



**Minutes**  
**BSHC CDWG12 Meeting**  
**3-4 March 2020**  
**Gdynia, Poland**

**27 March 2020**

**Minutes**

**1. Welcome and formalities**

Mr. Witold Stasiak from Polish Navy welcomed participants to Gdynia and explained the practical arrangements. After the first day meeting, the host organized a guided tour to a Polish Navy museum and the destroyer ORP Błyskawica.

Chair thanked Poland for hosting the meeting and welcomed participants warmly to the meeting.

Participants presented shortly themselves. All the member states except Denmark and Lithuania were present. Expert from Gdynia University joined the meeting for the first day and gave a presentation of the gravity measurements in Poland.

Mr. Jyrki Mononen was elected as the secretary for the meeting.

Chair reviewed the [Program](#) of the meeting and [Agenda](#). Both were approved without amendments.

The Russian Federation delegate provided chair an underlying reservation:

*“All decisions that would be taken during CDWG12 meeting would be accepted by Russian Hydrographic Service only after consultations and should be confirmed by the Department of Navigation and Oceanography of the Russian Federation Ministry of Defence.”*

**2. Review the work of the CDWG and actions since the last meeting**

The [CDWG Questionnaire 2020](#) of the implementation status in each member state were answered by all member states. Chair noted that and thanked all members for their contribution.

Chair gave an overview of the CDWG work and the importance of co-operation between different organizations, including MoU between BSHC and BOOS concerning the chart datum related tasks. [[Chairman's Report](#): Actions and initiatives 2019-2021]

Chair reviewed the short introduction to BSCD2000, which is included in the [CDWG web-page](#). Chair informed that BSCD2000 is accepted and included as one of the chart datums in the [IHO Geospatial Information Registry](#). BSCD2000 can now be used in S-10X products.

Chair gave an overview of BSCD2000 [Roadmap](#) where relevant contacts, meetings and reporting points has been shown. All the important matters and connections have been recognized in the Roadmap and CDWG implementation process diagram. One of the outstanding issues is how to continue finalizing geoid model after the FAMOS-project has been closed. This will be discussed and decided later on the meeting.

[Minutes](#) from CDWG11 were reviewed and no comments were made.

[List of Actions](#) since the last meeting was reviewed. All actions were done. Actions number 6 and 11 were reviewed more closely in the meeting.

- Action number 6 was removed, because there is no feasible way in Germany to provide the differences between MSL and BSCD2000.
- Action number 11 was renewed because DNO has informed that they have not received the letter concerning geodetic data. It was decided that Chair will ask Russian delegate to deliver the printed letter to appropriate contact point of DNO.  
(Action #1)

Chair noted that approved version of [BSCD2000 Specification](#) is available in the CDWG web-page. It was also mentioned that the specification document is still open for needed amendments.

It was proposed that BSCD2000 specification should be presented in International Hydrographic Review to make it more widely known. **Action #2:** To study how to get it published in IHR.

It was noted that Finnish representative, Jyrki Mononen, will act as the ordinary secretary.

Chair overviewed Swedish info-sheet of BSCD2000 which is available in the BSHC, CDWG web-page. It was discussed if a common info-sheet for the whole Baltic Sea should be composed. It was decided that at this moment a common info-sheet will not be done. Each state was encouraged to make their own info-sheet and Sweden kindly offered everyone to use Swedish info-sheet as a template.

### **3. Outcome of the BSHC 24<sup>th</sup> Meeting**

Chair reviewed the Minutes and Actions from BSHC24 and the report to BSHC. BSCD2000 is included in the IHO S-100 registry as one of the datums. MSL and BSCD2000 difference-map included in the Specification of the Baltic Sea Chart Datum 20000 in BSHC/CDWG web-page will be updated annually. During the discussion it was proposed that could also index map of charts published in BSCD2000-datum be included in the BSHC/CDWG web-page. It was agreed that this could be tested by providing chart index of BSCD2000-charts to Thomas Hammarklint e.g. as shape-files.

CDWG [TORs](#) and [WorkProgramme](#) were approved by BSHC. No new actions were requested from CDWG.

It was discussed whether the map of gravity surveys could be updated annually. The discussion was postponed under FAMOS-matters.

#### **4. Review the *national* implementation plans and the status of implementation**

Chair noted that all member states have answered the questionnaire and thanked participants for the contribution. Questionnaire includes e.g. implementation status, time schedules of the implementation, publication plans, rising issues, good practices etc. [Summary](#) can be found from BSHC/CDWG web-page.

Reports were received from [Estonia](#), [Finland](#), [Germany](#), [Latvia](#), [Lithuania](#), [Poland](#), [Russia](#) and [Sweden](#).

All participants presented national implementation status. Reports and presentations are in BSHC/CDWG web-page, links are included in the minutes.

##### **Estonia [[link to presentation](#)]:**

BSCD2000 was adopted 1.1.2018. Information has been provided to the relevant stakeholders, like ports, mariners. Information is provided also by magazines, information days, information sheets, web-pages and in NtM already 2017. Differences will be around 10-20 cm. Berthing and harbor cells anticipated to be published totally this year in BSCD2000. One chart album will be published in two datums, note on that is written in the first page, and also datum information is given on every page.

##### **Finland, Traficom [[link to report](#)] and FMI [[link to presentation](#)]:**

Finnish sea level data observations has been available internally in FMI since 2019 in BSCD2000. Observations and forecasts anticipated to be publicly available in MSL and BSCD2000 in the end of 2020 together with the publication of charts.

First charts in BSCD2000 planned to be published in the end of 2020. Bathymetric data has been transferred to BSCD2000 in the Bay of Bothnia. Information has been given by internet, meetings with relevant stakeholders.

##### **Poland [[link to presentation](#)]:**

Three main players concerning the implementation of BSCD2000: Hydrographic Office of the Polish Navy, Head office of Geodesy and Cartography, Meteorological and Water Institute. Road map for the implementation includes official national decisions and legislative acts of vertical and horizontal datums, transformation models for bathymetric data. Difference between Kron86 – PL-EVRF2007-NH around 16 cm.

Analysis of gravimetry measurements (presentation of the Gdansk University). The plan is to cover 2020 areas which has not sufficient coverage (eastern parts). Tests and calibration executed in railway line for dynamic and static gravity measurements.

**Germany, BSH [[link to report](#)] and BKG [[link to presentation](#)]:**

Responsibilities are divided between BSH (responsible of nautical charts) and Water and Shipping Administration (responsible for the water level information). BKG provides geoid model. Established a working group to discuss matters concerning BSCD2000 and implementation and national realization. Contact has been taken to ministry to be able to take BSCD2000 datum name in use.

New adjustment of European levelling network 2019. UELN heights are published on BKG web pages. Differences between EVRF2019 and 2017 have been calculated for the Baltic Sea area. Countries which have implemented EVRF are in agreement with BSCD2000.

**Latvia [[link to report](#)]:**

Decision of implementation will be done 2020. Latvian Geospatial Information Agency is responsible for height network and levelling; Latvian Environment, Geology and Metrology Centre has the responsibility of levelling of water level stations. No gravity measurements in Gulf of Riga. Ports provides water level information in BAS-77, but are aware of BSCD2000.

**Lithuania [[link to report](#)]:**

BAS-77 or LAS-07 are in use and it is noted on the chart to which the chart is referred to.

**Russia [[link to report](#)]:**

No decisions will be done before the new State Coordinate system is taken into use. Russia is now implementing the new state coordinate system and at this time they are not implementing BSCD2000.

**Sweden [[link to report](#)]:**

Charts has been published in BSCD2000 from Northern part of the Bay of Bothnia to Stockholm. Water level will be provided in BSCD2000. In mobile apps you can choose the datum, either MSL or BSCD2000.

**5. Review and update the *joint* road map, time line and communication plan**

Development of the [CDWG Website](#) was discussed. Web-page deemed to be good and informative and not major amendments were proposed. All member-states are welcome to propose information to be added to web-page, proposals are asked to forward Thomas Hammarklint.

Germany promised to provide web-links to information of German datums and coordinate systems to be added to CDWG-web pages. (**Action #3**)

Chair gave an overview to [Joint Roadmap](#). No amendments were proposed at this moment. Open question is, how to update it.

## 6. Specification of the Baltic Sea Chart Datum 2000

[Specification of the BSCD2000](#) was reviewed shortly. It was noted that at this moment there is no need for any amendments. Also, it was noted that it is official version to be used, but still open for amendments needed in the future.

## 7. Cooperation and communication with BOOS

Chair gave an overview to communication with [BOOS](#) (Baltic Operational Oceanographic System), [BOOS News. On-line water level information](#) in BOOS web-pages is still in old vertical datums. Chair informed that Sweden has already discussed with BOOS to change the Swedish information referenced to BSCD2000. Other water level related web-pages: [Copernicus Marine Service](#) and [BOOS Stations](#).

## 8. Presentations

### [Analysis of gravimetry measurements on the seaways of the Polish Exclusive Economy Zone](#)

The presentation was given by Mr. Krzysztof Pyrchia, University of Gdansk, agenda item 4.

### [FAMOS Odin \(2017-2019\)](#)

Jonas Ågren gave a presentation of comparison of methods applied for marine geoid modelling in the Baltic Sea. FAMOS project ended 2019 and didn't get continuation. Thus, also finalizing the FAMOS geoid model under FAMOS-project is not possible. Interim gravimetric geoid models has been calculated using three different well-known regional geoid model methods.

Several gravity measurement campaigns were executed during FAMOS-projects 2015-2019. FAMOS gravity database is managed by DTU in Denmark. There are still some gaps in the gravity data in some parts of Polish and Russian waters.

Conclusion is that FAMOS interim geoid models agrees well, but still it is important to improve gravity data. The geoid model on sea should be adjusted to GNSS/leveling on land.

### [Swedish marine gravity measurements](#) (FAMOS Odin, sub-activity 2.2)

Per-Anders Olsson gave a presentation of Swedish gravity measurements during FAMOS-project and after it. Main purpose was to fill the gaps and check old gravity data. Preliminary results shows that filling over 10 km gaps improves the gridded data significantly. During 2020, the plan is to execute dedicated gravity campaigns and make a study (master thesis) on uncertainties and combinations of gravity datasets at sea.

### [On the harmonisation of the Swedish tide gauges into one common network \(SHIP\)](#)

Mikael Stenström (SMHI) gave a presentation of the harmonization of Swedish tide gauges (FAMOS Odin, sub-activity 2.3). There are three different classes of tide gauges, all together 57 stations. SMA provides real-time quality controlled data and SMHI holds the archive.

### FAMOS Geomari-gravity campaign

Mirjam Bilker-Koivula gave a presentation of Impact of the FAMOS Geomari gravity campaign on the geoid model in the area (FAMOS Odin, sub-activity 2.4). the purpose of the Geomari-campaign was to fill the gaps of the gravity data in Finnish waters in the eastern part of Gulf of Finland. As a result Finish waters are now covered quite adequately with gravity data. At the same time GNSS-surveys and geoid models were compared.

### Future FAMOS (2020-)

The Chair gave a presentation of the continuation of the FAMOS project (FASTMOS), which was cancelled by EU.

## **9. FAMOS project continuation of Activity 2**

Main issue is how to finalize the FAMOS geoid model, because FAMOS continuation project FASTMOS was cancelled by EU. It has been agreed that FAMOS geoid model is to be finalized even without FAMOS continuation or any other similar project. A major concern is the resources.

It was decided that CDWG should be responsible of the finalization of the FAMOS geoid model. It was deemed important to have BSHC support for the finalization of the geoid model, thus it was agreed to make a proposal to next BSHC-conference how the task will continue. During the meeting a FAMOS geoid model finalization work plan was composed. The work plan includes tasks from this stage to final geoid model which is planned to be ready 2022 and also the data licensing principles. It was also agreed to include finalization of the FAMOS geoid model to CDWG TORs. Also NKG (Nordic Geodetic Commission) should be informed the FAMOS geoid model finalization.

Addendum for licenses and action points for FAMOS geoid model finalization is attached in the minutes.

It was agreed that Mirjam Bilker-Koivula and Per-Anders Olsson contacts Latvia and Lithuania in the NKG meeting, 9-13 March 2020, concerning geoid model and gravity data needs.

## **10. CDWG TORs**

TORs were reviewed and updated ([CDWG TORs 2020-2021](#), 4 March 2020). It was agreed to amend the TORs stating clearly that the aim is to finalize the FAMOS geoid model.

## 11. CDWG Work Programme for 2020-2021 and future work

Work Programme was reviewed and updated ([CDWG WorkProgramme 2020-2021](#), 4 March 2020).

Related to the gravity data licensing it was noted that in the bilateral agreement of FAMOS gravity data exchange has formally expired after FAMOS project has ended. Also, it was noted that the agreement concerns only the data exchange not the use of the final geoid model. It was also discussed that the agreement should not be limited only to the FAMOS geoid.

It was agreed that Mirjam Bilker-Koivula and Per-Anders Olsson inform in the NKG geoid meeting, 10-11 March 2020, about the CDWG plans to finalize the FAMOS geoid model, including the proposed addendum for FAMOS gravity data licensing and steps for finalizing the FAMOS geoid model. (**Action #4**)

It was agreed to add those FAMOS geoid finalization effort action points, which are feasible to be done in 2020-21, to CDWG action list. (**Actions #5-8**). It was also agreed that Chair send official email-info to relevant parties.

## 12. IHO Specifications and Resolutions

Chair reviewed relevant IHO specifications and resolutions. Specially coming IHO standard S-104 Water Level Information for Surface Navigation is relevant for CDWG. No actions noted.

- IHO Resolution 3/1919 - IHO CL10/2017 [[document](#)]
- IHO Specification S-104 Tides [[documents](#)]
- IHO Specification S-111 Currents [[documents](#)]

## 13. Any other business

- Election of CDWG secretary. Jyrki Mononen was elected as ordinary secretary of CDWG.
- [List of Members](#) was updated concerning the members of Russia, Denmark, Poland and Latvia. Observers were updated as well.
- Coming meetings and conferences:
  - [NKG](#) meeting, Reykjavik, Iceland, 10-11 March 2020
  - [BSHC25](#) meeting, VTC, 22 September 2020
  - [BOOS](#) annual meeting, VTC, 4-6 November 2020
  - [TWCWG5](#) meeting, VTC, 16-18 March 2021
  - [NHC64](#) meeting, VTC, 3 April 2021
  - [NSHC34](#) meeting, VTC, 27-28 April 2021
  - [BSHC CDWG13](#) meeting, VTC, 7 September 2021
  - [BSHC26](#) meeting, VTC, 21-23 September 2021

#### **14. Review of actions and unresolved issues of this meeting**

[CDWG12 List of Actions](#) were summarized and agreed.

#### **15. Report to BSHC 25<sup>th</sup> meeting**

BSHC 25<sup>th</sup> meeting will be a Virtual Meeting, hosted by HOPN, 22 September 2021. List of matters to be reported were reviewed.

#### **16. Next meeting**

CDWG13 will be an on-line meeting (VTC), 7 September 2021.

#### **17. Closing of the meeting**

Chair thanked the host for really good arrangements and hospitality. Chair thanked the participants for fruitful discussions and contribution in the meeting.

The meeting was closed 4 March 2020 at 11:50.