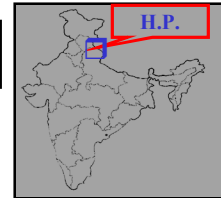




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CENTRAL WATER AND POWER RESEARCH STATION
PUNE - 411 024, INDIA.

PARBATI DAM SPILLWAY, HIMACHAL PRADESH



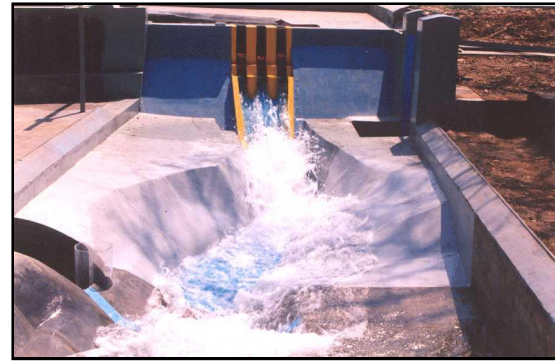
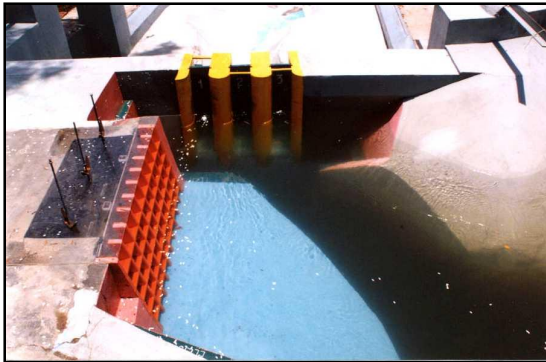
SALIENT FEATURES

| | |
|-------------------|---|
| Location | : Dist. Kulu. Himachal Pradesh |
| River | : Parbati (a tributary of Beas River) |
| Power Generation | : 800 MW |
| Maximum Discharge | : 1850 m ³ /s |
| Type of dam | : Concrete Gravity Dam Height 70 m |
| Spillway | : 3 Spans of 6.0 m wide with breast wall separated by 3 m thick piers |
| Radial Gates | : 9.0 m (H) 6.0 m (W) |
| Energy dissipator | : Ski-jump bucket with free formed plunge pool |

MAJOR STUDIES

Comprehensive model scale 1: 50

- ☺ Approach flow conditions upstream of spillway and power intake
- ☺ Assessment of discharging capacity & pressures on spillway profile
- ☺ Performance of spillway and energy dissipator
- ☺ Layout of plunge pool



RESULTS

- 📄 The discharging capacity of the spillway is adequate
- 📄 Approach flow conditions in the vicinity of spillway and power intake are satisfactory
- 📄 Performance of ski jump bucket is satisfactory
- 📄 Performance of spillway in respect of pressures on the crest profile is satisfactory
- 📄 Location and size of plunge pool has been recommended based on scour pattern observed on the model.
- 📄 Layout and height of training walls have been modified.



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AREAS OF ACTIVITIES AT THE CWPRS

- * HYDROLOGY AND WATER RESOURCES ANALYSIS
- * RIVER ENGINEERING
- * RESERVOIR AND APPURTENANT STRUCTURES
- * COASTAL AND OFFSHORE ENGINEERING
- * SHIP HYDRODYNAMICS
- * HYDRAULIC MACHINERY
- * APPLIED EARTH SCIENCES
- * MATHEMATICAL MODELLING
- * INSTRUMENTATION AND CONTROL ENGINEERING
- * FOUNDATION AND STRUCTURES
- * INFORMATION SYSTEM (WATER AND POWER)

RESERVOIR AND APPURTENANT STRUCTURES

FACILITIES

Large size covered and open model trays, Glass sided and Tilting flumes for hydraulic model studies. Precision Equipment for measurement of hydraulic parameters with data acquisition system. Workshop facilities for fabrication models Equipment for Field data Collection, Computer Center Numerical models for aeration devices and water hammer analysis.

AREAS OF SPECIALIZATION AND MAJOR STUDIES

STORAGE AND DIVERSION STRUCTURES

The study of storage and diversion structures include spillways, energy dissipators and appurtenant structures such as training walls, divide walls, downstream protection works.

❖ Spillway and Energy Dissipators : Bhakra, Salal, Sardar Sarovar, Chamera, Srilsailam, Nathpa Jahakri, Dhauliganga, Tala (Bhutan), Kurichu (Bhutan), Chukha (Bhutan), Bekhme (Iraq), Bakurman (Iraq), Khaliikan (Iraq), Sedwagyi (Myanmar), Ukai, Kadana, Dharoi, Baira-Siul, Mahi Bajaj Sagar, Matrikundai, Ranjitsagar, Icha, Rajghat, Khandong, Thoubal, Doyang.

❖ Appurtenant Structures : Assessment of hydrodynamic pressures/forces and bending moments on divide walls, chute, baffle blocks, breast walls, stilling basin apron and plunge pool lining for Sardar Sarovar, Salal, Bekhme (Iraq), Icha, Ranjitsagar, Ranganadi and Koyna Projects.

CONTROL STRUCTURES

The study of structures controlling and guiding high velocity flows include gate, tunnels and outlets. The major studies include assessment of hydrodynamic uplift and downpull and estimating air demand of gated outlets. CWPRS is the only laboratory in India using the state-of-art equipments for studies with the help of hydraulic models.

❖ Gates : Sardar Sarovar, Tala, Chamera, Supa, Beas, Mahanadi, Malaprabha, Cheruthoni, Kadana, Ukai, Idukki, Bhira.

CONVEYANCE STRUCTURES

The studies include intakes, penstocks, surge shafts, tunnels.

❖ Projects : Sardar Sarovar, Bhira Surge Tank, Indira Sarovar, Kakkad, Indravati, Doyang, Baira-Siul, Beas P3R, T1, T2 Tunnels, Pandoh Baggi, Koyna and Salal Tail Race Systems, Koyna Lake Tape, Srisailam Intake, Kalinadi Surge Shaft.

❖ Mathematical Modelling for water hammer analysis for Ghatghar and Kal Projects.

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