1.1 Introduction:

System analysis is a problem-solving technique that decomposes a system into its component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose. It mainly deals with a complete organization and its software development activities. To analyze a system, an analyst has to identify, understand and plan for organizational and human impacts of planned systems, interact with internal users and customers, explain the different phases of system development life cycles, enumerate the components of system analysis, explain the components of system design. We selected RPCL-Raozan Power Plant to analyze.

1.2 Objectives

- To obtain the hierarchy of the organization.
- To gather different information about the organization.
- To classify information into various categories.
- To briefly narrate the data flow diagram.
- To sort out the limitations and find out alternative solutions.
- To analyze the feasibility of the system and propose some better alternatives.

1.3 Overview of the organization

Raozan Power Plant is a dual fuel (HFO/Gas) power station which is owned and controlled by Rural Power Company Limited (RPCL). Rural Power Company Limited was the first Independent Power Producer (IPP) of Bangladesh and the first non-Bangladesh Power Development Board (BPDB) entity to be licensed to take up power generation. To eliminate power shortage of the country, government has taken short term, mid-term and long-term initiative

Figure 01: RPCL Raozan Power Plant

As a part of this initiative, RPCL has constructed the Raozan power plant. An EPC contract was signed on 23 March 2011 and the station achieved commercial operation on 9th May 2013.

1.3.1 Location & Area

Raozan power plant is located at Noapara in Raozan upazila of Chittagong district which is 25 kilometres (16 miles) northeast of Chittagong on the north of the Chittagong–Kaptai Highway.

1.3.2 Basic Information

Generation Capacity:

210MWx2

Raw Material:

Gas from Karnaphuli Gas Distribution Company Limited.

Supplier of raw material:

Standard Asiatic Oil Company under Petro Bangla.

Main Machine Supplier:

Dongfang Electric Company Ltd

Inventory Software:

IVVR

Cost per unit:

Cost of oil per unit production is 14 Tk. In case of natural gas, the cost on only .80Tk.

Features of plant machinery:

Flexible turbine, adjustable turbine, steam turbine, spillway gate, intake gate, 4 stroke engine, 3 generators, boiler, substation & switchgear, unit step up transformers, air cooled condenser for generators, water treatment unit for engines.

Special features:

- Modern & environment friendly technology.
- Enclosed by Acoustic walls to reduce noise.
- Plant design includes multiple layers of backup control levels to ensure high availability.
- Plant control is state of the art with computerized generation control & a complete monitoring system of all significant data.

Client

Bangladesh Power Development Board (BPDB), Bangladesh Rural Electrification Board (BREB).

Departments

There are mainly two departments

1. Maintenance Department
2. Operation Department

1.3.3 Why we have chosen RPCL Raozan Power Plant?

Bangladesh is presently facing shortage of power and there are always load shading in some parts of the country. This is threatening to the agriculture, industry, commerce as well as the whole economy. Rural Power Company Limited is committed to reliable power generation for Rural Development and also to take part in social & economic development for rural people of the country and Raozan Power Plant is an active branch under generating power regularly. So, we have considered this power station as an appropriate organization for system analysis. Moreover, an officer in management level is familiar to us. Furthermore, we also considered the distance and

transportation facilities. As the station is located near our university, it is easy for us to communicate with them and collect information.

1.4 Management Information

1.4.1 Information required in management:

Information is processed data used to trigger certain actions or gain better understanding of what the data implies. We need information to run an organization efficiently. On the basis of the information, we collected from the interviewee required by our selected organization may be classified into the following categories:

Strategic Information:

- Setting up new unit.
- Policies on machinery replacement, augmentation and modernization.
- Selecting new vendors if needed.
- Determining the level of materials inventory.
- Requirement of personnel at different level.
- Policies on human resource development & training.

Tactical Information:

- Identifying critical bottlenecks in production.
- Performance measures of machines to decide on replacement.
- Determining budget and variance between budget and expense.
- Deployment of personnel at different sections.
- Determining amount of raw material to be allocated in the inventory.
- Leave and overtime policies.
- Determining the amount of raw material to be reordered.
- Controlling high value inventory.
- Determining variance between generation of power and goal.

Operational Information:

- Monitoring up to date generation information.
- Information about leave record and daily attendance of staffs.
- Monitoring tools and machines.
- Checking availability of fuel, materials and equipment.
- Checking daily oil loading & unloading.
- Amount of excess and deficient oil received.
- Effects of seasonal variation on generation of power.
- Controlling transmission of power on the basis of load.
- Detecting likely shortages of Furness oil, lubricating oil and giving early warning.
- Monitoring staff performance and routine assessment.

1.4.2 Managing Level

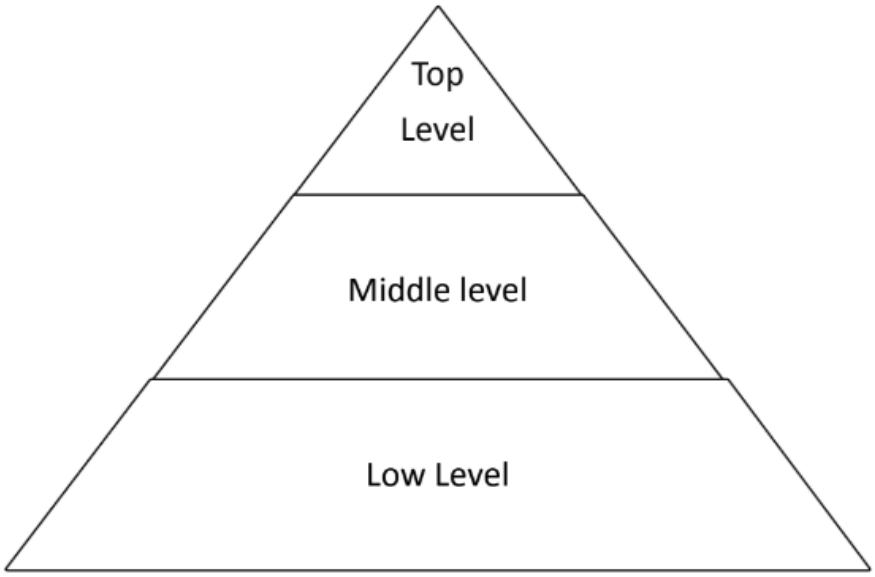

Figure 02: Managing Level

Top Level

There is one executive engineer in the top level of this power plant. He is also known as plant manager.

Middle Level

There are two sub-divisional engineers in middle level. One of them is in charge of the operation department and the other is in charge of the maintenance department. Assistant engineer, sub-assistant engineer, deputy manager, junior assistant manager etc. are also in middle level. 7 assistant engineers, 14 sub-assistant engineers and other stuffs works under the supervision of sub-divisional engineer.

Low Level

Store keeper, store assistant, work assistant, helper, electrician, driver, painter, fitter, welder, cleaner, gardener, cook etc. are in low level.

1.4.3 Functions of different officers

Executive Engineer:

- Leads audit committee, budget committee etc.
- Takes major decisions.

Sub Divisional Engineer (Operation)

- Supervises the operation of the power plant.
- Require tactical information to perform their function.

Sub Divisional Engineer (Maintenance)

- Supervises the maintenance department.

Assistant Engineer (Operation):

- Determines quantity of excess and deficient supply of raw materials.

Assistant Engineer (Maintenance):

- Performance measurement of machines.
- Identifies errors in machineries.
- Determines cost of repair and failure.

Sub-Assistant Engineer (Operation):

- Monitors up-to-date generation information.
- Receive raw materials.

Sub-Assistant Engineer (Maintenance):

- Monitors whether all the machines are properly functioning or not.

1.5 Information Gathering

1.5.1 Questionnaire:

Management

- Brief description of Hierarchy.
- How many departments this power plant has?
- Which department is for generation and which is for maintenance?
- What is the basic function of different officers?

Resources and Inventory

- What are the raw materials?
- Purchasing way of raw materials.
- Which company is the supplier of machinery?
- What is the way of controlling the inventory?

Generation and Production

- Generation capacity.
- How much it costs to generate per unit power?
- What kind of software is used to keep information of production?
- What is the system of knowing monthly history of production, fuel and cost?
- Who are the clients?
- What are the actions taken during any failure?

1.6 Conclusion:

RPCL Raozan Power Plant is a good model for system analysis & design including various perspectives. We came to know about the hierarchy of the organization & information about different sections. We have analyzed that the power plant needs some sections to be developed & to cope up with some modern facilities. We have examined how data is processed for obtaining different types of information in management. Moreover, we have analyzed that some procedures are still manual and should be computerized. As it has a great impact on the power supply of this area so for better performance the system should be slightly moderated. Hence, we have decided to continue analyzing the system of RPCL Power Plant.