

# MaxTRAC Tractor Conveyance of VSP in Highly Deviated Cased Hole Saves USD 650,000

VSI vertical seismic imager survey completed in less than  $\frac{1}{3}$  the time for drillpipe conveyance, offshore Angola

## CHALLENGE

Conduct a vertical seismic profile (VSP) survey in a highly deviated cased well offshore Angola to obtain velocity information and image below the well path.

## SOLUTION

Convey the VSI\* vertical seismic imager using the versatile MaxTRAC\* downhole wireline tractor system, which is engineered for deviated and high-angle wells.

## RESULTS

Obtained excellent-quality borehole seismic data in only 17 h, instead of the 60 h estimated for drillpipe conveyance, saving USD 650,000.

## Challenging conditions for borehole seismic survey

Total E&P needed to conduct a VSP survey for a well in Block 17, offshore Angola, to obtain velocity information as well as image below the well path. This information would be used to refine the velocity model for future wells.

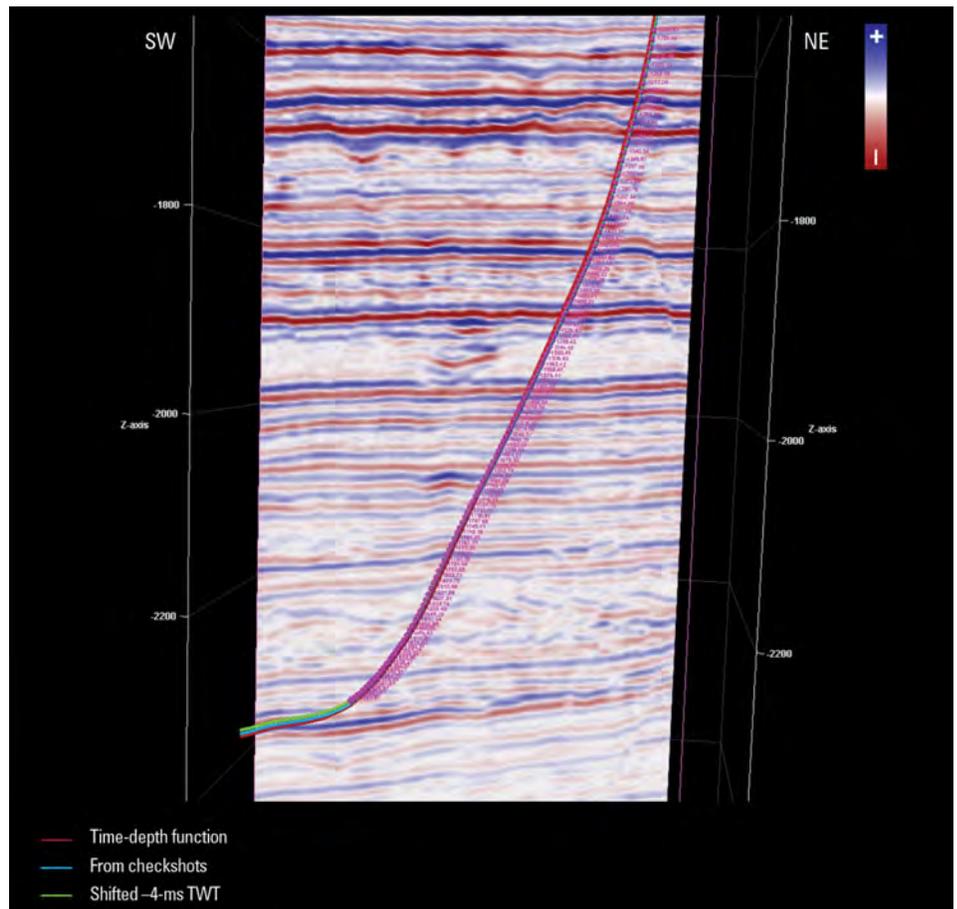
However, the cased well was a challenging acquisition environment, at 85° deviation in 650 m [2,100 ft] of water. Another critical consideration was the high rig cost, at more than USD 1 million per day.

## MaxTRAC tractor for quick, reliable conveyance

The VSI imager survey was conducted from 2,440 to 1,250 m [8,005 to 4,101 ft] with four shuttles at 10-m [33-ft] spacing. A G. GUN cluster of three 150-in<sup>3</sup> airguns was used, controlled with the TRISOR\* acoustic source control. Navigation was accurately recorded with the SWINGS\* seismic navigation and positioning system.

**"Sorry for the short notice, but this job is critical."**

Elemele Ogu,  
Total Operation Geophysicist



All tops selected by Total were found at the expected depths, with only 4-ms two-way time (TWT) necessary to tie the 2D migration from VSP processing with the surface seismic.



*The MaxTRAC tractor uses an inchworm traction system based on two or more tractor sections. As one section grips the casing or formation, the next is resetting for continuous motion.*

### **High-quality data at significant time savings**

It took only 17 h to acquire the VSI imager survey in 10¾-in casing. Drillpipe logging had been estimated to take in excess of 60 h. Thanks to MaxTRAC tractor conveyance, the cost savings realized on the rig rate was USD 650,000.

Subsequent processing by Schlumberger petrotechnical experts found very good correlation of the VSP 2D image with the surface seismic survey, with a maximum correlation of 88% between the corridor stack extracted from the 2D image and the surface seismic survey.

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