

**Paper for Consideration by NCWG**  
**Distinction between obstructions and foul grounds**

<b>Submitted by:</b>	Australia
<b>Executive Summary:</b>	Propose amendments to S-4 in order to facilitate the classification of artificial submerged objects as Obstruction or Foul ground.
<b>Related Documents:</b>	Paper NCWG4-12.5 INF5_Obstruction_Foul_Ground Paper ENCWG4_05.28_Issues_with_OBSTRN S-4 (B-422); S-57 UOC (§6.2)
<b>Related Projects:</b>	S-101

### Introduction / Background

This topic was originally presented at NCWG4 (NCWG4-12.5 INF5). Consequently, action item ENCWG 4.16 was allocated to AU and FR in order to recommend changes to S-4.

This topic has been also presented at ENCWG4 and S101PT4 (June 2019) and follow up actions aiming to amend S-52 and S-64 are currently underway.

This paper aims to include additional guidance in S-4 to assist cartographers with the classification of artificial submerged objects. This step is considered crucial because it directly affects the encoding of the S-57 attribute *CATOBS* and, as a result, the way the **OBSTRN** object will interact with ECDIS safety functions.

### Analysis / Discussion

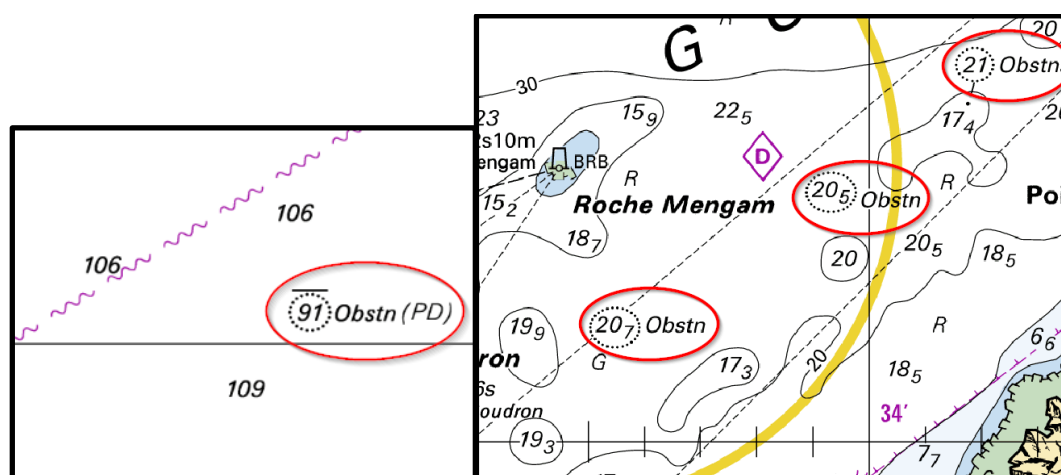
Artificial objects lying on the seabed can be charted as **Obstructions** or **Foul ground** using one of the following point symbols: INT1 K40 to 43 for Obstructions, K31 for Foul grounds.

There is no ambiguity in IHO standards as regard to the distinction between an Obstruction and a Foul ground: the former is dangerous for surface navigation, the latter is not.

Despite this, cartographers do not have available a clear and easy to follow decision-making process to help them answer the following key question:

Is this submerged object 'dangerous for surface navigation'?

On some charts, objects that are obviously not dangerous for surface navigation are shown as Obstructions. Below are two illustrations from SHOM charts, but similar cases have been found on other HO's charts:



1 - Extract from French chart 7066

2 - Extract from French chart 7401

The first example speaks for itself. As for the second one, independently of the tide, no ship with a draft of more than 20 metres should venture in this area with surrounding depths between 17,3 and 20 metres. The 3 charted Obstructions should have been shown as Foul grounds.

## Conclusions

Additional guidance to support the decision making process regarding the classification of an artificial submerged object as either **Obstruction** or **Foul ground** is required in S-4.

S-4 currently provides a good definition of **Foul ground** (B-422.8) but there is no explicit definition for **Submerged Obstruction** (B-422.9). For this, cartographers must refer to S-32.

## Recommendations

Amend S-4 sections as indicated below (new text in blue colour):

1. **B-422.9** – Include definition of ‘submerged obstruction’ using S-32 as source:

A **submerged obstruction** is any artificial or unknown object that hinders or prevents movement, particularly anything that endangers or prevents passage of a vessel. Natural dangers of similar characteristics are to be shown as soundings, underwater rocks, etc. Obstructions that are too small to be shown to scale must be charted similarly to wrecks (see B-422.3, 422.4, 422.7) but with the **international abbreviation** ‘*Obstr*’ in place of ‘*Wk*’. Further information .....

2. Add new section **422.10** to guide decision making process:

In order to decide if a submerged object should be encoded as a **Foul ground** (B-422.8) or as an **Obstruction** (B-422.9), cartographers must first determine the minimum acceptable under keel clearance margin over the object. This can be done by comparing the least known depth (or estimated safe clearance) over the object against the maximum draught of vessels operating in the area. If the depth margin obtained is considered enough as to support the safe navigation of vessels in the area, the object should be encoded as **Foul ground** otherwise it should be encoded as an **Obstruction**.

3. Include reference to new section **422.10** in **422.8** and **422.9**:
  - a. **B-422.8: Foul Ground** is an area over which it is safe to navigate but which should be avoided for anchoring, taking the ground or ground fishing (for example: remains of wreck; cleared platform). See **B-422.10**.
  - b. **B-422.9: A submerged obstruction is any artificial** ..... and in all cases where a depth numeral is not charted and the general depth of water is less than 100m. See **B-422.10**.

## Action required of NCWG

The NCWG is invited to:

- a. note this paper
- b. discuss the recommendations and approve amendments to S-4