

PROJECT NAME: OFFSHORE JACKET REPAIR

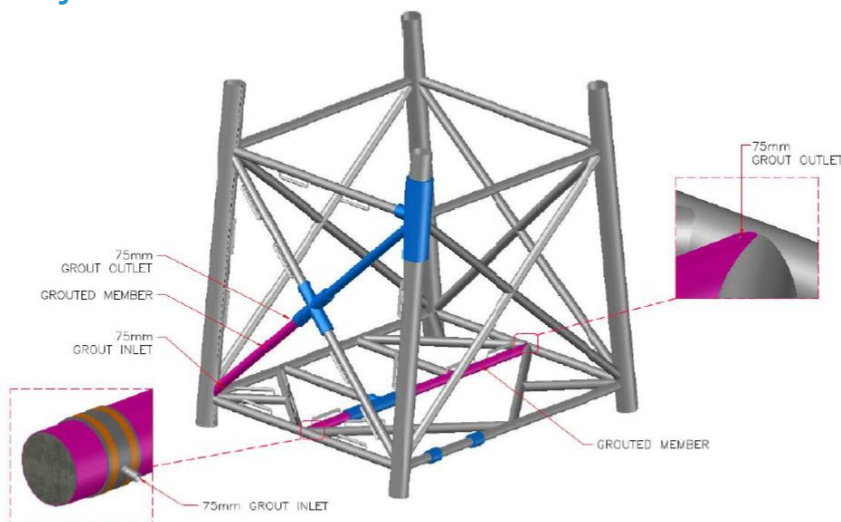


Photo: Offshore Delivery Team briefing prior to comencing the job

Location: Offshore Vietnam
Client: Neptune Subsea
Product: ceEntek ce200-140G™

Product Volume: 18 m³ (36 Te)
Connection Size: drilled connections-65mm; grout inlet-50mm
Completion Date: September 2017

PROJECT SITE



Offshore Platform is located in the East-southeast waters of Vietnam at a water depth of approximately 44 meters.

The platform has a 4-legged jacket foundation. The bracings on the jackets had undergone corrosion damage over the years and required structural repair to extend the platform's useful life.

Photo: Technical design of the Offshore Platform highlighting grouted members with ceEntek's ce200-140G™ UHPC grout

PROJECT PROFILE

PROJECT DESCRIPTION

Engineering and structural modelling of the offshore platform following an inspection and survey determined a requirement for a UHPC grout to be deployed to various members of the subsea jacket. Neptune Subsea was appointed by the owner and operator of the platform to provide the engineering support, design and grout the structural bracings for the repair of 5 damaged diagonal members of the platform. Neptune Subsea engaged ceEntek for the procurement of raw materials, blending and batching, packaging, and dispatching the final products to support the offshore grouting operations.



Photo: Neptune Subsea's 0.5 m³ Pan mixer used to batch ce200-140GTM (L); Inspection of ce200-140GTM grout delivery (R)

PROJECT EXECUTION

ceEntek's ce200-140GTM UHPC grout has been designed for similar structural strengthening in tropical waters. ce200-140GTM non-shrink UHPC grout was supplied in 2205lb (1000kg) bulk-bags and batched in the pan mixer located on the offshore vessel. One bulk-bag per batch provided 0.65cy (0.5m³) of the UHPC grout. The grout was pumped by Neptune Subsea to 44m (65') depth using 10cm (4") annuli flexible hoses to complete the structural repair grouting of 5 inlet and outlet jacket bracings of the offshore platform. The 50mm cubes were manufactured throughout the operation and taken to the laboratory on-shore for quality reporting services. The laboratory testing was witnessed and endorsed by ABS Consulting to confirm ce200-140GTM material performance, certifying the average 1-day compressive strength result at 80MPa (11600 Psi) and 7-day compressive strength result at 120MPa (17400Psi). Due to this rapid strength development and optimized execution, the project was delivered within 6-weeks from start to finish, without compromising the quality.

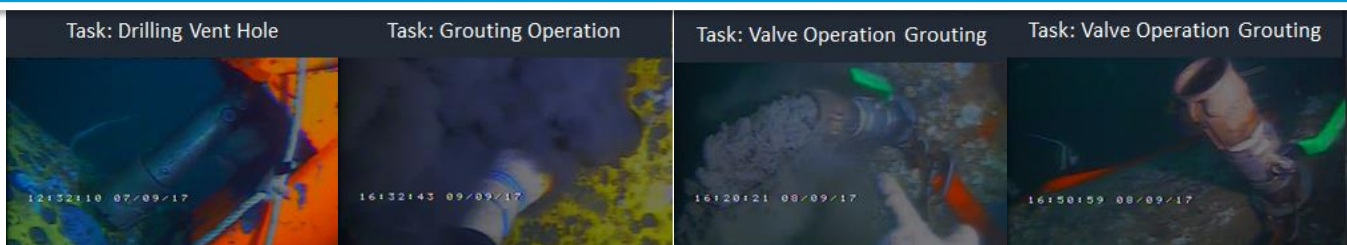


Photo 1: Subsea drilling into member using pneumatic and hydraulic drilling equipment by divers

Photo 2: Flushing of member using die materials to ensure continuity through section for grouting operations

Photo 3: Installation of grout valve and pumping of ce200TM-140G UHPC grout material to fill member

Photo 4: Mechanical lock-off at member upon completion of grout installation to complete works operations