Havtil
Havindustritilsynet

Klassifisering av brønnkontroll-hendelser

OFFSHORE NORGE

135 – Offshore Norge
Recommended guidelines for Classification and categorization of well control incidents and well integrity incidents

A well control incident is in drilling & completion and live well intervention defined as a failure of barrier(s) or failure to activate barrier(s), resulting in an unintentional(1) flow of formation fluid –

i) into the well
ii) into another formation or
iii) to the external environment.

1) A planned flow is not a well control incident (for instance DST, mini-DST etc.)

The matrix's left column is organized according to criticality into four colour coded categories:
- Red – Critical well control incidents
- Yellow – Serious well control incidents
- Green – Regular well control incidents
- Grey – Well control experiences for learning

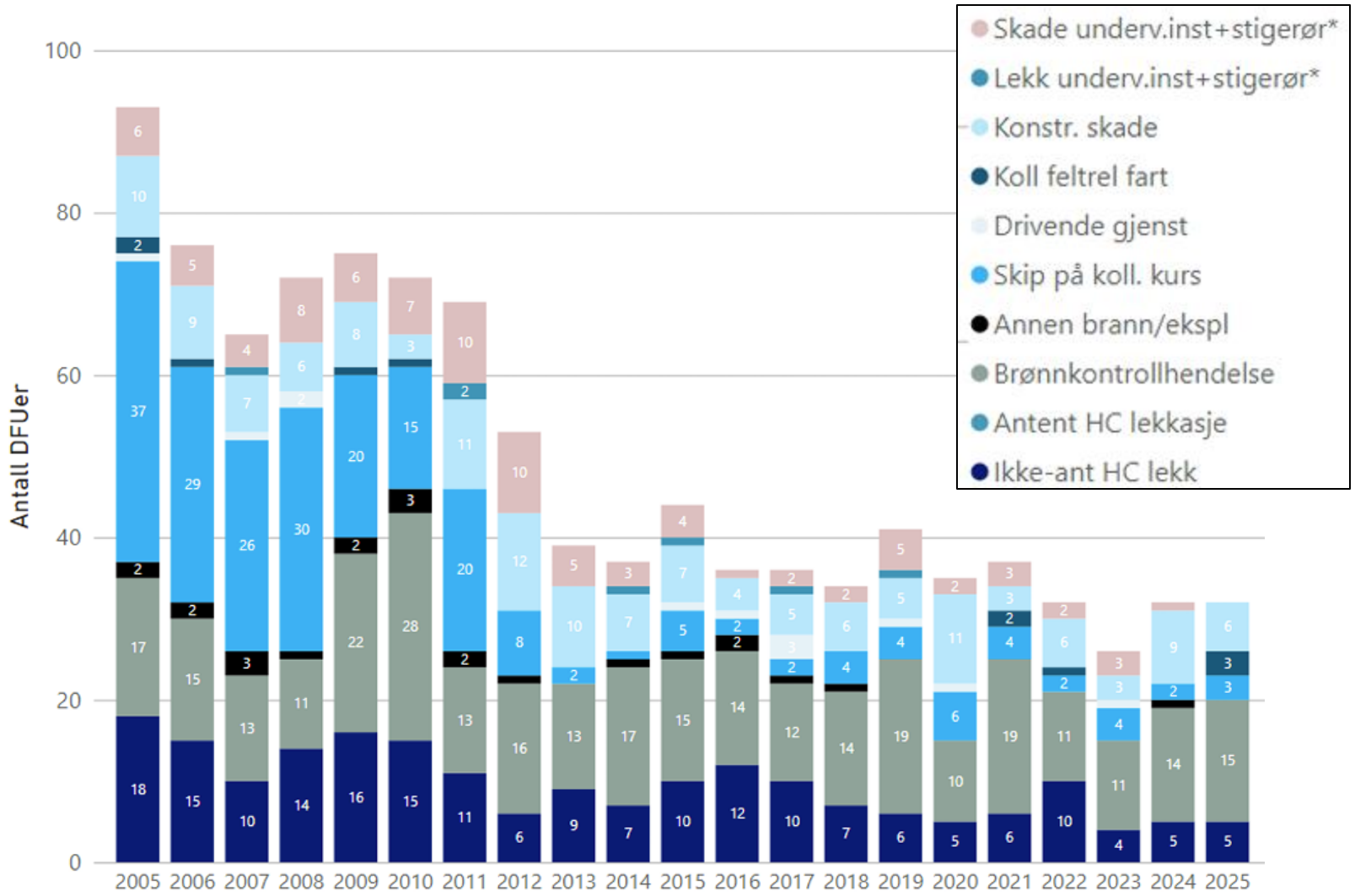
Degree of seriousness	Description	Guidance
Level 1- Red Critical well control incidents	**1. Blowout**	1. Blowout to environment or facility including underground blow out. Failure or malfunction of primary and secondary barriers.
	2. High HC influx volume/rate	2. Failure of primary well barrier. Successful activation of the secondary well barrier. Critical kill operations with high risk of blowout.
	3. High-rate shallow gas flow	3. Shallow gas incident with unsuccessful kill operation. Gas flowing to seabed or installation (diverter), until all gas is released.
	4. High-rate shallow water flow	4. Shallow water flow influencing stability of an installation (jack-up, fixed installation or template)
Level 2 – Yellow Serious well control incidents	**1. Medium HC influx volume/rate**	1. Influx volume above design criteria for kick margin, but possible to regain barrier with standard kill procedure.
	2. Total Fluid barrier lost	2. Loss situation without being able to maintain the hydrostatic pressure in the well.
	3. Medium rate shallow gas flow	3. S hallow gas incident with kill operations or gas handled on installation by diverter.
Level 3 – Green Regular well control incidents	**1. Low HC or water influx volume/rate**	1. Influx volume below design criteria for kick margin, and successfully regained barrier with standard kill procedure without degrading well integrity.
	2. Low-rate shallow gas flow	2. Shallow gas incident with kill operations. No gas handled on installation (riser-less operation)
	3. Low-rate shallow water flow	3. Shallow water flow incident.
Level 4 – Well control experiences for learning	**1. Non-continuous gas/water migration in well - with all barriers in place**	1. Release of a barrier element with contained volume of gas/water trapped below or behind casing.
	2. Loss of primary or secondary barrier without influx into the well	2. Incidents where a barrier is compromised but no influx has occurred.
	3. Low-rate shallow gas/water flow from riser-less pilot hole drilled with floating unit	3. Shallow gas/water flow when de-risking planned well location with small-size pilot hole. Handled according to plan, without escalation.
	4. Failed inflow test of mechanical barrier element	4. Minor influx during a failed inflow test. Fluid barrier re-established according to plan, without escalation.
	5. Influx suppressed with Surface Back Pressure MPD system	5. A single influx volume within defined limit in MPD well control matrix, and primary barrier successfully regained without escalation. Influx circulated out through the MPD system.

RNNP kvalitativ dybdestudie av brønnkontroll-hendelser

Kvalitativ dybdestudie (Proactima+) i 2022 for å få oppdatert innsikt om årsaksforholdene bak brønnkontroll-hendelsene de siste 10 år, identifisere mulige trender, og identifisere utfordringer til næringen om forbedringsområder.

- **Fant ingen signifikant reduksjon i antall brønnkontroll-hendelser fra 2013 til 2022.**





*Innenfor sikkerhetssonen

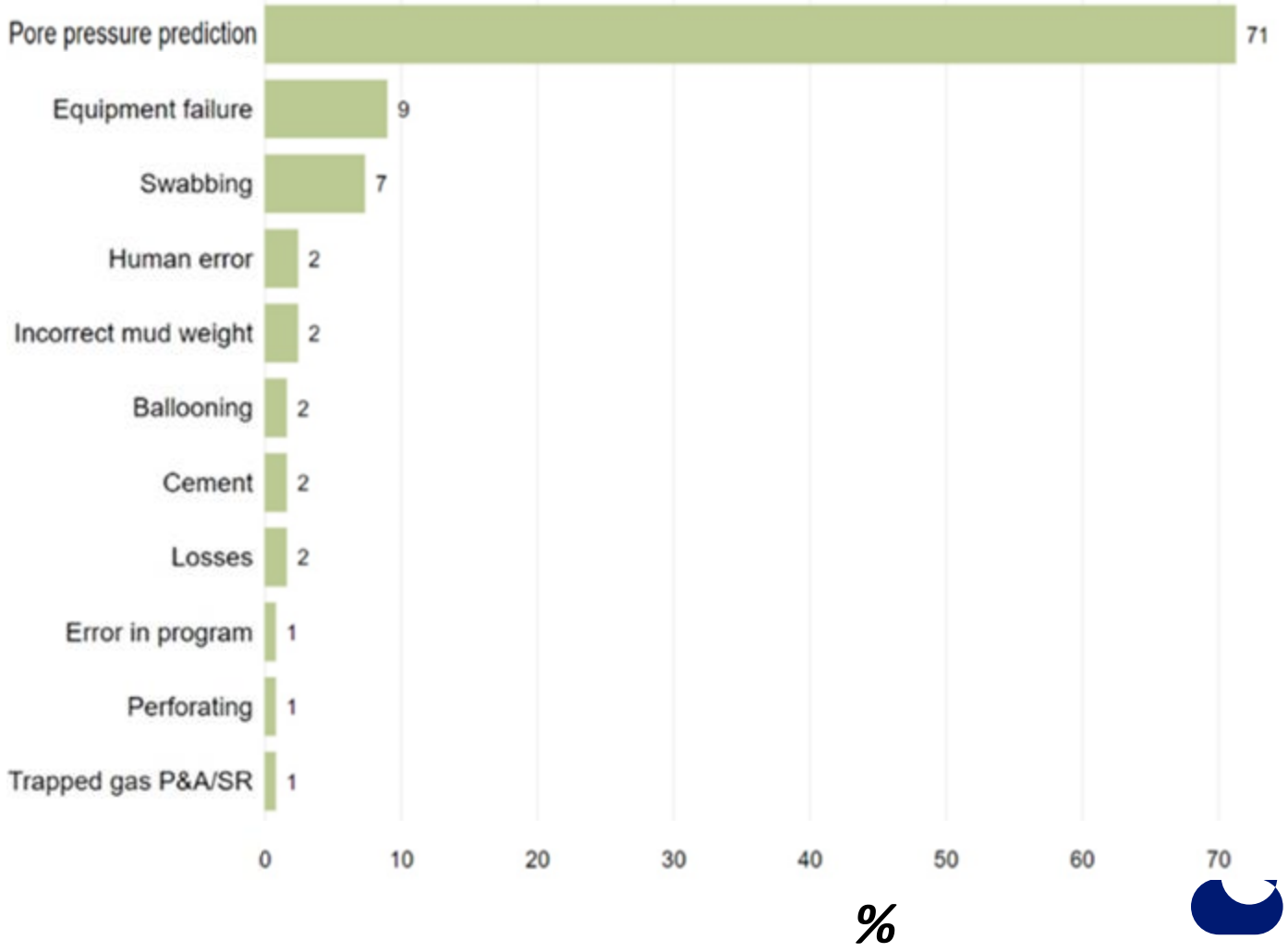
Figur 6-1 Oversikt over alle DFUer med storulykkespotensial på innretninger

Fra RNNP 2025 hovedrapport

Resultat

Direkte årsak til 121 analyserte brønnkontroll-hendelser i tidsrommet 2013 til 2022

Basert på operatørers innrapportering til Offshore Norge og Havtil.

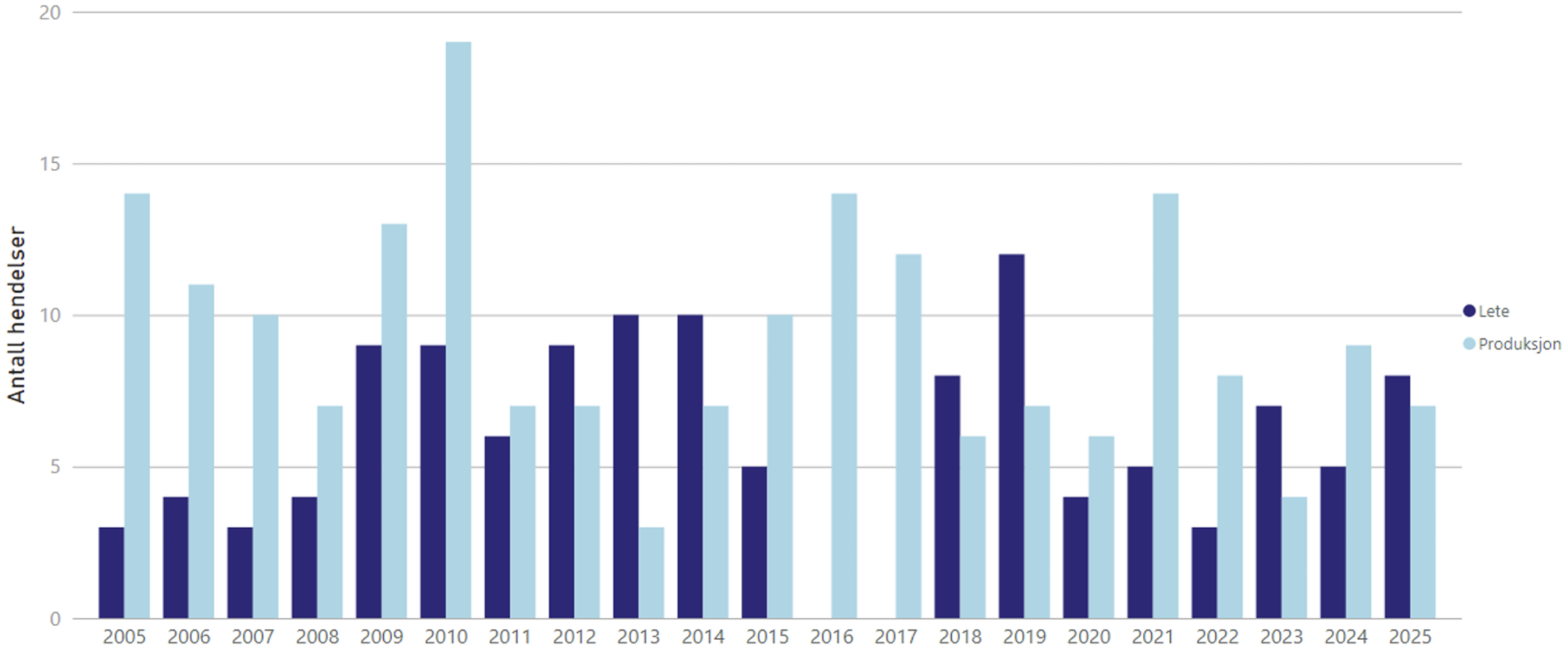


Havtil
Havindustritilsynet

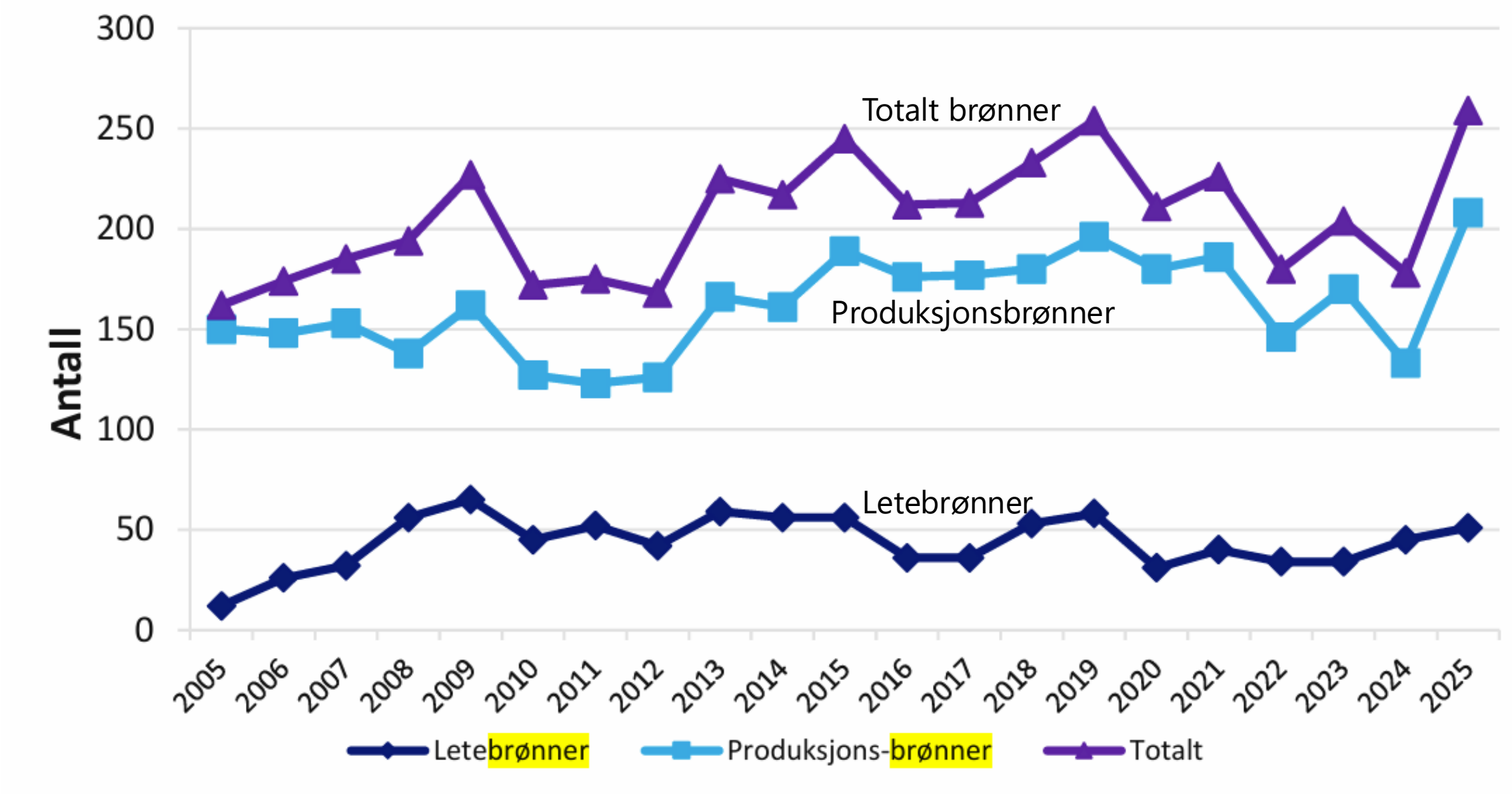
Statistikker om brønnkontrollhendelser fra RNNP hovedrapport 2025

Havtil
Havindustritilsynet

Brønnkontrollhendelser innen boring

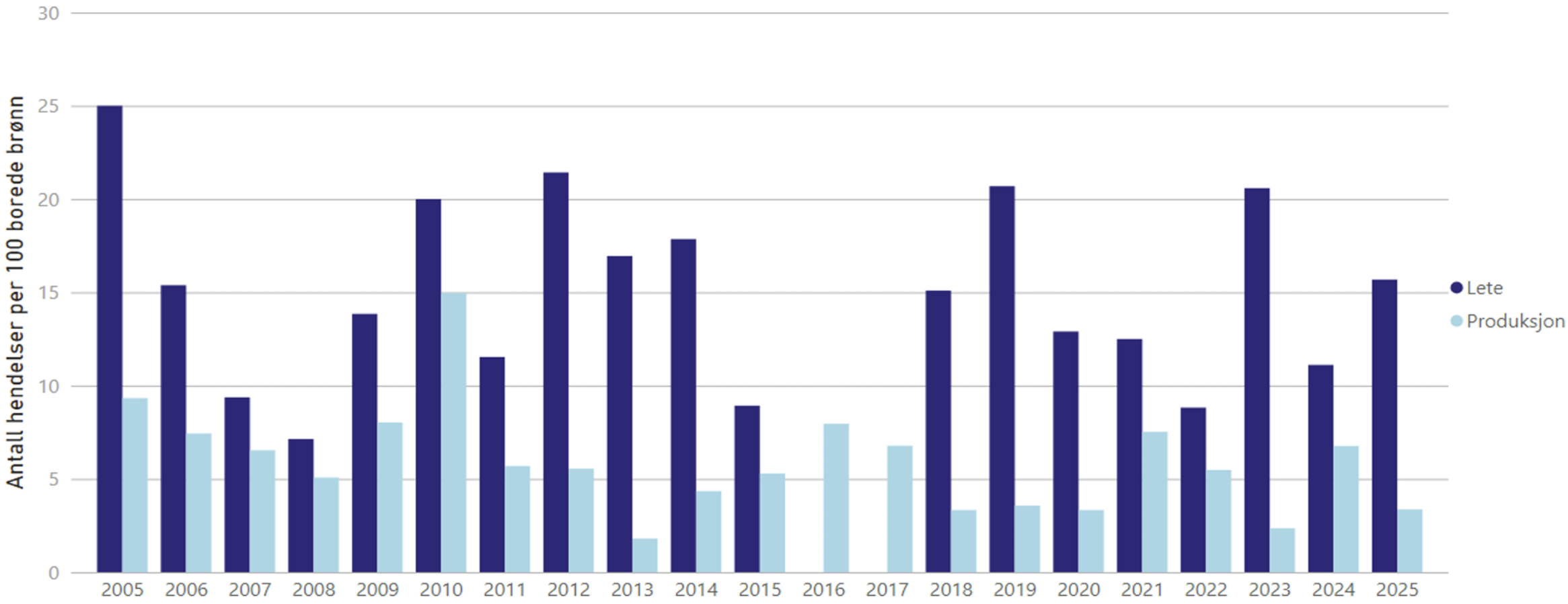


Figur 6-12 Antall brønnkontrollhendelser i lete- og produksjonsboring, 2005-2025



Figur 3-3 Utvikling i antall brønner boret per år lete- og produksjonsbrønner 2005-2025

Brønnkontrollhendelser innen boring - normalisert



Figur 6-13 Brønnkontrollhendelser per 100 brønner, lete- og produksjonsboring, 2005-2025

Havtil
Havindustritilsynet

Havtil analyser av brønnkontroll-hendelser siste år

- Hendelsesrapporter + «One Pager»
- Møter med operatør om brønnkontrollhendelser
- Granskingsrapporter fra enkelte hendelser (operatør/boreentreprenør)
- Aktivitets-data fra daglige borerapporter (DBRS)

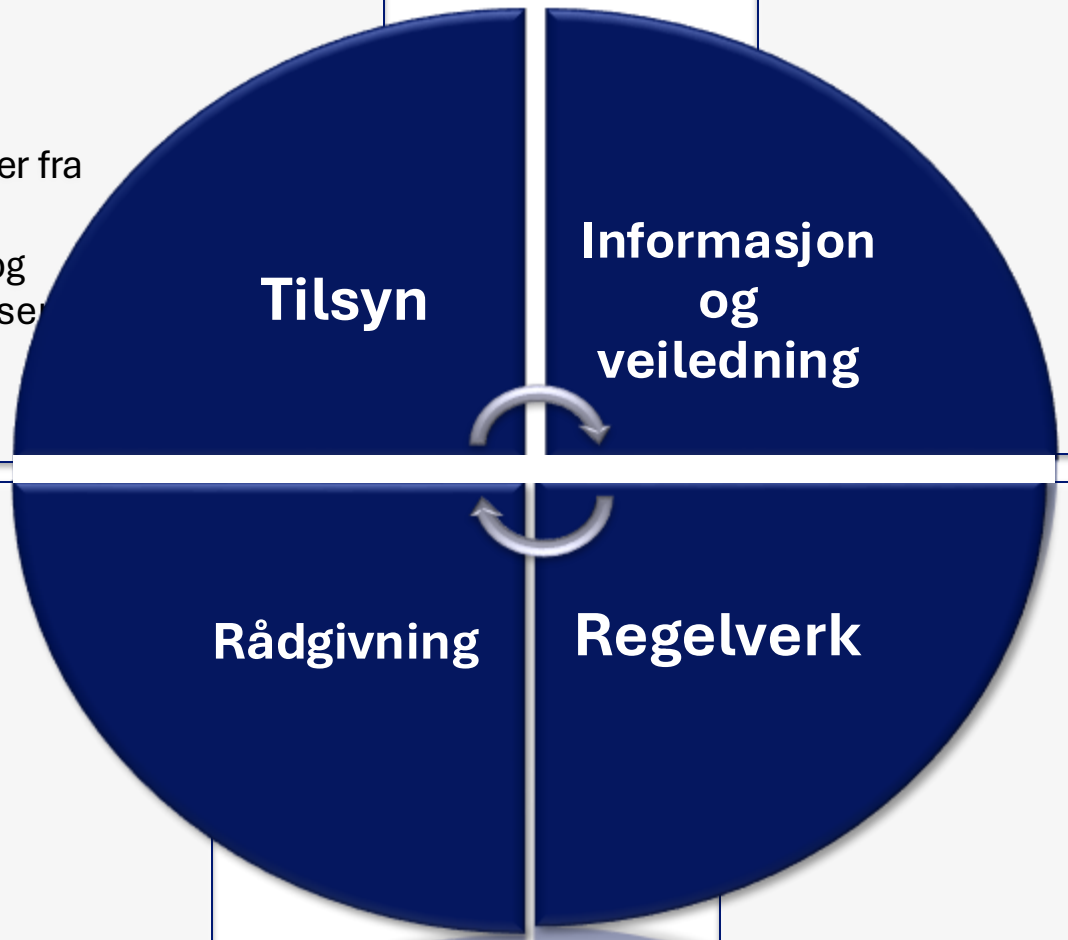
- Direkte årsak domineres fremdeles av **«Prognosis incorrect»**
- Indirekte årsak domineres fremdeles av **«Risk Accepted»**

- Tid brukt på normalisering av alle brønnkontroll-hendelsene i 2025, frem til planlagte operasjoner i boreprogrammet kunne fortsette: ***Ca. 35 døgn***
  - En grønn brønnkontroll-hendelse tok 8 døgn før planlagte operasjoner kunne fortsette
  - En rød hendelse tok 4 døgn
  - En brønn ble midlertidig forlatt for revidert planlegging (denne tiden ikke medregnet)

Havtil
Havindustritilsynet

Havtil B&B Strategi - Brønnkontroll 2026

- Tilsyn med B&B fra faste og flytende innretninger
  - fokus på planlegging, gjennomføring og med brønnkontrollutstyr
- Tilsyn med brønnintervensjoner fra LWI og faste innretninger
- Tilsynsserie – gjennomføring og vurdering av utblåsningsanalyser
- PP&A tilsyn
- Hendelsesoppfølging



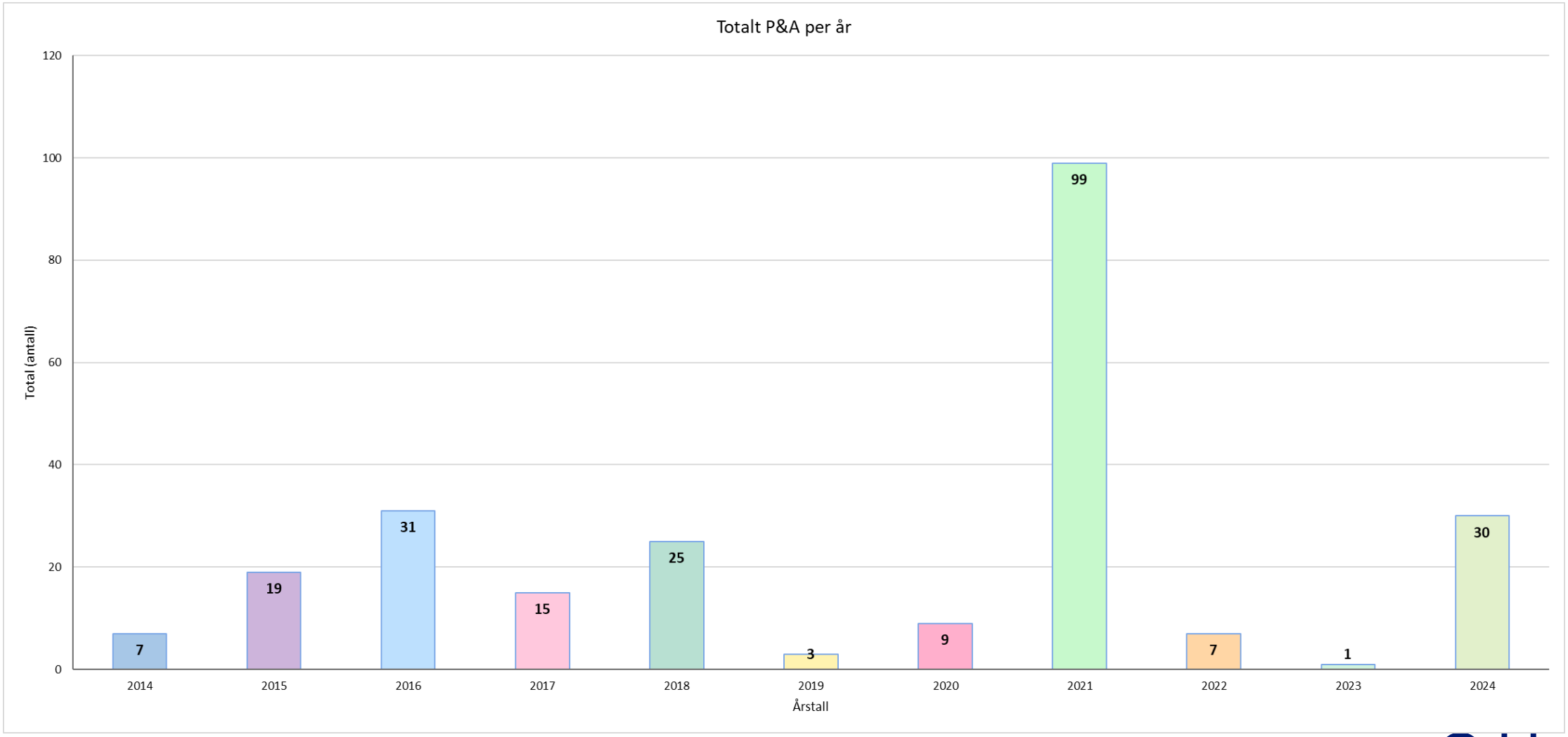
- Fagstudier, fra eksterne fag-spesialister.
  - Studie: Usikkerhet i poretrykk og formidling av denne.
- Oppfølging av ny teknologi
- Fagdager for bransjen
- Samarbeid med andre myndigheter (bl. a NSOAF WWG) og bransjeaktører

- Dialog med ED ifm brønnkontrollhendelser
- Deltaker i FOU initiativer

- Regelverk: Retningslinjer implementert siste årene relatert til brønnkontrollkompetanse, trening og øvelser, poretrykksestimering, planlegging av kapslingsoperasjoner.
- Revisjon av ON 135 – Retningslinje for brønnkontrollhendelser
  - ✓Boring & Brønn
    - ✓Uklare definisjoner
  - ✓Brønnintegritet
- Revisjon av Norsok D-010, D-002 og D-007

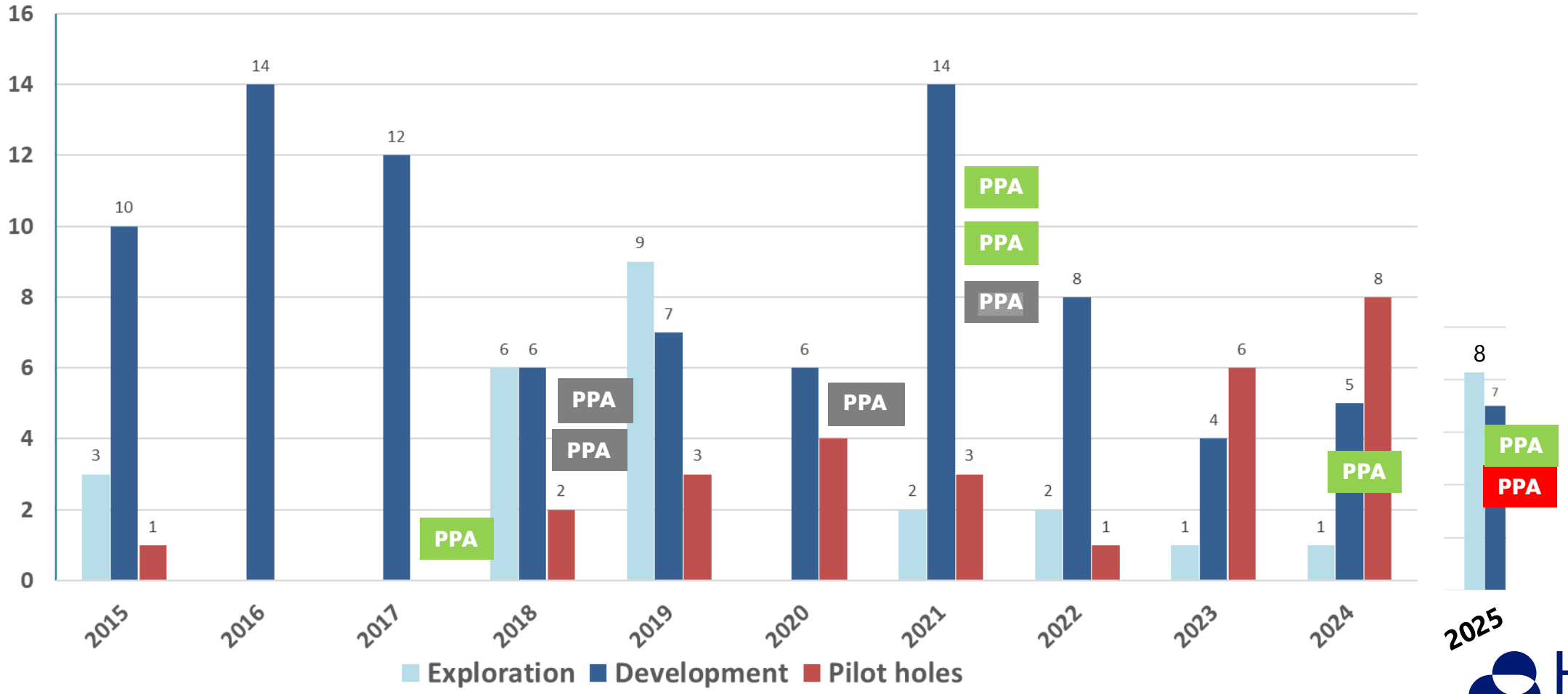
Havtil
Havindustritilsynet

Permanent pluggede brønner på NCS



Havtil
Havindustritilsynet

Brønnkontrollhendelser pr brønntype 2015-2025
Hendelser ifm permanent plugging ON 135



Havtil
Havindustritilsynet

App B Categorisation and classification matrix for well control incidents

Matrix for categorization and classification of well control incidents
Drilling and Completion operations

Degree of seriousness	Description	Guidance
Level 1- Red Critical well control incidents	**1. Blowout**	1. Blowout to environment or facility including underground blow out. Failure or malfunction of primary and secondary barriers.
	2. High HC influx volume/rate	2. Failure of primary well barrier. Successful activation of the secondary well barrier. C ritical kill operations with high risk of blowout.
	3. High-rate shallow gas flow	3. Shallow gas incident with unsuccessful kill operation. Gas flowing to seabed or installation (diverter), until all gas is released.
	4. High-rate shallow water flow	4. Shallow water flow influencing stability of an installation (jack-up, fixed installation or template)
Level 2 – Yellow Serious well control incidents	**1. Medium HC influx volume/rate**	1. Influx volume above design criteria for kick margin, but possible to regain barrier with standard kill procedure.
	2. Total Fluid barrier lost	2. Loss situation without being able to maintain the hydrostatic pressure in the well.
	3. Medium rate shallow gas flow	3. S hallow gas incident with kill operations or gas handled on installation by diverter.
Level 3 – Green Regular well control incidents	**1. Low HC or water influx volume/rate**	1. Influx volume margin, and su with standard degrading well
	2. Low-rate shallow gas flow	2. Shallow gas in No gas handle operation)
	3. Low-rate shallow water flow	3. Shallow water
Level 4 – Well control experiences for learning	**1. Non-continuous gas/water migration in well - with all barriers in place**	1. Release of a ba gas/water trapp
	2. Loss of primary or secondary barrier without influx into the well	2. Incidents wher influx has occu
	3. Low-rate shallow gas/water flow from riser-less pilot hole drilled with floating unit	3. Shallow gas/w well location according to p
	4. Failed inflow test of mechanical barrier element	4. Minor influx d re-established
	5. Influx suppressed with Surface Back Pressure MPD system	5. A single influx well control m regained witho through the M

App C

Matrix for categorization and classification of well control incidents
Well intervention operations.

Degree of seriousness	Well intervention
Level 1- Red Critical well control incidents	**1. Blowout**
	2. Failure of primary and secondary barriers
Level 2 – Yellow Serious well control incidents	**1. Failure of primary well barrier. Activation of secondary well barrier element**
Level 3 – Green Regular well control incidents	**1. Temporary reduction of well barrier element function. Activation of redundant well barrier elements. Note 1**
Level 4 – Well control experiences for learning	**1. Incidents with well control potential for industrial learning**

Note 1: Redundant well barrier elements are defined as pipe ram for CT/ cable rams for wireline or similar. See 2.1.2 about incidents that are not required to be reported.

App E Categorization and classification matrix for well integrity incidents

Matrix for categorization and classification of well integrity incidents
For wells in operation / production

Severity level	Grade	Guidance
LEVEL 1 – Red: Blowout or other critical well integrity incidents with high risk for personnel, environment, and facility. Alert to HAVTIL according to management regulation §29.	**GRADE 1:** **Leak rate** > 10 kg/s. **Discharge** > 100 kg HC gas immediate release. **Spill**> 500 m3 crude oil.	- Barrier failure with major HC release to external environment. - Crossflow with major release to external environment. - External leak from well resulting in mobilization of emergency preparedness team. - *Critical threat to installation and personnel.*
	GRADE 2: **Leak Rate** 1-10 kg/s. **Discharge** 10-100 kg HC gas immediate release.**Spill** > 50 m3 crude oil.	
LEVEL 2 – Yellow: Serious well integrity incidents. Alert to HAVTIL according to management regulation §29.	**GRADE 1:** **Leak rate** 0,1-1 kg/s. **Discharge** 1-10 kg HC gas immediate release. **Spill** > 1m3 crude oil.	- Barrier failure with HC release to external environment. - Crossflow with release to external environment. - External leak from well resulting in mobilization of emergency preparedness team. - Serious threat to installation and personnel.
	GRADE 1: **Leak rate** 0,01 - 0.1 kg/s. **Discharge** < 1kg HC gas immediate release. **Spill** > 0.01m3 crude oil.	- Barrier failure with limited HC release to external environment. - Uncontrolled crossflow between formations due to well barrier failure(s). - Barrier failures - Flow contained by activating safety barriers outside the well system or Manual Master Valve. - Potential threat to installation and personnel.
	GRADE 2: **Dual well barrier failure** (Primary and Secondary) - without loss of containment to external environment.	
	GRADE 1: **Leak rate** < 0,01 kg/s. **Spill** <= 0.01m3 crude oil.	- Barrier failure with very limited HC release to external environment. - Negligible threat to installation and personnel. For reference: API RP14B criteria for internal leak = 0,006 kg/s)
	GRADE 2: **Single barrier failure** - no loss of containment.	

Havtil
Havindustritilsynet

Hold deg oppdatert

Abonner på nyheter fra havtil.no