Report of the Mid-American Regional Quality Steering Committee's
Western Rivers Aids-to-Navigation Quality Action Team

January 2019

Introduction:

The Western Rivers Aids-to-Navigation (AtoN) Quality Action Team (QAT) was initiated on October 3, 2013, in accordance with the charter signed by Mid-America Regional Quality Steering Committee (RQSC) Co-Chairs CAPT John Arenstam, Eighth District Director of Western Rivers, and Mark Wright, AWO Vice President – Southern Region (Appendix 1). This charter was a direct result of discussions between RADM Kevin Cook, Eighth District Commander, and members of the River Industry Executive Task Force and it was determined the RQSC was best positioned to conduct a holistic assessment of Western Rivers AtoN to identify potential efficiencies while optimizing navigation safety.

RADM Cook and AWO President Tom Allegretti accepted the initial report from RQSC Co-chairs CAPT Christopher Palmer, Eighth District Director of Western Rivers and Mark Wright (Appendix 2) on January 22, 2015. The Initial Report detailed the results of 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. A series of open-ended questions provided to the participants garnered a better understanding of their needs regarding Western Rivers Aids to Navigation (AtoN).

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

Phase I: 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 22, 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 (i.e. LOMRC, IRCA, CORMIG, RIAC, etc.) and Coast Guard personnel from District Eight, 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 and encompassed the Mississippi (Baton Rouge to St. Paul), Ohio, Illinois, Cumberland, Tennessee, and Arkansas Rivers and the Tennessee - Tombigbee Waterway.

The various waterways were broken down using the 18 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 information collected in this assessment is perishable with time, in particular on the open river/non-pooled portions of the Upper (Middle River) and Lower Mississippi River south of St. Louis, and will require routine, deck-plate level assessments for the information to remain valid/viable.

    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. The QAT should reevaluate the requirement noted in the original QAT Charter to *"develop design guidance on how to best mark the available channel limits*." As noted above, the Western Rivers are ever changing and dynamic, which precludes "strict" design criteria similar to aids to navigation established on the coast (blue water). For example, during low water, certain sections of the river may require a point and bend way channel depending on silting and rate of fall. However, this same section of river may not require a point and bend way channel during subsequent low water periods if the conditions in the area are different (i.e. slower rate of fall, which decreases silting and increases self-scouring precluding the need for a point and bend way channel). 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.

<u>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.</u>

Phase II: 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.

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 vegetative growth 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 severally 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 AtoN cutter personnel.

The RQSC-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,

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 (i.e. LOMRC, IRCA, RIAC, etc.), 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 no 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. The assessments identified between 10-35% of the fixed aids on the various waterways as eligible for downgrading (i.e. from a lit structure to an unlit structure, from a tower to a day board, etc.) or outright disestablishment.

However, industry also identified numerous fixed aids, which are critical including vital crossing marks and bridge approach buoys. The RQSC 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 down grading.

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 Warior	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	***2531***	728	173	29%	6.84%

One common theme noted throughout all of the fixed AtoN assessments is the need to maintain the names of any/all disestablished aids on the charts for that area**.** The names associated with the fixed aids have become industry standards as colloquial terms of art to communicate relative locations along the river system. District Eight Waterways Management is coordinating with U.S. Coast Guard Headquarters and the U.S. Army Corps. of Engineers to ensure colloquial names remain on the navigational charts as geographic reference points once the associated fixed aids are disestablished.

Coast Guard Headquarters 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 scheduled for early 2019. Once complete, District Eight Waterways Management staff will coordinate the downgrade or disestablishment of the fixed aids identified during the RQSC-QAT fixed aids 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 such the passenger vessel industry and the public writ large, regarding the RQSC-QAT's 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.

The need to conduct similar fixed AtoN assessments on a reoccurring basis was also 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.

Conclusion:

This report, and associated assessment data, fulfills the RQSC's requirement to:

"Complete a base-line AtoN assessment with the Coast Guard throughout the inland river system to reduce non-priority aids. The analysis would also be used as a starting point for establishing a policy for AtoN waterway design. This has never been done systematically for AtoN on the inland rivers…These base-line assessments will provide the data needed to establish formal design criteria…A team will be selected to conduct these assessments which will include licensed pilots, Officers in Charge of inland tenders, Sector AtoN Officers and Eighth Coast Guard District waterways design staff." [Western Rivers Aids to Navigation Efficiency Quality Action Team Preliminary Report dtd January 20, 2015]

Appendices 3 and 4 document the data collected during the floating and fixed AtoN assessments.

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Mark Wright	CAPT P.E. Dittman, USCG
AWO Southern Region – VP	CCGD8(dw)
Mid-America RQSC Co-Chair	Mid-America RQSC Co-Chair

Mid-America Regional Quality Steering Committee

Western Rivers Aids to Navigation Efficiency

October 3, 2013

I. TASK TITLE

Identify potential efficiency improvements in the Western Rivers Aids to Navigation (AtoN) system while maintaining a safe and secure waterway.

II. BACKGROUND

The Eighth District spends approximately $6.7M annually for Western Rivers buoys and hardware to mark the western rivers system. District Eight needs to identify efficiencies in all mission areas and specifically conduct a review of Western River AtoN requirements with maritime industry involvement. This review is timely given the rapid development and usage of electronic navigation in the rivers.

III. PROBLEM STATEMENT

This Charter establishes a RQSC Quality Action Team to assess potential options for reducing the cost of the AtoN mission without adversely impacting maritime safety and mobility. The recommended option(s) will be available for consideration by 01 October 2014. Potential solutions may include all available options, including but not limited to an aid system design criteria, aid servicing guidelines, and/or changes to existing regulations that are outdated. . The Quality Action Team will develop and review potential solutions, while considering operational realities and the safe navigational flow of waterborne commerce.

IV. TASK

Establish a Quality Action team comprised of industry and Eighth District personnel, via the Regional Quality Steering Committee (RQSC), to develop proposals to achieve the established objectives. The main objective of the proposals must be safe commercial navigation on the inland river system, while maintaining a cost effective and efficient service delivery system.

The proposal should be accomplished in five phases.

Phase I: Develop prototype AtoN criteria for inland waterways navigation. The system design should give overall guidance on safety considerations, variables that influence the need for buoys (include river conditions, currents, nighttime restrictions, etc.-utilize information contained in the Waterways Action Plan), and possible alternatives to current floating buoys.

Phase II: Utilizing the above information develop design guidance on how to best mark the available channel limits and include general servicing guidelines. Utilize the same annexes as the Waterways Action Plan to consider guidance on buoy placement.

Phase III:. Participate and assist in the USCG HQ led Joint Capabilities Technical Demonstration (JCTD) - electronic and visual AToN needs on the Western Rivers. This effort will hlp USCG and industry analyze the role of electronic charting and navigation within the entire AtoN system. Identify the benefits and challenges of replacing AtoN with electronic charting and navigation.

Phase IV: Develop suggested changes to regulations. This may include but not limited to elimina ng regulations that no longer are necessary for safe transit with niodem technology.

Phase V: Develop outline of suggested training needed to accommodate increased usage of electronic charting and its relation to AtoNs..

V. ESTIMATED TIME TO COMPLETE TASK

Workgroup participants will be named by October 15, 2013.

A project managen).ent plan and timeline for full completion of the task should be established by November 30, 2013.

VI. RQSC CONTACTS

Eighth District Contact: CAP '!J. J Arenstam
CO-eha1r, Mid-America
Regional Quality Steering Committee

Industry Contact: Mark Wright
CO-Chair, -erica
·Regional Quality Steering Committee

Coast Guard-AWO Safety Partnership
Mid-America Regional Quality Steering Committee

Western Rivers Aids to Navigation Effi Quality Action Team Initial Report

On behalf of the U.S. Coast Guard's Eighth District and the American Waterways Operators, we accept the initial report of the Western Rivers ATON Effi Quality Action Team (QAT) by Mid-America Regional Quality Steering Committee (RQSC) Co-Chairs, CAPT Christopher Palmer and Mr. Mark Wright. The report embodies the value created by the Coast Guard-AWO Safe Partnership.

We encourage the QAT to proceed to the next phase, as outlined in the report. In addition, we recommend that the Coast Guard and AWO use this process to determine ATON efficiencies nationally with the Atlantic and Pacific RQSC's. The process is an eff method fo ensuring navigational needs and safe fo the mariner in the towing industry.

RADM Kevin S. Cook
Commander, U.S. Coast Guard Eighth District

1/22/2015
Date

Mr. Thomas A. Allegretti
President & CEO, The American Waterways Operators

Date

TO: Eighth Coast Guard District Commander
Mid-America RQSC Members

CC: Western Rivers Aids-to-Navigation Quality Action Team

FROM: Mid-America RQSC Co-Chairs

DATE: January 20, 2015

RE: Western Rivers Aids to Navigation Efficiency Quality Action Team
Preliminary Report

The Mid-Americ RQSC established a Western Rivers Aids-to-Navigation Efficiency Quality Action T am (QAT) in October 2013 to evaluate and consider future changes to Aids to-Navigation (AtoN) delivery and service on the Western Rivers. The need for thi QAT developed from a conversation between the industry members of the River Industry Executive Task Force (RIETF) and RADM Kevin Cook, Cornman er - Eighth District Coast Guard. The group agreed that a collaborative effort to identify how to accomplish the Coast Guard's AtoN mission in a more cost-effective manner and the emergence of electronic navigation tools was needed. As stated in the QAT Charter, it is an effort to "assess potential options for reducing the cost of the AtoN mission without adversely impacting maritime safety and mobility." This initial report is being provided to update the Eighth Coast Guard District Commander and Mid-America RQSC members on progress made thus far.

Since the formation of the QAT in November 2013, the following actions have been completed:

1. QAT members and industry representatives participated in the nationwide electronic navigation (E-NAV} listening sessions held within the Eighth Coast Guard District (New Orleans and St. Louis). The listening sessions were jointly hosted by the Army Corps of Engineers, the Coast Guard (CG-NAV-1}, and NOAA and were well attended by industry participants. The listening sessions were designed to discuss the present and future state of electronic navigation and to solicit feedback from mariners. Currently,the Eighth

Coast Guard District is working in partnership with CG-NAV-1 to test virtual Automated Information System (AIS) based aids on bridge span piers in Sector New Orleans. The Eighth Coast Guard District is one of several test-beds throughout the nation. The RQSC will continue to monitor and participate in this joint venture as stated in the QAT Charter.

2. Mid-America RQSC Co-chairs CAPT Chris Palmer and Mr. Mark Wright, RQSC and QAT members have met with professional mariners and industry representatives in eight locations throughout the Western Rivers soliciting feedback on the state of the current AtoN system design and administration. Listening sessions were held in the major inland ports of St Louis, MO; Louisville, KY; Memphis, TN; Vicksburg, MS; Huntington, WV; Paducah, KY; Peoria, IL; and Baton Rouge, LA. The QAT made a particular effort to engage operation committees such as LOMRC, RIAC, IRCA, and ICE to help generate feedback.

   The meetings held with mariners and industry representatives were based on the following questions about physical AtoN's as discussion primers:

   - What do you like about what we have now?
   - What don't you like about what we have now?
   - What is the Coast Guard doing that you need?
   - What is the Coast Guard doing that you don't need?
   - What is the Coast Guard not doing that you need?

   Consensus feedback was that electronic navigation alone would be insufficient to support safe navigation of commercial vessels on the inland river system. Physical AtoN, such as buoys, will need to remain a necessary part of safe navigation, especially in critical areas.

   The groups agreed on prioritization of AtoN as follows:

   1. **Highest priority:** Buoys and other floating AtoN, especially in bends, provide real-time environmental data such as current speed and direction. The professional mariners view this AtoN as critical to maneuvering under constantly changing river conditions.

2. **Medium priority:** Fixed structures at the entrance and exits to river bends give pilots a shore reference for steering and flanking.

3. **Lowest priority:** Fixed structures within the bends (such as, lights & day beacons), on points and in straits. Crossing marks and mile boards have lost significance with the advent of electronic charting. Given the consistent feedback from mariners that mile boards are no longer needed due to electronic charting, this QAT recommends the Coast Guard consider disestablishing mile boards on the inland river system through the public comment process.

During the sessions, (add one space here)there was a strong consensus that regular AtoN assessments should occur between industry operating groups and Coast Guard representatives at the Sector or MSU level.

Industry also expressed a willingness to help Coast Guard AtoN teams evaluate efficiencies with vessel operations.

The QAT should proceed and complete the tasks outlined the Charter. In order to do so, we recommend the following next steps and actions:

1. The Western Rivers AtoN QAT Charter will remain in effect to properly complete the entire project and address all phases of the charter. Deadlines and phases are detailed below.

2. Complete a base-line AtoN assessment with the Coast Guard throughout the inland river system to reduce non-priority aids. The analysis would also be used as a starting point for establishing policy for AtoN waterway design. This has never been done systematically for AtoN on the inland rivers. Currently the work group is in the planning stages of coordinating these AtoN assessments. These base-line assessments will provide the data needed to establish formal design criteria. Initial discussions on criteria have been a regular part of AtoN feedback sessions. A team will be selected to conduct these assessments which will include licensed pilots, Officers in Charge of inland river tenders, Sector AtoN Officers and Eighth Coast Guard District Waterways design staff. **Target Date:** June 30,2015.

3. Following completion of the AtoN base-line assessment, a separate workgroup consisting of Coast Guard and industry subject matter experts will be tasked with codifying design criteria. These measures will satisfy the provisions of Phases I and II of this charter.

4. During several feedback sessions, industry members asked if the Coast Guard could provide clarification on chart carriage requirements under 33 CFR 164.72. They specifically asked: "Do electronic charts satisfy the current regulations, or are they also required to carry paper charts?" This came up due to the vetting process that takes place between companies as part of their auditing requirements. Currently, some companies are requiring paper copies of chart books for the Western Rivers because they are of the belief Coast Guard requires this under the regulations. Some in industry feel this is financially burdensome because they must keep updated paper charts on board when their primary source of charting is electronic. The Coast Guard National Center of Excellence (NCOE) for Towing Vessels is currently seeking clarification from CG-SP on this matter. This is the only issue brought up thus far pertaining to Phase IV. **Target date:** June 30,2015

5. Phase V identification of training needs to accommodate increased usage of electronic charting will continue to be discussed and developed as part of Phases III and IV.

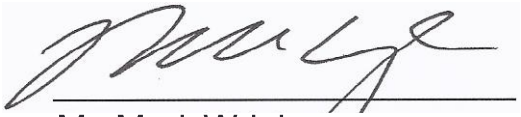
6. Status reports will be provided every six months; next report due April 30, 2015.

Eighth District:

CAPT Christopher K. Palmer
Co-Chair, Mid-America RQSC

1/20--
Date

Industry:



Mr. Mark Wrigh
Co-Chair, Mid- merica RQSC

1/20/15
Date