

Interactively Mixing the Display of Horizontal and Vertical Seismic Sections

by

Richard W. Verm and H. Roice Nelson, Jr.

ABSTRACT

This paper illustrates how interactive graphics can be used to handle evaluating the volume of information associated with a 3D seismic survey. The special capabilities of the Adage 4145 to mix the display of sections and three-dimensional (3D) line drawing interpretations is expanded to 3D data volumes by simultaneously displaying and interpreting vertical and horizontal seismic sections. The procedure revolves around efficiently managing and keeping track of the data files.

The first step is to use the standard RSGDEM program to determine the best parameters for reformatting the vertical seismic sections into picture format. A set of vertical sections, for example every 15th section across a 3D survey, are converted into the picture format and stored on disc for later access. Horizontal time slice sections are also created from the data volume. Then the new program, INTRMIX, allows the interpreter to put up a vertical seismic section, pick off a travel time of interest, have the displayed section cut off above or below this time and replaced with the appropriate horizontal section.

There are eight different combinations of how a mix of horizontal and vertical sections can be displayed. The simplest are to replace the upper portion of the vertical section with the back portion of the appropriate horizontal section or similarly the lower portion of the vertical section with the forward portion of the horizontal section. The inverse of this provides two other mixed displays. In these cases the same vertical section is displayed and any horizontal section requested can be mixed with this section. The case where a horizontal section is kept as the constant display and portions of different vertical sections replace the display creates the other four display combinations. In addition, once a vertical or horizontal section has been selected, the user may start an animated motion picture display. The selected frame will remain fixed while the perpendicular frames move past it.

The same procedures, previously described, for doing an interactive interpretation are possible with the INTRMIX program. The difference is that a combination line drawing interpretation of both horizontal and vertical sections is available for evaluation using the 3D display capabilities of the vector refresh graphics system. Current capabilities and planned future improvements to the interpretation programs will also be described.