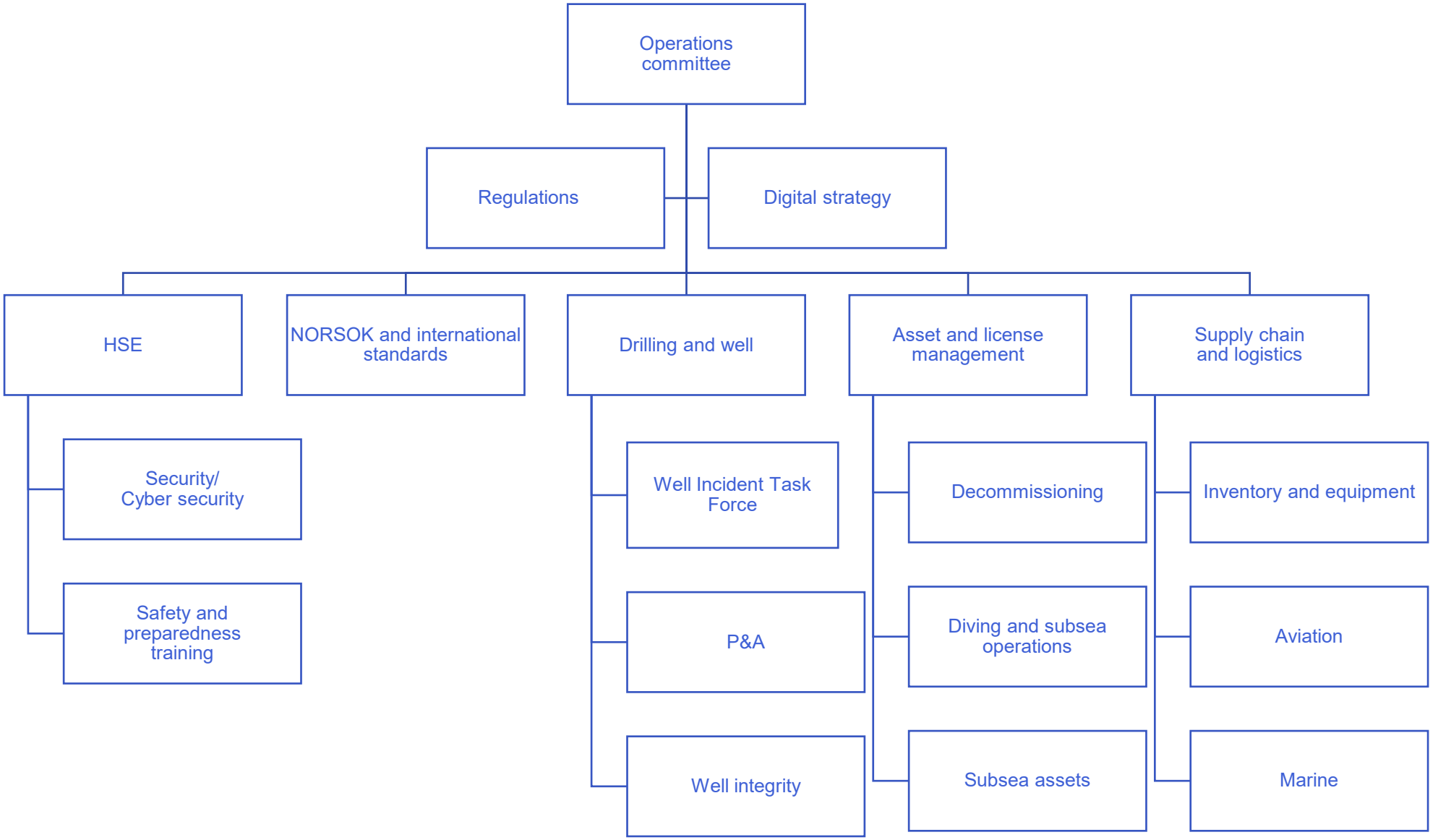
OFFSHORE NORGE

Geir Smaaskjær
Elected Chair D&W Forum

WHO WE ARE

- Offshore Norge is an employer and industry organization for companies with activities related with the NCS
- More than 100 companies associated with oil and gas activities on the NCS are organized through Offshore Norge
    - Oil & Gas Companies
    - Drilling and well service
    - Subsea contractors
    - Catering companies
    - Supply bases
    - Offshore wind companies
    - Start-up companies

OPERATIONS COMMITTEE – FORA/NETWORKS



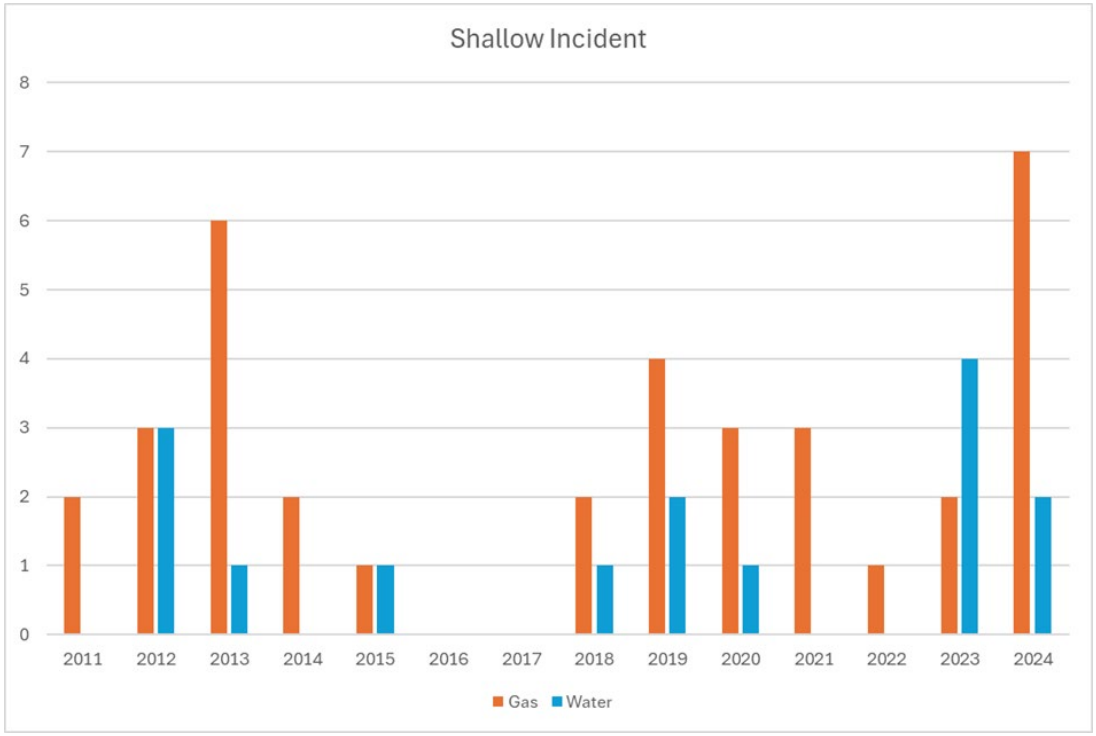
WELL CONTROL

ORGANIZATION DRILLING AND WELL

OFFSHORE NORGE

- 2 Forums for Drilling and Intervention activities;
  - Drilling and Well Forum
  - Well Incident Task Force
  - 4 meeting per year for each forum
- Drilling and well forum the main focus is on;
  - Drilling & well operations, well control incidents, well integrity and P&A
  - Exchange of experience and best practices
  - Yearly summary of well control incidents with a recommendation on improvements
  - Participants are Operators / Partners on the NCS, typically at Drilling Manager level
  - Open and good dialog with the authorities on regulatory updates and experience transfer
- While Well incident task force focuses on;
  - Sharing and learnings from well control incidents
  - Minimum **one meeting focuses solely on well intervention**
  - Goal to develop «A sharing to be better case» each year
  - Participants are selected Operators / Partners, Drilling Contractors, Well Intervention companies

OFFSHORE NORGE ONGOING ACTIVITIES



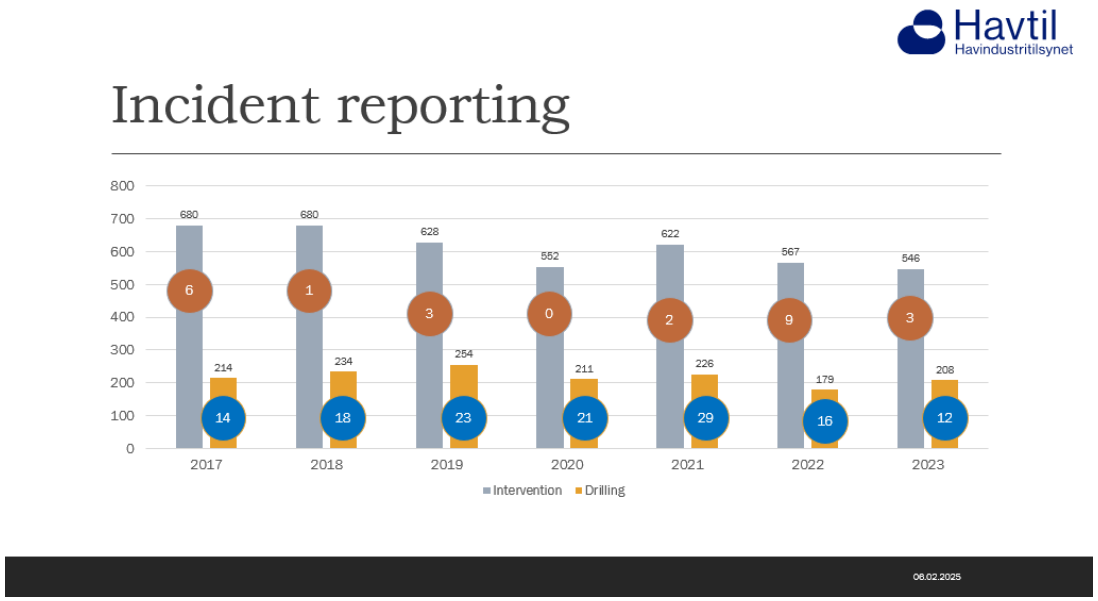
- **Update Offshore Norge 135 guideline**
- Large number of shallow incident last year, 9 of 17 in 2024- a majority of these has been on the Haltenbanken
- Initiative raised in D&W forum and work ongoing to update guideline 135 in cooperation with the authorities

OFFSHORE NORGE ONGOING ACTIVITIES

Degree of seriousness	Description	Guidance
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 - Non-Classified (NC)	**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.

- Suggested new classification for shallow incident, Riserless pilot hole drilled from a floating unit killed and cemented back according to plans
- Level-4 Non-Classified, but reportable including one-pager

OFFSHORE NORGE ONGOING ACTIVITIES



Courtesy: Vibjørn Dagestad- Havtil

- **Update guideline 135**
- Number of interventional activities and actual number of reported incidents needs to be further investigated to ensure that intervention incident are reported according to guideline 135 intention

OFFSHORE NORGE ONGOING ACTIVITIES

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

Degree of seriousness	Well intervention	Guidance
Level 1- Red Critical well control incidents	**1. Blowout**	1. Blowout to environment or facility. Failure of primary and secondary barriers that can be handled by relief well drilling, capping or handled on the installation.
	2. Failure of primary and secondary barriers	2. Well control equipment damaged from external loads or non-shearable item stuck across BOP and safety head. Well flowing to surroundings. Well killed or well capped on location.
Level 2 – Yellow Serious well control incidents	**1. Failure of primary well barrier. Activation of secondary well barrier – no other redundant barrier elements available.**	1. Well secured by closing one single valve (safety head or XT valve). String blocking other valves preventing redundant barrier element.
	2. Failure of primary well barrier. Activation of secondary well barrier – other redundant barrier elements available	2. Well secured by closing one single valve (safety head or XT valve). Additional valve(s) available to act as redundant barrier element.
Level 3 – Green Regular well control incidents	1. **Temporary reduction of well barrier element function**	1. Failure of one well barrier element. Activation of redundant well barrier elements and reestablishment of well barrier element within primary barrier. Secondary barrier intact.
Level 4 – Non-Classified (NC)	**1. Very small leak, no activation of BOP necessary.**	1. Very small leak, able to pull out of hole and close normal lubricator valves to repair leak. Two barriers intact.
	2. Loss of primary or secondary barrier without influx into the well.	2. Incidents where a barrier is compromised but no influx has occurred.

Tan = Alert to PSA according to management regulation
Blue = Notification to PSA according to management regulation
Grey = Alert or Notification to PSA depending in potential in accordance with Management Regulations § 29
Form: Confirmation of alert/notification to Petroleum Safety Authority

- Evaluate to revise matrix is to ensure that the classification categories are correctly defined and understood by the industry

OFFSHORE NORGE

WELL CONTROL TRAINING

TRAINING

OFFSHORE NORGE

c) Chapter 5.9 of the NORSOK D-010 standard and 024 - Norwegian Oil and Gas' Guidelines no. 024 should be used for general competence within **drilling and well activities**, with the exception of Chapter 2.1.1 litera a and b on the requirements for examination. For posts as operators, training and examination in accordance with public curriculum VG2 well techniques should be undertaken. In addition, IOGP's guideline 476 on well control competence should be used. For pressure-balanced operations in wells

Scenario-based well control training:

- can be applied to benefit both the drilling, completion, and the well intervention communities
- can enhance an operations team's ability to quickly recognise and mitigate well control events effectively and safely.

This method of learning, normally in a team (the team present in the class or the operational team, or sub-team, designated by the operator), is especially valuable when coupled with theory-based training and assessment.

- Regulated in Activity Regulation § 21
- Guideline to § 21 refers to IOGP 476

- IOGP 476 has as strong recommendation for Scenario based training, ref chapter 4.2

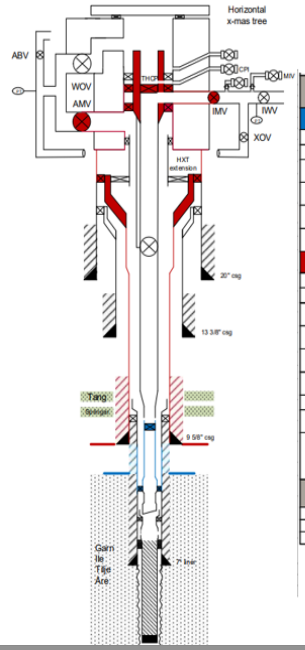
SHARING TO BE BETTER

OFFSHORE NORGE

PLANNED OPERATIONS

- P&A and perform sidetrack on 21 years old subsea injector.
- Well have been re-drilled and recompleted several times. This is 4th track.
- 13 3/8'' and 9 5/8'' casing installed in 2014 in oil based mud. Last operation on well, a recompletion in 2017.
- Pre-P&A performed by RLWI (Riserless Light Well Intervention). Installed deep mechanical plug, cut tubing and displaced A-annulus to new fluid from cut and up.
- Planned as standard P&A including pulling tubing, 9 5/8'' casing and 13 3/8'' casing. Next sidetrack to start from 20'' casing using whipstock.

- Which risks do you recognise for this type of P&A operation?
- What are the main differences plugging subsea wells compared to platform wells?
- How would you prepare for this operation?



Barrier status after RLWI operation:

Well barrier elements	Ref. WBEAC tables	Verification of barrier elements
PRIMARY		
1. In-situ formation	51	SHmin: 1,62 sg
2. Cement outside 7" liner	22	Verified by logging
3. 7" liner	2	Pressure tested to 310 bar WH with 1,46 sg WBM
4. Injection packer	7	Pressure tested to 310 bar WH with 1,05 sg brine
5. Tubing	25	Pressure tested to 310 bar WHwith 1,05 sg brine
6. Mechanical plug	28	Pressure tested according to LWI program
SECONDARY		
1. In-situ formation	51	SHmin: 1,75 sg
2. 9 5/8" casing cement	22	Verified by job performance
3. 10 3/4" x 9 5/8" casing with casing hanger	2	Pressure tested to 310 bar WH with 1,46 sg WBM
4. Wellhead with 10 3/4" seal assembly	5	Pressure tested to 310 bar WH with 1,50 sg OBM
5. Tubing hanger with seals	10	Pressure tested to 310 bar WH with 1,05 sg brine
6. Tubing hanger crown plug	11	Pressure tested according to LWI program
7. X-mas tree connector	31	Pressure tested to 310 bar WH
8. X-mas tree valves/body	31	Pressure tested to 310 bar WH with 1,05 sg brine

Disp. no. well integrity issues	Comment

3 |

- Aid/tools to assist in scenario-based training
- So far 23 cases developed
- Yearly aim in well incident task force
  - selects one well control incident with high potential of learnings
  - develops case/training package to be shared
- Feedback from industry –positive and in use with respect to scenario-based training of personnel

Sharing to be better cases