Engineering and Operations Workgroup Study Plans

Study #8: Temperature Impacts of Pumpback Operation on Oroville Reservoir Cold Water Pool

November 16, 2001

Goal

- Investigate the temperature impacts of pumpback operations at Hyatt Powerhouse on Oroville Reservoir cold water pool
- Determine if these impacts need to be considered in the Oroville Reservoir temperature modeling simulations

Task 1. Review Existing Data and Instrumentation

- Review existing temperature/Oroville Reservoir temperature profile data at Oroville Reservoir
- Review existing pumpback operation data
- Review existing temperature and Oroville reservoir monitoring instrumentation

Task 2. Design experiment

- Select locations data locations including:
  - Reservoir profile(s) around intake structure
  - Penstock Temperature
  - Hyatt Tailrace Temperature
  - Diversion pool temperature
- Select operational scenario's desired for the analysis
- Select appropriate pumpback levels for analysis, use “normal” pumpback operations as guide

Task 3. Install required temperature an/or reservoir profile sensors

- Additional instrumentation may be required to collect the data identified in Task 2. This will need to be installed.
- Develop process to collect data from the instrumentation

Task 4. Perform pumpback tests

- Collect data during periods of release and pumpback operations as defined in Task 2. Attempt to utilize data from normal operations as much as possible to minimize need for special pumpback operations for data collection purposes.
- Data collected will include:
  - Release flow and temperature
  - Pumpback flow and temperature
  - Oroville Reservoir temperature profiles around the Hyatt intake structure

Task 5. Analyze the results

- Compare temperature profiles with and without pumpback operations
- Compare profiles before, during, and after release and pumpback operations
- Compare resulting Oroville Reservoir cold water pool volumes

Task 6. Write final report

- Write report of finding including:
  - Document all assumptions
  - Document process followed
  - Derived impacts of pumpback operations on Oroville cold water pool
  - Recommendations for inclusion into Oroville Reservoir temperature model

Products

- Report on findings on impacts of pumpback operations on Oroville cold-water pool.

- Report will contain information for use in:
  - Oroville Reservoir temperature modeling
  - Setting of operational guidelines for temperature management purposes