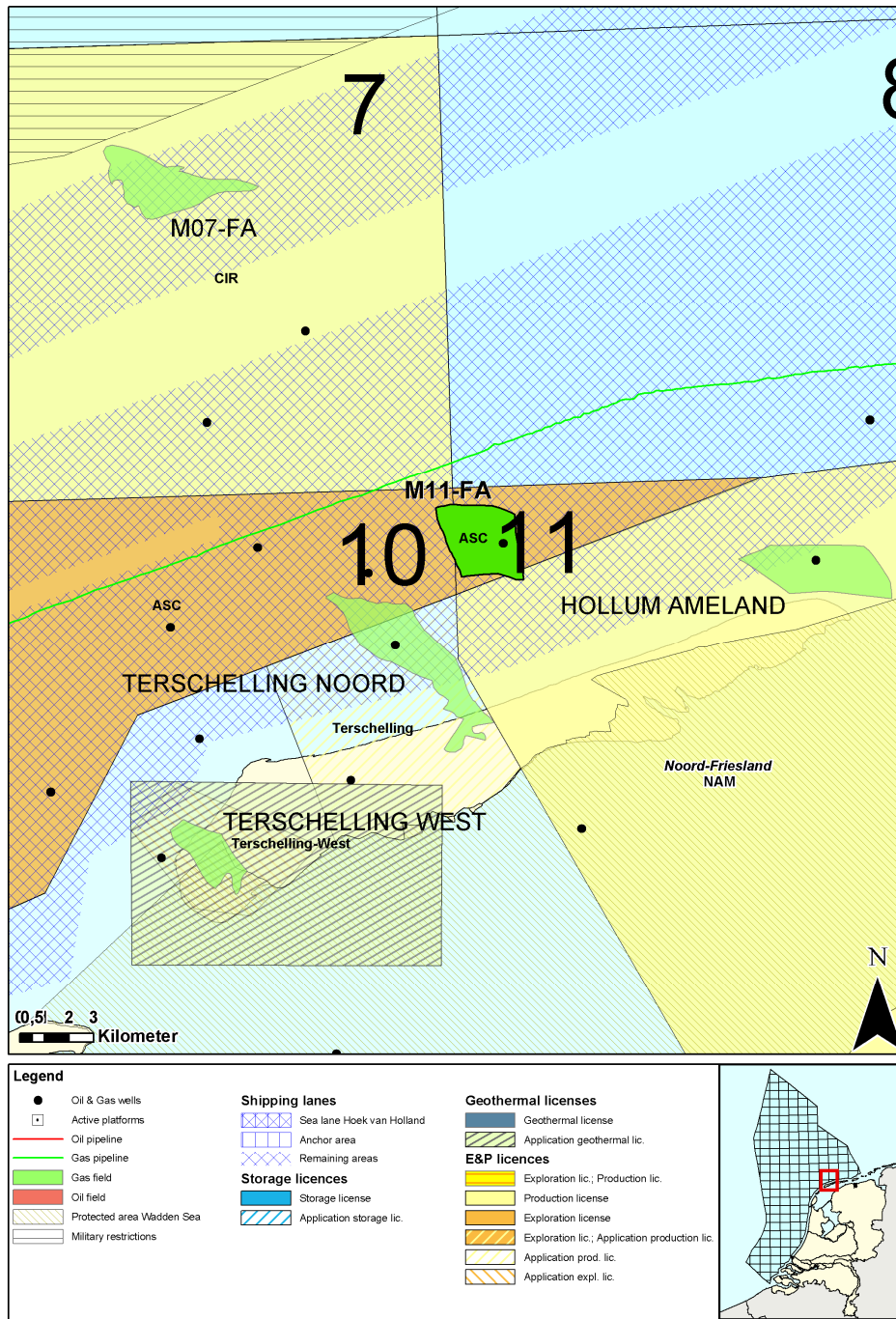




Fact sheet M11-FA field

Stranded fields - Q4 2009



Location map of the M11-FA field

General information

The offshore M11-FA gas field was discovered in 1982 by exploration well M11-01. It is situated some 10 km north of the island Terschelling. The gas is trapped in the reservoir sandstones of the Upper Slochteren Member of the Upper Rotliegend Group. The field has not been developed and currently lies in the concession M11 of ASC. The field appears to extend in the neighbouring licences M10 of ASC and Noord-Friesland of NAM.

The M11-FA field sits in a fault bounded, flat lying horst block. Bounding faults are running E-W and NW-SE. The field comprises one sandstone reservoir interval: the Upper Slochteren Member (ROSLU). The reservoir is tight due to poor primary reservoir facies and subsequent diagenetic deterioration. The field is centered on the M11 block, but straddles block boundaries of block M10 and NAM's Noord-Friesland production licence. The surface area of the field approximates 7.4 km². The field may extend two fault blocks eastward duplicating the surface area.

Three offset wells to the M11-01 well are reference wells for the Rotliegend lithostratigraphy (Terschelling-01, Hollum-Ameland-02 and Buren-01, Adrichem Boogaert et al. 1993). For general information on the geology of the M11-FA field area one is referred to the Geological atlas of the Netherlands, map sheet Vlieland-Terschelling (RGD 1991) in which the geological history is explained and for example also petrophysical analyses are reported.

Data presented in this fact sheet are taken from the various reports from the files of TNO-NITG. It is noted that NAM conducted a 3D seismic survey in an area of the M05, M08, M10 and M11 blocks in 1996 (release November 2006) and the Hollum-Noord survey from 1995 (release November 2005).

Sequence of events

Date	Event
08-03-1968	Award exploration license M11 to NAM
03-02-1982	Spud date well M11-01 (NAM)
09-05-1982	Completion date well M11-01 (NAM)
06-12-1983	Relinquishment of exploration license M11 by NAM
05-04-1984	Exploration license application M11 by BP
21-03-1985	Award exploration license M11 to BP
08-01-1991	Exploration license M11 transferred to Clyde
18-08-1993	Relinquishment of exploration license M11 by Clyde
18-01-1996	Exploration license application M11 by NAM
03-12-1996	Award exploration license M11 to NAM
03-02-1997	Exploration license M11 effective
03-02-2002	Relinquishment of exploration license M11 by NAM
07-28-2007	License of ACS

Reservoir data

Below are summaries of log evaluation data of the Upper Slochteren Member in well M11-01 by RGD (1996).

Geological unit RGD & NOGEPa (1993)	Depth interval m TVD/MSL	Net thickness m	N/G %	Porosity %	Gas saturation %
Upper Slochteren Member	2755-2883	106	83	6.3	13.2
Pay zone down to FWL	2755-2823	51	75	6.1	13.5

Well M11-01 was cored across the depth range 2772.5-2776.1 m (TVD/MSL). At 5 levels along this core interval, both porosity and permeability were measured. The core porosities are in the range 9-15 %, whereas the core permeability's are in the range 1-2 mD.

Contacts

Reservoir	Top structure m TVD-MSL	GDT m	GWC	FWL m TVD-MSL
Upper Slochteren Mbr	Approx. 2725	2777	-	2823 (from RFT)

Hydrocarbon specifications

Reservoir	CH ₄ %	CO ₂ %	N ₂ %	H ₂ S %	GHV MJ/m ³	Density rel. to air
Upper Slochteren Mbr	82.5	2.1	9.9	-	37.56	0.656

Volume

Reservoir	GIIP 10 ⁹ m ³ st		Reserves 10 ⁹ m ³ st		
	Expected		Proven	Expected	Possible
Upper Slochteren Mbr	In the range of 1-2			In the range of 0-0.5	

Productivity

Test depth	Reservoir pressure in bar abs	Q well production at s.c. m ³ /d	Drawdown bar	Q50 calculated m ³ /d per 50 bar drawdown	Reservoir temperature °C
ROSLU 2799-2804 m-RT	449.9	61000	346.7	6600	97

Q50 based on available public data from composite log

Well status

M11-01, plugged back and abandoned.

Infrastructure

The nearest platform is the recently installed monotower M7-A owned by Cirrus. It is located approximately seventeen kilometers to the northwest. The NGT pipeline is located within two kilometers to the north.

Public references

RGD 1996, Concessie aanvraag Terschelling, Petrofysica, TNO report. (Advice production license application Terschelling, Petrofysical report.)

RGD 1991, Geological Atlas of the deep Subsurface of the Netherlands, Map sheet I, Vlieland-Terschelling.

RGD & NOGEPa 1993, Stratigraphic nomenclature of the Netherlands, Mededelingen Rijks Geologische Dienst, Nr. 50

Composite log of well M11-01. *On open file.*

For more information stranded Oil&Gas fields in the Netherlands:

<http://www.nlog.nl/nl/reserves/reserves/stranded.html>

For released Well data and Seismic data contact DINOloket:

<http://www.dinoloket.nl>

For geological maps of the deep subsurface of the Netherlands:

http://www.nlog.nl/nl/pubs/maps/geologic_maps/NCPI.html

Liability

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