Ex. PGS 1047
(EXCERPTED)

Elements Of
3-D Seismology

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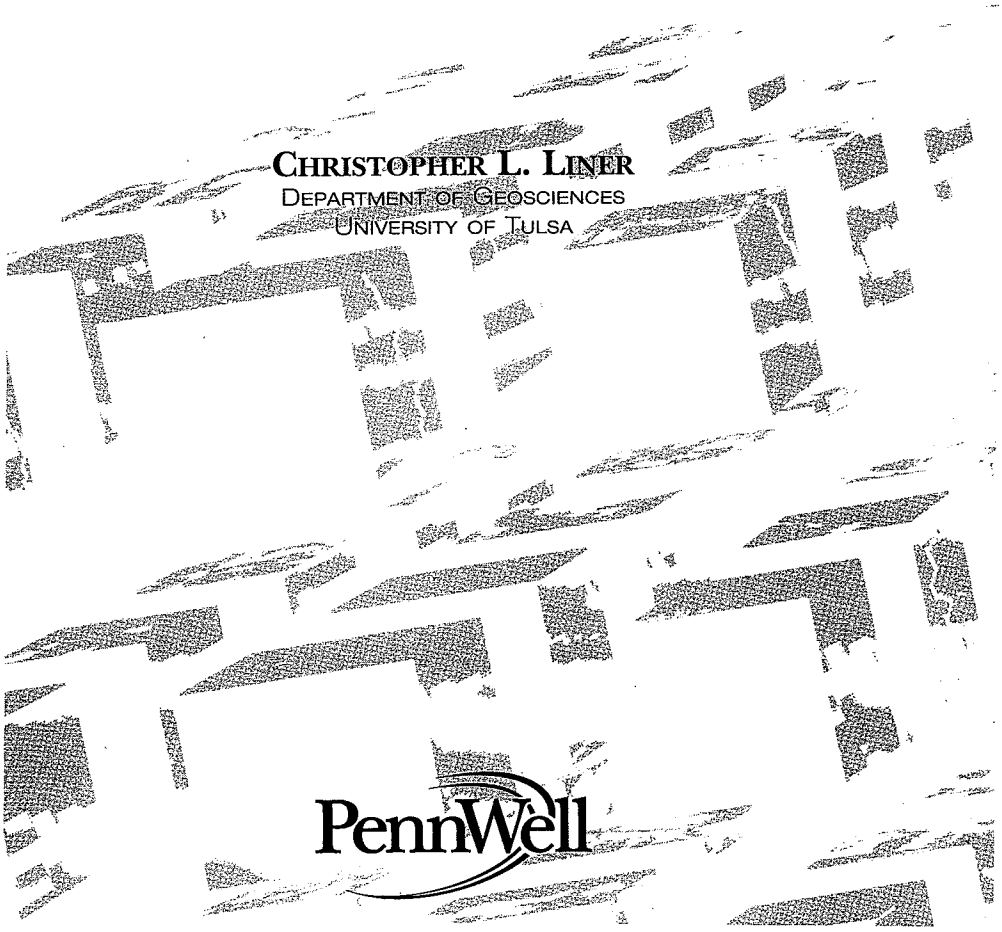

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CMP Fold

For a 3-D survey to yield good data quality, the target fold should be about one-half of the fold required to shoot good 2-D data in the area. This is a result of migration and dip moveout which result in more mixing of 3-D data than occurs in 2-D.

Some points on fold

1. High fold costs more at acquisition time
2. Low fold (< 10) 3-D has been successful
3. Lower fold with right bin size may be better than high fold with too large a bin

Spatial Aliasing

Spatial aliasing is an effect of trace spacing relative to frequency, velocity, and slope of a seismic event. With adequate trace spacing, the points along a seismic event are seen and processed as part of the continuous event. When trace spacing is too coarse, individual points do not seem to coalesce to a continuous event, which confuses not only the eye but processing programs as well. This can seriously degrade data quality and the ability to create a usable image.

Figure 7-6 shows one way of defining spatial aliasing. In this view spatial is based on trace-to-trace delay associated with a dipping reflector. Since the delay is related to trace spacing, the issue is really one of midpoint interval. This, in turn, is related to shot and receiver interval.

For 2-D data, midpoint spacing, M_i, shot interval, S_i, and receiver group interval, R_i, are related by

$$M_i = \frac{1}{2} Min(S_i, R_i) \tag{7.10}$$

To avoid spatial aliasing on the stack section we require

$$M_i < \frac{v_{int}}{4 f_{max} Sin\theta} \tag{7.11}$$

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