

Multicomponent Acquisition – Some New Economics

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ABSTRACT

One of the major impediments to multicomponent exploration gaining a foothold in the oil and gas industry has been the cost associated with the acquisition of multicomponent data. Kendall and Davis (1996) reported that, for a representative vibroseis acquisition project, 3-C and 9-C recording with the same 3-D P-wave receiver geometry require project cost premiums of approximately 30% and 240% respectively. This, together with a relative shortage of recording equipment, has dampened enthusiasm for multicomponent recording in spite of the many potential advantages that might accrue.

With new sensor development and a move to point receiver recording, significant improvements in field operations result for converted-wave acquisition and allow pricing much more competitive with P-wave recording. In fact, for converted wave acquisition using a dynamite source, more ambitious field geometries providing improved spatial sampling can be deployed at costs below the premiums noted above. Further, availability of equipment to conduct large 3D3C projects is no longer an issue.

Given investment costs for acquiring 3D datasets and rather modest premiums for converted-wave acquisition it is prudent to give serious consideration to gaining the additional data while in the field. Over the past several years important advances in the processing and interpretation of converted-wave data are allowing for the efficient use of these data. Professional journals now regularly report case histories demonstrating value to be gained from the inclusion of these data.