Total Jura

7

Client:
Total Exploration & Production UK Ltd

Location:
UK North Sea

Project Type:
SURF

The Jura project demonstrates Subsea 7's capability, experience and expertise in delivering fast-track projects, utilising its unique pipeline bundle technology which has now been successfully incorporated in over 60 North Sea projects.

The Jura project involved the design, fabrication and installation of a 3km long pipeline bundle system using the controlled depth tow method - tying back Total's Jura 1 and Jura 2 wells to the Forvie subsea manifold. The pipeline bundle consisted of an 8" super-duplex dry insulated pipe flow line with full electrical/hydraulic/fibre optic control lines all contained within a 27" carrier pipe. The Jura bundle was the largest ever towhead tow-out of its nature.

Total Jura

January 2011

Project
Total Jura

Client
Total Exploration & Production UK Ltd

Location
UK North Sea

Water depth
Up to 113m

Project Type
SURF

Date Awarded
March 2007

Date Completed
May 2008

Vessels/Spoolbases Utilised
Wester Bundle Fabrication Site
Seisranger
Rockwater 1

Bundle Technology
The Subsea 7 pipeline bundle product integrates the required flow lines, water injection, gas lift, chemical injection and control systems necessary for any subsea development and assembles them within a steel carrier pipe. At each end of the pipeline, the towhead structures, incorporating equipment and valves, designed specifically to the requirements of the field, are attached. The system, which has been fully function tested onshore, is then launched and transported to its offshore location using the Controlled Depth Tow Method (CDTM).

Overview
The Jura project included the following elements:

- A pipeline bundle (2.9km) consisting of an 8" Superduplex dry insulated pipe-in-pipe flow line with full electrical/hydraulic/fibre optic control lines all contained within a 27" carrier pipe
- Jura towhead manifold structure comprised 2 x retrievable process modules for the Jura 1 and Jura 2 wells. This manifold structure also contained a single SDU (Subsea Distribution Unit), a CIMU (Chemical Injection Metering Unit) and the facility to tie-in a third future well
  Each process module contained:
  - A MPFM (Multi-Phase Flow Meter)
  - A cryogenic cooling spool
  - A dedicated SCM (Subsea Control Module)
  - Choke valves
  - PT's & TT's (pressure and temperature transducers)
  - Sand detector
  - Erosion monitor
  In addition the Jura 1 module contained:-
  - A subsea HIPPS (High Integrity Pipeline Protection System)
- Forvie towhead structure
- Rigid & metrology tie in spools at Jura and Forvie
- Control jumpers at the Jura and Forvie manifolds

At 500 tonnes, the Jura towhead, which also incorporated the production manifold, was more than 150t heavier than any of the towheads in the previous 58 bundles built by Subsea 7 and its predecessors. The Jura towhead manifold structure comprised 2 x retrievable process modules for the Jura 1 and Jura 2 wells, and the manifold structure also contained a single SDU (Subsea Distribution Unit), a CIMU (Chemical Injection Metering Unit) and the facility to tie-in a third future well. With a cross section of 8m x 8m and over 40m in length, the fabrication of the main towhead structure, with its retrievable modules, demonstrated a noteworthy engineering accomplishment.

As part of the design engineering for the Total Jura development, Subsea 7 produced a fully detailed 3D model of each towhead structure, which allowed the main structure, process pipework, process valves, control system equipment, flexible jumpers and all tie-in points to be viewed from any angle and in great detail. This facility provided the project engineering teams at Subsea 7, Total and the main towhead fabricator, with a very accurate simulation of the complete towhead prior to the start of manufacture.

The 3D Modelling package was also used to great effect in the briefing of dive teams and ROV crews who were required to work in the structure, once it was on location and in 120m water depth.

As with all Subsea 7's bundle projects, fabrication took place at Subsea 7's Wester site near Wick, Northern Scotland. This pipeline bundle fabrication facility was custom built in 1979 and is utilised exclusively for the fabrication, testing and launch of pipeline bundles in the North Sea. The site is located approximately six miles north of the town of Wick and extends from the shoreline at Sinclair's Bay landward for 7.8 km in an east-west orientation.

Before launch, the pipeline and associated equipment located within the structures were also subjected to a full and thorough Site Integration Testing programme to ensure that the many interfaces between the control equipment and valves operated as per project and client requirements. During this phase the offshore control room equipment was set up on-site to facilitate full testing on both hardware and software.

The Jura bundle was successfully launched in April 2008, with offshore tie-ins and testing complete in May 2008.