ANALYSIS OF DISTRIBUTION SYSTEM OF DESCO

(DHAKA ELECTRIC SUPPLY COMPANY LIMITED)

An Internship report submitted in partial fulfillment of the requirements for the Award of Degree of
Bachelor of Science in Electrical and Electronic Engineering

Submitted By

Md. Maruf Hossen

Id: 153-33-2883

Supervised by

DR. M. SHAMSUL ALAM

Professor

Department Of EEE

Daffodil International University Dhaka, Bangladesh

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

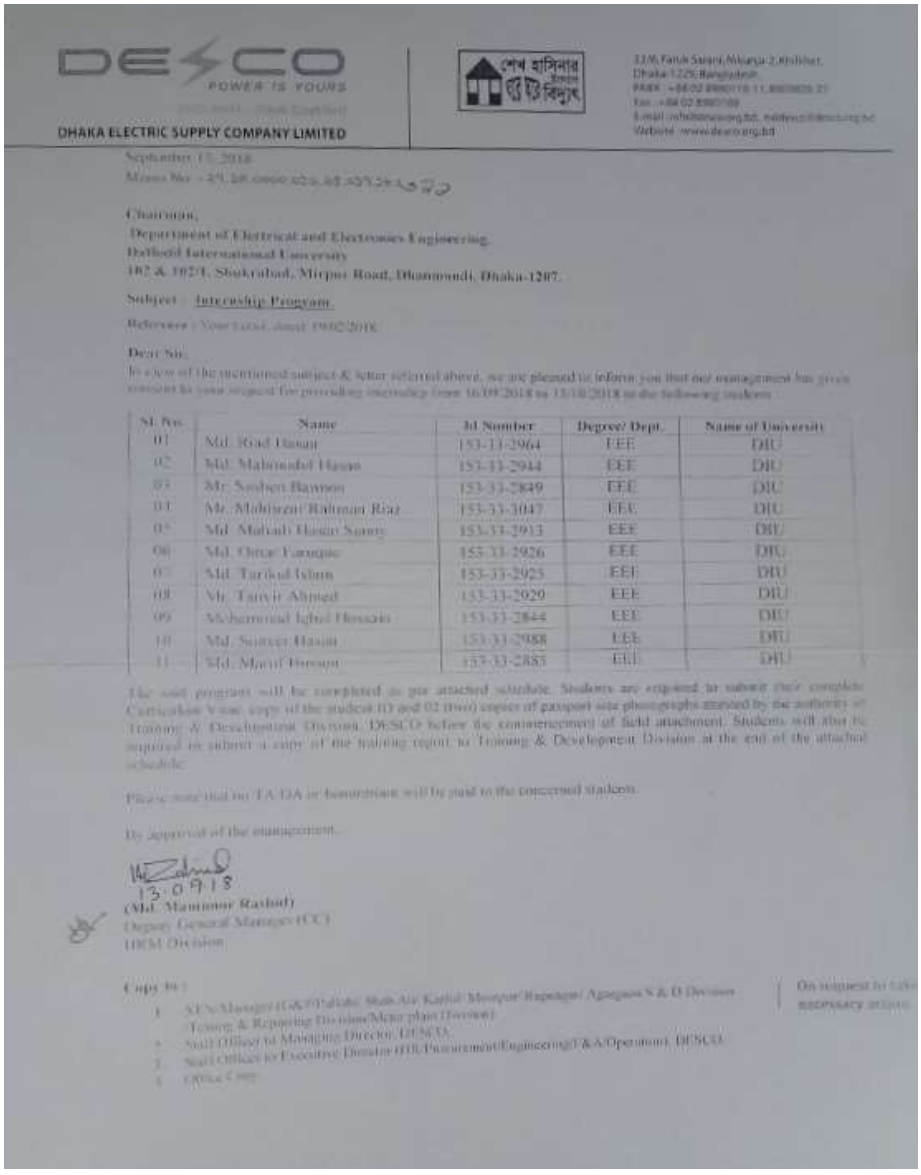
FACULTY OF ENGINEERING

DAFFODIL INTERNATIONAL UNIVERSITY

DECEMBER 2018

APPROVAL

This internship/field work at "**ANALYSIS OF DISTRIBUTION SYSTEM OF DESCO**" submitted by **Md. Maruf Hossen**, ID No: 153-33-2883 to the Department of Electrical and Electronics Engineering, Daffodil International University, has been accepted as satisfactory in partial fulfillment of the requirements for the degree of **Bachelor of Science in Electrical and Electronics Engineering** and approved as style and contents. The presentation has been held on December 2018.



DESCO
POWER IS YOURS

DHAKA ELECTRIC SUPPLY COMPANY LIMITED

Chairman,
Department of Electrical and Electronics Engineering
Daffodil International University
102 & 102/1, Shukrabad, Mirpur Road, Dhanmondi, Dhaka-1207.

Subject : Internship Program.

Dear Sir,

Sl. No.	Name	Id Number	Degree/ Dept.	Name of University
01	Md. Riad Hasan	153-33-2964	EEE	DIU
02	Md. Mahmudul Hasan	153-33-2944	EEE	DIU
03	Mr. Souben Barman	153-33-2849	EEE	DIU
04	Mr. Mahjarin Rahman Riaz	153-33-3047	EEE	DIU
05	Md. Mahadi Hasan Sunny	153-33-2913	EEE	DIU
06	Md. Omar Faruque	153-33-2926	EEE	DIU
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09	Mohammad Iqbal Hossain	153-33-2844	EEE	DIU
10	Md. Sumon Hasan	153-33-2988	EEE	DIU
11	Md. Maruf Hossen	153-33-2883	EEE	DIU

13.09.18
(Md. Mamunur Rashid)

CERTIFICATION

DESCO
POWER IS YOURS
ISO 9001 : 2008 Certified
ঢাকা ইলেকট্রিক সাপ্লাই কোম্পানি লিমিটেড

২২/বি, ফারুক সরণি, নিকুঞ্জ-২
খিলক্ষেত, ঢাকা-১২২৯, বাংলাদেশ।
ফোন ঃ +৮৮ ০২ ৮৯০০১১০-১১, ৮৯০০৮২০-২৩
ফ্যাক্স ঃ +৮৮ ০২ ৮৯০০১০০
ই-মেইল : info@desco.org.bd, mddesco@desco.org.bd
ওয়েবসাইট : www.desco.org.bd

শেখ হাসিনার উদ্যোগ ঘরে ঘরে বিদ্যুৎ

Certificate no-502/2018

To Whom It May Concern

This is to certify that ***Md. Maruf Hossen,*** *S/O- Md. Lutfor Rahman, Student ID: 153-33-2883, Department of Electrical & Electronic Engineering, Daffodil International University, Dhaka, Bangladesh, has successfully completed* ***Internship Program*** *in Dhaka Electric Supply Company Limited (DESCO) from September 16, 2018 to October 15, 2018.*

Manager (Current Charge)
Training & Development.

Deputy General Manager (Current Charge)
HRM Division.

Issue date: October 25, 2018

The internship/field work entitled **"ANALYSIS OF DISTRIBUTION SYSTEM OF DESCO"** submitted by **Name: Md. Maruf Hossen,** ID: 153-33-2883, Session: Fall 2015 has been accepted as satisfactory in partial fulfillment of the requirements for the degree of **Bachelor of Science in Electrical and Electronic Engineering** on 16 August 2018.

BOARD OF EXAMINERS

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Dr. Engr. … Chairman
Professor
Department of EEE, DIU

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Dr. Engr. --- Internal Member

Professor
Department of EEE, DIU

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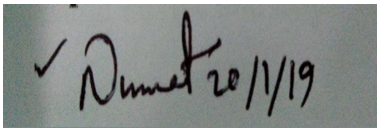
Dr. Engr. --- Internal Member

Professor
Department of EEE, DIU

DECLARATION

I hereby declare that this report has been done by me under the supervision of **Dr. M. Shamsul Alam,** Professor, Department of EEE, Faculty of Engineering, Daffodil International University. I also declare that neither this report nor any part of this report has been submitted elsewhere for award of any degree.

Supervised by



Dr. M. Shamsul Alam
Professor
Department of EEE
Faculty of Engineering
Daffodil International University

Submitted by

Md. Maruf Hossen
Id: 153-33-2883
Department of EEE
Daffodil International University

ACKNOWLEDGEMENT

First of all, we give thanks to Allah or God. Then we would like to take this opportunity to express our appreciation and gratitude to our field study supervisor **Professor Dr. M. Shamsul Alam, Dean, Faculty of Engineering of Department of EEE** for being dedicated in supporting, motivating and guiding us through this field study. This field study can't be done without his useful advice and helps. Also thank you very much for giving us opportunity to choose this field study.

We also want to convey our thankfulness to **Professor Dr. Md. Shahid Ullah, Professor and Head of the Department of EEE** for his help, support and constant encouragement.

Apart from that, we would like to thank our entire friends for sharing knowledge; information and helping us in making this field study a success. Also thanks for lending us some tools and equipment.

To our beloved family, we want to give them our deepest love and gratitude for being very supportive and also for their inspiration and encouragement during our studies in this University.

ABSTRACT

Dhaka Electric Supply Company Limited commonly known as DESCO. We have done one month field work on DESCO, that's a great opportunity for us. DESCO distributes electricity at the Northern parts of Dhaka city and Tongi town of Gazipur District. This company is under three zone and sixteen sales and distribution division .we work on Agargaon & Rupnagar sales & Distributions under Mirpur zone .The report provides an overview of the Training and Development Division, DESCO H/Q, Network operation Division, Rupnagar & Agargoan S & D Division, Testing & Repairing Division and Meter Plant Division of DESCO. Working with the Organization as an intern for a small period of one month, the main aspect was to acquire information and data to evaluate the culture, Working environment, and other practices of the company. I have also observed their administrative activities of control room; complain room operation, IT (Information & Technology) and one point operation which will surely help me to visualize the effectiveness in my practical life.

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Chapter 1

Introduction

1.1 Introduction:

Dhaka Electric Supply Company Limited, commonly known as DESCO, is a Public Limited Company which distributes electricity at the Northern parts of Dhaka City and Tongi Town of Gazipur District. [2]

The company was created on November 1996 under the Companies Act 1994 as a Public Limited Company. The company is now under the Power Division of the Bangladesh Ministry of Power, Energy and Mineral Resources and serving a total number of 604,304 consumers as of 31 December 2013. In 1972, the first Government of Bangladesh, in an effort to speed up the investment in the sector issued an ordinance, creating the Bangladesh Power Development Board (BPDB). BPDB, from 1972 to 1995, has increased the generation capacity in the country from 475 MW to 2818 MW, and the length of its 230 kV and 132 kV transmission networks to 419 km and 2469 km respectively. Without precedent for December 1982, the eastern and western parts of the nation were electrically associated through the appointing of twofold circuit 230 kV transmission line over the Jamuna River empowered at 132 kV among Ishurdi and Tongi called the principal East-West Inter-connector. In this way 230 kV and 132 kV between ties connected the dispersion systems of every significant town and urban communities had experienced. In any case, from 1986 onwards, the business execution of the BPDB crumbled and in 1991, BPDB's normal gross frameworks misfortune was around 42 percent and records receivables in abundance of 6.5 long periods of charging. This execution was not discovered sensible to the contracts concurred by the Government and BPDB with the Asian Development Bank and the World Bank.

So in 1990, another ordinance was issued, which was subsequently enacted as an Act transferring the 132 kV, 33 kV transmissions and distribution system in the Greater Dhaka Area including the Metropolitan City to a newly created Government agency called the Dhaka Electric Supply

Authority (DESA). This was done to lessen the administrative burden on BPDB's management by relieving it of the burden of managing about 50 percent of the energy distribution of the entire country.

With the economy performing very well during 1992-95, the demand for electricity grew substantially. Faced with a grim possibility of serious electricity shortages during the next few years and to enable the sector to be financially self-sustaining and also attract private capital, the cabinet approved in principle, the inter-ministerial committee report named "Power Sector Reforms in Bangladesh (PSRB)"

In the meanwhile, the performance of BPDB and DESA have slowly but steadily improved, although they are by no means near international levels of performance. In view of this Improvement and the restructuring effort announced by the Government, the development partners have agreed to resume funding to the sector based on the principle of "Reforms Funding Linkages" i.e. every project funded by these partners would have components addressing the reforms decided upon by the Government. The Project has been linked to redefining the franchise area of DESA and handing over of distribution networks outside Metropolitan Dhaka City to Rural Electrification Board (REB), and formation of a corporatized Dhaka Electric Supply Company (DESCO) which will initially take over part of the distribution network of DESA and ultimately take over all its assets. The formation of this company is seen as an essential step towards “Corporatization and Commercialization" of the sector and to reduce the excessive inefficiently in the distribution network in the capital [3][4]

In 2006 we were recorded with the Dhaka and Chittagong Stock Exchanges. Legislature of Peoples' Republic of Bangladesh holds 67.63% of the offers spoken to by Bangladesh Power Development Board and canceled DESA. 20.02% offers hold by the Institutional financial specialists and rest of the 11.789% offers possessed by different investors.

More than 1500 people directly employed and around 1700 people indirectly employed (outsourced) for the services of Commercial Operation Support, Line and Equipment Maintenance, Substation Maintenance, Office Security and Office up keeping. It’s the person who brings the progress of the company every day [5][6]

1.2 Objectives:

- To make a thorough analysis on how Renewable Energy Systems (Photovoltaic Solar System) and Technologies can help us to meet our electricity demand.
- Know about distribution and sales of electric Energy.
- To know about the equipment of substation & their Rating.
- Know about practical operations of the so many Electrical activities.
- To know about all parameter & how to use them.

1.3 Methodology of the study:

During the internship period of one month, the main target was to acquire data and information to evaluate the working environment, evaluate the culture and other similar practices of DESCO. I was assigned in various departments of the Company including the head office, Network operation, commercial operation, system operation and etc. This provided me with the opportunity to gather experience and knowledge by working in different departments along with helping me to engage with many different people.

Information about the Working procedure of DESCO has been collected by face to face conversation with officer's and staff, direct conversation with the participants. Initial lectures from the senior officer's practical work experience in different desks, study of different files and reports of DESCO and the website of DESCO.

1.4 Organization of the report

The report is mainly divided into five chapters. Chapter 1 gives an introduction, chapter 2 is the division of DESCO, chapter 3 literature reviews, chapter 4 is the analysis of the data and chapter 5 is the conclusion and recommendation of the report.

Chapter 2

Divisions of DESCO

Introduction:

Here we introduce about all division of DESCO. They have five divisions as Administration Division, Network Operation Division, Finance & Account Division, Transformer Testing & Repairing Division and Meter plan Division. We visited all of their Division and observe all of their activities.

2.1. Administration Division:

On 16 August 2018, I went to the administration office of DESCO for internship. I am also thankful to **Mr. Mamunor Rashid**, Deputy General Manager (CC) and HRM Division from the core of my heart for his kind support, guidance, constructive, supervision, instruction and advice and for motivating me to do my internship smoothly at **DESCO** Limited.
Administration division is the backbone of an institution. There is a general manager for the total administration division (see Fig 2.1). This division is subdivided into HRM and Administration division in which two DGMs are in the post of head of those sub-divisions. HRM department works for the sector of recruitment, training and development. Administration department works for the sectors of logistics and general services, security and estate and legal affairs. [3]

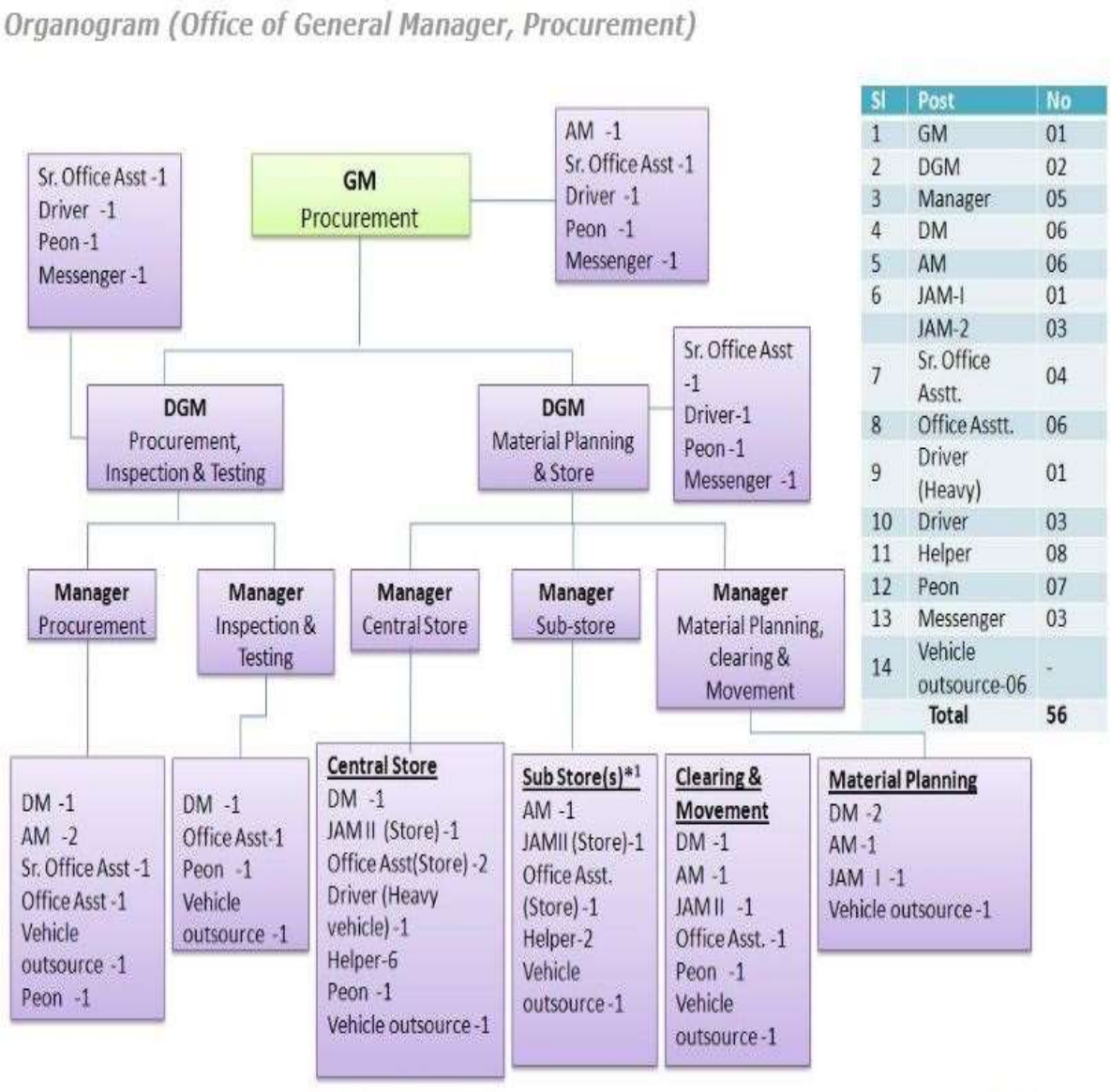


Figure 2.1: Administration Division of DESCO

2.2. Network Operation Division

This is the most important division for any power utilities as all other performance mostly depend on it. It is a network for delivering electricity from suppliers to consumer. The continuity of supply depends to a considerable extent upon successful operation of substation. DESCO has number of twenty six 33/11 kV substations and it has a separate division named Substation &

Network to maintain these substations. The division has a Superintending Engineer under the Chief Engineer, Network Operation. This division is divided into two departments:

1. Medium Voltage Substation Maintenance & Commissioning (MVSSMC).
2. Grid & Protection (G&P).

The Grid substation voltage level is 132/33/11 KV. A Grid substation or Substation transforms voltages from high to low or low to high by using power transformer. Most of the substation in DESCO are Gas Insulated Substation (GIS) but some Air Insulated Substation (AIS) are also used During my internship I have visited so many substation such as Baunia substation, uttara grid substation. Gulshan Substation, Bashundhara Grid substation (Figure 2.3), Nikunjo Substation There are 2 power transformers which are convert the voltage 33 KV to 11 KV and distribute to the consumers.

DESCO's Central Control, located at Gulshan, is under the Substation & Network division for optimal scheduling and dispatch of electricity among the 6 divisional control centers. To enable this, the control center is equipped with a reliable communication network. Network Operation Division of DESCO is (shown in Table: 2.1).

Name of zone	**Name of control center**
Mirpur	Mirpur Control (Kafrul)
	Agargaon Control
Uttara	Uttara Control
	Tongi Control
Gulshan	Gulshan Control
	Baridhara Control

Table: 2.1: Network Operation Division

There are 2 types of substation used here in DSECO .They are

1. Air Insulated Substation (AIS)
2. Gas Insulated Substation (GIS)

AIS substations are popular wherever space restrictions and environmental issue. AIS substations (see Fig: 2.2) from Siemens are renowned for highest reliability, economical operation, and low maintenance requirements. [5]

Figure: 2.2: AIS substation (Bashundhara 132/33KV)

SINGLE LINE DIAGRAM BASHUNDHARA 132/33KV SUB-STATION

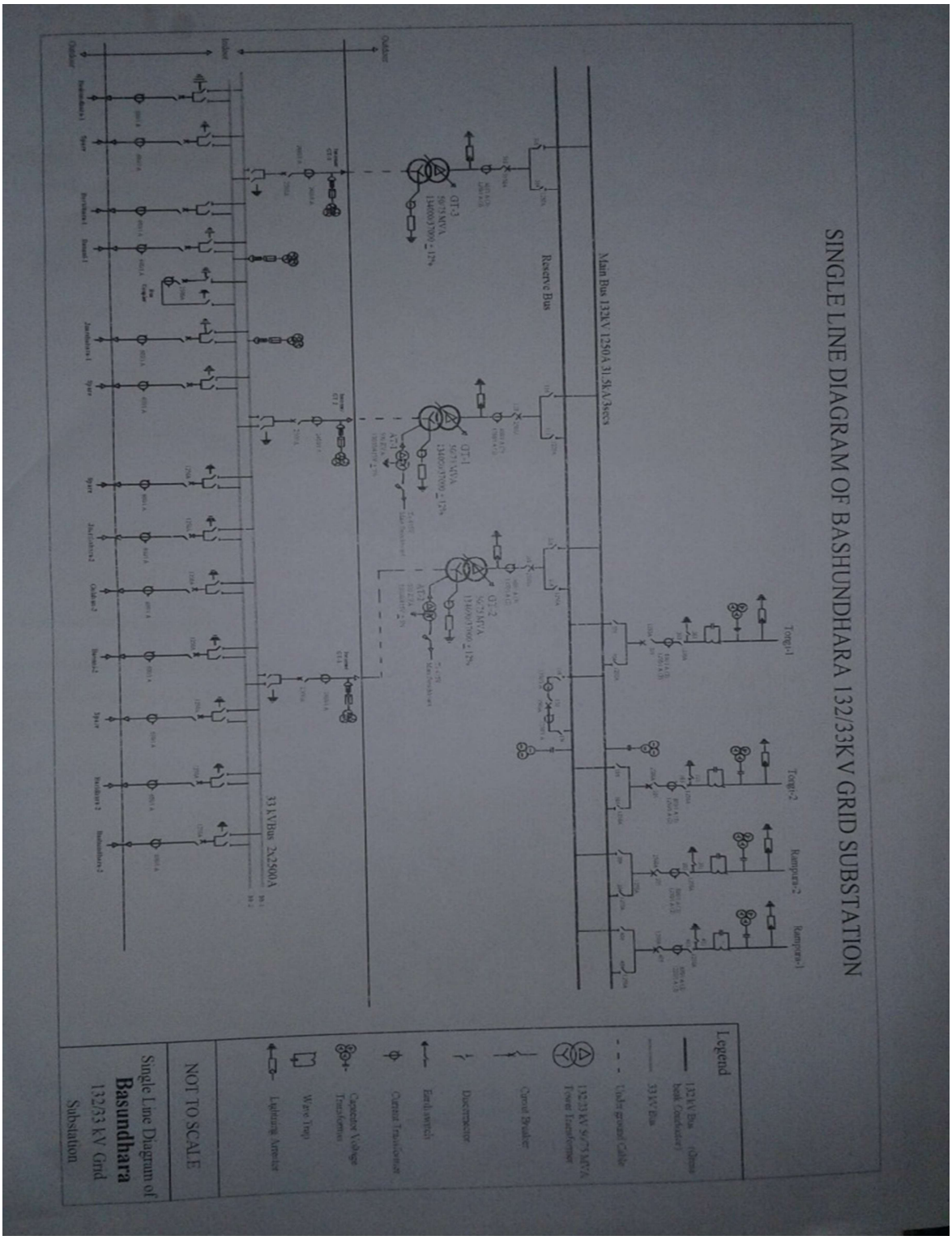


Figure 2.3: Single Line Diagram Bashundhara 132/33kv Sub-Station

2.3. Finance & Account Division

These divisions work for the financial and accounting matters such as collection ratio and C.I ratio. The primary objective of maintaining the financial potency of the company is achieved by constant efforts to uphold a vigorous billing/collection ratio. Considering sales at Tk. 33,277.565 million and collection at Tk. 33484.861 million, the billing collection ratio works out at 100.62% and the Collection/Import (C.I.) ratio to 93.33% this financial year. The financial strength of the company is achieved by continuous efforts to maintain a healthy billing and collection ratio. Billing process follow some procedure for collecting bill from consumers. In order to collect bill DESCO divide its area in different billing zone. As I work under Agargaon S&D so billing zone of mirpur are: Agargaon, Kafrul, Mirpur, Pallabi, Rupnagar, Shah Ali. These billing zone are created so that collection of meter reading to make bill and collect them become easy. There are three types of bill payment system and consumer can pay their bill using one of them using there bank service, mobile phone and app or through internet. Table: 2.2**.** Show the Finance & Account Division. [4]

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
Energy Import (MKWh)	3,726,31	4,064,19	4,320,98	4,795,12	4,980,05
Energy Sales (MKWh)	3,411,91	3,722,23	3,959,46	4,410,203	4,619,28
Energy Import (MTK)	20,393,48	22,898,05	24,344,81	28,956,565	30,523,25
Energy Sales (MTK)	21,951,48	24,431,03	27,358,15	31,478,24	33,277,57
System Loss (%)	8.44	8.41	8.37	8.03	7.24
Collection Ratio (%)	100.93	100.53	101.48	101.34	100.62
C.I. Ratio (%)	92.40	92.07	92.99	93.21	93.33
Consumer Nos.	573,356	641,933	705,234	760,844	8,18,156
Receivable/Sales (%)	14.49	13.60	12.79	12.79	12.72

Table: 2.2: Commercial Statement

2.4. Transformer Testing & Repairing Division

DESCO provide the following transformer testing:

- Type Test:
  - Transformer Ratio Test
  - Transformer Winding resistance Measured.
  - Transformer Vector Group Test.
  - Tap Changer Test.
  - No Load Loss & Current Measured.
  - Transformer Dielectric test.
- Routine Test:
  - Transformer HT & LT Sides phase to Phase coil winding Resistance Test.
  - Oil Pressure Test.
  - Insulation Resistance Measured.
  - Dielectric test.
  - Transformer Ratio Test.
- Special Test
  - Short Circuit Test.
  - Noise Level Measured.
  - 3 phase transformer Zero sequence Impedance test.
  - Buchholz Relay, Temperature indicator, pressure relief device test.

Figure: 2.4: Transformer Testing & Repairing Lab (DESCO).

Steps of Repair Works of a 3-Phase Damage Transformer:

Carrying of Transformer from central store to Transformer workshop

1. Transformer Register Entry
2. Oil Discharge
3. Opening the Transformer Tank
4. Removing the Core & Coil from the Transformer Tank
5. Damage Identification
6. Inventory Report
7. Estimation of Repairing Materials

8. Dismantling the Parts
9. Cleaning the Transformer Tank
10. Cleaning & Paper Tapping of LT Coil
11. Rewinding of LT Coil
12. Rewinding of HT Coil
13. Cleaning the Core
14. Reassembling Core & Coil, welding etc.
15. Putting the core & Coil from Heating Chamber
16. Core & Coil Heating
17. Taking out the Core & Coil from Heating Chamber
18. Painting the Transformer Tank (Inside & Outside)
19. Transformer Oil Centrifuging & filling
20. Tank-up(Including change of Spindle, Bushing, Gasket & Rubber Bush. Horn Gap, Silica Gel Breather, Silica Gel, Oil level indicator Glass & Gasket, Tank Cover Gasket, Nut-bolts)
21. Final Check
22. Testing Of Transformer
23. Test Report
24. Writing the Name of the repairer company & the date of repair(Test Date)
25. Carrying of Transformer from Transformer Workshop to central store

2.5. Meter plan Division

As meter is the ‘cash box’ of the Company, DESCO has left no stone unturned to change defective meters, sealing meters and inspecting meters regularly. During the financial year, 15,737 nos. of defective meters were changed and 41,418 nos. of meters were inspected. As meter is the ‘cash box’ of the Company, DESCO has left no stone unturned to change defective meters, sealing meters and inspecting meters regularly. During the financial year, 15,737 nos. of defective meters were changed and 41,418 nos. of meters were inspected. Before handover the meter they need to tested properly as they are the main calculator of energy that provide, LT meter are tested at different sales and distribution division (See Fig: 2.5) Meter Testing

But HT meter only tested at this meter testing division under supervision of one assistant engineer. Meter is tested using a software name meter testing software. There are different parameters that are tested here. LTCT meter should give 8000 impulse/KWh and HTCT meter 16000 impulse / KWh to ensure its good quality. Apart from this there is several test result also need to analyses like

1. Creep test / No load test
2. Starting Current
3. Dial test

Figure: 2.5: Meter Testing

2.6. Summary of the chapter

In this chapter we discuss about division of DESCO. We obseve each and every operation on their.Some times we have done so many operation , that was really incurables. Here we shows all divisions there are Administration Division, Network Operation Division, Finance & Account Division, Transformer Testing & Repairing Division and Meter plan Division. . We also know their up coming planning and design of substations. So many thing we study in book but in field we learn much more and being expert so many on so many operation.

Chapter 3

LITERATURE REVIEWS

Introduction:

Here we introduce about the operations of DESCO. There are two types one is commercial operation and another is system operation. Commercial operation has some parts as Disconnection and Reconnection, Metering, one point service center and Billing/collection. Also system operation has some parts as new connection, control room activity, Sub-station operation and maintenance, Line maintenance etc. Discuss all those topics in below.

3.1 Commercial Operation of S&D

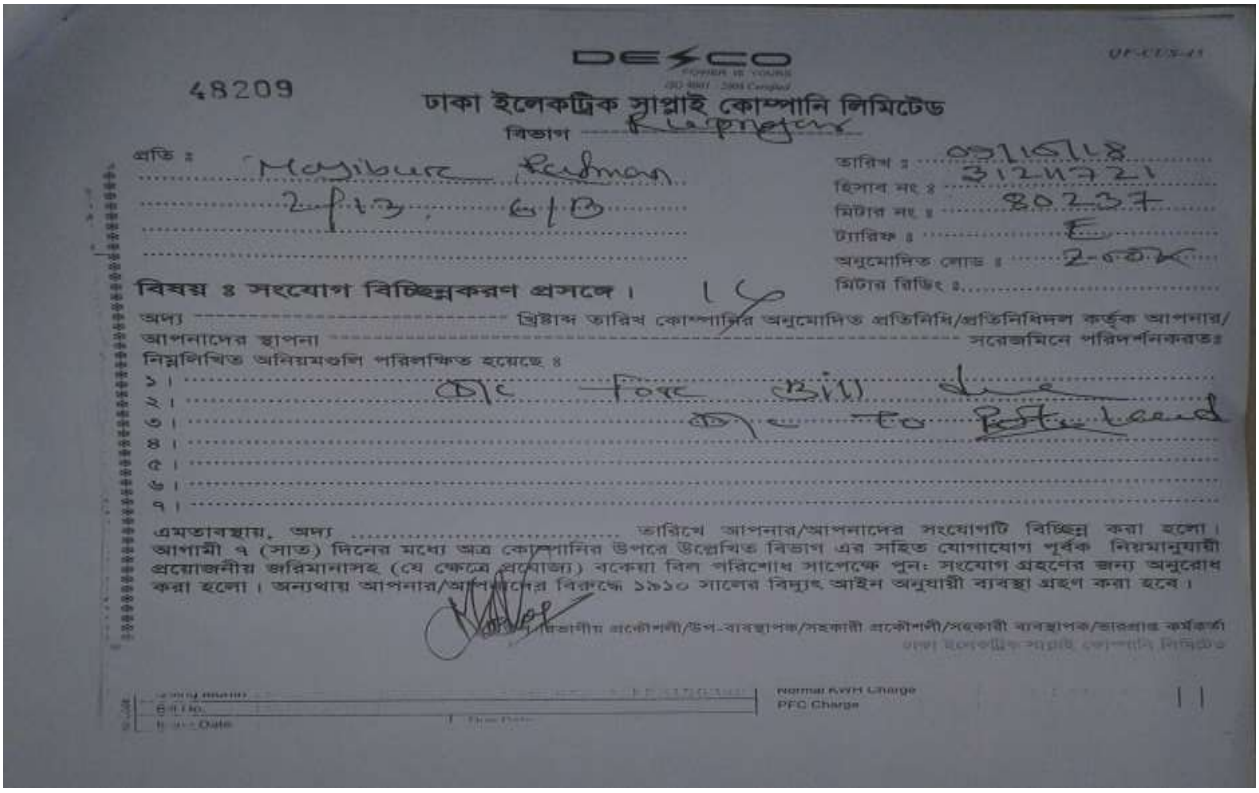
3.1.1 Customer Care-one point service center

DESCO is a distribution company and its main work is to deal with customer. Customer satisfaction is the main responsibility of it. One point service center in each of sales and distribution division plays this vital role. A huge number of employees are appointed to serve customer according to their demand. DESCO continuously strives to offer 'service excellence' to its valued consumers. Consumer come to one point service center to solve their problem changing existing meter, to pay their dew bill, reprint their bill etc.

3.1.2 Disconnection & Reconnection:

When the consumers don't pay their bill within the given time period by DESCO they get disconnected. This consider to be the effective tool to recover due payment. By applying this tool a huge number of illegal consumers are identified and a total number of 30,000 to 35,000 consumers has disconnected per year. After paying their due payment the authority permit to

reconnect their line which is termed as reconnection. Fig: 3.1. Show the Disconnection & Reconnection documents.



DESCO

48209

ঢাকা ইলেকট্রিক সাপ্লাই কোম্পানি লিমিটেড

বিভাগ ---

প্রতি : Mozibur Rahman

2nd 13 6/B

তারিখ : 09/10/18

হিসাব নং : 3124721

মিটার নং : 80237

ট্যারিফ : E

অনুমোদিত লোড : 2.0 KW

মিটার রিডিং :

বিষয় : সংযোগ বিচ্ছিন্নকরণ প্রসঙ্গে।

অদ্য ---------- খ্রিষ্টাব্দ তারিখ কোম্পানির অনুমোদিত প্রতিনিধি/প্রতিনিধিদল কর্তৃক আপনার/আপনাদের স্থাপনা ---------- সরেজমিনে পরিদর্শনকরতঃ নিম্নলিখিত অনিয়মগুলি পরিলক্ষিত হয়েছে ঃ

১। DC Fore bill

২।

৩। Bill Issued

৪।

৫।

৬।

৭।

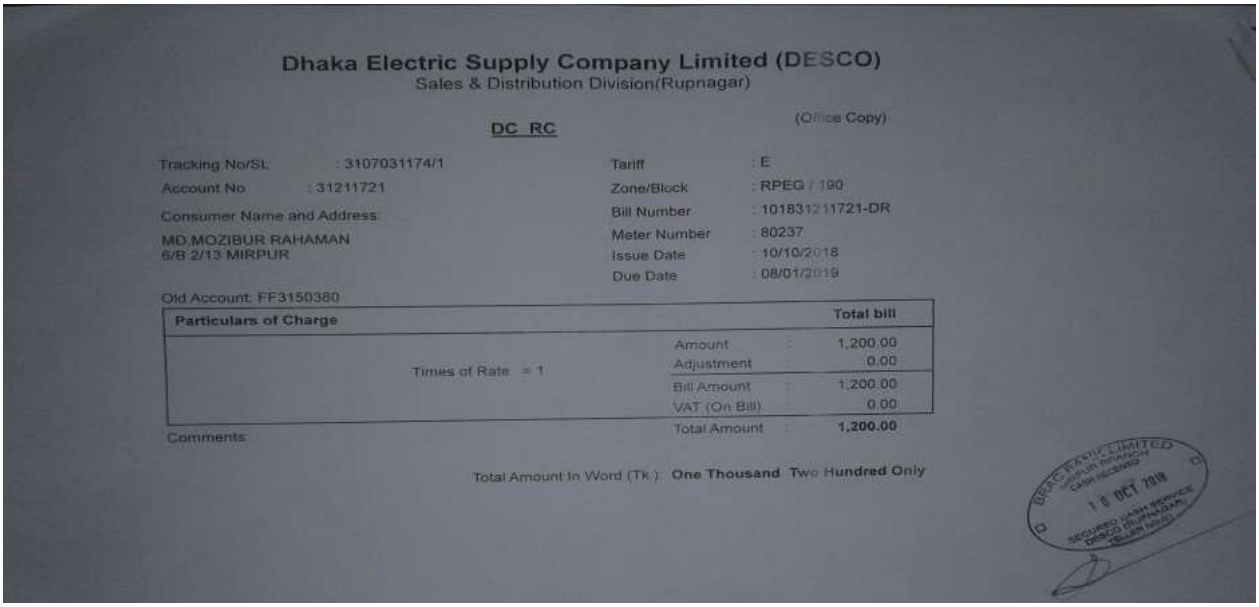
এমতাবস্থায়, অদ্য ---------- তারিখে আপনার/আপনাদের সংযোগটি বিচ্ছিন্ন করা হলো। আগামী ৭ (সাত) দিনের মধ্যে অত্র কোম্পানির উপরে উল্লেখিত বিভাগ এর সহিত যোগাযোগ পূর্বক নিয়মানুযায়ী প্রয়োজনীয় জরিমানাসহ (যে ক্ষেত্রে প্রযোজ্য) বকেয়া বিল পরিশোধ সাপেক্ষে পুনঃ সংযোগ গ্রহণের জন্য অনুরোধ করা হলো। অন্যথায় আপনার/আপনাদের বিরুদ্ধে ১৯১০ সালের বিদ্যুৎ আইন অনুযায়ী ব্যবস্থা গ্রহণ করা হবে।

---------- বিভাগীয় প্রকৌশলী/উপ-ব্যবস্থাপক/সহকারী প্রকৌশলী/সহকারী ব্যবস্থাপক/ভারপ্রাপ্ত কর্মকর্তা

ঢাকা ইলেকট্রিক সাপ্লাই কোম্পানি লিমিটেড

Normal kWh Charge

PFC Charge



Dhaka Electric Supply Company Limited (DESCO)

Sales & Distribution Division(Rupnagar)

DC RC (Office Copy)

Tracking No/SL : 3107031174/1

Account No : 31211721

Consumer Name and Address

MD.MOZIBUR RAHAMAN
6/B 2/13 MIRPUR

Tariff : E

Zone/Block : RPEG / 190

Bill Number : 101831211721-DR

Meter Number : 80237

Issue Date : 10/10/2018

Due Date : 08/01/2019

Old Account: FF3150380

Particulars of Charge			Total bill
Times of Rate = 1	Amount	:	1,200.00
	Adjustment	:	0.00
	Bill Amount	:	1,200.00
	VAT (On Bill)	:	0.00
	Total Amount	:	1,200.00

Comments:

Total Amount In Word (Tk.) : **One Thousand Two Hundred Only**

DESCO DHAKA LIMITED 18 OCT 2018 SECURED CASH SERVICE DESCO RUPNAGAR

Figure: 3.1: Disconnection & Reconnection documents.

3.1.3 Billing and Collection:

The financial strength of the company is achieved by continuous efforts to maintain a healthy billing and collection ratio. Billing process follow some procedure for collecting bill from consumers. In order to collect bill DESCO divide its area in different billing zone. As I work under the Agargaon S&D so billing zone of mirpur are: Agargaon, Kafrul, Mirpur, Pallabi, Rupnagar, Shah Ali. These billing zone are created so that collection of meter reading to make bill and collect them become easy. There are three types of bill payment system and consumer can pay their bill using one of them using bank service, mobile phone and app or through internet. Fig: 3.2. Show the Collection Statement for the month of August-2018.

Dhaka Electric Supply Company Limited (DESCO)

Sales and Distribution Division Rupnagar

Collection Statement fro the month of August-2018

Print date :10-Oct-2018 10:43:40AM

Division	No of Bills	Vat	Net Amount	Total Amount
Auto	24999	4,666,607.00	97343764.00	102,010,371.00
Rupnagar	22432	5,188,849.64	104395886.13	109,584,735.77
Shahali	4388	531,969.00	10701828.00	11,233,797.00
Pallabi	1531	1,056,806.00	21190896.00	22,247,702.00
Monipur	650	67,323.00	1355300.00	1,422,623.00
Kafrul	270	86,378.00	1744334.00	1,830,712.00
Joar Sahara	73	5,777.00	116247.00	122,024.00
Baridhara	61	4,708.00	351509.00	356,217.00
Gulshan	34	128,478.00	2572457.00	2,700,935.00
Agargaon	28	2,203.00	44912.00	47,115.00
Tongi East	14	924.00	18444.00	19,368.00
Uttara West	10	659.00	13082.00	13,741.00
Badda	5	394.00	21183.00	21,577.00
Uttara East	3	447.00	8920.00	9,367.00
Dakshinkhan	1	1,205.00	25365.00	26,570.00
UttarKhan	1	48.00	953.00	1,001.00
Total	54500	11,742,775.64	239,905,080.13	251,647,855.77

Figure: 3.2: Collection Statement for the month of August-2018

3.2 System Operation of S&D:

3.2.1 New Connection:

For new connection, when the load is below 50k W, the applicant applies via online application procedure along with their photo, signature, wiring certificate and other necessary documents. DESCO's sub-assistant engineer then visits the site and submits a report to assistant engineer via e-governance software. Assistant engineer then checks the report and verifies if all if ok and then sends the report to sub-divisional engineer who again verifies it sends to executive engineer. If the load is within 30k W and if all is ok then a demand note is send to the applicant and if all is not ok then a letter s send to the applicant via one point and after applicants reply. Executive engineer approves the connection. But if the load is above 30k W then the request goes to the superintending engineer who approves and then sends to executive engineer and one point. A demand note is then issued, money is deposited by the applicant in bank and a list of necessary documents, as like the number of meters, is submitted in one point. Meter room then checks and verifies and with the help of e-governance CMO. A copy of CMO is given the contractor who returns it along with other concerned documents after the work is done. It is then updated in IT and the file is stored.

If the load is up to 100KW, then superintending engineer can approve it, if the load is up to 500KW then chief engineer (operation) can approve it. If the load is above 500KW the director (operation) approves it and if it is 5MW or above then it goes to the managing director for approval.

3.2.2 Load Sanction & Retention:

For load above 250KW, applicant applies to execute engineer of S&D Division and field is visited by engineers who then report to assistant/ sub-divisional executive engineers. It is verified and then send to superintending engineer of that zone and then to the superintending engineer of P&D. Then a related meter letter is received and a file is send to executive engineer.

3.2.3 Load Management:

Load management manly applies to how to manage load if there is a shortage. The most common way is to shut down feeders in different areas at different time so that this shortage is met.

3.2.4 Control Room Activity:

The main work of control room is to note down any problem, report it to the authority so that effective action is taken in a very short time which results in minimum problem for the consumers. The control room maintains two registers Mainly one for load shedding, when the demand is higher than production and the second one for shutting down of current in any part and this occurs if there is any problem in that particular area.

- **Control Panel:**

In order to ensure instantaneous power supply dc battery charger should equipment like circuit breaker & Relay, switch on/off can be controlled from this control panel. It can be controlled by manual & automation. Fig. 3.3. Show the Control Panel.

Figure: 3.3: Control Panel

- **Circuit Breaker (Vacuum CB):**

A circuit breaker is an automatically operated electrical switch designed to protect an el circuit from damage caused by excess current from an over load or short circuit. The basic function is to interrupt current flow after a fault is detected. Unlike a fuse, which operates once and then must be replaced, a circuit breaker can be reset (either manually or automatically) to resume normal operation. Fig.3.4. Show the Circuit Breaker.

Figure: 3.4: Circuit Breaker (Vacuum CB)

3.2.5 Instrument transformer:

There are 2 types of instrument transformer CT and PT (See Fig: 3.5) used in Substation. CT used along with measuring or protective devices, in which the secondary current is proportional to the primary current (under normal conditions of operation) and differs from it by an angle that is approximately zero .

And Potential transformer or voltage transformer gets used in electrical power system for stepping down the system voltage to a safe value which can be fed to low ratings meters and

relays. Primary of this transformer is connected across the phase and ground. Just like the transformer used for stepping down purpose, potential transformer has lower turns winding at its secondary.

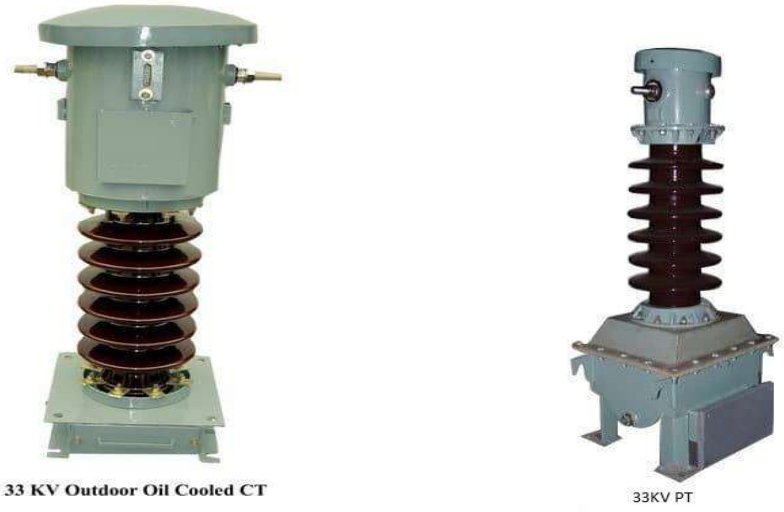


Figure: 3.5: Instrument transformer

3.2.6 Battery & Battery Charger:

Battery is core element for a substation. It is a one kind of storage device. It is required for backup de supply to ensure protection. Battery supplies 110 V the voltages to the control and protection circuit where ac fails. Fig. 3.6 Show the Battery& Battery Charger**.**

Figure: 3.6: Battery& Battery Charger

3.2.7 Bus bar:

In electric power distribution, a bus bar (also bus bar) is a metallic strip or bar, typically housed inside switchgear, panel boards, and bus way enclosures for local high current power distribution. They are also used to connect high voltage equipment at electrical switchyards, and low voltage equipment in battery banks. They are generally insulated, and have sufficient stiffness to be supported in air by insulated pillars. These features allow sufficient cooling of the conductors, and the ability to tap in at various points without creating a new joint. Fig.3.7. Show the Bus bar. [6]

Figure: 3.7: Bus bar

3.2.8.1 High Tension Current Transformer Meter (HTCT):

This kind of meter is connected before transformer. So the loss of transformer can't hamper its performance. In HT meter PT and CT both are present and there remain a certain ratio for PT, this ratio is count as 11000/110 and CT ratio are 15/5, 30/5, 60/5, 150/5 depending on load. Fig.3.8. Show the HTCT meter.

Figure: 3.8: HTCT meter

There are several components of any HTCT meter such as

1. KV meter: to select the 11kv voltage this meter switch is used.

2. Selector Switch: In any HTCT meter the phase to phase voltage remain 11 KV and the phase to neutral voltage $11/\sqrt{3}$.this switch select if they remain proper value or not.

3. Thermoster: it mainly used to control heater

4. Heater: If this meter is affected by moist then CT and PT get damaged in order to constraint moisture the temperature is set to 35/40 degree Celsius. Heater is used for this purpose.

5. Test Terminal Block: It mainly work as switch. There is no direct connection with meter because of this.

6. CT & PT:

They are the main component of energy meter. CT is used to handle current ratio and PT voltage ratio. There are 2 type of point exist in CT measuring point and metering point. In order to

measure CT ratio two methods are applied one is Clumpon meter method and anther is CT analyzer. The criteria to be checked are

- Interference
- Eddy current loss
- Ratio
- Accuracy test
- Deviation
- Number of ratio
- Primary current
- Inductance
- Knee point Current

3.2.8.2 Low Tension Current Transformer (LTCT):

LTCT meter connected after transformer. So it has some advantages over HTCT. As transformer connected before it and it passes through the transformer loss need to count for this kind of meter. But it need small space and easy maintenance so consumer always prefer to use it, but load is cross 50 kWh then he have to take HTCT meter. Fig. 3.9. Show the LTCT meter.

Figure: 3.9: LTCT meter

3.2.9 Power Factor Monitoring & Up grading:

Power factor is best if its value is 1. But it is not feasible in real world. So DESCO tries to keep the power factor above or equal to 0.95. IF power factor lowers down then they use capacitor banks in line and this helps to keep the power factor in limit.

3.2.10 Substation Operation & Maintenance:

Electrical Substation maintenance is a key component of any substation owner's electrical maintenance program it has been well documented that failures in key procedures such as racking mechanisms, meters, relays and busses are among the most common source of unplanned outages. Electrical transmission, distribution and switching substations generally have switching, protection and control equipment and one or more transformers.

Substation Repair and Maintenance:

Maintenance and repair are vital for any substation to provide reliable, low-cost power to their customers. Spectrum is here to assist in the maintenance and repair of any substation equipment. Complete substation maintenance and repair services include: Fig. 3.10 Show the single line diagram 11kv Feeder.

1. Overall electric power substation inspection thorough cleaning of each device.
2. Mechanical and electrical testing of all substation apparatus
3. Design modifications required for equipment replacement
4. Electrical wiring replacement
5. Testing of any substation relay for proper operation
6. Verification of protective device coordination
7. Full testing and commissioning
8. Complete test reporting [7]

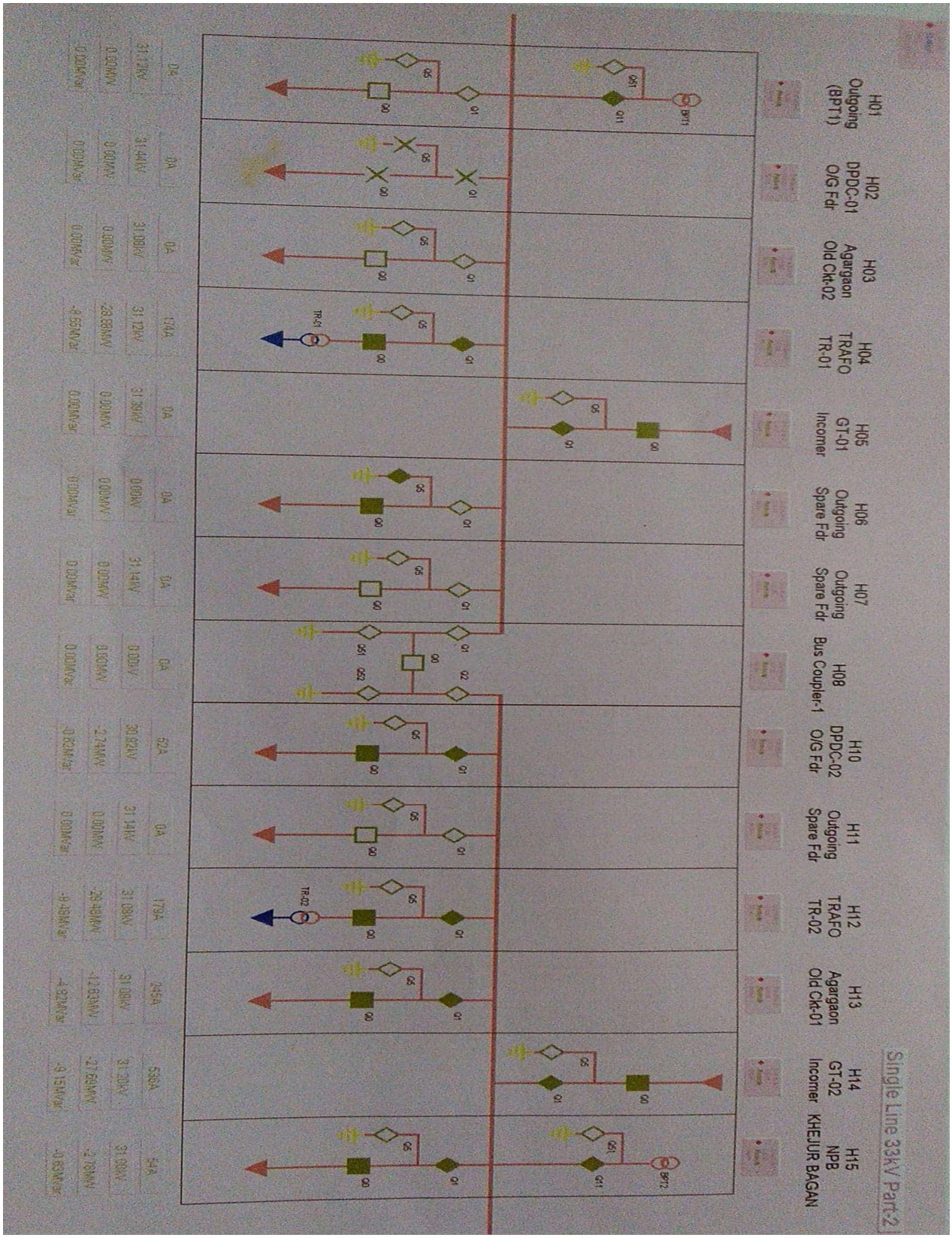


Figure: 3.10: single line diagram 11kv Feeder

3.3 Line Maintenance:

3.3.1 Transformer Maintenance:

Mainly these are distribution transformers which are used at transmission line to transform 11 KV voltages to 440/ 230 V for normal small size building. This type of transformer also needs regular maintenance (See Fig.3.11)**.** Besides regular maintenance thundering and over voltage can sometimes damage its different parts and it need to replace and thus a maintenance need to perform.

Figure: 3.11: Transformer Maintenance

3.3.2 Overhead Line Maintenance:

Overhead lines that are the main media for transfer power so the line should be maintained properly. This maintenance mainly focused on loose connection, any kind of insulation problem, jumping of overhead line etc. Fig.3.12. Show the Overhead Line Maintenance.

Figure: 3.12: Overhead Line Maintenance

3.4 Transformer workshop activities:

3.4.1 Transformer

Transformer is a static device which transforms electrical energy from one circuit to another without any direct electrical connection and with the help of mutual induction between two windings. It transforms power from one circuit to another without changing its frequency but may be in different voltage level. There are different types of transformer used in power sector but in substation power transformer is used to transfer voltage from primary to secondary

The term power transformer is used to provide a number of AC supplies of several voltages and ate values of current from the public electricity supply. Also used denote to the transformer with 500 KVA rating or greater. It transforms power from 132 KV to 33 KV and 33 KV to 11 KV (See Fig3.13) while 132 KV is supplied by PGCB.

Besides power transformer another types of transformer named distribution transformer also used in power sector. Distribution Transformer is electrical isolation transformer which convert high-voltage electricity to lower voltage levels acceptable for use in homes and business.

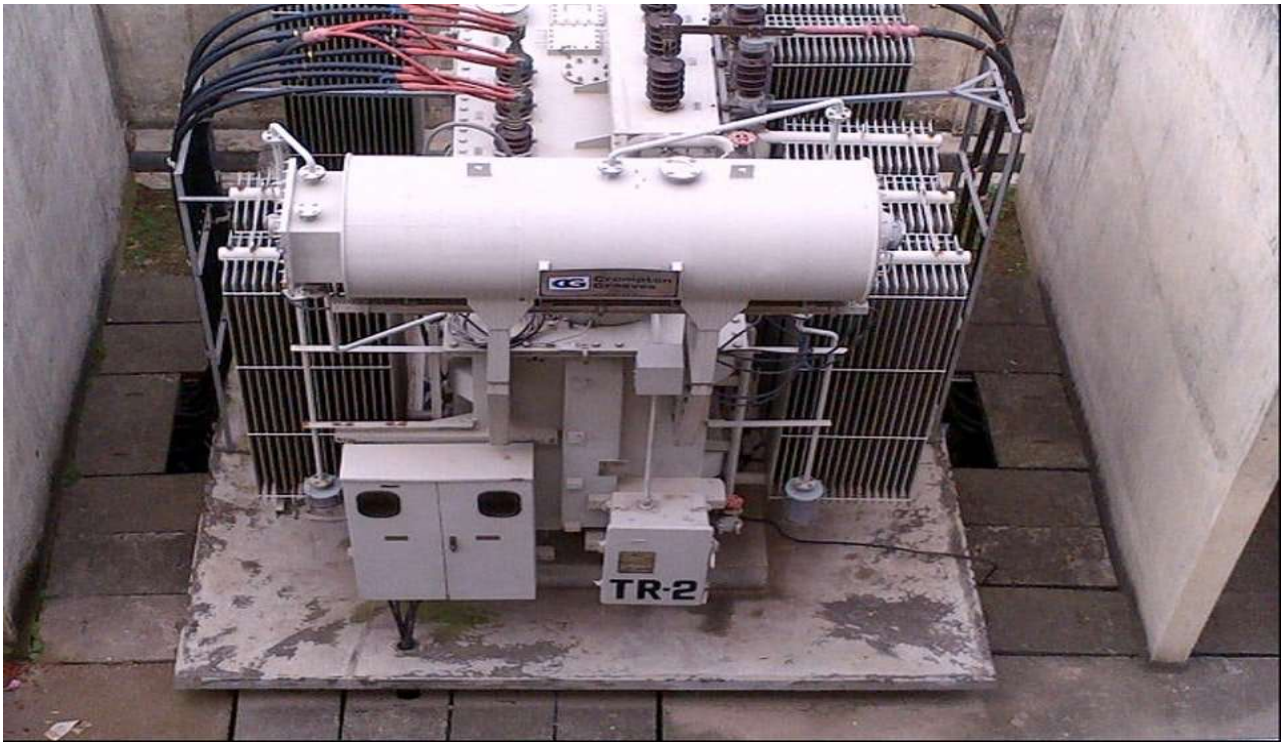


Figure 3.13: 33/11 KV Transformer

3.4.2 Power transformer components:

- LT and HT Bushing.
- Transformer winding.
- Conservator tank.
- Breather.
- Cooling Fan.
- Transformer oil.
- Tap changer.
- Insulator.
- Radiator.
- Buchholz relay
- Transformer core.

➢ LT and HT Bushing:

Bushing is a tubular insulator used to insulate a conductor that passes, for example, from the inside of a transformer or circuit breaker to the outside, enabling the internal components to be connected to external supply lines. Fig.3.14 Show the LT and HT Bushing. [8]

Figure: 3.14: LT and HT Bushing

➢ Transformer winding:

Windings are the conductors wrapped in various forms like helical, disc, cylindrical, crossover which generates emf that is carried by the core to other windings for different level of voltages. Fig.3.15 Show the Transformer winding**.** [9]

Figure: 3.15: Transformer winding

➢ Conservator tank:

This is a cylindrical tank mounted on supporting structure on the reef the transformer main tank. The main function of conservator tank of transformer (See Fig. 3.16) is to provide adequate. When transformer is loaded and when ambient temperature rises, the volume of oil inside transformer increases Conservator tank of transformer provides adequate space to this expanded transformer oil. It also acts as a reservoir for transformer insulating oil Space for expansion of oil inside the transformer. [10]

Figure: 3.16: Conservator tank.

➢ Breather:

Most of the power generation and distribution company use silica gel breathers fitted to the conservator of oil filled transformer. The purpose of these silica gel breathers (See Fig 3.17) is to absorb the moisture in the air sucked in by the transformer during the breathing process. [11]

Figure: 3.17: Breather

- **Radiator:**

When an electrical transformers is loaded then the current start flowing through its windings. Due to this flowing of electric current, heat is produced in the windings, this heat ultimately rises the temperature of transformer oil. It just increases the surface area for dissipating heat of the oil. Fig. 3.18. Show the Radiator.

Figure: 3.18: Radiator

- **Buchholz relay:**

Buchholz relay is used for the protection of transformers from the faults occurring inside the transformer. Short circuit faults such as inter turn faults, incipient winding faults, and core faults may occur due to the impulse breakdown of the insulating oil or simply the transformer oil. Buchholz relay (See Fig. 3.19) will sense such faults and closes the alarm circuit.

Figure: 3.19: Buchholz relay

3.5 Transformer Testing & Repairing:

DESCO provide the following transformer testing:

- ✓ Double Power Factor Testing
- ✓ Transformer Turns Ratio
- ✓ Insulation Resistance
- ✓ Winding Resistance
- ✓ Oil Analysis
- ✓ Dissolved Gas Analysis
- ✓ Furan Analysis.[12]

Figure: 3.20: Transformer Testing & Repairing Lab (DESCO)

3.5.1 Steps of Repair Works of a 3-Phase Damage Transformer:

Carrying of Transformer from central store to Transformer workshop

- Transformer Register Entry
- Oil Discharge
- Opening the Transformer Tank
- Removing the Core & Coil from the Transformer Tank
- Damage Identification
- Inventory Report
- Estimation of Repairing Materials
- Dismantling the Parts
- Cleaning the Transformer Tank
- Cleaning & Paper Tapping of LT Coil

- Rewinding of LT Coil
- Rewinding of HT Coil
- Cleaning the Core
- Reassembling Core & Coil welding etc.
- Putting the core & Coil from Heating Chamber
- Core & Coil Heating
- Taking out the Core & Coil from Heating Chamber
- Painting the Transformer Tank (Inside & Outside)
- Transformer Oil Centrifuging & filling
- Tank-up(Including change of Spindle, Bushing, Gasket & Rubber Bush. Horn Gap, Silica Gel Breather, Silica Gel, Oil level indicator Glass & Gasket, Tank Cover Gasket, Nut-bolts)
- Final Check
- Testing Of Transformer
- Test Report
- Writing the Name of the repairer company & the date of repair(Test Date)
- Carrying of Transformer from Transformer Workshop to central store.

3.6 Summary of the chapter

In this chapter we discuss about the operations of DESCO. There are two parts one is commercial operation and another is system operation. There also discuss about Commercial operation. It has some parts as Disconnection and Reconnection, Metering, one point service center and Billing/collection. Also discuss about system operation has some parts as new connection, control room activity, Sub-station operation and maintenance, Line maintenance etc.

Chapter 4

Analysis of the data

Introduction:

Here we analysis the data of DESCO. There discuss about some topics are Maximum Demand (Month Wise Maximum Demand), Load Growth, System & Commercial Activities, New development projects etc. Also analysis how many energy purchase and sells in DESCO. And show that about system loss.

4.1 Maximum Demand (DESCO):

4.1.1Month Wise Maximum Demand (DESCO):

Month	Maximum Demand(MW)	Month	Maximum Demand(MW)
Jun-18	900	Aug-17	841
May-18	898	Jul-17	911
Apr-18	839	Jun-17	906
Mar-18	808	May-17	934
Feb-18	691	Apr-17	803
Jan-18	524	Feb-17	734
Dec-17	557	Mar-17	734
Nov-17	722	Feb-17	612
Oct-17	870	Jan-17	518

Table: 4.1: Month Wise Maximum Demand (DESCO)

4.1.2 Maximum Demand Graph:

Figure: 4.1 Maximum Demand Graph

The graph shows monthly maximum demand of DESCO from jul-17 to jun-18. According to graph July 2017 was the maximum demand 911 MW (See Fig. 4.1). But it decreased a bit in August 2017 and come down to 841 MW. Then September 2017 it was 884 MW. Maximum demand decreased again in the next month and it fall down to 870 MW. But in November and December there was noticeable decreased of the maximum demand it was 722 MW and 557 MW. In January 2018 it decreased a bit again to 524 MW Because January was coldest month. In the next month maximum demand rose abruptly and it became 691 MW and same way in March it went up to 808 MW. In April and May the maximum demand increased slightly. In June 2018 it increased a bit to 900 MW. [13]

4.2 Load Growth:

Load Demand in the distribution areas are gradually increasing. Growth trends are shown below:

Figure: 4.2 Load Growths

A survey gives a crystal clear picture of how rapidly the load growth is rising. The graph shows the fiscal yearly amount of load growth of DESCO (See Fig. 4.2). Here 6 years of load growth represent some number of colors. Every year start from July to June of next year. In the beginning year 2002-2003, the load growth has been figured at 315 MW. In the 2nd year 2005-2006, the load growth show to be 397 MW. The load growth increased gradually day by day. In 2008-2009, the load growth rise in to 545 MW. The rise of the load growth is clear in the subsequent years. In 2011-2012, 2014-2015 and 2016-2017 load growth were 715 MW, 845 MW, 934 MW respectably. Throughout the years the load growth has risen from 315 MW in 2002-2003 to 934 MW in 2016-2017.

Besides this, there was no decrease. The highest increase was in 2011-2012 which was 170 MW, and it was more than that of previous year. The lowest increase was in 2005-2006 which was only 82 MW [16].

4.3 System Loss

The total of all energy lost or wasted on a system due to line loss and other forms of energy loss, unaccounted energy use and theft among other factors is referred to as system loss. Bangladesh has faced so many problems because of high percentage of system loss (See Fig. 4.3). Present government brought down distribution loss of the country's whole electricity to 9.98 percent and transmission loss to 2.67 percent in 2016-17.The government has undertaken various steps for bringing electricity system loss at tolerable stage. The steps are repair and replacement of the old and outdated power plants, construction of new power lines and sub-stations, identification of overloaded transformers, replacement and capacity enhancement, use of standard line and service drop, replacement of digital and repaid/smart meter instead of postpaid meter, ensure transparency on import and export of energy by installation of interface/grid meter, installation of automatic meter reading system, and others.[16]

Figure: 4.3. System Loss.

4.3 System & Commercial Activities for Last 5 years:

4.3.1 System Activities:

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
132/33 KV Grid Substation	2	2	2	2	2
33/11 KV Substation (No)	26	30	30	32	34
Capacity of 33/11 KV Substation(MVA)	1,080/1,512	1,200/1,680	1,250/1,750	1,420/1,988	1,500/2,100
Maximum Demand (MW)	726	786	845	861	934
33KV Overhead Line (CKM)	83	83	89	108.80	108.80
33KV underground Line (CKM)	316	322	327	348.89	417.95
11KV Overhead Line (KM)	1,122	1,204	1,266	1,321..66	1,394.65
11KV underground Line (KM)	434	438	456	480.58	540.48
LT Line (KM)	1,838	1,936	1,978	2033.24	2057.66
Distribution Transformer (No.)	5,215	5,672	5,932	6,315	6,567

Table: 4.2. System Activities.

4.3.2. Commercial Activities:

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17
Revenue from Operations	22,242	24,993	27,966	31,890	34,012
Cost Of Sales	21,646	24,063	25,427	29,989	31,535
Gross Profit	595	931	254	1,901	2,477
Total Expenses	(1,090)	(1,336)	(1,556)	(1,960)	(2,189)
Operation Profit/Loss	(495)	(405)	(983)	(59)	(288)
Financial Expenses	325	320	333	342	473
Exchange Fluctuation (Gain/Loss)	274	19	72	16	295
Non-Operating Income	1,674	1,633	1,268	985	713

Taxation	323	258	356	154	58
Net Profit for the year	805	669	1635	446	176
Dividend (proposed)	748	688	568	39.8	398
Un appropriated profit carried forward	6,146	6,227	7,520	7,951	7,946

Table: 4.3. Commercial Activities (Million Taka).

4.4 Monthly Operational Data:

No	particulars	Jul-18	Jun-18	May18	Apr-18	Mar-18	Fab-18	Jan-18
01.	Energy Purchase (MKWh)	561.699	491.968	486.036	457.112	469.716	318.996	310.09
02.	Energy Sales (MKWh)	521.289	434.855	419.705	427.539	396.097	296.41	294.506
03.	System loss (%)	7.19	11.61	13.65	6.47	15.67	7.08	5.03
04.	Purchase Rate (Tk.)	6.35	6.35	6.35	6.35	6.35	6.35	6.35
05.	Selling Rate (Tk.)	7.77	7.58	7.78	7.92	7.4	7.7	7.7
06.	Billing Amount (MTk.)	4050.05	3298.19	3265.92	3384.6	2929.56	2283.7	2266.93
07.	Billingcollection (MTk.)	3412.38	3425.96	3489.39	2931.38	2522.67	2362.66	2624.16
08.	Collection Billing Ratio (%)	84.26	103.87	106.84	86.61	86.11	103.46	115.76
09.	C.I Ratio (%)	78.19	91.82	92.26	81.01	72.61	96.13	109.94
10.	No of Consumer	889034	880505	876095	868986	865859	859082	854093

Table: 4.4. Monthly Operational Data

Calculation: calculation of providing data.

$$\text{System loss} = \frac{\text{Total Energy Purchase} - \text{Energy Sales}}{\text{Total Energy Purchase}} \times 100\%$$

$$= \frac{561.699 - 521.289}{561.699} \times 100\%$$

$$= 7.19\%$$

Here only calculate for July 2018 and others months will be respectably same way.

$$\text{Collection Billing Ratio (\%)} = \frac{\text{Billing collection}}{\text{Billing Amount}} \times 100$$

$$= \frac{3412.38}{4050.05} \times 100$$

$$= 84.26$$

4.5 New development projects

There are five new projects which are ongoing at this moment. These will enhance the DESCO's whole infrastructure capacity up to 2668 MVA, cover approximately 11, 20,000 nos. of consumer and power handling capacity around 2135 MW. These projects are financed by Asian Development Bank (ADB) under Power System Expansion and Efficiency Improvement Investment Program, Tranche-2 and Asian Infrastructure and Investment Bank (AIIB), under distribution system upgrade and expansion project to meet the load demand up to the year 2020 Total cost of the said 05 projects has been estimated approximately Tk. 3,949 core and expected to be completed within 2019. Apart from these, to meet the future load demand in Gulshan area, DESCO has undertaken the initiative to construct 132/33/11kV Underground Grid Substation at Gulshan S/S area financed by JICA (Japan International Cooperation Agency). The cost of this projects has been estimated approximately Tk. 1085 core and expected to be completed within 2020. Major components and current status of the said projects are as below: [16]

- **Construction of 132/33/11 kV Grid Substations**

This project includes installation & commissioning of 05 new 132/33/11 kV Grid Sub-stations and installation of 174 km (29 double circuit km) 132 kV source lines. After completion of the project, 800/1200 MVA will be added at 132 level and 300/420MVA at 33kV level. Construction works of this project are in full swing. [16]

- **Augmentation and Rehabilitation of Distribution System**

Total 14 nos. of new 33/11 kV Sub-stations will be constructed and Rehabilitation/ Augmentation of 10 nos. of 33/11 kV Sub-stations will be done on turnkey basis. New 14 substations will add 840/1176 MVA capacity and the other 10 substation which will be gone through Rehabilitation/ Augmentation process will add 340/476 MVA capacity in the existing system. This project also includes installation of 70 Circuit km of 33kV and 200 Circuit km of 11kV U/G XLPE Cable and 500 km of 11kV, 11/0.4kV and 0.4kV overhead lines. 2,00,000(Two lac) prepaid meter would procure under this project. Installation of 1500 nos. of 11/0.4kV & 300 nos. of 11/0.23kV distribution transformers also performed under this project. Distribution Transformer installation, O/H and U/G line construction works are ongoing. [16]

- **Augmentation and Rehabilitation of 132/33/11 kV grid substation at Bashundhara and Uttara**

The Objective of this project to increase capacity existing of 02 Grid substations from 250/375MVA to 480/720MVA at 132kV level. [16]

- **Conversion of existing 33 kV overhead lines into underground cables**

Objectives of this project are to increase reliability, improve power quality and increase safety of power supply. After completion of this project, no 33kV overhead lines would exist in DESCO area. [16]

- **Digital Services**

To achieve “Vision 2021” of digital Bangladesh, DESCO has introduced internet based self-services. Now DESCO provide following digital Services: ⏐ Bill Payment through SMS (2009) Online Bill Payment (2010) ⏐ On-Line Application for New Connection (2012) ⏐ Online Job Application (2012) ⏐ Mobile Banking Bill Payment (2014) ⏐ Payment through Live Payment Gateway (2014) ⏐ Mobile Application for Post Paid Consumers (2016)[16].

4.6 Summary of the chapter:

In this chapter we discuss about the data of DESCO. There discuss about some topics are Maximum Demand (Month Wise Maximum Demand), Load Growth, System & Commercial Activities, New development projects etc. And analysis how many energy purchase and sells in DESCO. Also show that about system loss of energy in DESCO. There have some new project Construction of 132/33/11 kV Grid Substations**,** Augmentation and Rehabilitation of Distribution System, augmentation and Rehabilitation of 132/33/11 kV grid substation at Bashundhara and Uttara, Conversion of existing 33 kV overhead lines into underground cables and DESCO has introduced internet based self-service. [16]

Chapter 5

Conclusion

5.1 Conclusion

The DESCO definitely creates a strong platform for young graduates to acquire some practical knowledge and of course DESCO provide us this opportunity to learn this very beautifully. I have gathered some tremendous experience during this internship program and spent some remarkable days. DESCO is the best practical ground for the EEE graduates. Each and every person helps us to their best in this whole program. From executive engineer to all employees welcomed us cordially and supported to complete this field study. The field study was good to find out what my strengths and weaknesses are this helped me to define what skills and knowledge. I have to improve in the coming time. I hope that the knowledge level will be sufficient to contribute in my job life. I was assigned in various departments of the Company including the head office, Network operation, commercial operation, system operation and etc. This provided me with the opportunity to gather experience and knowledge by working in different departments along with helping me to engage with many different people.

DESCO was immediately understood that private capital, regardless of whether residential or remote, would not come into a segment, which was not fiscally reasonable and was not in fact, authoritatively and legitimately organized in a route helpful for draw in it. Looked with a bleak plausibility of genuine power deficiencies amid the following couple of years and to empower the division to be fiscally self-continuing and furthermore draw in private capital, the bureau endorsed on a basic level, the between ecclesiastical board report named "Power Sector Reforms in Bangladesh (PSRB)"

The Demand for power is expanding and the clients DESCO is additionally gaining ground in allegation. Distinctive related advancements and hardware with the pace of this developing world. In the course of the last Hardly any years DESCO has been advancing at a rate of 66.27% as far as power generation and the turnover rate is 34%. This is extremely encouraging for power

ventures. A developing number of Electric utilities worldwide are looking for approaches to give phenomenal vitality administrations while Winding up more client engaged, focused, effective, imaginative, and naturally Dependable.

I must say the theories that I have learned at my University was practically observed by me at DESCO. I consider myself very much lucky to have my field study program with a reputed electricity distribution company like DESCO. It gave me an opportunity to implement my theoretical knowledge in practically. My achievements from DESCO are as follows:

- Field study provide by DESCO has enhance my practical knowledge.
- DESCO gave me an opportunity for observing the equipment of sub-station.
- It has developed my thinking capacity about practical operations of electrical equipment.
- It also developed my confidence level for facing job interview in future.

The friendly environment in DESCO encouraged me to co-operate with each other. I have Learned a lot and obtained practical knowledge during my internship at DESCO which will Help me in future life.

In conclusion, now I can say the power industry of Bangladesh like DESCO has a lot of opportunity although there are many obstacles present in the industry. If the government can implement all the projects that are initiated to increase power production then the industry could be a very effective for the country. As development of business is very much dependent on the power Sector, so if this industry can reach to its maximum then other business sectors will also get the facility of this development. Hence, the development of power industry is essential for the development of business as well as the overall economic development of the country. The goal of the government regarding this industry is optimistic and promising. If the government reaches its goal then the industry will surely be an independent industry which will facilitate the development of the country.

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