WP5A-WP5B-WP5C WORKSHOP

PREPARATIONS FOR WRC-15

AGENDA ITEM 1.16 - Automatic Identification System (AIS) Technology Applications and Improved Maritime Radiocommunication

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Automatic Identification System (AIS) Technology Applications and Improved Maritime Radiocommunication

Abstract: Maritime radio communication are critical to global trade and the safe transit of vessels on the seas. This agenda item will provide for the opportunity to globally harmonize and improve maritime communications. The International Maritime Organization (IMO) requires SOLAS vessels (SOLAS Chap. V, Reg. 19) to carry AIS transponders onboard. This AIS transponder carriage requirement has greatly enhanced navigational safety, vessel tracking, and voyage management. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), has worked closely with ITU-R, and contributed to the AIS standards, and is pursuing studies related to additional AIS-like communications and VHF data. ITU-R studies will also examine new AIS satellite applications, in existing maritime mobile and mobile-satellite services allocations. During this study period WP 5B will examine the potential to use AIS technology to further improve Search-and-Rescue applications, and enhanced AIS operations.

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What is AIS?

- The AIS is a shipboard broadcast system that acts like a transponder, operating in the VHF maritime band, that is capable of handling over 4,500 reports per minute and updates as often as every two seconds. It uses Self-Organizing Time Division Multiple Access (SOTDMA) technology to meet this high broadcast rate and ensure reliable ship-to-ship operation.
- Picture a shipboard radar or an electronic chart display that includes a symbol for every significant ship within radio range, each as desired with a velocity vector (indicating speed and heading).
- Each ship "symbol" can reflect the actual size of the ship, with position to GPS or differential GPS accuracy.

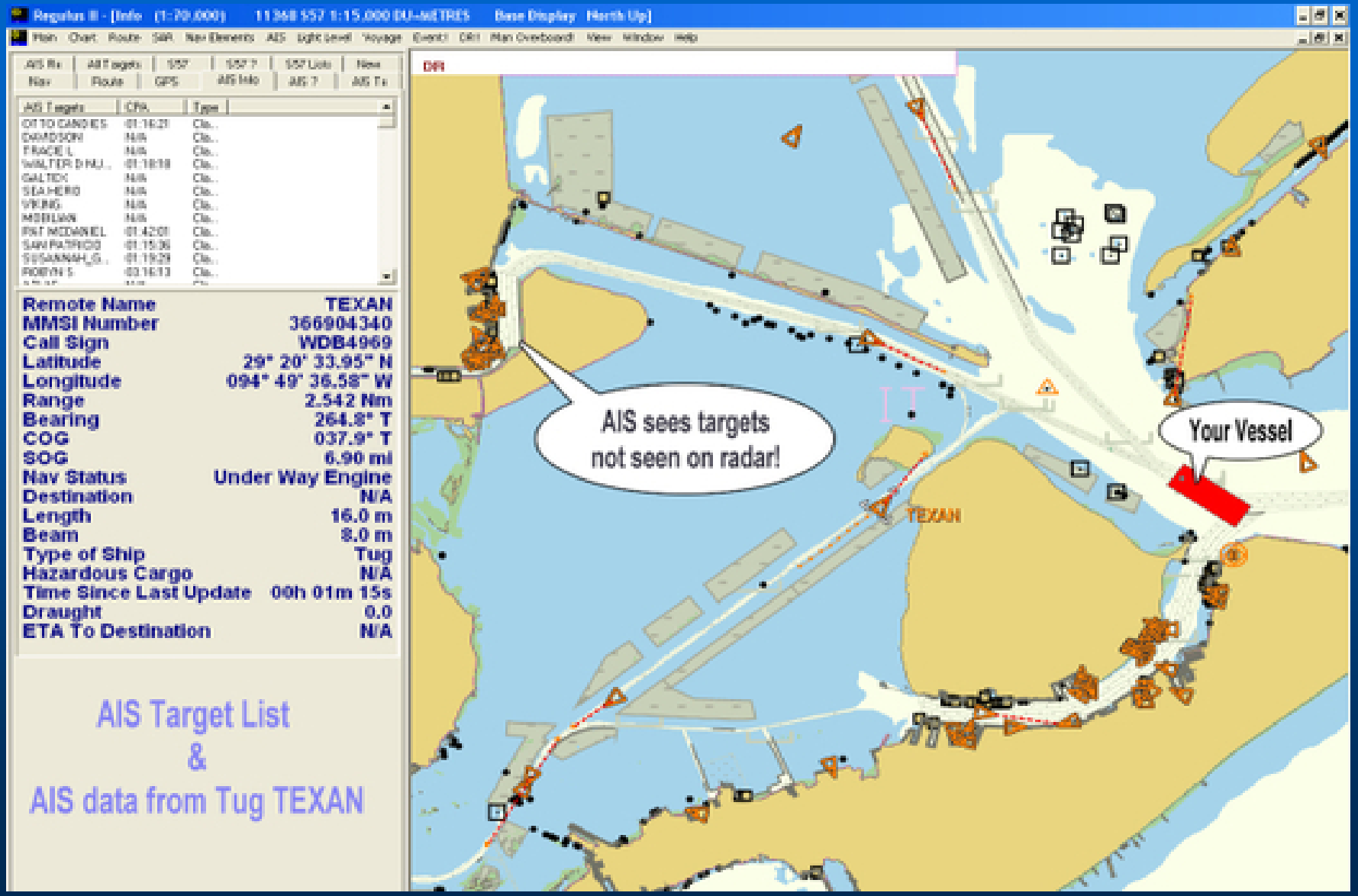
What is AIS? (Continued)

- By "clicking" on a ship symbol, you can learn the ship name, course and speed, classification, call sign, registration number, and MMSI.

- Maneuvering information, closest point of approach (CPA), time to closest point of approach (TCPA) and other navigation information, more accurate and more timely than information available from an automatic radar plotting aid, can also be available.

- Greatly improved Vessel Traffic Services (VTS).

What is AIS? (Continued)



Types of AIS

- **Class A** - Shipborne mobile equipment intended for vessels meeting the requirements of IMO AIS carriage.
- **Class B** - Shipborne mobile equipment provides facilities not in full accord with IMO AIS carriage requirements. The Class B is nearly identical to the Class A, except the Class B:
  - Has a reporting rate less than a Class A (e.g. every 30 sec. when under 14 knots, as opposed to every 10 sec. for Class A)
  - Does not transmit the vessel's IMO number
  - Does not transmit ETA or destination
  - Does not transmit navigational status
  - Is only required to receive, not transmit, text safety messages
  - Is only required to receive, not transmit, application identifiers (binary messages)
  - Does not transmit rate of turn information
  - Does not transmit maximum present static draught

Types of AIS (Continued)

- **Search and Rescue Aircraft -** Aircraft mobile equipment, normally reporting every ten seconds.
- **AIS Search and Rescue Transmitter (SART) -** Mobile equipment to assist homing to itself (i.e. life boats, life raft). An AIS SART transmits a text broadcast (message 14) of either 'SART TEST' or 'ACTIVE SART'. When active the unit also transmits a position message (message 1 with a 'Navigation Status' = 14) in a burst of 8 messages once per minute.
- **Aids to Navigation -** Shore-based or mobile station providing location and status of an aid to navigation (ATON). Normally reports (message 21) every three minutes.
- **AIS Base Station -**Shore-based station providing text messages, time synchronization, meteorological or hydrological information, and navigation information.

SUMMARY OF AIS FUNCTIONS

- Electronic aid to navigation for vessel collision avoidance
- Established terrestrial and satellite infrastructure, with a large number of AIS equipped vessels
- Vessel identification
- Vessel and cargo information
- Data exchange ship-to-ship and ship-to-shore, including application specific messages
- AIS is used for Search and Rescue Transponders (SART) (locating function)

AIS WRC-12 RESULTS

- Allocations to AIS 1 and AIS 2 for satellite detection, AIS on SAR aircraft, and Maritime Mobile (Search and Rescue, Vessel Traffic Service (VTS), Navigation Aid, Maritime Awareness)
- Allocation of AP18 channels 75 & 76 for satellite detection and greater probability of long range vessel tracking, with resulting benefits to maritime safety and security.
- Designated 5 VHF channels in AP18 for experimental AIS.

Major Initiatives Under AI 1.16

- AIS Enhancement – Study requirements for additional AIS channels. WRC-12 designated the following VHF channels for AIS application testing:
  - Channel 2006 (160.9 MHz)
  - Channel 27 (Duplex) (157.350 and 161.950 MHz)
  - Channel 87 (157.375 MHz)
  - Channel 28 (Duplex) (157.400 and 162.000 MHz)
  - Channel 88 (157.425 MHz)

- AIS Satellite Broadcasts – Study the ability to generate wide area satellite broadcast using AIS technology.

- Improved GMDSS Satellite Coverage - Studies related to expanded geographical satellite coverage of the Polar regions for GMDSS communications.

Questions?

Thank You