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# United States Coast Guard

## Office of Navigation Systems



**"We Help Mariners Get There"**

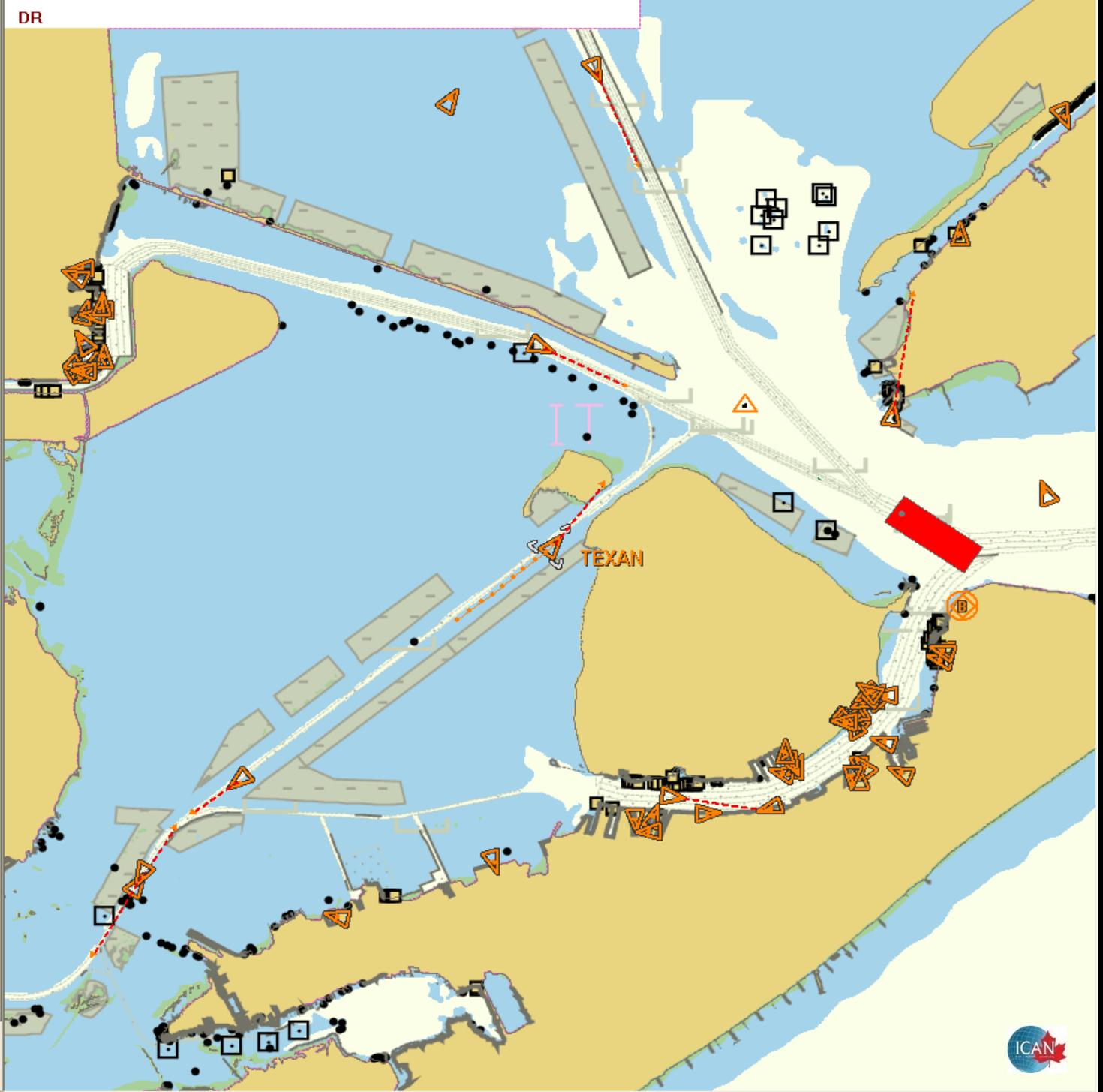
# Use of Application Specific Messaging in USA VTS and beyond

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

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...
ATLAC	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



# Automatic Identification System Messages

!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSru=gwowPblwwwwwwwhL=s1?wwtUg?<,2\*2C  
!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,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2\*1A  
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2\*73  
!AIVDM,1,1,9,0,84eGd8P0Bjd3NvKowIpfS1ISwpTJhvecwowPRBwwwwwwwhLApQOwwtUg?<,2\*7F  
!AIVDM,1,1,9,0,84eGd8P0Bjd3HNKotqp<3AtcwpSru=gwowPblwwwwwwwhL=s1?wwtUg?<,2\*2C  
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2\*1A  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2\*73  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2\*1A  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2\*73  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,6,0,84eGd8P0Bjd3IvKouqpFSR<dwpT:huegwowPbbwwwwwwwhH=t1GwwtUg?<,2\*1A  
!AIVDM,1,1,,A,13u?etPv2;0n:dDPwUM1U1Cb069D,0\*24  
!AIVDM,1,1,4,0,84eGd8P0Bjd3MvKovQpTS1tVwpTJhvecwowPbFwwwwwwwhLApQOwwtUg?<,2\*73

ID#	ITU-R M.1371 AIS Message Descriptions	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



# ITU-R M.1371

# 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 <sub>ais</sub>	8	±127 (-128 (80 <sub>h</sub> ) indicates not available, which should be the default). Coded by ROT <sub>ais</sub> = 4.733 SQRT(ROT <sub>INDICATED</sub> ) degrees/min ROT <sub>INDICATED</sub> 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 <sub>h</sub> ) = not available = default)
Latitude	27	Latitude in 1/10 000 min (±90°, North = positive, South = negative. 91° (3412140 <sub>h</sub> ) = not available = default)
COG	12	Course over ground in 1/10° (0-3599). 3600 (E10 <sub>h</sub> ) = 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	





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# AIS can transfer data via binary messages...

## Application Specific Messages

- Provides a means to use other applications
  - Encode application on the transmission side
  - Received by all AIS stations
  - Requires decode application on the processing side, usually external to the AIS
  - Sent as either General or Addressed broadcast
    - Addressed messages (MMSI-to-MMSI) receives an acknowledgement that the binary message was received

# 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		



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

INTERNATIONAL MARITIME ORGANIZATION  
4 ALBERT EMBANKMENT  
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IMO

*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



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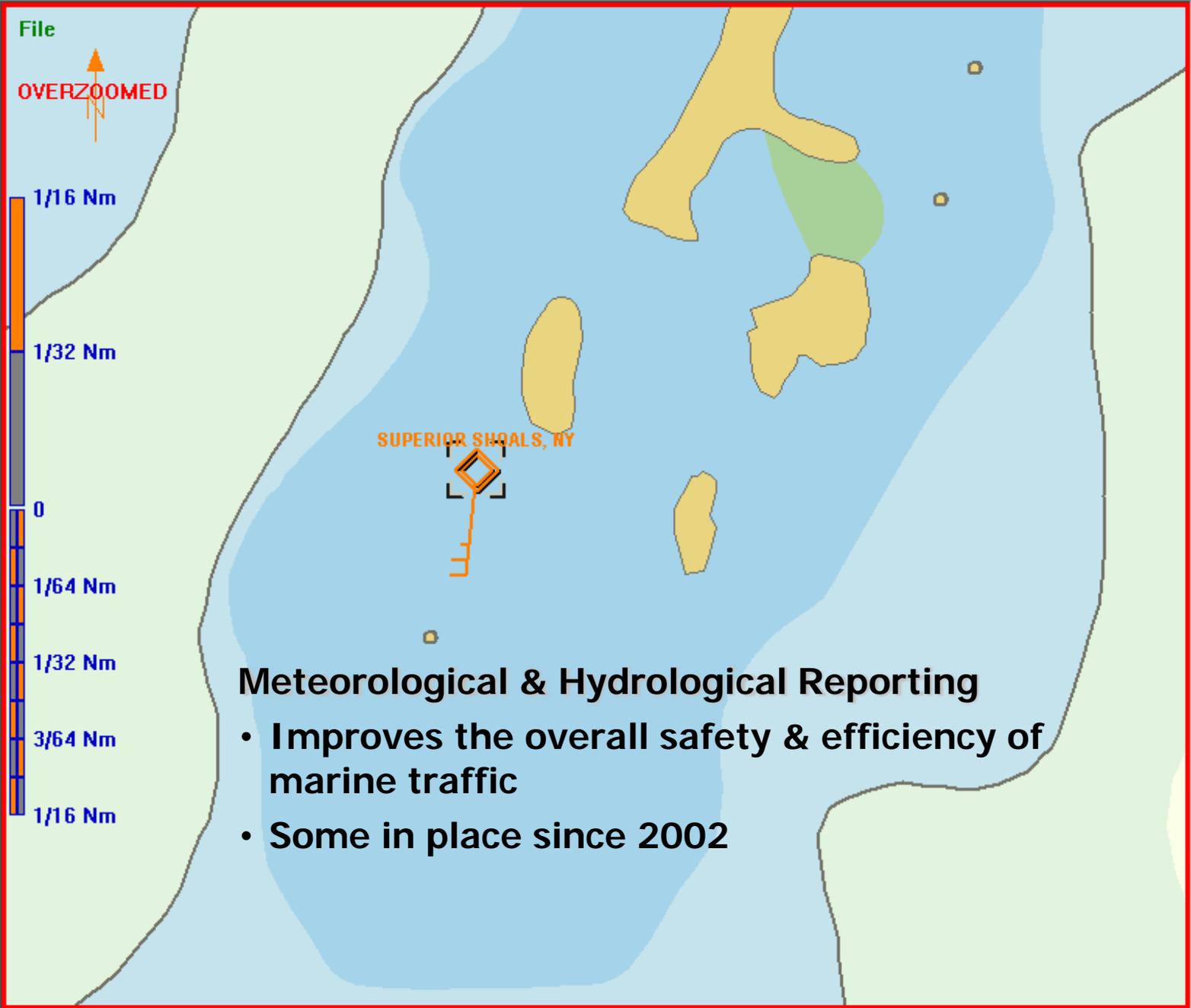
# IMO SN/Circ.236 ASM's

- Meteorological/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

S57	S57 ?	S57 Lists	Survey	NavAids	Buoy Tending	Radar
Nav	Route	GPS	AIS Info	AIS ?	AIS Tx	AIS Rx

Targets	CPA	Type
101126	00:01:05	Met...
101126	00:01:04	Met...
101126	00:01:05	Met...
101126	00:01:04	Met...

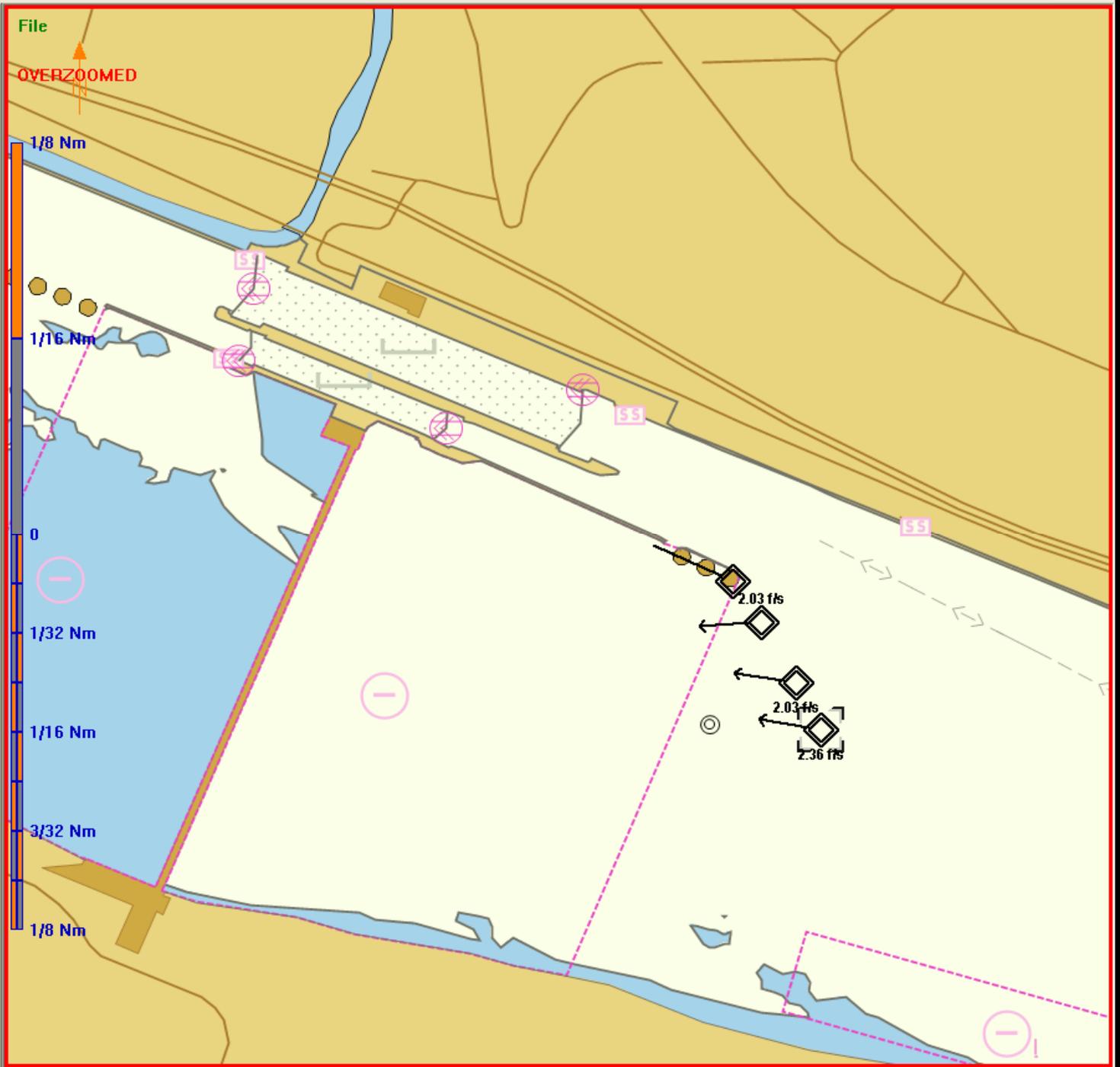
<b>Target</b>	<b>101126</b>
<b>Latitude</b>	<b>40° 30' 09.72" N</b>
<b>Longitude</b>	<b>080° 05' 08.70" W</b>
<b>Time of Tx</b>	<b>15:15</b>
<b>Average Wind Speed</b>	<b>N/A</b>
<b>Wind Gust</b>	<b>N/A</b>
<b>Air Temperature</b>	<b>N/A</b>
<b>Relative Humidity</b>	<b>N/A</b>
<b>Air Pressure</b>	<b>N/A</b>
<b>Water Level Report</b>	<b>-0.1 m</b>
<b>Surface Current Speed</b>	<b>2.36 f/s</b>
<b>Surface Current Direction</b>	<b>280°</b>

# USACE RTCV

## Real-time

## Current - Velocity

## System

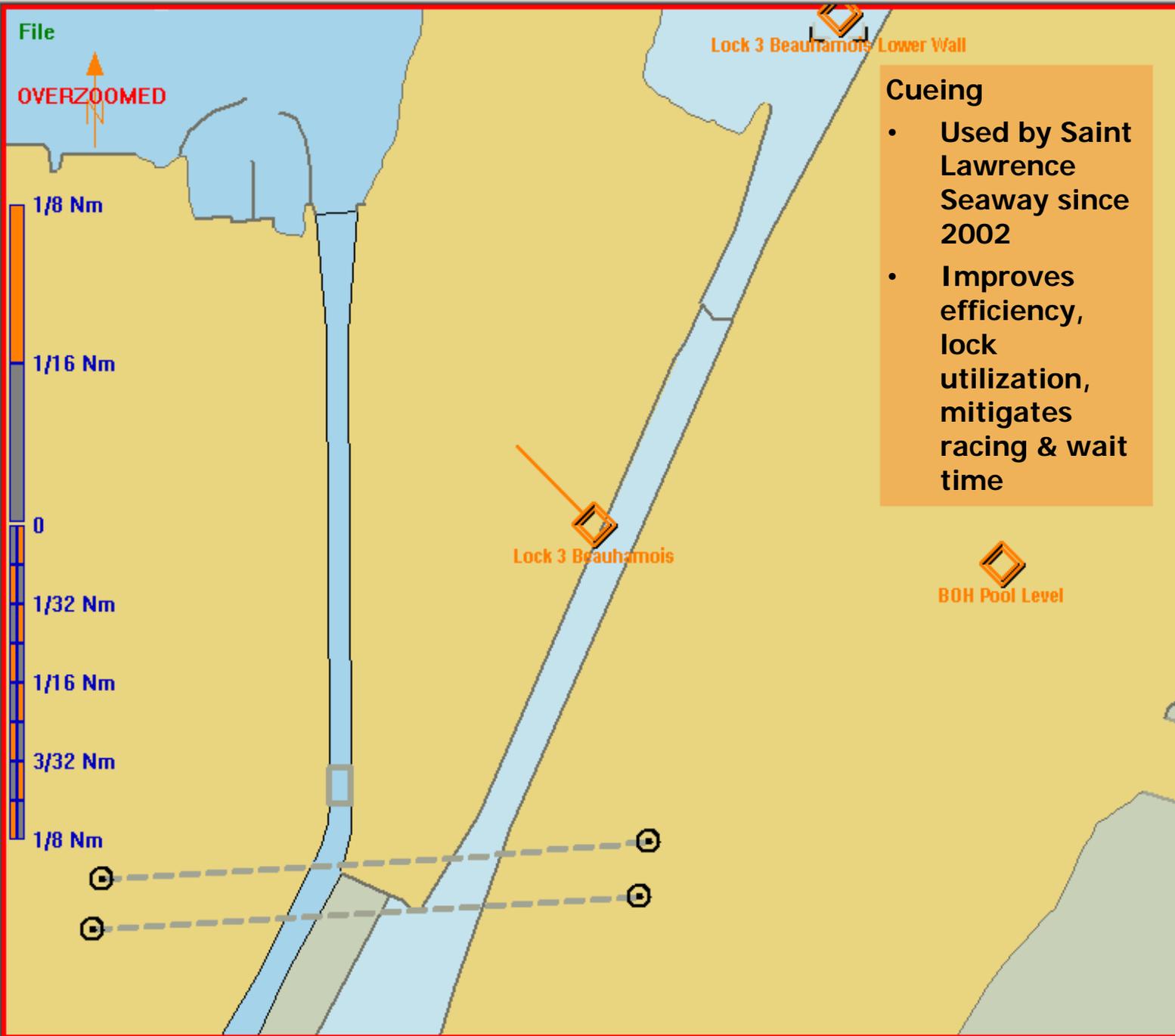


AIS Tx	AIS Rx	S57	S57 ?
Nav	Route	GPS	AIS Info AIS ?
S57 Lists	Aton	Lock Order	Met Hydro

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
IRD	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



**Cueing**

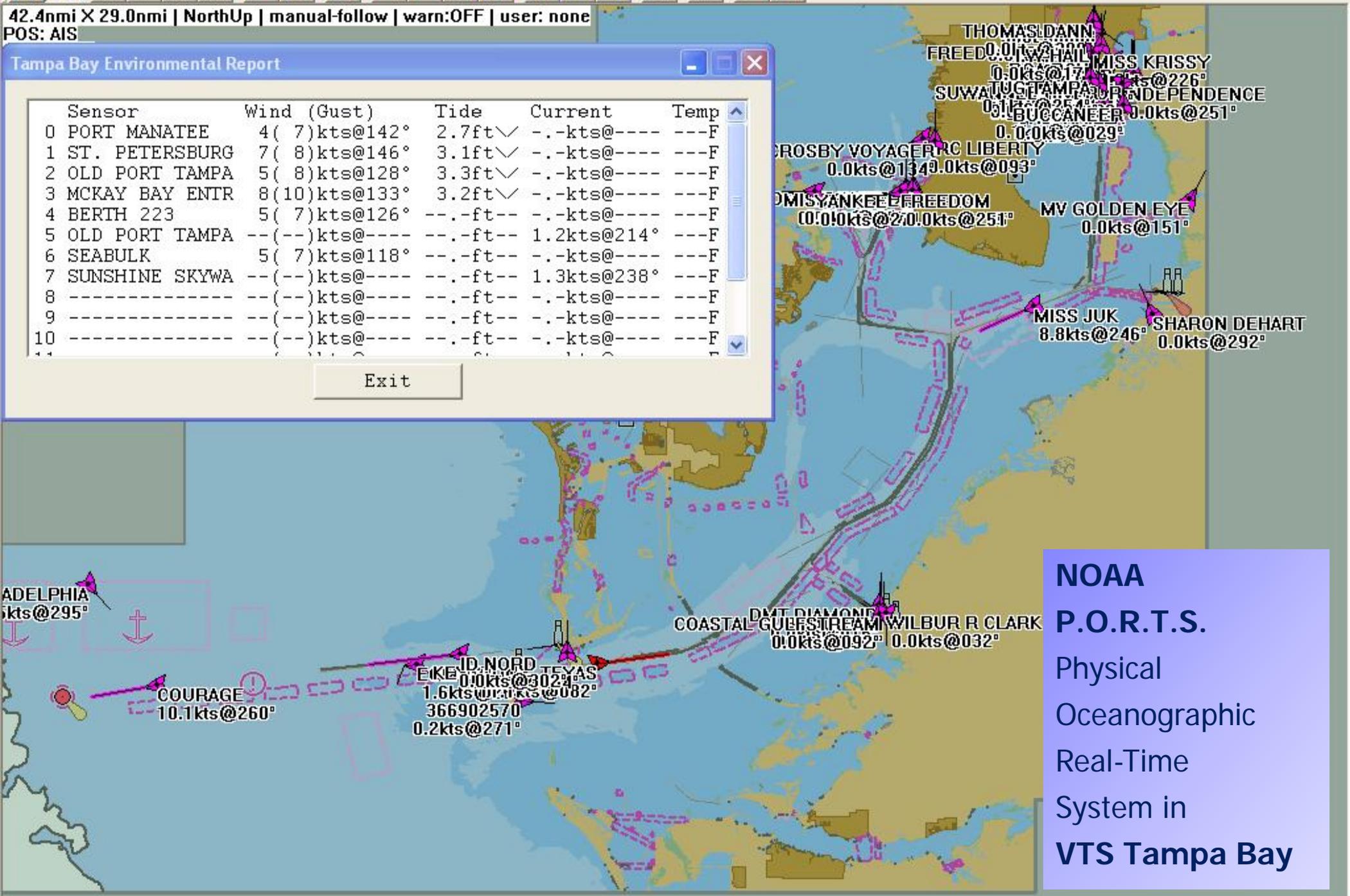
- Used by Saint Lawrence Seaway since 2002
- Improves efficiency, lock utilization, mitigates racing & wait time

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

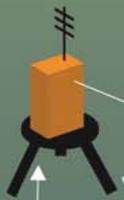


**NOAA**  
**P.O.R.T.S.**  
 Physical  
 Oceanographic  
 Real-Time  
 System in  
**VTS Tampa Bay**



# NOAA's Physical Oceanographic Real-Time System PORTS<sup>®</sup>

Data Collection Platform



Buoy Mounted ADCP



Bottom Mounted ADCP



Water Level



Meteorological



Air Gap



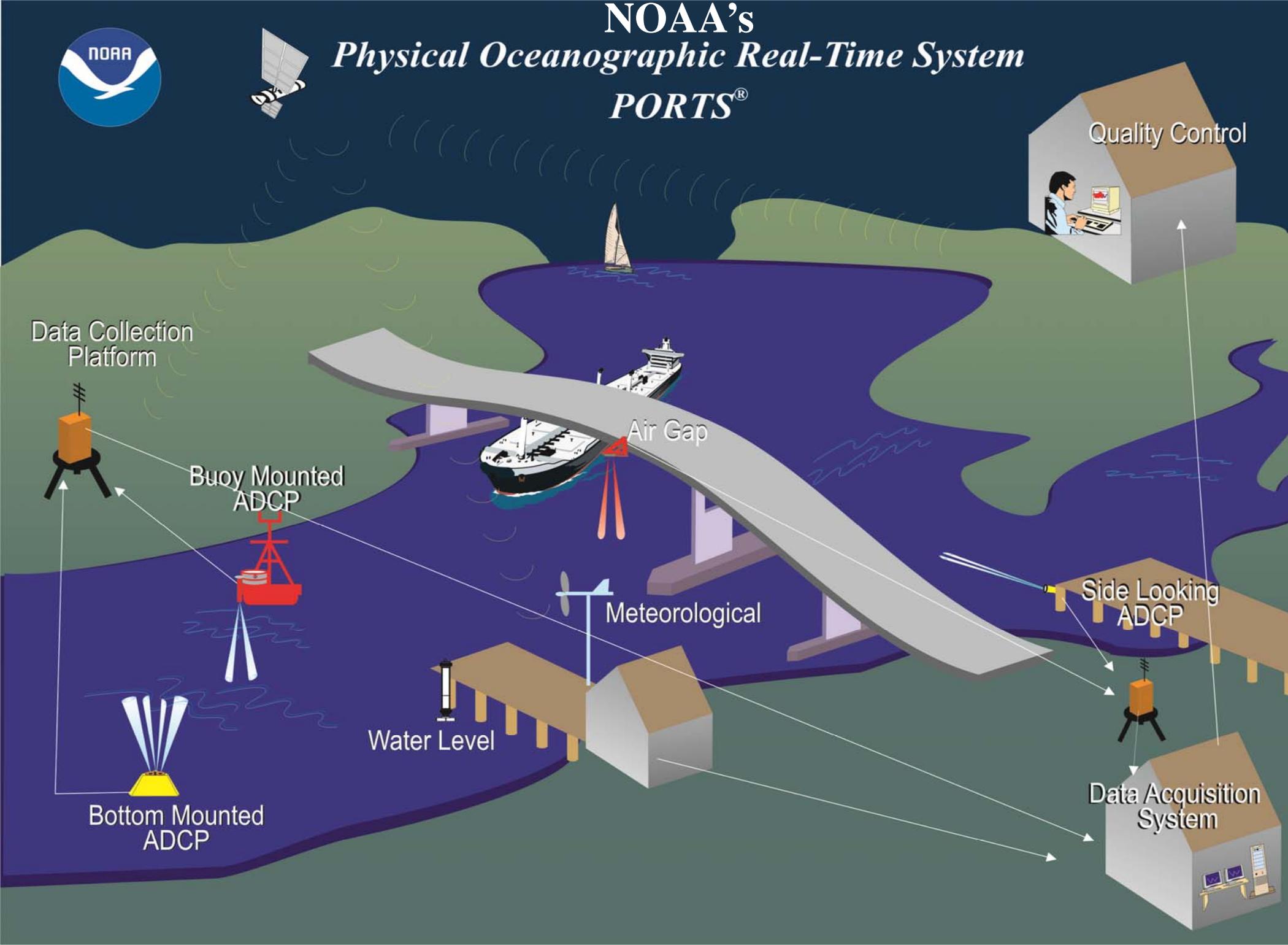
Quality Control



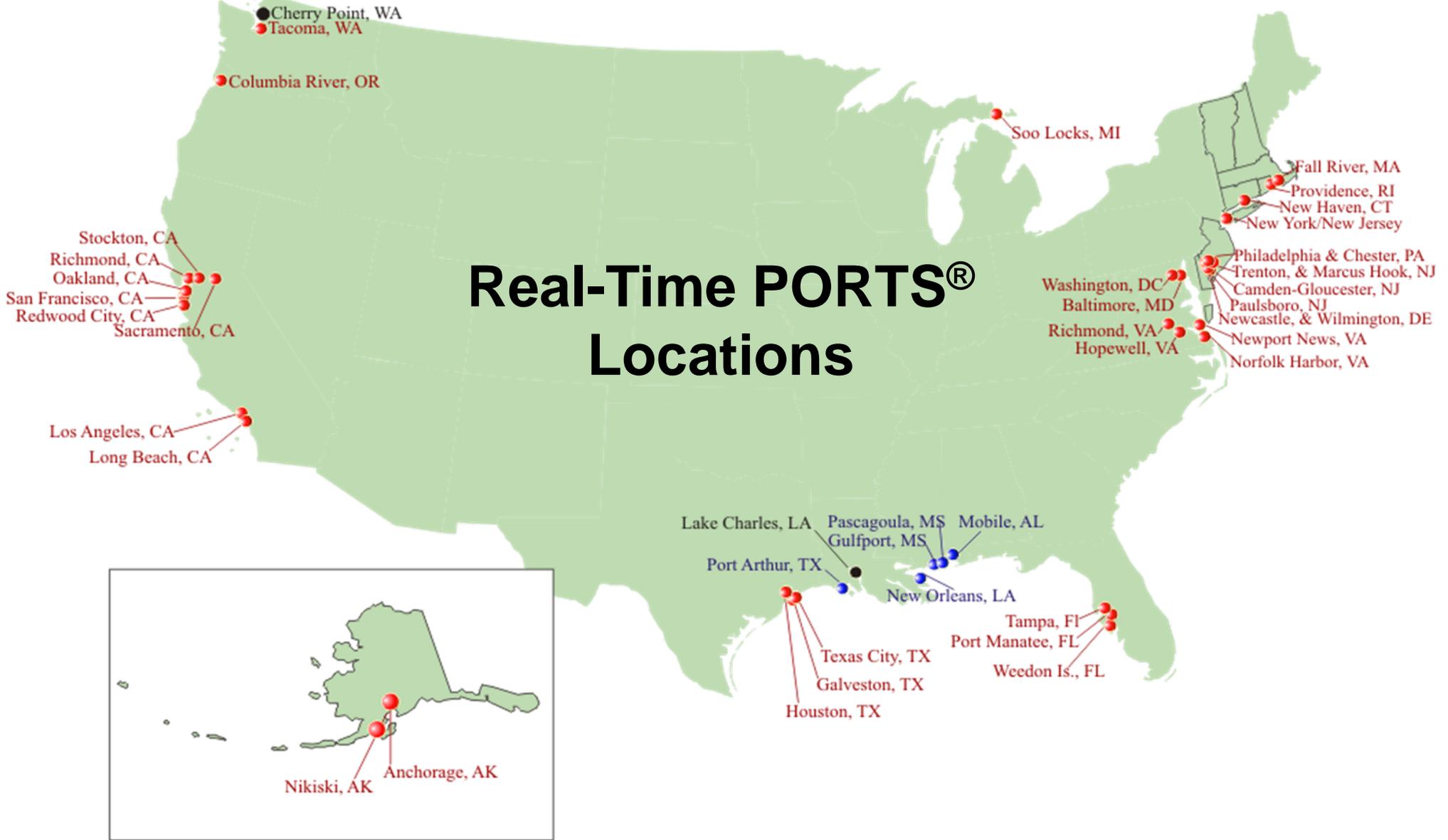
Side Looking ADCP



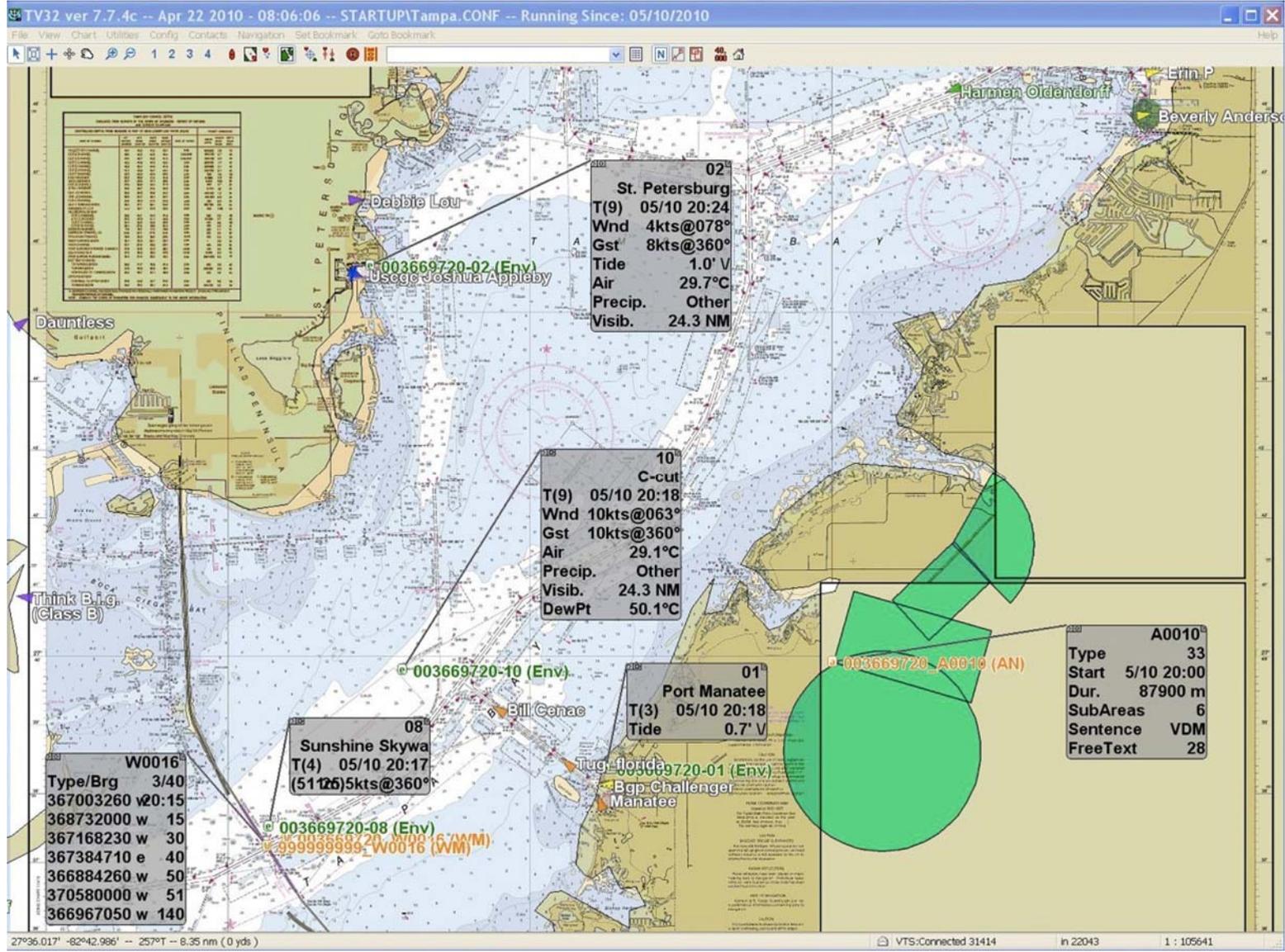
Data Acquisition System



# Real-Time PORTS® Locations



# AIS ASM NOAA PORTS Portrayal



# 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	AIS ?
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\NACAN\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

# IMO SN/Circ.290 AIS ASM PORTRAYAL GUIDANCE



E

4 ALBERT EMBANKMENT  
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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.

\*\*\*



Homeland  
Security



# IMO SN/Circ.289

## AIS ASM

## GUIDANCE

## 22 ASM's



**E**

4 ALBERT EMBANKMENT  
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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.



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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

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# Future ASM developments in the USA...

- U.S. Coast Guard
  - ✓ To expand our AIS ASM test beds to Louisville KY and with U.S. Army Corp of Engineers in their efforts in lock management
  - ✓ 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 Nation-wide AIS network
- Radio Technical Commission for Maritime Services (RTCM)
  - ✓ Special Committee 121 - AIS ASM
  - ✓ Special Committee 129 - Navigation Portrayal including ASM
  - ✓ Special Committee 109 – Electronic Chart Systems



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# Lessons Learned from our Test Beds

- ✓ Broadcasting PORTS/ASM data via AIS every three minutes has very minimal impact to the VDL
- ✓ VDL monitoring location is important
- ✓ Use caution when using Repeater Mode
- ✓ Use FATDMA is preferable to RATDMA; but, requires a base station to reserve slots
- ✓ Regarding message efficiency and probability of delivery, 3-slot messages seem best
- ✓ Be aware of bit-stuffing impacts and mitigations when designing messages
- ✓ There is a need for version parameter for each ASM



# **RTCM STANDARD FOR CREATION AND QUALIFICATION OF APPLICATION-SPECIFIC MESSAGES**

## **1 Scope**

Application-Specific Messages (ASM) should be developed using standard processes and procedures. This Standard specifies the minimum requirements for the development of new ASM and methods to qualify them against those requirements.

This Standard is intended for use by national authorities in determining which ASM to allow for transmission in their jurisdictions.

ASM transmitted via an Automatic Identification System (AIS) Very High Frequency (VHF) Data Link (VDL) conform to requirements for data structure and transmission specified in ITU-R M.1371. ASM transmitted via VHF - Frequency Modulated (VHF-FM) Digital Small Message Service (VDSMS) conform to requirements for transmission as specified in RTCM 12301 and may be transmitted either in ITU-R M.1371 or ITU-R M.1842 formats on channels other than AIS 1 and AIS 2.



ID#	ITU-R M.1371 AIS Message Descriptions	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
27	Long Range Report (Ch. 74 / 75)	x			1



Application Specific Messages | e-Navigation Netherlands - Windows Internet Explorer

http://www.e-navigation.nl/asm

**e-navigation** e-Navigation Netherlands

AIS Inland Maritime Ports Contact Log in/request new password English

Search

Search

## Application Specific Messages



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	
DANGEROUS 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	

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Jorge >>

4:53 AM

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# United States Coast Guard

## Office of Navigation Systems

**Thank You**  
**For Your Attention**

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