

Analog depth information to be included in the Swedish National Depth Information database

The Swedish Maritime Authority's primary objective with the digitalization of existing, relevant analog depth information is to build a complete National Depth Information Database (DIS) and thereby fulfilling the growing needs for such information by society in general. All products describing depth situations are to be generated through DIS. Everything within Swedish territorial waters is to be digitalised and stored in DIS. When all analog charts are processed it will be possible, from DIS via WinEko (Dtm), to generate both depth contours and soundings for chart production, diverse consumer products and deliver digital data to external clients and customers.

The SMA has noticed that the demand for digital depth information is increasing from year to year.

Geographical localization of the charts is done with the help of LMV's coastline together with triangulation points and the georeferenced picture files are then stored on a server. It is then possible to view the files directly in a chart editing program and localisation is automatic.

There are a total of around six thousand various depth charts and survey maps containing relevant information in the SMA archives. The aim is to scan this analog material and, with the help of the programs HydroCap and ArcGis, extract relevant information, such as soundings and contours and store it in digital form in DIS. During 2006 a digital production line was designed and implemented which is now called ScanDIS.

Production in ScanDIS started in 2007 with the training of personell in HydroCap and Prime systems.

Those parts of the process that are possible to outsource are colour separation(PRIME) and interpretation/vectorisation(HydroCap and ArcMap) of the analog charts.

Other parts of the process such as archive handling, scanning, georeferencing, database relations, quality control etc ought to be done at the SMA by authorized personell with the right qualifications.

After determining the boundaries of the Gräsö/Singö area it was decided which basic data was to be scanned and in DIS which precise charts were involved. Priority is given to scanning newer surveys, in other words those recorded on depth charts, and thereafter survey maps. The Gräsö/Singö area is covered by surveys dating from 1880 up to modern multibeam surveys which means that point frequency can vary from several per square metre to only one every one hundred metres. Most of the area is surveyed previous to 1920.

After the scanning of the charts they are georeferenced, which means that the raster files are given a correct geographical location with coordinates and their extent recorded in DIS with an area contour. Seabed type annotations are recorded from all charts, even those that are not digitalised. The Swedish Geological Institute(SGU) has assumed the responsibility for the reclassification of the definitions described in the “Maritime Survey Guide” into modern classes of bottom material. (Fig 6)

Then follows the most time consuming part of the process which is the recognition procedure for soundings and contours. On older charts values are given in fathoms and feet which must be converted into metres and adjusted to mean sea level for the year 2000. The information is then imported into DIS and checked against existing depths. Proof reading between DIS and the modern chart is the next step but this has not been done yet in this area which means that differences may occur. Within this area are several shallow inlets that remain unsurveyed and therefore there is no relevant information in the SMA archive.