

16 October 2020

CCL 2015 Limited
18B Birmingham Drive
Christchurch 8024

DMT GmbH & Co. KG
Volker Schäpe
Via email: Volker.Schaepe@dm-group.com

☎ 03 365 5960
✉ christchurch@coco.co.nz
🌐 www.coco.co.nz

Dear Volker,

As promised, I am writing to report on my experiences with the SUMMIT X One for our geophysical services. Cook Costello is a small to medium sized engineering consultancy company with four offices in New Zealand. In addition to our main services of Geotechnical and Structural engineering, we also house a few smaller specialty disciplines, one of which is our Geophysics division based out of the Christchurch office. Apart from the seismic system we also have electrical resistivity tomography (ERT), ground penetrating radar (GPR) and magnetic surveying equipment that we use for our geophysical investigations.

In early 2019 we purchased a SUMMIT X One seismic system, setup for 24 channels (i.e. 24 RU's, one DC and 330 m of cable on a single reel) and a sledgehammer source with piezo triggering (125 m trigger cable on reel directly plugged into the DC). Currently, we have 24 single-component vertical, and 3 single-component horizontal 4.5 Hz geophones. In the near future we hope to be able to extend this system which appears to be straight forward from a technical perspective.

We were looking for a lightweight, easy to transport and reliable, robust, high-resolution solution at a good price. While one may say this is impossible to get in one system, it is exactly what we have found with the SUMMIT X One. After receiving the SUMMIT, we purchased four gear cases to store and transport the system in. Each box weighs ≤ 23 kg and could technically be taken on a plane as checked luggage. We often ship our gear nationally through a freight company and the compactness and light weight does save cost and effort. I will report on two specific examples where we have used the SUMMIT X One on.

During summer 2020 we conducted a large-scale MASW investigation for a port in New Zealand collecting 80 individual seismic profiles within six nights to cover an approximately 30-hectare site. For increased acquisition efficiency we have used a landstreamer towed behind a truck. It was straight-forward to install the system on the landstreamer and even though we were advised to unreel the complete signal cable length, having it sit with at least 200 m still left on the reel in the back of the truck, this did not influence the data quality and helped with improving the acquisition by keeping it tidy. The good data quality also allowed us to use the P-wave refractions for estimating the groundwater depth. Both, the 1D shear wave velocity information and the groundwater depth estimate were used to inform a seismic resilience assessment of the client's assets.

In winter 2020 we collected seismic refraction data for a 60-hectare large new development. The data was used, in conjunction with geotechnical testing, to inform about bedrock and groundwater depth across the site. Although, the system we have is small and many profiles needed to be acquired back to back in order to cover distances of up to 700 m, the lightweight equipment with

its straight-forward minimal components allowed us to move efficiently and cover considerable profile lengths per day on site. The system saves us personnel costs on site because of the ease for deployment and operation. This therefore enables us to be competitive within the market we are operating in. While New Zealand lacks extreme temperature ranges, the system was used for a month on this site during a very wet winter with lots of rain. There were no faults or issues occurring from humidity at any time.



Photos: Left: the SUMMIT X One on the landstreamer during the investigation at the port. Right: setup of the DC, battery, and laptop for the (very) wet ground investigation for the development. Connection to the “mobile control centre” was only through the signal and trigger cables which could easily be disconnected and re-connected after each move of the active array.

I would also like to report that I am amazed how quickly the seismic data gets displayed on the laptop after each shot. There is hardly any time delay noticeable. The software is easy to understand and straight forward. Automated detection of the RU’s positions is a great feature and makes life on site easy. Also, I appreciate that the order of the geophone numbering can easily be switched from back to front or front to back by simply changing the cable plug-in port on the DC and refreshing the allocation in the software.

And finally, I am impressed with the outstanding customer service I have received from you and your team at DMT as well as your representative Geosensor in Australia. Questions and queries are taken seriously and answered immediately and with great passion and detail. “Going the extra mile” is lived and breathed (and very much appreciated). I can only end in saying, there is absolutely nothing I can fault the SUMMIT X One system and support on. We are thoroughly happy with our decision to purchase.

Kind Regards,



Eva Sutter

Geophysicist

PhD MSc Applied Geophysics, BSc Earth Sciences
+64 (0)22 323 6606 | eva@coco.co.nz | www.coco.co.nz