

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



IHO ECDIS PRESENTATION LIBRARY

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ANNEX A of APPENDIX 2

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FOREWORD

The "IHO ECDIS Presentation Library", together with the "Colour & Symbol Specifications for ECDIS", form Appendix 2 to the IHO S52 "Specifications for chart content and Display for ECDIS".

The original 1st Edition of the Presentation Library was developed in 1992 by SevenCs GmbH, Hamburg, on behalf of the Colours and Symbols Working Group of the International Hydrographic Organization, under contract to the Canadian Hydrographic Service and the Royal Australian Navy Hydrographic Service, with funding shared by the United States Coast Guard and the Canadian Coast Guard.

The overall structure of the Presentation Library has changed little since 1992, but many changes in detail have been made and this Edition 3.3 marks a considerable change in format. The Symbol Library is now specified in hard-copy format with the offsets of the pivot point specified explicitly, a major development carried out by Hochschule Wismar, Fachbereich Seefahrt Warnemünde, funded by the BSH. The entire Presentation Library is now published in man-readable form as a word-processed file on a CD-ROM, which carries a subscription charge for each new edition to help to cover maintenance costs, and this will become the authoritative "official" version. The digital version will also be issued for those who prefer it, but its continued existence depends on a voluntary provider, in this case Furuno-Navintra. ECDIS Chart 1, which will be issued with the Presentation Library as a graphic file will be also available in the pseudo-S57 format for edition 3.4 making use of the the SYMINS attribute of the generic object NEWOBJ introduced by the Supplement No.1 to S-57, Edition 3.1.1

Edition 3.4 brings into effect all the deferred amendments issued since Edition 3.3. A Change Control History for this period is given below.

Quotations from these specifications may be used in the manufacturer's manuals. The source should be acknowledged.

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CHANGE CONTROL HISTORY & GRACE PERIODS

The history of the previous changes to the C&S Specifications and the Presentation Library is as follows:

Notes: MD stands for IHO Maintenance Document [11]

IA stands for Immediate Amendment

DA stands for Deferred Amendment

1. Colours & Symbols Specifications (S-52 Appendix 2)

- Edition 4.0 (July 1997) + MD1 IA i01 --> Edition 4.1 (January 1999)
- Edition 4.1 + MD2 DA d02 + MD4 DA d06 --> Edition 4.2 (2004)
- Edition 4.2 + MD5 DA d7 → Edition 4.3 (January 2008)

2. Presentation Library (Annex A to S-52 Appendix 2)

- Edition 3.0 (July 1997) + MD1 IA i01 --> Edition 3.1 (January 1999)
- Edition 3.1 + MD 3 IA i04 --> Edition 3.2 (May 2000)
- Edition 3.2 + MD2 DA d02 + MD3 DA d05 + MD4 DA d06 --> Edition 3.3 (2004)
- Edition 3.3 + MD5 IA i5 + MD5 DA d7 + MD6 IA i6 → Edition 3.4 (2008)
- Digital versions:
 - PRSLIB03.dai (July 1997),
 - PSLB03_1.dai (December 1998),
 - PSLB03_2.dai (May 2000),
 - PSLB03_3.dai (March 2004),
 - PSLB03_4.dai (January 2008)
- Temporary digital files: PSTY03_0.dai (June 1999), PSTY3_2b.dai (October 2001) (see amendment d05.cl.005)
- Paper based description of symbols:
 - Addendum to Part I, Users' Manual (2003)
 - Addendum to Part I, Users' Manual (2007)
 - Addendum to Part I, Users' Manual (2008), Edition 3.4

Edition 4.2 of the CSMWG Specs and Edition 3.3 of the Presentation Library (PresLib), issued in March 2004, brought all outstanding deferred amendments to Editions 4.1 of the CSMWG Specs (issued January 1999) and 3.2 of the PresLib (issued May 2000) into effect. Edition 4.3 of the CSMWG Specs does not contain substantial changes compared to the preceding version with the exception of the reference to Edition 3.4 of the PresLib, which was triggered by the introduction of new objects, object attributes and attribute values in S-57 Supplement No. 1, (Edition 3.1.1) issued in January 2007.

The grace periods from the issuing date of a new edition after which changes are required to be included in an ECDIS nominally are:

- | | |
|--|----------|
| - for new development | one year |
| - for new selling (already type-approved before date of issue) | one year |

As an exceptional case, Edition 3.4 of the PresLib itself is to be set in force in conjunction with the S-57 Supplement No. 1 by **1. January 2008** to meet IMO requirements for depiction of archipelagic sea lanes and particularly sensitive sea areas. In addition, this issue of the PresLib reflects the consequences of the adoption of the revised ECDIS Performance Standard by IMO in 2006 to the chart presentation. The revised ECDIS Performance Standards of IMO itself will be set into force by 1. January **2009**. However, the implementation of Edition 3.4 allows compliance with the changed requirements as far as chart presentation matters are affected, in advance of this date.

GENERAL LAYOUT OF THE PRESENTATION LIBRARY

PART I:

USERS' MANUAL

sections 1-8 Description of symbolisation methods,
sections 9 & 10 Description of the digital Presentation Library.

TABLES AND SYMBOLISATION PROCEDURES

section 11 Look-up Tables,
section 12 Conditional Symbology Procedures,
section 13 Colour Tables, Viewing Groups and Text Groups,

SYMBOL LIBRARY AND SYMBOL PLOTS

section 14 Symbol Library, description (detailed specifications in Addendum)
section 15 ECDIS Chart 1, Symbol plots, symbol meanings, colour test diagram.

REFERENCES AND NOTES

sections 16,17 References, Bibliography, Glossary,
section 18 contents of the accompanying digital files,
section 19 use of colour calibration software, digital Chart 1, colour test diagram.

PART II¹:

MARINERS' NAVIGATIONAL OBJECTS

sections 1,2 Introduction, explanations,
section 3 Mariners' Object Classes,
section 4 Navigational Attributes,
section 5 References.

ADDENDUM:

Symbol Specifications Library for use on ECDIS. (paper based description of symbols)
- Addendum to Part I, Users' Manual (2008), Edition 3.4

DIGITAL FILES ON CD-ROM:

- .DAI file version of the Presentation Library,
- pseudo-S57 file version of ECDIS Chart 1,
- colour test diagram (pseudo S-57 code with look-up table),
- 'C' program for conditional symbology procedure LITDSN, plus LITTST
- CRT calibration software.

¹ To be superseded by IEC standards 61174, 3rd edition, and 62288, 1st edition, when they are published.

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PART I

USERS' MANUAL

TABLES AND SYMBOLISATION PROCEDURES

SYMBOL LIBRARY AND SYMBOL PLOTS

REFERENCES AND NOTES

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USER'S MANUAL

1. INTRODUCTION

This manual is intended to explain the IHO ECDIS Presentation Library to the manufacturer, and to help him to use the library. Therefore, it provides the software developer with the information he needs to translate the relatively abstract description of an S-57 [7] object into an effective ECDIS display according to S-52 [4]. However, it is not a picture book for ECDIS symbology, since the symbology itself is provided by diagrams showing shapes, dimensions, colours and offsets rather than scaled facsimiles of the symbols in a word-processed form in the Addendum. The scaled symbols are given in machine readable form on the distribution CD-Rom. This manual explains how the various parts of the ECDIS Presentation Library are related to each other, how these parts should be used to achieve an ECDIS presentation and how the symbol library can be transferred in a machine readable form.

The concepts and methods defined by the Presentation Library to deal with S-57 will significantly effect the ECDIS System design. Manufacturers are advised to consider how to implement the Presentation Library at an early stage in their system development.

Like in the past, modifications of ECDIS presentation will inevitably be required due to sea experience, to developments in mariners' and users' requirements, and to technical improvements. Changes may be in data or may affect the manufacturers' software (which will be avoided whenever possible). Manufacturers should build into their ECDIS a means of applying such changes once the ECDIS are installed on board ship.

This manual assumes, that the reader has carefully studied in advance the various standards for ECDIS, i.e., IHO S-52/S-57 [4,5,6,7] and IMO Performance Standards for ECDIS [3]. Although this manual is revised from time to time, the authors try to concentrate related information in one place, but some details remain buried in various sections of the manual. Therefore, it is strongly recommended to read this manual thoroughly before designing ECDIS software.

Sections 2 and 3 of this documentation start with an overview of the Presentation Library. They were written for the reader who is interested in the basic concept. Details that address especially the designer of an ECDIS system are explained from section 4 onwards.

Note that the Presentation Library does not cover all aspects of the ECDIS display. Therefore the IMO Performance Standards as well as the C&S Specifications and IEC publication 61174 [9] must also be studied. The IHO Test Data Sets (S-64) [13] will also be useful when testing ECDIS software.

1.1 Status of the Presentation Library

The IHO Presentation Library is annex A to the IHO "Colour and Symbol Specifications" (C&SS), which is in turn appendix 2 to IHO S-52 "Specifications for Chart Content and Display Aspects of ECDIS".

The Presentation Library implements the display specifications in the S-52 App.2 by decoding and symbolising the SENC. It contains:

1. the ECDIS symbol library, excluding the Navigation Symbols to be found in IEC 61174 [9] and IEC 62288 [10],

2. the ECDIS colour tables for day, dusk and night viewing,
3. look-up tables, with symbology instructions linking SENC objects to the appropriate colour and symbol and giving their IMO category, draw priority, priority over radar, and suggested viewing group,
4. conditional symbology procedures for:
 - cases where symbolising depends on circumstances, such as the mariner's choice of safety contour,
 - cases where symbolising is too complex to be defined in a direct look-up table,
5. description of the symbology instructions,
6. mariner's navigational objects, specified in the same format as chart objects for convenience in processing in ECDIS,
7. supplementary features such as the ECDIS chart 1, colour differentiation test diagram, colour calibration software.

The symbols of the Presentation Library should be replicated in size and shape, using any convenient format. The colour tables should be reproduced within the tolerances given in C&S Specifications, section 5.2.3. The remaining items may be implemented in any convenient form which produces the same results as the Presentation Library.

1.2 S-57 and the Presentation Model for ECDIS

The Presentation Model for ECDIS refers to the official IHO Transfer Standard for Digital Hydrographic Data (S-57) [7]. The IHO Transfer Standard states in Part 2, section 3, which describes the concept of presentation of S-57 chart data representing the real world: "The presentation of this information may vary to suit a particular use (e.g., it may be presented either graphically, using symbols, or in textual form). Therefore, the presentation of information is considered to be independent of its storage. Different applications must provide their own specific 'presentation models'. A presentation model defines, via a set of presentation rules, how real world information should be displayed for a specific application. ..."

In contrast to a presentation model suitable for paper chart application, a presentation model to be used by ECDIS systems must take into account the requirements of the IMO/IHO "Performance Standard for ECDIS" [3] and the IHO "Specifications for Chart Content and Display Aspects of ECDIS", IHO Special Publication No.52 [4]. In particular, this means, that the presentation of charts on an ECDIS screen changes depending on parameters and selections defined by the mariner, such as safety contour, time of the day, traditional or simplified symbology, etc. Thus the presentation model must cover not only colour and symbol definitions but also instructions how to handle a dynamically changing presentation as well.

1.3 Structure of the Presentation Model for ECDIS

The **Presentation Model for ECDIS** is built from two major parts:

- A library of colours, line styles, fill styles, point symbols and a set of symbology instructions and look-up tables for the translation of object descriptions into symbology instructions. This part is called "**Presentation Library for ECDIS**". It is provided on a CD-ROM and may also be available in a machine readable form.
- A description of a programmable structure, which serves as a functional model for the graphic of an ECDIS system and which explains how to use the elements of the Presentation Library and how to ensure the correct display of data structured according to S-57. This part is called "**Display Generator Concept**".

1.4 Supply and amendment of the Presentation Library

From edition 3.3 onwards the word-processed version of the Presentation Library is the "official" version. A limited digital version in .dai format is provided on the same CD-ROM as a manufacturer's option for edition 3.4, but may not be provided for succeeding editions. It consists of look-up tables; symbols; and colour tables and is supplied in ASCII format in the .dai file.

The name of the file on this CD which contains the official, word processed Presentation Library is "PSLBmm_n.pdf" where mm_n is the edition number. **The edition number of the PresLib installed should be available to the mariner on request.**

Further details of the numbering and amendment of S-52 App.2 are given in sections 1.2.3 and 1.2.4 of the "Colour & Symbol Specifications".

The general layout of the Presentation Library is shown on page iii of this publication. The various components of the Presentation Library are supplied and amended as follows:

- 1.4.1 The Presentation Library as a word processed file is issued on a CD-ROM, which carries a subscription charge for each new edition to help to cover maintenance costs. The word-processed Presentation Library includes:
 - .1 the look-up tables, colour tables and symbol library.
 - .2 the narrative and diagram conditional symbology procedures in Nassi-Shneiderman form, together with symbolizing instructions (in section 8) for special IMO and IHO requirements which are needed to complete the symbolizing of an ENC,
 - .3 further information needed for implementing the above in a display generator (in sections 1 to 8).
- 1.4.2 On each occasion of an immediate amendment of the Presentation Library:
 - .1 a description of the items in the amendment will be freely available from the IHO web site under the Maintenance Section (www.iho.int > Publications > Download List) [12].
 - .2 the amended word-processed Presentation Library will be posted on the IHO web site (www.iho.int > Catalogue) together with the ECDIS Test Data Set (S-64) [13]. A subscription may be required.

Note that only the contents of immediate amendments and not those of deferred amendments, will be included in the amended Presentation Library of .2 above.

1.4.3 The following digital files are also provided on the CD-ROM containing the word-processed Presentation Library:

- .1 The .dai file of the Presentation Library, consisting of look-up tables; symbols; and colour tables.

Note that the .dai version is provided as a manufacturer's option for edition 3.4, but may not be available for succeeding editions.

Also note that the "Test Edition Version" of the .dai file is no longer required in IEC 61174 and has been removed permanently from the digital Presentation Library. However symbol SY(CHKSYM 01) has been retained for use in checking symbol size.

The amendments, procedures, the formats and the naming of the digital Presentation Library files are described in sections 9 and 10, and the contents of the files are described in more detail in section 18.

- .2. A "C" program LITDSN for generating light descriptions,
- .3. ECDIS Chart 1 & Colour Differentiation Test Diagram, consisting of:
 - S-57 files containing a collection of all symbols coded as NEWOBJ using the SYMINS attribute and similarly arranged as INT1 [2] for paper charts
 - S-57 files containing combinations of foreground and background colours as line and area geometries.
- .4 Colour calibration software.

The following two sections describe the Display Generator Concept and give an overview of the Presentation Library.

2. BASIC CONCEPT OF A 'DISPLAY GENERATOR' FOR AN ECDIS SYSTEM

The elements of the Presentation Library are handled by the ECDIS Display Generator that is designed by each manufacturer, following the guidelines of this documentation and which performs the link between the object characteristic according to S-57 and the actual presentation on the ECDIS screen. Note that the basic concept for a Display Generator that is described in this section is only an example. There are other concepts to realize the ECDIS presentation. NOTE ALSO THAT THE DISPLAY GENERATOR IS NOT PROVIDED IN THE PRESENTATION LIBRARY; THE MANUFACTURER MUST DEVELOP THIS.

Figure 1 shows how the various elements of the Presentation Library can be linked together in order to display an S-57 object from the SENC. Only the individual elements (symbol library, look-up tables, etc.) are provided in the Presentation Library. It is understood, that the ECDIS manufacturer writes software linking these elements. Please note, that section 8 of this manual gives further details that are of interest to the programmer.

Note particularly section 8.4 dealing with the display of objects depending on date (e.g. DATSTA, DATEND, PERSTA, PEREND) or on display scale (SCAMIN). The requirement to display date-dependent information outside the date at which it is active (for route planning etc.) means that the date-filter in the first diamond of figure 1 will be deliberately by-passed

on request by the mariner. When this option is in use, the mariner must be reminded that the information on the display may not be correct for the actual, current, date and time.

Each graphic command is assigned to the display priority that was retrieved from the look-up table before. The display priorities are defined according to the requirements of the IMO and IHO (see 8.3.4).

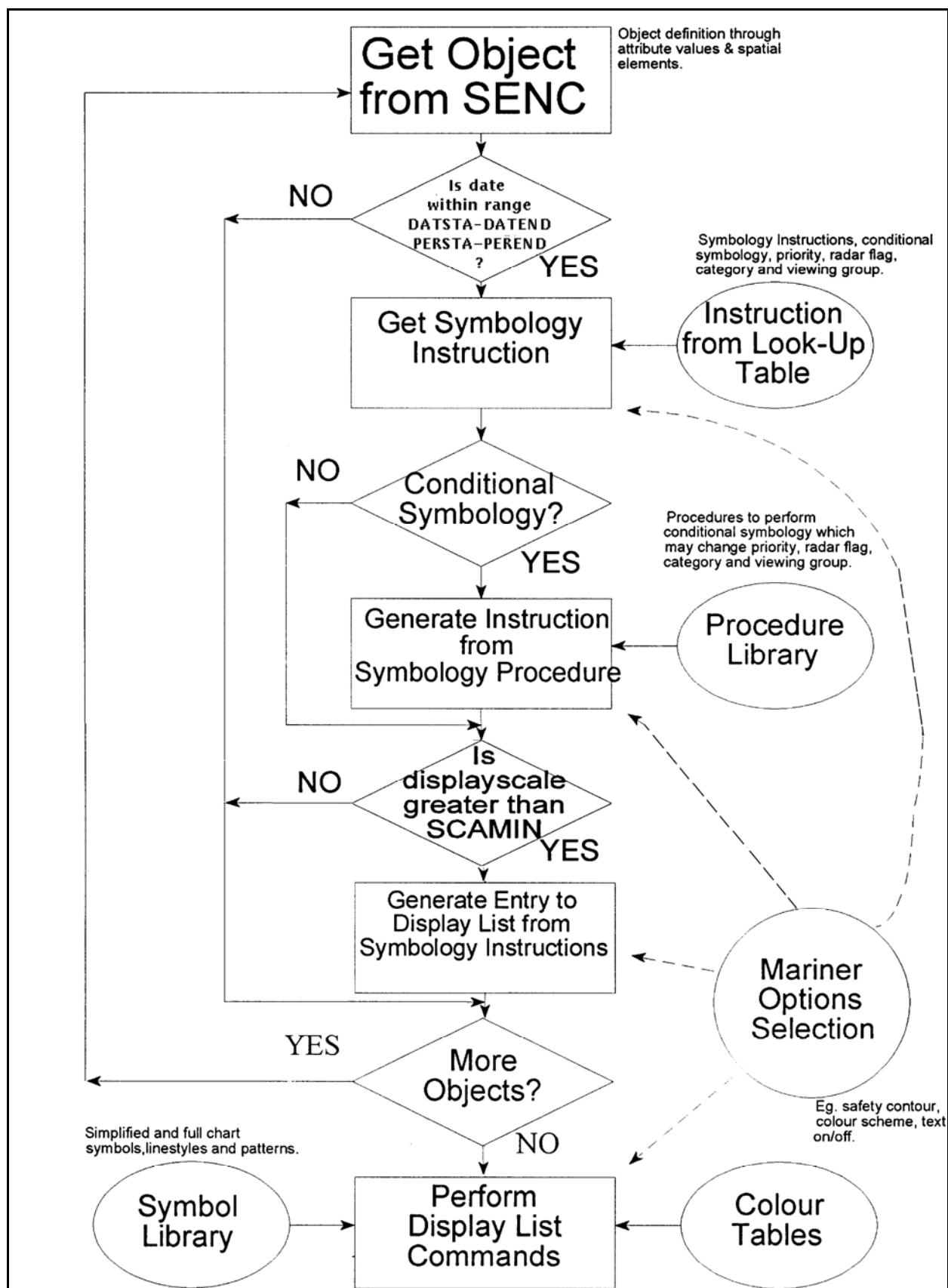


Fig. 1 - Display generator concept

After all objects have been examined by the programmed loop, the display list is filled with graphic commands. The commands are then performed by the ECDIS graphic, which in turn loads symbols from the symbol library and gets the colour values from the colour tables. This method to generate an ECDIS display gives the mariner control over the contents and the appearance of the presentation:

- If he selects, e.g., another safety contour, the display list is renewed in the programmed loop and the depth areas distinguishing shades are changed by a symbology procedure which is called to generate symbology instructions for the object class DEPART (depth area);
- or symbology instructions which refer to the simplified or paper_chart points, plain_boundaries or symbolized boundaries areas, and lines by switching to another look-up table;
- or the generation of the display list is influenced by a filter suppressing text commands;
- or the colour values for the day time are replaced with the values for the night time by selecting another colour table.

Note that the ECDIS should not initiate any change of state automatically or by linkage, e.g., it should not automatically select "lights" because the mariner selects the night colour table. All changes to the composition of the display should be initiated by the mariner.

3. THE ELEMENTS OF THE PRESENTATION LIBRARY - AN OVERVIEW

The Presentation Library consists currently of seven elements:

1. A library of symbols, line styles and fill styles
2. A .tif file (or other medium) set of diagrams that can be displayed or printed on demand and explain the symbology to the mariner (mariners' ECDIS Chart 1)
3. A colour coding scheme which includes the IHO colour tables for day and night time
4. A set of symbology command words from which machine readable instructions can be assembled. The result is a symbology instruction which in turn is processed to symbolize S-57 [7] objects.
5. A set of look-up tables that link object description from the SENC database to the appropriate symbology instructions depending on whether:
 - a) The link is straight forward, i.e., a direct relationship between an object's description and its presentation such as a buoy or land area. In this case the look-up table provides the symbology instruction to show a symbol, an area fill or a line style.
 - b) The link is conditional, i.e., depending on circumstances, for example a depth area, whose colour fill depends on the choice of the safety contour. In this case the look-up table refers the decision to a

conditional symbology procedure that then selects the appropriate symbology instructions.

6. A set of conditional symbology procedures to decide the appropriate symbolization in cases determined by the mariner's selection (e.g., safety contour) or in complex symbols (e.g., light sectors).
7. A catalogue of navigational object classes that comprise objects that the mariner may add to the chart in accordance with IEC 61174 [9], IEC 62288 [10] and that cannot be defined by means of S-57. (These are specified in Part II of the Presentation Library)

The following sections give a short description of the elements of the Presentation Library.

3.1 The Colour Coding Scheme

The Presentation Library uses a colour scheme, which classifies colours by their usage (see section 4). Each colour usage is represented by a token that is a five-letter code. Each colour token corresponds to a colour definition given in CIE coordinates in one of a set of colour tables for different bridge lighting conditions. Symbols, fill styles and line styles refer to the colour tables by using the standardized colour tokens as part of the symbol definition. See section 4 on how to use colour tokens, section 10.4 on how colour tables are transferred in the digital version and section 13 for a listing of the colour coordinates. ECDIS manufacturers should also refer to section 4 of the Colour and Symbol Specifications (C&SS) [5] for details of the design and use of colours.

3.2 The Library of Symbols, Fill Styles and Line Styles

ECDIS manufacturers should also refer to section 3 of the C&SS [5] for details of the design and use of symbols, line & fill styles.

Symbols, area fill patterns and line styles are described in detail in the Symbol Library (section 14 and the Addendum). For edition 3.4, they are also supplied in a machine readable format on the digital file.

3.2.1 Symbols

The Presentation Library provides symbols for point objects which are generally based on the traditional paper chart symbols. In addition to buoy and beacon symbols based on the paper chart, it also provides a set of more compact but more visible 'simplified' buoy and beacon symbols for use under difficult viewing conditions.

See section 7.2 for symbology instructions and 10.6 for details of the digital format.

3.2.2 Fill Styles

The Presentation Library offers various ways to fill areas. They can be filled with an opaque colour; or with a colour shown with some transparency; or with a pattern of symbols (fill pattern) or with a centred symbol. Fill patterns and centred symbols are introduced as a solution for the symbolization of areas in special situations. When using the traditional (paper chart) way, e.g., to symbolize the traffic direction by using an arrow, it might happen that the arrow-symbol moves off the screen because the size and position of the viewing window on the ECDIS chart cannot be predetermined. A fill pattern showing arrows does not have a

certain position on the chart like the paper chart arrow-symbol. It shows up as long as any part of the traffic separation lane can be seen on the screen. A centred symbol moves to the centre of the part of the area that remains in the display window.

The Presentation Library provides look-up tables for plain area boundaries (intended for use at small scale to reduce clutter) and symbolized area boundaries (intended for use at very large scale to show immediately on which side of the boundary the area lies and to identify the area). Note that centred symbols should still be used with symbolized boundaries to symbolize the case when the entire display window lies within an area.

See section 7.4 for symbology instructions and 10.5 for details of the digital format.

3.2.3 Line Styles

The Presentation Library uses two types of line styles: simple line styles and complex line styles. Simple line styles are solid, dashed or dotted lines with varying colour and thickness. Complex line styles are composed of repeating line patterns.

See section 7.3 for symbology instructions and 10.7 for details of the digital format.

3.3 Symbology Instructions

The ECDIS picture is generated from symbology instructions. The symbology instructions are in turn assembled from a set of symbology command words which have been designed for the Presentation Library. Symbology command words are machine readable orders, which can be decoded in a straightforward manner to low level graphic actions that are performed by the ECDIS program to generate the ECDIS picture.

These symbology instructions are also used in the look-up table of the word-processed version.

Currently there are five types of symbology instructions:

- instructions for line objects
- instructions for area objects
- instructions for point objects
- instructions for text labels
- call to conditional symbology procedure

Symbology instructions are explained in section 7.

3.4 Conditional Symbology Procedures

The majority of objects can be presented in a straightforward manner: symbology instructions for lines, areas or symbols are used.

To handle complex presentation situations conditional symbology is required. Conditional symbology is different from standard symbology in that a procedure is processed rather than a straightforward symbology instruction. Thus decisions are made by the computer while it is creating the presentation of an object, which affect symbolization and perhaps also priority, radar flag, category, viewing group.

Further conditional symbology procedures will be used as future requirements arise for which conditional symbology gives the simplest or most effective solution.

The conditional Symbology Procedures are given in section 12.

3.5 The Look-Up Tables and other symbolizing instructions

3.5.1 The Look-Up Tables

Instructions on how to symbolize an instance of an object class can be found in look-up tables that come with the Presentation Library on the distribution CD-Rom.

Due to the need for ECDIS to operate as a real-time navigation display, using an electronic display screen in place of the paper chart, a number of new symbols have been introduced. These identify the safety contour, no data areas, etc. In addition, a simplified and more visible set of buoy and beacon symbols have been developed for bad viewing conditions, such as bright sunlight or at night.

There are five look-up tables:

- paper chart point symbols
- simplified point symbols
- line symbols
- plain area boundary symbols
- symbolized area boundary symbols

The manufacturer should allow the mariner to select freely between the two point symbol tables and the two area symbol tables. There should be no linkages, for example linking simplified point symbols to plain area boundaries, etc.

Each line of a look-up table, called a look-up table entry, contains the code of the addressed object class, a string of attribute-value combinations and symbology instructions or a call to a conditional symbology procedure which in turn creates symbology instructions.

To find the correct symbolization for an instance of an object class the look-up table is entered with the object class code and its presentation-relevant attribute values. The resulting symbology instructions can then be processed by the Display Generator of the ECDIS system.

Every entry to the look-up tables matches either all objects of an object class or a subset. Therefore, the look-up tables are also used to assign the objects to the IMO/IHO display category, display priority, radar flag and optional viewing group. The viewing groups may be used by the mariner to either reduce or add information shown on the screen.

Look-up table entries are supplied in section 11 and in a machine readable format in the .DAI file of edition 3.3. See 8.3, 10.2 and section 11 for further details.

3.5.2 Extended Presentation Instructions which cannot be described by Look-Up Tables

Many display features cannot be handled by look-up tables, generally because they are not discrete S-57 objects and fall between the look-up tables and the conditional symbology procedures. Some examples are the scalebar, the ECDIS chart legend, manual correction identifiers, cursor pick etc. These are described in sections 8.5 through 8.8.

3.6 Mariners' ECDIS Chart 1 and Colour Differentiation Test diagrams

To familiarise the mariner with ECDIS symbology, a printable set of symbol diagrams, following the sequence of the paper chart INT 1 [2], is provided in section 15, along with a numbered list of symbol meanings to explain the use of each symbol.

The digital equivalent, a set of symbol diagrams in the form of S-57 compliant charts, is included on the CD-ROM for edition 3.3. These provide symbol meaning, through cursor picking referring to the symbol descriptions given in the symbol library.

A Colour Differentiation Test diagram is included to enable the mariner to verify the ability of his ECDIS display screen to distinguish between differently colour-coded areas, lines and point symbols. See 15.4 for the diagram and 19.4 for its use.

3.7 Catalogue of Mariners' Navigational Object Classes

IEC 61174 [9] and IEC 62288 [10], describes the Navigational Symbols required by Appendix 3 of the IMO Performance Standards for ECDIS. These symbols for which IEC is the authority represent non-chart objects which are not defined in S-57, e.g., a way point or a line of position. Thus, by agreement with the IEC, and to allow ECDIS manufacturers to handle navigation symbols by the same means as S-57 or chart objects, the Presentation Library includes as Part II a catalogue of navigational objects. As a result, a waypoint can be stored in the SENC and it will be presented on the ECDIS screen using symbols, line styles and fill styles of the Presentation Library. The symbology instruction suitable for a navigational object can be found in the look-up tables like the symbology instruction suitable for any S-57 object class.

Because navigational object classes are non-standard object classes, the class code is a lowercase 6 character acronym according to S-57. Therefore, they do not interfere with S-57.

Please see Part II for further details and definitions of the mariners' navigational object classes.

3.8 Test Edition of the Presentation Library

The Test Edition is no longer required in IEC 61174 and has been removed permanently from the Presentation Library. However symbol SY(CHKSYM 01) has been retained for use in checking symbol size.