

3D - MARINE SEISMIC DATA RECORDING AND PROCESSING

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3D-surveys have grown to be an intergral part of today's seismic exploration.

For marine 3D-surveys the single boat method is usually employed.

A qualified streamer shape estimation technique resulting in accurate geodetic positions for each individual seismic trace is an indispensable prerequisite for the seismic processing.

An optimal bin adjustment can automatically be arranged to achieve a unique coverage nearly all over the area from a coloured bin coverage map.

Topics in 3D-marine seismic data processing are presented with the help of the results from an area surveyed in the waters of the Far East Region.

The exploration target was to be expected at a travel time of about 1 sec. Field and processing parameters have been properly estimated considering the requirements for resolving the fault pattern of the structure in question.

Extensive velocity studies have been started from analyses data on a grid of 500 x 500 m. The velocities have been areally smoothed along pre-interpreted reflection horizons in order to obtain a velocity field for the stacking process free of random errors. Several maps demonstrate the effectiveness of this procedure. The pre-interpretation enabled

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extraction of dip information. This was used in conjunction with the streamer bearings for the conversion of the stacking velocity field into the RMS-equivalent to be applied in 3D-migration.

The reconstruction of true subsurface geometries was implemented by the 3D-downward continuation process, using the finite difference algorithm in the splitted version. The 3D-splitting migration allows - in contradiction to the often used 3D-two step migration - the incorporation of laterally varying velocities while the whole 3D-stacked data volume is recursively continued downwards.

A series of vertical and horizontal sections across the area will demonstrate the high degree of structural refinements geneally obtained by 3D-surveys.
