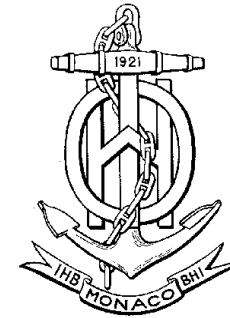


INTERNATIONAL HYDROGRAPHIC ORGANIZATION



IHO TRANSFER STANDARD for DIGITAL HYDROGRAPHIC DATA

Publication S-57
Edition 3.1 - November 2000

Published by the
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Printed - November 2002

Revised Edition - November 2002

Note: This booklet has been updated to reflect the revised status and structure of the S-57 documents, as explained in the Introduction on Page 2.

INTRODUCTION

S-57, Edition 3.0, was published in November 1996. It was decided that Edition 3.0 would be frozen, i.e. remain unaltered, for a period of four years (until November 2000) in order to facilitate ENC production and to provide stability for ECDIS manufacturers.

S-57 is maintained by the Transfer Standard Maintenance and Applications Development Working Group (TSMAD) of the IHO Committee on Hydrographic Requirements for Information Systems (CHRIS).

At a TSMAD Meeting in June 1998, one of the items addressed was what actions should be taken at the end of the freeze period, i.e. in November 2000. It was noted that whilst S-57 is intended to support all hydrographic applications, its use so far was mainly for ENC-related data. Furthermore, at that time, no official ENC services were available, very little ENC data was being used for navigation, and there were no type approved ECDIS systems. It was therefore proposed by TSMAD, and subsequently endorsed by CHRIS, that it would not be desirable to produce a major new edition of S-57 in November 2000.

However, based on practical experience, some hydrographic offices had identified additional attribute values that they required for ENC purposes but which were not contained in Edition 3.0. It was therefore agreed that a minor new edition of S-57, Edition 3.1, would be published at the end of the freeze period, which would incorporate these additional attribute values but no other new information. (Instructions on the use of the new attribute values for ENC purposes are included in the "ENC Product Specification" Edition 2.0 and subsequent editions of the "Use of the Object Catalogue for ENC" documents).

A familiarisation version of Edition 3.1 was made available in November 1999 to allow data producers and equipment manufacturers to familiarise themselves with the new content.

Because of the need to amend their data production software, it was anticipated that certain hydrographic offices would continue to produce ENCs conforming to Edition 3.0, for some time after November 2000. As a consequence, Edition 3.1 was made officially available in November 2000, as planned, but without immediately superseding Edition 3.0. It was agreed that Edition 3.1 would remain frozen until at least November 2002. Hydrographic offices that wish to use the new attribute values, must produce ENCs conforming to Edition 3.1.

S-57 is maintained by means of a Maintenance Document (MD), a new edition of which was usually produced following each TSMAD meeting. The latest edition of the Maintenance Document (MD 08) can be found on the IHO Web-site (www.iho.shom.fr). The S-57 Maintenance Document is cumulative, that is the latest edition also includes the contents of previous editions. To assist those hydrographic offices which continue to issue ENCs conforming to Edition 3.0 after November 2000, the contents of subsequent editions of the Maintenance Document (apart from references to the new attribute values) are applicable to both Edition 3.1 and 3.0 ENCs. Because Edition 3.1 is a minor new edition, the only information that has been transferred to it from the current Maintenance Document are the new attribute values referred to above. "Clarifications" contained in the Maintenance Document apply to Editions 3.0 and 3.1, but are not included in them. "Clarifications" in the latest edition of the MD must therefore be taken into account before making use of Edition 3.1. At the December 2001 meeting of TSMAD, it was decided that the new edition of the maintenance document issued following that meeting, would be the last one issued for S-57 Editions 3.0 and 3.1 (MD No 8 March 2002).

Until the December 2001 meeting of TSMAD, the only sections of S-57 that were not frozen were Appendix A - Annex A (IHO Codes for Producing Agencies), Appendix B1 - Annex A (Use of the Object Catalogue for ENC), - Annex C (Recommended ENC Validation Checks) and - Annex D (INT 1 to S-57 Cross Reference). New editions of these documents were produced as required, usually following the incorporation of changes that had been agreed at TSMAD meetings. At the December 2001 meeting of TSMAD, it was decided that Appendix A - Annex A (IHO Codes for Producing Agencies) and Appendix B.1 - Annex C (Recommended ENC Validation Checks), would be removed from S-57, and published as stand-alone documents, S-62 and S-58 respectively. It was also decided that Appendix B.1 Annex A (Use of the Object Catalogue for ENC) would remain part of S-57, but would be frozen together with the rest of S-57, i.e. the last new edition of Appendix B.1 Annex A is Edition 2.1. The latest editions of Appendix A Annex A and Appendix B.1 Annexes A, B and D, can be found on the IHO Web-site (www.iho.shom.fr).

S-57 Document File Formats

The S-57 documents on the attached CD-ROM have been included in the Portable Document Format (PDF) and MS Word (.doc) file formats. Free Viewing software for each of these formats has also been included on the CD-ROM. The IHO is not responsible for any loss of data or damage that may be caused as a result of the use of these viewers.

Adobe Acrobat Reader

Description. Adobe Acrobat Reader is freely distributed software that provides access to document files in the Portable Document Format (PDF).

PDF is a file format created by Adobe that allows the user to view and print a file exactly as the author designed it, without requiring the same application software or fonts used to create the file. PDF files are compressed to produce smaller file sizes, which reduces file transfer time and required storage space.

A free copy of the latest version of the Acrobat Reader software can be downloaded from the Adobe Web Site at: www.adobe.com

Word 97/2000 Viewer for (Windows 95/98/ NT)

This viewer has been included to enable non MS Word users to view and print documents created in the Word native file format. Users are able to zoom, outline, or view page layout, headers/footers, footnotes, and annotations.

For further information see: <http://www.microsoft.com/ms.htm>

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Maintenance

As described in the Introduction, Edition 3.1 is maintained by means of a cumulative Maintenance Document (MD-08, March 2002). This document includes two sections, namely a clarifications section, and a corrections section.

The **clarifications** section contains improvements to the wording and minor changes to correct editorial errors that do not result in a substantive change to the Standard. (A substantive change is one that would affect an implementation of the base Standard).

Because Edition 3.1 was a minor new edition, the only MD information that was transferred to it was the new attribute values requested by users of the Standard. "Clarifications" contained in the Maintenance Document were not included in Edition 3.1, and therefore remain of relevance to. **"Clarifications" from MD08 must therefore be taken into account before making use of Editions 3.0 and 3.1 where applicable.**

The **corrections** section contains substantive changes that amend the contents of the Standard. These changes will only become effective after they are included and published in the next major edition of the Standard. However, many of the clarifications do not make sense without reference to the corresponding corrections.

Continued Provision of Edition 3.0 ENCs.

Certain hydrographic offices will continue to produce ENCs conforming to Edition 3.0 for some time after November 2000. It is proposed that S-57 Edition 3.0 will no longer be supported by the IHO after December 2004.

Distribution

Owing to the substantial volume of the S-57 documentation, this publication is no longer supplied in paper format. It can be purchased on CD from:

The International Hydrographic Bureau
4, quai Antoine 1er
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Principality of Monaco
Fax: (377) 931 081 40
E-mail: info@ihb.mc
Web-site: <http://www.iho.shom.fr>

This Publication is available free of charge to the Hydrographic Offices of IHO Member States, and their dependent agencies. For all other individuals, institutes or organizations, prices are as indicated in the Catalogue of IHO Publications (P-4) which is available from the IHO website.

S-57 Edition 3.1 DOCUMENT CONTENTS

(Main Sections Only)

S-57 PART 1 - General Introduction

1. Scope
2. Structure of the Standard
3. ISO/IEC 8211 encapsulation
4. References
5. Definitions
6. Conformance
7. Maintenance

S-57 PART 2 - Theoretical Data Model

1. Model introduction
2. Model implementation
3. Presentation

S-57 PART 3 - Data Structure

1. Structure introduction
2. General coding conventions
3. Meta-record coding conventions
4. Feature record coding conventions
5. Spatial record coding conventions
6. Relationship coding
7. Structure implementation
8. Updating

Annex A - ISO/IEC 8211 Summary and Examples

Annex B - Alternate Character Sets

Appendix A - IHO Object Catalogue

Chapter 1 - Object Classes

~~Annex A - IHO Codes for Producing Agencies (Removed from S-57 and now published as S-62)~~

Annex B - Attributes/Object Classes Cross-Reference

Chapter 2 - Attributes

Appendix B - Product Specifications

Appendix B.1 - ENC Product Specification

Annex A - Use of the Object Catalogue for ENC

Annex B - Examples of CRCCoding

~~Annex C - Recommended ENC Validation Checks (Removed from S-57 and now published as S-58).~~

Annex D - INT 1 to S-57 Cross Reference

Appendix B.2 - IHO Object Catalogue Data Dictionary Product Specification

Background

S-57 describes the Standard to be used for the exchange of digital hydrographic data between national Hydrographic Offices and for the distribution of digital data and products to manufacturers, mariners, and other data users. The most significant digital product being delivered in the S-57 format is the Electronic Navigational Chart (ENC). S-57 was adopted as an official IHO standard by the XIVth International Hydrographic Conference, Monaco, 4-15 May 1992 and is also specified in the IMO Performance Standards for Electronic Chart Display and Information Systems (ECDIS) (IMO Resolution A.817(19) as amended).

ENCs

Producers of 'official ENCs', i.e. ENCs authorised by a government authority such as a Hydrographic office, for navigational purposes to comply with SOLAS Chapter V, **must** encode ENCs in accordance with the relevant ENC Product Specification, including its annexes and clarifications from MD08. It is strongly recommended that as a minimum, such authorities also use the various ENC quality assurance software available which utilise the recommended ENC Validation Checks (S-58).

Structure of the Documentation

The S-57 documentation is available in a digital format and consists of eleven Adobe (.pdf) files that have been sub-divided to correlate with the various sections of the S-57 document (See figure 1). These documents have

31Main.pdf	The Main Document, comprising Part 1, Part 2 and Part 3 with its associated Annex A and Annex B.
31ApAch1.pdf	Appendix A Chapter 1 Object Classes.
31ApAch2.pdf	Appendix A Chapter 2 Attributes.
1#Agen.pdf	Appendix A Annex A IHO Codes for Producing Agencies. (Now published as S-62)
31Xref.pdf	Appendix A Annex B Attributes/Object Classes Cross-Reference
20ApB1.pdf	Appendix B.1 ENC Product Specification.
2#USOC.pdf	Appendix B.1 Annex A Use of the Object Catalogue for ENC
10CRC.pdf	Appendix B.1 Annex B Examples of CRC Coding.
2#REVC.pdf	Appendix B.1 Annex C Recommended ENC Validation Checks. (Now published as S-58)
2#INT1S57.doc	Appendix B.1 Annex D INT1 to S-57 Cross Reference.
20ApB2.pdf	Appendix B.2 IHO Object Catalogue Data Dictionary Product Specification.

S-57 Standard Documents

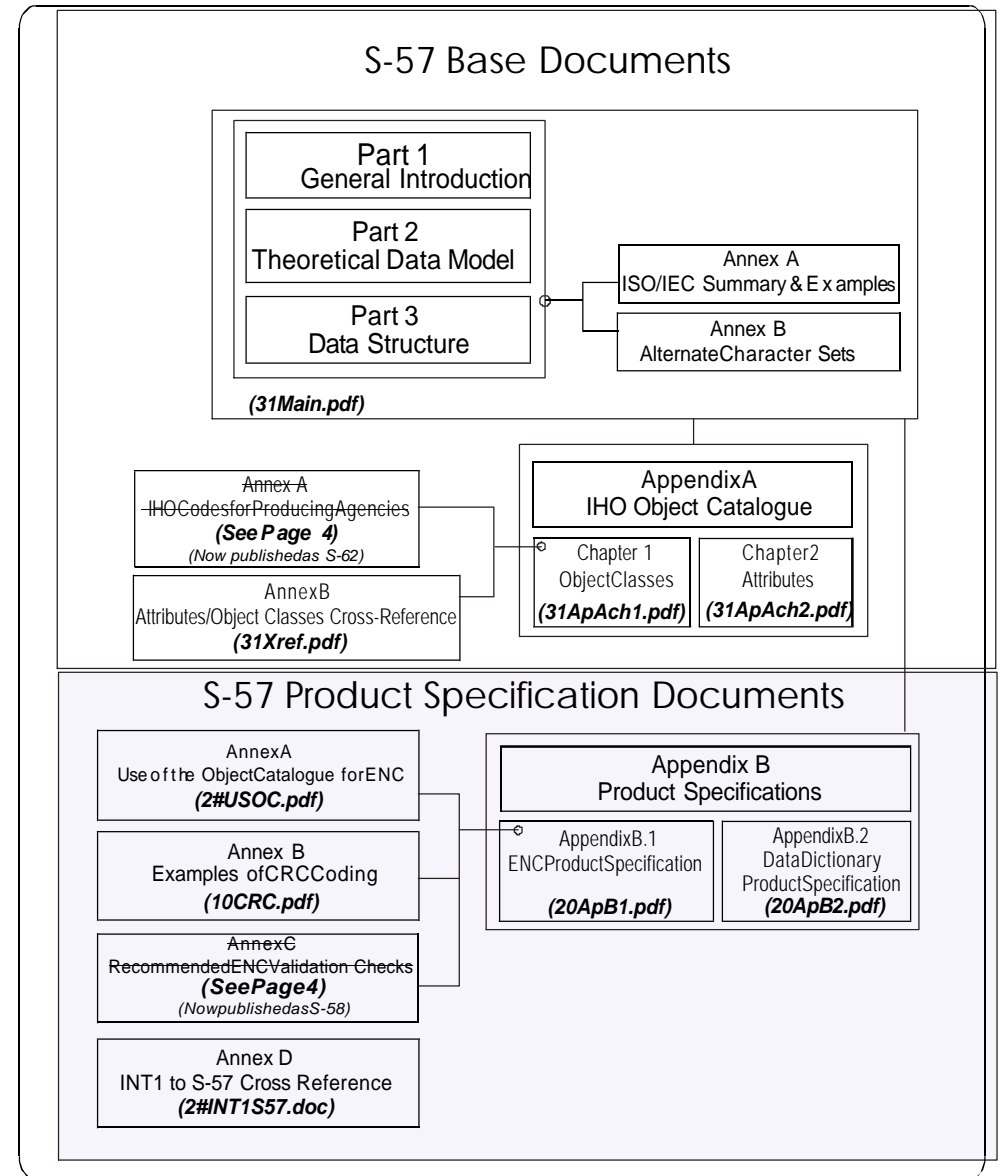
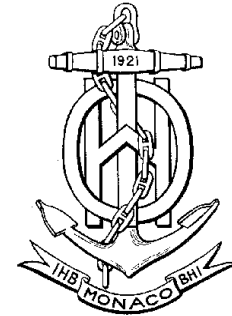


Figure 1

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



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EXPLANATORY BOOKLET
Revised Edition - November 2002

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International Hydrographic Bureau
MONACO

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