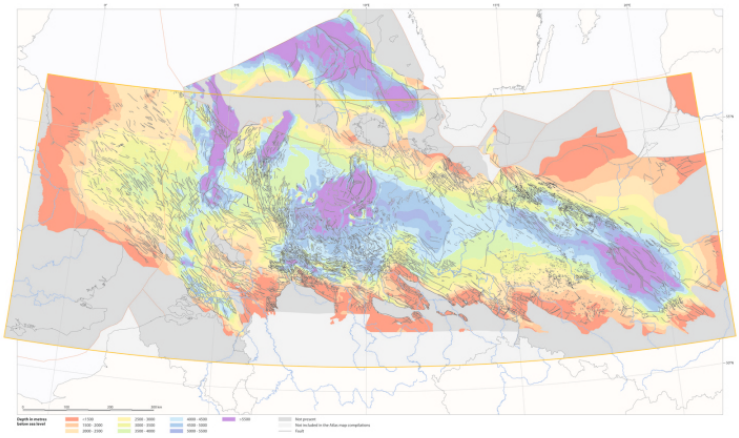
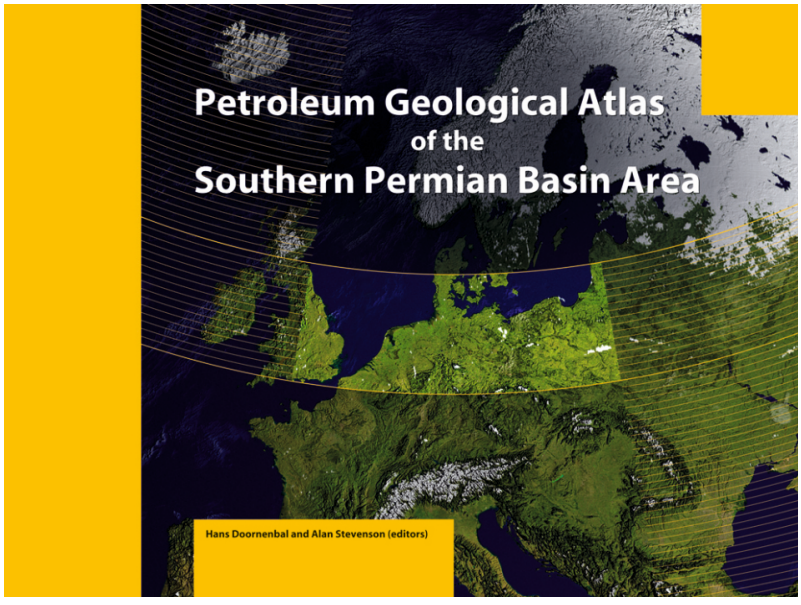
SPBA GIS MAPS AND DATABASE

The Southern Permian Basin Atlas (SPBA) presents a comprehensive and systematic overview of the results of over 150 years of petroleum exploration and research in the Southern Permian Basin area. The Atlas aims to stimulate the petroleum E&P industry to continue their activities in this mature basin. The subsurface characterisation provided in the Atlas will also be of great value to governments, researchers and other individuals interested in the deep subsurface.The printed Atlas (A2 format) is per chapter available on www.nlog.nl. The enclosed GIS Maps and the SPBA Project Database are also available now as a separate digital product and could be downloaded from www.nlog.nl.



Depth to the base of the Zechstein.



Contents 'SPBA GIS Maps and Database'

1. SPBA Project Database containing various types of spatial data: well and seismic data, oil and gasfield attributes, geochemical and gas composition data.
2. GIS Maps presented in the Atlas, ready for import in Petrel and ArcGIS.
3. References (>2100) in EndNote, subdivided into reference lists per chapter.

SPBA Project Database

The SPBA Project Database contains various types of spatial data: well and seismic data, oil and gasfield attributes, geochemical and gas composition data. Each type is described in the following section and their attributes are presented in Tables 1 to 6.

Well and seismic data

Databases of exploration wells, 2D-seismic lines and 3D-seismic surveys were compiled from input provided by the participating countries. They are provided as standard ESRI GIS format. Tables 1, 2 and 3 list the attributes of these data.

Table 1. Attributes for exploration wells.

Name	Description
ID	Unique number for each entry
Country	Name of the country where the well is situated
Well/location name	Name of the well or well location (geographic)
Well short name	Short name, number or code of the well
Co-ordinates (x, y)	Co-ordinates of the well surface location
Spud date	Start date (drilling of the well)
Completion date	End date (drilling of the well)
Owner/operator	Name or ID of the owner or operator of the well
End depth (MD, TVD)	End depth of the well (measured depth, total vertical depth)
Stratigraphy at TD (general, details)	Stratigraphic level at the end depth of the well (general period, formation or group)
Target stratigraphy (general, details)	Target stratigraphic level (general period, formation or group)
Result	Result with respect to hydrocarbon exploration (e.g. gas, oil, dry hole)

Table 2. Attributes for 2D-seismic lines.

Name	Description
ID	Unique number for each entry
Country	Name of the country supplying the data / where the 2D seismic line was recorded
Survey	Name of the 2D-seismic survey
Line	Name of the 2D-seismic line
Additional information	Optional additional information on the survey or survey operator
Completion date	Year (or a more specific date) when the seismic line was recorded

Table 3. Attributes for 3D-seismic surveys.

Name	Description
ID	Unique number for each entry
Country	Name of the country supplying the data / where the 3D-seismic survey was recorded
Survey	Name of the 3D-seismic survey
Additional information	Optional information about the survey or survey operator
Completion date	Year (or a more specific date) when the seismic survey was recorded

Oil and gasfield attributes

A dataset of oil and gasfields in the SPBA area has been compiled with input mainly from the participating organisations (Table 4). In some cases, regulatory or commercial confidentiality, or lack of data, did not allow the datasets to be completed. Where possible, the data gaps were filled by data provided by IHS Energy.

Table 4. Oil and gasfield attribute data in the SPBA Project Database.

Name	Description
ID	Unique number for each entry
Country	Name of the country where the field is located
Field name	Name of the field
Discovery year	Year in which the discovery well was drilled
Discovery well	Well that discovered the field
Reservoir age	Age of the reservoir rock
Reservoir lithology	Lithology of the reservoir
Fluid type	Gas, oil or oil and gas
Source rock	Name of the rock that sourced the reservoir
Depth	Approximate depth of the top of the structure
Initial pressure	Initial pressure of the reservoir
Temperature	Temperature of the reservoir
Field size	Gas or stock tank oil initially in place (HCIIP)
Recoverable volume	The quantity of oil or gas to be recovered
Cumulative production	Amount of gas/oil produced until present
Development status	Status of the development
Year start of production	Year of production start
Year end of production	Year of production end
Petroleum province number	Number of petroleum province used in Appendix 3 and Chapter 15

Source-rock geochemistry

The geochemical properties of the source rocks in the SPBA area are described in Chapter 13. The diagrams and graphs in the chapter are based on the data held in the SPBA Project Database (Table 5). This database was compiled from contributions by the participating countries with additional information from published sources. The geochemical data show the source-rock organic-matter quality and quantity, as well as its maturity. Rock-Eval pyrolysis and vitrinite reflectance (VR) data make up most of the geochemical data in the SPBA Project Database, although it also holds molecular and isotope data. All data are categorised by area (basin) and unit (stratigraphy).

Table 5. Approximate numbers of datasets in the SPBA Project Database – source-rock geochemistry.

Country	OM quantity (TOC)	OM quality (S_2, HI)	Maturity	Other (%Ro, T_{max})	Main data suppliers
Entire database	9750	9950	13 450	720	All participating countries
United Kingdom	900	850	900	180	TNO, CCGS, IGI Ltd.
Belgium	200	200	250	0	GSB, TNO
The Netherlands	4500	4500	8650	200	TNO
Denmark	1200	1200	1350	40	GEUS
Germany	1100	1100	750	250	BGR
Poland	1600	1550	1250	30	POGC, PGI
Lithuania/Russia	250	550	300	20	IGI Ltd.

Gas composition

In addition to source-rock data, the SPBA Project Database includes a gas database and selected molecular data on oils. The gas database consists of gas composition and isotope data from more than a thousand locations (Table 6). The database contains contributions from the participating countries combined with data from the Northwest European Gas Atlas Project (Lokhorst et al., 1998).

Table 6. Number of datasets in the SPBA Project Database – gas composition.

Country	Gas composition	Gas isotopes	Main data suppliers
Entire database	2309	130	All participating countries
United Kingdom	26	0	NW European Gas Atlas Project
The Netherlands	1416	130	TNO
Denmark	14	0	NW European Gas Atlas Project
Germany	258	0	NW European Gas Atlas Project
Poland	595	0	POGC, PGI

GIS Maps presented in the Atlas

The following GIS maps are available as ESRI Arcmap document (MPK) and ESRI Arcgis Pro Geopackage (gpkg) and ADOBE Portable Document Format (PDF).

Figure number	Map title	Scale		
		3M	6M	other
1.2	Topography and bathymetry	■		
1.3	Pre-Quaternary subcrop	■		
1.4	The distribution of about 1240 oil and gasfields in the Southern Permian Basin Atlas area including the 35 hydrocarbon field examples	■		
1.6	Locations of well and seismic data used to produce the 1 : 3 million scale lithostratigraphic depth maps	■		
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2.22	Gravity. Residual 2 (upward 5 km – upward 40 km)		■	
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2.24	Magnetics. Total field reduced to the North Pole		■	
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2.27	Geothermal. Temperature level - 1000 m		■	
2.28	Geothermal. Temperature level - 2000 m		■	
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Figure number	Map title	Scale		
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