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APPLICATION OF RESEARCH RESULTS IN EASYCARE
COTTON FABRICS IN THE TEXTILE INDUSTRY,
DP/IND/82/011
INDIA

Technical report: Initial review of project
(Wo.1)

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

Based on the work of T.A. Marsland
Chief Technical Adviser

United Nations Industrial Development Organization
Vienna

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1.0 INTRODUCTION

The Chief Technical Adviser (CTA) briefing for the project visit was concluded at the UNDP in New Delhi on Monday, 29 August 1983.

Present at the briefing were:
Mr. T.R. Haakan - Programme Officer
Mr. S. Ramamurthy - Assistant Programme Officer

The prime objectives of the visit were given as being:

i) Preparation of a Work Plan;
ii) Completion of a Project Progress Report;
iii) Completion of a Project Evaluation Report - (Form PC/1 - series);
iv) Preparation of Study Tour Specifications;
v) Presentation of Agenda for Tripartite Meeting originally to take place 26/7 September 1983;
vi) Comment on the decision to appoint a national organization/individual for the Market Survey Component of the project;
vii) Preparation of visit report, in accordance with the terms of reference issued.

The constraints stipulated being:

i) The Project Document and Objective to stand;
ii) That the Revised UNDP input - Project Budget Code 'B' - could not be exceeded.

1.2 The Project

The project was conceived in 1978 and finally activated in December 1982. Its aim and objective is to research and development within ATIRA easycare chemical finishes for cotton fabrics, rendering these more acceptable in the consumer markets and thereby increasing the demand for these goods in both home and export markets. On completion of the project work, the technical information and experience gained from field scale trials will be disseminated to the industry through the medium of technical publications and seminars.
2.0 OBSERVATIONS

Project work was commenced in December 1982 with the appointment of project staff, the allocation of office accommodation and buildings' floor space for the equipment placed on order. The initial Research and Development work, necessary at the initial stages of the project has proceeded with qualified satisfactory progress, and the initial technical parameters for the project defined.

2.1 Work undertaken during this period includes the following:

i) Establishing preparatory processes for cotton fabrics most suitable for the application of easycare chemical finishes. The method selected being based on sodium carbonate scouring (as opposed to sodium hydroxide) followed by conventional hydrogen peroxide and sodium hypochlorite bleaching;

ii) Laboratory trials establishing the precise chemical formulations and application conditions for imparting optimised easycare properties - consistent with retained fabric physical properties;

iii) Evaluation of differing fibre compositions and fabric constructions suitable for the application of easycare chemical finishes. The scope of this work has since been enlarged to include dilute blends of polyester and cotton;

iv) Selection of product areas, namely - shirtings, suitings, bed sheets and dress fabric;

v) Selection by laboratory evaluation of fabrics intended for initial, local wearer trials.

2.2 Of late, project work has been impeded to some extent by the late arrival of equipment, a delayed CTA input and external factors having an influence on the project - necessitating decisions that could not be taken in isolation. All such matters have or are in the course of being resolved; however, for the continued successful progress of the project, it was evident that some modification to the work content and inputs, within the framework of a detailed work plan were called for if this was to be achieved - and for the project to maintain a creditability with the industry.
3.0 **CTA ACTIVITIES**

Following a period of familiarisation with the project and review of the progress to date, work was commenced on resolving those matters impeding progress, and in executing the main tasks given as prime objectives of the visit.

3.1 **Work Plan (see Attachment I)**

A revised detailed Work Plan has been drawn up in conjunction with Mr. J.R. Modi - Project Co-ordinator, and is presented for approval by the appropriate authorities. Apart from timing, the main modifications in work content from that outlined in the project document are:

i) Elimination of the Flare Retardancy element;

ii) Inclusion of dilute polyester/cotton blends in the R&D work;

iii) Increased evaluation element;

iv) An increase in the Market Survey input;

v) Two study tours are planned, the first in 1984 and the second in 1985;

vi) Planned inputs/outputs have been rephased.

A reasoned explanation for these modifications is contained in the preamble to the Work Plan.

3.2 **Equipment**

All required equipment has been or is in the course of being ordered. Comment is reserved for those items requiring an element of finalisation.

**Garment Curing Oven** - The intended supplier for this equipment has declined from making a quotation. An alternative supplier - Froll and Lohmann, has been identified and his quotation is awaited. Other alternative suppliers will be identified by UNIDO staff attending the ITMA exhibition, and by the author on his return to UK.

**Micro Film Reader cum Printer** - This equipment has been received minus requested accessories and spares; this matter is being rectified by UNIDO Purchasing Section. The equipment console was received in a damaged condition and is the subject of an insurance claim.
Sewing Machines (2) - Received in a damaged condition (slight), are the subject of an insurance claim.

Gel Permeation Chromatograph - This item of equipment is not essential to the success of the project - further, insufficient funds remain for it's purchase. By agreement with ATIRA and UNIDO, the order placed for this equipment is to be cancelled, any charges arising from this action to be defrayed from the remaining equipment budget balance.

3.3 Revised UNDP Input

The budget document UNDP/82/011/B/01/37 has been revised as Code 'C' and is attached to the Work Plan. Budgeted expenditure has been contained to that previously approved; but rephased to coincide with project activities. The previously budgeted allocation for the Flame Retardancy Consultant has been incorporated into that allocated for the Market Survey element - reflecting the increased work content of this activity. It is possible that a proportion of this allocation may be required to fund the garment manufacture in Stage 6; depending upon whether alternative sourcing becomes available. In response to the confirmed request that this work is to be undertaken by a national organization/individual, the budget allocation for this activity has been transferred to line 20 of the document.

3.4 Market Survey Input

The detailed Work Plan calls for a greater Market Survey input than previously envisaged. Within the context of the present project, allocated inputs would not permit meaningful field work in potential export markets. On the premise that a healthy home market will provide a sound base for a viable export trade, it is considered that the main market survey effort should be directed to the former, and the export aspect considered as a Desk Survey. Such an approach would be facilitated by recent restricted publications surveying potential export markets; in addition to which there are federation and governmental bodies actively engaged in this work who could be approached.
For the above reasons, a national organisation or individual would be more suited than an overseas expert.

As the Market Survey input is planned for a later stage of the project work, specifications for this will be prepared during the next visit.

3.5 Industry Involvement

Earlier work by ATIRA staff had identified companies expressing positive interest in the project work, and initial discussions had taken place regarding product and fabric selection. Once an outline work plan had been formulated, a project Steering Committee Meeting was called and took place on 8 September 1983. At the meeting, the project objectives and work plan were outlined and discussed in detail.

The organised industry, including those represented at the meeting are experiencing difficult trading conditions - mainly because of increasing competition from the power loom sector. Comment was passed regarding the increasing volume demand for polyester/cotton blend fabrics; the decision to include dilute blends of polyester/cotton fabric in the project work was unanimously approved and several offers of assistance in kind were received.

Subsequently, visits were made to these mills when the project work, and the company's interests were discussed in greater detail.

3.6 Study Tours (see Attachment II)

During the visit, and itinerary for the first study tour was prepared and will be presented to the Training Section - UNIDO during de-briefing in Vienna. In accordance with current practice this has been restricted to a period of six weeks.

Nomination forms for this have already been prepared and submitted to the Government of India (May 1983) for approval and forwarding to UNDP-New Delhi. Since the first of these tours is planned for May-June 1984, ATIRA will require early advice if there is an impediment in this processing.
3.7 **Tripartite Meeting**

The annotated agenda presented during UNDP-New Delhi briefing is considered to be inappropriate to the present stage of project progress. An alternative agenda more compatible with this is forwarded for consideration. It is understood that this meeting will be arranged to take place in November 1983.

3.8 **Project Outputs**

Project progress in the present instance is monitored by the scheduled production of technical reports, publications and dissemination seminars by ATIRA. The detailed work plan produced calls for outputs at specific stages of the project's progress, the nature and timing of these outputs being as follows:

<table>
<thead>
<tr>
<th>Output No.</th>
<th>Description</th>
<th>Date</th>
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<tbody>
<tr>
<td>No. 1</td>
<td>The establishing of chemical formulations and conditions of application, for impoerting optimized easy care properties to cotton and dilute blends of polyester/cotton fabrics.</td>
<td>February 1984</td>
</tr>
<tr>
<td>No. 2</td>
<td>Results of comparative laboratory testing of 100% cotton and dilute polyester/cotton blended fabrics having had an easy care finishing treatments.</td>
<td>November 1984</td>
</tr>
<tr>
<td>No. 3</td>
<td>Correlation of laboratory testing and wearer trial responses on easy-care garments. Criteria for the selection of fabrics in the intended product areas.</td>
<td>May 1985</td>
</tr>
<tr>
<td>No. 4</td>
<td>Project Technical Report</td>
<td>May 1986</td>
</tr>
<tr>
<td>No. 5</td>
<td>Market Survey Report</td>
<td>June 1986</td>
</tr>
<tr>
<td>No. 6</td>
<td>Dissemination Seminars/Publications</td>
<td>September 1986</td>
</tr>
</tbody>
</table>

If approved by Tripartite agreement, the above outputs would replace those annotated in the Project Document.
4.0 RECOMMENDATIONS

All the actions taken during the CTA visit and related above have been discussed and agreed with the Project Co-ordinator and Directorate at ATIRA.

For the project to attain its set objectives and to proceed without further impediment, the following recommendations are presented for approval by the appropriate authorities:

4.1 That the detailed Work Plan, including the modifications referred to in the foregoing are given early approval by the appropriate authorities.

4.2 That the revised outputs referred to above are given approval, and should replace those contained in the Project Document as outputs and intermediate objectives for the purpose of assessing future project progress.

4.3 In view of the essential role of the Market Survey element to the success of the project, the means of funding this activity should be established without delay.

4.4 With regard to 4.3 above, ATIRA does not have the means of funding this activity. That the nomination of an Indian organization/individual for the Market Survey work would preclude UNDP funding was not appreciated until being de-briefed in New Delhi. As no resolution of the matter was immediately available, Mr. T.R. Maaken undertook to pursue this subject during his forthcoming visit to Headquarters in New York.

5.0 CONCLUSIONS

At the conclusion of the initial project visit, all of the objectives and tasks set for the visit have been completed.

Given early approval of the recommendations put forward in 4.1 - 4.3 above, the project can be proceeded with in a manner ensuring that intermediate and project objectives are attain and at the specified times.
In conclusion to this report, the author would wish to record his appreciation of the kind hospitality and co-operation extended to him by the Directorate, Project Co-ordinator and Staff, during the course of this work.
Attachment I

UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government of India

Application of Research Results in Easycare Cotton Fabrics in the Textile Industry

(IND/82/011/A/01/37)

PROJECT WORK PLAN

22nd Sept., 1983
1.0

The above activation, various bearing

For this evidence, should changes project these

2.0

2.1

During of the and due blend fabric by the

2.2

Polyesters high made of have and corresponding grade of inferior polyesters

2.3

High can an easy therefore applied fabric the trin...
Project was originally conceived in 1979 and finally December 1982. During this intervening period, all changes have taken place which have a direct project and anticipated outputs.

In order to maintain a reality with external events, and editability with the industry at large, it was he work content as originally envisaged - filed to an extent that would reflect the external e-same time permitting the attainment of the ive. The work plan presented aims to satisfy elements in all respects.

1. CHANGES

1. Market

In five years, a large and increasing proportion purchasing public have experienced the easy-care properties afforded by high content polyester/cotton.

To the extent that there is a demand for such preference to cotton. This demand is currently met c industry and the importation of made-up garments.

e and yarn are expensive in India, consequently polyester/cotton blend (48/52, 67/33 respectively) ments are considerably more expensive than those. To counter this differential, many manufacturers to producing composite blends of polyester, polynosic re in the proportions of 15:52:33 and 33:33:34

The polynosic fibre, whilst - cheaper than medium is an imported item, and produces a fabric having mance properties than the higher content on blends.

1. Polyester/cotton fabrics are not normally given hemical finish for the domestic market. It, ows, that a high performance easy-care finish t cotton fabric or low content polyester blend produce a fabric surpassing those manufactured from nd referred to in 2.2 above; and at the least,
equate to the 48/52 and 67/33 blends, in easy-care properties.
It is anticipated that such fabrics will compete successfully
with the latter on a price basis, and should therefore stimulate
the sale of textiles in domestic markets; at the same time
providing a sound base for the further development of a finished
fabric and made-up garment export trade.

3.0 WORK PLAN

3.1 In preparing a Work Plan that reflects, and takes into
consideration the external changes that have taken place, it
has been necessary to modify the project work content and
work plan contained in the Project Document. The modifications
incorporated in the revised Work Plan are as indicated in the
following paragraphs.

3.2 Modifications

(i) The inclusion of dilute blends of polyester/cotton
    in the R&D programme.

(ii) An increased element of evaluation in the project work.

(iii) The elimination of the 'Flame Retardancy Expert'.
    This has no relevance to the successful attainment
    of the project objective. Input information required
    for the formulation of a forward R&D programme will be
    forthcoming from planned study tour work.

(iv) The Work Plan presented requires a larger Market Survey
    input than that previously envisaged; this has been
    increased to a level considered necessary for the success
    of the project.

(v) Planned Study Tours have been reduced from three to two.

(vi) Planned inputs and outputs have been rephased to
    correspond with project work and activities.

(vii) The project completion date has been extended to
    September 1986.

3.3 Work Plan Presentation

The work plan is presented in graphical form on page _8_ of this
annex, previous pages state the project methodology, the activity
net work and detailed project activities in tabular form.
For internal monitoring and control purposes, the project work content is presented in ten progressive stages.

3.4 On receiving Tripartite Approval the presented Work Plan will replace the provisional one attached to the Project Document as Annex III.
## WORK PLAN - PROJECT PROGRESS STAGES

<table>
<thead>
<tr>
<th>Stage</th>
<th>Main Activities</th>
<th>Duration Months</th>
<th>Elapsed Time Months</th>
</tr>
</thead>
</table>
| 1 Preparatory Work | 1 Acquisition, Installation & Commissioning Equipment  
                           2 Laboratory Evaluation of Preparation Methods, Formulations and Conditions for Optimal Easy-Care Properties  
                           3 Progress Report |                |                     |
|             | **Sub Total**                                                                  | 14             | 14                  |
| 2 Pilot Scale Trials | 1 Product Selection  
                           2 Selection of Fabric Ranges  
                           3 Pilot Scale Manufacturing & Processing Trials  
                           4 Laboratory Evaluation of These Results  
                           5 Rationalisation of Fabric Ranges |                |                     |
|             | **Sub Total**                                                                  | 6              |                     |
| 3 Mill Trials | 1 Manufacture of Mill Trials Fabric  
                           2 Supervision of Mill Processing Trials  
                           3 Establishing Standards for Garment Manufacturing  
                           4 Laboratory Testing and Evaluation of fabrics  
                           5 Laboratory-Comparative Testing of 48/52 and 67/33 Polyester/Cotton Blends  
                           6 Progress Report |                |                     |
|             | **Sub Total**                                                                  | 4              |                     |
| 4 Weavers | 1 Supervision-Garment Manufacture  
                           2 Preparation and Supervision Weafer Trials  
                           3 Laboratory Garment Assessment | 3             | 2                   |
|             | **Sub Total**                                                                  | 4              |                     |
| 5 Evaluation & Selection | 1 Evaluation of Weafer Trials  
                           2 Selection of Fabrics for Mill Production Runs with Market Research Assistance  
                           3 Progress Report                      | 1             | 1                   |
<p>|             | <strong>Sub Total</strong>                                                                  | 1              |                     |</p>
<table>
<thead>
<tr>
<th>Stage</th>
<th>Main Activities</th>
<th>Duration Months</th>
<th>Elapsed Time Months</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>Mill Manufacture of Selected Fabrics</td>
<td>6</td>
<td>5</td>
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<tr>
<td></td>
<td>Supervision of Mill Finishing</td>
<td>2</td>
<td>1</td>
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<td></td>
<td>Supervision of Garment Manufacture</td>
<td>3</td>
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<td></td>
<td><strong>Sub Total</strong></td>
<td></td>
<td>7</td>
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<tr>
<td>7</td>
<td>Consumer Acceptance - Field Trial</td>
<td>4</td>
<td>3</td>
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<tr>
<td></td>
<td>Laboratory Evaluation Fabric and Garments - Comparison with Competitive Products - Domestic/Oversea Origin</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Establish Production/Manufacturing Costs - Liaison with Market Research</td>
<td>1</td>
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<td>Evaluation of Field Trial Responses</td>
<td>1</td>
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<td><strong>Sub Total</strong></td>
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<td>4</td>
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<td>8</td>
<td>Market Research - Home &amp; Export Markets Market Size (HRC), Distribution Patterns, Tariffs Trade Restrictions Price Structures etc. Economic Assessment of Product Viabilities and Forecasted Sales</td>
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<td>3</td>
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<td><strong>Sub Total</strong></td>
<td></td>
<td>2</td>
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<tr>
<td>9</td>
<td>Preparation of Forward R &amp; D Program: Inputs - Project Work - Study Tours - Market Research Recommendations</td>
<td>1</td>
<td>1</td>
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<tr>
<td></td>
<td><strong>Sub Total</strong></td>
<td></td>
<td>1</td>
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<td>10</td>
<td>Dissemination: - Seminars (Commercial &amp; Market Research Inputs) - Project Publication/Report</td>
<td>4</td>
<td>3</td>
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<tr>
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<td><strong>Sub Total</strong></td>
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<td><strong>Total Elapsed Time</strong></td>
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<td>45</td>
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</table>
WORK PLAN - ACTIVITY NETWORK

1.1 EQUIPMENT INSTALL & COMMISSION

1.2 ESTABLISH FORMULATION PROCESS CONDITIONS

2.1 PRODUCT SELECTION

2.3 PILOT SCALE PRODUCTION

2.4/5 LABORATORY EVALUATION SELECTION

2.6 MILL TRIAL 3.1/2/3

3.1 GARDEN MANUFACTURE

3.4 LABORATORY EVALUATION

3.5* LABORATORY EVALUATION

4.1 WEARER TRAILS (Local)

4.2 WEARER EVALUATION AND CORRELATION

4.3 SELECTION FABRICS & FINISHES

5.1 MANUFACTURE AND PROCESSING

6.1 MARKET SURVEY

6.2 REPORT DOMINANT FABRICS & FIELD WORK

7.4 EVALUATION

7.1 WEARER FIELD TRIALS

7.2 LABORATORY EVALUATION

7.3 GARDEN MANUFACTURE

8.1 MARKET SURVEY

9.1 FORWARD R&D PROGRAMME

10.1 DISSEMINATION SEMINAR LOCAL & NATIONAL PUBLICATIONS ETC.

* REPORT OUTPUTS
PROJECT METHODOLOGY

Establish Chemical Formulations and Application Conditions for Imparting Optimal Easy-care Properties to Cotton and Dilute Blends of Polyester/Cotton

Stage 1

SELECTION OF PRODUCT AREAS

SHIRTINGS  SUITINGS  BED SHEETS  DRESS FABRICS

Stage 2

Evaluate Differing Constructions of the above Fabrics as to their Suitability for Easy-Care Treatment in the intended Product Areas

Stage 3

SELECT

3 COTTON FABS
15/85 Poly/Cotton
33/67 Poly/Cotton

2 COTTON FABS +
33/67 Poly/Cotton

2 COTTON FABS +

3 COTTON FABS +
15/85 Poly/Cotton
33/67 Poly/Cotton

LABORATORY EVALUATION: COMPARISON WITH HIGH BLEND P/COTT

Stage 4

LOCAL WEARER TRIAL EVALUATION

Stage 5

SELECT

Stage 6

COTTON FAB
COTTON FAB
COTTON FAB

1 P/C FAB
1 P/C FAB
1 P/C FAB

LABORATORY EVALUATION: COMPARISON

Stages 7 and 8

CONSUMER ACCEPTANCE - FIELD TRIALS

COST : VALUE ANALYSIS

Stages 9

PLAN FORWARD R & D WORK
## PROJECT BUDGET COVERING UNDP CONTRIBUTION (IN U.S. DOLLARS) REVISION

**Country**: INDIA  
**Project No.**: IND/DP/82/011/C/01/37  
**Title**: APPLICATION OF RESEARCH RESULTS IN EASY CARE COTTON FABRICS IN THE TEXTILE INDUSTRY

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<td><strong>10 PROJECT PERSONNEL</strong></td>
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<tr>
<td>11 International Professionals</td>
<td>8</td>
<td>62,400</td>
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<tr>
<td>11-01 Senior Consultant</td>
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<td>COMPONENT TOTAL</td>
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<td>Prior Tr. Adjustments</td>
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<tr>
<td>COMPONENT TOTAL</td>
<td>134,000</td>
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<td>38,790</td>
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<td>Miscellaneous</td>
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<td>109,660</td>
<td>80,990</td>
<td>56,900</td>
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STUDY TOUR NO. 1

Nominee : Mr. J.R. Modi
Duration : 9 weeks
Timing : May - June 1984
Countries to Visit : W. Germany, U.K., U.S.A., Korea

Objective :
To gain experience in present day practices adopted for the manufacture of easy-care fabrics and garments; to gain knowledge of current research and development work on this and related subjects in the above countries.

Purpose :
For the more effective execution of the above project and to provide an input for the forward ATIRA Research and Development Programme.

Field of Study :
1. Easy-care Chemical Finishes and their application
2. Factory production of garments made from such fabrics e.g., Shirts, trousers etc.
3. Developments in preparatory processes

SUGGESTED ITINERARY

WEST GERMANY

1. B.A.S.F. AG 6700 Ludwigshafen Rhein W.Germany
   3 Days Technical discussions related to wet processing.

2. Institut Fuer Textiltech D.7306 Denkendorf -nik
   3 Days ) Pollution and Textile Processing.
   3 Days ) Technical discussions relating to wet processing.

3. Institut Fuer Textiltech D.7410 Reutlingen -nik
   3 Days ) Manufacturing of garments - preferably including easy-care garments

4. FIRST CHOICE
   Factory Visits 4 days
4A  

**SECOND CHOICE**

Institute für Textil- und-Faserforschung  
Ulmer Strasse 227  
D-7000, Stuttgart 60

Textilforschungsanstalt  
- Krefeld eV  
Rankesring 2  
4150 Krefeld

**U.K.**

U.M.I.S.T.  
Department of Textiles  
Sackville Street  
Manchester

Shirley Institute  
Didsbury  
Manchester M20 8RX

*Mr. F.H. Burkett - Director  
International Institute for Cotton  
Kingston Road, Didsbury,  
Manchester M20 8RX

CIBA-Geigy Ltd  
Manchester Road  
Clayton  
Manchester

ICI Ltd.,  
Textile Applications Section,  
Organics Division  
Blackley  
Manchester

Garment Manufacturers  

Clothing Institute  
Hillview Gardens  
Hendon, London NW4 2JS

British Launderers Association  
Hillview Gardens  
Hendon, London NW4 2JS

Marks & Spencer PLC  
Baker Street  
London

- 23 -

2 Days  Technical Discussions

2 Days  Technical Discussions of  
Wet processing related to  
cotton T.Cotton blends.

2 Weeks approximately

3 Days  Garment Manufacture,  
Standard Costing, Quality  
Control

1 Day  Laundering Practices  
- Europe

1 Day  Quality Standards &  
requirements for easy-care  
garments
### U.S.A.

**Preference**

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<th>Company/Mount</th>
<th>Days</th>
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<tr>
<td>1st</td>
<td>Cluett Peabody Corp.</td>
<td>2 Days</td>
<td>Technical Discussions related to Wet Processing</td>
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<td></td>
<td>Sanforised Corp.</td>
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<tr>
<td>530, Fifth Avenue</td>
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<tr>
<td>New York NY 10036</td>
<td></td>
<td></td>
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<tr>
<td>2nd</td>
<td>United States Department of Agriculture, Southern Region Research Centre, P.O. Box 19687 New Orleans</td>
<td>4 Days</td>
<td>Technical discussions related to wet processing and easy-care chemical finishes and garments</td>
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<td>3rd</td>
<td>Garment Manufacturing</td>
<td>7 Days</td>
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<td>4th</td>
<td>Gillette Research Inst., Rockville, MD Garfield, N.J. 07026</td>
<td>1 Day</td>
<td>Easy-care fabrics &amp; Garments-comfort aspects</td>
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<td>5th</td>
<td>J.P. Stevens &amp; Co Technical Centre 141 Lanza Avenue</td>
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<td>6th</td>
<td>DuPont De Nemours &amp; Co R 6D Division Organic Chemicals Dept Wilmington DE 19898</td>
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<td>7th</td>
<td>Dow Corning Corp Midland Michigan</td>
<td>1 Day</td>
<td>Technical discussions Wet Processing and chemical finishes</td>
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<td>8th</td>
<td>Cotton Incorporated Crabtree Raleigh (NC)</td>
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<td>9th</td>
<td>North Carolina State University Textile Chem. Department Raleigh (NC)</td>
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<td>10th</td>
<td>Textile Department Clemson University Clemson South Carolina 29631</td>
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**KOREA**

1 Week

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<td>Korea Textile Testing Inst., 43-8 Kwanchul-dong Chongno-ku Seoul (74)</td>
<td>Discussions and factory visits to processors and garment manufacturers</td>
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* Re. factory visits: It is believed that the International Institute for cotton in W.Germany, U.K. and USA would be cooperative in arranging visits to garment factories. Also—the American Apparel Manufacturers’