

2<sup>nd</sup> NCWG MEETING  
 Monaco 26-29 April 2016

Paper for Consideration by the Nautical Cartography Working Group (NCWG)  
 Proposal for a Shared INT1 Symbol Repository

<b>Submitted by:</b>	United States (NOAA)
<b>Executive Summary:</b>	Proposal to start sharing the symbol graphics used in S-4 and INT1 to enhance consistency and eliminate redundant graphic creation efforts by the various organizations that produce INT1 or national chart 1 documents.
<b>Related Documents:</b>	INT1, <i>Symbols, Abbreviation and Terms used on charts</i> S-4, <i>Regulations for International (INT) Charts and Chart Specifications of the IHO</i>

**Introduction / Background**



In addition to the three countries that produce the official IHO INT1 documents – France, Germany and Spain – at least three dozen other nations produce their own version of INT1 or chart 1. This proposal suggests that the standard raster chart symbols specified in S-4 and described for mariners in INT1 be shared among chart 1 producing organizations to reduce redundant work and increase consistency among the chart 1 publications that provide guidance to mariners throughout the world.

**Analysis / Discussion**

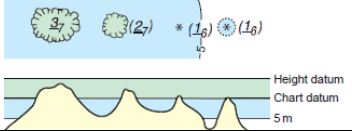
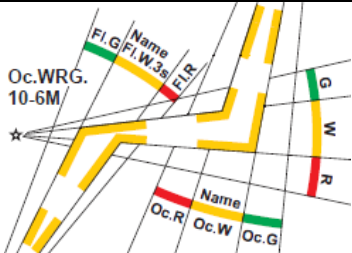
The purpose of INT1 and chart 1 documents is to provide mariners with complete and accurate guidance on the symbols used on international charts and any variations in national symbology. Therefore, it is in the best interest of mariners and the INT1/chart 1 producing organizations to have consistency among all of the many nautical symbology references that are used around the world. These are in many languages, but all of them have copies of INT1 symbols.

There are over 570 rows of entries in the latest editions of INT1 that hold graphic elements in the “Chart Specification of the IHO” or “INT1” column. Does it make sense that each organization supporting maritime safety must create each of these symbols over and over to produce their own chart 1 document?

Some examples of INT1 symbols are very simple,

T 1.1		Boarding place, position of a pilot cruising vessel
C 5		Flat coast

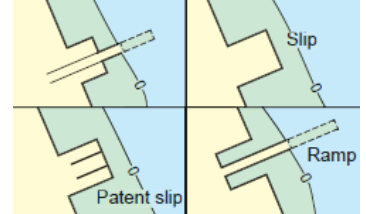

but many are quite complex.

K 11		Rock which covers and uncovers, height above chart datum
P 41.2		Sector lights on multicoloured charts, the white sector limits marking the sides of the fairway


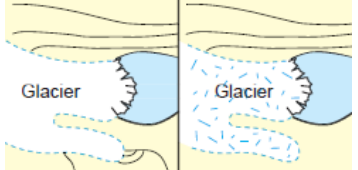

Would it be more efficient and ensure greater consistency if there was one source of these graphics

that could be shared among the community?

Most INT1 rows contain a single symbol, but many rows show two or more INT1 symbols, so even rows that contain simple symbols can require a significant amount of work to produce when multiple symbols are shown.

F 23		Slipway, Patent slip, Ramp
Q 7		Lighted marks on standard charts

Some symbols have been used for generations, such as the symbol for exposed wreck, while others have changed over time, such as the new INT1 glacier symbol. Each new edition of INT1 usually features one or more symbols that have just begun to appear on nautical charts, such as the new virtual AIS symbols. These modified and new symbols are where a shared source of symbol graphics could provide the most benefits.

T 1.1		Wreck showing any portion of hull or superstructure at level of Chart Datum
C 25		Glacier
S 18.2		Virtual AIS with cardinal mark function

Many rows contain only letters or numbers. As these examples are easily reproduced, there is no need to include these types of symbols in a graphic repository.

B 50	m                  min	Minute(s) of time
H 15	MLLW	Mean Lower Low water
I 10	12                  9 <sub>7</sub>	Sounding in true position

### Copyrights

All INT1 documents and most chart 1 documents are copyrighted. The copyright notices for the three current editions of INT1 are provided in Annex A. As most producers recover the costs of making and distributing the document through direct sales, this is entirely appropriate.

The greatest value of the documents is in their completed form, especially with each producer's inclusion of any national supplementary symbols and national variations of symbol use that are different from INT1. The individual components – such as the INT1 symbol graphics – are of little value on their own. The IHO S-4 copyright notice (see Annex B) provides a good model for the use of parts of the document by others for "general information." As S-4 is the source of all agreed upon standard INT symbols, all of the INT1 and chart 1 documents are already taking advantage of the intent to share the S-4 content (whether the statements of use provided in the S-4 copyright notice are included in the INT1 or chart 1 documents or not).

Sharing digital copies of the foundational INT1 symbol graphics among INT 1 and chart 1 document producers will not diminish the strength or effectiveness of individual producers' own copyright claims,

but it will increase the consistency of the graphic elements that appear in each version.

### Precedent for Sharing Nautical Chart Symbolology

There is already an established precedent for a mechanism to share nautical chart symbology among hydrographic data and data display providers. The IHO S-100 Registry provides a means to register, store, and obtain copies of standard (S-101) Electronic Navigational Chart (ENC) symbols in digital Scalable Vector Graphics (SVG) format. Various hydrographic offices and commercial original equipment manufacturers have contributed content to the S-101 Portrayal Register. There is no reason why this approach of distributing the effort for maintaining current symbol representations could not be used to reduce the burden of creating symbol graphics by each INT1 and chart 1 producer.

### **Conclusions**

INT1 and chart 1 producing organizations expend an undue amount of effort to reproduce new or modified symbol graphics from the examples in S-4 and new editions of INT1. A considerable reduction in redundant effort can be obtained by the creation of a shared symbol library. Sharing a single instance of each S-4/INT1 symbol will also ensure consistency of the examples of symbols shown in various chart 1 documents.

Most chart 1 documents are copyright protected and there is no reason why this practice should not continue. However, it is in the best interest of navigation safety to freely share the graphic elements from which these documents are composed. S-4 is the original source of the INT1 symbols and use of these *symbols* should be modeled after the IHO copyright S-4, which states that. "This document or partial material from this document may be translated, reproduced or distributed for general information, on no more than a cost recovery basis."

There is already a precedent for sharing digital copies of nautical chart symbols for S-101 electronic navigational charts.

### **Recommendations**

1. Endorse the establishment of a shared "S-4/INT1 Raster Nautical Chart Symbol Graphic Repository (or Library)."
2. Survey interested organizations to determine which graphic formats will be easiest export, store, extract, and import.
3. Establish simple rules for participation or membership in the library.
4. Establish a short term capacity to store graphics on an FTP site on an IHB or member states' computer server.
5. Establish a simple graphic file naming convention.
6. Encourage INT1 and chart 1 producing organizations contribute symbol graphics to the library.
7. Consider longer term goals for the library, such as possible use of an S-100 (or similar) portrayal registry to store and manage S-4 symbols, including the establishment of a governance process for submitting, validating, and retrieving symbols.

### **Action required of NCWG**

NCWG is invited to:

- a. consider implementing the recommendations stated above and
- b. consider any other actions that could improve the standardization and efficiency of providing mariners reliable guidance on the symbols used on raster nautical charts.

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