Digital ship , Oslo
11-12.03.08

ELECTRONIC NAVIGATION

SOLVANG ASA

”Reliability and flexibility through knowledge and experience”

SOLVANG ASA

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ELECTRONIC NAVIGATION

- Agenda for the speech
  - Introduction off the speaker
  - Solvang , Company Historie
  - Project for Electronic Navigation
  - Status today
  - Future improvements
- Speaker
- Capt. Tor Arne Tønnessen

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1936 --	Solvang was founded.
1989 --	Inge Steensland and family bought a majority of the company.
1989 – 1997	Bought several second hand ships.
1998 – 1999	Two newbuildings (”Clipper Viking” and ”Clipper Harald”) of 12,500 cbm ethylene/LPG ships in Germany, Meyerwerft
2003 -- 2004	Three newbuildng 60,000 cbm ships in Japan, Kawasaki.
2007 --	Two newbuildings of 17,000 cbm ethylene/LPG ships Germany, Meyerwerft
2008 –	7 newbuildings being delivered

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FLEET AS OF TODAY.

Semi refrigerated vessels and Ethylene vessels :

Clipper Hebe	17.000 m3 Ethylene	built 07	Kongsberg
Clipper Helen	17.000 m3 Ethylene	built 07	Kongsberg
Clipper Harald	12.500 m3 Ethylene	built 99	Transas
Clipper Viking	12.500 m3 Ethylene	built 98	Transas
Heros	12.060 m3 Ethylene	built 78	
Hera	12.060 m3 Ethylene	built 77	
Clipper Skagen	15.000 m3 Semi.ref/LPG	built 89	Transas
Clipper Victoria	12.000 m3 Semi.ref/LPG	built 76	

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Fully refrigerated . Vessel's

Clipper Sky	60.000 m3 LPG/NH3	Built 04 Transas
Clipper Moon	60.000 m3 LPG/NH3	Built 03 Transas
Clipper Star	60.000 m3 LPG/NH3	Built 03 Transas
Clipper Posh	56.000 m3 LPG/NH3	Built 83
Clipper Lady	56.000 m3 LPG/NH3	Built 79

New Building

TBN	17.000 m3 Ethylene	delivery 08 Meyer werft/Germany
TBN	17.000 m3 Ethylene	delivery 08 Meyer werft/Germany
TBN	60.000 m3 LPG	delivery 08 HHI / Korea
TBN	60.000 m3 LPG	delivery 08 HHI / Korea
TBN	60.000 m3 LPG	delivery 08 HHI / Korea
TBN	75.000 m3 LPG	delivery 08 HHI / Korea
TBN	75.000 m3 LPG	delivery 08 HHI / Korea

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Project for Electronic Navigation

Solvang decided to move on to Electronic Navigation in 2005

Goal / Future benefit

Project group

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Core values :

Practical use / user friendly

Technical solutions / integration with other equipment

Supply of charts and chart corrections , electronically

Training “ Hands on Training “

Service and support agreement

Supplier support for installation and start up support

Knowledge of supplier and understanding of our needs

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Selection of suppliers

Scope of supply / retro-new

supporting

Equipment details ,

Price

Shortlist

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Retrofit installations :

When it came to retrofit there was only one supplier that actually could deliver in accordance to our philosophy and demands.

So Transas was chosen as our supplier for 6 existing vessel and Kongsberg was chosen for our fully integrated bridge on New buildings.

Transas

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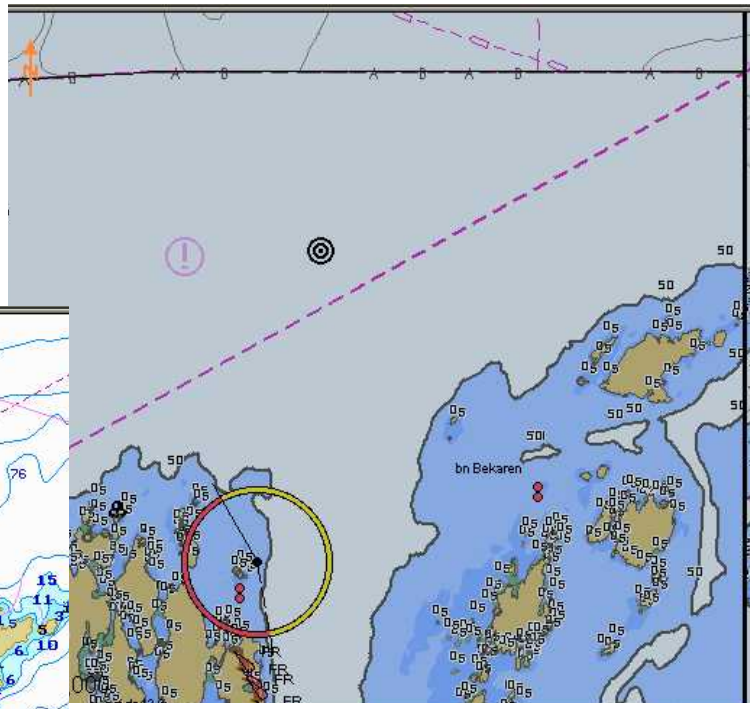
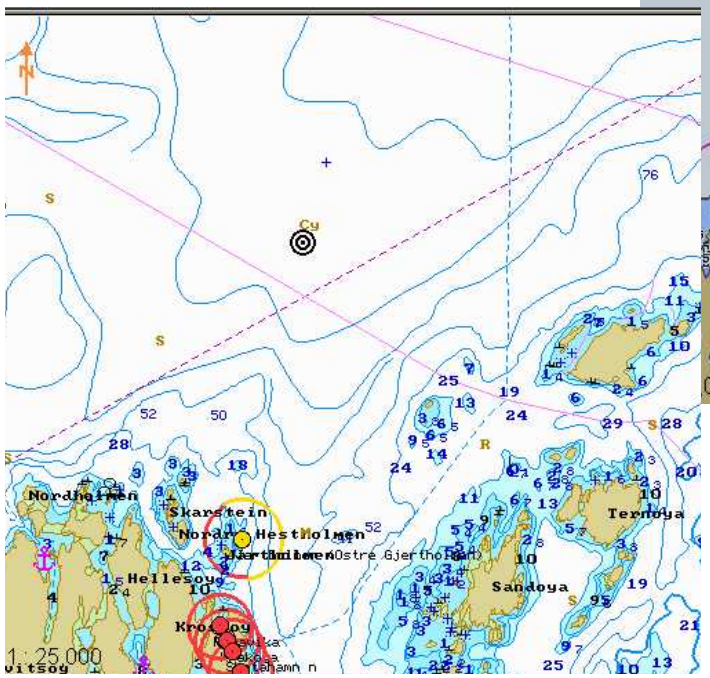
ENC / SENC



Service



Training

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Inspection of vessels

Training

Support/Service .

Updates

Standard

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New Buildings :

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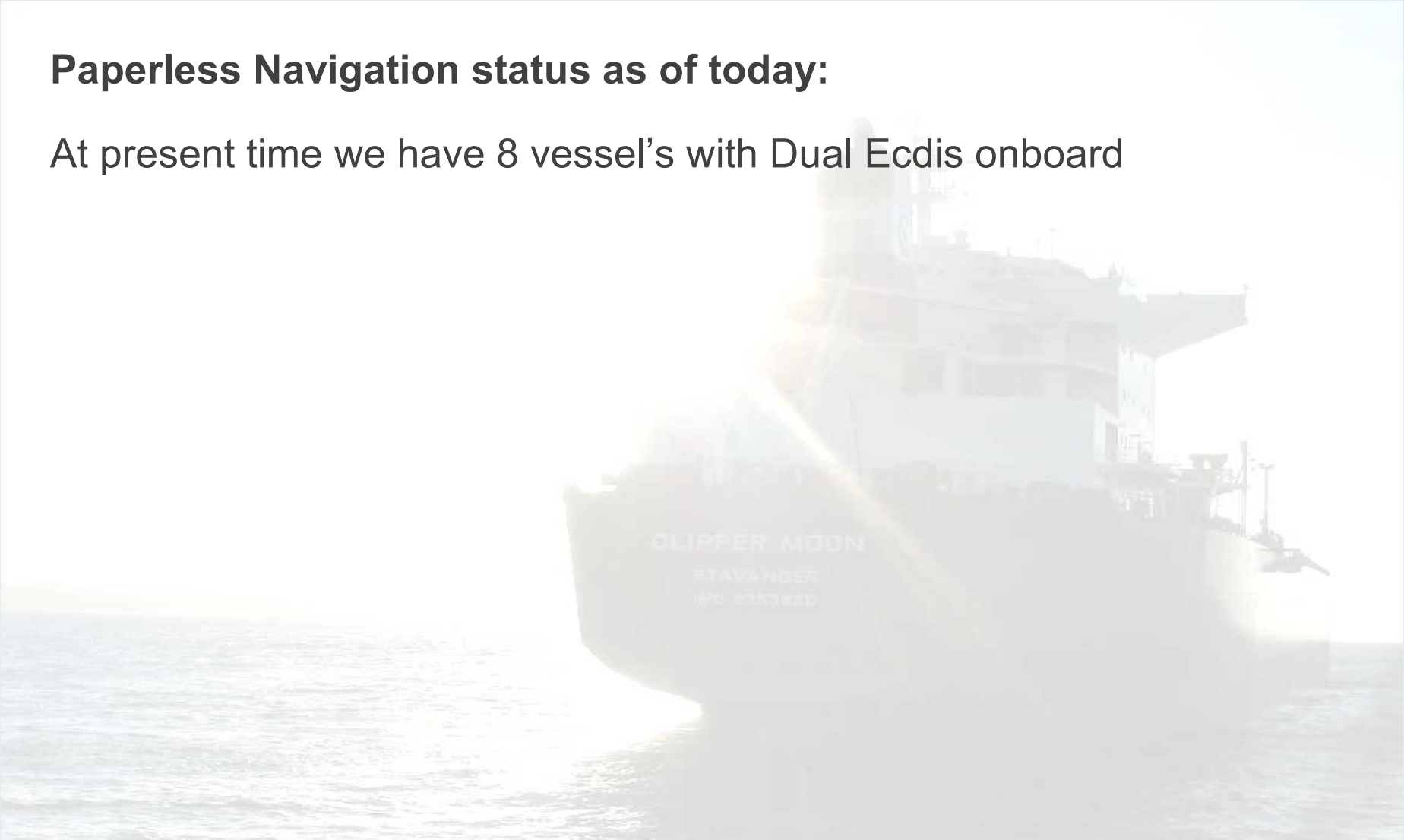
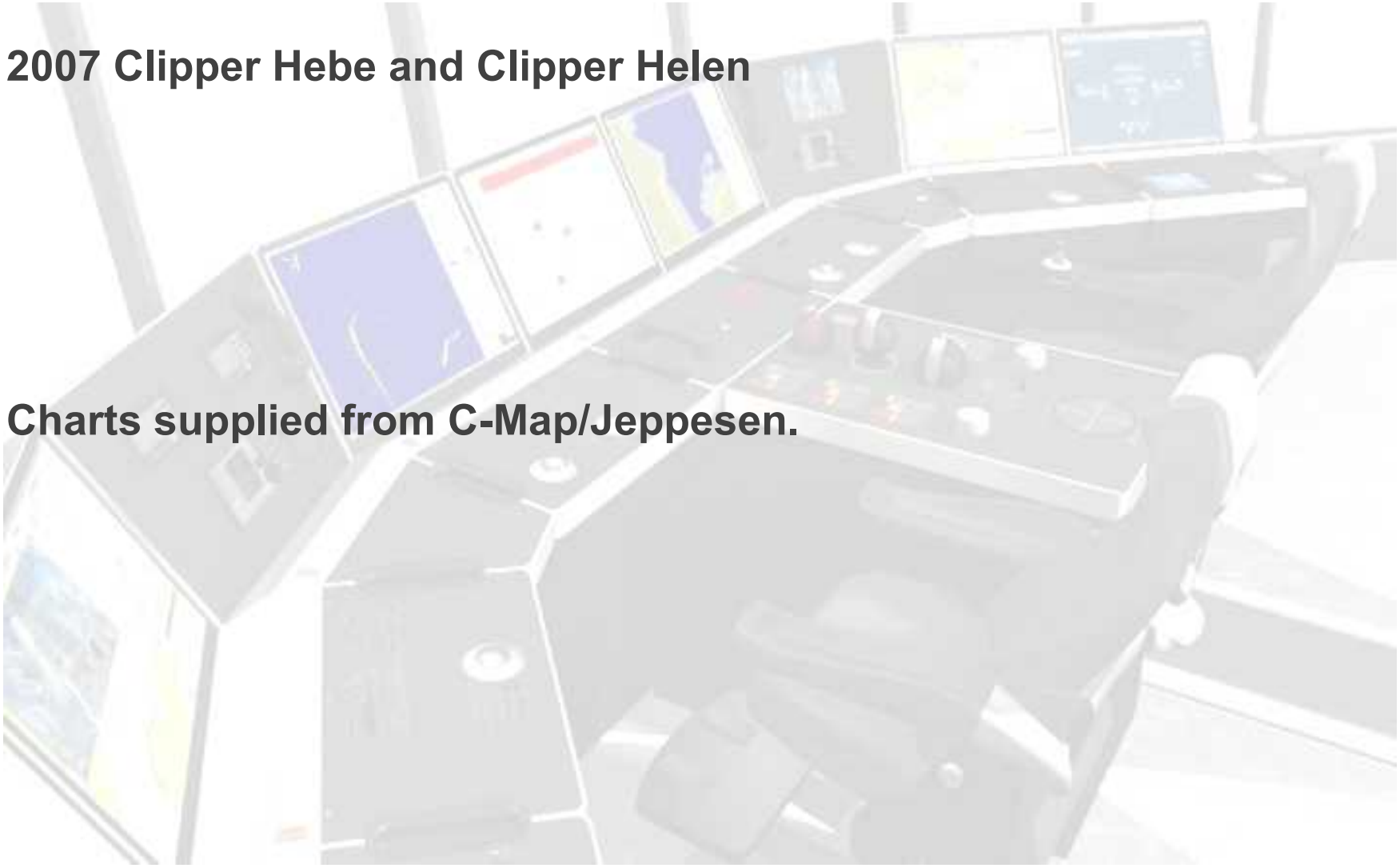
Paperless Navigation status as of today:

At present time we have 8 vessel's with Dual Ecdis onboard



ELECTRONIC NAVIGATION



2007 Clipper Hebe and Clipper Helen

Charts supplied from C-Map/Jeppesen.

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8 vessels sailing with Electronic Navigation

2 vessels with Kongsberg K-Bridge and 6 Vessel's with Transas 3000i

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Lesson learned and Future goals:

Navigation Aid or Navigation Equipment.

Safety Management System.

- **Implementation**
- **Operation of the equipment (Limitations if any)**
- **How to use the equipment I accordance to regulations**
- **Documentation of the Navigation with Electronic charts**
- **Company requirements for Training / Courses**
- **Certification and approval from Flag state**

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We have had good cooperation with both our suppliers, as example

Transas

Kongsberg

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Hands on Training

Operation of vessels with Ecdis installed and whiteout proper training can / will after our opinion drastically reduce safe Navigation/operation of the vessel.

They are in fact a seriously threat to others.

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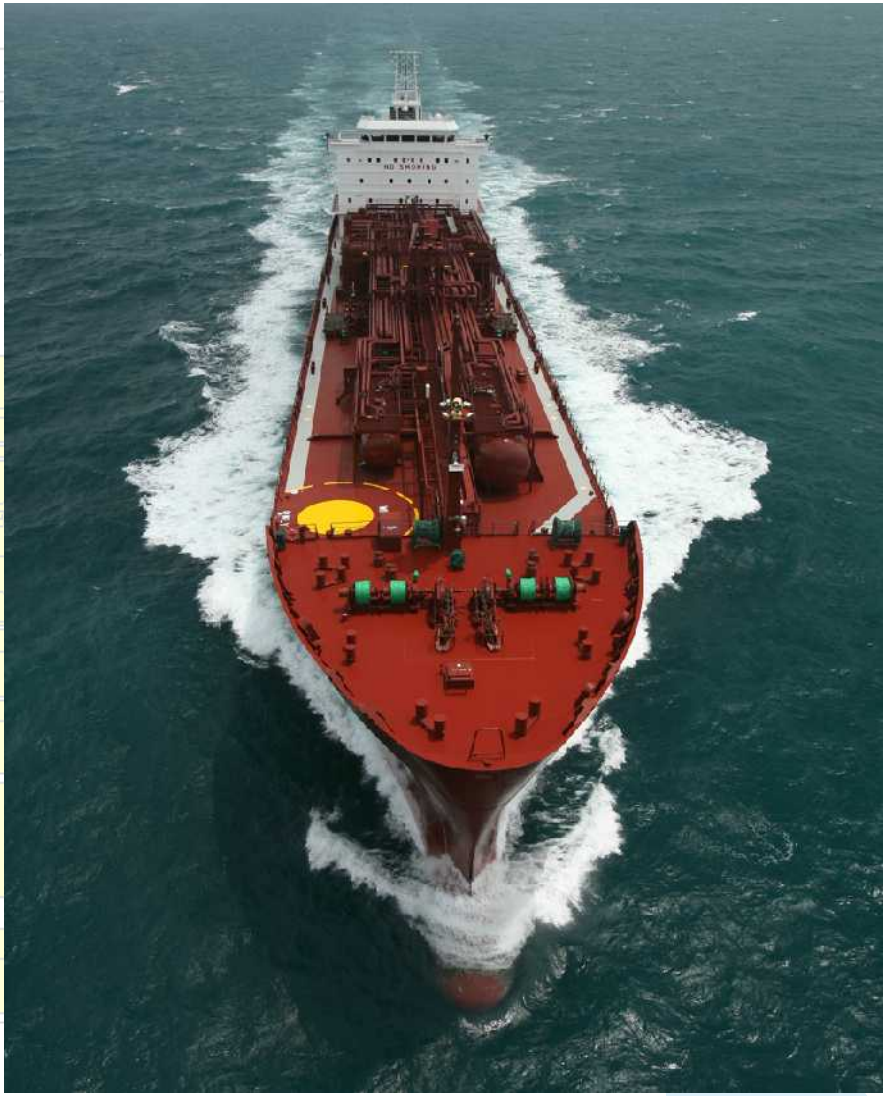
Training cost

IMO



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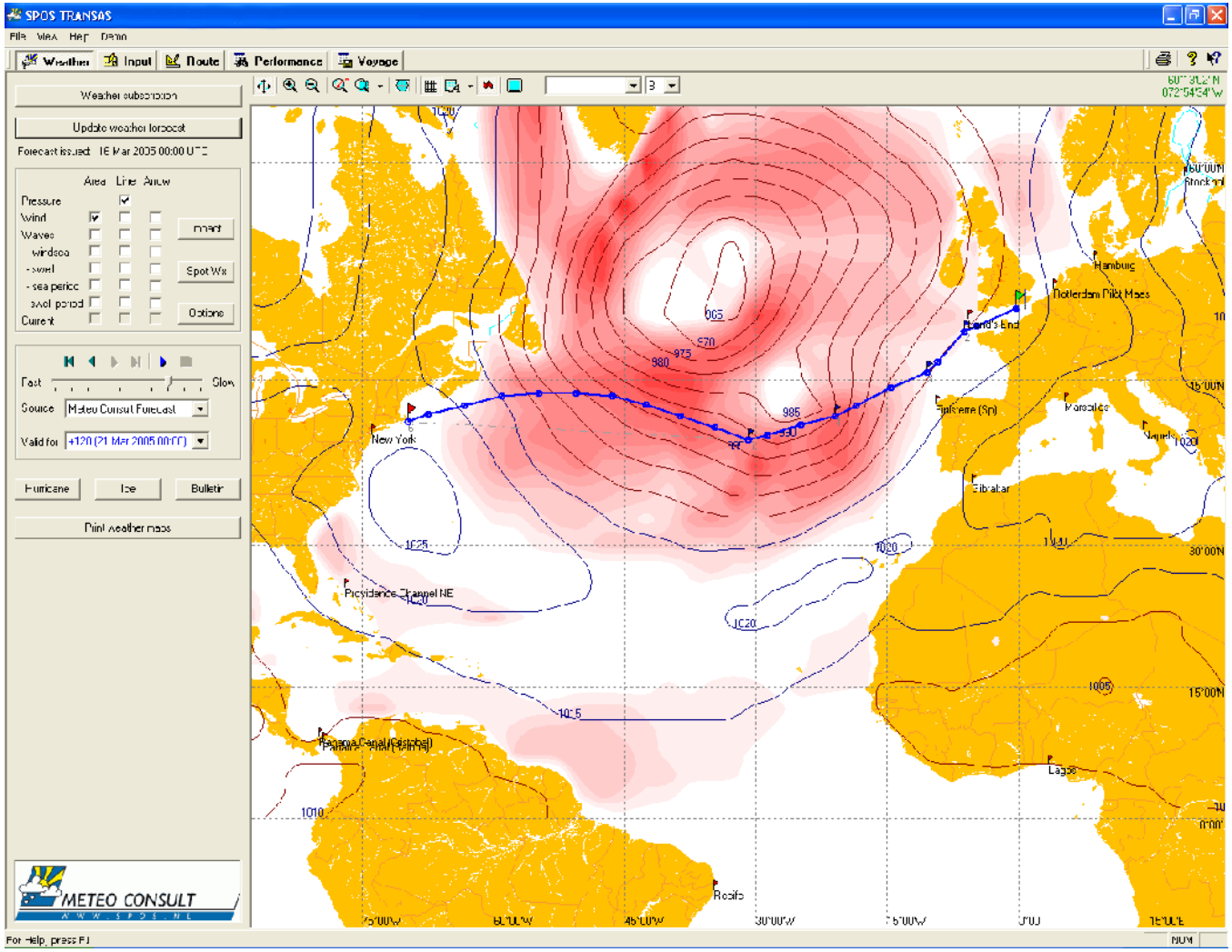
Integration of other equipment / and used together with Ecdis



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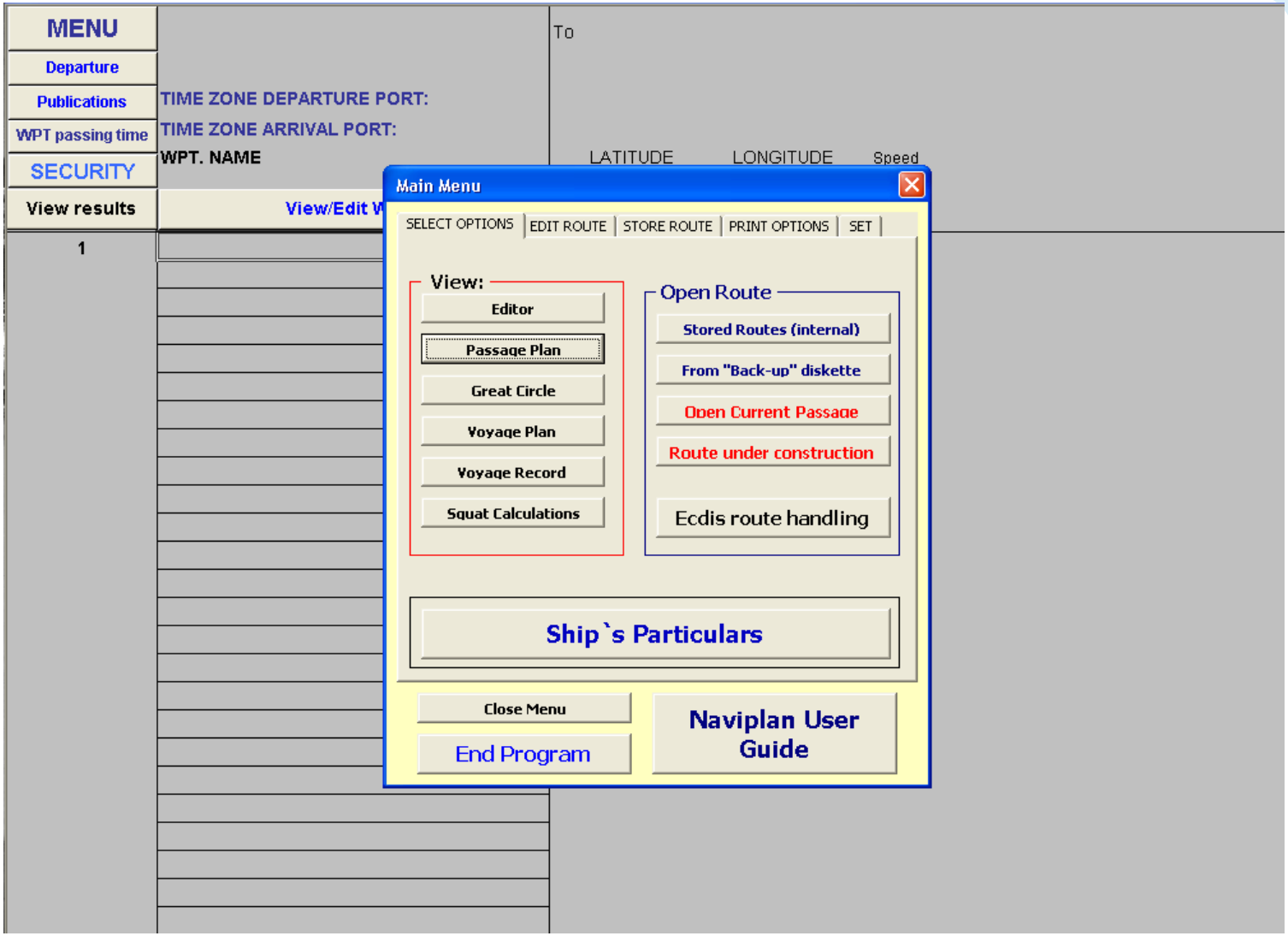
Navi Plan :



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Feedback from our Officers

Vetting.

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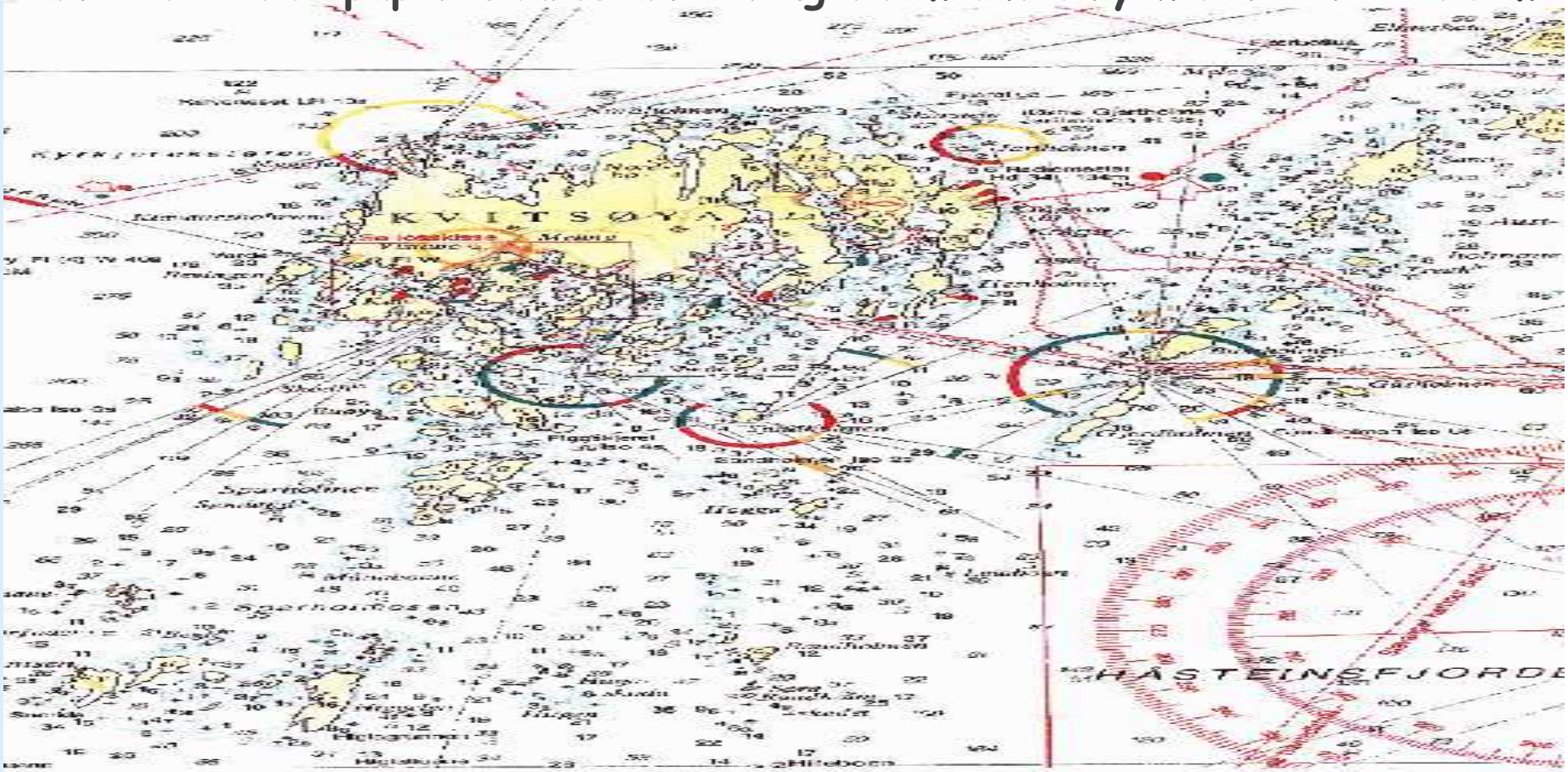
" Can I hide the paper charts and bring them out only when I need them"



ADP (electronic versions of Radio signals, tide tables etc)

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Future Improvements

Challenge

Response time

Ship specific Equipment

ENC coverage

T & P corrections

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Our conclusion today is that its been a long way , but rewarding since our Navigation officers and crew reports back that the system makes them feel more secure and that the operation of the vessel is safer.

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