

# 11

## Fields under development

Approved projects in existing fields are described in Chapter 10





## Alvheim

<b>Blocks and production licences</b>	Block 24/6 - production licence 088 BS. Awarded 2003. Block 24/6 - production licence 203. Awarded 1996. Block 25/4 - production licence 036 C. Awarded 2003. Block 25/4 - production licence 203. Awarded 1996.	
<b>Discovered</b>	1998	
<b>Development approval</b>	06.10.2004 by the King in Council of State	
<b>Operator</b>	Marathon Petroleum Norge AS	
<b>Licensees</b>	Lundin Norway AS	15.00%
	Marathon Petroleum Norge AS	65.00%
	Norske ConocoPhillips AS	20.00%
<b>Recoverable reserves</b>	<b>Original:</b> 23.5 mill. scm oil 5.7 bn scm gas	
<b>Investment</b>	Total investment is likely to be NOK 8.4 bn NOK 0.7 bn had been invested at 31.12.04 (2005 values)	

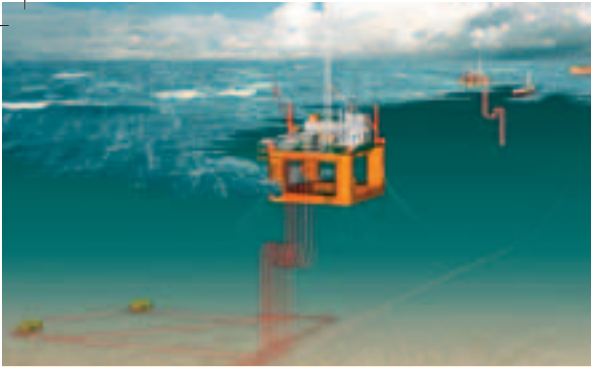
**Development:** Alvheim is an oil and gas field comprising the three discoveries 24/6-2, 24/6-4 and 25/4-7. The sea in the area is 120-130 metres deep. The field will be developed using a production ship and subsea wells. The oil will be stabilised and stored for export in the production ship. The development of Alvheim was approved by a Royal Decree of 06.10.2004.

**Reservoir:** The Alvheim reservoir consists of sandstone laid down as turbidites from the Shetland Platform in the Early Tertiary.

**Recovery strategy:** Alvheim is planned to be recovered using natural waterdrive.

**Transport:** The oil will be exported by tanker. Processed rich gas from Alvheim will be transported in a new pipeline from the field to the SAGE system on the UK shelf.

**Status:** Production start-up is planned for February 2007.



## Kristin

<b>Blocks and production licences</b>	Block 6406/2 - production licence 199. Awarded 1993. Block 6506/11 - production licence 134 B. Awarded 2000.	
<b>Discovered</b>	1997	
<b>Development approval</b>	17.12.2001 in the Parliament	
<b>Operator</b>	Statoil ASA	
<b>Licensees in Kristin</b>	Eni Norge AS	9.00%
	Mobil Development Norway AS	10.50%
	Norsk Hydro Produksjon AS	14.00%
	Petoro AS	18.90%
	Statoil ASA	41.60%
	Total E&P Norge AS	6.00%
<b>Recoverable reserves</b>	<b>Original:</b> 29.9 million scm oil 33.0 billion scm gas 6.9 million tonnes NGL	
<b>Investment</b>	Total investment is likely to be NOK 21.1 bn NOK 15.2 billion had been invested at 31.12.04 (2005 values)	

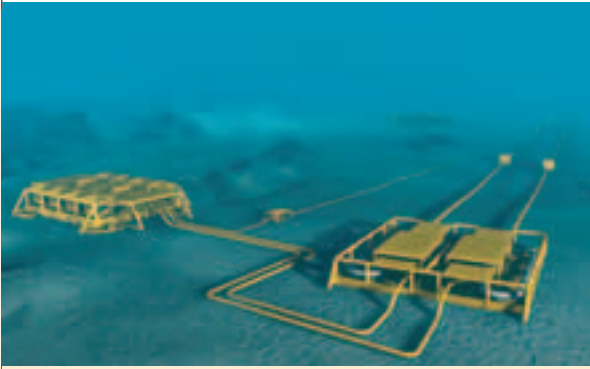
**Development:** Kristin is a gas field, to be developed using a subsea production facility with well stream transfer to a semi-submersible production facility for processing.

**Reservoir:** The reservoirs are in Middle Jurassic sandstone and lie some 4,600 metres deep. The two reservoirs are in the Garn and Ile formations and contain gas and condensate at very high pressure and temperature. There may also be recoverable resources in the Tofte formation.

**Recovery strategy:** Recovery will be assisted by depletion owing to the high pressure and low dewpoint.

**Transport:** Rich gas from Kristin will be transported in a separate pipeline to Åsgard Transport. The gas will be sent on to the Kårstø installation, where ethane and NGL will be extracted. Sales gas will be transported onwards to the Continent. Light oil will be separated and stabilised at Kristin and transferred to a storage ship tied back to an Åsgard C loading buoy for storage and export.

**Status:** The progress of drilling and completion has been slower than predicted. Estimates of recoverable resources in the Garn formation have been reduced because of predicted poorer reservoir characteristics. There are proven recoverable resources in the Tofte formation. Kristin is expected to go off plateau early, and it is therefore pertinent to arrange for processing of production from other discoveries in the area.



## Ormen Lange

<b>Blocks and production licences</b>	Block 6305/4 - production licence 209. Awarded 1996. Block 6305/5 - production licence 209. Awarded 1996. Block 6305/7 - production licence 208. Awarded 1996. Block 6305/8 - production licence 250. Awarded 1999.	
<b>Discovered</b>	1997	
<b>Development approval</b>	02.04.2004 in the Parliament	
<b>Operator</b>	Norsk Hydro Produksjon AS	
<b>Licensees for Ormen Lange</b>		
	A/S Norske Shell	17.04%
	DONG Norge AS	10.34%
	ExxonMobil Exploration and Production Norway AS	7.23%
	Norsk Hydro Produksjon AS	18.07%
	Petoro AS	36.48%
	Statoil ASA	10.84%
<b>Recoverable reserves</b>	<b>Original:</b> 375.2 billion scm gas 22.1 million scm condensate	
<b>Investment</b>	Total investment is likely to be NOK 31.8 bn NOK 1.8 billion had been invested at 31.12.04 (2005 values)	

**Development:** Ormen Lange is planned to be developed using 24 wells drilled from four subsea templates. Water depth in the area where the installations are planned to be located varies from 800 to 1,100 metres. Six predrilled production wells will be ready for production start-up on 01.10.2007. Ormen Lange lies in the Møre basin in the southern part of the Norwegian Sea, approximately 130 km west of Kristiansund. The field contains gas and some condensate. The development area is in the Storegga slide depression, formed some 8,200 years ago.

**Reservoir:** The main reservoir is in sandstone rocks of the Early Tertiary, about 2,700-2,900 metres deep.

**Recovery strategy:** The recovery strategy is based on production by depletion and subsequent compression.

**Transport:** The unprocessed well stream, consisting of gas and condensate, will be piped through two 30" multi-phase pipelines to a land installation at Nyhamna in the municipality of Aukra in Møre og Romsdal county. At the plant at Nyhamna, the gas will be dried and compressed before being transported through a 42" gas export pipe, Langeled, south to Sleipner and onward to the UK.

**Status:** Gas production from Ormen Lange is planned to begin in October 2007.



## Snøhvit

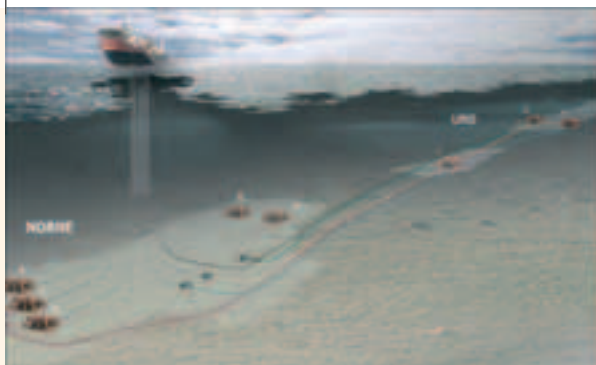
<b>Blocks and production licences</b>	Block 7120/6 - production licence 097. Awarded 1984. Block 7120/7 - production licence 077. Awarded 1982. Block 7120/8 - production licence 064. Awarded 1981. Block 7120/9 - production licence 078. Awarded 1982. Block 7121/4 - production licence 099. Awarded 1984. Block 7121/5 - production licence 110. Awarded 1985. Block 7121/7 - production licence 100. Awarded 1984.	
<b>Discovered</b>	1984	
<b>Development approval</b>	07.03.2002 in the Parliament	
<b>Operator</b>	Statoil ASA	
<b>Licensees in Snøhvit</b>		
	Amerada Hess Norge AS	3.26%
	Gaz de France Norge AS	12.00%
	Petoro AS	30.00%
	RWE Dea Norge AS	2.81%
	Statoil ASA	33.53%
	Total E&P Norge AS	18.40%
<b>Recoverable reserves</b>	<b>Original:</b> 160.2 billion scm gas 5.1 million tonnes NGL 17.9 million scm condensate	
<b>Investment</b>	Total investment is likely to be NOK 18.9 bn NOK 3.8 billion had been invested at 31.12.04 (2005 values)	

**Development:** Snøhvit is a gas field with condensate and an underlying oil zone. Snøhvit lies in the central section of the Hammerfest basin. The production facility will consist of subsea templates for 19 production wells and a CO<sub>2</sub> injection well. The facility will be positioned on the sea-bed at a depth of between 250 and 345 metres.

**Reservoir:** The Snøhvit area consists of seven structures containing gas, condensate and oil, in sandstone from the Early and Mid-Jurassic periods.

**Recovery strategy:** Recovery will be by depletion. The development does not include recovery of the oil zone. The CO<sub>2</sub> content of the gas will be removed at the plant at Melkøya and sent back to the field for injection into a formation below the oil and gas.

**Transport:** The unprocessed well stream, comprising natural gas incorporating CO<sub>2</sub>, NGL and condensate, will be transported through a 160 km long pipe to the Melkøya plant for processing and export. At Melkøya the gas will be processed and cooled to liquefy it (LNG). Transport to the market will be by special ship.



## Urd

<b>Block and production licence</b>	Block 6608/10 - production licence 128. Awarded 1986.	
<b>Discovered</b>	2000	
<b>Development approval</b>	02.07.2004 by the Crown Prince Regent in Council of State	
<b>Operator</b>	Statoil ASA	
<b>Licensees</b>	Eni Norge AS	11.50%
	Enterprise Oil Norge AS	10.00%
	Norsk Hydro Produksjon AS	13.50%
	Petoro AS	24.55%
	Statoil ASA	40.45%
<b>Recoverable reserves</b>	Original: 10.4 mill. scm oil 0.1 billion scm gas	
<b>Investment</b>	Total investment is likely to be NOK 3.5 bn NOK 1.1 billion had been invested at 31.12.04 (2005 values)	

**Development:** Urd consists of the discoveries 6608/10-6 Svale and 6608/10-8 Stær situated respectively some 5 and 10 km north-east of the Norne production ship. They will be developed using well templates tied back to the Norne ship. Five oil producers and three water injectors are planned in all. The production wells will use gas lift. On the well templates, there will be vacant slots for extra wells or for phasing in additional resources. Planned production start-up is 1.10.2005 and production is predicted to last until 2016.

**Transport:** On the Norne ship, the well stream will be processed and oil/condensate will be stabilised and loaded via buoys along with other oil/condensate from the Norne field. Rich gas will be exported along with gas from the Norne field in Åsgard Transport for further processing at Kårstø.

**Reservoir:** The discoveries lie in rotated fault blocks in the northern section of the Dønna terrace. The reservoirs are from the Early to Mid-Jurassic periods and consist of sandstones in the Åre, Tilje and Ile formations.

**Recovery strategy:** Both Svale and Stær are lacking gas caps and both will be produced using seawater injection for pressure maintenance. Oil in the Svale discovery is relatively heavy and the production is especially sensitive to the volume of water injected into the reservoir.

**Status:** The subsea installations will be put in place before production start-up on 01.10.2005. Five of the eight planned wells will be drilled and completed before production start-up, while the last three will be completed during the first quarter of 2006.