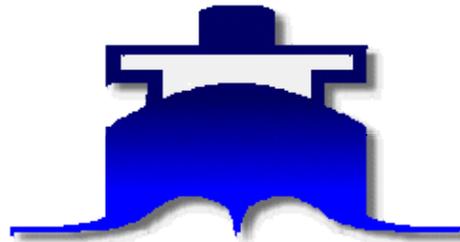

United States Coast Guard

Office of Navigation Systems



**Providing navigation
safety information for
America's waterways**

**Jorge Arroyo
Program Analyst
U.S. Coast Guard Headquarters
Washington, DC**

**Smart Rivers
September 15th, 2011
New Orleans, LA**



**Homeland
Security**



AIS Application Specific Messages

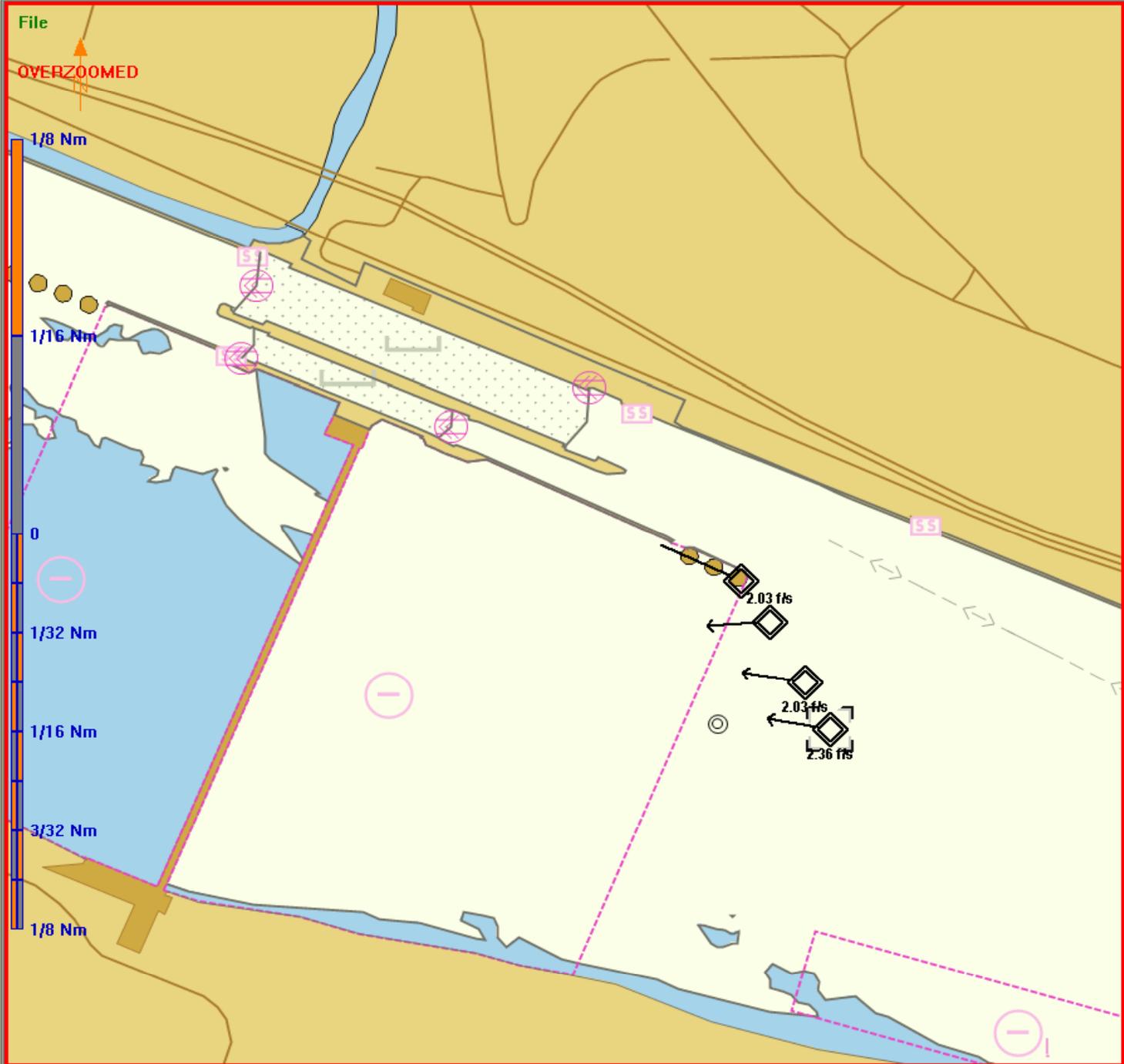
!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSrhu=gwowPblwwwwwwwhL=s1?wwtUg?<,2*2C
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2*1A
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2*73
!AIVDM,1,1,9,0,84eGd8P0Bjd3NvKowlpfS1ISwpTJhvecwowPRBwwwwwwwhLApQOwwtUg?<,2*7F
!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSrhu=gwowPblwwwwwwwhL=s1?wwtUg?<,2*2C
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2*1A
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2*73
!AIVDM,1,1,9,0,84eGd8P0Bjd3NvKowlpfS1ISwpTJhvecwowPRBwwwwwwwhLApQOwwtUg?<,2*7F

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



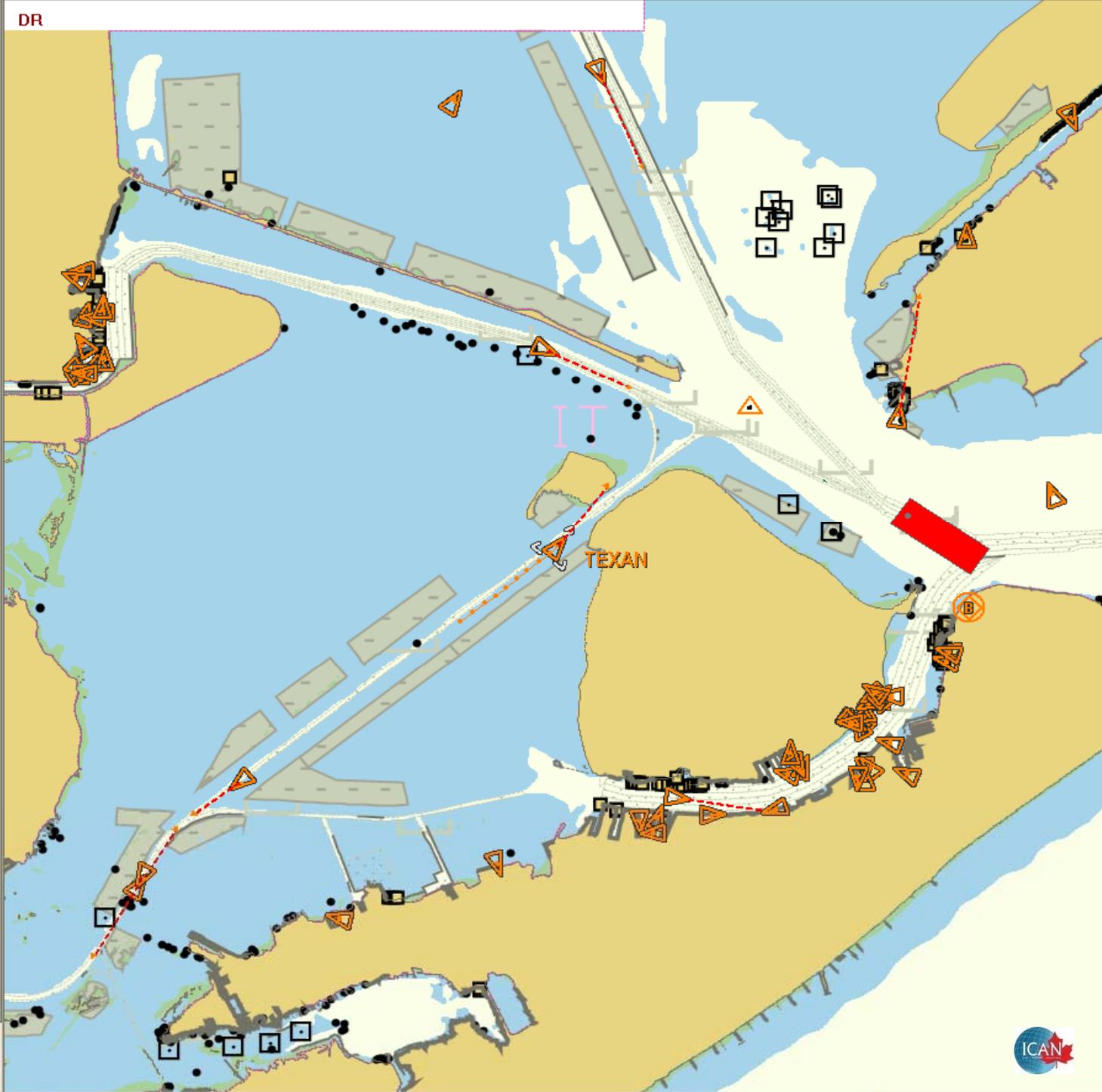
ID#	ITU-R M.1371 AIS Message Descriptions – Mobile Stations	A U	A S	I N	Slots
1,2,3	Position Reports – autonomous (au), assigned (as), or interrogated (in)	x	x	x	1
4	Base Station Report – UTC/date, position, slot nr.		x		1
5	Class A Report - static and voyage related data	x	x	x	2
6,7,8	Binary Message – addressed, acknowledge or broadcast	x	x	x	5/2
9	SAR aircraft position report	x	x	x	1
10,11	UTC/Date - enquiry and response		x	x	1
12,13,14	Safety Text Message – addressed, acknowledge or broadcast		x	x	5/2
15	Interrogation – request for specific messages		x	x	1
16	Assignment Mode Command	x	x		1
17	Binary Message – DGNSS Correction		x		1
18,19	Class B Reports – position & extended	x	x		2
20	Data Link Management – reserve slots		x		1
21	ATON Report – position & status	x	x	x	2
22	Channel Management		x		1
23	Group Assignment				1
24	Class B-CS Static Data			x	1
25	Binary Message - single-slot				1
26	Binary Message - multi-slot (STDMA)				5



AIS Rx	All Targets	S57	S57 ?	S57 Lists	New
Nav	Route	GPS	AIS Info	AIS ?	AIS Tx

AIS Targets	CPA	Type
OTTO CANDIES	01:16:21	Cl...
DAVIDSON	N/A	Cl...
TRACIE L	N/A	Cl...
WALTER D NU...	01:18:18	Cl...
GALTEX	N/A	Cl...
SEA HERO	N/A	Cl...
VIKING	N/A	Cl...
MOBILIAN	N/A	Cl...
PAT MCDANIEL	01:42:01	Cl...
SAN PATRICIO	01:15:36	Cl...
SUSANNAH_G...	01:19:29	Cl...
ROBYN S	03:16:13	Cl...
ATIAC	N/A	Cl...

Remote Name TEXAN
MMSI Number 366904340
Call Sign WDB4969
Latitude 29° 20' 33.95" N
Longitude 094° 49' 36.58" W
Range 2.542 Nm
Bearing 264.8° T
COG 037.9° T
SOG 6.90 mi
Nav Status Under Way Engine
Destination N/A
Length 16.0 m
Beam 8.0 m
Type of Ship Tug
Hazardous Cargo N/A
Time Since Last Update 00h 01m 15s
Draught 0.0
ETA To Destination N/A



Position Reports

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0*24

AIS Position Report

TABLE 15a

Parameter	Number of bits	Description
Message ID	6	Identifier for this message 1, 2 or 3
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. Refer to § 4.6.1; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	MMSI number
Navigational status	4	0 = under way using engine, 1 = at anchor, 2 = not under command, 3 = restricted manoeuvrability, 4 = constrained by her draught, 5 = moored, 6 = aground, 7 = engaged in fishing, 8 = under way sailing, 9 = reserved for future amendment of navigational status for ships carrying DG, HS, or MP, or IMO hazard or pollutant category C (HSC), 10 = reserved for future amendment of navigational status for ships carrying DG, HS or MP, or IMO hazard or pollutant category A (WIG); 11-14 = reserved for future use, 15 = not defined = default
Rate of turn ROT _{ais}	8	+127 (-128 (80 _b)) indicates not available, which should be the default). Coded by ROT _{ais} = 4.733 SQRT(ROT _{INDICATED}) degrees/min ROT _{INDICATED} is the rate of turn (720°/min), as indicated by an external sensor. +127 = turning right at 720°/min or higher -127 = turning left at 720°/min or higher
SOG	10	Speed over ground in 1/10 knot steps (0-102.2 knots) 1 023 = not available, 1 022 = 102.2 knots or higher
Position accuracy	1	1 = high (<10 m; differential mode of e.g. DGNSS receiver) 0 = low (>10 m; autonomous mode of e.g. global navigation satellite system (GNSS) receiver or of other electronic position fixing device); 0 = default
Longitude	28	Longitude in 1/10 000 min (±180°, East = positive, West = negative. 181° (6791AC0 _b) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90°, North = positive, South = negative. 91° (3412140 _b) = not available = default)
COG	12	Course over ground in 1/10° (0-3599). 3600 (E10 _b) = not available = default. 3 601-4 095 should not be used
True heading	9	Degrees (0-359) (511 indicates not available = default)
Time stamp	6	UTC second when the report was generated (0-59 or 60 if time stamp is not available, which should also be the default value or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 61 if positioning system is in manual input mode or 63 if the positioning system is inoperative)
Reserved for regional applications	4	Reserved for definition by a competent regional authority. Should be set to zero, if not used for any regional application. Regional applications should not use zero
Spare	1	Not used. Should be set to zero
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use
Communication state	19	See below
Total number of bits	168	



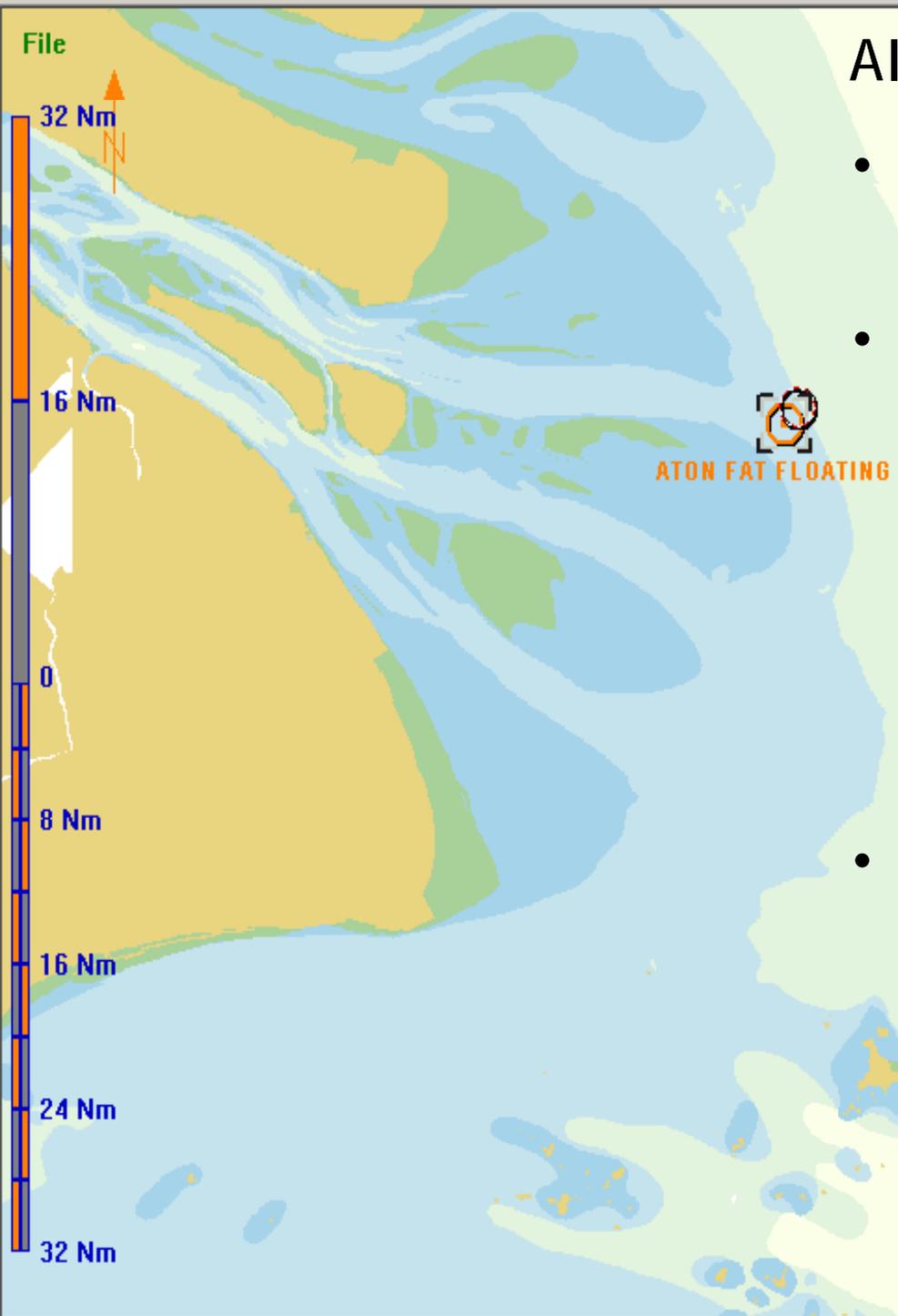
ID#	ITU-R M.1371 AIS Message Descriptions – Fixed Stations	A U	A S	I N	Slots
1,2,3	Position Reports – autonomous (au), assigned (as), or interrogated (in)	x	x	x	1
4	Base Station Report – UTC/date, position, slot nr.		x		1
5	Class A Report - static and voyage related data	x	x	x	2
6,7,8	Binary Message – addressed, acknowledge or broadcast	x	x	x	5/2
9	SAR aircraft position report	x	x	x	1
10,11	UTC/Date - enquiry and response		x	x	1
12,13,14	Safety Text Message – addressed, acknowledge or broadcast		x	x	5/2
15	Interrogation – request for specific messages		x	x	1
16	Assignment Mode Command	x	x		1
17	Binary Message – DGNSS Correction		x		1
18,19	Class B Reports – position & extended	x	x		2
20	Data Link Management – reserve slots		x		1
21	ATON Report – position & status	x	x	x	2
22	Channel Management		x		1
23	Group Assignment				1
24	Class B-CS Static Data			x	1
25	Binary Message - single-slot				1
26	Binary Message - multi-slot (STDMA)				5



AIS Info	AIS ?	AIS Tx	AIS Rx
Nav	Route	GPS	
S57	S57 ?	S57 Lists	Aton
AID	Type		
MUDAH_SELATAN	Light, without sectors		
TG_TUAN	Light, without sectors		
TEST_AIS	Special Mark		
ATON FAT FLOATING	Port hand Mark		

ATON	ATON FAT FLOATING
Type	Port hand Mark
Sub Type	Floating
Position Status	Off Position

ID	201
Name	ATON FAT FLOATING
Positional Accuracy	High
Latitude	31° 19' 49.37" N
Longitude	122° 20' 10.21" E
EPFS	GPS
Repeat Indicator	0
Mode	Autonomous
RAIM	Not In Use
Status	Off Position
Last Update Time	09:44:29



AIS ATON's

- Monitors 'health' & position
- Improves availability by reducing time to respond to outages because of near real time monitoring.
- Improves "visibility" to AIS equipped vessels.

ID#	ITU-R M.1371 AIS Message Descriptions – All Stations	A U	A S	I N	Slots
1,2,3	Position Reports – autonomous (au), assigned (as), or interrogated (in)	x	x	x	1
4	Base Station Report – UTC/date, position, slot nr.		x		1
5	Class A Report - static and voyage related data	x	x	x	2
6,7,8	Binary Message – addressed, acknowledge or broadcast	x	x	x	5/2
9	SAR aircraft position report	x	x	x	1
10,11	UTC/Date - enquiry and response		x	x	1
12,13,14	Safety Text Message – addressed, acknowledge or broadcast		x	x	5/2
15	Interrogation – request for specific messages		x	x	1
16	Assignment Mode Command	x	x		1
17	Binary Message – DGNSS Correction		x		1
18,19	Class B Reports – position & extended	x	x		2
20	Data Link Management – reserve slots		x		1
21	ATON Report – position & status	x	x	x	2
22	Channel Management		x		1
23	Group Assignment				1
24	Class B-CS Static Data			x	1
25	Binary Message - single-slot				1
26	Binary Message - multi-slot (STDMA)				5



Navigation toolbar with icons for zoom, pan, and other map functions. A dropdown menu shows the vessel ID: 367006030.

Ship Particulars (Vessel Data Card)

Static | Position | Extra | CPA | Alarms

Schd# 367006030 367006030

Name Tug Petaluma IMO# 7666

Callsign WCX2520 Remove << >>

Type 52-Tug

Cargo 0-AllShips

Destination Broad S

Dest ETA Apr 10 10:00 UTC

Region flag 0 POB 0

Nav 1-AtAnchor

Pilot

VHF 0

Length 82'0" Beam 26'3" Draft 13'1"

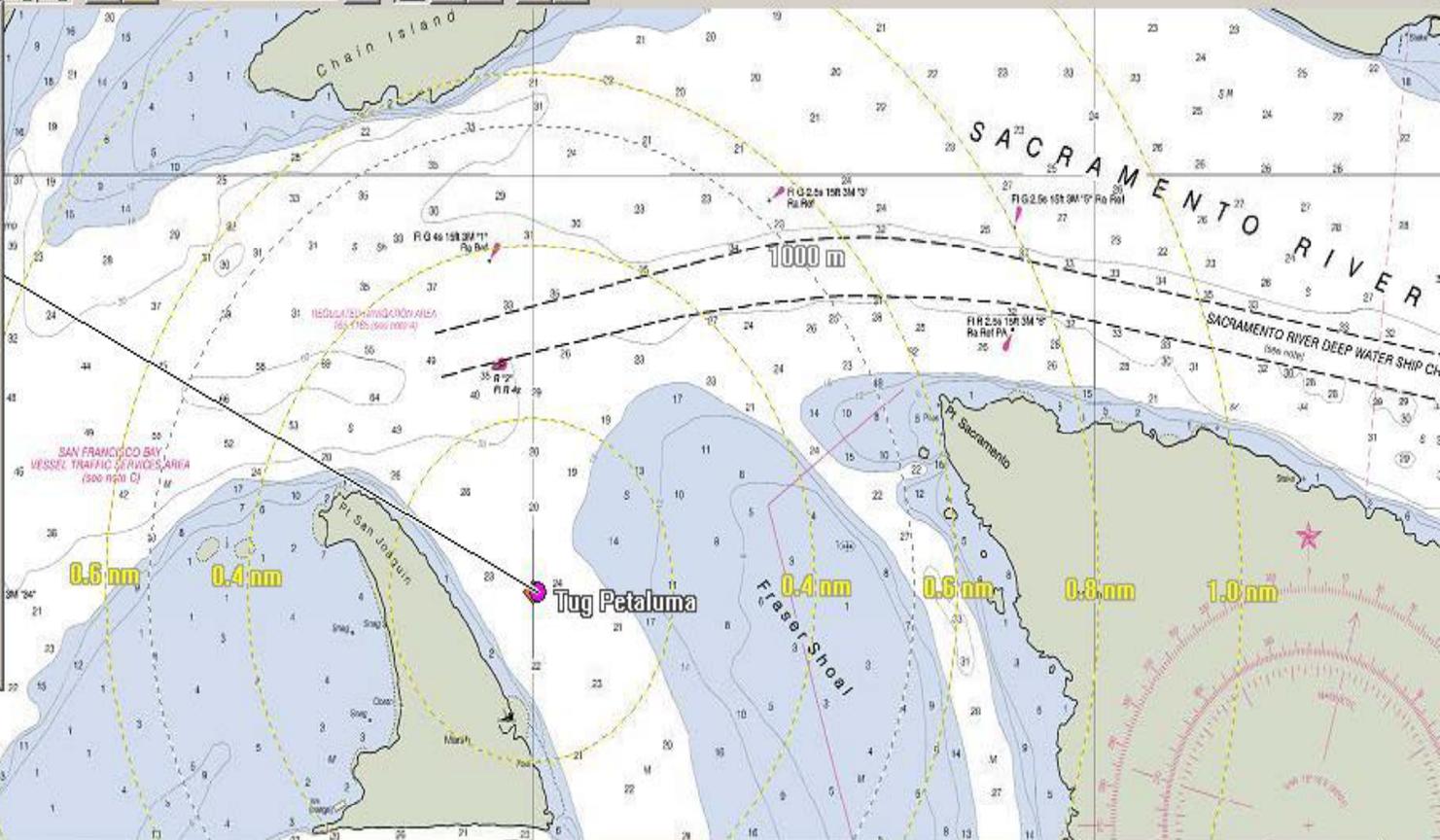
Antenna Offsets... from bow 0'0" from port 0'0"

Disp# 0

Vessel Bubble Labels

Save to File Set All

OK Cancel Apply Help



Safety Text Messages

Message	Source	Dest	Time (UTC)	MID	Seq	Channel A	Channel B	Idx
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:09	14		Received [1]		22
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:13	14			Received [1]	23
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:16	14		Received [1]		24
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:19	14			Received [1]	25
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:22	14		Received [1]		26
✉ ^gd_?e9	923659445	304262671	04/10 - 12:24	12			Received [1]	27
✉ mayday.de,tug.petaluma,wcx2520,367006030,pos:n 38^ 3.514' _w121^50.98...	367006030 - Tug Petalu...	All	04/10 - 12:25	14		Received [1]		28

Send

Broadcast to All Repeat (3 min) To: 367006030 [367006030] : Tug Petaluma Show All Messages

ID#	ITU-R M.1371 AIS Message Descriptions – Tele-commands	A U	A S	I N	Slots
1,2,3	Position Reports – autonomous (au), assigned (as), or interrogated (in)	x	x	x	1
4	Base Station Report – UTC/date, position, slot nr.		x		1
5	Class A Report - static and voyage related data	x	x	x	2
6,7,8	Binary Message – addressed, acknowledge or broadcast	x	x	x	5/2
9	SAR aircraft position report	x	x	x	1
10,11	UTC/Date - enquiry and response		x	x	1
12,13,14	Safety Text Message – addressed, acknowledge or broadcast		x	x	5/2
15	Interrogation – request for specific messages		x	x	1
16	Assignment Mode Command	x	x		1
17	Binary Message – DGNSS Correction		x		1
18,19	Class B Reports – position & extended	x	x		2
20	Data Link Management – reserve slots		x		1
21	ATON Report – position & status	x	x	x	2
22	Channel Management		x		1
23	Group Assignment				1
24	Class B-CS Static Data			x	1
25	Binary Message - single-slot				1
26	Binary Message - multi-slot (STDMA)				5



ID#	ITU-R M.1371 AIS Message Descriptions - Applications	A U	A S	I N	Slots
1,2,3	Position Reports – autonomous (au), assigned (as), or interrogated (in)	x	x	x	1
4	Base Station Report – UTC/date, position, slot nr.		x		1
5	Class A Report - static and voyage related data	x	x	x	2
6,7,8	Binary Message – addressed, acknowledge or broadcast	x	x	x	5/2
9	SAR aircraft position report	x	x	x	1
10,11	UTC/Date - enquiry and response		x	x	1
12,13,14	Safety Text Message – addressed, acknowledge or broadcast		x	x	5/2
15	Interrogation – request for specific messages		x	x	1
16	Assignment Mode Command	x	x		1
17	Binary Message – DGNSS Correction		x		1
18,19	Class B Reports – position & extended	x	x		2
20	Data Link Management – reserve slots		x		1
21	ATON Report – position & status	x	x	x	2
22	Channel Management		x		1
23	Group Assignment				1
24	Class B-CS Static Data			x	1
25	Binary Message - single-slot				1
26	Binary Message - multi-slot (STDMA)				5



AIS Application Specific Messages

!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSrhu=gwowPblwwwwwwwhL=s1?wwtUg?<,2*2C
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2*1A
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2*73
!AIVDM,1,1,9,0,84eGd8P0Bjd3NvKowlpfS1ISwpTJhvecwowPRBwwwwwwwhLApQOwwtUg?<,2*7F
!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSrhu=gwowPblwwwwwwwhL=s1?wwtUg?<,2*2C
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2*1A
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2*73
!AIVDM,1,1,9,0,84eGd8P0Bjd3NvKowlpfS1ISwpTJhvecwowPRBwwwwwwwhLApQOwwtUg?<,2*7F

Application Specific Message Format

52

Rec. ITU-R M.1371-1

3.3.8.2.6 Message 8: Binary broadcast message

This message will be variable in length, based on the amount of binary data. The length should vary between 1 and 5 slots.

TABLE 22

Parameter	Number of bits	Description		
Message ID	6	Identifier for Message 8; always 8		
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 3.3.8.2.1.1		
Source ID	30	MMSI number of source station		
Spare	2	Not used. Should be set to zero		
Binary data	Maximum 968	Application identifier	16 bits	Should be as described in § 3.3.8.2.4.1
		Application data	Maximum 952 bits	Application specific data
Total number of bits	Maximum 1 008	Occupies 1 to 5 slots		

AIS can transfer data via binary messages...

- Provides a means to use other applications
 - Encode application on the transmission side
 - Decode application on the receive side
 - Sent as either General or Addressed broadcast
 - Addressed messages (MMSI-to-MMSI) receives an acknowledgement that the binary message was received

IMO SN/Circ.236 AIS BINARY GUIDANCE 4-YR TRIAL PERIOD May 2004 - 2008

INTERNATIONAL MARITIME ORGANIZATION
4 ALBERT EMBANKMENT
LONDON SE1 7SR

Telephone: 020 7735 7611
Fax: 020 7587 3210



E

Ref.

SN/Circ.236
28 May 2004

GUIDANCE ON THE APPLICATION OF AIS BINARY 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 Automatic Identification System (AIS) is a working system for ship identification and tracking that has the capability of the service of binary messages. The concept, functional requirements, and technical constraints are described in annex 1.

3 The Sub-Committee on Safety of Navigation, at its forty-ninth session selected seven (7) binary messages as shown in annex 2 to this circular to be used as a trial set of messages. The idea is to use this set of 7 messages for a trial period of 4 years with no change. It should be noted that 4 additional system-related messages identified in Recommendation ITU-R M.1371 are needed for the operation of the system.

4 The criteria for selecting the 7 trial messages were:

- .1 demonstrated operational need;
- .2 a cross-section of users, including ships, VTS, pilots, and port authorities; and
- .3 messages already developed for format and content.

5 In addition, messages were limited to a maximum number of 3 slots to reduce the potential for overloading the AIS frequencies designated for IMO.

6 In addition to these 7 messages and 4 system-related messages, the Sub-Committee agreed to allow 2 additional messages in the 4-year trial period to test the process of introducing new binary



Homeland
Security



IMO SN/Circ.236 ASM's

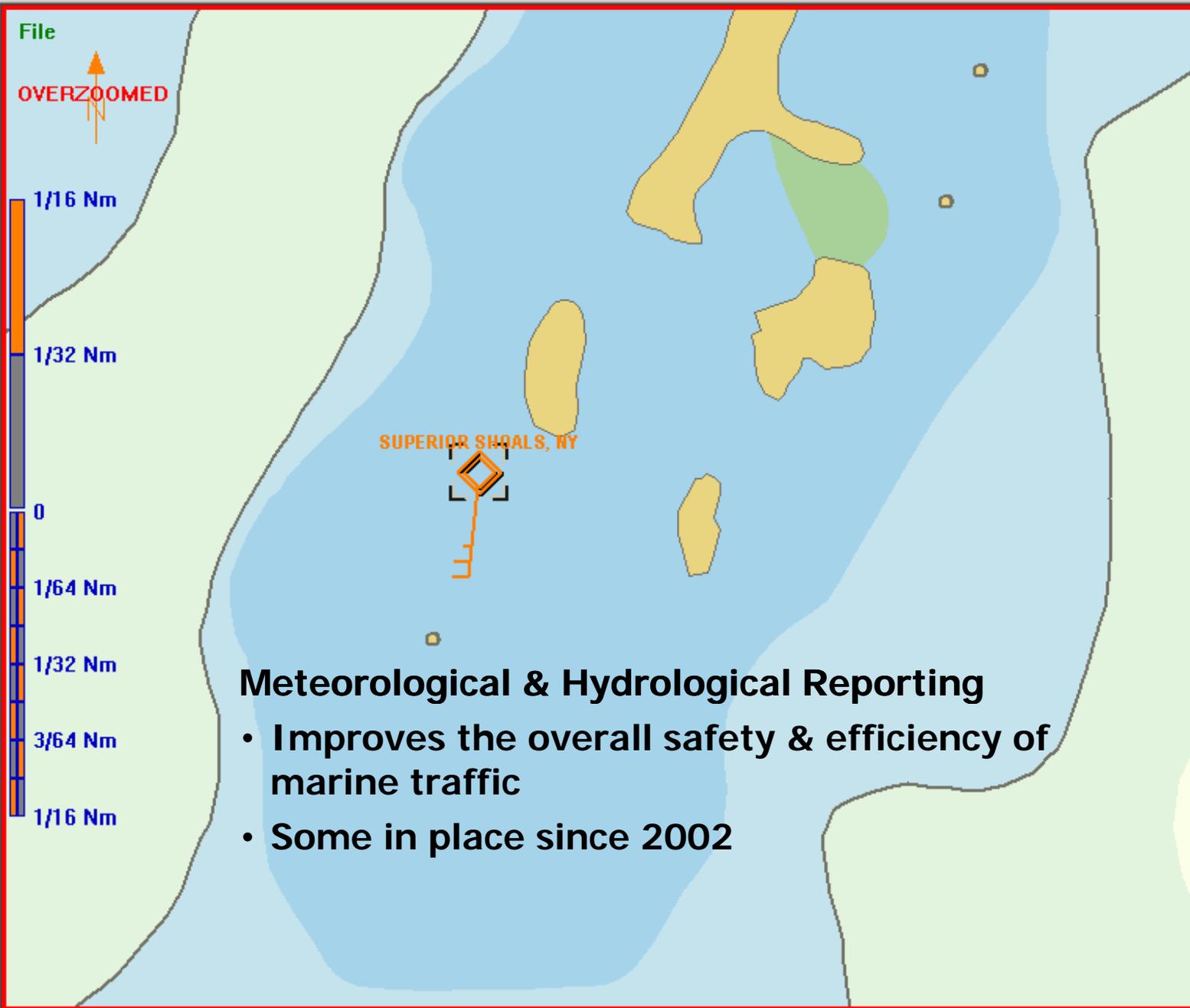
- Met/Hydrological*
- Dangerous cargo indication*
- Fairway closed*
- Tidal window*
- Extended ship static & voyage-related data*
- Number of persons on board**
- VTS-generated/synthetic targets**



AIS ?	AIS Tx	AIS Rx	S57	S57 ?
Nav	Route	GPS	Dredge Monitoring	
S57 Lists	Aton	Lock Order	Met Hydro	

Station ID	SUPERIOR SHOALS, NY
Station Type	Weather Station
Latitude	44° 28' 12.00" N
Longitude	075° 48' 00.00" W
Wind Speed	26.9 kts
Wind Gust	30.1 kts
Wind Direction	S
Air Pressure	996.0 mbar
Air Temp	17.4°C
Dew Point	12.4°C
Visibility	25.4 km
Water Temp	18.0°C
Time of Report	10:34:00
Time Since Last Report	00h 02m 16s

Station ID	SUPERIOR SHOALS, NY
Station Type	Weather Station
Latitude	44° 28' 12.00" N
Longitude	075° 48' 00.00" W
Water Level	N/A
Level Type	N/A
Chart Datum	N/A
Current Speed	N/A
Current Direction	N/A
Salinity	N/A
Water Temp	18.0°C
Water Flow	N/A
Time of Report	10:34:00
Time Since Last Report	00h 02m 16s



Meteorological & Hydrological Reporting

- Improves the overall safety & efficiency of marine traffic
- Some in place since 2002

Navigation controls including zoom in/out buttons, a scale dropdown menu set to 1:2,000, a compass, and a 'Silence' button.

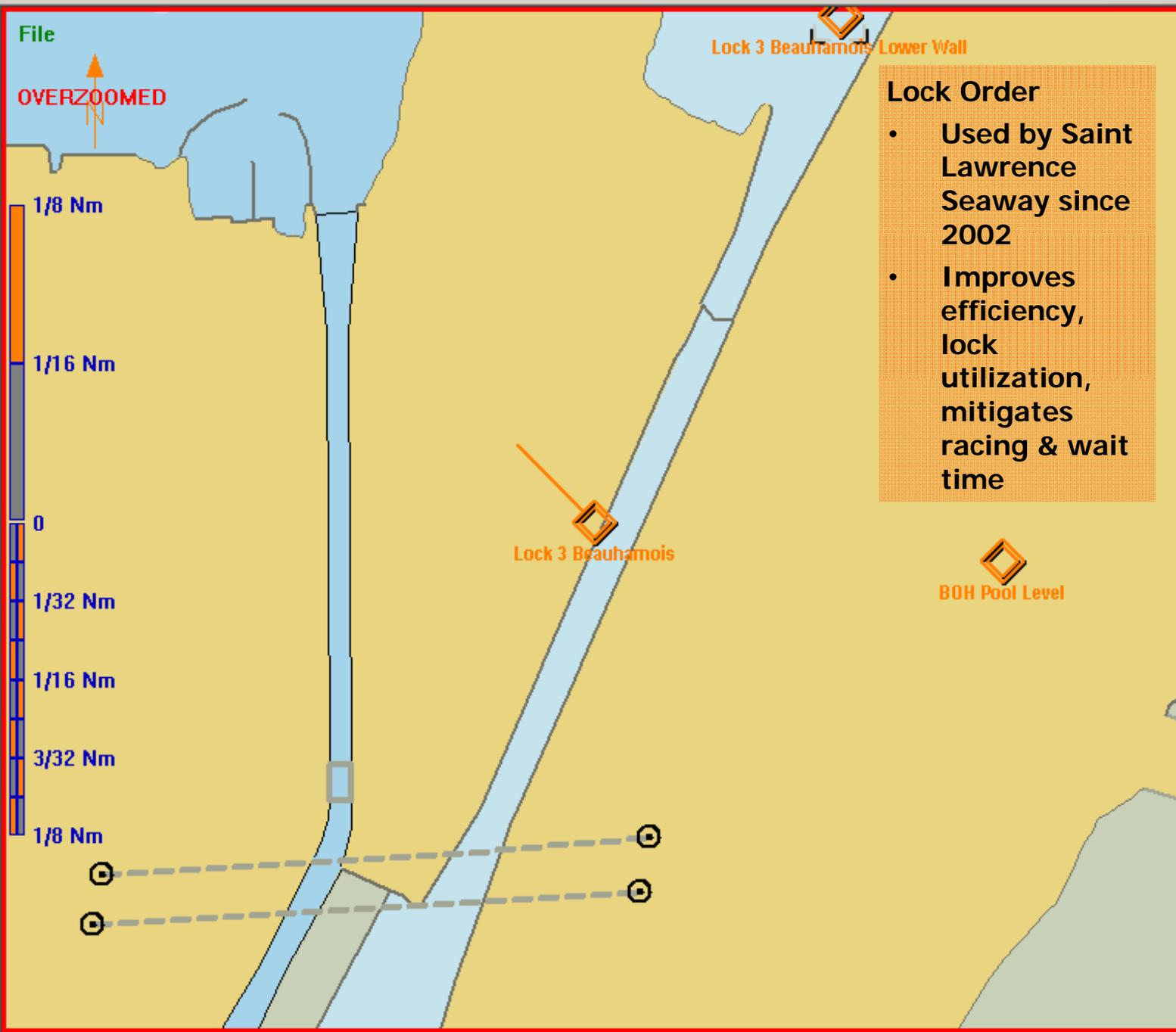


AIS Tx AIS Rx S57 S57 ?
 Nav Route GPS AIS Info AIS ?
 S57 Lists Aton Lock Order Met Hydro

Lock	Type	Time of last Report
L5W	Lock Order	16 July 14:22
SLB	Lock Order	16 July 14:21
CSC	Lock Order	16 July 14:21
*B03	Lock Order	16 July 14:21
IRO	Lock Order	16 July 14:21
LD2	Lock Order	16 July 14:21
L4W	Lock Order	16 July 14:21

ID	Direction	ETA
SEA GUARDIAN II	Up bound	16:57
DARYAMA	Down bound	11:13
PINEGLEN	Up bound	15:33

Vessel Name	N/A
Last Location	N/A
Last ATA	N/A
First Lock	N/A
First Lock ETA	N/A
Second Lock	N/A
Second Lock ETA	N/A
Delay Lock	N/A
Time of Report	N/A



Lock Order

- Used by Saint Lawrence Seaway since 2002
- Improves efficiency, lock utilization, mitigates racing & wait time

BOH Pool Level

Navigation controls including 'Out' and 'In' buttons, a scale indicator showing '1:4,000', and a 'Silence' button.

IMO SN/Circ.290 AIS ASM PORTRAYAL GUIDANCE



E

4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

Ref. T2-OSS/2.7.1

SN.1/Circ.290
2 June 2010

GUIDANCE FOR THE PRESENTATION AND DISPLAY OF AIS APPLICATION-SPECIFIC MESSAGES INFORMATION

- 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, selected seven (7) Application-Specific 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 (NAV), at its fifty-fifth session (27 to 31 July 2009), after evaluating the use of Application-Specific Messages in the trial period defined in SN/Circ.236, agreed on Guidance for the presentation and display of AIS Application-Specific Messages information.
- 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 for the presentation and display of AIS Application-Specific Messages information, as set out in the annex.
- 5 Member Governments are invited to bring the annexed Guidance to the attention of all concerned.



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IMO SN/Circ.289

AIS ASM

GUIDANCE

22 ASM's



E

4 ALBERT EMBANKMENT
LONDON SE1 7SR

Telephone: +44 (0)20 7735 7811

Fax: +44 (0)20 7587 3210

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.



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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



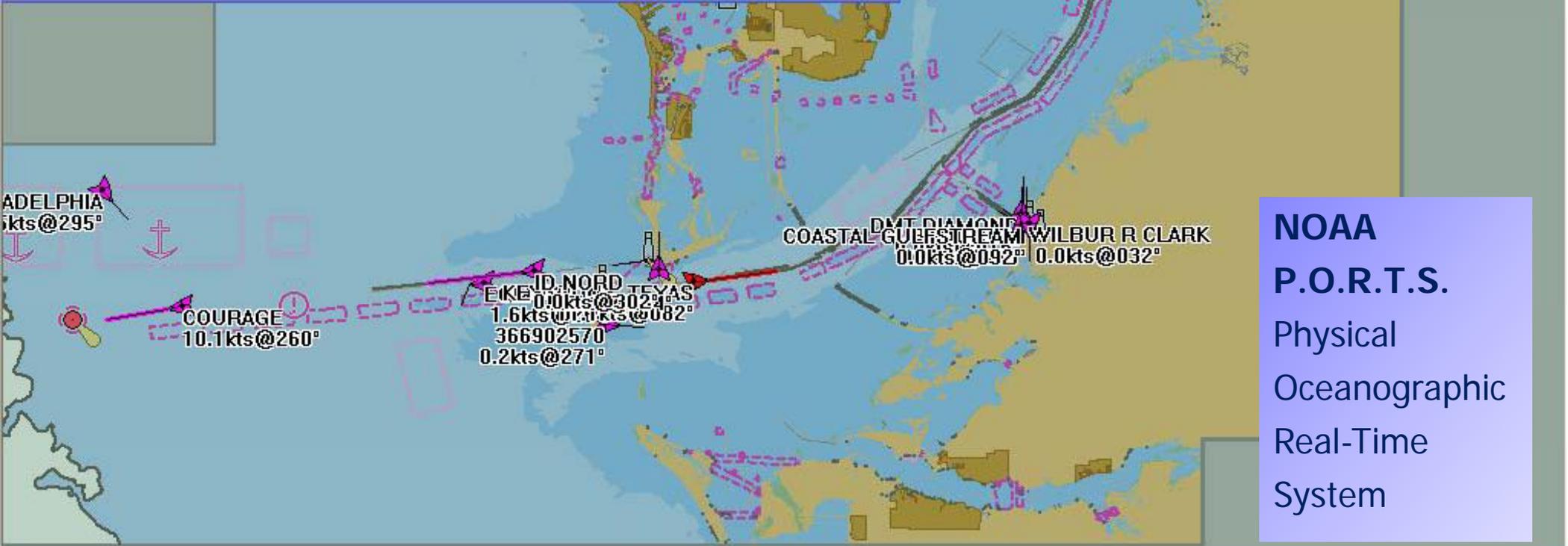


42.4nmi X 29.0nmi | NorthUp | manual-follow | warn:OFF | user: none
 POS: AIS

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



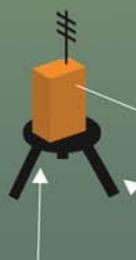
NOAA
P.O.R.T.S.
 Physical
 Oceanographic
 Real-Time
 System



NOAA's Physical Oceanographic Real-Time System PORTS[®]



Data Collection Platform



Buoy Mounted ADCP



Air Gap



Meteorological



Water Level



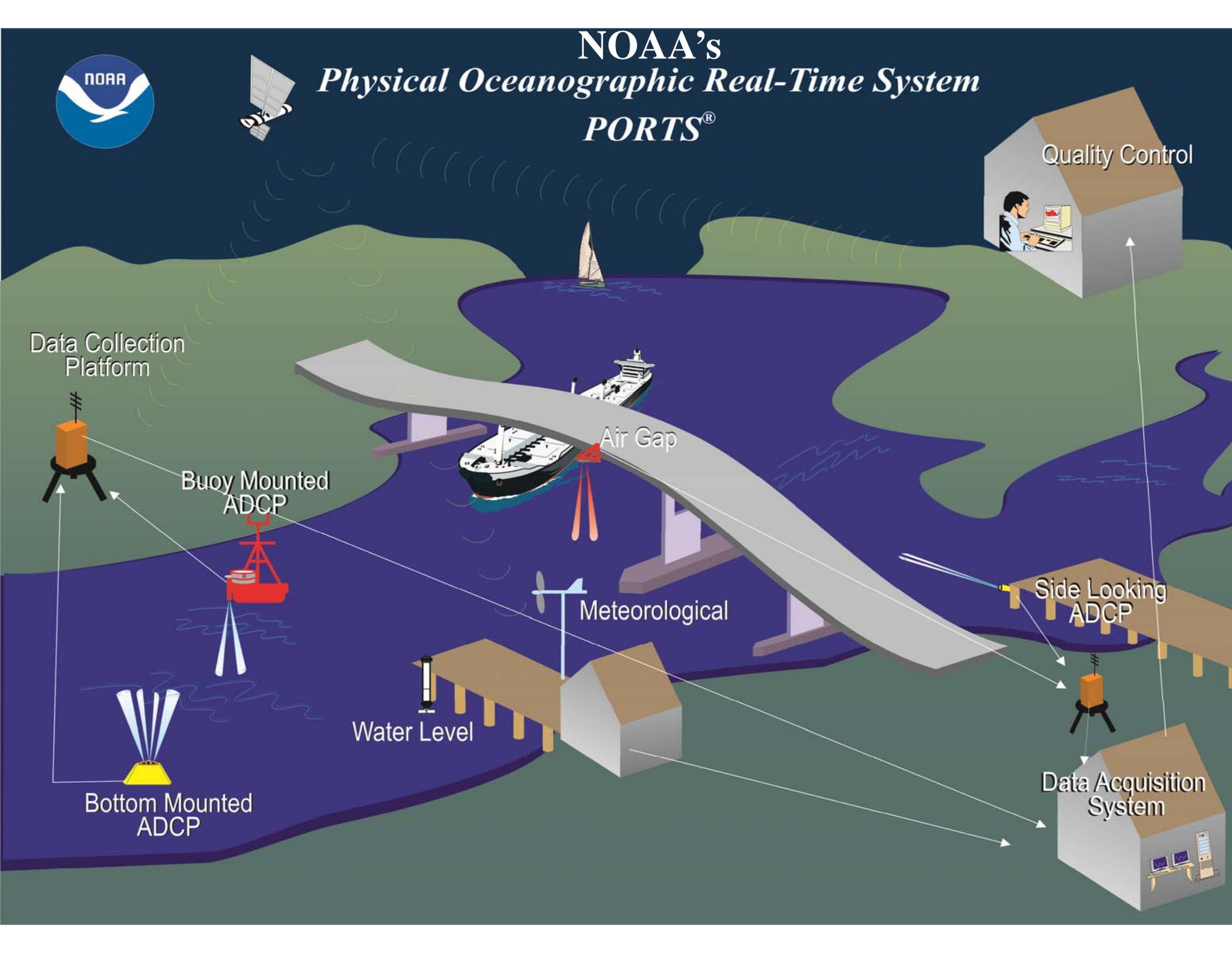
Bottom Mounted ADCP



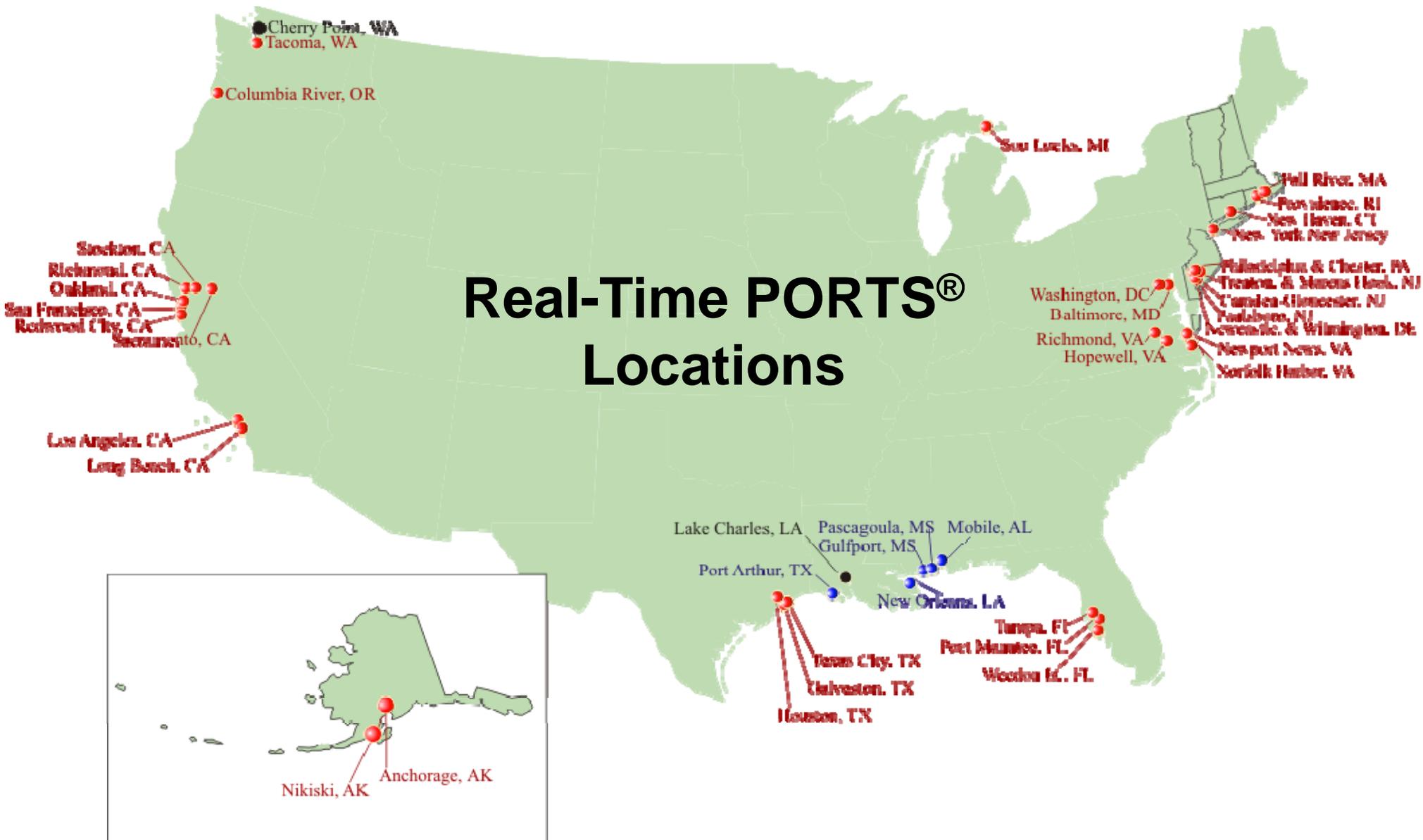
Side Looking ADCP



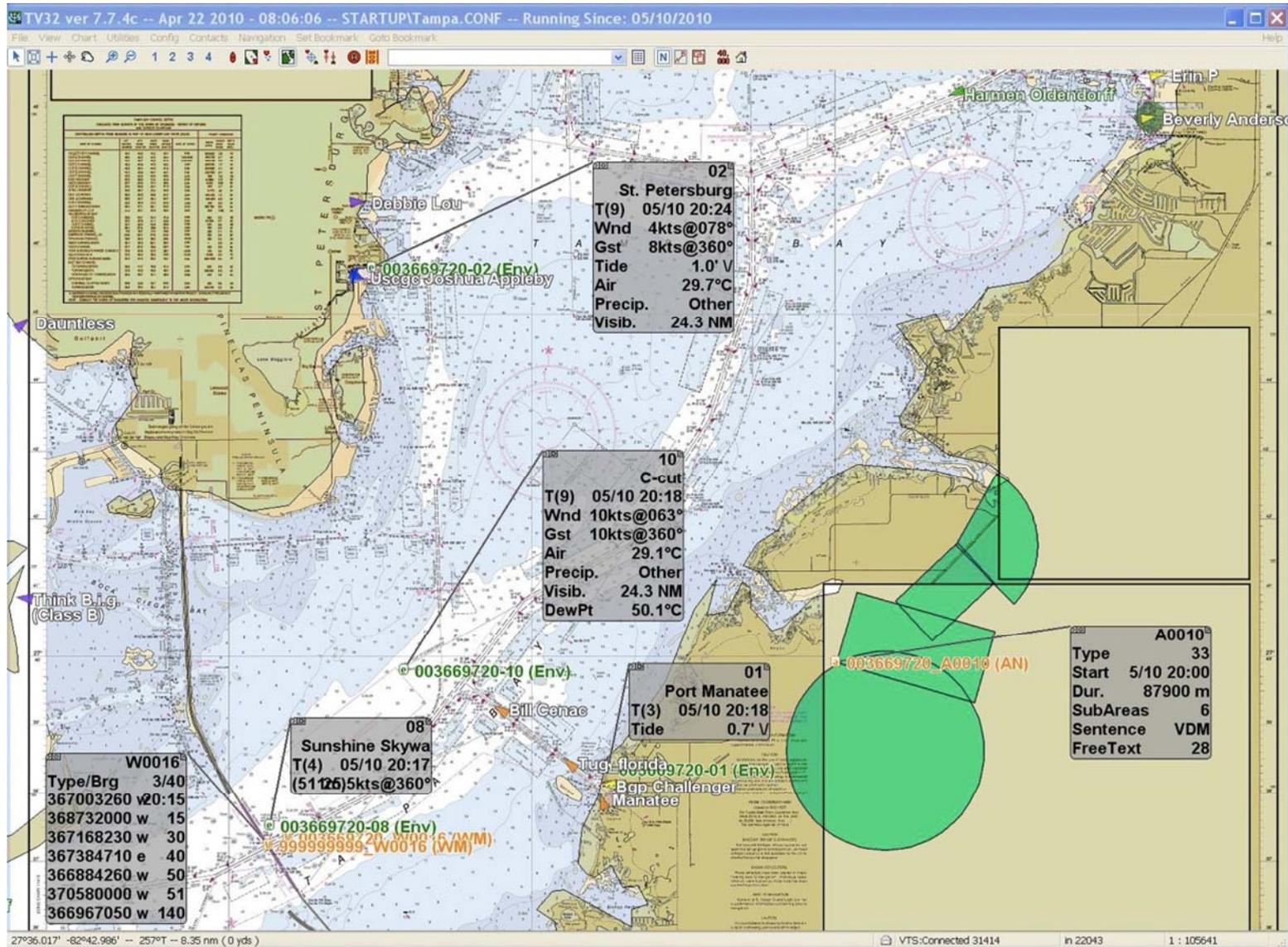
Data Acquisition System



Real-Time PORTS[®] Locations



AIS ASM NOAA PORTS Portrayal



Homeland Security



Area Notice (Geo-referenced Information)

circle or point

rectangle

sector

polyline

polygon

associated text

Regulus II - [Info (1:400,000) 13272 S57 1:10,000 DU=FEET Base Display North Up]

Main Chart Survey Route Nav Aids SAR Nav Elements Tow Boat AIS Light Level Voyage Event! DRI Man Overboard! View Window Help

AIS Tx	AIS Rx	All Targets	S57	S57 ?	S57 Lists
Basic	WorkBoat	Nav	Route	GPS	AIS Info
Survey	NavAids	Buoy Tending	Right Whale		

Time to Expire -4h -54m -55s
Latitude 42° 13' 47.19" N
Longitude 069° 57' 18.37" W
Radius 9260 m
Start Time 2008.10.15 16:37:00
Type Right whale detection
MMSI 3669734

Timed Circular Notices	CPA	Type
3669734: Right whale detection	20:51:48	Timed Circular Notice
3669734: Restricted Area	20:49:45	Timed Circular Notice
3669734: Restricted Area	20:47:42	Timed Circular Notice
3669734: Restricted Area	20:45:39	Timed Circular Notice
3669734: Right whale detection	20:41:32	Timed Circular Notice
3669734: Right whale detection	20:39:28	Timed Circular Notice
3669734: Right whale detection	20:36:15	Timed Circular Notice
3669734: Right whale detection	20:33:02	Timed Circular Notice
3669734: Right whale detection	20:29:49	Timed Circular Notice
3669734: Restricted Area	20:43:35	Timed Circular Notice

UTC 15:21:14 C:\Program Files\ICAN\Regulus II\LogFiles\Barg289a.08E logfile opened.
 UTC 15:21:14 Barg289a.08E logfile closing.
 UTC 15:21:14 Barg289a.08E logfile opened.

Area Notice Descriptions

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

Lessons Learned from our Test Beds

- ✓ Broadcasting PORTS data via AIS every three minutes has very minimal impact to the VDL
- ✓ Be aware of bit-stuffing impacts and mitigations when designing messages
- ✓ Regarding message efficiency and probability of delivery, 3-slot messages seem best
- ✓ Use FATDMA not RATDMA
- ✓ VDL monitoring location is important
- ✓ Use caution when using Repeater Mode

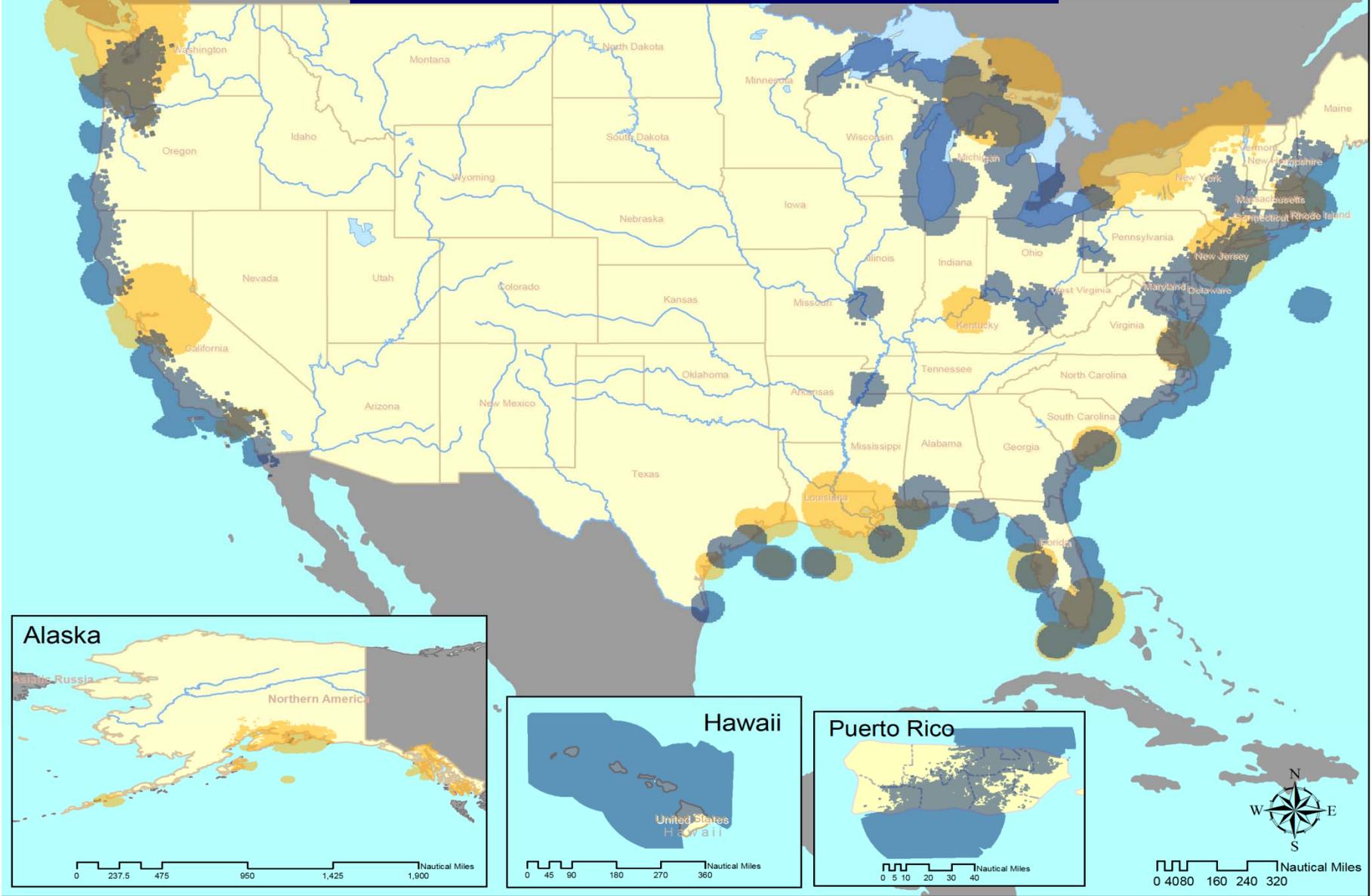


Future ASM developments...

- 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 expand mandatory AIS carriage to all U.S. waters
 - ✓ To require ECS and its integration with AIS (including ASM's)
 - ✓ To provide NOAA PORTS via NAIS



Current USA NAIS Coverage



Homeland Security





NAVIGATION CENTER

The Navigation Center of Excellence

U.S. Department of Homeland Security

UNITED STATES COAST GUARD



Home | Consolidated Nav Info | DGPS Advisories | GPS Constellation Status | GPS Testing Notices | LNMs | Almanacs | Nav Rules | AIS | Contact Us | Search

***** 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

AUTOMATIC IDENTIFICATION SYSTEM STANDARDS

International Maritime Organization

The [International Maritime Organization](#) (IMO), headquartered in London, is a specialized agency of the United Nations which is responsible for measures to improve the safety and security of international shipping and to prevent marine pollution from ships. It also is involved in legal matters, including liability and compensation issues and the facilitation of international maritime traffic. It was established by means of a Convention adopted under the auspices of the United Nations in Geneva on 17-March 1948 and met for the first time in January 1959. It currently has 165 Member States.

- [IMO Resolution MSC.74\(69\)](#), Annex 3, RECOMMENDATION ON PERFORMANCE STANDARDS FOR AN UNIVERSAL SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEMS (AIS). This standard defines the basic performance requirements for AIS equipment, and was used by [International Telecommunications Union](#) and [International Electrotechnical Commission](#) in developing technical and test standards.
- [IMO Resolution A.917\(22\)](#), GUIDELINES FOR THE ONBOARD OPERATIONAL USE OF SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEMS (AIS). These 14 page guidelines have been developed to promote the safe and effective use of shipborne Automatic Identification Systems (AIS), in particular to inform the mariner about the operational use, limits and potential uses of AIS. Consequently, AIS should be operated taking into account these Guidelines.
- [IMO Resolution MSC.140\(76\)](#), Annex 14, RECOMMENDATION FOR THE PROTECTION OF THE AIS VHF DATA LINK. Which recommends that: Class B AIS devices, as well as any device which transmits on the radio channels AIS 1 or AIS 2, should meet the appropriate requirements of Recommendation ITU-R M.1371 (series); Class B AIS devices should be approved by the Administration; and, that Administrations should take steps necessary to ensure the integrity of the radio channels used for AIS in their waters.
- [IMO Safety of Navigation Circular 227](#), GUIDELINES FOR THE INSTALLATION OF A SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM (AIS). These 14 page guidelines, prepared by the [International Association of Lighthouse Authorities](#) (IALA) and adopted by the International Maritime Organization (IMO), contains guidelines for manufacturers, installers, yards, suppliers and ship surveyors. It does not replace documentation supplied by the manufacturer. [IMO Safety of Navigation Circular 245](#) amends these guidelines to recommend that AIS be connected through an uninterrupted power supply. U.S. Addendum to IMO Installation Guidelines: [USCG AIS Data Entry Guideline](#).
- [IMO Marine Safety Circular 1252](#), GUIDELINES ON ANNUAL TESTING OF THE AUTOMATIC IDENTIFICATION SYSTEM (AIS)
- [IMO Safety of Navigation Circular 289](#), GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES (ASM)
- [IMO Safety of Navigation Circular 290](#), GUIDANCE FOR THE PRESENTATION AND DISPLAY OF AIS APPLICATION-SPECIFIC MESSAGES (ASM) INFORMATION

International Association of Lighthouse Authorities



e-Navigation Netherlands

Search

Application Specific Messages



IALA-AISM

By pressing the column title you can sort the list

Title	Msg	DAC	FI	Status	Registrant	Not to be used after
Monitoring aids to navigation	6	0	0	In force	Zeni Lite Buoy Co., Ltd	
Text telegram using 6-bit ASCII	6	1	0	In force	ITU-R.M.1371-1	
Application acknowledgement	6	1	1	replaced	ITU-R.M.1371-1	04/01/2010
Interrogation for specified FMs within the IAI branch	6	1	2	In force	ITU-R.M.1371-1	
Capability interrogation	6	1	3	In force	ITU-R.M.1371-1	
Capability reply	6	1	4	In force	ITU-R.M.1371-1	
Application acknowledgement to an addressed binary message	6	1	5	in force	ITU-R.M.1371-4	
DAANGEROUS CARGO INDICATION	6	1	12	Deprecated	IMO Circ. 236	01/01/2013
TIDAL WINDOW	6	1	14	Deprecated	IMO Circ. 236	01/01/2013
Number of persons on board	6	1	16	In force	IMO Circ. 289	
NUMBER OF PERSONS ON BOARD	6	1	16	Deprecated	IMO Circ. 236	01/01/2013
Ship waypoints (WP) and/or route plan report	6	1	17	In force	ITU-R.M.1371-1	
Clearance time to enter port	6	1	18	In force	IMO Circ. 289	
Advice of waypoints (AWP) and/or route plan of VTS	6	1	18	In force	ITU-R.M.1371-1	
Extended ship static and voyage related data	6	1	19	In force	ITU-R.M.1371-1	
Berthing data	6	1	20	In force	IMO Circ. 289	
Area notice	6	1	23	in force	IMO Circ. 289	
Dangerous cargo indication	6	1	25	In force	IMO Circ. 289	
Route information	6	1	28	in force	IMO Circ. 289	



www.e-navigation.nl/asm



United States Coast Guard

Office of Navigation Systems



Jorge.Arroyo@uscg.mil
1-202-372-1563
www.navcen.uscg.gov/enav
cgnav@uscg.mil

U.S. Coast Guard
Office of Navigation Systems
2100 Second St. SW
Washington, DC 20953



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