CASE STUDY:
1002/01

PRODUCT: DEPTH-LOC

DATE: AUGUST 2014

WIRELESS STRING DEPTH CORRELATION- REMOVING THE RISK, TIME AND COST OF WIRELINE

LOCATION:
Atlantic Ocean

SERVICE:
Wireless String Depth Correlation

BENEFITS:
10 hours rig time saved

Eliminate wireline

METROL®
APPLIED INTELLIGENCE

CASE STUDY: 1002/01

PRODUCT:	DEPTH-LOC STRING CORRELATION
DATE:	AUGUST 2014

"...BY BEING ABLE TO WIRELESSLY TRANSMIT DEPTH CORRELATION DATA FROM 3331M MDRT TO SURFACE IN A DEEP WATER ENVIRONMENT, THE CLIENT AVOIDED WIRELINE OPERATIONS AND ACHIEVED A SIGNIFICANT RIG TIME SAVING..."

CHALLENGE

The client had a stated vision:

"To be the best safety, health, and environmental performer in the UK continental shelf."

The client approached Metrol with a requirement to correlate the setting depth of a production packer, with a casing pip tag, while minimising risk and saving rig time.

The well was located in a gas field, which lies in 600 metres of water, North West of the Shetlands. This area is characterised by extreme environmental conditions making any offshore project challenging.

Metrol rapidly adapted the Paragon wireless telemetry system to fulfil these objectives.

METHOD

Metrol has developed a gamma ray detection tool, known as DEPTH-LOC, and incorporated it into the Paragon wireless telemetry system. DEPTH-LOC is capable of detecting formation and pip tag gamma signatures and relaying the data back to surface. Metrol used this tool to correlate packer depth when installing the lower completion, and allowed the client to avoid a potentially hazardous wireline operation. A reduction in rig time was also realised through a more time efficient operation.

DEPTH-LOC is a bolt-on to Metrol's wireless Paragon telemetry system. See Fig. 1.

The Paragon system enabled two-way wireless data transmission through the work-string, while an ROV deployable sonar unit, TRITON, located on the rig's BOP, created a communications link from the work-string to surface. See Fig. 2.

To verify the depth of the completion string, two "correlation passes" were performed between two points across the known depth of the casing pip tag. Each metre between these two points (approx. 20m) was marked on the pipe at surface. Importantly, an accurate time was noted each time one of the marks passed a reference point, as indicated by the laser index line - Fig. 3.

Metrol wirelessly interrogated the DEPTH-LOC tool to confirm the pip tag gamma signature and recorded the exact time the tool was adjacent to the casing pip tag. This information was used to start space out calculations using the measurements taken earlier on the drill floor.

A confirmation pass was performed to ensure repeatability of the gamma signature and the calculated space out.

Finally the correct, correlated depth could be confirmed and crossed checked by using the reference line measurements taken earlier.

Fig. 1 DEPTH-LOC.

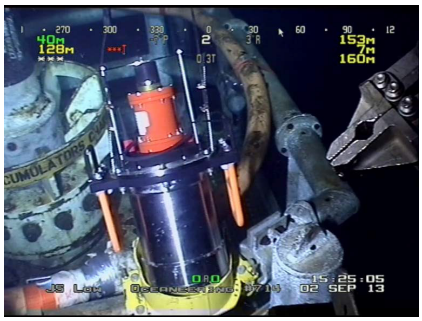


Fig. 2 ROV image showing RDS (ROV Deployable Sonar) being positioned onto LMRP (Lower Marine Riser Package).

Fig. 3 An index (or zero) line was made on the pipe; the compensated laser was used as a reference point when measuring the "passes" of DEPTH-LOC across the known depth of the pip tag.

RESULTS

Metrol retrieved data from the DEPTH-LOC system and recorded the centre of the gamma "spike" (see Fig. 4). The correlation pass was a constant speed, therefore a simple distance = speed x time calculation was performed to produce an accurate measurement.

The Metrol DEPTH-LOC correlation system uses real time as a reference for depth calculation, it does not have to contend with any errors introduced by stretch within wireline or pipe.

The total time to perform the passes, retrieve the data, analyse and correlate depth, was substantially less than a conventional wireline correlation operation. The entire operation took under 2 hours which represents approximately 10 hours saved rig time compared with a typical wireline correlation run.

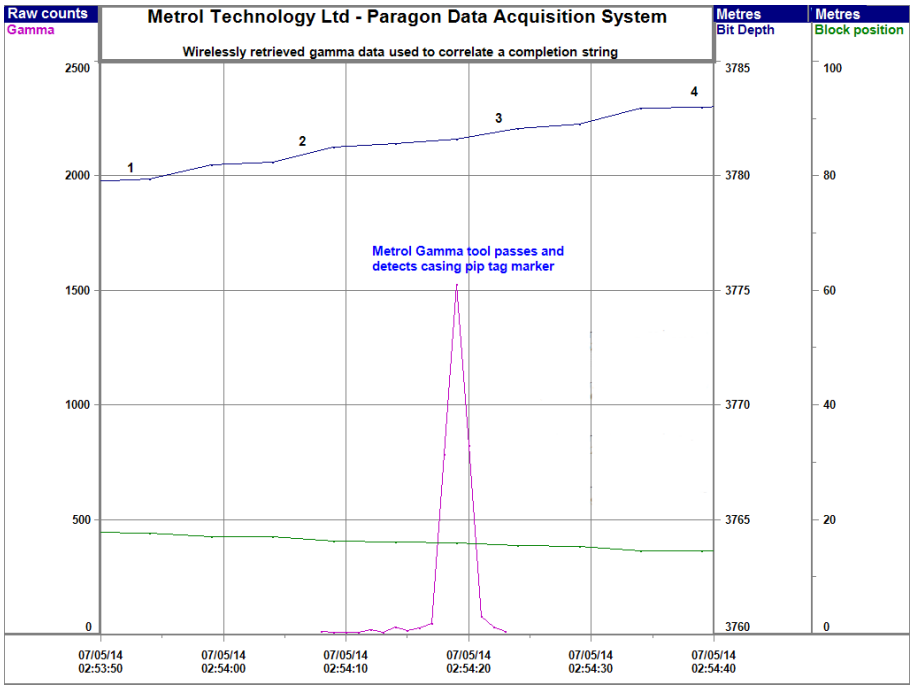
This translates to a significant saving in rig costs and reduces risk to personnel, and the well, by avoiding wireline intervention in a deep-water environment.

Similar projects have been conducted for clients:

Offshore UK Continental Shelf,

Offshore Vietnam,

Offshore Azerbaijan.



1. Metre mark #14 passes laser line at 02:53:52
2. Metre mark #13 passes laser line at 02:54:06
3. Metre mark #12 passes laser line at 02:54:22
4. Metre mark #11 passes laser line at 02:54:39

Fig. 4

Wireless data showing "gamma spike."

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