



WHEN TRUST MATTERS

JIP: High Strength Chain

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Safe operation of drilling rigs and floating wind by use of high strength chain

Challenge

- In recent years several failures of high-strength mooring chains used in mobile offshore units mooring systems have been reported. The fractures are found to be brittle in a material shown to be ductile through standard testing and otherwise compliant.
- Material susceptibility to hydrogen is considered to be the main failure cause.
- A criteria to identify an acceptable susceptibility threshold for mooring chain materials is missing



Solution

- Define an acceptance criteria and associated test procedures to differentiate between materials with detrimental and acceptable susceptibility to hydrogen degradation.

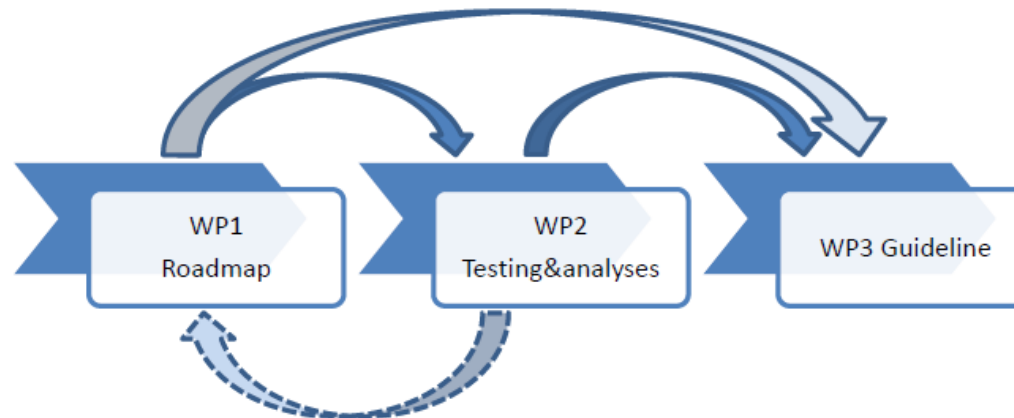
Benefits

- Leaner mooring systems with high reliability taking advantage of the high capacity of the high strength chain
- Provide knowledge that can be used to avoid this failure mode on new chains on high strength materials in the future

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Status of JIP proposal

- Contract has been sent in June 2023 to 6 oil companies, 3 rig owners, 3 rental companies and two manufactures of chain. First signatures have arrived.
- Assumed kick-off data August/September 2023 with Work package 1 which is consisting of establishing a roadmap for testing and analysis
- A large part of the work to be carried out will be testing and numerical and analytical fracture mechanics analysis (work package 2) which is expected to be carried out 2023-Q3 → 2024-Q3
- The key deliverable of the JIP will be a guideline with recommended activities needed to control the failure mode of HISC in high strength chains (Work package 3) which is planned for issuance 2025-Q1.
- Fee: 1.2 million NOK for operators/Oil companies, 0.6 million NOK Rig owners and 0.3 million NOK rental companies and manufactures



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