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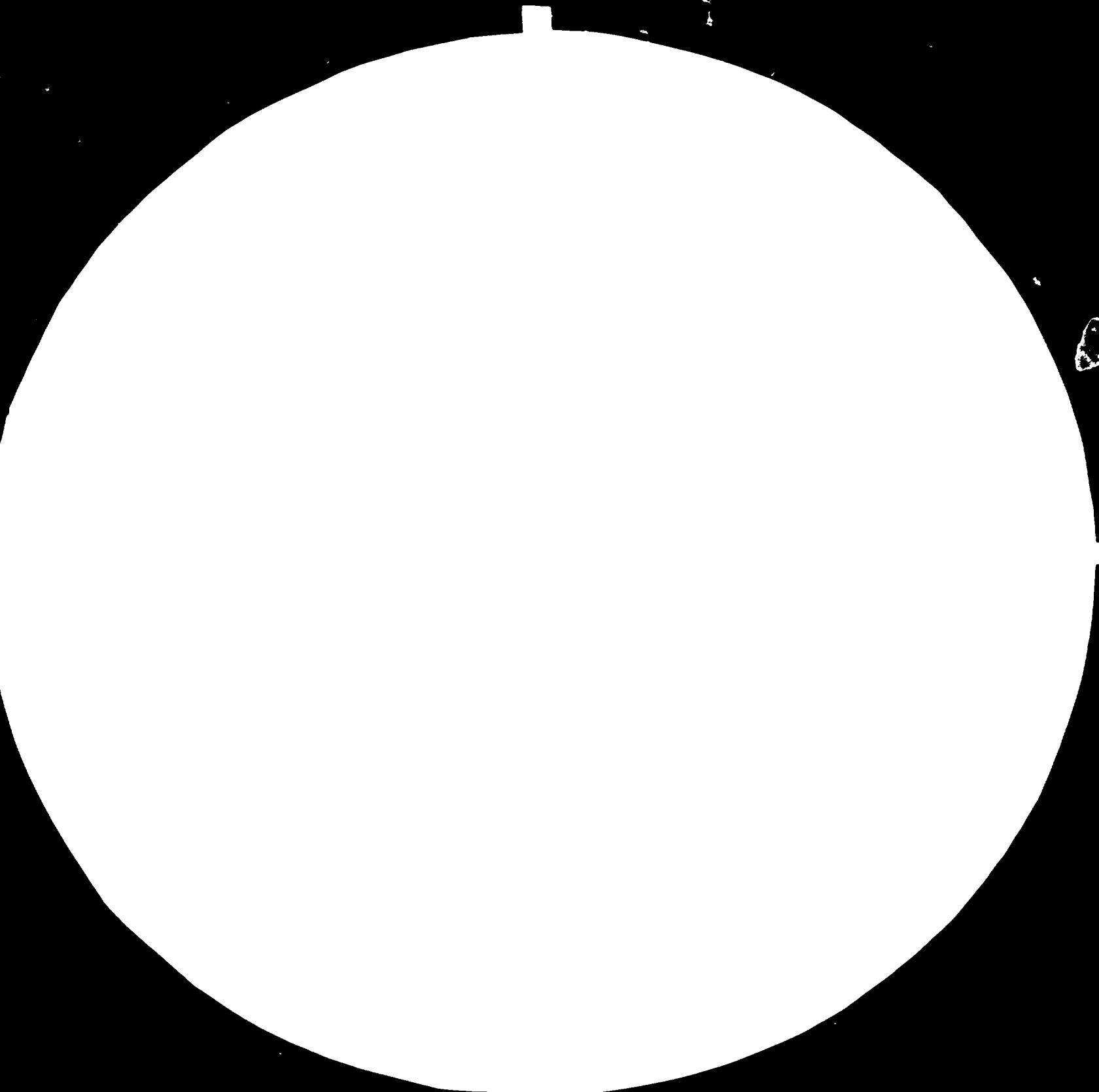
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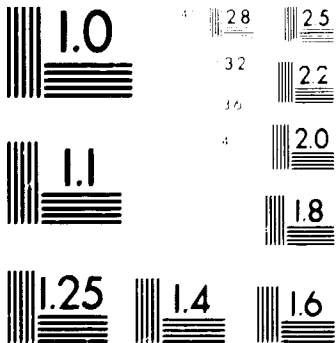
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PDR Yemen.

INSTALLATION OF MACHINERY AT THE
NATIONAL TANNING FACTORY, SHEIKH OTHMAN, ADEN

DP/ID/SER.A/
January 1984
English

RP/PDY/83/001

PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

Technical Report: Expert in the Installation and Operation of
Tannery Machinery *

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

Based on the work of Gerhard Felsner,
Expert in Leather Industries

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1985

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EXPLANATORY NOTES

Reference to dollars (\$) are United States Dollars.

The monetary unit in the People's Democratic Republic of Yemen is the dinar (YD) and there are one thousand fills to one dinar. During the period covered by this report, the value of the dinar in relation to the dollar was YD 0,341 = \$ 1.00

UNDP - United Nations Development Programme
UNIDO - United Nations Industrial Development Programme
NTF - National Tanning Factory

SUMMARY

With the installation of additional leather processing machines and the repair of some essential production equipment together with the newly designed water storage and supply system presently under construction, the national Tanning Factory has been provided with adequate means enabling the plant to process leather in compliance with the requirement of the local shoe industry in respect of quantity, quality and quality consistency.

However, even with the employment of new machinery and improvement equipment, the successful application of modern tanning and finishing techniques is directly related to the technical capability and determination of the production management to introduce, implement and monitor the various interlinking processing operations. Therefore, advanced training in the field of leather technology, plant maintenance and cost accounting will be required in order to maximize the resources available, thus contributing to the expansion of the leather and allied industry sector in particular and to the country's development in general.

ABSTRACT

The project RP/PDY/83/001 entitled "Expert in the Installation and Operation of Tanning Machinery" was started on 26 September 1983 and concluded on the 25 December 1983. The purpose of the project was to install and put into actual operation the tanning machinery and equipment provided to the National Tanning Factory, at Sheikh Othman, Aden, under the project UD/PDY/79/140 and supplied by the company Invest-Import of Belgrade, Yugoslavia.

Further duties of the expert were to train local personnel in the proper operation and maintenance of the machines provided as well as to advise on any other matters related to the proper functioning of the machinery and equipment existing at the N.T.F. Starting with the project implementation, the expert visited the subject manufacturer of tanning machinery in Yugoslavia for technical consultation including two tanneries where some of the machinery similar to those supplied by the referred project have been shown in actual operation. After briefing in Vienna, the expert arrived at the duty station on 7 October 1983 and he completed his mission in the People's Democratic Republic of Yemen on the 20 December 1983 and was debriefed on 22/23 December 1983.

INTRODUCTION

Background

The National Tanning Factory at Sheikh Othman, Aden, was established as a private enterprise dating back to 1960. After a short period of leather production the plant was closed down for economical reasons until 1972 after which the Government has implemented a plan of action to rehabilitate the tannery which included the repair of the existing machinery and equipment carried out by a local team of mechanical engineers. At the same time one reconditioned fleshing machine (Wilson 1550 mm) and one new shaving machine (Turner 600 mm) plus some three tanning drums (capacity 2,000 l up to the axle) were added.

The machinery park consisted after the embarkation of the rehabilitation programme of six tanning drums, sixteen soaking/liming pits, four paddles, three fleshing machines (2200 mm, 1550 mm, 1550 mm), two shaving machines (450 mm, 600 mm), one spraying equipment, one horizontal operated ironing machine, one jaw arm staking machine, one pinwheel measuring machine, two buffing machines (250 mm and 900 mm), one glazing machine. The total floor space of the roofed production area was approximately 1427 m². Following the rehabilitation of the public tannery, technical assistance through the Industrial Development Centre for Arab States was received which also provided fellowship training at the large Egyptian tannery El-Basateen, Cairo.

During 1976-1977 the NTF, on request of the Government, has received technical assistance from UNIDO/UNDP with the main objective of assessing the performance of the tannery and of advising the NTF management on production, production capacity utilization and the enhancement of the leather quality in order to meet primarily the demand of the local shoe industry as well as to stimulate the export of pickled and semi-finished sheep and goat skins. The referred project entitled "Assistance in the Leather Production and Marketing (IS/PDY/75/006) was carried out partly by one leather technologist and one leather marketing expert. The terminal report of the project recommended - inter alia - the requisition of additional tannery machinery and equipment required for the application of modern leather processing techniques and increased production capacity.

The listed subject machinery comprised in the report was endorsed in its validity by an UNIDO leather industry consultant who visited the NTF on a short-term mission in February 1978 (RP/PDY/78/004). Under the project UD/PDY/79/140 "Assistance to the National Tanning Factory at Sheikh Othman, Aden, the following machinery and equipment have been purchased from Yugoslavia using non-convertible Yugoslav currency for that purpose for an amount totalling the equivalent in Yugoslav Dinars - US\$ 266,065:

One hydraulic setting-out machine (Histeza)
One hydraulic sammying machine
One staking machine (Linda)
One staking wheel (Dravinja)
One splitting machine (Dividora)
One hydraulic scudding machine
One measuring machine (Prima)
One toggling unit (Ekonom)
Two tanning drums
One oil-fired boiler
One water softening equipment
Two trolleys, two balances, some hand tools.

In addition to these machines and equipment the Government purchased also one hydraulic leather press (Turner, UK). The machines listed have been supplied (except the press) and shipped through Invest-Export, Belgrade, at the end of 1980. The shipment arrived at Aden in January 1981, the crates containing the machines were stored for a period of approximately one week in the uncovered tannery yard until they could be accomodated in the newly constructed production hall.

FINDINGS

The tannery in general

At the time of the expert's arrival the production was limited to the merely processing of chamois leather by utilizing undisposed stocks of pickled goat skins and to the retanning and finishing of wet blue/crust cattle hides. This situation was due to the mechanical break-down of all the three fleshing machines as well as to make the necessary arrangement for the assembling and installation of the subject equipment. The expert recorded the stock of raw hides, semi-finished and finished leather as being rather low, except for raw goat and sheep skins which are supplied regularly in sufficient quantities, both from municipal abattoirs and country collectors.

About 200,000 sheep skins with wool on (approx. 60%, 1/2 - 1" and 40% 1 - 1 1/2 " length of wool pile), deriving from imports of Australian live sheep are being stored at the tannery in salt cured condition.

These skins referred to have been accumulated during the last two years owing to the non-existence of suitable dressing facilities and a lack of technical know-how required for further utilization. The existing, still operational machinery is in poor condition; the affected mechanical parts should be restored to serviceable condition, essential for the well-functioning of the equipment. Furthermore, the water supply to the vessels and the loose connecting arrangement to the drums are completely inadequate.

The layout of the building accomodating the lime and tannery yard does pose some inherent problems as far as transport and intermediate storage of hides and skins are concerned, caused by the existing narrow passages and aggravated by the confined floor space (1060 m²). However, with the commissioning of the new and well designed building (1000 m²) for the leather finishing operations, the aforementioned deficiencies will diminish.

The NTF employs at present 63 people of which 24 persons are engaged in administrative and supervisory activities.

Machinery and Equipment provided by the Project

Owing to the long storage period (January 1981 - October 1983) some of the equipment, in particular the disassembled parts of the toggle drying unit as most of the sensitive components pertaining to the measuring machine, have been affected by rust which removal has attributed to unforeseen delay on the assembling and installation works.

The remaining machines were found in good condition with the exception of the timbers for the tanning drums which have become distorted by the prevailing unfavourable climatic conditions. Concerning the hydraulic leather press (not purchased through UD/PDY/79/140 and delivered on site in September 1980) the machine has suffered serious transport damage affecting essential mechanical components while the off-loading at the NTF.

OBJECTIVES

The objectives of the project were to assemble, install and put into actual operation the machinery and equipment provided by the project as well as to train personnel to operate these machinery effectively, so as to increase the output of the tannery and to enhance the quality of the leather manufactured by the NTF.

Counterparts

The counterpart personnel of the expert were in the fields of:

- a) planning and layout of production facilities
 - Mr. Mansoor Ahmed Mansoor General Manager of NTF
 - Mr. Gamil Galib Ah-Haj Production Manager
- b) assembling, installation and maintenance
 - Mr. Ahmed M. Al-Shawafi Head of Workshop
- c) production, training of machine operators
 - Mr. Faruk M. Mohamed Tannery Department Manager
- d) cost accounting, stock control
 - Mr. Mustafa Abdalla Ali Accountant
 - Mr. Mohamed Abdu El Bary Ministry of Industry

RECOMMENDATIONS

a) Machinery

- Introduction of a service book/card for each and every equipment to record all the services carried out, e.g. checking, greasing, repairing, replacement of broken or worn components. The entries of the book/card should be subject to thorough spot checks by the senior management.

- A permanent post of a greaser and cleaner held by a reliable person with some mechanical understanding should be established.

- A suitable storage room where machinery spare parts visibly marked and properly registered can be stocked.

- Expendable components of machinery and equipment must be kept in service in appropriate quantities and be timely restocked.

b) Matters concerning the production

- An adequate stock of raw material equivalent to two months consumption by the tannery is considered essential for a meaningful production planning and improved capacity utilization.

- The management of the NTF shall be advised to prepare timely a realistic production plan (soaking, tanning, finishing) for each following month. To introduce some routine and to develop practical skills in every day's work, it is recommended to commence with smaller production lots but to adhere to daily (5 week-days) inputs.

- To introduce an effective production cost control system in order to assess and provide relevant information and data to a cost control/monitoring unit.

- To obtain an estimate on the installation of a separate saline water supply system. The estimate should also include a storage tank of about 30-50 m³ capacity. Saline water could be used for soaking, pickling, tanning and for the future envisaged wool sheep skin production.

- For the utilization of raw sheep skins deriving from Australian live sheep imports a techno-economic study covering the whole subject and elaborating on matters like equipment, building, technologies production cost, manpower and marketing should be carried out. It is suggested to process these skins into fur linings for shoes and for the manufacture of car seat covers.

- A follow-up mission of a leather industry expert to consolidate the results achieved so far and to assist the NTF primarily in its determination to process quality shoe upper leather aiming at meeting the requirements of the local footwear industry, thus contributing to the national economy by reducing the quantity of leather imports. The proposed assistance should consist of two split missions of three month duration each, with an interval of 6-9 months.

Training

The training of the technical staff provided either through UNIDO/UNDP fellowship programmes and/or received on the spot during the UNIDO experts missions, has contributed considerably to the enhancement of the leather produced by NTF.

To keep abreast of the technological advancement further intensive training of at least one tanner/finisher and one machinery maintenance engineer will be required. The respective training programmes should consist of courses extended over a period of two years. The participants of the courses will complete their practical and theoretical training as fully qualified tannery technologist/tannery machinery engineer. These specialized courses are available in the Federal Republic of Germany, Italy, France, the Netherlands, United Kingdom and the German Democratic Republic. The respective governments of those countries should be approached to explore the possibilities of providing the fellowships referred to.

ACTIVITIES

During the project's life the following activities in compliance with the terms of reference were carried out:

Visit to the tanning machinery manufacturing plant Kostroj of Slov'Konjice, Yugoslavia, from 26-30 September 1983. The expert was shown tannery machines in the various stages of manufacture and relevant technical matters on this subject have been discussed.

During the same time the expert has visited, together with the chief engineer of Kostroj, two tanneries (namely Konus of Ljutomere and Tovarna Usnja Sostanj of Sostanj) on the 28/29 September where similar machines as those supplied to the project have been seen in actual operation.

Installation of tannery machinery and equipment at the NTF, Sheikh Othman, Aden:

- Two Tanning Drums (size 2500 mm x 1500 mm)

The foundations for the drums were constructed according to plan, however, considering the congested area it would have been advantageous to set the foundations for the gearbox and motor at the reverse side of the drums. Due to the long storage period of the timbers which have become partly distorted, the drums could not be assembled in the usual conventional manner. Some of the timbers had to be wettened and afterwards weighted down in order to regain the original shape. The lack of appropriate tools caused substantial delay in the assembling works. Connections for the supply of cold and hot water with a built-in watermeter have been installed according to the expert's design.

- Toggle Dryer (Ekonom "H33, 20 frames 3200 mm x 1800 mm)

The original envisaged position of the toggle drying unit was found impractical and after consultation with the management, the dryer was assembled in a more suitable place. Due to the long storage, most of the metal components have been affected with rust which had to be removed, followed by a complete repainting of all the parts.

- Measuring Machine ("Prima" Model G 02, working width 2400 mm)

The pinwheel measuring machine which functional parts are made up of many small and sensitive components have in particular suffered from a long and improper storage. The interlinked registering system of the machine operates and functions only correctly if all the working parts of the mechanism are relatively free in their movement, therefore the cleaning and rust removal of the affected parts prior to the assembling was very time-consuming.

- Splitting Machine ("Dividora" 53, working width 2700 mm)

The splitting machine was found in good condition, the position and foundation practical and correct, only minor adjustments had to be carried out.

- Staking Machine ("Linda)

- Staking Wheel ("Dravinja")

These two staking machines have been put on foundations and their position arranged according to the work flow.

- Hydraulic Leather Press ("Turner" Type 623, max. pressure 600 t)

The essential parts of this machine have been damaged during transportation from the port of Aden to the NTF. Regrettably, the list of broken and unserviceable components compiled in due course was far from being complete, therefore only some of the necessary parts have been replaced. Following a thorough inspection of the machine, the expert identified further damages and a compiled list of the relevant spare parts required was transmitted to the manufacturer (Turner, UK) for replacement. For this reason, the expert was not able to install the subject equipment. However, arrangements were made with a local engineer to carry out the final installation works, as soon as the parts in question have been received.

- Hydraulic Scudding Machine (Model 11800, working width 1800 mm)

- Hydraulic Setting-out Machine ("Histeza" model 11900, working width 2100 mm)

- Hydraulic Sammying Machine ("BMD" model optima, working width 1800 mm)

The positional lay-out of these three machines was ascertained by the expert as being unsuitable in respect of work flow and appropriate placing. For this reason, the sammying machine was transferred from the finishing section to the tannery yard in the proximity of the tanning drums, further, the scudding machine was conveyed from the inapt position in front of the tanning drums next to the fleshing and splitting machine. The setting-out machine was positioned at a suitable place in the finishing department.

These transfers involved considerable work like casting of appropriate foundations, demolishing of some mural partitions, dismantling of sections of the roof through which the machines, weighing up to five tons each, had to be lifted by means of a crane and put into the designed place or otherwise transported manually with the employment of steel roller bars and the use of winches. Concurrently, the two shaving machines had to be transferred to pertinent positions near the sammying machine. The hydraulic system of the machines had to be cleaned as coagulated matters were found blocking filters and pumps. The electrical installation diagrammes supplied with, were recognized as not being conform with the actual layout and design of the distribution mechanism, however, the referred obstacle was overcome through the expert assistance of a local electro-engineer.

- Cold-Water Storage and Supply System

The production of leather requires suitable water in sufficient quantities. Depending on the processing methods, machinery, and the characteristics of the desired end-products, about 35-45 litres of water are needed to turn 1kg raw hides (salted) into leather. Therefore, an adequate and reliable supply of water as needed by the various production equipments is a prerequisite for the manufacture of quality leather. The absence of such a system at the NTF is impeding the technological process. The issue was discussed and treated with priority, to the effect that a well retained 50,000 litre steel tank was located and acquired by the NTF. The tank has been delivered to the tannery, the foundation works shall commence soon, whereas the installation work connecting (1 1/2") the drums to the feeder pipe (3") in progress.

- One oil-fired low pressure steam boiler
Type: ZV - 290, Manufacturer: Boris Kidric, Maribor

- One water softening plant
Type BS, Manufacturer: Minel, Beograd

As the most appropriate place to house the boiler and the relevant equipment, it was agreed to make use of the unutilized area in front of the new building accomodating the finishing section. An area of 72 m² has been prepared for this purpose on which the concrete base together with the foundation for the boiler, water softening device and water/diesel storage tank was constructed. An unused steel tank originally designed to transport fuel has been acquired at reasonable cost. The tank referred to has two separate chambers each having a capacity of 5,000 l which will be used to store fuel (diesel) and water (distilled). The boiler was supplied without the essential connecting parts like pressure pipes, flanges, fittings, valves, pumps etc., components which are difficult to obtain but most regrettably there was no installation manual or any useful information concerning the technical specification of the requisits, obviously expected to be purchased locally, delivered or accompanying the shipment. However, with the kind advice and the professional assistance of a local boiler engineer a list of "missing parts" was compiled. The boiler engineer will, as arranged, also carry out and supervise the final installation works as soon as the required items have been received.

- Training

Machine operators and maintenance staff have been trained on the spot to operate the machines effectively and safely as well as to maintain the equipment according to the requirements specified in the relevant repair and maintenance manuals.

NTF SALES OF PICKLED AND TANNED HIDES/SKINS

	<u>Description</u>	<u>Quantity</u>	<u>Value US\$</u>	<u>Y.Dinar</u>
1980 Export	Pickled goat/sheep	2,537 doz.	79,810	27,361
	Pickled austral.sheep	6,500 doz.	161,850	55,823
	Pickled lining goat/sheep	205 doz.	2,870	984
	Salted sheep/goat	2,472 doz.	30,694	10,528
	Salted austral. sheep	10 tons	3,000	<u>1,029</u>
				95,725
				=====
Local	Bovine/camel leather	144,265 sqft		37,969
	Sheep/goat leather	104,475 sqft		<u>22,787</u>
				60,756
				=====
	Total Sales in 1980: YD			156,481
1981 Export	Pickled sheep/goat	2,700 doz.	75,100	25,684
	Pickled austral. sheep	190 doz.	4,180	1,430
	Salted sheep/goat	886 doz.	10,632	<u>3,636</u>
				30,750
				=====
Local	Bovine/camel leather	120,607 sqft		50,427
	Sheep/goat leather	193,929 sqft		29,548
				79,975
				=====
	Total Sales in 1981: YD			110,725
1982 Export	Pickled sheep/skins	2,200 doz.	64,290	21,984
	Pickled austral. sheep	500 doz.	5,000	<u>1,710</u>
				23,694
				=====
Local	Bovine/camel leather	134,460 sqft		62,963
	Sheep/goat	198,837 sqft		42,676
	Raw sheep/goat	4,030 pieces		545
	Total Sales in 1982: YD			129,878

P R O D U C T I O N

1983 (January-September)

Products	Unit	Quantity	Value in YD	Remarks
1 Upper for shoes	sqft	25,943	111,769	
2 Hunting Suede	"	2,170	977	
3 Lining (sheep/goat)	"	65,417	13,376	
4 Chamois (cloths)	"	544	230	
5 Lining (sheep/goat)	baco	427	591	Each baco=20 pcs
6 Chamois for cleaning	pcs	1,088	1,736	
7 Pickled skins	doz.	3,295	16,903	Sheep+goat
8 Dry salted skins	doz.	5,252	21,533	Austral. sheep
			107,115	

S A L E S

1983 (January-September)

Items	Unit	Quantity	Value in YD	Remarks
1 Upper for shoes	sqft	56,368	24,613	Local
2 Hunting Suede	"	2,194	986	"
3 Suede leather	lb.	300	75	"
4 Lining (sheep/goat)	sqft	51,699	9,924	"
5 Chamois for cloths	"	210	120	"
6 Lining sheep/goat	baco	505	709	"
7 Chamois for cleaning	pcs	759	1,371	"
8 Pickled skins	doz.	2,000	9,234	Export
9 Dry-salted austral. skins	doz.	200	520	Export
			47,552	

NTF PRODUCTION FIGURES FOR THE YEAR 1982

Description of product	Unit	Quantity	Value:YD per unit	Pieces skin/hide	Value YD	Grade
Corr.grain upper	sqft	65,486	0,500	2,924	32,743	I
" " "	"	46,526	0,450	2,440	20,936	II
" " "	"	32,446	0,350	2,275	11,356	III
Hunting suede	"	66	0,450	3	30	I
" "	"	269	0,400	10	108	II
" "	"	3,318	0,250	663	830	III
Lining (sheep/goat)	"	9,311	0,300	2,023	2,793	SUPER
" " "	"	45,724	0,225	13,943	10,287	I
" " "	"	69,094	0,175	20,866	12,091	II
" " "	skin	26,710	-	26,710	3,447	mixed
Chamois (oil tan.)	"	292	2,500	292	730	I
" " "	"	422	2,000	422	844	II
" " "	"	953	1,500	953	1,430	III
" " "	"	804	1,000	804	804	IV
Dry salted Austral. sheep skin	"	86,397	0,490	86,397	42,355	-
Dry salted local sheep/goat	"	4,030	0,135	4,030	544	-
Pickled sheep/goat	"	28,344	0,983	28,344	27,875	-

TOTAL VALUE

169,203

PURCHASES OF RAW HIDES AND SKINS FOR THE YEAR 1982

Description	Quantity	Value: YD
Local sheep skins	68,071	16,054
Local goat skins	50,569	11,277
Somalian sheep skins	1,801	612
Somalian goat skins	1,336	512
Australian sheep skins	98,593	25,427
Local kid skins	189	11
Camel hides	99	64
Cattle hides*	5,844	9,396
		63,353

*) including import ex Ethiopia (1,879 pieces)

PURCHASES OF RAW HIDES AND SKINS FOR THE PERIOD JANUARY-SEPTEMBER 1983

Description	From Traders		From Meat Quantity	Corporation Value:YD
	Quantity	Value:YD		
Local sheep skins	37,102	8,279	6,242	1,885
Local goat skins	36,140	7,458	221	46
Cattle hides	1,094	1,192	30	60
Camel hides	1	1	-	-
Austral. sheep skins	-	-	61,136	5,921
	Total	16,930	Total	7,912

In addition, 2,324 Ethiopian cattle hides valued YD 5,452 have been imported by the NTF.

A) PRODUCTION COST AS COMPUTED FOR THE YEAR 1982

1) Total value of production:	YD 169,307
2) Production cost:	YD
a) major and auxiliary raw materials	84,651
b) packing materials	2,315
c) spare parts and repairs	5,585
d) fuel and oils	46
e) water	1,205
f) electricity	1,946
g) salaries and wages	60,508
h) depreciation value	8,592

B) MANPOWER

Classification	Year	Total No. Employees	Annual salaries paid:YD	A B S E N T E E I S M			
				No.man/ day	Usual authorized	Sick leaves	Other reasons
Managerial	1982	3	2,919	299	1	2	3
Supervisory (non-technical)	1982	6	5,243	280	42	31	45
" technical	1982	5	4,460	284	36	5	39
Worker (skilled + unskilled)	1982	57	47,886	268	746	262	797

THE NATIONAL LEATHER SHOE FACTORY AT MOALLA, ADEN

Visits: 26 November and 12 December 1983.

The National Leather Shoe Factory employs at present 118 people of which 84 are engaged in the production.

<u>Production</u>	<u>1982</u>	<u>(Jan.-Sep.) 1983</u>
Men shoes (med.+ high heel) corr.grain upper	5,235 pairs	15,450 pairs
Men boots - hunting suede	12,975 "	8,767 "
Men sandals - synthetic	34,234 "	45,080 "
Ladies sandals (10% leather, 90% synthetic)	29,276 "	17,673 "
Children sandals (10% leather, 90% synthetic)	29,964	15,282 "
Total	111,684	102,252 "

The value of the production amounted

in 1982 to	YD 423,390
in 1983 (Jan.-June) to	YD 271,334
in 1983 (July-Sep.) to	YD 31,988

The period July - September is considered as the off-season.

Production Forecast for 1984

10,000 pairs of men boots: requirement: 34,000 sqft hunting suede
colour brown, 1,6 - 1,8 mm

40,000 pairs men shoes: requirement: 92,000 sqft grain leather
1,4 - 1,6 and 1,6 - 1,8 mm

70,000 pairs of ladies and children sandals/sport shoes

The leather for the shoe production is imported until now from Ethiopia, India and to a small extent from Tanzania.

On imported leather there is a customs levy of 15%.

Prices paid (1983):

Hunting suede ex Ethiopia US\$ 1.15 per sqft by air-freight (CIF)

Corrected grain ex India US\$ 0.90 per sqft by air-freight (CIF)

1981 corrected grain ex Tanzania (Moshi) US\$ 1.10 per sqft by sea (CIF)

PURCHASE OF LEATHER (IMPORTS)

Year	Origin	Description	Quantity (sqft)	Value
1982	Ethiopia	Hunting suede	20,000	US\$ 22,000 (CIF)
	India	Corrected grain	30,000	Ind.Rup 270,000 (CIF)
1983	Ethiopia	Hunting suede	30,000	US\$ 37,500 (CIF)
	India	Corrected grain	45,000	Ind.Rup 579,500 (CIF)

The synthetic materials for the footwear manufacture are imported from Italy, France, FRG, UK.

CONSUMPTION OF LEATHER IN 1982

Description	Quantity sqft	Value (sqft) YD	Total Value YD
Box	19,363	0,469	9,081
Buffalo (grain)		0,469	
Hunting suede	14,233	0,509	7,244
Lining	6,969	0,242	1,686

SLAUGHTERING STATISTICS1) Australian Live Sheep

	<u>Total Import</u>	<u>Slaughtered</u>
1978	107,712	106,010
1979	103,894	96,938
1980	97,025	90,148
1981	117,405	115,297

2) Live Sheep and Goats from Ethiopia and Somalia

	<u>Total Import</u>	<u>Slaughtered</u>
1979	32,425	38,307 **
1980	51,827	47,663
1981	59,000	73,463 **
1982	64,206	60,330

**) It is believed that livestock of previous years' breeding stock is included.

3) Slaughtering of Local Livestock

	<u>Sheep/goat</u>	<u>Bovine</u>	<u>Camel</u>
1978	141,638	5,232	291
1979	101,477	6,573	262
1980	62,102	6,651	1,507
1981	110,256	4,280	771
1982	51,623	2,741	824

Source: Meat Corporation, Aden.

Apart from some recommendations and modifications on the methodology of the chamois leather processing as illustrated by small experimental batches, the expert also carried out, together with his counterparts, the following demonstration lots using the newly installed machines.

PROCESS OF DEMONSTRATION LOTS

Raw Material

10 green-salted cattle hides (Aden Abattoir) - weight 120 kg

10 air-dried cattle hides (up country) - weight 65 kg

Soaking: green-salted hides - 18 hrs

dried hides 36 hrs

500% water (30°C)

0,2% bactericide

The soaking bath was changed during the first six hours, respectively 18 hours.

After soaking, the hides were drummed for 30 min.

Soaking weight: 470 kg

Liming: 70% water, 30°C

3% sodium sulphide (60%)

6% lime

20 hrs, short rinsing.

Reliming: 100% water, 30°C

5% lime

20 hrs, rinsing, no fleshing, as fleshing machine under repair.

Deliming/Bating: 100% water, 35°C

20% ammonium sulphate

0.4% bate (3,000 units)

1 hour rinsing.

Pickling: 80% water, 30°C

10% salt

0,5% formic acid

0,5% sulphuric acid

1 hour

0,8% sulphuric acid

12 hours, PH 2,6, morse up, 2 days.

Defleshing by shaving

weight: 260 kg

Tanning: 80% water
8% salt
1% aminesx 163 (cationic fat liquor)
8% chromosal B
2 hours
0.7% soda ash
12 hours
horse up, 2 days, sammying, shaving,
weight: 160 kg

Neutralisation:
100% water
0.5% sodium bicarbonate
0.8% calcium formiate
1 hour, rinsing

Retanning/
Fat liquoring:
4% sulfonutrex 1086
10 minutes
10% tanigan OS, ph 4,5
50 mm
horse up, sorting.

Hunting Suede

Setting out, toggle drying, staking, buffing.

Chrome retanning: (dry weight)
500% water, 30°C
10% chromosal B
3 hrs, rinse, horse up.
12 hrs.

Dyeing: 300% water, 60°C
2% sandolix WWL
2% ammoniak (25%)
300% water, 60°C
10% derma havana
30 mm
5% formic acid, 85%
6% sulfonutrex 1086
30 mm
3% formic acid
30 mm, rinse, sammying, setting out, toggle
drying, milling, toggling, brushing.

Grain Upper

Dyeing: 100% water
0.5% ammoniak
10 mm
1% dermabrown 2GL (in case of black: 2% acid-black)
30 mm
0.5% sulphonated neats foot oil
3.5% sulfonutrex 214 (sulphonated spermoil)
30 mm
0.5% formic acid
20 mm
3% sulfonutrex 214
30 mm
1% formic acid
30mm, horse up, sammying, setting out, toggle drying,
staking.

Finishing

Bottom coating:

Pigment	200 parts
Fondo acrolot	200 "
Eukanol filler 1060	20 "
Ligant	40 "
Water	540 "
Drying, ironing - 60°C	

Spray finish, composition as above

2 crosses, drying, ironing, 70°C

Fixation: liquor emulsion E 500 parts

water 500 parts

drying, ironing - 70°C

WORKPLAN FOR THE INSTALLATION OF TANNERY MACHINERY AND EQUIPMENT

RP/PDY/83/001

	Projected	Amended
Toggle Dryer, Tanning Drums	8.10 - 3.11.83	8.10 - 6.11.83
Measuring Machine	16.10 - 7.11.83	22.11 - 10.11.83
Steaking Machine " Wheel	8.11	12.11 - 13.11.83
Splitting Machine	9.11 - 13.11.83	13.11 - 17.11.83
Scudding Machine Sammying Machine Setting out Machine	14.11 - 17.11.83	26.11 - 13.12.83
Boiler and Water Treatment Plant	19.11 - 24.11.83	19.11 - 19.12.83
Hydraulic Press	26.11 - 29.11.83	19.11 - 20.11.83
Water Connection to Tanning Drums	3.12 - 5.12.83	14.12 - 19.12.83
Plant Form at Tanning Drums and Splitting Machine	6.12 - 8.12.83	14.12 - 19.12.83
Listing of required spare parts		18.12 - 19.12.83

Note: From 30 October until 6 December 1983 the electrician with one assistant will, simultaneously to the above-mentioned activities, carry out the electrical connections for the specific machines. During the project's lifetime visits to local shoe factories and leather goods production units as well as to the municipal abattoirs will be made.



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

13 May 1983

Request from the Government of the People's Democratic Republic of Yemen

INTERNAL

JOB DESCRIPTION

RP/PDY/83/CO1/11-01/31.7.D

Post title Expert in the installation and operation of tannery machinery

Duration Three months

Date required As soon as possible

Duty station Aden

Purpose of project The purpose of this specific project is to install and put into actual operation all the tannery machinery provided to the National Tanning Factory, at Sheikh Othman, under the project UD/PDY/79/140 and supplied by the Yugoslav firm Invest-Import, Belgrade.

Duties The expert will be attached to the Ministry of Industry and will work directly with the National Tanning Factory at Sheikh Othman. The expert will be expected to carry out the following specific duties:

1. Set up, test and put into operation all the tannery machinery and equipment provided under project UD/PDY/79/140 and supplied by the Yugoslav firm Invest-Import of Belgrade;
2. Train local personnel in the proper operation and maintenance of the above machinery;
3. Advise on any other matter related to the proper functioning of the machinery and equipment existing in this tannery.

The expert will also be expected to prepare a final report, setting out the findings of the mission and recommendations to the Government on further action which might be taken.

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Applications and communications regarding this Job Description should be sent to:

Project Personnel Recruitment Section, Industrial Operations Division
UNIDO, VIENNA INTERNATIONAL CENTRE, P.O. Box 300, Vienna, Austria

- Qualifications** The candidate should have extensive practical experience in the installation and operation of tannery machinery and equipment. Specific experience with those machines and equipment supplied by the Yugoslav firm Invest-Import under project UD/PDY/79/140 would be preferable.
- Language** English (knowledge of Arabic an asset)
- Background information** Under project UD/PDY/79/140 the following machinery and equipment for the National Tanning Factory, at Sheikh Othman, Aden, has been purchased from Yugoslavia using non-convertible Yugoslav currency approved for that purpose in an amount totalling the equivalent in Yugoslav Dinars of US\$ 266,065 :
- One hydraulic setting-out machine (Histeza)
 - One staking machine (Linda)
 - One staking wheel (Dravinja)
 - One splitting machine (Dividora)
 - One hydraulic scudding-machine
 - One measuring machine (Prima)
 - One toggling unit (Ekonom)
 - Two drums
 - One oil-heater for water
 - Two trucks
 - Two balances
 - Some handtools.
- The above-mentioned machinery and equipment needs to be installed and put into actual operation by a specialized expert. The Government has requested UNIDO to provide this expert in tannery machinery installation and operation as soon as possible.

