

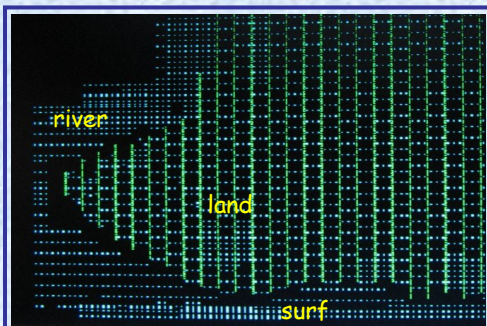
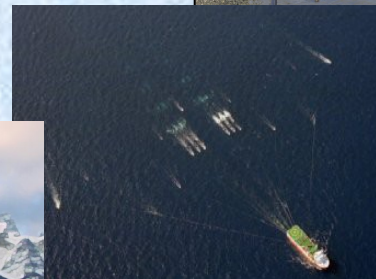


3D Seismic Survey Design and Planning

West Geo

Experience: exceeding 33 years covering all types of land, transition zone, and marine 3D seismic survey designs:

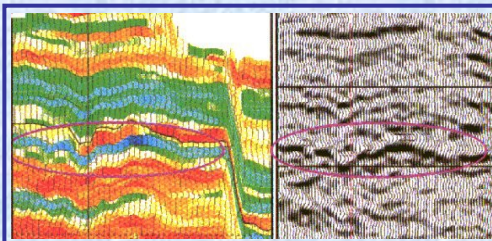
- Foothills, mountains, plains and desert
- Swamps, rivers, surf and transition zones
- Canada, US, Libya, Egypt, Yemen, Saudi, Romania, Greece, Asia Pacific
- Marine: West Africa, N. Sea, Angola, E. Coast Canada, Arctic
- Multi-environment, multi-source/receiver type, high-res.
- Merging land, transition zone and marine surveys together



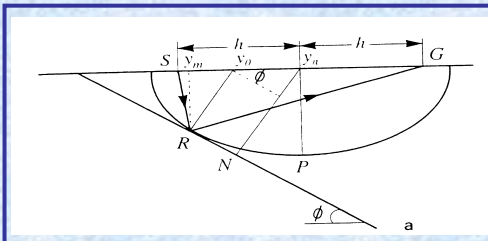
Src-Rec Layout, Land / River/ Surf 3D

Optimization: improving 3D seismic data involves many considerations and factors during design and planning. All aspects of geophysical, logistical and cost constraints are analysed in conjunction with the survey objectives, requirements and priorities.

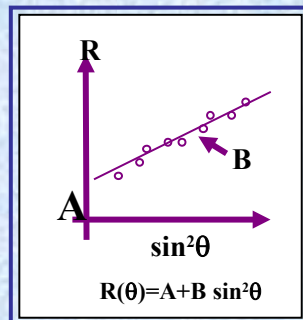
- equipment availability and suitability
- technical derivation of parameters and design refinement



Previous seismic and interpretations



Migration and imaging considerations



AVO considerations

3D Design: considerations include these examples:

- Previous data quality and appropriateness
- Target horizon depths, dips, frequencies needed, improvements in source type/parameters
- Terrain and environmental constraints or regulations; equipment availability, logistics
- Optimising survey area and size; source-receiver geometries, recording production plans
- Local community considerations
- Costs associated with all of the above!**



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Seismic Specialists

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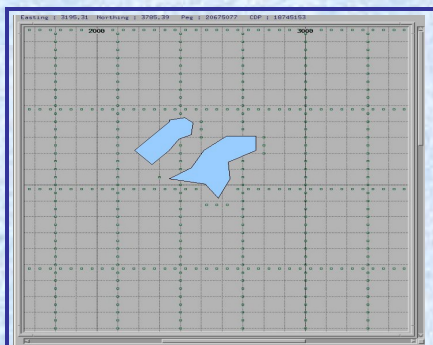
Survey Attribute Modeling:

Parameters are optimized for data processing accuracy and seismic image quality

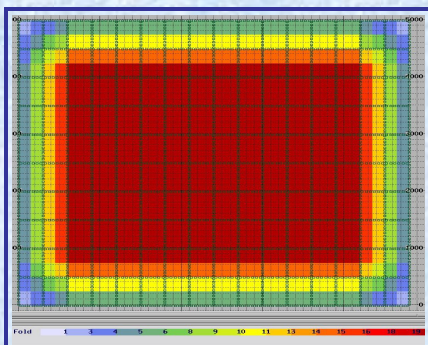
- for cmp-based processing analyses and source/receiver based noise reduction

Different schools of thought on survey attributes are considered:

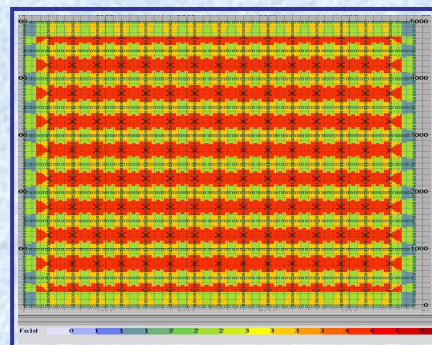
- symmetrical sampling, amplitude preservation and avoidance of artifacts



Src-Rec Layout, with obstacles

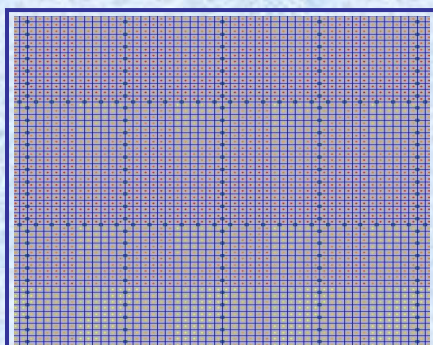


Subsurface Multiplicity (fold)

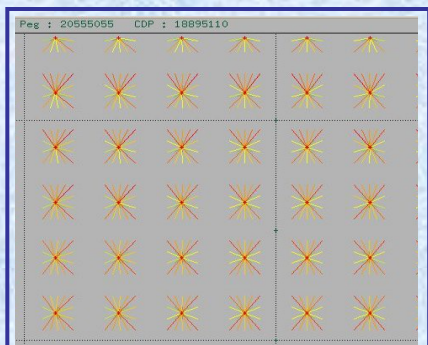


Limited offset multiplicity (fold)

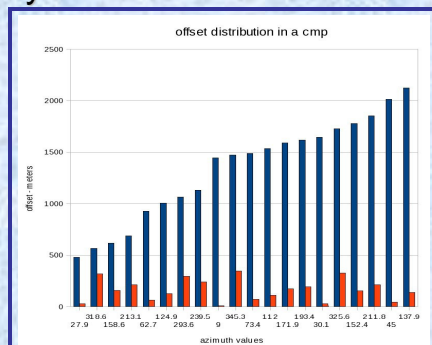
Various seismic attributes are analyzed



Midpoint scatter/binning analysis

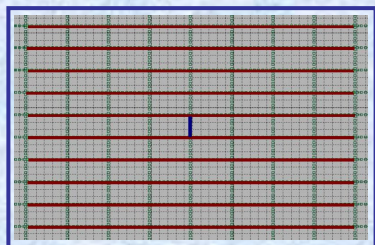


Offset/Azimuth Details

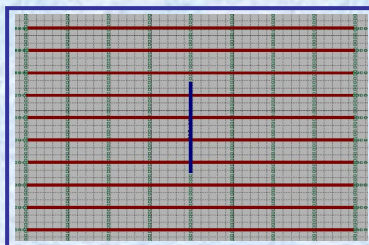


Offset distribution details

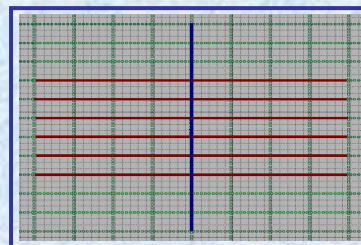
Source-receiver geometry optimized for survey objectives



Orthogonal Land 3D Patch



Wide Az. Multi-line roll



High production Patch

Previous satisfied clients:

Shell, Chevron, AGIP, Sonatrach, Aramco, Occidental, Texaco, Exxon, PetroCan, Husky, BP,



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