

Joint USCG D8 and AWO Fixed and Floating Aids to Navigation Assessment of the Western Rivers



February 2019

Introduction:

A Western Rivers Aids-to-Navigation (AtoN) Quality Action Team (QAT) was initiated in October 2013 as a direct result of discussions between RADM Kevin Cook, then Eighth District Commander, and members of the River Industry Executive Task Force. They determined a holistic, system wide assessment of Western Rivers AtoN was long overdue.

RADM Cook and AWO President Tom Allegretti accepted the initial QAT report in January 2015 which highlighted the first round of discussions held with industry representatives and Coast Guard personnel in the following cities: Vicksburg, MS; Memphis, TN; St. Louis, MO; Peoria, IL; Paducah, KY; Louisville, KY; and Huntington, WV. These discussions used a series of consistent, open-ended questions to gain a better understanding of the inland towing industry's needs regarding Western Rivers Aids to Navigation (AtoN).

In late 2015, the QAT subsequently initiated joint industry/Coast Guard assessments of the existing fixed and floating AtoN constellations on all of the major waterways throughout the Western Rivers.

Floating Aids to Navigation

Floating aids were the sole focus of the initial assessment for the following reasons:

1. Floating AtoN were identified as the highest priority during the listening sessions noted in the January 2015, QAT report.
2. Including both fixed and floating AtoN during the initial assessment deemed too broad a focus area.

A system wide, base-line assessment of all floating aids was completed in 2017 in coordination with various regional industry operating committees and Coast Guard personnel from District Eight, and the inland Sectors including all 18 inland buoy tender Officers-in-Charge (OICs). Assessments were completed in the following locations: Natchez, MS; Vicksburg, MS; Memphis, TN; St. Louis, MO; Louisville, KY; Paducah, KY, Little Rock, AR and Mobile, AL. Over 4,600 miles of river and over 8,000 buoys were assessed on the Mississippi (Baton Rouge to St. Paul), Ohio, Illinois, Cumberland, Tennessee, and Arkansas Rivers and the Tennessee -

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Tombigbee Waterway.

The various waterways were broken down using the inland buoy tender operating areas as the geographic focus for each assessment. The OIC would display on a screen the most current buoy laydown using either the Vega or Aldebaran electronic charting systems. The assessment team, including the OIC and licensed professional mariners with recent operational experience on that particular waterway, reviewed every five-mile stretch of river within the cutter operating area. The team discussed and documented the optimal buoy laydown for that stretch of waterway (including high and low water sets for non-pooled areas) and determined whether e-Aton (i.e. virtual/synthetic Aton) could replace or augment physical buoys/floating AtoN. In addition, and most importantly, the QAT “captured corporate knowledge” where possible. For example, if a particular bend in the river required a particular buoy set/laydown to support safe navigation, not only was the number of buoys, their location and spacing annotated in the spreadsheet but also the “why” this particular set was needed in this particular location. This “captured corporate knowledge” will inform and educate future Coast Guard personnel increasing their awareness of industry’s needs and ultimately enhance service delivery to best drive down risk.

Several conclusions were made/validated during the floating AtoN assessments:

1. Electronic navigation aids (i.e. virtual/synthetic Aton) are insufficient, as currently designed, to replace physical aids throughout the vast majority of the Western Rivers. The mariner’s ability to “read” the river facilitated by physical buoys is critical to safe navigation and existing electronic AtoN cannot duplicate this critical functionality. Electronic aids may be an effective supplement to augment floating aids (buoys) in some locations but are not a viable wholesale replacement for the vast majority of Western River buoys.
2. Industry and the Coast Guard should conduct similar assessments of floating aids throughout the Western Rivers on a regular basis for the following reasons:
 - A. The Western Rivers are dynamic and ever changing with constantly shifting channels, erosion, shoaling, and scouring as a result of continually fluctuating high and low water. The assessment information is perishable with time, in particular on the open river/non-pooled portions of the Mississippi River south of St. Louis, and will require routine, deck-plate level assessments for the information to remain valid/viable.

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- B. Inland buoy tender OICs rotate on average every 4 years. Joint industry/Coast Guard assessments will sensitize new OICs to their customer's needs while concurrently facilitating consistent, mutually beneficial dialogue which will build rapport between the OIC and their local industry partners nurturing trust and mutual respect. Industry and Coast Guard participants recommended annual or biennial assessments in the future.
3. As noted above, the Western Rivers are ever changing and dynamic, which precludes "formal" design criteria similar to aids to navigation established on the coast (blue water). Coastal, blue water ports lend themselves to strict design criteria. In these areas, buoys mark an assigned position and once set to mark that specific assigned position, remain on station for several years until serviced as part of a routine maintenance cycle. This long term, consistent AtoN placement lends itself to supporting strict design criteria. The omnipresent changes throughout the Western River system requires constant adjustment of buoy placement based on prevailing river conditions preventing the establishment of strict design criteria. The attached floating AtoN assessment data is intended to provide the Coast Guard and the maritime industry a point of departure to discuss floating AtoN requirements in the future. As evidenced by the dialogue and rapport established during the floating AtoN assessments, frequent, candid and open dialogue between the Coast Guard Sectors and their industry operating committees is key to ensure industry's AtoN requirements throughout the Western Rivers are effectively communicated and addressed to ensure navigation safety.

Fixed Aids to Navigation:

The RQSC completed a second assessment of all fixed aids to navigation in calendar year 2018 using a similar process for the floating AtoN assessments. A holistic, system wide assessment of fixed aids to navigation was necessary for several reasons:

1. Many fixed aids have been in place for decades and established long before the advent of electronic charts, the routine use of radar and other modern navigation conveniences. Assessing fixed aids to navigation established 20, 30 or 40+ years ago to ensure they remain as important today as they were when the aid was originally established was prudent and long overdue.

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2. The servicing of fixed aids to navigation is extremely labor intensive and a high-risk evolution for inland buoy tender personnel. Heavy under brush and thick vegetation require extensive physical brushing with power tools, chain saws and hand tools, often on steep, muddy riverbanks, in remote locations while exposed to the elements miles from emergency medical services. Brushing operations routinely expose U.S. Coast Guard personnel to poison ivy and stinging insects requiring emergency room acute care several times a year due to allergic reactions to bee and wasp stings and severe poison ivy exposure. Many fixed aids also require the climbing or dismantling of severely deteriorated, damaged and/or dilapidated metal tower structures during routine servicing further elevating risk of injury to cutter personnel in remote areas. The discontinuance of unnecessary fixed aids, which do not enhance navigation safety, will eliminate significant risks to U.S. Coast Guard personnel.
3. The U.S. Coast Guard inland buoy tender fleet has far exceeded its intended service life making it harder and harder to maintain their operational capability placing a premium on available operating hours to meet industry's aids to navigation requirements. Although their recapitalization is on the horizon, we will likely have to make do with these aging platforms for another decade. Their ability to maintain aids to navigation throughout the Western Rivers will become more and more challenged each passing year as they continue to age and degrade placing a premium on our ability to identify and focus the cutter's operations on high value AtoN to drive down the most risk.

The efficiencies gained through the discountenance of low value shore aids will enable the U.S. Coast Guard to properly direct its limited resources, including operational hours and budget, to most effectively drive down navigational risks while concurrently enhancing the safety of U.S. Coast Guard inland cutter personnel.

The QAT developed an easily repeatable and pragmatic process to complete fixed AtoN assessments on the following waterways in 2018:

1. Mississippi River from Baton Rouge, LA to Cairo, IL and St. Louis, MO to St. Paul, MN;
2. Ohio River from its confluence with the Mississippi River to Pittsburgh, PA including the Monongahela, Alleghany and Green Rivers;

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3. Illinois River from its confluence with the Mississippi River to Chicago;
4. Arkansas River from its confluence with the Mississippi River to Catoosa, OK including the White and Verdigris Rivers;
5. Tennessee - Tombigbee Waterway/Black Warrior and;
6. Tennessee/Cumberland Rivers.

Over 2,500 fixed aids were assessed collaboratively between the regional industry operating committees, inland cutter OICs, the cognizant U.S. Coast Guard Sector Waterways Management staff, AWO and District Eight Waterways Management personnel. During many of the assessments, industry routinely questioned why the Coast Guard maintained many of the shoreside aids, as they provided limited benefit to safe navigation. These statements lent credence to the earlier assumption that technological enhancements in navigation, including the routine use of radar and electronic charting by the inland towing industry, eliminated the need for many legacy fixed aids. 728 fixed aids, which equates to just over 29% of the fixed aids assessed, were recommended for disestablishment. A significant number were also identified for downgrading from a light to a day beacon saving additional operating hours and equipment costs (lights).

District Eight estimates each fixed aid costs on average \$1100 which will equate to over \$800,000 in one time replacement cost savings. In addition, each fixed aid is estimated to require 2 hours of servicing by a WLR which equates to over 1400 cutter hours saved for a single maintenance cycle.

However the real savings are not in time and money but in risk reduction to our cutter crews and the enhanced focus on high value aids when employing our operationally challenged and limited WLR capacity.

In addition, the trust, confidence and good will generated with the Inland Towing industry fostered during these assessments will positively impact Coast Guard interaction and coordination with this unique facet of the National Maritime Transportation System for years to come.

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D8 continued the best practice of “capturing corporate knowledge” initiated during the floating AtoN assessments to ensure future Coast Guard personnel understand industry’s fixed AtoN navigation safety requirements.

The following Table captures the number of aids assessed on each waterway and the number of aids identified for disestablishment or downgrading:

River	Total No. of Fixed Aids	Recommended to be Disestablished	Recommended to be Downgraded	Recommended to be Disestablished	Recommended to be Downgraded
Upper Miss	443	35	103	8%	23.25%
TN River	362	88	38	24%	10.50%
AR River	291	65	18	22%	6.19%
OH River	262	73	2	28%	0.76%
Lower Miss	258	97	0	38%	0.00%
IL River	200	9	7	5%	3.50%
Black Warrior	189	147	0	78%	0.00%
Tenn-Tom	143	71	0	50%	0.00%
Tombigbee	123	66	0	54%	0.00%
Cumberland	104	41	5	39%	4.81%
MONG	61	1	0	2%	0.00%
Kanawha	46	5	0	11%	0.00%
Verdigris	25	25	0	100%	0.00%
Allegheny	14	3	0	21%	0.00%
White River	10	2	0	20%	0.00%
Total	<u>2531</u>	728	173	29%	6.84%

Industry’s only concern regarding the removal of the fixed aids is the need to maintain their names on navigational charts to facilitate effective bridge-to-bridge radio telephone communications. This concern was a common theme noted during all of the fixed AtoN assessments. The names associated with the fixed aids have become industry standards as colloquial terms of art used to communicate location when coordinating meeting and overtaking situations. District Eight Waterways Management is coordinating with U.S. Coast Guard Headquarters and the U.S. Army Corps. of Engineers to ensure these colloquial names remain on the navigational charts as geographic reference points once the associated fixed aids are disestablished. CG-NAV is completing a national level Waterways Analysis and Management System (WAMS) Review of the Western Rivers in conjunction with their national WAMS of all domestic waterways. Completion of the Western Rivers WAMS is scheduled for early 2019. Once complete, District Eight will coordinate the

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downgrade or disestablishment of the fixed aids identified during the fixed AtoN assessments. This process will require the U.S. Coast Guard to coordinate with, and solicit feedback from, ALL waterway users, public and private, including the recreational boating community, other commercial operators including the passenger vessel industry and the public writ large, regarding the recommended changes to the Western River fixed AtoN constellation. The U.S. Coast Guard will coordinate, as needed, any additional discussion/review during the public comment period.

Conclusion:

The need to conduct similar fixed and floating AtoN assessments on a reoccurring basis was a common theme noted by the regional industry operating committees and the Officer's in Charge. At a minimum, AtoN assessments, both fixed and floating, are highly recommended after new OICs report aboard Western River AtoN cutters during routine transfers. District Eight Waterways Management will coordinate completion of these assessments with the inland Sectors during all subsequent transfers.

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