United States Coast Guard
Office of Navigation Systems

“We Help Mariners Get There”

New AIS Rules and Requirements

Jorge Arroyo | Navigation Systems | U.S. Coast Guard | Washington, DC
• New AIS Rule
  - Timeline
  - Noteworthy Changes
    • Because of Comments Received
  - New AIS Requirements
AIS Rulemaking Timeline [NPRM Proposed Changes in Bold-type]

✓ 07/01/03 published Temporary Interim Rule and Request for Comments
✓ 10/23/03 current AIS requirement (33 CFR 164.46)
✓ 07/01/03-01/09/04 sought AIS expansion comment
✓ 10/31/05 notice expansion of AIS to all waters
✓ 12/16/08 NPRM … 4/15/09 comment deadline

- Commercial self-propelled vessels of ≥ 65 feet
  
No exclusions, i.e. fishing and small passenger vessels

- Towing vessels ≥ 26 feet & >600 hp
- Vessels with ≥ 50 passengers (vice 150 for hire)
- Hi-speed passenger vessels (≥ 12 pax)
- Certain dredges & floating plants, &
- Vessel moving certain dangerous cargoes
AIS Meetings & Comment Period...

• Public Meetings
  - Washington, DC – March 5\textsuperscript{th}, 2009
    o 30+ attendees, 11 commenters
  - Seattle, WA – March 25\textsuperscript{th}, 2009
    o 30+ attendees, 12 commenters

• Comment period closed: April 15\textsuperscript{th}, 2009
  o 80+ submissions, 300+ comments regarding AIS
Noteworthy AIS Provisions...

• Applies to all navigable waters, no exceptions.

• Spells out ‘effective operating conditions’ which now includes the:
  - ability to reinitialize the AIS
  - ability to access AIS from conning position
  - accurate broadcast of an official MMSI
  - accurate input, upkeep, and updating

No changes to what was proposed
Noteworthy AIS Provisions...

• AIS does not relieve you of sound, lights or shapes nor radiotelephone requirements

• AIS (& assoc. sensors) shall remain on when:
  - Underway, at anchor, and at least 15 min. prior to unmooring
  - Except if it compromises safety or security
    - Securing it must be logged & reported to USCG

• Inoperative AIS is now a reportable deficiency

No changes to what was proposed
Noteworthy AIS Rule Changes...

- AIS is primarily for the person controlling the vessel, who must maintain a periodic watch.
  - Use of AIS mobiles from ashore or on unmanned vessels is prohibited.

- AIS messaging must be in English & solely for navigation safety information.
  - Allows the use of Application Specific Messaging, that have been adopted by IMO/IALA, but, only one/min.
Noteworthy AIS Rule Changes...

• Type-approved Class B be allowed, but, **not recommended** on vessels that are:
  - highly maneuverable
  - navigate at high speed
  - routinely operate in congested waters, or
  - operate in close-quarter situations

Allows the use of lower cost AIS Class B devices on: dredges, fishing boats, and vessels certificated <150 passengers that do not operate in a Vessel Traffic Service or at speeds of >30 kts
Noteworthy AIS Rule Changes...

- Individual yearly deviations/waivers permissible, but, only for vessels:
  - that solely operate within a very confined area
    e.g. shipyard, fleeting area, etc.
  - on short & fixed schedules
    e.g. a bank-to-bank river ferry service
  - otherwise not likely to encounter other AIS users

  Extends the deviation period to 5-years and broadens it to vessels on which AIS would be impractical, i.e. lack of power, open exposed conning position, display requirement on vessels allowed to use AIS Class B
Effective March 2\textsuperscript{nd}, 2015*, these 
commercially self-propelled vessels, 
operating on U.S. navigable waters, must 
have a properly installed, operational 
Automatic Identification System (AIS) no 
later than March 1\textsuperscript{st}, 2016

- vessels of 65 feet or more in length
- towing vessels of 26 feet or more in length 
  and more than 600 hp
- vessels certificated to carry more than 150 
passengers
- dredges that operate near a channel
- vessels engaged in the movement of certain 
dangerous cargo, flammable or combustible 
liquid cargo in bulk

<table>
<thead>
<tr>
<th>Effected Vessels by Type</th>
<th>2003</th>
<th>2015</th>
<th>Total Vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign ship &gt;65' &lt;300GT</td>
<td>1,119</td>
<td>1119</td>
<td></td>
</tr>
<tr>
<td>Fishing</td>
<td>1</td>
<td>-</td>
<td>2,906</td>
</tr>
<tr>
<td>Towing</td>
<td>13</td>
<td>2,212</td>
<td>1,429</td>
</tr>
<tr>
<td>Passenger</td>
<td>81</td>
<td>171</td>
<td>288</td>
</tr>
<tr>
<td>Cargo</td>
<td>154</td>
<td>77</td>
<td>247</td>
</tr>
<tr>
<td>OSV</td>
<td>55</td>
<td>432</td>
<td>151</td>
</tr>
<tr>
<td>MODU</td>
<td>1</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Industrial</td>
<td>21</td>
<td>11</td>
<td>220</td>
</tr>
<tr>
<td>Research</td>
<td>10</td>
<td>11</td>
<td>54</td>
</tr>
<tr>
<td>School</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Tank Ships</td>
<td>102</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Unknown</td>
<td>16</td>
<td>134</td>
<td>150</td>
</tr>
<tr>
<td>Unclassified</td>
<td>13</td>
<td>326</td>
<td>339</td>
</tr>
<tr>
<td>Dredges</td>
<td>-</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>U.S. Total</td>
<td>438</td>
<td>2,963</td>
<td>5,848</td>
</tr>
<tr>
<td>Total</td>
<td>4,520</td>
<td>5,848</td>
<td>10,368</td>
</tr>
</tbody>
</table>
**Current AIS Prices**

### Milltech Marine Online Store

#### ACR Nauticast2 Class A AIS Transponder
- **ACR 3003** $2,999.00

#### ComNav Voyager X3 Class A AIS Transceiver
- **List Price** $2,074.45
- **Our Price** $1,999.00

#### Furuno FA150 AIS Transponder
- **List Price** $1,248.95
- **Our Price** $1,248.95

### Class B: $499 – $1,700
Class A: 2,900 – $3,990

#### West Marine Store
- **AIS-1000 Class B "Send and Receive" AIS Transponder**
  - **List Price** $699.99
  - **Our Price** $685.00

#### Furuno FA30 Black Box AIS
- **List Price** $410.95
- **Our Price** $400.00

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total AIS Costs</strong></td>
<td><strong>Class A</strong></td>
<td><strong>Class A</strong></td>
</tr>
<tr>
<td>Unit</td>
<td>$7,000</td>
<td>$3,230</td>
</tr>
<tr>
<td>Installation</td>
<td>$2,000</td>
<td>$969</td>
</tr>
<tr>
<td>Operation &amp; Maintenance</td>
<td>$250</td>
<td>$250</td>
</tr>
<tr>
<td>Training</td>
<td>$110</td>
<td>$110</td>
</tr>
<tr>
<td><strong>Individual Cost</strong></td>
<td><strong>$9,250</strong></td>
<td><strong>$4,449</strong></td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>$49.2 M</strong></td>
<td><strong>$20.5 M</strong></td>
</tr>
</tbody>
</table>
### AIS FREQUENTLY ASKED QUESTIONS

1. What is AIS?
2. What is an MMSI, how do I get one, and how do I program my AIS?
3. What is the AIS rule and are there alternatives to the rule for small businesses?
4. Do AIS Class B devices meet current USCG AIS carriage requirements?
5. How does AIS help to increase security (and what is NAIS)?
6. When must AIS be in operation?
7. Does the installation of the AIS require additional equipment in order for the AIS to operate properly?
8. Will it be necessary to have electronic navigational charts for use with the AIS?
9. Are fishing vessels subject to AIS carriage, and is onboard Vessel Monitoring System (VMS) an acceptable substitute for the AIS?
10. Why have some AIS units stopped broadcasting valid position reports?
11. Why am I unable to see an AIS vessel’s name or other static information (dimensions, call sign, etc.)?
12. Why do I sometimes see more than one vessel with the same MMSI or vessel name (i.e. NAUT)?
13. I just purchased and installed an AIS Class B, will AIS Class A user see me?
14. Do AIS Class B devices meet current USCG AIS carriage requirements?
15. Is the USCG considering expanding AIS carriage to other vessels or outside of VTS areas?
16. How can I get a copy of an AIS presentation I saw (or heard about it) that was given at...
17. Where can I get AIS data?
18. Reserved for future use.
19. What is AIS Channel Management?
20. Can I use my AIS in an emergency or for distress messaging?
21. Is the Coast Guard broadcasting AIS Aids to Navigation Reports?
22. Have an AIS question not answered here?

#### 1. What is AIS?

Per 47 CFR §80.5, AIS is a maritime navigation safety communications system standardized by the International Telecommunication Union (ITU) and adopted by the International Maritime Organization (IMO) that provides vessel information, including the vessel’s identity, type, position, course, speed, navigational status and other safety-related information automatically to appropriately equipped shore stations, other ships, and aircraft; receives automatically such information from similarly fitted ships; monitors and tracks ships; and exchanges data with shore-based facilities. Read more on what it is, how it works, what it broadcasts, and, the messages it uses, etc.
### Comparison Table of AIS mobile devices

<table>
<thead>
<tr>
<th></th>
<th>Class A</th>
<th>Class B/BO</th>
<th>Class B/CS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transmit Power (Watts)</strong></td>
<td>12.5 W / 2 W (low-power)</td>
<td>5 W / 2 W (low-power)</td>
<td>2 W</td>
</tr>
<tr>
<td><strong>Primary Access Scheme</strong></td>
<td>Self-organizing Time-Division Multiple Access (SOTDMA)</td>
<td>SOTDMA</td>
<td>Carrier-sense TDMA non-competing with SOTDMA units</td>
</tr>
<tr>
<td><strong>Position Reporting Rate</strong></td>
<td>Either every 2, 3 ½, 6 or 10 s based on speed and course change. Every 3 min. when ≤ 3 kts.</td>
<td>Either every 5, 15 or 30 s based on speed (2-14, 14-23, &gt;23 kts) Every 3 min. when ≤ 2 kts.</td>
<td>Every 30 s Every 3 min. when ≤ 2 kts.</td>
</tr>
<tr>
<td><strong>Static Data Reporting Rate</strong></td>
<td>Every 6 min</td>
<td>Every 6 min</td>
<td>Every 6 min</td>
</tr>
<tr>
<td><strong>Frequency Range</strong></td>
<td>25 kHz bandwidth between 156.025 MHz to 162.025 MHz</td>
<td>25 kHz bandwidth between 156.025 MHz to 162.025 MHz</td>
<td>25 kHz bandwidth at minimum between 161.500 MHz to 162.025 MHz</td>
</tr>
<tr>
<td><strong>Dedicated DSC Receiver for Channel Management</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Time-shared</td>
</tr>
<tr>
<td><strong>Position Source / WGS-84 to 1/10,000 of minute of arc</strong></td>
<td>Internal Global Navigation Satellite System &amp; connection to an External Electronic Positioning System (EPFS)</td>
<td>Internal GNSS</td>
<td>Internal GNSS</td>
</tr>
<tr>
<td><strong>Digital Interfaces</strong></td>
<td>2 Input-Output &amp; Multiple Presentation Outputs</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>Multiple Keyboard Display (MKD)</td>
<td>MKD</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Safety Text Messaging</strong></td>
<td>Receive &amp; Transmit</td>
<td>Receive &amp; Transmit</td>
<td>Transmit Optional, and only with non-alterable pre-configured messages</td>
</tr>
<tr>
<td><strong>Application Specific Messaging</strong></td>
<td>Receive &amp; Transmit</td>
<td>Receive &amp; Transmit (up to 3 slots)</td>
<td>Receive Optional, cannot Transmit</td>
</tr>
<tr>
<td><strong>Transmit Data</strong></td>
<td>All</td>
<td>No Rate of Turn, Navigation Status, Destination, ETA, Draft, or IMO#</td>
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Use The Encoding Guide

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www.navcen.uscg.gov or Search: AIS FAQS
AUTOMATIC IDENTIFICATION SYSTEM

Automatic Identification System (AIS) is a valuable navigational safety radio communication tool. However, its usefulness is undermined by the broadcast of inaccurate, improper or outdated data. This Encoding Guide is intended to assist mariners in the proper entry of AIS data. Mariners are reminded that U.S. regulations require that each AIS be maintained in effective operating condition, which includes accurate input and upkeep of AIS data parameters. Failure to do so may subject a vessel to civil penalties; to avoid such action AIS Users should ensure their system is up-to-date and encoded according to the guidance contained here.

3. Dynamic Data...should be provided via systems that are type-certified, properly installed, maintained and operational. They provide the information that is required to support the safe and efficient movement of vessels in their vicinity. The Dynamic Data should be transmitted on a continuous basis, and should include information such as the vessel's identity, position, and movement.

4. Static Data...should reflect the vessel's official radio license or documentation, be inputted at installation, and be password protected. Names exceeding 20 characters (the parameter limit) should be truncated, not abbreviated, and include all unique distinguishing characters. For example, the tug JOLLY ROGER OF THE SEA 123456 should be input as JOLLY ROGER 123456. Names should not include vessel type precursors, e.g., F/V, M/V, M/Y, O/V, F/WH, R/WH, N/K, etc. Except public vessels, i.e., CO, CBP, USN, LAPD, NYSF, etc. If your vessel is not officially named, input "USA" followed by your state registration number, e.g., USA/12345V2. If unregistered (e.g., associated craft, tenders), use your parent vessel's name followed by a dash (-) and a numerical designator that distinguishes you amongst others. For example, the first tender for the cruise ship JOLLY ROGER OF THE SEA should be input as JOLLY ROGER OF THE SEA - 1. Additionally, its AIS message 248 call-sign parameter should reflect the last 6-digits of JOLLY ROGER OF THE SEA'S MMSI preceded by an 'A', e.g., A123456.

5. Maritime Mobile Service Identity (MMSI) should reflect the MMSI assigned to the vessel by the Federal Communications Commission (FCC) or one of its agents.

6. Call-sign should reflect the call-sign assigned to the vessel by the FCC. In case of an emergency, the vessel's call-sign is used to contact the vessel. This information is important for emergency services to locate a vessel in distress.

7. IMO Number should reflect the assigned 7-digit IMO number. This number is used to identify the vessel and is important for regulatory and operational purposes.

8. Type of positioning system used should reflect the actual system in use, i.e., GPS, combined GPS, GLONASS, etc. The type of positioning system used should be reflected in the appropriate Ship Type (see accompanying text).

9. Antenna Position should reflect the overall dimensions of the vessel, expressed as the distance fore (A), aft (B), to port (C), to starboard (D), and the position of the system used by AIS. The intersection of the two white lines in the diagram represents this position.

10. Voyage Related Data...should be inputted as necessary to always indicate up to date conditions. Navigation Status, i.e., at anchor, underway, engaged in fishing, etc., should always be up-to-date. Note: vessels engaged in towing should use: "Towing" (e.g., "12") when towing astern, or "13" when pushing ahead or astern. Remember to change your status when at anchor or moored. Doing so will reduce the AIS reporting rate from 2 to 12 times to once every 3 minutes, which mitigates network congestion and improves overall AIS range. Static Draft should be inputted in meters (not feet) and reflect the vessel's actual or maximum draft. Estimated Time of Arrival (ETA) to destination; voyage departure time, if moored or anchored; operational termination time (i.e., workboat) should be inputted in Universal Time Coordinated (UTC), not local time.

11. Destination and your origin should be inputted using 5-character UN location codes (UNLOCODES) followed by (per IMO Res/GC (324) or 4-character U.S. "GEO" codes, as follows:

12. Origin-Destination using UNLOCODES only

13. Origin-Destination using UNLOCODES and USGSID

14. Origin-Destination using USGSID only

15. Note: the difference in symbology (\* | + | q | o | x | 0 | 0) describes the aspect of the data.
AIS Type of Ship parameter is a 2-digit numeric codes composed either from 1st and 2nd digit columns or as defined in columns 3x or 5x.
The terms used are as defined in IMO SOLAS, 46 U.S.C. 2101 or 33 CFR 140.10. Blue italic text denotes amplifying text not found in the original source (ITU-R M.1371-5)

<table>
<thead>
<tr>
<th>1st digit</th>
<th>2nd digit</th>
<th>[3x] others &quot;engaged in&quot;</th>
<th>[5x] special craft</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Fishing industry vessels, including fish processors and fish tenders*</td>
<td>30 - Pilot vessel</td>
</tr>
<tr>
<td>1</td>
<td>Reserved for future use</td>
<td>31 - Towing astern*</td>
<td>31 - Search and rescue vessels, i.e. USCG boots and cutters, USCG Auxiliary boats, assistance towers</td>
</tr>
<tr>
<td>2</td>
<td>WIG (Wing-in-Ground) craft</td>
<td>32 - Towing astern and length of the tow exceeds 200 meters (656 ft) or breadth exceeds 23 m (82 ft)*</td>
<td>32 - Tugs or workboats, that do not regularly engage in towing</td>
</tr>
<tr>
<td>3</td>
<td>Other vessels engaged in actions denoted in column [3x]</td>
<td>33 - Engaged in dredging, or underwater operations, or other equipment operations that may obstruct navigation [such as busy tending, ice breaking, salting, sampling, surveying, or other similar activities, but, not diving, fishing, towing or military operations]*</td>
<td>33 - Port tenders, yacht tenders, dive tenders, off-shore supply vessels, etc.</td>
</tr>
<tr>
<td>4</td>
<td>HSC (Hi-speed Craft) or passenger ferries</td>
<td>34 - Engaged in diving operations or other types of operations with persons in the water*</td>
<td>34 - Vessels with anti-pollution facilities or equipment</td>
</tr>
<tr>
<td>5</td>
<td>Special craft per column [3x]</td>
<td>35 - Engaged in military operations or other types of restricted operations*</td>
<td>35 - Law enforcement vessels, i.e. U.S. Customs and Border Protection vessels, Department of Natural Resources/Conservation boats, marine police boats, etc.</td>
</tr>
<tr>
<td>6</td>
<td>Passenger ships other than HSC and passenger ferries; not including tenders or off-shore supply vessels [see 33]</td>
<td>36 - Sailing vessels*</td>
<td>36 - Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall dimensions of the vessel not including its tow</td>
</tr>
<tr>
<td>7</td>
<td>Cargo (freight) ships, including articulated (ATB) and integrated tug-barge (ITB) vessels</td>
<td>37 - Pleasure craft</td>
<td>37 - Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall rectangular area of the vessel including its tow</td>
</tr>
<tr>
<td>8</td>
<td>Tankers, including articulated or integrated tug tank barge vessels</td>
<td>38 - Reserved for future use</td>
<td>38 - Medical transports (as defined in the 1949 Geneva Convention and Additional Protocols) or similar public safety vessels</td>
</tr>
<tr>
<td>9</td>
<td>Other types of ship</td>
<td>39 - Reserved for future use</td>
<td>39 - Ships according to RR Resolution No. 18 (Mob-83)</td>
</tr>
</tbody>
</table>

*Remember to also update your Navigation Status accordingly, i.e. Status: 3-restricted maneuverability; 7-engaged in fishing; 8-under sail; 11-towing astern; 12-pushing ahead/alongside, etc. Redistribution with or without USCG identity is permissible and encouraged. For further information or additional copies visit www.navcen.uscg.gov (AIS FAQ#2) or email cgnav@uscg.mil

**USCG AIS Encoding Guide**

**Clarifies Ship Types**
Protection vessels, Department of Natural Resources/Conservation boats, marine police boats, etc.

56 – Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall dimensions of the vessel not including its tow.

57 – Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall rectangular area of the vessel including its tow.

58 – Medical transports (as defined in the 1949 Geneva Convention)
| 56 | Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall dimensions of the vessel not including its tow |
| 57 | Spare-for assignments to local vessels that are engaged in towing ahead or alongside, and whose dimensions (ABCD values) represent the overall rectangular area of the vessel including its tow |
| 58 | Medical transports (as defined in the 1949 Geneva Convention) |
Maritime Mobile Service Identity (MMSI) should reflect the MMSI assigned to the vessel by the Federal Communications Commission (FCC) or one of its agents.

Call-sign should reflect the call-sign assigned to the vessel by the FCC; absent a call-sign, input 00000000.

IMO Number should reflect the assigned 7-digit IMO number. Use leading zeroes (not trailing zeroes) to fill the parameter, e.g., 0001234567.

Absent an IMO assignment, input your U.S. official documentation number preceded by either ‘100 or 1000’, e.g., 1001234567, 1000123456.

Type of positioning source should reflect the actual system in use, i.e. GPS, combined GPS-GLONASS, etc.

Type of vessel should reflect the appropriate Ship Type (see accompanying table).

Antenna Position | Vessel Dimensions should be inputted in meters (not feet) and reflect the overall dimensions of the vessel, expressed as the distance fore (A), aft (B), to port (C), and to starboard (D) to the positioning-system antenna used by AIS; the intersection of the two white lines in the diagram.

For U.S. Ship Type 37 (see Table) dimensions should reflect the overall rectangular area of the vessel and its tow—as portrayed by the extended dark arrows within the rectangles in the diagram.

**USCG AIS Encoding Guide**

* Vessel/ABCD Dimensions For Vessel or Vessel+Tow
### AIS FREQUENTLY ASKED QUESTIONS

1. **What is AIS?**

15. **Is the USCG considering expanding AIS carriage to other vessels or outside of VTS areas?** Yes. On January 30th, 2015 the Coast Guard published a Final Rule (80 FR 5281), which on March 2nd, 2015, expands AIS carriage (68 FR 60599) to most commercial vessels (see those affected here) operating on any U.S. navigable waters, and, harmonizes U.S. AIS requirements with Regulation V/19.2.4 of the Safety of Life at Sea Convention and § 102 of the Maritime Transportation Security Act of 2002. The docket containing comments submitted, supporting documents, and the regulatory analysis to this and our proposed rulemaking (73 FR 76295) can be found at [www.regulations.gov](http://www.regulations.gov) [Search: USCG-2005-21869]. Printer-friendly PDF formats of these 2015 requirements our 2008 proposed rule, an amalgamation of both, our 2003 requirements, and, a chart-comparison of all three.

16. **How can I get a copy of an AIS presentation I saw (or heard about it) that was given at...** You can download recent presentations given by Coast Guard Office of Navigation Systems personnel here.

17. **Where can I get AIS data?**

18. **Reserved for future use.**

19. **What is AIS Channel Management?**

20. **Can I use my AIS in an emergency or for distress messaging?**

21. **Is the Coast Guard broadcasting AIS Aids to Navigation Reports?**

22. **Have an AIS question not answered here?**

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#### 1. What is AIS? Per 47 CFR §80.5, AIS is a maritime navigation safety communications system standardized by the International Telecommunication Union (ITU) and adopted by the International Maritime Organization (IMO) that provides vessel information, including the vessel’s identity, type, position, course, speed, navigational status and other safety-related information automatically to appropriately equipped shore stations, other ships, and aircraft; receives automatically such information from similarly fitted ships; monitors and tracks ships; and exchanges data with shore-based facilities. Read more on what it is, how it works, what it broadcasts, and, the messages it uses, etc.