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Narora Atomic Power Station – An Analytical Study

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Abstract – India is a developing country and the population is rapidly increasing day by day. With increase in population, the energy demand is also increasing. India is not enriched in conventional sources of energy. Hence to meet the energy demands Department of Atomic Energy (DAE) India is looking towards the Nuclear Energy as a better option for Energy generation. For achieving this goal, DAE established Nuclear Power Corporation of India Ltd. (NPCIL) on 17 Sep 1987 which includes construction of 8 Nuclear Power Plants across India. Narora Atomic Power Plant (NAPS) is one of them. NAPS has two Pressurized Heavy Water Reactor (PHWR) type units, each having a generating capacity of 220Mwe.The commercial operation of Unit I and Unit II was started from 01 Jan 1991 and 01july 1992 respectively. The plant is located in Narora (Bulandshahar District West UP) on the bank of river Ganga. It is situated in Ganga-Yamuna doab and on the basis of seismic zone it is in Zone IV. Nearest district is Aligarh which is the most populated district of this region. NAPS supply five 220 KV power lines in Moradabad Tehsil, Harduaganj, Simbholi, Khurja (2Lines) which are densely populated areas and economically depends upon agriculture due to fertile land of River Ganga. The main crops are wheat, sugarcane etc. A large number of Sugar mills are also situated in these areas. The power need in agriculture, irrigation and industries especially Sugar mills is supplied by NAPS. In this way the power plants also plays a vital roles in the development of this region.

Key Words – Nuclear Power Station, Power Supply, Development, Agriculture, Irrigation

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INTRODUCTION

In a developing country like India with a huge population, it is a big challenge to provide electricity to each and every one. The Conventional sources of energy are exhausting and on the other hand the population is increasing day by day. Out of the total power generated in India a large part of energy generation depends upon Thermal Power Plants, which use Coal as main Fuel, and which is exhausting rapidly. On the other hand, there is a large difference between Demand and supply of energy.

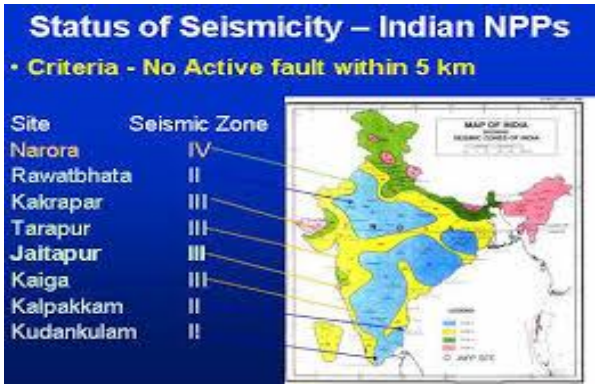
Hence, to minimize the difference between the Demand and supply Department of Atomic Energy established Nuclear Power Corporation of India Ltd. The main aim is to generate clean energy for which 8 different Nuclear Power Plants are established across India.

Narora Atomic Power Plant is one of them, which was established in 1989 and it supplies power to the Northern Grid. It has two units of 220MWe each. The commercial operation of Unit I was started on 1 January 1991 whereas Unit II was started on 30 June 1992.

AIM/OBJECTIVES

- To study the effects of Plant over the Research Area
- To study the Usability of the Plant in Research Area
- To study the effect upon the local job opportunities in the research area

NAPS is situated in Narora, Bulandshahar Distt. in West UP. It is in Ganga-Yamuna Doab. And according to the Seismic Zone it is in Zone 4, which means that Earthquakes are very frequent in that area. In the past 20 years, NAPS has faced a large number of earthquakes but is still completely safe.



NAPS is situated in area which have low population, large availability of water, more possibilities of Industrial expansion.

Total Area of plant = 8.04 km sq.

Area of building and Plant = 2.01 km sq.

Area of Plantation =6.023 km sq.

Energy Production:-

It have two units of 220 MWe each

Total energy generated Per day per Unit = 5 millionUnits

Total energy generated in both units = 2x 5 Millions= 10 million Units

Supply Area:-

NAPS have 5 outgoing feeders which are as follows

- Harduaganj
- KhurjaTehsil(2 Feeders)
- Simboli
- Moradabad

They all are populated areas with high energy demands.

Employees and Labor in Narora-

NAPS has created employment in both Direct and Indirect way. We can see the workers and labors working in NAPS with the help of table given below

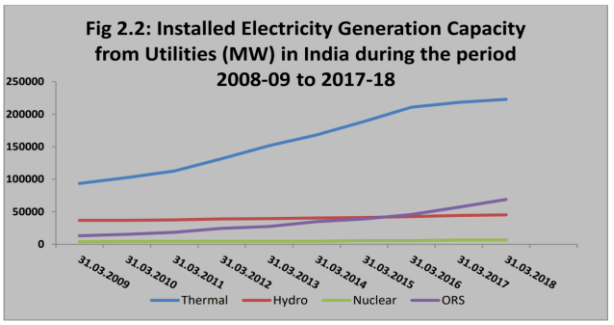
S. No.	Types of Employee	No. of Employee
1	Engineer	250
2	Technician	275
3	Work Assistant	50
4	Managers	125
5	Clerk Staff	184

S. No.	Type of Worker (Contract Based)	No. of Worker
1	Unskilled	25
2	Semi-Skilled	400
3	Skilled	200
4	Highly Skilled	10

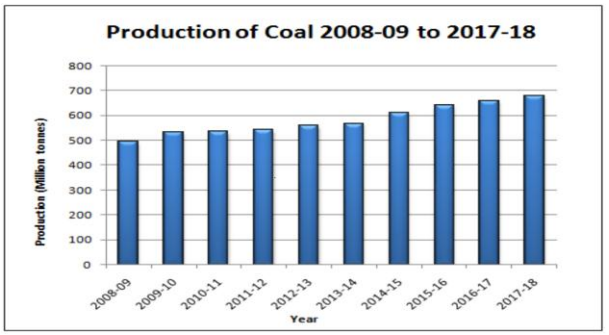
Importance

The stock of coal is limited which is currently the measure source for energy generation in India. On the other hand, the demand and supply gap of energy is increasing with increase in population.

In India Only 60% population have reach to electricity. To provide energy to rest of the population we have togenerate more electricity. The major source of Energy generation is Thermal Power Plants. So the amount of Energy generated by Thermal Power Plant is increasing (See Graph) which results in production of Coal at a large scaleeven when the Coal Resources are limited the coal production is increasing (See Bar Graph).

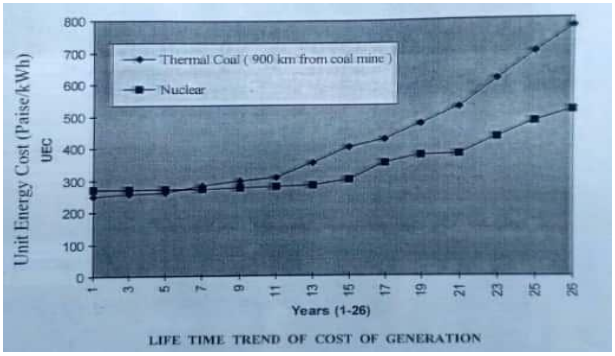


(Graph)



Because of the Power Generation through Coals, the level of CO2 and other Green House Gases is increasing in Atmosphere which results in increment of Global Temperature, melting of Glaciers, fires in Forest etc. So to take care of the environment we are looking for a source with almost zero pollution and have a large possibilities of energy generation. Nuclear Energy by using Nuclear fuels such as Uranium and Thorium which can generate a tremendous amount of energy comes out to be a better option for generating power.

The Nuclear Power plants required high Security standards and Specialized equipment's which makes the Plant Very Costly. According to a study Conducted by NAPS, the initial cost of per unit generation is almost equal for both Thermal and Nuclear Power Plant. But during the further operational period the per unit cost of energy generated by Thermal Power plant is increasing with the number of operational years increasing as compared to the Nuclear Power Plant. (See Graph)



LIFE TIME TREND OF COST OF GENERATION

The area in which the plant is situated is a high fertility land and most of the population is based upon Agriculture. The main crops are Sugarcane, Wheat etc. The electricity needed for the irrigation is supplied by NAPS. Along with this the power needs of Sugar mills and Oil Mills is also fulfilled by NAPS.

There is a township developed for the Employees of the NAPS near the Plant which results in development of food shops and a small market for daily household need items. Along with this the demand of Dairy Products in nearby Villages likes Ratanpur, Belon is also increased.

Also some local people are also driving E-rickshaw's as a mode of transport between townships to Market. These all things are helping people in getting self-Employed.

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