



Engineered Solutions: ACFM[®] SpoolScanner[™]

Inspection Challenge: Urgent requirement for the ACFM[®] Inspection of selected subsea spools at a Gas Field, North Pacific Ocean. Very low operating temperatures, harsh climate.

Campaign Focus: To determine presence or absence of surface breaking defects in welds on 8 and 10 inch spools.

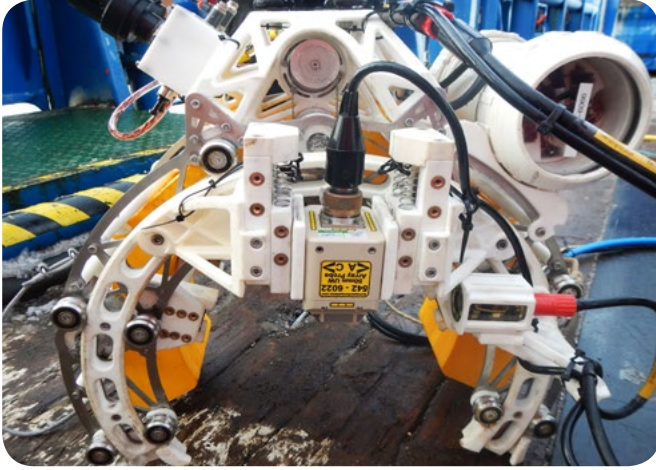
Coatings: Welds are protected with a 2.5mm thick poly-prop coating. Bent spool sections covered in at least 2.5mm of epoxy coating.

ACFM[®] Engineering: Design and build an ACFM[®] scanner tool, to suit the specified ROV (SPERRE Subfighter 15k). The ROV is just 15kW and has a payload of 20kgs. A lightweight scanner with neutral buoyancy was designed making deployment from the ROV possible.

Campaign Facts:

- Cavi-jet high pressure water jet used to achieve the cleaning standard for ACFM[®].
- All subsea welds inspected with a type 542 array probe, on a compliant mount, with the U31R[™] ACFM[®] instrument, carried by the ROV .
- 542 Array Probe scan width: 50mm
- Circumferential scan performed in two minutes.
- 4-wire RS232 ACFM communications set up through the ROV umbilical.
- Successful and consistent performance up to 100m depth in sub zero temperatures.

Above: TSC bespoke engineered SpoolScanner[™] and U31[™] subsea ACFM[®] system mounted on to a ROV ready for subsea deployment, up to 100m, in the North Pacific Ocean. Air temperatures often down to -11°C, plus wind chill, whilst the average sea temperature hovered at just above zero.



Above shows the ACFM® Spool Scanner carrying the 542 Array Probe.



Above shows the ROV with the SpoolScanner on-board being lowered for subsea deployment.



U31™ Features

- Reliable crack detection, full data storage.
- Accurate sizing (length and depth).
- Reduced cleaning requirements.
- Designed to operate in depths up to 2000m.
- Detection in duplex or non-magnetic materials.

Advantages of ACFM®

Feature	ACFM®	MPI	Conventional Eddy Current
Reduced dependence on operator competence. <ul style="list-style-type: none"> • Detection reliability and repeatability • Confidence in integrity data 	✓	✗	✗
Detection through coatings. <ul style="list-style-type: none"> • Avoids cost and disruption of coating removal 	✓	✗	✓
Detection in normal ambient light. No pollutants used.	✓	✗	✓
Detection in non-magnetic materials.	✓	✗	✓
Can be remotely deployed. <ul style="list-style-type: none"> • Enables hazardous zone deployment 	✓	✗	✗
Provides accurate and auditable inspection records. <ul style="list-style-type: none"> • Enables effective integrity and risk management • Supports regulator verification and audits 	✓	✗	✗
Determines crack length and depth without calibration. <ul style="list-style-type: none"> • Allows crack criticality assessment 	✓	✗	✗
High POD and low false call rate. <ul style="list-style-type: none"> • Avoids cost of unnecessary repairs and rework 	✓	✗	✗

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