

IMPRESSED CURRENT CATHODIC PROTECTION (ICCP) RETROFIT ON TAQA NORTH CORMORANT PLATFORM

Impressed Current Cathodic Protection (ICCP) system consisting of eight 950 amp systems on the TAQA North Cormorant Platform.

BACKGROUND

The North Cormorant platform, owned and operated by TAQA, is a fixed steel jacket located approximately 100 miles North East of Shetland in the Northern North Sea in a water depth of approximately 160 metres.

The platform was installed with a galvanic anode cathodic protection (CP) system, mounted directly on to the jacket.

Over the past few years, it was evident from a number of subsea surveys and reviews that the CP system was nearing the end of its useful life and a retrofit CP system was required.

The ICCP system consisted of eight No. 950 amp systems, each comprising of a remote anode sled located on the seabed between 300m to 350m from the jacket.

These sleds were specially developed by Deepwater, based on their previous track record of the 450 amp RetroBuoy™ buoyant anode units that have been installed at a number of locations worldwide.

INSTALLATION

The sleds developed are the largest DC rated sleds designed to date, and with this approach and optimisation, reduced the number of subsea systems from 16 to eight. This minimised installation time and costs, space topside for the topside power supplies, cable routing and the subsea cable protection systems between topside and the subsea RetroBuoys.

Each RetroBuoy and cable deployment took just 18 hours to fully deploy and install on the seabed.

Each RetroBuoy is powered by a dedicated air cooled transformer rectifier (TR) located topside.

Due to the platform space constraints, all eight TRs were installed in a self-contained A60 module onshore.

The module was mounted and installed on new overhang structure built on the platform, minimising offshore destruct and installation time.

PROJECT SPECIFICATIONS

The final design consisted of eight complete systems each with the following components:

- Large output RetroBuoy (seabed mounted impressed current remote anode sled)
- Subsea anode power cable (including pull-in head, subsea armour termination and bend restrictor)
- Cable hang-off assembly

- Stainless Steel Ex-d anode junction box
- Transformer rectifier (housed in an A60 module)
- Positive and negative topside power feed cables
- Structural negative connection (two negative train connection points)
- CP monitoring equipment.

Each ICCP system was rated at 75 volts 950 amps DC to meet the required current demand and voltage drops.

Successful installation of the ICCP retrofit was carried out in the third quarter of 2015, 15 months after commencement of detailed design.

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