

عنوان مقاله:

A Novel Method in Hydrocarbon and Reservoir Properties Prediction Based on Elastic Properties

محل انتشار:

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خلاصه مقاله:

It is undeniable that hydrocarbon and reservoir properties are able to be identified and predicted exactly in well log locations. Outside the well, the hydrocarbon and reservoir properties prediction becomes more challenging especially for the area with complexity in structure and lithological background. Many methods, based on seismic data, have been practiced widely in oil and gas industry for optimizing the result and minimizing the risk in hydrocarbon prediction. However, some of the current methods still need some improvement to achieve a better result. We have developed a novel method based on elastic properties for hydrocarbon and reservoir properties prediction. According to our test, this novel method is applicable for various geological conditions and purposes such as: lithology pore fluid separation, facies distribution, fracture basement characterization and also ۴D time lapse. By developing a couple of attributes that indicate lithology and pore fluid separately, the prediction of hydrocarbon and reservoir properties prediction can be optimized. Those attributes are giving a response like gamma ray indicating lithology and resistivity indicating fluid type. Both attributes are derived from elastic properties based on attenuation concept through rockphysics approximation. Combination of these attributes are used to formulate empirically the reservoir properties such as porosity, permeability, resistivity and water saturation. Using this strategy, each single seismic trace can now be transformed into pseudo log of reservoir properties.

کلمات کلیدی:

Rock Physics, Seismic Attribute, Reservoir Properties, SQp, SQs

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