



## NEDMAG VE-5 Fire Fighting and Rescue Plan

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NEDMAG Project Manager	5.1.2.e	26/01/2024	5.1.2.e
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### Controlled Copy Holders

Copy	Company	Position
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10.		

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## **1. Introduction**

### **1.1. Custodian**

NEDMAG is the custodian of this document. This implies that this organisation is ultimately responsible for ensuring the contents of this document are correct, kept up-to-date and distributed in accordance with requirements.

As soon as operational changes need to be performed which have an impact on this document or whenever this document and the actual situation do not match, an update will be required.

### **1.2. Validity**

This document remains valid for the time operations on the VE-5 well are in progress. Should a delay occur, the validity of this document will be extended in line with the delay period.

The activities except the mobilisation and demobilisation take place in a continuous schedule (day and night).

The workover operations are planned for week 8 of 2024, including mobilisation and demobilisation.



## 2. General

### 2.1. Objectives of this document

The purpose of this Firefighting and Rescue Plan (FFRP) is to provide all personnel involved in the workover operations of well VE-5 with information that is necessary to deal safely with firefighting and rescue situations. This document is supplementary to the regular NEDMAG Emergency Plan for the Mining location (M-02 Calamiteitenplan Zoutwinlocaties, WHC-1 en WHC-2), as the workover operations involving Inwatec's combined mini coil and wireline unit on VE-5 are considered non-routine.

Furthermore, this document provides the local authorities and fire department with additional information on the location and ensures compliance with the legislative requirement for reporting to the State Supervision of Mines (Staatstoezicht op de Mijnen).

This Firefighting and Rescue Plan is applicable for the operations area for the VE-5 well, located at the Borgercompagnie 156A in Borgercompagnie, in the municipality of Veendam.

### 2.2. Project Scope

The main goal of the activity is to remove a blockage in Nedmag's VE-5 solution mining well. The operations will be performed by Inwatec's combined mini coil and wireline unit. This document is applicable to the periods where the aforementioned unit, or related auxiliaries, are present in the VE-5 well area, including mobilization and demobilization periods. The activities except the mobilisation and demobilisation take place in a continuous schedule (24-hour coverage).

### 2.3. Document references

The Firefighting and Emergency Plan is based on legal requirements and is related to the following safety documents:

- **Project Specific Safety & Health Document for NEDMAG VE-5**

This document focuses on the co-ordination and cooperation between all parties during the VE-5 workover operations.

The objective of the Project Specific Safety & Health Document is to demonstrate to all involved parties, personnel and other stakeholders that essential control measures are in place; thereby reducing the major HSE risks to As Low As Reasonably Practicable (ALARP) level.

- **NEDMAG Safety & Health Document (M-01 Nedmag Veiligheids- en Gezondheidsdocument)**

This document covers all measurements to secure the Safety and Health of all employees during routine Nedmag operations. This document is available in the Dutch language.

- **NEDMAG document M-08 on Well-related activities (M-08 Bijzondere putwerkzaamheden)**

This document described how drilling, well intervention and abandonment operations are executed / managed at Nedmag. This document is available in the Dutch language.

- **NEDMAG Emergency Plan Mining (M-02) & NEDMAG Blowout scripts**

In the unlikely event of an emergency situation arising whereby there is an immediate danger to persons or the environment directly outside the perimeter of the VE-5 location, NEDMAG is in possession of contingency plans. Document M-02 in Nedmag's management system is the general Mining emergency plan. A project specific blow out script, covering a blow out of all live wells at WHC-1, is enclosed as appendix 4.

#### **2.4. Cooperation with local fire brigade**

The Veendam public fire brigade will provide firefighting services to the VE-5 location. The Veendam Fire Brigade is equipped with at least the minimum amount of firefighting equipment required by legislation. Assistance can be given if necessary, by regional fire brigades.

Prior to commencement of the work the local Fire Brigade is informed of the general activities and time frame. In close consultation, it will be decided whether it will be necessary to organise a joint fire drill.

### 3. Location Specific Information

#### 3.1. Surroundings

VE-5 is situated at Wellhead Center 1 (WHC-1) at Borgercompagnie 156A, Borgercompagnie in a rural area.

Near surroundings of the well:

<b>Buildings or similar objects, which are no part of the mobile installation</b>		
	<b>VE-5</b>	
Closest Neighbours	275m	
<b>Public roads or railways</b>		
Borgercompagnie	285m	
Veendamweg (N963)	350m	
<b>Flammable substances</b>		
Nearest electric heater for buildings	30m	
GTL tank (60m <sup>3</sup> )	25m	

The closest neighbours live north-east of the workover area. In case of an emergency the owners and possible relatives will be evacuated. There is a car park on location. A detailed map of the location is shown in Appendix 3. The location of the combined wireline and mini coil unit will be between VE-5 and VE-7 is marked as "coil".

#### 3.2. Equipment on location

During the workover activities the following equipment will be present on the location:

- Inwatec Offshore 2 Split Unit
- Diesel powerpack
- Electric fluid pumps
- Diesel tanks

#### 3.3. Contractors and Visitors

Contractors and visitors will only be allowed on-site with permission from the SSV, after completing a safety induction and being informed of applicable rules. All personnel and visitors must register with the SSV upon arrival at the site. There will be no dedicated security personnel on site.

#### 3.4. Dangerous locations and substances

Locations on WHC-1 where dangerous or flammable substances are stored are marked on the layout drawings, see Appendix 3.

Location	Hazard	Substance / max. amount
Well	Fire/explosion	Gas release / H <sub>2</sub> S gas release
Diesel storage tank (on wl/ct unit)	fire	Day tanks
Contaminated waste (on wl/ct unit)	poisonous/fire/corrosion	Oily rag and gloves trash container.
GTL containers - Nedmag	fire	GTL 215, max 60 m <sup>3</sup>

### 3.4.1. Chemicals

A list with daily chemical stock is available on site as well as chemical data sheets for all chemicals.

All Chemicals are in compliance with REACH. Material Safety Data Sheets (SDS) of all chemicals used on the well site are available on site. Appendix 1 has an overall list of chemicals, this will also be available on site.

### 3.4.2. Electrical danger

Working on electrical systems has an inherent risk. It is forbidden to work on systems under power except if there is an emergency plan and only after special precautions have been taken.

The wireline/minicoil unit will be earthed.

Electrical shock, electrical burns, fire or explosion can cause serious injury. Furthermore, electromagnetic fields can cause injuries or disease.

## 3.5. Drainage System

The whole location is provided with an open drain system connected to a storage pit (T-9105) which can contain about 40 m<sup>3</sup> of liquid. A larger basin (T-107) is located next to T-9105 and can be used when more storage is required.

## 3.6. Communication

- A day and night NEDMAG Company Representative (SSV) covers the site 24/7 during day- and night operations, with a day and night Inwatec supervisor also covering the site 24/7.
- An evacuation air horn will be available in the Inwatec unit and the Nedmag WHC-1 control room. This will be audible on the entire location.

For communication purposes there is a telephone list at the back of this document.

## 3.7. Escalation prevention measures

### • Blowout Preventer

A BOP will be installed on the well during the operations. The BOP will be certified and pressure tested according to Dutch mining regulations.

### • Emergency lighting

Temporary and mobile floodlighting are provided and has a back-up supply by means of batteries.

## 3.8. Emergency Equipment

- Fire extinguishers  
Four powder (ABC) fire extinguishers will be placed on location as per **Appendix 3: FFRP Overview**  
The firefighting equipment on site is the property of Nedmag. The firefighting equipment is checked both internally (inspection plan Nedmag) and externally by a qualified third party. The inspection date is indicated on a label attached to the extinguisher. Defective equipment will be replaced or repaired immediately. Inwatec has fire extinguisher on their own equipment.
- Available first aid and rescue equipment:
  - First-aid kits
  - Eye-wash bottles
  - Fire blanket

## Emergency training

- There will be sufficient trained personnel on site in order to use the rescue equipment that is available. The assistance of the fire brigade will be requested if additional rescue equipment is required.
- At the start of the workover activities, a firefighting/site instruction of the crew will take place. A fire drill or an abandon rig drill will be performed weekly, and will be logged in the daily report.



#### 4. Firefighting and Rescue Response

In principle rescue operations in a contaminated atmosphere will be left to the local fire brigade. The personnel working on site should only undertake rescue activities if these have to be carried out without delay and can be performed safely. In such events, the fire brigade or police will still be informed and their assistance requested.

In case of fire, the fire brigade shall be alarmed directly. Upon their arrival, the fire department will assume direct control over the well site. The fire brigade may require assistance from Workover specialists on site.

##### 4.1. Organization

The relationship between the various parties concerned and chain of command in the daily operational activities are described in the scheme below.

##### 4.2. Responsibilities in case of an emergency

The NEDMAG Company Representative (SSV) has the overall responsibility for:

- coordination of the necessary actions in case of an emergency on the workover site
- coordination of activities with NEDMAG head concurrent operations (HCO) and the service companies
- triggering the callout of public firefighting services and police
- reporting the incident to SodM after consultation with their WEP superior and the NEDMAG HCO
- advising the fire brigade; liaising with the Inwatec supervisor and NEDMAG HCO after the fire brigade or police have taken charge of handling the emergency
- ensuring that the press does not enter the workover location and is referred to the NEDMAG Managing Director

The SSV will wear a yellow vest to illustrate his coordinating role.

5. The Inwatec Supervisor is responsible for the Inwatec unit and crew and takes temporary charge in case of unforeseen unavailability of the SSV.

##### 5.1. Alarm & emergency procedure

###### Instructions for personnel on the site:

- Report an incident immediately to the NEDMAG Company Representative (SSV) or the Inwatec Supervisor.
- In case abandonment is necessary: ensure that the alarm in the Inwatec unit/NEDMAG control room is activated.
- In case of fire:
- Always decide for yourself if you can fight the fire until the local fire brigade arrives. **Your own safety is priority number one.**
- In order to prevent escalation: always notify the fire brigade, also in case you can fight the fire yourself.
- Keep equipment cool and wet, and remove possible flammable substances.
- Essential crew members may, depending on the situation, remain on the worksite to carry out well control operations or to ensure the well will remain in an operational condition.

###### Response to hearing an alarm

When the abandonment alarm is given:

1. Secure the work area
2. Proceed to the muster point
3. Check while leaving, that **no one**, regardless their reasons, remains on site
4. Walk to the muster point (See Appendix 3: FFRP Overview ) perpendicular to the wind direction
5. Help your colleagues when necessary, without endangering yourself

6. Follow the instructions of the NEDMAG Company Representative (SSV) and the Inwatec supervisor
7. Remain at the muster point until you are ordered to leave by the SSV
8. Follow the instructions of the Police, or Fire Brigade.

## **5.2. Fire-fighting**

If possible, Nedmag crew will respond first (incipient fire). As second response the Veendam fire brigade will provide fire-fighting services to the VE-5 location. The Veendam Fire Brigade has at least the minimum by legislation required Fire-fighting equipment.

Assistance can be provided by regional fire brigades if necessary.

## Appendix 1: Overview of Chemicals

DATA PROVIDED BY THE OPERATOR								
LANDLOCATIE	PRODUCT - LEVERANCIER DATA						OPERATOR DATA	
Mijnbouwwerk: landlocatie gebruik	Product handels naam (1)	Leveranciernaam (2)	Datum van uitgifte VIB (indien beschikbaar ) (3)	CtgB nr. ("toelatings- nummer" of "aanmeldings- nummer") indien biocide (4)	Product etiket: H-zinnen of R- zinnen (5)	REACH Compliance check afgerond (gevaarlijk product) (6)	Geplande maximaal te gebruiken kg (7)	Algemene opmerking (8)
<b>Inwatec - wireline and mini coil services</b>								
Borgercompagnie	Motip Remmenreiniger	Motip Dupli BV	03/09/2019		H222-H229, H315, H336,	ja	2L	
Borgercompagnie	Motip Penetrating oil MoS2	European Aerosols BV	13/06/2022		H222-H229, H412	ja	2L	
Borgercompagnie	Motip PTFEvet	European Aerosols BV	16/06/2022		H222-H229, H336, H411		2L	
Borgercompagnie	Diesel	Gulf Bunkering BV	18/04/2019		H226, H304, H315, H336, H351, H373,	ja	20L	
Borgercompagnie	Dasty Ontvetter	Dasty Italy S.p.A	21/09/2018		H318, H315	ja	5L	
Borgercompagnie	Copper + Plus	Kroon Oil BV	14/07/2023		H412	ja	1L	
Borgercompagnie	Q8 HLVP Hydraulic Oil 46	Kuwait Petroleum Companies	02/07/2021		niet gevaarlijk	ja	20L	
Borgercompagnie	EuroL AFT IID	EuroL BV	03/08/2022		niet gevaarlijk	ja	2L	
Borgercompagnie	Coolant RTU 40	77 Lubricants	04/09/2018		H302, H361, H373	ja	20L	



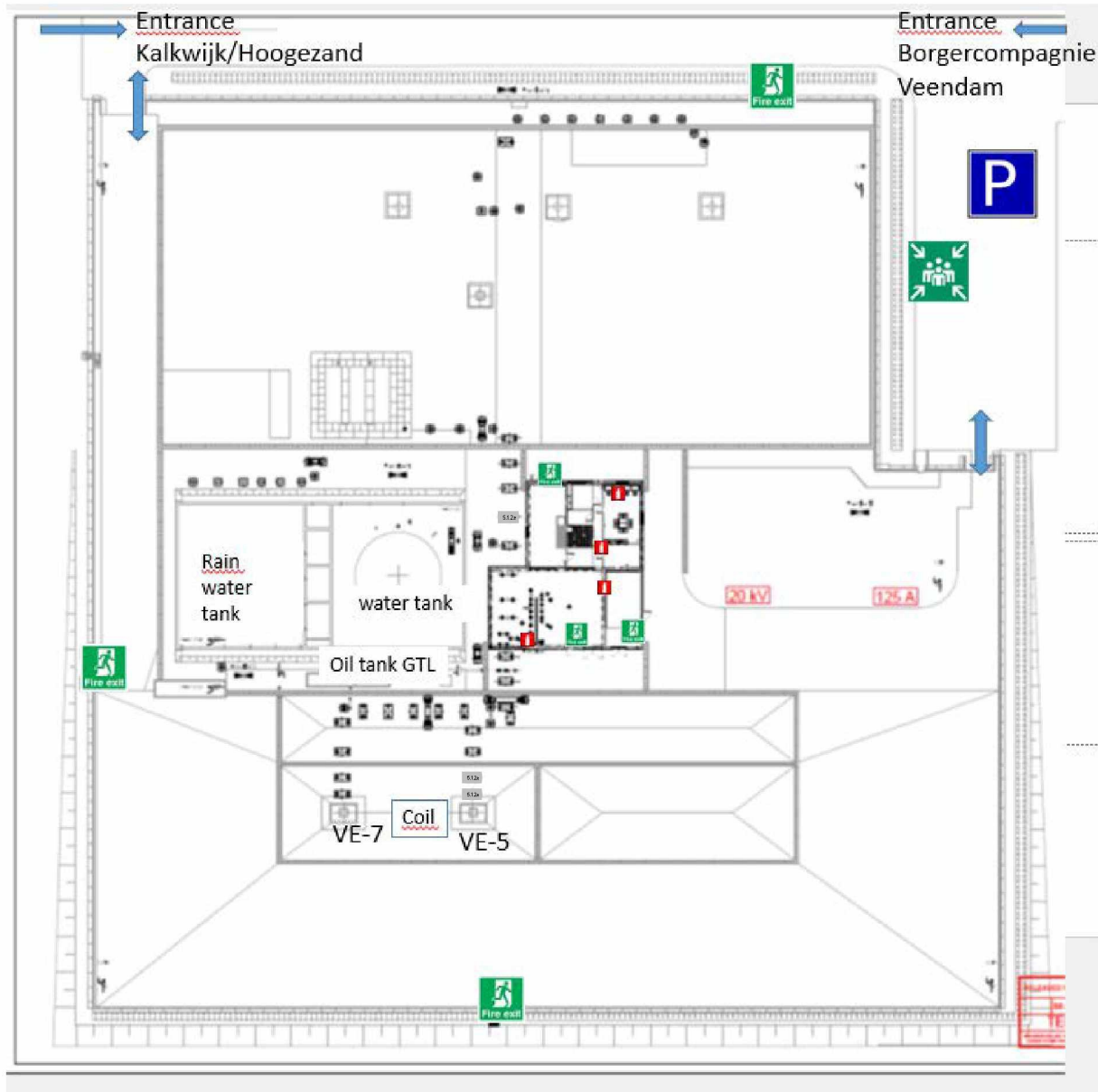
**Appendix 2: Emergency Telephone Numbers**

**Call 112 for police, fire brigade or ambulance.**

Name	Function	Office	Mobile Phone
<b>NEDMAG</b>			
5.1.2.e	Mine Manager		5.1.2.e
5.1.2.e	Project Manager		5.1.2.e
Nedmag Mining Control Room		5.1.2.e	
NEDMAG DSV	Company representative		
<b>WEP</b>			
5.1.2.e	WEP Operations manager	5.1.2.e	5.1.2.e
5.1.2.e	Project Manager	5.1.2.e	5.1.2.e
5.1.2.e	Project Engineer	5.1.2.e	5.1.2.e
5.1.2.e	Project Engineer	5.1.2.e	5.1.2.e
<b>Inwatec</b>			
5.1.2.e	Sales Manager	5.1.2.e	5.1.2.e
5.1.2.e	Operations Manager	5.1.2.e	5.1.2.e
<b>State Supervision of Mines/ SodM</b>			
	Head consignee		5.1.2.e
	2 <sup>nd</sup> consignee		5.1.2.e
	General	5.1.2.e	

Public services	
Local doctors Veendam:	
Veentjer, Lloydsterras 10	0598 612227
De Beijl/Trips Steenstraat 10	0598 612282 / 612005 (spoed 635701)
Local doctors after office hours:	
Huisartsenpraktijk Groningen	0900 9229
University Hospital Groningen (Hanzeplein 1)	050 361 61 61
Martini Hospital (Van Swietenplein 1)	050 5245245
Hospital Stadskanaal (Refaja) (Boerhavestraat 1)	0599 654 654
Ommelander Hospital Scheemda (Pastorieweg 1)	088 0661000
Taxi Midden-Groningen	06-51925292,
Connexion Taxi Services Groningen	0597 454 444
5.1.2.e	
5.1.2.e	156) 5.1.2.e

Appendix 3: FFRP Overview VE-5



## Appendix 4: project specific brine blowout contingency plan



## VE-5 Blow-out Contingency Plan (BOCP)

Rev No.	Details	Date	Author	Checked	Approved
1.0	Initial version for client review	12/01/2024	MN/SH	SH	SH
1.1	Version with client comments	16/01/2024	MN	SH	SH

**Authorisation:**

	Name	Date	
NEDMAG Project Manager	5.1.2.e		
WEP Project Manager	5.1.2.e		
NEDMAG QHSE Manager	5.1.2.e		
Inwatec Operations Manager	5.1.2.e		

**Controlled copy holder**

	Company	Position
	NEDMAG	QHSE Manager (Custodian)

**Uncontrolled Copy Holders**

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1.	NEDMAG	QHSE-manager (Custodian)
2.	NEDMAG	General Manager
3.	NEDMAG	Project Manager
4.	State Supervision of Mines	Inspector General Mines
5.	Well Engineering Partners	Project manager
6.	Well Engineering Partners	Well Service Supervisor (Well Site)
7.	Inwatec	Operations
8.	Inwatec	Supervisor
9.	Fire brigade Veendam	
10.		

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## 1. Introduction

The primary goal of this document is to provide a working methodology for NEDMAG to safely and effectively manage, respond to and recover from an uncontrolled well incident (blow-out) during workover operations on well VE-5. A blow-out is defined as an uncontrolled release of cavern or formation fluids from the well, either to the surface or to the (shallow) subsurface. The consequences of a blow-out can be severe: death or injury to personnel, damage to adjacent wells and/or plant equipment, harm to the local environment and loss of the company's reputation.

In line with the NEDMAG objective of having in place an Effective Emergency Response process, this Blow-out Contingency Plan (BOCP) is issued to supplement the existing Emergency Response Procedures for the relevant location.

This Blow-out Contingency Plan is a supplement to the following documents:

- NEDMAG VE-5 Fire Fighting and Rescue plan
- Work Program for NEDMAG VE-5
- NEDMAG VE-5 Project-Specific Safety & Health Plan

## **2. Blow-out Response Requirements**

The development of the cavern of VE-5, drilled in 2022, was started in August 2023. A few weeks later the blockage occurred. Based on the injected and produced volumes the cavern size is estimated to be maximum 300 m<sup>3</sup>.

The maximum theoretical outflow is therefore 300 m<sup>3</sup>, a volume that can easily be retained on the location of WHC-1, within the concrete walls.

Well VE-5 holds surdyne in the annulus between the 10 ¾" and 7" casings. This annulus is closed off by the current X-mas tree which will not be removed.

The top priority in the response to a blow-out or any emergency (large fire, smoke, etc) is the safety of the personnel.

In case of uncontrolled outflow of another well (VE-1/3/4/7) the following actions are implemented:

- All non-essential personnel are evacuated to the parking lot at the main gate, unless it is not safe to go there.
- Cars, trucks, forklift-trucks that can immediately leave the location should do so. If that is not possible (for instance a crane with a suspended load), it should be left behind.
- The truck gate (rolling gate) at the west side (close to VE-2) should be closed as soon as possible. The truck gate at the east side (parking lot near Borgercompagnie road) should be closed as the last gate, when brine (nearly) starts flowing out and all personnel has left the location.
- The incident is reported to 112 and the Veendam Fire Brigade directly, as well as SodM. If people are severely injured, medical assistance is requested.
- The organisation commences with actions to minimize the impact on the environment and community.
- The organisation takes immediate actions to minimize damage to the rig/unit, surface facilities and location.
- The NEDMAG Project Manager decides on the formation of the Blow-out Response Team to efficiently and effectively bring the well(s) under control.
- Planning steps are documented to evaluate the most appropriate method for controlling the well.
- All those taking part in the emergency are fully aware of, and familiar with, the tasks they have been assigned and are adequately trained to accomplish their respective assignments.

Blow-out response can be defined as having four phases, which are as follows:



**Phase 1: Alarm and Co-ordination**

This phase covers the first few hours of the situation, with the primary objective being to safeguard human life and take the initial steps required to minimize the effects of the blow-out. This phase commences when the alarm is raised and will follow the procedures contained in the Emergency Response Procedures.

In addition to responding to the emergency following the NEDMAG standard emergency response procedures, for blow-outs the following initial actions are conducted:

1. After the safety of all personnel has been assured, the following data should be obtained from the Workover Supervisor and personnel, where possible:
  - General situation: Is there surface flow, underground flow, or a highly dangerous pressure situation with no flow? How hazardous is the situation? (i.e. Is there oil present? ).
  - Nature of flow: Provide an estimated total flow rate, and amount of brine or oil.
  - Point of exit: Is the flow coming through tubing, casing, and wellhead, failed BOP's or flange?
  - Extent of damage: Provide an estimate on the extent of the damage to the rig/unit and surface equipment.
  - Accessibility and competence of well control equipment: provide an assessment of the condition of the BOP's and control unit.
2. The NEDMAG Project Manager appoints a Blow-out Coordinator at the first available opportunity. Initially, this role will be performed by the NEDMAG Mine Manager, soon followed by a Well Engineer.

**Phase 2: Containment**

During this phase, the blow-out is brought under control, or the outflow has been minimized by itself due to cavern depressurization or well crystallization and clogging.

The methods for controlling the outflow from the well are determined by the Blow-out Coordinator with the assistance of experts from WEP.

**Phase 3: Reinstatement and Further Recovery Activities**

Once the well is fully secured, the Blow-out Coordinator stands down.

After standing down from the emergency, any remaining pollutants must be recovered and steps taken to ensure that the contaminated area is cleaned and returned to its original state, if possible.

Following any blow-out, an assessment is required to establish the impact on the environment.

### **3. Blow-out Response Team Roles & Responsibilities**

The detailed roles and responsibilities for the positions specified within the Blow-out Response Team are as follows:

#### **3.1 Blow-out Coordinator**

- Responsibility for coordinating the planning, and initiating all activities connected with containing the blow-out. He/ she will be accountable to the NEDMAG Project Manager.
- Ensures that all safety precautions and procedures are addressed as part of operations planning and that environmental damage is taken into consideration in the plan.
- Responsible for ensuring that all technical preparations and safety precautions are implemented as planned during containment operations.
- Ensures that the site is restored and all pollution has been cleaned up or cleared off the site, once the well has been contained

#### **3.2 Well Engineer**

The Well Engineer reports to the Blow-out Coordinator, and is responsible for:

- Mobilizing the identified equipment and personnel.
- Supervising the blow-out operations, ensuring that efforts are coordinated in a manner which is safe, efficient and with as little damage to the environment, assets and company's reputation as possible.
- Ensuring that all safety precautions and procedures are addressed as part of operations planning and that environmental damage is taken into consideration in the plan.

#### **3.3 HSE Manager / Advisor**

It is the responsibility of HSE Manager to advise the Blow-out Coordinator on all Health, Safety, and Environmental issues. Blow-out conditions are extremely hazardous and he advises on HSE issues such as:

- Exposure limits.
- Protective equipment.
- Generally ensure that all safety precautions are taken during operations.

The HSE Manager is in charge of monitoring and advising on the safety and health hazards for people working on the project.

The HSE Manager also arranges to have an independent survey conducted to assess the impact on the local environment and assists Blow-out Coordinator with the clean-up program.