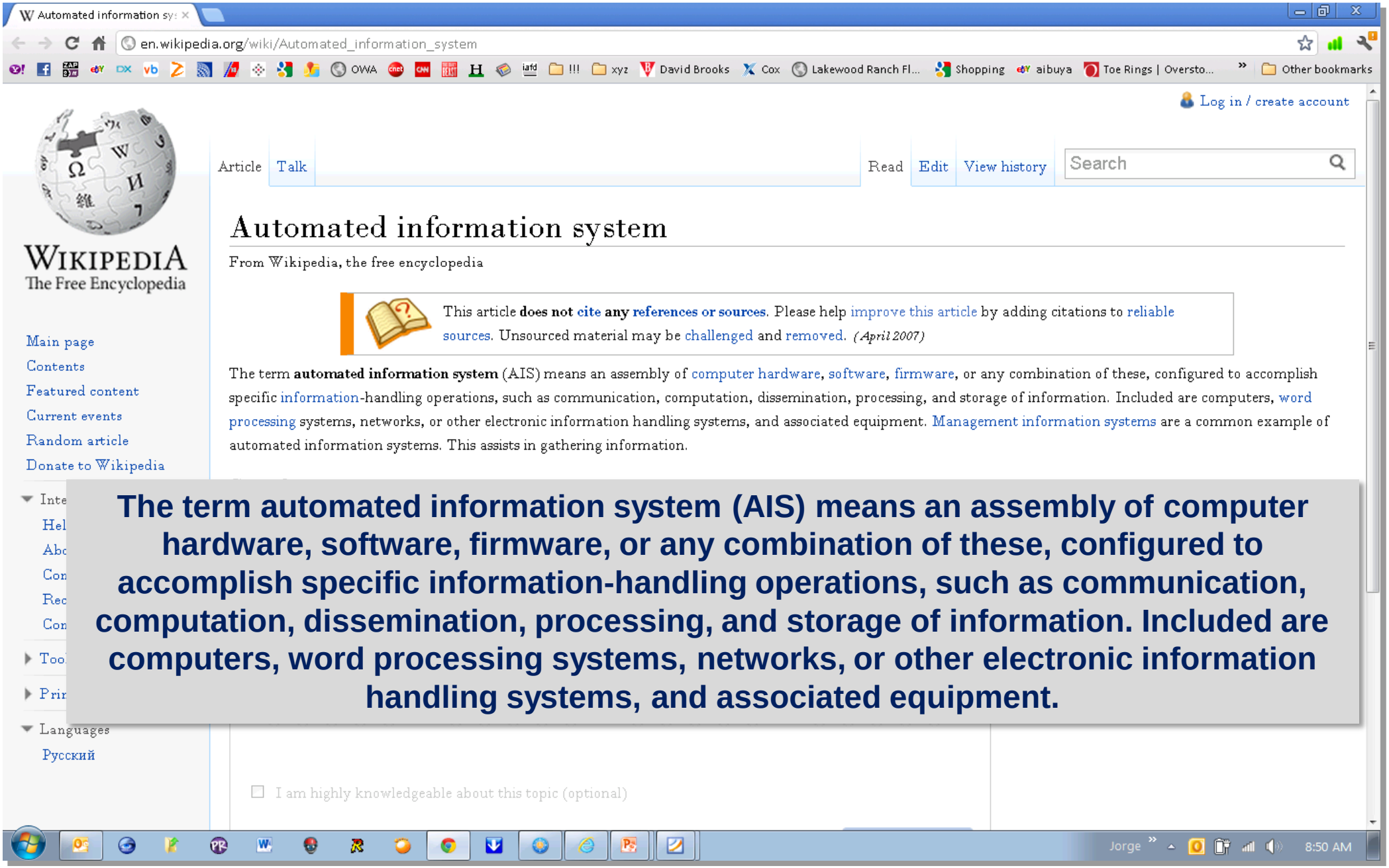
United States Coast Guard

Office of Navigation Systems

"We Help Mariners Get There"

Jorge Arroyo | eNavigation | U.S. Coast Guard | Washington, DC

Homeland Security



The term automated information system (AIS) means an assembly of computer hardware, software, firmware, or any combination of these, configured to accomplish specific information-handling operations, such as communication, computation, dissemination, processing, and storage of information. Included are computers, word processing systems, networks, or other electronic information handling systems, and associated equipment.

Automatic Identification System

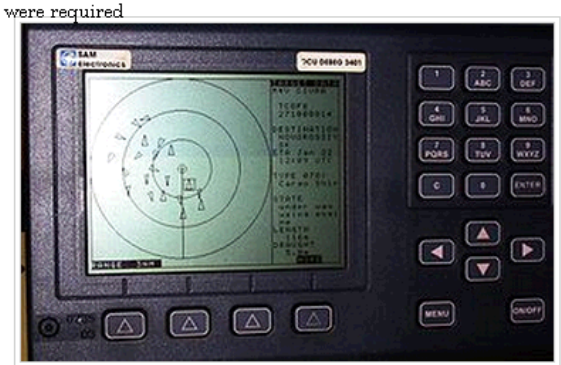
From Wikipedia, the free encyclopedia

The **Automatic Identification System** (**AIS**) is an automatic tracking system used on ships and by Vessel traffic services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships and AIS Base stations. AIS information supplements marine radar, which continues to be the primary method of collision avoidance for water transport.

Information provided by AIS equipment, such as unique identification, position, course, and speed, can be displayed on a screen or an ECDIS. AIS is intended to assist a vessel's watchstanding officers and allow maritime authorities to track and monitor vessel movements. AIS integrates a standardized VHF transceiver with a positioning system such as a LORAN-C or GPS receiver, with other electronic navigation sensors, such as a gyrocompass or rate of turn indicator. Vessels fitted with AIS transcei LORAN transponders can be tracked by AIS base stations located along coast lines, or when out of range of terrestrial networks through a growing number of satellites fitted with specialist AIS receivers.

A marine traffic coordinator using AIS and radar to manage vessel traffic.

The International Maritime Organization's (IMO) International Convention for the Safety of Life at Sea (SOLAS) requires AIS to be fitted aboard international voyaging ships with gross tonnage (GT) of 300 or more tons, and all passenger ships regardless of size. It is estimated that more than 40,000 ships currently carry AIS class A equipment.[*citation needed*] In 2007, the new Class B AIS standard was introduced which enabled a new generation of low cost AIS transceivers. This has triggered multiple additional national mandates from Singapore, China, Turkey and North America affecting hundreds of thousands of vessels. In 2010, the most commercial vessels operating on the EU Inland Waterways were mandated to fit an Inland waterway modified and approved AIS Class A, and the entire EU fishing fleet over 15m in length were required to fit a Class A by 2014. Additionally a wide number of other countries such as China, India, USA, Singapore etc have started AIS mandate programs which require large numbers of vessels to fit an approved AIS device for safety and national security purposes.



An AIS-equipped system on board a ship presents the bearing and distance of nearby vessels in a radar-like display format

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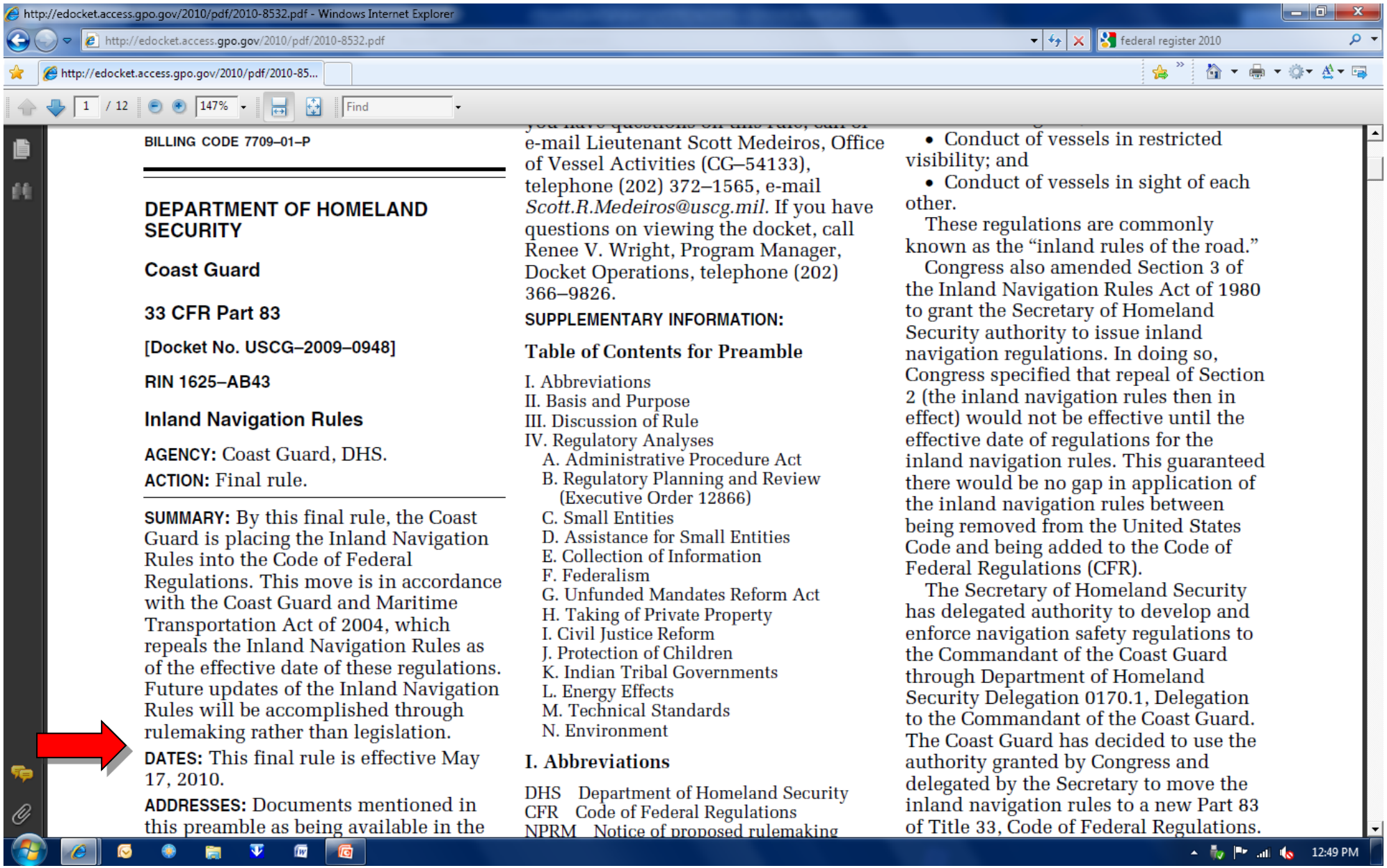
Navigation Systems Regulatory Efforts

- 33 CFR 83 – Inland Navigation Rules codification
  - Effective May 2011
  - NPRM in development to address NAVSAC resolutions and 2002 COLREG amendments
- 33 CFR 164 – Navigation Equipment
  - SOLAS Chp.V & CGMT'04(ECS)
  - In development
- 33 CFR 164.46 – Expansion of AIS Carriage



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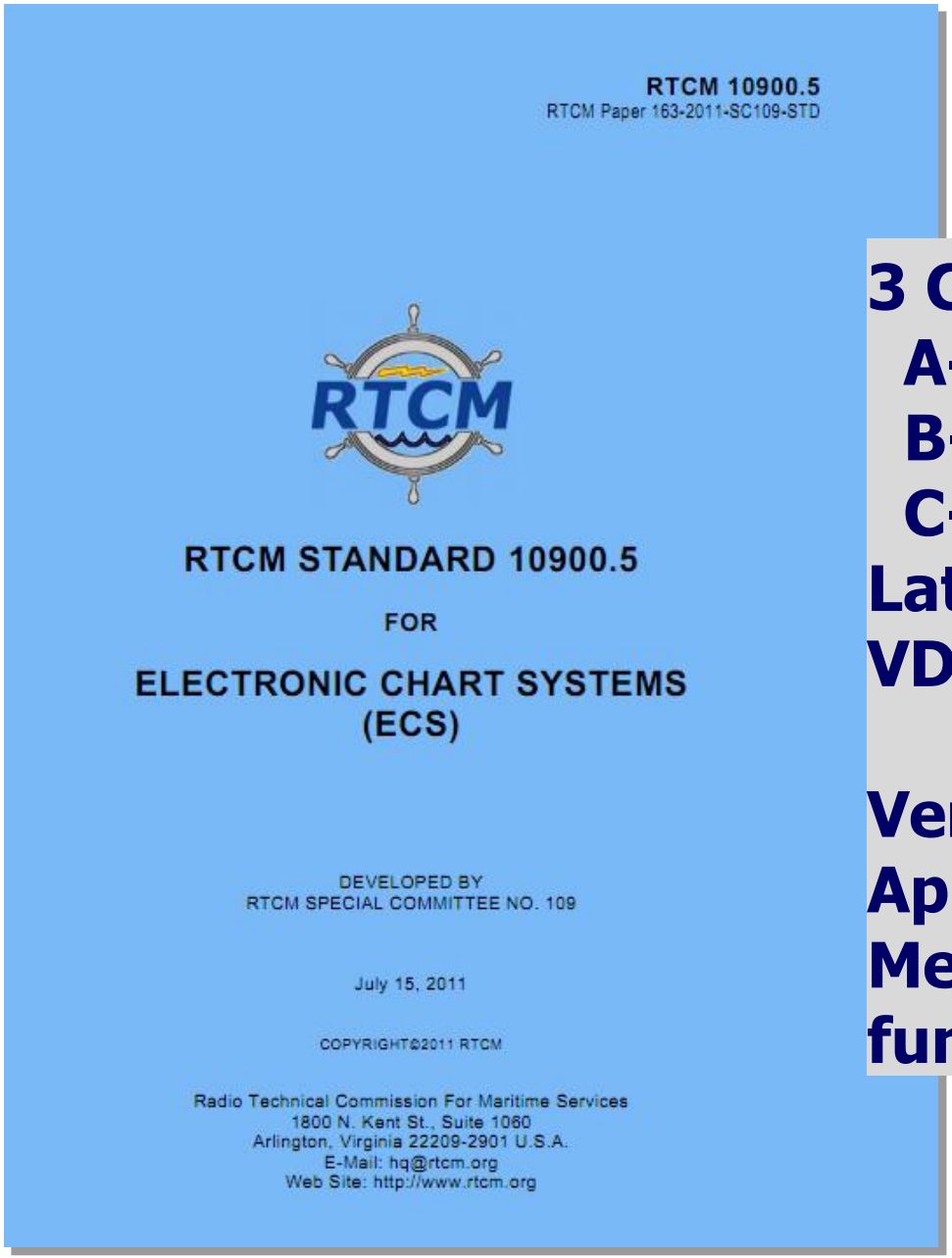
SOLAS/ECDIS/ECS rules…

- SOLAS Chp. V changes took effect 2000
- CG&MT of 2002 mandates ECS in US
  - Should integrate AIS
- IMO mandate ECDIS on other ships
- USCG rulemaking in development
  - What ECS to mandate & for what?
  - ECDIS/ECS don't currently integrate AIS



3 Classes
- **A- SOLAS ECDIS Back-up**
- **B- ECDIS-lite**
- **C- Software**

Latest version has limited VDR capability

Version .6 to address AIS Application Specific Messaging & remote MKD functionality

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Who has to have AIS?

- *Internationally Adopted & Required*
  - *IMO SOLAS Regulation V/19.2.4*
  - All ships of 300 gross tonnage or greater & passenger vessels irrespective of size on international voyage; 500 gross tonnage or greater domestically
- *Mandated by Congress*
  - *Marine Transportation & Security Act of 2002*
  - Commercial self-propelled vessels 65 feet or greater;
  - Towing Vessels over 26 feet or greater and 600 hp or more;
  - Passenger vessels as determined by USCG; and
  - those the USCG deems necessary for safety.

AIS Rulemaking [Changes in **Bold-type**]

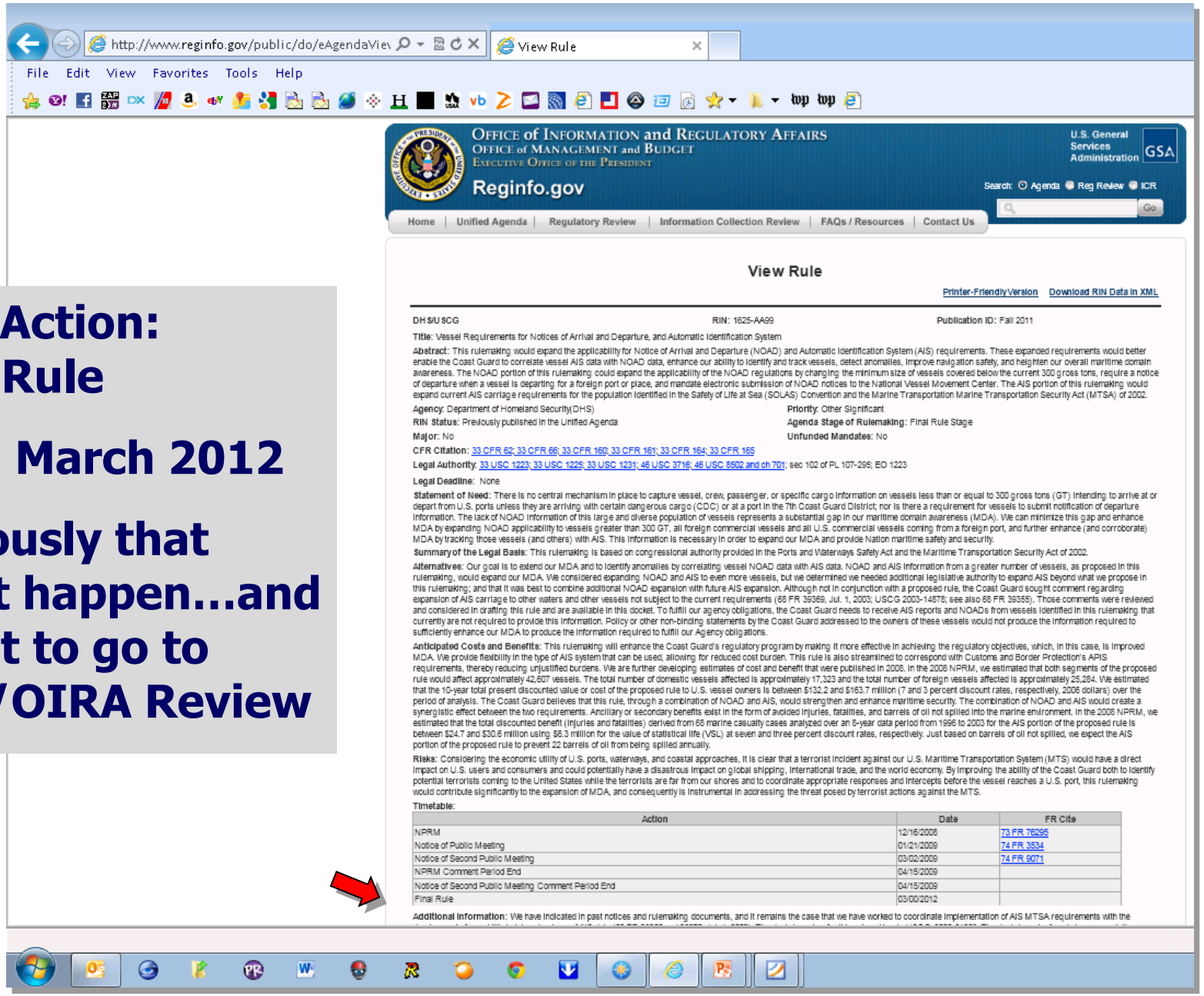
- ✓ 10/23/03 - current AIS requirement (33 CFR 164.46)
- ✓ 07/01/03-01/09/04 sought AIS expansion comment
- ✓ 10/31/05 - Notice expansion of AIS to **all** waters
- ✓ 12/16/08 - NPRM; 04/15/09, comment deadline
- Could effect 17,442 vessels/14,506 small biz's, i.e.
  - Commercial self-propelled vessels of ≥ 65 feet
    - **No exclusions**
  - Towing vessels ≥ 26 feet and > 600 hp
  - Vessels with **≥ 50** passengers (vice 150 for hire)
  - **Hi-Speed vessels with ≥ 12 passengers for hire**
  - **Certain dredges & floating plants, &**
  - **Vessel moving certain dangerous cargoes**

Estimated Expanded AIS Population	
Ships ≥65ft	**2,973**
Freight Ship	298
Industrial Ship	748
MODU	210
OSV	553
Research Vessel	97
School Ship	19
Tank Ship	122
Unclassified	385
Unknown	541
Fishing ≥65ft	**5,520**
Documented	4,571
Undocumented (est.)	949
Towing ≥26ft & ≥600hp	**4,560**
Passenger	**3,235**
≥65ft	2,167
<65' but ≥50 pax	1,062
>30kts & >12 pax for hire	6
Dredges	**35**
Total (U.S.)	**16,323**
Foreign Flag ≥65ft	**1,119**
Total (All)	**17,442**

AIS Comment Period…

- Public Meetings
  - -Washington, DC – March 5th, 2009
    - 30+ attendees, 11 commenters
  - -Seattle, WA – March 25th, 2009
    - 30+ attendees, 12 commenters
- Comment period closed: April 15th, 2009
- Public Submissions
  - -80+ submitters, 70+ regarding AIS

- **Next Action: Final Rule**
- **Date: March 2012**
- **Obviously that didn't happen…and its yet to go to OMB/OIRA Review**



http://www.reginfo.gov/public/do/eAgendaVie

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DHS/USCG RIN: 1625-AA99 Publication ID: Fall 2011

Title: Vessel Requirements for Notices of Arrival and Departure, and Automatic Identification System

Abstract: This rulemaking would expand the applicability for Notice of Arrival and Departure (NOAD) and Automatic Identification System (AIS) requirements. These expanded requirements would better enable the Coast Guard to correlate vessel AIS data with NOAD data, enhance our ability to identify and track vessels, detect anomalies, improve navigation safety, and heighten our overall maritime domain awareness. The NOAD portion of this rulemaking could expand the applicability of the NOAD regulations by changing the minimum size of vessels covered below the current 300 gross tons, require a notice of departure when a vessel is departing for a foreign port or place, and mandate electronic submission of NOAD notices to the National Vessel Movement Center. The AIS portion of this rulemaking would expand current AIS carriage requirements for the population identified in the Safety of Life at Sea (SOLAS) Convention and the Marine Transportation Marine Transportation Security Act (MTSA) of 2002.

Agency: Department of Homeland Security(DHS) **Priority:** Other Significant

RIN Status: Previously published in the Unified Agenda **Agenda Stage of Rulemaking:** Final Rule Stage

Major: No **Unfunded Mandates:** No

CFR Citation: 33 CFR 62; 33 CFR 66; 33 CFR 160; 33 CFR 161; 33 CFR 164; 33 CFR 165

Legal Authority: 33 USC 1223; 33 USC 1225; 33 USC 1231; 46 USC 3716; 46 USC 8502 and ch 701; sec 102 of PL 107-295; EO 1223

Legal Deadline: None

Statement of Need: There is no central mechanism in place to capture vessel, crew, passenger, or specific cargo information on vessels less than or equal to 300 gross tons (GT) intending to arrive at or depart from U.S. ports unless they are arriving with certain dangerous cargo (CDC) or at a port in the 7th Coast Guard District; nor is there a requirement for vessels to submit notification of departure information. The lack of NOAD information of this large and diverse population of vessels represents a substantial gap in our maritime domain awareness (MDA). We can minimize this gap and enhance MDA by expanding NOAD applicability to vessels greater than 300 GT, all foreign commercial vessels and all U.S. commercial vessels coming from a foreign port, and further enhance (and corroborate) MDA by tracking those vessels (and others) with AIS. This information is necessary in order to expand our MDA and provide Nation maritime safety and security.

Summary of the Legal Basis: This rulemaking is based on congressional authority provided in the Ports and Waterways Safety Act and the Maritime Transportation Security Act of 2002.

Alternatives: Our goal is to extend our MDA and to identify anomalies by correlating vessel NOAD data with AIS data. NOAD and AIS information from a greater number of vessels, as proposed in this rulemaking, would expand our MDA. We considered expanding NOAD and AIS to even more vessels, but we determined we needed additional legislative authority to expand AIS beyond what we propose in this rulemaking; and that it was best to combine additional NOAD expansion with future AIS expansion. Although not in conjunction with a proposed rule, the Coast Guard sought comment regarding expansion of AIS carriage to other waters and other vessels not subject to the current requirements (68 FR 39365, Jul. 1, 2003; USCG 2003-14878; see also 68 FR 39355). Those comments were reviewed and considered in drafting this rule and are available in this docket. To fulfill our agency obligations, the Coast Guard needs to receive AIS reports and NOADs from vessels identified in this rulemaking that currently are not required to provide this information. Policy or other non-binding statements by the Coast Guard addressed to the owners of these vessels would not produce the information required to sufficiently enhance our MDA to produce the information required to fulfill our Agency obligations.

Anticipated Costs and Benefits: This rulemaking will enhance the Coast Guard's regulatory program by making it more effective in achieving the regulatory objectives, which, in this case, is improved MDA. We provide flexibility in the type of AIS system that can be used, allowing for reduced cost burden. This rule is also streamlined to correspond with Customs and Border Protection's APIS requirements, thereby reducing unjustified burdens. We are further developing estimates of cost and benefit that were published in 2008. In the 2008 NPRM, we estimated that both segments of the proposed rule would affect approximately 42,607 vessels. The total number of domestic vessels affected is approximately 17,323 and the total number of foreign vessels affected is approximately 25,284. We estimated that the 10-year total present discounted value or cost of the proposed rule to U.S. vessel owners is between $132.2 and $163.7 million (7 and 3 percent discount rates, respectively, 2006 dollars) over the period of analysis. The Coast Guard believes that this rule, through a combination of NOAD and AIS, would strengthen and enhance maritime security. The combination of NOAD and AIS would create a synergistic effect between the two requirements. Ancillary or secondary benefits exist in the form of avoided injuries, fatalities, and barrels of oil not spilled into the marine environment. In the 2008 NPRM, we estimated that the total discounted benefit (injuries and fatalities) derived from 68 marine casualty cases analyzed over an 8-year data period from 1996 to 2003 for the AIS portion of the proposed rule is between $24.7 and $30.6 million using $6.3 million for the value of statistical life (VSL) at seven and three percent discount rates, respectively. Just based on barrels of oil not spilled, we expect the AIS portion of the proposed rule to prevent 22 barrels of oil from being spilled annually.

Risks: Considering the economic utility of U.S. ports, waterways, and coastal approaches, it is clear that a terrorist incident against our U.S. Maritime Transportation System (MTS) would have a direct impact on U.S. users and consumers and could potentially have a disastrous impact on global shipping, international trade, and the world economy. By improving the ability of the Coast Guard both to identify potential terrorists coming to the United States while the terrorists are far from our shores and to coordinate appropriate responses and intercepts before the vessel reaches a U.S. port, this rulemaking would contribute significantly to the expansion of MDA, and consequently is instrumental in addressing the threat posed by terrorist actions against the MTS.

Timetable:

Action	Date	FR Cite
NPRM	12/16/2008	73 FR 76295
Notice of Public Meeting	01/21/2009	74 FR 3534
Notice of Second Public Meeting	03/02/2009	74 FR 9071
NPRM Comment Period End	04/15/2009	
Notice of Second Public Meeting Comment Period End	04/15/2009	
Final Rule	03/00/2012	

Additional Information: We have indicated in past notices and rulemaking documents, and it remains the case that we have worked to coordinate implementation of AIS MTSA requirements with the

How AIS Works

www.navcen.uscg.gov/?pageName=AISworks

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***** UPDATED 6-6-2011: Warning for Fukushima, Japan ***** In response to the situation at the Fukushima Nuclear Power Plant in Japan, the U.S. Coast Guard recommends, as a precaution, that vessels avoid transiting within 20 kilometers/10.8 nautical miles of the Fukushima Nuclear Power Plant (37°25.5'N, 141°02.0'E)...read the entire notice.

Automatic Identification System (AIS)

- What is AIS?
- How AIS Works
- Types of AIS
- AIS Messages
  - Class A Position Report
  - Class A Static & Voyage Data
  - Class B Reports
- Nationwide AIS (NAIS)
- Carriage Requirements
- Reference Information
- Frequently Asked Questions

Primary Mission Areas:

- Global Positioning System
- Differential GPS
- Nationwide DGPS
- Long Range Identification and Tracking
- Civil GPS Service Interface Committee
- Automatic Identification System
- Nationwide AIS (NAIS)
- Electronic Navigation & Charting
- Maritime Telecommunications
- LORAN C (archive)

Services & Reporting:

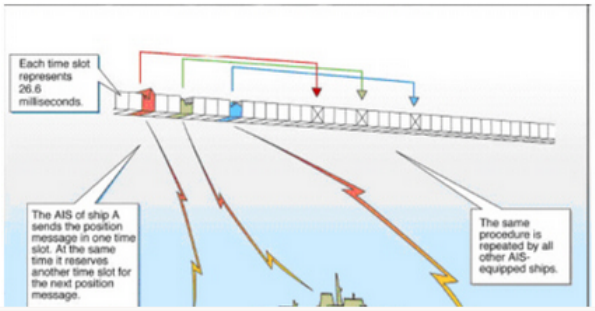
- Receive Free LNM Updates
- Receive Free GPS Status Messages
- Receive NANU Updates

HOW AIS WORKS

Each AIS system consists of one VHF transmitter, two VHF TDMA receivers, one VHF DSC receiver, and standard marine electronic communications links (IEC 61162/NMEA 0183) to shipboard display and sensor systems (AIS Schematic). Position and timing information is normally derived from an integral or external global navigation satellite system (e.g. GPS) receiver, including a medium frequency differential GNSS receiver for precise position in coastal and inland waters. Other information broadcast by the AIS, if available, is electronically obtained from shipboard equipment through standard marine data connections. Heading information and course and speed over ground would normally be provided by all AIS-equipped ships. Other information, such as rate of turn, angle of heel, pitch and roll, and destination and ETA could also be provided.

The AIS transponder normally works in an autonomous and continuous mode, regardless of whether it is operating in the open seas or coastal or inland areas. Transmissions use 9.6 kb GMSK FM modulation over 25 or 12.5 kHz channels using HDLC packet protocols. Although only one radio channel is necessary, each station transmits and receives over two radio channels to avoid interference problems, and to allow channels to be shifted without communications loss from other ships. The system provides for automatic contention resolution between itself and other stations, and communications integrity is maintained even in overload situations.

Each station determines its own transmission schedule (slot), based upon data link traffic history and knowledge of future actions by other stations. A position report from one AIS station fits into one of 2250 time slots established every 60 seconds. AIS stations continuously synchronize themselves to each other, to avoid overlap of slot transmissions. Slot selection by an AIS station is randomized within a defined interval, and tagged with a random timeout of between 0 and 8 frames. When a station changes its slot assignment, it pre-announces both the new location and the timeout for that location. In this way new stations, including those stations which suddenly come within radio range close to other vessels, will always be received by those vessels.



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AIS Frequently Asked Ques
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Services & Reporting:
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Receive Free GPS Status Messages
Receive NANU Updates
AIS FREQUENTLY ASKED QUESTIONS
1. What is AIS?
2. How do I program my AIS?
3. What is the AIS rule and are there alternatives to the rule for small businesses?
4. How much does an AIS cost?
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 vessels' 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. What is a MMSI and where can I get one for my AIS?
19. What is AIS Channel Management?
20. Can I use my AIS in an emergency or for distress messaging?
21. 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.
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1:59 PM


AIS Frequently Asked Ques
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Tips for solving pro...
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15. Is the USCG considering expanding AIS carriage to other vessels or outside of VTS areas? Yes. On December 16th, 2008 the Coast Guard published a proposed rule (73 FR 78295) to amend the current AIS regulations, and, expand AIS requirements-beyond Vessel Traffic Service (VTS) areas to all U.S. navigable waters and require AIS carriage for additional commercial vessels, including commercial vessels carrying 50 or more passengers, fishing vessels 65 feet or greater, hi-speed passenger vessels, dredges and floating plants operating in or near channels or fairways, and vessels carrying or moving certain dangerous cargo. See a breakdown of vessels affected. We invite you to visit www.regulations.gov (Search: USCG-2005-21899) to view the public comments submitted on our proposal and to register for email notifications regarding future actions on this rulemaking; and, www.reginfo.gov (RIN: 1625-AA99) for its timetable.
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:
NOAD AIS Public Meeting in Washington, DC (05MAR09) and Seattle, WA (25MAR09).pdf (1.06MB) Washington, DC audio.mp3 (12MB) Seattle, WA audio.mp3 (7.83MB)
Arroyo@IWC(04MAR09).pdfaudio.mp3 (22,501KB)
Arroyo@TSAC(07MAY09).pdf (5.03MB)
Arroyo@NAVSAC(2009).pdf (Transcript and NAVSAC Resolution re: AIS Class B carriage) (565.87KB)
Arroyo@RTCM(17MAY10).pdf (3.27MB)
Arroyo@NMFS-PAC.pdf (10.18MB)
17. Where can I get AIS data? Although the U.S. Coast Guard operates our Nation's AIS network (NAIS), we do not --currently-- make our AIS information available to the general public. There are, however, numerous AIS networks and commercial purveyors that do provide AIS data and track information on the World Wide Web; many of which are listed on Wikipedia's AIS webpage. Local, state and federal government agencies may request U.S. Coast Guard Nation-wide AIS data here.
18. What is a MMSI and where can I get one for my AIS? A unique and official Maritime Mobile Service Identity (MMSI) number is required for every AIS station, see our MMSI page for more information.
19. What is AIS Channel Management? One of the lesser known and potent features of AIS is its ability to operate on multiple channels of the VHF-FM marine band. This frequency agility ensures AIS can be used even when the default channels are otherwise unavailable or compromised. In such conditions, competent authorities, such as the Coast Guard, can use an AIS base station to tele-command shipborne AIS devices to other more appropriate channels when within a defined region(s) of 200 to 2000 square nautical miles. This can be done automatically (and without user intervention) by receipt of the AIS channel management message (AIS message 22) or manually entered via the AIS Minimal Keyboard Display (MKD) or similar input device. Once commanded or inputted the channels management information will stay in memory for 5 weeks or until a vessel exceed 500 nautical miles from the defined region. AIS channel management commands can only be automatically overridden via another channel management message for the same defined region or manually overridden or erased by the user via the unit's channel (regional frequencies) management function—read more. Note, reinitializing or resetting your AIS or transmission channels will not necessarily reprogram your unit back to default channels.
20. Can I use my AIS in an emergency or for distress messaging? Yes, but, be aware that AIS safety related text messages are not - currently- received, processed, recognized or acted upon as Global Maritime Distress Safety Systems (GMDSS) messages would be by the Coast Guard or other maritime first responders. Therefore, AIS should not be relied upon as the primary means for broadcasting distress or urgent communications, nor used in lieu of GMDSS such as Digital Selective Calling radios which are designed to process distress messaging. Nonetheless, AIS remains an effective means to augment GMDSS and provides the added benefit of being 'seen' (on radar or chart displays), in addition to being 'heard' (via text messaging) by other AIS users within VHF radio range. For further guidance, see USCG Safety Alert 5-10.
21. Have an AIS question not answered here? Please contact us.
U.S. Coast Guard Navigation Center NAVCEN MS 7310, 7323 Telegraph Road, Alexandria, VA 20598 - 7310 | (703) 313-5900
Start
Jorge
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Future ASM developments…

- International Assoc. of Marine Aids to Navigation & Lighthouse Authorities (IALA) Guidelines & Recommendations
  - ✓ E-Navigation Committee, Portrayal Working Group
  - ✓ Maintaining an AIS ASM catalogue
- Radio Technical Commission for Maritime Services (RTCM) Standards
  - ✓ Special Committee 121 - AIS ASM
  - ✓ Special Committee 129 - Navigation Portrayal
  - ✓ Special Committee 109 – Electronic Chart Systems
- U.S. Coast Guard
  - ✓ To expand our AIS ASM test beds to Louisville KY and with USACE LOMA effort
  - ✓ To require ECS and its integration with AIS (including ASM's)
  - ✓ Expanding transmit capability to our Nation-wide AIS (NAIS)
  - ✓ To provide NOAA PORTS via NAIS

IMO SN/Circ.289
AIS ASM GUIDANCE
22 ASM's

IMO INTERNATIONAL MARITIME ORGANIZATION

E

4 ALBERT EMBANKMENT
LONDON SE1 7SR
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Ref. T2-OSS/2.7.1

SN.1/Circ.289
2 June 2010

GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES

1 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), approved SN/Circ.236 on Guidance on the application of AIS binary messages as prepared by the Sub-Committee on Safety of Navigation at its forty-ninth session (30 June to 4 July 2003).

2 The Sub-Committee on Safety of Navigation, at its forty-ninth session (30 June to 4 July 2003), selected seven (7) binary messages as shown in annex 2 to SN/Circ.236 to be used as a trial set of messages for a period of four years with no change. It was noted that four additional system-related messages were identified in Recommendation ITU-R M.1371 for the operation of the system.

3 The Sub-Committee on Safety of Navigation, at its fifty-fifth session (27 to 31 July 2009), after evaluating the use of binary messages in the trial period defined in SN/Circ.236, agreed on Guidance on the use of AIS Application-Specific Messages, including messages which are recommended for international use.

4 The Maritime Safety Committee, at its eighty-seventh session (12 to 21 May 2010), concurred with the Sub-Committee's views and approved the Guidance on the use of AIS Application Specific Messages, as set out at annex.

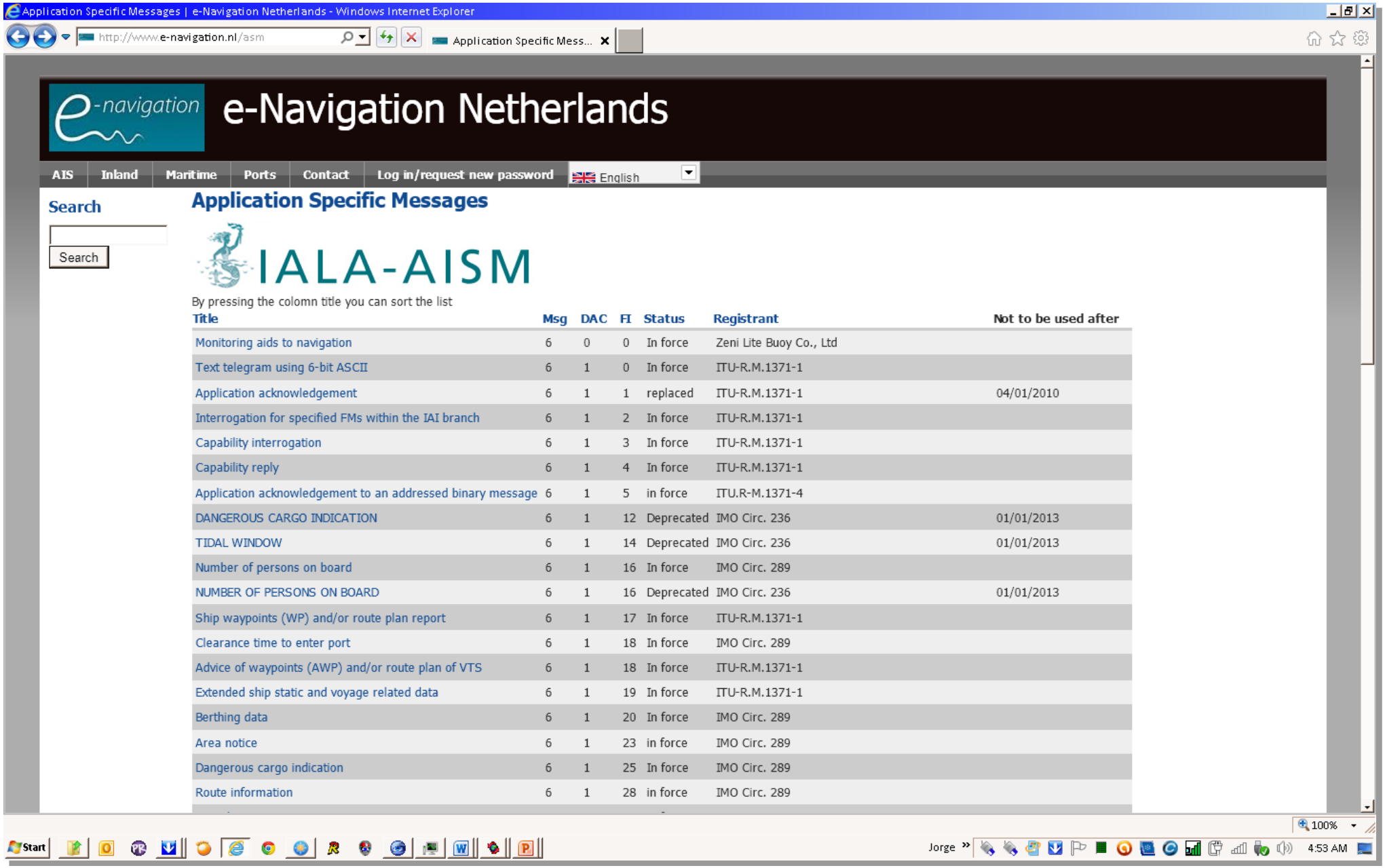
5 Member Governments are invited to bring the annexed Guidance to the attention of all concerned.

6 This circular revokes SN/Circ.236 as from 1 January 2013.

Homeland Security

IMO SN/Circ.289 ASM's

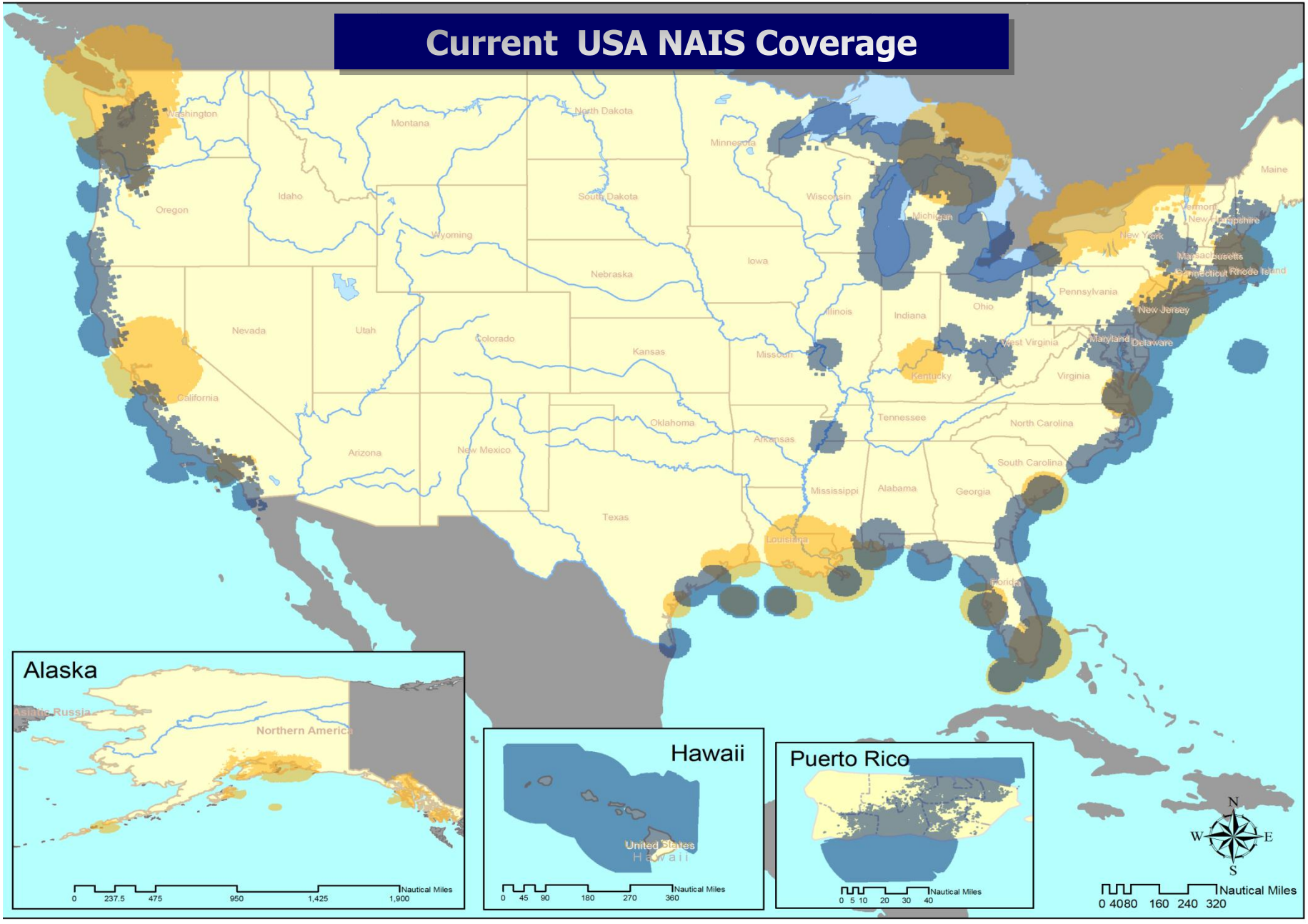
- ❑ Clearance time to enter port
- ❑ Marine traffic signal
- ❑ Berthing data
- ❑ Weather observation report from ship
- ❑ Area notice – broadcast & addressed
- ❑ Extended ship static and voyage-related data*
- ❑ Dangerous cargo indication*
- ❑ Environmental Data
- ❑ Route information – broadcast & addressed
- ❑ Text description – broadcast & addressed
- ❑ Meteorological and Hydrographic [sensor] data
- ❑ Tidal window



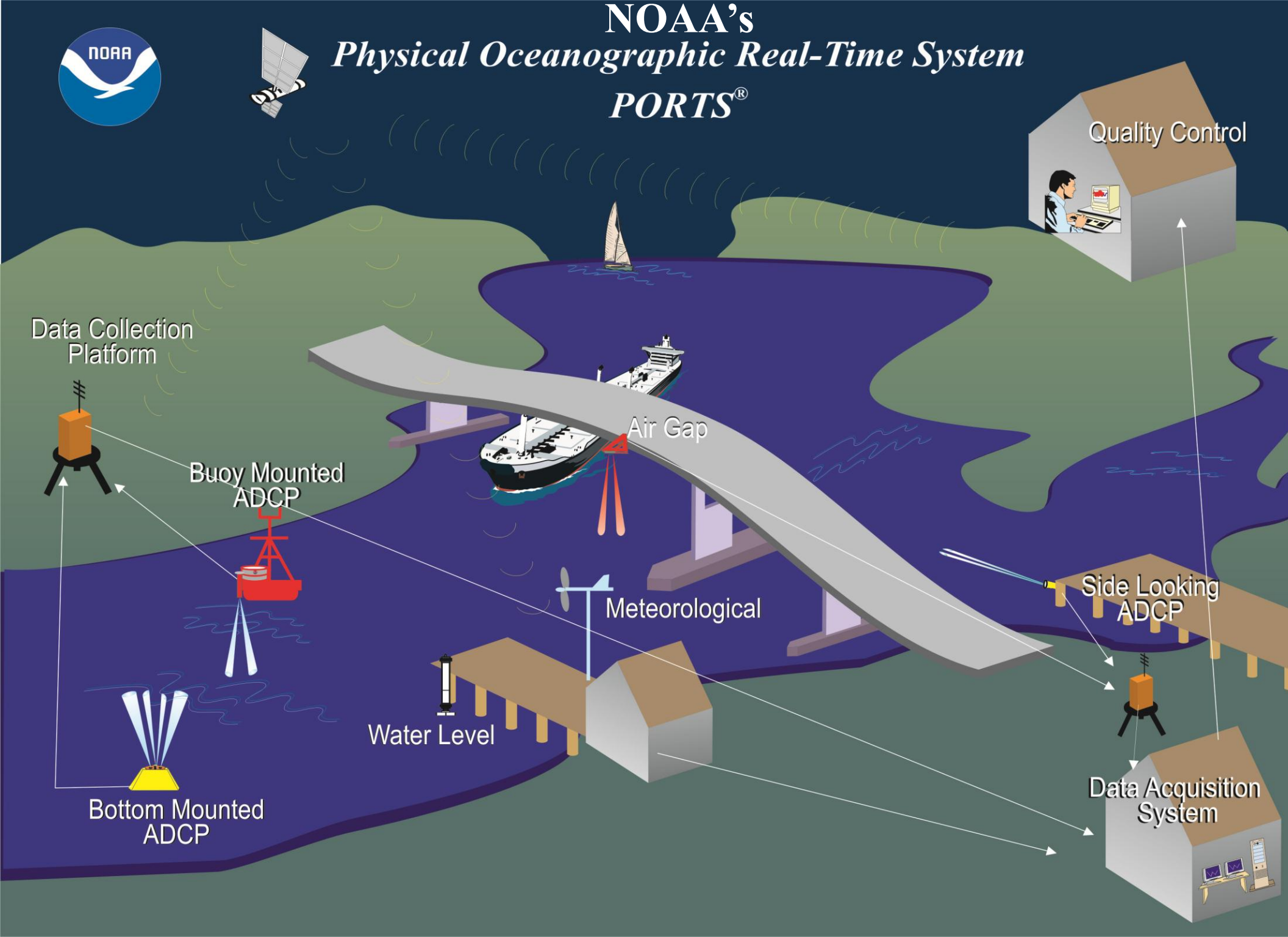
Homeland Security

www.e-navigation.nl/asm

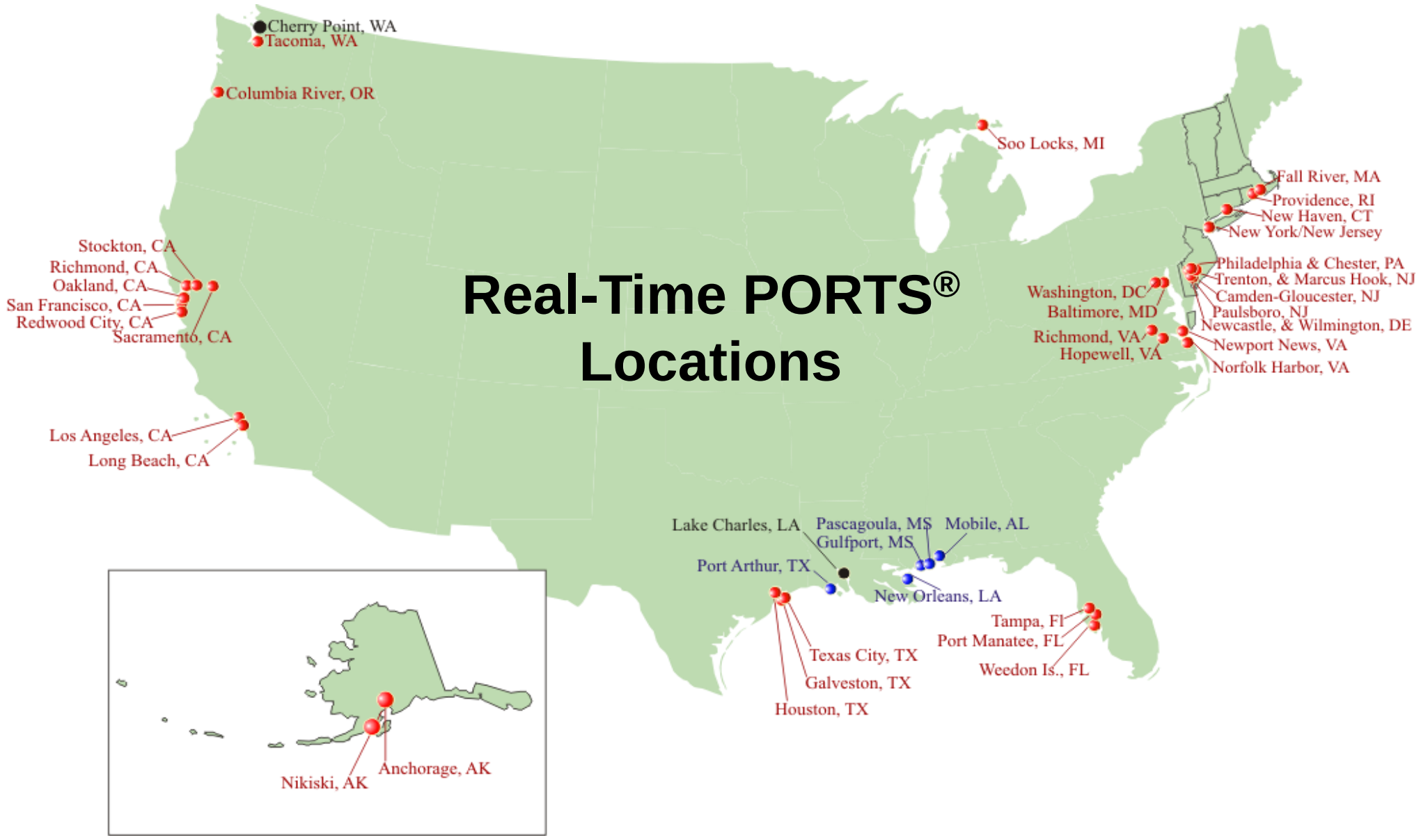
Current USA NAIS Coverage



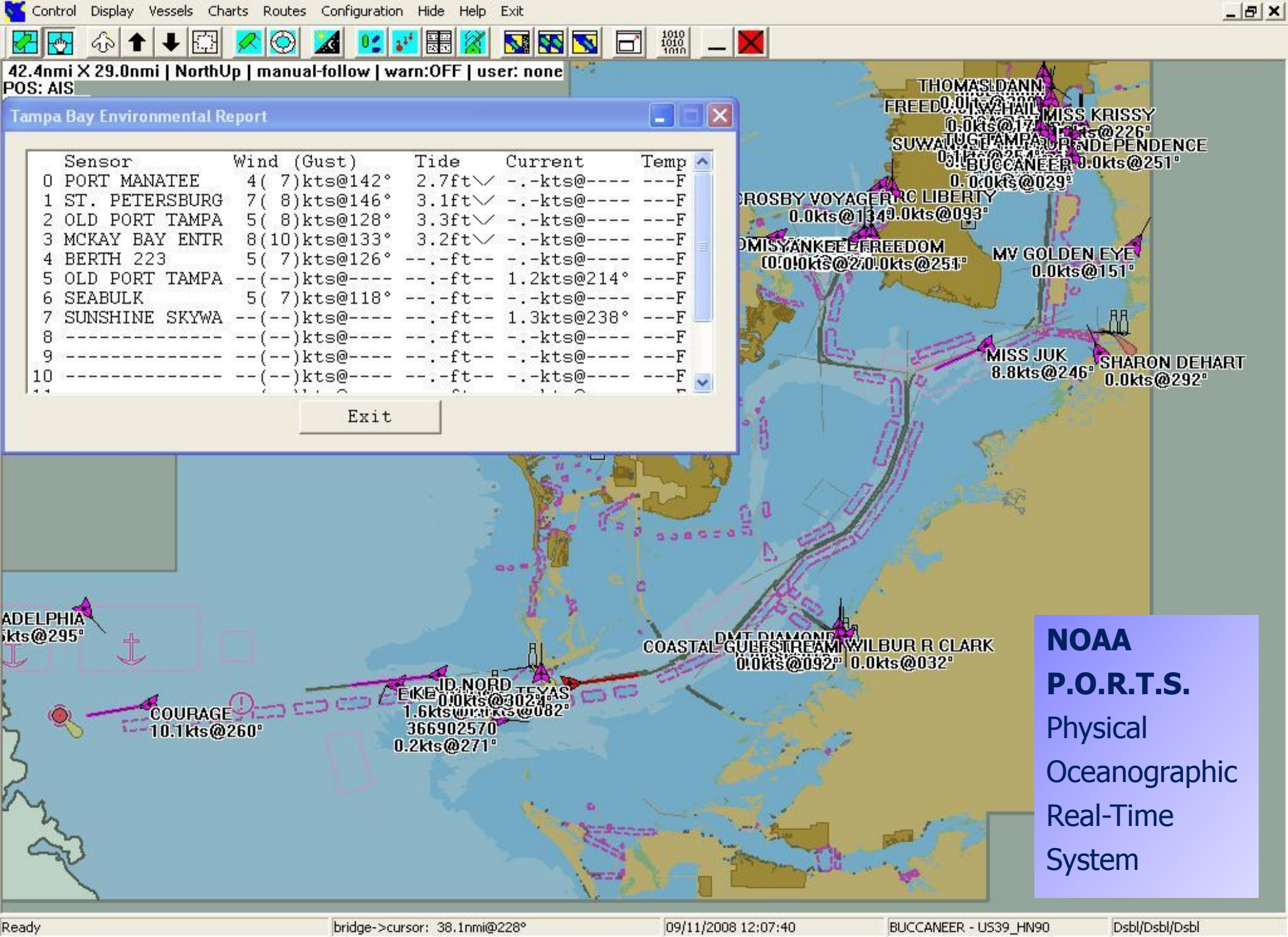
Homeland Security


NOAA's
Physical Oceanographic Real-Time System
PORTS®
Quality Control
Data Collection Platform
Air Gap
Buoy Mounted ADCP
Meteorological
Side Looking ADCP
Water Level
Bottom Mounted ADCP
Data Acquisition System

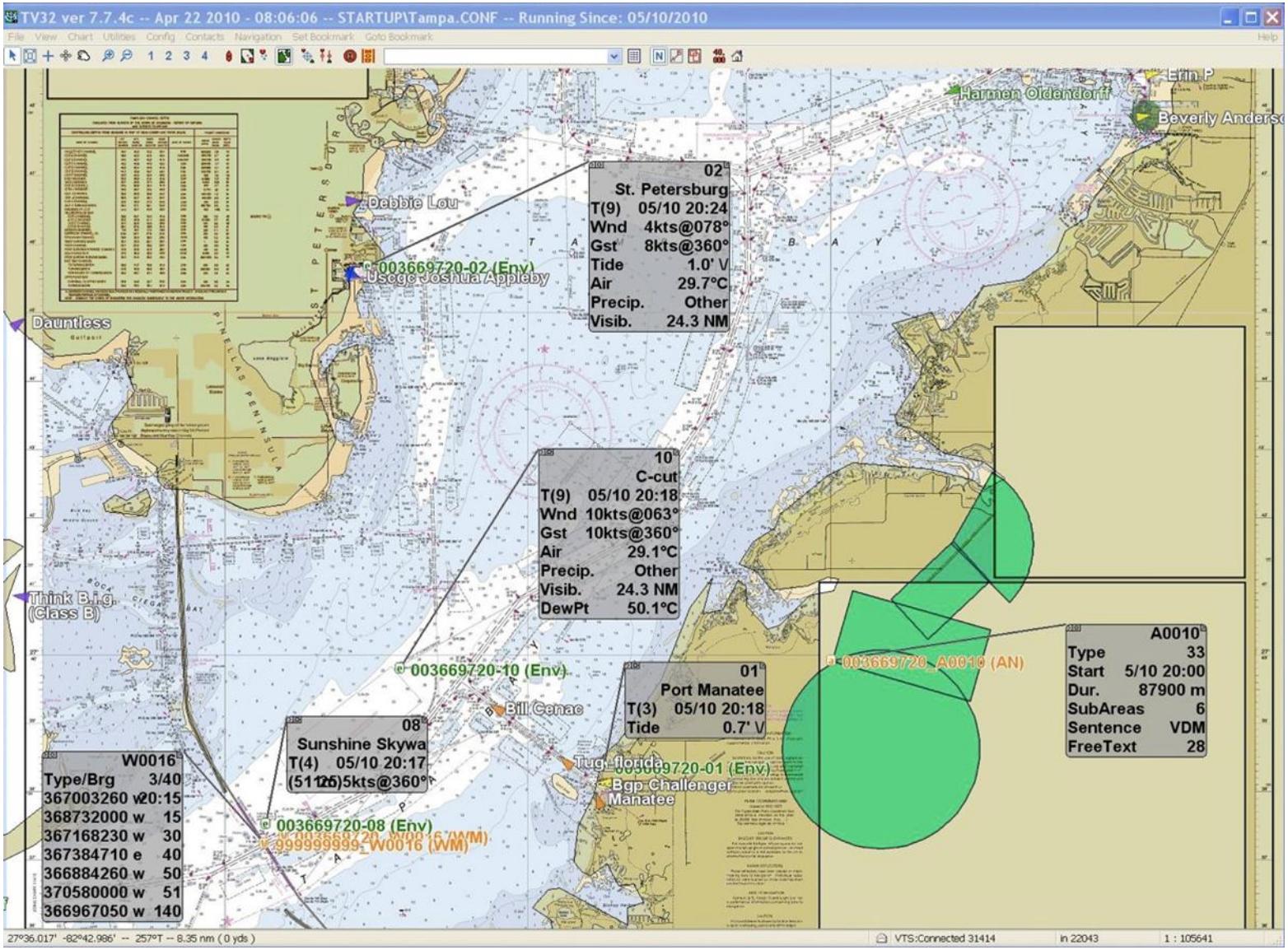
Real-Time PORTS® Locations



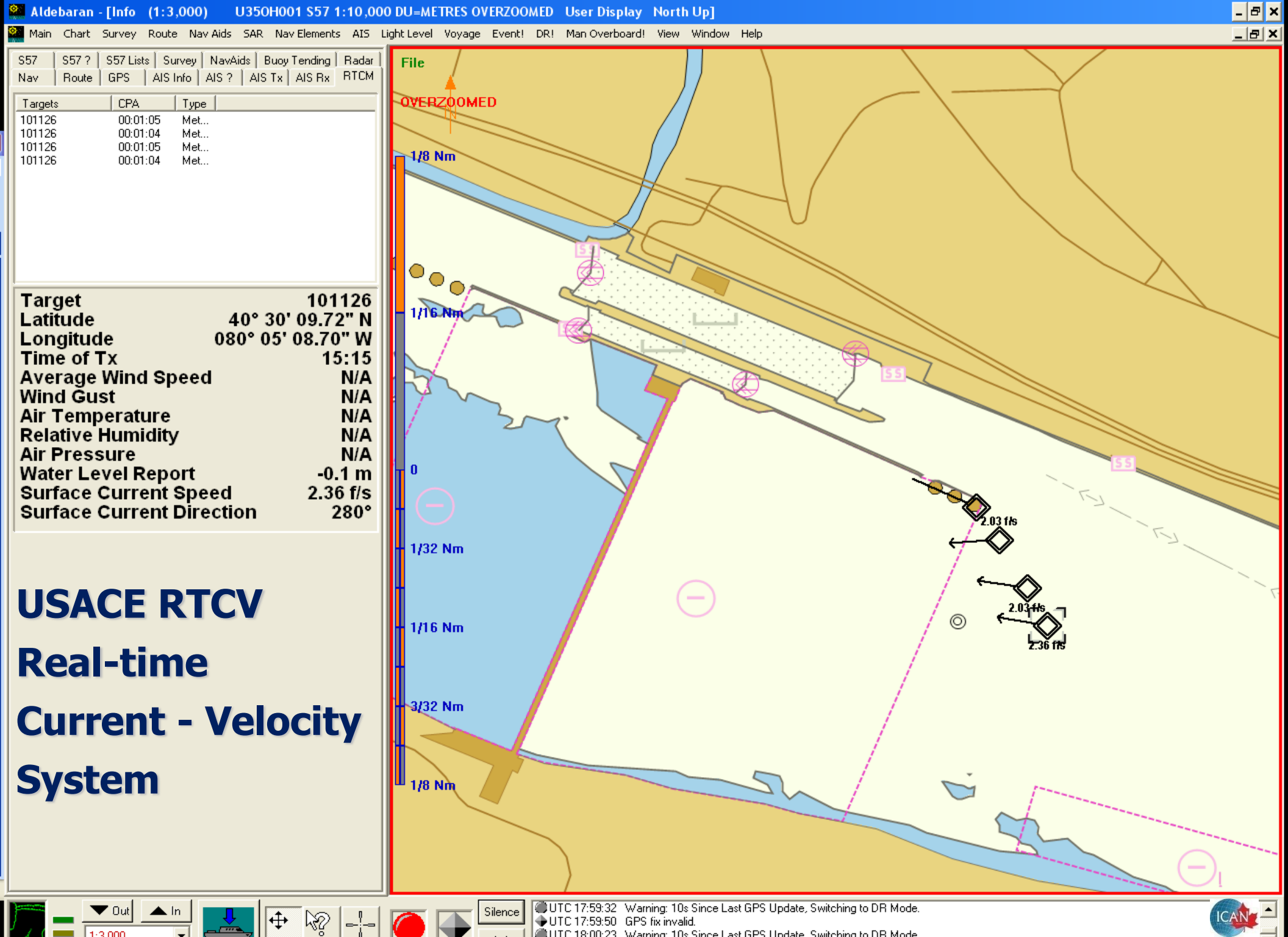
Homeland Security


Control Display Vessels Charts Routes Configuration Hide Help Exit
42.4nmi X 29.0nmi | NorthUp | manual-follow | warn:OFF | user: none
POS: AIS
Tampa Bay Environmental Report
Sensor Wind (Gust) Tide Current Temp
0 PORT MANATEE 4(7)kts@142° 2.7ft↘ -.-kts@---- ---F
1 ST. PETERSBURG 7(8)kts@146° 3.1ft↘ -.-kts@---- ---F
2 OLD PORT TAMPA 5(8)kts@128° 3.3ft↘ -.-kts@---- ---F
3 MCKAY BAY ENTR 8(10)kts@133° 3.2ft↘ -.-kts@---- ---F
4 BERTH 223 5(7)kts@126° --.-ft-- -.-kts@---- ---F
5 OLD PORT TAMPA --(--)kts@---- --.-ft-- 1.2kts@214° ---F
6 SEABULK 5(7)kts@118° --.-ft-- -.-kts@---- ---F
7 SUNSHINE SKYWA --(--)kts@---- --.-ft-- 1.3kts@238° ---F
8 ---------- --(--)kts@---- --.-ft-- -.-kts@---- ---F
9 ---------- --(--)kts@---- --.-ft-- -.-kts@---- ---F
10 ---------- --(--)kts@---- --.-ft-- -.-kts@---- ---F
Exit
THOMAS DANN
MISS KRISSY
0.0kts@226°
SUWA
TUG TAMPA
INDEPENDENCE
BUCCANEER 0.0kts@251°
0.0kts@029°
CROSBY VOYAGER
RC LIBERTY
0.0kts@134°
0.0kts@093°
OMISYANKEE FREEDOM
0.0kts@251°
MV GOLDEN EYE
0.0kts@151°
MISS JUK
8.8kts@246°
SHARON DEHART
0.0kts@292°
ADELPHIA
kts@295°
COASTAL GULFSTREAM
WILBUR R CLARK
0.0kts@092°
0.0kts@032°
EIKE
ID NORD
0.0kts@302°
1.6kts@082°
COURAGE
10.1kts@260°
366902570
0.2kts@271°
NOAA
P.O.R.T.S.
Physical
Oceanographic
Real-Time
System
Ready
bridge->cursor: 38.1nmi@228°
09/11/2008 12:07:40
BUCCANEER - US39_HN90
Dsbl/Dsbl/Dsbl

AIS ASM NOAA PORTS Portrayal

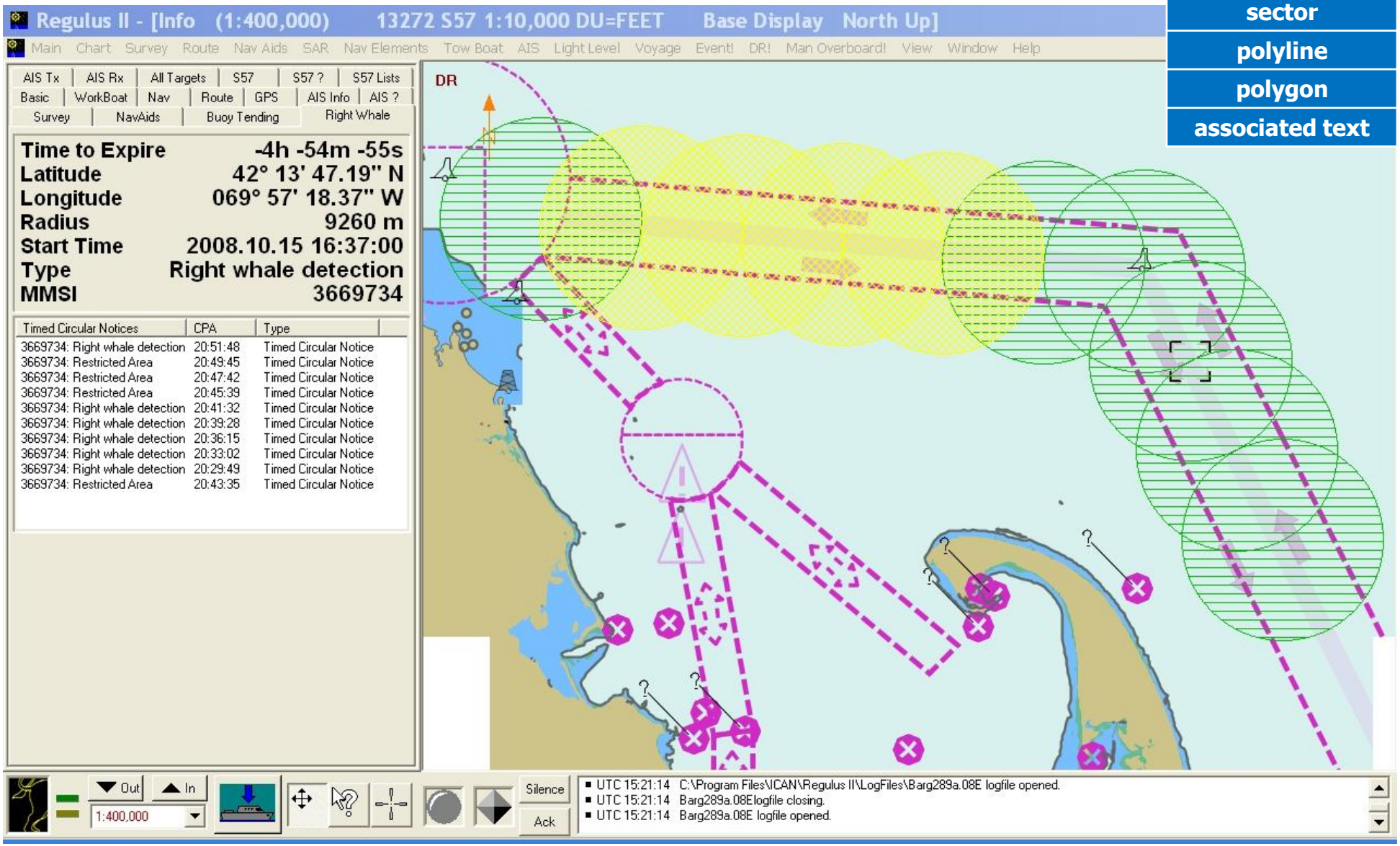


Homeland Security


Aldebaran - [Info (1:3,000) U350H001 S57 1:10,000 DU=METRES OVERZOOMED User Display North Up]
Main Chart Survey Route Nav Aids SAR Nav Elements AIS Light Level Voyage Event! DR! Man Overboard! View Window Help
S57 S57 ? S57 Lists Survey NavAids Buoy Tending Radar
Nav Route GPS AIS Info AIS ? AIS Tx AIS Rx RTCM
Targets CPA Type
101126 00:01:05 Met...
101126 00:01:04 Met...
101126 00:01:05 Met...
101126 00:01:04 Met...
Target 101126
Latitude 40° 30' 09.72" N
Longitude 080° 05' 08.70" W
Time of Tx 15:15
Average Wind Speed N/A
Wind Gust N/A
Air Temperature N/A
Relative Humidity N/A
Air Pressure N/A
Water Level Report -0.1 m
Surface Current Speed 2.36 f/s
Surface Current Direction 280°
USACE RTCV
Real-time
Current - Velocity
System
File
OVERZOOMED
1/8 Nm
1/16 Nm
0
1/32 Nm
1/16 Nm
3/32 Nm
1/8 Nm
2.03 f/s
2.03 f/s
2.36 f/s
Out In
Silence
UTC 17:59:32 Warning: 10s Since Last GPS Update, Switching to DR Mode.
UTC 17:59:50 GPS fix invalid.

Area Notice (Geo-referenced Information)

- circle or point
- rectangle
- sector
- polyline
- polygon
- associated text



Homeland Security

Area Notice Descriptions

Anchorage Area: Anchorage closed
Anchorage Area: Anchorage open
Anchorage Area: Anchoring prohibited
Anchorage Area: Deep draft anchorage
Anchorage Area: Shallow draft anchorage
Anchorage Area: Vessel transfer operations
Cancellation – cancel area per Msg Linkage ID
Caution Area: Cluster of fishing vessels
Caution Area: Derelicts (drifting objects)
Caution Area: Divers down
Caution Area: Dredge operations
Caution Area: Fairway closed
Caution Area: Fishery – nets in water
Caution Area: Harbour closed
Caution Area: Marine event
Caution Area: Marine mammals habitat
Caution Area: Marine mammals in area – reduce speed
Caution Area: Marine mammals in area – report sightings
Caution Area: Marine mammals in area – stay clear
Caution Area: Protected habitat – no fishing or anchoring
Caution Area: Protected habitat – reduce speed
Caution Area: Protected habitat – stay clear
Caution Area: Risk (define in Associated text field)
Caution Area: Seaplane operations
Caution Area: Survey operations
Caution Area: Swim area
Caution Area: Traffic congestion
Caution Area: Underwater operation
Caution Area: Underwater vehicle operation
Chart Feature: Bridge closed
Chart Feature: Bridge fully open
Chart Feature: Bridge partially open
Chart Feature: Channel obstruction
Chart Feature: Reduced vertical clearance
Chart Feature: Semi-submerged object
Chart Feature: Shoal area
Chart Feature: Shoal area due east
Chart Feature: Shoal area due north
Chart Feature: Shoal area due south
Chart Feature: Shoal area due west
Chart Feature: Submerged object
Chart Feature: Sunken vessel
Clearance granted – proceed to berth
Distress Area: Person overboard
Distress Area: Pollution response area
Distress Area: SAR area
Distress Area: Vessel abandoning ship
Distress Area: Vessel collision
Distress Area: Vessel disabled and adrift
Distress Area: Vessel fire/explosion
Distress Area: Vessel flooding
Distress Area: Vessel grounding
Distress Area: Vessel listing/capsizing
Distress Area: Vessel requests medical assistance
Distress Area: Vessel sinking
Distress Area: Vessel under assault
Environmental Caution Area: Heavy icing
Environmental Caution Area: Restricted visibility
Environmental Caution Area: Strong currents
Environmental Caution Area: Hazardous sea ice
Environmental Caution Area: High waves
Environmental Caution Area: High wind
Environmental Caution Area: Storm front (line squall)
Environmental Caution Area: Storm warning
Information: Icebreaker waiting area
Information: Location of response units
Information: Pilot boarding position
Information: Places of refuge
Information: Position of icebreakers
Instruction: Await instructions prior to …
Instruction: Contact Port Administration here
Instruction: Contact VTS at this point/juncture
Instruction: Do not proceed beyond this point/juncture
Other – Define in associated text field
Proceed to this location – await instructions
Report from ship: Icing info
Report from ship: Miscellaneous information
Restricted Area: Active military OPAREA
Restricted Area: Drifting Mines
Restricted Area: Entry approval required prior to transit
Restricted Area: Entry prohibited
Restricted Area: Firing – danger area.
Restricted Area: Fishing prohibited
Restricted Area: No anchoring.
Rouge or suspicious vessel
Route: Alternative route
Route: Recommended route
Route: Recommended route through ice
Security Alert – Level 1/2/3
Vessel requesting non-distress assistance
VTS active target

INTERNATIONAL STANDARD

IEC 61993-2

First edition
2001-12

Maritime navigation and radiocommunication equipment and systems – Automatic identification systems (AIS) –

Part 2: Class A shipborne equipment of the universal automatic identification system (AIS) – Operational and performance requirements, methods of test and required test results

- **2nd edition completed, publication in 2012**
- **Includes GNSS output**
- **Active comparison of internal GNSS and external input, will alarm when data suspect**
- **Adds a msg 27 long range capability**
- **Corrects DSC msg 22 issues**

Homeland Security

IEC 62287-1

Edition 2.0 2010-11

INTERNATIONAL STANDARD

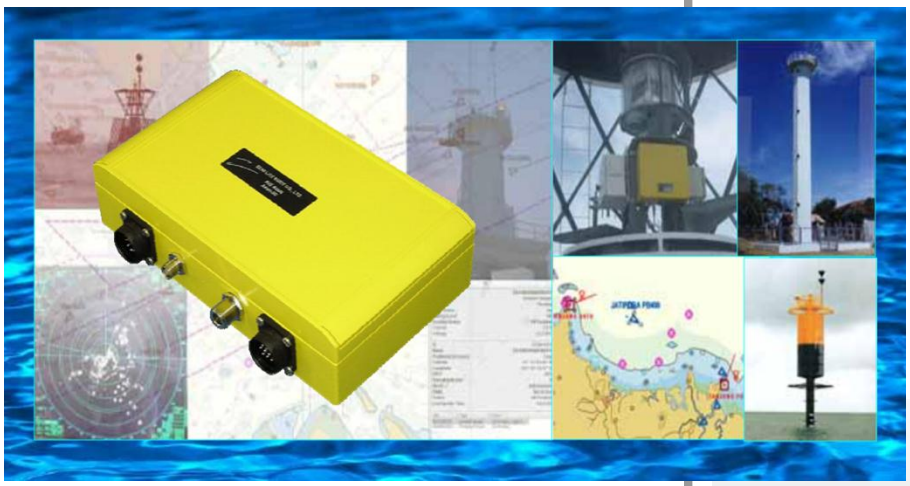
Maritime navigation and radiocommunication equipment and systems – Class B shipborne equipment of the automatic identification system (AIS) – Part 1: Carrier-sense time division multiple access (CSTDMA) techniques

Homeland Security

IEC 62320-2

Edition 1.0 2008-03

INTERNATIONAL STANDARD



Maritime navigation and radiocommunication equipment and systems – Automatic identification system (AIS) – Part 2: AIS AtoN Stations – Operational and performance requirements, methods of testing and required test results

Homeland Security

IEC

IEC 61097-14

Edition 1.0 2010-02

INTERNATIONAL STANDARD

- **Starting to see test broadcasts**
- **As promised, they perform much better than radar SART**

Global maritime distress and safety system (GMDSS) –
Part 14: AIS search and rescue transmitter (AIS-SART) – Operational and performance requirements, methods of testing and required test results

Homeland Security

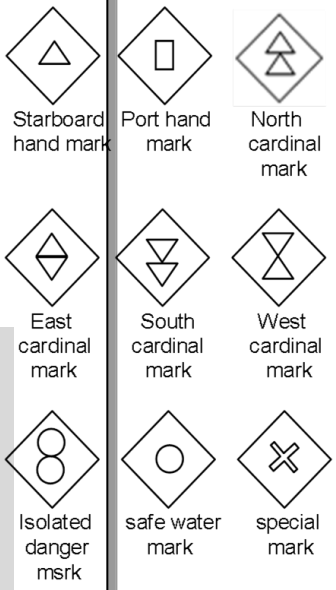
IEC 62288

Edition 1.0 2008-07

INTERNATIONAL STANDARD

2nd edition in the works – completion 2012

To address other AIS symbols, i.e. AIS AtoN, AIS Aircraft, Base Stations, Application Specific Messaging, etc.



Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results

Homeland Security

United States Coast Guard

Office of Navigation Systems

Thank You

Jorge.Arroyo@uscg.mil
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cgnav@uscg.mil
1-202-372-1563

Mid-Atlantic Waterways Conference
Norfolk, VA
April 24th, 2012

Homeland Security

AUTOMATIC IDENTIFICATION SYSTEM
ENCODING GUIDE

AUTOMATIC IDENTIFICATION SYSTEM is a valuable navigation safety radio communication tool. However, its usefulness is undermined by the broadcast of inaccurate, improper or outdated data. Mariners are reminded that U.S. regulation requires that each AIS be maintained in effective operating condition which includes accurate input and upkeep of all AIS data fields. Failure to do so may subject a vessel to civil penalties of up to $40,000 per ocurrence. To avoid penalties AIS Users in the United States should ensure their system is encoded as follows:

Static Data...should be input manually at installation & password protected. Remember thee password. You will need it to re-encode or update certain AIS fields

- **Maritime Mobile Service Identifier (MMSI), call sign, & vessel name** should match your radio license. There should only be one MMSI assigned to the vessel. If you are licensed-by-rule, input {@@@@@@@} as your call-sign. Names should not include abbreviations, (except public vessels, i.e. USCG, USCGC, USACE, USS, LAPD, NYFD, etc., or precursors or designators, e.g. F/V, M/V, MV, OSV, P/V, REC, S/V, TUG. Names exceeding 20 characters (the parameter limit) should not be abbreviated or truncated; except company fleet vessels1 who may do so as needed, but, not their unique distinguishing characters. For example, World-wide Traders' tug 123456 should be identified and inputted as {WORLD-WIDE TRA123456}.

  If nameless, use your state registration number preceded by {USA#} as your name, e.g. USA#NY1234YZ. If unnumbered (e.g. associated craft, vessel 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 *Freedom of the Seas* should be identified and inputted as {FREEDOM OF THE SEA-1}. Additionally, its AIS message 24B call-sign parameter should reflect the last 6-digits of *Freedom of the Seas* MMSI preceded by {A}, e.g. A123456.

- **IMO Number** should match your assigned[3] IMO number. Absent an IMO assignment input your U.S. official documentation number preceded by a '1' and zeroes, e.g. 1001234567, 1000123456. Official numbers must be preceded by a leading '1' followed by either one {10} or two zeroes {100} to fill-in all the 10-digits of this parameter. If your AIS does not accommodate 10-digits input all zeroes instead.

Dynamic Data...should be provided via systems that are properly installed, maintaned & opertaional[5]

- **Type of positioning source** and accuracy should be accurately set, i.e. GPS, surveyed, manual input, etc. The positioning source should provide: course over ground in 1/10 degrees, speed over ground in 1/10 knots, vessel position in 1/10 seconds of latitude & longitude, and degree of accuracy (whether greater or less than 10 meters).

- **Heading** data should be integrated into the AIS on vessels of 150 gross tonnage or greater; and **Rate of Turn** data on vessels of 50,000 gross tonnage or greater (per SOLAS Regulation V/19.2).

- **A Pilot Plug**, on vessels required to embark pilots, should be connected and properly wired to the AIS. It should be permanently located near a 3-prong, 120-volt, AC receptacle.

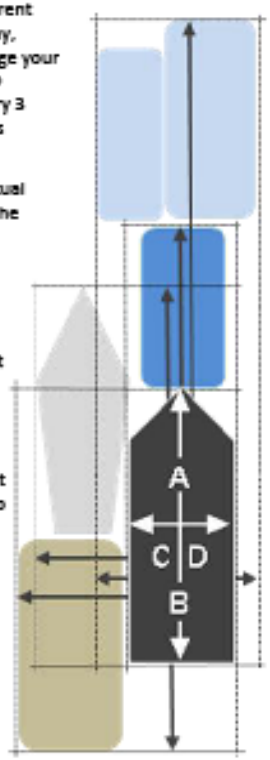
Voyage Related Data...should be manually inputted as necessary to always indicate current conditions

- **Navigation Status** should indicate your current navigational status, i.e. at anchor, underway, engaged in fishing, etc. Remember to change your status when anchored or moored. Doing so reduces the AIS reporting rate to once every 3 minutes vice once every 2–10 seconds. This mitigates network congestion.

- **Static Draft** should indicate the vessel's actual draft. Input the vessel's maximum draft if the actual draft is unknown.

- **Type of vessel** should indicate a *Ship Type* denoted in the accompanying table.

- **Dimensions** should indicate the official dimensions of the vessel. Input meters, not feet. Dimensions are described in terms of distance in meters to the positioning-system antenna used by AIS (e.g. GPS antenna). Refer to the diagram. In this example the AIS's GPS antenna is located at the intersection of the two white lines. Also to be used by U.S. *ship type 22 (see Table)* to convey the overall rectangular proportions of the vessel and its tow—as portrayed by the dark arrow lines within the rectangles in the diagram.



- **Estimated Time of Arrival** to destination or voyage departure (if moored or anchored). Input Universal Time Coordinated (UTC) not local time.

- **Destination** (including origination) should be inputted using ISO 3166 country codes and UN/LOCODE's[4] for international voyages; and US/LOCODE's[5] for voyages to any U.S. port or place[6] as follows:

  Origination>Destination using ISO 3166 country & UN/LOCODE

  USNYC>NLRTM ...a New York City to Rotterdam voyage[7]

  Vessels inbound to the U.S. should also include a US/LOCODE

  CNSHA>USSFO^OVCY for Shanghai to San Francisco Pier 35

  Domestic voyages, US^US/LOCODE|>|><|<>|<|>>|US/LOCODE

  US^NYRO><NY5O ...a one-way voyage

  US^NYOP><NY6L ...a scheduled route, e.g. ferry service

  US^SFCO><SFCX ...voyage to nowhere & back, e.g. excursion

  US^LAJ5<>AJ5 ...operations in a confined area, e.g. fleeting area

  US^LBNC< ...anchored, moored, or on station, e.g. MODU, FPSO

  US^LM7N>>PAPX<GIQJ ...a one-way voyage, via an alternate route (e.g. New Orleans, LA to Port Arthur, TX via Gulf Inter-coastal Waterway)

Safety-Related Text Messaging...should be short, concise, & used only to exchange pertinent navigation safety-related information

- AIS safety-related text messages (SRM) must be in English and solely to exchange navigation safety information.

- Although not prohibited, AIS text messaging should NOT be relied upon as the primary means for distress (MAYDAY) or urgent (PAN PAN) communications.[8]

- Keep SRM concise and as short as possible (less than 90 characters). The use of abbreviations is acceptable and highly encouraged; see the USCG Local Notice to Mariners, Light List and U.S. Nautical Chart No. 1 for a listing of common abbreviations.

- Testing or repair facilities, is conjunction with on-air testing, should also periodically broadcast an AIS SRM: {TEST BCST}. Repair testing should be kept to a minimum and not exceed an hour per day.

---

[1] See http://wireless.fcc.gov/services/index.htm (Ship Radio Stations)

[2] Obtained at www.imonumbers.lrfairplay.com/default.aspx

[3] Per IMO SN/Circ. 227 & 224 or NMEA 4.0 Installation Guidelines

[4] Find Country (ISO 3166) & United Nations Location Codes (UN/LOCODE) at: www.unece.org/cefact/locode/welcome.html

[5] Find U.S. Location Codes (US/LOCODE) at: www.navcen.uscg.gov/?pageName=locode

[6] Any port or place in which a vessel is bound to anchor, moor, or maintain station (i.e. Outer Continental Shelf activity)

[7] If AIS lacks angle brackets (>) substitute with parenthesis ( ) |)(| () |)| (|

[8] See 47 CFR 80.1109–Distress, urgency, and safety communications

Revised AIS Encoding Guidance Promulgated 12/01/05

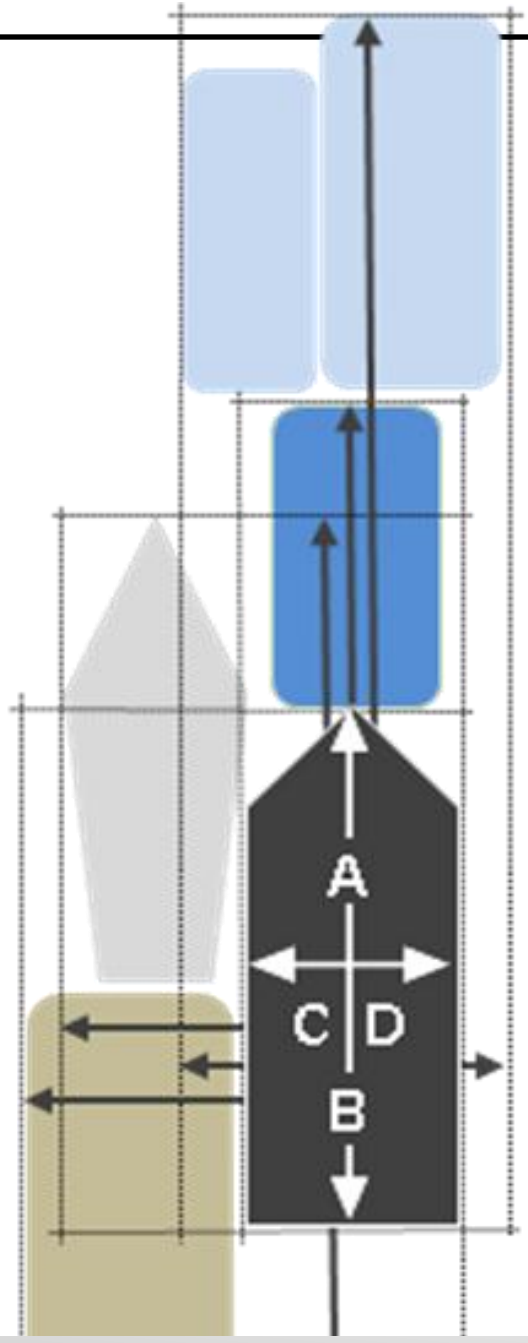
Maritime Mobile Service Identifier (MMSI), call sign, & vessel name should match your radio license

- There should only be one MMSI assigned to the vessel.
  - –If you are licensed-by-rule, input {@@@@@@@@} as your call-sign.
  - –Names should **not** include abbreviations, (except public vessels, i.e. USCG, USCGC, USACE, USS, LAPD, NYFD, etc., or precursors or designators, e.g. F/V, M/V, MV, OSV, P/V, REC, S/V, TUG.
- Names exceeding 20 characters (the parameter limit) should not be abbreviated or truncated.
  - –Except fleet vessels who may do so as needed, but, not their distinguishing characters, e.g. World-wide Traders' tug 123456 -> WORLD-WIDE TRA123456
  - –If nameless, use your state registration number preceded by {USA#} as your name, e.g. USA#NY1234YZ.
  - –If unnumbered (e.g. associated craft, vessel tenders), use your parent vessel's name followed by a dash {-} and a numerical designator that distinguishes you amongst others, e.g. FREEDOM OF THE SEA-1.
  - –Additionally, its AIS message 24B call-sign parameter should reflect the last 6-digits of parent's MMSI preceded by {A}, e.g. A123456.
- **IMO Number** should match your assigned IMO number.
  - –Absent an IMO assignment input your U.S. official documentation number preceded by a '1'

Note major change for vessels without IMO# and Associate Craft

Dimensions should indicate the official dimensions of the vessel. Input meters, **not** feet.

- Dimensions are described in terms of distance in meters to the AIS's GPS positioning-system antenna location
- Vessel's AIS's GPS antenna is located at the intersection of the two white lines.
- U.S. *ship type 22* are to convey the overall rectangular proportions of the vessel and its tow—as portrayed



Dimension field can now be used to represent the a vessels tow (type22)

Destination (including origination) should be inputted using ISO 3166 country codes and UN/LOCODE's for international voyages; and US/LOCODE's for voyages to any U.S. port or place as follows:

Origination>Destination using ISO 3166 country & UN/LOCODE

USNYC>NLRTM …a New York City to Rotterdam voyage

Vessels inbound to the U.S. should also include a US/LOCODE

CNSHA>USSFO^OVCY for Shanghai to San Francisco Pier 35

Domestic voyages, US^US/LOCODE|>|><|<>|<|>>|US/LOCODE

US^NYRX>NY5O …a one-way voyage

US^NYOP><NY6L …a scheduled route, e.g. ferry service

US^SFCX><SFCX …voyage to nowhere & back, e.g. excursion

Use of UNLOCODE still required for International voyages, but, we now adopt USLOCODE/GUIDS for domestic voyages. Angle brackets are used to convey routes, round trips, confined ops, anchored/moored

- AIS safety-related text messages (SRM) must be in English and solely to exchange navigation safety information
  - –Although not prohibited, AIS text messaging should **NOT** be relied upon as the primary means for distress (MAYDAY) or urgent (PAN PAN) communications
- Keep SRM concise and as short as possible (less than 90 characters)
  - –The use of abbreviations is acceptable and highly encouraged; see the USCG Local Notice to Mariners, Light List and U.S. Nautical Chart No. 1 for a listing of common abbreviations
- Testing or repair facilities, is conjunction with on-air testing, should also periodically broadcast an AIS SRM: {TEST BCST}.
  - –Repair testing should be kept to a minimum and not exceed an hour per day

Note exhortation to use abbreviations and requirement for Test Broadcasts

2-digit numeric codes for *Type of Ship and Cargo Type* are composed from 1st and 2nd digit columns; or as defined in columns 2x, 3x, or 5x.
The terms used are as defined in IMO SOLAS, 46 U.S.C. 2101 or 33 CFR 140.10. Blue and/or italic text denotes amplifying text not found in the original source (ITU-R M.1371-4)

1st digit	2nd digit [4x|6x|7x|8x|9x]	Codes for specific vessels operating in USA [2x]	Engaged in… Codes [3x]	Special Craft Codes [5x]
0 – Not available *DO NOT USE*	0 – All ships of this type	*20 – WIG (Wing In Ground) vessels*	30 – Fishing*	50 – Pilot vessel
1 – Reserved for future use *DO NOT USE*	1 – Carrying DG (Dangerous Goods), HS (Hazardous Substances), or MP (Marine Pollutant), IMO hazard or pollutant category A/X; *or use 41/61 if carrying < 12 passengers for hire*	*21 – Engaged in towing other than barges by pushing ahead or hauling alongside (i.e. articulated tug-barges, push-boats, workboats); whose dimensions (ABCD values)* ***solely*** *represent the overall dimensions of the vessel**	31 – *Engaged in* towing *by pulling (not pushing or hauling)*	51 – Search and rescue vessels, *i.e. USCG boats, USCG Auxiliary, assistance towers*
2 – WIG *or other vessels denoted in column [2x] operating in U.S waters, including the U.S. EEZ*	2 – Carrying DG, HS, or MP, IMO hazard or pollutant category B/Y; *or use42/62 if carrying ≥ 12 passengers for hire*	*22 – Engaged in towing barges by pushing ahead or hauling alongside (i.e. articulated tug-barges, push-boats, workboats); whose dimensions (ABCD values) represent the overall rectangular dimensions of the vessel* ***and*** *its tow**	32 – *Engaged in* towing *by pulling (not pushing or hauling)* and length of the tow exceeds 200 meters (656 ft.)	52 – *Harbor* tugs
3 – Other vessels *engaged in actions denoted in column [3x]*	3 – Carrying DG, HS, or MP, IMO hazard or pollutant category C/Z; *or use 43/63 for ferry service carrying < 150 passengers*	*23 – Light boats (i.e. push-boats or work boats* ***not*** *engaged in towing; whose dimensions (ABCD values)* ***solely*** *represent the vessel dimensions of the vessel**	33 – Engaged in dredging, or underwater operations, *(e.g., salvaging, surveying, but, not diving)* *	53 – *Fish, offshore or* port tenders
4 – HSC *or passenger vessels < 100 GT, including tenders*	4 – Carrying DG, HS, or MP, IMO hazard or pollutant category D/O; *or use 44/64 for ferry service carrying ≥ 150 passengers*	*24 – Mobile Offshore Drilling Units (MODUs), Liftboats, Floating Production Systems (FPS), Floating Production Storage and Offloading Vessels (FPSO)*	34 – Engaged in diving operations*	54 – *Commercial response* vessels with anti-pollution facilities or equipment
5 – Special craft, *per column [5x]*	5 – Reserved for future use *DO NOT USE*	*25 – Offshore Supply Vessels (OSV)*	35 – Engaged in military operations	55 – Law enforcement vessels, *i.e. USCG cutters, marine police*
6 – Passenger ships *≥ 100 GT*	6 – Reserved for future use *DO NOT USE*	*26 – Processing vessels (i.e. fish)*	36 – Sailing *vessels**	56 – Spare–for assignments to local vessels *as designated by the USCG Captain of Port*
7 –Cargo *(freight)* ships, *including Integrated Tug-Barge (ITB) vessels*	7 – Reserved for future use *DO NOT USE*	*27 – School, scientific, research or training ships*	37 – Pleasure craft *(recreational vessel)*	57 – Spare–for assignments to local vessels *involved in a marine event*
8 – Tankers	8 – Reserved for future use *DO NOT USE*	*28 – U.S. public or governmental vessels*	38 – Reserved for future use *DO NOT USE*	58 – Medical transports (as defined in the 1949 Geneva Convention and Additional Protocols) *or similar public safety vessels*
9 – Other types of ship	9 – No additional information *—contact cgnav@uscg.mil prior to use*	*29 – Autonomous or remotely-operated craft*	39 – Reserved for future use *DO NOT USE*	59 – Ships according to RR Resolution No. 18 (Mob-83)

Text in blue italics are clarifications or changes to existing coding standards
Note, column 2x changes WIG codes for other specific vessels in the USA, i.e. pushboats

Codes 2x currently denote WIG's	Codes for specific vessels operating in USA [2x]
20 – All ships of this type	*20 – WIG (Wing In Ground) vessels*
21 – Carrying DG , HS, or MP, IMO hazard or pollutant category A/X	*21 – Engaged in towing other than barges by pushing ahead or hauling alongside (i.e. articulated tug-barges, push-boats, workboats); whose dimensions (ABCD values) **solely** represent the overall dimensions of the vessel**
22 – Carrying DG, HS, or MP, IMO hazard or pollutant category B/Y	*22 – Engaged in towing barges by pushing ahead or hauling alongside (i.e. articulated tug-barges, push-boats, workboats); whose dimensions (ABCD values) represent the overall rectangular dimensions of the vessel **and** its tow**
23 – Carrying DG, HS, or MP, IMO hazard or pollutant category C/Z	*23 – Light boats (i.e. push-boats or work boats **not** engaged in towing; whose dimensions (ABCD values) **solely** represent the vessel dimensions of the vessel**
24 – Carrying DG, HS, or MP, IMO hazard or pollutant category D/O	*24 – Mobile Offshore Drilling Units (MODUs), Liftboats, Floating Production Systems (FPS), Floating Production Storage and Offloading Vessels (FPSO)*
25 – Reserved for future use	*25 – Offshore Supply Vessels (OSV)*
26 – Reserved for future use	*26 – Processing vessels (i.e. fish)*
27 – Reserved for future use	*27 – School, scientific, research or training ships*
28 – Reserved for future use	*28 – U.S. public or governmental vessels*
29 – No additional information	*29 – Autonomous or remotely-operated craft*

Note, column 2x changes WIG codes for specific (vessels, i.e. pushboats) use in the USA