P&A SEMINAR
PLUGGING & ABANDONMENT
8th of May 2025

Havtil Norwegian Ocean Industry Authority

Norwegian Ocean Industry Authority

Welcome to the 2nd

Plug and abandonment Seminar 2025

Monica Ovesen, Head of Drilling & Well Technology

Theme: Innovation, Collaboration and use of new technology

Are we ready?
Outlook from 2025 - 2050

Several fields in production will have a decline in production rate from 2030…

More than 2000 wells expected to be permanent plugged between 2025 – 2050/2070.

Wild Well Control reports an increase in well control incidents globally

Are WE on NCS prepared ?

Update from HAVTIL P&A group

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Plug and Abandonment seminar 2025

Norwegian Ocean Industry Authority

09:00 – 09:10 Welcome & Introduction	Monica Ovesen, **Havtil**
09:10 - 09:35 Updates from HAVTIL PP&A	PP&A gruppen, **Havtil**
09: 35 –09:50 Expectations in Late life phase	Niels Erik Hald, Sokkeldirektoratet
09:50 – 10:20 UK & Norway Wells Collaboration	Lewis Harper/ Magnus Svensson
10:20 Coffee Break	
10:45 – 11:10 P&A Innovative Gas Tracking Technology	Erik Tegelaar, MPA
11:10 – 11:30 New wireline deployed technology for rigless	Svein Bjelland, Axter
11:30 – 11:45 RockSolid – a potential game changer in P&A	Kristian Solhaug, Interwell
11:45 – 12:30 Lunch break and Networking	
12:30 – 12:50 Status on SFA Plugging campaign	Thomas Kibsgaard-Vatn, **360Equinor**
12:50- 13:10 Hod A P&A Learnings & Opportunities for P&A	Martin Straume, Aker BP
13:10- 13.30 Updates Total Energies R&D Global	Johan Kverneland, Total Energies
13:30 – 14:00 Coffee break	
14:00 – 14:20 P&A updates from Greater Ekofisk Area	Petter Erland, ConocoPhillips
14:20 – 14:35 IOGP, Well abandonment for CO2 storage,	Ben Hern, Equinor
14:35 – 14:45 Wrap-up (What did we learn/share today)	Nina Ringøen, Havtil

Innovation, collaboration and use of new technology

- ❑ Several fields are in the late life phase
- ❑ Use of new technology for permanent plugging is crucial for continuous improvements
- ❑ Collaboration and sharing of knowledge and lessons learn
- ❑ Continuous improvement is one of the key principle in the Norwegian HSE regulations

Facility Regulations § 9

Qualification of new technology and new materials

TRL-process API 17N

Criteria's shall be drawn up for
- **Development,**
- **Testing and**
- **Use**

Includes investigation and obtaining objective proof that the needs for a specific intended use are covered.

The technology or methods shall be adapted to already accepted solutions *(Verification /best practice)*

Guidance Level: DNVGL RP-A203 and Oil & Gas UK Guidelines Use of Barrier Materials in Well Decomissioning Guidelines

New technology as mentioned in the first subsection, may be new products, new materials, analysis tools or known products used in a new way.

The qualification or testing shall demonstrate that applicable requirements can be fulfilled.

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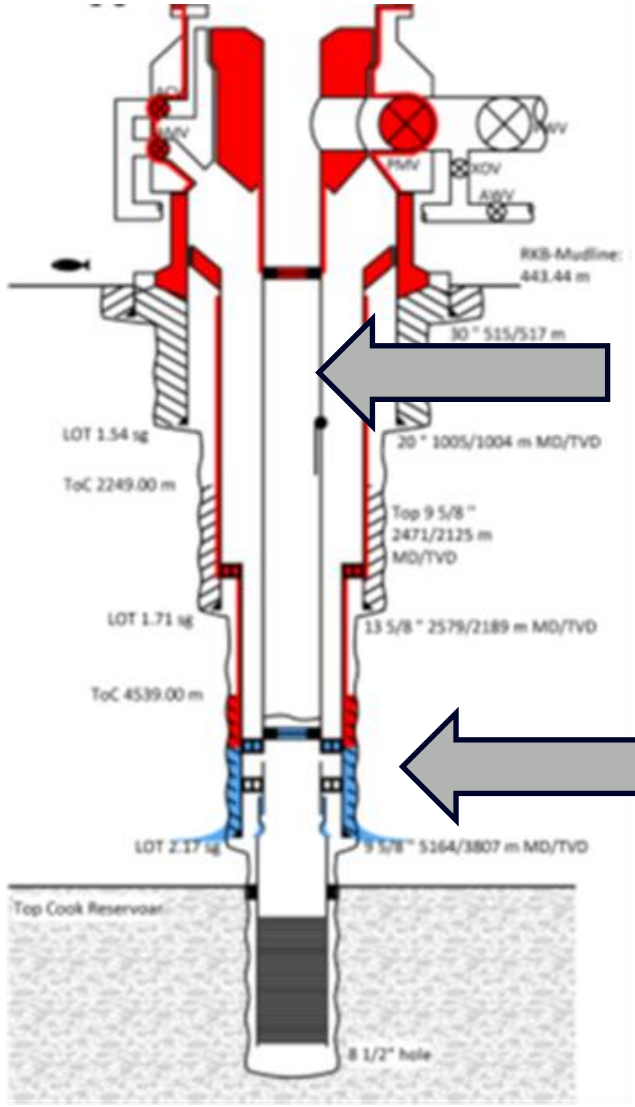
A high safety level is perishable....

Well Control Incidents PP&A

Recordable well control incident PP&A 2024

- Re-entry of a temporary abandoned subsea well without continuous monitoring of primary and secondary barrier
- Phase 1 was executed with LWI. Well was temporary abandoned for one year.



No pressure monitoring

No pressure monitoring - Reservoir pressure: close to HPHT (virgin)

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Root causes for "well incidents"

''It was not recognized that an MOC was needed"

''The risk was not identified"

''Considered a routine operation"

''Lack of routines for checking (test port blind plugs)..."

''Procedures for conducting operation not completely aligned"

''MOC should have been performed considering the 9 7/8" could not be recovered as planned"

''Decision to empty trip tank to poor-boy was done withtout a risk assessment"

''A new risk assessment should have been done... it was not considered a new risk"

''MOC not documented"

Not all direct and underlying causes are technical causes!

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Well control incident

Location: <Location>
Rig type: <Rig type>
Well type: <Well type>
Date: <Date>

Plan:
- Description of plan……

Operation with course of events:
- Event description……

Reason for events:
- Free text evaluation

Lessons Learned:
- Free text evaluation

Recommended actions:
- Free text evaluation

Well control incident

Norsk olje&gass

Location: <Location> **Rig type:** <Rig type> **Well type:** <Well type> **Date:** <Date>	**Critical Issues:** • Free text evaluation

	Direct Cause:		**Underlying Cause:**
	Prognosis incorrect		Risk accepted
	Shallow gas		Error in program / procedure
	Shallow water flow		Procedure not followed
	Incorrect mud weight		Lack of competence
	Swabbing		Communication error (missing, wrong, incomplete, etc.)
	Ballooning		Incorrect use of equipment
	HC accumulation below barrier element		Equipment failure
	Surface pressure control system failure		BOP failure
	Downhole mechanical barrier failure		Other: ……
	Downhole cement / casing barrier failure		
	Other: ……		

Technical casues / Organizational causes / Operational causes (?)

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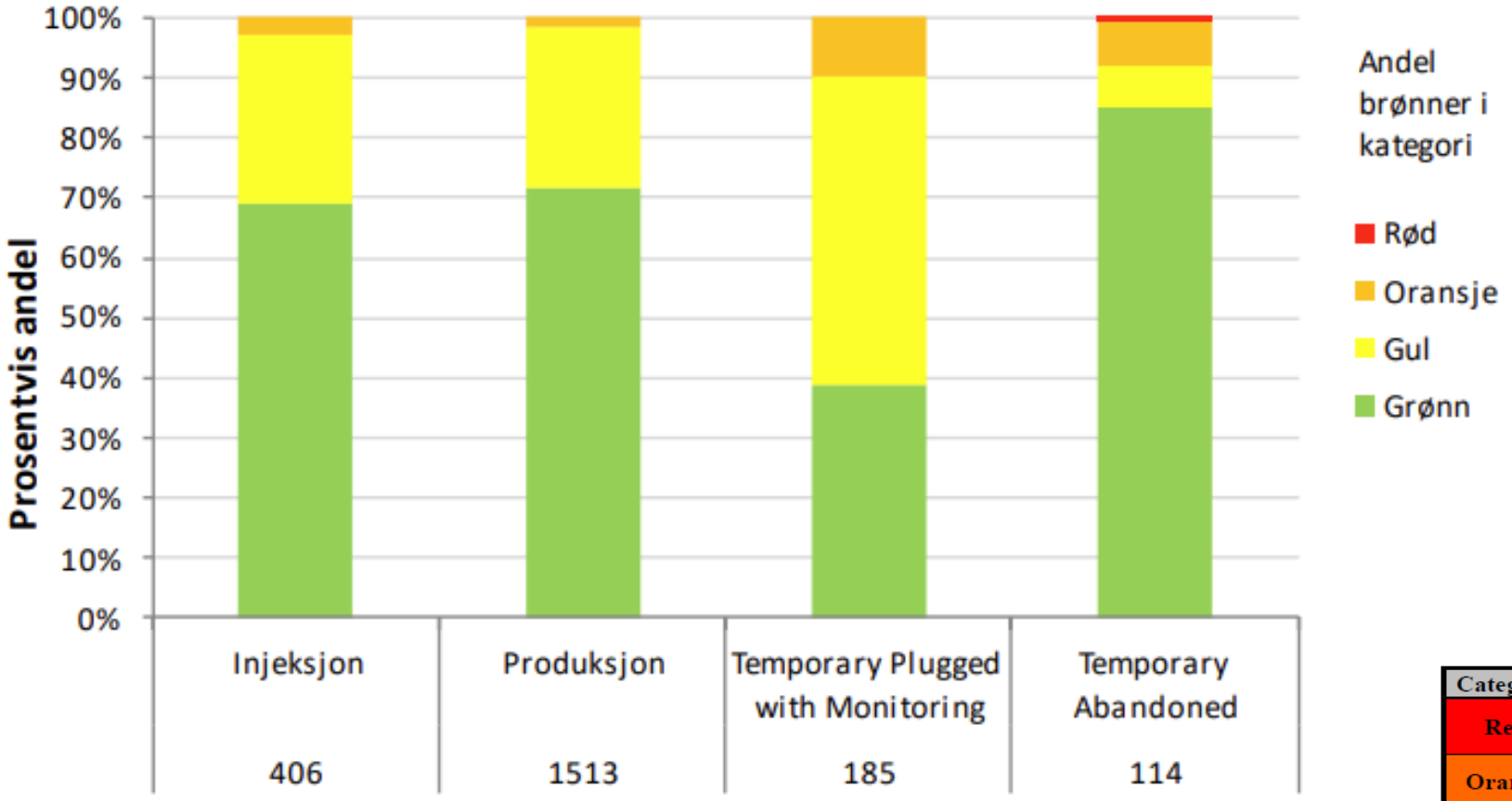
RNNP 2025 - «Active wells» on NCS

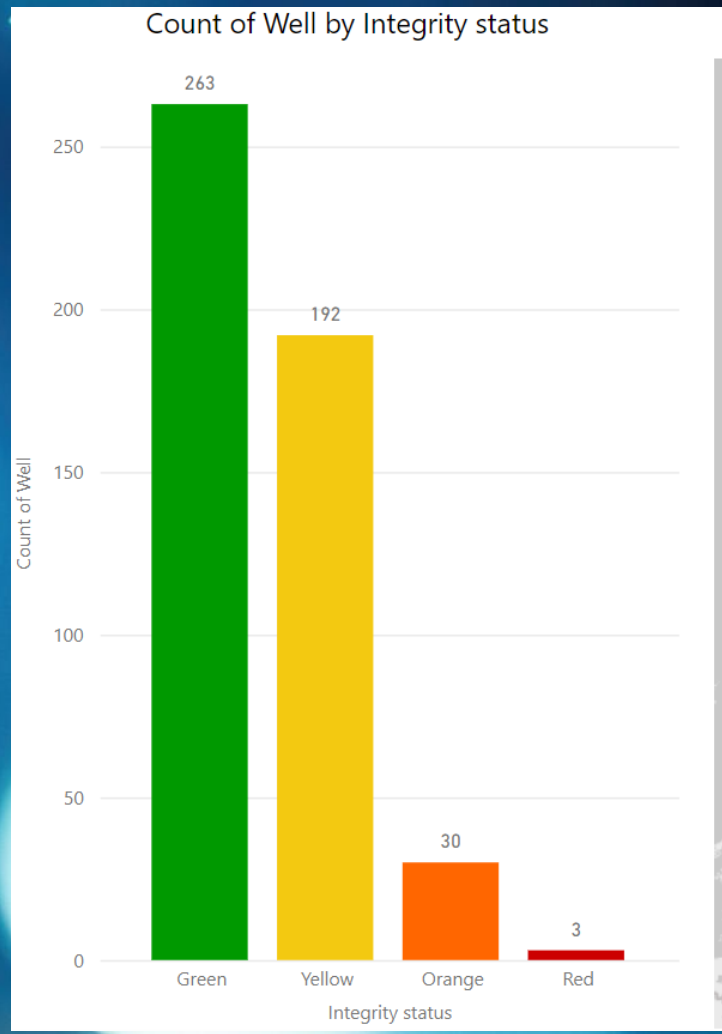
From 2245 wells in 2024 to 2218 wells in 2025

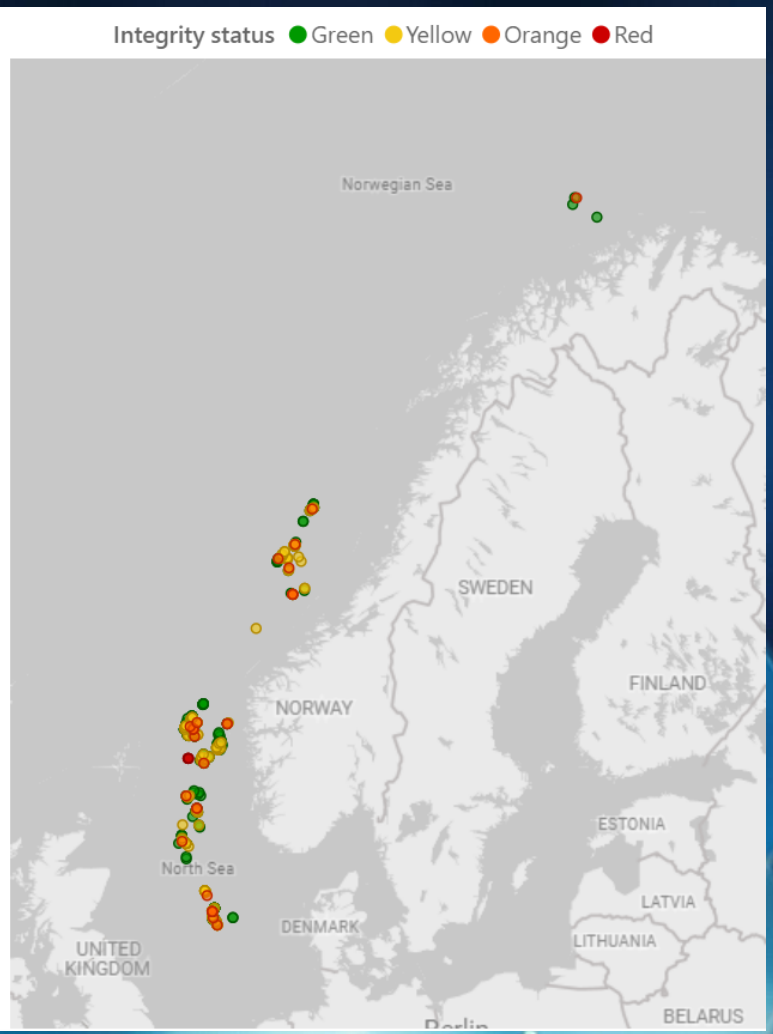


Category	Principle
Red	One barrier failure and the other is degraded/not verified, or leak to surface
Orange	One barrier failure and the other is intact, or a single failure may lead to leak to surface
Yellow	One barrier degraded, the other is intact
Green	Healthy well - no or minor issue

Norwegian Continental Shelf 2024

About 488 of 2245 wells on NCS are temporary abandoned





Well Inventory 2024:

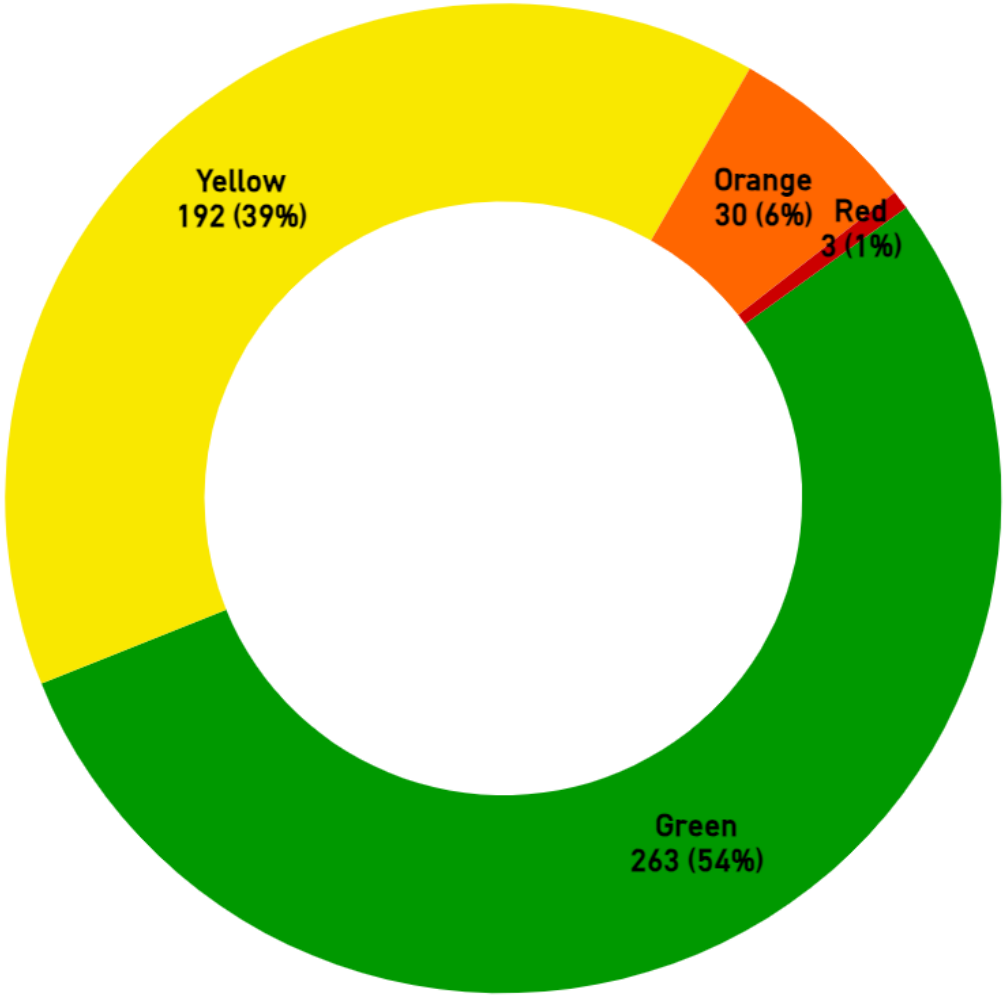
- **+/- 2245 wells**
  - Updated 1 January 2024
    - **488** temporary plugged & abandoned wells (22%)
  - Updated 15th of March 2024

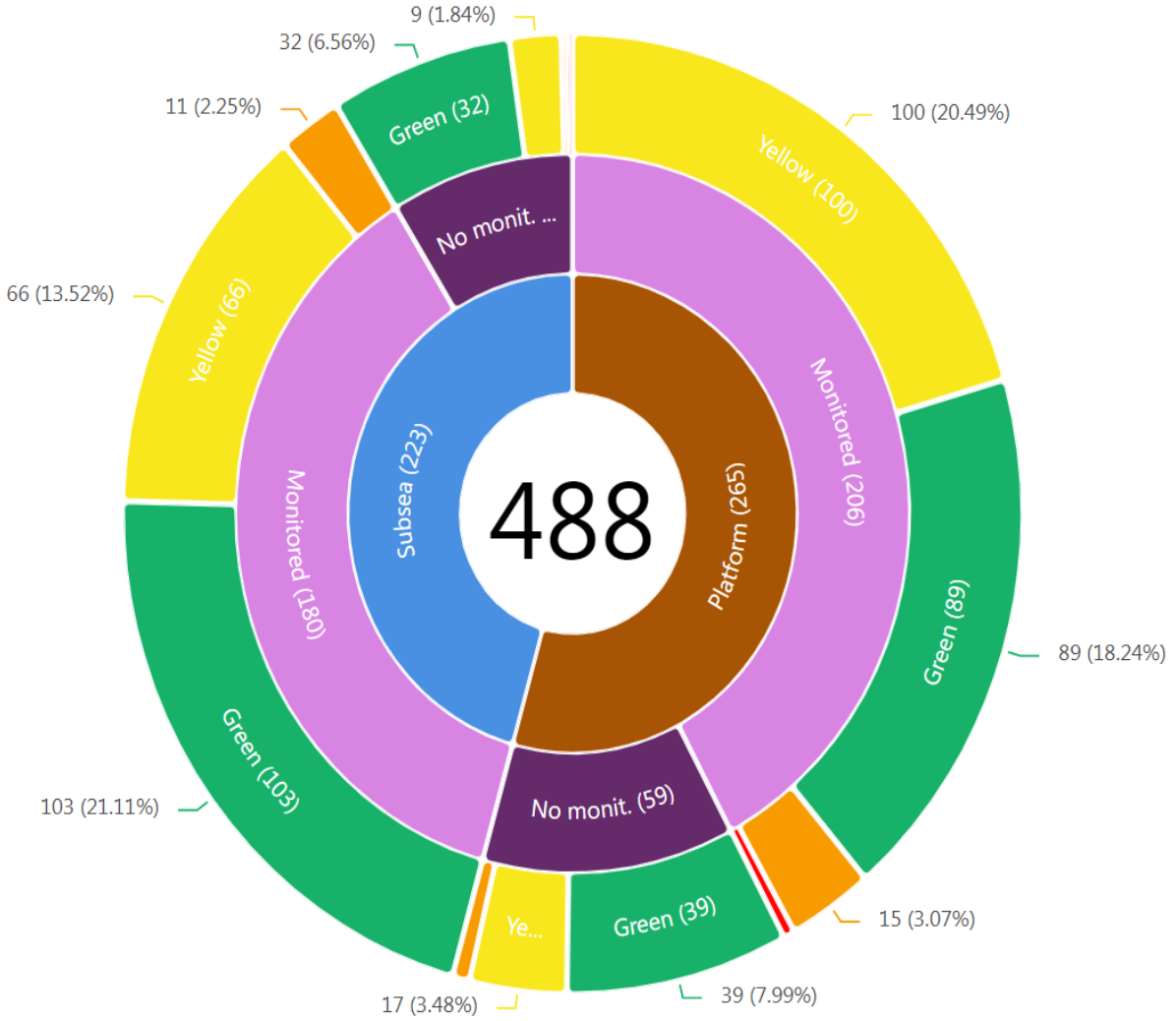
Permanent plugged wells:

+/- 1800* permanent plugged exploration and development wells

* Updated October 2024, NOD

Temporary abandoned wells 2024





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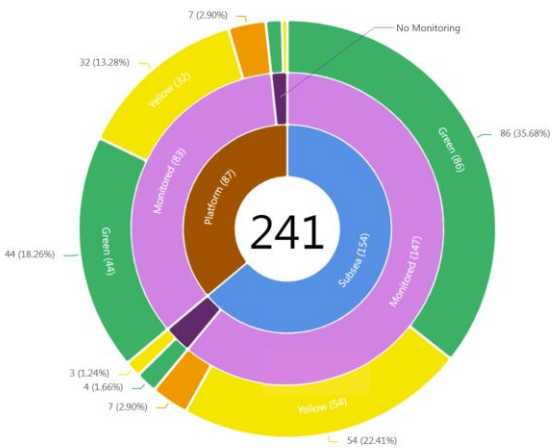
EU Regulation Methane emission Article 18 WELLS

….reports containing information on quantification of methane emissions

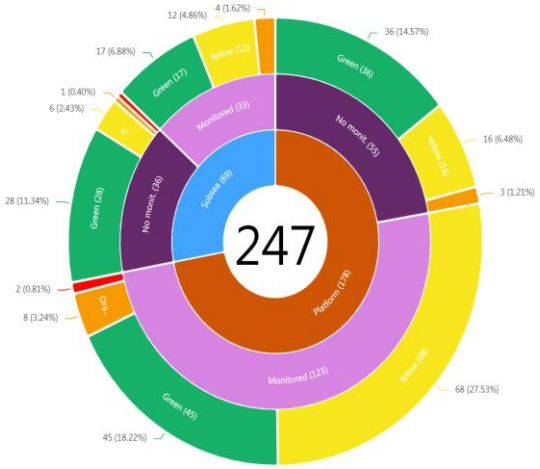
Inactive wells

+/- 241



Temporary plugged wells

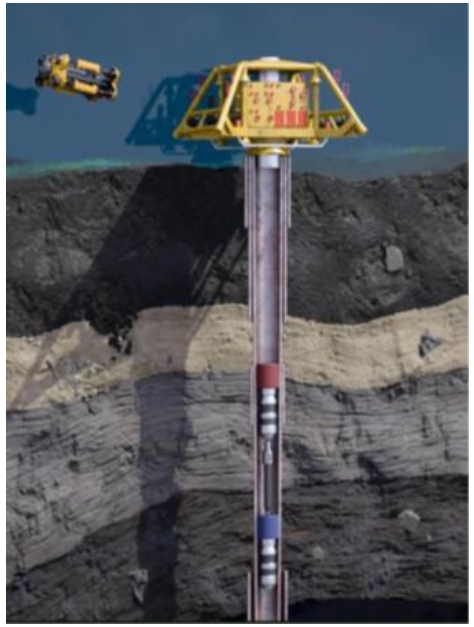
+/- 247



Permanent plugged and abandoned wells

+/- 1800

Will not be re-entered



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Sharing of knowledge

Gather information, develop and share knowledge and best practise with the global P&A community.

Creeping shale / Creeping formation:

- Review of qualification process and status update
- Input to the revision of NORSOK D-010 EAC table 52 Creeping Formation

Permanent plugged and abandoned wells

- Inventory list
  - Exploration wells +/- 1400
  - Development wells +/- 350
- Seepage/leaks, and to what standard?

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Collaboration with other authorities and industry partners is key

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