All Cartographic Orders thru **CO. 012/04** (dated July 29, 2004) and all Memorandums dated thru **July 26, 2004** have been incorporated into this document. This document is considered current and complete as of: **AUGUST 5, 2004.**

NAUTICAL CHART MANUAL

VOLUME ONE (Parts 1 and 2)

POLICIES AND PROCEDURES

Chapters 1 Through 8

Seventh (1992) Edition

U.S. Department of Commerce
Office of Coast Survey

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 011/04 JUNE 30, 2004

File With Nautical Chart Manual Volume 1, PART 1, RECORD OF CHANGES

TO: All Cartographers
Marine Chart Division

SUBJECT: Record of Changes

APPLICATION: Nautical Chart Manual

Effective immediately, the following attachment shall replace Cartographic Order 001/04, Record of Changes - Nautical Chart Manual, found in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment is a listing of all Cartographic Orders and Memoranda previously issued and which are necessary to properly update the Nautical Chart Manual through June 30, 2004.

The attachment shall be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, immediately after the title page and preceding the Volume 1 Table of Contents.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

REFER TO DIGITAL VERSION OF RECORD OF CHANGES

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Revisions and additions to this Intranet version of the Nautical Chart Manual are provided through the issuance of official Marine Chart Division Cartographic Orders and Memorandums.

The following Cartographic Orders/Memorandums have been issued for insertion into the Nautical Chart Manual Seventh (1992) Edition. Superseded directives are not listed. *(Cartographic Orders/Memorandums listed are arranged in the order of the most recently distributed item.)*

All Cartographic Orders thru **CO. 012/04** (dated July 29, 2004), and all Memorandums dated thru **July 26, 2004** have been incorporated into this document. This document is considered current and complete as of: **AUGUST 5, 2004**.

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 012 / 04	July 29, 2004	Shoreline	3.3.1	
Memorandum	July 26, 2004	Grammar Correction	4.12	
Memorandum	July 23, 2004	Potential Revision of Projection Ticks on Source Diagrams for Nautical Charts Converted to International Borders/Neatlines	2.9.5	
Memorandum	July 23, 2004	Intranet Nautical Chart Manual - New Address		Supersedes MEMO 05-19-03
CO 011 / 04	June 30, 2004	Record of Changes - Nautical Chart Manual		Supersedes C.O. 001/04
Memorandum	June 25, 2004	Nautical Chart Manual, Volume 1, Table of Contents		Supersedes C.O. 013/01
Memorandum	June 15, 2004	IHO/NOS International Border/Neatline Specifications-Replacement Pages	2.10.1.6, 2.10.1.11	Amends C.O. 005/04
Memorandum	June 14, 2004	Note Z, No-Discharge Zone - Web Site Change		Amends C.O. 015/02
CO 010 / 04	May 24, 2004	Nautical Chart Manual Digital File Access and Management System (D-FAMS)	0.3 - 0.6	
Memorandum	April 5, 2004	Nautical Chart Manual Index	Volume 1, Part 2	

(continued)

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 009 / 04	April 1, 2004	Submarine Pipelines	4.13.8	
CO 008 / 04	April 1, 2004	Section 4.14.5.3 U.S. Army Corps of Engineers (USACE) Established Dumping Areas and 4.14.5.3.2 Disposal Areas	4.14.5.3, 4.14.5.3.1, 4.14.5.3.2, and 4.14.5.3.3	
CO 007 / 04	April 1, 2004	Section 4.14.5.2.2 Discontinued (DISUSED) Chemical Munitions Dumping Areas	4.14.5.2.2	
CO 006 / 04	April 1, 2004	Section 4.14.5.2 U.S. Navy (DOD) Established Dumping Areas and Section 4.14.5.2.1 Ammunition and Explosives Dumping Areas	4.14.5.2 and 4.14.5.2.1	
CO 005 / 04	June 14, 2004	IHO/NOS International Border/Neatline Specifications	2.9.5	Supersedes C.O. 028/00
CO 004 / 04	April 1, 2004	Section 4.14.5 Dumping Areas-Overview and Section 4.14.5.1 EPA Established Dump Sites	4.14.5 and 4.14.5.1	Supersedes C.O. 019/03
Memorandum	March 16, 2004	Caution Note-Submarine Pipelines and Cables	4.13.8	
CO 003 / 04	February 19, 2004	Fish Havens	4.12	
CO 002 / 04	January 8, 2004	National Imagery and Mapping Agency (NIMA) Name Change	1.1.1	See also MEMO 11/25/03
Memorandum	January 30, 2004	Chart Symbolization of Federally Regulated Areas	4.14.1	
Memorandum	January 1, 2004	Note *A* on NOS Hydrographic Surveys	4.11.1	
CO 001 / 04	January 1, 2004	Record of Changes - Nautical Chart Manual		
Memorandum	November 25, 2003	National Imagery and Mapping Agency (NIMA) Name Change	1.5.1	See also C.O. 002/04

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
Memorandum	November 25, 2003	Compass Roses	7.3.1	
CO 019 / 03	October 10, 2003	EPA Established "Interim" Dump Sites	4.14.5.1	Superseded by C.O.004/04
CO 018 / 03	September 12, 2003	Columbia River-Channel Tabulations and Tabulation Diagram	4.6.1	
Memorandum	September 11, 2003	Land Contour Type Style Corrections, Line Weight Clarifications	3.4.1	
Memorandum	September 5, 2003	Desk Reference Guide		Also amends C.O. 014/03
Memorandum	August 27, 2003	Nautical Chart Manual: Correction Pages 4-275 through 4-278	4.14.7	
Memorandum	August 1, 2003	Equivalent Graphic Pages for Rocks	4.9	
CO 017 / 03	July 15, 2003	National Weather Service Broadcasts from USCG "High Sites"	6.2.3	
CO 016 / 03	July 14, 2003	Nautical Charts Web Site	2.18	
CO 015 / 03	July 14, 2003	Tide Notes	7.1	
Memorandum	July 9, 2003	Submarine Cables on International Charts	1.3.1	
Memorandum	July 1, 2003	Conversion to Adobe (.pdf format): VOLUME 2 of the Nautical Chart Manual (Intranet Version)	Volume 2	
Memorandum	June 22, 2003	APPENDIX IV: Meters to Fathom Conversion Table	Appendix IV	
Memorandum	June 21, 2003	APPENDIX IV: Feet to Fathom Conversion Table	Appendix IV	
Memorandum	June 20, 2003	APPENDIX IV: Map Scales and Equivalents	Appendix IV	
Memorandum	June 19, 2003	APPENDIX IV: Proportional Divider Settings; Light Characteristic Phases	Appendix IV	

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 014 / 03	June 16, 2003	Cartographic Order Format	0.1 and 0.2	Amended by MEMO 09-05-03
CO 013 / 03	June 2, 2003	Nautical Chart Catalogs	1.7.4	
CO 012 / 03	May 29, 2003	Subdivision of Selected Projection Lines	2.10.1.1	Incorporated into C.O. 005/04
CO 011 / 03	May 30, 2003	Samples: Margin and Border Note Formats; Small-Craft Chart and Cover Formats	Appendix IV	
CO 010 / 03	May 29, 2003	Nautical Chart Manual, Volume 2, Table of Contents	Table of Contents	Supersedes C.O. 010/01
CO 009 / 03	May 28, 2003	Chart Formats	2.5.2	
CO 008 / 03	May 27, 2003	Small-Craft Charts	1.3	
Memorandum	May 19, 2003	Intranet Nautical Chart Manual - New Address	4.11.4	Amends MEMO 09-12-02
CO 007 / 03	April 18, 2003	Nomenclature, and Small-craft	7.4	
CO 006 / 03	April 11, 2003	Correction to Specifications for Breakers	3.3.2	
Memorandum	April 9, 2003	Clarification on Snags and Obstructions	4.11.4	
CO 005 / 03	March 31, 2003	Magnetics	7.3	Supersedes MEMO 07-30-02
CO 004 / 03	March 24, 2003	Wreck Charting Policy Revision	4.10.3	
Memorandum	March 28, 2003	Elevations of Bare Rocks (Islets)	4.9	
CO 003 / 03	February 18, 2003	Surveyed Areas with a High Concentration of Obstructions and/or Sunken Wrecks	4.11.1.1	
CO 002 / 03	January 21, 2003	Placement of Soundings	4.3.2.1	
CO 001 / 03	January 1, 2003	Record of Changes-Nautical Chart Manual	Record of Changes	Superseded by C.O. 001/04

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
Memorandum	December 31, 2002	Deletion of "2002 The Year of Clean Water" Logo	Appendix IV	Supersedes C.O. 002/02
CO 015 / 02	October 1, 2002	No-Discharge Zone (NDZ) Note	4.14.1.1	Amended by MEMO 06-14-04
Memorandum	September 12, 2002	Conversion to Adobe (.pdf format) of the Nautical Chart Manual -Volume 1 (Intranet Version)		Amended by MEMO 05-19-03
CO 014 / 02	September 3, 2002	Record of Changes - Nautical Chart Manual		Superseded by C.O.001/03
CO 013 / 02	August 5, 2002	Print-on-Demand Announcement Note	7.6.3	
Memorandum	July 30, 2002	Magnetic Variation Note	7.3.3	Superseded by C.O.005/03
CO 012 / 02	July 23, 2002	Edition Dates and Corrected Through Dates	2.4.3	
CO 011 / 02	July 22, 2002	Edition Dates	2.6	Supersedes MEMO 03-14-02
Memorandum	July 22, 2002	Nautical Chart Manual Correction Pages: 7-5 through 7-8	7.3.1	
Memorandum	July 17, 2002	Nautical Chart Manual Correction Pages: 4-239 through 4-258.2	4.12	
Memorandum	July 8, 2002	Nautical Chart Manual Correction Pages, IV-20e and IV-20f	Appendix IV	
Memorandum	June 28, 2002	Nautical Chart Manual Correction Pages: 7-5 through 7-18	7.3.1	
Memorandum	June 28, 2002	Nautical Chart Manual Correction Pages: 7-1 through 7-4	7.1.1	
CO 010 / 02	June 24, 2002	Caution Note-"Limitations on the Use of Radio Signals	6.2.1	
Memorandum	June 21, 2002	Nautical Chart Manual Correction Pages: 4-35 to 4-40	4.3.3	

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
Memorandum	June 15, 2002	Notice to Mariners Caution Note Correction	1.4.5.6	Supersedes MEMO 05-22-02
CO 009 / 02	June 15, 2002	Nautical Updating Service Note	1.7.10	
Memorandum	June 12, 2002	Nautical Chart Manual Correction Pages-Pages 6-7 through 6-30	6.1.3	
Memorandum	May 22, 2002	Notice to Mariners Caution Note	1.4.5.6	Superseded by MEMO 06-15-02
CO 008 / 02	May 18, 2002	Eelgrass	4.14.2	
Memorandum	May 8, 2002	Nautical Chart Manual Page Header Number Revision	5.3.2	
Memorandum	May 2, 2002	Nautical Chart Manual Correction Pages - Page Header Number and Section Number Revisions; Correction Pages-Pages 5-41 through 5-44	5.10.2.2	
Memorandum	May 1, 2002	Nautical Chart Manual Correction Pages - Page Header Number and Section Number Revisions; Correction Pages-Pages 5-19 through 5-22	5.4.2	
Memorandum	May 1, 2002	Nautical Chart Manual Page Header Number Revisions; Correction Pages-Pages 5-33 through 5-40	5.10.2	
Memorandum	May 1, 2002	Nautical Chart Manual Page Header Number Revisions; Pages 5-45 through 5-50	5.10.3	
CO 007 / 02	April 30, 2002	Corrected Through Dates	1.4.5	
Memorandum	April 30, 2002	Nautical Chart Manual Intracoastal Waterway Aids to Navigation paragraphs (and Note Examples) Removed from “Ranges” Section; Page Header Number and Section Number Revisions; Correction Pages-Pages 5-23 through 5-32	5.4.3	
CO 006 / 02	April 18, 2002	Nautical Chart Manual NOS/ENC Object Specifications (Navigational Aids) Interpreting Ambiguous Light List Information	5.30.RF	

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 005 / 02	April 17, 2002	Nautical Chart Manual NOS/ENC Object Specifications (Navigational Aids) Translation Tables	5.30.RF	
CO 004 / 02	April 16, 2002	Nautical Chart Manual NOS/ENC Object Specifications (Navigational Aids) Reference Section and Object Glossary	5.30.RF	
CO 003 / 02	April 18, 2002	Nautical Chart Manual NOS/ENC Object Specifications (Navigational Aids) General Encoding Information	5.30	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Acknowledgement Note	2.3.2	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Chart Parameter Correction Form; Sales Agent Credit Symbol	2.5.15	Superseded by C.O.011/02
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - North American Datum Label and Notes	2.8.1	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Lake Diagram; Sounding Units Label (Canadian Chart Coverage); Heights Note	2.8.2	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Figure 3-1: Shoreline and Foreshore Features	3.3	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Pump-out Facility Example	3.8	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Bridges and Overhead Power Cables	3.11.1	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Fathoms and Tenths Sounding Units Symbolization	4.11.1	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Page - Figure 4-1: Source Diagram	4.2.2	

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Fish Haven Labels	4.12	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Dumping Ground Labels; Disposal Area Note; Colreg Note	4.14.5	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Cleared Depths	4.15.4	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Chart Specifications Form	2.5.13	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Chart Projection Figures	2.9.3	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Plane Coordinate Grid Note	2.9.5	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Bar Code Example	2.17	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Pages 5-15 and 5-16: Section Number Revision	5.4	
Memorandum	March 14, 2002	Nautical Chart Manual Correction Pages - Pages 5-5 and 5-6	5.3	
Memorandum	March 14, 2002	Nautical Chart Manual: Page Header Number Revision; Correction Pages-Pages 5-9 and 5-10	5.3.2	
Memorandum	March 14, 2002	Nautical Chart Manual :Section Number Revisions; Correction Pages-Pages 5-11 and 5-14	5.3.3	
Memorandum	March 14, 2002	Nautical Chart Manual Page Header Number and Section Number Revisions; Correction Pages-IALA Maritime Buoyage System Notes	5.4	

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 002 / 02	January 17, 2002	"2002 The Year of Clean Water" Logo	Appendix IV	Superseded by MEMO 12-31-02
CO 001 / 02	January 2, 2002	Record of Changes		Superseded by C.O.001/03
CO 023 / 01	December 21, 2001	Nautical Chart Manual, Chapter 5 Navigational Aids: Updating of General Information and Embedding of ENC Requirements	5	
CO 022 / 01	December 14, 2001	Response to Distorted Projection Lines	2.9.1	
CO 021 / 01	December 7, 2001	Revision of Temporary Defects Caution Note and the Combined Temporary Defects/Seasonal Aids Caution Note	5.1	
CO 020 / 01	December 1, 2001	No-Discharge Zones	4.14.1	
CO 019 / 01	October 3, 2001	EPA-Established Dump Sites	4.14.5	Supersedes CO's 002/01 and 003/01
CO 018 / 01	October 2, 2001	International Maritime Organization Adopted No Anchoring Areas	4.14.4	See also C.O. 017/01
CO 017 / 01	October 1, 2001	Anchorage Areas	4.14.4	See also C.O. 018/01
CO 016 / 01	Never Issued			
CO 015 / 01	June 18, 2001	ENC Encoding of Sediment Traps	4.30.13 4.30.14 4.30.15	
CO 014 / 01	June 18, 2001	Sediment Traps	4.6.5	
Memorandum	May 29, 2001	Nautical Chart Manual Length Conversion Tables	Appendix IV	
Memorandum	May 25, 2001	Updating the Nautical Chart Manual Preface	Preface	
CO 013 / 01	May 18, 2001	Nautical Chart manual, Volume 1, Table of Contents	Table of Contents	Superseded by MEMO 06-25-04

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
CO 012 / 01	May 15, 2001	Type Specifications	IV	
CO 011 / 01	May 18, 2001	Particularly Sensitive Sea Areas	4.14.7	
CO 010 / 01	May 23, 2001	Nautical Chart Manual, Volume 2, Table of Contents	Table of Contents	Superceded by C.O. 010/03
CO 008 / 01	January 31, 2001	NOS/ENC Object Specifications-Topological Structure	2.30.7	
CO 007 / 01	January 31, 2001	NOS/ENC Object Specifications-3E Areas	2.30.4.3	
CO 006 / 01	January 31, 2001	NOS/ENC Object Specifications-Which Large Scale Chart Shall be the Official Source Document	2.30.4.2	
CO 005 / 01	January 31, 2001	Introduction of ENC General Practices and Procedures to the Nautical Chart Manual	2.3	
CO 004 / 01	January 31, 2001	Incorporation of ENC Object Depth Contour-NOS/ENC Object Specification Pages	4.30.13	
CO 003 / 01	February 7, 2001	Dump Sites	4.14.5	Superceded by C.O. 019/01
CO 002 / 01	January 30, 2001	EPA Dumping Areas-Standardization of Primary Label	4.14.5	Superceded by C.O. 019/01
Memorandum	January 8, 2001	Chapter 6		Amends MEMO 07-12-00
Memorandum	January 8, 2001	Chapter 2		Supersedes 42 selected pages.
Memorandum	January 8, 2001	Chapter 3		Amends MEMO 07-12-00
Memorandum	January 5, 2001	Chapter 4		Supersedes 20 selected pages.
CO 001 / 01	January 2, 2001	Record of Changes		Superceded by C.O. 001/02
Memorandum	November 30, 2000	List of Acronyms	Acronyms	Amended by MEMO 09-05-03

RECORD OF CHANGES TO THE NAUTICAL CHART MANUAL

Carto Order/ Memo	Issue Date	Subject	Section	Remarks
Memorandum	November 30, 2000	Chapter 8		Amends MEMO 07/19/00
Memorandum	November 30, 2000	Chapter 1		Amends MEMO 07-12-00
Memorandum	September 22, 2000	Chapter 4		Amended by MEMO 01-05-01
CO 029 / 00	August 9, 2000	Overhead Pipes	3.12	
CO 028 / 00	July 27, 2000	Selective Implementation of IHO Border/Neatline Subdivision Specifications	2.10.1	Superceded by C.O. 005/04
Memorandum	July 26, 2000	Chapter 2		Amended by MEMO 01-08-01
Memorandum	July 21, 2000	Chapter 7		
Memorandum	July 19, 2000	Chapter 8		Amended by MEMO 11-30-00
Memorandum	July 19, 2000	Chapter 5		
Memorandum	July 12, 2000	Chapter 6		Amended by MEMO 01-8-01
Memorandum	July 12, 2000	Chapter 3		Amended by MEMO 01-8-01
Memorandum	July 12, 2000	Chapter 1		Amended by MEMO 11-30-00 and C.O. 007/02
Memorandum	June 23, 2000	Standard Notes	Appendix IV	Amends C.O. 024/00
CO 024 / 00	May 17, 2000	Standards Notes	Appendix IV	Also see MEMO 6-23-00
CO 022 / 00	May 12, 2000	Nautical Chart Manual Index	Index	
Memorandum	November 30, 1999	Chapter 1		Amends 10 pages
CO 003 / 97	May 5, 1997	KAPP Numbers	Appendix IV	
CO 003 / 96	October 1, 1996	Type Specifications Revision	Appendix IV	See C.O. 012/01

END

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

JUNE 25, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Allen L. Taylor
Acting Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual, Volume 1, Table of Contents

Effective immediately, the following attachment shall replace pages iii through xxii in the Nautical Chart Manual, Volume 1, Part 1 Seventh (1992) Edition.

The attachment updates the Nautical Chart Manual - Volume 1 Table of Contents and is to be inserted into the Nautical Chart Manual, Volume 1, Part 1 immediately after the Nautical Chart Manual, Volume 1, Part 1 title page.

Attachment

NAUTICAL CHART MANUAL

TABLE OF CONTENTS

VOLUME ONE - PART 1

Policies and Procedures

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5.30 Navigational Aids - National Ocean Service/Electronic Navigational Charts Object Specifications

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6 LANDMARKS

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NAUTICAL CHART MANUAL
(Intranet Version)

See Nautical Chart Manual, Volume 2 for the Volume 2 Table of Contents.

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REVISED AUGUST 1, 2002

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

MAY 25, 2001

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Updating of the Nautical Chart Manual Preface

The attachment updates and replaces the Preface in the Nautical Chart Manual, Volume 1, Seventh (1992) Edition by:

(1) incorporating the Office of Coast Survey (OCS) organizational name change,

(2) incorporating the division of Volume 1 into two (2) parts,

(3) incorporating the Office of Coast Survey's (OCS) entry into the production of raster and Electronic Navigational Charts (ENCs),

(4) incorporating the NOS address change for comments and suggestions concerning the Nautical Chart Manual,

(5) deleting the Preface's page number (i.e., xiii).

The attachment is to be inserted into the Nautical Chart Manual, Volume 1, Part 1, immediately before the Acknowledgements page.

Attachment

NAUTICAL CHART MANUAL

PREFACE

The Nautical Chart Manual is a comprehensive documentation of cartographic standards, procedures, and policies in two volumes for use within the Office of Coast Survey (OCS) in the production of nautical charts. It also serves to inform chart users and other interested parties of the policies and practices used in producing Office of Coast Survey nautical charts.

The economic importance and development of an area, the number and kinds of marine dangers or hazards therein, and the scale requirement are some of the variables that make a nautical chart an individual work. The chart, however, must still conform to prescribed cartographic standards and policies. The primary purpose of this manual is to define these standards to ensure accuracy, completeness, consistency, uniformity and simplicity in the general appearance of the nautical charts compiled by OCS.

The need for documented nautical chart production standards, procedures, and policies was recognized as early as 1920 when OCS published its first Nautical Chart Manual, a 34-page pamphlet. This manual was expanded and updated over the years, and in 1963 was published in its sixth edition. However, by 1992 more than 500 documents had been issued that amended, supplemented or affected the 1963 manual in some way. A simple updating of the manual was not realistic due to the quantity of new cartographic items, methods, policies and procedures that had been introduced since 1963.

This completely revised Nautical Chart Manual, Seventh Edition, contains 8 chapters and 4 appendices in two volumes defining OCS policies, procedures, and other information required for nautical chart production. Volume One, which is divided into two (2) parts, contains cartographic policies and procedures. Volume Two is comprised of valuable reference materials including an extensive glossary (of nautical chart compilation terms) which has been assembled from 40 authoritative national and international reference works; a summary of OCS-approved standards and specifications for the various symbols used in nautical charting; a list of the abbreviations used in the manual; and an extensive index.

Additional items and topics provided in the Nautical Chart Manual, Seventh Edition, include a correlation of the OCS publication Chart No. 1, Nautical Chart Symbols Abbreviations and Terms to Nautical Chart Manual topographic and hydrographic features; a historical background of OCS and its area of nautical charting responsibility; the legal requirements of the mariner to use appropriate-scale, up-to-date charts in U.S. ports; the coordination of international charting standards with existing OCS chart compilation policies, the relationship between OCS and international charting authorities; and OCS' production of both raster and Electronic Navigational Charts (ENCs).

This manual is intended for internal OCS use, with provision for a limited exchange within the nautical charting community. Comments and suggestions concerning this manual and its contents are encouraged and should be forwarded to the Chief, Marine Chart Division, N/CS2, National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

REVISED MAY 25, 2001

NAUTICAL CHART MANUAL - VOLUME 1 - POLICIES AND PROCEDURES

Seventh (1992) Edition

MISCELLANEOUS NAUTICAL CHART MANUAL INFORMATION

U.S. Department of Commerce
Office of Coast Survey

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

JULY 23, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Allen L. Taylor
Acting Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Intranet Nautical Chart Manual - New Address

The address of the Intranet version of the Nautical Chart Manual (Volume 1) has changed. It can now be accessed at the following Intranet address: http://mcd01/chartman/ncm_vol1.pdf. [Please note the underbar between "ncm" and "vol1" (i.e., ncm_vol1)]

The Intranet version of the Nautical Chart Manual can also be reached by accessing the OCS Intranet; clicking on "MCD", then clicking on "Nautical Chart Manual".

This memorandum supersedes the Memorandum dated May 19, 2003, also entitled "Intranet Nautical Chart Manual-New Address", and is to be inserted into the Nautical Chart Manual, Volume 1, Part 1 immediately after the Acknowledgments page.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

SEPTEMBER 12, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Conversion to Adobe (.pdf format) of the Nautical Chart Manual-Volume 1 (Intranet Version)

Effective immediately, the Intranet version of the Nautical Chart Manual, Volume 1, Seventh (1992) Edition will now be presented in Adobe (.pdf) format.

The Intranet location of the new version of the digital Nautical Chart Manual **has not changed** and is still accessible either through the Office of Coast Survey Intranet or by directly typing the following web address:

http://ocsnet.ncd.noaa.gov/mcd/chartman/ncm_vol1.pdf

Some of the advantages of the new Adobe format include the following:

1. Document content, layout and formatting comparable to the analog copy of the Nautical Chart Manual.
2. Word search capability.
3. Easier accessibility of chapters through the use of pre-established bookmarks.
4. Size 8 1/2" x 11" page printing capability.
5. Improved graphics and note examples.
6. Unlimited view magnification capability, and,
7. More user-friendly document navigational tools.

To download a free copy of the ADOBE Reader 5.0, go to the following web address:

http://www.adobe.com/products/acrobat/readstep2.html

This memorandum is to be inserted into the Nautical Chart Manual, Volume 1, Part 1, immediately after the Acknowledgements page.

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 014/03 June 16, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 0.1 and 0.2

TO: All Cartographers
Marine Chart Division

SUBJECT: Cartographic Order Format

APPLICATION: Nautical Chart Manual, Seventh (1992) Edition.

Effective immediately, the attachment shall be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, immediately preceding Section 1, Introduction. The attachment documents the standard format and procedures for issuance of cartographic orders, which are used for additions and revisions to the manual. Annotations are provided describing spacing, type sizes and fonts to be used in cartographic orders.

Attachment

Alexandra B. Heliotis
Acting Chief, Marine Chart Division

0.1 Cartographic Orders

Cartographic orders are issued as additions, deletions or revisions to the Nautical Chart Manual when a new policy or procedure is established or existing policy is changed. These directives must be approved and signed by the Chief, Marine Chart Division (MCD).

A cartographic order consists of a cover letter explaining the purpose of the cartographic order and an attachment consisting of replacement pages for the manual. The replacement pages detail specifications, procedures and reference information. Cartographic orders are arranged so that existing double-sided pages of the manual can be replaced with the new pages.

1. Procedure:

The procedure for creating a cartographic order is as follows:

a. Assignment

Cartographic Orders are assigned by the Chief, Quality Assurance, Plans and Standards Branch (QAPSB).

b. Research Background Reference Materials

A cartographic order must be thoroughly researched for background information that may affect MCD policies and procedures and the Nautical Chart Manual.

Background reference materials may include, but are not limited to, the following:

National Ocean Service (NOS) Nautical Chart Manual
NOS Symbol Specification Sheets
NOS Hydrographic Manual
NOS Wire Drag Manual
U.S. Coast Pilot
U.S. Coast Pilot Manual
U.S. Chart No. 1, Nautical Chart Symbols, Abbreviations and Terms
Shore and Sea Boundaries
American Practical Navigator
U.S. Coast Guard (USCG) Aids to Navigation Manuals
USCG Navigation Rules
USCG Light Lists
Federal Register
U.S. Code

Code of Federal Regulations
National Imagery and Mapping Agency (NIMA) Product Specifications
International Hydrographic Organization (IHO) Technical Resolutions
International Hydrographic Organization Hydrographic Dictionary (S-32)
Chart Specifications of the IHO and Regulations for International (INT) Charts (MP-004)
IHO Transfer Standard for Digital Hydrographic Data (S-57)
IHO INT 1, Symbols, Abbreviations, Terms Used on Charts
IHO INT 2, Borders, Graduation, Grids and Linear Scales
International Association of Lighthouse Authorities (IALA) Publications
International Maritime Organization (IMO) Ship's Routing
Minutes of meetings–national and international
Canadian Hydrographic Service (CHS) Cartographic Standing Orders
United States Geological Survey (USGS) Map Standards
Chapman's Piloting
Dutton's Navigation & Piloting
Quality Assurance, Plans and Standards Branch Subject Files
Various technical reports

c. Research Web Sites

Numerous web sites available on the Internet may also be used for reference. A sample of useful web sites follows:

www.noaa.gov	National Oceanic and Atmospheric Administration
www.nauticalcharts.noaa.gov	Office of Coast Survey
www.co-ops.nos.noaa.gov	Center for Operational Oceanographic Products (NOS)
www.uscg.mil	U.S. Coast Guard
www.nima.mil	National Imagery and Mapping Agency
www.access.gpo.gov	U.S. Government Printing Office (Federal Register, U.S. Code, CFR)
www.epa.gov	U.S. Environmental Protection Agency
www.usace.army.mil	U.S. Army Corps of Engineers
www.usgs.gov	U.S. Geological Survey
www.iala-aism.org	International Association of Lighthouse Authorities
www.iho.shom.fr	International Hydrographic Organization
www.imo.org	International Maritime Organization

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

SEPTEMBER 12, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Desk Reference Guide

Effective immediately, the attachment replaces pages 0-3, 0-4, the first two pages of the LISTING OF ACRONYMS, and index pages 11 and 12 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

All copies of the Desk Reference Guide have been recalled by QAPSB. These replacement pages remove all references to that document from the Nautical Chart Manual.

d. Determine the Authenticity and Currentness of the Background Material.

After background subject matter has been evaluated, determine whether and how the required revision affects policy. New policy or a change in policy may be required. Primary considerations to be addressed include safety requirements, legal requirements, internationally recognized standards and technical advances.

e. Resolution of Conflicting Information

Resolve any conflicts between references.

Resolve any conflicts between the proposed cartographic order and other material issued in the Nautical Chart Manual or Chart No. 1.

After resolving all conflicts between references, text and graphic symbology must be developed, and a draft of a proposed cartographic order is prepared.

Incorporate previously issued material on the same subject into the new cartographic order, making it all-inclusive.

f. Incorporate Miscellaneous Documentation

When a cartographic order is written, it must incorporate any non-superseded policies contained in any existing miscellaneous documentation. Great care must be taken since some of these documents may have not been updated and therefore some of the information is no longer valid.

g. Develop Text and Graphic Symbology Required for the Revision

Write text including background, outlining procedures and stating specifications for the requirement.

Create associated graphics if required, to incorporate into the cartographic order.

Indicate size, style, color, and placement of labels and notes.

h. Evaluate the Need to Limit the Scope of the Cartographic Order

Decide if the required revision is common to all products or limited to certain products.

Decide if the required revision affects all scales of charts or is confined to certain geographic areas.

i. Coordination with Other Offices

Coordination may be required with all affected internal offices of the Marine Chart Division (MCD),

Office of Coast Survey (OCS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce (DOC), NOAA Office of General Counsel (OGC), and external agencies such as the Department of Defense (DOD), Department of the Interior (DOI), Department of State (DOS), United States Coast Guard (USCG), other Federal agencies, state and local governments, international agencies and chart users.

j. Prepare Cover Letter

The cover letter of a cartographic order must refer to any superseded pages of the Nautical Chart Manual, canceled directives, and related material as appropriate.

k. Submit Draft for Comments

A draft of a proposed cartographic order must be submitted for comments as directed by the Chief, QAPSB. Typically, a draft cartographic order is reviewed within QAPSB before distribution to each branch chief within MCD. Copies of the proposed cartographic order may also be transmitted to other government organizations and interested parties, as directed. Any digital or paper copy of a cartographic order not bearing the signature of the Chief, MCD, must be clearly identified as a draft.

Disagreements and suggested improvements resulting from a draft submitted for comments must be resolved. Resolved agreements shall be incorporated into the proposed cartographic order.

l. Submit Revised Drafts

Additional drafts shall be prepared for review as directed by the Chief, QAPSB.

Resolve issues where needed.

Resubmit drafts for approval.

m. Obtain a Number for the Cartographic Order

A cartographic order number shall be assigned by the Chief, QAPSB, or a designee, only when a final draft of a cartographic order is being prepared for the signature of the Chief, MCD. A list of cartographic orders and memoranda shall be maintained by the Chief, QAPSB, or designee.

n. Obtain Approval for Final Text of the Revision

A final draft of the proposed cartographic order shall be placed in a folder and routed to the Chief, QAPSB, Deputy Chief, MCD and the Chief, MCD. Background materials, prior drafts and comments received from others during the review phase, shall also be included in the folder.

Receive comments and redraft for final approval if needed.

After signature by the Chief, MCD, copies shall be made of the completed cartographic order.

o. Initiate Printing of the Revision

Establish number of copies required.

Print enough copies for each copy of the Nautical Chart Manual distributed and in stock

Prepare extra copies for Quality Assurance, Plans and Standards Branch files.

The cover letter shall print on canary yellow paper.

Replacement pages shall print on white paper.

p. Archive the Signed Cartographic Order and Background Files in the Quality Assurance, Plans and Standards Branch Files

q. Punch Paper Copies of the Cartographic Order

Copies shall be punched, using a twelve-hole punching machine, and stapled, before distribution of the cartographic order.

r. Distribute Revision to All Recipients of the Nautical Chart Manual.

Check distribution list of internal and external recipients.

A cartographic order shall be distributed according to the distribution list maintained by the Chief, Quality Assurance, Plans and Standards Branch.

Extra copies shall be kept on file in the Quality Assurance, Plans and Standards Branch Files.

s. Update the Digital Version of the Nautical Chart Manual

A digital copy of each cartographic order shall be incorporated into the digital version of the Nautical Chart Manual maintained on a file server.

A digital version of the Nautical Chart Manual shall be archived upon each revision from a cartographic order.

t. Update the Table of Contents, Index, Appendices and Cell Libraries

Appropriate changes to the Nautical Chart Manual Table of Contents, Appendices or Index shall be noted in a master copy located in the Quality Assurance, Plans and Standards Branch. Those changes shall be distributed as directed by the Chief, QAPSB.

Appropriate changes to the symbol cell library or notes cell library shall be arranged by the author of a signed cartographic order.

2. Format

a. Format of a Cover Letter

One inch margins shall be used at the top, sides and bottom of a cover letter.

Full justification of text shall be used in a cover letter.

The cover letter shall indicate where to place the replacement pages in the manual.

Page 2 of a cover letter shall print on the reverse side of Page 1.

Page 2 of a cover letter shall not be numbered if the cover letter consists of only two pages.

Page 2 of a cover letter shall be numbered at the top of the page, centered, in 12 pt. Times New Roman when the cover page exceeds two pages.

Additional pages of a cover letter shall print back to back and be numbered sequentially.

b. Format of Replacement Pages

One inch margins shall be used at the top, sides and bottom of replacement pages.

Full justification of text shall be used with replacement pages.

A decimal section number shall be listed at the upper outside corner of each replacement page of the Nautical Chart Manual. The section number used is the number of the first section or remainder of a section to appear on that page. Section numbers include the chapter number and sequential decimal identifiers, such as Section 5.2.

Replacement pages are numbered at the bottom of the page, centered, and comprised of the chapter number, hyphen and sequential whole numbers, such as 5-76. When pages need to be inserted between existing pages, decimal extensions are added to the sequential page numbers, such as 5-75, 5-75.1, 5-75.2, 5-75.3, 5-76.

When a blank page is necessary to maintain the numbering system, the standard page header with section number and the name of the manual shall be used. The standard page footer with page number and revision date shall also be used. The center of the page shall be labeled thus:

(This page is intentionally blank.)

When only part of the page is used for text, diagrams, notes, etc., the following label may be used:

(The remainder of this page is intentionally blank.)

4. Sample Cartographic Order

The following pages depict a sample fictitious cartographic order indicating the standard components and format.

(The remainder of this page is intentionally blank.)

(12 pt. Times New Roman bold type, all caps) **NATIONAL OCEAN SERVICE**
(12 pt. Times New Roman bold type, caps and lower case) **Office of Coast Survey**
(12 pt. Times New Roman bold type, caps and lower case) **Marine Chart Division**

vertical space
vertical space

vertical space *(14 pt. Times New Roman bold type, all caps)* *(12 pt. Times New Roman bold type)*

CARTOGRAPHIC ORDER 000/03 **June 16, 2003**

vertical space

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 2, SECTION 0.2

vertical space *(12 pt. Times New Roman bold type, all caps)*
vertical space

TO: *3 tabs* All Cartographers *(12 pt. Times New Roman type, caps and lower case)*
Marine Chart Division

vertical space

SUBJECT: *2 tabs* *(subject of carto order in 12 pt. Times New Roman type, caps and lower case)*

vertical space

APPLICATION: *tab* All Affected Nautical Charts *(12 pt. Times New Roman type, caps and lower case)*

vertical space
vertical space

Effective immediately, the attachment replaces Pages 0-9 and 0-10 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition. Give reasons for Cartographic Order and a brief description of the policy changes. Text in this paragraph should be in 12 pt. Times New Roman (not bold), with full text justification. This directive supersedes Cartographic Order 0XX/03.

vertical space

Attachment *(12 pt. Times New Roman type, caps and lower case)*

vertical space
vertical space
vertical space
vertical space

Nicholas E. Perugini *(12 pt. Times New Roman type, caps and lower case)*
Captain, NOAA
Chief, Marine Chart Division

cover letter prints on canary yellow paper
use full justification of text
use one inch margins on top, bottom and sides

Page 2 of a cover letter is numbered at the top, centered, in 12 pt. Times New Roman, when the cover letter exceeds two pages.

SAMPLE COVER LETTER

(title centered and in 12 pt. Times New Roman bold, Section number in 12 pt. Times New Roman bold, in outside corner.)

0.2 Name of Topic Underlined *(12 pt. Times New Roman bold type)*

vertical space

Definition: **TERM IN ALL CAPITAL LETTERS, 12 PT. TIMES NEW ROMAN BOLD, FOLLOWED BY A PERIOD AND TWO SPACES.** Definition of the term in 12 pt. Times New Roman type (not bold), with full justification of text and a bracketed numeral or numerals indicating the source of the definition. [numeral] ***Definition must also appear in Appendix I.***

vertical space

General Requirements *(12 pt. Times New Roman bold type)*

vertical space

Documents the general conditions under which a feature should be applied to a chart. The category may also contain other general specifications such as how to use certain source materials or special conditions. Full justification of text in 12 pt. Times New Roman type.

(some examples of general requirements follow:)

A Three Nautical Mile Line shall only be charted at the direction of the Chief Geographer.

A (name of feature) shall only be charted when requested by (name of authority).

A (name of feature) shall be shown on all charts, 1:100,000 scale and larger. Those plotting within areas that are charted without hydrography shall be omitted.

A (name of feature) shall not be charted behind the shoreline plane of reference.

Feature Recommendation for a Notice to Mariners *(12 pt. Times New Roman bold type)*

vertical space

Documents any action to be taken in reference to generating a Notice to Mariners in 12 pt. New Times Roman type.

(an example follows:)

A newly applied, revised or deleted (name of feature) shall be evaluated for a Notice to Mariners. (When appropriate, "evaluated" may be replaced with "recommended.") Full justification of text.

SAMPLE OF A REPLACEMENT PAGE

(replacement pages for the manual are printed on white paper)
(one inch margins at top, bottom and on each side)
(section number at the top of the page refers to the number of the first section or part of section appearing on that page)

(page number in 12 pt. Times New Roman bold, centered)
(revised or Added date in 12 pt. Times New Roman, outside corner, all caps and in bold)
(section number and Revised or Added date are right justified on face pages, left justified on back pages)

(section number in outside corner and in 12 pt. Times New Roman bold, title centered and in 12 pt. Times New Roman bold)

Line Type and Weight *(12 pt. Times New Roman bold type)*
vertical space
Documents the specifications for applying lines to a chart. These specifications include type of line (dashed, solid, dotted, or some combination), length of dashes and spaces, line weight and diameter of dots. (See Nautical Chart Manual, Volume 2, Appendix 3) Full justification of text in 12 pt. Times New Roman type.

(some examples of line specifications follow:)

A (name of feature) shall be charted with a dashed line, 0.15 /0.75/0.40 mm (.006"/0.030"/0.016").

The line shall remain unbroken for charted detail.
vertical space
Example: *(12 pt. Times New Roman)*

(show an example of a charted line using the actual lineweight, lengths and color)

Location and Orientation *(12 pt. Times New Roman bold type)*
vertical space
Documents the specifications for locating and orienting features on a chart. Full justification of text in 12 pt. Times New Roman type.

(an example of location and orientation follows:)

A (name of feature) shall be charted in its exact geographic position as depicted in the source material.

Size and Shape *(12 pt. Times New Roman bold type)*
vertical space
Documents the dimensional specifications for applying a feature to a chart. These specifications include the size and shape characteristics of symbolized features. Full justification of text in 12 pt. Times New Roman type.

(examples of size and shape follow:)

A (name of feature) symbol shall be charted the size and shape of the standard cartographic symbol in Chart No. 1 [Alpha numeric identifier]. The circle has a 0.3 mm (0.012")radius, measured from the center of the circle to the center of the line.

The limit lines for a (name of feature) shall be charted to scale as depicted on the source material. The size of the area may be exaggerated on small-scale charts when deemed necessary.

vertical space *(12 pt. Times New Roman, bold and centered)* *(outside corner)*

When the greatest dimension of a (name of feature) at chart scale is 1.3 mm (0.052") or less, a minimum size solid black filled square shall be charted. This square shall be oriented according to the source.

vertical space

Example: *(12 pt Times New Roman type)*

(show an example of a symbol at actual charting size and in the color to be charted)

Labels and Notes *(12 pt. Times New Roman bold type)*

vertical space

Documents specifications for labeling a feature and for adding notations to charts. These specifications include not only what text to chart, but also conditions under which to chart the feature, and the location at which to chart it. Style, size and color are specified. Notes are also detailed with descriptions of standard widths, type sizes and styles, and color. Full justification of text in 12 pt. Times New Roman type.

(some examples of label and note specifications follow)

A (name of feature) label shall be charted with black, 7 pt. Swiss Light Italic.

Capitalize the first letter of a (name of feature) label.

A (name of feature) label shall be aligned with the baseline of the chart.

The following note shall be charted with magenta, 7 pt. Swiss Light style type, set either 2" or 3 1/2" wide:

FACILITIES

Locations of public marina facilities are shown by large magenta numbers with leaders and refer to the facility tabulation.

7 point Ariel type closely resembles Swiss Light. If importing a note directly from the notes cell library, suppress the gray background for better legibility. Show the note in the actual color to be charted.

Color and Screening *(12 pt. Times New Roman bold type)*

vertical space

Documents the specifications for applying tint and screening to charts. These specifications include tint the percent and density of screening. Full justification of text in 12 pt. Times New Roman type.

(some examples of color and screening specifications follow)

A (name of feature) symbol shall be charted with magenta.

A (name of feature) shall be charted with a required 1.0 mm (0.040"), green 10 percent, 120-LPI screened band on the inside edge of the boundary.

(12 pt. Times New Roman bold, centered) *(12 pt. Times New Roman bold, outside corner)*

vertical space

Feature Removal from Chart *(12 pt. Times New Roman bold type)*

vertical space

Documents the conditions under which a feature may be removed from the chart. Full justification of text in 12 pt. Times New Roman.

(some examples of feature removal specifications follow:)

A charted (name of feature) shall only be removed at the request of the U.S. Coast Guard.

A charted (name of feature) shall not be removed until an established authority provides conclusive evidence that the (name of feature) does not exist in the charted position. Non-authoritative sources (e.g., U.S. Power Squadron and U.S. Coast Guard Auxiliary Reports, photo revisions without field edit), do not have sufficient authority to declare a feature non-existent.

In instances when non-authoritative sources identify a (name of feature) not visible in its charted position, the (name of feature) shall be charted as a submerged feature until removal has been confirmed by and established authority (e.g., Local Notice to Mariners, U.S. Army Corps of Engineers, U.S. Coast Guard, and Field Investigations by the National Ocean Service.

(12 pt. Times New Roman, not bold, full type justification)

(The remainder of this page is intentionally blank.)

(12 pt. Times New Roman, centered)

(it is preferred to start another feature on the next page, for easier editing and replacement of pages)

SAMPLE OF A REPLACEMENT PAGE

(one inch margins at top, bottom, left and right sides)

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 010/04 May 24, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 0.3 through 0.6

TO: All Cartographers
Marine Chart Division

SUBJECT: Nautical Chart Manual Digital File Access and Management System (D-FAMS)

APPLICATION: Nautical Chart Manual

Effective immediately, the attachment shall be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, immediately after Section 0.2. The attachment documents the procedures the Quality Assurance, Plans and Standards Branch (QAPSB) shall use to retrieve, download, upload and archive all revised Nautical Chart Manual pages issued throughout the Marine Chart Division as official Cartographic Orders and/or Memorandums.

Background: In January 2001, a network schema encompassing the update and revision procedures of the Nautical Chart Manual was developed within the Quality Assurance, Plans and Standards Branch. Its purpose is to provide a secure mechanism for the digital storage, retrieval, maintenance and archiving of the Nautical Chart Manual. In January 2003, and for litigation purposes, an additional process was developed (within QAPSB) which would enable the rapid and "time stamped" retrieval of the Nautical Chart Manual as it represented the Marine Chart Division charting policies in use as of a specific date.

The procedures provided in the attachment shall apply exclusively to the members of the Quality Assurance, Plans and Standards Branch and do not represent an alternative method for accessing the web-based Nautical Chart Manual which is available to all Marine Chart Division personnel.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

0.3 Nautical Chart Manual Digital File Access and Management System

The Quality Assurance, Plans and Standards Branch (QAPSB), Nautical Chart Manual, Digital File Access and Management System (**D-FAMS**) refers to:

A. The procedures necessary for:

1. retrieving and downloading (from the appropriate Marine Chart Division server), the Nautical Chart Manual (NCM) files required for the updating and/or revision of specific pages of the Nautical Chart Manual.

2. uploading new and revised NCM pages to the appropriate temporary server location. These pages will subsequently be incorporated into the current WordPerfect® and web-based (i.e., Acrobat®) versions of the Nautical Chart Manual.

3. the incorporation (by the Nautical Chart Manual Digital File Manager) of all revised NCM pages into the respective NCM digital formats (WordPerfect® and Acrobat®).

B. Maintaining and ensuring the integrity of:

1. the server directory structure established specifically for the storage and retrieval of the Nautical Chart Manual

2. the server directory structure established specifically for litigation purposes and having the objective of enabling a "time stamped" (NCM) document retrieval.

3. the data contents of both Nautical Chart Manual digital format versions (i.e., WordPerfect® and Acrobat®).

0.3.1 Server Location

All QAPSB Nautical Chart Manual storage files are located at the following address:

MCD02/qapsb

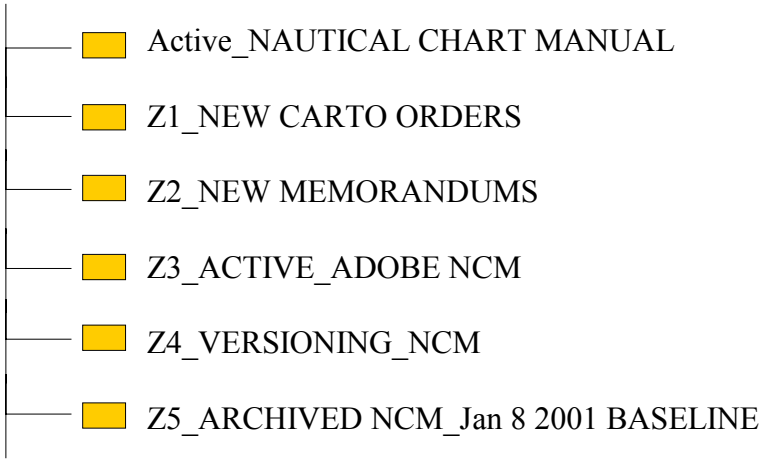
All subsequent moves, by the server administrator, of the files to a different MCD server shall continue to have the subdirectory: *qapsb*

0.3.2 Directory Structure and Description of Contents

A. Primary Sub-Directories

The following diagram contains the names assigned to the primary sub-directories of the "qapsb" directory.

MCD02/qapsb/



B. Description of Contents - Primary Sub-Directories

Active_NAUTICAL CHART MANUAL: Contains the current up-to-date WordPerfect® version of the Nautical Chart Manual, as of the last Cartographic Order and/or Memorandum issued.

This sub-directory is also the location for storing the file copies of the individual Cartographic Orders and Memorandums.

Z1_NEW CARTO ORDERS: The temporary location for the placement of all new cartographic orders. These files will subsequently be incorporated into the current version of the Nautical Chart Manual and will simultaneously be issued as analog (i.e., paper document) revisions.

Z2_NEW MEMORANDUMS: The temporary location for the placement of all new memorandums. These files will subsequently be incorporated into the current version of the Nautical Chart Manual and will simultaneously be issued as analog (i.e., paper document) revisions.

Z3_ACTIVE ADOBE NCM: Serves as a backup location for all current Acrobat® (.pdf) files. These files comprise the current version of the web-based NCM and are consistent with the contents of the current WordPerfect® version of the NCM.

Z4_VERSIONING_NCM: In January 2003, (and beginning with the first cartographic order/memorandum of 2003), this directory was established specifically for litigation purposes. Its objective is to render a "time stamped" version of the Nautical Chart Manual in both WordPerfect® and Adobe® formats. The contents of this directory represent the NCM at each phase of its associated updates and revisions, and is the source for retrieving Marine Chart Division charting policies and procedures in use as of a specific date.

Z5_ARCHIVED NCM_Jan 8 2001 BASELINE: In February 2000, the WordPerfect®/Word® documents used to produce the Nautical Chart Manual were organized and updated for the purpose of producing the first web-based version (i.e., in .html format) of the Nautical Chart Manual. The files contained in this directory represent the Nautical Chart Manual as it existed on January 8, 2001, and **shall not be revised**.

In addition, these files were also used to establish a starting point (i.e., baseline) from which a digital filing system was developed for the storage and retrieval of: (a.) future Cartographic Orders and Memorandums, and (b.) a current and up-to-date analog version of the Nautical Chart Manual.

C. Secondary Sub-Directories

The only Primary Sub-Directories of "qapsb" containing Secondary Sub-Directories are "Active_NAUTICAL CHART MANUAL" and "Z4_VERSIONING_NCM". Following are the respective structure diagrams and content/format descriptions of each.

1. Primary Sub-Directory: "Active_NAUTICAL CHART MANUAL"

A. Structure Diagram:

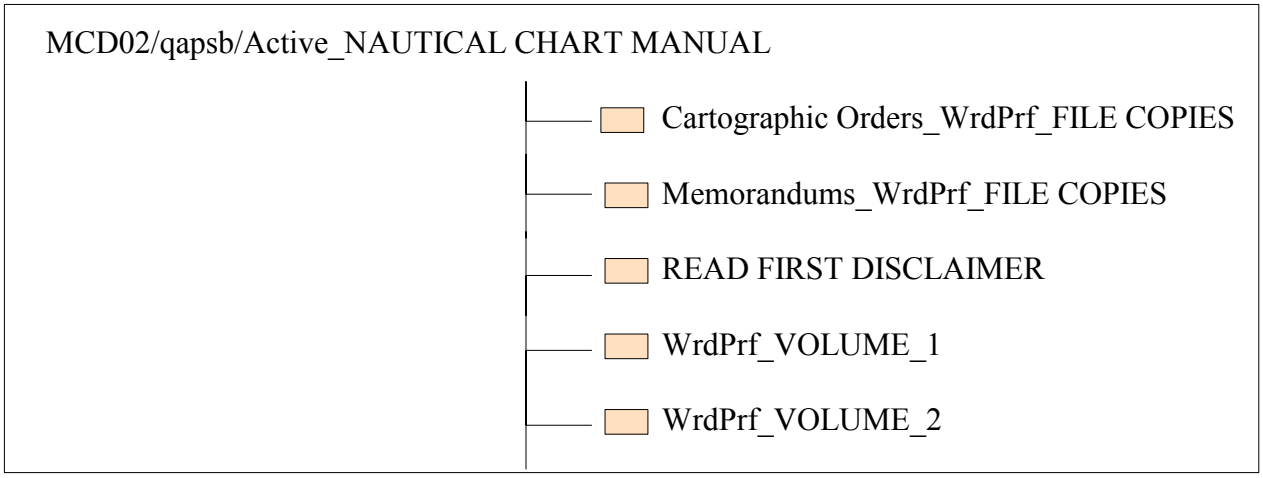


Figure 0-2

B. Description of Contents

Cartographic Orders_WrdPrf_FILE COPIES: The specific directory in which individual Cartographic Orders produced by QAPSB are stored. This sub-directory is further sub-divided by the calendar year in which the cartographic order was written (i.e., 2001, 2002, 2003, etc.).

Memorandums_WrdPrf_FILE COPIES: The specific directory in which individual Memorandums produced by QAPSB are stored. This sub-directory is further sub-divided by the calendar year in which the memorandum was written (i.e., "2001", "2002", "2003", etc.).

READ FIRST_DISCLAIMER: Contains the disclaimer which is to be included in every copy of the Nautical Chart Manual issued digitally to individuals and organizations external to the National Oceanic and Atmospheric Administration community, and which/who are not currently listed on the official QAPSB Nautical Chart Manual distribution list. The disclaimer reads as thus:

DISCLAIMER
<Date CD-ROM is forwarded>

This CD-ROM version of the National Oceanic and Atmospheric Administration/Office of Coast Survey Nautical Chart Manual Seventh (1992) Edition is being provided for the purpose of serving as a reference document ONLY.

No portions of its contents shall be re-produced, copied or published without obtaining the explicit, documented and official approval of all appropriate U.S. Department of Commerce/National Oceanic and Atmospheric Administration/Office of Coast Survey authorities.

This document has been updated through Cartographic Order *xxx/yy dated ***Month, Day, Year*> and Cartographic Memorandum dated ***Month, Day, Year*>, and is current and complete as of ****Month, Day, Year*> .

Key:

* xxx: the cartographic order number;
yy: the last two digits of the cartographic order year

** the date of the cartographic order/memorandum; format example = January 14, 2004.

*** the date through which the version of the Nautical Chart Manual being forwarded is considered current and complete.

WrdPrf_VOLUME_1: Contains Nautical Chart Manual, Chapters 1 through 8. This sub-directory is further sub-divided into:

(1.) each chapter number (i.e., "WrdPrf_CHAPTER_1", "WrdPrf_CHAPTER_2", "WrdPrf_CHAPTER_3", etc.),

(2.) the *general* policies and procedures for producing paper and raster nautical charts (i.e., "Regular"), and

(3.) the polices and procedures for producing ENCs (i.e., "ENC").

This directory also contains the Nautical Chart Manual, Volume 1 Table of Contents.

WrdPrf_VOLUME_2: Contains Nautical Chart Manual, Appendices I through IV. This sub-directory is further subdivided into each Appendix's number/name (i.e., "APPENDIX_I_Definitions", "APPENDIX II_Chart Abbreviations", etc.)

This directory also contains the Nautical Chart Manual, Volume 2 Table of Contents.

2. Primary Sub-Directory: "Z4_VERSIONING_NCM"

A. Structure Diagram

The "Z4_VERSIONING_NCM" sub-directory is further divided by directories for the Adobe® and WordPerfect® formats of the Nautical Chart Manual. (See Figure 0-3)

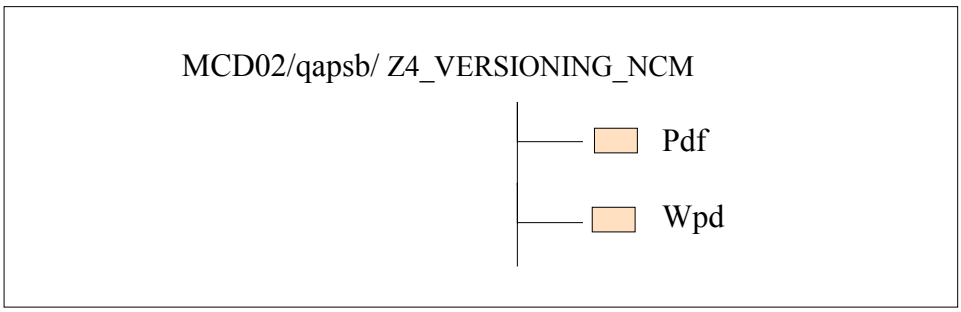


Figure 0-3

The Pdf and Wpd directories are then sub-divided by:

- the year the cartographic orders/memorandums are distributed, then
- the incorporation session number, the word: "thru", and the number (and date) of the latest cartographic order/memorandum incorporated into the Nautical Chart Manual for that session.
- the date the WordPerfect® version is *updated* and the date the Adobe® version is *published* on the web. These dates will usually agree.

(See Figure 0-4)

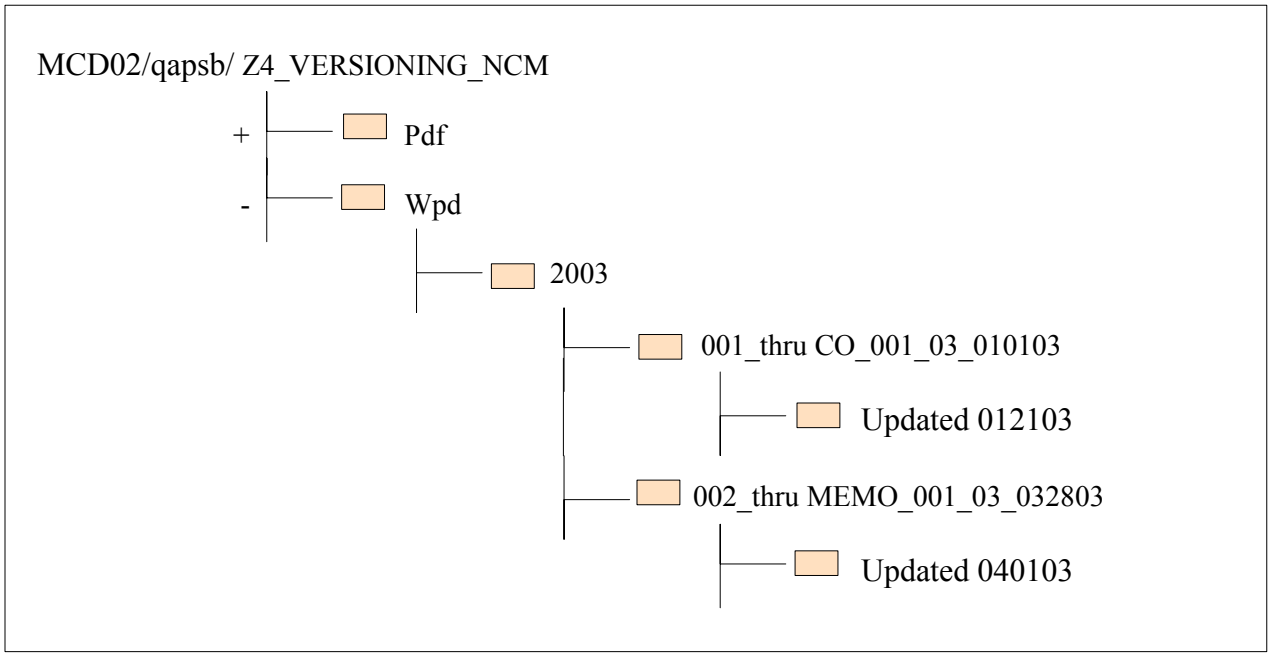


Figure 0-4

(The remainder of this page is intentionally blank.)

B. Cartographic Order/Memorandum Sub-Directory Naming Conventions

- The first three (3) digits of the cartographic order number/date sub-directory (i.e., 001_) represent a consecutively assigned number identifying the Nautical Chart Manual incorporation session. (NOTE: Digital "Versioning" first began with Cartographic Order No. 1 of 2003, thereby initiating incorporation session no. 1. The assignment of session numbers shall continue sequentially through each subsequent year and shall **never** start over with the number "001" at the beginning of a new year.)

- "thru CO_xxx_yy_mmddyy": xxx : represents the cartographic order number.
  yy: represents the last two digits of the year of the cartographic order date).
  mm: represents the month of the cartographic order date.
  dd: represents the day of the cartographic order date.
  yy: represents the last two digits of the year of the cartographic order date.

- "thru MEMO_xxx_yy_mmddyy": xxx: represents a consecutive number assigned by the D-FAMS (Digital File Access and Management System) File Manager to the memorandum issued.
  yy: represents the last two digits of the year of the memorandum date.
  mm: represents the month of the memorandum date.
  dd: represents the day of the memorandum date.
  yy: represents the last two digits of the year of the memorandum date.

NOTE: the term "thru" shall always be placed before the abbreviations CO (cartographic order) and MEMO.

0.3.3 Retrieving and Downloading Nautical Chart Manual Files

To update or revise a portion of the Nautical Chart Manual, the affected pages must be accessed, retrieved and copied from the server to the computer of the cartographer making the revisions. ONLY members of the Quality Assurance, Plans and Standards Branch have access to the appropriate files and can individually copy the files required.

The locations of the files which are to be copied are:

MCD02/qapsb/Active_NAUTICAL CHART MANUAL/WrdPrf_VOLUME_1

and

MCD02/qapsb/Active_NAUTICAL CHART MANUAL/WrdPrf_VOLUME_2

0.3.4 Uploading New and Revised Nautical Chart Manual Pages

At the conclusion of editing his/her document **AND** upon its acceptance by the Chief, Marine Chart Division, the cartographer shall upload the revised pages to one of two (2) temporary locations on the MCD02 server. The selection of the proper temporary location will depend on whether the revised pages are to be issued throughout the Division as a new cartographic order or as a new memorandum. All members of the Quality Assurance, Plans and Standards Branch have access to the appropriate directories and can individually upload the appropriate pages.

The location for the temporary placement of new cartographic orders is:

MCD02/qapsb/Z1_NEW CARTO ORDERS

The location for the temporary placement of new memorandums is:

MCD02/qapsb/Z2_NEW MEMORANDUMS

0.3.5 Summary of Retrieving, Downloading and Uploading

ALL QAPSB PERSONNEL-Cartographic Orders and Memorandums:

a. From proper server location **retrieve** (i.e., **download** to local computer) Nautical Chart Manual pages to be revised.

b. Perform appropriate editing.

c. **Upload** revised Nautical Chart Manual pages to proper server location

0.3.5.1 Retrieving, Downloading and Uploading Flow Charts

See Figures 0-5 and 0-6.

Quality Assurance, Plans and Standards Branch
Digital File Access and Management System
RETRIEVING AND DOWNLOADING FLOW CHART
(Performed by All ~~QAPSB~~ Personnel)

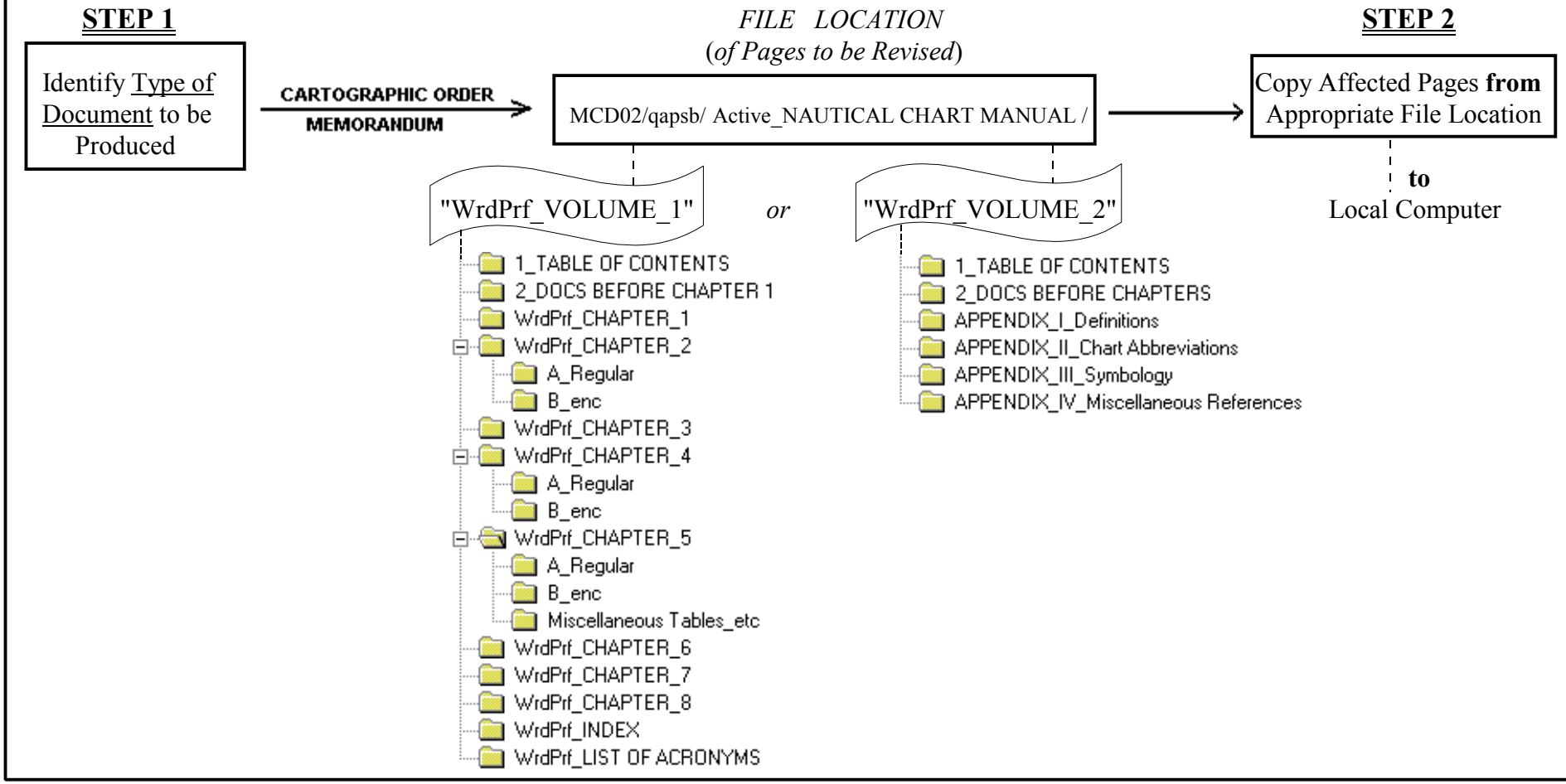


Figure 0-5

Quality Assurance, Plans and Standards Branch
Digital File Access and Management System
UPLOADING FLOW CHART
(Performed by All QAPSB Personnel)

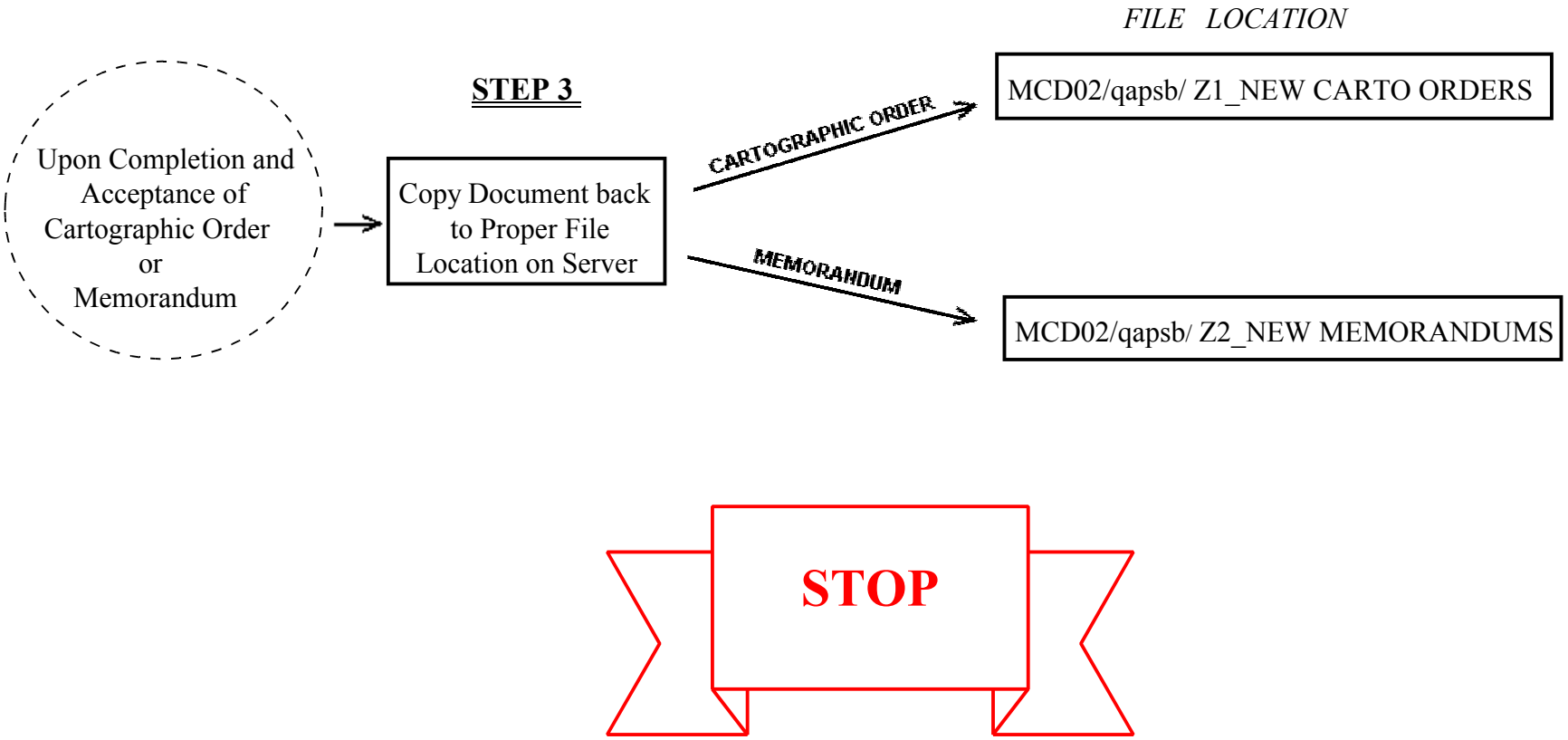


Figure 0-6

0.3.6 Incorporation of Revised Nautical Chart Manual Pages

NOTE: The *Incorporation* of newly revised pages into the current copy of the Nautical Chart Manual shall only be performed by the D-FAMS (Digital File Access and Management System) File Manager, and after all prior and necessary tasks (i.e., retrieval, downloading, editing and uploading) have been performed by other members of the Quality Assurance, Plans and Standards Branch.

By allowing only one individual (i.e., the Digital File Manager), to perform the task of *Incorporation*, a system of "checks and balances" has been implemented which will:

a. monitor for efficiency and effectiveness, the mechanism established for the secure (and digital) storage, retrieval, maintenance and archiving of the Nautical Chart Manual.

b. ensure the uniform and proper application of the techniques set forth in Sections 0.3 through 0.6, and

c. ensure the overall integrity of both the WordPerfect® and Adobe® versions of the Nautical Chart Manual.

Incorporation of the revised pages involves the removal of superseded Nautical Chart Manual pages and the insertion of the corresponding revised pages. Incorporation is performed for both the WordPerfect® (.wpd) and Adobe® (.pdf) versions of the Nautical Chart Manual.

0.3.7 Summary of Incorporation

QAPSB DIGITAL FILE MANAGER ONLY - Cartographic Orders and Memorandums:

a. From proper server location **retrieve** (i.e., **download** to local computer) revised pages to be incorporated into current version of Nautical Chart Manual.

b. **Remove** from current version of Nautical Chart Manual superceded pages; **insert** newly revised pages.

c. **Copy** incorporated document back to proper server location.

0.3.7.1 Incorporation Flow Charts (WordPerfect® Files Only)

See Figures 0-7 through 0-8.

Quality Assurance, Plans and Standards Branch
Digital File Access and Management System
INCORPORATION FLOW CHART
(WordPerfect® Files Only)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

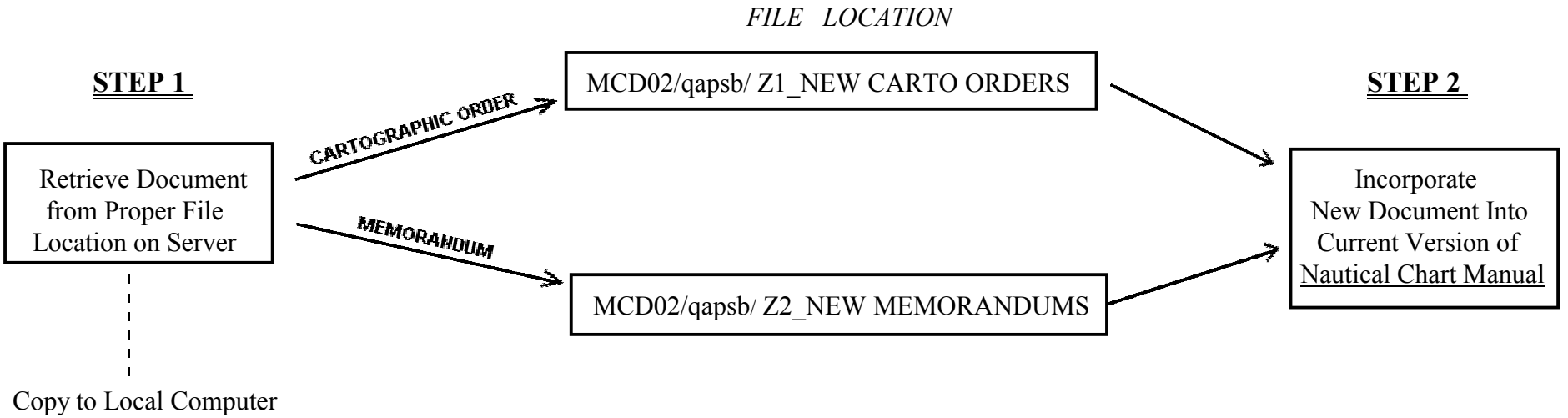


Figure 0-7

Quality Assurance, Plans and Standards Branch
Digital File Access and Management System
DOCUMENT INCORPORATION FLOW CHART
(WordPerfect® Files Only)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

STEP 3

Copy Incorporated Document back to Proper Location on Server

FILE LOCATION
(*of Current Nautical Chart Manual*)

MCD02/qapsb/ Active_NAUTICAL CHART MANUAL /

"WrdPrf_VOLUME_1" *or* "WrdPrf_VOLUME_2"

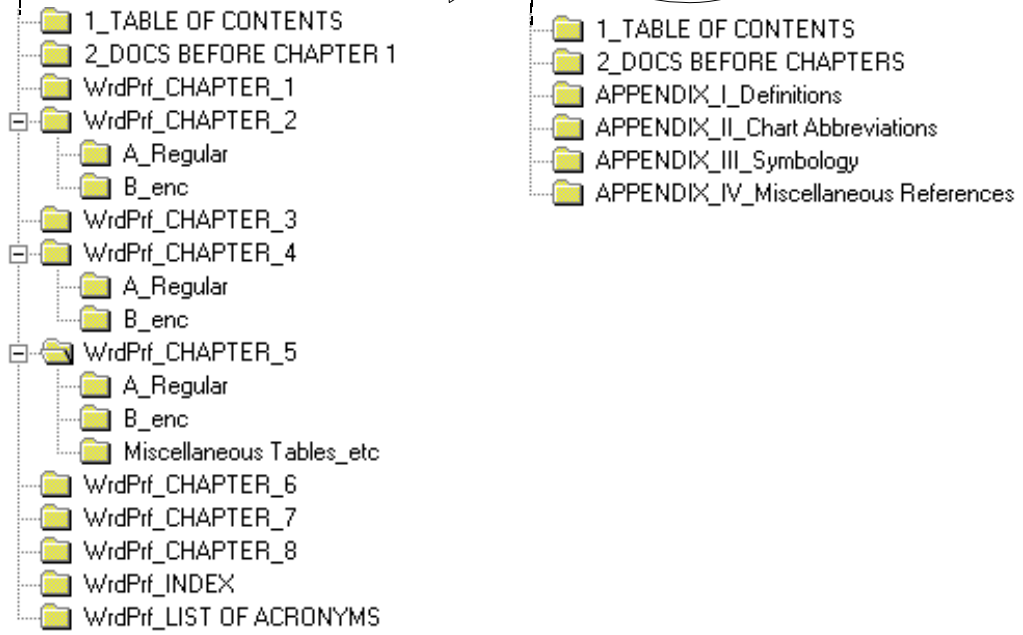


Figure 0-8

0.3.8 Updating the Web-Based Nautical Chart Manual

NOTE: The updating of the web-based Nautical Chart Manual shall only be performed by the Digital File Manager.

Updating the web-based Nautical Chart Manual involves:

a. converting all appropriate WordPerfect® files into the proper format (i.e., **.pdf**),
b. incorporating the converted files into the current copy of the web-based Nautical Chart Manual,
c. creating all required bookmarks, destinations and links, and
d. copying the updated files back to the appropriate:

    1. web site.
    2. server location for the back-up of the web-based Nautical Chart Manual (i.e., MCD02/qapsb/Z3_ACTIVE_ADOBE NCM)
    3. *Versioning* (see Section 0.4) location for the web-based Nautical Chart Manual.

0.3.8.1 Requisite Software

Adobe® Acrobat shall be the software used to convert and incorporate a new cartographic order and/or memorandum into the web-based Nautical Chart Manual.

Refer to the Adobe® Acrobat User's Manual for more comprehensive information about software features.

0.3.9 Web-Based Nautical Chart Manual - Updating Flow Charts

See Figures 0-9 and 0-10.

Quality Assurance, Plans and Standards Branch
UPDATING FLOW CHART
(Web-Based Nautical Chart Manual)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

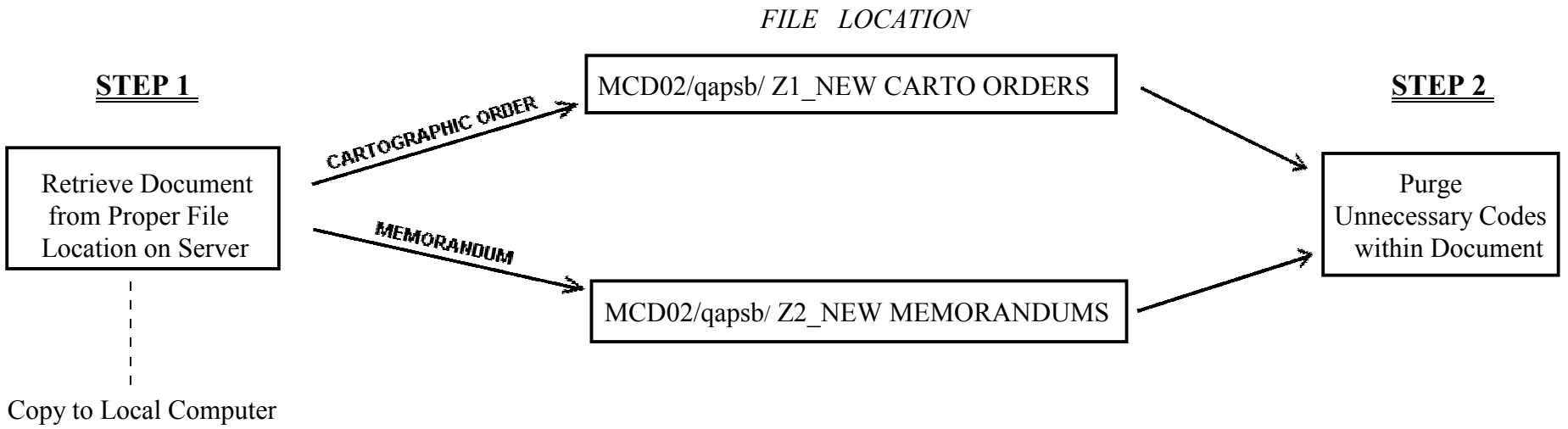


Figure 0-9

Quality Assurance, Plans and Standards Branch
UPDATING FLOW CHART
(Web-Based Nautical Chart Manual)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

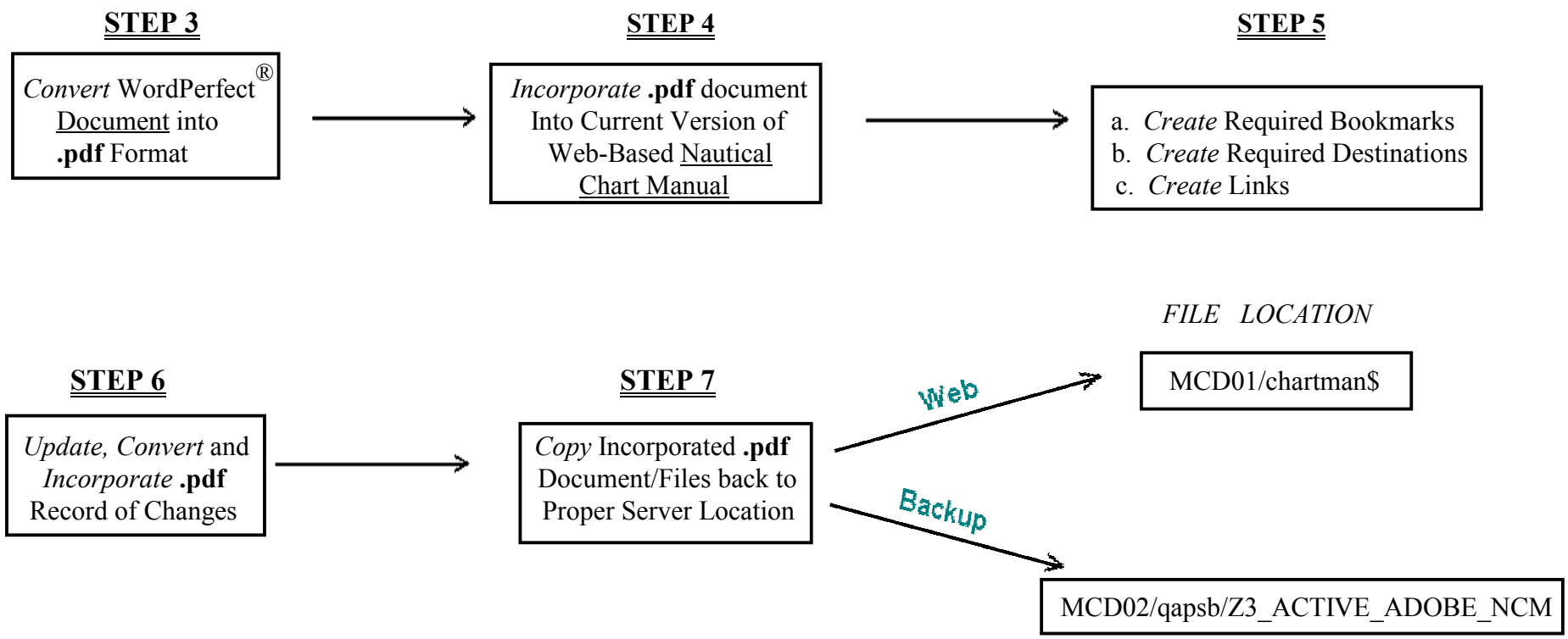


Figure 0-10

0.4 Versioning

NOTE: The *Versioning* of each update of the Nautical Chart Manual shall only be performed by the D-FAMS (Digital File Access and Management System) Digital File Manager.

Versioning (as in *Incorporation*) also involves the storage of the Nautical Chart Manual after every update and revision. However, where the incorporated copy (as described in Section 0.3.6) of the Nautical Chart Manual only represents its current status, the Versioning directory contains each and every version of the NCM as it existed after each update and revision.

The Versioning directory was established specifically for litigation purposes and has the objective of enabling a "time-stamped" retrieval of the Nautical Chart Manual. This directory is the source for retrieving the NOS charting policies and procedures in use as of a specific date. (See Section 0.3.2 (2)

Versioning shall be performed for both the WordPerfect® (.wpd) and Adobe® (.pdf) versions of the Nautical Chart Manual.

0.4.1 Procedures

A. WordPerfect® Files.

Upon the completion of **each** Nautical Chart Manual update (i.e., downloading, editing, uploading, and incorporation), a sub-directory shall be created within the:

MCD02/qapsb/ Z4_VERSIONING_NCM/ Wpd/ *appropriate year*

directory identifying:

1. the incorporation session number, and
2. the number (and date) of the latest cartographic order/memorandum incorporated for that incorporation session.

For example:

Incorporation Session Number 1:

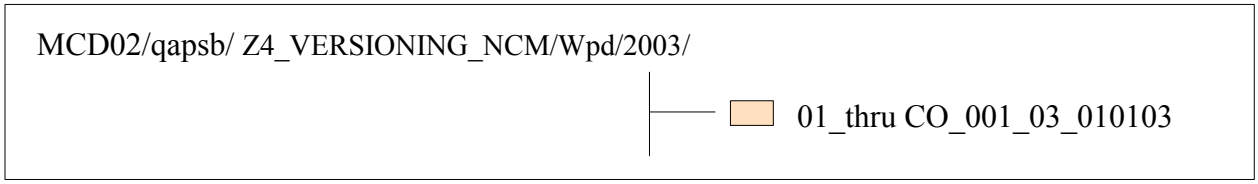


Figure 0-11

Incorporation Session Number 2:

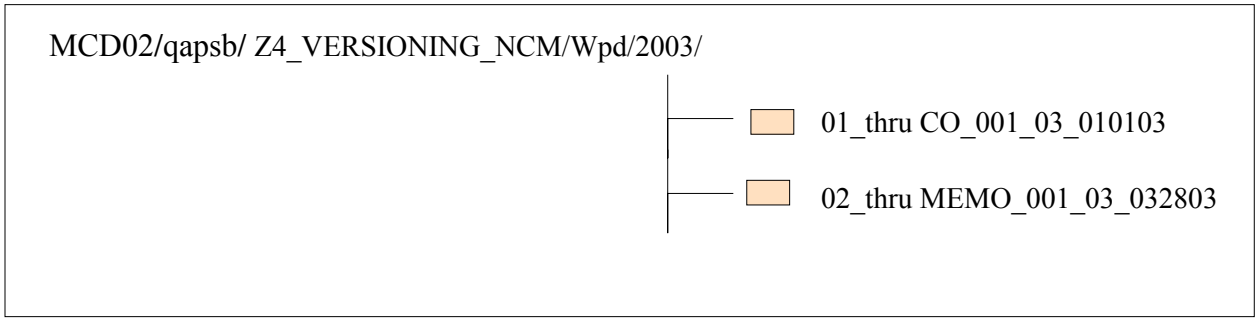


Figure 0-12

Incorporation Session Number 3:

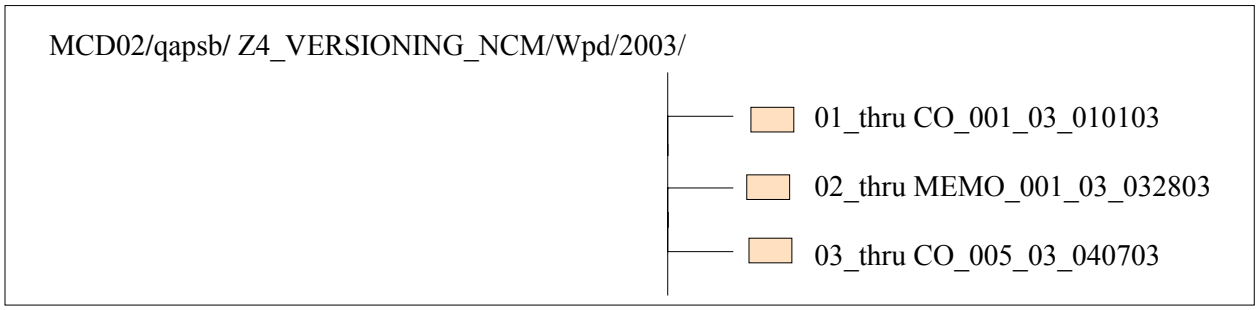
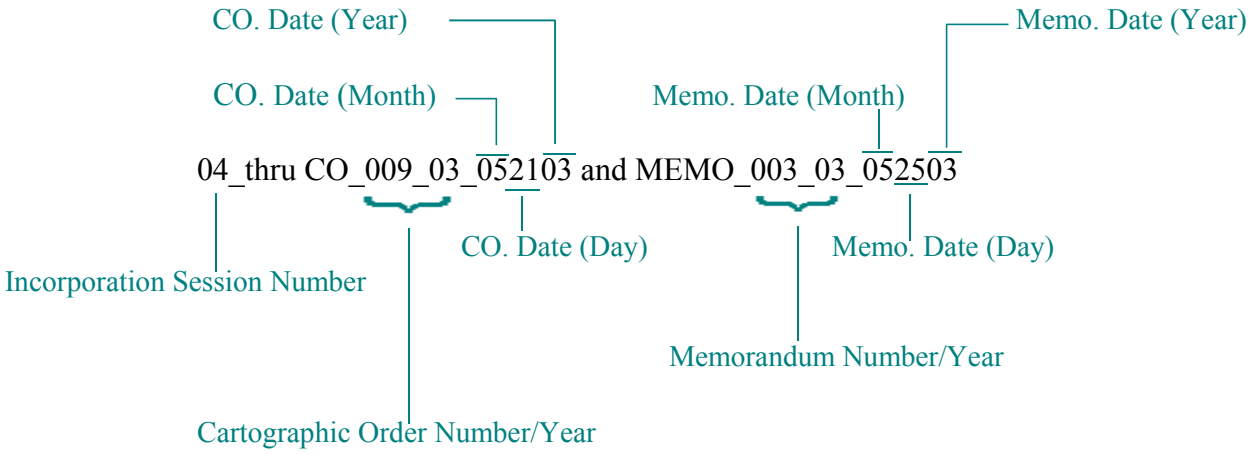


Figure 0-13

When both cartographic orders and memorandums are incorporated for a particular session, the directory shall reflect the appropriate documents, respectively.

For example:



See Section 0.3.2 (2.)(B.) for a more detailed explanation of the directory naming conventions.

An additional sub-directory is then created under the incorporation session sub-directory identifying the date the WordPerfect version is *updated,* See Figures 0-14.

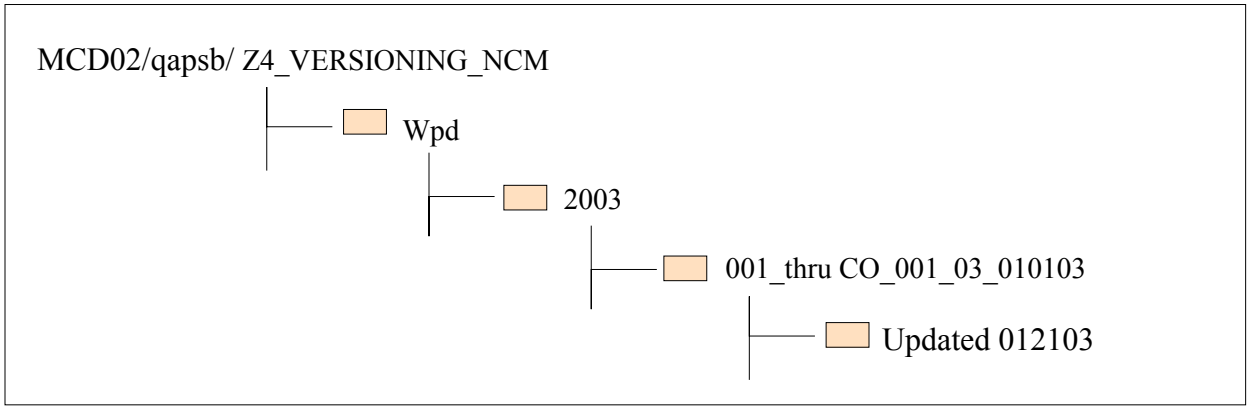


Figure 0-14

After the appropriate directory is created for the incorporation session, **ALL** Volume 1 directories (and files) and **ALL** Volume 2 directories (and files) are copied into the newly created *Versioning* directory. This also includes chapters/appendices for which there were no revised pages.

B. Adobe® Acrobat (.pdf) Files.

Except for the substitution of:

MCD02/qapsb/ Z4_VERSIONING_NCM/ Pdf/ *appropriate year*

as the storage location of all (.pdf) files after an incorporation session, and the creation of the sub-directory identifying the publication date (see Figure 0-15), the Versioning procedures performed for the Adobe® Acrobat (.pdf) files are identical to the procedures performed for the WordPerfect® Files [see Section 0.4.1 (A)].

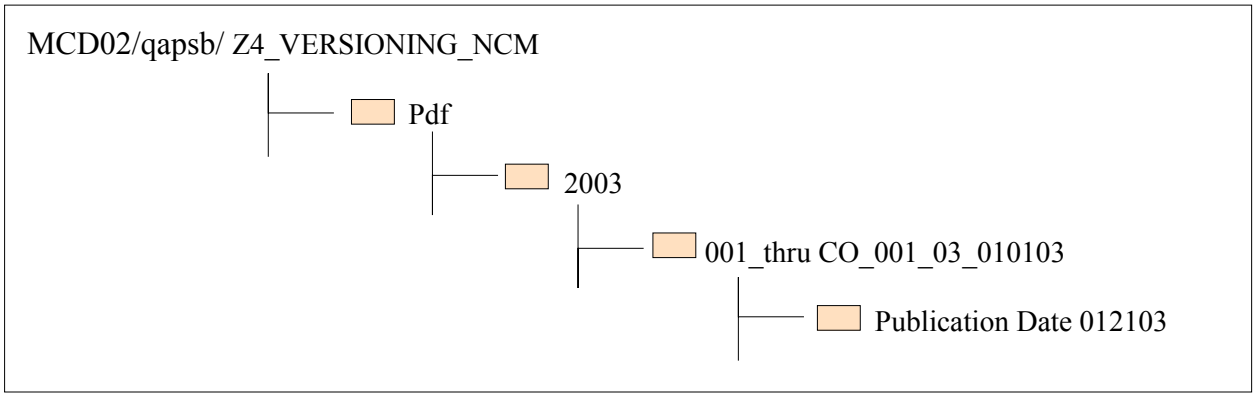


Figure 0-15

0.4.2 Summary of Versioning

QAPSB DIGITAL FILE MANAGER ONLY - WordPerfect® and Adobe® Files

For EACH Incorporation Session:

a. **Create** subdirectory in appropriate location on the server.

b. From proper server location **retrieve ALL** Volume 1 and Volume 2 directories and document files.

c. **Copy ALL** Volume 1 and Volume 2 directories and document files (retrieved from step b. above) to proper server location.

0.4.2.1 Final Directory Structure (for an Incorporation Session)

Figure 0-16 provides an illustration of the proper directory structure after the completion of an update session.

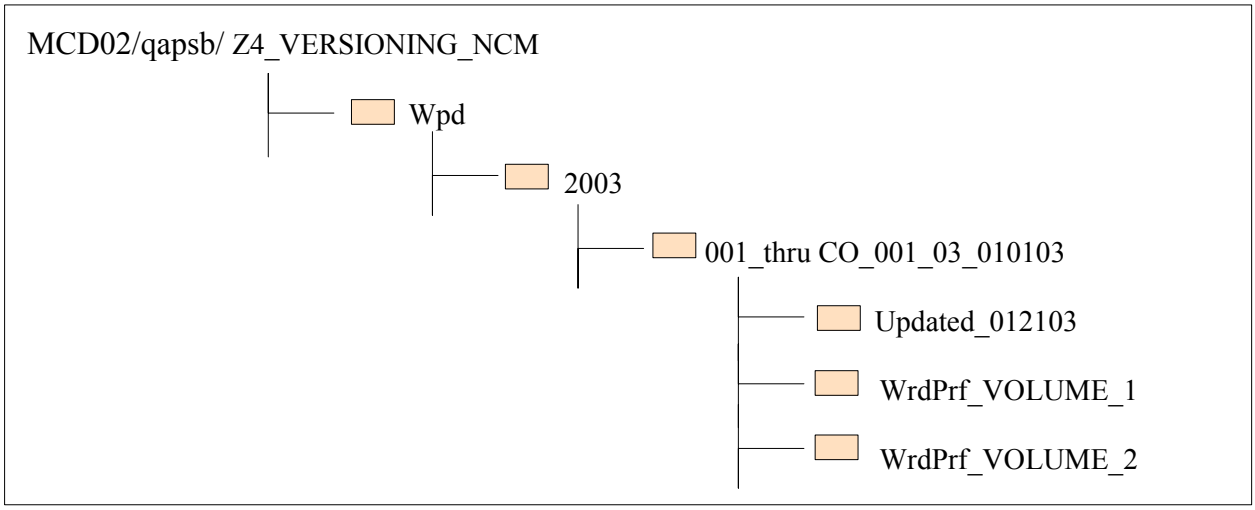


Figure 0-16

0.4.2.2 Versioning Flow Charts

See Figures 0-17 through 0-19.

VERSIONING FLOW CHART
(WordPerfect® and Adobe® Files)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

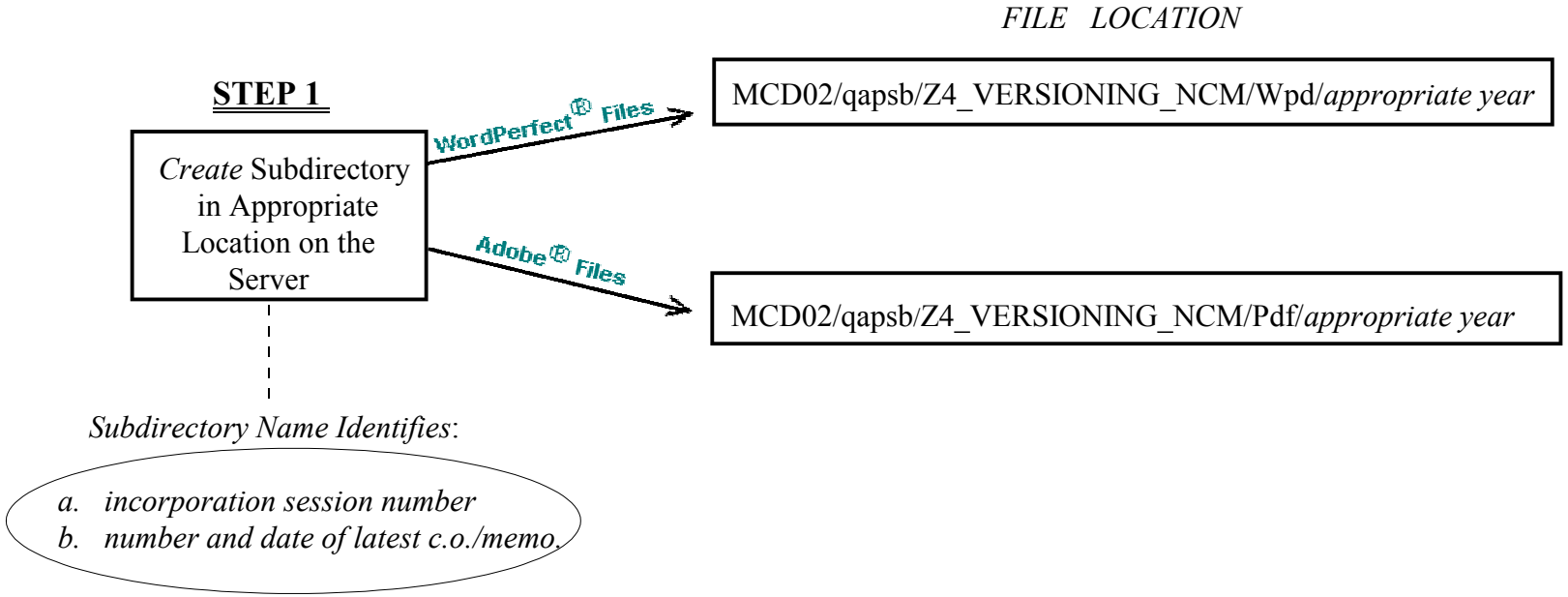


Figure 0-17

VERSIONING FLOW CHART
(WordPerfect® and Adobe® Files)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

STEP 2

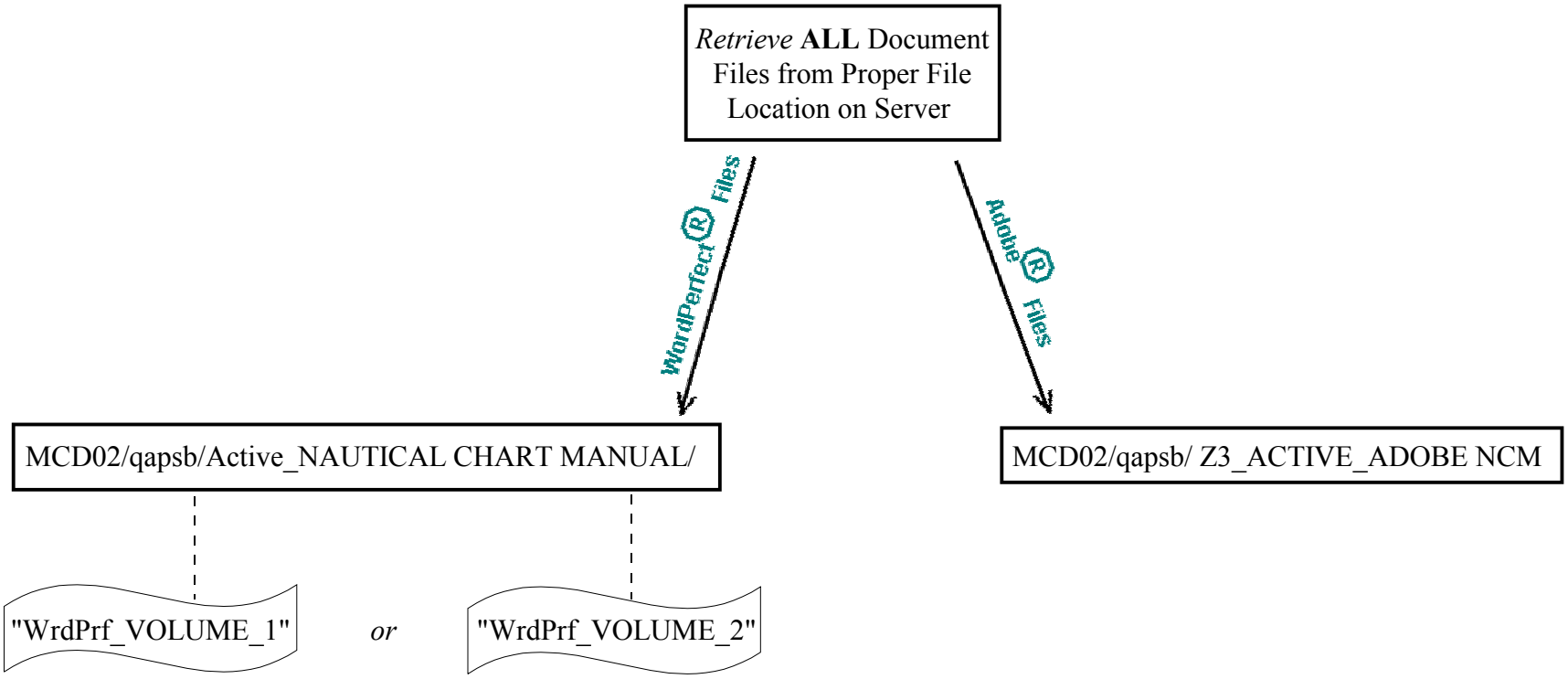


Figure 0-18

VERSIONING FLOW CHART
(WordPerfect® and Adobe® Files)

****** TO BE PERFORMED BY DIGITAL FILE MANAGER ONLY ******

STEP 3

Copy **ALL** Document Files to Proper File Location on Server

WordPerfect® Files

Adobe® Files

MCD02/qapsb/Z4_VERSIONING_NCM/Wpd/ <*appropriate year*>

MCD02/qapsb/Z4_VERSIONING_NCM/Pdf/<*appropriate year*>

Subdirectory Identifying:

a. *incorporation session number*
b. *number and date of latest c.o./memo.*

Subdirectory Identifying:

a. *incorporation session number*
b. *number and date of latest c.o./memo.*

Figure 0-19

0.5 Global E-Mail Announcement

NOTE: An e-mail announcing the updating of the web-based Nautical Chart Manual and the latest issuance of new cartographic orders and/or new memorandums shall be written by the Digital File Manager only and subsequently forwarded to the Marine Chart Division secretary for global distribution throughout the Division.

0.5.1 Procedure

The e-mail shall be written only **after** the conclusion of the **FINAL** Nautical Chart Manual updating process of Versioning. (See Section 0.6 for the summary of the Nautical Chart Manual updating processes.)

The e-mail is then forwarded to the Marine Chart Division secretary for subsequent global distribution throughout the Division, and a carbon copy (i.e., "cc") is forwarded to the Chief, Quality Assurance, Plans and Standards Branch.

0.5.2 Format

A. New Cartographic Orders

The global e-mail shall indicate all new cartographic orders issued by identifying (in the following order) the cartographic order number, date and title. See Figure 0-20 for an example of the proper format.

Cartographic Order:

1. Cartographic Order 003/04 (dated February 19, 2004) ---- Fish Havens

Figure 0-20

B. New Memorandums

The global e-mail shall indicate all new memorandums issued by identifying (in the following order) the memorandum date and title. See Figure 0-21 for an example of the proper format.

Memorandum:

1. Dated: March 16, 2004 ----Caution Note-Submarine Pipelines and Cables

Figure 0-21

C. Web-Based Nautical Chart Manual

The global e-mail shall contain a phrase which indicates the date thru which the web-based Nautical Chart Manual is considered current and complete. **THIS DATE IS IDENTICAL TO THE DATE OF THE EMAIL**. See Figure 0-22 for an example of the proper format.

Web-Based Nautical Chart Manual:

The web-based Nautical Chart Manual is considered current and complete as of April 13, 2004.

Figure 0-22

0.5.2.1 Global E-Mail-Sample Illustration

A sample illustration of the email to be forwarded follows:

April 13, 2004

<Name of Secretary>,

Could you send the following message out as a global?

Thanks,
<Name of Digital File Manager>

The following new Cartographic Order and Memorandum were distributed between the dates of April 5 and April 13, 2004 and have been incorporated into the web-based Nautical Chart Manual.

Cartographic Order:

1. Cartographic Order 003/04 (dated February 19, 2004) ------- Fish Havens

Memorandum:

1. Dated: March 16, 2004 ------ Caution Note-Submarine Pipelines and Cables

Web-Based Nautical Chart Manual:

The web-based Nautical Chart Manual is considered current and complete as of April 13, 2004.

Figure 0-23

0.6 Summary of Nautical Chart Manual Updating

ALL Quality Assurance, Plans and Standards Branch Personnel:

a. Retrieving and Downloading
b. Editing
c. Uploading

DIGITAL FILE MANAGER ONLY:

d. Incorporation
e. Updating Web-Based Nautical Chart Manual
f. Versioning
g. Composition of Global E-Mail
h. Forwarding of Global E-Mail to MCD secretary

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NAUTICAL CHART MANUAL - VOLUME 1 - POLICIES AND PROCEDURES

Seventh (1992) Edition

CHAPTER 1 - INTRODUCTION

U.S. Department of Commerce
Office of Coast Survey

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

JULY 12, 2000

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 1

Effective immediately, the attachment replaces Chapter 1in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition in its entirety.

Chapter 1 is revised as follows:

1. Carto Orders and Memorandums are embedded in the text.

2. Outdated procedures are deleted.

3. Acronyms are revised.

4. Pages are renumbered.

References to Chapter 1 in places, such as the Table of Contents and the Index in the Nautical Chart Manual, will be updated.

Attachment

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

NOVEMBER 30, 2000

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 1

Effective immediately, the attachment replaces the following Chapter 1 pages of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition:

1. Page 1-1 / Page 1-2
2. Page 1-3 / Page 1-4
3. Page 1-7 / Page 1-8
4. Page 1-9 / Page 1-10
5. Page 1-25 / Page 1-26

In an effort to bring the analog edition of the Nautical Chart Manual into agreement with its digital counterpart, the attachment contains only minor grammatical changes to the information provided.

The digital version of the Nautical Chart Manual can be accessed on the Web using either of the two following addresses:

1. http://ocsnet.ncd.noaa.gov/mcd/chartman/index.htm
   or
2. http://ocsnet.ncd.noaa.gov/mcd.htm

Attachment

NAUTICAL CHART MANUAL

1 INTRODUCTION

1.1 A Brief History

In the early 1800's, a young United States of America consisted of some interior territory and 16 states along the eastern seaboard. Commerce between the states was mostly waterborne. Foreign trade, necessary for the survival and expansion of our national economy, was entirely by sea. The development of the Nation's natural resources was also dependent upon maritime commerce.

A lack of nautical charts, the most fundamental of navigation instruments, made navigation dangerous in the unknown waters along our coasts and in our harbors. Inadequate sketches of a few areas and written descriptions such as Blunt's Coast Pilot were the only printed information available to the mariner. Shipwrecks were common, insurance rates high, and products of commerce correspondingly high priced. Uncharted dangers in our coastal areas and harbors were a serious impediment to safe navigation.

Thomas Jefferson, among others, foresaw the need for comprehensive, reliable nautical charts to safeguard shipping, and he believed the Government should be responsible for producing them. On February 10, 1807, Congress passed an act authorizing President Jefferson "...to cause a survey to be taken of coasts of the United States, in which shall be designated the islands and shoals and places of anchorage... ."

The Survey of the Coast (an agency which was renamed the Coast Survey in 1836, Coast and Geodetic Survey in 1871, National Ocean Survey in 1970, and National Ocean Service in 1982) completed its first hydrographic survey in 1834 of Great South Bay, Long Island. The U.S. Lake Survey, created in 1841 to conduct surveys and produce nautical charts of the Great Lakes and connecting waterways, was transferred to the National Ocean Service (NOS) from the U.S. Army Corps of Engineers (USACE) in 1970 as part of a major reorganization within the Department of Commerce. [1] In 1982, the Office of Charting and Geodetic Services was formed within NOS with the responsibility for nautical charting. In 1991, the Office of Charting and Geodetic Services was renamed the Coast and Geodetic Survey (C&GS) in honor of the original agency.

[1] The Coast and Geodetic Survey was consolidated with the Weather Bureau of the Department of Commerce known as the Environmental Science Services Administration (ESSA) by Reorganization Plan No.2 of 1965, effective July 13, 1965.

The Environmental Science Services Administration was abolished by Reorganization Plan No. 4 of 1970, effective October 3, 1970.

In order to implement this Reorganization Plan, the name Environmental Science Services Administration was changed to National Oceanic and Atmospheric Administration (NOAA), while the Coast and Geodetic Survey was changed to the National Ocean Survey (NOS) by the order of the Acting Associate Administrator, December 19, 1970.

The National Ocean Survey became the National Ocean Service, the Office of Charting and Geodetic Services was formed as the unit within NOS responsible for nautical charting by order of the Administrator, December 1, 1982. On May 6, 1991, the Office of Charting and Geodetic Services was renamed the Coast and Geodetic Survey.

The first U.S. Government-produced nautical chart, a black and white print made in 1835 from a stone engraving, was of Bridgeport Harbor, Connecticut. Although lacking the detail of today's charts, it was compiled to an exceptional cartographic accuracy that has been a consistent characteristic of U.S. nautical charts throughout the years. Acquisition of a copperplate printing press in 1842 enabled the Coast Survey to publish a chart of New York Bay and Harbor in 1844 with finer definition than was possible from a stone engraving. The addition of color, first added to the charts by hand and later by color lithographic presses, has greatly enhanced the usefulness of the charts.

Many of the other nautical products and services produced by NOS, although more highly refined and technically advanced today, were also begun in the early days of the agency. For example, the original C&GS published its first U.S. Coast Pilot in 1875 after the Government purchased the copyright and stereotype plates for the Coast Pilots commercially produced at that time by the Blunt Company. From its inception, C&GS was in the forefront of new surveying innovations. It used schooners to perform surveys, lead lines to measure soundings, and astronomic fixes and dead reckoning to position a survey ship when out of sight of land on the first hydrographic surveys in late 1834 and early 1835. NOS today employs automated systems for gathering source data from its diesel-fueled hydrographic vessels and to aid the shore-based hydrographic survey units. These systems electronically position the survey vessel and record soundings in both analog (graphic) and digital formats, thereby virtually eliminating the need to record survey data by hand. In addition, plane table methods for topographic work have given way to sophisticated digital photogrammetric techniques.

Some of the more important developments made in nautical charting have been the automation of hydrographic surveying, processing, and chart compilation and reproduction operations; selection of hydrographic and topographic detail for greater legibility; addition of selected topographic detail to aid navigation by radar; detailed fine-line depth contour development of submarine relief; introduction of folded charts for small-craft use; and the standardization of symbols to better conform to international standards and usage.

NOS performs public services essential to the safety and advancement of marine and air commerce, to surveying and mapping and other engineering work, and to the economic development of natural resources. The early leaders of the Nation wisely considered such services as elements of the constitutional responsibility of the Nation to promote and develop trade and commerce between the several states and with foreign nations. As a maritime nation with its thousands of miles of coastline, the United States must have a continually expanding knowledge of the sea around it, its coasts, the location of dangerous reefs and shoals, the extent of fishing banks and submerged lands, the rise and fall of the tide, and the direction and strength of sea currents affecting its navigation and communications.

Today, the activities of NOS in the fields of engineering, science, and higher mathematics provide data vital to the development of navigation, industry, and national defense. Still prominent among its varied functions is the responsibility for conducting surveys and publishing nautical charts of the 2½ million square miles of the coastal and Great Lakes waters of the United States and its possessions.

NOS has the responsibility for charting the national and territorial coastal waters of the United States including the Great Lakes, Puerto Rico, U.S. Virgin Islands, U.S. administered trust territories, and other islands in the Atlantic and Pacific Oceans.

Besides constructing and maintaining these charts, NOS also publishes the U.S. Coast Pilots and other navigational aids.

1.1.1 Legislative History of NOS

The following legislative history[2] is the basis of NOS' charting responsibilities.

1. Organic Act of 1807

The Organic Act of February 10, 1807, (2 Stat. 4134) authorized the President "to cause a survey to be taken of the coasts of the United States, in which shall be designated the islands and shoals, with the roads or places of anchorage, within twenty leagues[3] of any part of the shores of the United States; and also the respective courses and distances between the principal capes or head lands, together with such other matters as he may deem proper for completing an accurate chart of every part of the coasts within the extent aforesaid." Section 2 of the act further authorized "such examinations and observations to be made, with respect to George's bank, and any other bank or shoal and the soundings and currents beyond the distance aforesaid to the Gulf Stream, as in his opinion may be especially subservient to the commercial interests of the United States."

The legislative history shows no intent on the part of Congress to establish a boundary line in the water at 20 leagues or at any other distance from shore. The act merely calls for a survey of the coasts[4] of the United States and a designation of the islands, shoals, roads, and anchorages "within twenty leagues of any part of the shores of the United States." This coastal survey would include both land area (with no defined limits) and water area to a distance of 20 leagues from shore.

Interestingly, that the distance of 20 leagues had earlier been cited in the treaty with Great Britain in 1783, which settled the Revolutionary War. This treaty described the new Nation's boundaries as "comprehending all islands within twenty leagues of any part of the shores of the United States." The

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2 Extracted from Coast and Geodetic Survey's Shore and Sea Boundaries (Shalowitz) and the Act of April 5, 1960, background.

3 In Thomas Jefferson's time, a "league" was probably defined as 3 sea miles, each mile being equivalent to 1 minute of latitude. A marine league is presently defined as a distance of 3 "geographical miles", a geographical mile being 1,852 meters. Thus, 20 leagues is understood to be about 60 nautical miles.

4 The term "coasts" appears to be used in the act in a very broad sense to cover both the land and water areas. Modern usage confines "coast" to a zone of land of indefinite width (perhaps 1-3 miles) bordering the sea – i.e., the land extending inland from the shore.

Supreme Court has held that this language was not intended to establish United States territorial jurisdiction over all waters lying within 20 leagues of the shore. The Court noted that Secretary of State Jefferson's proposal only 10 years later (in 1793) that a 3-mile limit should be placed upon the extent of U.S. territorial waters bears out the conclusion that "language claiming all islands within a certain distance of the coast is not meant to claim all the marginal sea to that distance."

2. Act of March 3, 1843

A significant milestone in the history of the Coast Survey was reached when Congress passed the Act of March 3, 1843 (5 Stat. 630, 640), which provided that future appropriations should be "expended in accordance with a plan of reorganizing the mode of executing the survey" to be formulated by a board of officers from the Coast Survey, Navy, and Army. The plan defined the requirements for triangulation, astronomic, topographic, and hydrographic work and provided for the first time for the making of magnetic observations "as circumstances and the state of annual appropriations may allow."

Hydrographic surveys were extended seaward to include soundings of 120 fathoms depth. The Plan of 1843 specifically provided that "soundings shall be made along the whole line of the coast, as far inland as the ports and harbors for commerce, and as far seawards as to soundings of 120 fathoms depth." This was a definite modification of the 20-league provision in the Organic Act of 1807, and constituted a varying rather than a constant distance offshore.[5] The 120-fathom depth approximates the conventional edge of the continental shelf, which is taken as 100 fathoms. Along the northeast Atlantic coast and along the gulf coast, this depth varies considerably from 20-league belt specified in the Act of 1807.

Although the responsibilities of the Coast Survey were vastly increased during the ensuing years, the Act of March 3, 1843, and the plan of organization adopted pursuant thereto, governed its operations for more than a century until passage of the Act of August 6, 1947.

3. Act of August 6, 1947

The Act of August 6, 1947, (61 Stat. 787) was the first legislation in more than 100 years to define the functions and duties of C&GS. While it did not change previous authorizations to any great extent, it eliminated a number of obsolete statutes and assembled into one place various items of substantive legislation which had been enacted since 1807. Section 1 sets forth the purpose of the act and the authority conferred upon the Director of C&GS, under direction of the Secretary of Commerce, to conduct the following activities "in the United States, its territories, and possessions:"

5

Along the Atlantic coast, the 120 fathom depth curve varies from a maximum of 64 leagues east of Cape Cod to a minimum of 2 leagues off Miami Beach; in the Gulf of Mexico, it extends to a distance of 37 leagues off Tampa and 40 leagues at the boundary between Louisiana and Texas. The wording of the provision as to 120 fathoms depth in the Plan of 1843 also bears out the interpretation placed on the word “coasts” in the Act of 1807 – i.e., that it referred to land and water areas rather than to a boundary line at a distance of 20 leagues from shore.

a. Hydrographic and topographic surveys of coastal water and land areas (including surveys of off-lying islands, banks, shoals, and other offshore areas);

b. Hydrographic and topographic surveys of lakes, rivers, reservoirs, and other inland waters not otherwise provided for by statute;

c. Tide and current observations;

d. Geodetic control surveys;

e. Field surveys for aeronautical charts;

f. Geomagnetic, seismological, gravity, and related geophysical measurements and investigations, and observations for the determination of variation in latitude and longitude.

Section 2 of the act provides for the processing and dissemination of the field data resulting from the activities authorized in section 1, specifically the compilation, printing, and distribution of nautical and aeronautical charts and related navigation publications:

In order that full public benefit may be derived from the operations of C&GS by the dissemination of data resulting from the activities herein authorized and of related data from other sources, the Director is authorized to conduct the following activities:

a. Analysis and prediction of tide and current data;

b. Processing and publication of data, information, compilations, and reports;

c. Compilation and printing of aeronautical charts of the United States, its territories, and possessions; and, in addition, the compilation and printing of such aeronautical charts covering international airways as are required primarily by United States civil aviation;

d. Compilation and printing of nautical charts of the United States, its territories, and possessions;

e. Distribution of aeronautical charts and related navigational publications required by United States civil aviation;

f. Distribution of nautical charts and related navigation publications for the United States, its territories, and possessions.

4. Clarification of 1955

Thus the area of survey responsibility had progressed from the 20-league limit stated in the Organic Act of 1807 to the 120-fathom depth stated in the Act of 1843 which placed the limit farther offshore in most areas. (In 1843, the areas concerned were the Atlantic and gulf coasts only.) For many years the 120-fathom curve was a primary factor on which operating funds for the Coast Survey were based.

In 1955, Admiral H. Arnold Karo, Director of C&GS, expressed concern to Congress about the agency's areas of hydrographic responsibility. He requested a determination and documentation of a new boundary and various mileage statistics for a new and more realistic limit on which to base appropriation requests.

The Coastal Surveys Division was assigned the task of determining and documenting the new area of survey responsibility, and it established a somewhat arbitrary offshore limit of 60 nautical miles (coincident with the 20 leagues of 1807). This corresponded to the distance that the Electronic Position Indicator, the electronic positioning system in use at that time for hydrographic surveys, was considered dependably accurate. This became the baseline to which adjustments were made as deemed necessary generally ranging from 12 miles off of Nova Scotia, the Bahamas, and Cuba, to the 1,000-fathom curve off most of the east coast, to various political boundaries such as the U.S.-Russia boundary in the Bering Sea. The limits of modern hydrography in effect in 1955 were also used as appropriate. The 60-nautical-mile limit was effected in most other areas. Inclusion of the U.S.-controlled Caribbean and Pacific Islands was assumed. These limits conformed well to the specifications of the Act of August 6, 1947, which specified that surveys should include "coastal water and land areas (including surveys of off lying islands, banks, shoals, and other offshore areas)."

5. Act of April 5, 1960

Congress enacted legislation in 1960 to clear up misunderstandings resulting from the 1947 law, which it was widely believed limited C&GS in its overall operations "to the United States, its territories, and possessions" and its survey work to "coastal water and land areas including off lying islands, banks, shoals, and other offshore areas." The new law (74 stat. 16) eliminated all real or ambiguous restrictions on the geographical scope of the area in which NOS is authorized to operate. It made clear that the Survey was authorized to carry out its activities without regard to geographical limitations whenever the head of an executive agency determines the project to be essential to the national interest.

Until recent years, then, considerable uncertainty surrounded the NOS legal charting area of responsibility. The Act of April 5, 1960, was clearly intended to eliminate all confusion about this responsibility by removing the geographic restrictions for surveying and charting activities. It opened up all waters to NOS and authorized the Secretary of Commerce to conduct surveying, charting, and geophysical activities without regard to geographical limitations in connection with projects designated essential to the national interest. The background statements for this act also expressed the intention that

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 002/04 January 8, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, Part 1, Section 1.1.1

TO: All Cartographers
Marine Chart Division

SUBJECT: National Imagery and Mapping Agency (NIMA) Name Change

APPLICATION: Nautical Chart Manual, Seventh (1992) Edition

REFERENCE: Memorandum Subject: National Imagery and Mapping Agency (NIMA) Name Change, dated November 25, 2003

Since the National Imagery and Mapping Agency (NIMA) has changed its name to the National Geo-spacial-Intelligence Agency (NGA), effective immediately the following attachment replaces pages where this change occurs. Revisions to the index are forthcoming.

The attachment replaces pages:

1-7 through 1-10	2-71 through 2-74	5-17 and 5-18
1-21.4 through 1-21.11	2-79 and 2-80	6-23 and 6-24
1-21.16 through 1-21.19	2-85 and 2-86	6-27 through 6-30
1-25 through 1-32	4-25 and 4-26	8-1 and 8-2
21- through 2-12	4-41 and 4-42	List of Acronyms
2-23 through 2-24	5-2.3 and 5-2.4	IV-20c through IV-20f
2-33.2 through 2-34	5-2.11 and 5-2.12	IV-20i and IV-20j
		IV-20m and IV-20n

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

the U.S. Naval Oceanographic Office (NAVOCEANO) and NOS should cooperate in conducting oceanic surveys.

6. Area of Current Responsibility

Today NAVOCEANO and the National Geospatial-Intelligence Agency (NGA) still take primary responsibility for foreign surveying and charting activities, while similar domestic responsibilities rest with NOS. However, there are exceptions. For example, NGA produces charts of certain U.S. harbors where national security is involved, overprints many NOS small-scale charts for special purposes, and on occasion produces charts of domestic areas simply because NOS does not have the resources to accommodate all NGA requirements. NOS has also conducted surveys of foreign waters at NAVOCEANO's request, eventually incorporating the results into any NOS charts of the area. NOS often enters into agreements with the Canadian Hydrographic Service (CHS) to survey Canadian waters. With few exceptions, however, NOS resources simply have not permitted further extension of its legally authorized activities, except for oceanographic research within the National Oceanic and Atmospheric Administration's (NOAA) broad scope.

The division of responsibility between NOS and USACE for charting inland waters and lakes remains unclear. Both NOS and USACE are authorized to produce maps, charts, and related publications covering the inland waters of the Nation. For a number of years, nautical charting for the U.S. portion of the Great Lakes, Lake Champlain, and the St. Lawrence River was under USACE authority. More recently this charting was the responsibility of the NOS Lake Survey Center in Detroit and was completely detached from other NOS nautical charting activities. In 1974, the charting work of the Lake Survey Center was integrated with all other NOS charting activities. The NOS and USACE responsibilities for other inland areas remain split, but successfully so, with the charting responsibilities for inland areas being determined cooperatively and individually as they arise.

The 200-mile limit of the Fishery Conservation Zone-Exclusive Economic Zone is sometimes incorrectly espoused as the NOS limit of surveying responsibility instead of the wider ranging (but also legally incorrect) offshore limits of present nautical chart coverage. Perhaps this reflects a desire for a limit that would be a feasible goal since it is the smaller of the two measurable areas (3,337,600 versus 10,644,000 square nautical miles) is easier to visualize, and is a continuously charted line. But, in fact, there are no such limitations.

1.1.2 Federal Requirements for Chart Usage

The modern nautical chart is constantly used by the prudent mariner to determine the safest course and is considered so indispensable that the U.S. Code of Federal Regulations requires vessels 1600 gross tons or larger to have charts of the U.S. waters on which they operate available for convenient reference at all times.

The following is extracted from the Federal Register, Vol. 48, No. 190, September 29, 1983, pages 44534 and 44535:

> "Regulations that would govern the operation of all major vessels in U.S. waters were introduced by an Advanced Notice of Proposed Rulemaking (ANPRM) on June 28, 1974, (39 FR 24157) in response to the Ports and Waterways Safety Act of 1972.
>
> Based upon comments received on the ANPRM, a Proposed Rule to establish a new Part to 33 CFR Part 164, entitled "Navigation Safety Regulations," was published on May 8, 1976 (41 FR 18766). These regulations, applicable to all vessels of 1600 grt [gross ton] or more operating on U.S. waters, were published as a Final Rule on January 31, 1977 (42 FR 5956). A proposed rule to modify the chart and publication requirements in 104.33 was published on July 7, 1983 (48 FR 31259).
>
> This rule modifies the requirements for carriage of nautical charts and publications by removing certain ambiguities from the Navigation Safety Regulations. These regulations are applicable to each self-propelled vessel of 1600 grt or more operating on the navigable waters of the United States, except the Saint Lawrence Seaway.
>
> The final rule closely parallels that of SOLAS (see 1.6.3). The final rule requires marine charts to be of large enough scale, with sufficient detail to make safe navigation of the area possible.
>
> Charts and publications must be corrected, and updated with corrections contained in all Notices to Mariners reasonably available to the vessel. The latest edition is no longer required provided the edition on board is so corrected. The required Tide and Tidal Current Tables must be the current edition. Foreign charts and publications must equally provide for the safe navigation of the vessel for the area to be transited.
>
> A master in selecting a chart or publication for use in an area must evaluate it on the basis of its sufficiency for safe navigation. In some instances the largest scale chart available may not be necessary to provide for safe navigation of the vessel. The scale of a foreign chart need not be exactly the same as the corresponding U.S. chart available for an area, provided the scale and detail make safe navigation possible. If the Captain of the Port determines that any charts or publications are inadequate for safe navigation, the Captain of the Port may require the master to obtain additional charts and publications before departure or subsequent return to that port.
>
> Provided the charts and publications are currently corrected, requiring further carriage and retention on board of Notices to Mariners is unnecessary.

The requirement for carriage of U.S. Coast Guard (USCG) Local Notice to Mariners (LNM) is also eliminated. The LNM is not readily available outside the local port area in advance to transient vessels. Current local information is available from pilots, broadcast notice to mariners, port authorities, agents and the like. Masters should endeavor to obtain this information prior to transit."

The following regulations are extracted from 33 CFR 164:

"164.30 Charts, publications, and equipment. General.

No person may operate or cause the operation of a vessel unless the vessel has the marine charts, publications, and equipment as required by 164.33 through 164.41 of this part.

164.33 Charts and publications.

(a) Each vessel must have the following:

(1) Marine charts of the area to be transited, published by the National Ocean Service, U.S. Army Corps of Engineers, or a river authority that

(i) Are of a large enough scale and have enough detail to make safe navigation of the area possible; and

(ii) Are currently corrected.

(2) For the area to be transited, a currently corrected copy of, or applicable currently corrected extract from, each of the following publications:

(i) U.S. Coast Pilot

(ii) Coast Guard Light List

(3) For the area to be transited, the current edition of, or applicable current extract from:

(i) Tide tables published by the National Ocean Service.

(ii) Tidal current tables published by the National Ocean Service, or river current publication issued by the U.S. Army Corps of Engineers, or a river authority.

(b) As an alternative to the requirements for paragraph (a) of this section, a marine

chart or publication, or applicable extract, published by a foreign government may be substituted for a U.S. chart and publication required by this section. The chart must be of large enough scale and have enough detail to make safe navigation of the area possible, and must be currently corrected. The publication, or applicable extract, must singly or in combination contain similar information to the U.S. Government publication to make safe navigation of the area possible. The publication, or applicable extract must be currently corrected, with the exceptions of tide and tidal current tables, which must be the current editions.

(c) As used in this section, "currently corrected" means corrected with changes contained in all Notices to Mariners published by the National Geospatial-Intelligence Agency, or an equivalent foreign government publication, reasonably available to the vessel, and that is applicable to the vessel's transit."

1.2 Nature of Nautical Charts

Until recent times, nautical charts were constructed primarily to serve the needs of maritime navigation for large commercial and military ship operations. The purpose of today's nautical chart has been broadened to provide for and promote the growth of various segments of the national economy as well as to respond to the needs of technological developments. The proper presentation of hydrographic data is invaluable to such commercial interests as fishing, transportation, and underwater mineral resource development, and to that segment of the economy catering to recreational boating and sport fishing. Oceanographic programs, developments in ship design, and the growth in recreational boating all have contributed to the changing design of nautical chart presentations.

A basic requirement of a nautical chart is to promote safe navigation by providing the navigator with the proper information to assist in making the right decision at the right time. NOS must be able to anticipate these diverse needs and make them available to the user in the best graphic form. Any attempt to improve charts must take into account the navigator's point of view. User surveys on specific charting proposals, user evaluation surveys through contacts with private organizations, boat show participation, and direct contact with commercial and recreational boating interests are some of the methods NOS uses to collect information on the needs of navigators. These requirements must be evaluated and merged with cartographic feasibility, economic considerations, technical trends, and available resource.

A nautical chart is a graphic portrayal of the marine environment. It is used by the mariner both as a "road map" and worksheet. Used in conjunction with other supplemental navigational aids, such as Coast Pilots and Notices to Mariners (NM), the mariner is able to lay out courses and navigate a ship by the shortest, and most economical safe route. A chart is constructed then primarily to serve the needs of the mariner. It shows the nature and form of the coast, the depths of the water and general character and configuration of the sea bottom, the locations of reefs, shoals, and other dangers to navigation, the rise

and fall of the tides, the locations of man-made aids to navigation, the direction and strength of water currents, and the characteristic of the Earth's magnetism in the area of the chart. Portraying, as it does, all this pertinent information in a single, inexpensive, easy-to-use, and easy-to-understand analog or digital format, the nautical chart is an indispensable navigational tool.

The long coastline of the United States - totaling about 100,000 miles of tidal shoreline presents many and varying problems in coastal geography. Added to this vast area to be charted are extensive intracoastal waterways and many bays and harbors. Eighty percent of the nautical charts published by NOS are at large scales (1:50,000 or larger) for navigation in the relatively restricted intracoastal waters. In these waters the navigator is often close to land and is vitally concerned with the shallow waters along the shore, the features of the shoreline, and the nearby land.

NOS publishes and maintains over 900 nautical charts of the coastal waters of the United States and its possessions. It also maintains records and supplies information about the coastal geography of the country which is required for the protection of the coastline and for economic development in coastal regions. Safety of life and property frequently depends directly upon the reliability of the NOS charts and publications; its precise geodetic surveys of the country are also the foundation of all topographic and geologic mapping, land surveys, and many extensive engineering projects. It is, therefore, NOS policy to stress accuracy and dependability in all field observations and publications for which it is responsible. The founders of NOS established high standards of accuracy early in the 19th century which have withstood the test of time.

However, charting an area is not a job that can be done once and then be forgotten. The marine environment is constantly changing as a result of the establishment of new ports and waterfront facilities, straightening rivers, dredging channels, adding piers, building bridges and changing bridge and cable clearances, deepening harbors, extending breakwaters, and changing landmarks. Other changes result from hurricanes and earthquakes as well as sediment deposition resulting from nature's more subtle and constant actions. Natural elements such as wind, tide, current, and storm erosion are potent forces that affect chart maintenance activity. All of these man-made and natural changes must be continually monitored, and the affected areas resurveyed and recharted if our waters are to remain safe for commerce, industry, recreation, and national defense.

1.2.1 Nautical Charts vs Topographic Maps

The nautical chart differs considerably from the topographic map in its treatment of the coastline. The topographic map emphasizes the land forms and the representation of relief, with shoreline as an approximate delineation of the waterline at mean sea level. In contrast, the nautical chart has such a unique requirement for detailed and accurate representation of the coastline and water forms that it must be considered in a separate category from topographic maps in any discussion of coastal geography.

Nautical charts also differ from maps in that standardized specifications cannot be applied

indiscriminately to them. In fact, the attempted application of simple rules to govern chart content has been a principal cause of wasted effort in the past. For example, although topographic contours are undeniably valuable to the mariner on charts of some areas for radar reflection, visual profiles, and identification for relative position locating, their inclusion on other charts causes an amount of work out of proportion to their value. The drafting of standard rules covering particular features often leads to a misguided attempt to give a chart uniform treatment throughout, whereas an essential element of successful chart compilation is that different considerations apply as a compiler works from inshore to offshore areas, or along an open coast toward a shoal-encumbered estuary, or inland from the coastline. Therefore, the specifications outlined in this Manual are to be used as guidelines and the ultimate decision regarding depiction of the various features appearing on nautical charts must rest on the professional judgment of the cartographer.

Chart symbols are designed to convey to the navigator quickly, clearly, and unmistakably the information necessary for safe navigation. The graphic methods for charting coastline features encompass various combinations of individual symbols and symbol patterns, line drawings in which the line itself may be varied (as to line width, solid vs. dashed lines, etc.), screen tints, and legends. Too many symbols reduces the legibility of charts and the ease and speed with which they can be interpreted. Thus, simplicity is a key element in good chart compilation and one regarding sound cartographic judgment.

1.2.2 Hydrography

The soundings, or depths, are without doubt the single most significant feature appearing on a nautical chart, for it is these depths that show where a vessel can and cannot safely be navigated. Soundings are selected to show trends of bottom features not brought out by depth curves, with enough soundings to clearly show the shoal areas and the channels between. Careful selection of soundings is required to allow correct interpolation between them, to reflect the adequacy of the survey, and to permit the use of the chart as a plotting sheet.

Least depths are shown on shoals and in natural navigable channels and represent the most important class of soundings shown on the chart. The least depths in channels tell the mariner the maximum draft that can pass through that channel. In harbor areas, least depths are also important and are shown in the entrances to the harbors and basins and alongside piers and wharves. Enclosed deeps in shoal areas are shown, as their presence is helpful to mariners using echo sounders to confirm their position in poor visibility and are also useful when anchoring.

On large-scale charts and on other charts where the submarine topography is simple, a uniform pattern of soundings is selected to avoid the impression of an incomplete survey, sparse data, or old data when soundings were obtained by wire or lead line at relatively widely spaced intervals. Much of these old survey data, which dates back to the days of sailing survey vessels, are still being used and are still valid in certain areas of hard, stable bottom.

The quality of the bottom is particularly important as an indication of anchor-holding characteristics: sand and other firm deposits hold better than soft mud, while rocky bottom is undesirable for anchoring. When known, bottom material is shown on shoals, banks, and reefs as a guide to their stability and as a clue to possible bottom irregularity.

Depth curves, lines of equal depth which are the equivalent of land contours on a topographic map, are also of special importance in chart compilation. In drawing these curves, full use is made of all the soundings obtained on the hydrographic survey. Each curve is the equivalent of an infinite number of soundings of equal depth. By careful use of these curves, characteristic features of the ocean bottom are brought into prominence and provide the navigator with a simple method for position identification by comparing a line of echo soundings with the charted depth curves. They bring order out of what otherwise might appear to be chaos. Depth curves aid in interpreting the soundings, in emphasizing the submerged dangers, and in defining the extent of safe channels. Depth curves are extended offshore at regular and predetermined intervals, with the spacing selected so that sufficient background or white space is retained to preserve the basic function of the chart as a medium for course plotting and other navigational notations.

The outer limit of the foreshore area, that part of the beach between high and low waters at ordinary tides, is determined by hydrographic or photogrammetric surveys. On a gently sloping coast, the area which uncovers at low water may reach a considerable distance from the high water line. This low water line is represented on the chart by a dotted line, if it is other than ledge rock, and emphasized by a green tint between the high water and the low water lines. This green tint - produced by overprinting the gold land tint and the blue water tint - is clearly visible under red chart-reading lighting (as are the separate land gold and water blue), which was not true of the yellow land color used prior to 1977. Within this foreshore area, the effects of the sea cutting into the shore, such as scoured ledge rock or scattered boulders, are also identified.

A selected offshore area adjacent to the foreshore is charted with a blue tint. The outer limit of this area is a particular depth contour, the selection of which varies according to the area and purpose of the chart. The blue-tinted area emphasizes the approximate extent of the zone considered to be the most threatening to the majority of mariners using the chart. It generally includes that area which is most affected by deposition and erosion. It is the area where bars, reefs, and isolated rocks are usually located. Most of the information for charting this area comes from hydrographic surveys. Surveys are more intensive in such areas, and the depth curves are defined in greater detail and reveal more of the bottom configuration. Legends are used to describe conditions which cannot readily be represented by symbols. Legends such as "Boulders," "Wreckage," or "Foul area," with limits if needed, may be charted over an extensive area.

1.2.3 Dangers

The principal dangers to navigation shown on nautical charts are rocks, reefs, shoals, and wrecks. Rocks

are shown by an asterisk-like symbol if their peak uncovers within a low water to high water zone, and by an islet if it is always bare above the limit for high water. A submerged rock, one that is covered even at low water, is shown by a simple cross if the depth is unknown, or as a sounding with an adjacent "Rk" legend.

Isolated reefs are detached from shore, while ledges (rocky, coral, or lava formations) are connected with and fringe the shore. They are symbolized by a wavy detailed line simulating the irregular edging of the formation. The reef and ledge symbol shows a shelf of rock which uncovers at low water, and individual asterisk-like symbols show scattered rocks or high points which uncover at some stage of tide. Where a ledge extends below the low water level, it is depicted by sunken rock symbols or an area labeled "Foul" and outlined by a dotted line. Coral or lava rock are treated the same as rock ledge since they present the same hazard to the mariner. They are seldom labeled since identification can be inferred from their locality. Rocks, reefs, and ledges are unyielding, and the wise mariner will avoid navigating areas where they are depicted. Frequently there are other undetected hazards in the immediate vicinity.

Charted wrecks are of two kinds, stranded or sunken. A stranded wreck has some portion of the hull or superstructure visible above the sounding datum. It is represented on the chart by a pictorial ship profile symbol. A sunken wreck is completely submerged or may have masts visible above the sounding datum. Sunken wrecks are symbolized by a line crossed by three shorter lines.

When rocks, wrecks, or obstructions have been cleared by means of a wire-drag survey, the clearance depth is shown underlined by a bracket.

An enclosing dotted danger line is used to delimit and emphasize rocky and foul areas and also to mark shoal areas of unknown depth, isolated dangerous shoal areas, rocks and reefs, wrecks, and obstructions.

Continuous attacks by the sea upon points of land projecting into the water erodes away materials which are transported to other places and deposited as accretions to existing forms or which contribute to the formation of new shoals and bars. Natural forces working upon inlets create a constantly shifting arrangement of channels; cause inlets to open, close, or migrate; and cause a consequent readjustment of the shoreline. Progress in the evolution of shoreline configuration is usually gradual, but occasionally changes occur so rapidly and in such a strategic location that a definite marine hazard results which requires immediate action.

For areas subject to continuous and rapid change, a suitably worded caution note may be necessary. In extreme cases, such as for certain ocean inlets, hydrography and aids to navigation are not charted; instead, the position of such often-moved buoys are relayed to the mariner via the LNM.

1.2.4 Shoreline

The shoreline, or high waterline is the most prominent line on the chart. It is represented by a solid

black line (a dashed line if its delineation is only approximate). The shoreline is further emphasized by a gold color tint on the land side and a contrasting blue or green tint on the water side. Its configurations are important when the mariner is close to shore. The accurately determined shoreline reveals the physical

geography of the shore, and it reflects the effects of prevailing currents, wave fronts, and storms. The shoreline delineates the seaward limits of both marsh and swamp areas since to the mariner this limit appears as the visible shoreline. Marsh areas carry a green tint and, where space permits, the legend "marsh" is added. The seaward extent of marsh is accurately surveyed, but the inshore boundary may be generalized, as the ragged indentations into the land are of little importance on the nautical chart. Swamp is represented by the land tint and with a legend "swamp" or "mangrove." Since the vegetation of swamp land makes it appear as land to the mariner, its general location is sufficient for charting purposes.

Seawalls, bulkheads, and other man-made structures on the shoreline are represented on the chart by their outlines. They are not usually labeled since they are symbolized by a finer line and can be identified by their shapes or by their proximity to other cultural features. Structures which form a part of the shoreline but also extend underwater, such as marine railways or ramps, are represented by a dashed line showing that portion which covers at high water.
Backshore is that part of the coast which extends inland from the shoreline to the cliff or bluff marking the limit of storm waters. The cliff or bluff is charted if it has landmark value or if it presents an obstacle to landing. The symbol used is drawn to suggest relative heights.

1.2.5 Aids to Navigation

Aids to navigation are shown on charts to assist the mariner in navigating a vessel safely from one place to another. They are placed at strategic points along the coast and navigable waterways to mark safe water and to provide navigators with a means to determine their position with relation to the land and to hidden dangers.

Charted aids fall into two classes, fixed aids and floating aids. Fixed aids include lighthouses, other fixed lights, daybeacons, man-made landmarks, and radio aids, including LORAN-C. Floating aids to navigation on the chart consist of articulated lights and the various types of buoys, lighted and unlighted. Many primary aids are equipped with sound devices such as a bell or horn to aid the mariner during periods of poor visibility. Prominent man-made structures are charted whenever they may be useful for vessel positioning. Radio towers and stacks are most useful for this purpose as they are not only good daytime references but their flashing red and strobe lights can be seen for long distances at night. All of these aids to navigation are clearly and distinctly marked on the chart, using symbols and labels that allow the mariner to readily recognize and use these features.

1.2.6 Technological Progress

The physical geography depicted on nautical charts is revised by use of aerial photography as an integral

part of the chart maintenance program. The shoreline is compiled at chart scale for direct application to the digital chart files, and the location of the aids to navigation and special landmarks are an integral part of the information furnished by the photogrammetric processes.

Aerial photographs are the basic media from which the shoreline is compiled. The many aids to navigation, including daybeacons and lights in our harbors and along the intracoastal waterways, show clearly on color photographs and can be readily located by photogrammetric measurement. By use of infrared photography, the water surface is reflected with little or no depth penetration. The waterline contour is well defined, and when taken in conjunction with the high and low stages of the tide, the high water and low water lines can be extracted for chart application. Other color film media have a water depth penetration quality that can be interpreted with certainty in relatively clear waters. This concept in photogrammetry, called photobathymetry, is applied primarily for nautical charting. Shoreline maps are prepared for nearshore hydrographic surveys and include such coastal geography as foreshore detail, underwater channel lines, shoals, and rocks. These features guide and supplement the hydrographic survey in the detail work for charting shallow waters adjacent to the shore.

Electronics and automation are key elements in modern mapping and charting. Electronic methods of charting and mapping, in one form or another, are now used by nearly all maritime nations for surveying the waters bordering their seacoasts, while aerial photogrammetric methods have become the universal medium for surveying the land features.

The whole field of surveying and mapping on land, sea, and in the air is undergoing major change. Surveyors have an important new yardstick at their disposal namely, the velocity of radio and light waves. Instruments using this new technology have not only reduced the cost of surveys, but have accomplished surveys that had been impossible with conventional methods. These methods have steadily improved, resulting in increasingly accurate hydrographic surveys and photogrammetric information. The rapidity with which depths can now be measured and topographic information collected has greatly increased the total amount of data available for application to the nautical charts in recent years.

Today's unprecedented demands for increasingly accurate cartographic products and the wealth of source materials available for their construction and revision have required accelerated chart production. Current cartographic operations have resulted in a shorter time span between inception and publication of a chart.

Automation places cartography on the threshold of the most revolutionary developments it has ever undergone. Electronic methods are steadily pushing seaward the frontiers of accurate hydrographic surveys and are making it feasible to explore the intricate patterns of deep coastal slopes with an accuracy and completeness previously undreamed of - thus enhancing the safety of life and property at sea and increasing man's knowledge of world geography. However, any changes in charting must continue to take into account the basic purpose of the nautical chart namely to provide sufficient information for safe navigation while avoiding the possibility of confusion or misinterpretation.

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 008/03 May 27, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 1.3

TO: All Cartographers
Marine Chart Division

SUBJECT: Small-Craft Charts

APPLICATION: All Affected Nautical Charts

Effective immediately, the attachment replaces pages 1-17 through 1-20 and adds pages 1-20.1 through 1-20.2 in the Nautical Chart Manual, Volume1, Part 1, Seventh (1992) Edition.

Beginning in the late 1970's, the Marine Chart Division began converting its area, route and modified route small-craft charts to the pocket fold format. The conversion of these type of Marine Chart Division small-craft charts is now complete.

Consisting of one sheet printed front and back, pocket fold small-craft charts are folded on a horizontal axis to form a centerfold, on a vertical axis to form an accordion fold, and are NOT issued in a protective cardboard jacket.

The attachment updates Section 1.3.2 to identify the only four (4) types of small-craft charts which are currently produced by the Marine Chart Division - folio, pocket fold, recreational and canoe.

Pages 1-17 through 1-20.2 are to be inserted into the Nautical Chart Manual, Volume1, Part 1, Seventh (1992) Edition, immediately after page 1-16.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

JULY 9, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Submarine Cables on International Charts

Effective immediately, the attachment replaces pages 1-17 and 1-18 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The purpose of this memorandum and attachment is to reinforce the guidelines concerning the charting of submarine cables on international charts 50,500, 501, 513 and 514.

Submarine cables shall **not** be charted on international charts. All submarine cables (symbols L 30.1 and L 32) which are currently charted on international charts 50,500, 501, 513 and 514 shall be deleted.

Many changes have taken place in hydrographic surveying and charting techniques during NOS' long years of public service. Each new milepost in this steady march of scientific and technical progress has added more accurate and more detailed information to the accumulated knowledge. Greatly enlarged efforts to solve problems through intensive research programs are in the offing. These efforts will contribute to the future progress of NOS in charting the Nation's waterways and coastal geography.

1.3 Chart Classification

Variation in the precision and detail required to satisfy the needs of different users gives rise to a requirement for a variety of chart scales. Nautical charts vary in scale with the importance of the geographic area, the purpose for which the chart is designed, and the necessity for clearly showing all dangers within that area. Consideration of the varying needs of users has resulted in three categories of charts, the flat conventional charts, the folded or bound small-craft charts, and the marine facilities charts.

1.3.1 Conventional Charts

These charts are flat, printed reproductions of some portion of the Earth's surface. Depending on their scale, these charts show the nature and shape of the coast, depth of the water, general configuration and character of the bottom, prominent landmarks, port facilities, cultural details, dredged channels, aids to navigation, marine hazards, magnetic variations, and seaward boundaries. There are five classifications of conventional nautical charts:

1. International Charts

These consist of a series of five charts covering the Northeastern Pacific Ocean and the Bering Sea, compiled to internationally standardized cartographic specifications and at scales of 1:3,500,000 or 1:10,000,000. The navigational information provided includes depth curves, soundings, nautical symbols and related data, but does not include the charting of submarine cables (symbols L 30.1 and L 32).

These series of more than 80 sheets of small-scale charts encompassing the entire world, were the result of the participation of fifteen worldwide nations. The National Ocean Service is responsible for the production of the following five (5) charts: 50, 500, 501, 513, and 514.

2. Sailing Charts

Published at scales smaller than 1:600,000, these are intended for planning voyages and for fixing the mariner's position as the coast is approached from the open ocean or for sailing along the coast between distant ports. The shoreline and topography are generalized, and only offshore soundings, principal navigational lights and buoys, and landmarks visible at considerable distances are shown.

3. General Charts

These charts of the coast, published at scales ranging from 1:150,001 to 1:600,000, are intended for coastal navigation when a course is well offshore but can be fixed by landmarks, lights, buoys, and

characteristic soundings.

4. Coast Charts

Published at scales ranging from 1:50,001 to 1:150,000, these charts are intended for near shore navigation inside outlying reefs and shoals, in entering or leaving bays and harbors of considerable size, and in navigating the larger inland waterways.

5. Harbor Charts

Published at scales of 1:50,000 and larger, these charts are intended for navigating in harbors and smaller waterways and for anchorage.

1.3.2 Small-Craft Charts

These charts, published at scales ranging from 1:10,000 to 1:80,000, are designed for easy reference and plotting in limited spaces. In some areas these charts represent the only chart coverage for all marine users. They portray regular nautical chart detail and other specific details of special interest to small-craft operators, such as enlargements of harbors; tide, current, and weather data; rules-of-the-road information; locations of marine facilities and anchorages; courses and distances. Types of small-craft nautical charts include the following:

1. Folio Charts

These small-craft charts consist of two to four sheets printed front and back, accordion-folded, and bound in a protective cardboard jacket. (See Nautical Chart Manual, Volume 2, Appendix IV, page IV-14.)

2. Pocket Fold Charts

These small-craft charts consist of one sheet printed front and back; folded (1) on a horizontal axis (i.e., centerfold) and (2) in an accordion-folded format on a vertical axis. Pocket Fold charts are NOT issued in a protective cardboard jacket. (See Nautical Chart Manual, Volume 2, Appendix IV, page IV-14.2.)

To facilitate easy handing and storage, small-craft charts which were previously issued in the area chart, route chart and modified route chart formats have been re-designed and re-formatted as pocket fold charts. However, these categories of small-craft charts are still identified as their respective types due to the geographic coverage and depicted information.

a. Area Charts

These are versions of conventional nautical charts overprinted with additional small-craft information.

Many changes have taken place in hydrographic surveying and charting techniques during NOS' long years of public service. Each new milepost in this steady march of scientific and technical progress has added more accurate and more detailed information to the accumulated knowledge. Greatly enlarged efforts to solve problems through intensive research programs are in the offing. These efforts will contribute to the future progress of NOS in charting the Nation's waterways and coastal geography.

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Variation in the precision and detail required to satisfy the needs of different users gives rise to a requirement for a variety of chart scales. Nautical charts vary in scale with the importance of the geographic area, the purpose for which the chart is designed, and the necessity for clearly showing all dangers within that area. Consideration of the varying needs of users has resulted in three categories of charts, the flat conventional charts, the folded or bound small-craft charts, and the marine facilities charts.

1.3.1 Conventional Charts

These charts are flat, printed reproductions of some portion of the Earth's surface. Depending on their scale, these charts show the nature and shape of the coast, depth of the water, general configuration and character of the bottom, prominent landmarks, port facilities, cultural details, dredged channels, aids to navigation, marine hazards, magnetic variations, and seaward boundaries. There are five classifications of conventional nautical charts:

1. International Charts

These consist of a series of five charts covering the Northeastern Pacific Ocean and the Bering Sea at scales of 1:3,500,000 or 1:10,000,000 compiled to internationally standardized cartographic specifications. The navigational information includes depth curves, soundings, nautical symbols, and related data. Fifteen nations participated in the production of more than 80 sheets of this series of small-scale charts to cover the entire world.

2. Sailing Charts

Published at scales smaller than 1:600,000, these are intended for planning voyages and for fixing the mariner's position as the coast is approached from the open ocean or for sailing along the coast between distant ports. The shoreline and topography are generalized, and only offshore soundings, principal navigational lights and buoys, and landmarks visible at considerable distances are shown.

3. General Charts

These charts of the coast, published at scales ranging from 1:150,001 to 1:600,000, are intended for coastal navigation when a course is well offshore but can be fixed by landmarks, lights, buoys, and characteristic soundings.

4. Coast Charts

Published at scales ranging from 1:50,001 to 1:150,000, these charts are intended for near shore navigation inside outlying reefs and shoals, in entering or leaving bays and harbors of considerable size, and in navigating the larger inland waterways.

5. Harbor Charts

Published at scales of 1:50,000 and larger, these charts are intended for navigating in harbors and smaller waterways and for anchorage.

1.3.2 Small-Craft Charts

These charts, published at scales ranging from 1:10,000 to 1:80,000, are designed for easy reference and plotting in limited spaces. In some areas these charts represent the only chart coverage for all marine users. They portray regular nautical chart detail and other specific details of special interest to small-craft operators, such as enlargements of harbors; tide, current, and weather data; rules-of-the-road information; locations of marine facilities and anchorages; courses and distances. Types of small-craft nautical charts include the following:

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2. Pocket Fold Charts

These small-craft charts consist of one sheet printed front and back; folded (1) on a horizontal axis (i.e., centerfold) and (2) in an accordion-folded format on a vertical axis. Pocket Fold charts are NOT issued in a protective cardboard jacket. (See Nautical Chart Manual, Volume 2, Appendix IV, page IV-14.2.)

To facilitate easy handing and storage, small-craft charts which were previously issued in the area chart, route chart and modified route chart formats have been re-designed and re-formatted as pocket fold charts. However, these categories of small-craft charts are still identified as their respective types due to the geographic coverage and depicted information.

a. Area Charts

These are versions of conventional nautical charts overprinted with additional small-craft information.

b. Route Charts

These charts are designed for river and narrow waterway coverage, and for much of the Intracoastal Waterway.

c. Modified Route Charts

These are versions of Intracoastal Waterway charts that were originally issued in a conventional chart format. Modified route charts are used for some areas that are not adaptable to the route chart style used for long, narrow waterways.

3. Recreational Charts

These are a series of large-scale charts, published in a book format, providing sequential page coverage for selected areas.

4. Canoe Charts

This is a chart series of the Minnesota-Ontario border lakes. Most canoe charts do not show hydrography. They are intended to portray the general shape and size of these lakes and the international boundary between Canada and the United States. They were originally designed for the International Boundary Commission/U.S. Section but are now also used to provide information of interest to campers and boaters who must portage between the lakes.

1.3.2.1 Designation in Chart Catalogs

Folio charts are identified in chart catalogs with the designation "SC FOLIO SMALL-CRAFT CHART"; Pocket Folds are identified in chart catalogs with the designation "PF" and Recreational charts are identified with the designation "SMALL-CRAFT BOOK CHART".

All canoe charts are located in the Great Lakes. These charts are outlined in green in the chart catalog and are listed under the heading:

CANOE CHARTS
MINNESOTA-ONTARIO BORDER LAKES

1.3.3 Marine Facilities Charts

These charts are conventional charts with small-craft marine facility information overprinted on the chart and presented in tabular form on the back. These are produced for major port areas where facility information for a wide area, such as Narragansett Bay or Galveston Harbor, is useful for the mariner.

1.3.3.1 Designation in Chart Catalogs

Marine Facilities charts are identified in chart catalogs with the designation “MF”.

1.4 Chart Production Terminology

1.4.1 Standard

A "Standard" is a black, white, and magenta paper copy of the chart or compilation used to record and index all new information and source documents (except information from the NM) received during the life of the Standard, usually 2 to 12 years. Information, source notations and listings that have been "canceled" by a date stamp are considered fully applied to the chart compilation; those items which are not date stamped have yet to be fully applied. Also recorded on the Standard are certain standing items considered to be of value in the future application of source documents or other information to a chart. When the amount of source documents (and other information) indicated on the Standard becomes excessive, a new Standard is produced, and the old Standard is stored for future reference and eventual microfilming.

1.4.2 Aid Proof

The term "Aid Proof" is no longer in use. The Aid Proof was a paper copy of a current chart on which were indicated all changes in aids to navigation, important notes and tabular corrections which were to be applied to the chart for the next printing. Information regarding changes to aids to navigation was derived principally from the NM. Aid Proofs were replaced by Drawing-Aid Proofs in 1976 and are available now only in the microfilm system maintained by the Nautical Data Branch (NDB) of NOS.

1.4.3 Drawing Aid Proof

The term “Drawing Aid-Proof” is no longer in use. The Drawing-Aid Proof was the medium upon which cartographic compilation edits (i.e., additions, revisions, deletions) were applied from source documents to all New Editions (see Section 1.4.5) and certain minor Reconstructed Charts (see Section 1.4.9). The Drawing-Aid Proof served as a permanent graphic record of the cartographic changes, between chart printings, resulting from all source documents. It was a contact film positive

of the black and magenta plates of a chart, reproduced on .007" stable-base plastic. (The contact film positive of the magenta plate was not considered a Drawing-Aid Proof, but only an accessory drawing to the contact film positive of the black plate; therefore, the contact positive of the magenta plate was not archived or microfilmed as was the contact positive of the black plate.)

When a New Edition or Reconstruction of a nautical chart was scheduled to be published and the Drawing Aid Proof was forwarded to the Reproduction Branch for the purpose of revising the appropriate chart negatives, an interim copy was made of the forwarded Drawing Aid Proof. This interim copy, called an X-Drawing and made of a more thinner plastic than the stable-base plastic, was retained in the compilation branch for the application of source material received in the Division after the date the Drawing Aid Proof was forwarded.

1.4.4 Proof

A proof (once produced on contact film, but now generated on paper from the raster files), is an advanced copy of a New Edition of a chart. This advanced copy is produced to:

(a.) verify the presence of quality and correct content in the cartographic work before the chart's final printing
(b.) verify the design and plate registration of the chart,
(c.) verify the cartographic quality of the engraving work,
(d.) verify the proper use of colors for chart features when appropriate,
(e.) clean up cosmetic image defects.

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NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 007/02 **April 30, 2002**

File with Nautical Chart Manual Volume 1, Part 1, Section 1.4.5

TO: All Cartographers
Marine Chart Division

SUBJECT: Corrected Through Dates

APPLICATION: All Nautical Charts

Effective immediately, the attachment amends Section 1.4.5, 1.4.6, 1.4.7 and 1.4.8; pages 1-19 through 1- 22 of a memorandum dated July 12, 2000, which amended the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition,.

The contents of the Notice to Mariners (NM), published weekly by the National Imagery and Mapping Agency (NIMA), is available on the Internet well in advance of publication in analog form. The content of the NM does not change between posting on the Internet and publication of the printed version of the NM. NM corrections shall be entered into CRIT as they are posted on the Internet.

Since the publication date of the NM may vary by several weeks from the publication date of the most recently available Local Notice to Mariners- published weekly by each U.S. Coast Guard district- both the date of the latest NM and the date of the latest LNM shall be charted as specified in the attachment. These dates shall be referred to as, "corrected through dates."

An edition date shall continue to be charted, but only as a month and year as specified in the attachment. Edition dates shall be added to small-craft chart covers.

The Notice to Mariners Caution Note shall also be revised on each chart.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

1.4.5 New Edition

A chart issue that cancels all previous issues is called a New Edition. A New Edition reflects one or more changes of such importance to navigation that all previous printings are obsolete. Changes may be based on corrections from the NM in addition to other sources.

1.4.5.1 Edition Number

The edition number shall be incremented with each new edition of the chart. The edition number shall be shown on all new editions as follows:

Conventional Charts-

The edition number shall be printed in the lower left corner of the chart, outside of the chart border, using the following form:

32nd Ed.,

The edition number shall start flush with an imaginary line extended from the outside edge of the left border. The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-1.

Small-Craft Chart Covers-

The edition number shall be printed in the lower border of the front cover, to the right of the chart number, 5.0 mm (0.2") from the bottom edge of the cover, using the following form:

EDITION 30

The edition number shall start flush from an imaginary line extended from the left side of the cover photograph. The edition number shall print in the color of the cover photograph and in 12 point Swiss Light style type. See Figure 1-2.

Small-Craft Folio Chart Pages-

The edition number shall print in the lower left corner of the page, immediately to the right of the chart number, using the following form:

32nd Ed.,

The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-3.

Small-Craft Pocket Fold Chart Cover Panels-

The edition number shall be printed after the chart number located above the publication note, which varies in location depending upon available space. The edition number shall be shown using the following form:

32nd Ed.,

The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-4.

Small-Craft Pocket Fold Chart Pages-

The edition number shall print in the lower left corner of the page, immediately to the right of the chart number, using the following form:

32nd Ed.,

The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-5.

Recreational Chart Covers-

The edition number shall be printed in the lower left corner of the chart, outside of the decorative border, using the following form:

32nd Ed.,

The edition number shall start flush from an imaginary line extended from the outside edge of the left border. The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-6.

Recreational Chart Pages-

The edition number shall be printed in the lower left corner of each page, immediately following the chart number, except for pages that are only included to display general information. The edition number shall use the following form:

32nd Ed.,

The edition number shall print in black, 8 point Swiss Light style type. See Figure 1-7.

1.4.5.2 Edition Date

The edition date represents the month and year that a new edition is printed. The day of the month shall not be shown. The edition date shall be shown on all new editions as follows:

Conventional Charts-

The edition date shall immediately follow the edition number in the lower left corner of the chart, outside of the chart border, using the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash, and shall print in black, 12 point Swiss Light style type. See Figure 1-1.

Small-Craft Chart Covers-

The edition date shall be shown in the lower border of the front cover, 10.0 mm (0.4") to the right of the edition number, 5.0 mm (0.2") from the bottom edge of the cover. The edition date shall assume the following form:

JUNE 2002

The month of the edition date shall not be abbreviated. The year of the edition date shall be shown by all four digits, such as, 2002. The edition date shall print in the color of the cover photograph and in 12 point Swiss Light style type. See Figure 1-2.

Small-Craft Folio Chart Pages-

The edition date shall immediately follow the edition number in the lower left corner of each page, outside of the chart border, using the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September would be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month and year of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash. See Figure 1-3.

Small-Craft Pocket Fold Chart Cover Panels-

The edition date shall immediately follow the edition number, located above the publication note, which varies in location depending upon available space. The edition date shall assume the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September would be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month and year of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash. See Figure 1-4.

Small-Craft Pocket Folio Chart Pages-

The edition date shall immediately follow the edition number in the lower left corner of each page, outside of the chart border, using the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September would be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month and year of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash. See Figure 1-5.

Recreational Chart Covers-

The edition date shall immediately follow the edition number in the lower left corner, outside of the decorative border, using the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September would be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month and year of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash. See Figure 1-6.

Recreational Chart Pages-

The edition date shall immediately follow the edition number in the lower left corner of each page, outside of the chart border, except for pages that are only included to display general information. The edition date shall assume the following form:

Jun. /02

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September would be abbreviated, Sep. Only the first letter of the month shall be capitalized. The month and year of the edition date shall print in black, 8 point Swiss Light style type. The year of the edition date shall be shown by the last two digits of the calendar year, separated from the month of the edition date by a space and a slash. See Figure 1-7.

1.4.5.3 Print Date:

In the past, edition dates were also known as print dates. Print dates were always the Saturday date of the last applied weekly NM, published by NGA, provided the application of all LNM, published by the appropriate USCG District(s), to the same date or a later date had been made. The date of the latest LNM was not indicated. Print dates included month, day of the month and the last two digits of the calendar year. This practice is no longer used and the term "print date" shall not be used to indicate an edition date.

1.4.5.4 Sales Agent Credit Symbol:

Authorized NOS nautical chart sales agents are given a refund credit for unsold charts that are made obsolete by the issuance of a New Edition. The agent is directed to return the portion of the chart that contains the chart number, edition information, and the sales agent credit symbol. The sales agent credit symbol consists of a 1.7 mm square, solid black box, aligned with the type baseline and following the edition or revised print year by an equivalent letter space. Guidelines have been established to ensure that only one sales agent credit symbol will be shown on multiple page charts.

Conventional Charts-

The sales agent credit symbol shall be placed immediately after the edition date in the lower left corner of the chart, aligned with the type baseline and following the edition year by an equivalent letter space. See Figure 1-1.

Small-Craft Folio Chart Covers-

The sales agent credit symbol shall not be placed on small-craft folio covers.

Small-Craft Folio Chart Pages-

The sales agent credit symbol shall be placed on Page B only. The symbol shall be aligned with the type baseline, in the lower left corner of Page B, following the edition year by an equivalent letter space. See Figure 1-3.

Small-Craft Pocket Fold Chart Cover Panels-

The sales agent credit symbol shall be placed at the right end of the text string centered over the publication note. The symbol shall be aligned with the type baseline, following the edition year by an equivalent letter space. See Figure 1-4.

Small-Craft Pocket Fold Chart Pages-

The sales agent credit symbol shall not be placed in the lower left corner of small-craft pocket fold chart pages.

Recreational Chart Covers-

The sales agent credit symbol shall be placed immediately after the edition year, in the lower left corner of the cover, aligned with the type baseline and following the edition year by an equivalent letter space. See Figure 1-6.

Recreational Chart Pages-

The sales agent credit symbol shall not be shown on Recreational Chart pages.

1.4.5.5 Corrected Through Dates

All charts shall display the date of the latest NGA weekly Notice to Mariners through which the New Edition has been corrected and the date of the latest USCG Local Notice to Mariners through which the New Edition has been corrected.

The dates through which the New Edition has been corrected by the NGA weekly NM and the U.S. Coast Guard LNM shall include corrections obtained via the Internet, in advance of the receipt of the published copy. It is probable that the dates of the most recent LNM and the most recent NM will be weeks apart. The date of the latest Canadian Coast Guard Notice to Mariners shall not be shown.

The dates used in the banner box shown on Print-on-Demand Charts shall be determined in an identical manner. The date of the latest Canadian NM may be shown as an option in the banner box of Print-On-Demand Charts.

The NM corrected through date represents the publication month, day and year of the latest NGA weekly Notice to Mariners, checked for corrections in advance via the Internet, before publication of the New Edition. The LNM corrected through date represents the publication month, day, and year of the latest Local Notice to Mariners checked before the publication of the New Edition. The corrected through date shall print in black, 8 point Swiss Light style type. The corrected through dates shall be shown as follows:

Conventional Charts-

The date of the latest NGA Notice to Mariners checked before publication of the New Edition shall assume the following form:

Corrected through NM Apr. 20/02

The NM corrected through date shall be aligned with the type baseline, in the lower left corner of the chart, following the sales agent credit symbol by a minimum of two equivalent letter spaces.

NM shall be capitalized (both letters).

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the NM Corrected Through date by a slash.

See Figure 1-1.

The date of the latest USCG Local Notice to Mariners checked before publication of the New Edition shall assume the following form:

Corrected through LNM Apr. 6/02

The LNM corrected through date shall be placed immediately below the NM corrected through date, in the lower left corner of the chart. The first letter in the LNM corrected through date shall be aligned directly below the first letter in the NM corrected through date.

LNM shall be capitalized (all three letters).

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the LNM corrected through date by a slash.

See Figure 1-1.

Small-Craft Folio Chart Covers-

Corrected through dates shall not be shown on Small-Craft Folio Chart Covers.

Small-Craft Folio Chart Pages-

The dates of the latest NGA Notice to Mariners checked before publication of the New Edition and the latest USCG Local Notice to Mariners checked before the publication of the New Edition shall assume the following form:

Corrected through NM Apr. 20/02, LNM Apr. 6/02

The NM corrected through date and LNM corrected through date shall be aligned with the type baseline, in the lower left corner of each page of the chart, following the sales agent credit symbol by a minimum of two equivalent letter spaces on Page B and following the edition date year by a semicolon on all other pages.

NM and LNM shall be capitalized.

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date and the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the month of each corrected through date by a slash.

See Figure 1-3.

Small-Craft Pocket Fold Chart Cover Panels-

The dates of the latest NGA Notice to Mariners checked before publication of the New Edition and the latest USCG Local Notice to Mariners checked before the publication of the New Edition shall assume the following form:

Corrected through NM Apr. 20/02, LNM Apr. 6/02

The NM corrected through date and LNM corrected through date shall be centered immediately above the publication note which varies in location depending upon available space, and immediately below the chart number, edition number, edition date and sales agent credit symbol.

NM and LNM shall be capitalized.

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date and the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the month of each corrected through date by a slash.

See Figure 1-4.

Small-Craft Pocket Fold Chart Pages-

The dates of the latest NGA Notice to Mariners checked before publication of the New Edition and the latest USCG Local Notice to Mariners checked before the publication of the New edition shall assume the following form:

Corrected through NM Apr. 20/02, LNM Apr. 6/02

The NM corrected through date and LNM corrected through date shall be aligned with the type baseline, in the lower left corner of each page of the chart, following the edition date year by a semicolon on both pages.

NM and LNM shall be capitalized.

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date and the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the month of each corrected through date by a slash.

See Figure 1-5.

Recreational Chart Covers-

The dates of the latest NGA Notice to Mariners checked before publication of the New Edition and the latest USCG Local Notice to Mariners checked before the publication of the New Edition shall assume the following form:

Corrected through NM Apr. 20/02, LNM Apr. 6/02

The NM corrected through date and LNM corrected through date shall be aligned with the type baseline, in the lower left corner, following the sales agent credit symbol by a minimum of two equivalent letter spaces.

NM and LNM shall be capitalized.

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date and the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the month of each corrected through date by a slash.

See Figure 1-6.

Recreational Chart Pages-

The dates of the latest NGA Notice to Mariners checked before publication of the New Edition and the latest USCG Local Notice to Mariners checked before the publication of the New Edition shall assume the following form:

Corrected through NM Apr. 20/02, LNM Apr. 6/02

The NM corrected through date and LNM corrected through date shall be aligned with the type baseline, in the lower left corner of each page of the chart, following the edition date year by a semicolon on all pages, except for pages that are only included to display general information.

NM and LNM shall be capitalized.

Except for the month of May, all calendar months shall be abbreviated using the first three alphabetical characters of the respective month. For example, September shall be abbreviated, Sep. Only the first letter of the month shall be capitalized.

The year of the NM corrected through date and the LNM corrected through date shall be shown by the last two digits of the calendar year, separated from the day of the month of each corrected through date by a slash.

See Figure 1-7.

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Example of an Edition Number, Edition Date, Sales Agent Credit Symbol and Corrected Through Dates on a Conventional Chart

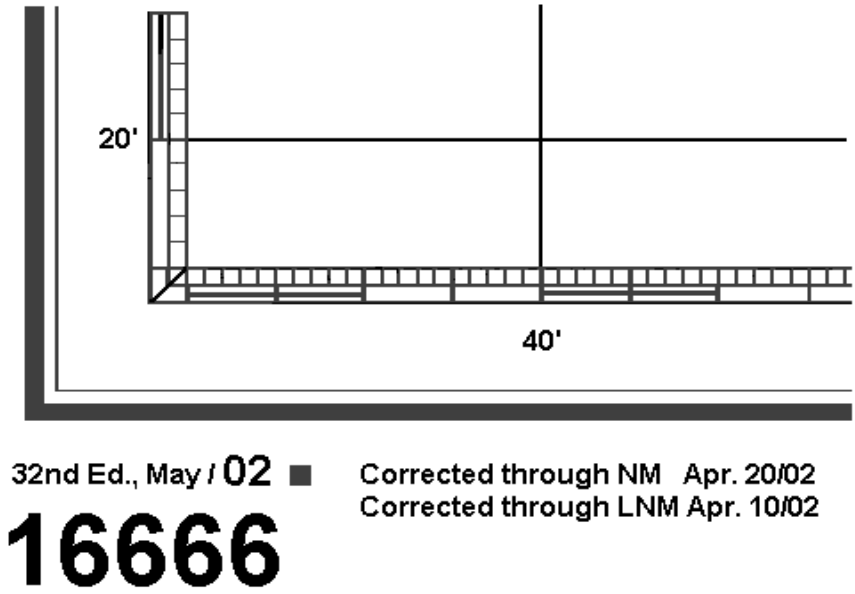

Figure 1-1

Example of an Edition Number and Edition Date on a Small-Craft Folio Chart Cover

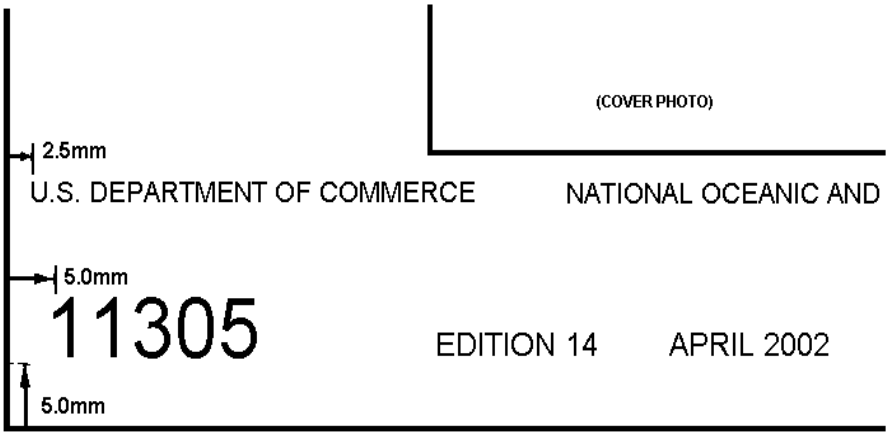

Figure 1-2

Example of an Edition Number, Edition Date, Sales Agent Credit Symbol and Corrected Through Dates on Page B of a Small-Craft Folio Chart

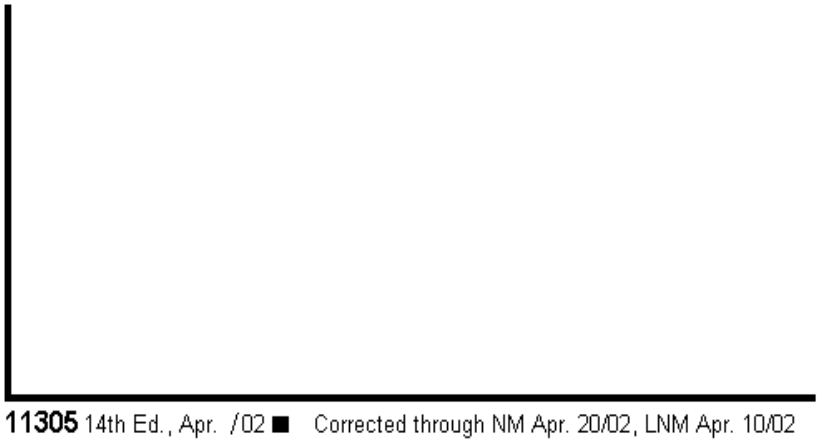

Figure 1-3

Example of an Edition Number, Edition Date, Sales Agent Credit Symbol and Corrected through Dates on a Small-Craft Pocket Fold Chart Cover Panel

Chart 12290 26th Ed., Apr. / 02 ■
Corrected through NM Apr. 20/02, LNM Apr. 10/02

Published at Washington, D. C.
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
COAST SURVEY

Figure 1-4

Example of an Edition Number, Edition Date, and Corrected through Dates on a Small-Craft Pocket Fold Chart Page

12290 26th Ed., Apr. /02; Corrected through NM Apr. 20/02, LNM Apr. 10/01

Figure 1-5

Example of an Edition Number, Edition Date, Sales Agent Credit Symbol and Corrected Through Dates on a Recreational Chart Cover

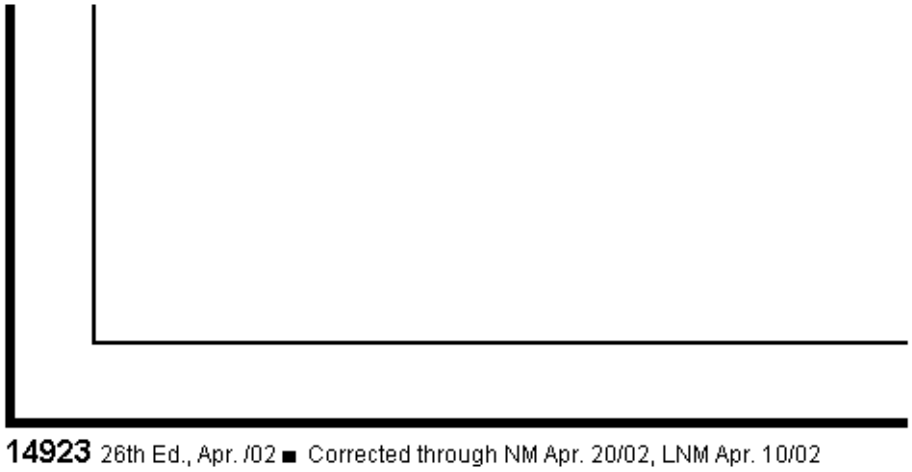

Figure 1-6

Example of an Edition Number, Edition Date and Corrected Through Dates on a Recreational Chart Page

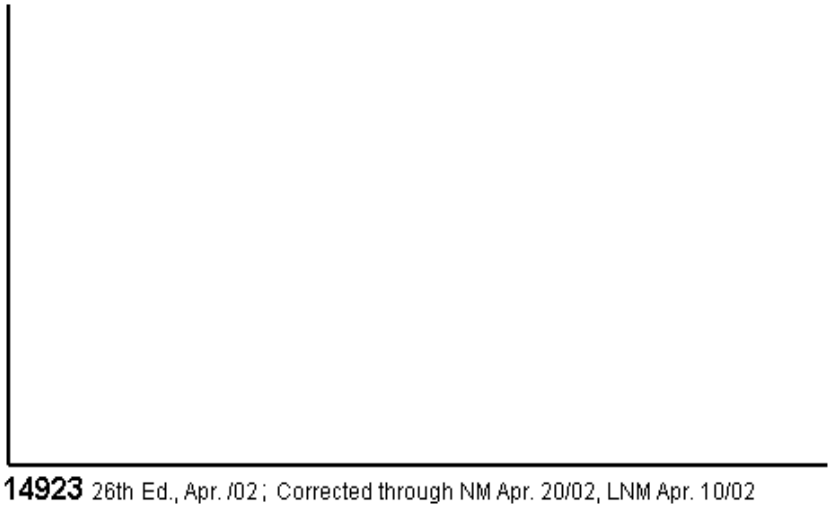

Figure 1-7

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

June 15, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Notice to Mariners Caution Note Correction

Effective immediately, the attachment replaces the memorandum entitled, "Notice to Mariners Caution Note," dated May 22, 2002. This corrected memorandum shall be inserted into the Nautical Chart Manual, Volume 1, Seventh (1992) Edition, Section 1.4.5.6.

These replacement pages correct a misspelling in the Notice to Mariners Caution Notes shown in the memorandum dated May 22, 2002. The notes are shown in the colors specified for each type of nautical chart. Those colors were specified in the text only in Cartographic Order 007/02. Additional emphasis has been given to the requirement that no other textual variations of the Notice to Mariners Caution Note be charted. Canadian or other foreign sources of information shall not be included in the Notice to Mariners Caution Note.

Attachment

1.4.5.6 Notice to Mariners Caution Note

The Notice to Mariners Caution Note shall be applied to all charts. The note explains the dates through which NM corrections and LNM corrections have been made. The Notice to Mariners Caution Note shall not refer to Notice to Mariners publications published by Canada or other foreign governments. The note shall print in 7 point Swiss Light style type, set 3.5 inches wide, in the color and preferred locations indicated below for each type of chart. There are no alternative versions of the text of this note.

Conventional Charts.

The note shall print in magenta, as follows:

CAUTION

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

Preferred Locations of the Notice to Mariners Caution Note on Conventional Charts:

First Preference: Along the lower margin of the chart, preferably 102.0 mm (4.0") from an imaginary line extending the outside edge of the left chart border, 2.5 mm (0.1") from the outside edge of the bottom chart border.

Second Preference: Along the lower margin of the chart, anywhere to the left of the centerline of the chart, but only if the first preference cannot be accommodated. The note shall be 2.5 mm (0.1") from the outside edge of the bottom chart border.

Third Preference: In the title block area.

Fourth Preference: Inside the chart neatline, lower left corner.

Fifth Preference: Along the lower margin of the chart, anywhere to the right of the centerline of the chart. The note shall be 2.5 mm (0.1") from the outside edge of the bottom chart border.

Sixth Preference: Along the top margin of the chart.

Last Preference: Anywhere else on the chart.

Small-Craft Folio Chart Covers.

The Notice to Mariners Caution Note shall not be shown on Small-Craft Folio Chart Covers.

Small-Craft Folio Chart Pages.

The note shall print in magenta, as follows:

CAUTION

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

Preferred locations of the Notice to Mariners Caution Note on Small-Craft Folio Chart Pages:

First Preference: In the title area on Page B.

Second Preference: In another prominent area on Page B, if the first preference cannot be accommodated.

Small-Craft Pocket Fold Chart Cover Panels.

The Notice to Mariners Caution Note shall not be shown on Small-Craft Pocket Fold Chart Cover Panels.

Small-Craft Pocket Fold Chart Pages.

The note shall print in magenta, as follows:

CAUTION

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

Preferred locations of the Notice to Mariners Caution Note on Small-Craft Pocket Fold Chart Pages:

First Preference: In a prominent location on Side B.

Second Preference: In a prominent location on Side A, if the first preference cannot be accommodated.

Recreational Chart Covers.

The note shall print in black, as follows:

CAUTION

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial-Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the dates shown in the lower left hand corner.

Preferred location of the Notice to Mariners Caution Note on Recreational Chart Covers:

Inside the lower left corner of the decorative chart border.

Recreational Chart Pages.

The Notice to Mariners Caution Note shall not be shown on Recreational Chart Pages.

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1.4.6 Revised Print

Historically, Revised Prints have been issued when changes or corrections of a minor character were made to a printing. A Revised Print included all changes published in the Notice to Mariners since the preceding issue of the chart.

The date of the Revised Print was added to the edition date and was charted thus:

2nd Ed., Aug. 16/86; Revised Jan. 28/95

Revised Prints were also known as New Prints. This term became confused with the same term used for a lithographic copy of a new edition used for indicating corrections of a minor nature required for the next New Edition, such as tint errors, difficult to read type, incorrect type sizes, etc.

Revised Prints have become obsolete by more efficient production methods and alternative methods for disseminating data to customers.

1.4.7 Reprint

Whenever the stock of a chart is depleted and the chart is reprinted without any revisions, the issue is called a Reprint. A Reprint is an exact duplicate of the current issue with no changes in printing or publication dates.

1.4.8 New Chart

A New Chart is constructed to satisfy the needs of navigation in a particular area. It is laid out in conformity with a broad scheme to meet future needs in the adjacent areas and is designated by a number not assigned in recent years. New chart numbers are issued by NGA upon request. The area may have had no prior chart coverage at a given scale or the limits of an existing chart may require radical change. The new chart may cancel an existing chart. The edition date on which a New Chart is first printed appears in the center of the upper margin of the chart as the first edition date, and remains there for the life of the chart, thus:

1st Ed., Mar. 2002

The first edition reference shall print in black, 6 point Swiss Light style type.

The first edition date may be immediately followed by a KAPP number. See Section 7.6.2.

1.4.8.1 Conversion of Two-Sided Charts

1. Edition Numbers

Selected two-sided charts are being converted to two separate one-sided charts. One side of the existing chart shall retain the current chart number and the other side shall be issued a new chart number. The assignment of a new chart number is predicated on requirements for Print-on-demand charts. There is no substantive change in the associated graphic in terms of geographic limits, content, scale, etc.

(The remainder of this page is intentionally blank)

The Edition Number for the next new edition of the chart retaining the current chart number and the chart assigned a new chart number shall be one edition number above the current chart edition number currently on issue.

Both the chart retaining the current chart number and the chart assigned with the new chart number at the time of printing shall have the same edition number.

EXAMPLE: Conversion of Chart 11329 - Edition Number

The current edition of Chart 11329 on issue is the 32nd, dated June 13, 1998.

For the next printing:

Side A of Chart 11329 shall retain the original chart number - 11329, and consist of just one side without any references to Side A.

The Edition Number of the next new edition shall be incremented to the 33rd edition in accordance with standard maintenance procedures.

Side B of Chart 11329 shall be revised to the new chart number - 11325, and consist of just one side (the former Side B of Chart 11329).

The Edition Number of the next new edition (even though the first edition associated with this chart number) shall also be incremented to the 33rd edition.

2. First Edition Date

The date on which a New Chart is first printed appears in the center of the upper margin of the chart as the First Edition Date (also commonly referred to as the 1st Edition Reference), and remains there for the life of the chart.

EXAMPLE: 1st Ed., Sep., 1960

The first edition note shall include the former or old chart number. This specification for all Marine Chart Division charts serves as an aid in relating the chart to older source records and the references listed under the old number.

EXAMPLES: Formerly C&GS 8252, 1st Ed., Feb., 1936 C1936-447

Formerly 101-SC, 1st Ed., 1959

Formerly LS 3, 1st Ed., 1852

SPECIFICATION: Based on requirements for Print-on-Demand charts, selected two-sided charts are being converted to two separate one-sided charts. One side of the existing chart shall retain the current chart number and the other side shall be issued a new chart number. When an existing chart number is changed, there must be a corresponding revision to the charted 1st Edition Reference.

The side of the chart being revised to a new chart number requires an additional modification to the charted 1st Edition Reference to preserve the uniformity and integrity of the referencing system. Consistent with prior specifications, the former NOS chart number and alphabetical letter designating the side of the chart shall be inserted into the existing 1st Edition Reference directly after the word "Formerly", e.g., Formerly NOS 99999B, ... A current example for Chart 11329 is provided to illustrate the required changes.

The side retaining the current chart number does not require any changes to the 1st Edition Reference and meets the current specification.

EXAMPLE: Conversion of Chart 11329

For the next printing:

Side A of Chart 11329 shall retain the original chart number - 11329, and consist of just one side without any references to Side A.

This chart meets the current specification and no changes to the 1st Edition Reference are required.

Side B of Chart 11329 shall be revised to the new chart number - 11325, and consist of just one side (the former Side B of Chart 11329).

Based on this revised specification, the existing 1st Edition Reference requires revision.

The currently charted 1st Edition Reference for Side B of Chart 11329 is:

Formerly C&GS 590, 1st Combined Ed. Mar. 1952 C-1933-389

After modification the resultant 1st Edition Reference for New Chart Number 11325 is:

Formerly NOS 11329B, C&GS 590, 1st Combined Ed. Mar. 1952 C- 1933-389

1.4.9 Reconstructed Chart

When the accumulation of new information is sufficiently extensive to affect most of an existing chart, the chart may be completely recompiled on a new projection. This may also occur if there are changes to the chart limits. A Reconstructed Chart is issued as a New Edition.

1.4.10 Provisional Chart

This is a special chart for which there is an urgent need. The chart is compiled from processed and approved source material. The label "PROVISIONAL CHART" is placed in two prominent locations on the chart in a manner that will require minimum restoration of charted detail when removed. Additional labels may be added if deemed desirable. The chart will retain the "provisional" label until all detail is charted.

Placement of this label shall be in the following order of preference:

1. On conventional charts

    a. Any prominent location in the upper and lower margin, preferably in opposite corners of the chart.

    b. Any prominent location inside the upper and lower border, preferably in opposite corners of the chart.

2. On small-craft charts

    a. On route charts, any prominent location within the chart along the base (bottom) and top on both sides.

    b. On folio and book charts, any prominent location on the cover.

1.4.11 Preliminary Chart

This is a chart for which there is a strong requirement, but of a region where some or all of the survey data does not meet modern standards. The deficiencies in surveys may be due to small scale, outmoded or nonstandard survey techniques, obsolete age, unprocessed or unapproved data, or other factors which cause the survey data to be below customary standards for the scale of the chart. A Preliminary Chart may or may not be published in full color. Included on the chart shall be a source diagram and a warning note stating that all or much of the hydrography shown on the chart is not of customary quality. Two examples of such warning notes follow:

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

NOVEMBER 25, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: National Imagery and Mapping Agency (NIMA) Name Change

The 2004 Defense Authorization Bill authorizes the National Imagery and Mapping Agency (NIMA) to formally change its name to the National Geospatial-Intelligence Agency (NGA). Effective immediately, instances where the text, "National Imagery and Mapping Agency (NIMA)," "National Imagery and Mapping Agency," or "NIMA" appear on NOAA Charts shall be changed to "National Geospatial-Intelligence Agency (NGA)," " National Geospatial-Intelligence Agency," or "NGA" on New Editions.

WARNING
PRELIMINARY CHART

All of the data on this preliminary chart is considered to be of marginal quality for modern charts. Many of the depths were taken by leadline in the early 1900's, so uncharted shoals are likely in this area. Navigators should use this chart with extreme caution and report discrepancies or hazards to the Director, Office of Coast Survey, (N/CS), National Ocean Service, NOAA, Silver Spring, Maryland 20910.

WARNING
PRELIMINARY CHART

The soundings near Cape Jasper on this preliminary chart in the area of H-3012 and H-2462 are considered to be of marginal quality for modern charts. Continuous bottom profiles were not taken between soundings, and spacing between soundings is wide enough to allow hazards to remain undetected. Navigators should use this chart with caution and report discrepancies or hazards to the Director, Office of Coast Survey, (N/CS), National Ocean Service, NOAA, Silver Spring, Maryland 20910.

The label "PRELIMINARY CHART" shall be placed in two prominent locations on the chart in a manner that will require minimum restoration of charted detail when removed. Additional labels may be added if deemed desirable. The chart will retain the "preliminary" label until it is recompiled using processed and approved source material, all detail is charted, and all standard chart colors are shown.

Placement of this label shall be in the following order of preference:

1. On conventional charts

    a. Any prominent location in the upper and lower margin, preferably in opposite chart corners.

    b. Any prominent location inside the upper and lower border, preferably in opposite chart corners.

2. On small-craft charts

    a. On route charts, any prominent location within the chart along the base (bottom) and top on both sides.

    b. On folio and book charts, any prominent location on the cover.

1.4.12 Section no longer exists.

1.4.13 Overprint

Overprints are used for additions, deletions, or revisions to existing charts. Overprints are most often used to correct a recently printed chart to avoid scrapping an entire press run. Usually the overprint will use standard chart colors, but on occasion, the color green will be used to call attention to the revision.

1.5 Interagency Coordination

USACE administers Federal laws for the protection and preservation of the navigable water of the United States. The term "navigable waters" of the United States is defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (see 33 CFR 320.4).

Federal regulation of ocean waters is variously under the jurisdiction of the USACE, Minerals Management Service (MMS), and other Federal agencies. The term "ocean water" shall mean those waters of the open seas lying seaward of the base line from which the territorial sea is measured, as provided for in the Convention on the Territorial Sea and the Contiguous Zone (15 UST 1606; TIAS 5639).

The Departments of Commerce (of which NOS is a unit), Transportation (through the USCG), and Defense (DOD) have independent responsibility for carrying out extensive programs in support of ocean exploration and safety of marine navigation. The charting and related responsibilities of DOD and the USCG are delineated as follows:

1.5.1 Department of Defense

1. National Geospatial-Intelligence Agency (NGA)

Overall DOD mapping, charting, and geodetic policies are set by the NGA headquarters. The National Geospatial-Intelligence Agency (NGA) produces nautical charts and related navigational publications required by the DOD for areas outside of NOS responsibility. Overlap coverage exists where foreign water areas are contiguous with those of the United States. NGA produces several "Limited Distribution" charts containing berthing or military information strictly for naval use. It also overprints NOS charts with operational information.

NGA also publishes weekly Notices to Mariners (NM) that contain information needed to keep charts
accurate and current. NOS contributes items for publication in the NM and reviews items written by

NGA prior to including them on NOS charts. NGA also supplies LORAN information for NOS charts.

2. U.S. Naval Oceanographic Office (NAVOCEANO)

Within DOD, NAVOCEANO conducts hydrographic surveys outside of the area of NOS responsibility to provide naval operating forces with marine environmental data needed to effectively operate U.S. ships and weapons systems and to provide for the security of the Nation. Unclassified data developed by NAVOCEANO, such as charts and atlases of foreign waters, are made available to the merchant marine and to the oceanographic community.

3. U.S. Army Corps of Engineers (USACE)

The USACE needs marine environmental data to plan, design, construct, operate, and maintain nonmilitary projects. USACE work is principally in national and territorial harbor or harbor approach areas, in areas of coastal erosion, and along intracoastal and inland waterways.

While the NGA publishes charts of foreign areas, coverage of national waters is divided between NOS and the USACE. Mapping and charting of the Great Lakes, Lake Champlain, and the St. Lawrence Seaway and River became the sole responsibility of NOS in October 1970 when the U.S. Lake Survey District of the USACE was merged with the NOS at the time of the formation of NOS.

The USACE submits copies of its hydrographic surveys, channel depth reports, navigation bulletins, project plans, and other relevant studies to the NOS Marine Chart Division (MCD). The USACE also furnishes copies of permits for construction or dredging that affect NOS charts, furnishes clearance data for overhead cables, confirms NOS charting of submerged pipelines and cables in inshore waters, and furnishes positions of aids to navigation. In return, MCD relays reports of shoaling, obstructions, and other pertinent items to the USACE districts.

NOS is responsible for compiling nautical charts of the harbors and coastal and offshore waters of the conterminous United States, Alaska, Hawaii, and territorial waters. However, both the USACE and NOS are authorized to publish maps, charts, and related publications covering the Nation's inland waters. Policies and procedures for disseminating navigation and chart data have been developed to achieve coordination between the two agencies and to avoid duplication.

1.5.2 U.S. Coast Guard (USCG)

MCD furnishes the USCG with accurate positions of aids to navigation. This information originates from both USACE and NOS sources. USCG District Offices issue this information in LNM and in the Light Lists. The LNM also provides up-to-date foreshore information. The data are published frequently and continued coordination is required between the agencies to clarify or confirm data.

The USCG is the source for bridge clearance information, and it routinely furnishes information on areas where bottom changes indicate the need for new surveys and submits requirements for chart improvements.

1.5.3 Other Coordination

NOS provides consultant services to other Federal agencies, states, local governments, and the public in matters pertaining to agency specialization covering high-order surveying, earth sciences, and physical oceanography. Among these services are the furnishing of technical advice and assistance in regard to the demarcation of shore and sea boundaries; the use and interpretation of NOS hydrographic, topographic, and geodetic surveys of coastal waters and the adjacent shore spanning more than a century and a half; and special instruction and training in surveying and charting techniques to personnel from other Government agencies and to members of engineering and scientific organizations.

In addition to the sources mentioned above, NOS routinely receives chartable data from more than 60 other sources, including the U.S. Geological Survey (USGS), National Park Service, Bureau of Reclamation, Federal Aviation Administration, Soil Conservation Service, and MMS.

NOS submits edited copies of charts of the International Rapids Section of the St. Lawrence River (charts 14761-14768 and 14770-14774) to the St. Lawrence Seaway Development Corporation and charts that cover the surveying and charting operations overlap of U.S.-Canadian waters in the Great Lakes (charts 14761-14768, 14770-14774, 14781, 14800, 14802, 14806, 14810, 14816, 14820, 14823, 14826, 14828-14830, 14832-14833, 14842, 14844, 14848, 14850, 14852, 14854, 14860, 14862, 14865, 14880, 14882-14884, 14960-14962, 14968, and 14982-14999) to the CHS, Central Region, Burlington, Ontario, for their review and comment prior to the publication of the chart. In addition, copies of new charts are submitted to the appropriate USACE District and the CHS regions for review and comment prior to publication.

1.5.4 Interagency Agreements

Interagency support and exchange of information is sometimes detailed in the Code of Federal Regulations for the particular agency involved. Separate agreements may be negotiated between agencies for more comprehensive details or to cover new items.

1.6 International Coordination

1.6.1 International Hydrographic Organization (IHO)

Much of the coordination of the hydrographic surveying and nautical charting requirements of international users is accomplished through the work of the International Hydrographic Bureau (IHB) and its 55 member countries called the International Hydrographic Organization (IHO). For example,

the safety and defense of U.S. interests in this country and abroad depend to a great extent on the immediate availability of reasonably authoritative nautical charts of waters foreign to the United States. Since DOD cannot survey and chart all foreign waters, NGA has entered into reciprocal agreements with numerous foreign maritime nations, 27 to date, to produce "modified facsimiles" of charts from reproducibles furnished by these countries. (These are facsimiles on which the language, symbols, etc., have been modified by NGA for use by Americans.) This is in agreement with international coordination promoted by IHO Technical Resolution A 3.4. NOS reciprocates by furnishing chart reproducibles to these same countries upon their request and at no cost.

Prior to formation of the IHO, representatives of the world maritime countries held conferences in Washington, D.C., in 1899 and St. Petersburg, Russia, in 1912 in an attempt to achieve a degree of uniformity in hydrography. In London, in 1919, representatives of 24 nations convened at the first International Hydrographic Conference. The IHB was subsequently founded in 1921 by 19 member countries, and Monaco was selected as the location of the headquarters.

The name IHO was adopted in 1970 along with a convention of regulations to provide an organization with international legal status and recognition. Since then, the term IHB has been used to represent the headquarters and administrative staff of the organization at Monaco.
The goals of the IHO are as follows:

1. The coordination of the activities of national hydrographic offices;

2. The greatest possible uniformity in nautical charts and documents;

3. The adoption of reliable and efficient methods of carrying out and exploiting hydrographic surveys;

4. The development of the sciences in the field of hydrography and the techniques employed in descriptive oceanography; and

5. The promotion of measures aimed at establishing or strengthening the hydrographic capabilities of developing countries.

The work of the IHB is promulgated through the following publications:

1. The biannual International Hydrographic Review containing professional articles on hydrography and related subjects;

2. The monthly International Hydrographic Bulletin containing information of current hydrographic interest;

3. An annual yearbook; and

4. Chart specifications, survey standards, and other special publications on definitive works in hydrography.

IHB also sponsors International Hydrographic Conferences every 5 years at which delegates meet to review previous programs of the IHB and to plan for future programs. Regional Hydrographic Conferences are also conducted in the interim.

1.6.2 United States - Canada Hydrographic Commission

The United States and Canada have enjoyed both formal and informal cooperation in surveying and charting activities of mutual interest over a long period of time.

The U.S.-Canada Hydrographic Commission has the following objectives:

1. Coordinating the hydrographic operations of NOS and the CHS where the surveying and charting operations of U.S.-Canadian domestic waters overlap, or where improved efficiency could be attained through bilateral cooperation of survey effort;

2. Achieving maximum compatibility, uniformity, and interchangeability of all marine charts and related navigational publications produced by both agencies; and

3. Providing for the free exchange of unclassified nautical charts, publications, reproduction materials, field survey data, and related information necessary for an efficient and effective nautical charting program designed to provide maximum safety of marine navigation.

Three regional Charting Advisors Committees (for the Northeast Pacific, Great Lakes, and Atlantic Coast) coordinate the surveying and charting requirements and operational plans of the two countries in the border waters. Matters of concern include coordination of the planning and implementation of hydrographic surveys; chart production, including the specifications for chart schemes and formats; revisory surveys and chart maintenance; tidal and current surveys, water level gauging, and associated publications; establishment and maintenance of horizontal and vertical control; and sailing directions/pilots.

In addition, a Chart Standards Committee is responsible for ensuring maximum compatibility of the nautical charts produced by the two nations.

An example of productive cooperation between the two countries is the routine updating of six NOS charts by the CHS. A positive copy (SBM7) of the combined black and (screened) magenta of each New Edition of charts 14848, 14850, 14852, 14882, 14883, and 14884 is revised by the CHS, Central Region, Burlington, Ontario, from Canadian sources not available to NOS.

1.6.3 Other International Coordination

NOS also works closely with various other multinational organizations, such as the following:

1. International Maritime Organization (IMO)

The International Maritime Organization (IMO), formerly the Intergovernmental Maritime Consultative Organization (IMCO), is the agency of the United Nations concerned with maritime affairs.

U.S. participation in IMO is coordinated by the Department of State (DOS). Private sector input is solicited by DOS-sponsored Shipping Coordinating Committee (SCC); its 6 subcommittees and 10 working groups advise U.S. delegations to IMO meetings and conferences on the action to take on maritime matters.

NOS is closely involved in certain actions of the SCC's Subcommittee on Safety of Life at Sea (SOLAS), Working Group on Safety of Navigation, which the USCG chairs. NOS input primarily concerns the establishment and adjustments to vessel traffic separation schemes and other vessel routing measures. This includes evaluating existing hydrographic data and recommending new surveys. Also of interest is SOLAS' work on the 1972 International Regulations for Preventing Collisions at Sea (COLREGS), requirements concerning vessels carrying of charts, position fixing systems, search and rescue procedures, ships' mechanical and electronic requirements, and requirements concerning visibility from the bridge of a ship. NOS/USCG/NGA interactions are conducted by MCD.

Since its first assembly in 1959, IMO has produced some 30 conventions and protocols, the majority of which are now in force. Its most well-known convention is the 1972 Convention on COLREGS. These navigation rules apply to all vessels upon the high seas and in most connecting waters navigable by seagoing vessels.

1.7 Chart-Related Publications

The following is a list of publications that are used as a source or reference in the compilation of nautical charts.

1.7.1 Notice to Mariners (NM)

The NM, issued weekly by NGA, is prepared jointly with input from NOS and the USCG. The NM, a public information announcement of primary interest to navigators of deep-draft vessels, presents important matters affecting navigational safety, changes to channels, navigational aids, and other information for updating the nautical charts and publications produced by these agencies. NOS also prepares Chartlets (revised, page-sized, black-and-white portions of nautical charts) for inclusion in

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 013/03 **JUNE 2, 2003**

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 1.7.4

TO: All Cartographers
Marine Chart Division

SUBJECT: Nautical Chart Catalogs

APPLICATION: All Nautical Charts

Effective immediately, the attachment shall replace pages 1-31 and 1-32 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, Section 1.7.4.

The Nautical Chart Catalogs have been reformatted and are no longer identified numerically nor are their panels labeled. The bar code/stock number will refer to them as A, G, P, K, and L. The existing stock numbers shall be canceled when the new catalogs are published. After publication of each newly reformatted catalog, all nautical charts falling within that catalog's coverage area shall be revised as follows. The Nautical Chart Catalog Locator, consisting of the catalog number and panel, shall be removed from the upper right-hand corner of each chart or Small-Craft Chart pages and Recreational Chart covers.

In the Nautical Chart Manual, Volume 2, Seventh (1992) Edition, Appendix IV, the Nautical Chart Catalog Locator identification shall be removed from the upper right-hand corner of each sample chart on pages IV-7, IV-9, IV-10, and IV-11. Type specification for 'Catalog Number & Panel Number' text shall be removed from page IV-49. Revisions to these pages are forthcoming.

Attachment

Alexandra B. Heliotis
Acting Chief, Marine Chart Division

the NM when the changes being announced are too extensive or detailed to be described as a text item.

1.7.2 Local Notice to Mariners (LNM)

The LNM, issued by each USCG District to disseminate important information affecting navigational safety within the District, includes data compiled by NOS. Since information on waters not navigable by oceangoing vessels, as well as temporary changes to published data that are known or expected to be of short duration, is not included in the weekly NM, the appropriate LNM may be the only source of such information. Small-craft owners using intracoastal and other waterways and small harbors that are not normally used by oceangoing vessels require the LNM to keep charts and related publications up to date. As with the weekly NM, NOS prepares Chartlets when the changes being announced are too extensive or detailed to be described as a text item.

1.7.3 Chart No. 1

Chart No. 1, Nautical Chart Symbols and Abbreviations and Terms, is a NOS-produced publication prepared with the assistance of NGA which lists most of the symbols and abbreviations used on U.S. nautical charts. It also includes many definitions and other valuable data helpful in understanding NOS nautical charts and USCG navigational aids. Terms, symbols, and abbreviations are numbered in accordance with a standard format recommended by IHO.

1.7.4 Chart Catalogs

Nautical Chart Catalogs, produced and maintained by NOS, briefly describe each chart and other nautical publications NOS produces, authorized chart agents, and other information pertinent to selecting and ordering the publications. Chart coverage of the coastal waters of the U.S. and its territories is identified in a set of five Nautical Chart Catalogs that includes the U.S. Atlantic Coast, including Puerto Rico and the Virgin Islands; the U.S. Gulf Coast, including Puerto Rico and the Virgin Islands; the U.S. Pacific Coast, including Hawaiian, Mariana and the Samoa Islands; Alaska, including the Aleutian Islands; and the U.S. Great Lakes and Adjacent Waterways. The bar code/stock number will refer to them as A, G, P, K, and L.

1.7.5 Coast Pilot Publications

1.7.5.1 The "United States Coast Pilot," in nine volumes, is a series of nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters and waters of the Great Lakes. Much of this book information cannot be shown graphically on the nautical charts and is not readily available elsewhere.

1.7.5.2 "Distances Between United States Ports" is another publication relating to the marine world. This publication presents in tabular format the distances between many U.S. ports and between

U.S. ports and Canadian ports in the Great Lakes. It is republished as required.

1.7.5.3 The "Coast Pilot Manual" is a working guide for Coast Pilot personnel for the compilation and publication of the Coast Pilot publications. It is also a guide for other NOS personnel, including hydrographic and photogrammetric field parties, and others assigned to Coast Pilot field inspections, in making field observations and preparing reports from the field to update Coast Pilot publications. It is republished as required.

1.7.6 Tidal Publications

Tide Tables are published annually by NOS to give the predicted times and heights of high and low waters for each day in the year for approximately 200 of the most important harbors which are designated as reference stations. The tables also include a limited amount of astronomical data. In addition, they contain tidal differences and factors for interpolating tidal predictions at thousands of subordinate stations. These subordinate stations are each tied to one of the reference stations so that predicted times and heights of high and low waters can be calculated for numerous coastal areas of only local importance. The range of the tide and mean tide level are also published for each of these subordinate stations.

Tide Tables are available for the following regions:

1. East Coast of North and South America, including Greenland;
2. West Coast of North and South America, including the Hawaiian Islands;
3. Europe and the West Coast of Africa, including the Mediterranean Sea; and
4. Central and Western Pacific Ocean and the Indian Ocean.

1.7.7 Tidal Current Publications

1. Tidal Current Tables

These are published annually by NOS to provide predicted times of slack or minimum currents for each day of the year at 54 places located around the Atlantic Coast of North America, the Pacific Coast of North America and Asia, as well as data for predicting currents at approximately 2,400 subordinate stations in these areas. The two volumes of tables also furnish average speeds and directions for maximum floods and ebbs and provide data for computing the velocity of the current at any time and the duration of slack water or minimum current. Descriptions and predictions for selected locations of rotary currents, observed velocities, the mean position of the Gulf Stream, tidal current direction deviations due to wind conditions and types of combination currents are also provided in the tables, together with a limited amount of astronomical data for the edition year.

2. Tidal Current Charts

These graphically represent tidal currents in selected bays and harbors of the United States. Each of the 12 Tidal Current Chart series consists of a set of 12 or 13 charts (pages) which depict, by means of arrows and figures, the direction and speed of the tidal for equal intervals of the tidal cycle. They are used in conjunction with the annual Tidal Current Tables, except for the Narragansett Bay chart which is used with the Tide Tables.

3. Tidal Current Chart Diagrams

This is a series of 12 monthly diagrams covering selected areas such as Long Island and Block Island Sound, Boston Harbor, Upper Chesapeake Bay, and New York Harbor. The diagrams are used with the corresponding Tidal Current Charts to determine tidal current predictions in the area.

1.7.8 Coastal Zone and Continental Shelf Products

1. Offshore Oil and Gas Lease Maps

These are small-scale nautical charts overprinted in red with data obtained from MMS of the Department of Interior to show offshore oil and gas lease areas and blocks. They are useful for planning purposes because they show block leases for extensive areas, whereas the official MMS diagrams depict only small areas. The Offshore Oil and Gas Lease Maps series presently includes the following: 1113-A, Havana to Tampa Bay; 1114-A, Tampa to Cape San Blas; 1115-A, Cape St. George to Mississippi Passes; 1116-A, Mississippi River to Galveston; and 1117-A, Galveston to Rio Grande.

2. Geophysical Maps

Geophysical Maps are no longer produced.

1.7.9 Section no longer exists.

1.7.10 Nautical Updating Service

A Nautical Updating Service for selected nautical charts was begun in 1975 for certain NOS charts on either an 8- or 12-year maintenance cycle and covering areas of little change. The service offers to the chart user a listing of NM corrections affecting the chart subsequent to the edition date of the chart. At present, only 95 charts, all of Alaskan waters, are included in this service.

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 009/02

JUNE 15, 2002

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 1.7.10

TO: All Cartographers
Marine Chart Division

SUBJECT: Nautical Updating Service Note

APPLICATION: All Affected Nautical Charts

Effective immediately, the content of the Updating Service Note shall be revised from "subsequent to the date shown" to "subsequent to the NM corrected through date shown".

The Updating Service note on page 1-35 has been revised as a result of changing the edition date portrayal and adding "Corrected through" dates on all new editions of nautical charts. Revision to the Notes Cell Library has been made and the note is available for immediate chart application.

The attachment shall replace pages 1-33 through1-36 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

12-Year Nautical Updating Service Charts

16041	16082	16124	16441
16042	16083	16200	16442
16043	16084	16204	16446
16044	16085	16206	16462
16045	16086	16381	16463
16046	16087	16382	16474
16061	16088	16421	16475
16062	16101	16430	16476
16063	16102	16431	16477
16064	16103	16432	16478
16065	16104	16433	16484
16066	16121	16434	16486
16067	16122	16435	16487
16081	16123	16436	16490

8-Year Nautical Updating Service Charts

16300	16516	16535	17314
16322	16517	16547	17336
16323	16518	16549	17337
16343	16521	16551	17341
16363	16522	16568	17362
16501	16528	16591	17363
16511	16529	16599	17365
16513	16530	16762	17381
16514	16531	17301	17404
16515	16532	17313	17406

All extended maintenance cycle charts listed above, shall display the following note informing the purchaser of the availability of this updating service.

UPDATING SERVICE

FOR THIS CHART, a listing of NOTICE TO MARINERS (NM) corrections subsequent to the NM corrected through date shown in the lower left hand corner, is available from the Chief, Marine Chart Division (N/CS2), National Ocean Service, NOAA, Silver Spring, Maryland 20910-3282.

This note shall be printed in black, 7 pt. Swiss Light, set 3 1/2 inches wide. The following order of

placement shall generally apply:

(1) Bottom chart margin.

(2) Top Margin

(3) Body of chart

This order of placement may be adjusted to avoid excessive repositioning of other charted information, but the note must be prominent.

1.7.11 Nautical Training Charts

Nautical training charts are outdated nautical charts used for educational purposes in training classes for small-boat operators. The following training charts are currently available: 39 TR, West End of Lake Erie; 116-SC TR, Long Island Sound; 1210 TR, Martha's Vineyard to Block Island; 12221 TR, Chesapeake Bay Entrance; 12354 TR, Long Island Sound-Eastern Part; 13205 TR, Block Island Sound and 18465 TR, Strait of Juan de Fuca-Eastern Part. Relevant pages of symbols and abbreviations from Chart No. 1 are printed on the reverse side of some of the training charts.

1.7.12 By Products and Services

Many spin-offs accrue from the national charting program. Although these by-products and services are not used for navigation, Government agencies and industry use them for planning and designing offshore engineering projects and for offshore resource exploration and development activities. The most important of the by-products are these:

1. Topographic surveys and planimetric shoreline maps
2. Aerial photographs
3. Hydrographic survey smooth sheets
4. Graphic depth records
5. Descriptive Reports
6. Sedimentology samples and data.
7. Geodetic surveys
8. Leveling networks
9. Tide and current data

1.8 Repository

The NOS archive contains all of the original field surveys made by NOS over the years. This archive (commonly called the "vault" because it is a securable area) is maintained by the Data Control Section of the Hydrographic Surveys Division (HSD) of NOS.

Hydrographic, planetable, and photogrammetric surveys of the coastal areas have been used to produce and maintain nautical charts since 1834. Over 26,000 individual surveys are now on file. Because of the need for chart maintenance, many areas along the coast have been surveyed several times. These resurveys represent a unique and comprehensive record of the Nation's coastline and the adjacent waters over an extended time period, including changes resulting from both natural and man-made causes. These records are used extensively by the public and by other Government agencies for research, engineering, and development purposes. They are often referred to in property disputes where the shoreline represents a boundary, and certified copies are frequently presented as evidence in the courts.

Hydrographic and topographic surveys are made and registered separately. Hydrographic surveys are identified by a number with the prefix "H," "FE," "D," or "WD." Topographic surveys or photogrammetric shoreline maps are identified by a number with the prefix "T" or "TP." Hydrographic and topographic surveys of the Great Lakes completed prior to the closing of the Lake Survey Center in 1976 are combined on a single sheet and are identified by a number with the prefix "I."

Both hydrographic and topographic surveys are indexed on a separate set of full-sized, chart-based diagrams and are color coded and tabulated to give information on the survey registry number and type, chief of the survey party, scale, and date of survey. Indexes for hydrographic and topographic surveys to about 1970 are available in 8½"x11" size. The approximate area covered by any individual hydrographic or topographic survey is shown on the diagrams. The area of coverage varies depending upon chart needs at the time of the survey. From 1835 to 1927, practically all of the topographic surveys were made by planetable, and these original planetable sheets are also filed in the archive. Photographic reproductions of surveys are usually made on a fast print paper coated with silver bromide emulsion and are positives (black lines and figures on a white background). Photographic reproductions can also be made on stable-base media at a higher cost. A Descriptive Report describing survey details is available for most surveys.

1.9 Foreign Copyright Claims

The following note shall be shown on all charts depicting an international boundary or any foreign territory:

COPYRIGHT
No copyright is claimed by the United States Government under Title 17 U.S.C. However, other nations may claim intellectual property rights on the compilation of data depicting the foreign waters on this chart.

The note shall print in black, 7 point Swiss light style type, 2 1/2, 3, or 3 1/2 inches wide.

The following text shall be included under "NAUTICAL CHARTS" in Chapter 1 of all United States Coast Pilot volumes that describe U.S. waters adjacent to international boundaries:

Chart Copyright. - No copyright is claimed by the United States Government under Title 17 U.S.C. However, many NOS nautical charts cover the boundary waters of the United States and depict our international borders. In the interest of navigational safety, the charted features do not stop at the border, but continue into the foreign territory. In most instances, the information about the charted features in foreign territories is provided by foreign hydrographic offices following the provisions of the International Hydrographic Organization. In these instances, other nations may claim intellectual property rights on the compilation of data depicting the foreign waters shown on NOS charts.

1.10 Electronic Navigational Charts (ENCs)

In 1997, the Marine Chart Division began creating a digital vector database of selected nautical chart features. The purpose of this database is to provide highly accurate and current vector data for the production of Electronic Navigational Charts. These Electronic Navigational Charts or ENCs, are being produced in accordance with the International Hydrographic Organization Transfer Standard for Digital Hydrographic Data Publication S-57,(current edition 3.0); and are intended for use in commercially available Electronic Chart Display and Information Systems (ECDIS).

An Electronic Navigational Chart has been defined by the International Hydrographic Organization as a database which:

- **is standardized as to content, structure and format,**
- **is issued for use under the authority of government-authorized hydrographic offices; and**
- **meets the International Maritime Organization (IMO) Performance Standards for use with [an] ECDIS**

ENCs differ from raster charts primarily because of the "smart data" concept. Whereas raster charts are merely a pixel image of a nautical chart, the database behind an ENC will permit a mariner's navigational system to provide the appropriate warnings and information that are based on both the ENC data and the ship's own characteristics.

The Marine Chart Division, in recognizing the need to currently and efficiently maintain its two production systems, has assigned to the Quality Assurance Plans and Standards Branch the responsibility of incorporating into the Nautical Chart Manual:

those procedures to be performed in the raster production branches in support of ENC production efforts, and,

the ENC Extraction Specification containing the procedures (in accordance to S-57

requirements) in which the data for ENCs is to be collected and attributed. The ENC Extraction Specification will apply to ENC production only.

It must be noted that the ultimate goal of the Marine Chart Division is to incorporate the LAMPS2/ENC production system throughout the Division and have each cartographer produce from this one technical system, both an ENC and its respective raster counterpart. At present, however, the operation of the raster and ENC production systems are two very distinct and diverse processes which result in MCD personnel acquiring specific knowledge of either one or the other's chart compilation requirements.

It is now a goal of the Quality Assurance, Plans and Standards Branch to identify those comparable requirements which may support both the raster and ENC compilation processes, eliminate the dual examination of source documents and promote a timely and efficient application of charting information by cartographers operating both systems.