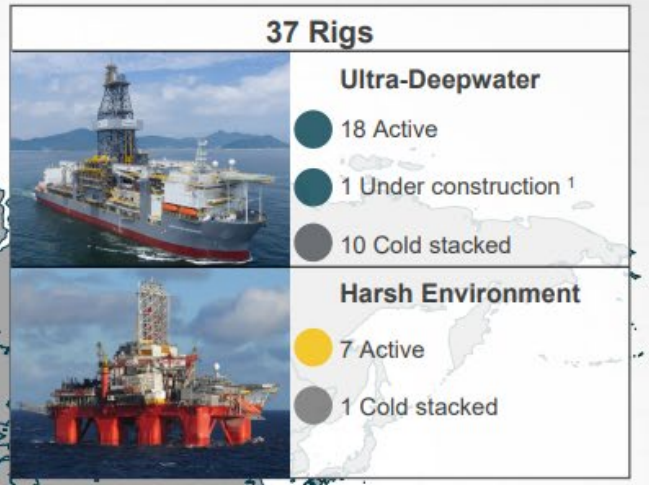
Smart Vedlikehold

Riggvedlikehold 2024

26.09.2024

GLOBAL FLEET



1. Aquila is undergoing contract prep to commence in 2024

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MÅL

Rett vedlikehold til rett tid

Følg "Sløyfa"

STRATEGI

Utnytte oppholdsperioder maksimalt

Planlegging

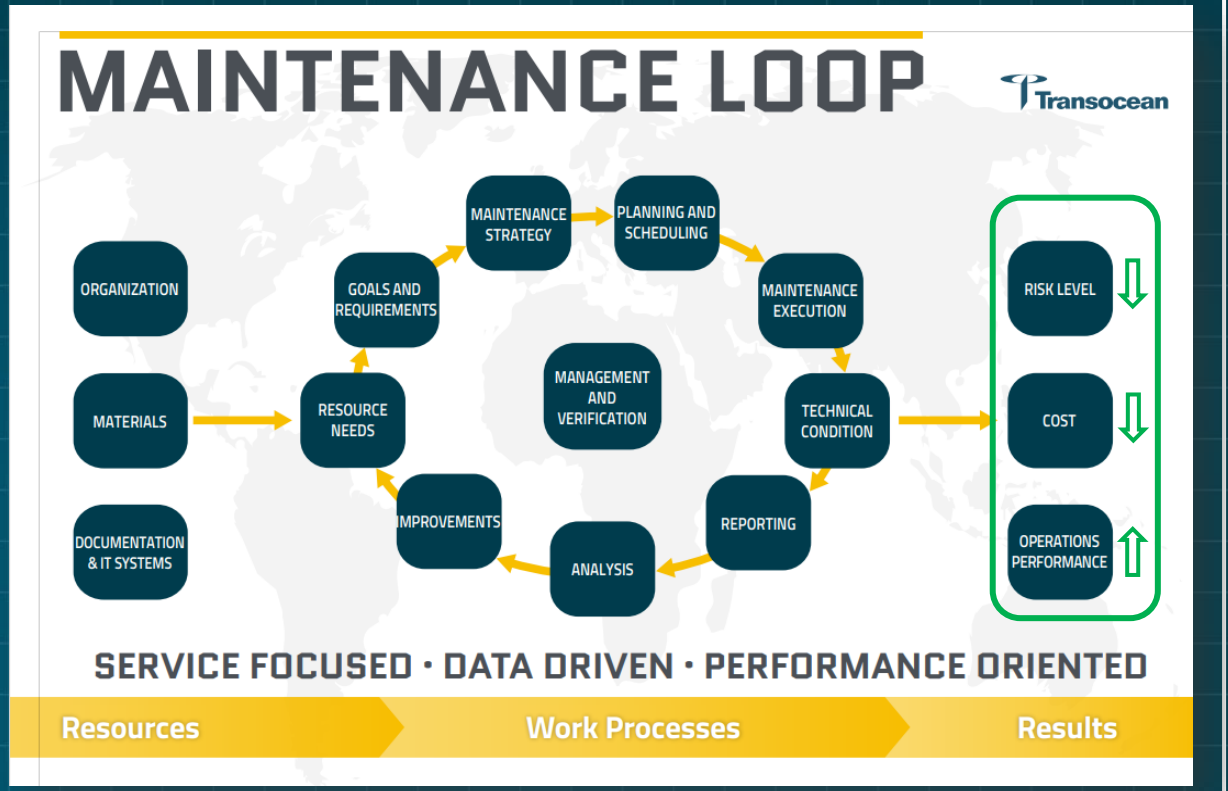
Tettere samarbeid med leverandører

Alle parter forstår Mål, Strategi og Plan

Tilstandsbasert vedlikehold

Prediktivt vedlikehold

Smart bruk av data



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Smart Equipment Analytics

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SEA SMART EQUIPMENT ANALYTICS - GOALS & BENEFITS

System to allow real time data access, analytics and visualization

Reliability

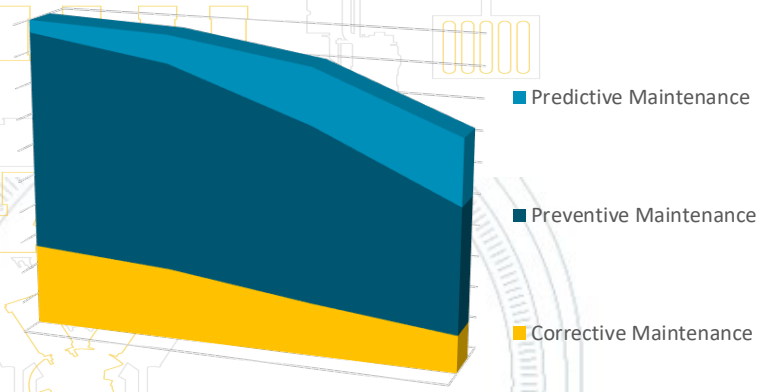
Equipment Data predicting failures through analytics

Cost Reduction

Equipment Data driving maintenance optimization

Safety & Sustainability

Rig Data supporting operational discipline and efficiency



SEA – DATA FLOW

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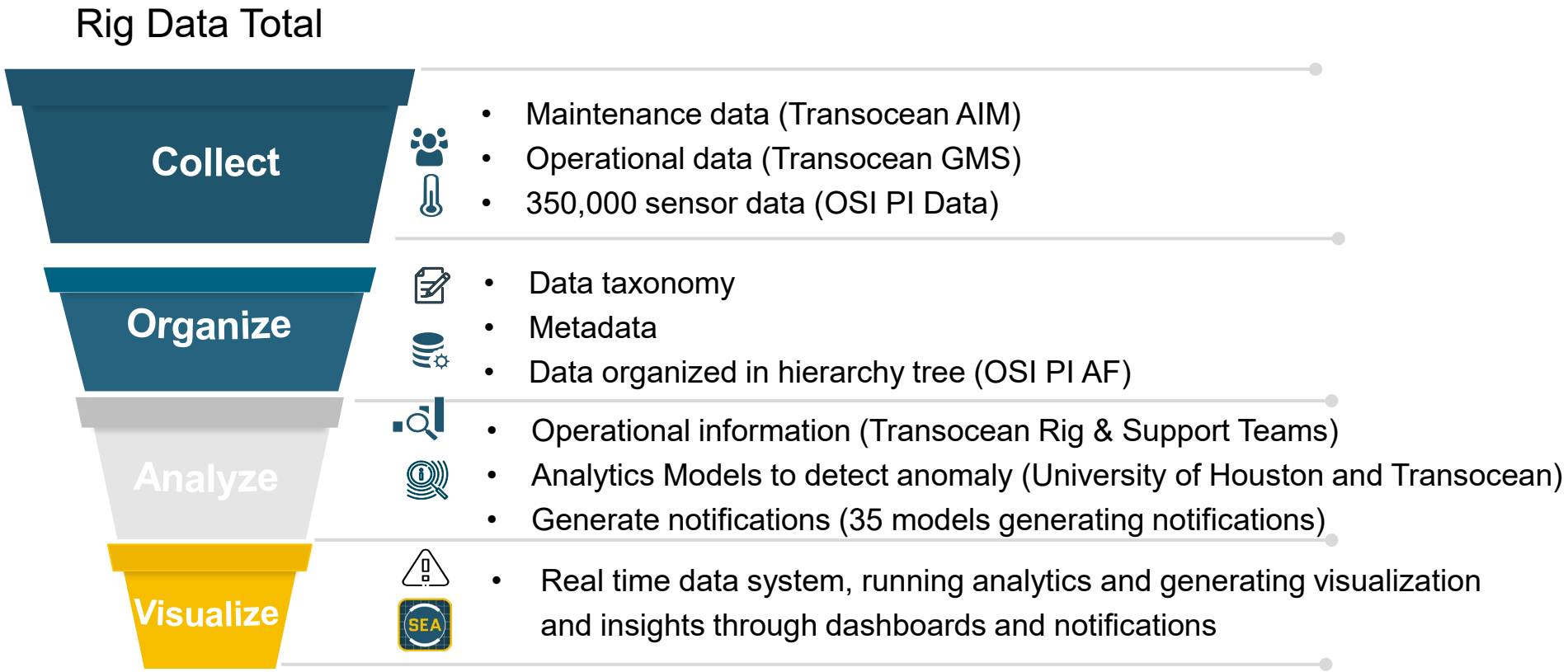
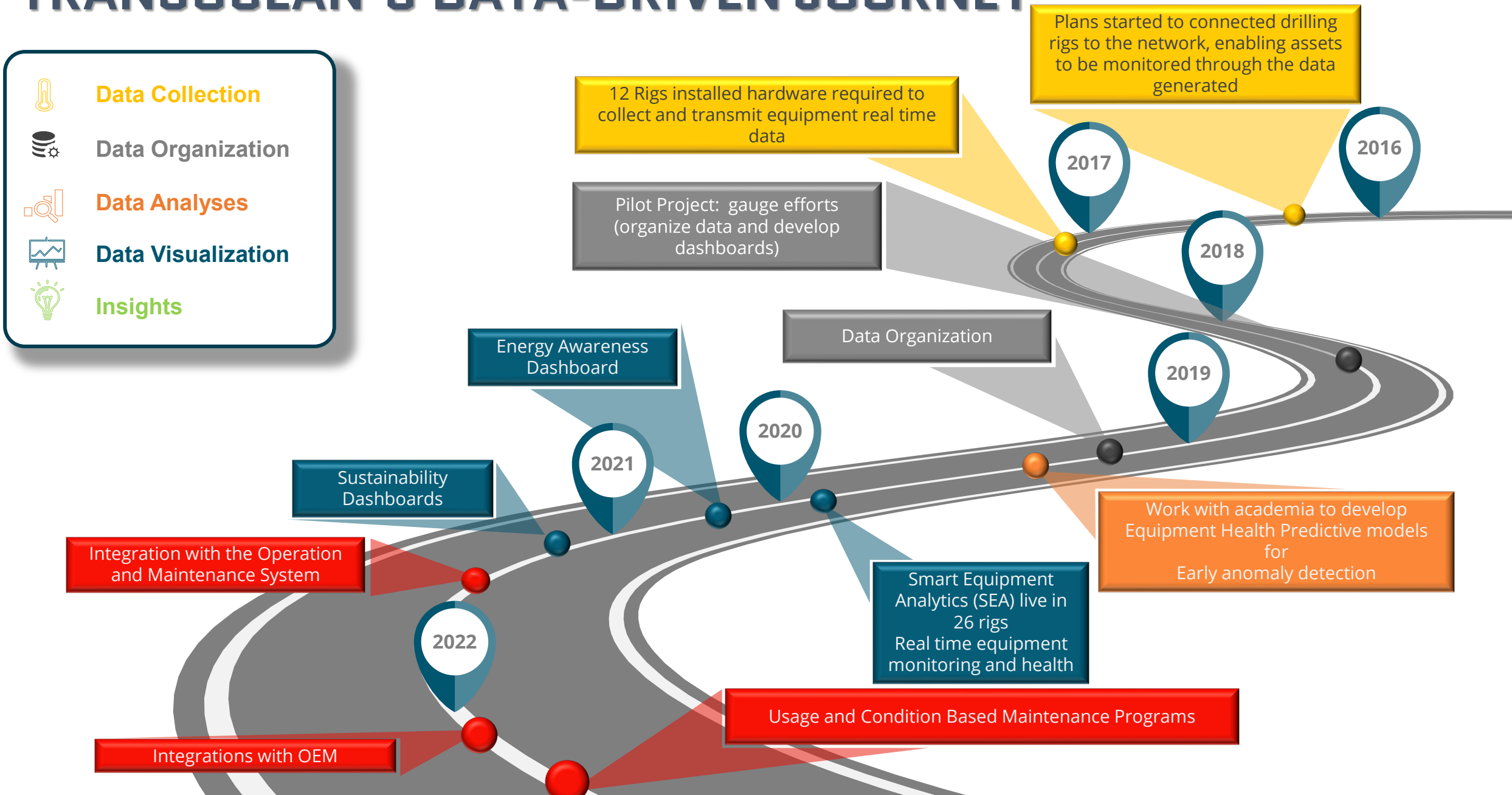


TRANSOCEAN'S DATA-DRIVEN JOURNEY



SEA APPLICATION – User Interface

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Smart Equipment Analytics

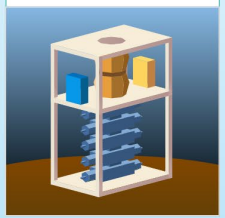
OVERVIEW | DRILLING 2 | BOP 0 | DP 0 | POWER 0

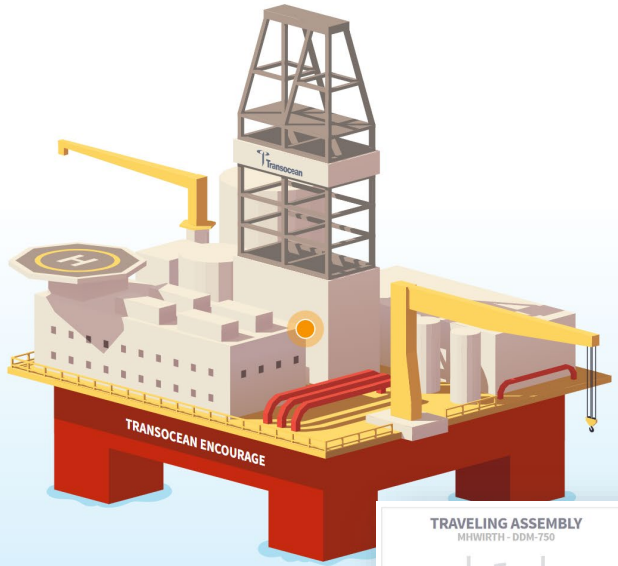
Rig Overview

DP
- 0 DP Overview
- 0 Thrusters
- 0 Sensors & HPR
- 0 PosMoor
- 0 Safety Critical Alarms

POWER
- 0 Engines
- 0 Generators
- 0 Energy awareness
- 0 Fuel Efficiency and Emissions
- 0 Safety Critical Alarms

BOP
- 0 BOP
- 0 Safety Critical Alarms





Safety Critical Alarms

DRILLING

Main
- 0 Traveling Assembly
- 0 Drawworks
- 0 Pipe Racker
- 0 Iron Roughneck

Aux
- 0 Pipe Racker
- 0 Iron Roughneck

- 2 Drill Floor Safety System
- 0 Mud Pumps

Work Order 1403676105

Description
SEA ALARM - Rule 225 - MRT Wire Change-out

Status
RELEASED

Equipment
1840058 - Wire, Cylinder 2, Riser Tensioner 2 & 3 Unit

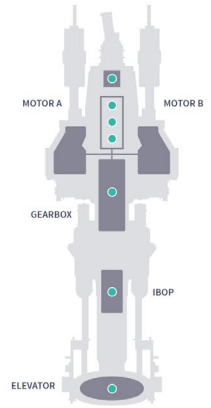
Scheduled start
Wed, Jul 17, 2024 7:00 AM

Scheduled end
Wed, Jul 17, 2024 7:00 AM

Work description

Jul 10 2024 9:01AM]
ALARM DETAILS:Tensioner Wire ATC reached 23 Ton-Cycles > 75% of limit (30 Ton-Cycles).
Tensioner wire maintenance required to happen when limit of 30 Ton-Cycles is reached.

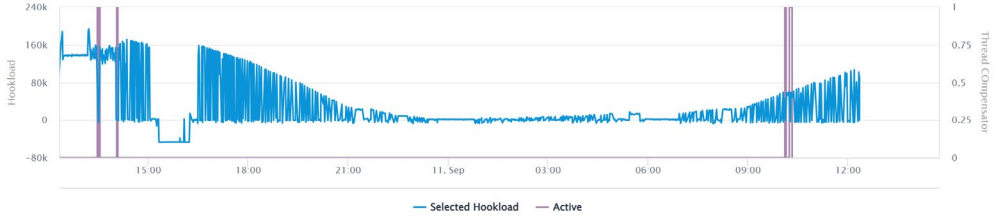
TRAVELING ASSEMBLY
MHWIRTH - DDM-750



THREAD COMPENSATOR ACTIVE AND HOOKLOAD (KG)

Time: last 24 hours

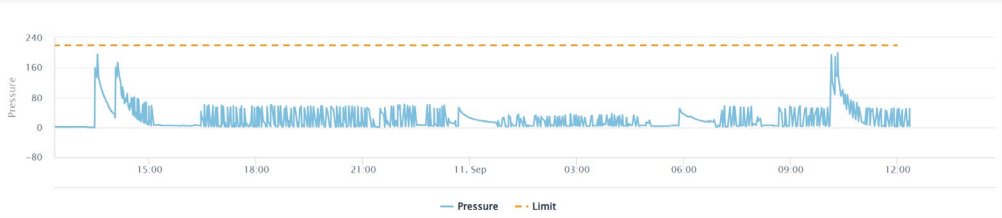
Activations	5
Comp. not Active after Connection	4
Comp. Active after Connection	1
Comp. Active and Pres. > 220 bar	0



THREAD COMPENSATOR PRESSURE

Time: last 24 hours

Pressure	5.4 bar



Drawwork Enabler

HOW EQUIPMENT DATA IS TRANSMITTED TO SHORE

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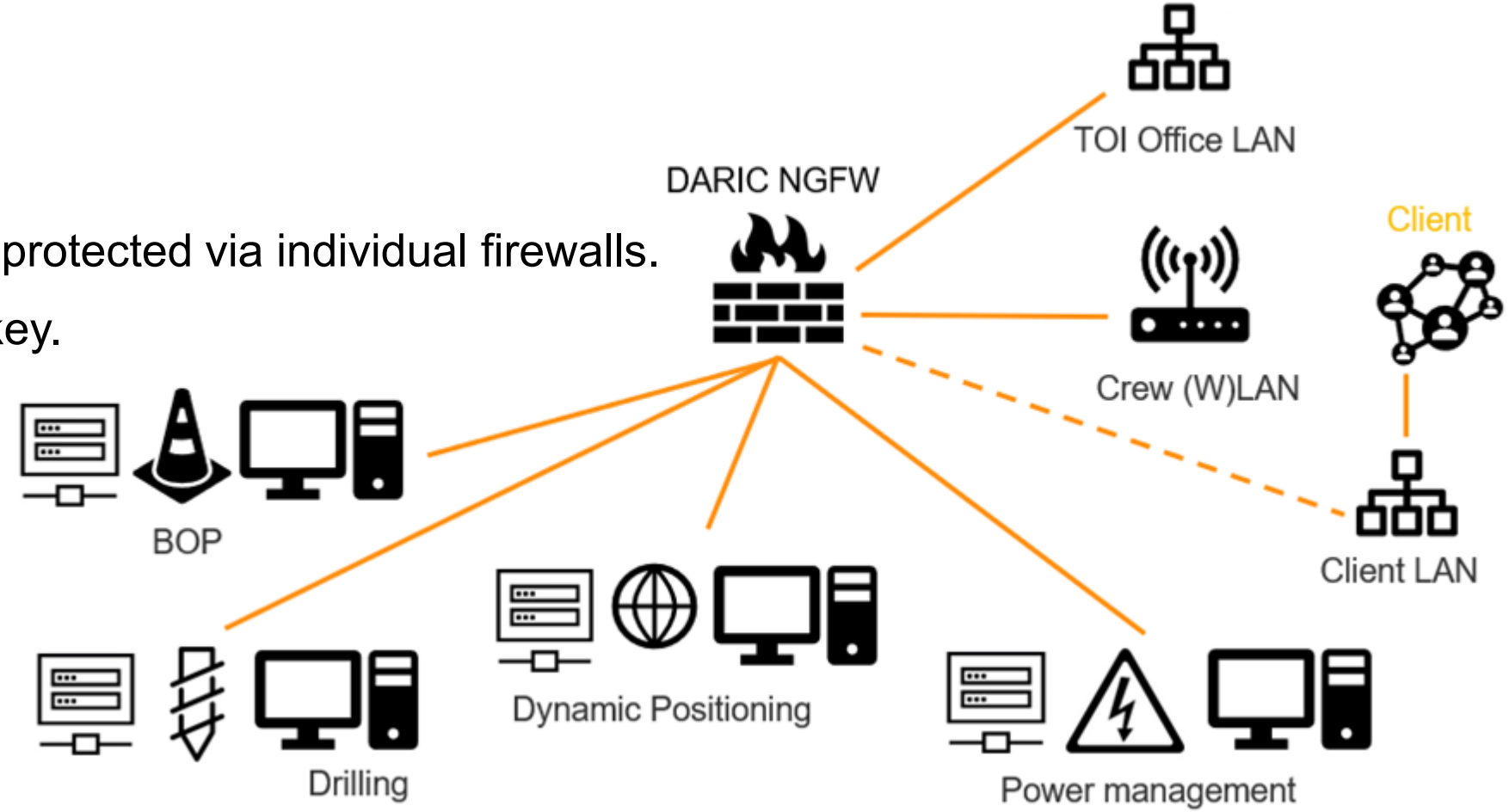
- 4 Main Rig Systems transmitting real time data to shore
  - DP / POSMOOR
  - Drilling Systems
  - BOP
  - Power
- Data transmission protected via individual firewalls.
- Cyber Security is key.



SUSTAINABILITY & GHG EMISSIONS

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Smart Equipment Analytics

Energy Awareness: detailed understanding of main power consumers and how they respond under different operational conditions

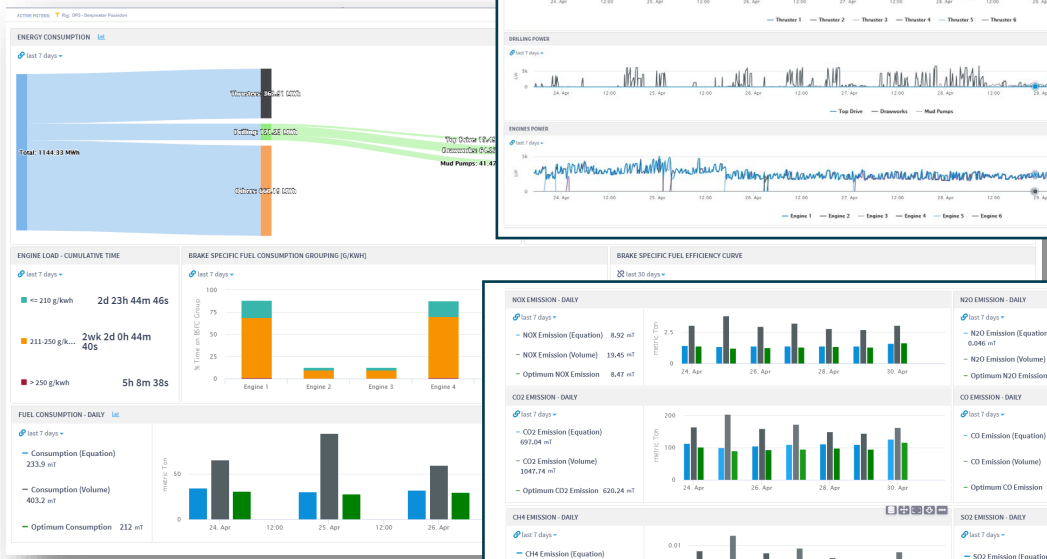
Fuel Consumption: engine data monitored against its design to provide awareness for optimum operation of power plant

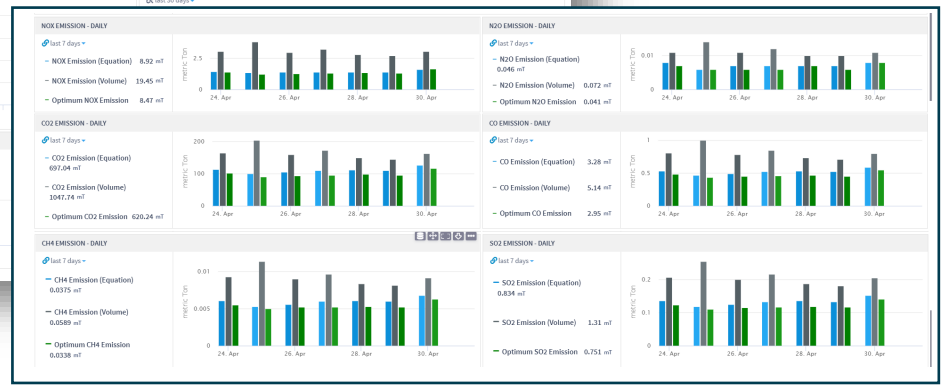
Emissions: real time GHG emissions monitoring system

26 Rigs Live in SEA: energy awareness, fuel consumption and emissions monitoring applications running with real time data

Power Consumers

Energy Awareness





Emissions

SEA APPLICABILITY

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Managers

- Real time equipment health insights
- Daily reports
- Expedite decisions

Rig crew

- Predictive notification alarms
- Maintenance planning assistance
- Equipment Data visualization

Technical Support

- Troubleshooting assistance
- Equipment behavior studies
- Historical data trends

UTSTYRS LEVERANDØR AVTALER - PRINSIPPER

- Comprehensive Service Agreement/Total Cost of Ownership (CSA/TCO)
- 10 års program
  - (År 7 for TSB & TBR, år 6 for Cat D, år 5 for TNG).
- Drilling systems (NOV/HMH), BOP(Cameron/GE/NOV), Engines and Thrusters
- Forutsigbarhet(kost/SOW) for begge parter
- Deleforbruk for all maintenance PM & CM + Overhaling & resertifisering
- OEM insentiv: oppetid på utstyr gir effekt på inntekt/rate
- I tillegg:
  - Support for IBWM QAQC (BOP) & overhaling & resertifisering.
  - Tett dialog og samarbeid med OEM – ukentlig møter med prosjektledere.
  - Engineering support for reliability, CBM og vedlikeholds optimalisering

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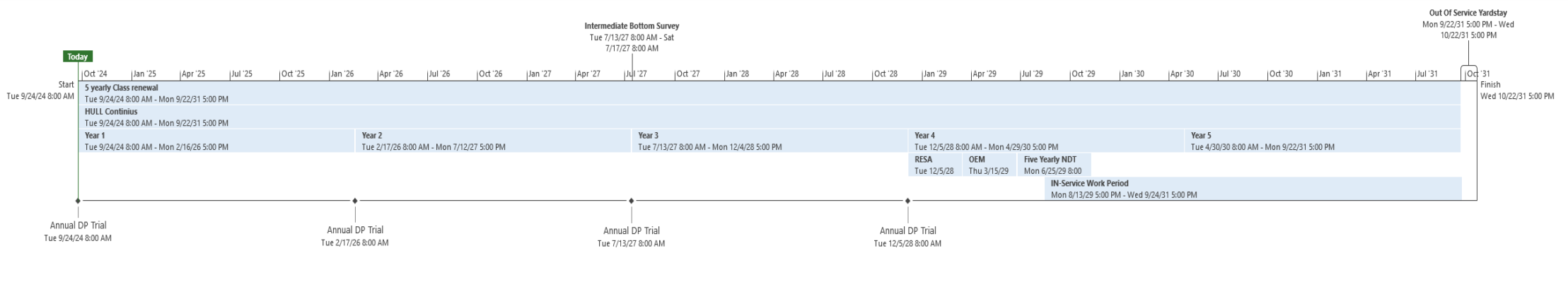
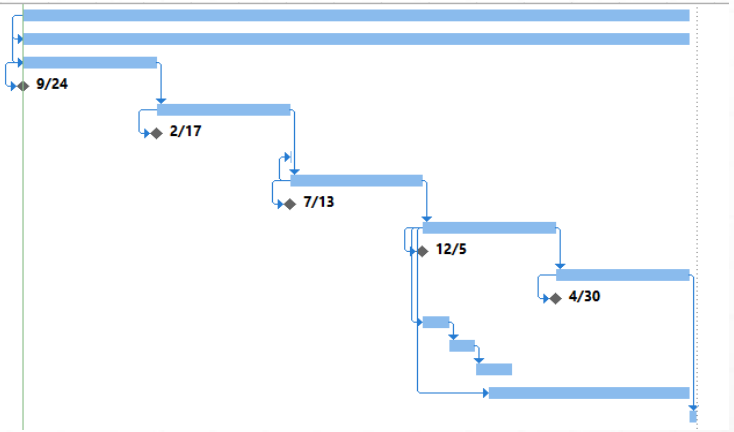
SPS STRATEGI



1		5 yearly Class renewal	1825 days	Tue 9/24/24	Mon 9/22/31			
2		HULL Continius	1825 days	Tue 9/24/24	Mon 9/22/31	1SS		
3		Year 1	365 days	Tue 9/24/24	Mon 2/16/26	1SS		
4		Annual DP Trial	0 ehrs	Tue 9/24/24	Tue 9/24/24	3SS		
5		Year 2	365 days	Tue 2/17/26	Mon 7/12/27	3		
6		Annual DP Trial	0 ehrs	Tue 2/17/26	Tue 2/17/26	5SS		
7		Intermediate Bottom Survey	4 edays	Tue 7/13/27	Sat 7/17/27	8SS		
8		Year 3	365 days	Tue 7/13/27	Mon 12/4/28	5		
9		Annual DP Trial	0 ehrs	Tue 7/13/27	Tue 7/13/27	8SS		
10		Year 4	365 days	Tue 12/5/28	Mon 4/29/30	8		
11		Annual DP Trial	0 ehrs	Tue 12/5/28	Tue 12/5/28	10SS		
12		Year 5	365 days	Tue 4/30/30	Mon 9/22/31	10		
13		Annual DP Trial	0 ehrs	Tue 4/30/30	Tue 4/30/30	12SS		
14		RESA	100 edays	Tue 12/5/28	Thu 3/15/29	10SS		
15		OEM Equipment Inspections	100 edays	Thu 3/15/29	Sat 6/23/29	14		
16		Five Yearly NDT Inspections	100 days	Mon 6/25/29	Fri 11/9/29	5 15		
17		IN-Service Work Period	772 edays	Mon 8/13/29	Wed 9/24/31	10SS+180 days		
18		Out Of Service Yardstay	30 edays	Mon 9/22/31	Wed 10/22/3	12		



OPPSUMMERING

- ***SMART*** vedlikehold krever også at det grunnleggende er på plass –data kvalitet.
- SEA: Hvilke utfordringer skal løses? Må klart defineres (kost/nytte).
- Data innsamling, struktur og kvalitet er essensielt.
- Visualisering og analyse verktøy
  - Gi den enkelte i felt mulighet til førsthånds analyser (bruker vennlighet).
  - Automatiserte aksjoner må være klare og linket inn mot vedlikeholdssystemet.
- Smart bruk av data krever smart planlegging.

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Spørsmål?

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Takk for oppmerksomheten

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