

Applications In Action

LAND IMAGING SYSTEMS



Optimizing Productivity for High-Density Acquisitions

AHV-IV Renegade Delivers 80,000 Pounds of Efficiency

SEGMENT: Land Seismic Acquisition - Source Products

REGION: Khazzan Makarem Block, Oman

TECHNOLOGIES: AHV-IV Renegade

The Challenge

Mobilizing and maintaining a vibroseis fleet to cover high-density, 3D acquisitions can be labor and time intensive.

In December 2007, Global Geophysical Services, a geophysical service provider operating twelve land survey crews worldwide, began a five-month, 3D data acquisition in Oman. The acquisition specified an advanced vibroseis recording methodology covering approximately 2,793 sq km of relatively flat desert terrain for characterization of a target approximately 6,000 meters below the surface. With aggressive daily productivity parameters and simultaneously recorded offset separated shot points required by the E&P operator, Global sought a highly reliable vibroseis vehicle with faster acceleration that would provide greater energy input while minimizing the logistical quandary of mobilizing and coordinating multiple vibs per fleet.

The challenge with a survey of this magnitude is managing, maintaining and coordinating the sheer volume of vibrators required to meet the high-productivity structure of the acquisition. In addition, wear-and-tear on vibrators utilized in twenty-four hour continuous recording environments can hamper production and greatly diminish uptime if maintenance and repairs are difficult or complicated to address in the field.

The Solution

A source-driven acquisition utilizing seventeen AHV-IV Renegade vibroseis vehicles with 80,000 pounds of peak force in a single source fleet configuration

To accommodate the high-productivity survey parameters, Global's Oman Crew 663 commissioned 17 AHV-IV Renegades (15 in operation with 2 spares), ION's 80,000 pound peak force vibrators with interchangeable tires and tracks. Operating the Renegades



Global Geophysical's Crew 663 recently completed a 3D acquisition in Oman with record-breaking productivity.

"The AHV-IV Renegade was critical to the success of the acquisition because it afforded the opportunity to accommodate the demanding continuous recording environment with single-source operations. With a large number of vibrators to manage, our productivity will be highly correlated with the reliability of the units."

Tom Fleure
Sr. VP, Geophysical Technology
Global Geophysical Services



With over 2,900 km of use on a single AHV-IV Renegade in the Oman fleet, Global experienced the value of having durable, low-maintenance vibroseis vehicles in the field.

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in unison in a single-source fleet configuration with 50 meter VP spacing intervals, and 100 meter spacing between source lines, the acquisition covered approximately 42,000 km of vibrator track distance - an average of 280 km a day with a 610 km-day maximum.

In peak production, Global achieved weekly production rates of 50,000 VPs. With a total of 842,324 VPs recorded over the 151-day duration, Global was able to maintain 95% vibrator uptime in a continuous recording environment with virtually twenty-four hour a day operations. Vibrator uptime and fleet mobility were critical factors for the success of the Oman acquisition.

The Results

Improved field productivity with minimal downtime and simplified in-field maintenance

Global Geophysical Services optimized uptime and productivity by utilizing the AHV-IV Renegade which maintained exceptional field performance during the five-month acquisition. With the ability to deliver increased ground force in a 6-second sweep (a 32 second cycle time) from the 80,000 pound Renegade, Global provided higher productivity operations and faster move-up times between VPs with a record day of 12,200 VPs recorded.

Utilizing the same number of vibs and identical configuration with 60,000 pound vibrators, an operator would have to increase the sweep length by 77% to maintain the same signal to noise ratio, an additional 4.7 seconds in cycle time. The increase in cycle time dramatically impacts field productivity. Operating in a continuous recording environment and accommodating the grueling pace requires technology that is durable and field-reliable. With astounding ease, the AHV-IV Renegade maintained consistent performance levels throughout the high-density survey, and proved to be a cost-effective resource with minimal downtime and maintenance on the 3D acquisition.

Global provided higher productivity operations and faster move-up times between VPs with a record day of 12,200 VPs recorded.



ION's AHV-IV Renegade has a V/V transmission that improves move-up time between VPs, increasing field productivity.

"With over 87 AHV-IV vibrators in our fleet, field maintenance and durability are of extreme importance to our crews. I am very pleased with the field performance of the AHV-IV Renegade, and its ability to operate almost 24 hours a day is a testament to the rugged, durable design of the vehicle."

Pat Ryan
Equipment Manager
Global Geophysical Services

We would like to thank Global Geophysical Services for permission to show the above referenced results.

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