

EAST WEST UNIVERSITY

INTERNSHIP REPORT

ON

DISTRIBUTION AND MAINTENANCE OF GRID-SUBSTATION OF
DESCO

Submitted By

MD. Sharif Ahmed (2008-1-80-039)

Submitted to the

Department of Electrical and Electrical Engineering

Faculty of Science and Engineering

East West University

In partial fulfillment of the requirements for the degree of
Bachelor of Science in Electrical and Electronic Engineering

(B.Sc in EEE)

[Spring, 2013]

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Approved by

Fakir Mashuque Alamgir
Academic Advisor
Hakim

Department Chairperson
Dr. Mohammad Mojammel Al

Approval Letter



DESCO
POWER IS YOURS
DHAKA ELECTRIC SUPPLY COMPANY LTD

House - 22/B, Faruque Sarani, Nikanjo-2,
Dhaka-1229.
e-mail: info@desco.org.bd; mddesco@desco.org.bd
www.desco.org.bd

August 28, 2012
Memo No: DESCO/Trg. & Dev./ 30/2012/ 276

Mr. Nahid Hassan Khan
Advisor, Students' Welfare &
Head, Career Counseling Center (CCC)
East West University
43 Mohakhali C/A, Dhaka-1212.

Subject : Practicum/ field attachment program.

Reference : 01) EWU(CCC)01/11/Fall-12/06, dt: 09/07/12.
02) EWU(CCC)01/11/Fall-12/123, dt: 25/07/12.

Dear Sir,

In view of the mentioned subject & letter referred above, we are pleased to inform you that our Management has given consent to your request for providing 100 Hours practicum/ field attachment in DESCO to your following student of Electrical Engineering Department :

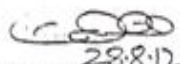
Sl. No.	Name	Id Number	Degree/ Dept.	Name of University
01	Mr. Md. Sharif Ahmed	2008-1-80-039	EEE	East West University
02	Mr. Arif Ahmed	2008-1-80-031	EEE	

The said training will be completed as per attached schedule. Student is required to submit their complete Curriculum Vitae, copy of the student ID and 02 (two) passport size photographs certified/ attested by authority to Training & Development, HRM Division, DESCO before the commencement of training. Student will also be required to submit a copy of the training report to Training & Development, HRM Division by 30 September, 2012.

Please note that no TA/DA or Honorarium will be paid to the concerned student.

Sincerely yours,

By Approval of the Management,





28.8.12
(Engr. Sanatan Datta)
Manager (Trg. & Dev.)
HRM Division

Encl: Training Schedule.

Copy for kind information & with a request to inform the concerned Coordinator/Facilitator as per attached schedule:

1. Dy. General Manager (Administration/Sub-station & Network), DESCO.
2. Manager, S & D Division, Uttara (East) DESCO.
3. Staff Officer to MD, DESCO.
4. Office Copy.

Training Certificate

 <p>DESCO POWER IS YOURS</p>	<p>House # 22/B, Farookh Sarani, Nikunja-2 Dhaka-1229, Bangladesh PABX : +88 02 8900110-11; 8900810-11 Fax : +88 02 8900100 email : info@desco.org.bd; mddesco@desco.org.bd www.desco.org.bd</p>
<p>DHAKA ELECTRIC SUPPLY COMPANY LTD</p>	
<p>October 17, 2012 Memo No: DESCO/HRM/Trg.&Dev/2012/ 329</p>	
<p><u>To Whom It May Concern.</u></p>	
<p>This is to state that Mr. Md. Sharif Ahmed (Student ID: 2008-1-80-039) student of Electrical and Electronics Engineering (B.Sc) program in East West University, Dhaka Bangladesh, has successfully completed 03(three) weeks Industrial Training from 10/09/2012 to 30/09/2012 and complied all the requisites of Training & Development, HRM Division, DESCO.</p>	
<p>I wish his all the success in his career.</p>	
<p> (Engr. Gazi Shahriar Parvez) Manager (Training & Development) HRM Division.</p>	

Acknowledgement

First of all I would like to thank Engr. Gazi Shariar Parvez, Manager, training & development Md. Taquiue Abdullah, Manager Administrating of DESCO, for allowing me to do internship and work with them.

I would also like to thank my academic advisor Fakir Mashuque Alamgir, Lecturer, Department of Electrical & Electronic Engineering, East West University, Bangladesh.

Then I would also like to mention the name of Dr. Mohammad Mojammel Al Hakim, Chairperson & Professor of the Department of Electrical & Electronic Engineering. I am also grateful to all our teachers and friends for their cooperation and encouragement throughout my whole academic life at East West University. I would also like to thank Dr. Kazi Mujibur Rahaman, Adjunct faculty at East West University. I would like to thank some persons who had given me the opportunity to collect some information for my report and also helped me to understand many related matters and gave me their precious time more than once. They are; Engr. Md. Shahin Ibne Rafiq. Deputy Manager (Trang. & Div.), Md. Rasudur Rahnan DGM (admin), S.M. Hasibul Islam, Jr. Assistant Manager (Uttara grid-substation), Engr. Mohammad Kamruzzama, Manager (Uttara S.& D. Division) and Md. Rezaul Karim, Jr. Assistant Manager (Kafrul substation).

Finally, I would to thank all my teachers, student and staffs of Department of Electrical and Electronic Engineering at East West University and all of my family members and friends whose names are not mentioned here.

Executive Summary

The power sector of Bangladesh have faced numerous problems characterized by lack of supply capacity, frequent power cuts, unacceptable quality of supply and poor financial and operational performance of the sector entities. There have been a number of reforms in the power sector in Bangladesh since the independence. But most of these reforms failed to bring the desired outcome in the power sector. Among the three main components of the power system, recent reform activities were centered on generation and transmission. The most pressing problems in the power sector have been with the distribution system, which is characterized by heavy system loss and poor collection performance. However, the distribution system seldom gets the priority in the reform initiatives.

To solve these problems, Government of Bangladesh has taken an initiative to unbundle the power sector in the form of The Private Limited Companies. This report is based on my internship activities which I have done at DESCO (Dhaka Electric Supply Company Limited). This report focuses on the operation of DESCO, their vision, supply capacity, financial condition, distribution of electricity and future planning. The Dhaka electric supply company was created as a distribution company in 1996 under the companies act 1994 as a public limited company with an authorized capital of TK. 5 million. At present, DESCO is one of the main power distribution companies in Bangladesh. In total 75% shares of DESCO are owned by Bangladesh Government and rests of the 25% shares are owned by Chairman of DESCO and other shareholders.

Internship is such an opportunity to learn those activities that are related to our real engineering world. During my internship period, I have been able to gather some knowledge on grid-substation, transformer and their maintenance and the power factor improvement which are closely related to my study materials. 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.

Internship Schedule

Day	Time duration	Topics	Mentor
Monday 10.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Introduction, service area, organization	Engr. MD. Shahin Ibne Rafiq Deputy Manager
Tuesday 11.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Administrative activities	MD. Rashidur Rahman DGM (admin)
Wednesday 12.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Grid-substation, single line diagram and equipment's.	S.M. Hasibul Islam Jr. Assistant Manager.
Friday 14.09.2012	9 am to 1.30 pm, 3.00 pm to 5.00 pm	Transformer, its principal and component.	Suman Datta Jr. Assistant Manager.
Saturday 15.09.2012	9 am to 1.30 pm, 3.00 pm to 5.00 pm	Transformer component, Protection and energy losses.	Md. Tamiz Uddin Jr. Assistant Manager.
Monday 17.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Substation auxiliary x-former and circuit breaker	S.M. Hasibul Islam Jr. Assistant Manager.
Tuesday 18.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Commercial activities.	Engr. Mohammad Kamruzzaman Manager.
Wednesday 19.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Technical operation.	Engr. Mohammad Kamruzzaman Manager.
Friday 21.09.2012	9 am to 1.30 pm, 3.00 pm to 5.00 pm	VCB, PT, CT, LA	MD. Mahumudur Rahman Jr. Assistant Manager.
Saturday 22.09.2012	9 am to 1.30 pm, 3.00pm to 5.00 pm	Isolator, bus bar and Battery and battery charger.	MD. Mahumudur Rahman Jr. Assistant Manager.
Monday 24.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Maintenance and protection of Substation	Engr. Md Golam Mowla Deputy Manager.
Tuesday 25.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Transformer, fault detection and repairing.	MD. Monraj Khan Jr. Assistant Manager.
Wednesday 26.09.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Power factor monitoring and upgrading.	Md. Rezaul Karim Jr. Assistant Manager.
Friday 28.09.2012	9 am to 1.30 pm, 3.00 pm to 5.00 pm	Control room activities.	Md. Rezaul Karim Jr. Assistant Manager.
Monday 01.10.2012	9 am to 1.30 pm, 2.30pm to 5.00 pm	Principal of relay operation and delta-y x-former.	S.M. Hasibul Islam Jr. Assistant Manager.

Total internship hours=103 hours

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Chapter 1

Introduction

1.1 Background of DESCO

Dhaka Electric Supply Company Ltd (DESCO) was created as a distribution company on November, 1996, under the company act 1994 as a Public Limited Company with an authorized capital of Tk. 5.00 billion, due to improve power sector, to provide better service and to improve revenue collection specially in Dhaka city. However, the operational activities are at DESCO's field level commenced on September 24, 1998 [1].

1.2 Organization and Service area of DESCO

The company is run by a small management team headed by the Managing Director under the guidance of a Board of Directors and six numbers of sales and distribution division and above forty numbers of grid-substations. DESCO always visualizes running the system efficiently and economically keeping minimum overhead cost with minimum number of skilled manpower. The area is about 220 square kilometers comprises the areas bounded by the Mirpur Road, Agargaon Road, Rokeya Sarani, Progati Sarani, New Airport Road, Mymensingh Road, Mohakhali Jhee, Rampura Jheel connected with Balu River in the south , Balu River in the east and Turag River in the west and areas under Tongi Pourashava in the north. It may be mentioned that "Purbachal Model Town" a Rajuk project, situated on the east side of Balu River, adjacent to Dakkhinkhan area, has been decided to be included under DESCO [1].

1.3 Technical Operation

On September 19, 2012, I went to the Uttara sales & distribution division of DESCO to understand technical operation, where Engr. Mohammad Kamruzzaman (Manager, Uttara sales & distribution division, DESCO) explained me about the system operations of sales & distribution, Pre-paid meter, consumer tariff rate, load management and new connection.

Prepaid meter utilizes smart card technology that allows customers to put money on a smart card which is usually inserted and removed from the prepaid meter. The meter reads a chip in the card and ensures that only the amount of electricity that has been paid for be available to the customer. Customers can re-charge their smart cards of DESCO at vending stations. The

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introduction of prepaid meters has helped to improve revenue collections as well as to reduce system loss.

There are ten types of consumer tariff rates. These are as follows:

(a)A-Residential, (b)B-Irrigation, (c)C-Small industry, (d)D-Non-resident,(e)E-commercial
(f)F-11KV,(g)G-33/132KV(DPDC),(h)H-HT,(i)I-(I-1,I-2,I-3,I-4,I-5,I-6)-utility,(j)J-street
light.

Chapter 2

Operation of Grid-Substation

2.1 Grid- Substation

During my internship period at DESCO, I have visited at four grid-substations. On September 12, I went to the Uttara grid-substation where Jr. Assistant Manager, S.M.Hasibul Islam, explained me about the basic definition and the working principal of grid-substation, single line diagram, general equipment and their operation. Actually super grid-substation voltage level is about 230/132/33KV, grid-substation voltage level is about 132/33/11KV, and substation voltage level is about 33/11KV. But grid-substation is an interrelated network for delivering electricity from suppliers to consumers. The DESCO has no power plant. Therefore, they purchase power and transmitted from Power Development Board (PDB) via Power Grid Company of Bangladesh (PGCB) at different places of Dhaka city. A grid-substation or substation transforms voltages from high to low or low to high by using power transformers. A substation that has a step-up power transformer increases the voltage while decreasing the current, while a step-down distribution transformer decreases the voltage while increasing the current for domestic and commercial uses of electricity.

At DESCO, there are above forty numbers of grid-substations, but during my internship period, I have visited only four grid-substations due to lack of time. These are as follows:

- Uttara grid-substation (132KV/33KV/11KV).
- Kafrul (Mirpur) substation (33KV/11KV).
- Uttara East substation (33KV/11KV).
- Nikunja substation (33KV/11 KV).

At Uttara grid-substation, there are two incoming sources from Mirpur and Tongi grid.

132KV bus-1, 132KV bus-2, bus PT-1 (potential transformer), bus PT-2 (potential transformer), 132KV bus coupler and the insulator of Uttara grid-substation are shown in figure (2.1).



Figure 2.1: Uttara grid-substation with bus-1, bus-2, insulator, PT and bus coupler.

The wave trap, potential transformer (PT), lighting arrester (L.A) and 132KV incoming source from Tongi grid of Uttara grid-substation are shown in figure (2.2).



Figure 2.2: 132KV incoming source from Tongi grid, wave trap, PT and L.A.

Actually single line diagram is the basic configuration to understand the basic operation of grid-substation. In figure (2.3), it is shown that how 132KV incoming sources are connected to the Uttara grid-substation and then how it transforms from 132KV to 33KV. Also 33KV transforms to 11KV. Initially 132KV incoming sources from Tongi grid and Mirpur grid are connected to Uttara grid-substation via UG/OHL (UG means underground and OHL means

overhead line), then safety equipment L.A. (Lighting Arrester), potential transformer (PT), wave trap, isolator, current transformer (CT), SF₆ gas circuit breaker are connected to 132KV bus-1. Then 132KV bus coupling is used to run or to keep active both 132KV bus-1 and 132KV bus-2. Then again PT, isolator, CT, L.A. and grid-transformer-1 which transforms the voltages from 132KV to 33KV. Subsequently 33KV is also connected with 33KV bus via SF₆ gas circuit breaker. Here also 33KV bus coupling is used to run both 33KV bus-1 and 33KV bus-2. Last of all VCB (Vacuum Circuit Breaker) is also connected to 33KV bus and then grid-transformer-3, which transforms the voltages from 33KV to 11 KV. Subsequently 11KV is also connected with 11KV bus via VCB and then active eight numbers of 11KV outgoing feeders are connected to different sectors of Uttara. The single line diagram of Uttara grid-substation is given in figure (2.3).

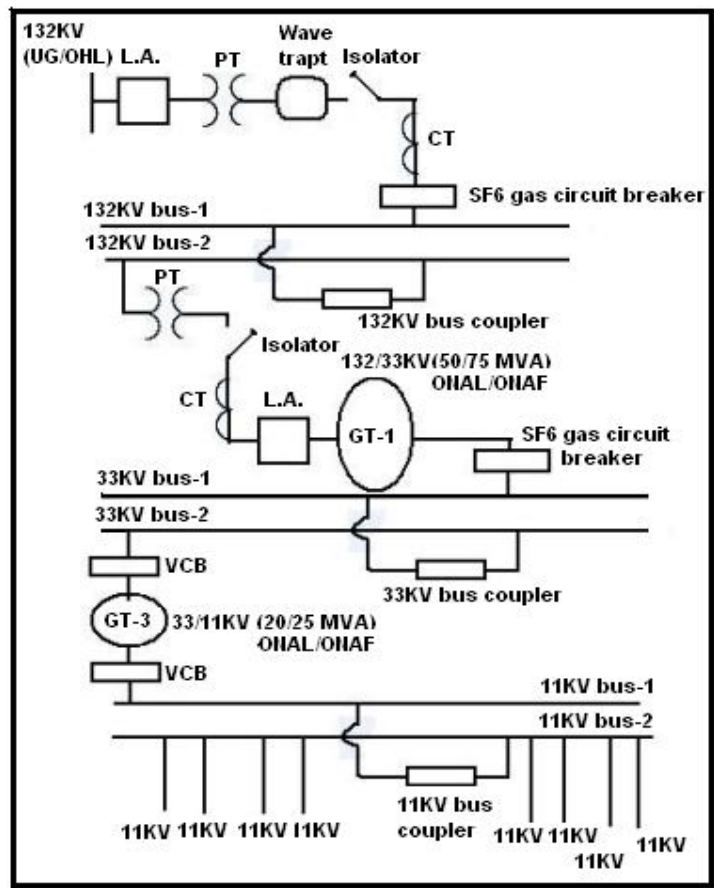


Figure 2.3: Single line diagram of Uttara grid-substation (132/33/11KV).

In our country, the voltage transmissions are 400KV, 230KV, 132KV respectively. But at DESCO the step down transmission voltages are 132KV to 33KV, 33KV to 11KV and 11KV to 415V. At Uttara grid-substation the step down voltage is 132/33/11 KV.

2.2 General Equipment

There are various equipment at Uttara grid-substation which I have observed and acquired knowledge such as power transformer, switchgear/circuit breaker, SF6 gas circuit breaker, vacuum circuit breaker, current transformer, potential transformer, isolator, line isolator, earth switch, wave trap, lightning arrester, auxiliary transformer, bus bar (main bus bar and reserve bus bar), battery and battery charger, control relay panel, ac & dc distribution panels and voltage regulator etc.

2.3 Operational Equipment

2.3.1 Transformer at DESCO

Power Transformer: During my internship period at Uttara grid-substation (132/33/11KV), I have acquired knowledge about transformer. Actually a transformer is a device which transforms electric power from one circuit to another circuit without changing in frequency. The electric power of transformer is created by electromagnetic induction between the windings or circuits. Depending upon the size of the windings, values of voltage and current are changed from primary (source) to secondary (load) with constant frequency. At DESCO, I have observed power transformer to transform power from 132 KV to 33 KV and 33KV to 11KV where 132 KV is supplied by PGCB. Most of the power transformers are made by Energy Pack and maintained by them as well. At Uttara grid-substation, there are four grid (power) transformers indicated as GT1, GT2, GT3 and GT4 [2].

The image of GT1 power transformer is given in figure (2.4).



Figure 2.4: 132/33 KV Power transformer (GT1) at Uttara grid-substation .

At Uttara grid-substation, two transformers transform voltages from 132KV to 33KV which is indicated by GT1 & GT2 (50/75 MVA ranged transformers are used). And other two Δ

(delta) transformers transform voltages from 33KV to 11KV indicated by GT3 & GT4 (20/28 MVA ranged transformers are used). The image of GT4 power transformer is given in figure (2.5).



Figure 2.5: 33/11KV power transformer (GT4) at Uttara grid-substation.

2.3.2 Transformer Specification

There are various types of transformer available. But at DESCO, they prefer oil based transformers, imported from China. China provides transformers at a lower cost than Bangladeshi companies. So, China has totally captured this market. The main reason of using oil based transformers is availability and reasonable price compare to other types of transformers. The image of transformer designed specification (main tank control box) is given in figure (2.6).

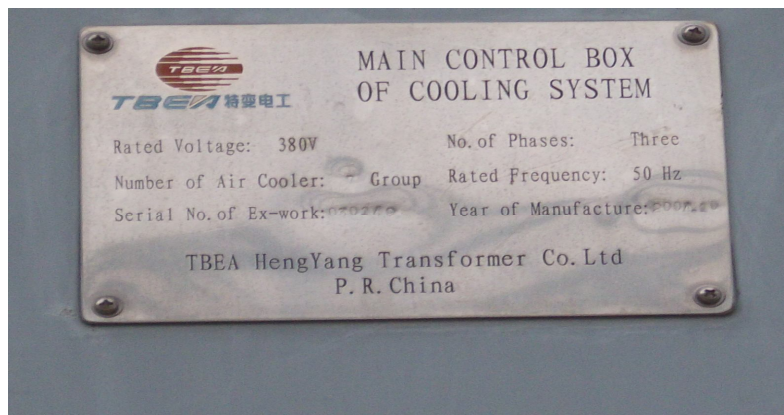


Figure 2.6: Nameplate of transformer main control box.

2.3.3 Transformer Component

During my internship at Uttara grid-substation, I have acquired some knowledge about transformer component such as winding, main tank, conservator tank, breathing system, cooling system, transformer oil, oil level indicator meter, on load tap changer, silica gel, insulator, radiator, oil temperature meter, and winding temperature meter, buchholz relay and pressure relief device.

Winding: In figure (2.7), the primary winding is 33KV and secondary winding is 11KV. In this case it is step-down transformer and that is why primary winding is Δ (delta) connected and secondary winding is Y (wye) connected. The ac source is known as primary winding. The load which is taken from the source is called secondary winding. The transformer consists of soft iron core or the silicon steel core. Also two windings attached to it, they are primary winding and the secondary winding. The windings are insulated from one another. The conducting material (a conductor is a material which contains movable electric charges) used for the windings, depends upon the application. But in all cases, each turns must be electrically insulated from each other to ensure that the current travels throughout every turn [3].

Main Tank: Main tank is such type of protective element for the primary winding and secondary winding. The end edge of the primary winding is connected from one side of the main tank. And the starting edge of the secondary winding is connected from opposite site of the main tank. Main tank is filled up with oil. And oil is used to provide insulation between the main tank and the windings. The image of main tank along with primary and secondary winding is given in figure (2.7).

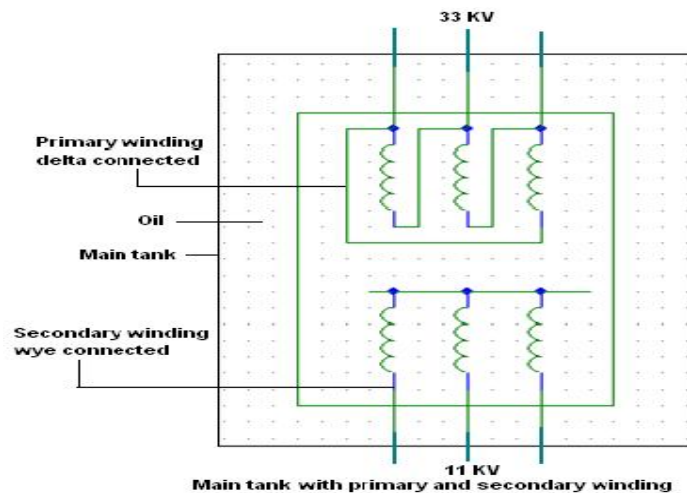


Figure 2.7: Main tank with primary & secondary winding [9].

Conservator Tank: During the expansion of oil due to internal fault of transformer or when load increases, windings (both primary and secondary winding) produce more heat. As a result oil volume can expand. And expansion of oil volume can enter from main to conservator tank via buchholz relay. Actually the tank is designed as an expansion reservoir which allows the expansion of the oil during operation. The image of conservator tank is given in figure (2.8).



Figure 2.8: Conservator tank at Uttara grid-substation.

Buchholz Relay: Buchholz relay is a protective element of transformer. It is installed at the middle position of the transformer tank and the conservator tank. When gas is produced in the main tank due to a minor fault, oil volume expands and can enter to conservator tank via buchholz relay. If oil's motion is very rapid, then at 1st, it gives the signal to the control room. If the fault is very big then it trips the transformer [4].

The image action of buchholz relay is given in figure (2.9).

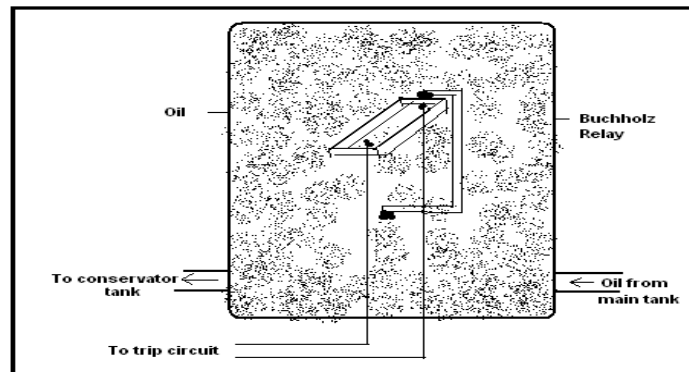


Figure 2.9: Action of buchholz relay at Uttara grid-substation [9].

Cooling Equipment: The cooling equipment such as radiator collects the hot oil from the top of the main tank and returns cooled oil lower down on the side of the main tank.

Winding Temperature and Oil Temperature Indicator: Winding temperature indicator (meter) indicates the appropriate temperature of winding (The normal position of winding temperature is 75 degree centigrade). Oil temperature indicator (meter) indicates the appropriate temperature of oil (The normal position of oil temperature is 65 degree centigrade). The image of oil temperature and winding temperature indicator is given in figure (2.10).

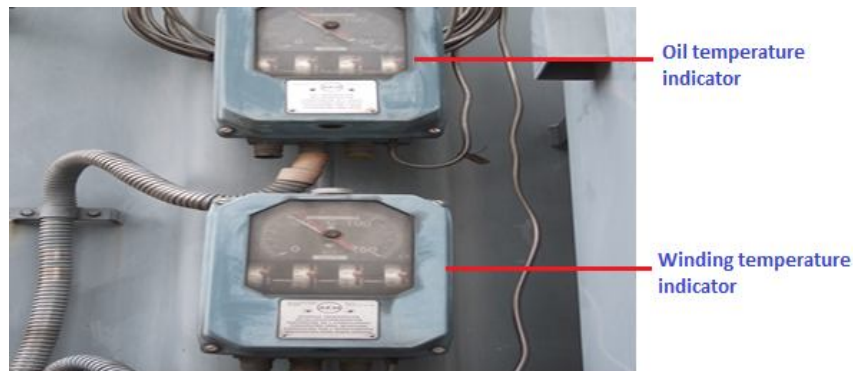


Figure 2.10: Winding temperature and oil temperature indicator.

On Load Tap Changer: On load tap changing is a mechanism that usually used in case of any disturbance of primary winding or in case of any fault of actual incoming voltages to the primary winding. In figure (2.11), the primary winding is 33KV and secondary winding is 11KV. If 33KV is reduced at 28KV then on load tap changer is used to increase from 28KV to 33KV. The image of on load tap changing mechanism is given in figure (2.11).

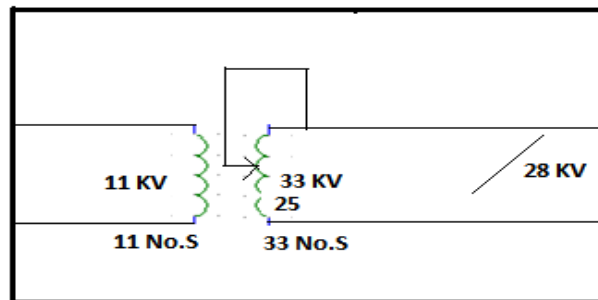


Figure 2.11: Tap changing mechanism [9].

Transformer Oil: Transformer oil is used to provide insulation between the transformer main tank and the windings (both primary windings and secondary windings) and for keeping cool the transformer. The transformer oil also provides high dielectric strength to the coils and core which are submerged. This allow transformer to be more compact and cost efficient.

Breathing System: Transformer breathing system is controlled by silica gel. It is used to absorb moisture. During the injection of oil into transformer tank some air can enter or exit in the conservator tank depending on expansion and extraction of the oil of main tank and silica gel is used to absorb the moisture from that air. The image of silica gel is given in figure (2.12).

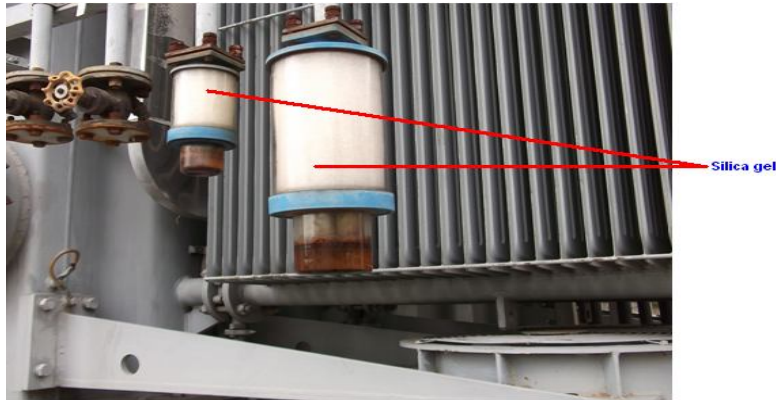


Figure 2.12: Transformer breathing system (silica gel) used at DESCO.

2.3.4 Losses in Transformer

During my internship period at Uttara grid-substation, I have acquired knowledge about transformer losses. These are as follows:

Iron Losses: In actual iron cores, in spite of lamination, some heat is still produced by the eddy currents.

Copper Losses: In actual practice, coils of the transformer possess some resistance. So a part of energy is lost due to heat produced by the resistance of the coils.

Hysteresis Losses: The alternating current in the coils repeatedly takes the iron core through complete cycle of magnetization. So energy is lost due to hysteresis.

2.3.5 Protection Systems for transformer

The principal relays and systems used for transformer protection at DESCO's grid-substation are described below.

- Buchholz devices providing protection against all kind of incipient fault i.e. slow – developing faults such as insulation failure of windings, core heating, fall of oil level due to leaky joints etc.
- Earth-fault relays providing against earth-faults only.
- Over current relays providing protection mainly phase-to-phase faults and overloading.

- Differential system (or circulating current system) providing protection against both earth and phase fault.

2.4 Auxiliary Transformers

During my internship period at Uttara grid-substation, I have seen two auxiliary transformers and acquired knowledge about these. The grid-substation itself has a maintenance room beside it, so the power supply of that household is provided through this auxiliary transformer. It provides the supply to the auxiliary service which includes lighting, low voltage power supplies and ventilation. The auxiliary service may be three-phase 415V or single phase 230V (Typical voltage rating 33KV/0.415KV).

The image of auxiliary transformer at Uttara grid-substation is given in figure (2.13).



Figure 2.13: Auxiliary transformer at Uttara grid-substation.

2.5 Circuit Breaker

A circuit breaker is a switching device which can open and close a circuit in a small fraction of second under normal as well as during fault condition. Basically, it is automatically operated by electrical switch which is designed to protect an electrical circuit form damage caused by overload or short circuit and its basic function is to detect a fault condition.

2.5.1 SF6 Gas Circuit Breakers

SF6 Gas Circuit breaker: During my internship period at Uttara grid-substation, I have seen four sulphur hexafluoride (SF6) gas circuit breaker and acquired knowledge about these. A SF6 (sulphur hexafluoride) gas circuit breaker is a high voltage circuit breaker. Basically sulphur hexafluoride (SF6) is an inert, heavy gas having good dielectric and arc extinguishing properties. It has high die-electric strength and outstanding arc quenching characteristics.

The followings are the advantages of SF6 gas circuit breaker:

- Due to the superior arc quenching property of SF6, such breakers have very short arcing time.
- Since the dielectric strength of SF6 gas is 2 to 3 times that of air, such breakers can interrupt large currents.
- The SF6 gas circuit breaker gives noiseless operation due to its closed circuit.
- There is no risk of fire in such breakers because SF6 as is non-inflammable.
- The SF6 breakers have low maintenance cost, light foundation requirements and minimum auxiliary equipment.

The image of SF6 gas circuit breaker is given in figure (2.14).



Figure 2.14: SF6 gas circuit breaker at Uttara grid-substation.

2.5.2 Vacuum Circuit Breakers

At Uttara grid-substation, I have observed two vacuum circuit breaker and acquired knowledge of them. Vacuum circuit breaker is a low voltage circuit breaker with rated current up to 3000 A. These breakers interrupt the current by creating and extinguishing the arc in vacuum container. These are generally applied for voltages up to about 35000 V, which corresponds roughly to the medium-voltage range of power systems.

2.6 Potential Transformers

At Uttara grid-substation, I have observed twelve (12) potential transformers (PT). These are connected in parallel with the bus bar. Potential transformer or voltage transformer is used for reducing ac voltage from higher value to lower value for measurement, protection and control purpose. At Uttara grid-substation the ratio of potential transformer is 132KV to 110V.

The image of potential transformer is given in figure (2.15).



Figure 2.15: Potential transformer at Uttara grid-substation.

2.7 Current Transformers

At Uttara grid-substation, I have observed twelve (12) current transformers (CT). These are connected in series with the bus bar. Current transformers (CT) are also used for reducing ac current from higher value to lower value for measurement, protection and control purpose. At Uttara grid-substation the ratio of current transformer is (1600/800/1) Ampere. The image of current transformer is given in figure (2.16).



Figure 2.16: Current transformer at Uttara grid-substation.

2.8 Lighting Arresters

At Uttara grid-substation, I have seen six (6) lighting arresters. Lighting arrester is a device, used on grid-substation to protect the insulation on the grid-substation from the damaging effect of lightning. The typical lightning arrester also known as surge arrester has a high

voltage terminal and a ground terminal. When a lightning surge or switching surge travels down the power system to the lightning arrester, the current from the surge is diverted around the protected insulation in most cases to earth. Lightning arrester is installed on many different pieces of equipment such as power poles and towers, power transformers, circuit breakers and bus structures in substation. The image of lightning arrester and GT-2 is given in figure (2.17).



Figure 2.17: Lightning Arrester and GT-2 at Uttara grid-substation.

The image of lightning arrester indicator is given in figure (2.18).



Figure 2.18: Lightning arrester indicator at Uttara grid-substation.

2.9 Isolators

At Uttara grid-substation, I have seen different types of isolators. These are line isolator, bus isolator, earth isolator, pin isolator and post isolator. Isolators are used to break the 3 phase power circuit under no load condition. These are (mostly in substation) installed before and

after the transformer maintenance purpose. Basically it is used to disconnect a component of electrical systems from the power source. Isolator switch is used to make sure that an electrical circuit can be completely de-energized for service or maintenance. It operates only on “no load” condition since there is no ability for arc extinguishing. The image of line isolator is given in figure (2.19).

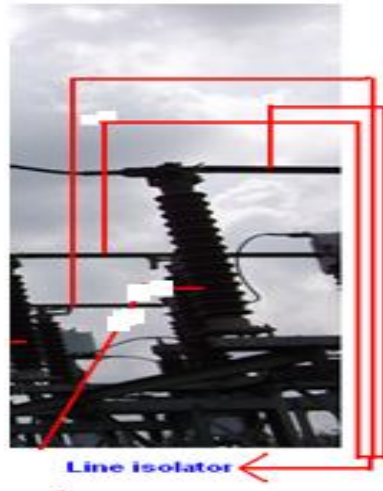


Figure 2.19: Line isolator at Uttara grid-substation.

2.10 Bus Bars and Bus Coupler

At Uttara grid-substation, I have seen six (6) bus bars. These are 132KV bus-1, 132KV bus-2, 33KV bus-1, 33KV bus-2, 11KV bus-1 and 11KV bus-2. Actually bus bar is a strip of copper or aluminum that conducts electricity within a switch board, distribution board, substation or other electrical apparatus. The size of the bus bar determines the maximum amount of current that can be safely carried. Generally it consists of two bus-bars a main bus bar and a reserve bus bar. The incoming and outgoing lines can be connected together in bus bar. However, in case of repair of main bus-bar or fault accusing on it, the continuity of supply to the circuit can be maintained by transforming it to the reserve bus-bar. Bus coupler is used to run the both bus (main bus and reserve bus) at the same time.

The image of bus bar and bus coupler is given in figure (2.20).



Figure 2.20: 132 KV bus bars and bus coupler at Uttara grid-substation.

2.11 Battery and Battery Charger

Battery is the heart of Substation. Battery is a storage device. It is required for back-up dc supply to ensure protection. Battery supplies 110V dc voltage to the control and protection circuit when ac fails or charger fails. In a substation, dc Voltage is required for protection, control and signaling. Battery charger rectifies the 400V ac into 110V dc and supplies the dc voltage to control panels for the mentioned purpose as well as charges the batteries. The image of battery and battery charger is given in figure (2.21).



Figure 2.21: Battery back up system of 132/33/11KV Uttara grid-substation.

Chapter 3

Maintenance and Protection of Grid-Substation

3.1 Maintenance and Inspection of Substation

During my internship period at DESCO, I have got some ideas about substation's equipment maintenance and practically observed maintenance period of Kafrul substation.

Basically there are many inspections of substations, but DESCO implements inspection of substation's equipment on monthly and half-yearly basis.

Single line diagram of Kafrul substation is shown in figure (3.1). At Kafrul substation, there are three (3) 33 KV incoming sources and eighteen (18) 11KV outgoing feeders. In figure (3.1), some transformers directly transform voltages from 33KV to 415V and some transformers transform voltages from 33KV to 11KV. At Kafrul substation only eight numbers of 11KV outgoing feeders are active, seven numbers of 11KV outgoing feeders are spare or in off position and three numbers of 11KV outgoing feeders are for switching.

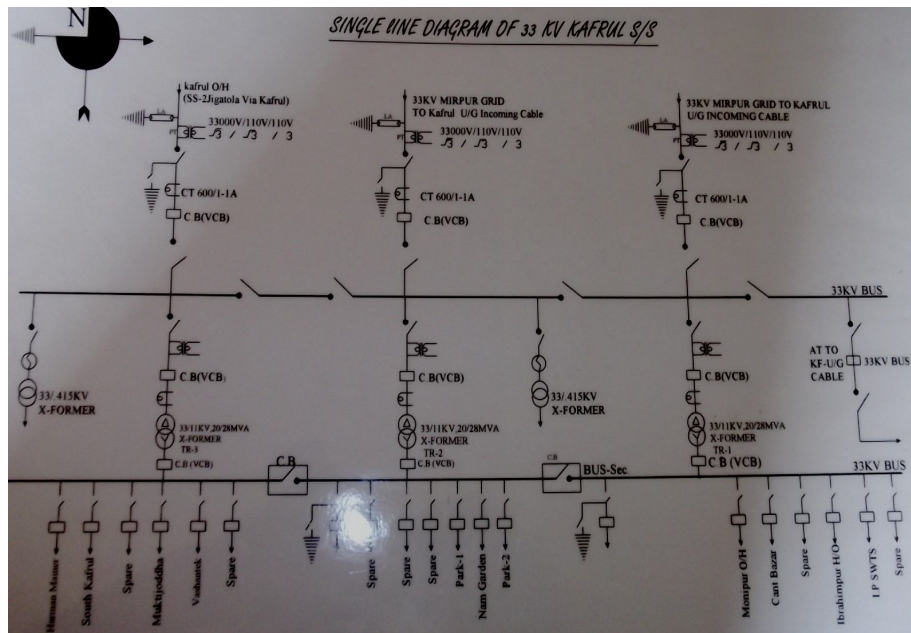


Figure 3.1: Single line diagram of Kafrul (Mirpur) 33/11 KV substation.

During the period of monthly inspection at Kafrul substation, I have collected the picture which is given in figure (3.2).



Figure 3.2: Maintenance of Kafrul (Mirpur) 33/11 KV substation.

3.2 Transformer Maintenance

Transformer maintenances at Uttara grid-substation are given below. :

- Overall cleaning or washing of transformers.
- Check insulation resistance between each winding and ground.
- Check the control system and driving mechanism of OLTC.
- Change the oil of OLTC (OLTC means On Load Tap Changer).
- Check toughness of low terminal and high terminal.
- Check the performance of oil temperature & winding temperature meter.

The images of maintenances of transformer at Uttara grid-substation are given in figure (3.3). The explanations of the images (while they were doing at maintenance period) are mentioned above.



Figure 3.3: Transformer maintenances at Uttara grid-substation.

3.3 Transformer Fault Detection and Repairing

On September 25, 2012, I have visited the transformer repairing section at Kafrul substation with Md.Momraj Khan, Jr. Assistant Manager (Kafrul Sales & Distribution division). He explained me about the common faults of transformer which are given below:

- Transformer coil burn.
- Drop off fuse.
- Low dielectric strength in transformer oil.

Transformer Coil Burn: Coil burn process happens when distribution transformer runs under overload for long days. For detecting transformer fault, at first the ‘insulation tester’ is used. This insulation tester measures the resistance of transformer insulation. This tester has a prime mover, mega Ω meter and two probes. To test the transformer insulation, one probe is connected to high side and another one to low side. Then the prime mover is rotating by 120 rpm (rotating per minute) and produces very low current follow like 100V. If the meter shows the resistive value less than 5 M Ω , it means coil is burned, otherwise the tester shows more or equal to 30 M Ω . The image of distribution transformer is given in figure (3.4).



Figure 3.4: The 11/415KV distribution transformer [10].

Drop off Fuse: Drop off fuse is a protection to protect transformer from burning. It is used, when transformer’s distribution or feeder lines falls in short circuit or ground fault.

Low Dielectric Strength: One kind of oil is used in transformer to isolate the coil-container and to keep cool the transformer. This oil is a dielectric material. If the oil dielectric value decreases, the core can be burned or a serious accident could be occurred. So, DESCO usually checks the oil dielectric strength in every two or three years ever since the transformer is installed.

3.4 Power Factor Monitoring & Upgrading

Power factor monitoring is one of the most important factors in power system. Because poor power factor impose low effects on power generation. At Kafrul substation I have seen the power factor was about $0.97 \approx 0.98$, but usually the average is about 0.95.

Inductive load is responsible to degrade the power factor. We know that power factor is defined as the ratio of KW to KVA. But we can see that the cause of low power factor is large KVAR. And we know that the magnitude of KVAR is proportional to inductive load. All big factories, industries and workshops are main sources of inductive loads. Inductive load includes: Transformer, Induction motor and Energy saving light. Reactive power increases the amount of apparent power. This increases the reactive power and as a result apparent power creates large angle (θ) between KW and KVA and larger angle produces poor power factor ($pf = \cos\theta$).

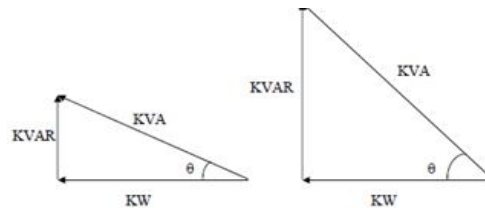


Figure 3.5: PF dependence on the amplitude of KVA [9].

Based on the above figure (3.5), we can describe PF as follows:

- Power factor will remain as an approaching unity (if KVAR small).
- KW and KVA will be almost equal (if KVAR small).

Effect of Low Power Factor: Poor power factor affects the power distribution system, loss in distribution network and voltage drop in feeder line. Excessive voltage drop may cause over heating in distribution network. Poor power factor also affect the generation plant. The power generators act as an induction machine. The reactive power comes from these power generators. Poor power factor means more reactive power. More reactive power overloads the generators.

3.5 Control Room Activity

On September 28, 2012, I have spent six and half (6.5) hours at Kafrul substation's control room. Actually control room is very important in power system. This control room is open for 7 days and 24 hours. The basic operations of a control room are as follows:

- Communicates with other control rooms or grids.

- Communicates with line maintenance teams.
- Manage load shedding.
- Record data (Supply load, demand load, load shedding time).

The image of control room at Kafrul substation is given in figure (3.6).

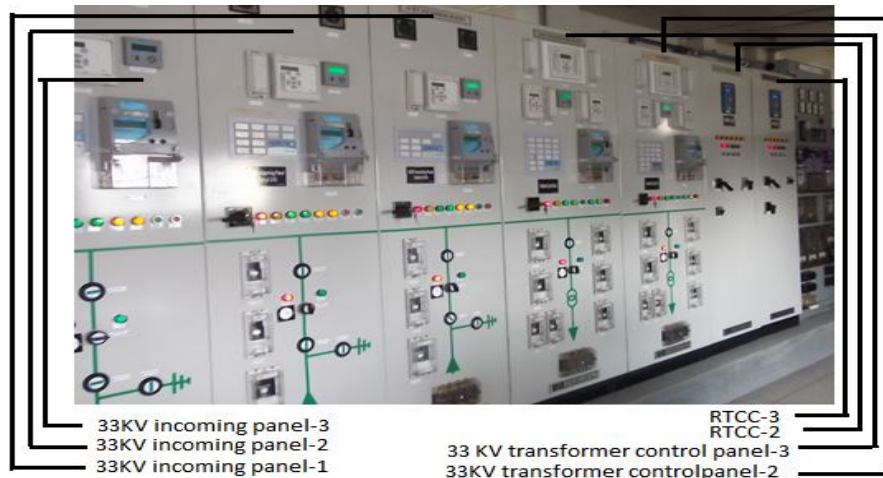


Figure 3.6: Control room at Kafrul substation (33/11KV).

Control relay panels facilitate centralized control of the related controlled equipment in power stations, switching stations and industrial plant. The panels are bolted together to form a board. This approach permits replacements, extensions and rearrangement when necessary. The panel incorporates control switches and indicator lamps for remote control of controlled equipment. A “remote/ supervisory” selector switch is also provided for selection of supervisory control from remote control center.

3.6 Incoming Panels or Lines

At Kafrul substation there are three incoming lines. These are as follows:

- 33KV incoming panel-1 (Mirpur old, Kafrul U/G).
- 33KV incoming panel-2 (Kafrul U/G).
- 33KV incoming panel-3 (kafrul O/H).

The equipment of 33KV incoming panels are trip circuit supervision relay-1, trip circuit supervision relay-2, trip relay, bus isolator, ac alarm, dc alarm, on lamp, off lamp, line isolator, earth isolator, dir. O/C and E/F relay, multifunction meter, KWH meter and also indicator signal.

The image of 33KV incoming panel with relay protection is given in figure (3.7).

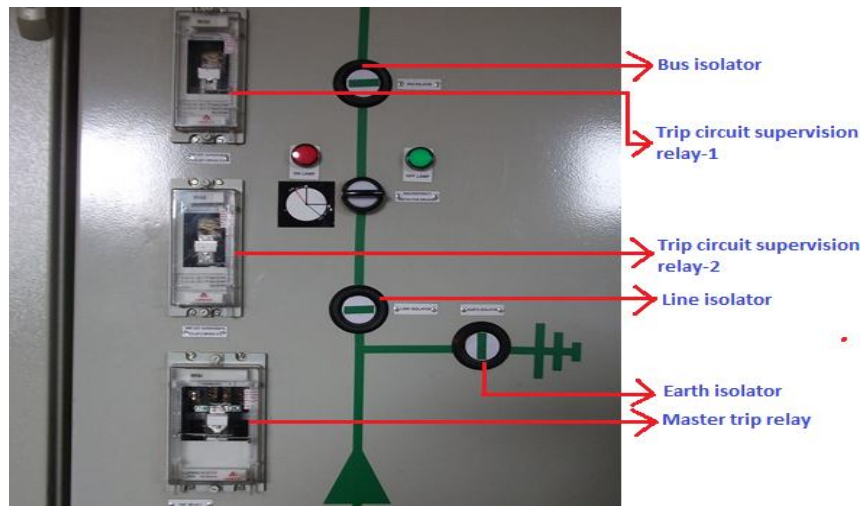


Figure 3.7: The relay protection on 33KV incoming line at Kafrul substation.

Relay Protection on 33KV Incoming Line: At Kafrul substation's control room inside the 33KV incoming panel there are two trip circuit supervision relays, one trip relay, one bus isolator, one line isolator and one earth isolator which I have observed and acquired knowledge during my internship period. Trip circuit supervision relay-1 is the relay which supervises the trip circuit of the circuit breaker. It tests whether dc supply is under proper condition or not. It also provides alarm for loss of dc supply, faults in trip coil or cables, faults on the breaker auxiliary contacts and faults in the relay itself. Trip circuit supervision relay-2 is also used for same objective. Bus isolator is used to isolate the bus from incoming line due to the maintenance or service purposes of bus. Line isolator is used to isolate the incoming line due to the maintenance or service purpose of substation.

Earth Isolator: After closing the bus isolator and line isolator, some electric charge remains present in cables. Actually earth isolator is used to discharge the electric charge from the cables. Master trip relay is the main and backup for protection relay for trip circuit supervision relay [8].

3.7 The 33 KV Transformer Control Panels

At Kafrul substation, I have observed three transformer control panels. These are transformer control panel-1, transformer control panel-2 and transformer control panel-3. The equipment at 33KV transformer control panel are differential relay, sensitive earth fault relay (p-120), O/C and E/F relay (p-120), multifunction meter, energy (KWH) meter, spring charge lamp, trip lamp, trip coil-1, healthy lamp, trip coil-2, healthy lamp, dc-1, dc-2, spare, trip relay-1,

trip relay-2, trip circuit supervision relay-1, trip circuit supervision relay-2, auxiliary relay-1 (BZ main tank and PRD main tank), auxiliary relay-2 (WTT and OLT), auxiliary relay-3 (BZ OLTC and PRD OLTC). The image of digital relay protection is given in figure (3.8).



Figure 3.8: The digital relay protection on 33KV transformer panel.

During my internship at Kafrul substation, I have observed and acquired knowledge about the differential relay, sensitive earth fault relay multifunction meter and O/C (over current) and E/F (earth fault) relay of transformer control panel. Actually transformer differential relay is a relay that checks for current balance between the primary and the secondary side of a transformer. It also acts as a protective element to protect cables which finds the fault or the difference between the primary and secondary current. The sensitive earth fault relay of power transformer is a protective device that works by measuring the amount of leak current which discharges to the earth such as for any small leak at underground cables and some current are discharging to the ground of earth. But it has a limitation. If it crosses the limit current, the sensitive earth fault relay trips the transformer. Multifunction meter is a meter which can display voltage, current, power factor, line to line voltage, phase to phase voltage and phase to neutral voltage. O/C means over current relay and E/F earth fault relay. O/C relay, if there is any imbalance in the 3 phase current then the over current relay trips the circuit. During storms, if the phase falls down to the earth, then the earth fault relay trips the circuit [5] [6] [7].

The image of relay protection on 33KV transformer panel is given in figure (3.9).

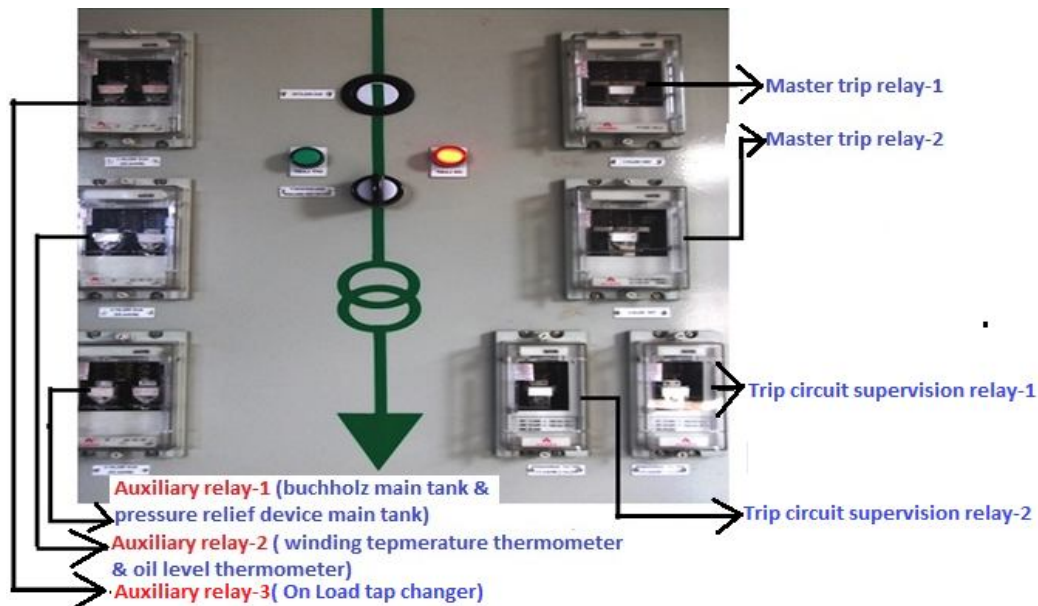


Figure 3.9: The relay protection on 33KV transformer panel at Kafrul substation.

Relay Protection on 33KV Transformer Panel: At Kafrul substation’s control room inside the 33KV transformer panel, there are two trip circuit supervision relays, two trip relays and three auxiliary relays which I have observed during my internship period. Trip circuit supervision relay-1 is the relay which supervises the trip circuit of the circuit breaker. It controls the dc supply of trip circuit. It also provides alarm for loss of dc supply, faults in trip coil or cables and faults on the breaker auxiliary contacts. Trip circuit supervision relay-2 is also used for same objective. The auxiliary relay-1 trips the transformer when there are fault inside the buchholz’s main tank and pressure relief device’s main tank. The auxiliary relay-2 trips the transformer when there are fault inside the winding temperature thermometer and oil level thermometer. The auxiliary relay-3 trips the transformer when there is fault inside the on load tap changer. Master trip relay is the main and backup protection relay for trip circuit super vision relay. If the trip circuit supervision relay-1 and relay-2 are unable to detect the fault or unable to sense the fault, then the master trip relay must detect the fault and trip the transformer [8].

3.8 Outgoing Feeders

At Kafrul substation there are eighteen numbers of 11KV outgoing feeders. But seven numbers of 11KV outgoing feeders are closed or spare for requirement of future generation

Undergraduate Internship Report

and three numbers of 11KV outgoing feeders are for switching and only eight numbers of 11KV outgoing feeders are active for the distribution of electricity.

Chapter 4

Conclusion

4.1 Discussion

I have spent some remarkable days at DESCOS during my internship program. DESCOS is one of the best practical grounds for the Electrical and Electronic Engineers in our country. I must say the theories that I have learned at my University was practically observed by me at DESCOS. I consider myself very much lucky to have my internship program with a reputed electricity distribution company like DESCOS. It gave me an opportunity to implement my theoretical knowledge in practically. My achievements from DESCOS are as follows:

- Industrial training provided by DESCOS has enriched my practical knowledge.
- It has enlarged my thinking capacity about practical operations of the different equipment.
- It has increased my confidence level for facing job interview in future.
- DESCOS gave me a unique experience of observing the equipment of substation.

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

4.2 Problems

I have already gathered some knowledge about DESCOS's practical operations. But within the limited time it was really difficult task to gather the whole knowledge about everything. Due to some privacy problem I could not get enough pictures and enough accesses to every place. Due to some mechanical fault, it was really a difficult task to visit and gather some knowledge about Kafrul substation. Moreover, I could not get the opportunity to learn about the new project of DESCOS because the project manager of DESCOS was outside the country. At that time due to the frequent maintenance at Uttara grid; it was not possible for me to know about the coolers of the grid. Due to some technical problems I could not observe the single bus bar of Mirpur substation.

4.3 Recommendation

During my internship period I had been introduced to some mechanical instruments. But at our University there is no mechanical engineering course according to our course curriculum.

Undergraduate Internship Report


That is why I had faced some problems during observation of these instruments. So, I just want to make a request to our academic faculty members and our authority to consider for adding a mechanical engineering course in our course curriculum. I hope this surely will help the upcoming students to understand about the mechanical instruments and their uses. Moreover students need to learn more power related theoretical knowledge before going for their internship program.

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Available: <http://www.allinterview.com/showanswers/132221.html>.
- [9] Photo taken by author from personal communication at DESCO.
- [10] Photo taken by author from Local Street at Gulsan-1.

Appendix

1



Department of Electrical and Electronic Engineering
East West University
EEE 499
Industrial Training
Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.


Name of the company:	DESEO
Name of the student:	MD. Shahif Ahmed
ID:	2008-1-80-039

Date:	10/09/2012
Start time/End time	9:00am-1:30pm, 2:30pm-5:00pm
Location:	HRM division, DESEO
Mentor:	Engr. Md. Shahin Ibne Rafiq.

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- b. The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- c. The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.

Dr. HRM Division.

 Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

1. Introduction to DESCO
2. The Area under cover DESCO (Service area).
3. Organization.

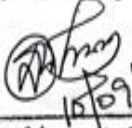
2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Dhaka Electric Supply Company Ltd (DESCO) was created as a distribution company in November 1996 under the companies Act 1994 as a public limited company with an Authorized capital of TK 5.00 billion. The Area, about 220 square kilometers, under service of the company.

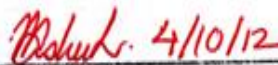
The company is run by a small management team headed by the Managing Director under the guidance of a nine member board of directors and six numbers of sales and distribution three grid and substation.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are Introduction of DESCO, Service area and Organization, ^{but} so practically is not related slightly to our EEE101 course which are provided by East West University.


10/09/12

Signature of the mentor, with date
Name: Md. Shahin Ibne Rana
Designation: Engr. Manager (Trng. & Dev.)
Contact Person: HRM Division (DESCO)


4/10/12

Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESED
Name of the student:	MD. Sharif Ahmed
ID:	2008-180-039
Date:	11/09/2012
Start time/End time	9:00am-1:30pm, 2:30pm-5:00pm
Location:	Administration Division, DESED H/R.
Mentor:	MD. Rashidur Rahman.

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

1. Administration Activities

DGM (Administration) (Deputy general Manager)
Manager (Logistics and general service)
Dy. Manager (Recruitment, Inquiry and discipline).

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

DGM is the head of the Section and he is controlled by GM (Administration) Implement of all Section like Estate, Logistics, Security department office order, circulars as directed by authority and the works of all Section
GM (Admin) Manager is under controlled by DGM. To implement like Logistics department as per condition of approved service rules and policy guideline.
Dy. Manager is controlled by DGM. To help DGM (Admin) and establish the service rules and policy guideline of Recruitment, Inquiry discipline

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topic are Administration activities like, DGM (Administration) Manager (Logistics and general service) Dy. Manager (Recruitment, Inquiry, and discipline) and it are practically small or slightly related to our MGT322 courses which are provided by our East West University

Signature of the mentor with date
Name: Md. Rashidur Rahman
Designation: DGM (Admin), DESCO
Contact Phone #:

Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
East West University
EEE 499
Industrial Training
Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESCO
Name of the student:	MD. Sharif Ahmed
ID:	2008180039
Date:	12/09/2012
Start time/End time	9:00 am-1:30 pm, 2:30 pm-5:00 pm
Location:	Uttaragpind SubStation (132/33/11KV)
Mentor:	S.M. Hanibul Islam

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- b. The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- c. The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

- Uttara Grid Substation (132/33/11KV)
- ① grid sub station and distribution sub station (basic definition)
 - ② single line diagram of sub station.
 - ③ general equipment of sub station.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

In our country the voltage transmission are 400KV, 230KV, 132KV respectively. But also in there grid the step down transmission voltage is 132KV to 33KV and 33KV to 11KV.

Basic configuration and understanding of single line diagram general equipments are

- ① Potential transformer
- ② Current transformer
- ③ Lightning arrester
- ④ Isolator
- ⑤ Fuse
- ⑥ Wave trap
- ⑦ grid transformer
- ⑧ Auxiliary transformer
- ⑨ Bus bar
- ⑩ Bus coupler.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are grid sub station and distribution sub station, single line diagram of sub station and general equipment of sub station. closely related to our EE E441 (Power station) course which is provided by our East West University.

Hakim
4/10/12
Signature of the mentor with date
Name: **S.M. Hasibul Islam**
Designation: **Jr. Assistant Manager-II**
Contact Phone #: **Uttara Grid, DESCO**

Mohammed
4/10/12
Signature of academic supervisor with date
Name: **FMA**
Designation: **Lecturer.**



4

Department of Electrical and Electronic Engineering
East West University
EEE 499
Industrial Training
Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Shouqij Ahmed
ID:	2008-1-80-039

Date:	14/09/2012
Start time/End time	9:00am-1:30pm, 3:00pm-5:00pm
Location:	Uttara grid Substation (B2/B3/11KV)
Mentor:	SUMAN DATTA

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- b. The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- c. The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

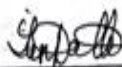
1. Transformer
2. Transformer principal
3. Transformer components.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Transformer is a static device which transform electric power from one circuit to another circuit without any change in frequency. When the current in the primary coil changes, changing magnetic flux is produced and this linked with secondary through core, which induced a voltage in the secondary according to the Faraday's Law of Induction.
Transformer components: Winding, Tank, conservator, Dehydrating Breather.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are Transformer, transformer ^{principal} and transformer components and topic is very closely related to the OUr EEE 441 (power station) course.

 14.09.12

Signature of the mentor with date
Name: **SUMAN DATTA**
Designation: **Jr. Assistant Manager**
Contact Phone: **Grid & Protection Division**
Uttara Grid, DESCO.

 4/10/12

Signature of academic supervisor with date
Name: **FMA**
Designation: **Lecturer.**



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

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Name of the company:	DESED
Name of the student:	MD. SHARIF AHMED
ID:	2008-1-80-039

Date:	15/09/2012
Start time/End time	9:00 AM - 1:30 PM, 2:30 PM - 5:00 PM
Location:	Uttara grid sub-station (132/33/11 KV)
Mentor:	MD. TAMIZ UDDIN

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
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Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

1. Transformer cooling system, Silica gel, Transformer oil, Transformer tap-charging, oil level indicator,
2. Energy loss in Transformer
3. Transformer protection system. Uttara grid Sub Station (132/23/11kV)

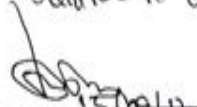
2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.


The cooling equipments collect hot oil at top of the tank and returned cooled oil lower down on the side. Silica gel is used to absorb the moisture from the air. The transformer oil provided high dielectric strength to the coil and core which are submerged.

Oil level indicator indicates the oil level in the conservator and gives too low or too high indications by the contacts unit. Energy loss in Transformer-like, loss of Magnetic flux, iron loss, copper loss, Hysteresis loss.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics were transformer components, Energy loss in Transformer and Transformer protection system & closely related to our EEE 443 (power station) course.


Signature of the mentor with date
Name: Md. Tamiz Uddin
Designation: Jr. Assistant Manager
G&P Division, U Grid, DESCO
Contact Phone #:


Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESED
Name of the student:	M.D. Sharif Ahmed
ID:	2008-1-80-039
Date:	17/09/2012
Start time/End time	9:00am - 1:30 Pm, 2:30 Pm - 5:00Pm
Location:	Uttara grid Sub-Station (132/33/11KV)
Mentor:	S.M. Hasibul Islam

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
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- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

A Uttara grid Sub-Station (132/33/11KV)

1. Sub Station Auxiliary Transformer
2. circuit breaker
3. SF₆ (Sulphur Hexafluoride) gas circuit breaker.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives

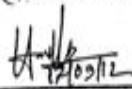
The Sub Station Auxiliary Transformer provide to the Auxiliary Service include lighting, low voltage power supply, ventilation and compressed air. In the Uttara grid Sub Station there are two auxiliary transformer three-phase 415V or single phase 230V. Typical size (11KV/0.115KVA)

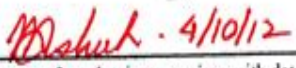
A circuit breaker is an automatically operated electrical switch which is designed to protect an electrical circuit from damage caused by overload or short circuit. Actually its basic function is to detect fault condition.

In Uttara grid SS there are two SF₆ (Sulphur Hexafluoride) gas circuit breaker.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Basically the topics are Auxiliary transformer, circuit breaker, SF₆ gas circuit breaker closely related to our EEE 411 (Power station course) which is provided by East West University


Signature of the mentor with date
Name: **S.M. Hasibul Islam**
Designation: **Jr. Assistant Manager-II**
Contact Phone #: **Uttara Grid, DESCO**


Signature of academic supervisor with date
Name: **FMA**
Designation: **Lecturer**



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Department of Electrical and Electronic Engineering
East West University
EEE 499
Industrial Training
Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Sharif Ahmed
ID:	2008-1-80-039
Date:	18/09/2012
Start time/End time	9:00am-1:30 pm, 2:30 pm-5:00pm
Location:	Utara S. & O. Division, DESEO
Mentor:	Engr. Mohammad Kamruzzaman

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- b. The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- c. The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

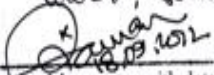
1. What was the objective of the day's activities? (If applicable, list multiple objectives)


Utara grid Sales and distribution (East), DESCO

1. Commercial activities
Disconnection/Reconnection
Metering (Meter Reading)
One point Service centre
Billing and collection.
2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Disconnection of domestic line has been considered to be a effective tool to ask consumer outstanding bills des. As connection of illegal connection, Meter reading are collected through meter Readers as per Schedule. (Low Tension, Low Tension Industry, High Tension) consumers. Any consumer coming to DESCO's sales and distribution office may receive desired service and solution from two staff of the one point Service centre. Billing/collection activities go under IT Section. Employees collect data from meter reading and entry in e-governance software. That software is very smart, it store data in server and create bill according to the tariff charge.
3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually two topics are commercial activities like, disconnection/Reconnection, Metering (Meter Reading, one point Service centre) and Billing and collection, topics slightly related to our MEST 321 course, which is provided by East West University.

Signature of the mentor with date

 Name: Engr. Mohammad Kamruzzaman
 Designation: Manager
 Contact Phone #: _____

Signature of academic supervisor with date

 Name: FMA
 Designation: Lecturer



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Shorif Ahmed
ID:	2008-1-80-039

Date:	19/09/2012
Start time/End time	9:00 am - 1:30 pm, 2:30 pm - 5:00 pm
Location:	Uttara S. & D. Division, DESEO
Mentor:	Engr. Mohammad Kamruzzaman.

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

1. Utility S. & D. Division (East), DESCO
1. Prepaid Meter
2. consumer Tariff Rate
3. Load Management
4. New connection.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Pre-Paid Meter utilizes smart card technology that allows customers to put money on a smart card which is usually inserted and removed from the pre-paid meter.


Consumer Tariff rate is different based on the different category of DESCO system.

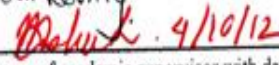
Load Management: Area where even distribution of electricity according to demand, Update load shedding schedule published in the web should be updated frequently. Building its own supervisory control and Data Acquisition system (SCADA) to manage its load a single point.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are Prepaid Meter, consumer tariff rate, load management, new connection is slightly related to MGT 322

and EEE 402 (Microcontroller and Microprocessors) which are provided by our East West University.


13.09.12
Signature of the mentor with date
Name: Eng. Mohamad Kamruzzaman
Designation: Manager
Utility S & D Division, DESCO
Contact Phone #:


9/10/12
Signature of academic supervisor with date
Name: Lecturer
Designation: FMA



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESED
Name of the student:	MD. Shoof Ahmed
ID:	2008-1-80-039

Date:	21/09/2012
Start time/End time	9:00am-1:30 pm, 3:00pm-5:00pm
Location:	Uttara Grid Substation (B2/B3/11KV)
Mentor:	MD. Mahmudur Rahman

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

Uttargangid Substation (132/33/11kV)

1. Vacuum circuit breaker
2. Potential Transformer
3. Current transformer
4. Lightning arrester

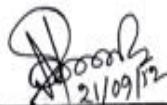
2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Actually Vacuum circuit breaker is a low voltage circuit breaker. Potential transformer or voltage transformer are used to step down AC voltage from higher to lower value for measurement, protection and control purpose. It is parallelly connected with the bus bar. Current transformers are also used for stepping down AC current higher value to lower value for measurement, protection and control purpose.

Lightning arrester or surge diverter has a high voltage terminal and a ground terminal. Actually it is designed to get a high voltage to ground when lightning strikes.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are Vacuum circuit breaker, potential transformer, current transformer, lightning arrester, closely related to our EEE 441 (power station) courses.


21/09/12

Signature of the mentor with date
Name: Md. Mahmudur Rahman
Designation: Jr. Assistant Manager
Contact Phone #: 74P Division, U.Grd, DESCO


4/10/12

Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
East West University
EEE 499
Industrial Training
Daily Activity Report

10

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD Sharif Ahmad
ID:	2008-1-80-039
Date:	22/09/2012
Start time/End time	9:00 AM - 1:30 PM, 2:30 PM - 5:00 PM
Location:	Uttara grid SubStation (B2/B3/11KV)
Mentor:	Md. Mahmudur Rahman.

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- b. The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- c. The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

Uttara Grid Substation (132/33/11kV)
1. Isolator (pin isolator, post isolator).
2. Bus Bar
3. Battery and Battery charger.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Isolator is used to break the 3 phase power under no load condition installed before and after the transformer maintenance purpose. Basically it is used to disconnect of electrical systems from the power source.

A bus bar is a strip of copper or aluminum that conducts electricity with a switch board, distribution board, substation or other electrical apparatus. The incoming and outgoing lines that can be connected together in bus bar.

Battery is a storage device. It is required for back-up DC supply to ensure protection. Actually DC voltage is required for protection control and signaling.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are Isolator (types of isolator), Bus bar, battery and battery charger is closely related to EEE 441 (power station) course which is provided by our East West University.


22/09/12

Signature of the mentor with date


Name:

Designation: Md. Mahmudur Rahman

Jr. Assistant Manager

Contact Phone # 02-88610000

D&P Division, U.Grad, DESCO


4/10/12

Signature of academic supervisor with date

Name: FMA

Designation: Lecturer



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Sharif Ahmed
ID:	2008-1-80-039

Date:	24/10/2012
Start time/End time	9:00 Am - 1:30 Pm, 2:30 Pm - 5:00 Pm
Location:	Kajral Substation (33/11KV)
Mentor:	Engr. Md. Golam Mowla.

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

- Protection and Maintenance of Substation (
1. Maintenance and Inspection of Sub Station.
 2. Transformer protection and maintenance
 - 3.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.


DESCO's Maintenance and Inspection of Sub Station

- (i) Monthly Inspection and maintenance, Half-yearly and yearly, Transformer maintenance and protection system
- (ii) Check condition of oil gauges and oil level
- (iii) Check the performance of oil temperature and winding temperature meter
- (iv) Check the control system and driving mechanism of OLTC Protection (i) Buchholz Relay, differential Relay, Pressure Relief device,

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topics are maintenance and inspection of Sub Station, and transformer protection and maintenance are already related to our EEE 411 (Power station) course which is provided by our East West University


Signature of the mentor with date
Name: **Engr. Md. Golam Mowla**
Designation: **Deputy Manager**
Contact Person: **Protection, DESCO**


Signature of academic supervisor with date
Name: **FMA**
Designation: **Lecturer**



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report


Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	M.D. Shanif Ahmad
ID:	2008-1-80-039

Date:	25/09/2012
Start time/End time	9.00 am-1.30 pm, 2.30 pm- 5.00 pm
Location:	Karbul SubStation (33/11Kv)
Mentor:	M.D. Moinul Khan

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.

 Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

Transformer fault detection and repairing (33/11kV) Katal Substation

- (i) Transformer coil burn
- (ii) Drop of fuse
- (iii) low dielectric strength transformer oil.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Transformer coil burn happens when distribution transformer runs under overload for a long day.
Drop fuse is a protection to avoid transformer burn. Drop off fuse burn when transformer or distribution feeder lines fall in short circuit fault or ground fault.
One kind of oil is used in transformer to isolate coil-container and cooling the transformer. This oil is a dielectric material. If the oil dielectric value decrease, the core can be burned and serious accident could be occurred.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually the topic are Transformer coil burn, Drop off fuse, and low dielectric strength transformer oil are closely related to EEE 442 (Switchgear and protection Relay), which is provided by our East West University

Signature of the mentor with date
Name: MD. MOMTAJ KHAN
Designation: J. Asst. Manager-II
Contact Phone: 01711 250717
Electric Supply Company Ltd. (ESL)

Signature of academic supervisor with date
Name: FMA
Designation: Lecturer
Mahmud 4/10/12



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

13

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Sharif Ahmed
ID:	2008-190-039

Date:	26/09/2012
Start time/End time	9:00am - 1:30pm, 2:30pm - 5:00pm
Location:	Katol Substation (33/11KV)
Mentor:	MD. Rezoul Karim

General Instructions:

- a. It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
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- d. In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

- Kafural Sub Station (23/11/12)
- ① Power factor monitoring and upgrading
 - ② How power factor vary
 - ③ Effect of negative power factor.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Power factor is two most important factor in the power system because low power factor impose negative effect on power generation. In Kafural Sub Station I saw two power factor's 0.97 ~ 0.98 but Average 0.95

$$P.F = \frac{\text{Real Power (kw)}}{\text{Apparent power (kva)}} = \cos \theta$$

Inductive load is responsible to degrade the power factor. Special In Industry who has Induction motor, Energy saving light. It affects the power distribution system voltage drop in power line, excessive voltage drop response over heating in distribution network. power factor correction plant.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually two topic are power factor monitoring and upgrading. How power factor vary, effect of negative power factor, power factor correction plant are related to our EEE441 (power station) course.

26.03.12
Signature of the mentor with date
Name: Md. Rezaul Karim
Designation: Jr. Asset Manager
Contact Phone #:

Mohab. 4/10/12
Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
 East West University
 EEE 499
 Industrial Training
 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Sharif Ahmed
ID:	2008-1-80-033

Date:	28/09/2012
Start time/End time	9:00am-1:30pm, 3:00pm-5:00pm
Location:	Kabul Sub Station (33/11KV)
Mentor:	Md. Rezaul Karim

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
- In case of any confusion, interns are strongly recommended to consult their respective academic supervisors.



Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

1. Control Room Activity
2. Control Relay Panel
Kafra Substation (23/11 KV)

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

The basic operation of control rooms are
 (i) communicate with other control room operators
 (ii) communicate with line maintenance team
 (iii) Manage load shedding.
 (iv) Recieve data (Supply, load, demand load, load shedding time)

Kafra 23/11 KV Substation SES Panel Remote Top Charge cable

The panel incorporates control switches and indication lamps for remote control of controlled equipment
 23KV Incoming Panel (Mux panel) Kafra (0/H and U/G), 23KV Transformer Panel.
 23KV Incoming Panel (Kafra U/G), 23KV Incoming Panel (Kafra 0/H)

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually two topics are Kafra Substation's control room activity and control Relay panel (equipment of signaling) related to our EEE 441 (power station systems).

[Signature]
28/09/12

Signature of the mentor with date
Name: Md. Rezul Karim,
Designation: Jr. Asst. Manager
Contact Phone #:

[Signature] 4/11/12

Signature of academic supervisor with date
Name: FMA
Designation: Lecturer



Department of Electrical and Electronic Engineering
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 Daily Activity Report

Separate Daily Activity Report should be completed by each intern for every day of work and should be signed by the mentor from the company and the academic advisor. Copy of all the reports should be attached to the final internship report.

Name of the company:	DESEO
Name of the student:	MD. Sharif Ahmed
ID:	2008-1-80-039

Date:	02/10/2012
Start time/End time	9:00am - 1:30pm, 2:30pm - 5:00pm
Location:	Uttara-goid Sub Station (132/33/11KV)
Mentor:	S.M. Hanbul Islam.

General Instructions:

- It is the intern's duty to make sure that all his/her daily activity reports are appropriately signed by both the mentor and the academic supervisor.
- The daily report should be a brief narration of the activities during the internship period in the eyes of the intern and should be completed and submitted by every intern irrespective of the number of partners s/he might have for the presentation and final report writing purpose.
- The report should not be a compilation of lectures notes taken during the internship, rather it should depict what the intern has learned on a particular day.
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Department of Electrical and Electronic Engineering
East West University

Address the following points briefly (Use additional page if necessary)

1. What was the objective of the day's activities? (If applicable, list multiple objectives)

Uttara grid Sub Station (132/33/11KV)

1. Metering and protection of ET, PT
2. Principle of Relay operation.
3. Delta-Ye transformer.
4. Transformer Internal Architecture.

2. List the day's activities according to the order of objectives listed in 1. Mention the specifications of the equipments used/visited. Comment on how these activities fulfill your objectives.

Understanding of ET, PT, how they protection and metering my meter easily explained with help of two basic diagram of ET, PT. He also explain the operating principle of Relay how it energized and how it is activated signaling during any fault condition.

Actually step-up transformer is generally Delta-Ye type transformer and also in grid G11, G12, G13, G14 are Delta-Ye type means primary winding is Delta connected and secondary winding Ye connected.

3. Relate your practical activity with the theoretical knowledge you gained in the respective academic course.

Actually two topics are Metering and protection system of ET, PT, Principle of Relay operation, Delta-Ye type transformer, Transformer Internal Architecture is related to our EEE 441 course (power station) which is provided by our East West University.

Signature of the mentor with date

Name: **S.M. Hasibul Islam**
Designation: **Jr. Assistant Manager-II**
Contact Phone #: **Uttara Grid, DESCO**

Signature of academic supervisor with date

Name: **FMA**
Designation: **Lecturer.**