



# Well intervention, risks and statistics

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# Content

- Activity level, drilling and well intervention
- Number of well control incidents, well intervention vs. drilling
- RNNP, risk level in the petroleum industry; well intervention personnel responses
- Regulations, guidelines, norms and standards



# Well lifecycle - Increasing intervention envelope

Expanding wireline capabilities  
– continous development

New intervention  
technology

PPA: from rig → LWI  
Qualification process

Year 0

Coil Tubing Drilling

Automatisation of  
conveyence

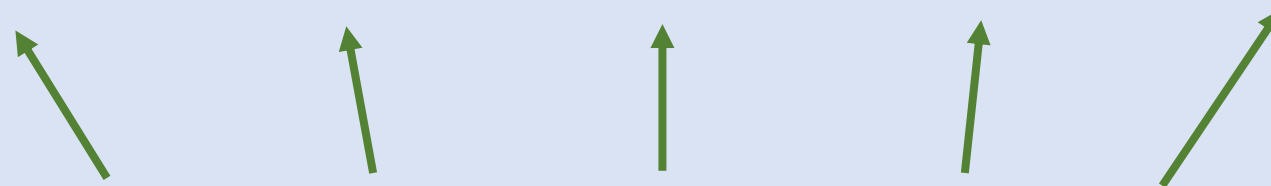
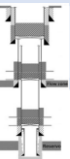
Year XX



**Drilling**

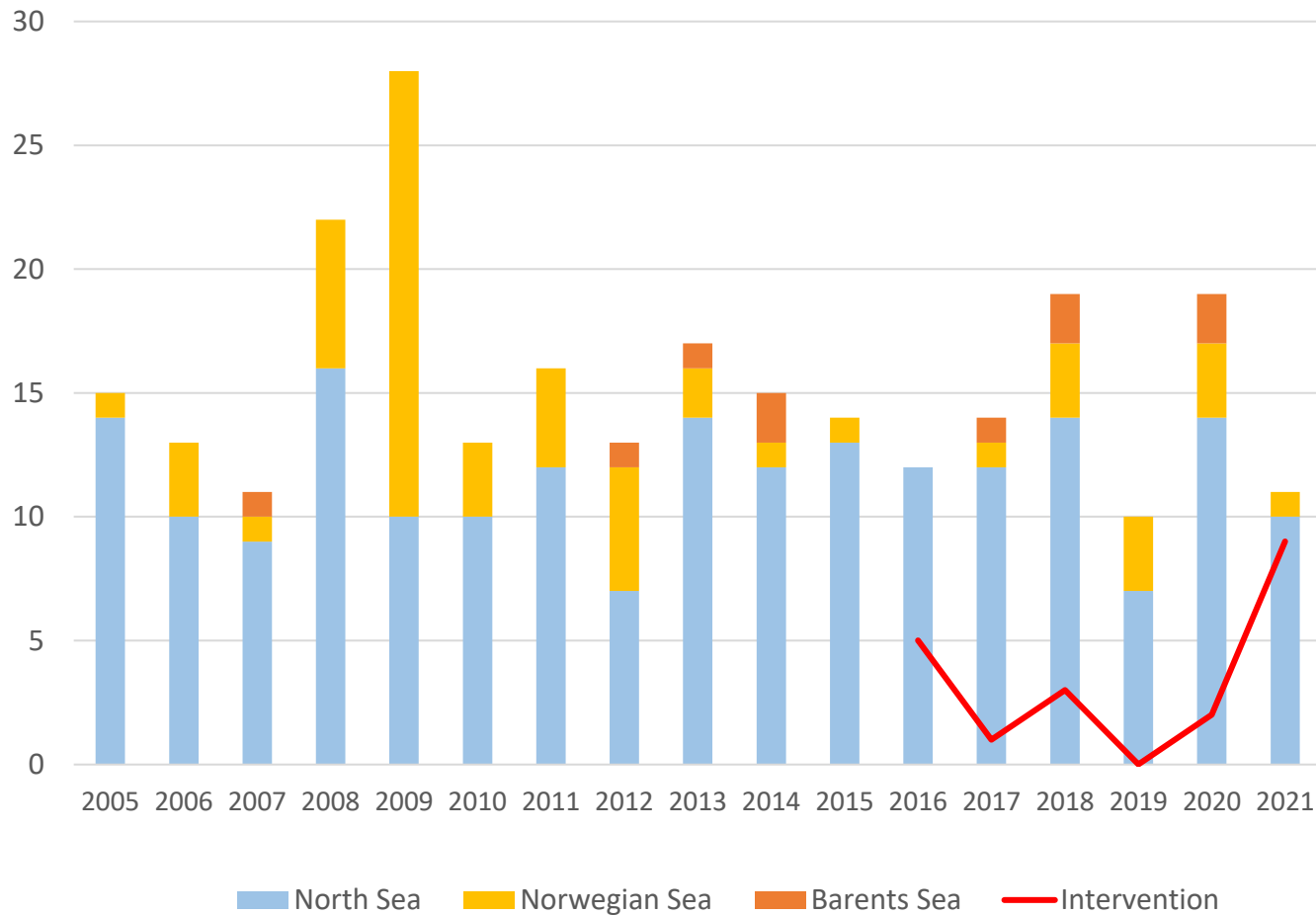
**Production / Intervention**

**P&A**



Well integrity issues – Diagnostic and barrier  
re-establishment through interventions

# Well control incidents, well intervention vs. drilling



## Drilling

- 220 wells per year
- 85 incidents last five years

## Intervention

- 600 operations per year
- 21 incidents last five years

# Intervensjonshendelser, 2017 - 2023

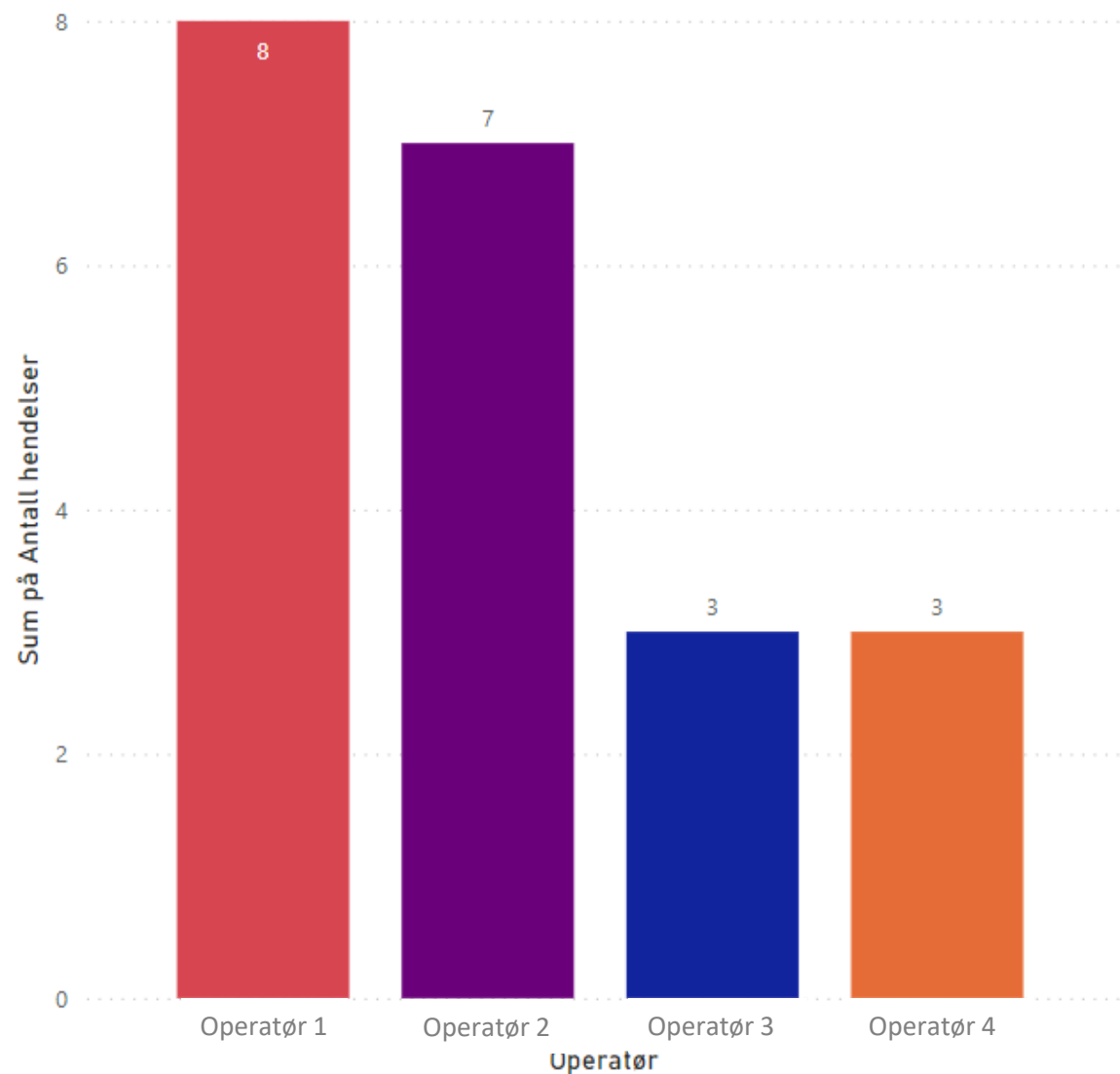
Hendelsesdatabasen, DFU 3A og 3B

21  
Sum på Antall hendelser

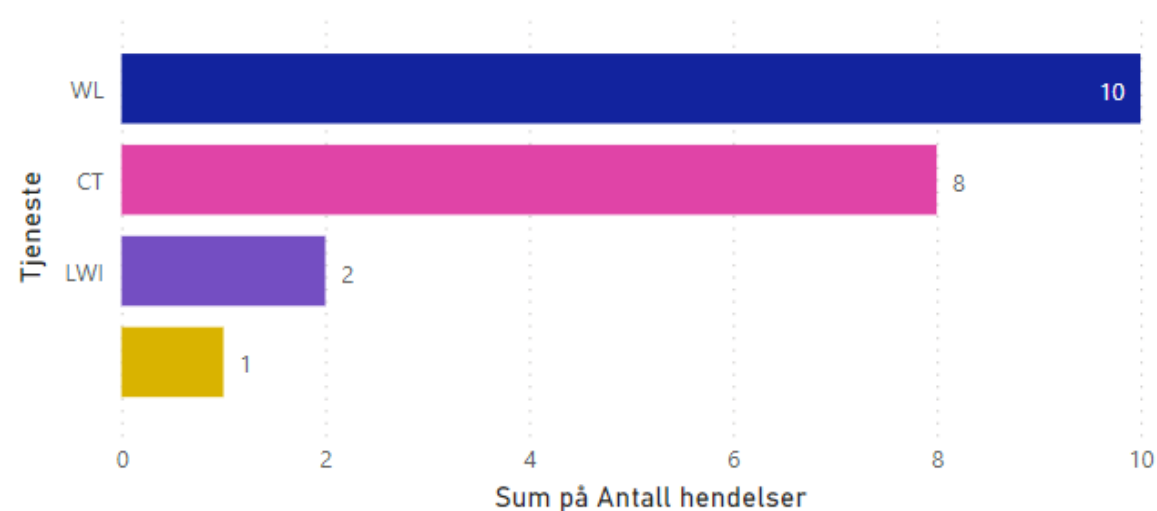
11  
Antall Felt

13  
Antall Brønn

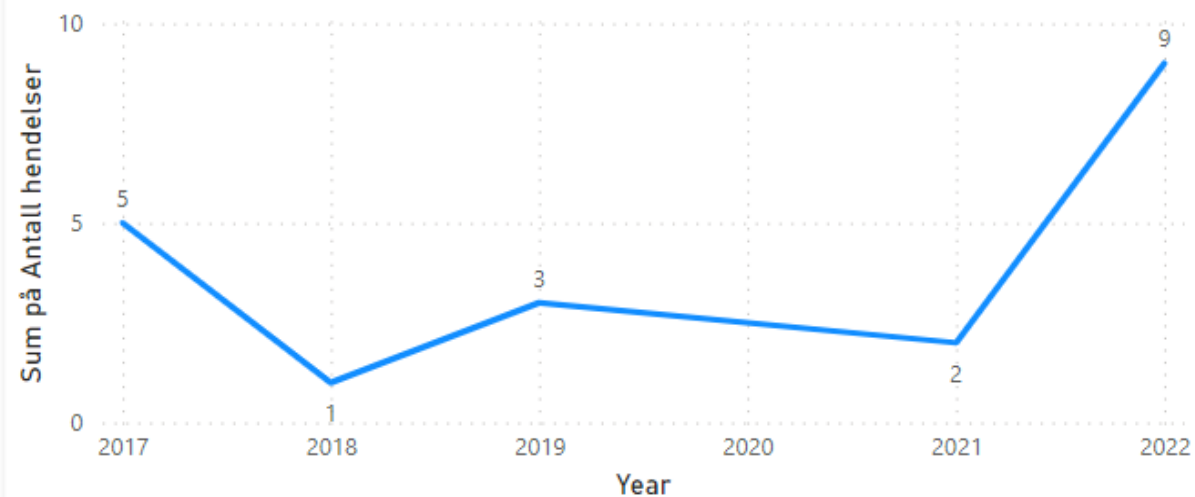
## Antall intervensjonshendelser, 2017-2023



## Antall intervensjonshendelser, 2017-2023, Tjeneste



## Antall intervensjonshendelser, 2017-2023, Trend



# Well-intervention: Working environment and HSE-climate

## **Working environment**

Work demands

Support from management

## **HSE-climate**

Cooperation and communication

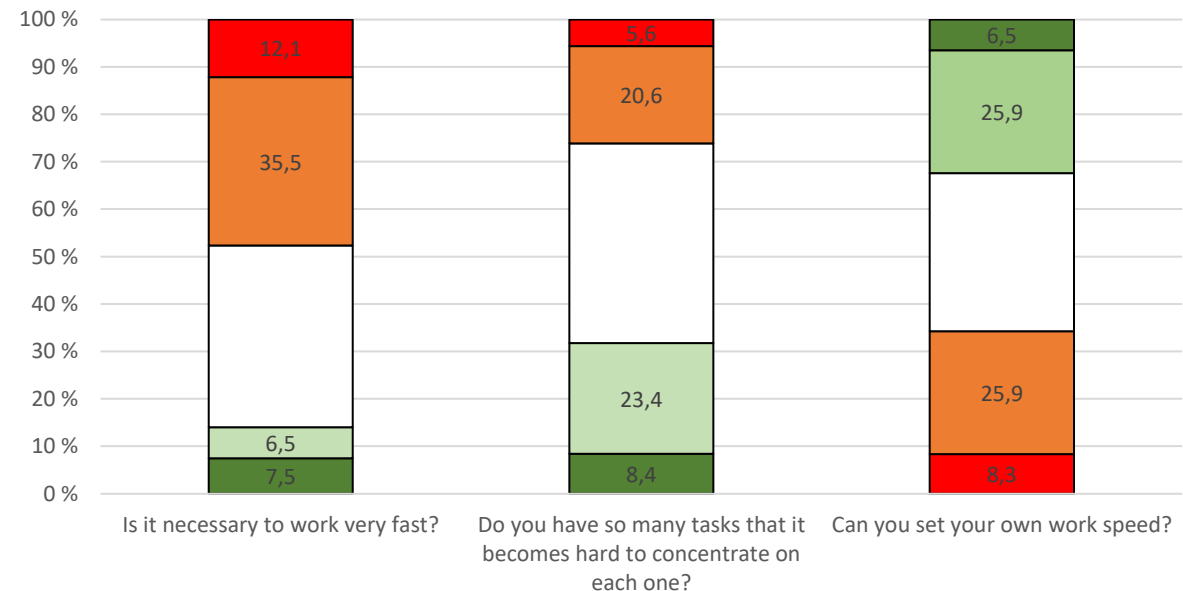


# Working environment: Working demands

## High working demands

- Many tasks
- High pace
- Lack of influence on work pace

Nearly 50 % report they often have to work in a high pace

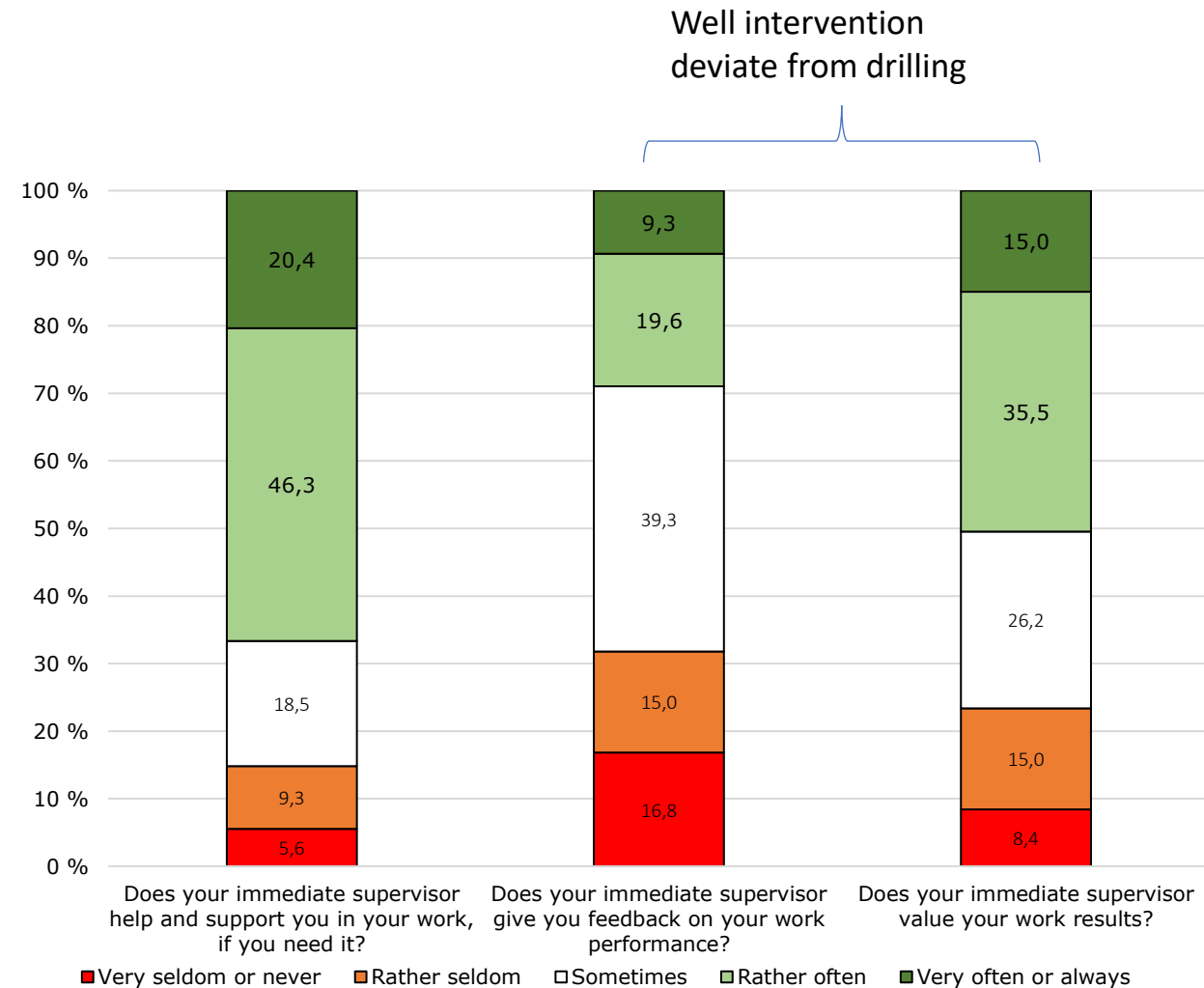


■ Very seldom or never ■ Rather seldom □ Sometimes ■ Rather often ■ Very often or always

# Working environment: Support from manager

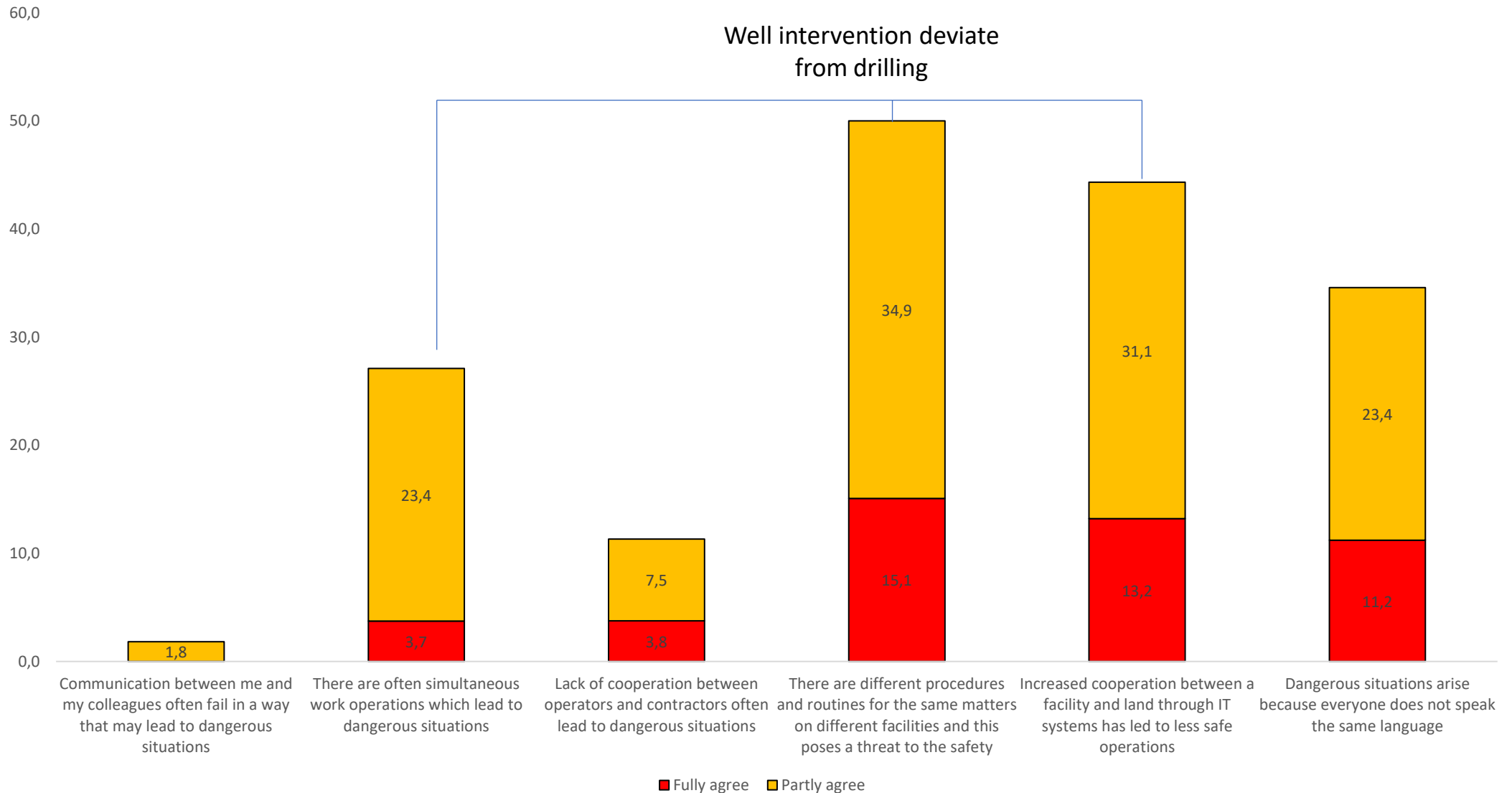
Low degree of support from manager

- Support and assistance from manager
- Lack of feedback on performance
- Appreciation of performance





# HSE-climate: Cooperation and communication



# Regulations, guidelines, norms and standards

Lov

## **Objective**

The purpose of this document is to provide a guide for:

- Categorization and classification of well control incidents.
- Classification of well integrity incidents in the operational and production phases.
- Correct evaluation and alerting, notification and reporting to the authorities.
- Learning and experience transfer from well incidents.

# Offshore Norge 135

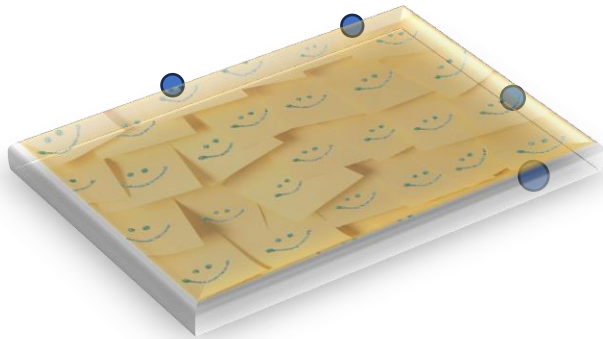
Potential improvements

Pinhole, blocking of valves, power outage

More categories, clear language, better examples

Improve language, better examples, more categories, new categories

Should emphasize on intervention, principle based guidance



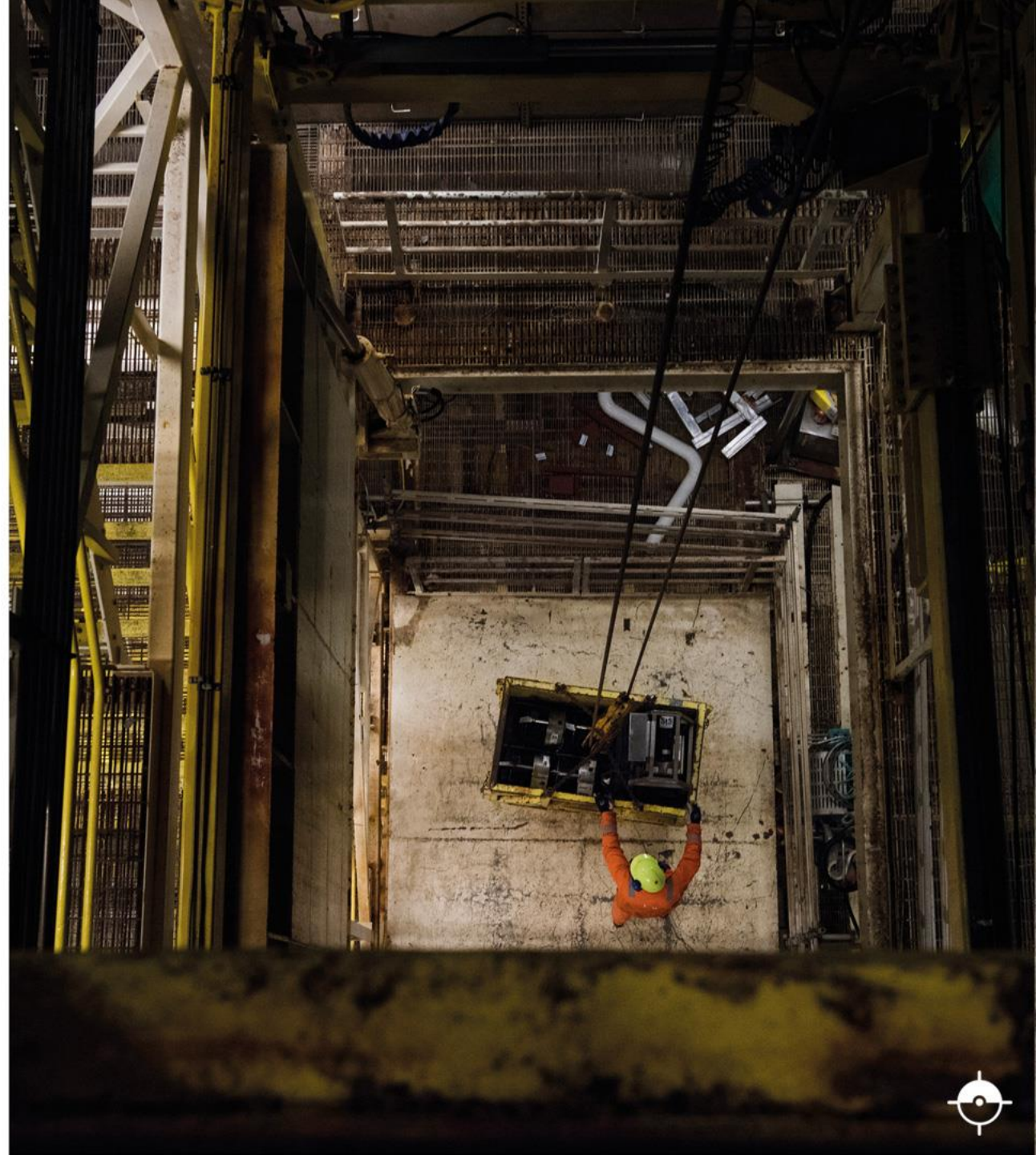
No.	Blowout
11.1 - 01	Non-shearable item stuck across BOP, leakage above BOP – not able to close any BOP rams – DHSV not available – installation decided to be evacuated.
11.1 - 02	Well control equipment damaged from external loads – not able to operate equipment – well flowing to surroundings – installation decided to be evacuated.
	<b>Failure of primary and secondary barriers</b>
11.2 - 01	Non-shearable item stuck across BOP, leakage above BOP – not able to close any BOP rams – DHSV not available – non-essential personnel trapped with assistance from well control
11.2 - 02	Well control equipment damaged from external loads – not able to operate equipment – well flowing to surroundings – well killed with assistance from well control
	<b>Activation of secondary well barrier – redundant barrier elements available</b>
	Well secured by cutting string and well secured by cutting string and close other valves (not required to be blocked).
12.1 - 02	Well secured by cutting string using safety head. String blocking other valves (not required to be blocked).
	<b>Activation of secondary barriers – redundant barrier elements available</b>
12.2 - 01	Well secured by cutting string using safety head. String blocking other valves (not required to be blocked) – double block
12.2 - 02	Well secured by cutting string using safety head. String blocking other valves (not required to be blocked) – double block
	<b>Activation of secondary barriers – redundant barrier elements available</b>
	<b>Barrier element functions</b>
13.1 - 01	Barrier compromised in well above BOP.
13.1 - 02	Barrier compromised in well above BOP. Well secured by cutting string using safety head. String blocking other valves (not required to be blocked) – double block
13.1 - 03	Barrier compromised in well without flow potential.
	<b>Non-classified incidents</b>
NCI - 01	Very small leak, able to pull out of hole and close normal lubricating valves to repair leak. Two barriers intact.

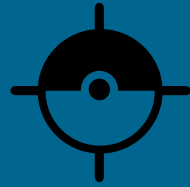
# Risks



What's in it for you?

Knowledge  
**Safety** Sharing  
Learning Quality  
Performance





PETROLEUM SAFETY AUTHORITY  
NORWAY

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