Water Awareness and Charge Certificate Manual

Module 62: Radio Communications

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Module Contents

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Module 62: Radio Communications	Initial Release	1.0	11 Jan 2013
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Module 62: Radio Communications	Outcomes Added	1.2	14 Jan 2018

Outcomes

After completing this module, the certificate holder will:

- Be able to list the various radio communication methods available.
- Be able to apply radio protocols to communicate a message
- Be able to call for assistance for your vessel or on behalf of another

1 Types of Radios

1.1 VHF Radios

VHF radios are now mandatory on large vessels and are increasingly popular on small vessels. VHF has excellent clarity on voice transmission and has a range of between 5 and 60 nautical miles, depending on the antenna. Marine VHF mostly uses "simplex" transmission, where communication can only take place in one direction at a time. A transmit button on the set or microphone determines whether it is operating as a transmitter or a receiver. Some channels are set aside for "duplex" transmissions channels where communication can take place in both directions simultaneously if the equipment supports. 2 frequencies are assigned to each duplex channel

Figure 1: A hand held VHF set

Figure 2: A VHF set and with Digital Selective Calling

A marine VHF set is a combined transmitter and receiver and only operates on standard, international frequencies known as channels.

Channel 16	Calling and emergencies
Channel 6, 8, 10	Ship to ship transmission
Channel 12, 14	Port operations
Channel 23, 24, 25, 26, 27	Ship to shore telephone, weather bulletins and navigation warnings

Table 1: Marine VHF channels

In South Africa, the VHF band is controlled by ICASA and only VHF radio licence holders are legally permitted to use such radios.

Either a VHF or 29Mhz radio must be carried in vessels of categories A to D (appropriate to area of operation according to SAMSA regulations)

1.2 27 MHz Radios

This is the Citizen Band frequency. These radios are not used in any official marine communication networks. They are for private use only.

1.3 Ham radio frequencies

These frequencies are allocated between 28.00 and 29Mhz. The most common Ham voice frequencies range from 28.5 to 28.6 Mhz and use AM modulation. They are generally for private use.

1.4 29 MHz Radios

29 MHz radios may be considered Citizen Band type radios, tuned for this band and packaged for marine use. They are widely used in small vessel to vessel communications, particularly the KZN coast, but are not widely used in the Western Cape.

These radios are not very powerful (only 5 watts) and are limited to a range of between 1 and 10 nm, depending on the antenna. 29 MHz radios are all simplex and operates on 3 standard channels

Channel 19 (A)	Calling and emergencies
Channel 6 (B)	Working channel 1
Channel 22 (C)	Working channel 2

Table 2: Marine 29 MHz channels

ICASA does monitor the 29 MHz band. You require a frequency licence to own a 29 MHz radio, but no operators licence is required.

1.5 Installation

To get the best from your radio and ensure it will function as needed in an emergency, proper installation is very important.

1. Match the aerial and ground plane with your radio set.
2. Install the radio in a place where it will remain dry at all times.
3. Don't install the radio too near the navigation equipment as the radio may cause interference.
4. The aerial must be connected tightly and not cross threaded.
5. The radio must be protected by the appropriate fuse.

2 Phonetic Alphabet

A	Alpha	H	Hotel	O	Oscar	V	Victor
B	Bravo	I	India	P	Papa	W	Whiskey
C	Charlie	J	Juliette	Q	Quebec	X	X-ray
D	Delta	K	Kilo	R	Romeo	Y	Yankee
E	Echo	L	Lima	S	Sierra	Z	Zulu
F	Foxtrot	M	Mike	T	Tango		
G	Golf	N	November	U	Uniform		

Table 3: Phonetic alphabet

3 Operational Efficiency

The operating efficiency of this equipment depends on the correct operating procedure and strict observance of the rules.

Radio control for a particular area may be the port authority, beach control or the police water wing. They will have large fixed antennas which give maximum range. If operating in a harbour, it is mandatory that the radio procedures be followed.

- Contact control to inform them that you are launching and do a time check
- Report to control immediately after launching to inform them of your position and planned voyage.
- Inform control again when you have docked.

When making a transmission, the party being called must be named first, followed by the name of the calling party.

- Always listen for other traffic on the channel before transmitting
- Always use the official call signs. Using names does not identify the station and is thus against the law
- After calling, wait 2 minutes for acknowledgement. If nothing is received after 3 calls, wait 15 minutes before calling again
- When not it use, always leave your radio on channel 16(VHF) or channel A (29Mhz)
- Be concise in your messages
- No idle chatting
- When you have completed your message, transmit the word "Over" to inform other vessels
- Do not exchange traffic on the calling channel except for emergencies. After acknowledgement, move to one of the general communications channels
- Once you have completed your entire transmission, transmit the word "Out" to inform other vessels
- "Over and out" is only used in movies and has no place in real life.
- Don't transmit without authentication
- Offensive language is not permitted.
- Three minutes after the hour and half hour is the silence period on the calling / distress channel. This is used to listen for weak emergency signals. Do not attempt to call during this period.
- Special reports by control or a vessel at sea will be preceded by radio prefix **Securité**

4 Dealing with an Emergency

The law of the sea requires everyone to go to the aid of a vessel or person in distress as long as it does not endanger your own vessel or crew. An emergency call will begin with one of the following prefixes:

- **Mayday** – The universal distress signal. This is only used when human life is in imminent danger
- **Pan-Pan** – The urgency call, indicating that assistance is required, but life is not in imminent danger. Examples could be a vessel out of fuel or disabled in some other way.

These prefixes can be combined with other key words in certain situations

- **Mayday Relay** – This is used to pass on a distress signal. If you hear a mayday call and no response is received from control or another vessel, initiate a Mayday Relay call
- **Selonce Mayday** – is given by control or the vessel managing the emergency and orders silence on the distress frequency
- **Selonce Finee** – The emergency is over and the frequency is open to general traffic.
- **Pan-pan Medico** – Used by vessels at sea when medical advice is required.

In an emergency transmission, the following format it always adopted:

- Mayday mayday mayday
- *Vessel name, vessel name, vessel name*
- Position
- Description of problem and other related info.

5 Examples

The skipper of vessel Star wants to contact the skipper of vessel Venus

Star on channel A	Venus, Venus, Venus, this is Star, Star, Star
Venus on channel A	Star, Star, Star, this is Venus, Venus, Venus. Receiving you loud and clear. Go to channel B. Over
Star on channel B	Venus, this is Star. Are you receiving me? Over
Venus on channel B	Star, this is Venus. Receiving you loud and clear. Go ahead. Over
Star on channel B	Venus, this is Star. "…….message……..." Over
Venus on channel B	Star, this is Venus. Acknowledged. Out

Example Mayday Transmission

Mayday Mayday Mayday
North Star, North Star, North Star
S 35°17'12.71" E 16°44'13.01"
Engine failed and taking on water. Drifting NE in a strong SW breeze. Wave height approximately 4m. Require urgent assistance.