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Organization of the
United Nations



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien

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Basic navigation and navigational aids

IOTC ROS SFO TR5



CapMarine

Capricorn Marine Environmental

Descriptor

This module aims to provide Observers with the basic understanding of the practical elements of navigation and to explain how a position is determined.

The learning outcomes for this training requirement are:

1. Demonstrate knowledge of navigation and positioning (including latitude/longitude; course and speed);
2. Aware of electronic navigation equipment usage and limitations (GPS; plotters; echo-sounders and sonar); and
3. Familiar with principal functions of electronic fishing aids and the information they provide.



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Electronic Navigation Equipment Usage & Limitations

IOTC ROS SFO TR5.2

Observer must be familiar with the range of Electronic Navigation equipment found on the bridge of a vessel

Category: Basic navigation and navigational aids

[IOTC ROS SFO TR5]



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A broad range of electronic equipment and navigation aids are found onboard even the most basic vessel. It is important that observer are aware of these and the information they can provide.



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ELECTRONIC NAVIGATION SYSTEMS

A range of Electronic Navigation equipment is found on the bridge of a vessel

Observers must be familiar with these and the information they provide

It is important for observers' protocol they MUST NOT attempt to operate any of the vessel's electronic equipment

They must request from the Officer On Watch any information from equipment



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A range of Electronic Navigation equipment is found on the bridge of a vessel and observers must be familiar with the different systems and the information they provide. **It is important for observers' protocol they MUST NOT attempt to operate any of the vessel's electronic equipment. They must request from the Officer On Watch to assist with providing any information they may need from equipment.**



ELECTRONIC NAVIGATION SYSTEMS

GPS Global Positioning System

- Provides positions in Latitude and Longitude
- Also provides speed in Knots
- Course the vessel is moving



Uses satellites to give the precise position of the vessel at all times



GPS Global Positioning System

Uses satellites to always give the precise position of the vessel

One of the main systems found onboard and provides positions in coordinates of Latitude and Longitude; and

- Also provides;
 - speed of the vessel in Knots; and
 - the course of the vessel.



ELECTRONIC NAVIGATION SYSTEMS

Plotters

Electronic map

- Shows the position of the vessel relative to surroundings
- Can show the track of the vessel
- Can plot a course from one position to another



DANGER plotter can display two different positions depending on which mode is set

THE POSITION DISPLAYED MAY NOT BE THE POSITION OF THE VESSEL



Plotters

A plotter is an electronic map and can show the position of the vessel relative to its surroundings. There are various functions.

In “navigation mode” it will show the vessels position as it moves across the plotter and can also show the past track of the vessel.

In a plot mode, position can be entered onto the plotter and a course can be plotted or drawn from one position to another.

Due to the various functions of the plotter it can display different positions not related to the actual position of the vessel. Depending on which mode is set on the plotter, there is a real **DANGER** that observers can record an incorrect position that is not related to the actual position of the vessel.

THE POSITION DISPLAYED MAY NOT BE THE POSITION OF THE VESSEL, so it is always important to check this against the GPS if possible.



ELECTRONIC NAVIGATION SYSTEMS

Radar

- Uses radio waves to reflect off objects within a specific range around a vessel
- Radar can show other boats or the coastline in real times of darkness or poor visibility



Radar

A radar uses radio waves to reflect off objects within a specific range around a vessel. It can show other boats or the coastline in real times during periods of darkness or in poor visibility.

Most modern radars are also integrated with a GPS and can provide the position of the vessel.

Onboard purse seine vessel special high frequency radars also pick up seabird activity and movement on the water and can be used to detect shoals of fish



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ELECTRONIC NAVIGATION SYSTEMS

Auto pilot

Used to electronically steer the vessel on a specified course

It electronically reads the compass and controls the rudder



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Auto pilot

The auto pilot is used to electronically steer the vessel on a specified course. It electronically reads the compass and controls the mechanics that moves the rudder.

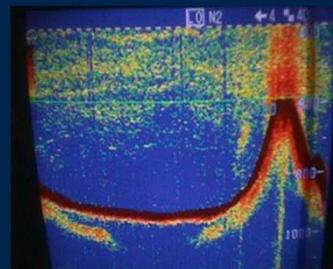
It is often looks like a GPS and can also show the position of the vessel.



ELECTRONIC NAVIGATION SYSTEMS

Echo Sounder

- uses sound waves directed vertically down below the vessel to show the depth of the water
- can also detect the position of fish below the vessel



Echo Sounder

An echo sounder or depth recorder uses sound waves directed vertically below the vessel to show the depth of the water. It can also be used to detect the position of fish below the vessel.

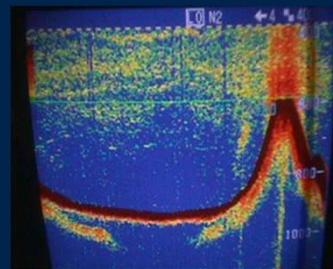
Observers should note the units that the echosounder is recording. Also, the range set as it may not necessarily be showing the actual depth. Important to engage the bridge personnel when recording information from the echo sounder.



ELECTRONIC NAVIGATION SYSTEMS

Sonar

- Sonar uses sound waves directed horizontally to detect shoals of fish around the vessel
- The sonar direction can be controlled



Sonar

A sonar uses sound waves directed horizontally to detect shoals of fish around the vessel. The sonar direction can also be controlled to determine the direction of the shoal of fish relative to the vessel as well as the depth of the shoal.

Note; a sonar is used almost exclusively to look for fish and is never used to determine depth.



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ANY QUESTIONS?



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