CARBON EMISSIONS REDUCTIONS IN OFFSHORE OPERATIONS

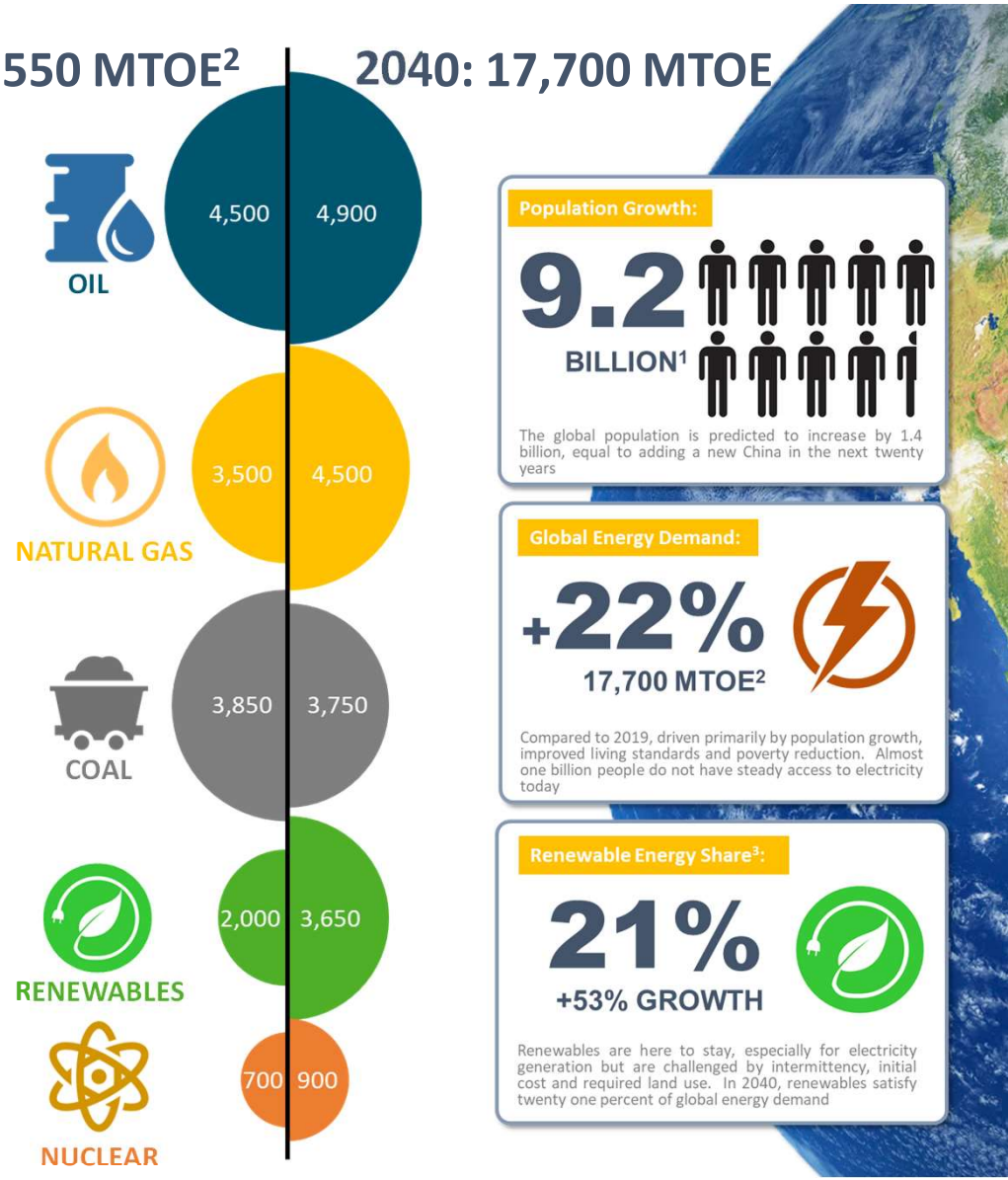
Transocean's Approach for Sustainable Operations

Transocean

2040 ENERGY MIX

One view…of many

- Oil and Gas is a necessary component in the energy mix, supporting energy access and abundance in coming decades
- While declining in western nations, coal is supported by demand in Asia and India
- Renewables will continue to be the fastest growing segment in the energy mix, nearly doubling in the next 20 years



Notes:

1. UN Population Division, World Population Prospects 2019
2. Values are in MTOE (Million Tons Oil Equivalent. 1.0 MTOE = 11,630 MWh
3. Renewables include Wind, Solar, Hydro, Modern Bioenergy and Solid Biomass, ref: Canadian Association of Petroleum Producers (CAPP)
4. Interpreted from the IEA Stated Policy Scenario, reflecting the impact of announced policy intentions for the energy sector out to 2040 (2.5C scenario), and does not reflect the IEA Sustainable Development Scenarios

ENERGIZING SOCIETY

Our Changing Role

"Energy transition" is less about shift and more about expansion to meet demand

Our role is changing on the world energy stage, but we play a critical role in a diverse energy mix

Recent world events highlight a need to identify and integrate multiple energy sources into the energy supply

OUR PRINCIPLE: ALIGN WITH STRATEGIC INITIATIVES

CUSTOMER FOCUSED

- Align with Customers' strategies and Paris Climate Accord
- Commercial partnerships to speed up deployment

SERVICE ORIENTED

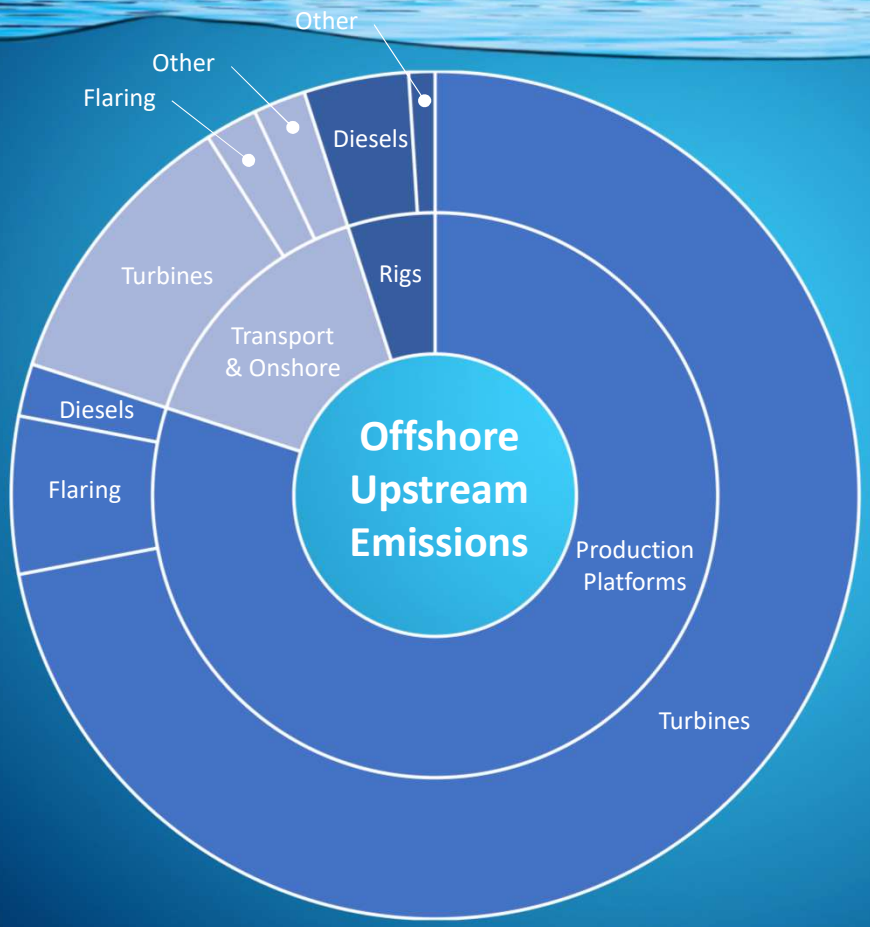
- Explore and deploy technologies that further enhance efficiency:
  - ✓ Fewer days per well
  - ✓ Fewer kilowatt-hours per well
  - ✓ Optimized fuel burn

DATA DRIVEN

- Carbon Intensity KPIs and metrics for 2030 now established
- Push lessons learned back into the process

EXPLORATION AND PRODUCTION

NCS OFFSHORE UPSTREAM SCOPE 1 CO_2 EMISSIONS



Source: Norway Statistics, Rystad Energy Research, Sep. 2019

TRANSOCEAN'S COMMITMENT

40%

Reduction in Carbon Intensity by 2030*

ACHIEVED THROUGH:

Enhanced Processes, implementation of innovative solutions and exploration of emerging opportunities

* Scope 1 and 2 Emissions, using a 2019 CO_2e baseline (refer to Transocean's 2019 Sustainability Report at www.deepwater.com for details)

DEEP WATER CHALLENGES

The Drillers' Landscape

REMOTE

Independent of external or shore-based energy sources

INTENSIVE

Operations dependent on energy, generated by converting diesel fuel to electricity. Primary means to reduce carbon emissions for a driller is by reducing the amount of fuel needed to fulfil the rig energy demand

EXPENSIVE

Fuel is a well cost component, borne primarily by Customers and always a target for savings

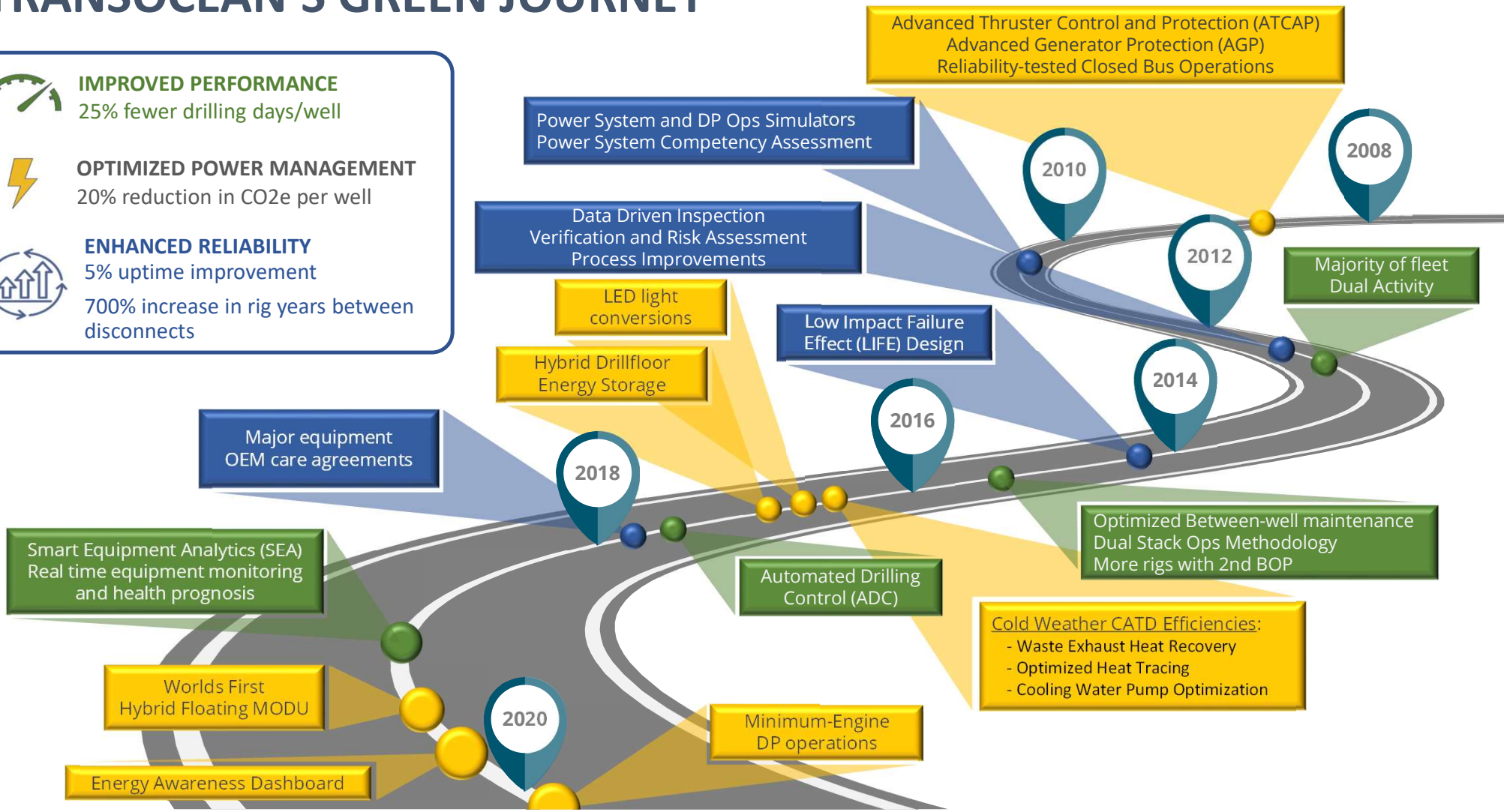
TRANSOCEAN'S GREEN JOURNEY

IMPROVED PERFORMANCE
25% fewer drilling days/well

OPTIMIZED POWER MANAGEMENT
20% reduction in CO2e per well

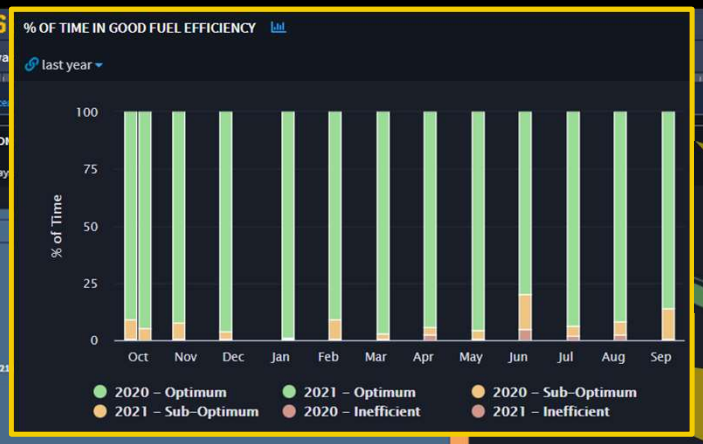
ENHANCED RELIABILITY
5% uptime improvement

700% increase in rig years between disconnects



ENERGY EFFICIENCY DASHBOARDS

Transocean SEA Smart Equipment Analytics



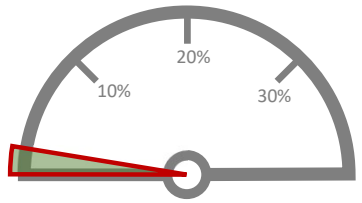
Fuel consumption per day, actual versus optimal tracked and trended

Power Plant efficiency, expressed in stop-light format

Energy use segregated by function displays where and how much energy is consumed

Emissions (CO2e) per hour for user-specified time intervals

Engines running vs. minimum engines required based on demand and load-dependent start logic



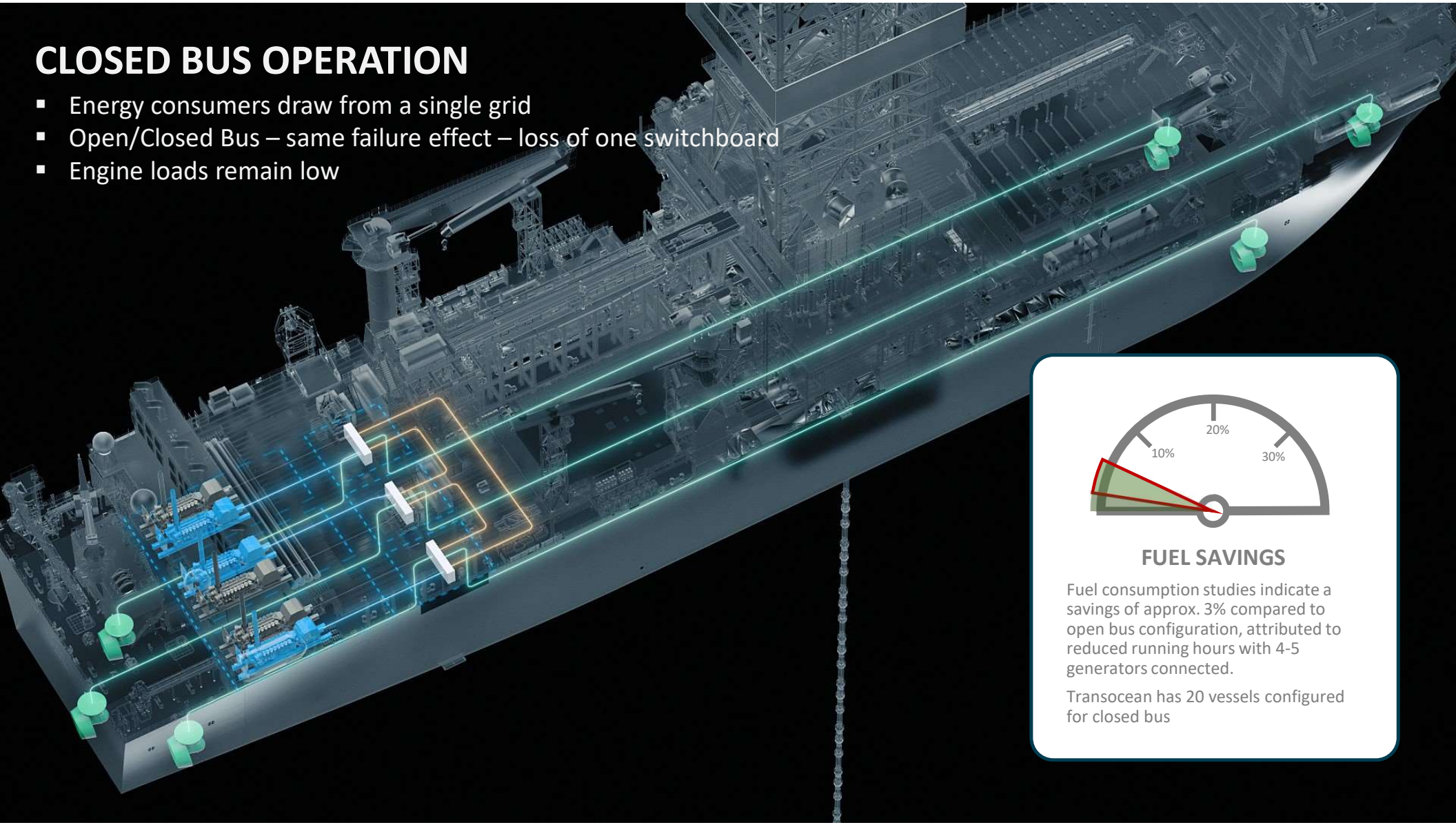
FUEL SAVINGS

Fuel consumption improved approximately 2% once vessel personnel were able to visualize plant performance and the effect of optimization in near-rea time..

Transocean has 20 vessels equipped with SEA, Fuel Efficiency and Energy Awareness Dashboards

CLOSED BUS OPERATION

- Energy consumers draw from a single grid
- Open/Closed Bus – same failure effect – loss of one switchboard
- Engine loads remain low



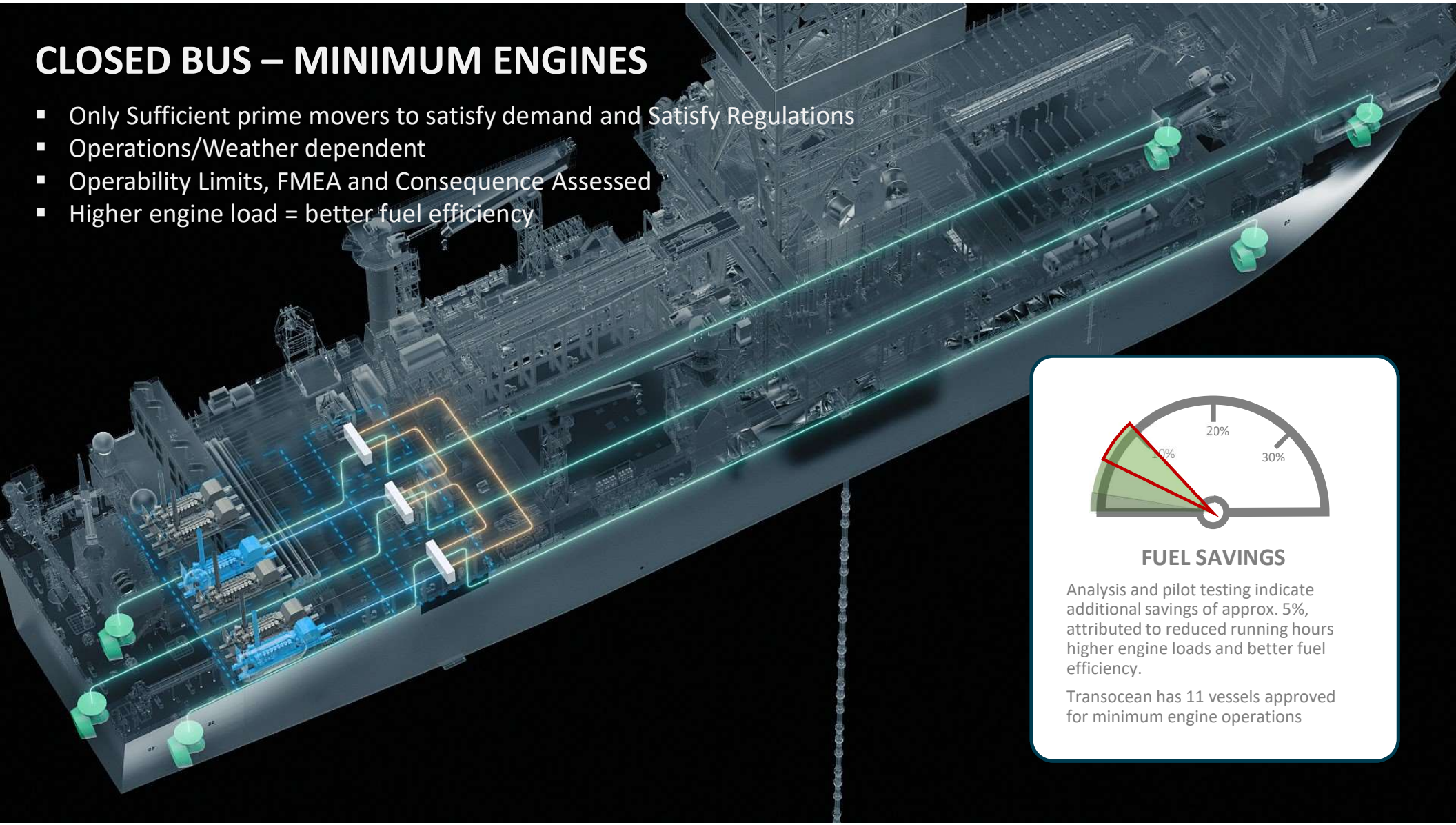
FUEL SAVINGS

Fuel consumption studies indicate a savings of approx. 3% compared to open bus configuration, attributed to reduced running hours with 4-5 generators connected.

Transocean has 20 vessels configured for closed bus

CLOSED BUS – MINIMUM ENGINES

- Only Sufficient prime movers to satisfy demand and Satisfy Regulations
- Operations/Weather dependent
- Operability Limits, FMEA and Consequence Assessed
- Higher engine load = better fuel efficiency



FUEL SAVINGS

Analysis and pilot testing indicate additional savings of approx. 5%, attributed to reduced running hours higher engine loads and better fuel efficiency.

Transocean has 11 vessels approved for minimum engine operations

ESG FUEL CATALYSTS

Designed for combustion ignition engines

Can be added to storage or day tanks

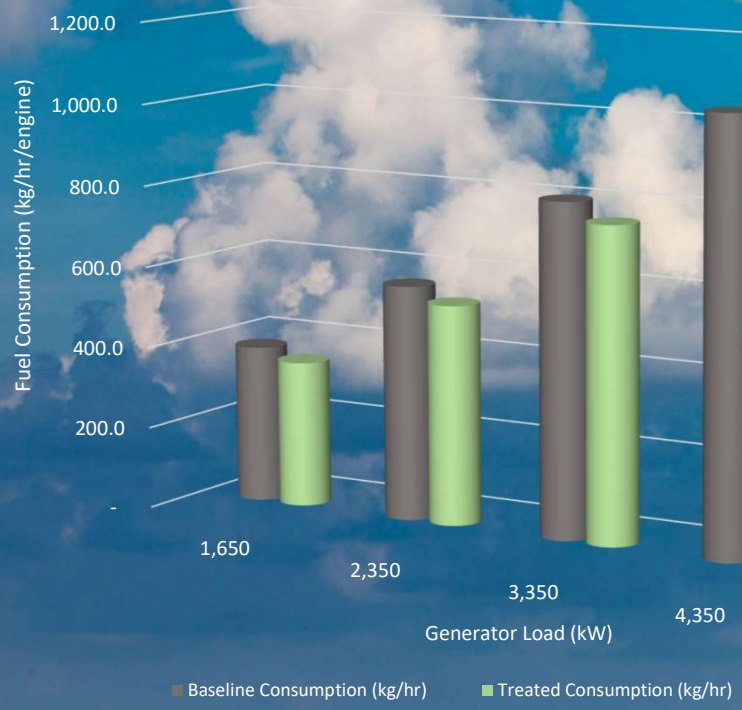
Does not degrade over time, stays in suspension once mixed

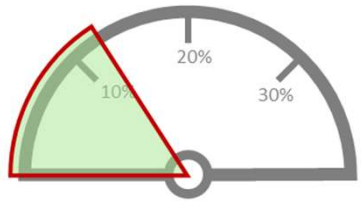
Chemically alters combustion timing

Higher percentage of fuel consumed in combustion

Reduces unburned fuel escaping in the exhaust as smoke

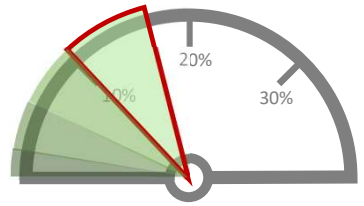
ESG ADDITIVE TESTING – INITIAL RESULTS





NOx REDUCTION

Average NOx reduction of 12.5% achieved through better combustion.



FUEL SAVINGS

Test results indicate fuel savings from 5% to 7% depending on engine load. Carbon emissions reduced for every ton of fuel saved.

Testing carried out in US Gulf of Mexico onboard *Deepwater Asgard*, February 2021

LIGHTING OPTIMIZATION

Lighting Energy:

5,200
MWh/year

A modern drill ship has more than 5000 light fixtures* installed onboard, consuming in excess of 5000 MWh of energy annually, about 8% of the total energy generated.

Savings Opportunity:

68%

Converting fluorescents to LED fixtures ship-wide can save up to 68% of the power previously allocated to lighting. Additional savings possible through optimization of lighting in selected spaces and in exterior locations.

FUEL SAVINGS

LED replacement on repair/replace basis approx. 20% complete.

Studies indicate a fuel savings up to 5% through reduction in energy generated annually (on completion of replacement work)

* High-Intensity Discharge (HID) fixtures excluded

EQUIPMENT OPTIMIZATION: HPU

HPU Energy:

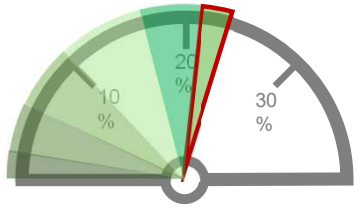
3,150 MWh/year

A large drill ship HPU (with 6 pumps) can consume in excess of 3000 MWh of energy annually, as much as 5% of the total energy generated.

Savings Opportunity:

UP TO 70%

Control system modifications, in conjunction with a small accumulator system to prevent pressure drop on additional pump activation allows us to run fewer pumps, satisfy demand with redundancy, and reduce energy use by up to 70%

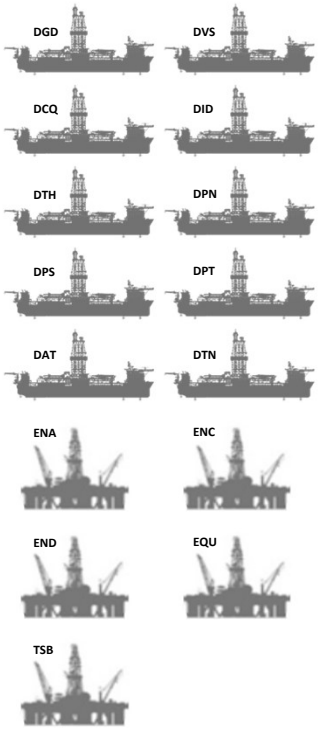


FUEL SAVINGS

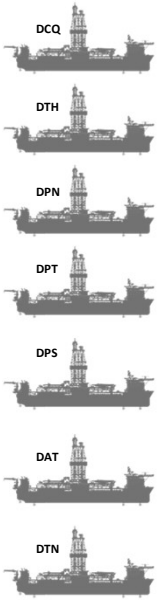
Studies indicate a fuel savings of 2-3% possible through reduction in energy generated annually (depending on control system logic for HPU pump reactivation)

STATUS AT A GLANCE

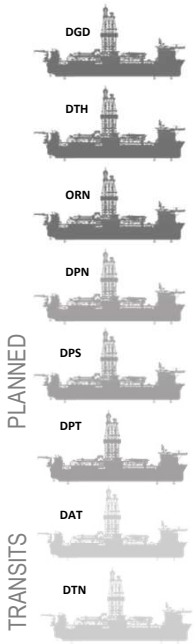
Classed Closed Bus CBT



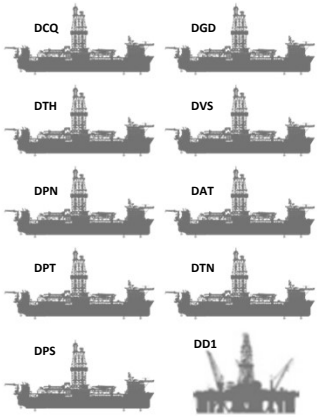
Energy Storage



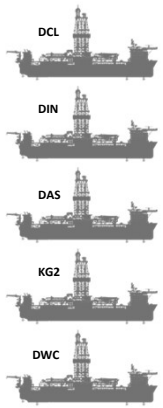
Fuel Additives



Catalytic Reactors (SCR)



Closed Bus



Hybrid-ESS

Notes:

1. CBT vessels are classed with the DNV AUTRO-CBT notation for closed operational modes. Four of these vessels also carry the +ER enhanced reliability notation
2. Energy Storage denotes drill floor energy storage harvesting regen energy from the hoisting system to smooth peaks in energy demand from the power plant
3. Closed Bus vessels were designed specifically for closed bus configurations with at least one vessel in each class short-circuit tested (DCL, DWC). These vessels predate the –CBT notations
4. Fuel additives are in use on three vessels with three more in-deployment. Both newbuilds will use ESG fuel catalyst for transit from SE Asia to US Gulf of Mexico
5. Hybrid ESS is the distributed hybrid energy storage system installed onboard Transocean Spitsbergen

IN CLOSING, KEY TAKE-AWAYS

Our industry should be proud of the part we play energizing society

We strive to be responsible environmental stewards and good citizens in the communities where we live and work

Our role is changing on the world energy stage, but we play an important role as part of a healthy energy mix

Minimizing our carbon emissions is crucial to that role

Opportunities revolve around fuel savings and energy consumption, but they are significant

We must explore emerging technologies and adapt

Self-funding commercial partnerships with Customers are essential to timely implementation.


Transocean
THANK YOU