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ESTABLISHMENT OF A CLOTHING UNIT IN THE DEPARTMENT OF SUPPLIES TO ORGANIZE AND SUPPORT TECHNICALLY LOCAL MANUFACTURE OF SCHOOL AND OTHER UNIFORMS

US/BOT/90/151/11-04
(formerly US/BOT/87/097)

BOTSWANA

Technical report: Establishment of the textile testing laboratory*

Prepared for the Government of Botswana
by the United Nations Industrial Development Organization

Based on the work of Mortimer O'Shea, purchase and procurement expert

Backstopping officer: J.P. Moll,
Agro-based Industries Branch

* Mention of company names and commercial products does not imply the endorsement of the United Nations Industrial Development Organization (UNIDO). This document has not been edited.

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C O N T E N T S

SUBJECT	INDEX	PAGE
Objectives		1
Abstract		1
Major Recommendations		1
Textile Testing	1.00	2
Communication Problems	1.01	2
Flawed Training Examples	1.02	2
Reporting of Test Results	1.03	2
Tensile Test Instrument Problem	1.04	3
Some Additional Tests	1.05	3
Crocking Tests	1.06	3
Fabric Purchase & Procurement	2.00	3
Warehouse	3.00	3
Demonstration Rig	3.01	3
Storage of Piece Goods	3.02	4
Stock Control	3.03	4
Textile Piece Goods	3.03.1	4
Some Anomalies	3.03.2	4
Stock Records	3.03.3	4
Recommendation for Improvement	3.03.3.1	4
Stock Control Anomaly	3.03.3.2	5
Development of Stores Model	3.03.3.3	5
Location of Textiles Piece Goods Store	3.03.3.4	5
Proposed Study Tour	4.00	5
Information for Assistant Director	5.00	5

A N N E X E S

SUBJECT	ANNEX No.	PAGE
Reporting of Test Results	1	6
Fusing Shrinkage Test	2	7
Comparative Strength Test for Sewing Threads in Seam	3	8
Crocking Tests	4	9
Fabric Purchase & Procurement	5	10-12
Machine Specification & Suppliers Listing for Fabric Inspection & Measuring	6	13, 14
Fabric Inspection Faults Record Form	7	15
Recommendations for Improvements to Piece Goods Storage	8	16,17
Comprehensive Listing of Textile Piece Goods	9	18
Portable Stock Records	10	19,20
Information for Assistant Director-Uniform	11	21-24
Persons Met	12	25
Abbreviations	13	26
Exchange Rate		26

OBJECTIVES

The objectives of this third mission* (one man month) were:

- to establish how effectively the Textile Testing Laboratory had been functioning since its establishment during the P+PE's second mission*
- to upgrade test procedures
- to introduce additional test methods
- to establish a test reporting system
- to improve laboratory management in general in light of discovered shortcomings
- to establish warehouse controls
- to recommend warehouse improvements
- to instruct on fabric specification and purchasing procedures

ABSTRACT

The P+PE discovered a number of serious omissions and incorrect practices in the running of the lab. and in the reporting of tests and the passing on of vital information to other concerned parties. These matters were corrected. Some additional tests were introduced. Demonstration of cloth inspection and measuring was given to warehouse and lab. staffs. Fault recording and all necessary procedures were introduced. A fabric procurement system was established. A number of recommendations for the improvement of fabric storage were made

MAJOR RECOMMENDATIONS

A critical situation exists in the Purchase and Procurement function due to the frequent long-term absence of the appointed Head of Testing and Procurement. It is vital that a person of reliable attendance be recruited for this key position. The person nominated for a Fellowship in Warehouse Management should have completed the course and returned to work before the next mission by the P+PE. It would otherwise be futile to arrange a return mission as this area now needs most attention. Equally important is that an up to date fabric inspection machine will have been installed. The additional lab. equipment must be available so that staff can be trained in its correct use.

This strong recommendation is made bearing in mind the proposed termination date of early September 1991 for the current Project.

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* Two other missions were undertaken under former project no US/BOT/87/097.

1.00 Textile Testing

1.01 Communication Problems - Although a sound system for the testing of fabrics and recording of results was set up and the lab. staff at that time trained during the P+PE's second mission, only one of the staff of that time now remains actively engaged in lab. work. There are two new members of staff now working in this area, including the person nominated for the Warehouse Management Fellowship. These two persons had received totally inadequate and incorrect training from a former colleague. The P+PE discovered a great lack of realism and initiative in making the test results available where these were most needed. Although specifications for all fabrics were prepared during his second mission, there was a failure to communicate correct information to those who needed it. An example of this was the retention of all the old fabric swatch books in the lab. and the offices of key staff members. The information in these swatch books was largely incorrect and was leading to the issue of unreliable purchasing specifications. All such swatch books have now been corrected with proof of such correction by way of signature and date.

1.02 Flawed Training Examples -

1.02.1 A new member of staff had been carrying out Light Fastness tests without turning on the cooling water. She had not been informed of this requirement, nor of the existence of an instruction manual. She was also unaware of the existence of a Grey Scale. The Martindale Abrasion Tester had incorrectly tensioned abradant fabrics. The lab. was generally untidy despite the emphasis placed upon the need for the highest standards of tidiness and good storage of samples during the P+PE's previous mission. An instruction to disconnect the power supply to lab. equipment each evening had been disregarded. The term 'Master Sample' was no longer understood; more than one 'Master Sample' of apparent variance were found for the same fabric. In one instance, an extremely faulty fabric from a delivery which should have been rejected was filed as a 'Master Sample' even though a correct 'Master Sample' had been filed by the P+PE during the previous mission. A number of test procedures had been forgotten, e.g., those for Dry and Wet Crocking, the calculation of yarn counts and the determination of ends and picks per cm. in densely woven, milled and Terry fabrics. A special Cutting Table for the measurement and cutting of test samples was no longer available for this essential function. It was being used as a desk. There was a total lack of security and the lab. was unlocked even overnight.

1.03 Reporting of Test Results

A summary test report sheet was designed (see Annex 1) This is intended to make essential information on test results available in an easily-read and-understood form by the key staff members to whom it should be circulated. More detailed information can be pursued as required through the lab. test files.

1.04 Tensile Test Instrument Problem

This instrument had been giving incorrect readings on the computer for some time. The CTA approached the manufacturers concerning this following his last visit and a 'correction input' was given to the consultant Sewing Machine Mechanic who is currently on a mission for the Project. This programme was successful in correcting the problem. The P+PE predicts that the fault will recur as it is probable that it is caused by Voltage 'spikes'since the instrument has no protection against these. The Counterpart Staff have agreed to install a protective socket. Ideally a 'Power Supply' should be provided.

1.05 Some Additional Tests

It was considered desirable to introduce the following:-

- Fusing shrinkage test (see Annex 2)

- Comparative strength test for sewing threads in seams (see Annex 3)

Further tests can be added when the additional equipment has been installed (see Annex 10, page 18 of P+PE's second mission report)

1.06 Crocking Tests

A re-designed form to deal with Wet and Dry Crocking test results will give clear, easily interpreted data. (see Annex 4)

2.00 Fabric Purchase and Procurement

In the absence of the Head of Purchasing and Procurement during this mission, the P+PE gave detailed instructions to the three members of the lab. staff and prepared a comprehensive check list and procedural guidelines for this function (see Annex 5)

3.00 Warehouse

The P+PE had expected to be in a position to demonstrate the correct use of a new Fabric Inspection and Measuring Machine during this mission; however, the expected machine had not been acquired. The purchase of this machine was outside the scope of UNIDO's remit and was entirely the responsibility of the Department of Supplies. The P+PE has given a specification and selective listing of potential manufacturers to the Counterpart Staff. (see Annex 6)

3.01 Demonstration Rig

A simple mock-up using a table with inclined plane and a piece unrolling support was used for instruction on fault detection and identification. Instruction on fault logging was given for a representative selection of fabric types, some of the worst examples having been selected. (see Annex 7)

3.02 Storage of Piece Goods

As pointed out in Annex 9, page 17 of the P+PE's second mission report, the standard of storage of piece goods is extremely poor and has led to many faults and problems. A number of recommendations for improvement are given as Annex 8. The current situation could be greatly improved by merely lining the storage racking with a smooth material and perhaps introducing subdivisions. However, the ideal would be the introduction of two sided pallets following the rationalizing of racking spaces. The Counterpart Staff are agreeable to construct a trial unit of racking and to have a set of two-sided pallets fabricated locally in order to establish the suitability of the proposed improvements prior to the replacement of the existing storage area. A low mast height Fork Lift Truck was borrowed from another store in order to test its suitability for use in this context because this part of the stores has a mezzanine floor which will not allow the use of a standard mast height FLT.

3.03 Stock Control

A Government published 'Classified Vocabulary & Priced List of Supplies' and issued by the Director Of Supply, Gaborone, is the source book for all stock headings.

3.03.1 Textile Piece Goods

Textile piece goods appear on several pages of this vocabulary and in the interests of clarity, the P+PE extracted the comprehensive listing which is given as Annex 9.

3.03.2 Some Anomalies

Some anomalies were apparent in this listing, notably that cloth 8305-053 is described as 'Navy Serge for Nurses' Capes. However, this same number had already been allotted to 'Traffic Flags, Red, for Roads and Railways' and more recently than the former designation. A memorandum concerning this error was given to the lab. staff and the need for clarity of records stressed.

3.03.3 Stock records

An overall system exists to cover all stocked items in all stores. This is a non portable central system in which textile piece goods records are mixed with various other stock records. It is, therefore, difficult and time-consuming for a person from the Clothing Unit to obtain the frequently and urgently needed stock situation up-dating information.

3.03.3.1 Recommendation for Improvement

The P+PE is recommending - for the textile fabrics sector only - the introduction of the simplest KALAMAZOO system as an adjunct to the existing records. This is a portable system (see Annex 10)

The smallest portable folder of this system would have sufficient capacity for all textile piece goods.

3.03.3.2 Stock Control Anomaly

It should be noted that a peculiar anomaly exists concerning goods procurement, inventory and stock control, whereby the responsibilities are divided between the old Central Stores Depot and the new Gaborone West depot. Because these two divisions are in separate locations approximately 3km apart, a great deal of time is wasted by personnel - including textile lab. staff - in having to commute frequently between the two centres. A number of related delays and inefficiencies and general dissipation of resources inevitably occur.

3.03.3.3 Development of Textile Piece Goods Stores as a Model.

The P+PE recommends the development of the fabrics warehouse as a model or 'setter of standards'. This development should incorporate the rationalization of storage racking to take four two-sided in-store pallets per sector and with the heights of each storage level equalized. (Currently three different heights exist) Please consult Annex 8 for details.
Security would also be an essential element of such a development. This aspect is dealt with in the P+PE's first mission report, dated 2 August, 1989, par. 2.2.1, page 5.

3.03.3.4 Location of Textile Piece Goods Storage Area

It is not essential that this storage area should be located in the existing area nor even in the same building; indeed, due to the headroom limitation, it might be advisable to re-locate this storage designation.

4.00 Proposed Study Tour

The P+PE is surprised to learn that a Study Tour for Counterpart Staff members has been arranged without his involvement or specific advice. He feels that this tour cannot produce the best results without the participation of an expert.

5.00 Information for Assistant Director-Uniform

It was unfortunate that the most senior Counterpart Staff member at the Gaborone West Depot - Ms C.Mwasi - was absent due to illness during the last week of the P+PE's mission. In order to inform her about the salient features of this report, a special summary and relevant memoranda are given as Annex 11

ANNEX 1 Reporting of Test Results (summary report)

Prepared by.....Copies to: Assistant Director-Uniform Purchase & Procurement

Date.....Supplier.....To match Folio No.....

Colour.....End-use.....Date received in lab.....

Note: Only appropriate tests to be applied

Parameter	Required Spec.	Supplier's Spec.	Tested Version	Pass	Fail
Fabric weight in grams/M^2					
Ends per cm.					
Picks per cm.					
Abrasion test					
Pilling test					
Strength/elongation test					
Light fastness					
Dry rubbing (crocking)					
Wet rubbing "					
Wash fastness (colour)					
Wash fastness (shrinkage)					
Warp yarn counts (Tex)					
Weft " " "					
Fusing press shrinkage (%) Warpwise					
Weftwise					

ANNEX 2 Fusing Shrinkage Test

1. Switch on Fusing Press and heat to recommended fusing temperature, for example, 150°C for most interlinings, but please check with the interlining supplier.

2. Clearly mark, using an accurate template, a 25X25 cm square on the fabric face . The test specimen should be approximately 30 cm square. The marked square must align accurately with warp and weft directions.

3. Bring together back of fabric and adhesive side of the interlining.

4. Place carefully in Press, making sure there are no creases.

5. Close Press under high pressure.

6. Set timer for recommended cycle, for example, 60 seconds but again please establish this with the interlining supplier and note for future reference.

7. If no further tests required, switch off the Press.

NOTE: It will be good practice to test as many specimens as possible in one cycle, providing the fusing temperature is the same for all samples.

8. Record results by measuring marked dimensions and expressing these as percentage shrinkage:

   i) warpwise
   ii) weftwise

9. File results in cabinet together with other test results.

10. Record results together with other test results on the Laboratory Test Results Summary form.

ANNEX 3 Comparative Strength Test for Sewing Threads in Seam

(This is a special adaptation of the Tensile Tester)

Preparation of specimens and procedure.

1. For this test use cloth 8305-016
2. Cut five strips 50mm wide from <u>weft</u> direction only.
3. Use same template as for tensile tests but allow 2cm extra in length.
4. Test length (between clamps) to remain at 200mm.
5. Cut specimen at approximately mid point with accurate right angle to the long axis.
6. Use Lockstitch machine correctly set at five stitches /cm.
7. Leave sewing thread 'tails' 2cm long at beginning and end of seam.
8. Seam <u>must</u> be accurately at right angle to specimen long axis.
9. Place specimen squarely clamped in tensile tester.
10. In this test, seam will always rupture (not the fabric)
11. Prepare summary report and copy to the Quality Controller.

Thread Specification	Supplier	Mean Breaking Load (Kgf)

Tested by.....Date.....Date received.....

ANNEX 4. Crocking Tests (Dry and Wet Rub tests)

NOTE: The main application for this test is on the colour separations of printed textiles, e.g., Camouflage.

dry ☐

wet ☐

L=light
D=dark

Specimen	Rating (5=best)					Colour (tick appropriate box)												
	1	2	3	4	5	red		blue		green		yellow		brown		grey		black
						L	D	L	D	L	D	L	D	L	D	L	D	
A																		
B																		
C																		
D																		
E																		
F																		
G																		
H																		
I																		
J																		
K																		

ANNEX 5 Fabric Purchase & Procurement

Procedure to be adopted when seeking a quotation for fabrics (Guidelines for fabric specification and purchase)

1. For a repeat order

1.1. From same supplier as previously

1.1.1. If available, send a correct sample - i.e., an exact match for the Master Sample, and approximately 20X20 cm. Do not quote the supplier's own details or use any unverified details.

1.1.2. Quote verified specification for:

- ends and picks per cm.
- grams per square Metre
- request *appropriate colour fastness to:
  - sunlight
  - washing
  - dry cleaning
  - dry and wet crocking
- request *appropriate resistance to shrinkage in:
  - laundering
  - dry cleaning
  - steam pressing
  - interlining fusing
- request *appropriate resistance to:
  - pilling
  - abrasion
- request any other *appropriate parameters

*Use commonsense and do not ask for totally unnecessary and inappropriate requirements such as good light fastness for a duster cloth, high light fastness for a lining material or inordinately high abrasion resistance for a curtain material. If ordering a white material, colour fastness is not specified. Do not ask for a colour swatch for materials such as Angola Shirting nor for lab. dyed samples for a blended fibre-dyed (mixture) fabric such as Angola Shirting.

1.1.3. Give the proposed end-use of the material and if - for example this is intended primarily for outdoor use and therefore exposed to strong sunlight, remind the supplier - particularly if in the UK or any other country of comparable latitude, that Botswana has a very hot and sunny climate.

1.1.4. Check the history of supplies from this source and if any problems arose these should be pointed out.

ANNEX 5 (continued)

1.1.5. Request - if same shade as previously ordered - a half metre full width strip sample.

1.1.5.1 If a new shade, request a lab.-scale sample initially.

1.1.5.2 If shade passed, request a half metre full width sample. This to be used for testing all appropriate parameters before a commitment to ordering is made.

1.1.5.3. Provide the supplier with information on the approximate quantity required and inform whether delivery required in one phase or more.

1.2. For a repeat purchase of a standard material but from a proposed new supplier.

1.2.1. Provide a brief information paragraph about the Department of Supplies warehousing complex. Suggested 'copy' is given as paragraph 2.00 of this Annex.

1.2.2. Repeat other details as at 1.1.1,1.1.2,1.1.3,1.1.5.2, 1.1.5.3.

1.2.3. Request a lab.-dyed counter sample.

1.3. For a new material

1.3.1. Give a full specification stating the proposed end-use and the approximate ordering quantities as well as the delivery timing. Provide a sample if available.

1.3.2. Request a sample swatch of any material that may already be available from the potential supplier that may happen to be a close match for the required material.

1.3.3. If the specification must be exact, insist upon this as a supplier will normally endeavour to sell a standard line.

1.3.3.1. If a new specification is being established and a particular supplier offers a standard line at the right price that approaches closely the sought specification, it may be advisable to adopt an established and proven line rather than pursue the difficult and time-consuming task of having a new line established. This assumes that a good **representative selection of potential suppliers has been approached.

**A listing should be established by visiting leading textile apparel fabrics trade fairs such as the Frankfurt/Main (Germany) 'Interstoff'. Such fair

ANNEX 5 (continued)

fair/

catalogues can be consulted and used as directories but this information should be augmented by acquiring for the library a good international selection of textile fabrics directories.

1.3.4. Always request from any new potential supplier an information brochure or leaflet to help determine ``bility; for example, have they experience in export trading, do they use the services of a reputable testing laboratory, are they manufacturers or merchants, have they an agent in Botswana or in a neighbouring country? Establish their allowance per 'string' (marked piece fault)

1.4. Establish a set of files - one for each supplier or potential supplier.

1.4.1. In addition to correspondence, hold a set of samples as provided but, where necessary, reduce their size to a manageable norm so that they fit neatly in the file. This will be the material left over after lab. testing and must not be confused with that held in the already-established filing system in the lab. The proposed set of files are intended for use by the Purchase and Procurement Officer. The lab. Summary Report (Annex 1) should be filed with these samples.

2.00 The Department of Supplies at Gaborone West is the new storage complex for the Department of Supplies in Botswana. Textile piece goods are an important category among the many items stored here in ideal, modern conditions. In association with the Stores, expert personnel are engaged in all aspects of textile testing and Quality Control using the most up to date equipment. The textiles are dedicated to the production of uniforms for all Government services including the Defence Forces, Police, Wardens, etc. The Purchase and Procurement section deals with fabric specifications and actively pursues the establishment of thoroughly reliable resources by whom the objectives of keen pricing, quality assurance and reliability of delivery are vigilantly pursued.

ANNEX 6. Specification for Fabric Inspection & Measuring Machine

- take pieces to a maximum width of 200 cm
- unroll from pieces with various bore size cores of paper or plastics.
- roll onto a standard plastics core
- provision for batching up to 50 cm
- easy removal of finished cloth rolls
- adjustable angle viewing plane
- illuminated visual inspection field
- accurate cloth meter, calibrated in metres+decimals
- length ticket printer/dispenser
- variable cloth speed control with reverse button
- easily accessible controls
- weight registration via load cell (desirable but not essential)
- plaiter not necessary.

ANNEX 6 (continued)

Fax No. 372557 (Botswana)

FAO: Mr.Colin Whitehouse, UNIDO Consultant, Department of Supply, Gaborone West Supply Depot.

Dear Colin,

Following is a selective listing of manufacturers of Fabric Inspection and Measuring machines who should now be sent the specification which I prepared:

1. Alfamatex,S.A., Calle Disputación 242, Barcelona, Spain.

2. Bates Textile Machinery Co, Ltd., Harding Street, Leicester LE1 4DH, UK.

3. Calator/IRO, Box 137, 50103, Boras, Sweden.

4. Gessner Company, 41, Fremont Street, P.O. Box 802, Worcester, MA 01613, USA.

5. Grob+Company AG, Stockerstrasse 27, Postfach 8810, Horgen, Switzerland.

6. Heinz Hergerth Textilmaschinen GmbH, Halterner Str. 70, 4408, Dülmen, Germany.

7. H.Krantz GmbH & Co., Maschinenbau, Postfach 830, 5100, Aachen Germany.

8. Polytex AG, Flughofstrasse 57, 8152, Glattbrug-Zürich, Switzerland.

9. Smith Whitworth PLC, Mellor Street, Rochdale, Lancs. OL12 6AB, UK.

Best regards to all,

Mortimer O'Shea

ANNEX 7. Fabric Inspection Faults Record Form

Serial No.....

Copies to: 1. Stores File 2. Assistant Director-Uniform
3. Textile Laboratory

Checked by.....Date.....Stock check ☐ Delivery check ☐
Delivery date.....Stores bin No.....Folio No.....Order No.....
Supplier.....Piece No.....Shade.....
Checked piece net weight.....Kg Supplier's given weight.....Kg.
Checked weight in Grams/sq.Metre.....Master sample weight.....gm/M^2
Piece width.....cm. Piece length as measured.....Metres
Piece length as given by supplier.....Metres Faults allowance.....
Ends per cm (nominal).....Ends per cm (actual).....1....2....3....4
Picks per cm " .....Picks " " " .....1....2....3....4...

Fault description (tick for each occurence in second column)	Number of occurences (use red tick for a supplier's string)	Severity S	M	L
shade variation				
cockling				
handling/storage damage				
set crease				
tight yarn-warp				
" " weft				
rig mark				
weavimg start-up mark				
other tension fault				
weaving damage				
eneven selvedge				
slack selvedge				
pressure mark				
hole				
slub				
double pick				
stitch(float) - warp				
" " weft				
weft bar				
mixed yarn				
uneven yarn counts				
oil stain				
other stain				
*missing yarn - warp				
* " " weft				
knot				
bowed weft				
skewed weft				
other (specify)				

NOTE: If a fault should run for several metres or for the piece length, state this instead of using a tick
* Instead of a tick in second column, give approximate length in cm.
SEVERITY: S=slight, M=moderate, L=large
ENDS + PICKS/cm should be checked at four intervals from beginning to end of piece

ANNEX 8 Reccommendations for Improvements to Piece Goods Storage

NOTE: See Annex 9, Page 17 of report dated 4.4.90 - P+PE's second mission - 'current status of warehouse and recommendations'

The P+PE now recommends the use of in-store two-sided pallets similar to those manufactured by Aluminium-Hütte.
Currently, the box section steel racking in the fabric storage area is badly utilized. Although fundamentally, the structure is of a high standard, its utilization for the storage of textile piece goods is very poor. Rolls of fabric are supported on the racking by means of crude wooden pallets, many of which are splintered, thus causing damage to stored goods and leading to tearing of the polythene piece wrappings. Pallets do not fully floor the available spaces, thus allowing a piece to drop between two adjacent pallets.
Standard dimensions of storage bay subdivisions (segments) are:

width 2740mm
depth 1800mm

Height, however, varies for each of the three levels as follows:

from floor to under second level:	1300mm
second level to under third level:	740mm
third (top) level:	810mm

Currently, four wooden pallets form the floor on each level. This is their sole function as fork-lifting is not carried out in this part of the stores.

As mentioned in paragraph 3.02, page 4 in the body of this report, a set of four two-sided fabricated metal pallets with smooth interiors should be introduced initially on a trial basis by using locally-made prototypes. It is to be understood that these special pallets are for use exclusively within the textile piece goods store. Incoming pieces, having passed inspection and measuring, should be loaded neatly whilst on the warehouse floor onto the two-sided pallets with the piece width parallel to the pallet sides and fork-lifted onto the appropriate storage space.

The storage racking as currently employed will not suit this system for two main reasons:

1. Height variations
2. The width of a segment - 2740mm is 360mm too narrow to allow for the storage of two of the proposed new pallets in juxtaposition, i.e., with piece widths parallel to the storage alleyway.

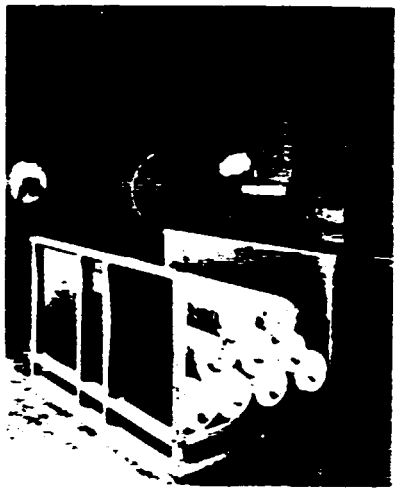
The rationalization of storage spacing in the piece goods store to suit the proposed new system would give a number of obvious advantages and notable among these is that the overall storage capacity would be substantially increased.

ANNEX 8 (continued)

Aluminium pallets for fabric transport and storage

Aluminium-Hütte Rheinfelden GmbH, D-7888 Rheinfelden, FR of Germany 9-124

The aluminium pallet **(fig.)** is an aluminium-wood sandwich construction on the modular system with two sides. It is therefore variable in its dimensions and can be used as an in-plant pallet for storing and transporting non-stackable unstable and easily damaged goods, such as rolls of fabric, paper and plastic foil.



The aluminium-wood sandwich construction has the following advantages:

- low weight with high useful load
- solid and stable
- no maintenance, no painting
- easily cleaned
- smooth surfaces
- max. utilisation of storage space
- suitable for mechanised transport.

Recommended racking and pallet dimensions

1. Equalize heights of racking to: 950mm
2. Standardise two sided pallet dimensions to:

width:	1600mm
depth:	900mm
height:	940mm

The above dimensions provide tolerances for width and height within each storage segment as well as for piece width variation. But it is assumed that the maximum fabric width will be a nominal 150cm

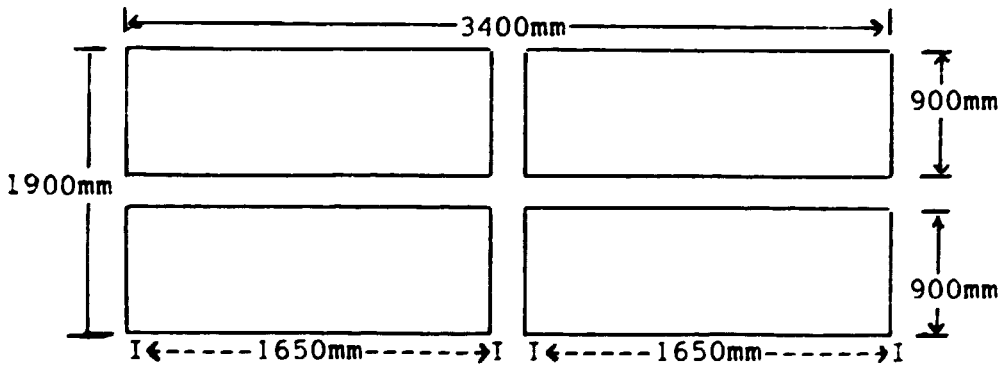


Fig. Plan view of four pallets in a storage segment.

ANNEX 9 Comprehensive Listing of Textile Piece Goods

Description	Folio No.	Composition	Width cm	Directory Page
Cloth Sheeting khaki	7210-018	100% Cotton	150	24
" " white	-020	" "	56	24
" Towelling,Terry white	-022	" "	56	"
" Twill, Turkey Red	-023	" "	56	"
Material, olive green	-025	Poly/cotton	-	"
Towelling,Huckaback	-047		45	"
Baize, green	8305-001		90	42
Interfacing	-002		90	"
Printed, for dish towels	-003			"
Brown Denim	-004		150	"
National Flags, sky/blk/wh	-005			"
Melton, black	-006			"
Flannelette,4X2 pull through	-007	100% Cotton		"
Canvas, green (proofed)	-010		90	"
Royal blue, ladies overalls	-012	50/50 pl/cot	150	"
Lavender-hospital orderlies	-013			"
Flannelette,striped	-014	100% Cotton	150	"
Khaki drill-wildlife shirt	-015		150	"
Beige-nurses uniforms	-016		150	"
Grey-female messengers	-018			43
Flannel for dusters	-019	100% Cotton	65-71	"
White-nurses uniforms	-021			"
Lace material, white	-023	" "	150	"
" " "	-023A	" "		"
Hessian	-035		182	"
Sheeting, white/blue BGP	-049		160	"
Bleached for draw sheets	-051		140	"
Blue/white check	-052	100% Cotton		"
Navy serge-nurses capes	-053	100% wool wor.	150	"
Lining,cherry red-nurses cape	-054	" " "	150	"
Shirting, cream (wildlife)	-055	50/50%pol/cot	150	"
Shirting Angola-BDF	-056	65/25/10%W/N/C	150	"
Camouflage for BDF	-057	100% Cotton		44
Olive-BDF slacks and shirts	-058		150	"
Lt. Green shirting-BDF	-059	65pol/35%cot	150	"
Lt.grey shirting-security guards/immigration	-060		190	"
Optic white shirting customs	-061	65/35%pl/cot	150	"
Khaki drill-dust coats, aprons	-062		150	"
White drill- " " "	-063		150	"
Sky bl. shirting-civ. aviation	-066		150	"
Khaki shirting-prison gatekprs.	-068		150	"
Lt green trousers-wildlife	-070		150	"
White drill-male cooks jackets	-072	50/50%pol/cot	150	"
Khaki drill-wildlife uniform	-074		150	"
Orange-civ.aviat.overalls	-075		150	"
Olive-BDF slacks	-076	100% cotton	150	"
White interlining grade 6001	-100		150	"
" " " 435	-101		110	"
ditto in 10, 48 and 100M rolls	-102		006	"
ditto, grade 2270 " "	-103		150	"
ditto " " " "	-104		003	"
Dk. grey suiting,240gm/sq.M.	-110	45/55%wl/pol.	150	"

Stock control: visible records

Stock control is all about making your capital, and your valuable storage space, work for you in the most effective way possible. So the last thing you want to do is tie up your money by overstocking. But understocking is just as dangerous. If you haven't got everything on hand just when it's needed, you're facing production delays, lost machine time, broken delivery dates – even lost orders.

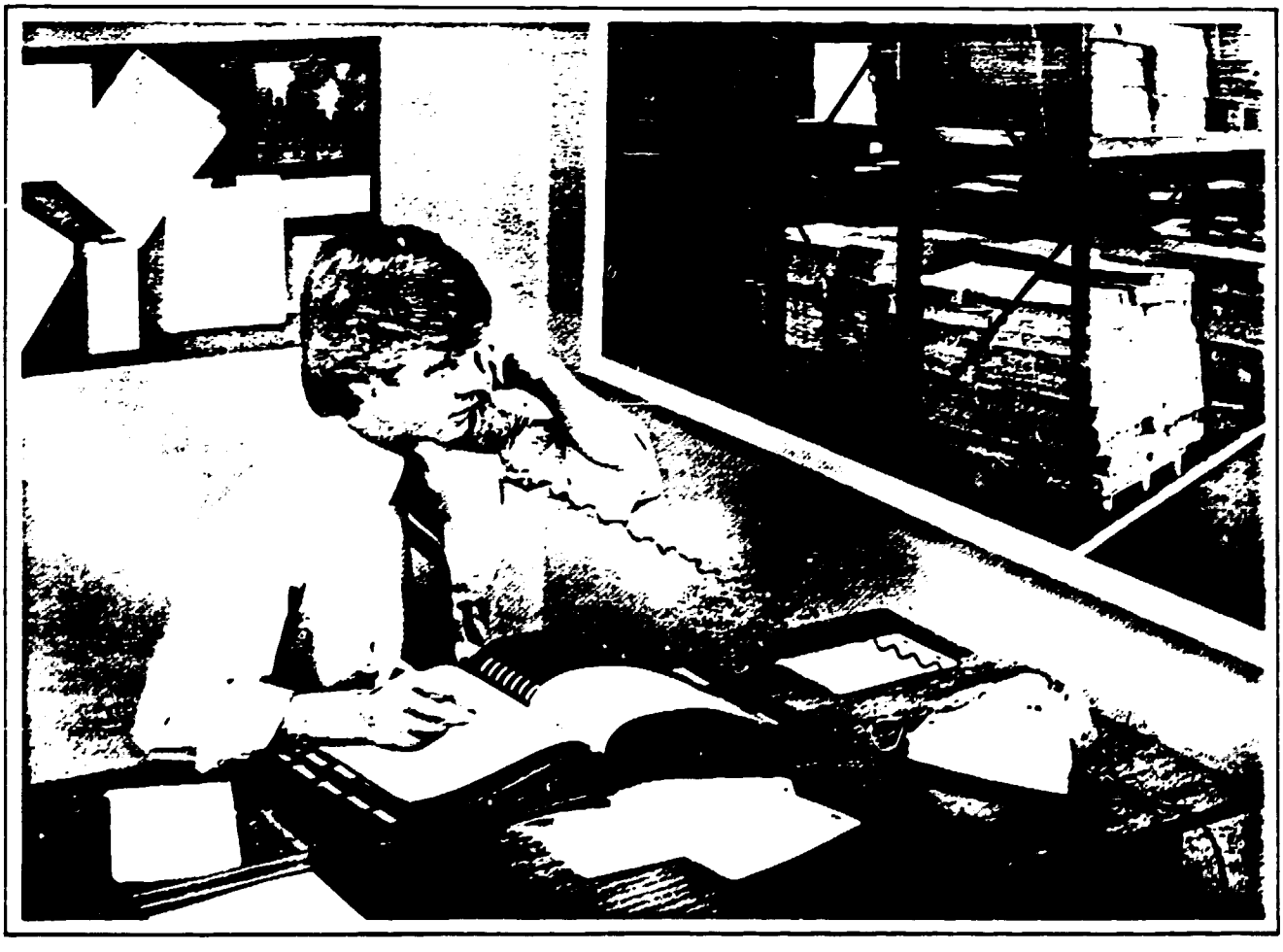
It's a delicate balance. And it takes a fine degree of control to ensure that you're buying economically, with all your stocked items always maintained at optimum level.

Kalamazoo visible records for stock control can help you get the balance just right, with all the information you need for really effective control.

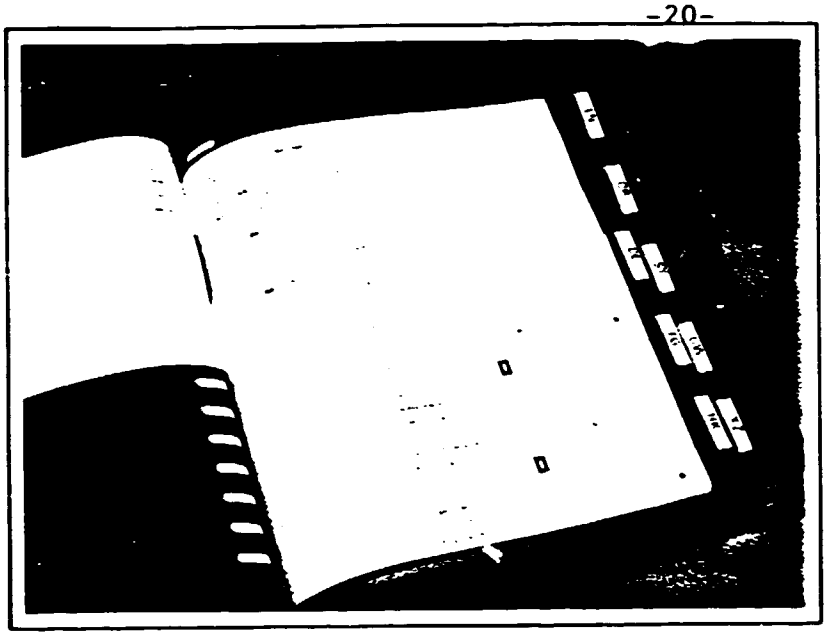
For every stock item, a visible record shows stock on hand, maximum and minimum quantities to hold, when and how many to re-order, location, price, consumption, delivery, specification, and buying history – everything you need to know.

Three different sizes of visible binder are available, and a very wide range of record designs – together with a series of source documents such as requisitions, returns notes, goods received registers, and so on.

The system is secure, portable, compact, and suitable either for the stores or the office. And only the minimum of paperwork is involved – the stock records can be updated quickly and easily.



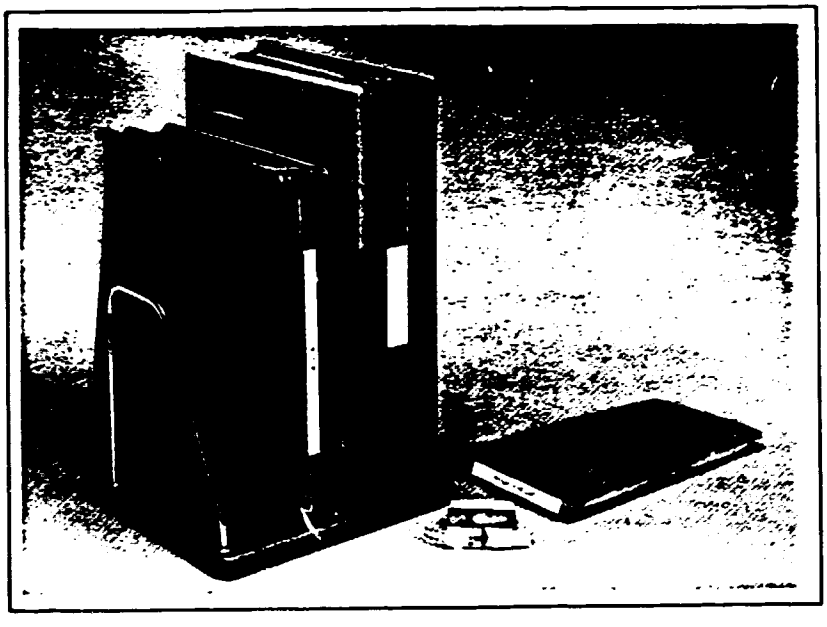
A fast, accurate, efficient routine



Every time you open a Kalamazoo visible binder, you see a series of index tabs giving you the broad location of the record you're looking for. When you select the appropriate tab, you can see at a glance all the individual titles on a complete run of stock records, plus the most important facts about each one. And because of the unique way the "visible" edges overlap, you can go straight to the details you want, without having to search through books, blind cards, or ordinary loose-leaf records.

The design's very flexible. Whenever a sheet is full, just take it out, and add a new one anywhere in the unit.

The binder mechanism which holds the sheets in place keeps them completely secure. And when it's open, the binder gives you a natural writing surface to work on.

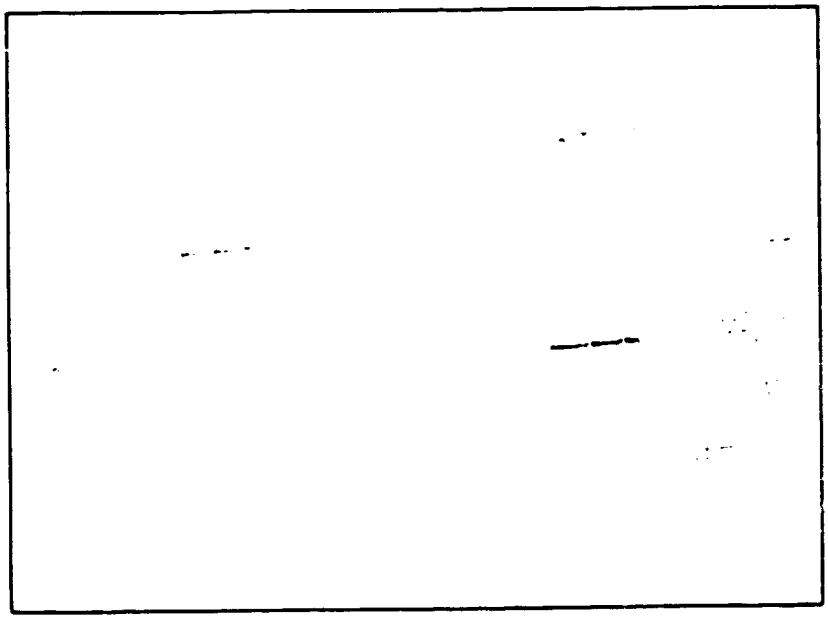


Kalamazoo visible record binders come in three sizes. Visible 30 holds a maximum of 840 records. Visible 10 has a loaded capacity of 210 records. The smallest version, Visible 3, holds 60 records. So whether you need to record a very large amount of information about your stock, or just keep a small number of records together, there's a visible binder to fit the bill.

A wide range of standard record designs is available. The most popular include:

STORES RECORDS
ANALYSED STORES RECORDS
STORES LEDGERS
ALLOCATION RECORDS
BUYING RECORDS, and
COMBINED BUYING AND STORES RECORDS.

If your needs go beyond our standard series, we can always design and print specially to order.



Source documents

You can enhance the smooth operation of the system even further with a complete range of SOURCE DOCUMENTS. These cover

REQUISITIONS
RETURNS NOTES
MATERIAL TRANSFER NOTES
MATERIAL ALLOCATION NOTES
SCRAP PERMITS, and
GOODS RECEIVED REGISTERS

ANNEX 11 Information for Assistant Director-Uniform

8.2.91

Memo to: Ms C.Mwasi,
Assistant Director-Uniform,
Department of Supply,
Gaborone West

Subject: Recommendation for improved running of the Textile Testing Laboratory

During this visit I have become aware of a number of totally incorrect testing procedures that have gradually been introduced to this lab. whereby some quite unreliable test findings were very likely.

Even the keeping of filed records had in many instances been inconsistent.

These instances of unscientific procedures have been pointed out to the staff and in my opinion, much of the cause derives from the low frequency of tests.

I am suggesting that from now on, each member of the lab. staff should perform a complete rota of tests on fabrics chosen at random in order to acquire ongoing experience and proficiency.

It should be clearly understood that whenever a required set of tests are called for, the practice testing should be interrupted and resumed after the essential tests will have been carried out.

Mortimer O'Shea

ANNEX 11 (Continued)

SUMMARY REPORT - Fabric Purchase & Procurement Consultant

WAREHOUSE - Several pieces, dyin a representative selection of fabric types were examined and measured. Inspection reports were filled in by all interested staff. The procedures are now well understood but there is no substitute for constant practice and sustained training within a mill or warehouse.

EXAMINING MACHINE - The problem was discussed with Mr. Bakwena and Mr. Mahendron. It appears likely that funding will be provided for the purchase of a new machine. Although we have a quotation from Textile Aids of S.A., it is felt that a number of alternative quotations should be sought internationally. Because there are no suitable trade directories available to me here, I shall send a listing to Mr. Whitehouse early next week. He already has my specification. It is felt that it may be possible to use the Trumeter which came with the old machine as it is registering length accurately although it has'nt got a length ticket printer. Perhaps it can be used for (say) a year and then a new meter could be purchased.

MR. MUZILA - I have explained to him my proposal for an improved fabric storage system whereby four metal pallets, each with two sides and lined with a smooth material such as fibreboard, hardboard or plywood would be used for the storage of piece goods. The existing storage racking segments are a little too narrow to accept two pallets side by side in the fabric roll width direction. Mr. Muzila would give his full support to an experimental phase, whereby a small section of racking would be erected having longer horizontal supports than those currently constructed in the stores. Storage height would be equalized at each of the three levels and, initially, just one set of four pallets would be fabricated locally from 2cm square metal and lined inside.
Mr. Muzila was most cooperative and arranged for a low mast height Fork Lift Truck to be brought to the store for demonstration purposes.

MR MOLOTOLI - was most helpful in making the demonstration rig for fabric inspection.

LABORATORY STAFF - were instructed on a wide range of activities including the following:

1. the rectification of some incorrect procedures in the carrying out of some tests
2. a number of new tests
3. revision of procedures
4. the use of newly designed forms
5. better attention to detail
6. better attention to tidiness and method
7. correct procedures for fabric procurement and purchase on international markets

Among the new forms is one that summarises all test results in report form to be passed to those who should have such information.

A useful calculation to find the length of a roll of fabric by weighing it and using the tested weight per square metre was demonstrated physically in the warehouse.

copies to:

Ms O. Mwasi
Mr. O. Whitehouse
Project File

MORTIMER O'SHEA

ANNEX 11 (Continued)

8.2.91

Memo to Ms C.Mwasi
Subject: Durafoam and recent delivery of green Polyester/Cotton shirting for EDF officers

I telephoned Mr.Solly Ballin this morning to inform him that a sample taken from last Monday's delivery changed colour very significantly on washing.

I have asked the lab. to test several more pieces from this delivery to establish if the problem is widespread.

Mr. Ballim will call here on Monday next to see the problem.
I suggested that he should recall the entire delivery as the use of such faulty material would lead to enormous problems for all concerned.

I notice a rather bad 'history' of supplies from this firm in this particular fabric. One sample from a previous delivery I would have regarded as being totally unacceptable even from a visual inspection. It was extremely streaky and slubby in the warp direction. I fail to understand how the lab. staff could have regarded such an inferior product as acceptable.

There are many suppliers worldwide who pay great attention to Quality Control and if Durafoam cannot give you a guarantee that Quality Assurance will be consistently provided, they should no longer remain on your list of suppliers.

Mortimer O'Shea

ANNEX 12 List of persons met

Organization	Title
UNDP	
Ms Sissel Bjerk Steen	Programme Officer
Mr. Arthur Notermans	Programme Officer (UNCDF)
UNIDO	
Mr. Colin Whitehouse	Clothing Consultant
Mr. S. Hollingworth	Mechanic
COUNTERPART STAFF	
Mr. M.G. Bakwena	Deputy Director, Ministry of Finance and Development Planning
Mr. Mahendron	Accountant
Ms C. Mwasi	Assistant Director - Uniform, Department of Supply

ANNEX 13

Abbreviations

Lab.	Laboratory
P & PE	Purchase and Procurement Expert
CTA	Chief Technical Advisor
FLT	Fork Lift Truck
UK	United Kingdom
blk	black
wh	white
BGP	Botswana Government Property
bl	blue
civ.	civil
pl, pol	Polyester
cot, c	cotton
wor	worsted
N	nylon
wl	wool
S.A.	South Africa

EXCHANGE RATE

During the period of this mission, 14 January to 10 February 1991, the following exchange rate prevailed:

US$ 1 = Pula 1.83