SUBCTEST

Development of novel inspection NDT techniques and robots to be deployed by remote operating vehicles (ROVs) for the subsea inspection of offshore structures

- **Project budget: £1.2m**
- **End Users: HSE, PSA**

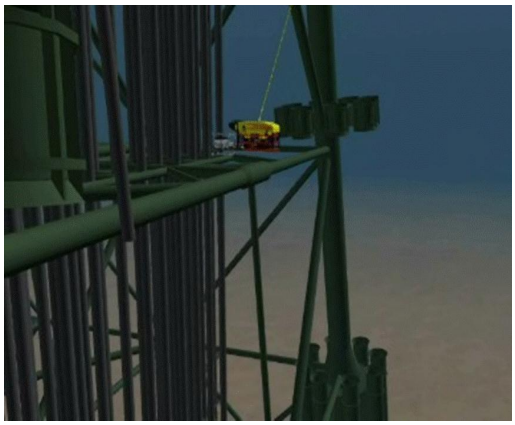
The SUBCTEST project developed NDT techniques suitable for deployment from a small observation class ROV for the examination of critical welds and lengths of subsea pipelines.

The NDT techniques developed were:

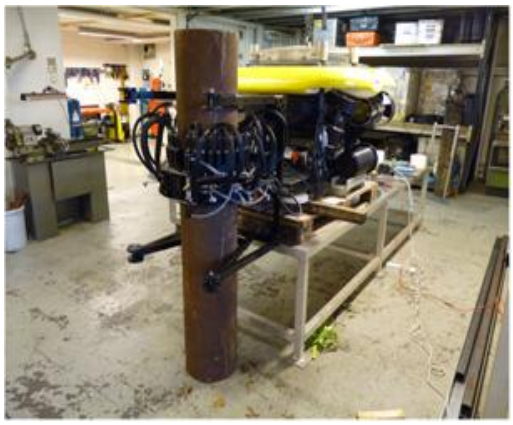
- A 'Creep' wave Phased Array Ultrasonic Testing (PAUT) technique for simultaneous testing of inside and outside surfaces of tubular members of offshore platforms.
- Multi-skip PAUT technique for testing node welds in a single circumferential scan.
- An Alternating Current Field Measurement (ACFM) array technique for scanning node welds in a single pass.
- A long range ultrasonic testing (LRUT) technique for chains.
- An LRUT technique for the girth welds at either end of a pipe spool.

In addition, a combined stress wave / electromagnetic numerical model was developed for comparing periodic permanent magnet with meander coil electro-magnet acoustic transducers (EMATs) as a foundation for using guided waves for coated pipes in place of conventional piezo-electric transducers.

Finally two robotic manipulators were built, one for deploying the ACFM and the other for the LRUT and put through underwater trials. It was not possible to take the ROV manipulators offshore for final trials and therefore a simulation was made of the ROV deployment on a structure. The simulation is interactive and can be used to train ROV pilots.



Simulation of ROV deployment on 'jacket' legs



LRUT mounting on an ROV

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SEVENTH FRAMEWORK PROGRAMME