Learning Management System (LMS)
Using Maritime Simulation Tool (MaST)

User's Guide

May 2016

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Contents

1 Introduction

The Learning Management System (LMS) is an optional software package which enhances the capability of Buffalo Computer Graphics' simulation products. The LMS consists of enhanced features to the Maritime Simulation Tool (MaST) instructor station, along with a Student Response Unit (SRU) package utilized by one or more students. The LMS acts as an on-line teaching aid which allows the instructor to build intelligent lesson plans and question sets directly into a navigational exercise. Student interaction takes place at the SRU which is located conveniently at the student operator position. The SRU presents text messages or speech to the student, while the MaST monitors and records all SRU activity.

Since all phases of the LMS are controlled by the instructor, he/she determines the level of automated support which is integrated into the training scenario. The student is presented with the lesson plans and question sets as they progress through the training. The LMS features supplement the use of radar, ECDIS and voice communication utilized during the exercise. This allows the student to be taught as they work their way through the training. As part of this, all student SRU interaction and ship navigation commands are recorded for later review by the instructor.

One or more Student Response Units are networked with the MaST Instructor Station, which controls the loading and progression of the exercises. Both the Student Response Unit (SRU) and the Instructor's MaST PC work in-sync with one another to provide a realistic training simulation for the student. The SRU software can be facilitated either by the GUI2 or the MaST application running on the student PC. This document only describes the SRU software features when the MaST application is used for it (which is recommended for all new installations).

This User Guide provides instructions as to how the Instructor's Station and the Student Response Unit interact within the LMS.

Section 2 describes LMS features on the instructor station.

Section 3 describes LMS features on the student station (SRU).

Section 4 describes features used to review the results of finished LMS exercises.

Section 5 provides a full reference of LMS controls in the MaST application window.

The reader should also review the **MaST User's Guide** and **MaST Quick Start Guide** for basic operational aspects of the MaST for exercise creation.

2   Instructor Station

2.1   Creating an LMS Exercise

When a training exercise is created the instructor normally plans out all aspects of the training prior to adding in LMS features. This normally entails the creation of the base exercise with selection of a geographical area of operation, placing the Ownship and placing traffic ships as the training dictates. Once this is accomplished the exercise may be saved to the simulator as a core training file. Adding LMS features include the creation of Briefing Text, Reference areas/lines, Warnings and Question Sets. These can be added to a training exercise on top of a previously generated vessel situation. Once the instructor is happy with the LMS features added, the training exercise is saved again as the core file name or another name if desired.

At initialization the instructor's monitor presents the Maritime Simulation Tool (MaST) control window. The **File** ribbon tab containing the **Learning Management System** group of controls is central LMS functions. From the MaST window the instructor controls all aspects of the simulation exercise including SRU interaction. [The reader is referred to the **MaST Quick Start Guide** provided with the simulator as the reference for creating a core training exercise file.]
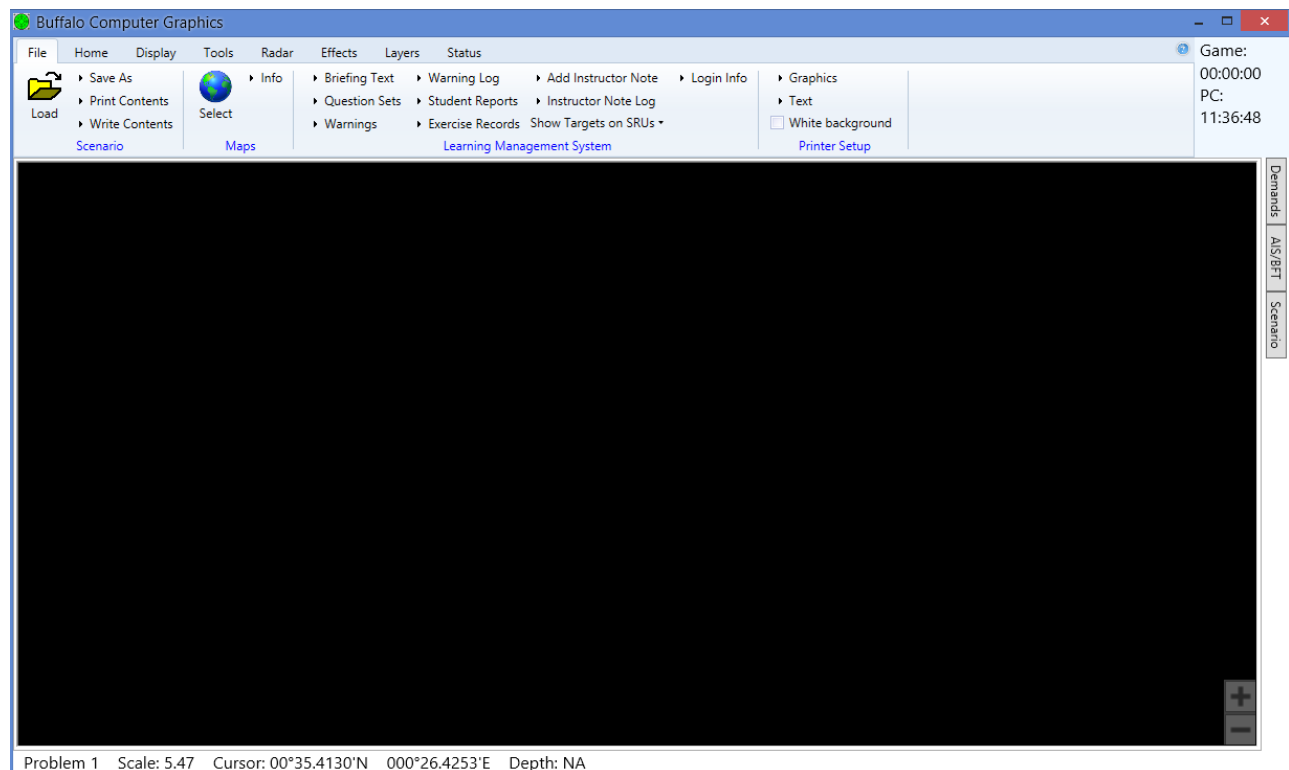

Adding LMS features begins with Briefing Text:

2.2   Briefing Text

Briefing Text allows the instructor to provide the student with a detailed description of the exercise, including the student's specific role in the simulation (e.g. Quartermaster), duties or tasks which the student must carry out (e.g. Planning passage of vessel), and information about the questions being asked by the instructor. In order to create a Briefing Text, the instructor must complete the following steps.

2.3   Creating a Briefing Text

Left click on the **Briefing Text** item in the **File** ribbon tab. Once selected, a Briefing Text window will appear on the screen. Clicking in the white area of the box allows the instructor to begin to type in the briefing text. This window supports up to 4,000 characters of free form text. If the instructor attempts to enter more than 4,000 characters, an error message box will appear. If the Briefing Text is too large to be viewed all at once in the window, the Page Up, Page Down, and Arrow keys on the keyboard can be used to scroll through it.
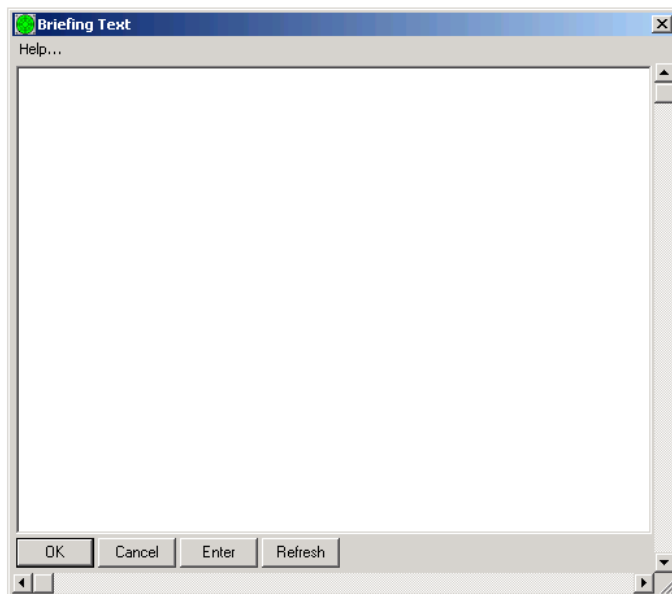
Entered text will appear in the color blue, indicating that it is either new or changed text. When the instructor is finished typing or editing the Briefing Text, the **Enter** button must be clicked in order to enter the text into the program. The Briefing Text will change from blue to black, indicating that the text has been entered into the program. The **OK** button must be clicked in order to exit out of the Briefing Text window. Once exited out of the Briefing Text window, the text is saved as part of the Scenario until it is dispatched to the SRU.

2.4   Other Features in the Briefing Text Window

The **Cancel** button can be used if the instructor decided he or she does not want to edit or create a Briefing Text and wants to exit the window. Anything that was typed or changed in the Briefing Text window will not be saved if the **Cancel** button is clicked on.

Clicking on the **Refresh** button in any of the windows will clear all of the text within that window or clear all answers in the window. If this button is clicked on accidentally, the instructor may press **Cancel** and re-open the Briefing Text box by clicking the **Briefing Text** item in the ribbon.

At the top left of the window there is a menu labeled "Help" which will provide the instructor with general help information at any time throughout the program.

NOTE TO INSTRUCTOR: Creating a Briefing Text is an off-line process. Briefing Text should be completed before running a scenario. The instructor CANNOT create or make changes to a Briefing Text while a student is engaged in an exercise. The instructor should create, edit and save the Briefing Text BEFORE the student is logged on.
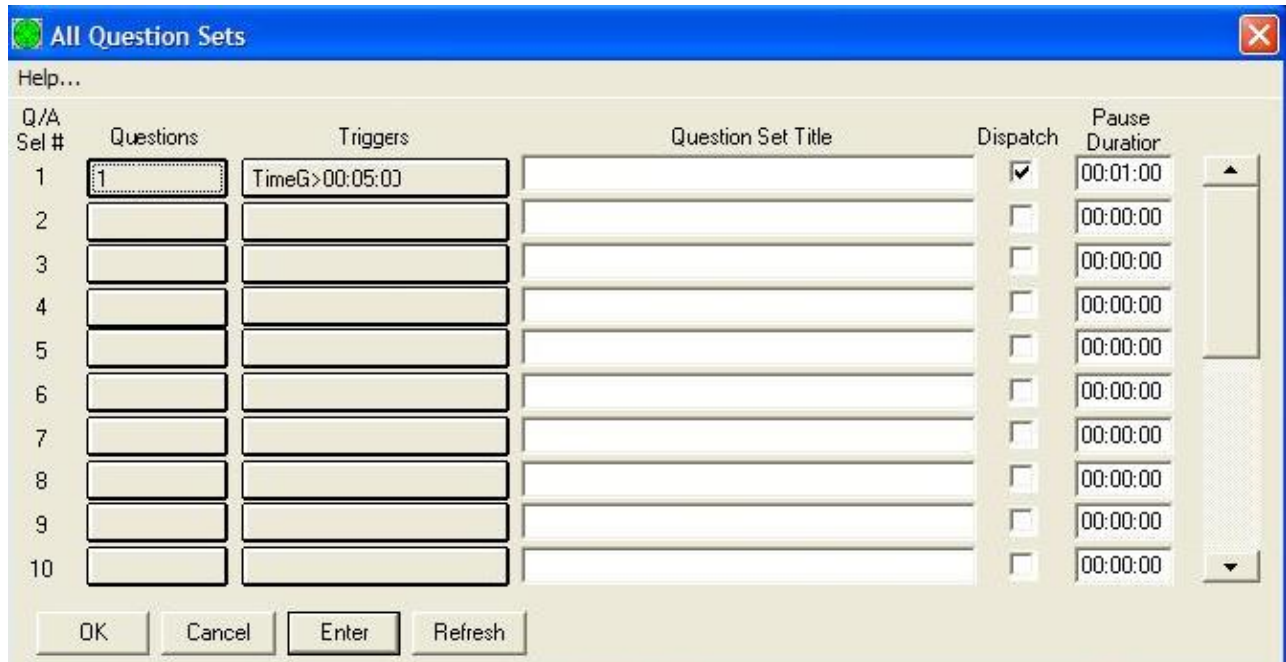
2.5   Question Sets

Question Sets allow the instructor to create up to 200 different questions (20 sets of 10 questions) to be dispatched to the student. The instructor determines when specific question sets are to be dispatched based upon time or a "Trigger" event and how much time the student has to answer the questions. Each question set can have one or more trigger conditions that determine when questions become available to the student. When the exercise is replayed and the trigger conditions are met, the SRU will display a notification message to the student and then present the questions.

NOTE TO INSTRUCTOR: Creating Question Sets is an off-line process. In order to create and save Question Sets, the instructor CANNOT make changes to a Question Set while a student is logged on and engaged in an exercise. The instructor should create, edit and change the Question Sets BEFORE the student is logged on.

2.6   Creating Question Sets

In order to access the All Question Sets window, left click the **Question Sets** item in the **File** ribbon tab. A window will appear titled "All Question Sets" which controls what set of questions gets dispatched to the student. In order to create or edit a question set, the instructor must left click on the blank square button under the word "Questions"; the first box corresponding with Q/A Set #1, the second box corresponding with Q/A Set #2, and so on. The edit box will be blank if there are no questions present in that specific Question Set. If there are questions that have already been entered in a specific Question Set, that number of questions (from 1-10) will appear in the edit box.

After clicking on one of the buttons in the **Questions** column, a new window will appear showing the question set which was selected. In this new window, the instructor will see 10 question boxes that will be blank. When loading previously saved Question Sets, these boxes may have text in them which can be edited if necessary.
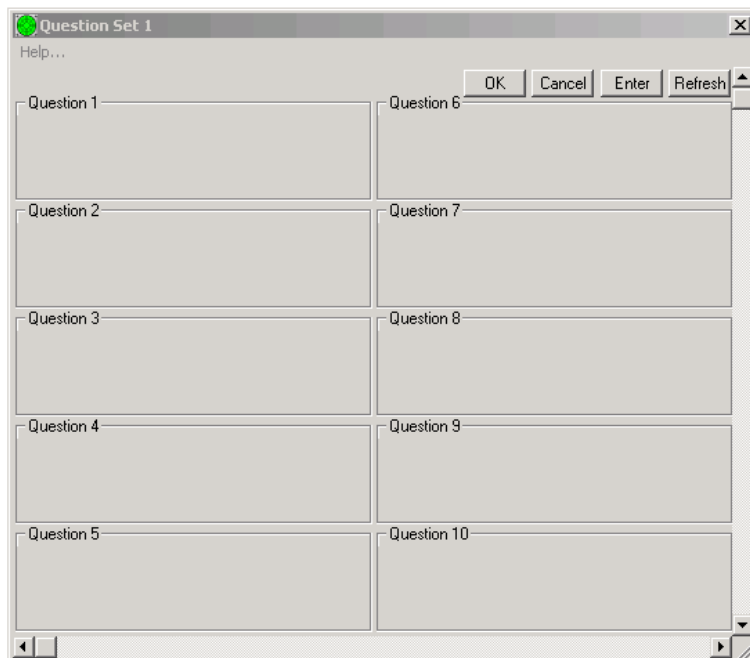
To enter or edit text for an individual question, left click on the box in this window for the specific question that is going to be created or edited. A new Question window appears. In this window, the instructor can click on the large white text area under the title "Question"

and begins to type up to 1024 characters for each question. After the question has been entered, the instructor is provided with various question "Formats", located at the top right of the question window. A question Format can be chosen by clicking on the drop down list arrow on the right of the Format menu. After clicking on this arrow, the instructor is given the choice of seven question Formats: True/False, Yes/No, Multiple Choice – A/B, Multiple Choice – A/B/C, Multiple Choice – A/B/C/D, Input Text, and No Answer. Below is a brief description of each question Format.
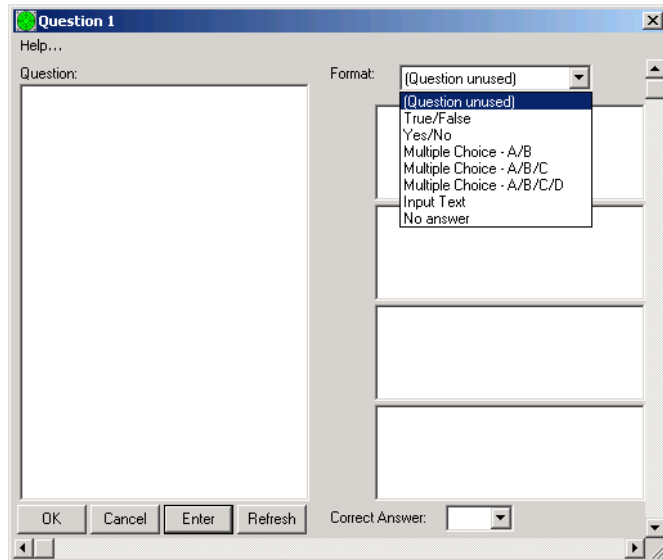
True/False: Used for questions pertaining to a statement made by the instructor in the question.
Example: The vessel to your port side is at anchor.

Yes/No: Used for question that can be answered by a simple "yes" or "no".
Example: If no changes take place, will the ship bearing 125 cross your bow within
30 minutes?

Multiple Choice: Multiple choice provide the student with 2-4 possible answer choices which the instructor can personally enter. This format can be used for questions which require an answer more specific then Yes/No or True/False.
     Example: The vessel at the channel mark will:
A.   *Be stationary*
B.   *Pass within 1 NM*
C.   *Pass at greater than 1 NM*

**Input Text:** This format leaves a blank answer box on the student's screen and allows the student to type in a specific response to the instructor's question (up to 256 characters).
     Example: Please explain what your plan of action is in this situation.

No Answer: This format allows the instructor to simply make a statement or refer to a previous or upcoming question. The student cannot respond to this type of question.

Example: The following three questions will refer to what you see on your radar display.
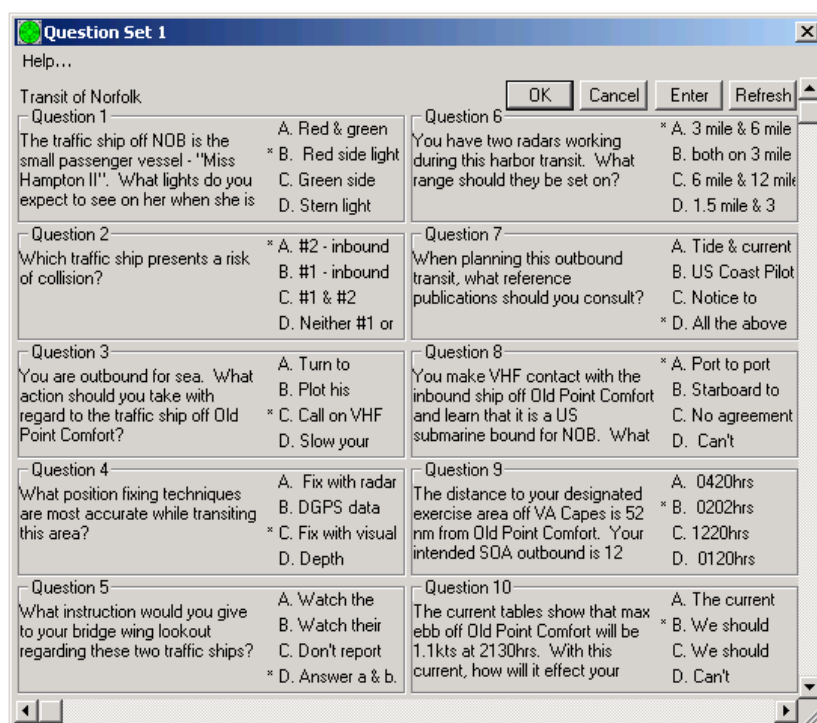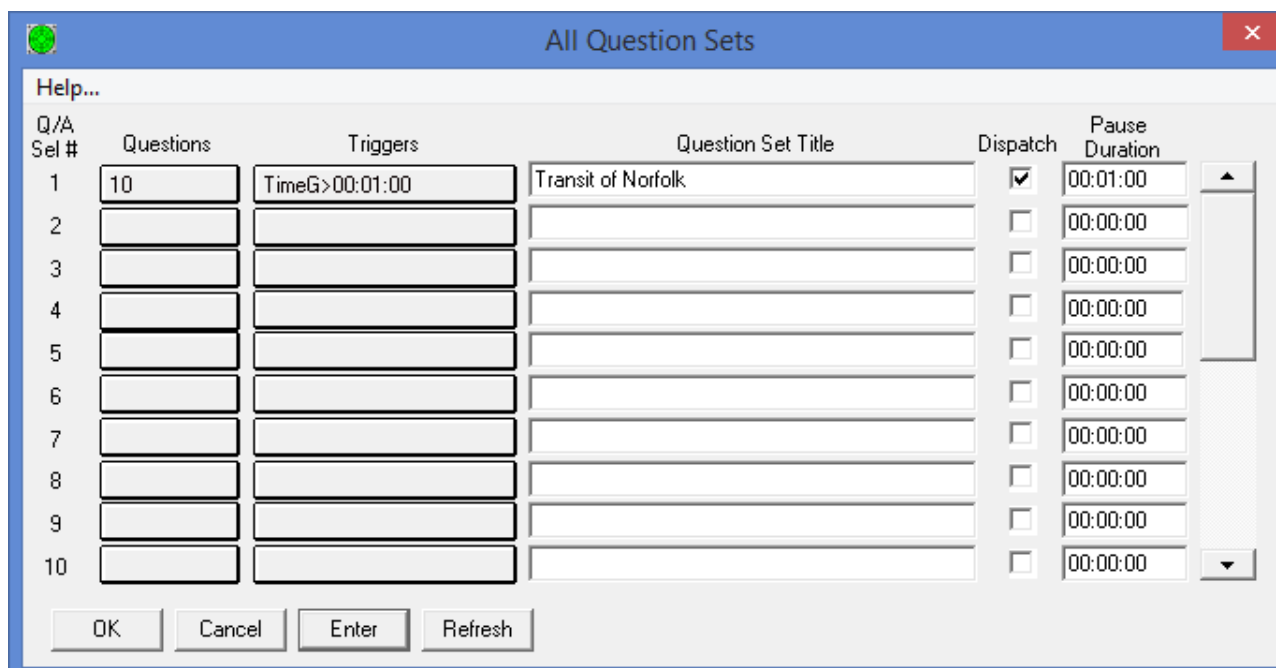
Depending on the format that the instructor has chosen, answer choices may be entered in the corresponding boxes to the right of the question box. After both the questions and answers have been typed in the appropriate boxes, the instructor indicates the correct answer by choosing from the "Correct Answer" drop down list at the bottom of the window. After choosing the correct answer, an asterisk will be displayed to identify this answer. Both question and answer text will appear as blue, indicating that it is new or different from the original text. After both the question and answer are finished being typed, the instructor can press the **Enter** button to enter the question into the exercise program, then **OK** to exit out of the question window. Pressing **Enter** will turn the text from blue to black, indicating that it has been entered into the program.
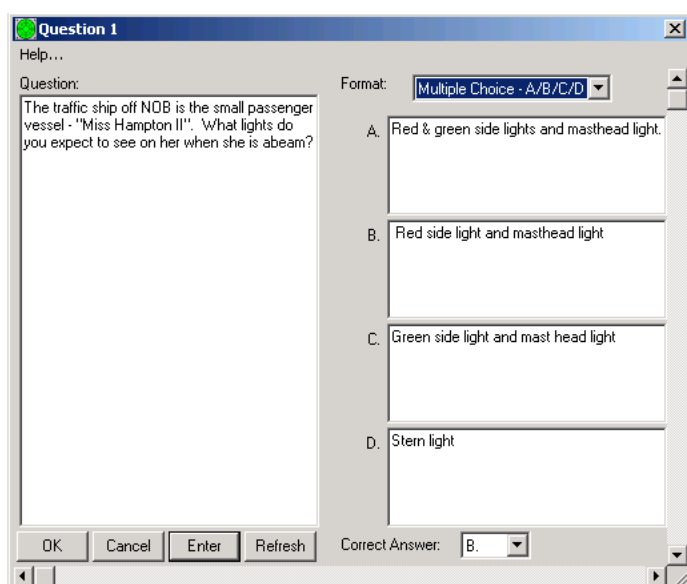
Upon selecting **OK**, the instructor will be returned to the Question Set window where they can select another question and repeat these steps. Note that the question that was most recently entered or edited will appear a light blue color, indicating that changes have been made to that question. Just as with creating a question, the instructor must select the **Enter** button in order to enter the question into the exercise program, which will in turn change the color of the box from light blue to gray.

After adding or editing questions in each respective Question Set, the instructor should left click on the **Enter** button to enter all of the questions into the program, and then select **OK** on the Question Set window in order to return to the All Question Sets window. The corresponding Question Set box should also be a light blue color, indicating that changes were made in this Question Set. Pressing the **Enter** button once again will enter these changes into the program.

The images below are an example of a full Question Set entered into the program.

All Question Sets

Q/A Sel #	Questions	Triggers	Question Set Title	Dispatch	Pause Duration
1	10	TimeG>00:01:00	Transit of Norfolk	☑	00:01:00
2				☐	00:00:00
3				☐	00:00:00
4				☐	00:00:00
5				☐	00:00:00
6				☐	00:00:00
7				☐	00:00:00
8				☐	00:00:00
9				☐	00:00:00
10				☐	00:00:00

Help...

OK   Cancel   Enter   Refresh

Question Set 1

Help...

Transit of Norfolk   OK   Cancel   Enter   Refresh

Question 1
The traffic ship off NOB is the small passenger vessel - "Miss Hampton II". What lights do you expect to see on her when she is
- A. Red & green
- * B. Red side light
- C. Green side
- D. Stern light

Question 2
Which traffic ship presents a risk of collision?
- * A. #2 - inbound
- B. #1 - inbound
- C. #1 & #2
- D. Neither #1 or

Question 3
You are outbound for sea. What action should you take with regard to the traffic ship off Old Point Comfort?
- A. Turn to
- B. Plot his
- * C. Call on VHF
- D. Slow your

Question 4
What position fixing techniques are most accurate while transiting this area?
- A. Fix with radar
- B. DGPS data
- * C. Fix with visual
- D. Depth

Question 5
What instruction would you give to your bridge wing lookout regarding these two traffic ships?
- A. Watch the
- B. Watch their
- C. Don't report
- * D. Answer a & b.

Question 6
You have two radars working during this harbor transit. What range should they be set on?
- * A. 3 mile & 6 mile
- B. both on 3 mile
- C. 6 mile & 12 mile
- D. 1.5 mile & 3

Question 7
When planning this outbound transit, what reference publications should you consult?
- A. Tide & current
- B. US Coast Pilot
- C. Notice to
- * D. All the above

Question 8
You make VHF contact with the inbound ship off Old Point Comfort and learn that it is a US submarine bound for NOB. What
- * A. Port to port
- B. Starboard to
- C. No agreement
- D. Can't

Question 9
The distance to your designated exercise area off VA Capes is 52 nm from Old Point Comfort. Your intended SOA outbound is 12
- A. 0420hrs
- * B. 0202hrs
- C. 1220hrs
- D. 0120hrs

Question 10
The current tables show that max ebb off Old Point Comfort will be 1.1kts at 2130hrs. With this current, how will it effect your
- A. The current
- * B. We should
- C. We should
- D. Can't

In the All Question Sets window the instructor is given the option to administer Question Sets at different times throughout the simulation exercise and can control how much time the student is allotted for each of these sets. This window also allows the instructor to give names to the different Question Sets. Two timing features are offered to the instructor: **Triggers** [section 2.7] and **Pause Duration** [section 2.8].

2.7   Triggers

Each question set can have one or more trigger conditions that determine when its questions become available to the student during scenario replay. When a pushbutton in the "Triggers" column is clicked, a Question Set Trigger Conditions window appears. This window defines what conditions are to be used to trigger when questions are to be presented. As the scenario progresses and the trigger condition(s) are met, the SRU will receive a notification that questions are available.
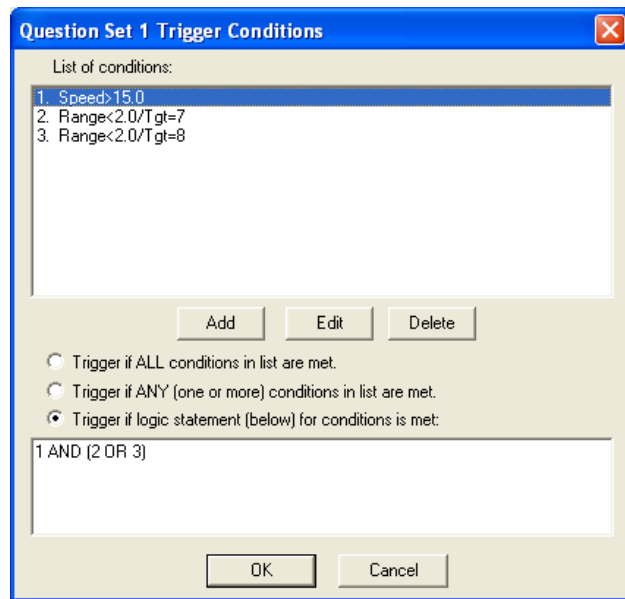
2.7.1   Trigger Conditions List Window

The trigger conditions window can be used to specify one or more "trigger conditions" that are based on student Ownship situations. If more than one condition is specified, then they are shown in a list, with each condition assigned an index number starting with 1. The three radio buttons determine how the conditions in the list will be combined to determine when a trigger is valid (any, all or combination). If the third radio button is selected the instructor can specify a logical statement in the field below it that controls how the conditions are combined. This logic statement may include index numbers, the words AND, OR, NOT, and parentheses.

To add a new trigger condition to the list, click the "Add" pushbutton. This brings up a Question Set Trigger window that specifies a single trigger condition.

Only one radio button option can be selected within this window. The options are described below.

Game Time: triggers when the game clock reaches the specified time. This option is often used since it is guaranteed to happen at a certain time regardless of how the student maneuvers the Ownship.

Range: triggers when the student Ownship comes within range of a reference. When this is selected then the wide pushbutton must be clicked to specify the reference used.

CPA: triggers when the student Ownship comes within in a specified CPA/TCPA of a reference. A reference must be specified for the CPA option by clicking the associated pushbutton.

Reference line: triggers at the moment of time when the student Ownship crosses over a reference line that has the specified label. Reference lines can be drawn by the instructor into any map by using the Graphic view Demand Menu. Reference lines are not visible on student stations.

Reference area: triggers when the student Ownship is inside a reference area that has the specified label. A reference area is a reference line that forms a closed polygon.

Speed: triggers according to speed of student Ownship.
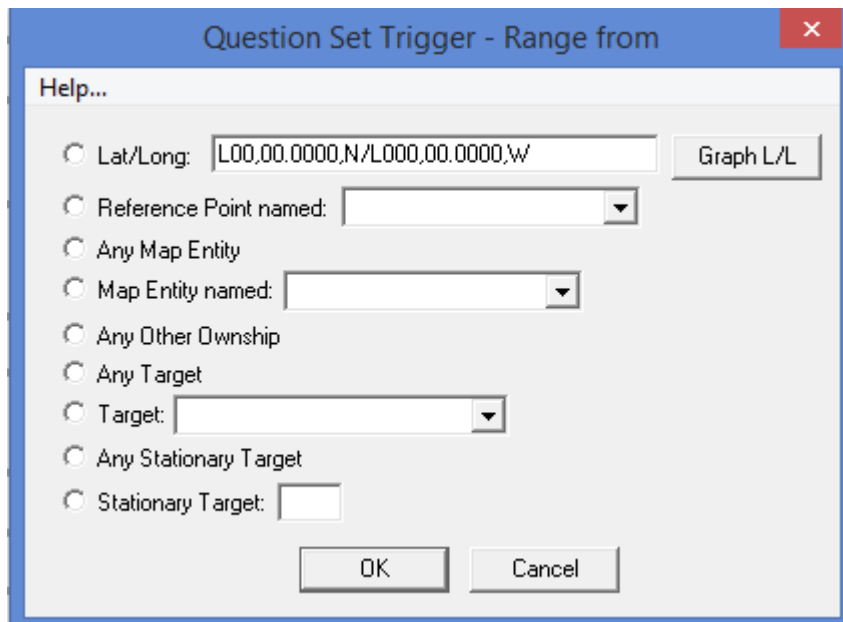
Depth: triggers according to depth below keel of student Ownship. This option can only be used with map databases that incorporate depth information.

Grounding: triggers when the student ownship runs aground, according to depth below keel as computed using map depth data.

Collision: triggers when the student ownship collides with another vessel.

2.7.2   Trigger Range Reference Window

When the user selects the Range trigger and clicks on the "Unspecified" button this allows a reference location, reference point or vessel that is used as the basis for a range trigger calculation with the student Ownship.

If the **Lat/Lon** option is selected, then the location can be selected graphically using the "Graph L/L" pushbutton.

The **Reference Point** option requires the label of a reference point that has been defined using the Reference Line features in the Graphic view Demand Menu. A reference "point" is really just a reference line that has one vertex, and is drawn as a bright blue dot.

The **Any Map Entity** option will cause a trigger based on the range between the student ownship and buoy, tank or racon entity.

The **Map Entity named** option requires the name of a buoy tank or racon entity.

The **Any Other Ownship** option can only be used in configurations with multiple student Ownships.

The **Any Target** option will cause a trigger based on the range between the student ownship and any (non-stationary) target.

The **Target** option requires a (non-stationary) target ID number.

The **Any StationaryTarget** option will cause a trigger based on the range between the student ownship and any stationary (anchored) target.

The **Stationary Target** option requires a stationary target ID number.

(It was necessary to provide separate options for non-stationary and stationary targets for the sake of backwards compatibility with existing LMS installations that employ the GUI2 application).

The Reference line or Reference area trigger events are pre-defined graphical references entered by the instructor through the MaST window. Reference Lines are entered using the **Tools** tab of the ribbon and selecting the "Reference Lines" menu (both lines and areas can be defined here).
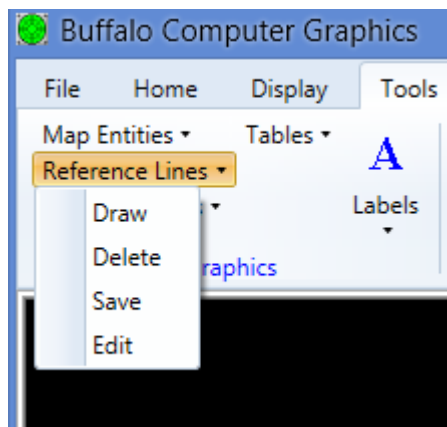
Reference Line Draw – this allows the user to draw a new reference line with the mouse into the map displayed in the graphic view. After selecting this menu item, each vertex of the reference line is selected by clicking the left mouse button somewhere in the graphic view. There may be no more than 99 vertices in a reference line that is drawn using the MaST. The user may zoom or pan the view while drawing the reference line.

After the last vertex has been selected, the user should press the Escape key. A Reference Line Window then appears which contains the latitude/longitude coordinates of each vertex. If the user then clicks the OK pushbutton, the reference line is added to the graphic view. If there are other problems that display the same map, then the reference line will be added to those problems also. Another feature available here is to close off a series of Reference Lines into a Reference Area. This is done with the "Closed Polygon (area)" checkbox at the bottom of the Reference Line window.

In order for a reference line to be used within a trigger condition, it must be assigned a unique label in the Reference Line window. The label may have up to 30 characters and are case sensitive.
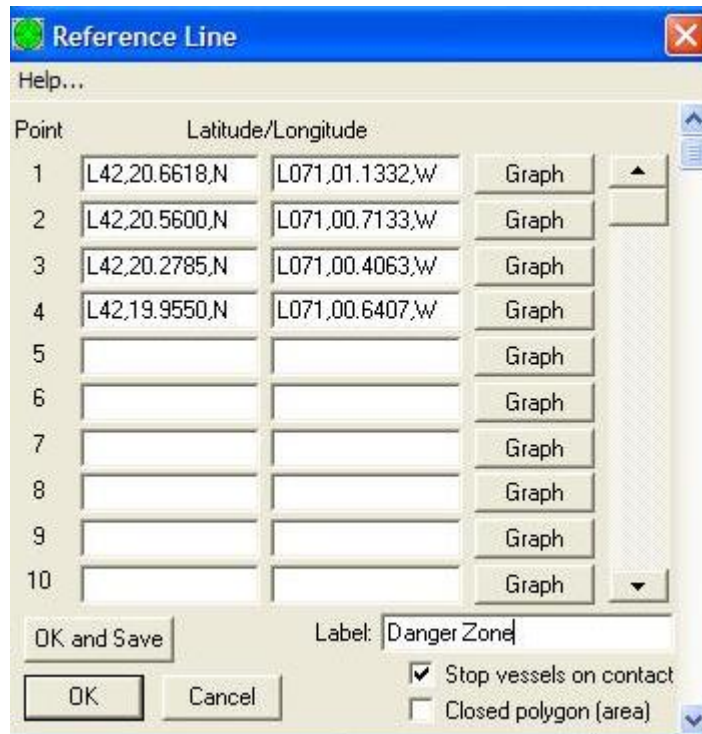
Reference Line Delete – this allows the user to delete a reference line that is currently displayed in the graphic view. After selecting this menu item, the user selects a reference line by clicking the left mouse button on or near one of its line segments. The user may zoom or pan the view before selecting. The selected reference line is then highlighted in yellow. If the user then presses the Delete key, the highlighted reference line is deleted. Note that if there are other graphic views that display the same map, the reference line will also be deleted from those other graphic views.

Reference Line Save – this allows the user to save the current collection of reference lines to a disk file that is associated with the landmass currently loaded in the graphic view. After saving, whenever that landmass is loaded into a problem, the reference lines from the disk file will automatically be loaded. It is allowed to save reference lines for the "blank" landmass also.

Reference Line Edit – this allows the user to edit an existing reference line that is currently displayed in the graphic view. After selecting this menu item, the user selects a reference line by clicking the left mouse button on or near one of its line segments. The user may zoom or pan the view before selecting. This will open the Reference Line window and allow the user to make changes to an existing item.

<u>NOTE TO INSTRUCTOR:</u> Reference Lines/Areas should not be drawn or modified while running an exercise.

2.7.3 Trigger CPA Reference Window

When the user selects the CPA/TCPA trigger and clicks on the "Unspecified" button this allows a CPA to be defined. This specifies the reference that is used as the basis for a CPA/TCPA trigger calculation with the student Ownship. The "Any Other Ownship" option can only be used in configurations with multiple student Ownships. The "Target" option requires a MaST target ID number. Only non-stationary targets can be used with CPA triggers.
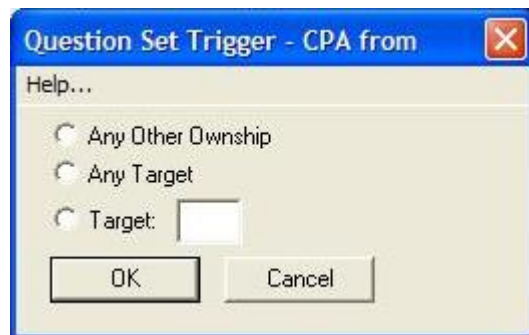
2.8 Pause Duration

This determines how much time the student is given to answer each Question Set. This function stops the exercise time, allowing the student time to answer the Question Set without it interfering with the simulation. For example, if the instructor wants to allow the student 10 minutes to answer the 10 questions, he/she could set the Pause Duration at "00:10:00". If the instructor prefers to student to answer the questions in "real time", he/she does not have to set a Pause Duration at all.

Both Scheduled Time and Pause Duration will appear in blue text and will change to black after the instructor left clicks on the **Enter** button. After the instructor creates the question set and determines the Scheduled Time and Pause Duration, he/she needs to click the check box below the heading "Dispatch" in order to identify that Question Set as one that will be sent to the SRU for the student to answer. THE DISPATCH BOX MUST BE CHECKED IN ORDER TO SEND THE CORRESPONDING QUESTION SET TO THE STUDENT RESPONSE UNIT.

2.9 Warning Definitions Window

Another LMS feature is the ability for the instructor to issue Warnings to the student. The Warnings can be tied to Trigger Events (similarly as with Question Sets), or be issued immediately. There may be up to 100 instructor defined Warning messages available in an exercise. A unique feature of warnings is that each can be presented to the student

either as text, voice speech or both. The speech feature is provided through a text-to-speech package included with the LMS.

Warnings are made available to the instructor by clicking the **Warnings** item in the **File** ribbon tab which causes the Warnings window to be opened.
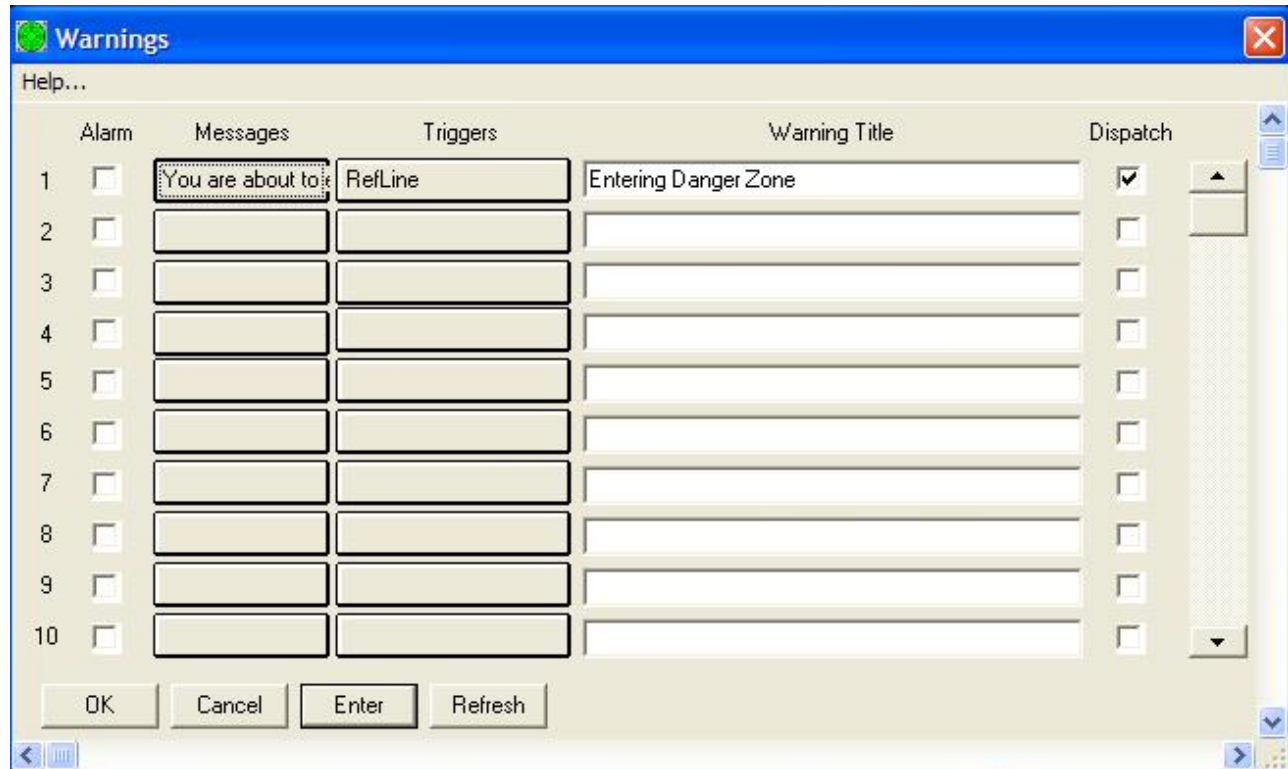
Each pushbutton in the "Messages" column brings up the Warning Message window which the instructor can type the desired warning message. The lower right portion of the Warning Message window offers a delivery mode selection capability. Here the instructor determines if the just entered Warning will be delivered to the student as Display Text (text only to the SRU), Speak Text (voice audio only to the SRU) or Display and Speak Text (both mediums).
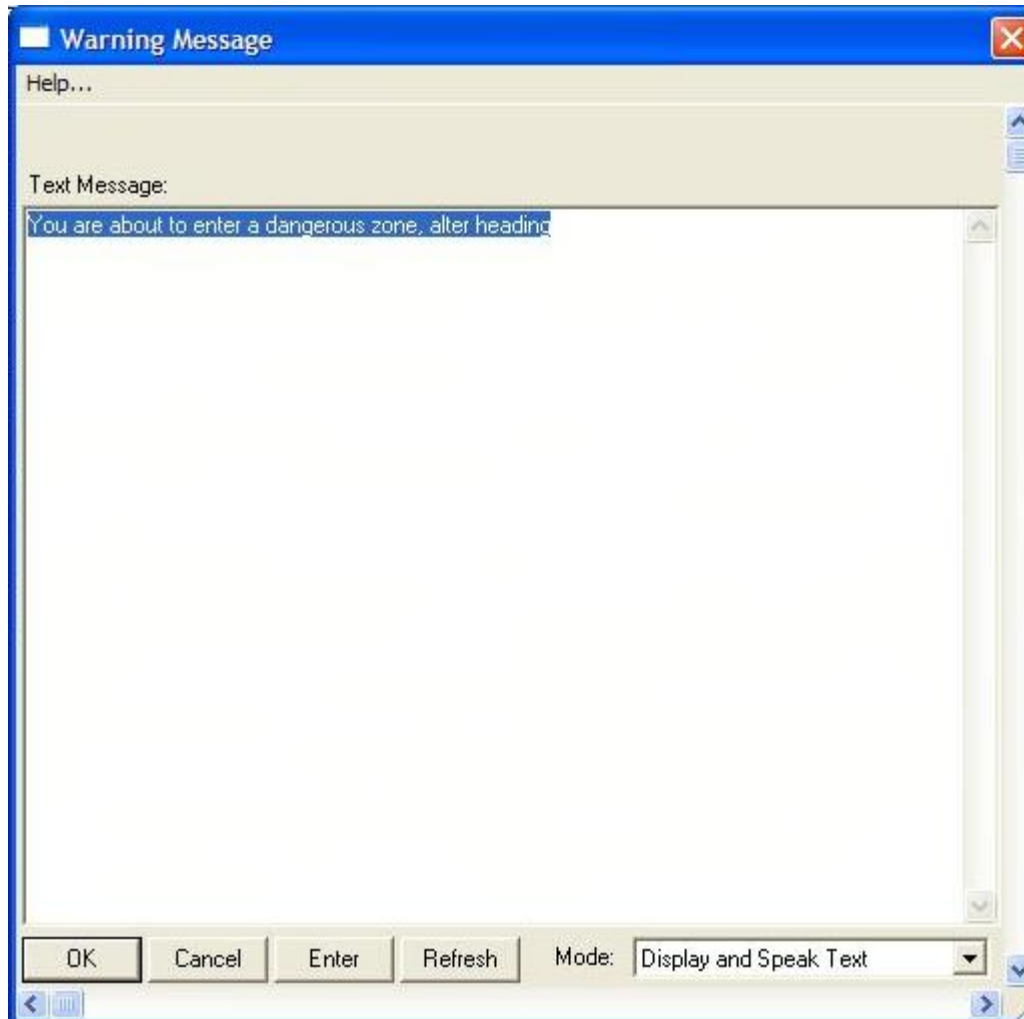
Trigger events for Warning messages are the same as available for Questions Sets.

If an "Alarm" checkbox is checked in the Warnings window, then at the SRU the Warning message will be displayed in red and cannot be cleared by the student. The only way to remove the Alarm notice is through student actions to deactivate the Trigger Event.

The "Warning Title" field defines the caption of the warning message window that will appear on the SRU (if not defined, the default title is just "Warning"). The "Dispatch" checkbox must be checked for each valid warning that is able to be shown the student.

When the trigger conditions are satisfied the SRU displays a small message window with the instructor text, or speak the text to the student with an audio voice.
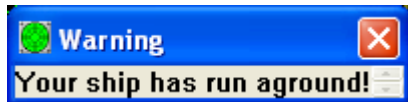
## 2.10   Instructor Text Notes

At any time during an exercise, the instructor may insert a Text Note into the exercise. This note can include any comments the instructor wishes to make about student actions, conditions, etc. Instructor notes will be automatically saved with the exercise record and can be reexamined by the instructor when the exercise is later reviewed. The instructor can also specify that a note to be immediately transmitted to the student SRU (checkbox) and if it will be a text, speech or both text & speech presentation. The message can be sent to all SRUs or else to a particular SRU only.

The window for specifying text notes can be accessed by clicking the **Instructor Text Note** item in the **File** ribbon tab. An example of the window is shown below.
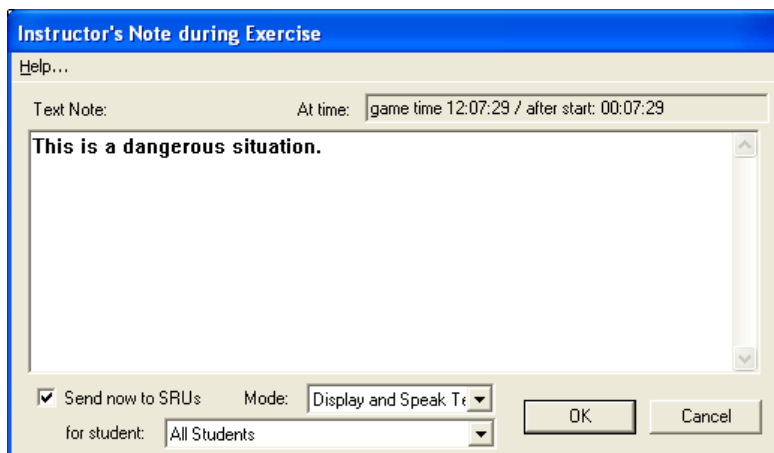

2.11   Starting, Ending and Saving an LMS Exercise

Question Sets and Briefing Texts are saved with the scenario for use in the future. Typically the instructor first creates a scenario without students being at the SRU stations. The scenario can then later be loaded and run with students present by clicking the **Load** item in the **File** tab of the main window ribbon. This brings up the Load Scenario window shown below.
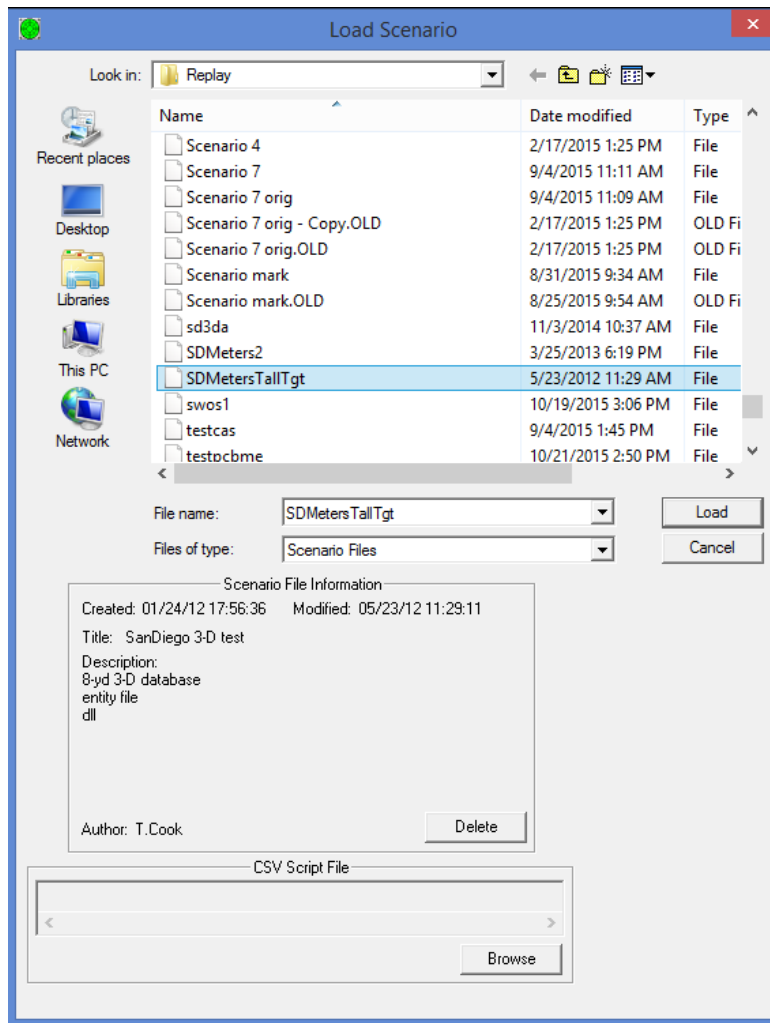
Once the instructor loads a Scenario with Briefing Text and Question Sets, the information will dispatch to each student automatically.

When the instructor finishes building an exercise without students, or else finishes running an exercise with students, the exercise can be stopped by clicking the **Stop** button in the **Home** ribbon tab. A window asking the instructor to confirm stopping the current exercise will appear (pictured below), and the instructor may select **OK**.
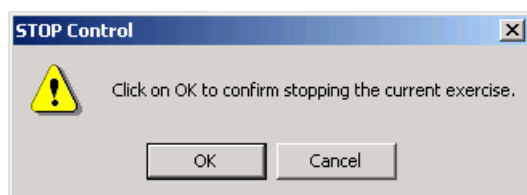
The program then asks whether the instructor wants to "save the scenario just recorded". If changes were made to a loaded scenario, the instructor can chose to save or not to save the changes. If a new scenario is not saved, it cannot be recalled later.
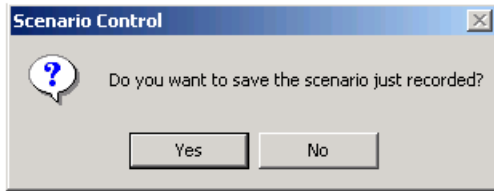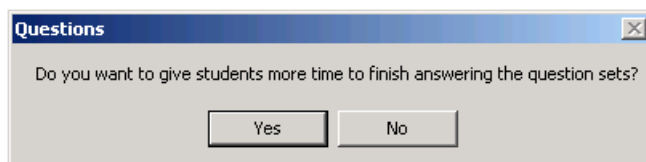
A save window will appear and the instructor can name and save the scenario. If you try to save to an existing scenario file name, then a message will appear asking if you want to overwrite the previous file. If you overwrite an existing scenario file, then the previous version is lost irretrievably.

When the scenario was played in a configuration that has students maneuvering their respective ownship using a steering stand, then the student maneuvers will be included in the newly saved scenario. This allows the instructor to later review the student maneuvers. This kind of scenario should be always saved with a new name so that it doesn't overwrite the original "clean" scenario that the instructor originally built having no student maneuvers in it. In some configurations, a copy of the scenario containing student maneuvers is always saved automatically with a file name having a .REC extension, which can be loaded from the Student Reports window [see section 4.2].

Any student SRU responses to question sets are recorded and saved to a separate "answers" text file, even if the instructor decides not to save the scenario.

After the instructor is given the option to save the scenario, another message window will appear asking whether or not the instructor wants to allow more time for the students to finish answering the Question Sets sent to them.

If the instructor clicks **Yes**, the student will be allowed an indefinite amount of time to finish their questions and a "Waiting" window will appear on the Instructor Station. This window will disappear when all students have indicated that they have finished. A message will then appear on the SRU screen informing the student that the current exercise is coming to an end, and that they should finish their remaining questions and click on the **OK** button in the All Question Sets window.

If the instructor clicks **No** (or else clicks the **Cancel** button in the small "Waiting for students" window before the students have finished answering), then the exam for that student will finish immediately.

When each student's exam finishes, the answers are transmitted to the instructor via the network. When all students have finished, the new answers for each student will be automatically appended to the answers file ("student record") for that student. A new "exercise record" will also be created, which records all events that occurred during a single exercise run. The exercise record also includes all students' answers to questions during that particular exercise run. When a new exercise record is created, a window appears with the name of the exercise record and buttons for viewing and printing it (pictured below).
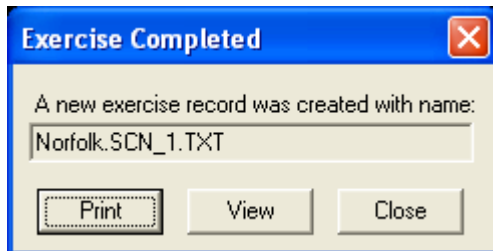
An example of the first page of an exercise record is shown below. The exercise record will also include the question set answers, which will be printed on separate pages for each student. An example of the format of question set answers is also shown below.

If there is a problem printing the exercise record, it can be reprinted at any time by using the Exercise Record Manager window. Also, any student's complete record history can be printed at any time by using the Student Report Generator window. These windows are described more fully later in this document.
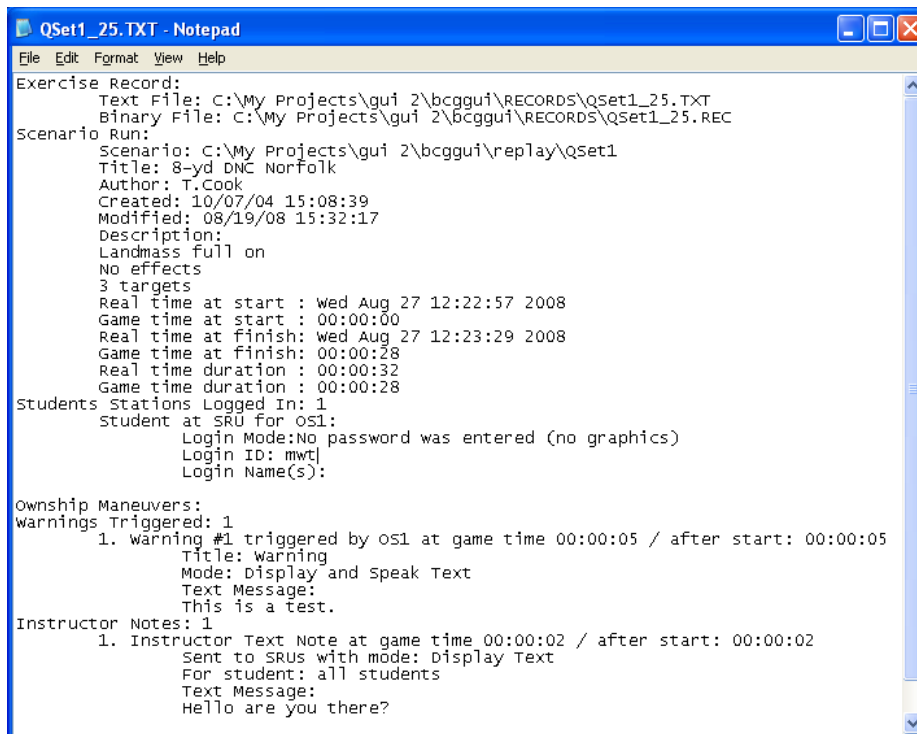
```
Student #1.TXT - Notepad                                    _ □ ✕
File  Edit  Format  Help
Students' Answers
************************************************
Real time: Tue Mar 06 11:16:08 2007
Game time: 00:03:54

Student at OS 1: [No password was entered (no graphics)]
   Login Name:
      Student #1
   Login Text:
      John Student
   Question Set 1: Transit of Norfolk
****5 out of 10 multiple choice questions were answered
correctly.)
      Question 1 / Format: Multiple Choice — A/B/C/D
         Correct Answer: B.
         Student's Answer: B.
      Question 2 / Format: Multiple Choice — A/B/C/D
         Correct Answer: A.
         Student's Answer: A.
      Question 3 / Format: Multiple Choice — A/B/C/D
         Correct Answer: C.
         Student's Answer: C.
      Question 4 / Format: Multiple Choice — A/B/C/D
         Correct Answer: C.
         Student's Answer: B.
      Question 5 / Format: Multiple Choice — A/B/C/D
         Correct Answer: D.
         Student's Answer: D.
      Question 6 / Format: Multiple Choice — A/B/C/D
         Correct Answer: A.
         Student's Answer: A.
      Question 7 / Format: Multiple Choice — A/B/C/D
         Correct Answer: D.
         Student's Answer: C.
      Question 8 / Format: Multiple Choice — A/B/C/D
         Correct Answer: A.
         Student's Answer: B.
      Question 9 / Format: Multiple Choice — A/B/C/D
         Correct Answer: B.
         Student's Answer: A.
      Question 10 / Format: Multiple Choice — A/B/C/D
         Correct Answer: B.
         Student's Answer: A.
```

After the instructor reviews each student's questions and has saved or printed what he/she needs, the exercise is complete and the instructor can log out by clicking the red X at the upper right corner of the MaST main window. When the LMS Instructor Station is logged out, the SRU is automatically logged out also. Both the LMS Instructor Station and the SRU can be logged back on by double clicking the program icon on the respective computers.

The following section will look at the interaction between the LMS Instructor Station and the Student Response Unit and the step-by-step processes of the student and the instructor.

3   Student Station

The LMS can be configured to allow students to see a Geoplot of the exercise either unconditionally or else only if the student enters the correct password.. In the instructor's GUI.INI configuration file, the LoginPassword setting in the [ShipHandling] section can be set to a non-blank password, in which case the students must enter that password when logging in, in order to see the Geoplot. If the LoginPassword setting is not defined, then all students will be able to see the Geoplot without needing to enter a password. An SRU window with Geoplot is shown below. When the Geoplot is now shown, then most of the ribbon controls are useless, except for the **Briefing Text** and **Question Sets** items in the **File** tab.
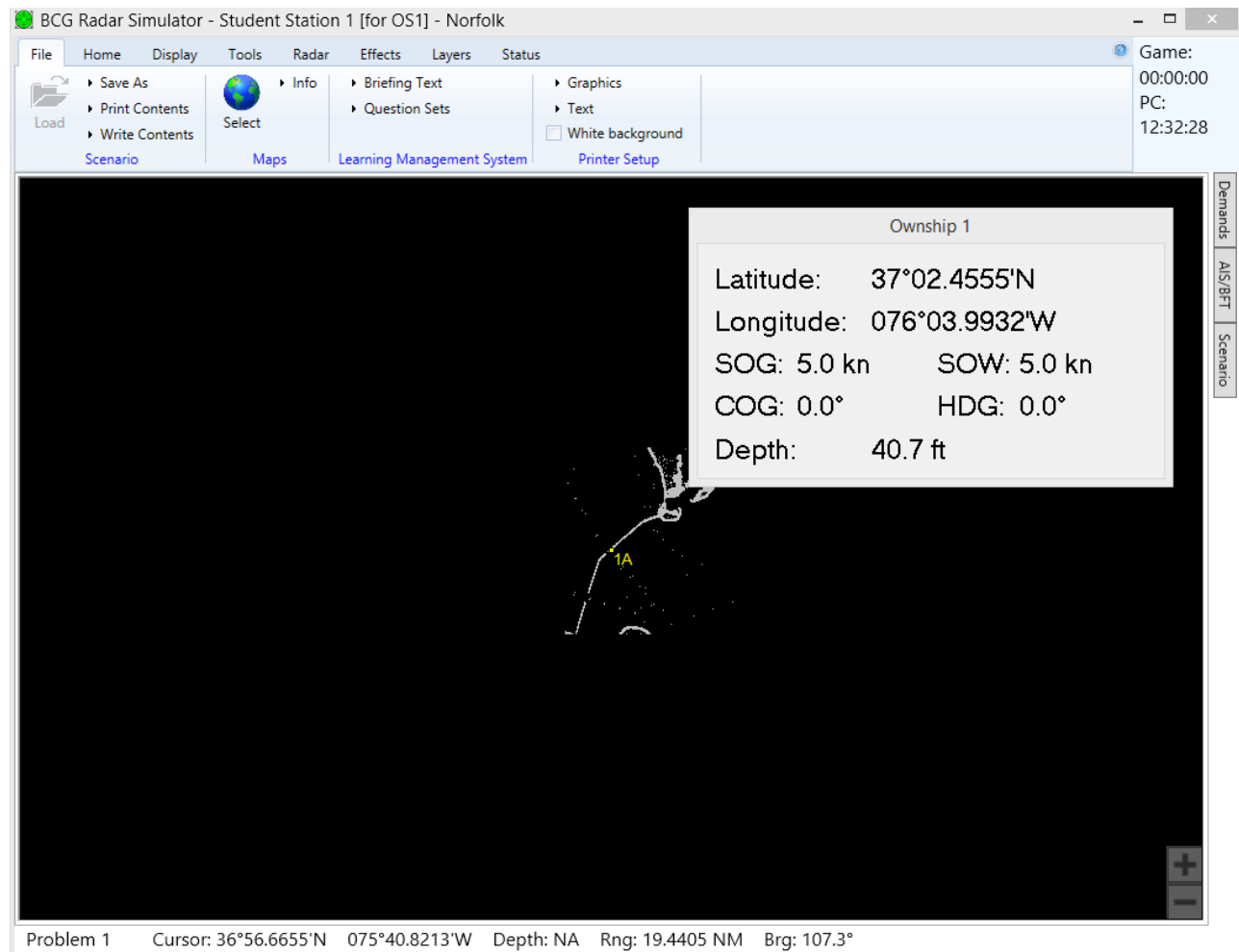

This section includes step by step instructions for how a student uses the SRU (Student Response Unit) software running at the student station PC in order to interact with the instructor in an LMS configuration.

The MaST Instructor Station can be networked together with one or more of the Student Response Units. For such a configuration, the GUI.INI file must include network addresses

and other parameters using the ClientOS, RSHandler, ExamPort and LoginPort parameters in the "ShipHandling" section as well as the LoginMode and ExamMode parameter in the "Config" section. The program should automatically booted up when the SRU is turned on. The following is a step by step Guide to the communication between the MaST Instructor Station and the Student Response Unit.

1.   Power up all Student Response Units.

2.   Power up MaST Instructor Station.

3.   The student logs into the SRU using a designated Login ID or Login Name and an optional Login Password. Students may type in information using the keyboard or the On-Screen Keyboard (both pictured below). [Note: If the SRU is provided with a real keyboard, the onscreen keyboard will not appear.]   If the student enters a correct password, then the student will be able to see a Geoplot in the graphic view.
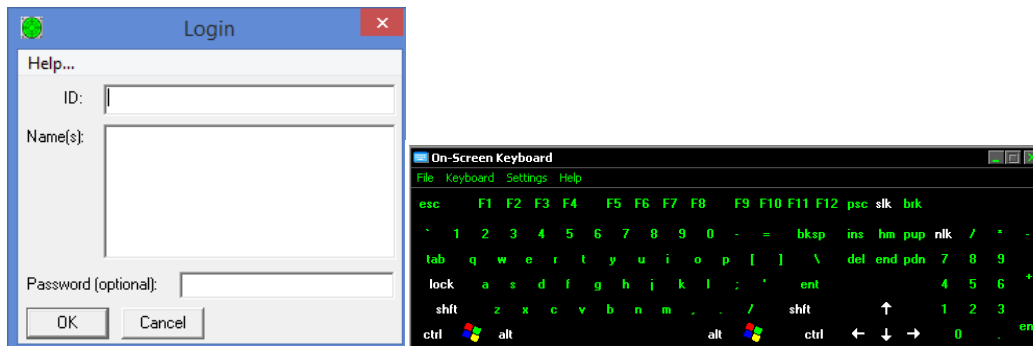

4.   The instructor then receives a login verification of each SRU and left clicks **OK** in order to acknowledge each operating system (pictured below).

5.   The instructor then loads an existing Scenario for the exercise by clicking the **Load** item in the **File** tab of the MaST ribbon.

6.   After the instructor loads a Scenario, the MaST Instructor Station will receive a confirmation that the Briefing Text/Question Sets were successfully sent to each SRU operating system (pictured below). Upon verification, the instructor may left click on the **OK** button.
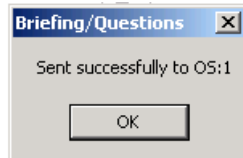
7.   The student is sent a notice informing them that Question Sets were received on their SRU from the instructor and gives them the choice if they want to examine the Briefing Text. If the student chooses **Yes**, he/she will be able to view the Briefing Text prepared by the instructor and may left click **OK** at the bottom of the window when they are finished reading it.
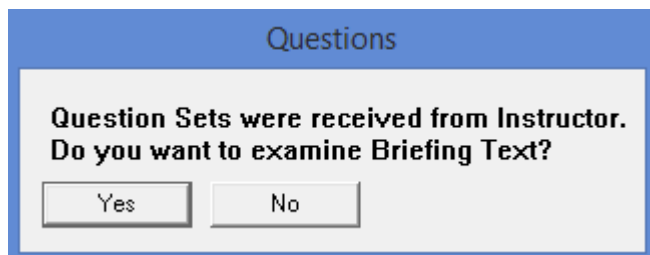
8.   Both the MaST Instructor Station and the Student Response Unit are ready to start the exercise.

9.   The instructor presses the **Play** item in the **Home** tab of the ribbon to start the exercise. The exercise clock will begin to count up from zero on the Instructor's Station. The student will begin the exercise.

10.   Question Sets will appear on the SRU for the student to answer at the Scheduled Time predetermined by the instructor. At this time, the exercise clock at the top left of the main window will pause for the Pause Duration set by the instructor. A window will appear on the student's screen informing them that the Question Set has been sent to them (pictured below).
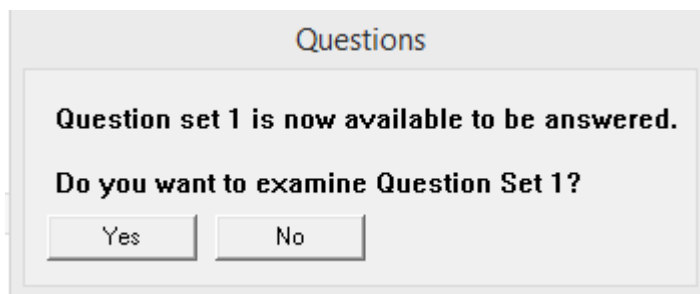

After the Pause Duration is up, the exercise clock will start back up again. The clock can also be paused by the instructor during an exercise by pressing the **Pause** item in the **Home** tab of the ribbon. The clock can be resumed by pressing the **Play** button again.

11.   Question Sets will be sent to each SRU (pictured below, Left) where the student can respond to the questions by clicking on the question text then selecting the correct answer from the "Your Answer" drop-down list or typing in the correct response in the text box provided (pictured below, right).
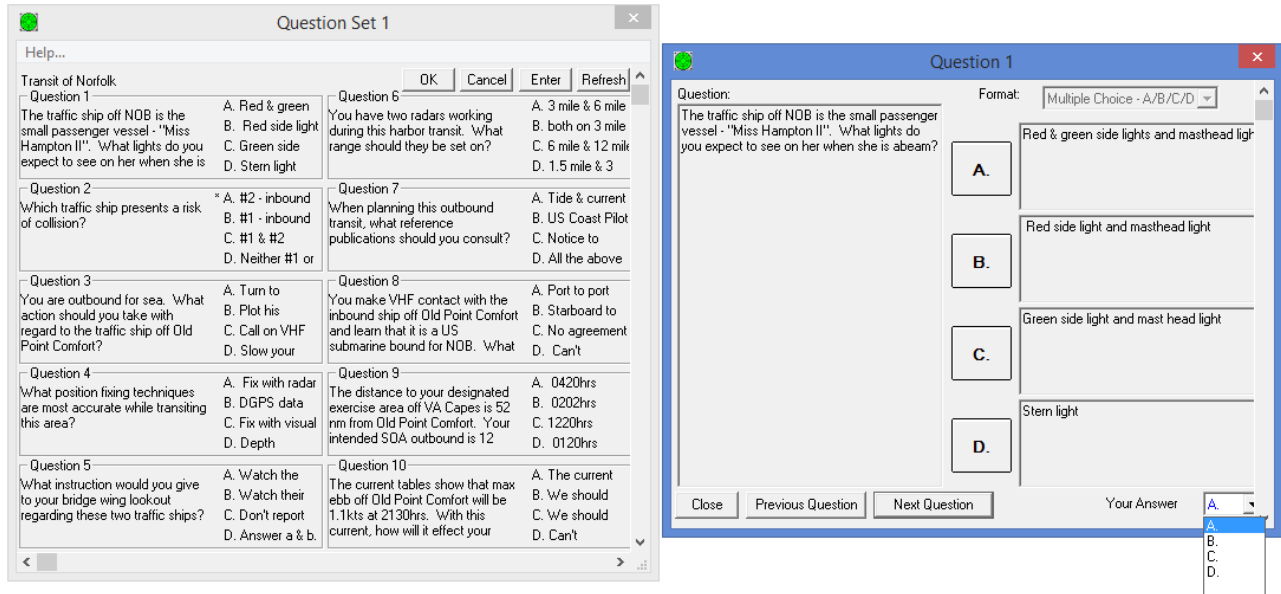

Once an answer is selected, an asterisk will be placed next to the answer to indicate the student's choice on his or her screen. Upon answering all of the questions in the Question Set the student can press the **OK** button when finished. Depending on the number of Question Sets sent by the instructor, this step may or may not be repeated. The student will be able to view the All Question Sets window on their SRU and go back to change answers and finish questions in previous sections by clicking on the "Edit" button that corresponds to each question set.

At the end of an exercise the instructor will press the **Stop** item in the **Home** tab of the ribbon to end the exercise. A window asking the instructor to confirm stopping the current exercise will appear (pictured below), and the instructor may select **OK**. This will end the exercise.
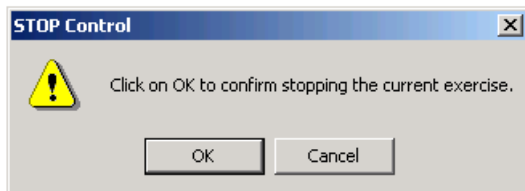

12.   The program will then ask whether the instructor wants to "save the scenario just recorded" (pictured below). If changes were made to a loaded Scenario, the instructor can

chose to save or not to save the changes. If the scenario was just created and has yet to be saved, it is suggested that the instructor clicks **Yes** to save this scenario for later use. If the scenario is not saved, it can never be recalled again. A save window will appear and the instructor can name and save the scenario. [Note: Any student SRU responses are recorded even if the instructor decides not to save the scenario]
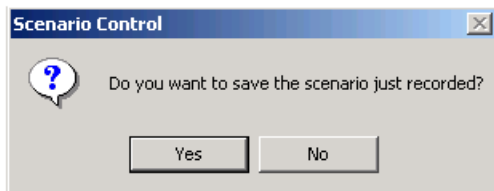

13.   At this time, a window will appear asking whether or not the instructor wants to allow more time for the students to finish answering the Question Sets sent to them. If the instructor chooses **Yes**, the student will be allowed an indefinite amount of time to finish their questions and a "Waiting" window will appear on the Instructor Station.
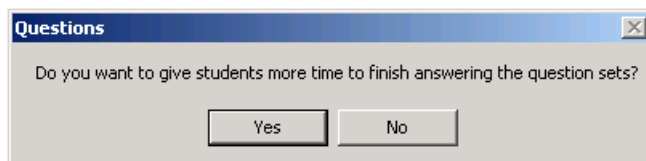

14.   When the instructor has stopped the exercise, a message will appear on the SRU screen informing the student that the current exercise is coming to an end and that they should finish their remaining questions and click on the **OK** button in the All Question Sets window. When the student clicks the **OK** button, it will give them one more chance to make sure they have answered all of the Question Sets, then terminate the program.

15.   Once each student is finished with the Question Sets he/she can click the **Yes** button. In some older configurations, the instructor is then asked about overwriting old answer files previous created by the students (pictured below). If the instructor chooses **Yes**, the old answer files will be deleted and replaced by new answers. If the instructor chooses **No**, the new answers will be appended to the end of the old answers file. In newer configurations, the answers file is always appended.
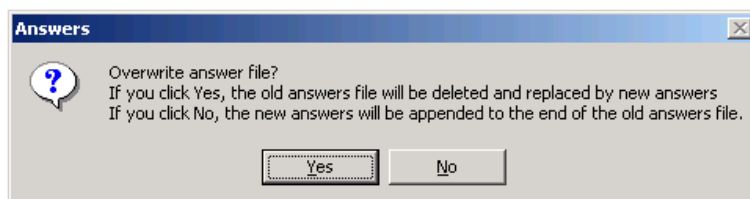
16.   The instructor will then see a Question Set Answers window appear with the list of the Login ID's or Login Names of the students and the options to "View", "Print", or "Close" the Answer Sets (pictured below).
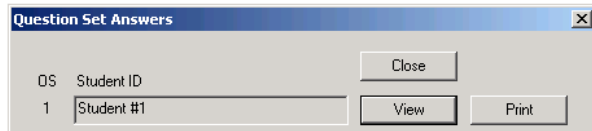
If the instructor selects "View", each student's answers can be viewed through Notepad (pictured below). This text shows the students answers as well as the correct answers and how many the student answered correctly in each question set. This text can be either saved or printed by the instructor for later review.


```
Students' Answers
****************************************************
Real time: Tue Mar 06 11:16:08 2007
Game time: 00:03:54

Student at OS 1: [No password was entered (no graphics)]
  Login Name:
      Student #1
  Login Text:
      John Student
  Question Set 1: Transit of Norfolk
****5 out of 10 multiple choice questions were answered
correctly.)
      Question 1 / Format: Multiple Choice – A/B/C/D
        Correct Answer: B.
        Student's Answer: B.
      Question 2 / Format: Multiple Choice – A/B/C/D
        Correct Answer: A.
        Student's Answer: A.
      Question 3 / Format: Multiple Choice – A/B/C/D
        Correct Answer: C.
        Student's Answer: C.
      Question 4 / Format: Multiple Choice – A/B/C/D
        Correct Answer: B.
        Student's Answer: C.
      Question 5 / Format: Multiple Choice – A/B/C/D
        Correct Answer: D.
        Student's Answer: D.
      Question 6 / Format: Multiple Choice – A/B/C/D
        Correct Answer: A.
        Student's Answer: A.
      Question 7 / Format: Multiple Choice – A/B/C/D
        Correct Answer: D.
        Student's Answer: C.
      Question 8 / Format: Multiple Choice – A/B/C/D
        Correct Answer: A.
        Student's Answer: B.
      Question 9 / Format: Multiple Choice – A/B/C/D
        Correct Answer: B.
        Student's Answer: A.
      Question 10 / Format: Multiple Choice – A/B/C/D
        Correct Answer: B.
        Student's Answer: A.
```

17.   After the instructor reviews each student's questions and has saved or printed what he or she needs, the exercise is complete and the instructor can log out. When the MaST Instructor Station is logged out, the Student Response Unit is automatically logged out also. Both the MaST Instructor Station and the SRU can be logged back on by double clicking the program icon on the respective computer.

4 Post-Training LMS Review

All SRU student responses and exercise records are saved on the Instructor Station PC. Student records are stored in the C:\GUI\ANSWERS directory and exercise records are stored in the C:\GUI\RECORDS directory. While it permitted for the instructor to view, print, or delete the files in these directories using Windows Explorer, it is recommended that the instructor always use the "Student Report Generator Window" and the "Exercise Record Manager Window" to access all record data. These windows can be opened by clicking on the **Student Reports** and **Exercise Records** items in the **File** tab of the MaST ribbon on the instructor station.

4.1 Warning Log Window

This window allows the instructor to examine the entire list of warnings that have been triggered by students during the current exercise. The window is opened by clicking on the **Warning Log** item in the **File** ribbon tab. This window will also appear automatically whenever a new warning is triggered by a student, unless the checkbox at the bottom of this window has been checked previously. When an exercise is being replayed by the instructor in review mode (without students) then this window will show all the warnings that occurred during the entire exercise regardless of current game time.
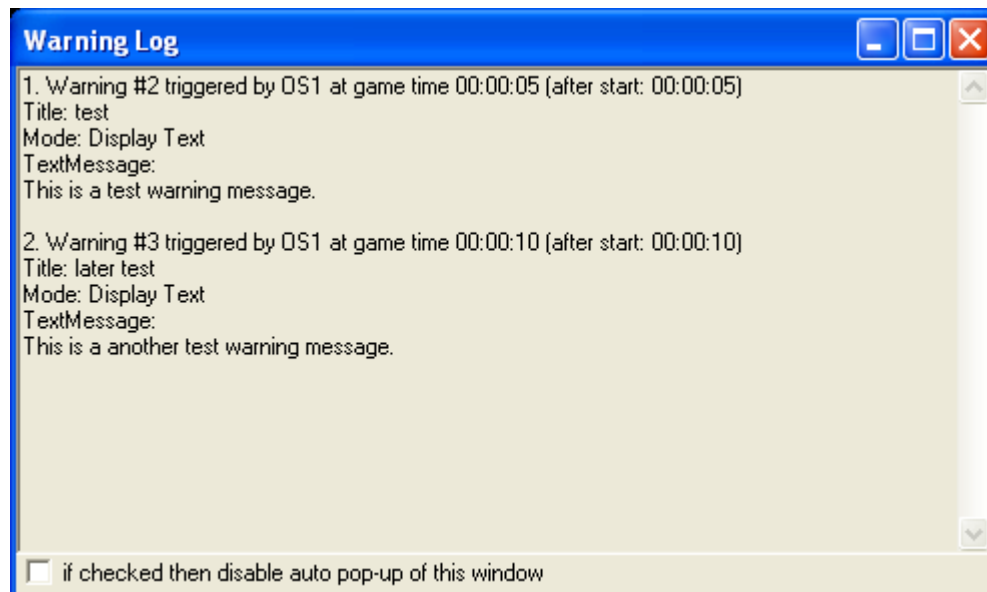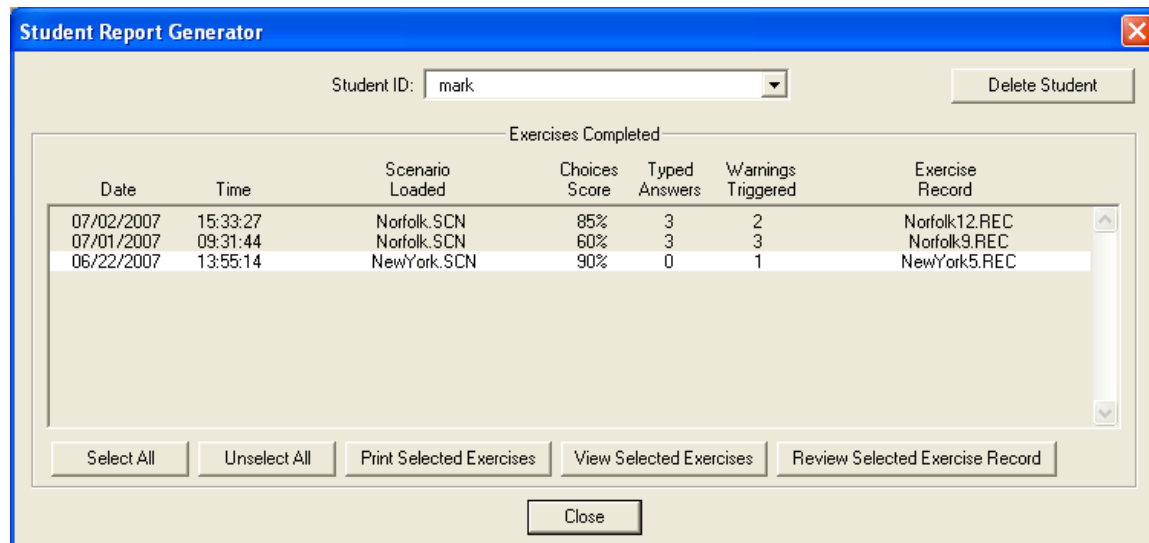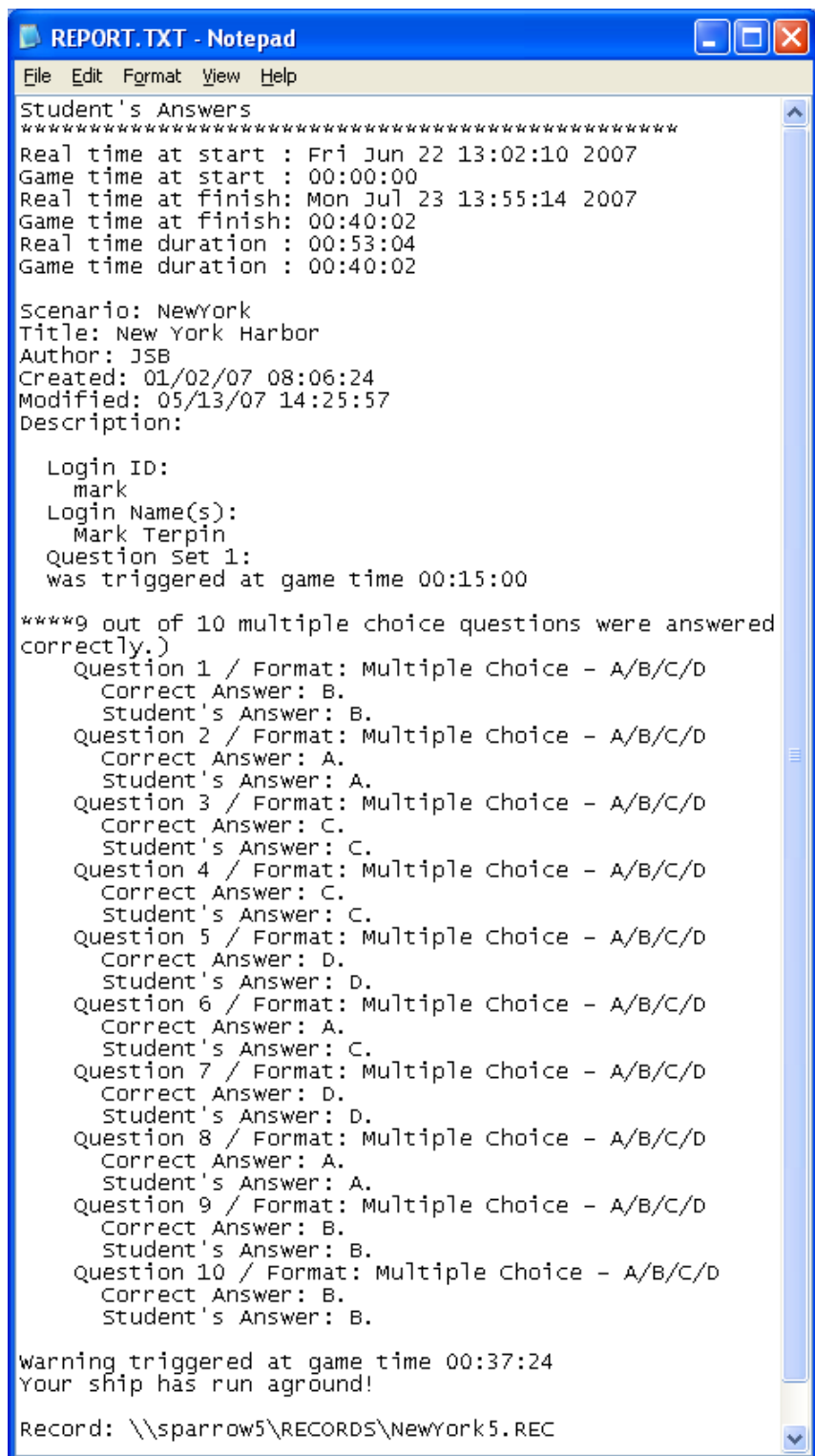

4.2 Student Reports

Whenever a student finishes an exercise, there will be an "answer file" that is updated on the instructor's PC via the network. Each answer file contains a report summarizing a student's training activity and results. The LMS program provides a "Student Report Generation" window that allows the instructor to view, print and manage the data contained in student answer files. The window is opened by clicking on the **Student Reports** item in the **File** ribbon tab.

The Student Report Generation window has a large list box that displays a line with some brief information about each exercise that a student has completed. One or more or the lines can be selected with the mouse (the Ctrl or Shift key must be held down while clicking to select multiple lines). Selected lines are shown with a white background. The "View Selected Exercises" pushbutton can be used to examine a full report of the exercises for the selected lines. This report is displayed within a Notepad window. The "Print Selected Exercises" pushbutton can be used to print the report. A sample report file is shown below.

For each exercise, there is also a "Binary Exercise Record" file that records all student Ownship motion that occurred. This file's contents cannot be examined directly, but it can be loaded by the LMS application and replayed by the instructor just as if it were a regular scenario. This is done by selecting a single line in the list box and clicking the "Review Selected Exercise Record" pushbutton. The instructor can then replay the exercise in order to review student maneuvers, warning trigger times, etc. While in review mode, the SRU is partially disabled in that the student cannot examine/answer questions sets or change Ownship motion. The exercise may be played and paused the same as for a normal scenario, and fast time features may also be used. When the exercise is stopped however, the exercise record cannot be resaved (overwritten) by the instructor.

Student Report Generator

Student ID: mark ▼   Delete Student

Exercises Completed

Date	Time	Scenario Loaded	Choices Score	Typed Answers	Warnings Triggered	Exercise Record
07/02/2007	15:33:27	Norfolk.SCN	85%	3	2	Norfolk12.REC
07/01/2007	09:31:44	Norfolk.SCN	60%	3	3	Norfolk9.REC
06/22/2007	13:55:14	NewYork.SCN	90%	0	1	NewYork5.REC

Select All   Unselect All   Print Selected Exercises   View Selected Exercises   Review Selected Exercise Record

Close

```
REPORT.TXT - Notepad                                    _ □ ✕
File  Edit  Format  View  Help
Student's Answers
***********************************************
Real time at start : Fri Jun 22 13:02:10 2007
Game time at start : 00:00:00
Real time at finish: Mon Jul 23 13:55:14 2007
Game time at finish: 00:40:02
Real time duration : 00:53:04
Game time duration : 00:40:02

Scenario: NewYork
Title: New York Harbor
Author: JSB
Created: 01/02/07 08:06:24
Modified: 05/13/07 14:25:57
Description:

  Login ID:
    mark
  Login Name(s):
    Mark Terpin
  Question Set 1:
  was triggered at game time 00:15:00

****9 out of 10 multiple choice questions were answered
correctly.)
    Question 1 / Format: Multiple Choice - A/B/C/D
      Correct Answer: B.
      Student's Answer: B.
    Question 2 / Format: Multiple Choice - A/B/C/D
      Correct Answer: A.
      Student's Answer: A.
    Question 3 / Format: Multiple Choice - A/B/C/D
      Correct Answer: C.
      Student's Answer: C.
    Question 4 / Format: Multiple Choice - A/B/C/D
      Correct Answer: C.
      Student's Answer: C.
    Question 5 / Format: Multiple Choice - A/B/C/D
      Correct Answer: D.
      Student's Answer: D.
    Question 6 / Format: Multiple Choice - A/B/C/D
      Correct Answer: A.
      Student's Answer: C.
    Question 7 / Format: Multiple Choice - A/B/C/D
      Correct Answer: D.
      Student's Answer: D.
    Question 8 / Format: Multiple Choice - A/B/C/D
      Correct Answer: A.
      Student's Answer: A.
    Question 9 / Format: Multiple Choice - A/B/C/D
      Correct Answer: B.
      Student's Answer: B.
    Question 10 / Format: Multiple Choice - A/B/C/D
      Correct Answer: B.
      Student's Answer: B.

Warning triggered at game time 00:37:24
Your ship has run aground!

Record: \\sparrow5\RECORDS\NewYork5.REC
```
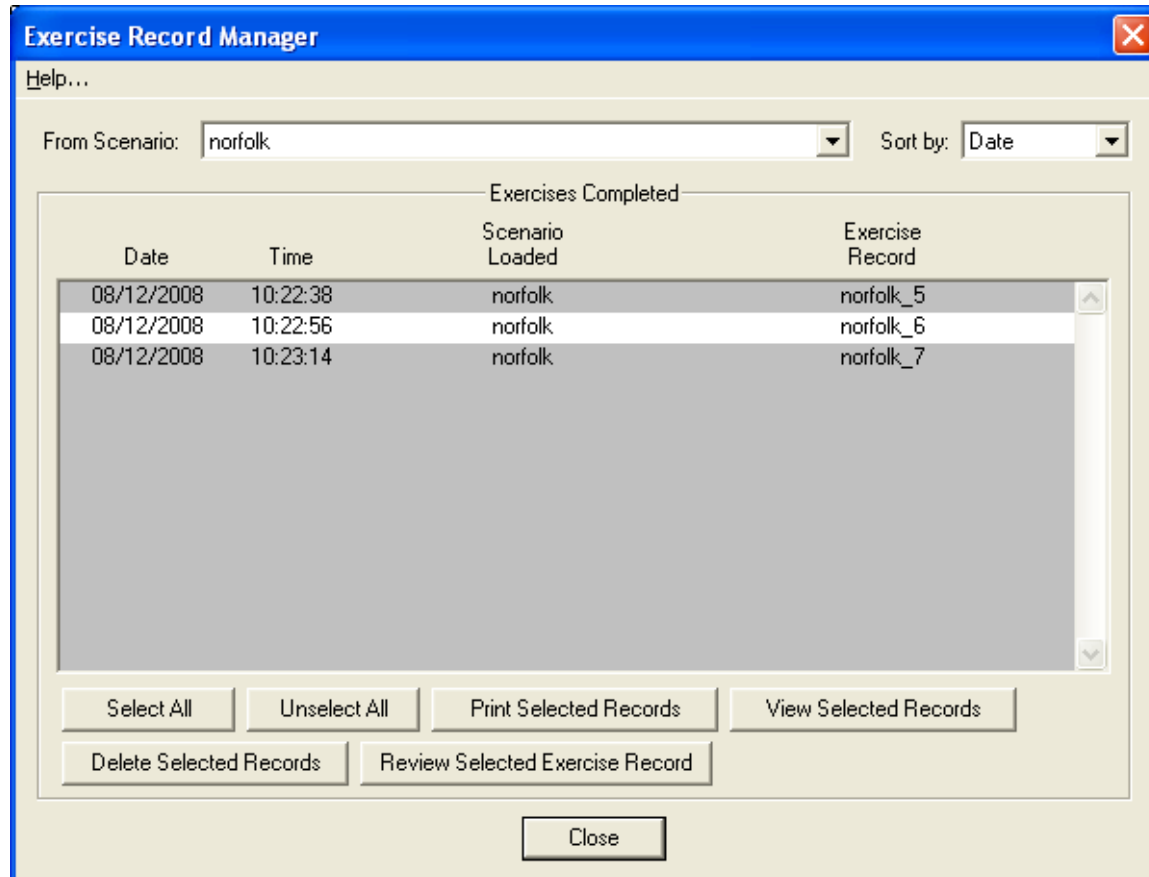
4.3   Exercise Record Manager

The LMS can be configured so that a disk file "exercise record" is saved every time a scenario is run by the instructor. A window is then provided that allows the instructor to

view, print, delete or review any of the stored exercise records at any time. The window is opened when the **Exercise Records** item is selected in the **File** ribbon tab.

There are two drop-down controls near the top of the window. These can be used to filter or sort the list of records that are displayed in the large list box, and they can be helpful when there are a large number of records currently on the disk. The first drop-down can be used to specify a single scenario such that only the exercise records that were created from that scenario will be loaded. The second drop-down causes the items in the list box to be sorted either by date or by name.

The list of exercise records is listed in the large list box (filtered and sorted). Multiple items can be selected by holding down a Ctrl key while left clicking. Highlighted lines are shown with white rather than gray background. Below the list are several pushbuttons that can perform various operations on the list.

Select All: makes all items in list to be selected.

Unselect All: makes all items in list to be unselected.

Print Selected Records: sends the text information from all the selected exercise records to the default text printer.
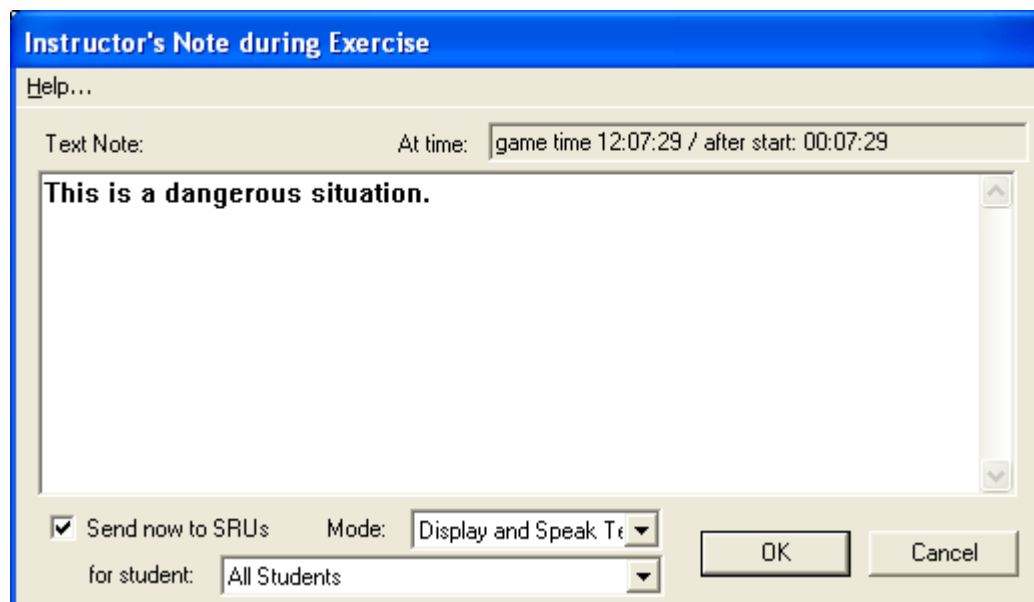
View Selected Records: combines the text information from all the selected exercise records into one text file and opens it in a Notepad window.

Delete Selected Records: causes all the selected exercise records to be deleted permanently deleted from the disk.

Review Selected Exercise Record: only one exercise must be selected before clicking this pushbutton. This causes the saved exercise to be loaded as if it were a scenario, and the Exercise Records window immediately closes. The instructor can then replay the exercise in order to review student maneuvers, warning trigger times, etc. While in review mode, the SRU is partially disabled in that the student cannot examine/answer questions sets or change Ownship motion. The exercise may be played and paused the same as for a normal scenario, and fast time features may also be used. When the exercise is stopped however, the exercise record cannot be resaved (overwritten) by the instructor.

4.4   Instructor Text Note Window

During the course of a live exercise (running with students logged in), the instructor may enter Text Note messages at any time during the exercise. The window for adding such notes appears when the **Add Instructor Note** item in the **File** ribbon is selected. These notes may include comments about situations that the student has gotten into, etc. The notes are then saved with the exercise record file, and when the instructor replays the instructor (in review mode), then the note messages may be displayed on the instructor's MaST at the proper times.

This window also allows the instructor to immediately send a message to students at SRU stations. This is specified by first checking the checkbox at the lower left corner. The "Mode" dropdown that appears specifies whether the message will be displayed visually and/or

spoken verbally on the SRU. The "for student" dropdown specifies the recipient(s), either "all students" or one particular SRU.

Instructor notes will only be recorded when a named scenario file has been loaded and at least one student at an SRU has logged in. (These are the conditions necessary for an "exercise record" file to be saved when the exercise is stopped.) When the exercise is later replayed for review by the instructor, the recorded notes will pop up on the instructor's MaST at the proper time, or may be examined using the Instructor's Notes Log" window.

It is allowed to send a message immediately to students even when no scenario is loaded (however the message will then not be recorded).

4.5   Instructor Note Log Window

This window displays a list of all notes that have been entered by the instructor during an exercise, in chronological order. This may be used both while in live mode (with students logged in) or in review mode when the instructor is replaying an exercise. The window appears when **Instructor Note Log** item is selected in the **File** ribbon.

When in review mode, this window will include a checkbox that can disable the automatic popup of note review windows. By default, a note review window will automatically appear in review mode for each recorded note when its corresponding game time is reached by the game clock.
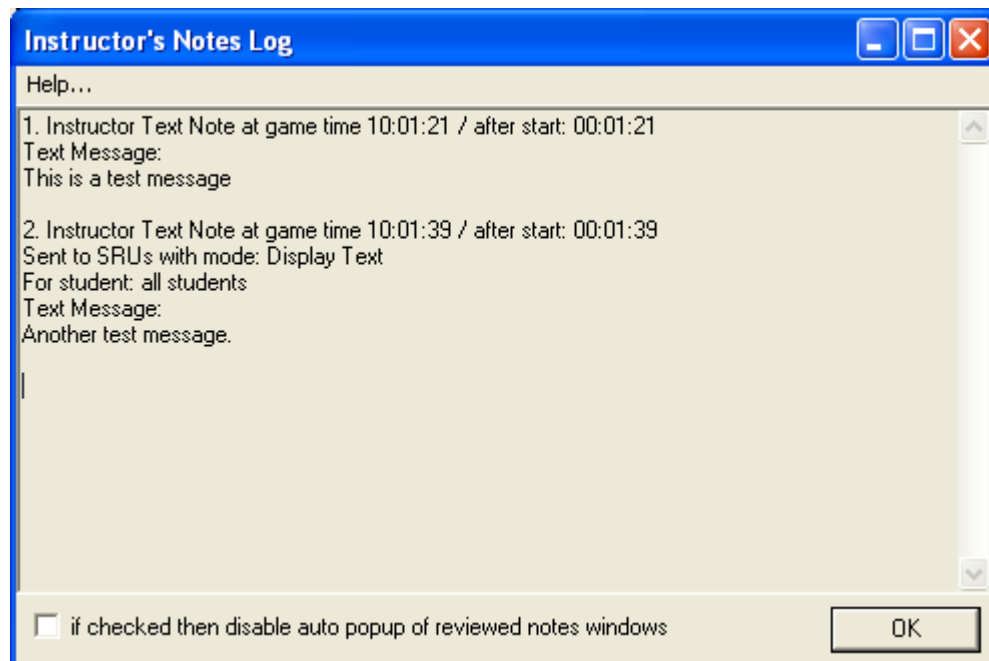
Instructor's Note Review

1. Instructor Text Note at game time 10:01:21 / after start: 00:01:21
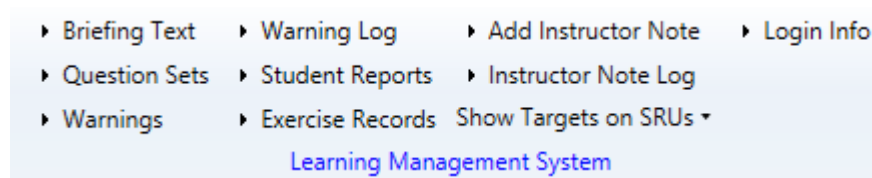Text Message:
This is a test message

5   Reference of LMS Features in MaST Ribbon

This section provides a full reference for the Maritime Simulation Tool (MaST) features that are used In a Learning Management System (LMS) configuration. This configuration allows the instructor to set up briefing text, question sets, and other features to monitor student learning during simulated exercises.
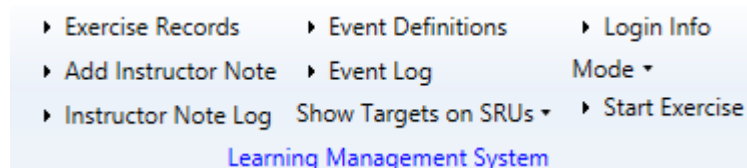
The sections in this section are organized according to the control items in the **File** tab of the **Learning Management System** group of the ribbon across the top of the MaST main window.

▸ Briefing Text	▸ Warning Log	▸ Add Instructor Note	▸ Login Info
▸ Question Sets	▸ Student Reports	▸ Instructor Note Log	
▸ Warnings	▸ Exercise Records	Show Targets on SRUs ▾	
	Learning Management System		

This group is used for managing student examinations and monitor student responses during an exercise. It contains the following controls:

Briefing Text [section 5.1, page 47]
Question Sets [section 5.2, page 48]
Warnings [section 5.3, page 55]
Warning Log [section 5.4, page 58]
Student Reports [section 5.5, page 58]
Exercise Records [section 5.6, page 60]
Add Instructor Note [section 5.7, page 63]
Instructor Note Log [section 5.8, page 63]
Show Targets on SRUs [section 5.9, page 64]
Login Info [section 5.10, page 65]

When the MaST is configured for a slave configuration with IOS ("Student Scoring System"), this group will appear as shown below.

▸ Exercise Records	▸ Event Definitions	▸ Login Info
▸ Add Instructor Note	▸ Event Log	Mode ▾
▸ Instructor Note Log	Show Targets on SRUs ▾	▸ Start Exercise
	Learning Management System	

For this configuration, the group contains the following controls:

Exercise Records [section 5.6, page 60]
Add Instructor Note [section 5.7, page 63]
Instructor Note Log [section 5.8, page 63]
Event Definitions [section 5.11, page 65]
Event Log [section 5.12, page 66]

Show Targets on SRUs [section 5.9, page 64]
Mode [section 5.13, page 67]
Start Exercise [section 5.14, page 67]

The Learning Management System is a set of features that allows the instructor to monitor and interact with students during an exercise. This pertains to configurations that have an Instructor MaST PC that is networked together with one or more Student Response Unit (SRU) PC's. For such a configuration, the GUI.INI file must include network addresses and other parameters using the ClientOS, RSHandler, ExamPort and LoginPort parameters in the [ShipHandling] section; and the LoginMode and ExamMode parameter in the [Config] section.

Each student station is a slave to the MaST instructor station. The instructor controls the loading and progression of exercises. Each students may only control his own ownship by using an optional steering peripheral device.

When the icon on the student station is clicked, a Student Login Window appears asking for a login name or names, and optional password. A student then must type in that information and click **OK**. The student station then proceeds to establish network communications with the instructor station. If a connection is successfully established, the SRU program appears on the student's screen. If a connection cannot be established, then the SRU finishes immediately.

The student station will automatically retry several times if it is not successful connecting to the instructor station via the network the first try. This is controlled by the LoginTries and LoginWait parameters in the [ShipHandling] section of the GUI.INI file on the student station PC's.

If the password entered by the student is correct, then the student's SRU will run with all menu items for graphic views enabled. If the password is incorrect, then the student's MaST will begin running with all menu items for graphic views disabled. The correct password is stored in the GUI.INI file on the instructor station, as the value for the LoginPassword parameter in the [ShipHandling] section. The password can be any ASCII string up to 20 characters. Upper and lower case letters are considered to be equivalent.
If a blank password is stored as the value for LoginPassword, then any password entered by students will be considered a correct password.

As soon as a student SRU successfully connects to the instructor MaST, a message box will immediately appear on the instructor's screen with a message such as:

Student Logged In for OS 2
(Correct password was entered for graphics)
Login Name(s): John Smith
Richard Roe

It is recommended that the instructor wait until all the students are logged in before loading an exercise, especially if the exercise includes Briefing Text and/or Question Sets. The instructor may examine the login information for all students that are currently connected by bringing up the Login Info Window.

If the connection between the student and instructor should become broken for any reason, a message should immediately appear on the instructor's screen such as:

Connection was broken for Student Ownship 2

And a message will immediately appear on the student's screen:

Connection to Instructor was broken

If a student becomes disconnected while an exercise is in progress, the student should notify the instructor immediately. If the student has entered answers for any questions sets, the instructor MaST program will not attempt to obtain the answers from the disconnected student station via the network. If the instructor station fails to obtain a student's answers at the end of an exercise, then the only way the instructor can obtain those answers is by walking over to the student's console and examining the answers on the screen.

Once an exercise is concluded, any students that have become disconnected must exit and restart the SRU program and then login again in order to reconnect to the instructor.

When a Scenario is loaded by the instructor from the disk, any Briefing Text and Question Sets are immediately sent to all connected student stations. A message also then appears on the instructor's screen indicating whether the data was successfully transmitted, such as:

Briefing Text/Question Sets
Sent successfully to OS: 1,2,3,4
Error sending to OS:

A message will also appear on each student's screen, such as:

Question Sets were received from Instructor.
Do you want to examine Briefing Text? (Yes/No)

Then, if the student clicks on "Yes", the Briefing Text Window will pop up.

When the instructor plays the exercise, the game clock for all connected student stations increments and all vessels will move in unison. If the instructor has programmed a question set to be unavailable until a certain game time then a message will appear on the students' screens as soon as it becomes available, such as:

Question Set 1 is now available to be answered.

The All Question Sets Window and its sub-windows are used by the student for selecting answers to the questions. Most of the fields in the question windows are read-only for the student, except for the Correct Answer field, which the student uses to make answer selections.

The instructor also uses the All Question Sets Window and its sub-windows to compose and edit question sets. Unlike the student, the instructor may make changes to any field in these windows. It is recommended that the instructor does not make changes to briefing text or question sets while students are logged on, and that all briefing text and question sets already reside in loadable scenario files before beginning a session with students. This is recommended because once the MaST transmits this information to the students, it will not retransmit it during that exercise, even if the instructor makes changes.
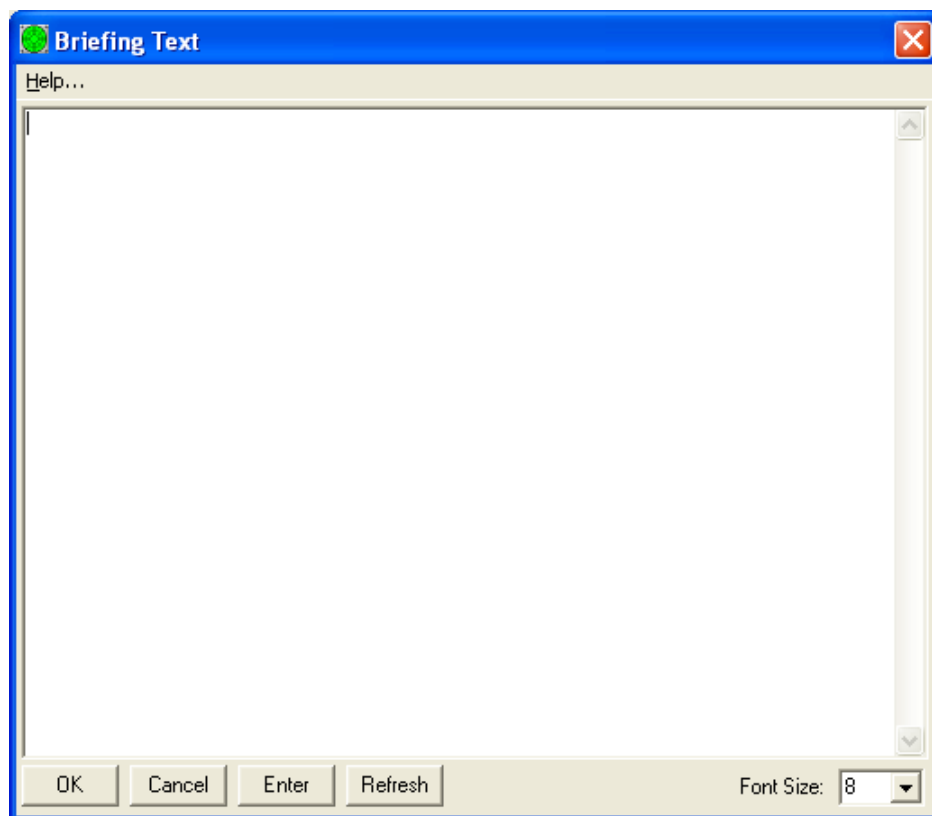
Figure 5-1 Briefing Text Window

All Question Sets

Help…

Q/A Sel #	Questions	Triggers	Question Set Title	Dispatch
1				☐
2				☐
3				☐
4				☐
5				☐
6				☐
7				☐
8				☐
9				☐
10				☐
11				☐
12				☐
13				☐
14				☐
15				☐
16				☐
17				☐
18				☐
19				☐
20				☐

OK   Cancel   Enter   Refresh
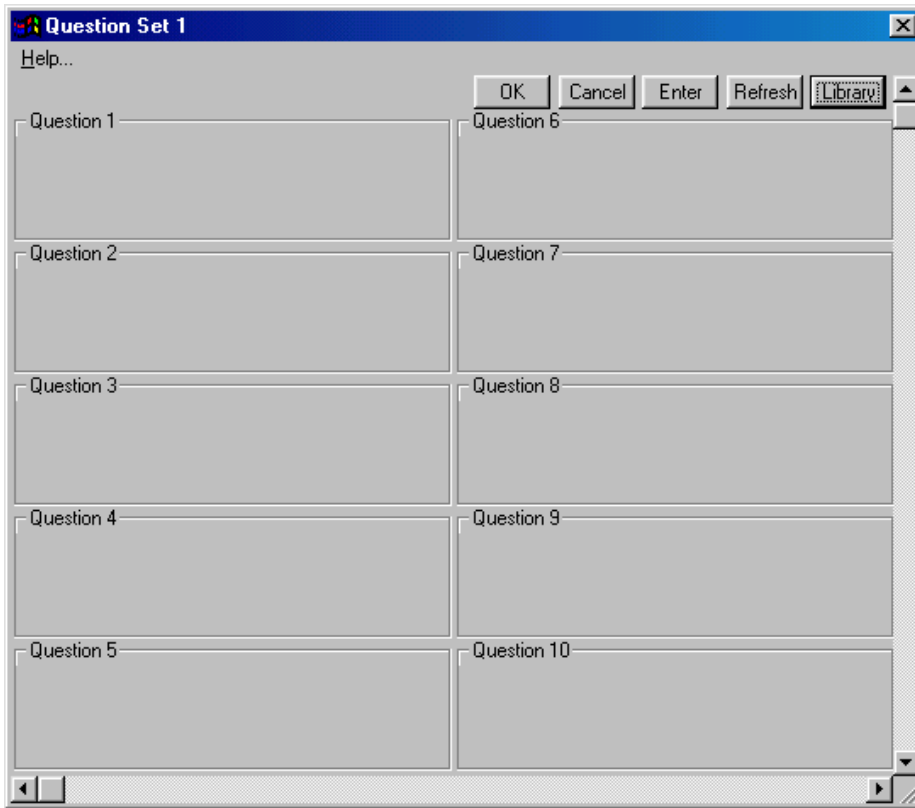
Figure 5-2   All Question Sets Window
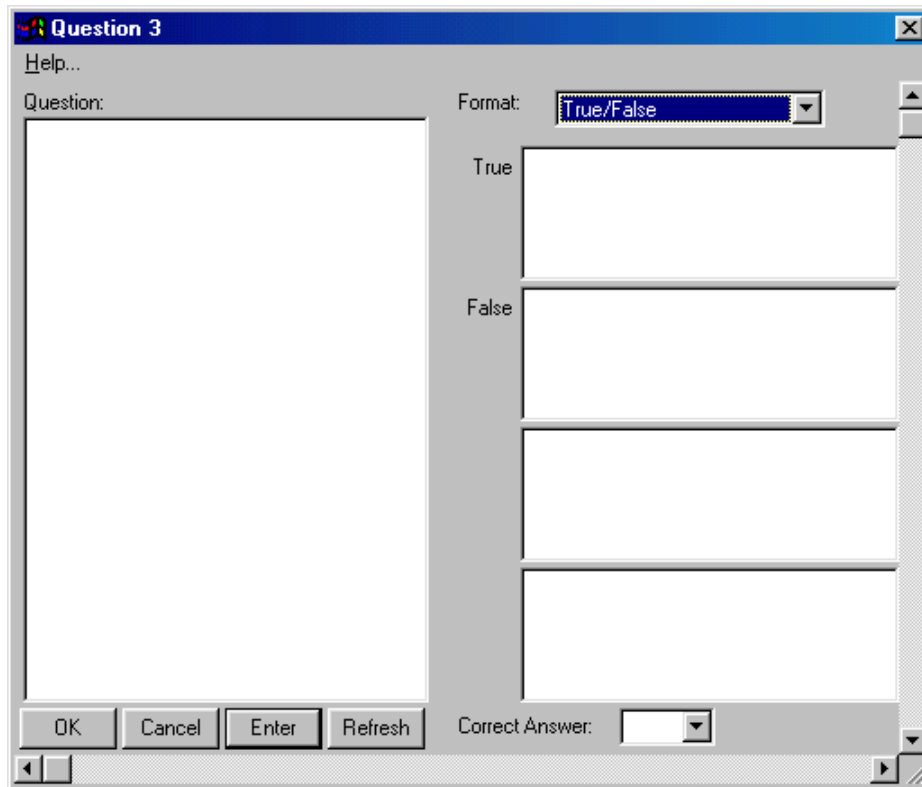
Figure 5-2   Question Sets Window

Figure 5-3   Question Window

When the instructor clicks the **Stop** button, the MaST attempts to retrieve all the answers that students have selected to transmitted questions. If the instructor MaST has been configured to allow extra time for students to answer questions ([Config] AllowExtraTimeForExams=Yes) then the instructor will be prompted whether extra time should be allowed. If the instructor affirms, then a small window appears on the screen:

Question Set Answers
Waiting for students...

This window will disappear when all students have indicated that they have finished. The "All Question Sets" windows should appear on the SRU's and a message will appear telling the student to finish. Each student indicates that he has finished by clicking the **OK** button in his "All Question Sets" window.

If the instructor clicks the Cancel button in the small "Waiting for students" window before the students have finished answering, then the exam will finish immediately and the current answers will then be retrieved.

While the instructor MaST is retrieving student answers, a small window appears on the screen:

Question Set Answers

Waiting for responses...

If the instructor clicks the **Cancel** button in that window, then the program will cancel trying to retrieve the students' answers. Otherwise, after a few seconds the window will disappear and another window will appear with a message indicating if the students' answers were received successfully over the network, such as:

Received answers from OS: 1,2,3,4
Error receiving from OS:

Then the instructor clicks **OK** to proceed. The instructor is now given options to view or print the students' answers to exams. For configurations with [Config] NewStudentAnswers=Yes, the answers for each student are written to files. Each file is written under the C:\GUI\ANSWERS directory and is named according to the student's login name. When a student takes multiple exams, the answers are appended to the same file sequentially. In newer configurations, the answers for all students are also written to an "exercise record" file that describes everything that happened during the session.

Once the answer file(s) have been written, a window appears that allows the instructor to view or print the results of the exam. There are three different formats for this window, depending on the configuration:

1.   An "Exercise Completed" window that allows the exercise record file contents including exam results) to be viewed or printed.
2.   A "Question Set Answers" window appears that allows the instructor to view or to print the results of the exam.
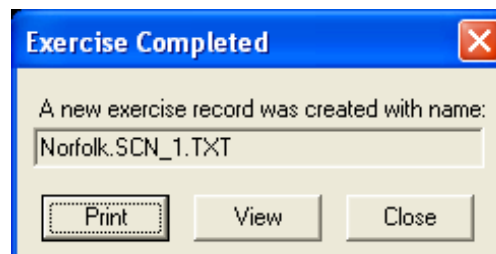3.   A simple message box asking "Do you want to print the students' answers? "

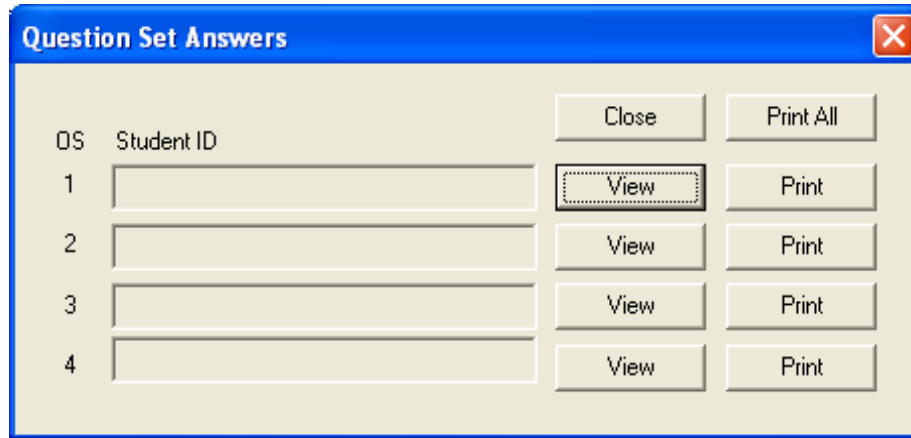Figure 5-4   Exercise Completed Window

Figure 5-5   Question Set Answers Window

In newer configurations that don't use the Question Set Answers Window, functionality for printing student records is provided by the Student Reports Window.

When the instructor closes the instructor station MaST, all the student station SRU windows will also be closed and exited automatically.

Below is a brief overview of the windows associated with logins, briefing text and question sets:

Student Login Window - appears on student SRU when started. After the student enters login name(s) and optional password, a network connection is established with the instructor MaST.

Login Info Window - shows the instructor which students are currently logged on. [section 5.10, page 65]

Briefing Text Window - displays the briefing text. On the instructor station, the briefing text can be edited. [section 5.1, page 47]

All Question Sets Window - shows the title and dispatch parameters for up to twenty question sets, and provides buttons for accessing the Question Set Window for each set. On the instructor station, the title and dispatch parameters can be edited. [section 5.2, page 48]

Question Set Window - contains ten large buttons for accessing the Question Window for each question in the question set. On the face of each button, the abbreviated question/answer text for the question is displayed. [section 5.2.3, page 53]

Question Window - displays all the question and answers text for a single question. The instructor uses this window to compose and edit each question, and can modify any field.

The student uses this window to read the question and select an answer, and can modify only the Correct Answer field. [section 5.2.4, page 54]

Warning Definitions Window – can be used by the instructor to define conditions that will cause a warning message to appear on student stations. [section 5.3, page 55]

Warning Log Window – allows the instructor to examine a list of all warnings that have been triggered by students during the exercise. [section 5.4, page 58]

Student Reports Window – used by the instructor to generate text reports containing the history of questions answered by a student during one or more exercises. [section 5.5, page 58]

Exercise Records Window – used by the instructor to manage exercise record files that describe what happened during each previous exercise run. [section 5.6, page 60]

Instructor Text Note Window – used by the instructor to insert a text note at a particular game time during an exercise. This note will be saved in the exercise record file, and will be displayed when the instructor later reviews the saved exercise. This window can also be used to send a message (text and/or spoken) immediately to one or all SRU stations. [section 5.7, page 63]

Instructor Note Log Window – allows the instructor to examine a list of all notes that have been recorded during an exercise. [section 5.8, page 63]

5.1   Briefing Text item

This is used by students to examine the briefing text. It is also used by the instructor to edit the briefing text for a scenario that is being composed. On an SRU, the briefing text appears when the student selects "Yes" in the message box that appears immediately after new briefing text has been received from the instructor station via the network.

The briefing text window contains one large field that contains the entire text. If the briefing text is too large to fit in the field, then the PageUp, PageDown, and Arrow keys can be used to scroll through it. The briefing text cannot be more than 4000 characters long. If the instructor tries to enter briefing text that is longer, an error message box will appear.

In some configurations there is a drop-down field near the lower right corner that can be used to change the font size of the text as it will appear on student stations.

It is recommended that the instructor does not make changes to the briefing text while students are logged on, and that the briefing text already reside in loadable scenario files before beginning a session with students. This is recommended because once the MaST transmits the briefing text to the students, it will not retransmit the briefing text during that exercise.

Near the bottom of this window there are four buttons. The **OK** button accepts changes and closes the window. The **Cancel** button ignores changes and closes the window. The **Enter** button accepts changes and keeps the window open. The **Refresh** button restores previous settings before any changes.

This window is available only if the ExamMode parameter in the [Config] section of the GUI.INI file was set to either Instructor or Student.

5.2   **Question Sets** item

On instructor and student stations, clicking this item brings up the **All Question Sets Window** that shows the title and dispatch parameters for up to twenty question sets, and which provides buttons for accessing the **Question Set Window** [section 5.2.3, page 53] for each set. On the instructor station, the title and dispatch parameters can be edited.

For each question set, there is a line with the following fields:

Edit - a button that, when clicked, brings up the Question Set Window, which contains information about each of the ten questions in a single question set.

Title - the title of the question set, up to 80 characters.

Triggers - Each question set can have one or more trigger conditions that determine when its questions become available to the student during scenario replay. When a "Trigger" button is clicked, a "Question Set Trigger Conditions" window appears as shown in [Figure .2.1-1, page 50]. When the scenario is replayed and the trigger conditions are met, the MaST will display a notification message on the screen of each student station, such as:

Question Set 2 is now available to be answered.

Dispatch Checkbox - if checked, then the question set will be transmitted via the network to the student stations when the scenario is replayed. Otherwise, the question set will not be sent and will be unavailable to the students.

Pause Duration – this specifies a time duration such that the game clock on the student stations will automatically freeze while the student answers the questions. For configurations that have multiple student stations controlled by an instructor station, the pause will only be enabled when the question set has a simple time trigger.

At the instructor station, the Title, Scheduled Time/Trigger, Dispatch and Pause controls can be modified composing a scenario. At the student stations, these fields are read-only. It is recommended that the instructor not make changes to question sets while students are logged on, and that all question sets already reside in loadable scenario files before beginning a session with students. This is recommended because once the MaST transmits

question sets to the students, it will not retransmit them during that exercise, even if the instructor makes changes to them.

Near the bottom of this window there are four buttons. The **OK** button accepts changes and closes the window. The **Cancel** button ignores changes and closes the window. The **Enter** button accepts changes and keeps the window open. The **Refresh** button restores previous settings before any changes.
This window is available only if the ExamMode parameter in the [Config] section of the GUI.INI file was set to either Instructor or Student.

5.2.1 Trigger Conditions List Window

The trigger conditions window can be used to specify one or more "trigger conditions" that are based on student ownship situations. If more than one condition is specified, then they are shown in a list, with each condition assigned an index number starting with 1.

The three radio buttons determine how the conditions in the list will be combined to determine when to trigger the question set. If the third radio button is selected, then the instructor can specify a logical statement in the field below it that controls how the conditions are combined. This logic statement may include index numbers, the words AND, OR, NOT, and parentheses. In the example shown in the figure below, the question set becomes available when condition 1 is met and either condition 2 or condition 3 is met (i.e. if the student's ownship is moving faster than 15 knots and is within 2 NM range of either target 7 or target 8).

To add a new trigger condition to the list, click the "Add" button. This brings up a Trigger Condition Window that specifies a single trigger condition, as shown in [Figure 2.3.1.2.2-1, page 52].
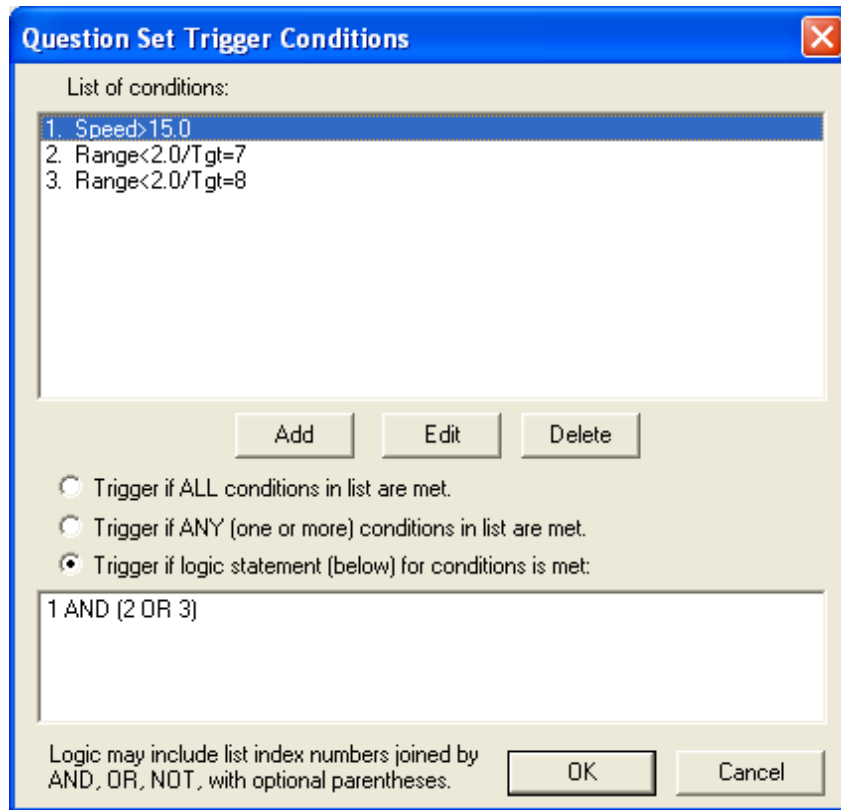
Figure 5.2.1-1   Trigger Condition List Window

5.2.2 Trigger Condition Window

Only one radio button option can be selected within the trigger window.   The options are described below.

Game Time: triggers when the game clock reaches the specified time. This option is used to guarantee an event will happen at a certain time regardless of how the student maneuvers the ownship.

Range: triggers when the student ownship comes within range of a reference.   When this is selected then the wide button in this window must be clicked to specify the reference used. The window that appears when the range reference button is clicked is shown in [Figure .2.2.1-1, page 52].

CPA: triggers when the student ownship comes within in a specified CPA/TCPA of a reference. A reference must be specified for the CPA option by clicking the associated button. The window that appears when the range CPA button is clicked is shown in [Figure .2.2.2-1, page 53].

Reference line: triggers at the moment of time when the student ownship crosses over a reference line that has the specified label. Reference lines can be drawn by the instructor into any map by using the menu in the Graphics group of the Tools ribbon tab. Reference lines are not visible on student stations.

Reference track: triggers when the student ownship deviates by a certain distance from a reference line path that has the specified label. It does not count when the ownship "exits" the desired track normally at either endpoint.

Reference area: triggers when the student ownship is inside a reference area that has the specified label. A reference area is a reference line that forms a closed polygon.

Speed: triggers according to speed of student ownship.

Depth: triggers according to depth below keel of student ownship. This option can only be used with map databases that incorporate depth information.

Grounding of student ownship: this condition can be detected either by the MaST or master bridge simulator, depending on configuration.

Collision of student ownship: this condition can be detected either by the MaST or master bridge simulator, depending on configuration.

Figure 2.3.1.2.2-1   Trigger Condition Window

5.2.2.1   Trigger Range Reference Window

This specifies a reference location, reference point or vessel that is used as the basis for a range trigger calculation with the student ownship.

If the **Lat/Lon** option is selected, then the location can be selected graphically using the "Graph L/L" button.

The **Reference Point** option requires the label of a reference point that has been defined using the Reference Line menu. A reference "point" is really just a line that has one vertex, and is drawn as a bright blue dot.

The **Map Entity** option requires the label of a defined entity (usually a buoy). Map entities are drawn as purple dots and their labels can be edited using the "Map Entity" menu.

The **Any Other Ownship** option can only be used in configurations with multiple student ownships.

The **Target** option requires a MaST target ID number.

The **Stationary Target** option requires a stationary target ID number (a target that has object type of "Station/ATON" or a Racon"). This option is provided mainly for backwards compatibility with older versions of the MaST.

Figure 5.2.2.1-1   Trigger Range Window

5.2.2.2   Trigger CPA Reference Window

This specifies a reference location, reference point or vessel that is used as the basis for a CPA/TCPA trigger calculation with the student ownship.

The **Any Other Ownship** option can only be used in configurations with multiple student ownships.

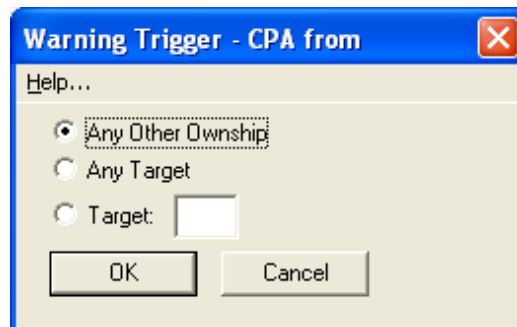The **Target** option requires a MaST target ID number.

Figure 5.2.2.2-1   Trigger CPA Window

5.2.3 Question Set Window

This window is accessed by clicking one of the buttons in the **All Question Sets Window**. It is used for displaying information for a single question set. There can be up to ten questions in a question set, for which there are ten large buttons in this window. Each button has a title indicating the question number, and contains two rectangular display areas on its face. When a button is clicked, a **Question Window** pops up, displaying all the information about the question.

The text for each question is displayed in an abbreviated form on the face of each large button. For the instructor, an asterisk is displayed next to the selection that is the correct answer. For the student, an asterisk is displayed next to the selection chosen by the student in the test. If a question is unused, the large button face will be blank.

For the instructor, when a question's data has changed, the corresponding button will be drawn in blue. Such changes will not actually be registered until **OK** or **Enter** is clicked in this window, and **OK** or **Enter** is clicked in the parent window (All Question Sets Window).

Near the bottom of this window there are four buttons. The **OK** button accepts changes and closes the window. The **Cancel** button ignores changes and closes the window. The **Enter** button accepts changes and keeps the window open. The **Refresh** button restores previous settings before any changes.

This window is available only if the ExamMode parameter in the [Config] section of the GUI.INI file was set to either Instructor or Student.

5.2.4 Question Window

This window is accessed by clicking one of the large buttons in a **Question Set Window**. It is used for displaying or editing the information about a single question. It is also used by students to answer a single question.

Each question can have one of the following formats:

Question unused
True/False
Yes/No
Multiple Choice A/B
Multiple Choice A/B/C
Multiple Choice A/B/C/D
Input Text
No answer

The format for a question will be displayed in a list box at the upper right corner of the window. If the format is Question Unused, then the question will not be available to be answered by students. If the format is Input Text, then the student will not be given a selection, but will be expected to type in an answer (up to 256 characters) into the top Selection window (which will be labeled "Your Answer:"). If the format is No Answer, then the questions is considered to be "information only", and the question's text will be sent to the students, but it cannot be answered.

The text for the question appears in a large field on the left side of the window. The text may not be longer than 1024 characters.

There may be up to four choices for the answer, and the text for them appears on the right side of the window. The text for all four fields may be filled in by the instructor even if the question has less than four choices. The text for a choice may not be longer than 256 characters. A label will appear to the left of each choice field depending on the question format; one of: A, B, C, D, Yes, No, True, False, Your Answer, or blank.

Near the bottom right of the window is a drop-down list-box. The drop-down list contains all the choice labels as items, but only if the question has a Multiple Choice, Yes/No or True/False format. If the question is unused or has an Input Text or No Answer format, then this list-box is not used and the following two paragraphs are not applicable.

For the instructor, the list-box is labeled "Correct Answer" and the selected item indicates which choice is correct. The field's selection will be drawn in blue if it has just been changed. The instructor may also change any of the other fields. Changes to questions are not completely registered until **OK** or **Enter** is clicked in this window, the parent window (**Question Set Window**), and the grandparent window (**All Question Sets Window**).

For the student, the list-box is labeled "Your Answer", and the student must select an item to choose the answer to the question in the test. It is the only field that the student can change. The field's selection will be drawn in blue if it has just been changed. To register the answer, the student must click **OK** in this window. The answer is then immediately registered.

Near the bottom of this window there are four buttons. The **OK** button accepts changes and closes the window. The **Cancel** button ignores changes and closes the window. The **Enter** button accepts changes and keeps the window open. The **Refresh** button restores previous settings before any changes.

If a student has not yet selected an answer for a multiple choice question and clicks **OK**, then a message box will appear and ask the student for a confirmation before exiting the question window.

This window is available only if the ExamMode parameter in the [Config] section of the GUI.INI file was set to either Instructor or Student.

5.3   **Warnings** item

Clicking this brings up the **Warnings Definition Window**. There may be up to 100 independent warning messages defined in a scenario. Each warning has a set of trigger conditions that define when the message is shown on the student station. The format of the top-level window that is available for defining warnings is shown in the figure below.
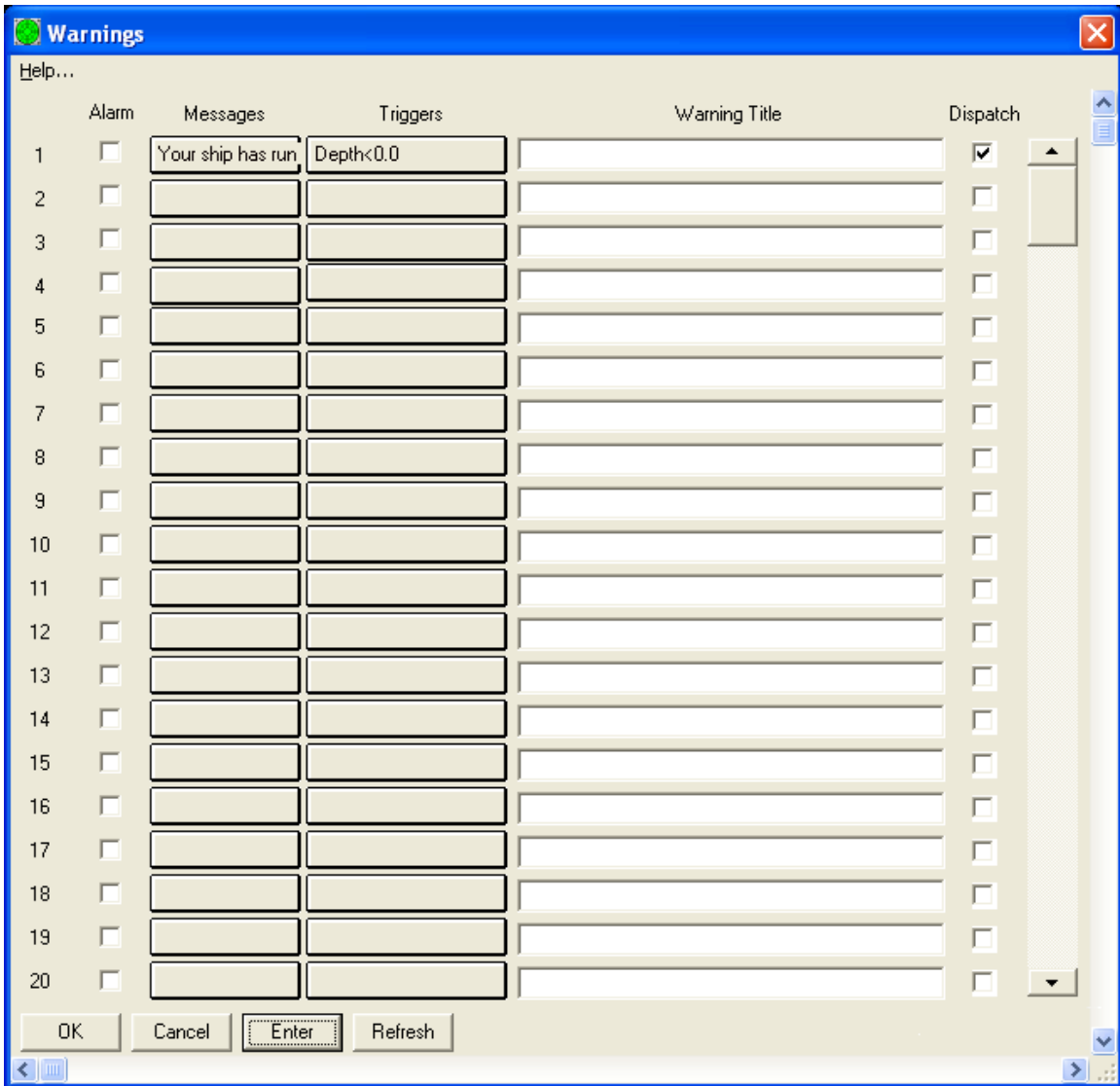
Figure 5.3-1 Warnings Window

If an "Alarm" checkbox is checked, then on the student station the warning message will be uncloseable and displayed in red while the trigger condition is active. Each "Messages" button brings up a window into which the instructor can type the warning message, as shown in the figure below. Each "Triggers" button brings up a window that defines one or more trigger conditions for the warning. This window has the same features as the one used for question sets trigger conditions. Each "Warning Title" field defines the caption of the warning message window that will appear on the student station (if not defined, the default title is just "Warning"). The "Dispatch" checkbox must be checked for each valid warning that is able to be shown the student.
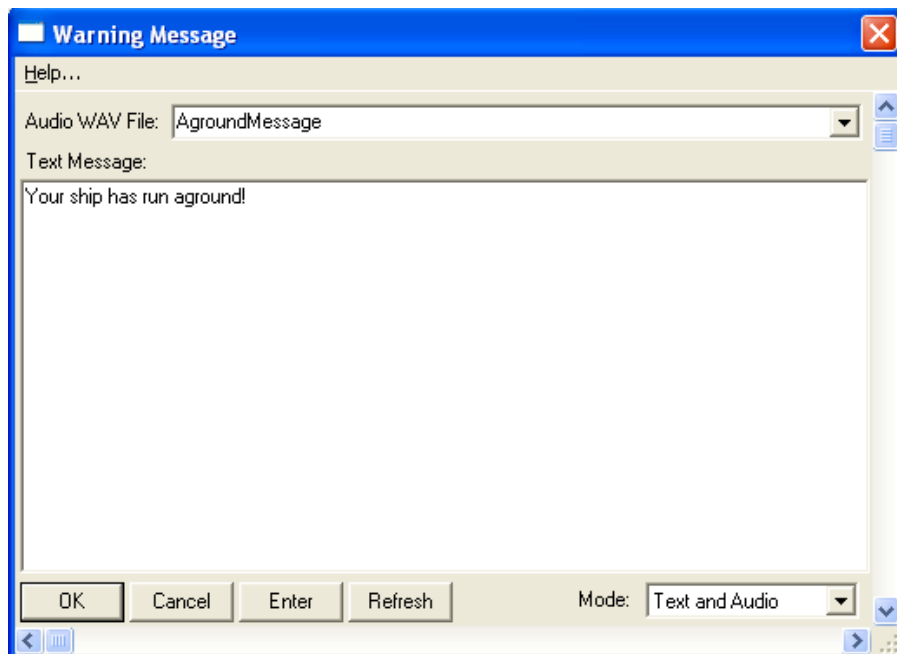

Figure 5.3-2   Warning Message Window

The drop-down box at the lower right corner determines whether the warning that is produced on the student station will be presented as a visual text message, a spoken text message, an audio message, or a combination. For audio messages, the drop-down near the top must specify the name of a WAV file in the C:\GUI\AUDIO\ directory. This file can be created using the Windows Sound Recorder. (The WAV file must also be copied into the same directory on all SRU stations.)

An example of a text warning message window as it would appear on a student station is shown in the figure below. Whenever a warning is triggered by any student at an SRU, the Warning Log Window will pop up on the instructor's MaST to show information about the triggered warning. The automatic popup of the log window can be disabled by a checkbox. The log window may also be brought up at any time by selecting the **Warning Log** item [section 5.4, page 58].
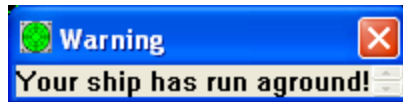
Figure 5.3-3   Student Warning Message Window

5.4   Warning Log item

Clicking this brings up the **Warnings Log Window** that allows the instructor to examine the entire list of warnings that have been triggered by students during the current exercise. This window will also appear automatically whenever a new warning is triggered by a student, unless the checkbox at the bottom of this window has been checked previously. When an exercise is being replayed by the instructor in review mode (without students) then this window will show all the warnings that occurred during the entire exercise regardless of current game time.
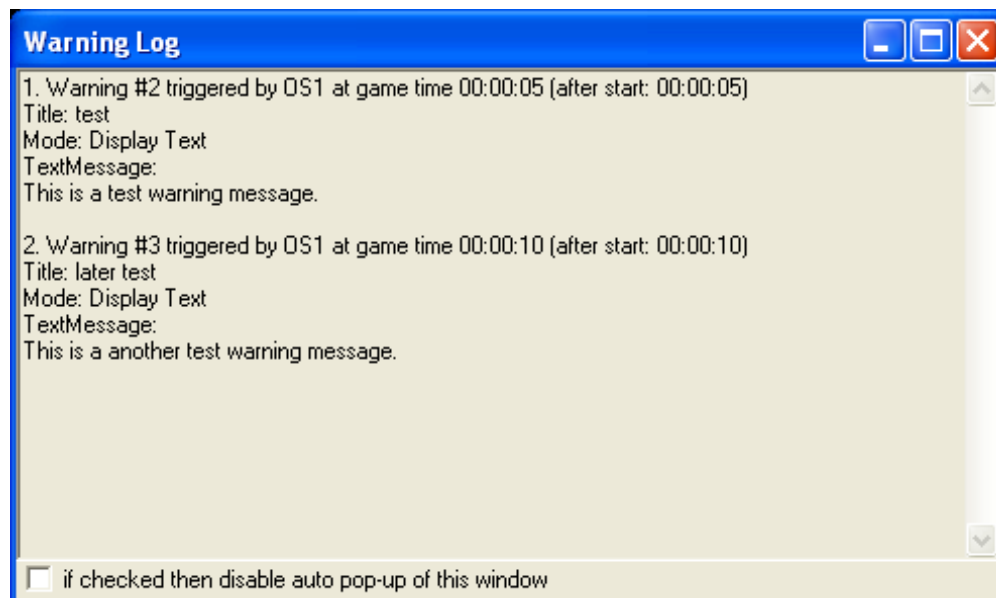

Figure 5.4-1   Instructor Warning Log Window

5.5   Student Reports item

Clicking this brings up the **Student Reports Window**. Whenever a student finishes an exercise, there will be an "answer file" that is updated on the instructor's PC via the network. Each answer file contains a report summarizing a student's training activity and results. The scenario builder program provides a "Student Report Generation" window that allows the instructor to view, print and manage the data contained in student answer files.

The Student Report Generation window, which is shown in [Figure .5-1, page 59], has a large list box that displays a line with some brief information about each exercise that a student has completed. One or more or the lines can be selected with the mouse (the Ctrl

or Shift key must be held down while clicking to select multiple lines). Selected lines are shown with a white background. The "View Selected Exercises" button can be used to examine a full report of the exercises for the selected lines. This report is displayed within a Notepad window. The "Print Selected Exercises" button can be used to print the report. A sample report file is shown in [Figure .5-2, page 60].

For each exercise, there is also a "Binary Exercise Record" file that records all student ownship motion that occurred. This file's contents cannot be examined directly, but it can be loaded into the Scenario Builder and replayed by the instructor just as if it were a regular scenario. This is done by selecting a single line in the list box and clicking the "Review Selected Exercise Record" button. The instructor can then replay the exercise in order to review student maneuvers, warning trigger times, etc. While in review mode, the SRU's are partially disabled in that the student cannot examine/answer questions sets or change ownship motion. The exercise may be played and paused the same as for a normal scenario, and fast time features may also be used. When the exercise is stopped however, the exercise record cannot be resaved (overwritten) by the instructor.
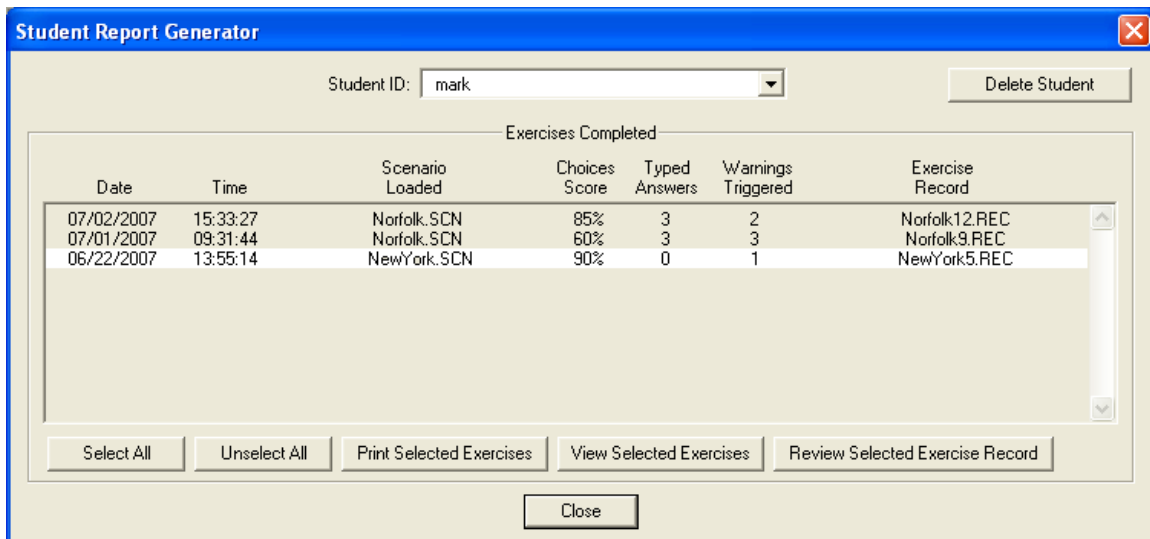

Figure 5.5-1 Report Generator Window

```
REPORT.TXT - Notepad
File  Edit  Format  View  Help
Student's Answers
*******************************************************
Real time at start : Fri Jun 22 13:02:10 2007
Game time at start : 00:00:00
Real time at finish: Mon Jul 23 13:55:14 2007
Game time at finish: 00:40:02
Real time duration : 00:53:04
Game time duration : 00:40:02

Scenario: NewYork
Title: New York Harbor
Author: JSB
Created: 01/02/07 08:06:24
Modified: 05/13/07 14:25:57
Description:

  Login ID:
    mark
  Login Name(s):
    Mark Terpin
  Question Set 1:
  was triggered at game time 00:15:00

****9 out of 10 multiple choice questions were answered
correctly.)
    Question 1 / Format: Multiple Choice – A/B/C/D
       Correct Answer: B.
       Student's Answer: B.
    Question 2 / Format: Multiple Choice – A/B/C/D
       Correct Answer: A.
       Student's Answer: A.
    Question 3 / Format: Multiple Choice – A/B/C/D
       Correct Answer: C.
       Student's Answer: C.
    Question 4 / Format: Multiple Choice – A/B/C/D
       Correct Answer: C.
       Student's Answer: C.
    Question 5 / Format: Multiple Choice – A/B/C/D
       Correct Answer: D.
       Student's Answer: D.
    Question 6 / Format: Multiple Choice – A/B/C/D
       Correct Answer: A.
       Student's Answer: C.
    Question 7 / Format: Multiple Choice – A/B/C/D
       Correct Answer: D.
       Student's Answer: D.
    Question 8 / Format: Multiple Choice – A/B/C/D
       Correct Answer: A.
       Student's Answer: A.
    Question 9 / Format: Multiple Choice – A/B/C/D
       Correct Answer: B.
       Student's Answer: B.
    Question 10 / Format: Multiple Choice – A/B/C/D
       Correct Answer: B.
       Student's Answer: B.

Warning triggered at game time 00:37:24
Your ship has run aground!

Record: \\sparrow5\RECORDS\NewYork5.REC
```

Figure 5.5-2 Example Student Report File

5.6 **Exercise Records** item

Clicking this brings up the **Exercise Record Manager Window**. The MaST can be configured so that a disk file "exercise record" is saved every time a scenario is run by the instructor. A window is then provided that allows the instructor to view, print, delete or review any of the stored exercise records at any time.

There are two drop-down controls near the top of the window. These can be used to filter or sort the list of records that are displayed in the large list box, and they can be helpful when there are a large number of records currently on the disk. The first drop-down can be used to specify a single scenario such that only the exercise records that were created from that scenario will be loaded. The second drop-down causes the items in the list box to be sorted either by date or by name.

In a **Student Scoring System** configuration, there will be another drop-down control for selecting the name of the assessment scenario associated with the records.
The list of exercise records is listed in the large list box (filtered and sorted). Multiple items can be selected by holding down a Ctrl key while left clicking. Highlighted lines are shown with white rather than gray background. Below the list are several buttons that can perform various operations on the list.

Select All: makes all items in list to be selected.

Unselect All: makes all items in list to be unselected.

Print Selected Records: sends the text information from all the selected exercise records to the default text printer.

View Selected Records: combines the text information from all the selected exercise records into one text file and opens it in a Notepad window.

Delete Selected Records: causes all the selected exercise records to be permanently deleted from the disk.

Review Selected Exercise Record: only one exercise must be selected before clicking this button. This causes the saved exercise to be loaded as if it were a scenario, and the Exercise Records window immediately closes. The instructor can then replay the exercise in order to review student maneuvers, warning trigger times, etc. While in review mode, the SRU's are partially disabled in that the student cannot examine/answer questions sets or change ownship motion. The exercise may be played and paused the same as for a normal scenario, and fast time features may also be used. When the exercise is stopped however, the exercise record cannot be resaved (overwritten) by the instructor.
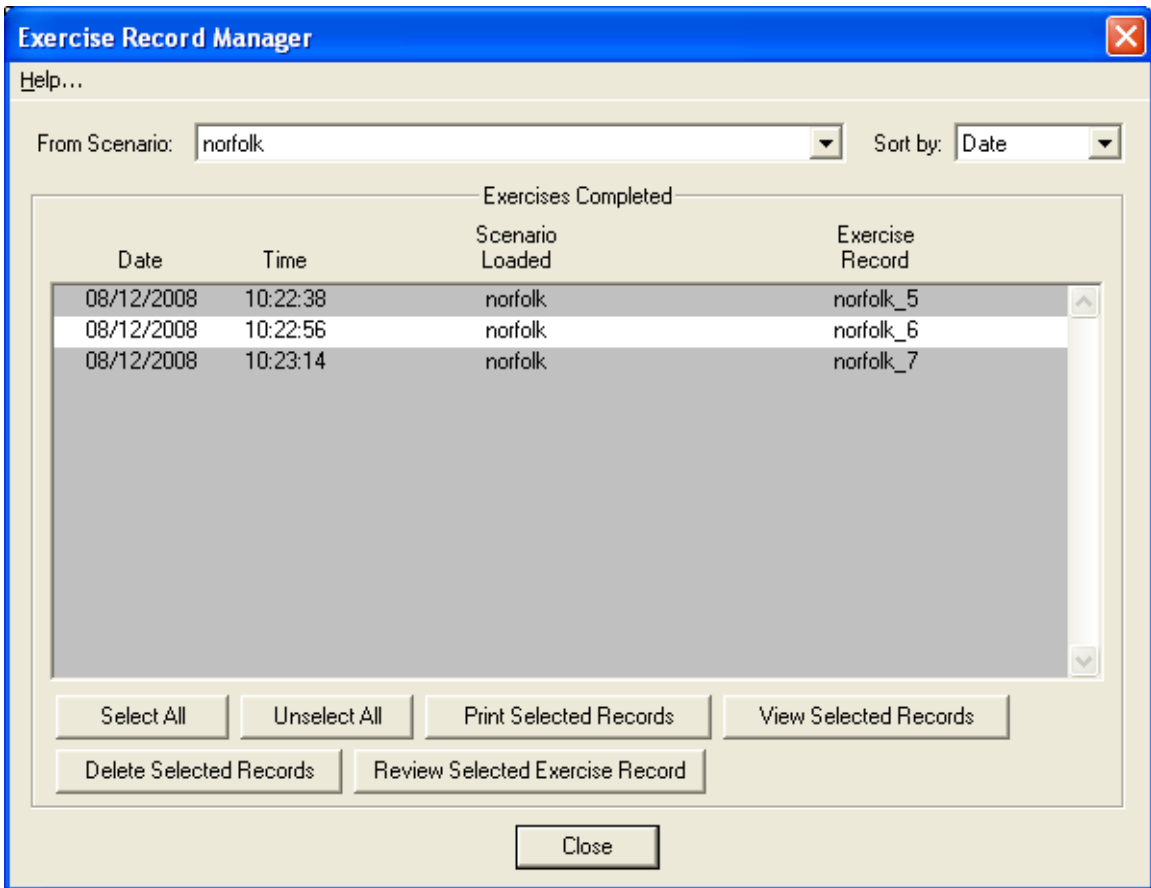
Figure 4.6   Exercise Record Manager Window

5.7   Add Instructor Note item

Clicking this brings up the **Instructor Text Note Window**. During the course of a live exercise (running with students logged in), the instructor may enter text note messages at any time during the exercise. These notes may include comments about situations that the student has gotten into, etc. The notes are then saved with the exercise record file, and when the instructor replays the instructor (in review mode), then the note messages may be displayed on the instructor's MaST at the proper times.

This window also allows the instructor to immediately send a message to students at SRU stations. This is specified by first checking the checkbox at the lower left corner. The "Mode" dropdown that appears specifies whether the message will be displayed visually and/or spoken verbally on the SRU. The "for student" dropdown specifies the recipient(s), either "all students" or one particular SRU.

Instructor notes will only be recorded when a named scenario file has been loaded and at least one student at an SRU has logged in. (These are the conditions necessary for an "exercise record" file to be saved when the exercise is stopped.) When the exercise is later replayed for review by the instructor, the recorded notes will pop up on the instructor's MaST at the proper time, or may be examined using the Instructor Notes Log Window.

It is allowed to send a message immediately to students even when no scenario is loaded (however the message will then not be recorded).
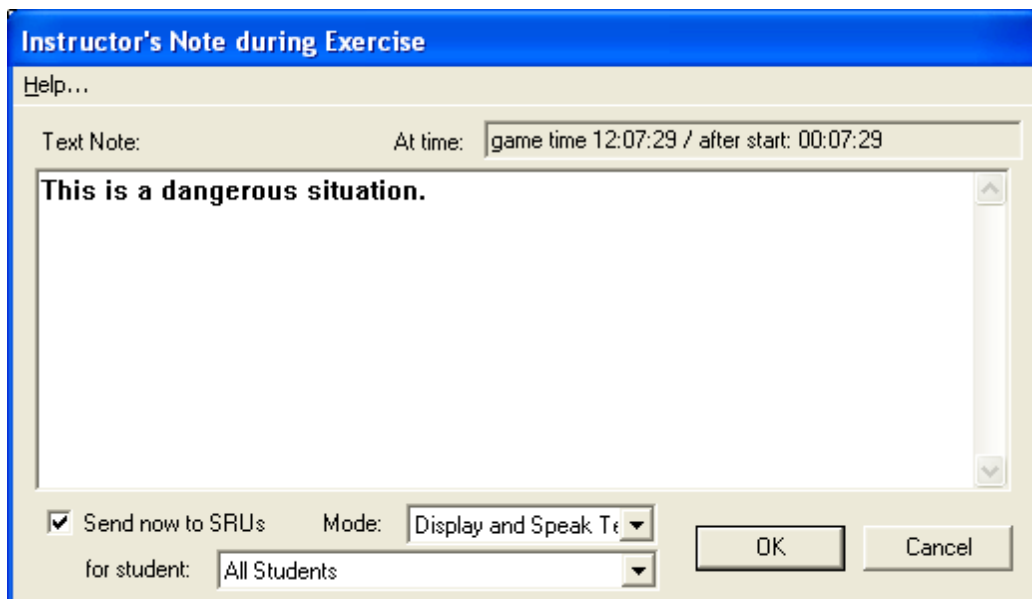

Figure 5.7-1   Instructor Text Note Window

5.8   Instructor Note Log item

Clicking this brings up the **Instructor Note Log Window** that displays a list of all notes that have been entered by the instructor during an exercise, in chronological order. This may be used both while in live mode (with students logged in) or in review mode when the instructor is replaying an exercise.

When in review mode, this window will include a checkbox that can disable the automatic popup of note review windows. By default, a note review window will automatically appear in review mode for each recorded note when its corresponding game time is reached by the game clock.

In a **Student Scoring** configuration, the total score is shown for the student during the exercise (so far) at the bottom of this window. The total score is always based on a value of 100 added to the weights from triggered events and instructor notes.
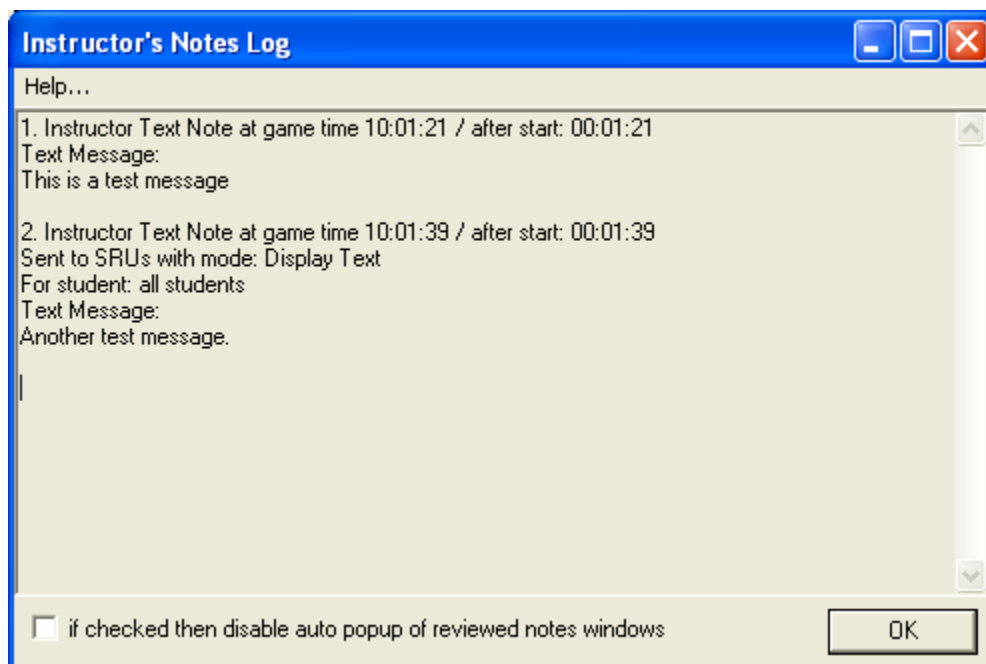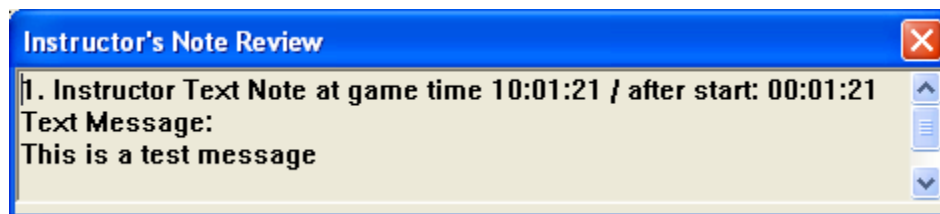

Figure 5.8-1   Instructor Note Log Window

Figure 5.8-2   Instructor Note Review Window

5.9   **Show Targets on SRUs** item

When this checkbox is checked by the instructor, then the markers for all targets in the exercise will be displayed in the students' graphic view.

5.10   **Login Info** item

When this is clicked, a window appears allowing the instructor to examine the login names and network status for all student stations that are currently connected to the instructor station. It is available only if the LoginMode parameter in the [Config] section of the GUI.INI file is set to Instructor. This window is never displayed on any student's screen.

There are 8 group boxes in the window, each corresponding to an ownship number for a student station. If a student is currently logged in, then the group box contains the login name(s). At the bottom of the group box appears one of the following status messages:

"Correct password was entered for graphics" - the student logged in and entered a password that matches the value for the LoginPassword parameter in the [ShipHandling] section of the GUI.INI file.

"Incorrect password was entered (no graphics)" the student logged in and entered a password that did not match the value for the LoginPassword parameter in the [ShipHandling] section of the GUI.INI file.

"Password not required (graphics)" - the student logged in, and the value of the LoginPassword parameter in the GUI.INI is an empty string (""), therefore no password is required of the students.

"Not logged in" - no student is currently logged in at the station.
"Connection broken" - a student was logged in at the station, but the network connection has since been broken.

5.11   **Event Definitions** item

Clicking this brings up the **Event Definition Window**. Events are similar to warnings, except that when an event occurs, the instructor is immediately notified, but the student is not. Triggered events are also included in the record file for the exercise. Each "event" has a trigger condition associated with it that defines what the student must do in order to the event to be triggered. Each event also has a text description and a numeric weight factor associated with it.

The Event Definition Window contains a list of all events defined in the assessment scenario. A maximum of 1000 possible events may be defined in a single scenario, although only 20 at a time can be displayed in the scrolling list.   For each defined event, a text description should be entered in the wide edit field. This description will be included in the student record files if the event triggers during a live exercise. A numeric weight factor is also associated with each event. This value may range from -100 to 100 and is added to the student's total score during a live exercise if the event triggers (for Student Scoring

configuration). During a live exercise, it is possible for the same event to trigger up to 20 times and each time the weight will be added to the total score.
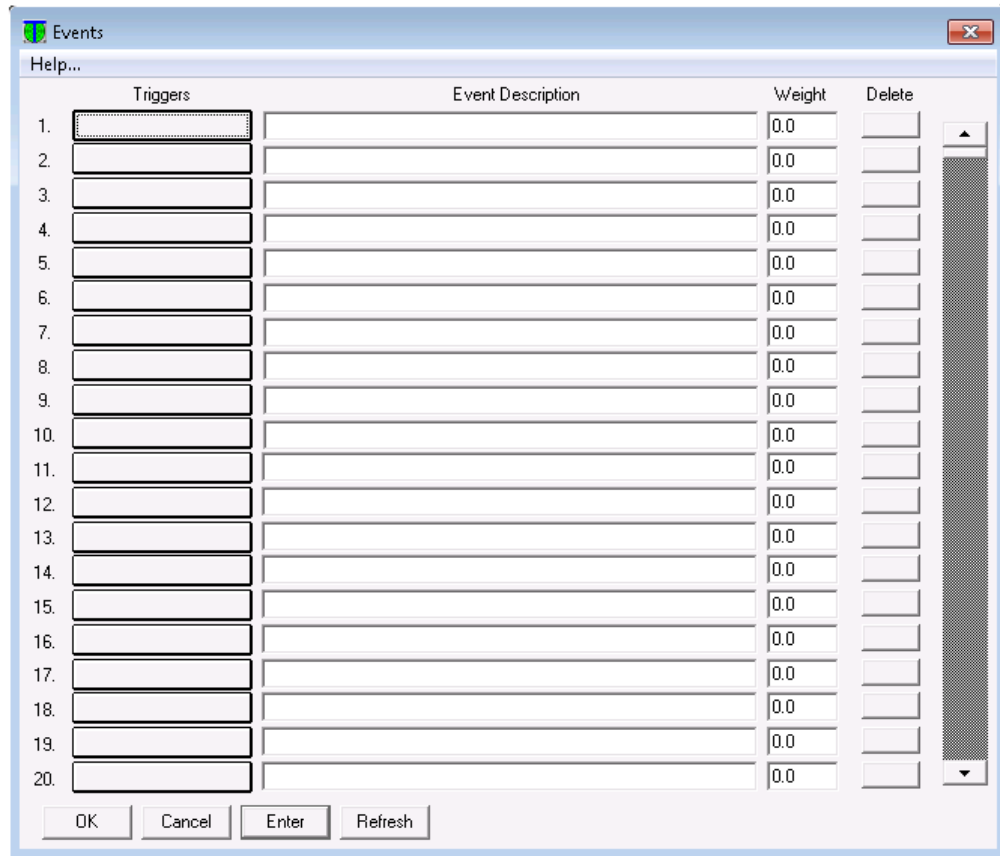

Figure 5.11-1   Events Definition Window

The trigger for each event can be edited by clicking its button in the "Triggers" column. For configurations that support Build and Live modes, the events can only be defined while in Build mode.

5.12 **Event Log** item

Clicking this brings up the **Event Log Window**. While running a live exercise, the Event Definitions window can be examined by the instructor but it cannot be changed. Whenever an event is triggered by the student, the Event Log window will automatically pop up (unless disabled) showing of list of the descriptions of all events that have been triggered so far.
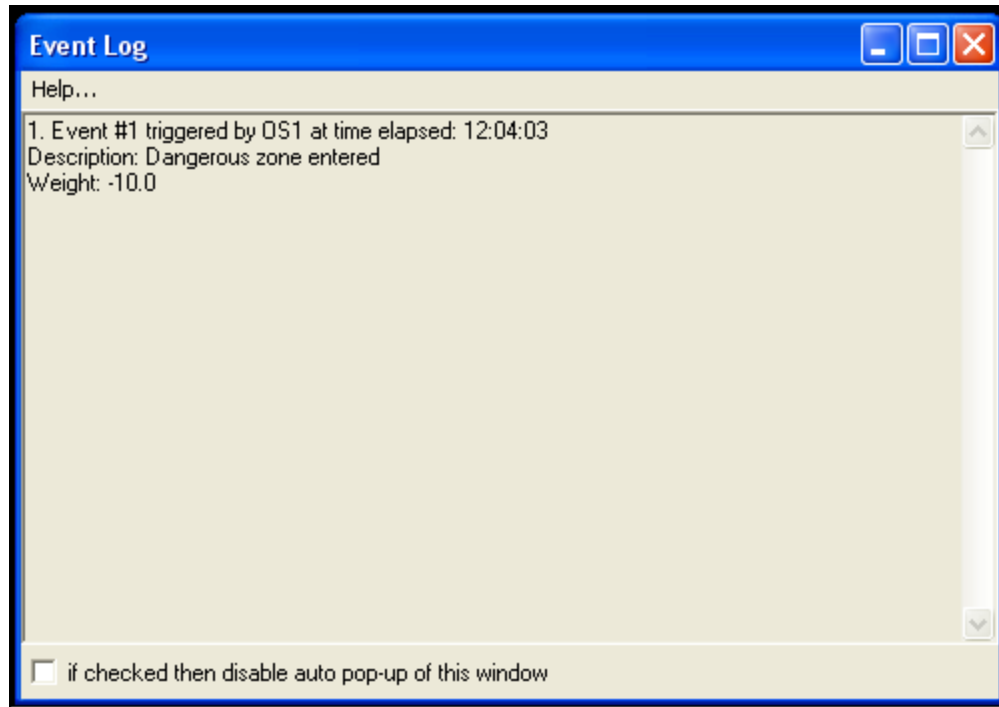
Figure 5.12-1   Events Log Window

5.13 **Mode** item

This item is only used for a "Student Scoring System" slave configuration, and it contains two options: **Build** and **Live**.   See the "User Guide for Student Scoring System" document for an explanation of how these modes are used.

5.14 **Start Exercise** item

This item is only used for a "Student Scoring System" slave configuration, and it is clicked by the instructor to start a new exercise. See the "User Guide for Student Scoring System" document for more information.