

Data Set used in the Petrel

The Gullfaks data set has been released for commercial use by the Norwegian oil company **Statoil**. Gullfaks is one of the major oil fields in the North Sea and one of the largest oil producing fields on the Norwegian continental shelf, Fig. 3.1 Gullfaks is an oil and gas field in the Norwegian sector of the North Sea operated by Statoil Hydro. It was discovered in 1979, in block 34/10, at a water depth of 135 meters (442.913 foot). The initial recoverable reserve is 2.1 billion barrels, and the remaining recoverable reserve in 2004 is 234 million barrels. This oil field reached peak production in 2001 at 180,000 barrels per day.



Fig. 3.1: Gullfaks Oil Field

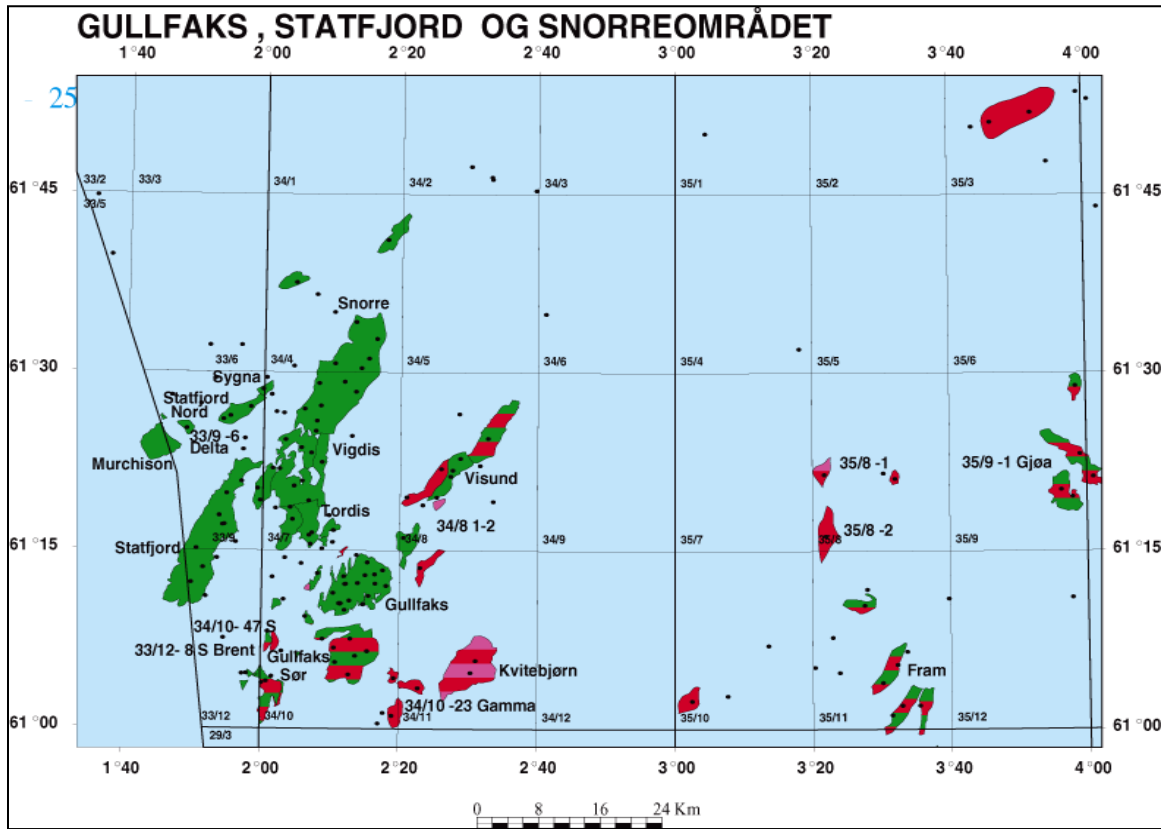


Fig3.2: Infrastructure on the Gullfaks field

Development

The sea depth in the area is 130 - 220 meters (426.509 - 721.784 foot). The field has been developed with three integrated processing, drilling and accommodation facilities with concrete bases and steel topsides, Gullfaks **A**, **B** and **C**. Gullfaks **B** has a simplified processing plant with only first-stage separation.

Gullfaks **A** and **C** receive and process oil and gas from Gullfaks Sør and Gimle. The facilities are also involved in production and transport from Tordis, Vigdis and Visund. The Tordis production is processed in a separate facility on Gullfaks **C**.

Reservoir

The Gullfaks reservoirs consist of Middle Jurassic sandstones of the Brent Group, and Lower Jurassic and Upper Triassic sandstones of the Cook, Statfjord and Lunde formations. The reservoirs are 1700 - 2000 meters (5577.427- 6561.679 foot) below the sea level.

The Gullfaks reservoirs are located in rotated fault blocks in the west and a structural horst in the east, with an intermediate highly faulted area.

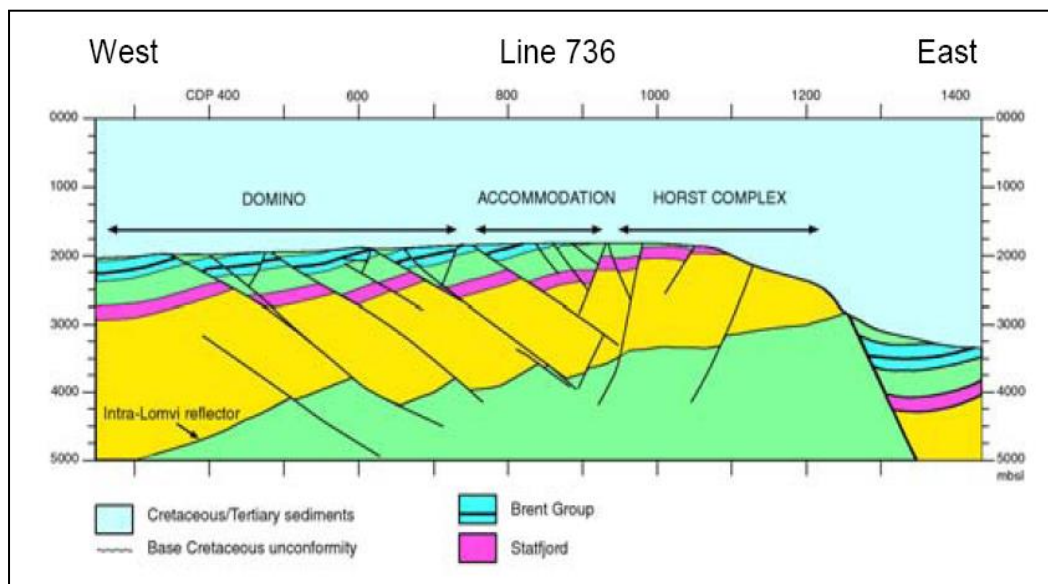


Fig3.3: Structural setting of the Gullfaks main field showing 3 main areas

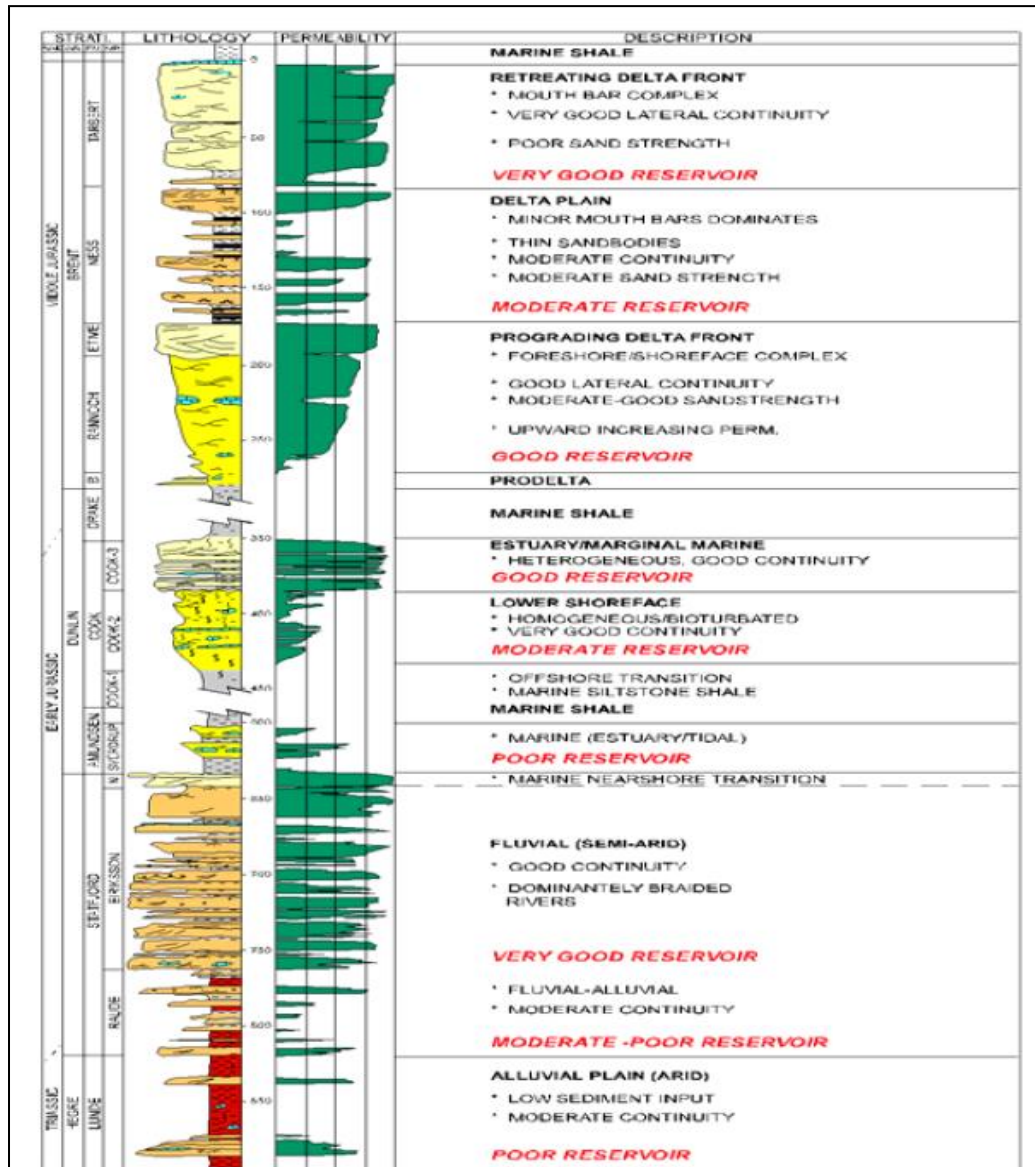


Fig3.4: Lithostratigraphy of the Gulfacks main field

Recovery strategy

The drive mechanisms are water injection, gas injection or water/alternating gas injection (WAG). The drive mechanism varies between the drainage areas in the field, but water injection constitutes the main strategy.



Fig3.5: Gullfaks offshore

Transport

Oil is exported from Gullfaks A and Gullfaks C via loading buoys to shuttle tankers. The part of the rich gas that is not reinjected is sent through the export pipeline to Stat pipe for further processing at Kårstø and export to the Continent as dry gas .

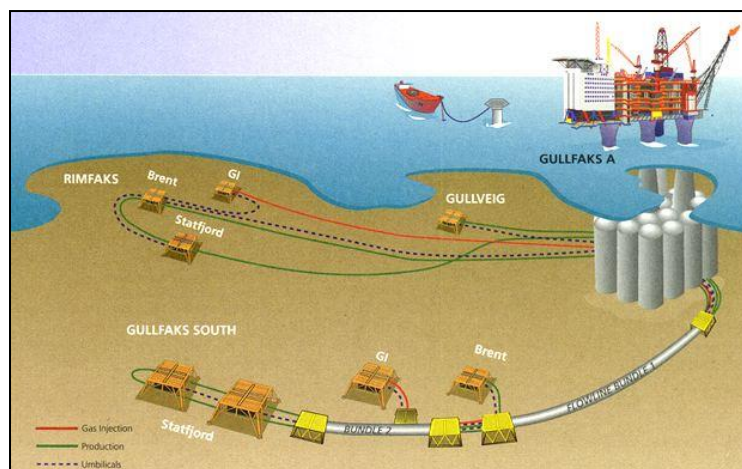


Fig3.6: Transportation of Gullfaks

Status

Production from Gullfaks is in the decline phase. Efforts are being made to increase recovery, partly by locating and draining pockets of remaining oil in water flooded areas, and partly through continued massive water circulation .

Implementation of a chemical flooding pilot will be considered in 2010. A new project has also been initiated to evaluate necessary facility upgrades for lifetime extension of the field towards 2030 .

Facts about Gullfaks

Operations:	In Norway.
Operator:	Statoil Hydro ASA
Location:	34/10 in the northern part of the North Sea
Discovery year:	1978
Production start:	Gullfaks A December 1986 Gullfaks B February 1988 Gullfaks C November 1989
Production:	Oil and Gas
API:	37.5°
S.G.:	0.8372
Sulphur:	0.22 mass%
Pour Point:	-15 °C
Exploration wells:	Den norske stats oljeselskap a.s: 25 wells Statoil ASA: 6 wells
Development wells:	Den norske stats oljeselskap a.s: 169 wells Statoil ASA: 52 wells Statoil Hydro ASA: 4 wells
Licensees:	Petro AS (30.0 %) Statoil Hydro ASA (61.0 %) Statoil Hydro Petroleum AS (9.0 %)
Recoverable reserves:	357 million Sm ³ oil 24 billion Sm ³ gas 3 million tonns ngl Remaining 2008-02-01: 27 million Sm ³ oil 2 billion Sm ³ gas 0 million tonns ngl

The Supplied Reservoir Data

The following wells, along with their well headers (well location map), well deviations (well paths), well logs, and well tops (formation tops), are supplied: A10, A15, A16, B1, B2, B4, B8, B9, C1, C2, C3, C4, C5, C6, and C7. The stratigraphic succession of the reservoir under study is given in the following table:

Succession	Horizon	Zone
1 (top)	Cretaceous	
2	Tarbert	Tarbert-3
		Tarbert-2
		Tarbert-1
3	Ness	Ness-2
		Ness-1
4 (bottom)	Ettive	