Input paper: [[1]](#footnote-1) ENG16-3.1.2.8

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**□** ARM **☑** ENG **□** PAP **☑** Input

**□** ENAV **□** VTS **□** Information

Agenda item [[2]](#footnote-2) n.n

Technical Domain / Task Number 2 …WG 2 task 2.5.1…

Author(s) / Submitter(s) …China MSA……….…

Draft Chapter 12 of New Guideline on IDENTIFYING BUOY CHARACTERISTICS TO MEET NAVIGATIONAL AND OPERATIONAL REQUIREMENTS

# Summary

This paper mainly provides draft text of Chapter 12 for the newly developing guideline on *IDENTIFYING BUOY CHARACTERISTICS TO MEET NAVIGATIONAL AND OPERATIONAL REQUIREMENTS*, which including introduction to the meaning of monitoring, requirement of monitoring, methods of monitoring and position of monitoring.

## Purpose of the document

To propose the draft Chapter 12 “monitoring” for the newly developing guideline on *IDENTIFYING BUOY CHARACTERISTICS TO MEET NAVIGATIONAL AND OPERATIONAL REQUIREMENT*.

## Related documents

G1XXX IDENTIFYING BUOY CHARACTERISTICS TO MEET NAVIGATIONAL AND OPERATIONAL REQUIREMENTS

# Background

Chapter 12 "Monitoring" of the new guideline mainly provide some basic concepts related to buoy monitoring. According to the discussion during the ENG15, China MSA is responsible for drafting text of this chapter.

# Discussion

Based on the results of brainstorming at ENG 15 and the actual situation of monitoring in related member state, delegates agreed that Chapter 12 of the guideline should include the following contents:

1. The meaning of monitoring. Monitoring as a method of proving IALA availability requirement. Refer to the G1053 *AVAILABILITY AND RELIABILITY OF AIDS TO NAVIGATION ‐ THEORY AND EXAMPLES* for this part.
2. The content of monitoring. This part mainly introduces the content to judge the performance of navigation buoy. Refer to the R0118 (O-118) *THE RECORDING OF AIDS TO NAVIGATION POSITIONS* for this part.
3. Means of monitoring. There are various means of buoy monitoring, including remote monitoring, visual inspection, ship traffic reports of defects or out of position, and competent authority inspection of buoy for published characteristics. With the development of technology, the role of remote monitoring is becoming more and more important. Refer to the G1008 on *REMOTE CONTROL AND MONITORING OF MARINE AIDS TO NAVIGATION* for this part.

# References

1. G1008 ON REMOTE CONTROL AND MONITORING OF MARINE AIDS TO NAVIGATION.
2. R0118 (O-118) THE RECORDING OF AIDS TO NAVIGATION POSITIONS.
3. G1035 AVAILABILITY AND RELIABILITY OF AIDS TO NAVIGATION ‐ THEORY AND EXAMPLES.

# Action requested of the Committee

The committee is requested to note the draft text in the annex and take appropriate action.

Annex Draft Chapter 12 “Monitoring”

1. monitoring
   1. Objective of monitoring

The main purpose of buoy monitoring is to keep constant surveillance on the working status of buoy, detect existing or potential failure and intervene in time to ensure that the buoy maintains good performance. Buoy monitoring is an important supplementary means to assess performance of the buoys. As a method to match IALA availability requirement, monitoring result can be used as data to calculate the availability of the buoy. Therefore, its accuracy and comprehensiveness may affect the level of service, which the navigators are expecting from the buoy. Buoy monitoring is a complex task. There are various methods that have different effects.Competent authority should fully consider the realistic factors and the expected results, and finally make the choice that meets the requirements when deciding the monitoring methods.

* 1. Content of monitoring

The main elements in buoy monitoring include:

1. Position.
2. Appearance and structure.
3. Working status of the lantern.
4. Working status of energy system (charging and discharging voltage, current, battery capacity,etc.)
5. Status of auxiliary equipment (such as battery, RACON, solar panel, Physical AIS device, etc.)

Generally, competent authority can select some of the elements to monitor according to priority, and the elements that may effect the performance of the buoy should be considered with higher priority, such as buoy position, lantern performance and overall structure and so on. Meanwhile, as a drifting buoy may cause obstruction to navigator instead of assistance, the position accuracy of buoy should be one of most important part to monitor, and the datum point to measure position accuracy should base on the point of sinker or anchor.

* 1. Methods of monitoring

1.3.1 Remote monitoring

Remote monitoring system can be used to monitor buoys at different locations, and collect information of buoy status which can be accessed and shared through proper platform. A typical remote monitoring system consist of remote terminal units, communication network, data processing center and user platform. By setting up corresponding threshold to receiving parameters, authorized user can justices the performance of buoy and detects failure in time. Multiple communication networks can be used on remote monitoring system, such as cellular, terrestrial and satellite radios, microwave links, landlines, and internet. Normally, remote monitoring can only read the status data of the buoy. Some remote monitoring systems can also send instruction to set up specific parameters to realize integration of remote monitoring and remote controlling.

1.3.2 Visual check

Visual check is to maintain a regular or continuous observation to the buoy. For example,a buoy keeper /attendant continuously observes the buoy. The reliability and integrity of the buoys depend on the competence of the keeper/attendant. The advantage is that, in some cases, the keeper/attendant can intervene in failure based on his/her technical capabilities without waiting for maintenance personnel, and the keeper/attendant can completely control the buoy equipment or structure on site. The disadvantage is that, living facility for the keeper is required on site, which is difficult to meet for most buoys. In addition, the labor cost is high and the work is boring.

1.3.3 Reports from vessel

This requires AtoN administration to set up regulations for vessels to report buoy abnormality when passing by. In fact, whether the report can be made in time or not mostly depends on vessel’s navigator, the navigator may delay or fail to report. And, it means the buoy fail to play its role in aid of navigation, even can cause obstruction to navigation in some case, when reports from vessel occurs. Therefore the disadvantage of this method is that it can not detect and repair the failure in time, neither to achieve certain prediction nor prevention. Taking consideration of the uncertainty of reports from vessel, it is recommended that competent authority should set up buoy monitoring system combines with other methods.

1.3.4 Competent authority inspection

After launch of a buoy, competent authority shall organize inspection of buoy as soon as possible to ensure that the buoy can meet declared characters. In addition, the competent authority should conduct regular inspection during life cycle of the buoy, including comprehensive inspection and spot check. Generally, inspection or check hold by the competent authorities is professional and authoritative, which is significant important for solving problem or conducting subsequent maintenance of the buoy. The disadvantage is that it can not keep constant monitor of the buoy.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
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