Models for S-Wave Data Quality Studies

Mike O'Brien
Radial and Transverse Gather

Borrowed from Singh and Melvin, 2009
Baseline PP Stack  
Stretched 2 X  

Baseline SS11 105°  
Stack  
Not Stretched  

Baseline PS1 105°  
Stack  
Stretched 1.5 X  

Borrowed from Robert Windels, October, 2009
Data quality issues
240 ms S-wave statics

Baseline survey
Source residual statics

Monitor survey
Source residual statics

From Robert Windels, October, 2009
Data quality issues
40ms S-wave splitting in near surface

Baseline and Time Lapse Survey - LAG S1 - S2

Base Line Survey

Time Lapse Survey
Data quality issues
S-wave polarization direction changes

Baseline and Time Lapse Survey - PHI - direction of fast Shear Waves

Base Line Survey

Time Lapse Survey
Slope and Basin Consortium
Brushy Canyon Model
(subjected to mild abuse)
Incident S-Wave AVO for A-Sand and Model Sand

Postle A Sand

Model Channel Sand

CREWES Zoeppritz Explorer 2.0

Incident S-Wave
SP  
SS

Vp 3374
Vs 1676
Rho 2.584

Vp 3651
Vs 2067
Rho 2.511

CREWES Zoeppritz Explorer 2.0

Incident S-Wave
SP  
SS

Vp 3546
Vs 1761
Rho 2.610

Vp 3499
Vs 1530
Rho 2.510
The first model is structurally simple. It presents the birefringence problem in the absence of statics and scattering.
Compounding problems, a second model adds statics and scattering to the HTI medium.
Example S-wave data with statics
Acquisition Parameters

- Shot Points
- Receiver Points

55 ft x 55 ft

- No. of shot lines: 16
- No. of receiver lines: 16
- Minimum offset: 76.86 ft
- Maximum offset: 18,590.74 ft

Borrowed from Singh and Melvin, 2009
Acknowledgments
## Physical Properties in Trial Models

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<tr>
<th>Region</th>
<th>Vp</th>
<th>Vs</th>
<th>Rho</th>
<th>Eps</th>
<th>Delta</th>
<th>Gamma</th>
<th>Azimuth</th>
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<td>0.003</td>
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*Authoritative information on model properties is in file src/model_params.F90