

CASE STUDY

CORROSION MAPPING INSPECTION OF LARGE SUBSEA OIL STORAGE TANK

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INTRODUCTION

A client has a large subsea oil storage tank located on the seabed, in water depths in excess of 130m. The tank structure has a total surface area of 8550m². A corrosion risk assessment was conducted on the tank by the client and Sonomatic, that identified key areas on the tank outer walls for inspection.

PROCESS

Each face of the tank required inspection for potential corrosion threats, including the bottom of the tank which is 1m above the seabed on a support frame. Due to the limited access to the tank bottom, it was inaccessible for most ROV systems to conduct/deploy an inspection system capable of collecting accurate corrosion mapping information. The tank has been in service for some time and had a build-up of marine growth and seabed silt on all surfaces. Any inspection solution had to be capable of conducting cleaning operations to obtain an acceptable scan surface condition and provide accurate thickness measurements required to satisfy the CRA requirements.

Although the MAG-Rover is a tried and tested system for automated ultrasonic subsea inspection, the capacity to conduct simultaneous cleaning and inspection operations on the structure was a new challenge for Sonomatic. An intense development process for a water jetting cleaning head was completed with limited time due to vessel operational time-frames. A FAT type demonstration/validation was conducted at Sonomatic's head office in Warrington, attended virtually by key stakeholders to assess the readiness of the scanner prior to mobilisation.

OUTCOME

Once in field the MAG-Rover was put into action on the top face of the tank and commenced cleaning and inspection on selected runs covering 109.5m of accurate corrosion mapping data. The MAG-Rover continued an intense cleaning and inspection campaign on all four sides, and the top and bottom faces of the tank. Due to the high risk associated with the inspection on the bottom of the tank runs were conducted in a safe and tightly controlled evolution, managed by all parties. In total, over 700m of data was collected on all faces of the tank. The accurate corrosion mapping array data sets, will provide sufficient information to satisfy the CRA requirements to show that the tank will be fit for purpose for several years to come.

