Advisory Group for the Ministry of Economic Affairs

TNO | Knowledge for business

TNO Built Environment and Geosciences
Geological Survey of the Netherlands
PO Box 80015
3508 TA Utrecht
The Netherlands

Nora Witmans

Petroleum-geological mapping

– Terschelling Basin and southern Dutch Central Graben

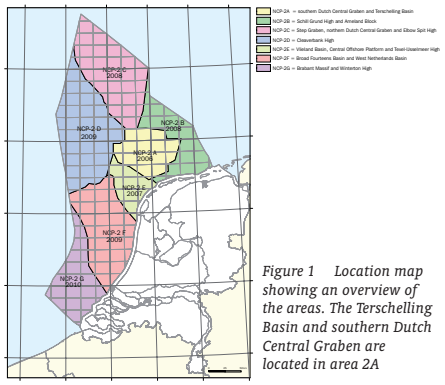


Figure 1 Location map showing an overview of the areas. The Terschelling Basin and southern Dutch Central Graben are located in area 2A

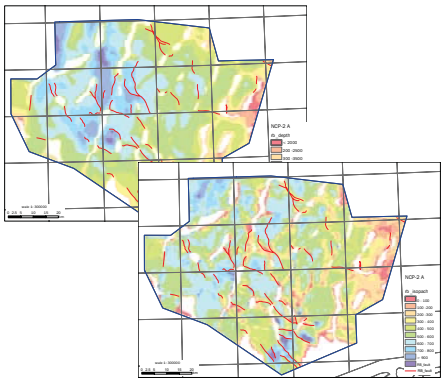


Figure 3 Depth map and isopach map of the Lower Germanic Trias Group showing that the base of the Triassic deposits is deeper than 6000m between saltdomes

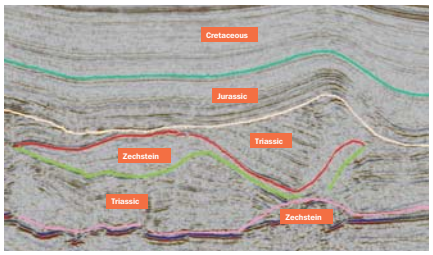


Figure 5 Seismic section with lateral Zechstein salt intrusions in the Upper Germanic Trias Group

Introduction

Within the conventional mapping framework of NCP-1 the Geological Survey of the Netherlands - TNO has started a detailed mapping program with emphasis on petroleum-geological topics, such as:

- facies analysis within a tecto-stratigraphic framework,
- petrophysical analysis of cored reservoir intervals,
- property modeling of actual and potential reservoirs,
- 3D burial history of source and reservoir rocks.

The aim of this study is to present a more comprehensive model of the subsurface to future and current operators in the oil industry in a basin-scale petroleum-system.

Deliverables

For the Terschelling Basin and southern Dutch Central Graben the following deliverables will be compiled:

- depth maps and isopach maps of major lithostratigraphic units
- 3D fault model
- velocity model with V_0 grids and K-values
- subcrop maps
- tecto-stratigraphic diagram
- well correlations
- erosion maps
- thickness, facies and property maps of reservoirs
- source rock maps and diagrams with migration paths
- maturity and burial diagrams
- pressure and temperature data

All deliverables will be made available at the end of January 2007 through the NL Oil and Gas portal www.nlog.nl and in DINO*Loket* www.dinoloket.nl.

Figure 6
Petrophysical evaluation of the Lower Volpriehausen Sandstone Member of the Lower Germanic Trias Group. This reservoir is a medium to fine grained sandstone, irregularly layered. The calculated results and porosity values measured from core samples show very good correlation

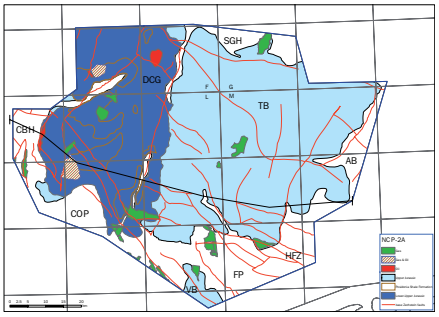


Figure 2 Structural geological map of the Terschelling Basin and southern Dutch Central Graben with the distribution of Lower – Upper Jurassic sediments, the distribution of the Posidonia Shale Formation (Lower Jurassic source rock) and oil & gas fields. TB Terschelling Basin, DCG Dutch Central Graben. The cross section is shown in figure 7

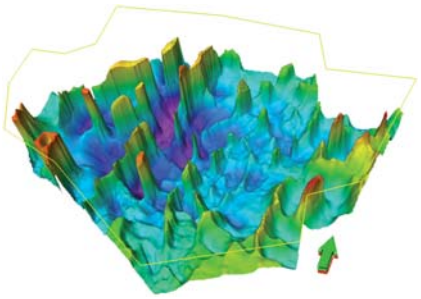
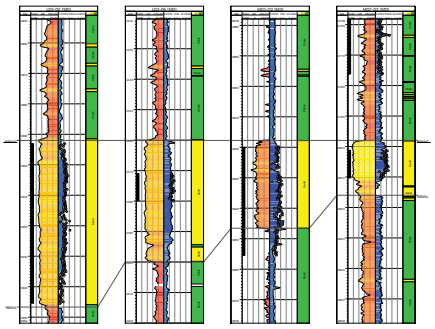


Figure 4 3D image of the top of the Zechstein Group in the mapped area. In the western part of the area the salt domes penetrate through the base of the North Sea Super Group (Cenozoic)



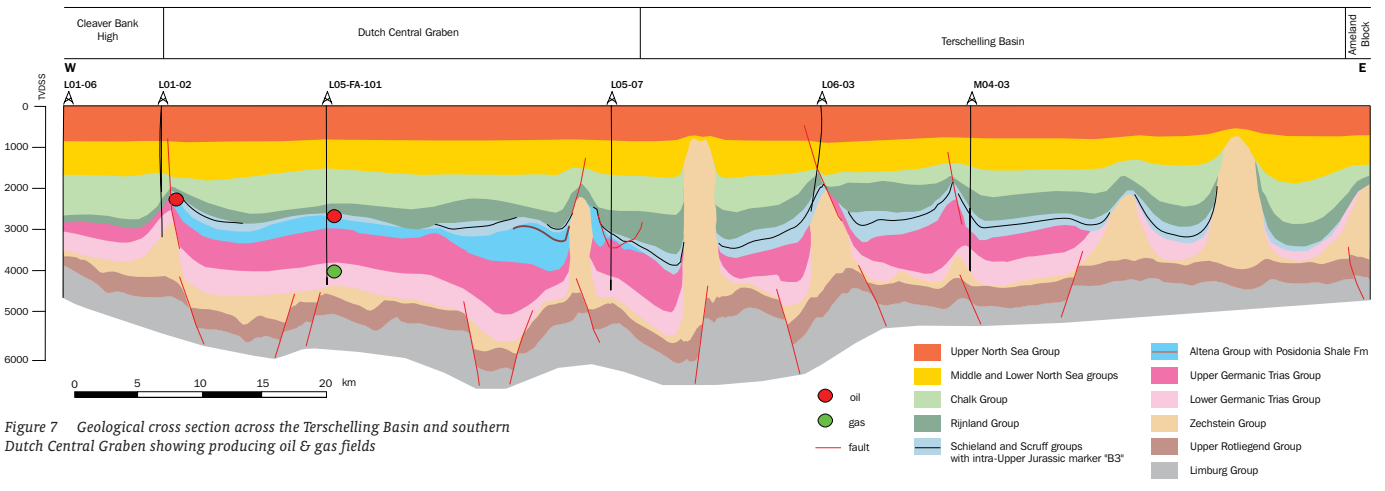


Figure 7 Geological cross section across the Terschelling Basin and southern Dutch Central Graben showing producing oil & gas fields