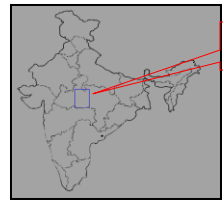




INDIRA SAGAR DAM SPILLWAY, MADHYA PRADESH



BACKGROUND

Main and Auxiliary spillways are designed to dispose off a design flood. In the original design, the energy dissipator was in the form of slotted roller bucket with different bucket invert levels for both the spillways. It was observed by the project authorities that during every monsoon, the slotted roller bucket of the main spillway gets damaged and needs to be restored. A ski jump type of energy dissipator was proposed in place of slotted roller bucket for the main spillway considering the prevailing site conditions, hydraulic, structural and economic aspects. Physical model studies were conducted for finalizing and optimizing the design.

SALIENT FEATURES

River	: Narmada
Dam	: 92 m high Concrete Gravity Dam, Distt. Khandwa (Madhya Pradesh)
Main Spillway	: 12 nos. Overflow spans - 20 m wide X 17 m high
Auxiliary Spillway	: 8 nos. Overflow spans - 20 m wide X 17 m high
Power House	: Surface
Capacity	: 1000 MW (8 x 125 MW Francis Turbines)

MODEL STUDIES

3-D Comprehensive (1:130 GS) models of the dam spillway have been constructed to study:

- ❖ Discharging capacity of Main and Auxiliary spillways
- ❖ Water surface profiles for entire range of discharges
- ❖ Performance of energy dissipation arrangements
- ❖ Assessment of the throw distance of Ski-jump jet
- ❖ Flow conditions in the vicinity of Power House tail race channel
- ❖ Scour studies to decide the location & size of the preformed plunge pool
- ❖ Evolving a well defined exit channel downstream of the Auxiliary spillway



SIGNIFICANCE OF THE STUDIES

The model studies are useful to evolve economic and safe hydraulic designs of spillways and energy dissipators. The studies for Indira Sagar project will help in enhancing safety due to:

- ❖ Modification of Energy dissipation arrangement in the form of Ski-jump bucket for main spillway
- ❖ Improved energy dissipation with modifications in design of the spillway

FURTHER STUDIES

- ❖ To assess the discharging capacities of spillways, flow conditions upstream and downstream of both the spillways and in the tail race channel up to confluence in the river downstream
- ❖ To design a well defined exit channel downstream of the Auxiliary spillway to prevent the water flow towards the TRC tail pool