

**Natural gas
and oil
of the
Netherlands**

1986



NATURAL GAS AND OIL OF THE NETHERLANDS
1986 ANNUAL REVIEW

A review of hydrocarbon exploration and
production in the Netherlands and in the
Netherlands sector of the Continental Shelf.

Ministry of Economic Affairs
The Hague, August 1987

Copies of the report are obtainable from
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Cover photo

Positioning of the L13-FC-1 platform

(Nederlandse Aardolie Maatschappij B.V. c.s.)

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FOREWORD

Each year, the Ministry of Economic Affairs reports on developments in the field of exploration for and production of hydrocarbons in the Netherlands and in the Netherlands sector of the Continental Shelf. We are pleased to note the annually rising number of requests for this review (of which this is the English translation of the original Dutch text).

The 1986 review deals with the customary subjects, namely:

- licences and concessions
- reconnaissance and exploration
- production
- reserves

In 1986, applications could be filed for exploration licences for the Netherlands sector of the Continental Shelf. Precisely in that period, at the beginning of 1986, a substantial fall in oil prices occurred on the international market. At the beginning of 1987 a total of 28 blocks or part of blocks had been allocated and were accepted, a result which - certainly in the light of the oil and gas prices now prevailing- may be called satisfactory.

The allocated blocks are spread over the Continental Shelf, a not unimportant factor to ensure a balanced exploration effort.

The Ministry of Economic Affairs, which under the Netherlands mining legislation is responsible for mining policy in all its aspects, has begun the preparatory work on framing an environmental impact

assessment (EIA) procedure concerning oil containing mixtures and oil-based drilling mud used by installations at sea.

This procedure forms an important part in the drafting, on the basis of the Mining Regulations Continental Shelf, of further rules to be laid down by the Minister of Economic Affairs in agreement with the Ministers of Transport & Public Works and of Housing, Physical Planning and Environment.

Oil and gas production in the Netherlands and on the North Sea has meanwhile been taking place for a considerable number of years. The cumulative gas production through 1986 is 1.39×10^{12} m³ (st), and the cumulative oil production 67×10^6 tons. This has made an important contribution to one of the main objectives of Dutch energy policy: the development and production of indigenous energy resources. To continue to meet this main objective is of indisputable importance for the future. To that end, maintenance of the stable legal and financial regime is a factor of inestimable significance.

The Director of General Energy Policy and Mining

P.A. Scholten

1. LICENCES AND CONCESSIONS

1.1 ONSHORE

1.1.1 Drilling licences

On 1st January, 1987 there were 20 licences in force for onshore exploratory drilling for oil and natural gas (see Annexes 1 and 19), of which one was granted in the course of the year under review, namely the "IJsselmeer" drilling licence held by Nederlandse Aardolie Maatschappij B.V.

In addition, during the same year the "Engelsmangat" drilling licence was granted to Placid International Oil Ltd., but, like the "Vlieland II" drilling licence applied for by Nederlandse Aardolie Maatschappij B.V. and granted in the preceding year, it was not yet in force owing to appeals instituted against the grant of these licences.

At the end of the year there were still five applications for a licence under consideration, namely "Buren" and "Zuid-Haarlem" held by Mobil, "Harderwijk" applied for by Petroland and "Drouwen" and "Onstwedde" applied for by N.V. Nederlandse Gasunie.

1.1.2 Concessions

In the course of 1986, two concession applications for gasstorage were filed by N.V. Nederlandse Gasunie, namely "Drouwen" and "Onstwedde". The concession application filed by Petroland B.V. in 1985 for the drilling licence area "Corredijk" is still under consideration.

1.1.3 Priority declarations

During the year under review, one priority declaration was issued, namely "Donkerbroek" to Cluff Oil. A list of priority declarations issued and still in force is shown in Table 1.1.

Table 1.1 Priority declarations issued

<u>Operator</u>	<u>Area</u>
Cluff Oil	Donkerbroek
Petroland B.V.	Zwolle
Petroland B.V.	Enschede
Nederlandse Aardolie Maatschappij B.V.	Biddinghuizen
Nederlandse Aardolie Maatschappij B.V.	Markerwaard

Annexes 1 and 2 give lists of the drilling licences and concessions in force.

Annex 19 shows a general map of the concession, drilling licence and priority declaration areas.

1.2 CONTINENTAL SHELF

1.2.1 General

Of the total area of the Dutch sector of the Continental Shelf, which covers 57,107 km², at year-end 1986 32,212 km² had been issued under exploration or production licences. A general chart is given in Annex 21.

1.2.2 Reconnaissance licences

In 1986, 11 reconnaissance licences were issued, namely 6 to contractors and 5 to oil companies. Table 1.2 shows the numbers of reconnaissance licences granted as from 1981.

Table 1.2 Reconnaissance licences granted annually

	1981	1982	1983	1984	1985	1986
Number	10	9	22	9	35	11

Summation of the surface area of the reconnaissance licences granted in 1986 comes to 18,289 km². The actual total area surveyed is smaller because of licence overlaps. Annex 3 contains specific data on each reconnaissance licence.

1.2.3 Exploration licences

No exploration licences were granted in the year under review. On the other hand, 6th round applications for oil and gas exploration were filed during the period from 1st January 1986 to 1st April 1986. Reference is made to section 1.2.5.

The exploration licences K9a,b held by Placid International Oil Company and Q8 held by B.P. Exploratie Maatschappij Nederland B.V. lapsed during 1986, because a production licence came into force. On 31st December 1986, the total number of exploration licences was 82 (see also Annex 4), covering an area of 23,852 km².

1.2.4 Production licences

In the course of the year under review, 2 production licences were granted. These are specified in Table 1.3.

Table 1.3 Production licences granted in 1986

Operator	block	surface	effective	off.Gaz.
	segment	area		
- B.P. Exploratie Maatschappij Nederland B.V.	Q8	247	15-09-86	187
- Placid Inter- national Oil Company Ltd.	K 9a,b	211	11-08-86	163

On 1st January 1987, the total number of production licences in force was 23, covering a total surface area of 8,360 km² (see Annex 5). In 1986, 3 new production licence applications were filed. Annex 6 lists the applications still under consideration at year-end 1986.

1.2.5 6th Round exploration licence application

The period during which no exploration licence applications could be filed ended on 1st January 1986 (Royal Decree of 21st December 1984, No. 48). From 1st January 1986 to 1st April 1986, oil and gas exploration licence applications could be filed for available blocks.

Licences were filed for 93 blocks or block segments with a total surface area of 15,771.4 km², representing 28% of the total surface area of the Netherlands sector of the Continental Shelf. Further details can be found in Annex 8a.

Well before the start of the 6th round, a publication appeared in the Official Gazette giving the areas for which applications could be filed. (Official Gazette of 3rd October 1985, No. 192; with rectification in the Official Gazette of 7th November 1985, No. 117, with supplement in the Official Gazette of 31st January 1986, No. 22).

The publication stated, among other things, that it was intended, subject to special restrictions, to make available the military shooting range off the North Holland coast situated in L17c, Q2c, and Q5c, open for exploration and production activities. It was further announced that licence holders for these areas would need further consent by the Minister of Economic Affairs in agreement with the Minister of Defence for carrying out seismic surveys and the positioning of mining installations. This consent would only be given on condition that the licence-holder provided a written declaration in advance that he would not hold the State liable in the case of detonation of explosives, save in the case of deliberate or negligent acts on the part of the State. Also, drilling installations would only be allowed to be present above sea level for short periods of time; production of oil and gas in the area concerned would likewise not be permitted with installations above sea level.

In addition, the publication announced the criteria which the applications would have to satisfy, and the procedure which would be followed for their assessment.

Besides the criteria already applied in previous rounds, such as the quality of the supporting geological report and the work programme, the announcement mentioned among other things a new additional criterion: in the event different applications for the same block could be regarded as more or less equivalent when assessed against the above-mentioned criteria, for the purpose of allocation attention would be paid to the degree in which the applicant contributes towards a balanced spread of exploration activities in the Netherlands sector of the Continental Shelf.

In the "open period" from 1st January 1986 to 1st April 1986, 15 different groups of companies filed 80 applications for exploration licences for in total 35 blocks or part of blocks. The 15 groups are made up of 53 companies. Annex 8b gives the composition of these groups, and the blocks or segments applied for by these groups.

After filing, the applications were assessed for completeness and admissibility; subsequently, for the purpose of further evaluation the Minister sought the advice of the Rijks Geologische Dienst (RGD; Geological Survey of the Netherlands) in Haarlem in order to assess the quality of the supporting geological reports. He also asked for an appraisal of the geological relevance of the work programmes.

In order to weigh the merits of the various applications as objectively as possible, the RGD performed a comparative study with reference to a large number of separate aspects. Previously, the RGD had submitted its assessment procedure and system to the Mijnraad (Mining Council) and the Council had declared itself in full agreement with the method chosen.

On 16th November 1986 the Director of the RGD submitted its advisory report to the Minister, who, consequently sent it to the Mining Council for its consideration.

Although it is outside the scope of the year under review, it may be noted here that the Council advised the Minister of Economic Affairs on 20th March 1987.

Subsequently, on 7th April 1987, the Minister proceeded to allocate the exploration licences according to the advice of the Mining Council (Annex 8c).

1.2.6

7th Round for applications for exploration licences

By Royal Decree of 22nd December 1986, No. 14 (Official Gazette 251), the period in which no exploration licence application can be filed was extended until 30th September 1988. From 1st October 1988, to 1st January 1989, applications for an exploration licence for oil and gas can be filed. It is expected that in this 7th round, the currently closed military area in the L, M and N quadrants will be opened up for exploration and production activities subject to restrictions still to be determined.

2. RECONNAISSANCE AND EXPLORATION

2.1. GEOPHYSICAL SURVEYS

2.1.1 Onshore

During the year under review a total of 2,386 km of 2D seismic surveying was carried out and 1,183 km² was surveyed in 3D. On the Veluwe and for the project "Regional onshore seismic survey with long registration time", Delft Geophysical B.V. performed a total of 453 km 2D seismic surveying on a speculative basis (that is to say, for its own account and risk). In the priority areas "Zuid-Haarlem" (Mobil), "Buren" (Mobil), "Biddinghuizen" (NAM) and "Markerwaard" (NAM), altogether 336 km of 2D seismic surveying was completed.

In the drilling licence areas "Kampen", "Utrecht II", "Rotterdam-Zuid", "N.O.-Polder", "Roosendaal", "Zeeland", "Zuid-Friesland II" and "IJsselmeer" (all NAM) and "Amersfoort" (Petroland) 1,165 km of 2D seismic surveying was performed, and in the drilling licence area "Andel" and "Almelo" (both NAM) 193 km² was surveyed in 3D. In the concession areas "Noord-Friesland", "Middelie", "Rijswijk" (all NAM) and "Bergen" (Amoco) a total of 432 km of 2D seismic survey was completed, which represented a sharp decrease by comparison with the preceding year. Finally, in the concessions "Groningen", "Drenthe", "Noord-Friesland", "Tietjerksteradeel", "Rijswijk" (all NAM) and "Slootdorp" (Petroland), altogether 990 km² was surveyed in 3D.

2.1.2

Continental Shelf

The year under review featured a sharp decrease in the seismic programme, both 2D and 3D. On the one hand this was due to the fall in the oil price and, on the other, to the high level of activity which seismic contractors displayed during the previous year in shooting speculative seismic survey within the framework of the 6th round. Altogether, 11,795 km of 2D seismic survey and 7,132 km of 3D seismic survey was performed.

Within the framework of a reconnaissance licence, contractors performed a total of 5,985 km of 2D seismic exploration, and the oil companies B.P. and Statoil reported a total of 1,151 km of 2D seismic exploration. Within the exploration licence blocks, the licence-holders Amoco, Mobil, NAM, Pennzoil, Petroland, Statoil and Unocal performed a total of 3,233 of 2D seismic exploration. Altogether, Amoco, NAM, Pennzoil and Petroland performed 1,425 km of 2D seismic survey in production licence areas. In addition, Amoco, NAM, Placid and Unocal performed 3D seismic surveys totalling 7,132 km linear length.

2.2

DRILLING FOR OIL AND GAS

2.2.1

Introduction

The drilling operations carried out in the Netherlands during 1986 are summarized in Annex 12. In this review, three different categories of wells are distinguished. The first category comprise exploration wells, sometimes called wildcats; these are drilled in order to explore prospective underground structures which have been seismically defined.

Once oil or gas has been found, appraisal wells are drilled in order to establish the (volume and) extent of the accumulation. Finally, development wells are drilled for the purpose of production from the field. This last category is dealt with in the section on production.

Annex 10 gives a breakdown of drilling activities showing the number of exploration and appraisal wells and their results. Annex 13 shows the drilling operation in terms of the number of metres drilled for the combination of exploration and appraisal wells.

Annexes 20 and 23 summarize the oil/gas wells completed in 1986. In the tables, the wells are classified into three categories: exploration wells, appraisal wells and development wells. For each category, the wells are shown in alphabetical order, stating the name of the operator responsible for the drilling operations. The table also states the drilling licence area in which the well is situated, as well as the result of the well. The maps in Annexes 20 and 23 indicate the geographical position of the wells. The numbers on the charts correspond to those on the tables opposite.

2.2.2 Netherlands territory

2.2.2.1 Exploration wells

The total number of exploration wells drilled in the search for oil and gas both onshore and within the Netherlands territorial waters since 1959 is summarized year by year in the following table.

Table 2.1 Exploration wells drilled on Dutch territory

Year	Number	Result		
		Oil	Gas	Dry
1959	9	-	2	7
1960	3	1	1	1
1961	3	-	1	2
1962	1	-	1	-
1963	2	-	2	-
1964	23	-	2	21
1965	38	-	16	22
1966	9	1	-	8
1967	1	-	1	-
1968	7	-	3	4
1969	13	-	2	11
1970	14	-	3	11
1971	12	-	3	9
1972	10	-	3	7
1973	4	-	2	2
1974	2	-	-	2
1975	8	-	3	5
1976	7	-	2	5
1977	7	-	3	4
1978	6	-	2	4
1979	6	-	4	2
1980	5	1	2	2
1981	15	2	2	11
1982	14	-	5	9
1983	8	-	4	4
1984	14	1	6	7
1985	15	1	5	9
1986	12	-	2	10
TOTAL	268	7	82	179

Table 2.1a summarizes in alphabetical order the exploration wells completed on Dutch territory in 1986, stating the operator concerned and the result achieved.

Table 2.1a Exploration wells on Dutch territory completed in 1986

Name of well	Concession/ Drilling licence	Operator	Result
Eesveen 1	Overijssel Noord (d)	NAM	dry
IJsselmuiden 1	Centraal Ned. (d)	BP	dry
Kijkduin-Zee 2	Rijswijk (c)	NAM	dry
Leeuwarden-Stad 1	Leeuwarden (c)	Petroland	dry
Marknesse-Oost 1	N.O.Polder (d)	NAM	dry
Minnertsga 1	Nrd.Friesland (c)	NAM	dry
Molenaarsgraaf 2	Andel (d)	NAM	dry
Papekop 1	Utrecht 2 (d)	NAM	gas
Slijkenburg 2	N.O.Polder (d)	NAM	dry
Steehoven 1	Breda (d)	Petroland	dry
Den Velde 1	N.O.Overijssel (d)	NAM	gas
Wieringerwaard 1	Kolhorn (d)	Petroland	dry

c = concession d = drilling licence

During the year under review, 12 exploration wells for oil and gas were completed on Dutch territory, 3 fewer than in 1985. This figure represents a 20% decrease, which - in view of the economic circumstances in the oil industry - is by no means a spectacular decline. Most of the wells were drilled in drilling licence areas, namely 75% as against 46.7% in 1985. This is partly due to the drilling obligations in these areas. Two exploration wells struck gas; all the other wells in this category were abandoned as dry holes. Both strikes were made by NAM in drilling licence areas. No new oil strikes

were made in 1986. NAM drilled four exploration wells in drilling licence areas, and also drilled the well Kijkduin-Zee 2 within territorial waters in the "Rijswijk" concession and the well Minnertsga 1 behind the Frisian sea dike in the extreme south west of the "Noord-Friesland" concession, which were all abandoned as dry holes. The total number of metres drilled in these six wells was 20,721; the two last ones were drilled deeper than 3,500m. The three wells drilled by Petroland, including the one drilled in the "Leeuwarden" concession area, failed to strike hydrocarbons. Total metres drilled in these three wells was amounted to 7,397. The average depth of all twelve exploration wells completed in 1986 was 2,772.4 metres, which is approximately the same as the year before.

The success ratio in the search for oil and gas fell from 40% in 1985 to 16.7% in the year under review. Over the entire period from 1959 through 1968, the success ratio on Dutch territory was 33.2%. This cumulative success ratio, which is more representative than the figure for one single year, has remained virtually unchanged at 1 to 3.

2.2.2.2 Appraisal wells

Table 2.2 lists the appraisal wells drilled since 1959 for the purpose of determining the reserves in accumulations where the presence of hydrocarbons had previously been proved.

Table 2.2 Appraisal wells drilled on Dutch territory

Year	Number	Result		
		Oil	Gas	Dry
1959	1	-	-	1
1960	1	-	1	-
1961	1	-	1	-
1962	-	-	-	-
1963	-	-	-	-
1964	2	-	1	1
1965	3	-	1	2
1966	1	-	1	-
1967	3	-	3	-
1968	4	-	2	2
1969	3	-	2	1
1970	1	-	1	-
1971	4	-	3	1
1972	2	-	-	2
1973	1	-	1	-
1974	5	-	4	1
1975	7	-	-	2
1976	12	-	12	-
1977	13	2	10	1
1978	20	-	20	-
1979	15	2	11	2
1980	22	2	16	4
1981	14	5	7	2
1982	10	-	8	2
1983	15	1	13	1
1984	16	4	8	4
1985	12	2	10	-
1986	3	-	3	-
TOTAL	191	18	144	29

A summary of the appraisal wells drilled and completed on Dutch territory in 1986 is given in Table 2.2a.

Table 2.2a Appraisal wells drilled on Dutch territory, completed in 1986

Name of well	Concession/ drilling licence		Operator	Result
Coevorden 45	Schoonebeek	(c)	NAM	gas
Dalen 14	Drenthe	(c)	NAM	gas
Hardenberg 4	Schoonebeek	(c)	NAM	gas

The number of appraisal wells drilled to evaluate geological structures containing proven hydrocarbons declined drastically in the course of the year under review. Against the total of twelve wells drilled in this category during 1985, in 1986 only a quarter of that number was completed. All three appraisal wells were drilled for the account of NAM. Two of these wells confirmed parts of the Coevorden and Dalen gas field respectively. The Hardenberg 4 well indicated that the gas accumulation found in the "Schoonebeek" concession as long ago as 1967 extends to the south east into the adjacent drilling licence area "Noord-Oost-Overijssel".

2.2.3 Offshore

2.2.3.1 Exploration wells

Table 2.3 shows the number of exploration wells on an annual basis. In common with Table 2.1 showing onshore drilling, this list of offshore wells distinguishes between oil and gas where the well struck hydrocarbons. Table 2.3a shows all the offshore exploration wells completed in 1985, stating the name, operator and result achieved.

Table 2.3 Exploration wells on the Dutch Continental Shelf

Year	Number	Result		
		Oil	Gas	Dry
before				
1962	-	-	-	-
1962	3	-	-	3
1962				
up to				
1967	-	-	-	-
1968	7	-	2	5
1969	15	-	2	13
1970	14	1	6	7
1971	18	-	3	15
1972	16	-	10	6
1973	17	-	4	13
1974	16	1	7	8
1975	15	-	6	9
1976	16	-	5	11
1977	23	-	3	20
1978	18	-	4	14
1979	17	1	7	9
1980	26	4	6	16
1981	15	1	3	11
1982	35	7	6	22
1983	31	1	3	27
1984	26	1	6	19
1985	36	3	9	24
1986	25	2	9	14
TOTAL	389	22	101	266

Table 2.3a Offshore exploration wells completed in 1986

Name of well	Licence type	Operator	Result
D12-4	EL	Pennzoil	dry
D15-2	EL	NAM	dry
D15-3	EL	NAM	gas
E4-1	EL	Petroland	dry
E14-1	EL	Pennzoil	dry
F14-5	EL	Statoil	oil
F15-4	EL	Petroland	gas
F18-8	EL	Pennzoil	dry
J3-2	EL	NAM	gas
K6-3	PL	Petroland	gas
K8-11	PL	NAM	dry
K11-10	PL	NAM	dry
K12-10	PL	Placid	dry
L1-6	EL	Unocal	dry
L7-12	PL	Petroland	dry
L7-13	PL	Petroland	gas
L8-9	EL	Pennzoil	gas
L8-10	EL	Pennzoil	dry
L10-27	PL	Placid	dry
L13-8	PL	NAM	gas
L13-9	PL	NAM	gas
M5-1	EL	Conoco	dry
M10-3	EL	Placid	dry
P12-5	EL	Mobil	gas
Q13-5	EL	NAM	oil

EL = exploration licence

PL = production licence

The fall in the price of crude oil on the world market which began to take shape during the last month of 1985 and which was typical of 1986, has had a major impact on the exploration efforts in terms of wells drilled on the Continental Shelf. For the year 1986 as a whole, the decline was more than 30% in comparison with 1985 (25 against 36). Although in this respect 1985 may be called a peak year, the decline is nevertheless significant in view

of the fact that average number of wells completed on the Dutch sector of the North Sea over the four preceding years, from 1982 to 1985, amounted to 32. Another illuminating figure for this phenomenon is the total number of exploration and appraisal wells in operation on the Continental Shelf at the beginning and at the end of the reporting year. At 1st January 1986 this number was six one year later this was three.

When including the production wells these numbers are 12 and 5 respectively.

Of the 25 offshore exploration wells, 7 wells or 28% were drilled deeper than 4,000 metres, that is 28% as against 8 out of 36, or 22.2%, in 1985. Thirteen or 52% were drilled to a depth between 3,500 and 4,000 metres. In 1985 the corresponding figures were 7 out of 36 or 19.4%. Altogether 90,399 metres of offshore exploration wells were drilled. This refers to wells completed in the course of 1986, and it represents an average of 3,616 metres per offshore exploration well. In 1985, the corresponding figures were 110,688 and 3,075 metres.

Of the 22 exploration wells started in the course of 1986, 4 were primarily aimed at the Carboniferous and 10 were targeted at the Rotliegend. For 1985 the corresponding figures were 3 aimed at Carboniferous and 13 at the Rotliegend of the 31 exploration wells started during that year. In 1985 the sands of the Lower Cretaceous were the important primary exploration target in 9 wells. In 1986, only one exploration well had the same primary target, in the search of oil.

Noteworthy is the good result achieved by the exploration wells in the exploration licence areas which were awarded in the fifth round. Of the 6 exploration wells in this category, 2 struck oil and 2 gas. The others in this group were dry.

Gas was also found in two wells drilled in a part of the Netherlands Continental Shelf where until now comparatively little has been found, namely in the western D and J quadrants. Taking into account discoveries which have been made in recent years on the adjacent U.K. part of the Continental Shelf, this area is becoming more promising.

Petroland and NAM drilled gas-bearing structures in the blocks for which they hold production licences. Pennzoil struck gas in a block for which an application for a production licence is under consideration.

Of the 14 dry holes, 9 were drilled in exploration licence areas, 2 of which in fifth round blocks, as already mentioned.

The K and L quadrants continue to receive most attention from the exploring oil companies: 12 of the 25 wells, or 48%, were drilled here. The area of the D, E and J quadrants comes next, with 6 of the 25 wells, or 24%. Three exploration wells were drilled in the general area of the Central Graben and two of these were successful. The southern area of the P and Q blocks received relatively the least interest this year, but both wells drilled here struck hydrocarbons, albeit that NAM's oil find was not of commercial significance.

The success ratio on the Continental Shelf was 44% in 1986. The success ratio over the years 1962 through 1986 is 31.6%.

2.2.3.2 Appraisal wells

Table 2.4 summarizes all the appraisal wells completed up to and including 1986 for the evaluation of geological structures in which hydrocarbons previously had been found.

Table 2.4 Offshore appraisal wells

Year	Number	Result		
		Oil	Gas	Dry
before				
1962	-	-	-	-
1962				
up to				
1968	-	-	-	-
1969	1	-	-	1
1970	-	-	-	-
1971	1	1	-	-
1972	1	-	-	1
1973	2	-	1	1
1974	1	-	1	-
1975	3	-	1	2
1976	3	1	2	-
1977	5	1	3	1
1978	5	1	2	2
1979	4	-	3	1
1980	5	2	2	1
1981	17	6	5	6
1982	10	1	6	3
1983	12	1	2	9
1984	7	3	1	3
1985	7	2	4	1
1986	5	2	2	1
TOTAL	89	21	35	33

Table 2.4a lists all the wells completed in this category during the year under review.

Table 2.4a Offshore appraisal wells completed in 1985

Name of well	Licence type	Operator	Result
F15-5	EL	Petroland	gas
L1-5	EL	BP	dry
P6-7	PL	Mobil	gas
Q1-20	PL	Unocal	oil
Q1-21	PL	Unocal	oil

The number of offshore appraisal wells drilled in 1986 was two fewer than in the year before. One well in this category was abandoned as a dry hole.

The two wells drilled by Unocal were drilled in their production licence block Q1 in order to determine the extent of the oil accumulation which had been discovered in 1980 north of the Helder and Hoorn oil fields. Both wells were successful.

Mobil's P6-7 well provided a better definition of the north-western part of the P6-A gas field, both structurally and as far as the trend in the quality of the reservoir in this direction is concerned. In early spring, Petroland confirmed the gas reservoir in the fifth round block F14a, which had been discovered early in the year under review.

Development of drilling activities

The combined drilling activities relating to exploration for oil and gas and the evaluation of previously discovered hydrocarbon accumulations on Netherlands territory and in the Netherlands sector of the Continental Shelf declined by almost 36% in 1986 in comparison with the preceding year.

This, clearly, was largely attributable to the fall in the price of crude oil on the world market. Pending an improved price situation, most companies deferred proposed investments both for exploration and appraisal as well as for development.

The number of production wells - this category is reported in Chapter 3 - remained unchanged at 35 for the Continental Shelf. Onshore and within territorial waters, on the other hand, these activities declined by more than half: in 1986, 15 wells were completed in this category against 34 in the previous year. A summary of the drilling activities in 1986 is given in Annex 12.

At the turn of the year, two NAM wells were being drilled in the "Schoonebeek" concession, one to evaluate the gas accumulation below the oil field, the other being a development well for this gas reservoir.

On the Continental Shelf, three exploration wells and two production wells were being drilled as on 1st January 1987.

2.3 NEW RESERVOIRS

2.3.1 Netherlands territory

Two new gas reservoirs were discovered during the year under review. No oil finds were made in 1986. This result is less favourable than in the year before, when five new gas accumulations and one new oil accumulation were discovered.

Both new gas reservoirs were discovered by NAM in drilling licence areas. In the Den Velde 1 well, which had been spudded on 15th November 1985, at Gramsbergen in the north-east of the "Noord-Oost Overijssel" drilling licence area close to the boundary with the "Schoonebeek" concession, a gas production test was performed, officially witnessed by a Government Inspector.

On 24th November 1986, the Papekop 1 well was also tested, witnessed by a government inspector. This well had been spudded by NAM on 29th June 1986, in the north-west of the "Utrecht II" drilling licence area in the Barwoutswaarderpolder near Driebruggen. The well was drilled as a deviated hole. Gas was struck below the district of Molenvliet in the neighbouring municipality of Woerden.

According to the licenceholder the production tests yielded interesting volumes of gas; the size of the accumulation requires further evaluation by means of appraisal wells.

The total number of gas reservoirs onshore and within Dutch territorial water therefore increased by 2 to 96 in the course of 1986. The number of oil reservoirs remained unchanged at 17.

The total number of hydrocarbon reservoirs on Dutch territory at 1st January 1987 therefore increased to 113. This figure also includes those oil and gas reservoirs overlying each other and separated by impermeable rock layers.

The geographical location of the oil and gas reservoirs is shown in Annex 25.

2.3.2

Continental Shelf

In spite of the fact that the number of exploration wells drilled in the Dutch sector of the North Sea declined rather drastically in 1986, the number of new gas accumulations struck was the same as in 1985. Eight new accumulations were discovered. One new oil reservoir was found namely by Statoil in the fifth round block F14a. The oil find in NAM's Q13-5 well needs further appraisal. The oil find by Statoil brought the total number of oil reservoirs on the Continental Shelf as at 1st January 1987 to 19.

Two of the eight new gas reservoirs were found in fifth round blocks. On 8th April, 1986, Petroland performed a gas production test on the F15-4 well, witnessed by a government inspector. The appraisal well drilled later in 1986 confirmed that it was an interesting gas find.

In its first exploration well in the fifth round block P12, Mobil struck gas.

The gas find made by NAM in the J3-2 well in the eastern part of block J3a, for which the company holds a fourth round exploration licence, led in November 1986 to the filing of an application for a production licence, for J3a as well as for the adjacent block K1a, a third round exploration licence. This find has increased the significance of this part of the Continental Shelf. The gas find made by NAM in the northern part of block D15 also contributes to this significance.

It is assumed that this concerns the same gas-bearing geological structure as that in which Pennzoil made a gas test in the D12-3 well during 1985. For that reason, the reservoir in which the NAM find was made in well D15-3 has not for the time being been included as an separate gas reservoir in the numbers.

Pennzoil drilled a prospect south of the gas accumulation L8-G already drilled in the summer of 1984, and found sufficient gas to perform a gas test witnessed by a government inspector on 21st January 1986. In July 1985 the company filed a production licence application for the relevant block segment L8a. The other four new gas reservoirs were discovered in production licence areas. Early in 1986, NAM find two new gas fields in block L13, one to the north east and the other to the south east of the L13-FC field discovered in 1983. Altogether there are now six gas fields in this block. Petroland discovered new gas reservoirs in the south east of block L7 and in the south of block K6. In block L7 there are now eight gas reservoirs, and two in block K6.

At 1st January 1987, the total number of separate gas reservoirs in the Netherlands sector of the Continental Shelf had reached 96, compared with 88 the year before, bringing the number of hydrocarbon reservoirs in the Dutch sector of the North Sea to a total of 115. For the location of the reservoirs, reference is again made to Annex 25.

3. PRODUCTION

3.1 ONSHORE

3.1.1 Development of oil fields

NEDERLANDSE AARDOLIE MAATSCHAPPIJ B.V.

In the "Schoonebeek" concession area, one new well was drilled and completed as a water injection well, and 2 sidetracks were drilled. In 9 wells casing or liner repairs were made. Seven injection wells and one observation well were repaired. One well was abandoned and 15 wells were temporarily shut in because of the fall in the price of oil.

Finally, one production well was completed as an injection well.

The Surplus Sour Gas Disposal project was started up in the year under review, which will enable H₂S-containing gas originating from the Schoonebeek oil field to be injected at the Dalen 1/8 location. For this purpose, at the EVI/ROV (Production Treatment Plant/Oil Loading Terminal) at Schoonebeek, a special gas drying installation has been built and booster compressors installed, while injection compressors have been installed at the Dalen 1/8 location.

In the Western part of the Netherlands, within the "Rijswijk" concession area, sidetracks were drilled in the Wassenaar, Ridderkerk and IJsselmonde fields and various repairs were made. A total of 4 wells were abandoned.

The renovation work on the Loolaan Oil Loading Terminal has not yet been completed, and it will continue during 1987.

A section of the Berkel-Europoort oil transmission pipeline was completed. The remaining work will be finished in the course of 1987.

The first section of the IJsselmonde-Pernis (Rotterdam-Pernis) pipeline was completed. The wells at the Rotterdam 1/2 location were taken into production during the year under review and the oil is now being pumped to Pernis through the above-mentioned pipeline. Renovation work was performed at various locations, and various transmission pipelines were also renovated.

3.1.2

Development of gas fields

NEDERLANDSE AARDOLIE MAATSCHAPPIJ B.V.

At the Ameland location 4 wells were completed and commissioned. At the Ameland-Westgat platform, 3 wells were completed and commissioned.

In the "Groningen" concession area, a sidetrack was drilled at the 't Zand location. The construction work on the De Paauwen and Warffum gas treatment installations were completed during the year under review. Both installations were commissioned. In the "Tietjerksteradeel" concession area, one new well was drilled and completed. The construction work on the Tietjerk 100, 200 and 300 gas treatment locations for the installation of freon cryogenerators was completed. At the end of the year under review, preparatory work began on the construction of the Kootstertille gas compressor station. The construction is scheduled to be completed in 1988.

In the "Drenthe" concession area, one well was drilled in the Annerveen field. At the Wildervank location, installation work began on the external gas cooling system based on freon cryogenerators. In the municipality of Emmen, construction work began on the gas purification plant. At 9 locations in the acid gas fields in the "Drenthe" and "Twente" concessions, construction work began on new control buildings. The design for the modification of 20 existing acid gas installations has almost been completed. In the course of 1987, modification work on these installations will begin. In the "Schoonebeek" concession area, two wells were drilled in the Coevorden field, one in the Schoonebeek field and one well in the Dalen field was completed as a production well.

PETROLAND B.V. c.s

In the area of the "Leeuwarden" concession, one new well was drilled and completed as a gas production well. In addition, routine maintenance and repair operations were performed in this concession and in the "Slootdorp" concession.

In the "Zuidwal" concession area, a wellhead/production platform was placed in position. In the Wadden Zee between the platform and the future location of the gas treatment plant at Harlingen, two pipelines were laid, namely one 20" pipeline for the transport of gas and one 2" glycol pipeline. In order to afford the Wadden wetland environment maximum protection, these pipelines were buried together by the "tandem method". In this method, a trench is excavated, in which the pipelines are subsequently laid after being welded on the barge put together.

Hereafter the excavated sand is forced through a pressure pipeline system into the trench to cover the twin pipeline. Work has already begun on constructing the Harlingen treatment plant.

AMOCO NETHERLANDS PETROLEUM COMPANY

In the area of the "Bergen" concession the only work carried out consisted of routine maintenance and repair.

CHEVRON OIL COMPANY OF THE NETHERLANDS

In the "Akkrum" concession area, only routine maintenance and repair operations took place.

Table 3.1 Onshore production wells completed in 1986

Name of well	Concession	Operator	Final depth	Result
Ameland Oost 105	Noord Friesland	NAM	4,307	gas
Ameland Westgat 105	Noord Friesland	NAM	3,981	gas
Coevorden 46	Schoonebeek	NAM	2,977	gas
Coevorden 47	Schoonebeek	NAM	3,189	gas
Dalen 13	Schoonebeek	NAM	4,060	gas
IJsselmonde 52 A	Rijswijk	NAM	1,153	oil
Leeuwarden 102	Leeuwarden	Petroland	2,690	gas
Ridderkerk 12C	Rijswijk	NAM	1,148	oil
Schoonebeek 28A	Schoonebeek	NAM	843	oil
Schoonebeek 589	Schoonebeek	NAM	3,044	gas
Schoonebeek 590	Schoonebeek	NAM	789	oil
Tietjerksteradeel 105	Tietjerksteradeel	NAM	2,965	gas
Wassenaar 20A	Rijswijk	NAM	1,546	oil
't Zandt 12 (sidetrack)	Groningen	NAM	2,955	gas
Zuidlaarderveen 5	Drenthe	NAM	3,160	gas

3.2 OFFSHORE

3.2.1 Development of oil fields

UNOCAL NETHERLANDS INC.

In the course of the year under review, a monopod platform was positioned over a temporarily shut-in well. This Helder-B platform stands on a single column, which is anchored in the sea bed by means of three piles. The produced oil rises through the column to the platform, where it undergoes initial treatment. The produced oil is discharged via an 8" pipeline to the Helder-A platform. From the Helder-A platform, one well was drilled and completed and at the Helder-A platform one sidetrack was drilled. Apart from the above-mentioned wells, no drilling activities took place. On all the platforms in the Q1 block, measures were taken in order to improve production.

CONTINENTAL NETHERLANDS OIL COMPANY

In the year under review, 3 new production wells were drilled. One of these wells failed to produce oil whereafter a sidetrack was drilled, which could be completed as a production well. Also one water injection well was drilled.

AMOCO NETHERLANDS PETROLEUM COMPANY

During the year under review, from the P15-A platform, 6 new wells were drilled, 5 of which were water injection wells and one an oil production well. At this platform, a sidetrack was drilled in a previously completed well. From the P15-B platform, 7 new wells were drilled. Of these, 4 wells were completed as production wells, two of which as water injection wells. One well in which no oil had been found was suspended.

3.2.2

Development of gas fields

NEDERLANDSE AARDOLIE MAATSCHAPPIJ B.V.

In the course of the year under review, hook-up operations at the K14-FA-1C compression platform were completed. The 12" gas pipeline between platforms K8-FA-3 and K7-FA-1, which had to be removed because of leakages, was replaced by a new pipeline.

The L13-FC-1 wellhead/production platform was positioned as a single unit (see cover photo). Because the connecting bridge between the 2 platforms and the pipeline system passing across it had already been installed at the construction yard, this procedure gave a drastic reduction in the time needed for hook-up. For transport of the produced gas, an 18" pipeline was laid between the L13-FC-1 and K15-FA-1 platforms. From the L13-FC-1 platform, 2 wells were drilled and completed in the year under review. Two previously drilled wells were completed, so that the platform now has 4 producing wells.

From the K15-FB-1 platform, an unsuccessful sidetrack was drilled, after which the well was temporarily shut in. At the K8-FA-1 and K8-FA-2 platform a number of wells were given an acid treatment in order to improve productivity. A similar treatment was also performed at the K15-FB-1 platform.

PLACID INTERNATIONAL OIL LTD.

In the course of the year under review the K12-E platform was installed. A 10" pipeline to transport the produced gas was laid between the K12-E and K12-C platforms. In addition a 2" methanol pipeline was laid between the K12-E platform and a sidetap in the glycol pipeline between L10-A and K12-A.

From the K12-B platform 3 new wells were drilled and completed. From the K12-D platform, a sidetrack was drilled and 1 new well was drilled from the K12-E platform.

MOBIL PRODUCING NETHERLANDS INC.

In the year under review, from the P6-C platform one new well was drilled and completed as a production well.

UNOCAL NETHERLANDS INC.

In the L11 block, during the year under review the L11-A platform was installed and a 14" gas transmission pipeline was laid between that platform and a sidetap in the 36" Noordgas Transport Pipeline.

PENNZOIL NEDERLAND COMPANY

Apart from routine maintenance and repair work, no activities took place.

PETROLAND B.V.

Apart from routine maintenance and repair work, no activities took place.

B.P. EXPLORATIE MAATSCHAPPIJ NEDERLAND B.V.

In the year under review the three-leg Q8-A platform was installed over a well drilled in 1985. Between this platform and the gas treatment installation which was constructed at the Hoogovens Site in the municipality of Heemskerk, a 10" pipeline was laid for the transport of the produced gas. For crossing the dunes, a hole was successfully drilled horizontally underneath the dunes from the onshore location, through which the pipeline was subsequently drawn. The unmanned platform, which is operated from the treatment installation, became operational at the end of the year under review.

Table 3.2.3 Offshore production wells, completed in 1986

Name of well	Operator	Final depth	Result
K12-B-2	Placid	4,599	gas
K12-B-3	Placid	4,441	gas
K12-B-4	Placid	4,572	gas
K12-D-2 (sidetrack)	Placid	4,298	gas
K12-E-2	Placid	4,481	gas
K15-FB-101 (sidetrack)	NAM	4,331	gas
L4-A-5	Petroland	4,175	gas
L4-A-6	Petroland	4,240	gas
L10-F-4	Placid	4,572	gas
L10-K-1A (sidetrack)	Placid	3,909	gas
L10-K-2	Placid	4,404	gas
L13-FC-103	NAM	4,175	gas
L13-FC-104	NAM	4,032	gas
L16-Logger-5	Conoco	1,960	oil
L16-Logger-6	Conoco	2,978	oil
L16-Logger-7	Conoco	2,740	waterinj.
L16-Logger-8	Conoco	2,883	dry
L16-Logger-8a	Conoco	2,570	oil
P6-C-1	Mobil	3,818	gas
P15-Rijn-A-6 (sidetrack)	Amoco	2,450	waterinj.
P15-Rijn-A-10	Amoco	3,270	waterinj.
P15-Rijn-A-11	Amoco	3,194	waterinj.
P15-Rijn-A-12	Amoco	3,090	waterinj.
P15-Rijn-A-13	Amoco	2,980	oil
P15-Rijn-A-14	Amoco	2,481	waterinj.
P15-Rijn-A-15	Amoco	2,783	oil
P15-Rijn-B-5	Amoco	2,435	oil
P15-Rijn-B-6	Amoco	2,678	waterinj.
P15-Rijn-B-7	Amoco	2,375	oil
P15-Rijn-B-8	Amoco	2,323	waterinj.
P15-Rijn-B-9	Amoco	2,300	oil
P15-Rijn-B-10	Amoco	2,225	dry
P15-Rijn-B-11	Amoco	2,395	oil
Q1-Helder-A-4 (sidetrack)	Unocal	1,859	oil
Q1-Helm-A-8	Unocal	1,418	oil

3.3 1986 PRODUCTION FIGURES

3.3.1 Oil production in 1986

Onshore:

Concession	10 ³ tons	10 ³ m ³ (st)
Schoonebeek (NAM)	596.1	658.9
Rijswijk (NAM)	639.2	688.8
TOTAL	1,235.3	1,347.7

Offshore:

Production licence	10 ³ tons	10 ³ m ³ (st)
K18a and b (Conoco)	1,050.2	1,222.6
L16a (Conoco)	493.7	576.1
Q1 (Unocal)	1,021.8	1,114.9
P15a and b (Amoco)	827.0	976.1
TOTAL	3,392.7	3,899.7

3.3.2.

Natural gas production in 1986Onshore:

Concession	10 ⁶ m ³ (st)	10 ⁶ m ³ Groningen-gas equivalent
Akkrum (Chevron)	472.2	442.3
Bergen (Amoco)	845.7	914.6
Drenthe (NAM)	4,194.0	4,120.5
Groningen (NAM)	45,650.8	43,624.0
Leeuwarden (Petroland)	722.2	666.3
Middelie (NAM)	225.3	191.1
Noord-Friesland (NAM/Mobil)	2,538.7	2,557.9
Rossum-De Lutte (NAM)	145.5	154.3
Rijswijk (NAM)	43.6	48.1
Schoonebeek (NAM)	1,911.8	1,865.5
Slootdorp (Petroland)	85.0	93.0
Tietjerksteradeel (NAM)	1,497.3	1,407.5
Tubbergen (NAM)	147.4	157.5
Total onshore	58,479.5	56,242.6

Offshore:

Production licence	10 ⁶ m ³ (st)	10 ⁶ m ³ Groningen-gas equivalent
K6-L7 (Petroland)	1,017.7	1,100.0
K7 (NAM)	497.3	530.0
K8-K11 (NAM)	2,932.3	3,225.5
K10a (Pennzoil)	1,334.0	1,452.4
K12 (Placid)	1,016.1	1,194.6
K13 (Pennzoil)	824.2	864.5
K14 (NAM)	1,293.5	1,317.8
K15 (NAM)	1,676.9	1,430.9
K18 a en b (Conoco)	11.0	13.6
L4a (Petroland)	1,390.5	1,414.1
L10-L11a (Placid)	1,669.6	1,777.4
L11b (Unocal)	62.8	72.0
L13 (NAM)	575.3	630.5
L16 (Conoco)	3.6	3.9
P6 (Mobil)	1,135.4	1,227.8
P15 (Amoco)	78.1	84.3
Q1 (Unocal)	30.7	38.2
Q8 (BP)	46.2	50.8
Total offshore	15,595.2	16,428.3
Total Netherlands	74,074.7	72,670.9

4. RESERVES

4.1 INTRODUCTION

Reserves of natural gas and/or oil (i.e. hydrocarbons) are calculated, under the responsibility of the Geological Survey of the Netherlands, primarily by the volumetric method, because this is the only possible method for fields which have little or no production history. In addition, the material balance method has been used to supplement the volumetric estimate in cases where gas production has been continuing for an extended period.

For oil reserves which have been in production for a considerable period, such as those in NAM's "Schoonebeek" and "Rijswijk" concessions, analysis of the production history has also been taken into account for the purpose of determining the reserves.

4.2 Definitions

In this review, the following categories of reserves are distinguished:

1. Expected initial reserves

The most realistic estimate of the volume of hydrocarbons present in a reservoir which are estimated to be ultimately recoverable.

These reserves are equal to the recoverable volume originally present in the reservoir, i.e. before the beginning of production.

2. Remaining expected reserves

That part of the expected initial reserves remaining

after deduction of the total volume of hydrocarbons produced from the reservoir concerned before the end of the reporting year.

3. Remaining proven reserves

That proportion of the remaining expected reserves at reporting date for which the probability that in reality they will equal or exceed the estimate may be put at 90%.

The term "expected" in the definitions should be interpreted in the statistical sense of the word.

The number represents the "expectation".

The following explanatory notes may be useful.

Because of uncertainties in determining the parameters for the calculations of reserves, variations in those parameters occur. In order to obtain some insight into how the uncertainties in the various parameters of an individual reservoir affects the calculated reserves, a Monte Carlo procedure is applied which results in an expectation curve. This expectation curve is a graphical representation of a cumulative chance distribution function, that is to say a graph in which the value of the reserves is plotted against the associated chance that this value will be achieved or exceeded. In practice the expected reserves are equated to the "expectation" which is computed using the mean values of the parameters concerned, each of which has its own chance distribution. When the distributions of all the parameters are symmetrical, then the expectation of the

volume of hydrocarbons in a reservoir can be read from the cumulative probability curve at the 50% chance. When calculating the reserves according to this method, the estimate of the expected reserves does not usually vary much from the 50% value, but it cannot a priori be equated with that value.

As the development of a hydrocarbons reservoir progresses, the uncertainties decrease and the expectation value varies less and less from the 50% value on the cumulative chance distribution function. The proven reserves are defined by the 90% value of the expectation curve.

The recoverability of hydrocarbons from a reservoir is determined by factors such as the geological and reservoir data of the accumulation, the recovery techniques existing as at the reporting data and the economic conditions prevailing at that time.

The reserves considered in this review relate to the reservoirs in geological structures in which the presence of hydrocarbons has been actually proven by one or more wells. These data are based on an inventory of these reservoirs made by the Geological Survey of the Netherlands, which includes accumulations whose commercial recoverability has not been definitively established at the reporting date; for example, in view of their geographical position.

For a number of reservoirs, a provisional estimate only was made of the reserves. Structures in which merely gas or oil shows were found are not included in the estimates of recoverable reserves.

The differentiation made in this Chapter between "Netherlands territory" and "Netherlands Continental Shelf" is based on the Mining Acts 1810 and 1903 on the one hand and the Mining Act Continental Shelf on the other.

UNITS

Natural gas reserves are stated in terms of m^3 at 1.01325 bar a (= 1 atmosphere absolute) pressure and at 15°C . This m^3 is defined as standard volume in standard 5024-1976(E) of the International Organization for Standardization (ISO), and is usually abbreviated as m^3 (st).

The amounts of natural gas are stated not only in these units of volume, but also in units representing the calorific value of the gas. For this purpose the volume of gas from various fields producing various qualities of gas are restated, in terms of combustion heat, to the (notional) volume which would be measured if each field were to produce gas of the same quality as that of the Groningen reservoir, which has a gross calorific value of $35.17 \text{ MJ}/\text{m}^3$ (= $8400 \text{ kcal}/\text{m}^3$) at 0°C and 1.01325 bar a. This standard is used by N.V. Nederlandse Gasunie among others.

Oil reserves are also stated in standard m^3 at 1.01325 bar and 15°C .

In order to render the units comparable with other fuels in drawing up energy balances etc., a number of conversion sectors are given below:

1 ton of oil equivalent = 41.9×10^9 Joule = 1191 m^3 of
natural gas (0°C ; 35.17 MJ)

1 milliard (10^9) m^3 of natural gas = 0.84 million tons of
oil equivalent,
usually written as
0.84 MTOE.

1 ton of coal equivalent = 2.93×10^{10} Joule = 833 m^3 of
natural gas (0°C ; 35.17 MJ)

1 milliard (10^9) m^3 of natural gas = 1.20 MTOE

NATURAL GAS RESERVES

Table 4.1a gives a summary of the expected and proven gas reserves, both onshore and offshore, as at 1st January 1987, expressed in billions (10^9) m^3 (st) (at $15^\circ C$ and 1.01325 bar a). Table 4.1b shows the same reserve categories as table 4.1a, but in 10^9 m^3 of Groningen gas equivalent.

Natural gas from the Groningen field has a gross calorific value of value of 35.17 MJ per m^3 at $0^\circ C$ and 1.01325 bar a (= 1 atmosphere absolute). When applying the m^3 Groningen gas equivalent, the natural gas volumes of the various reservoirs, each of which has a different gross calorific value, are converted to the calorific standard of the largest gas field in the Netherlands, the Groningen field. This procedure yields figures for all gas qualities, which in general do not represent actual volumes but volumes which would be obtained if the gas from all the fields had the same calorific value per m^3 .

In the tables, the expectations of the gas reserves are shown in the column under "expectation" followed by the the proportion that can be considered as proven.

The figures for the proven natural gas reserves shown against "total Netherlands" in the second column, bottom row, of the table is obtained by summation of the proven reservoirs of the individual gas reservoirs according to the probabilistic method. This amounts to a procedure whereby the probability distributions of the reservoirs of the individual fields are combined. In this way, the uncertainties which are inherent in any estimate of reservoirs are taken into account.

Table 4.1a Netherlands natural gas reserves as at
1st January 1987, in 10⁹ m³ (st)

Area	Expectation	Proven
"Groningen" concession	1,398	1,289
Other onshore concessions	257	121
Offshore	300	150
Total Netherlands	1,955	1,815 ¹⁾

Table 4.1b Netherlands natural gas reserves as at 1st
January 1987 10⁹ m³ Groningen gas equivalent²⁾

Area	Expectation	Proven
"Groningen" concessions	1,328	1,223
Other onshore concessions	263	124
Offshore	313	156
Total Netherlands	1,904	1,765 ¹⁾

1) This figure was obtained by the probabilistic summation of the proven reserves in the individual fields.

2) Groningen gas equivalent means that the natural gas volumes of the various reservoirs have been converted to the calorific standard of the Groningen gas field, namely a gross calorific value of 35.17 megajoules per m³ at 0°C and 101.325 kPa. Accordingly, the volumes shown in Table 4.1a and 4.1b are not directly correlated to one another.

The result of applying the method of probabilistic summation is that the total figure obtained for the proven reserves now indeed represents the proven proportion of total Dutch reserves in a statistically more valid manner, according to the definition; in other words, the figure obtained in this way can be assigned a probability of 90% that the actual reserves are equal to or larger than that value.

The figure for the proven reserves shown against "total Netherlands" as found from the probability summation of the individual gas reservoirs is higher than the result of the "ordinary" or arithmetical summation, which may be regarded as the total of the proven reserves of the individual gas reservoirs. This latter figure, 1,560 milliard m³ (st) or 1,503 milliard m³ Groningen gas equivalent, represents at least a 98% probability that the figure will exceeded.

It may be stated that in the "ordinary summation" of determining proven reserves, it is assumed that disappointments in the reserves of one gas accumulation will be accompanied by disappointments in all the other individual gas reserves. This is a pessimistic hypothesis. In the probabilistic summation method, on the other hand, it is assumed that disappointments in the reserves of one reservoir will wholly or partly compensated by underestimates elsewhere, which is a more optimistic and also more realistic view of the situation. Hence, in the probabilistic phase the outcome of the summation is higher, for the total proven gas reserves, than that yielded by the arithmetical summation method. In each case, the expectation of the total reserves remains, by definition, identical.

OIL RESERVES

Table 4.2 gives a summary of the oil reserves as at 1st January 1987.

The table is constructed in the same manner as Table 4.1a for gas reserves, except that the probabilistic summation is omitted. This has been done here because, based on the laws of probability, in this case a summation procedure is less justifiable, in view of the greater degree of uncertainty which, especially at this early juncture, exists with regard to the estimated reserves of a number of oil fields, including a number of major reservoirs as well. This uncertainty is largely correlated with the estimate made of the recovery factor obtainable by secondary and tertiary production techniques. Taking into account the above-mentioned considerations and, albeit in the second place, the small number of oil reservoirs, the Geological Survey of the Netherlands considers that it is not yet opportune to apply the probabilistic summation procedure for the purpose of determining the total proven oil reserves of the Netherlands.

Table 4.2

Oil reserves of the Netherlands as at 1st January 1987, in 10^8 m³ (st)

Area	Expectation	Proven
North-eastern Netherlands	25	4
Western Netherlands	15	9
Continental Shelf	35	18
Total Netherlands	75	31

Dutch onshore oil reserves as at 1st January 1987 totalled 40 million m³ (st), of which 13 million m³ (st) can be regarded as proven. The figures for the continental shelf are 35 million m³ (st) reserves and 18 million m³ (st) proven. Of the latter reserves, 23 million m³ originate from the fields lying within the production licence areas, of which 13 million m³ (st) are proven reserves.

4.6 TREND IN RESERVES

4.6.1 Natural gas

Table 4.3 Trend in the expectation of natural gas reserves of the 1968-1987 period (in 10⁹ m³ (st))

Reporting date	Onshore	Continental Shelf	Total Netherlands
1 Jan. 1968	2,430	unknown	2,430
1 Oct. 1971	2,352	104	2,456
1 Jan. 1974	2,243	211	2,454
1 Jan. 1976	2,137	340	2,477
1 Jan. 1977	2,030	367	2,397
1 Jan. 1978	1,996	363	2,359
1 Jan. 1979	1,928	343	2,271
1 Jan. 1980	2,023	304	2,327
1 Jan. 1981	1,953	298	2,251
1 Jan. 1982	1,899	275	2,174
1 Jan. 1983	1,845	272	2,117
1 Jan. 1984	1,809	271	2,080
1 Jan. 1985	1,754	281	2,035
1 Jan. 1986	1,704	290	1,994
1 Jan. 1987	1,655	300	1,955

Table 4.3 summarizes the trend in the expectation of total natural gas reserves of the Netherlands for the period from 1st January 1968 to 1st January 1987 as at the reporting dates.

In 1986, the volume of total Netherlands gas reserves fell by 39 milliard m³ (st). The downward trend is therefore continued, although to a somewhat lesser degree than in the preceding year. In terms of relative reduction it was 1.96%, against 2.01% for 1985 and 2.16% for 1984.

As at 1st January 1987, the expectation of reserves of the Groningen gas field accounted for 69.5% of the total expected Dutch gas reserves, against 70.3% one year earlier and 71.6% as at 1st January 1985. The slight downward trend of this share has therefore been continued.

In the course of 1987, seven new gas fields were brought into production. Six of these are on the Continental Shelf, and two are located one above the other and separated by interjacent geological layers. The new onshore producing gas field is Warffum, located in NAM's "Groningen" concession area. As at 1st January 1987, the total number of producing gas fields outside the major Groningen field was 79. The share of this category in the expected remaining gas reserves of the Netherlands as a whole at that date was 19.0%.

Last year this share was 15.3% (1984: 15.5%, 1983: 13.5%). There is now, therefore, a clear increase in this respect.

During the year under review, the Groningen gas field accounted for about 62% of the annual gas production of the Netherlands as a whole, which is less than in 1985 when this figure was 65%. The downward trend, which had been broken in 1985, therefore resumed in 1986.

The share in the annual production of the Netherlands as a whole of the North Sea gas fields was 21% in the year under review (1985: 20%, 1984: 21%). The share of the smaller onshore gas fields increased slightly by the comparison with 1985, from 16% to just over 17% of total gas production.

The decrease in expected onshore gas reserves in 1986 was about the same as in the preceding year. The reduction amounted to 49 milliard m³ (st) against 50 milliard m³ (st) in 1985 and 55 milliard m³ (st) in 1984. In terms of relative decrease, this amounts to a practically steady figure of around 3%.

The reservoirs onshore and inside Netherlands territorial waters produced 58.5 milliard m³ (st) of gas during the year under review, compared with 64.6 milliard m³ (st) in 1985. In contrast with 1985, there was a distinct fall in the production of natural gas.

The fall in production by 6.1 milliard m³ (st) represents a relative reduction of 9.4%. In 1985, however, there had been an increase in production of 5.2 milliard m³ (st), or 8.8% of the annual production figure for 1984.

These fluctuations are connected with fluctuating demands and are mainly absorbed by the Groningen gas field. Accordingly, this reservoir, the largest in the Netherlands, produced 10.3 milliard m³ (st) less than in 1985, representing a reduction of 19.5%.

NAM's other smaller gas fields, however, produced 4.4 milliard m³ (st), or approximately 47% more, during the year under review. The other oil companies together achieved a production level, on an annual basis, of 2.1 milliard m³ (st), 10% lower than in 1985.

As a result of the combined effect of NAM's two new gas finds and recalculations of the expected reserves of known reservoirs, the production from gas fields within Netherlands territory during 1986 could be compensated as to some 10 milliard m³ (st), which is about 17%.

The compensation percentage was 23% for 1985 and about 7% for 1984. Half of the production compensation for 1986 can be attributed to the new finds.

In 1986, the expected natural gas reserves in the Dutch sector of the Continental Shelf increased by a figure of 10 milliard m³ (st), which was of the same order of magnitude as the previous year's increase. The relative increase was 3.4%; in 1985 it was 3.2%.

The most important contribution to the increase in reserves during the year under review came from the 8 new gas finds. About half of the increase in reserves is accounted for by finds in fifth round blocks. Reinterpretation of existing gas reservoirs resulted in a reduction in the expected reserves on the Continental Shelf of about 4 milliard m³ (st) in 1986. The annual production of 15.6 milliard m³ (st), which was at approximately the same level as the preceding year, was once again easily compensated by the combined net result of the new gas finds and the re-evaluations.

Annex 19 shows the distribution of initial gas reserves over the total number of reservoirs for the Netherlands as a whole. The share of those reservoirs with an initial reserve smaller than 2 milliard m³ (st) decreased by 3% compared with 1985, to 51%.

Table 4.4 summarizes the changes which took place in expected gas reserves in the course of 1986.

Table 4.4 Changes in the expected natural gas reserves during 1986 in 10⁹ m³ (st)

Area	Attributable to			Total
	New finds	re-evaluation	production (net)	
Onshore	+ 5	+ 5	- 58	- 48
Offshore	+ 30	- 4	- 16	+ 10
Total	+ 35	+ 1	- 74	- 38
Nether-lands				

4.6.2

Oil

Table 4.5 summarizes the development of Dutch oil reserves over the period from 1st January 1970 to 1st January 1987.

Table 4.5 Development of expected oil reserves from 1970-1987
in 10^9 m³ (st)

date 1 Jan.	Netherlands territory			Offshore	Total
	North-East	Western	total		
1970	27	9	36	-	36
1971	26	8	34	-	34
1972	25	7	32	-	32
1973	23	6	29	-	29
1974	21	6	27	-	27
1975	30	10	40	14	54
1976	41	10	51	14	65
1977	40	9	49	16	65
1978	35	11	46	7	53
1979	34	10	44	9	53
1980	33	10	43	11	54
1981	30	11	41	14	55
1982	29	10	39	20	59
1983	28	10	38	49	87
1984	27	10	37	41	78
1985	27	14	41	34	75
1986	26	16	42	36	78
1987	25	15	40	35	75

In contrast to 1985, oil reserves for the Netherlands as a whole declined by over 3 million m³ (st). This brought the level back to that of two years ago. The relative decline in reserves was 4.7%. The annual production of 5.2 million m³ (st), however, was compensated as to about one third by the effects of recalculations of the oil reserves in known fields, especially on the Continental Shelf. The contribution from Statoil's new gas discovery in its fifth round block F14a has not yet been included in these figures. In contrast to the gas reserves situation, it cannot be stated that 1986 was a favourable year for oil.

The decline in expected offshore oil reserves is largely attributable to the Schoonebeek field. Here, due to the deteriorated economic conditions on the world market, the recovery factor of certain parts of the reservoir was reduced. Various producing wells were closed. The reserves position of NAM's "Rijswijk" concession improved somewhat. The total effect on Dutch onshore reserves, however, was negative so that, on balance, the reduction was increased by the production over the year. The decline in reserves was 8.4% of the onshore oil reserves as at 1st January 1986.

The net effect of the re-evaluation of the offshore oil reserves was positive, and provided a two-third compensation for the annual production in 1986. Several oil reservoirs had to have their reserves adjusted, partly for economic considerations and partly as a result of re-evaluations based on further seismic surveys with production seismology techniques (usually 3D shots) and wells. The effect here was predominantly positive.

Table 4.6 summarizes the changes which took place in expected oil reserves in the course of 1986.

Table 4.6 Changes in the expected oil reserves during 1986,
in 10⁹ m³ (st)

Area	Attributable to			Total (net)
	new finds	re- evaluation	production	
Onshore	-	- 0.9	- 1.3	- 2.2
Offshore	-	+ 2.6	- 3.9	- 1.3
Total	-	+ 1.7	- 5.2	- 3.5
Netherlands				

5. DEVELOPMENTS RELATING TO
MINING ACTIVITIES

5.1 UNDERGROUND STORAGE

During the year under review, the subject of underground storage received a large amount of attention.

This was due in part to the fact that, from various quarters, intentions were announced or further updated concerning the realization of storage facilities in the deep subsoil.

To mention a few: storage of gas in salt domes, the storage of drilling cuttings and drilling mud in salt domes, and underground pump accumulation stations. The Minister of Economic Affairs, who, on the basis of the mining legislation, is primarily responsible for governing (production) operations in the subsoil, in principle views these plans favourably provided that they do not in any way jeopardize the production of minerals, the safety and the environment. In addition, great value is attached to ensuring that - against the background of the many different forms of storage - the most efficient and responsible use is made of the relatively scarce possibilities of the deep subsoil.

The Mining Council has issued an advisory report on this matter. Partly on the basis of this report, the Minister of Economic Affairs has asked both the Geological Survey of the Netherlands and the State Mining Inspectorate to give their opinion on aspects attached to the various forms of storage, such as geology, safety and the environment.

These opinions are expected to be forthcoming (in broad outline) by the end of 1987.

RESULTS OF STUDIES INTO THE ENVIRONMENTAL ASPECTS OF OFFSHORE OPERATIONS

Together with the Ministry of Transport and Public Works and the Ministry of Housing, Physical Planning and Environment, the Ministry of Economic Affairs participated in the project "Monitoring the spread and biological effects of oil around platforms in the North Sea 1985-1987" and also in the development of methods for determining the toxicological properties of oil-containing drilling muds.

The preliminary results of the monitoring study carried out by TNO and NIOZ confirm that disturbances in the flora composition and in the densities of individual species have occurred in the sediment up to 250 metres from the installations, and that these disturbances extend to a lesser degree for a distance of up to 1000 metres from the installation.

Besides performing research into the immediate and long-term impact on the marine environment of the discharge of oil-containing drilling cuttings, on behalf of the authorities concerned TNO has also studied the development of test methods capable of allowing an assessment to be made of toxicological properties of oil-containing drilling fluids prior to their application (a preventive method). On the basis of the results of that study, a new test method is to be developed for determining the toxicity of oil-containing drilling fluids, taking into account the ecological effects on the sea-bed.

ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE

On 26th March 1986 the draft resolution on the Environmental Impact Assessment Procedure (E.I.A) was published in the Official Gazette. This draft resolution is relevant both to onshore and offshore production operations.

With regard to the production of oil and gas, the E.I.A. procedure will be obligatory for the activities (column 1), cases (column 2) and decisions (column 3) as shown in Table 5.1.

In the second half of 1987, the Ministry of Economic Affairs will draw up "Further Rules" on the basis of Section IV-A of the Mining Regulations Continental Shelf. These rules will relate to the discharge of oil from production installations and the use of oil-based drilling mud. The relevant decision will be subject to an E.I.A. procedure. In preparation for the latter, a preliminary study is to be made in mid 1987.

Compulsory IEA procedure for production activities

<u>Column 1 Activities:</u>	<u>column 2 Case:</u>	<u>column 3 Decision:</u>
The production of coal and lignite		The decision to grant concession pursuant to Section 5 of the Mining Act 1810
Exploration for and production of oil and gas on the Continental Shelf	In cases where further rules are issued governing discharges of oil-containing mixtures and other contaminants or toxic substances from offshore production installations	The decision pursuant to Articles 49a, para. 2 (a), 49b, para. 2 and 49c of the Mining Regulations
Exploration for and production of oil and gas onshore	In cases where the operation is contemplated in an area designated by the drilling operations commission as exceptionally vulnerable and requiring special protection	Determination of the drilling location by or on behalf of the Minister of Economic Affairs
Laying a main transmission pipeline for the transport of natural gas	In cases where the operation relates to a pipeline over 5 km in length which is located or projected in the areas mentioned in a - g	Determination of the route by or on behalf of the Minister of Economic Affairs
Laying a main transmission pipeline for the transport of a liquid other than water or of gas other than natural gas	If the operation relates to a pipeline located or projected over a length of 1 km or more in the areas mentioned in a - g	Determination of the route by or on behalf of the Minister of Economic Affairs
Landfall of a pipeline	If the landfall is in an area as mentioned under a - g	The decision pursuant to Article 143b of the Mining Regulations 1964

Explanatory notes to the table:

- a. a protected nature reserve or national nature reserve, designated pursuant to Section 7 or Section 21 of the Nature Conservancy Act;
- b. a national park;
- c. the area of the Wadden Zee;
- d. an extensive single natural area and an area which has nature as its main function;
- e. a river flood bed among the most valuable river flood beds;
- f. a river valley among the most valuable river valleys;
- g. a water catchment area.

5.4

DISPOSAL OF DRILLING MUD AND CUTTINGS

On 22nd August 1986, the Minister of Transport and Public Works granted the Nederlandse Aardolie Maatschappij a licence, based on the Contamination of Surface Waters Act, to discharge certain pre-purified drilling wastes into the Ems-Dollard.

This licence was granted for a 3-year period. This made allowance for the period which will be needed to implement the alternative, i.e. deposition in salt caverns. As far as the long-term deposition of spent drilling mud and drilling cuttings in salt caverns is concerned, the provincial executive of Groningen prefers that a further investigation of the alternative disposal methods be performed first. The Ministers concerned have decided, in the light of these developments, to revive the working group on drilling mud and drilling cuttings.

5.5

PROCEEDINGS CONCERNING THE PROFIT SHARE

In 1986 the Council of State gave its decision on two cases concerning assessment of the profit share pursuant to the Royal Decree of 27th January 1967. This represents the first jurisprudence relating to profit share.

The first case related to the relationship between profit share, deductible tax and WIR premium. These proceedings had been instituted in 1982 by North Sea Selection B.V. and Wintershall Nederland B.V. (formerly Delfzee B.V.) in response to the assessment of the profit and loss accounts for the years 1978 and 1979.

For these assessments, the WIR premium received by the licence-holders had been treated as a reduction of the tax deductible from the profit share.

The Council of State set aside the contested decisions assessing the profit and loss account and the profit share. (Council of State decision of 21st May 1986, Nos. A-1.1274, A-1.1275, A-1.1278 and A-1.1279 (1982).

The second decision was given in a case instituted by Placid International Oil Ltd against the assessment of the profit and loss account for 1977.

For the assessment of this profit and loss account, the government had applied a considerable reduction to the charges for transport and treatment claimed by the licence-holder. The Council of State held that the assessment of the profit and loss account was in accordance with the intention of the Royal Decree of 27th January 1967, and therefore set aside the appeal instituted by the licence-holder. (Council of State decision of 15th December 1986, No. ROI.84.1559).

5.6

SURVEY OF OFFSHORE EXPENDITURE

In November 1986 the results were published of a survey into offshore expenditures made by the oil companies operating in the Netherlands sector of the Continental Shelf. A separate brochure on this subject is available from the Ministry. The highlights of the survey are summarized here.

In 1984 the oil companies spent fls. 3,134 million on their offshore operations in the Netherlands sector of the North Sea. Of this, 69.6% was spent on exploration for and production of gas and 29.2% on exploration for and production of oil.

Exploration expenditures amounted to fls. 646 million (20.6% of the total), of which fls. 523 million was spent on exploration and appraisal wells. Investment expenditures in new production facilities during 1984 amounted to fls 1,648 million, which with 52.6% was the biggest expenditure item of the total.

Within this category, expenditure on platforms (fls. 752 million) and on drilling and completing production and injection wells (fls. 666 million) were by far the biggest items. Fls. 130 million was spent on pipelines.

The last main category is that of operational activities, i.e. expenses required for day-to-day operation of producing fields. Oil companies' spending on this category amounted to fls. 839 million (20.6% of the total).

The survey was also aimed at finding out the position of the Dutch industry supplying goods and services to the offshore activities of oil companies.

Of the total of fls. 3,100 million, an amount of fls. 483 million guilders (just over 15 per cent) was spent by the oil companies themselves, either on their own activities here in the Netherlands or on services within the corporate organization.

In 1984, suppliers received orders worth 2,600 million guilders, or almost 85 per cent of total spending. Of that amount, 20% went directly to suppliers established abroad.

The rest, about 64 per cent of total spending, was received by Netherlands suppliers. However, that does not mean that these were net amounts received in the Netherlands. Some of the Netherlands suppliers (perhaps

15 per cent) are trading companies representing foreign manufacturers. Subtraction of this part leaves the proportion which was spent within Dutch industry: the share of the manufacturing and service companies established in the Netherlands was just over 40% in 1984. This is consistent with estimates which the ministry has made in the past on this subject.

5.7

NATURAL GAS PROCEEDS FOR THE STATE

The revenues accruing to the Treasury from oil and gas production, traditionally called the "gas revenues", have over the years come to be of essential importance to the national budget. The following graph illustrates the development of these revenues. On the one hand, this income to the State consists of the corporate income tax paid by the various companies holding one or more concessions or production licences.

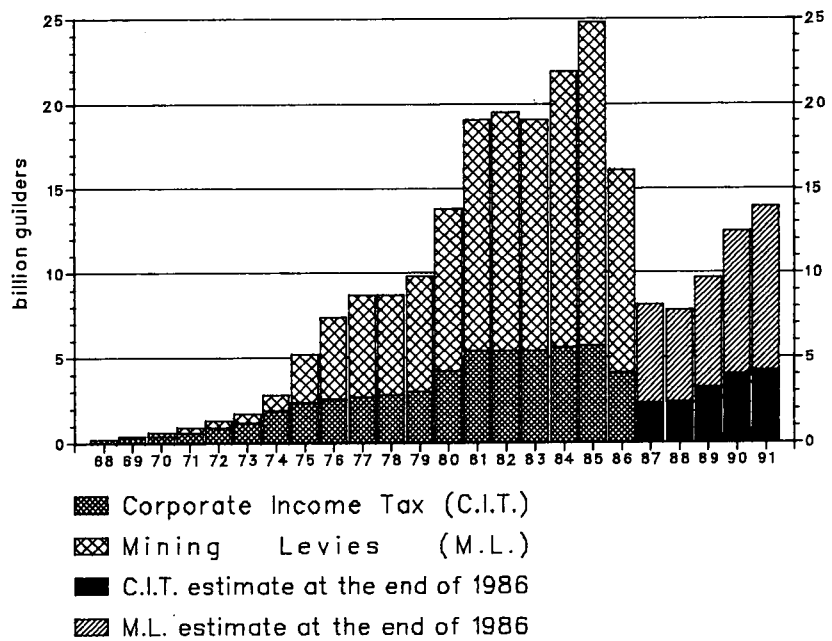
In addition, the State also receives an amount of "Non-tax Moneys", consisting of surface rights, royalties, state profit share, the special payment on production from the Groningen field and the profit distributed by DSM Aardgas BV, a company which participates in production on behalf of the State.

These figures do not include receipts from value-added tax and environmental levies.

The enormous fall in gas revenues during 1986 and 1987 is a direct consequence of the substantial fall in oil prices, the likewise large fall in the dollar exchange rate and also the decline over the same period of Dutch gas exports abroad. Furthermore, there is the fact that production from the Groningen field (with a high government take) is declining in favour of growing production from smaller fields with higher costs and lower government take.

The estimates incorporated in the graph for the years 1987-1991 give an indication based on recent insights. The assumptions include one that the oil price will reach a level of \$24 f.o.b. per barrel in 1990.

Development of gas revenues on a transaction basis
in billion guilders



6. LEGAL FRAMEWORK

6.1 Mining legislation

6.1.1 Netherlands territory

The production of oil and gas on Netherlands territory (including territorial waters as far as three miles offshore) is governed in the Mining Act of 1810 (Bulletin des Lois, 285). Under this act a concession is required which is granted by the Crown after hearing the Council of State. Access to the land in order to carry out mining activities at the chosen location(s) is subject to approval of the landowner concerned. The concession gives the concession-holder perpetual ownership of the minerals present in the subsoil.

The Mining Act 1903 (Official Journal 1904, Nr. 73) provides for the concession-holder to be served notice of default for failure to fulfil the obligations relating to exploitation of the mine that are incumbent on him by provisions of and pursuant to the Act. On the basis of this act, the Mining Regulations 1964 (Official Journal Nr. 538) were enacted, setting out regulations for mining activities. These relate in particular to safety in mine development and exploitation, to the health of persons employed for that purpose, to the working conditions in mines and to the protection of the environment.

In the year under review, a bill proposing amendments to the Mining Act 1810 and the Mining Act 1903 was submitted to the Lower House of Parliament by Royal Decree of 22nd September, 1986. The main proposals of the bill are as follows:

- Restriction on the duration of new concessions granted. In determining the period for which a new concession will be valid, the nature and the volume of the minerals to be produced and the desired production rate will among other things, be taken into account. In certain cases an extension will be possible.
- The requirement to obtain approval to transfer the entire concession.
- It will no longer be necessary to hear the Council of State (Administrative Disputes Section) prior to a Crown decision concerning the award of a concession and it will accordingly become possible to appeal against future decisions by means of the so called "AROB"-procedure.

In addition to the landowner's consent, Section 2 of the Minerals Exploration Act (Official Journal 1967, 258) requires a licence from the Minister of Economic Affairs for exploration for oil and gas by means of drilling (the drilling licence).

This requirement does not apply to a concession-holder drilling in his production concession area.

Before awarding concessions or drilling licences, the Minister of Economic Affairs asks the opinion of the interdepartmental "Advisory Committee on vulnerable areas to be protected from drilling", in which the Ministry of Defence, Ministry of Agriculture and Fisheries, Ministry of Transport and Public Works, Ministry of Housing, Physical Planning and Environmental Management, Ministry of Economic Affairs, and the Geological Survey of the Netherlands are represented.

This committee was set up by the Minister of Economic Affairs in 1973 in order to ensure balanced consideration of the interest of energy supply and other interests such as nature, country side and the environment. Before giving its opinion, the committee hears the provincial executives of the provinces concerned. On the basis of this opinion, all drilling licences and concessions are made subject to a condition which prohibits the performance of drilling or installation of above-ground facilities within extremely vulnerable and highly important areas designated. Furthermore the committee designates areas where it considers that exploration and production activities may only be performed subject to special restrictions. These are known as "attention areas".

In addition, the holder of a concession or drilling licence is obliged to consult the interdepartmental Planning Commission set up by the Minister of Economic Affairs, with regard to the construction of a location for drilling or production purposes, the placing thereon of equipment or installations relating to the said activities, and the performance of other work relating to a location as aforementioned, whenever such activities take place in such attention areas, in order to ensure that such works are duly planned to be integrated into their natural environment as fully as possible. In areas where no special environmental protection is required from the national point of view, consultation with the provincial planning commission is sufficient. This obligation has been in force since 1966; concessions granted before that date carry the condition that the above-mentioned consultation must be conducted with a planning commission set up by the province concerned.

The Director of the Geological Survey of the Netherlands issues an advisory report on the geological aspects and boundaries of the area applied for. By General Administrative Order of 27th April, 1984, (Official Journal 228) above-ground works and installations relating to mines were designated. This implies that with regard to such works and installations it is not the Labour Act 1979, Safety Act 1934 and Public Nuisance Act which are applicable but the mining legislation, in this case the Mining Regulations 1964.

6.1.2

Continental Shelf

With regard to exploration for and production of minerals on the Netherlands sector of the Continental Shelf, a different regime applies from that governing onshore operations. The rules for mining activities on the Continental Shelf are laid down in the Mining Act Continental Shelf which came into force on 1st March 1967 and several Royal Decrees based on that act. This act recognizes three different licences, namely:

- the reconnaissance licence: this gives a non-exclusive right to perform seismic surveys for an area and period fixed in the licence;
- the exploration licence: this gives an exclusive right to perform exploration activities, including drilling, for one or more blocks or block segments;
- the production licence: this gives an exclusive right to produce the minerals specified in the licence, in one or more blocks or block segments.

The licences may be made subject to restrictions and conditions. With regard to exploration and production licences for oil or gas these are laid down in the General Administrative Order of 1976 (Official Journal 102). These concern inter alia financial arrangements, state participation, duration of the licence and work obligation. Before 1976 there was a similar decree (General Administrative Order 1967 (Official Journal 24), which applies to production licences for blocks for which the licence-holder had been granted an exploration licence before the 1976 General Administrative Order came into effect.

Rules relating among other things to the safety, health and labour by personnel employed on mining installations on the Continental Shelf and also relating to the environment are laid down in the Mining Regulations - Continental Shelf (Official Journal 1967, 158) enacted on the basis of Section 26 of the Mining Act - Continental Shelf. These regulations also contain rules in the interest of shipping, fishing and for the prevention of sea pollution. The Inspector-General of Mines has both onshore and offshore responsibility for supervising the performance of mining activities.

Pursuant to Section 3 of the Mining Act Continental Shelf, it may be laid down by General Administrative Order that no licences or exemptions shall be granted for designated parts of the Continental Shelf. The exclusion of areas for mining activities as indicated on the "Mining Legislation Chart" (Official Journal 102, 1976), as last amended by Royal Decree of 20th February 1986 (Official

Journal 65), is connected with shipping and defence interests.

In addition, it is possible by General Administrative Order, based on Section 12 of the Mining Act - Continental Shelf, to impose certain restrictions on the performance of mining activities in certain areas designated in the Order. These are known as restriction areas. Such areas have also been designated hitherto in connection with shipping and defence interests. They are also indicated on the above-mentioned mining legislation chart. The principal consequence of designating a restriction area is that, in order to position a mining installation in such an area, special approval is required from the Minister of Economic Affairs, to be granted in agreement with the Minister of Transport and Public Works and/or the Minister of Defence. A mining company is only subject to these restrictions if the subject licence is granted after the restriction area has been designated. If licences are already in force at the time when such an area is designated, the consequences thereof (for example the requirement of special approval) do not apply to the holders concerned. Nevertheless, in practice a code of conduct is observed which ensures that, even in the latter type of situation, the greatest possible consultation is conducted amongst all parties concerned with a view to achieving an optimal positioning of the mining installations - in view of the interests of shipping or defence.

All licence and concession applications, both onshore and offshore, are subject of advisory reports, first by the Geological Survey of the Netherlands and subsequently by the Mining Council.

Financial arrangements

In the view of the Netherlands government, the proceeds from the exploitation of hydrocarbons present in the sub-soil of the Netherlands territory and in the Netherlands sector of the Continental Shelf, should accrue in part to the community.

The government has decided to leave the initiative for exploration for and production of oil and gas with private industry. In view of this, a system of financial arrangements has been developed whereby the proceeds of oil and gas production are shared between the State, as the guardian of the public interest, and the production company. The guiding principle is that the production company must be given a fair yield on its investments. In the first place, like other firms, oil companies pay corporate income tax on the profit gained on their operations. Moreover, additional financial arrangements, which can be classed in a number of categories, have been imposed via the mining legislation and supplementary agreements.

A. Land Concessions granted before 1967

The agreements relating to these concessions include the clause that the concession-holder has to pay the State 10% per annum of the credit balance of a profit and loss account. For the purpose of drawing up the profit and loss account for the "Staatsaandeel" (State Share), or SA, the corporate income tax due is regarded as a cost item. On the other hand, the SA is a cost item for the purpose of calculating the corporate income tax. Following the reduction in the rate of corporation tax (Vpb) in 1984, an additional payment (AB) was agreed with concession holders as a result of which the total payments (Vpb+SA+AB) equal those in a situation where the rate of corporate income tax is 48%.

Special terms are applied for the "Groningen" concession. At the time the concession was granted, the State stipulated that it would have a 40% participation in the production. In addition, special profit arrangements have been agreed with the licence-holders. These mean that the State is entitled to an additional payment (on top of tax and SA) to a total of 85% or 95%, respectively, of the proceeds above specified reference levels.

B. Concessions and production licences granted after 1967

For concessions and licences granted between 1967 and 1976, the conditions laid down by the 1967 General Administrative Order (Official Journal 24) apply.

For concessions granted after 1976, the conditions as laid down in the 1976 General Administrative Order (Official Journal 102) apply.

C. Licences based on the 1967 General Administrative Order

On receipt of an exploration licence, a bonus had to be paid of fls. 1,000 per km². In addition, an additional surface right is payable per km².

The production licence holder also has to pay the State an annual surface right. By Royal Decree of 11th June 1974 it was laid down that these amounts are increased annually by the wage index figure.

A production licence holder has to pay the State royalties. These are fixed according to a "sliding scale" whereby the percentage rises with the volume of production. The royalties are calculated on the sales value of the mineral, reduced - within certain limits - by the costs of treatments, transport and storage.

The "Winsttaandeel" (profit share), or WA, is payable on the profit made on production. A different method of calculation was chosen for the WA than for the above-mentioned (land)concessions, because it was not certain that production activities on the Continental Shelf would be subject at all times to corporate income tax. For that reason the WA was set at 50% of the balance of a profit and loss account to be drawn up annually, reduced by corporate income tax.

In addition, the State is entitled to taken a 40% share in the production of gas. This share is embodied in DSM Aardgas B.V., a subsidiary of Dutch State Mines N.V. which is a state-owned corporation. When a production licence is granted, the State will decide whether or not to participate. If it does, it will then refund 40% of the exploration costs incurred in finding the reserves. Accordingly, the State does not bear the exploration risk, not even in the case of further exploration in the licence area.

D. Licences based on the 1976 General Administrative Order

New conditions were fixed by the 1976 General Administrative Order. With regard to production licences, these are only applicable to licences granted after 1976, with the exception of production licences granted on the basis of exploration licences granted prior to 1976. The bonus and the surface rights were doubled.

The inflation indexation was retained. The royalty rates were altered, as was the calculation method. The rate also rises in line with production, but it now applies to the entire production volume in contrast to the "sliding scale". The value taken for calculating the royalties is the value in the subsoil. In this way the production costs are taken into account, in order to encourage the development of high cost fields.

The WA rate was set at 70%, with an additional deduction of 70% on the depreciation of production assets and of 20% on operational costs being allowed. However, this applies on condition that a minimum of 50% is always payable, disregarding the special deduction. The State share in the venture was set at a maximum of 50% for both oil and gas production.

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ONSHORE DRILLING LICENCES GRANTED

AT JANUARY 1, 1987

Licence-holders	Drilling Licence	*	Area in ha.	In force as from	Off. Gaz.
1 <u>British Petroleum Exploratie Maatschappij Nederland B.V.</u> - Chevron U.S.A. Inc.	Centraal Nederland	19	158,013	20-06-'80	129
2 <u>British Petroleum Exploratie Maatschappij Nederland B.V.</u> - Chevron U.S.A. Inc.	Eindhoven	15	398,515	7-10-'84	185
3 <u>Nederlandse Aardolie Maatschappij B.V.</u>	Utrecht II	1	87,237	29-08-'71	175
	Terschelling West	5	329	26-06-'78	20 ('80)
	Overijssel Noord II	8	18,245	12-06-'80	129
	Noordoost Overijssel	10	16,117	03-07-'80	135
	Noordoostpolder	11	61,090	05-07-'80	135
	Rotterdam-Zuid	13	23,517	09-01-'82	26
	Haulerwijk	14	4,742	02-03-'82	75
	Andel	4	36,252	20-06-'84	53
	Kampen	16	45,375	09-06-'84	110
IJsselmeer	22	87,450	02-06-'86	107	
4 <u>Nederlandse Aardolie Maatschappij B.V.</u> - Amoco Netherlands Petroleum Company - Dyas B.V. - Veba Oil Nederland B.V.	Roosendaal	2	131,422	22-09-'84	239

Licence-holders	Drilling Licence	*	Area in ha.	In force as from	Off. Gaz.
5 <u>Nederlandse Aardolie Maatschappij B.V.</u> - Dyas B.V. - Veba Oil Nederland B.V. - Chevron U.S.A. Inc. - Texaco Netherlands Inc.	Zuid-Friesland II	7	72,760	30-06-'79	202
6 <u>Nederlandse Aardolie Maatschappij B.V.</u> - DSM Energie B.V.	Zeeland Vlieland II	12 20	196,142 26,000	22-01-'81 28-11-'85	27 235**
7 <u>Nederlandse Aardolie Maatschappij B.V.</u> - Dyas B.V. - Veba Oil Nederland B.V.	Almelo	18	54,670	18-11-'85	252
8 <u>Petroland B.V.</u> - Eurafrep Nederland B.V. - Corexland B.V. - Cofraland B.V.	Kolhorn Gorredijk Breda	3 6 17	95,400 71,000 74,840	30-05-'78 29-09-'79 22-06-'84	113 215 143
9 <u>Petroland B.V.</u> - Cofraland B.V. - Corexland B.V. - Dyas B.V. - Eurafrep Nederland B.V. - Total Marine Exploitatie Maatschappij B.V.	Amersfoort	19	126,580	15-03-'86	207
10 <u>Placid International Oil Ltd.</u>	Engelsmangat	21	3,770	08-07-'86	133**

* Numbers refer to survey map in annex 19.

** Not effective at January 1st 1987; date and Off. Gazette concern the grant.

ONSHORE CONCESSIONS GRANTED

AT JANUARY 1ST, 1987

Concession-holders	Concession	*	Area in ha.	Awarded	Off. Gaz.
1 <u>Amoco Netherlands Petroleum Company</u> - Dyas B.V. - Veba Oil Nederland B.V.	Bergen	XIII	25,240	01-05-'69	94
2 <u>Chevron U.S.A. Inc.</u> - Texaco Netherlands Inc.	Akkrum	V	21,916.5	17-02-'69	46
3 <u>Nederlandse Aardolie Maatschappij B.V.</u>	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	35,995	17-02-'69	47
	Middelie	XII	68,152	01-05-'69	94
Twente	IX	27,584	27-01-'77	26	
4 <u>Nederlandse Aardolie Maatschappij B.V.</u> - Mobil Producing Netherlands Inc.	Noord-Friesland	I	59,424	17-02-'69	47
5 <u>Petroland B.V.</u> - Cofraland B.V. - Corexland B.V. - Eurafrep Nederland B.V.	Oosterend	XVI	9,156	23-03-'85	84
6 <u>Petroland B.V.</u> - Cofraland B.V. - Corexland B.V. - Eurafrep Nederland B.V. - Total Marine Exploi- tatie Maatschappij B.V.	Leeuwarden	IV	61,360	17-02-'69	46
	Slootdorp	XI	16,170	01-05-'69	94
	Zuidwal	XV	22,522	28-08-'84	190

* Roman numerals refer to the survey map in annex 19.

TABLE OF RECONNAISSANCE LICENCES AWARDED IN 1986

Licence-holder	Blocks/ part of blocks	Area in sq.km	In force as from	Term	Off. Gaz.
Mobil Producing Netherlands Inc.	Q2	152	27-01-86	6 months	24
Unocal Netherlands Inc.	F16 L1	295	05-01-86	6 months	28
Britoil (Alpha) Ltd.	E1,18 D6,9,12, 15,18 F10 K2,3	7,510	26-05-86	6 months	99
Nopec A.S.	A5,8,9,12 B10,14 F3,9 G7 H16 N1	47	19-06-86	6 months	118
Geophysical Service Inc.	D6,9,12,15 E4,7,10,11 13,14,16	3,514	07-07-86	6 months	130
Statoil Netherlands B.V.	L5,6,8,9,12 M4,7	425	24-07-86	6 months	145
Amoco Netherlands Petroleum Company	L4 Q16	175	16-07-86	12 months	148
Geophysical Service Inc.	E17,18 K2,3	1,375	06-08-86	6 months	151
Geophysical Service Inc.	J3 K1 P12,15 Q7,10,11, 13,14	1,190	05-09-86	6 months	173

Licence-holder	Blocks/ part of blocks	Area in sq.km	In force as from	Term	Off. Gaz.
Geophysical Service Inc.	F18 G16,17,18 H16 L3,6,9 M1,2,3,4 5,6,7,8 N1,4	3,333	05-09-86	6 months	173
Geophysical Company of Norway	A17,18 B13,14,16 D6 E1,2,4,9, 12,15,18 F1,4,7 K3,5,6,8,11, 14,16,17 O15,18 P1,4,10,13 R3,6,9	273	25-09-86	6 months	187
Total surface area granted:		<u>18,289 sq. km</u>			

OFFSHORE EXPLORATION LICENCES GRANTED

AT JANUARY 1ST, 1987

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
1 <u>Amoco Netherlands Petroleum Company</u> 4th Round: P18a	105	21-12-'77/83	9('78)/235
2 <u>Amoco Netherlands Petroleum Company c.s. I</u> - Dyas B.V. - Veba Oil Nederland B.V. 4th Round: L5b en L8b F 17b	441 130	26-05-'82 07-03-'83	110 61
3 <u>Amoco Netherlands Petroleum Company c.s. II</u> - Dyas B.V. - Veba Oil Nederland B.V. - Pennzoil Nederland Company - Amax Petroleum Corporation - Billiton Exploratie Maatschappij B.V. - Caland Exploratie B.V. - Falcon Seaboard Inc. - Hoogovens Delfstoffen B.V. - Noordzee Selection B.V. - Wintershall Nederland B.V. - Petroland B.V. - Van Dyke Energy Company - Anadarko Netherlands Petroleum Company - Champlin International Petroleum Company - Newmont Netherlands Petroleum Company 1st Round: P9a en P9b	126	19-03-'68/'78	62/50
4 <u>Amoco Netherlands Petroleum Company c.s. III</u> - Dyas B.V. - Veba Oil Nederland B.V. - Unocal Netherlands Inc. - DSM Energie B.V. - Nedlloyd Energy B.V. 4th Round: L16b en P11a	309	10-07-'79/'85	140/129

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
5 <u>Amoco Netherlands Petroleum Company c.s. IV</u> - Dyas B.V. - Veba Oil Nederland B.V. - BP Exploratie Maatschappij Nederland B.V. - Bricomin Exploration Company Ltd. - DSM Energie B.V. - DSM Energy (Netherlands) Ltd. - Enserch Netherlands Inc. - GAO North Sea Ltd. - GAO North Sea Exploration Ltd. - Oranje-Nassau Energie B.V. - Pacific Lighting Exploration Company 4th Round: P15c en Q10b	259	26-11-'80/'86	247/231
6 <u>Amoco Netherlands Petroleum Company c.s.V</u> - BP Exploratie Maatschappij Nederland B.V. - Dyas B.V. - Veba Oil Nederland B.V. 4th Round: F13a, F16a en F16b	421	26-09-'79/'85	200/207
7 <u>Bow Valley Industries Ltd. c.s. I</u> - Kerr-McGee Corporation 4th Round: Q11b	77	13-11-'80	230
8 <u>BP Exploratie Maatschappij Nederland B.V.</u> 4th Round: F7a en F10a	409	26-09-'79/'85	200/207
9 <u>B.P. Exploratie Maatschappij Nederland B.V. c.s.I</u> - Chevron USA Inc. 4th Round: F14b en F14c Q2a, Q5a en Q5b F11b en F12b 5th Round: Q2b	100 39 156 18	26-06-'81 25-02-'82 08-03-'83 21-03-'85	131 48 61 109
10 <u>B.P. Exploratie Maatschappij Nederland B.V. c.s. III</u> - Bricomin Exploration Company Ltd. - DSM Energie B.V. - DSM Energy (Netherlands) Ltd. - GAO North Sea Ltd. - GAO North Sea Exploration Ltd. - Oranje-Nassau Energie B.V. - Pacific Lighting Exploration Company - Scurry Rainbow Oil Ltd. - Van Dyke Netherlands Inc.			

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
<ul style="list-style-type: none"> - Charterhouse Petroleum Netherlands Ltd. - Dow Chemical (Nederland) B.V. - R.T.Z. Oil and Gas Ltd. - Scampol B.V. 			
2nd Round: L1a en L1b	118	02-11-'70/'80	220/205
11 <u>B.P. Exploratie Maatschappij Nederland B.V.</u> <u>c.s. IV</u> <ul style="list-style-type: none"> - Bricomin Exploration Company Ltd. - DSM Energie B.V. - DSM Energy (Netherlands) Ltd. - GAO North Sea Ltd. - GAO North Sea Exploration Ltd. - Oranje-Nassau Energie B.V. - Pacific Lighting Exploration Company - Van Dyke Netherlands Inc. <ul style="list-style-type: none"> - Amoco Netherlands Petroleum Company - Dyas B.V. - Veba Oil Nederland B.V. 			
1st Round: P2a	216	10-04-'68/'78	77/69
12 <u>B.P. Exploratie Maatschappij Nederland B.V. c.s. V</u> <ul style="list-style-type: none"> - Agip (Nederland) B.V. - Pacific Lighting Exploration Company 			
5th Round: M8 en M11	432	21-03-'85	92
13 <u>Continental Netherlands Oil Company c.s. I</u> <ul style="list-style-type: none"> - Kuwait Petroleum (Nederland) Exploration and Production Company B.V. 			
4th Round: 012 en P10	351	16-08-'83	170
14 <u>Continental Netherlands Oil Company c.s. II</u> <ul style="list-style-type: none"> - Enterprise Oil (TOI) Ltd. - Kuwait Petroleum (Nederland) Exploration and Production Company B.V. - Polar Bear International Petroleum Ltd. 			
4th Round: G16b	182	29-03-'83	76
15 <u>Continental Netherlands Oil Company c.s. II</u> <ul style="list-style-type: none"> - L.L. & E. Netherlands Petroleum Company - Oranje Nassau Energie B.V. 			
5th Round: M4a, M5a en M6a	363	15-04-'85	92

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
16 <u>DSM Energie B.V.</u> - Houston Oil and Minerals of the Netherlands Inc. - Pogo Netherlands Inc. 4th Round: F8a	200	01-12-'78/'84	2('79)/46('85)
17 <u>Mobil Producing Netherlands Inc.</u> 4th Round: B14a en B17b	270	25-10-'79/'85	221/208
18 <u>Mobil Producing Netherlands Inc. c.s. I</u> - Bow Valley Industries Ltd. - Bristol Oil and Minerals Plc. - Pan Ocean Petroleum Netherlands Ltd. - Sunningdale Oils Ltd. 3rd Round: P4a en P4b	82	19-12-'72/ '82	2('73)/ 1('83)
19 <u>Mobil Producing Netherlands Inc. c.s. II</u> - Charterhouse Petroleum Netherlands Ltd. - Enterprise Oil (TNS) Ltd. - Enterprise Oil (TOI) Ltd. - Holland Sea Search B.V. - Kewanee Industries Inc. - Newmont Holland Inc. - Newmont Oil Company International - Texas Eastern Netherlands Inc. - Triton North Sea Operators Ltd. 1st Round: P8a 4th Round: P2b en P5a	210 323	08-03-'68/'78 23-11-'78	54/46 248
20 <u>Mobil Producing Netherlands Inc. c.s. III</u> - Charterhouse Petroleum Netherlands Ltd. - Enterprise Oil (TNS) Ltd. - Enterprise Oil (TOI) Ltd. - Holland Sea Search B.V. - Kewanee Industries Inc. - Newmont Oil Company International - Texas Eastern Netherlands Inc. - Triton North Sea Operators Ltd. 4th Round: P8b	209	23-12-'83	8(84)
21 <u>Mobil Producing Netherlands Inc. c.s. IV</u> - Polar Bear International Petroleums Ltd. 4th Round: L6c	75	14-04-'83	89

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
22 <u>Mobil Producing Netherlands Inc. c.s. V</u> - DSM Energie B.V. - Holland Sea Search II B.V. - Hollandsche Delfstoffen Maatschappij (HDM) B.V.			
5th Round: F5	398	10-04-'85	92
P12	420	10-04-'85	92
23 <u>Mobil Producing Netherlands Inc. c.s. VI</u> - Holland Sea Search II B.V. - Hollandsche Delfstoffen Maatschappij (HDM) B.V.			
5th Round: Q10a	155	10-04-'85	92
24 <u>Mobil Producing Netherlands Inc. c.s. VII</u> - Holland Sea Search II B.V.			
4th Round: G11a, G14a, G15a, G17a en G17b	632	12-06-'79/'85	127/169
F15b, F15c en G13a	299	12-06-'79/'85	127/106
25 <u>Nederlandse Aardolie Maatschappij B.V.</u>			
1st Round: F17a en L2	680	08-03-'68/'78	54/50
K17	414	08-03-'68	54
2nd Round: L3a, L5a, L6a, L6b en G16a	552	21-09-'70/'80	191/177
P1	208	21-09-'70	191
3rd Round: A14a en A18a	413	11-12-'72/'82	250/244
K1a, K1b, K3a, K3b en L15a	476	11-12-'72/'82	250/244
4th Round: L9a	208	14-06-'78/'84	128/99
E9a, E9b, E12a en E15a	409	14-06-'78/'84	128/99
E17 en E18	808	19-02-'81	47
G18 en H16	477	26-03-'82	74
26 <u>Nederlandse Aardolie Maatschappij B.V. c.s. I</u> - Mobil Producing Netherlands Inc.			
1st Round: M9a	212	08-03-'68/'78	54/46
27 <u>Nederlandse Aardolie Maatschappij B.V. c.s. II</u> - DSM Energie B.V.			
4th Round: J3a	72	02-11-'76/'82	223/211
A9a en A12a	230	20-12-'78/'84	4('79)/46('85)
P3a en P3b	210	20-12-'78/'84	4('79)/20('85)
D6, D9, D15 en E7	859	24-02-'81	47
D18a, K2a, K2b en K5b	398	08-06-'79/'85	117/106
Q16b	80	02-03-'83	54
5th Round: F18a	206	15-04-'85	92
Q13a	367	15-04-'85	92

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
28 <u>Nederlandse Aardolie Maatschappij B.V. c.s. III</u> - Clam Petroleum Company - Newmont Netherlands Petroleum Company - Oranje-Nassau Energie B.V.			
1st Round: L12a	343	12-03-'68	54
29 <u>Nederlandse Aardolie Maatschappij B.V. c.s. IV</u> - Clam Petroleum Company - DSM Energie B.V. - Newmont Netherlands Petroleum Company			
4th Round: L12b en L15b	187	13-04-'78	84
30 <u>Pennzoil Nederland Company c.s. I</u> - Amax Petroleum Corporation - Billiton Exploratie Maatschappij B.V. - Caland Exploratie B.V. - Diamond Shamrock Netherlands Petroleum B.V. - Hoogovens Delfstoffen B.V. - Noordzee Selection B.V. - Wintershall Nederland B.V.			
2nd Round: L8a	213	29-09-'70/'80	197/177
4th Round: D12, E13 en E14	1,051	02-03-'81	50
F18b	198	28-02-'83	54
P14	422	14-11-'83	237
31 <u>Pennzoil Nederland Company c.s. II</u> - Amax Petroleum Corporation - Billiton Exploratie Maatschappij B.V. - Caland Exploratie B.V. - Diamond Shamrock Netherlands Petroleum B.V. - Hoogovens Delfstoffen B.V. - Noordzee Selection B.V. - Wintershall Nederland B.V. - Amoco Netherlands Petroleum Company - Dyas B.V. - Veba Oil Nederland B.V.			
4th Round: K10b en K10c	94	25-09-'79/'85	200/193
32 <u>Pennzoil Nederland Company c.s. III</u> - Amax Petroleum Corporation - Billiton Exploratie Maatschappij B.V. - Caland Exploratie B.V. - Diamond Shamrock Netherlands Petroleum B.V. - Hoogovens Delfstoffen B.V. - Wintershall Nederland B.V.			
5th Round: E10a	201	18-04-'85	92

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
33 <u>Petroland B.V. c.s. I</u>			
- Cofraland B.V.			
- Corexland B.V.			
- Eurafrep Nederland B.V.			
- Total Marine Exploitatie Maatschappij B.V.			
4th Round: M7a	210	24-09-'79/'85	200/193
F9a	208	28-08-'80/'86	174/218
E4 en E16	802	25-02-'81	50
34 <u>Petroland B.V. c.s. II</u>			
- Britoil (Alpha) Ltd.			
- Cofraland B.V.			
- Corexland B.V.			
- Eurafrep Nederland B.V.			
- Norsk Hydro Holland B.V.			
- Total Marine Exploitatie Maatschappij B.V.			
5th Round: F15a	234	17-04-'85	92
K16	267	17-04-'85	92
35 <u>Petroland B.V. c.s. III</u>			
- Bow Valley Industries Ltd.			
- Britoil (Alpha) Ltd.			
- Cofraland B.V.			
- Corexland B.V.			
- Eurafrep Nederland B.V.			
- Hamilton Brothers U.K. Petroleum Corporation			
- Peko Offshore Ltd.			
- TCPL Resources Ltd.			
- Total Marine Exploitatie Maatschappij B.V.			
5th Round: K4b en K5a	305	17-04-'85	92
36 <u>Placid International Oil Ltd. c.s. I</u>			
- HPI Netherlands Ltd.			
- Rosewood Exploration Ltd.			
3rd Round: A15a	197	23-01-'73/'83	27/5
4th Round: A8a en A11a	383	01-06-'78/'84	114/130
A5a	46	02-04-'79/'85	74/29
E10b en E11	601	01-04-'81	77
5th Round: N7	315	18-04-'85	92

Licence-holders	Area in sq. km	In force as from/ relinquishment	Off. Gaz.
37 <u>Placid International Oil Ltd. c.s. III</u> - Bristol Oil and Minerals Plc. - Energieversorgung Weser-Ems AG (EWE) - HPI Netherlands Ltd. - KRC of Holland Inc. - Nederlandse Aardolie Maatschappij B.V. - Rosewood Exploration Ltd. 2nd Round: L14	412	15-10-'70	209
38 <u>Placid International Oil Ltd. c.s. IV</u> - Bristol Oil and Minerals Plc. - Energieversorgung Weser-Ems AG (EWE) - Goal Olie- en Gasexploratie B.V. - Goal Petroleum Plc. - HPI Netherlands Ltd. - Rosewood Exploration Ltd. - Ultramar Exploration (Netherlands) B.V. 4th Round: K9c	198	30-05-'80	114
39 <u>Placid International Oil Ltd. c.s. V</u> - Continental Netherlands Oil Company - HPI Netherlands Ltd. - L.L. & E. Netherlands Petroleum Company - Oranje-Nassau Energie B.V. - Rosewood Exploration Ltd. 5th Round: M10	222	18-04-'85	92
40 <u>Statoil Netherlands B.V. c.s. I</u> - Dyas B.V. - Veba Oil Nederland B.V. 5th Round: F14a	202	18-03-'85	92
41 <u>Ultramar Exploration (Netherlands) B.V. c.s. I</u> - Berkeley Exploration and Production plc - Det Norske Oljeselskap A.S. - Petrolex (Nederland) B.V. - Saxon Oil Ltd. 5th Round: J3b en J6	124	10-04-'85	92
42 <u>Unocal Netherlands Inc. c.s. I</u> - Nedlloyd Energy B.V. 4th Round: P9c F2b	267 90	21-06-'79/'85 07-03-'83	127/106 62

Licence-holders	Area in sq.km	In force as from/ relinquishment	Off. Gaz.
43 <u>Unocal Netherlands Inc. c.s. II</u>			
- DSM Energie B.V.			
- Nedlloyd Energy B.V.			
4th Round: L1c	151	19-05-'82	110
5th Round: L17b	220	10-04-'85	92
Q7	419	10-04-'85	92
44 <u>Unocal Netherlands c.s. Inc. III</u>			
- Charterhouse Petroleum Netherlands Ltd.			
- Enterprise Oil (TNS) Ltd.			
- Enterprise Oil (TOI) Ltd.			
- Holland Sea Search B.V.			
- Kewanee Industries Inc.			
- Mobil Producing Netherlands Inc.			
- Nedlloyd Energy B.V.			
- Newmont Holland Inc.			
- Newmont Oil Company International			
- Texas Eastern Netherland Inc.			
- Triton North Sea Operators Ltd.			
4th Round: Q4b en Q4c	145	19-09-'79/'85	192/215
45 <u>Unocal Netherlands Inc. c.s. IV</u>			
- Aberford Resources (US) Ltd.			
- Altana Exploration Company			
- KRC of Holland Inc.			
- Nedlloyd Energy B.V.			
- Preussag Aardolie B.V.			
- Reading & Bates Netherlands Petroleum Co.			
- Texel Petroleum C.V.			
- Trend Energy Netherlands Ltd.			
- Van Dyke Energy Company			
5th Round: F12a	<u>321</u>	10-04-'85	92
TOTAL	23,852 sq.km		
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OFFSHORE PRODUCTION LICENCES GRANTED

AT JANUARY 1st 1987

Licence-holders	Block/ part of blocks	Round Expl. lic.	Area in sq. km.	In force as from	Off Gaz.
1 <u>Amoco Netherlands Petroleum Company c.s. A</u>	P15a en P15b	1	220	12-07-'84	150
- Dyas B.V.					
- Veba Oil Nederland B.V.					
- British Petroleum Exploratie Maatschappij Nederland B.V.					
- Bricomin Exploration Company Ltd.					
- DSM Energie B.V.					
- DSM Energy (Netherlands) Ltd.					
- Enserch Netherlands Inc.					
- GAO North Sea Ltd.					
- GAO North Sea Exploration Ltd.					
- Oranje-Nassau Energie B.V.					
- Pacific Lighting Exploration Company					
- Van Dyke Netherlands Inc.					
2 <u>British Petroleum Exploratie Maatschappij Nederland B.V.</u>	Q8	1	247	15-09-'86	187
- Chevron U.S.A. Inc.					
3 <u>Continental Netherlands Oil Company c.s. A</u>	L16a	1	239	12-06-'84	130
- Cities Service Netherlands Petroleum Corporation					
- LL and E Netherlands Petroleum Company					
- Nederlandse Aardolie Maatschappij B.V.					
- Oranje-Nassau Energie B.V.					
- Petroland B.V.					
- Cofraland B.V.					
- Corexland B.V.					

Licence-holders	Block/ part of blocks	Round Expl. lic.	Area in sq. km.	In force as from	Off Gaz.
- Eurafrep Nederland B.V. - Total Marine Exploitatie Maatschappij B.V.					
- Statoil Netherlands B.V.					
4 <u>Continental Netherlands Oil Company c.s. B</u>	K18a en K18b	1	192	09-05-'83	103
- Cities Service Netherlands Petroleum Corporation					
- DSM Energie B.V.					
- LL and E Netherlands Petroleum Company					
- Nederlandse Aardolie Maatschappij B.V.					
- Oranje-Nassau Energie B.V.					
- Petroland B.V.					
- Cofraland B.V.					
- Corexland B.V.					
- Eurafrep Nederland B.V.					
- Total Marine Exploitatie Maatschappij B.V.					
- Statoil Netherlands B.V.					
5 <u>Mobil Producing Netherlands Inc. c.s. A</u>	P6	1	417	14-04-'82	83
- Charterhouse Petroleum Netherlands Ltd.					
- Enterprise Oil (TNS) Ltd.					
- Enterprise Oil (TOI) Ltd.					
- Holland Sea Search B.V.					
- Kewanee Industries Inc.					
- Newmont Holland B.V.					
- Newmont Holland Inc.					
- Newmont International B.V.					
- Newmont Oil Company International					
- Texas Eastern Netherlands Inc.					
- Triton North Sea Operators Ltd.					
6 <u>Nederlandse Aardolie Maatschappij B.V.</u>	K14	1	412	16-01-'75	18
	K15	2	412	14-10-'77	214
	K7	1	408	08-07-'81	140
	F3	1	396	09-09-'82	215
	B18a	(spont.)	40	10-10-'85	224

Licence-holders	Block/ part of blocks	Round Expl. lic.	Area in sq. km.	In force as from	Off Gaz.
7 <u>Nederlandse Aardolie Maatschappij B.V. c.s. A</u>	K8-K11 L13	1 1	820 412	26-10-'77 26-10-'77	223 223
- Clam Petroleum Company					
- Newmont Netherlands Petroleum Company					
- Oranje-Nassau Energie B.V.					
8 <u>Pennzoil Nederland Company c.s. A</u>	K13	1	324	03-10-'73	203
- Amax Petroleum Corporation					
- Billiton Exploratie Maatschappij B.V.					
- Caland Exploratie B.V.					
- Diamond Shamrock Nether- lands Petroleum B.V.					
- Hoogovens Delfstoffen B.V.					
- Noordzee Selection B.V.					
- Wintershall Nederland B.V.					
9 <u>Pennzoil Nederland Company c.s. B</u>	K10a	1	195	26-01-'83	28
- Amax Petroleum Corporation					
- Billiton Exploratie Maatschappij B.V.					
- Caland Exploratie B.V.					
- Diamond Shamrock Nether- lands Petroleum B.V.					
- Hoogovens Delfstoffen B.V.					
- Noordzee Selection B.V.					
- Wintershall Nederland B.V.					
- Amoco Netherlands Petroleum Company					
- Dyas B.V.					
- Veba Oil Nederland B.V.					
10 <u>Petroland B.V. c.s. A</u>	K6-L7 L4a F6	1 2 2	816 312 398	20-06-'75 30-12-'81 09-09-'82	126 82('82) 215
- Cofraland B.V.					
- Corexland B.V.					
- Eurafrep Nederland B.V.					
- Total Marine Exploitatie Maatschappij B.V.					

Licence-holders	Block/ part of blocks	Round Expl. lic.	Area in sq. km.	In force as from	Off Gaz.
11 <u>Placid International Oil Ltd. c.s. A</u> - HPI Netherlands Ltd. - Rosewood Exploration Ltd.	L10-L11a	1	596	13-01-'71	20
12 <u>Placid International Oil Ltd. c.s. B</u> - Arco Netherlands Inc. - Canadian Superior Oil (Nederland) B.V. - HPI Netherlands Ltd. - Netherlands North Sea Superior Oil Ltd. - Rosewood Exploration Ltd.	K12	1	411	18-02-'83	53
13 <u>Placid International Oil Ltd. c.s. C</u> - Bristol Oil and Minerals Plc. - Energieversorgung Weser-Ems AG (EWE) - Goal Olie- en Gas- exploratie B.V. - Goal Petroleum Plc. - HPI Netherlands Ltd. - Rosewood Exploration Ltd. - Ultramar Exploration (Netherlands) B.V.	K9a en K9b	1	211	11-08-'86	163
14 <u>Unocal Netherlands Inc. c.s. A</u> - Nedlloyd Energy Q/1 B.V.	Q1	1	415	11-07-'80	138
15 <u>Unocal Netherlands Inc. c.s. B</u> - Nedlloyd Energy B.V.	F2a L11b	1 2	306 161	24-08-'82 15-06-'84	215 130
	TOTAL		<u>8,360 sq.</u> km		

OFFSHORE PRODUCTION LICENCES APPLIED FOR

AT JANUARY 1ST, 1987

Licence-holders	Block/ part of block	Round expl. lic.	Published	Off. Gaz.
- Ned. Aardolie Mij B.V.	K17	1	13-03-'78	51
- Ned. Aardolie Mij B.V. c.s.	L12a	1	13-03-'78	51
- Ned. Aardolie Mij B.V.	P1	2	08-10-'80	195
- Placid Int. Oil Ltd. c.s.	L14	2	20-10-'80	203
- Ned. Aardolie Mij B.V.	L15a	3	15-01-'81	9
- Ned. Aardolie Mij B.V. c.s.	L12b/L15b	4	15-01-'81	9
- Ned. Aardolie Mij B.V.	F17a/L2	1	16-03-'83	53
- Mobil Prod. Neth. Inc. c.s.	P8a	1	25-03-'83	60
- Ned. Aardolie Mij B.V./ Mobil Producing Neth. Inc.	M9a	1	25-03-'83	60
- Amoco Neth. Petr. Cy c.s.	P9a+b	1	28-03-'83	61
- B.P. Expl. Mij Ned. B.V. c.s.	P2a	1	26-04-'83	80
- Mobil Prod. Neth. Inc. c.s.	P2b	4	12-09-'84	178
- Pennzoil Nederland Company	L8a	2	25-07-'85	142
- Ned. Aardolie Mij. B.V.	G16a	2	08-10-'85	195
- B.P. Expl. Mij Ned. B.V. c.s.	L1a en L1b	2	20-11-'85	226
- Placid Int. Oil Ltd. c.s.	K9c	4	28-02-'86	42
- NAM	K1a	3	05-12-'86	236
- NAM/DSM	J3a	4	05-12-'86	236

STATUS OF OFFSHORE BLOCKS
AT JANUARY 1ST, 1987

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area
A.	4	0.2					0.2
	5a	46	46	Placid cs	4		
	b	44					44
	7	46					46
	8a	187	187	Placid cs	4		
	b	195					195
	9a	35	35	NAM cs	4		
	b	104					104
	10	129					129
	11a	196	196	Placid cs	4		
	b	196					196
	12a	195	195	NAM cs	4		
	b	195					195
	13	212					212
	14a	184	184	NAM	3		
	b	209					209
	15a	197	197	Placid cs	3		
	b	98					98
	c	98					98
	16	294					294
	17	395					395
	18a	229	229	NAM	3		
	b	166					166
B.	10	177					177
	13	393					393
	14a	133	133	Mobil	4		
	b	64					64
	16	395					395
	17a	154					154
	b	137	137	Mobil	4		
	c	104					104
PL	18a	40	40	NAM	(sp)		
	b	158					158
D.	3	3					3
	6	65	65	NAM cs	4		
	9	149	149	NAM cs	4		
	12	245	245	Pennzoil cs	4		
	15	246	246	NAM cs	4		
PL	18a	58	58	NAM cs	4		
	b	140					140

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area	
E.	1	375					375	
	2	396					396	
	3	396					396	
	4	398	398	Petroland cs	4			
	5	398					398	
	6	398					398	
	7	399	399	NAM cs	4			
	8	399					399	
	9a	24	24	NAM	4			
	b	63	63	NAM	4			
	c	312					312	
	10a	201	201	Pennzoil cs	5			
	b	200	200	Placid cs	4			
	11	401	401	Placid cs	4			
	12a	295	295	NAM	4			
	b	51					51	
	c	55					55	
	13	403	403	Pennzoil cs	4			
	14	403	403	Pennzoil cs	4			
	15a	27	27	NAM	4			
b	376					376		
16	404	404	Petroland cs	4				
17	404	404	NAM	4				
18	404	404	NAM	4				
F.	1	396					396	
	PL	2a	306	306	Unocal cs	(1)		
		b	90	90	Unocal cs	4		
	PL	3	396	396	NAM	(1)		
		4	398					398
	pl	5	398	398	Mobil cs	5		
		6	398	398	Petroland cs	(2)		
	7a	81	81	BP expl.mij.n.cs	4			
	b	318					318	
	8a	200	200	Lasmo cs	4			
	b	199					199	
	9	399	399	Petroland cs	4			
	10a	328	328	BP expl.mij.n.cs	4			
	b	73					73	
	11a	218					218	
	b	149	149	BP expl.mij.n.cs	4			
	c	34					34	
	12a	321	321	Unocal cs	5			
	b	7	7	BP expl.mij.n.cs	4			
	c	73					73	
	13a	235	235	BP expl.mij.n.cs	4			
	b	168					168	
	14a	202	202	Statoil cs	5			
b	60	60	BP expl.mij.n.cs	4				
c	40	40	BP expl.mij.n.cs	4				
d	101					101		

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area
	15a	234	234	Petroland cs	5		
	b	97	97	Mobil	4		
	c	72	72	Mobil	4		
	16a	91	91	BP expl.mij.n.cs	4		
	b	95	95	BP expl.mij.n.cs	4		
	c	218					218
	17a	274	274	NAM	1		
	b	130	130	Amoco cs	4		
	18a	206	206	NAM cs	5		
	b	198	198	Pennzoil cs	4		
G.	7	121					121
	10	397					397
	11a	62	62	Mobil	4		
	b	95					95
	c	16					16
	13a	130	130	Mobil	4		
	b	273					273
	14a	295	295	Mobil	4		
	b	63					63
	c	45					45
	15a	117	117	Mobil	4		
	b	108					108
	16a	222	222	NAM	2		
	b	182	182	Continental cs	4		
	17a	58	58	Mobil	4		
	b	100	100	Mobil	4		
	c	246					246
	18	404	404	NAM	4		
H.	13	1					1
	16	73	73	NAM	4		
J.	3a	72	72	NAM cs	4		
	b	41	41	Ultramar cs	5		
	c	30					30
	6	83	83	Ultramar cs	5		
	9	20					20
K.	1a	83	83	NAM	3		
	b	146	146	NAM	3		
	c	177					177
	2a	27	27	NAM cs	4		
	b	110	110	NAM cs	4		
	c	269					269
	3a	83	83	NAM	3		
	b	80	80	NAM	3		
	c	243					243
	4a	306			5		306
	b	101	101	Petroland cs	5		
	5a	204	204	Petroland cs	5		
	b	203	203	NAM cs	4		
PL	6	407	407	Petroland cs	(1)		
PL	7	408	408	NAM	(1)		

Block	Nr.	Area in sq. km	Area in licence	Licence- holders	Round	Closed area	Open area
PL	8	409	409	NAM cs	(1)		
PL	9a	150	150	Placid cs	(1)		
PL	b	61	61	Placid cs	(1)		
	c	198	198	Placid cs	4		
PL	10a	195	195	Pennzoil cs	(1)		
	b	68	68	Pennzoil cs	4		
	c	26	26	Pennzoil cs	4		
	d	86					86
PL	11	411	411	NAM cs	(1)		
PL	12	411	411	Placid cs	(1)		
PL	13	324	324	Pennzoil cs	(1)		
PL	14	412	412	NAM	(1)		
PL	15	412	412	NAM	(2)		
	16	267	267	Petroland cs	5		
	17	414	414	NAM	1		
PL	18a	36	36	Continental cs	(1)		
PL	18b	156	156	Continental cs	(1)		
	c	222					222
L.	1a	31	31	BP expl.mij.n.cs	2		
	b	87	87	BP expl.mij.n.cs	2		
	c	151	151	Unocal cs	4		
	d	47					47
	e	13					13
	f	77					77
	2	406	406	NAM	1		
	3a	121	121	NAM	2		
	b	285				285	
PL	4a	312	312	Petroland cs	(2)		
	b	95					95
	5a	162	162	NAM	2		
	b	245	245	Amoco cs	4		
	6a	35	35	NAM	2		
	b	12	12	NAM	2		
	c	75	75	Mobil cs	4		
	d	285				285	
PL	7	409	409	Petroland cs	(1)		
	8a	213	213	Pennzoil cs	2		
	b	196	196	Amoco cs	4		
	9a	208	208	NAM	4		
	b	201					201
PL	10	411	411	Placid cs	(1)		
PL	11a	185	185	Placid cs	(1)sp		
PL	b	161	161	Unocal cs	(2)		
	c	65					65
	12a	343	343	NAM cs	1		
	b	68	68	NAM cs	4		
PL	13	412	412	NAM cs	(1)		
	14	412	412	Placid cs	2		
	15a	84	84	NAM	3		
	b	119	119	NAM cs	4		

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area
L. PL	16a	239	239	Continental cs	(1)		
	b	90	90	Amoco cs	4		85
	c	85					63
	17a	63					
	b	220	220	Unocal cs	5		111
	c	111					13
	18	13					
M.	1	406				406	
	2	406				406	
	3	406				406	
	4a	1	1	Continental cs	5		
	b	406				406	
	5a	100	100	Continental cs	5		
	b	307				307	
	6a	262	262	Continental cs	5		
	b	145				145	
	7a	210	210	Petroland cs	4		
	b	199					199
	8	405	405	BP expl.mij.n.cs	5		
	9a	212	212	NAM cs	1		
	b	158					158
	10	222	222	Placid cs	5		
	11	27	27	BP expl.mij.n.cs	5		
N.	1a	7					7
	b	208				208	
	4a	368					368
	b	12				12	
	5	13					13
	7	315	315	Placid cs	5		
	8	33					33
O.	12	2	2	Continental cs	4		
	15	145					145
	17	3					3
	18a	326					326
	b	42				42	
P.	1	208	208	NAM	2		
	2a	216	216	BP expl.mij.n.cs	1		
	b	199	199	Mobil cs	4		
	3a	172	172	NAM cs	4		
	b	38	38	NAM cs	4		
	c	205					205
	4a	45	45	Mobil cs	3		
	b	37	37	Mobil cs	3		
	c	80					80

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area
	5a	124	124	Mobil cs	4		
	b	293				293	
PL	6	417	417	Mobil cs	(1)		
	7	224				224	
	8a	210	210	Mobil cs	1		
	b	209	209	Mobil cs	4		
	9a	59	59	Amoco cs	1		
	b	67	67	Amoco cs	1		
	c	267	267	Unocal cs	4		
	d	26					26
	10	349	349	Continental cs	4		
	11a	219	219	Amoco cs	4		
	b	201					201
	12	420	420	Mobil cs	5		
	13	422					422
	14	422	422	Pennzoil cs	4		
PL	15a	203	203	Amoco cs	(1)		
PL	b	17	17	Amoco cs	(1)		
	c	202	202	Amoco cs	4		
	16a	305					305
	b	119				119	
	17a	337					377
	b	30				30	
	c	17				17	
	18a	105	105	Amoco	4		
	b	115					115
	c	4					4
	d	200					200
Q. PL	1	415	415	Unocal cs	(1)		
	2a	20	20	BP expl.mij.n.cs	4		
	b	18	18	BP expl.mij.n.cs	5		
	c	327				327	
	4a	183					183
	b	20	20	Unocal cs	4		
	c	125	125	Unocal cs	4		
	d	89					89
	5a	0.3	0.3	BP expl.mij.n.cs	4		
	b	18.7	18.7	BP expl.mij.n.cs	4		
	c	279				279	
	7	419	419	Unocal cs	5		
PL	8	247	247	BP expl.mij.n.cs	1		
	10a	155	155	Mobil cs	5		
	b	57	57	Amoco cs	4		
	c	111					111
	d	97					97
	11a	85					85
	b	77	77	Bow Valley cs	4		
	13a	367	367	NAM cs	5		
	b	32					32

Block	Nr.	Area in sq.km	Area in licence	Licence- holders	Round	Closed area	Open area
	14	24					24
	16a	84					84
	b	80	80	NAM cs	4	(12)	
	c	1				1	
R	2	120					120
	3a	321					321
	b	104				104	
	5	105					105
	6	413					413
	9	105					105
S.	1a	295					295
	b	130				130	
	2a	361					361
	b	64				64	
	3a	203					203
	b	137				137	
	4	426					426
	5	378					378
	6	45					45
	7	403					403
	8	128					128
	10	66					66
	11	0.2					0.2
T.	1	1				1	

57,107.4

PL= Production Licence

The other blocks or part of blocks being in licence concern exploration licences.

Annex 8a

LIST OF AVAILABLE BLOCKS AND PARTS OF BLOCKS IN THE 6TH ROUND

Blocks/ parts of blocks	sq. km	Blocks/ parts of blocks	sq. km
A4	0.2	J9	20.0
A5b	44.0	K1c	177.0
A7	46.0	K2c	269.0
A8b	195.0	K3c	243.0
A9b	104.0	K4a	306.0
		K10d	86.0
A10	129.0	K18c	222.0
A11b	196.0	L1d	47.0
A12b	195.0	L1e	13.0
A13	212.0	L1f	77.0
A14b	209.0	L4b	95.0
A15b	98.0	L9b	201.0
A15c	98.0	L11c	65.0
A16	294.0	L16c	85.0
A17	395.0	L17a	63.0
		L17c	85.0
A18b	166.0	L18	13.0
B10	177.0	M7b	199.0
B13	393.0	M9b	158.0
B14b	64.0	N1a	7.0
B16	395.0	N4a	368.0
B17a	154.0	N5	13.0
B17c	104.0	N8	33.0
B18b	158.0	O15	145.0
D3	3.0	O17	3.0
D18b	140.0	O18a	326.0
E1	375.0	P3c	205.0
E2	396.0	P4c	80.0
E3	396.0	P5b	293.0
E5	398.0	P7	224.0
E6	398.0	P9d	26.0
E8	399.0	P11b	201.0
E9c	312.0	P13	422.0
E12b	51.0	P16a	305.0
E12c	55.0	P17a	377.0
E15b	376.0	P18b	115.0
F1	396.0	P18c	4.0
		Q2c	327.0
F4	398.0	Q4a	183.0
F7b	318.0	Q4d	89.0
		Q5c	279.0
F8b	199.0	Q11a	85.0
F10b	73.0	Q14	24.0
F11a	218.0	Q16a	84.0
F11c	43.0	R2	120.0
F12c	73.0	R3a	321.0
F13b	168.0	R5	105.0
F14d	101.0	R6	413.0
F16c	218.0	R9	105.0
G7	121.0	S1a	295.0
G10	397.0	S2a	361.0
G11b	95.0	S3a	203.0
G11c	16.0	S4	426.0
G13b	273.0	S5	378.0
G14b	63.0	S6	45.0
G14c	45.0	S7	403.0
G15b	108.0	S8	128.0
G17c	246.0	S10	66.0
H13	1.0	S11	0.2
J3c	30.0		

LIST OF APPLICATIONS AND BLOCKS APPLIED FOR IN THE 6TH ROUND

Applicants		Blocks
1.	name of group operator : Amoco c.s. : Amoco Netherlands Petroleum Company other companies : - Dyas B.V. - Veba Oil Nederland B.V.	B16, G13b, P13, P16a, P17a, Q2c
2.	name of group operator : ARCO c.s. : ARCO Netherlands Inc. other companies : - Vendex International N.V. - R.T.Z. Oil and Gas Limited - Goal Olie- en Gas Exploratie B.V.	E3, F1, F4, G10, K3c, L17c, N4a, Q2c
3.	name of group operator : BP : British Petroleum Exploratie Maatschappij Nederland B.V. other companies : --	E1, E2, E5, E8, Q2c, Q5c
4.	name of group operator : Charterhouse c.s. : Charterhouse Petroleum Netherlands Limited other companies : - Dow Chemical (Nederland) B.V. - Clyde Petroleum plc. - Bricomin Exploration Company Ltd.	E15b, K3c

Applicants		Blocks
5.	name of group : Clyde Petroleum c.s. operator : Clyde Petroleum plc. other companies : - Dow Chemical (Nederland) B.V.	Q14
6.	name of group : Conoco c.s. operator : Continental Netherlands Oil Company other companies : - Oranje-Nassau Exploratie C.V. - L.L. & E. Netherlands Petroleum Company	E12c, E15b, G7, G10 Q2c, Q4a, Q5c
7.	name of group : DNO c.s. operator : Det Norske Oljeselskap AS other companies : - Berkeley Exploration and Production plc. - Texas Gas Exploration (Netherlands) Corp.	K4a

Applicants	Blocks
<p>8. name of group : Hamilton Oil c.s. operator : Hamilton Brothers UK Petroleum Corporation other companies : - British Gas Corp. - Century Power and Light Limited - Offshore Ontwikkelingsmaatschappij B.V.</p>	<p>F16c, G10, K3c, Q2c, Q5c</p>
<p>9. name of group : Mobil c.s. operator : Mobil Producing Netherlands Inc. other companies : - Hollandsche Delfstoffen Maatschappij (HDM) B.V. - Holland Sea Search II B.V.</p>	<p>K3c</p>
<p>10. name of group : NAM/Petroland c.s. operators : Nederlandse Aardolie Maatschappij B.V./ Petroland B.V. other companies : - Total Marine Exploitatie Maatschappij B.V. - Eurafrep Nederland B.V. - Corexland B.V. - Cofraland B.V. - DSM Energie B.V. - Koninklijke Volker Stevin N.V.</p>	<p>F8b, G10, Q2c, Q5c, Q16a</p>

Applicants		Blocks
11.	name of group operator other companies	Pennzoil c.s. Pennzoil Nederland Company - Amax Petroleum Corporation - Caland Exploratie B.V. - Diamond Shamrock Netherlands Petroleum B.V. - Hoogovens Delfstoffen B.V. - Wintershall Nederland B.V.
12.	name of group operator other companies	Placid c.s. Placid International Oil Ltd. - HPI Netherlands, Ltd. - Rosewood Exploration Ltd. - Texel Petroleum C.V.
13.	name of group operator other companies	Statoil c.s. Statoil Netherlands B.V. - Fina Nederland B.V.
14.	name of group operator other companies	Unocal c.s. Unocal Netherlands, Inc. - Nedlloyd Energy B.V.

Applicants	Blocks	
15. name of group	: Van Dyke c.s.	B17a, F1, F4, G10, G13b, K3c, L17c,
operator	: Tricentol Exploration Overseas Limited	P11b, Q2c, Q5c
other companies	: - Champlin International Petroleum Company - Van Dyke Energy Company - Whitehall Petroleum Limited	

List sixth round: list of allocations

- B14b Placid International Oil Ltd. (operator)
HPI Netherlands Ltd. Rosewood Exploration Ltd.
Texel Petroleum C.V
- B16 Statoil Netherlands B.V. (operator)
Fina Nederland B.V.
- B17a Van Dyke Energy Company
Champlin International Petroleum Company
Tricentrol Exploration Overseas Ltd.
(operator)
Whitehall Petroleum Ltd.
- B17c Placid International Oil Ltd. (operator)
HPI Netherlands Ltd.
Rosewood Exploration Ltd. Texel Petroleum C.V.
- D18b Pennzoil Nederland Company (operator)
Amax Petroleum Corporation
Caland Exploratie B.V.
Diamond Shamrock Netherlands Petroleum B.V.
Hoogovens Delfstoffen B.V.
Wintershall Nederland B.V.
- E3 Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.

- E12c Continental Netherlands Oil Company
(operator)
Oranje-Nassau Exploratie C.V.
L.L.&E. Netherlands Petroleum Company
- E15b Continental Netherlands Oil Company
(operator)
Oranje-Nassau Exploratie C.V.
L.L.&E. Netherlands Petroleum Company
- F1 Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.
- F4 Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.
- F16c Hamilton Brothers UK Petroleum
Corporation (operator)
British Gas Corporation
Century Power and Light Limited
Offshore Ontwikkelingsmaatschappij B.V.
- G7 Statoil Netherlands B.V. (operator)
Fina Nederland B.V.
- G10 Nederlandse Aardolie Maatschappij B.V.
Petroland B.V. (operator)
Total Marine Exploitatie Maatschappij B.V.
Eurafrep Nederland B.V.
Corexland B.V.,
Cofraland B.V.
DSM Energie B.V.
Koninklijke Volker Stevin N.V.

G13b Unocal Netherlands Inc. (operator)
Nedlloyd Energy B.V.

K3c Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.

K4a Det Norske Oljeselskap A.S.
Berkeley Exploration and Production Plc.
Texas Gas Exploration (Netherlands)
Corporation (operator)

L9b Statoil Netherlands B.V. (operator)
Fina Nederland B.V.

L17c Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.

N4a Arco Netherlands Inc. (operator)
Vendex International N.V.
R.T.Z. Oil and Gas Limited
Goal Olie- en Gas Exploratie B.V.

O18 Placid International Oil Ltd. (operator)
HPI Netherlands Ltd.
Rosewood Exploration Ltd.
Texel Petroleum C.V.

P13 Amoco Netherlands Petroleum
Company (operator)
Veba Oil Nederland B.V.
Dyas B.V.

- P16a Pennzoil Nederland Company (operator)
Amax Petroleum Corporation
Caland Exploratie B.V.
Diamond Shamrock Netherlands Petroleum B.V.
Hoogovens Delfstoffen B.V.
Wintershall Nederland B.V.
- P17a Amoco Netherlands Petroleum Company
(operator)
Veba Oil Nederland B.V.
Dyas B.V.
- Q2c Amoco Netherlands Petroleum Company
(shared operatorship)
Veba Oil Nederland B.V.
Dyas B.V.
Placid International Oil Ltd.
(shared operatorship)
HPI Netherlands Ltd.
Rosewood Exploration Ltd.
Texel Petroleum C.V.
- Q4a Continental Netherlands Oil Company (operator)
Oranje-Nassau Exploratie C.V.
L.L.&E. Netherlands Petroleum Company
- Q5c Continental Netherlands Oil Company
(shared operatorship)
Oranje-Nassau Exploratie C.V.
L.L.&E. Netherlands Petroleum Company
Pennzoil Nederland Company (shared operatorship)
Amax Petroleum Corporation
Caland Exploratie B.V.
Diamond Shamrock Netherlands Petroleum B.V.
Hoogovens Delfstoffen B.V.
Wintershall Nederland B.V.

Q14 Clyde Petroleum plc. (operator)
Dow Chemical (Nederland) B.V.

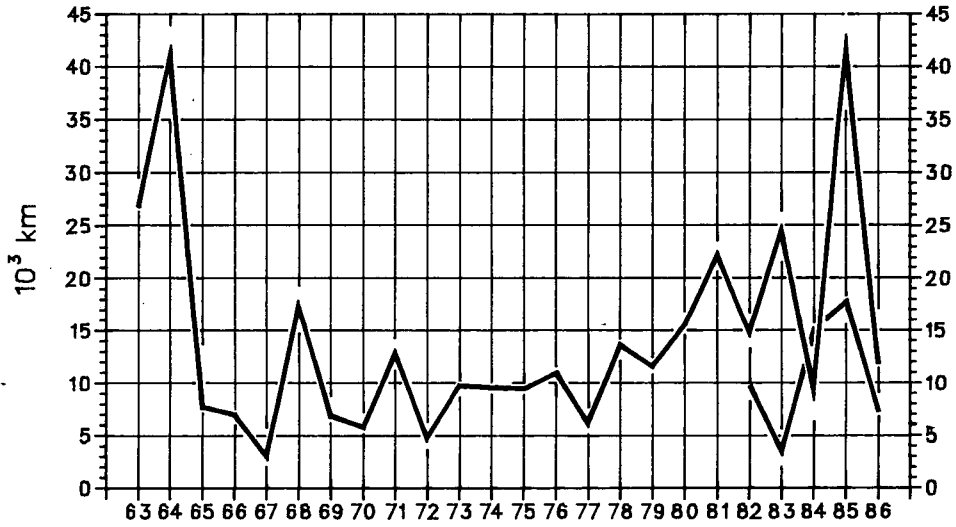
Q16a Nederlandse Aardolie Maatschappij B.V.
(operator)
Petroland B.V.
Total Marine Exploitatie Maatschappij B.V.
Eurafrep Nederland B.V.
Corexland B.V.,
Cofraland B.V.
DSM Energie B.V.
Koninklijke Volker Stevin N.V.

SEISMIC (relates to diagram)

	Offshore		Onshore	
	2D lines km	3D lines km	2D lines km	3D area sq.km
1963	26,778	-	2,860	-
64	41,136	-	10,992	-
1965	7,707	-	8,885	-
66	6,939	-	3,510	-
67	3,034	-	1,673	-
68	17,349	-	2,541	-
69	6,846	-	3,857	-
1970	5,780	-	5,113	-
71	12,849	-	3,252	-
72	4,716	-	4,034	-
73	9,708	-	1,783	-
74	9,536	-	1,422	-
1975	9,413	-	1,706	-
76	10,963	-	2,318	-
77	6,184	-	948	-
78	13,568	-	2,466	-
79	11,575	-	986	-
1980	15,497	-	2,017	-
81	22,192	-	4,627	-
82	14,791	9,585	4,363	172
83	24,498	3,335	3,980	526
84	9,314	14,961	2,523	594
1985	41,593	17,642	3,480	1,243
86	11,795	7,132	2,386	1,183

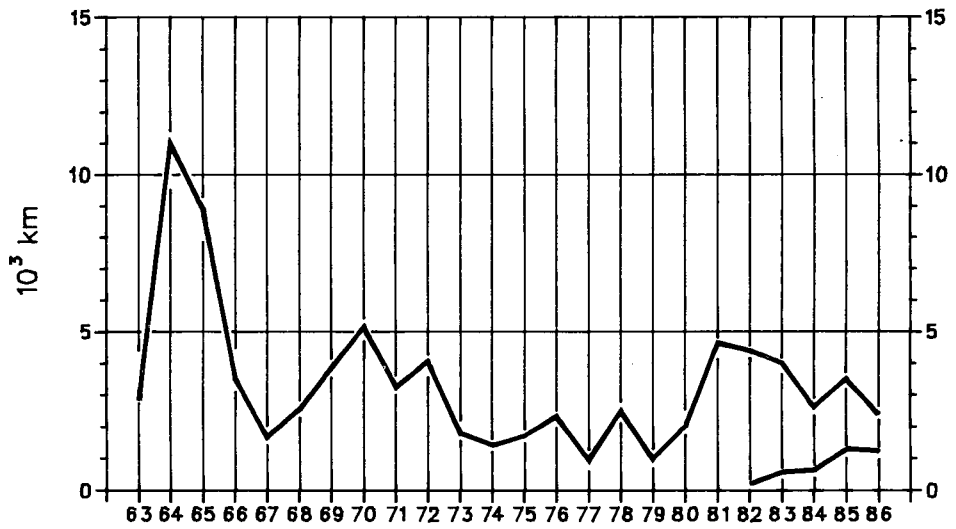
Seismic Survey
1963 - 1986

Offshore
kms



Onshore

2d : kms, 3d : kms²

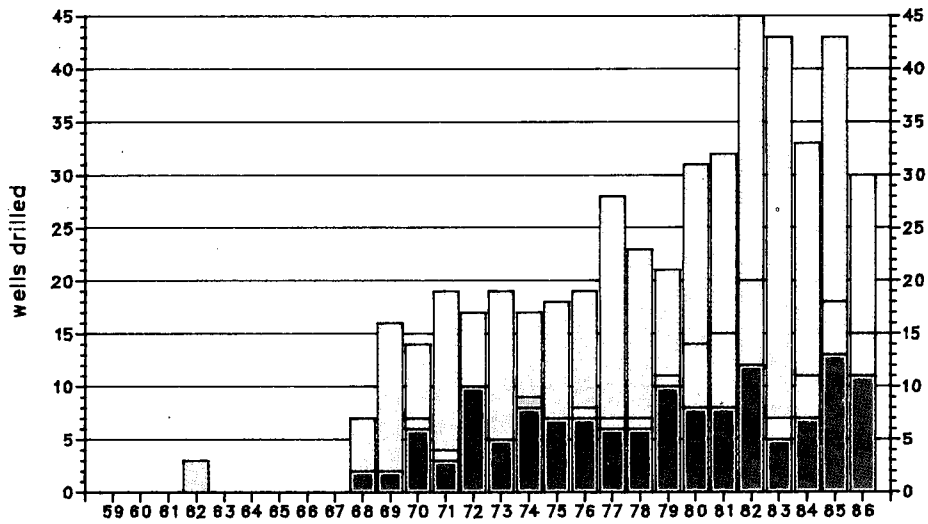


2d seismic survey

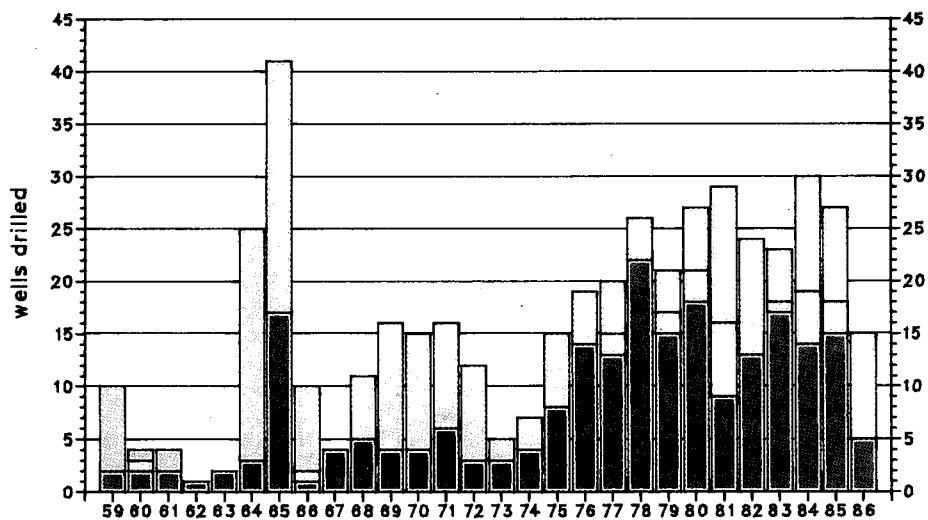
3d seismic survey

Exploratory Activity
1959 - 1986
drillings and results (wildcats and appraisal)

Offshore



Onshore

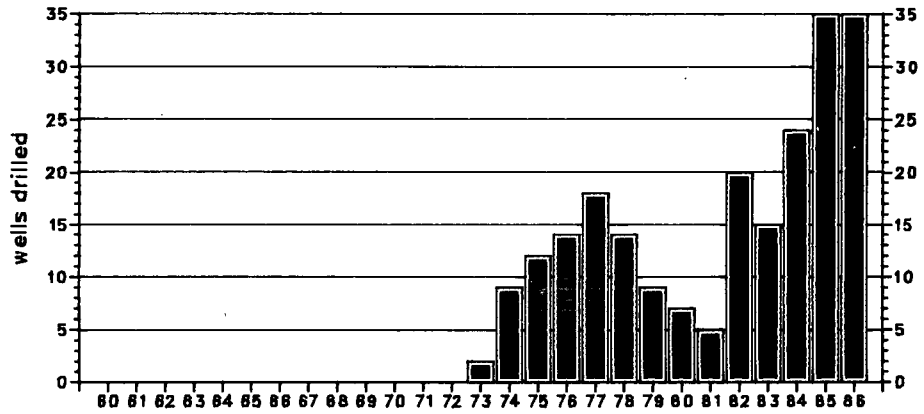


- Gas
- Oil and Gas
- Oil
- Dry

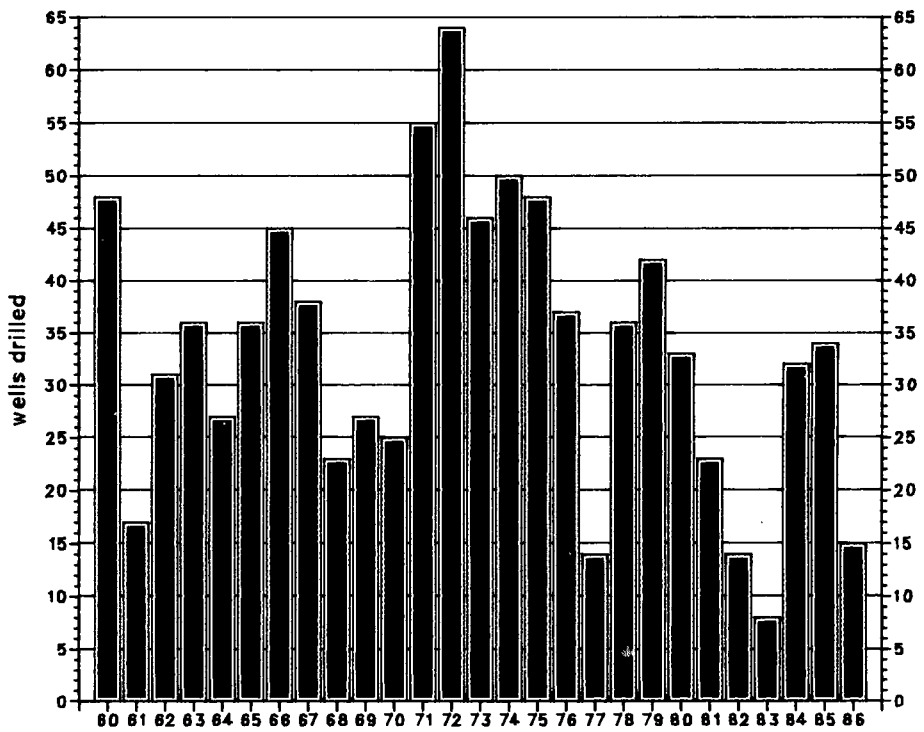
Production Activity

1960 - 1986

Offshore



Onshore



REVIEW OF DRILLING OPERATIONS DURING 1986

Geogr. position	Type of well	Gas	Oil	Water Disposal	Dry	Total
Netherlands	Exploration	2	-	-	10	12
Onshore	Appraisal	3	-	-	-	3
	Production	10	5	-	-	5
<u>Total onshore</u>		<u>15</u>	<u>5</u>	<u>-</u>	<u>10</u>	<u>30</u>
Netherlands	Exploration	9	2	-	14	25
sector of the	Appraisal	2	2	-	1	5
Cont. Shelf	Production	14	11	8	2	35
<u>Total offshore</u>		<u>25</u>	<u>15</u>	<u>8</u>	<u>17</u>	<u>65</u>
<u>Total Netherlands</u>		<u>40</u>	<u>20</u>	<u>8</u>	<u>27</u>	<u>95</u>

DRILLING ACTIVITY

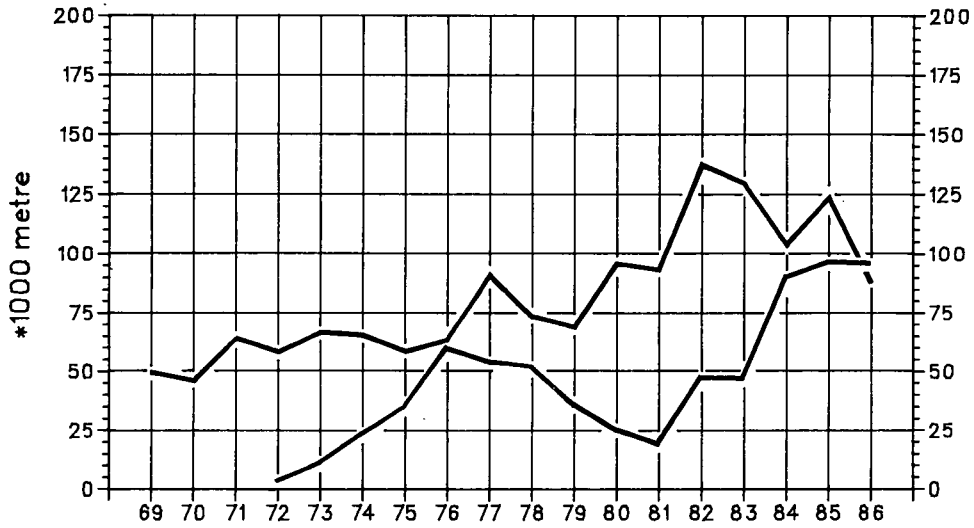
1969-1986

number of metres

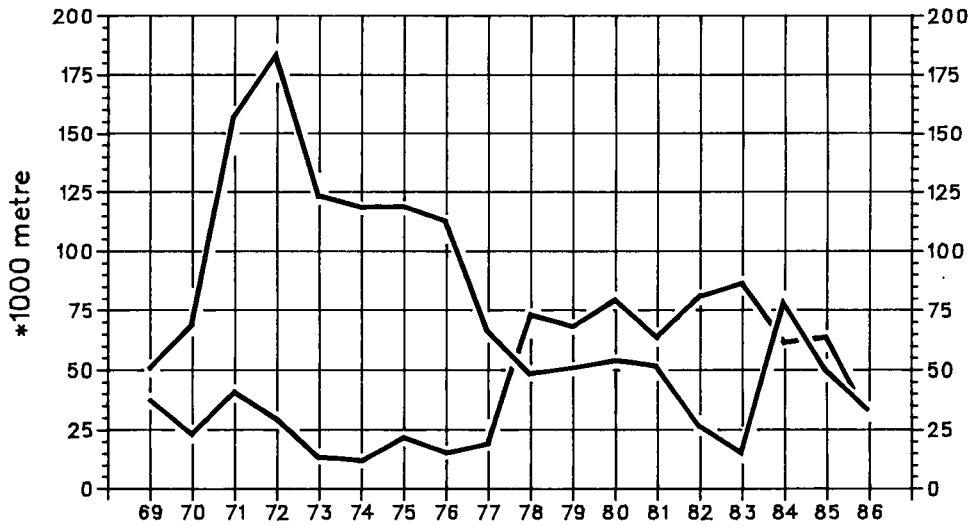
	ONSHORE		OFFSHORE		TOTAL	
	Prod.	Expl.	Prod.	Expl.	Prod.	Expl.
1969	50,125	37,410	----	49,224	50,125	86,634
1970	68,270	23,146	----	45,838	68,270	68,984
71	156,270	40,621	----	63,979	156,419	104,600
72	182,787	29,334	2,966	58,176	185,753	87,510
73	122,838	13,414	10,616	66,425	133,454	79,839
74	118,046	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

Drilling Activity
1969 - 1986

Offshore



Onshore



Production
Exploration

OIL PRODUCTION

Annex 14

Table 14a: Production of oil in tonnes

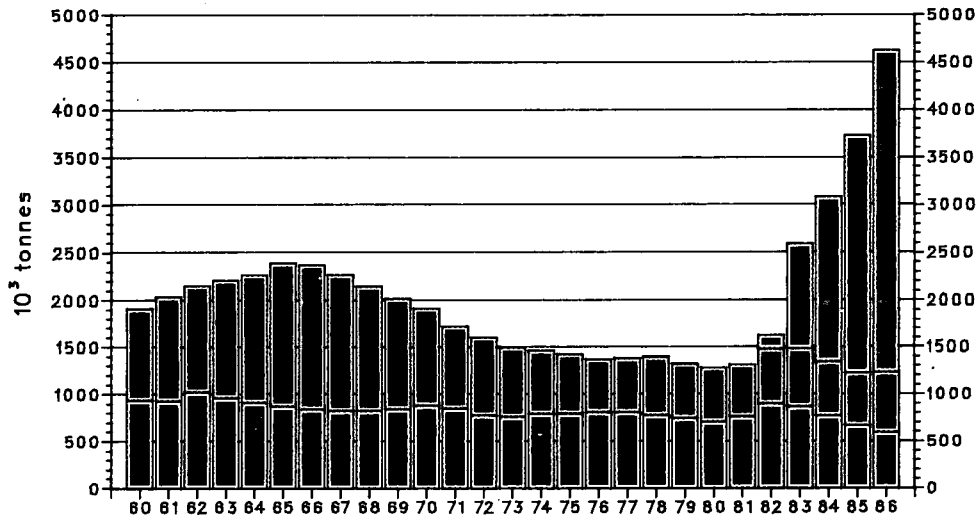
Year	"Schoonebeek" Concession	"Rijswijk" Concession	Offshore	Total
1960	933,898	983,770	-	1,917,668
61	933,092	1,113,450	-	2,046,542
62	1,022,559	1,131,929	-	2,154,488
63	957,829	1,255,936	-	2,213,765
64	915,568	1,352,934	-	2,268,502
1965	871,928	1,523,472	-	2,395,400
66	844,345	1,521,732	-	2,366,077
67	827,396	1,437,857	-	2,265,253
68	827,813	1,319,673	-	2,147,486
69	845,458	1,174,258	-	2,019,816
1970	884,071	1,034,566	-	1,918,637
71	852,039	862,144	-	1,714,183
72	775,665	821,478	-	1,597,143
73	759,260	732,454	-	1,491,714
74	795,332	665,607	-	1,460,939
1975	794,374	624,664	-	1,419,038
76	807,855	563,020	-	1,370,875
77	806,915	574,672	-	1,381,587
78	781,080	621,174	-	1,402,254
79	743,123	572,664	-	1,315,787
1980	705,488	574,612	-	1,280,100
81	760,135	554,927	-	1,315,062
82	894,837	581,665	148,923	1,625,425
83	869,562	609,895	1,109,796	2,589,253
84	767,149	572,633	1,746,040	3,085,822
1985	665,510	561,154	2,501,797	3,728,461
86	596,123	639,161	3,392,678	4,627,962
cumulative	32,880,151	25,667,241	8,899,234	67,446,626

Table 14b: Cumulative production of oil in 10³ tonnes

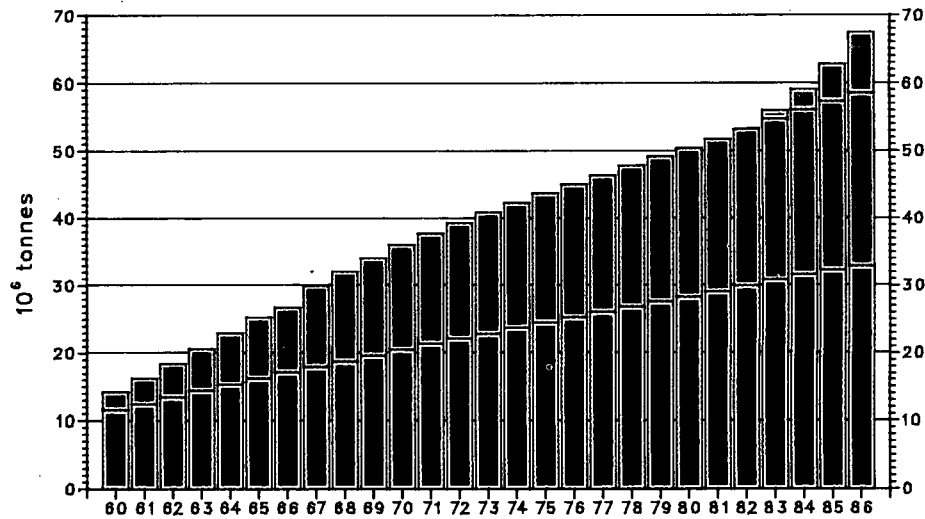
Year	"Schoonebeek" Concession	"Rijswijk" Concession	Offshore	Total
up to 1959	10,642	1,685	-	12,327
1960	11,576	2,669	-	14,244
61	12,509	3,782	-	16,291
62	13,531	4,914	-	18,445
63	14,489	6,170	-	20,659
64	15,405	7,523	-	22,928
65	16,277	9,046	-	25,323
66	17,121	10,568	-	27,689
67	17,948	12,006	-	29,954
68	18,776	13,326	-	32,102
69	19,622	14,500	-	34,122
70	20,506	15,535	-	36,040
71	21,358	16,397	-	37,754
72	22,134	17,218	-	39,352
73	22,893	17,950	-	40,843
74	23,688	18,617	-	42,304
75	24,482	19,241	-	43,723
76	25,290	19,804	-	45,094
77	26,097	20,379	-	46,476
78	26,878	21,001	-	47,879
79	27,621	21,573	-	49,194
80	28,327	22,148	-	50,475
81	29,087	22,703	-	51,790
82	29,982	23,284	149	53,415
83	30,851	23,894	1,259	56,004
84	31,618	24,467	3,005	59,090
85	32,284	25,028	5,507	62,819
86	32,880	25,667	8,899	67,446

Oil
1960 - 1986

Production
10³ tonnes



Cumulative production
10⁶ tonnes



- Schoonebeek Concession
- Rijswijk Concession
- Offshore

GAS PRODUCTION

Table 16a: Production of gas in 10^6 m³ (st)

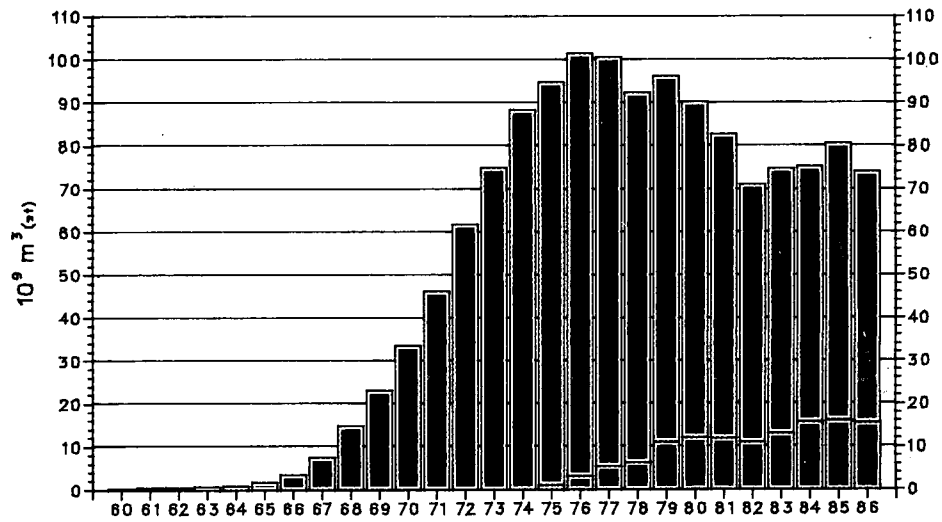
Year	Onshore	Offshore	Total
1960	383.9	-	383.9
61	476.4	-	476.4
62	538.1	-	538.1
63	602.7	-	602.7
64	875.8	-	875.8
1965	1,817.6	-	1,817.6
66	3,564.0	-	3,564.0
67	7,422.7	-	7,422.7
68	14,889.0	-	14,889.0
69	23,097.3	-	23,097.3
1970	33,417.8	7.9	33,425.7
71	46,248.3	2.4	46,250.7
72	61,661.1	1.4	61,662.5
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	95,108.6	5,479.6	100,588.2
78	85,980.4	6,298.5	92,278.9
79	85,367.2	10,925.5	96,292.7
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

Table 16b: Cumulative production of gas in 10^6 m³ (st)

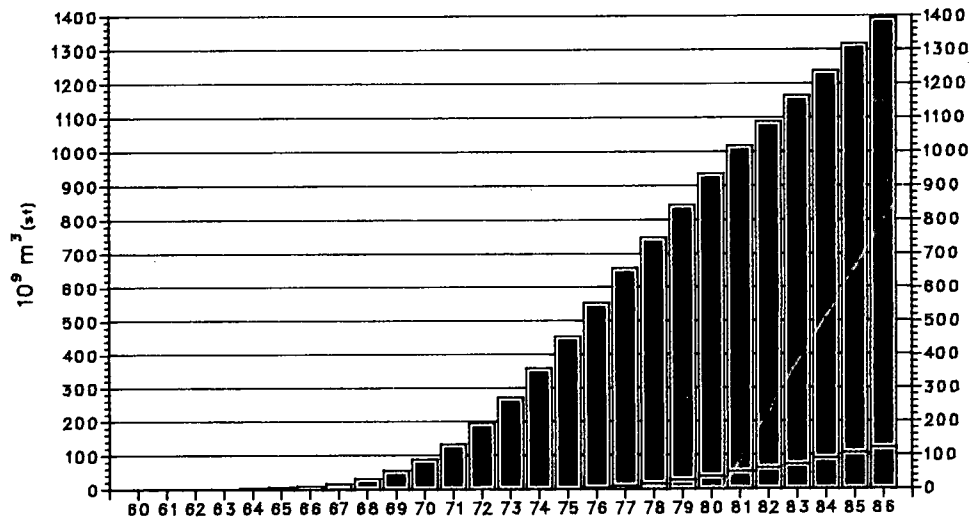
Year	Onshore	Offshore	Total
1959	1,445.6	-	1,445.6
1960	1,829.5	-	1,829.5
61	2,305.9	-	2,305.9
62	2,844.0	-	2,844.0
63	3,446.7	-	3,446.7
64	4,322.5	-	4,322.5
1965	6,140.1	-	6,140.1
66	9,704.1	-	9,704.1
67	17,126.9	-	17,126.9
68	32,015.8	-	32,015.8
69	55,113.1	-	55,113.1
1970	88,531.0	7.9	88,538.9
71	134,779.3	10.3	134,789.6
72	196,440.4	11.7	196,452.1
73	271,206.3	19.5	271,225.8
74	359,565.0	34.1	359,599.1
1975	453,489.0	997.4	454,486.4
76	551,796.4	4,090.1	555,886.5
77	646,905.0	9,569.7	656,474.7
78	732,885.4	15,868.2	748,753.6
79	818,252.6	26,793.7	845,046.3
1980	896,461.5	38,895.7	935,357.2
81	967,389.8	50,694.0	1,018,083.8
82	1,027,394.1	61,767.3	1,089,161.4
83	1,088,927.1	74,939.5	1,163,866.6
84	1,148,278.7	90,726.8	1,239,005.5
1985	1,212,852.1	106,797.7	1,319,649.8
86	1,271,331.6	122,346.7	1,393,678.3

Natural gas
1960 - 1986

Production

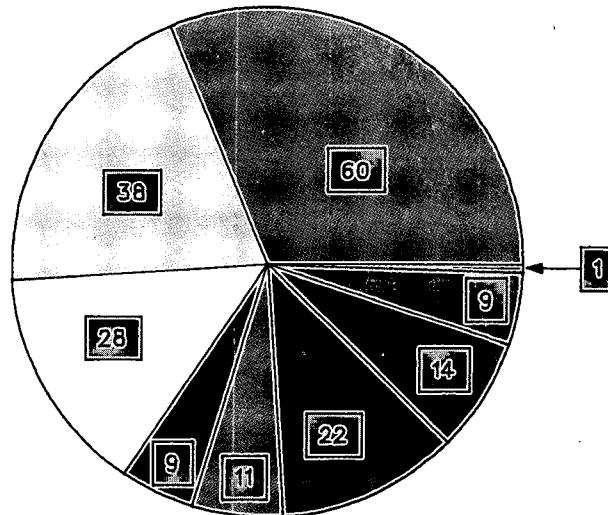


Cumulative production



- Offshore
- Onshore

Distribution of the initial reserves
over all natural gas reservoirs
as at January 1ST 1987



Total 182 reservoirs

initial reserves in 10⁹ m³ (st)

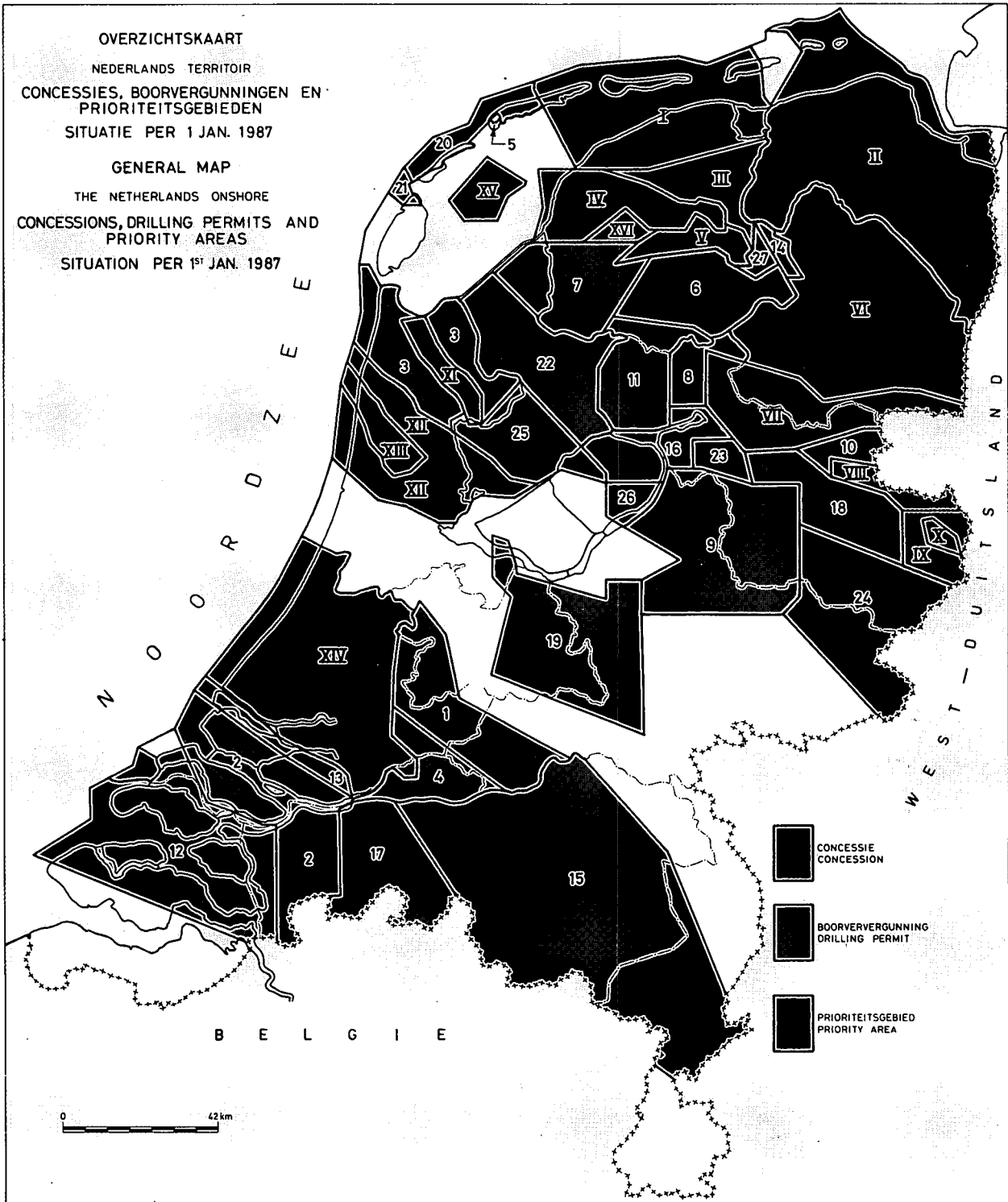
- 0 ≤ reserves < 1
- 1 ≤ reserves < 2
- 2 ≤ reserves < 3
- 3 ≤ reserves < 4
- 4 ≤ reserves < 5
- 5 ≤ reserves < 10
- 10 ≤ reserves < 20
- 20 ≤ reserves < 100
- reserves ≥ 100

ONSHORE LICENCES GRANTED AT JANUARY 1ST, 1987

(relates to chart)

<u>Concessions:</u>	<u>Drilling licences:</u>	<u>Priority areas:</u>
I Noord-Friesland	1 Utrecht II	23 Zwolle
II Groningen	2 Roosendaal	24 Enschede
III Tietjerksteradeel	3 Kolhorn	25 Markerwaard
IV Leeuwarden	4 Andel	26 Biddinghuizen
V Akkrum	5 Terschelling West	27 Donkerbroek
VI Drenthe	6 Gorredijk	
VII Schoonebeek	7 Zuid-Friesland II	
VIII Tubbergen	8 Overijssel Noord II	
IX Twente	9 Centraal Nederland	
X Rossum de Lutte	10 Noordoost Overijssel	
XI Slootdorp	11 Noordoostpolder	
XII Middelle	12 Zeeland	
XII Bergen	13 Rotterdam Zuid	
XIV Rijswijk	14 Haulerwijk	
XV Zuidwal	15 Eindhoven	
XVI Oosterend	16 Kampen	
	17 Breda	
	18 Almelo	
	19 Amersfoort	
	20 Vlieland II	
	21 Engelsmangat	
	22 IJsselmeer	

In the Wadden Zee area no drilling may be performed up to 10th January 1994, except in Zuidwal.



WELLS COMPLETED IN 1986 - NETHERLANDS TERRITORY

(belongs to map)

1. Exploration wells:

No.	Name of well	Concession/ drilling permits	Operator	Final depth	Result
1	Eesveen 1	Overijssel.Nrd.2 (d)	NAM	2,183	dry
2	IJsselmuiden 1	Centraal Nederland(d)	BP	2,400	dry
3	Kijkduin-Zee 2	Rijswijk (c)	NAM	3,775	dry
4	Leeuwarden-Stad 1	Leeuwarden (c)	Petroland	1,946	dry
5	Markenese-Oost 1	Noordoostpolder (d)	NAM	2,006	dry
6	Minnertsga 1	Nrd. Friesland (c)	NAM	3,845	dry
7	Molenaarsgraaf 2	Andel (d)	NAM	3,287	dry
8	Papekop 1	Utrecht 2 (d)	NAM	2,751	gas
9	Slijkenburg 2	Noordoostpolder (d)	NAM	2,402	dry
10	Steehoven 1	Breda (d)	Petroland	2,806	dry
11	Den Velde 1	N.O.Overijssel (d)	NAM	3,223	gas
12	Wieringerwaard 1	Kolhorn (d)	Petroland	2,645	dry

2. Appraisal wells:

13	Coevorden 45	Schoonebeek (c)	NAM	2,317	gas
14	Dalen 14	Drenthe (c)	NAM	3,763	gas
15	Hardenberg 4	Schoonebeek (c)	NAM	3,288	gas

3. Production wells:

16	Ameland Oost 105	Nrd.Friesland	NAM	4,307	gas
17	Ameland Westgat 105	Nrd.Friesland	NAM	3,981	gas
18	Coevorden 46	Schoonebeek	NAM	2,977	gas
19	Coevorden 47	Schoonebeek	NAM	3,189	gas
20	Dalen 13	Schoonebeek	NAM	4,060	gas
21	IJsselmonde 52 A	Rijswijk	NAM	1,153	oil
22	Leeuwarden 102	Leeuwarden	Petroland	2,690	gas
23	Ridderkerk 12C	Rijswijk	NAM	1,148	oil
24	Schoonebeek 28A	Schoonebeek	NAM	843	oil
25	Schoonebeek 589	Schoonebeek	NAM	3,044	gas
26	Schoonebeek 590	Schoonebeek	NAM	789	oil
27	Tietjerksteradeel 105	Tietjerksteradeel	NAM	2,965	gas
28	Wassenaar 20A	Rijswijk	NAM	1,546	oil
29	't Zandt 12 sidetr.	Groningen	NAM	2,955	gas
30	Zuidlaarderveen 5	Drenthe	NAM	3,160	gas

OVERZICHTSKAART
GENERAL MAP

NEDERLANDS TERRITOIR
THE NETHERLANDS ONSHORE

AKTIVITEITEN EN VERANDERINGEN IN 1986
ACTIVITIES AND CHANGES DURING 1986

- ☼ GASPUT (GAS-WELL)
- OLIEPUT (OIL-WELL)
- ⊕ BORING ZONDER BITUMINA (DRY HOLE)

○ 38 NUMMER VAN BORING (ZIE LINKER BLADZIJDE)
NUMBER OF WELL (SEE LEFT PAGE)

⊕ EINDDIEPTE BORING BEREIKT,
WACHTEN OP TESTEN
TOTAL DEPTH WELL REACHED,
WAITING ON TEST

⊕ BORING IN BEDRIJF (DRILLING WELL)

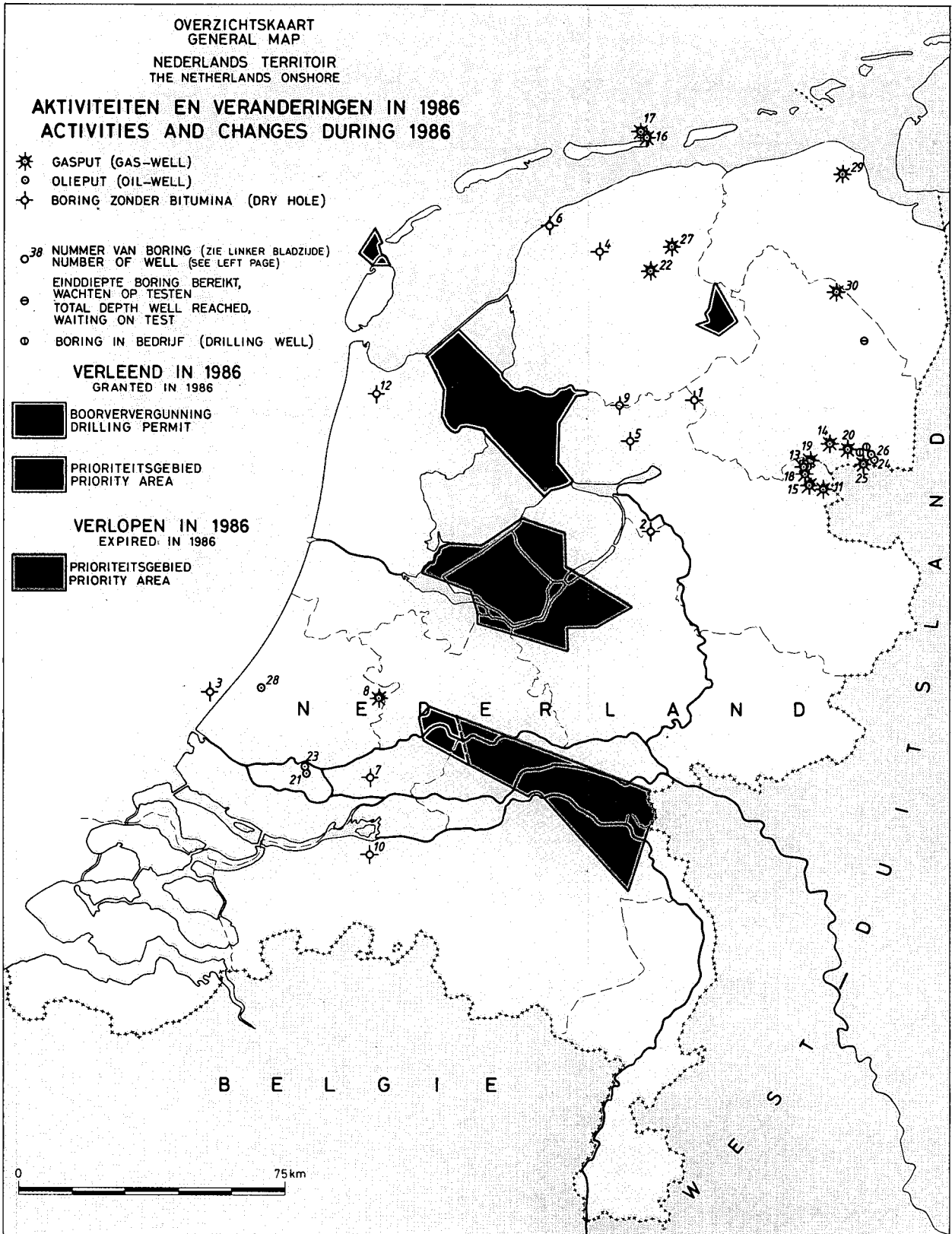
VERLEEND IN 1986
GRANTED IN 1986

■ BOORVERVERGUNNING
DRILLING PERMIT

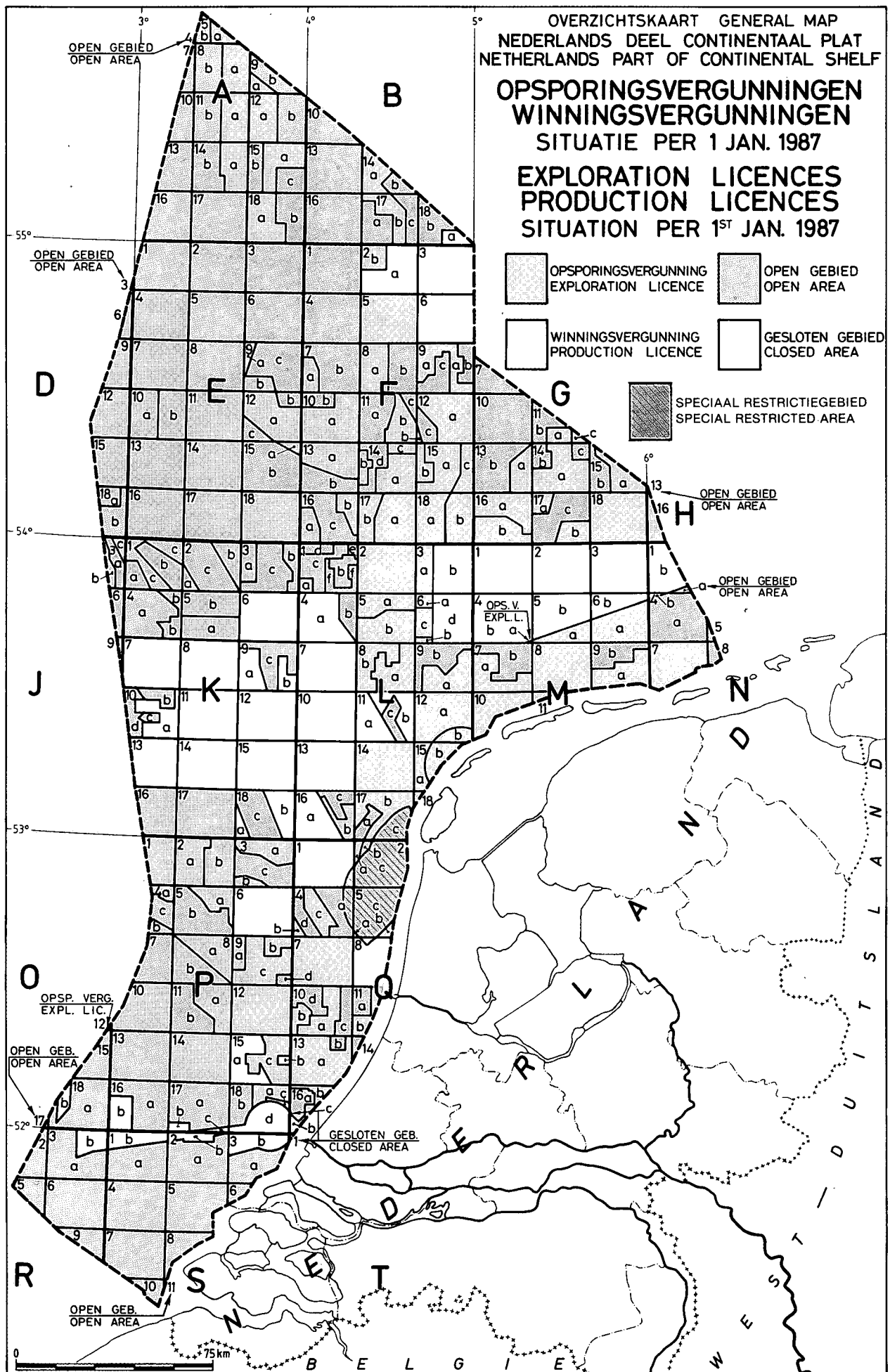
■ PRIORITEITSGBIED
PRIORITY AREA

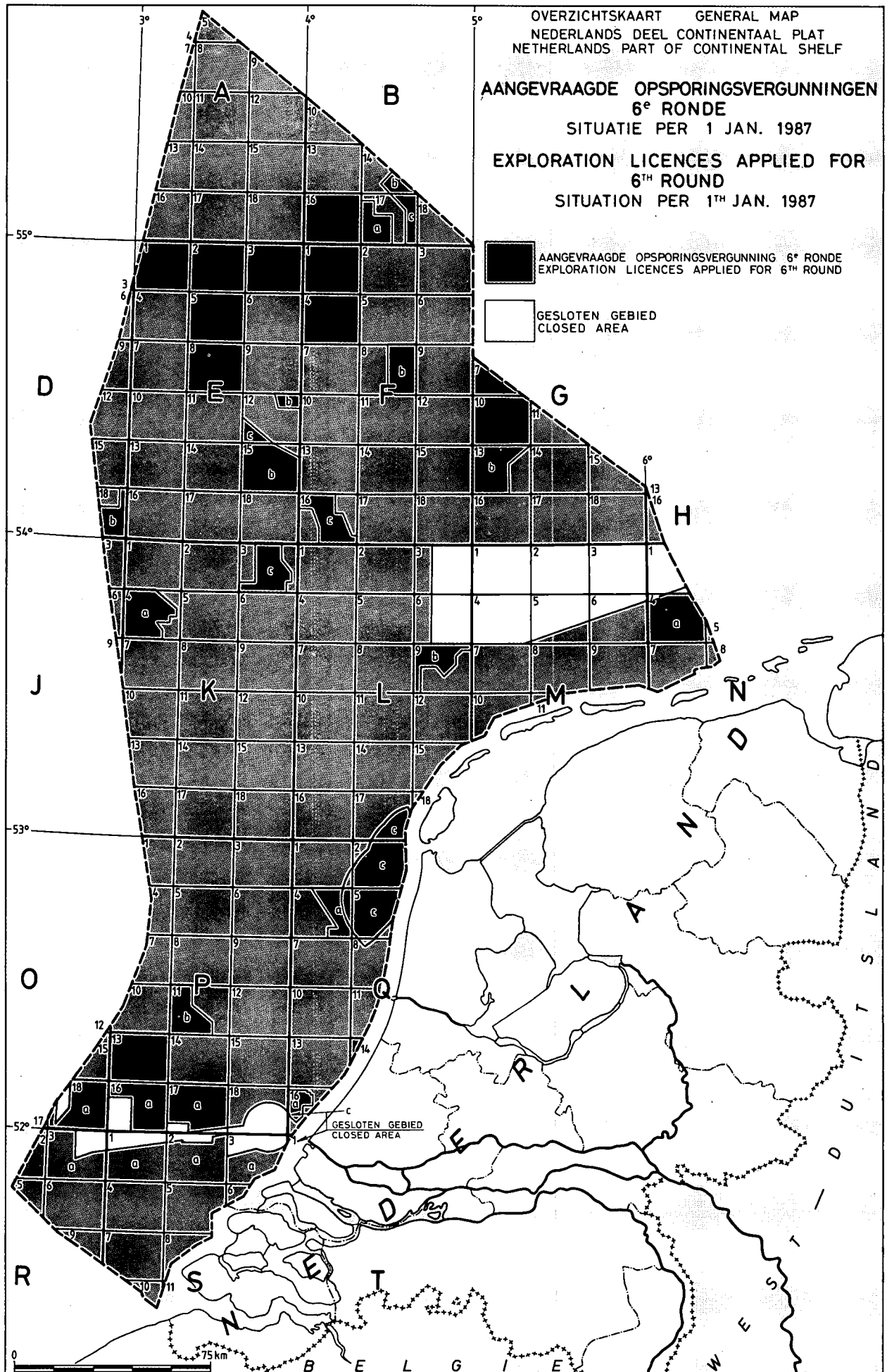
VERLOPEN IN 1986
EXPIRED IN 1986

■ PRIORITEITSGBIED
PRIORITY AREA



0 75 km





WELLS COMPLETED IN 1986 - CONTINENTAL SHELF

1. Exploration wells:

No.	Name of well	Type	Operator	Final depth	Result
1	D12-4	EL	Pennzoil	3,880	dry
2	D15-2	EL	NAM	3,905	dry
3	D15-3	EL	NAM	4,017	gas
4	E4-1	EL	Petroland	1,633	dry
5	E14-1	EL	Pennzoil	4,208	dry
6	F14-5	EL	Statoil	2,297	oil
7	F15-4	EL	Petroland	3,620	gas
8	F18-8	EL	Pennzoil	3,503	dry
9	J3-2	EL	NAM	3,975	gas
10	K6-3	PL	Petroland	3,960	gas
11	K8-11	PL	NAM	3,677	dry
12	K11-10	PL	NAM	3,636	dry
13	K12-10	PL	Placid	3,764	dry
14	L1-6	EL	Unocal	4,459	dry
15	L7-12	PL	Petroland	4,085	dry
16	L7-13	PL	Petroland	4,124	gas
17	L8-9	EL	Pennzoil	4,250	gas
18	L8-10	EL	Pennzoil	4,437	dry
19	L10-27	PL	Placid	3,921	dry
20	L13-8	PL	NAM	3,780	gas
21	L13-9	PL	NAM	3,739	gas
22	M5-1	EL	Conoco	2,014	dry
23	M10-3	EL	Placid	3,079	dry
24	P12-5	EL	Mobil	3,605	gas
25	Q13-5	EL	NAM	2,831	oil

2. Appraisal wells:

26	F15-5	EL	Petroland	3,765	gas
27	L1-5	EL	BP	2,990	dry
28	P6-7	PL	Mobil	3,694	gas
29	Q1-20	PL	Unocal	1,856	oil
30	Q1-21	PL	Unocal	2,034	oil

EL = exploration licence

PL = production licence

3. Production wells:

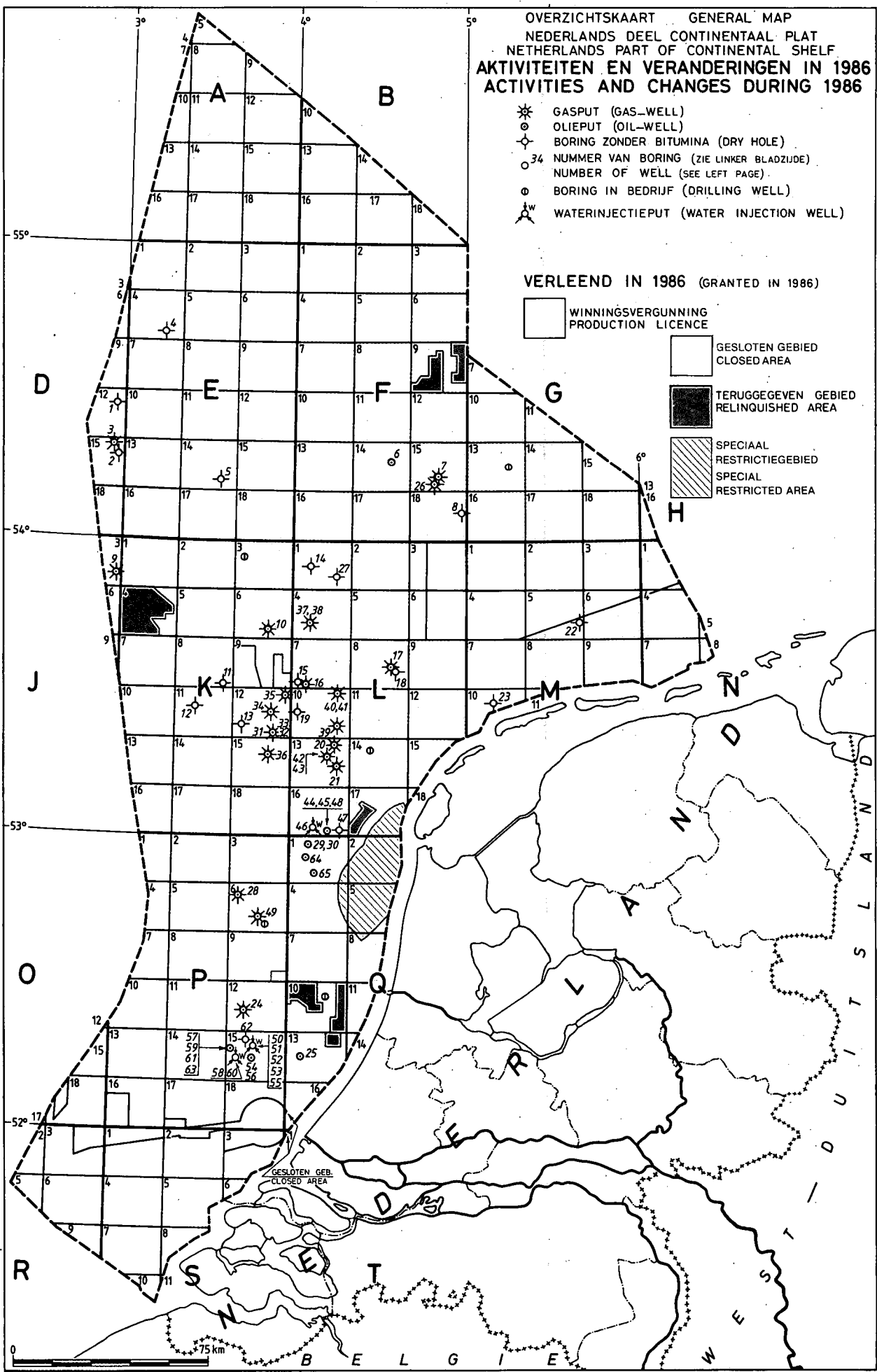
31	K12-B-2	Placid	4,599	gas
32	K12-B-3	Placid	4,441	gas
33	K12-B-4	Placid	4,572	gas
34	K12-D-2 sidetr.	Placid	4,298	gas
35	K12-E-2	Placid	4,481	gas
36	K15-FB-101 sidetr.	NAM	4,331	gas
37	L4-A-5	Petroland	4,175	gas
38	L4-A-6	Petroland	4,240	gas
39	L10-F-4	Placid	4,572	gas
40	L10-K-1a	Placid	3,909	gas
41	L10-K-2	Placid	4,404	gas
42	L13-FC-103	NAM	4,175	gas
43	L13-FC-104	NAM	4,032	gas
44	L16-Logger-5	Conoco	1,960	oil
45	L16-Logger-6	Conoco	2,978	oil
46	L16-Logger-7	Conoco	2,740	waterinj.
47	L16-Logger-8	Conoco	2,883	dry
48	L16-Logger-8a	Conoco	2,570	oil
49	P6-C-1	Mobil	3,818	gas
50	P15-Rijn-A-6 sidetr.	Amoco	2,450	waterinj.
51	P15-Rijn-A-10	Amoco	3,270	waterinj.
52	P15-Rijn-A-11	Amoco	3,194	waterinj.
53	P15-Rijn-A-12	Amoco	3,090	waterinj.
54	P15-Rijn-A-13	Amoco	2,980	oil
55	P15-Rijn-A-14	Amoco	2,481	waterinj.
56	P15-Rijn-A-15	Amoco	2,783	oil
57	P15-Rijn-B-5	Amoco	2,435	oil
58	P15-Rijn-B-6	Amoco	2,678	waterinj.
59	P15-Rijn-B-7	Amoco	2,375	oil
60	P15-Rijn-B-8	Amoco	2,323	waterinj.
61	P15-Rijn-B-9	Amoco	2,300	oil
62	P15-Rijn-B-10	Amoco	2,225	dry
63	P15-Rijn-B-11	Amoco	2,395	oil
64	Q1-Helder-A-4 ST	Unocal	1,859	oil
65	Q1-Helm-A-8	Unocal	1,416	oil

OVERZICHTSKAART GENERAL MAP
 NEDERLANDS DEEL CONTINENTAAL PLAT
 NETHERLANDS PART OF CONTINENTAL SHELF
AKTIVITEITEN EN VERANDERINGEN IN 1986
ACTIVITIES AND CHANGES DURING 1986

- ☼ GASPUT (GAS-WELL)
- ⊙ OLIEPUT (OIL-WELL)
- ⊖ BORING ZONDER BITUMINA (DRY HOLE)
- ⊙ 34 NUMMER VAN BORING (ZIE LINKER BLADZIJDE)
NUMBER OF WELL (SEE LEFT PAGE)
- ⊙ BORING IN BEDRIJF (DRILLING WELL)
- ⊙^w WATERINJECTIEPUT (WATER INJECTION WELL)

VERLEEND IN 1986 (GRANTED IN 1986)

- WINNINGSVERGUNNING
PRODUCTION LICENCE
- GESLOTEN GEBIED
CLOSED AREA
- TERUGGEGEVEN GEBIED
RELINQUISHED AREA
- ▨ SPECIAAL
RESTRICTIEGEBIED
SPECIAL
RESTRICTED AREA

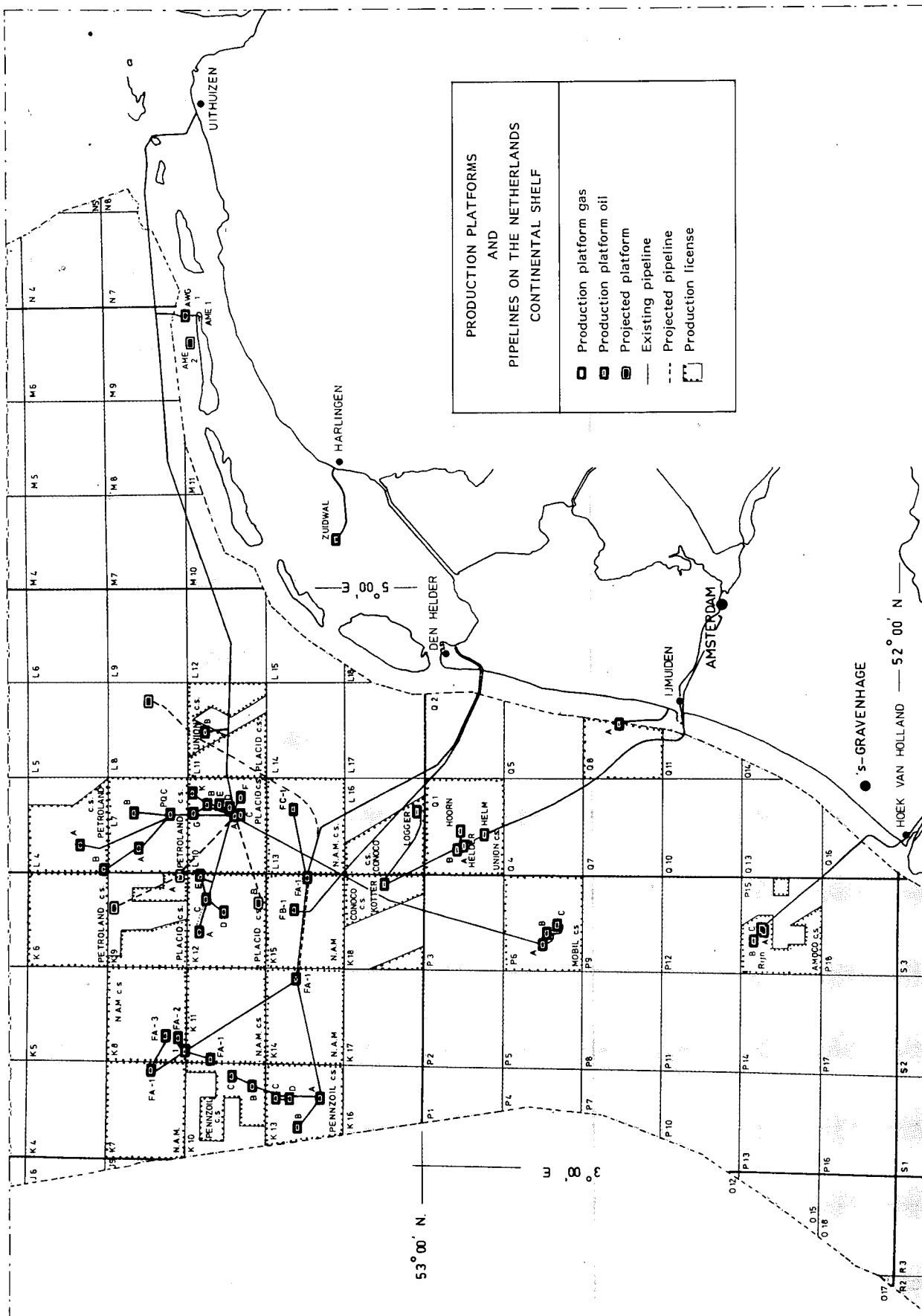


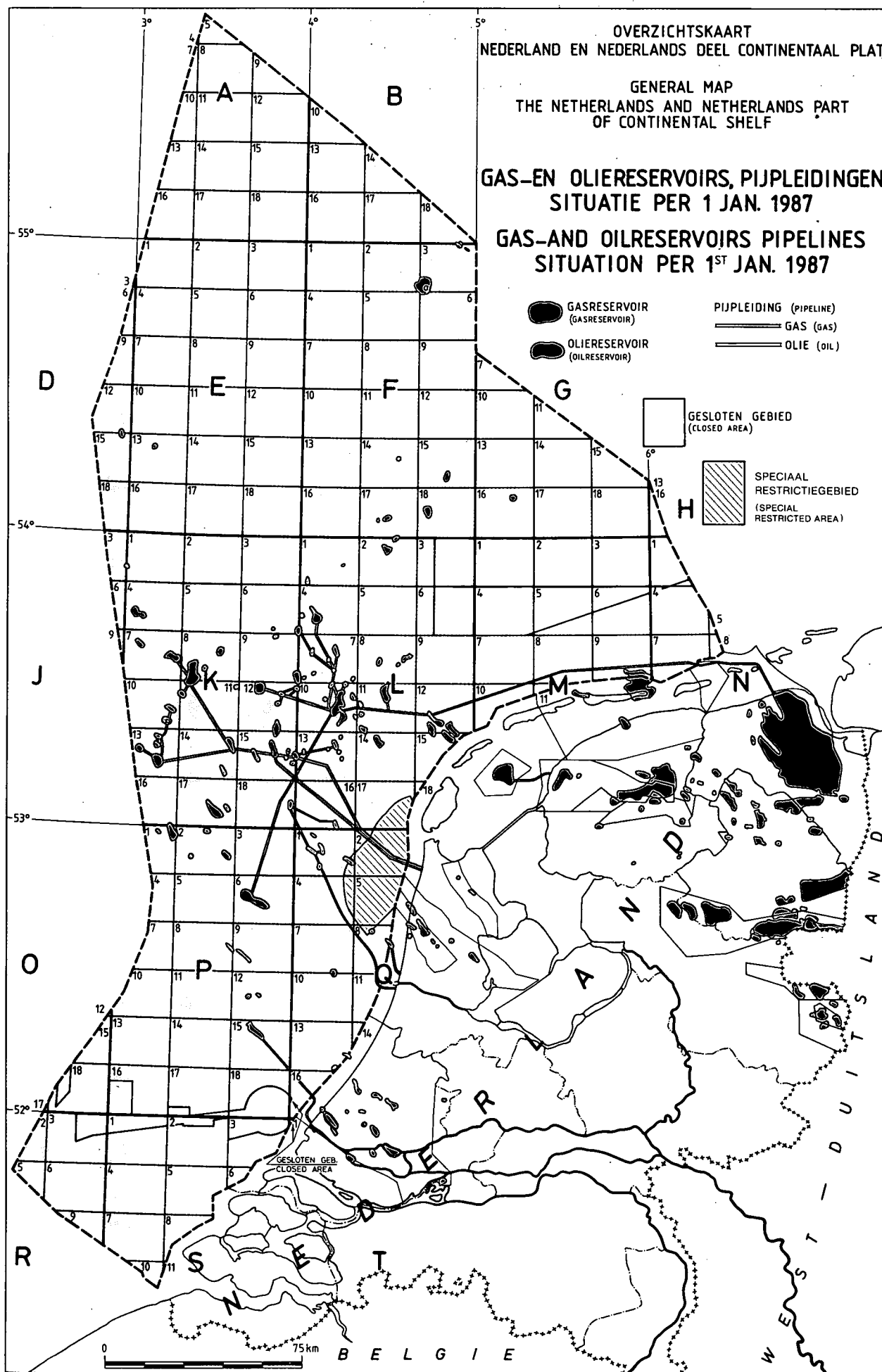
GESLOTEN GEB.
CLOSED AREA

0 75 km

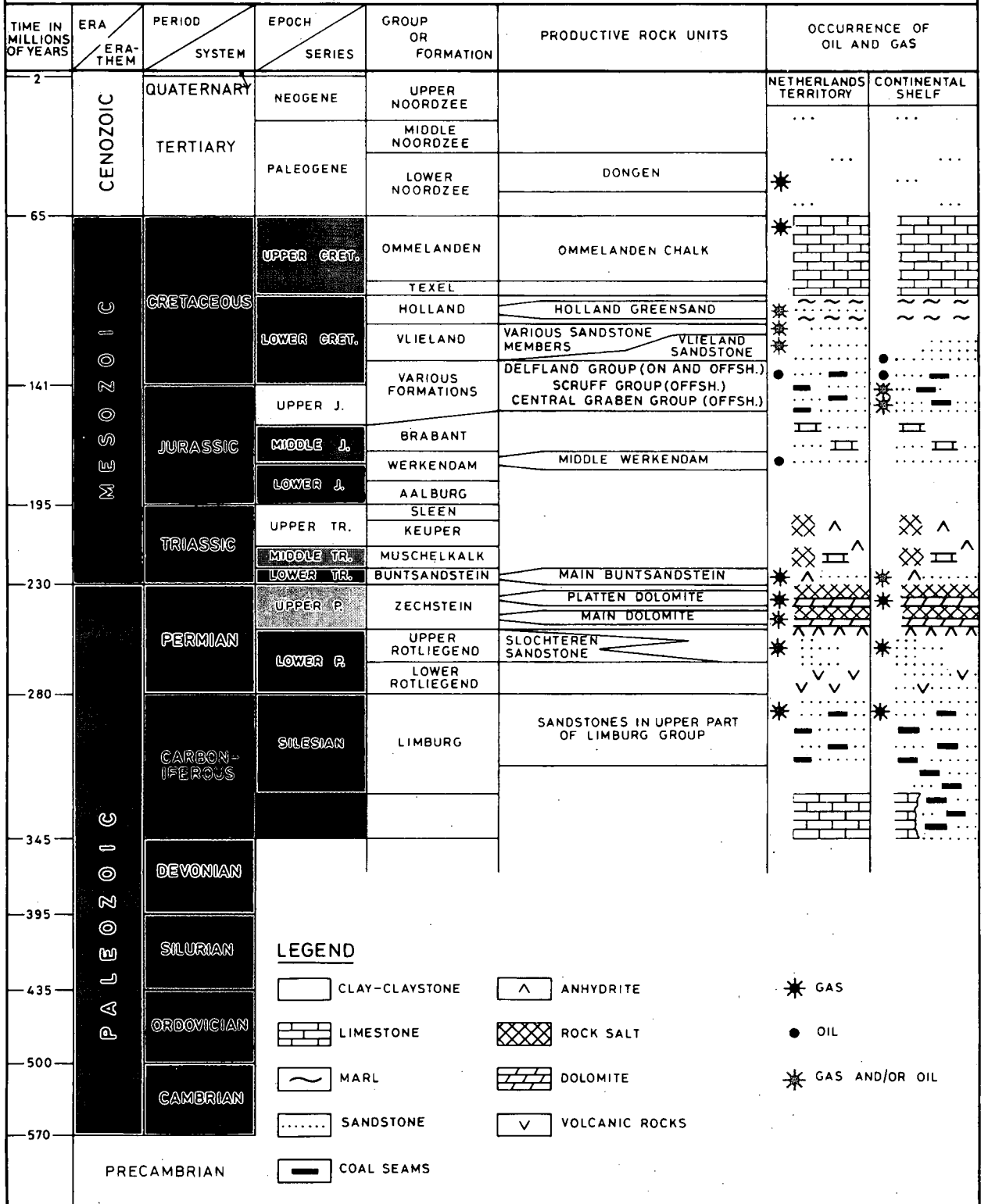
PRODUCTION PLATFORMS (as far as January 1st of 1987)

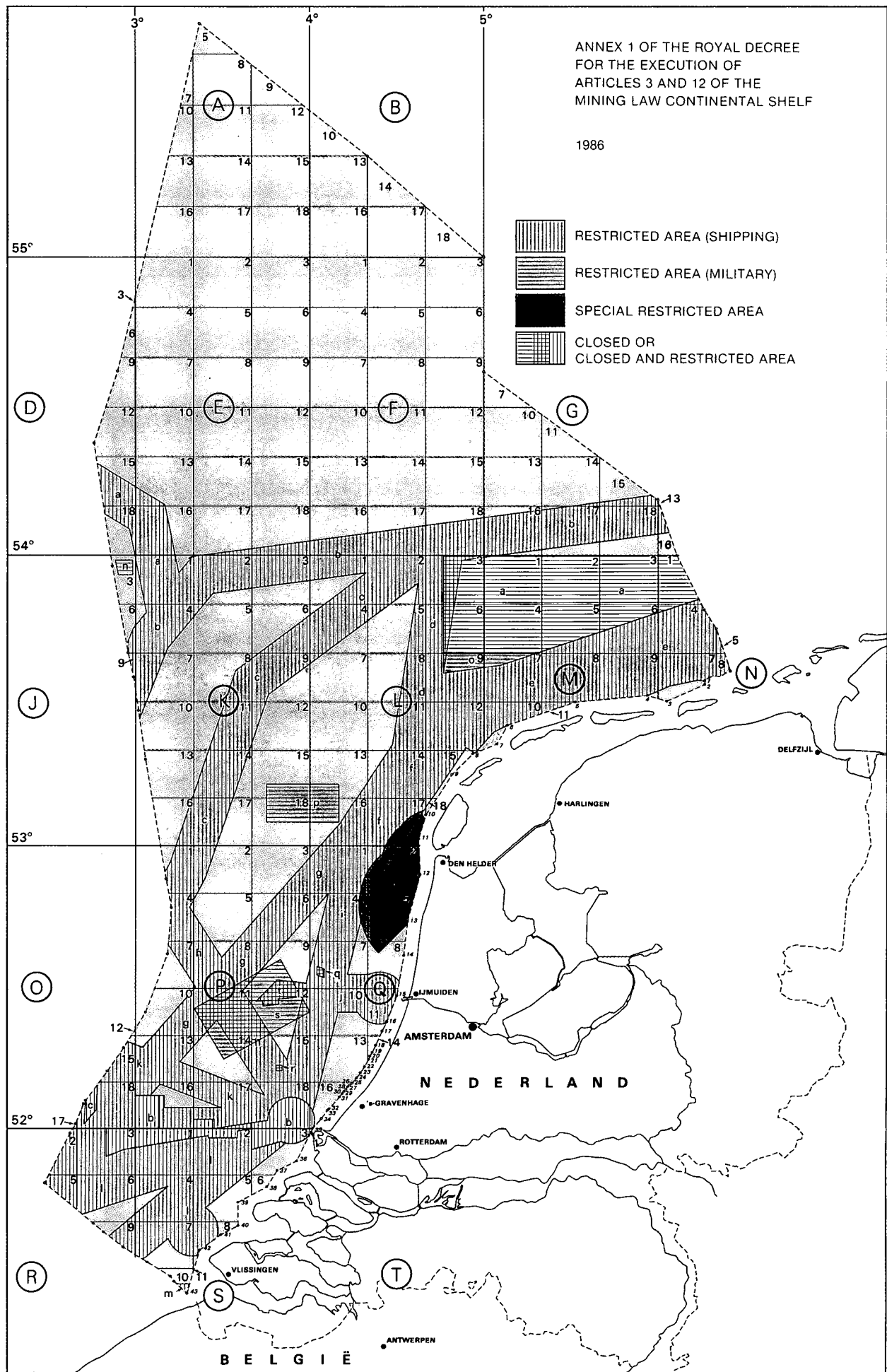
Platform	Operator	Year of installation	Number of legs	Oil/gas	Function
AWC-1	NAM	1985	3	gas	riser
AWC-1P	NAM	1985	6	gas	production
AWC-1W	NAM	1985	4	gas	wellhead
K/07-FA1	NAM	1982	6	gas	production
K/07-FA1	NAM	1980	4	gas	wellhead
K/08-FA1	NAM	1977	10	gas	integrated
K/08-FA2	NAM	1977	4	gas	satellite
K/08-FA3	NAM	1984	6	gas	satellite
K/09-A	Placid	1985	4	gas	satellite
K/10-B	Pennzoil	1981	6	gas	production
K/10-B	Pennzoil	1981	6	gas	wellhead
K/10-C	Pennzoil	1981	4	gas	satellite
K/11-FA1	NAM	1977	4	gas	satellite
K/12-A	Placid	1983	4	gas	satellite
K/12-C	Placid	1984	4	gas	satellite
K/12-D	Placid	1985	4	gas	satellite
K/12-E	Placid	1986	4	gas	satellite
K/13-A	Pennzoil	1974	8	gas	production/ compression
K/13-A	Pennzoil	1974	4	gas	wellhead
K/13-B	Pennzoil	1976	4	gas	satellite
K/13-C	Pennzoil	1977	6	gas	production/ compression
K/13-C	Pennzoil	1977	4	gas	wellhead
K/13-D	Pennzoil	1978	4	gas	satellite
K/14-FA-1C	NAM	1985	8	gas	compression
K/14-FA1	NAM	1975	10	gas	integrated
K/15-FA1	NAM	1977	10	gas	integrated
K/15-FB1	NAM	1978	10	gas	integrated
K/18-KOTTER	Conoco	1984	8	oil	production
K/18-KOTTER	Conoco	1984	6	oil	wellhead
L/04-A(PA)	Petroland	1981	8	gas	integrated
L/04-B	Petroland	1984	4	gas	wellhead
L/07-A	Petroland	1984	4	gas	satellite
L/07-B	Petroland	1975	4	gas	integrated
L/07-BB	Petroland	1978	4	gas	wellhead
L/07-C(C)	Petroland	1977	4	gas	wellhead
L/07-C(PK)	Petroland	1983	4	gas	compression
L/07-C(P)	Petroland	1977	8	gas	production
L/07-C(Q)	Petroland	1977	4	-	accommodation
L/10-A	Placid	1974	8	gas	production
L/10-A	Placid	1974	10	gas	wellhead/ compression
L/10-A	Placid	1974	4	gas	riser
L/10-B	Placid	1974	4	gas	satellite
L/10-BB	Placid	1980	3	gas	wellhead
L/10-C	Placid	1974	4	gas	satellite
L/10-D	Placid	1977	4	gas	satellite
L/10-E	Placid	1977	4	gas	satellite
L/10-EE	Placid	1984	3	gas	wellhead
L/10-F	Placid	1980	4	gas	satellite
L/10-G	Placid	1984	4	gas	satellite
L/10-K	Placid	1984	4	gas	satellite
L/11-A	Unocal	1986	4	gas	integrated
L/13-FC-1	NAM	1986	4	gas	wellhead
L/13-FC-1	NAM	1986	6	gas	production
L/16-A	Conoco	1985	4	oil	production
(LOGGER) L/16-A	Conoco	1985	4	oil	wellhead
(LOGGER)					
P/06-A	Mobil	1982	8	gas	production
P/06-B	Mobil	1985	4	gas	satellite
P/15-A(RIJN)	Amoco	1985	4	oil	wellhead
P/15-B(RIJN)	Amoco	1985	4	oil	satellite
P/15-C(RIJN)	Amoco	1985	6	oil	production
Q/01-HELM	Unocal	1981	6	oil	production
Q/01-HELM	Unocal	1981	4	oil	wellhead
Q/01-HELDERA	Unocal	1982	6	oil	production
Q/01-HELDERA	Unocal	1982	4	oil	wellhead
Q/01-HELDERB	Unocal	1986	1	oil	satellite
Q/01-HOORN	Unocal	1983	6	oil	production
Q/01-HOORN	Unocal	1983	4	oil	wellhead
Q/08-A	BP	1986	3	gas	wellhead





GEOLOGICAL TIMETABLE WITH COMPOSITE STRATIGRAPHIC COLUMN OF THE NETHERLANDS AND THE CONTINENTAL SHELF





PIPELINES IN THE NETHERLANDS SECTOR OF THE
CONTINENTAL SHELF (at 1st of January 1987)

Operator	From	To	Diameter (inch)	Laid	Length (km)	Carries
Placid	L10/C	L10/A	10 * 2	May '74	1.1	g + m
Placid	L10/B	L10/A	10 * 2	June '74	7.3	g + m
Placid	L10/A	Uithuizen	36	April '75	177.0	gas
Pennzoil	K13/A	Callantsoog	36	July '75	120.5	gas
Placid	L10/D	L10/A	10 * 2	May '77	1.15	g + m
Placid	L10/E	L10/A	10 * 2	Aug. '77	4.1	g + m
Pennzoil	K13/B	K13/A	10 * 2	June '77	8.7	g + m
Petroland	L7/B	L7/P	12+4+3	'77	7.85	g+w+m
Petroland	L7/P	L10/A	16	'77	15.8	gas
NAM	K11/FA1	K8/FA1	6	Sept. '77	6.0	gas
NAM	K8/FA2	K8/FA1	10	Sept. '77	3.8	gas
NAM	K8/FA1	K14/FA1	24	Nov. '77	30.9	gas
NAM	K15/FA1	WGT-leiding(s)	24	Jan. '78	0.06	gas
NAM	K14/FA1	WGT-leiding(s)	24	'78	0.14	gas
Pennzoil	K13/D	K13/C	10 * 2	June '78	3.5	g + m
Pennzoil	K13/C	K13/A	20	June '78	10.2	gas
Placid	L10/F	L10/A	10 * 2	Sept. '80	4.2	g + m
Petroland	L4/A	L7/P	12+3	Dec. '81	22.7	g + g
NAM	K7/FA1	K8/FA1	18	May '82	9.4	gas
Pennzoil	K10/C	K10/B	10 * 2	June '82	5.2	g + m
Pennzoil	K10/B	K13/C	20	June '82	7.4	gas
Unocal	Helder/A	Helm (Q1)	20	July '82	6.5	oil

* = multiple pipeline

+ = laid separately

s = side tap

g + m = gas + methanol

g + g = gas + glycol

Operator	From	To	Diameter (inch)	Laid	Length (km)	Carries
Unocal	Helm(Q1)	IJmuiden	20	July '82	56.8	oil
NAM	K15/FB1	Callantsoog	24	June '83	74.3	gas
Unocal	Hoorn(Q1)	Helder/A(Q1)	10	June '83	3.4	oil
Placid	K12/A	L10/A	14 * 2	June '83	29.2	g + m
Mobil	P6/A	L10/A	20	July '83	78.7	gas
Petroland	L4/B	L7/A	10 + 3	April '84	10.6	g + g
Petroland	L7/A	L7/P	10 + 3	April '84	9.8	g + g
Conoco	Kotter (K18)	Helder/A (Q1)	12	June '84	19.7	oil
Placid	L10/G	L10/B-L10/A(s)	10 * 2	Aug. '84	4.9	g + m
Placid	L10/K	L10/B-L10/A(s)	10 * 2	Aug. '84	5.8	g + m
Placid	L10/B	L10/A	14	Aug. '84	6.8	gas
Placid	L10/EE	L10/B-L10/A(s)	10	Oct. '84	0.2	gas
Placid	K12/C	K12/A-L10/A(s)	10 * 2	Oct. '84	0.31	g + m
NAM	AWG/1	NGT-leiding(s)	20	April '85	7.1	gas
NAM	AME/1	AWG/1 (M9)	20	June '85	4.2	gas
Conoco	Logger (L16)	Kotter (K18)	8 + 6	July '85	18.9	o + w
Placid	K12/D	K12/C	10 * 2	July '85	4.3	g + m
Amoco	P15/AC	H.v.Holland	10	Aug. '85	42.6	oil
Amoco	P15/B	P15/AC	10+6+6+4	Aug. '85	3.4	o+o+w+g
Mobil	P6/B	P6/A	12 * 3	Aug. '85	3.9	g + g
Mobil	P6/C	P6/B	12 * 3	Aug. '85	2.9	g + g
NAM	L13/FC1	K15/FA1	18	April '86	15.4	gas
BP	Q8/A	Wijk aan Zee	10	'86	13.7	gas

* = multiple pipeline

+ = laid separately

s = side tap

g + g = gas + glycol

g + m = gas + methanol

o + w = oil + water

o+o+w+g = oil + oil + water + gas

Operator	From	To	Diameter (inch)	Laid	Length (km)	Carries
NAM	K8/FA3	K7/FA1	12	'86	8.9	gas
Placid	K12/A-	K12/E	2	'86	4.0	methanol
Placid	L11/A	NGT-leiding(s)	14	'86	6.8	gas
Placid	K12/E	K12/C	10	'86	6.3	gas
Unocal	Helder/B	Helder/A	8	'86	1.9	oil

g + g = gas + glycol

ADDRESSES AND TELEPHONE NUMBERS
(Operators and government)

Amoco Netherlands Petroleum Company,
Koningin Julianaplein 10,
Postbus 11550,
2502 AN DEN HAAG.
Tel.: 070-490911

Bow Valley Industries Ltd.,
p.a. Loeff & Van der Ploeg,
Blaak 333,
Postbus 21020
3001 AA ROTTERDAM.
Tel.: 010-147555

B.P. Exploratie Maatschappij Nederland B.V.,
Catsheuvel 105,
2517 KA DEN HAAG.
Tel.: 070-527272

Charterhouse Petroleum Netherlands Ltd.
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2501 BC DEN HAAG.
Nieuwe Havenstraat 2
2272 AD VOORBURG.
Tel.: 070-647820

Chevron Oil Company of the Netherlands,
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Tel.: 070-262141

Continental Netherlands Oil Company,
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2260 BD LEIDSCHENDAM.
Tel.: 070-209365

DSM Energie B.V.,
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Bezuidenhoutseweg 6,
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Tel.: 070-796320

Mobil Producing Netherlands Inc.,
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Tel.: 070-498498

Nederlandse Aardolie Maatschappij BV,
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Postbus 28000,
9400 HH ASSEN.
Tel.: 05920-69111

Nederlandse Olie en Gas Exploratie
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2594 AC DEN HAAG.
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Pennzoil Nederland Company,
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Postbus 13410,
2501 EK DEN HAAG.
Tel.: 070-924351

Petroland BV,
Mariahoeveplein 6
Postbus 93280,
2509 AG DEN HAAG.
Tel.: 070-481891

Placid International Oil Ltd.,
Koningin Julianaplein 15,
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2502 AS DEN HAAG.
Tel.: 070-814581

Rijks Geologische Dienst,
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Tel.: 045-711910

J.C. van Markenlaan. 5
2285 VL RIJSWIJK.
Tel.: 070-956500

Statoil Netherlands BV,
Duindoorn 31, Leidschenhage,
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2260 BD LEIDSCHENDAM.
Tel.: 070-209230

Ultramar Exploration (Netherlands) B.V.
p/a Maas, Hoek, Schuurs & Havermans
Postbus 5113
3008 AC ROTTERDAM.

Unocal Netherlands Inc.
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Postbus 84363,
2508 AH DEN HAAG.
Tel.: 070-520591