Project, appreciation of the quality of repair shops manufactured and making arrangements for their timely delivery to the port of shipment.

In the country of the Project - the People's Republic of Angola - the plan stipulates for the re-activation of some movable repair shops, supplied by V/O "Technopromexport" to the PRA in I986, checking its completion and serviceability, putting into operation, preparation of the list of spare parts, recommended for buying, theoretical and practical training of the Angolian personnel in observance of main requirements for exploitation of the repair shop and its efficient usage.

Section 2.00

Results of the first phase for contract works

Point 2.0I. Results of works performed in the country of the Contractor

In accordance with the plan of works in the country of the Customer - the USSR - two visits /in August and September I986/ directly to the plant manufacturing the IPM-I movable repair shops were made.

To secure the guaranteed high quality of the products delivered under this Contract through UNIDO to the People's Republic of Angola during the visits to the manufacturing plant control tests were organized for two /2/ IPM-I movable repair shops manufactured against order of V/O "Technopromexport" for delivery to the People's Republic of Angola.

In the process of testing it was certified:

I. IPM-I repair shop in regard to its composition and completion meets the requirements of technical conditions and spe-

cial conditions of delivery to tropical countries.

2. Technical specifications of ЗИЛ-431418 vehicle chasis, I6TO4A screw-cutting lathe, АБ-8Т/230А petrol-electric set, 2МІІ2 bench-drilling machine, К-ВВ-ОІ-І.25 acetylene generator and other completing items meet the existing standards.

The assembly and mounting of completing items are effected with high quality.

4. The completion of technical and operation documentation is in conformity with the order.

In order to reduce the time required for mastering ПРМ-І movable repair shops and putting them into operation in the People's Republic of Angola was secured an additional supply of documentation sets in Spanish without extra expenses for UNIDO.

5. Special control testing showed high serviceability of all completing items of the ПРМ-І repair shops.

Point 2.02. Results of works performed in the country of the Project

2.02.0I. Checking the completion of the ПРМ-І repair shop

The ПРМ-І repair shop supplied to the PRA in the first half of I986 from the Soviet Union was kept for a long time in the port of Luanda and then it was taken over by representatives of UNIDO and the National enterprise SUCANOR. The "Technoprom-export' representative assessed the completion of the repair shop immediately after arrival at the area of the Project - 26.9.I986. The assessment of the completion was made with participation of the representatives of the National enterprise SUCANOR.

In the process of checking it was stated that during prolonged keeping in the port of Luanda the seals on the hood and the cabin of the vehicle and the body of the repair shop were broken.

The keys for the vehicle and the repair shop are lost.

It is found out that a number of important components and completing parts are taken away, namely:

- the silencer and the exhaust pipe of the motor for the vehicle chasis;

- the full set of illuminating vehicle equipment /headlights, parking lights, tail lights, under-hood lamp, light switch-over etc./;

- storage battery;

- heater electric motor;

- pneumatic signal;

- technical and operation documentation for the vehicle chassis, the petrol-electric set, acetylene generator, the screw-cutting lathe, the drilling machine etc.

It was also found out that damages were made to the screw-cutting machine and other completing items.

On the basis of the results of the check up there was made a joint check report signed by the UNIDO expert - the representative of V/O "Technopromexport" and the manager of the National enterprise - SUCANOR /Appendix A in Portuguese/.

In conclusion to the above Report it is noted that the movable repair shop as a result of stealing and damages caused at the

port of Luanda needs extra completion and current repairs.

In order to speed up putting into the effective operation of the movable repair shop a decision was made to perform the entire complex of repairing and restoration works for RMP-I repair shop directly in Luanda using extra possibilities of the Contractor found by him free of charge for UNIDO.

2.02.02. Repairing and restoration works for RPM-I repair shop

The Contractor's representative has made the entire complex of repairing and restoration works for the RPM-I movable repair shop required as a result of stealing and damages caused in the port of Luanda.

Within the shortest reasonable time the delivery of lacking parts and assembly units was made and new elements manufactured. The repair shop is restored in the original state in accordance with technical conditions of the manufacturing plant. The list and scope of the repairing and restoration works for the RPM-I repair shop are given in Appendix B.

It is essential to note that the repairing and restoration works for the repair shop required extra means and time on the part of the Contractor.

Expenses connected with performance of repairing and restoration works and the cost of replacing new spare parts instead of stealed ones made out about 5000 US dollars, and are referred to the responsibility of the Contractor without charges to UNIDO with a view to raising the prestige of UNIDO and speeding up the effective commissioning of the repair shop.

2.02.03. Re-activation and putting into operation of RPM-I repair shop

Re-activation of the repair shop and its completing items is

made in full scope with participation of the Angolian personnel.

The repair shop is made serviceable in accordance with existing recommendations and instructions of the manufacturing plant.

As a result the Angolian side accepted the serviceable repair shop in the established procedure in conformity with mutually agreed upon report /Appendix C in Portuguese/.

The vehicle chassis and all technological equipment were subjected to preventive maintenance in the scope of the Technological maintenance No.2. The Angolian personnel received the training course.

2.02.04. Development of plans for training the national personnel

Under instruction of UNDP Mission in the People's Republic of Angola was prepared and coordinated with the managers of the National enterprise - SUCANOR - the detailed training plan for preparation of Angolian specialists /Appendix G in Spanish/. The plan stipulates the training of the national personnel within 140 hours; theoretical /68 hours/ and practical /72 hours/ classes. The training plan stipulates the brief consideration of general questions of technical policy in the sphere or organization and mechanization of treatment, loading, transportation and unloading the scrap-iron, technical policy in automobile facilities, type of transport facilities for conveying the scrap-iron. The detailed acquaintance and necessary theoretical and practical knowledge are stipulated for ЗИЛ 130-431413/ vehicle chasis, АБ-8-Т/230 petrol-electric set, 16Т04А screw-cutting lathe, 2МІІ2 bench-drilling machine, К-ВВ-01-1,25 acetylene generator and other completing items.

The training plan stipulates the considerable scope of studies

for training the national personnel in works required for the needs of SUCANOR.

2.02.05. Training of the national personnel

Under the instruction of the UNDP mission in the People's Republic of Angola the UNIDO expert with managers of the National enterprise SUCANOR was agreed the number of the enterprise staff /II persons/ needed to prepare the ПРМ-I repair shop for operation. This figure includes engineer - I· motor-man - I; mechanics and their assistance - 3; electricians - 3; fitters - 2; mechanic for industrial equipment - I.

The national personnel finished the course of preliminary training in specially equipped class-room and received directly on-the-job training in the ПРМ-Irepair shop. Special attention was devoted to questions of completion, equipment, designation, specifications, general design and principles of work for completing items in the repair shop as a whole, preparation for work, certain operation practices, procedure for operation and maintenance of the repair shop.

Two persons /counter party/ received the provisional cycle of training in effective appliance of the equipment of the repair shop and in removal of its possible troubles. The full scope of training the national personnel was stipulated during the second phase of works under the Contract after arrival of two ПРМ-I shops additionally supplied.

Section 3.00.

Results of the second phase for contract work

Point 3.0I. Putting into operation of two ПРМ-Imovable repair shops

Re-activation of two repair shops and its completing items

received for the PRA in December of I986 was made in full scope with the participation of the Angolian personnel in the same way as indicated in point 2.02.03. of this Report /re-activation, cheching of the completion, preventive maintenance for the vehicle, chasses and all the technological equipment in the scope of the technological maintenance No.2, evaluation of the completion parts, installation at the enterprise SUCANOR of the parallel additional storage batteries, an accomodation of the permanent location places of the movable repair shops etc./

The Angolian personnel was given a course of putting into operation of the repair shops RPM-I.

The ready for operation repair shops were delivered by a mutually agreed Report to the Angolan Side. /Appendix D in Portuguese/. To the moment of the conclusion of the Contract works all the repair shops were being used for the needs of the SUCANOR Enterprise.

Point 3.02. Preparation of the list of spare parts to be ordered for the repair shops

So as to make possible a normal operation of the 3 repair shops the "List of spare parts for RPM-I repair shop recommended for buying" was elaborated /Appendix F/.

During the elaboration of the List was taken an account the fact there is a 2-year reserve of spare parts for some completing elements of the repair shops.

In the List were included the best durable spare parts for the following completing elements of the repair shops.

Point 3.03. Training of national personnel

In accordance with the approved "Plans for training the specialists" in specific features of the unit and in principles of main-

tenance of IPM-I movable repair shop /Appendix G/ following rational specialist were trained for independent work /Table I/

Table I

Nos.	Post or profession	Number of trained specialists
I	2	3
I.	Chief of production	I
2.	Chief of the section of technical maintenance	I
3.	Metal craftsmen with diplomas of industrial equipment /chiefs of movable repair shops/	3
4.	Drivers and mechanical engineers with diplomas	3
5.	Electricians with diplomas of industrial equipment and their assistants	3
6.	Metal craftsmen assistants for industrial equipment	3
	Total:	I4 persons

After having passed the full course of theoretical and practical classes all the specialists were subjected to a special examination with the aim of checking their knowledge and skill. The exams were received by a Commission of the National enterprise SUCANOR.

All the students of the course passed the tests.

Point 3.04. <u>General appraisal of the existing industrial base for technical service and maintenance of the rolling-stock of the enterprise SUCANOR</u>

The enterprise SUCANOR has 3I units of rolling-stock including

automobile-tractors "Renault" and semi-trailers for collecting and transportation of scrap-iron, vans "Robur" and "JFA", chassis "ZIL" of movable repair shops, cars "NIVA", a crane PPM, fork-lift trucks etc.

The result of analysis shows, that motor and tractor means bought at the expense of UNIDO now and for the nearest future of 2-2,5 ears /till the construction and equipment of the main industrial building and this construction has just begun/ are practically not provided with a base for technical service and repair /table 2/.

Table 2

Nos.	Title of the index	Units	Index /numerator means calculated number, and denominator means actual availability/
I	2	3	4
I.	Number of units of the rolling-stock	units	3I
2.	Number of daily service	-"-	3I/O
3.	Number of technical services of the I degree	-"-	I5/O
4.	Number of technical services of the 2 degree	-"-	2/o
5.	Number of specialised sectors for technical service and repair of the rolling-stock	-"-	5/O
6.	Number of specialised posts for technical service and repair of the rolling-stock	-"-	3/O

At present time the enterprise lacks sectors of vital importance for current repair of diesel and carburettor engines, hydraulic and pneumatic system, electrical equipment, repair of tyres,

repair and charging of accumulators etc.

These facts show, that urgent measures should be taken at the enterprise SUCANOR to create provisional capacities to secure timely technical service and current repair of the rolling-stock so as not to allow the irretrievable loss of the equipment bought at the expense of UNIDO. In our opinion such capacities could be established during 6-7 months with additional minimal expenditure of approximately 70000 am.dollars for the missing technological equipment and for the work of an expert.

Section 4.00.

Conclusions

I. All assignments under Contract between UNIDO and V/O "Technopromexport" No.86/45, Project No. ДР/АНГ/72/0[illegible], ДР/AN/JG.8 for rendering services under the Project of assistance in processing iron ore and scrap-iron in the People's Republic of Angola within the assignments and periods stated by UNIDO Reference to the Contract" of I2.06.86 are fulfilled in full scope and in due time.

2. In order to secure the guaranteed high quality of items supplied under the UNIDO Contract to the People's Republic of Angola directly at the manufacturing plant were arranged for and carried out special control testings of two ПРМ-I movable repair shops in the process of which it was certified that they correspond to requirements of the technical documentation and existing standards.

The arrangements are made for the delivery of repair shops to the port of shipment.

3. Together with the National enterprise SUCANOR it is found out and stated in the by-lateral Report /Appendix A in Por-

tuguese/ that the completion of one ПРМ-I repair shop was violated and damages are made during its prolonged keeping in the port of Luanda.

4. Due to special conditions of the delivery within the framework of the Organization of the UN and with a view to securing the high prestige of UNIDO the representative of the Contractor's country free of charge without any charges to UNIDO within limited time has fulfilled the considerable scope of repairing and restoration works for ПРМ-I repair shop directly in the country of the Project. This work involved organizations and respresentations of the Contractor's country located in the People's Republic of Angola. The tentative cost of the newly installed assembly units, components and fulfilled repairing and restoration works /Appendix B in English/ makes out about 5000 US dollars.

5. Three ПРМ-I movable repair shops were completed in full with the equipment, and in correspondence with the specifications of the manufacturing plant and in fully serviceable conditions were handed over to the National enterprise SUCANOR /Appendices C and D in Portuguese/.

6. During putting into operation of the three ПРМ-I repair shops the entire complex of technical maintenance No.2 was made to ЗИЛ-43I4I8 vehicles chassis; I6T04A screw-curring lathes; 2MII2 bench-drilling machines; АБ-8-Т/230А petrol and electric sets К-В-В-ОI-I. 25 acetylene generators and other completing items.

7. Under instruction of UNDP in the People's Republic of Angola, were prepared and coordinated with managers of the National enterprise SUCANOR the detailed training plan /Appendix G - in Spanish/ for preparing Angolian specialists involving 68-theoretical studies, 72 - practical studies /I40 hours altogether/ for specific features and operation of ПРМ-I movable repair shop.

The training stipulates for the considerable scope of studies in training the national personnel directly for the needs of SUCANOR.

8. Under the instruction of the UNDP in the People's Republic of Angola the number of the personnel was agreed upon with the National enterprise SUCANOR for preparing to use and operate the IPM-I repair shop.

9. The National personnel/practically I4 persons/ have studied the course of starting theoretical and practical training in questions of completion, equipment, designation, specifications, general design and work principles of completing items and the repair shop as a whole, preparation for work, certain practices, procedure of work and requirements of operation. Angolian specialists have studied the cycle of training in effective appliance of the equipment in the repair shop and removal of their possible faults /Appendix H in Portuguese/.

All the Angolian specialists passed successfully the exams.

I0. With the aim of securing of a prolonged running of the three repair shops the "List of spare parts of the IPM-I repair shop recommended for buying" was elaborated /Appendix F in Spanish/. The List was handed over to the management of the National enterprise SUCANOR so as it could buy the spare parts in accordance with established order.

II. The established complex of three movable repair shops is used in the practical work of the National enterprise SUCANOR and basically meets the needs in repair and restoration services of the industrial equipment and the rolling-stock.

Section 5

Recommendations

I. In order to avoid the irretrievable loss of the technical

units purchased at the means of the UNIDO for SUCANOR enterprises it is quite essential /as a provisional measure/ to resort to urgent arrangements for establishing /e.g. in containers/ minimum conditions for maintenance and repairs of the rolling-stock. This work may be performed within the framework of an additional Contract to the amount of $ 70 000 /technological equipment and services of one expert-specialist in the field of motor transport within 6-7 months/.

2. On the basis of the survey made by the expert in regard to upgrading, handling and transporting the scrap with the SUCANOR enterprise as an example, it is determined that in spite of ever-increasing scopes of delivery to the People's Republic of Angola of technical units and facilities /automobiles, tractors, agricultural machines etc./ and their natural tear and ware or breakage due to violation of operation rules or military activities which result in rejection from operation and converting into the category of the metal resources /90% of all scrap resources/ the level of deficiency in collecting the scrap is significant as ever.

The resons accounting for the above problem are as follows:

- the problem is not sttled in regard to the upgrading the scrap and its delivery according to classes. categories, types and metal brands. The said situation increases the labour consumption for its processing;

- irregularity in delivering the scrap to the processing stations mainly due to transportation difficulties which are not settled;

- the scrap is not prepared for delivery in the form suitable for transportation;

- the sparse location of enterprises and organizations which are dealing with delivery of the scrap;

- long distances to be covered for transporting the scrap beyond the limits of the great town;

- low level of accumulating the scrap at each individual enterprise or organization;

- absence of unified tare for collecting and transportation of the scrap by specialized transport, stortage of handling mechanisms and facilities for upgrading the scrap at small enterprises;

- the problem of collecting the small amounts of household and nobody's scrap in great towns /in appartment blocks/ is not settled yet.

To our opinion the main reason for the existing situation characteristic not only for SUCANOR enterprises but also for any other similar enterprises in less-developed countries is the absence of the specialized project - "Organization of management and methods for the scrap conveying". Such Project should be necessary an integrated part of any complex Project similar to "Assistance in Iron ore and "Scrap" processing", part "Scrap processing " DP/ANG/79/008 /Establishment of the pilot scrap enterprise of Angolian System for scrap collection and processing - SUCANOR - centre in Luanda/.

When establishing the Project "Organization of management and procedures for the scrap conveying" they should put into practice recommendations required for settling the below tasks:

I. Analysis of dynamics of scopes for delivery of the scrap.

2. Analysis of regularity in delivering and bringing the scrap to the processing enterprises.

3. Development of technology for prepairing /cutting/ the sophisticated, written-off technical units with a view to transforming them into transportable state; upgrading into classes, categories, types; keeping for secondary usage of complex units /motors, reducers etc./ that have residual life.

4. Development of the system and carrying out the survey of scrap deliverers, especially in country side areas.

5. Analysis of the state and development of methods for improving the transport process for conveying the scrap especially in the country side, including the settlement of the problems:

- loading the scrap into transport facilities;

- selection of the scheme for the scrap conveying, especially in the country side;

- selection of the automobile type for conveying the scrap depending upon the operation conditions /road system, etc./ and technical and economic indicators for the usage;

- estimates for the required number of automobiles and handling facilities. especially for the country side;

- organizational matters concerning the scrap deliverers, the scrap receivers and transport organizations.

6. Analysis of the state and development of the methods

for improving the stock of household and nobody's scrap in appartment blocks of great towns including the settlement of problems:

- arrangements for collecting the scrap using replaceable containers /selection of container type, determination of their number and location sites etc./;

- organization of conveying the scrap using the specialized rolling stock, namely: vehicles - self-loaders; vehicles equipped with "Multilift" system etc. /selection of the type of rolling stock, determination of the number of vehicles, selection of transportation scheme etc./.

- estimation of costs and selection of payment procedures for collection, loading and conveying the scrap in appartment blocks of great towns.

7. Establishment of organizational management system for conveying the scrap by vehicles including the settlement of the below problems;

- establishment of reasonable requirements for the scrap deliverer /obligations, responsibility, rights, sanctions etc./;

- establishment of reasonable requirements for vehicles service unit /the owner/ dealing with the trainsportation of the scrap;

- establishment for reasonable requirements for the scrap, receiver;

- development of the organizational patterns and the framework of management for conveying the scrap /contract for

conveying between the scrap deliverer, the scrap receiver and the owner of the transport means; establishment of the centralized authority for transportations equipment with technical appliances of management units including computers etc./;

- development of methods for management over the scrap transportations /current planning of transportations; keeping account, control and analysis of fulfilling the transportation plans/;

- development of the procedure for documents circulation /contracts, schedules, current transportation plans, daily-shift targets for drivers; acceptance certificates for the scrap and containers; forms, registering the fulfillment of plans, overweight and underweight of the containers; terms of reference for the personnel employed for transportations etc./.

8. Complex technological designing for the entire zone of maintenance and repairs for transport means of the enterprise including:

- estimates for the production programme in regard to maintenance and repairs of transport means and industrial equipment /determination of rational regularity and number of technical services, determination of daily and yearly programmes of work, distribution of labour consuming works according to production zones and sections, determination of optimum number of production workers/;

- technological designing of maintenance and repairs zones /establishment of rational conditions for work of maintenance and repair zones, estimates for the number of universal and specialized posts of maintenance and repairs, estimates for requirements and the range of technological equipment according to shops, zones, sections and maintenance posts/;

- determination of areas for production room of maintenance and repairs;

- determination of areas for storing the technical facilities;

- determination of areas for stores and auxiliary room;

- arrangement layouts for every zone, shop, section and post for technological equipment;

- development of organizational pattern for technical service of the enterprise;

- development and putting into practice of methods for management organization of maintenance and repairs of technical facilities at the enterprise;

- development and introduction of the rational system for keeping accounts of all technical services performed during operation of the technical units at the enterprise;

- development of technological foundations for maintenance and repairs of transport facilities and industrial equipment of the enterprise;

Implementation of the specialized Project "Organization of management and procedures for scrap conveying" integrated in the complex project "Assistance in Iron ore and scrap processing", part "Scrap processing" may be effected by a single expert/engineer-mechanic/ - specialist in the field of automobile transport /within 24 months/ and according to out opinion this Project may increase the total scope of collecting the scrap and decrease the respective expenses at least by four am. dollars per ton and secure due to additional collecting

and usage of the scrap the economic effect at least $ 40 per ton of the scrap.

Works performed under this Contract at the project in the country of the project are considered and approved at technical, operation and routine meetings at Mr. George Teixeira, General Director of the National enterprise SUCANOR, Mr.Rangueli Karadjov, Project Manager, Mr. Gerd Merrem, UNDP Resident Representative, Mr. A. Milovanov - SIDEA and Mr. E.Bengtsson - JPO, UNDP - Luanda.

While working with the national personnel in the country of the Project the Spanish language was used, Belateral Acts on stages of implementing works are made in the language of the Project - Portuguese, plans for training the national personnel and specifications of spares, so as to use them at other projects of UNIDO are prepared in the Spanish language, the Report - in English.

Dr. Yu. Sozontov,

UNIDO Expert - representative of the Contractor /V/O "Technopromexport"/

January 30, 1987 Luanda

Appendix A.

Appendix B

Appendix C

ACTA DE ENTREGA DA OFICINA MÓVEL PEM-1 À EMPRESA REGIONAL DE SUCATA NORTE SUCANOR U.E.E.

LUANDA, AOS 21 DE OUTUBRO DE 198[illegible]

SUCANOR – U.E.E.

[illegible]

LUANDA

[illegible]

[illegible]

[illegible]

[illegible]:

1 – [illegible]

2 – [illegible]

3 – [illegible]

4 – [illegible]

[illegible]

[illegible]

[illegible] preparação.

[illegible] - [illegible] (cimalho [illegible]) [illegible] principio [illegible] [illegible]

[illegible] - [illegible] conhecer os [illegible] métodos [illegible] [illegible] ocorrer [illegible].

Conclusões

[illegible] - [illegible] oficina [illegible] e está preparada para [illegible].

[illegible] - [illegible] [illegible].

[illegible], [illegible] de [illegible] de 19[illegible]

[illegible]

[illegible]

([illegible])

SUCAPOR U. S. L.

[illegible]

([illegible])

Appendix D

Appendix E

Seller [illegible] Scale of delivery list
Contract
Notice

Consignee, address, country

Sheet 1 Sheets 2

Marks and num.	Description of goods	Type of pack	No. of pack		Mass gross net	
	[illegible]		1			
	Body back	"	1			
	Turning lathe with [illegible] and three-jaw [illegible]	"	1			
	Gasoline engine-generator for set AC-AT/220 [illegible]	"	1			
	Bench-drilling machine model [illegible]	"	1			
	Acetylene generator capacity [illegible]	"	1			
	Wooden bench	"	1			
	Parallel bench vice L=140	"	1			
	Electric grinder	"	1			
	Oxygen bottle 40 lit	"	2			

[illegible]

Sheet 41 [illegible]

[illegible] numbers	Description of goods	[illegible]	[illegible]	Price per piece	Total
	[illegible]	piece	1		
	[illegible]	"	1		
	[illegible]	"	1		
	[illegible] for [illegible]-20	m	10		
	[illegible] Hose for [illegible]	"	10		
	[illegible]	piece	1		
	Tester Ц-4315	"	1		
	Storage battery [illegible]	"	1		
	Electrical capacit[illegible] [illegible]	"	1		
	Electrical reflecting [illegible]	"	1		
	Cable КГ 3x2,5+1x1,5	m	15		

[illegible]			
[illegible]	[illegible]	1	
Hacksaw frame	"	1	
Shears [illegible] dia 8 mm	"	1	
Hand shears for cutting metal [illegible]	"	1	
Screw 30	"	1	
Screw [illegible]	"	1	
Electric heater	"	1	
Circular saw	"	1	
Crosscut saw	"	1	
Double-head wrenches	"	1	
" " 12x14	"	1	
" " 17x19	"	1	
" " 15x22	"	1	
" " 27x30	"	1	
Hack 300 mm	"	6	
Stock for round dies [illegible] No 3	"	5	
[illegible]	set	1	
Taps for metric thread M5	[illegible]	2	
" " M5	"	2	
" " M[illegible]	"	2	
" " M[illegible]	"	2	
" " M12	"	2	
" " M12	"	[illegible]	
" " M20	"	2	
Thread gauges inch	"	1	
Thread gauges metric	"	1	
Hacksaw blade	"	6	

Appendix F

SUCANOP-U.E.E.

[illegible]

AO

DR. JORGE SEQUEIRA

DR. [illegible] DA SUCANOP

Prezado Sr. Director tenho a honra apresentar a sua excelência a lista das peças de reposição para os [illegible] e equipamentos dos ateliers [illegible] R-1.

A aquisição das peças de reposição requeridas através das organizações [illegible] estabelecidas garantir-se a durabilidade e [illegible] dos ateliers na planta da SUCANOP.

Anexo: A lista das peças de reposição contém 203 parágrafos.

[illegible]

[illegible]

[illegible]

[illegible]

Appendix G

Appendix H

L I S T

of SUCANOR specialists that were trained

I. Engineers	I. Carlos Jose Catita
II. Technicians	2. Jesus Ambrosio
III. Drivers-mechanics for movable repair shops	3. Joao Ferreira Cardoso
	4. Eduardo Ramiro Valdes
	5. Gabriel Simao
	6. Pedro Utucaiawi
	7. Pedro Antonio
IV. Electricians	8. Jose Nigola Joat
	9. Afonso Joao
	IO. Simao D. Matias
V. Mechanics for production equipment	II. Aleixo Manuel Bumba
	I2. Gonsalves Fernandes Diego
	I3. Antonio Francisco
	I4. Jose Malanga

Total I4 specialists