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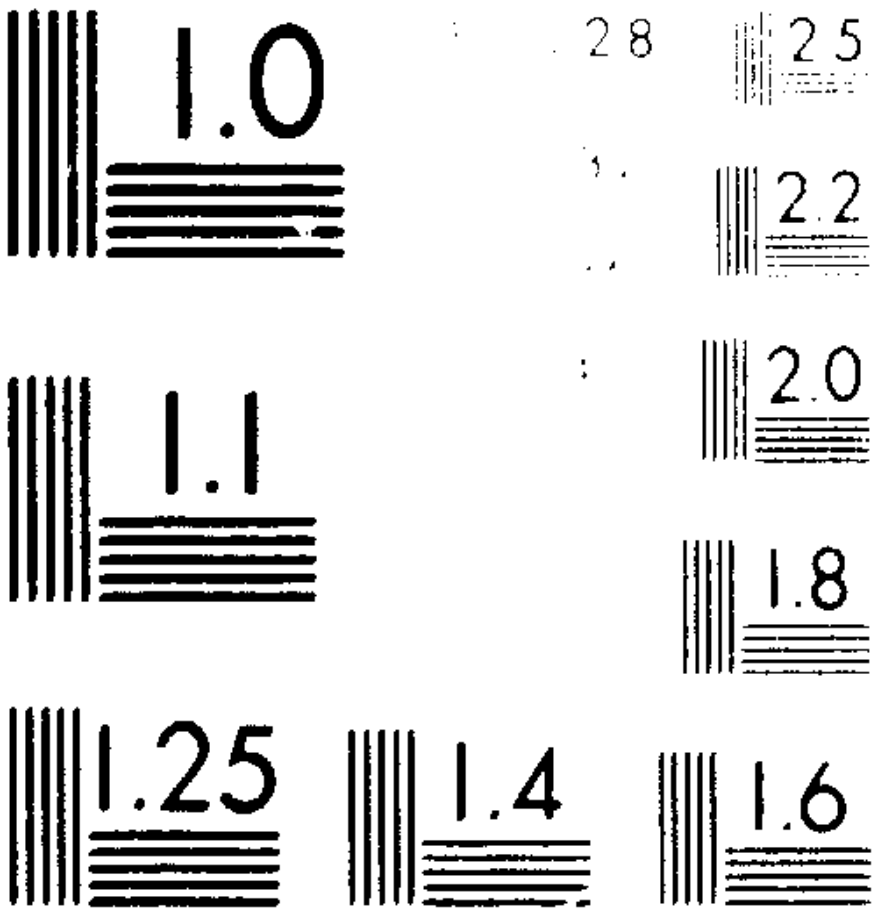
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Nigeria.

TEXTILE TESTING AND QUALITY CONTROL (Phase II)

(NIR/78/001/C/01/37)

Project findings and recommendations

Terminal report prepared for
the Government of Nigeria

by

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The United Nations Development Programme

This Report has not been cleared with the United Nations Industrial Development Organization which does not therefore necessarily share the views presented (1)

(1) To be omitted after clearance by UNIDO

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SUMMARY

The purpose of the project is to render technical assistance to the Nigerian Government in textile testing and quality control. This includes the equipping of the Federal Institute of Industrial Research, Oshodi with different textile testing apparatuses and the training of the staff, referring to the utilisation of these units, as well as maintenance, respectively.

At the present stage of the project, during the one month assignment of the international expert the following activities were carried out:

1. Advice and assistance were rendered referring to the modification of the laboratory building, which will house the textile laboratory.
2. Testing equipment and apparatuses were selected with special care on the
   - versatile utilisation
   - need of the local industry, as well as that of the Institute
   - serviceability
   - optimal quality and price
3. Books and publications were chosen for acquisition.
4. The participants of the fellowship training were selected, as well as the place, venue and duration of the training, respectively.
5. A working plan has been elaborated referring to the five months assignment of the international expert.
6. Suggestion was made on the recruitment of more staff to the textile laboratory.
7. Revision of the project was suggested giving the background justification.
8. Recommendation was made referring to the expansion of the present project in the next phase. The targets are
   - to equip the FIIR with all the necessary apparatuses for testing and quality control in the textile and clothing industries
   - to establish a pilot plant for textiles and to furnish it with the necessary machinery

1. EXPLANATORY NOTES

Definitions

In the Report the following abbrevations can be found:

Federal Institute of Industrial Research, Oshodi - FIIR

or Institute

Naira - N

The rest of the abbreviations are in correlation with those used by the United Nations Industrial Development Organization.

The exchange rate of the N

1 $ = 0,569 N

2. INTRODUCTION

Project Background and Supporting Information

2.1 Justification for the Project

In 1971 the Government of Nigeria expressed its desire for UNIDO assistance to provide the Federal Institute of Industrial Research, Oshodi (FIIR) with the necessary equipment for textile testing and quality control.
A project was developed to provide the Institute with the equipment up to the value of $53,700.

The project became operational in 1976, when the international expert arrived in Nigeria and two staff members of FIIR started for the fellowship training in Hungary.

The executing agency was the UNIDO.

The contribution of the UNDP in addition to the value of the equipment was $28,350 and that of the Government was N8,940.

The objectives of the project were as follows:

(i) establishing an adequate laboratory for testing and quality control of textile materials, products and

related materials by expanding the present FIIR laboratory facilities;

(ii) strengthening and developing the capabilities of FIIR's staff to provide the necessary services to Government and private sectors;

(iii) to be able to render a greater assistance in the preparation of national standards and to render assistance in the certification process.

These objectives could not be attained by the project because the variety and the quantity of equipment was not sufficient to carry out all the necessary tests and to initiate a proper quality control. It was recommended therefore to expand the project and to involve more equipment, and to provide a further training to the staff. This recommendation was accepted by both the UNIDO and the Government.

2.2 Official Arrangements

The second phase of the project became operational on the 23rd of April, 1981 when the international expert returned to Nigeria.

2.3 Contribution

The contribution to be covered by the UNDP has come up to $218.150 while that covered by the Government is N53,500.

3. ACTIVITIES

3.1 Laboratory Building

According to the original plan the equipment involved in the present project were due to be placed in the new laboratory building. This plan has, however, been changed. FIIR has decided that the old laboratory building is to house all the equipment of the Textile Laboratory. The area of the laboratory will be expanded; the Pulp and Paper Laboratory, the Analytical Laboratory and the

Industrial Chemistry Laboratory will be moved to the new building and the Textile Laboratory will occupy the whole ground-floor.

In the old building certain modification has to be carried out to be able to serve the purpose of the Textile Laboratory.

There is a corridor in the middle of the building which runs through the whole length of it. On the left side of the corridor the mechanical laboratory will be placed, on the right side of it the chemical laboratory and the staff room will be located. The international expert suggested to have a separate small room for the equipment serving the laboratory, f.i. the equipment which provide the standard atmosphere for testing, the stabilizer, etc. It was decided that the standard atmosphere for testing will be provided for the area of the mechanical laboratory only.

The windows of the old building should be either partly walled up or equipped with roller-blinds. The material of these blinds should let the light pass through but block most of the heat waves. Such foils are available f.i. under the registered name SUN - X in W. Germany.

Partitions will be developed in the area of the mechanical laboratory. These will serve to divide the area of the Fiber, Yarn and Fabric laboratory, respectively. The height of these partitions will be about 2.20 - 2.50 m. Over the partitions the air can flow free to ensure the necessary atmospheric condition.

3.2 Equipment and Machinery

Table 1 contains the list of equipment and machinery which are, for the time being, in the possession of the Textile Laboratory. In the table the uses of the equipment, as well as the name of the producer are also indicated.

The project involves a fund of $160,000 to cover the equipment price to be purchased for the FIIR. In the following the name and uses of the recommended equipment are listed. This list differs, however, from the originally suggested one, because in the mean time

- new equipment have been introduced
- the cost factor was changed and maximally considered
- the Institute has acquired the equipment from its own budget.

When selecting the equipment the need of the Nigerian textile and clothing industries, as well as that of the Institute were taken into consideration.

Each item in the list of the suggested equipment has been discussed with and agreed to by the Nigerian counterpart.

In the list the name of the producer is generally indicated. In those cases, when the supplier differs from the producer the name of the supplier is also mentioned. Abbreviations are used for indicating the names, at the end of this list in table 2, however, the complete names and addresses of each producer and suggested supplier are shown.

TABLE I

MACHINERY IN TEXTILE LABORATORY

	Name of Machine	Uses of Machine	Range of Application	Make of Machine	When obtained
1.	Quadrant Balance	For indicating the counts of yarns and rovings		Goodbrand & Co. Ltd., England	
2.	Martindale Abrasion Tester	Numerical Assessment of pilling and abrasion		Goodbrand & Co. Ltd., England	
3.	Cambridge Textile Extensometer			Cambridge Instrument Company, England	
4.	Shirley Comb Sorter	Length and Maturity of Cotton Fibres		Shirley Developments Limited, England	
5.	Wrap Reel (Manually Operated)		Up to 100 m	Goodbrand & Co. Ltd., England	
6.	Thermohygrograph	Temperature and Humidity of Environment		Casella, London, England	
7.	Counting Glass	Threads per inch			
8.	Xenotest 150	Assessment of Light fastness and Weathering		John Godrich, Ludlow, England	1981

TABLE I (CONTD.)

	Name of Machine	Uses of Machine	Range of Application	Make of Machine	When Obtained
9.	Brabender Viscograph	Measurement of Viscosity of liquids and suspension and the gelatinisation of starch products	Up to 2000 Viscosity Units	Brabender Duisburg, Germany	
10.	Twist Tester			Zweigle KG Reutlingen, Germany	
11.	Dyeing Master	Laboratory Dyeing Expts up to 100°C		John Jeffreys Ltd., England	1973
12.	Selector	For estimation of Contamination of Cotton fibres		T.K.I. Budapest, Hungary	1976
13.	Fibre-Bundle Tensile Strength Tester	Tensile Strength and ultimate Elongation of fibres in bundle	0-50N	Metrimpex, Budapest, Hungary	1976
14.	Automatic Yarn Tensile strength Tester (ATFA) - FY 17	Tensile strength and breaking elongation of spun products	0,2-20N	Metrimpex, Hungary	1976

TABLE I (CONTD.)

	Name of Machine	Uses of Machine	Range of Application	Make of Machine	When Obtained
15.	Yarn Evenness Tester (YET) FY 26	To measure the cross sectional mass flunctuation along yarn length	1 - 30 U%	T.K.I., Hungary	1976
16.	Cloth Strength Testing Machine (FF 24)	Estimation of the Tensile Strength and Elongation of polymers and textiles	0 - 2000N	Metrimpex, Hungary	1976
17.	TricoDim Test (FD 22)	Determination of the dimensional changes of woven or knitted fabrics	+ 30% Elongation - 20% Shrinkage	T.K.I., Hungary	1976
18.	Flexometer (FF 20)	Determination of the flexibility and flexural rigidity of clothes		T.K.I., Hungary	1976
19.	Florometer (FC 04)	Pulling force of yarn loops and carpet tufts	0 - 3 kg	T.K.I., Hungary	1976
20.	Wapertest (FF 13/A)	Water permeability of treated fabrics	20 - 3000 mm water pressure	Metrimpex, Hungary	1976

TABLE I (CONTD.)

	Name of Machine	Uses of Machine	Range of Application	Make of Machine	When Obtained
21.	Scourotester (FE 09)	Washing fastness and wet colour fastness features of textile	Temp. Up to 140°C	T.K.I., Hungary	1976
22.	Dyeing Tester (FE 08/C)	Laboratory Dyeing Experiments	Temp. Up to 150°C	T.K.I., Hungary	1976
23.	Spektomom 402	Measurement of the absorption and transmission of coloured liquids and solutions in the visible spectra range	360 - 720 mμ	MOM, Budapest, Hungary	1976
24.	MOMCOLOR - D (Digital Tristimulus Colorimeter)	For colour measurements		MOM, Hungary	1976

Remarks

T.K.I. = Hungarian Textile Research Institute, Instrument Developing and Production Unit

Metrimpex = Hungarian Trading Company for Instruments

MOM = Hungarian Optical Works

It is strongly recommended to accept the name of the producer when placing the order. The Institute already posseses apparatuses which can be connected and utilised only together with the suggested ones, further on the recommended equipment involve opimally the cost factor and the need of the Institute.

The supplier can be changed without notice.

Equipment to be acquired

		$
1.	Tensile Strength Tester Test load max. 10 kN Equipped with jaws for fibre, yarn fabric and ribon, etc. testing Equipped with all the electronic measuring heads available Producer: Zwick. Type: 1445	45,000
2.	Cloth Thickness Tester Producer: Textest or Thorn Suppliers for Thorn: Sas, Heal or CML	400
3.	Bursting Strength Tester in compliance with BS 4768 Producer: Heal,Type 111 B	5,000
4.	Shiefer type Abrasion Tester in compliance with ASTM D 1175 Producer: Frazier or TKI Supplier for TKI: Metrimpex	6,500
5.	Accelerator Abrasion Tester in compliance with ASTM D 1175 Producer: Brabender, Atlas Type: AB-7	5,500
6.	Random Tumble Pilling Tester in compliance with ASTM D 3512 Producer: Brabender, Atlas Type: PT 4	4,000
7.	I.C.I. Pilling Box in compliance with BS 5811 Producer: Heal	1,000
8.	Bundesmann Water Repellency Tester in compliance with The Textile Institute Working Party for Waterproofness Testing Producers: Shirley, Goodbrand Suppliers: Sas, Heal or CML	2,500

		$
9.	Shirley type Crease Recovery Tester with Loading Device in compliance with BS 3086 and ISO R 2313 Producer: Shirley Suppliers: SAS, Heal or CML	400
10.	I.C.I. Mace Snag Tester in compliance with BSI Technical Com. T/16 Producer: Shirley Suppliers: SAS, Heal or CML	2,500
11.	I.C.I. Stitch Damage Tester Producer: Shirley Suppliers: SAS, Heal or CML	1,500
12.	Air Permeability Tester in compliance with the Shirley Institute Test Leaflet Equipped with "Guard Ring" Producer: Shirley Supplier: SAS, Heal or CML	4,500
13.	Flamability Tester in compliance with BS 5438 Producer: Heal. Type 280	1,000
14.	Carpet Thickness Gauge variable load up to 1000 N/cm^2 fulfils requirements of BS 4051 Producer: TKI. Type: FC-01 Supplier: Metrimpex	500
15.	Carpet Compressibility Tester loading limit 1000 N/cm^2 fulfills requirements of BS 4939 Producer: TKI. Type FC-02 Supplier: Metrimpex	500
16.	Mechanical Treader for Carpets 12 cycles/min., dropping height 60 mm fulfils the requirements of BS 40. Producer: TKI. Type: FC-03 Supplier: Metrimpex	1,000
17.	Staining Tester for testing dye fastness of fabrics against rubbing in compliance with ISO R 117 Producer: TKI. Type: FD 17 Supplier: Metrimpex	1,500
18.	Rapid Oil Extraction Apparatus to determine the oil and fat content of textile materials in compliance with BS 3582 Producer: Thorn. Type: WIRA Suppliers: SAS, Heal, CML	2,000

		$
19.	Static Voltmeter for the measurement of electro-static charges and monitoring of anti-static preparations Producer: Rothschild	1,800
20.	Fixotest for testing fastness in thermo-setting to determine the stability of dyes and fibres to surface heat, further on colour comparison lamp (Day Light Lamp) in compliance with ISO R 173, and DIN 54060 and DIN 54022 Producer: Original Hanau Types: 7505 and 7251	4,800
21.	Perspiration Tester for testing colour fastness against perspiration in compliance with AATCC TM 15-1979 Producer: Atlas Type: AATCC Perspiration Tester	100
22.	Automatic Length Programmed Measuring Reel motor driven Producer: TKI. Type FY 38 Supplier: Metrimpex	2,000
23.	Board type Yarn Evenness Tester (Seriplan) Producer: TKI. Type: FY 20 Supplier: Metrimpex	2,500
24.	Wave Analyser, YET for measuring and recording the periodic changes of mass evenness Producer: TKI. Type: FY 27 Supplier: Metrimpex	7,200
25.	Skein Meter, Skein Circumference Measuring Instrument for measuring, under pre-loading, the circumference of yarn, skein and their changes in length Producer: TKI. Type: FY 32 Supplier: Metrimpex	2,500
26.	Conditioning Cabinet to determine correct invoice mass of textiles, with precision digital balance and pre-drier. Accuracy of weighing: Max. 0.01 g Producer: TKI. Type: FL 02/A Supplier: Metrimpex	4,500

		$
27.	Climatic Test Cabinet Size: 125 Ltr. Temp. range: -30 ... + 180 °C (diagrame ABCD) Regulating: single index Producer: Brabender Realtest Type: Realtest KSE	10,000
28.	Shearing Apparatus for Cutting to Length Pre-loaded Fibre Bundles cutting length: 10 - 100 mm Producer: TKI. Type: FM 14/B Supplier: Metrimpex	900
29.	Compact Micronaire to determine fineness of cotton wool, and synthetyc fibres (only versatile apparatus is accepted) Producer: Textest. Type: RM 107 A	3,500
30.	*Projection Microscope to determine the diameter of fibres Producer: Reichert Type: Visopan	800
31.	*Fibrograph for the determination of length and length distribution of fibres. Can be used for testing cotton, wool and synthetics. Only versatile equipment can be accepted Producer: Spinlab. Type 530	25,000
32.	Bundle Shrinkage Tester to determine the length change of synthetics in wet heat treatment Producer: TKI. Type: FM 17 Supplier: Metrimpex	800
33.	Labormixer fibre homogenisation apparatus Producer: TKI. Type FM 10 Supplier: Metrimpex	2,700
34.	Aspiration Psychrometer for determination and controlling of the rel. humidity Producer: Textest. Type L 505	300
35.	Air Conditioner to create the standard atmosphere for testing Temperature 27 ± 2 °C and 20 ± 2 °C (variable) Rel. Humidity: 65 ± 2% Volume of the room to be cond. 723 m^3	10,000

		$
36.	Desktop Computer Memory: 16 kbyte equipped with thermo printer The computer can be later extended with an additional 16 kbyte memory Language: BASIC Producer: Hewlett Packard Type: HP 85 F	5,500
37.	Printer for item 36. Producer: Hewlett Packard	3,000
38.	General Statistics Pac Software for item 36 Producer: Hewlett Packard Type: HP 00085 - 13003	200
39.	Plotter-Printer ROM Software for item 36. Producer: Hewlett Packard Type: HP 00085 - 15002	200

The selected equipment fulfil the requirements at least one of the following standards:

ISO (International Standard Organization)

ASTM (American Society for Testing and Materials)

BS (British Standards)

AATCC (American Association of Textile Chemists and Colorists)

DIN (Deutsche Industie Normen - German Standards)

All the apparatuses will be operated on a current of 220 V and 50 HZ.

TABLE 2

NAME AND ADRESS OF PRODUCERS, SUPPLIERS AND PUBLISHERS

	Name	Address	Phone	Telex	Cables
1.	AATTC: American Association of Textile Chemists and Colorists	P. O. Box 12215 Research Triangle Park NC 27709, USA	919/549 - - 8141		
2.	ASTM: American Society for Testing and Materials	1916 Race St., Philadelphia, Pa. 19103, USA			
3.	BS: British Standards Institution	2, Park St., London W1A 2BS, England	01-629 9000	266933	
4.	Brabender Technologie KG./ Atlas Electric Devices Co.	41, Duisburg, Postf. 204/205, BRD /4114 No. Ravenswood Avenue, Chicago, Ill.60613./ USA			
5.	Brabender Realtest G.m.b.H	Postf. 1209, D-4130, Moers - Hochstrasse, Gewerbegebiet, Germany	/02841/ 54061	8121160	
6.	CML Components Ltd.	59, College Road, Harrow, Middlesex England			Components Harrow
7.	Frazier Precision Instrument Company Inc.	210 Oakmont Avenue, Gaithersburg Maryland 20760, USA	948-9026		

TABLE 2 (CONTD.)

Name	Address	Phone	Telex	Cables
8. Goodbrand & Company Ltd.	Elm Works, Mere Lane, Rochdale Lancashire OL 11 3TE, England	Rochdale 32712		Goodbrand Rochdale
9. Heal: James H.Heal & Co. Ltd.	Halifax, West Yorkshire HX3,6EP, England	0422 - -66355	51450 HEALCO G	Heal Halifax
10. Hewlett-Packard G.m.b.H.	Handelskai 52, POB 7, A-1205 Vienna, Austria	351621-0	75923 HEWPAK A	
11. Metrimpex, Hungarian Trading Co. for Instruments	Budapest P.O. Box 202, Hungary H- 1391		22-5451	Instrument Budapest
12. Original Hanau Quartzlampen G.m.b.H.	Postf.642, Hohensonne-Strasse D-6450 Hanau/Main, Germany	/06181/ 3631	415202-16 hud	Oringinal-hanau Hanau
13. Reichert: C. Reichert Optische Werke A.G.	Wien, Hernalser Hauptstrasse 219 Austria			
14. Rothshild Elektronische Mess-und Steuergerate	8002 Zurich, Traubenstrasse 3, Schweiz	(01)2023187	57665 ch	

TABLE 2 (CONTD.)

Name	Address	Phone	Telex	Cables
15. SAS Group of Company	Victoria House, Vernon Place, London WC 1B 4D F, England	(01)4045711	24508 SAS GRP G	SASGROUP LONDON WC1
16. Shirley Developments Ltd.	P.O. Box 6, 856 Wilmslow Road Didsbury, Manchester M20 8SA, England	061445-7757	669386 ESSDIEL G	
17. Spinlab A.G.	P.O. Box 180, Rautistr.58 Schweiz 8048 Zurich	(01)544900	53755	SPINLAB ZURICH
18. Textest Inc.	Weinbergs trasse 93, Schweiz, CH-8802 Kilchberg-Zurich	(01)7151585	56532 TEXET CH	Textest Zurich
19. Thorn Automation Ltd.	Beech Avenue, New Basford, Nottingham N G7 7JJ, England	0602 786123	37142 TALNOT G	
20. TKI: Textilipari Kutato Intezet MAF	1021 Budapest, XX. Torontal u.3-5. Hungary	478-930	texki 224698	
21. Zwick G.m.b.H & Co.	Postf.4350,D-7900 Ulm-Einsingen, BRD	07305--101	07-12830	Zwico Ulmdonau

The estimated price of the equipment exceeds the limit of $160,000 (is about $173,600 but the expert doubts that all of the suggested equipment will be available. In the recommendation of this report there is a suggestion to expand the project further, and the missing apparatuses can be acquired in the next phase. If, however, all the equipment are available, the equipment with asterisks should be omitted from the list (No 5, 30 and 31).

3.3 Books and Publications

The books and publications to be acquired are listed in the following. The expert completed the local purchase form, but, because of the short duration of the assignment was not in the position to initiate and to arrange the acquisition himself.

Books to be ordered

2 pieces each	American Society for Testing Materials Annual Book of ASTM Standards (last edition) Part 32 and 33 Referring to Textiles (Fibres, Yarns, Fabrics, Test Methods)	
	Total	$60
1 piece	British Standards Institution: BS Handbook 11 Methods of Test for Textiles (last edition)	$40
2 pieces	Sommer +Winkler: Handbuch der Werkstoffprugung,: Die Prufung der Textilien. Springer Verlag (Berlin) 1960	$180
1 piece	Juran J.M.: Quality Control Handbook. 3rd Edition. Mc Graw-Hill publication (New York), 1976	$140
2 pieces	Graf-Henning: Statistische Methoden bei Textilen Utersucheungen. Springer Verlag (Berlin), 1976	$60
1 piece	Davies O.L.: Statistical Methods in Research and Production.Oliver and Boyd (London) Last edition (1979 ?)	$40
1 piece	Morton - Hearle: Physical Properties of Textile Fibres. The Textile Institute, - Butterworths, Manchaster London last edition (1976 ?)	$50

2 pieces	American Association of Textile Chemists and Colorists: Technical Manual of AATCC Volume 56, 1980	$50

Remark : The publishers detailed addresses are to be found among those of the producers and suppliers of the equipment.

3.4 Training

The project includes individual fellowship training up to 12 men/ months, equivalent to the value of $20,400.

As the result of the discussion with the Nigerian counterpart, the following persons and courses are suggested.

Dr. O.A. Kolegso, Research Director - 1 month

U.K., Manchester: Shirley Institute - 10 days

Hungary, Budapest: Institute for Quality Control in the Textile Industry, further on Textile Research Institute - 10 days

Egypt, Alexandria: Textile Consolidation Fund, Quality Control Centre - 10 days

Mr. L. Akerele, Chief Research Officer - 1 month

Egypt, Alexandria: Textile Consolidation Fund, Quality Control Centre - 10 days

Hungary, Budapest: Textile Research Institute, Institute for Quality Control in the Textile Industry 10 days

USA, Princeton: Textile Research Institute (New Jersey) - 10 days

Dr. E. Ofulue, Asst. Chief Research Officer Head of Division - 1 month

U.K., Nottingham: HATRA (Hosiery and Allied Trades Res. Ass.)

Leeds: WIRA (Wool Industries Res. Ass.) - 12 days

Dr. E. Ofulue (contd.)

Hungary, Budapest:	Institute for Quality Control in the Textile Industry, Textile Research Institute	-	10 days
India, Delhi:	Institute of Technology	-	8 days

Dr. I. Aladeselu, Principal Research Officer - 3 months

Singapore:	Quality Control and Certification, Course at Singapore Inst. of Standards and Industrial Research	-	8 weeks
Egypt, Alexandria:	Quality Control in Textiles Course at Quality Control Centre	-	2 weeks
Hungary, Budapest:	Institute for Quality Control in the Textile Industry	-	2 weeks

Mr. O. M. Odutola, Research Officer Grade I - 3 months

Hungary, Budapest:	Textile Research Institute, Institute for Quality Control in the Textile Industry	-	1 month
U.K., Manchester:	Shirley Institute UMIST (University of Manchester Institute for Science and Technology	-	2 months

Mr. M. D. Balogun, Principal Tech. Officer - 3 months

U.K., Leeds:	University of Leeds, Dept. of Textile Industries	-	1,5 months
Manchester	Shirley Institute	-	1,5 months

The fellowship trainings are suggested to carry out as soon as possible. The three latter officers are advised to be back in Nigeria before the arrival of the international expert.

3.5 Work Plan

A work plan has been elaborated which is enclosed in the Appendice.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The objective of the project, in the present stage, was to select

- the necessary equipment to be acquired
- books and publications for requisition
- the staff members for training and the place and venue of the training

These targets were fully achieved and beside it some additional expertise was carried out referring to the further advance of the project.

4.2 Recommendations

4.2.1 Experts

4.2.1.1 Computer Specialist

Beside the Textile Consultant and Electrical Engineer and Expert in Computer utilisation is needed. The latter has to have special knowledge in BASIC computer programming and training.

This expert is necessary because the framework of the project includes a desktop computer. In the first stage the computer should be used for data processing only, efforts have to be carried out, however, that later

- the test reports should be printed by the hardware of the computer, further on
- as many equipment should be connected through an interface to the computer as possible.

This enables the staff to reduce the failure rate to the possible minimum.

When developing programmes and creating the whole system the knowledge of a Computer Specialist is necessary who takes the above mentioned into consideration from the beginning of his activity.

4.2.1.2 Suggestion on the selection of the Experts.

In the Institute for Quality Control in the Textile Industry, Budapest, Hungary, there are two experts engaged, who have carried out similar tasks frequently. Therefore their candidature is strongly recommended.

The Electrical Engineer, Mr. Antal Solymos is engaged to the Institute for Quality Control in the Electrical Industry, Budapest, Hungary. He possesses a special knowledge on repairing textile testing equipment.

The Computer Specialist has already introduced the previously described system in the Institute running under my directorship. The person to be recommended gives lectures at the Post-Graduate Department of Polytechnical University, Budapest, Hungary as well. His name is Mr. Ferenc Rez.

Both experts can be located and contacted through the writer of this report.

4.2.1.3 Timing of the arrival of the experts.

After the return of the Textile Consultant to Nigeria, in accordance with the Work Plan, the equipment must be unpacked, installation work has to be carried out, for which the presence of the Electrical Engineer is not necessary. Therefore 2-4 weeks after the return of the Textile Consultant is suggested to schedule the arrival of the Electrical engineer.

The Computer Specialist is needed, however, in the last phase of the project, before the symposium takes place. The presence of the Computer Specialist in the last three months of the project is recommended.

4.2.2 Further equipment for the laboratory and equipment for the Pilot Plant (Expansion of the Project).

The budget of the present project was suggested in 1966. Because of the inflation the prices of the equipment have increased and new, more sophisticated apparatuses have been introduced. That means that the target set could not be reached. Because of the price-limit certain equipment were left out. Especially equipment, necessary for the Pilot Plant were omitted.

The Textile Consultant during his 5 months mission should review and evaluate the project from this point of view, and should make recommendation to expand the project, completing the Textile Laboratory and the Textile Pilot Plant of the Institute.

4.2.3 Recruitment of the staff of the Textile Laboratory.

For the time being, there are three staff members in the Textile Laboratory; one post-graduated member who is a chemist, another has a first degree in fibre science and the third qualified in textile technology.

It is recommended to expand the number of the staff at least by two textile physicists and by one more textile chemist.

The recruitment should be completed before the return mission of the Textile Consultant into Nigeria to enable all the staff members to participate in the project.

4.2.4 Transport.

According to the point No. 10.B of the Legal Context of the project local transport facilities will be provided for the UN technical consultants. In the project budget $750 and an additional ₦1,500 are to cover the transport charges.

The transport facilities of the FIIR can not cope with the need. The availability of transport facility is rather difficult, because of the immense need of the Institute itself.

Beside the transport of the experts there is a need to make acquisition for certain items, in the lack of which the success of the project can be jeopardized.

Therefore it is strongly recommended to include a separate car to the project. This car can be later transferred to the possession of FIIR. The Institute may provide the driver, if needed.

The project budget is therefore to be increased by ₦5,000 or $6,000 (if the car is imported).

APPENDICE NO. 1

Post: NIR/78/001/C/01/37

May 13, 1981

Prepared by:
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Lagos

WORK PLAN

For October 1981 - February 1982

This work-plan includes the modification of the building housing the equipment, the installation and checking of the latter, further on the training of the staff and all interested people engaged in quality control for the best possible utilization of the project. As a result of this work local standards will be developed.

1. Building (about 1 week)

   1.1 Checking the laboratories for the necessary modifications.

   1.2 To advise on the electrical installation.

2. Equipment (about 25 months)

   2.1 Unpacking and checking the components.

   2.2 Installation.

   2.3 Checking.

   2.3.1 mechanical operation

   2.3.2 electrical operation

   2.4 To control the accuracy of the units.

   2.5 Preparation of samples for testing.

   2.6 To carry out tests.

   2.7 To carry out repair work if necessary or to initiate correspondence referring to the repair to be carried out by the producer.

3. Training (about 1,5 months)

3.1 Training of the Staff

3.1.1 Operation principle of the equipment.

3.1.2 Referring standards (ASTM, BS, DIN, GOST, MSZ, etc.).

3.1.3 Operation and utilization of the apparatuses.

3.1.4 Evaluation of the results.

3.1.5 Referring quality control standards with prescribed values.

3.1.6 Comparing the test results to the prescribed values.

3.1.7 Maintenance of the equipment.

3.2 Training of all people engaged to the industry and to universities dealing with quality control. (2 weeks)

A one week long symposium to be organized dealing with the following main topics:

- Quality Control in general
- Quality Control systems in the industry
- Quality Control in the textile and allied industries
- Utilization of the equipment involved in the project

4. Standardization (1 week)

To create standards in cooperation with the Nigerian Standard Organization referring to:

- Testing methods
- Evaluation and classification in the textile industry

APPENDICE NO. 2

Post: NIR/73/001/C/01/37

May 15, 1981

Prepared by G.S. Aschner

REVISION OF THE PROJECT
TEXTILE TESTING AND QUALITY CONTROL

Background

On the request of the Nigerian Government in 1976 and 1977 UNIDO rendered assistance to the Federal Institute of Industrial Research, Oshodi (FIIR). This assistance included the provision of FIIR with some equipment on textile testing and quality control, as well as the training of the staff, respectively.

The equipment were financed by the Hungarian voluntary fund ($53,700), and the number of the apparatuses were limited. It was obvious therefore that the objectives of the project, namely to establish a research and quality control centre in the area of the textile and clothing industries could not be attained. It was recommended to expand the project and to involve more equipment, further on to provide more training for the staff of the Institute.

This recommendation was accepted by both UNIDO and the Government of Nigeria and a new project has been developed, which involves the acquisition of equipment up to the fund of $160,000.

Revision

The revision of the project is necessary on the following areas.

1. To recruit a Computer Specialist.

   The equipment to be acquired involve a BASIC operating desktop computer. This computer should be utilized for

- data processing
- printing the test report itself
- connecting, through an interface, directly to the various apparatus which will enable the system to record and process the testing data automatically.

To create this system a computer specialist is needed, who, beside his knowledge on data processing, is able to develop the necessary interface and to carry out the modifications on the various testing apparatus themselves.

The duration of the assignment of the computer specialist is suggested to be about 3-4 months.

2. To include a car in the project.

According to the point No. 10.B of the Legal Context of the project, local transport facilities will be provided for the UN technical consultants. In the project budget $750 and an additional ₦1,500 are to cover the transport charges.

The transport facilities of the FIIR can not cope with the need. The availability of transport facility is rather difficult, because of the immense need of the Institute itself.

The project involves not only the FIIR but the Nigerian Standard Organization as well, which is located in Enugu, Anambra State, about 750 kms from Lagos. To fulfil the objectives of the project the Textile Consultant should visit and cooperate with the staff of NSO when creating standards.

Beside the transport of the experts there is a need to make acquisition for certain items, in the lack of which the success of the project can be jeopardized.

A car should be therefore included in the project. This car can be later used for other UNDP projects or can be transferred to the possession of FIIR. The Institute may provide the driver, who can be taken into the UNDP staff during the duration of the project.