De Minister van Economische Zaken

Postbus 20101
2500 EC Den Haag

Vos références
Nos références DV-DIR-2009-496
Interlocuteur
Objet Request for a Salt Exploration License

Paris, 13th January 2010

Dear Sir,

Electricité de France S.A. (EDF), a company limited by shares ("Société Anomyme"), organized and existed under the laws of France with a registered capital of 911,085,545 Euros, whose registered office is at 22-30 avenue de Wagram 75008 Paris, hereby applies for a Salt Exploration License (opsporingsvergunning) as meant in Article 6 of the Mining Act (Mijnbouwwet) in accordance with the Mining Regulations (Mijnbouwregeling).

In the present request, EDF asks for a Salt Exploration License for a five-year period under the name "Salt de Marne" in relation with the geographical location in the Pieterburen area in the province of Groningen.

The area applied for is a 25 km² square defined by 4 corner points, denoted NW, NE, SE and SW, which are given in New RD coordinates in the table below :

Corner points	X New RD	Y New RD
NW	222300	603500
NE	227300	603500
SE	227300	598500
SW	222300	598500

The present application contains the relevant information according to the section 1.3.1 of the Mining Regulations. It is provided in three folds.

Direction Gaz
Tour EDF, 20 Place de la défense
92050 Paris la défense cedex
Téléphone
Télécopie
email :
www.edf.fr

The application contains business and production data in the meaning of the Government Information Act (Wet openbaarheid van bestuur) that EDF would like to maintain confidential.

Yours sincerely,

Direction Gaz

Tour EDF, 20 Place de la défense
92050 Paris la défense cedex

Téléphone
Télécopie
email :

www.edf.com

APPLICATION BY ELECTRICITÉ DE FRANCE FOR A SALT EXPLORATION LICENSE

UNDER THE DUTCH MINING ACT
PIETERBUREN SALT DOME AREA

EXECUTIVE SUMMARY

Electricite de France S.A. (EDF) hereby applies for a salt exploration license to perform exploratory works in order to establish if the salt dome around Pieterburen is suitable for underground gas storage purposes. The name proposed for this license is "Salt de Marne".

Through this application and subsequent realization of this project, EDF wants to become a major player in the north-western European gas markets considering that the Netherlands will play a key role in this evolving gas market.

The Dutch government is aiming that the Netherlands acts as a hub for the increasing international gas flows and as a distribution centre for gas in north-western Europe. This is known as the so-called "gasrotonde" or gas roundabout. This gas roundabout strategy forms an important part of the efforts by the Dutch government to secure the future supply of energy and is also of great importance for the Dutch economy in terms of investments, innovations and commercial activities generated by this. We believe that this potential underground gas storage project could provide a valuable addition to the gas roundabout strategy of the Dutch government.

EDF has researched various opportunities in the Netherlands and is now focusing on one specific salt structure in the area of Pieterburen.

Feasibility studies – based on public available seismic and well data – have shown a potential opportunity to construct underground gas storage in the Pieterburen salt dome near Pieterburen in Northwest Groningen.

In order to establish if this salt dome is suitable for underground gas storage (UGS) one or more exploration wells need to be drilled to the required depths, along with further seismic work and evaluations.

The only previous well in the Pieterburen salt dome was drilled by Akzo Nobel in 1971. This well was drilled to a depth of only 903 meters and did not encounter sufficient homogeneous salt and was therefore subsequently plugged and abandoned.

EDF intends to explore the Pieterburen salt structure to a depth of approximately 1,600 meters (an possibly up to 2,000 meters considering the results of the exploration drilling) in order to ascertain if sufficient homogeneous salt volumes are available between 1,000 and 1,500 meters depth, for the establishment of underground gas storage.

If the exploration phase is deemed positive, EDF will develop a gas storage corresponding to the full geological potential for its own needs and will bring the flexibility demanded by the other gas players.

EDF is the applicant for the license request. Please note however, that EDF intends to incorporate or use a Dutch subsidiary to hold the License. Should it be the case, we will contact you to procure that EDF is replaced as applicant to this request and ensure that the correct additional information in connection therewith is submitted.

Note: EDF would like to maintain the technical sections of the application (Annex III and IV) confidential

These two annexes contain "business and production" data (bedrijfs en fabricagegegevens) in the meaning of the Government Information Act (Wet openbaarheid van bestuur).

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IDENTIFICATION OF THE APPLICANT

1. IDENTIFICATION OF THE APPLICANT

Electricité de France S.A. (EDF), a company limited by shares ("Société anonyme") organized and existing under the laws of France with a registered capital of 911,085,545 (nine hundred eleven million eighty five thousand five hundred and forty five) Euros, whose registered office is at 22-30 avenue de Wagram, 75008 Paris, France, and its Paris Trade and Companies Register n° 552 081 317, herewith applies for a Salt Exploration License (opsporings-vergunning) as meant in Article 6 paragraph 1 sub a) of the Mining Act (Mijnbouwwet), in accordance with the Mining Regulations (Mijnbouwregeling), in particular Article 1.3.1.

As introduction, summary background information regarding the applicant and its expertise are provided below.

1.1. Presentation of the EDF Group

EDF, through its experience and its expertise, has sufficient technical and financial capabilities to ensure the success of the exploration work that is the object of the present application.

The EDF Group, one of the leaders in the energy market in Europe, is an integrated energy company active in all the business segments: production, transport, distribution, energy selling and trading. The Group is involved in supplying energy and services to more than 37,8 million customers around the world, including more than 28 million in France.

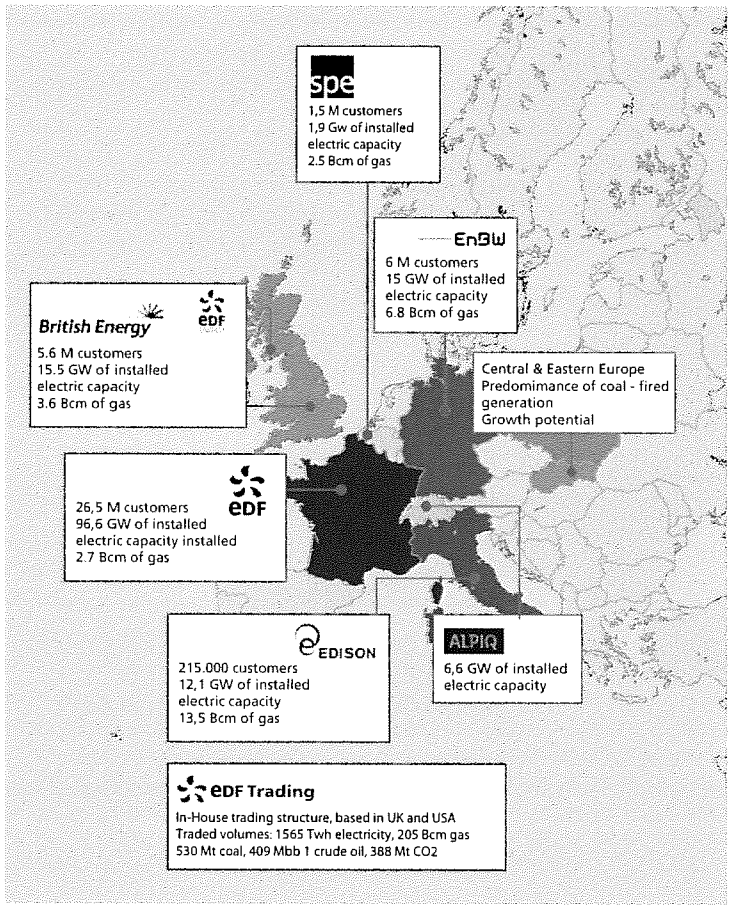
The Group is the leading electricity producer in Europe. In France, it has mainly nuclear and hydraulic production facilities where 95% of the electricity output involves no CO2 emissions. EDF Group operates 1.200.000 km of low and medium voltage overhead and underground electricity lines and around 100.000 km of high and very high voltage networks.

The EDF Group has a strong position in the gas activities through EDF Energy (United Kingdom), EnBW (Germany), Edison (Italy), and Dalkia France (cf. map 1).

In 2008, The EDF Group handled a total volume of approximately 26 billion m^3 (Bcm) of gas, making it one of the significant players in the European gas market in terms of the volumes handled.

The EDF Gas Division will lead the exploration works described in the present application.

A dedicated or existing Dutch subsidiary will be used for the holding of the License. If so, EDF will ensure that this subsidiary shall receive the necessary technical and financial capacities along with all necessary parent support.



Map 1. Main presences of the EDF group on the European markets in 2008

These quantities do not include the volumes handled by EDF Trading, a wholly-owned subsidiary of the EDF Group, which is one of the leading energy traders in Europe, and has started up its Liquefied Natural Gas (LNG) business, receiving its first cargo spot at the Montoir (France) terminal in November 2006.

1.2. The expertise of the EDF group in large industrial projects

The EDF Group has developed and operates a vast electricity production capacity that includes nuclear, gas, and hydraulic power plants.

EDF has consequently developed a set of skills and the performance levers necessary to operate Europe's largest electricity production capacity and ensure its development and its sustainability. The reach of the highest safety level is EDF's permanent requirement in the operation of its facilities, under the very strict oversight of the competent authorities.

EDF is engaged in constant engineering and maintenance work to ensure the optimum life of its installations.

The EDF Group's experience incorporates all recent advances and innovations in safety, protection of the environment, and technical and economic performance.

Moreover, EDF is working on the development of several major gas projects. The project, led by EDF, of building a (LNG) regasification terminal at Dunkerque has successfully passed the public enquiry phase. This is a large-scale operation with an investment cost exceeding €700 million.

Construction, expected to begin in 2010, will last approximately three years and will employ more than 1,200 people on site. In a context of growing gas imports in Europe, this strategic project will enable EDF to contribute to the security of energy procurement for Europe and for France. EDF's technical teams, assisted by engineering companies specializing in the field of LNG, will perform the construction.

In the Netherlands, DELTA Energy B.V. and EDF signed a joint venture agreement (cf. Figure 1) to build and operate the Sloecentrale (CCGT power plant), in the port and industrial area to the east of Vlissingen, on 29th March 2007. The Sloecentrale will supply power to industrial customers and private households from 2010. The power plant will generate about 870 megawatts, which is equivalent to the electricity used by two million households.

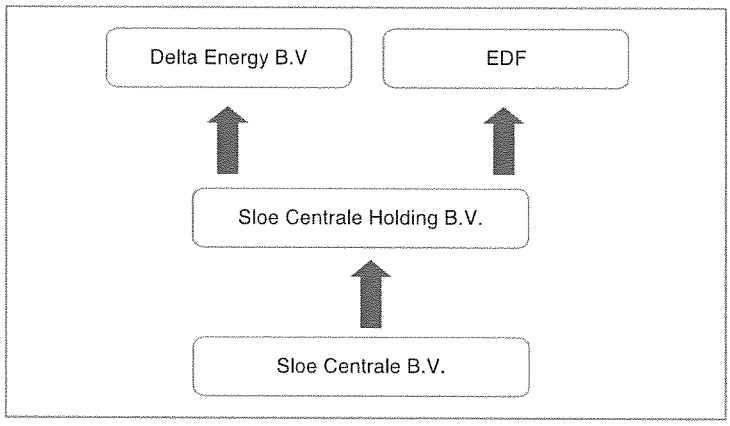


Figure 1. Organizational chart for the Sloecentrale

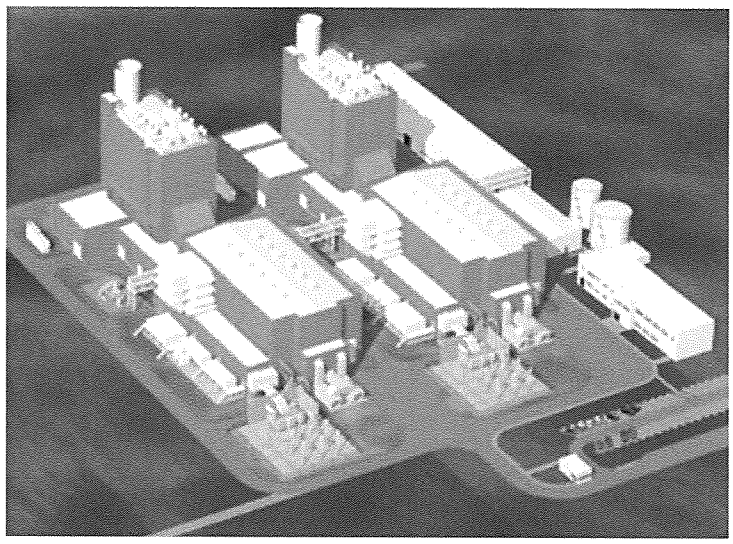


Figure 2. Overview of the Sloecentrale

Underground Gas Storage

In the specific field of underground gas storage, EDF is currently building surface facilities for a storage in salt cavities at Etzel, in Germany, in co-operation with EnBW. Furthermore, EDF is currently making exploration works to determine the suitability of salt dome for potential underground gas storage projects in the South West of France. The salt exploration activities involved are similar to those described in the present application. An exploration well shall be drilled in Q1 2010.

Edison, EDF's Italian subsidiary, is also working on a number of large projects to guarantee gas deliveries to Italy and Europe, including new strategic LNG infrastructure for European imports, currently in operation. Currently Edison operates two underground storage facilities in Italy.

EDF Trading has developed and operates an underground gas storage facility in salt cavities at Hole House Farm in the UK. Moreover EDF Energy has agreed a deal with British Salt Ltd to acquire a site to build a new fast cycle underground gas storage facility in Cheshire - it will be adjacent to EDF Trading's existing facility at Hole House Farm, Middlewich. The deal, which is set to provide a major boost to the local construction and engineering sector once work gets underway, provides further stability for British Salt's production plant, which employs 125 people. The storage facility will help secure the energy supply of the UK in the face of the continued decline of domestic gas production from the North Sea and gas being derived from many sources across Europe, Russia and North Africa.

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2. INFORMATION REQUIRED UNDER THE MINING REGULATIONS ("MIJNBOUWREGELING")

Articles relevant to the Exploration, production and storage licenses

The article relevant to the present application is the section 1.3.1 of the Mining Regulations whose requirements are provided in the following sections.

Sub 1.a.

EDF applies for a salt exploration license for a period of 5 years. This period shall cover the necessary studies (described in Annex III) to prepare and perform the exploration phase with the drilling of one, possibly two wells and to determine the technical characteristics of the potential storage.

A preliminary schedule of the main technical and permitting activities has consequently been established :

YEAR 1

- Continuation of the work of analysis of the seismic data (according to the results of the work in progress): acquisition of the raw data, reprocessing, interpretation.
- Preparation of the detailed drilling programme and of orders for well equipment (tubes, well head) and for the drilling rig.
- Submit and obtain the relevant permits/exemptions to perform the drilling phase.

YEAR 2

- Execution of a deep borehole, with coring and logs.
- Analysis of the drilling results (logs, cores).
- Laboratory tests to characterize the geomechanical properties of the salt structure.
- Updating of the structural maps derived from the seismic with the well data.
- Analysis and synthesis.

YEAR 3

- If the results are incomplete or unsatisfactory, preparation of a second drilling programme.
- Laboratory tests to characterize the geomechanical properties.

YEAR 4

- Updating of the structural maps derived from the seismic with the well data.
- FEED (Front End Engineering Design) studies on the surface installations.

YEAR 5

- Preparation and request for the salt production and storage licenses if the results of the exploratory phase are positive.

Sub 1.b.

The salt exploration license is applied for the following area with a surface of 25 km²:

Corner points	X New RD	Y New RD
NW	222300	603500
NE	227300	603500
SE	227300	598500
SW	222300	598500

Table 1. Coordinates of the area

In annex I, an overview of the license area is provided.

Sub 1.c.

The application concerns exploration of the salt structure at Pieterburen, Groningen, to determine suitability for potential underground gas storage purposes.

Sub 2.a.

In annex II, all the financial data and information about EDF are provided in accordance with Appendix 1 of the Mining Regulations.

Sub 2.c.

In annex III, an overview is given of the activities the applicant intends to carry out and the techniques to be used.

Sub 2.d.

In annex IV, the geological report related/relevant to this application is inserted.

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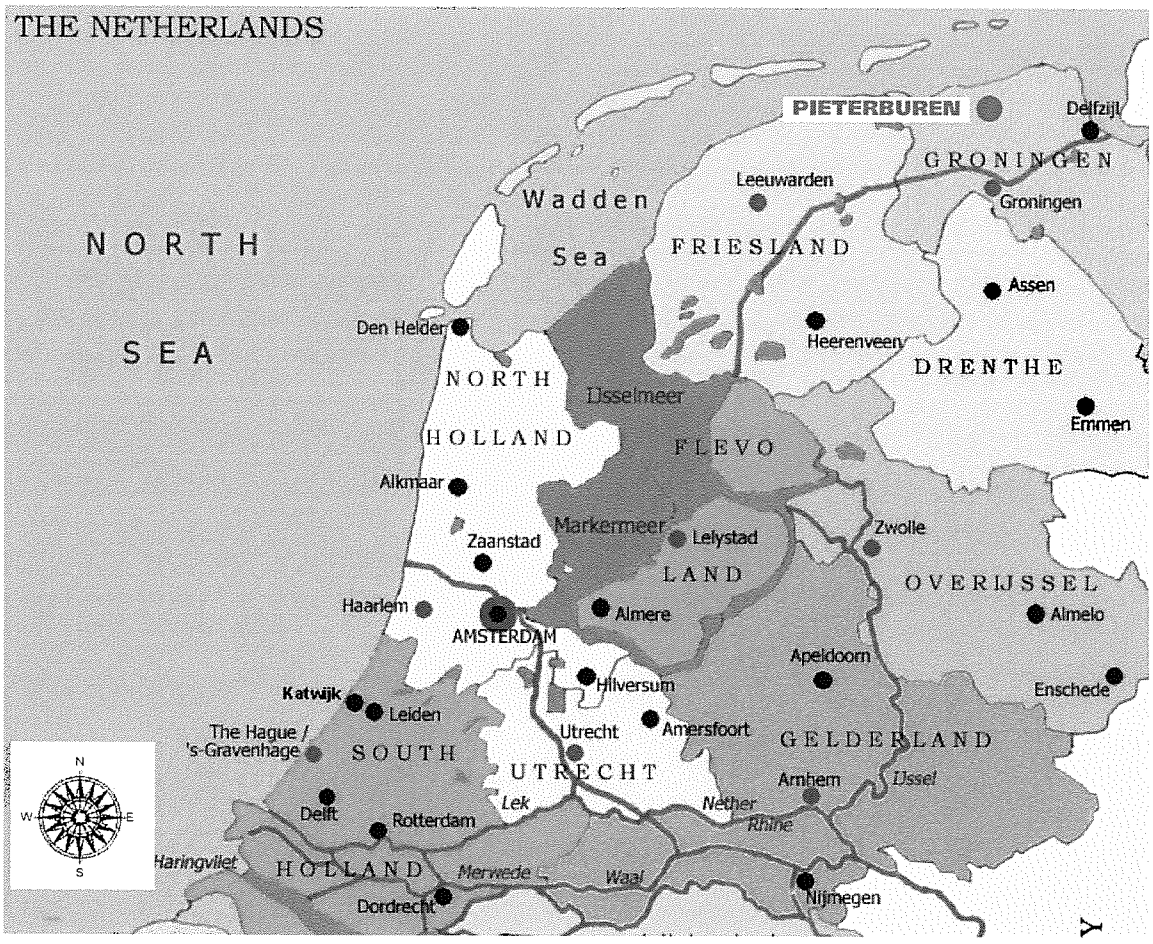
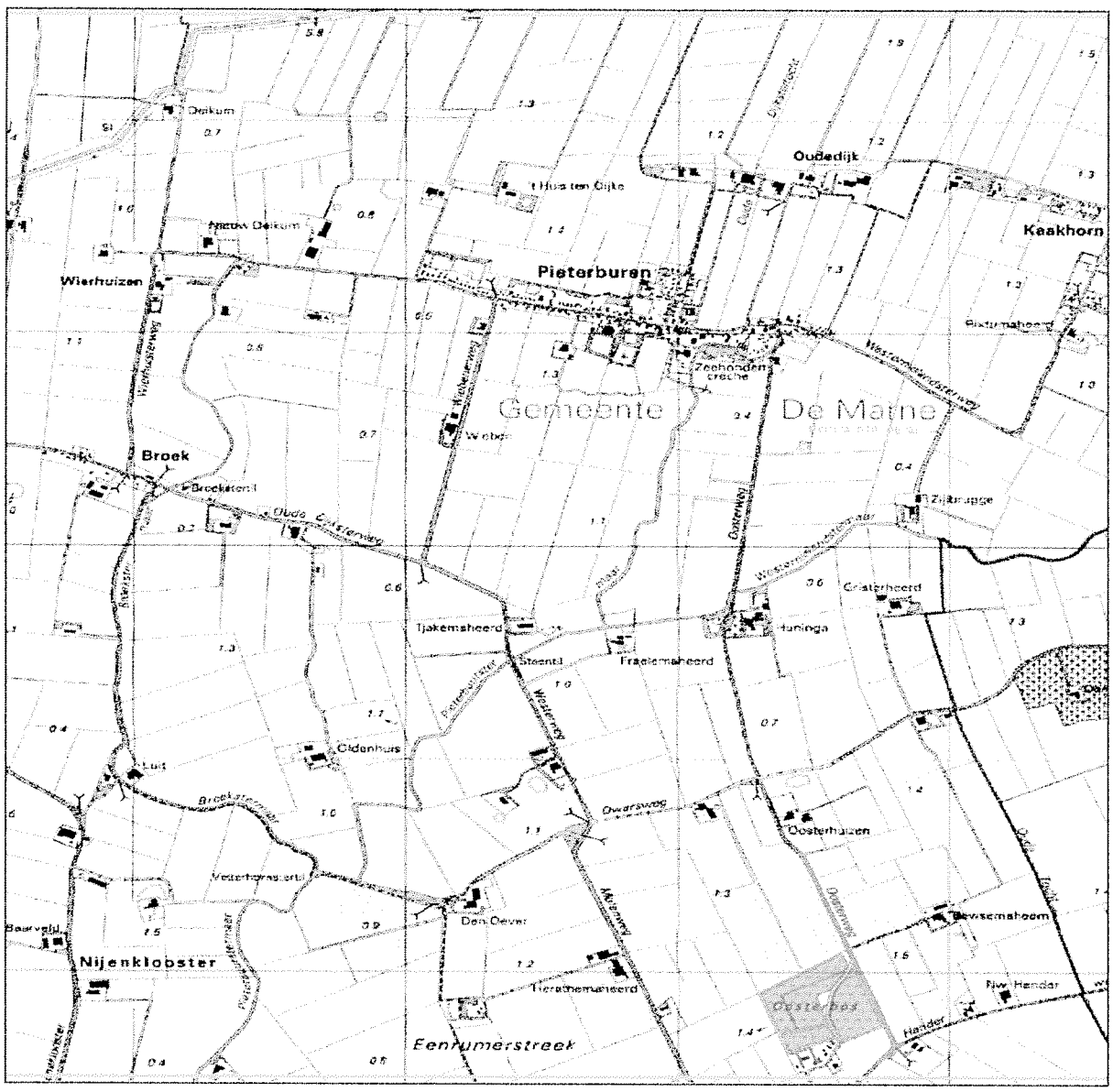
ANNEX I:
LICENSE AREA IN PIETERBUREN

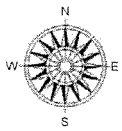
The area applied for is a square defined by 4 corner points, denoted NW, NE, SE and SW, which are given in New RD coordinates (Map 3 and Table 2). This area is located in the North-East of the province of Groningen to the South of the "Groninger Wad" and approximately 15 kilometers to the East of the "Lauwersmeer". The area is largely agricultural and roughly bounded by the villages of Kloosterburen, Westernieland and Eenrum. Including Pieterburen they are all part of the municipality "De Marne".

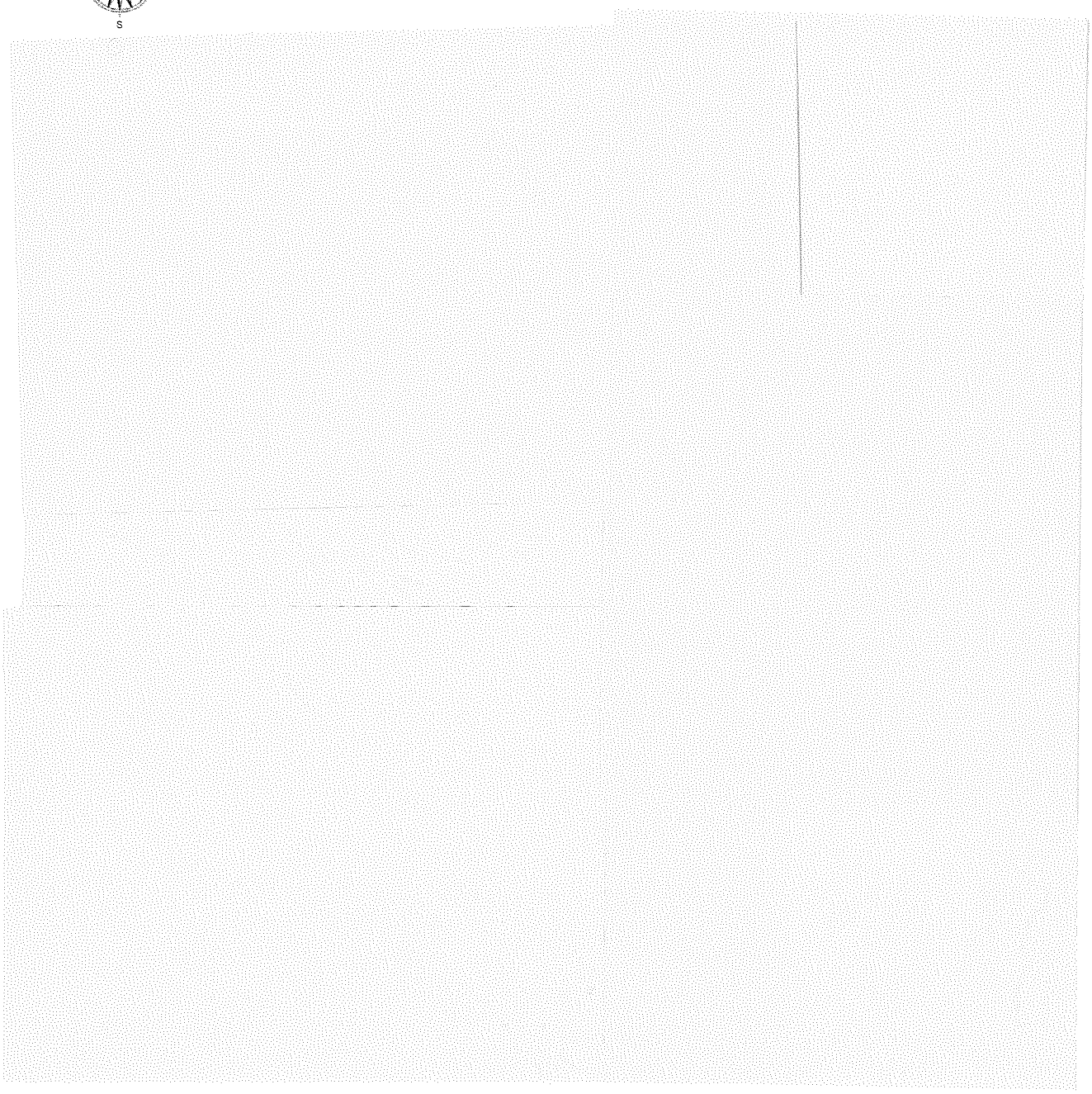


Map 2. Overview of the area



Map 3. License area





Map 4. Isobath map

Corner points	X New RD	Y New RD
NW	222300	603500
NE	227300	603500
SE	227300	598500
SW	222300	598500
Total area: 25 km²		

Table 2. Coordinates of the license area

ANNEX II: INFORMATION ABOUT THE APPLICANT IN ACCORDANCE WITH APPENDIX 1 OF THE MINING REGULATIONS

1. GENERAL INFORMATION

Electricité de France S.A. is a company limited by shares ("Société anonyme"), organized and existing under the laws of France with a registered capital of 911,085,545 (nine hundred eleven million eighty five thousand five hundred and forty five) Euros, whose registered office is at 22-30 avenue de Wagram, 75008 Paris, France, and its Paris Trade and Companies Register n° 552 081 317.

The articles of association and an excerpt of the Paris Chamber of Commerce are attached in this section. The shareholder structure is indicated in Figure 3:

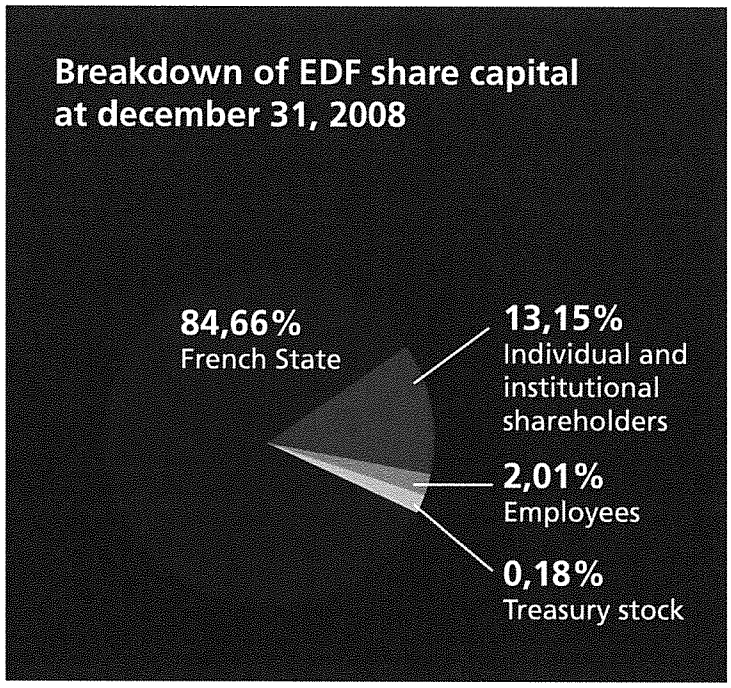


Figure 3. EDF's shareholder Breakdown

2. FINANCIAL DETAILS

The exploration activities involved in the present application presuppose financial commitments; these are compatible with the Group's financial capacity, as shown by the consolidated annual results for 2008.

The extract companies register and the articles of association are attached with the application. The EDF group's financial publications provide detailed information about EDF's financial capacity in the context of this application. The authorized, issued and paid-up capital along with the reserves and loan capital are indicated in the "Document de reference" attached in this section (see the Appendix E page 408 - 409).

Thus the exploratory works described in the application are incorporated in the investment plan of the EDF Group and represent a minor part of the overall amount of forecast investments.These exploratory works shall be financed by EDF's own means.

Moreover the financial capacities of the group are substantially improved by its strong cash flow and EBITDA (14.3 billion euros in 2008). This good performance is reflected in the high ratings awarded by three rating agencies, Moody's, S&P, and Fitch, which enables EDF to benefit from favourable conditions of access to the financial market:

- Long-term rating, Moody's: Aa1
- Long-term rating, Standard & Poor: AA-
- Fitch IBCA rating: AA-

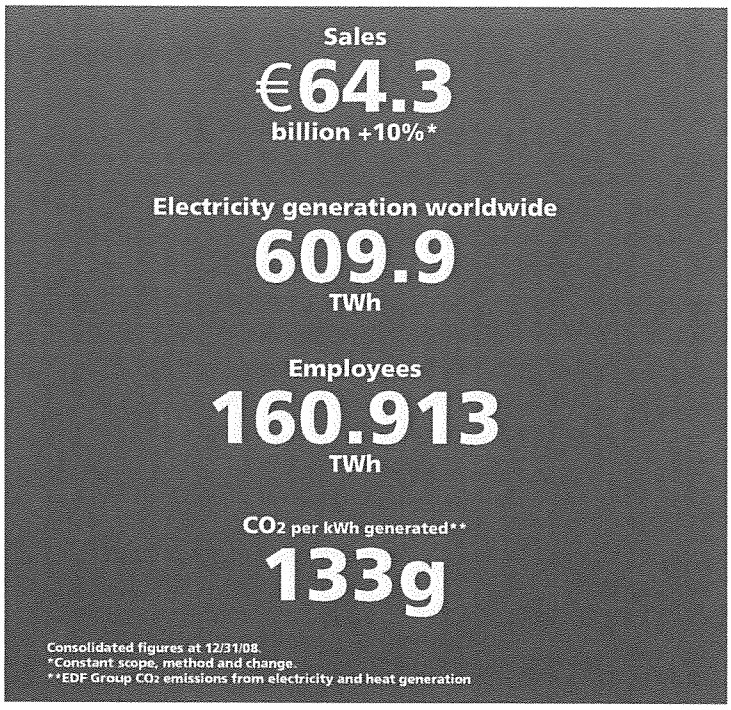


Figure 4. Key numbers of the EDF Group

3. TECHNICAL CAPACITY OF THE EDF GROUP RELEVANT TO UNDERGROUND GAS STORAGE PROJECTS

The EDF Group boasts experience in the development and operation of natural gas underground storage activities. The project team responsible for exploratory drilling to be done within the framework of the requested exploration permit can benefit from this in-house expertise for both drilling and the operation of underground storage facilities in subsidiaries of the EDF group like EDISON (2 storage facilities in operation in Italy) and EDF Trading (1 storage facility in operation in England). See further below.

3.1. Storage facilities in operation

UK

As already mentioned, the EDF Group operates an underground storage (The Hole House Farm) in the North of the United Kingdom, through EDF Trading (a wholly owned subsidiary of the EDF Group).

The purpose of developing this installation is to obtain a working volume of 55 million m^3, with a fourth cavity being put into service (3 gas cavities are already in operation).

EDF Trading acquired the installation in October 2002. Approval for starting phase II of the project was obtained in June 2003. The additional plant, introduced as part of the phase II development to increase the import and export capacity, was commissioned in October 2005. The third cavity has been operational since the end of 2008.

Figure 5. Hole House facilities

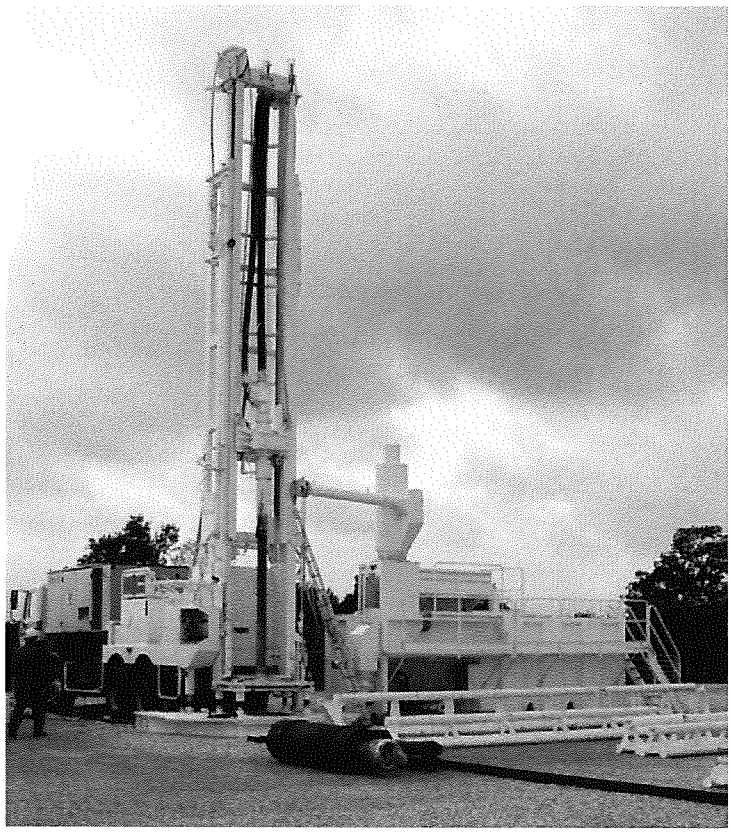
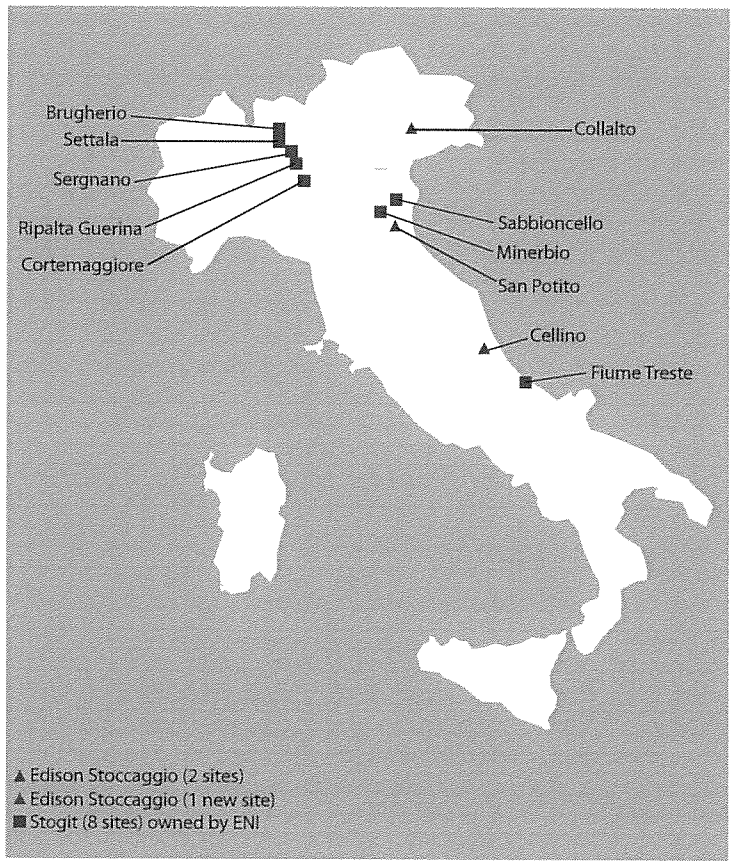


Figure 6. Hole House drilling works

Italy

The EDF Group operates two depleted reservoir storage sites in Italy, through EDISON (49% owned). EDISON's experience in this activity goes back to the beginning of the 1980s when the Cellino field (centre of Italy) was converted into a natural gas storage site.



Map 5. Italian storage sites

3.2. New storage projects

Germany

The EDF Group is currently developing a gas storage in salt cavities at Etzel in Northern Germany. EDF and EnBW (45% owned holding) have each signed an agreement with the IVG Caverns GmbH to store natural gas by 2010-2011.

These agreements will allow EDF and EnBW to use a total volume of around 400 million m³ for a period of thirty-five years.

EDF and EnBW are working together to produce a gas compression and treatment station and are setting up the operation structure for this installation whose construction has already started.

EDF and EnBW have also joined the consortium responsible for the construction of a 56-kilometre long gas pipeline (BEP) that will connect the Etzel storage site to the Dutch natural gas transport network (GTS). A connection to the German gas transport network, already close to the site, will also be made.

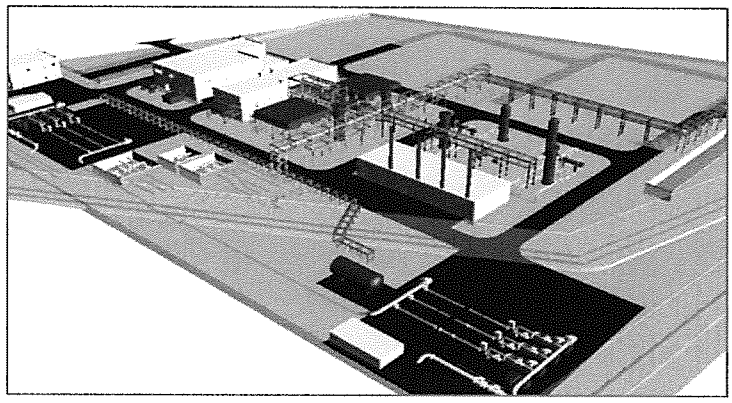


Figure 7. EDF/EnBW Gas Plant facilities at Etzel

UK

EDF Energy is also working on a new extension to the Hole House site (phase III) in the UK that is intended to gradually supply gas to 10 new cavities between 2010 and 2015. The storage facility is composed of 10 pre-existing cavities formed in the rock salt deposits some 200m beneath the ground. The cavities are currently full of brine which will be displaced by gas and used by British Salt as feedstock for their salt production process. Permit applications (submitted in the second quarter of 2009) are currently being examined and engineering studies have started. When fully operation in 2016, EDF Energy's fast cycle gas storage facility will have a total storage capacity of 98 million m³.

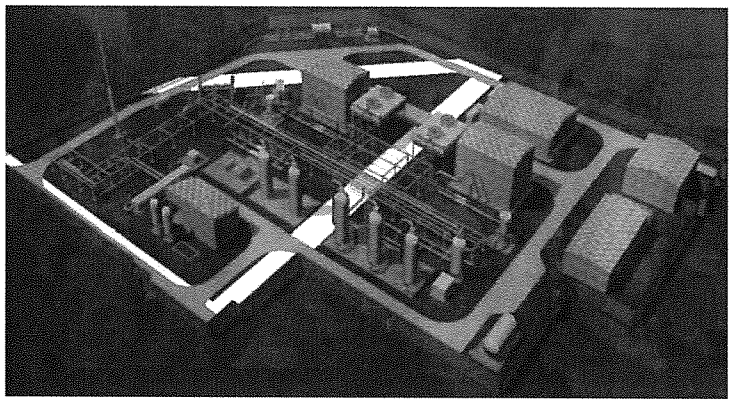


Figure 8. Gas Plant facilities of the new Hole House extension sites

France

Moreover a salt exploration permit has recently been granted to EDF in the South West of France. This permit along with the relevant local authorizations shall allow EDF to drill an exploration to determine the salt quality of the targeted site for storage purposes.

Italy

After obtaining the relevant permits and authorizations, the new EDISON storage sites at San Potito-Cotignola, near the Adriatic coast town of Ravenna, will have a capacity of 900 million m³ and will be fully operative by April 2013.

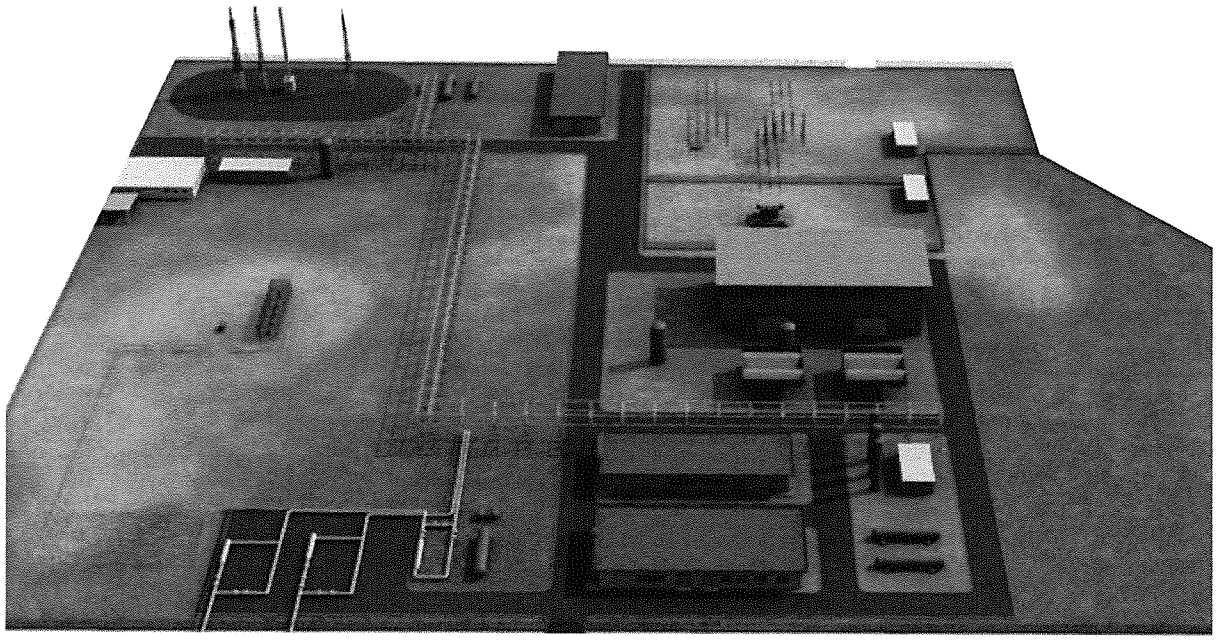


Figure 9. Overview of the San Potito Site

Sharing of "storage" expertise within the EDF Group

A "storage" working group has been set up, bringing together EDF and European subsidiaries such as EDF Energy, EDF Trading, EnBW and EDISON, in order to capitalise on experiences acquired in Europe in the operation of natural gas underground storage facilities.

The purpose of this group of operators is to exchange technical, regulatory and commercial operating feedback.

This initiative is coordinated by the EDF Gas Division. It will help to optimise synergies between the different entities in the group and to better understand problems related to storage activities on a European scale.

Furthermore, a policy whereby resources are exchanged among the different group subsidiaries has been adopted, in order to allow experience-sharing to be passed on. This is the context in which several persons, particularly from EDF Energy and EnBW, have been seconded to the Gas Division and vice versa. Ongoing training formations on gas storage technical fields are also organized to ensure that the current resources have the best up-to-date knowledge on these matters.

3.3. The Gas expertise within EDF

3.3.1. The Gas Division: the Project Owner

The Gas Division of EDF is responsible for the development of gas infrastructures in France and elsewhere in Europe. It supervises with EnBW the construction of the gas plant facility at Etzel and provides technical support to the European subsidiaries.

The Gas Division, as a Project Owner, shall lead the exploratory activities described in the present application and shall be the contact with the relevant authorities throughout the application process.

The Gas Division is responsible of the adequacy of the present Project to the HSE policy of the EDF group. It will indeed be in charge of the project management activities.

Fabien Favret shall be the Senior Project Manager in charge of these exploratory activities within the Mistream Business Development team in the Gas Division. He was formerly Project Manager in Gaz de France and has more than 15 years' experience in underground gas storage activities in France and Europe. He will be supported by Nizar Damree, Midstream Business Developer, who has a reservoir engineering background.

Moreover the Gas Division has also launched a programme to recruit graduates specialised in the oil & gas industry. It has thus recruited 4 engineers trained at the Institut Français du Pétrole (French Oil Institute) and the Association Française du Gaz (French Gas Institute). Besides there is an ongoing recruitment of a senior subsurface expert who will join the Midstream Business Development team within the Gas Division.

EDF wishes indeed to secure its gas resources in the long term and quickly increase the skills of its personnel.

In order to control and validate the technical studies regarding the present exploratory activities, the Gas Division is supported by the internal Owner's Engineer, the Centre d'Ingénierie Thermique (CIT). The Gas Division has thus received resources allocation for this Project from the CIT.

3.3.2. EDF's Gas Engineering department (Centre d'Ingénierie Thermique or CIT): the internal Owner's Engineer

EDF's Centre d'Ingénierie Thermique has expertise in project management and the supervision of gas projects. It employs 420 persons, including about 300 engineers, and has many different skills covering all fields of engineering. This includes project management, the preparation of environmental and regulatory files, the design and construction of industrial installations by taking safety and environmental protection requirements into consideration right from the start, maintenance engineering and deconstruction.

Therefore, CIT has assigned a complete team to the performance of the group's gas projects. It acts as an Owner's Engineer to the Gas Division.

This activity is covered by a protocol defining the roles of each party in implementing the group's gas projects. It also specifies the technical skills to be implemented to ensure that projects are conducted satisfactorily. The team specialising in gas projects is composed of 3 Project Leaders and 25 persons working full-time, including 20 engineers; business activities are monitored in project mode, with "business line" support for the different specialities. Each team is made up of a Project Leader, a Technical Head Officer, a Project Engineer, a Contractual Monitoring Head Officer, a Site Preparation Engineer, and an HSE engineer. CIT is now concentrating on the recruitment of geotechnical experts and engineers specialised in underground storage activities to implement the growing presence of EDF in this specific area.

A geologist has been being recruited from "the Civil Engineering, Geology and Geotechnical Production and Test Techniques" (TEGG) department. This geologist is responsible for geological services required by CIT, for which he will provide assistance in the control of geological problems related to gas storage activities, and particularly in the definition of the geological model of the site, taking account of sedimentary geology, geophysics and hydrogeology.

The exploration strategy in fact requires skills from several sectors of geology and geophysics. This expert shall join the teams starting in early 2010 to satisfy increasing needs concerning these projects.

3.4. Signature of framework agreements with specialised contractors

The Gas Division chose to call upon specialised contractors in subsurface engineering and gas surface installations to ensure optimal implementation of its projects. Calls for tenders were launched in order to sign framework agreements with reputable companies for 5-year periods (2010-2015). The assignment process is aimed at selecting engineering companies that are essential European players in each of their corresponding sectors.These framework agreements shall be signed between EDF and the appointed companies.

3.4.1 Framework agreement for gas facilities owner's engineering services for gas underground storage facilities

The purpose of this framework agreement is to:

- Provide project management assistance services for "project definition", starting from project emergence until production of the technical and contractual documentation necessary to issue a call for tenders in the form of an EPCC (turnkey) contract or an original equipment contract (EPCM).
- Adviser to the Client in issuing Project Management contracts.
- Assist with project management (planning, costs, studies, purchases).
- Supervise activities on the construction site until commissioning and transfer to the operator.

3.4.2. Framework agreement for subsurface owner's engineering services for gas underground storage facilities

This framework agreement covers technical services (reservoir engineering [geology, geophysics, etc.] and salt cavities [geomechanics, etc.], monitoring of drilling work, leaching, addition of gas) and project management services from the emergence phase until commissioning.

ANNEX III: PLANNED DRILLING ACTIVITIES AND TECHNIQUES TO BE USED

1. MAIN ACTIVITIES PLANNED

1.1 Selection of the drilling location and seismic studies

A suitable surface location will be selected within the area of the Salt Exploration License, consistent with all applicable legislation, from which the Pieterburen salt dome can be penetrated in a vertical well to explore the salt section down to approximately 1600 m. Depending on the results of the first exploration well, a second location may be selected.

Moreover the seismic analysis shall be pursued (according to the results of the work in progress): acquisition of the raw data, reprocessing, interpretation.

1.2. Preparations for the drilling of an exploration well

A comprehensive drilling programme will be prepared of the exploration well, consistent with the regulations and practices for salt exploration.

This programme will be submitted to Staatstoezicht op de Mijnen (SodM) within the applicable lead-time, for review and possible adaptation requested by SodM. In addition to the drilling programme, a site specific safety plan and a fire fighting and rescue plan will be prepared.

1.3. To submit and obtain necessary local permits, including zoning plan exemption or change, if applicable

All necessary local permits will be submitted and obtained, consistent with the timing of the exploration drilling project.

1.4. To submit and obtain way-leave, owner's consent for exploratory drilling

Agreements will be made with local land owners for the use of and access to the location.

1.5. Construction work regarding location

The well site and access road will be constructed by a reputable contractor with previous experience in building drilling locations.

1.6. Well drilling

EDF will assemble a team of reputable contractors to drill and evaluate the well. The drilling contractor will have specific approval of SodM to work in the Netherlands. EDF will employ on their behalf an independent and experienced drilling management team to ensure that safety and quality of the drilling operations will be safeguarded. The team of suppliers and the drilling management structure will be communicated to SodM as part of the drilling programme.

1.7. Perform seismic offset well shoots

The seismic subcontractor will design the well shoot survey and appropriate approvals will be obtained from the landowners involved to ensure access.

1.8. Coring

The salt section will be cored in the intervals relevant for the evaluation objective of the well. The sections to be cored will be detailed in the drilling programme. The cores will be studied/evaluated by a reputable third party.

1.9. Evaluation of the well

The well will be extensively logged, consistent with the drilling programme, subject to acceptable hole conditions. The final logging programme will be included in the drilling programme. The logging results will be evaluated by a reputable third party.

1.10. Decide on potential further seismic work

The well shoot may indicate a requirement for additional seismic work. This matter will be considered after drilling and evaluating the well.

1.11. Second exploration well

Depending on the results of the first well, a second well may be required to fulfil the exploration objectives of EDF.

Same activities will be performed as under 1 through 9 above.

EDF shall be the Project Owner for the activities listed above. The subsurface activities may be subcontracted to specialists after a tender process. The next section described the management process of these activities.

2. MANAGEMENT OF THESE ACTIVITIES BY EDF

The Gas Division has organised the Project so that all necessary resources are present to ensure both technical and operational success.
The following diagram shows the general project organisation set up for the entire exploration phase.

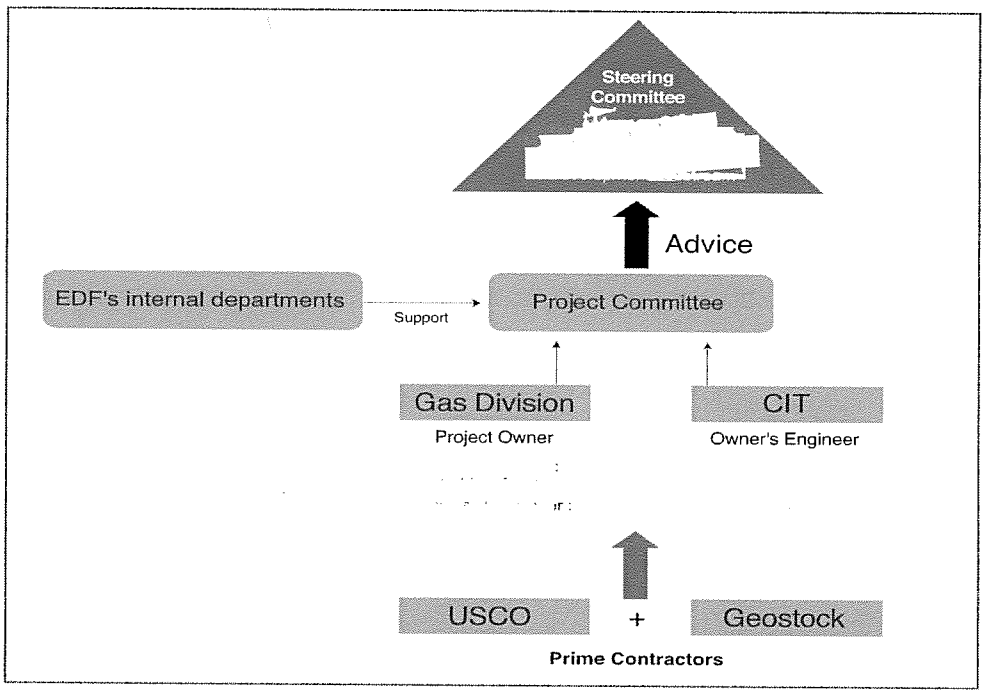
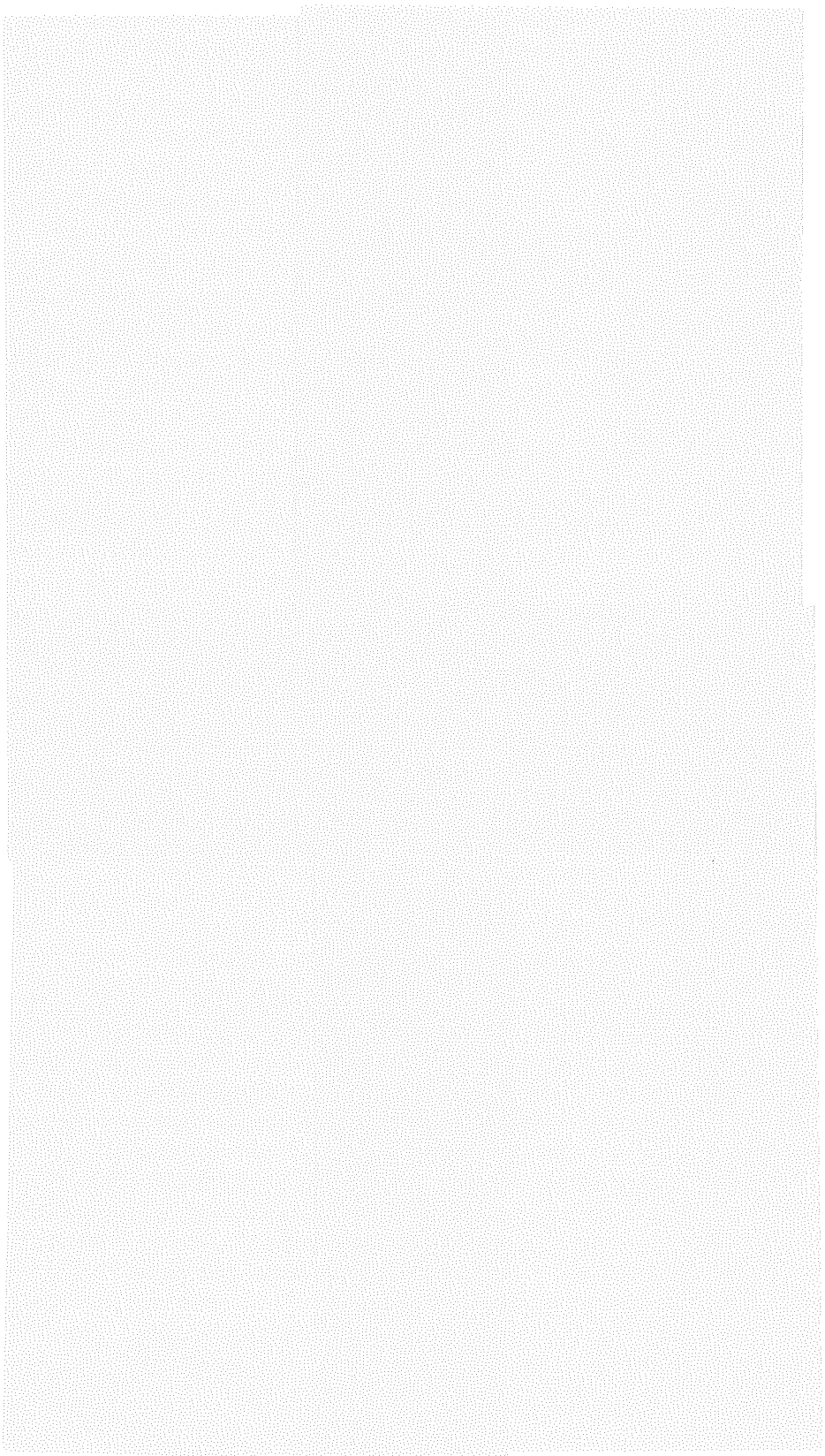
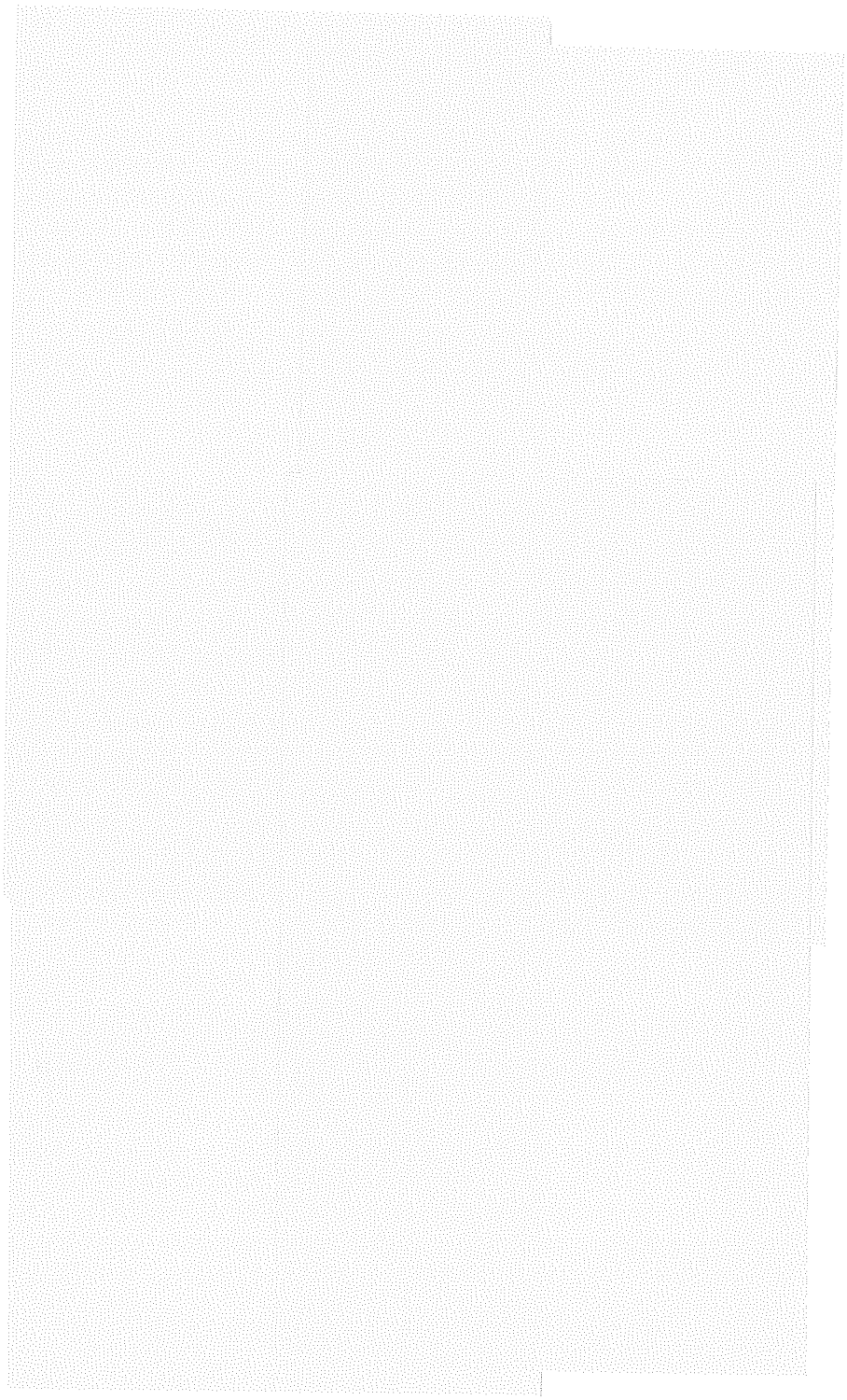


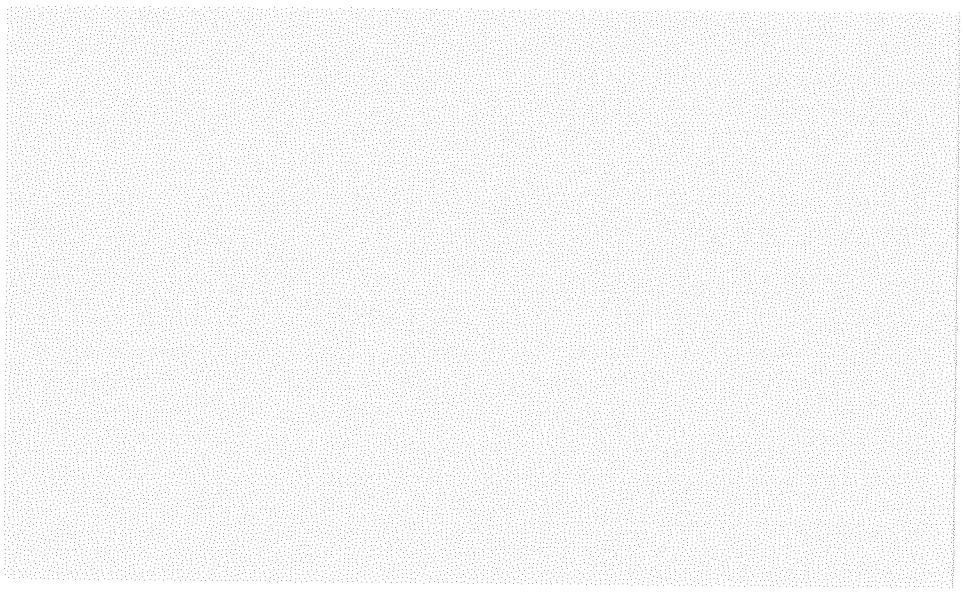
Figure 10. Organizational Chart of the Project

EDF Project Team



Team of Experts of USCO Development bv:





ANNEX IV: GEOLOGICAL REPORT / INVENTORY

1. SEISMIC INTERPRETATION STUDY

The next study has been focused on three possible candidate salt structures. In the context of this application only the Pieterburen data are relevant.

INTRODUCTION

A seismic interpretation study on three salt bodies in the northern Netherlands, among which Pieterburen (Fig. 9) was carried out in Q4 2008. The main objective was establishing a structural depth map of top salt. Based on these maps, volumes of gross salt have been derived. In order to assess uncertainty, also high and low case maps have been constructed.

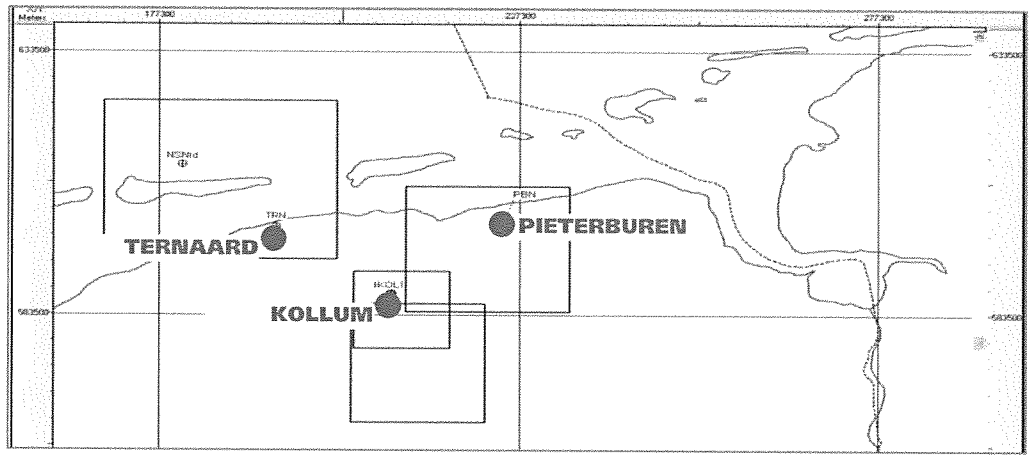


Figure 11. Location of the 3 D surveys on the studied salt domes. Coordinates are Dutch Grid, Amersfoort Datum.

Seismic interpretation

Table 3 gives the details of the 3D survey covering the area of interest.

	PIETERBUREN
File name:	L3NAM1992E
Acquisition date:	1992
Processing date:	1193
Reprocessed:	
Processed by:	DIGICON
Polarity:	SEG
Sampling interval:	4 ms

Table 3. Seismic Acquisition Parameters

The following horizons were interpreted:

Base North Sea, Base Chalk , Top Zechstein and Base Zechstein. The seismic ties are first of all based on regional knowledge. All 4 horizons are very well known in the Netherlands, both on- and offshore and well tied by hundreds of wells.

As a check, velocities from public well data from the nearby offshore M blocks were used to convert the tops in wells on the 3D surveys to TWT (two-way time).

Near the domes, the interpretation density is every 16th inline and cross line, i.e. 400 by 400 meters. Away from domes, this density was reduced to every 64th inline and cross line, i.e. 1200 by 1200 meter.

Figure 12. presents an interpreted inline and cross line for Pieterburen.

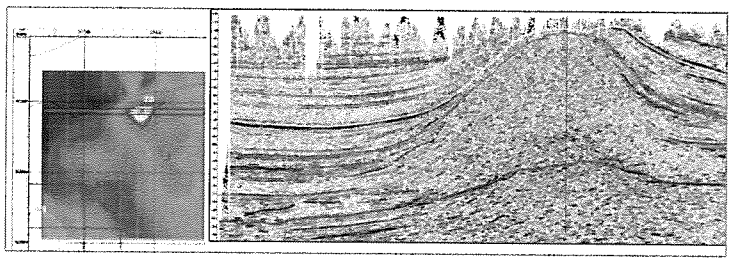


Figure 12. E-W interpreted seismic line across the Pieterburen well and dome

Time-depth conversion

Three different time-depth conversion methods were applied.

- V0k method, using regional data as described by TNO
- Constant interval-velocities, derived from M block offshore wells.

Reference is made to table 4 below for a summary of parameters used in these two methods.

	VO	k	Mwells based interval-velocities
	m/s		m/s
North Sea Gp	1696	0.49	1981
Chalk Gp	2092	1.08	3784
Trias	0.69	3362	3362
TriasTernaard	3254	0,56	3362
Zechstein	4700	average velocity	4700

Table 4. The different methods for the time-depth conversion

Velocities derived from seismic picks at well tops.

See Table 5 for details.

	TWT (s)	isochrone (s)	Tvdepth (m)	isochore (m)	interval vel. (m/s)
Base North sea	0.51	0.51	482.5	482.5	1892
Base Chalk	0.663	0.153	692	209.5	2739
Base Chalk Top Zechstein	0.809	0.146	977	285	3904
Base Zechstein	2.076	1.267	3997	3020	4767

Table 5. Derived Velocities from seismic picks

Result

Figure 13. presents a depth map for the Pieterburen dome.

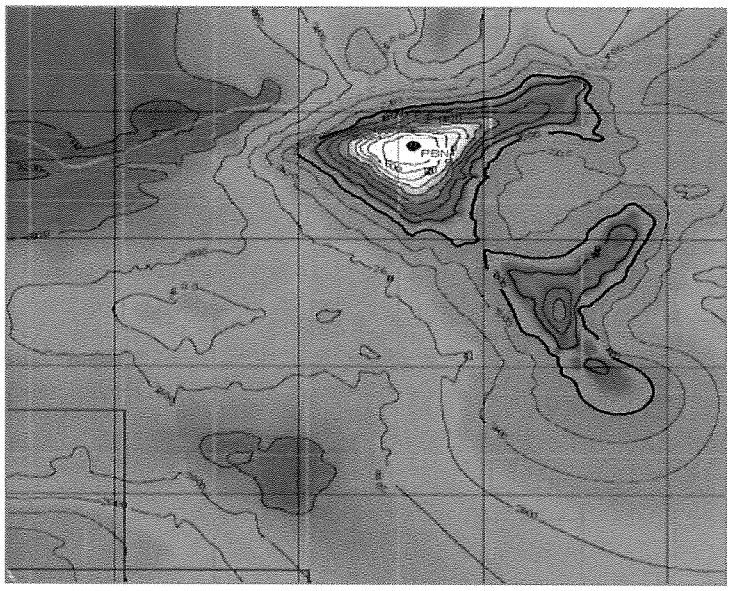


Figure 13. Pieterburen V0k velocity top Zechstein depth map

Volumetric results

Table 6 presents the gross volume (Billion m) below top Zechstein depth, down to a maximum of 2000 m for the three different depth maps.

VOGROSS SALT VOLUME ABOVE 2000 M (BILLION M³)	V0K	INTERVAL VELS	SEISMIC PICKS VELS
PIETERBUREN	7.52	2.6	3.63

Table 6. Volumetric results

Top Zechstein depth maps were prepared applying all three depth conversion methods, thus giving an impression of the spread in depth of the identified horizons. Subsequently the available salt volume above 2000 m was calculated as a way to judge the salt volume available for the realisation of an UGS.

No seismic (re)processing of unprocessed raw data was performed, since these data were not publicly available. This possibility might be pursued, if deemed necessary, after evaluation of the intended exploration well.

Pieterburen structure

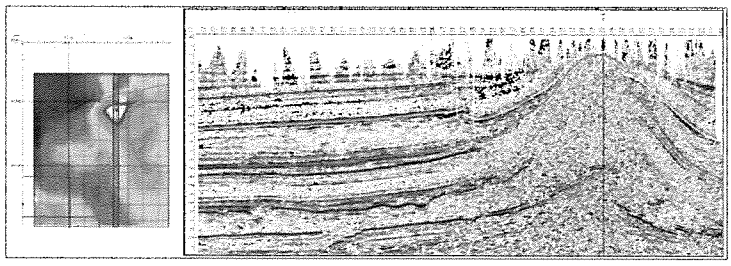


Figure 14. S-N interpreted seismic line across the Pieterburen well and dome

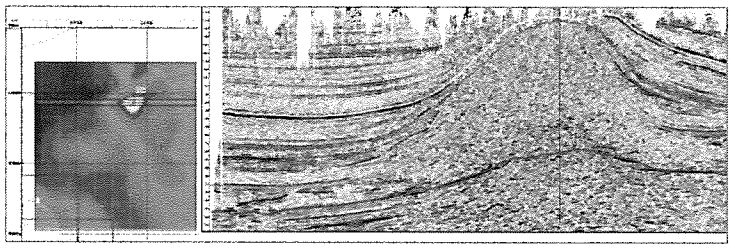


Figure 15. W-E interpreted seismic line across the Pieterburen well and dome

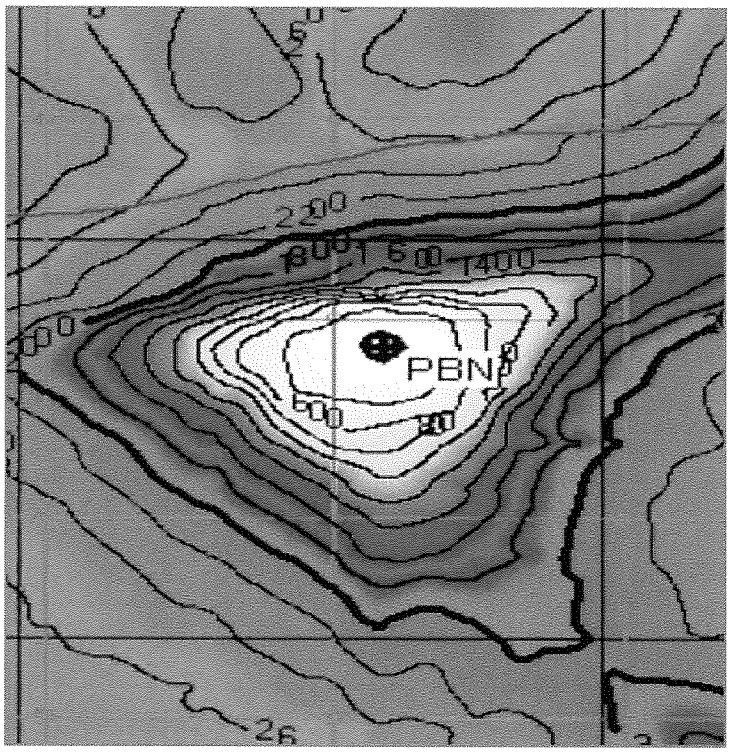


Figure 16. Structure map of Top Zechstein based on V0k velocity (5 x 5 km grid block)

2. DATA OF WELL PIETERBUREN-1 (PBN-01)

A Drilling License was granted to N.V. Koninklijke Nederlandse Zoutindustrie (now AkzoNobel) by ministerial Decree of 24 April 1969. The PBN-01 well was drilled from 23 February until 6 April 1971 and subsequently plugged and abandoned. No other well was drilled by AkzoNobel or any other party in the Pieterburen dome. The license was valid for 3 years and has since expired.

The PB-01 well showed the following stratigraphy:

Boorgaten	Namm	Pieterburen 01	Geological column
	CODE	PBN-01	
	NITG-NUMMER	B03C0015	
STRATIGRAFIE	DATUM INTERPRETATIE	23-08-1990	
	STRATIGRAFISCH MODEL	RGD LITHOSTRATIGRAFIE	
	BRON	KARTERING DIEPE ONDERGROND	
	BEGINDIEPTE	EINDDIEPTE	STRATIGRAFISCHE EENHEID
	0	40	NUCT - QUATER. UNDIFF. (FORMATION)
	40	75	NUBA - BREDA FM (FORMATION)
	75	160	NLFFS - BRUSSELS SAND MB (MEMBER)
	160	218	CKGR - OMMELANDEN FM (FORMATION)
	218	311	ZECP - ZECHSTREIN CAPROCK (FORMATION)
	311	775	ZEZ3H - Z3 SALT MB (MEMBER)
	775	791,5	ZEZ3H - MAIN ANHYDRITE (MEMBER)
	791,5	807,5	ZEZ3C - Z3 CARBONATE (MEMBER)
	807,5	808,5	ZEZ3G - GREY SALT CLAY (MEMBER)
	808,5	903,2	ZEZ2H - Z2 SALT MB (MEMBER)

Table 7. Stratigraphy derived from the PBN-01 well data

Highlights of the Pieterburen structure are:

- Sufficient salt volume present for the planned UGS.
- An Elan simulation (performed by Geostock) from the well data has shown a 15% rate of insoluble in average.
- Development can be sited at sufficient distance from the dike at the "Waddenzee".
- PBN-1 well shows disturbed salt sequence to 900 m, quality cavern interval for UGS is unconfirmed.
- The normally almost pure and massive Z2 salt Member starts at the bottom of the well PBN-1.
- Below 903 m the internal structure is largely unknown. herefore a new exploration well is required.

3. NEED FOR AND EXPLORATION WELL

The lithology at the chosen location is typified as follows:

0 – 150 m	sandy/silty clay with sand layers
150 – 225 m	limestone/dolomite, possible loss zone
225 – 325 m	gypsum/anhydrite, possible loss zone
325 – 2000 m	rock salt

Table 8. Probable expected lithology

The cavern construction is planned in the Zechstein 2 Formation (Stassfurt-Formation). It is possible that Stassfurt rock salt will occur from the top of the salt dome downwards to the desired drilling depth and provide ample rock salt thickness for cavern construction. This formation generally implies very good leaching properties for cavern construction. For information, this is the salt formation present at Etzel where EDF and EnBW are building a new gas storage facility.

Rock salt and anhydrite, clay or potassium and magnesium salts, belonging to the younger Zechstein formations, may occur in the salt dome. These types of formation would have a negative influence on the leaching process; e.g. carnallites and bischoffites are more soluble salts than rock salt leading to potentially uncontrolled volume development around the cavern, anhydrites could be uncovered and can fall to the bottom of the cavern and cause damage to the leaching pipes.

It is therefore essential that the absence of such disturbances is determined before a major cavern construction programme is started. It is recommended that a vertical exploration well is drilled and cored at a potential cluster location; this well could be converted into a cavern in a subsequent cavern construction phase.

The exploration wells will be evaluated by coring, electrical logging and offset well shoots. The latter will reveal the cross section and flanks of the structure and will allow the cavern positions to be optimised. The evaluation can be supplemented with bromine analysis of cuttings during drilling operations and with electromagnetic radar surveys as an additional logging method. With the latter method undesirable sediments like clay, carnallite and anhydrite can be determined inside a more or less homogeneous section of Zechstein 2 salt. The EMR methods can help to understand the internal structures and the type of the salt dome.

It is also very important to know the proportion of insoluble material in the salt mass, as this material will accumulate in the bottom of the cavern as loosely settled material and occupy space. The insoluble fraction must be determined by performing solution test on core samples taken across the entire vertical height of the cavern interval.

The salt section above the cavern will determine the strength and quality of the roof. Therefore the entire section above the planned cavern interval must be cored in the exploration wells. The core samples must be subjected to tests for determining the mechanical properties. A this stage it has been assumed that with a last cemented casing at 1100m, the cavern can be charged with 85% of the minimum rock stress, based on a lithological gradient of 2.15 bar/10m, providing a maximum charge pressure of 200 bar.