



ORGANIZACION HIDROGRAFICA INTERNACIONAL

Dossier del BHI No. S3/8151/CHRIS

**CIRCULAR No. 108/2007
21 de Noviembre del 2007.**

COHERENCIA DE LAS ENCs - S-65

- Referencias:
- Circular No. 47/2004 del 5 de Julio del 2004 – *Mejorando la Coherencia de las ENCs*;
 - Circular No. 32/2007 del 14 de Marzo del 2007 – *Mejorando la Coherencia de las ENCs*;
 - Circular No. 64/2007 del 13 de Julio del 2007 – *Codificación coherente de las ENCs*.

Estimado(a) Director(a),

1. En el 2003, el IC-ENC¹ preparó un documento que identificaba los temas significativos relativos a la coherencia de los datos de las ENC² que transitaban por el RENC³. Dicho documento incluyó una serie recomendada de reglas para la aplicación del atributo SCAMIN de la S-57, y su objetivo era solucionar el problema de la saturación en pantalla al visionar las ENC² en el ECDIS, y asegurar la coherencia entre las células ENC adyacentes, en las que SCAMIN no había sido codificado universalmente o de manera coherente. Estas reglas fueron convenidas por el TSMAD⁴ y posteriormente aprobadas por el CHRIS⁵ en su 16^a reunión, en el 2004 (CHRIS/16). Las recomendaciones fueron enviadas a los Estados Miembros, junto con la Circular No. 47/2004.

2. En el 2006, como resultado de una preocupación persistente por la coherencia de las ENC², la 10^a reunión del Comité WEND⁶ sometió las acciones siguientes a CHRIS, para su consideración en su 18^a reunión:

*La responsabilidad de la aplicación de SCAMIN sigue siendo de los SHs;
Los SHs necesitan orientación sobre cómo utilizar el atributo SCAMIN;
Desarrollar esta orientación es una tarea de CHRIS.*

CHRIS/18 propuso que un método apropiado de dar más importancia y visibilidad a las recomendaciones establecidas sería incorporarlas en una Resolución Técnica de la OHI. La Circular No. 32/2007 invitaba a los Estados Miembros a aprobar esta propuesta. Aunque la propuesta tuvo un apoyo importante, algunos Estados Miembros expresaron reservas. Al mismo tiempo, el TSMAD había convenido mejoras adicionales de las recomendaciones relativas al uso del atributo SCAMIN. Como resultado, la Circular No. 64/2007, aunque adjuntaba las recomendaciones mejoradas desarrolladas por el TSMAD, anunciaba la suspensión de la votación, a la espera de un examen suplementario de CHRIS en su 19^a reunión del 2007.

¹ Centro Internacional para las ENC²;

² Cartas Electrónicas de Navegación ;

³ Centro Regional de Coordinación de las ENC² ;

⁴ Grupo de Trabajo sobre el Mantenimiento de la Transferencia de Normas y el Desarrollo de Aplicaciones - GT subsidiario de CHRIS;

⁵ Comité de la OHI sobre Requerimientos Hidrográficos para Sistemas de Información ;

⁶ IHO Committee on the Worldwide ENC Database

3. El Presidente del TSMAD ha informado ahora a ambas, la 1ª Reunión Extraordinaria del Comité WEND (X-WEND) y la 19ª Reunión de CHRIS, indicando que se han hecho cambios adicionales a las "Recomendaciones para la Codificación coherente de ENC's" para tratar los problemas expresados por ciertos

Estados Miembros. El Presidente del TSMAD destacó a ambos comités que las recomendaciones, en su forma actual, siguen beneficiando de un importante apoyo de la mayoría de representantes del GT del TSMAD. Además, se pretende que las recomendaciones proporcionen una base de referencia para las futuras prácticas de codificación, más que requisitos obligatorios que deberían cumplir de forma precisa todos los Estados y las regiones. El Presidente del TSMAD reconoció que los Estados que han producido ya ENC's dedicarán algo de tiempo a uniformizar sus ENC's con las directivas; sin embargo, los nuevos productores y aquellos Estados que están a punto de producir nuevas ENC's tienen ahora una referencia básica en la que basar sus normas de compilación.

4. Ambas reuniones, la X-WEND y, posteriormente, la CHRIS/19, observaron la importancia de la cobertura y la coherencia de las ENC's y el hecho de que la OHI había aprobado recientemente Resoluciones en la 17ª CHI, referentes a la cobertura y la coherencia de las ENC's. La X-WEND convino también que la cobertura y la coherencia tienen la misma importancia y que se requiere pues un esfuerzo equilibrado. Ambos comités acordaron que se publicarían las directivas de codificación de las ENC's.

5. Como resultado, la CHRIS/19 ha aprobado la versión revisada de las "Recomendaciones para una Codificación coherente de ENC's" y ha convenido que, antes que incluir estas recomendaciones como una nueva Resolución Técnica, se incluirán como Anexo de la S-65 - *Directivas sobre la Producción de ENC's*. Al hacerlo, el CHRIS reconoció que hay varias iniciativas regionales en curso, que pueden mejorar adicionalmente las recomendaciones en el futuro.

6. Una versión enmendada de la S-65, conteniendo las *Recomendaciones para una Codificación coherente de ENC's*, será publicada en su momento. Para el periodo ínterin, se incluye un ejemplar de referencia en el Anexo A de esta Circular.

En nombre del Comité Directivo
Atentamente,



Capitán de Navío Robert WARD
Director

Anexo A : Recomendaciones para la Codificación coherente de datos de ENC's.
(en Inglés únicamente)

Recommendations for Consistent ENC Data Encoding

- 1 The compilation scale¹ (CSCL sub-field of the DSPM field of the ENC header and the attribute CSCALE on the object M_CSCL) should be considered as the optimum display scale of an ENC and as such should be set based upon the standard radar range scales in the following table (see also 3 below):

<i>Selectable Range</i>	Standard radar scale (rounded)
200 NM	1:3,000,000
96 NM	1:1,500,000
48 NM	1:700,000
24NM	1:350,000
12 NM	1:180,000
6 NM	1:90,000
3 NM	1:45,000
1.5 NM	1:22,000
0.75 NM	1:12,000
0.5 NM	1:8000
0.25 NM	1:4000

Table 1 - Radar range / standard scale table

- 1.1 Normally, the nearest larger standard radar scale should be used, e.g. an ENC produced from a 1:25,000 paper chart should have a compilation scale of 22,000. However the selected scale may take into account the density of data when displayed at the chosen standard scale in addition to the quality and scale of the original source material.
- 1.2 Where the source material used to produce the ENC is of a scale larger than 1:4000 or smaller than 1:3,000,000 then the actual paper chart / source material scale may be used as the compilation scale for the ENC.
- 1.3 The use of too many M_CSCL objects within the same cell should be avoided. The values of any M_CSCL CSCALE attributes should be set using the same criteria as those used for setting 'compilation scale' described above.

¹ CSCALE is defined in S-57 as *The scale at which the data was originally compiled*. This has proved to be misguided and supports too strong an association with the paper chart compilation scale. Paper charts are designed at a scale which enables a designated area to fit on a specific size of paper. Vector data should be scaled to optimize the viewing capabilities in a digital environment, usually a 21 inch monitor.

2 SCAMIN should be used for all ENCs.

2.1 SCAMIN values used should be selected from the following list:-

1:19,999,999
1:9,999,999
1:4,999,999
1:2,999,999
1:1,499,999
1:699,999
1:499,999
1:349,999
1:259,999
1:179,999
1:119,999
1:89,999
1:59,999
1:44,999
1:29,999
1:21,999
1:17,999
1:11,999
1:7,999
1:3,999
1:1,999
1:999

Table 2 - SCAMIN values

2.2 SCAMIN values for features within an ENC should be set to either 1, 2, 3 or 4 steps smaller scale than the compilation scale of the ENC.

2.3 Appendix 1 lists the step values (i.e. 1, 2, 3 or 4) that should be applied for specific object classes together with any relevant conditions and additional flexibilities.

Following these three rules, offers an automated approach to setting SCAMIN which takes account of the relative importance of different object classes and will achieve sufficient de-cluttering even where there are large gaps in the scales of coverage available.

Unless the step values outlined in Appendix 1 have been manually adjusted, this approach takes no direct account of the relative importance of individual occurrences of an object, and may still result in the unsettling situation where an object disappears and then reappears as the user zooms out. To address these remaining issues, the following additional rules may be applied:-

- 2.4 Linear and area objects (excluding those objects subject to extensive generalisation e.g. DEPCNT) that extend beyond the coverage of a cell and exist in a smaller navigational purpose cell must be assigned a SCAMIN value based on the compilation scale of the smaller scale cell.
- 2.5 The SCAMIN value of an individual occurrence of an object should be set to either 1, 2, 3 or 4 steps smaller scale than the compilation scale of the smallest scale ENC that the object would appear on.
- 3 Inconsistent depiction of the same localities in different navigational purposes should be avoided. For example, outlines of rivers, ports etc. in smaller scale cells should be shown but may be in a simplified outline form.
- 4 In addition to setting the compilation scale and encoding SCAMIN, there should be close liaison between neighbouring HOs when creating ENCs in their border areas, in order to resolve any issues of inconsistent depiction and to avoid gaps and overlaps in data coverage (consult the WEND Principles in IHO TR K 2.19). In particular, the following issues should be investigated and resolved:
- common data limits
 - COMF value used (*see 9 below*)
 - overlaps / gaps - buffer zone (*see 10 and 11 below*)
 - content / data alignment
 - depth contour intervals (*see 6 below*)
 - truncated limits and boundaries (areas that cross the cell boundaries)
- 5 Misalignment and inconsistent depiction of data at cell, source and international boundaries should be investigated and rectified.
- 6 HOs should, as a minimum, use standardised depth contour intervals (refer M-4, B-411 and IHO TR A 2.11). Additional depth contours may be added, where required.
- 7 HOs should not leave holes in smaller scale coverage, assuming that the user will have larger scale data available.
- 8 Wherever possible, meaningful and useful values of CATZOC should be used, i.e. values other than CATZOC 6 (data not assessed) for areas of bathymetry (refer S-57 Appendix B.1 – Annex A, clause 2.2.3.1). For areas of unstable seafloors, the M_QUAL attribute SUREND may be used to indicate the date of the survey of the underlying bathymetric data.
- 9 Coordinates should be held in ENC production systems at a resolution of 0.0000001 (10^{-7}) and the COMF value should be set to 10000000 (10^7) for all cells.
- 10 There must be no gaps in data between adjoining cells of the same navigational purpose.
- 11 There must be no overlapping data between cells of the same navigational purpose (see S-57, Appendix B.1 clause 2.2), except at the agreed adjoining national data limits, where, if it is difficult to achieve a perfect join, a 5 metre overlapping buffer zone may be used.

Specific SCAMIN step values for Object and attribute combinations

In the following table, group 2 objects have been sub-divided into the following sub-groups:-

- 2 Group 2 object (not part of standard display).
- 2M Meta objects.
- 2B Group 2 objects that are always part of base display.
- 2CB Group 2 objects that are part of base display dependent on safety contour setting.
- 2S Group 2 objects in standard display.

The final column **SCAMIN STEPS** indicates the number of steps above (smaller scale) the compilation scale that SCAMIN values should be set to.

NB. Producers should be prepared to deviate from the step values specified when the significance of the feature dictates, e.g. the recommended number of steps for a LIGHTS object is 4, but there will be circumstances where a LIGHTS object is so important that no SCAMIN value be applied; alternatively, the light could be so minor that a step value of 1 can be applied.

It is generally accepted that objects making up a NAVAID will have the same attributes, and therefore those with Master/Slave relationships should be assigned the same SCAMIN value.

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
ACHARE	Point/ Area	2		2
ACHARE	Point/ Area	2S	If RESTRN defined	3
ACHBRT	Point/ Area	2		1
ADMARE	Area	2		3
AIRARE	Point/ Area	2S	If CONVIS = 1(visually conspicuous)	3
AIRARE	Point/ Area	2		1
ARCSLN	Line/ Area	2S		4
BCNCAR	Point	2S		3
BCNISD	Point	2CB		4
BCNLAT	Point	2S		3
BCNSAW	Point	2S		3
BCNSPP	Point	2S		3
BERTHS	Point/Line/ Area	2		1
BOYCAR	Point	2S		3

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
BOYINB	Point	2S		3
BOYISD	Point	2CB		4
BOYLAT	Point	2S		3
BOYSAW	Point	2S		3
BOYSPP	Point	2S		3
BRIDGE	Point/Line/ Area	2CB		4
BUAARE	Point/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
BUAARE	Point/ Area	2		1
BUISGL	Point/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous) or FUNCTN = 33	3
BUISGL	Point/ Area	2		1
C_AGGR	N/A	2		NOT SET
C_ASSO	N/A	2		NOT SET
CANALS	Line	2		1
CANALS	Area	2		4
CAUSWY	Line/ Area	2		2
CBLARE	Area	2S	If RESTRN defined	3
CBLARE	Area	2		2
CBLOHD	Line	2CB	Over Navigable Water	4
CBLOHD	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
CBLOHD	Line	2		1
CBLSUB	Line	2		3
CGUSTA	Point	2		1

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
CHKPNT	Point/ Area	2		1
COALNE	Line	2B		NOT SET
CONVYR	Line/ Area	2CB	Over Navigable Water	4
CONVYR	Line/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
CONVYR	Line/ Area	2		1
CONZNE	Area	2		3
COSARE	Area	2		3
CRANES	Point/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
CRANES	Point/ Area	2		1
CTNARE	Point/ Area	2S		4
CTRPNT	Point	2		1
CTSARE	Point/ Area	2		1
CURENT	Point	2		3
CUSZNE	Area	2		2
DAMCON	Point/Line/ Area	2		1
DAMCON	Line/ Area	2B	If sharing geometry with LNDARE & DEPARE or DRGARE	NOT SET
DAMCON	Line/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
DAYMAR	Point	2S	If Slave SCAMIN must match that of Master	3
DEPARE	Line	2		1
DEPARE	Area	1		NOT SET
DEPCNT	Line	2CB	If VALDCO = 0 (drying line) or 30 (default safety contour ref S-52)	4

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
DEPCNT	Line	2		2
DISMAR	Point	2		2
DMPGRD	Point/ Area	2S	If RESTRN defined	3
DMPGRD	Point/ Area	2		2
DOCARE	Area	2		1
DRGARE	Area	1		NOT SET
DRYDOC	Area	2		1
DWRTCL	Line	2S		NOT SET
DWRTPT	Area	2S		NOT SET
DYKCON	Line/ Area	2B	If sharing geometry with LNDARE & DEPARE or DRGARE	NOT SET
DYKCON	Line	2		1
EXEZNE	Area	2		3
FAIRWY	Area	2S		3
FERYRT	Line/ Area	2S		3
FLODOC	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
FLODOC	Area	1		NOT SET
FNCLNE	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
FNCLNE	Line	2		1
FOGSIG	Point	2S	If Slave SCAMIN must match that of Master	3
FORSTC	Point/Line/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
FORSTC	Point/Line/ Area	2		1
FRPARE	Area	2		2

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
FSHFAC	Point/Line/Area	2		2
FSHGRD	Area	2		1
FSHZNE	Area	2		3
GATCON	Point/Line/Area	2		2
GATCON	Line/Area	2B	If sharing geometry with LNDARE & DEPARE or DRGARE	NOT SET
GENOBJ	Point/line/Area	2S		4
GRIDRN	Point/Area	2		1
HRBARE	Area	2		3
HRBFAC	Point/Area	2		1
HULKES	Point	2		1
HULKES	Point	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
HULKES	Area	1		NOT SET
ICEARE	Area	2		3
ICNARE	Point/Area	2		1
ICNARE	Point/Area	2S	If RESTRN defined	3
ISTZNE	Area	2S		NOT SET
LAKARE	Area	2		1
LIGHTS	Point	2S	If Slave SCAMIN must match that of Master	4
LITFLT	Point	2S		4
LITVES	Point	2S		4
LNDARE	Point/Line/Area	1		NOT SET
LNDELV	Point	2S	If CONVIS = 1(visually conspicuous)	3
LNDELV	Point/Line	2		1

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
LNDMRK	Point/Line/Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous) or FUNCTN = 33	3
LNDMRK	Point/Line/Area	2		1
LNDRGN	Point/Area	2		1
LOCMAG	Point/Line/Area	2		3
LOGPON	Point/Area	2CB	On Navigable Water	4
LOGPON	Point/Area	2		1
LOKBSN	Area	2		1
M_ACCY	Area	2M		NOT SET
M_COVR	Area	2M		NOT SET
M_CSCL	Area	2M		NOT SET
M_HOPA	Area	2M		NOT SET
M_NPUB	Area	2M		NOT SET
M_NSYS	Area	2M		NOT SET
M_QUAL	Area	2M		NOT SET
M_SDAT	Area	2M		NOT SET
M_SREL	Area	2M		NOT SET
M_VDAT	Area	2M		NOT SET
MAGVAR	Point/Line/Area	2		1
MARCUL	Point/Line/Area	2CB	If EXPSOU = 2(shoaler than range of the surrounding depth area) & VALSOU ≤ 30m	4
MARCUL	Point/LineArea	2S	If RESTRN defined	3
MARCUL	Point/Line/Area	2		1
MIPARE	Point/Area	2S		3

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
MORFAC	Point/Line/Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
MORFAC	Point/ine/Area	2S		2
NAVLNE	Line	2		3
OBSTRN	Point/ Line/Area	2CB	If VALSOU >= 30m	4
OBSTRN	Point/ Line/Area	2CB	If VALSOU < 30m	NOT SET
OFSPLF	Point	2CB	Isolated Installations	4
OFSPLF	Point/Area	2S		3
OFSPLF	Area	2CB		4
OILBAR	Line	2CB		4
OSPARE	Area	2CB		4
PILBOP	Point/Area	2		3
PILPNT	Point	2CB	Where used to mark position of LIGHTS object in water	4
PILPNT	Point	2S	If CONVIS = 1(visually conspicuous)	3
PILPNT	Point	2		2
PIPARE	Point/Area	2S		3
PIPOHD	Line	2CB	Over Navigable Water	4
PIPOHD	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
PIPOHD	Line	2		1
PIPSOL	Point/Line	2	Submarine	3
PIPSOL	Point	2	On land	1
PONTON	Line	2		2

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
PONTON	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
PONTON	Area	1		NOT SET
PRCARE	Point/Area	2S		3
PRCARE	Point/Area	2S	When part of TSS	NOT SET
PRDARE	Point/Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
PRDARE	Point/Area	2		1
PYLONS	Point/Area	2CB	Bridge supports in navigable water	4
PYLONS	Point/Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
PYLONS	Point/Area	2		1
RADLNE	Line	2		3
RADRFL	Point	2	If Slave SCAMIN must match that of Master	3
RADRNG	Area	2		3
RADSTA	Point	2	If Slave SCAMIN must match that of Master	2
RAILWY	Line	2		1
RAPIDS	Point/Line/Area	2		1
RCRTCL	Line	2S		3
RCTLPT	Point/Area	2S		3
RDOCAL	Point/Line	2S		3
RDOSTA	Point	2	If Slave SCAMIN must match that of Master	1
RECTRC	Line/Area	2S		3
RESARE	Area	2S		3
RETRFL	Point	2S	If Slave SCAMIN must match that of Master	3

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
RIVERS	Line	2		1
RIVERS	Area	2		4
ROADWY	Point/Line/ Area	2		1
RSCSTA	Point	2		3
RTPBCN	Point	2S	If Slave SCAMIN must match that of Master	3
RUNWAY	Point/Line/ Area	2S	If CONVIS = 1(visually conspicuous)	3
RUNWAY	Point/Line/ Area	2		1
SBDARE	Point/Line/ Area	2		1
SEAARE	Point/ Area	2		1
SILTNK	Point/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1(radar conspicuous) or Representative of a group of SILTNKs	3
SILTNK	Point/ Area	2		1
SISTAT	Point	2	If Slave SCAMIN must match that of Master	1
SISTAW	Point	2	If Slave SCAMIN must match that of Master	1
SLCONS	Point/Line/ Area	2S/2B		NOT SET
SLOGRD	Point/ Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
SLOGRD	Point/ Area	2		1
SLOTOP	Line	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
SLOTOP	Line	2		1
SMCFAC	Point/ Area	2		1
SNDWAV	Point/Line/ Area	2		3
SOUNDG	Point	2CB	If VALSOU > 30m	1
SOUNDG	Point	2CB	If VALSOU ≤30m	3

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
SOUNDG	Point	2CB	If EXPSOU = 2(shoaler than range of the surrounding depth area) & VALSOU ≤ 30m	4
SPLARE	Point/Area	2S	If RESTRN defined	3
SPLARE	Point/Area	2		1
SPRING	Point	2		1
STSLNE	Line	2		3
SUBTLN	Area	2S		3
SWPARE	Area	2		3
T_HMON	Point/Area	2		1
T_NHMN	Point/Area	2		1
T_TIMS	Point/Area	2		1
TESARE	Area	2		3
TIDEWY	Line/Area	2		1
TOPMAR	Point	2S	If Slave SCAMIN must match that of Master	3
TS_FEB	Point/Area	2		3
TS_PAD	Point/Area	2		2
TS_PNH	Point/Area	2		2
TS_PRH	Point/Area	2		2
TSELNE	Line/Area	2S		NOT SET
TSSBND	Line	2S		NOT SET
TSSCRS	Area	2S		NOT SET
TSSLPT	Area	2S		NOT SET
TSSRON	Area	2S		NOT SET
TS-TIS	Point/Area	2		2

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
TUNNEL	Point/Line/ Area	2		1
TUNNEL	Area	2CB	If Navigable	4
TWRTPT	Area	2S		NOT SET
UNSARE	Area	1		NOT SET
UWTROC	Point	2CB	If EXPSOU = 2(shoaler than range of the surrounding depth area) & VALSOU ≤ 30m	4
UWTROC	Point	2	Not within an OBSTRN area	3
UWTROC	Point	2		2
VEGATN	Point/Line/ Area	2S	If CONVIS = 1(visually conspicuous)	3
VEGATN	Point/Line/ Area	2		1
WATFAL	Point/Line	2S	If CONVIS = 1(visually conspicuous)	3
WATFAL	Point/Line	2		1
WATTUR	Point/Line/ Area	2		3
WEDKLP	Point/ Area	2		3
WRECKS	Point/ Area	2CB?	If CATWRK = 1 or VALSOU > 30m	4
WRECKS	Point/ Area	2S?		NOT SET
WRECKS	Point/ Area	2CB	If EXPSOU = 2(shoaler than range of the surrounding depth area) & (VALSOU ≤ 30m or CATWRK = 2,4 or 5)	4

Optional additional rules that can be manually applied to fine tune the application of SCAMIN after the above values have been automatically applied.

OBJECT	PRIMITIVE	GROUP	CONDITION	SCAMIN STEPS
BRIDGE	Point/Line/Area	2S	If CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous) and not over navigable water	3
BRIDGE	Point/Line/Area	2	Not over Navigable water	1
OBSTRN	Point	2	The most significant OBSTRN of a group of OBSTRNS within close proximity	NOT SET
OBSTRN	Point	2	For groups of OBSTRNs in close proximity, or within an OBSTRN area	2
SOUNDG	Point	2	Critical Depths over sand bars etc where VALSOU < 30m	3
SOUNDG	Point	2		1
UWTROC	Point	2	The most significant UWTROC of a group of UWTROCs within close proximity and not within an OBSTRN area	NOT SET
WRECKS	Point/ Area	2S	CONVIS = 1(visually conspicuous) or CONRAD = 1 (radar conspicuous)	3
WRECKS	Point/Area	2	For groups of WRECKSs in close proximity (the most significant should not have SCAMIN)	2
WRECKS	Point/Area	2	The most significant WRECKS of a group of WRECKS within close proximity	NOT SET