



Radar Simulator AIS Supplement for MaST interface

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1.0 Automatic Identification System (AIS)

Buffalo Computer Graphics (BCG) provides the following implementation for an Automatic Identification System (AIS) simulation as part of our Radar Simulator product line. The AIS functionality is provided through the addition of both software and computer hardware at each simulator requiring the AIS functionality. BCG's implementation of the AIS data packet generation is done in compliance with the ITU-R 1371-5 and NMEA-0183 standards.

For each vessel within an exercise (Ownship or Target), the instructor is provided with a series of tools used to enter AIS information that describes each vessel. The AIS information is entered by the instructor through Graphical User Interface (GUI) running with each simulator. This data entry is done through the AIS Entry Windows. The data entered is used to fill the fields of the AIS message transmission that are non-dynamic. These fields include:

- Ship Name
- Call Sign
- Navigational Status*
- MMSI Number
- IMO Number
- Destination
- Vessel length, beam and draft (can be taken from CSC Network Packet)
- Type of Ship
- Location of position fixing antenna
- Cargo Type
- ETA
- DTE
- RAIM
- Special Maneuver status
- Communication State

* Though a vessel may be assigned a Speed of '0' knots, it will be considered as UNDERWAY if the Navigation Status is set to the default of '0'. For a vessel that truly cannot move, use the Navigation Status of MOORED ('5') or AT ANCHORED ('1').

The AIS output message streams also contain dynamic data pertaining to each vessel. This dynamic data includes:

- Position
- Speed
- Course
- Heading
- Rate of Turn
- Time stamp (UTC second)

The dynamic data used to fill these AIS fields is provided by the GUI as the vessel(s) move in the simulated exercise. The static and dynamic data is then merged and used to populate the AIS message string for transmission. The instructor controls all AIS message transmissions from the GUI. This includes changing static AIS data or the ability to turn ON or turn OFF AIS messages from each vessel. Text messaging (both SRM and IFM telegram) is supported if the GUI.INI file is properly configured (see sections 1.4 and 1.7).

Any AIS vessel (ownership or target) can be specified to be an Aircraft in which case the AIS message 9 for SAR Aircraft are generated for dynamic position reports instead of message 1. The altitude of the aircraft can be specified using the GUI. At present, automatic dynamic changes to altitude are not supported. Any AIS vessel can also be specified to use either "Class A" messages or "Class B" messages. When "Class B" is selected (either "SO" or "CS" modes) then AIS messages 18 and 24 are generated for dynamic and static reports instead of messages 1 and 5.

The GUI can also be used to generate AIS messages for Aids-To-Navigation (ATON) or Base Station entities. These are specified by using a "Stationary Target" object (color blue) in the GUI (see section 1.5).

To support all vessels within the exercise, the instructor is supplied with a series of AIS tools within the GUI. The instructor has the capability to create and store separate definition files with specific and unique static AIS data that can later be assigned to a simulated vessel. The AIS definition file, referred to as the AIS Library, may then be recalled to reduce the time needed to create an AIS vessel. The data associated with the entities stored in the AIS Library can be recalled when creating a simulated vessel within the simulation. The AIS Library may contain an unlimited number of AIS vessel databases, each uniquely representing the static AIS information of a particular vessel that may be activated within the training exercise. The AIS Library may be created and edited off-line using the same GUI as is used for running a simulation.

When the exercise is started, the GUI retrieves the AIS data for each vessel that is active in the exercise. The static data from the AIS settings, along with the dynamic data being produced by the simulator, is combined into the AIS message to be generated for a particular traffic vessel. AIS transmission only occurs while the exercise is playing (unless RunningAISOutput=No in GUI.INI, in which case transmission will also occur while the exercise is paused; see section 1.7).

The instructor is also given some dynamic control of AIS generation with the ability to introduce failures or to disable AIS transmissions for any traffic vessel(s). Failures may include erroneous data fields, missing message updates, position errors, etc.

Once AIS message strings are formed with the AIS simulation software, the message output process will be consistent with the international specifications in both content and rate. The AIS simulation module will output Message Types 1 and 5 (for "Class A") utilizing either or both a serial port(s) and the network (via UDP or TCP/IP). The complete list of AIS message types that can be output by the GUI are: 1, 4, 5, 6, 8, 9, 12, 14, 18, 19, 21, 24, 25, 26, 27.

The GUI is usually configured for one ownship, but multiple ownship configurations are supported. Each ownship can be assigned its own serial or network port. When multiple ownships are created in the same Problem Window, then each ownship's simulated AIS unit will output AIS data for the other ownship(s) as if they were targets.

All output will operate in "autonomous and continuous" mode with dynamic data being updated with minimum delay. These AIS message outputs can then be accepted by an AIS capable radar / ECDIS, or AIS receiving station to display AIS information for all active vessels in an exercise. The position message output (reporting interval) for each vessel is automatic and defined by the following table:

Ship at anchor or moored and not moving faster than 3 knots = 3 min
Ship at anchor or moored and moving faster than 3 knots = 10 sec
Ship with a speed of between 0 – 14 knots = 10 sec
Ship with a speed of between 0 – 14 knots and changing course = 3 1/3 sec
Ship with a speed of between 14 – 23 knots = 6 sec
Ship with a speed of between 14 – 23 knots and changing course = 2 sec
Ship with a speed of greater than 23 knots = 2 sec
Ship with a speed of greater than 23 knots and changing course = 2 sec

The AIS simulation can be disabled by the instructor at the start of an exercise if desired by checking the "Disable" checkbox for each ownship in the exercise. This allows both the running of a training exercise or the replay of an exercise to occur without AIS traffic.

The sections below that describe MaST AIS user-interface features are extracted from Section 3 of the MaST User's Manual.

3.21 AIS Button in Ownship/Target Panel

A button labeled AIS will appear in the ownship and target panels only for configurations that have the AIS enabled in GUI.INI and are licensed for AIS. Clicking this button will bring up a window containing the AIS information for that vessel.

See AIS Parameters [section 3.21.1, page 6] for a general description of the AIS features provided by the MaST and of the input fields in the AIS window for ownships and moving targets. The input fields in the AIS information window for stationary targets (base stations or ATONs) are described in [section 3.21.4, page 15].

The AIS Library Window [section 3.21.2, page 11] is made visible by clicking the **Library** button in the AIS window for a vessel. The Library Window disappears when the **OK** button in the Library Window is clicked. A separate library database is maintained for AIS information for stationary targets, which may simulate Base Stations or ATONs. All the features of the stationary target AIS library window are the same as for the movable vessel AIS library window.

3.21.1 AIS Parameters for Ships/Aircraft

BCG's implementation of the AIS data packet generation is done in compliance with the ITU-R 1371-5 and NMEA-0183 standards.

For each vessel within an exercise (Ownship or Target), the instructor is provided with a series of tools used to enter AIS information that describes each vessel. The AIS information is entered by the instructor through the AIS Window. The data entered is used to fill the fields of the AIS static messages, including:

- Ship Name
- Call Sign
- Navigational Status*
- MMSI Number
- IMO Number
- Destination
- Vessel length, beam and draft (from Class Table)
- Type of Ship
- Location of position fixing antenna
- Cargo Type
- ETA
- DTE
- RAIM
- Special Maneuver status
- Communication State

* Though a vessel may be assigned a Speed of '0' knots, it will be considered as UNDERWAY' if the Navigation Status is set to the default of '0'. For a vessel that truly cannot move, use the Navigation Status of MOORED ('5') or AT ANCHORED ('1').

The AIS output message streams also contain dynamic messages pertaining to each vessel. This dynamic data includes:

- Position
- Speed
- Course
- Heading
- Rate of Turn
- Time stamp (UTC second)

The dynamic data used to fill these AIS fields is provided by the MaST as each vessel moves in the simulated exercise. The instructor controls all AIS message transmissions from the MaST. This includes the ability to turn ON or turn OFF AIS messages from each vessel. Text messaging (both SRM and IFM telegram) is supported if the GUI.INI file is properly configured.

Any AIS target can be specified to be an Aircraft in which case the AIS message 9 for SAR Aircraft are generated for dynamic position reports instead of message 1. The altitude of the aircraft can be specified using the MaST. At present, automatic dynamic changes to altitude are not supported. Any AIS vessel can also be specified to use either "Class A" messages or "Class B" messages. When "Class B" is selected (either "SO" or "CS" modes) then AIS messages 18 and 24 are generated for dynamic and static reports instead of messages 1 and 5.

The MaST can also be used to generate AIS messages for Aids-To-Navigation (ATON) or Base Station entities. These are specified by creating a target that has an object type of "Anchored/ATON" and then clicking the AIS button in the panel for that target.

The instructor has the capability to create and store to the disk separate definitions with specific and unique static AIS data that can later be assigned to simulated vessels. The AIS definition file, referred to as the AIS Library, may then be recalled to reduce the time needed when creating an AIS vessel. The AIS Library may contain an unlimited number of AIS vessel databases, each uniquely representing the static AIS information of a particular vessel that may be activated within the training exercise. The AIS Library may be created and edited off-line using the same MaST as is used for running a simulation.

When the exercise is started, the MaST retrieves the AIS data for each vessel that is active in the exercise. The static data from the AIS settings, along with the dynamic data being produced by the simulator, is combined into the AIS output to be generated for a particular traffic vessel. AIS transmission only occurs while the exercise is playing (unless RunningAISOutput=No in the [Timing] section of GUI.INI, in which case transmission will also occur while the exercise is paused).

The instructor is also given some dynamic control of AIS generation with the ability to introduce failures or to disable AIS transmissions for any traffic vessel(s). Failures may include erroneous data fields, missing message updates, position errors, etc.

Once AIS message strings are formed with the AIS simulation software, the message output process will be consistent with the international specifications in both content and rate. The AIS simulation module will output Message Types 1 and 5 (for "Class A") utilizing serial port(s) and/or the network (via UDP or TCP/IP). The complete list of AIS message types that can be output by the MaST are: 1, 4, 5, 6, 8, 9, 12, 14, 18, 19, 21, 24, 25, 26, 27.

The MaST is usually configured for one ownership, but multiple ownership configurations are supported. Each ownership can be assigned its own serial or network port. When multiple ownerships are created in the same Problem Window, then each ownership's simulated AIS unit will output AIS data for the other ownership(s) as if they were targets.

All output will operate in "autonomous and continuous" mode with dynamic data being updated with minimum delay. These AIS message outputs can then be accepted by an AIS capable radar / ECDIS, or AIS receiving station to display AIS information for all active vessels in

an exercise. The position message output (reporting interval) for each vessel is automatic and defined by the following table:

- Ship at anchor or moored and not moving faster than 3 knots = 3 min
- Ship at anchor or moored and moving faster than 3 knots = 10 sec
- Ship with a speed of between 0 – 14 knots = 10 sec
- Ship with a speed of between 0 – 14 knots and changing course = 3 1/3 sec
- Ship with a speed of between 14 – 23 knots = 6 sec
- Ship with a speed of between 14 – 23 knots and changing course = 2 sec
- Ship with a speed of greater than 23 knots = 2 sec
- Ship with a speed of greater than 23 knots and changing course = 2 sec

Table 3.21.1-1 AIS Position Message Output Intervals

The AIS simulation can be disabled by the instructor at the start of an exercise if desired by checking the “Disable” checkbox for each ownship in the exercise. This disables all AIS output for the ownship feed during an exercise. (However, if PassAISTargets=Yes in the [Config] section of GUI.INI, then target AIS messages will be sent for the ownship feed even when the Disable checkbox is checked for the ownship.)

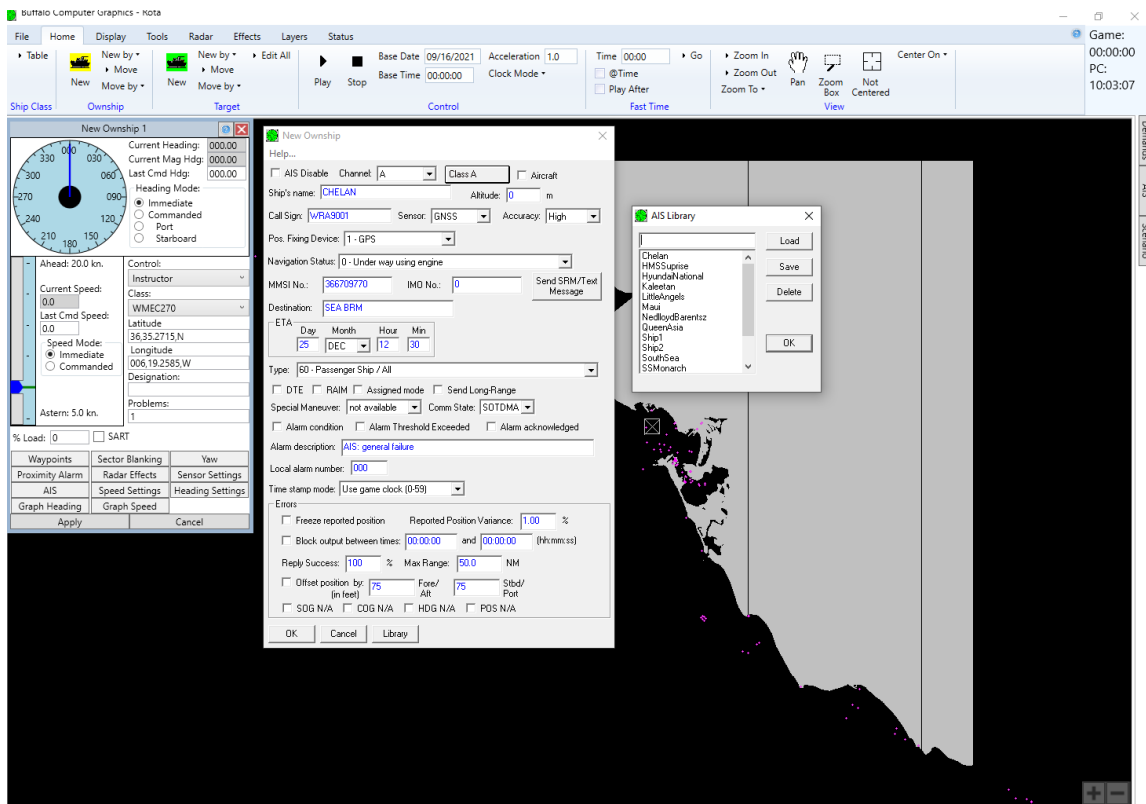


Figure 3.21.1-1 Ownship Panel with AIS window

A sample AIS window with the library window is shown in the figure below.

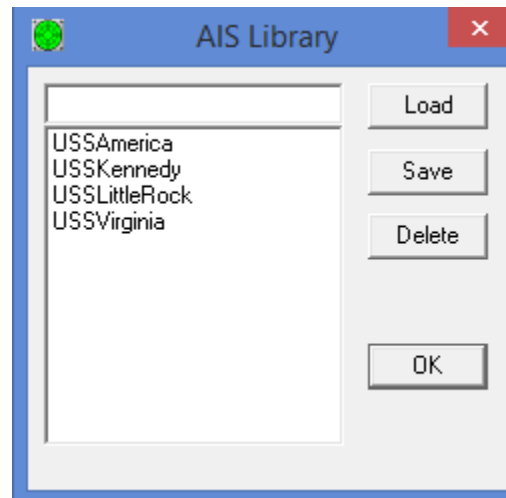


Figure 3.21.1-2 AIS Library window

If you opened the AIS window by clicking the AIS button in an ownship/target panel, then in order to enter changes you must click **OK** in the AIS window and then **Apply** in the panel. If you opened the AIS window by right-clicking on the marker in the Problem Window, then clicking **OK** in the AIS window causes the changes to be entered immediately.

The AIS window for ownships or moving targets contains the following fields:

Disable: If this checkbox is checked, then no AIS data will be sent to the radar display by the MaST for this vessel. By default, AIS for all ownships is enabled and AIS for all targets is disabled.

Channel: This allows the radio channel to be simulated for transmitting messages. This field may be set to A, B, Null, or Alternating. If Alternating is selected, then the messages will alternate between channels A and B.

Class button: Clicking this brings up a small window that can be used to select which type of equipment is being emulated for the vessel, one of: Class A, Class B "SO", or Class B "CS". The messages produced for the vessel will then conform to the specifications for the selected type. The small window may also contain fields for parameters that are only supported for Class B simulation.

Aircraft checkbox: If checked, then AIS messages for aircraft position will be output.

Altitude: This is only used if the Aircraft checkbox is checked. In some configurations, this field will be grayed and read-only indicating that the altitude for the target can only be set using the Altitude button in the Target Panel.

Sensor: If Aircraft is checked, then this indicates the sensor type for Altitude, either GNSS or barometric.

Ship's Name: Contains the name of the vessel, which may have up to 20 characters. Only the letters A-Z, digits 0-9, and the space character are allowed. Lower case letters are allowed, but they will be automatically converted to upper case.

Call Sign: Contains an identification name or number for the vessel, which may have up to 7 characters. Only the letters A-Z, digits 0-9, and the space character are allowed. Lower case letters are allowed, but they will be automatically converted to upper case.

Pos. Fixing Device: Indicates the Position Fixing Device for the vessel.

Accuracy: Indicates the reported position accuracy for the vessel.

Navigational Status: this dropdown list contains different options for the status information that is sent to the AIS for the target. Only one may be selected at any time. If the option 14 AIS-SART/MOB/EPIRB is selected, then a small button (labeled "ACTIVE") to the right of the dropdown appears that can be clicked to set parameters specifically for AIS-SART/MOB/EPIRB options. That button will also appear (labeled "TEST") if option 15 is selected to enable test mode of SART/MOB/EPIRB.

MMSI Number: Contains a 9-digit number identifying the vessel. This must be a unique number for each vessel within an exercise.

IMO Number: Contains a number identifying the vessel. This should be a unique number between 1 and 9999999999.

Send Safety/Text Message button: Clicking this brings up a window in which a text safety (SRM) and/or IFM Telegram message can be defined and sent immediately [section 3.21.3, page 12].

The message may be broadcast or sent to a single address. At present, these messages cannot be recorded or replayed as part of a scenario file.

Destination: Contains the name of the next port of destination for the target. This may have up to 20 characters. Only the letters A-Z, digits 0-9, and the space character are allowed. Lower case letters are allowed, but they will be automatically converted to upper case.

ETA: Specifies the estimated date and time of arrival.

Type: This is a drop-down list containing all known types of AIS vessels. There are eighty different types in this list, and a code number from 20-99 is displayed at the left of each entry,

DTE: Checking this causes Data Terminal Ready to be specified as available.

RAIM: Checking this causes Receiver Autonomous Integrity Monitoring to be specified.

Assigned mode: Checking specifies that station is operating in assigned mode.

Send Long-Range: Checking this causes long-range position messages (27) to be automatically sent periodically for the vessel.

Special Maneuver: This drop-down list indicates whether the vessel is engaged in a special maneuver.

Comm State: This drop-down list specifies the communication state (SOTDMA or ITDMA)

Alarm Enabled: Checking this causes a NMEA ALR message to be sent to the radar display at the time when **OK** is clicked. A subsequent ALR message will be sent whenever any of the other Alarm fields are later changed and **OK** is clicked again if the Alarm condition checkbox is still checked.

Alarm Threshold Exceeded: Checking this sets the "Alarm condition" field in the NMEA ALR message to be set to 'A' as opposed to 'V'.

Alarm Acknowledge State: Checking this sets the "Alarm's acknowledge state" field in the NMEA ALR message to be set to 'A' as opposed to 'V'.

Alarm Description: This may be a text string of up to 50 characters describing the alarm. This must only contain characters that are legal for a NMEA ALR message field (letters A-Z, digits 0-9 and the space character, no comma).

Local Alarm Number: Sets the ID number of the alarm source in the NMEA ALR message (0-999).

Time Stamp Mode: This determines the 7-bit time stamp value used in AIS position messages. Normally this is set to the seconds component of the current game time, but it can be forced to a fixed value from 60 to 63.

Freeze Reported Position: While this is checked, the position reported in the simulated AIS messages for the vessel will be paused.

Block output between times: By entering two game times in the two edit boxes, a time period can be specified during which the vessel will not output any AIS messages. The game times are entered using HH:MM:SS format. The second game time must be after the first game time, although if the base game time at the beginning of the exercise was not 00:00:00, then the time period may wrap around midnight.

Reply success: This is a percentage that specifies how likely it is that an AIS message will successfully be received. If this is 100, then all messages transmitted by the vessel will be received (unless blocked). If this is less than 100, then AIS messages from the vessel will randomly fail to be transmitted.

Max Range: This specifies the maximum range that AIS messages from the vessel can successfully be transmitted. This may contain any number between 0 and 250 (NM). (This field only appears in configurations where the AISMaxRange key is set to zero in the [MRS] section of GUI.INI).

Offset Position By: This can be used to specify latitudinal/longitudinal offsets for the position of the vessel as reported by AIS messages. If these are non-zero, then the latitude/longitude values reported in AIS message from the vessel will be offset by a fixed distance from the actual position of the vessel.

Reported Position Variance: This is a percentage used to introduce a random variance of the vessel's position as reported by AIS messages. The value entered determines the maximum distance that the reported position can vary from the actual position. The value is entered as a percentage, with 100 corresponding to the maximum variance distance which is 200 yards.

No Video: When this checkbox is checked for a target that has AIS enabled, then the AIS messages will be output for that target, but any radar video for it will be suppressed.

SOG/COG/HDG/POS N/A: These are four checkboxes that can be used to cause position messages to be sent with unavailable SOG, COG, Heading and/or Position fields.

3.21.2 AIS Library Window

The AIS Library Window is made visible by clicking the **Library** button in the AIS window for an ownship or target. The Library Window disappears when the **OK** button in the Library Window is clicked.

The Library Window contains a large list box which contains the names of all the AIS definitions in the AIS Library disk file. There is no limit to the number of definitions it may contain. When there are more names in the list than can be displayed in the list box, you can scroll through the list using the mouse.

At the top of the list box is an editable field which can contain the name of one of the library entry names immediately below it or the name of a new entry name. The contents of this field can be entered by using the keyboard, or by clicking the mouse on an entry in the list box. This field is used in conjunction with the buttons which are described below:

Load - Before clicking this button, the editable field must contain the name of one of the AIS definitions from the list box. When this is clicked, the given definition is retrieved from the AIS Library disk file and inserted into the fields of the parent AIS window.

Save - Before clicking this button, the user must have typed in the name of a new AIS library entry. When this is clicked, the definition from the AIS window is stored into the AIS Library disk file. If there was already a definition in the disk file having the same name, then the old definition is replaced; otherwise, the new name is added to the list box. The currently displayed parameter values are stored even if they are drawn in blue and have not actually been registered yet. If any of the displayed parameter values are invalid, then an error message appears and the new definition is not stored.

Delete - Before clicking this button, the editable field must contain the name of one of the AIS definitions from the list box. When this is clicked, the user is asked for a confirmation. If the user confirms, the given definition is deleted immediately from the AIS Library disk file. This delete is irreversible.

OK - clicking this button causes the AIS Library Window to disappear and the focus to return to the parent AIS window.

3.21.3 AIS Text Messages

The MaST can send out SRM and/or IFM Telegram text messages using the “Send SRM/Text Message” button in the AIS Parameters window. (This button will only appear if GUI.INI has been configured properly with the AISTextEnabled parameter). The window that appears when this button is clicked is shown below.

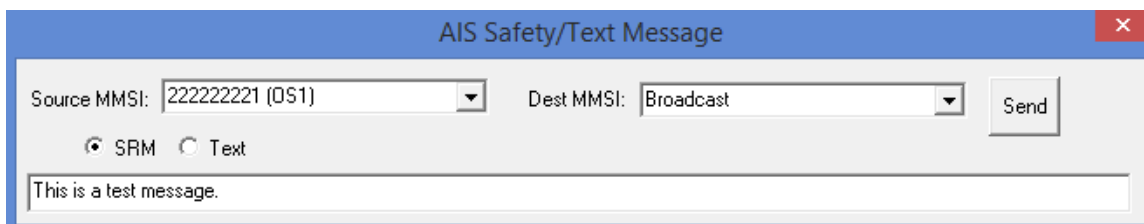


Figure 3.21.3-1 AIS SRM/Text window

There are radio buttons for specifying whether the message will be sent using SRM or IFM Telegram (“Text”).

If GUI.INI has the line AISAllowText=All, then a dropdown appears next to the word “using” for specifying which message number is used to send the IFM Telegram (6, 8, 25, or 26). When the Text radio button is selected and “6 or 8” is selected in the “using” dropdown, then 6 will be used for addressed text, or 8 will be used for broadcast text. An “Acknowledge required” checkbox also appears that is only used for messages 6 or 8. The “Retransmit until acknowledged” checkbox appears when GUI.INI has the line AISAllowResend=Yes.

When the SRM radio button is selected, the message 12 will be used for addressed, or message 14 for broadcast.

The message is sent once each time the Send button is clicked.

When text messages are enabled by GUI.INI, then the MaST allows the instructor to view a record of text messages by clicking the “Show AIS Text Log” button in the AIS/BFT panel. This brings up a window showing all sent/received AIS text messages (SRM or Text), as shown in the figure below.

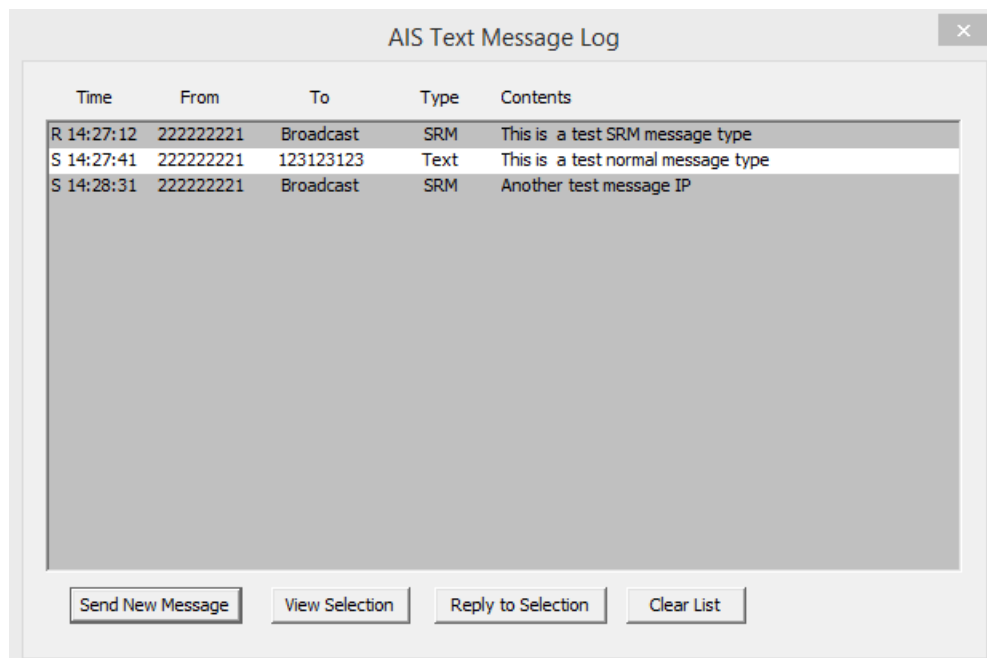


Figure 3.21.3-2 AIS Text Message Log Window

There is a letter ‘R’ or ‘S’ at the beginning of each line in the list indicating whether the message was sent or received. The buttons at the bottom have the following functions:

Send New Message: this brings up a window allowing the instructor to send a new message, similar to the window shown in [Figure 3.21.3-1, page 12].

View Selection: this brings up a window showing the details of the selected message. This window is similar to the window shown in [Figure 3.21.3-1, page 12], except that the fields in it are read-only.

Reply to Selection: this is used to reply to the received message that is currently selected in the list (any line beginning with ‘R’). Clicking this brings up a window similar to the window shown in [Figure 3.21.3-1, page 12] with the destination MMSI field automatically set to the source MMSI of the selected received message.

Clear List: this removes all items shown in the list.

In some configurations an AIS/BFT log window is provided that shows more detailed technical information about sent/received AIS message, shown in the figure below. This window is

opened by clicking the "Show Log Window" button in the AIS Display Panel [section **Error! Reference source not found.**, page **Error! Bookmark not defined.**], and it contains a list box with a line for each AIS message sent by the instructor or received via a serial or network port. Double-clicking on a line will open up a window that shows the contents of that message in detail. This is the same window described in [section 3.21.6, page 19].

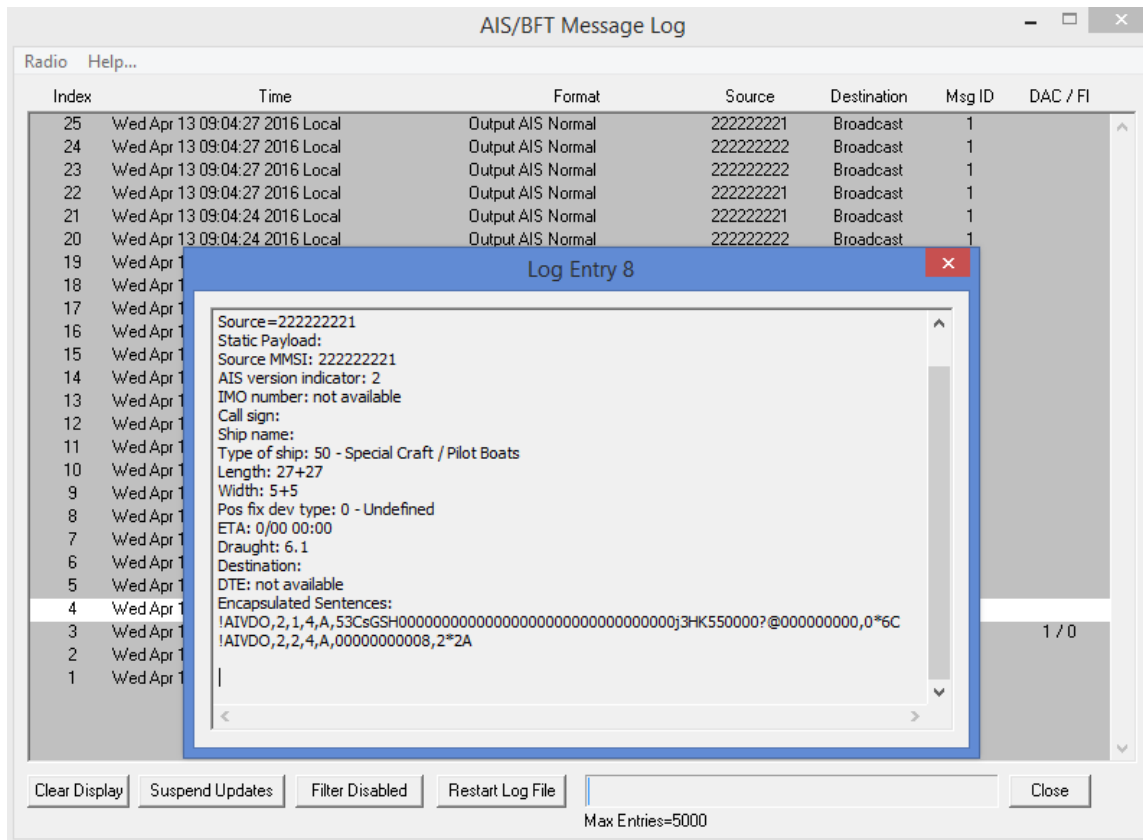


Figure 3.21.3-3 Message Log with Entry details

This log window lists each AIS/BFT message sent or received with Time Stamp, Format, Source, Destination, Message Type and DAC/FID information. The user can stop updates to the Log Window by left clicking on the Suspend button.

By clicking on the Filter Disabled/Enabled button near the bottom of the Message Log Window, the user may set up filters for incoming and outgoing messages. This brings up a window that can be used to specify features that help to isolate the particular message(s) that are of interest. Filtering parameters include Source, Destination, AIS messages and BFT message type(s). The filter must have the **Enabled** checkbox checked to take effect.

When `AISTextEnabled=Yes` in GUI.INI, then this log will automatically use a filter to only show entries for SRM or IFM Telegram text messages. When `AISTextEnabled=All` in GUI.INI, then this log will not use a filter and will show entries for all AIS messages. This log window is described in more detail in the BCG AIS_BFT Supplement document.

3.21.4 AIS ATON and Base Station Parameters

The MaST allows the user to define “Stationary Targets” objects in an exercise that may generate AIS Aid-To-Navigation messages (21) or Base station messages (4). Stationary targets have their object type set to “Anchored/ATON”, are drawn in blue instead of green, and cannot be assigned a speed. Clicking the AIS button in the Target Panel for a stationary target will bring up a window containing the AIS information for that stationary target.

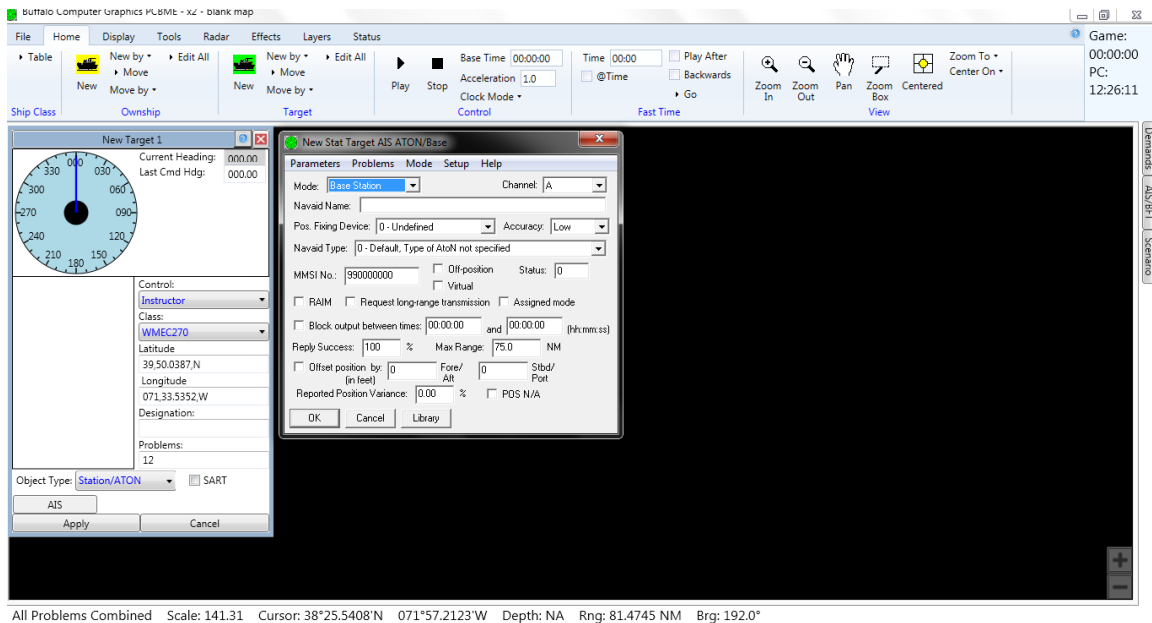


Figure 3.21.4-1 AIS window for stationary target

The AIS ATON window contains the following input fields:

Mode: This droplist allows the stationary target to send AIS messages as an “ATON” (message 21) or as a “Base Station” (message 4). The default mode is “Disabled”.

Channel: This allows the radio channel to be simulated for transmitting messages. This field may be set to A, B, Null, or Alternating. If Alternating is selected, then the messages will alternate between channels A and B.

Navaid Name: Contains the name of the navaid, which may have up to 34 characters. Only the letters A-Z, digits 0-9, and the space character are allowed. Lower case letters are allowed, but they will be automatically converted to upper case.

Pos. Fixing Device: Indicates the Position Fixing Device for the navaid.

Accuracy: Indicates the reported position accuracy for the navaid.

Navaid Type: This is a drop-down list containing all possible types of aids-to-navigation.

MMSI Number: Contains a 9-digit number identifying the navaid. This must be a unique number for each entity within an exercise.

Off-position and **Virtual** checkboxes: Checking these set the corresponding bits in the AIS ATON output message.

Block output between times: By entering two game times in the two edit boxes, a time period can be specified during which the navaid will not output any AIS messages. The game times are entered using HH:MM:SS format. The second game time must be after the first game time, although if the base game time at the beginning of the exercise was not 00:00:00, then the time period may wrap around midnight.

Reply success: This is a percentage that specifies how likely it is that an AIS message will successfully be received. If this is 100, then all messages transmitted by the vessel will be received (unless blocked). If this is less than 100, then AIS messages from the navaid will randomly fail to be transmitted.

Max Range: This specifies the maximum range that AIS messages from the navaid can successfully be transmitted. This may contain any number between 0 and 250 (NM). (This field only appears in configurations where the AISMaxRange key is set to zero in the [MRS] section of GUI.INI).

Offset Position By: This can be used to specify north and east offsets for the position of the navaid as reported by AIS messages. If these are non-zero, then the latitude/longitude values reported in AIS message from the navaid will be offset by a fixed distance from the actual position of the navaid.

Reported Position Variance: This is a percentage used to introduce a random variance of the navaid position as reported by AIS messages. The value entered determines the maximum distance that the reported position can vary from the actual position. If the value entered is 100, then the position can vary up to 200 yards.

There is a Library button that can be used to load/save the AIS parameters in this window, similar to the window described in [section 3.21.2, page 11]. However the library database for stationary targets is maintained separately from the library database for ownship/targets.

3.21.5 AIS Configuration Data

The following provides a sample of the AIS configuration data used by the BCG simulator. Normally the AIS function is installed and configured in the factory prior to delivery. If the customer needs to change any of these parameters make certain that a back-up copy of the original file is available. If assistance is needed configuring the AIS Simulation module, please contact BCG.

The following parameters can be useful for operation of the BCG AIS Simulation module. These parameters are set in the GUI.INI file found in the C:\GUI folder of the simulator. These .INI files may be edited using any text editor.

[Timing]

PeriodAISStatic=300

; This parameter specifies the number of seconds between automatic updates of AIS static information. The default is "300" (for 5 minutes).

PeriodAISUpdate=0

; Setting this parameter to “0” forces the AIS software to output updates for Class A vessels as per the AIS specification [Table 3.21.1-1, page 8]. This parameter can be set to a positive value in seconds, if you would like to output all Class A vessels at a fixed rate.

PeriodAISUpdateX=0

; Setting this parameter to “0” forces the AIS software to output updates for Class B vessels as per the AIS specification. This parameter can be set to a positive value in seconds, if you would like to output all Class B vessels at a fixed rate.

PeriodAISBaseStation=10

; This parameter specifies the number of seconds between automatic updates of AIS Base Station messages.

PeriodAISNavaid=180

; This parameter specifies the number of seconds between automatic updates of AIS Aid-To-Navigation messages.

RunningAISOutput=Yes

; Setting this parameter to “Yes” causes AIS output to stop when the scenario is Paused. Setting this to “No” causes AIS output to be generate when the scenario is either Playing or Paused.

StaggerAISOutput=No

; Setting this parameter to “Yes” causes AIS output to be staggered, or distributed across available time, and avoids outputting in a ‘burst’ mode.

[Serial]

COM1=38400,N,8,1

; Specifies the set-up parameters to be used by AIS for serial output.

[Config]

AIS=Furuno

; Enables AIS support in MaST.

AISTextEnabled=Yes

; Allows the instructor to send SRM or IFM Telegram text messages using the button in the AIS parameters window. If this is set to “All” instead of “Yes”, then the user may select which message type is used to send IFM Telegram messages (6, 8, 25 or 26).

AISAllowResend=No

; If this is set to “Yes”, then the user may use a checkbox labeled “Retransmit until acknowledged” for any sent addressed messages (6 or 12). When the checkbox is checked and the message is sent, it will automatically retransmit up to 3 times until an acknowledgment message (7 or 13) is received.

AllowAISLoadSave=No

; This should only be set to “Yes” in a slave MaST configuration. It allows scenario files containing AIS settings to be loaded and saved while the MaST is running as a slave to another simulator.

CheckAISTextRange=No

; If this is “Yes”, then the [MRS] AISMaxRange value will be used to determine whether text messages (SRM or IFM Telegram) are received using the distance of the sender to the ownship. If this is “No”, then all text messages will be received regardless of distance.

AllowASM367=Yes

; If this is “Yes” then the MaST will be able to send/receive messages 6 or 8 with a DAC of 367 with payloads for US Coast Guard ASM messages.

[MRS]

PortForAIS1=COM1

; Defines what serial port is to be used for AIS message output.

AISMaxRange=0

; Defines maximum range in NM from Ownship that an entity which is AIS Enabled will respond. If set to “0”, then the individual “Max Range” setting in each vessel’s AIS window will be used instead of a single overall limit.

AISMaxLongRange=75

; Defines maximum range in NM from Ownship for receiving long-range AIS messages (27).

[ShipHandling]

AISOS1=AISF_ETHER/192.168.0.82/5000,0

; Used to set up the IP and Port # for AIS messaging in UDP protocol. The IP is for receiving machine with network adapter, and Port # is where AIS messages are written to. If two port numbers are specified, then the first number is for sending and the second is for receiving. The second number may be zero if only sending is being used.

AISOS1=AISF_ETHERT/192.168.0.82/5000

; This is like AISF_ETHER, except that the output is sent over TCP rather than UDP. If one port number is specified then the MaST port is a Server. If two port numbers are specified (send, receive), then the MaST port is a Client. The second port number may be zero if only sending is being used.

AISOS1=AISFNMEA_ETHER/192.168.0.82/5000,0

; This is like AISF_ETHER, except that all the GPS NMEA messages for the ownship are also sent over the same port as the AIS output.

AISOS1=AISFNMEA_ETHERT/192.168.0.82/5000

; This is like AISF_ETHERT, except that all the GPS NMEA messages for the ownship are also sent over the same port as the AIS output.

AISROS1=AISF_ETHER/192.168.0.82/5000,0

; This is like AISOS1= except that the output includes a few proprietary sentences intended for a BCG radar emulator product such as PCRadar.

AllowReconnection=Yes

; To allow the AIS node using TCP to reconnect automatically after a Stop or Shutdown.

3.21.6 Message Log Window

Some configurations provide a window that displays a list of all AIS and BFT messages sent and received in chronological order. The window is opened by clicking the “Show Log Window” button in the AIS Panel [section **Error! Reference source not found.**, page **Error! Bookmark not defined.**]. This window lists each message sent or received with Time Stamp, Format, Source, Destination, Message Type and FID information. The user can stop updates to the Log Window by left clicking on the Suspend button, or view individual log entries by double left clicking on a message string. This opens the Log Entry Window with full information about the message selected. For an example picture of these window, see [Figure 3.21.3-3, page 14].

For some entry types, there will be a time elapsed value drawn in red or green text immediately to the right of the time stamp text. This shows the time in seconds since the previous message of the same types was last received. If the text is red, then the value is larger than the normal time period for that type of message.

3.21.6.1 Message Log Filter

By clicking on the Filter Disabled/Enabled button near the bottom of the Message Log Window, the user may set up Filters for Incoming and Outgoing messages. This brings up a window that can be used to specify features that help to isolate the particular message(s) that are of interest. Filtering parameters include Source, Destination, AIS messages and BFT message type(s). A dropdown is also provided for specifying whether sent and or received messages are included. The Filter must be Enabled (check box) to take effect.

2.0 BCG COMMA SEPARATED VALUE (CSV) FILE FORMAT

The BCG Comma Separated Value File Format was defined to provide a mechanism for the BCG radar simulation products to import or export various types of simulation data in a text friendly format. This specification is designed to grow in various directions to support current and future simulation requirements. Compatibility of this specification with any BCG simulation software delivered prior to 29 November 2005 is not guaranteed. The user is cautioned that though this format is meant to be simple, it covers a wide range of simulation data types. In that regard, not all data types have been completely tested. Any operational abnormalities found by the user should be reported to BCG for further evaluation.

2.1. BCG Comma Separated Value (CSV) File Format

A record separator may consist of a line feed (ASCII/LF=0x0A), or a carriage return and line feed pair (ASCII/CRLF=0x0D 0x0A). However, a record can wrap across multiple lines when each line (except the last) is ended by double backslash characters (\\).

NOTES: Fields are always separated with **commas**.
Leading and trailing space-characters adjacent to comma field separators are ignored.
All CSV files must reside in the C:\GUI\CSV folder.
The GUI.INI or GUIT.INI file must have the entry:

```
[Config]
AllowLoadingCSV=Yes
```

Fields may be delimited with double-quote characters. Fields that contain double quote characters must be surrounded by double-quotes, and the embedded double-quotes must each be represented by a pair of consecutive double quotes. (e.g. "This is a ""test"" field",). It will probably not be necessary to use double quotes, but if you do and are using Word to create the CSV file, then make sure that only the standard ASCII double-quote character (hex 22) is used.

Comments may be placed in the file preceded by the # character. All characters on a line following a # will be ignored. For a multi-line record, any comments should be placed after the double backslash.

Example:

```
TGT1,,5,PatrolBoat, \\ # comments
14.5,270.0,,4017.2543,N,\\ # comments
```

07456.953,W,1,0

comments

comments

The first field in each record is a short name indicating the type of record. Each name is associated with a specified format for the fields in the record. If more fields need to be added to a type of in the future, a new name will be defined that incorporates the old and new fields instead of redefining the format for an existing name.

Fields marked with an asterisk (*) are required to be non-empty. If a required field is empty, then the simulation program will alert the user that there is an error in the CSV file when it is loaded. All non-required fields may be blank (nothing between two commas), in which case a default value is used. For numeric fields, the default value is the smallest legal value (except where noted). For text fields, the default value is an empty character string.

All fields are **case** insensitive so that case upper or lower case characters are treated the same.

2.2. CSV Record Types

2.2.1 TGT1 - for target without AIS information

1. *Message Name: TGT1
2. Time to start target. This can have one of the following formats HH;MM;SS, MM:SS, or Seconds. This time is relative to the start of the scenario. For example, 00:05:00 indicates that the target will be started five minutes into the scenario. If this field is not specified, then the target is started immediately.
3. *Target number (1-999)
4. *Class name – this must be the name of one of the classes currently in the class table loaded by the scenario. A class name cannot be longer than 40 characters.
5. *Speed (knots) – valid values are from -99 to 999. This may be either an integer or a number with a decimal point in it.
6. *Heading (degrees) – valid values are from 0 to 359.999. This may be either an integer or a number with a decimal point in it.
7. Route name – this specifies the name of a route file that specifies waypoints that the target will follow. The file should reside in the C:\GUI\ROUTES directory and should have a .ROU file extension. The name specified in this field should not include the path nor the .ROU file extension. For example, the field name “HAMPTON” would correspond to the file “C:\GUI\ROUTES\HAMPTON.ROU”. If a route is specified, then the Latitude and Longitude fields are optional; if the Latitude and Longitude fields are blank, then the target will be started at the first waypoint. (ROU file format is specified in Section 3 of this document.) If waypoints are specified, the target will proceed from a starting position specified by the waypoint, to the first waypoint in the route file.

8. Latitude (DDMM.MMM with any number of decimal places, e.g. 4017.2543 for 40 degrees 17.2543 minutes). This is required unless a Route name was specified, but may be used with a route file to specify a starting position not in the route file.
9. Latitude direction, either N or S. This is required unless a Route name was specified. See Field 8 above.
10. Longitude (DDDMM.MMM with any number of decimal places, e.g. 07456.95 for 74 degrees 56.95 minutes). This is required if no Route name was specified, but may be used with a route file to specify a starting position not in the route file.
11. Longitude direction, either E or W. This is required if no Route name was specified. See Field 10 above.
12. Problem number (1-8 for a specific problem, or 0 for all problems).
13. Bitmask. At present only the LSB has significance when a route is specified. If the LSB is 1 then the speed changes in the Route file will be ignored and the starting speed will be maintained as the vessel travels the route. If the LSB is 0 then the target will change speed according to the speeds specified in the Route file.

Examples:

A CSV Record with starting position, speed, and heading. No route file is specified, therefore the target will continue at specified speed, and heading.

```
TGT1,,5,Patrol Boat,14.5,270.0,,4017.2543,N,07456.953,W,1,0
```

A CSV Record with speed, heading and route. No starting waypoint is specified. Route file 'HAMPTON' is specified. Target will start at first waypoint in route file, and follow all waypoints in route file.

```
TGT1,3:00,6,Patrol Boat,14.5,270.0,HAMPTON,,,,,1,0
```

A CSV Record with starting position, speed, heading and route. Route file is specified, but the target will start at the specified waypoint and proceed to the first waypoint in the route file, and then continue to follow all waypoints in the route file.

```
TGT1,0,1,PatrolBoat,14.5,270.0,norf,3657.0000,N,07622.0313, W,1,1
```

2.2.2 TGTAIS1 - for target with AIS information

1. Message Name: TGTAIS1
2. Time to start target. This can have one of the following formats HH;MM;SS, MM:SS, or Seconds. This time is relative to the start of the scenario. For example, 00:05:00 indicates that the target will be started five minutes into the scenario. If this field is not specified, then the target is started immediately.
3. *Target number (1-999)
4. *Class name – this must be the name of one of the classes currently in the class table loaded by the scenario. A class name cannot be longer than 40 characters.

5. *Speed (knots) – valid values are from -99 to 999. This may be either an integer or a number with a decimal point in it.
6. *Heading (degrees) – valid values are from 0 to 359.999. This may be either an integer or a number with a decimal point in it.
7. Route name – this specifies the name of a route file that specifies waypoints that the target will follow. The file should reside in the C:\GUI\ROUTES directory and should have a .ROU file extension. The name specified in this field should not include the path nor the .ROU file extension. For example, the field name “HAMPTON” would correspond to the file “C:\GUI\ROUTES\HAMPTON.ROU”. If a route is specified, then the Latitude and Longitude fields are optional; if the Latitude and Longitude fields are blank, then the target will be started at the first waypoint. (ROU file format is specified in Section 3 of this document.)
8. Latitude (DDMM.MMM with any number of decimal places, e.g. 4017.2543 for 40 degrees 17.2543 minutes). This is required unless a Route name was specified.
9. Latitude direction, either N or S. This is required unless a Route name was specified.
10. Longitude (DDDMM.MMM with any number of decimal places, e.g. 07456.95 for 74 degrees 56.95 minutes). This is required unless a Route name was specified.
11. Longitude direction, either E or W. This is required unless a Route name was specified.
12. Problem number (1-8 for a specific problem, or 0 for all problems).
13. Bitmask. At present only the LSB has significance when a route is specified. If the LSB is 1 then the speed changes in the Route file will be ignored and the starting speed will be maintained as the vessel travels the route. If the LSB is 0 then the target will change speed according to the speeds specified in the Route file.
14. AIS name, up to 20 characters (may only use A-Z, 0-9 or space)
15. AIS channel: A or B, or if field is empty then default is null.
16. AIS call sign, up to 7 characters (may only use A-Z, 0-9 or space)
17. AIS position fixing device, a number from 0 to 7.
18. AIS accuracy, 0 for low or 1 for high
19. AIS navigation status, a number from 0 to 15
20. *AIS MMSI number, a 9 or 10 digit number
21. AIS IMO number, up 9 digits
22. AIS destination, up to 20 characters (may only use A-Z, 0-9 or space)
23. AIS ETA, format Day:Month:Hour:Minute, e.g. 4:7:14:30 for July 4, 2:30 PM
24. AIS Type, a number from 50 to 99.
25. AIS reply success percent, a number from 0 to 100, the default is 100.
26. AIS Max Range in NM, a floating point number from 0.0 to 250.0, the default is 75.0
27. AIS Offset Position Longitudinal, in yards
28. AIS Offset Position Latitudinal, in yards
29. AIS Reported Position Variance percent, a number from 0 to 100

Example:

TGTAIS1,23:59:59,6,Patrol Boat,14.5,270.0,ROU1,4018.7573,N,07426.183,\\ W,1,0,USS Little Rock,A,LTLROCK,0,1,0,143424432,\\ 949399393,Buffalo NY,10:7:9:39,51,100,50.0,0,0,0

2.3. BCGUI Route (ROU) File Format

A route file contains waypoint information for a single route that can be followed by targets. The format of this file is similar to that of CSV files, and the basic conventions listed in Section 1 of this document also apply to ROU files. However the list of message names allowed in ROU file records is different than for CSV files.

The BCG Enhanced GUI application has the capability to load and save route files automatically. From within the GUI this feature is accessed by opening the Waypoint window from an Edit Target window. The Waypoint window has a menu called "File" with selections to Load or Save a route file. When a route file is saved, all the waypoints currently displayed in the window are written to a file. When a route file is loaded, all the waypoints from a file are copied into the window. This feature allows you to specify the list of waypoints graphically and then write them to a file ensuring that the correct ROU file format is used.

NOTES: All route files must reside in the C:\GUI\ROUTES folder.
Only one route can be contained per ROU file.

The formats of the messages that are used in ROU files are described below, in case there is ever a need to create or edit them manually. These Record Types cannot be used in CSV files, nor can CSV Record Types be used in ROU files.

2.4. Route Record Types

2.4.1 WPCOUNT1 – specifies total number of waypoints in route

1. *Message Name: WPCOUNT1
2. *Number of waypoints (1-99)

2.4.2 WPTXT1 – specifies text field associated with a single waypoint (use of this message is optional)

1. *Message Name: WPTXT1
2. *Waypoint number (1-99)
3. Text field, up to 40 characters

2.4.3 WPENTRY1 – specifies location and other parameters for a single waypoint

1. *Message Name: WPENTRY1
2. *Waypoint number (1-99)
3. *Latitude (DDMM.MMM with any number of decimal places, e.g. 4017.2543 for 40 degrees 17.2543 minutes).
4. *Latitude direction, either N or S.

5. *Longitude (DDDMM.MMM with any number of decimal places, e.g. 07456.95 for 74 degrees 56.95 minutes).
6. *Longitude direction, either E or W.
7. *Speed (knots) – valid values are from -99 to 999. This may be either an integer or a number with a decimal point in it.
8. Direction mode – when a target reaches a waypoint, this can be used to specify whether the next waypoint will be the following waypoint or the previous waypoint in the list. This can be used to cause a target to go through a route backwards. This field may contain the letter “F” for forwards or “B” for backwards. If this field is blank, then the target will continue in the direction of the previous waypoint. The default mode for the first waypoint is forwards.
9. Goto mode – this can be used to cause the target to go to any waypoint instead of following the normal order. (The waypoint to go to is specified in field 10.) This field may contain the letter “G” to cause the target to start heading towards the other waypoint gradually, or the letter “J” to cause the target to immediately jump to the other waypoint. If this field is blank, then the target will continue with the next waypoint in the route normally.
10. Goto waypoint number – this field is used only if field 9 was specified as “G” or “J”. This field indicates the waypoint that the target will go to or jump to.
11. Pause time – this can be used to make a target stop motion for a time period when it reaches a waypoint. This field may contain an integer value between 0 and 64800 specifying the number of seconds to pause. The default is zero.

Examples:

Stand ROU file-

```

WPCOUNT1,5
WPTTEXT1,1,Start
WPENTRY1,1,3659.12487,N,07620.74473,W,5.00,,,0,0
WPTTEXT1,2,
WPENTRY1,2,3659.02974,N,07619.64075,W,5.00,,,0,0
WPTTEXT1,3,
WPENTRY1,3,3659.56744,N,07619.64088,W,5.00,,,0,0
WPTTEXT1,4,
WPENTRY1,4,3659.53540,N,07617.43411,W,7.50,,,0,0
WPTTEXT1,5,
WPENTRY1,5,3659.97898,N,07615.06880,W,7.50,,,0,0

```

ROU File without optional WPTTEXT1 line-

```

WPCOUNT1,5
WPENTRY1,1,3659.12487,N,07620.74473,W,5.00,,,0,0
WPENTRY1,2,3659.02974,N,07619.64075,W,5.00,,,0,0
WPENTRY1,3,3659.56744,N,07619.64088,W,5.00,,,0,0
WPENTRY1,4,3659.53540,N,07617.43411,W,7.50,,,0,0
WPENTRY1,5,3659.97898,N,07615.06880,W,7.50,,,0,0

```

Complex ROU file - The following route file will cause the Ownship to proceed from waypoint 1, to waypoint 2, jump from waypoint 2 to waypoint 4, and reverse course back to waypoint 3, and waypoint 2. The Ownship will then travel between waypoint 2 and waypoint 4 continuously.

```

WPCOUNT1,5
WPTEXT1,1,
WPENTRY1,1,3659.12680,N,07620.74469,W,35.00,,,,,10
WPTEXT1,2,
WPENTRY1,2,3659.03970,N,07619.64079,W,25.00,,J,4,20
WPTEXT1,3,
WPENTRY1,3,3659.58750,N,07619.64079,W,25.00,,,,,0
WPTEXT1,4,
WPENTRY1,4,3659.53930,N,07617.43419,W,20.00,B,,,40
WPTEXT1,5,
WPENTRY1,5,3659.97990,N,07615.06879,W,25.00,,,,,0

```

2.5. Converting Spreadsheet Data To CSV Format

Note: Prior to creating an Excel worksheet, select (highlight) the cells in the sheet that you will be using, and under the format menu, select **cells**, and **text**. This will preserve all numerals in Latitude / Longitude values that are entered. If this is not done, editing any field in the Excel spreadsheet will cause *.csv file errors.
Note that commas in a *.csv, or *.Rou file opened with a text application will be represented by cell boundaries when opened in an Excel spreadsheet.

Example:

(text) WPENTRY1,5,3659.97990,N,07615.06879,W,25.00,,,,,0

(Excel)

WPENTRY1	5	3659.97990	N	07615.06879	W	25.00					0
----------	---	------------	---	-------------	---	-------	--	--	--	--	---

(all cells formatted as text cells, do not insert commas)

CSV stands for Comma Separated Values, sometimes also called Comma Delimited. A CSV file is a specially formatted plain text file which stores spreadsheet or basic database-style information in a very simple format, with one record on each line, and each field within that record separated by a comma. It's important that the individual "records" within a CSV file NOT contain commas, as this may break the simple formatting when using the file in another application.

CSV files are often used as a simple way to transfer a large volume of spreadsheet or database information between programs, without worrying about special file types. Microsoft's Excel is a common application that can Import or Export CSV format files. Creating a CSV file from spreadsheet data is very simple to do using Microsoft Excel.

1. Open your spreadsheet document and go to the **File** pull-down menu, then choose **Save As....**
2. Change the "Save as type" or "Format" field to read: "CSV (Comma delimited)". Enter a name for the document and click **Save**.
3. To check the validity of your CSV file, open the new file from a plain-text reading program such as Notepad. Check to make sure there are no extra commas, other than between fields.

3.0 ASM DAC 367 Messages

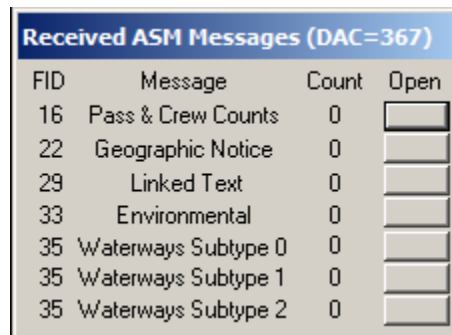
The GUI can support sending and receiving AIS 6 and 8 messages with ASM payloads for DAC 367. In order to enable this feature the following line must be in the [Config] section of GUI.INI:

```
AllowASM367=Yes
```

Also, the GUI must have been licensed with the BFT option. It is not necessary, however, to configure the GUI.INI for other BFT options. (For more information about BFT, see the AIS_BFT_Supplement document.)

The ASM messages are sent encapsulated using standard unencrypted AIS messages, using the same serial port or Ethernet socket that is used for normal AIS messages.

When enabled, the window below will appear in the graphic window.



FID	Message	Count	Open
16	Pass & Crew Counts	0	<input type="button" value="Open"/>
22	Geographic Notice	0	<input type="button" value="Open"/>
29	Linked Text	0	<input type="button" value="Open"/>
33	Environmental	0	<input type="button" value="Open"/>
35	Waterways Subtype 0	0	<input type="button" value="Open"/>
35	Waterways Subtype 1	0	<input type="button" value="Open"/>
35	Waterways Subtype 2	0	<input type="button" value="Open"/>

Figure 7

The numbers under the Count title indicate how many ASM messages of each type have been received during the current exercise. The buttons under the Open title are used to open dialogs for sending messages and for showing received messages for each type.

The content of the message dialogs are different for each type, but they have some common features:

1. The message dialogs are divided into two sections (either horizontally or vertically). One section is labeled "New Message" and the controls in it are used to send a new message immediately. The other section is labeled "Received Message" and can be used to examine received messages one at a time.
2. The "New Message" section includes Source and Destination dropdown fields for specifying MMSI numbers. Next to them is a "cycle" button that will automatically populate the dropdowns with known MMSI numbers.
3. The "New Message" section also includes a Library button that can be used to load/save a message from/to the disk library file. Clicking this button brings up a window that has the same functionality as the standard GUI Class/Radar Library windows.

4. The message will be sent immediately when the Send button is clicked, unless there is a field with an illegal value.
5. There will be a "Message Linkage ID" field just below the Destination field on dialogs for messages that support linked text messages. This is provided as a more convenient way to specify linked text. The text body can be specified by clicking the pushbutton to the right that is initially labeled "No Text". This brings up a dialog for entering the text and which includes a checkbox to enable the linked text. When this checkbox is checked and the dialog is closed, then the pushbutton label changes from "No Text" to "With Text". This causes the linked text message to be sent together with the main message when the Send button is clicked.
6. The "Received Message" section can display a single received message. The fields are all shown in gray and are read-only. The Previous and Next buttons can be used to display different messages when there are multiple messages in the receive queue.
7. Clicking the Delete button causes the currently displayed message to be deleted from the receive queue. Clicking the Delete All button deletes all messages in the receive queue. (These do not cause the messages to be deleted from the log window or log file).

3.1 Passenger and Crew Count Dialog

This dialog is for parameters associated with the FID 16 message. It is divided into left and right sections and includes the automatic Message Linkage ID feature.

3.2 Geographic Notice Dialog

This dialog is for parameters associated with the FID 22 message. It is divided into left and right sections and includes the automatic Message Linkage ID feature.

The dialog includes two buttons labeled "View", one in each section. Clicking one of these causes the geographic shape defined in either the sent or received message to be displayed graphically in the graphic window. Clicking the "Clear View" button cancels this graphical display feature.

The "New Message" section includes a dropdown labeled "Sub-area count" that can be set to a number from 0 to 9. When this number is changed, then that number of sub-area rows will be displayed immediately. Each row specifies the sub-area type and a pushbutton for defining the parameters for that sub-area. Clicking any of these pushbuttons brings up a sub-area dialog.

The sub-area dialogs are different for each type. Most of them include buttons for specifying geographic location/shape using the mouse in the graphic window, instead of typing in numbers.

The "Received Message" section will also display sub-area rows for the received message. The type fields in the rows and the fields in the associated dialogs will be read-only

3.3 Linked Text Dialog

This dialog is for parameters associated with the FID 29 message. It is divided into top and bottom sections. This window can be used for sending out linked text messages manually at any time, or for examining received linked text messages.

3.4 Environmental Dialog

This dialog is for parameters associated with the FID 33 message. It is divided into left and right sections. Environmental messages can only be broadcast.

The “New Message” section includes a dropdown labeled “Sensor Report count” that can be set to a number from 0 to 8. When this number is changed, then that number of report rows will be displayed immediately. Each row specifies the report type and a pushbutton for defining the parameters for that report. Clicking any of these pushbuttons brings up a report dialog.

The report dialogs are different for each type. Only the “Site Location” dialog includes a button for specifying geographic location using the mouse in the graphic window, instead of typing in numbers.

The “Received Message” section will also display report rows for the received message. The type fields in the rows and the fields in the report dialogs will be read-only.

3.5 Waterways Subtype 0 Dialog

This dialog is for parameters associated with the FID 35 message subtype 0. This dialog is divided into left and right sections and includes the Message Linkage ID feature.

The “New Message” section includes a dropdown labeled “Vessel count” that can be set to a number from 0 to 7. When this number is changed, then that number of vessel rows will be displayed immediately. Each row contains a pushbutton for defining the parameters for that report. Clicking any of these pushbuttons brings up a vessel dialog.

The “Received Message” section will also display vessel rows for the received message. The type fields in the rows and the fields in the vessel dialogs will be read-only.

3.6 Waterways Subtype 1 Dialog

This dialog is for parameters associated with the FID 35 message subtype 1. This dialog is divided into left and right sections and includes the Message Linkage ID feature.

3.7 Waterways Subtype 2 Dialog

This dialog is for parameters associated with the FID 35 message subtype 2. This dialog is divided into left and right sections and includes the Message Linkage ID feature.

4.0 AIS Log Window

A log window is provided for examining sent/received AIS/BFT messages in chronological order. This window can be accessed via the "Show AIS Log" item in the graphic window Demand menu. (For BFT configurations, it can also be accessed via the "Show Log" pushbutton in the BFT window.) The log window will only be available for non-BFT configurations if the "AISTextEnabled" setting is set to "Yes" or "All" in the [Config] section of GUI.INI.

The log window lists each AIS/BFT message sent or received with Time Stamp, Format, Source, Destination, Message Type and DAC/FID information. The user can stop updates to the Log Window by left clicking on the Suspend button, or view individual log entries by double left clicking on a message string. This opens the Log Entry Window with full information about the message selected.

By clicking on the Filter Disabled/Enabled pushbutton near the bottom of the Message Log Window, the user may set up Filters for Incoming and Outgoing messages. This brings up a window that can be used to specify features that help to isolate the particular message(s) that are of interest. Filtering parameters include Source, Destination, AIS messages and BFT message type(s). The Filter must be Enabled (check box) to take effect.