The First 3C-3D Using MEMS In Barranca_Lebrija Swamp, Colombia

VOLUMEN I, N° I JANUARY 15, 2008

Notes: About 3d-3C
DESIGNING 3-COMPONENT 3D SEISMIC SURVEYS.
By: A. Cordsen1 and D.C. Lawton2

NOTES

The UT-MOCAM Operator

This challenge the Seismic aquisition in swamp areas represents a high risk when dealing with remote areas with difficult accesslimited operation times due to seasonal influences and governmental restrictions, . Under such circumstances, Barranca_Lebrija project is the first one of them.

In December 2007 finished, a 3C-3D seismic survey was conducted by CSG Ltd. over the Barranca_lebrija field located between Santander and Cesar, departments of Colombia.

This survey covered an area of 60 square kilometres (9.9x6km), using MEMS (Mechanical-Electronic Micro Systems) VectorSeisTM 3C digital sensors as recording equipment **input/ output System Four (4).**

The data pre-processing was performed using the ProMAX software system. The objective of the survey was to determine the best resolutions and trajectories from sandstone.There were also number of difficult environment which were to benchmark the sensors in this area at a wáter depth of 12 meters average.

The primary objetive of this trial was to verify the operational sequence and performance of this new generation of 3C digital sensors,, in this paper, after a short description of the recording system and the acquisition layouts.

The weather (rains) over the acquisition period was full for the area at that time of the year.

The wind were slights in the morming. Lights rain fell on various days, and although there was few degradation in quality data, more for the running of wáter to the marsh.

The fisrt step in the field procedure was to terminate the full benchmark of the path, and desplacement for all botes.The path was 6 lines of 120 channels each one, with holes to (25 feets average in mirror wáter and 30 feets per hole = 55 feets from surface) of depth, totally 1410 holes.

Predicting hydrocarbon occurrence and estimating its volume is an effort central to development geophysics. Using 3C-3D seismic data with well log information and combining them geostatistically, UT MOCAM can begin to estimate oil volumes. 3C-3D seismic surveys, where compressional waves generate shear-wave reflections (PS-waves), can provide complimentary surface-seismic information to help identify fracture properties early in the production history of a reservoir. Based on measurements of shear-wave azimuthal anisotropy, PS-waves can identify fracture density and strike, and because of their asymmetry they are also sensitive to fracture dip.CSG recomended use for processing sequence the Vp/Vs ratio as a seismic attribute for recognition of lateral lithologic changes in the reservoir, using 3C multicomponent traveltime records.

Westerngeco,-Schlumberger is processing the 3C/3D Barranca_Lebrija Project using Omega Software in Bogota City.

ACKNOWLEDGEMENTS:

We would like to thank the sponsors of GAS MOCAM for their support, and all of our colleagues who contributed their efforts to this project. We would also like to thank to Mr. Hugo Gravini and Jorge Engels from GEOFIELDS.

CONTACTS:

CSG
Calle 94 A No. 11-A-66, Of: 301
Phone: (57-1) 257 63 41 / 46
Facsimile: (57-1) 2 57 63 44
Bogota– Colombia.

Email:**Duverney.Ardila@csg.com.co**