



अनुसंधान के माध्यम से सेवा  
Service Through Research

## MANGDECHHU DAM SPILLWAY, BHUTAN

Mangdechhu  
H. E.P(Bhutan)



### SALIENT FEATURES

Location	: Dist. Trongsa Dzongkha
Country	: Bhutan
River	: Mangdechhu
Power Generation	: 720 MW
Design Discharge	: 8500 M <sup>3</sup> /S
Type of dam	: Concrete Gravity Dam Height 56 m
Spillway	: 4 Spans of 10 m wide x 16 m high with breast wall
Energy dissipator	: Ski-jump bucket with pre-formed plunge pool

### MAJOR STUDIES

#### 1:40 Scale 2D Sectional model & 1:60 Scale 3-D Comprehensive model

- " Approach flow conditions upstream of spillway and power intake
- " Assessment of discharging capacity , water profile & pressures on spillway
- " Performance of spillway and energy dissipator



### RECOMMENDATIONS OF THE STUDIES

- ❖ Design of breast wall bottom profile was modified so as to increase its performance. The water surface follows the breast wall profile after the modification and hence its performance is found to be satisfactory.
- ❖ The discharging capacity of the spillway was found to be adequate.
- ❖ Approach flow conditions upstream of spillway were not satisfactory causing non-uniform flow distribution and high return velocities on the upstream right bank and hence it needs to be protected.
- ❖ It is recommended to provide special structural measures to protect the surface of the ski-jump bucket against abrasion damage due to the formation of hydraulic jump before initiation of ski jump.
- ❖ Performance of ski-jump bucket was found to be satisfactory for gated operation.
- ❖ Flow conditions in the vicinity of power intakes were found to be satisfactory with intake discharge under MDDL condition.