Estimating the Value of Seismic Data Before a Survey is Shot; Special Reference to 4D

Karl A. Berteussen, The Petroleum Institute, Abu Dhabi United Arab Emirates, phone: 0097125085286, kberteussen@pi.ac.ae

Bayesian theory is used in order to make estimates of the monetary values (EMV) of seismic information before acquiring the data. The procedure is illustrated on a hydrocarbon detection problem, on a 4D case, and on a structural resolution problem. Applying this procedure for calculating EMV one might compare a seismic project on an equal footing with any other projects competing for available funds. Obviously the parameters applied will be field dependent. However, making sensitivity plots help with the problem of not knowing the a priori probabilities exactly. The approach can also be used to evaluate seismic tenders. Typically they are separated into two groups, technically acceptable and unacceptable and the job is given to the lowest bidder in the technically acceptable group. Calculating the EMV for each alternative one will be able to assign a value to a survey depending on the parameters applied, say give a value to resolution power, to time and spatial sampling rates, fold or proven processing algorithm performance etc. This should end up with selecting the survey acquisition or processing alternative that in fact is best for the problem at hand. Finally, before a survey is initiated, 4D or ordinary survey, this methodology might be used to help estimate how much an oil company actually could pay for such a survey, which should be useful information both for the receiver and producer of a tender.