

Automatic Identification System

AIS 101

- What it is
 - What it can and can't do
 - How do I get it?
- (or, how does it get to me)?

Brian Tetreault

ERDC-CHL

09 January 2019

ERDC
Engineer Research and
Development Center



**US Army Corps
of Engineers®**



What is AIS?

- Transponder?
- Tracking system?
- Collision avoidance system?
- Communications system?
- Everything to everyone?



The Players

- International Maritime Organization
 - ▶ Sets overall requirements – performance standards
 - ▶ Mandates carriage (through competent authorities)
- International Telecommunications Union
 - ▶ Radio frequency management
 - ▶ Defines technical characteristics
- International Electrotechnical Commission
 - ▶ Sets standards for “the box(es)”
- International Association of Marine Aids to Navigation and Lighthouse Authorities
 - ▶ Shoreside component, operational guidance
- US Coast Guard
 - ▶ US AIS competent authority
 - ▶ US carriage requirements
 - ▶ Operates Nationwide AIS infrastructure



AIS performance guidelines



MSC 69/22/Add.1
ANNEX 12
Page 13

ANNEX 3

RECOMMENDATION ON PERFORMANCE STANDARDS FOR AN UNIVERSAL SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEM(AIS)

1 Scope

1.1 These performance standards specify the requirements for the universal AIS.

- .1 in a ship-to-ship mode for collision avoidance;
- .2 as a means for littoral States to obtain information about a ship and its cargo; and
- .3 as a VTS tool, i.e. ship-to-shore (traffic management).

1.3 The AIS should be capable of providing to ships and to competent authorities, information from the ship, automatically and with the required accuracy and frequency, to facilitate accurate tracking. Transmission of the data should be with the minimum involvement of ship's personnel and with a high level of availability.



Recommendation ITU-R M.1371-5
(02/2014)

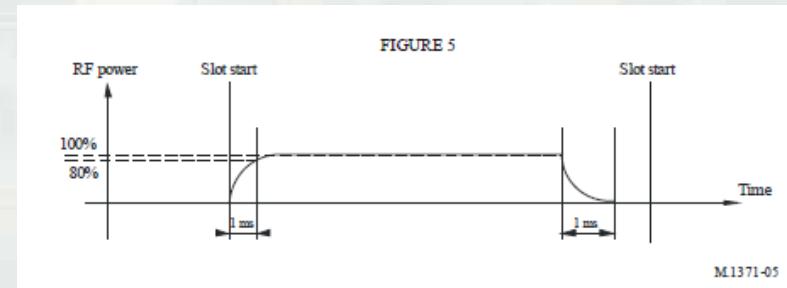
**Technical characteristics for an automatic
identification system using time division
multiple access in the VHF maritime
mobile frequency band**

M Series
**Mobile, radiodetermination, amateur
and related satellite services**



ITU-R.M1371-5

- Specifications:
 - ▶ Types of AIS equipment
 - ▶ Reporting rate
 - ▶ Radio characteristics
 - ▶ Data encoding and transmission
 - ▶ Message structure, types and descriptions



3.3.7 Message structure

Messages, which are part of the access schemes, should have the following structure shown in Fig. 16 inside the data portion of a data packet:

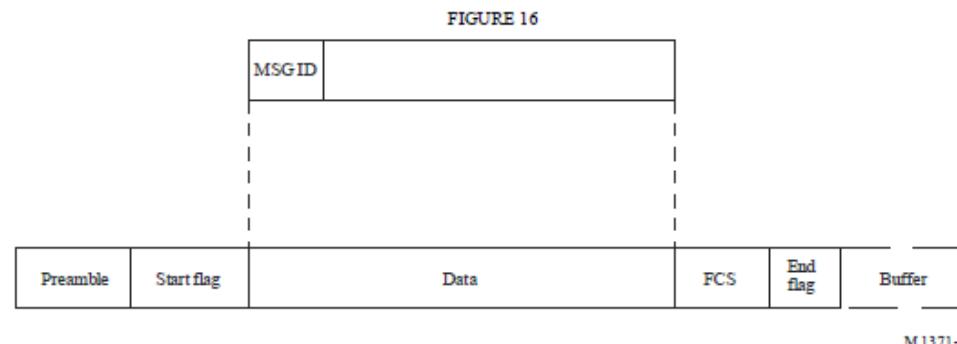


TABLE 46

Message ID	Name	Description	Priority	Access scheme	Communication state	M/B
1	Position report	Scheduled position report; (Class A shipborne mobile equipment)	1	SOTDMA, RATDMA, ITDMA ⁽¹⁾	SOTDMA	M
2	Position report	Assigned scheduled position report; (Class A shipborne mobile equipment)	1	SOTDMA ⁽⁹⁾	SOTDMA	M
3	Position report	Special position report, response to interrogation; (Class A shipborne mobile equipment)	1	RATDMA ⁽¹⁾	ITDMA	M
4	Base station report	Position, UTC, date and current slot number of base station	1	FATDMA ^{(3), (7)} , RATDMA ⁽²⁾	SOTDMA	B
5	Static and voyage related data	Scheduled static and voyage related vessel data report; (Class A shipborne mobile equipment)	4 ⁽⁵⁾	RATDMA, ITDMA ⁽¹¹⁾	N/A	M
6	Binary addressed message	Binary data for addressed communication	4	RATDMA ⁽¹⁰⁾ , FATDMA, ITDMA ⁽²⁾	N/A	M/B
7	Binary acknowledgement	Acknowledgement of received addressed binary data	1	RATDMA, FATDMA, ITDMA ⁽²⁾	N/A	M/B
8	Binary broadcast message	Binary data for broadcast communication	4	RATDMA ⁽¹⁰⁾ , FATDMA, ITDMA ⁽²⁾	N/A	M/B
9	Standard SAR aircraft position report	Position report for airborne stations involved in SAR operations, only	1	SOTDMA, RATDMA, ITDMA ⁽¹⁾	SOTDMA ITDMA	M
10	UTC/date inquiry	Request UTC and date	3	RATDMA, FATDMA, ITDMA ⁽²⁾	N/A	M/B
11	UTC/date response	Current UTC and date if available	3	RATDMA, ITDMA ⁽²⁾	SOTDMA	M
12	Addressed safety related message	Safety related data for addressed communication	2	RATDMA ⁽¹⁰⁾ , FATDMA, ITDMA ⁽²⁾	N/A	M/B
13	Safety related acknowledgement	Acknowledgement of received addressed safety related message	1	RATDMA, FATDMA, ITDMA ⁽²⁾	N/A	M/B
14	Safety related broadcast message	Safety related data for broadcast communication	2	RATDMA ⁽¹⁰⁾ , FATDMA, ITDMA ⁽²⁾	N/A	M/B
15	Interrogation	Request for a specific message type (can result in multiple responses from one or several stations) ⁽⁴⁾	3	RATDMA, FATDMA, ITDMA ⁽²⁾	N/A	M/B
16	Assignment mode command	Assignment of a specific report behaviour by competent authority using a Base station	1	RATDMA, FATDMA ⁽²⁾	N/A	B

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Rec. ITU-R M.1371-5

TABLE 46 (end)

Message ID	Name	Description	Priority	Access scheme	Communication state	M/B
17	DGNSS broadcast binary message	DGNSS corrections provided by a base station	2	FATDMA ⁽³⁾ , RATDMA ⁽²⁾	N/A	B
18	Standard Class B equipment position report	Standard position report for Class B shipborne mobile equipment to be used instead of Messages 1, 2, 3 ⁽⁸⁾	1	SOTDMA, ITDMA ⁽¹⁾ , CSTDMA	SOTDMA, ITDMA	M
19	Extended Class B equipment position report	No longer required; Extended position report for Class B shipborne mobile equipment; contains additional static information ⁽⁸⁾	1	ITDMA	N/A	M
20	Data link management message	Reserve slots for Base station(s)	1	FATDMA ⁽³⁾ , RATDMA	N/A	B
21	Aids-to-navigation report	Position and status report for aids-to-navigation	1	FATDMA ⁽³⁾ , RATDMA ⁽²⁾	N/A	M/B
22	Channel management ⁽⁶⁾	Management of channels and transceiver modes by a Base station	1	FATDMA ⁽³⁾ , RATDMA ⁽²⁾	N/A	B
23	Group assignment command	Assignment of a specific report behaviour by competent authority using a Base station to a specific group of mobiles	1	FATDMA, RATDMA	N/A	B
24	Static data report	Additional data assigned to an MMSI Part A: Name Part B: Static Data	4	RATDMA, ITDMA, CSTDMA, FATDMA	N/A	M/B
25	Single slot binary message	Short unscheduled binary data transmission (Broadcast or addressed)	4	RATDMA, ITDMA, CSTDMA, FATDMA	N/A	M/B
26	Multiple slot binary message with Communications State	Scheduled binary data transmission (Broadcast or addressed)	4	SOTDMA, RATDMA, ITDMA, FATDMA	SOTDMA, ITDMA	M/B
27	Position report for long-range applications	Class A and Class B "SO" shipborne mobile equipment outside base station coverage	1	MSSA	N/A	M

TABLE 48²³

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. See § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
User ID	30	Unique identifier such as MMSI number
Navigational status	4	0 = under way using engine, 1 = at anchor, 2 = not under command, 3 = restricted maneuverability, 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, high speed craft (HSC), 10 = reserved for future amendment of navigational status for ships carrying dangerous goods (DG), harmful substance or IMO hazard or pollutant category A, with driven vessel towing astern (regional use), 12 = power-driven vessel pushing ahead or 13 = reserved for future use, 14 = AIS-SART (active), MOB-AIS, EPIF 15 = undefined = default (also used by AIS under test)
Rate of turn ROT _{AIS}	8	0 to +126 = turning right at up to 708° per min 0 to -126 = turning left at up to 708° per min Values between 0 and 708° per min coded ROT _{AIS} = 4.733 SQRT(ROT _{sensor}) d where ROT _{sensor} is the Rate of Turn as input Indicator (TI). ROT _{AIS} is rounded to the nearest integer. +127 = turning right at more than 5° per 30 s -127 = turning left at more than 5° per 30 s -128 (80 hex) indicates no turn information ROT data should not be derived from COG
SOG	10	Speed over ground in 1/10 knot steps (0-1) 1 023 = not available, 1 022 = 102.2 knots
Position accuracy	1	The position accuracy (PA) flag should be Table 50 1 = high (≤ 10 m) 0 = low (> 10 m) 0 = default
Longitude	28	Longitude in 1/10 000 min ($\pm 180^\circ$, East = positive (as per 2's complement), West = negative (as per 2's complement). 181 = (6791AC0 _h) = not available = default)
Latitude	27	Latitude in 1/10 000 min ($\pm 90^\circ$, North = positive (as per 2's complement), South = negative (as per 2's complement). 91° (3412140 _h) = not available = default)
COG	12	Course over ground in 1/10 = (0-3 599). 3 600 (E10 _h) = not available = default. 3 601-4 095 should not be used
True heading	9	Degrees (0-359) (511 indicates not available = default)

TABLE 48 (end)

Parameter	Number of bits	Description
Time stamp	6	UTC second when the report was generated by the electronic position system (EPFS) (0-59, or 60 if time stamp is not available, which should also be the default value, or 61 if positioning system is in manual input mode, or 62 if electronic position fixing system operates in estimated (dead reckoning) mode, or 63 if the positioning system is inoperative)
Special manoeuvre indicator	2	0 = not available = default 1 = not engaged in special manoeuvre 2 = engaged in special manoeuvre (i.e. regional passing arrangement on Inland Waterway)
Spare	3	Not used. Should be set to zero. Reserved for future use.
RAIM-flag	1	Receiver autonomous integrity monitoring (RAIM) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use. See Table 50
Communication state	19	See Table 49
Number of bits	168	



TABLE 52

Parameter	Number of bits	Description
Message ID	6	Identifier for this Message 5
Repeat indicator	2	Used by the repeater to indicate how many times the message has been repeated. Refer to § 4.6.1, Annex 2; 0- more
User ID	30	MMSI number
AIS version indicator	2	0 = station compliant with Recommended Performance Standard 1 = station compliant with Recommended Performance Standard 2 = station compliant with Recommended Performance Standard 3 = station compliant with future edition
IMO number	30	0 = not available = default – Not applicable 0000000001-0000999999 not used 0001000000-0009999999 = valid IMO 0010000000-1073741823 = official flag
Call sign	42	7 x 6 bit ASCII characters, @@@@@ Craft associated with a parent vessel, e.g. 6 digits of the MMSI of the parent vessel, towed vessels, rescue boats, tenders, lifeboats
Name	120	Maximum 20 characters 6 bit ASCII, e.g. @@@@@ The Name should be as shown on the aircraft registration certificate, it should be set to “SAR AIRCRAFT 1” equals the aircraft registration number

TABLE 52 (*end*)

Parameter	Number of bits	Description
Type of ship and cargo type	8	0 = not available or no ship = default 1-99 = as defined in § 3.3.2 100-199 = reserved, for regional use 200-255 = reserved, for future use Not applicable to SAR aircraft
Overall dimension/ reference for position	30	Reference point for reported position. Also indicates the dimension of ship (m) (see Fig. 41 and § 3.3.3) For SAR aircraft, the use of this field may be decided by the responsible administration. If used it should indicate the maximum dimensions of the craft. As default should A = B = C = D be set to "0"
Type of electronic position fixing device	4	0 = undefined (default) 1 = GPS 2 = GLONASS 3 = combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = integrated navigation system 7 = surveyed 8 = Galileo, 9-14 = not used 15 = internal GNSS
ETA	20	Estimated time of arrival; MMDDHHMM UTC Bits 19-16: month; 1-12; 0 = not available = default Bits 15-11: day; 1-31; 0 = not available = default Bits 10-6: hour; 0-23; 24 = not available = default Bits 5-0: minute; 0-59; 60 = not available = default For SAR aircraft, the use of this field may be decided by the responsible administration
Maximum present static draught	8	In 1/10 m, 255 = draught 25.5 m or greater, 0 = not available = default; in accordance with IMO Resolution A.851 Not applicable to SAR aircraft, should be set to 0
Destination	120	Maximum 20 characters using 6-bit ASCII; @aaaaaaaaaaaaaaaaaaaaaaa = not available For SAR aircraft, the use of this field may be decided by the responsible administration
DTE	1	Data terminal equipment (DTE) ready (0 = available, 1 = not available = default) (see § 3.3.1)
Spare	1	Spare. Not used. Should be set to zero. Reserved for future use
Number of bits	424	Occupies 2 slots

AIS Timeline

International

WRC'97
AIS1 Ch.87B
AIS2 Ch.88B

SOLAS
V/19.2.4

2002 IMO
Diplomatic
Conference

SOLAS
V/19.2.4

IMO
MSC 74 (69)
Performance

ITU-R M.1371-1
Technical

IEC 61993-2
Testing &
Certification

1990-----1994-----1997----1998----1999----2000----2001----2002---2003--2004

OPA
'90

ADSSE
ITU-R
M.825-3

National
Dialog
Group

Marine Board
Ports &
Waterways
Study

FCC
Notice
DA-02-1362

National

105th
Congress

VTS LMR
Public
Meeting

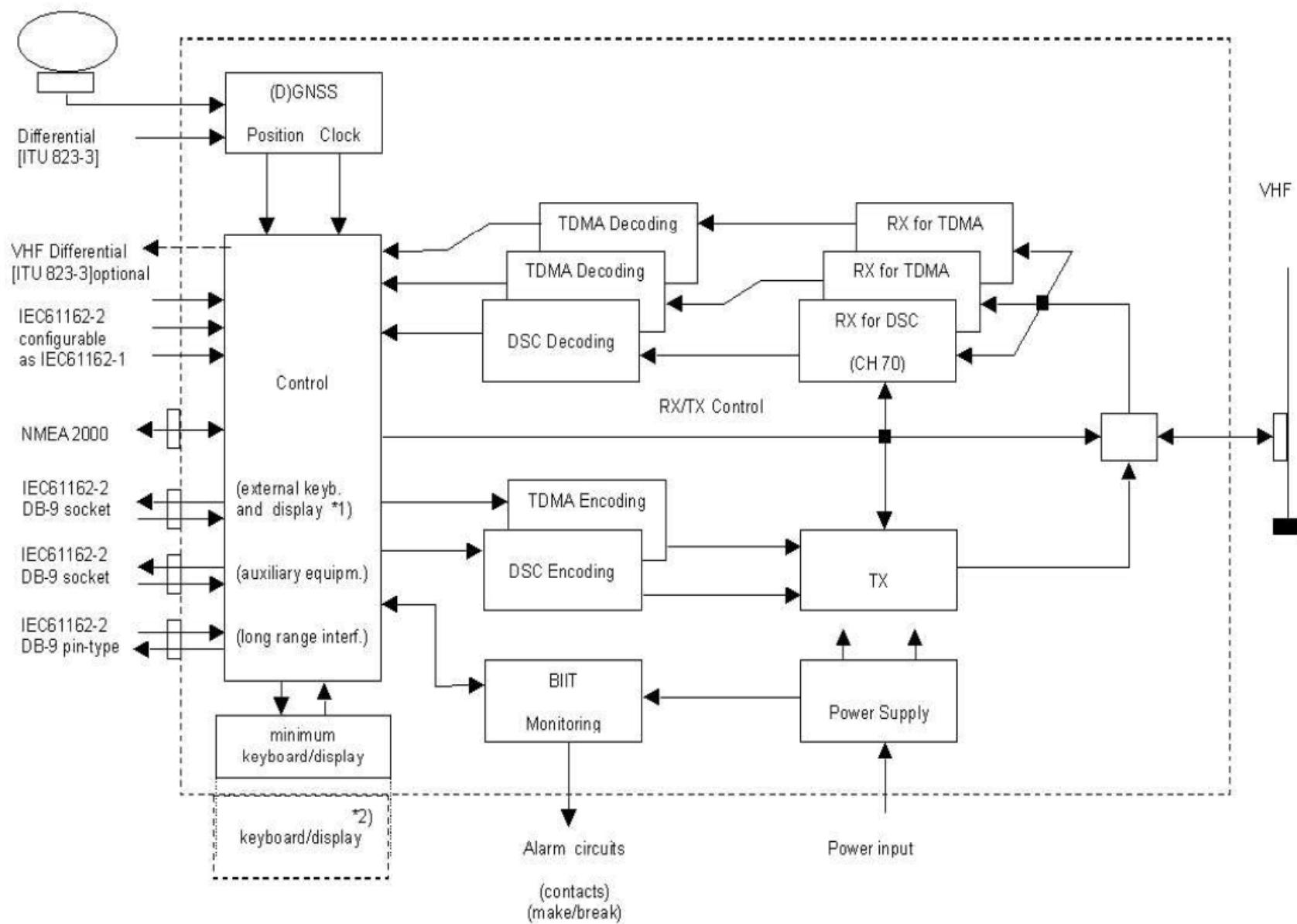
MTSA - 11/02
Interim - 7/03
Final - 10/03
Deadline - 1/04



Homeland
Security



What does AIS look like?



What does AIS look like?

Current AIS Prices

Milltech Marine Online Store



ACR Nauticast2 Class A AIS Transponder

The ACR Nauticast2 AIS Transponder is a class A unit that is specifically designed to fulfill non-SOLAS carriage requirements. This product is packaged in an All-in-One kit that includes the AIS transponder, VHF & GPS antenna, an ECDIS port adapter is included with your ECDIS display or marine chartplotter. It can be ordered for use with 12 volt power sources.

ACR-2609 \$2,999.00 [Add to Cart](#)



ComNav MARINE 2141002
ComNav Voyager X3 Class A AIS Transceiver

SKU: 40523 MPN: 2141002 Weight: 0.30 LBS

IN STOCK, & READY to SHIP
 RETAIL: \$2,649.00 (YOU SAVE 10%)
\$2,074.45
 ONLY 1 LEFT

[ADD TO CART](#)

Get more items for free
 Click here for details

Free UPS Ground Shipping
 No Sales Tax (outside of NJ)
 Easy 30 Day Returns
 100% Cleamer Coastrine

Furuno FA150 AIS Transponder

Product ID: FU150-15 MFG ID: FA150

Furuno FA150 is a shipborne Universal AIS (Automatic Identification System) Transponder capable of exchanging navigation and ship data between own ship and other ships or coastal stations.

Availability: Usually ships within 24 hours

List Price: \$4,495.00 Our Price: \$3,999.95

Qty: [+ ADD TO CART](#)

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

WEST MARINE NEW!

AIS-1000 Class B "Send and Receive" AIS Transponder

\$699.99 USD

[Add To Cart](#)

+ Add AIS-1000 Class B "Send and Receive" AIS Transponder To Project List

AIS-1000 Class B "Send and Receive" AIS Transponder



FURUNO FA30 BLACK BOX AIS

List Price: \$1,102.50
 Our Price: \$805.00
 You Save: \$297.50 (27%)

SKU: FURFA30

In Stock

Humminbird TX AIS Class B Receiver



RRP: \$350.00
 Your Price: \$448.82
 (You save \$111.17)
 SKU: 409310-1
 Brand: Humminbird
 Condition: New
 Weight: 5.00 LBS
 * Extended: No Extended Warranty
 Warranty: 2 Year Warranty \$9.99
 3 Year Warranty \$9.99

Simrad A150 AIS Identification System

Product ID: 510152-001
 Simrad A150 AIS Autotuning receiver. Built-in compass. Simrad A150 AIS transmits a digital signal that identifies the boat's identity, speed and location to vessels in your area. It's legal to use in the U.S.

Availability: Usually ships within 24 hours

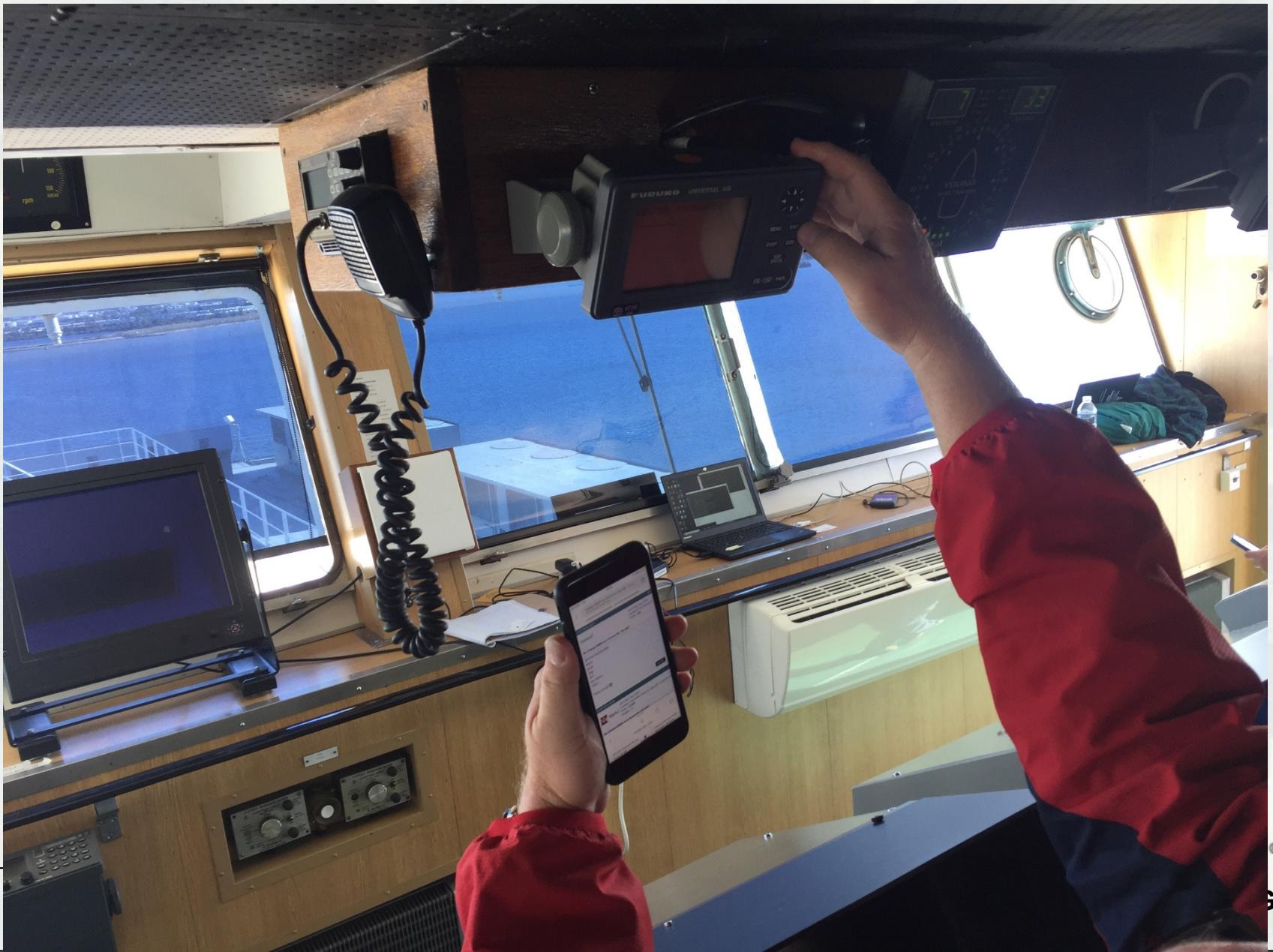
List Price: \$1,699.00 Our Price: \$1,249.95

Qty: [+ ADD TO CART](#)

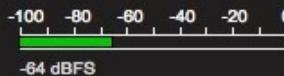
100% CERTIFIED BRAND NEW

Total AIS Costs	2003		2015	
	Class A	Class A	Class B	
Unit	\$7,000	\$3,230	\$700	
Installation	\$2,000	\$969	\$210	
Operation & Maintenance	\$250	\$250	\$250	
Training	\$110	\$110	\$110	
Individual Cost	\$9,250	\$4,449	\$1,160	
Total Costs	\$49.2 M		\$20.5 M	

What does AIS look like?

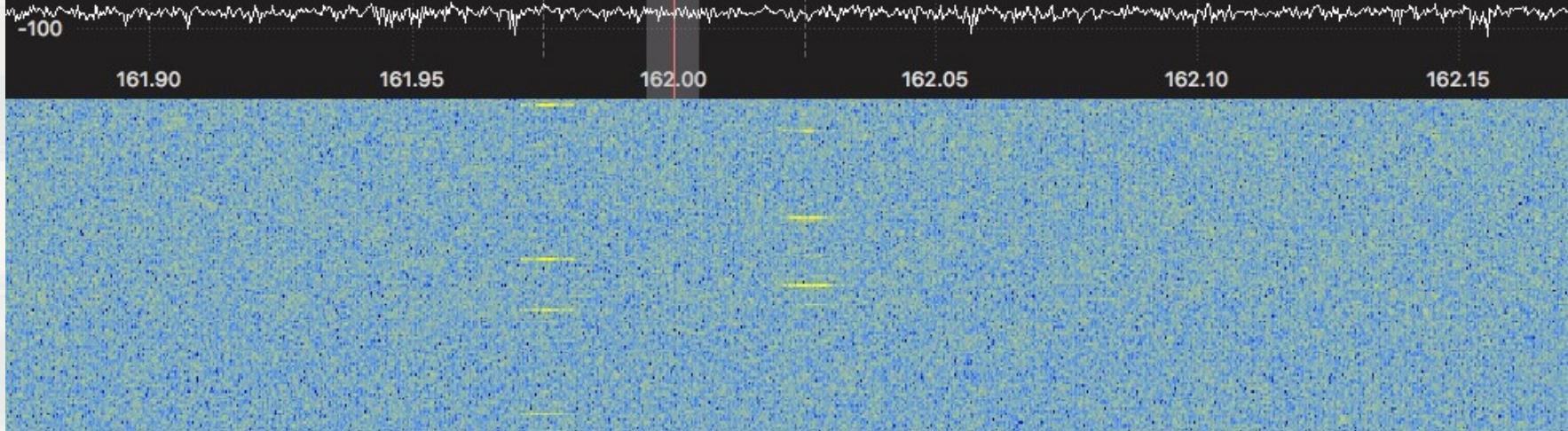


162.000.000



AIS1

AIS2



161.975.000

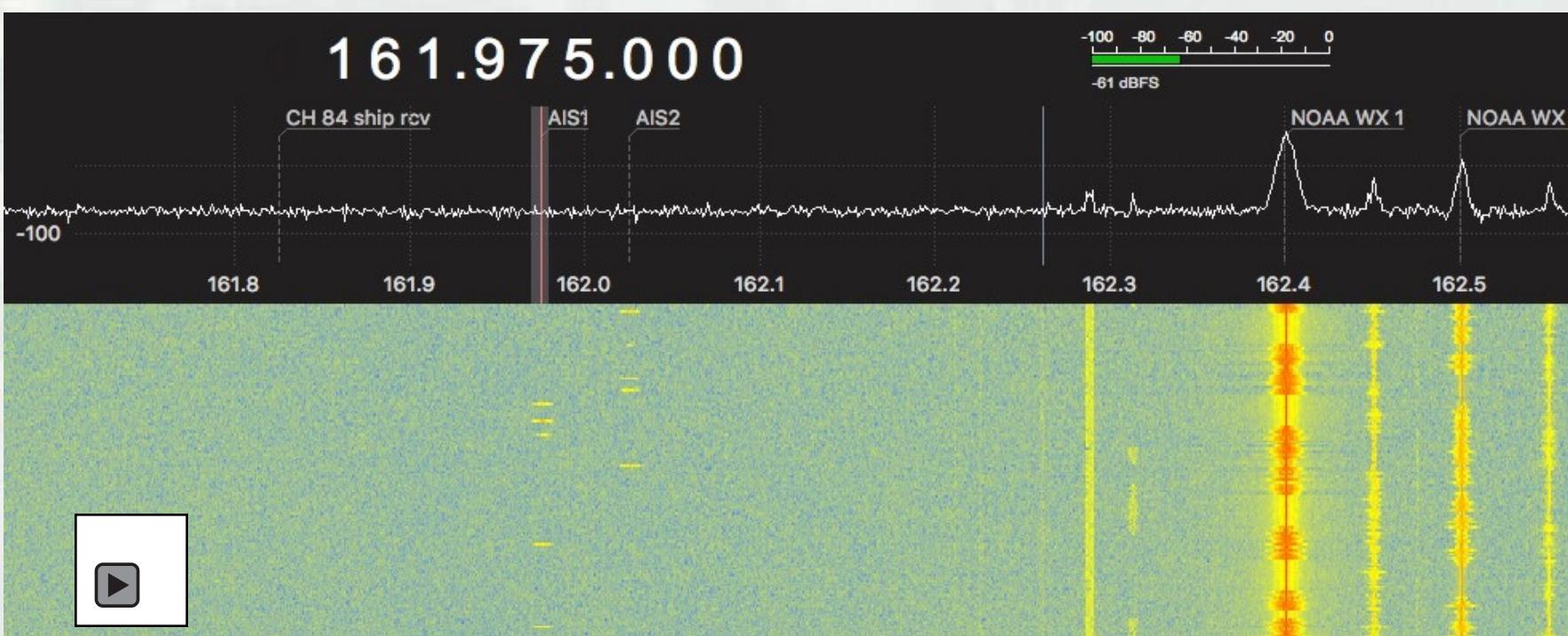


CH 84 ship rcv

AIS1 AIS2

NOAA WX 1

NOAA WX 2



What does AIS look like?

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\n:622509,s:b003669954,c:1471371636*1B\!SAVDM,1,1,,A,15NIe<PP00IRN@vA8Cj8L?w208C~,0*70
\n:793047,s:b003669953,c:1471371636*18\!SAVDM,1,1,,A,15NTfUPP01IS5hv@bED:f0w400RV,0*76
\n:793050,s:b003669953,c:1471371636*1E\!SAVDM,1,1,,B,35NSdC1P00qRwd`@c09s<?w42DNJ,0*26
\n:61912,s:b003669955,c:1471371636*2D\!SAVDM,1,1,,A,15NW@d`P00IPgFN@l9t1Igw22@CU,0*1C
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\g:2-2-34138,n:520372*19\!SAVDM,2,2,8,A,Pp568888880,2*15
\n:537862,s:b003669710,c:1471371634*10\!SAVDM,1,1,,B,13TtQf0000?s88EVFUafb8v0<1h,0*77
\n:237301,s:b003669987,c:1471371637*1A\!SAVDM,1,1,,A,14Q;928000G@1WrK@LpoI4740<1N,0*16
\n:237302,s:b003669987,c:1471371637*19\!SAVDM,1,1,,B,15NoD`?P00o?vR6K>l;r?w20@Cb,0*55
\n:735341,s:b003669704,c:1471371637*1C\!SAVDM,1,1,,B,14eGDVh000G<jc6L7eiHjs120D3j,0*3E
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\g:1-2-5086,n:6367,s:D01MN-NE-WESBS1,c:1471371633*15\!SAVDM,1,1,5,B,15NFJM0000JvKRfHvkIBRqk406A@,0*67
\g:1-2-5981,n:11780,s:D05MN-DB-CPMBS1,c:1471371633*36\!SAVDM,1,1,0,A,35PH6`@OhcraV2pFC>iQciJv0Q2@,0*61
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\g:1-2-8491,n:10338,s:D01MN-SE-WARBS1,c:1471371633*3F\!SAVDM,1,1,9,B,15NW3M0P01rsF?tGluUrggw420R@,0*02
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\g:1-2-9915,n:15038,s:D05MN-HR-NNWBS1,c:1471371633*22\!SAVDM,1,1,1,A,H5N4rJPJuJ1@tqv1ALT00000000,2*7F
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\g:1-2-5826,n:11568,s:D09MN-LM-AGNBS1,c:1471371633*23\!SAVDM,1,1,2,A,B52P9l@08fMAB:V6CMj2GwhUoP06,0*16
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\n:164432,s:b2003669980,c:1471371637*2D\!SAVDM,1,1,,B,15NGht?P12IArL2A4R9GR?w42@Ch,0*68
\n:426715,s:b003665002,c:1471371636*14\!SAVDM,1,1,,B,13cJB<001sr0w6bJ1o5sQa9400S8,0*4D
\n:342293,s:b003669978,c:1471371636*12\!SAVDM,1,1,,B,15NW@MP000I<RcTA14w:c0?400SA,0*1C

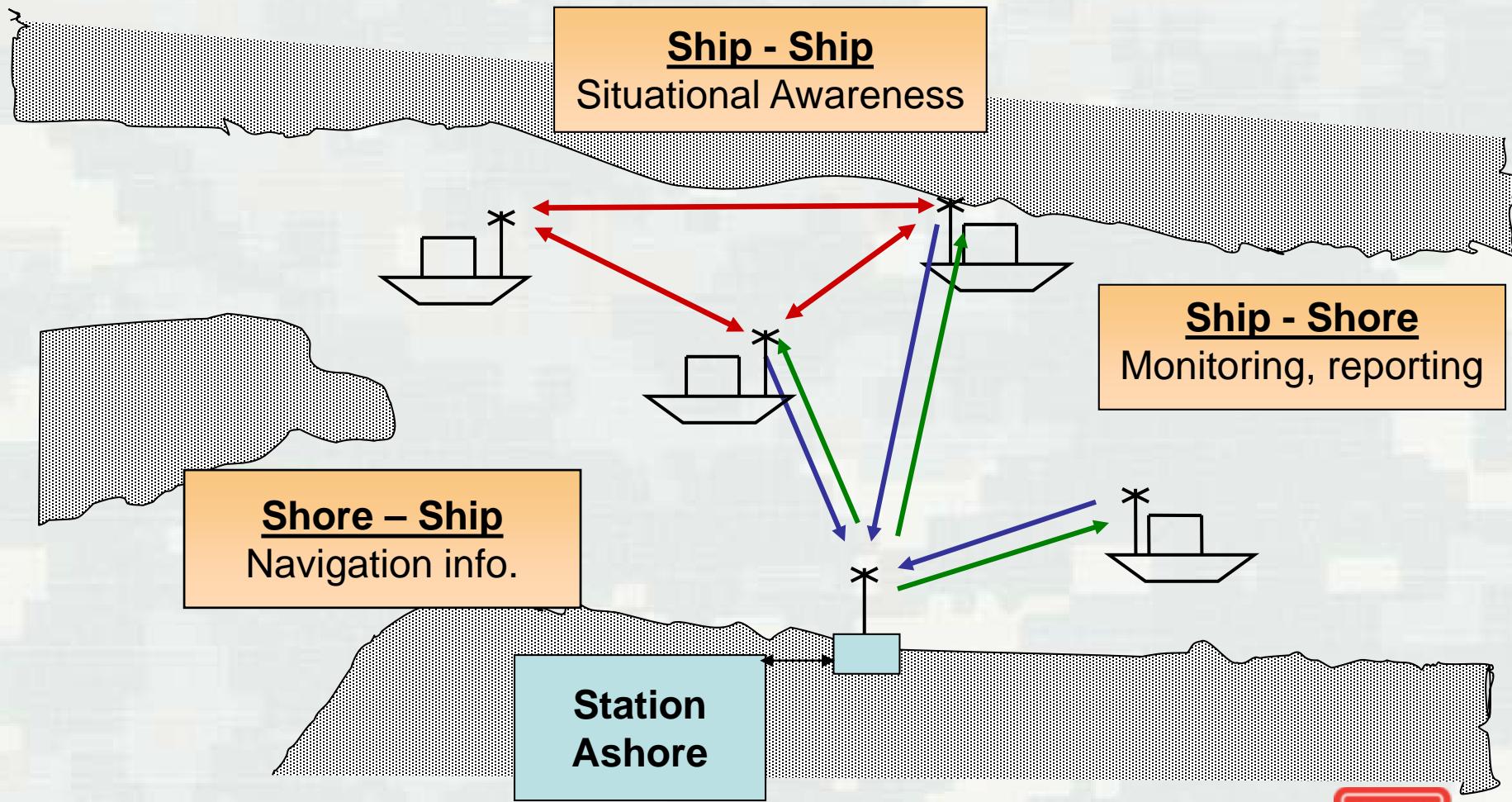
What does AIS look like?

71065_reports.csv - Excel

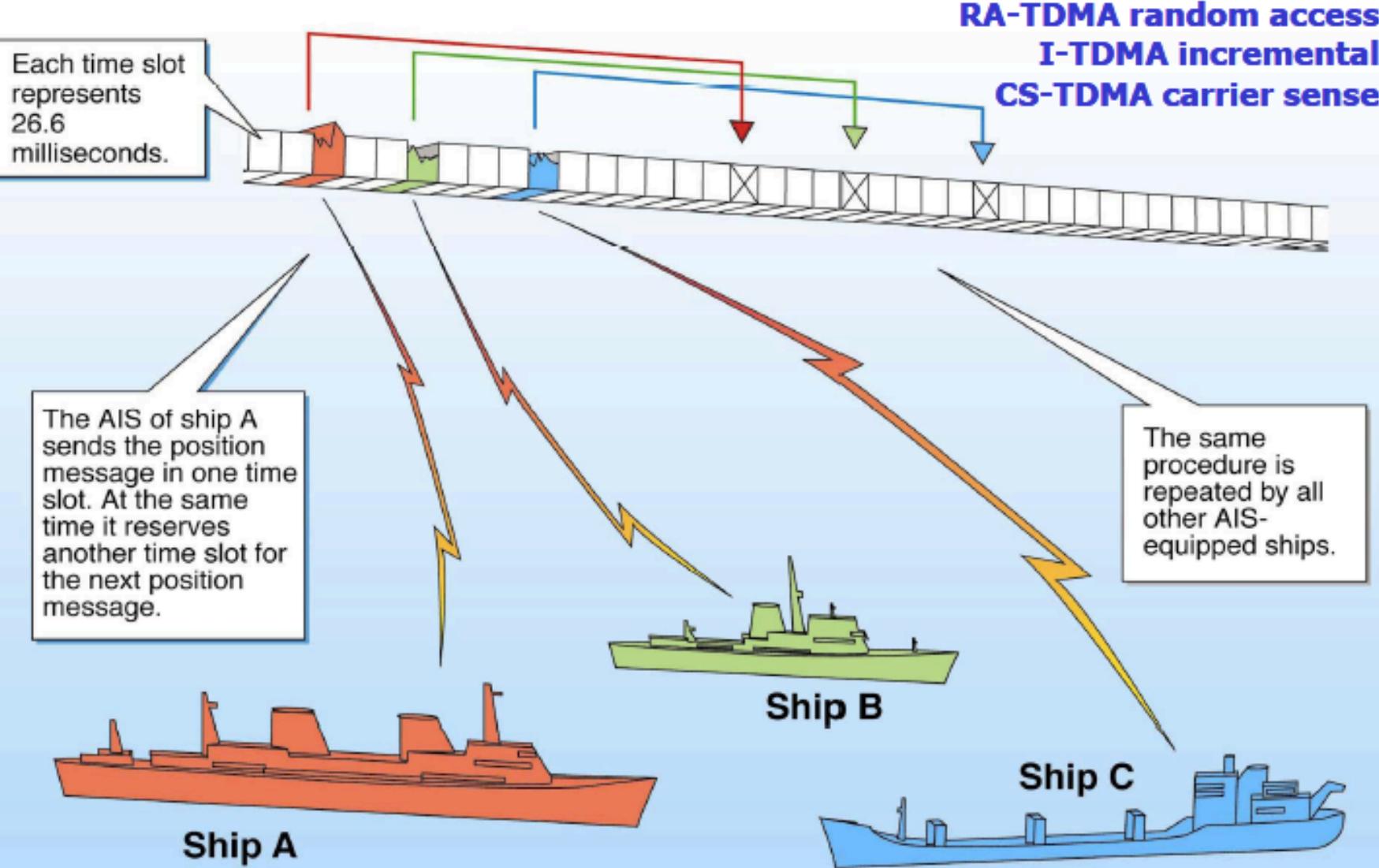
Tetreault, Brian J CIV USARMY CEERD-CHL (US) ▾

	A	B	C	D	E	F	G	H	I	J	K	L
1	MMSI	NAME	RECEIVER	TX_DTTM	LAT	LON	COURSE_OVER_GROUND	NAV_STATUS	POS_ACCURACY	RATE_OF_TURN	SPEED_OVER_GROUND	HEADING
2	366999645	CG-CHEYENNE-----		6/5/2017 0:00	38.587088	-90.209098		287 Moored	FALSE	0	0	48
3	367533180	TAURUS		6/5/2017 0:00	37.070665	-89.308686		171 Under way using engine	FALSE	0	2	200
4	367051930	DANNY BRADFORD		6/5/2017 0:00	38.18708	-90.33315		276 Not defined (default) or	FALSE		0	
5	366956790	CO-OP ENTERPRISE		6/5/2017 0:00	38.583492	-90.213212		180 Not defined (default) or	FALSE	0	0	47
6	367599790	STONE STRAIT		6/5/2017 0:00	38.874806	-90.160008		134 Reserved for DG/HS/MP	FALSE	0	1	129
7	367057590	CARL CANNON		6/5/2017 0:00	38.966334	-90.492664		66 Not defined (default) or	FALSE		5	
8	367687950	DAKOTA		6/5/2017 0:00	38.378258	-90.349346		202 Under way using engine	FALSE		8	
9	366984940	MARY EVELYN		6/5/2017 0:00	39.38738	-90.933955		187 Not defined (default) or	FALSE	0	0	124
10	367451290	LOREE ECKSTEIN		6/5/2017 0:00	38.387088	-90.343583		209 Under way using engine	FALSE	0	9	199
11	366995330	CHARLOTTE		6/5/2017 0:00	38.865387	-90.14536		122 Reserved for future use	FALSE	-13	4	120
12	367496750	LEXINGTON		6/5/2017 0:00	38.572156	-90.225022		230 Under way using engine	FALSE		0	
13	366999645	CG-CHEYENNE-----		6/5/2017 0:05	38.587087	-90.209099		224 Moored	FALSE	0	0	48
14	367533180	TAURUS		6/5/2017 0:05	37.064081	-89.310251		180 Under way using engine	FALSE	0	6	180
15	367051930	DANNY BRADFORD		6/5/2017 0:05	38.187083	-90.333146		272 Not defined (default) or	FALSE		0	
16	367599790	STONE STRAIT		6/5/2017 0:05	38.873157	-90.158388		151 Reserved for DG/HS/MP	FALSE	0	1	130
17	366956790	CO-OP ENTERPRISE		6/5/2017 0:05	38.583491	-90.213212		255 Not defined (default) or	FALSE	0	0	47
18	367057590	CARL CANNON		6/5/2017 0:05	38.967826	-90.485831		80 Not defined (default) or	FALSE		5	
19	367687950	DAKOTA		6/5/2017 0:05	38.368536	-90.354232		200 Under way using engine	FALSE		6	
20	366984940	MARY EVELYN		6/5/2017 0:05	39.387375	-90.933953		187 Not defined (default) or	FALSE	0	0	124
21	367451290	LOREE ECKSTEIN		6/5/2017 0:05	38.374758	-90.350376		199 Under way using engine	FALSE	0	11	197
22	366995330	CHARLOTTE		6/5/2017 0:05	38.861148	-90.135536		118 Reserved for future use	FALSE	-9	7	120
23	367496750	LEXINGTON		6/5/2017 0:05	38.572148	-90.225024		232 Under way using engine	FALSE		0	
24	366999645	CG-CHEYENNE-----		6/5/2017 0:10	38.587083	-90.209097		305 Moored	FALSE	0	0	48
25	367533180	TAURUS		6/5/2017 0:10	37.053911	-89.308706		195 Under way using engine	FALSE	0	3	160
26	367051930	DANNY BRADFORD		6/5/2017 0:10	38.187105	-90.333148		268 Not defined (default) or	FALSE		0	
27	367544950	DALE ARTIGUE		6/5/2017 0:10	38.177162	-90.306671		280 Under way using engine	FALSE	0	4	280
28	367599790	STONE STRAIT		6/5/2017 0:10	38.871328	-90.156101		129 Reserved for DG/HS/MP	FALSE	0	2	123

Automatic Identification System (AIS)



time-division multiple access protocol (TDMA)



What vessels have AIS?

New AIS Carriage Requirements...

Effective March 2nd, 2015, these commercially self-propelled vessels, operating on U.S. navigable waters, must have a properly installed, operational Automatic Identification System (AIS) no later than March 1st, 2016

- vessels of \geq 65 feet in length
- towing vessels of \geq 26 feet in length & $>$ 600 hp
- vessels certificated to carry \geq 150 passengers
- dredges and ~~floating plants~~ that operate in/near a commercial channel
- vessels engaged in the movement of certain dangerous cargo, **flammable or combustible liquid cargo in bulk**

Effected Vessels by Type	2003		2015	Total Vessels
	SOLAS	Domestic		
Foreign ship >65'<300GT		1,119		1119
Fishing	1	-	2,906	2907
Towing	13	2,212	1,429	3654
Passenger	81	171	288	540
Cargo	154	77	247	478
OSV	55	432	151	638
MODU	1	-	31	32
Industrial	21	11	220	252
Research	10	11	54	75
School		5	10	15
Tank Ships	102	15	35	152
Unknown		16	134	150
Unclassified		13	326	339
Dredges		-	17	17
U.S. Total	438	2,963	5,848	9,249
Total	4,520		5,848	10,368





NAVIGATION CENTER

The Navigation Center of Excellence

U.S. Department of Homeland Security

UNITED STATES COAST GUARD



<https://www.navcen.uscg.gov/?pageName=AISFAQ>

[Print-friendly](#)

System

- What is AIS?
- How AIS Works
- Types of AIS
- AIS Messages
 - Class A Position Report
 - Class A Static & Voyage Data
 - Class B Reports
 - Long Range AIS Report
 - AIS ATON Report
 - AIS Base Station Report
- Nationwide AIS (NAIS)
- NAIS Data Request
- NAIS Search Tool (VIVS)
- AIS Requirements
- AIS Reference Information
 - AIS Encoding Guide & LOCODES
 - AIS Frequently Asked Questions

Mission Areas

- Global Positioning System
- Nationwide DGPS
- Nationwide AIS (NAIS)
- AIS (Overview, Messages, etc.)
- Long Range Identification and Tracking
- Local Notice to Mariners
- Light Lists Publications (2017)
- Light Lists (Weekly Updates)
- CGSIC General Information
- LORAN C (archive)

Subscribe / Report (free)

- Email Message Subscriptions (Free)
- Report an ATON Discrepancy
- Report a GPS Problem
- Report an NDGPS Problem
- Report an LRIT Problem
- Report an AIS / NAIS Problem
- Contact Us

Maritime Information

- Electronic Charts Approval
- Maritime Safety Information Downloads
- Maritime Telecommunications

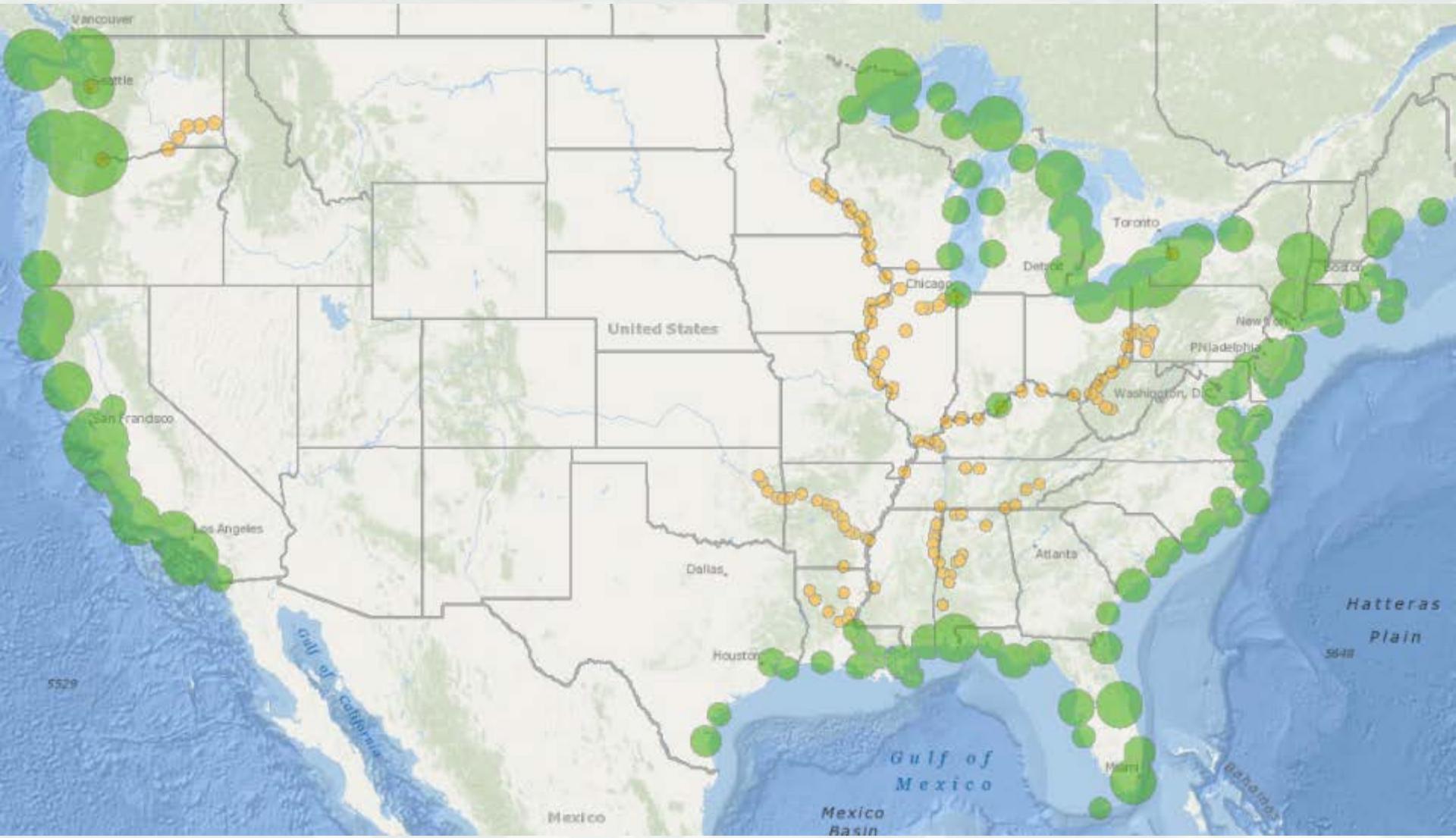
AIS FREQUENTLY ASKED QUESTIONS

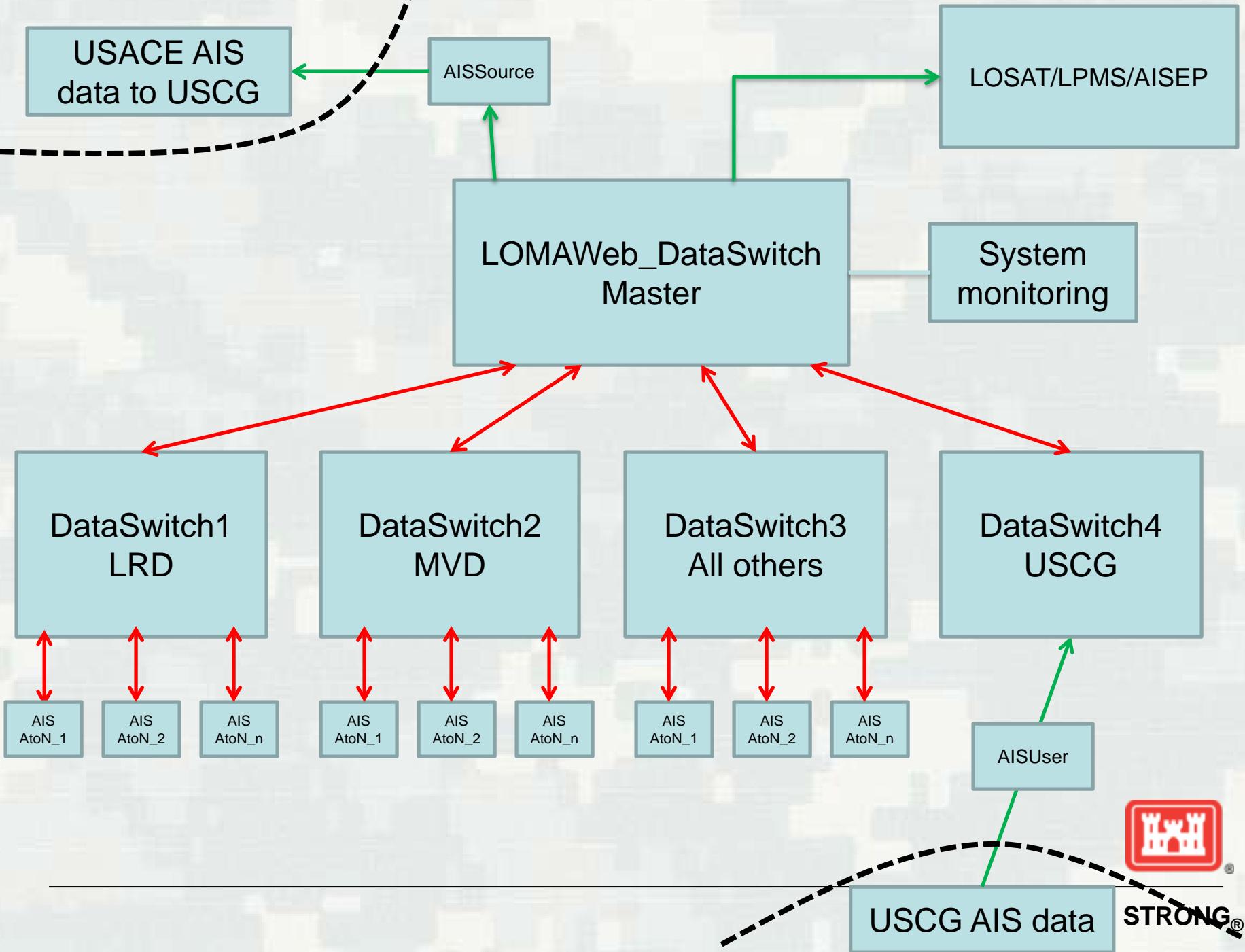
1. [What is AIS?](#)
2. [How do I register \(obtain a MMSI's\), install, encode, and verify my AIS?](#)
3. [What is the AIS rule and are there alternatives to the rule for small businesses?](#)
4. [Do AIS Class B devices meet current USCG AIS carriage requirements? What are the differences between AIS Class A and Class B devices?](#)
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, are onboard Vessel Monitoring Systems \(VMS\) an acceptable substitute for 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. [What are the differences between AIS Class A and B devices?](#)
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? You can download recent presentations given by the Coast Guard Office of Navigation Systems.](#)
17. [Where can I get AIS data?](#)
18. [Can I use AIS to locate my nets, pots, traps, moorings, etc.?](#)
19. [What is AIS Channel Management?](#)
20. [Can I use my AIS in an emergency or for distress messaging?](#)
21. [Is the Coast Guard broadcasting AIS Aids to Navigation Reports?](#)
22. [Have an AIS question not answered here?](#)

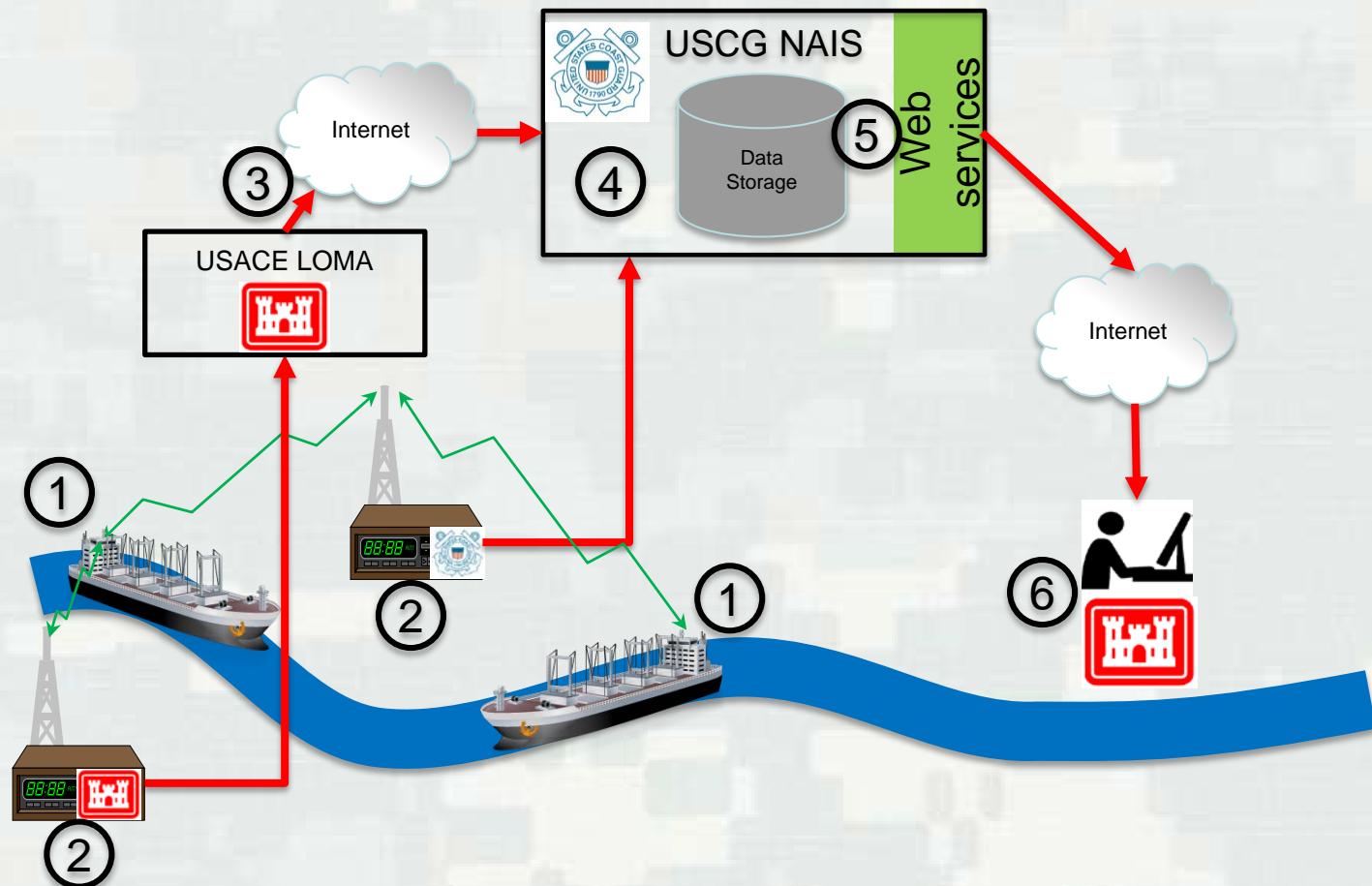
1. What is AIS? Per 33 CFR §164.46(a), AIS is a maritime navigation safety communications system standardized by the International Telecommunication Union (ITU) and adopted by the International Maritime Organization (IMO) that provides vessel information, including the vessel's identity, type, position, 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. Note, many devices are marketed as AIS, but, only those (see [Types of AIS](#)) that are certified to meet stringent standards are. [Read more](#) on what it is, how it works, what it broadcasts, and, the messages it uses, etc.

2. How do I register (obtain a MMSI's), install, encode, and verify my AIS? AIS devices are not registered, however, each requires a unique and official 9-digit Maritime Mobile Service Identity (MMSI) number. To obtain one see our [MMSI page](#). AIS devices should be installed taking into consideration the guidelines developed by the International Maritime Organization ([IMO Safety of Navigation Circular.227, Guidelines For The Installation Of A Shipborne Automatic Identification System](#)) or the National Marine Electronics Association ([NMEA 0400-4.00, Installation Guide](#)). Encoding an AIS varies by class. AIS Class B are not user configurable, AIS Class A are; but, their static data (i.e. MMSI, name, call-sign, type, dimension, etc.) is password protected. Therefore, Class B owners, and Class A owners whom have lost/forgotten their password, should contact your AIS installer, manufacturer, or retailer for instructions on how to encode/decode it. Note, each [USCG type-approved](#) AIS has an internal built-in integrity tester that mitigates the need to send TEST text messages to verify its operations. That said, the U.S. Coast Guard operates a [Vessel Information Verification Service](#) which can be used to not only verify that your AIS has broadcasted, but, will also highlight any potential data or encoding discrepancies (contrary to our [USCG AIS Encoding Guidance](#)). Per 33 CFR §164.46(d) vessels equipped with AIS must maintain it always in effective operating condition and broadcasting accurately; failure to do so could subject owner/operator to civil penalties not to exceed \$25,000 (46 U.S.C. 70119).

USACE and USCG AIS coverage







USACE-USCG ISA



**Homeland
Security**

Interconnection Security Agreement

between

**United States Coast Guard (USCG)/ Nationwide
Automatic Identification System**

And

United States Army Corps of Engineers (USACE)

WARNING: This document is FOR OFFICIAL USE ONLY (FOUO). It contains information that may be exempt from public release under the Freedom of Information Act (5 U.S.C. 552). It is to be controlled, stored, handled, transmitted, distributed, and disposed of in accordance with DHS policy relating to FOUO information and is not to be released to the public or other personnel who do not have a valid "need-to-know" without prior approval of the NAIS and the USACE Disclosure Offices.

May 20, 2015

Securing Information that Protects the Homeland

For Official Use Only

MEMORANDUM OF Understanding (MOU)

Between

**United States Coast Guard (USCG)/ Nationwide
Automatic Identification System (NAIS)**

And

United States Army Corps of Engineers (USACE)



May 20, 2015

Memorandum Of Understanding (MOU)

For Official Use Only

System monitoring

LOMA Transceiver Status Report 11/27/2018 0830 CT (UNCLASSIFIED) - Message (Plain Text)

FILE MESSAGE McAfee E-mail Scan ADOBE PDF

Tue 11/27/2018 9:33 AM

Towne, Brady A CIV USARMY CEERD (US)

LOMA Transceiver Status Report 11/27/2018 0830 CT (UNCLASSIFIED)

To: Aust, Kimberly J CIV USARMY CEIT (US); Brooks, Curtis J CIV CEMVR CEMVD (US); Chambers, Gary E CIV DFAS (US); Christopher.P.Padlo@uscg.mil; Dennis.R.Foster@uscg.mil; Djoseph, Patricia K CIV USARMY CEERD-CHL (US); Eckhardt, W Cody CIV USARMY CEMVD (US); Elvin, G. Bruce2@uscg.mil (Elvin.G.Bruce2@uscg.mil); Heinold, Thomas D Jr CIV USARMY CEMVR (US); Jacob.E.Littley@uscg.mil; James Kilroy (DREN: 'Jennifer. M. Newman2@uscg.mil' (Jennifer.M.Newman2@uscg.mil); Johnson, Gregory W; Kilroy, James T Jr CIV USARMY CEERD-CHL (US); Lauth, Timothy John CIV USARMY CEMVS (US); Martin, Matthew O CIV USARMY CEMVR (USA); michael.j.nevman@uscg.mil; Mitchell, Kenneth N CIV USARMY CEERD-CHL (USA); Ramon Villa ; Riley, Steven D CIV (US);

CLASSIFICATION: UNCLASSIFIED

LOMA Transceiver Status Report 11/27/2018 0830 CT All LOMA units are up and operational except:

COLUMBIA_OB_0X2D	ACE-IT INC # 6953207
SELDEN_BW_0JZW	ACE-IT INC # 6988495
MVM_BGU	ACE-IT INC # 7168243/7176106/7175895
MVM_HURLEY	
MVM_MISSISSIPPI	
USACEENSLEYARD_0WMW	

IWR FEED UP

ACE-IT: Site	Incident Date	Incident Time	Ticket #	Notes
LRLitM - John T Myers Lock & Dam - Vernon, Indiana	24-Nov-18	1045 CT	7233561	Degraded / UITOC
SAMSELr1-vpn - Seldon Lock & Dam - Sawyerville, Alabama	14-Aug-18	0945 CT	7129080	Down / UITOC / Awaiting p
SWLDAV-David D Terry Lock and Dam #6 - Scott, Arkansas	21-Nov-18	0934 CT	7232225	Down / Telco

ACE-IT Maintenance:

- ACE-IT Vicksburg (CPC) Scheduled Database Migration Maintenance, Friday, 30 November 2018, 1400-1900 Central Time
- ACE-IT Scheduled ESD Electrical Room Maintenance, Thursday, 29 November 2018, from 1200 to 1600 Central Time

LOMA Admin Console

Admin Panel Bottom Connections Top Connections Map Analysis

DataSwitch Status		
Web DataSwitch	Online	11/26/2018 7:58:06 AM
DataSwitch 1	Online	9/25/2018 3:30:27 AM
DataSwitch 2	Online	11/20/2018 12:49:52 AM
DataSwitch 3	Online	11/20/2018 12:40:23 AM
DataSwitch 4	Online	11/26/2018 7:46:26 AM

DataStore Status		
DataStore	Up	281.6

Server Status		
Web Server	140.194.60.240	Online
DataSwitch 1 Server	140.194.60.242	Online
DataSwitch 2 Server	140.194.60.243	Online
DataSwitch 3 Server	140.194.60.244	Online
DataSwitch 4 Server	140.194.60.245	Online
Authentication/Tools Server	140.194.60.49	Online
Database Server	140.194.20.33	Online

System monitoring



USACE Performance Report Production – OSC Feed 26 November 2018

1. Analyst Report:

- See Analyst comments.

2. Analyst Comments:

- C3CEN has not received USACE data via the OSC production feed since November 23, 2018 @ 0500 EST (0000 GMT).

VILLA.RAMON.F
LORES.JR.11559
62620

Digitally signed by
VILLA.RAMON.FLORES.JR.11
55962620
Date: 2018.11.27 07:58:16
-05'00'

NAIS Analyst



USACE Performance Report Pre-Production - Direct Feed 26 November 2018

1. Analyst Report:

- 138 – Total valid receivers.
- 134 – Valid receivers online and reporting.
- 4 – Valid receivers offline.
- 0 – Valid receivers online, but not reporting.
- 97.10% – Percent of total valid receivers online.
- 0 – Unknown receivers.
- 0 – Receivers with greater than 5% bad data.
- 1691 – Unique MMSI(s).

2. Analyst Comments:

- 0EK6, 0EL3, and 0JVF all report valid and compliant sentences, with 0 class A and B message types, and 1 MMSI.
- There are 2 receivers reporting as non-operational on the LOMA TSR dated 11/26/2018 that did not report offline in pre-production: 0A9W and 0C31.
- There are 2 receivers reporting offline in pre-production that did not appear on the LOMA TSR dated 11/26/2018: 096K and 0JZW.

3. Total Data Report from Analysis Tool:

Receiver Name	Compliant Sentences	Sentences	MMSI	Class A	Class B	% Bad Data	Own Base Station	Remarks
rACE01HW	260261	260261	118	224686	2972	0	1	
rACE01PN	36351	36351	4	7095	0	0	0	
rACE01SU	35247	35247	6	5970	0	0	0	
rACE01VK	34308	34308	6	3600	0	0	0	
rACE021Z	30083	30083	2	841	0	0	0	
rACE0230	31702	31702	5	2427	0	0	0	
rACE0239	30086	30086	3	1290	0	0	0	
rACE024S	34835	34835	5	5377	182	0	0	
rACE03HS	115275	115275	20	57801	0	0	0	

Summary

- What is AIS?
- Players
 - ▶ 1371 overview
 - ▶ IMO performance guidelines
- Technology
- Limitations
- Data flow to USCG
 - ▶ opportunity for ready access to real-time and archival data



AIS transmit capability

- AIS well known as a “tracking” system
 - ▶ Receive information from vessels
- AIS is also a two-way communications system
 - ▶ Send information to vessels
 - ▶ Receive additional information from vessels
 - ▶ Standard messages and new messages to address specific needs
- Cooperative work with US Coast Guard
 - ▶ Technology development
 - ▶ Test beds

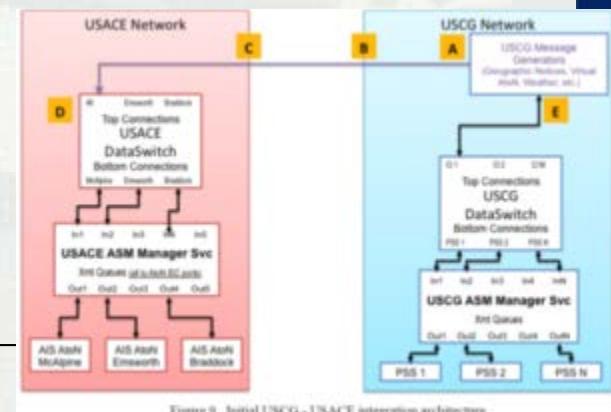
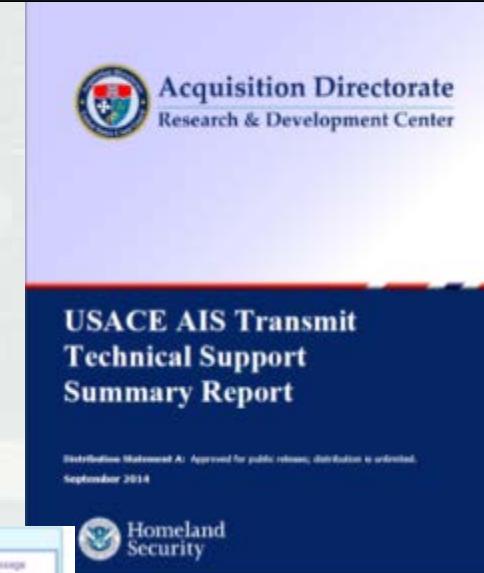
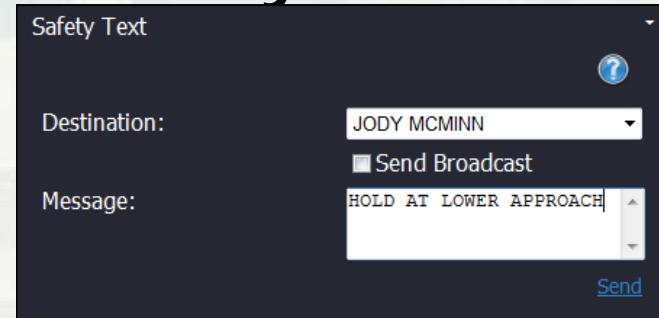


Figure 9. Initial USCG - USACE integration architecture.

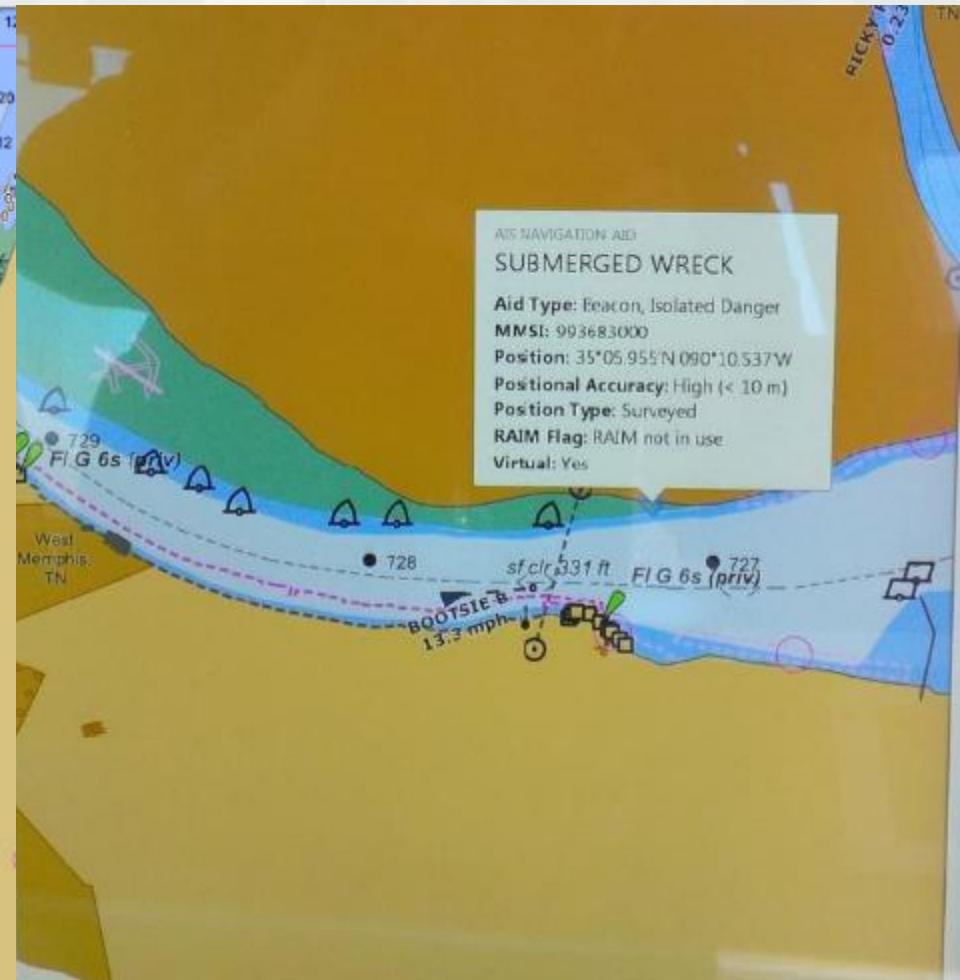


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Virtual AtoN

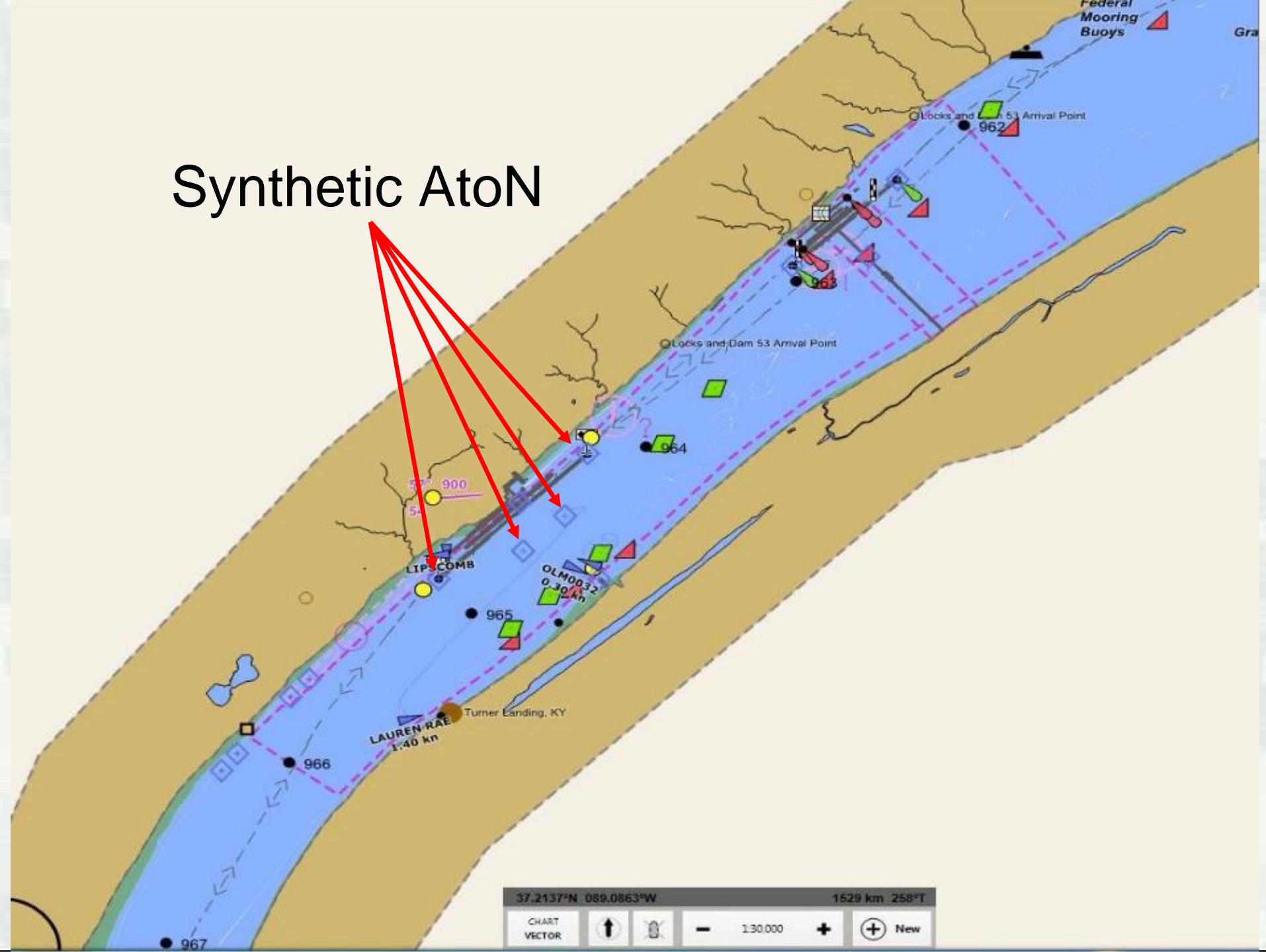


AIS V-AtoN in area where ice and tidal range prohibit physical AtoN

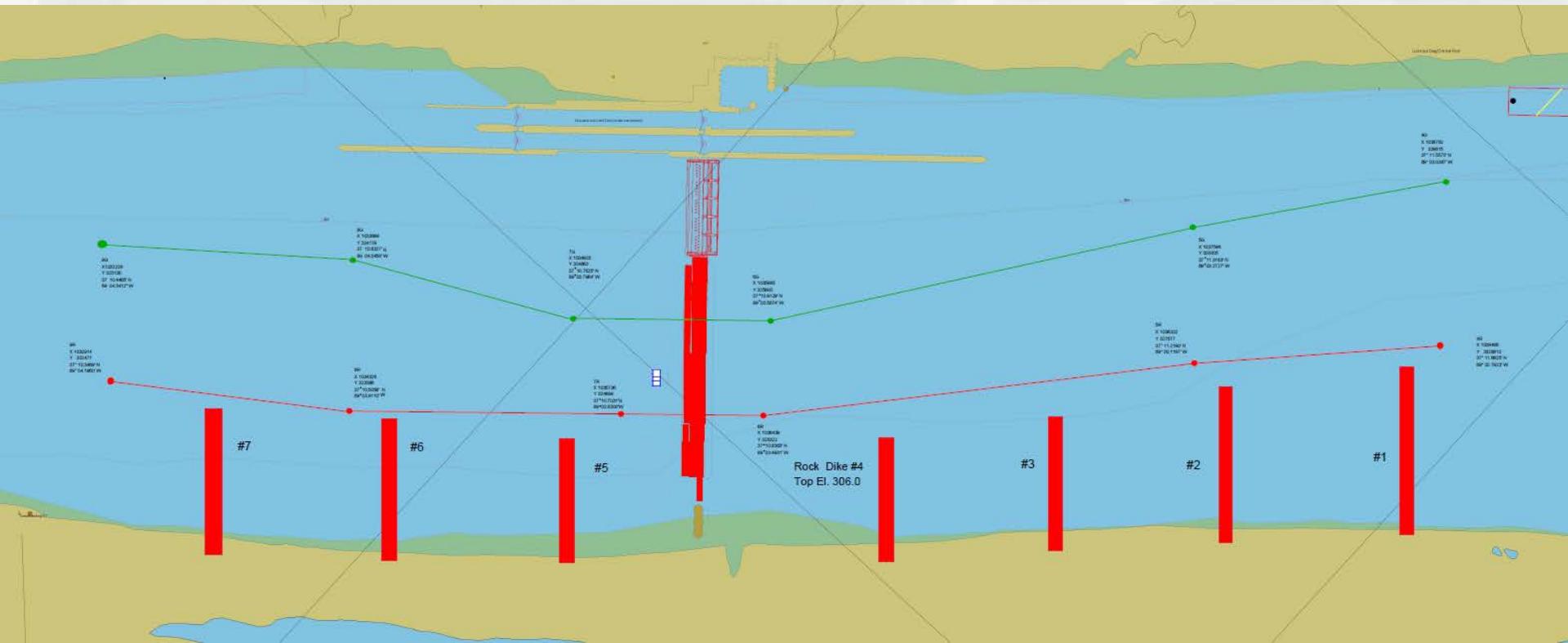


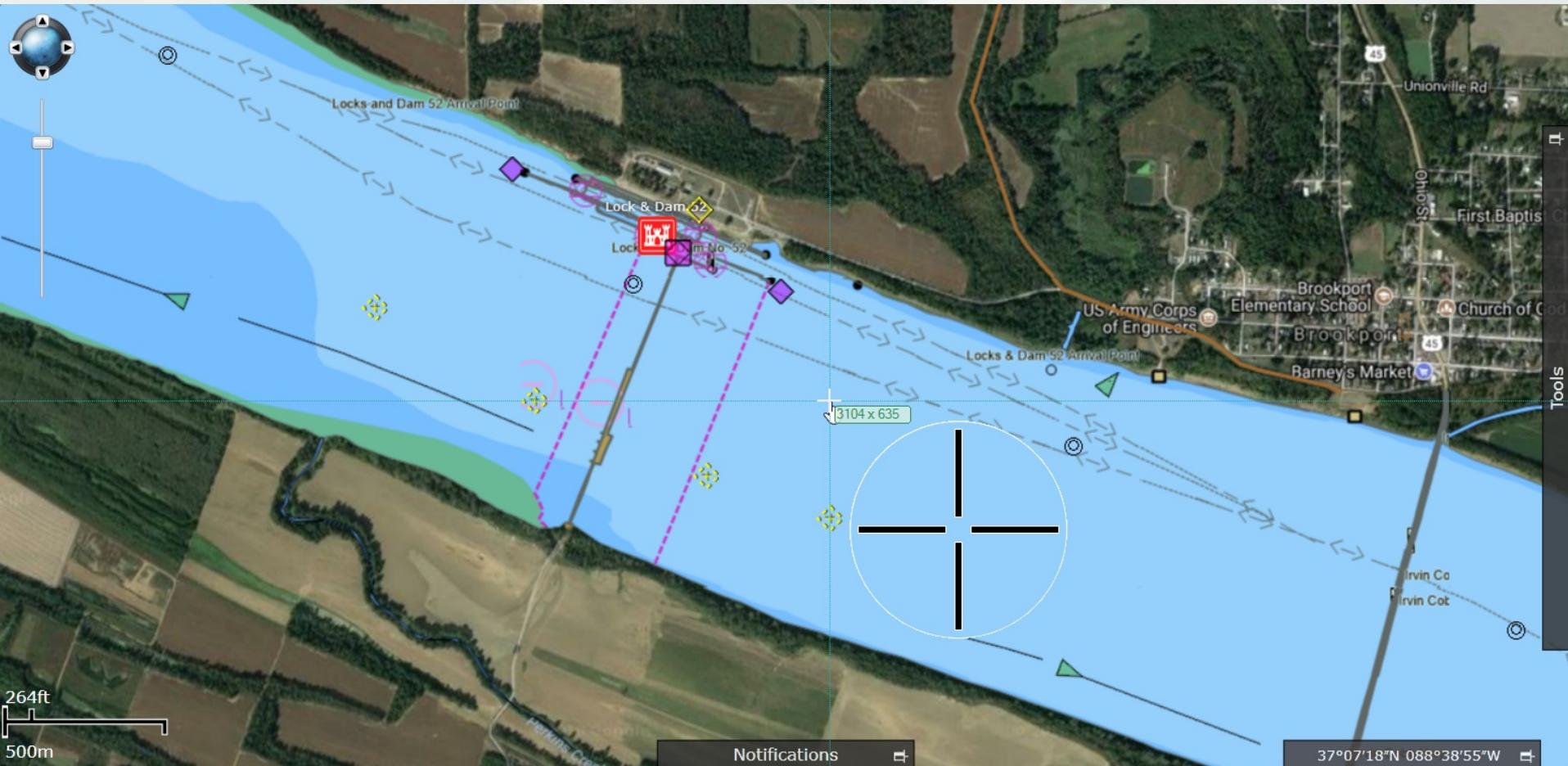
AIS V-AtoN marking submerged wreck in swift river waters

Synthetic AtoN



AIS AtoN marking navigation pass

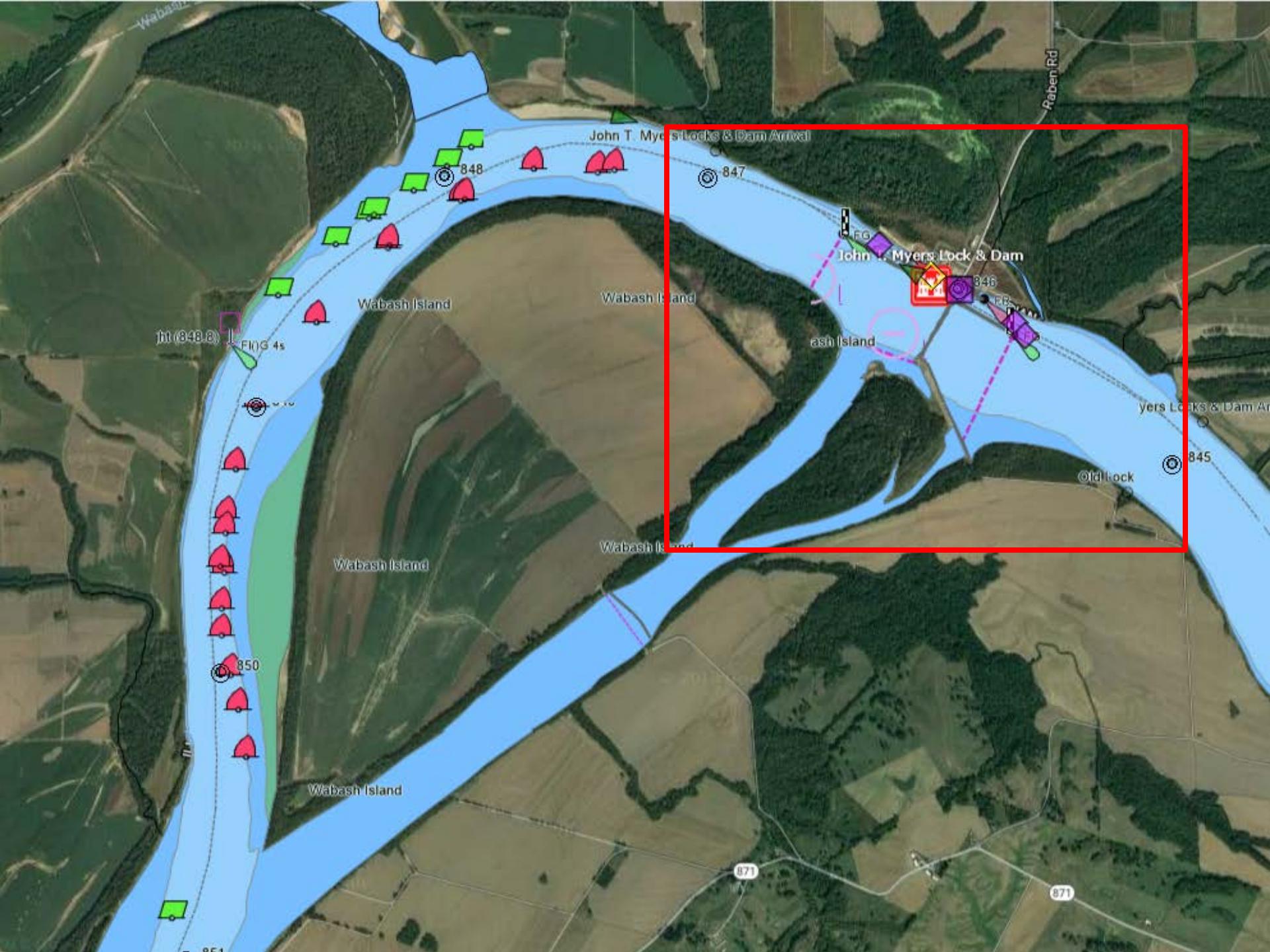


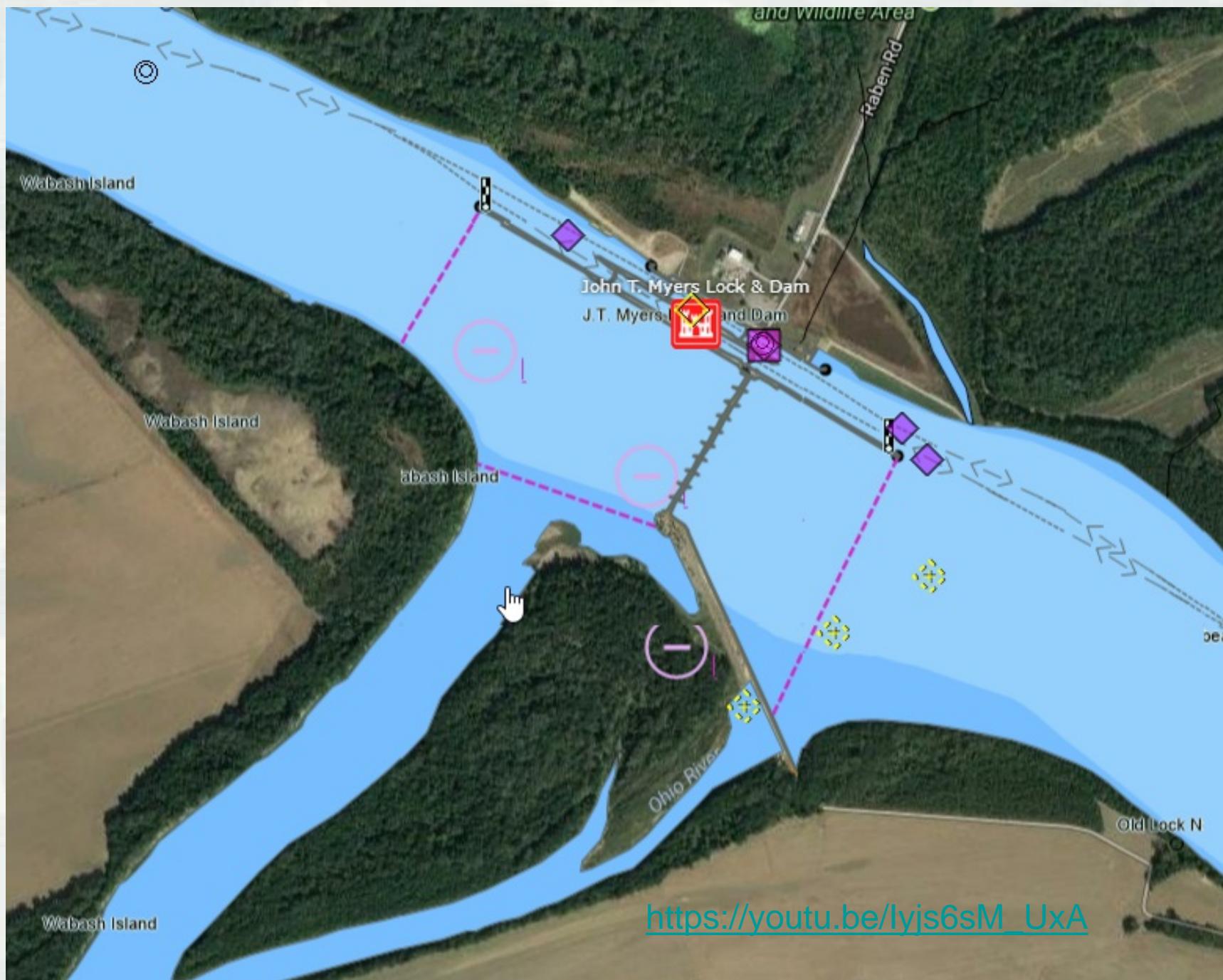


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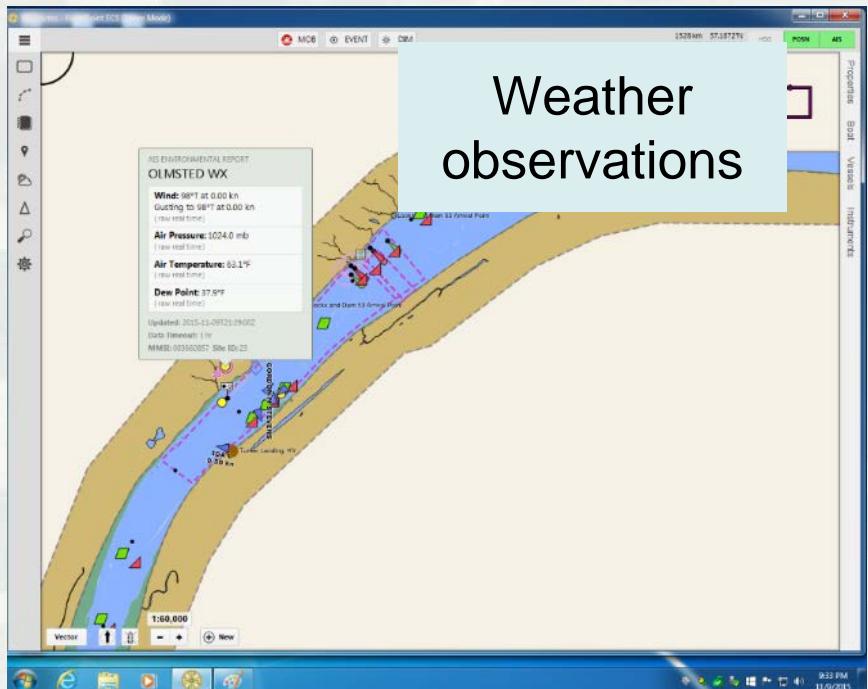
DONG®

Virtual/Synthetic AtoN issues

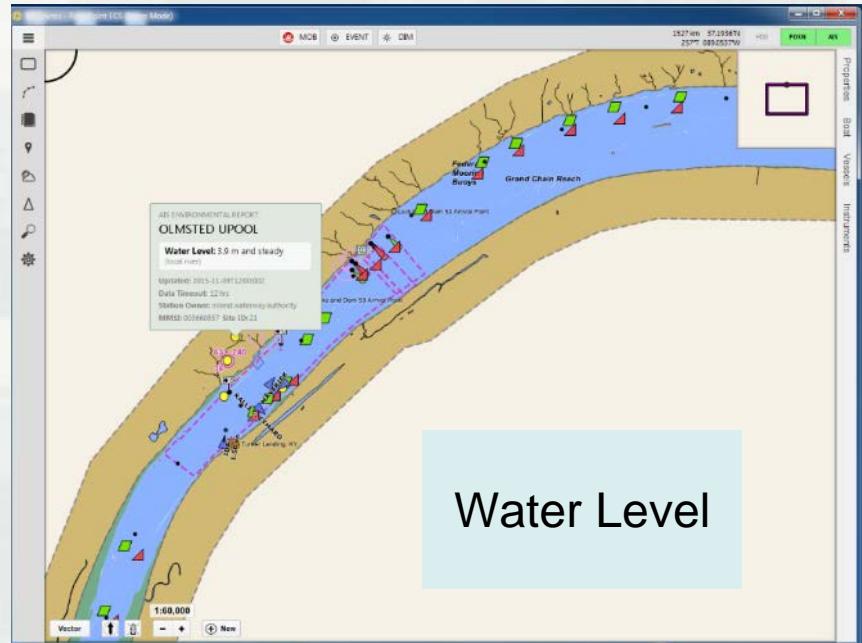
- Process
 - ▶ Who decides when and where to establish?
 - ▶ Who creates?
 - ▶ Monitoring to ensure transmission/receipt?
- Technical
 - ▶ USCG-USACE connectivity
 - ▶ USAIMS integration
- IENC:
 - ▶ What AIS AtoN are charted?



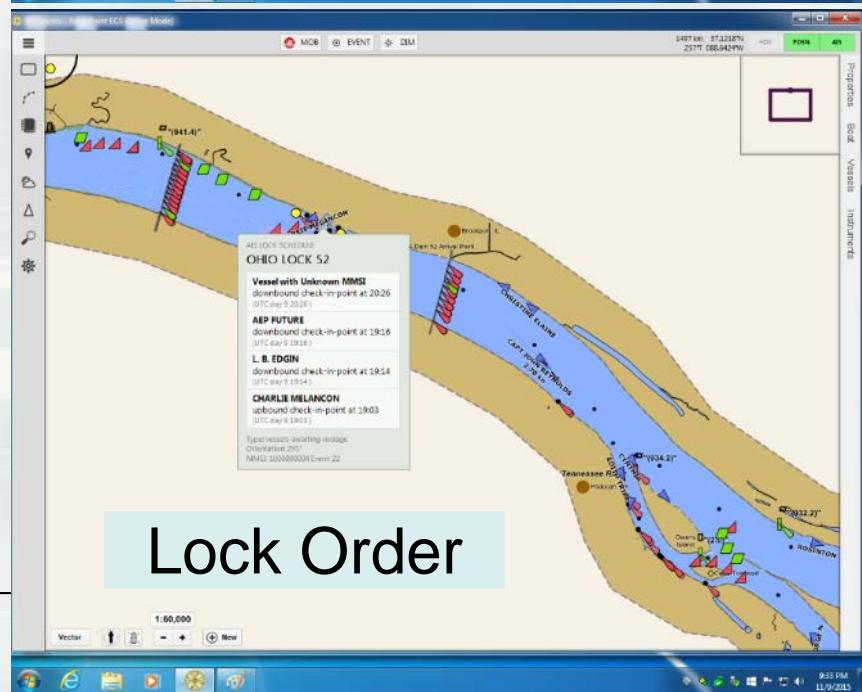
Information delivered to vessels via AIS



Weather observations

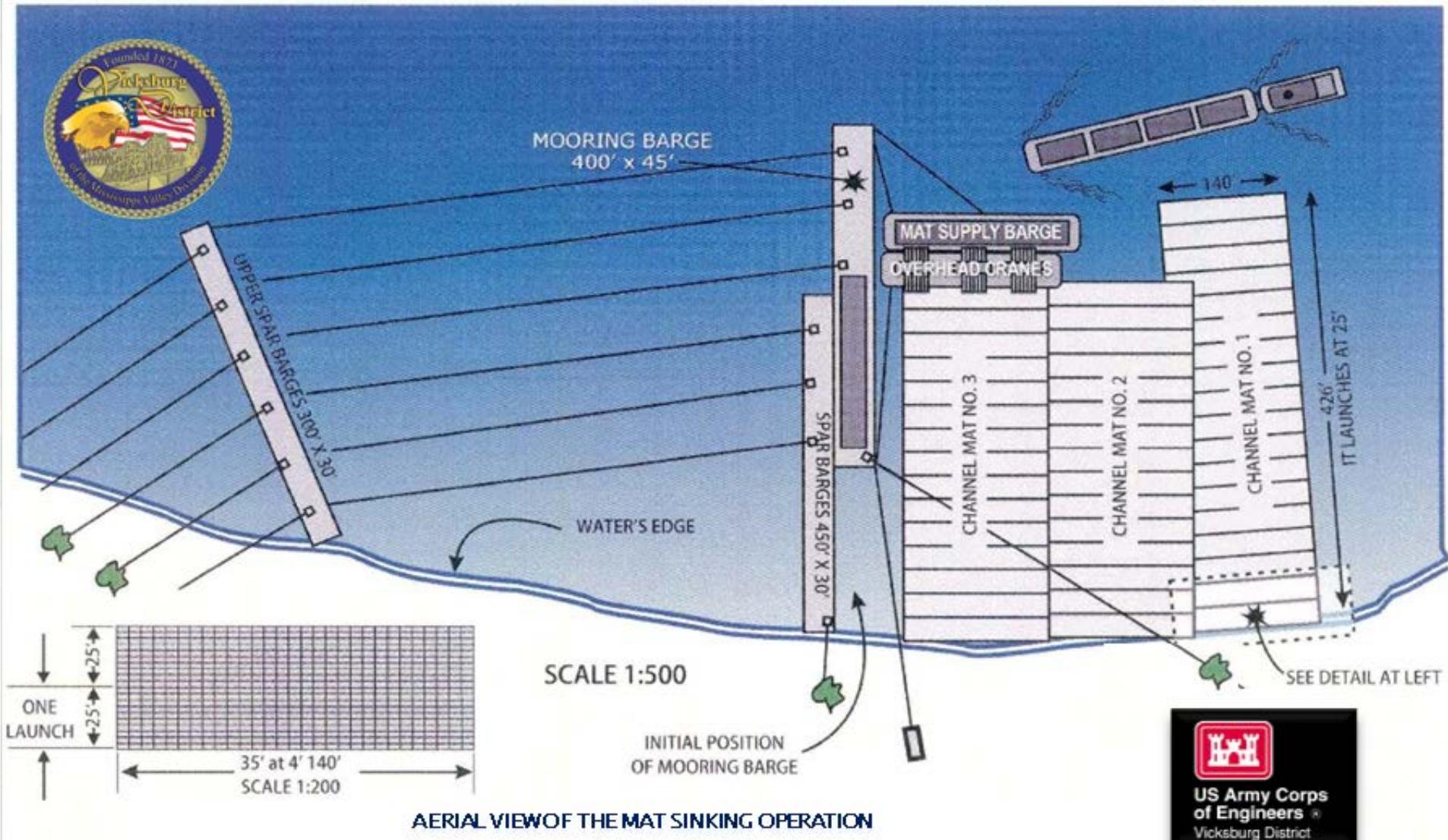


Water Level



Lock Order

Mat Sinking Unit operations

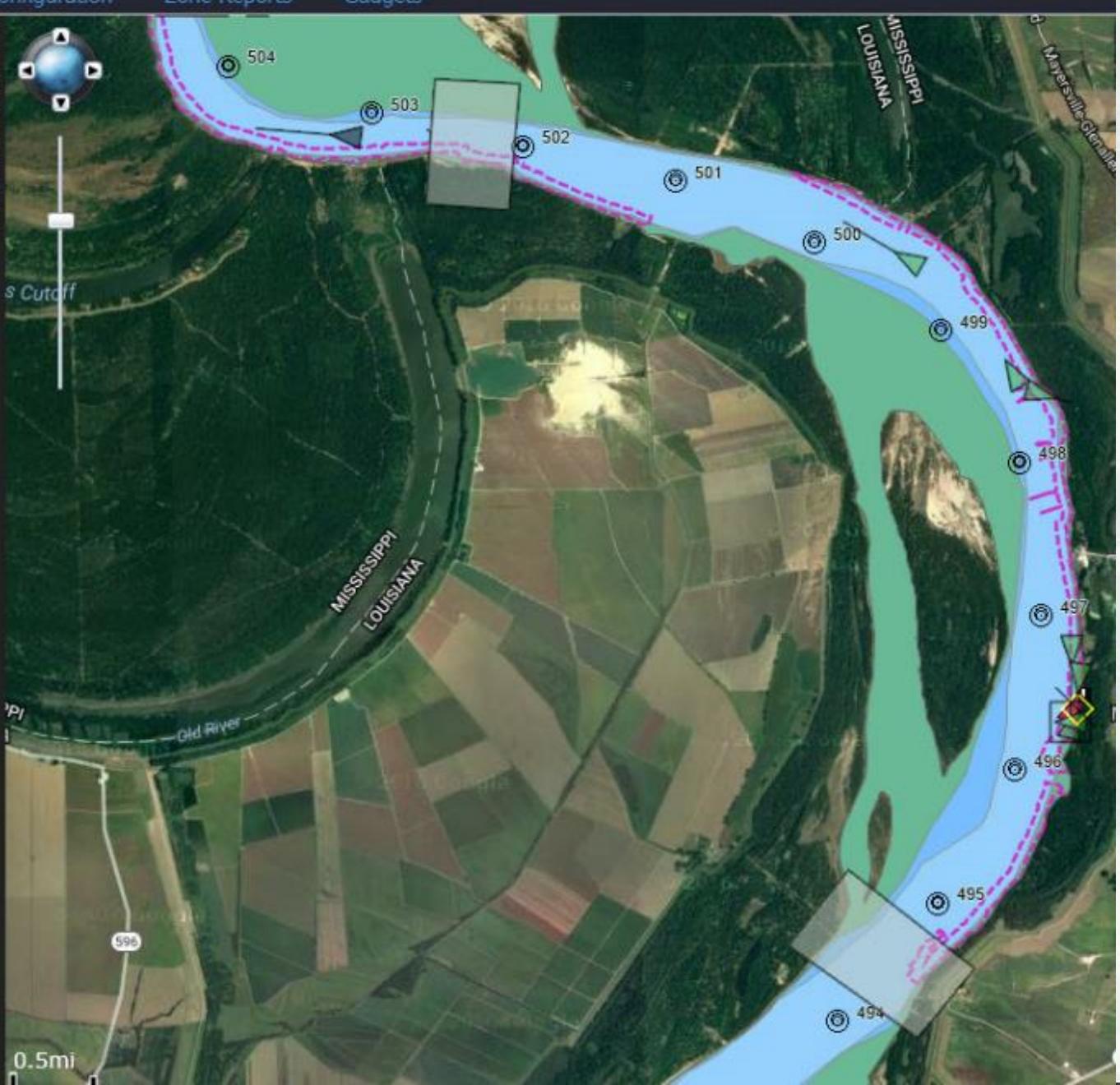


US Army Corps
of Engineers ®
Vicksburg District

[Live Plotter](#)[Playback Plotter](#)[Zone Configuration](#)[Zone Reports](#)[Gadgets](#)

Target Information

Name	WILLIAM JAMES
MMSI	366999267
Callsign	AAAG
Latitude	32°54'05"N
Longitude	091°03'40"W
SOG	0 mph
Heading	Not available
COG	272°
Nav Status	Moored
Operating Mode	Autonomous
Rate Of Turn	Not available
Length	164.00 ft
Beam	45.92 ft
Type of Ship	Vessel - Towing
Type of Cargo	N/A
CargoType	31
IMO Number	0
Draught	0.00 ft
Nav Sensor	GPS
DTE Status	Available
Nationality	United States of America
Lock	Not available
Mile	496
River	Mississippi River
Time since last update	00:03:46





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Collision between the *Riley Elizabeth* Tow and
US Army Corps of Engineers Barge Plant
Mississippi River near Waterproof, Louisiana
July 18, 2014

NTSB

Marine Accident Report

4. Recommendations

As a result of its investigation, the National Transportation Safety Board makes the following safety recommendations to the US Army Corps of Engineers:

Specify in the information you provide to the public how far US Army Corps of Engineers projects extend into the waterway. (M-15-13)

Use automatic identification system aids to navigation or application-specific messages to mark potential hazards to navigation. (M-15-14)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

CHRISTOPHER A. HART
Chairman

ROBERT L. SUMWALT
Member

Safety Board



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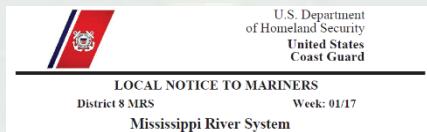
River Information Services

Working definition:

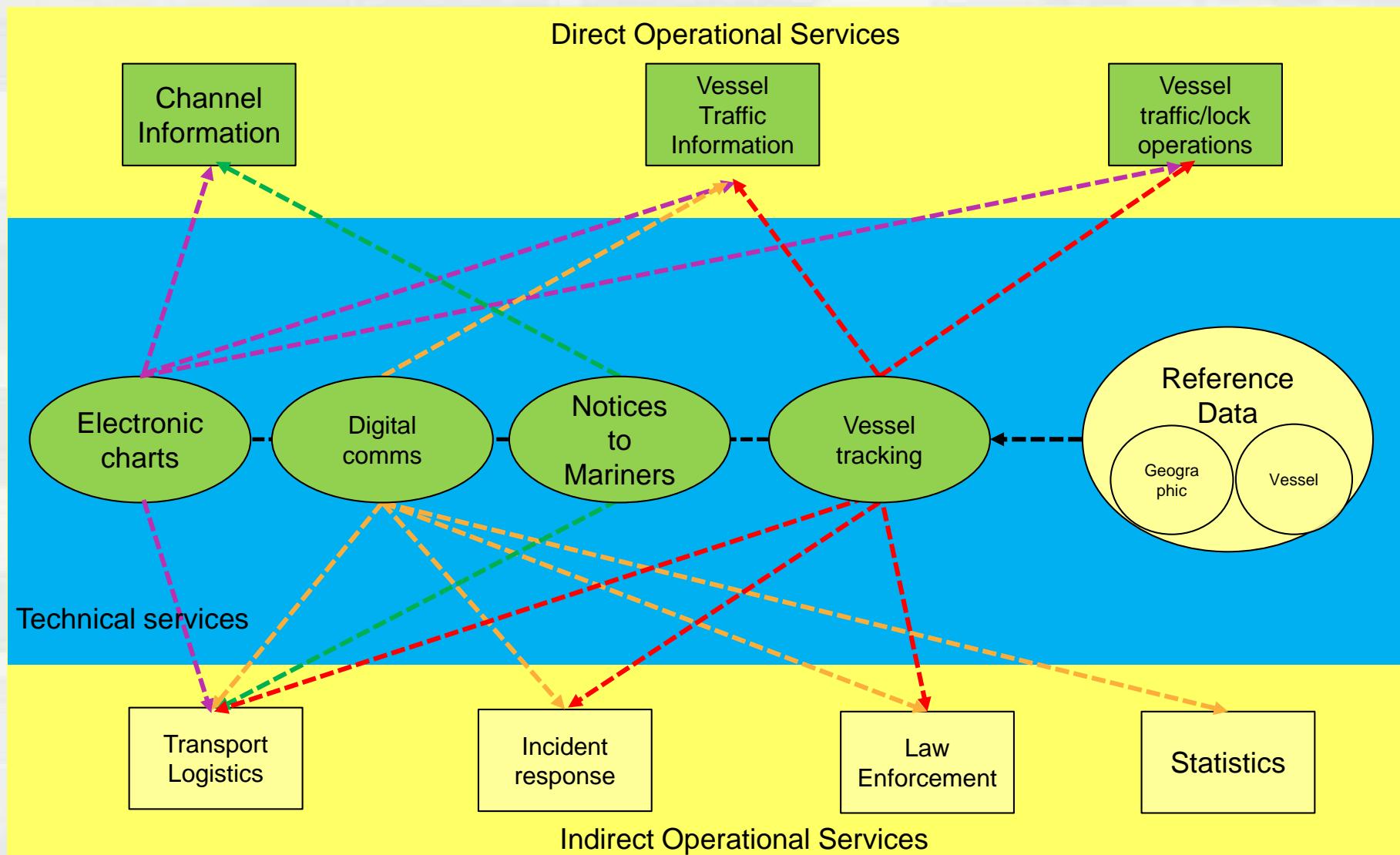
River Information Services (RIS) makes navigation data more accessible and usable in support of USACE Navigation operations and maintenance.

Technical Services

- Inland Navigation Charts (IENC)
- Vessel tracking (AIS)
- Notices to Mariners
- Electronic Reporting
- Reference Data



RIS Technical and Operational Services

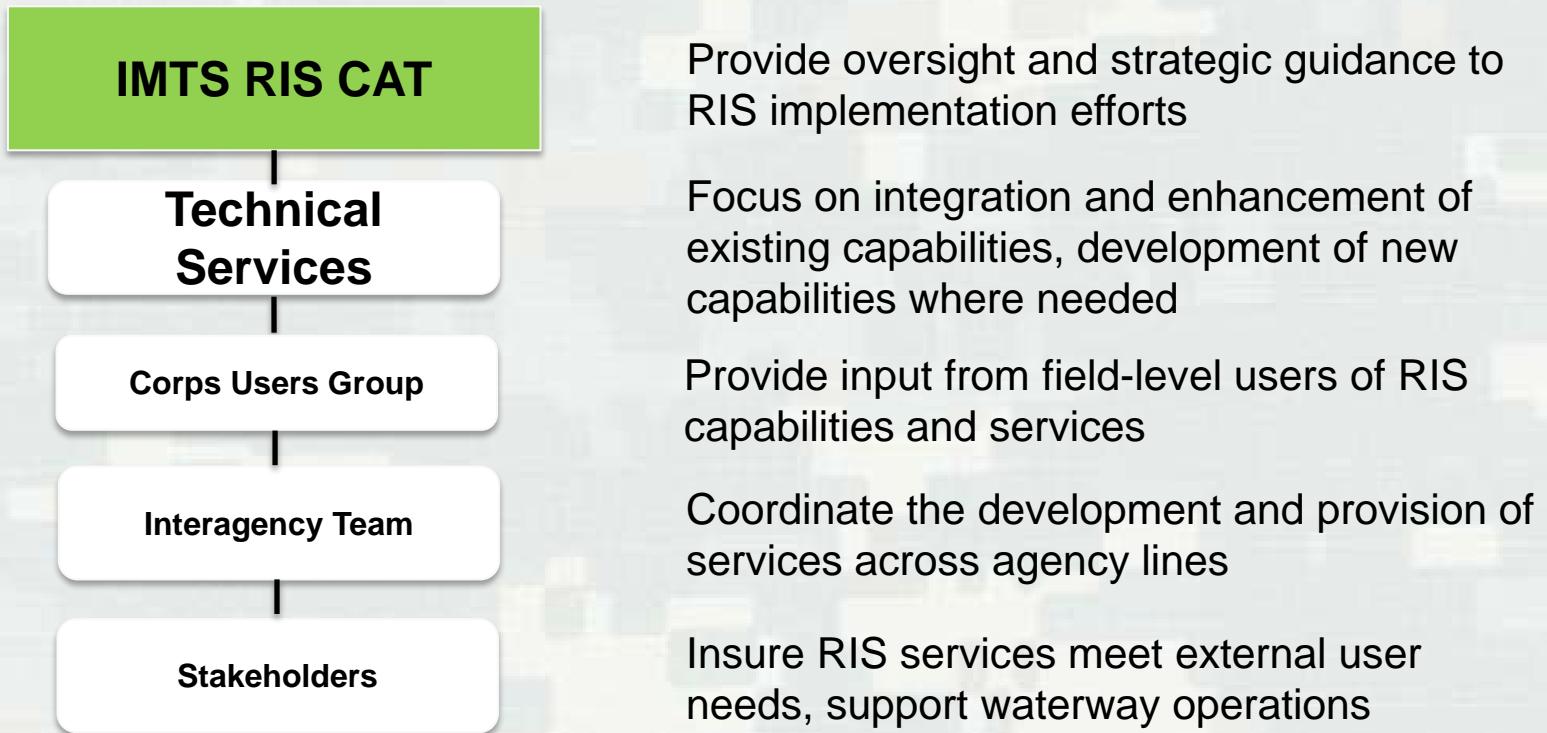


Way ahead for US RIS implementation

- Build on existing capabilities
- Establish governance
 - ▶ USACE RIS team
- External engagement:
 - ▶ Interagency
 - ▶ Industry
- Implementation project



RIS Collaborative Action Team



National RIS Implementation Project

- Phase 1: short term - Define and achieve interoperability of systems
 - ▶ LOMA timings to LPMS – automate as much as possible
 - ▶ LPMS feed LOMA gate settings (etc.) for input to model outdrafts
 - ▶ Delays for system performance
- Phase 2: mid term - Vessel tracking and electronic reporting
 - ▶ eHydro integration/implementation
 - ▶ Electronic reporting of industry information
 - ▶ NTNI/NTM harmonization
- Phase 3: long term – Navigation Planning Tools
 - ▶ Congestion prediction
 - ▶ Dynamic trip support (ETA service)
 - ▶ Enhanced weather/water information



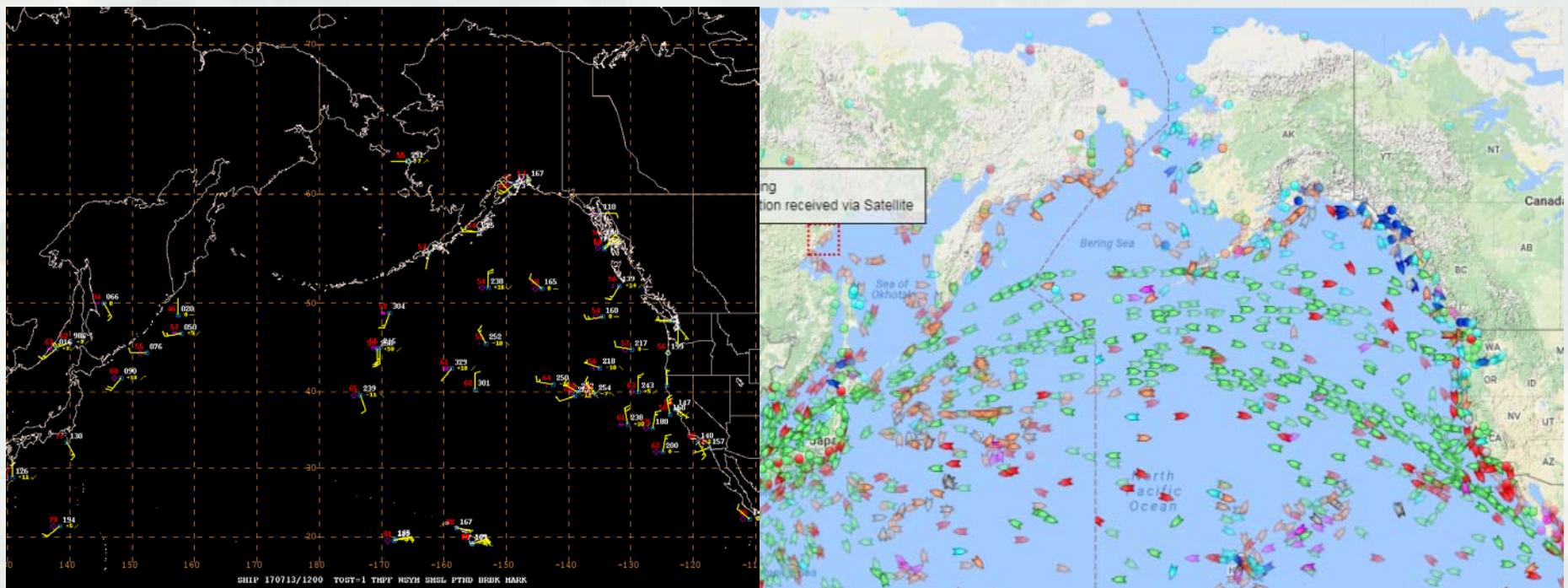
Strategic Communication

- Internal events:
 - ▶ Lock Operations workshop 16-18 October 2018
 - ▶ MSC Ops Chiefs TBD
 - ▶ Lock Maintenance workshop Jan/Feb 2019
- Industry outreach
 - ▶ MVD-LRD-stakeholders meeting 24 October 2018
 - ▶ Inland Waterways Conference March 2019
- Workshop(s) - TBD
- Interagency Outreach
 - ▶ Committee on the Marine Transportation System (CMTS)



Weather observations via AIS

- Weather forecasters need more observations
- Small fraction of vessels provide voluntary observations
- Observations are usually manually collected
- Communication of observations from vessel to weather offices can be problematic



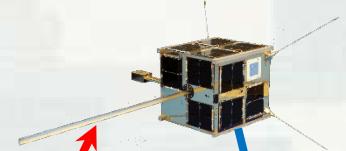


NMEA
Manual

Integration software

AIS
?

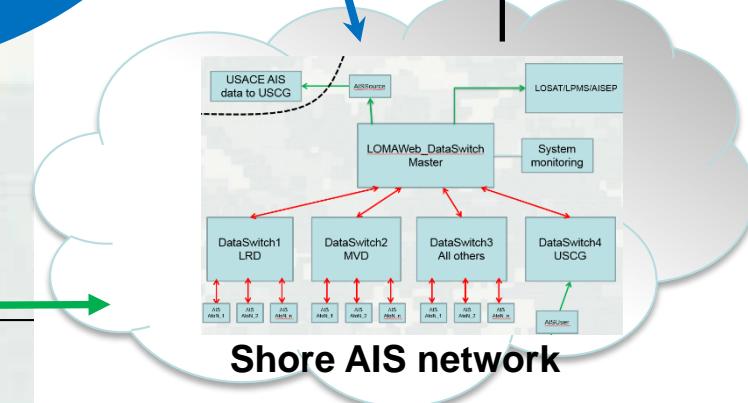
Other comms



Forecaster

Forecast models

Processing
- Decode
- QA/QC
- Routing



The laptop was placed on a ledge adjacent to the AIS pilot port; a cable from the pilot port was run to the laptop. A power strip plugged into the one available outlet was used to power the laptop and weather station.



Figure 7. Left: Laptop (orange arrow) on ledge to the right of the pilot port (green arrow). Right: close-up of pilot port.



L3-INTERFACE

File Home Insert Page Layout Formulas

Cut Copy Format Painter Clear

Font Size Alignment Number Conditional Format

Normal Bold Italic Underline

Wrap Text Merge & Center

Format Cells

Normal Bad Good

A297 F1 135100

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
3351	141155	303940000	367	33	76.60139	39.26202	0	0	0	0	0	300	3	29	34	
5512	141255	303940000	367	33	76.60138	39.26208	0	0	0	0	0	300	2.8	29	34	
5804	141357	303940000	367	33	76.60134	39.26205	0	0	0	0	0	300	2.8	29	34	
5951	141458	303940000	367	33	76.60134	39.26205	0	0	0	0	0	300	3	29	34	
6361	141558	303940000	367	33	76.60135	39.262	0	0	0	0	0	300	3.1	29	34	
6541	141659	303940000	367	33	76.60139	39.262	0	0	0	0	0	300	3	29	34	
6659	141861	303940000	367	33	76.60139	39.26208	0	0	0	0	0	300	3.2	29	34	
7030	141962	303940000	367	33	76.60139	39.26202	0	0	0	0	0	300	3.2	29	34	
7031	141962	303940000	367	33	76.60139	39.26202	0	0	0	0	0	300	3.2	29	34	
7213	142063	303940000	367	33	76.60141	39.26203	0	0	0	0	0	300	3	29	34	
7544	142104	303940000	367	33	76.60135	39.262	0	0	0	0	0	300	3.2	29	34	
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8208	142407	303940000	367	33	76.60132	39.26203	0	0	0	0	0	300	3.2	29	34	
8209	142408	303940000	367	33	76.60132	39.26203	0	0	0	0	0	300	3.2	29	34	
8597	142508	303940000	367	33	76.60138	39.26209	0	0	0	0	0	300	3.4	29	34	
8598	142508	303940000	367	33	76.60138	39.26209	0	0	0	0	0	300	3.4	29	34	
9012	142609	303940000	367	33	76.60138	39.26202	0	0	0	0	0	300	3.2	29	34	
9541	142811	303940000	367	33	76.60131	39.262	0	0	0	0	0	300	3.5	29	34	
9709	142912	303940000	367	33	76.60129	39.26202	0	0	0	0	0	300	3.5	29	34	
9710	142912	303940000	367	33	76.60129	39.26202	0	0	0	0	0	300	3.5	29	34	
9828	143013	303940000	367	33	76.60133	39.26207	0	0	0	0	0	300	3.4	29	34	
10479	143114	303940000	367	33	76.60133	39.26207	0	0	0	0	0	300	3.2	29	34	
10479	143114	303940000	367	33	76.60133	39.26207	0	0	0	0	0	300	3.2	29	34	
10612	143215	303940000	367	33	76.60134	39.26206	0	0	0	0	0	300	3.1	29	34	
10635	143215	303940000	367	33	76.60134	39.26206	0	0	0	0	0	300	3.1	29	34	
10799	143315	303940000	367	33	76.60134	39.26207	0	0	0	0	0	300	3.2	29	34	
11253	144017	(8) M002-Hom										300	3.4	29	34	
11320	143518	PAL10M_2.1.1.0_R_0.510e-01_M2.1.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.2	29	34	
11357	143619	PAL10M_2.2.2.0_R_0.510e-01_M2.2.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.3	29	34	
11598	143619	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.3	29	34	
11979	143720	PAL10M_2.2.2.0_R_0.510e-01_M2.2.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.4	29	34	
12214	143953	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.4	29	34	
12725	144023	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.8	29	34	
13059	144327	PAL10M_2.2.2.0_R_0.510e-01_M2.2.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.4	29	34	
13510	1440327	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.5	29	34	
13675	144428	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.4	29	34	
13806	144538	PAL10M_2.2.2.0_R_0.510e-01_M2.2.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.3	29	34	
14154	144629	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.3	29	34	
146429	144630	PAL10M_1.1.1.0_R_0.510e-01_M1.1.1.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	3.3	29	34	
14953	144993	PAL10M_2.2.2.0_R_0.510e-01_M2.2.2.0_R_0.500e-01_L0.1_R0ppR0G5.10_R0.01P										300	2.8	29	34	

Advertisement Microsoft Office

Figure 10. Shore side software (Ship Weather Monitor) is running in upper right window. The CSV file of logged data is shown in the background with reports from the CAPE WRATH (MMSI 303940000)

Lock Operations Management Application (LOMA)

- Purpose:
 - ▶ Provide end users information needed for decision support
- Goals:
 - ▶ Increase lock operator situational awareness
 - ▶ Provide vessel operators better information
 - ▶ Provide better information to Corps management
 - ▶ Exchange information with external users
- The Automatic Identification System (AIS) is the central LOMA technology



LOMA AIS equipment deployment

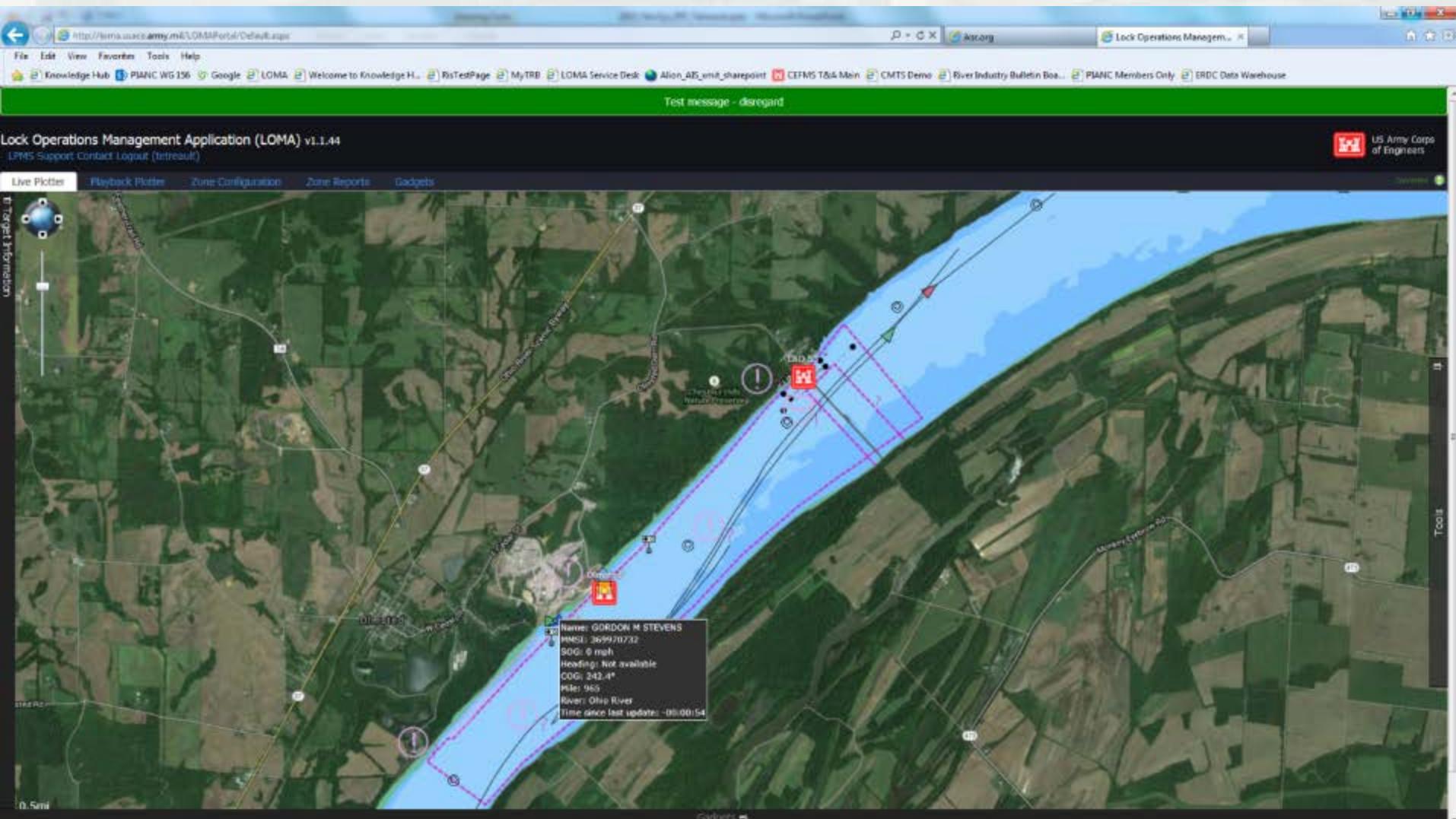
- 130+ locations
- AIS AtoN transceivers
- Interoperability with USCG



Google

LOMA Capabilities

- Lock operator situational display
- AIS vessel information
- Zone Management
- Playback capability



LOMA - Zones

Lock Operations Management Application (LOMA) v1.1.44
LPMS Support Contact Logout (mfwink)

Live Plotter Playback Plotter Zone Configuration Zone Reports Gadgets

Target Information

Name	JOHN D NUGENT
MMSTI	367057860
Callsign	WDC6557
Latitude	037°13'42"N
Longitude	088°57'32"W
SOG	8.2 kts
Heading	Not available
COG	268.6°
Nav Status	Under Way Engine
Operating Mode	Autonomous
Rate Of Turn	Not available
Destination	CAIRO
Length	134.48 ft
Beam	45.92 ft
Type of Ship	Vessel - Towing
Type of Cargo	N/A
CargoType	31
IMO Number	0
Draught	9.51 ft
Nav Sensor	GPS
DTE Status	Available
Nationality	United States of

Targets in Olmsted

- MAVERICK
- LIPSCOMB
- KALI C. EYWARD
- OLM0032

Gadgets

Zone Report

Lock Operations Management Application (LOMA) v1.1.44
LPMS Support Contact Logout (mfwink)

US Army Corps of Engineers

Zone Reports															Gadgets	
Search: <input type="text"/>																
Zone Name	MMSI	Vessel Name	Cargo Type	Ship Type	Entry Time	Exit Time	Time In Zone	SOG	COG	Callsign	Mile Mark	River	Nationality	Lat/Lon	Zone Owner	
Vbg-UST	367434080	DON BOLING	N/A	Towing	1/11/2016 2:06:14 PM	1/11/2016 2:16:33 PM	0:10:19	11 kts	96.8	WDF2979	440	Mississippi River Mouth of Ohio River to Baton Rouge LA	United States of America	032°20' 46°N 090° 56'21"W	mfwink	
Vbg_DST	366862710	WALTER BLESSEY JR	N/A	Towing and length of the tow exceeds 200 m or breadth exceeds 25 m	1/11/2016 1:45:40 PM	1/11/2016 1:52:31 PM	0:06:51	12.3 kts	232.6	WDA9212	433	Mississippi River Mouth of Ohio River to Baton Rouge LA	United States of America	032°17' 19°N 090° 56'09"W	mfwink	
Vbg-UST	366862710	WALTER BLESSEY JR	N/A	Towing and length of the tow exceeds 200 m or breadth exceeds 25 m	1/11/2016 1:15:51 PM	1/11/2016 1:25:11 PM	0:09:20	12.6 kts	96	WDA9212	440	Mississippi River Mouth of Ohio River to Baton Rouge LA	United States of America	032°20' 43°N 090° 56'21"W	mfwink	
Vbg_DST	366956740	LYDIA BRENT	N/A	Fishing	1/11/2016 1:13:51 PM	N/A	1:14:02	3.8 kts	45.9	WDC2716	433	Mississippi River Mouth of Ohio River to Baton Rouge LA	United States of America	032°17' 29°N 090° 56'16"W	mfwink	
Vbg_DST	367402880	BIG VALLEY 499	All ships of this type	Passenger ships	1/11/2016 12:20:41 PM	1/11/2016 12:35:31 PM	0:14:50	12.2 kts	35.7	WCZ7098	435	Mississippi River Mouth of Ohio River to Baton Rouge LA	United States of America	032°18' 28°N 090° 54'59"W	mfwink	



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Lock ETA

Lock Operations Management Application (LOMA) v1.1.44

LPM5 Support Contact Logout (mfwink)



Live Plotter Playback Plotter Zone Configuration Zone Reports Gadgets Connected:

Target Information

Name	CITY OF JOLIET
MMSI	365947464
Callsign	WDC2653
Latitude	038°54'27"N
Longitude	090°13'15"W
SOG	3.8 kts
Heading	Not available
COG	312.8°
Nav Status	Undefined
Operating Mode	Autonomous
Rate Of Turn	Not available
Length	36.08 ft
Beam	164.00 ft
Type of Ship	Vessel - Towing
Type of Cargo	N/A
CargoType	31
IMO Number	1048576
Draught	10.50 ft
Nav Sensor	GPS
DTE Status	Available
Nationality	Not found
LockETA	1/11/2016 9:37:30 PM
Lock	L&D 25
Mile	205
PreviousMile	204

Information

Name: CITY OF JOLIET
SOG: 3.8 kts
LockETA: 1/11/2016 9:37:35 PM
Mile: 205
Time since last update: 00:00:12
NearestLock: L&D 25



Targets in Vbg-UST

MVD_TestLock Status

SMART Gate - Demo

BUILDING STRONG®

Additional LOMA capabilities

Filter Selection

MMSI: Add

Target Type:

- Class A
- Class B
- Base Station
- AtoN

Vessel Size:

From:

To:

Vessel Type:

- Pilot
- Search and rescue Vessels
- ...
- WIG - No Sub Type
- WIG - Hazard Category X
- ...
- Vessel - Fishing

SOG:

From:

To:

Nav Status

- Underway Using Engine
- At Anchor
- Not Under Command
- ...

Playback query

Target Type:

- Class A
- Class B
- AToN
- Base Station
- Met/Hydro

Vessel Type:

- Reserved for future use - No Sub Type (1)
- WIG - No Sub Type (2)
- Vessel - No Sub Type (3)
- HSC - No Sub Type (4)
- Special Craft - No Sub Type (5)

Navigation Status:

- Under way using engine (0)
- At anchor (1)
- Not under command (2)
- Restricted manoeuvrability (3)
- Constrained by her draught (4)

Vessel Length:

From: m

Vessel Speed:

From: kts

To: m

To: kts



Filtered AIS

Live target display filter

Vessels of Interest

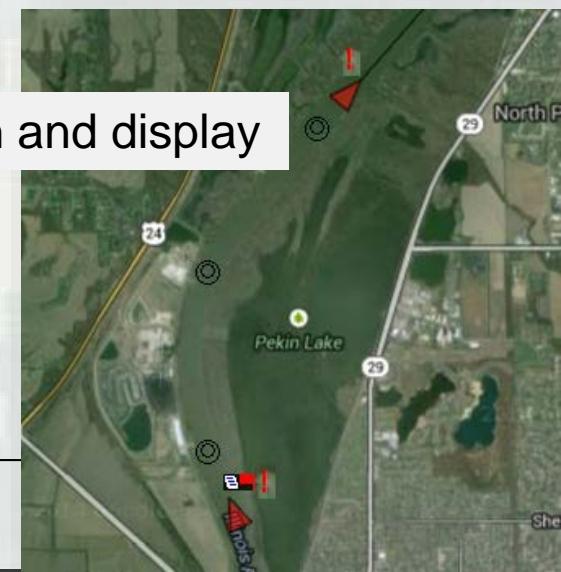
Vessels

- [TY DOLESE](#)
- [VIRGINIA RENEE](#)
- [SYNTERGY](#)

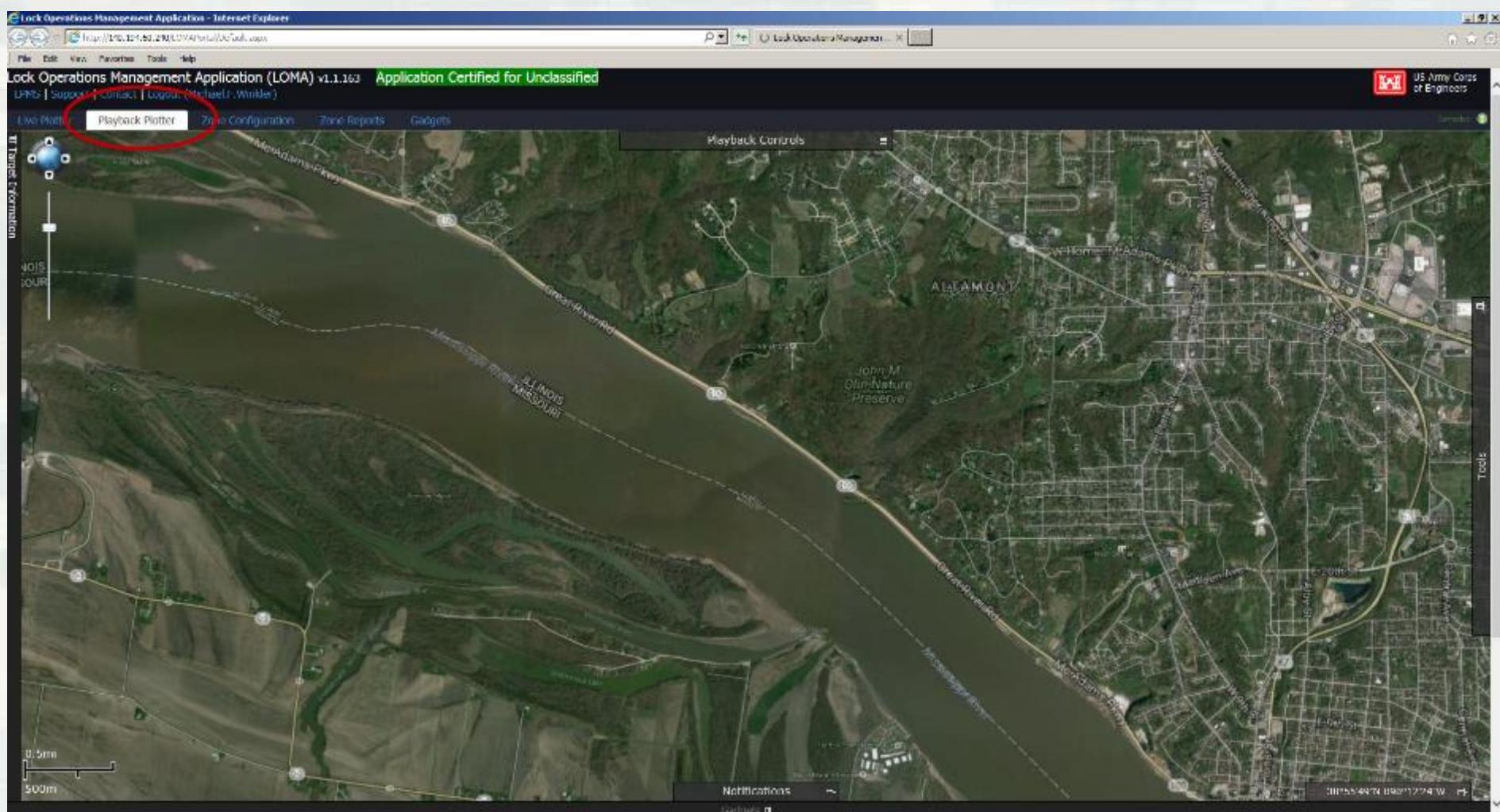
[Minimize](#) [Close](#) [Delete](#)

River/Mile

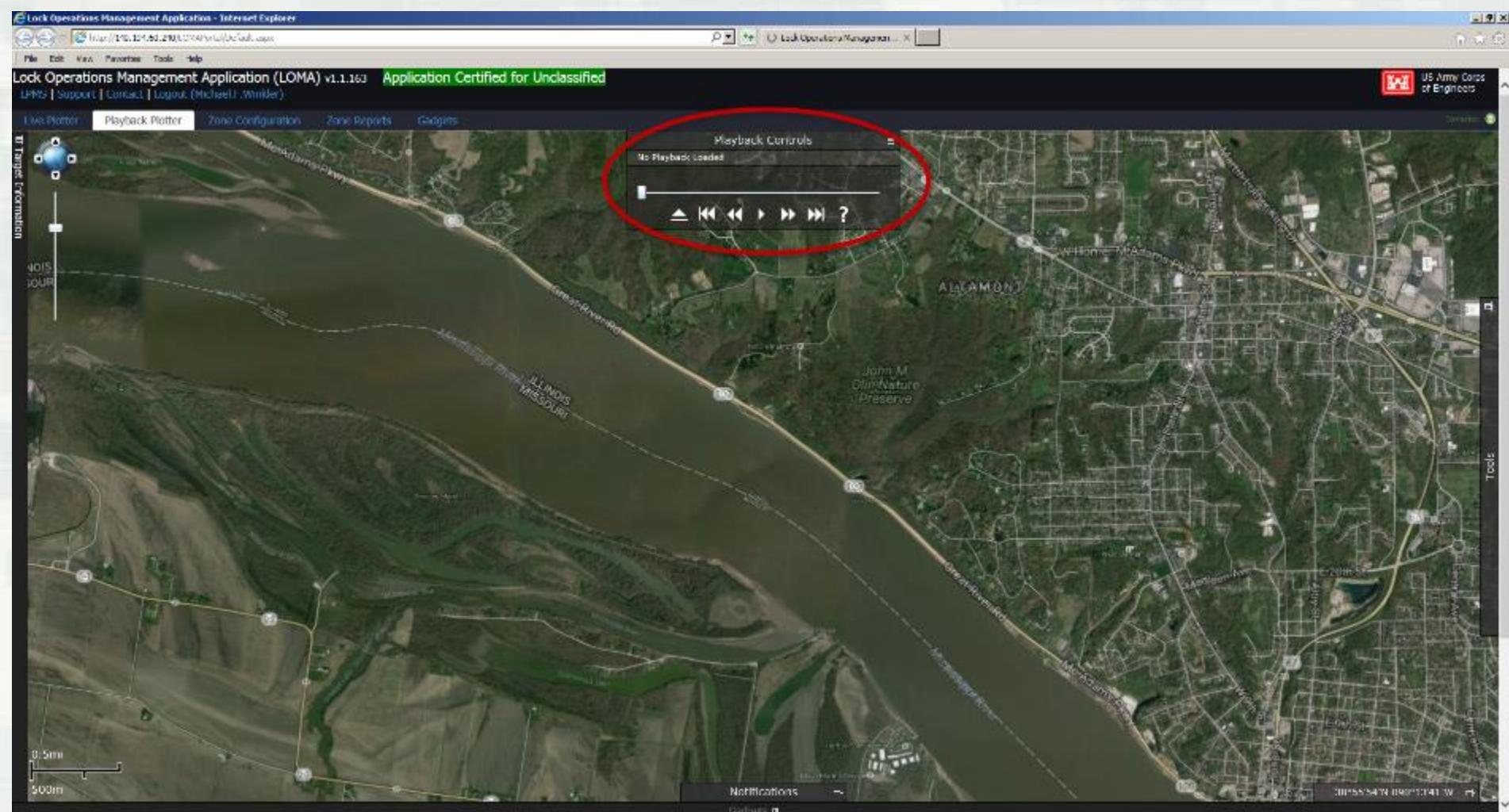
Yazoo River MS Mile 4
Ohio River Mile 9
Cumberland River Mouth to Nashville TN Mile 21



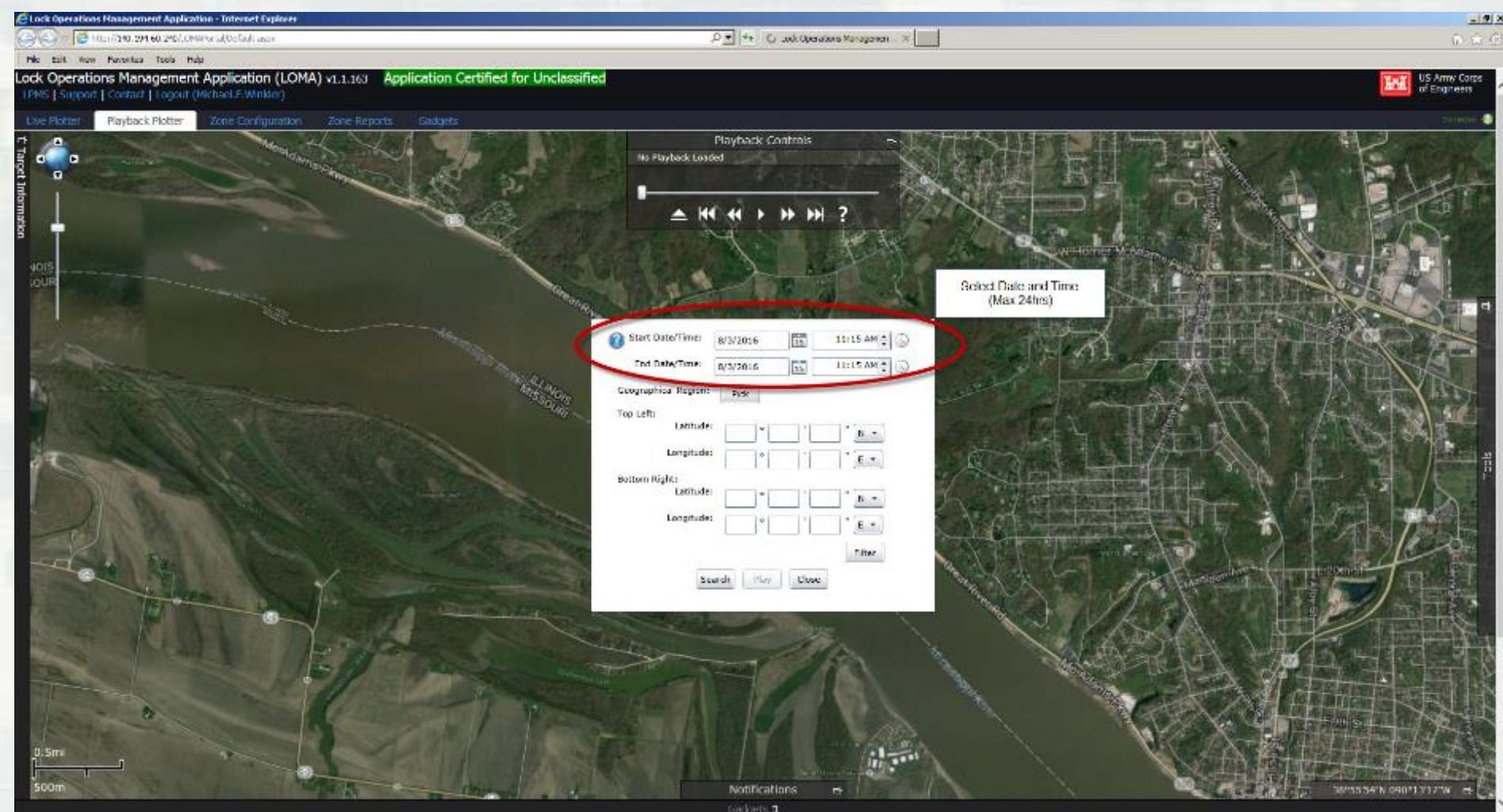
LOMA Playback Plotter



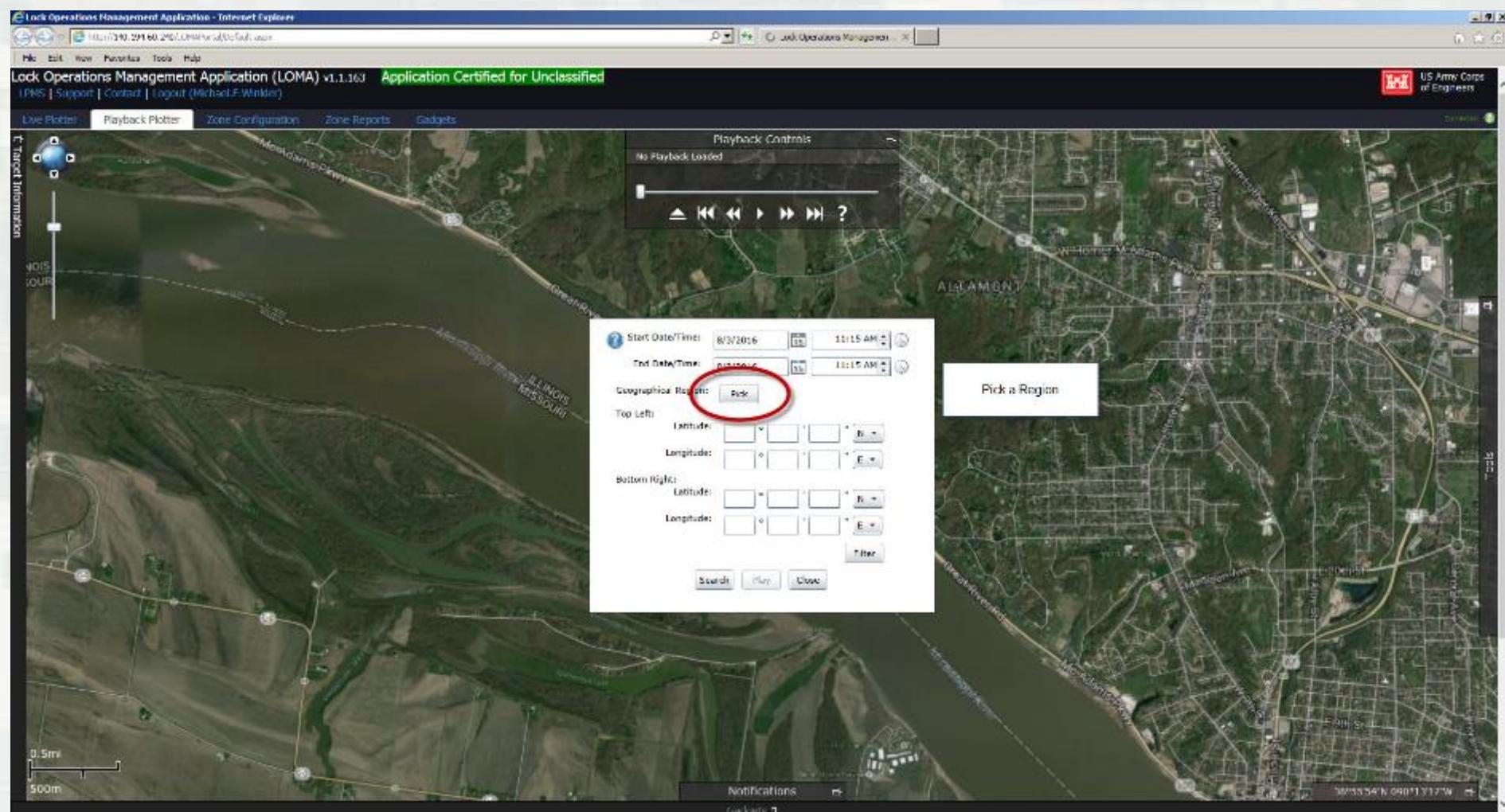
LOMA Playback Controls



LOMA Playback Query

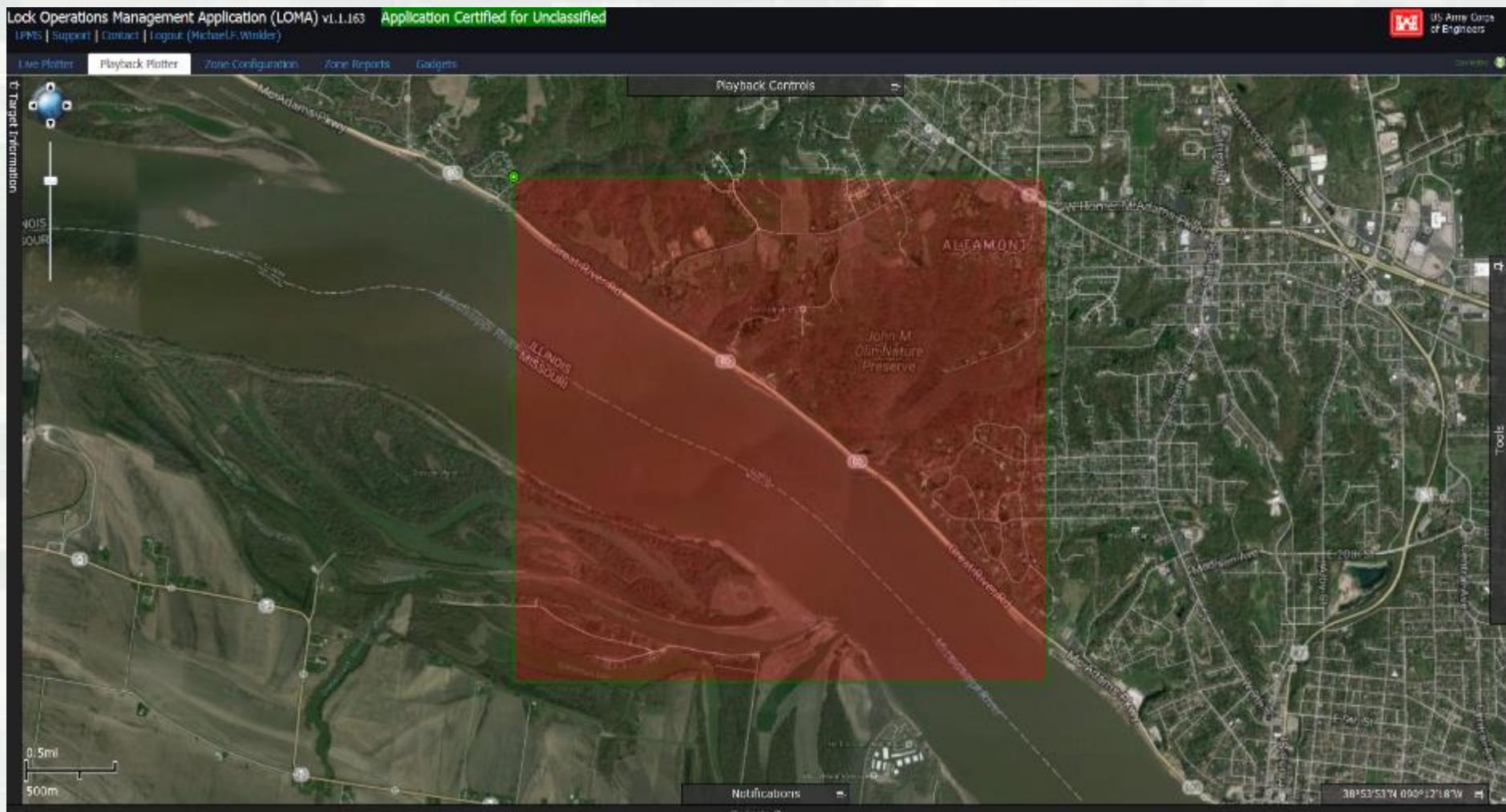


LOMA Playback Query



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LOMA Playback Query



BUILDING STRONG®

Grounding – Upper Mississippi River



Accident - Lock 18

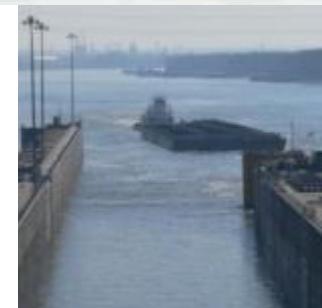


04/09/2015 07:06



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For more information



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Brian Tetreault

brian.j.tetreault@usace.army.mil



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