

## DEEPWATER PROJECT



FPS Towing and Installation, Gumusut-Kakap Offshore Deepwater Field, Sabah, Malaysia.

# Gumusut-Kakap Development Project

## Introduction

The Gumusut-Kakap Field is operated by Sabah Shell Petroleum Company Limited (SSPC), which owns a 33% stake, in partnership with ConocoPhillips Sabah (33%), Petronas Carigali (20%) and Murphy Oil (14%). The field is located approximately 120km northwest of Labuan, offshore Malaysia. It is the region's first deepwater (1200m) field utilising a moored Semi-submersible Floating Production System (SEMI-FPS). The crude oil is transported to the onshore Sabah Oil and Gas Terminal (SOGT), at Kimanis, Sabah using a single 18" oil export pipeline.

SapuraAcergy was awarded the contract in November 2008 for the engineering, procurement, construction and installation (EPCI) of an oil export pipeline, catenary risers, flowline jumpers and mooring arrangement for the SEMI-FPS. The installation works were completed successfully in November 2013.

## Project Fact Sheet

<b>Project Contract Name</b>	Transportation and Installation of Offshore Pipelines, Risers and Facilities for the Gumusut-Kakap Deepwater Project
<b>Location</b>	Sabah, Malaysia
<b>Client</b>	Sabah Shell Petroleum Company Limited (SSPC)
<b>Water Depth</b>	Approximately 1200m
<b>Project Duration</b>	5.5 years
<b>Vessel Utilised</b>	Sapura 3000
<b>Scope of Work</b>	<p>Semi-submersible Floating Production System Installation</p> <ul style="list-style-type: none"> <li>Mooring wires, connectors and chains procurement</li> <li>Mooring piles and mooring lines pre-installation</li> <li>Tow to field</li> <li>Mooring line hook-up</li> </ul> <p>Oil Export Pipeline Installation (S-Lay and J-Lay Method)</p> <ul style="list-style-type: none"> <li>200km of 18" pipelay including shore crossing, burial and steel catenary risers (SCRs) installation</li> </ul> <p>Flowlines and Installation (J-Lay)</p> <ul style="list-style-type: none"> <li>9 off PLET and 7 off in-line SLED – design, fabrication and installation</li> <li>Installation of 9 off flowlines (8" to 12" in diameter), covering a total 31km</li> <li>Installation of 10 off SCRs (1.7km each)</li> <li>Design, fabrication and installation of 8 off flowline jumpers</li> <li>Installation of 5 manifolds (driven pile foundation)</li> </ul>



PLET Installation

## Project Overview

**The Offshore Execution** was completed in 3 major phases: 2010, 2011 and 2013; with a total of 460 offshore days for the Sapura 3000. Many 'firsts' were recorded in Malaysia - these included, the installation of flowlines and risers using J-Laying method, installation of SCRs and tow and installation of the FPS.

**The Sapura 3000** was used to install ALL the subsea facilities including the pipelines (S-Lay & J-Lay). Of particular note was the wet storing and recovery of the SCRs. For operational reasons, 6 out of 10 of the SCRs were wet stored on the seabed prior to the FPS arriving infield. When the FPS was moored, the SCRs were recovered from the seabed, then cross hauled under the FPS and hooked up.

Installation of SLED using the J-Lay tower.



**The Welding Process**, especially for the SCRs, demanded uncompromising quality and stringent compliance to process. All production welding was completed on schedule, with the welding of the SCRs being of the highest quality.

**A Large Project Team** of almost 200 personnel was assembled in our Kuala Lumpur office. The team managed the international supply chain, engineering and analysis, fabrication, risk and safety assessments, planning, testing and development of the installation procedures. The efforts put into the preparation led to an efficient and safe operation (onshore and offshore).

**HSE Performance** throughout the project was given the highest attention. This applied not only to the Sapura 3000, but to all suppliers, fabrication sites and support vessels. The Sapura 3000 had an excellent record of zero LTI throughout the 460 offshore days. In addition, the safety performance was recognised by Shell, with a prestigious award for HSE excellence being received in 2013.