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## Albacora Leste Field Development Project

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### Abstract

The Albacora Leste Project consists of the production development of an offshore deep-water oil field, in the Campos Basin, Brazil, for which PETROBRAS and REPSOLYPF are the concessionaires. PETROBRAS is the field operator and holds 90% of working interest, while REPSOLYPF holds 10%. Albacora Leste Field covers an area of 141 square kilometers, at water depths ranging from 800 to 2,000 meters (2,620 to 6,560 ft), with reserves of approximately 90 million m<sup>3</sup> of oil (565 million barrels), and 10 billion cubic meters of gas (353 billion SCF).

This paper aims at presenting a general view of the Albacora Leste project and the approaches adopted by PETROBRAS to overcome the challenges faced during its implementation.

A general description of financial and project team structures is also given.

### Introduction

Albacora Leste field is located in the Campos Basin, 120 km East of Cape São Tomé, in Rio de Janeiro coast, as shown in Fig. 1.

The field was discovered in March 1986 by the 1-RJS-342A exploratory well, which found a 28 meters of net pay zone with oil and gas in the reservoir AB-140. The Oligocene and Eocene reservoirs also presented oil in the same well.

The early field production began in June 1998 with the anticipation of production through well RJS-477 tied up to P-25 platform, in the neighboring Albacora Field. In early 1997, PETROBRAS performed a Technical and Economical Feasibility Study (TEFS) in which the field would be developed in two phases, using semi-submersible platforms as Floating Production Units (FPU). First oil production, in Phase I, would occur in 1999 and Phase II in 2002.

The economic results of this TEFS were used by PETROBRAS, in the negotiation to form a Joint Venture with

major oil companies. This negotiation took place from 1997 to 2000.

In 1998, the first TEFS was adjusted and an initial Development Plan was submitted to the Brazilian regulating authority, “Agência Nacional do Petróleo” (ANP), having the first oil production occurring in July 2001. This plan, however, was never implemented as the project was not considered sufficiently attractive to all parties.

In January 2000 a new round of negotiations for a Joint Venture was authorized by PETROBRAS board, considering, this time, PETROBRAS as the operator. The base case chosen, for start-up of negotiations, was an FPSO with 36 wells tied-up through manifolds, which then had the lowest risk and better economic results.

In July 2000, a Memorandum of Understanding (MOU) was signed between REPSOLYPF and PETROBRAS, where PETROBRAS farmed out 10% equity of the Albacora Leste development area to REPSOLYPF.

In December 2000, the Original TEFS was approved considering a leased FPSO and the first oil scheduled for May 2003.

In April 2001, a tender for a leased FPSO was conducted and three companies submitted proposals. The minimum proposed leasing rate was 31% higher than the estimated one in the original TEFS, causing its cancellation. In June 2001, the original TEFS was revised to consider an owned FPSO.

Finally, in May 2002, a Joint Operating Agreement was signed with REPSOLYPF.

### System Description

The overall field development architecture is illustrated in Fig. 2.

The production development project involved the conversion of an existing very large crude oil carrier, VLCC, into a Floating Production Storage and Offloading unit (FPSO P-50), with oil processing capacity of 28,600 m<sup>3</sup>/d (180,000 bopd) and 6,000,000 Sm<sup>3</sup>/d (212 MMscfd) of gas. A total of 30 subsea horizontal wells (16 production and 14 injection) were drilled and completed with gravel packing to exploit the reserves. The oil production will be transferred to onshore terminals by shuttle tankers, while the gas production will be exported to shore by a gas pipeline.

### Reservoir Characterization

The reservoirs that comprise the Albacora Leste field are Miocene sandstones from the Carapebus Formation in the Campos Basin. A depositional model is based on high and low density flows in a large area. The traps are primarily