Intra Array Statics Derived in the Cross-Spread Domain for a High Density, High Resolution, Wide Azimuth 3D Land Data Currently Being Acquired in Qatar

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High density, high resolution, wide azimuth, 3D land acquisition offers a unique opportunity to de-alias slow velocity ground-roll and guided waves that are present in the records. Presence of high resolution in spatial sampling allows better surface wave removal solutions in better preservation of the signal. Once all the benefits of high resolution acquisition are used to de-alias and/or remove surface waves one can apply what is called "Digital Array Forming ", or shortly, DAF, to resample high velocity, long wavelength seismic signal into a coarser spatial grid without loss of information.

DAF process is most efficiently applied in the wavenumber domain. As statics are often a problem for land data sets the DAF process, in turn, requires derivation and application of trace-to-trace statics, also known as intra array statics, before wavenumber domain filtering.   With the practical and orthogonal recording geometries used in the industry today, even though source and receiver increments along the source and receiver lines, respectively, are very small, the distances between receiver lines and/or source lines are much larger than the distances of sources or receivers on them, making DAF process in common shot domain (or common receiver domain) impossible. As subsurface sampling of the cross-spread data is very fine cross-spread domain offers an alternative to other domains for the DAF processing.

We briefly describe a recently started high density, high resolution, wide azimuth 3D land survey in Qatar and illustrate the results of intra-array statics that we derived in cross spread domain.