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# Crooked CDP Lines and Structure; Whose Fault Is It?

The Trenton-Black River play has created a resurgence of "road" vibrator work in the Appalachian Basin area. This has been coupled with reprocessing of various vintages of legacy seismic data. The primary difference between current and legacy being in group interval, source interval, number of channels and bandwidth of recording. Tegland 1973, and 1974 presented an early scheme for dealing with "crooked line" problems. At that time the the overall offsets were generally smaller and channel count less. "Smearing" of the stacked result due to crossline dip was seen by most people as the most significant problem and limiting the crossline window appeared to be the best answer. This was accompanied by definition of inline traverses that were contorted to take advantage of maximum CDP fold areas. Since the results of stacking changed direction frequently it was necessary to created special "dip projected" lines that could be migrated if migration was desired. While these methods worked they were cumbersome. The more modern acquisition has generally more channels with smaller intervals but greater overall offset ranges. Using the earlier methods still has appeal to some geophysicists, but results in discarding large amounts of basic data. We are proposing much simpler basic CDP definition schemes which can then utilize various display techniques to evaluate the "Cross Line Dip' (CLD) related problems. We will demonstrate how CLD affects processes such as Normal Moveout (NMO) and other time correctional processes. We will demonstrate the behavior of the data relative to the choice of traverse line orientation using model data and actual data. The CLD displays make use of the 3-Dimensional nature of the data and suggest how one might make detailed local evaluation of structure in areas with a high degree of subsurface scatter. The issue of geographic positioning of resulting stack traces will also be discussed. Some ideas will be presented concerning this issue. The best results will require utilization of all a priori geologic information concerning structure. This means close cooperation between the processing and interpretation functions. This may result in more that one orientation of stack line and interpretation of various special displays. Remember one mans "smear' may be another man's 3-D data set.