

Illustration of reservoir dept



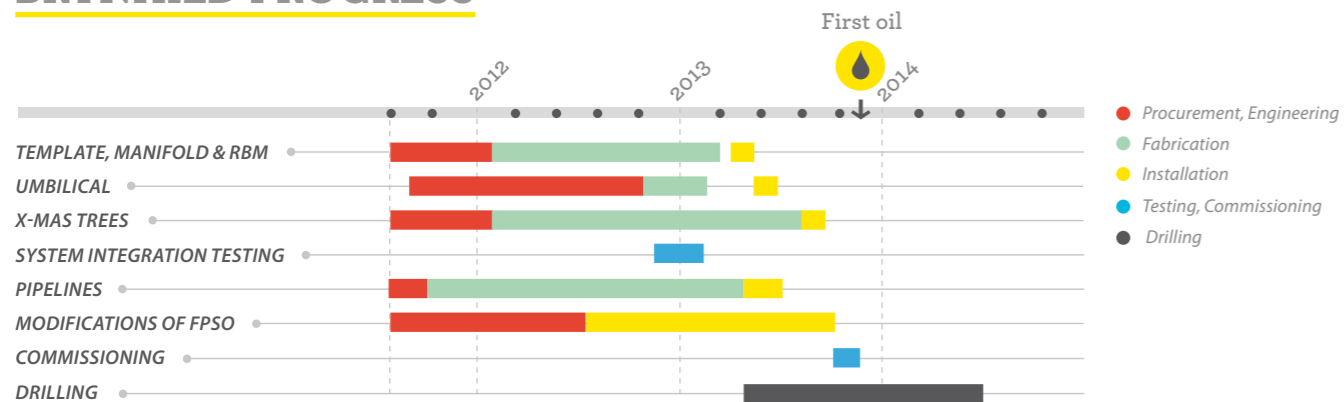
Photo of jackup rig, Mærsk Guardian

DRILLING & COMPLETION

Brynhild will be developed with four wells drilled from a subsea template; two oil producers and two water injectors. One of the water injectors will be used as a production well to increase recovery and enhance early production rates. The oil production wells will be long horizontal wells, and advanced geosteering tools will be used to stay within the thin reservoir throughout the horizontal section. The wells are approximately 5000 m long with horizontal sections of approximately 1000 m. Sand screens will be installed in the lower part of the wells to avoid any sand production, and high alloy steel tubing will be used to avoid corrosion. The well completions also contain downhole chemical injection systems to avoid scale precipitation and downhole pressure and temperature gauges to optimize production and interpret reservoir behaviour.

The wells will be drilled using the self-elevating cantilever jackup rig Mærsk Guardian. The rig is well suited for the Brynhild well operations with HPHT capabilities, oil based mud capabilities, large cantilever skidding envelope and operated by an experienced rig contractor. Mærsk Guardian was equipped with a new BOP and had several other upgrades in 2011. A high pressure riser, supplied by Aker Solutions, will be used to connect the subsea wellhead and xmas tree system to the rig's BOP. The riser will be kept in tension at all times and is designed to withstand a 1000 year return storm.

BRYNHILD PROGRESS



BRYNHILD



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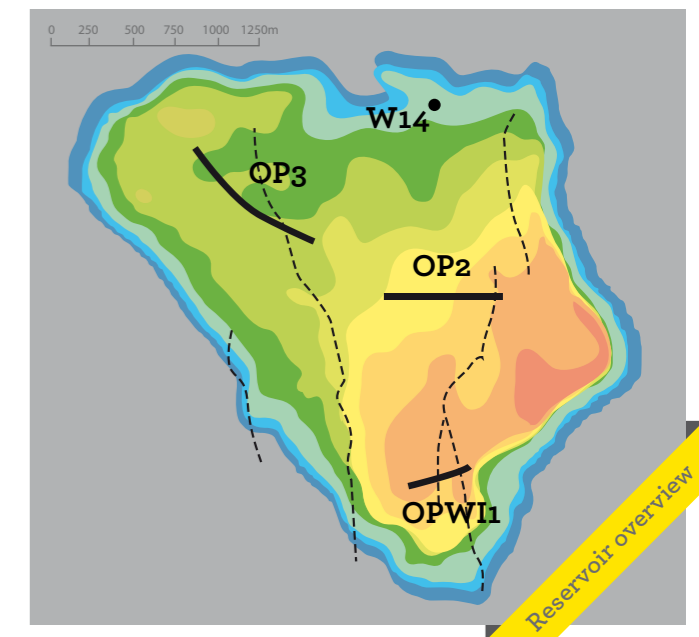
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DRAINAGE STRATEGY

The initial reservoir pressure on Brynhild is very high relative to the formation depth. This means heavy drilling fluids need to be used and special procedures implemented to maintain well control when drilling the reservoir section. Reactive shales and narrow drilling tolerances require the use of oil based drilling fluids designed to minimize friction losses in the lower parts of the wells.



BRYNHILD DEVELOPMENT PROJECT

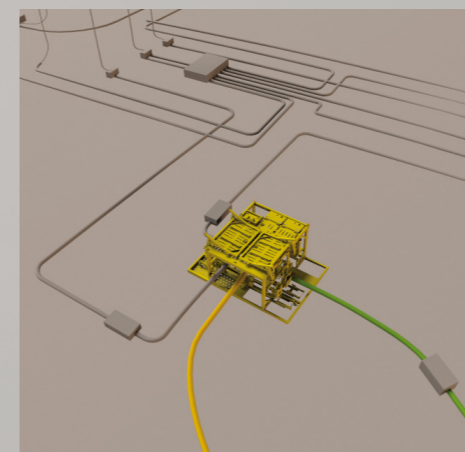
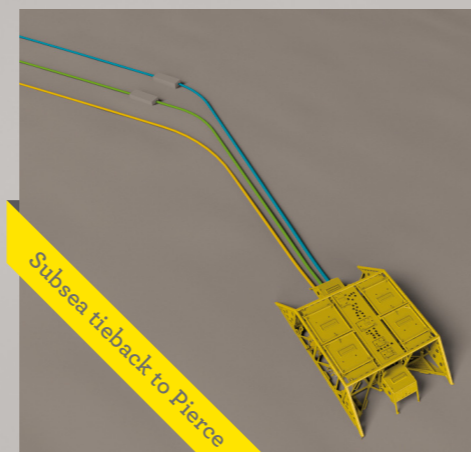
The Brynhild Development project is a subsea field development project on block 7 on the Norwegian Continental Shelf. The Brynhild subsea field will be tied back to the FPSO Haewene Brim located in the Pierce subsea field, UK blocks 23/22a and 23/27, using subsea flow lines and umbilicals. The field will have 4 wells, of which 2 are for production and 2 are for water injection.

The Brynhild field will operate using a Subsea Production System (SPS) comprising the following main components:

- A template/manifold system housing the wellhead systems, 4 horizontal Xmas trees, subsea control system components, Multi Phase Flow Meter (MPFM) module, Integrated Overpressure Protection System (IOPPS), control lines and other required manifold functions. This system is located on the Brynhild field
- The Riser Base Manifold (RBM) is the commingling point between Brynhild and Pierce. It contains isolation valves and a MPFM module measuring the production from Pierce. The unit is located subsea, adjacent to the Pierce development
- Topside subsea control system located on the Haewene Brim FPSO

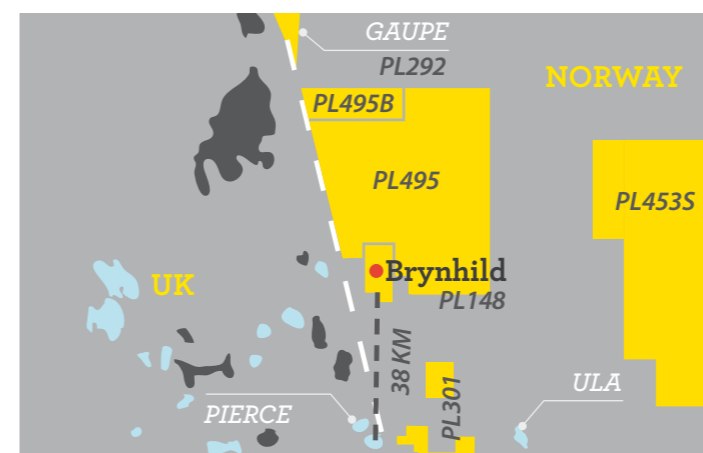
The flow from Brynhild production wells will commingle with the flow from Pierce at the RBM. The common Brynhild/Pierce well flow will then be transported to the FPSO via a renewed 10" dynamic flexible riser for well fluid processing on the Haewene Brim FPSO.

The Pierce and Brynhild flows will be metered independently using a MPFM on each well stream. Fiscal metering will take place on the FPSO. The gas produced will be re-injected into the Pierce field. A water injection system will inject treated seawater into both the Pierce and Brynhild fields.



THE BRYNHILD DEVELOPMENT WILL BE TIED BACK TO PIERCE USING THE FOLLOWING:

- A 38 km long production flow line of nominal size 6" using a pipe-in-pipe configuration to reduce heat loss from the well stream
- A 39 km long water injection line of nominal size 6"
- 1 umbilical system connecting the Brynhild template manifold system to the Haewene Brim FPSO via the RBM



LICENCE OVERVIEW



LICENCE OVERVIEW:

- Brynhild is located in PL148 in the southern North Sea. Tieback to the Haewene Brim FPSO located on the Shell Pierce field in the UK
- Lundin Norway AS: 70% (operator)
- PDO submitted August 2011, approved November 2011
- Gross reserves 20.4 MMbo
- Plateau production: 12 000 boepd gross
- First oil end 2013