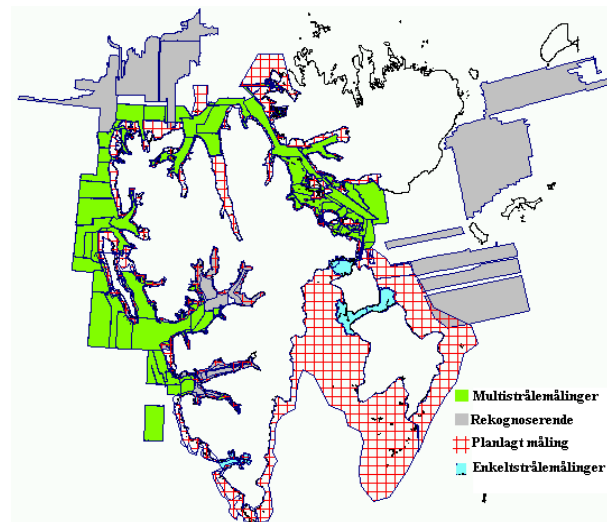
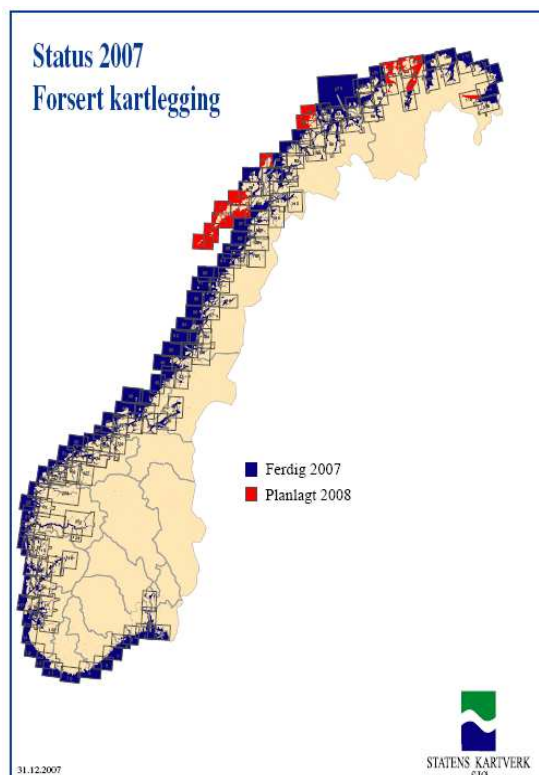


Status of enhanced ENC production

Hydrographic Surveys

Internal surveying 2007 Svalbard

Two survey launches equipped with EM 3000D and one with EM 1002 have been operating on a 12-hour daily operation 2,5 month in 2007 outside Svalbard. The efficiency has been very good and a total of 685.5km² has been surveyed along the Svalbard coast, mostly in areas with water-depths less than 20 meters.



Norwegian coast

Two survey launches equipped with EM 3000D and one with EM 1002 have been operating on a 12-hour daily operation in 9,5 months in 2007 (before and after Svalbard)

survey campaign). The efficiency has been very good and a total of 804 km² has been surveyed along the Norwegian coast, mostly in areas with water-depths less than 20 meters.

Plans 2008

NHS has will install EM 710 on the main ship, m/s HYDROGRAF,- and will survey deep sea as part of the Mareano project. The plan is to survey 4500 km² outside Lofoten, in period April – July.

There will be an autonomous survey campaign along Norwegian coast with the new surveying launch while Hydrograf is surveying deep water for Mareano.

In period July-September the survey vessels will be used on coast near Svalbard, expected area to cover is 700 km².

The survey near coast of Norway is planned January – mid March, and after Svalbard for the rest of the year, expected to cover 700 km².

External sea surveying 2007

Status

Blom (renamed to Scan Maritime) has surveyed 191 km² in shallow waters, and this survey campaign ends the planned use of external survey companies as part of the enhanced ENC production project near Norwegian coast..

Fugro-OSAE had intention to survey 13600 km² in deep water outside North Norway as part of the Mareano project. Due to weather hindrance this demanding obligation was far from met.

Plans 2008

Fugro- OSAE will survey this season on deep water as part of Mareano, with EM 710 and EM300, and revised survey scheme covers an area of 11 627 km².

3. Nautical Charts

3.1. General

The internal ENC and paper chart production was in 2007 continued in accordance with the NHS Long Term Plan (the Enhanced Project), and with a main goal to reach full ENC coverage for the Norwegian Coast within mid 2008. In 2007 the work was mainly concentrated to areas in the northern part of Norway, in the counties of Troms and Finnmark. As in previous year, the production was carried out by an extensive use of private industry. Quality controls and final approval of external production was accomplished in-house by NHS.

3.2. ENC production

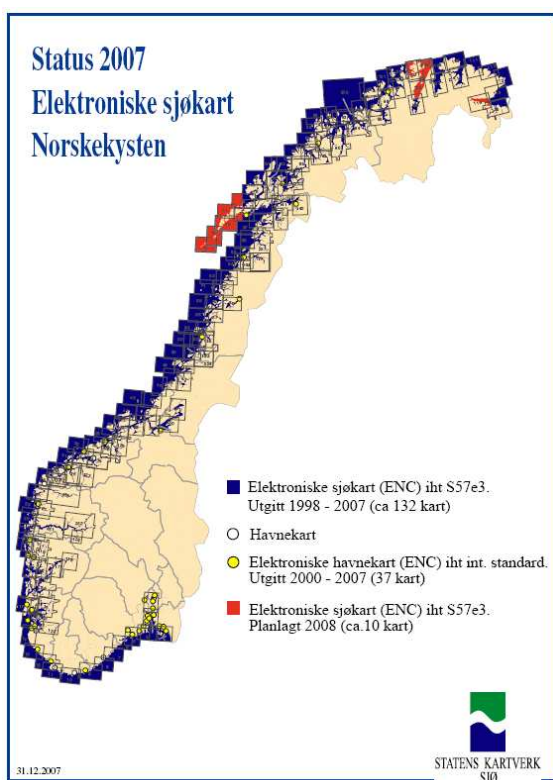


Figure 1

Figure 1: Shows ENC coverage for Norwegian internal coastal waters (ENCs in Approach User Band). Blue colour indicates coverage. Red colour indicates area to be covered in 2008.

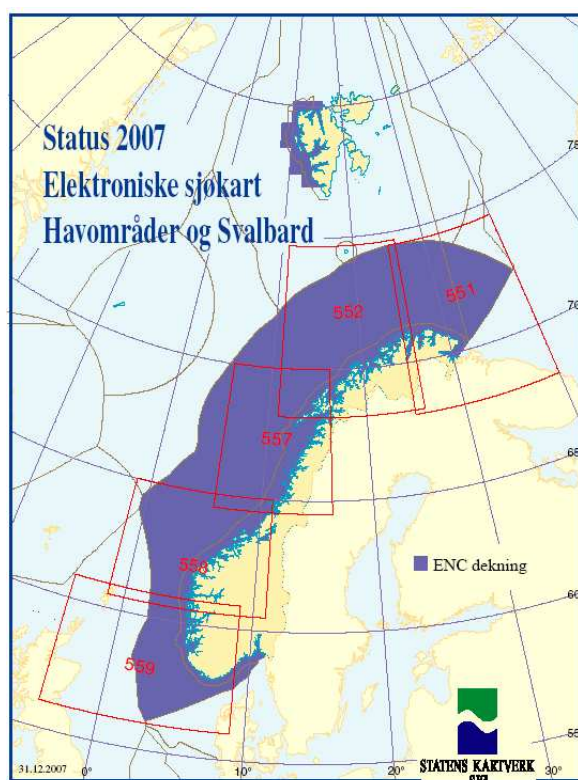


Figure 2

Figure 2: Shows ENC coverage in General- and Coastal User Band inside the Norwegian Economic Zone, also including the Svalbard area. (Blue colour indicates ENC coverage).

In 2007 ENC's equal to 33.5 D-cells (30' x 30') in the Approach User Band were produced, mainly covering areas in the northern part of Norway. In addition 9 ENC's covering the west coast of Svalbard, and a few ENC's in the Harbour User Band were published. As reported previously all new ENC's are compiled from source data (Primary Data).

By end of 2007 about 94% of Norwegian internal coastal waters was covered with ENC's. (See figure above).

The total number of Norwegian ENC's released and distributed through Primar is indicated in the table below. (Status as at December 31st 2007.)

<i>Usage Band</i>	<i>ENC Cells Produced</i>	<i>% Total ENC Coverage</i>
Berthing	3	-
Harbour	112	87% (Approx)
Approach	706	94% (Approx) See note 1
Coastal	22	See note 2
General	50	100% See note 3

Notes:

1. Covering Norwegian internal coastal waters

2. Covering areas at Svalbard west coast

3. Covering areas inside the Norwegian Economic Zone from Skagerrak northwards to the border with Russia

Updating via ER profiles were issued in accordance with *Etterretninger for sjøfarende* (Notice to Mariners), and distributed through PRIMAR. New Editions were issued as required.

Planned activities in 2008:

The ENC production for 2008 will be focussed on completing the remaining work in the northern part of Norway, and with the main goal of having full ENC coverage for Norwegian coastal waters about mid 2008. In addition the ENC coverage will be extended on Svalbard west coast from Van Mijenfjorden and southwards to around Sørkapp.

As in previous years, issuing of ER profiles and NE according to *Etterretninger for sjøfarende* (Notice to Mariners) will have priority.

3.3 Paper chart production

In 2007 a total number of 11 new charts in the Main Chart Series were published (see listing below). No harbour charts were published in 2007.

In addition 9 main charts were taken into the digital production line, reconstructed, transformed to WGS 84 datum and published as New Editions.

New charts published 2007:

Chart No.	Title	Scale
	<i>(Main Chart Series)</i>	
20	Sunnhordlandsfjordene	1: 50 000
69	Tranøy – Raftsundet	1: 50 000
76	Stokmarknes – Sortland – Malnes	1: 50 000
78	Hovden – Langenes – Risøysundet	1: 50 000
79	Risøysundet – Kvæfjorden – Harstad	1: 50 000
82	Andfjorden	1: 50 000
85	Ytre Senja	1: 50 000
86	Ytre Kvaløya	1: 50 000
94	Skjervøy – Kvænangen	1: 50 000
96	Altafjorden og Langfjorden	1: 50 000
99	Kvalsbotn – Revsbotn – Burstadsund	1: 50 000

Reconstructions¹ (published as New Editions) 2007:

Chart No.	Title	Scale
37	Tyrhaug – Trondheimsleia	1: 50 000
38	Trondheimsleia, Terningen – Kyrksæterøra – Ørlandet	1: 50 000
39	Trondheimsfjorden, Agdenes – Thamshamn – Buvika	1: 50 000
40	Smøla	1: 50 000
41	Frøya – Gjøsing	1: 50 000
42	Gjøsing – Halten	1: 50 000
43	Agdenes – Lauvøya	1: 50 000
44	Lauvøya – Halten – Roan	1: 50 000
130	Trondheimsfjorden, Trondheim – Skogn	1: 50 000

1. Reconstruction: Reconstruct a chart from Primary Data Base

Remarks:

- All charts are referred to WGS 84
- The charts are printed in 4 colours (CMYK)

Revised Reprints published in 2007:

87 charts were revised and reprinted (out of these 47 were updated through the Digital Production Line based on changes in the Primary Data Base). 10 of these charts were printed as New Editions due to insertion of new surveyed areas.

Since establishing of the Digital Production Line in 1996, a total of 128 charts were by end of 2007 produced digitally. This means that about 50% of the paper chart portfolio now is on WGS 84, and subject to maintenance through the NHS Digital Production Line. (Most of the remaining charts are still in ED 50 or Norwegian Datum.)

Reconstruction of charts:

9 Main Series Charts (scale 1: 50 000) were reconstructed, transformed to WGS 84, and implemented into the Digital Production line. The charts were published as New Editions.

Planned activities in 2008:

As for ENC's the paper chart production will be focussed on finishing the New Chart Scheme for the Northern part of Norway. This work is scheduled to be completed during second half of the year. Two new charts in scale 1: 100 000 are scheduled for the Svalbard area.

The work of reconstructing charts on ED 50 or Norwegian Datum to WGS 84, and implement these into the Digital Production Line will be given priority. The objective is to complete this work within a period of five years.

3.4 Technology

The MINTEC-project:

NHS in 2005 entered into an agreement with HydroService (now Jeppesen) regarding development of a new technology for production and maintenance of ENC's and papercharts, based on dKart Office software (the MINTEC project). An effective interface with the Primary Database; in combination with effective tools for maintenance of the products were important pre-conditions for the project.

In October 2007 the new technology was declared operational, as most of the software development then was completed, tested and approved. Some remaining development items will, according to a revised project plan, be completed during the first six months of 2008.

Before full effect of the new technology can be reached the following tasks must be completed:

a) Training of the staff

The basic training in dKart Office software includes a one-week course in dKart Editor and a one-week course in dKart Publisher, followed by on the job training.

b) Transition of ENC's from Intergraph MGE to dKart Office

The transition of ENC's includes no conversion as the dKart Editor software is working on S-57 files. However, in order to create unique identifiers of objects as lights and beacons between ENC's and the Primary Database, all ENC's have to be issued as New Editions. This work will be carried out gradually, and probably not completed before 2009.

c) Conversion of paper charts from Intergraph MGE to dKart Office

Around 120 paper charts produced as design-files in the MGE system must be converted into the *pc.dcf-format* used in dKart Office. This work will be extensive, and due to lack of resources in-house, most of the work will be done by private industry. The work will not be completed until late 2008 or in the beginning of 2009.

Print On Demand (POD):

The NHS in 2007 initiated a project with the objective of establishing a Print on Demand service, and with technical solutions based on the dKart Office technology. Due to delay in the implementation of the dKart Office technology, the progress of the project was less than planned. The project will, however, continue in 2008, with an objective to report on technical- and operational solutions by end of this year, for further consideration and approval.