

# Shell BC-10

(Parque das  
Conchas)



Client:  
Shell Brasil Ltd

Location:  
Campos Basin, offshore  
Brazil

Project Type:  
SURF

In 2009, Subsea 7 successfully delivered again for Shell in Brazilian deep-waters, completing pipeline installation activities for Shell's BC-10 Parque das Conchas development, offshore Brazil.

Subsea 7's workscope involved the engineering, fabrication and installation of pipelines, risers and jumpers and installation of umbilicals and manifolds.

The project included the fabrication and installation of the world's first lazy-wave steel catenary risers. BC-10 also enjoyed the single honour of being the first Subsea 7 project to welcome two of the company's new flagship pipeline installation vessels, the *Seven Oceans* and the *Seven Seas*.

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## Project

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(Parque das Conchas)

## Client

Shell Brasil Ltd

## Location

Campos Basin,  
offshore Brazil

## Water depth

1,600m to 2,000m

## Project Type

SURF

## Date Awarded

December 2006

## Date Completed

July 2009

## Vessels/Spoolbases Utilised

*Seven Oceans*  
*Seven Seas*  
*Seisranger*  
*Ubu Spoolbase*

## Overview

The successful delivery of this project was underpinned by well established infrastructure in the region, an experienced locally based workforce, engineering expertise, effective project execution and a modern vessel fleet fitted with the latest technology.

In water depths of 2000 metres, the Subsea 7 scope of work on BC-10 involved:

- Installation of 11 steel pipelines totalling approximately 130km
- Fabrication and installation of 7 steel catenary lazy-wave risers (the world's first), totalling approximately 21km
- Transportation and installation of three dynamic and two static umbilicals totalling approximately 55km
- Installation of 4 manifolds
- Fabrication and installation of 25 rigid jumpers

The BC-10 field was developed with a centrally located FPSO, *Espirito Santo*, using an internal turret and subsea wells producing through manifolds, subsea pressure boosting, flowlines and risers.

All pipeline fabrication and installation engineering was performed by Subsea 7 involving a lead team located in Brazil, supported by personnel from other global offices, as required. This ensured that an integrated international team was in place, with the required qualifications, drawing upon shared learnings and experiences from throughout the company.

Installation analysis for the BC-10 pipelines and welding development for fabrication of the pipelines was technically challenging and involved a concerted effort from the team. Several finite element analyses (FEA) were performed to ensure the reeling and straightening process would not harm the fatigue life of the risers.

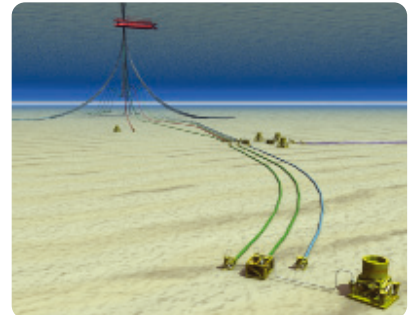
The process of treating each and every linepipe as an individual item on a huge fabrication list was performed for no less than 15 thousand pipe joints. Over a period of 15 months the BC-10 pipes were received, measured, grouped, machined, welded, inspected and field-joint coated in what has been to date, the largest reeled steel pipeline installation project ever performed in Brazil.

In addition, the new vessels, *Seven Oceans* and *Seven Seas*, had extensive work scopes where a total of 770 vessel days were consumed to complete the project. Installation was also supported by the *Seisranger*, ROV Support vessel over a period of 278 vessel days.

During the project, where several trips to the field had to be made, Subsea 7's *Ubu Spoolbase* was of significant advantage. *Ubu* is located only 6-hours steaming time to the field, which helped immensely with the project schedule. It is also the only operational spoolbase in country today and has been extensively used by Subsea 7 for several steel pipeline projects in the last 5 years including *Golfinho*, *PDEG* and *Roncador*.



*Seven Oceans* laying pipe and *Seisranger* performing touch-down monitoring



*BC-10 schematic*



*Seven Oceans*, production risers