

# KOMA KULSHAN HYDROELECTRIC PROJECT FINAL DESIGN & CONSTRUCTION MANAGEMENT

The Koma Kulshan Hydroelectric project is a 14 MW high-head plant constructed by a private developer. The turbine is a 2-jet Pelton horizontal machine rated at 122 cfs at 1,640 feet of head. The project utilizes two dams on two different streams to obtain the project flow. These dams were about 12-feet-high concrete gravity structures. A 45-inch-diameter welded steel pipeline shown above conveys the water from the two intakes about 25,400 feet to the powerhouse. The project was located 100 percent on U.S. Forest Service land and required extensive coordination with USFS throughout the permit and construction period. The project came on-line in late 1990.



Two members of EES Consulting's staff participated in the Koma Kulshan Project, including portions of the design and drafting for the powerhouse, intakes and pipeline, construction management and construction oversight review, start-up and plant operations. Jack Snyder was the overall project manager and owner's representative for this project. He was responsible for design approval, contracting of the various bid packages, and contract administration on all contracts, including review and approval of all invoices. When project construction began, Jack moved out to the jobsite for the duration of the two years of construction. He had overall responsibility for construction inspection and quality control. Paul Carson provided construction inspection and overall project QA/QC on behalf of the financing institutions.

EESC staff also performed factory inspections of turbine-generator equipment during its manufacture to be sure factory procedures were in compliance with contract specifications. EESC staff received all equipment deliveries at the jobsite and made sure all equipment was received and stored properly.

When project construction was completed, Jack Snyder led the start-up team and put the machine into service for the first time. After initial test operations, Jack was responsible as plant operations manager for the next nine months of project operation. He hired and trained the permanent operators and set up the project spare parts inventory and purchased plant tools and equipment for operations.

Paul Carson and Jack Snyder also participated in the successful efficiency testing of the completed unit using IEC Code 607, the thermodynamic test method to verify performance as guaranteed in the turbine supply contract.