The Draugen Field: Even on world class reservoirs people make the difference

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The Draugen oil field is located in PL093 in block 6407/9, in the Haltenbanken area in water depths of 240 - 300 m, some 160 km northwest of Trondheim. The current licence partners are

A/S Norske Shell (operator)	**26.2%**
Petoro AS	**47.88%**
BP Norge AS	**18.36%**
Chevron Norge AS	**7.56%**

The field was discovered in June 1984 by the exploration well 6407/9-1. The Plan for Development and Operation of Draugen (PDO) was approved by the Parliament in December 1988 and the field came on stream in October 1993.

At the time of the PDO the expected recoverable reserves were 67.6 mln Sm^3 (425 mln bbls). The current estimate is 138.7 Sm^3 (872 mln bbls) and production to date has been 119 Sm^3 (750 mln bbls).

Draugen is blessed with world class reservoir properties (high quality reservoir, good reservoir connectivity, light oil, high sweep efficiency etc.), but it is the decisions people have made to enable the successful development and production of this world class reservoir that make the difference:

- The exploration team were permitted resources to buy all the data they could get hold of and time to perform thorough regional study of the Mid Norway margin,
- This enabled the team to substantiate HC migration into what is still the only significant oil discovery on the Trøndelag platform.
- Despite different oil properties in all the six exploration/appraisal wells, the development team “gambled” on a non-compartmentalised field and therefore proposed only 6 crestal producers and 5 water injectors on the flanks to produce the major part of the reserves.

- Because of the very low GOR in Draugen, the authorities allowed gas to be injected into a deeper water bearing formation, while waiting for a gas evacuation system for the Halten area.
- The facilities engineers designed the facilities such that with only small extra investments the platform could be modified to increase the capacity from 95,000 to 230,000 bbls/d.
- The development and well engineering team designed the first 9 5/8” completion for a Norwegian oil producer for well A-4
- Based on very high quality time lapse seismic acquisition and processing the A-4 well location was shifted about 1 km and only 6 months after the last shot with the result that the well tested 12,200 Sm^3/d or almost 77,000 bbls/d, and Draugen 4D results have since been used as show-cases both within the Shell world and outside.
- Draugen licence partners have been constructive contributors in the decision process