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GHD Pty Ltd
2 Salamanca Square
Hobart Tasmania
7000 Australia

Our ref: 3218210

Your ref:

To Whom it may concern,

GHD Project 5097 – Antarctic Geotechnical Investigations – Davis Station SUMMIT X One Experience Report

As part of the Australian Government's 20-year Strategic Plan, GHD has been engaged to undertake one of the largest geotechnical, geological, geophysical and hydrogeological investigations to occur on the Antarctic Continent, in the Vestfold Hills of Ingrid Christensen Coast of Princess Elizabeth Land, Eastern Antarctica.

The key scope of the geophysical investigations is to carry out seismic reflection, refraction, MASW and passive MAM/HVSR surveys to understand the composition and structure of Pliocene/Pleistocene marine transgression sediments overlying gneissic bed rock. It is anticipated that these sediments will vary in thickness from several hundreds of meters to less than five metres. Complex cryogenic and hydrogeological conditions are also expected.

In selecting a vendor for provision of a seismic data acquisition system, GHD considered the following aspects:

- **Reliability** – our team of geophysicists have deployed for a period of six months with zero ability to obtain spares or receive external support outside of radio communications. The seismic system and software must be reliable, with demonstrated maintenance free long-term field performance.
- **Robustness** – the seismic acquisition system must be able to cope with continual operation in temperatures of down to -20ºC, periodic immersion in hypersaline pools and continual abrasion from the unweathered glacial till soils of the Vestfold Hills (see photo).
- **Quality** – the system must produce high dynamic range, low noise seismic data, with as little susceptibility to external sources of noise such as power lines and high power radio transmitters as possible.
- **Flexibility** – the scope of work demands a seismic acquisition system sufficiently flexible such that it can be configured in the broad range of competing receiver configurations demanded by reflection, refraction and surface wave investigations. Likewise, complete control and flexibility of acquisition parameters, including for continuous recording and GPS synchronisation.
- **Weight and Compactness** – environmental requirements demand that all surveys are carried out entirely on foot. Some survey areas are 4-5 days walk from base camp. Consequently, the size and

weight of the acquisition system were critical. Carrying multiple sets of analog receiver cables was not an option. Neither were individual batteries for wireless nodal systems.

- **Productivity** – the challenging weather conditions of Antarctica coupled with limited resources means that when windows with suitable conditions are available that the maximum quantity of data is collected. The acquisition system must have an architecture that allows rapid deployment and software systems that are simple, logical and easy to configure and perform QC on.
- **Service & Support** – the system vendor must be responsive and actively engaged in the project and clearly understand the engineering outputs and performance specifications. They must have the ability to build and provide hardware and spares at short notice and rapidly respond to technical support. They must also have an in-country representative to provide local support.
- **Cost Effective** – the system must represent good value for money when compared to similar options on the market.

In all of the above criteria, DMT, and the SUMMIT X One system rated highest or equal-highest in GHD's evaluation.

Price per channel for high resolution survey, the SUMMIT X One is more cost effective than any other system available. Responsiveness was truly impressive - DMT were able to build the system and deliver in Hobart within one week of receiving our order.

Our team is now into their second week of survey in Antarctica. Whilst it is still early on in the program, their production rates are meeting or exceeding targets – this is largely down to the roll-along field layout reducing the spread move up time.

Comments from our field team is that set up and field handling is very easy, flexible, fast and bomb-proof reliable. The pre and post-sales support we have received from DMT and their Australian rep, Geosensor has been outstanding.

Accordingly, we would recommend the SUMMIT X One system and DMT as a vendor with the highest degree of confidence.

Sincerely
GHD Pty Ltd

Hugh Tassell
Principal Geophysicist
Team Leader Geotechnical Engineering

Figure 1 Site conditions during summer.