





BACKGROUND. IHO IMPLEMENTATION PLAN (1/3)

Resolution of the IMO Maritime Safety Committee. MSC 530 (106)

IMO accepts S-100 as a valid format for ECDIS and introduction of the ENDS (Electronic Navigation Data Service) concept.

Gradual introduction: S-100 ECDIS: It will be legal in January 2026 and mandatory in January 2029.

IHO's commitment to IMO

Maintain implementation schedule of the S-101 and other standards (Work Plan 2023-2026)

Have adequate coverage of S-101 and other S-100 products (ENDS) by the time ECDIS S-100 becomes operational

IHO COMMITMENT "Important" coverage of S-100 products in January 2026





BACKGROUND. IHO IMPLEMENTATION PLAN (2/3)

Phase 1 / Route Monitoring

Phase 1 Route Monitoring Mode

S-101 ENC S-102 Bathymetry S-104 Water Level S-111 Surface Currents S-124 Navigational Warnings S-129 UKC Management

Critical Framework

IHO Geospatial Information Registry S-98 Interoperability Specification S-100 Universal Hydrographic Data Model S-128 Catalogue of Nautical Products S-164 Test Data Set for S-100 and ECDIS Type Approval

Phase 2 / Route Planning

Phase 2 Route Planning Mode

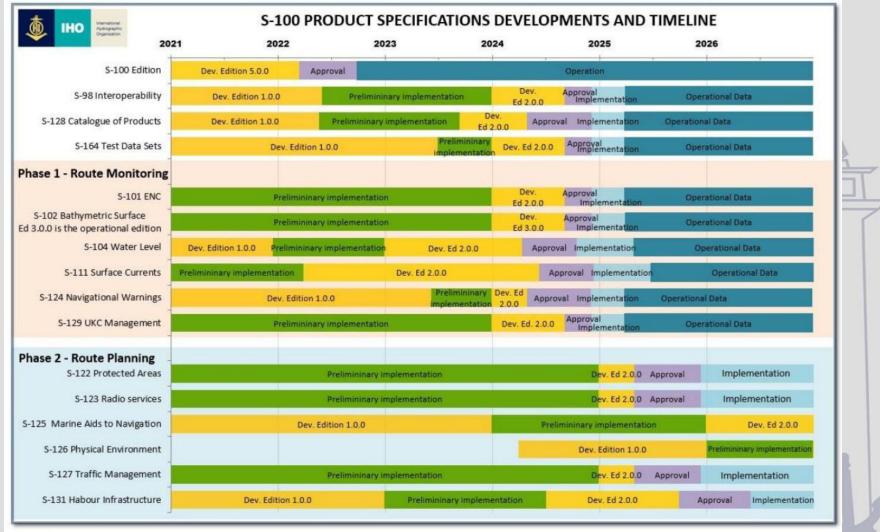
S-122 Marine Protected Areas S-123 Marine Radio Services S-125 Marine Aids to Navigation (AtoN) S-126 Marine Physical Environment S-127 Marine Traffic Management S-131 Marine Harbour Infrastructure S-411 Ice Information (WMO) S-412 Weather and Wave Hazards (WMO)

> + S-100 Products used in Monitoring Mode





BACKGROUND. IHO IMPLEMENTATION PLAN (3/3)







IHM IMPLEMENTATION PLAN (1/2)

PHASE 1: Initial phase

- Definition and establishment of the initial situation
- Product Specification Standard Definition
- Coordination with other national agencies involved

FASE 2: Identification and coverage of needs

- Hardware and/or necessary material
- Software and/or necessary licenses (acquisition and/or development)
- Establishment or adaptation of DB
- Personnel and/or training needs

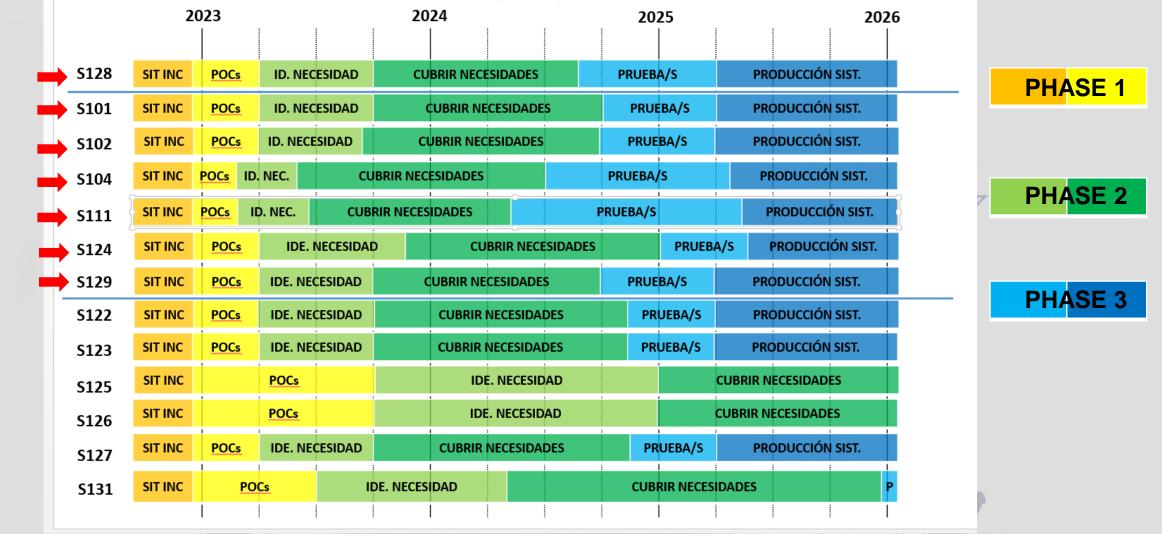
FASE 3: Testing and start of systematic production

- First test and/or tests. Referral to future validating agency (if already known)
- Establishment of validating agency and validation procedures/tools
- Establishment of production procedures





IHM IMPLEMENTATION PLAN (2/2)





COLOR

CODE

INSTITUTO HIDROGRÁFICO DE LA MARINA



INDICATORS and MONITORING PROCEDURE (1/4)

	SIT. INI	STAN SPECIFI		AGENCY/IES	HARDWARE/ MATERIAL	SOFTWARE/ LICENSES	DATABASES	TRAINING	PERSONAL	FIRST TEST	VALIDATION	DISTRIBUTION	
128	SI												
BSER	VACIO	ONES											
STANDARD SPECIFICATION		- 1	Progress status of development of standard specifications										
AGENCY/IES		s	Relations and coordination with other external organizations										
	HARDWARE/ MATERIAL		Hardware or other type of material needs										
	SOFTWARE/ LICENSES		Software needs (programs, applications,) or licenses										
DATABASES Identification of the need to create new databases or adapt existing ones													
TR/	AINING		Staff training needs										
PER	SONAL	-	Need	ls to hire a	to hire additional personnel or external services								
FIRS	t test		First production test and referral to the organization that will carry out its validation and distribution										
VALIDATION Monitoring progress in the development of validation procedures systems													
DIST	RIBUTIC	Ň	Monitoring progress in the development of distribution systems and procedures										





	PHASE 1			PHASE 2				PHASE 3			
	SIT. INI.	STANDARD SPECIFICATION	AGENCY/IES	HARDWARE/ MATERIAL	SOFTWARE/ LICENSES	DATABASES	TRAINING	PERSONAL	FIRST TEST	VALIDATION	DISTRIBUTION
S128	SI										
						PRIORIDAD					
	SIT. INI.	STANDARD SPECIFICATION	AGENCY/IES	HARDWARE/ MATERIAL	SOFTWARE/ LICENSES	DATABASES	TRAINING	PERSONAL	FIRST TEST	VALIDATION	
S101	SI										
S102	SI										
S104	SI										
S111	SI										
S124	SI										
S129	SI										
						PRIORIDAD	DOS				
	SIT. INI.	STANDARD SPECIFICATION	AGENCY/IES	HARDWARE/ MATERIAL	SOFTWARE/ LICENSES	DATABASES	TRAINING	PERSONAL	FIRST TEST	VALIDATION	DISTRIBUTION
S122	SI										
S123	SI										
S125	SI										
S126	SI										
S127	SI										
S131	SI										
			1	1	1	1 1			Nover	nber 23 th , 20	023





INDICATORS and MONITORING PROCEDURE (3/4)

WEND 100 IGIF MATRIX

- Plan Indicators IHO Strategic Plan 2021-2026 (SPI 1.3.1).
- Determine capacity of member countries to execute the S100 Implementation
- Capacity: Technical, legal, responsibilities, financial, resources, national organization
- Current version under review (WENDWG)

-									
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EFFECTED SPANISH TRANSLATION ALREADY PUBLISHED ON OHI WEB





DETAILS OF MORE ADVANCED STANDARDS (IHO PRIORITY 1)

All pending approval, definitive standards, validation and quality control procedures and tools.

STDR	SUMMARY OF CURRENT IMPLEMENTATION STATUS	DISTRIBUTION VALIDATION		
S128	Planned production by IC-ENC (Data from IHM)	IC-ENC INToGIS III (OHI)	>	
S101	First test sent to IC-ENC February 23.	IC-ENC		
S102	First test sent to IC-ENC May 23.	IC-ENC		
S104	Software development actions started	IC-ENC		
S111	Software development actions started	IC-ENC		
S124	Efforts initiated for financing and software development. SHOM collaboration received	WWNWS		
S129	Standby	;?		

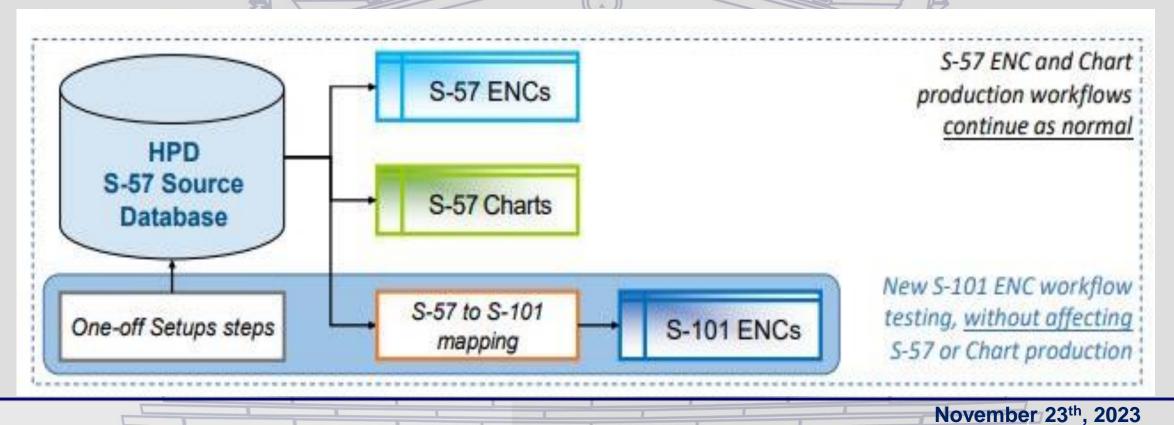


S101



DETAILS OF MORE ADVANCED STANDARDS (IHO PRIORITY 1)

- PRODUCTION SOFTWARE: CARIS HPD 4.1.38 and MODULE S101
- CARTOGRAPHIC DB MIGRATION CARRIED OUT TO ADAPT TO CARIS HPD
- TRANSFORMATION TOOLS S57 to S101 NOT DEFINITIVE
- TOOLS and PROCEDURE VALIDATION/QUALITY CONTROL IN DEVELOPMENT
- WORK SCHEME FOR PRODUCTION S101







DETAILS OF MORE ADVANCED STANDARDS (IHO PRIORITY 1)

S101

WE INTEND TO MAINTAIN SIMILAR SCHEME AS WITH S57

- Facilitates the S57 to S101 transformation process
- No ENC changes (cells) in sensitive/special interest areas
- No coverage/overlap problems with neighboring countries







GUIA DE IMPLANTACIÓN DE PRODUCCIÓN ENC S101

ANEXOS

- I. Plan OHI de implantación de estándares de la familia S100, para 2023-2026
- II. Definición de indicadores de seguimiento de implantación de los estándares S100
- III. Programación y contenidos del curso de formación HPD 4.1
- IV. Programación y contenidos del curso de formación del módulo S101
- V Procesos de trabajo para la transformación y producción de S101 a partir de S57

1.- INTRODUCCIÓN

El pasado 07 de noviembre de 2022, el Comité de Seguridad Marítima (MSC) de la Organización Marítima Internacional (OMI), adoptó la resolución MSC.530 (106) "Normas de funcionamiento de los sistemas de información y visualización de cartas Electronicas", que es una revisión y actualización de la anterior resolución MSC232(82). Esta revisión contempla la introducción gradual de la próxima generación de cartas de navegación electrónica (ENC), conforme a las nuevas especificaciones de la Organización Hidrográfica Internacional (OHI) (productos cartográficos de la familia de estándares S-100), estableciendo lo siguiente con respecto las consolas ECDIS:

- Los equipos instalados a partir del 1 de enero de 2029 deberán cumplir con estas normas revisadas, es decir, que estarán obligados a soportar formatos \$100.
- Los instalados a partir del 1 de enero de 2026 pero antes del 1 de enero de 2029, pueden ajustarse a estas medidas revisadas o las anteriores del MSC.232 (82), es decir, que podrán soportar formatos S57, S100, o ambos a la vez (concepto de trabajo "Dual-Fuel").

La adopción esta resolución supone un importante avance para alcanzar la implantación de los productos \$100, pero también supone un fuerte compromiso por parte de la Organización Hidrográfica Internacional (OHI) para cumplir con el plan de trabajo y cronograma de implantación de la \$101 y del resto de estándares de la familia \$100, establecido para los años 2023-2026 (Anexo I).

Destacar que dentro de los plazos establecidos en este Plan de implantación 2023-2026 de la OHI, se establece la necesidad de contar con una cobertura aceptable de los principales productos de la familia S100 a principios del año 2026. En este sentido, se da prioridad a aquellos estándares dedicados a la monitorización de la navegación: S101 (ENC), S102 (superficie batimétrica), S104 (mareas) y S111 (corrientes), así como aquellos relativos a la catalogación (S128), desarrollo de procedimientos de validación, control de calidad y distribución de todos estos nuevos productos. Otros estándares más relacionados con labores de planeamiento se establecen como segunda prioridad. Además, la OHI recomienda a los países productores centrar sus primeros esfuerzos en las zonas de mayor relevancia para la navegación, atendiendo a criterios de densidad del tráfico, puertos relevantes, restricciones, variaciones de sonda, etc.

PRODUCTION IMPLEMENTATION GUIDE ENC S101 IN SPANISH LANGUAGE

- Preparation and definition of the starting situation
- Definition of monitoring indicators
- Minimum hardware requirements
- Minimum software requirements
- Staff training plan
- S101 Database Configuration
- Transformation processes from s57 to S101 (in testing phase)
- Processes of sending to the RENC







CONCLUSIONS

- Awareness: 2026 very close. Coverage commitment (OHI with OMI)
- IHM implementation plan in accordance with the OHI Plan (2021-2026)
- IHM sole interlocutor from Spain with IC-ENC
- Priority most relevant areas / S101, S102, S104, S111, S128, S124 and S129
- It is important to continue producing S101 and S102. IC-ENC referral.
- It is important to start production as soon as possible in tests of S104 and S111
- S128, it is intended to be produced with the collaboration of IC-ENC
- Continue with line started for software development S124 (SHOM)
- S129, currently waiting (first production S104)





