



Amplitude variation analysis for multichannel seismic data in the Ulleung Basin

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The amplitude variation with offset of seismic data can detect fluids in the sediment and resolve the petro-physical properties of hydrocarbons in the subsurface. We analyzed and described the amplitude variation for multichannel seismic data on the Ulleung Basin, East Sea, Korea. By inspecting seismic CDP-offset and CDP-angle gathers which show a bright reflection event, we decided a target zone for amplitude variation analysis. From the seismic angle gather at the middle of Ulleung Basin, we recognized amplitude increase or decrease versus offset on the intercept-gradient curve. Using the product attribute and Poisson's ratio attribute computed in terms of intercept with gradient, the top and the base of gas saturated sediments were described. The area of amplitude variation with the presence of gas saturated sediments is shown at the depth of 3 s travelttime. Anomalous features of seismic amplitude in the Ulleung Basin were classified by the crossplot of intercept and gradient. The background trend of crossplot between intercept and gradient shows an inverse proportional relation that is common for wet sediments. Anomalous amplitudes of Class III fall into the first and the third quadrants on crossplots. We inferred regional gas/water saturated area with the horizontal dimension of 150 m in the Ulleung Basin by cross-section with respect to cross-plot anomaly.