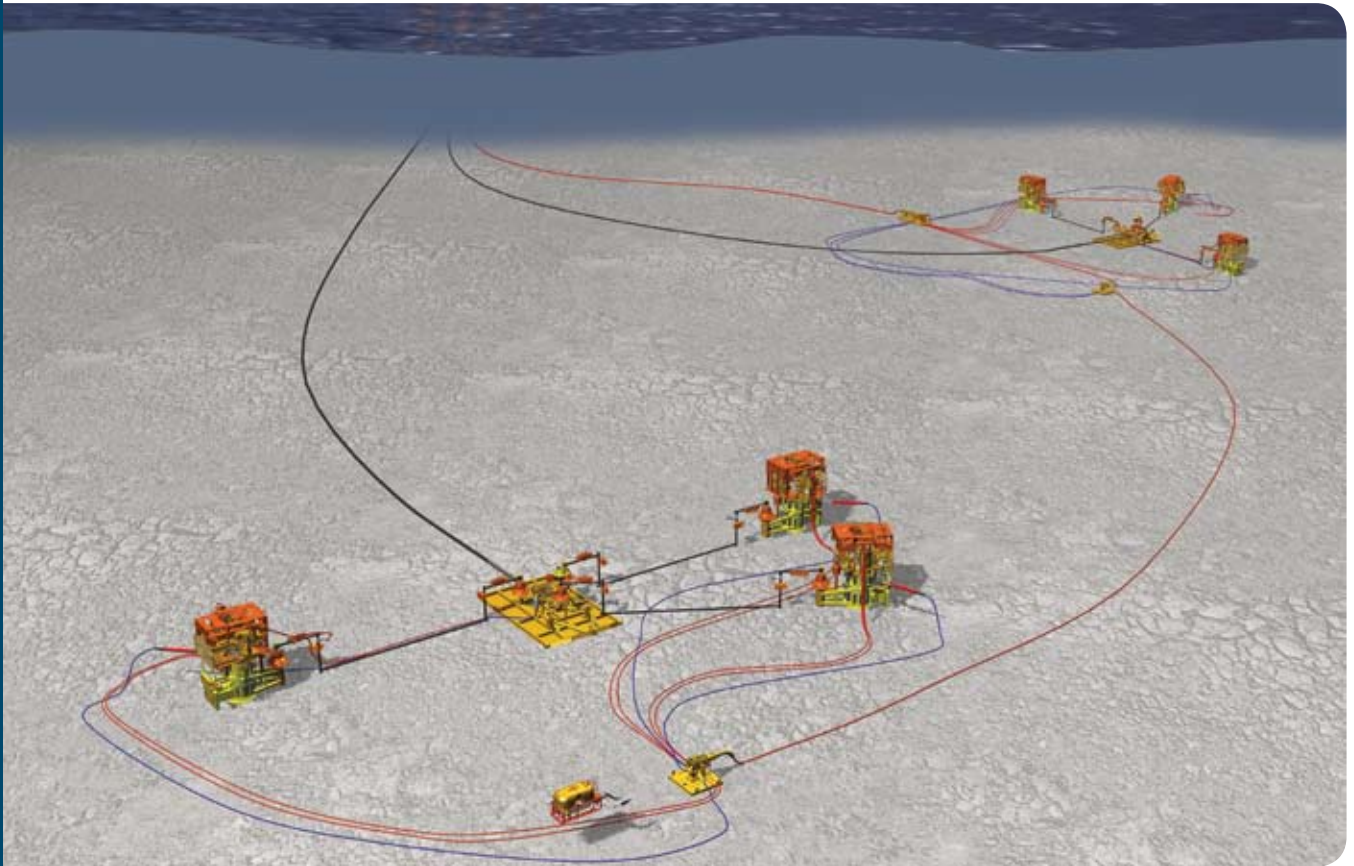


Shell Serrano Oregano

Gulf of Mexico Blocks GB 472 & 516 and 558 & 559



Landmark: World's First Electric-Heated Flowlines to Prevent Hydrate Formations

Project Overview

Contract Award: 2000
Sales: Houston, Texas
Fabrication: Houston, Texas
Service Base: Houston, Texas
Host Type: TLP
Contract Type: Alliance

Project Characteristics

No. Trees: 6
Water Depth: 910 m (3,000 ft)
Tree Type: EVXT
Tree Pressure: 10,000 psi
Tree Bore Size: 4"x2"
Hydrocarbon: Oil and Gas

Project Ownership

Shell 100%

Scope of Work

- ▶ Six (6) vertical 4"x2" 10,000 psi subsea trees
- ▶ PSL-3 FF trim (410 ss with selective CRA cladding)
- ▶ Sand-erosion detector
- ▶ Allows for jumper installation before or after tree installed
- ▶ Flowpath fully insulated
- ▶ 4" 10,000 psi flowline jumper system
- ▶ 5" 10,000 psi Torus III hydraulic connectors with integral soft-landing capability
- ▶ Tree-mounted controls
- ▶ 24-function diverless GLL electro-hydraulic subsea control module
- ▶ 13-function diverless multiple quick connects
- ▶ Combined pressure/temperature sensors
- ▶ Umbilical termination assembly
- ▶ Separate mudmat and umbilical termination head
- ▶ Steel tube flying leads
- ▶ ROV-installed, all steel tube flying leads
- ▶ Master control station
- ▶ System integration, testing, installation assistance, service and maintenance

Comments

The Oregono Field is located in the Gulf of Mexico at Garden Banks 559, and the Serrano Field is located in the Gulf of Mexico at Garden Banks 516. The Oregono and Serrano projects were developed together as one project to take advantage of synergies in design and execution. The Oregono Field is approximately 13 km (8 miles) south of the Auger TLP, and the Serrano Field is 11 km (6.5 miles) southwest of the Auger TLP.

The Oregono Field was developed using subsea wells tied into a PLEM (pipeline end manifold). Hydrocarbons from both wells are commingled to the PLEM and flowed back to Auger TLP through a single electric-heated pipe-in-pipe (EHPIP) pipeline and riser.

The Serrano Field was developed using the same tree and PLEM system as Oregono. Individual wells were completed using FMC Technologies' SDDSI standardized subsea tree system. Production is routed from the trees to the PLEM via 4" nominal 410 SS jumpers.



Worldwide Headquarters:
 FMC Technologies
 1803 Gears Road
 Houston, TX 77067, USA
 Phone: +1 (281) 591 4000
 Fax: +1 (281) 591 4291

Regional Sales Office:
 FMC Technologies
 1777 Gears Road
 Houston, TX 77067, USA
 Phone: +1 (281) 591 4000
 Fax: +1 (281) 591 4291

www.fmctechnologies.com

