

Caesar Tonga Field Development

Client:

Oxy

Location:

Green Canyon, Gulf of Mexico

Equipment:

Proserv open communications hub

Background

The Caesar Tonga field is located approximately 112 nautical miles south of Dulac, Louisiana in the Green Canyon area off the Gulf of Mexico, in a water depth of approximately 1,500 m. The subsea development is located 15.5 miles to the East of the Constitution Spar Platform. The subsea development has four subsea production wells, with an option for expansion to four further wells in the future.

Each tree had the capability to add a jumper mounted multi-phase flow meter (MPFM) for allocation, reservoir management and production surveillance. However, the existing controls were unable to handle the increased data requirements involved in adding these modules to the OEM subsea control system.

Oxy came to Proserv with a requirement for two subsea multiphase interface modules along with a meter data handoff system to install the MPFMs onto the tree and connect to the control system.

Project Description

Proserv's open communications hub (OCH) enable fully transparent communications and high-speed data monitoring from the subsea multiphase flow meters and control modules. Two OCHs were installed to deliver high speed communications for eight Framo subsea multiphase flowmeters, each requiring a minimum of 32 W of power and minimum communication speed of 38.4 kbps.

The subsea distribution units (SDUs) located at each drill centre supports the mounting, latching and electrical distribution to each OCH. The OCH was designed for deployment and intervention by means of ROV onto the subsea metering interface module mounting base, which was installed on the SDU prior to deployment.

Primary communication from topside to the OCH is made via fibre optic link and copper cables in the subsea umbilical backed up by a powerline from the topside cabinet. Located

on the Constitution Spar Platform, the cabinet provides monitoring of both OCHs with provision for a third drill centre. Interface to the Topside MCS and DCS was provided using Modbus TCP and OPC communications protocols.

Scope of Work

Subsea: two redundant OCHs and mounting bases each capable of control and monitoring of four Framo MPFMs (max six).

Topside: One fully redundant topside data acquisition and handoff cabinet with expansion for a third drill centre. Each OCH and fibre optic communications rack provides all subsea power management and communications diagnostics to each of the four Framo MPFMs connected. All diagnostics can be accessed remotely via web browser.

Conclusion

Proserv's open communications hubs deliver the high-speed data monitoring necessary for the MPFMs, allowing Oxy to more effectively measure and enhance production. With the OCHs now installed, the control system will be able to handle any additional MPFMs with no further controls upgrades required.

The Benefits

- Proserv delivered communications speeds of 115 kbps (serial) or 100 Mbit (Ethernet), offering up to 10x increased performance of our competitors
- Each OCH provides power and communications for up to four MPFM and is capable of delivering 400 W of power total (100 W to each meter output)
- Continuous data is streamed via both communication channels (primary and redundant) for each OCH and collated within the data server for access by the MCS and Framo servers
- Data is presented in a Modbus TCP format to allow access by Modbus TCP masters, with transparent access available for raw meter data

