

**Electronic**

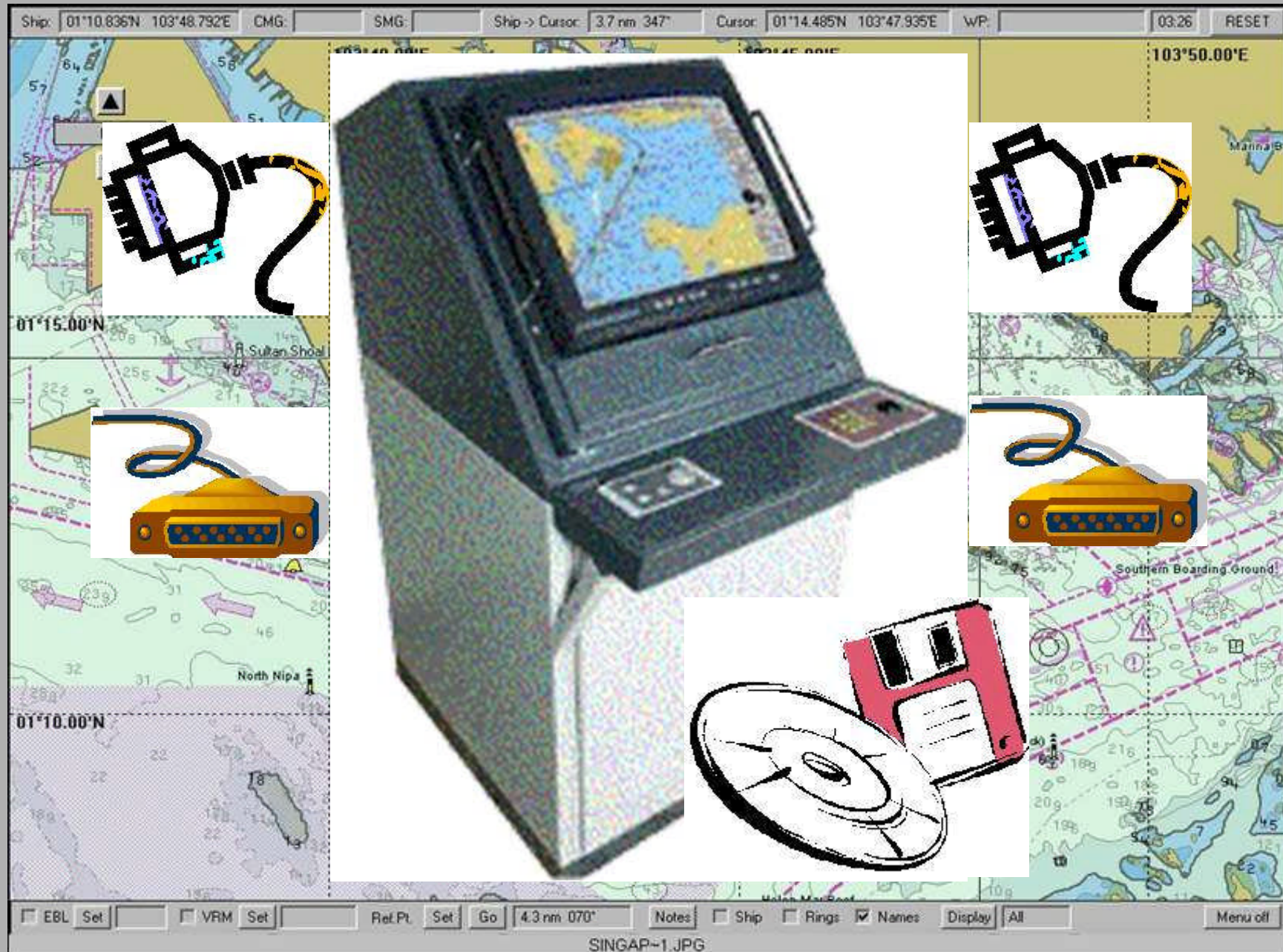
**Chart**

**Display and Electronic Chart Display and Information System**

**Information**

**System**

**An ECDIS is a dedicated Computer loaded with the  
requisite computer Software and connected to various  
sensors, which is capable of reading and displaying an  
Electronic Chart.**



## Information

**The National Marine Electronics Association (NMEA) published a standard known as NMEA-0183.**

**This standard specifies how marine electronic devices (e.g., GPS receivers, autopilots, depth finders, and such) can communicate with each other.**

**Electronic devices that send out NMEA-0183 compliant data, can be combined using an NMEA Multiplexer.**

**An NMEA Multiplexer, accepts up to four incoming NMEA-0183 signals and combines them all onto one outgoing wire which can then be plugged into other equipment's (PC) serial port.**

**Since the multiplexer only works with NMEA-0183 compliant devices, it won't be able to help with non-compliant equipment.**

**ECDIS deciphers the electronic coded information**

**contained in a CD or floppy and displays it as a picture**

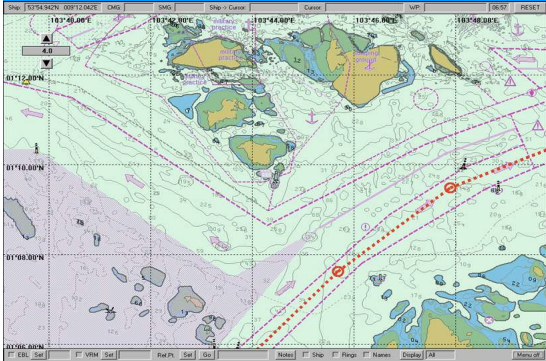
**familiar to us.**

**This coded data may contain information of various types,**

**from simple pictures of charts to information about buoys,**

**lights and depths.**

# Chart as you see



User input

Multiple sensor Input

ECDIS - Introduction

SENC

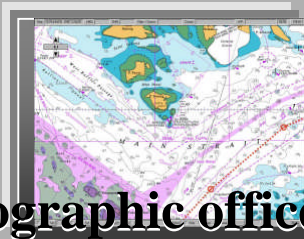
010011001100000111110010100011111100000000111  
111100000000101010101010101010101010000011110



ECDIS processor on board ship

Production, addition of data & display

Data in 'cells' each not to exceed 5mb



010011001100000111110010100011111100000000111  
111100000000101010101010101010101010000011110

CD ROM (ENC)



May contain multiple cells

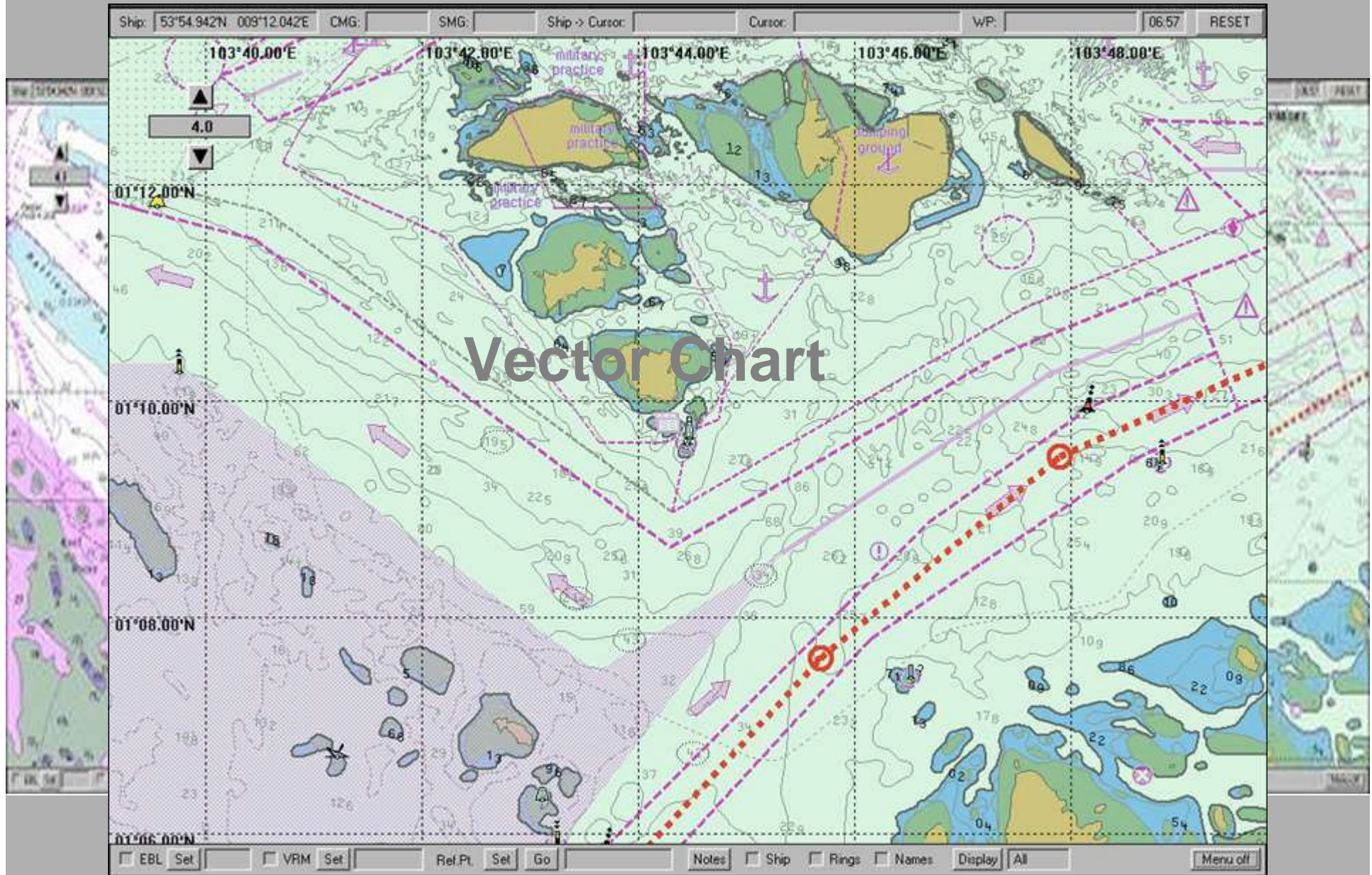
Hydrographic office survey and mapping data, made into a CD (ENC)

**The ECDIS may be used to display both the Raster Chart  
and the Vector Chart**

**In brief a Vector Chart, is one which has been vectorised  
using a computer software.**

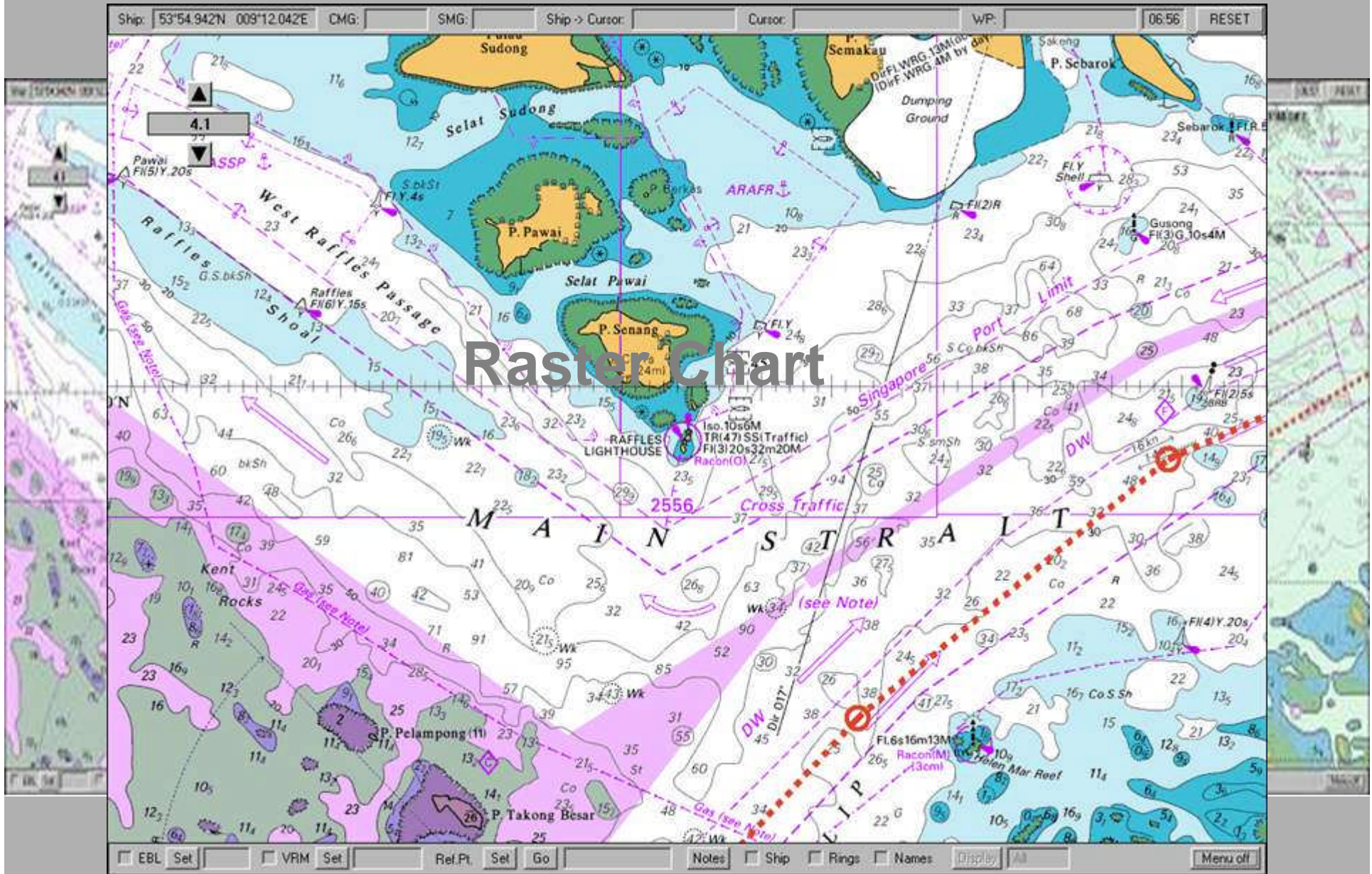
**Whereas a Raster Chart is an electronically scanned paper  
chart with minimal amount of GIS positioning work done.  
The above charts may or may not be an authorised version.**



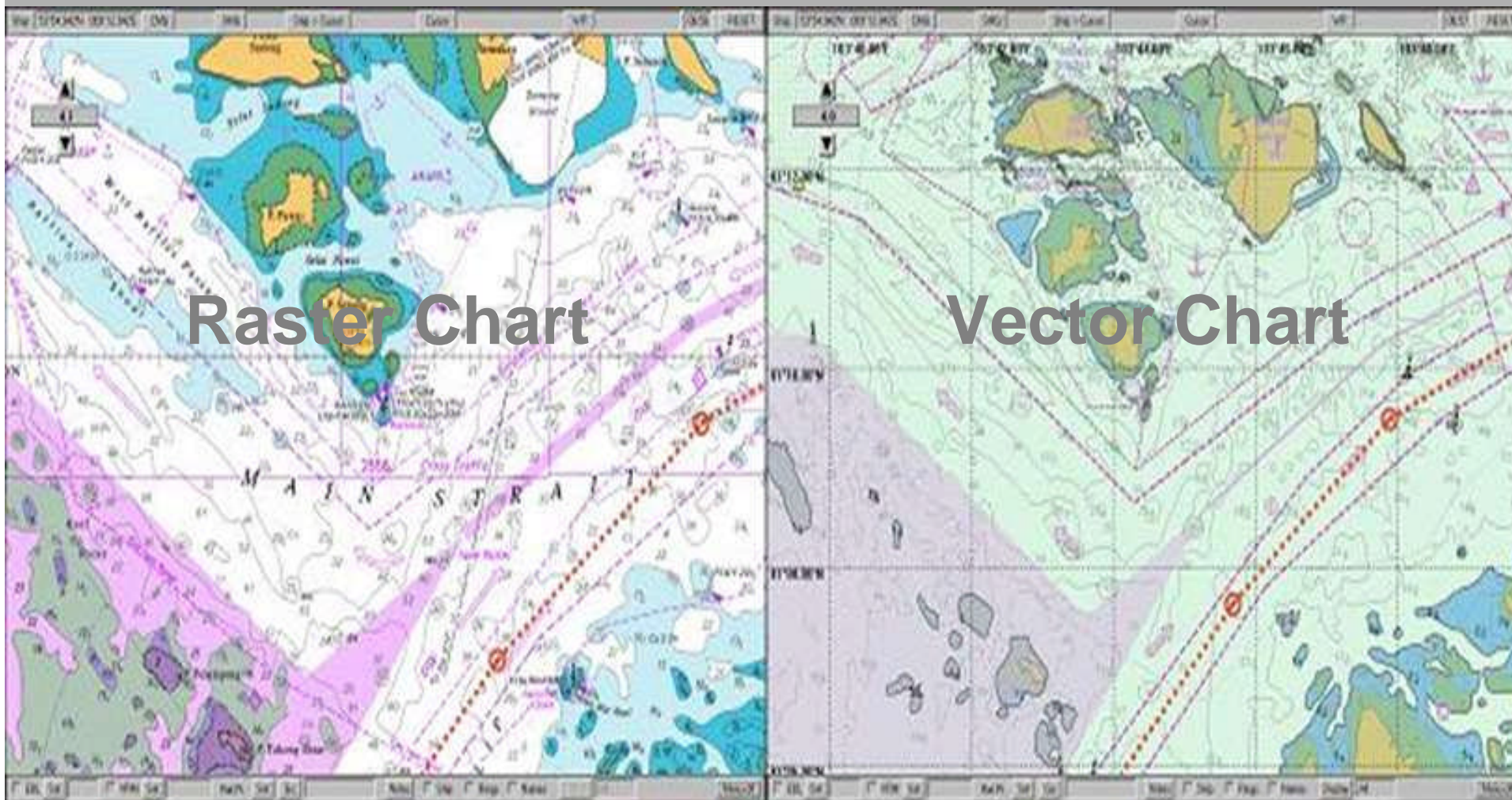


Vector Chart









**Equipment that are be connected to an ECDIS:**

**Gyro Compass - IMO Res. - Heading**

**Speed Log - IMO Res. - Speed**

**GPS / DGPS - IMO Res. - Position Fixing**

**Additionally the following equipment may also be connected provided that the sensor inputs do not degrade the quality of the display or otherwise.**

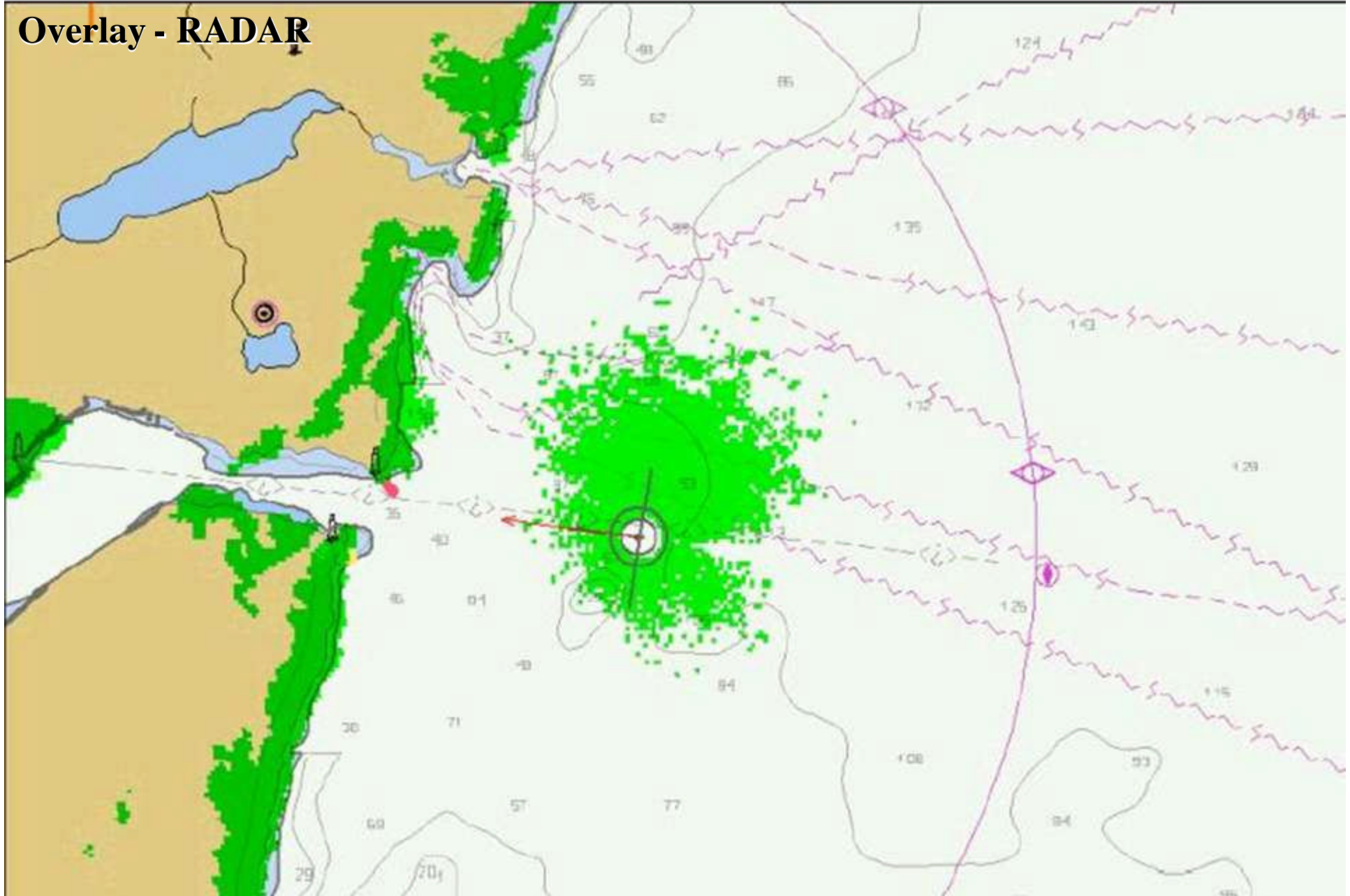
**Radar / ARPA**

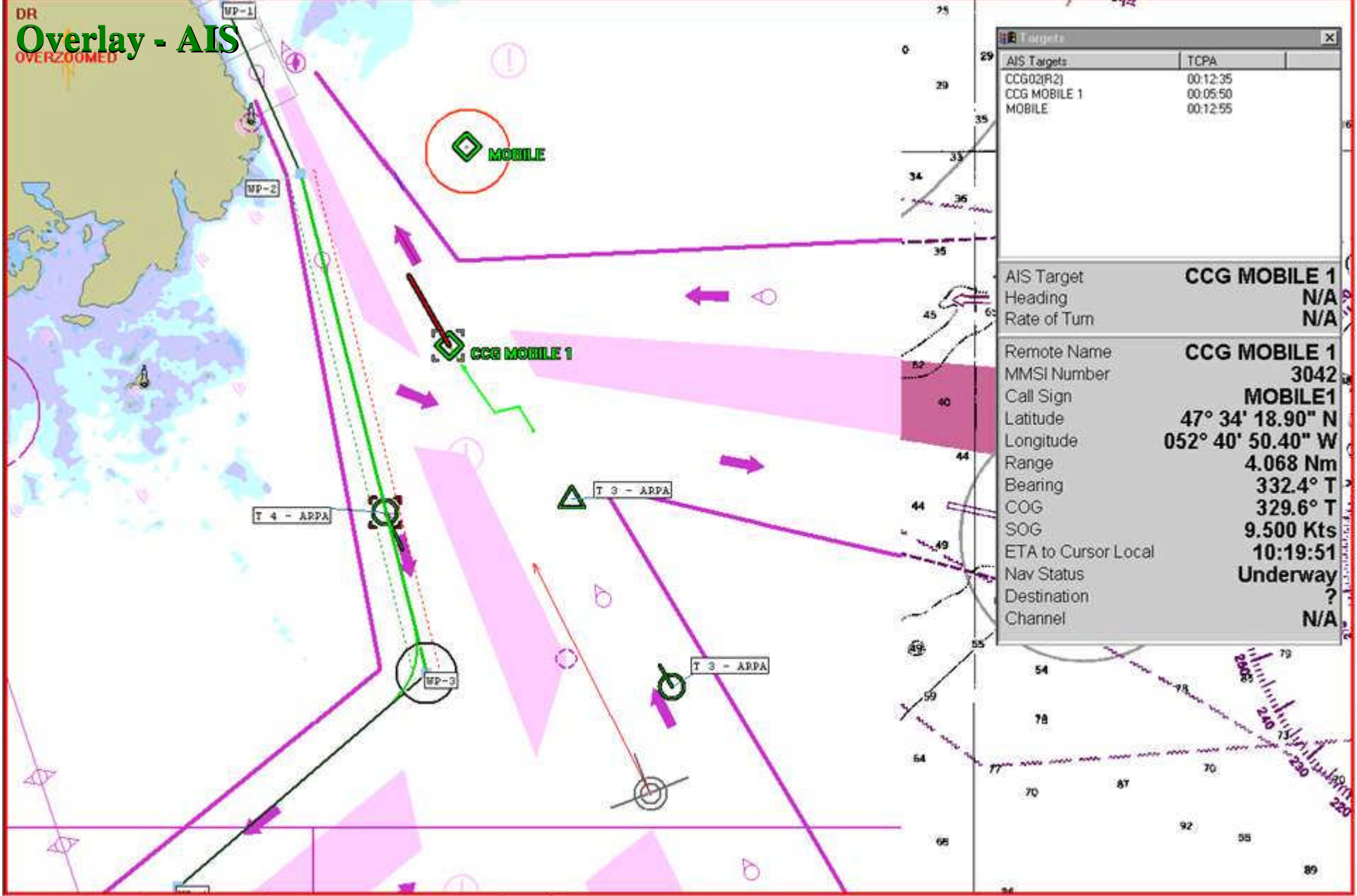
**AIS**

**Echo Sounder**



# Overlay - RADAR





DR  
Overlay - AIS  
OVERZOOMED

Targets	
AIS Targets	TCPA
CCG02(R2)	00:12:35
CCG MOBILE 1	00:05:50
MOBILE	00:12:55

AIS Target	<b>CCG MOBILE 1</b>
Heading	N/A
Rate of Turn	N/A
Remote Name	<b>CCG MOBILE 1</b>
MMSI Number	3042
Call Sign	<b>MOBILE1</b>
Latitude	<b>47° 34' 18.90" N</b>
Longitude	<b>052° 40' 50.40" W</b>
Range	4.068 Nm
Bearing	332.4° T
COG	329.6° T
SOG	9.500 Kts
ETA to Cursor Local	10:19:51
Nav Status	<b>Underway</b>
Destination	?
Channel	N/A

Navigation controls including zoom (Out, In), scale (1:100,000), and status (Silence, Ack).

**Definitions:**

*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 regulation V/20 of the 1974 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.*

**Definitions:**

*Electronic navigational chart (ENC)* means the database, standardised as to content, structure and format, issued for use with ECDIS on the authority of government authorised hydrographic offices.

The ENC contains all the chart information necessary for safe navigation, and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation.



**Definitions:**

*System electronic navigational chart (SENC)* means a database resulting from the transformation of the ENC by ECDIS for appropriate use, updates to the ENC by appropriate means, and other data added by the mariner.

It is this database that is actually accessed by ECDIS for the display generation and other navigational functions, and is the equivalent. to an up to date paper chart.

The SENC may also contain information from other sources.

**Definitions:**

*Standard display* means the SENC information that should be shown when a chart is first displayed on ECDIS.

The level of the information it provides for route planning or route monitoring may be modified by the mariner according to the mariner's needs.

**Standard display, to be displayed when the chart is first displayed by ECDIS, consisting of:**

**Display base**

**Drying line**

**Indication of fixed and floating aids to navigation**

**Boundaries of fairways, channels, etc.**

**Visual and radar conspicuous features**

**Prohibited and restricted areas**

**Chart scale boundaries**

**Indication of cautionary notes**

**Definitions:**

*Display base* means the level of SENC information which cannot be removed from the display, consisting of information which is required at all times in all geographical areas and all circumstances.

**It is not intended to be sufficient for safe navigation.**



**Display base, permanently retained on the ECDIS display, consisting of:**

**Coastline (high water);**

**Own ship's safety contour, to be selected by the mariner;**

**Indication of isolated underwater dangers at depths of less than the safety contour which lie within the safe waters defined by the safety contour;**

**Indication of isolated dangers which lie within the safe water defined by the safety contour such as bridges, overhead wires, etc., including buoys and beacons, whether or not these are being used as aids to navigation;**

**Traffic routeing systems;**

**Scale, range, orientation and display mode;**

**Units of depth and height.**

**All other information, displayed individually on demand, for example:**

**Spot soundings**

**Submarine cables and pipelines**

**Ferry routes**

**Details of all isolated dangers**

**Details of aids to navigation**

**Contents of cautionary notes**

**ENC edition date**

**Geodetic datum**

**Magnetic variation**

**Graticule**

**Place names**

**Definitions:**

***Raster Chart Display System (RCDS)* means a navigation information system displaying RNCs with positional information from navigation sensors to assist the mariner in route planning and route monitoring and, if required, display additional navigation related information.**

**Definitions:**

***Raster Navigational Chart (RNC)* means a facsimile of a paper chart originated by, or distributed on the authority of, a government authorized hydrographic office.**

**RNC is used in these standards to mean either a single chart or a collection of charts.**



**Definitions:**

*System Raster Navigational Chart Database (SRNC)* means a

**database resulting from the transformation of the RNC by**

**the RCDS to include updates to the RNC by appropriate**

**means.**