OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

07299

Distr.
RESTRICTED

UNIDO/IOD.62
7 January 1977

ORIGINAL: ENGLISH

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

DEVELOPMENT OF THE PRINTING INDUSTRY 1/

IS/YEM/75/005

Final report prepared for the Government of the Yemen Arab Republic
on the basis of the final report of
Mr. I. Abouelela
UNIDO expert

1/ This document has been reproduced without formal editing.

id.77-078

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

TABLE OF CONTENT

SUMMARY and CONCLUSIONS

1. There are nineteen (19) printing presses operating in the country. Three (3) of them belong to the major Government run printing enterprise, the Yemen Printing and Publishing Company. The remaining belong to the private sector and are of small size.

   In addition to the above, the Government is executing three (3) new printing house projects, namely:

   - the Ministry of Education is establishing a brand new press with offset and letterpress;

   - the National Institute of Public Administration (NIPA) is establishing also a brand new printing house with offset equipment

   - the Ministry of Information is establishing a Printing House under the bilateral technical assistance of the Federal Republic of Germany.

   All the new printing houses are equipped with offset sections which are new to the country printing industry, and the rest are equipped with letterpress equipment.

2. The many serious constraints which prevent efficient operations and rational development of the local printing houses could be summarized as follows:

   (i) lack of qualified manpower including the supervisory and management level staff;

   (ii) inadequate and obsolete equipment. This applies particularly to the private printing houses which still operate with the inefficient old machinery. On the other hand, the modern printing houses which are presently under erection will have a number of bottle-necks despite of the modern equipment provided.

   (iii) inadequate technical knowledge such as material and equipment utilization and application of specific graphic arts techniques;

(iv) ineffective repair and maintenance services and facilities;

(v) lack of management know-how such as production planning and management, accountancy for instance,

(vi) inadequate physical facilities and working conditions.

3. In order to ensure efficient and beneficial operations, it would be advisable to merge all the Government printing houses into a single Printing Complex. However, the Ministry of Education Printing Project should be excluded from this scheme and concentrate on the production of school books.

4. In view to upgrade the skills of the existing manpower on the one hand and to train new personnel required on the other, it is recommended to operate the Printing House of MIPA as the offset printing training centre of the country.

5. The printing industry in the Yemen Arab Republic needs further technical assistance for the training of the manpower and for improving the management and printing operations. Such technical assistance could be requested from UNDP/UNIDO.

OBJECTIVES OF THE PROJECT

6. The Government requested the UNIDO technical assistance to carry out a study of:

(i) the conditions in the existing printing presses with a view to critically examining their capacity and the ability of the machinery.

(ii) the projected requirements within the next few years. The Government wished also to have specific recommendations for a rational and effective development of the printing industry to cope with the increasing demands of printed matters, giving particular attention to the possibilities of establishing a Government Printing House.

7. To carry out the above, the UNIDO expert visited a few small printing shops of the private sector and all the major printing houses which belong to the various governmental authorities. He also provided, where and whenever needed, the technical assistance services at floor level in the operation of machinery, the design of plant lay-out, the demonstration of certain printing techniques, etc.

Planned and existing printing press

No.	Name of the Presses	City	Type of Work	Managers	Foremen	Workers	Remarks
1.	Yemen Printing + Publishing Co.	Sana'a	Newspapers, Magazines, Books, Visiting Cards, Commercial work	6	7	90	Belongs to Ministry of Information + Yemen National Bank
2.	Military Printing Press (Al-Tuwgeeh Al-Ma'anawy)	Sana'a	Newspapers + their own Printing requirements				
3.	National Institute of Public Administration Press	Sana'a		-	-	1	1 Printer arrived from Nigeria 18 January. Press is not yet in process. Belongs to NIPA. (New Offset Press)
4.	Ministry of Education Printing Press	Sana'a		-	-	-	New machines + equipment need revision + complementary machines to be purchased. (Offset Press)
5.	Branch of Yemen Printing + Publishing Co.	Taiz	Newspapers, Magazines, all commercial work, visiting cards	4	1	18	All hand work except 1 stitching + 2 cutting machines.

No.	Name of the Presses	City	Type of Work	Manager	Foremen	Workers	Remarks
6.	Dar El-Ahly Press	Sana'a	Commercial	1	1	3	
7.	Dar Al-Hadid Press	Sana'a	Commercial	1	1	3	
8.	Dar El-Kodssi for Printing + Publishing	Sana'a	Commerical	–	–	8	
9.	Sana'a El-Haditha Printing Press	Sana'a	Commerical	1	–	1	
10.	Dar El-Kalam Press	Taiz	Commercial	1	1	5	
11.	El-Sha'ab Press	Taiz	Commercial	1	1	3	
12.	Yemen Press	Taiz	Commercial	1	1	2 3	
13.	Saba Press + Branches	Taiz	Commercial	1	1	3	
14.	Thabet Abd El-Gelil Press	Taiz	Commercial, Visiting Cards, Exercise books, ledgers, Calendars	1	1	14	
15.	El-Salam Press	Taiz	Commercial	1	1	3 4	
16.	Dar El-Araby Press	Taiz	Commercial	1	1	2	
17.	El-Non Press	Hodeida	Commercial	1	1	2	
18.	El-Nahda Press	Hodeida	Commercial, Ledgers, Exercise books	1	1	11	
19.	El-Wihdah Press	Hodeida	Commercial	1	1	7	
20.	Dalil El-Yemen Press	Hodeida	Commercial	1	1	5	
21.	El-Salam Press	Hodeida	Commercial	1	1	3	
22.	El-Shark Press	Hodeida	Commercial	1	1	3	
23.	El-Sabah Press	Hodeida	Commercial and Newspapers	1	1	3	

DEVELOPMENT PROSPECT OF THE PRINTING INDUSTRY IN YEMEN

8. The Economy of the Yemen Arab Republic is primarily agricultural. There is a little industry in the YAR. The manufacturing sector has until now remained mostly confined to import substitution industries. One of the industries which the government wishes to develop is the printing industry so that it can cope with the requirements of the prospective development in the country. At present there are nineteen printing presses in the country; three of them belong to the government and the rest are private.

9. The 3-year Development Plan (1974-1976) of the Yemen Arab Republic includes the establishment and/or the development of printing facilities under the following projects:

1. The Ministry of Education Printing Project
2. The National Institute of Public Administration
3. The National Printing Company which belongs to the Ministry of Information.

The first two projects are incomplete with regard to the equipment which is on hand, in expectation that there will be substantial Offset Operation within the Ministry of Education and a plan for small Offset Printing installation for the National Institute of Public Administration.

The problems include machinery which has been chosen without proper technical consideration being given, equipment which is stored in unsuitable surroundings in crates - upside down, and at present, a complete lack of organization capability and planning, etc.

The Ministry of Education Printing Project

10. This Ministry of Education Printing Project is one of the most important projects in the Yemen Arab Republic because it will cover all the needs of the school children with regard to books and exercise books.

It will make the Ministry self sufficient and it will save the importation of books which yearly costs over $ 6 million and also will avoid the printing of books outside.

11.. To give some indication of the scope of this project, the following tables provide statistical details on the number of schools and students, male and female in the YAR from 1974 - 1980.

1974 - 1975 School Year

Stage of Education	Number of Schools	Number of Students
Primary Schools	1943	232,595
Preparatory Schools	120	12,163
Secondary Schools	26	4,461
Primary Teacher-Training Institutes	7	643
General Institutes for teachers	7	368
Commercial Secondary Schools	3	215
Technical Secondary Schools	1	337

Increasing Percentage in the Three Educational Stages

Stage of Education	1973/74
Primary Stage	22%
Preparatory Stage	35%
Secondary Stage	32%

Regarding the University of Sana'a, there is not a fixed percentage because a large number of students are studying abroad, but the Ministry of Education has decided that from the academic year 1977/78, there will be a control on sending students abroad except for faculties which are not established at Sana'a University.

Expected Increase in the number of Students from the beginning of 1975/76 to 1979/80

Primary	Preparatory	Secondary	Year
279,219	16,652	7,400	1975/76
340,647	20,800	10,700	1977/78
415,139	30,100	16,000	1978/79
623,300	75,000	40,000	1979/80

These statistics have been taken from the Statistics Director, Mr. Aly El-Kumin and have been given to the Chairman of the Printing + Publishing Company.

Note: In the YAR there are some private schools from which the number of pupils has not been registered.

Number of Students in Technical Schools and Universities	
Technical Secondary Schools	387 students
Technical Preparatory Schools	198 students
Technical Primary Schools	233 students
All universities in the Country	1,446 male students 199 female students

The Situation of the Project when the UNIDO Expert arrived:

12. All machines and equipment arrived in the Yemen Arab Republic two years ago and they have been in the open air ever since (because the building is not yet finished), some upside down and also the machines were chosen without proper thought to the right technical conditions. A co plimentary list of machines and equipment needed to complete the project has therefore been prepared by the expert. He also assisted in the design of the layout of the building in such a way as to ensure continuity of the flow line of work.

What has been done by the UNIDO Expert to date

13. The Ministry requested the expert to look after the project from the 9th February, 1976 for a period of sixteen weeks. The expert has acted as follows:

(i) The expert supervised the layout of the building and made a lot of changes in it in a technical way with the aid of the engineer who was in charge of the layout and also some of the engineers from the Ministry of Education. This re-planning has been done satisfactorily.

(ii) The expert gave a full specification for the supply of water and electricity to suit the machines. This specification was given to the electrical engineer.

(iii) The expert put all the machines and equipment in the building in the right way and in their proper place.

(iv) The expert controlled all the machines and equipment and made a list of complementary machines and equipment needed. This list has been handed to the Ministry of Education.

(v) The expert met a representative of the Linotype and Machinery Company, who visited Sana'a at the beginning of April for a period of three days to find out how the work has progressed. A date was fixed for the arrival of the engineers to assemble all the machines. The expert gave the representative a list of all broken parts which need replacing before the work commences.

(vi) The expert has prepared a report to the Minister of Education giving full details and requirements which need to be done before the arrival of the engineers, to save time and to get the best advantage from them.

The requirements of the Project in the coming years

14. As it is a new project in its beginning and as there is a lot of modern automatic machinery with new advanced technology and for the time being no local man power which can handle such machines, this project needs proper supervision and continuation of maintenance from the technical side until the start of production and should be organized and planned in a proper economic and technical manner. In addition a full training programme for the local trainees must be carried out to ensure the right production.

UNDP/UNIDO technical assistance should be requested to help in all printing works such as colour work photography, proof making, plate making, mechanical composing, etc.

The technical assistance will also help.

- Preparing a training programme for the apprentices in all printing sections to keep up with modern technology.
- Planning management, costing and estimating sections to prepare for the different jobs in case of commercial output to secure profitability.
- Stocking and stock management of raw materials to ensure continuity of printing. Planning the maintenance of machines to keep them running at full capacity. Giving full, safety instuctions to avoid work accidents.

Staff requirements:

15. The project would need the following staff:

Section	No. of Personnel
Costing and Estimating	2
Secretarial	2
Planning and designing + original layout	2
Plate making	2
Mechanical composing	4
Maintenance	2
Preparing proofs, making ready for filming	2
Photography (black and white)	1
Photography (colour)	1
Printers	4
Printers for letter press machine	1
Binding	8
Store room	2

Concerning the Management side, the following are required:

One General Manager,

One Technical Manager

One Financial Manager

These personnel are required at the start of the project.

16. Fellowships:

The following fellowships are recommended under the UNDP/UNIDO technical assistance programme:

Section	Number	Period	Country of Training
Management	1	6 months	Egypt
Design and Layout	1	6 months	Egypt
Estimating and Costing	1	6 months	Egypt
Mechanical composing	1	6 months	Lebanon or Egypt
Machine Maintenance	1	6 months	Europe
Photography (black and white and color work)	1	6 months	Europe
Printing (Sheer fed)	1	1 year	Egypt
Printing (wep offset)	1	1 year	Egypt

List of machinery already available:

17. The following machines are already available for the project:

(a) Composing Room equipment

i 2 Linotype composing machines Model 18 SM Quaruplex (28 Cicero) each complete with traditional Arabic/English keyboard.

ii 4 Full-length,9o channel Main Magazines.

iii 4 Full-length, 34 channel Side Magazines

iv 1 Funditor Remelting Furnace Model RM 2 (7 wt - 35o kg capacity)

v 1 All-purpose Funditor Supersow complete with table (Pedestal Model).

vi 1 Masta Magna Slag Cutter including scale.

vii 1 Hand Mitreing Machine.

viii 1 Farley Proofing Press complete with Inking Plate
4 Hand Rollers 45 cm x 68 cm.

ix 1 complete set of 3 dozen additional mould liners.

x 1 set of Horizontal and Vertical Leaders.

(b) Reproduction + Plate-Making Departments:

Dark Room

i 1 Main Camera for black white half tones line work and production of page negatives.

ii 1 LGS Type 231 Horizontal Camera
Maximum Film size 6o x 5o c.

Additional Accessories:

1 LGS Type 266 Temperature-Controlled Developing Sink suitable for films upto 5o x 6o cm., divided into three compartments for

a) Developing and fixing

b) Washing

c) Disposal of chemicals

Heater/chiller unit for temperature control.

1 LGS Type 126 Negative Viewer

1 LGS Type 2o5 Contact Frame

Incorporating Pin Register Maximum size 8o x 8o cm.

Studio

1 LGS Type 191 Film Drying Cabinet

2 LGS Type 1o8 Light Tables

2 KTS Type Illuminates Desk

Metall Printing

2 LGS Type 162 CM Rotex Vacuum Printing Down Frames

2 General purpose plastic sinks, size 12o x 1oo x 2o cm.

iii 1 Sheet Fed two colour Roland Offset Machine Model RZK IIIB
Maximum sheet size 72 x 1o2 cm.
Maximum speed 8,ooo copies per hour.

iv 2 Unit L + H "PACT" 36 Web Offset Perfecting Press
with all additional attachements.

v Pre Press Model R 225
Cylinder Proof Press (Offset)
Printing Area 54.6o x 62.2o cm.
Paper size 63,5o x 61 cm.

vi 1 Nebiolo Flatbed Press Model Super Tgeria RTAF
Complete with all standard accessories + electrical equipment.
Maximum sheet size 46 x 58,5o cm.
Maximum speed 5,ooo copies per hour.

vii Linotype Trimstitch
1 single Unit Machine for gathering, stitching and trimming.
Magazines fitted with two stitching heads, six handfeeding stations, three knife trimmers.

viii 1 Vickers Side Stitching Bindery Equipment
Model 6o7o - 1" capacity

ix 1 Camco A 2 W Folding Machine

16 page Model with spares pack.

x 1 Wohlenberg 115 cm. Standard Guillotine
With 4 spare knives.

List of complementary machines and equipment needed for the Ministry of Education Printing Project.

18. To guarantee better planning and operation of the flow line process for all future production, so as to achieve a more rational and efficient standard of production, it is recommended to purchase certain complementary machines and equipment which are detailed below:

a. Composing Section

(i) Two linotype 7' SH quadruplex (28 cicero) each complete with traditional Arabic-English keyboard.
4 full linth, 8o channel main magazines
4 full linth, 34 channel side magazines.

(ii) One model "N" Ludlow slugcasting machine complete with accessories, ancillary equipment and 5 fonts Arabic

(iii) One model "K" ELROD stripcasting machine complete with accessories, ancillary equipment and rule, lead and etc. molds.

(iv) Two galley racks for galley proofs.

b. Plate making and montage section

(i) Blue print developer machine from Ozalid AG Zurich model Bodan 24o D.

Working width 12o cm

Electric power: 22oV, 5o HZ 35o W. 6 A

With table 5o cm,

Height 27 cm.

(ii) One vacuum frame LGS type 2o5 pin register, manufactured by Little John Graphic System Ltd.

(iii) Plate and developing machine Little John, take plates size 1oo x 72 cm.

c. Camera Room

(i) 2 double-lined black material or plastic for dark room size: 15o wide, 23o length

(ii) Two montage drawers size 7o x 11o cm, height 8o cm, with 7 drawers order no. 16o7 from Bacher Germany or from Little John, England.

(iii) One control junior for the proof reader with 5 drawers order no. 16o6 with light or without drawers order no. 151o from Bacher

(iv) Monotype topias adheser

Specification:

Width 35.5 cm max.

Power 22o V 6 AM

From Monotype Corporation Ltd. England

d. Machine Room

(i) Two offset machines

First recommendation: Solna 125 one colour

Paper size 4t x 64 cm max.
21 x 25 mon.

Solna offset A B Printing equipment

s - 191 87 Sollentuna Schweden

Second recommendation: Heidelberg offset printing machine Sord one colour, Germany.

Plate size 71.5 x 99,5 cm.

Third recommendation: Planeta Variant Offset printing machine 13 one colour

Plate size: 79 x 91 cm

East Germany

(ii) Two small Offset machines

Heidelberg GTO

Size: 32 x 46 cm max.
1o.5 x 18.5 cm min.

Power motor: 1.5 KW
8oo sheet P/H

or Romayor 513

Max paper size 36.6 x 52.2 cm.

Min. paper size 2o.3 x 25.4 cm

65oo impression P/H

Electric motor 1.1 KW, 44o V.

145 V.P.M.

MAHATIR 2/127 Mount road

Madras

(iii) One damping ruler machine with drying unit with diameter up to 12o mm hold up to 3 dampers rulers and water, the drying device can take one ruler at a time

Length and width 122o x 7oo mm

(iv) Damping rulers transport rack PGM

The same size of the damping ruler washing machine. From Germany, Gerhard Busch, Graphische Maschinen 2ooo, Hamburg 1, Heidenkampsweg 4[illegible], or from Luscher-Leber, CIEAG 3oo1, Berne, Switzerland.

All machines should be ordered complete with its accessories.

e. Binding Section

(i) One Polar 115 Guillotine for cutting large sheets

cutting length 115

pile height 14,5 cm

Power 4 KW

Width 265 cm

Knife to be ground off 6 cm

or: Schnider Senatar

Cutting length 115

From: Louis Cerutti SA
Bethlehem Strasse 36
Case postale 116
3027 Bern, Switzerland

From: Germany Adolf Mohr
Maschinenfabrik, 6238
Hofheir, Postfach 1220

(ii) Vibroleader jogging and loading unit "A"

outer dimensions 850 x 1150 mm

max working area of table 850 x 1050 mm.

(iii) Two convertable fork lift for paper bile and reels either from Linotype and company of from Schnider PL

electro-motor to carry one ton of paper

(iv) Two humidifier machines one for the paper store and one for machine room specification of the area required to be conditioned must be sent to the manufacturer for the size of the machine and the required number needed.

one precision grinding machine either type GPITL or to be mounted to the guillotine itself for the same purpose

From Longitudinal Germany.

2 stitching machines 6070, thickness 2.5 cm.

One exercise bookmaking machine

Production capacity 16 million per annum.

The National Institute of Public Administration (NIPA) project.

19. This is a small but modern printing shop equipped with offset printing machines. Such printing facilities appear most suitable to serve a basic training centre for the technical staff required by the local printing industries.

At the time of the UNIDO expert's arrival, the NIPA Printing Room equipment included the following items:

(i) Heidelberg Offset 46 x 64 cm. single colour, Model Kord.
(ii) Horizontal Copy Camera 14" x 18".
(iii) Developing Sink and Flip-top Plate Maker.
(iv) Standing Press.
(v) Ideal Cutting Machine. Cuts about 32 sheets of paper.
(vi) Stitching Machine. Single phase, no wires or threads received.
(vii) Electric Duplicator. Stencil.
(viii) 2 Stapling Machines.

These are all the Printing Room equipment for Offset Reproduction and it is clear that there are many machines and equipment lacking.

The expert has been assisting the Institute in plant layout, equipment preparation, production plans and numerous other problems connected with the commencement of actual operations by NIPA Offset Press Unit.

Additional machines and equipment required to complete the NIPA Printing House:

2o. There is no hand composing section or mechanical composing section in this project and the Project Manager, Dr. Roberts mentioned that he wished to have a filmsetting section and that he wished to avoid type metal lettering and conventional methods of producing type faces. The UNIDO expert suggested the following machinery and equipment:

A. Reproduction Section:

(i) Filmsetting Composing Machine

(a) Monophoto 4oo/8 Filmsetting System.

Specifications:

Lettering:	o.2 x o.2 in film matrice, 4oo matrices in every arrangement could be used.
Size of Lettering:	5 to 24 point Didot or Pica. 16 different typefaces.
Lettering Broad Size:	5o cicero (228mm.)
Speed of Filming:	4o,ooo letters per hour.
Film Materials:	Film and paper with Lith-Emulsion two sorts

Source of Light:	Halogen Lamp 12 v.
Electric Power:	200 to 250 v. Changing power: 50 hz or 100/125 v. Changing power: 60 hz.
Air used:	0,085 m^3/min.
System:	Model 4 00/8:1 speed of filming standard
or	Model 400/8:2 speed of filming and correcting.

The above equipment with "Monotype" NJ 400 perforator
or "Monotype" LD 400 perforator
or "Monotype" TI 400 with television terminal.

From: Monotype Co. Ltd., Salfords, Redhill, RH1 5 JP, England.

or (b) Fototronic 600 Photo Composition System from Harris, London

or (c) Photon Filmsetting Machine, London.

(ii) Display Phototypesetter

(a) "MINISTAR" Semi-automatic. German Manufacture.

Specifications:

Size	64 x 37 cm
Height	66 cm.
Setting type	7.4 x 42 cm.
Magazine size	60 x 40 x 180 mm.
Electric Current	150 w. to 220 v.
Type Size	3.5 x 42 mm.

or (b) "MONOTYPE" Studio Lettering Machine.

Width	73,7 cm.
Depth	73.7 cm.
Height	132 cm.
Electric Current	220 to 240 v. 12 Amps.
Lighting	240 v. 150 w.
Size of Type :	3 - 127 mm. (9-360 point).
Largest Size of Lettering:	146 x 368 mm.

Lettering Faces to be ordered with (a) or (b) above as follows:

"MINISTAR" Display Phototypesetter - English Typeface

Anabella :	Order No. 1600
Wagner :	Profile Order No. 9005 Haas
Arabic Medium No. 495:	Order No. 9029 Berthold
Arabic Shaded No. 505 :	Order No. 8030 Berthold

Baskerville Italic 169	Bodoni 135	Perpetue Bold 461
Plantin Bold 194	Arabic Foufi Bold 772	Naskh Bold 729

(iii) Control Junior (61 x 88 cm.)

Specifications:

Size	:	12 cm.
Width	:	83 cm.
Height	:	8o cm.
Order No.	:	151o
From:		Bücher (Germany)

(iv) Control 2ooo Filmcutting Machine (For small filmsetting Montage)

Specifications:

Width	:	81 cm.
Depth	:	61 cm.
Height	:	23 cm.
Electric Current:		22o v. Order No. 162o.
From:		Bücher (Germany)

(v) Film Developing Machine (from Kodak)

"KODAKLITH" Film Processor Model 324.

(vi) Monotype Tobias Adheser (to be used in the Montage Section)

Specifications:

Length of Film	:	3.5 cm.max.
Voltage	:	22ov. 6 Amps.
Dimensions	:	64 x 33 cm.
Minimum Size	:	13 x 25 mm.
From:		Monotype Corporation, England

(vii) Copyproof Machine (from Agfa for Positive Proofs and Transpariencies)

Specifications:

Model	:	CF 38
Slot Width	:	38 cm
Length	:	615 mm.
Width	:	24o mm.
Height	:	135 mm.
Electric Current	:	22o v. 3o w. 6o hz.
Rollers	:	2 rubber.
Weight	:	7.1 kg.
Capacity of Developing Tray	:	1 litre

(viii) Control Litho Montage

Specifications:

Table Size : 65 x 1o5cm. No. 61oo + 7o x 11ocm No. 1618

Montage Cupboard: 7o x 11ocm. Nos. 1656 and 1617
With 5 drawers

From : Bücher (Germany)

(ix) Monotype Table (for Filmsetting)

Specifications:

Size : 81 x 112 cm.

Free Space : 62 cm.

Working Area : 82 x 58 cm.

Size of Table : 82 x 74 cm.

From : Monotype Corporation (England)

(x) Films + Chemicals (to be used in the darkroom and in the Montage Section)

For Film Processing Machine

Kodak MP Films and Chemicals

("Kodalith" MP Film 2559 - Estar Base 1o/1oo mm.)

For Manual Developing

By 2o°C and continuous motion for 2 3/4 minutes.

Stopbath 1o seconds in Kodak Formal SBIA.

Fixing Kodak Rapid Fixer or Kodolith RT Liquid Fixer 1 - 2 mins.

Washing 1o mins. Water temperature 18 - 21° C.

Finally, film to be put in Kodak Photoflow Solution.

or

Kodolith MP Developer + Developer Replenisher.

Kodak Rapid Fixer

Kodolith MP Film Process Control Strips.

(xi) Astralon Folien

Specifications:

Quality : Glass-clear and matt.

Thickness : o.5o mm. and o.25 mm.

Size : 8o x 16o mm. and 1ooo x 2ooo mm. for Montage.

(xii) Millimiter Folien (from Astralon)

Specifications:

Sizes : 22o x 297 mm. (Dim. A 4)

297 x 42o mm. (Dim. A3)

1ooo x 13oo mm for large Montage.

From : J. Affolter + Co., Bellerivester 28, 8o34 Zurich.

(xiii) Brilliant "VUCUPLUS" (for Montage + Plate in contact frame)

From : Wilhelm Straub GMBH, 6o78 Neu Isenburg, Hermannstrasse 15 34.

(xiv) Film Dry Cabinet "COMBIHERM"

Specifications:

Inside Size : 3o x 38 cm.

Length : 185 cm.

Width : 8o cm.

Height : 92 cm.

Electric Current 22o v. One face 15 Amps.

From : Nobs + Plüss Lausanne, Lausanne, Switzerland

(xv) Contact Frame (for Darkroom)

All metal vacuum contact "LITTLEJOHN" England.

Size : 51 x 61 cm. (2o" x 24 ")

With magneta and grey screens (One set)

(xvi) Plates + Materials

(a) Aluminium Plates - Negative + Positive.

Crofal anodized (positive).

Three different thicknesses : o.3o mm. o.4o mm. o.5o mm.

and Prenegal (negative)

Thicknesses : o.13 mm. o.3o mm. o.4o mm. o,5o mm., and

Chemicals from the same manufacturer.

From : Louis Cerutti AG., Bern

Bethlehemstrasse 36, Switzerland.

or (b) Polychrome Plates - Negative and Positive.

or (c) Ozasol - From: Kalle AG., West Germany;

The rest of the platemaking equipment already delivered at NIPA with the exception of:

(a) Developing sink required for plate making (to be installed locally)
(b) Small Fan for drying plates after applying gum.

IMPORTANT NOTE:

In the event of purchasing this filmsetting composing machine such as:

Monophoto 400
Fotoronic 600
or Photon

local trainees (at least two) should be sent abroad for at least one year before the machines are purchased irrespective of whether the machinery is purchased by the YAR Government or the UNDP Fund.

B. PRINTING SECTION

Heidelberger Small Offset Machine "GTO"

Specifications:

Size	:	32 x 64 cm.
Print Size	:	31 x 44.5 cm.
Offset Plate Size	:	37 x 45 cm.
Plate Thickness	:	0.10 to 0.15 mm.
Plate Gripper Edge	:	35 mm.
Cylinder Size	:	455 x 400 mm.
Thickness	:	1.0 mm.
Capacity	:	8000 sheets per hour.
Electric Current	:	1.5 Kw.
From	:	Germany.

or

Offset Printing Machine "TOMMYCR" 513

Specifications:

Maximum Paper Size	:	366 x 522 mm.
Capacity	:	2500 - 7500 impressions per hour.
Minimum Paper Size	:	203 x 254 mm.
Maximum Height of Paper	:	400 mm.
From	:	Czechoslovakia.

Printing Plate

Specifications:

Dimensions	:	0.1 x 400 x 521 mm.
Electric Motor	:	1.1 Kw x 440 v. 1450 r.p.m.
Length	:	1400 mm.
Width	:	1150 mm.
Height	:	1435 mm.
From	:	Mahabir + Co., 2/127 Mount Road, Madras 2, India.

C. BINDING SECTION

1.

(a) Guillotine "POLAR" 72, 29 inch

Specifications:

Cutting Length	:	72 cm.
Pile Height	:	8 cm.
Table Space Behind Knife	:	72 cm.
Power	:	1,5 Kw. 2 HP
Net Weight	:	700 kg.
Width (with side table)	:	143 cm.
Depth	:	165 cm.
Table Length Front	:	45 cm.
Table Height	:	90 cm.
Clamping Pressure	:	150/220 K/P.
Knife to be ground off	:	2.5 cm.

or

(b) Guillotine "SENATOR" 92

From : Schneider Werk GMBH, Lübeck,

2. Paper Folding Machine

14" x 25" with four parallel folding $\frac{1}{4}$ H/P Motor

For A/C. 220 volts, single phase.

Maximum Speed 7000 Sheets per hour.

Indian manufacture.

3. Punching Machine

4. Working Table for Binding Unit.

5. One Sink for washing PVC Brushes after use.

6. Small Humidifier No. 15, for paper store room.

From: Paul Muller, Freiburgstrasse 398, 3018 Bern 18.

The rest of the Binding Section Machines have already been delivered.

D. Composing section:

(i) 2 Selectric Typewriters

IBM 72 - 3 Nos. in 10 Pitch

3 Nos. in 12 Pitch (USA)

With elements Arabic 2 sets.

(ii) A small Hand Composing Section for letterheading and small jobs.

(iii) Plates: Plate master which can be mounted on the Offset machine directly after typing, after cleaning with special chemicals (Fountain Solution RC 62). These plates and chemicals can be purchased from Osalid AG. Zurich.

21. All the above machinery and equipment have been suggested at the request of Dr. Roberts, the UNIPA Project Manager, in order to complement the printing equipment already ordered. The printing machine already ordered is for 46 x 64 cm. format and is for large-scale production. Further discussion with him and his Project Officer revealed that this Offset Plant is intended only for service of the Institute, and for small scale production and indeed he has already ordered small size 21 x 35 cm. plates. As a matter of fact, this Heidelberg printing machine cannot be used for this purpose; yet much simpler equipment could provide the Institute with all its needs, for example two typewriter machines with their special plates.

Printing presses of the National Printing and Publishing Company:

22. As the expert has spent most of his time at the National Printing + Publishing Company, part of which belongs to the Government, the following comments and recommendations are largely related to this press.

However, several short visits were made to all the other presses in Sana'a, Taiz and Hodeida. It was found that the same problems inherent in the National Printing + Publishing Company's press exist in the other presses on a smaller scale. This is due to the fact that the other presses are relatively smaller and do not have as much manpower as the Government press.

Some of the problems encountered in the YAR presses with special reference to the National Printing + Publishing Company, may be inferred from the following:

23. Management and organization

Improvements are essential in the following areas to ensure maximum managerial efficiency in the printing industry:

a) Business organization (evaluation of modern industrial organization).

b) Production Planning and Control, Work Study, Layout, Methods Measurement, Human Aspects, Record Chart Tabulation.

c) Personnel - working conditions, Factories Act, Common Law Requirements, System of Payments, Monetary and Non-Monetary Incentives.

The publications which need to be set by these machines are as follows:

1 Daily Newspaper	8 pp Broadsheets
7 Weekly Newspapers	8 pp Tabloid
3 Monthly Magazines	6o pp - 8o pp each
3 Monthly Books	2oo pp each

plus varied governmental commercial work.

With three Intertype machines and three cylinder machines and four Heidelberg Platens being worked continuously for 3 sh , there is insufficient time for adequate daily and weekly maintenance. In the case of one of these machines breaking down, production will stop for approximately one to two weeks. Even by British or any international standards, there are insufficient machines to cope with the volume of work.

24. Production Sections

The Remelting Metal Pot Room should be fitted with a good ventilation system to allow the metal fumes to issue, well away from the working area.

Recommendation for the melting type metal : the following proposition gives the constituent metals considered to be most suitable:

Intertype + Linotype Metal	(%)
Tin	3
Antimony	11
Lead	86

Also the type metal ingots should have a bright clean appearance, free from dross, to ensure good results. The metal should be replenished and melted as quickly as possible, the temperature should be raised to 50°F above normal working temperature for drossing and cleaning.

To ensure that the metals in use are of the correct proportions it is advisable that samples are taken and sent for essay at least twice every year.

25. Mechanical Composing Sections

There is a bottle-neck in this composing department, where there are:

2 Model "V" Intertype Machines producing abridged Arabic and
1 Model C 4 four side magazine Intertype producing traditional Arabic.
1 Electric saw for slages and 1 corner machine.
1 Funditor Remelting Furnace.

Due to the irregular checking up of the type he ght of paper and poor maintenance of the machines in this section, they are working below capacity.

Recommendation: Precision methods must be used to produce type with accurate dimensions. All damaged matrices must be replaced because it does not pay to spend time on the machine patching up the packing.

On line composing machines the trimming knives should be regularly checked so that they produce slugs of accurate dimensions in body size and height to the paper.

26. Hand Composing Sections

The principal cause of all problems in this section is the absence of any precision equipment such as registration of colour printing blocks, plate gauges, micrometers, make up galleys. Pre-Make Ready such as type measurement, plate mounting, page make up, imposition precision proofing, form transport and the premature overlay. This precision method must be introduced assoon as possible, also new type faces should replace the old and should be cast locally by a Monotype casting machine. Ladlow machines should be introduced in this section for better heading and faster output.

Some type cases exist with very old type faces, Arabic and English, 12, 16, 24, 36 point.

There is no system of distributing the type faces, not enough Roof Racks, Slaps for make-up formes, most formes on the floor; wooden tables instead of metal.

27. Letterpress Sections

It is essential that certain codes of practice should be adopted in order to eliminate as far as possible any undue human error so long as machine minders are responsible for the complete make-ready and running-off of forms on one or more machines. It is clear that many of the problems are attributable to the lack of general technical knowledge on the part of the printer. The remedies for some of these problems are given below:

a) Better maintenance and regular checking up of oil, gears and pulley by a competent mechanic will give good results.

b) Using powder and spray driers will give quick drying to the ink and ensure faster running of the machine without set-off ink.

c) Proper dressing of cylinders and use of Manilla sheets of paper for dressing will give better printing results.

d) Paper and ink difficulties such as blocking, crystallisation, overprinting, mottling and static electricity are all obstacles that could be remedied by training and practice under supervision of a printing technologist.

e) Temperature and humidity should be controlled to within 65-70°F and 65% relative humidity. Elimination of static electricity before it reaches the press could be tackled in various ways: for instance if the reams are already in stock, the best solution is to store them opened up and the sheets hung in the machine room from metal racks for not less than one day, prior to use on the press.

f) For using spaces, this could be caused from too much wood furniture, excessively tight or faulty lock up, badly justified lines in hand composed matter. The remedy is obvious - through using metal furniture to replace some of the wood furniture in the form; uneven blocks can be removed and accurately planned, spiked or bodged.

Mechanically composed matter should be locked whether it is unit-composed or slug-set.

g) One of the most common causes of wear on the printing plates is over- or under-packing of the cylinder. This is a result of the dressing of the cylinder as the machine bed, travelling at different speeds causes slipping or rubbing at the point of impression. On an over-packed cylinder the periphery will move faster than the form, which will obviously act as a drag on the cylinder dressing which will tend to wear away from the grippers, and the plates will move off their bases in the direction of the gripper edge, causing a slur to appear at the leave edge of each row of pages and a tail on each dot pointing away from the gripper edge. An over-packed cylinder has a slower preparing speed in relation to the machine bed, which

tends to push the cylinder dressing towards the grippers. The printing plates will tend to move off their mounts and away from the gripper edge and thus a slur and tail on the half-tone dots will appear. Other causes of plate wear are due to abrasive action of certain pigments in the ink or to chemical errosion by the contents of the ink. To overcome both troubles it is advisable to change the ink and if this is not possible, a plate of a different type of metal should be used.

h) Screen filling could be a result of one or more factors. The press Man should check to ensure that the blocks are not in excess of type height and that they are firmly mounted on a rigid base with no tendency to rock or warp.

Screen filling could be caused also by insufficiently etched blocks, rollers set too low or "wiping" or dirty or fast drying ink which tends to body up during the run. Another contributing factor which occurs frequently and is often overlooked is caused by the impression. (This has been observed in most of the presses, notably the National Printing + Publishing Company). The impression should be neither too heavy nor too light - either condition leads to screen filling. In the case of too heavy an impression, the ink on the highlight dots may be forced off into the intervening spaces, whereas in the case of too light an impression, the ink film deposited by the rollers will not be sufficiently transferred to the stock - the excess ink seeping into the shallow interstices.

28. Block Making Sections

As the very old, traditional Zincograph material and equipment now in use gives inferior results, it is essential to introduce the Klischograph K 155 for both Letterpress and Offset. This could be used with current Letterpress equipment and in the future for Offset printing. It is more efficient, giving rapid and superior results. Further, a new camera should be provided and this has already been ordered for the new project.

29. Proof Reader Section

This section should be introduced and given proper attention in all printing houses and the proof reader himself should be selected with great care. Firstly, a man with the appropriate background should be recruited and given every facility and good working conditions since the job will involve great concentration. For example the candidate should have training as a compositor and have acquired specialisation in this branch of work. He must possess the following qualities and qualifications:

a) Good eyesight.
b) Concentration
c) A good comand of his own language, including house style and wide general knowledge.
d) Good technical knowledge of printing and familiarity with different type faces.
e) Patience and a thorough knowledge of the laws relating to printing.
f) Clear and clean handwriting.

He requires good working conditions, such as good lighting, quietness, comfortable surroundings, freedom from distractions, access to sources of information and the copy holder. In addition the Proof Reader should follow certain procedures:

First To see that he has the right copy.

Second To check all instructions on the work ticket and on the layout, if any.

In case of the National Printing + Publishing Company, the proof reader should be provided with a ruling table for controlling the layout of each job.

Third To check that the size and measurements of the type face are as required in the copy.

Fourth To read through the Proof without the copy to check for house style, and then with the copy holder to read along from the copy. Also to check Page Proofs (page number) running the headlines page, dimension of margins, alterations and copy area. Also to check Authors Proof and Authors Revise.

30. Design Sections

The printing houses in the YAR lack a design section, where important art operations are carried out such as drawing the layout and display.

This has meant that Newspapers and Magazines appear in an unorganized form. To overcome this situation it is recommended that personnel connected with Newspaper and Magazine design and art work be sent for training to one ofthe Middle East countries, preferably Egypt or the Lebanon for at least six months.

31. Labour + Working Conditions

To improve working conditions in all the printing houses in the YAR my recommendations are as follows:

a) Daylight and good ventilation should be supplied to all production sections .

b) Washing facilities and toilets must be available to all personnel.

c) Replanning for most of the production sections and introducing work and method study for production control

d) Provisions of the factory act should be supplied in case of fire, all rooms should be installed with an approved type of fire fighting equipment. These should be ready for immediate use at all times.

e) First aid should be provided and kept in a readily accessible spot. A first aid box or cupboard of prescribed standard should be placed in each of the printing houses.

f) In case of accidents or personal injury in any of the printing houses, compensation for industrial injury should be paid out of a central fund on a weekly basis.

32. Machines + Equipment in the Production Section

The major machines in this section are:

2 Heidelberg Cylinder
1 old Chinese cylinder
4 Heidelberg Platten

To ensure smooth operation of the section, the following are recommended:

a) All old or unused machines should be removed to eliminate wastage of floor space, to increase the mobility of workers and to facilitate transportation of materials.

b) Machines should be maintained regularly e.g. cleaning, oiling, greasing, etc. etc.

c) Used ink on all rollers must be washed out daily after working hours.

d) All rollers should be correctly stored on racks and not placed on top of each other or on the floor.

e) All motors of machines must be fitted with safety-guards for labour safety.

f) All tools and lock-up keys must be kept away from the machines on a special board to avoid damaging the cylinder bed or cylinders.

g) Air-conditioning in the machine rooms especially in the Intertype section should be installed so that burning of the hot metal pots and motors due to excessive heat could be avoided.

h) Excess oil, rags, paper and old colour tins must be moved away from the machines to avoid accidents and also to have more room around the machines.

j) All printing paper or paper that has been printed on must be kept in tidy stacks to prevent printing problems.

k) More trolleys for transporting paper are needed.

33. Binding Sections

The following machines are available:

1 Mansfeld (Leipzig o29) very small.
2 Paper Cutting machines
2 Presses for binding.
3 Drilling machines, one electric and the other foot operated.
3 Wire Staples, one only in production.
1 Wire stitching machine, electric 1".

All operations in this section should be automated. Better working space should be provided in place of the two small and narrow rooms; the ceiling should be high enough to allow fresh air and daylight into the room.

Machines should not be crowded close to each other to allow better flow-line production. Unused machines should be removed to allow space for another machine or finished product.

More labour and machines should be provided, collating mark should be introduced in the book work as well as side edges marker. This gives a remarkable binding result and also the flow of the process will be much easier and more efficiently done especially for trimming, folding and gathering.

A special room should be provided for despatching finished jobs which should be well packed with covering material, free from dust.

34. Materials - Requirements + Storage

These problems are diversified and interrelated and represent a major factor contributing to poor production. Therefore the following should be strictly observed:

a) Materials and chemicals required for all sections, especially for Letterpress and Offset in the future, should be purchased from various developed countries in order to obtain maximum durability and facilitate the efficient operation of different processes.

b) Handling and storage of the paper is important. All types of paper and in particular coated paper, deteriorate with excessive handling and it is desirable that all printing houses in the YAR evolve a system suited to their respective establishments whereby stocks are conveyed and stored in a manner likely to cause the least disturbance to the package reams or bales. Certain fundamental rules should be followed to maintain paper stocks in first-class condition.

Once the stock arrives in the warehouse or store, it should not be disturbed until required for printing, and then the exact amount required should be handled and delivered to the bench of machine, thus eliminating any undue handling. New stocks should be allowed to mature before processing in any way and should be stored in an atmosphere free from damp, dust, chemical fumes, strong sunlight and dry atmosphere. Therefore, humidifiers should be installed in all store rooms to give the paper the right conditioning before printing. Also, there should be an adequate ventilation system. Special care must be exercised in the storage of split reams, which are often secured with string, which causes damage to both parts.

Damp will cause discolouration of stocks and gummed paper. Also it encourages stretching, cockling and waving of sheets.

Dust should also be avoided as much as possible because of its detrimental effect, not only on the paper stocks, but also on the press. It will brush off the sheets on to the press and make the ink gritty, causing half tone blocks to fill in and obviously necessitating additional wash-ups. The only satisfactory remedy from chemical and other fumes is the installation of an effective air-conditioning plant.

Strong daylight and especially direct sunlight, in view of the present conditions in most printing houses in the YAR, will rapidly discolour paper supplies especially coloured and tinted stocks. To avoid this costly wastage, ensure that all reams and packages are carefully wrapped and sealed in light-proof paper.

Ministry of Information Printing Project

35. At present, this is the largest printing project, and it is being financed under the bilateral technical assistance of the Government of the Federal Republic of Germany, Messrs. Ahmed Hagi, the Project Director, and Mohammed Ali Basrahil, Advisor to the Ministry of Information are directly in charge of the project.

36. Mr. Ahmed Hagi and Mr. Mohammed Ali Bashrahil have been sent, in accordance with a request from the Minister of Information, to West Germany for a general survey of the printing industry to investigate available printing machines and equipment with a view to purchasing modern Offset printing machines. They have made a great effort in their tour of about 45 manufacturing companies, mainly for Offset and mechanical composing machines and have to the best of their knowledge, succeeded in choosing modern machinery and equipment useful for the future of the printing industry. This should help to cover the long-term needs of the country in all printing prodcution such as newspapers, magazines, educational books and other commercial materials such as colour and black and white work.

With the aid of the German Federation for Printing Industry (VDM), they have completed the selection of some of the machinery and printing equipment and have prepared the plan and programme of the project divided into three phases for implementation. This was completed after the visit of the representative of VDM to the YP last year.

37. After careful review of the project, the UNIDO expert made the following observations:

Some of the necessary and complementary machines and equipment for Offset production are lacking and have not been mentioned, e.g. Photo-composing machines which should replace handcomposing and mechanical composing in letterpress printing production and these machines are manufactured by many firms in England and the USA.

This complementary machine must be purchased in Phase 2 or 3 as it is important to the project and will also suit modern technology in the printing industry. In case a decision is made to buy these machines, the cost will be about YP 2,000,000, inclusive of the following complementary machines needed to control and correct all work before going to the printing machines:

(a) Studio Lettering Machine
(b) Film Processor Machine
(c) Photocopying and Drawing printing machine.

38. But it is quite clear from this offer that the management intends to have only mechanical composing machines with hot metal lettering in the composing section and there are already nine Intertype machines for this project in the First Phase. Some important machines to complete this composing section are lacking in the project and must be ordered in the first phase immediately. These machines are as follows:

(a) 4 Additional mechanical composing machines should be purchased from the same firm as those already ordered.

(b) 2 Ludlow Machines for the lettering heads.

(c) 2 Imposing Surfaces 2 x 3 m. for making ready the forms before taking photo proofs.

(d) 1 Galley Proof Rack, size for chase metal:

(i) Size to conform with Web Page
(ii) Size to conform with $\frac{1}{2}$ Web Page
(iii) Size to conform with $\frac{1}{4}$ Web Page.

39. Some materials are needed for the preparation process in the layout section such as:

(a) Type Meter Folio

(b) Millimeter Folio

of different sizes as indicated to Mr. Bashrahil; these have already been ordered.

4o. It has been discovered that some equipment is also lacking in the binding section to complete all stages in this department.

Some of the machines which have been mentioned in the project are not necessary and should be omitted because these machines could be used only for the printing of over three or four million copies and it precludes their use with different and cheaper kinds of manufacture, especially in plate orders.

41. After long discussion, the management responsible has agreed to omit these machines as follows:

(a) [illegible] Burning Oven (requires high electric current)
Price: DM 13,350,00

(b) AD 641 o2o Plan Proof Printing Press (only required for colour film specialists in printing houses)
Price : DM 43,350,00

(c) Simplex Cross Cutter Type Kp. 1/600
with equipment and attachments
Price: DM 315,600,00

Some machines have been ordered already in the First Phase. It is necessary to order the remainder of these complementary machines in either the Second or Third Phase.

42. VDMA in Germany has prepared a training scheme with the co-operation of the Printing Promotion Scheme for the training of workmen in the YAR for Offset printing. This will cost DM 755.950,00 and will enable three printing professionals to come to the YAR to train the workers for a period of one year, and allow five persons from the YAR to go to Germany for 8 weeks to be trained on different machines; it will include interpreters for both groups. After the review of this training programme, it is found that the YAR would clearly benefit from these three professionals in the training of the local trainees, especially if conducted under the supervision of a Printing Technologist; this should ensure a good training and lecturing programme for the trainees, especially in the Offset fields, since at the present time there is no single person qualified in Offset printing techniques.

43. It is imperative to find a suitable site for the building of the new Printing House which should be well planned on modern lines appropriate to this large project and it should be completed before the arrival of all the machines and equipment.

List of machineries and equipment provided under the bilateral technical assistance of the Federal Republic of Germany.

44. The total value of the equipment provided and listed below would be about DM 5.7oo.ooo.

Printing

i a) 1 Web Offset Koenig + Bauer "KOLBAU COMPACT" with 4 perfectin units.

b) Electrical Equipment.

c) Blankets + Coverings.

d) Erection (Including Interconnecting Cables, AIR-LOC shoes, Mechanical + Electrical Section)

ii High-Capacity Single Colour Offset "ROLAND FAVORIT RF OB"

Line Composing (Intertype)

6 Hot-metal 4-magazine machines Arabic/English with reversing galley and ancillary equipment.

i a) 1 WOHLENBERG-THLERMANN Heavy duty flow-line for manufacturing text books, complete with stitching unit and Trimmer A 43 DM.

b) Production material and required optional equipment.

ii KALLE Burning oven (this has been omitted).

iii 1 Automatic Step + Repeat machine. KRAUSE BIAGOSH Model M 16o Liw with auto-film changer.

iv 1 High-Capacity 4-colour Offset Model "ROLAND REKORD RVK/3B"

v 1 Original WILL Fully automatic exercise bookmaking machine MODEL MZ-K.

vi 1 Film developing machine. (Only required if buying electronic filmsetting).

vii 1 BICKEL high performance perforating machine with auto feed, type HK ha/5/68 F.III for 5o mm passage slot including electrical equipment. (For 3rd phase).

viii 1 Poly-Universal Spiral binding machine for manufacturing wire spirals, in one winding, complete with 5o kg. plastic covered steel wire.

ix Special high efficiency perforating machine type H'K 5o for feeding paper in vertical or horizontal direction, including electrical equipment (For 3rd phase).

x 1 Hole perforating comb. for spiral binding 3.o mm diam. spacing 5.o mm, 5oo mm. working width.

xi 1 Miller-Johannisberg Offset TP 41 each two-colour/perfacting without RF 7o.

xii a) 6 GEHK Offset machines 2ooo SR..
b Basic spare parts.

xiii a) 1 HIKI Precision proof Press Model "AP 7o4"
b) 1 Plate Cutting machine Model KPS 1o2.

Photography + Plate-Making

i a) 1 Klimsch Auto Vertical T Stand for black + white.
b) 1 Klimsch Auto Vertical for colour separation.
c) KLIMSCH Ancillary Equipment.

Printing Ink + Raw Material

i HARTMANN Offset Printing Ink, 1ooo kg.

ii Glue, Wire Reels for stitching, Cloth for spine of books, etc.

iii BYRUT Paper.

Binding/Paper Converting

i a) 2 High Speed Cutters, WOHLENBERG 115 Programmatic T.
b) Additional Plastic Cutting.
c) EHLERMANN Equipment for rebinding books.

ii 2 KOMBI Folding Machines MBO K 76/4 KLL.

iii 1 GOTSCHL Longitudinal Precision Grinding Machine Type GPI eL (G4o) x 15oc mm grinding length.

iv 1 Collating/Wire Stitching/Trimming Machines.

v 1 Rotary Cross Cutter working width max 15oo mm.

vi 1 Automatic Perforating (found hole) Machine.

vii 2 BB-I Speck-Botel Wire Stitching Machines.

RECOMMENDATIONS

45. It is recommended that the Government merge all the governmental presses into a single printing complex. However, this scheme should not include the Ministry of Education printing project which needs to stand on its own to be able to carry on with the increasing demands of school books and all other school printed matter

The Printing Complex will ensure:

(i) efficient production flowline,
(ii) improved productivity of machines and manpower,
(iii) lower cost and effective quality control works,
(iv) efficient management,
(v) centralization of material and equipment purchases and that of the marketing/sales services.

46. It is also recommended that the Government acquire all the complementary equipment and machines which have been specified by the UNIDO expert for the projects of NIPA, the Ministry of Education and the Ministry of Information.

47. The Government printing branch in TAIZ should be supplied with modern automatic letterpress machines, mechanical composing machines and automatic binding machines.

48. It seems feasible to set up a special branch to deal with the printing of packaging and carton for cigarettes and food industries.

49. A rational and effective training programme should be implemented in order to provide qualified technicians and skilled workers to staff all the printing plants. This programme could be carried out by using the NIPA Printing press as the training centre.

50. The various Government printing projects need technical assistance services which would be requested from UNDP/UNIDO. This would help the projects in the erection of machinery, management and organization of printing works, starting/testing of new machinery, repair and maintenance of machinery, introducing up-to-date cost calculations/accountancy techniques in printing industry, quality control works, training of skills and technicians, etc.

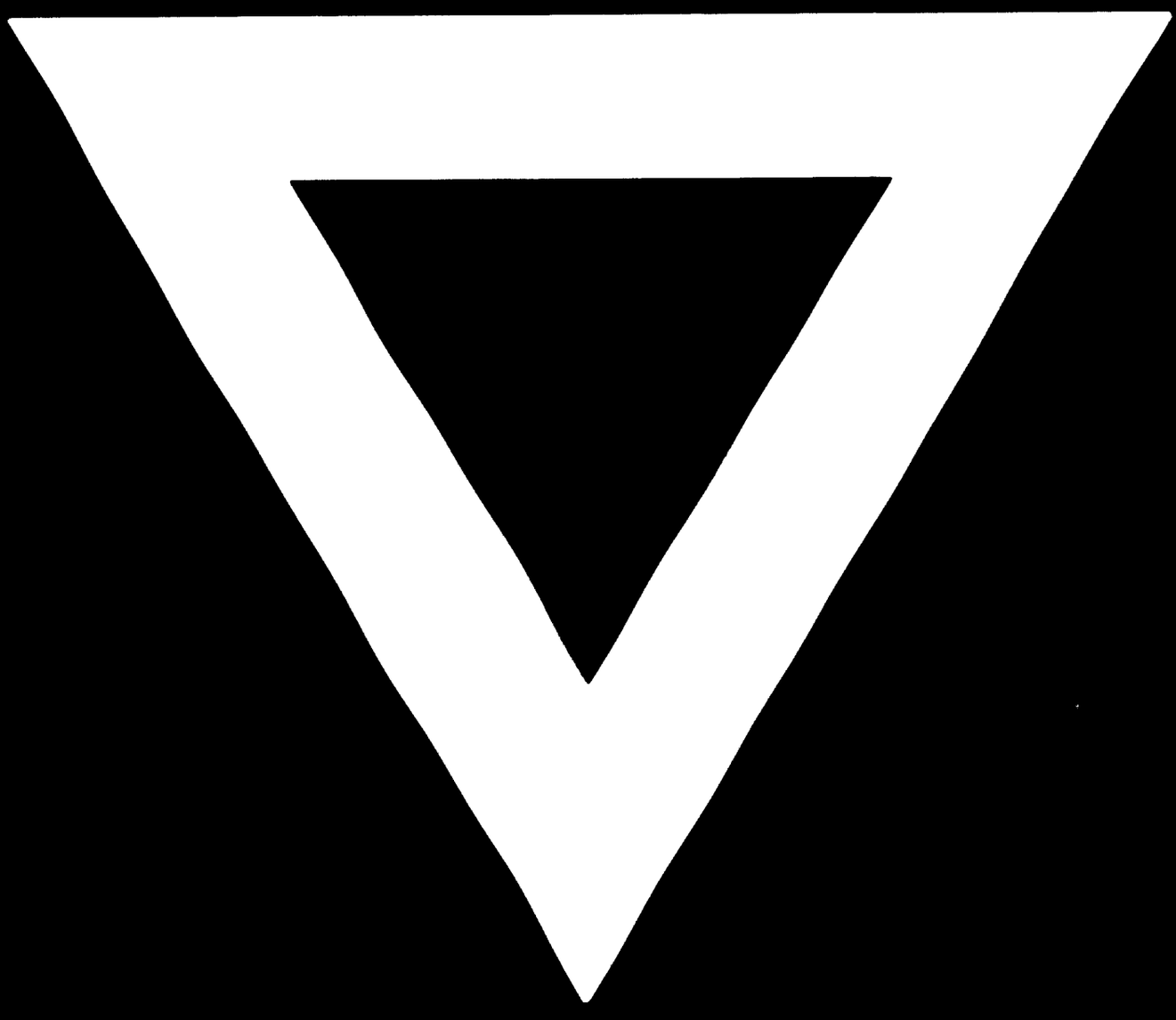
UNIDO recommends the following:

(i) One expert in Printing technology for 30 months;
(ii) One repair and maintenance specialist for 12 months;
(iii) One graphic designer for 6 months;
(iv) One expert in costs calculations/accountancy for 12 months;
(v) some 15 to 20 fellowships for training abroad in the various printing techniques, for a total of about 45 m/m;
(vi) a budget provision of about US$ 100,000 to US$ 150,000 for the supply of selected modern equipment and materials.

The above technical assistance could be financed by UNDP funds.

Furthermore, if the above proposal is accepted by the Government and UNDP, UNIDO shall call for the cooperation of certain industrialized countries for the provision of 3 to 5 associate experts in specific fields such as colour photowork, offset printing, mechanical composition, photocomposing and film setting, etc.

B-332



77.09.26