

## 本地船隻諮詢委員會

### 國際航標協會建議 O-133 – 緊急沉船標誌浮標

#### 目 的

海事處建議採納國際航標協會（IALA）有關緊急沉船標誌浮標的建議 O-133，本文為此徵詢委員的意見。

#### 引 言

2. 海事意外有可能導致船隻沉沒，在海中留下新的殘骸，危害航行安全。遇有此等情況，主管當局必須盡快標示沉船位置，讓路過船隻輕易察覺海上有新的礙航物。

3. 目前，新的礙航物一般以方位浮標或側舷浮標標示。一些主管當局（如香港海事處）則會設置孤立危險物浮標來標示新的沉船位置。

#### 背 景

4. 2002 年 12 月，挪威運車船“Tricolor”號與一艘巴哈馬貨櫃船於英倫海峽相撞，最後在該繁忙的航道上沉沒。

5. 雖然有關當局已派出巡邏船在場戒備並以燈浮標妥善標示“Tricolor”號的沉船位置，但該船的殘骸在同年同月和翌年一月先後再遭一艘德國船隻和一艘土耳其油輪碰撞。事件令各界關注如何標示構成危險的沉船位置才算有效和足夠，能夠避免其他船隻碰撞沉船殘骸。

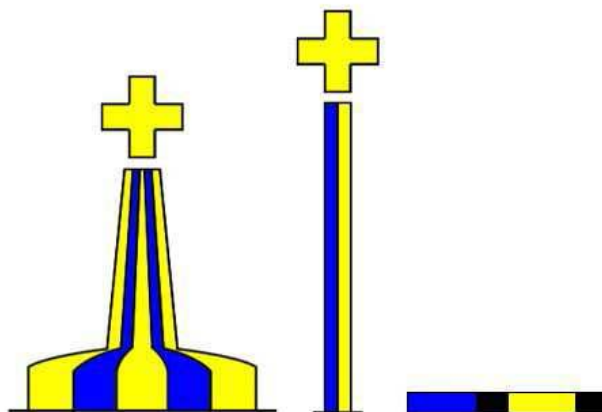
6. “Tricolor” 號事件後，IALA 發出“1046 號指引——標示新沉船位置的應急計劃”（2005 年 6 月版），為緊急標示沉船位置的工作提供指引及建議。指引建議主管當局設置特別設計的“緊急沉船標誌浮標”，方便航海人士識別新的沉船障礙物位置。

7. 國際間不同港口／燈塔的管理當局就此建議進行了不少測試，最後發現採用藍黃相間直條紋且裝有藍黃交替閃燈的柱形或桿形浮標，較設置傳統的方位浮標、側舷浮標或孤立危險物浮標更有效和更令人滿意。IALA 建議 O-133 載列了這類“緊急沉船標誌浮標”的特點及標準（附件 I 及 II（只提供英文版本））。

## 特 點

8. IALA建議的“緊急沉船標誌浮標”具備以下特點：

- a) 形狀——柱形或桿形
- b) 大小——視乎位置而定
- c) 顏色——藍黃相間直條紋，兩種顏色條紋的數目和尺寸相同（條紋總數最少四條，最多八條）。
- d) 頂標——一個直立／垂直的黃色十字（非強制）
- e) 燈質——藍黃交替閃光，燈光射程為四海里（海事當局可按本地情況增減射程），藍黃光輪流各閃1秒，其間相隔0.5秒。（**藍光1.0秒 + 暗0.5秒 + 黃光1.0秒 + 暗0.5秒 = 3.0秒**）



## 現 況

9. 香港一向都採用 IALA 海上浮標系統，現行安排是以孤立危險物浮標（紅黑相間橫條紋且裝有白閃燈的柱形浮標）來標示新的沉船位置。我們注意到珠江口區域的海事主管當局近期已採納 IALA 建議 O-133，以“緊急沉船標誌浮標”標示新的沉船位置。

## 建 議

10. 上述IALA建議已獲國際間不同港口／燈塔的管理當局廣泛採用，並為珠江口區域各港口所採用。為了劃一區內的浮標系統，讓航海人士更容易識別構成危險的新沉船位置，現提議採納IALA建議的“緊急沉船標誌浮標”，以標示香港水域範圍內構成危險的新沉船位置。

11. 如建議獲通過，我們便會着手準備“緊急沉船標誌浮標”和添置燈標設備，預計最遲可在本年年底推行建議。

## 徵詢意見

12. 請委員通過上述建議，採納IALA有關緊急沉船標誌浮標的建議 O-133。

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**IALA Recommendation O-133  
On**

**Emergency Wreck Marking  
Buoy**

**Edition 1**

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# IALA Recommendation on Emergency Wreck Marking Buoy

## Recommendation O-133

### THE COUNCIL:

**NOTING** the function of IALA with respect to the safety of marine navigation, the efficiency of maritime transport and the protection of the environment;

**NOTING ALSO** the provisions contained within the IALA Maritime Buoyage System (MBS), and related IALA Recommendations and IALA Guidelines;

**RECOGNISING** the significant hazard to shipping posed by new wrecks or obstructions;

**RECOGNISING ALSO** that it is a matter for a National Authority to assess the danger to shipping, navigational requirement, the risk involved, and to decide on emergency wreck marking;

**RECOGNISING FURTHER** that emergency marking of dangerous wrecks is intended to preserve the safety of life, safety of navigation and to protect the marine environment;

**HAVING CONSIDERED** the proposals by the IALA Aids to Navigation Management Committee and taking into account IALA Guideline No. 1046 Response Plan for the Marking of New Wrecks;

**ADOPTS** the “Emergency Wreck Marking Buoy”, set out in the Annex to this Recommendation, for use on a trial basis; and

**RECOMMENDS** that Responsible Authorities, in addition to the use of the MBS and in conjunction with other measures, consider the deployment of Emergency Wreck Marking Buoys, as described in the Annex to this Recommendation.

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## **ANNEX – Emergency Wreck Marking Buoy**

### **1 INTRODUCTION**

The wreck of the ‘Tricolor’ in the Dover Straits in 2002 has brought into sharp focus the effective responses required to adequately and quickly mark such new dangers and prevent collisions. Responsible Authorities need to assess their areas of responsibility and rapid response capability as part of their contingency planning.

The **IALA Guideline No.1046 - Response Plan for the Marking of New Wrecks (June 2005)** provides guidance to Authorities for an immediate, effective and well co-ordinated response in such a situation. The guidelines recommend procedures to be observed, as well as considerations to be taken into account with respect to all necessary measures when confronted with a new danger or an obstruction as a result of an incident within their area of responsibility.

Furthermore, there has been discussion with regards to the limitations of the present IALA Maritime Buoyage System when providing initial marking of new dangers. At present, new dangers are generally marked by cardinal or lateral buoys, although it is recognised that a number of Authorities also deploy isolated danger marks. Recent groundings and collisions have indicated a need for a revision of how new dangers are to be marked, especially in an emergency. As such, Guideline No. 1046 provides guidance and recommendations for emergency wreck marking.

### **2 SCOPE & OBJECTIVES**

Within the Guideline, reference is made to an ‘emergency wreck marking buoy’. This Recommendation provides details of a new buoy configuration, in addition to that already found in the IALA Maritime Buoyage System, which Authorities may consider deploying when responding to a new danger or obstruction.

### **3 CONSIDERATIONS**

A new wreck can be very dangerous for shipping, not only when its exact position is unknown and is still unmarked, but even when the position is known and the wreck is properly marked. In the past, new wrecks have caused problems to other shipping resulting in damage, pollution and even loss of life. As detailed in the Guideline No.1046, Authorities should consider a range of responses including the deployment of guardships, the use of AIS, temporary VTS and deployment of buoys amongst other risk mitigation measures.

Whatever additional risk mitigation measures are initiated, a new danger must be physically marked. Weather conditions, sea state and unknown facts about the danger can all hamper timely marking. However, it is of great importance that the location of the danger is marked as soon as practicable and that this marking can be readily recognised by ships as a new hazard.

The volume of traffic, background lighting and proliferation of Aids to Navigation (AtoN) in the area may make the deployment of cardinal or lateral marks difficult for mariners to quickly identify a new danger in the initial stages of an incident. In these instances, Authorities are invited to consider the deployment of an emergency wreck marking buoy that is specifically designed to mark new dangers.

## 4 EMERGENCY WRECK MARKING BUOY

The emergency wreck-marking buoy is designed to provide high visual and radio aid to navigation recognition. It should be placed as close to the wreck as possible, or in a pattern around the wreck, and within any other marks that may be subsequently deployed.

The emergency wreck marking buoy should be maintained in position until:

- The wreck is well known and has been promulgated in nautical publications;
- The wreck has been fully surveyed and exact details such as position and least depth above the wreck are known;
- A permanent form of marking of the wreck has been carried out.

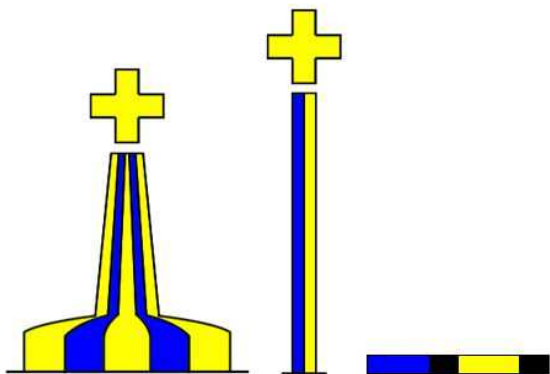
### 4.1 Characteristics

The buoy has the following characteristics:

- A pillar or spar buoy, with size dependant on location.
- Coloured in equal number and dimensions of blue and yellow vertical stripes (minimum of 4 stripes and maximum of 8 stripes).
- Fitted with an alternating blue\* and yellow flashing light with a nominal range of 4 nautical miles (authorities may wish to alter the range depending on local conditions) where the blue and yellow 1 second flashes are alternated with an interval of 0.5 seconds.

$$\text{Bu}1.0\text{s} + \underline{0.5\text{s}} + \text{Y}1.0\text{s} + \underline{0.5\text{s}} = 3.0\text{s}$$

- If multiple buoys are deployed then the lights should be synchronised.
- Consideration should be given to the use of a racon Morse Code “D” and/or AIS transponder.
- The top mark, if fitted, is to be a standing/upright yellow cross.



*\*The light characteristic was chosen to eliminate confusion with blue lights to identify law enforcement, security and emergency services.*

# **IALA Guideline No. 1046**

**On**

## **Response Plan for the Marking of New Wrecks**

**Edition 1**

**June 2005**



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## **IALA Guidelines on a Response Plan for the Marking of New Wrecks**

### **1 INTRODUCTION**

Following an incident as a result of which a new and dangerous wreck occurs, certain measures will have to be taken by the responsible authorities in order to avoid further incidents and to prevent loss of life and/or pollution. These measures are included in the existing IALA Maritime Buoyage System (MBS) under section 7 – New Dangers.

The wreck of the ‘Tricolor’ in the Dover Straits has brought into sharp focus the effective responses required to adequately mark such dangerous wrecks and to prevent further collisions with the wreck. Incidents following the wreck of the ‘Tricolor’ identified a requirement to provide marking options in addition to those identified in the MBS, as well as a requirement for emergency wreck marking contingency planning. The aim of such planning would be to ensure that an immediate, effective and well co-ordinated response can be given in such a situation.

#### **1.1 Scope**

These Guidelines provide the basis for developing an Emergency Wreck Marking Plan (EWMP). The EWMP points out procedures to be observed, as well as considerations to be taken into account with respect to all necessary measures that should be taken by the authorities when confronted with a new dangerous wreck or an obstruction as a result of an incident within their area of responsibility.

These Guidelines identify the considerations, decision process and possible actions that administration may take when responding to a requirement to mark a new and dangerous wreck or obstruction.

### **2 DEFINITIONS AND ACRONYMS**

<b>AIS</b>	Automatic Identification System
<b>Dangerous wreck</b>	any wrecks or obstructions in navigable water that pose a hazard to navigation
<b>DSC</b>	Digital Selective Calling
<b>ETV</b>	Emergency Towing Vessel
<b>EWMP</b>	Emergency Wreck Marking Plan
<b>Guard ship</b>	A vessel which can be tasked to guard the area of a wreck to warn other vessels of the new danger posed.
<b>Racon</b>	Radar transponder beacon
<b>VTS</b>	Vessel Traffic Services
<b>EGC</b>	Enhanced Group Calling
<b>NOTMAR</b>	Notices to Mariners

### 3 CONSIDERATIONS

Administrations need to assess their areas of responsibility and response capability. This includes carrying out risk assessments, assessing response capabilities and resources and consideration of plans to deal with such situations<sup>1</sup>. Aspects of such a risk assessment should include:

- 1 Analysis of responses capabilities;
- 2 Indication of areas of Responsibility;
- 3 Assessment of response required in specific areas;
- 4 Indication of response times;
- 5 Indication of intervention times;
- 6 Assessment of mobile resources e.g. pollution combating vessels, buoy tenders, Emergency Towing Vessels, guardships, buoys, Temporary VTS capability;
- 7 Assessment of electronic resources such as AIS and information systems.

A helpful tool for decision making with respect to the marking of wrecks that should be developed beforehand is a 'marking requirements map', indicating the different marking requirements in specific sea-areas. For each of these areas the marking requirements should be based on information and knowledge of the types and size of shipping in the area, traffic patterns and minimum under-keel clearance requirements.

### 4 DECISIONS AND ACTIONS

Authorities may consider their response in the following order of priority: (see flow diagram Annex 1)

1. Immediate broadcast of initial Safety message (navigational warning) concerning the new dangerous wreck.
2. Obtain as much information as possible about the new wreck.
3. Consider deployment of a Guard ship on the location of the new wreck.
4. Consider whether temporary VTS is necessary on the new wreck.
5. Consider AIS applications.
6. Initial marking of the wreck position.
7. Survey the wreck.
8. Consider the permanent marking of the wreck.
9. Issue updates.
10. Consider whether continuation of temporary VTS is necessary.
11. Consider whether removal of the wreck is necessary.
12. Identify steps to take if the wreck is not to be removed.

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<sup>1</sup> IALA Guideline 1018 on Risk Management refers

## **4.1 Immediate broadcast of an initial Safety message concerning the new dangerous wreck**

Especially in busy waterways, a new dangerous wreck or obstruction has the capability to cause loss of life, environmental damage and economic impact. Although, in most incidents detailed information is not directly available, it is very important that initial information of a new wreck or an obstruction, regardless of how scant it may be, is made known to shipping without delay.

An Initial Safety message (navigational warning), indicating the approximate position of the new wreck and any other relevant information, should be broadcast without delay on:

- VHF\* (announced on DSC - digital selective calling)
- MF\*(announced on DSC)
- HF\*(announced on DSC)
- AIS
- NAVTEX\*
- INMARSAT (EGC)
- Mobile phone
- Internet (email)
- and any other communications means available

\*In certain circumstances it might be necessary to issue an urgent navigational warning.

## **4.2 Obtain as much information as possible about wreck**

Information about a new wreck should be gathered as soon as possible. In certain situations this process might well start even before a wreck is actually a fact. For example, after a collision, as a result of which a ship is slowly drifting and sinking, any relevant information as to the status of the damaged vessel should be monitored. The sooner the actual location of a wreck is known the better as this will save valuable time so as to be able to initially mark the wreck and issue navigational warnings. This will also reduce the risk of other ships hitting the wreck whilst it is still unmarked.

In circumstances where a ship sinks with no other ship in the vicinity able to report/confirm the position, the wreck location should be established as soon as possible so that navigational warnings can be issued and initial marking of the wreck location can be carried out.

## **4.3 Consider Deployment of Guard Ship**

A new wreck can be very dangerous for shipping, not only when its position is not exactly known and is still unmarked, but even when the position is known and the wreck is properly marked. In the past, many wrecks have caused numerous problems resulting in damage, pollution and even loss of life.

When confronted with a new, possibly dangerous wreck, authorities should decide as soon as possible if it is necessary to send a 'guard ship' to the location of the wreck in order to 'guard' the location and inform ships navigating near the wreck position of the new danger. The guard ship should be well equipped for her task and should be able to stay on position in all weather conditions and sea states. The guard ship may be fitted with a racon morse code "D". It may also be fitted with the proposed blue/yellow alternating lights that some administrations are promoting specifically for new dangerous wrecks.

#### **4.4 Consider Temporary VTS**

In busy shipping areas such as Traffic Separation Schemes (TSS), precautionary areas, channels, harbour approaches, etc. the establishment of a guard ship may not be sufficient / appropriate. Action to establish a temporary VTS at the wreck location should be considered.

When a temporary VTS is established at the wreck location, certified VTS operators should ideally be employed to staff the centre.

#### **4.5 Consider AIS applications**

AIS applications may be appropriate to physically mark the area of the wreck, promulgate information concerning the wreck or virtually mark the wreck (virtual AIS). This may be particularly relevant if the weather and sea state prevent ship deployment.

#### **4.6 Initial marking of the Wreck.**

A new dangerous wreck, which is a danger to shipping, must be marked. Weather conditions, sea state and unknown facts about the new wreck can all hamper timely marking. Irrespective of these circumstances it is of great importance that the wreck location is marked as soon as possible and can be readily recognised by ships as a new wreck location. The IALA MBS provides a means of marking new dangers through the use of appropriate Cardinal or Lateral buoys using VQ or Q light characters, with duplicate marks that are identical to their partners in all respects. In addition, new dangers may be marked by a racon with coded morse 'D'.

Some administrations have developed an 'emergency wreck buoy' designed specifically for new, dangerous wrecks and to have 'high impact recognition' for the navigator. Administrations are invited to consider the deployment of such a buoy to mark a new, dangerous wreck. The buoy should be placed as close to the wreck as possible, and within any other marks that may be deployed. This buoy is coloured blue and yellow in vertical stripes. It is fitted with an alternating blue and yellow light. Ideally it should be fitted with a racon Morse Code "D". The characteristics and location of the buoy should be promulgated to the mariner by all available means.

The wreck buoy should be maintained in position until the wreck is well known and has been promulgated in nautical publications, or until the wreck has been fully surveyed and exact details such as position and swept clearance above the wreck are known, and permanent marking of the wreck has been carried out.

#### **4.7 Survey of the wreck**

A survey of the new wreck should be performed as soon as possible. Survey information and details should include, as a minimum, the:

- exact position of the wreck,
- stability of the wreck,
- wreck orientation or heading,
- swept depth above the wreck.

## **4.8 Consider the permanent marking of the wreck**

As soon as the wreck survey details are available, taking into account factors such as shipping routes and traffic density, the marking of the wreck should be reconsidered. When considering more permanent marking solutions, factors to take into account include:

- The use of the MBS
  - Is the initial marking, as per MBS, sufficient?
  - Is there a requirement to reposition the marks?
  - Is additional marking needed?
  - Are there other solutions?
- Danger indicators on the wreck.
- AIS and AtoN information

## **4.9 Issue Updates**

As soon as further survey details and information concerning the wreck becomes available, shipping and relevant authorities should be informed immediately.

As survey information and updates are received, mariners should be informed through MSI (Marine Safety Information) systems such as EGC, NAVTEX, NOTMARs, etc.

## **4.10 Consider whether continuation of VTS is necessary**

Irrespective of all measures taken earlier (navigational warnings, marking, etc.) it may be necessary to decide to continue VTS on the wreck location. In case of an extremely dangerous wreck, for instance in the middle of a busy shipping route or shipping lane, a VTS on location may be considered essential to avoid collision, either with the wreck or between ships which are manoeuvring past the dangerous wreck. As an ongoing aspect of the EWMP, Pilot stations, VTS and other allied services in the area should notify mariners of the dangerous wreck.

## **4.11 Consider whether removal of the wreck is necessary**

Based on risk assessment, taking into account traffic densities, traffic patterns, under-keel clearances, draft restrictions, etc. authorities should consider whether the removal of the wreck is necessary.

If the decision is made to remove the wreck, a comprehensive salvage plan must be developed. It should again assess the risk and consider all aspects of the operation.

## **4.12 Identify steps to take if wreck is not to be removed.**

If it is decided not to remove the wreck, permanent marking requirements must be reconsidered as per 4.8, and the wreck must be charted permanently through the hydrographic office.

Annex 1 – Flow Chart for Emergency Marking of Dangerous Wrecks

