

Experience from the world's first coil tubing coring operation for marine minerals exploration

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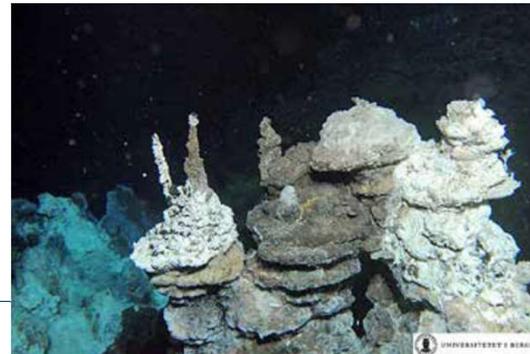
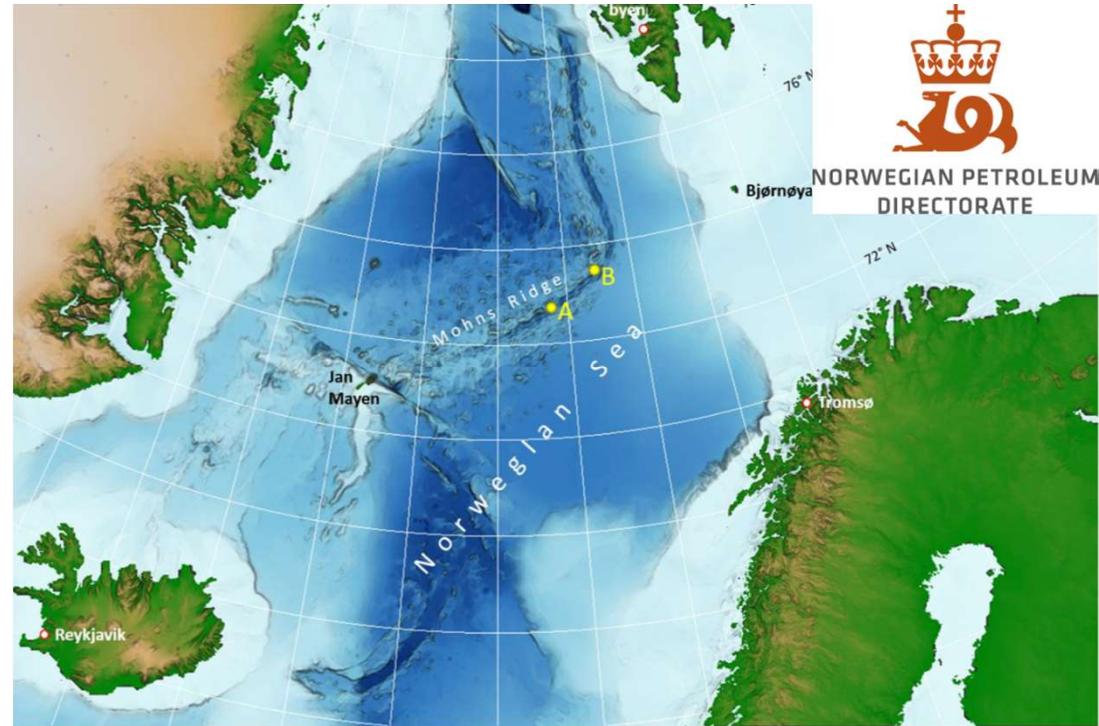
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Mission

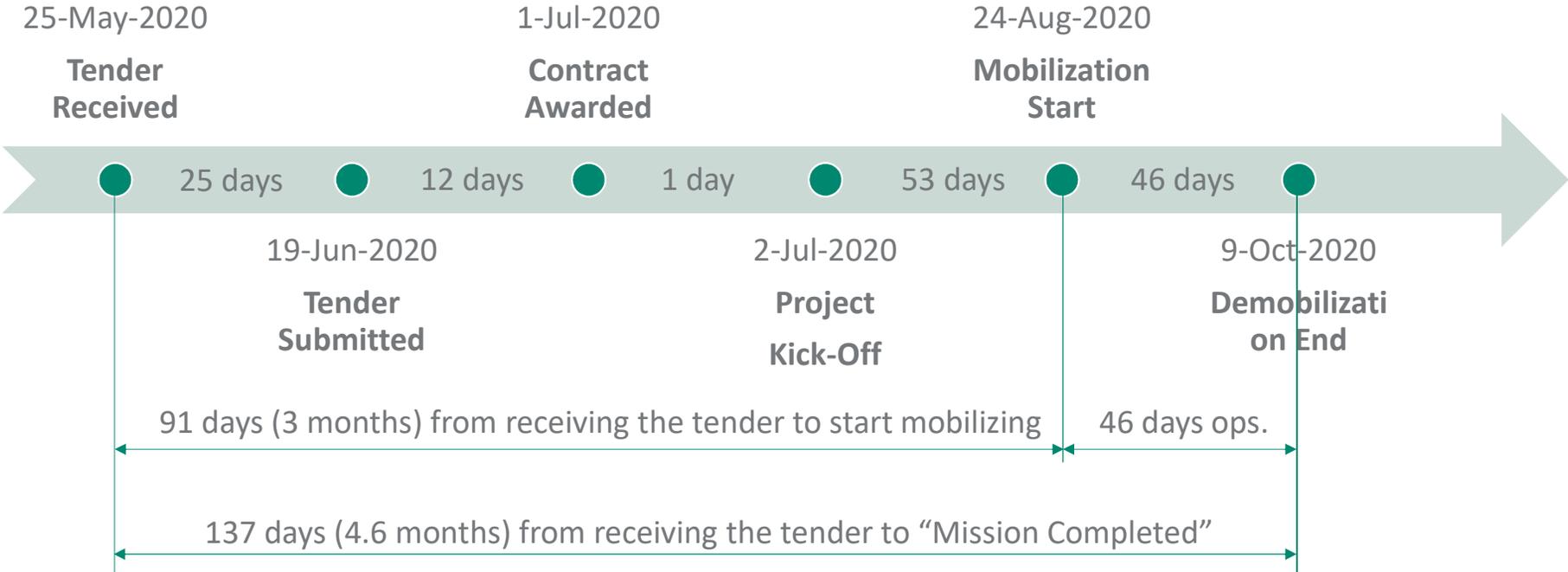
- Core Drilling of Seabed Massive Sulfides in the Norwegian Sea
- Water Depth: 2700-3085 m.
- Challenges time/area/operation
 - Very steep seabed conditions
 - Long distance
 - HSE
 - Spare parts/contingency
 - Vacation time
 - Covid 19



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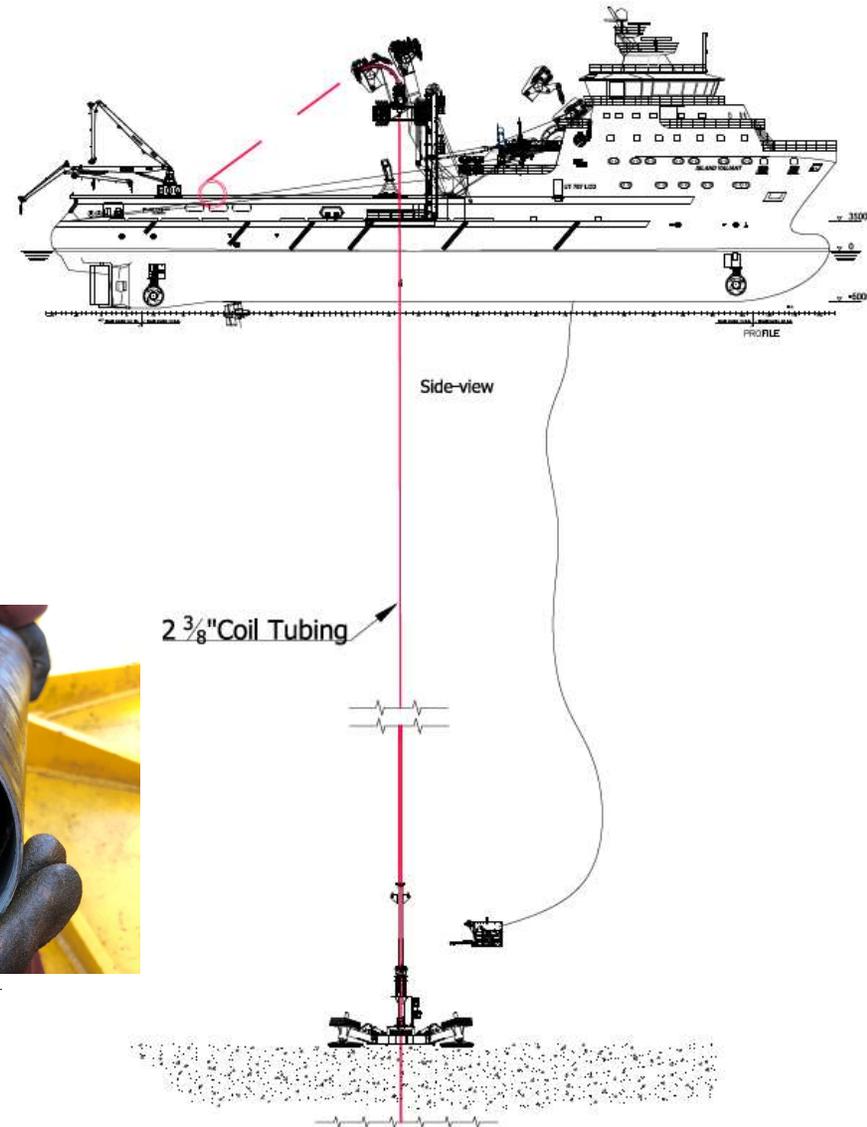
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Timeline



Solution

- Riserless Coiled Tubing Core Drilling from AHTS vessel *“Island Valiant”*
 - 93.4 m LOA x 22 m. breadth., 840 m² deck
 - 7 x 7 m. moonpool
 - 200 t. A-Frame
 - 90 t. AHC Crane
 - 1 work-class ROV



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Solution



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HSE - focus

- Create a safe working environment on a small vessel with complex operation
 - Focus on minimum manual handling and lifting of heavy items
- Perform Emergency drill – This is out of reach for SAR choppers
 - This is not like operating along Norwegian cost line (E18)
- Mob planning and follow up of third party
 - Perform HSE audit during mob
- Result
 - Less heavy equipment and fewer personnel results in improved HSE
 - Minimal environmental footprint



Results

- 26 days at field location
- 14 Coiled Tubing runs successfully executed in water depths between 2780 and 3085 m.
- Several cores retrieved successfully
- Seabed rock samples recovered by ROV during operations
- A total of 600 kg Core-samples and Stone-samples picked by ROV delivered to NPD
- Mission accomplished



Main learnings:

- Allow more time for planning-phase
- Use larger vessel in order to reduce WOW
- Smaller and lighter subsea guide-base for future operations
- Drop coring (if acceptable)
 - Evaluate to drill the holes and collect cutting-returns in revolving magazines. Run real time logging
 - Or
 - Combination of coring and drilling, run sidewall coring after hole is drilled
- Use larger/stronger coiled tubing to handle reactive torque better
- Improve coring-BHA for better recovery

