



NORDISKA KOMMISSIONEN FÖR GEODESI

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

Minutes of the 14th meeting

Spidsbergseter, Norway - March 6-7, 2003

PRESENT

Denmark: Sigvard Stampe Villadsen
Bo Madsen
Finland: No representative
Norway: Björn Engen
Rune Hanssen
Sweden: Bo Jonsson
Andreas Engfeldt (secretary)

ITEM 1: OPENING OF THE MEETING

Björn Engen welcomed everybody to the 14th meeting of the NKG Steering Committee on the on-going sub projects for "Nordic Positioning Service".

The Steering Committee agreed to the following agenda for the meeting

1. Opening
2. Minutes from the 13th Steering Committee meeting on November 21-22 in Gävle

3. Status of a computer network between the Nordic control centres, Rune H
4. Results of the GNSMART/GPSNet test campaign, Andreas E
5. GPRS as distribution channel, Rune H
6. Status for the CPOS-service in Norway, the commercial services in Denmark and the regional Positioning services in Sweden
7. Status of the co-operation sub projects
 - B - Real time service with dm accuracy
 - C1B - Evaluation of RTK algorithms
8. Status of the information sub-projects
 - A0 - Standard for reference stations
 - A1 - Web-site
 - A2 - Automated Computation Service
 - C1A - Distribution channel for RTK
9. Preparation for the next Directors General Meeting
10. Ongoing activities and Future work
11. Other items
12. Next meeting and closing

ACTION LIST:

- Andreas E will collect the co-ordinates of the Nordic permanent reference stations. (ITEM2) and distribute to the members of the Steering Committee
- Rune H will arrange a telephone conference to discuss the status for the software development for exchange of data between SWEPOS and SATREF/the Danish network.
- KMS will make a comparison of height measurements with different brands of GPS-equipment at one site (ITEM 7 C1B).
- Andreas E will update the report from the comparisons of GPSNet and GNSMART in November 2002 (ITEM 4).
- KMS takes the initiative to develop a login procedure for the Nordic the Web-site for post-processing data (ITEM 8 A1).
- The document of the classification of the reference stations that has been developed will be updated as soon as possible (ITEM 7 A0), LMV is responsible.

- Mails about how the Swedish tests of SAPOS RTCM message 59 proceed (ITEM 8 C1A) and how the Danish height tests proceed (ITEM 7 C1B) will be sent out to the Steering Committee.

ITEM 2: MINUTES FROM PREVIOUS MEETING

Minutes from the 13th Steering Committee meeting on November 21-22 was approved after the following remarks were given:

ITEM 3: Change the last sentence to: "There is a possibility that the DPOS-service could be tested **all over Denmark** already on the 1st of March".

ITEM 7: Andreas will send out an email to Thorarinn to ask for the co-ordinates of the Icelandic reference stations.

ITEM 8: The expressed interest from FGI to participate in the sub-project about distribution channels was never discussed at the Meeting of the Presidium.

ITEM 9: The date of the Meeting for the Directors General of the Nordic Mapping Authorities has been changed to the 26-27 of May. The next "full" Meeting will be in Iceland on 25-26 August.

ACTION LIST FROM THE MEETING OF THE STEERING COMMITTEE ON NOVEMBER 21 -22 AND WHAT HAS HAPPENED:

- "GPRS as distribution channel" will be a new ITEM for the next meeting.
- **Action carried out:** It is on the agenda for today, see ITEM 5.
- Rune H. will check more about GPRS before the next meeting (ITEM 6, C1A).
- **Action carried out:** See ITEM 5 in these minutes.
- The document of the classification of the reference stations that has been developed will be updated as soon as possible (ITEM 6 A0), LMV is responsible.
- **Action carried out:** Nothing has happened, because of changes in the available resources. But it is the intention that the document shall be finalised before the next Meeting of the Steering Committee.

ITEM 3: STATUS OF A COMPUTER NETWORK BETWEEN THE NORDIC CONTROL CENTRES

The specification for the computer network between the control centres in Denmark, Norway and Sweden can be found in the document "NKG Network - Architectural Design", which was updated on 20th of November 2001 (see minutes from the 9th Steering Committee Meeting, in November 2001).

The computer network between SATREF, SWEPOS and the Danish network is working. Exchange of data between SATREF and the Danish network of permanent reference stations is in operation. The software development for exchange of data between SWEPOS and SATREF/the Danish network is still not finalised. LMV and SK have to allocate resources to finalise this development. Since SWEPOS and SATREF use different real-time formats a conversion from the SWEPOS format to the SATREF format is necessary. Rune H. agrees to arrange a telephone meeting to discuss the status for the software development and plans for the finalisation.

ITEM 4: RESULT OF THE GNSMART/GPSNet TEST CAMPAIGN

Andreas presented an almost complete report from the GNSMART/GPSNet test campaign in October/November 2002. Stampe had two remarks: He asked if it was possible to have the GPSNet results to be shown in a table like table 2 in the Danish report "Test in open land" from spring 2002. He also proposed that the calculated position average for all the instruments should be shown.

This spring a diploma work, which will examine differences between simultaneous network-RTK and single station RTK on different distances from the SWEPOS-station Gävle, will be performed at LMV. Both performance and accuracy will be studied. The intention is to investigate the receiver brands Leica, Topcon and Trimble. .

One thing that was discussed was how to improve the functionality of GPSNet. Maybe a study visit to one of the nets in Germany could be something? Or maybe to arrange a work shop for the operators of GPSNet?

ITEM 5: GPRS AS A DISTRIBUTION CHANNEL FOR NETWORK-GPS DATA

GPRS is a further development of GSM. For GSM the user pays for the connection time, but for GPRS the user pays for the transferred data quantity. At present there is probably no maximum delay time in the GPRS-channel, since data is transferred in "package mode".

Rune reported that there is. "Software Development Kits", which works like an Internet server and is sold by telephone companies. One of these kits could be used for a test of sending GPS-data via GPRS. Rune will check to the next meeting if GPRS is a cheap solution or not.

ITEM 6: STATUS FOR THE CPOS-SERVICE IN NORWAY, THE COMMERCIAL SERVICES IN DENMARK AND THE REGIONAL POSITIONING SERVICES IN SWEDEN

Two new CPOS-stations (Ulefoss and Porter) in the Østland area have been established recently. Now there are totally 8 CPOS-stations. There will be an establishment of new stations in Rogaland (6 stations), in Stavanger and in Augder probably already this spring. Later also stations in the Molde area and the Trondheim area will be established.

In Denmark nothing in particular has happened with the commercial services since our last meeting. The version of GPSNET was changed on the 10/1 to version 2.0 and in the single station network there are now totally 52 stations included.

A proposal of a nationwide RTK-service in Sweden has been developed. The proposal includes 114 stations and the coverage of the service is the southern part of Sweden up to Gävle and the coastal area of the northern part of Sweden. The investment cost for an extension of the present SWEPOS to the proposed RTK-service is estimated to 42 million SEK and the operation cost is estimated to 21 million SEK/year including the investment costs for replacement equipment.

ITEM 7: STATUS OF THE CO-OPERATION SUB PROJECTS

A0 - A Nordic standard for reference stations The document of the classification of the reference stations that has been developed is at last on its way to be written.

Bosse will follow it up. Then the document will be sent to the members of the sub project and to the Steering Committee.

Svein Ola Thorssen will take over the Norwegian place in this sub-project after Svein Rekkedal.

The next step is to make an inventory of the existing Nordic reference stations. A standard form, based on e.g. an Access database, should be used. Based on this inventory and the existing standards for IGS and EUREF stations the sub project shall propose a long-term standard for the design of Nordic reference stations.

B - A Nordic Real-time Service with half-meter horizontal accuracy (95 %)

The Norwegian Positioning Service DPOS, which gives a position accuracy on the decimetre level, is in operation since June 2002 and is marketed. At moment there are not so many users of DPOS in Norway. But the Norwegian Maritime Authorities have saved about 0,5 million NOK because of their DPOS-use.

At present the DPOS-service can't use data from the SWEPOS network since the software development for exchange of real-time data between SWEPOS and SATREF/the Danish network is not finalised yet, see ITEM 3.

C1B - Evaluation of available RTK algorithms

KMS will carry out a comparison of the algorithms for height measurements in different brands of GPS-equipment.

ITEM 8: STATUS OF THE INFORMATION SUB PROJECTS

A1 - A Nordic Web-site for download of reference station data for post-processing purposes

KMS will co-ordinate and start the development of a login page for a Nordic Web-site. In this matter a lot of different ideas (not mentioned here) how the Web-site should function were discussed. What was decided was that we will have only one start page and from that page the users should be directed to the national page after they have marked which system they are registered users of (SATREF/SWEPOS/the Danish network).

A2 - An Automated Computation Service

LMV has a computation service in operation on the SWEPOS web-site, which performance is very satisfactory. During recent time we have got many new users, especially from the regional departments of Lantmäteriet.

To extend the computation service to be a Nordic service some investigations regarding the relations between the national reference systems in the Nordic countries needs to be done, a plan will be developed by the NKG Working Group Reference Frame and Positioning. When this is done the service can be introduced e. g. in Denmark.

Since the last Meeting nothing new has happened here. We are still waiting for the plan from the NKG Working Group for Reference Frame and Positioning.

C1A - Test of distribution channels for RTK

In Sweden there will be a test of SAPOS RTCM-message 59 for network-RTK within the next few weeks. LMV is having a discussion with the company Cartesia about the DARC channel.

ITEM 9: PREPARATIONS FOR THE NEXT DIRECTOR GENERALS MEETING

The next full meeting of the Director Generals will be on 25-26 August in Iceland. This means that we have time to prepare something for that meeting on our next Meeting. So before that we have to think about which plans we have for next year, our financial frames, the consequences of decreased resources for the geodetic field.

ITEM 10: ONGOING ACTIVITIES AND FUTURE WORK

For the future Meetings of the Steering Committee, we will try to rearrange the Agenda so that the most important issues will be placed as ITEM 3 and forward.

ITEM 11: OTHER ITEMS

Nothing in particular was mentioned here.

ITEM 12: NEXT MEETING AND CLOSING

The next meeting of the Steering Committee will take place in København on June 3, 2003, 08.00 – 16.00. Björn thanked all the participants for their contribution to a fruitful meeting.

