

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

☐ ARM                      ☐ ENG                      ☐ PAP                      **X** Input

☐ ENAV                      **X** VTS                      ☐ Information

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## THE USE OF VHF AND MAINTAINING SITUATIONAL AWARENESS

### 1 INTRODUCTION

It has come to our attention that, as part of an ongoing investigation regarding a collision between two vessels within a VTS Area resulting in fatalities, it is probable that a significant contributory factor was a reduction in situational awareness due to the interaction being conducted on a duplex circuit without instantaneous retransmission.

A review of existing IALA documentation related to the interaction between VTS and participating ships identified:

- There is an absence of operational guidance that situational awareness is maximised in voice communications through the use of simplex channels to ensure that all participants are able to monitor exchanges between each other and the VTS centre. That is, both sides of any exchange can be heard by all other ships.
- Technical guidance is provided that, where duplex VHF channels are used to manage ship traffic and respond to developing situations, there should be instantaneous retransmission of the incoming call on the other part of the duplex channel being used by the VTS operator, so it is received by all other ships, and therefore maximise situational awareness (IALA *Guideline G1111-2 Producing Requirements for Voice Communications, Section 3.2.2.3*).

### 2 DISCUSSION

VTS interaction with ships is most commonly conducted using voice communications over VHF in the IMM band. It is important to recognise that where traffic management is conducted using VHF voice communications, situational awareness will only be maximised if simplex channels are used to ensure that all participants are able to monitor exchanges between each other and the VTS centre.

Duplex channels use two separate frequencies. Only shore stations are channelised to receive transmissions from ships and, thus, communication between ships is not possible on duplex channels as they will be unable to hear the transmissions of other ships. For this reason, the use of duplex channels in VTS is generally reserved for administrative traffic.

It is recognised that duplex channels may be utilised to manage ship traffic and respond to developing situations through the use of instantaneous retransmission of the incoming ship's transmission by the VTS centre whereby the duplex channel then effectively replicates a simplex channel. This has occasionally been used by VTS

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<sup>1</sup> Leave open if uncertain

providers to overcome a shortage of VHF simplex channels allocated to Port Operations and Ship Movement and/or interference.

Appendix 18 of the ITU Radio Regulations lists the channels available in the VHF Maritime Mobile Band and, in particular, the channels identified solely for “Port Operations and Ship Movement”. These are all “Single Frequency” channels. A number of duplex channels in this category are also identified for alternative use but they are not dedicated to Port Operations.

It should be noted that recent changes to the ITU Radio Regulations have introduced a number of additional simplex channels dedicated to “Port Operations and Ship Movement” and IMO have mandated carriage from 2024, which should help alleviate the previous shortage of available simplex channels.

The importance of using simplex channels to manage ship traffic and respond to developing situations and the instantaneous retransmission when using duplex channels, is not currently reflected in operational guidance provided in:

- *G1141 Operational Procedures for Delivering VTS*
- *G1132 VTS Voice Communications and Phraseology*

Reference to simplex channels needs to be included in *G1111-2 Producing Requirements for Voice Communications*. The existing text in sub-section 3.2.2.3 would also benefit from rewording to complement the addition of a reference to simplex channels.

### **3 ACTION REQUESTED OF THE COMMITTEE**

The Committee is requested to consider the amendments at Annex A to the following Guidelines that identify the importance of the use of simplex communications to maximise situational awareness amongst participating ships and how duplex channels should be operated if insufficient simplex channels are available:

- *G1141 Operational Procedures for Delivering VTS*
- *G1132 VTS Voice Communications and Phraseology*
- *G1111-2 Producing Requirements for Voice Communications*

## Guideline G1141 Operational Procedures for Delivering VTS

Section 5.1. Routine procedures, sub-section 5.1.1. VTS voice communication. Delete existing three paragraphs in this sub-section:

~~“Processes and procedures to ensure that VHF Communication is timely, clear, concise and unambiguous should be established. In VHF communications with vessels, the IMO Standard Marine Communication Phrases (SMCP) (reference Resolution A.918(22) [12]), Proper use of VHF Channels at Sea (IMO Resolution A.954(23) [13]), and IALA Guideline G1132 VTS Voice Communications and Phraseology [14] should be used whenever applicable.~~

~~Procedures should also include list [sic] of the VTS communication channels used and monitored in the VTS area.~~

~~Please note, Guideline G1132 VTS Voice Communications and Phraseology provides further information to assist authorities implement practices associated with ensuring VTS communications are harmonized through the use of standard message structure and phrases”.~~

Replace by:

Voice communications in VTS areas is generally conducted using VHF channels allocated in ITU Radio Regulations Appendix 18.

To maximise situational awareness, simplex channels should be used to ensure all participants are able to monitor exchanges between each other.

Processes and procedures should be available to ensure:

- VHF Communication is timely, clear, concise, and unambiguous, taking into consideration:
  - IMO Resolution A.918(22) *Standard Marine Communication Phrases* [12]);
  - IMO Resolution A.954(23) *Proper use of VHF Channels at Sea* [13]);
  - IALA Guideline G1132 *VTS Voice Communications and Phraseology* [14]; and
  - IALA Guideline G1111-2 *Producing Requirements for Voice Communications*
- The VHF channels used and monitored are clearly communicated.

Where ITU allocated simplex circuits are unavailable due to insufficient channels or interference, duplex channels may be used. However, provision should be made for incoming calls from one vessel on a duplex channel to be instantaneously retransmitted on the outgoing frequency to ensure that both sides of any exchange can be heard by all other ships, thus replicating a simplex channel (refer to Guideline G1111-2 *Producing Requirements for Voice Communications*).

Where a VTS operates more than one sector, each sector should be on a separate VHF channel.

## G1132. VTS Voice Communications and Phraseology

Add a new section 4.1 to **4. PART A GENERAL PRINCIPLES OF VTS COMMUNICATIONS**

### 4.1 VTS VOICE COMMUNICATIONS

Voice communications in VTS areas is generally conducted using VHF channels allocated in ITU Radio Regulations Appendix 18.

To maximise situational awareness, simplex channels should be used to ensure all participants are able to monitor exchanges between each other.

Where ITU allocated simplex circuits are unavailable due to insufficient channels or interference, duplex channels may be used. However, provision should be made for incoming calls from one vessel on a duplex channel to be instantaneously retransmitted on the outgoing frequency to ensure that both sides of any exchange can be heard by all other ships, thus replicating a simplex channel (refer to Guideline *G1111-2 Producing Requirements for Voice Communications*).

Where a VTS operates more than one sector, each sector should be on a separate VHF channel.

Renumber sections 4.1 – 4.5 as 4.2 – 4.6 respectively.

### **G1111-2 Producing Requirements for Voice Communications**

Add an additional paragraph to Section 2.5.1 – VERY HIGH FREQUENCY (VHF) after the second paragraph to read:

Voice communications in VTS areas is generally conducted using VHF channels allocated in ITU Radio Regulations Appendix 18.

To maximise situational awareness, simplex channels should be used to ensure all participants are able to monitor exchanges between each other.

Where ITU allocated simplex circuits are unavailable due to insufficient channels or interference, duplex channels may be used. However, provision should be made for incoming calls from one vessel on a duplex channel to be instantaneously retransmitted on the outgoing frequency to ensure that both sides of any exchange can be heard by all other ships, thus replicating a simplex channel (see section 3.2.2.3).

Where a VTS operates more than one sector, each sector should be on a separate VHF channel.

Amend section 3.2.2.3 to read:

Duplex channels use two separate frequencies. Since only shore stations are channelised to receive transmissions from ships, the use of duplex channels in VTS is generally reserved for administrative traffic. Exceptionally, duplex channels may be utilised for traffic management through the use of instantaneous retransmission of the incoming ship's transmission by the VTS centre whereby the duplex channel then effectively replicates a simplex channel. Instantaneous retransmission of a duplex channel may be used by VTS providers to overcome a shortage of VHF simplex channels allocated to Port Operations and Ship Movement and/or interference.

It should be noted that the 2012 and 2016 editions of the ITU Radio Regulations introduced a number of additional simplex channels dedicated to "Port Operations and Ship Movement" and IMO MSC.1/Circ. 1460/Rev 2 mandates that equipment should be updated by the first radio survey after 1 January 2024. This should help alleviate the previous shortage of available simplex channels.