Bore- & riggkonferansen

1 November 2022

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Sr. Vice President
Sales & Product Line

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CEO

Harsh environment specialist with unmatched competence

ODFJELL DRILLING

Key factors securing Odfjell Drilling's success

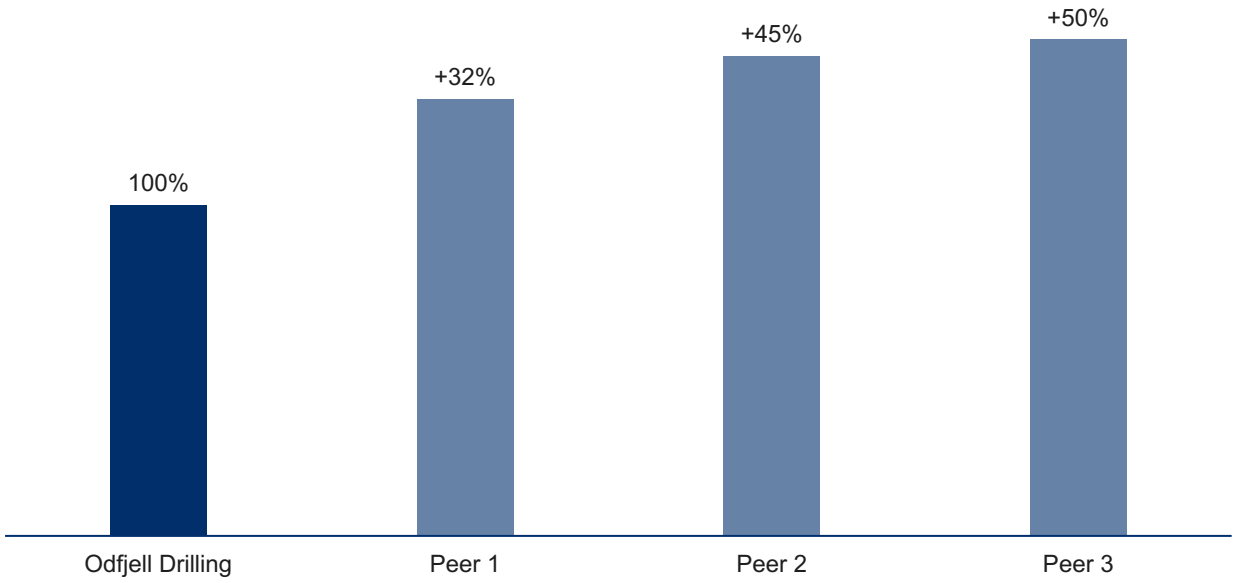
Best Rigs
Efficient, high specification, harsh environment units with deepwater or ultra deepwater capabilities

Best People
Competent and capable. Support hub and management close to operations

Best Culture
Strong ownership and dedication. Open and transparent structure and leadership model

Superior performance achieved through significant experience

Normalised well delivery time
Actual drilling days relative to expected drilling days1



>2 million meters
drilled on the NCS

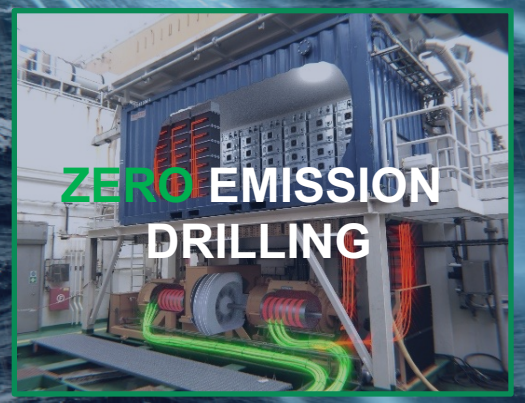
>500 wells
drilled on the NCS

1st contractor
to drill two wells simultaneously

1) Peers include Saipem, Seadrill (including North Atlantic Drilling) and Transocean (including Songa Offshore). Metric is normalised to Odfjell Drilling and shows actual dry hole days less coring and logging divided by Rushmore's statistical estimate of the number of days the 'average' operator would take to drill a well from spud to total depth excluding coring and logging operations but including non-productive time and waiting on weather. Wells drilled prior to 2017 or drilled by more than one rig are excluded
Source: Rushmore, NPD

Yellow Well Factories – Going Digital and Green

ODFJELL DRILLING

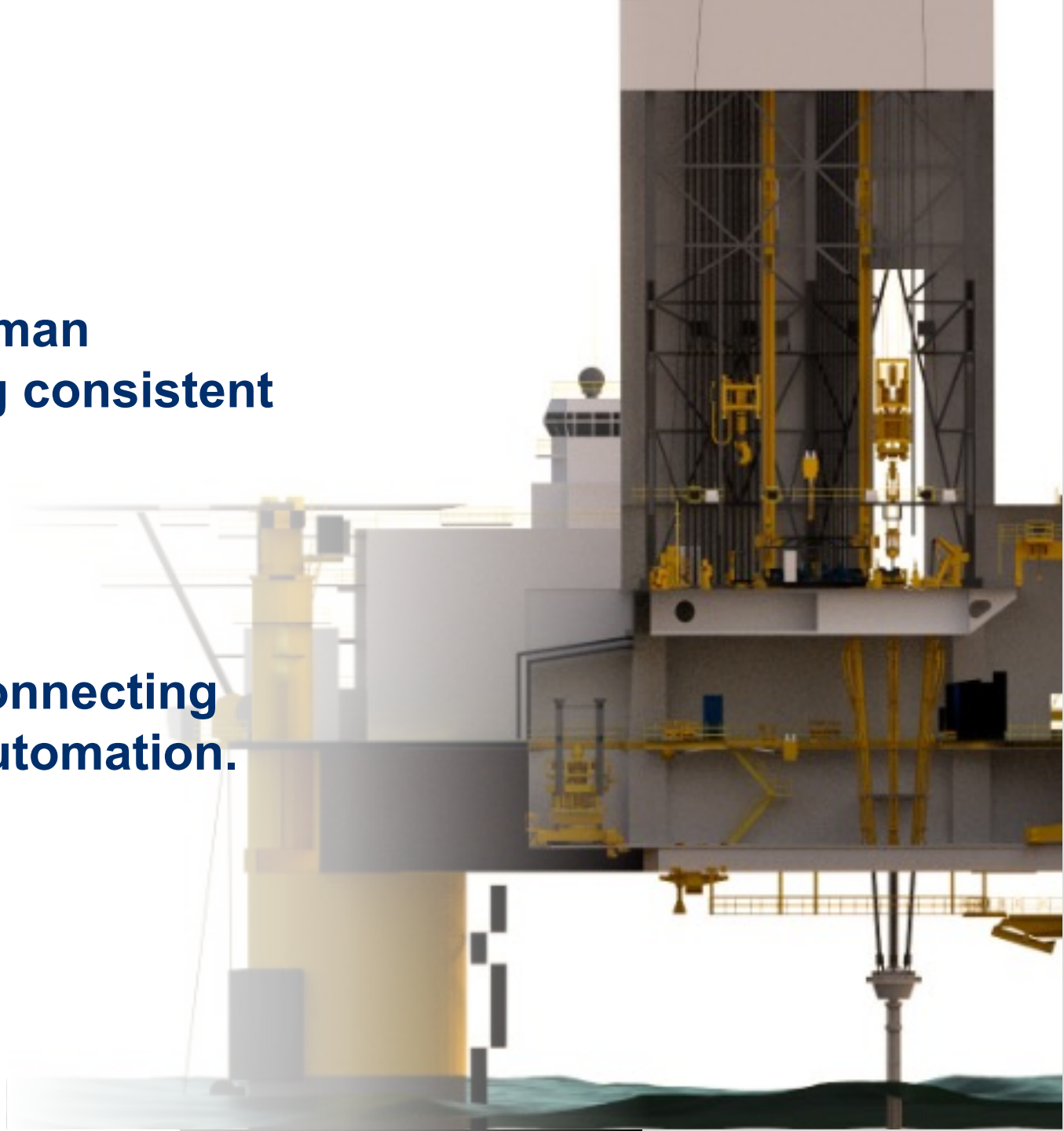


Deepsea Aberdeen:

Derrick automation reducing human interaction in Red Zone securing consistent and efficient operations.

Deepsea Nordkapp:

Pipe deck logistic automation connecting onshore logistics with derrick automation.



PowerBlade Hybrid – Development

- Flywheel hybrid system – joint development of hybrid system including integration with drilling control and rigs power plant
- Close cooperation between experts in Odfjell Drilling, NOV, and subsuppliers to optimize system
- R&D Test centre established for full scale testing
- System installed on:
  - Deepsea Atlantic – Pilot rig
  - Deepsea Nordkapp
  - Deepsea Stavanger
  - Deepsea Aberdeen (planned)
- Results:
  - Rig fuel savings of up to 30% during tripping operations
  - Improve load level generators
  - Less generator maintenance
  - Improved equipment performance

ODFJELL DRILLING

PowerBlade Hybrid development learnings

Start with a holistic approach to the whole power system

Involve experts in all relevant areas

Spend enough time and recourses in engineering phase

Have enough time to test system and float in schedule

Clearly defined responsibilities and expectations

Engage third parties early for new products

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NOVOS

NOVOS™ is NOV's field proven process automation platform capable of automating repetitive drilling activities.

- Automated "Drill a Stand" process
- Automated Activities: Surveys, Reaming, and Friction Tests
- Integrated Well plan enables features based on depth
- Enforces connections procedural adherence

NOVOS APPS

The NOVOS platform enables Apps for optimizing drilling activities.

App Categories:

- Drilling Optimization *(i.e. Kaizen™)*
- Directional Drilling *(i.e. DrillLink™)*
- Pressure Management *(i.e. EnvelopeProtection)*
- Dysfunction Mitigation *(i.e. SoftSpeed II™)*

ALM Services

Ensuring Automation performance is achieved and sustained.

- Latest Software versions
- Data Analytics and KPI reporting
- Remote Technical and Performance Support
- Strategic planning and coordination

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Drilling Automation Enhancement

Based on user engagement and input from Odfjell and other drilling contractors/operators

Optimize for Floater and use of Active Heave Drawwork

Deepsea Atlantic, Deepsea Aberdeen and Johan Sverdrup performance

Proactive Support Service developed and established

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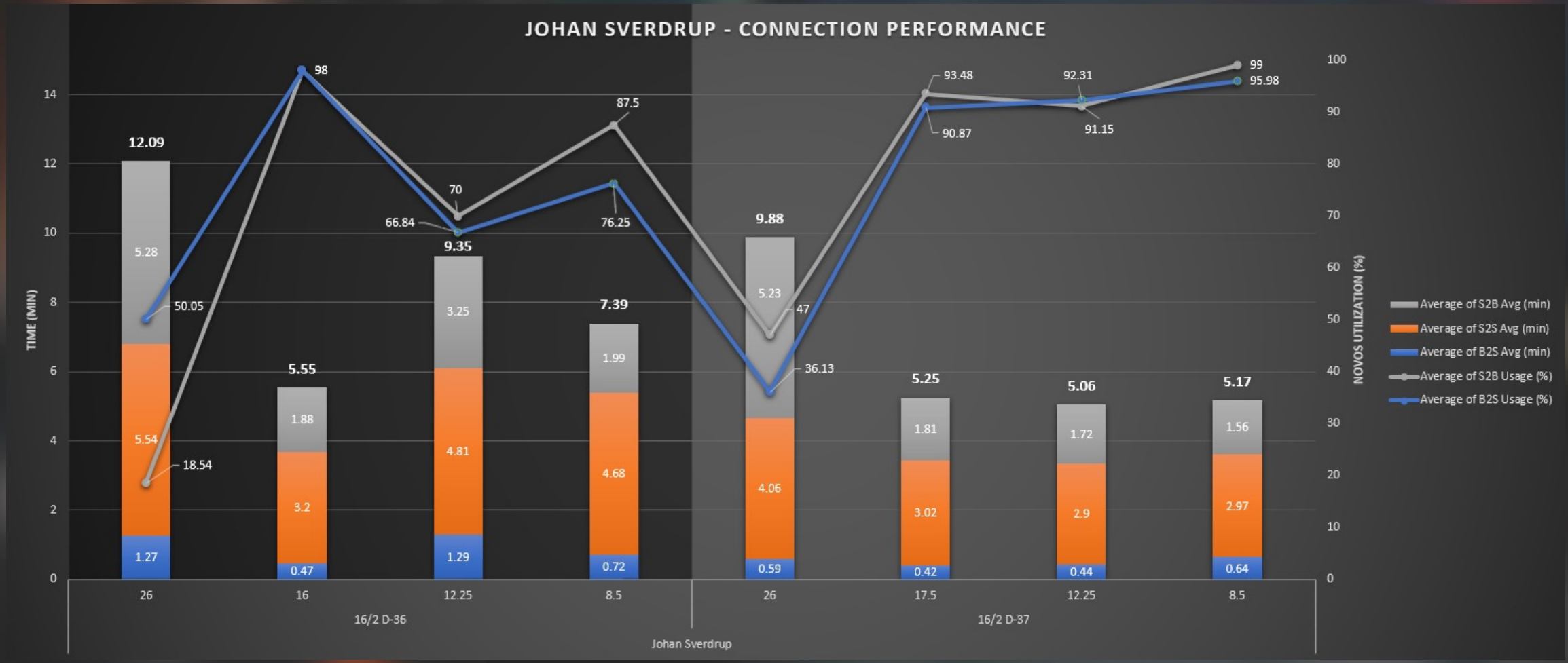
Drilling Automation enhancement - Results

Johan Sverdrup's previous well vs latest well, where the NOV Performance Center was engaged. As can be seen, the performance was improved substantially. Additionally, the correlation between high NOVOS utilization and low connection times is evident.



Automation Keys to Success

Learnings:

Create a culture of collaboration between Operator, Rig Contractor, Equipment Manufacturer, and Service Company

Don’t underestimate the Human Factors

Rig performance through Data Analytics. Measure and monitor the system’s utilization and performance to ensure success.

Create an agile approach to developing and deploying solutions. Feedback is critical for continuous improvement of the product.

Remote Performance center 24/7 – Proactive support and communication

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Next Steps on the Automation journey

Drillfloor Automation/Robotic –
Prospect developed for Deepsea Aberdeen

Pipedeck & Pipe Tally Automation –
Prospect developed for Deepsea Nordkapp

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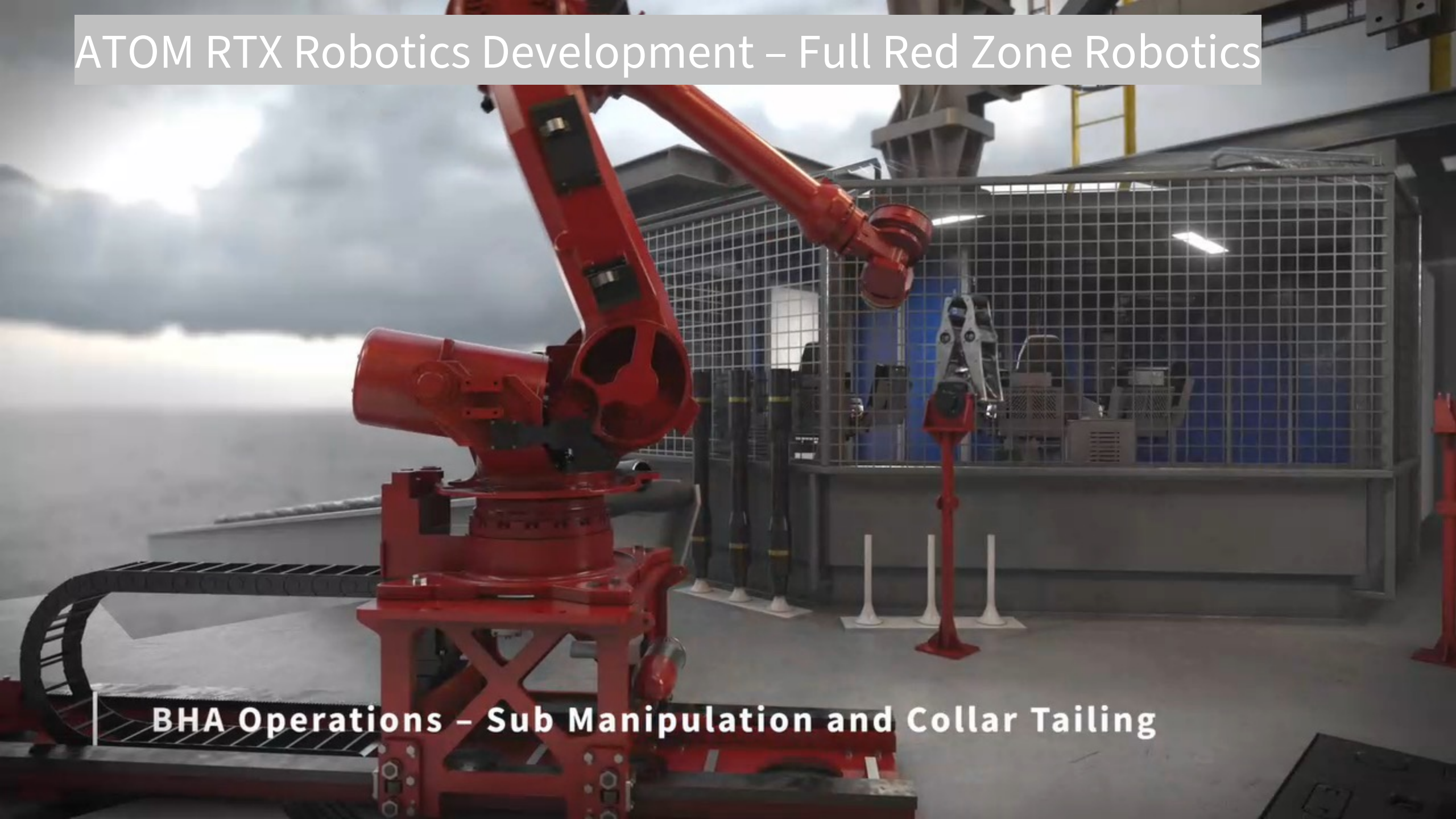
ATOM RTX Robotics Development – Full Red Zone Robotics