



# 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 21<sup>st</sup> meeting København, October 20 - 21, 2005

#### PRESENT

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



## ITEM 1: OPENING OF THE MEETING

Bjørn Engen welcomed everybody to the 21<sup>st</sup> 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 of the meeting (Bjørn)
2. Minutes from the 20<sup>th</sup> Steering Committee meeting on 23 June in Hurdalsjøen and review of action lists from that meeting (see below) and from the latest telephone meeting on 26 September (also see below) (Andreas / All)
3. Ongoing activities
  - Nordnet – the computer network (Rune)
  - NorDPOS (Rune)
  - NordRTK (Per Erik)
  - The national GPS-services in each country (Bo, Rune, Casper)
  - The classification of the reference stations (Andreas)
4. Ntrip (Bo)
5. Report from the latest Presidium Meeting (Bo)
6. Preparation for the next Directors General Meeting (All)
7. DARC/Global Star (Bo)
8. Future activities (All)
9. RTK - tests and the report list (Andreas, Per Erik, Casper)
10. Agreements (Casper, Bo, Rune)
11. EGNOS (Rune)
12. Prices for the lines between the control centres (Bo, Rune)
13. Spidernet (Casper)
14. A daily Nordic solution (Bjørn)
15. Additional items (All)
16. Summary of action list (Andreas)
17. Next meeting and closing the meeting (All)

## ITEM 2: MINUTES FROM PREVIOUS MEETING

Minutes from the 20<sup>th</sup> Steering Committee meeting on June 23 was approved, without any remarks.



## REVIEW OF THE ACTION LIST FROM THE MEETING OF THE STEERING COMMITTEE ON JUNE 23

Action list from the meeting in Hurdalsjøen:

### AGREED ACTION LIST:

- A. 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). **Action carried out:** The Swedish reports were distributed the week after the meeting in Norway and two new reports which were mentioned at that meeting was distributed in print on this meeting (about "Network RTK in Northern and Central Europe" and about "En noggrannhets-jämförelse mellan Nätverks-RTK och Nätverks-DGPS"). The Norwegian reports were also distributed before this meeting (See ITEM 9).
- B. 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 (October 20-21). **Action carried out:** The sub-group had a meeting on October 18-19 which was fruitful (See ITEM 3).
- C. Javad/Topcon Ribex format needs to be tested. A Javad/Topcon receiver is then required. Rune will solve this. **Action carried out:** It is almost finished.
- D. 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). **Action carried out:** The contact has not been established yet.
- E. 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. **Action carried out:** We are working on it (See ITEM 12 and ITEM 3)
- F. Andreas will fill the report list with Swedish reports and distribute it to the Steering Committee before next telephone meeting. **Action carried out:** Because of a computer crash and a bad back-up system we started this work from scratch again. But right before this meeting it was finished and it is distributed with these minutes as Appendix E (See ITEM 9).

Action list from the last telephone meeting:

	Action	Responsible	Status	Important dates
1	All reports handed out on this meeting shall if	Andreas and Per Erik	Waiting for the Norwegian reports	ASAP



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	possible be sent in a digital form to the Steering committee			
2	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 on October 18-19 in København
3	Javad/Topcon Ribex needs to be tested in reality. A Javad/Topcon receiver is then demanded	Rune	The converter is up, lots of work has been done	ASAP
4	In order to solve (3), Sweden will try to help by asking their point of contacts	Bosse		ASAP
5	There will be a contact between Norway and Sweden about the Ribex converter (Topcon)/DES Topcon	Örjan Zackrisson (and Per Erik)		Örjan will call Per Erik this week
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 and Per Erik	The previous one got lost because of a computer crash and a change of computers	A new one will be sent before next meeting
8	Coordinates for the new Swedish stations along the Swedish-Norwegian border shall be distributed to Norway	Bosse	15 (of 22) station positions are determined	The coordinates will be sent in about two weeks, when all the positions are determined
9	Sweden wants daily data for post processing from Trysil	Anders Frisk (and Per Erik)		Anders will contact Per Erik



10	Spidernet in Denmark will be on the agenda for the next meeting	Andreas (Casper)		Next meeting
11	A daily Nordic solution will be on the agenda for the next meeting	Andreas		Next meeting
12	Next meeting	Denmark		On 20-21 October

### **Actions carried out:**

- 1: Done, see Action A
- 2: Done, see Action B
- 3: See Action C
- 4: Done
- 5: See Action D
- 6: See Action E, ITEM 3 and ITEM 12
- 7: Done, see Action F
- 8: Preliminary coordinates have been sent to Per Erik
- 9: A contact was established the day after the last telephone meeting
- 10: See ITEM 13
- 11: See ITEM 14

## **ITEM 3: ONGOING ACTIVITIES**

### **Nordnet and NorDPOS**

Bo H will check with Tele Danmark if we can get a better offer for the data network between the control centres of the Nordic networks of permanent stations.

A discussion about how to solve the problems concerning DEC/DES (Data Exchange Client / Data Exchange Server) ended up in a decision of a workshop in København on November 17. The people attending should be Casper, Bo H and Søren from Denmark; Rune, Per Erik and Mohammed from Norway; Anders F, Örjan, Andreas and Bosse from Sweden.

In Norway there has been a test of two different softwares for Network DGPS, the 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 together with the pocket VRS will be used for DPOS in the near future, but the GPSNet solution needs to be adjusted to the pocket VRS in order to make one way distribution possible for this solution.



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In the very end of this year there will be new DPOS stations in Kautakeino and in Honningsvåg. In Bodø the station will be moved to another location. In next year new DPOS stations are planned in Lofoten and Brønnøysund.

KMS has contacted a Swedish company who are responsible for the DAB solutions in Denmark. Casper or Bo H will try to set up a meeting with the company and Rune, themselves and someone from Radio Denmark.

## **NordRTK**

On October 19-20 a NordRTK meeting took place (see Appendix A). The next NordRTK meeting will be held before summer next year.

## **The national GPS services in each country**

### Sweden

The Swedish stations in Värmland/Dalarna will be up on the 1<sup>st</sup> of December. The location of a few Norwegian CPOS-stations around the Swedish border will be changed before the 31<sup>st</sup> of December.

Last Tuesday there was the annual SWEPOS seminar in Gävle. Earlier this autumn there has also been three local SWEPOS seminars. In every seminar about 80-90 people have attended and the users seem overall be happy about the service. Many users seem to be interested in the combination GPS and GLONASS, now when the GLONASS satellites are more than they have been for many years.

A few words were also said about "Projektanpassad Nätverks-RTK" and the road construction project "Marieholmsförbindelsen".

### Norway

CPOS has been increased by five stations this year. In the beginning of 2006 there will be more new stations, this time in Trøndelag and Møre og Romsdal. ADSL lines have been very successful this far and is a cheap solution.

### Denmark

GPSNet still use 28 stations. GPS-Referencen will very soon (see ITEM 13) start to use Network RTK with the new SpiderNet software. They get four stations from KMS at moment and totally use 58 stations.

## **Classification of reference stations**

On October 18-19 a meeting of the Classification sub group took place. During the meeting a new classification was performed, based on how our stations really look like (see Appendix B and Appendix C). That classification will in a short time be sent for review to



a few experts in our countries. To check that the classification really worked and that every country has a few Class A stations, one reference station from every country was checked (see Appendix D).

This sub-project shall be finished before the 22th Steering Committee meeting early next year in Sweden.

#### **ITEM 4: NTRIP**

An alternative way to solve the real time data transfer using the Ntrip-protocol was proposed by Lantmäteriet. After some discussion the Steering Committee agreed to continue according to the present specifications.

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

The latest Presidium meeting was on 8-9 September in Oslo. Nordic Positioning Service was not an agenda item on that meeting. The next meeting of the Presidium will be on 23-24 November. A daily Nordic solution (ITEM 14) will be an item on the agenda then. The next NKG General Assembly will take place in end of May 2006 and Per Knudsen is the chair for the Scientific Committee, who is responsible for the scientific program of the NKG General Meeting. We will discuss this more on the next meeting, when Andreas also shall make a presentation proposal about the activity of Nordic Positioning Service.

#### **ITEM 6: PREPARATION FOR THE NEXT DIRECTORS GENERAL MEETING**

The next meeting of the Directors General will take place early next year. On the latest meeting there was a question about if NKG should have a vision. Bjørn and Stampe were asked to write it and the day before this meeting it was finalized. That vision shall be approved on the NKG General Assembly. Except for that the Directors General gave us positive signals for our work.

#### **ITEM 7: DARC/GLOBAL STAR**

The Global Star salesman from Netton will attend the kick-off meeting of the Network RTK project, Position Mitt. Elsamcom and Netton are at moment working with making the modem box smaller and more suitable for field work. There is an interest in Norway about Global Star, so Bosse will ask Netton to contact Rune.



## ITEM 8: FUTURE ACTIVITIES

### PROJECT C1A - Test of distribution channels for RTK

See ITEM 7.

### Postponed projects

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

At moment all countries are running their own ftp-solution. The ftp-solution of Sweden is automatic and the solution of Norway and Denmark are not. In Norway one person is now working with a national Web-site for this purpose and the question is if we shall continue with this Nordic Web-site or not? We decided that all countries should think this through and that we shall use the next telephone meeting to talk only about this.

### C1B - Evaluation of available RTK algorithms

Nothing new in particular was mentioned here.

### PROJECT A2 - An Automated Computation Service

Sweden is now developing a new solution of the automated computation service based on the latest version of the Bernese software. When that one is finished we will talk about a Nordic automated computation service again.

## ITEM 9: RTK (TESTS AND REPORT LIST)

Tests: The reports from the tests presented on the last meeting have been distributed to all members of the Steering Committee. No new tests were presented. In Norway there will be a GLONASS/Geo++ test in the week after this meeting, which will be presented on the next meeting.

The report list: It was finally finished and it will be distributed to all in the Steering Committee as soon as possible.

## ITEM 10: AGREEMENTS

Rune will send a copy of the latest types of agreements for SATREF users to the rest of the Steering Committee.





## ITEM 11: EGNOS

Rune gave a detailed presentation, which not will be attached here. In the Nordic countries there will be five EGNOS monitor stations, all of them in Norway.

## ITEM 12: PRICES FOR THE TELECOMMUNICATION LINES BETWEEN THE CONTROL CENTRES

Bosse will check with Telia and Rune will check with Telenor. Rune puts together a specification for the telecommunication lines.

## ITEM 13: SPIDERNET

On the NordRTK meeting the Leica salesman Brian Hansen was giving a presentation about Spidernet, the new Network RTK software from Leica (see also Appendix A). The software will be used in the Danish network GPS-Referencen, which estimates to start their Network RTK solution on the 1<sup>st</sup> of December.

## ITEM 14: A DAILY NORDIC SOLUTION

The different Nordic solutions, calculated by the Positioning and Reference Frame WG, have given different results. So there is a need to make new calculations as a routine by the Positioning and Reference Frame WG. They will also make real time solutions, which is something very important for this project. Sweden will help Norway to get Gamit going.

## ITEM 15: ADDITIONAL ITEMS

The German network SAPOS has announced their interest in co-operation with Denmark.

## ITEM 16: SUMMARY OF ACTION LIST

	Action	Responsible	Status	Important dates
1	Investigation if we can get better prices by Tele Danmark	Bo Normann Hansen	Not done	ASAP
2	The classification of permanent reference stations shall be sent on review to some experts	Andreas	Not done	ASAP
3	Meeting in København (or Hønefoss) about Nordnet between Casper, Bo H,	All participants		On November 17



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	Søren, Per Erik, Rune, Mohammed, Andreas, Anders and Örjan			
4	Meeting between Casper or Bo H, Rune, someone from Radio Danmark and someone from BSD.	Rune		When there is time
5	Netton should be contacted about the Norwegian interest of GlobalStar	Bosse		ASAP
6	The report list shall be distributed to the Steering Committee	Andreas and Per Erik		Before next telephone meeting
7	The Norwegian-Swedish DPOS solution in the northern parts of Norway and Sweden	Bosse and Rune	Nothing will be done before the new Norwegian stations in the north will be up	Probably in mid 2006
8	Report about the Norwegian GLONASS / Geo++ tests in the Bergen area	Per Erik	The tests will be performed in week 43.	On next meeting
9	Report from Nordic Positioning Service on NKG General Assembly	Andreas	Not done	A draft will be presented on next meeting
10	More things about Nordic Positioning Service on NKG General Assembly	All of us		We will talk about that on the second next telephone meeting
11	Project A1	Casper, Rune and Bosse		We will talk about almost only that on the next telephone meeting
12	Distribution of the latest Norwegian agreements to the SC	Rune		ASAP
13	The Nordic solution	Bjørn, Bosse and Lolita		Should be on the agenda for the next Presidium meeting
14	Sweden will help Norway to get Gamit going	Someone in the Pos & Ref frame WG	Not done	When Norway wants



15	Next NordRTK meeting	Per Erik		Before next summer
16	Next telephone meeting	Andreas		On 31 October 2005, 09.30
17	Next meeting	Sweden		On 24-25 January

## ITEM 17: NEXT MEETINGS AND CLOSING

The next telephone meeting of the Steering Committee will take place on October 31, 9.30-10.00. That meeting will be a special telephone meeting mostly about the old Project A1.

The next "real" meeting will take place in Sweden on January 24, 12.00 – January 25, 12.00, 2006. The location will be decided later.

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