Capabilities of using Tesseral 2D and Pro

For Educational process:

The wavefield modelling represents an integral part of any university course on seismic data interpretation. It is important to teach the geophysical students to obtain the computed field of seismic events that reasonably meets the observed field, and to obtain in general an effective seismic and geological model as a base for solution of the seismic reverse problem. As a program product for hands-on trainings, the software product *Tesseral 2D* may be used successfully. In it, all the functions needed for simulation of seismic processes used in university courses like 1D wave simulation of primary reflections' and multiples' traces for normal incidence in absolute elastic earth, and 2D wave simulation of time sections are well implemented. These variants of modelling may be then used for solutions of industrial tasks under conditions of routine processing and limited a priori information.

The modelling that uses the *Tesseral* software gives the possibility to visualize the wavefields under various configurations of reflectors. It is important for development of visual representations of time sections complicated with multiples, and of influence of reflector's curvatures. It is possible to create small movies related forward modelling. The visual images are kept in mind well, and they are important for understanding of seismic processes. It is possible to demonstrate the processing flows like stacking, introduction of statics and other issues relating synthetic models.

For research and scientific work:

The Tesseral software package may be used as an effective instrument for simulation of wave processes while studying forms and intensities of reflected events for obtainment of information related physical properties of rocks and for geological profile forecast, in particular, for development of new techniques for evaluation of rocks' reservoir properties, detection of lithological composition, facies features, paleoreconstructions of sedimentation conditions, revealing of structural and lithological traps, detection and contouring of hydrocarbon accumulations. The algorithms of full-wave seismic modelling enabled in the *Tesseral 2D and Tesseral Pro* packages gives the possibility to build the seismic models highly accurately, and then to study the physical effects caused by changes of elastic, density, thirsty properties of hydrocarbon accumulation rocks, to compute models of gas saturation influence and model sensitivity of seismic events to changes of reservoir saturation.

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