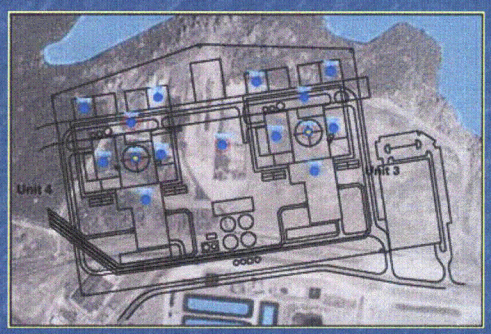
Overview

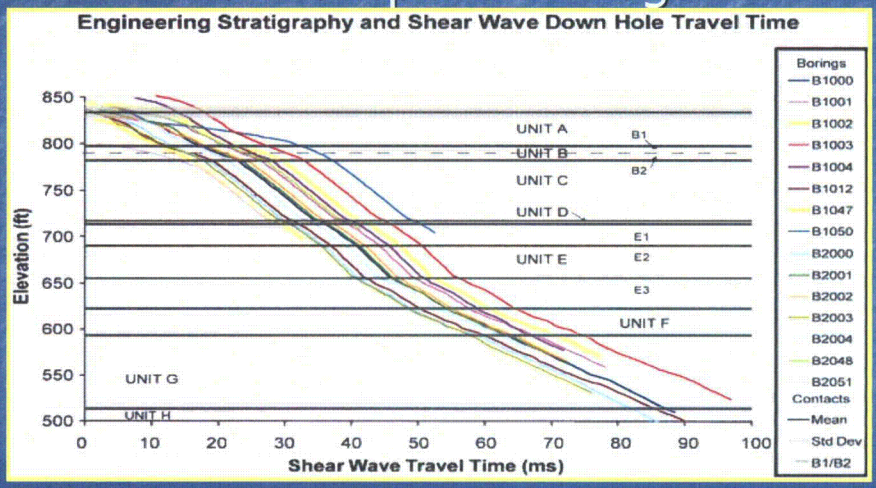
- Quick review velocity information and site engineering stratigraphy
- Development of shallow profile (<550 ft)
- Comparison of results from different geophysical methods (Suspension Log – SASW – Downhole – Crosshole)
- Development of deep profile to "seismic basement" (i.e. Vs=9200 ft/sec: 550 - ~5500 ft)

Suspension Log, SASW and Downhole Velocity Control



- 15 borings with suspension logs
- 4 borings with co-located SASW inversions
- 2 borings with co-located downhole profiles
- Unit 1 & 2 crosshole

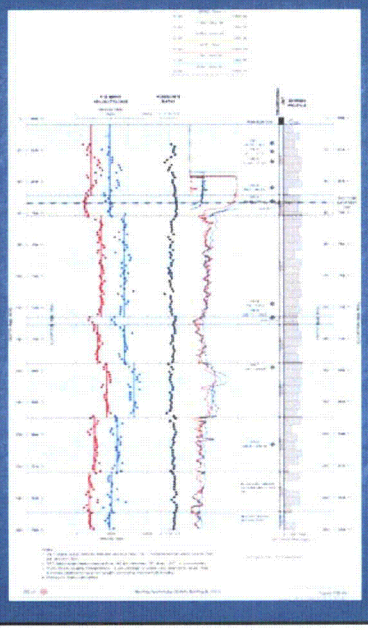
Engineering Stratigraphy and Simulated Downhole Travel Times from Suspension Logs

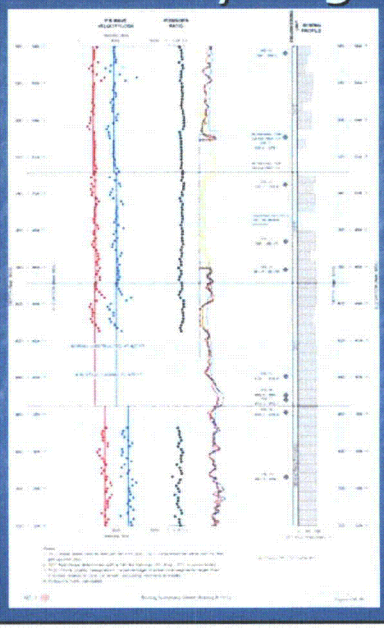


Shallow Profile Development Methodology

- Parse SSL simulated downhole travel times by layer
- Linear regression on times vs depth – slope gives the layer slowness (invert slowness to get representative V_s and V_p for each layer).
- Use representative Vs and Vp for each layer to calculate a representative Poisson's Ratio – these values with the engineering layer boundaries constitute boring specific profiles (15)

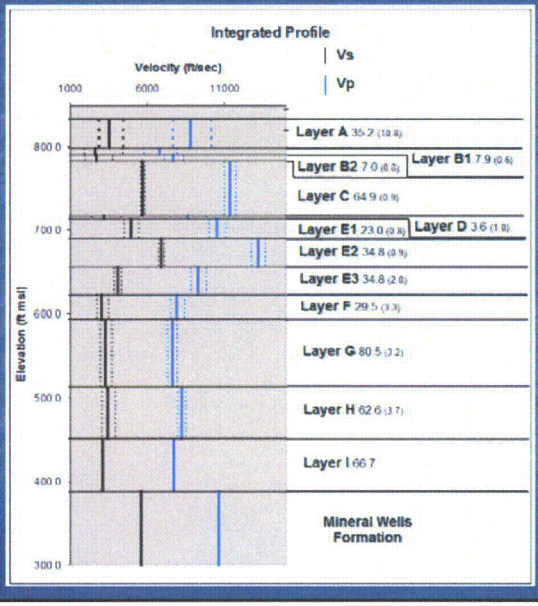
B1012 Boring Summary Log





Develop Integrated Site Profile

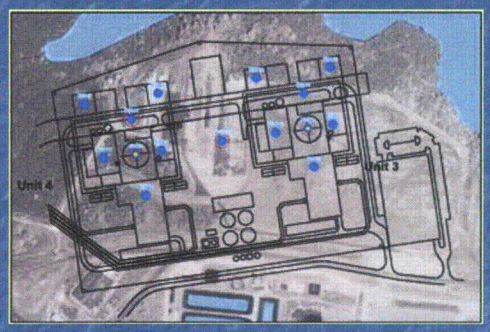
- Combine representative layer Vs an Vp for each boring to produce an integrated Vs and Vp for each layer (take the geometric mean and log deviates)
- Calculate Poisson's Ratio for each layer using the integrated Vs and Vp values for each layer
- Combine the results from above with the engineering stratigraphic boundaries (+/- sd) and thicknesses (+/- sd) to produce integrated profile



Layer C Representative Velocities

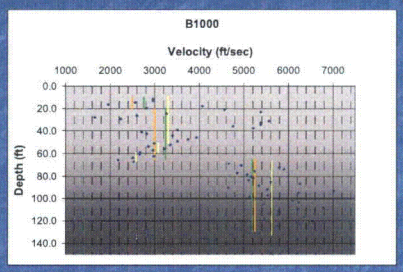
Layer C				
Boring	Vs	Log10(Vs)	Vp	Log10(Vp)
B1000	5585	3.7470	11177	4.0483
B1001	5613	3.7492	11194	4.0490
B1002	5667	3.7534	11321	4.0539
B1003	5623	3.7500	11063	4.0439
B1004	5704	3.7562	11161	4.0477
B1012	5660	3.7528	10928	4.0385
B1047	5625	3.7501	11557	4.0628
B1050	5598	3.7480	11493	4.0604
B2000	5738	3.7588	11375	4.0560
B2001	5707	3.7564	11388	4.0564
B2002	5731	3.7582	11185	4.0486
B2003	5758	3.7603	11305	4.0533
B2004	5643	3.7515	11372	4.0558
B2048	5648	3.7519	11609	4.0648
B2051	5539	3.7434	11336	4.0545
Mean Logs:		3.7525		4.0529
Geometric Mean:		5656		11296
Arith. Mean:		5656		11298
Std:		62		184

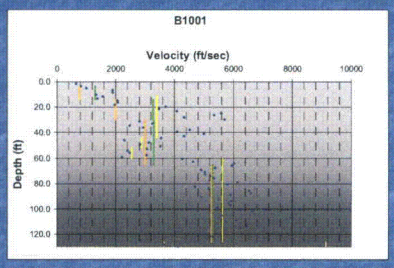
SASW Velocity Control

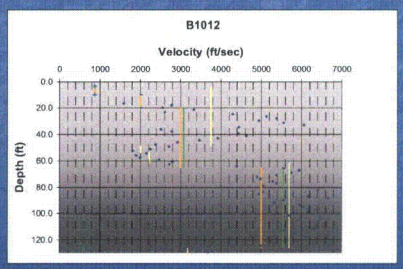


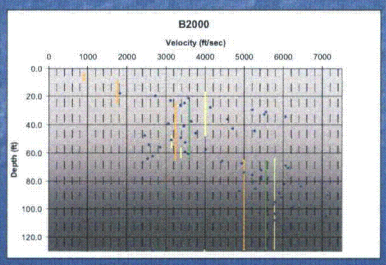
- 4 borings with co-located SASW inversions

R1-R2 Suspension Vs – SASW Vs Comparison

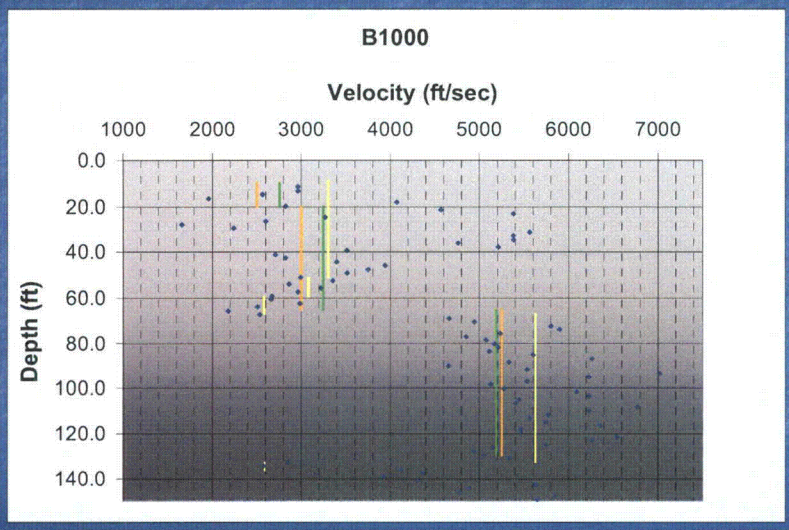




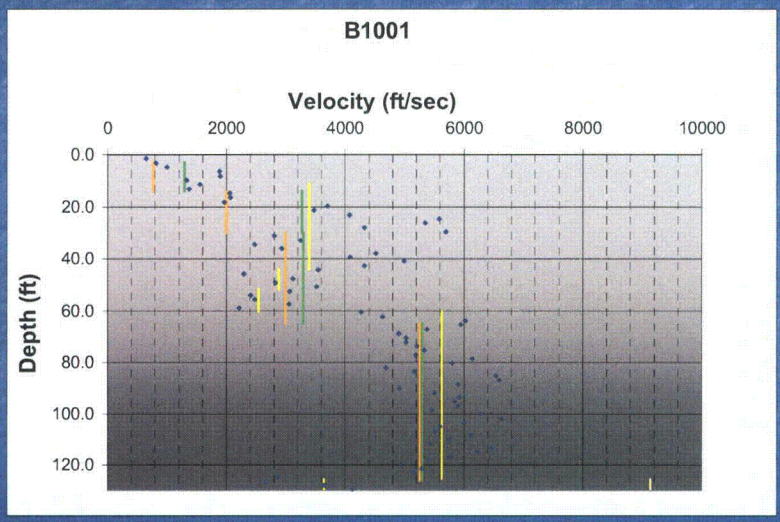




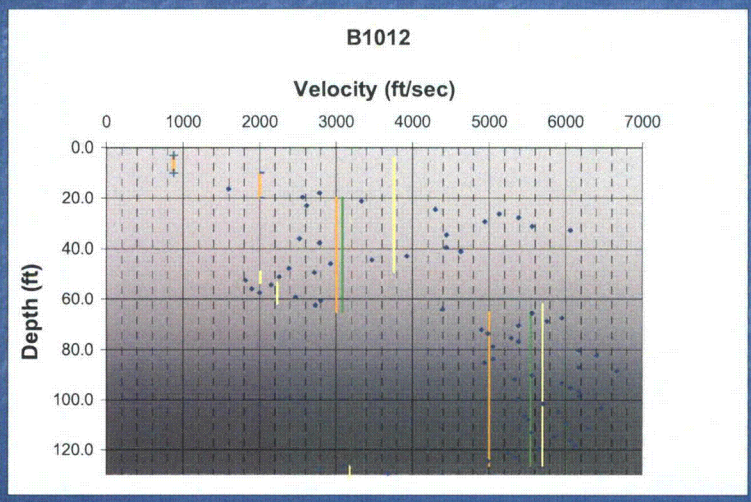
SASW


B1000
Velocity (ft/sec)
1000
2000
3000
4000
5000
6000
7000
Depth (ft)
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0

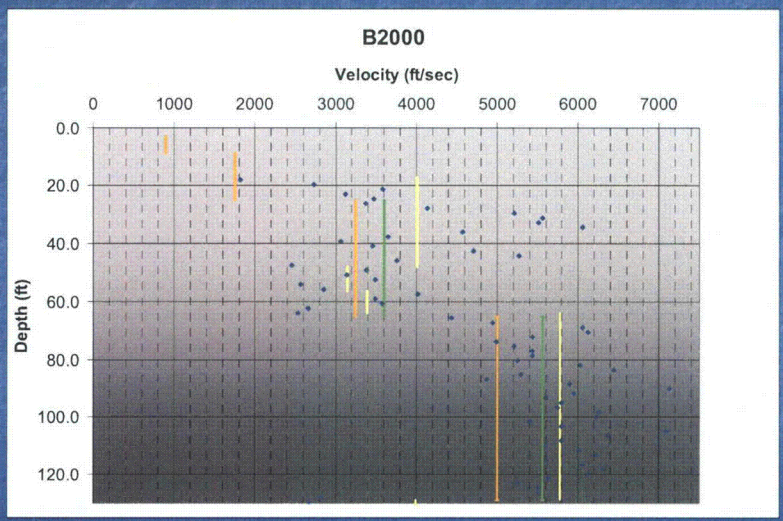
SASW


B1001
Velocity (ft/sec)
0
2000
4000
6000
8000
10000
Depth (ft)
0.0
20.0
40.0
60.0
80.0
100.0
120.0

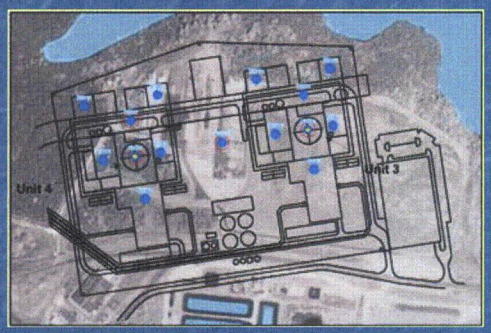
SASW


B1012
Velocity (ft/sec)
0
1000
2000
3000
4000
5000
6000
7000
Depth (ft)
0.0
20.0
40.0
60.0
80.0
100.0
120.0

SASW

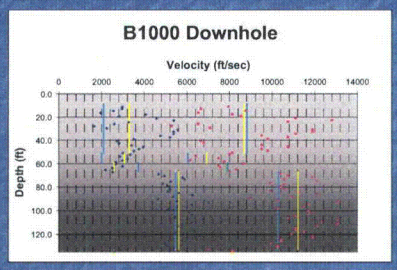

B2000
Velocity (ft/sec)
0
1000
2000
3000
4000
5000
6000
7000
Depth (ft)
0.0
20.0
40.0
60.0
80.0
100.0
120.0

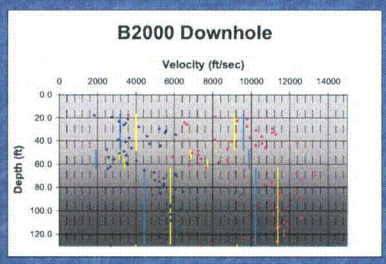
Downhole Velocity Control

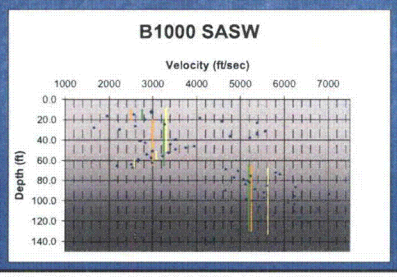


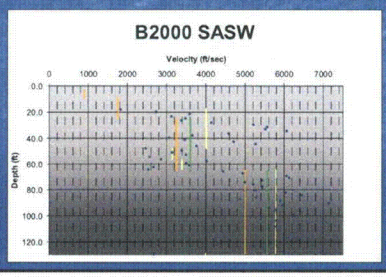
- 2 borings with co-located downhole profiles

R1 – R2 Suspension Velocity – Downhole Comparison

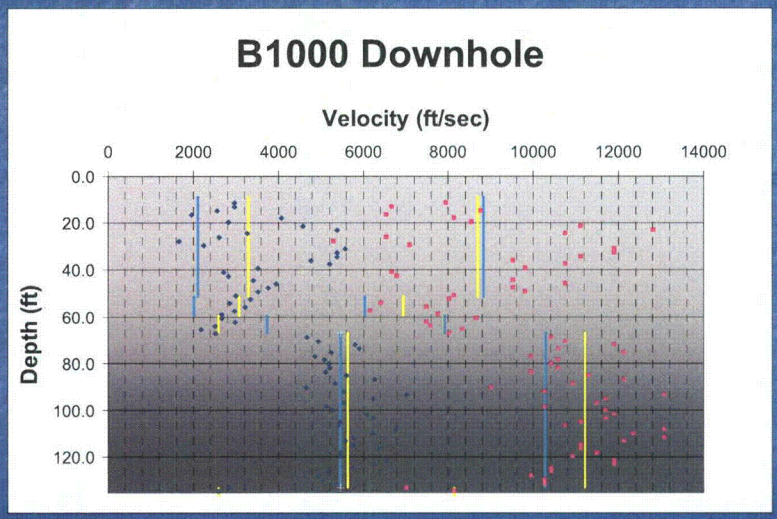




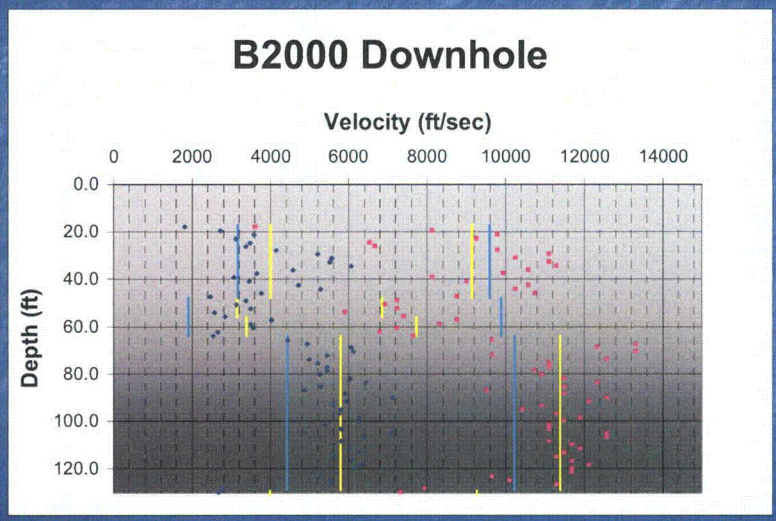




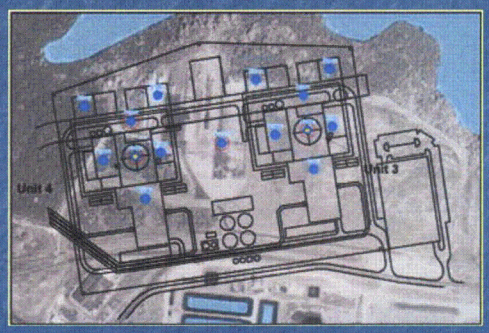
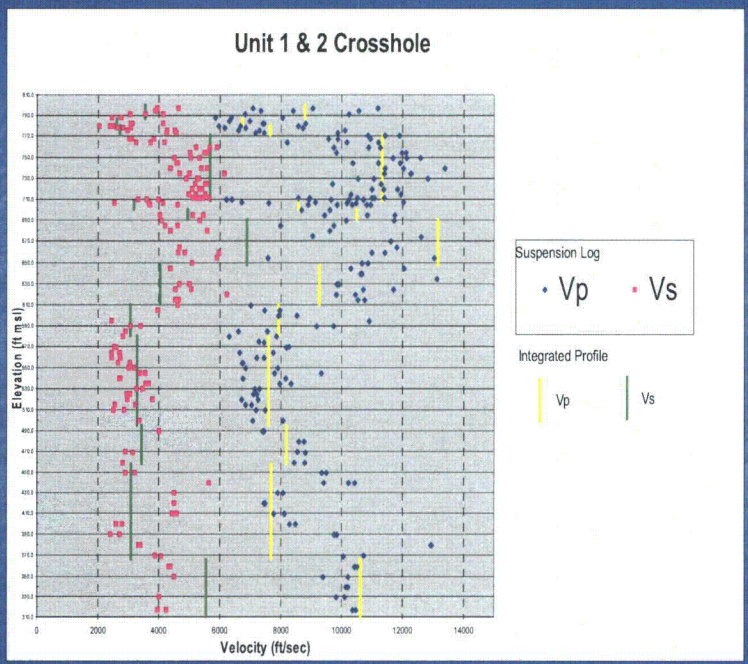
Downhole



Downhole



Suspension Log, SASW and Downhole Velocity Control



- Unit 1 & 2 crosshole