Towing Safety Advisory Committee (TSAC)

Report of the Sub-Committee On:

Automatic Identification System (AIS) Encoding for Towing Vessels (TASK 13-01)

BACKGROUND

In 2012, the Coast Guard published the “Automatic Identification System Encoding Guide”. This document was intended to summarize the requirements for a vessel to input and maintain correct data in its AIS. The towing vessel industry, particularly the inland towing industry, had significant concerns with requirements being generated by the Guide, and felt that the burden being imposed on a towing vessel operator was both unnecessary for and negatively impacted safe operations of a towing vessel.

The Coast Guard submitted Task Statement 13-01 to TSAC, and TSAC voted to accept the task on January 16, 2012. Mr. Dan Nutt was assigned as the sub-committee chair.

TASKS

The Task Statement specified the following tasks to be completed and reported to the Committee:

1. Review the USCG AIS Data Fields required to be part of the AIS transmission. Identify data fields that, in the opinion of TSAC, could be modified to support the unique operations of towing vessels.

2. Provide recommendations to the Coast Guard, to enhance the clarity of navigational information contained in an AIS transmission.

3. Provide recommendations and Bridge Resource Management practices to prevent distraction or overtasking the OICNW when navigating and entering data into the AIS for transmission.

SUB-COMMITTEE MEETINGS

The Sub-Committee held meetings on March 6, 2013 (teleconference); presented an progress update on March 20, 2013 at the full TSAC meeting in New York; sub-committee meeting June 19, 2013 (teleconference), and sub-committee meeting July 23, 2013 (in-person/teleconference). The July meeting was held in conjunction with the Lone Star Harbor Safety Committee, Navigation Sub-committee at USCG MSU Texas City, TX and included representatives of the USCG Houston/Galveston Vessel Traffic Service. The Sub-committee presented an update and reviewed the draft report at the TSAC meeting September 5-6, 2013 in Chicago. A final teleconference Sub-committee meeting was held on January 7, 2014, at which time this report was reviewed and recommended for presentation to the full TSAC by unanimous vote of the participants present.
FINDINGS AND CONCLUSIONS

1. The current AIS Encoding Guide refers to “U.S. regulation” which “requires that an AIS be maintained in effective operating condition which includes upkeep of all AIS parameters”. This statement infers that all data fields provided by an AIS are required to be maintained current by the operator. The applicable regulation being referred to is 33 CFR 164.46(a) which states that an AIS must be “properly installed”. A note to section 164.46(a) further defines “properly installed” to mean using the guidelines contained in IMO Circular SN/Circ.227, which is incorporated by reference. SN/Circ.227 requires the following data inputs:

Static data- (Entered into AIS at time of installation)
- *Maritime Mobile Service Identity (MMSI) number*
- *IMO vessel number*
- *Radio call sign*
- *Name of ship*
- *Type of ship*
- *Ship’s dimensions and reference point of position of the AIS*

Dynamic data- (Entered by the operator)
- *Navigational status*

The additional data fields that may be available on an AIS unit are (entered by the operator);
- Draft
- Hazardous cargo type
- Destination and ETA

The Sub-committee concluded that the entering of data into AIS regarding draft, destination, eta, and cargo is not prescribed by the regulations cited in the Encoding Guide.

2. At the July 23, 2013 meeting, discussion presented on the call indicated that the reason for requiring the additional data regarding destination, eta, and cargo was to facilitate single-point reporting of data which may be required by other regulations (i.e. ACOE vessel reports). Although the Sub-committee believes the intent of such an effort has merit, from its earliest onset in regulation, the primary purpose of AIS has been as a navigation safety tool. The functionality of AIS equipment in common use aboard towing vessels does not easily lend itself to other purposes, thus requiring an operator to input and maintain additional data fields unnecessarily distracts the operator from safely operating the vessel.
3. During all three teleconference meetings, substantial discussion among towing industry participants was related to how settings may be changed and how data is entered into an AIS. There are basically two methods. The first and most common method, particularly for inland towing vessels, is to use the keypad with menu-driven functions on a small LCD screen on the AIS unit. Using this method to enter text strings in fields or to use the messaging function of the AIS is similar to using a phone with only a number keypad for text messaging and is extremely unwieldy.

The second method is to access the AIS through another electronic device interface which allows the use of a standard computer keyboard on a larger screen. This method is more commonly used by larger vessels equipped with radars or GMDSS consoles interfaced into their AIS installation. This type of equipment is rarely found on inland towing vessels.

4. The Sub-committee acknowledges that incorrect data being displayed by a vessel’s AIS can be a detriment to navigation safety. Since the inception of AIS, enforcement efforts by the U.S. Coast Guard and VTS centers have increased the accuracy of AIS static data, which enhances navigation safety. To advance this effort, this report includes recommendations for reminding operators of the importance of ensuring that their AIS is broadcasting the correct data as identified in para. 1 above.

5. The Sub-committee reviewed the location references given in the AIS Encoding Guide; the United Nations Location Codes (UN/LOCODEs) and U.S. Geographically Unique Identification (GUID) Codes. Both of these web-based references are impractical for a towing vessel operator to use and reference. In particular, the GUID coding scheme is not an intuitive system. That is, the locations and codes are subject to constant change based on the owner/operator custody of the terminal.

6. There was overwhelming consensus among the towing vessel operators that the inclusion of cargo, destination, and ETA data fields for towing vessels and barges created both significant security and business related concerns, without a compelling need to enhance safety. Such concerns notwithstanding, certain VTS areas have adopted local schemes for reporting Destination using LOCODES specific to the operating area.

One example would be the San Francisco Bay region, where a defined operating region has implemented an AIS encoding scheme tailored to the needs and capabilities of stakeholders and users. This may prove more useful than a “one-size fits all” requirement specified in the encoding guide.
RECOMMENDATIONS

The following are the Sub-committee’s recommendations specific to the Tasks identified under TASKS above, and in section IV of Task Statement 13-01.

1. Review of AIS data fields:

   • The only data fields which should be required for towing vessels are the fields as provided for in IMO Circular SN/Circ.227, which are the seven fields described in and Findings and Conclusions para. 1. above.

   • On the AIS Encoding Guide, fields for Type of vessel (ship) and Dimensions should appear under “Static Data”.

   • Data fields which could be modified for towing vessels:
     
     a. Type of Ship- IMO Circular SN/Circ.227 includes an Annex 2, Type of Ship Table. This table reserves identifier no. 52 for “Tugs”.

     The Sub-committee believes that it is not the intention or necessity of AIS to strictly define the current employment of a towing vessel by its “type”, but rather the “type” should convey to other AIS users the general service of the vessel, while additional information regarding the current employment of the towing vessel should be transmitted via Bridge-to-Bridge radiotelephone as needed. Type of ship is a field contained within “static data” and should not be changed by the operator for each shift or voyage.

     However, the Sub-committee does recognize that in certain operating regions, or under certain operational considerations, the use of a code to specify the mode of towing that the vessel is engaged in may be useful and enhance navigation safety. For example, per SN/Circ.227, identifier no. 32 is specified as an option for tugs towing astern when the length of the tow exceeds 200 meters.

     Recommendation 1.a. The Sub-committee recommends that identifier no. 52 be specified for all tugs and towboats regardless of towing configuration or current employment; but that if additional codes are published to reflect additional towing modes or configurations, these codes are strictly optional for use at the discretion of the towing vessel operator.

     b. Dimensions- IMO Circular SN/Circ.227 describes the inputs to the vessel’s dimensions to reflect the position of the AIS antenna on the vessel. The AIS Encoding Guide requires that a towing vessel adjust these inputs on a per voyage basis to reflect the dimensions of the tug-tow unit. This is an extremely unwieldy requirement due to the difficulty of making changes to what is actually a “static” data field in the AIS unit.
Recommendation 1.b. The Sub-committee recommends that the dimensions of the vessel should reflect the dimensions of the towing vessel with no requirement to modify the field to reflect the size of the tow from voyage to voyage.

- The Sub-committee acknowledges that where an operating area lends itself to the successful implementation of an AIS coding scheme to enhance vessel safety, the vessel operators, cognizant vessel traffic service, marine exchange, harbor safety committee and local stakeholder groups should be allowed to adopt such schemes without being bound by a nationwide requirement. The Sub-committee recognizes that in certain cases, particularly with regard to hazardous cargoes, the transmission of barge cargo, destination, and ETA information via AIS raises concerns for vessel security.

Recommendation 1.c. The Sub-committee recommends that the transmission of barge cargo, destination, and ETA information should not be required under any circumstances.

2. Recommendations to enhance clarity of AIS information:

The Sub-committee felt that most issues related to clarity of AIS information were in regard to the accuracy of the information being transmitted by vessels. In particular, it was noted that navigational status, a dynamic data field, often does not get changed to reflect the current status of the vessel, as to moored or underway.

Recommendation 2. The Sub-committee recommends:

a. The USCG issue appropriate Safety Alerts or Marine Safety Information Bulletins (MSIB) to towing vessel companies and operators regarding the requirement to properly maintain the static data being transmitted by the vessel’s AIS.

b. That when towing vessel inspections are conducted, that inspectors verify the correct static data is being transmitted by the AIS.

c. That the towing vessel owner/manager provide a simple instruction card posted or available near the AIS for the operator to use for changes to navigational status. In the case of inland towing vessels, this should be the only AIS data field that requires modification by the operator on a regular basis.
3. Recommendations and Bridge Resource Management practices to prevent distracting and over-tasking the OICNW when entering AIS data.

Distraction and over-tasking of the Officer-in-Charge of the Navigational Watch (OICNW) was a serious concern raised very early in the discussions on this tasking. Typically, on inland or coastwise towing vessels, the master or mate on watch is serving as both the conning officer/helmsman and lookout. Although most radios and radar installations are designed and installed for convenient use and operation by the officer on watch during the course of a voyage, the AIS units most commonly in use on inland and coastwise towing vessels are not. The typical AIS unit may not be installed in a wheelhouse location accessible from the piloting position. Most AIS units utilize an alpha-numeric keypad to access an array of “menus” on a small LCD screen. Data entry on these units is not unlike texting from a phone with only number keys. Entering data on these units requires the full attention of the operator and easy access to the control panel of the unit.

Recommendation 3. The Sub-committee recommends:

a. That by reducing the AIS data fields that require attention and changes by the vessel operator, the opportunity for distraction of the watch officer will be reduced.

b. That companies ensure that appropriate guidance is provided to towing vessel deck officers on managing on-watch distractions, including guidance directing changes to AIS information to occur only when moored or when additional qualified personnel are available on watch to ensure the safe operation and navigation of the vessel.

c. That when the configuration of the wheelhouse allows, AIS units should be installed in a position which allows access and operation by the operator from the normal piloting position.

d. That when optional electronics interfaces are available on the towing vessel to access the AIS and make changes to the AIS data fields, the use of these interfaces should be encouraged.

e. That pre-underway and voyage planning checklists, when available or required, include items to require the update of necessary AIS data fields prior to getting underway.
4. Use of AIS as a vessel reporting system: Although not an issue identified in the Task Statement as requiring recommendations from this Sub-committee, the Sub-committee learned through this tasking that efforts have been initiated by the USCG and the USACOE to explore methods to utilize AIS as a vessel/cargo movement data collection system. The Sub-committee believes that the primary purpose of AIS is to enhance navigation safety as addressed in Findings and Conclusions para. 2 above.

Recommendation 4. The Sub-committee recommends that use of AIS as a “single-point” vessel/cargo reporting system, with the current technology deployed aboard most towing vessels, was not appropriate due to the distraction that would be imparted on the watch officer by the time and attention required to enter variable cargo and barge data in the AIS system. The Sub-committee did feel that if government agencies envision use of the AIS system for this purpose, the agencies should collaborate with industry to determine how this may be accomplished.

ACKNOWLEDGEMENTS

The Sub-committee wishes to acknowledge the support and assistance of Mr. Mark Wright of the American Waterways Operators, and Mr. David Foret and Mr. Tom Marian of the Lone Star Harbor Safety Committee for their contributions to this report.

SUBMITTAL

Respectfully submitted this 25th day of February, 2014.

Gary D. (Dan) Nutt
AIS SubCommittee Chair

Encl: (1) AIS Sub-committee Attendee Listing
AIS Encoding Task Statement 13-01  

Meeting Attendees

March 6, 2013 (Teleconference)

Dan Nutt (Kirby) Chair  
Mike Vitt (E.N. Bisso)  
Patrick Mannion (USCG)  
Mark Wright (AWO)  
Brian Vahey (AWO)  

Charlie Costanzo (AWO)  
Jeff Parker (Kirby)  
Jill Taft (Kirby)  
Matt LaGarde (AEP River Operations)  
William Abernathy (USCG)

March 20, 2013 (TSAC meeting in New York)

TSAC members and guests – presented update; solicited feedback

June 19, 2013 (TSAC Chairs and Subcommittee Chairs telecon)

TSAC Chair and Vice Chair, Subcommittee Chairs – presented update; solicited feedback

July 23, 2013 (In conjunction with Lone Star Harbor Safety Committee Meeting in Texas City, TX)

Dan Nutt (Kirby) Chair  
David Foret (Action Group)  
Christos Sotireris (Galveston Pilots)  
Tom Marion (Buffalo Marine)  
John Taylor (Houston Mooring)  
Steve Novheim (USCG VTS Houston/Galveston)  
Adib Nasir (Oil Tanking)  
Warner Wekll (USCG VTS Houston/Galveston)  
George Pontikos (Odfjell Shipping)  
Philip Kropf  
Hyun Sook Miramontes (USCG)  
Bob Lain (Moran Shipping)  
Patricia Seeba  
Jason Hayley  
Tracy Cheramie (Florida Marine)

Marcin Papier  
Yusuf Kosoko (Tricon Energy)  
Andreas Luckert  
Henry Xuh (Tricon Energy)  
James Prazak (Tricon energy)  
John Salvesen (Odfjell Shipping)  
Tom Hudson (MOL Bulk)  
Tony Capelt (Freeport LNG)  
N. Lyngso  
Michael Kolomaznik (Norton Lilly)  
Xochito Castenada (USCG)  
Donnie Nolan (Kirby)  
Kay Gentry  
Mike Sellosi (USCG via phone)

September 5-6, 2013 (TSAC meeting in Chicago)

TSAC members and guests – presented update; solicited feedback

January 7, 2014 (Teleconference)

Dan Nutt (Kirby) Chair  
Brian Tetreult (ACOE)  
Matt LaGarde (AEP River Operations)

Cathy Hammond (Inland Marine Service)  
Tom Marion (Buffalo Marine)  
Rex Woodward