

**Nordic Field Committee Meeting 2019**  
**Reykjavik, Iceland, Denmark**  
**29th - 30th August 2019.**

Participants:

Erik Rosbirk, Byggros, Denmark  
Susanne Granhøj, Geo, Denmark (minute taker)

Petri Koikkalainen, Finland  
Jani Lepistö, Finland

Sverrir Örvar Sverrisson, Vegardin, Iceland

Magne Bonsaksen, ERA Geo, Norway (chairman)  
Amund Augland, GeoVita, Norway

Thomas Andrén, Geofound, Sweden  
Kenneth Anderson, Tyréns, Sweden

## **1. Status from the committees**

### **Iceland**

By Sverrir Örvar Sverrisson

Status on roadwork.

In Iceland there is 5.000 km paved road and 7.300 km unpaved road. There is quite a number of single lane bridges and roads. The aim is to upgrade the single lane roads to at least dual line roads.

The geotechnical investigations is made by a drilling rig mounted on belts for larger investigations and with a drill on a tripod for the smaller investigations.

In Iceland the depth to bedrock is either very shallow or none or can be up til 30 m of silts in the fjords.

### **Sweden**

By Thomas Andrén (two presentations included in email)

The swedish field committee has been working on various courses at HB, geophysics and clay samplers. Moreover, upgrading the "Felthandbook" is ongoing including small videos on geophysical methods and drilling using wassara DTH system on youtube.

Drilling for especially instrumentation can be carried out with Wassara DTH in small diameter boreholes, leaving in the steel liner. More expensive but time saving. The system can be used on quite small rigs.

Time has also been spend on working at the new eurocode 20-21.

### **Finland**

By Jani Lepistö

Every year 4 meetings are held; the meetings are held as day meetings.  
Reviewing standards 22475-1, 24283-1 to 24283-3 and standard for geophysics.  
The revised Finnish Field book, will be published/available in November 2019.

National education is ongoing, including education course for drillers, 4 months theory, 3 month practice, 12 persons a year.

Digital situation in general, in Finland they are working towards that no paper is used at fieldworks.  
Digital situation in Field, 5% of the drilling rigs is equipped with either bluetooth, GPRS or GPS.  
Around 170 people has got a drilling certificate.

## **Denmark**

By Susanne Granhøj (presentation included in email)

Every year 4 meetings are held, the meetings are held as day meetings.

Currently Denmark is working on:

- Commenting Eurocodes (22475-1, EC7-2 twice, 24283-1 to 24283-3)
- Revising SPT guidance (number of blows (N) to relative density  $I_D$  and/or relationships to get the friction angle.

In DGF 6 after-work meetings has been held and two seminars. The first seminar was on offshore wind farms and the second seminar "Geoteknikerdagen" had the main topic of sustainability soil handling. See the presentation for details.

## **Norway**

By Magne Bonsaksen (presentation included in email)

Every year 4 meetings are held; the meetings are held as day meetings.

In the past years, there has been made revision of the following NGF-guidelines

- Guidance 10: "Beskrivelsestekster for grunnundersøkelser" – description of site investigations
- Guidance 12: "Detektering av kvikkleire" – finding/registrering of quick clay during drilling
- NVE kvikkleireveileder – Norwegian national guidance for designing with quick clay.
- Byggegrepveilederen (planning of larger site investigations especially in built up areas/cities and how to carry out the construction site without damaging the surrounding properties)

The following courses has been held

- Qualified operator
- Grunnborerskolen
- Both courses will be required to get a drilling certificate.
- NGF plans the courses and teach this norwegian "brøndboreruddannelse".

In Norway, offers are made based on a standardized list of offers prepared by NGF.

Homepage for guidances: [http://ngf.no/?page\\_id=67](http://ngf.no/?page_id=67)

Homepage for video about quickclay: <https://www.youtube.com/watch?v=3g-qfNIEP4A>

## **2. Next meeting**

The next meeting will be held in Sweden in 2020.

## **3. Safety**

According to EN 16228 all drilling rigs shall have precautions against accidents around the moving parts since start of 2014-12-01.

In Norway all drilling rigs should be updated accordingly. In Sweden and Finland only the drilling rigs ordered later than December 2014 should have it.

Geomachine from Finland showed which safety measures is developed for their drilling rigs. See presentation.

In Sweden and Denmark there are 2 drillers on the larger rigs, in Finland the development has gone from 2 to 1 driller on the rigs due to economy.

See details in the presentations from Denmark and Norway.

#### **4. Digitalization**

##### Norway (presentation included in email)

Digitalization in Norway is mostly using f.ex. spreadsheet for CPTu from SVV. Trimble is upgrading Geosuite, and there are some public maps which is quite good;

- Finn – historical photos and historical data
- Atlas - (quickclay occurrence and hazards, levels, areas before below sealevel, risk of avalanche, risk of flooding)
- InSar – satellite terrain measurements from satellites

##### Denmark (presentation included in email)

The presentation regarding digitalization in Denmark concentrates on how to handle samples in the laboratory. Every sample has a designated bar code, which follow the sample. Small inhouse programme links the typed data, the scale and the database, which minimize spend man hours to hand write, typing and checking data. The same applied for managing storage of samples, where the project manager are asked and have to agree to disposal of samples digitally. The laboratory then print a list once a week and through the appointed samples away. This also save a lot of man hours.

##### Sweden (presentation included in email)

Sweden told about the application (ESRI Collector) to get the overview of the status of drillings on a large infrastructure project.

It is controlled by your phone or tablet. It can show the status of the work and be used as a planning tool for especially large scale projects. The driller click in the data and thereby updating the map showing all the boreholes. The driller can key in his name and a specific date and a daily report with his drilling work (borehole number, meter drilled, etc.) for that day.

It is possible for the project manager to key in the specific borehole ID and see the status of the borehole and the geologic descriptions for the single samples as soon as they are carried out. There is no need to wait for the driller to finish the borehole.

Environmental data for field excavation (coloured squares) can be put into the programme. Status on the excavation can be seen.

##### Finland

Finland told about tool which links photo and map with coordinates. Moreover Finland told about a free map tool showing all borings from the Finnish Road Authority. The larger cities in Finland have separate maps showing more details. Map of Helsinki f.ex. shows ground water data, inclinometer measurements, bedrock fracture zones, ground heat wells.

#### **5. Standardization**

##### DSF/pr EN ISO 22475-1 Geotechnical investigation and testing – Sampling of soil, rock and ground water – Part 1 – Technical principles

Discussed the revision 1 in general – everybody agreed that the proposed 5 sampling categories in change for the existing 3 sampling categories is a draw down.

Table 3: Finland, Sweden, Norway, Iceland use 40-80 mm sample in clay. Taken like with SPT. Usually make lab tests like water content, Atterberg limits, bulk density, grain size distribution and geological description. In the standard it is only possible. Proposed change to table 3 – line 14 – change to class D and table 1, water content nr. 1-4. These changes will fullfill the main sampling.

The Nordic countries has voted no to this revision of the standard.

*After the meeting the result of the overall voting in ISO was that the “no’s” last with 1% of the votes/ sgr 2019-11-07*

ISO/TC 182 N285 Geotechnical investigation and testing – Qualification criteria – Part 1: Qualified technician

ISO/TC 182 N287 Geotechnical investigation and testing – Qualification criteria – Part 2: Responsible Expert

ISO/TC 182 N289 Geotechnical investigation and testing – Qualification criteria – Part 3: Qualified Enterprise

Discussion regarding the above 3 suggested standards during the meeting.

#### 22476-1 CPTu standard

British chairman. Thomas Andrén is worried that the standard will be too “light” and not take account for the challenges in sensitive soils.

## **6. Site Visits**

### Road work

Visiting a road work approx. 1 hour drive from Reykjavik.

### Geothermal plant

Visiting Hellisheiði Power plant including exhibition, turbines and surroundings.



*Photo from powerplant website showing an overview of the plant.*



*Power plant – utilities at the back site.*

Geological features

Road trip showing various geological features including the rifts between the tectonic plates as seen from the southern coast road.



*Thermal outburst of hot steam and water close to the thermal plant.*