

MINUTES OF IAEG COMMISSION C-21

Ninth International Conference on Permafrost

Fairbanks, Alaska USA June 29 – July 3, 2008

Meeting 1 of IAEG Commission 21 & IPA Task Force “Engineering geology for development in permafrost regions”

Date: July 03, 2008

Time 16:15-16:45

Location: USA, Alaska, Fairbanks, UAF, NICOP

Present: Kaare Flaate, Anastasia Tseeva, Dmitry Sergeev, Gisle Håland, Jan Otto Larsen, Baolin Wang (Fig. 1).

Agenda

1. Establishment of the joint initiative “Engineering geology for development in permafrost regions”: Commission 21 in IAEG + Task Force in International Permafrost Association.
2. Presenting the plan of the development of the new Commission.

Kaare Flaate opened the meeting and proposed the way of cooperation between International Association for Engineering Geology and the Environment and International Permafrost Association. Fred Baynes, president of IAEG, and Jerry Brown, president of IPA have proposed to establish a joint commission dealing with problems in permafrost regions. The discussion between IAEG and IPA has taken place by correspondence and a meeting in Vail, Colorado, June 7. 2007. The IAEG Council meeting held in Vail, Colorado, June 3. 2007 decided to initiate a commission C 21: “Engineering Geology in Permafrost Regions”. The

intention was that this could be a joint commission between IAEG and IPA.

"Engineering Geology is the science devoted to the investigation, study and solution of the engineering and environmental problems which may arise as the result of the interaction between geology and the works and activities of man as well as to the prediction and of the development of measures for prevention or remediation of geological hazards." (IAEG statutes, 1992). The aims of the International Association for Engineering Geology and the environment are:

- to promote and encourage the advancement of Engineering Geology through technological activities and research;
- to improve teaching and training in Engineering Geology;
- to collect, evaluate and disseminate the results of engineering geological activities on a worldwide basis.

In result the first meeting of the Commission/Task Force proposed the new name of Commission: "Engineering geology for development in permafrost regions".

Also three principal branches of the Commission/Task Force potential activities were proposed by D.Sergeev and discussed on the meeting:

1. Points of EG specificity in permafrost region:
 - a. List of permafrost geological hazards on different scale intervals (link to JTC3-commission).
 - b. List of mapped and/or assessed permafrost parameters that are important for engineering geology (link to JTC3-commission).
 - c. Global warming and the permafrost state forecasts.
 - d. Problem of exploration of perpetual resources of the natural heat and cold.
2. Engineering geology mapping in permafrost regions:
 - a. Engineering geology mapping in permafrost regions.
 - b. Recommended legends to reflect the permafrost condition parameters in different scale intervals (link to C1-commission).
 - c. Small scale zonation of cold region that reflects the permafrost geological hazards (link to C1-commission).
3. The illustrated list of successful examples of using the permafrost science results in engineering geology practice.

Kaare Flaate and Kåre Senneset presented the special proposal at project level for the point 2a. Engineering geology maps are a useful and necessary tool for planning of infrastructure in permafrost regions. Knowledge about rock and soil properties, permafrost thicknesses and extent as well as drainage conditions is crucial in finding the most favourable location or taking the necessary measures for a given location.

Mapping of formations: topography, rock, soil, slides, drainage paths etc. Based on topographic maps, air photos, field work.

Description of formations: Rock and soil type, permafrost (temperature, active layer, ground ice) etc. Based on sampling (excavation, drilling) and geophysical investigations.

Suitability for construction: Housing, roads, utility lines, pipelines etc. Based on knowledge: frozen ground engineering for arctic infrastructure.

The field work should take place at one or more locations in the arctic, preferably near and/or in a developed area. If possible within the scope of the project different conditions may be investigated. This could be in Russia, Svalbard, Alaska or Canada depending on the participation obtained.

Reference to: Troy L. Péwé's work at Svalbard in 1980, published by the Norwegian Committee on Permafrost in the journal "Frost I Jord", nr 23, 1981).

There are already many engineering geology reports for exploration and infrastructure purposes. An initial step might be a literature review.

The product could be guidelines for engineering geology mapping related to engineering problems in areas with different formations.



Figure 1. From left to right: Baolin Wang, Jan Otto Larsen, Kaare Flaate, Dmitry Sergeev, Anastasia Tseeva, Gisle Håland.

The full list of contact details is located below:

Dr Kaare Flaate (IPA)
Bernhard Herresv 6
0376 OSLO
Norway
+47 22491087
kflaate@online.no

Dr. Baolin Wang, P.Eng.
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario
Canada, K1A 0E8
Phone: 1-613-992-8323
Fax: 1-613-992-0190
bwang@NRCan.gc.ca

Dr. Anastasia Tseeva

Yakut Design & Research Institute for Construction
Ministry for Construction of Sakha Republic RF
Phone: +74112452125 (office)
+74112225746 (home)
E-mail: antseeva@yapniis.ysn.ru
antseyeva@hotmail.com Skype: antseeva
Address: 20, Dzerzhinsky Str. Yakutsk, Russia 677000

Dr. Dmitry Sergeev
Institute of Environmental Geoscience Russian Academy of Sciences (IEG RAS)
Phone: +7-(495)-624-9622 (work)
+7-(495)-154-7281 (home)
Personal E-mail: sergueevdo@mail.ru
Work (public) E-mail: cryo2@yandex.ru
Address: Ulansky, 13, build.2, p.o.box 145, Moscow, 101000, Russia.
<http://www.geoenv.ru/index-eng.html>

Dr. Jerry Brown
President International Permafrost Association
P.O. Box 7
Woods Hole MA 02543
USA
email: jerrybrown@igc.org

Professor Kare Senneset (IPA)
Hogskoleringen 7a, 7491 Trondheim
+47 73 59 46 02
Kaare.senneset@ntnu.no

Dr. Jan Otto Larsen (IPA)
PO Box 156 N-9171 Longyearbyen
Norway
+47 79 02 33 44
Jan.otto.larsen@unis.no

Gisle Håland (IPA)
StatoilHydro ASA
NO-4035 Stavanger, Forusbeen 50, Forus
+47 481 47 518
gish@statoilhydro.com

Jared D Abraham USGS (IPA)
USGS Denver Federal Center Ms 964
Denver CO 80225-0046
303-236-1318
jdabraha@usgs.gov