

# WIRELESSY CORRELATING GUN DEPTH ENSURES SAFE OPERATIONS AND REDUCES RIG TIME

DEPTH-LOC

JANURARY 2016

PRODUCT:

DATE:

SERVICE:  
DEPTH CORRELATION DRILL  
STEM TEST

BENEFITS:  
COST EFFECTIVE

REDUCED RIG TIME

IMPROVED SAFTEY

ACCURATE DECISION  
MAKING



CASE STUDY:

1002/02

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APPLIED INTELLIGENCE

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CASE STUDY: **1002/02**

PRODUCT:	DEPTH - LOC
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FOR FIVE CONSECUTIVE DST'S, METROL'S DEPTH-LOC WAS RUN WITH THE PARAGON WIRELESS SYSTEM ALLOWING PACKER AND TCP GUNS TO BE ACCURATELY POSITIONED WITHOUT THE USE OF A WIRELINE INTERVENTION.

## CHALLENGE

The client requested a method of wirelessly correlating TCP gun depth for five drill stem tests without the use of wireline. The well tests were conducted using a jack-up rig. The perforation intervals were 36ft, 13ft, 32ft, 9ft and 11ft respectively, in a single well, that was over 10,000ft deep. The precision of gun placement, within relatively narrow intervals, was absolutely critical to ensure the TCP accurately perforated each pay zone.

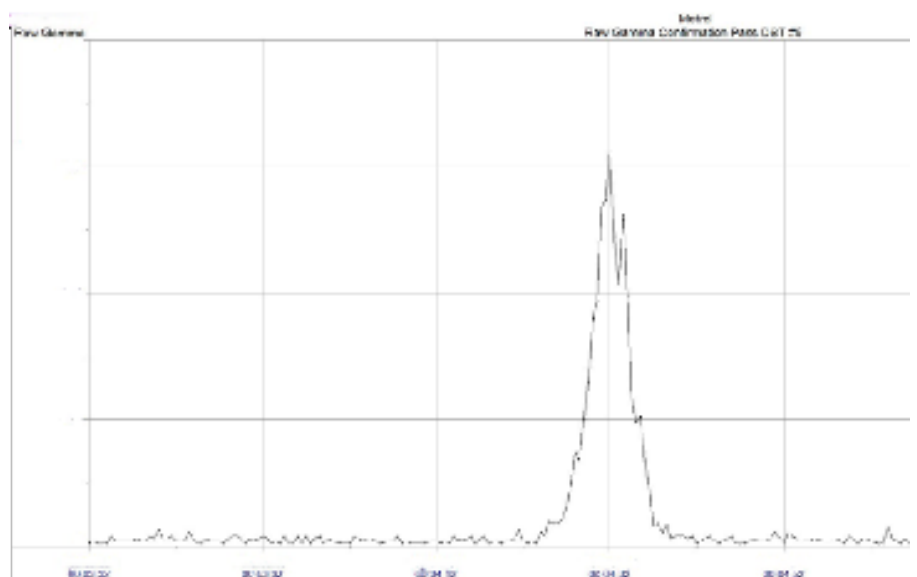
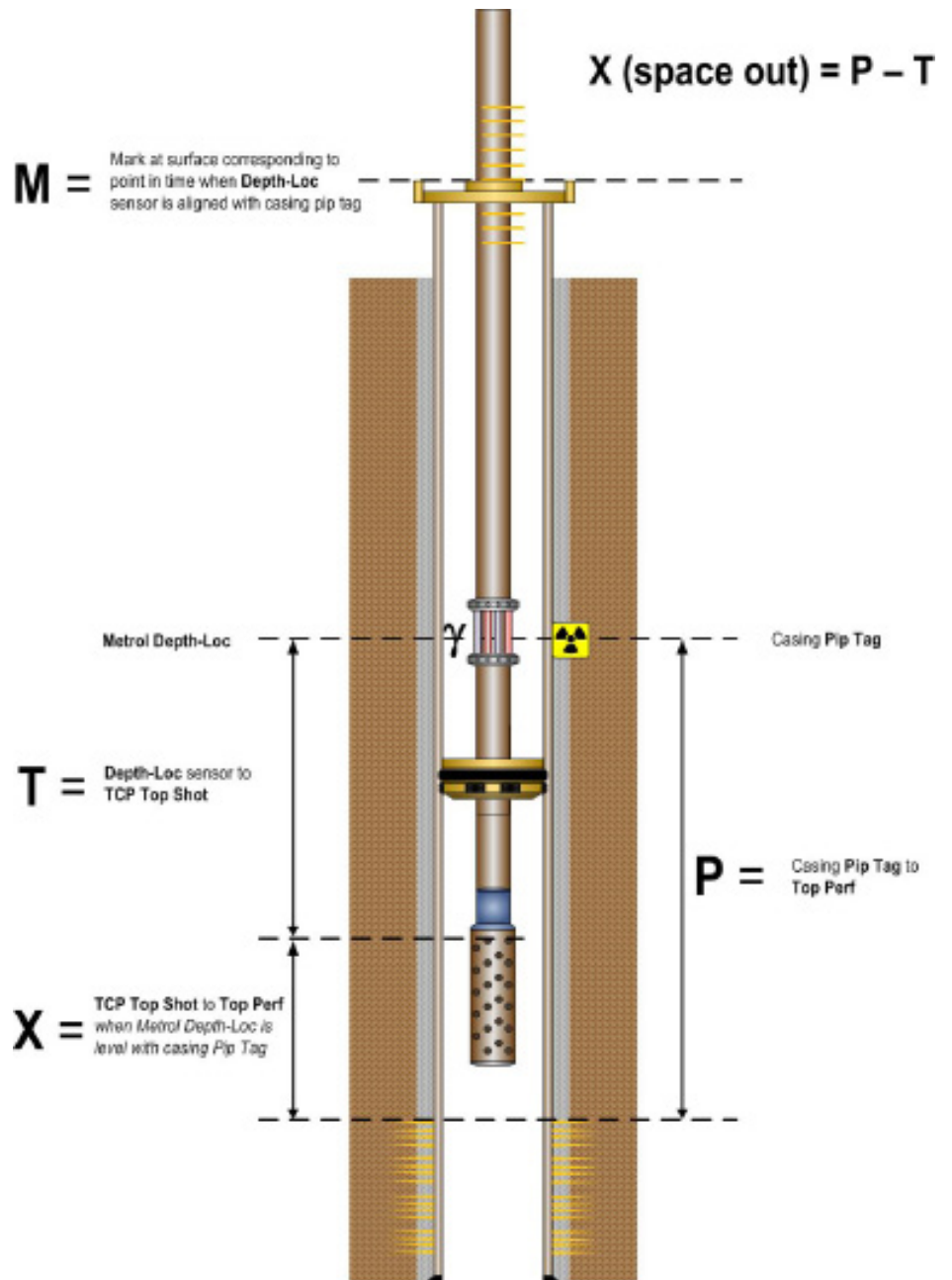
## METHOD

DEPTH-LOC is Metrol's fully wireless string depth correlation system. It is capable of detecting formation and pip tag gamma signatures before relaying the data back to surface via the PARAGON wireless telemetry system.

To achieve accurate depth correlation two known reference points were required:

- 1) The gamma pip tag located in the casing and
- 2) The Metrol DEPTH-LOC Gamma sensor placed at a known position in the tool string.

To verify the depth of the packer and guns two 'correlation passes' were performed across the known casing pip tag depth. At surface an accurate time was noted each time a pre-marked line passed a fixed reference point, in this case the rotary table.



## METHOD CONT...

Importantly, all correlation passes were performed in the same direction the packer was to be set, this ensured string effects due to compression were repeatable between passes.

After completing the correlation passes a wireless transceiver was attached to the tool string just above the rotary table, this created a wireless pathway from the DEPTH-LOC tool to a surface interrogation package via the PARAGON repeater stations.

Metrol wirelessly interrogated the DEPTH-LOC tool to confirm the pip tag gamma signature and noted the precise time the DEPTH-LOC sensor was adjacent to the casing pip tag on both correlation passes.

## RESULTS

After identifying the point at which the DEPTH-LOC sensor was aligned with the casing pip tag, the space out could be calculated by subtracting the length between DEPTH-LOC to TCP top shot (T) from the length between casing pip tag and top perforation (P). Inserting the resulting length of tubing into the string aligned TCP top shot with the top of perforations.

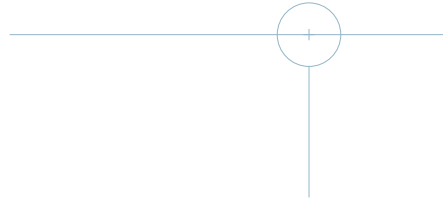
As DEPTH-LOC system uses real time as the reference for depth calculation, it does not have to contend with any errors introduced by stretch within tubing or wireline. The correlation procedure was carried out using Metrol's core offshore crew, removing the requirement for an e-line crew just prior to the start of testing operations.

## CONT..

The total time to perform the passes, retrieve the data and correlate string depth was significantly less than a conventional wireline correlation operation, saving considerable rig time and removing the requirement for additional crew mobilisation at key phases of the project.

Table summary of DEPTH-LOC efficiency

DST #	DEPTH-LOC Correlation time	Wireline Correlation time (approx)	Cumulative rig time saved (approx)	Cumulative man days saved (no requirements for e-line crew)
1	3.5 hours	6 hours	2.5 hours	9
2	2.5 hours	6 hours	6 hours	18
3	< 2 hours	6 hours	10 hours	27
4	3.5 hours	6 hours	12.5 hours	36



## CASE STUDY INDEX

1001 – MULTI-ZONE TESTING

1002 – DEPTH-LOC

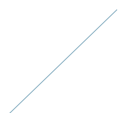
1002/02 - DEPTH-LOC

1003 – RETROFIT TECHNOLOGY

1004 – PRO-LOG

1005 – CROSS-FIRE

1006 – WIRELESS BARRIER MONITORING



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