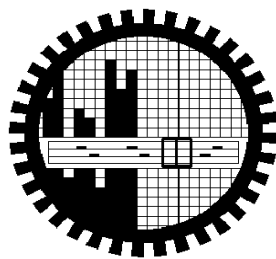


MASTERS OF ENGINEERING

**EFFECTS OF WORKER FATIGUE ON PRODUCT QUALITY:
A CASE STUDY IN APPAREL INDUSTRY**

MD. MAHMUD AKHTER



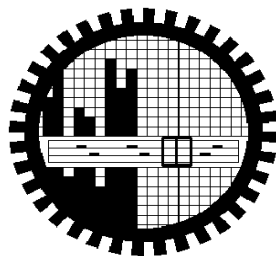
**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING
BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY
DHAKA, BANGLADESH
DECEMBER, 2013**

**EFFECTS OF WORKER FATIGUE ON PRODUCT QUALITY:
A CASE STUDY IN APPAREL INDUSTRY**

BY

MD. MAHMUD AKHTER

A thesis paper submitted to the Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, in partial fulfillment of the requirements for the degree of Master of Engineering (M. Engg.)



**DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING
BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY
DHAKA, BANGLADESH
DECEMBER, 2013**

The thesis paper titled “**Effects of worker fatigue on product quality: A case study in apparel industry.**” Submitted by Md Mahmud Akhter, Student No-0409082019P of Session April, 2009 has been accepted as satisfactory in partial fulfillment of the requirement of the degree of Master of Engineering in Industrial and Production Engineering on 3rd December, 2013.

BOARD OF EXAMINERS

1.

Dr. Nafis Ahmad
Professor
Department of Industrial and Production Engineering
Bangladesh University of Engineering and Technology, (BUET)
Dhaka, Bangladesh

Chairman

2.

Dr. Abdullahil Azeem
Professor
Department of Industrial and Production Engineering
Bangladesh University of Engineering and Technology, (BUET)
Dhaka, Bangladesh

Member

3.

Dr. Ferdous Sarwar
Assistant Professor
Department of Industrial and Production Engineering
Bangladesh University of Engineering and Technology, (BUET)
Dhaka, Bangladesh

Member

DECLARATION

I hereby declare that no part of this thesis has been submitted elsewhere for the award of any degree or diploma.

Md. Mahmud Akhter

**This Work is Dedicated to My
Parents**

Table of Content

	Page No.
List of Figures	vi
List of Tables	vii
Acknowledgement	viii
Abstract	ix
Chapter-I Introduction	1
1.1 Problem Statement	2
1.2 Objectives	3
1.3 Methodology	3
Chapter-II Background	5
2.1 Possible Indicators of Workplace Fatigue	6
2.2 Factors Effects on Fatigue	7
2.2.1 Shift work	7
2.2.2 Extended work Hour	8
2.2.3 Effects Accumulate	8
2.2.4 Noise	9
2.2.5 Lighting	9
2.2.6 Ventilation, Air quality And Thermal Comfort	9
2.2.7 Vibration	9
2.2.8 Ergonomics	9
2.3 Literature Review	10
2.4 Proposed Model	13
Chapter-III Data Collection	16
3.1 Description of the Company	16
3.2 Factory Specification	17
3.3 Product Mix	17
3.4 Stitching Department	18
3.4.1 Hood Make	18
3.4.2 Hood Ruling	18
3.4.3 Sleeve on Panel and Hood Over lock	18
3.4.4 Sleeve Padding joint	19

3.4.5 Zipper join and Bon top stitch	19
3.4.6 Bone joint at Zipper	20
3.4.7 Facing Join and top stitch	20
3.4.8 Collar and Lining join	20
3.4.9 Zipper top stitch and tuck	21
3.4.10 Lining Sleeve and Side Joint	21
3.5 Finishing Department	35
3.6 Fabric Department	40
Chapter-IV Data Analysis	44
4.1 Stitching Department	44
4.1.1 Variations in Defective Quantities	44
4.1.2 Reasons for Deviations	50
4.2 Finishing Department	51
4.2.1 Variations in Defective Quantities	51
4.2.2 Reasons for Deviations	56
4.3 Fabric Department	56
4.3.1 Variations in Defective Quantities	56
4.3.2 Reasons for Deviations	61
Chapter-V Results and Discussion	62
5.1 Results and Discussion	62
5.2 Possible Interventions	65
Chapter-VI Conclusions	67
6.1 Conclusions	67
6.2 Recommendations for Future Work	67
References	68
Appendices	69

List of Figures

Figure 2.1	Conceptual Fatigue Model	8
Figure 2.2	Steps for Determining the Effects of fatigue on product Quality	15
Figure 3.1	Hood Making	18
Figure 3.2	Hood Ruling	18
Figure 3.3	Sleeve on Panel And Hood Over Lock	19
Figure 3.4	Sleeve Padding Joint	19
Figure 3.5	Zipper Joint And Bone Top Stitch	19
Figure 3.6	Bone Joint at Zipper	20
Figure 3.7	Facing Joint And Top stitch	20
Figure 3.8	Collar And Lining Joint	20
Figure 3.9	Zipper Top Stitch And Tuck	20
Figure 3.10	Lining Sleeve And Side Joint	21
Figure 3.11	A Typical Front View of the Jacket	21
Figure 3.12	Complete Overview of the Jacket	22
Figure 3.13	A Typical View of Assembly Line	22
Figure 3.14	Layout of the Assembly Line	24
Figure 3.15	Causes of Defects in Stitching Department	28
Figure 4.1	Percentage of Causes of Defects of Stitching Department	45
Figure 4.2	Percentage of Defective items in Different Sections of Stitching Dept.	46
Figure 4.3	7 Days Average Defect Quantities of Stitching Department	48
Figure 4.4	7 Days Total Defect Quantities of Stitching Department during Different time Interval	49
Figure 4.5	Percentage of Defective items in Different Sections of Finishing Dept.	51
Figure 4.6	7 Days Average Defect Quantities of Finishing Department	54
Figure 4.7	7 Days Total Defect Quantities of Finishing Department during Different time Interval	55
Figure 4.8	Percentage of Defect Causes of Fabric Department	57
Figure 4.9	7 Days Average Defect Quantities of Fabric Department	59
Figure 4.10	7 Days Total Defect Quantities of Fabric Department during Different time Interval	60

List of Tables

Table 3.1 Name of the Operations Carried Out On a Jacket	23
Table 3.2 Time Intervals of a Working Day	25
Table 3.3 Type of Machine to Produce the Jacket	26
Table 3.4 7 Days Defect quantities in Sewing Department (Hood Make)	29
Table 3.5 7 Days Defect quantities in Sewing Department (Front Part)	30
Table 3.6 7 Days Defect quantities in Sewing Department (Back and CPU)	31
Table 3.7 7 Days Defect quantities in Sewing Department (Lining Part)	32
Table 3.8 7 Days Defect quantities in Sewing Department (Assembly Part)	33
Table 3.9 Total Defect Quantities in Sewing Department	34
Table 3.10 7 Days Defect Quantities in Finishing Department (Pressing)	36
Table 3.11 7 Days Defect Quantities in Finishing Department (Accessories)	37
Table 3.12 7 Days Defect Quantities in Finishing Department (Spot)	38
Table 3.13 Total Defect Quantities in Finishing Department	39
Table 3.14 7 Days Defect Quantities in Fabric Department	42
Table 4.1 Causes of Defect Quantities in Stitching Department	44
Table 4.2 Defective Rate in Different Sections of Stitching Department	45
Table 4.3 7 Days Average Defect Quantities of Stitching Department	47
Table 4.4 Defective Rate in Different Sections of Finishing Department	51
Table 4.5 7 Days Average Defect Quantities of Finishing Department	53
Table 4.6 Causes of Defect Quantities in Fabric Department	57
Table 4.7 7 Days Average Defect Quantities in Fabric Department	58
Table 5.1 Stitching Department's Data Summery	63
Table 5.2 Finishing Department's Data Summery	63
Table 5.3 Fabric Department's Data Summery	64

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ABSTRACT

Improving product quality is one of the main concerns of any manufacturing industry. There are many factors in apparel industries which are responsible for poor product quality and defective items. Unskilled workers, physical fatigue from manual work, extended working hours, misplacement of worker at workstation, lack of training, absence of engineering knowledge and engineering management are few factors directly related to product quality. In this work, the effects of work fatigue on product quality are studied and analysed for stitching, finishing and fabric departments of an apparel industry. During the investigation, attention is concentrated on how work fatigue influences product quality. It is found that the defect rate varies with time. The defect rate increases gradually until lunch break. A similar pattern is observed after the lunch break also. Among the three departments, the defect rate in the stitching department is higher than in the fabric and finishing departments. Finally, a few suggestions are proposed to reduce the quantity of fatigue-related defective items.

CHAPTER-I

INTRODUCTION

A major movement within the rapidly emerging global market has involved a shifting focus from low cost products to high quality, high value products. Specifically in the garment industry where competition is high. In addition to customer driven demands, companies are being made more responsible for good working conditions on the floor by government regulations, tight labor markets, and recognition of the value of a good employee. To meet these demands, garment manufacturers must find a manufacturing method that meets or exceeds quality standards while decreasing costs through optimizing manufacturing productivity, efficiency, and safety. Fatigue plays an important role in designing systems and tasks. Design of successful working method helps to utilize the human capabilities with job demands. A mismatch of this interface can increase expenses, thus affecting the net profit by causing human operators to make mental mistakes, work inefficiently, or work beyond their physical capabilities to the point of injury. Workers fatigue research has been employed where highly repetitive and low to moderate force levels.

Fatigue can be represented as a single phenomenon or discrete variable, but it is probably more appropriate to view it as a continuous dimension, that is experienced as a subjective internal feeling. Fatigue is both a ubiquitous symptom and is difficult to define. Some definitions attempt to identify the source of the fatigue e.g. muscle dysfunction, while others take a behavioral view, treating it in terms of performance decrements. From a physiological perspective 'weakness is a diminished ability of rested muscle to exert maximal force, whilst fatigue is a loss of maximal force-generating capacity that develops during muscular activity.

Fatigue as a major problem in the Bangladesh workforce, and one with a major impact on product quality. Workplace conditions for which fatigue is a major symptom such as depression or anxiety accounted for only a small part of the productivity losses. Fatigue reduced work performance mainly by interfering with concentration and increasing the time needed to accomplish tasks. As a result required product quality level is not achievable during the working hours.

There is a clear relationship between quality and productivity. Generally, when quality increases, increased in productivity, because waste is eliminated. The amount of inputs required to produce outputs is reduced. So productivity increases. This can happen as long as the individual or group of individuals is willing to exert effort and has the capability to achieve the quality productivity levels desired.

1.1 Problem Statement

During the last decade, there have been several changes in the international trade agreements for apparel products, which are generating new challenges and opportunities for the export-oriented apparel industry in Bangladesh. Bangladesh economy in association with low labor productivity, a low efficiency of the workers, lack of efficient infrastructure , low level of investment, lack of opportunities on the job training, lack of knowledge and awareness of the management about productivity and quality are intensifying the internationally originated challenges. So it is necessary for the readymade garments industry of Bangladesh to develop a standard framework for some functions of product quality and productivity to maintain the international level of standards.

Today, the Bangladeshi garments industry is facing a fierce competition in global market, where price is order qualifier whereas excellent service, high quality of goods and timely delivery are order winners. Increased competition, product diversification and excellence in service have forced garment manufacturers to increase productivity, to reduce costs, adapt to demand cycle and improve quality. Only those units will survive which are competitive and efficient in all respect. For the last decade, increasing global competition in manufacturing has forced companies to focus on enhancing the efficiencies and economies of scale in all of their business processes. There is a growing trend towards downsizing to decrease the labor costs of manufacturing and assembling products. One result of this trend is that downsized companies are forced to produce more using fewer resources with better quality.

Human fatigue is one of the important factors which affects product quality. So far several works are reported in the literature on the effect of fatigue [Asberg et al.

(2000), Boksem et al. (2006) and Chalder et al. (1993)]. However no work is conducted to investigate how product quality is affected due to fatigue in apparel industries. Fatigue conceptualized as a reduction in physical and mental capacity which reduces strength, speed and reaction time. It has a negative impact on product quality by increasing errors. It is frequently advocated that since humans are unreliable and less consistent compare to machines, they are primarily responsible for lowering product quality. Physical, psychological, mental and sensory fatigue factors adversely affect operator/worker performance [Dawson et al. (2001)].

1.2 Objectives

The objectives of the study are:

- a) To identify defective rate due to fatigue in different sections of an apparel industry
- b) To classify in defective items with different time interval during working hours
- c) The analyze the change in defective rate during the working hours
- d) To design a possible interventions to reduce fatigue and/or improve product quality

1.3 Methodology

The study will be carried out in an apparel industry in Bangladesh. Steps are as follows:

- a) After choosing a product, the processes will be identified where manual activities are involved. Then whole working time will be divided into 20 intervals of 30 minutes each.
- b) Data from different sections such as fabrics, stitching and finishing will be collected. The factors related to product quality due to fatigue will be identified. All items will be checked to classify defect types and quantities.
- c) Finally percentage of defective items due to fatigue will be determined and compared with other factors and average defective items at different times and

in different sections. Results will show section-wise variation in defective rate in a particular time and explanations.

- d) Based on the findings, possible interventions will be determined to reduce defective rate due to fatigue.

CHAPTER-II

BACKGROUND

Product quality in manufacturing, is a measure of excellence or a state of being free from defects, deficiencies and significant variations. It is brought about by strict and consistent commitment to certain standards that achieve uniformity of a product in order to satisfy specific customer or user requirements. In the other way quality may be defined as "the totality of features and characteristics of a product or service that bears its ability to satisfy stated or implied needs."

If a product fulfils the customer's expectations, the customer will be pleased and consider that the product is of acceptable or even high quality. If his or her expectations are not fulfilled, the customer will consider that the product is of low quality. This means that the quality of a product may be defined as "its ability to fulfil the customer's needs and expectations".

Quality needs to be defined firstly in terms of parameters or characteristics, which vary from product to product. For example, for a mechanical or electronic product these are performance, reliability, safety and appearance. For pharmaceutical products, parameters such as physical and chemical characteristics, medicinal effect, toxicity, taste and shelf life may be important. For a food product they will include taste, nutritional properties, texture, and shelf life and so on.

Fatigue is a physical or mental state caused by over exertion. It reduces a person's capabilities to an extent that may impair their strength, speed, reaction time, coordination, decision making, or balance. Normally, good quality sleep reverses the imbalance, allowing the body and the brain to recover. How-ever, working long hours, working with intense mental or physical effort, or working during some or all of the natural time for sleep can all cause excessive fatigue. Fatigue can also have longer-term effects on health. Fatigue is defined as a state of being tired. The signs, symptoms and affect fatigue has on workers varies from one person to the next, however fatigue may affect the individual worker's ability to perform. Most frequent possible Indicators of Workplace Fatigue are feeling drowsy or relaxed, feeling tired

or sleepy or not feeling re-fresh after sleep, blurred vision, increased irritability, finding it difficult to keep eyes open, taking more frequent naps during leisure hours or falling asleep at work, finding it hard to concentrate or making more mistakes than usual, excessive head nodding or yawning, increased absenteeism, repeatedly moving off track while driving vehicles and plant, near misses etc.

2.1 Possible Indicators of Workplace Fatigue

Fatigue symptoms can be accompanied by or manifest in a range of other physical and emotional complaints. These include:

- a) Constant tiredness or sleepiness
- b) Lack of energy
- c) Desire to sleep more
- d) Headaches
- e) Aching muscles or joints
- f) Muscle weakness
- g) Slower reflexes and responses rates
- h) Indecision and poor judgment
- i) Low mood and irritability or depression
- j) Changes in appetite
- k) Lowered immune system functioning
- l) Problems with short term memory
- m) Attention difficulties and poor concentration
- n) Poor motivation

This list is not exhaustive and the presence of these indicators does not necessarily mean that fatigue is a risk. Management of fatigue should not just rely on workers recognizing these symptoms, as the symptoms on their own have been found to be unreliable indicators of fatigue. The employer must assess the risk and implement control measures as required [Dawson et al. (2001)].

Fatigue may be related to a number of underlying medical conditions and a proper diagnosis is important. Should fatigue symptoms not clear after making the appropriate lifestyle changes, it is recommended that you consult your physician. The

following list includes some of the more common medical causes of fatigue: Anemia, ongoing sleep disorders such as Insomnia, narcolepsy, or sleep apnea, chronic Pain, dehydration, allergies that cause hay-fever or asthma, poor Immune System functioning and chronic infection, diabetes, hypothyroidism (under active thyroid), Addison disease etc.

2.2 Factors Effects on Fatigue

The study was guided by an initial comprehensive model (Figure 2.1), which was hypothesized based on existing fatigue research, frameworks, and models. The model suggests that a total fatigue construct does exist and that it encompasses at least two dimensions, physical fatigue and mental fatigue. In addition, it is proposed that physical fatigue affects physical performance directly and that mental fatigue affects mental performance directly. Indirect effects between physical fatigue and mental performance and between mental fatigue and physical performance are also included in the model. Each of the three phases of research relates to an overall understanding of the fatigue and performance relationships within this model. Additional factors, such as job task factors, psychosocial factors, and individual factors, are included in this conceptual model. The other factors are described as follows:

2.2.1 Shift Work

In terms of work hours, shift work is defined as work that starts at 8.00am and finishes at 5.00pm with an hour lunch time. The start and finish time may vary organization to organization. A biological definition of shift work would be any work pattern that causes a change in normal sleep patterns.

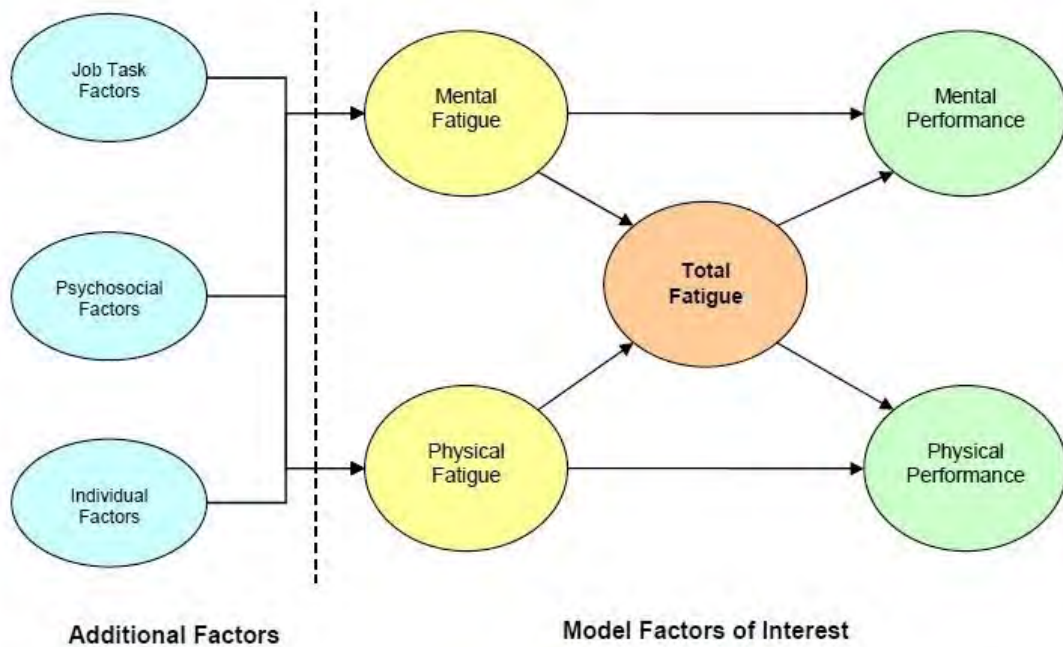


Figure 2.1 Conceptual fatigue model

2.2.2 Extended Work Hour

Shift that last longer than 8 hours are classed as long or extended. People may work long hours on a short-term basis to deal with a major emergency or an unexpected situation, or they may work long hours regularly for financial or other reasons. The effects of working long hours depend on how long the work periods are, are how often they occur, and at what time of day. Sleep restriction has clear negative impact on human performance. It suppresses the immune system, increase appetite, and makes the body increasingly resistant to insulin. Several nights of restricted sleep create a sleep debt results fatigue which has a clear effects on product quality.

2.2.3 Effects Accumulate

The combined effects of sleep restriction and extended hours of work has a short-term impact on performance and product quality and in the long term may affect cardiovascular health, mental health, safety, and productivity.

2.2.4 Noise

Excessive exposure to loud noise can irreversibly damage the ear, resulting in noise-induced hearing loss. 'Nuisance' noise can be annoying and distracting and result in reduced job performance and satisfaction. Noise may also be unsafe if it impairs communication in the work environment, such as by overpowering auditory alarms.

2.2.5 Lighting

Lighting levels need to be appropriate to the task and must comply with Australian Standard 1680. Working in dim or overbright work environments can result in eyestrain, headaches, irritability and, inevitably, reduced productivity, reduced product quality. Light sources, including the sun, can create unwanted reflections, glare and shadows in the workplace that can cause discomfort and distraction, and can interfere with the performance of visual tasks. Low levels of lighting can cause depression, which for some people may be severe.

2.2.6 Ventilation, Air Quality and Thermal Comfort

Ventilation is important for the control of dust, fumes, gases, aerosols, climate and thermal comfort factors. Exposure to different types of dust can result in fibrosis of the lung, allergic reactions and asthma attacks. Various vapours, gases and aerosols have the ability to cause respiratory and skin damage. Extremes of heat can reduce concentration and motivation and cause a number of heat-related illnesses. Extremes of heat can also reduce tolerance to chemical and noise exposure, and increase the risk of heart attacks.

2.2.7 Vibration

Whole body vibration, e.g. from riding a mower, can affect comfort and performance even at low levels with poor quality and can cause damage to the spine, stomach pain and gastrointestinal complaints. Hand-arm vibration, such as from hand tools, can have negative effects on muscles and the skeleton, and can contribute to carpal tunnel syndrome, low-back pain and vibration white finger, for example.

2.2.8 Ergonomics

Ergonomics and human factors have been around for approximately 60 years. During World War II there was a need to deal with employee fatigue, stress, injuries, and

poor performance due to mismatches between people and technology, unusual work schedules, and demanding and threatening working conditions. Over the ensuing 60 years ergonomic researchers and practitioner of ergonomics have learned that the best way to address ergonomic concerns is to take a broad view of the problems encountered combined with focused solutions. The broad view of a work process and improvements addresses the need to make sure that improvements in one area do not lead to problems in another area. It accounts for the issues that often occur elsewhere in the work system when just a focused approach is used in one area. This has led to the understanding that a bigger view allows the ergonomics practitioner who is trying to solve a problem to address both the specific problem (the “micro ergonomics”), and to also deal with the ramifications in the entire work process (the “macro ergonomics”). Micro ergonomic factors deal with design characteristics of tasks, or tools/technology, or the environmental conditions, or the capacity/knowledge of each individual employee. It addresses the specific ergonomic risk factors in a particular task, job or operation. Macro ergonomic factors deal with larger issues such as the organization of the work process, the coordination of tasks and activities among employees, the supervision of processes and employees, and how people, technology, tasks and environmental features are integrated. Ergonomic improvements and interventions must account for both levels and their effects on the work system to be successful.

2.3 Literature Review

Many works have done on the effect of fatigue on productivity in the working hours. However no works is done on the effect fatigue on product quality. So far several works are reported in the literature of human fatigue. Study the effects of shift work on different dimensions of perceived fatigue, as well as to study if fatigue changes over an entire shift life. Fatigue was rated at the end of each shift. Reaction time tests were also carried out at the end of each shift. The result showed that the reported fatigue was primarily expressed in terms of sleepiness and to some extend also in term of lack of energy and lack of motivation. These dimensions also discriminated most between work shifts, where the highest level of fatigue were reported during the night shift. Longer reaction times coincided with increasing ratings of the mental aspects of fatigue. However no work is conducted to investigate how product quality is affected

due to fatigue in apparel industries. Several research groups have developed models for estimating the work-related fatigue associated with shift workers duty schedules. The prevalence of shiftwork has substantially increased in most industrialized economies in the last three decades, largely due to changes in customer demands and community expectations, combined with the arrival of global competition. Consequently, employees in many industries are now required to work extended shifts and/or to work shifts that are outside the standard 9-to-5, Monday-to-Friday work week. The sleep loss and body clock disruption associated with these work demands may lead to increased levels of work-related fatigue, which manifests as reduced alertness, impaired neurobehavioral performance, increased sleepiness, and/or greater risk of injury and accident. However, several research groups have developed fatigue models designed to quantify the impact of shiftwork schedules on employees' levels of sleepiness, alertness, and/or performance. Most early fatigue models shared a common feature: they required actual or estimated sleep times as one of several inputs. This requirement was reasonable for researchers estimating the effects of fatigue in laboratory- based studies, but it posed difficulties for organizations wishing to estimate the effects of fatigue in workplace settings. [Ahsberg et al. (2000)]

Fatigue due to prolonged task performance is a common phenomenon in our everyday lives. When people become fatigued, they usually experience difficulties in maintaining task performance at an adequate level. This can have major consequences: for example, in a recent study by Campagne et al. (2004) in which subject were required to drive a car (in a simulator) for about 3 hours, it was found that with increasing fatigue, performance deteriorated. Driving errors such as large speed variations and even running of the road became increasingly frequent. The effects of mental fatigue on behavior are due to reduced action monitoring as indexed by the error related negativity. Subjects clearly exhibited impaired action monitoring and response preparation when they became fatigued. The observation that this impairment can be alleviated by increasing rewards, suggest that mental fatigue involves an effort/reward imbalance. Continuous task performance over such a prolonged period of time requires an increase in effort of subjects to keep performance at adequate levels. When the observed rewards become insufficient, subjects disengage from the task, feeling fatigued. When rewards are increased at the end of the task, effort and reward are once again balanced, resulting in better

performance. The observation that subjects differed in the way they improved their performance after the motivation, suggests that performance under conditions of mental fatigue involves adaptive strategy changes to keep performance at acceptable levels. [Boksem et al. (2006)]

A self-rating scale was developed to measure the severity of fatigue. Two-hundred and seventy-four (274) new registrations on a general practice list completed a 14 items fatigue scale. Tests of internal consistency and principal components analyses were performed on both sets of data. Aim was to produce a short, easy to administer scale which was both reliable and valid. Many synonyms are used to describe fatigue. It has been suggested that the shorter the scale the less reliable and valid it becomes, however, the revised 11-item scale was found to be both reliable and valid, despite its brevity. Items were chosen for their simplicity and unambiguousness. Like most symptoms, fatigue is better viewed as a dimension as opposed to a category and response options were chosen accordingly, to accommodate two different scoring methods. The principle components analyses provided good evidence for the distinction made between the two constructs, physical and mental fatigue. To date, a total fatigue score has been obtained by adding up all the items. However, the analyses demonstrate that it would probably be more useful to have two scores, one for physical fatigue and one for mental fatigue. In a brief, easy to administer self-rating fatigue scale was developed. The intended purpose of the scale is the assessment of symptom severity, the detection of fatigue cases in epidemiological studies and as a valid estimator of change. It is recommended, however, that the scale is not used alone to detect cases, but should be used as an adjunct to a thorough clinical assessment. The scale has good face validity, and reasonable discriminant validity. Although evidence of validity as an estimator of change has been established in an open-treatment trial further evidence could be obtained by using the scale before and after treatment in a controlled trial. [Chalder et al. (1993)] Fatigue conceptualized as a reduction in physical and mental capacity which reduces strength, speed and reaction time. It has a negative impact on product quality by increasing errors. It is frequently advocated that humans are unreliable and less consistent compare to machines, they are primarily responsible for lowering product quality. Physical, psychological, mental and sensory fatigue factors adversely affect operator/worker performance. [Dawson et al. (2001)]

2.4 Proposed Model

Due to the physical fatigue of worker, there will have an effect on product quality. In figure 2.2, determination of the effects of work related fatigue on product quality and the steps are shown.

Step-1

By checking and counting each and every pieces total number of defective items are found where fatigue related factors and other factors both are involved.

Step-2

In the second step, total number of defective items are categorized. Defects related to fatigue and other factors are the two categories in this step.

Step-3

After completing step two, next step is to check the factors. Is the factors really related to fatigue? If no, then identify fatigue related factors and come back to step two. And the process is continuous. If the answer is yes, then we can proceed to next step.

Step-4

In this step, after identifying the causes of defects related to work-fatigue from previous step, the defect percentage is calculated. And it plays an important role to the total number of defective items.

Step-5

After completing step four, in this step feasibility of defect percentage is tested. If defect percentage is reasonable then we will go to the next step where this will be compared with other factors. If no, then identify new fatigue related factors and/or change the process where manual activities are more and related to work fatigue. And come back to step two. And the process will be continued.

Step-6

In this step, comparison are made between work fatigue related factors and other factors. We will get definite fatigue related factors from previous step. Both defects amount and percentage are found from total number of defective items in apparel industry.

Step-7

In this step, the average defective rate is calculated in the different time interval.

Step-8

In this step, the nature fatigue's effect on product quality is determined.

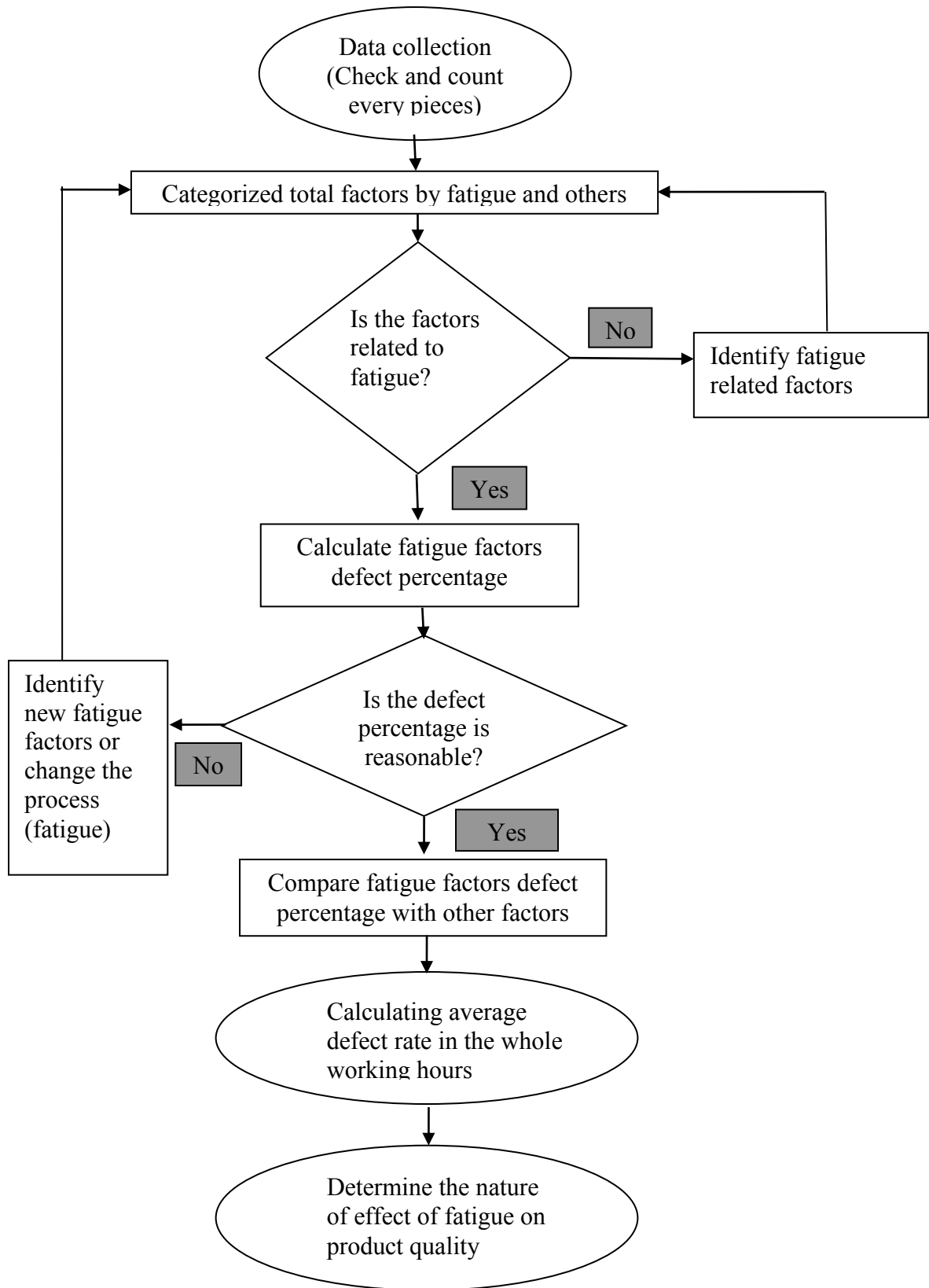


Figure 2.2 Steps for determining the effects of fatigue on product quality

CHAPTER-III

DATA COLLECTION

In Bangladesh, there are numerous number of garment factories. A major part of foreign currency comes from this sector. The study is carried out in an apparel industry. The company under consideration, located at Mirpur, Dhaka-1216, is a big out-ware apparel industry. In this study, the effects of work fatigue on product quality are observed in the stitching, finishing and fabric departments and relevant data are collected.

3.1 Description of the Company

The organizational status are worker-based factory, which is includes possible opportunities and challenges. Our views are to produce readymade woven garments for apparel buyers who may wish to play a vital role in the apparel industry.

It has legally incorporated on 9th November 2010. The factory received machinery from JUKI & BROTHER on time. It is a Turkey-Bangladesh Join venture 100% export oriented woven out-ware apparel manufacturing industry.

As per Memorandum of articles the company has established business as Joint Venture with the Board of three Directors. So, this company is a obviously 100% export oriented world class ready-made garments factory committed to quality & competitive price, equipped with all latest and supplicated machinery & equipment and run by honest, dedicated and long experienced Management.

This factory adheres to all of major merchandising to Turkey, factory certification and labor compliances as per local law or buyer requirements. Utmost importance has been given to production layout and the quality control department, which gives the assurance of quality with inventory check, in-line inspection & final inspection before final inspection / shipment by Buyer. It is one of the leading garment factory in Bangladesh where we providing local law facilities, prayer room & medical facilities for workers on time. Even their factory is giving a wonderful circumstance facility for worker. Also they are providing some facilities for Buyer / representative.

3.2 Factory Specification

The factory has six storied building. In the ground floor, central bonded ware-house, reception, boiler room, generator room and childcare room are there. Corporate office, accessories ware-house and packaging section are in the first floor. In the second floor, sample room, inspection room, medical room, staff dining and sewing line one and line two with finishing are there. In the third floor central processing unit and sewing line three and line four with finishing are there. Half of cutting, fusing section, maintenance room and sewing line five and line six with finishing are there. In the fifth floor, half of cutting and sewing line seven and eight with finishing are there. And finally in the sixth floor idle machine place and sewing line nine and line ten with finishing exists.

There are one permanent doctor for first treatment. All types medicine for are provided without any payment if any worker get accident while doing his duty. Compliance department is very strong and aware looking for worker interest and problem. There is child care center to look after kid of worker.

It tries to meet all fire code regulations. Salary payment date is 7th on every month. It provides attendance bonus and incentives with their respective wage. According to the Bangladesh government rules (BGMEA) all compliance facilities are here.

3.3 Product Mix

The factory produces garments for both summer and winter seasons. In the product mix, men's jacket, ladies jacket and bottom shorts cover the total annual quantity. Most of the quantity around sixty percent (60%) is come from ladies jacket. Also jogging suits and kids item covers the summer season from july to december every year.

3.4 Stitching Department

There are fifty operations are carried out for this particular jacket. Some of them are single and most of them are combined. Each operation is performed at different workstation. All material handling is carried out by own and/or helper. No conveyor or belt is used for transportation material from one workstation to another workstation. Description of those operations is stated at below where manual activities and processing time are more.



Figure 3.1 Hood making



Figure 3.2 Hood ruling

3.4.1 Hood Make

Hood make is of the critical operation of producing jacket. Single needle lock stitch machine is used to do this operation. 3.62 minute required to do this job. Three panels get together to make the hood. In figure 3.1 hood make is shown.

3.4.2 Hood Ruling

After making the hood ruling is made. For this single needle lock stitch machine is used. Standard minute value of this process is 3.37 for single ruling. The process is shown in figure 3.2.

3.4.3 Sleeve on Panel and Hood over lock

After attaching padding in sleeve panels, overlocking is done around the shape. Three thread over lock machine is used for this purpose. Same operations are done in

hood over lock where padding will be attached with hood panels. The standard minute value for these two operations is 3.66. In figure 3.3, the operations are shown.



Figure 3.3 Sleeve panel and hood over lock

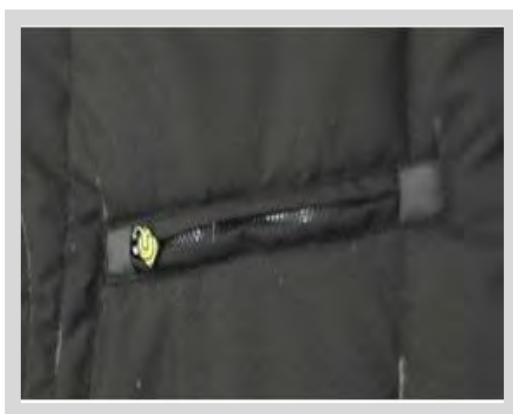


Figure 3.4 Sleeve padding joint



Figure 3.5 Zipper joint and bone t/s

3.4.4 Sleeve Padding joint

Padding attach with sleeve cut panels which is the first operation of sleeve making. Single needle lock stitch machine is used for this operation. Standard minute value is 3.70. The operation is shown in figure 3.4.

3.4.5 Zipper joint and Bone top stitch

At first zipper is attached with side pocket bone. Then zipper and bone together attached with front side pockets. Single needle lock stitch machine is used for this operation. Standard minute value is 3.32. The operation is shown in figure 3.5.



Figure 3.6 Bone joint at zipper



Figure 3.7 Facing joint & t/s

3.4.6 Bone joint at zipper

In this operation first zipper is attached with bone .Then zipper ends safety covers are attached. Single needle lock stitch machine is used for this operation. Standard minute value is 3.60. The operation is shown in figure 3.6.

3.4.7 Facing joint and top stitch

In this operation long cut panels are attached with inner body lining parts. And finally cut panels are fold and make top stitches along the seam direction. Single needle lock stitch machine is used for this operation. Standard minute value is 4.07. The operation is shown in figure 3.7.

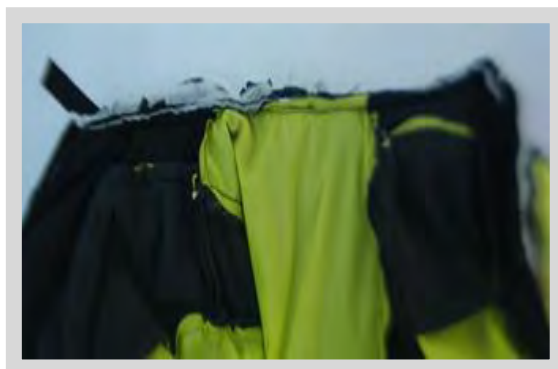


Figure 3.8 Collar and lining joint



Figure 3.9 Zipper top stitch & tuck

3.4.8 Collar and Lining joint

Lining part joint with shell (body) collar. In this operations two different parts are join together. Two parts are made previously. Single needle lock stitch machine is used for this operation. Standard minute value is 3.87. The operation is shown in figure 3.8.

3.4.9 Zipper top stitch and tuck

In this operation along the zipper length 1/16 inch top stitches are made two sides of the zipper. At the two ends of the zipper extended parts are fold and make a tuck over there. Single needle lock stitch machine is used for this operation. Standard minute value is 3.93. The operation is shown in figure 3.9.

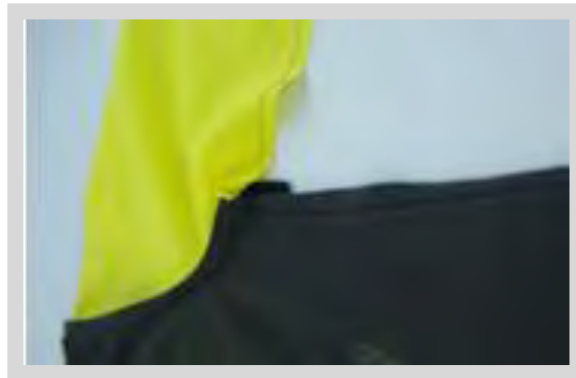


Figure 3.10 Lining sleeve and side joint

3.4.10 Lining Sleeve and Side joint

In this operation previously made inner sleeve is attached with inner body (lining part). After attaching sleeve two open sides are closed. Single needle lock stitch machine is used for this operation. Standard minute value is 3.83. The operation is shown in figure 3.10.



Figure 3.11 A typical front view of the jacket

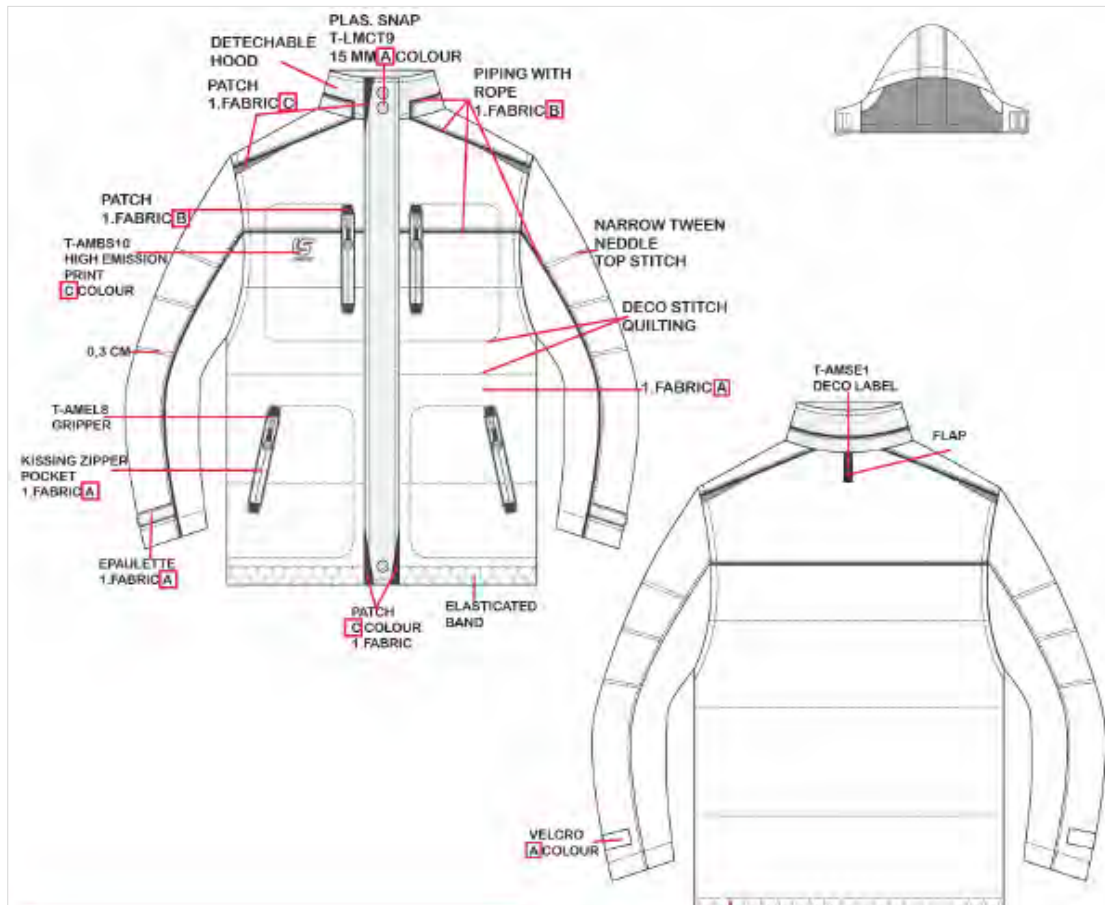


Figure 3.12 Complete overview of the Jacket



Figure 3.13 A typical view of assembly line

Table 3.1 Name of the operations carried out on a Jacket

S.No.	Full Name	S.No.	Full Name
1	Hood padding katcha and collar padding katcha	26	Pocket same joint
2	Apulette make and velcro joint	27	Zipper joint and bone top stitch
3	Hood over lock	28	Bone joint at zipper
4	Collar band make	29	Zipper joint and bone top stitch
5	Band top stitch and hood facing tuck	30	Side pocket bone joint
6	Collar and hood zipper joint	31	Side bone pocket joint
7	Hood make	32	Front part design top stitch
8	Hood ruling	33	Shoulder joint
9	Sleeve show stitch and hood top stitch	34	Collar and front zipper joint
10	Velcro joint	35	Sleeve joint and side joint
11	Sleeve panel and hood over lock	36	P0ckekt over lock
12	Sleeve padding joint	37	Armhole top stitch
13	Piping joint at back yoke	38	Bar tack
14	Sleeve velcro joint and apulate joint	39	Pocket same joint and bone joint and bone and pocket kacha
15	Placket make and top stitch	40	Facing joint and top stitch
16	Sleeve panel joint and back yoke joint	41	Bone make and bone top stitch and pocket closing
17	Front yoke and facing and shoulder piping joint	42	Mesh lining joint and top stitch
18	Front yoke and shoulder joint	43	Collar and lining joint
19	Front and back top stitch and front yoke top stitch	44	Shoulder and label joint (lining)
20	Front part padding joint and katcha	45	Zipper top stitch and tuck
21	Back part padding joint and katcha	46	Lining sleeve and side joint
22	Sleeve top stitch & back part top stitch	47	Dosting attach
23	All punch	48	Hem close
24	All snap & eyelet attach	49	Cuff ruling
25	Bone make	50	Placket joint and top stitch

In Table 3.1, the operations to produce the jacket are given. And operations are divided among the five different sections of stitching department. They are hood make, front part, back and CPU part, lining and assemble sections.

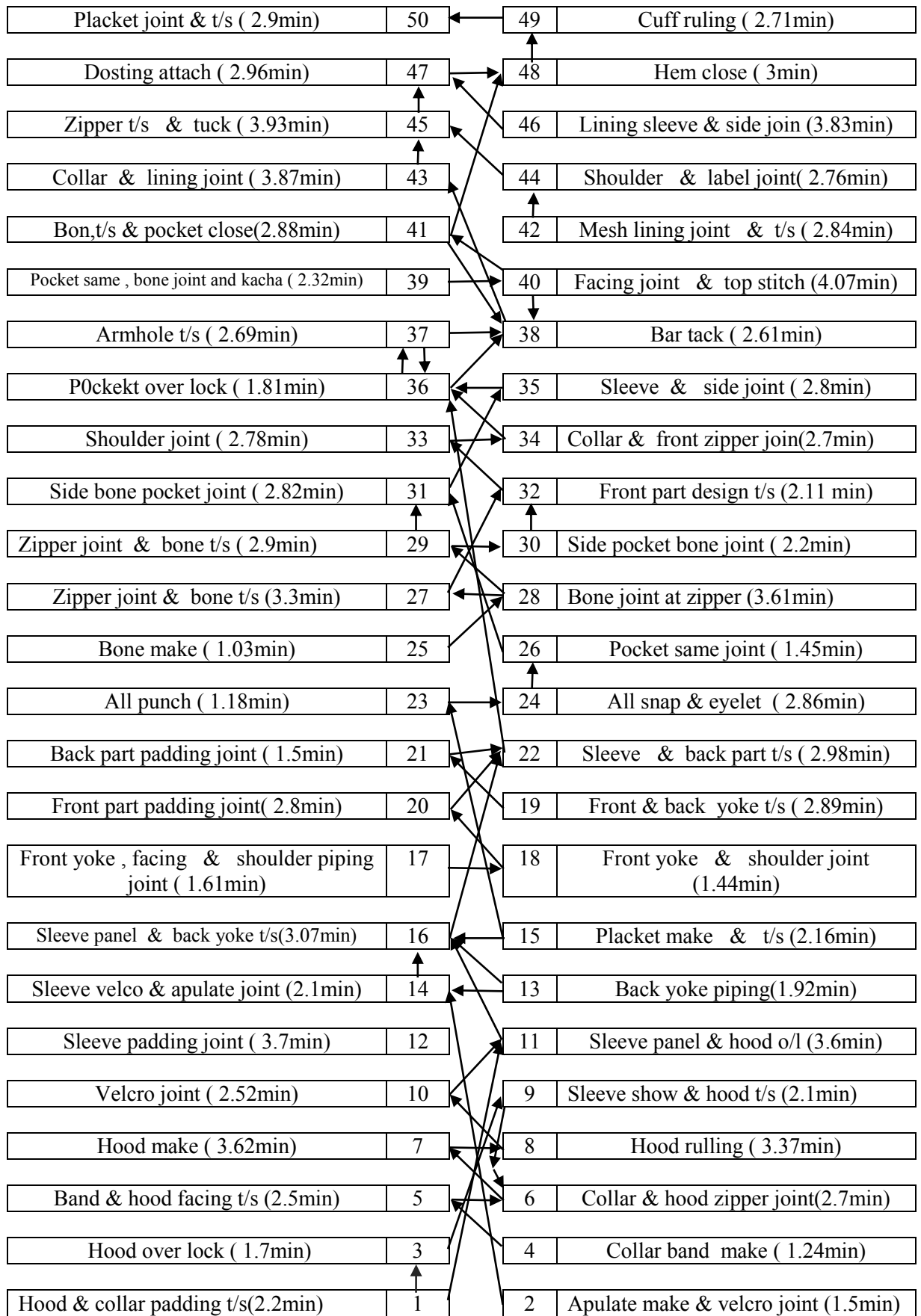


Figure 3.14 Layout of the assembly line

In figure 3.14 layout of the assembly line is shown where total standard minute value is 130.6 for machine operators. Input of this jacket parts are coming from cutting department as bundles. In this layout 50 work stations are shown. Out of them 15 work stations are direct input and they are 1,2,4,9,12,13,15, 17,19,21,25,26,39,42 and 46, which are shown in figure. Material flow along the stitching line is shown by arrow. Here, sometimes material comes from one or more sources and distribute in the same way.

In this study data are collected in three departments. They are stitching, finishing and fabric department. Data are collected in the whole working hours (10 hours). In this study the effects of fatigue on product quality is observed in the stitching, finishing and fabric department. Here the whole working time is divided into 20 intervals and 30 minutes each. Intervals are shown in Table 3.2.

Table 3.2 Time intervals of a working day

Interval	Working time	Hours
1	08:00 -8:30	1 st Hour
2	08:30 -9:00	
3	09:00-9:30	2 nd Hour
4	09:30-10:00	
5	10:00-10:30	3 rd Hour
6	10:30:11:00	
7	11:00-11:30	4 th Hour
8	11:30-12:00	
9	12:00-12:30	5 th Hour
10	12:30-13:00	
Break	13:00-14:00	Lunch Hour
11	14:00-14:30	6 th Hour
12	14:30-15:00	
13	15:00-15:30	7 th Hour
14	15:30-16:00	
15	16:00-16:30	8 th Hour
16	16:30-17:00	
17	17:00-17:30	9 th Hour
18	17:30-18:00	
19	18:00-18:30	10 th Hour
20	18:30-19:00	

In Table 3.3, different types of machineries for producing the jacket are shown.

Table 3.3 Type of machine to produce the jacket

Serial number	Machine name	Machine number(s)
1	SNLS	43
2	O/L	4
3	DNLS	1
4	Punch	1
5	Snap	1

Total= 6 Total number of
machineries is = 50

Where, SNLS refers single needle lock stitch machine, O/L refers over-lock machine and DNLS refers double needle lock stitch. Out of 50 SNLS is 43 in number.

Causes of defects are observed in the stitching department .Stitching department is divided into five sections. The sections and related operations are given below-

1. Hood Make :

Associated operations are hood padding katcha , hood over-lock, hood facing tuck, hood zipper joint, hood make and hood ruling.

2. Front Part:

Associated operations are front yoke join, facing join, front yoke top stitch, front part join and kacha.

3. Back and Central Processing Unit (CPU) Part:

Associated operations are back yoke join, back yoke top stitch, show stitch with padding, collar, box plate, apulate and bone make.

4. Lining Part:

Associated operations are facing join, patch join, label join, loop join, front facing join, shoulder join, sleeve join and side-seam join.

5. Assembly Part:

Associated operations are collar, hood, front part, back part, sleeve, lining part, zipper and other accessories are assembled here.

Cause of defects are considered in the stitching department is shown in figure 3.15. They are as follows:

- a) Pleat- A double or multiple fold in a garment
- b) Uncut thread- The excess thread which should not be included in a garment.
- c) Open seam- Where the threads in the seam have ruptured leaving a hole in the stitch line.
- d) Uneven stitch- Uneven distance between the stitches of a garment operation.
- e) Join stitch -Two or more stitches in a seam where stitch should be one
- f) Needle mark- Needle holes exists without stitch.
- g) Raw edge -Unfinished or cut edge of a garment.
- h) Point up down -Stitching end points are not in same position.
- i) Misplacement -Part(s) are placed in a wrong position.
- j) Down stitch -Stitch dropped down from stitching line.
- k) Symmetry -Uniformity of parts to their own position.

The data tables (Table 3.5 to Table 3.10) of stitching department are given below. The tables are refers to hood make, front part, back and CPU part, lining part, assembly part and summery of stitching department.



(a) Pleat



(b) Uncut thread



(c) Open seam



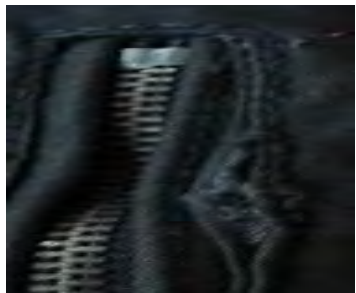
(d) Uneven



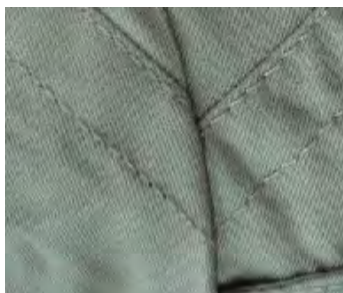
(e) Join stitch



(f) Needle mark



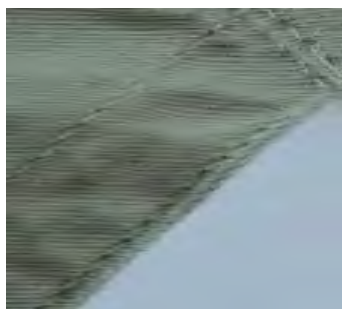
(g) Raw edge



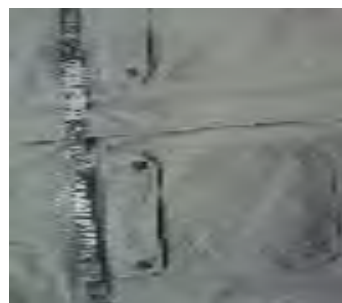
(h) Point up-down



(i) Misplacement



(j) Down stitch



(k) Symmetry

Figure 3.15 Causes of Defects in Stitching Department

Table 3.4 7 Days defect quantities in sewing department (Hood make)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 - 8:30	1st	108	209	4	11	15	33	2	3		1		1	1		1		2	4
2	08:30 - 9:00		101		3	15	18		6		1		1	1		2	1	1	2	3
3	09:00-9:30	2nd	104	211	3	15	18	37	2	2	3	1	3			3	1			3
4	09:30-10:00		107		3	16	19		2		3		1	1	1		3	2	3	3
5	10:00-10:30	3rd	109	220	3	21	24	55	1	5	2		6	1	2	1	1	1	1	3
6	10:30-11:00		111		4	27	31		3	4	2	1	3	1	2	1	2	6	2	4
7	11:00-11:30	4th	109	219	6	29	35	65	3	3	1	2	1	2	3	5	3	1	5	6
8	11:30-12:00		110		4	26	30		2	4	4	1	2	1	3	2	1	3	3	4
9	12:00-12:30	5th	108	221	3	32	35	65	4	3	4	2	5	1	2	1	4	2	4	3
10	12:30-13:00		113		9	21	30		2	4		3	1		3	3	3	1	1	9
11	14:00-14:30	6th	97	198	3	16	19	34	2	1	2		2	3		1	2	1	2	3
12	14:30-15:00		101		2	13	15		3	3	1	1				2	1	1	1	2
13	15:00-15:30	7th	109	219	4	17	21	38	3	1	5	1		1	1	2	1	1	1	4
14	15:30-16:00		110		4	13	17		1	3			1	2	1	2	1		2	4
15	16:00-16:30	8th	109	215	6	20	26	59	5		1	1	1	4	1		3	1	3	6
16	16:30-17:00		106		3	30	33		2	6	1	3	4	1	3	1	2	4	3	3
17	17:00-17:30	9th	111	221	2	29	31	68	2	2	4	1		3	2	3	1	5	6	2
18	17:30-18:00		110		5	32	37		6	2	2	1	3	3	1	3	5	5	1	5
19	18:00-18:30	10th	113	225	6	29	35	68	4	4	2	4		4	1	4	2	2	2	6
20	18:30-19:00		112		5	28	33		1	5	3	3	4	1	1	1	4	1	4	5

CHECKED QUANTITY 2158
DEFECTS QUANTITY 522

DEFECT RATE 24.2%

Table 3.5 7 Days defect quantities in sewing department (Front part)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	100	206	5	15	20	32	3	2	2			1	3		1	1	2	5
2	08:30 -9:00		106		2	10	12			2	1		1		1		1	1	3	2
3	09:00-9:30	2nd	105	202	3	16	19	36	2		2	1	1	1	3	1	1	3	1	3
4	09:30-10:00		97		2	15	17		2	1	4	1			2	2	1		2	2
5	10:00-10:30	3rd	110	222	4	24	28	59	5	4		1		2	2	3	1	3	3	4
6	10:30-11:00		112		4	27	31		2	3	1	3	1	2	4	1	4	2	4	4
7	11:00-11:30	4th	110	221	7	28	35	69	5	2	4	2	2	1	1	1	2	5	3	7
8	11:30-12:00		111		4	30	34		3	1	1	2	3	1	4	5	3	4	3	4
9	12:00-12:30	5th	111	226	4	34	38	76	4	1	2	3	3	2	3	4	5	4	3	4
10	12:30-13:00		115		2	36	38		4	2	3	2	2	2	1	4	5	4	7	2
11	14:00-14:30	6th	105	213	3	16	19	33	3	2	1	2	2		2	2			2	3
12	14:30-15:00		108		5	9	14			2		1	1				2	3		5
13	15:00-15:30	7th	105	213	2	17	19	40	4		1	1	1	2	1		1	3	3	2
14	15:30-16:00		108		2	19	21		4	1		2		3	1	2	2	1	3	2
15	16:00-16:30	8th	112	224	4	26	30	64	1	3	1	1	2	1	4	1	2	7	3	4
16	16:30-17:00		112		5	29	34		3	2	1	1	2	2	4	5	3	3	3	5
17	17:00-17:30	9th	108	222	4	30	34	70	5	1	1	3	1	2	3	3	3	3	5	4
18	17:30-18:00		114		3	33	36		4	4	3	1	2	5	1	4	2	2	5	3
19	18:00-18:30	10th	112	229	7	37	44	78	1	2	5	4	2	2	6	3	3	3	6	7
20	18:30-19:00		117		4	30	34		2	5	1	3	1	2	2	3	3	5	3	4

CHECKED QUANTITY 2178
DEFECTS QUANTITY 557

DEFECT RATE 25.6%

Table 3.6 7 Days defect quantities in sewing department (Back and CPU part)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	112	221	3	15	18	38		1	4		2	1		3		2	2	3
2	08:30 -9:00		109		2	18	20		2	1	1	1	2	1	4	1	2	1	2	2
3	09:00-9:30	2nd	105	213	3	14	17	43	3	3	1	1		2		1		2	1	3
4	09:30-10:00		108		3	23	26		3		4	3	1	3	1		3	2	3	3
5	10:00-10:30	3rd	113	229	5	26	31	61	3	3		3	2		2	3	3	3	4	5
6	10:30-11:00		116		4	26	30		2	2	1	1	3	1	5	1	2	4	4	4
7	11:00-11:30	4th	116	237	5	27	32	68	2	2	4	1	3		1	3	4	4	3	5
8	11:30-12:00		121		3	33	36		2	2	2		2	2	5	4	3	5	6	3
9	12:00-12:30	5th	116	237	5	28	33	71	4	2	1	2	2	2	2	5	2	4	2	5
10	12:30-13:00		121		4	34	38		3	4	5	2	1	3	2	2	2	5	5	4
11	14:00-14:30	6th	115	227	4	16	20	36	2		3		2		1	1	2	2	3	4
12	14:30-15:00		112		4	12	16		1	2		2	2	1	1		2	1		4
13	15:00-15:30	7th	111	230	2	18	20	43	4	1	2		1	1	2	1	1	1	4	2
14	15:30-16:00		119		3	20	23		1	3	2	1	1		2	3	3	2	2	3
15	16:00-16:30	8th	115	233	2	27	29	64	2		2	2	3	2	3	1	4	4	4	2
16	16:30-17:00		118		4	31	35		2	2	1		2	4	1	3	4	5	7	4
17	17:00-17:30	9th	114	235	4	34	38	72	5	3	4	4	3	1	4	3	1	3	3	4
18	17:30-18:00		121		3	31	34		4	2	2	2	2	4	3	2	3	4	3	3
19	18:00-18:30	10th	121	235	5	34	39	75		3	3	5	2	4	4	3	1	5	4	5
20	18:30-19:00		114		5	31	36		4	2	2	2	1	4	5	2	3	5	1	5

CHECKED QUANTITY 2297
DEFECTS QUANTITY 571

DEFECT RATE 24.9%

Table 3.7 7 Days defect quantities in sewing department (Lining part)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 - 8:30	1st	112	217	3	11	14	29	1	1	1	2		1	2	1		1	1	3
2	08:30 - 9:00		105		1	14	15		2	1	1	1		2	2	1		2		2
3	09:00 - 9:30	2nd	112	228	1	14	15	32	2	1	2		1	2	1		2	1	2	1
4	09:30 - 10:00		116		1	16	17			2	1		1	2	2	3	3		2	1
5	10:00 - 10:30	3rd	112	219	1	21	22	47	1	3	2	1	2	1	3	2	2	2	2	1
6	10:30 - 11:00		107		2	23	25		1	3		1	4		1	1	2	6	4	2
7	11:00 - 11:30	4th	103	224	5	25	30	57	5	1	1	2	4	2	2	1	4	1	2	5
8	11:30 - 12:00		121		3	24	27		1	4	2	2	2	3	3	1	3	1	3	1
9	12:00 - 12:30	5th	114	233	3	29	32	64	3	4	2	4	2	3	1	3	2	3	2	3
10	12:30 - 13:00		119		7	25	32		4	2	1	2	3	3	4	4		2		
11	14:00 - 14:30	6th	120	238	1	16	17	28	2	1	2	1	1	3	1				5	1
12	14:30 - 15:00		118		1	10	11		1	4	1			1	1			2		
13	15:00 - 15:30	7th	117	224	2	20	22	36	2	2	2	3	1	2	1	1	2	3	1	2
14	15:30 - 16:00		107		1	13	14		2				3	1	1	1	1	1	1	3
15	16:00 - 16:30	8th	122	223	3	27	30	55	5	2	3		1	4		3	2	4	3	3
16	16:30 - 17:00		101		2	23	25		3	1	1	3	1	2	2	3	2	3	2	1
17	17:00 - 17:30	9th	118	249	5	28	33	60	3	3		2	1	4	3	3	3	2	4	5
18	17:30 - 18:00		131		2	25	27		3	3	1	3	4	4		2	3			2
19	18:00 - 18:30	10th	111	235	6	26	32	64	1	3	2	2	2	1	2	3	3	3	4	6
20	18:30 - 19:00		124		3	29	32		4	4	3	4	2	3	2	1	2	2	2	2

CHECKED QUANTITY 2290
DEFECTS QUANTITY 472

DEFECT RATE 20.6%

Table 3.8 7 Days defect quantities in sewing department (Assembly part)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 - 8:30	1st	119	232	3	16	19	35	1	2	2	2	1		1		4	3		3
2	08:30 - 9:00		113		2	14	16		2	2		1	1	2	2	2				2
3	09:00-9:30	2nd	111	222	3	11	14	39	1	1		1	1	3	1			1	2	3
4	09:30-10:00		111		3	22	25		4	2	2	1	2	2		2	2	3	2	3
5	10:00-10:30	3rd	112	230	1	24	25	64	4	1	3		2	2	2	2	2	5	1	1
6	10:30-11:00		118		5	34	39		3	4	3	2	1	4	3	3	3	4	4	5
7	11:00-11:30	4th	113	220	2	29	31	71	3	2	3	4	1	3	2	6		2	3	2
8	11:30-12:00		107		1	39	40		5	2	3	5	3	1	3	4	5	5	3	1
9	12:00-12:30	5th	109	226	3	31	34	83	2	2	1	2	3	3	5	2	4	4	3	3
10	12:30-13:00		117		7	42	49		3	6	3	4	4	5	4	3	4	3	3	7
11	14:00-14:30	6th	105	208	2	17	19	36	1		3		1	2	2	2	1	3	2	2
12	14:30-15:00		103		3	14	17		4	2		1	3					2	1	1
13	15:00-15:30	7th	104	216	4	12	16	40	2	1		3			2	1		1	2	4
14	15:30-16:00		112		1	23	24		1	2	1		1	1	5	3	5	2	2	1
15	16:00-16:30	8th	106	225	4	22	26	62	5		1	2	2	1	1	1	5	2	2	4
16	16:30-17:00		119		3	33	36		3	5	2	2	2	2	3	2	3	6	3	3
17	17:00-17:30	9th	112	221	4	34	38	74	3	5	5	2	1	3	4	2	2	1	6	4
18	17:30-18:00		109		4	32	36		3	2	2	4	3	3	2	4	1	4	4	4
19	18:00-18:30	10th	117	234	3	35	38	72	4	2	4	3	4	3	2	2	3	5	3	3
20	18:30-19:00		117		2	32	34		3	4	2	4	2	2	3	1	5	4	2	2

CHECKED QUANTITY 2234 DEFECT RATE 25.8%
 DEFECTS QUANTITY 576

Table 3.9 Total defect quantities in sewing department

INTERVAL	WORKING HOUR	STITCHING DEFECTS QUANTITIES												TOTAL DEFECT QUANTITY (1/2 Hr)	TOTAL CHECKED QUANTITY (1/2 Hr)	WITHOUT DEFECT QUANTITY (1/2 Hr)
		PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS			
1	08:00 -8:30	7	9	9	5	3	4	7	4	6	7	7	18	86	548	462
2	08:30 -9:00	12	6	4	3	5	6	9	6	6	3	11	10	81	534	453
3	09:00-9:30	10	7	8	4	6	8	5	5	4	7	6	13	83	537	454
4	09:30-10:00	11	5	14	5	5	8	6	7	12	7	12	12	104	539	435
5	10:00-10:30	14	16	7	5	12	6	11	11	9	14	11	14	130	556	426
6	10:30:11:00	11	16	7	8	12	8	15	7	13	22	18	19	156	564	408
7	11:00-11:30	18	10	13	11	11	8	9	16	13	13	16	25	163	551	388
8	11:30-12:00	13	13	12	10	12	8	18	16	15	18	17	15	167	570	403
9	12:00-12:30	17	12	10	13	15	11	13	15	17	17	14	18	172	558	386
10	12:30-13:00	16	18	12	13	11	13	14	16	14	15	16	29	187	585	398
11	14:00-14:30	10	4	11	3	8	8	6	6	5	6	14	13	94	542	448
12	14:30-15:00	9	13	2	4	6	3	2	2	9	6	2	15	73	542	469
13	15:00-15:30	15	5	10	8	3	6	7	5	5	9	11	14	98	546	448
14	15:30-16:00	9	9	3	3	6	7	10	11	12	6	12	11	99	556	457
15	16:00-16:30	18	5	8	6	9	12	9	6	16	18	15	19	141	564	423
16	16:30-17:00	13	16	6	9	11	11	13	14	14	19	20	17	163	556	393
17	17:00-17:30	18	14	14	12	6	13	16	14	10	14	24	19	174	563	389
18	17:30-18:00	20	13	10	11	14	19	7	15	14	15	15	17	170	585	415
19	18:00-18:30	10	14	16	18	10	14	15	15	12	18	19	27	188	574	386
20	18:30-19:00	14	20	11	16	10	12	13	8	17	17	12	19	169	584	415

CHECKED QUANTITY 11154
 DEFECTS QUANTITY 2698

WITHOUT DEFECT QUANTITY 8456
 DEFECT RATE 24.2%

3.5 Finishing Department

The sections and causes of defect are given as follows:

1. **Pressing Section:** In apparel manufacturing this is the most important section. The main appearance of a garments comes out through this section. Some fatigue and non-fatigue both type of defect are found here. The major cause's related defects are poor ironing, shiny mark, crease mark and wrong shape of the garments.
2. **Accessories Section:** Major indications are made visible in this section. These are color, sizes, price tag, fabric type, flag label, brand patch etc. Any mistake creates problem. Out of them some mistakes are fatigue oriented and they are missing, wrong placement of the accessories, wrong accessories and damage accessories to the body.
3. **Spot Section:** Without movement and/or transportation it's not possible to make a garment. Most of the apparel making machine contain oil for proper functioning of the machine. In respect of Bangladesh it is very quiet possible to make out-wear garments without marking, some factories achieved oil free or very less oil problem. Chalk or other marking is mandatory, unfortunately sometimes these are treated as spot problem. Ink mark is also often found.

In Table 3.11 to Table 3.15, finishing department's data tables are given. The tables are belongs to pressing, accessories, spot and summery of finishing department.

Table 3.10 7 Days defect quantities in finishing department (Pressing)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	261	500	3	6	9	19	3		2	1	3
2	08:30 -9:00		239		3	7	10		3		3	1	3
3	09:00-9:30	2nd	231	482	2	12	14	25	5		4	3	2
4	09:30-10:00		251		3	8	11		2		3	3	3
5	10:00-10:30	3rd	237	483	4	11	15	32	2	4	1	4	4
6	10:30-11:00		246		3	14	17		4	5	2	3	3
7	11:00-11:30	4th	244	489	6	13	19	40		5	4	4	6
8	11:30-12:00		245		4	17	21		3	4	4	6	4
9	12:00-12:30	5th	242	476	4	17	21	44	5	3	5	4	4
10	12:30-13:00		234		5	18	23		6	6	3	3	5
11	14:00-14:30	6th	256	497	1	13	14	22	4		3	6	1
12	14:30-15:00		241		2	6	8			3	2	1	2
13	15:00-15:30	7th	249	484	2	10	12	27	3	3	1	3	2
14	15:30-16:00		235		3	12	15		4	1	2	5	3
15	16:00-16:30	8th	258	498	1	11	12	27	4	3	3	1	1
16	16:30-17:00		240		5	10	15		4		2	4	5
17	17:00-17:30	9th	263	506	2	14	16	32	3	3	2	6	2
18	17:30-18:00		243		3	13	16		4		3	6	3
19	18:00-18:30	10th	235	480	4	17	21	39	5	4	3	5	4
20	18:30-19:00		245		4	14	18		4	5	2	3	4

CHECKED QUANTITY 4895
DEFECTS QUANTITY 307

DEFECT RATE 6.3%

Table 3.11 7 Days defect quantities in finishing department (Accessories)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	254	506	1	8	9	17	3	1	2	2	1
2	08:30 -9:00		252		3	5	8		2	1	1	1	3
3	09:00-9:30	2nd	236	496	4	8	12	21	1	1	2	4	4
4	09:30-10:00		260		4	5	9		2	2	1		4
5	10:00-10:30	3rd	246	485	3	5	8	24	3			2	3
6	10:30-11:00		239		4	12	16		1	4	4	3	4
7	11:00-11:30	4th	244	481	3	13	16	32	5	4	1	3	3
8	11:30-12:00		237		4	12	16		3	4	3	2	4
9	12:00-12:30	5th	236	480	5	16	21	37	5	3	3	5	5
10	12:30-13:00		244		3	13	16		2	5	3	3	3
11	14:00-14:30	6th	241	475	2	8	10	17	4	2	2		2
12	14:30-15:00		234		4	3	7		1		2		4
13	15:00-15:30	7th	249	499	3	6	9	20	2	2	1	1	3
14	15:30-16:00		250		2	9	11		3	2	4		2
15	16:00-16:30	8th	240	481	5	9	14	26	2	3	2	2	5
16	16:30-17:00		241		2	10	12			3	4	3	2
17	17:00-17:30	9th	258	519	4	13	17	33	4	2	2	5	4
18	17:30-18:00		261		1	15	16		2	6	3	4	1
19	18:00-18:30	10th	253	490	5	17	22	35	3	7	3	4	5
20	18:30-19:00		237		3	10	13		6	1	1	2	3

CHECKED QUANTITY 4912
DEFECTS QUANTITY 262

DEFECT RATE 5.3%

Table 3.12 7 Days defect quantities in finishing department (Spot)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00-8:30	1st	225	440	0	7	7	15		3	2	2	
2	08:30-9:00		215		2	6	8		2	1		3	2
3	09:00-9:30	2nd	225	434	4	6	10	19	1	1	3	1	4
4	09:30-10:00		209		0	9	9		2	2	4	1	
5	10:00-10:30	3rd	214	433	4	12	16	32	1	5	4	2	4
6	10:30-11:00		219		5	11	16		1	3	5	2	5
7	11:00-11:30	4th	216	428	1	12	13	33	1	4	7		1
8	11:30-12:00		212		1	19	20		2	6	6	5	1
9	12:00-12:30	5th	213	446	2	17	19	40	4	6	1	6	2
10	12:30-13:00		233		2	19	21		4	3	7	5	2
11	14:00-14:30	6th	223	437	2	5	7	14			2	3	2
12	14:30-15:00		214		3	4	7		1	3			3
13	15:00-15:30	7th	219	446	0	10	10	21	2	4	2	2	
14	15:30-16:00		227		2	9	11			3	1	5	2
15	16:00-16:30	8th	216	438	2	13	15	28	2	3	5	3	2
16	16:30-17:00		222		1	12	13		2	1	6	3	1
17	17:00-17:30	9th	212	430	2	14	16	38	5	3	4	2	2
18	17:30-18:00		218		6	16	22			4	5	7	6
19	18:00-18:30	10th	227	451	2	15	17	40	3	7		5	2
20	18:30-19:00		224		5	18	23		5	2	8	3	5

CHECKED QUANTITY 4383
DEFECTS QUANTITY 280

DEFECT RATE 6.4%

Table 3.13 Total defect quantities in finishing department

INTERVAL	WORKING HOUR	PRESSING DEFECTS					ACCESSORIES DEFECTS					SPOT DEFECTS					TOTAL DEFECT QUANTITY (1/2 Hr)	TOTAL CHECKED QUANTITY (1/2 Hr)	WITHOUT DEFECT QUANTITY (1/2 Hr)
		POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS	MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS	OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS			
1	08:00 -8:30	3		2	1	3	3	1	2	2	1		3	2	2		25	740	715
2	08:30 -9:00	3		3	1	3	2	1	1	1	3	2	1		3	2	26	706	680
3	09:00-9:30	5		4	3	2	1	1	2	4	4	1	1	3	1	4	36	692	656
4	09:30-10:00	2		3	3	3	2	2	1		4	2	2	4	1		29	720	691
5	10:00-10:30	2	4	1	4	4	3			2	3	1	5	4	2	4	39	697	658
6	10:30-11:00	4	5	2	3	3	1	4	4	3	4	1	3	5	2	5	49	704	655
7	11:00-11:30		5	4	4	6	5	4	1	3	3	1	4	7		1	48	704	656
8	11:30-12:00	3	4	4	6	4	3	4	3	2	4	2	6	6	5	1	57	694	637
9	12:00-12:30	5	3	5	4	4	5	3	3	5	5	4	6	1	6	2	61	691	630
10	12:30-13:00	6	6	3	3	5	2	5	3	3	3	4	3	7	5	2	60	711	651
11	14:00-14:30	4		3	6	1	4	2	2		2			2	3	2	31	720	689
12	14:30-15:00		3	2	1	2	1		2		4	1	3			3	22	689	667
13	15:00-15:30	3	3	1	3	2	2	2	1	1	3	2	4	2	2		31	717	686
14	15:30-16:00	4	1	2	5	3	3	2	4		2		3	1	5	2	37	712	675
15	16:00-16:30	4	3	3	1	1	2	3	2	2	5	2	3	5	3	2	41	714	673
16	16:30-17:00	4		2	4	5		3	4	3	2	2	1	6	3	1	40	703	663
17	17:00-17:30	3	3	2	6	2	4	2	2	5	4	5	3	4	2	2	49	733	684
18	17:30-18:00	4		3	6	3	2	6	3	4	1		4	5	7	6	54	722	668
19	18:00-18:30	5	4	3	5	4	3	7	3	4	5	3	7		5	2	60	715	655
20	18:30-19:00	4	5	2	3	4	6	1	1	2	3	5	2	8	3	5	54	706	652

CHECKED QUANTITY 14190
DEFECTS QUANTITY 849

WITHOUT DEFECT QUANTITY 13341
DEFECT RATE 6.0%

3.6 Fabric Department

Effects of fatigue is also observed in the fabric department and different than stitching and finishing departments. In this study fatigue is considered to fabric inspector. Major defects of fabrics are separated and data are taken in the whole working hour.

Considered defects are given below-

- Thick yarn
- Missing yarn
- Slub
- Dying fault
- Oil stain
- Shading
- Stain
- Knot
- Foreign yarn
- Hole and
- Running shade.

Here others defects are not considered because of major defects of fabrics are already considered. In time of final inspection to ship out these fabrics fault cannot be acceptable where others fabrics fault sometimes have some tolerance.

Description:

Hole: It is a knitting fault.

Causes: Bad needle, take down mechanism too tight, high tension on yarn, bad yarn needle too tight in their slots, dial height too low or too high and badly tied knots, improper stitch setting.

Slub: It is a yarn fault.

Causes: Usually caused by an extra piece of yarn that is woven into fabric. It can also be caused by thick places in the yarn. Often is caused by fly waste being spun in yarn in the spinning process.

Shading: Shade variation is a major problem in fabrics.

Causes: It is a dying fault. In a fabric layer shade should be uniform.

Knots: Somewhere stack of yarn and breaks uniformity.

Causes: Caused by tying spools of yarn together.

Crease Mark: It is a finishing fault.

Causes: Differs from crease streak in that streak will probably appear for an entire roll. Crease mark appears where creases are caused by fabric folds in the finishing process. On napped fabric, final pressing may not be able to restore fabric or original condition. Often discoloration is a problem.

Missing Yarn: Yarn is missing from uniformity of yarn.

Causes: Occurs in warp knit. Results from wrong fiber yarn (or wrong size yarn) placed on warp. Fabric could appear as thick end or different color if fibers have different affinity for dye.

Stain: During carrying of fabrics from one place to another place a problem could be found in the fabric that is stain.

Causes: Caused by soil mark.

Thick yarn: One or more yarn are thick in the fabric area

Causes: Caused by thick yarn, weaving fault.

Dying Fault: Spot or irregular color mixing.

Causes: Caused by dying of fabrics.

Foreign yarn: Fly yarn on fabric

Causes: Caused during finishing the fabric.

In Table 3.16, fabric department's data are given. The major defects and other defects quantities are listed in the table.

Table 3.14 7 Days defect quantities in fabric department

INTERVAL	WORKING HOUR	FABRIC DEFECTS QUANTITIES												TOTAL DEFECT QUANTITY (1/2 Hr)	TOTAL CHECKED QUANTITY (1/2 Hr)	WITHOUT QUANTITY (1/2 Hr)
		THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS			
1	08:00 -8:30	3	5	4	4	3	6	3	5	2	7	2	2	46	806	760
2	08:30 -9:00	5	2	3	2	2	2	3	6		4	1	4	34	817	783
3	09:00-9:30	2	2	4	2	1	1	5	3	1	2	6	1	30	801	771
4	09:30-10:00	3	4	1	2	2	3	3	3	6	5	2	3	37	798	761
5	10:00-10:30	4	2	3	2	4	2	1	3	2		4	1	28	803	775
6	10:30:11:00	2	4	3	1		3	2	4	3	3	2	2	29	795	766
7	11:00-11:30	3	1	2	1	1		3	2	2	5	2	2	24	817	793
8	11:30-12:00	2	2	1	1	2	2	2	1	2	1	1	2	19	799	780
9	12:00-12:30	1		2	2	3	1		3	1		1	1	15	809	794
10	12:30-13:00	3	2		2	2			1	2		1	2	15	797	782
11	14:00-14:30	2	6	1	4	2	2	3	5	5	3	4	6	43	806	763
12	14:30-15:00	4	4	4		2	2	3	2	4	2	2	2	31	815	784
13	15:00-15:30	4	3	5	5	1	3	3	2	3	4	3	2	38	796	758
14	15:30-16:00	4	4	1		2	2	3	4	5	1	3	2	31	816	785
15	16:00-16:30	3	3	2	2	2	2	2	3	1	2	2	5	29	803	774
16	16:30-17:00	3		1	5	2		1	1		4	3	3	23	814	791
17	17:00-17:30	5	1	3	1	3	1	3	3	2	1	1	3	27	800	773
18	17:30-18:00	3	3	2			2	1	1	2	1	2	1	18	815	797
19	18:00-18:30	1	3	1	1		1	1	2	2		1	2	15	818	803
20	18:30-19:00	3	1	1	1		2	2	1	2	1	4	2	20	806	786

CHECKED QUANTITY 16131
 DEFECTS QUANTITY 552

WITHOUT DEFECT QUANTITY 15579
 DEFECT RATE 3.4%

In the Table 3.4, 3.5, 3.6, 3.7 and 3.8, stitching department's five different sections data are tabulated. The sections are hood make, front part, back part and central processing unit (CPU), lining part and finally in the assembly section where all other sections complete parts are attached here. And in Table 3.9, total defect quantities is shown. Here, in the stitching defect rates are observed for seven days. Defects rates are different, depends on risk of fatigue. In the hood make, front part, back part and central processing unit (CPU), lining part and assembly part defect rates are 24.2%, 25.6%, 24.9%, 20.6% and 25.8% respectively. In this department, average defect rate is 24.2%.

In the Table 3.10, 3.11 and 3.12, finishing department's three different sections data are tabulated. And in Table 3.13, total defect quantities is shown. The average defect rate is 6.0%. Defect rates of pressing, accessories and spot are 6.3%, 5.3% and 6.4%.

In Table 3.14, fabric department's major fabric defects and other defects data table is shown. Here work fatigue of the inspector is considered while inspecting fabric. In this department defect rate is 3.4%. With the time propagation defect rate is decreased with some exceptions.

CHAPTER-IV DATA ANALYSIS

The more the manual activities, the more the chance to work related fatigue. It has a negative effect on product quality by increasing defect rates. In this study, work related fatigue data in the stitching, finishing and fabric departments are taken for analyzing with the other data. In this study total 10 working hours is considered. Before lunch break five hours, one hour lunch break, next three hours normal hour and finally last two hours extended hour. Here the trend of getting defects, possible causes and possible interventions are described. Starting hour is in the morning 08:00 am and finish at 19:00 pm where one hour lunch break exist from 13:00 pm to 14:00pm.

4.1 Sewing Department

4.1.1 Variations in defective quantities

In Table 4.1, causes of defective items and their percentages is shown. Here total defect quantity is 2698. In figure 4.1, the stitching department causes of defects is shown and their rates are as follows: pleat 9.8%, uncut thread 8.3%, open seam 6.9%, uneven stitch 6.2%, join stitch 6.5%, needle mark 6.9%, raw-edge 7.6%, point up-down 7.4%, misplacement 8.3%, down stitch 9.3%, symmetry 10.1% and others 12.8%.

Table 4.1 Causes of defect quantities in stitching department

DEFECT NAME	PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETRY	OTHERS
DEFECT QUANTITY (PCS)	265	225	187	167	175	185	205	199	233	251	272	344
DEFECT (%)	9.8%	8.3%	6.9%	6.2%	6.5%	6.9%	7.6%	7.4%	8.3%	9.3%	10.1%	12.8%

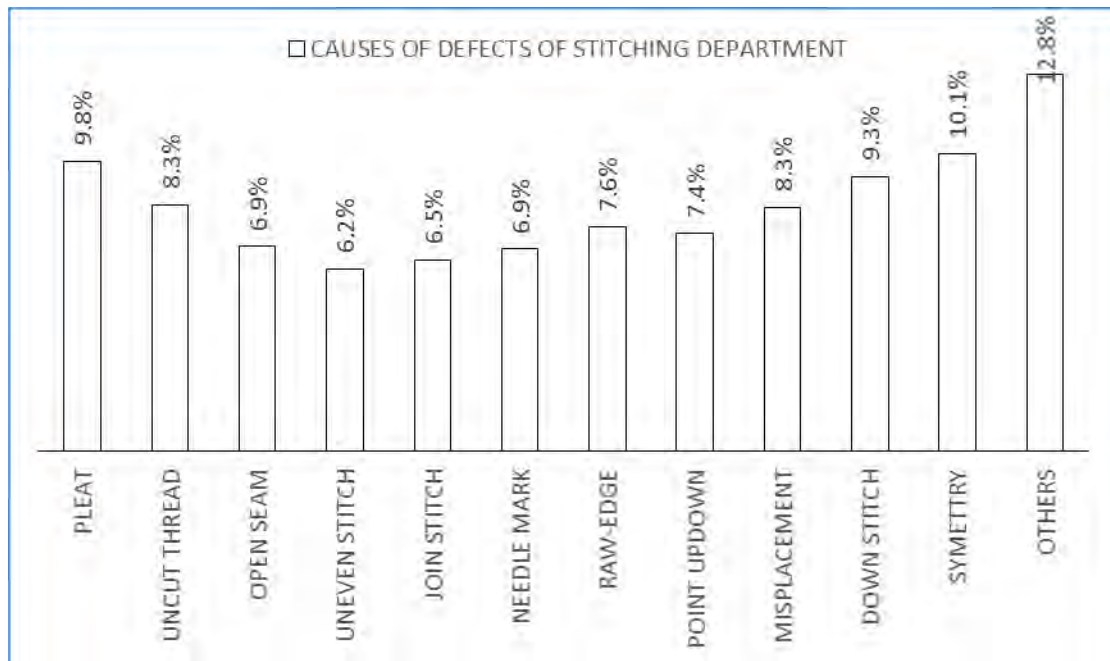


Figure 4.1 Percentage of causes of defects of stitching department

In Table 4.2, different sections of stitching department and their defect rates are shown. In figure 4.2, percentage of defective items in five different sections are shown and the average defect rate is calculated 24.3%. The defect rates are as follows: hood make 24.2%, front part 25.6%, back and CPU part 24.9%, lining part 20.8% and assembly 25.8%. The average defect rate in this department is 24.23%.

Table 4.2 Defective rate in different sections of stitching department

SECTION'S NAME	HOOD MAKE (%)	FRONT PART (%)	BACK AND CPU PART (%)	LINING (%)	ASSEMBLY (%)	SEWING DEFECT (%)
DEFECT (%)	9.8%	8.3%	6.9%	6.2%	6.5%	6.9%

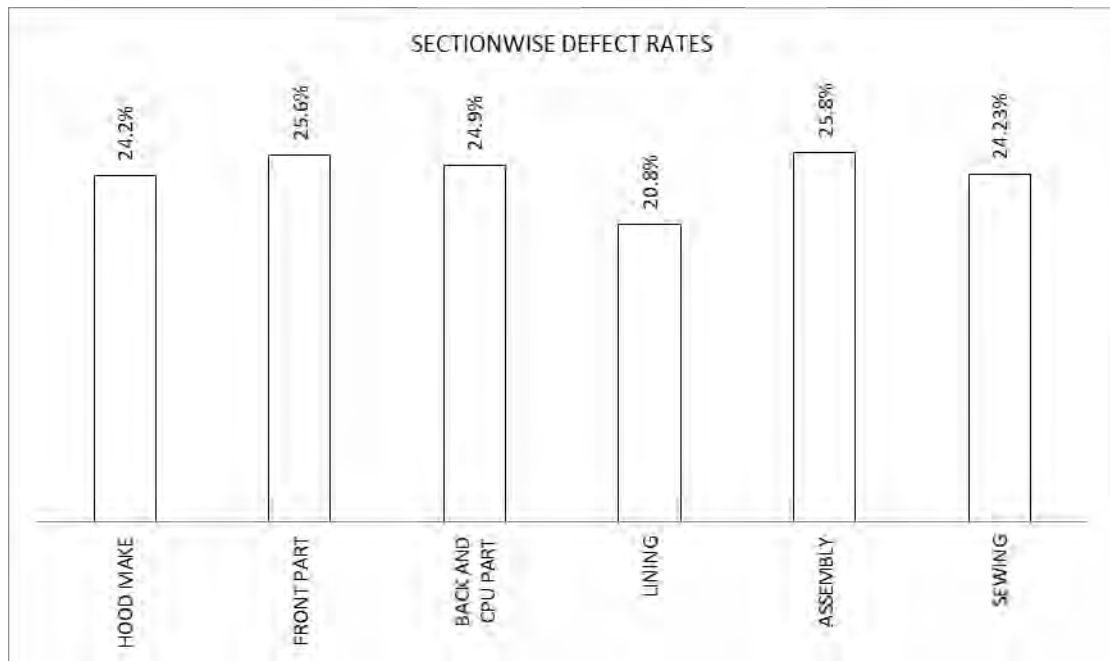


Figure 4.2 Percentage of defective items in different sections of stitching department

In Table 4.3, seven days average defect quantities of stitching department are shown. And in figure 4.3, the average defective quantities are shown in the stitching department. In the 3rd, 4th, 5th, 8th, 9th and 10th defective items are found comparatively higher than other hours.

Table 4.3 7 Days average defect quantities of sewing department

INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WORKING HOUR	08:00-8:30	08:30-9:00	09:00-9:30	09:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	12:00-12:30	12:30-13:00	14:00-14:30	14:30-15:00	15:00-15:30	15:30-16:00	16:00-16:30	16:30-17:00	17:00-17:30	17:30-18:00	18:00-18:30	18:30-19:00
HOOD MAKE (PCS)	2.1	2.6	2.6	2.7	3.4	4.4	5	4.3	5	4.3	2.7	2.1	3	2.4	3.7	4.7	4.4	5.3	5	4.7
FRONT PART (PCS)	2.9	1.7	2.7	2.4	4	4.4	5	4.9	5.4	5.4	2.7	2	2.7	3	4.3	4.9	4.9	5.1	6.3	4.9
BACK AND CPU PART (PCS)	2.6	2.9	2.4	3.7	4.4	4.3	4.6	5.1	4.7	5.4	2.9	2.3	2.9	3.3	4.1	5	5.4	4.9	5.6	5.1
LINING (PCS)	2	2.1	2.1	2.4	3.1	3.6	4.3	3.9	4.6	4.6	2.4	1.6	3.1	2	4.3	3.6	4.7	3.9	4.6	4.6
ASSEMBLY (PCS)	2.7	2.3	2	3.6	3.6	5.6	4.4	5.7	4.9	7	2.7	2.4	2.3	3.4	3.7	5.1	5.4	5.1	5.4	4.9
AVERAGE (PCS)	12.3	11.6	11.9	14.9	18.6	22.3	23.3	23.9	24.6	26.7	13.4	10.4	14	14.1	20.1	23.3	24.9	24.3	26.9	24.1

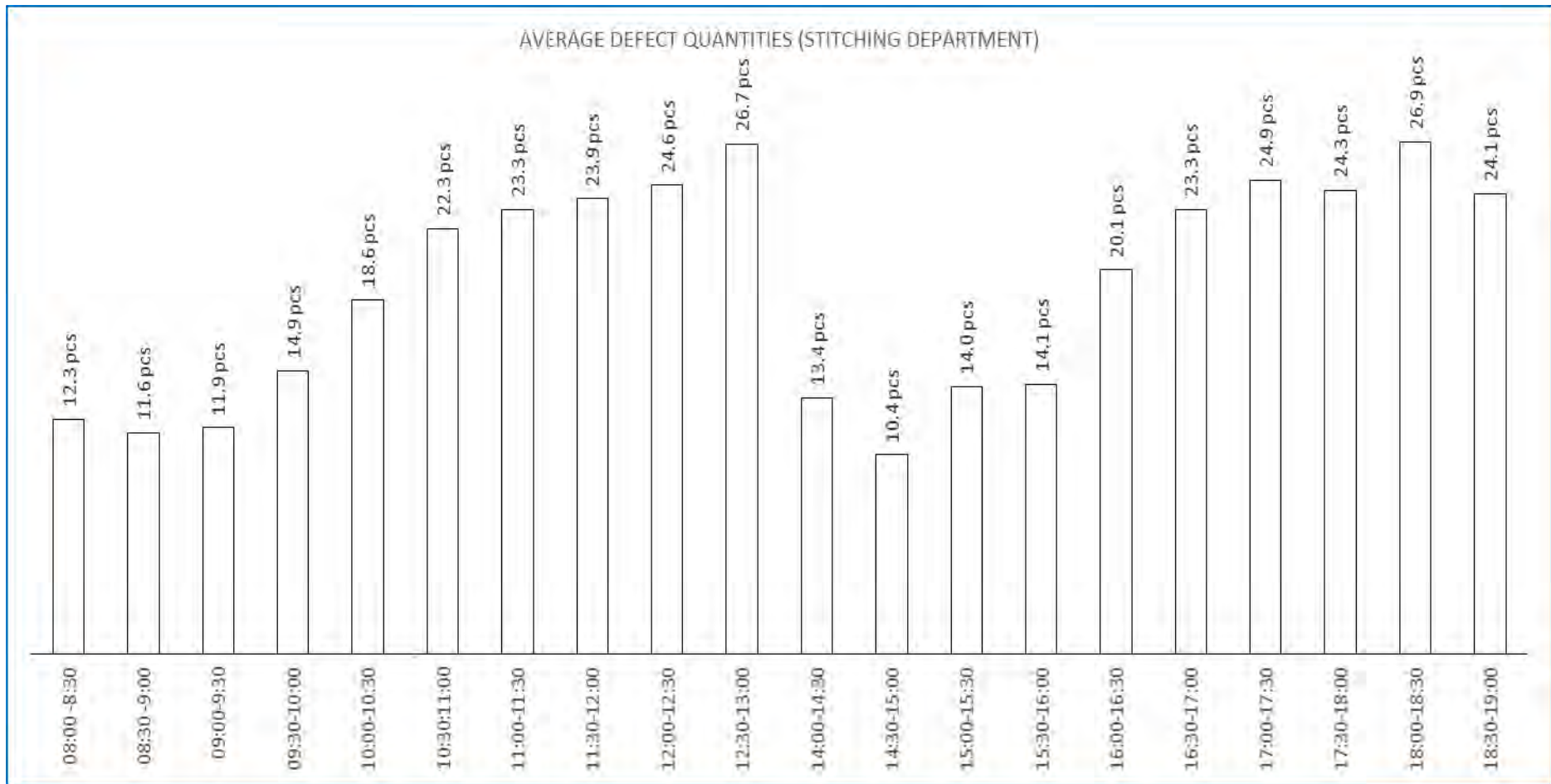


Figure 4.3 7 days average defect quantities of stitching department

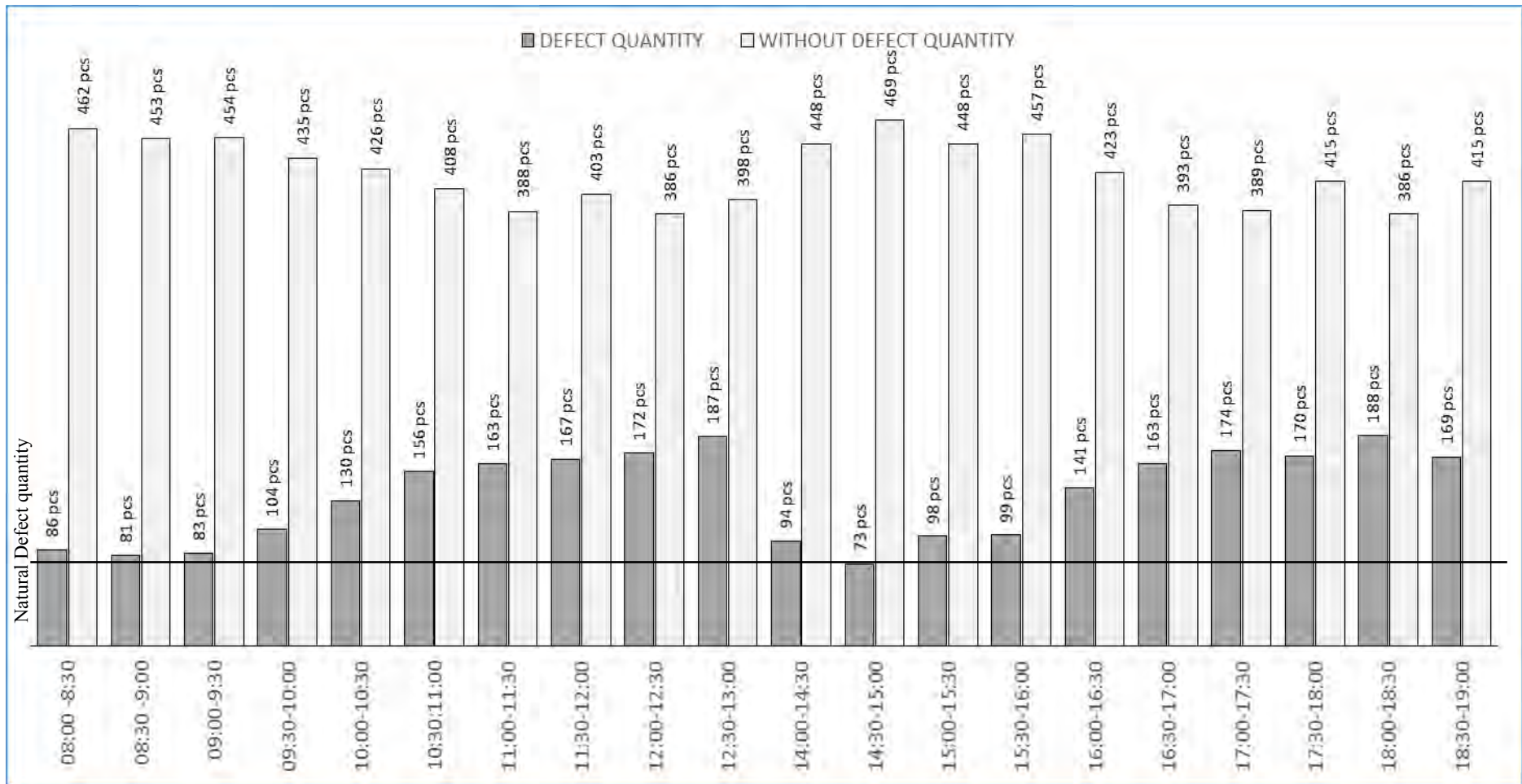


Figure 4.4 7 days total defect quantities of stitching department during different time interval

4.1.2 Reasons for deviations

The figure 4.4 shows, the total number of defects and without defect quantities in stitching department during different time intervals. The study is carried out for seven days, start from 08:00 am in the morning and finish at 19:00 pm at night. Between start and finish one hour lunch break is considered (13:00 pm to 14:00 pm).

In this study, total ten working hours is considered, 30 minutes each with 20 intervals. There is a common region of 73 pieces is found during the whole working hour. The result shows, there is no work related fatigue throughout the period where defect quantity is 73 pieces. And this quantity is naturally found during the time interval.

The defect and without defect quantities vary with time. If defect rates increases, without defect quantity decreases. The opposite phenomenon is found with decreasing defective items.

The minimum defective quantities are found in the 1st, 2nd, 6th and 7th hours. A very few effects of work fatigue exist. In this study, increasing nature of defective items is found in the 3rd, 4th, 5th, 8th, 9th and 10th hours. These hours without defect quantities decreases because of the adverse effect of work related fatigue. As a result more defect quantities are found from 10:00 am to 13:00 pm exponential nature of defective items are visible. And it is also true for the hours between 16:00 pm to 19:00 pm.

Overall, within the time interval, in the first half 5 (five) hours defect rates are increased with time but in the second half last 3 (three) hours defect quantities are higher. And defects are less in second half's first 2 (two) hours. Work-fatigue effects visible throughout the period, exception in some hour where less fatigue exists. And this is because of getting rest before start the work in the morning and just after lunch period.

4.2 Finishing Department

4.2.1 Variations in defective quantities

In Table 4.4, different sections of finishing department and their defect rates are shown. In figure 4.5, the percentage of defective items in three different sections are shown. They defect rates are as follows: pressing 6.32%, accessories 5.3% and spot 4.1%. The average defect rate in this department is 5.26%.

Table 4.4 Defective rate in different sections of finishing department

SECTION'S NAME	PRESSING (%)	ACCESSORIES (%)	SPOT (%)	FINISHING DEFECT (%)
DEFECT (%)	6.3%	5.3%	4.1%	5.26%

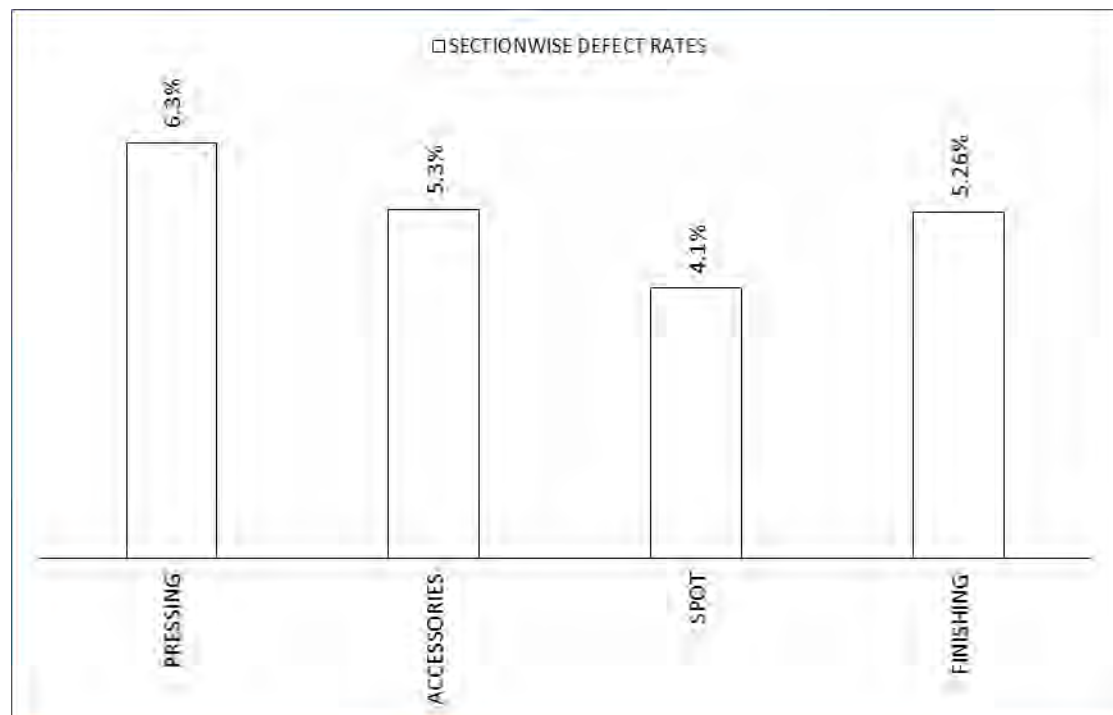


Figure 4.5 Percentage of defective items in different sections of finishing department

In Table 4.5, seven days average defect quantities of finishing department are shown. And in figure 4.6, the average defective quantities are shown in the finishing department. In the 3rd, 4th, 5th, 8th, 9th and 10th defective items are found comparatively higher than other hours. The maximum average defect quantity 8.6 pieces is found in the 10th and 19th interval, where minimum is 3.1 pieces in the 12th interval.

Table 4.5 7 Days average defect quantities of finishing department

INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
WORKING HOUR	08:00-8:30	08:30-9:00	09:00-9:30	09:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	12:00-12:30	12:30-13:00	14:00-14:30	14:30-15:00	15:00-15:30	15:30-16:00	16:00-16:30	16:30-17:00	17:00-17:30	17:30-18:00	18:00-18:30	18:30-19:00
PRESSING (PCS)	1.3	1.4	2	1.6	2.1	2.4	2.7	3	3	3.3	2	1.1	1.7	2.1	1.7	2.1	2.3	2.3	3	2.6
ACCESSORIES (PCS)	1.3	1.1	1.7	1.3	1.1	2.3	2.3	2.3	3	2.3	1.4	1	1.3	1.6	2	1.7	2.4	2.3	3.1	1.9
SPOT (PCS)	1	1.1	1.4	1.3	2.3	2.3	1.9	2.9	2.7	3	1	1	1.4	1.6	2.1	1.9	2.3	3.1	2.4	3.3
AVERAGE (PCS)	3.6	3.7	5.1	4.1	5.6	7	6.9	8.1	8.7	8.6	4.4	3.1	4.4	5.3	5.9	5.7	7	7.7	8.6	7.7

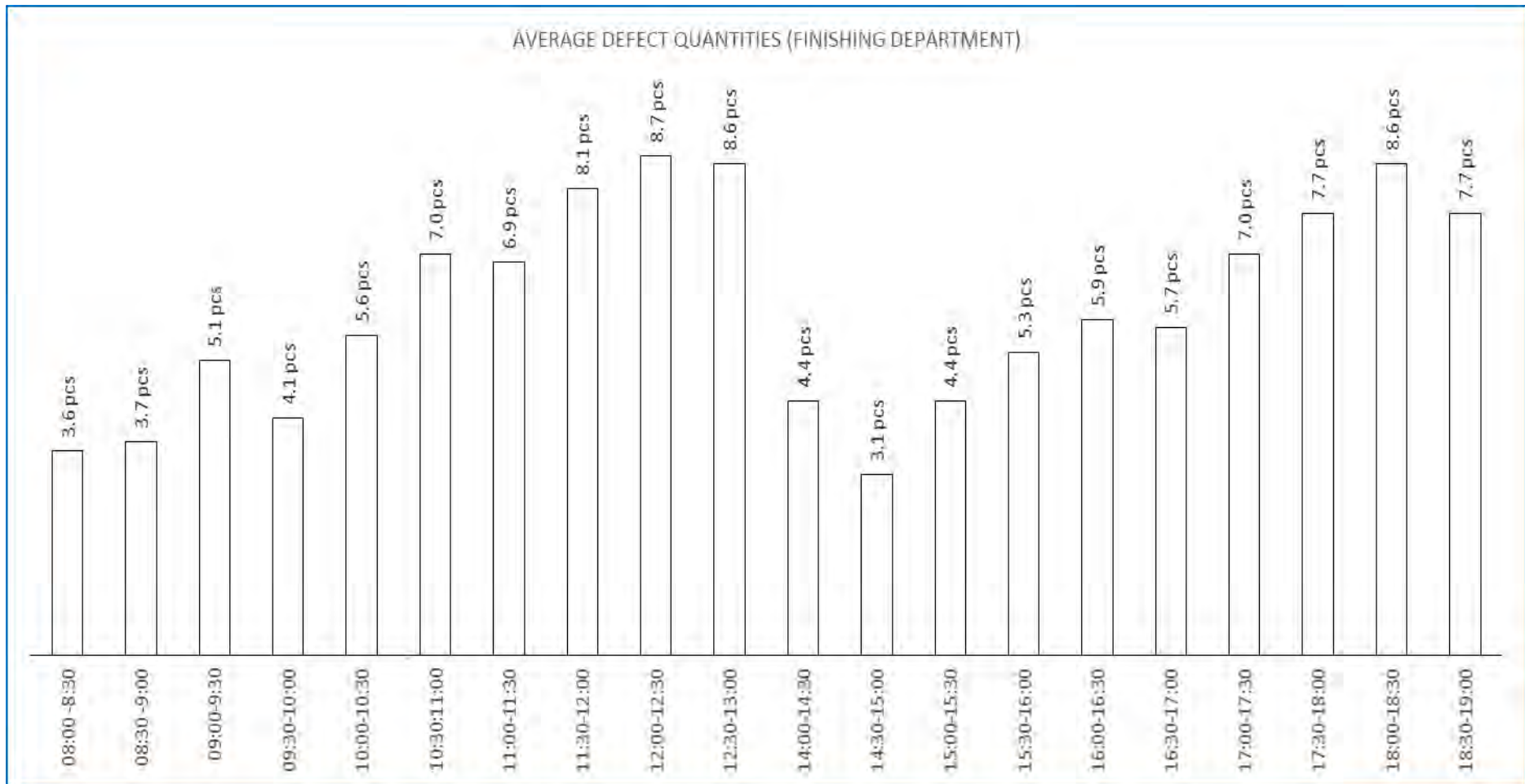


Figure 4.6 7 days average defect quantities of finishing department



Figure 4.7 7 days total defect quantities of finishing department during different time interval

4.2.2 Reasons for deviations

The figure 4.7 shows, the total number of defect quantities in finishing department during different time intervals in the whole working hour. In this study, total ten working hours is considered, 30 minutes each with 20 intervals. There is a common region of 2 pieces is found during the whole working hour. The result shows, there is no work related fatigue for each interval where defect quantity is 22 pieces. And this is natural during those periods.

The minimum defective quantities are found in the 1st, 2nd, 6th and 7th hours. In this section defect rates are low. As very few amount of defective items are found. In this study, increasing nature of defective items is found in the 3rd, 4th, 5th, 8th, 9th and 10th hours. The defect quantities are found from 10:00 am to 13:00 pm proportionally increases. And it is also true for the hours between 16:00 pm to 19:00 pm except some exceptions.

Overall, within the time interval, work-fatigue effects visible throughout the period, exceptions of few hours. And due to taking rest between 13:00 pm to 14:00 pm in the lunch hour, less work fatigue is observed in the 2nd half.

4.3 Fabric Department

4.3.1 Variations in defective quantities

In Table 4.6, major and others causes of defective items in fabric department are tabulated. Here total number of defect is 552. In figure 4.8, percentage of defects causes in fabric department is shown. And defect causes percentages are as follows: thick yarn 10.9%, missing yarn 9.4%, slub 8.0%, dying fault 6.9%, oil stain 6.2%, shading 6.7%, stain 8.0%, knot 10.0%, foreign yarn 8.5%, hole 8.3% ,running shade 8.5% and others 8.7%.

Table 4.6 Causes of defect quantities in fabric department

DEFECT NAME	THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
DEFECT QUANTITY (PCS)	60	52	44	38	34	37	44	55	47	46	47	48
DEFECT (%)	10.9%	9.4%	8.0%	6.9%	6.2%	6.7%	8.0%	10.0%	8.5%	8.3%	8.5%	8.7%

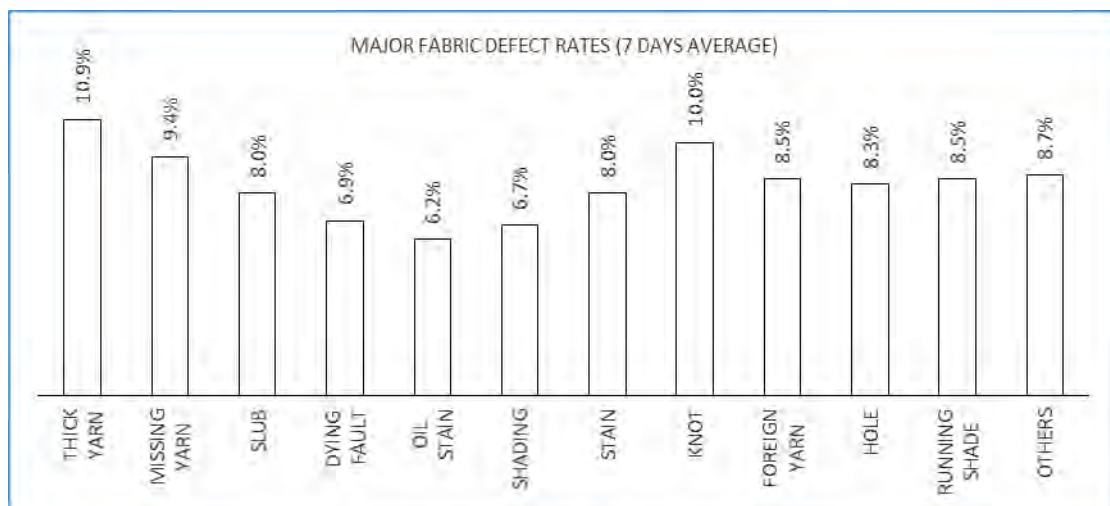


Figure 4.8 Percentage of defects causes of fabric department

In Table 4.7, seven days average defective items and their quantities are shown. In this department work fatigue and its effects is considered on fabric inspector only. And in figure 4.9, the average defective quantities are shown in the fabric department. In the 1st, 2nd, 3rd, 6th, 7th and 8th hour defective items are found comparatively higher than other hours. In the first half average defect quantities are decreased with the propagation of time. But in the second half again it sows increasing nature and then downward nature. This occurs because of work fatigue. In the 2nd half after taking rest, again we observe work fatigue’s effect on average defect quantities.

Table 4.7 7 Days average defect quantities in fabric department

INTERVAL	WORKING HOUR	AVERAGE (PIECES)
1	08:00 -8:30	6.6
2	08:30 -9:00	4.9
3	09:00-9:30	4.3
4	09:30-10:00	5.3
5	10:00-10:30	4.0
6	10:30-11:00	4.1
7	11:00-11:30	3.4
8	11:30-12:00	2.7
9	12:00-12:30	2.1
10	12:30-13:00	2.1
11	14:00-14:30	6.1
12	14:30-15:00	4.4
13	15:00-15:30	5.4
14	15:30-16:00	4.4
15	16:00-16:30	4.1
16	16:30-17:00	3.3
17	17:00-17:30	3.9
18	17:30-18:00	2.6
19	18:00-18:30	2.1
20	18:30-19:00	2.9

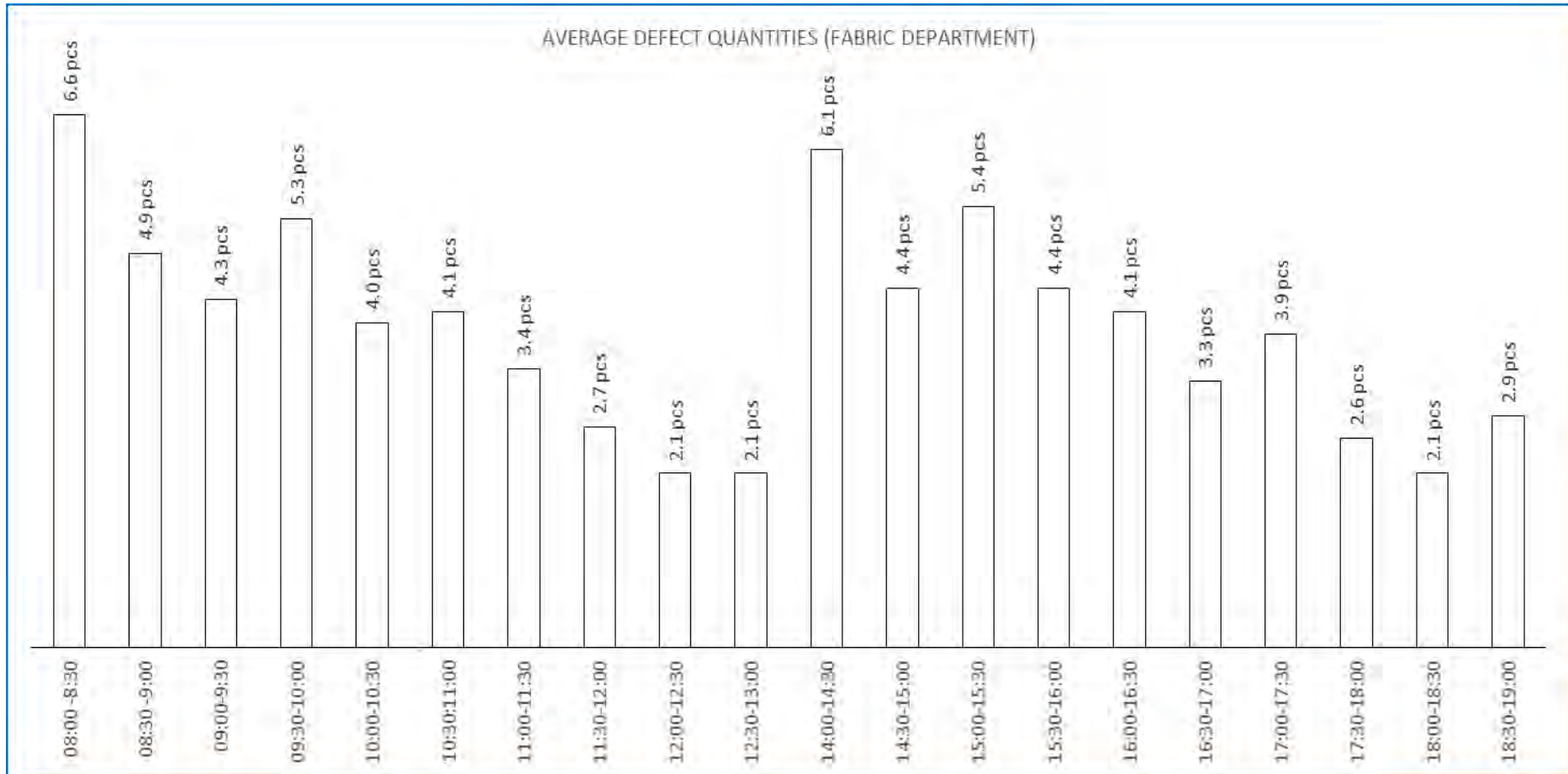


Figure 4.9 7 days average defect quantities of fabric department



Figure 4.10 7 days total defect quantities of fabric department during different time interval

4.3.2 Reasons for deviations

The figure 4.10 shows, the defect quantities in fabric department during different time intervals. The study is carried out for seven days. And here fabric inspector's work fatigue is observed. Number of pieces is considered with the help of consumption of the respective jacket.

In this study, total ten working hours is considered, 30 minutes each with 20 intervals. There is a common region of 15 pieces is found during the whole working hour. The result shows, there is no work related fatigue below 15 pieces of defect quantity. This is natural during those periods of this department during the observation.

The defect and without defect quantities vary with time. Like other two departments, here very less effects of work fatigue is found. The opposite nature is found in fabric department, starting of two halves defect quantities are higher and they gradually decreases with the propagation of time.

Overall, within the time interval, work-fatigue effects visible throughout the period but very less in quantity. In this department defect rate is also less.

CHAPTER-V

RESULTS AND DISCUSSION

Fatigue study of worker is a very significant way to design the work assembly line. In the stitching and finishing departments work fatigue nature is similar whereas different in fabric department. In the 4th, 5th, 6th, 7th, 9th and 10th hour comparatively defects rates are higher than other hours in both stitching and finishing departments. In the case of fabric department defects rates decreases with the increasing of the time. In this study low rate of work fatigue is found. A very promising result can be obtained from the fatigue management by taking proper interventions in every departments. Hence, every garments industry should control fatigue as well as causes of defect to enhance both productivity and product quality.

5.1 Results and Discussion

The thesis presents the results of work fatigue effects on product quality and suggests possible interventions to reduce fatigue as well as improving the quality. Work fatigue causes are studied here and compared with other causes of defect. Here considered causes defect quantity, other cause's defect quantity, considered causes average defect quantity, nature of defect in the whole working hour and certain time interval and possible interventions are suggested to control work-fatigue, are studied. These three sections are studied for seven days.

Finally for stitching department, defect quantities are increased in the 4th, 5th, 6th, 7th, 9th and 10th hour due to work fatigue Here total defect rate is 24.2%, where higher defect rate is found in this department comparing to finishing and fabric departments. In table 5.1, stitching department's data summery is given. Five different sections checked quantities, defect quantities and defect rates are shown. Highest defect rate is in assembly section (25.8%) and lowest in the lining part (20.6%).

Table 5.1 Stitching department's data summery

Serial Number	Stitching department's five sections	Checked quantity (Pieces)	Defect quantity (Pieces)	Total defect (%)	Average defect (%)
1	Hood make	2158	522	24.2	24.2
2	Front part	2178	557	25.6	
3	Back & CPU	2297	571	24.9	
4	Lining part	2290	472	20.6	
5	Assembly	2234	576	25.8	

Same nature is found in finishing department but quantities and rate are different. In Table 5.2, in this department total 14190 pieces checked and 746 pieces defect quantity is found. In this department, total defect rate is 6.0%.

Table 5.2 Finishing department's data summery

Serial number	Finishing department's three sections	Checked quantity (Pieces)	Defect quantity (Pieces)	Total defect (%)	Average defect (%)
1	Pressing	4895	307	6.3	6.0
2	Accessories	4912	262	5.3	
3	Spot	4383	280	6.4	

In the fabric department fatigue is considered in a different way. Fabric inspector fatigue's effect while inspecting fabrics is considered. The major considered fabrics defects are thick yarn, missing yarn, slub, dying fault, oil stain, shading, stain, knot,

foreign yarn, hole and running shade. In fabric department total yard is converted to pieces according to the consumption. There will not have other causes of defect quantities in this study. In Table 5.3, total check quantity is 16131 pieces where 2.5 yards consumes to make the jacket. Defect quantity of major causes of defect is 552 pieces. Average defect rates is 3.4%. When garments will be produced with this fabric obviously bad quality of product will come out. Here the less the defect rate, the better the product quality can be found. The defect rate should be within tolerance limit.

Table 5.3 Fabric department's data summery

Serial Number	Checked Quantity (pieces)	Defect Quantity (pieces)	Defect Rate (%)	Average defect rate (%)
1	2294	78	3.4	3.4
2	2316	75	3.2	
3	2304	66	2.9	
4	2307	79	3.4	
5	2307	80	3.5	
6	2305	87	3.8	
7	2298	87	3.8	

Low product quality comes out due to both work and non-work related fatigue. Work fatigue should be controlled by designing possible interventions to increase product quality by reducing defect rates. In the appendix I-LXIII, the data tables for stitching, finishing and fabric department are included.

5.2 Possible Interventions

The possible interventions for both stitching, finishing and fabric departments are as follows:

- Restrict shift work, especially night shift, to essential tasks and projects.
- Schedule low risk work during high fatigue periods, e.g. end of shift and others relevant hours (Specially in hood making in stitching and accessories section in finishing department).
- Ensure adequate supervision during high fatigue working hours and his/her respective operation(s).
- Develop contingency plans in case employees become fatigued, rotating employees through job tasks so that fatigued employees are replaced regularly and manage fatigue.
- Enforce strict controls and procedures when performing respective work during high fatigue periods.
- Limit the duration of shifts and eliminate or reduce the need to work overtime or be on-call.
- Ensure breaks between shifts allow for sufficient rest and recovery as well as commuting between work and home.
- Provide information to employees on how they can manage work related fatigue.
- Monitor and take account of workers previous hours and days, e.g. last shift was night or else.
- Maintain time of day work is being performed and arrange work so that high risk tasks are scheduled at the times when workers are performing at their best.
- If possible arrange vehicle for worker transportation, it reduces work fatigue.
- When designing work, consider safety, criticality and regular breaks.
- Recovering or preparing for work every time when starting work.
- Providing right environment for work not like sleepy, sweatiness, noisy and overheated environment. (e.g. Ironing section in the finishing department and in fabric inspection in the fabric department)
- Making of eco-friendly environment for work to reduce physical and mental fatigue. (e.g. In the stitching, finishing and fabric departments)

- Make the operation standard and standard operation procedure (SOP) should be clear to worker. Excessive work causes work fatigue and results low performance and increased defective rate. (e.g. In the stitching, finishing and fabric departments)
- Noise, excessive exposure to loud noise can irreversibly damage the ear, resulting in noise-induced hearing loss. ‘Nuisance’ noise can be annoying and distracting and result in reduced job performance. In work place noise should control to reduce work fatigue. (e.g. In the fabric departments)
- Lighting levels need to be appropriate to the task and must comply with the standard. Working in dim or overbright work environments can result in eyestrain, headaches, irritability and inevitably reduced productivity. Lighting should be in the standard level to control work fatigue. (e.g. In the fabric departments)
- Vibration, results physical work fatigue. Defect rates are increased while working. Vibration should control to reduce work fatigue. (e.g. In the stitching and finishing departments)

CHAPTER-VI CONCLUSIONS

Because of increasing competition and demand of garments product in the global market, it is very important to maintain the demand and delivery with required quality. In most of the industry, work fatigue is not considered but it should be mandatory because of its negative impact on product quality.

6.1 Conclusions

The product quality loss/defects due to work related fatigue can vary department to department. The work related fatigue has a negative impact on product quality. In this study sewing and finishing department's defect rates are 24.2% and 6.0% respectively. And in the fabric department it is 3.4%. Possible interventions can be taken to control fatigue. Fatigue can be reduced in a certain limit. After that the changes can be ignored. The following important possible interventions can be suggested.

Make the operation standard and standard operation procedure (SOP) should be clear to worker. Excessive work causes low performance, result fatigue and lowering product quality. Restrict shift work e.g. especially in the night shift. The breaks between shift to sufficient rest and recovery [Asberg et al. (2000)]. When designing work, consider safety, criticality and regular breaks [Michael et al. (1994)]. Noise, ventilation, lighting and vibration, these environmental factors should also consider.

6.2 Recommendations for Future Work

If the additional cost is very high compare to the design of possible interventions, it is not wise to expense to develop the environment of workplace. A future study can be carried out to find out the effect of non-work related fatigue on product quality and increased associated cost to control it by increasing product quality.

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Annexure-I

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS	
1	08:00 -8:30	1st	15	28	1	1	2	4	1												1
2	08:30 -9:00		13														1				
3	09:00-9:30	2nd	14	30		2	2	5	1				1								
4	09:30-10:00		16		1	2	3					1						1			
5	10:00-10:30	3rd	13	29		4	4	7		1			1		1				1		
6	10:30-11:00		16		1	2	3							1							
7	11:00-11:30	4th	16	31	2	2	4	8	1			1									2
8	11:30-12:00		15				4		4			2					1				1
9	12:00-12:30	5th	13	32	2	2	4	8			1								1		2
10	12:30-13:00		19		2	2	4				1						1				
11	14:00-14:30	6th	14	30		3	3	5		1			1				1				
12	14:30-15:00		16		1	1	2						1								
13	15:00-15:30	7th	13	31	2	2	4	6	1		1										2
14	15:30-16:00		18				2		2					1			1				
15	16:00-16:30	8th	16	32	1	4	5	9	1			1		2							1
16	16:30-17:00		16				4		4			1			1	1					1
17	17:00-17:30	9th	14	30		4	4	9			1			1		1				1	
18	17:30-18:00		16		1	4	5				1	1		1							1
19	18:00-18:30	10th	16	32	1	2	3	8		1									1		1
20	18:30-19:00		16		1	4	5					1	1				1	1			

CHECKED QUANTITY 305
DEFECTS QUANTITY 69

DEFECT RATE 22.6%

Annexure-II

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS														
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS			
1	08:00 -8:30	1st	14	30	1	0	1	4														1	
2	08:30 -9:00		16											2						1			
3	09:00 -9:30	2nd	13	27	1	1	1	3		1													
4	09:30-10:00		14																				1
5	10:00-10:30	3rd	16	32	2	4	6	7					1										
6	10:30:11:00		16																1				
7	11:00-11:30	4th	18	34	1	4	5	9		1				1							1		
8	11:30-12:00		16														2			1			
9	12:00-12:30	5th	16	32	2	3	5	10				1	1	1							1		
10	12:30-13:00		16												1			1					
11	14:00-14:30	6th	13	31		1	1	4						1									
12	14:30-15:00		18												1								
13	15:00-15:30	7th	16	30	1	1	2	5			1	1											
14	15:30-16:00		14																1				
15	16:00-16:30	8th	16	29	2	2	4	8						1							1		2
16	16:30-17:00		13													1							
17	17:00-17:30	9th	18	34	1	4	5	9						1								2	1
18	17:30-18:00		16												2			1					
19	18:00-18:30	10th	16	33	3	4	7	10			1	1											3
20	18:30-19:00		17												1			1					

CHECKED QUANTITY 312
DEFECTS QUANTITY 69

DEFECT RATE 22.1%

Annexure-III

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAY-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	18	32		3	3	5	1						1			1		
2	08:30 -9:00		14						2	2	1									
3	09:00-9:30	2nd	15	33	1	2	3	6					1			1				1
4	09:30-10:00		18						3	3	1									1
5	10:00-10:30	3rd	14	30		4	4	7		1				2		1				
6	10:30:11:00		16						3	3			1							
7	11:00-11:30	4th	16	34		6	6	9	1			1			2	1			1	
8	11:30-12:00		18						1	2	3			1		1				
9	12:00-12:30	5th	16	31		6	6	9	1			1			2				1	1
10	12:30-13:00		15						1	2	3			1	1					
									1			1	0			0				
11	14:00-14:30	6th	13	29		3	3	4			1			1					1	
12	14:30-15:00		16						1	1		1								
13	15:00-15:30	7th	12	27	1	3	4	6	1		1							1		1
14	15:30-16:00		15							2	2			1						
15	16:00-16:30	8th	13	28		5	5	8	1		1			1				1		1
16	16:30-17:00		15							3	3					1			1	
17	17:00-17:30	9th	16	32		5	5	9	1		1			1		1			1	
18	17:30-18:00		16						1	3	4						1		1	
19	18:00-18:30	10th	14	29		5	5	10	1			1			1	1			1	
20	18:30-19:00		15						1	4	5				1			2		

CHECKED QUANTITY 305 DEFECT RATE 23.9%
 DEFECTS QUANTITY 73

Annexure-IV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS		
1	08:00 -8:30	1st	18	30		2	2	5		1		1										
2	08:30 -9:00		12		1	2	3		1							1						1
3	09:00-9:30	2nd	14	26	1	2	3	6			1		1								1	
4	09:30-10:00		12			3	3							1								
5	10:00-10:30	3rd	18	36		4	4	9	1	1	1			1								
6	10:30-11:00		18			5	5		1	1			1			1						1
7	11:00-11:30	4th	15	29	2	5	7	10		1				1		1			1	1	2	
8	11:30-12:00		14			3	3						1			1					1	
9	12:00-12:30	5th	15	31		7	7	10	1	1	1	1	1						1		1	
10	12:30-13:00		16		1	2	3									1					1	
11	14:00-14:30	6th	16	29	1	3	4	6			1							1		1	1	
12	14:30-15:00		13			2	2		1													1
13	15:00-15:30	7th	17	35	1	1	2	5								1					1	
14	15:30-16:00		18		1	2	3							1								
15	16:00-16:30	8th	16	33	1	1	2	7	1													1
16	16:30-17:00		17			5	5					1									1	1
17	17:00-17:30	9th	15	31	1	3	4	10				1				1				1	1	
18	17:30-18:00		16			5	6						1						2		1	
19	18:00-18:30	10th	16	32		5	5	9	1		1			1		1				1		
20	18:30-19:00		16		1	3	4					2				1						

CHECKED QUANTITY 312
DEFECTS QUANTITY 77

DEFECT RATE 24.7%

Annexure-V

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS										
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAY-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETTRY
1	08:00 -8:30	1st	18	30		2	2	5		1								1	
2	08:30 -9:00		12		1	2	3		1			1							
3	09:00-9:30	2nd	12	29		3	3	6		1		1			1				
4	09:30-10:00		17		1	2	3		1										1
5	10:00-10:30	3rd	16	30	1	1	2	8		1									1
6	10:30:11:00		14			6	6			1	1		1				1	1	1
7	11:00-11:30	4th	16	32	1	4	5	10	1		1				1			1	1
8	11:30-12:00		16		1	4	5		1	1		1			1				
9	12:00-12:30	5th	17	33		3	3	9					1				1	1	
10	12:30-13:00		16		2	4	6			1		1			1		1		
11	14:00-14:30	6th	12	24	1	2	3	4	1									1	1
12	14:30-15:00		12		1	0	1												
13	15:00-15:30	7th	15	31		2	2	5	1		1								
14	15:30-16:00		16		1	2	3									1			1
15	16:00-16:30	8th	16	32		2	2	8	1									1	
16	16:30-17:00		16			6	6		1	1		1			1	1	1		
17	17:00-17:30	9th	16	33		5	5	9		1	1						1	1	1
18	17:30-18:00		17		1	3	4		1		1								1
19	18:00-18:30	10th	16	34	1	4	5	10				1		1		1	1		1
20	18:30-19:00		18			5	5			1	1		1						1

CHECKED QUANTITY 308
DEFECTS QUANTITY 74

DEFECT RATE 24.0%

Annexure-VI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS		
1	08:00 -8:30	1st	13	29	1	2	3	5						1			1				1	
2	08:30 -9:00		16																			
3	09:00-9:30	2nd	18	35	1	3	4	5	1		1						1				1	
4	09:30-10:00		17																			
5	10:00-10:30	3rd	18	33	1	3	4	8			1		1				1					1
6	10:30:11:00		15													1			1			
7	11:00-11:30	4th	12	29	1	5	6	10		1			1				1	1		1		1
8	11:30-12:00		17													1						
9	12:00-12:30	5th	17	33		5	5	9	1	1			1				1			1		
10	12:30-13:00		16													1			1			
11	14:00-14:30	6th	15	28	1	2	3	6						1				1				1
12	14:30-15:00		13												1	1	1					
13	15:00-15:30	7th	18	30		3	3	4		1					1					1		
14	15:30-16:00		12																		1	
15	16:00-16:30	8th	16	30	1	3	4	10	1						1					1		1
16	16:30-17:00		14													1	1		1			
17	17:00-17:30	9th	17	32		3	3	11							1				1	1		
18	17:30-18:00		15																		1	
19	18:00-18:30	10th	17	33	1	5	6	11	1	1			1	1	1	1	1	1	1			1
20	18:30-19:00		16														1		1			

CHECKED QUANTITY 312
DEFECTS QUANTITY 79

DEFECT RATE 25.3%

Annexure-VII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (HOOD MAKE) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	12	30	1	1	2	5		1										1
2	08:30 -9:00		18		1	2	3		1											
3	09:00-9:30	2nd	18	31		2	2	6			1				1					
4	09:30-10:00		13			4	4				1		1							1
5	10:00-10:30	3rd	14	30	1	4	5	9		1			1		1				1	1
6	10:30-11:00		16			4	4		1	1		1				1				
7	11:00-11:30	4th	16	30		3	3	9						1	1	1				
8	11:30-12:00		14			6	6		1		1	1			1	1				1
9	12:00-12:30	5th	14	29	1	4	5	10	1	1	1		1							1
10	12:30-13:00		15		1	4	5			1		1			1					1
11	14:00-14:30	6th	14	27		2	2	5	1				1							
12	14:30-15:00		13			3	3				1					1	1			
13	15:00-15:30	7th	18	35		3	3	7			1			1					1	
14	15:30-16:00		17		1	3	4		1	1					1					
15	16:00-16:30	8th	16	31	1	3	4	9					1				1	1		1
16	16:30-17:00		15			5	5		1	1		1								
17	17:00-17:30	9th	15	29		5	5	11	1	1				1				1	1	
18	17:30-18:00		14		1	5	6		1			1		1	1	1				
19	18:00-18:30	10th	18	32		4	4	10	1	1		1							1	
20	18:30-19:00		14		1	5	6			1		1			1		1			1

CHECKED QUANTITY 304
DEFECTS QUANTITY 81

DEFECT RATE 26.6%

Annexure-VIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS										
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAV-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETTRY
1	08:00 -8:30	1st	15	31	1	3	4	6	1							1		1	1
2	08:30 -9:00		16		1	1	2				1								
3	09:00-9:30	2nd	13	26		2	2	5	1						1				
4	09:30-10:00		13		1	2	3				1	1							
5	10:00-10:30	3rd	16	33	1	2	3	9	1	1									1
6	10:30:11:00		17			6	6				1	1		1		1	1	1	
7	11:00-11:30	4th	17	31	1	3	4	9	1		1						1		1
8	11:30-12:00		14			5	5				1	1	1	1	1				
9	12:00-12:30	5th	16	34	1	5	6	10	1			1				1	1	1	1
10	12:30-13:00		18			4	4				1					1	1		1
11	14:00-14:30	6th	17	34		3	3	4	1					1				1	
12	14:30-15:00		17		1	0	1												
13	15:00-15:30	7th	14	28		3	3	5	1				1				1		
14	15:30-16:00		14		1	1	2						1						
15	16:00-16:30	8th	16	32	1	3	4	8		1							1	1	1
16	16:30-17:00		16		1	3	4				1	1							1
17	17:00-17:30	9th	16	31	1	3	4	9	1			1						1	1
18	17:30-18:00		15		1	4	5				1	1	1						1
19	18:00-18:30	10th	16	34	1	4	5	11			1		1		1			1	1
20	18:30-19:00		18		1	5	6				1	1		1		1	1	1	1

CHECKED QUANTITY 314
DEFECTS QUANTITY 76

DEFECT RATE 24.2%

Annexure-IX

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETTRY	OTHERS
1	08:00 -8:30	1st	14	26	1	2	3	5	1						1					1
2	08:30 -9:00		12			2	2			1										
3	09:00-9:30	2nd	12	25		1	1	3											1	
4	09:30-10:00		13		1	1	2													
5	10:00-10:30	3rd	17	31	1	3	4	7	1	1				1						1
6	10:30-11:00		14		1	2	3			1		1								
7	11:00-11:30	4th	17	34	1	3	4	8				1	1						1	1
8	11:30-12:00		17		1	3	4		1							1	1			
9	12:00-12:30	5th	14	32	1	3	4	10	1						2					1
10	12:30-13:00		18		1	5	6				1	1				1	1			1
11	14:00-14:30	6th	13	28		3	3	4	1	1									1	
12	14:30-15:00		15		1	0	1													
13	15:00-15:30	7th	15	31		3	3	5	1				1						1	
14	15:30-16:00		16			2	2					1								
15	16:00-16:30	8th	16	32	1	3	4	8	1					1					1	1
16	16:30-17:00		16			4	4		1		1				1					
17	17:00-17:30	9th	16	33	1	4	5	10	1							1	1	1	1	1
18	17:30-18:00		17			5	5		1		1		1		1					1
19	18:00-18:30	10th	16	32		7	7	10		1		1	1		1		1	1	1	
20	18:30-19:00		16		1	2	3								1				1	1

CHECKED QUANTITY 304
DEFECTS QUANTITY 70

DEFECT RATE 23.0%

Annexure-X

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS
1	08:00 -8:30	1st	15	32		2	2	4		1								1		
2	08:30 -9:00		17			2	2			1				1						
3	09:00-9:30	2nd	14	31	1	2	3	5				1							1	1
4	09:30-10:00		17			2	2				1				1					
5	10:00-10:30	3rd	12	27		6	6	9	1	1					1	1		1	1	
6	10:30-11:00		15			1	2		3					1						
7	11:00-11:30	4th	16	32	1	5	6	11	1	1					1			1	1	1
8	11:30-12:00		16			1	4		5					1	1					1
9	12:00-12:30	5th	16	34	1	5	6	10				1		1		1		1	1	1
10	12:30-13:00		18				4		4							1	1			1
11	14:00-14:30	6th	15	29	1	2	3	4	1							1				1
12	14:30-15:00		14				1		1											
13	15:00-15:30	7th	16	30		2	2	6			1								1	
14	15:30-16:00		14				4		4		1			1			1			
15	16:00-16:30	8th	16	33		5	5	9		1					1	1		1	1	
16	16:30-17:00		17				4		4		1				1	1	1			
17	17:00-17:30	9th	16	33	1	5	6	11	1			1		1	1				1	1
18	17:30-18:00		17				1		4	5			1	1			1			
19	18:00-18:30	10th	18	34	2	5	7	12			1				1			1	1	2
20	18:30-19:00		16				5		5			1				1		1	1	

CHECKED QUANTITY 315
DEFECTS QUANTITY 81

DEFECT RATE 25.7%

Annexure-XI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS		
1	08:00 -8:30	1st	14	32	1	0	1	4													1	
2	08:30 -9:00		18										1							1		1
3	09:00-9:30	2nd	16	29	1	1	2	5							1							1
4	09:30-10:00		13											1	1	1						
5	10:00-10:30	3rd	17	34	1	2	3	8								1					1	1
6	10:30-11:00		17																1	1	1	1
7	11:00-11:30	4th	16	32	1	3	4	9	1		1						1					1
8	11:30-12:00		16														1				1	1
9	12:00-12:30	5th	15	31		4	4	11								1	1	1	1			
10	12:30-13:00		16												1	1	1					
11	14:00-14:30	6th	12	29	1	1	2	5				1										1
12	14:30-15:00		17													1						
13	15:00-15:30	7th	18	36		3	3	6	1						1						1	
14	15:30-16:00		18												1							1
15	16:00-16:30	8th	16	33	1	5	6	12			1	1	1		1					1		1
16	16:30-17:00		17															1	1	1	1	
17	17:00-17:30	9th	14	29		7	7	11	1			1	1		1	1	1				1	
18	17:30-18:00		15														1			1	1	
19	18:00-18:30	10th	16	34	1	6	7	12	1		1	1		1	1	1						1
20	18:30-19:00		18													1	1			1		

CHECKED QUANTITY 319
DEFECTS QUANTITY 83

DEFECT RATE 26.0%

Annexure-XII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS	
1	08:00 -8:30	1st	12	27	1	3	4	5		1				1	1						1
2	08:30 -9:00		15																		
3	09:00-9:30	2nd	17	29		4	4	6	1				1		1						
4	09:30-10:00		12			2	2						1								
5	10:00-10:30	3rd	16	31		5	5	10	1	1		1		1							1
6	10:30:11:00		15		1	4	5				1			1							
7	11:00-11:30	4th	13	28	1	4	5	11		1	1			1						1	1
8	11:30-12:00		15		1	5	6		1	1				1	1						
9	12:00-12:30	5th	18	31	1	6	7	13	1			1	1	1	1		1				1
10	12:30-13:00		13			6	6		1		1					1					
11	14:00-14:30	6th	18	33	1	2	3	6		1		1									1
12	14:30-15:00		15		1	2	3						1								
13	15:00-15:30	7th	13	29	1	1	2	5												1	1
14	15:30-16:00		16			3	3		1					1							
15	16:00-16:30	8th	14	30	1	3	4	10						1						1	1
16	16:30-17:00		16		1	5	6			1		1			1	1					
17	17:00-17:30	9th	13	27		5	5	11	1						1	1				1	1
18	17:30-18:00		14		1	5	6		1	1				1			1				
19	18:00-18:30	10th	16	34	1	7	8	12		1	1	1	1		1	1				1	1
20	18:30-19:00		18			4	4		1	1							1				

CHECKED QUANTITY 299
DEFECTS QUANTITY 89

DEFECT RATE 29.8%

Annexure-XIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAY-EDGE	POINT UP/DOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS
1	08:00 -8:30	1st	16	28	1	3	4	5	1		1				1				1	
2	08:30 -9:00		12				1		1											
3	09:00-9:30	2nd	15	28	1	3	4	7			1			1				1		1
4	09:30-10:00		13				3		3		1				1		1			
5	10:00-10:30	3rd	16	33	1	3	4	10	1					1			1			1
6	10:30:11:00		17				6		6		1	1	1			1		1		1
7	11:00-11:30	4th	15	33	1	6	7	11	1				1		1		1	1	1	1
8	11:30-12:00		18				1		3	4			1	1			1			
9	12:00-12:30	5th	16	32		6	6	11			1	1	1	1	1		1	1		
10	12:30-13:00		16				5		5		1			1		1				1
11	14:00-14:30	6th	14	31		2	2	5					1		1					
12	14:30-15:00		17				3		3			1			1					1
13	15:00-15:30	7th	16	34	1	2	3	6						1					1	1
14	15:30-16:00		18				3		3			1				1	1			
15	16:00-16:30	8th	18	34		3	3	8					1					1	1	
16	16:30-17:00		16				1		4	5		1					1			1
17	17:00-17:30	9th	16	34		2	2	10			1								1	
18	17:30-18:00		18						8	8		1		1	1	1	1	1	1	1
19	18:00-18:30	10th	16	30	1	4	5	10				1		1			1	1	1	1
20	18:30-19:00		14				1		4	5			1	1		1				1

CHECKED QUANTITY 317
DEFECTS QUANTITY 83

DEFECT RATE 26.2%

Annexure-XIV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (FRONT PART) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS										
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETTRY
1	08:00 -8:30	1st	14	30		2	2	3			1							1	
2	08:30 -9:00		16		1	0	1												
3	09:00-9:30	2nd	18	34		3	3	5			1				1			1	
4	09:30-10:00		16			2	2							1	1				
5	10:00-10:30	3rd	16	33		3	3	6						1			1	1	
6	10:30-11:00		17			3	3		1										1
7	11:00-11:30	4th	16	31	1	4	5	10	1		1	1						1	1
8	11:30-12:00		15			5	5		1			1	1						
9	12:00-12:30	5th	16	32		5	5	11	1		1			1			1	1	
10	12:30-13:00		16		1	5	6			1				1		1	1		1
11	14:00-14:30	6th	16	29		3	3	5			1		1		1				
12	14:30-15:00		13		1	1	2										1		
13	15:00-15:30	7th	13	25		3	3	7	1			1						1	
14	15:30-16:00		12			4	4		1				1						
15	16:00-16:30	8th	16	30		4	4	9		1				1			1	1	
16	16:30-17:00		14		1	4	5					1		1	1	1			
17	17:00-17:30	9th	17	35	1	4	5	8		1			1		1			1	1
18	17:30-18:00		18			3	3		1	1			1						
19	18:00-18:30	10th	14	31	1	4	5	11			1			1				1	1
20	18:30-19:00		17		1	5	6		1	1		1					1		

CHECKED QUANTITY 310
DEFECTS QUANTITY 75

DEFECT RATE 24.2%

Annexure-XV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETTRY	OTHERS
1	08:00 -8:30	1st	14	31	1	2	3	8		1								1		1
2	08:30 -9:00		17			5	5		1	1		1				1				1
3	09:00-9:30	2nd	13	27	1	0	1	5												1
4	09:30-10:00		14			3	4		1							1				1
5	10:00-10:30	3rd	15	31	1	4	5	8	1				1					1	1	1
6	10:30-11:00		16			3	3						1	1						1
7	11:00-11:30	4th	16	33	1	2	3	10			1		1							1
8	11:30-12:00		17			6	7				1	1		1		1		1	1	1
9	12:00-12:30	5th	18	37	2	2	4	9						1				1		2
10	12:30-13:00		19			4	5		1		1									1
11	14:00-14:30	6th	18	34	1	1	2	5								1				1
12	14:30-15:00		16			2	3					1								1
13	15:00-15:30	7th	15	34		2	2	6		1	1									
14	15:30-16:00		19			3	4				1							1		1
15	16:00-16:30	8th	16	33		2	2	9					1		1					
16	16:30-17:00		17			6	7		1		1		1	1			1			1
17	17:00-17:30	9th	16	32		7	7	11	1			1		1	1	1	1	1		
18	17:30-18:00		16			3	4							1		1		1		1
19	18:00-18:30	10th	18	35	1	4	5	10			1			1	1				1	1
20	18:30-19:00		17			4	5		1				1		1		1			1

CHECKED QUANTITY 327
DEFECTS QUANTITY 81

DEFECT RATE 24.8%

Annexure-XVI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS	
1	08:00 -8:30	1st	18	31		2	2	5			1					1					
2	08:30 -9:00		13			3	3		1					1	1						
3	09:00-9:30	2nd	15	28		2	2	6	1					1							
4	09:30-10:00		13		1	3	4				1	1		1							
5	10:00-10:30	3rd	15	32	1	5	6	9	1					1	1	1	1				1
6	10:30:11:00		17			3	3		1				1						1		
7	11:00-11:30	4th	16	31		5	5	10	1	1	1			1			1				
8	11:30-12:00		15			5	5					1				1	1	1	1	1	
9	12:00-12:30	5th	16	30	1	4	5	10		1					1	1	1				1
10	12:30-13:00		14			5	5						1		1	1	1				1
11	14:00-14:30	6th	19	37		2	2	5										1	1		
12	14:30-15:00		18		1	2	3				1			1							
13	15:00-15:30	7th	16	34		3	3	6	1						1				1		
14	15:30-16:00		18			3	3				1							1			1
15	16:00-16:30	8th	15	31		4	4	9	1					1			1	1			
16	16:30-17:00		16			5	5						1		1	1	1	1	1	1	
17	17:00-17:30	9th	16	35		5	5	10			1	1	1			1			1		
18	17:30-18:00		19		1	4	5				1			1	1						
19	18:00-18:30	10th	17	34	1	6	7	11		1		1		1	1	1			1		1
20	18:30-19:00		17			4	4						1			1				1	1

CHECKED QUANTITY 323
DEFECTS QUANTITY 81

DEFECT RATE 25.1%

Annexure-XVII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	16	35	1	2	3	5						1					1	1
2	08:30 -9:00		19										1							
3	09:00-9:30	2nd	14	31		2	2	6	1					1						
4	09:30-10:00		17							4	4				1	1				1
5	10:00-10:30	3rd	18	35	1	2	3	9				1				1				1
6	10:30-11:00		17								6	6				1		1	1	
7	11:00-11:30	4th	15	34	1	3	4	11					1			1	1			1
8	11:30-12:00		19								7	7	1		1			1	1	1
9	12:00-12:30	5th	14	30		4	4	10				1	1				1			
10	12:30-13:00		16							6	6			1	1	1		1		
11	14:00-14:30	6th	16	32	1	2	3	4			1							1		1
12	14:30-15:00		16								1	1						1		
13	15:00-15:30	7th	18	35	1	2	3	6	1					1						1
14	15:30-16:00		17								3	3	1					1		
15	16:00-16:30	8th	14	29		4	4	10			1	1	1				1			
16	16:30-17:00		15							1	5	6			1			1	1	
17	17:00-17:30	9th	19	35	1	3	4	12	1	1	1					1	1			1
18	17:30-18:00		16								1	7	8	1			1	1		1
19	18:00-18:30	10th	16	31	1	5	6	10		1	1			1			1	1		1
20	18:30-19:00		15								1	3	4			1	1			1

CHECKED QUANTITY 327
DEFECTS QUANTITY 83

DEFECT RATE 25.4%

Annexure-XVIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	18	33		2	2	5			1		1							
2	08:30 -9:00		15			3	3							1				1		
3	09:00-9:30	2nd	19	32		3	3	7			1	1						1		
4	09:30-10:00		13		1	3	4		1										1	1
5	10:00-10:30	3rd	17	35	1	5	6	9		1		1			1			1	1	
6	10:30:11:00		18		1	2	3						1							1
7	11:00-11:30	4th	17	33	1	4	5	9		1	1						1	1		1
8	11:30-12:00		16			4	4							1	1	1				1
9	12:00-12:30	5th	16	32	1	4	5	10	1											1
10	12:30-13:00		16			5	5					1								1
11	14:00-14:30	6th	14	28		5	5	6	1		1		1						1	
12	14:30-15:00		14			1	1												1	
13	15:00-15:30	7th	18	36		4	4	8	1				1					1	1	
14	15:30-16:00		18		1	3	4							1	1	1				
15	16:00-16:30	8th	18	35	1	6	7	9	1				1		1	1	1	1	1	1
16	16:30-17:00		17			2	2													1
17	17:00-17:30	9th	15	32	1	4	5	9	1					1				1	1	1
18	17:30-18:00		17			4	4					1		1						
19	18:00-18:30	10th	16	33		5	5	11				1		1	1			1	1	
20	18:30-19:00		17		1	5	6		1	1					1			1	1	

CHECKED QUANTITY 329
DEFECTS QUANTITY 83

DEFECT RATE 25.2%

Annexure-XIX

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS										
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMETTRY
1	08:00 -8:30	1st	13	27		2	2	6							1		1		
2	08:30 -9:00		14		1	3	4						1	1				1	
3	09:00-9:30	2nd	13	27	1	2	3	6		1								1	1
4	09:30-10:00		14			3	3									1			
5	10:00-10:30	3rd	16	31		3	3	9					1				1	1	
6	10:30-11:00		15		1	5	6			1		1		1		1	1		
7	11:00-11:30	4th	16	35		2	2	8							1			1	
8	11:30-12:00		19		1	5	6			1				1	1			1	1
9	12:00-12:30	5th	19	37		5	5	10	1			1			1			1	1
10	12:30-13:00		18		1	4	5			1	1	1							
11	14:00-14:30	6th	18	32	1	2	3	6	1								1		1
12	14:30-15:00		14		1	2	3			1			1						
13	15:00-15:30	7th	17	31		1	1	5						1					
14	15:30-16:00		14		1	3	4			1	1	1							
15	16:00-16:30	8th	16	35		5	5	10					1				1	1	
16	16:30-17:00		19		1	4	5					1	1						1
17	17:00-17:30	9th	17	36	1	5	6	11	1	1	1	1		1					1
18	17:30-18:00		19			5	5			1		1	1			1	1		
19	18:00-18:30	10th	19	35	1	4	5	12		1		1	1					1	1
20	18:30-19:00		16		1	6	7			1			1	1			1	1	

CHECKED QUANTITY 326
DEFECTS QUANTITY 83

DEFECT RATE 25.5%

Annexure-XX

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETTRY	OTHERS
1	08:00 -8:30	1st	14	28		4	4	5			1		1			1				
2	08:30 -9:00		14		1	0	1													
3	09:00-9:30	2nd	14	32		2	2	7		1									1	
4	09:30-10:00		18			5	5			1			1	1					1	1
5	10:00-10:30	3rd	14	30	1	4	5	9	1	1		1					1			1
6	10:30-11:00		16		1	3	4		1										1	1
7	11:00-11:30	4th	17	34	1	5	6	10				1	1				1	1	1	1
8	11:30-12:00		17		1	3	4					1	1						1	
9	12:00-12:30	5th	16	35	1	5	6	11	1	1				1	1				1	1
10	12:30-13:00		19		1	4	5			1			1		1	1				
11	14:00-14:30	6th	15	32	1	3	4	5			1		1				1			1
12	14:30-15:00		17			1	1							1						
13	15:00-15:30	7th	14	31	1	3	4	6	1								1		1	1
14	15:30-16:00		17			2	2				1					1				
15	16:00-16:30	8th	18	33	1	2	3	9									1		1	1
16	16:30-17:00		15			6	6		1			1			1	1	1	1	1	1
17	17:00-17:30	9th	15	33	1	5	6	10				1	1		1				1	1
18	17:30-18:00		18			4	4		1				1		1					1
19	18:00-18:30	10th	19	36		6	6	11			1	1	1	1		1			1	
20	18:30-19:00		17		1	4	5		1				1		1	1				

CHECKED QUANTITY 324
DEFECTS QUANTITY 83

DEFECT RATE 25.6%

Annexure-XXI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (BACK AND CPU PART) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS
1	08:00 -8:30	1st	19	36	1	1	2	4			1									1
2	08:30 -9:00		17		2	2				1										
3	09:00-9:30	2nd	17	36	1	3	4	6	1	1					1					1
4	09:30-10:00		19		2	2													1	
5	10:00-10:30	3rd	18	35		3	3	8		1				1				1		
6	10:30-11:00		17		1	4	5			1		1			1		1			
7	11:00-11:30	4th	19	37	1	6	7	10	1		1				1	1	1	1	1	1
8	11:30-12:00		18			3	3				1			1						
9	12:00-12:30	5th	17	36		4	4	11	1				1		1		1			
10	12:30-13:00		19		1	6	7			1	1			1			1	1	1	1
11	14:00-14:30	6th	15	32		1	1	5											1	
12	14:30-15:00		17		1	3	4			1		1						1		
13	15:00-15:30	7th	13	29		3	3	6			1			1					1	
14	15:30-16:00		16			3	3					1				1			1	
15	16:00-16:30	8th	18	37		4	4	8				1		1				1	1	
16	16:30-17:00		19		1	3	4			1									1	1
17	17:00-17:30	9th	16	32		5	5	9	1	1	1		1		1					
18	17:30-18:00		16			4	4			1	1		1							
19	18:00-18:30	10th	16	31	1	4	5	10				1		1				1	1	1
20	18:30-19:00		15			5	5				1		1	1			1	1		1

CHECKED QUANTITY 341
DEFECTS QUANTITY 77

DEFECT RATE 22.6%

Annexure-XXII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETTRY	OTHERS
1	08:00 -8:30	1st	14	25		2	2	3						1				1		
2	08:30 -9:00		11		1	1														
3	09:00-9:30	2nd	15	27		2	2	4	1		1									
4	09:30-10:00		12		2	2				1						1				
5	10:00-10:30	3rd	18	39	1	3	4	8		1			1		1					1
6	10:30-11:00		21		1	3	4					1								1
7	11:00-11:30	4th	12	32	1	5	6	8	1			1	1		1			1		1
8	11:30-12:00		20		1	1	2						1							
9	12:00-12:30	5th	17	31	1	3	4	9		1		1							1	1
10	12:30-13:00		14		1	4	5				1			1		1	1			
11	14:00-14:30	6th	14	30		2	2	3	1										1	
12	14:30-15:00		16		1	1							1							
13	15:00-15:30	7th	20	41	1	3	4	5	1		1							1		1
14	15:30-16:00		21			1	1							1						
15	16:00-16:30	8th	21	41	1	6	7	9			1		1	1		1	1	1		1
16	16:30-17:00		20			2	2				1									
17	17:00-17:30	9th	21	37	1	3	4	8	1					1		1				1
18	17:30-18:00		16			4	4				1			1	1		1			
19	18:00-18:30	10th	19	34	1	3	4	9		1								1	1	1
20	18:30-19:00		15		1	4	5				1			1					1	1

CHECKED QUANTITY 337
DEFECTS QUANTITY 66

DEFECT RATE 19.6%

Annexure-XXIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	21	37	1	1	2	4								1				1
2	08:30 -9:00		16										1						1	
3	09:00-9:30	2nd	11	25		2	2	4			1								1	
4	09:30-10:00		14										1					1		
5	10:00-10:30	3rd	11	28		2	2	6										1	1	
6	10:30-11:00		17										1					1		
7	11:00-11:30	4th	17	35		3	3	7	1			1		1						
8	11:30-12:00		18											1	1			1		
9	12:00-12:30	5th	12	33	1	6	7	9	1	1	1	1		1				1		1
10	12:30-13:00		21													1				
11	14:00-14:30	6th	18	36		2	2	3			1								1	
12	14:30-15:00		18												1					
13	15:00-15:30	7th	14	25	1	1	2	5				1								1
14	15:30-16:00		11											1					1	
15	16:00-16:30	8th	20	32	1	4	5	7	1	1	1							1		1
16	16:30-17:00		12															1		1
17	17:00-17:30	9th	16	37	1	4	5	9	1	1				1			1			1
18	17:30-18:00		21													1		1		
19	18:00-18:30	10th	16	32	1	4	5	8				1				1	1		1	1
20	18:30-19:00		16												1		1			1

CHECKED QUANTITY 320
DEFECTS QUANTITY 62

DEFECT RATE 19.4%

Annexure-XXIV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	12	31	1	1	2	4				1								1
2	08:30 -9:00		19			2	2		1						1					
3	09:00-9:30	2nd	20	40		1	1	5						1						
4	09:30-10:00		20			4	4			1					1	1	1			
5	10:00-10:30	3rd	20	38		2	2	6		1	1									
6	10:30-11:00		18			4	4		1	1			1				1			
7	11:00-11:30	4th	21	40		3	3	8	1				1					1		
8	11:30-12:00		19		1	4	5			2			1				1			
9	12:00-12:30	5th	16	31		5	5	9	1	1		1			1					
10	12:30-13:00		15		1	3	4		1	1					1					
11	14:00-14:30	6th	21	39		2	2	3			1		1							
12	14:30-15:00		18			1	1							1						
13	15:00-15:30	7th	17	29		3	3	4		1				1	1					
14	15:30-16:00		12		1	0	1													
15	16:00-16:30	8th	14	25		3	3	7		1				1					1	
16	16:30-17:00		11		1	3	4			1							1			1
17	17:00-17:30	9th	21	38	1	3	4	9		1								1	1	
18	17:30-18:00		17		1	4	5		1			1	1				1			
19	18:00-18:30	10th	14	32		4	4	9	1		1		1					1		
20	18:30-19:00		18			5	5			1	1	1	1	1						

CHECKED QUANTITY 343
DEFECTS QUANTITY 64

DEFECT RATE 18.7%

Annexure-XXV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS		
1	08:00 -8:30	1st	17	30	1	1	2	5							1						1	
2	08:30 -9:00		13										1						2			
3	09:00-9:30	2nd	19	39		2	2	5						1			1					
4	09:30-10:00		20						3	3					1			1				1
5	10:00-10:30	3rd	12	27		5	5	8			1				1	1			1	1		
6	10:30:11:00		15						3	3					1						1	1
7	11:00-11:30	4th	13	34	1	3	4	10	1						1					1	1	
8	11:30-12:00		21						6	6		1		1		1	1			1		1
9	12:00-12:30	5th	20	39		5	5	9			1		1	1	1	1						
10	12:30-13:00		19						1	3	4					1	1		1			
11	14:00-14:30	6th	17	33		1	1	4													1	
12	14:30-15:00		16				1		2	3		1								1		
13	15:00-15:30	7th	18	31		2	2	5		1							1					
14	15:30-16:00		13						3	3					1					1		1
15	16:00-16:30	8th	15	29		4	4	7	2					1						1		
16	16:30-17:00		14						3	3				1					1			1
17	17:00-17:30	9th	11	30		5	5	8				1		1	1	1				1		
18	17:30-18:00		19						3	3		1		1						1		
19	18:00-18:30	10th	21	40	1	3	4	9								1			1	1	1	
20	18:30-19:00		19						5	5		1	1			1		1	1			

CHECKED QUANTITY 332
DEFECTS QUANTITY 70

DEFECT RATE 21.1%

Annexure-XXVI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAY-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	16	36		2	2	4		1									1	
2	08:30 -9:00		20			2	2								1					
3	09:00-9:30	2nd	17	32	1	3	4	5		1			1					1		1
4	09:30-10:00		15			1	1							1						
5	10:00-10:30	3rd	17	30		3	3	6		1		1								
6	10:30-11:00		13			3	3					1			1					1
7	11:00-11:30	4th	11	23	1	2	3	7						1				1		1
8	11:30-12:00		12			4	4				1		1			1				1
9	12:00-12:30	5th	14	34		3	3	8							1			1	1	
10	12:30-13:00		20			1	4		5		1	1					1			1
11	14:00-14:30	6th	18	31		2	2	5				1		1						
12	14:30-15:00		13			3	3				1				1			1		
13	15:00-15:30	7th	13	30		3	3	5					1					1	1	
14	15:30-16:00		17			2	2							1						1
15	16:00-16:30	8th	13	25		5	5	9	1		1				1	1		1		
16	16:30-17:00		12			4	4				1				1	1				1
17	17:00-17:30	9th	20	37		3	3	8					1			1			1	
18	17:30-18:00		17			5	5				1		1		1					1
19	18:00-18:30	10th	11	30	1	2	3	9					1				1			1
20	18:30-19:00		19			2	4		6		1			1						1

CHECKED QUANTITY 308
DEFECTS QUANTITY 66

DEFECT RATE 21.4%

Annexure-XXVII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS	
1	08:00 -8:30	1st	13	24		3	3	5	1			1		1							
2	08:30 -9:00		11		1	1	2					1									
3	09:00-9:30	2nd	16	33		2	2	4	1										1		
4	09:30-10:00		17			2	2						1						1		
5	10:00-10:30	3rd	21	33		2	2	6						1			1				
6	10:30-11:00		12			4	4						1						1	1	1
7	11:00-11:30	4th	15	30	1	4	5	9			1	1			1	1					1
8	11:30-12:00		15			1	3		4				1			1	1				
9	12:00-12:30	5th	21	35	1	3	4	10	1			1				1					1
10	12:30-13:00		14			2	4		6				1	1		1				1	
11	14:00-14:30	6th	12	32	1	3	4	5		1				1						1	1
12	14:30-15:00		20				1		1			1									
13	15:00-15:30	7th	20	34		4	4	6			1	2				1					
14	15:30-16:00		14			2	2								1		1				
15	16:00-16:30	8th	20	35	1	1	2	8										1			1
16	16:30-17:00		15			1	5		6		1			1	1					1	
17	17:00-17:30	9th	17	37		4	4	9				1		1			1	1			
18	17:30-18:00		20				5		5			1		1	1				1		1
19	18:00-18:30	10th	14	35	1	5	6	10		1	1	1		1					1		1
20	18:30-19:00		21				4		4			1	1	1							1

CHECKED QUANTITY 328
DEFECTS QUANTITY 72

DEFECT RATE 22.0%

Annexure-XXVIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (LINING PART) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS	
1	08:00 -8:30	1st	19	34		1	1	4			1										
2	08:30 -9:00		15			3	3			1				1							1
3	09:00-9:30	2nd	14	32		2	2	5							1			1			
4	09:30-10:00		18		1	2	3						1							1	1
5	10:00-10:30	3rd	13	24		4	4	7	1				1			1	1				
6	10:30-11:00		11		1	2	3						1							1	
7	11:00-11:30	4th	14	30	1	5	6	8	1	1			1				1		1	1	
8	11:30-12:00		16			2	2						1	1							
9	12:00-12:30	5th	14	30		4	4	10		1		1					1	1			
10	12:30-13:00		16		1	5	6			1			1	1	1	1					
11	14:00-14:30	6th	20	37		4	4	5	1					1	1					1	
12	14:30-15:00		17			1	1				1										
13	15:00-15:30	7th	15	34		4	4	6	1				1		1			1			
14	15:30-16:00		19			2	2			1											1
15	16:00-16:30	8th	19	36		4	4	8	1				1		1			1			
16	16:30-17:00		17			4	4					1	1		1		1				
17	17:00-17:30	9th	12	33	2	6	8	9	1	1			1	1				1	1	2	
18	17:30-18:00		21			1	1						1								
19	18:00-18:30	10th	16	32	1	5	6	10		1				1	1			1	1	1	
20	18:30-19:00		16			4	4				1		1	1	1						

CHECKED QUANTITY 322
DEFECTS QUANTITY 72

DEFECT RATE 22.4%

Annexure-XXIX

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETTRY	OTHERS	
1	08:00 -8:30	1st	17	31		2	2	5				1					1				
2	08:30 -9:00		14		1	2	3		1						1						
3	09:00-9:30	2nd	12	26	1	1	2	7						1							1
4	09:30-10:00		14			5	5		1		1			1						1	1
5	10:00-10:30	3rd	17	36		2	2	9							1					1	
6	10:30-11:00		19			7	7			1	1		1		1	1	1	1			
7	11:00-11:30	4th	16	32	1	5	6	10	1	1				1			1	1			1
8	11:30-12:00		16			4	4				1					1	1	1			
9	12:00-12:30	5th	15	31		3	3	12		1				1			1				
10	12:30-13:00		16		1	8	9			1	1			1	1	1	1	1			1
11	14:00-14:30	6th	18	32		2	2	3	1						1						
12	14:30-15:00		14		1	0	1														
13	15:00-15:30	7th	18	33		2	2	5						1					1		
14	15:30-16:00		15			3	3		1				1			1					
15	16:00-16:30	8th	13	32		2	2	8	1							1					
16	16:30-17:00		19		1	5	6			1			1	1	1					1	
17	17:00-17:30	9th	18	37	1	5	6	10			1	1		1					1	1	1
18	17:30-18:00		19		1	3	4		1						1					1	
19	18:00-18:30	10th	18	35	1	6	7	10	1		1	1		1					1	1	1
20	18:30-19:00		17			3	3					1		1					1		

CHECKED QUANTITY 325
DEFECTS QUANTITY 79

DEFECT RATE 24.3%

Annexure-XXX

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETTRY	OTHERS
1	08:00 -8:30	1st	17	35		2	2	4			1							1		
2	08:30 -9:00		18		2	2			1		1									
3	09:00-9:30	2nd	17	30	1	2	3	6				1							1	1
4	09:30-10:00		13			3	3			1	1									
5	10:00-10:30	3rd	15	34		4	4	9			1			1	1	1				
6	10:30-11:00		19		1	4	5		1	1						1	1			
7	11:00-11:30	4th	18	31		7	7	11	1		1	1	1			1		1	1	
8	11:30-12:00		13			4	4		1		1	1								1
9	12:00-12:30	5th	17	36		6	6	12	1			1	1	1			1	1	1	
10	12:30-13:00		19			6	6			1	1	1	1						1	1
11	14:00-14:30	6th	12	28		2	2	5						1				1		
12	14:30-15:00		16			3	3			1		1							1	
13	15:00-15:30	7th	12	30	1	0	1	4												1
14	15:30-16:00		18		1	2	3				1		1							
15	16:00-16:30	8th	16	35		4	4	9	1			1		1				1		
16	16:30-17:00		19			5	5		1	1		1								1
17	17:00-17:30	9th	16	35		6	6	11	1	1	1		1		1				1	
18	17:30-18:00		19			5	5				1	1		1		1				
19	18:00-18:30	10th	17	36		5	5	9			1			1	1	1		1		
20	18:30-19:00		19			4	4			1	1						1			1

CHECKED QUANTITY 330
DEFECTS QUANTITY 80

DEFECT RATE 24.2%

Annexure-XXXI

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	17	30		4	4	7	1		1						1	1		
2	08:30 -9:00		13			3	3						1							
3	09:00-9:30	2nd	18	31	1	1	2	6				1				1				1
4	09:30-10:00		13			4	4		1	1				1			1			
5	10:00-10:30	3rd	16	33		4	4	8	1		1			1				1		
6	10:30-11:00		17			1	3		4					1						1
7	11:00-11:30	4th	16	31		5	5	10				1		1	1	1			1	
8	11:30-12:00		15				5		5	1		1					1	1	1	
9	12:00-12:30	5th	12	31	1	6	7	13			1			1	1	1	1	1		1
10	12:30-13:00		19			1	5		6			1	1	1		1				
11	14:00-14:30	6th	18	30		1	1	5										1		
12	14:30-15:00		12			1	3		4		1			1						
13	15:00-15:30	7th	16	32	1	1	2	6				1								1
14	15:30-16:00		16				4		4						1	1	1	1		
15	16:00-16:30	8th	17	31	1	4	5	9	1				1				1		1	1
16	16:30-17:00		14			1	3		4	1	1						1			
17	17:00-17:30	9th	16	28	1	4	5	10	1	1				1					1	1
18	17:30-18:00		12				5		5	1	1		1		1					
19	18:00-18:30	10th	17	34		5	5	10	1		1		1					1	1	
20	18:30-19:00		17			1	4		5				1	1		1			1	

CHECKED QUANTITY 311
DEFECTS QUANTITY 84

DEFECT RATE 27.0%

Annexure-XXXII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS		
1	08:00 -8:30	1st	17	34	1	2	3	4					1				1				1	
2	08:30 -9:00		17			1	1									1						
3	09:00-9:30	2nd	16	35		3	3	6		1			1						1			
4	09:30-10:00		19			3	3				1						1				1	
5	10:00-10:30	3rd	16	30		4	4	9	1				1				1		1			
6	10:30-11:00		14			1	4		5		1			1								1
7	11:00-11:30	4th	15	33		3	3	9			1					1				1		
8	11:30-12:00		18				6		6					1	1		1	1	1			1
9	12:00-12:30	5th	15	31	1	3	4	12					1				1			1	1	
10	12:30-13:00		16			1	7		8		1	1	1	1			1				1	
11	14:00-14:30	6th	15	30		4	4	5			1			1				1			1	
12	14:30-15:00		15				1		1		1											
13	15:00-15:30	7th	17	33	1	1	2	7	1													1
14	15:30-16:00		16				5		5						1	1	1	1			1	
15	16:00-16:30	8th	18	34	1	2	3	9						1				1				1
16	16:30-17:00		16			1	5		6			1				1				1	1	1
17	17:00-17:30	9th	19	34		4	4	10			1					1	1			1		
18	17:30-18:00		15			1	5		6					1	1			1				1
19	18:00-18:30	10th	18	34	1	4	5	11		1		1	1							1		1
20	18:30-19:00		16				6		6		1	1	1				1				1	1

CHECKED QUANTITY 328
DEFECTS QUANTITY 82

DEFECT RATE 25.0%

Annexure-XXXIII

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS												
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLA CEMENT	DOWN STITCH	SYMETTRY	OTHERS	
1	08:00 -8:30	1st	19	38	1	2	3	5				1					1			1	
2	08:30 -9:00		19			2	2						1							1	
3	09:00-9:30	2nd	18	33		1	1	4	1												
4	09:30-10:00		15		1	2	3													1	
5	10:00-10:30	3rd	19	32	1	3	4	11			1							1	1	1	
6	10:30-11:00		13		1	6	7				1	1		1	1			1	1		
7	11:00-11:30	4th	15	29	1	4	5	10	1			1		1	1					1	
8	11:30-12:00		14		1	4	5				1	1		1						1	
9	12:00-12:30	5th	19	33		5	5	11		1		1		1	1			1			
10	12:30-13:00		14		2	4	6				1	1									
11	14:00-14:30	6th	15	29	1	2	3	5					1						1		1
12	14:30-15:00		14			2	2				1			1							
13	15:00-15:30	7th	12	28		2	2	6											1		
14	15:30-16:00		16			4	4					1								1	1
15	16:00-16:30	8th	14	31	1	4	5	10			1		1					1		1	1
16	16:30-17:00		17			5	5					1	1		1						1
17	17:00-17:30	9th	14	32		4	4	11	1		1			1					1		
18	17:30-18:00		18		1	6	7				1	1		1	1		1				1
19	18:00-18:30	10th	15	31	1	6	7	10	1		1	1	1					1		1	1
20	18:30-19:00		16			3	3				1				1						

CHECKED QUANTITY 316
DEFECTS QUANTITY 83

DEFECT RATE 26.3%

Annexure-XXXIV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS													
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEYEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UP/DOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS		
1	08:00 -8:30	1st	19	34	1	2	3	5		1					1						1	
2	08:30 -9:00		15			2	2			1						1						
3	09:00-9:30	2nd	13	31		1	1	4						1								
4	09:30-10:00		18		1	2	3		1											1		
5	10:00-10:30	3rd	12	29		3	3	8	1	1								1				
6	10:30:11:00		17		1	4	5		1	1			1							1		
7	11:00-11:30	4th	14	29		3	3	10		1	1					1						
8	11:30-12:00		15			7	7		1	1		1		1	1			1		1		
9	12:00-12:30	5th	12	30		5	5	12	1			1	1		1			1				
10	12:30-13:00		18		1	6	7		1	1			1		1		1	1				
11	14:00-14:30	6th	13	32		4	4	8			1			1		1				1		
12	14:30-15:00		19		1	3	4		1				1							1		
13	15:00-15:30	7th	15	33		2	2	6				1								1		
14	15:30-16:00		18			4	4				1				1			1		1		
15	16:00-16:30	8th	16	34	1	4	5	9	1			1				1	1				1	
16	16:30-17:00		18			4	4				1	1				1		1		1		
17	17:00-17:30	9th	12	24	1	4	5	11			1			1	1				1		1	
18	17:30-18:00		12			6	6				1		1	1			1		1	1		
19	18:00-18:30	10th	16	31		4	4	10	1	1								1	1			
20	18:30-19:00		15		1	5	6			1		1			1			1	1			

CHECKED QUANTITY 307
DEFECTS QUANTITY 83

DEFECT RATE 27.0%

Annexure-XXXV

DEFECT QUANTITIES IN THE SEWING DEPARTMENT (ASSEMBLY PART) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	STITCHING DEFECTS											
									PLEAT	UNCUT THREAD	OPEN SEAM	UNEVEN STITCH	JOIN STITCH	NEEDLE MARK	RAW-EDGE	POINT UPDOWN	MISPLACEMENT	DOWN STITCH	SYMMETRY	OTHERS
1	08:00 -8:30	1st	13	30		2	2	5		1								1		
2	08:30 -9:00		17		1	2	3			1					1					
3	09:00-9:30	2nd	17	36		2	2	6						1					1	
4	09:30-10:00		19		1	3	4					1		1				1		
5	10:00-10:30	3rd	17	36		4	4	10	1				1	1		1				
6	10:30-11:00		19			6	6			1	1			1	1			1	1	
7	11:00-11:30	4th	19	35		2	2	11				1			1					
8	11:30-12:00		16			9	9		1	1	1	1		1	1	1	1	1	1	1
9	12:00-12:30	5th	19	34	1	3	4	11						1				1	1	1
10	12:30-13:00		15		1	6	7			1		1		1		1		1	1	1
11	14:00-14:30	6th	14	27	1	2	3	5			1					1				1
12	14:30-15:00		13			2	2		1							1				
13	15:00-15:30	7th	14	27	1	4	5	6	1			1		1	1					1
14	15:30-16:00		13			1	1								1					
15	16:00-16:30	8th	12	28		2	2	8	1								1			
16	16:30-17:00		16			6	6		1				1	1	1	1	1	1	1	
17	17:00-17:30	9th	17	31	1	7	8	11		3		1	1		1		1			1
18	17:30-18:00		14		1	2	3								1		1		1	
19	18:00-18:30	10th	16	33		5	5	12					1	1	1	1	1	1		
20	18:30-19:00		17			7	7		1	1		1	1					1	1	1

CHECKED QUANTITY 317
DEFECTS QUANTITY 85

DEFECT RATE 26.8%

Annexure-XXXVI

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	40	75		1	1	3	1				
2	08:30 -9:00		35		1	1	2				1	1	
3	09:00-9:30	2nd	31	71		1	1	3	1				
4	09:30-10:00		40			2	2					1	1
5	10:00-10:30	3rd	39	79		2	2	5		1		1	
6	10:30-11:00		40		1	2	3				1	1	1
7	11:00-11:30	4th	34	71	1	2	3	7		1	1		1
8	11:30-12:00		37		1	3	4		1		1	1	1
9	12:00-12:30	5th	35	71		3	3	6	1		1	1	
10	12:30-13:00		36		1	2	3				1	1	1
11	14:00-14:30	6th	35	73		2	2	3	1			1	
12	14:30-15:00		38			1	1					1	
13	15:00-15:30	7th	30	63	1	2	3	4	1			1	1
14	15:30-16:00		33			1	1					1	
15	16:00-16:30	8th	34	73		1	1	4	1				
16	16:30-17:00		39		1	2	3		1			1	1
17	17:00-17:30	9th	36	74		2	2	5	1			1	
18	17:30-18:00		38			3	3		1		1	1	
19	18:00-18:30	10th	36	69	1	3	4	6	1	1	1		1
20	18:30-19:00		33			2	2		1			1	

CHECKED QUANTITY 719
DEFECTS QUANTITY 46

DEFECT RATE 6.4%

Annexure-XXXVII

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	39	73	1	0	1	2					1
2	08:30 -9:00		34			1	1						
3	09:00-9:30	2nd	31	63		3	3	4	1		1	1	
4	09:30-10:00		32		1	0	1					1	
5	10:00-10:30	3rd	32	66	1	1	2	6	1				1
6	10:30:11:00		34		1	3	4		1	1	1		1
7	11:00-11:30	4th	37	69	1	2	3	6		1		1	1
8	11:30-12:00		32		1	2	3			1	1		1
9	12:00-12:30	5th	38	78	1	3	4	7	1	1	1		1
10	12:30-13:00		40		1	2	3		1	1			
11	14:00-14:30	6th	34	69		2	2	4			1	1	
12	14:30-15:00		35			2	2			1	1		
13	15:00-15:30	7th	38	70		2	2	4		1	1		
14	15:30-16:00		32			2	2		1			1	
15	16:00-16:30	8th	35	71		3	3	6	1	1		1	
16	16:30-17:00		36			3	3		1		1	1	
17	17:00-17:30	9th	36	66		1	1	2			1		
18	17:30-18:00		30			1	1					1	
19	18:00-18:30	10th	32	66		2	2	3	1		1		
20	18:30-19:00		34		1	0	1						1

CHECKED QUANTITY 691
DEFECTS QUANTITY 44

DEFECT RATE 6.4%

Annexure-XXXVIII

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	34	67		1	1	2	1				
2	08:30 -9:00		33			1	1				1		
3	09:00-9:30	2nd	36	68		2	2	3	1			1	
4	09:30-10:00		32		1	0	1						1
5	10:00-10:30	3rd	36	74	1	2	3	5			1	1	1
6	10:30-11:00		38			2	2		1	1			
7	11:00-11:30	4th	38	73	1	3	4	6		1	1	1	1
8	11:30-12:00		35			2	2		1			1	
9	12:00-12:30	5th	31	62		2	2	6	1			1	
10	12:30-13:00		31		1	3	4		1	1		1	1
11	14:00-14:30	6th	35	71		2	2	3	1		1		
12	14:30-15:00		36		1	0	1						1
13	15:00-15:30	7th	37	77		2	2	5		1		1	
14	15:30-16:00		40			3	3		1	1	1		
15	16:00-16:30	8th	40	71		2	2	3	1		1		
16	16:30-17:00		31		1	0	1						1
17	17:00-17:30	9th	37	68		2	2	4			1	1	
18	17:30-18:00		31		1	1	2		1				1
19	18:00-18:30	10th	31	70	1	1	2	4	1				1
20	18:30-19:00		39			2	2			1	1		

CHECKED QUANTITY 701
DEFECTS QUANTITY 41

DEFECT RATE 5.8%

Annexure-XXXIX

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	40	70	1	1	2	3			1		1
2	08:30 -9:00		30			1	1		1	1			
3	09:00-9:30	2nd	35	74		1	1	3			1		
4	09:30-10:00		39			2	2		1	1			
5	10:00-10:30	3rd	34	67	1	2	3	4	1			1	1
6	10:30-11:00		33			1	1		1	1			
7	11:00-11:30	4th	35	70	1	1	2	5			1		1
8	11:30-12:00		35			1	2		3	1	1	1	1
9	12:00-12:30	5th	34	66		3	3	6	1	1	1		
10	12:30-13:00		32			3	3		1	1	1	1	
11	14:00-14:30	6th	39	75		3	3	4	1		1	1	
12	14:30-15:00		36			1	0		1				
13	15:00-15:30	7th	37	71		1	1	2	1				
14	15:30-16:00		34			1	0		1				
15	16:00-16:30	8th	40	76		2	2	3	1	1			
16	16:30-17:00		36			1	1		1			1	
17	17:00-17:30	9th	38	69		3	3	5	1	1		1	
18	17:30-18:00		31			2	2		1			1	
19	18:00-18:30	10th	36	76	1	2	3	7	1			1	1
20	18:30-19:00		40			1	3		4	1	1	1	

CHECKED QUANTITY 714
DEFECTS QUANTITY 42

DEFECT RATE 5.9%

Annexure-XL

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	40	74		2	2	4	1			1	
2	08:30 -9:00		34		1	1	2				1	1	
3	09:00-9:30	2nd	38	76	1	2	3	5	1		1		1
4	09:30-10:00		38			2	2		1		1		
5	10:00-10:30	3rd	31	66	1	1	2	3		1			1
6	10:30-11:00		35			1	1				1		
7	11:00-11:30	4th	30	60		1	1	5		1			
8	11:30-12:00		30			4	4		1	1	1	1	
9	12:00-12:30	5th	40	70	1	2	3	7			1	1	1
10	12:30-13:00		30		1	3	4		1	1	1		1
11	14:00-14:30	6th	38	72	1	1	2	3				1	1
12	14:30-15:00		34			1	1				1		
13	15:00-15:30	7th	35	66		1	1	4		1			
14	15:30-16:00		31		1	2	3		1		1	1	
15	16:00-16:30	8th	40	71	1	1	2	4			1		1
16	16:30-17:00		31		1	1	2		1			1	
17	17:00-17:30	9th	37	76	1	2	3	6	1	1			1
18	17:30-18:00		39		1	2	3					2	1
19	18:00-18:30	10th	32	63		3	3	7	1	1		1	
20	18:30-19:00		31		1	3	4		1	1	1	1	

CHECKED QUANTITY 694
DEFECTS QUANTITY 48

DEFECT RATE 6.9%

Annexure-XLI

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	37	72	1	0	1	3					1
2	08:30 -9:00		35		1	1	2		1	1			
3	09:00-9:30	2nd	30	64		3	3	4	1		1	1	
4	09:30-10:00		34			1	1		1				
5	10:00-10:30	3rd	31	67		2	2	5		1		1	
6	10:30-11:00		36			3	3		1	1	1		
7	11:00-11:30	4th	39	77	1	2	3	6			1	1	1
8	11:30-12:00		38		1	2	3		1	1	1		
9	12:00-12:30	5th	34	65	1	2	3	6	1			1	1
10	12:30-13:00		31			3	3		1	1	1		
11	14:00-14:30	6th	35	66		1	1	2				1	
12	14:30-15:00		31			1	1		1				
13	15:00-15:30	7th	36	71	1	0	1	4					1
14	15:30-16:00		35		1	2	3		1	1	1		
15	16:00-16:30	8th	31	61		1	1	4		1			
16	16:30-17:00		30		1	2	3		1		1	1	
17	17:00-17:30	9th	39	78	1	1	2	5				1	1
18	17:30-18:00		39		1	2	3			1	1	1	
19	18:00-18:30	10th	30	65		3	3	6		1		2	
20	18:30-19:00		35		1	2	3		1	1		1	

CHECKED QUANTITY 686
DEFECTS QUANTITY 45

DEFECT RATE 6.6%

Annexure-XLII

DEFECTS IN THE FINISHING DEPARTMENT (PRESSING PART) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	PRESSING DEFECTS				
									POOR IRON	SHINY MARK	CRESE MARK	WRONG SHAPE	OTHERS
1	08:00 -8:30	1st	31	69		1	1	2			1		
2	08:30 -9:00		38			1	1		1				
3	09:00-9:30	2nd	30	66	1	0	1	3					1
4	09:30-10:00		36		1	1	2				1	1	
5	10:00-10:30	3rd	34	64		1	1	4		1			
6	10:30-11:00		30		1	2	3		1		1	1	
7	11:00-11:30	4th	31	69	1	2	3	5		1		1	1
8	11:30-12:00		38			2	2			1	1		
9	12:00-12:30	5th	30	64	1	2	3	6		1	1		1
10	12:30-13:00		34		1	2	3		1	1			
11	14:00-14:30	6th	40	71		2	2	3	1			1	
12	14:30-15:00		31			1	1			1			
13	15:00-15:30	7th	36	66		2	2	4	1			1	
14	15:30-16:00		30			2	2				1	1	
15	16:00-16:30	8th	38	75		1	1	3			1		
16	16:30-17:00		37		1	1	2				1	1	
17	17:00-17:30	9th	40	75		3	3	5		1		2	
18	17:30-18:00		35			2	2		1		1		
19	18:00-18:30	10th	38	71	1	3	4	6		1	1	1	1
20	18:30-19:00		33			2	2			1	1		

CHECKED QUANTITY 690
DEFECTS QUANTITY 41

DEFECT RATE 5.9%

Annexure-XLIII

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	39	77	1	0	1	2					1
2	08:30 -9:00		38			1	1				1		
3	09:00-9:30		31			2	2				1	1	
4	09:30-10:00	2nd	36	67	1	0	1	3					1
5	10:00-10:30		37			1	1					1	
6	10:30:11:00	3rd	38	75		2	2	3		1	1		
7	11:00-11:30		33			2	2			1			1
8	11:30-12:00	4th	35	68	1	2	3	5		1		1	1
9	12:00-12:30		34			3	3			1	1		1
10	12:30-13:00	5th	37	71		2	2	5		1	1		
11	14:00-14:30		32			1	1			1			
12	14:30-15:00	6th	33	65		1	1	2			1		
13	15:00-15:30		31			1	2				1		
14	15:30-16:00	7th	33	64		1	1	3		1			1
15	16:00-16:30		31			2	2			1	1		
16	16:30-17:00	8th	36	67		1	1	3				1	
17	17:00-17:30		32			3	3			1		1	
18	17:30-18:00	9th	31	63		2	2	5		1		1	
19	18:00-18:30		35			1	3		4		1	1	
20	18:30-19:00	10th	38	73	1	1	2	6	1				1

CHECKED QUANTITY 690
DEFECTS QUANTITY 37

DEFECT RATE 5.4%

Annexure-XLIV

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	40	71		2	2	3	1			1	
2	08:30 -9:00		31			1	1			1			
3	09:00-9:30	2nd	32	72	1	1	2	3				1	1
4	09:30-10:00		40			1	1			1			
5	10:00-10:30	3rd	34	71		1	1	3	1				
6	10:30:11:00		37			2	2			1		1	
7	11:00-11:30	4th	38	68		2	2	4	1		1		
8	11:30-12:00		30		1	1	2			1		1	
9	12:00-12:30	5th	35	73	1	3	4	6	1	1		1	1
10	12:30-13:00		38		1	1	2			1			
11	14:00-14:30	6th	31	65		1	1	2	1				
12	14:30-15:00		34		1	0	1					1	
13	15:00-15:30	7th	38	69		1	1	4		1			
14	15:30-16:00		31		1	2	3		1		1		1
15	16:00-16:30	8th	36	66		1	1	4			1		
16	16:30-17:00		30			3	3			1	1	1	
17	17:00-17:30	9th	34	73		2	2	5	1		1		
18	17:30-18:00		39		1	2	3			1	1		1
19	18:00-18:30	10th	31	64	1	3	4	5	1	1	1		1
20	18:30-19:00		33			1	1			1			

CHECKED QUANTITY 692
DEFECTS QUANTITY 39

DEFECT RATE 5.6%

Annexure-XLV

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	35	75		1	1	2	1				
2	08:30 -9:00		40		1	1				1			
3	09:00-9:30	2nd	37	72	1	0	1	2					1
4	09:30-10:00		35		1	1			1				
5	10:00-10:30	3rd	39	73	1	0	1	3					1
6	10:30:11:00		34		1	1	2			1	1		
7	11:00-11:30	4th	32	72		2	2	3	1	1			
8	11:30-12:00		40		1	0	1				1		
9	12:00-12:30	5th	34	65	1	3	4	5	1		1	1	1
10	12:30-13:00		31			1	1				1		
11	14:00-14:30	6th	39	70	1	1	2	3	1				1
12	14:30-15:00		31		1	1			1				
13	15:00-15:30	7th	33	70	1	1	2	3	1				1
14	15:30-16:00		37		1	1	1			1			
15	16:00-16:30	8th	30	65	1	1	2	4			1		1
16	16:30-17:00		35			2	2			1	1		
17	17:00-17:30	9th	39	75		2	2	4		1		1	
18	17:30-18:00		36			2	2		1	1			
19	18:00-18:30	10th	38	69	1	2	3	5			1	1	1
20	18:30-19:00		31			2	2		1		1		

CHECKED QUANTITY 706
DEFECTS QUANTITY 34

DEFECT RATE 4.8%

Annexure-XLVI

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	34	65		1	1	3				1	
2	08:30 -9:00		31		1	1	2		1				1
3	09:00-9:30	2nd	36	76		1	1	3		1			
4	09:30-10:00		40		1	1	2		1				1
5	10:00-10:30	3rd	35	66		1	1	3				1	
6	10:30-11:00		31		1	1	2		1		1		1
7	11:00-11:30	4th	36	72	1	2	3	5	1	1			1
8	11:30-12:00		36		1	1	2		1		1		1
9	12:00-12:30	5th	31	69	1	1	2	6				1	1
10	12:30-13:00		38			4	4		1	1	1	1	1
11	14:00-14:30	6th	33	63		1	1	2			1		
12	14:30-15:00		30			1	1		1				
13	15:00-15:30	7th	36	72		1	1	2			1		
14	15:30-16:00		36			1	1		1		1		
15	16:00-16:30	8th	32	64	1	1	2	3		1			1
16	16:30-17:00		32			1	1		1		1		
17	17:00-17:30	9th	38	78	1	2	3	5		1		1	1
18	17:30-18:00		40			2	2		1		1	1	
19	18:00-18:30	10th	38	74		3	3	5		1	1	1	
20	18:30-19:00		36		1	1	2		1		1		1

CHECKED QUANTITY 699
DEFECTS QUANTITY 37

DEFECT RATE 5.3%

Annexure-XLVII

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	40	80		1	1	2		1			
2	08:30 -9:00		40			1	1		1				
3	09:00-9:30	2nd	33	67	1	1	2	3				1	1
4	09:30-10:00		34		1	0	1						1
5	10:00-10:30	3rd	32	69		1	1	3	1				
6	10:30:11:00		37		1	1	2				1		1
7	11:00-11:30	4th	37	69	1	2	3	5		1		1	1
8	11:30-12:00		32			2	2		1	1			
9	12:00-12:30	5th	32	62	1	2	3	5		1	1		1
10	12:30-13:00		30		1	1	2			1			1
11	14:00-14:30	6th	30	69		2	2	3	1		1		
12	14:30-15:00		39		1	0	1						1
13	15:00-15:30	7th	37	74		1	1	3				1	
14	15:30-16:00		37		1	1	2		1				1
15	16:00-16:30	8th	37	72	1	2	3	4	1			1	1
16	16:30-17:00		35			1	1			1			
17	17:00-17:30	9th	37	76	1	1	2	4	1				1
18	17:30-18:00		39			2	2			1		1	
19	18:00-18:30	10th	37	72		2	2	5		1		1	
20	18:30-19:00		35			3	3		1	1		1	

CHECKED QUANTITY 710
DEFECTS QUANTITY 37

DEFECT RATE 5.2%

Annexure-XLVIII

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00-8:30	1st	35	70		2	2	3	1		1		
2	08:30-9:00		35		1	0	1						1
3	09:00-9:30	2nd	37	77	1	2	3	4			1	1	1
4	09:30-10:00		40			1	1			1			
5	10:00-10:30	3rd	39	71	1	0	1	5					1
6	10:30-11:00		32		1	3	4		1	1		1	1
7	11:00-11:30	4th	38	68		1	1	5	1				
8	11:30-12:00		30			4	4		1	1	1	1	
9	12:00-12:30	5th	31	65		2	2	5	1			1	
10	12:30-13:00		34		1	2	3		1		1		1
11	14:00-14:30	6th	39	72	1	1	2	3		1			1
12	14:30-15:00		33		1	0	1						1
13	15:00-15:30	7th	37	76		1	1	2	1				
14	15:30-16:00		39			1	1			1			
15	16:00-16:30	8th	34	72	1	0	1	4					1
16	16:30-17:00		38		1	2	3			1	1		1
17	17:00-17:30	9th	38	74	1	1	2	5				1	1
18	17:30-18:00		36			3	3		1	1		1	
19	18:00-18:30	10th	40	74	1	2	3	5		2			1
20	18:30-19:00		34			2	2		1			1	

CHECKED QUANTITY 719
DEFECTS QUANTITY 41

DEFECT RATE 5.7%

Annexure-XLIX

DEFECTS IN THE FINISHING DEPARTMENT (ACCESSORIES) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	ACCESSORIES DEFECTS				
									MISSING	WRONG PLACEMENT	WRONG ACCESSORIES	DAMAGE ACCESSORIES	OTHERS
1	08:00 -8:30	1st	31	68		1	1	2			1		
2	08:30 -9:00		37		1	0	1					1	
3	09:00-9:30	2nd	30	65		1	1	3				1	
4	09:30-10:00		35		1	1	2		1			1	
5	10:00-10:30	3rd	30	60	1	1	2	4	1				1
6	10:30:11:00		30			2	2			1	1		
7	11:00-11:30	4th	30	64	1	2	3	5		1		1	1
8	11:30-12:00		34			2	2		1		1		
9	12:00-12:30	5th	39	75	1	2	3	5	1		1		1
10	12:30-13:00		36			2	2			1		1	
11	14:00-14:30	6th	37	71		1	1	2		1			
12	14:30-15:00		34		1	0	1					1	
13	15:00-15:30	7th	37	74	1	0	1	3					1
14	15:30-16:00		37			2	2			1	1		
15	16:00-16:30	8th	40	75	1	2	3	4		1		1	1
16	16:30-17:00		35		1	0	1					1	
17	17:00-17:30	9th	40	80	1	2	3	5	1			1	1
18	17:30-18:00		40			2	2				1	1	
19	18:00-18:30	10th	34	64	1	2	3	4	1	1			1
20	18:30-19:00		30		1	0	1					1	

CHECKED QUANTITY 696
DEFECTS QUANTITY 37

DEFECT RATE 5.3%

Annexure-L

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	34	61		1	1	2			1		
2	08:30 -9:00		27			1	1			1			
3	09:00-9:30	2nd	32	60	1	0	1	3					1
4	09:30-10:00		28			2	2			1	1		
5	10:00-10:30	3rd	28	56		1	1	5		1			
6	10:30:11:00		28		1	3	4			2	1	1	
7	11:00-11:30	4th	28	55		2	2	4		1	1		
8	11:30-12:00		27			2	2			1	1		
9	12:00-12:30	5th	29	64		3	3	6	1			2	
10	12:30-13:00		35			3	3		1	1	1		
11	14:00-14:30	6th	34	65	1	0	1	2					1
12	14:30-15:00		31			1	1			1			
13	15:00-15:30	7th	34	69		3	3	4		2		1	
14	15:30-16:00		35			1	1				1		
15	16:00-16:30	8th	29	61		3	3	4		2	1		
16	16:30-17:00		32		1	0	1					1	
17	17:00-17:30	9th	31	63		3	3	5	1	2			
18	17:30-18:00		32		1	1	2					1	1
19	18:00-18:30	10th	32	59		1	1	5		1			
20	18:30-19:00		27		1	3	4		1		1	1	1

CHECKED QUANTITY 613
DEFECTS QUANTITY 40

DEFECT RATE 6.5%

Annexure-LI

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	33	65		1	1	3				1	
2	08:30 -9:00		32			2	2			2			
3	09:00-9:30	2nd	32	65	1	0	1	2					1
4	09:30-10:00		33			1	1		1				
5	10:00-10:30	3rd	28	60	1	0	1	3					1
6	10:30:11:00		32			2	2		1	1			
7	11:00-11:30	4th	32	64		2	2	6		1	1		
8	11:30-12:00		32			4	4		1	2	1		
9	12:00-12:30	5th	31	65	1	3	4	6		3			1
10	12:30-13:00		34			2	2		1	1			
11	14:00-14:30	6th	32	62		1	1	2				1	
12	14:30-15:00		30			1	1		1				
13	15:00-15:30	7th	29	64		1	1	4	1				
14	15:30-16:00		35			3	3		2	1			
15	16:00-16:30	8th	27	60		1	1	4				1	
16	16:30-17:00		33			3	3		1	2			
17	17:00-17:30	9th	28	63	1	1	2	6	1				1
18	17:30-18:00		35			1	3		4	1	2	1	
19	18:00-18:30	10th	33	61		2	2	5		2			
20	18:30-19:00		28			1	2		3	1	1	1	

CHECKED QUANTITY 629
DEFECTS QUANTITY 41

DEFECT RATE 6.5%

Annexure-LII

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	27	55		1	1	2				1	
2	08:30 -9:00		28			1	1		1				
3	09:00-9:30	2nd	35	65		1	1	2				1	
4	09:30-10:00		30			1	1		1				
5	10:00-10:30	3rd	31	63		2	2	3	1		1		
6	10:30:11:00		32		1	0	1					1	
7	11:00-11:30	4th	31	62		2	2	5	1		1		
8	11:30-12:00		31			3	3			2	1		
9	12:00-12:30	5th	33	64		2	2	7		1		1	
10	12:30-13:00		31			5	5		1	1	1	2	
11	14:00-14:30	6th	31	59	1	0	1	2					1
12	14:30-15:00		28			1	1			1			
13	15:00-15:30	7th	27	60		1	1	2			1		
14	15:30-16:00		33			1	1				1		
15	16:00-16:30	8th	35	67		2	2	5	1		1		
16	16:30-17:00		32			3	3				2	1	
17	17:00-17:30	9th	29	64		3	3	5			2	1	
18	17:30-18:00		35		1	1	2			1			1
19	18:00-18:30	10th	30	62		2	2	6	1	1			
20	18:30-19:00		32			4	4			1	2	1	

CHECKED QUANTITY 621
DEFECTS QUANTITY 39

DEFECT RATE 6.3%

Annexure-LIII

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	34	63		1	1	2		1			
2	08:30 -9:00		29		1	0	1					1	
3	09:00-9:30	2nd	32	61		1	1	3			1		
4	09:30-10:00		29			2	2		1		1		
5	10:00-10:30	3rd	33	60		3	3	5		2		1	
6	10:30:11:00		27		1	1	2			1		1	
7	11:00-11:30	4th	31	61	1	1	2	5			1		1
8	11:30-12:00		30			3	3			2		1	
9	12:00-12:30	5th	32	63	1	2	3	7	1	1			1
10	12:30-13:00		31			4	4		1		3		
11	14:00-14:30	6th	32	66		1	1	2				1	
12	14:30-15:00		34			1	1		1				
13	15:00-15:30	7th	35	70		1	1	2		1			
14	15:30-16:00		35			1	1				1		
15	16:00-16:30	8th	27	62	1	1	2	3			1		1
16	16:30-17:00		35			1	1		1				
17	17:00-17:30	9th	34	64	1	2	3	6	1		1		1
18	17:30-18:00		30			3	3			1		2	
19	18:00-18:30	10th	33	67		2	2	6	1	1			
20	18:30-19:00		34		2	2	4		1		1		2

CHECKED QUANTITY 637
DEFECTS QUANTITY 41

DEFECT RATE 6.4%

Annexure-LIV

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	34	68		1	1	2			1		
2	08:30 -9:00		34			1	1		1				
3	09:00-9:30	2nd	28	55	1	2	3	4			2		1
4	09:30-10:00		27			1	1		1				
5	10:00-10:30	3rd	35	69	1	3	4	6		2		1	1
6	10:30:11:00		34			1	1		2				
7	11:00-11:30	4th	35	66		2	2	4		1	1		
8	11:30-12:00		31			2	2		2				
9	12:00-12:30	5th	30	62		3	3	5		1	1	1	
10	12:30-13:00		32			1	1		2	1			
11	14:00-14:30	6th	27	57		1	1	2			1		
12	14:30-15:00		30			1	0		1				
13	15:00-15:30	7th	33	65		2	2	3		1		1	
14	15:30-16:00		32			1	1		1				1
15	16:00-16:30	8th	33	63	1	0	1	4					1
16	16:30-17:00		30				3		3	1		1	1
17	17:00-17:30	9th	28	55		2	2	5	1		1		
18	17:30-18:00		27			1	2		3		1		1
19	18:00-18:30	10th	32	66		3	3	6		1		2	
20	18:30-19:00		34			1	2		3	1		1	

CHECKED QUANTITY 626
DEFECTS QUANTITY 41

DEFECT RATE 6.5%

Annexure-LV

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00 -8:30	1st	32	62		1	1	2		1			
2	08:30 -9:00		30		1	0	1					1	
3	09:00-9:30	2nd	34	67	1	1	2	3	1				1
4	09:30-10:00		33			1	1				1		
5	10:00-10:30	3rd	29	64	1	3	4	5			3		1
6	10:30:11:00		35			1	1		1				
7	11:00-11:30	4th	31	58		1	1	5			1		
8	11:30-12:00		27		1	3	4			1	1	1	1
9	12:00-12:30	5th	27	62		1	1	4	1				
10	12:30-13:00		35		1	2	3			1		1	1
11	14:00-14:30	6th	33	62		1	1	2			1		
12	14:30-15:00		29		1	0	1						1
13	15:00-15:30	7th	28	58		1	1	3			1		
14	15:30-16:00		30		1	1	2			1			1
15	16:00-16:30	8th	32	59		3	3	4	1			2	
16	16:30-17:00		27			1	1				1		
17	17:00-17:30	9th	27	55		2	2	5	1	1			
18	17:30-18:00		28		1	2	3				1	1	1
19	18:00-18:30	10th	35	69		3	3	5	1			2	
20	18:30-19:00		34			2	2		1		1		

CHECKED QUANTITY 616
DEFECTS QUANTITY 38

DEFECT RATE 6.2%

Annexure-LVI

DEFECTS IN THE FINISHING DEPARTMENT (SPOT) (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	SPOT DEFECTS				
									OIL MARK	DIRTY MARK	CHALK MARK	INK MARK	OTHERS
1	08:00-8:30	1st	31	66		1	1	2		1			
2	08:30-9:00		35			1	1			1			
3	09:00-9:30	2nd	32	61		1	1	2		1			
4	09:30-10:00		29			1	1		1				
5	10:00-10:30	3rd	30	61	1	0	1	5					1
6	10:30-11:00		31			1	3		4	2	1	1	
7	11:00-11:30	4th	28	62		2	2	4		1	1		
8	11:30-12:00		34			2	2		1	1			
9	12:00-12:30	5th	31	66		3	3	5	1				2
10	12:30-13:00		35			2	2			1	1		
11	14:00-14:30	6th	34	66		1	1	2					1
12	14:30-15:00		32			1	0		1				1
13	15:00-15:30	7th	33	60		1	1	3	1				
14	15:30-16:00		27			1	1		2		1		1
15	16:00-16:30	8th	33	66		3	3	4		1	2		
16	16:30-17:00		33			1	1					1	
17	17:00-17:30	9th	35	66		1	1	6					1
18	17:30-18:00		31			1	4		5		1	3	
19	18:00-18:30	10th	32	67		2	2	7		1			1
20	18:30-19:00		35				3		3	1		1	1

CHECKED QUANTITY 641
DEFECTS QUANTITY 40

DEFECT RATE 6.2%

Annexure-LVII

DEFECTS IN THE FABRIC DEPARTMENT (DAY-1)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	111	227		7	7	11		1	1	1		2			1	1		
2	08:30 -9:00		116		1	3	4		1					1	1					
3	09:00-9:30	2nd	119	229		5	5	10	1		1		1				1		1	
4	09:30-10:00		110			5	5			1		1			1	1			1	
5	10:00-10:30	3rd	112	222		5	5	9	1	1			1				1		1	
6	10:30-11:00		110			4	4					2			1					1
7	11:00-11:30	4th	118	228		3	3	7	1							1		1		
8	11:30-12:00		110			4	4			1			1			1				1
9	12:00-12:30	5th	118	237		1	1	4					1							
10	12:30-13:00		119			3	3			1			1						1	
11	14:00-14:30	6th	118	234		6	6	10		3		1		1				1		
12	14:30-15:00		116			4	4			1			1	1		1				
13	15:00-15:30	7th	115	232		5	5	11			1				2			1	1	
14	15:30-16:00		117			6	6		1	2		1				1			1	1
15	16:00-16:30	8th	111	223	1	4	5	7	1	1				1	1					1
16	16:30-17:00		112		1	1	2					1								
17	17:00-17:30	9th	113	226		3	3	5	1				1				1			
18	17:30-18:00		113		1	1	2				1									
19	18:00-18:30	10th	118	236		3	3	4				1					1	1		
20	18:30-19:00		118			1	1													

CHECKED QUANTITY 2294 DEFECT RATE 3.4%
 DEFECTS QUANTITY 78

Annexure-LVIII

DEFECTS IN THE FABRIC DEPARTMENT (DAY-2)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	119	238		6	6	12		2	1		1	1			1			
2	08:30 -9:00		119		2	4	6		1		1	1			1					
3	09:00-9:30	2nd	114	224		4	4	10			1				2				1	
4	09:30-10:00		110			6	6		1	2			1			1			1	
5	10:00-10:30	3rd	111	227		4	4	9	1			1			1	1				
6	10:30-11:00		116			5	5			2			1			1				1
7	11:00-11:30	4th	120	234		2	2	6						1			1			
8	11:30-12:00		114			4	4		1			1			1				1	
9	12:00-12:30	5th	118	231		1	1	4				1								
10	12:30-13:00		113			3	3		1			1						1		
11	14:00-14:30	6th	116	235	1	6	7	11	1	1			1			1	1		1	1
12	14:30-15:00		119			4	4				2				1				1	
13	15:00-15:30	7th	114	234		5	5	9	1		1				1	1	1	1		
14	15:30-16:00		120			4	4			1			1			1				1
15	16:00-16:30	8th	116	233	1	2	3	5	1				1							1
16	16:30-17:00		117			2	2				1									1
17	17:00-17:30	9th	116	231		3	3	5				1				1			1	
18	17:30-18:00		115			2	2			1			1							
19	18:00-18:30	10th	119	229		2	2	4			1			1						
20	18:30-19:00		110		1	1	2				1									

CHECKED QUANTITY 2316
DEFECTS QUANTITY 75

DEFECT RATE 3.2%

Annexure-LIX

DEFECTS IN THE FABRIC DEPARTMENT (DAY-3)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	111	230		6	6	10	1	1					2		1			
2	08:30 -9:00		119			4	4				2	1							1	
3	09:00-9:30	2nd	119	231		4	4	8		2		1			1					
4	09:30-10:00		112		1	3	4		1							2				
5	10:00-10:30	3rd	115	231		3	3	6				1	1						1	
6	10:30-11:00		116			3	3			1						2				
7	11:00-11:30	4th	118	232		3	3	5						1			2			
8	11:30-12:00		114		1	1	2				1									
9	12:00-12:30	5th	114	228		2	2	4				1			1					
10	12:30-13:00		114		1	1	2		1											
11	14:00-14:30	6th	116	233	2	5	7	10	1			1			1		1		1	2
12	14:30-15:00		117			3	3			2									1	
13	15:00-15:30	7th	117	228		6	6	8	1	1	1			1			1		1	
14	15:30-16:00		111			2	2									2				
15	16:00-16:30	8th	114	228	1	2	3	6							2					1
16	16:30-17:00		114			3	3			1	1								1	
17	17:00-17:30	9th	111	225		3	3	5	1					2						
18	17:30-18:00		114			2	2						1					1		
19	18:00-18:30	10th	120	238	1	1	2	4		1										1
20	18:30-19:00		118			2	2			1			1			1				

CHECKED QUANTITY 2304
DEFECTS QUANTITY 66

DEFECT RATE 2.9%

Annexure-LX

DEFECTS IN THE FABRIC DEPARTMENT (DAY-4)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	112	224		6	6	10			1	1		1	1	1		1		
2	08:30 -9:00		112			4	4		1			1			1	1				
3	09:00-9:30	2nd	110	224	1	3	4	9	1									1	1	1
4	09:30-10:00		114			5	5			1	1		1				1	1		
5	10:00-10:30	3rd	114	226		3	3	8			1		1						1	
6	10:30-11:00		112			1	4		5	1	1				1				1	
7	11:00-11:30	4th	114	233	1	4	5	6	1	1	1								1	1
8	11:30-12:00		119			1	1									1				
9	12:00-12:30	5th	117	231		2	2	4	1				1							
10	12:30-13:00		114			2	2			1										
11	14:00-14:30	6th	120	238	1	4	5	12		1		1				1		1		1
12	14:30-15:00		118			1	6		7	1		1			1	1	1	1		
13	15:00-15:30	7th	111	229	1	2	3	9		1								1		1
14	15:30-16:00		118			1	5		6	1		1			1	1	1			
15	16:00-16:30	8th	110	228		3	3	8				1	1					1		
16	16:30-17:00		118			1	4		5	1		1			1					1
17	17:00-17:30	9th	117	235	1	4	5	7		1	1		1			1				1
18	17:30-18:00		118				2		2								1			
19	18:00-18:30	10th	119	239	1	3	4	6	1					1			1			1
20	18:30-19:00		120				2		2	1									1	

CHECKED QUANTITY 2307 DEFECT RATE 3.4%
 DEFECTS QUANTITY 79

Annexure-LXI

DEFECTS IN THE FABRIC DEPARTMENT (DAY-5)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	115	231		6	6	11	1			1	1		1	1		1		
2	08:30 -9:00		116			5	5				1			1	1	1		1		
3	09:00-9:30	2nd	115	235		4	4	9			1			1		1			1	
4	09:30-10:00		120		1	4	5		1				1			1	1			1
5	10:00-10:30	3rd	116	228		3	3	7				1				1			1	
6	10:30-11:00		112		1	3	4					1			1		1			1
7	11:00-11:30	4th	118	229		4	4	5				1	1		1				1	
8	11:30-12:00		111			1	1		1											
9	12:00-12:30	5th	113	225	1	2	3	5				1				1				1
10	12:30-13:00		112			2	2		1			1								
11	14:00-14:30	6th	112	232	1	6	7	11		1		1	1			1	1	1		1
12	14:30-15:00		120			4	4		1		1		1							
13	15:00-15:30	7th	114	229	1	6	7	10	1			3	1	1						1
14	15:30-16:00		115			3	3		1						1		1			
15	16:00-16:30	8th	116	236	1	3	4	8	1		1	1								1
16	16:30-17:00		120			4	4					1					1		1	1
17	17:00-17:30	9th	118	234		4	4	7	1		1			1	1					
18	17:30-18:00		116			3	3		1										1	1
19	18:00-18:30	10th	112	228		1	1	7											1	
20	18:30-19:00		116		1	5	6		1					1		1	1		1	1

CHECKED QUANTITY 2307
DEFECTS QUANTITY 80

DEFECT RATE 3.5%

Annexure-LXII

DEFECTS IN THE FABRIC DEPARTMENT (DAY-6)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	119	235	1	6	7	12		1				1	1		1	1	1	1
2	08:30 -9:00		116		1	4	5		1						1			1	1	1
3	09:00-9:30	2nd	114	227		4	4	10						1	1		1	1		
4	09:30-10:00		113		1	5	6					1		1	2				1	1
5	10:00-10:30	3rd	119	233	1	6	7	9	1	1	1			1		1	1			1
6	10:30-11:00		114			2	2									1		1		
7	11:00-11:30	4th	113	227		3	3	7	1							1	1			
8	11:30-12:00		114		1	3	4				1			1						
9	12:00-12:30	5th	110	225		3	3	5			1		1						1	
10	12:30-13:00		115		1	1	2						1							
11	14:00-14:30	6th	111	226	1	4	5	10							1	1	1		1	1
12	14:30-15:00		115		1	4	5		1	1						1			1	1
13	15:00-15:30	7th	115	230		7	7	11	1		1	1		1	1		1		1	
14	15:30-16:00		115			4	4		1					1		1			1	
15	16:00-16:30	8th	120	239		6	6	9		1	1		1		1		1	1		
16	16:30-17:00		119		1	2	3		1			1								
17	17:00-17:30	9th	114	234	1	4	5	9	1		1					1	1		1	
18	17:30-18:00		120			4	4		1	1	1					1				
19	18:00-18:30	10th	119	229		1	1	5		1										
20	18:30-19:00		110			4	4		1					1			1		1	

CHECKED QUANTITY 2305
DEFECTS QUANTITY 87

DEFECT RATE 3.8%

Annexure-LXIII

DEFECTS IN THE FABRIC DEPARTMENT (DAY-7)

INTERVAL	WORKING HOUR	HOURS	CHECKED QUANTITY (1/2 Hr)	TOTAL CHECKED (1 Hr)	OTHERS DEFECT	MAJOR DEFECT	TOTAL DEFECT (1/2 Hr)	TOTAL DEFECT (1 Hr)	FABRIC DEFECTS											
									THICK YARN	MISSING YARN	SLUB	DYING FAULT	OIL STAIN	SHADING	STAIN	KNOT	FOREIGN YARN	HOLE	RUNNING SHADE	OTHERS
1	08:00 -8:30	1st	119	238	1	7	8	14	1		1	1			1			1	1	
2	08:30 -9:00		119							1	1	1		1						
3	09:00-9:30	2nd	110	229		5	5	11			1	1			1	1			1	
4	09:30-10:00		119		1		6		6		1	1			1	1		1	1	
5	10:00-10:30	3rd	116	231		3	3	9	1		1		1							
6	10:30:11:00		115			1	6		6		1	1	1	1		1	1			
7	11:00-11:30	4th	116	233	1	3	4	7			1				1			1		1
8	11:30-12:00		117			3	3						1	1	1					
9	12:00-12:30	5th	119	229		3	3	4			1				1	1				
10	12:30-13:00		110			1	1										1			
11	14:00-14:30	6th	113	223		6	6	10			1			1	1	1	1		1	
12	14:30-15:00		110			4	4			1					1		1	1		1
13	15:00-15:30	7th	110	230		5	5	11		1	1	1			1			1		
14	15:30-16:00		120		1	5	6			1	1	1	1		1					1
15	16:00-16:30	8th	116	230	1	4	5	9		1					1	1		1	1	
16	16:30-17:00		114			4	4			1		1							1	1
17	17:00-17:30	9th	111	230	1	3	4	7	1			1			1					1
18	17:30-18:00		119			3	3			1	1			1	3	1				
19	18:00-18:30	10th	111	225		2	2	5		1					1					
20	18:30-19:00		114			3	3			1				1						1

CHECKED QUANTITY 2298
DEFECTS QUANTITY 87

DEFECT RATE 3.8%