

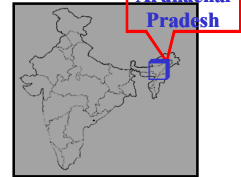


अनुसंधान के माध्यम से सेवा  
Service Through Research

CENTRAL WATER AND POWER RESEARCH STATION

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## SIANG LOWER H.E. PROJECT, ARUNACHAL PRADESH



### BACKGROUND

The spillway arrangement and construction schedule envisaged is unique. A two tier spillway comprising overflow ogee spillway on the top tier and sluice spillway below is proposed. Sluice spillway performs dual function of disposing flood as well as flushing of sediment. Design of these structures can not be standardised and depend on site specific conditions. Physical model studies are required for finalizing and optimizing the design.

### SALIENT FEATURES

Type	: Run of river H.E. Project
River	: Siang
Dam	: 86 m high concrete gravity dam, Distt. East Siang (Arunachal Pradesh)
Spillway	: 14 nos. Sluices - 7.0 m wide X 12 m high with breast wall with 8 Nos. Overflow spans - 20 m wide X 22 m high
Power House	: Surface (Dam Toe)
Capacity	: 2700 MW (9 x 300 MW Francis Turbines)

### MODEL STUDIES FOR PHASE I AND PHASE II DAM SPILLWAY

#### 2-D Sectional (1:70 GS) and 3-D Comprehensive (1:100 GS) models to assess :

- ❖ Discharging capacity of overflow and sluice spillway
- ❖ Adequacy of top level of coffer dam and protection wall
- ❖ Water and pressure profiles along the spillway surface
- ❖ Efficacy of the energy dissipation for only sluice spillway operating and both sluice and overflow spillway operating under the different combination of gate openings
- ❖ Flow conditions upstream of spillway and in the vicinity of power intake
- ❖ Flow conditions downstream of spillway and protection measures of river bed and banks



### SIGNIFICANCE OF THE STUDIES

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

- ❖ Improved pressures along spillway surface with modifications of spillway profile and sluice roof profile at exit
- ❖ Improved energy dissipation with modifications in design of the stilling basin
- ❖ To prevent overtopping of water the top level of upstream coffer dam and protection wall need to be increased.

### FURTHER STUDIES

- ❖ Modification of upstream and downstream ends of protection wall for improving flow conditions in the upstream and downstream of spillway
- ❖ Flow conditions in the tail race channel for different combination of power intake operations
- ❖ Model studies for Phase . II (completed stage) spillway and power intakes