Reducing Costs by using Underwater Remote ACFM® Inspection

Subsea Expo February 2017

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Topics

- Introduction
- How ACFM® Works
- Subsea Inspection
- ROV remote deployment
- Cost saving applications
- Q&A
The ACFM® technology

- Alternating Current Field Measurement (ACFM®)
- Alternating current induces a uniform electromagnetic field into the surface
- The electromagnetic field is disturbed by surface-breaking defects
- Sensors measure this disturbance and locate the defect
- The interaction is recorded and modelled using advanced mathematics, which allows sizing for depth and length without the need for on-site calibration
Weld Inspection Array Data

Acquired during FAT on test piece with longitudinal and transverse cracks.
Alternative Contour Plot

......of ACFM® data from weld scan by crawler
The need for inspection
Remote underwater ACFM® inspection

- TSC’s remote inspection capability makes use of ROV’s to either carry out the inspection, or place sub-systems that guide the probes while the ROV stands off.

- TSC develops solutions to suit the specific application, usually based on the TSC ‘toolkit’ of remote tooling.

- Remote weld inspection using ACFM® has been carried out across a wide range of applications including:
  - Structural node welds on jackets.
  - Caisson inspection.
  - Inspection of welded plate structures.
  - Mooring System inspection, including chains
  - Inspection of spud cans.
ACFM® MagCrawler example deployment video
Urgent requirement for weld inspection on 8 and 10 inch spools.

- Welds are protected with a 2.5mm thick poly-prop coating.
- ACFM® can inspect through the coating.
- ACFM® can be deployed from inspection class ROV.
- Scanner built to suit ROV and with neutral buoyancy.
- Circumferential scan performed in two minutes.
- System performed well up to 90m water depth and in Russian sub zero weather.

SpoolScanner™ for inspection of spool welds
Offshore Deployment of SpoolScanner™
ACFM® is a mature and certified technique for surface crack detection and sizing.
No need to remove and re-apply coatings.
A variety of methods available to deploy ACFM® on subsea structures.
Cost saving applications; no diver, smaller ROV, easier cleaning.

ACFM® campaign inspection experience using ROVs includes:
- **Norwegian Sector of North Sea**: Talisman, Repsol, Statoil, Shell, Total
- **Australia**: Woodside, Apache
- **UK Sector of North Sea**: Shell, Elf, Enquest, Taqa, Britannia
- **Brazil**: Petrobras
- **Gulf of Thailand**: Chevron
- **Africa**: Exxon Mobil, Shell

TSC partner collaborations to provide inspection service solutions:
- Fugro
- DeepOcean
- Subsea 7
- DOF
- HPR
- Technip
- Ocean Installer
- Sonomatic
- Oceaneering
- Prezioso Linjebygg
Any Questions?

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