

# Maintenance in Transition

SPECTOR

Henrik Veholmen Erdal Maintenance Engineer

DNV

ISO 9001 ISO 14001 ISO 45001 ISO 50001

Safe Efficient Low-Carbon

Honesty Motivation Cooperation

### **Objectives of this Presentation**



- Experiences and challenges with increased activity and rigs coming to Norway
- Experiences and challenges in maintenance management
- How to ensure continuous improvement in maintenance?
- How to ensure that the maintenance management works and how to follow it up?



# **COSL Drilling Europe**

- Established in 2005
- Head Office at Forus
- 2025: Over 800 Employees
- Owner: CNOOC
- First drilling operation in NCS August 2011
- Norway, UK, Faroe Islands, Denmark and New Zealand







# **COSL Drilling Europe**

- COSLInnovator
- COSLPromoter
- COSLPioneer
- COSLProspector









#### **COSLProspector**

COSL





#### **AoC Process – Maintenance Management**

- April 25 October 1
- Consequence Classification
- FMEA/FMECA
- Barriers Performance Standard
- Maintenance
- Spare Parts
- Procedures/Manuals
- Documentation



			Impact												
	Negligible	Minor	Moderate	Significant	Severe										
Very Likely	Low Med	Medium	Med Hi	High	High										
Likely	Low	Low Med	Medium	Med Hi	High										
Possible	Low	Low Med	Medium	Med Hi	Med Hi										
Unlikely	Low	Low Med	Low Med	Medium	Med Hi										
Very Unlikely	Low	Low	Low Med	Medium	Medium										

Preventive<br/>maintenanceCorrective<br/>maintenancebefore a failure<br/>has occurredafter a failure<br/>has occurred





# Moving rigs into Norway

- Maintenance/Preservation
- History
- CMMS updates
- Technical condition
- Mobilization
- Are we in control?







# Experiences and challenges in maintenance management

- Hierarchies
- Databases
- Testing VS Maintenance
- FMECA

Safe

fficient

-ow-Carbon

- Qualitative VS Quantitative
- Experience VS Failure rates
- Documentation
- Standards and Procedures
- Unsafe Failure Modes



COSL

#### How to ensure continuous improvement in maintenance?



- Proactive
- Organizational Adaptable
- Monitoring
  - Failure modes, SIL, Barriers
- Static VS Dynamic
- Daily follow-up of the rigs
- Reporting

ow-Carbon

- Communication
  - Monthly analysis of data
  - Presenting data



#### How to ensure that the maintenance management works and CCCSL how to follow it up?

• Self-verification



Table 1 Follow-up plan of activities for COSL's maintenance management system (2024-2027)

Year			2024	4			2025									2026												2027								
Activity type <sup>1</sup>	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Monthly Supervision Check		x	x	х	x	х	x	x	x	x	x	x	x	x	x	x	x	x	x	х	x	x	x	х	x	x	x	x	x	x	x	x	х	x	x	x
Monthly Review of Open Findings		х	х	х	х	х	х	х	x	x	x	x	x	x	х	x	x	x	x	х	x	х	х	х	х	x	х	x	х	x	х	x	х	х	x	x
Quarterly Self Verification	X, X			х			х			х			x			х			х			х			х			х			x			х		
Yearly Self Verification								х												х												x				
Yearly Review of Plan	x					х												х												х						
3-Yearly External review			х																																	

Safe Efficient Low-Carbon

### Summary



- Experiences with rigs coming into Norway
  - Maintenance
  - Technical condition
- Experiences and challenges in maintenance management
  - Hierarchies in place
  - Database
  - Dedicated resources
- Ensure continuous improvement
  - Monitoring
  - Follow up's
- Ensure that the maintenance management works and follow it up
  - Self-verification



# C O <mark>5</mark> L

# Thank you for your attention!



Safe Efficient Low-Carbon

Honesty Motivation Cooperation