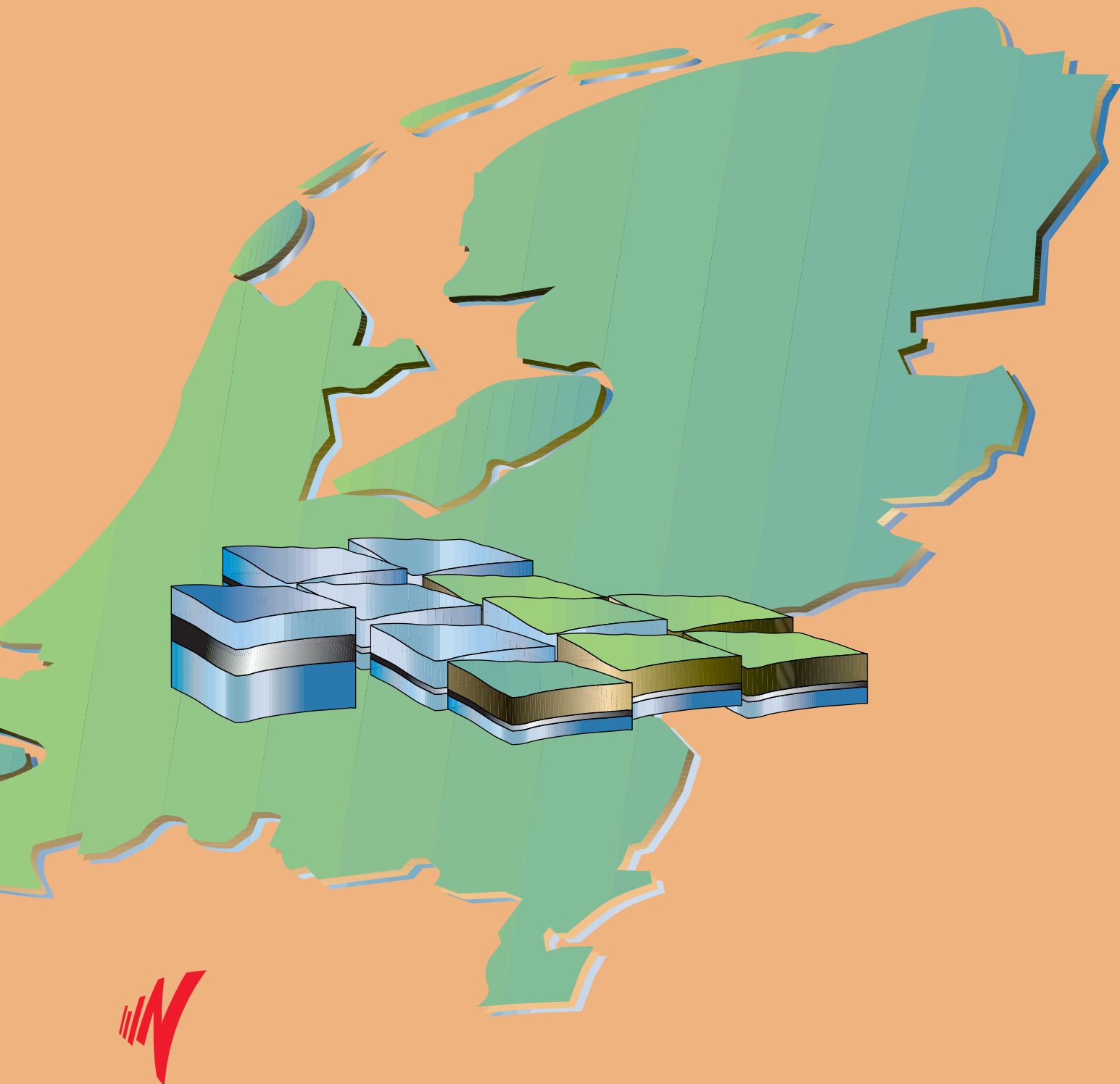


# Oil and gas in the Netherlands

Exploration and production 2002



# **OIL AND GAS IN THE NETHERLANDS EXPLORATION AND PRODUCTION 2002**

## ***A review of oil and gas exploration activities in the Netherlands and the Dutch sector of the Continental Shelf***

This review has been compiled by the Netherlands Institute of Applied Geosciences TNO – *National Geological Survey*, at the request of the Energy Production Directorate of the Directorate General for Competition and Energy of the Dutch Ministry of Economic Affairs. Key data have been provided by the Ministry of Economic Affairs (Dutch acronym: EZ for Ministerie van Economische Zaken), the Netherlands Institute of Applied Geosciences TNO – *National Geological Survey* (Dutch acronym: TNO-NITG for Nederlands Instituut voor Toegepaste Geowetenschappen TNO) and the State Supervision of Mines (Dutch acronym: SodM for Staatstoezicht op de Mijnen).

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The Hague, May 2003



## **Preface**

The Hague, May 2003

The annual review, Oil and Gas in the Netherlands, exploration and production, reports on developments in exploration and production of hydrocarbons in the Netherlands and the Dutch sector of the Continental Shelf.

The review covers the usual subjects, i.e.:

- Licences;
- Reconnaissance and exploration;
- Production;
- Reserves.

The chapter 'Introduction' briefly reports on 2002 developments. Special attention deserve the 2002 key data, the Mining Act, payments pursuant to the Mining Act, gas supply, the Dutch Gas Structure, the Environmental Covenant between the Government and the oil and gas industry, produced water management, recovery optimisation, earthquakes in the Netherlands, and the Technical Commission on Ground Movement.

Various annexes and maps present the state of the affairs as at 1 January 2003.

J.C. de Groot  
Director Energy Production



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In this annual review, natural gas and oil volumes are stated in terms of 'standard' m<sup>3</sup>, usually abbreviated as m<sup>3</sup>(st). 'Standard' relates to the reference conditions: 15° C and 101.325 kPa.

In some cases the natural gas volumes are stated in terms of Groningen Gas Equivalent, which has a gross calorific value of 35.17 MJ/ m<sup>3</sup> at 0° C and 101.325 kPa. In such cases this is explicitly stated in the text.

## INTRODUCTION

### 1. Key data 2002

During the review year, two applications for exploration licences for the Continental Shelf were submitted and two exploration licences were awarded. Three production licence applications were submitted, while five production licences were awarded in 2002.

No onshore exploration or production licences were applied for or awarded. Drilling licences Andel II and Schagen have become irrevocable after a court decision.

A total of 42 wells were drilled for oil and gas. That is two more than in 2001. Of these 42 wells, 20 were exploration wells, four appraisal wells and 18 development wells.

In 2002, total gross gas production from Dutch gas fields was 71.24 billion cubic metres, which is 1.4% (1.02 billion cubic metres) less than in 2001.

Onshore gas fields accounted for 44.47 billion cubic metres, which is 1.25 billion cubic metres more than in 2001, an increase of 2.9%. Production from offshore gas fields decreased by 2.27 billion cubic metres to 26.77 billion cubic metres, a decrease of 7.8%. In 2002, the net result of injection into the three underground storage facilities was positive and totalled 0.53 billion cubic metres. Therefore, total net gas production from the Dutch subsurface amounted to 70.71 billion cubic metres, which is 2.9% (2.13 billion cubic metres) less than in 2001.

In 2002, a total of 2.68 million cubic metres of oil were produced in the Netherlands, which is 1.05 million cubic metres, or 64%, more than in 2001. Onshore fields accounted for 0.44 million cubic meters of oil, a drop of 19%, compared to 2001. Production from fields on the Dutch sector of the Continental Shelf increased by 106% to 2.24 million cubic metres. Average daily oil production over 2002 was 7 330 cubic metres, which is equivalent to 46 100 barrels a day on average.

### 2. Mining Act

On 1 January 2003, the Mining Act and the accompanying Mining Decree and Mining Regulations came into force. The new Act replaces over two centuries of legislation on the production of mineral resources. The main topics of the Mining Act are:

- the system of exploration and production licences is basically the same as in the old legislation, what is new is that, now, a licence is also obligatory for the exploration for and production of geothermal energy (deeper than 500 metres).
- the storage licence for storing substances in the subsurface (deeper than 100 metres); this licence obligation is a new provision in comparison with previous legislation.
- the mining environmental licence, for cases in which mining operations are established which do not require a licence under the Environmental Protection Act.
- the production and storage plan, dealing with proper planning and management of mineral resources and geothermal energy as well as ground movement, applicable to accumulations that are located onshore or within 3 miles from the coastline.
- the possibility for the Minister of Economic Affairs to request financial security for the compensation of potential damages resulting from ground movements and for the removal of mining installations and pipelines on the continental shelf.
- payments and state participation.
- advisory bodies: to be precise the Mining Board and the Technical Commission on Ground Movement.
- reporting by mining companies to the Minister and reporting by the Minister to the European Commission and the States-General, the parliament of the Netherlands.
- enforcement and supervision by the State Supervision of Mines.



- the Guarantee Fund Mining Damage, which has been established to pay compensation in certain cases of damages resulting from mining operations suffered by private persons.

The Mining Act also comprises transitional provisions and repeals and amendments of other acts. An important amendment is that, henceforth, the Working Conditions Acts also applies to mining operations (both onshore and offshore). This has resulted in a major amendment of the Working Conditions Decree. This amendment also came into force as from 1 January 2003.

For further information and the full text of the act in Dutch, please refer to the website of the Ministry: [www.minez.nl/beleid/ext\\_frame.asp?site=/beleid/home\\_ond/olieengas/oliegas.htm](http://www.minez.nl/beleid/ext_frame.asp?site=/beleid/home_ond/olieengas/oliegas.htm), click on Mijnbouwwet. An unofficial English translation is available on <http://www.nitg.tno.nl/oil&gas/>

### **Applications for exploration licences**

The application procedure is included in chapter 2 of the new Mining Act (Bulletin of Acts and Decrees 2002, 542) and is detailed in chapter 1 of the Mining Regulations (Netherlands Government Gazette 2002, 245).

An important aspect of the new procedure is the possibility of competing applications. When an applicant has submitted an application for an open block or part of a block, other parties have the opportunity to submit competing applications during a thirteen-week period. An invitation for competing applications is published in the Netherlands Government Gazette and the European Union Official Journal. The date of publication in the Government Gazette is deciding for the thirteen-week period.

### **Applications for production licences**

The application procedure is also included in chapter 2 of the new Mining Act and in chapter 1 of the Mining Regulations. When a holder of an exploration licence applies for a production licence, that licence is normally awarded. No competing applications are possible in that case.

The procedure involving competing applications only applies to applications for open areas as described above in ‘applications for exploration licences’.

## **3. Payments**

From the moment the Mining Act came into force, payment of surface rentals, levies and profit shares for oil and gas production by mining operators are no longer determined by the Minister of Economic Affairs but levied and collected by the Tax Authorities Rijnmond (Belastingdienst Rijnmond), simultaneous with the application of the relevant tax legislation and regulations. These Tax Authorities are also entitled to levy and collect mining payments for the years preceding the date the new Mining Act came into force, which have not been closed by the Ministry of Economic Affairs. This implies that, as from 1 January 2003, mining operators should send all information concerning payments (including information concerning the "old years") to the Tax Authorities Rijnmond instead of to the Minister of Economic Affairs.

## **4. Gas Supply**

In 2001, the Ministry commissioned the Netherlands Institute of Applied Geoscience TNO - *National Geological Survey* (TNO-NITG) to prepare a report comprising information on exploration and production licence applications and awarded licences for the exploration and production of natural gas, any natural gas fields found, the volumes of gas reserves, and the prognosis of natural gas production in the Netherlands during the next ten years. Data on the gas fields include an inventory of depleted gas fields, gas fields that are currently being produced and gas fields that will come on stream in the next few years or in the period thereafter. The report (entitled ‘Aardgasstromen in Nederland’) was based on article 58 of the Gas Act (which, was retracted and replaced by article 125 of the Mining Act. The published report has been sent to Second Chamber of Parliament by the Minister in February 2002. As stipulated in the Mining Act, an update of this report will be sent to both chambers of the Dutch parliament every two years.

The Dutch version of this publication is also available on the web, see:

[www.nitg.tno.nl/oil&gas/wet.shtml](http://www.nitg.tno.nl/oil&gas/wet.shtml) and [www.ez.nl/beleid/home\\_ond/olieengas/aardgasstromen.pdf](http://www.ez.nl/beleid/home_ond/olieengas/aardgasstromen.pdf).

### **5. Gasgebouw (Dutch Gas Structure)**

The Minister of Economic Affairs has informed the Second Chamber of Parliament in letters dated 19 November 2001, 8 April 2002 and 17 December 2002 about the restructuring of the so-called Gasgebouw (Dutch Gas Structure) and of Gasunie, a topic of negotiations between the Minister of Economic Affairs and Shell and ExxonMobil. For various reasons it has not been possible for the new structure to become operational on the planned date of 1 January 2003. The new structure is now intended to become operational as from 1 January 2004.

Once the intended structure is implemented, Gasunie will be split into three independent units: one handling transportation and two for trading. The process involves Shell and ExxonMobil each becoming owner of one of the trading units. The Government is prepared to take over the ownership of the transportation network, on the express condition that this will be financially neutral. The small-field policy and the function of the Groningen field as a swing producer will be laid down adequately and by law. The basic premise is and will be that the current practice applicable to contracts for both existing and for new small fields will be continued.

For background information, an outline of the proposed structure and the reasons for the delay, please refer to the information in the letters dated 19 November 2001, 8 April 2002 and 17 December 2002. The Dutch text of these letters can be accessed via the website of the Ministry of Economic Affairs by clicking on the link:

<http://www.minez.nl/home.asp?locatie=main&page=/upload/docs/kamerbrieven/pdf-documenten/index.asp>

### **6. Environmental Covenant**

In 1995, the industry and the government concluded a covenant 'declaration of intent concerning implementation of environmental policies for the oil and gas industry'. The covenant covers the period till 2010. In the framework of the covenant, Integral Environmental Targets (Dutch acronym: IMT = Integrale Milieu Taakstelling) for the entire industry have been agreed concerning the themes: climate change, acidification, dissemination (discharges), removal and violation. The tools used by operators to implement the measures intended to achieve aforementioned reductions are Company Environmental Plans – (Dutch acronym: BMPs = Bedrijfsmilieuplannen) and Environmental Annual Reports (Dutch acronym: MJVs = Milieujaarverslagen).

Since the start of the covenant, emission reduction in the oil and gas industry is proceeding satisfactorily, e.g. of methane, Volatile Organic Sulphur (VOS) and SO<sub>x</sub>. Issues that warrant attention are the emissions of NO<sub>x</sub> to the atmosphere and of heavy metals and mining additives to water. This will be the focus of attention of the coming BMP-3 cycle 2003 – 2006.

The covenant is ready, both for the organisation and the IMT of the BMP-3 cycle after renewing the Long-Term Energy Agreement in 2001 and recording this in the BMP-3 Guide (Handreiking BMP-3) and the Addendum to the BMP-3 Guide. The full Dutch text of these documents and all up-to-date information on the covenant can be found on the website of the covenant's process supervisor, FO-Industrie (Facilitaire Organisatie Industrie): [www.fo-industrie.nl](http://www.fo-industrie.nl).

### **7. Management of produced water**

In June 2001, the OSPAR Commission ratified the 'Management of Produced Water from Offshore Installations Recommendation 2001/1'. The recommendation's ultimate objective is to eliminate environmentally damaging emissions of oil contained in produced water. By 2020, oil contained in produced water should cause zero damage to the marine environment. The reduction target for 2006

stipulates a 15% reduction in oil concentration in produced water in comparison with 2000. Also, after 2006, no individual plant should discharge any produced water with an oil concentration exceeding 30 mg/l. The OSPAR agreements have been laid down in the new mining legislation. The Dutch industry is set to achieve the 15% reduction target if it continues its current efforts in the framework of the Environmental Covenant and the Benzene Agreement.

The Benzene Agreement was concluded between the industry and the Dutch Government on 10 January 2002 as part of the Sixth Commission Integrated Water Management (Dutch acronym: CIW-6 = Commissie Integraal Waterbeheer). The agreement proposes to achieve a reduction of 60% in benzene emissions in comparison with 1990. The industry has committed itself to take definite emission-reducing measures at eight gas-producing platforms in the period from 2001 up to and including 2004. The 60% target implies a maximum benzene emission to water of 31 tonnes per year.

### **8. Long-term energy agreement on energy efficiency**

On 6 December 2001, the Netherlands Oil and Gas Exploration and Production Association (Dutch acronym: NOGEPA for Nederlandse Olie en Gas Exploratie en Productie Associatie) joined the second long-term energy agreement (Dutch acronym: MJA-2 for Meerjarenaafpraak-2) on behalf of the Dutch oil and gas industry. The industry's target is to improve the energy efficiency with 10.7% by 2004 in comparison with 1998 by implementing firmly planned energy-saving measures. If provisionally planned measures are included as well, the industry's target amounts to 12.7%. These figures are based on the industry's preliminary Long-term Energy Plan (Dutch acronym: MJP for Meerjarenplan).

### **9. Systematic management (efficient production) Hydrocarbons.**

In October 1996, the Minister of Economic Affairs promised the Second Chamber of Parliament that government supervision of efficient production, i.e. systematic management of mineral resources, would be stepped up. Representatives of the State Supervision of Mines (SodM) are responsible for this supervision, in close co-operation with the Netherlands Institute of Applied Geoscience TNO - *National Geological Survey* (TNO-NITG).

To facilitate an efficient supervision projects have been started to integrate existing databases and make these more easily accessible. These projects are proceeding well and will continue during the coming year.

In 2002, consultations with BP continued concerning a possible resumption of oil production from the Rhine field in offshore block P15. TNO-NITG's reservoir study of this field shows that a considerable producible volume of oil remains in the reservoir. BP has indicated that resumption of production is currently not feasible economically. The production facilities will, however, remain in place, enabling production to be resumed at a later date.

Close consultations were also held with NAM on the possibilities of resuming production from the Schoonebeek oil field. NAM will decide early 2003 on preparing a field-development plan.

All production data on onshore and offshore natural gas, condensate and oil fields (according to article 111 and 112 of the Mining Decree) will be published monthly per well, mining facility or licence area according to article 116 (Mining decree) on <http://www.nitg.tno.nl/oil&gas/>

### **10. Earthquakes**

Since 1986, minor earthquakes have been recorded regularly in the northern part of the Netherlands. Some tremors can actually be felt by the local population. The severity of most tremors, however, is so low, that they can only be detected by seismometers. To obtain the best possible inventory of the number of earthquakes, their magnitudes and epicentres, two seismic monitoring networks have been installed in the northern part of the Netherlands. One network covers the provinces of Drenthe and Groningen as well as parts of the provinces of Friesland and Overijssel, while the other covers part of the province of North Holland. The two monitoring networks are managed and maintained by the

Royal Dutch Meteorological Institute, (Dutch acronym: KNMI = Koninklijk Nederlands Meteorologisch Instituut). All information on the North Netherlands seismic network is basically public and available upon request. Part of this information can be viewed on the KNMI website: [www.knmi.nl](http://www.knmi.nl)

In 2002, twenty-five earthquakes were recorded in the northern part of the Netherlands, two of which were actually 'felt' by the public in the vicinity of Roswinkel and Stedum. These tremors did not give rise to any damage reports.

#### **11. Technical Commission on Ground Movement**

The Technical Commission on Ground Movement (Dutch acronym: Tcbb = Technische Commissie Bodembeweging) was established by decree of the Minister of Economic Affairs of January 2000. On the basis of advice by Tcbb chairman, Dr. D.K.J. Tommel, the commission's task was broadened as from April 2001. In addition to its regular advisory and public information tasks, the Tcbb can also be called upon for advice in case a damage claim has not been settled by the mining company to the satisfaction of the claimant. This resulted in the registration of around twenty 'old' claims with the Tcbb in 2001. In 2002, progress in settling these cases and handling requests for advice has been good. In six cases, independent technical studies have proven causal relationships between the damages claimed and a tremor.

In the fall of 2002, the Minister was advised by the Tcbb to extend the commission through the appointment of a building-engineering expert.

Information on the Tcbb can be found on the website: [www.tcbb.nl](http://www.tcbb.nl)



## 1 LICENCES

### TERRITORY

The total surface area of the Netherlands territory is 41,785 km<sup>2</sup>. On 1 January 2003, exploration licences had been awarded for a total of 3,684.6 km<sup>2</sup>, while production licences had been awarded for a total area of 15,391.4 km<sup>2</sup>. This implies that exploration and production licences had been awarded for 45.7% of the Dutch territory.

### Exploration Licences

On 1 January 2003, a total of six exploration licences were in force. During 2002, two exploration licences lapsed and two new exploration licences came into effect, i.e. Andel II and Schagen.

Three applications were still subject to objections/appeal, i.e.:

- IJsselmeer,
- Markerwaard,
- Zuid-Friesland II.

At the end of the year under review, one application for an exploration licence was still under consideration, i.e.:

- Schiermonnikoog-Noord filed by Gaz de France Production Nederland B.V.

The exploration licences that lapsed in 2002 are the exploration licences Harderwijk and Oosterwolde held by TotalFinaElf. This freed an area of 1,158.3 km<sup>2</sup> for new licence applications for exploration for oil or natural gas.

### Production licences

A total of 24 production licences were in force by 1 January 2003.

Production licence application Terschelling, filed by the Nederlandse Aardolie Maatschappij B.V., was still under consideration.

### CONTINENTAL SHELF

The Dutch sector of the Continental Shelf covers 56,814.4 km<sup>2</sup>. By 1 January 2003, exploration or production licences had been awarded for a total area of 22,676 km<sup>2</sup>. This equals 40% of the area available.

### Reconnaissance licences

Seven reconnaissance licences were granted in 2002. The total surface area covered by reconnaissance licences is 3,366 km<sup>2</sup>.

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<b>Reconnaissance licences awarded</b>					
	1998	1999	2000	2001	2002
Number	8	4	2	3	7
Area in km <sup>2</sup>	3 701	1 268	681	169	3 366

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### Exploration licences

On 1 January 2003, a total of 30 exploration licences were in force covering a total area of 6,539 km<sup>2</sup>. In 2002, two applications for exploration licences were submitted, no exploration licences came into effect. In 2002, two exploration licences were awarded, which, pursuant to the new Mining Act, came into effect on 1 January 2003.

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<b>Exploration licences awarded during 2002</b>			
Licence holder	Block (part)	In force as from	km <sup>2</sup>
Nederlandse Aardolie Maatschappij B.V.	F6b		390
Wintershall Noordzee B.V. c.s.	F13b		399
		Total	789

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In 2002, ten exploration licences lapsed, covering a total area of 2,353 km<sup>2</sup>.

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<b>Exploration licences lapsed during 2002</b>			
Licence holder	Block (part)	km <sup>2</sup>	
Amerada Hess (Netherlands) Ltd. c.s.	A5	91	
Nederlandse Aardolie Maatschappij B.V.	A8a, A8b	197	
Nederlandse Aardolie Maatschappij B.V.	A9b, A9c	54	
Nederlandse Aardolie Maatschappij B.V.	A10	129	
Nederlandse Aardolie Maatschappij B.V.	A14	393	
Nederlandse Aardolie Maatschappij B.V.	E1a	195	
Nederlandse Aardolie Maatschappij B.V. c.s.	E2	397	
Nederlandse Aardolie Maatschappij B.V. c.s.	E3	397	
Nederlandse Aardolie Maatschappij B.V.	M10b, M11	102	
Petro-Canada Netherlands B.V.	F5	398	
		Total	2 353

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In 2002, no licence holders relinquished their licence areas voluntarily.

### Production licences

In 2002, four production licences were awarded and came into effect, covering a total surface area of 660 km<sup>2</sup>. In 2002, one production licence was granted, which, pursuant to the new Mining Act, came into effect on 1 January 2003.

<b>Production licences that came into effect during 2002</b>			
Licence holder	Block (part)	In force as from	km <sup>2</sup>
Wintershall Noordzee B.V. cs	E15a	04-10-'02	39
Wintershall Noordzee B.V. cs	E18a	04-10-'02	212
Wintershall Noordzee B.V. cs	F13a	04-10-'02	4
Wintershall Noordzee B.V. cs	F16	04-10-'02	405
Subtotal			660

<b>Production licences awarded during 2002</b>			
Licence holder	Block (part)	In force as from	km <sup>2</sup>
TotalFinaElf E&P Nederland B.V. c.s.	L1f	01-01-'03	17
Subtotal			17
Total			677

The licence area covered by the production licence mentioned below was modified in 2002:

<b>Voluntary relinquishment licence areas</b>					
Licence holder	From block	km <sup>2</sup>	To block	km <sup>2</sup>	Relinquished km <sup>2</sup>
TotalFinaElf E&P Nederland B.V. c.s.	L1a & L1b	118	L1a	30	88
Total					88

On 1 January 2003, a total of 79 production licences were in force, covering a total area of 16,943 km<sup>2</sup>. On 1 January 2003, the number of applications for production licences totalled 19. During the year under review, four applications were submitted, one of which, for part of block L1f, has been awarded.



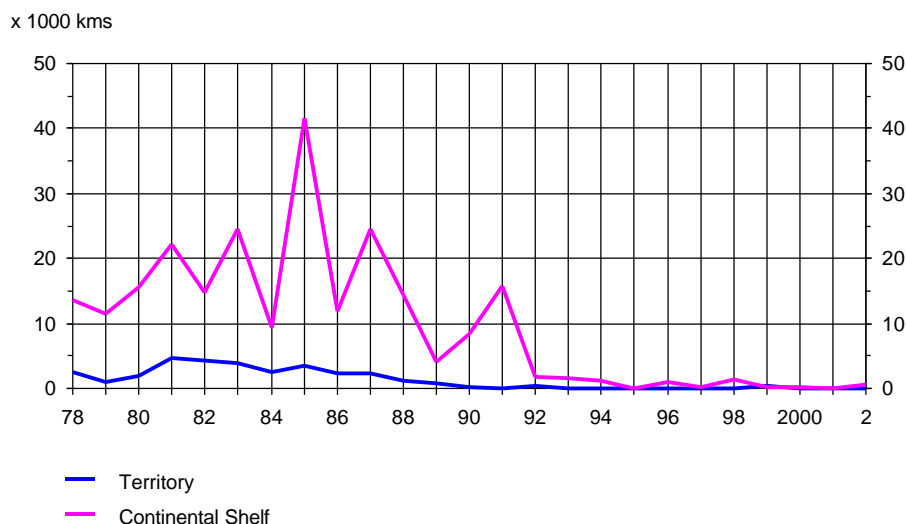


## 2 RECONNAISSANCE AND EXPLORATION

### Seismic surveys territory

In 2002, no onshore 2D or 3D seismic surveys have been shot.

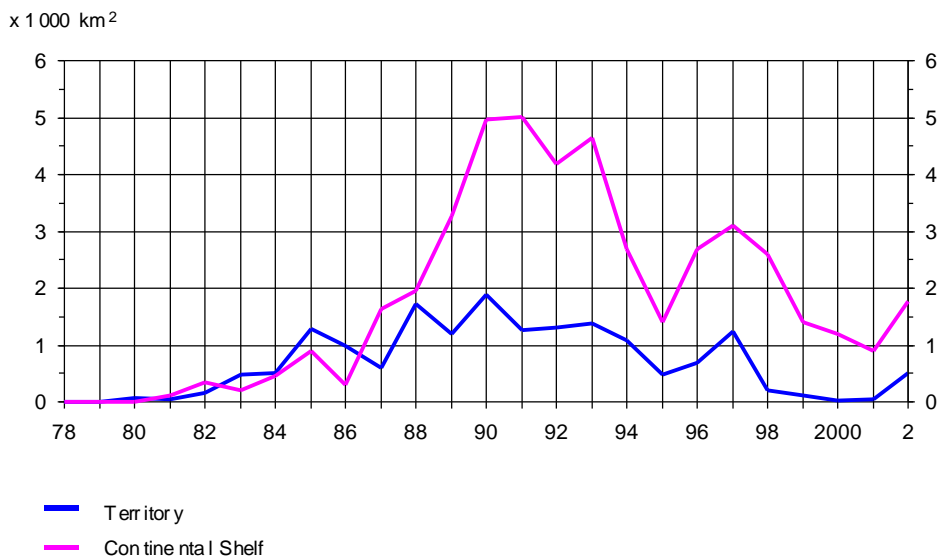
### 2D Seismic surveys 1978 – 2002



### Seismic surveys Continental Shelf

Four 3D seismic surveys were shot on the Continental Shelf in 2002, covering a total area of 1,778 km<sup>2</sup>. These surveys were acquired in the B blocks in G17 and G18, in F1 and F2, and in F11 and F12. Acquisition of the latter survey was interrupted prematurely and will be resumed in spring 2003. In 2002, 495 km of 2D seismic lines were shot on the Continental Shelf. After some three years in which acquisition was relatively low-key, activity stepped up in 2002. As in previous years, several existing seismic surveys have been reprocessed. 'Pre-stack' depth migration produces greatly improved results, in particular in areas with complex geological structures.

### 3D Seismic surveys 1978 – 2002



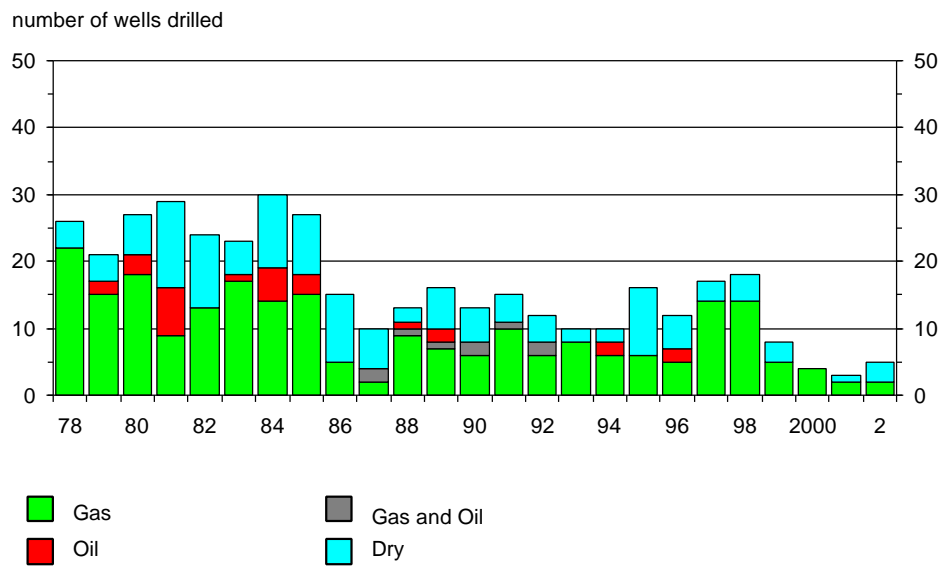
### Exploration wells territory

In 2002, four onshore exploration wells were completed. All four exploration targets were located in licence areas. One well found natural gas; the other three were dry wells. None of the wells had oil as a target.

### Appraisal wells territory

One onshore appraisal well was completed in 2002 to evaluate a previously discovered gas accumulation. This well proved the presence of natural gas.

### Exploration and appraisal wells territory 1978 - 2002



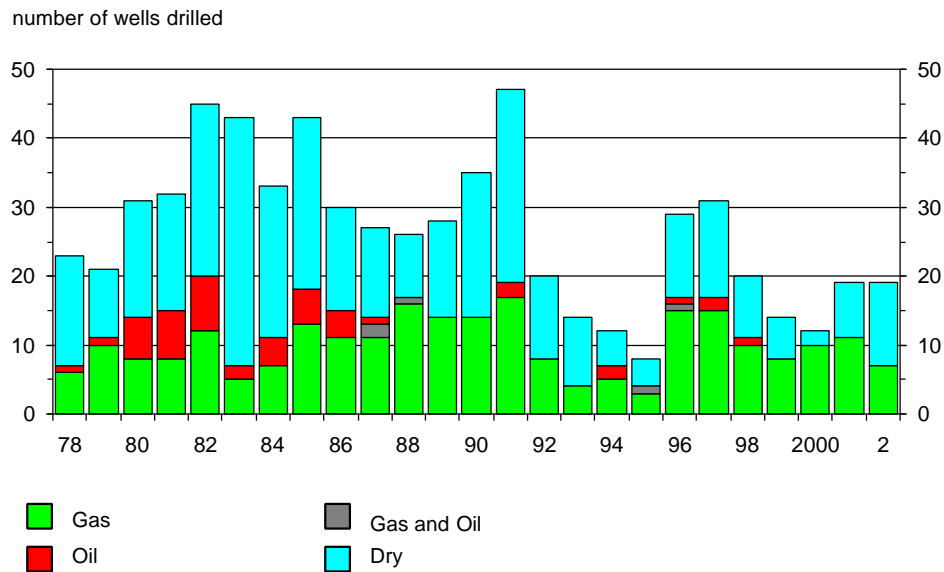
### Exploration wells Continental Shelf

Sixteen exploration wells were completed offshore in 2002, nine of which were spudded in production-licence areas and seven in exploration-licence areas. Six of these wells found hydrocarbons, a geological success rate of 37.5%.

### Appraisal wells Continental Shelf

Three appraisal wells were completed in 2002 to evaluate prior gas finds. One of these was successful.

## Exploration and appraisal wells Continental Shelf 1978 - 2002



### Trend in drilling activity

Since the decline in drilling activity was successfully reversed in 2001, drilling activity stabilised in 2002 at the 2001 level. In comparison with 2001, two more wells have been drilled in 2002.

### Trend in drilling activities for oil and gas in the Netherlands, in numbers of exploration and appraisal wells completed annually in the period 1992-2002

Year	Number of wells		
	Exploration	Evaluation	Total
1992	30	2	32
1993	23	1	24
1994	15	7	22
1995	18	9	27
1996	29	12	41
1997	32	16	48
1998	28	10	38
1999	17	5	22
2000	8	8	16
2001	18	4	22
2002	20	4	24



### 3 PRODUCTION

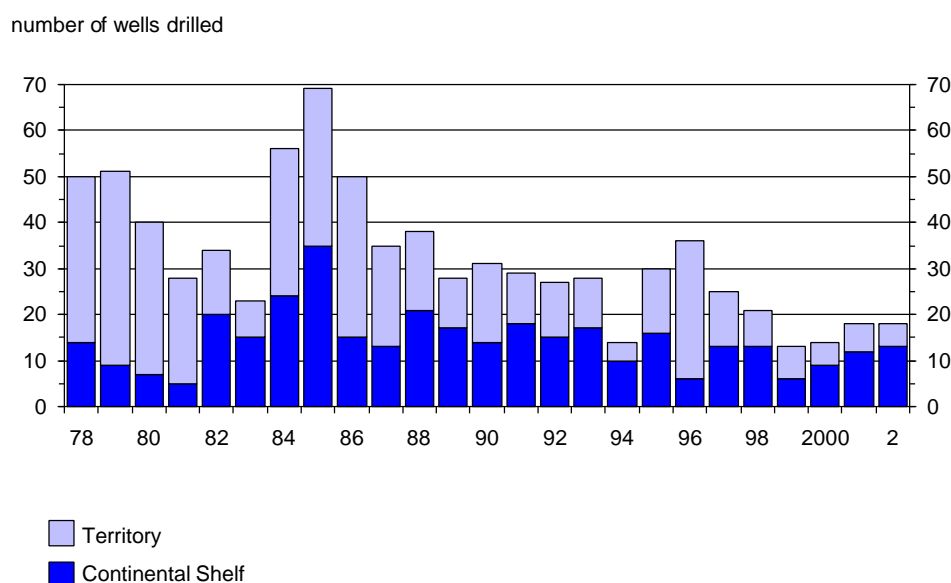
#### Construction work

New construction work of, or major modification to onshore and offshore mining facilities, which took place or were completed in 2002 are listed in the annual report of the State Supervision of Mines (Dutch acronym: SodM for Staatstoezicht op de Mijnen). This annual report also lists new pipelines for the production of onshore mineral resources as well as new pipelines laid on the Dutch sector of the Continental Shelf. (For new offshore platforms and pipelines on the continental shelf, one may also refer to annexes 19 and 20).

#### Developments in drilling activities

A total of 18 development wells were drilled in 2002, the same number of wells as in 2001.

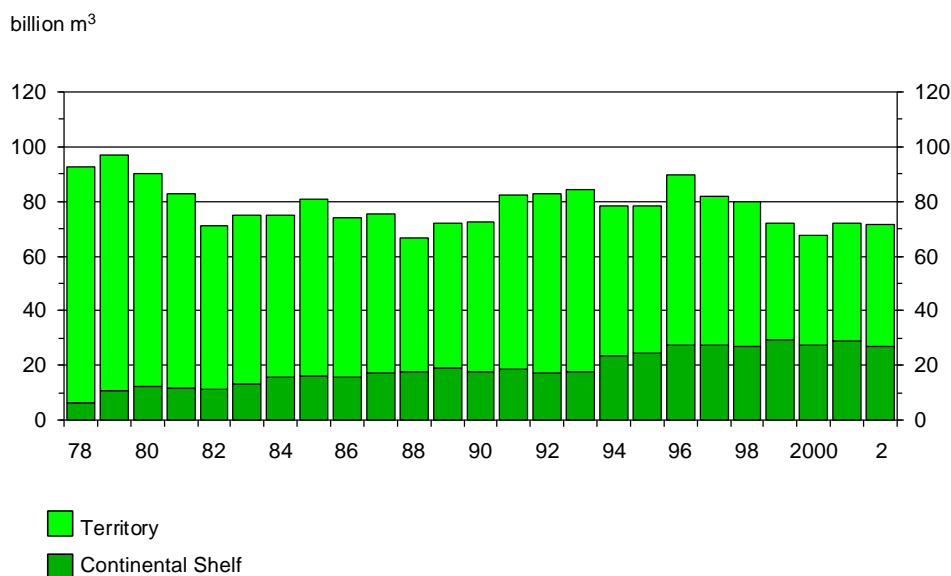
#### Development wells 1978 – 2002



#### Production of natural gas

In 2002, total Dutch gross natural gas production was 71.24 billion cubic metres, which is 1.4% or 1.02 billion cubic metres less than in 2001. Onshore gas production accounted for 44.47 billion cubic metres, which is 1.25 billion cubic metres, or 2.9% more than in 2001. Offshore fields produced 26.77 billion cubic metres, which is 2.27 billion cubic metres less than in 2001, a decrease of 7.8%. A total of 1.33 billion cubic metres was injected into the Underground Gas Storage facilities, while these produced 0.80 billion cubic metres. This implies that net total natural gas production from the subsurface of the Netherlands was 70.71 billion cubic metres. In 2002, 1.12 million cubic metres of condensate were produced together with the natural gas, virtually the same amount as in 2001.

## Natural gas production 1978 - 2002



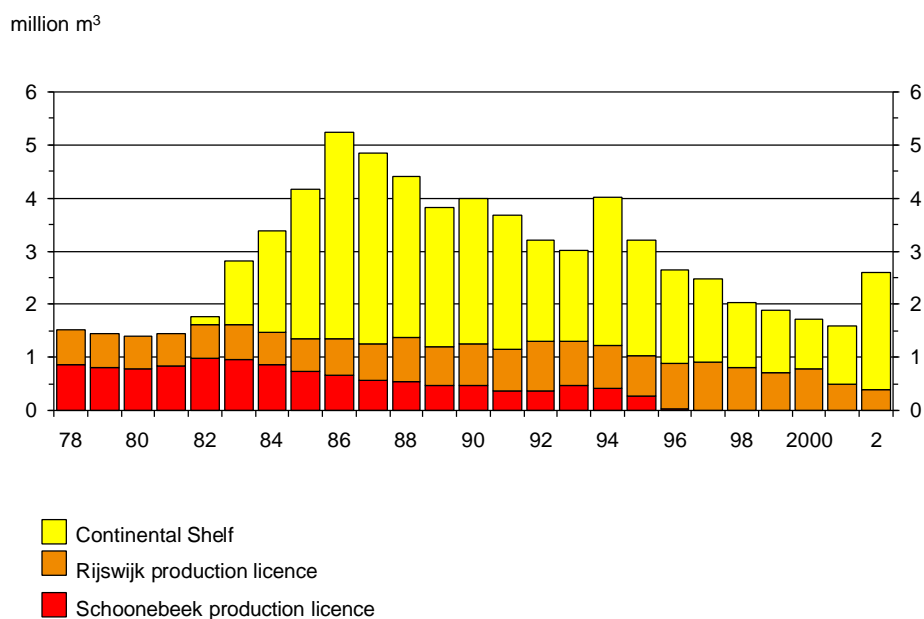
## Production of oil

In 2002, a total of 2.68 million cubic metres of oil were produced, which is 1.05 million cubic metres, or 64.4% more than in 2001.

Onshore fields accounted for 0.44 million cubic metres - a drop of 19%, or 0.10 million cubic metres, while 2.24 million cubic metres came from fields in the Dutch sector of the North Sea, an increase of 106%, i.e. 1.15 million cubic metres.

Average daily oil production over 2002 was approximately 7,330 cubic metres, which is equivalent to an average of 46,100 barrels a day. The corresponding figures for 2001 were 4,463 cubic metres, or 28,067 barrels a day.

## Oil production 1978 - 2002



## 4 RESERVES

Reserve estimates are prepared by TNO-NITG. The estimates cover those reservoirs in geological structures in which the presence of hydrocarbons has been proven conclusively by one or more wells. All accumulations are included, even those for which it could not be stated with certainty at the reporting date whether or when they would come on stream.

For a number of recently discovered accumulations only a provisional reserve estimate is given. The item 'revisions' concerns re-evaluations of reserves in accumulations found prior to 2002. The structures in which only shows of oil or gas were detected are not included in the estimates of recoverable reserves.

In addition to the statement of reserves in proven fields, this report also presents an estimate of future additions to the gas reserves resulting from future exploration.

### Natural gas reserves

The tables below summarise the reserves of natural gas remaining on 1 January 2003 in fields proven at that date.

<b>Natural gas reserves as at 1 January 2003, in billion m<sup>3</sup>(st)</b>		
Area	Remaining proven reserves	Remaining expected reserves
Groningen field	1 017	1 110
Other onshore territory	160	252
Continental Shelf	186	327
<b>Total Netherlands</b>	<b>1 567 <sup>1)</sup></b>	<b>1 689</b>

<b>Natural gas reserves as at 1 January 2003 in billion m<sup>3</sup> Groningen Gas Equivalent</b>		
Area	Remaining proven reserves	Remaining expected reserves
Groningen field	963	1 051
Other onshore territory	170	266
Continental Shelf	195	345
<b>Total Netherlands</b>	<b>1 545 <sup>1)</sup></b>	<b>1 662</b>

<sup>1)</sup> This figure was obtained by probabilistic summation of the proven reserves of individual fields



In the course of 2002, total net Dutch gas reserves decreased by almost 48 billion cubic metres. This represents the overall balance of new finds, revisions of previously proven fields and (net) production.

Seven new gas accumulations were discovered in 2002, one of them onshore and the other six offshore. According to preliminary estimates, these new finds increase reserves by 0.3 and 23.1 billion cubic metres respectively. Further evaluations are required to firm up these reserve figures.

The 2002 revisions of previously proven fields resulted in a neutral balance and do not affect reserves.

In 2002, net production of natural gas totalled 71 billion cubic metres. This includes the net production of -0.5 billion cubic metres of natural gas from underground storage facilities (UGS).

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**Changes in the remaining natural gas reserves during 2002, in billion m<sup>3</sup>(st)**

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Area	Changes attributable to:			total
	new finds	recalculations	(net) production	
Onshore	0.3	1.1	-43.9	-42.5
Continental shelf	23.1	-1.2	-27.6	-5.7
Balance underground gas storage			0.5	0.5
<b>Total</b>	<b>23.4</b>	<b>-0.1</b>	<b>-71.0</b>	<b>-47.7</b>

---

On 1 January 2003 the total number of producing gas fields was 187, 108 of which were located offshore. The number of non-producing fields was 146, of which 85 were located onshore and 61 on the Continental Shelf (these figures do not include abandoned gas fields).

The reserves contained in accumulations proven by 1 January 2003, which have not yet been brought on stream, totalled approximately 258 billion cubic metres. Approximately 88 billion cubic metres of these volumes have to be classified as subeconomic on the basis of (a combination of) factors such as size, location, producibility and gas composition.

A classification of the total number of gas fields by field size, expressed in expected initial reserve, for both the onshore territory and the Continental Shelf is given in Annex 26 (there, however, abandoned fields are also included).

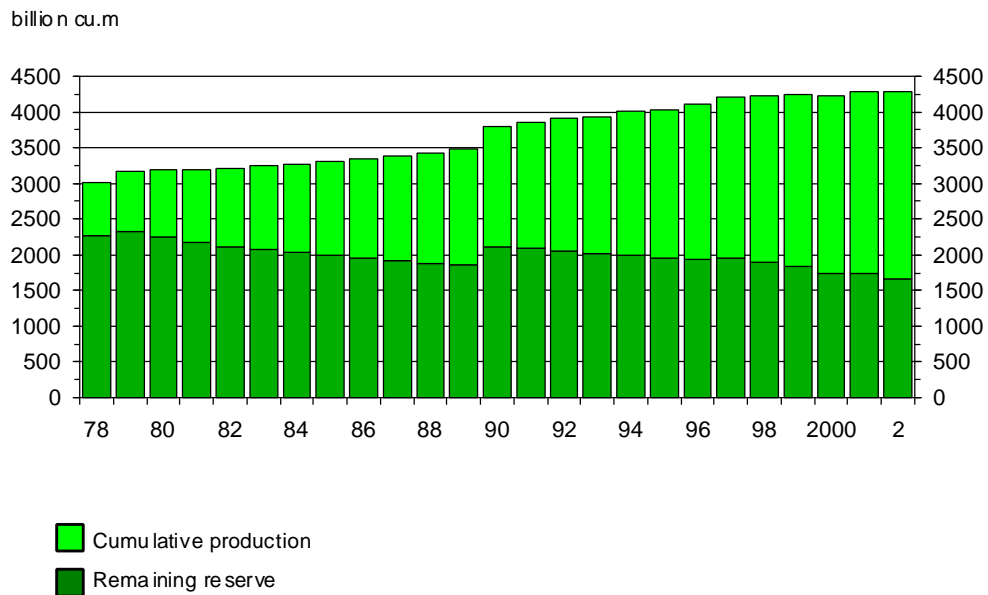
### Future additions to natural gas reserves as a result of exploration

TNO-NITG focused on appraisal of those geological plays in the Netherlands where suitable conditions for gas accumulations exist and which have been sufficiently established by drilling. Within these geological plays, only those prospective structures are considered that have been identified on the basis of existing data. This reserves category is commonly referred to as gas futures. Neither potential futures in hypothetical plays, nor potential futures in prospective structures that have not actually been identified, have been taken into account because they are too speculative.

Despite some large finds during the last year TNO-NITG expects the same range recoverable volume of natural gas of these futures that may be discovered as a result of exploration as presented for 2002 which was estimated at between 240 and 490 billion cubic meters. Of the total estimated volume of gas futures about 35% is expected to be found onshore and 65% on the Continental Shelf. The outcome of the futures estimate is expressed as a range to do justice to the intrinsically high degree of uncertainty of this type of estimate compared to reserve estimates for proven fields.

A review of gas future figures for the Netherlands over the past years reveals a dynamic behavior: prospective structures were drilled reducing the prospect portfolio but prospective structures were added by ongoing mapping and evaluation. This dynamic behavior of the portfolio and the rate at which the futures can be proven and brought on stream, are currently in research. Data which will become available through the new mining law will make it possible to present an improved estimate by taking into account the dynamic behavior of the prospect portfolio as well as future exploration efforts and economic factors.

### Natural gas reserves and cumulative production (year end), 1978-2002



## Oil reserves

The table below presents a summary of the oil reserves in the Netherlands remaining on 1 January 2003.

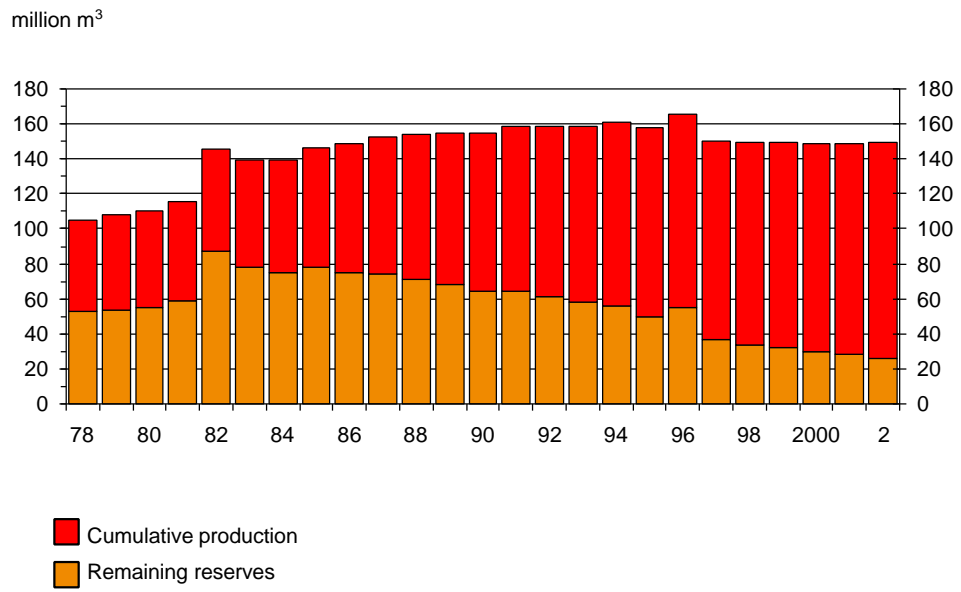
<b>Dutch oil reserves as at 1 January 2003 in millions m<sup>3</sup>(st)</b>		
Area	Remaining proven reserves	Remaining expected reserves
North-eastern Netherlands	0	0
Western Netherlands	1	5
Continental Shelf	8	21
Total Netherlands	9	26

The layout of this table is similar to the natural-gas-reserves table. However, the remaining proven oil reserves have not been obtained by probabilistic summation in this case. Such a summation procedure is not justifiable in this case because of the relatively small number of oil reservoirs and more important because of the very significant uncertainty associated with the reserves in a number of oil fields. This reflects the uncertainty in the estimate of the recovery factor, which in the case of oil fields depends much more on technical and economic factors than in the case of gas fields.

Dutch oil production in 2002 totalled 2.7 million cubic metres. No oil exploration took place in the Netherlands in 2002. The balance of new finds and revisions of reserves in previously proven oil fields is neutral.

On 1 January 2003, the number of producing oilfields in the Netherlands totalled 13, ten of which were located on the Continental Shelf and three on the territory. Production in F2a in particular contributed to a considerable increase in total production. Of the total number of onshore oil fields ever brought on stream, production has ceased in seven onshore oil fields and production facilities are being abandoned. Production of one oil field on the Continental Shelf has been discontinued awaiting the final decision to abandon this field.

## Oil reserves and cumulative production (year end), 1978-2002





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**EXPLORATION LICENCES, Netherlands Territory at January 1st, 2003**

<b>Licence-holder</b>	<b>Licence</b>	<b>*</b>	<b>Area in ha</b>	<b>In force as from</b>	<b>Official Gazette</b>	
<b>1 Nederlandse Aardolie Maatschappij B.V.</b>	Zuid-Friesland II	4	72 740	30-06-'79	202	***
- Chevron U.S.A. Inc.						
- Dyas B.V.						
- Petro-Canada Netherlands B.V.						
- R.D.S. Netherlands International Inc.						
- TotalFinaElf E&P Nederland B.V.						
<b>2 Nederlandse Aardolie Maatschappij B.V.</b>	IJsselmeer	2	87 450	02-07-'86	148	***
	Markerwaard	3	57 209	20-04-'89	87	**
	Andel II	5	30 120	21-03-'02	--	
	Schagen	1	57 640	04-11-'02	219	
<b>3 TotalFinaElf E&amp;P Nederland B.V.</b>	Lemmer-Marknesse	6	63 300	09-03-'98	62	
- Dyas B.V.						
- Lundin Netherlands B.V.						
<b>Total</b>			<b>368 459</b>			

\* Numbers refer to Supplement 1

\*\* Licence issued; not yet effective due to legal procedure

\*\*\* Permission to change issued; not yet effective due to legal procedure



## PRODUCTION LICENCE, Netherlands Territory at January 1<sup>st</sup>, 2003

Licence-holder	Licence	*	Area in ha	Awarded	Official Gazette	
1	<b>BP Nederland Energie B.V.</b> - Dyas B.V. - Petro-Canada Netherlands B.V.	Bergen	XIII	25 240	01-05-'69	94
2	<b>Clyde Petroleum Exploratie B.V.</b> - Dyas Nederland B.V. - Petro-Canada Netherlands B.V.	Waalwijk	XVIII	76 500	17-07-'89	154
3	<b>Chevron U.S.A. Inc.</b> - R.D.S. Netherlands International Inc.	Akkrum	V	21 917	17-02-'69	46
4	<b>Nederlandse Aardolie Maatschappij B.V.</b>	Schoonebeek	VII	93 000	03-05-'48	110
		Tubbergen	VIII	17 700	11-03-'53	80
		Rijswijk	XIV	208 972	03-01-'55	21
		Rossum-de Lutte	X	4 614	12-05-'61	116
		Groningen	II	297 000	30-05-'63	126
		Drenthe	VI	228 428	04-11-'68	234
		Tietjerksteradeel	III	41 120	17-02-'69	47
		Twenthe	IX	27 584	27-01-'77	26
		Hardenberg	XIX	16 117	19-07-'90	149
		Botlek	XX	23 517	03-07-'91	141
		Beijerland	XXIV	14 025	11-12-'96	243
5	<b>Nederlandse Aardolie Maatschappij B.V.</b> - Mobil Producing Netherlands Inc.	Noord-Friesland De Marne	I XXII	159 270 677	17-02-'69 05-09-'94	47 189
6	<b>Nederlandse Aardolie Maatschappij B.V.</b> - Clyde Petroleum Exploratie B.V. - Dyas B.V.	Middelie	XII	94 590	01-05-'69	94
7	<b>Nederlandse Aardolie Maatschappij B.V.</b> - Bula Oil Netherlands B.V. - Lepco Oil & Gas Netherlands B.V.	Donkerbroek	XXIII	6 956	20-03-'95	66
8	<b>TotalFinaElf E&amp;P Nederland B.V.</b> - Lundin Netherlands B.V.	Leeuwarden Slootdorp Zuidwal	IV XI XV	61 360 16 170 22 522	17-02-'69 01-05-'69 28-08-'84	46 94 190
9	<b>TotalFinaElf E&amp;P Nederland B.V.</b> - Lundin Netherlands B.V.	Oosterend Gorredijk	XVI XVII	9 156 62 852	23-03-'85 10-07-'89	84 145
10	<b>TotalFinaElf E&amp;P Nederland B.V.</b>	Steenwijk	XXI	9 851	05-09-'94	177
			Total	1 539 138		

\* Roman numerals refer to Supplement 1

**PRODUCTION and EXPLORATION LICENCES, Netherlands Territory  
at January 1<sup>st</sup>, 2003**

<b>Production licences:</b>	<b>Exploration licences:</b>
I Noord-Friesland	1 Schagen
II Groningen	2 IJsselmeer
III Tietjerksteradeel	3 Markerwaard
IV Leeuwarden	4 Zuid-Friesland II
V Akkrum	5 Andel II
VI Drenthe	6 Lemmer-Marknesse
VII Schoonebeek	
VIII Tubbergen	
IX Twenthe	
X Rossum-de Lutte	
XI Slootdorp	
XII Middellie	
XIII Bergen	
XIV Rijswijk	
XV Zuidwal	
XVI Oosterend	
XVII Gorredijk	
XVIII Waalwijk	
XIX Hardenberg	
XX Botlek	
XXI Steenwijk	
XXII De Marne	
XXIII Donkerbroek	
XXIV Beijerland	
<b>Application for production licence:</b>	<b>Application for exploration licence:</b>
XXV Terschelling	7 Schiermonnikoog-Noord

**RECONNAISSANCE LICENCES  
awarded in 2002**

<b>Licence-holder</b>	<b>Block</b>	<b>area in km<sup>2</sup></b>	<b>in force as from</b>	<b>term in month</b>	<b>Official Gazette</b>
1 Clyde Petroleum Exploratie B.V.	P03, Q02, Q05 en Q07	427	25-01-'02	6	19
2 Fugro-Geoteam A.S..	B10, B13, B14, B16, B17 en B18	1 182	26-02-'02	6	41
3 Denerco Oil A/S	F3, F6b, F9, G7, G10, G11 en G14	455	18-03-'02	6	57
4 TotalFinaElf E&P Nederland B.V. Prolongation	F15b F15b	2	02-04-'02 27-9-'02	6 6	67 187
5 GDF Production Nederland B.V.	G18	81	16-08-'02	6	158
6 WesternGeco Ltd.  Transfer of WesternGeco Ltd. to WesternGeco B.V.	F8, F9, F11, F12, F14 en F15 F8, F9, F11, F12, F14 en F15	1 039	21-08-'02  07-11-'02	6	161  218
7 Fugro Multi Client Services A.S.	F1 en F2	180	09-09-'02	6	174
<b>Total</b>		<b>3 366</b>			

**EXPLORATION LICENCES, Netherlands Continental Shelf  
at January 1<sup>st</sup>, 2003**

	<b>Licence holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force as from/ relinquishment</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
1	<b>Clyde Petroleum Exploratie B.V.</b>	M1a	213	09-04-'91/'97	09-04-'01*	93/99
		M1b	193	19-07-'01	08-08-'06	143
		M4	408	26-06-'01	02-08-'06	134
		P2b	200	05-12-'01	09-01-'06	1
2	<b>Clyde Petroleum Exploratie B.V.</b> Dyas B.V. Petro-Canada Netherlands B.V.	K16	267	25-01-'99	31-12-'04	44
3	<b>Clyde Petroleum Exploratie B.V.</b> GDF Production Nederland B.V.	M2	406	03-07-'00	05-06-'04	147
4	<b>Clyde Petroleum Exploratie B.V.</b> EWE Aktiengesellschaft	Q02a	332	04-09-'01	27-09-'06	183
5	<b>Clyde Petroleum Exploratie B.V.</b> Dyas B.V. EWE Aktiengesellschaft	Q10d	120	15-02-'93/99	15-02-'03	50/45
6	<b>GDF Production Nederland B.V.</b>	G17a	275	12-11-'01	31-10-'08	233
7	<b>Nederlandse Aardolie Maatschappij B.V.</b>	A18b	39	12-02-'93/99	12-02-'03*	50/39
		F6b	390	01-01-'03**	03-01-'06	224
		K10d	40	12-02-'93/'99	12-02-'03	50/45
8	<b>Nederlandse Aardolie Maatschappij B.V.</b> DSM Energie B.V.	A12a	195	20-12-'78/'84	20-12-'88*	4/46
		A12b,B10a	125	12-01-'90/'96	12-01-'00*	25/35
		A18a	229	11-12-'72/'82	11-12-'87*	250/244
		B13a	206	12-01-'90/'96	12-01-'00*	25/35
		B16a	67	11-05-'87/'01	11-05-'97*	127/233
		G14	403	16-12-'96	07-12-'04	2
		L6d	16	12-01-'90/'96	12-01-'00*	25/41
9	<b>Nederlandse Aardolie Maatschappij B.V.</b> Conoco (U.K.) Limited DSM Energie B.V.	D18a	58	08-06-'79/'85	08-06-'89*	117/106
10	<b>Nederlandse Aardolie Maatschappij B.V.</b> Lundin Netherlands B.V. TotalFinaElf E&P Nederland B.V.	E17a,E17b	114	09-03-'93/99	09-03-'03*	54/39
		Q16e,Q16f	13	12-02-'93/99	12-02-'03*	50/39
11	<b>Petro-Canada Netherlands B.V.</b>	P10	355	18-03-'99	25-02-'06	64
		P11b	210	11-02-'93/'98	11-02-'03	50/162
12	<b>TotalFinaElf E&amp;P Nederland B.V.</b> Lundin Netherlands B.V.	F12	401	01-11-'01	31-10-'08	219

	<b>Licence holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force as from/ relinquishment</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
13	<b>Wintershall Noordzee B.V.</b> Dana Petroleum (E&P) Ltd Marathon Exploratie Nederland B.V.	A15	393	23-02-'99	25-02-'07	44
14	<b>Wintershall Noordzee B.V.</b> Dana Petroleum (E&P) Ltd DSM Energie B.V. Petro-Canada Netherlands B.V.	B17a	80	02-06-'87/'93	02-07-'97*	127/101
15	<b>Wintershall Noordzee B.V.</b> Lundin Netherlands B.V. Nederlandse Aardolie Maatschappij B.V.	E10b	155	12-02-'93/'99	12-02-'03	50/39
16	<b>Wintershall Noordzee B.V.</b> CLAM Petroleum B.V. GDF Production Nederland B.V.	F13b	399	01-01-'03**	31-12-'09	223
17	<b>Wintershall Noordzee B.V.</b> Petro-Canada Netherlands B.V.	L5b	237	14-02-'97	21-01-'03*	49
		<b>Total</b>	<b>6 539</b>			

\* licence holder did application for production licence

\*\* licence awarded in 2002 and in force as from january 1<sup>st</sup>, 2003 under the new Mining Act

**APPLICATIONS FOR EXPLORATION LICENSES, Netherlands Continental Shelf,  
9<sup>TH</sup> ROUND in 2002**

<b>Block (part)</b>	<b>Publication</b>	<b>Date</b>	<b>Closing date application</b>
F13b	Publicatieblad EG, C362	18-12-'01	19-03-'02
	Staatscourant 27	07-02-'02	
	Staatscourant 67	08-04-'02	
F6b	Publicatieblad EG, C12	16-01-'02	17-04-'02
	Staatscourant 24	04-02-'02	
	Staatscourant 80	25-04-'02	
F9, G7	Publicatieblad EG, C132	04-06-'02	03-09-'02
	Staatscourant 110	13-06-'02	
	Staatscourant 178	17-09-'02	
L6a	Publicatieblad EG, C162	06-07-'02	05-10-'02
	Staatscourant 130	11-07-'02	
	Staatscourant 198	15-10-'02	

**PRODUCTION LICENCES, Netherlands Continental Shelf at January 1<sup>st</sup>, 2003**

<b>Licence-holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
1 <b>BP Nederland Energie B.V.</b> Clyde Petroleum Exploratie B.V. DSM Energie B.V. Dyas B.V. Dyas Nederland B.V. Oranje-Nassau Energie B.V. Van Dyke Netherlands Inc. Petro-Canada Netherlands B.V.	P15a & P15b	220	12-07-'84	12-7-'24	150
2 <b>BP Nederland Energie B.V.</b> Clyde Petroleum Exploratie B.V. DSM Energie B.V. Dyas B.V. Dyas Nederland B.V. Oranje-Nassau Energie B.V. Petro-Canada Netherlands B.V.	P15c	202	07-05-'92	07-05-'32	114
3 <b>BP Nederland Energie B.V.</b>	P18a	105	30-04-'92	30-04-'32	96
4 <b>BP Nederland Energie B.V.</b> Dyas B.V. Petro-Canada Netherlands B.V.	P18c	6	02-06-'92	02-06-'32	113
5 <b>Clyde Petroleum Exploratie B.V.</b> Dyas B.V. Nederlandse Aardolie Maatschappij B.V. Petro-Canada Netherlands B.V.	K18a & K18b L16a	191 238	09-05-'83 12-06-'84	09-05-'23 12-06-'24	103 130
6 <b>Clyde Petroleum Exploratie B.V.</b> DSM Energie B.V. Nederlandse Aardolie Maatschappij B.V.	M7	410	22-03-'01	22-03-'21	66
7 <b>Clyde Petroleum Exploratie B.V.</b> Dyas B.V. Dyas Energy B.V. GDF Participation Nederland B.V. Oranje-Nassau Energie B.V. Van Dyke Netherlands Inc.	P2a	216	23-07-'96	23-07-'16	146
8 <b>Clyde Petroleum Exploratie B.V.</b> Dyas Nederland B.V. GDF Participation Nederland B.V. Holland Sea Search B.V. Holland Sea Search Inc. Petro-Canada Netherlands B.V.	P6	417	14-04-'82	14-04-22	83

<b>Licence-holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
9 <b>Clyde Petroleum Exploratie B.V.</b> Dyas Nederland B.V. GDF Participation Nederland B.V. Holland Sea Search B.V.	P12	421	08-03-'90	08-03-'30	78
10 <b>Clyde Petroleum Exploratie B.V.</b> Clam Petroleum B.V. Dyas B.V.	Q4	417	02-12-'99	02-12-'19	2
11 <b>Clyde Petroleum Exploratie B.V.</b> Dyas Nederland B.V.	Q8	247	15-09-'86	15-09-'26	187
12 <b>GDF Production Nederland B.V.</b> Clyde Exploratie Petroleum B.V.	G17c & G17d	130	10-11-'00	10-11-'25	14
13 <b>GDF Production Nederland B.V.</b> EWE A.G. HPI Netherlands Ltd Rosewood Exploration C.V. (gevormd door haar vennoten Rosewood Exploration Ltd en Rosewood Capital Corporation)	K9a & K9b K9c L10 & L11a	211 199 596	11-08-'86 18-12-'87 13-01-'71	11-08-'26 18-12-'27 13-01-'11	163 21 20
14 <b>GDF Production Nederland B.V.</b> EWE A.G. HPI Netherlands Ltd Rosewood Exploration C.V. (gevormd door haar vennoten Rosewood Exploration Ltd en Rosewood Capital Corporation) TCPL Netherlands Ltd.	K12	411	18-02-'83	18-02-'23	53
15 <b>GDF Production Nederland B.V.</b> EWE A.G. Rosewood Exploration C.V. (gevormd door haar vennoten Rosewood Exploration Ltd en Rosewood Capital Corporation)	L14a	21	19-11-'90	19-11-'30	240
16 <b>GDF Production Nederland B.V.</b> HPI Netherlands Ltd Nederlandse Aardolie Maatschappij B.V. Rosewood Exploration C.V. (gevormd door haar vennoten Rosewood Exploration Ltd en Rosewood Capital Corporation)	N7	315	10-03-'94	10-03-'34	88
17 <b>Lasmo Nederland B.V.</b> TotalFinaElf E&P Nederland B.V. Holland Sea Search II B.V.	J3b & J6	125	06-11-'92	06-11-'32	231
18 <b>Nederlandse Aardolie Maatschappij B.V.</b>	B18a	40	10-10-'85	10-10-'25	224



<b>Licence-holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
	F17c	18	04-12-'96	04-12-'11	240
	G16a	224	06-01-'92	06-01-'32	13
	K2a & K2b	137	24-08-'98	24-08-'23	165
	K3a	83	24-08-'98	24-08-'23	165
	K7	408	08-07-'81	08-07-'21	140
	K14	413	16-01-'75	16-01-'15	18
	K15	413	14-10-'77	14-10-'17	214
	K17	414	19-01-'89	19-01-'29	42
	L2	406	15-03-'91	15-03-'31	75
	L4c	12	07-01-'94	07-01-'34	15
	L5a	163	15-03-'91	15-03-'31	77
	L9a	209	09-05-'95	09-05-'35	113
	L9b	201	09-05-'95	09-05-'35	114
	L15c	4	07-09-'90	07-09-'30	199
19 <b>Nederlandse Aardolie Maatschappij B.V.</b> Conoco (U.K.) Limited Wintershall Noordzee B.V.	D15	247	06-09-'96	06-09-'21	180
20 <b>Nederlandse Aardolie Maatschappij B.V.</b> DSM Energie B.V.	F3	397	09-09-'82	09-09-'22	215
21 <b>Nederlandse Aardolie Maatschappij B.V.</b> Clam Petroleum B.V. Clyde Petroleum Exploratie B.V. Oranje-Nassau Energie B.V.	K8 & K11 L12a L13	821 344 413	26-10-'77 14-03-'90 26-10-'77	26-10-'17 14-03-'30 26-10-'17	223 63 223
22 <b>Nederlandse Aardolie Maatschappij B.V.</b> Clam Petroleum B.V. Clyde Petroleum Exploratie B.V.	L12b & L15b	184	12-03-'90	12-03-'30	63/199
23 <b>Nederlandse Aardolie Maatschappij B.V.</b> Mobil Producing Netherlands Inc.	M9a	213	10-04-'90	10-04-'30	81
24 <b>Nederlandse Aardolie Maatschappij B.V.</b> Lundin Netherlands B.V. TotalFinaElf E & P Nederland B.V.	Q16a	85	29-12-'92	29-12-'32	6
25 <b>Petro-Canada Netherlands B.V.</b> DSM Energie B.V. Dyas Nederland B.V. EDC (Europe) Ltd. Oranje-Nassau Energie B.V. Petro-Canada Hanze GmbH	F2a	307	24-08-'82	24-08-'22	215
26 <b>TotalFinaElf E&amp;P Nederland B.V.</b> Lundin Netherlands B.V. DSM Energie B.V.	F6a	8	09-09-'82	09-09-'22	215
27 <b>TotalFinaElf E&amp;P Nederland B.V.</b> Lundin Netherlands B.V.	F15a F15d	234 4	06-05-'91 15-06-'92	06-05-'31 15-06-'32	95 148

Licence-holder	Block	km <sup>2</sup>	In force	Expiring date licence	Official Gazette
Dyas Nederland B.V. Oranje-Nassau Energie B.V.					
28 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	J3a	72	12-01-'96	12-01-'36	22
Nederlandse Aardolie Maatschappij B.V.	K1a	83	10-02-'97	10-02-'22	46
29 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	K3b	7	30-01-'01	30-01-'21	29
Lundin Netherlands B.V.	K3d	26	01-04-'99	01-04-'24	76
	K6 & L7	818	20-06-'75	20-06-'15	126
	L1e	12	13-11-'96	13-11-'11	226
	L4a	313	30-12-'81	30-12-'21	82('82)
	L1f	17	01-01-'03*	16-01-'33	235
30 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	K4a	307	29-12-'93	29-12-'33	5
	L1d	7	13-11-'96	13-11-'16	225
31 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	K4b & K5a	305	01-06-'93	01-06-'33	114
Lundin Netherlands B.V. Dyas B.V. Goal Olie- en Gasexploratie B.V.					
32 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	K5b	204	07-11-'96	07-11-'21	225
Goal Olie- en Gasexploratie B.V. Rosewood Exploration C.V. (gevormd door haar vennoten Rosewood Exploration Ltd. en Rosewood Capital Corporation)					
33 <b>TotalFinaElf E&amp;P Nederland B.V.</b>	L1a	30	12-09-'96	12-09-'16	187
Van Dyke Netherlands Inc.					
34 <b>Unocal Netherlands B.V.</b>	L11b	47	15-06-'84	15-06-'24	130
DSM Energie B.V. GDF Production Nederland B.V. Petro-Canada Netherlands B.V.					
35 <b>Unocal Netherlands B.V.</b>	P9a & P9b	126	16-08-'93	16-08-'33	160
Clyde Petroleum Exploratie B.V. DSM Energie B.V. Dyas B.V. GDF Participation Nederland B.V. Holland Sea Search B.V. Vanco Netherlands B.V. Petro-Canada Netherlands B.V.					
36 <b>Unocal Netherlands B.V.</b>	P9c	267	16-08-'93	16-08-'33	160
Clyde Petroleum Exploratie B.V. DSM Energie B.V. Dyas B.V. GDF Participation Nederland B.V. Holland Sea Search B.V. Petro-Canada Netherlands B.V.					

<b>Licence-holder</b>	<b>Block</b>	<b>km<sup>2</sup></b>	<b>In force</b>	<b>Expiring date licence</b>	<b>Official Gazette</b>
37 <b>Unocal Netherlands B.V.</b> DSM Energie B.V. Clyde Petroleum Exploratie B.V.	Q1	416	11-07-'80	11-07-'20	138
38 <b>Unocal Netherlands B.V.</b> DSM Energie B.V. Dyas B.V.	Q2c	32	14-07-'94	14-07-'34	150
39 <b>Wintershall Noordzee B.V.</b> Nederlandse Aardolie Maatschappij B.V.	D12a	214	06-09-'96	06-09-'21	180
40 <b>Wintershall Noordzee B.V.</b> Clam Petroleum B.V. Dana Petroleum (E & P) Limited GDF Production Nederland B.V. Goal Olie- en Gasexploratie B.V.	E15a E18a F13a	39 212 4	04-10-'02 04-10-'02 04-10-'02	24-09-'32 24-09-'32 24-09-'32	199 199 199
41 <b>Wintershall Noordzee B.V.</b> GDF Production Nederland B.V.	F16	405	04-10-'02	24-09-'32	199
42 <b>Wintershall Noordzee B.V.</b> Clyde Petroleum Exploratie B.V. Petro-Canada Netherlands B.V.	K10a K10b & K10c	195 94	26-01-'83 22-04-'93	26-01-'23 22-04-'33	28 84
43 <b>Wintershall Noordzee B.V.</b> Clyde Petroleum Exploratie B.V.	K13 L8a P11a P14a	324 213 2 317	03-10-'73 18-08-'88 23-06-'92 23-06-'92	03-10-'13 18-08-'28 23-06-'32 23-06-'32	203 171 148 148
44 <b>Wintershall Noordzee B.V.</b> Petro-Canada Netherlands B.V.	L5c L8b	8 181	03-12-'96 17-05-'93	03-12-'16 17-05-'33	19 105
45 <b>Wintershall Noordzee B.V.</b> Clam Petroleum B.V. Clyde Petroleum Exploratie B.V. Dyas B.V. Goal Olie- en Gasexploratie B.V.	Q5c, Q5d & Q5e	146	15-02-'01	15-02-'21	46
<b>Total</b>		<b>16 943</b>			

\* licence awarded in 2002 and in force as from January 1<sup>st</sup>, 2003 under the new Mining Act

**PRODUCTION LICENCE APPLICATIONS, Netherlands Continental Shelf  
at January 1<sup>st</sup>, 2003**

<b>Licence-applicant</b>	<b>Block/part of block</b>	<b>Published</b>	<b>Official Gazette</b>
NAM	A18a	06-01-'88	3
NAM	part of A18	06-01-'88	3
	part of A18 (change)	03-02-'00	24
NAM cs	A12a	30-12-'88	254
NAM cs	part of A12	30-12-'88	254
NAM	B16	08-06-'93	105
	part of B16 (change)	30-11-'01	233
Wintershall cs	B17a	09-06-'97	106
NAM cs	D18a	24-07-'97	139
NAM cs	B13a	01-02-'00	22
NAM cs	L6d	01-02-'00	22
NAM cs	A12b, B10a	01-02-'00	22
Cyde	M1a	11-05-'01	91
GdF cs	P8	01-06-'01	104
GdF cs	Q13	01-06-'01	104
NAM cs	part of E16	12-11-'01	219
NAM cs	parts of E17	12-11-'01	219
NAM	part of G16	12-11-'01	219
TotalFinaElf cs	part of K2	04-07-'02	125
Wintershall cs	part of L6	31-07-'02	144
Wintershall cs	L5b	31-07-'02	144

### LIST OF BLOCKS, Netherlands Continental Shelf at January 1<sup>st</sup>, 2003

Block/ Part of block	Area not in licence (km <sup>2</sup> )	Area in licence (km <sup>2</sup> )	Type*	Licence holder
A 4	0.2			
A 5	91			
A 7	47			
A 8	382			
A 9	141			
A 10	129			
A 11	392			
A 12a		195	ov	NAM cs
A 12b		31	ov	NAM cs
A 12c	164			
A 13	211			
A 14	393			
A 15		393	ov	Wintershall cs
A 16	294			
A 17	395			
A 18a		229	ov	NAM cs
A 18b		39	ov	NAM
A 18c	127			
B 10a		94	ov	NAM cs
B 10b	84			
B 13a		206	ov	NAM cs
B 13b	187			
B 14	199			
B 16a		67	ov	NAM cs
B 16b	328			
B 17a		80	ov	Wintershall cs
B 17b	315			
B 18a		40	wv	NAM
B 18b	159			
D 3	2			
D 6	60			
D 9	149			
D 12a		214	wv	Wintershall cs
D 12b	40			
D 15		247	wv	NAM cs
D 18a		58	ov	NAM cs
D 18b	140			
E 1	374			
E 2	397			
E 3	397			
E 4	398			
E 5	398			
E 6	398			
E 7	400			
E 8	400			
E 9	400			

Block/ Part of block	Area not in licence (km <sup>2</sup> )	Area in licence (km <sup>2</sup> )	Type*	Licence holder
E 10a	105			
E 10b		155	ov	Wintershall cs
E 10c	141			
E 11	401			
E 12	401			
E 13	403			
E 14	403			
E 15a		39	wv	Wintershall cs
E 15b	364			
E 16	405			
E 17a		87	ov	NAM cs
E 17b		27	ov	NAM cs
E 17c	291			
E 18a		212	wv	Wintershall cs
E 18b	193			
F 1	397			
F 2a		307	wv	Petro-Canada Neth. cs
F 2b	90			
F 3		397	wv	NAM cs
F 4	398			
F 5	398			
F 6a		8	wv	TotalFinaElf cs
F 6b			3 ov	NAM
F 7	400			
F 8	400			
F 9	400			
F 10	401			
F 11	401			
F 12		401	ov	TotalFinaElf cs
F 13a		4	wv	Wintershall cs
F 13b			3 ov	Wintershall cs
F 14	403			
F 15a		234	wv	TotalFinaElf cs
F 15b	72			
F 15c	93			
F 15d		4	wv	TotalFinaElf cs
F 16		405	wv	Wintershall cs
F 17a	387			
F 17c		18	wv	NAM
F 18	405			
G 7	122			
G 10	397			
G 11	174			
G 13	403			
G 14		403	ov	NAM cs
G 15	226			
G 16a		224	wv	NAM
G 16b	181			
G 17a		275	ov	GDF Prod. Ned.
G 17c		34	ov	Clyde P. Expl. cs
G 17d		96	wv	Clyde P. Expl. cs
G 18	405			

Block/ Part of block	Area not in licence (km <sup>2</sup> )	Area in licence (km <sup>2</sup> )	Type*	Licence holder
H 13	1			
H 16	72			
J 3a		72	wv	TotalFinaElf cs
J 3b		42	wv	Lasmo cs
J 3c	31			
J 6		83	wv	Lasmo cs
J 9	18			
K 1a		83	wv	TotalFinaElf cs
K 1b	323			
K 2a		27	wv	NAM
K 2b		110	wv	NAM
K 2c	269			
K 3a		83	wv	NAM
K 3b		7	wv	TotalFinaElf cs
K 3c	290			
K 3d		26	wv	TotalFinaElf cs
K 4a		307	wv	TotalFinaElf cs
K 4b		101	wv	TotalFinaElf cs
K 5a		204	wv	TotalFinaElf cs
K 5b		204	wv	TotalFinaElf cs
K 6		408	wv	TotalFinaElf cs
K 7		408	wv	NAM
K 8		410	wv	NAM cs
K 9a		150	wv	GDF Prod. Ned. cs
K 9b		61	wv	GDF Prod. Ned. cs
K 9c		199	wv	GDF Prod. Ned. cs
K 10a		195	wv	Wintershall cs
K 10b		68	wv	Wintershall cs
K 10c		26	wv	Wintershall cs
K 10d		40	ov	NAM
K 10e	46			
K 11		411	wv	NAM cs
K 12		411	wv	GDF Prod. Ned. cs
K 13		324	wv	Wintershall cs
K 14		413	wv	NAM
K 15		413	wv	NAM
K 16		267	ov	Clyde P. Expl. cs
K 17		414	wv	NAM
K 18a		36	wv	Clyde P. Expl. cs
K 18b		155	wv	Clyde P. Expl. cs
K 18c	223			
L 1a		30	wv	TotalFinaElf cs
L 1b	340			
L 1d		7	wv	TotalFinaElf cs
L 1e		12	wv	TotalFinaElf cs
L 1f		17	wv	TotalFinaElf cs
L 2		406	wv	NAM
L 3	406			
L 4a		313	wv	TotalFinaElf cs
L 4b	83			
L 4c		12	wv	NAM

Block/ Part of block	Area not in licence (km <sup>2</sup> )	Area in licence (km <sup>2</sup> )	Type*	Licence holder
L 5a		163	wv	NAM
L 5b		237	ov	Wintershall cs
L 5c		8	wv	Wintershall cs
L 6a	392			
L 6d		16	ov	NAM cs
L 7		410	wv	TotalFinaElf cs
L 8a		213	wv	Wintershall cs
L 8b		181	wv	Wintershall cs
L 8c	16			
L 9a		209	wv	NAM
L 9b		201	wv	NAM
L 10		411	wv	GDF Prod. Ned. cs
L 11a		185	wv	GDF Prod. Ned. cs
L 11b		47	wv	Unocal cs
L 11c	179			
L 12a		344	wv	NAM cs
L 12b		67	wv	NAM cs
L 13		413	wv	NAM cs
L 14a		21	wv	GDF Prod. Ned. cs
L 14b	392			
L 15a	81			
L 15b		117	wv	NAM cs
L 15c		4	wv	NAM
L 16a		238	wv	Clyde P. Expl. cs
L 16b	90			
L 16c	86			
L 17	394			
L 18	13			
M 1a		213	ov	Clyde P. Expl.
M 1b		193	ov	Clyde P. Expl.
M 2		406	ov	Clyde P. Expl. cs
M 3	406			
M 4		408	ov	Clyde P. Expl.
M 5	408			
M 6	408			
M 7		410	wv	Clyde P. Expl. cs
M 8	405			
M 9a		213	wv	NAM cs
M 9b	158			
M 10	222			
M 11	28			
N 1	217			
N 4	381			
N 5	14			
N 7		315	wv	GDF Prod. Ned. cs
N 8	34			
O 12	2			
O 15	143			
O 17	2			
O 18	367			



<b>Block/ Part of block</b>	<b>Area not in licence (km<sup>2</sup>)</b>	<b>Area in licence (km<sup>2</sup>)</b>	<b>Type*</b>	<b>Licence holder</b>
P 1	209			
P 2a		216	wv	Clyde P. Expl. cs
P 2b		200	ov	Clyde P. Expl.
P 3	416			
P 4	170			
P 5	417			
P 6		417	wv	Clyde P. Expl. cs
P 7	222			
P 8	419			
P 9a		59	wv	Unocal cs
P 9b		67	wv	Unocal cs
P 9c		267	wv	Unocal cs
P 9d	26			
P 10		355	ov	Petro-Canada Neth. cs
P 11a		2	wv	Wintershall cs
P 11b		210	ov	Petro-Canada Neth. cs
P 11c	209			
P 12		421	wv	Clyde P. Expl. cs
P 13	422			
P 14a		317	wv	Wintershall cs
P 14b	105			
P 15a		203	wv	BP Ned. Energie cs
P 15b		17	wv	BP Ned. Energie cs
P 15c		202	wv	BP Ned. Energie cs
P 16	424			
P 17	424			
P 18a		105	wv	BP Ned. Energie
P 18b	313			
P 18c		6	wv	BP Ned. Energie cs
Q 1		416	wv	Unocal cs
Q 2a		332	ov	Clyde P. Expl. cs
Q 2c		32	wv	Unocal cs
Q 4		417	wv	Clyde P. Expl. cs
Q 5a	0.2			
Q 5b	103.7			
Q 5c		98	wv	Wintershall cs
Q 5d		44	wv	Wintershall cs
Q 5e		4	wv	Wintershall cs
Q 5f	48			
Q 5i	0.1			
Q 7	419			
Q 8		247	wv	Clyde P. Expl. cs
Q 10a	261			
Q 10b	19			
Q 10d		120	ov	Clyde P. Expl. cs
Q 10e	21			
Q 11	162			
Q 13	399			
Q 14	25			
Q 16a		85	wv	NAM cs
Q 16b	46			
Q 16c	21			
Q 16e		12	ov	NAM cs

<b>Block/ Part of block</b>	<b>Area not in licence (km<sup>2</sup>)</b>	<b>Area in licence (km<sup>2</sup>)</b>	<b>Type*</b>	<b>Licence holder</b>
Q 16f		1	ov	NAM cs
R 2	103			
R 3	425			
R 5	7			
R 6	311			
R 9	28			
S 1	425			
S 2	425			
S 3	340			
S 4	427			
S 5	378			
S 6	45			
S 7	360			
S 8	129			
S 10	36			
S 11	0.2			
T 1	1			
<b>Total</b>	<b>33 332.4</b>	<b>23 482</b>		

Explanatory notes

\*) : wv = production licence

ov = exploration licence

**COMPANY CHANGES IN LICENCES in 2002**

<b>Company relinquishment</b>	<b>Company farm-in</b>	<b>Block</b>	<b>In force as from</b>	<b>Official Gazette</b>
1. BG Exploration and Production Ltd.		Q10d	15-04-'02	113
2. Dyas B.V.		K10a, K10b & K10c	17-07-'02	135
3. Clyde Petroleum Expl. B.V. TotalFinaElf E&P Nederland B.V.	Wintershall Noordzee B.V. Conoco (U.K.) Limited	D15	08-11-'02	219
4. Clyde Petroleum Expl. B.V.	Conoco (U.K.) Limited	D18a	08-11-'02	219
5. TotalFinaElf E&P Nederland B.V. Nederlandse Aardolie Mij. B.V. Oranje Nassau Energie B.V.		L1a	19-11-'02	224
6. TotalFinaElf E&P Nederland B.V.		D12a	19-11-'02	224
7. Holland Sea Search II B.V.	Holland Sea Search B.V.	P12	09-12-'02	238
8.	EWE Aktiengesellschaft	Q2a	09-12-'02	238
9.	EWE Aktiengesellschaft	Q10d	09-12-'02	238
10. Petro-Canada Hanze GmbH	Petro-Canada Netherlands B.V.	B17a	20-12-'02	249
11. Petro-Canada Hanze GmbH		P10	20-12-'02	249
12. Petro-Canada Hanze GmbH BP Energie B.V.		P11b	20-12-'02	249

**NAME CHANGES in 2002**

<b>Previous company</b>	<b>Company</b>
1. Coparex Netherland B.V.	Lundin Netherlands B.V.
2. Edöl-Erdgas Gommern Netherlands B.V.	GDF Participation Nederland B.V.
3. Veba Oil & Gas Netherlands B.V. Veba Oil Nederland IJssel B.V. Veba Oil and Gas Hanze GmbH	Petro-Canada Netherlands B.V.

**AMALGAMATIONS in 2002**

<b>Disappearing company</b>	<b>Acquiring company</b>
There were no amalgamations in 2002	

**SEISMIC SURVEYING**

Year	Territory		Continental Shelf	
	2 D line km	3 D area in km <sup>2</sup>	2 D line km	3 D area in km <sup>2</sup>
1965	8 885	-	7 707	-
66	3 510	-	6 939	-
67	1 673	-	3 034	-
68	2 541	-	17 349	-
69	3 857	-	6 846	-
1970	5 113	-	5 780	-
71	3 252	-	12 849	-
72	4 034	-	4 716	-
73	1 783	-	9 708	-
74	1 422	-	9 536	-
1975	1 706	-	9 413	-
76	2 318	-	10 963	-
77	948	-	6 184	-
78	2 466	-	13 568	-
79	986	-	11 575	-
1980	2 017	76	15 497	-
81	4 627	37	22 192	110
82	4 363	170	14 791	337
83	3 980	478	24 498	208
84	2 523	512	9 314	455
1985	3 480	1 282	41 593	892
86	2 386	993	11 795	296
87	2 243	601	24 592	1 637
88	1 103	1 726	14 356	1 958
89	828	1 206	4 033	3 264
1990	160	1 889	8 288	4 972
91	-	1 268	15 853	5 002
92	388	1 307	1 799	4 173
93	-	1 382	1 591	4 637
94	-	1 074	1 089	2 694
1995	-	491	-	1 408
96	-	689	892	2 686
97	-	1 236	260	3 101
98	-	214	1 383	2 603
99	43	124	181	1 409
2000	-	33	160	1 189
01	5	47	-	898
02	-	-	495	1 778

## NUMBER OF METRES DRILLED

Year	Territory		Continental Shelf		Total	
	Production	Exploration	Production	Exploration	Production	Exploration
1969	50 125	37 410		49 224	50 125	86 634
1970	68 270	23 146		45 838	68 270	68 984
71	156 270	40 621		63 979	156 419	104 600
72	182 787	29 334	2 966	58 176	185 753	87 510
73	122 838	13 414	10 616	66 425	133 454	79 839
74	118 046	11 728	23 045	65 051	141 091	76 779
1975	118 399	21 697	34 320	58 632	152 719	80 329
76	112 264	15 481	59 335	63 483	171 599	78 964
77	65 835	19 392	53 490	91 010	119 325	110 402
78	48 053	72 974	51 344	73 410	99 397	146 384
79	50 500	68 100	35 600	68 700	86 100	136 800
1980	53 564	79 363	24 864	95 702	78 425	175 065
81	51 005	63 852	18 674	93 245	69 679	157 097
82	26 029	81 070	46 867	137 403	72 896	218 473
83	14 640	86 532	46 311	129 472	60 951	216 004
84	77 565	61 870	89 834	104 006	167 399	165 876
1985	49 195	63 991	95 939	123 701	145 134	187 692
86	32 558	30 334	95 415	88 043	127 973	118 377
87	24 491	33 414	36 997	82 681	61 488	116 095
88	34 891	30 495	43 099	81 107	77 990	111 602
89	25 813	54 339	51 170	105 097	76 983	159 436
1990	31 287	42 723	51 446	128 143	82 733	170 866
91	29 902	47 178	42 378	119 767	72 280	166 945
92	32 892	36 900	61 095	76 331	93 987	113 231
93	23 652	36 211	48 320	43 841	71 972	80 052
94	18 552	39 399	30 002	35 628	48 554	75 027
1995	29 695	40 698	56 428	37 956	86 123	78 654
96	72 068	49 960	24 878	98 166	96 946	148 126
97	32 476	54 339	51 767	102 064	84 243	156 403
98	16 400	63 900	36 900	82 300	53 300	146 200
99	20 565	30 480	26 195	53 032	46 760	83 512
2000	12 187	13 045	34 024	42 679	46 211	55 724
01	18 446	12 315	49 003	73 384	67 449	85 699
02	20 516	16 310	54 917	55 148	75 433	71 458

Exploration concerns exploration and appraisal.

**2001 DRILLING ACTIVITIES**

	Type of well	Result				Total
		Gas	Oil	Gas+Oil	Dry	
Territory	Exploration	1	-	-	3	4
	Appraisal	1	-	-	-	1
	Production	5	-	-	-	5
	Subtotal	7	-	-	3	10
Continental shelf	Exploration	6	-	-	10	16
	Appraisal	1	-	-	2	3
	Production	13	-	-	-	13
	Subtotal	20	-	-	12	32
Total		27	-	-	15	42

**OIL AND GAS WELLS, Netherlands Territory completed in 2002****I Exploration wells**

Name of well	Concession	Operator	Result
Dordrecht-1	Rijswijk	NAM	dry
Huibeven-1	Waalwijk	Clyde	dry
Uithuizermeeden-2	Groningen	NAM	dry
Warfstermolen-1	Tietjerkstradeel	NAM	gas

**II Appraisal wells**

Name of well	Concession	Operator	Result
Blijham-6	Groningen	NAM	gas

**III Production well**

Name of well	Concession	Operator	Result
Bedum-3	Groningen	NAM	gas
Boerakker-3	Groningen	NAM	gas
Grootevast-103	Groningen	NAM	gas
Leens-1A	Groningen	NAM	gas
's Gravenzande-2	Rijswijk	NAM	gas



## OIL AND GAS WELLS, Netherlands Continental Shelf completed in 2002

### I Exploration wells

Name of well	Type of licence *)	Operator	Result
A14-2	OV	NAM	dry
D12-6	WV	Wintershall	gas
E10-3 sidetrack 1	OV	Wintershall	dry
F16-4	OV	Wintershall	dry
G14-2	OV	NAM	dry
K1-4	WV	TotalFinaElf	dry
K5-12	WV	TotalFinaElf	gas
K9-11 sidetrack 1	WV	Gaz de France	dry
K10-17	WV	Wintershall	dry
K15-FA-106	WV	NAM	gas
K15-FG-104	WV	NAM	dry
L5-9	OV	Wintershall	gas
L16-15	WV	Clyde	gas
P10-3	OV	Veba	dry
P12-14	WV	Clyde	gas
Q2-5	OV	Clyde	dry

### II Appraisal wells

Name of well	Type of licence *)	Operator	Result
K6-GT-4 sidetrack 1	WV	TotalFinaElf	gas
P6-A-4 sidetrack 1	WV	Clyde	dry
Q1-25	WV	Clyde	dry

### III Production wells

Name of well	Type of licence *)	Operator	Result
G17-A-1	WV	Gaz de France	gas
G17-A-2	WV	Gaz de France	gas
K1-A-1 sidetrack 2	WV	TotalFinaElf	gas
K1-A-2	WV	TotalFinaElf	gas
K1-A-3	WV	TotalFinaElf	gas
K6-N-1 sidetrack 1	WV	TotalFinaElf	gas
K8-FA-101B deep	WV	NAM	gas
K8-FA-108	WV	NAM	gas
K12-G-3	WV	Gaz de France	gas
K12-G-4	WV	Gaz de France	gas
L9-FF-107 sidetrack 2	WV	NAM	gas
L10-F-5	WV	Gaz de France	gas
Q4-B-1	WV	Clyde	gas

\*) OV = exploration licence  
WV = production licence

**OIL- AND GAS WELLS, Netherlands Territory number of wells**

Year	Exploration					Appraisal					Production
	O	G	G&O	D	Σ	O	G	G&O	D	Σ	Σ
up to 1967	2	26	-	61	89	-	8	-	4	12	278
1968	-	3	-	4	7	-	2	-	2	4	23
1969	-	2	-	11	13	-	2	-	1	3	27
1970	-	3	-	11	14	-	1	-	-	1	25
1971	-	3	-	9	12	-	3	-	1	4	55
1972	-	3	-	7	10	-	-	-	2	2	64
1973	-	2	-	2	4	-	1	-	-	1	46
1974	-	-	-	2	2	-	4	-	1	5	50
1975	-	3	-	5	8	-	-	-	2	2	48
1976	-	2	-	5	7	-	12	-	-	12	37
1977	-	3	-	4	7	2	10	-	1	13	14
1978	-	2	-	4	6	-	20	-	-	20	36
1979	-	4	-	2	6	2	11	-	2	15	42
1980	1	2	-	2	5	2	16	-	4	22	33
1981	2	2	-	11	15	5	7	-	2	14	23
1982	-	5	-	9	14	-	8	-	2	10	14
1983	-	4	-	4	8	1	13	-	1	15	8
1984	1	6	-	7	14	4	8	-	4	16	32
1985	1	5	-	9	15	2	10	-	-	12	34
1986	-	2	-	10	12	-	3	-	-	3	35
1987	-	1	2	6	9	-	1	-	-	1	22
1988	-	5	1	2	8	1	4	-	-	5	17
1989	-	2	1	6	9	2	5	-	-	7	11
1990	-	3	1	4	8	-	3	1	1	5	17
1991	-	7	1	3	11	-	3	-	1	4	11
1992	-	5	2	4	11	-	1	-	-	1	12
1993	-	8	-	2	10	-	-	-	-	-	11
1994	-	4	-	1	5	2	2	-	1	5	4
1995	-	3	-	10	13	-	3	-	-	3	14
1996	-	2	-	3	5	2	3	-	2	7	30
1997	-	8	-	3	11	-	6	-	-	6	12
1998	-	7	-	4	11	-	7	-	-	7	8
1999	-	2	-	3	5	-	3	-	-	3	7
2000	-	2	-	-	2	-	2	-	-	2	5
2001	-	2	-	1	3	-	-	-	-	-	6
2002	-	1	-	3	4	-	1	-	-	1	5
<b>Total:</b>	<b>7</b>	<b>144</b>	<b>8</b>	<b>234</b>	<b>393</b>	<b>25</b>	<b>184</b>	<b>1</b>	<b>34</b>	<b>243</b>	<b>1 116</b>

D = dry  
G = gas  
G&O = gas and oil  
O = oil  
Σ = total

### OIL- AND GAS WELLS, Netherlands Continental Shelf number of wells

Year	Exploration					Appraisal					Production	
	O	G	G&O	D	Σ	O	G	G&O	D	Σ	Σ	
up to 1967	-	-	-	3	3	-	-	-	-	-	-	-
1968	-	2	-	5	7	-	-	-	-	-	-	-
1969	-	2	-	13	15	-	-	-	1	1	-	-
1970	1	6	-	7	14	-	-	-	-	-	-	-
1971	-	3	-	15	18	1	-	-	-	1	-	-
1972	-	10	-	6	16	-	-	-	1	1	-	-
1973	-	4	-	13	17	-	1	-	1	2	-	2
1974	1	7	-	8	16	-	1	-	-	1	-	9
1975	-	6	-	9	15	-	1	-	2	3	-	2
1976	-	5	-	11	16	1	2	-	-	3	-	4
1977	-	3	-	20	23	1	3	-	1	5	-	18
1978	-	4	-	14	18	1	2	-	2	5	-	14
1979	1	7	-	9	17	-	3	-	1	4	-	9
1980	4	6	-	16	26	2	2	-	1	5	-	7
1981	1	3	-	11	15	6	5	-	6	17	-	5
1982	7	6	-	22	35	1	6	-	3	10	-	20
1983	1	3	-	27	31	1	2	-	9	12	-	15
1984	1	6	-	19	26	3	1	-	3	7	-	24
1985	3	9	-	24	36	2	4	-	1	7	-	35
1986	2	9	-	14	25	2	2	-	1	5	-	15
1987	-	9	1	12	22	1	2	1	1	5	-	13
1988	-	12	1	8	21	-	4	-	1	5	-	21
1989	-	10	-	13	23	-	4	-	1	5	-	17
1990	-	8	-	21	29	-	6	-	-	6	-	14
1991	2	15	-	26	43	-	2	-	-	2	-	18
1992	-	8	-	11	19	-	-	-	1	1	-	15
1993	-	3	-	10	13	-	1	-	-	1	-	17
1994	1	4	-	5	10	1	1	-	-	2	-	10
1995	-	2	-	3	5	-	1	1	1	3	-	16
1996	1	10	1	12	24	-	5	-	-	5	-	6
1997	1	7	-	13	21	1	8	-	1	10	-	13
1998	-	9	-	8	17	1	1	-	1	3	-	13
1999	-	7	-	5	12	-	1	-	1	2	-	6
2000	-	4	-	2	6	-	6	-	-	6	-	9
2001	-	9	-	6	15	-	2	-	2	4	-	12
2002	-	6	-	10	16	-	1	-	2	3	-	13
<b>Total:</b>	<b>27</b>	<b>224</b>	<b>3</b>	<b>431</b>	<b>685</b>	<b>25</b>	<b>80</b>	<b>2</b>	<b>45</b>	<b>152</b>		<b>412</b>

D = dry  
G = gas  
G&O = gas and oil  
O = oil  
Σ = total

## PLATFORMS, Netherlands Continental Shelf at January 1<sup>st</sup>, 2003

Platform	Operator	Year of installation	Number of legs	G* O*	Function
K13-A	Wintershall	1974	8	G	production/compression
K13-A	Wintershall	1974	4	G	wellhead
L10-A	Gaz de France	1974	8	G	production
L10-A	Gaz de France	1974	10	G	wellhead/compression
L10-A	Gaz de France	1974	4	G	riser
L10-B	Gaz de France	1974	4	G	satellite
L10-C	Gaz de France	1974	4	G	satellite
K14-FA-1	NAM	1975	10	G	integrated
L7-B	TotalFinaElf	1975	4	G	integrated
K15-FA-1	NAM	1977	10	G	integrated
K8-FA-1	NAM	1977	10	G	integrated
K8-FA-2	NAM	1977	4	G	satellite
L10-D	Gaz de France	1977	4	G	satellite
L10-E	Gaz de France	1977	4	G	satellite
L7-C(C)	TotalFinaElf	1977	4	G	wellhead
L7-C(P)	TotalFinaElf	1977	8	G	production
L7-C(Q)	TotalFinaElf	1977	4	--	accommodation
K15-FB-1	NAM	1978	10	G	integrated
L7-BB	TotalFinaElf	1978	4	G	wellhead
K7-FA-1	NAM	1980	4	G	wellhead
L10-BB	Gaz de France	1980	3	G	wellhead
L10-F	Gaz de France	1980	4	G	satellite
K10-B	Wintershall	1981	6	G	production
K10-B	Wintershall	1981	6	G	wellhead
L4-A(PA)	TotalFinaElf	1981	8	G	integrated
Q1-HELM	Unocal	1981	6	O	production
Q1-HELM	Unocal	1981	4	O	wellhead
K7-FA-1	NAM	1982	6	G	production
P6-A	Clyde	1982	8	G	integrated
Q1-HELDER-A	Unocal	1982	6	O	production
Q1-HELDER-A	Unocal	1982	4	O	wellhead
K12-A	Gaz de France	1983	4	G	satellite
L7-C(PK)	TotalFinaElf	1983	4	G	compression
Q1-HOORN	Unocal	1983	6	O	production
Q1-HOORN	Unocal	1983	4	O	wellhead
K12-C	Gaz de France	1984	4	G	satellite
K18-KOTTER	Clyde	1984	8	O	production
K18-KOTTER	Clyde	1984	6	O	wellhead
K8-FA-3	NAM	1984	6	G	satellite
L10-EE	Gaz de France	1984	3	G	wellhead
L10-G	Gaz de France	1984	4	G	satellite
L4-B	TotalFinaElf	1984	4	G	wellhead
L7-A	TotalFinaElf	1984	4	G	satellite
AWG-1	NAM	1985	3	G	riser
AWG-1P	NAM	1985	6	G	production
AWG-1W	NAM	1985	4	G	wellhead
K12-D	Gaz de France	1985	4	G	satellite
K14-FA-1C	NAM	1985	8	G	compression
L16-LOGGER	Clyde	1985	4	O	production

Platform	Operator	Year of installation	Number of legs	G* O*	Function
L16-LOGGER	Clyde	1985	4	O	wellhead
P15-RIJN-A	BP	1985	4	O	wellhead
P15-RIJN-B	BP	1985	4	O	satellite
P15-RIJN-C	BP	1985	6	O	production
P6-B	Clyde	1985	4	G	satellite
K12-E	Gaz de France	1986	4	G	satellite
L11b-A	Unocal	1986	4	G	integrated
L13-FC-1	NAM	1986	4	G	wellhead
L13-FC-1	NAM	1986	6	G	production
Q8-A	Clyde	1986	3	G	wellhead
K12-BD	Gaz de France	1987	4	G	wellhead
K12-BP	Gaz de France	1987	8	G	production
K9ab-A	Gaz de France	1987	4	G	integrated
K9c-A	Gaz de France	1987	4	G	integrated
L10-AC	Gaz de France	1987	4	G	compression
Zuidwal	TotalFinaElf	1987	8	G	wellhead
K12-CC	Gaz de France	1988	4	G	compression
L10-L	Gaz de France	1988	4	G	satellite
L10-S-1	Gaz de France	1988	-	G	subsea completion
L13-FD-1	NAM	1988	4	G	satellite
L7-N	TotalFinaElf	1988	4	G	satellite
L8-A	Wintershall	1988	4	G	satellite
L8-G	Wintershall	1988	6	G	integrated
L8-H	Wintershall	1988	4	G	satellite
K15-FC-1	NAM	1989	4	G	satellite
L13-FE-1	NAM	1989	4	G	satellite
L7-H	TotalFinaElf	1989	4	G	satellite
Q1-HAVEN-A	Unocal	1989	1	O	satellite
K15-FG-1	NAM	1990	4	G	satellite
L11a-A	Gaz de France	1990	4	--	jacket
P12-SW	Clyde	1990	4	G	satellite
AME-2	NAM	1991	4	G	wellhead
AME-2	NAM	1991	4	G	production
K12-S1	Gaz de France	1991	-	G	subsea completion
K6-D	TotalFinaElf	1991	4	G	wellhead
K6-P	TotalFinaElf	1991	4	G	production
L2-FA-1	NAM	1991	6	G	integrated
F15-A	TotalFinaElf	1992	6	G	integrated
F3-FB-1P	NAM	1992	3+GBS	G+O	integrated
J6-A	Lasmo	1992	6	G	integrated
K6-C	TotalFinaElf	1992	4	G	wellhead/riser
K6-DN	TotalFinaElf	1992	4	G	satellite
L5-FA-1	NAM	1992	6	G	integrated
P15-10S	BP	1992	-	G	subsea completion
P15-12S	BP	1992	-	G	subsea completion
P15-14S	BP	1992	-	G	subsea completion
F3-FB-AP	NAM	1993	3	G+O	accommodation
F3-OLT	NAM	1993	1	O	offshore loading tower
K10-V	Wintershall	1993	4	G	satellite
K6-N	TotalFinaElf	1993	4	G	satellite
L15-FA-1	NAM	1993	6	G	integrated
P14-A	Wintershall	1993	4	G	satellite
P15-D	BP	1993	6	G	production

Platform	Operator	Year of installation	Number of legs	G* O*	Function
P15-E	BP	1993	4	G	satellite
P15-F	BP	1993	4	G	satellite
P15-G	BP	1993	4	G	satellite
P18-A	BP	1993	4	G	satellite
P9-Horizon	Unocal	1993	4	O	integrated
P9-Seafox-1	Unocal	1993	4	O	accommodation
K5-A	TotalFinaElf	1994	4	G	wellhead
K5-D	TotalFinaElf	1994	4	G	satellite
K5-P	TotalFinaElf	1994	4	G	production
L8-P	Wintershall	1994	4	G	satellite
Q8-B	Clyde	1994	4	G	satellite
K11-B	Gaz de France	1995	4	G	satellite
K5-B	TotalFinaElf	1995	4	G	satellite
L13-FH-1	NAM	1995	-	G	subsea completion
Q1-Halfweg	Unocal	1995	4+GBS	G	satellite
K14-FB-1	NAM	1997	4	G	satellite
K4a-D	TotalFinaElf	1997	-	G	subsea completion
K5-EN/C	TotalFinaElf	1997	4	G	satellite
L10-S-2	Gaz de France	1997	-	G	subsea completion
L10-S-3	Gaz de France	1997	-	G	subsea completion
L10-S-4	Gaz de France	1997	-	G	subsea completion
N7-FA-SP	NAM	1997	1	G	satellite
P2-NE	Clyde	1997	4	G	satellite
P6-S	Clyde	1997	4	G	satellite
K4-A	TotalFinaElf	1998	4	G	satellite
K6-GT	TotalFinaElf	1998	4	G	satellite
K7-FD-1	NAM	1998	4	G	satellite
L9-FF-1P	NAM	1998	6	G	production
L9-FF-1W	NAM	1998	4	G	wellhead
Q16-FA-1	NAM	1998	-	G	subsea completion
D15-FA-1	NAM	1999	6	G	integrated
K9ab-B	Gaz de France	1999	4	G	satellite
L4-PN	TotalFinaElf	1999	4	G	satellite
F2-A-Hanze	Petro-Canada	2000	GBS	G+O	integrated
K4-BE	TotalFinaElf	2000	4	G	satellite
L10-M	Gaz de France	2000	4	G	satellite
L8-A-west	Wintershall	2000	-	G	subsea completion
L8-P4	Wintershall	2000	4	G	satellite
Q4-A	Clyde	2000	4	G	satellite
P6-D	Clyde	2001	4	G	satellite
K12-G	Gaz de France	2001	4	G	satellite
G17d-A	Gaz de France	2001	4	G	jacket
K8-FA-1P	NAM	2001	4	--	accommodation
K1-A	TotalFinaElf	2001	4	G	satellite
G17d-A	Gaz de France	2002	4	G	satellite
K12-S2	Gaz de France	2002	-	G	subsea completion
K15-FK-1	NAM	2002	4	G	satellite
K5-PK	TotalFinaElf	2002	4	G	satellite
Q4-B	Wintershall	2002	4	G	satellite

**REMOVED PLATFORMS**

<b>Platform</b>	<b>Operator</b>	<b>Removing</b>	<b>Number of legs</b>	<b>G* O*</b>	<b>Function</b>
K10-C	Wintershall	1997	4	G	satellite
K11-FA-1	NAM	1999	4	G	satellite
K13-B	Wintershall	1997	4	G	satellite
K13-C	Wintershall	1989	4	G	wellhead
K13-C	Wintershall	1989	6	G	production/compression
K13-D	Wintershall	1988	4	G	satellite
L10-K	Gaz de France	2000	4	G	satellite
L11a-A	Gaz de France	1999	4	--	topside removed
L14-S1	Gaz de France	1998	-	G	subsea completion
P2-NE	Clyde	2002	4	G	satellite
P2-SE	Clyde	2001	4	G	satellite
P12-C	Clyde	2001	4	G	satellite
Q1-HELDER-B	Unocal	1989	1	O	satellite

**NEW PLATFORMS**

<b>Platform</b>	<b>Operator</b>	<b>Year of installation</b>	<b>Number of legs</b>	<b>G* O*</b>	<b>Function</b>
G17d-A	Gaz de France	2002	4	G	satellite
K12-S2	Gaz de France	2002	-	G	subsea completion
K15-FK-1	NAM	2002	4	G	satellite
K5-PK	TotalFinaElf	2002	4	G	satellite
Q4-B	Wintershall	2002	4	G	satellite

G\* = Gas

O\* = Oil

GBS = Gravity Based Structure

### PIPELINES, Netherlands Continental Shelf at January 1st, 2003

Operator	From	To	Diameter (inch)	Laid (year)	Length (km)	Carries
Gaz de France	L10-C	L10-AP	10,75 * 2,375	1974	1,1	g + m
Gaz de France	L10-B	L10-AP	10,75 * 2,375	1974	7,4	g + m
NGT	L10-AR	Uithuizen	36	1975	179,0	g
Wintershall	K13-AP	Callantssoog	36	1975	120,5	g
Gaz de France	L10-D	L10-AP	10,75 * 2,375	1977	1,1	g + m
Gaz de France	L10-E	L10-AP	10,75 * 2,375	1977	4,0	g + m
Wintershall	K13-B	K13-AP	10 * 2	1977	8,7	def.verl.
TotalFinaElf	L7-B	L7-P	12+4+3	1977	7,9	g + w + m
TotalFinaElf	L7-P	L10-AR	16	1977	15,8	g
NAM	K8-FA-1	K14-FA-1	24	1977	30,9	g
NAM	K14-FA-1P	WGT-pipe (s)	24	1977	0,1	g + co
NAM	K11-FA-1	K8-FA-1	6,625	1978	6,0	def.verl.
NAM	K8-FA-2	K8-FA-1	10,75	1978	3,8	g + co
NAM	K15-FA-1	WGT-pipe (s)	24	1978	0,1	co
Wintershall	K13-D	K13-C	10 * 2	1978	3,5	def.verl.
Wintershall	K13-C (Bypass)	K13-AP	20	1978	10,2	g
Gaz de France	L10-F	L10-AP	10,75 * 2,375	1980	4,3	g + m
TotalFinaElf	L4-A	L7-P	12 + 3	1981	22,7	g + gl
NAM	K7-FA-1P	K8-FA-1	18	1982	9,4	g + co
Wintershall	K10-C (Bypass)	K10-B	10 * 2	1982	5,2	g + m
Wintershall	K10-B	K13-C (Bypass)	20	1982	7,4	g
Unocal	Q1-Helder-AW	Q1-Helm-AP	20	1982	6,2	o
Unocal	Q1-Helm-AP	Ijmuiden	20	1982	56,7	o
NAM	K15-FB-1	Callantssoog	24	1983	74,3	g + co
Unocal	Q1-Hoorn-AP	Q1-Helder-AW	10,75	1983	3,5	o
Gaz de France	K12-A	L10-AP	14 * 2,375	1983	29,2	g + m
Clyde	P6-A	L10-AR	20	1983	78,7	g
TotalFinaElf	L4-B	L7-A	10 + 3	1984	10,6	g + gl
TotalFinaElf	L7-A	L7-P	10 + 3	1984	9,8	g + gl
Clyde	K18-Kotter-P	Q1-Helder-A	12	1984	20,2	o
Gaz de France	L10-G	L10-B / L10-A (s)	10,75 * 2,375	1984	4,7	g + m
Gaz de France	L10-K	L10-B / L10-A (s)	10,75 * 2,375	1984	5,5	def.verl.
Gaz de France	L10-B	L10-AD	14	1984	6,8	g
Gaz de France	L10-EE	L10-B / L10-A (s)	10	1984	0,2	g
Gaz de France	K12-C	K12-A / L10-A (s)	10 * 2	1984	0,4	g + m
NAM	AWG-1R	NGT-pipe (s)	20	1985	7,1	g + co +ci
NAM	AME-1	AWG-1R	20	1985	4,2	g + co
Clyde	L16-Logger-P	K18-Kotter-P	8	1985	18,9	o
Clyde	K18-Kotter-P	L16-Logger-P	6	1985	18,9	w
Gaz de France	K12-D	K12-C	10,75 * 2,375	1985	4,3	g + m
BP	P15-C	Hoek v. Holland	10	1985	42,6	o
BP	P15-B	P15-C	10	1985	3,4	def.verl.
BP	P15-B	P15-C	6	1985	3,4	o + w
BP	P15-B	P15-C	6	1985	3,4	def.verl.
BP	P15-B	P15-C	4	1985	3,4	l



Operator	From	To	Diameter (inch)	Laid (year)	Length (km)	Carries
Clyde	P6-B	P6-A	12 * 3	1985	3,9	g + gl
Clyde	P6-C (toek.plf)	P6-B	12 * 3	1985	2,9	g + gl
NAM	L13-FC-1P	K15-FA-1	18	1986	15,4	g + co
Clyde	Q8-A	Wijk aan Zee	10	1986	13,7	g
NAM	K8-FA-3	K7-FA-1P	12,75	1986	8,9	g
Gaz de France	K12-A/ L10-A (s)	K12-E	2,375	1986	3,9	m
NGT	L11b-A	NGT-pipe (s)	14	1986	6,8	g
Gaz de France	K12-E	K12-C	10,75	1986	6,3	g
Unocal	Q1-Helder-B	Q1-Helder-AW	8,625	1986	1,8	def.verl.
TotalFinaElf	Zuidwal	Harlingen TC	20 + 3 + 3	1987	20,3	g + gl + c
NGT	K12-BP	L10-AR	18	1987	21,4	g
NGT	K9c-A	L10-AR	16	1987	36,6	g
NGT	K9c-A/L10-AR(s)	K9ab-A	16	1987	0,1	g
NAM	K15-FA-1	K14-FA-1C	18	1987	24,2	g + co
TotalFinaElf	L7-P	L7-N	10 * 3	1988	4,2	g + gl
Wintershall	L8-A	L8-G	8	1988	10,0	g
Wintershall	L8-H	L8-A / L8-G(s)	8	1988	0,2	g
Wintershall	K13-C (Bypass)	K10-B / K13-A (s)	20	1988	2,5	g
Gaz de France	K12-A	K12-CC	10,75	1988	8,3	g
Gaz de France	L10-L	L10-AP	10,75 * 2,375	1988	2,2	g + m
Gaz de France	L10-S1	L10-AP	6,625 * 2,375	1988	11,5	def.verl.
NGT	L8-G	L11b-A	14	1988	14,4	g
Gaz de France	K12-E	L10-S1	90 mm	1988	4,6	def.verl.
TotalFinaElf	L7-H	L7-N	10,75	1989	6,3	g
TotalFinaElf	L7-H	L7-N	3,5	1989	6,3	gl
Unocal	Q1-Haven-A	Q1-Helder-AW	8,625	1989	5,8	def.verl.
NAM	L13-FD-1	L13-FC-1P	10	1989	3,7	g + co
NAM	L13-FC-1P	L13-FD-1	3,6	1989	3,6	c
NAM	K8-FA-2	K8-FA-1	10,75	1989	4,0	g + co +ci
NAM	K15-FC-1	K15-FB-1	10,75	1990	7,9	g + co
NAM	K15-FB-1	K15-FC-1	4,03	1990	7,9	c
NAM	K15-FG-1	K15-FA-1	14,3	1990	7,0	g + co
NAM	K15-FA-1	K15-FG-1	4,03	1990	7,0	c
NAM	L13-FE-1	L13-FC-1P	12,98	1990	4,3	g + co
NAM	L13-FC-1P	L13-FE-1	3,76	1990	4,3	c
Clyde	P12-C	P12-SW	8 * 3	1990	6,9	def.verl.
Clyde	P12-SW	P6-A	12 * 3	1990	42,0	g + gl
Gaz de France	L14-S1	L11a-A	6,625 * 2,375	1990	6,0	def.verl.
Gaz de France	K12-B	K12-S1	3,5	1990	4,9	c
NGT	L11a-A	NGT-pipe (s)	10,75	1990	11,8	g
Gaz de France	K12-S1	K12-BP	6,625 * 2,375	1991	4,9	g + m
NGT	K6-C	K9c-A	16	1991	5,2	g
TotalFinaElf	K6-D	K6-C	10,75 * 3.5	1991	3,8	g + gl
NAM	AME-2	AWG-1R	13,6	1991	5,2	g + co
NAM	AWG-1R	AME-2	4,02	1991	5,2	c
NAM	F3-FB-1P	L2-FA-1	24	1991	108,1	g + co
NAM	L2-FA-1	Callantsoog	36	1991	144,2	g + co
TotalFinaElf	F15-A	NOGAT-pipe (s)	16	1991	0,3	g + co
NAM	L5-FA-1	NOGAT-pipe (s)	16	1991	0,4	g + co

Operator	From	To	Diameter (inch)	Laid (year)	Length (km)	Carries
NAM	L15-FA-1	NOGAT-pipe (s)	16	1991	0,4	g + co
TotalFinaElf	K6-DN	K6-C	12 * 3	1992	5,3	g + gl
Wintershall	J6-A	K13-AW	24	1992	85,8	g
Wintershall	K10-V	K10-C (Bypass)	10 * 2	1993	10,3	g + m
Wintershall	P14-A	P15-D	10 * 2	1993	12,6	g + m
Unocal	P9-Horizon-A	Q1-Helder-AW	10,75	1993	4,8	o + w
TotalFinaElf	K6-N	K6-C	12 * 3	1993	8,5	g + gl
BP	P15-D	Maasvlakte	26	1993	40,1	g
BP	P15-E	P15-D	10 * 2	1993	13,9	g + m
BP	P15-F	P15-D	12 * 3	1993	9,1	g + m
BP	P15-G	P15-D	12 * 3	1993	9,1	g + m
BP	P15-10S	P15-D	4 * 2	1993	3,9	g + m
BP	P15-D	P15-10S	90 mm	1993	3,9	c
BP	P15-12S	P15-D	4 * 2	1993	6,1	g + m
BP	P15-D	P15-12S	90 mm	1993	6,1	c
BP	P15-14S	P15-G	4 * 2	1993	3,7	g + m
BP	P15-D	P15-14S	90 mm	1993	8,0	c
BP	P18-A	P15-D	16 * 3	1993	20,8	g + m
NAM	F3-FB-1P	F3-OLT	16	1993	2,0	o
NAM	F3-FB-1P	F3-OLT	3,21	1993	2,0	c
Clyde	Q8-B	Q8-A	8 * 2	1994	8,3	g + m
Lasmo	ST-I	J6-A	12 * 2	1994	5,5	g + m
TotalFinaElf	K5-D	K5-A	12 * 3	1994	10,3	g + gl
Wintershall	K5-A	J6-A / K13-AW (s)	18	1994	0,3	g
Wintershall	L8-P	L8-G	8 * 2	1994	7,5	g + m
NAM	L13-FH-1	K15-FA-1	6,625	1995	9,4	g + co + m + ci
NAM	K15-FA-1	L13-FH-1	2,98	1995	9,4	c
TotalFinaElf	K5-B	K5-A	346 mm	1995	6,4	g
TotalFinaElf	K5-A	K5-B	92 mm	1995	6,4	m + c
Unocal	Q1-Halfweg	Q1-Hoorn-AP	12,75 * 2,375	1995	12,4	g + co + m
Unocal	Q1-Hoorn-AP	Q1-Halfweg	70,9 mm	1995	12,4	c
Unocal	Q1-Hoorn-AP	WGT-pipe (s)	12,75	1995	17,2	g + co
Unocal	Q1-Haven-A	Q1-Helder-AW	8,625	1995	5,8	o + w
Gaz de France	K11-B	K12-C	14 * 2,375	1995	16,1	g + m
Clyde	P2-NE	P6-A	10	1996	38,2	g
Clyde	P6-S	P6-B	203 mm	1996	6,5	g
TotalFinaElf	K4a-D	J6-A	183 mm	1997	7,3	g
TotalFinaElf	J6-A	K4a-D	86 mm	1997	7,3	c
TotalFinaElf	K5-EN/C	K5-D	303 mm	1997	2,8	def.verl.
TotalFinaElf	K5-D	K5-EN/C	101 mm	1997	2,8	gl
TotalFinaElf	K5-B	K5-EN/C	70 mm	1997	6,2	c
NAM	K14-FA-1P	K15-FB-1	16	1997	16,6	g
NAM	K14-FB-1	K14-FA-1P	10,75	1997	9,2	g + co
NAM	K14-FA-1P	K14-FB-1	3,65	1997	9,2	c
NAM	L9-FF-1P	NOGAT-pipe (s)	24	1997	19,3	g + co
Gaz de France	L10-S2	L10-AP	6,625 * 2,375	1997	6,3	g + m
Gaz de France	L10-AP	L10-S2	84 mm	1997	7,0	c
Gaz de France	L10-S3	L10-AP	6,625 * 2,375	1997	1,9	g + gl
Gaz de France	K12-E	L10-S3	3,5	1997	4,5	c
Gaz de France	L10-S4	L10-AP	6,625 * 2,375	1997	8,3	g + m

Operator	From	To	Diameter (inch)	Laid (year)	Length (km)	Carries
Gaz de France	L10-AP	L10-S4	84 mm	1997	8,4	c
NAM	K7-FD-1	K8-FA-1	12	1998	9,4	g + co
NAM	K7-FD-1	K8-FA-1	3,4	1998	9,4	c
NAM	K8-FA-1	K14-FA-1C	24	1998	30,9	g
NAM	Q16-FA-1	P18-A	8,625	1998	10,3	g + co
NAM	P18-A	Q16-FA-1	2,375	1998	10,3	m
NAM	Q16-FA-1	P18-A	3,4	1998	10,3	c
TotalFinaElf	K4-A	K5-A	12 * 3	1998	6,9	g + gl
TotalFinaElf	K4-A	K5-A	68 mm	1998	6,9	c
TotalFinaElf	K6-GT	L4-B	10 * 3	1998	10,7	g + gl
NGT	D15-FA-1	L10-AC	36	1999	140,7	g
TotalFinaElf	L4-PN	L4-A	8	1999	11,4	g
TotalFinaElf	L4-A	L4-PN	2,5	1999	11,4	gl
Gaz de France	K9ab-B	D15-FA-1 / L10-A (s)	10	1999	0,1	g
Clyde	Q4-A	P6-A	14	2000	35,2	g + co
Gaz de France	L10-M	L10-AP	10,75 * 2,375	2000	11,9	g + m
TotalFinaElf	K4-BE	K4-A	9,5	2000	8,0	g
TotalFinaElf	K4-A	K4-BE	2,5	2000	8,0	gl
Veba	F2-A-Hanze	TMLS	16	2000	1,5	o
Wintershall	Duitsland (A6)	F3-FB-1P	20 + 4	2000	119,0	g + co
Wintershall	L8-A-West	L8-P4	6	2000	10,2	g + co
Wintershall	L8-P4	L8-A-West	4	2000	10,2	c
Wintershall	L8-P	L8-P4	12	2000	2,8	g
Wintershall	L8-P4	NGT-pipe (s)	16	2000	28,0	g + co
Veba	F2-A-Hanze	A6 / B4 (s)	4	2001	0,1	g
Veba	F2-A-Hanze	A6 / B4 (s)	62,1 mm	2001	0,1	c
Veba	F2-A-Hanze	TMLS	62,1 mm	2001	1,5	c
TotalFinaElf	K5-EN/C	K5-D	10,75	2001	2,7	g
TotalFinaElf	K1-A	J6-A	14 * 3,5	2001	9,1	g + gl
NGT	G17d-A	NGT-pipe (s)	18	2001	64,5	g
Gaz de France	K12-G	L10-AP	14 + 2	2001	15,6	g + m
Clyde	P6-D	P6-B	12	2001	6,8	g
Gaz de France	K12-S2	K12-C	6.625	2002	6,9	g
Gaz de France	K12-S2	K12-C	95.5 mm	2002	6,9	c
Clyde	Q4-B	Q4-A	10.75	2002	7,3	g
Clyde	Q4-C	Q1-Hoorn	16 * 2	2002	14,3	g + gl

- \* = multiple pipeline  
+ = laid separately  
c = control cable  
o = oil  
g = gas  
co = condensate  
gl = glycol  
m = methanol  
ci = corrosion inhibitor  
l = instrument air  
(s) = side-tap  
def.verl. = abandoned

## PRODUCTION FIGURES 2002

### Natural Gas

Continental Shelf		million m <sup>3</sup> (st)	Q4 Q8 Q16a	(Clyde) (Clyde) (NAM)	626.7 23.2 471.8
D12a	(Wintershall)	213.0	<b>Total</b>		<b>26 770.1</b>
D15	(NAM)	395.6	<b>Netherlands Territory</b>		
F2a	(Petro-Canada)	125.5	<b>million m<sup>3</sup> (st)</b>		
F3	(NAM)	991.4	Akkrum	(Chevron)	0.0
F6a	(TotalFinaElf)	50.3	Bergen	(BP Nederland)	621.7
F15a	(TotalFinaElf)	538.6	Botlek	(NAM)	508.6
G17c & d	(Gaz de France)	224.8	De Marne	(NAM)	23.4
J3a	(TotalFinaElf)	517.4	Drenthe	(NAM)	1 660.1
J3b-J6	(Lasmø)	636.8	Gorredijk	(TotalFinaElf)	200.2
K1a	(TotalFinaElf)	38.3	Groningen	(NAM)	31 294.4
K4a	(TotalFinaElf)	938.6	Hardenberg	(NAM)	88.9
K4b-K5a	(TotalFinaElf)	1 525.5	Leeuwarden	(TotalFinaElf)	240.1
K5b	(TotalFinaElf)	190.7	Middelie	(NAM)	130.0
K6-L7	(TotalFinaElf)	1 834.1	Noord-Friesland	(NAM)	3 758.4
K7	(NAM)	641.6	Oosterend	(TotalFinaElf)	17.4
K8-K11	(NAM)	871.9	Rijswijk	(NAM)	2 512.6
K9a & b	(Gaz de France)	646.6	Rossum-De Lutte	(NAM)	95.6
K9c	(Gaz de France)	253.0	Schoonebeek	(NAM)	1 712.3
K10a	(Wintershall)	60.7	Slootdorp	(TotalFinaElf)	34.6
K10b & c	(Wintershall)	26.2	Steenwijk	(TotalFinaElf)	150.0
K12	(Gaz de France)	1 007.0	Tietjerksteradeel	(NAM)	934.6
K14	(NAM)	723.9	Tubbergen	(NAM)	96.4
K15	(NAM)	734.1	Twente	(NAM)	1.4
K18a & b	(Clyde)	1.1	Waalwijk	(Clyde)	201.1
L1a & d	(TotalFinaElf)	191.1	Zuidwal	(TotalFinaElf)	190.4
L2	(NAM)	195.3	<b>Total</b>		<b>44 472.4</b>
L4a	(TotalFinaElf)	655.9	<b>Underground gas storage</b>		
L5a	(NAM)	519.5	<b>million m<sup>3</sup> (st)</b>		
L8a	(Wintershall)	120.9	Injection		- 1 328.5
L8b	(Wintershall)	1 529.1	Production		800.8
L9a & b	(NAM)	4 226.8	<b>Total</b>		<b>- 527.8</b>
L10-L11a	(Gaz de France)	1 178.1	<b>Total Netherlands</b>		
L11b	(Unocal)	39.8	<b>million m<sup>3</sup> (st)</b>		
L12b-L15b	(NAM)	364.4	Territory		44 472.4
L13	(NAM)	472.2	Continental Shelf		26 770.1
L16a	(Clyde)	1.2	Underground gas storage		- 527.8
M9a	(NAM)	0.0	<b>Total</b>		<b>70 714.8</b>
P2a	(Clyde)	0.0			
P6	(Clyde)	682.6			
P9a & b	(Unocal)	1.1			
P9c	(Unocal)	2.8			
P11a	(Wintershall)	22.0			
P12	(Clyde)	84.3			
P14a	(Wintershall)	214.7			
P15a & b	(BP Nederland)	571.5			
P15c	(BP Nederland)	56.1			
P18a	(BP Nederland)	1 038.5			
P18c	(BP Nederland)	160.8			
Q1	(Unocal)	113.9			
Q2c	(Unocal)	19.7			

## PRODUCTION FIGURES 2002

### Oil and Condensate

Oil production		1 000ton	1 000 m <sup>3</sup> (st)
Rijswijk	(NAM)	386.5	439.0
F2a	(Petro-Canada)	1 291.9	1 556.9
F3	(NAM)	152.2	216.3
F6a	(TotalFinaElf)	11.7	16.6
K18a & b	(Clyde)	76.8	88.6
L16a	(Clyde)	48.0	55.9
P9a & b	(Unocal)	18.3	21.4
P9c	(Unocal)	46.8	54.7
Q1	(Unocal)	203.2	225.9
<b>Total Netherlands</b>		<b>2 235.4</b>	<b>2 675.4</b>

Condensate production	1 000 m <sup>3</sup> (st)
from onshore gas fields	442.2
from offshore gas fields	676.4
<b>Total</b>	<b>1 118.6</b>

\* Condensate is a liquid which is obtained at the production of natural gas. This liquid is also referred to as natural gasoline or natural gas liquids (NGL).

**OIL PRODUCTION**  
**in 1 000 m<sup>3</sup> (st)**

<b>Year</b>	<b>Production licence Schoonebeek</b>	<b>Production licence Rijswijk</b>	<b>Continental Shelf</b>	<b>Total</b>
up to 1969	21 662.8	15 587.2	--	37 250.0
1970	976.0	1 112.2	--	2 088.2
71	940.7	926.8	--	1 867.5
72	856.3	883.1	--	1 739.4
73	838.2	787.4	--	1 625.6
74	878.0	715.5	--	1 593.5
1975	877.0	671.5	--	1 548.5
76	891.9	605.2	--	1 497.1
77	890.8	617.8	--	1 508.6
78	862.3	667.8	--	1 530.1
79	820.4	615.6	--	1 436.0
1980	778.9	617.7	--	1 396.6
81	839.2	596.5	--	1 435.7
82	987.9	625.3	159.7	1 772.9
83	960.0	655.6	1 209.1	2 824.7
84	846.9	615.6	1 921.7	3 384.2
1985	734.5	602.8	2 825.4	4 162.7
86	658.9	688.8	3 889.7	5 237.4
87	556.4	692.5	3 607.8	4 856.7
88	536.0	844.9	3 032.9	4 413.8
89	464.3	731.6	2 634.5	3 830.4
1990	463.0	784.9	2 744.5	3 992.4
91	366.0	777.3	2 527.9	3 671.2
92	379.3	907.3	1 920.7	3 207.3
93	454.0	849.0	1 709.8	3 012.8
94	406.4	811.4	2 804.8	4 022.6
1995	268.3	760.9	2 182.1	3 209.3
96	23.2	856.5	1 767.2	2 647.0
97	-	917.6	1 556.8	2 474.4
98	-	810.4	1 218.9	2 029.3
99	-	714.6	1 173.2	1 887.8
2000	-	776.1	936.4	1 712.5
01	-	542.2	1 085.4	1 627.6
02	-	439.0	2 236.4	2 675.4
<b>Total</b>	<b>40 217.6</b>	<b>39 808.6</b>	<b>43 144.9</b>	<b>123 171.1</b>

**OIL RESERVES AND CUMULATIVE PRODUCTION**  
**in million m<sup>3</sup> (st)**

	Territory		Continental Shelf		Total		
	as per 1st January	remaining expected reserves	cumulative production	remaining expected reserves	cumulative production	remaining expected reserves	cumulative production
1970		36	37.3	.	-	36	37.3
71		34	39.3	.	-	34	39.3
72		32	41.2	.	-	32	41.2
73		29	42.9	.	-	29	42.9
74		27	44.6	.	-	27	44.6
1975		40	46.2	14	-	54	46.2
76		51	47.7	14	-	65	47.7
77		49	49.2	16	-	65	49.2
78		46	50.7	7	-	53	50.7
79		44	52.2	9	-	53	52.2
1980		43	53.7	11	-	54	53.7
81		41	55.1	14	-	55	55.1
82		39	56.5	20	-	59	56.5
83		38	58.1	49	0.2	87	58.3
84		37	59.7	41	1.4	78	61.1
1985		41	61.2	34	3.3	75	64.5
86		42	62.5	36	6.1	78	68.6
87		40	63.9	35	10.0	75	73.9
88		41	65.1	33	13.6	74	78.7
89		39	66.5	32	16.6	71	83.1
1990		41	67.7	27	19.3	68	87.0
91		40	69.0	24	22.0	64	91.0
92		38	70.1	26	24.6	64	94.7
93		37	71.4	24	26.5	61	97.9
94		35	72.7	23	28.2	58	100.9
1995		34	73.9	22	31.0	56	104.9
96		33	75.0	17	33.2	50	108.1
97		33	75.8	22	34.9	55	110.8
98		12	76.7	25	36.5	37	113.2
99		8	77.5	26	37.7	34	115.2
2000		7	78.2	25	38.9	32	117.1
01		6	79.0	24	39.8	30	118.8
02		5	79.5	23	40.9	28	120.4
03		5	79.9	23	43.1	28	123.0

**NATURAL GAS PRODUCTION**  
**in million m<sup>3</sup> (st)**

<b>Year</b>	<b>Territory</b>	<b>Continental Shelf</b>	<b>Total</b>
up to 1969	55 113.1	-	55 113.1
1970	33 417.8	7.9	33 425.7
71	46 248.3	2.4	46 250.7
72	61 661.1	1.4	61 662.5
73	74 765.9	7.8	74 773.7
74	88 358.7	14.6	88 373.3
1975	93 924.0	963.3	94 887.3
76	98 307.4	3 092.7	101 400.1
77	95 603.2	5 479.6	101 082.8
78	86 475.0	6 298.5	92 773.5
79	85 861.9	10 925.5	96 787.4
1980	78 208.9	12 102.0	90 310.9
81	70 928.3	11 798.3	82 726.6
82	60 004.3	11 073.3	71 077.6
83	61 533.0	13 172.2	74 705.2
84	59 351.6	15 787.3	75 138.9
1985	64 573.4	16 070.9	80 644.3
86	58 479.5	15 549.0	74 028.5
87	58 088.8	17 271.4	75 360.2
88	49 092.4	17 591.2	66 683.6
89	52 569.6	19 300.0	71 869.6
1990	54 585.4	17 856.0	72 441.4
91	63 724.1	18 686.3	82 410.4
92	65 701.6	17 279.0	82 980.6
93	66 154.0	17 851.4	84 005.4
94	54 863.3	23 536.9	78 400.2
1995	53 643.0	24 706.9	78 349.9
96	62 295.2	27 350.6	89 645.8
97	54 261.2	27 581.1	81 842.3
98	52 764.2	27 141.2	79 905.4
99	42 823.3	29 206.9	72 030.2
2000	40 320.2	27 473.9	67 794.1
01	43 220.8	29 043.1	72 263.9
02	44 472,4	26 770,1	71 242,5
<b>Totaal</b>	<b>2 131 394,9</b>	<b>490 992,7</b>	<b>2 622 387,6</b>



**NATURAL GAS RESERVES AND GROSS CUMULATIVE PRODUCTION**  
**in billion m<sup>3</sup> (st)**

as per 1 <sup>st</sup> January	Territory		Continental Shelf		Total	
	remaining expected reserves	cumulative production	remaining expected reserves	cumulative production	remaining expected reserves	cumulative production
1974	2 243	271.2	211	0.0	2 454	271.2
1975	.	359.6	.	0.0	.	359.6
76	2 137	453.5	340	1.0	2 477	454.5
77	2 030	551.8	367	4.1	2 397	555.9
78	1 996	646.9	363	9.6	2 359	656.5
79	1 928	732.9	343	15.9	2 271	748.8
1980	2 023	818.3	304	26.8	2 327	845.1
81	1 953	896.5	298	38.9	2 251	935.4
82	1 899	967.4	275	50.7	2 174	1 018.1
83	1 845	1 027.4	272	61.8	2 117	1 089.2
84	1 809	1 088.9	271	74.9	2 080	1 163.8
1985	1 754	1 148.3	281	90.7	2 035	1 239.0
86	1 704	1 121.9	290	106.8	1 994	1 319.7
87	1 655	1 271.3	300	122.3	1 955	1 393.6
88	1 607	1 330.8	303	139.6	1 910	1 470.4
89	1 557	1 380.0	320	157.2	1 877	1 537.2
1990	1 524	1 432.6	341	176.5	1 865	1 609.1
91	1 780	1 487.1	333	194.4	2 113	1 681.5
92	1 739	1 550.9	347	213.0	2 086	1 763.9
93	1 705	1 616.6	356	230.3	2 061	1 846.9
94	1 658	1 682.7	352	248.2	2 010	1 930.9
1995	1 663	1 737.6	334	271.7	1 997	2 009.3
96	1 631	1 791.2	321	296.4	1 952	2 087.7
97	1 587	1 853.5	343	323.8	1 930	2 177.3
98	1 574	1 907.7	373	351.4	1 947	2 259.1
99	1 533	1 960.6	360	378.5	1 893	2 339.0
2000	1 499	2 001.3	337	407.7	1 836	2 409.0
01	1 447	2 043.7	330	435.1	1 777	2 478.8
02	1 406	2 086.9	333	464.2	1 738	2 551.0
03	1 362	2 131.4	327	491.0	1 689	2 622.4

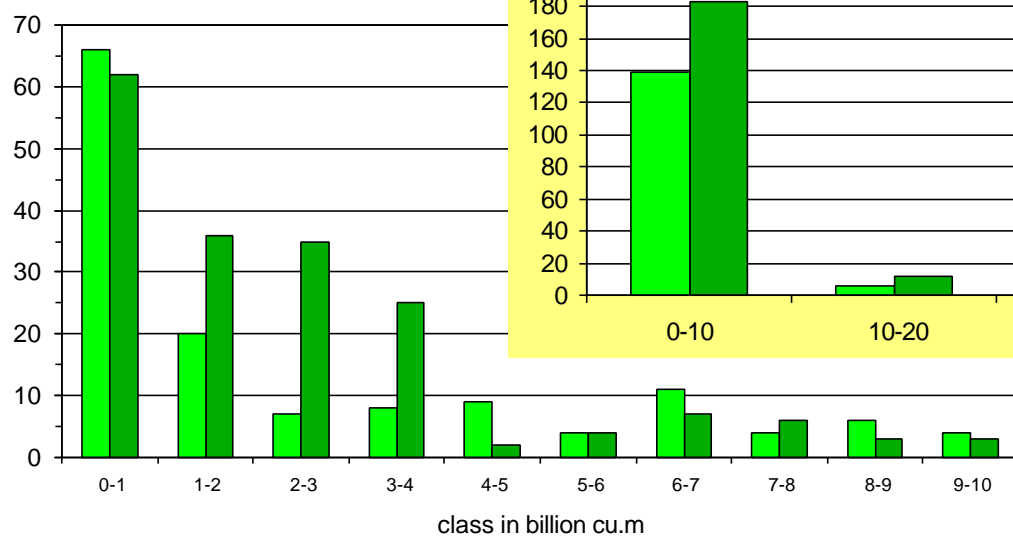
## FIELD SIZE DISTRIBUTION OF GASFIELDS

based on Expected Initial Reserves in billion m<sup>3</sup> (st).

Class	Territory	Continental Shelf	Total
0 tot 1	66	62	128
1 tot 2	20	36	56
2 tot 3	7	35	42
3 tot 4	8	25	33
4 tot 5	9	2	11
5 tot 6	4	4	8
6 tot 7	11	7	18
7 tot 8	4	6	10
8 tot 9	6	3	9
9 tot 10	4	3	7
10 tot 20 = 20	6 8 *	12 5	18 13 *
<b>Total</b>	<b>153</b>	<b>200</b>	<b>353</b>

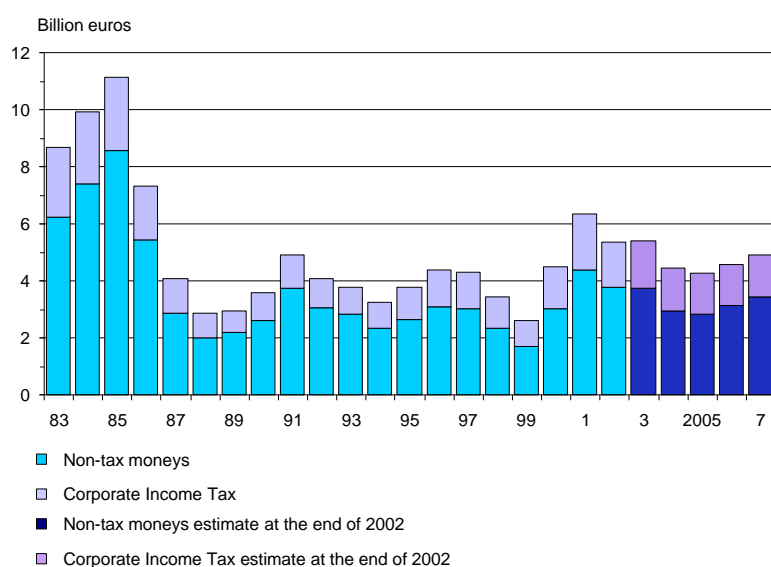
\* including Groningen gasfield (more than 100 billion m<sup>3</sup>)

number of fields



■ Territory  
■ Continental Shelf

## NATURAL GAS REVENUES 1983 – 2007



Year	Non-tax moneys	Corporate Income Tax	Total
	€	€	€
83	6.22	2.45	8.67
84	7.40	2.54	9.94
1985	8.58	2.54	11.12
86	5.45	1.86	7.31
87	2.86	1.23	4.09
88	2.00	0.86	2.86
89	2.18	0.78	2.96
1990	2.61	0.96	3.57
91	3.72	1.17	4.89
92	3.04	1.02	4.06
93	2.83	0.95	3.78
94	2.34	0.91	3.25
1995	2.64	1.13	3.77
96	3.10	1.26	4.36
97	3.01	1.30	4.31
98	2.33	1.12	3.45
99	1.69	0.92	2.61
2000	3.02	1.47	4.49
01	4.36	1.97	6.33
02	3.78	1.57	5.35
03	3.73	1.68	5.41
04	2.94	1.52	4.46
2005	2.84	1.43	4.27
06	3.12	1.46	4.58
07	3.43	1.47	4.90

\* Non-tax moneys consist of: bonus, surface rental, royalties, the State profit share, the special payments to the State on production from the Groningen field and the profit distributed by Energie Beheer Nederland B.V., the participant in the production on behalf of the State.

## Organizations concerned with mining activities

### Ministry of Economic Affairs, Energy Production directorate

Works on ...

- Reliable, efficient, cleaner production and conversion of energy in the Netherlands
- Optimal development of natural resources in the Netherlands
- Sustainable use of the deep subsurface

Via ...

- Mutual co-ordination of energy production and environmental and physical planning policies
- Provision for a good business climate, in both national and international terms
- Provision for a stable mining climate
- Production and optimal use of available natural resources
- Effective and efficient implementation of mining law
- Provision for revenues from production of minerals
- Research and development in the fields of nuclear energy and radioactive waste
- Balanced conditions for production and conversion of energy
- Stimulation of the application of renewable energy sources, among others through support of research, development and demonstrations
- Removal of administrative constraints to the application of renewable energy

address: Ministry of Economic Affairs  
Directorate-General for Energy  
Energy Production Directorate

Bezuidenhoutseweg 6  
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E-mail : ezinfo@postbus51.nl  
www.minez.nl

## **Netherlands Institute of Applied Geoscience - National Geological Survey (TNO-NITG)**

The task of TNO-NITG is to advise the Minister on geological matters, in particular those relating to exploration for and production of natural resources. TNO-NITG also maintains interprets and processes data which become available during the exploration for and production of natural resources or otherwise.

address: Netherlands Institute of Applied Geoscience – National Geological Survey  
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## **State Supervision of Mines**

(a department of the Ministry of Economic Affairs)

The State Supervision of Mines supervises reconnaissance surveys, exploration and production activities concerning natural resources and geothermal energy and underground storage. Further the State Supervision of Mines advises on mining activities and licences and has a task as enforcer of the legislation of the mining sector

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## Definition of selected terms

### **Territory or Netherlands territory:**

in this review, territory and Netherlands territory denotes: the Netherlands mainland and that part of the Netherlands territorial waters located on the landward side of the line referred to in article 1, sub c, of the Mining Act.

### **Continental Shelf:**

in this review, Continental Shelf denotes: that part of the Continental Shelf over which the Kingdom of the Netherlands has sovereign rights and which is located on the seaward side of the line referred to in article 1, sub c, of the Mining Act.

### **Reconnaissance licence:**

a licence to carry out a reconnaissance survey on the Continental Shelf; as from the 1 January 2003 a reconnaissance survey is only required for certain areas.

### **Exploration licence:**

a licence to carry out exploration for the mineral resources specified in the licence.

### **Production licence:**

a licence to produce the mineral resources specified in the licence, and also to carry out exploration for these mineral resources.

### **Seismic surveying:**

this review differentiates between 2D and 3D seismic techniques. Two-dimensional seismic surveying has a long tradition in the oil industry. This seismic technique is based on vibrations that are generated along a line on the earth's surface. These vibrations are reflected by the layers in the earth's crust and the reflections are recorded by geophones or hydrophones. Because the vibrations do not always propagate solely in the vertical plane underneath the recording line, the representations of geological structures in 2D seismic sections only approximate the real situation. This approximation is far better for a 3D seismic survey, in which a large number of recording lines are positioned close together in a relatively small surface area. Modern electronic data processing makes it possible to correct for deviations of the wave fronts that are not in the vertical plane underneath an individual recording line, and thus permits generating an accurate model of the geological structures at any desired location.

### **Wells:**

- exploration well (or wildcat): a well to explore a prospective underground accumulation of oil and/or gas
- appraisal well: a well drilled in order to establish the volume and extent of a reservoir after an exploration well has found hydrocarbons;
- development well: a well drilled in order to bring the reservoir on stream;

**Gas field/oil field:**

A natural, isolated accumulation of gas and/or oil in a subsurface reservoir consisting of a porous rock that is capped or enclosed by an impermeable rock.

**Reserves (categories and definitions):**

In the following definitions, natural gas and oil are referred to collectively as hydrocarbons.

**1 Gas/Oil Initially in Place**

The total volume of hydrocarbons in a reservoir that is initially (originally) present in a reservoir. This volume is calculated on the basis of the mean values of the parameters used in the calculations.

**2 Expected Initial Reserves**

The total volume of hydrocarbons in a reservoir that is estimated to be ultimately recoverable. This volume is calculated on the basis of the mean values of the parameters used in the calculations.

**3 Proven Initial Reserves**

The volume of hydrocarbons in a reservoir that is estimated to be ultimately recoverable, with an expectation-curve probability of 90%.

**4 Remaining Expected Reserves**

That part of the expected initial reserves remaining after subtraction of the cumulative production, i.e. the total volume of hydrocarbons produced from the reservoir concerned by the end of the year under review.

**5 Remaining Proven Reserves**

The volume - based on the 90% expectation-curve value - of hydrocarbons that can still be extracted from a reservoir. This volume is calculated by subtracting the cumulative production from the Proven Initial Reserves.

The term 'expected' in the definitions above should be interpreted in the statistical sense of the word. The stated figure represents the expected value. The following explanation may be useful.

All data that are used for the purpose of calculating reserves have an intrinsic uncertainty.

By processing these uncertainties statistically, an expectation curve can be determined for each reservoir. This is a cumulative probability distribution curve, i.e. a graph in which reserve values are plotted against the associated probabilities that these values will be achieved or exceeded. As production from a hydrocarbon reservoir progresses, several uncertainties decrease and the expected value will deviate less and less from the 50% value on the cumulative probability distribution curve. In practice, the stated reserves of a given field are the expected values. This is the most realistic estimate available of the volume of hydrocarbons actually present in a reservoir.

Recoverability of hydrocarbons from an accumulation is determined by the geological and reservoir characteristics of that accumulation, the recovery techniques available at the reporting date, and the economic conditions prevailing at that time.

**Probabilistic summation of the proven reserves:**

In this method, the probability distributions of the reserves of the individual fields are combined.

This way, the uncertainties inherent to all reserve estimates are accounted for. The result of applying the probabilistic summation method is that the total figure obtained for the proven reserves according to the definition, now indeed represents the proven proportion of total Dutch reserves in a statistically more reliable manner. In other words, there is a 90% probability that reserves will actually exceed the value stated.

**Units:**

Natural gas and oil reserves are stated in terms of m<sup>3</sup> at a pressure of 101,325 kPa (or 1.01325 bar) and 15°C. This m<sup>3</sup> is determined as the standard cubic metre in Standard 5024-1976 (E) of the International Organization for Standardization (ISO), and is usually abbreviated as m<sup>3</sup>(st).

In some cases, natural gas volumes are also reported in terms of Groningen Natural Gas equivalent, which has a gross calorific value of 35.17 MJ/m<sup>3</sup> at 0°C and 101,325 kPa (or 1.01325 bar) absolute. For this purpose, the volumes of natural gas from various fields that produce different qualities of gas are restated, in terms of combustion heat, as the (nominal) volumes that would be measured if each field were to produce gas of the same quality as that from the Groningen reservoir. The term Groningen Natural Gas equivalent is commonly used by N.V. Nederlandse Gasunie.

Figures stated in Groningen Natural Gas equivalent can be converted simply into equivalents for other fuels, such as Tons Oil Equivalent (TOE) and Coal Equivalent (CE).

Fuel name	Expressed in	Giga joules	Giga calories	Oil equiv. tonnes	Oil equiv. barrels	Coal equivalent tonnes	Natural Gas equivalent 1,000 m <sup>3</sup>
Firewood (dry)	tonnes	13.51	3.23	0.32	2.36	0.46	0.43
Coal	tonnes	29.30	7.00	0.70	5.11	1.00	0.93
Lignite	tonnes	17.00	4.06	0.41	2.96	0.58	0.54
Coke	tonnes	28.50	6.81	0.68	4.97	0.97	0.90
Coke oven gas	1,000 m <sup>3</sup>	17.60	4.20	0.42	3.07	0.60	0.56
Blast furnace gas	1,000 m <sup>3</sup>	3.80	0.91	0.09	0.66	0.13	0.12
Crude oil	tonnes	42.70	10.20	1.02	7.45	1.46	1.35
Oil equivalent	tonnes	41.87	10.00	1.00	7.30	1.43	1.32
Refinery gas	1,000 m <sup>3</sup>	46.10	11.01	1.10	8.04	1.57	1.46
LPG	1,000 m <sup>3</sup>	45.20	10.79	1.08	7.88	1.54	1.43
Naphtha	tonnes	44.00	10.51	1.05	7.67	1.50	1.39
Jet fuel	tonnes	43.49	10.39	1.04	7.58	1.48	1.37
Gasoline	tonnes	44.00	10.51	1.05	7.67	1.50	1.39
Kerosene	tonnes	43.11	10.29	1.03	7.52	1.47	1.36
Light fuel oil	tonnes	42.70	10.20	1.02	7.45	1.46	1.35
Heavy fuel oil	tonnes	41.00	9.79	0.98	7.15	1.40	1.30
Petroleum cokes	tonnes	35.20	8.41	0.84	6.14	1.20	1.11
Natural gas	1,000 m <sup>3</sup>	31.65	7.56	0.76	5.52	1.08	1.00
Electricity *	MWh	3.60	0.86	0.09	0.63	0.12	0.11

\* In this energy conversion table, the energy value of an MWh electricity is to be understood as the energy content of a generated unit of electricity. In order to produce this unit of energy, more energy is necessary. The amount of energy required depends on the efficiency of the conversion.

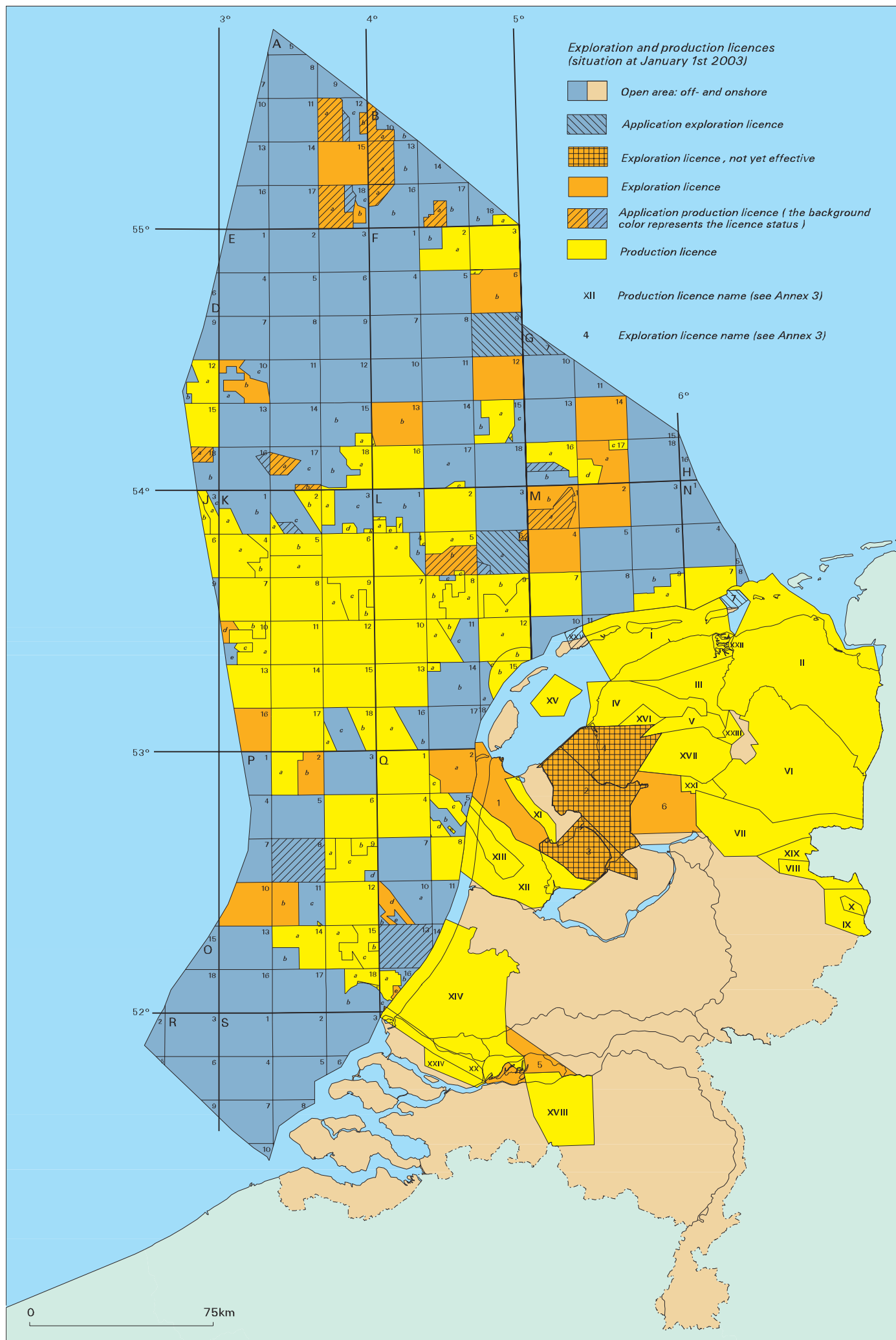




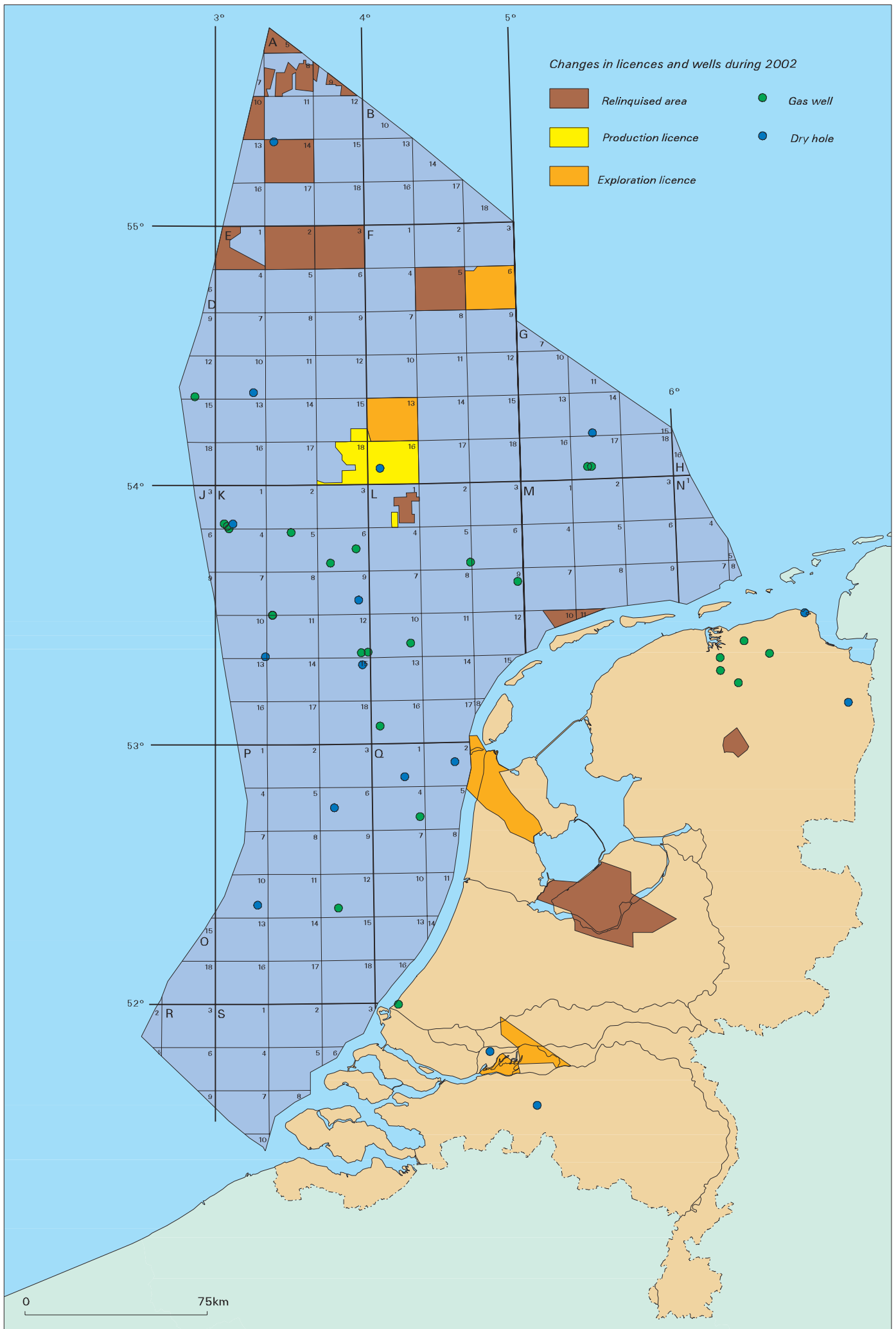
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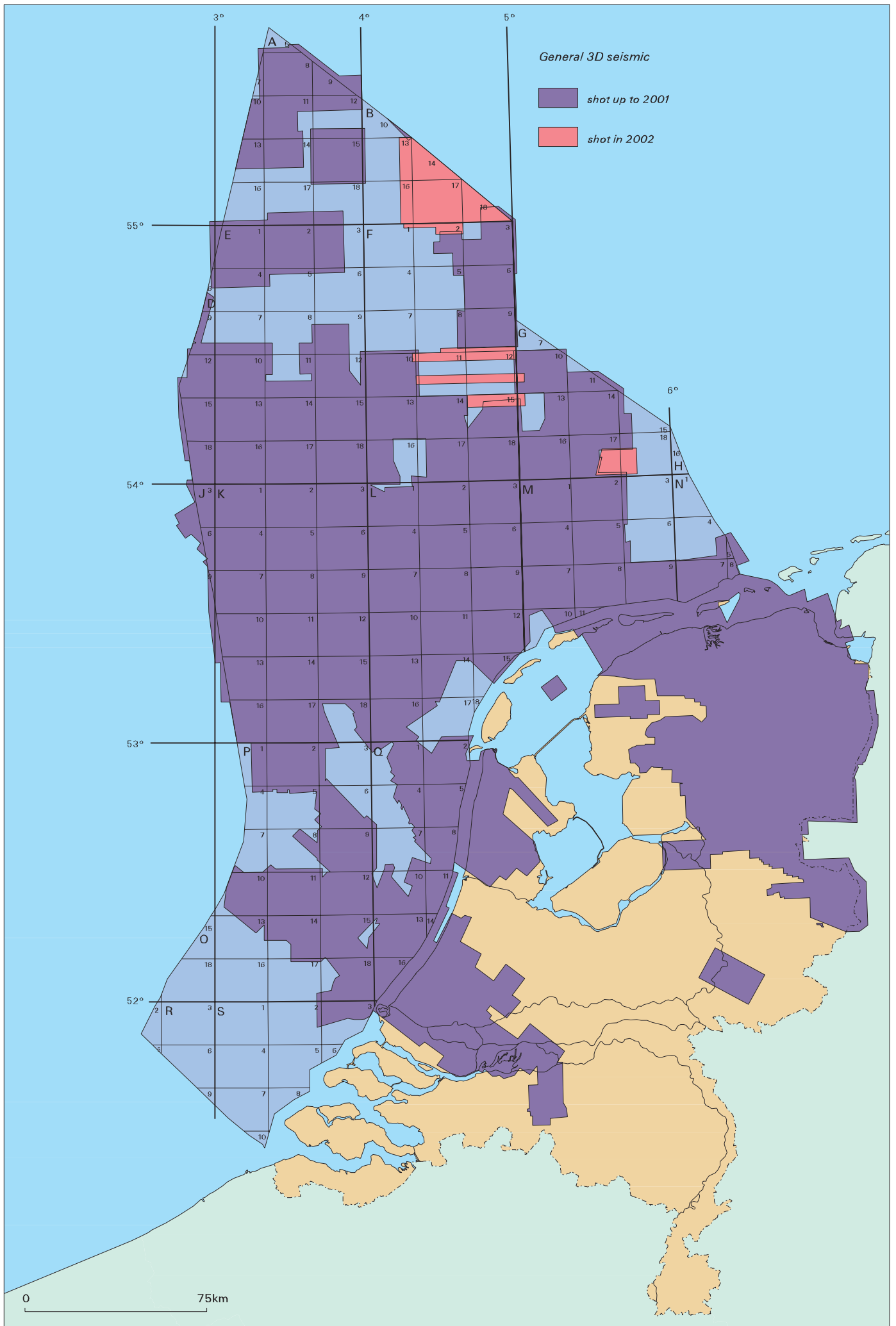






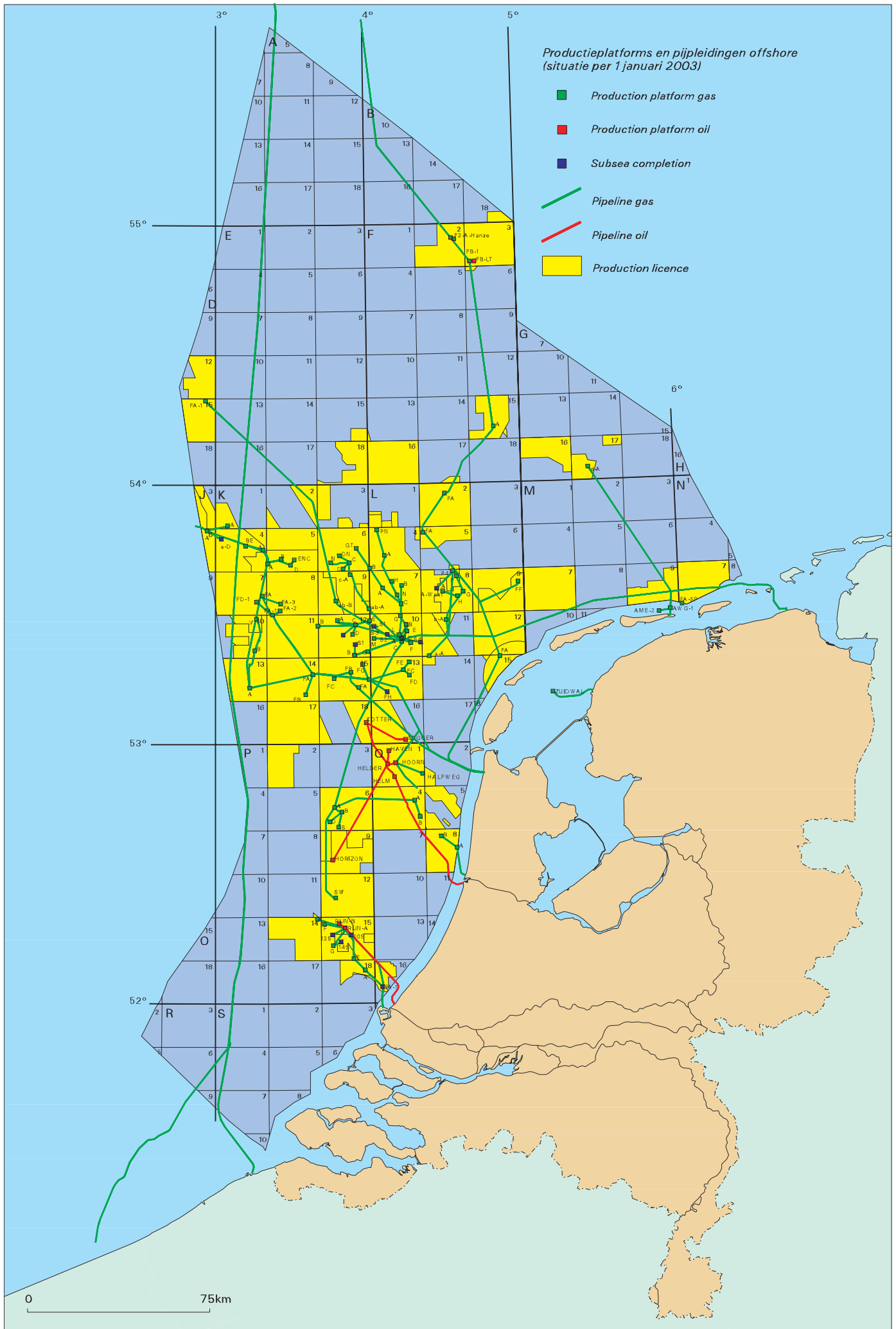




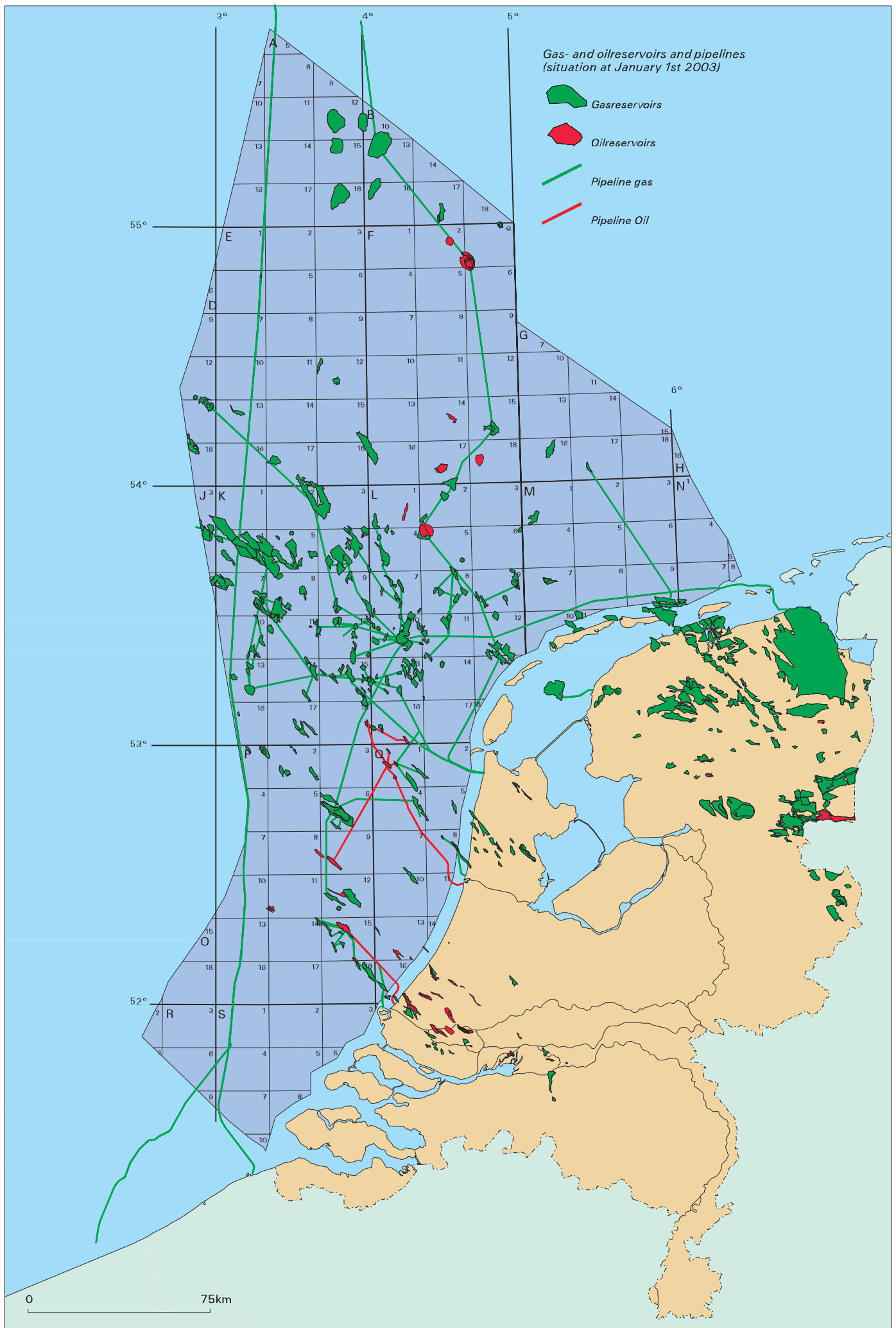








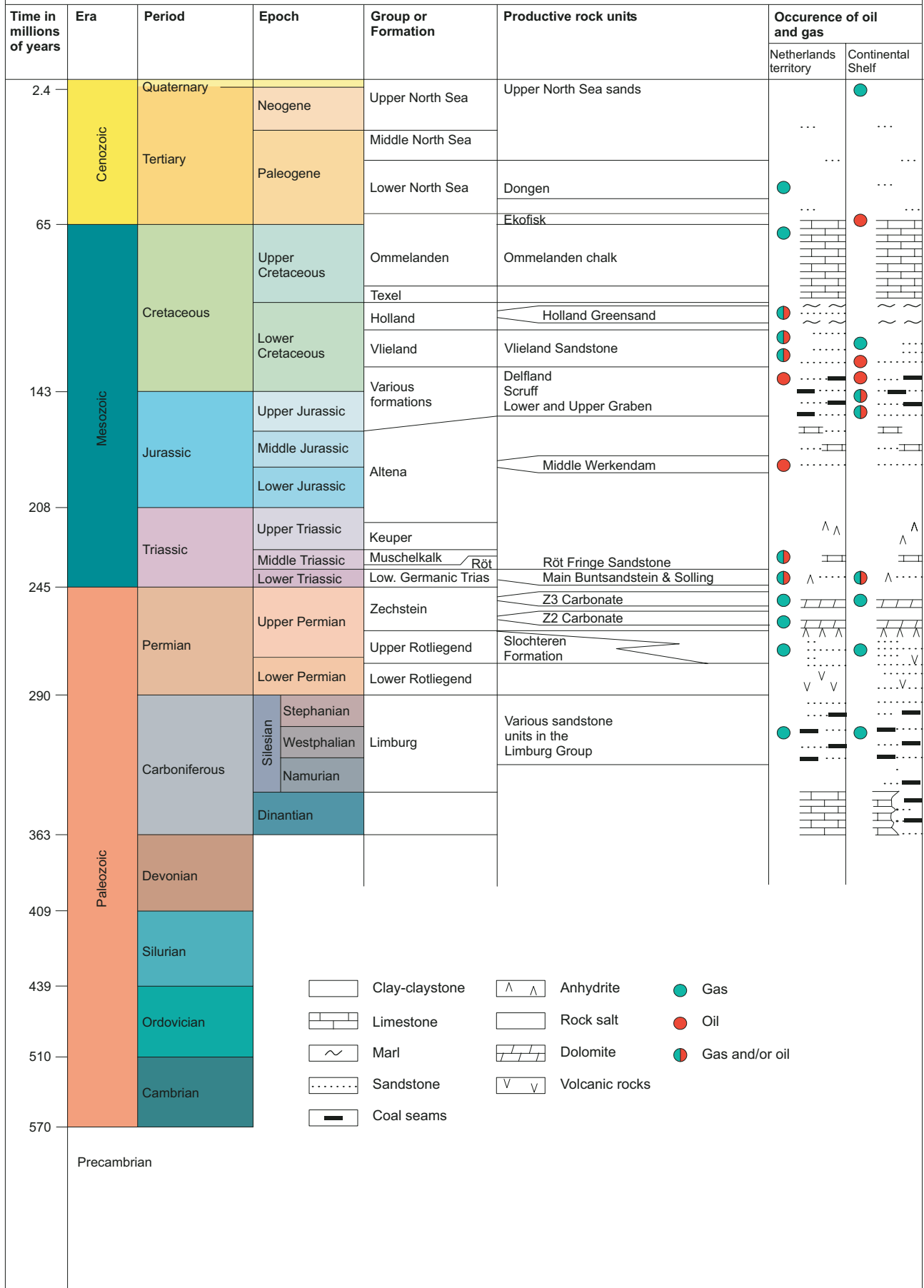




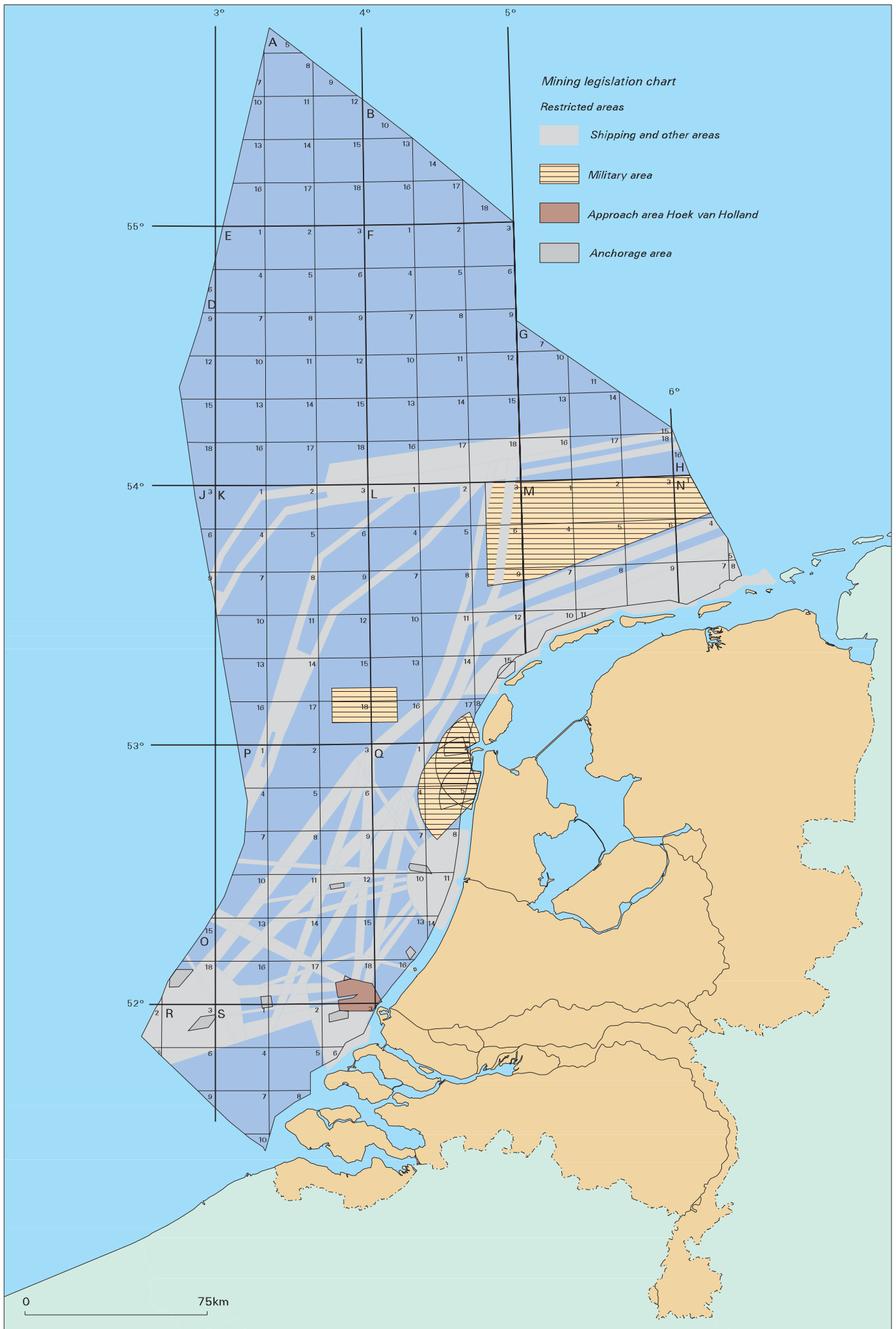


# Geological time scale

with composite stratigraphic column  
of the Netherlands and the Continental Shelf













Ministry of Economic Affairs  
Directorate-General for Competition and Energy

May 2003

