

Information about access to data of the German Oil and Gas Industry at LBEG-Hannover

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Objective of this information sheet is providing an overview over the current situation concerning the data of the deep subsurface of the oil and gas industry. Besides the competence (keyword: federal system) and the legal basics the two networks Erdölgeologischer Austausch (ATS) [Petroleum geological Exchange] and Verbund-Kohlenwasserstoffgeologie (KW-Verbund) [Association-Hydrocarbon Geology] are dealt with. The central KW-Fachinformationssystem [Hydrocarbon (HC)-Information System] of the LBEG is presented and possibilities concerning the access to industry data are pointed out. User information concerning internet research of the KW-Fachinformationssystem provide an efficient potential for receiving basic data for their own use. Questions frequently asked by users, domestic and international, have been taken into account. Numerous appendices, expanding the individual subjects and/or containing supplementary information have been attached. In case of further questions concerning this area, please contact: kohlenwasserstoffe@lbeg.niedersachsen.de

1 Responsibility

In general, the responsibilities for the delivery and provision of data of the deep subsurface lie with the corresponding state authorities. These are the mining authorities and geological services of the individual states. The treatment of these data has been molded by the federal system of the Federal Republic of Germany. It differs considerably from the conditions in other European countries, which have mainly centrally organized state mining authorities and geological services. The release of data and the access to data have been considerably simplified in some cases and regulated by the legal basics applicable there (cf. below).

2 Legal basis

The mining authorities refer to the Bundesberggesetz [Federal Mining Act] (1982). The geological services refer to the Lagerstättengesetz [Mineral Deposit Act] (1934, latest version 2001). These laws and the corresponding implementation rules specify, amongst others, that supplied data have to be treated confidentially.

An information sheet prepared and published by Landesamt für Bergbau, Energie und Geologie (LBEG) - Hannover, Landesamt für Landwirtschaft, Umwelt und ländliche Räume (LLUR) - Schleswig-Holstein, Geologischer Dienst für Bremen (GDfB) and Geologisches Landesamt (GLA) - Hamburg (1/2014, Appendix 1) defines the scope of the

data to be reported. This information sheet has either been adopted by the other state authorities or they prepared their own versions, subsequently they were adapted to the requirements of the individual state.

3 Verbund-Kohlenwasserstoffgeologie (KW-Verbund) [Association-Hydrocarbon Geology]

The "KW-Verbund" came into being in 2000. It is a voluntary association of the Staatlichen Geologischen Dienste (SGD) [State Geological Services] or the responsible state ministries on a contractual basis. It is the objective of the association to further the joint interests of the state in the area of hydrocarbon geology. Until the year 1999 the Department "Kohlenwasserstoffgeologie" [hydrocarbon geology] in the Lower Saxony Landesamt für Bodenforschung [State Geological Survey] (NLfB, now LBEG) was part of the Geowissenschaftlichen Gemeinschaftsaufgaben [Institute for Applied Geosciences] (GGA) and active in all of the federal territory on the basis of a federal-state funding. After the independence of the GGA and the remaining of the Department in the NLfB, the activities of the NLfB (with exception of the ATS, cf. below) have been formally limited to the federal state of Lower Saxony. To further cooperation, bilateral contracts between Lower Saxony and other interested federal states were entered, which have come into force after the year 2000. The Department hydrocarbon geology (now in the LBEG: unit "Oil & Gas") advises the federal states involved in the fields Exploration & Production of oil and gas, underground gas storage (pore storage), creation and maintenance of HC data bases and HC-GIS systems. The current members of the KW-Verbund can be determined through the website of the LBEG. There is also additional information concerning the KW-Verbund, cf. <http://www.lbeg.niedersachsen.de>.

4 Erdölgeologischer Austausch (ATS) [Petroleum Geological Data Exchange]

The Erdölgeologische Austauschkreis was founded in 1934 (after 1996 on a contractual basis of industrial companies and LBEG). Originally based on state initiative, later based on the initiative of the oil and gas companies, the ATS had the following objectives:

- providing information on exploration activities of the companies involved,
- developing standardized formats for data exchange and for the development of database and GIS-systems,
- providing a data exchange for the completion of their own data stocks,
- fulfilling the compulsory delivery in accordance with the laws and
- solving scientific problems jointly.

The HC-Department of the LBEG coordinated this exchange. Since 1996 the cooperation between the Wirtschaftsverband Erdöl- und Erdgasgewinnung e.V. (WEG) and the LBEG had been based on a contract. Within the Erdölgeologische Austauschkreis special agreements applied in relation to the access to exploration data, which shall not be described in detail.

The contract of the Petroleum Geological Data Exchange ended at 31.12.2012.

5 Hydrocarbon (HC) information system

Due to the historical development of the LBEG, the cooperation with the oil and gas companies operating in Germany as well as the federal states (involved in the KW-Verbund) it was possible to establish a unique data set. An extensive analogue archive with industry reports of the E&P-activities, relational database and GIS-systems and the possibility of central internet research provide an efficient access of the data on the subsurface. An overview of the principle presence of data in general (which has to be delivered from companies) has been given in appendix 1.

5.1 Access to data of the deep subsurface

Generally **Header Data** and **Measured Data** have to be distinguished.

"**Header Data**" (also called master data) are those data that describe the existence of activities in detail. Replies to the questions: "**Who has done what, where and when?**" belong to the Header data. Examples are: well names, well times, coordinates, final depths, last horizons, clients, existence of cores and core tests, existence of bore hole measurements, location of seismic profiles etc.

In contrast "**Measured Data**" contain detailed information about the area investigated and/or the investigated space. Examples are: measured values, seismic profiles, geological profiles, core tests (distinct values) etc.

Header data are not confidential and are passed on to interested parties. Measured data on the other hand have to be treated confidentially and have been released for use by the owners only under certain conditions.

The access to the data is to be realized as follows:

5.1.1 Internet research of the Header data

On the map server of the LBEG (<http://nibis.lbeg.de/cardomap3/>) Header Data of wells and geophysics may be available for (re)search and download purposes. The downloaded data in the Shape-format can be imported into own GIS-applications or analyzed using standard programs (Excel, Access, dBase etc.). This type of internet research is the only possibility of gaining access to the header data in the LBEG. Information on how to use this system is listed in Chapter 6. Alternately header data can be enquired at the responsible authorities of the federal states. This applies in particular to federal states, which are not organized in the KW-Verbund and operate their own systems.

5.1.2 Viewing Measured Data

If the internet research turned out suitable wells, seismic profiles (2D), surveys (3D) or further sources of information, the interested person can conduct a data view in a data room of the LBEG, to be able to assess the quality and quantity of the Measured Data. A view means pure VIEWING, no copies, no processing, no photos, no notes of the

contents etc. The viewing has to be approved by the owners of the data in advance. Under certain conditions (cf. appendix 2) a blanket release has been given by a number of companies. Special guidelines apply to the use of the data room and the resulting costs, these have been listed in appendix 3.

5.1.3 Copies, processing or alternative use of Measured Data

If it is required for corresponding projects to conduct more than a data viewing, this is only possible with prior approval of the owner of the data. The companies to be contacted (operator companies) can be extracted from the internet research of the Header Data. Please contact these companies (or the BVEG (Bundesverband für Erdgas, Erdöl und Geothermie e.V.) in their place) and describe exactly, what you need for which purpose. The following should be listed:

- names of wells, profiles, surveys, etc. which are required (header data),
- form of the required data (copies, digital data, formats, etc.),
- purpose of use.

The required data can be obtained or bought either directly at the companies or, with a corresponding declaration of consent, from the state authorities. In any case a prior view (cf. item 5.1.2) would be advisable.

Please determine in advance exactly, whether the data access meets your expectations, to prevent you from finding out at your visit that the corresponding information is not available.

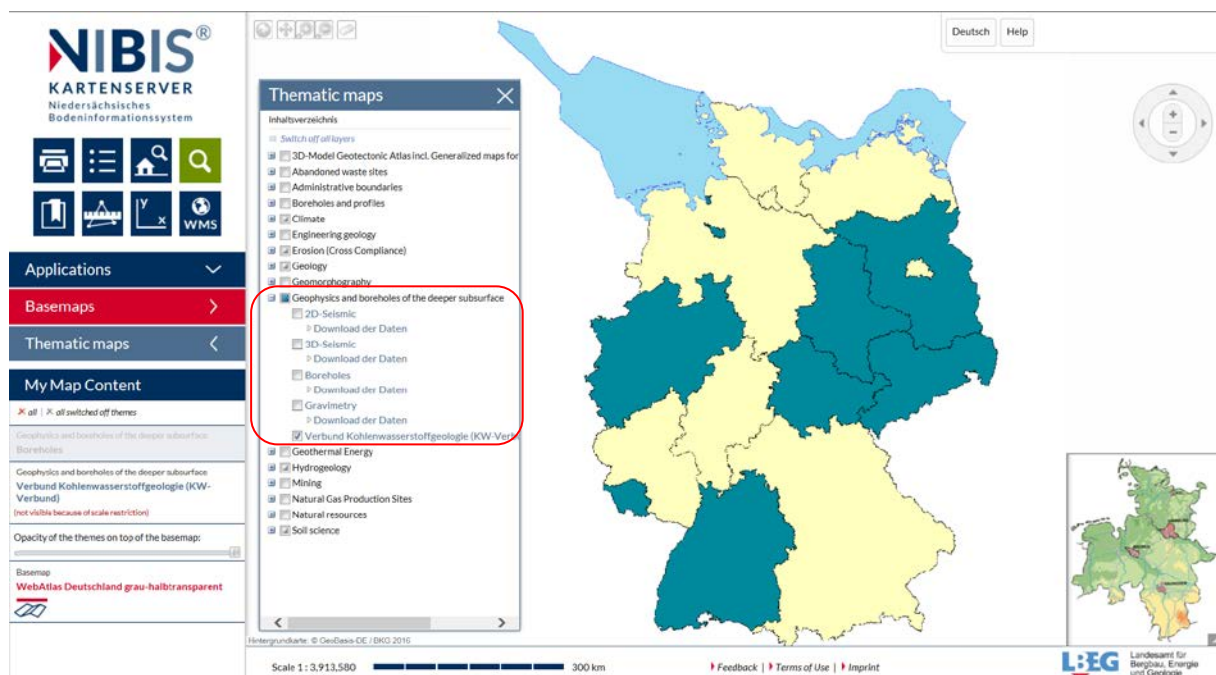
In case of questions concerning the access to data of the subsurface, please contact kohlenwasserstoffe@lbeg.niedersachsen.de.

6 User information concerning the internet research

As already explained in chapter 5.1.1, a map server is available for the internet research of the Header Data of the LBEG. A short description of the use of this system is given here, to provide the user with a quick introduction.

6.1 Overview

The map server of the LBEG is available at <http://nibis.lbeg.de/cardomap3/>. The HC data can be found in the layer „**Geophysik und Tiefbohrungen / Geophysics and deep boreholes**“ (red box). The single topics can be combined with other layers.



With the menu the user can navigate through the map with the normal functions (start extent, move, zoom in, zoom out, getting information). Press the button and click or move in the map. An alternative usage is offered under the register „Bedienung einstellen“ (“Set Map Operation” in the top right position of the window).

Individual information (Header Data) can be requested using the “i”-button, which are displayed in a separate window.

The map server is standardized and can be used intuitively.

Kohlenwasserstoffbohrungen

Die KW-Bohrungsdatenbank des LBEG enthält Titel- und Fachdaten von über 30.000 Bohrlöchern. Neben KW-Explorations- und Produktionsbohrungen sind darin auch zu anderen Zwecken niedergebrachten Tiefbohrungen sowie Versenkbohrungen enthalten.

Bohrungsname:	KTB-Oberpfalz HB (6.)
Kurzname:	KT-O HB
Kurzname-Ost:	
12stelliger ID:	424147500106
LBEG-Archiv:	Reports
Auftraggeber:	Nieders. Landesamt fuer Bodenforschung
Eigentümer:	Landesamt für Bergbau, Energie und Geologie
Ergebnis:	Ziel erreicht
Bohrungsklasse:	
Bohrungsklasse - lang:	
Bohrungsart:	Forschungsbohrung
Endhorizont:	
Endhorizont ATS:	
Bohrbeginn:	05.07.1994
Bohrende:	12.10.1994
Endteufe [m]:	9101,00
Rechtswert:	4508775,20
Hochwert:	5519864,40
ABW - Teufe [m]:	-1,00
ABW - Strecke [m]	-1,00
ABW - Azimut [Grad]:	-1,00
Teufenverlust [m]:	71,00
Anzahl Kerne:	-1
Anzahl Kernuntersuchungen:	-1
Anzahl Temperaturwerte:	54
ABW - Daten:	NO
Profildaten:	NO
GVM-Daten:	NO
GVM-Archivnummer:	
Zugang:	Gesperrt
Lochstatus	Offen
Einsicht	Keine Einsicht ohne Erlaubnis des Eigentuemers

3D - Seismik

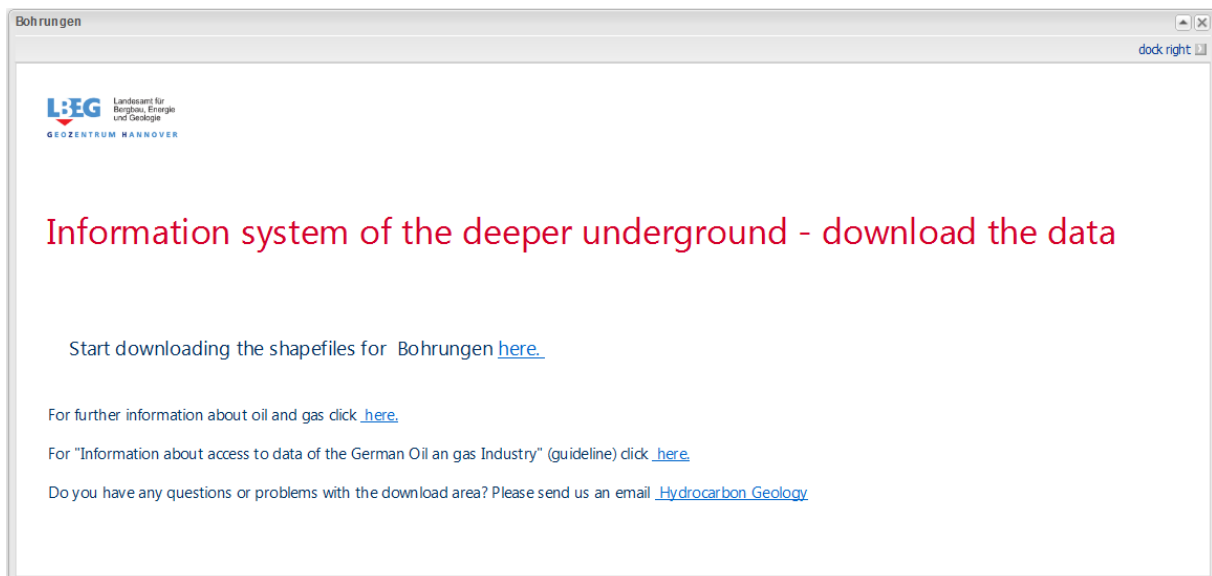
Reflexionsseismische Profile (2D-Seismik) sind seit Jahrzehnten die wichtigste geophysikalische Messmethode zum Abbilden von Strukturen im Untergrund. Flächenhafte reflexionsseismische Messungen (3D-Seismik) sind eine technologische Weiterentwicklung der 2D-Seismik. 3D-Seismik wird in Deutschland seit 1985 betrieben. In den LBEG-Seismik-Datenbanken sind neben den Titeldaten die Punktkoordinaten der reflexionsseismischen Profile - die so genannten UKOOA-Daten - sowie die Umrisspolygone der 3D-seismischen Flächen gespeichert.

Name:	Integrierte Seismik Oberpfalz DEKORP-KTB
ID-Nr:	159
Auftraggeber:	Nieders. Landesamt fuer Bodenforschung
Eigentümer:	Landesamt für Bergbau, Energie und Geologie
LBEG-Nummer:	0107511
Messfirma:	Prakla Seismos
Processing:	
Messbeginn:	17.07.1989
Messende:	27.11.1989
Art der Messung:	Sprengseismik, Vibrator Seismik
Abtastrate [ms]:	4
Aufzeichnungslänge [s]:	12000
Sweepdauer [s]:	20
Sweepfrequenz [Hz]:	12-48
Einsicht:	Keine Einsicht ohne Erlaubnis des Eigentuemers

6.2 Downloading Header Data

- Geophysik und Tiefbohrungen
 - 2D-Seismik
 - ▷ Download der Daten
 - 3D-Seismik
 - ▷ Download der Daten
 - Gravimetrie
 - ▷ Download der Daten
 - Tiefbohrungen (KW)
 - ▷ Download der Daten

The System not only displays the data within the map server, but also offers the option of downloading Header Data as Shape-files for further use. The use of the information-system is free of charge. If you want to download the different topics please press the link just below of the desired topic ("Download...") in the table of contents and a new window will show up.



More information and an email contact is given in the links at the bottom.

7 Web Map Services (WMS)

The data described in this information sheet as well as further data sets of the LBEG are additionally available via the WMS. The homepage of the LBEG can be found at <http://www.lbeg.niedersachsen.de>. From there follow the direct link “WMS” where the following topics are currently being offered:



Startseite | Inhaltsverzeichnis | Kontakt | RSS |

Aktuelles | Bergbau | Energie & Rohstoffe | Geologie | Boden & Grundwasser | **Karten, Daten & Publikationen** | Wir über uns & Service

Navigation > Karten, Daten & Publikationen > NIBIS® KARTENSERVER > Web Map Services (WMS)

Schriftgröße:
Farbkontrast:

Karten, Daten & Publikationen

- NIBIS® KARTENSERVER
 - NIBIS® MAPSERVER (in English)
 - Web Map Services (WMS)**
 - NIBIS
 - Newsletter
 - Bohrdatenbank
 - Boden-Profildatenbank
 - Karten & Daten
 - Publikationen

Kartendienste (Web Map Services) des LBEG

Das LBEG stellt Karten im Internet als **WMS (Web Map Service / Internetkartendienst)** in einer Reihe von wählbaren Projektionen zur Verfügung. So können die Karten des LBEG direkt in verschiedensten Anwendungen betrachtet werden. Selbstverständlich sind über die Kartendienste auch Legenden verfügbar. Die Anzeige von Attributen der in den Karten dargestellten Gegenstände wird unterstützt. In einem Kartendienst bietet das LBEG in der Regel mehrere thematisch verwandte Karten an.

Um mehr darüber zu erfahren, welche Karten das LBEG in einem Kartendienst zusammengefasst hat, können Sie die nachfolgenden Links verfolgen - es ist nur ein normaler Browser nötig! Hinter den Links auf die WMS-Dienste finden Sie Links zu der jeweiligen Thematik im NIBIS® KARTENSERVER, mit dem Sie sich schnell einen Überblick über die Karten der Dienste verschaffen können.

Die Kartendienste werden Ihnen mit einem XML Dokument antworten, in dem die Karten aufgelistet und kurz beschrieben sind. Je nach eingesetztem Browser und vorhandenen Einstellungen, wird Ihnen die Datei direkt angezeigt oder Sie müssen weiteren Anweisungen Ihres Browsers folgen, bevor Sie die Antwort des Kartendienstes betrachten können.

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=24&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Bodenkundlichen Karten im NIBIS® KARTENSERVER

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=22&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Geologischen Karten im NIBIS® KARTENSERVER

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=23&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Hydrogeologischen Karten im NIBIS® KARTENSERVER

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=25&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Ingenieurgeologischen Karten im NIBIS® KARTENSERVER

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=26&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Rohstoffsicherungskarte im NIBIS® KARTENSERVER

WMS-Dienst: <http://nibis.lbeg.de/net3/public/ogc.aspx?PkgId=34&Version=1.1.1&Service=WMS&Request=GetCapabilities> der Karten zur



Links zu WMS

- INSPIRE-Richtlinie der EU
- Geodateninfrastruktur Niedersachsen (GDI-NI)
- GDI-NI (LGN): Wie funktioniert ein WMS?
- GDI-NI (LGN): Formulieren von Anfragen an einen WMS?
- Geodateninfrastruktur Deutschland (GDI-DE)
- Open Geospatial Consortium (OGC)

Nutzungsbedingungen für die Geodaten-Dienste

 Nutzungsbedingungen für die Geodaten-Dienste (PDF, 17 KB)

At this point special reference is made to the topic Bergamtskarten [maps of the board of mines], which contain the Bergbauberechtigungen (licenses) within the area of responsibility of the LBEG.

Appendix 1: Information sheet concerning data collection

Guidelines for the Reporting of Geophysical and Geological Data Acquired in Licence Areas for Hydrocarbon Exploration and Pro- duction

as well as in Underground Porous Rock Gas Storage

Landesamt für Bergbau, Energie und Geologie (LBEG)
Stilleweg 2, 30655 Hannover

**Landesamt für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-
Holstein, Geologischer Dienst (LLUR)**
Hamburger Chaussee 25, 24220 Flintbek

Behörde für Stadtentwicklung und Umwelt, Geologisches Landesamt Hamburg (BSU)
Billstraße 84, 20539 Hamburg

Geologischer Dienst für Bremen (GDfB)
Leobener Straße, 28359 Bremen

Date: January 2014

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6.2.1 Registration / login	Fehler! Textmarke nicht definiert.
6.2.2 Selection of data sets and download	Fehler! Textmarke nicht definiert.
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1. Introduction

The exploration and production (E&P) activities of the oil and gas industry in Germany are regulated by two laws: the Federal Mining Act (BBergG) and the Federal Mineral Deposits Act (LagerstG). The first requires reports and data to be submitted to the respective State Mining Office (§11.4, §70). The Federal Mineral Deposits Act (§5 and §7) requires reports and data to be submitted to the Geological Survey of the respective German state, hereinafter referred to as the Geological Survey.

The objective of these Guidelines is to define standards for the content of the reports and data required by the two acts. The requirement is fulfilled when reports and data are submitted in compliance with Section 2 of these Guidelines. The reports required by these Guidelines do not replace the routine reporting to the LBEG of hydrocarbon production and reserves figures and field parameters, and the routine reporting to the LBEG defined in the operating plan.

These Guidelines do not limit in any way the rights of the State Mining Office defined in the Federal Mining Act, and the rights of the Geological Survey defined in the Federal Mineral Deposits Act, in particular the right to demand further data and information. These Guidelines will be updated as required by the development of new technology and in special cases.

2. Reporting

The data, reports and studies which must be submitted concern E&P activities within the areas of responsibility of the aforementioned agencies. The data is derived from field surveys, laboratory analysis and well logs, as well as the results of data processing with the standard methods used by the oil and gas industry.

The operating company must submit this material routinely within three months after the final data is available. The following reports must be submitted:

To LBEG for activities in Niedersachsen, Bremen, Hamburg, Schleswig-Holstein, the North Sea and the Schleswig-Holstein part of the Baltic Sea:

- Reports as specified in Sections 3 to 6.

To GDfB for activities in the Freie Hansestadt Bremen;

To BSU, GLA-Hamburg for activities in the Freie und Hansestadt Hamburg;

To LLUR for activities in Schleswig-Holstein and the Schleswig-Holstein part of the North Sea and the Baltic:

- Data as defined in Sections 3 to 6, excluding digitally recorded seismic data (SPS, UKOOA, SEG Y).

The submitted data is to be used only within the agencies unless agreed upon otherwise.

3. Scientific reports

Reports on geological, geophysical, geochemical and other investigations carried out to evaluate the prospectivity of the licence must be submitted if they are part of the working program and/or are to be deducted from the licence fee.

4. Reports on areal exploration work

Reports and data on geophysical, geochemical and other field surveys for exploration of the subsurface as well as results of processing existing data (e.g. digitizing of measurements, re-processing, etc.) must be submitted if they are part of the working program and/or are to be deducted from the licence fee.

4.1 Seismic

The digital poststack data must be submitted in SEG Y format soon after data acquisition and processing. The prestack data including geometry is only to be submitted on request.

The reports (data acquisition and data processing) can be submitted in mixed analogue and digital form. The location maps, seismic sections (all of the 2D and selected 3D lines spaced 2 km apart in both directions), and other documents included in the reports can be submitted as plot files (specific formats decided after consultation).

2D and 3D seismic (onshore and offshore seismic):

- survey data in SPS or similar format,
- coordinates of the CMP locations for 2D data or the points of the processed 3D-area (polygon) in UKOOA format,
- reports on the field survey and data processing (including sections and graphic files if applicable),
- migrated sections in SEG Y format (2D), or migrated 3D volumes in SEG Y format (workstation version),
- relevant stacking velocities,

- relevant static corrections.

4.2 Gravimetry and Magnetics

A report on the field survey and the data processing is required, together with a location map showing the contour map of the measured physical parameters, and the survey data in digital table form.

4.3 Geochemical and other field surveys

A report on the field surveys, the methods used, and the processed data are required, together with a location map, and the survey data in digital form.

5. Drilling Reports

The drilling operator is obliged to submit to the Geological Survey the following information on all wells:

- notification two weeks in advance that a well is to be drilled;
- unless otherwise agreed a monthly report on the status of the drilling at the end of each month and a four-weekly geological report, both in digital form;
- a final well report in digital form must be submitted a reasonable period after reaching total depth (about three months after the results have been collected).

The content and form of the monthly geological reports and the final well reports must comply with the standard of the German Petroleum Industry. Standard reporting layouts and a recording program for the preparation of these reports can be obtained from the Geological Survey.

5.1 Well logs

Submission of technical (e.g. CCL, CBL etc.) and production logs is currently waived for practical reasons. If there is any doubt concerning submission, please contact the respective agency. The following well logs must be submitted without delay as raw data (DLIS format, etc.) and as graphic data (PDS or META format, etc.):

- MWD/LWD logs
- Open-hole logs
- Cased-hole logs

For wells spudded after 1.1.2007, it is no longer necessary to routinely submit analogue log data.

Analogue logs from older wells which are digitized must also be submitted if the digitization is part of the working program and/or the costs have been deducted from the licence fee.

Well deviation data must be submitted to the Geological Survey in digital standard format. Example data is available at the Geological Survey.

Well velocity surveys and VSPs must be submitted to the Geological Survey in analogue and digital form. The scope and format must also comply with the standard, copies of which are available from the Geological Survey.

5.2 Production tests

The basic data of the production tests are detailed in the final well reports. Additional useful information can also be reported in the comments lines.

5.3 Analysis of material recovered from wells

5.3.1 Petrophysical analysis

The main results of core analysis (porosity and permeability) are to be summarized in digital form in the relevant parts of the final well report. Other core analysis results must also be reported.

5.3.2 Analysis of gases and liquids

Results of the analysis of gases and liquids from the well must be reported in digital form in the relevant section of the submitted final well report. Other gas and liquid analysis results must also be reported.

5.3.3 Studies of source rock potential and maturity

Determinations of maturity and analysis of the amounts and composition of organic material (TOM, TOC, pyrolysis, etc.) must be presented in reports and in analogue, and if possible, digital tables.

5.4 Well samples

The operator is obliged to collect and store material samples from the well using professional methods of the oil and gas industry, and to permit inspection of said samples upon request.

The approval of the regulator must be obtained before terminating the storage of said sample material and core material.

6. Final report when a licence expires, is relinquished or changes ownership

At the request of the regulator, the owner of an exploration or production licence is obliged to submit a final report within six months after expiration of the licence, or when there is a change in ownership. This report can refer to previously submitted reports and data, but must contain the most important results of the geophysical, geochemical, and geological analysis, as well as all wells. It should be prepared according to the following layout:

- Introduction and general information about the licence
- Summary of the exploration and production activities
- Description of the geology, stratigraphy, and the drilling results
- Structural interpretation of the area
- Description of the hydrocarbon reservoirs
- Summary and conclusions
- Location map of the licence area involved, of the 2D and 3D seismic surveys, wells and other geoscientific activities;
- Overview of 2D-3D-Seismic, wells and other geoscientific activities/measurements in table form;
- Seismic time maps and/or depth maps of the main horizons;
- Representative seismic lines with interpretations;
- Where possible, maps of the reservoir geology, geochemistry, and structural geology.
- Only in the case of production licence expiration/relinquishment: a summary of oil and gas production history and statistics.

These guidelines shall be amended as required, and adapted to the state of the art and changes in legislation.



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Appendix 2a: View of data – Part 1 (geothermal projects)

In the frame of the Geothermieforum Niedersachsen [geothermal forum Lower Saxony], which has been set up by Niedersächsischen Ministerium für Wirtschaft, Arbeit und Verkehr [Lower Saxony State Ministry of Economic Affairs and Employment], the Wirtschaftsverband Erdöl- und Erdgasgewinnung (WEG, today BVEG) [Trade Association for The Production of Oil and Gas] and the Landesamt für Bergbau, Energie und Geologie (LBEG) [State Office for Mining, Energy and Geology] in 2004, four work groups consisting of representatives from authorities and the oil and gas industry were called into being. The work group AG 2 dealt with a standardized, simplified procedure of allowing access to the data of the oil and gas – industry for geothermal projects. As a result the following basic requirements have been postulated by WEG, which have to be fulfilled for a simplified access for data view purposes:

Permission for viewing data available at the LBEG (company-specific) for geothermal projects if the following basic requirements have been fulfilled:

1. *Before viewing, a legitimate interest of the inquirer has to be proved. Legitimate interest is defined as follows:*
 - a. *Geothermal licensee*
 - b. *Company by order of a geothermal licensee*
 - c. *Company in the planning stage of obtaining a geothermal license:*
 - i. *Companies, which already hold other geothermal licenses*
 - ii. *Newcomers: Feasibility studies (as a rule order to consultants or similar)*
 - d. *Communities or authorities planning geothermal projects: Feasibility studies (as a rule order to consultants or similar)*
 - e. *Universities and research institutions: Projects concerning geothermal energy should be confirmed by the corresponding professor or project manager*
2. *The participant covenants to handle the data/material confidential and to use it only for the named project. The participant is responsible for not using the data/material for other issues and projects particularly with regard to exploration or production of hydrocarbons (oil/gas).*
3. *The permission to view is limited to the data present at the LBEG and the other geological surveys.*
4. *The view is conducted solely under surveillance by the LBEG in Hannover, if the data are accessible there. In the course of the viewing neither notes nor copies may be made, neither in writing nor in an electronic format. Cell phones, digital cameras and other recording devices may not be brought.*
5. *The LBEG records participants and viewed data and provides the owners of the data with this information.*

6. Data of an interpretative and planning character have to be regarded as an industrial/business secret within the meaning of § 6 Informationsgesetz - IFG dated September 5th, 2005. A view of this type of data has to be decided on an individual basis.
7. The following data will be released for purely viewing purposes by the companies listed, if the above-mentioned requirements have been fulfilled (cf. table):

	EWE	EMPG	GdF-PEG	ITAG v. Rautenkranz	RWE Dea	WiHo Gelsb.
Wells						
Header Data (coordinates, operator, drilling dates, enddepth, end-formation, deviation data, etc.)	x	x	x	x	x	x
Existence of: cores, coremeasurements, logs, etc., no Measured Data!	x	x	x	x	x	x
Report of the well	x	x	x	x	x	x
Geological profile (stratigraphy, lithology)	x	x	x	x	x	x
Cores, coremeasurements	x	x	x	x	x	x
Logs, (no composite-logs)	x	x	x	x	x	x
Temperature data (BHT, Temperaturverläufe)	x	x	x	x	x	x
Vertical seismic profiling (GVM, VSP, Checkshots)	x	x	x	x	x	x
Seismic						
Header Data 2D und 3D (coordinates, operator, dates, geometry, rec-length, etc.)	x	x	x	x	x	x
2D profiles and reports (technical), analogue	x	x	x	x	x	x
3D surveys, digital	x	x	x	x	x	x
Companies						
EWE	Energieversorgung Weser-Ems	ITAG Tiefbohr GmbH u. Co. KG	ITAG	Header Data, free access		
EMPG	ExxonMobil Production Deutschland GmbH	ITAG v. Rautenkranz	v. Rautenkranz	Measured Data, confidential		
GdF-PEG	Gaz de France - Production Exploration GmbH	RWE Dea	RWE Dea AG			
Gelsb.	Gelsenberg AG	WiHo	Wintershall Holding AG			

Appendix 2b: View of data – Part 2 (general)

After the view of data for geothermal projects (appendix 2a), was successfully handled for several years an additional process for general purposes (not geothermal projects) was defined from WEG/BVEG companies and LBEG. Starting within only the responsibility area of the LBEG now for all over Germany the view of data is possible for wells and seismic measurements under acceptance of user guidelines (appendix 3) if one of the following conditions is met:

- a) Wells, which start- and end-coordinates are outside of mining licences and 2D-/3D-seismics, which lines/polygons are at least 50% outside these licences. After an expiry of a license new data is tagged for easier access, if no new application for a license exists. Once tagged wells or seismic will be available permanent in the procedure.
- b) Wells and seismic measurements which are older than 5 years.

The data is tagged in attribute "Einsicht" (s. appendix 5).

Permission for viewing data available at the LBEG for geothermal projects if the following basic requirements have been fulfilled:

1. *Before viewing, the inquirer has to define a specific project name. Target and region have to be part of it.*
2. *The participant covenants to handle the data/material confidential and to use it only for the named project. The participant is responsible for not using the data/material for other issues and projects.*
3. *The permission to view is limited to the data present at the LBEG and the other geological surveys.*
4. *The view is conducted solely under surveillance by the LBEG in Hannover, if the data are accessible there. In the course of the viewing neither notes nor copies may be made, neither in writing nor in an electronic format. Cell phones, digital cameras and other recording devices may not be brought.*
5. *The LBEG records participants and viewed data and provides the owners of the data with this information.*
6. *Data of an interpretative and planning character have to be regarded as an industrial/business secret within the meaning of § 6 Informationsgesetz - IFG dated September 5th, 2005. A view of this type of data has to be decided on an individual basis.*
7. *The following data will be released for purely viewing purposes by the companies listed, if the above-mentioned requirements have been fulfilled (cf. table):*

	EWE	EMPG	GdF-PEG	ITAG v. Rautenkranz	RWE Dea	WiHo Gelsb.
Wells						
Header Data (coordinates, operator, drilling dates, enddepth, end-formation, deviation data, etc.)	X	X	X	X	X	X
Existence of: cores, coremeasurements, logs, etc., no Measured Data!	X	X	X	X	X	X
Report of the well	X	X	X	X	X	X
Geological profile (stratigraphy, lithology)	X	X	X	X	X	X
Cores, coremeasurements	X	X	X	X	X	X
Logs, (no composite-logs)	X	X	X	X	X	X
Temperature data (BHT, Temperaturverläufe)	X	X	X	X	X	X
Vertical seismic profiling (GVM, VSP, Checkshots)	X	X	X	X	X	X
Seismic						
Header Data 2D und 3D (coordinates, operator, dates, geometry, rec-length, etc.)	X	X	X	X	X	X
2D profiles and reports (technical), analogue	X	X	X	X	X	X
3D surveys, digital	X	X	X	X	X	X
Companies						
EWE	Energieversorgung Weser-Ems	ITAG	ITAG Tiefbohr GmbH u. Co. KG	Header Data, free access		
EMPG	ExxonMobil Production Deutschland GmbH	v. Rautenkranz	von Rautenkranz GmbH & Co. KG	Measured Data, confidential		
GdF-PEG	Gaz de France - Production Exploration GmbH	RWE Dea	RWE Dea AG			
Gelsb.	Gelsenberg AG	WiHo	Wintershall Holding AG			

Appendix 3: User guidelines of the data room in the LBEG

In the data room of the unit "Oil & Gas and licensing" of the LBEG, confidential data of the oil and gas industry are made available for viewing purposes. In order to be able to ensure an uncomplicated course of the view, we would like to acquaint you with our stipulations, which have been set in coordination with the owners of the data.

Header Data can be researched and downloaded in the internet at www.lbeg.niedersachsen.de ⇒ Karten und Daten ⇒ Kartenserver ⇒ Fachprogramm "Auskunftssystem tiefer Untergrund". After the desired data have been selected for viewing, contact the LBEG at kohlenwasserstoffe@lbeg.niedersachsen.de, to coordinate the scope and to make an appointment.

Please send the letter of agreement of the owner of the data prior to your visit or describe your reasons for taking the blanket view approach (cf. appendix 2).

The data can only be viewed after an appointment has been scheduled. A member of our unit will take care of you during the viewing to make sure the regulations will be adhered to.

Please sign the confidentiality and viewing statement before proceeding. You agree to treat the data you are viewing confidentially and to use them only for the named project.

The viewed data (archived documents) shall be recorded in the viewing confirmation. The statements will be sent to the owners of the data after the viewing for information purposes.

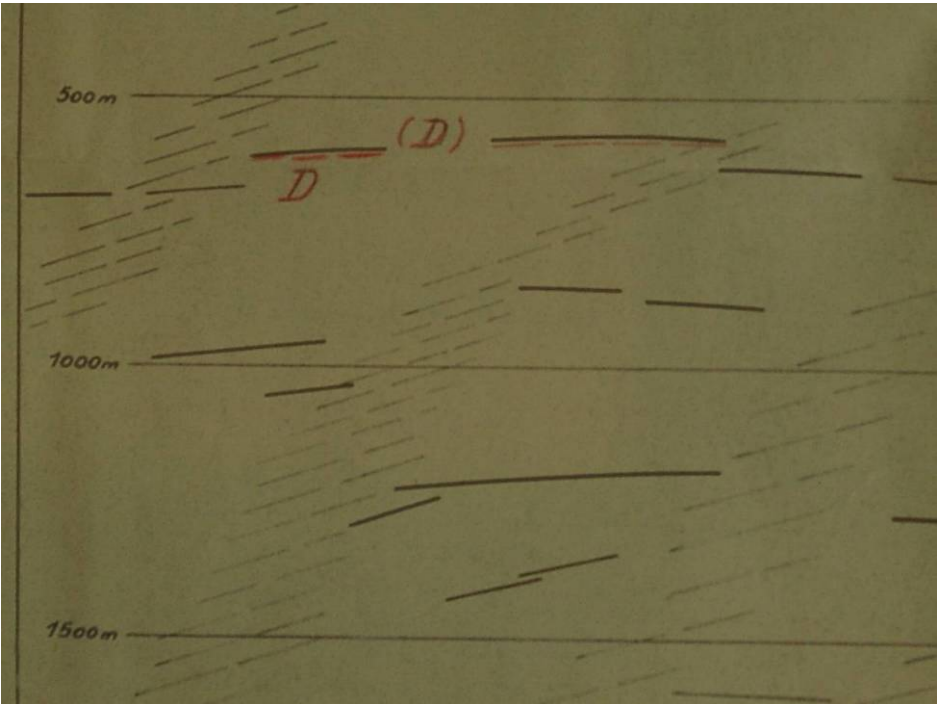
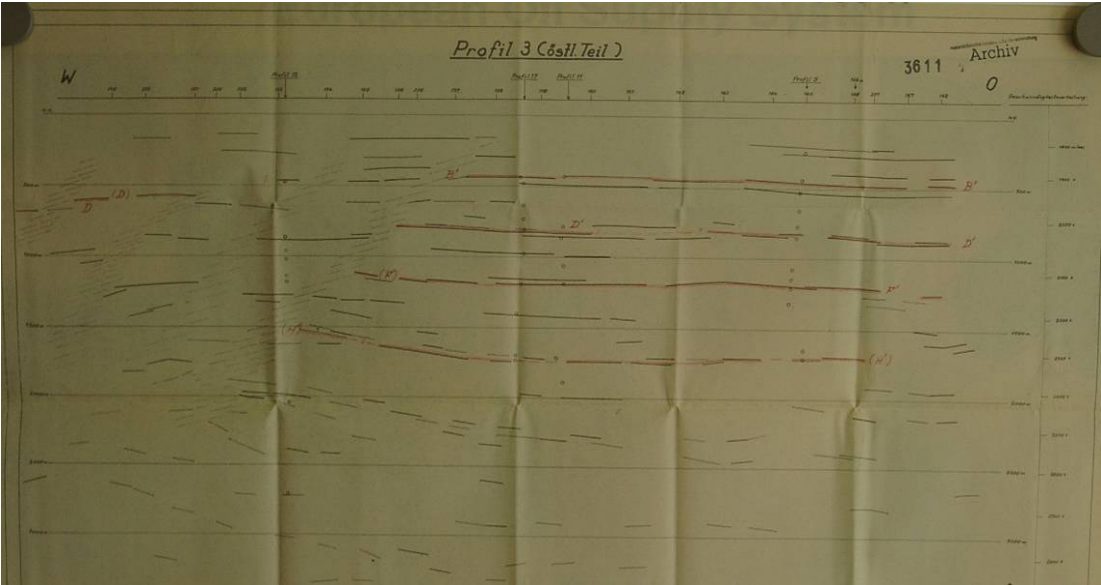
In accordance with agreements between LBEG and BVEG viewing is restricted to a purely visual review of the data. Notes, sketches and copies either handwritten or electronically may not be created. Cell phones, digital cameras or similar recording devices may not be brought to the appointment. Only the information required for purchasing exploitation rights or data may be taken down.

In the past our staff members were inundated with requests to provide site maps, etc. during the viewing. This is not possible. Please remember to bring along your documents from the GIS-research.

Cost accounting is based on the archived documents viewed. Currently there is a lump sum of 50 € plus 15 € for every archived document viewed, plus VAT. In case contents are missing in the archived reports, these shall be requested from the owners and can be viewed at a later time without further cost.

Appendix 4: Older 2D-Seismics: Line Drawings

From experience based on previous data view, it has to be pointed out that in the mid 60s a change of the 2D-seismic data recording took place. Older profiles usually do not exist as sections as is standard for newer seismics. The corresponding reports contain only so-called "Line Drawings", a rough interpretation of the seismic data. The following figures can be used as examples:



Appendix 5: Detailed description of the available data

In this appendix the individual data topics and their attributes are described, which can be downloaded from the internet as Shape-files using the technical program "Auskunftssystem tiefer Untergrund" of the LBEG map server.

The sources of the individual topics are as a rule data base excerpts of the German oil and gas companies as well as data collections of the NLfB / LBEG. In some cases data from the responsible geological surveys has been transferred to the LBEG and integrated there. The data stocks are completed by additional targeted inquiries and additional demands at the industrial companies as well as the systematic registration of older analogue material in the LBEG.

Appendix 5.1 Wells

All hydrocarbon (HC) - wells have to be taken into account for the wells. Storage wells are also included, if they are known to the department "Oil & Gas and licensing" in the LBEG. In the new federal states of Germany all wells of the so-called "GGA-storage" (Grunddaten Geologischer Aufschlüsse) have been included, if they have a final depth of more than 500m. Sporadically wells from the area "Deep Geothermal Energy" have been included, if the state authority responsible had transmitted them to the LBEG. The attributes available in the internet have been listed in the table below:

Wells

ID	Number of the bore hole in the LBEG data base (identifier for a hole; unique)
IDENTIFIER	12-digit identifier, clearly describes a single borehole (external)
LOCHNAME	Name of the bore hole
KURZNAME	Abbreviation of the bore hole name
DDR_NAME	Abbreviation of the bore hole name in the former GDR
LBEG_NR	LBEG Archive number
ZUGANG	Access and/or confidentiality of the data: free or restricted (frei oder gesperrt)
OPERATOR	Operating company
FIRMA	Current owner of the data (contact)
G_ERGEBNIS	Geological result of the well
B_KLASSE	Well classification (abbreviation, classification see annual report LBEG)
B_KLASSE2	Well classification
B_ART	Type of well
RECHTSWERT	Easting
HOCHWERT	Northing
GK_ELLIPSE	Reference system for eastings-northings
A_HOEHE	Height above sea level
BOHRBEGINN	Start of well (date)
BOHRENDE	End of well (date)
ENDTIEFE	Final depth (along hole)
E_HORIZONT	End horizon in acc. with symbol key (abbreviation)
E_HORIZO_L	End horizon in acc. with symbol key
ATS_E_HORI	End horizon in acc. with ATS-key (abbreviation)
ATS_E_HO_L	End horizon in acc. with ATS-key
ABW_TIEFE	Deviation depth (borehole drilling depth, to which the following deviation data refer)
ABW_STRECK	Deviation drift (horizontal deviation at ABW-TIEFE)

ABW_AZIMUT	Deviation azimuth (deviation direction at ABW-TIEFE)
TIEFENVERL	Loss of depth due to deviation
WASSERTIEF	Depth of water
VORH_ART	Type of project: * = Original well path, a = 1st geol. side track, b = 2nd geol. side track
BOHRFIRMA	Drilling company
B_KLASSE_A	Previous well classification
T_ERGEBNIS	Technical result
L_STATUS	Hole status: filled, partially filled, open
DIGI_LOGS	Digital Logdata present in the LBEG
GVM_NR	LBEG Archive number of a VSP measurement in this borehole
TEMP_ANZ	Number of the temperature data in LBEG-database for corresponding borehole
KERN_ANZ	Number of the cores in LBEG-database for corresponding borehole
KUNTER_ANZ	Number of the core tests in LBEG-database for corresponding borehole
ABWDATEN	Deviation data present in the LBEG-database (yes/no)
PROFILDATE	Profile data (geol. profile) present in the LBEG-database (yes/no)
GVM	GVM/VSP-data (check-shots) present in the LBEG-database (yes/no)
RECHTS_3	Easting referring to DHDN_3
HOCH_3	Northing referring to DHDN_3
EINSICHT	Status of a well with regard to view the data in the LBEG dataroom

Appendix 5.2 2D-Seismics

The 2D-Seismics data stock are based on UKOOA-location data of the industrial companies. These data have been supplemented by analogue location plan maps (cf. in part appendix 5, Part 1) from western and eastern Germany in different scales (1:10.000, 1:25.000 and 1:50.000). The attribute data have been extracted from the reports of the LBEG-Archive. The digitalization of the location plans as well as the recording of the attributes has not yet been concluded. The attributes available in the internet have been listed in the table below:

2D-Seismics

ID	Number of the profile in the LBEG data base (identifier for a profile; unique)
ID_SURVEY	Survey number in the LBEG database
SURVEYNAME	Survey name
S_KURZNAME	Abbreviation of survey name
LBEG_ARCHI	LBEG Archive number(s)
OPERATOR	Operating company (abbreviation)
OP_LANG	Operating company
OP_NACHFOL	Current owner of the data (contact partner) if empty, then immediately OP_LANG
MESSJAHR	Year of measurements
MESSBEGINN	Date start of the measurements
MESSSENDE	Date end of the measurements
PROFILNAME	Profile name
KOORDINATE	Types of coordinates: underground coordinates, geophone coordinates, shotpoint coordinates
ANREGUNG	Type of excitation
RECDAUER	Recording time in seconds
SAMPLING	Sampling rate in ms
FOLD	Fold
EINSICHT	Status of a seismic profile with regard to view the data in the LBEG dataroom

Appendix 5.3 3D-Seismics

The polygon outlines of the 3D-Seismics data have been provided by the industrial companies or recorded in the LBEG. The attribute data have been extracted from the corresponding reports of the LBEG-Archive. The attributes available in the internet have been listed in the table below:

3D-Seismics

ID	Number of the survey in the LBEG-database (Identifier; unique)
NAME	Name of the survey
CODE	Abbreviation of the survey
OPERATOR	Operating company (abbreviation)
OP_LANG	Operating company
OP_NACHFOL	Current owner of the data (contact)
NLFB_NR	LBEG-Archive number (1)
NLFB_NR_2	LBEG-Archive number (2)
MESSFIRMA	Measuring company
DV_FIRMA	Processing company
MESSBEGINN	Date start of the measurements
MESSENDE	Date end of the measurements
MESSART	Type of the measurement: S = explosive, V = vibrator, A = air gun
S_RATE	Sampling rate in ms
REG_LAENGE	Recording time in seconds
SWEEP	Sweep time in seconds (for vibrator excitation)
SWEEP_HZ	Frequency window of the sweep
FOLD	Cover - total
FOLD_X	Cover - X-direction
FOLD_Y	Cover - Y-direction
GRID_X	Width of grid in X-direction
GRID_Y	Width of grid in Y-direction
AUSLAGENFL	Geophone area
CDP_FAECHEN	Covered underground area
EINSICHT	Status of a seismic survey with regard to view the data in the LBEG dataroom

Appendix 5.4 Gravimetry

The polygons of the gravimetry measurements have been calculated in the LBEG from the individual measurement points, which have been reported by the industrial companies. The attribute data have been extracted from the corresponding reports of the LBEG-Archive. The attributes available in the internet have been listed in the table below:

Gravimetry

ID	Number of the survey in the LBEG-database (Identifier; unique)
SURVEYNAME	Name of the survey
ARCHIV	LBEG-Archive number
MESSJAHR	Measuring year
OPERATOR	Ordering company
OP_NACHFOL	Current owner of the data (contact person)
MESSFIRMA	Measuring company
MESS_PKTE	Number of measuring points