Ten Tips For Using AIS on Your Boat

Doug Miller
Milltech Marine Inc.
www.MilltechMarine.com
What I’ll Cover …

• What is AIS
• How it can be used on your boat
• AIS Demo
• Ten Tips to Make AIS Work Really Well
• Questions

NOTE: I’ll mention many solutions - lots more exist & products constantly changing
What Is AIS

- AIS = Automatic Identification System
- AIS is a broadcast transponder system, operating in the VHF maritime mobile band (channels 87B & 88B)
- Transmits ship information such as identification, position, course, speed, and more to other vessels and shore
- Uses 9 digit MMSI (Maritime Mobile Service Identity) as unique identifier
- Types of AIS devices
  - **Class A**: mandated for use on SOLAS and other types of commercial vessels
  - **Class B**: for use on recreational and small commercial vessels
  - **Other devices**: AIS receivers, SART, MOB, AtoN
- Transponders use integrated GPS to fix own position and transmit info via VHF
- NOT a replacement for radar or other watch methods
What You See (on AIS)...

[Image of a chart and AIS display showing maritime navigation information.]

Milltech Marine
... Is What You Get!
Demo

- PC with Rose Point Navigation Coastal Explorer
- Log of a GPS and AIS session
- See the demo on: [http://youtu.be/m6Yugk7DSR8](http://youtu.be/m6Yugk7DSR8)
OK!

- Time for my top ten AIS recommendations...
#1: AIS Receiver or Transponder?

- AIS Receivers pick up all types of AIS transmissions
- Transponders send your info and also receive
- Price difference? About $200 vs. $500+
- Class B CSTDMA Transponders
  - Sends your info 5-7 miles (2 watt transmitter)
  - Transponders can be put into “silent mode”
  - Requires GPS and VHF antennas (or VHF splitter)
- Class B SOTDMA Transponders
  - I’ll cover next slide...
- What about Class A AIS transponder??
  - $2000 - $10,000
  - Sends vessel info 25-35 miles (12.5 watt transmitter)
- Receiver can’t be upgraded to transponder
#2: Class B SOTDMA Transponder?

- New type of Class B AIS transponder available soon
- Different from existing CSTDMA Class B
  - 5 watts vs. 2 watts
  - Therefore more transmit range (~10-15 miles)
  - Uses SOTDMA (same as Class A)
  - Higher reporting rate, but same data as CSTDMA
  - Higher grade time management & priority
- AMEC WideLink B600 AIS STODMA Class B
  - Should be available in next 30 days
  - Pricing: $859 (Wi-Fi version $1059)
- em-trak AIS B400
  - Pricing: £1425
  - “Coming soon”

CSTDMA = carrier-sense time-division multiple access
SOTDMA = self-organizing time-division multiple access
#3: Consider an AIS VHF Radio

- VHF Radio with integrated AIS receiver
  - E.g. Standard Horizon GX2200, Icom, Lowrance, Garmin
  - Some have mini-display for AIS
  - AIS data can be sent to other devices e.g. chartplotter or computer

- VHF Radio with AIS display, no receiver
  - E.g. Standard Horizon GX2000, Icom
  - Connect to an AIS transponder – sends AIS & GPS to radio

- Standard Horizon radio with Class B transponder “coming soon”
- All make Digital Selective Calling (DSC) easy
#4: VHF Antenna Considerations

- AIS devices require VHF antenna
- Any good VHF antenna will work
- Position is #1 factor – by far
- Antennas need separation
  - At least 4 feet from other VHF
  - GPS antenna less critical
  - Consider combo antennas
- Any metal causes multi-path interference
  - E.g. stays, masts, arches, bimini
- Cable & connectors also important
- Antenna splitters?

Don’t do this!
#5: Antenna Splitters Do Work

- How they work?
- For both receivers and transponders
- Cost vs. antenna?
- Signal loss vs. gain?
- Reliability
- Often best solution for sailboats
- Beware of “switches”
#6: Consider Connections

- What do you want to connect to?
  - Chartplotter, computer, tablet, radio – or all of the above
- Connection methods?
  - NMEA 0183, NMEA 2000, USB, Wi-Fi – or all of the above
  - Why have Wi-Fi?
- Multiplexing capabilities
- Difficult and expensive to add connection capabilities later
Multi-connection AIS Scenario

AIS to Chartplotter, Radio, iPad & Computer

Vesper Marine XB-8000 Class B AIS Transponder

AIS/GPS/NMEA data to computer via USB (or Wi-Fi)

Computer AIS view

GPS antenna

VHF to transponder

AIS/GPS/NMEA data to iPad over Wi-Fi

iPad iNavX AIS view

Chartplotter & AIS data via NMEA 0183 or NMEA 2000

AIS, GPS & DSC data via NMEA 0183 or NMEA 2000

Milltech Marine
#7: MarineTraffic ≠ AIS

AIS should not be relied on for vessel tracking, especially with MarineTraffic.
#8: MMSI – FCC or BoatUS?

- MMSI is unique 9 digit identifier for AIS & DSC
- Used worldwide, assists with research & rescue
- In US, two types of MMSI:
  - FCC: recognized worldwide but costs $215 for 10 years
    - Is part of a FCC ship station license for VHF radio
  - BoatUS, others: free but info not accessible outside US
- US rules: all US vessels on international voyages must have an FCC ship station license for VHF radio
- But also safety benefits with FCC MMSI
- Bottom line: going to Canada, Mexico or beyond?
  - Get an FCC license
#9: Turn Off AIS While Away

- Volume of Class B transponders is now having a negative impact on AIS
- Safety issue: so many targets, you can’t see other nav features
- Especially a problem on older chartplotters e.g. Garmin 3000 series
  - Limited targets, some not visible
- Turn off your Class B AIS transponder when you are in a marina PLEASE!!!
Missing AIS targets!

All clear ahead?

Here’s the problem
#10: Consider AIS MOB

AIS-only models
- Designed for emergency use only
- Integrated GPS
- Sends AIS distress message when activated
  - Limited AIS range (~4 NM)
- Signal received by AIS devices
- Floats, waterproof
- Wear on lifejacket, typically auto-activated

Now some models have DSC as well as AIS
- e.g. Ocean Signal MOB1
- Program your vessel MMSI into device
- Sends DSC alarm direct to your vessel
- And sends AIS alarm to all nearby vessels

About $300
Ocean Signal MOB1 – AIS & DSC

Graphic provided by Ocean Signal
Questions?

www.MilltechMarine.com

Doug Miller
doug@milltechmarine.com

PO Box 1074, Port Orchard, WA 98366

206-299-2217

Thank you!