# Inleiding

# *Dit document bevat een voorbeeld van een VG-document voor de boorfase. Dit voorbeeld gaat onder andere uit van een situatie waar het projectmanagement door een gecertificeerde organisatie plaats vindt. Dit gaat niet voor alle projecten op!*

**Scope**

This document describes the Health, Safety and Environment (HSE) management measures for the specific operations on [Location Name] of [XY Project], with the objective to reduce the HSE-risks associated with the activity to a level As Low As Reasonably Practicable (ALARP principle).

This document is a site specific supplement to the rig specific HSE- plan of [Drilling Contractor].

**Objectives**

The objectives of this document are to ensure that:

* the roles and responsibilities of all persons in charge of activities are clearly defined, communicated and understood;
* all key personnel are aware of the work tasks to be undertaken in a safe manner;
* all health and safety hazards and risks associated with the operation are assessed, controlled and communicated to all personnel;
* all personnel are competent for the work tasks to be undertaken and that all supervisors are competent to supervise and direct subordinates in a safe manner.

This HSE-document should be considered in conjunction with:

* the drilling program
* well design
* site specific safety case
* [Drilling Contractor]’s HSE management system
* emergencies response plan
* FFRP (Site Specific Firefighting and Rescue Plan)

This document is intended to describe how safety, health and environmental protection is managed during drilling, completion and testing operations at [Location Name].

This document is only valid for the period covering the specific operations on [Location Name] The Netherlands. The rig-up will commence DD/MM/YYYY.

The main parties involved are:

|  |  |
| --- | --- |
| **Company Name** | **responsibility** |
| [Operator] | Licence holder |
| [Drill Management] | Main contractor (Project Management  and Supervision) |
| [Drilling Contractor] | Drilling contractor |
| [HSE advisor] | HSE advisor to operator |

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# General

## 1.1 Goal and scope

[Drill Management] will drill, test and complete two geothermal wells for [Operator].

The objective of this operation is to drill two wells and install a production pump and injection valve.

The working unit will consist of a land-rig drilling platform. The execution of the operation is guided by [Drill Management].

Summary of the planned activities:

* Prepare location
* Mobilise & Rig up
* Drilling
* Testing and completion
* Skidding
* Drilling
* Testing and completion
* Demobilize equipment

Execution of the activities are planned to commence DD/MM/YYYY. For detailed information see the drilling program.

From the health and safety legislation (BW7: 658) the principal who is responsible for work places in the mining industry is held to promote co-ordination between the contractors who perform work there. [Drill Management], as principal is responsible for safety at the location; [Drilling Contractor] has the responsibility for the operational safety on location.

All contractors present at the site are independent contractors and as such are responsible for the safety of their own employees.

By developing this HSE-document based on the standard process for gas and oil drilling with land-rigs, care was taken to ensure that it reflects the relevant regulatory requirements / client expectations as well as the operating demand of the Dutch regulations for the mining industry it is being developed for.

The present HSE-document aims to give substance to Art. 2.42f of the Working Conditions Decree (Arbeidsomstandighedenbesluit), art. 3.7 and paragraph 3.10 of the Working Conditions Rule (Arbeidsomstandighedenregeling) (obligation to draw up a Safety and Health Document, with prescribed content) and Art. 2.42 of the Working Conditions Decree (Cooperation between different employers in a business or establishment; obligation to draw up a Safety and Health Document with specified content; coordination for health and safety by the employer responsible for the workplace in the mining industries).

[Drill Management] is, as in the aforesaid sense, a representative of [Operator], responsible for the project operations.

[Drill Management] is responsible for:

* management of the HSE-document;
* adjusting the content of the HSE-document to the work performed on the well site;
* keeping the HSE-document up to date;
* distribution of the HSE-document(s) to all stakeholders, also after actualization/revision.

## 1.2 Distribution

The present HSE-document is distributed to the persons listed below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Copy nr** | **Company** | **Name** | **Function** |
| 1 | [Drill Management] |  | Drilling Manager |
| 2 | State Supervision of Mines |  | Afdeling Operaties |
| 3 | [Drilling Contractor] |  | Rig Manager |
| 4 | [Drilling Contractor] |  | Tool Pusher |
| 5 | [Drill Management] |  | Site supervision |
| 6 | [Drill Management][Drill Management] |  | QHSE-management |
| 7 | QHSE |  | HSE-Advisor |

Only registered copy holders will receive formal revisions and adjustments. Requests, for addition to the distribution list, must be approved by the document manager.

[Operator], [Drill Management], [Drilling Contractor] and all other (sub)contractors on site are convinced that this document forms the basis for healthy and safe working conditions for all the personnel involved.

This document outlines:

* the identification of all potential hazards;
* the evaluation of all potential risks; and
* the management and supervision of all potential risks.

Ratification and validity:

Ratification of this document is done by signing the QHSE-agreement form by [Drill Management], by all contractors and by all sub-contractors. This agreement will be signed on the first day of the spud.

Modifications have to be recorded in the register as shown below. Suggestions for additions and improvements should be passed to [Drill Management] or the document manager.

This document remains valid for the time of the operations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Document release- and change registry** | | | | |
| Holder of this HSE-document | | | | |
| Revision | Revised pages | Revision date | Revised pages,  Contributed by | Initials |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

## 1.3 Reference documents

Associated with the planned well activities – next to the (present) HSE-document –

the following documents have been prepared and are available[[1]](#footnote-1):

* [Drill Management] HSE-statement
* Site Specific Safety Case Well Design
* Drill program
* Drilling Contractor’s QHSE-Standards and Guidelines
* HSE-Bridging Document

## 1.4 Revisions and actualisation

[Drill Management] is the guardian of this document. This implies that this organization is responsible for ensuring that the contents of this document is correct, kept up-to-date and distributed in accordance with the requirements.

All well operations will be carried out according to the work-program. If changes are required, approval in writing will be required from the Site Supervision, who will secure the approval of the Drilling Manager for changes that may impact the integrity, safety and/or environmental impact of the operation. SodM will be informed in writing of changes in the work program and/or Specific HSE-Document. In chapter 3.3 an organization chart is plotted.

# Organisation

## 2.1 Description of the project organisation

The figure below illustrates the organisation chart of the operation. There are a number of parties working together on site during the well activities. They are contractors specialised to perform the necessary activities:



A contact-list and addresses of the contractors and (other) stakeholders can be found in appendix X[[2]](#footnote-2).

## 2.2 Contractor management & Cooperation between employers

A significant number of [Drill Management] activities are carried out by contractors. In those instances [Drill Management] will select contractors based on professional skills, HSE performance, planning and economical aspects.

Major contractors providing [Drill Management] must demonstrate implementation of their management systems (based on international standards like OHSAS 18001, ISO 14001 and ISO 9001).

All major contractors are responsible for their workplace and for the co-ordination and execution of their activities operated from their workplace. When operating in the proximity of [Drill Management] workplaces, a bridging-document should be developed to manage the interfaces between both companies’ management systems. Also a HSE-document for concurrent operations should be developed, if applicable (see also Site Specific Safety Case).

Sub-contractors must have basic understanding of the HSE aspects within their scope of activities and shall provide a simple, effective system (e.g. VCA) to promote the quality of their work. These contractors will also perform the activities under the [Drilling Contractor] Management System. Hired personnel are subjected to the [Drilling Contractor] Management System since they are directly incorporated in the activities.

The collaboration between the relevant employers is furthermore focused on alignment of the mutual risks and the effective management of these risks in order to assure the safety and health of the workers.

Workers and/or delegates of [Drill Management] and [Drilling Contractor] collaborated in preparing the HSE-document. Meetings were held with all (sub-) contractors to go through the work program and discuss the measures to reduce the associated hazards and risks.

## 2.3 Quality management structure

The quality management structure can be visualised as follows:





The responsibilities are defined as follows:

|  |  |
| --- | --- |
| **Role** | **Responsibility** |
| DM-[Drill Management] | Has final responsibility for the safe and environmentally sound implementation of the well activities including adequate well emergency follow up and safety case implementation. |
| HSE | Advises and assists [Drill Management] in the execution of responsibilities regarding well related projects in the office (PM) and on site (CR). |
| SSV | Generally has the responsibility for the safe implementation of the project in general. The PM comes to the field if and when necessary. |
| RM | Represents the Contractor. Responsible for safety and quality during the work program execution. |
| TP | Is accountable for the process and the crew within the framework of the HSE Management System. |
| other  contractors | For each service-contractor a representative is named who is responsible for the implementation of the HSE Management System of his company. |

## 2.4 Tasks, authorities and responsibilities

The roles and responsibilities of the main parties and subcontractors are as follows:

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Task** | **Responsibilities** |
| **Main Parties** |  |  |
| [Drill Management] | Drilling manager  Site Supervision | Company representative  Well Location (site)  QHSE assurance (general) Input in general meetings  Advising [Drill Management]  Company representative on site |
|  | Company  representative  Well Engineering Consultant Advisor | Input in general meetings  Advising [Drill Management]  General well engineering support  Communication link  Reporting to SSM  Collecting, compiling and sending out reports |
| [Drilling Contractor] | Rig Management  Operational Project  Management | Input in general meetings  Advise & Report to State Supervision of Mines  Supervise and advise to the TP |
|  | Main contractor Operational Supervisor | QHSE assurance (on site)  Daily reporting to RM  Security on Location  Logistics  Supervising sub-contractors  Persons-register personnel & visitors Introduction to well site regulations  Execution work program  Autonomous in decisions according to work program if they do not affect QHSE  On site supervision  Communication link |
| Sub-Contractors |  |  |
|  | For detailed information see Appendix X[[3]](#footnote-3) |  |

## 2.5 Individual responsibility

For all decisions made, ‘safety first’ shall be the deciding factor. Each person is responsible to carry out the activities in a correct, qualified and safe manner. Prior to entering the site, a brief summary of the work to be performed is given by the Tool Pusher (TP), the risks are identified and individual responsibilities for HSE are discussed.

At the start of the operation the drilling company/contractor (Tool pusher) coordinates a team-meeting in which the planned activities are explained, the risks are identified and individual responsibilities for HSE are discussed. Reports will be made of all team-meetings, in which the discussed items and attendance-list are registered.

The TP will arrange the persons register and access-control to the location. At the site there will be an attendance list which will be signed by the employee entering the site.

## 2.6 Coordination

According to the Dutch Arbo health and safety legislation, the ‘employer responsible for the work places in the mining industry’, is responsible for the promotion of adequate co-ordination between the contractors who perform work at the work places.

[Drill Management] is responsible (and also acts as Operator) for all activities related to the activities described above.

Before starting the activities a general team meeting will be held with all involved parties as described in paragraph 3.5.

The parties (service companies) who are involved in the well activities are responsible for education and training of their employees.

Chapter 3.7 defines how the coordination and communication is managed between the interfaces during the execution phase; incident reporting; and emergency’s. The organogram(3.3) shows the coordination schedule of the operation.

## 2.7 Communication

Effective communication is critical to the success of the operation where different parties interface.

All main parties will be informed of the objectives and timetable of the operation in advance of the operation. A pre-spud meeting will be held with the main parties and subcontractors involved in the operation.

Each main party is responsible for ensuring that all relevant HSE information is effectively communicated within their own organization including alerts, notices, reports etc. The person responsible for HSE will communicate all relevant HSE information to all persons on the on-site operations.

## 2.8 Execution of Operations

All main parties shall ensure that their personnel, including all subcontractors, are familiar with the on-going activity program and abide by all relevant regulations and standards. The following methods will be used to establish and maintain effective lines of communication between main parties and subcontractors:

* Introduction – the TP is responsible for ensuring that all personnel new to the operation are formally introduced and if required are given a tour.
* Safety meetings.
* Pre-job meeting/tool box talks – held at the operational job site by all related personnel. Particular attention is to be given to any program changes which must be assessed with a review of the appropriate task/risk assessment.
* Daily report & meeting – the main parties and subcontractors provide a daily report detailing operational progress and planned program.
* The participants must also discuss together regarding needed actions. The outcome must be recorded on the report. CR reports this to State supervision of mines.

## 2.9 Management of Change

In case of a minor change the operations are halted if necessary. The TP, RM, SSV and Drilling manager and the rest of the team will discuss the change and make a follow-up decision.

All changes are documented in the daily operations report.

In case of a major change the operations are stopped. Additional experts are added as required and SSM shall be notified. Any major (design) change shall be submitted for a second opinion by an independent well examiner.

Major changes may require additional planning and design steps which will need an approval by the panel.

## 2.10 Evaluation and reporting

All personnel have a responsibility to report accidents, incidents and unsafe situations immediately to the Tool Pusher. [Drill Management] is responsible for reporting to the related authorities.

All main parties participate in a close-out meeting to assess the project on successes and mistakes (‘lessons learned’).

Key lessons will be captured directly at ‘after-action review-meetings’ and documented to ensure that they will be implemented in future operations.

# Risk identification, assessment and management

## 3.1 Hazard identification and risk analysis

Based on the work program, in a special meeting with all the involved parties, a risk inventory was made of the potential dangers. Mitigation measures have been formulated for each identified risk. The main results of this risk analysis can be found in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Activity:** | **Risk:** | **Mitigation Measures:** | **Action by:** |
| **Mobilisation of location** | | | |
| Transport to & placing of equipment | - Facilities located within ATEX zones  - Disturbance due to lack of space  - wrong order of placement | - Site visit by Contractors to get insight in limitations /  opportunities of the site  - Status & characteristics of site clearly known by contractors  - Good communication between Contractors and TP  - Good communication with working parties that are working around location | TP  TP  3rd Parties |
| **Execution of work programmes** | | | |
| Release of gas during activities | - Gas accumulation in cellar  - Explosion danger  - Fire  - Asphyxia | - Check cellar for gas with detection devices  - Application of ATEX zones  - Venting  - PPE  - weather vane | TP |
| Release of formation water | - Spillage | - Approved storage tanks available  - Well cellar available to contain spillage | RM |
| Kick (gas) during activities | - Losing control of well  - Spillage | - Shut-in / Close-in well  - Well cellar available to contain spillage | TP |
| **General aspects** | | | |
| Security / Site access | - Unauthorized / uninformed people on site | - Isolation of well site  - All employees and site visitors will be induced to the rules and regulations applicable on site | TP |
| Working safely | - Uncontrolled activities | - Work to be done with a working permit / permission of site supervisor | TP / 3rd parties |
| Hazardous substances &  chemicals | - Exposure to hazardous materials | - Data sheets available and certified employees | TP / 3rd parties |
| Personal Protective  Equipment (PPE) | - Injuries | - Standard PPE on site: coverall, helmet, boots, glasses | TP / 3rd parties |
| Weather conditions (storm, thunder, lightning, rain) | - Wind and lightning | - Stop work / activities  - Follow-up the protocol for adverse weather conditions of [Drilling Contractor] | TP / 3rd parties |
| Emergencies | - Injuries  - Late / insufficient response | - Emergency procedures according to HSE-document  - Inform police, fire brigade about project and start date of activities | TP/RM /TP / |
| Disturbance to neighbours because of noise, lights, transport, vibrations | - Complaints | - Activities during daytime only / sound-level survey  - No explicit disturbance sources available during the execution of the work programmes | RM / 3rd parties |
| Planning disturbance | - Improvising | - No disturbance expected | TP / 3rd parties |
| H&S responsibilities /  coordination on site | - Unclear responsibilities | - Tool-Pusher is responsible for H&S on site | RM |

The specific hazards and risk inventories can be found in the Site Specific Safety Case.

## 3.2 Risk elimination and reduction

The risks to workers connected with the execution of the activities, including the preparation, mobilization and demobilization of equipment are inventoried and evaluated. As described in the Site Specific Safety Case, there will be a set of sufficient physical facilities and organizational measures in place to reduce or eliminate risks.

## 3.3 Performance standards

Performance standards are defined as clear and measurable parameters been described to the performance of a process or system components, equipment and management systems, which contribute directly to achieve safety and health objectives.

An inventory is made on the evaluated risks to workers connected with the drilling of boreholes, including the preparation and disposal of equipment. Adequate physical facilities and organizational measures are or will be in place to eliminate or minimize risks.

Furthermore, [Drill Management] assures that all necessary plans, programs and documents are submitted via [Operator] to the State Supervision of Mines, as described in:

* Mijnbouwbesluit, afdeling 5.3 Boorgaten.
* Mijnbouwregeling, hoofdstuk 8 Boorgaten en putten.
* Legislation for safety documentations:
* Arbobesluit: art. 2.42, 2.42 e t/m h.
* Arboregeling: art. 3.6 t/m 3.14 .and that work will be done in accordance with such plans.

## 3.4 Assessment against the performance standards

* In selecting the contractors their track records in the areas of quality, safety and environment are reviewed.
* The contractors will use certified equipment and materials during the activities.
* Preceding to the start of the activities a document check (certificates) will be performed.
* The execution of the work will be checked on safety on a regular basis. After the inspections, an evaluation of the findings takes place. If necessary, additional measures will be taken.

# Emergency preparedness and response

## 4.1 General

A list of identified risks and mitigation measures can be found in Chapter 3. To minimise risks to an acceptable level the necessary precautions and measures will be taken.

## 4.2 Fire and explosions

Risk of fire is caused by:

* Presence of flammable materials; see table below;
* Overheating of engines and hydraulic systems;
* Short-circuiting of electrical equipment.

An overview of flammable materials and equipment on site, with corresponding location and hazard class, is displayed in the table below.

|  |  |  |
| --- | --- | --- |
| Location / Equipment | Flammable Materials | Hazard Class |
| Well Head;  Work Platform; Storage tanks;  Ducting / Piping; | - Released gas (only possible  during start of operation)  - Synthetic material, rubber  - Oil and lubricants | ABC |
| Diesel storage | - Diesel  - Synthetic material, rubber | ABC |
| Trucks/ Cranes | - Diesel  - System components (synthetic material, rubber) | ABC |
| Generator | - Diesel  - System components (synthetic material, rubber) | ABC |
| Storage | - System components (synthetic  material, rubber, wood)  - Hydraulic oil  - Lubricants  - Solvents | ABC |
| Office | - System components (synthetic material, rubber, wood)  - paper, textiles | ABC |

## 4.3 Alarm procedure

Considering the nature of the activities and the limited amount of flammable materials in storage, a fire alarm will only be initiated after a visual observation.

In appendix X[[4]](#footnote-4) an overview of the relevant phone numbers can be found. Additional numbers will be added to the list when required.

## 4.4 Assistance in case of injuries

The employees of the contractor are trained to provide first aid when accidents occur or fire fighting is required. At least one person will be present on site with first aid certification.

If medical assistance or consultation is required or demanded, the involved person or persons will be directed to the local general practitioner. Medical support is available 24 hours. In case of emergencies the ambulance service/hospital will be notified by calling 112.

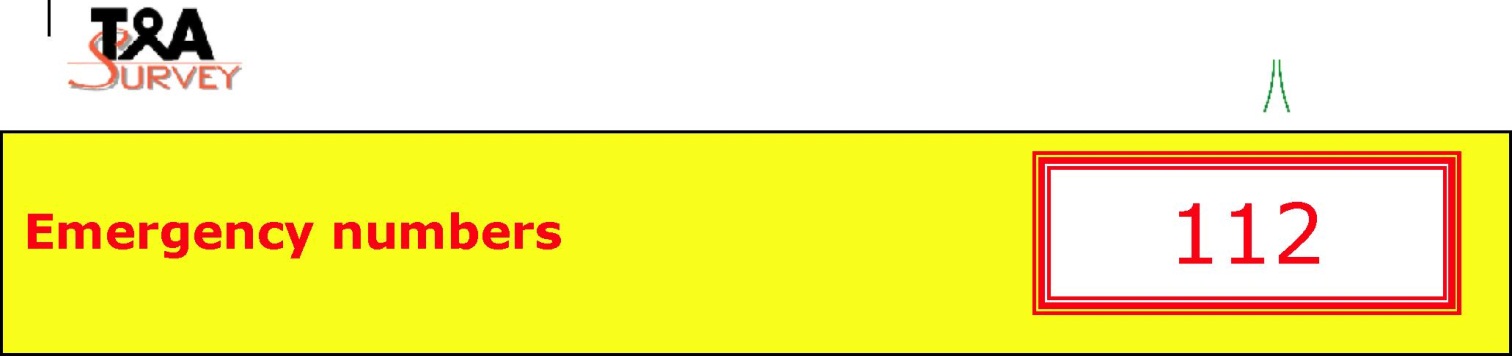
## 4.5 Fire fighting and evacuation

Local authorities, police and fire brigade will be made aware of the activities and the possible hazards and risks involved. The fire brigade is located in […]. In case of emergencies the alarm number 112 has to be called.

All employees of the contractor on site are trained to use fire fighting equipment and to fight possible fire hazards.

In case of fire the well site has to be evacuated. By means of different routes the well site can safely be abandoned (art 3.6 Working Conditions Rule).

The scenario details are described in the Site Specific Firefighting and Rescue Plan[[5]](#footnote-5).



***Telephone numbers***

**Location :**

**Preliminary location x= ….. e, y= …… n (rd)**

**Emergency numbers**

**Police 112**

**Fire Brigade 112**

**Ambulance 112**

**General Numbers (Non Urgent)**

**Police 0900 - 8844**

**Internal telephone numbers**

**Tool Pusher :**

**QHSE Manager :**

**Onsite supervisor :**

**Rig Manager :**

**Project Manager :**

**Emergency contact SODM :**

1. Geen onderdeel van dit Handboek Geothermie [↑](#footnote-ref-1)
2. Geen onderdeel van dit Handboek Geothermie [↑](#footnote-ref-2)
3. Geen onderdeel van dit Handboek Geothermie [↑](#footnote-ref-3)
4. Geen onderdeel van dit Handboek Geothermie [↑](#footnote-ref-4)
5. Geen onderdeel van dit Handboek Geothermie [↑](#footnote-ref-5)