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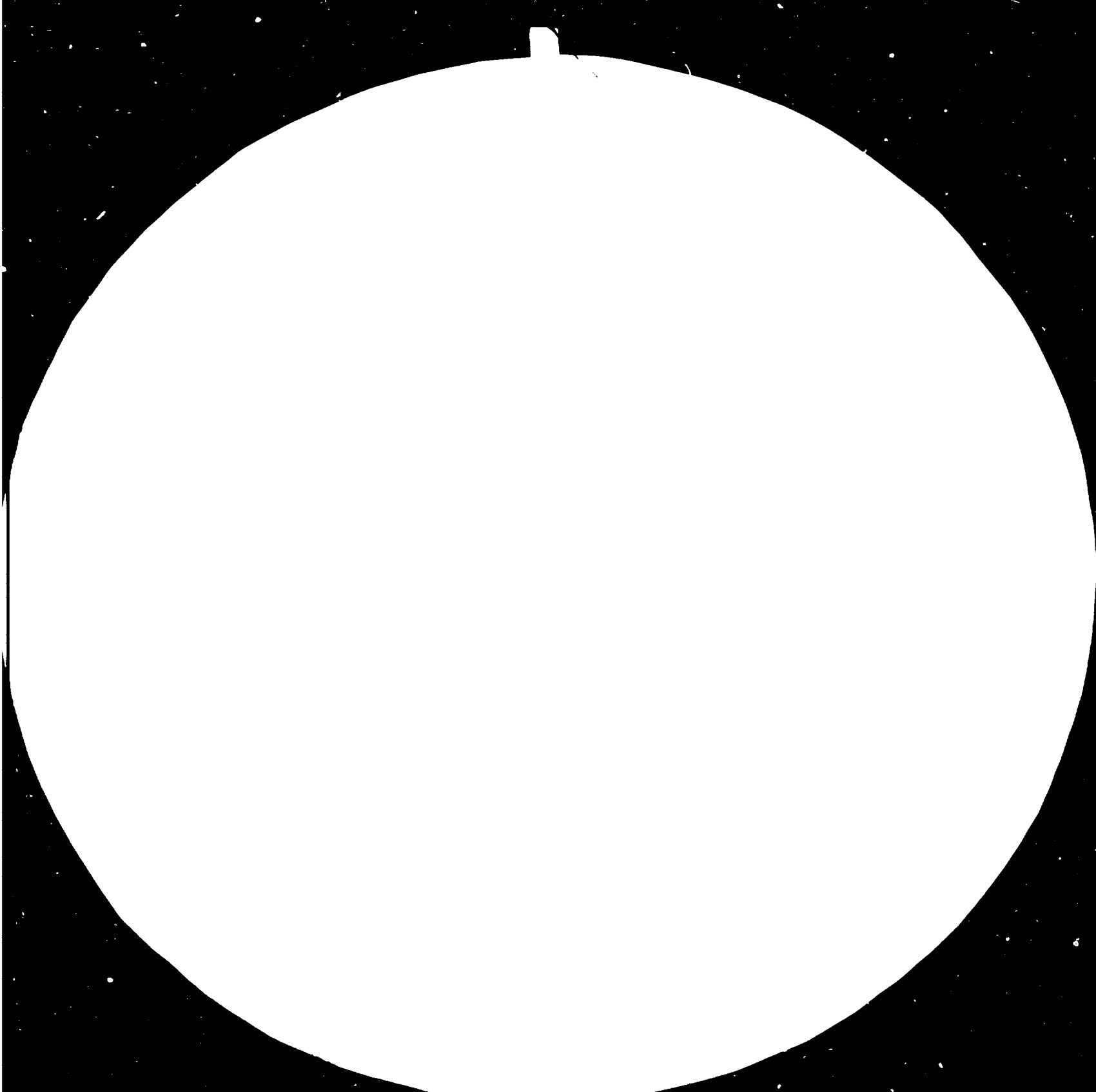

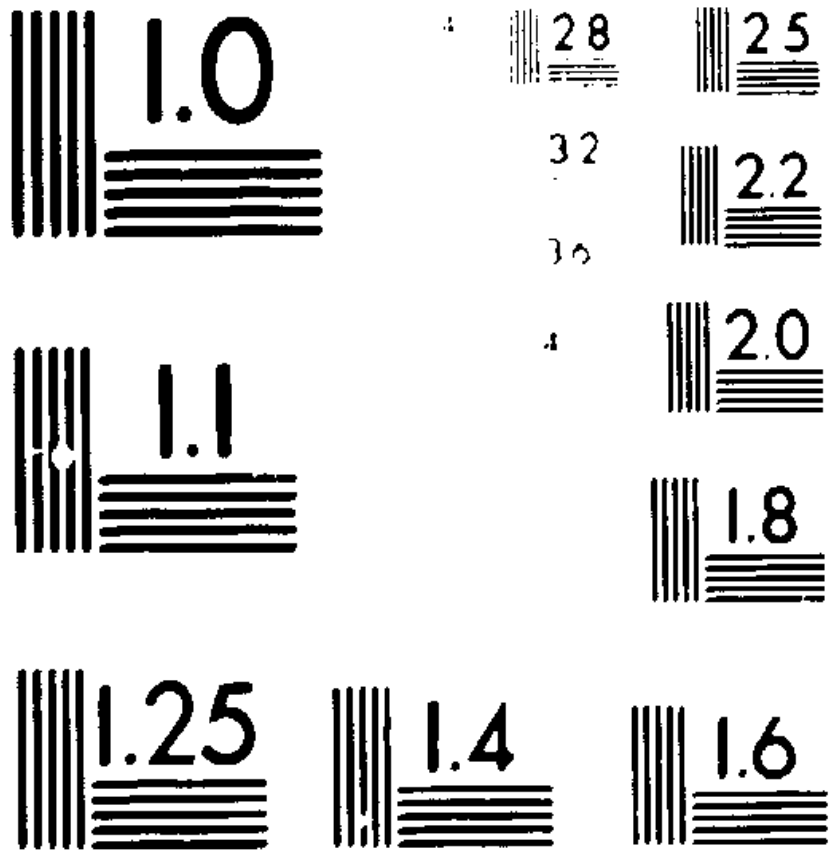

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TEXTILE INDUSTRY DEVELOPMENT PROGRAMME

DP/BGD/82/006

BANGLADESH

Technical Report: Assistance to the Spinning Sector*

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

Based on the work of R. Ashton
Spinning Adviser

United Nations Industrial Development Organization
Vienna

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1. This is the final report covering my term of duty at the TEXTILE INDUSTRY DEVELOPMENT CENTRE, PROJECT NO: DP/BGD/82/006 from August 1981 - December 1983.

A. PROJECT INFORMATION

1. THE DEVELOPMENT PROJECT

The objective of the development programme was to increase domestic production of yarns and fabrics in the Bangladesh Textile Mills. In attaining this, it was expected that production costs would be reduced, and the country would reach self sufficiency in the industry. This in turn would restrict importation of yarn and cloth into the country. With the shortage of yarn in the handloom sector, it was envisaged that the project would also lead to an expansion in this sector.

2. THE ADVISERS AND RESPONSIBILITIES

A team of advisers had been in operation since 1979. Each adviser having joined the team at varying stages of time between 1979 and 1981. The advisory team consisted of the following:-

2.1 AREA OF ADVICE	OPERATION	TRAINING
Project Leader	1	
Spinning	2	1
Preparatory and Weaving	1	1
Bleaching, Dyeing & Finishing	1	1
Workshop Engineering	1	

2.12 The Spinners project time for adviser was

Operations 4 years/Adviser
Training 4 years/Adviser

2.13 In 1982 Spinning Operation man-hours were reduced from initial total man-months of 96 to 80 man-months.

005 42 man-months
006 38 man-months

2.14 On termination of the project assuming the date as 31.12.1983 the total input in terms of man-months for the spinning section, is as follows:-

004 46 man-months Training
005 35 man-months Operations
006 28.5 man-months Operations

A reduction of approximately one third of the initially agreed spinning operation input. It can be realised that this was a critical time to terminate

the spinning operation project. The formulation of the most effective way of helping the industry had been established. The counterparts who, having been trained in the initial stages, to work as an orchestrated team on fault finding and rectification work in the mills, were observing the results of their combined work in the form of reduced yarn breaks at spinning, and indeed at all process. Combined with increases in production and improved quality this was a great incentive to them in terms of work input. Many hours were worked outside the official UN Schedule hours, by spinning operations Advisers, and counterparts.

The man-hours lost would have been utilised in more detailed work for the counterpart in their production and technical development, such as an appreciation of work study, work method, activity sampling etc. and also to develop each individuals self reliance as opposed to team working. In this way, more mill studies could have been undertaken.

2.15 The Spinning Adviser(Operations) activities, which would naturally have a beneficial effect on subsequent further processing, was essentially to promote the following line of operations. Our brief was as follows:-

2.16 Increase the productivity and improve yarn quality in the spinning section.

2.17 Rationalisation of present production programmes with a view to reducing the number of counts spun in each mill.

2.18 Increase in machine and worker productivity through correct machine settings, improved working methods, and suitable maintenance schemes.

2.19 Selection and procurement methods of cotton and other raw materials for the industry.

2.20 Setting up appropriate quality and process control systems at the mill and corporation level. Including minimum quality standards.

2.21 Training of 3 counterparts(1 senior counterpart, Asstt. Manager Spinning level) (2 junior counterparts, Asstt. Spinning Master level) to eventually take over the responsibility of assisting in raising production and quality levels in the industry.

2.22 To involve BTMC management and technical staff in the work TIDC were carrying out in the mills, thus giving them the opportunity of improving their technical appreciation. Some senior management being commercial and non-technical, this was an opportunity to assess the strengths and weaknesses of their internal staffs.

Additional activities that we were to carry out, which although essential, also detracted from our agreed brief of initially increasing productivity and improving quality, was to implement the following programmes of work.

2.23 Technical feasibility studies for BMR programme in both the public sector, and later, the private sector mills. Initiated by World Bank-IDA Credit.

2.24 To convert 2 spinning units to spinning Polyester/Cotton blend yarns from 100% cotton yarns. With subsequent liason with the weaving of these Polyester/Blend fabrics.

2.25 A further programme was requested by the Chairman of BTMC. The 3 Spinning Advisers were to be given 5 selected mills for a 3 month period to concentrate on these mills and increase productivity and quality. This was to be effective Sept. 82 to Nov. 82.

3. HISTORICAL DATA

It is not intended to write a homely on the recent past history of the Bangladesh Textile Industry. This has been well documented in pre-project information. It is sufficient to outline, that there has been, and still is, a shortage of Bangladesh spun yarn in the country.

3.1 That the spinning mills are running at low efficiency.

3.2 That in the weaving sector, Power and Handloom, there is still a shortage of yarn, and there are many looms stopped for this reason.

4. PROBLEMS RELATING TO PRODUCTIVITY

Again in the pre-project documents, there are many valid reasons given, as to why the textile industry has not been sufficient since 1971. From my experience over the last 27 months the following reasons are still valid:

4.1 The social and economic structure whereby salaries paid to the Managers and Technical people of industries lead to the more capable people seeking employment and rewards in other countries. The foreign currency returned by these people is a very poor substitute for the speedier development of the country's industrial sector.

4.2 Perhaps one of the biggest constraints on consistent progress in the mills, is the fact that in the first 20 months of service in Bangladesh, the raw materials position was very critical. Many mills ran completely out of cotton and the mills that were fortunate not to do so, did not have the correct types for spinning the products of the mill.

As well as creating low efficiencies, this also had the demoralising effect on the workforce in these stop-start situations. Especially if bonuses were at stake. Further detrimental spin offs from these situations occurred when management would try to spin higher count that the cotton was suited for. The result being distinctly higher ringframe end breaks than the already excessive breaks that occurr. In some cases more than an operator could manage effectively even with a one-frame allocation.

4.3 Power is another major source of loss of production. Calculated losses vary from 2.5% to 5% over a 12 month period. Load shedding as practised in the Chittagong areas is infinitely preferred to the no-warning-close down that occurrs in other districts. (See graphs Table 2)

4.4 Lack of spare parts and essential ancillary items such as drafting roller rubber cots and aprons, also lead to reductions in quality and production.

4.5 The financial position of each mill in terms of purchasing the necessary requirements to sustain full production.

4.6 The pricing structure of the spun count, as laid down by the Government legislation which on the predominent spun counts of 40 and 32 created losses at each mill.

4.7 The lack of appreciation by Managers technical and non-technical of the reasons for low productivity in the mills.

4.8 The shortage of practical textile technicians, managerial and maintenance.

4.9 The range of counts spun, in relation to the average count the machinery has been installed to spin. The mills very often spin at average counts which put the mills completely out of balance and in doing so underutilise men and machinery thus reducing cost effectiveness.

5. PRODUCTION TARGETS AND EFFICIENCIES

The method devised to standardise production data in the mills is to bring all production to average count of 32's. This is carried out by using conversion figures which have been calculated within BTMC.

The optimum figure as suggested by Temcate the Dutch Textile consultancy agency was 3.5 oz/spindle as an average for Asia. This was then the figure that was adopted by BTMC. Temcate does not state the average count that the figure of 3.5 ozs is based upon. This would have a great bearing on the spindle speeds and T.P.I. that would be required to accomplish this target. BTMC adopted and were trying to attain. In effect this would entail spindle speeds in the region of

12000 r.p.m. for counts from 32's - 80's with the nominal twist for each count as adopted by HTMC. The relevant converted productions for popular counts from 32-80 spinning at spindle speeds of 12000 r.p.m. with the relevant twist Multiplier is as follows:-

5.1

Count	TM	SS	Ozs/Spdl.	%UT
80	4.0	12000	3.415	94
60	4.0	12000	3.4065	92
40	4.25	12000	3.372	90
32	4.25	12000	3.565	90

As stated previously there are many mills with machinery dated 1954-61 era. All of these mills are equipped with Ring Frames with tin roller drive system, which in the main would have a specification when new, of spinning at spindle speeds of 10500 r.p.m. maximum. In the present run down condition of the mills, in addition to the finer count base, the converted productions of 3.5 ozs/spindle is over optimistic.

6. RATIONALISATION

Although HTMC have rationalised the counts spun to a degree. The overall strategy of rationalisation within the HTMC mills is somewhat limited due to individual mills being responsible for profit. Other factors affecting rationalisation are:-

6.1 The seasonal demands by the weavers for fine count yarn and coarse count yarn.

6.2 The inability because of quality reasons to export yarn.

6.3 The inability of the handloom sector weavers to finance their own requirements (to a large extent reliant on agents financing requirements of the yarn, and the subsequent sale of cloth).

6.4 The inability of spinning units in the recent past to make profits particularly in the 40 and 32 counts which represent 80% of all production, government due to legislation on prices. (This position has been improved by recent agreed to price rises).

6.5 The shortfall of raw materials required to correctly balance the mills on the average counts that the mills were installed for.

6.6 The machinery balance within the mills totally out of ratio to the counts spun, resulting in extremely low utilisation of combing equipment. See chart.

B. WORK PROGRAMME

1. INITIAL METHOD OF APPROACH

After our initial appraisal of the mills that had been designated to us, mills that were eventually to be included in Phase-I of the World Bank BMR Programme namely, 8 mills:

Afsar Cotton Mills
Jaba Textile Mills
Dhaka Cotton Mills
Muslin Cotton Mills
Laxmirarayan Cotton Mills
Chittaranjan Cotton Mills
Bogra Cotton Spinning Mills
Kushtia Textile Mills

It was decided that we would first implement a programme of work at the start of each process i.e. the Opening and Cleaning range or Blowroom. The plants that we had visited, which were within travelling distance from Dhaka, would be the mills that we would do our initial work in. When we had corrected all faults in these area's we would then move into the next area of operation.

The programme of work was to ensure that the machinery was mechanically, electrically, and technically correct. Maintenance systems were to be drawn up by the counterparts for each mill, tailored to the machinery requirements and quality of raw materials used. Quality control method were to be introduced. Other areas of work would be appraised, and management given working solutions to be carried out by the mills technical and maintenance staff.

It was intended to all, or majority of faults at the initial process, and also ensure that correct working practices were being adhered to. Quality controls were to be introduced i.e. weighing and controlling each lap produced, yard by yard checks were to be carried out, and control data to be produced in a simple graph form for easy identification. This method helps to identify in general terms where the faults are being created, and therefore action can be taken very quickly. Quality controllers at each mill were instructed how to prepare the graphs, and how to react to them in case of any deviation from the norm.

In every case recordings were made, with the exceptions of 2 mills. Lap weights were systematically recorded in a log book. In all cases recorded weights were finalised to a large extent. This was verified by carrying out lap weight checks at each mill.

N.B. In some of the private mills, lap weights are not recorded. It was strongly emphasised to quality controllers and all management the effect that would be created by allowing irregular laps to pass through into process. How this would lead to uneven places at each process and at the first process of spinning the yarn would be weak and lead to excessive end breaks.

2. QUALITY CONTROL

The majority of the spinning units that were visited were equipped with only the most basic of quality control equipment for spinning units. It considered primarily of the following equipment:-

i. Yarn Wrap Reel
ii. Lea Count Strength Tester
iii. Weigh Pan Balance for Count Checks
iv. Twist Tester
v. Black Board(approx. 70% of mills)
vi. Nep Template(50% of Mills)

The later installations have been equipped with more sophisticated equipment such as:

vii. Drying Ovens for testing moisture content
viii. Hygrometers for checking wet and dry bulb temperature
ix. Fibre Length testing equipment
x. Uster Regularating test equipment(3 Mills)

In all cases with the exception of 1 mill where the Hygrometer was in use. The equipment has been damaged and is out of use.

The level of importance attached to control of quality within the mills was extremely low. The recordings taken at each of the relevant points of operation were with a view to controlling for count variation which was basically all they could do with the equipment available. Although nep counts were recorded in some mills, from our checks, the results were recorded incorrectly. No corrective measures were used according to results that were recorded, with the exception of pinion changes. Constant changing at simplex would lead to more variation at spinning.

2.1 The Method of Recording: was invariably to transcribe all results into log books. These results after the turn of 1 or 2 pages become facts and figures lost in history. Even with the minimum of testing equipment facilities that is available, if it is used correctly, improvements in yarn quality can be achieved. This we have impressed upon Management and Staff. We have illustrated sets of figures in log book form, against figures illustrated in graph form, with a mean figure requirement. This was illustrated at each of the check points.

i.	Blow room	Lap weight and yard/yard recorded weight
ii.	Cards	Sliver weight 6 yard wraps and nep count
iii.	Drawframe	Sliver weight " "
iv.	Comber	Sliver weight " "
v.	Roving	Roving weight 30 yards wraps
vi.	Ring yarn	Average CT with high low recordings strength per lea and LCSP figures.

Against the graphed results we have illustrated how tolerances can be maintained with the correct use of pinion changing. For instances with a drawframe sliver weight requirement of 60 grains or 360 grains/6 yard wrapping and a pinion of 40 teeth. One tooth change on the pinion would be equal to 9 grains change in the weight of 6 yard of sliver or

40 Tooth Pinion = 360 grain sliver/6 yards
41 Tooth Pinion = 369 grain sliver/6 yards

Therefore the tolerance that could be maintained would be between 355.5 and 364.5, or within 1.25% of correct sliver wet. This system can be related where pinions and counts are linked. The tolerance of this sort of simple data recording is that one can detect immediately any deviations out of tolerance levels, and being more specific, can be traced if deviation is materialising from card sliver or Blowroom laps.

A simple system, which if followed correctly can maintain better regularity of yarn. The importance of within machine regularity and overall count, or hank regularity, was outlined to all personnel.

2.2 Approx. 50% of spinning units both in public sector and private sector utilises the nep boards, and nep counting templates. Samples are taken, the results usually recorded in log books. No remedial action is taken on the findings of these tests. For further details on nep counting see "CARDING".

2.3 Although we have infererred that by keeping a correct control of material from Blowroom to finished yarn will result in evenness of finished yarn. This is relatively correct as against not carrying out this method of control. We are however only controlling within the limits of the length of material checked and to achieve a good regularity of finished yarn requires more sophistidated equipment which either is not available or out of action.

This was outlined in my initial first month report. Two Mini Uster sliver regularity testers were then purchased for TIDC. These were very effective in obtaining optimum results within the capability of recordings analysed. See Drawframe for further information on Mini Uster.

3. INFLUENCING FACTORS

In the initial stages of our involvement with the various mills, it has been necessary to involve ourself in many other areas other than the technological aspects of production of spun yarn.

3.1 Unions - Before Martial Law was enforced most of the mills were in a strong grip of various unions who were extremely militant. In the main, the labour leaders in each mill(and these could vary from around 4 up to 12 and even 16 people) none of these people held any working position in the mills. The degree of their autonomy varied from mill to mill and from area to area. Another aspect was that the unions were also politically orientated. So as well as having to contend with the disruption of production for various demands, Management were in the unfortunate position of having production disrupted because of politically oriented walk out by the various unions.

More insiduous, was the fact that management were also subjected to physical violence(openly admitted by management) if actions were taken contrary to labour leader demands. Some areas had greater reputations then others in this line.

After Martial Law fairly strong action was taken regarding strikes of any type, and matters certainly improved over the first 6 months. This again depended in the strength of the Management in each mill, as to whether they would take the opportunity offered by the Chief Martial Law Administrator(CMLA).

3.2 Administration - Labour or Personnel Officers - This was another area where production could be impaired because of lack of coordination between the personnel officer and spinning master. Key operators who were denied leave at particular times because of production committments, were allowed to proceed on leave by the personnel officer who had the final response. Very often this had disastrous results on the production of the mills.

3.3 Implication of harvest and planting time - A large proportion of the Bangladeshi industrial labour force are also small plot of share holders. Production in the factories curtailed to a degree because these workers take the leave period at these times of planting and harvesting. These are annual or bi-annual occurrences that disrupt production. The hiring of casual labour or Badli labour does not totally fill the gap.

3.4 Tender system - All requisitions are subjected to this system. Although the reason for the system in Bangladesh is apparent and probably required. Production does suffer because of the length of time taken from indentation of requested items(very often vital items such as Drafting Cots and Aprons) and hold ups

at various points in the chain of the system. This mainly occurrs at Procurement officers, Accountants, and at a lesser degree at Manager and General Manager level.

3.5 Procurement - As stated under "Tendering System" procurement is another area where as well as potential production being lost, there has been a tremendous amount of waste taking place. This takes place when requisition are ignored, or lowest tenders taken for inferior materials against the advice of the Spinning Master.

3.6 Staff Meetings - In an attempt to highlight the various problems in connection with production and quality. We endeavoured to involve every one concerned directly or indirectly in discussing the problems that caused loss of production and quality. Meetings were arranged attended by all concerned.

Manager
Spinning Manager
Accountants
Procurement officer
Labour or Personnel officer
Labour Leaders

The various problems were discussed and it was emphasized that obtaining good quality yarn and production depended on not just the Spinning Managers and operators, but on all the people in the factory at all levels. Each level of involvement was discussed, and it was highlighted where production and quality could be restricted if good liasons were not maintained.

As well as the internal problems experienced by management, because certain mills had cash flow problems, procurement of raw materials and essential spare parts had to be ascertained by the Bangladesh Textile Mills Corporation. This again could lead to disastrous delays in obtaining requirements essential to continuous production.

4. SECONDARY METHODS OF APPROACH TO OBJECTIVE:

After reviewing our work during the first 18 months of operation during which my counterparts had been working with me an average of 12 months. Although I was confident that our approach to machine rectification was correct it was not giving enough incentive to managerial staff overall. The appreciation of reducing CVs in the Blowroom from 7.5 to 2.5 was not enough to make them enthusiastic to implement that work themselves.

It was decided that our approach although the same in intention, would be convened to operate a small section of the plant at each mill, to the optimum that could be

expected in the short term. In this way it was hoped that we could show immediately better results in terms of end break results at each process and particularly at Ring Spinning. This in turn would lead to increase in production at each stage of operation.

Coincidental with our change of approach was that the new Chairman of B.T.M.C. was showing great interest in individual mill production, and T.I.D.C. were asked to implement programmes of work in specific mills.

Our Secondary approach was as follows:-

4.1 Mixing - to ensure that correct percentage of waste was mixed with the allocated raw materials.

4.2 Blow room - to make each unit work mechanically and technically correct within, subject to parts and equipment being available when required.

4.3 Cards - two cards would be selected, these would be prepared for production by TIDC counterparts, i.e. the cylinder doffers and flats would be ground to recommendation. The card would then be completely set by the counterparts.

4.4 Draw frames - one set of draw frames selected

i.e. Breaker Draw frame

1 Finisher Draw frame

The machines were set according to material being processed. Top Draft rollers, all reground, and all parts made to operate correctly within the bounds of our immediate capability.

4.5 Simplex - one simplex machine completely reset. Top drafting rollers were ground and reset. TIDC specification for hank and twist was used.

4.6 Ring frame - one ring frame completely reset as follows:-

Spindles centred
Ring and ring plates aligned
Control ring centred
Lappets centred to spindle
Top draft roller cots were buffed or recovered and buffed
Top and bottom apron checked for wear and replaced where necessary
Creels checked and adjusted where necessary
Draft rollers reset
Correct TPI inserted for count spun

After completion of the work a small mixings was processed through the machinery that had been worked upon by TIDC. Whilst the counterparts were working upon the machine, the maintenance people were involved at each stage of operation. Management

were informed of our findings and what we were attempting to carry out.

When our survey was completed within each mill and the sample of yarn spun had resulted in lower end breaks at spinning. The management were then allocated a programme of work to complete at each stage of operation. An initial report would be issued to all concerned:

Chairman
Directors
Factory Management
Project Leader

This report will be work that had been carried out by TIDC. The results that had been obtained on our initial spinning tests. The work programme that had been allocated to management to implement immediately.

TIDC were then to monitor progress at the mill and issue further reports regarding the progress made with implementation of the work programme, and the up-to-date results in terms of any progress made at each stage of operation.

In my estimation, the fact that the Chairman of BTMC was showing a positive interest in individual mills gave a great incentive to Management to make great efforts to follow our given lead and positive progress was made at each mill visited. Further work along these lines was curtailed because of our involvement in the BMR Programme for Private Sector mills.

5. COUNTERPARTS

On my arrival at T.I.D.C. counterparts had not yet been assigned to me. After gaining exposure to some of the Bangladesh Textile Mills assigned to Mr. Basil Jackson(Spinning Adviser Operations) and thereafter writing my initial report. I was assigned a temporary counterpart from the Training Section of T.I.D.C. until counterparts could be assigned from BTMC Mills.

It was December and January respectively when counterparts arrived at T.I.D.C. Three counterparts were to assist me in carrying out my brief and at the same time receive training from myself.

In the intervening time from August 20 to December 10, I had already formulated an impression of the amount of involvement of internal mill staff from Senior Manager level to Supervisors and Shift-in-Charge. This appraisals was to be instrumental in deciding the method, or approach I should use, in assisting my counterparts to become technically more competent in carrying out their assignments.

My counterparts were assigned to me as follows:-

i. Senior Counterpart - MD. ENAMUL HAQUE (Asstt. Spinning Master)
ii. Junior Counterparts- MD. JAMALUDDIN & NOOR MOHAMMAD(Asstt. Spinning Masters)

The nature of our work required us to deal with people at all levels in the mills. At later stages in our operations my counterparts were having to liase with far more senior staff, who(from their textiles experience) should have been aware of their problems that required solving to increase productivity and improve quality. As can be envisaged, this would create problems, and negative responses from some managers, particularly by those who were supposed to have been trained technically, when junior counterparts would suggest plans of action that would require to be implemented.

Constant approaches were made on this point, to give the counterparts a " a few more teeth " by raising their status within BTMC. Apart from deleting the junior from " Junior Counterpart ", nothing was attained to this end. This was to be instrumental in losing the BTMC well trained technicians who could and had implemented practical application in the mills and produced higher productivity and better quality. My intention was to ensure that the counterparts were aware of:-

5.1 The implication of correct raw material mixings taking into consideration the various parameters

i. Staple length
ii. Trash content
iii. Micronaire value
iv. Pressley fibre strength
v. Colour
vi. Waste percentage
vii. Number of bales to be blended
viii. Type of raw material

5.2 The implication of incorrectly operating machinery. How to evaluate machinery operation at each stage, and how to rectify. The counterparts were to carry this out personally where possible. This was basically to be the backbone of their further training - to expose them to as much practical participation as possible.

To train them to evaluate production and quality in a logical manner by making qualitive and productive evaluations before carrying out any changes in working procedures i.e. to establish a control result against changes in procedure made.

5.3 To expose the counterparts to constant factory floor activity. As well as working at times a 10 hour day, it involved working a 7 day week. This occurred particularly when we were carrying out controlled spinning tests. Also when we were introducing(on page no. 14)

Polyester/Cotton spinning into designated mills which required our presence at all times whilst we were introducing procedures to mill management and staffs.

5.4 Control tests include:

i. Mixing - Number of bales in mix, Micronaire values, Pressley fibre strength values, Trash content of mix. Percentage of recovered waste in mix.

ii. Blowroom - Lap weight CV, Yard by yard evaluation. Waste analysis at each beater point. Production analysis.

iii. Card - Evaluation of sliver - Nep counts, Sliver weight. Trash in sliver. Waste analysis of Flats strip and under card waste. Production analysis.

iv. Drawframes - Evaluation of sliver - Sliver weight per yard checks, sliver regularity by the aid of Mini-Uster portable sliver test equipment. This enabled counterparts to establish optimum drafting conditions i.e. settings and draft distribution for best result. Production analysis.

v. Simplex - No equipment available to test roving regularity. Counterparts were trained to recognise visual roving defaults and their likely causes. Checks on roving TPI and the implication of this at further processing. Production analysis.

vi. Combers - Waste analysis/head and total waste. Production analysis.

vii. Ring frame - End breaks, Black board appearance and production analysis.

viii. Winding reports - End breaks, production analysis.

6. <u>BMR Programs</u>

As this was not envisaged in the initial project document, in terms of carrying out our brief it was to have a restricting affect in the short term in increasing productivity and raising the quality standards. Ten mills under the public sector were reviewed. Eight mills under the private sector were reviewed, three of which were reviewed as public sector mills but again reviewed as private sector mills.

Previous evaluation had been carried out for the public sector mills. The TIDC Advisers were asked to reappraise the 1981-82 position.

6.1 The Mills were:-

<u>PUBLIC SECTOR MILLS</u>	<u>PRIVATE SECTOR MILLS</u>
*Afsar Cotton Mills	*Afsar Cotton Mills
Chittaranjan Cotton Mills	Al-Haj Textile Mills
Chisty Textile Mills	Bogra Cotton Spinning Mills

PUBLIC SECTOR MILLS	PRIVATE SECTOR MILLS
Dhaka Cotton Mills	Calico Cotton Mills
*Jaba Textile Mills	Chittagong Textile Mills
Laxminarayan Cotton Mills	Goalundo Textile Mills
Muslim Cotton Mills	Habibur Rahman Textile Mills
National Cotton Mills	*Jaba Textile Mills
Pahartali Textile Mills	
R. R. Textile Mills	

The work involved in carrying out these appraisements was to ascertain whether the current machinery would require the following:-

6.2 BALANCING: Production from each area to balance at a given average count.

6.3 MODERNISING: Present equipment to be updated to meet production requirement.

6.4 RENEWALS: Renewing o' obsolete equipment and spare parts required to operate for 2 years.

Spin plans had to be drawn up showing the possible production position before and after BMR had been implemented. The counterparts were fully involved in this work, working out, a drawing up spin plans, and also making out the finalised report.

7. ALLOCATION OF THREE(3) MONTH WORK PROGRAMME

In September it was requested by the Chairman of BTMC that 5 spinning units should be investigated over a 3 month period with a view to increasing the production and quality.

The assessment of the level of production that each mill should produce at differed from mill to mill. This assessment was given by BTMC Production Management. The basis for the assessments appeared to be from past performance rather than objective capability. Which in turn would be an assessment of management capability rather than machine capability. The mills that were allocated to our section were as follows:-

7.1 Monnoo Textile Mills, Tongi comprising of 3 units

i. Monnoo
ii. Monnoo Fine
iii. Monnoo Extension

7.2 Tangail Textile Mills comprising of 2 units

i. Tangail
ii. Tangail Extension

The assignment of increasing productivity at both these mills was compromised with a request from Director of Operations to also introduce the spinning of Polyester/Cotton blends yarns in the New Extensions of both the factories. It was further compromised by the fact that the Tangail Management had only started training operators for the new extension unit. As can be seen from the graphs and not withstanding a complete change in quality in the new extensions production was increased in all units whilst we were in attendance. Production would have been further increased if there had been outlets for the Polyester/ Cotton when we had reached the targeted requirement as laid down by BTMC, as it was, within one week of reaching this loading. We had then to revert to spinning 100% Cotton because of lack of demand in the weaving section. This was obviously due to lack of planning on behalf of BTMC.

In addition to the fact that no planning had gone into as to who would prepare and weave the yarn produced at Monnoo and Tangail. The units that were to bleach dye and finish the Polyester/Cotton fabrics, Ahmed Bawany and Olympia Textile Mills had not been completed in a recommended modification to the heat setting machinery.

The remaining 3 mills allocated to the Spinning Advisers also increased production whilst the advisers were in attendance.

8. COTTON OR RAW MATERIAL

Must be purchased from named countries. In this respect some degree of autonomy of selection is restricted. However the specifications are laid down by the BTMC as to the grades of cotton that they require from each country.

It is suspected that in many instances

i. The grades of cotton imported into the country do not match up to the specification as laid down by BTMC.

ii. That the pre-import inspection of raw material that is reported to have been carried out by specified agents is not in fact being maintained.

iii. That investigations should be carried out by BTMC into the yield aspect of many of the cottons purchased and the count range that should be spun from these cottons. The economics of high end breaks and high trash and waste percentages could be offset by the purchase of higher grade cottons at only slightly higher prices, which would result in reduced end breaks, low trash and waste percentages, and also higher production spinning speeds.

Raw material that is imported into the country, that does not meet up to specification usually ends up as a claim against the supplier.

Unfortunately there is no provision for claims of loss of production by Mill Management when processing these, under specified raw materials. The claim of "One cannot spin a claim" is true. At the present time BTMC have one central testing laboratory which primarily deals with raw materials testing for the whole of BTMC.

Although one or two mills have a certain amount of equipment for testing fibre length and moisture content, it is mostly inoperative. In any event the most they could accomplish because of material shortage would be to record raw material specifications against production, or loss of production due to incorrect materials supplied.

9. ADVISE IN MACHINE OPERATION AND TECHNOLOGY

Outlined below are the areas where we have attempted to implement change. Usually this has been preceded by the counterparts giving a demonstration in actually changing machinery conditions, or working along with the maintenance people to do so. We have tried to show wherever possible the best results of our efforts in analytical form.

Some results of achievements will be listed below as a demonstration of actual effectiveness at the time of implementation. It can be realised after reading this report why in the short term improvements can be made, but any longer term benefits will be realised historically.

10. RAW MATERIAL MIXING

The selection and procurement methods of cotton and raw materials for the industry. Because of the mitigating circumstances we could only involve ourselves in the quality aspects of raw materials. Over the last two years the industry has been with either:

i. A total shortage of raw material which has reduced production in the mills drastically or

ii. A shortage of particular types of raw material to produce the correct production and count balance within the mills.(See Graphs)

This shortage of material entails that every bale imported into Bangladesh must be used regardless of the quality. This in many instances leads to further reduction in productions and quality of yarns.

10.1 Cotton and raw materials are procured to a large extent from donated aid programs, from various countries:

i. America(USA)
ii. Holland
iii. Russia(USSR)
iv. Pakistan

10.2 With the forecasted setting up of 7 regional testing centres throughout Bangladesh, it is hoped that this will help to improve the statistical data on raw material and effects at further processing and thus change cotton purchasing policies.

For the regional test centre at Chittagong, full facilities provided by UNIDO, will be installed for testing shipments of raw materials as they arrive into the country. These will be tested against specification. A small computer will be installed to assist in data recording. It has been discussed with the quality control manager as to the nature of the proposed testing. A method that was suggested, taking into account the facilities available at the individual mills was to carry out the following checks in the Port of Entry, Chittagong.

1 Landed weight of Bales	All
2 Moisture content on landing	5%
3 No. of Bale irons against specification	5%
4 Inspection of correct bale wrappings and cleanliness of bale	10%
5 Micronaire values against specification	All
6 Pressley fibre strength	10%
7 Trash content against specification	5%
8 Cotton colour and appearance against grade boxes	All local mills
9 Cotton storage godown required to specification for easy assess loading and unloading	
10 Cotton to be stored in grades and micronaire values	
11 All bales to be tagged with relevant information for mill purposes	
12 Mills to be supplied with the average mixing rather for the shipment.	

11. MILL MIXINGS

Raw Material Mixings are laid down by BTMC usually in the form of percentage blend.

In general all mills blend by hand stack mixing prior to processing. Most mills utilise between 4 and 10 bales as a full mixing the average would be 6 bales.

The waste percentage of the mixing is hand mixed within the stack mixing. Very often the waste is not weighed prior to blending and is therefore of an indeterminate percentage of the mixing.

In view of the fact that mills are not provided with individual bale specification and also due to the fact that a low number of bales are utilised in the mixing. It would be impossible to forecast the resultant micronaire value and pressley fibre strength of each mixing and the odds would be that there would be large variances from one mixing to another. This of course affects the spinning

parameters which would change from mixing to mixing and in the following manner:-

i. Yarn strength
ii. Yarn appearance
iii. Yarn colour
this in turn would affect the resultant fabrics
iv. Fabric strength
v. Fabric appearance
vi. Fabric colour if non-bleached
vii. Fabric dyeability
viii. Fabric finish

Therefore within the bounds of the capabilities of each mill, some who have restrictions of space in the Opening and Cleaning areas. We have tried to illustrate the benefits that can be gained by the use of correct mixings, with particular emphasis on the amount of reusable waste that should be blended back into the mixing. Where we have been able to, we have demonstrated by running samples from bale to yarn, and producing simple comparative results. Due to our time being limited, in that we were trying to achieve results in as many mills as we could as well as attempting to set the standard for raw material mixings, we also set up a section of machinery for each operation in order to minimise any results that could be thrown up by incorrectly set machinery. A direct comparable result for methods of laying down mixings could therefore not be stablished. But it was established that by carrying out these procedures, improved results were obtained. Technical reports issued for the following mills were highly encouraging. See synopsis for the results;

Afsar Cotton Mills
Jaba Textile Mills
Chittaranjan Cotton Mills
Dhaka Cotton Mills
Chisty Cotton Mills

12. MACHINERY EVALUATION AND RECTIFICATION

Under the previous heading of "Initial Method of Approach" we have outlined our approach in attempting to solve some of the problems of low productivity and quality, rather than elucidate on work that we have carried out at each mill. We will take each area of operation and explain the type of work that we have carried out. As well as training counterparts to adopt a systematic approach to problem solving, the maintenance personnel and the spinning technicians were also involved in our work. We tried to expand in-plant cooperation with a certain

degree of in-plant practical training.

12.1 BLOW ROOM(OPENING AND CLEANING)

In general it has not been recognised by Management the importance of maintaining correct quality control standards at this point of production. As well as rectifying the following control points in the operation. The counterparts also draw up maintenance schedules tailored to the machinery and processed material requirements.

Our operational work was as follows:-

i. Correcting operation of swing panels and photo cells to ensure an even material flow thus maintaining hoppers at a constant level.
ii. Correcting operation of the pedal feed control mechanism and cone drum operation. This intended stripping and resetting this control mechanism.
iii. Correcting full lap control mechanism or counters.
iv. Tensioning of all lattices.
v. Advised the correction of all beater striking units bladed or needles.
vi. Waste control checks at each beater section.
vii. Lap recordings of each lap(Charts). Also yard by yard checks.
viii. Correct method of feeding.

12.2 CARDING

Carding in Bangladesh is in a transitional state. There are still a large number of cards that are covered with flexible wire, carding at production rates of from 7-9 lbs/hour. The wire in many cases, has long been past the recovering stage. There are many cards, that have been converted to metallic wire, some of which are still running at the same rate as the flexible wire cards. Other installations have been fully converted to semi-high production running at production rates of 14-15 lbs/hour.

The later installations, mostly new installation,have high production cards installed capable of production rates of up to 60-80 lbs/hour. Apart from the condition of the metallic wire which is very poor, and certainly in need of recovering in the vast majority of cases the general maintenance of the cards is not in the best interest of good carding. The problems encountered are as follows:-

12.3 CARD GAUGES

Very few mills possess card setting gauges. With the leaf setting gauges that were produced it would be nearly impossible to obtain correct settings because of the state of the gauges which were pitted and marked. Only at the

new mills were they able to produce flat setting trewel gauges. On cards that we had checked mills settings, in all of the mills not one of the cards had correct settings.

12.4 Our observations of the maintenance people setting cards show that incorrect methods were being used.

12.5 Wire maintenance one of the most basic requirements of carding is that correct maintenance of the wire is essential to good carding.

In every installation of cards with metallic wire that was visited by the Spinning Advisers, the same method of maintenance for flexible wire was being used on metallic wire. Cards were being stripped, and the wire was being ground at the same intervals as for flexible wire. The consequence of this was that the wire was damaged by the wire stripping brushes. Constant grinding, sometimes for 8 hours continuously, resulted in overground points with "burrs" on them. This type of maintenance obviously leads to poor carding and a very low life for metallic wire.

BTMC were strongly advised on this point and the mills were circulated accordingly. As with most things, traditions die hard, and it was only on the advisers in-plant teachings that changes appeared to be implemented. Most of the wire however had been badly damaged and would require recovering.

Regarding the new mills that were just coming into operation, it was stressed to BTMC, that the technicians at these mills should be trained to observe correct metallic wire maintenance before wrong methods were used.

12.3 <u>WORK IMPLEMENTED AT CARDING</u>

In-plant instruction for Card technicians, and the relevant management personnel on the following aspects of carding.

Metallic wire maintenance which

Sequence of stripping dependant of seed build up

The procedure of how to evaluate the necessity to grind by use of nep count data

The correct method of grinding metallic wire

The use of magnifying glass for examination of wire points(None available in the mills) Instructional only.

The correct method of setting cards with the use of leaf and trawel gauge

The implication of utilising the correct lap wt. and hanks, in conjunction with further processing

The utilisation of graphs for recording neps and sliver weights

Waste evaluation at Card, and method of carrying this out

Flat grinding and the correct method of machine settings

12.4 Recovering of Taker-in, and the subsequent truing of the garnett wire points.

12.5 DRAWFRAMES

Within the Bangladesh Textile Mills there are Drawframes of varying manufacturer and age. The older types of drawframes, six delivery type with 12"x36" can delivery, mechanical sliver stop motions, and mechanical start up. Although these machines were still operating, the resultant sliver regularity as checked by Mini Uster was poor. As could be expected, where because of the inherent problems of the mills, maintenance had not been particularly strong, drafting systems were in bad conditions because of worn roller necks, solid type bearings had worn thin, bearing, housings were badly worn, resulting in to much play tolerance in the draft systems. These drawframes would be of an age between 25 and 45 years old, with 4-line roller drafting and dead weighted top draft rollers. These machines would operate at around 120 ft/min. front roller delivery.

Slightly more modern installations having 4-delivery usually 14"x36" can size, were usually in slightly better condition. These drawframes would be equipped with 4 over 5 drafting system. Spring weight top drafting arms. Electrical stop motions on the top rollers calender rollers and individual sliver stop motion at the creel. At their best these machines would be capable of operating at 400 ft/min. In general speeds of between 200 & 300 ft/min. were the operating speeds.

The later generation of drawframes, two delivery machines, can sizes ranging from 16" x 42", 18" x 42", or 20" x 42" capable of speeds between 600 ft/min. and 1000 ft/min. These higher speed machines required scheduled maintenance like all machinery, in addition, to ensure good evenness of sliver, the draft system must be constantly monitored, with particular emphasis of top draft rollers where, because of the weighting utilised on the top rollers, and the periperal speeds the rollers are operating at, a high torgue is developed. This results in a channelling of the rollers when the adhesive bond between cot and roller breaks down. In turn this creates irregular sliver which can have disastrous effects on production and quality.

In most of the mills that we have operated in, the above mentioned faults

have been highly evident. Although the drawframe is a relatively simple machine, it has been evident that maintenance on the higher speed machines has not been detailed enough from the outset to maintain them in correct operational order. Many of the later generation machines 4-delivery and 2-delivery were not operating due to parts missing from the machines whilst the elder and slower machinery was operating.

We believe this was a case of the system of procurement of spares rather than the inability of the maintenance personnel to keep the machinery running. Coupled with the fact that more precision is required in the spares for the higher speed machines, the workshops at the factorys are not equipped for precision work.

WORK CARRIED OUT AT DRAWFRAME

- Assisting in the procurement of spare parts to make the Drawfame operational.
- Restoration of electrical stop motions that were inoperative (i.e) Sliver Creels. Draft systems. Calendar rollers. Full can stop motions.
- Correcting top draft roller configuration and setting.
- Correcting ceiler and can speeds, for correct sliver can ceiling.
- Advising on Drafting roller maintenance.
- Optimum draft roller settings were advised at certain mills after tests carried out with the Mini Uster. This of course was dependant on the type of cotton used and the amount of reworkable waste returned in the mixing.
- Recommended minimum of spare parts including sliver cans, the latter, after restricting productions because of insufficient cans at drawframes and simplex.

12.6 SIMPLEX

Many varied types of Simplex within Bangladesh from the more sophisticated. Rovematic with different concepts of spindle and bobbin drive to the elder models of 3 over 3 drafting with spindle and bobbin drive concepts dating from 1910 onwards.

WORK CARRIED OUT AT SIMPLEX

- Implementing complete dismantling of Simplex rebuilding and resetting on two installations.
- Advising and implementing correct twist levels on various installations conducive to obtaining higher L.C.P.S. at the ringframes.

- Advising and implementing correct build of roving with correct twist in order to build full roving package (Many mills only running to half capacity roving bobbin size because of incorrect technical application).
- Implementing correct alignment of lifter tables.
- Implementing correct reweighting of draft systems and resetting of draft rollers. Renewal of aprons, recovering and buffing of rollers cots.
- Advise on maintenance procedures.

12.7 COMBERS

An area which has been neglected in the past, but most of the comber units have never been fully utilised and subsequently with the exception of the half lap needles, top comb needles, brushes, recovering of cots, and a few simple bowls, the combers in general could work well at their limited speeds.

WORK CARRIED OUT AT COMBERS

- Implementing renoedling of half laps and top combs.
- Recovering of nip rollers.
- Resetting of waste percentages at each head and total waste percentage.

12.8 RINGFRAME

Many varied types and ages of Ringframes with assorted types of drives, creels, draft systems. Each type had to be surveyed in the light of what we could accomplish with existing facilities that were available. As has been previously stated our general approach has been to completely reset the ring frames. Usually by complete supervision of the first 2-frames and thereafter instruction with Management. As in B 3.6 Secondary Method of Approach.

12.9 WINDING

Considering this is one of the most essential of operation to ensure good quality and efficiency at further processing, it is probably the most neglected. There are obvious reasons why these machines are never set to clear yarn and why hand knotters are not used. Principally that in general the yarn has been so bad that to attempt to clear it would result in low productivity at winding and yarn that would be full of knots.

12.10 WORK CARRIED OUT AT WINDING

On certain installation where work has been carried out throughout the mill, settings have been made at the yarn clearer to good effect. Mills with new installations have also had their clearer adjusted to the counts being produced. We have not had the satisfaction of converting mills to the use of mechanical hand knotters. Management has been made aware of the faults caused by knotting by hand.

C. ACHIEVEMENTS

1. SHORT TERM ACHIEVEMENTS

It has been demonstrated by the Advisers and to the managerial and technical staffs in many mills, that gains can be made in production and quality in many areas of the spinning sequence, without having to spend vast amounts of money.

Whilst the Advisers and counterparts have been monitoring the programmes that have been laid down by them at successive mills, quality and production have been increased. Reports have been issued to Directors of BTMC on all work carried out, with recommendations. By-weekly meetings were also held with the Director of Operations, recommendations were put forward on various aspects of increasing production or improving the quality of yarn and fabrics. Minutes of these meetings are available. To sustain production, and quality increases, requires monitoring strictly shift by shift at each stage of operation. Only in this way can staff and operatives be geared up to produce at a continuous level.

Notwithstanding the negative factors of power and low cotton stocks, which as shown in the graph, ANNEX-4-5 can influence production, even though both these factors have been allowed for. There is still a large area where production is lost by not monitoring consistently. These are in areas as shown in the graph under spindles stopped for other causes. See ANNEX-6

Although the power losses and less for other causes have been reduced by approx. 50% as shown from the graph. The other problems of raw materials may be with us for a time to come although as mentioned, the Polyester programme should help to alleviate the problem when that is implemented. See ANNEX-1 & 2 for production increased in the short term.

2. ACHIEVEMENT OF OBJECTIVES

It has been related under "Short term achievements" how it is possible to make improvements. The method that we finalised upon as being a practical method of increasing production and improving quality, as well as promoting other lines of operation, as quoted in our brief, was to impress upon management the following:-

2.1 Method used by TIDC to improve machine and worker method of operation. Finalised by test spin with improved results(Incentive).

2.2 The involvement required by all concerned to achieve these results(Constant Monitoring).

2.3 The detailed follow-up programme given by TIDC for Management to complete (Constant Monitoring).

2.4 The total responsibility placed upon Management to achieve results as

indicated by TIDC in test spins. Advice by TIDC to be requested at any time (Constant Monitoring).

The Chairman and Directors of BTMC were circulated with Memo's on work carried out, work recommended, and results(Constant Monitoring).

We have related the many problems and restrictions that have to be overcome to ensure that the Textile Industry in Bangladesh becomes efficient. Against these factors, it can be seen from the graph that there has been a very distinct rise in spun production from September 1982 which has maintained a consistency throughout 1983. It can readily been seen from the graphs that the amount of work put into the mills by all the Spinning Advisers "Operations and Training", would not be fully realised in the first months of our activities due to the mitigating circumstances as illustrated in the graphs. See ANNEX-3,4,5 & 6.

It can also readily been seen that with improvement in these situations, the mills were able to take full advantage of the improvements or suggestions implemented by TIDC in the form of improved production and quality.

Whilst we are highlighting the trends of production, against some influencing factors that do have a strong bearing on production, it would be ill advice to interpret these factors as being the sole reason for low productivity. It has been proved in many instances quoted and particularly in the period September-November, 1982 where 5 mills production was increased dramatically by the Advisers and Counterparts.

As the problems of power loss, shortage of cotton and other causes for stopped production are solved, then it will be more increasingly necessary to ensure that correct technical and management methods are applied to increase efficiency.

In the short term that we have been working with the BTMC through TIDC we would assess that we have succeeded in training our counterparts to a proficient degree of enabling them to approach mill problems objectively, enabling them to diagnose problems that occurr at each stage of operation. To correct the problem after diagnoses. To enable them to fully appreciate the necessity of quality control at each stage of operation.

We have <u>not</u> implemented practical training in work study methods, activity sampling, work leading practical training with Uster equipment with the exception of the Mini Uster.

Many copies of relevant textile literature has been imparted to the counterparts (In this area, there is a great shortage of any type of textile related information).

We would be confident that our programme of assistance as finally decided upon, if

maintained under strong direction would a strong and reliable method of ensuring increased productivity and quality, and in turn would fulfill our brief of:

i) Introducing better quality control

ii) Improving worker productivity and methods

iii) Improving production and quality

This of course would be subject to the counterparts monitoring the programme of work as laid down.

3. POLYESTER BLEND YARNS

This is an area for obvious expansion in Bangladesh. It has been observed that most U.D.C. have expanded quickly into this field. With the present low oil prices and the subsequent fall in Polyester staple fibre prices no better time could be selected to exploit this market. The present comparison of mill prices between Cotton S.L.M. 1 1/16" staple out at around 20-21 Taka/lb. Polyester 32 mm 1.5 den at around 14 Taka/lb. N.B. Polyester has a tax advantage.

Whilst most people would agree that aesthetically spun 100% cotton fibre would be easier to wear in a country like Bangladesh, the price advantage of present Polyester fibre, assuming a blend of 65% Polyester and 35% cotton would enable a higher weight of raw materials into the country for the same costs. This in turn would ensure better continuity of production in the spinning mills.

A further bonus is the strength of these yarns and fabrics which in their turn could lead to higher spinning and weaving speeds and longer length of life of fabrics(if treated correctly).

The two public sector units initially converted to spin Polyester/Blend yarns have a capacity to spin around 32 lakh lbs/year. None of the disinvested mills were spinning Polyester/Blend yarns although many of them expressed the intent to do so.

The forecasted requirements for production of blended fabrics and yarn is as follows:-

T A B L E

ESTIMATED POSSIBLE PRODUCTION OF BLENDED YARNS IN LAKH LBS.

Present Capacity	1984-85	1985-90	1990-97
32	148.5	198.6	224.8

Whilst there is loom capacity in the public, private and power hand-loom sector to develop the Polyester/other fibre blend fabrics, there is little use of producing these fabric unless there are adequate facilities for further processing as at :-

BLEACHING, DYEING, PRINTING AND FINISHING

This area is the key to producing good fabrics. It is little use producing high quality yarns and fabrics if the latter process are not equipped to deal with these fabrics.

Taking into account the following criteria.

HANDLOOM SECTOR

This sector will receive yarns from many suppliers which could comprise of various type of Polyester, and types and grades of cotton. It is therefore not feasible to expect continuity of stable dye shades and finishes.

Printing is not affected by these criteria so it would, therefore, seem more feasible that when setting-up regional centres of Bleaching, Dyeing, Printing and Finishing of which I was assured was being investigated, printing should be the dominant method of design for the handloom products.

Where control of raw materials can be exercised, and it will be required if export of dyed fabrics is envisaged. This area should be then exploited by the public and private sector mills.

D. RECOMMENDATIONS

1. RECOMMENDATIONS TO BTMC

Tighter control in the selection of raw materials, controlled initial raw material testing by their recognised agents, testing at the point of entry into the country, disbursement according to shipment, average micronaire value, and pressley strength.

1.1 Technical Staff & Training

Due to the lack of sufficiently(practically) trained technical staff within the BTMC. A more in depth approach should be made towards ensuring that sufficiently trained staff is available to ensure the industry runs efficiently. The initial plan by the Chairman of BTMC in implementing a 12 months programme for non-textile graduates, is a move in the right direction. It is not sufficient to fill the gap to the equivalent of technical management at the level required. In our view total immersion of textile graduates at each area of operation at the levels of operator and maintenance/supervisory position is required.

i) The operator level to gain a first hand appreciation of the problems that occur at this level and to be fully conversant with the operation. ii) The maintenance level to gain a first hand appreciation of the difficulties that arise in solving productive and quality defects due to mechanical problems. iii) The supervisory level in gaining a first hand appreciation of the best methods available in solving the problems of operators and maintenance without undue loss of production or quality.

At least six months should be allowed at each area of operation, with the responsibility of production and quality in addition to the practical duties imparted to them.

1.2 Promotional Prospects

The present system of promotion with service is not conducive to encouraging the so called self starters of which the BTMC are so short off. Promotion should be given according to merit with particular emphasis on the younger and up and coming textile graduates, as with the case of TIDC spinning counterparts. The potential growth required by the industry will demand change in this area. If exceptional people are detected in the course of monitoring the progress of graduates, further intense courses of Business Management should be arranged for them.

1.3 Quality Control

It was envisaged that 7-regional Quality Control centres were to be set-up after BMR implementation. As a pre-requisite to this, the standard of quality control personnel, particularly at mill level would have to be raised. BTMC quality control officers with the exception of Mr. Alam(Control Manager) would also require more in depth practical training in control methods and the utilisation of them.

1.4 Production Targets

Very comprehensive production data is issued monthly by BTMC. It is felt however that the system is manipulated by the mills and that the number of operative spindles as against installed spindles is used as a weight balance against any inefficiency. The target production should be assessed as the maximum spindle speeds attainable at each mill coorelated with the raw material fed, which is supposedly standard for given counts. This should be based on installed spindles which reflect the true efficiency of ozs/spindles.

1.5 Operator Training

We have found that the operative work force in the mills are extremely hard working. They lack the appreciation of why particular tasks have to be carried out in a systematic way. We would suggest that in view of the labour problems that do occur in the mills, it would be worth while to train operator instructions for each area of processing. This ensures that each operator knows in detail the work he has to perform and more to the point the reason he has to do it. Management has the satisfaction of knowing that each operator has the same working procedures. Systems like this require monitoring by the instructor.

1.6 Maintenance

With particular emphasis on maintenance personnel who service the new mills. This type of equipment which runs at relatively high production speeds, requires correct methods of fitting bearings and shafts etc. In particular where settings have to be made it requires a certain amount of training imparted to the maintenance personnel to ensure that machines are in correct mechanical and technical working condition.

N.B: There are many establishments in Bangladesh where various aid programmes are in progress developing workshops fitters and mechanics. It should be possible for BTMC to "tap" these courses for suitable people who at least have been trained in the basis of fitting and maintenance procedures.

1.7 Rationalisation Machinery

If the BTMC is to remain as a combined group of mills, it would seem feasible to select what is considered the most appropriate make of machine for each area of appreciation, taking into consideration prior and follow-up machineries. The reason we suggest this is that it is well known that spares cost today are a formidable part of the operating cost throughout the life expectancy of the machinery. As we have noted in Bangladesh many new machines have been idle because of lack of correct spares, whilst in other mills wrong types of spares have lain idle for many years. A centralised system of machinery and spares could solve the problem and reduce spare part expenditure.

1.8 Rationalisation Counts

Combed yarns is an area where better utilisation of equipment and personnel is required. There are new units that have been installed and balanced with the specific reason of spinning particular ranges of comb yarns. Two of these mills Monnoo Extension and Tangail Extension were turned over to spinning Polyester/Cotton blends. In effect these two mills could certainly have produced excellent combed yarns given the correct raw materials, and with a little more technical guidance. Certainly the machinery was capable of producing export type yarns.

These are specialist type mills and every facility should be given to producing combed yarns at all times. Surplus yarn to domestic requirement should be tuned to the export market in an effort to earn foreign currency.

1.9 Polyester/Blend Yarns

It is evident that this is an area for growth. Considerations should be given to setting up into specifically designed mills to produce Polyester and Polyester/Blend Yarns, both in carded and combed yarns. This enables one to take advantage of the many different specification that can be procured as aids to producing these yarns.

It is obvious from our first ventures into this field, that priorities are first required in the dyeing, printing and finishing areas with particular emphasis in areas accomodating to the hand loom weavers where it is believed the most benefit to the country would be made.

1.10 Marketing

In conjunction with the last two items. Rationalisation and Polyester/Blends it is felt that a greater emphasis on marketing strategies should be employed not only in the local sense, but also in the export area. There are many

areas, in particular the hand loom sector where problems occur due to financing and marketing problems. Methods should be sought at all levels to overcome these problems which cover Quality, Designs, Financing, Presentation and Costings.

1.11 Factory Conditions

Most factories within Bangladesh are running without air-conditioning of any type. For these mills we would recommend that as a temporary measure extract fans be placed in strategic places, in particular the spinning areas to extract the hot air build up. Air will return as per Plenum System.

i) Lighting is also particularly poor, again particularly in the spinning area.
ii) Cool drining water facilities should be provided in all mills.
iii) Readily assessable and clean toilet facilities should be available for both sexes.
iv) Mills should be kept well painted internally.
v) Mill operative earnings particulary where bonuses are paid, should not be left in dispute, but settled with minimum delay.

All these items have a relative bearing on how a man performs his work. To obtain the best out of workers, it is essential that he has the best available working conditions.

1.12 Training

The Training Centre at Savar and the courses initiated by Mr. R. Flaherty (Spinning Training Adviser) should be adhered to and extended upon.BTMC have the basis for exceptional training facilities and this should be fully utilised to ensure that practically trained operators are forthcoming. It is unfortunate that the training advisers was not on hand to set up the initial programmes at Savar thus ensuring that the programmes were initially started up on the correct lines.

2. RECOMMENDATION TO THE GOVERNMENT

The requirements of the textile industry in the form of Technicians and Management is an initial factor in how the industry is going to perform. It is well known that there is a shortage of good practical people at this point in time and the position will deteriorate as the demand for yarn and cloth increases. The Textile College of Technology in Dhaka has the potential to turn out the manpower required by the industry, but is falling a long way short of providing the needs of the industry in the form of practical technicians and technologist. A large part of training should

be devoted to practical work on the machinery that is installed in the college and in practical use of quality control equipment. We would recommend, therefore that:-

i) The College syllabus should be reassessed to accommodate technicians and degree courses.

ii) The teaching staff should be competent to teach at a theoretical and practical level conducive to the posts.

iii) The machine room should be brought upto date with new equipment for each stage of operations and students given a full appreciation of their applications.

iv) A full range of testing equipment should be made available for practical use under supervision.

v) A close liason with industry should be maintained to identify present and future needs.

YARN PRICING STRUCTURE

The Government pricing structure should be conducive to the industry being able to finance itself and still be more than competative with import yarns. Special considerations should be given to Handloom section in the form of restrictions on imported seconds cloth and second hand garments imported into the country.

DEVELOPMENT OF EXPORT QUALITY YARNS AND FABRICS

In view of our last recommendations ref. Technicians and Technologists. It is viewed that because of the lack of practically trained personnel, the opinion that 16% - 20% of exported garments would be from locally produced yarns and fabrics by the year 1986-87 is optimistic. Particularly inthe field of Polyester/Cotton.

Having been associated with the private sector mills through the BMR Programme. the opinion has been formed that the entrepreneurs and Directors of the majority of the mills have only a lay knowledge of textiles. The Management and technical people they employ have not sufficient practical experience to deal with the immediate problems of poor quality and production. If Polyester/Blends are introduced problems can be envisaged.

It is recommended that short term assistance is sought from experienced people in this field. With particular emphasis on the Bleaching, Dyeing, Printing and Finishing side of the operations. In this way it may be possible to short cut to quality products. This applies to Public and Private Sector mills.

IMPORTATION OF ESSENTIAL
SPARES AND EQUIPMENT

The method of procurement of essential parts, appears to be a pratracted affair, it would certainly assist industry if speedier methods could be realised, including customs procedures.

POWER LOSSES

As can be seen from the graphs the losses of power have been drastically reduced from the previous year but still play a part in reduced output. Especially critical in the drying units where specific dye temperatures and times of operation are paramount. Further action required in this area.

ACKNOWLEDGEMENT

- To conclude I would like to express my thanks to the people that I have worked within Bangladesh

  The Chairman & Directors of BTMC
  The Managers & Staff in the factories

- My counterparts, without who it would have proved difficult to carry out my brief, and who I sincerely hope will have benefited from our association. I wish them well.

- The Operatives of the factories, I found to be extremely industrous, hard working and happy people, who I have enjoyed working with. The people who I have met socially who have been most curteous and kind. Finally the Government of the People's Republic of Bangladesh for allowing me to work in the country. I shall leave with many happy memories of a poor, but lovely country wishing them well for the future.

ANNEX - 1

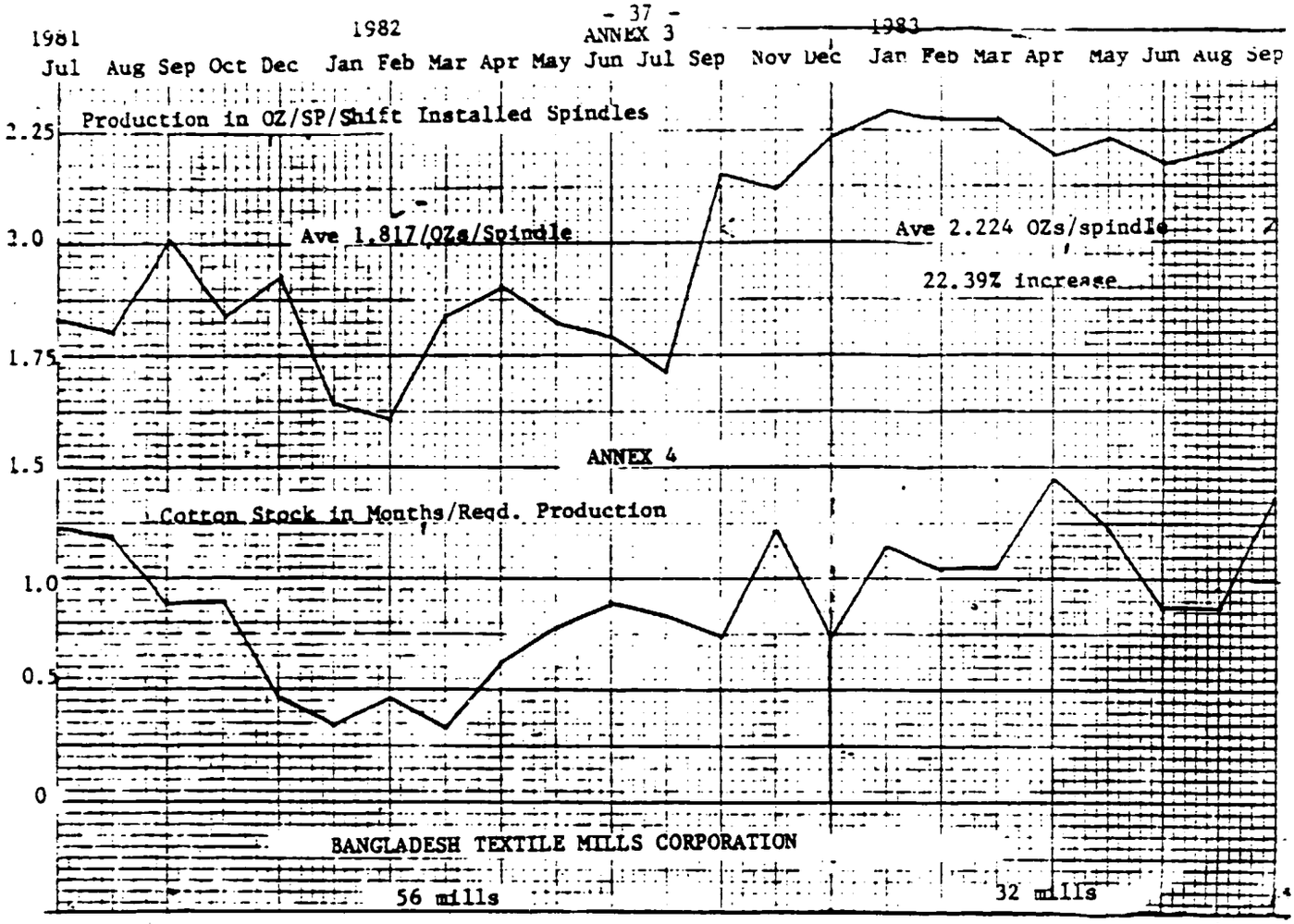
	CHITTARANJAN		AFSAR		LUXMINARAYAN		JABA		MUSLIM		DHAKA	
LAP MD% PRE TIDC	3.75%		4.65%		1.7%		5.07 - 4.85		3.4 - 2.8		1.9 - 3.8	
LAP MD% AFTER TIDC	1.87%		2.3%		- -		2.24 - 1.49		2.9 - 2.8		- -	
MONTHS	MARCH JULY	AUGUST DEC.	MAR JUL	AUG. DEC.	MAR JUL	AUG DEC	MAR JUL	AUG DEC	MAR JUL	AUG DEC	MAR JUL	AUG DEC
PROD AVE 32a	891393	1002135	489411	544371	749610	739282	284108	380096	1808697	1749000	794236	750878
NO.OF DAYS	124	123	130	124	132	122	97	102	131	118	104	102
AVE.PROD. PER DAY	7188	8147	3764	4390	5678	6059	2929	3726	13806	14822	7636	7361
INCREASE PROD/DAY	+ 959		+ 626		+ 381		+ + 797		+ 1016		- 275	
%INCREASE PROD/DAY	+ 13.3%		+ 16.6%		+ 6.0%		+ 27.2%		+ 7.3%		- 3.6%	

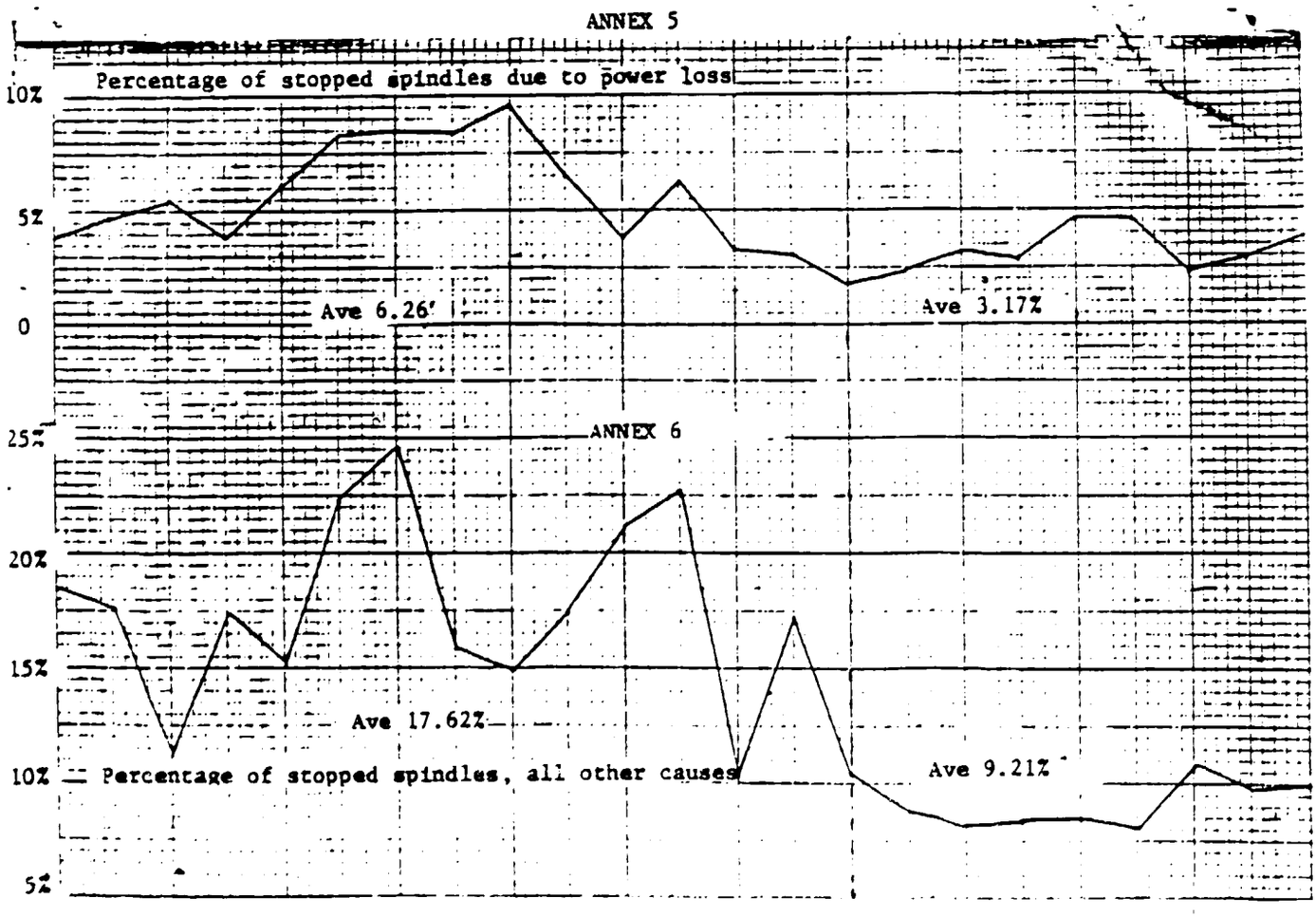
ANNEX - 2

THREE(3) MONTHS WORK PROGRAMME

1982 JULY	INSTALLED SPDLS	OPERATIVE SPDS	PROD. IN OZ. SPD/SHIFT OPERATIVE	PROD. IN OZS/SPD/ SHIFT- INSTALLED	% INCREASE IN PRODN.
MONNOO TEXTILE	15744	12245	2.14	1.66	
MONNOO EXTENSION	10500	7294	2.47	1.77	
MONNOO FINE	12400	10213	2.53	2.08	
1982 DEC.					
MONNOO TEXTILE	15744	14678	2.28	2.125	+ 28%
MONNOO EXTENSION	12500	10667	2.54	2.167	+ 26.7%
MONNOO FINE	12400	11702	2.76	2.604	+ 25.19
JULY TANGAIL COT	12400	2746	2.68	0.593	
TANGAIL EXTENSION	11500	8068	2.49	1.746	
DECEMBER TANGAIL COT	12400	10339	2.56	2.134	+ 59.86%
TANGAIL EXTENSION	11500	76.39	2.54	1.687	MATERIAL CHANGES FROM POLY/COTTON BACK TO 100% COTTON
TANGAIL EXTENSION NOVEMBER	11500	8687	2.71	2.047	+ 8.52%

ANNEX 3


1981
1982
1983
Jul Aug Sep Oct Dec Jan Feb Mar Apr May Jun Jul Sep Nov Dec Jan Feb Mar Apr May Jun Aug Sep
Production in OZ/SP/Shift Installed Spindles
2.25
2.0
1.75
1.5
1.0
0.5
0
Ave 1.817 OZs/Spindle
Ave 2.224 OZs/spindle
22.39% increase
ANNEX 4
Cotton Stock in Months/Reqd. Production
BANGLADESH TEXTILE MILLS CORPORATION
56 mills
32 mills


ANNEX 5
Percentage of stopped spindles due to power loss
10%
5%
0
Ave 6.26%
Ave 3.17%
ANNEX 6
25%
20%
15%
10%
5%
Ave 17.62%
Percentage of stopped spindles, all other causes
Ave 9.21%