

Subsea 7 was awarded this \$1.3bn contract in July 2010 covering four reservoirs offshore West Africa.

Located in the northern part of Angola Block 17, approximately 40km north-north-west of the Girassol Development, the project represents the largest ever project award for Subsea 7.

In total, the development includes four reservoirs which give their name to the project: Cravo (C), Lirio (L), Orquidea (O) and Violeta (V). Subsea 7 will carry out works on this extensive development in water depths ranging from 1,050m to 1,410m.

# Total E&P Angola

## CLOV Development Project

### Project

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### Client

Total E&P Angola

### Location

Offshore West Africa

### Water depth

1,050m to 1,410m

### Project Type

EPIC

### Date Awarded

July 2010

### Vessels/Spoolbases Utilised

*Seven Borealis*  
*Seven Eagle*  
*Acergy Legend*  
*Rockwater 2*  
*Seisranger*  
*Simar Esperança*

Subsea 7's proposal has been developed with a focus on six key drivers including safety, quality, environment, schedule, efficiency and local content.

### Overview

Engineering is at the heart of this extremely large project. Our scope includes the:

- Engineering, procurement, fabrication and installation of 130km of pipes including:
  - 40km of pipe-in-pipe production
  - 60km of water injection
  - 32km of gas export
  - Two Hybrid Riser Towers, one for each production loop
  - A Single Hybrid Riser at the end of the gas export line
  - 80km of subsea umbilicals
  - 37 spools and 15 jumpers
- Installation of manifolds and subsea pumps.

In addition to this diverse workscope, Subsea 7 has also carried out overall pre-commissioning activities.

Subsea 7, committed to local content, has utilised the skills of its partners, Sonamet and our local subsidiary, Subsea 7 Angola. Sonamet has undertaken the majority of fabrication for this significant project, including the Hybrid Riser Towers from its facilities in Lobito.

Offshore Installation was started in December 2012, using the *Seven Borealis* to lay pipe-in-pipe production flowlines, water injection and gas export lines in J-lay mode, and to install gas export Single Hybrid Riser and manifolds.

*Seven Eagle* was in charge of the installation of 80km of umbilicals, 13 units of flexible risers, the jumpers and spools, the subsea pumping unit and to support the dewatering of the gas export system.

*Acergy Legend* installed the LBL arrays in 2012. Installation of flying leads, support for pre-commissioning operations, metrologies and all other surveys were performed by the *Seisranger* and the *Simar Esperança*.

*Rockwater 2* also performed goosenecks installation on top of riser towers in saturation diving mode.

- First oil was achieved in June 2014.



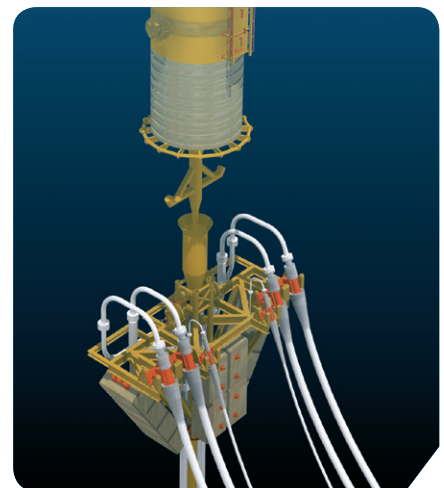
*Seven Borealis*



*Seven Eagle*



*Seisranger*



*3D model of upper riser tower assembly*