



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 20th meeting Hurdalsjøen, Norway - June 23, 2005

PRESENT

Denmark:	Casper Jepsen Lola Bahl
Finland:	No representative
Norway:	Bjørn Engen Rune Hanssen Per Erik Opseth
Sweden:	Bo Jonsson Andreas Engfeldt (secretary)



ITEM 1: OPENING OF THE MEETING

Bjørn Engen welcomed everybody to the 20th 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 19th Steering Committee meeting on 20-21 January in Gävle and review of action lists from that meeting and from the latest telephone meeting on 25 April.
3. Ongoing activities
 - Nordnet – the computer network, including the new sub-project
 - NorDPOS
 - NordRTK
 - The national GPS-services in each country
 - The classification of the reference stations
4. Report from the NKG Positioning and Reference Frame WG (Torbjørn Nørbech)
5. Report from the latest Presidium Meeting and preparation for the next
6. Preparation for the next Directors General Meeting
7. DARC/Global Star
8. Future activities
9. RTK (tests and the report list)
10. Agreements
11. EGNOS
12. Prices for the lines between the control centres
13. Summary of action list
14. Next meeting and closing

AGREED ACTION LIST:

- All reports handed out on this meeting shall if possible be sent in a digital form to the Steering committee as soon as possible. Responsible: Andreas (for the Swedish reports) and Per Erik (for the Norwegian reports).
- A new sub-project group for the classification of permanent reference stations will be formed. It will include Andreas (chair), Casper, Svein Ola Thorsen and Gunnar Hedling. The group will have a meeting before the next meeting of the Steering Committee (20-21 October).



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- Javad/Topcon Ribex format needs to be tested. A Javad/Topcon receiver is then required. Rune will solve this.
- Per Erik will contact Örjan Zackrisson in week 27 about the status for the verification of the transmission of SWEPOS data to the SATREF control center (the Swedish DES).
- The Steering Committee will investigate the possibility to change the communication lines between the control centres to something cheaper and more up to date. Rune puts together a specification for communication lines. Bosse will check with Telia and Rune will check with Telenor.
- Andreas will fill the report list with Swedish reports and distribute it to the Steering Committee before next telephone meeting.

ITEM 2: MINUTES FROM PREVIOUS MEETING

Minutes from the 19th Steering Committee meeting on January 20-21 was approved, with the following remark:

ITEM 11: Appendix E will be cancelled.

REVIEW OF THE ACTION LIST FROM THE MEETING OF THE STEERING COMMITTEE ON JANUARY 20-21

- Rune shall mail the project plan to the rest of the Steering Committee as a mpp-file and as a pdf-file after the meeting. **Action carried out:** It was done right after the previous meeting.
- There shall be a telephone meeting about the project plan at 13.00 on January 27. Andreas is responsible for the booking of the meeting. Before the telephone meeting all partners will check the project plan and which staff from respective partners shall be involved in the project. **Action carried out:** It was delayed a few days, but has taken place.
- Örjan Zackrisson and Anders Frisk will go to Hønefoss for a meeting with Rune and Mohammed Ouassou on February 2. **Action carried out:** The meeting took place according to the schedule.
- GlobalStar will be a subject on the Agenda list for next ordinary meeting. **Action carried out:** See ITEM 7 in these minutes.
- The SWEPOS distribution agreements will be studied until next ordinary telephone meeting. Casper will investigate how the distribution agreements of GPSNet.dk look until next ordinary telephone meeting. **Action carried out:** They were studied, but we decided to wait with those discussions until this meeting (See ITEM 10).
- Casper starts to write a list of reports related to the project Nordic Positioning Service, fills it with Danish reports, sends it further to Per Erik who fills in the Norwegian reports and sends it further to Andreas who fills in the Swedish reports and distributes the whole complete list to the Steering Committee. **Action carried out:** The report list was sent from Casper to Per Erik earlier this week. Per Erik



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handed over it to Andreas during the meeting. Andreas will add Swedish reports and distribute it to the Steering Committee.

- The results of the calculation for a new common Nordic Reference Frame by the NKG working group, Positioning and Reference Frame, shall be presented on the next meeting of the Steering Committee. **Action carried out:** It was presented by Torbjørn Nørbech at this meeting (See ITEM 4).
- Two different types of reference stations shall be classified from each country before 1 April by a Working Group consisting of Bo Madsen, Gunnar Hedling and Svein Ola Thorssen. **Action carried out:** The classification of two types of Norwegian and Swedish stations are finished. Now more things will happen with this subject (See ITEM 3).
- Detailed station data availability reports shall be sent to Örjan from Mohammed every week. **Action carried out:** Örjan has received reports.

ITEM 3: ONGOING ACTIVITIES

Nordnet and NorDPOS

We are at moment delayed with the original plan for Nordnet, so the plan was updated during this meeting and Rune got the mission to send it to the Steering Committee as a pdf-file (see Appendix A) as well as the original Microsoft Projects file.

In Norway there has been a test of two different softwares for Network DGPS, Trimble software and Terrasat GPSNet (See ITEM 9). Since a few years the Trimble software and the pocket VRS has been used in the DPOS-service, but this test proved that GPSNet is slightly better. It is now decided that the GPSNet solution will be used for DPOS in the near future, but it needs to be adjusted to the pocket VRS in order to make one way distribution possible to use the GPSNet solution instead of the present solution. In the next few months there will be a decision on if they will use the software Terrasat GPSNet with or without the pocket VRS. The decision will be announced on the next telephone meeting of this group.

NordRTK

The next meeting will take place in connection to the next meeting of the Steering Committee, in Copenhagen. A proposed time for the meeting is October 20, 8.00-12.00. Our Finnish partner in the geodesy field, FGI, has shown interest in participating in this sub-project.



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The national GPS services in each country

The Swedish stations in Värmland/Dalarna will be up in October if the financing goes on as it should. The Norwegian CPOS-area around the Swedish border will be up at about the same time.

Classification of reference stations

This spring the classification of two different types of national reference stations was performed by Norway (by Svein Ola Thorsen) and by Sweden (by Gunnar Hedling and Andreas). From the Danish side it was decided the day before this meeting that Casper will make their classification.

It was decided that a new sub-project group will be formed with Andreas as the chair. The members will be Casper, Svein Ola and Gunnar. It was also decided that this group will have a meeting latest in connection to the next meeting of the Steering Committee. What will be discussed in this group is a revision of the present specification for the different types of reference stations. Today none of the Norwegian or Swedish types looks a bit like any of the four different classes proposed. We decided on this meeting that if we will keep the old specifications we must change a few of the listed properties to optional. After the new sub-project group has come up with new ideas of how to proceed, these ideas should be sent on a review to other Nordic experts, such as Bo Madsen, Oddgeir Kristiansen, Lotti Jivall and Jan Johansson. This sub-project shall be finished before the 22th Steering Committee meeting early next year in Sweden.

ITEM 4: REPORT FROM THE NKG POSITIONING AND REFERENCE FRAME WG

Torbjørn Nørbech visited the meeting and gave an overview of the new Nordic reference frame. This reference frame was calculated because respective national ETRS89 solutions don't give us a homogenous network. The epoch is 2003.75 and it's conceived out of the ITRF solution, ITRF2000. It has been processed in four different ways, by two different versions of the Bernese software, by GAMIT and by GIPSY. The final solution is an average between the GAMIT and GIPSY solutions. The Steering Committee got the task to check if RTCM version 3.XX can be used together with this reference frame and a future Nordic position service.

ITEM 5: REPORTS FROM THE LATEST PRESIDIUM MEETING AND PREPARATION FOR NEXT PRESIDIUM MEETING

There should have been a Presidium Meeting in April, but it was postponed to 8-9 September.



ITEM 6: PREPARATION FOR THE NEXT DIRECTORS GENERAL MEETING

The next meeting of the Directors General will take place 8-10 August on the Faeroe Islands. What could be important to point out are the new Nordic reference frame (see ITEM 4) and our operative and very active collaboration in the GPS-field.

ITEM 7: DARC/GLOBAL STAR

Andreas reported about the Global Star tests that LMV has performed during the last months. The result using Global Star as communication link for Network RTK is very similar accuracy-wise to using GSM. The initialization time takes though a few seconds longer in average. Bosse reported about that Elsacom (the operators of Global Star) will design a new modem, which will be smaller and more designed for field work. The price of it will be about 6-8000 SEK. Concerning DARC there has not yet been a meeting between Teracom and LMV. A diploma work performed last summer for LMV by students from Gävle, in which the difference using GPRS and GSM as distribution channels for Network RTK was studied, will soon be printed and published on www.lantmateriet.se. Andreas will then distribute it to the rest of the Steering Committee.

ITEM 8: FUTURE ACTIVITIES

RTCM version 3.0

Gunnar Hedling wrote a travel report about the meeting of the RTCM committee on 27-28 January in San Diego. The report was distributed to the Steering Committee earlier this spring.

PROJECT C1A - Test of distribution channels for RTK

See ITEM 7.

Postponed projects

PROJECT A0 - A Nordic standard for reference stations

Nothing new in particular was mentioned here.

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

Nothing new in particular was mentioned here.

C1B - Evaluation of available RTK algorithms

Nothing new in particular was mentioned here.



PROJECT A2 - An Automated Computation Service

Nothing new in particular was mentioned here.

ITEM 9: RTK (TESTS AND REPORT LIST)

Tests: Andreas presented the result from a diploma work from Trollhättan concerning Network DGPS and preliminary results from a diploma work from KTH concerning Network DGPS in a less dense network. Andreas also presented the results from a LMV GPS/GLONASS test which was performed earlier in June.

Per Erik presented a few reports from Statens Kartverk, among others a test comparison of the two different types of Network DGPS that is possible to run in Norway (See ITEM 3).

The report list: Casper finished the Danish part on Tuesday this week and sent the Excel document to Per Erik that day. Per Erik finished the Norwegian part and gave Andreas the Excel document on this meeting. Andreas will now finish the Swedish part and add all Swedish reports concerning RTK and then distribute the document to the Steering Committee before next telephone meeting.

ITEM 10: AGREEMENTS

We found that we had no time left on the meeting to discuss this, so we decided to postpone this subject.

ITEM 11: EGNOS

This item was postponed to the next meeting.

ITEM 12: PRICES FOR THE telecommunication LINES BETWEEN THE CONTROL CENTRES

Our present lines are quite expensive and according to a Danish "expert" they are an old technology. There must be a possibility to get it better and cheaper. Bosse will check with Telia and Rune will check with Telenor. Rune puts together a specification for the telecommunication lines?

ITEM 13: SUMMARY OF ACTION LIST

	Action	Responsible	Status	Important dates
1	The project plan shall be mailed to the SC in a pdf-file and a	Rune	Written on the meeting	ASAP

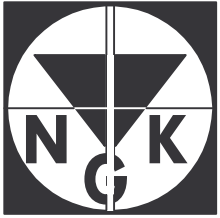


	mpp-file			
2	All reports handed out on this meeting shall if possible be sent in a digital form to the Steering committee	Andreas and Per Erik		ASAP
3	A new sub-project group for the classification of permanent reference stations will be formed	Andreas	Will also include Casper, Svein Ola and Gunnar	A meeting should take place before October 20
4	Javad/Topcon Ribex needs to be tested in reality. A Javad/Topcon receiver is then demanded	Rune		ASAP
5	There will be a contact between Norway and Sweden about the Ribex converter (Topcon)/DES Topcon	Per Erik (and Örjan)		Contact shall be taken in week 27
6	The possibility to investigate to change lines between the control centres to something cheaper and more up to date	Bosse and Rune		Before next meeting
7	The report list shall be filled with Swedish reports and distributed to the Steering Committee	Andreas		Before next telephone meeting
8	Next telephone meeting	Bosse		On 31 August 2005, 13.00
9	Second next telephone meeting	Andreas		On 19 September 2005, 09.30
10	Next meeting	Denmark		On 20-21 October

ITEM 14: NEXT MEETINGS AND CLOSING

A number of future meetings were decided.

The next two meetings of the Steering Committee will be telephone meetings, on August 31, 13.00-14.00 and on September 19, 09.30-10.30. Bosse will be responsible for the first of them, because Andreas will then be on a hotel in Esrange.



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The next “real” meeting will take place in København on October 20, 12.00 – October 21, 12.00 (or even to 15.00, it will be decided later), 2005.

Bjørn thanked all the participants for their contribution to a fruitful meeting.