REPORT

EDUCATIONAL TOUR TO BISALPUR DAM

ON 17TH MARCH 2016

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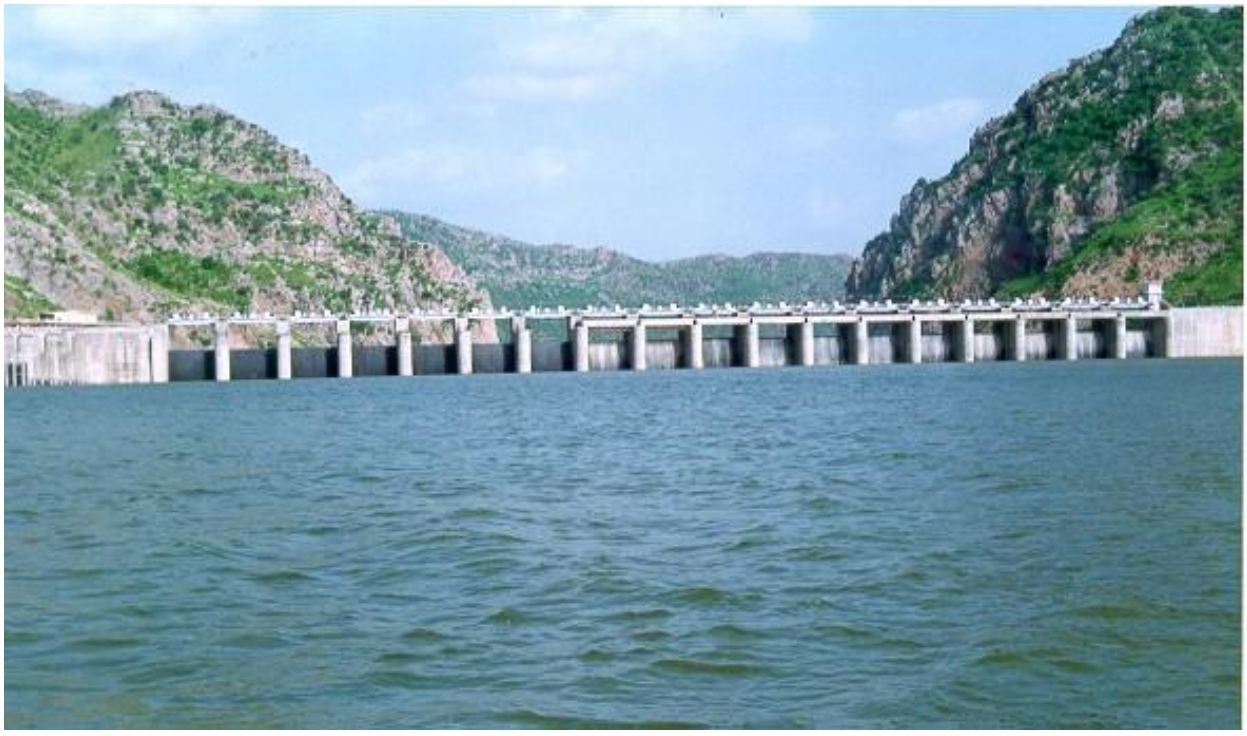
INTRODUCTION

Bisalpur Dam is a Gravity dam on the Banas River near Deoli in Tonk district, Rajasthan, India. The dam was completed in 1999 for the purpose of irrigation and water supply. It has a total capacity of 1100000000 m^3 891,785 acre·ft and a surface area of about 218.36 km2.

It has a spillway capacity of 29,046 m3/s with a height of 59.4m and a length of 574 km. It has been built by a collaboration of number of companies one of them is L&T. The project is completed in 1999 with an expenditure of 556 crores rupees.



COOLING PLANT AT BISALPUR

A cooling plant is situated just besides the spillways for cooling down the bearings of pumps and generators used in the dam. The plant uses the mechanism of flowing cool water around the parts which needs to be cool down .This way the bearings transfers their heat to the water and then the heated water is allowed to fall from a

certain height in order to cool it down. The cooled water is then used again for the same purpose.

WATER TREATMENT PLANT:

Water treatment plant at Bisalpur is in its second phase providing a 600 Million Litres water per day. In its third phase it would be able to treat 1020ML of water per day.It is using German technology never used before in the whole country.It is designed in such a way that it can be expand further for the ever growing demand of water.

COMPONENTS OF WATER TREATMENT PLANT:

Water treatment plant at Bisalpur has following components that has the following purpose:

1. Receiving Chamber:

   For the purpose of carrying water from the Dam. Via this point water from the dam is taken into the treatment plant for the purpose of purification.

2. Main distribution chamber :

   Water after receiving is allowed to flow through the main distribution chamber. Here chemicals generally coagulants are added to the water for the purpose of sedimentation and coagulation.

3. Parshall Flume:

   It is the narrowing down of the main distribution chamber to increase the speed of flow and turbulence so the chemicals like liquid Chlorine (added by using underwater pipes) can be thoroughly added to the water.

4. Pulsator Distribution Chamber:

A Pulsator is a device which divides a single stream of water into two equal stream by using air pressure and a specific shape at the discharge. Since these uses air pressure these are generally termed as pneumatic pulsators. After the water from the Main Distribution Chamber different pulsators are used for dividing the flow into two equal main stream.

5. Aquazur V filter:

   These are zigzag shaped channels specially designed for the purpose of removing solid wastes from the water. When the water flows through the channels the sudden zigzag turns check the wastes particles carried by the water.

6. Filter Annexe Building:

   This building includes chlorine tanks and various flocculants. As soon as water enter this building it is processed with a common process of break point chlorination and flocculation of particles. Resultantly, the charged particles get neutralized and settles down. After the chemical process is over ,water is allowed to pass through several layers of sand, gravels and various other components of different particle sizes. This as a result check the flow of various wastes of different sizes with the flow of water.

7. Filter backwash waste recirculation tank:

   When water keep passing for a certain period from the filter annexe , filters get blocked due to the deposition of wastes in its pores. Hence there is need of backwash. This backwash tank pressurized a flow of compressed air and water in the reverse direction from the filter causing the waste to move back with the water. This waste water is then sent again to the main distribution chamber for its filtration.

8. Processing of sludge:

   Sludge receive d from the waste water is carried to large pits (known as sludge drying beds) under the direct sun. It is kept there for a certain period of time until it gets dried up completely and ready to be used as manure in the fields or if hazardous to be dumped below the ground.

9. Thickeners:

   Thickeners are chemical compounds which get added at the time water enters into the main distribution chamber. Their work is to increase the density of wastes for their easy removal.

10. Pump house:

    Pump house pumps the treated water into the large pipes for its supply to various places. These are necessary to maintain a certain head through the pipes and at receiving end of the pipes.

11. Surge Tank:

    The treated water is allowed to store at a certain pace known as surge tank. Its capacity is about 6000ML.Before going to the pump house water is stored in surge tanks.

ADMINISTRATION AND CONTROL:

For the administration and control of such a huge project an Administration and Control Building is located at the water treatment plant. From here all the pumps, pipes ,volume in surge tank, water getting treated per hour ,discharge of water at the receiving end, head of water to be supplied and water forced to flow etc. are controlled. A whole team of L&T is controlling each and every operation related to the water treatment plant.

BISALPUR – JAIPUR WATER SUPPLY PROJECT:

The Bisalpur-Jaipur Water Supply Project (BWSP) has been designed to deliver water from the existing Bisalpur Dam head works up to Balawala on the south edge of Jaipur City to reduce the city's dependence on its ground water resources, and includes complementary provisions for supplying water to other areas. The conceptual planning for the BWSP is to utilize the Bisalpur Dam water in a phased manner in order to meet the ever increasing water demands of Jaipur City and reduce the groundwater abstraction to sustainable limits. Phase I of the BWSP with water treatment plant (WTP) designed to supply a total of 400 MLD with a provision of 360 MLD for Jaipur city and 40 MLD for rural area.

The works have been planned and designed for 600 MLD in such a manner so as to facilitate a Phase II expansion program which is to be taken up in the future to provide a total of 540 MLD of treated water to Jaipur City plus 60 MLD to the rural areas and also to facilitate construction of the Stage II of the Project to achieve a total capacity of 1020 mld clear water production.

OTHER TECHNICAL DETAILS:

The transmission system portion of the Phase I works is comprised of:

- Supply and installation of 9 Nos. vertical turbine raw water pumps each 850KW having capacity of
- (Phase -I 416 MLD and for phase-II 624 MLD) in the existing pumping station at the Bisalpur Intake
head works.
- Supply and installation of 8.4 km of 2400 mm diameter MS raw water pipeline from Bisalpur up to Surajpura of
1060 mld capacity.

- Construction of a 400 MLD potable water treatment plant at Surajpura. Bisalpur Water Supply
- Construction of a 400 MLD capacity clear water pumping station at Surajpura, with 360 mld to be delivered to
Jaipur and 40 mld for rural areas expendable for 600 mld capacity.
- Supply and installation of 96.0 km of 2300 mm diameter MS clear water pipeline from Surajpura up to Balawala
of capacity 540 MLD suitable for phase-II..
- Dedicated power supply system, 220 KV GSS at Duni, 132 KV GSS at Surajpura, 2 Nos. of 33 KV Indoor type .
GSS at intake and WTP, double circuit 132 KV power line from Todarai Singh 10 Km. and single circuit 132 KV .
two lines 30 Km. from Duni to Surajpur.