

FIELD DEVELOPMENT CASE STUDY

BHP Billiton - Stybarrow Oil Field,
Offshore Western Australia

AWT DISCIPLINES

Completions Engineering
Production Technology



PROJECT BACKGROUND

The Stybarrow and Eskdale oil fields development represented the first deep water development by BHP Billiton in Australia and Australia's deepest development at a water depth of approx. 825 m. The joint venture partners were BHP Billiton (50% and Operator) and Woodside Energy Limited (50%).

Location:

WA-32-L, some 65 km from Exmouth in Western Australia

Nature of the Field:

Complex offshore field
Remote deep water location
Heavy oil & poorly consolidated sandstone reservoir
Pressure support requirement by water injection
Gas disposal via a gas injector into the gas cap of the adjacent Eskdale field.

Reserves:

60 to 90 MMstb (Initial Recoverable)

For more information contact:
Tel: (+603) 2162 3127 or visit our website at: www.awtinternational.com

AWT WORK SCOPE

- After a successful exploration and appraisal campaign, AWT personnel assisted BHP Billiton with the design and planning of the development wells which included horizontal oil producers, deviated water injectors and a vertical gas injector.
- This work included:
 - conceptual well design and input into the field development plan
 - completion time and cost estimation for AFE,
 - material selection and tubing stress analysis
 - completion equipment specifications
 - tender documents for completion equipment and related services, including sand control
 - evaluation of tenders, contract negotiations and vendor management
 - completion installation procedures
 - interfacing with other parts of project team including drilling, subsurface, production technology, subsea engineering, production operations
- It was concluded from the study and design that all production wells would require
 - horizontal open hole gravel packs for production wells
 - deviated water injectors with wire wrapped screens
 - pressure actuated formation isolation valve
 - permanent downhole gauges
 - gas lift mandrels
 - deep set tubing retrievable subsurface safety valve 5-1/2" and 7" tubing for producers with design production rates of up to 35,000 bpd

AWT VALUE ADDED

- AWT was able to deliver a completion design for the deep water high oil reserve Stybarrow Field which incorporated innovative designs enabling a sand free production and a deliverability above expectations when the field was brought online; producing on average 50,000+ bpd, with the capacity to produce up to of 80,000 bpd.
- The open hole horizontal gravel packs were successfully installed, well deliverability exceeded expectations without sand production. The field commenced production in November 2007, two months ahead of schedule. Note: AWT was not involved in the execution phase of the project.
- The development drilling campaign resulted in the successful construction of 3 water injection wells and 4 horizontal production wells at Stybarrow; and a single oil production well and gas injection well at Eskdale.