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Primar Stavanger International Official ENC Service

ECDIS on High Speed Vessels Compulsory in Norway

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Presentation



1. Few words about Primar Stavanger, operated by the Norwegian Hydrographic Service
2. Electronic Navigational Chart (ENC) – description
3. What is ECDIS
4. ECDIS made mandatory
5. ECDIS on High Speed Vessels – Compulsory in Norway
6. Facts from the Norwegian Maritime Directorate
7. Primar coverage status and latest development
8. ENCs Benefits
9. Unofficial electronic charts



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**Primar Stavanger is operated by the
Norwegian Hydrographic Service
(Sjøkartverket)**



STATENS KARTVERK
NORWEGIAN HYDROGRAPHIC SERVICE

Primar Stavanger Official ENC Service

RENC and NHS VAR



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ic-enc



Primar RENC
Regional ENC Coordinating Centre
(bilaterals)

Primar - NHS VAR
Value Added Reseller
(distr. agreements)



NHS - Primar Distributor Agreement
Primar Chart Catalogue 3.0

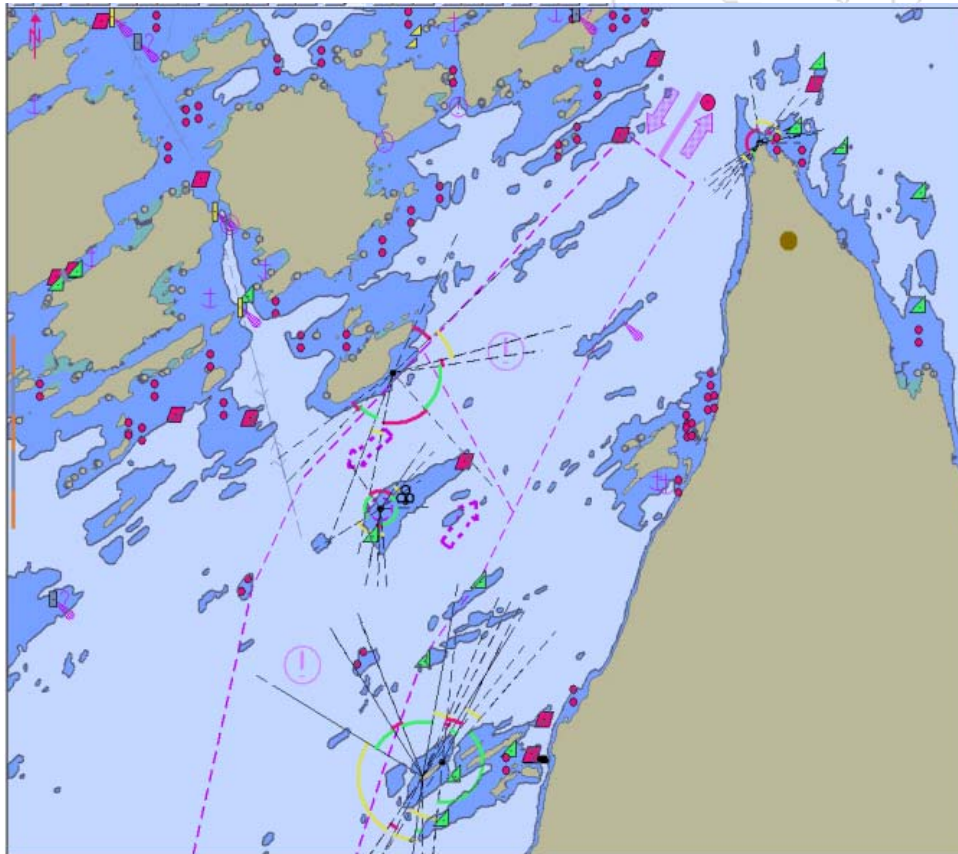
33 Distributors



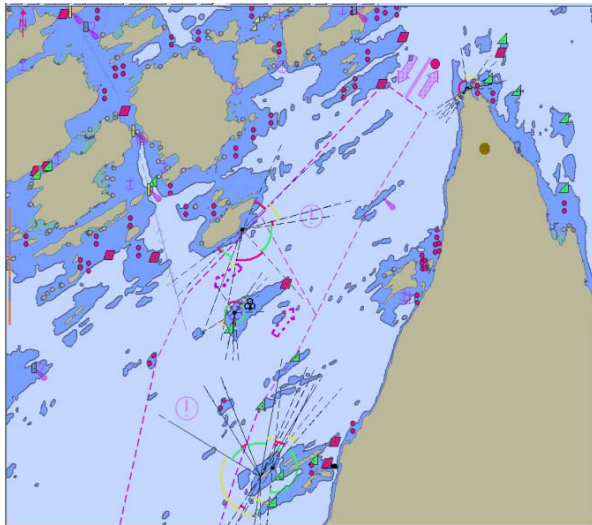
Electronic Navigational Chart (ENC) description



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Electronic Navigational Chart (ENC)



ENC Example 1

ENC (Electronic Navigational Chart) – official digital chart data **authorized by National Hydrographic Office** in accordance with the ENC Product Specification in the International Hydrographic Organisation's (IHO) S-57.

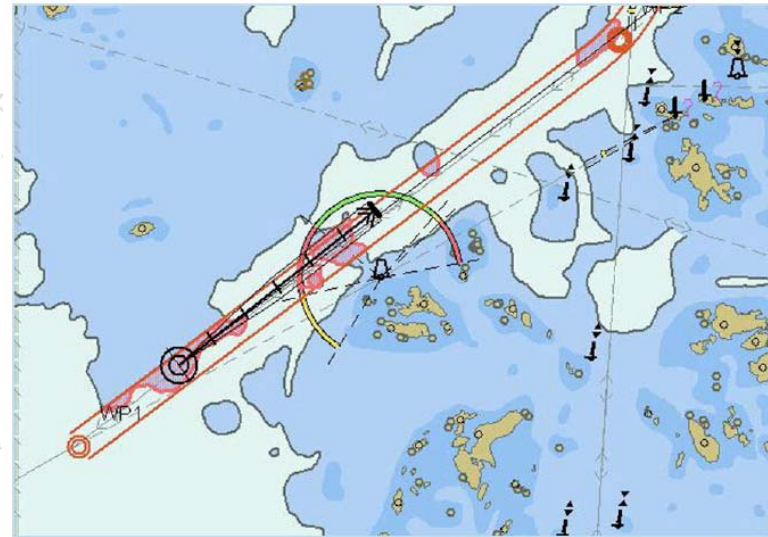
IMO Definition: ENC (Electronic Navigational Chart). The **international standard** for vector charts has been finalised by the International Hydrographic Organization (S-57, Version 3), and **IMO adopted performance standards for ECDIS**, using vector charts, in 1995 by Assembly Resolution A.817(19). ENC are authorized by National Hydrographic Office in accordance with the International Hydrographic Organisation's (IHO) product specification S-57.

ENC

- ENC's are “intelligent” vector charts, where different views can be selected suitable for your navigation
- ENC's are authorized by national hydrographic offices
- ENC's meet IMO carriage requirements when used on ECDIS with appropriate back-up
- Only ENC's can be used for paperless navigation on ECDIS.



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ENC Example 2



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ECDIS

Electronic Chart Display and Information System

Electronic Chart and Information Display System (ECDIS)



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- **Your ECDIS has to be documented and tested to comply with the requirements of the IEC 61174 (Electronic Chart and Information Display System (ECDIS) – Operational and performance standards, methods of testing and required results.)**
- **This standard is made to clarify and support a test standard to the ECDIS performance standard (IMO Res. A.817(19))**



What is an ECDIS ?



- **IMO ECDIS performance standard states:**
“Electronic Chart Display and Information System (ECDIS) means a navigation information system which, with adequate back up arrangements, can be accepted as complying with the up to date chart required by V/19 and V/27 of the Safety of Lives at Sea (SOLAS) Convention,

by displaying selected information from a System Electronic Navigational Chart (SENC) with positional information from navigation sensors to assist the mariner in route planning and route monitoring, and by displaying additional navigation-related information if required.” (IMO Resolution A.917 (19))

Approval of ECDIS



To ensure conformance with IMO requirements, ECDIS must pass type approval and test procedures development by the International Electrotechnical Commission (IEC) based on IMO ECDIS Performance Standards and applying the IHO requirements S-52 and S57 in particular.

Type approval is normally conducted by recognized organisations or by marine classification societies nominated by Flag States.

E.G. DNV ECDIS type approval certificate of Litton Marine System (2002)



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DET NORSKE VERITAS
TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. A-7752
This Certificate consists of 4 pages

This is to certify that the
Electronic Chart Display and Information System (ECDIS)
with type designation
VISION 2100 ECDIS

Manufactured by
LITTON MARINE SYSTEMS INC.
1070 Seminole Trail
Charlottesville, VA 22901, U.S.A.

is found to comply with

- Performance standards for electronic chart display and information systems. (IMO Res. A.817(19))
- General requirements for shipborne radio equipment, (GMDSS) and for electronic navigational aids. (IMO Res. A.694(17))
- General requirements for electromagnetic compatibility for all electrical and electronic ship's equipment. (IMO Res. A.813(19))
- Code on Alarms and Indicators (IMO Res. A.686(17) and A.830(19)) as applicable
- IEC 61174 Ed. 1.0 (1998-08) Maritime navigation and radiocommunication equipment and systems - Electronic chart display and information system (ECDIS) - Operational and performance requirements, methods of testing and required test results
- IEC 60945 Ed. 3.0 (1996-11) Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results
- IEC 61162-1 Ed. 1.0 (1995-11) Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners

Place and date
Hovik, 2000-09-15
for DET NORSKE VERITAS AS


Per Martinsen
Head of Section


Local Office
DNV New Jersey

This Certificate is valid until
2002-12-31


Finn H. Spone
Surveyor

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Form No.: 20 90a Issue: January 98 Page 1 of 4

Plans for mandatory use of ECDIS



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- 1st ECDIS on High Speed crafts, Norway, 2006-2008
- 2nd Europe, EU, 2007-2009 ?
- 3rd International, IMO, under discussion this week at IMO Nav51, London, 6-9 June, from 2008-2010.

Why mandatory use of ECDIS ?



Safety records of Norwegian High Speed Passenger Vessels:

- Sailing in complex waters along a very demanding coastline at high speed demands high accuracy.
- These high speed vessels are especially vulnerable to navigational mistakes.
- Safe operation demands an amount of information and coordination that paper charts cannot provide.
- Early electronic chart systems were therefore put on board most of these vessels from the time they were made commercial available, before ECDIS was developed.

Why mandatory use of ECDIS ? continue



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- With exception of a few new vessels, the chart machines are **not the approved ECDIS**.
- They were “only” meant as supplementary aid to paper charts.
- However, in real life the navigators use primarily these because of limited work space on bridge and their convenience.
- These outdated and non-approved chart systems represent a safety hazard for these ships and should be replaced.

Frequency of incidents



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Comparing frequency of navigational accidents on the Norwegian coast, shows that the high speed vessels have a much higher frequency of incidents than most other vessels.

Frequencies - NOR/NIS ships - last 5 years - Initial Accident Cause Only

Incident type	Shiptype	2000	2001	2002	2003	2004	Avr.	Comments
Navigation	TANKER > 500 gt	2 %	3 %	3 %	2 %	1 %	2 %	
	BULKER >500 gt	2 %	5 %	3 %	5 %	1 %	3 %	
	CARGO >500 gt	4 %	3 %	5 %	2 %	3 %	3 %	
	OFFSH >500 gt	2 %	0 %	1 %	3 %	1 %	1 %	
	ANY 100-500 gt	3 %	4 %	2 %	3 %	2 %	3 %	
Navigation	HSC >100 gt.	6 %	8 %	5 %	1 %	3 %	5 %	

Why mandatory use of ECDIS ? continue



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- Improving the accuracy of navigation by ECDIS based on fully ENC (Electronic Navigational Charts), will have a significant effect on avoiding grounding.
- These incidents remain today abt. 40% of the total casualties, and were the cause of the 2 greatest tragedies of high speed passenger vessels, the groundings of “SEA CAT” (Bahamas flag) and “SLEIPNER” (Norway) on the coast of Norway.
- “ECDIS” is also necessary to achieve a satisfactory “INS - Integrated Navigational System” on a high speed vessel.
- Safe navigation of these vessels on the Norwegian coast demands coordinated information from a central source.
- With the exception of only one incident, – all incidents on HSC recorded the last 5 years were related to NAVIGATION and OPERATION.



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With the exception of only one incident, – all incidents on HSC recorded the last 5 years were related to NAVIGATION and OPERATION.

HSC – High SpeedCrafts > 100 gt		2000	2001	2002	2003	2004	Sum & Share
Incident	Grounding	2	4	2	1	2	11 39 %
	Contact/pier etc.	1		2	2		5 18 %
	Collided floating object			1	1		2 7 %
	Near Accident	2		1		1	4 14 %
	Collided with vessel	2	1				3 11 %
	Weatherdamaged	1			1		2 7 %
	Fire in Engines			1			1 4 %
	Sum	8	5	7	5	3	28 100 %
Yearly Frequency %	Grounding	3,0 %	6,3 %	3,0 %	1,4 %	3,1 %	
	Contact/pier etc.	1,5 %	0,0 %	3,0 %	2,7 %	0,0 %	
	Collided floating object	3,0 %	0,0 %	1,5 %	0,0 %	1,5 %	
	Near Accident	1,5 %	0,0 %	0,0 %	1,4 %	0,0 %	
	Collided with vessel	0,0 %	0,0 %	1,5 %	0,0 %	0,0 %	
	Weatherdamaged	3,0 %	1,6 %	0,0 %	0,0 %	0,0 %	
	All accidents investigated	12,1 %	7,8 %	9,1 %	6,8 %	4,6 %	

ECDIS required for Norwegian high-speed crafts from 2006



“The Norwegian Maritime Directorate has announced that Norway has decided to make the use of ECDIS mandatory on all high-speed passengers crafts along the Norwegian coast.

This requirement will come into force from January 2006 south of the Arctic Circle and from 2008 north of the Arctic Circle”
(Source: NMD and *Navigare* 01/2005)

Date for final implementation for this regulation has not been set.
Some delay is expected.





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ENC Coverage status and latest development

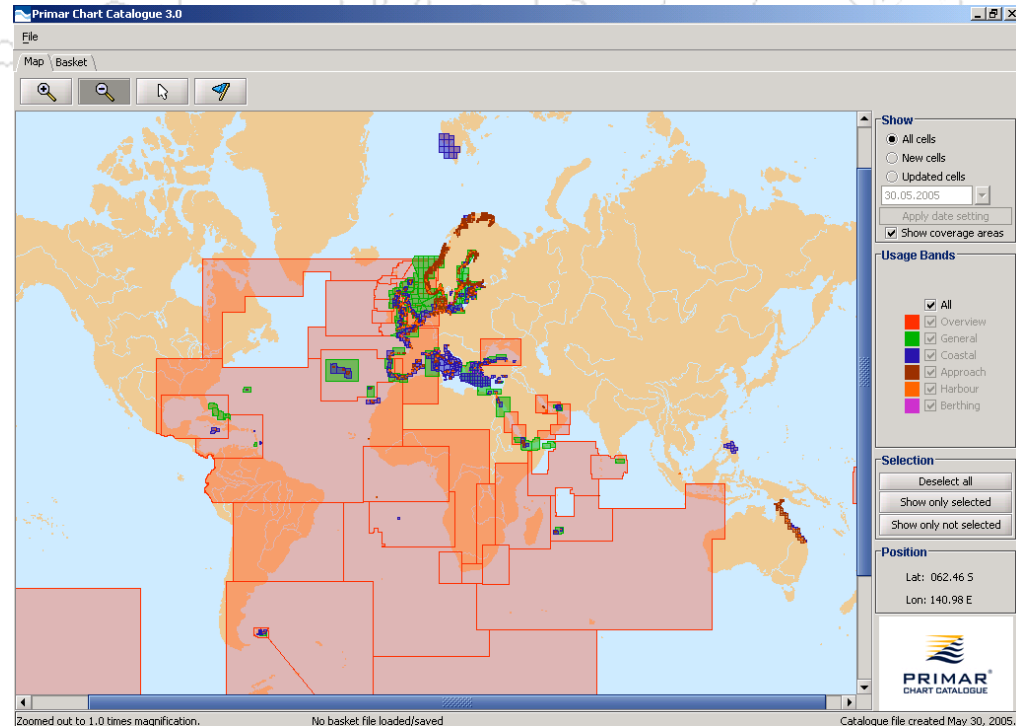
Coverage

Primar Stavanger Chart Catalogue



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- New ENC's every week
- Coverage increasing in Asia and North- and South-America
- Focus on developing coverage for most important international shipping routes.





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Primar Chart Catalogue 3.0

File

Map | Basket

Show

- All cells
- New cells
- Updated cells

11.05.2005

Apply date setting

Show coverage areas

Usage Bands

- All
- Overview
- General
- Coastal
- Approach
- Harbour
- Berthing

Selection

Deselect all

Show only selected

Show only not selected

Position

Lat: 069.97 N

Lon: 001.85 W

Usage Bands

- All
- Overview
- General
- Coastal
- Approach
- Harbour
- Berthing

Map | Basket

Show

- All cells
- New cells
- Updated cells

30.05.2005

Apply date setting

Show coverage areas

Usage Bands

- All
- Overview
- General
- Coastal
- Approach
- Harbour
- Berthing

Selection

Deselect all

Show only selected

Show only not selected

Position

Lat: 024.00 N

Lon: 028.39 E

PRIMAR CHART CATALOGUE

Lat: 002.33 N

Lon: 145.83 W

PRIMAR CHART CATALOGUE

Zoomed out to 2.0 times magnification. No basket file loaded/saved. Catalogue file created May 30, 2005.

Primar Chart Catalogue 3.0

- ENC folio planning, management, on-line ordering and delivery -



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The screenshot displays the Primar Chart Catalogue 3.0 software interface. The main window shows a map of Europe with various colored regions and a grid overlay. A 'Quotation' window is open in the foreground, displaying a list of products and their details.

Quotation

Distributor: Primar Stavanger demo
Customer: Quotation use
Vessel: Quotation use

Reference number:
Additional Mail:

Product: English Coast - Trondheim Region
English Coast - Strömlingen R...
English Coast - Scarborough R...
English Approaches - Lowest...
English Approaches - The Wash
English Approaches - Grenville
English Approaches - Invergh...
English Approaches - Bridg...
English Harbours - North-East
English Harbours - North-East ...
The Strait of Dover and the ...
From Llobregat to Papi...
Lleida to Sitges Harbour
Sole Strait, Argent
Yentabla to Pankkita
Port of Huelva
Favelba Harbour
Port of Huelva (outer part)
Port of Lapesola (outer part)
Port of Lapesola
Dutch North Sea
Dutch Coast - Frisian I...
Dutch Coast - Texel to Weste...
Dutch Coast - Amsterdam Reg...
Dutch Coast - Europort Region
Dutch Approaches - Den Helder
Dutch Approaches - Europoort
Dutch Approaches - Vliedorp
Dutch Harbours - Europoort
Nardaren
NORSEHENA
Nordrenna
Nordrenna

Product	Subscription type	Price band	Permit end date	Amount	Price	Discount	Total
ENC	12 months	Large	Mar 10, 2006	76	1530.00	1530.00	0.00
ENC	12 months	Medium	Mar 10, 2006	44	465.00	465.00	0.00
ENC	12 months	Small	Mar 10, 2006	380	1690.00	1690.00	0.00
ENC unit	12 months		Mar 10, 2006	37	585.00	585.00	0.00
Sum:					4271.00	4271.00	0.00

Order Close

IHO Chart Catalogue



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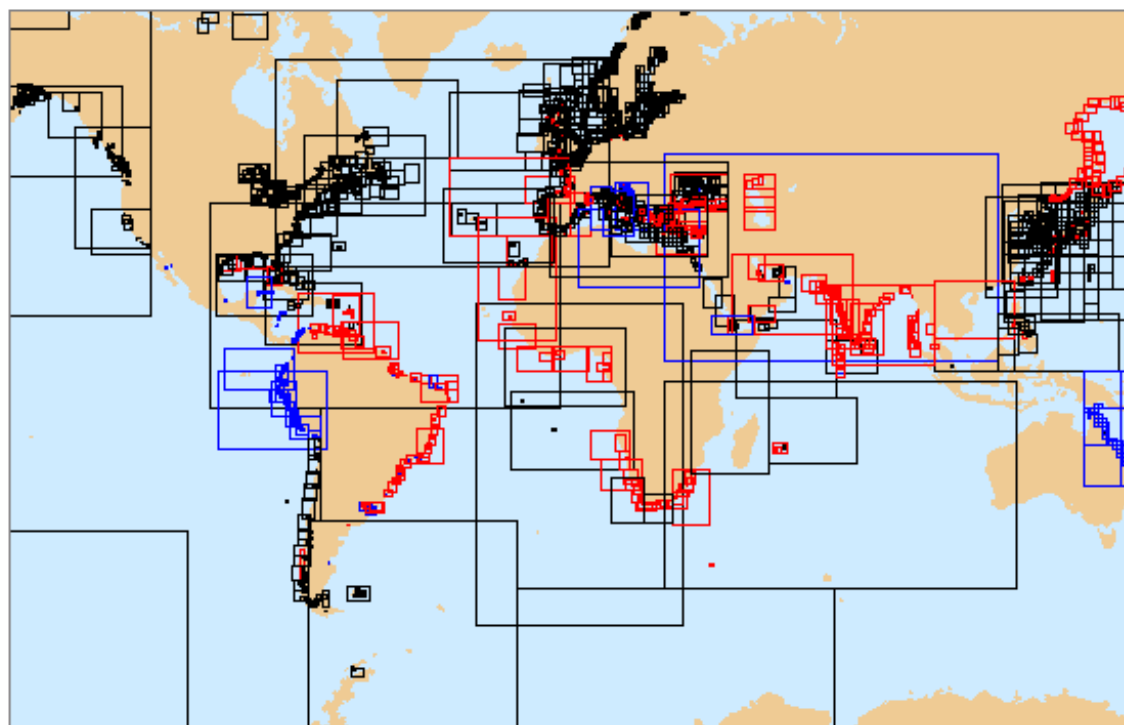


IHO GLOBAL ENC CATALOGUE

The IHO ENC Catalogue displays the global availability of ENC information. Colour codes are used to show the ENC status. The ENC information will continuously be maintained by the Hydrographic Offices or the RENCs.

It is possible to zoom and pan using the buttons below the chart. Further information about an ENC can be obtained by selecting the I (Information) button and clicking on an ENC.

It is also possible to download the ENC catalogue information from [here](#) as a comma separated file.



Layers

Graticule

Usage Bands

- Overview
- General
- Coastal
- Approach
- Harbour
- Berthing

Release Status

- Commercially available
- In production or planned for production
- Completed (issued), but not commercially marketed

Update

Created by
Electronic Chart
Centre AS



ECDIS-ENC Benefits

(Meet IMO Solas V for paperless navigation)



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ECDIS + ENCs

- + Reduced risk of grounding - 40 % (Source: DNV)
- + Time, fuel and oil savings (Source: Survey done by Canadian Coast Guard)
- + Better and more cost effective route and voyage planning
- + Efficient updating of ENC
- + Reduced cost on paper charts and paper charts updating
- + Better utilization of bridge personnel (save time and costs due to improved and easier route planning and chart updating)
- + Integration with AIS and other functions (weather, navtex, etc)
- + Insurance benefits (in progress..)

P&I club warns against using non-ENCs



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- North of England P & I club has warned that a vessel's ability to defend claims or limit liabilities may be compromised if it uses private electronic charts (non-ENCs).
- If not produced by an authorised hydrographic office, these charts could be inaccurate and lead to costly and indefensible accidents when used as the primary system of navigation.
- North of England P & I club says there is no guarantee that non-official electronic charts are up-to-date or accurate.
“They do not comply with SOLAS chapter V requirements or IMO resolution A.871(19) and, as such, a vessel's ability to defend claims or limit liabilities may be compromised,”

Unofficial electronic charts

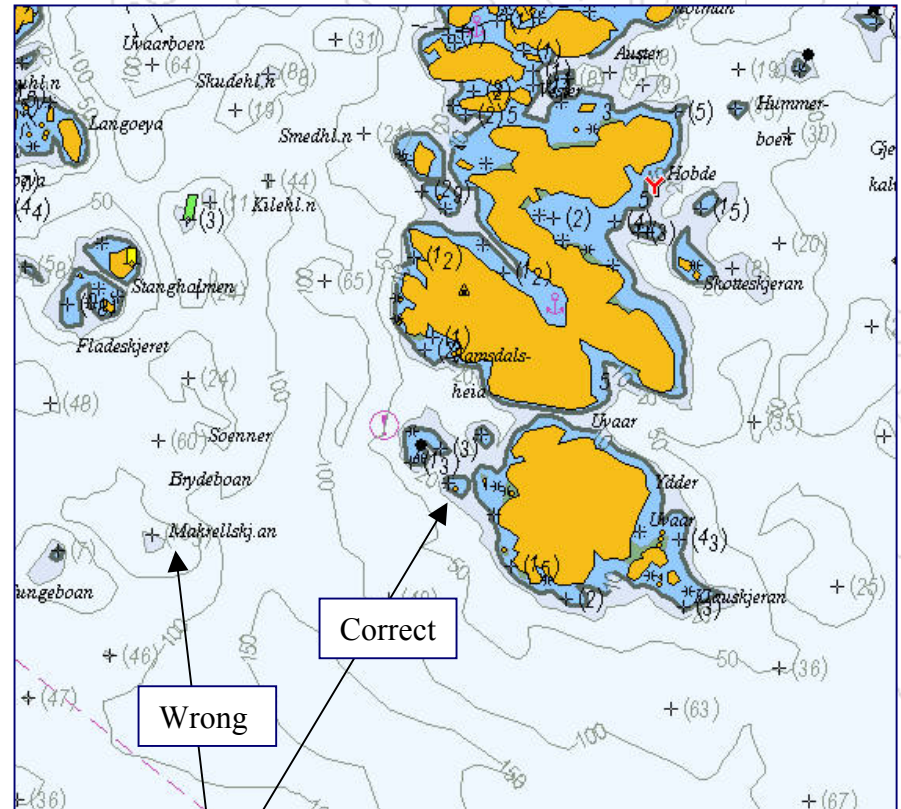


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- They might look nice
- They might have good functionality
- They might be inexpensive, seemingly being good value for money

BUT:

- They can not be used for navigation
- No party take any responsibility for the accuracy and quality of the charts
- Can limit P&I insurance claims
- Do **YOU** take the risk ????



Private vector chart where e.g. naming of one rock is in the wrong position.



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HAVE A SAFE VOYAGE WITH OFFICIAL CHARTS

For more information
visit us on stand
C01-06