

bENC – a new S-57 Product

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presented by Birgit Heinsen-Knapp

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Québec

Content of Presentation

- Background
- Introduction of the bENC concept
- bENC Production Process
- ENC versus bENCs
- ...

Content of Presentation

- ...
- Potential Producers and Users of bENCs
- Projects
- Frequently Asked Questions
- Conclusions

Background

- ENCs were introduced more than a decade ago.
- Coverage has constantly improved.
- ENCs are compiled for use in ECDIS.

Background

- ENCs are designed for sailing from one Port to another.
- They are not intended for Navigation in confined waters.
- Usually ENCs do not contain high density bathymetry.

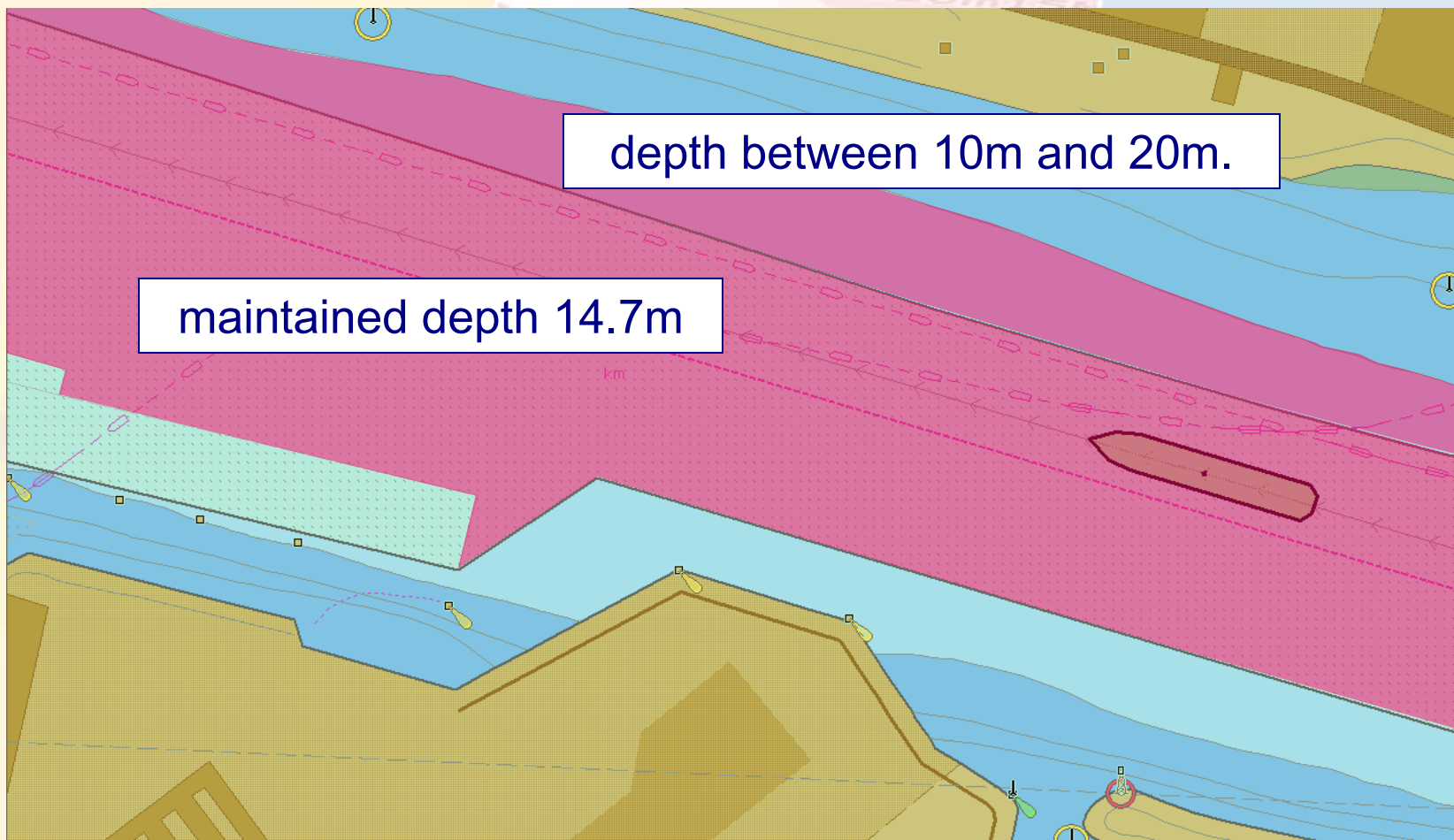
Background

- ENC's are not only used by ECDIS.
- ECS systems also use ENC's.
- Navigation in confined waters is often done with ECS assistance.
- Dedicated systems are available for high precision operations.

Background

- To use an ECS for high precision navigation we need:
 - More accurate positioning data.
 - The latest bathymetric survey data.
 - High density depth information.
- ENC's do not meet these requirements.

Example: ENC Depth Areas

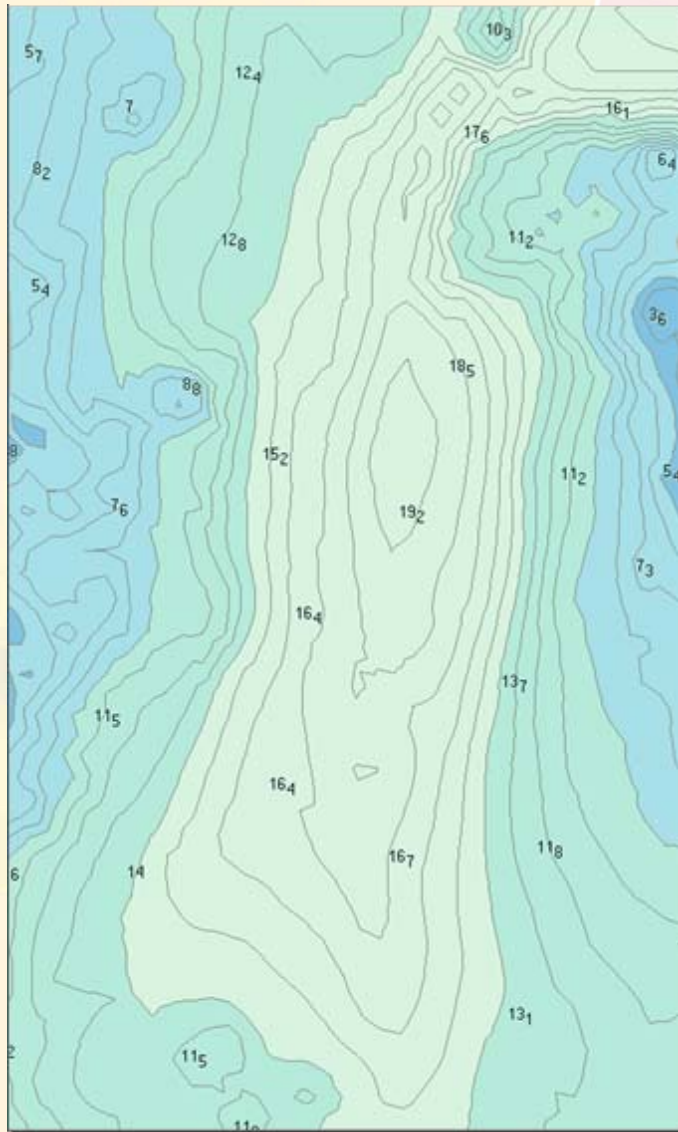


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bENC - Introduction

- A new chart product for display in ECS.
- bENCs contain high density bathymetry.
- Based on latest hydrographic surveys .
- Used in combination with ENC's, IENC's, PENC's.



Example: bENC

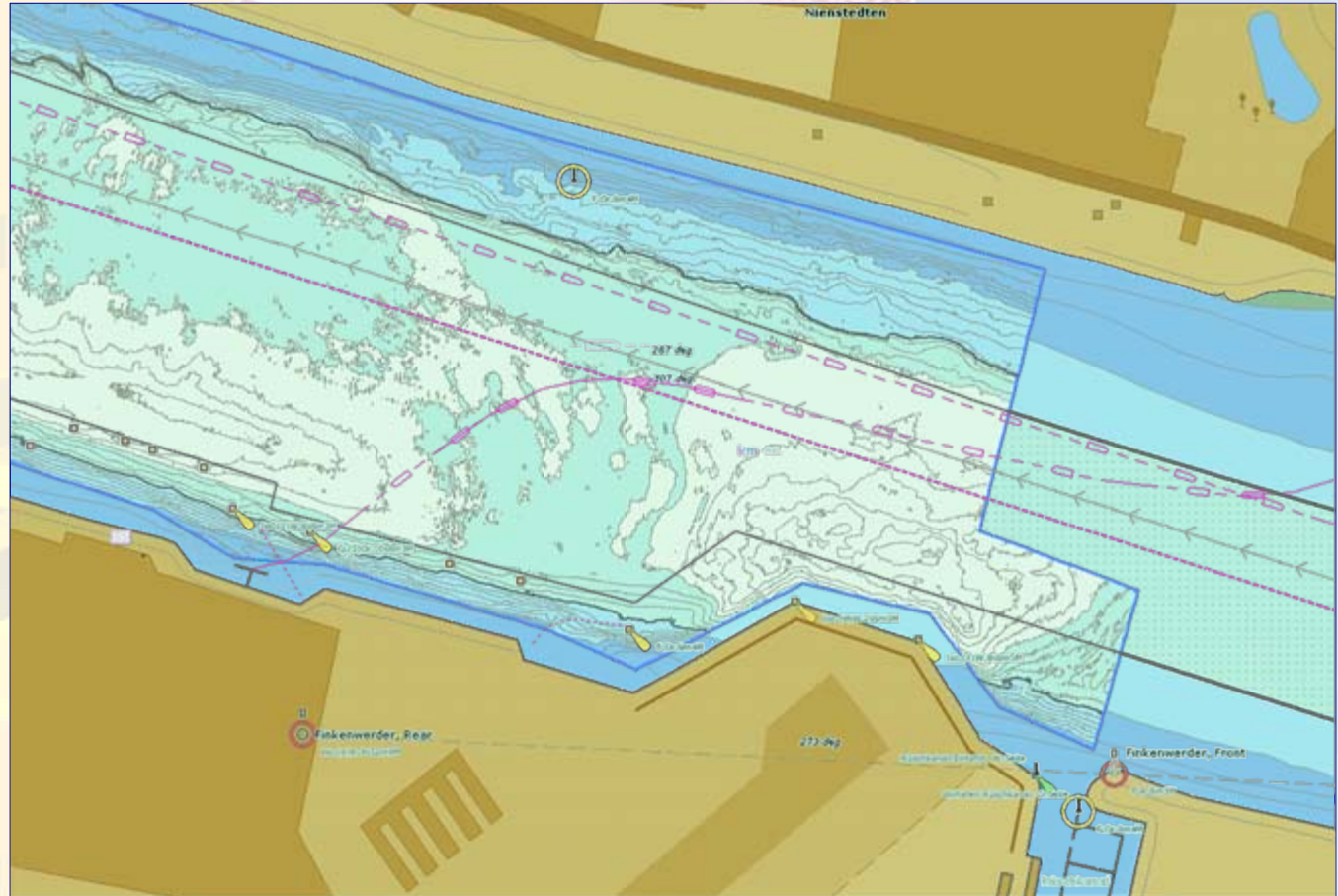
- *bENC with contour lines and spot soundings.*
- *No other nautical information required*

Example: bENC and ENC

import



bENC

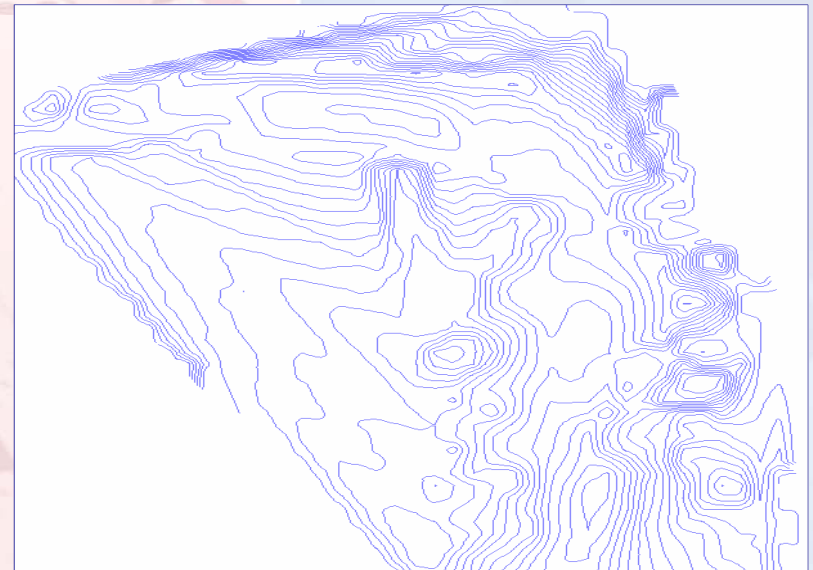
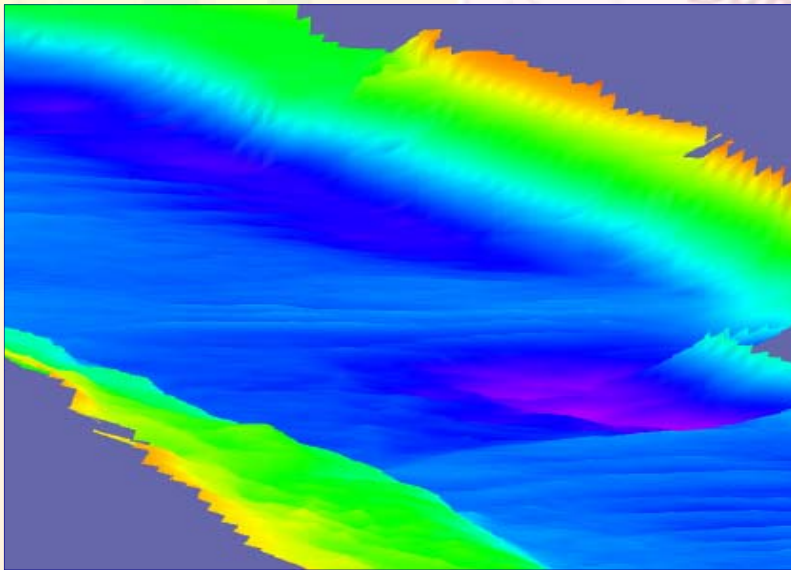


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bENC Production Process

- Source data from Hydrographic Surveys.
- DEM Generation: Contours, Soundings.



bENC Production Process

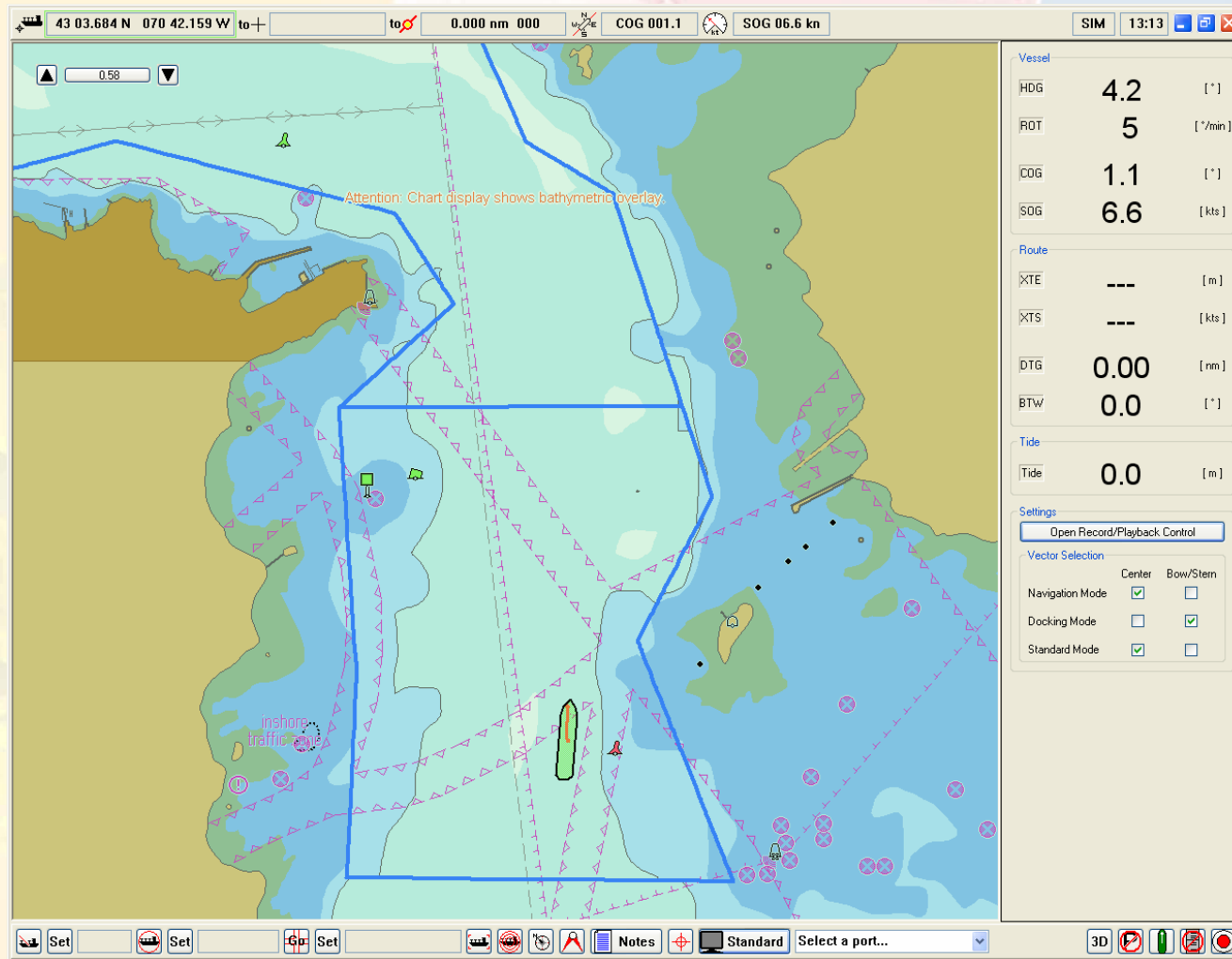
- S-57 Translation of Contour Lines and Selected Soundings => „raw“ bENC.



bENC Production Process

- Automatic creation of depths areas.
- Add Meta Information:
 - Data Set Name, Producer, Edition #, ...
 - Compilation Scale, Sounding Datum, ...
 - Data Quality.

Example: bENC in ECS Display



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ENC versus bENC

- bENCs must be used in combination with Electronic Navigational Charts (ENC).
- ENCs show basic depth information only.
- bENCs add detailed depths information, but they do **not replace** ENCs.

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Potential Producers of bENCs

- Port Authorities
- Waterway Authorities
- Hydrographic Offices
- Others (survey companies etc.)

Potential Users of bENCs

- Pilots using PPU equipment.
- Vessel Traffic Management Systems.
- Marine Simulators.
- Special software used for navigation in confined waters (SAR etc.)

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Projects

- Since 2008 regular production of bENCs for the River Elbe.
- Involved German Waterway Authority, the German Hydrographic Office and 7Cs.
- Area of 70 nm is covered by 7 bENCs.
- Appr. 2 new Editions per week.

Projects

- **EFFORTS Project** (Effective Operations in Ports) 2006 -2009
- Hamburg Port Authority (HPA) was the leader of the sub-project „**Port ECDIS**“.
- HPA has produced bENCs of the Port Area for integration in Port ECDIS.

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Frequently Asked Questions

Can't ENC's store high density bathymetry?

- Yes, but often bathymetric data is subject to frequent changes.
- Short term chart updating required.
- Existing ENC distribution procedures are not suitable.

Frequently Asked Questions

Why is the bENC concept so effective?

- Simple and straight forward conversion process.
- Not an elaborate cartographic task.
- Producers do not have to get involved in “full blown” ENC production.

Frequently Asked Questions

Harmonization with ENC production?

- Not required, bENC production is independent from ENC production.
- bENC producer and ENC producer do not have to synchronize their work.

Frequently Asked Questions

Will bENCs be supported by S-100?

- bathy ENC will be supported by S-100 (*S-100 Info Paper*).
- Easy Product Transition from S-57 bENC to S-100 bENC expected.

Frequently Asked Questions

What is the difference compared to CLB?

- CLB is AML product (military standard).
- Content is basically the same.
- bENC specification has been optimized for use with ENCs, IENCs and PENCs.
- bENC allows more flexibility.

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Conclusions of bENC concept

- Perfect for the integration of high density bathymetry in electronic charts.
- Added value for ECS that are used in confined waters or specific purposes.
- Simple and straight forward production.
- S-100 compatible.

Thank you for your Attention

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