SOLUCIÓN A UN PROBLEMA ESTÁTICO EN UN ÁREA CON TOPOGRAFÍA ABRUPTA USANDO UNA VELOCIDAD DE REEMPLAZAMIENTO VARIABLE.

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ABSTRACT

A major problem encountered in reflection seismology is the precise determination of field static corrections that have to be applied to the reflection data in order to eliminate the effects of weathering layer. Normally these corrections are calculated with the help of Shallow Refraction Surveys, which apart from being costly, may in general also be of insufficient accuracy with respect to the actual needs of the seismic reflection method. The waves refracted at the weathering layer are most of the time present in the reflection seismograms and constitute part of the so called ``first breaks". These are waves where the source-receiver ray trajectories are located partly within the weathering layer and partly along its base. The arrival times of these refracted waves also carry necessary information concerning the vertical travel times through the weathering layer needed to compute the field static corrections. In this work a simple and efficient method is described for obtaining field statics using only field seismograms recorded by the common midpoint (CDP) technique. As input data one considers: (a) the surface topography of the seismic line; (b) the first breaks of waves generated at the base of the weathering layer and (c) the data acquisition geometry. The method consists of determining from a starting model a velocity one that provides first breaks which match with those measured in the reflection seismograms. The initial model has a layer constructed taking into account available information concerning average thicknesses and/or velocities of the weathering layer in the area. The redundancy of CMP data practically ascertains that the solution is unique and that the final model is capable of providing field static .

The method, proposed in this work, was tested on raw register and a seismic line with abrupt topography in colombia. The obtained corrections with variavel velocity were better than those computed with a constant velocity model measurements.

The static solution are necesary to obtain a good surface image. But in the initial sequence processing it is necesary corrections of high accuracy, and don´t spend time in surveys with other process, that don´t resolve the static problem. In this paper is propose a processing method using static calculation model with variavel velocity.

This method have been development in the processing data in areas with irregular surface. For instance, Piedemonte Llanero, the sofware for calculation is ProMAX, algorith Gauss-Seidel.

In the seismic processing explain the replacement velocity value is very important, it affecting the image, which can be destroyed. One question is the value of this velocity (Replacement velocity), constant Velocity in all project, being more important the link with near areas that the static problem.

In this study are using real data processing from a variavel replacement velocity and other constant velocity model, being compared and analising, with differences betwen images.

RESUMEN

Uno de los problemas encontrados en la sísmica de reflexión es la determinación de las correcciones estáticas que han sido aplicados a los datos de reflexión para poder eliminar los efectos de la capa meteorizada y de la superficie. Esas correcciones son calculadas con ayuda de estudios de refracción, con costos adicionales y también pueden ser insuficientes con respecto a las necesidades del método de reflexión sísmica. Las ondas refractadas en la capa meteorizada están presentes en los datos de reflexión (sismogramas) y constituyen parte de lo que se conoce como "primeros arribos", las cuales pueden ser definidas como ondas donde, la trayectoria del par fuente-receptor, son localizadas parcialmente dentro de la