

PARTNERING FOR POWER PRODUCTION

PACORA POWER PLANT

REPUBLIC OF PANAMA



BUILT IN 2003 FOR



PEDREGAL POWER COMPANY

BY



Burmeister & Wain Scandinavian Contractor A/S

PROJECT BACKGROUND

The Pacora diesel power project is a 49.9 MW merchant plant initiated by El Paso Power Company, and operates in the privatised power sector of the Republic of Panama.

Pedregal Power Company signed the turnkey construction contract for the plant with MAN B&W Diesel AG and BWSC Panama S.A in October 2001.

The power station was built as a fast track project to very high technical and environmental standards, fulfilling World Bank 1998 emission regulations as well as local requirements. In addition to the turnkey construction contract, Pedregal Power Company and BWSC Panama S.A. have signed a 15-year full operation and maintenance (O&M) contract.

PROJECT IMPLEMENTATION

The 14-month construction period for the project was achieved through highly efficient co-operation between Pedregal, El Paso, MAN B&W, BWSC, and others.

BWSC was the overall turnkey construction contractor for the project, with MAN B&W Augsburg providing the three medium-speed diesel generating sets. Cocige, a local company, carried out the civil work, and mechanical and electrical erection work was performed by Celmec, operating as subcontractors to BWSC Panama S.A.

The Pacora power plant is designed for continuous operation on heavy fuel oil (HFO) delivered to the plant by highway standard tanker trucks.

The project includes a powerhouse for the three generating sets, with mechanical and electrical annexes, oil storage tank farm, fuel oil treatment building, fire-fighting/water-treatment building, two-storey administration building, storage and workshop building, and a high voltage switchyard.

The plant is connected to the ETESA grid through a step-up transformer, located in the 230 kV switchyard, and two 230 kV overhead lines.

Upon completion of construction, a specialist BWSC and MAN B&W team carried out a full testing and commissioning programme, during which the plant demonstrated heat rate and emissions well within the contractual guarantees.

HEAVY LIFT TRANSPORTATION

Transportation of the diesel engines, each weighing 320 tonnes, and the other major components was a complex task. The engines and generators were transferred from the ocean-going heavy lift vessel and transported through the Panama Canal on a landing vessel to Puerto de Coquira, some 30 kilometres from the plant site.



Engine hall



Landing vessel

Road transportation from the landing site to the plant site was achieved with heavy lift trailers. On the 30-kilometre route from Puerto de Coquirá to the site at Pacora, 10 bridges were reinforced and more than 100 overhead lines were lifted permanently to allow the trailers and other heavy vehicles to pass underneath.

Transportation was successfully completed in less than 2 weeks.

OPERATION & MAINTENANCE

Operation and maintenance (O&M) is undertaken by BWSC Panama S.A., which mobilised the O&M contract during the last months of plant construction. Thirty-seven Panamanian engineers, technicians, and support staff, and two BWSC expatriate managers form the O&M organization. During the mobilization period, the O&M staff participated in BWSC tailor-made training programs and in preparing the power plant for commercial operations. Training and plant preparation were specifically focused on the safety and environmental requirements of the Panamanian and World Bank authorities.



Control room

Summary

Contract

Type Turnkey
 Contract award October 2001
 Handing over January 2003

Technical Data

Diesel engines

Make MAN B&W Diesel, Germany
 Type 18V 48/60, 4 stroke
 Speed 514 rpm

Alternators

Make ABB, Finland
 Type AMG1600UU14DSEB
 Rating 21.7 MVA
 Voltage/frequency 13.8 kV/60Hz
 Output at 100% load 17,800 kW at pf. 0.85

Main unit

Builder Aura Marine, Finland

Exhaust gas boiler/auxiliary boiler

Make Danstoker, Denmark
 Type EEB-S/TDC no. 5
 Steam capacity 2 x 2,200 kg/h/2,200 kg/h

Radiator cooler

Make GEA Erge Spirale, France
 Type Forced Draft
 Cooling capacity ... HT 7,920 kW + LT 5,920 kW

Fuel oil treatment

Make GEA Westfalia, Germany
 Type 2 x OSC 50-0136-066/60
 Rated capacity 14 m³/h

Lube oil treatment

Make GEA Westfalia, Germany
 Type 3 x OSC 50-0196-066/40
 Rated capacity 6.3 m³/h

Step-up transformer

Make Siemens, Columbia
 Type TLUN 7754
 Voltage 13.8/230 kV
 Rated capacity 45/65 MVA

Powerhouse building and chimney

Length 40.0 m
 Width 31.6 m
 Height 13 m
 Overhead travelling crane 5 ton
 Chimney height 32 m

OWNER & DEVELOPER



Pedregal Power Company, S. de R.L.
Avenida Samuel Lewis
Torre ADR, Piso 12
Panama City
Panama

SPONSOR



El Paso Power Company
1001 Louisiana Street
Houston, Texas 77002
USA

SHAREHOLDERS



CBPF Panama Ltd.



Coastal Power Panama Generation Ltd



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Industrialisation Fund for
Developing Countries

LENDER



Kreditanstalt für Wiederaufbau

Pacora Power Station is connected to the Empresa de Transmision Electrica S. A. 230 kV grid and is supplying reliable power on merchant basis to the Central American Siepac grid.



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