

# 14

## Future developments

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(where a development decision is expected within four years. This list does not include discoveries included under new resources in existing fields.)

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## Discoveries in the planning phase

### **2/12-1 Freja**      *Production licence 113. Operator: Amerada Hess Norge AS*

Resources	Oil: 2.9 mill scm Gas: 0.6 bn scm
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Discovered in 1987, Freja lies east of Valhall in about 70 metres of water close to the boundary with the Danish continental shelf. The development concept under consideration involves a sub-sea facility tied back to installations in the area.

### **3/7-4 Trym**      *Production licence 147. Operator: A/S Norsk Shell*

Resources	Gas: 3.3 bn scm Condensate: 0.8 mill scm
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This small gas/condensate find proven in 1990 lies close to the boundary with the Danish continental shelf. A possible development solution involves a subsea installation with gas export through an eight-km flowline to Denmark's Harald platform.

### **15/5-1 Dagny**      *Production licences 029 and 048. Operator: Statoil ASA*

Resources	Gas: 3.8 bn scm NGL: 0.2 mill tonnes Condensate: 1.2 mill scm
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Proven in 1978, Dagny lies north of Sleipner West. A possible development solution involves a subsea production system tied back to the A or T platforms on Sleipner East when capacity becomes available on one or other of these installations.

### **15/9-19 S Volve**      *Production licence 046. Operator: Statoil ASA*

Resources	Oil: 11.7 mill scm Gas: 1.2 bn scm NGL: 0.2 mill tonnes
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Proven in 1993, Volve lies in the Sleipner area. Possible development solutions involve a production ship or jack-up platform.

### **15/12-12 Varg South**      *Production licence 038. Operator: Pertra AS*

Resources	Oil: 1.1 mill scm Gas: 4.5 bn scm Condensate: 1.2 mill scm
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This oil and gas discovery south of Varg was proven in 2001. A development based on a subsea installation or use of an existing wellhead platform is under consideration.

**24/6-2 Alvheim** *Production licences 036 C, 088 BS and 203.  
Operator: Marathon Petroleum Norge AS*

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Resources Oil: 23.7 mill scm Gas: 4.2 bn scm

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Located west of Heimdal, Alvheim comprises three structures in about 120 metres of water which were previously designated Kameleon, Boa and Kneler. The last two of these were proven in 2003, whilst Kameleon was proven in 1998.

Options considered for Alvheim by the licensees include a stand-alone development or phasing-in to existing infrastructure. A plan for development and operation is expected to be submitted during 2004.

**25/5-5** *Production licence 102. Operator: Total E&P Norge AS*

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Resources Oil: 4.3 mill scm

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This 1995 discovery lies about six km east of Heimdal. It extends marginally into block 25/4. A development based on a subsea installation tied back to other infrastructure is under consideration.

**25/11-16** *Production licence 169. Operator: Norsk Hydro Produksjon a.s*

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Resources Oil: 3.6 mill scm

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Proven in 1992, this oil discovery lies south-west of Grane. Development is planned with a subsea installation tied back to Grane after production from the latter field goes off plateau.

**30/6-17 Alpha Cook** *Production licence 053. Operator: Norsk Hydro Produksjon a.s*

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Resources Gas: 1.5 bn scm

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Proven in 1986, Alpha Cook is a small gas discovery in the Cook formation beneath the main reservoir in Oseberg. It could be produced with a long well drilled from Oseberg B.

**30/9-19 Delta** *Production licences 079 and 190. Operator: Norsk Hydro Produksjon a.s*

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Resources Oil 2.3 mill scm Gas: 5.9 bn scm

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Delta was proven in 1998 as a gas find with a thin oil zone in the Tarbert formation. This structure could be developed with a long production well from the Oseberg field centre, but a subsea installation tied back to Oseberg is also being considered. The bulk of the resources in this find lie in production licence 079, with a small extension into production licence 190.

**33/12-8 A Skinfaks** *Production licence 152. Operator: Statoil ASA*

Resources	Oil 2.5 mill scm Gas: 1.0 bn scm NGL: 0.2 mill tonnes
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Skinfaks was proven in 2002 and lies west of Gullfaks. Plans call for it to be developed with a subsea template tied back to Gullfaks South.

**35/9-1 Gjoa** *Production licence 153. Operator: Statoil ASA*

Resources	Oil: 6.5 mill scm Gas: 29.4 bn scm NGL: 1.5 mill tonnes
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The Gjoa field was proven in 1989 west of Floro and about 42 km north of Fram. Various development options are currently under consideration, including a possible unitisation with other resources in the area.

**6406/2-1 Lavrans** *Production licence 199. Operator: Statoil ASA*

Resources	Gas: 13.9 bn scm Condensate: 3.9 mill scm
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Proven in 1994-95, Lavrans lies about five to 10 km south-east of Kristin in 270-290 metres of water. It is located in production licence 199, part of Halten Bank West. Development could be based on a subsea installation tied back to Kristin, with rich gas being piped through Åsgard Transport to Karsto for separation of the NGLs while condensate is processed on the Kristin platform. A tie-back of this kind would be accompanied by an adjustment of licence interests in Halten Bank West to reflect it. No development timetable has been clarified.

**6407/1-2 Tyrihans** *Production licences 073 and 091. Operator: Statoil ASA*

Resources	Oil: 22.0 mill scm Gas: 25.3 bn scm NGL: 4.3 mill tonnes
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This discovery comprises two structures – Tyrihans North and Tyrihans South – located about 35 km south-east of Kristin in roughly 285 metres of water. Tyrihans South, an oil field with a gas cap, was proven in 1983. Tyrihans North, a gas/condensate field with a thin oil zone, was proven in 1984.

A direct subsea tie-back to Kristin combined with gas injection from Åsgard B is being considered, with rich gas exported via Åsgard Transport to Karsto. A plan for development and operation is expected to be submitted in late 2004 or early 2005, with production scheduled to start in the autumn of 2008. A small part of Tyrihans South extends into production licence 091, while Tyrihans North lies entirely within production licence 073.

**6507/3-3 Idun** *Production licence 159. Operator: Statoil ASA*

Resources	Oil: 0.6 mill scm Gas: 17.4 bn scm
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The Idun West segment was discovered in 1999. Two sidetracks, which proved the East segment, have also been drilled in the structure. These wells proved gas in early and middle Jurassic sands. A number of development options are under consideration, and a unitised project with Skarv seems the most likely.

**6507/5-1 Skarv** *Production licences 159, 212, 212 B and 262. Operator: BP Norge AS*

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<b>Resources</b>	Oil: 16.8 mill scm Gas: 36.0 bn scm NGL: 6.0 mill tonnes Condensate: 4.0 mill scm
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Proven in 1998, Skarv lies in roughly 400 metres of water about 200 km off the Norwegian coast. It is primarily located in production licence 212, but also extends into production licence 262 and to a small extent into production licence 159. Both a stand-alone concept and a long-distance tie-back are under consideration. Development and the timing of a production start depend on finding an export solution for the gas in the Skarv structures.

**6608/10-6 Svale** *Production licence 128. Operator: Statoil ASA*

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<b>Resources</b>	Oil: 8.1 mill scm Gas: 0.6 bn scm
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Svale was proven in 2000. A sidetrack was also drilled on the structure. This discovery lies about 3.5 km north-east of Norne. Plans call for it to be developed with subsea-completed wells tied back to the Norne production ship. A plan for development and operation for the Norne satellites is expected in 2004.

**7122/7-1 Goliat** *Production licence 229. Operator: Eni Norge AS*

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<b>Resources</b>	Oil: 8.1 mill scm
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The 7122/7-1 Goliat oil discovery was made in 2000 and lies entirely within production licence 220 between the Snøhvit field and Hammerfest in northern Norway. An appraisal well drilled by Eni Norge AS in the autumn of 2002 yielded positive results and is included in further evaluation of the field with a view to development. Another appraisal is planned on the discovery in 2004 to clarify whether it can be developed.

## Discoveries sanctioned by the licence

### 6305/5-1 Ormen Lange

<b>Blocks and production licences</b>	Block 6305/7 - production licence 208. Awarded 1996. Blocks 6305/ 4 and 5 - production licence 209. Awarded 1996. Block 6305/8 - production licence 250. Awarded 1999.
<b>Operators</b>	Norsk Hydro Produksjon a.s (development phase) A/S Norske Shell (production phase)
<b>Licensees in the unitised field</b>	
	Petoro AS <sup>1</sup> 36.48%
(rounded off to two decimal places)	Norsk Hydro Produksjon a.s 18.078%
	A/S Norske Shell 17.04%
	BP Norge A/S 10.84%
	Statoil ASA 10.34%
	Esso Expl & Prod Norway AS 7.23%
<b>Resources</b>	Gas: 375 bn scm Condensate: 22.1 mill scm

<sup>1</sup> Petoro AS serves as the licensee for the SDFI.

Proven in 1997, the Ormen Lange gas discovery extends across production licences 208, 209 and 250. It lies about 140 km west of Kristiansund.

Plans call for the field to be developed using subsea installations tied back to a process plant at Nyhamna on the mid-Norwegian coast, with gas export from there. A plan for development and operation was submitted to the authorities in December 2003. Gas production is due to start in October 2007.

### 34/10-47 Gulltopp *Production licence 050. Operator: Statoil ASA*

<b>Resources</b>	Oil: 4.1 mill scm NGL: 0.2 mill tonnes
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Proven in 2002, Gulltopp is a small oil discovery located about seven km west of Gullfaks. Plans call for it to be produced through an extended-reach well drilled from Gullfaks A, with production expected to start on 1 July 2005.