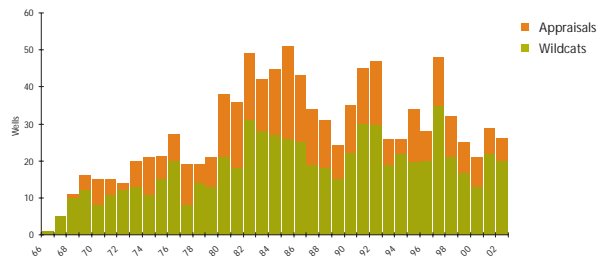




9 Exploration operations





Figur 9.1 Exploration wells completed per year after reclassification

Exploration operations seek to identify new commercial petroleum resources, help maintain a stable and steady level of activity, and lay the basis for future development, production and government revenues.

About 60 per cent of the NCS has been opened for exploration, and roughly nine per cent of this acreage is covered by production licences. Across such a large area, the basis for exploration will naturally differ in terms of resource potential, established infrastructure and environmental challenges.

Seismic surveys

Seismic surveys acquire data which provide information about the sub-surface rocks. Sound waves transmitted through the Earth's crust are reflected back to surface vessels and allow a picture of rock formations deep underground to be formed.

Data collected in this way fall into several categories. The commonest are two-dimensional (2D) and three-dimensional (3D), with the latter involving more extensive, and also expensive, data gathering than the former.

Seismic mapping of the NCS began in 1962, and a total of 7 784 939 km had been shot by the end of 2002. Of this, 3 798 571 km was collected above 62°N since surveying began there in 1969. The NPD, oil companies and survey contractors shot 502 506 km of seismic lines in 2002.

Exploration drilling

Exploration drilling embraces wildcat and appraisal wells. A wildcat is the first well on a prospect, while an appraisal is drilled to determine the extent and scope of a discovery.

During 2002, 26 exploration wells – 20 wildcat and six appraisal – were completed or temporarily abandoned on the NCS. These included 17 (14 wildcat and three appraisal) in the North Sea and nine (six wildcat and three appraisal) in the Norwegian Sea. No wells were drilled in the Barents Sea during 2002. Operators for the wells completed in 2002 were Statoil 12, Norsk Hydro five, BP Amoco two, Amerada Hess two, Conoco one, Phillips one, Shell one and RWE-DEA one.

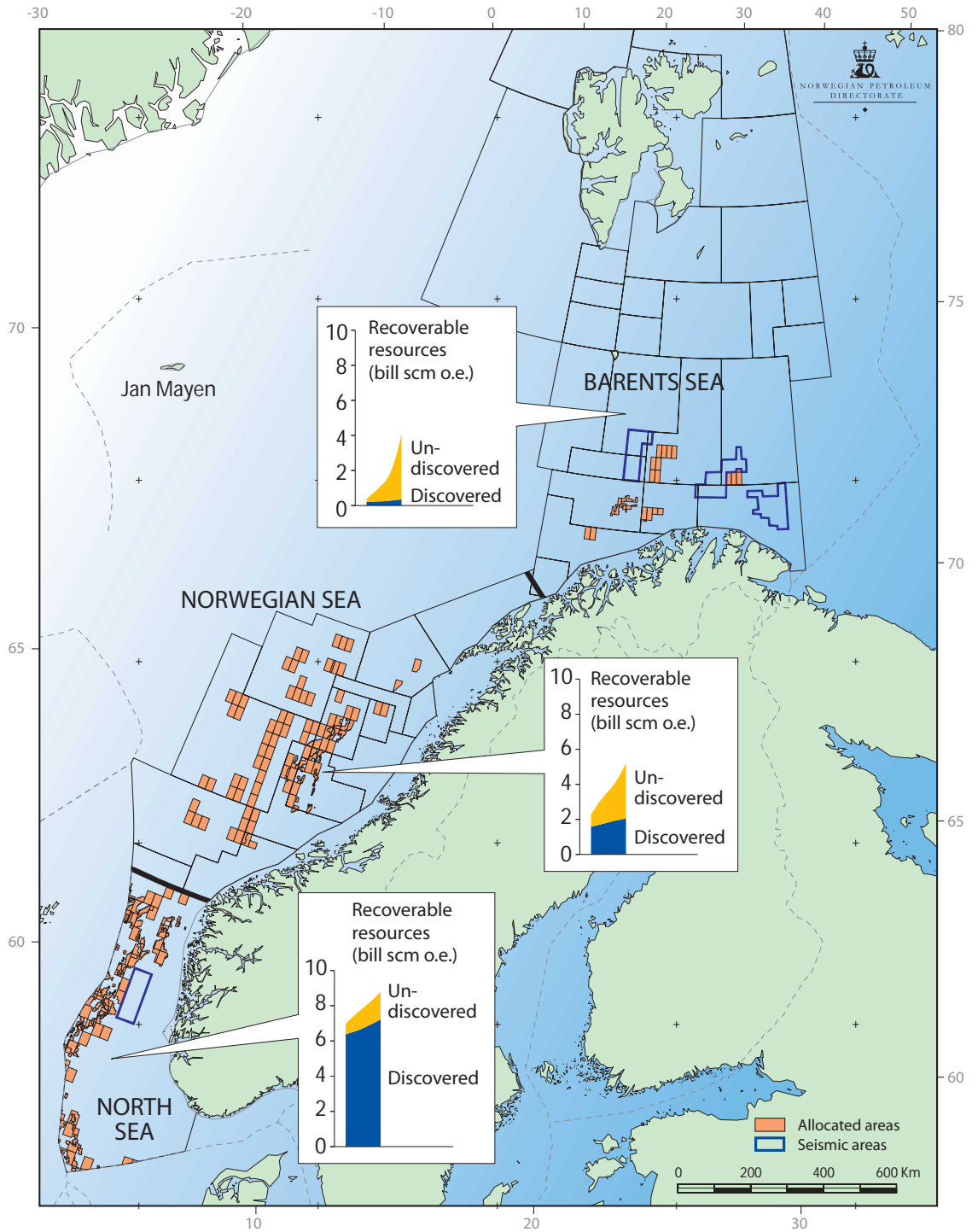
A total of 1 041 exploration wells had been completed or temporarily abandoned on the NCS at 31 December 2002.

The future level of exploration will be determined by a number of factors, with oil price expectations, the scope of licence awards and discoveries leading to appraisal drilling as the most important.

New discoveries

Petroleum was discovered in nine of the exploration wells drilled in 2002. Seven of these were in the North Sea and two in the Norwegian Sea.

The overall increase in resources from exploration operations in 2002 is estimated to be 10-13 mill scm oil and 10 bn scm gas. This represents a decline from the year before. The volume of oil and gas discovered was smaller than the amount produced.



All discoveries in the North Sea during 2002 were made in Jurassic rocks, with most of them found close to existing fields in the Tampen area. All the discoveries were small and could be developed as satellites to existing fields in the vicinity. Two wells west of Gullfaks South and Rimfaks yielded oil and gas in small deposits with good reservoir quality. These results enhance the probability of making additional discoveries in the area.

Two new finds, all in Jurassic rocks, were recorded on the Halten Bank in the Norwegian Sea. They lie close to Norne and Kristin, and development must be assessed in relation to these fields.

Future exploration

Substantial undiscovered oil and gas resources remain on the NCS. Future exploration will be pursued in both new and established exploration

regions of the North, Norwegian and Barents Seas. Future exploration above the 62nd parallel will face major challenges, such as geological understanding, technological solutions for deep water, establishing infrastructure and protecting the environment.

Exploration strategy and operations must reflect the special challenges faced in each area of the NCS.

North Sea

The North Sea is the most-explored part of the NCS. Geological understanding is good over much of the area. A leading challenge is to prove resources close to existing and planned infrastructure. Even small discoveries may show good profitability when rational use is made of these facilities.

Exploration could also be extended to less well-known parts of the North Sea in coming years. These waters are likely to be a core area for exploration in the long term.

To simplify and enhance the efficiency of the

Table 9.1 New discoveries on the NCS in 2002 (recoverable resources). (Source: NPD)

Well	Operator	Hydrocarbon type	Oil/condensate mill scm	Gas bn scm
30/9-20S	Norsk Hydro	oil	<1	
33/12-8 S ¹	Statoil	oil	1	<1
33/12-8 A	Statoil	oil	1	<1
34/10-45 S	Statoil	oil/gas	<1	<1
34/10-46 A	Statoil	gas	<1	<1
34/10-47 S	Statoil	oil	3	<1
6406/5-1	Shell	gas/condensate	2	1
6608/10-8	Statoil	oil	4	
Total			10-13	-<10

¹Two discoveries in the same well

awards process, the MPE will introduce fixed predefined exploration areas covering mature regions of the NCS in 2003. The selected areas will be included in future annual awards of mature acreage.

Norwegian Sea

The biggest contribution to resource growth on the NCS over the past decade has come from exploration in the Norwegian Sea. A number of substantial finds have been made in these waters over this period. Infrastructure has also been established, offering opportunities for the profitable development of small discoveries.

New production licences have been awarded approximately every two-four years in the Norwegian Sea over the past decade. The most recent allocation took place in the 17th offshore licensing round in the summer of 2002. In coming years, the general rule will be to hold a licensing round for the Norwegian Sea every other year. That will contribute to greater predictability in licensing policy.

Six production licences were awarded in the 17th licensing round, covering deepwater sections of the Vøring Basin as well as areas near the Dønna Terrace and Trøndelag Platform. A total of 32 full or partial blocks were put on offer, and 18 were awarded. Interesting exploration wells are planned in several of these production licences over coming years. Plans call for the 18th licensing round on the NCS to be announced in the fourth quarter of 2003, with awards likely to be made in the second quarter of 2004.

Barents Sea

Petroleum operations in the Barents Sea face major challenges. Terms for working in this region have been modified with a view to encouraging continued exploration. The latest production licences awarded in these waters involved seven areas in the Barents Sea project in May 1997. Companies operating in these waters must take particular account of environmental and fishing interests.

