

First Ever Multi Client Seismic Survey in Singapore

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Geophysical Services Singapore Ltd (GSL) is a shallow land seismic company.

The main areas of business include shallow Oil & Gas exploration and Geotechnical surveys for the construction industry.

GSL have recently pioneered two achievements in Singapore:

1. The first Multi Client Land Seismic Survey
2. The first High-Res 3D Land Seismic Survey

Singapore's First Multi Client Land Seismic Survey

GSL looked at the geological information available in Singapore and decided some updates were required.

Firstly there has been no high definition Seismic data acquired in Singapore. We therefore looked for possible areas to achieve this. The area we chose for the first multi client survey was along

the "Green Corridor" which follows the path of the former KTM Railway running from Tanjong Pagar to Woodlands.

GSL rented the entire stretch of land from Singapore Land Authority for one month and acquired data along the line in its entirety from Bukit Merah to Woodlands, using a 3.5 Kilometers Spread and an ESS 500 Accelerated Weight Drop source (250 Kgs accelerated to 1.3 tons), which made GSL one of the largest land leasers in Singapore for that one month. The survey was completed in 15 Days with a total distance of 25 kms, being surveyed, using 12.5 Meter shots and 12.5 Meter Geophone groups.

Acquisition System

GSL uses the "i-Seis Sigma" wireless seismic acquisition system. 320 channels were laid out for this survey, rolling it as we progressed along the line. This gave us a Full Fold of 800 taking into account five AWD thumps fired at each shot point.





dwellings remained conveniently undisturbed by the seismic survey activities.

Objectives:

The main objective of the survey was to map the structure from the surface to three thousand meters, which was achieved. Mapping of the Alluvial layers, the Jurong formation, Kallang formation and Bukit Timah granite means that various companies and agencies can better plan for construction and geothermal projects, as well as the future underground development of Singapore.

GSL achieved excellent data quality which correlated extremely well with the existing "Singapore Geology Map" published by DSTA.

Interpretation of the data was done by Dr. Grahame Oliver of the National University of Singapore.

Source

GSL used an ESS500 Accelerated Weight Drop (AWD) as a source. This is very convenient and environmentally friendly, particularly in city environments as it is safe and produces minimal disturbances to the public. Production continued even whilst cyclists and joggers were simultaneously using the Green Corridor for recreational use.

Low noise levels and low land disturbance also meant that wild life and nearby residential

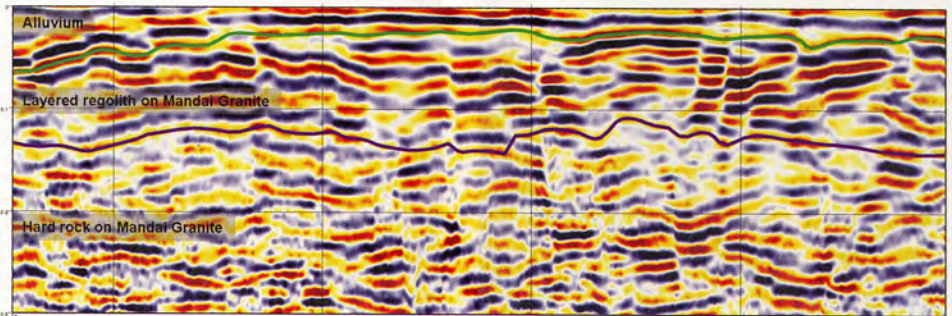
Areas of High Noise

The railway line ran parallel to the Ayer Rajah Expressway and other major road systems, which generated a lot of random noise. In these high noise areas the AWD was fired between five to eight thumps per shot point and thus eliminating most of the noise contained in that shot position. Further noise reduction by standard CDP stacking and the combination of the two methods eliminated around 90% of the surrounding noise.



Further Multi Client Surveys

GSL intend to carry out at least two more Multi Client surveys and around Singapore during 2015, as well as continue acquiring 3D land seismic surveys for government construction projects.



Sample of Data acquired from the Green Corridor