

Well Control Seminar 2024

Well Control – Focus and incidents

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Drilling & Well Technology

Norwegian Ocean Industry Authority

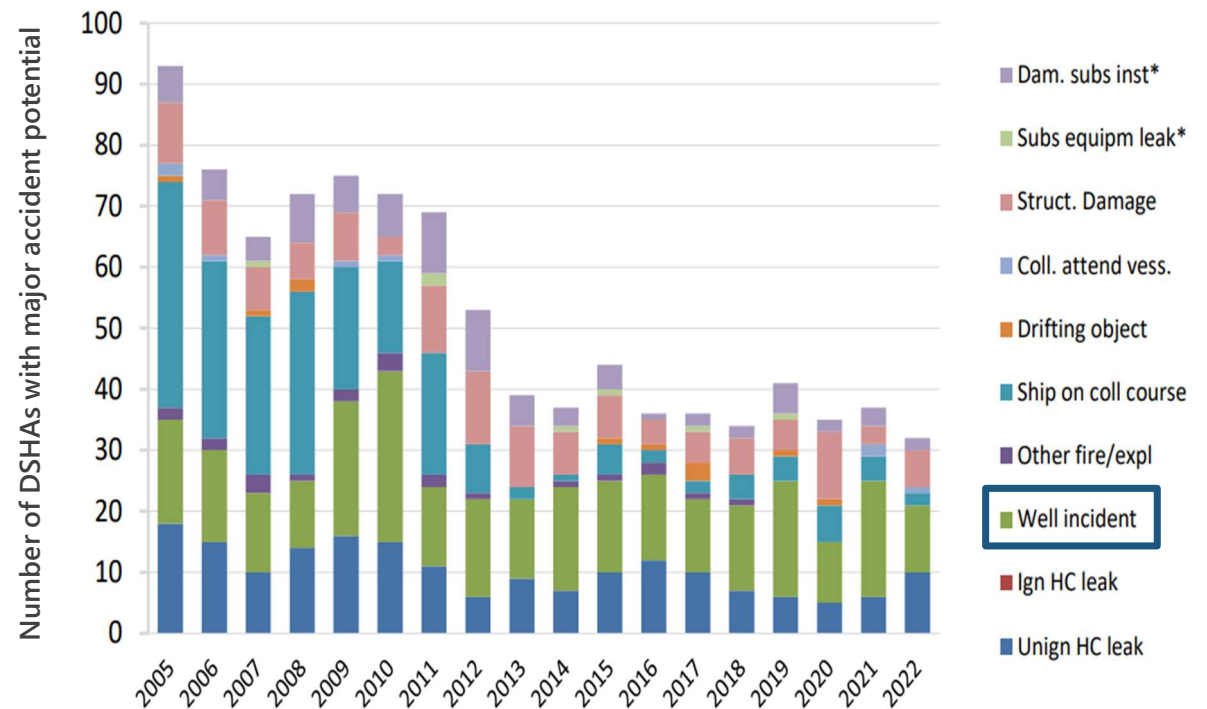
Well Control Incident Status - NCS

No significant reduction in the number of well control incidents on the NCS over the last decade.

- Initiated a qualitative study to give more insight into causal factors and measures for well control incidents related to Norwegian petroleum activities.

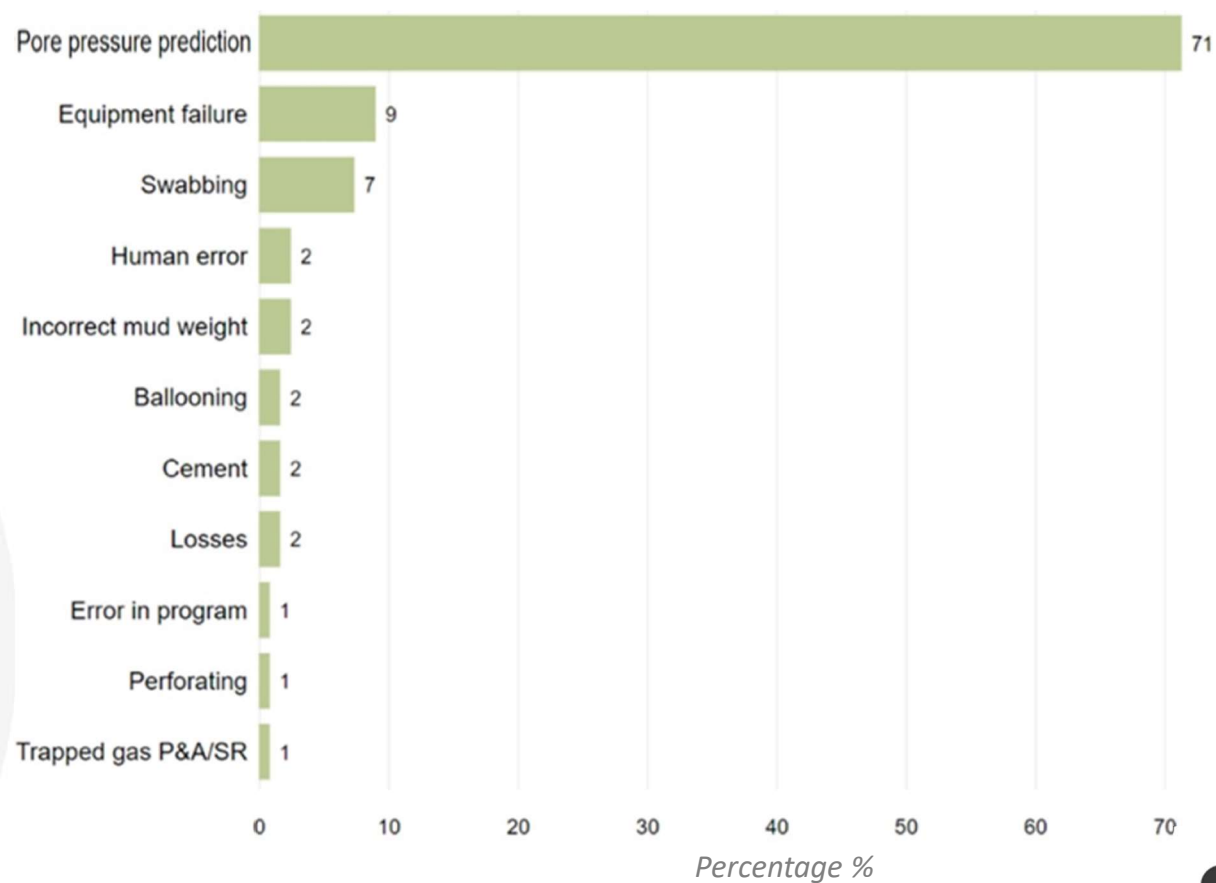


Defined situations of hazards and accidents (DSHAs)



Qualitative Study - Results

Main contributing factors of the 121 well control incidents reported during 2013 - 2022



Identified challenges

Well control competence

- Identified challenges with the traditional system for certification of well control competence.
 - Training more adapted to D&W operations in Norway
 - Focus on development of well control competence

Learning and transfer of experience

- Potential for improvement in the way companies share information about events and transfer experience
 - New digital possibilities still seem underutilized
 - Scenario-based training and learning is in demand

Risk management

- Need to further develop the processes for managing overall risk linked to drilling and well operations.
 - This particularly applies to handling uncertainty in formation pressure and subsurface conditions

Change management

- Extensive organizational changes have been carried out within the drilling and well organizations both onshore and offshore, including in relation to introduction of new technology.
 - A need to improve the process for managing organizational changes and how proposed changes affect both own organization, the organization of partners, as well as the interaction between the organizations.



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Havti - Well Control focus going forward



Ensuring Well Control Competence for each role

- Such as IOGP 024 and IOGP 476



Learning, experience transfer and training

- Such as IOGP 628, 501 & 502



Risk Management

- Using suitable methodologies in identification of Well Control risks in well- and operational planning



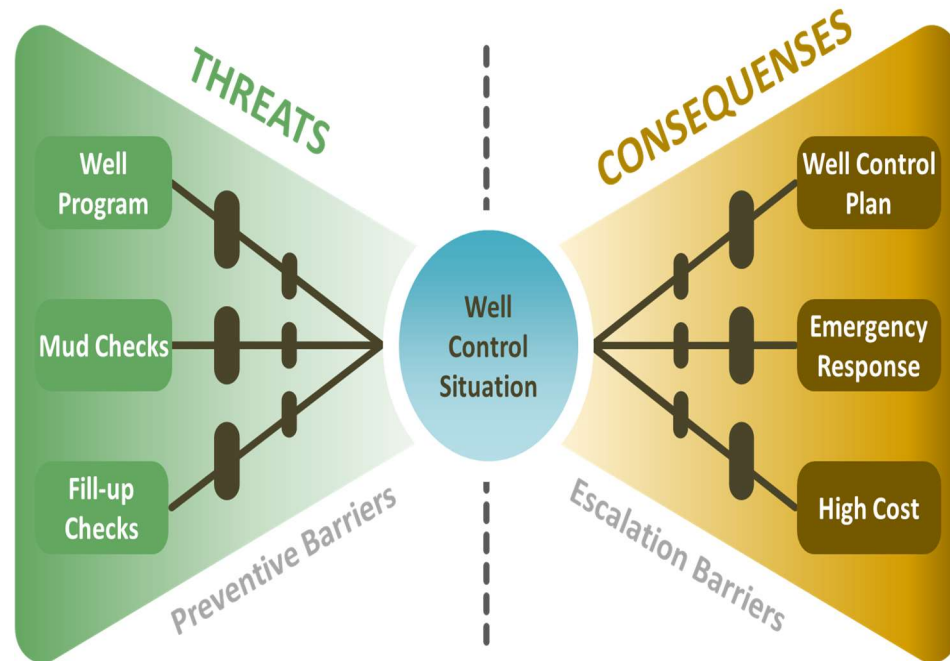
Change Management

- Change in drilling plans must include Well Control risk assessments

PPFG

Seismic Interp.

Risk Analysis



Blowout

Environmental Damage

Capping

Relief Well

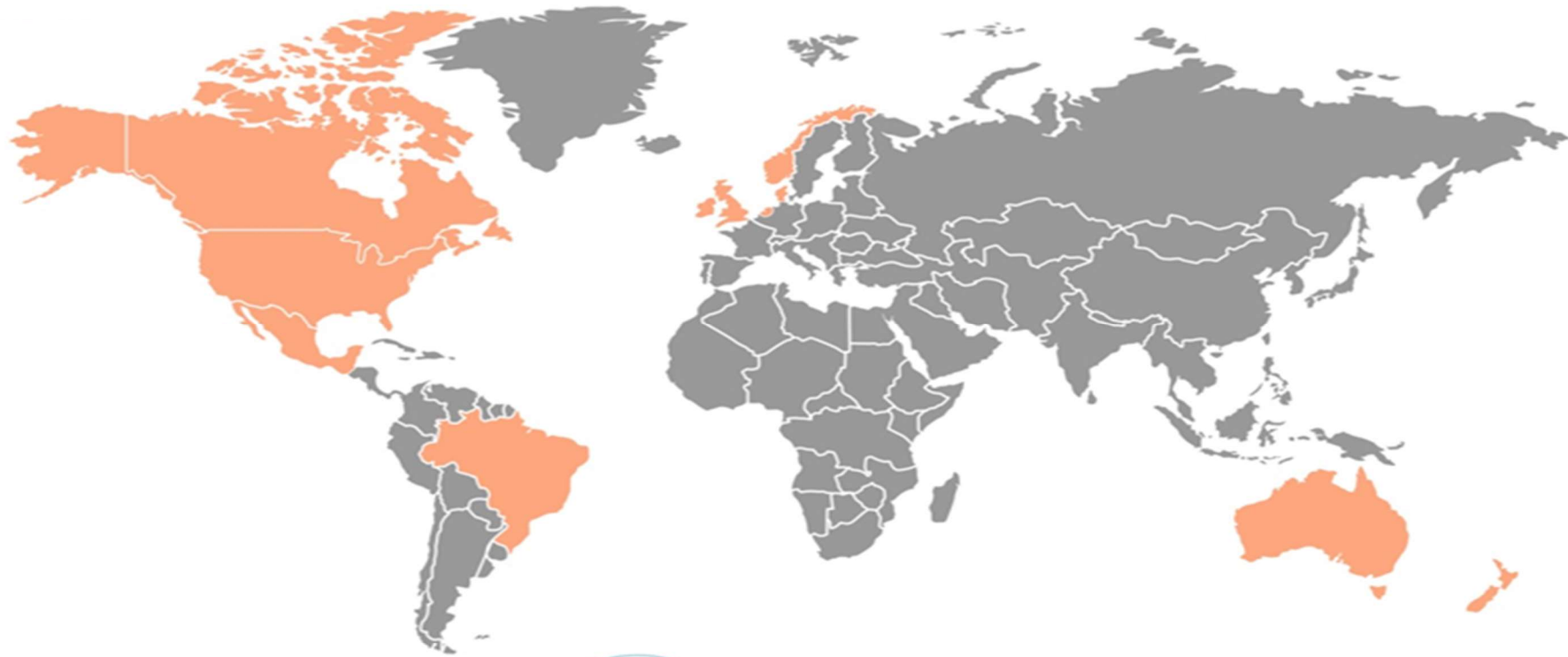




International Regulators' Forum
GLOBAL OFFSHORE SAFETY

International initiatives

Prevention of Well Control incidents



Canada Energy Regulator

Régie de l'énergie du Canada



CNSOPB



CANADA-NOVA SCOTIA OFFSHORE PETROLEUM BOARD

A877898





International Regulators' Forum
GLOBAL OFFSHORE SAFETY

Strategy

Highlight high priority risk topics to industry and support industry's focus on developing solutions.

1. Identify common risks and describe them in a Problem Statement
2. Engage industry associations to develop solutions
3. Assess solutions and support implementation

- IRF invite relevant industry organisations (IOGP/IADC) to develop solutions to the Problem Statements
- IRF «holds the pen» on the Problem Statement
- Industry «holds the pen» on the solutions, and implements desired changes globally



Which Problems are being tackled



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IRF and industry have prepared the following 3 problem statements to be addressed collaboratively

Prevention of well control incidents

- Greater emphasis on “left hand side” of well control bow-tie, particularly with regards to PPFG prediction and monitoring
- IRF contact: NOPSEMA (Australia)

Investigation quality / sharing & application of learnings

- Improve investigation quality and improve ways to embed learnings
- IRF contact: ANP (Brazil)

Digitalisation

- Reducing risks from automated systems with a human-centered design approach
- IRF contact: PSA (Norway)

Which Problems are being tackled

IRF and industry have prepared the following to be addressed collectively

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Recommended practice for pore pressure and fracture gradient analysis for well design – construction, intervention, and abandonment

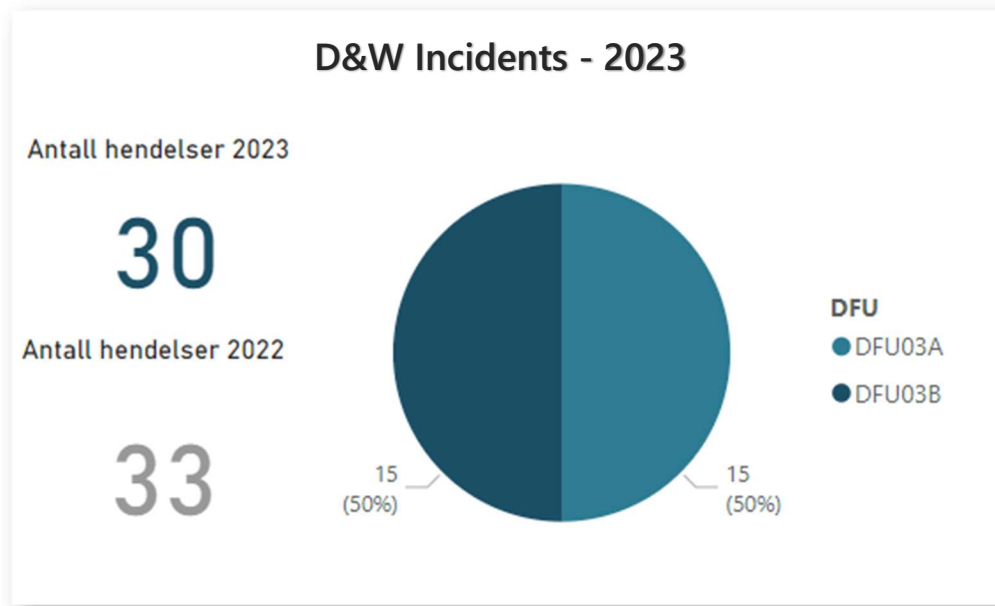
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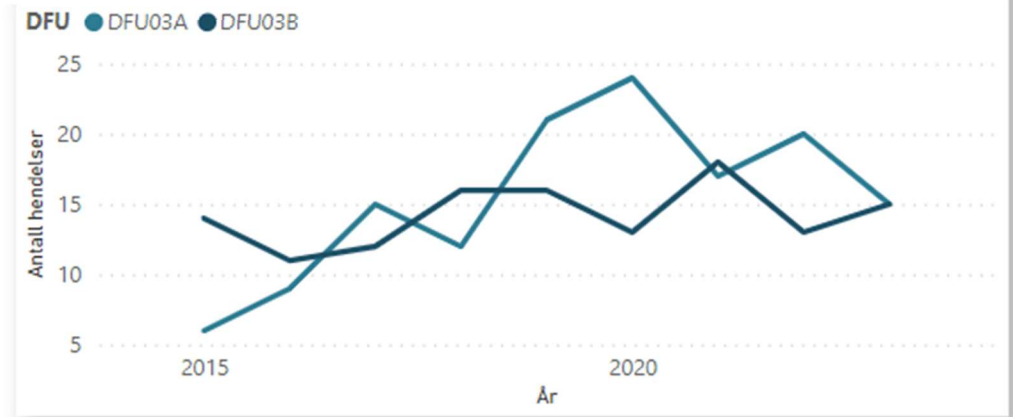
International Association of Oil & Gas Producers

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Well Control Incidents 2023 - NCS



D&W Incidents - Trend

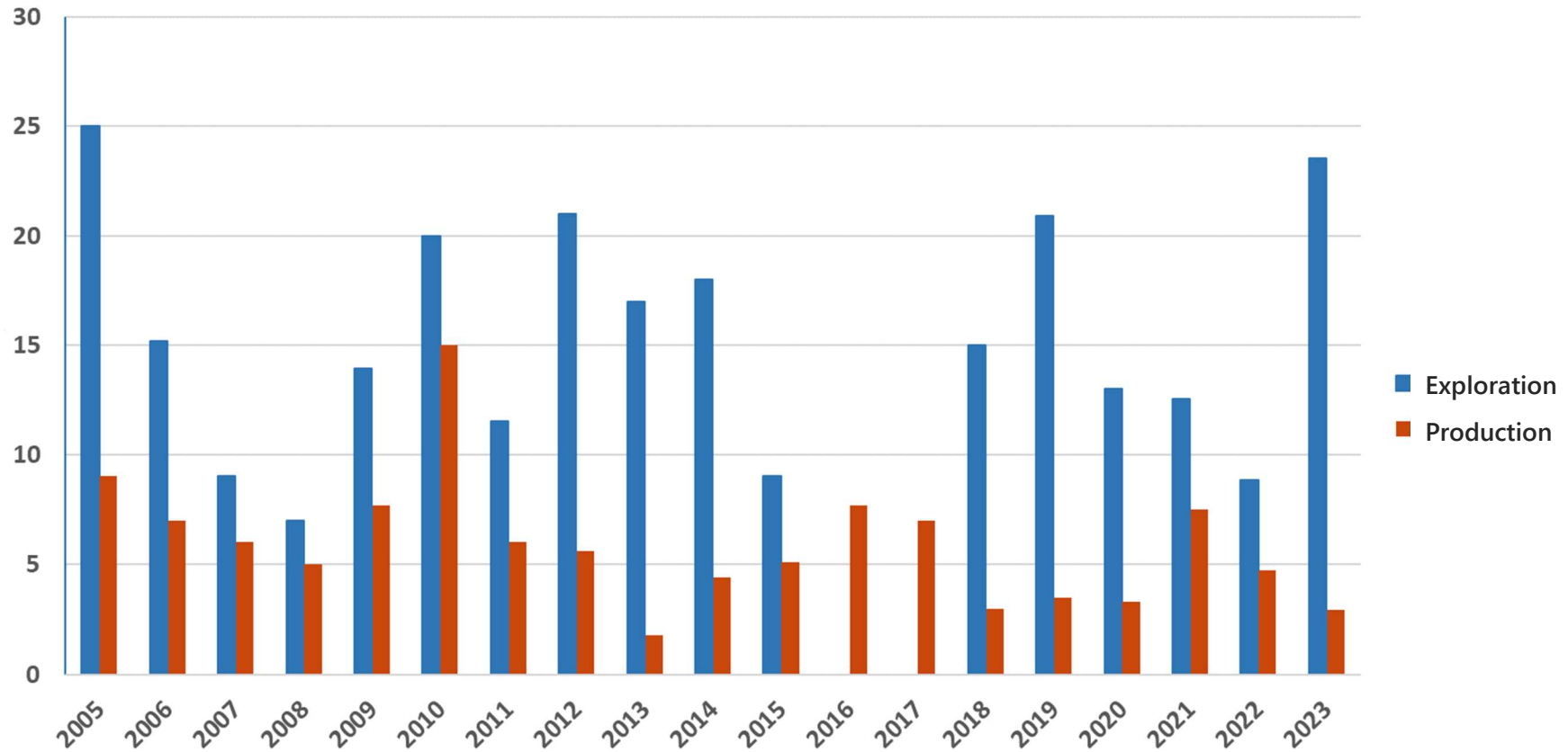


*** Note: Final numbers to be confirmed in RNNP 2023 report**



Well Control Incidents 2023 - NCS

Well Control Incidents – Normalized per 100 drilled well, Exploration vs. Production

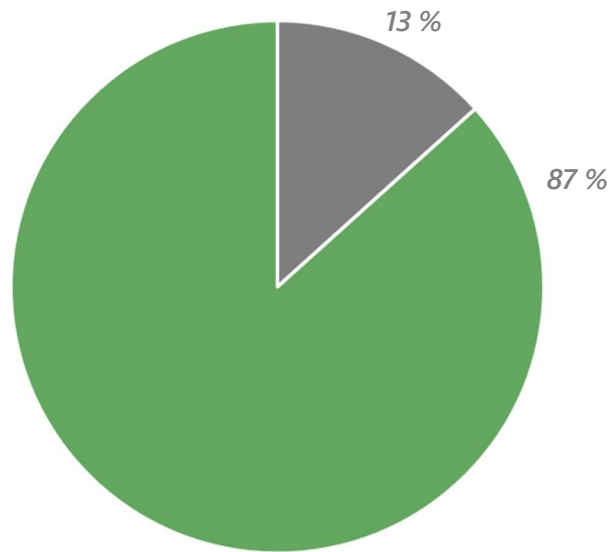


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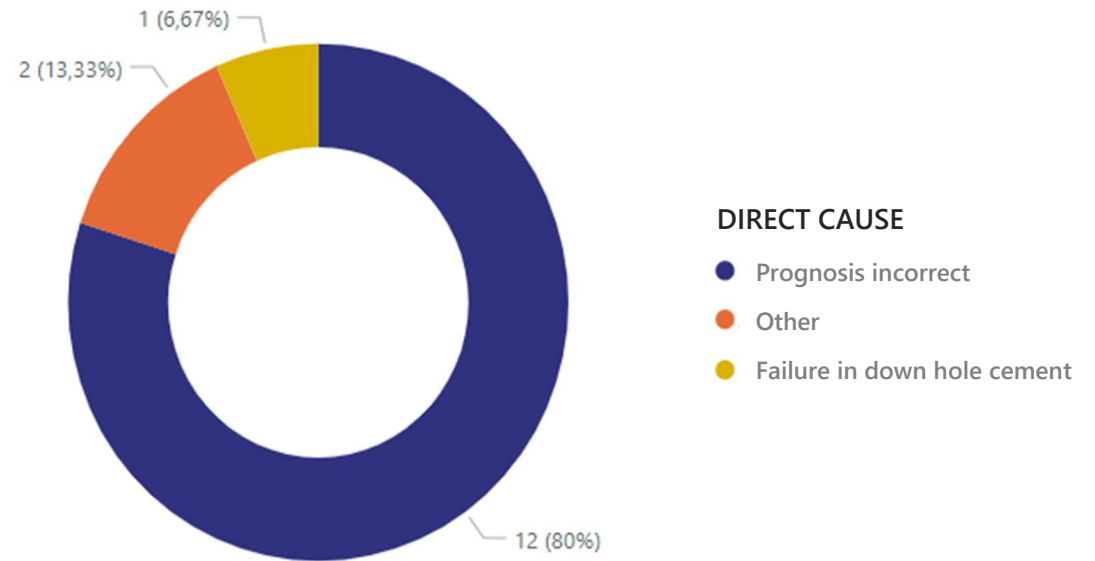


Well Control Incidents 2023 - NCS

Well Control Incidents 2023 - Category



Well Control Incidents 2023 – Direct Cause

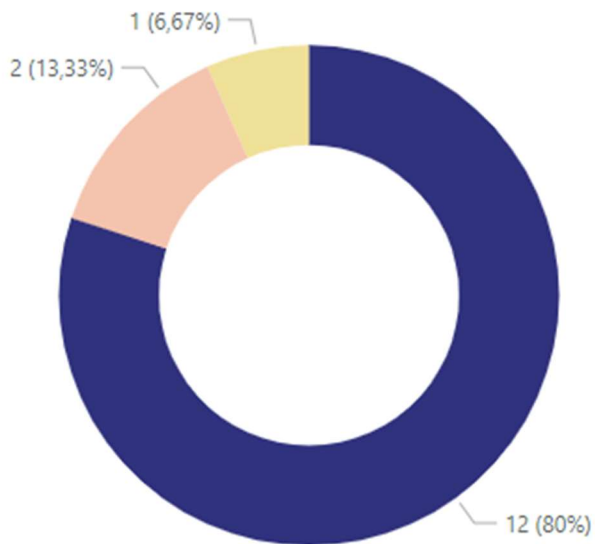


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Well Control Incidents 2023 - NCS

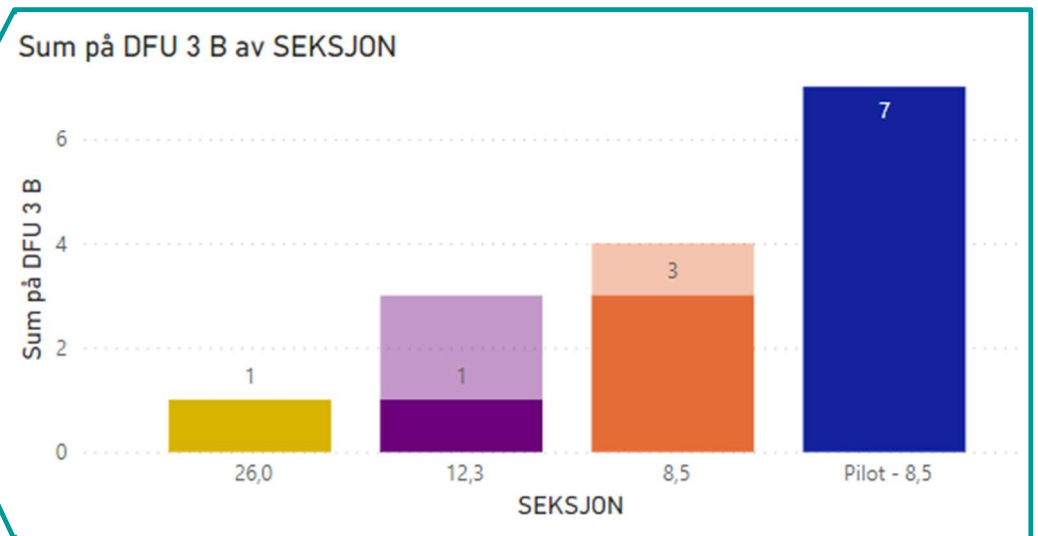
2023 – Direct Cause: Prognosis incorrect



DIRECT CAUSE

- Prognosis incorrect
- Other
- Failure in down hole cement

2023 – Direct Cause: Prognosis incorrect per Section



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