

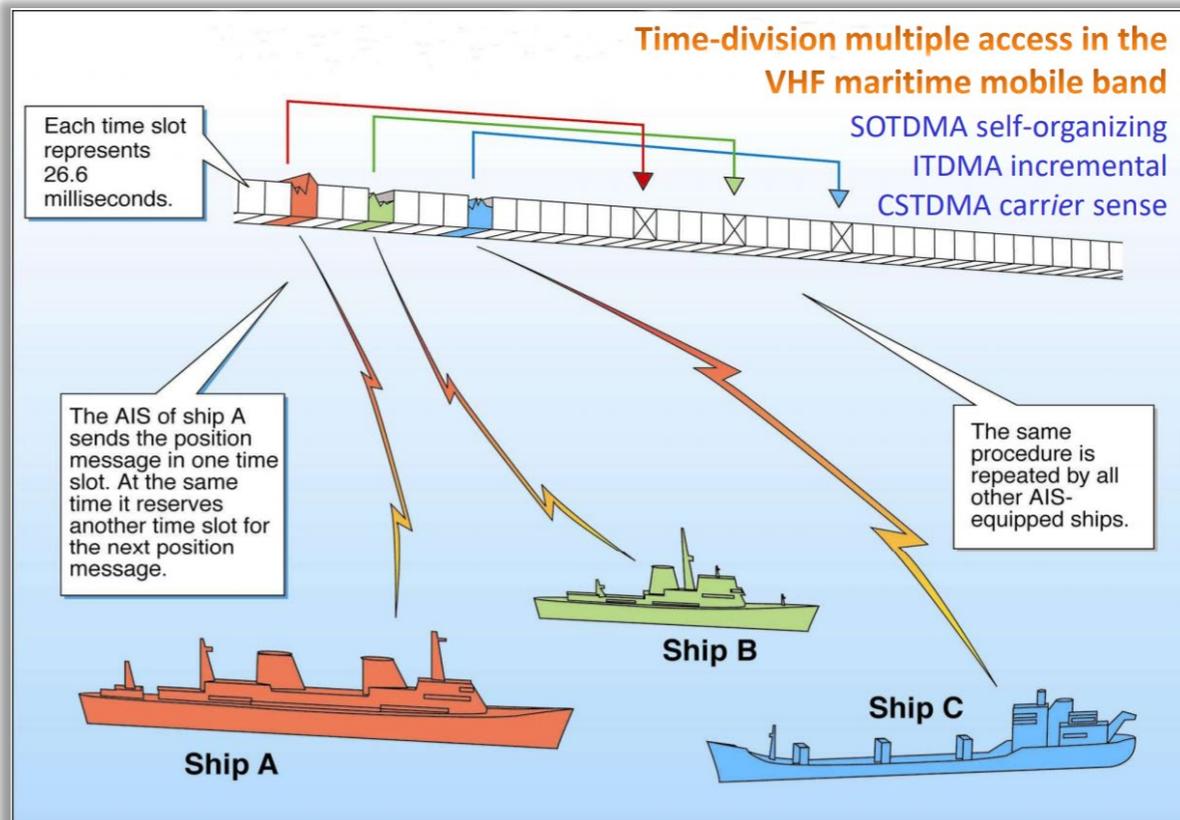
AIS Validation

Learning Objectives

Upon successful completion of this lesson, the student will be able to:

- Define SeaVision Static AIS information
- Define SeaVision Dynamic AIS information
- Identify vessel types based on Static and Dynamic AIS information
- Identify the differences between AIS/GPS anomalies, AIS Gaps, Spoofing, and Vessels Going Dark

Automatic Identification System (AIS)



- AIS is a digital positional awareness system
- Very High Frequency (VHF)
- AIS uses time slots, so each vessel gets a chance to broadcast its update

Automatic Identification System (AIS)

- The purpose of AIS is to help identify ships
 - Assist in search and rescue
 - Simplify information exchange
 - Collision avoidance
 - Ship detection
 - Additional information for situational awareness
- AIS reduces mandatory verbal ship reporting and other radio traffic

AIS Static Data on Vessel Data Card

- All manually inputted information
- Static Data includes:
 - MMSI
 - Vessel name
 - IMO Number
 - Flag
 - Call Sign
 - Ship Type
 - Length
 - Beam
 - Draft
 - Navigation Status
 - Destination
 - Estimated Time of Arrival (ETA)

Sheng Le C

Source: SATELLITE AIS
Time: 2020 Jan 06 19:31:35 UTC
Age: 2h 53m 26s ago
Position: 11° 35' 1" N, 126° 33' 11" E
Speed: 8.4 kts
Heading: 156°
Course: 161°
MMSI: 371778000
IMO Number: 9124146
Flag: Panama
Call Sign: H9GJ
Ship Type: 7-Cargo
Length: 170 m
Beam: 27 m
Draft: 6.2 m
Navigation Status: 0-Underway(Engine)
Destination: Pg Pom
ETA: 01/14 @ 12:00 UTC



History Trail 

DR Vector

[Vessel Details](#)

[Add Vessel to List](#)

AIS Dynamic Data on Vessel Data Card

- AIS generated information
- Dynamic Data includes:
 - Time
 - Age
 - Position
 - Speed
 - Heading
 - Course

Sheng Le C

Source: SATELLITE AIS
Time: 2020 Jan 06 19:31:35 UTC
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History Trail 

DR Vector

[Vessel Details](#)

[Add Vessel to List](#)

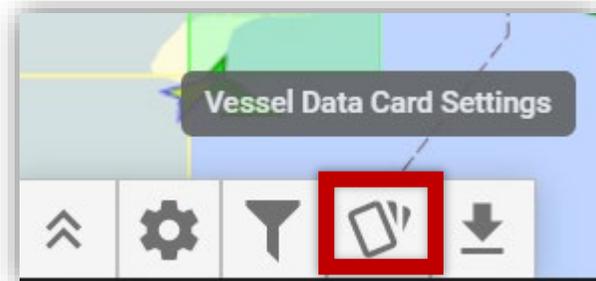
Vessel Data Card

- Settings

- History Trail
- Dead Reckoning (DR) Vector
- Vessel Details (link)
- Add Vessel to List
- Warnings
- Rules

- Options

- Download
- Print
- Minimize



Sheng Le C [Download] [Print] [Minimize] [Close]

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History Trail [Down Arrow]

DR Vector

[Vessel Details](#)

[Add Vessel to List](#)

[List Icon] [Warning Icon] [Checkmark Icon]

Maritime Mobile Service Identity (MMSI)

- AIS signals are identified by MMSI numbers
 - MMSI numbers are not regulated and are not unique
- Flag registries allocate MMSI numbers.
 - An MMSI number may be reallocated to another ship when it changes flags (countries)
- There are reports of vessels sharing MMSI numbers
 - This will show a vessel in two locations at the same time

AIS vs. Global Positioning System (GPS)

- AIS is not the same as GPS
 - GPS is a satellite-based navigation system that works in any weather condition and any position in the world
- AIS transmits on VHF radio waves
 - VHF radio waves travel in straight lines
 - Transmission distance is line-of-sight
 - 20-30 miles
- AIS is designed to operate in local areas
 - In large port congregations, signals may be lost due to interference

Transmission Gaps

- By regulation, AIS is mandatory
 - Voluntary in actual use
- Vessels must choose to transmit
 - One-way radio signal
 - It cannot be pinged
 - Inspect a signal remotely
- A transmission gap is when a vessel vanishes in SeaVision and reappears sometime later
 - Maybe an indication of covert illicit activity

Spoofing and GPS Spoofing

- Spoofing is the act of disguising an unknown source as a known and trusted source
 - GPS spoofing simply gives vessel operators false information
 - Does not let someone else take control
- Vessel operators make course changes based on the information that they are going in the wrong direction
 - GPS spoofers trick a navigation system by sending counterfeit signals
- GPS spoofing is not the same as GPS jamming
 - Both are a cause for concern

Vessels Going Dark

- A vessel that goes dark means one of two things:
 - A system malfunction
 - Deliberately stop transmitting
- Legitimate reasons to intentionally turn off AIS are:
 - Avoiding pirates
 - Avoiding rival countries
- AIS transmissions are for safety, created to avoid accidents at sea
- Vessels not transmitting may not be covered by insurance if in an accident
- Vessels deliberately going dark to hide illicit activity may include:
 - Ports of call in a country where vessels do not want to be seen
 - Sanctions or political reasons
 - Smuggling, transferring of illicit or sanctioned goods
 - Receiving/transferring goods, people, or money
 - Illegal fishing
 - Hiding from authorities
 - Avoiding arrest or fines

Summary

In this lesson, we covered:

- Static AIS information
 - All manually inputted AIS information
- Dynamic AIS information
 - AIS-generated information
- Vessel types based on Static and Dynamic information
 - Utilize the information shown on the Vessel Data Card
- Differences between AIS/GPS anomalies, AIS Gaps, Spoofing, and Vessels Going Dark
 - Some are unintentional, while others are intentional