



**Norconsult performed basic engineering of Alfalfal II Hydropower Plant (270 MW) and Las Lajas Hydropower Plant (270 MW). The project was done jointly with AMEC-Cade and Norplan.**

#### **Assignment**

Design with unlined pressure tunnels and shafts is often found to be an economic and cost saving option for hydropower projects and is one of Norconsult's specialties. This design was used with success during planning and construction of the adjacent Alfalfal I Hydropower Plant for AES Gener back in the 80-ties and the Client planned for the same principles of design for the later Alfalfal II and Las Lajas HPP. Las Lajas HPP is one of the two plants comprising AES Gener's Alto Maipo Project. The plant has 480 meter head, two Pelton units of total 270 MW installed in an underground cavern of 37000 m<sup>3</sup>, design flow is 65 cubic meters per second. The plant has its intake immediately downstream of the

existing Alfalfal I HPP. The headrace comprises two km of concrete culvert, 9.5 km of unlined headrace tunnel 21-38 m<sup>2</sup> and a vertical, steel lined pressure shaft, 150 m long, with diameter 3.7 m. The tailrace tunnel is 13 km long, free surface flow, 38 m<sup>2</sup>. The tailrace from Alfalfal II HPP feeds directly into the headrace of Las Lajas.

#### **Solution**

Services rendered by Norconsult: • Review of Feasibility Study, with emphasis on underground works • Conceptual and Basic Design of underground works • Detail Design and preparation of tender documents for underground works and el-mech installations in the powerhouse

► **Disciplines and services**  
Hydropower

**Time span**  
2007 - 2008