

Caisson video inspection and simultaneous cleaning system

CLIENT

BP

ASSET

Eastern Trough Area
Project (ETAP)

LOCATION

UK

Innovative custom designed and manufactured equipment can prove to be a very efficient option when you need one tool that can simultaneously carry out multiple functions

BENEFITS

Improves efficiency and reduces manpower

Minimises DROPS potential

Re-configurable on-site to cater for additional client requirements during field deployment



DELIVERY ASSURED

CHALLENGE

Our customer required hi-resolution inspection and cleaning of a Caisson J-tube which contained a loosely anchored messenger wire which could not be disturbed or snagged during the process. With a requirement for all debris to be cleaned out to the open end of the tube, it was necessary to ensure the camera/cleaning equipment could be recovered without the need for diver assistance.

We set out to create an innovative method for the inspection and cleaning of the Caisson J-tube which is:

- able to be deployed to the end of the J-tube
- configured to remove any debris via pressure water-jetting from the bottom of the J-tube as it was open to the sea
- optionally configured to physically manipulate debris or objects within the J-tube
- able to provide hi-resolution (1080p) image (both forward facing and 360 degree side facing) feeds in live video format
- accurately and repeatedly deployed to any specific location within the tube for additional inspection and cleaning purposes
- able to demonstrate the ability to move rotationally within the J-tube to allow 360 degree cleaning if required and avoid any potential snagging or hang up points
- fully risk assessed to have as low as reasonably possible DROPS potential.

SOLUTION

- After analysing all the requirements we designed a new tool – PISCES (Precision Inspection and Simultaneous Cleaning in Enclosed Shafts)
- The cleaning head can be turned / steered manually onto its feet and allows accurate orientation within the J-tube. The manual steering system also allows the unit to be pushed to the curved end of the tube
- This concept allows simultaneous control of the cleaning and inspection progress very accurately with 100% certainty of the mission task success before recovery from the tube
- With live video feed available during the cleaning process we can quickly repeat water jetting in any specific area as required. This greatly reduces the time required on the job
- EV Offshore, an established industry leading subsea video inspection company provides proven hi-resolution camera hardware
- The design of the system and its bespoke deployment method operates within manual handling technique limits. We utilise incorporated lifting devices within our equipment to avoid the need for additional rigging attached on-site removing a large degree of complexity from the on-site deployment
- We have various attachments to enhance the steering and orientation options tailored to a given site requirement. These are off-the-shelf but we can very quickly and simply adapt and cater to a bespoke location
- Whiskers can be fitted to the system to allow enhanced visual depth perception, identify possible gaps at tube joints and verify the integrity of the J-tube. We can place the whiskers into and around any joints with accuracy and repeatability
- Alternate cleaning head sections and operating pressures can be fitted and create maximum flexibility to cater for the client's pressure jetting requirements
- Our system can be configured up to a deployed length of 250m to maintain the live camera feed
- The initial inspections undertaken allowed our customer a detailed insight into the type of deposits found in subsea caissons and how to remove these in preparation for commissioning. We could repeatedly target specific areas and verify the integrity of Caisson joints. This created a high degree of confidence in the overall caisson integrity and de-risked the subsequent umbilical pull significantly.

SUMMARY

- Engineering and designs support
- PISCES pressure jetting / video head mounting unit
- Deployment bench
- Water pressure pump and hydraulic hoses
- EV Offshore camera unit and umbilical cable
- Steering rods and PISCES head unit control swan-necks fittings
- 3 operators for the system
- 2 1000ltr IBC tanks with clean potable water



The PISCES system set up on location

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