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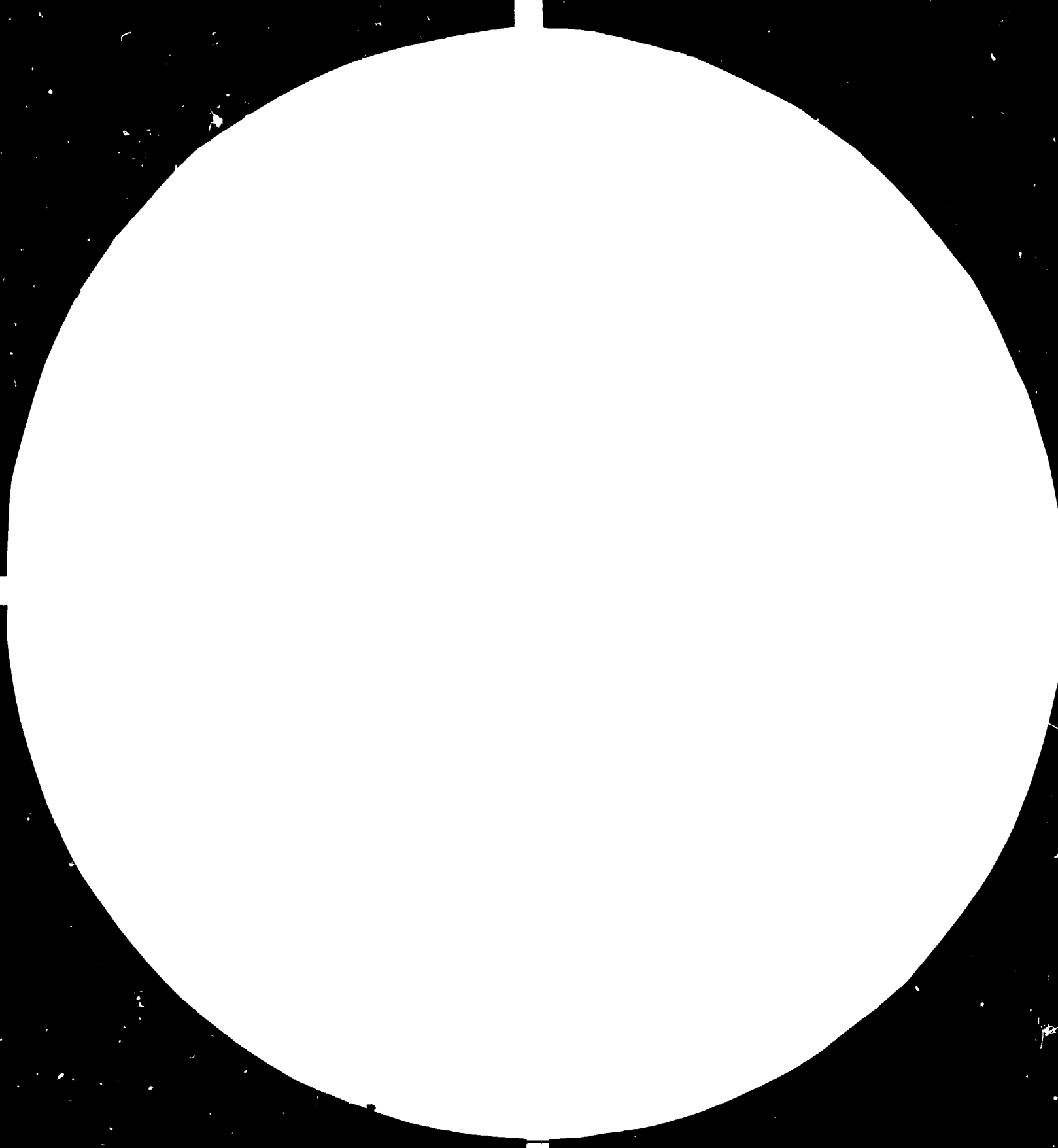

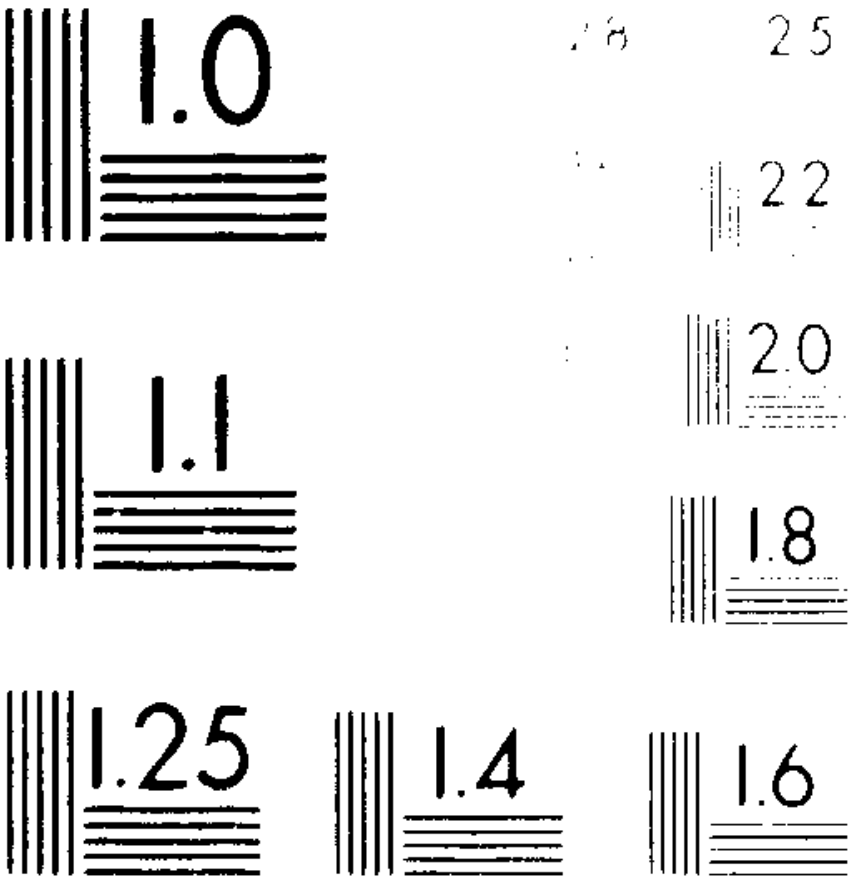
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UNIDO/IO/R.156
8 May 1985

ENGLISH

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

IMPROVEMENT OF GARMENT DESIGN AND MANUFACTURING TECHNOLOGY

UC/ROM/83/114

ROMANIA

Technical report: Assistance to the Romanian Garment Industry *

Prepared for the Government of Romania
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Ian Bastow,
Garment Technologist

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1. ACKNOWLEDGEMENTS

I would like to thank Technical Director (Central Organization of Apparel Industry) Mr. V. Livianu for the way in which he organised my program and for his unstinting help and co-operation, Chief Engineer Mr. G. Tîru for the many hours of patient and diligent work and who showed himself to be very knowledgeable and extremely competent.

I would like to thank Ms. V. Păunescu and the Protocol Staff for the work which was done behind the scenes, Ms. Lidia Novak for the very many hours of proficient translating with such good humour.

Mr. Eichhorne of U.N.D.P. Bucharest and his friendly helpful staff. Last but not least Mr. Minke my Backstopping Officer and all the people in UNIDO connected with my assignment.

2. INTRODUCTION

The garment industry in Romania has a tradition which stretches back over a hundred years. Now it is concentrated into 37 garment factories manufacturing men's wear (suits, overcoats, casual jackets, shirts etc) ladies' wear (dresses, suits, top coats, casual jackets, skirts, blouses etc) and children's wear. The majority of the production is exported. These 37 factories, co-ordinated by three Garment Industry Organizations, have over 100,000 workers.

The purpose of this project was to train specialists in the field of modern garment making technology as well as giving consultative advice concerning the organization of production, working through the Centrala Industrier Confectiilor Bucharest (C.I.C.B.).

The duration of the assignment being 3 months from February to April 1985.

After discussing the work plan with the officials of the C.I.C.B. the duties had to be modified from the original set out in the job description. The revised duties were as follows:

One week - discussion of proposed duties and preparing for lectures.

Five weeks - giving 21 lectures, the duration of which lasted 90 hours to some 60-70 garment technologists from all over Romania.

Three weeks - Factory visits.

One/two weeks - Final report.

One/two weeks - Final briefing to senior managers from all over Romania on aspects and findings of the report and items raised in the lectures. A final briefing with a First Deputy Minister of Light Industry.

Due to the imbalance of the amount of time taken up in the lectures, some of the original duties laid down in the job description had to be omitted. Mr. Minke, the backstopping officer for this project was informed and approval was given to revise the duties as above*.

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* See Annex I - Duties.

3. SUMMARY OF FINDINGS

A. Training Course for Garment Technologists

As the specific request of the technical director of C.I.C.B. 21 lectures were prepared and presented, the content of which took approximately 90 hours to an audience of some 60-70 garment technologists from the length and breadth of Romania. (see Annex II for a list of lectures) as the participants being lectured to were all mature practising technologists and engineers so the content of the lectures was deep and very technical. Each lecture was recorded so that at a later date a type written transcript could be handed to each participant.

At the end of each lecture, time was allowed for questions to be asked on matters arising out of the lecture. The keeness, enthusiasm and knowledge of all who attended was reflected in the questions which they addressed to the speakers.

B. Factory Visits

In the three-week time period given to factory visits some seven factories were visited which necessitated travelling 2800 kilometers by road and air. (see Annex III). The factories are large by most standards (in terms of operatives employed), Bucharest being the largest employing some 18,000 with Cluj - Napoca at the other end of the scale employing 2,400 each factory using the two shift day system of working. The problems found in the Bucharest factory were endemic in all the others visited so one can safely assume the problems listed below are national and not local.

At the end of each factory visit there would be a de-briefing session with the higher management. On one occasion there were about 100 people present. Particulars would be discussed relevant to the factory visited, such as the observations and comments below, as well as certain points raised in the lectures.

C. Observations and Comments Appertaining to Factory Visits

i) Cutting rooms

(a) These were too small for full size cutting tables and were very congested.

(b) The cloth laying up and cutting tables were too short, too narrow and too low.

(c) As a result of (a) and (b) the facility of using cloth laying up machines is excluded with the serious loss in productivity.

(d) There were no paper lay copying machines which again is labour saving.

(e) There were no paper lay making facilities which is usually performed by specialists to obtain the maximum utilization of the fabric. The method used was marking in on the fabric in the cutting room using pipe clay which is often thick and inaccurate when marking round cardboard patterns which are "Dog eared" and misshaped. Hardly the correct start to producing quality garments.

(f) The most serious of all the observations is the quality of the fabrics in terms of numbers of faults per piece, variation of piece widths, short piece lengths, pieces shaded differently from one side to the other and lastly, the pieces delivered into the factories in a folded condition instead of it being on the open out. It is to be recommended that the responsibility for the quality control of the fabrics to be carried out more carefully by the cloth manufacturer.

(g) Because of the unforeseen problems of the fabrics in the cutting room it could cause a hold up of work into the machine room. Instead of being able to maintain a buffer stock of at least three days of cut work, for the machine rooms the latter are quite often waiting for work with the subsequent loss of productivity.

ii) Machine rooms

(a) Lack of modern machines for specialised operations to give greater productivity and quality.

(b) The ordinary flat bed machines out of date and in most cases many years old.

(c) Insufficient room between the machines the space in 2,80 square metres and it should be minimum 5,0 square metres. The lack of space inhibits labour saving techniques so necessary in modern sewing plants.

(d) No spare machines which are essential to replace machines which are broken down on the production line and as an extra machine in cases of line bottlenecks.

(e) There is no documentation to follow up the daily performances of each operator so necessary to calculate the work performed and log any time lost through machine breakdown, no work, faulty garment parts etc.

(f) The ratio of operators to supervisors is far too high. In extreme cases 1 supervisor to 80 operators but more often 1 supervisor to 50 operators. In most countries the ratio is 1 to 20. The supervisor is the linch-pin of the factory floor. Here the supervisor has an impossible task to carry out all the duties necessary for running an efficient factory floor.

(g) The overall working conditions were found to be consistent in that the machine rooms had poor lighting, not only is this a strain on the eyes of the operatives but contributed towards poor quality. The factories were often too hot with little ventilation.

(h) One of the more disconcerting observations on walking down any sewing room floor was the slow working pace of the operatives compared with Western Europe. With one exception all the factories visited showed a working rate of about 80 performance. (A normal operative, working under normal conditions with the correct standard minute value for motivation would be working at a 100 performance).

Yet the assurance given by the management was that the operatives were working at 100 performance! Obviously the standard minute values employed in the factories visited were too loose. There are many reasons why this is so, and it is too complicated a subject for this report.

(i) There is a need to introduce up to date systems of transportation of garment parts in the sewing rooms such as a hanging rail system which will help to reduce the standard time.

(j) The machinery for underpressing is in many cases out of date and the hand irons far too heavy.

(k) In many cases there are no hanging rail systems in the press rooms (unlike the most efficient press room in Bucharest) which results in over crowding of the garments resulting in loss of productivity and quality.

(l) The conditions for storing raw materials and finished garments is not suitable because of lack of space and temperature conditions which were too low (for winter).

4. RECOMMENDATIONS

The recommendations are largely based on the observations and comments section of this report.

(a) With reference to observations and comments - Cutting rooms figure (f). Poor quality of fabrics, the following points need URGENT attention.

(i) Fabrics must be delivered to the clothing factory in the "open cut" instead of being folded.

(ii) The fabric manufacturer must take the responsibility for any faulty fabrics and endeavour to improve the quality.

(iii) There should be a maximum number of allowable faults in any one piece of fabric and a minimum length of a piece which should be decided between the fabric and the garment manufacturers.

(iv) Regular meetings should take place between the fabric and garment manufacturers where frank discussions can take place in order to achieve a better understanding of each others problems with an aim to improving quality and service.

(b) With reference to observations and comments - Cutting rooms figures (a), (b), (c), (d), (e).

(i) Larger cutting rooms.

(ii) Cutting tables up to 30 metres long.

(iii) Laying up machine.

(iv) Paper lay copying machines.

(v) Paper lay making facilities, either by computer or manually.

(vi) Use a Meto type garment labelling machine.

(c) With reference to observations and comments - Machine room figures (a), (b), (c), (d).

(i) More investment needed in specialized machinery giving higher productivity and quality.

(ii) The out of date flat bed machines to be replaced with machines which have Vario stop Motors and under bed thread trimming. There is a potential saving of up to 20% of non machining in this type of machine.

(iii) More room to be made available between the machines to allow for labour saving techniques and specialized work stations.

(iv) Spare machines required - both specialized and ordinary flat bed.

(v) There is a need to introduce hanging rail systems which will increase operator performance by reducing handling times and will reduce operator fatigue and so help increase quality.

(d) With reference to observations and comments - Machine Room figure (e). There is an urgent need to employ the use of a daily work sheet for each operator. This monitors the daily production and standard performance as well as any non-standard time such as machine breakdown etc. The supervisor and management have a daily picture of every operator and are able to take any steps necessary to make the line more productive. It safeguards the operator too in case of any dispute over wages.

(e) With reference to observations and comments - Machine Room figure (f). Decrease the ration of operatives to supervisors to 20 operators to 1 supervisor.

(f) There is a definite need to introduce a system of specialized machinists called "Float Hands". Float Hands are multi-skilled machinists who are used to fill in the gaps created by absenteeism, bottlenecks and the introduction of new styles. The number of float hands required is calculated as 12% of the total number of operatives. They are paid at a rate more than 100 performance.

They will fill in a daily work sheet as any operative. Great care is needed when selecting people for these positions because they have to be conscientious, self motivated and reliable.

(g) With reference to observations and comments - Machine Room figure (g). An effort should be made to make the working conditions better for the operatives such as:

(i) Better lighting.

(ii) Better ventilation.

(iii) More comfortable seating which can be adjusted in the area of the back as well as in the up/down position - it relieves operator fatigue.

(h) There is a definite need for in line inspection. These are points in the sewing line placed in strategic positions where 100% inspection can take place. Any faults found can be rectified at an early stage of the production without too much cost. Apart from random inspection the only inspection is at the end of the line when the garments is finished. At that stage most repairs are unsatisfactory and costly.

(i) Operator training schools should be set up within the confines of the factory. Strict guidelines should be laid down for correct machine handling and simple machine maintainance.

(j) With reference to observations and comments - Machine Room figure (h). Outside help should be sought to correct and bring into line with Western Europe the wayward standard minute values. If the Romanian clothing industry is to remain competitive it has to face the fact that the standard minute values are about 20% too loose. This can be done by an organization currently employed in Western Europe and has a deep sense of integrity. The organization should advise on wages and documentation and apply same to the computer. Once the standard time is established the management must ensure that all the conditions are achieved to enable the operatives reach the standard time.

(k) The factories should specialize more, have longer runs of orders and less complicated styles. As conditions pertain at the moment there is little opportunity to engineer any of the sewing lines with a loss of efficiency.

(l) The introduction of smaller factories employing a maximum of 500 operators specializing in certain sectors of manufacture should be looked at most carefully. The monoliths which are the norm at present, bear the marks of indiscipline and inefficiency. In a smaller factory it is much easier to instill discipline and create an efficient climate.

(m) Outside (Western Europe) Cutting room technology, should be bought. A pilot scheme should be bought (including laying up tables and machines) and installed and used as a model for the remainder of the factories. Any subsequent Cutting Rooms would be based on the model with whatever modifications the local technicians think necessary and have the equipment made locally.
The same recommendation will apply also to the sewing rooms. A complete line of machines, equipment and layout may be bought (for trousers, jackets, shirts etc.) including technical know-how. This is most important for the survival of the Clothing Industry.

(n) Higher management and technicians should be encouraged to take more trips abroad to visit exhibitions and selected clothing factories. There are some very competent people employed in the garment industry who are stagnating through lack of contact with modern efficient clothing factories.

ANNEX I

DUTIES

After discussing a work plan with the officials of the Garment Industry Organization, the expert will introduce and demonstrate modern garment-making technology in its broadest sense to a group of 25 garment industry technologists. The expert will specifically be expected to:

(i) introduce methods for the inventory control of cloth and auxiliaries, and a related ordering system;

(ii) advise on Cutting Room technology;

(iii) conduct courses in production organization, work study, incentive systems, techniques for production-line layouts, production planning and control;

(iv) introduce quality control systems;

(v) advise on the selection of modern sewing machinery, auxiliaries, attachments, work-aids etc. in selected factories.

ANNEX II

SUMMARY OF LECTURES

Lecture	1	-	Organization - classical and traditional theories of organization.
	2	-	Tools of planning - work measurement.
	3	-	Sewing Room design i.e. line balancing etc.
	4	-	Materials handling - systems of moving work.
	5	-	Production planning and control depts.
	6	-	Scheduling in the cutting room.
	7	-	Cost control.
	8	-	Sewing Room Management - maintaining correct std. time.
	9	-	Measurement of motivation and productivity slack.
	10	-	Rules for maximum productivity.
	11	-	Incentive schemes - the rules.
	12	-	Unearned wages - their causes and remedies.
	13	-	Video and training.
	14	-	Video and rate setting.
	15	-	Total quality control and the cost of quality.
	16	-	Principles of motion analysis in the sewing room.
	17	-	Motion economy considerations in designing work stations.
	18	-	Quality control in the management structure.
	19	-	The total quality control approach - A checklist.
	20	-	A list of garment defects.
	21	-	Installing quality control.

ANNEX III

LIST OF FACTORIES VISITED

Name of factory	Number of operatives	Type of manufacture
Bucharest	18,000	Mens and womens wear
Braila	5,000	Shirts
Sibiu	2,500	Mens and womens wear
Focşani	4,000	Mens and womens wear Light sewing
Bacáu	4,200	Mens and womens wear
Birlad	2,500	Shirts
Cluj-Napoca	2,400	Mens wear