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The NKG Steering Committee on the on-going sub-projects for "NORDIC POSITIONING SERVICE"

**Summary of the minutes of the 8th meeting, Copenhagen, Denmark, August 13-14,
2001**

Application to "Nordisk Industrifond"

In October 2000 the Director Generals signed an agreement on development of a common Nordic real-time positioning service. The precondition for this project was that it should be financed from external sources by at least 50 % of the costs. In November 2000 an application for funds was submitted to the Nordic council, in June 2001 this application was revised and forwarded to "Nordisk Industrifond".

Status of the sub-project A0 - A Nordic standard for reference stations

A detailed document of the classification of reference stations is under development. The final version is expected in the end of August 2001.

Status of the sub-project A1 - A Nordic Web-site for download of reference station data for post-processing purposes

A prototype of the Web-site is available.

The group will have a meeting on August 14 in Copenhagen. The following issues will be discussed:

- The compression of the data should be standardised.
- The session name should follow the IGS standard.
- It should be possible to download the newest precise ephemeris from the Web-site.

The Steering Committee decided that the primary goal is to implement a common Web portal at each control centre of the Nordic networks of permanent reference stations. The final goal is to establish a common Web site with a common pricing policy.

Status of the sub-project A2 - An Automated Computation Service

LMV has a computation service in operation. The NT-version of the Bernese processing software and the SWEPOS Web-site are used. LMV has improved the computation service during the summer. It is now even possible to compute files with shorter observation time than 30 minutes.

LMV will arrange a working group meeting during the autumn 2001.

Status of the sub-project B - A Nordic Real-time Service with half-meter horizontal accuracy (95 %)

SK has installed Trimble WADGPS software. The expected accuracy is 10 centimetres (1σ , horizontally) and 30 centimetres (3σ , horizontally).

The Norwegian private company Navsys is developing a pocket VRS, which include Windows CE computer, GSM modem, FM radio receiver, GPS receiver and a RS232 serial port. The WADGPS or Network-RTK message is transmitted in proprietary format to the pocket VRS, where the message is converted to RTCM format ver. 2.2 and then transmitted to the GPS receiver. SK is expecting a prototype of the pocket VRS in the near future.

When the communication links between the control centres are established a pilot project with a "decimetre" service (WADGPS) will be carried out in southern Norway, southern Sweden and Denmark using the software installed at the SATREF control centre.

A working group is established for the preparation and establishment of the pilot project

The working group shall work out a proposal for a computer network between the control centres (including costs and future possibilities for up-grade) and the establishment of the pilot project.

Status of the sub-project C1B - Evaluation of available RTK algorithms

The private company Bravida has established a network for Network-RTK of 6-8 stations in the southern part of Norway and is using the software GPS Network from Trimble, Terrasat.

The Terrasat Network RTK software, GPS-Network, was installed for test purposes in September 2000 at the SWEPOS control centre in Gävle. A license for GPS-Network was bought in the end of December 2000.

LMV informed about the experiences from the network RTK projects in the southern (Skåne), western (Göteborg) and eastern (Stockholm, Mälaren) part of Sweden. The projects are based on a co-operation between the municipalities, the local Railway Administration, the local Road Administration and SWEPOS. In the southern and the eastern part test measurements has been carried out during the autumn 2000 and winter 2001. In the western part the project has just started. The final report from the eastern part is expected in a few days. There are proposals for extension of the networks and further tests in 1-year projects.

LMV intend to test the Calgary network RTK software in September/October.

The Trimble distributor in Denmark has established a network RTK service based on a network of 26 permanent reference stations covering the country. KMS has processed a data set from all the stations using the Bernese software for the determination of the position of the reference stations. A one-day data set from all the 26 stations will be processed every month to check the stability of the reference stations.

Leica users have established a co-operative single station RTK service with 60 reference stations.

A computer network between the Nordic control centres

A working group has been established for the preparation and establishment of a computer network between the Nordic Control centres. The working group consists of Rune Hanssen (chair) (SK), Ole Bjerregaard (KMS), Bo Hansen (KMS), Gunnar Hedling (LMV), Örjan Zackrisson (LMV) and Anders Frisk (LMV).

The working group shall work out a proposal for a computer network between the control centres (including costs and future possibilities for up-grade) and the establishment of the network. The long-term goal is to establish exchange formats for real-time data between the Nordic control centres.

The project has the following time schedule:

- Specification and documentation, 2 weeks
- Programming, 4 weeks
- Testing and evaluation, 6 weeks

The network is expected to be operational in November/December 2001. The group will have a kick-off meeting on September 4-5 in Copenhagen.

Exchange of data (both real time and post-processing) between the Nordic countries

The Steering committee proposes that data (both post-processing and real time) will be exchanged free of charge between the Nordic countries. To avoid competition each National Mapping Authority will only distribute data for use within the nation and this condition shall clearly be stated in the agreement with the users. On the other hand each NMA are free to charge the national use of Nordic data according to the national price list.

Next meeting

The next meeting of the Steering Committee will take place at LMV in Gävle on November 15-16 2001.