Federal Aviation Administration

En Route ERAM Ghost Pilot (GP) Training

Lesson 1: Setting Up the Ghost Pilot Display

Course FAA55149002

Version: V 2019-05

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LESSON PLAN DATA SHEET

Section	Description
Course Name	En Route ERAM Ghost Pilot (GP)
Course Number	FAA 55149002
Lesson Title	Setting Up the Ghost Pilot Display
Duration	1 Hour 30 minutes
Date Revised	May 2019
Version	V.2019-05
Software Compatibility	Microsoft Word, Power Point
Reference(s)	• TI 6110.106, ERAM Ghost Pilot Quick Reference Card • TI 6110.154, ERAM ARTCC System Support Manual: Simulation User's Guide • ATPilot Situational Display Data (SDD) User Manual
Handout(s)	None
Exercise(s)/ Activity(s)	Part Task Scenario 1
Assessments	End-of-course Knowledge and Performance Tests
Materials and Equipment	Projector
Other Pertinent Information	None

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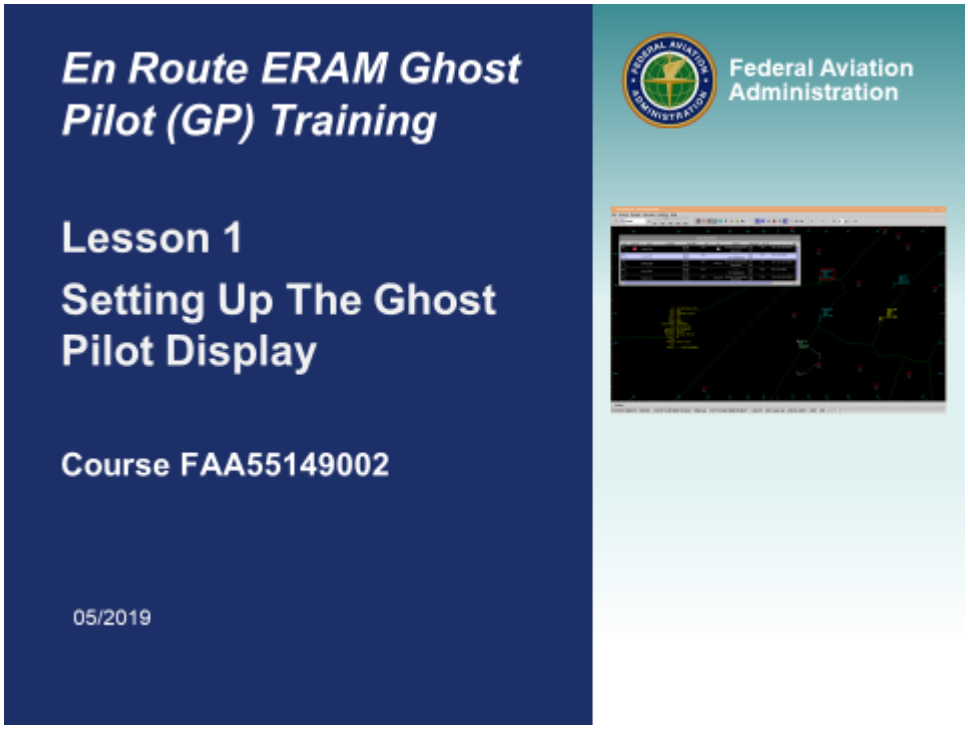
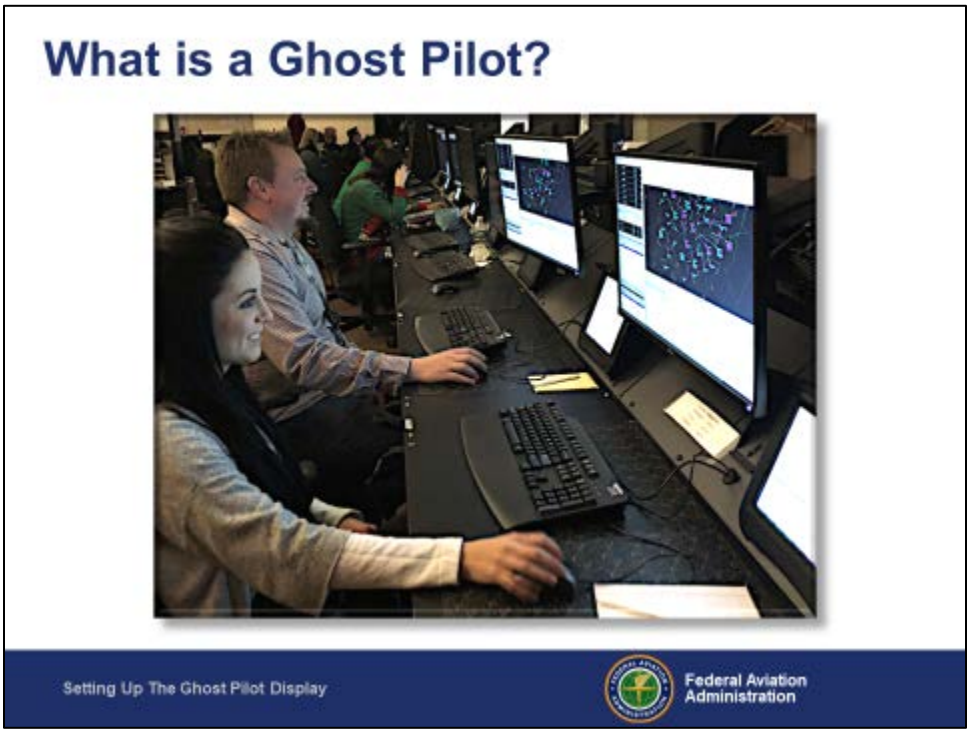
Slide - 1.


En Route ERAM Ghost Pilot (GP) Training
Lesson 1
Setting Up The Ghost Pilot Display
Course FAA55149002
05/2019
Federal Aviation Administration

Slide - 2.



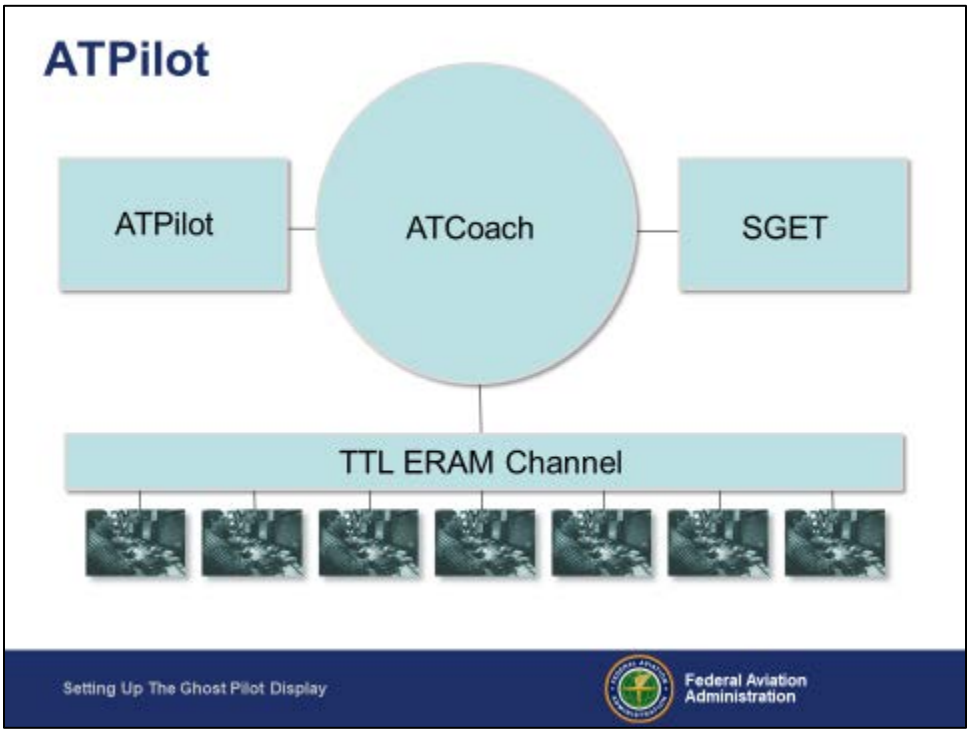
Ghost Pilots play an important role in implementing simulation training in the En Route Automation Modernization (ERAM) Test and Training Lab (TTL) at En Route centers. Simulation exercises are a key component of new controller training. Simulation exercises are also used for new systems training.

In general, Ghost Pilots perform two roles during an exercise:

- Ghost Pilots simulate aircraft pilots.
    - They conduct all air-to-ground voice communications with the controller working at the training sector.
    - They use ATPilot software to enter target control commands in response to clearances issued by the controller.
        - An example would be a clearance to climb to a new altitude.
    - They use ATPilot software to communicate with the controller using Controller Pilot Data Link Communications, or CPDLC.
        - CPDLC is a digital text communication option used with properly equipped aircraft instead of voice.

- Ghost Pilots simulate adjacent sector controllers.
    - They conduct all ground-to-ground communications with the controller at the training sector.
    - They use ATPilot software to enter ERAM commands required for the scenario.
        - An example would be accepting handoffs from the controller.

Slide - 3.



The design of the course assumes students are familiar with Air Traffic operations and phraseology. The focus of the course is ATPilot functionality.

ATPilot is a Graphical User Interface (GUI) for entering ATCoach commands.

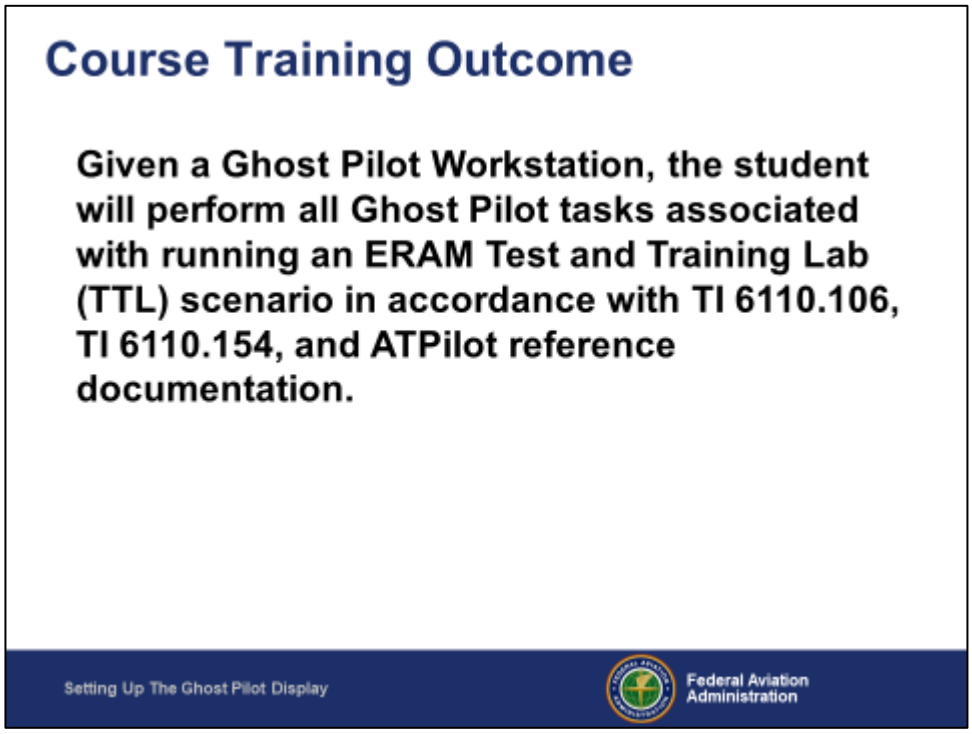
ATCoach is the simulation software that connects to the TTL ERAM channel.

- ATCoach feeds simulated surveillance data to the TTL ERAM channel for display at controller positions.
    - Example: When a Ghost Pilot interacts with the ATPilot display to select a new altitude for a target, it converts the action into an ATCoach command. ATCoach then executes the command, and the simulated surveillance data reflects the altitude change.
- ATCoach injects ERAM commands as if entered at the facility.
    - Example: When a Ghost Pilot interacts with the ATPilot display to accept a handoff, ATPilot converts the action into an ERAM handoff accept command. ATCoach then injects the command as if entered at the receiving sector.

Simulation developers use software called Scenario Generation Tool (SGET) to create scenarios. Scenarios are nothing more than a series of ATCoach commands injected at specified times. Anything a Ghost Pilot can do can also be scripted in the scenario. Scenario developers script as much of the exercise as possible to minimize the Ghost Pilot workload.

- Typically, any event with a known time will be scripted in the scenario.
- The Ghost Pilot handles events that are dependent on a controller instruction.

Slide - 4.


Course Training Outcome
Given a Ghost Pilot Workstation, the student will perform all Ghost Pilot tasks associated with running an ERAM Test and Training Lab (TTL) scenario in accordance with TI 6110.106, TI 6110.154, and ATPilot reference documentation.
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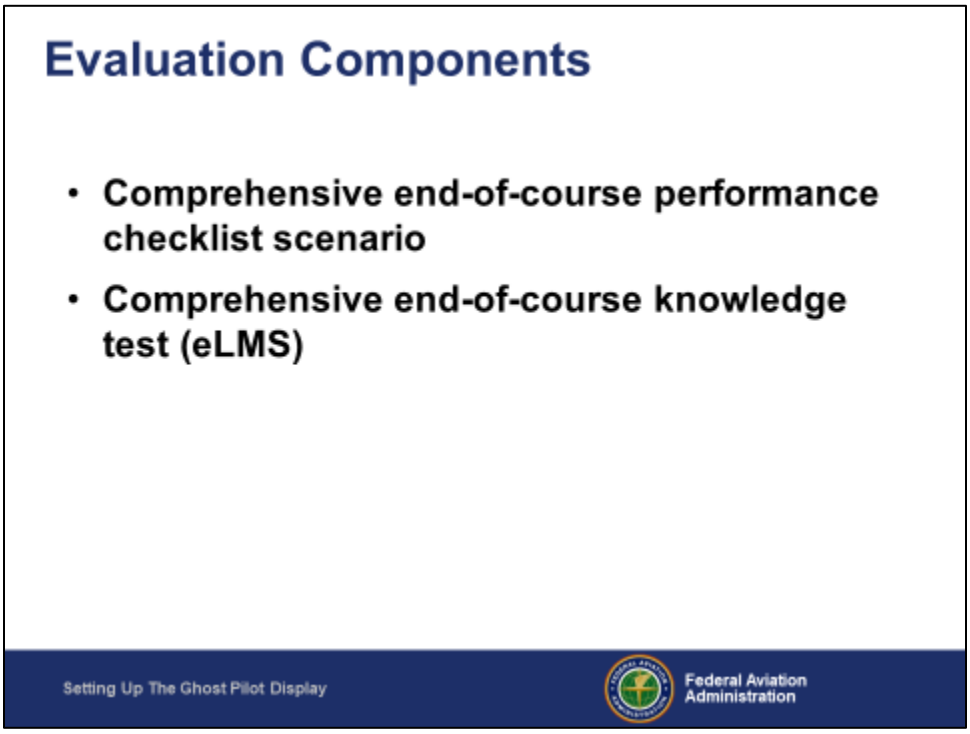
Slide - 5.



There are two evaluation components:

- A comprehensive end-of-course performance checklist administered by an instructor.
    - The instructor will provide feedback as needed.
- A comprehensive end-of-course knowledge test administered via eLMS.
    - After all questions are attempted, a review screen will provide feedback for any missed questions, and an alternate question must be answered correctly.
    - The student will need to correctly answer a question on each topic to complete the course.

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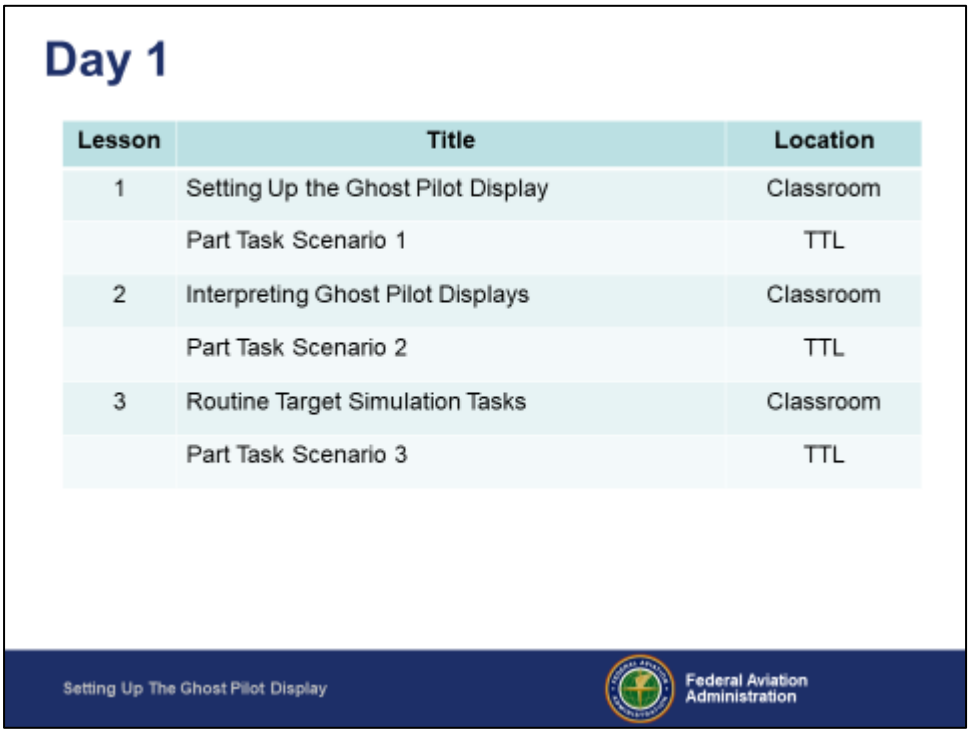


This is a 4-day course combining instructor-led lessons, part-task scenarios, operational scenarios, and performance checks.

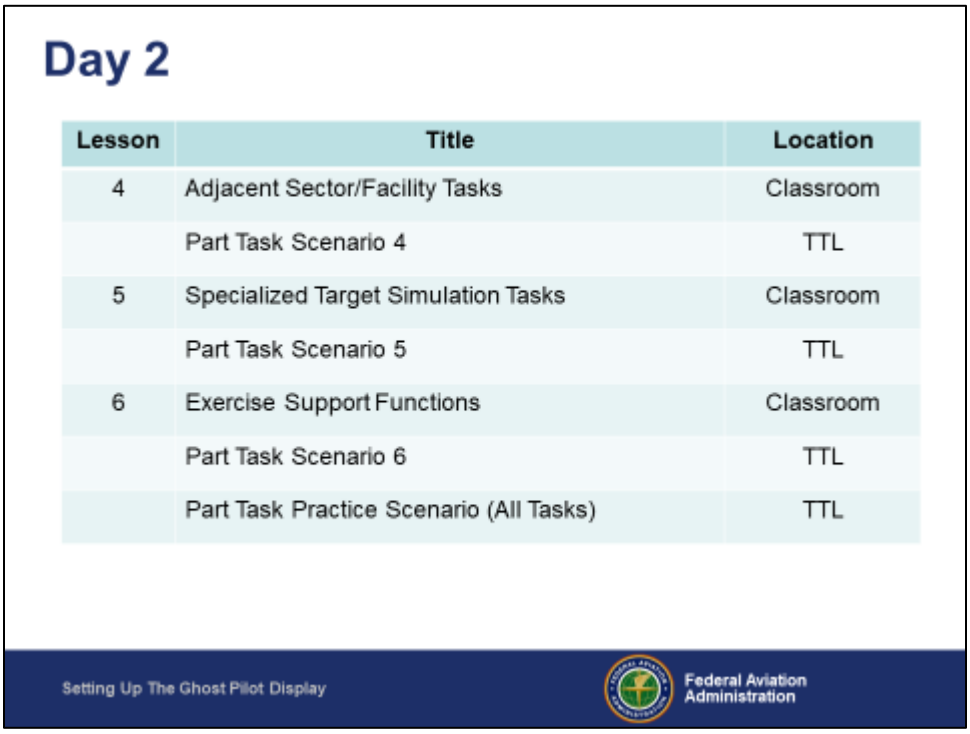
Day 1 consists of the following lessons:

Lesson 1 – Setting Up the Ghost Pilot Display (with Part Task scenario)

Lesson 2 – Interpreting Ghost Pilot Displays (with Part Task scenario)

Lesson 3 – Routine Target Simulation Tasks (with Part Task scenario)

Slide - 7.



Day 2 consists of the following lessons:

Lesson 4 – Adjacent Sector/Facility Tasks (with Part Task scenario)

Lesson 5 – Specialized Target Simulation Tasks (with Part Task scenario)

Lesson 6 – Exercise Support Functions (with Part Task scenario)

There will also be a comprehensive Part Task practice scenario.

Slide - 8.

Day 3 consists of five operational scenarios with headsets.

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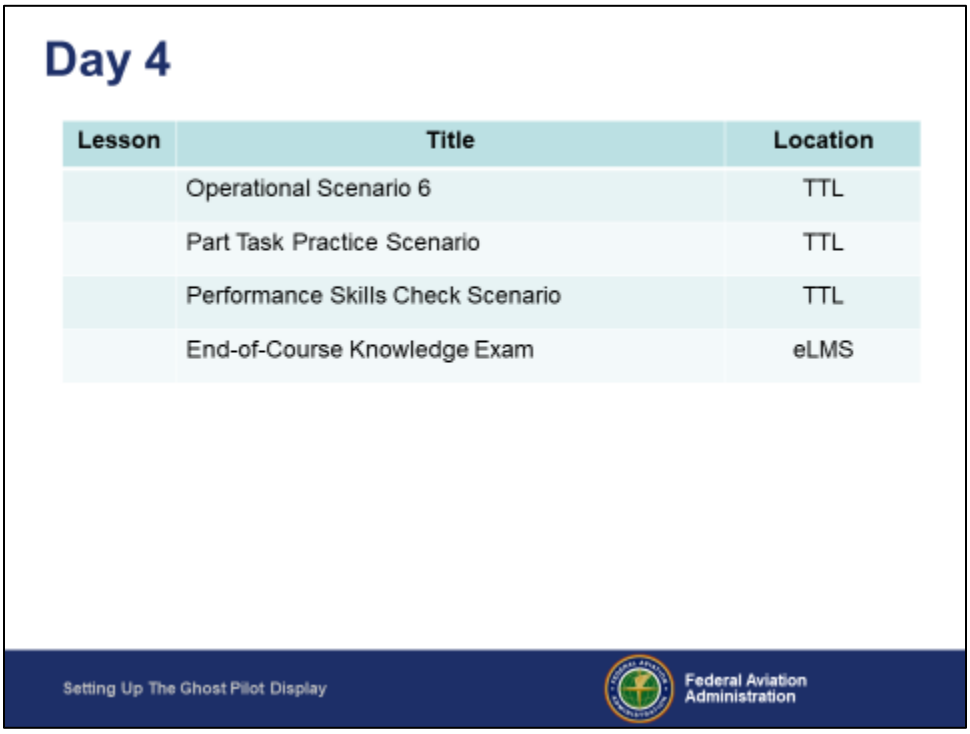


Day 4 consists of the following:

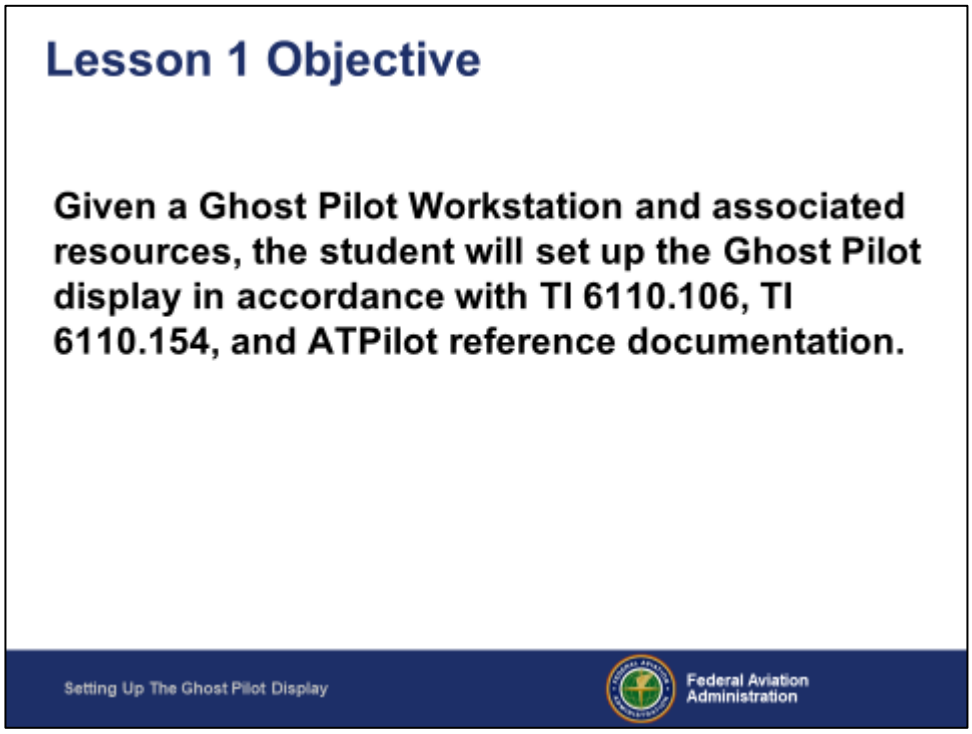
A final operational scenario with headsets.

A Part Task practice scenario that covers all the performance objectives in the course.

A Performance Skills Check scenario that covers all performance objectives in the course.

A comprehensive knowledge test delivered via eLMS.

Slide - 10.


Lesson 1 Objective
Given a Ghost Pilot Workstation and associated resources, the student will set up the Ghost Pilot display in accordance with TI 6110.106, TI 6110.154, and ATPilot reference documentation.
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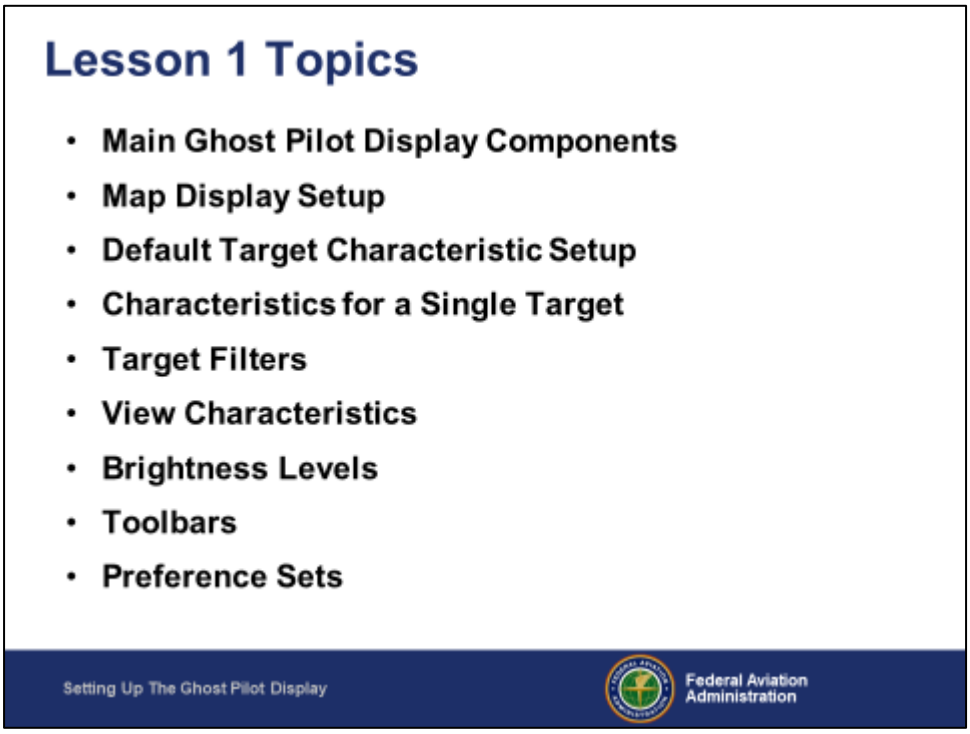
Slide - 11.


Lesson 1 Topics
• Main Ghost Pilot Display Components
• Map Display Setup
• Default Target Characteristic Setup
• Characteristics for a Single Target
• Target Filters
• View Characteristics
• Brightness Levels
• Toolbars
• Preference Sets
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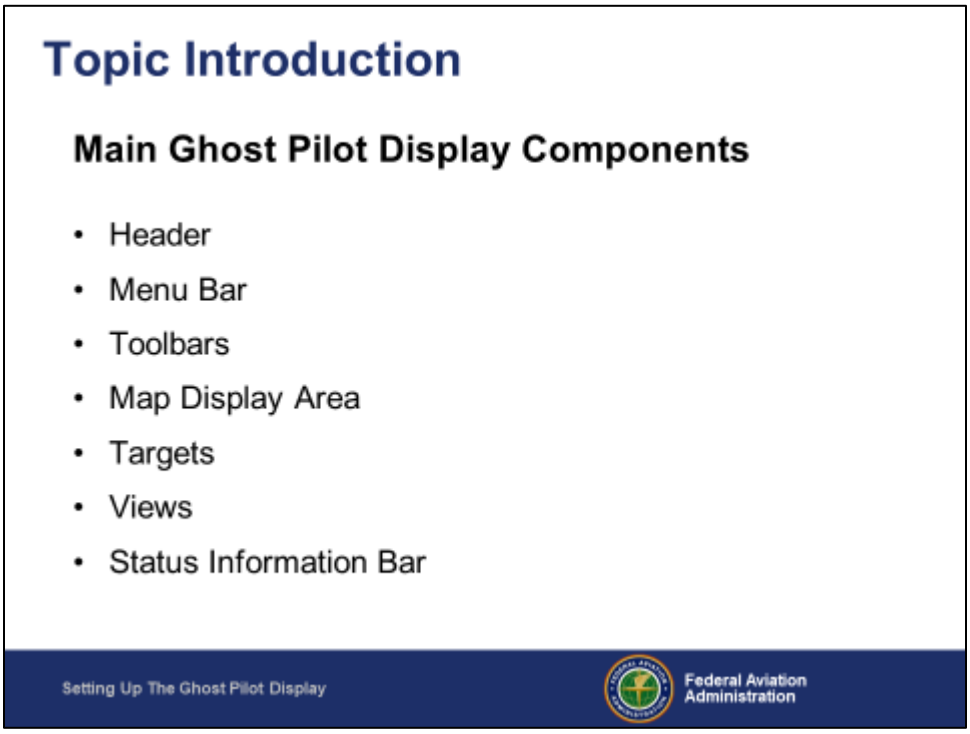
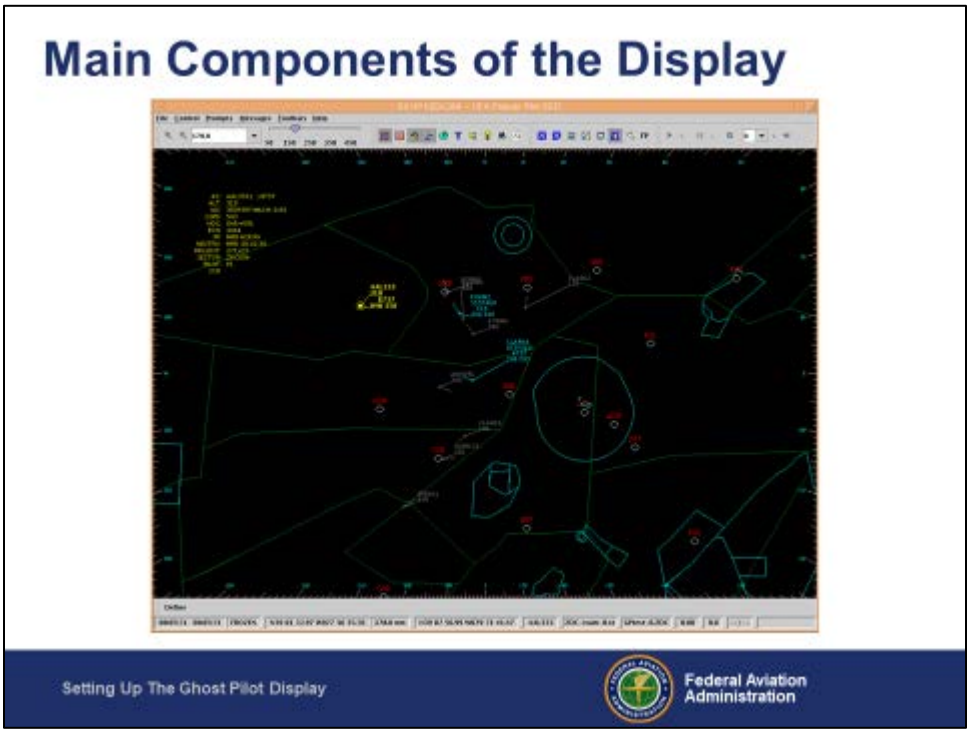
Slide - 12.



The first topic quickly introduces the main Ghost Pilot display components.

Slide - 13.



The first topic quickly introduces the main Ghost Pilot display components.

The Header, or Identification bar, is at the very top of the display. It identifies the TTL exercise number, the pilot position number, and the training sector being supported. In this case, the exercise number is 1, the pilot position number is 1, and the training sector is ZDC 4.

The window menu and minimize/maximize pick areas should not be used by Ghost Pilots.

The Menu bar is immediately below the Header and is used to access six drop-down menus.

Below the menu bar are the toolbars. Ghost Pilots can customize which toolbars are displayed, as well as their location. Note that the default location for the Macro toolbar is almost at the bottom of the display.

The map display area depicts the scenario airspace. Ghost Pilots can customize the map elements (e.g., sectors, fixes, or airways) that are displayed.

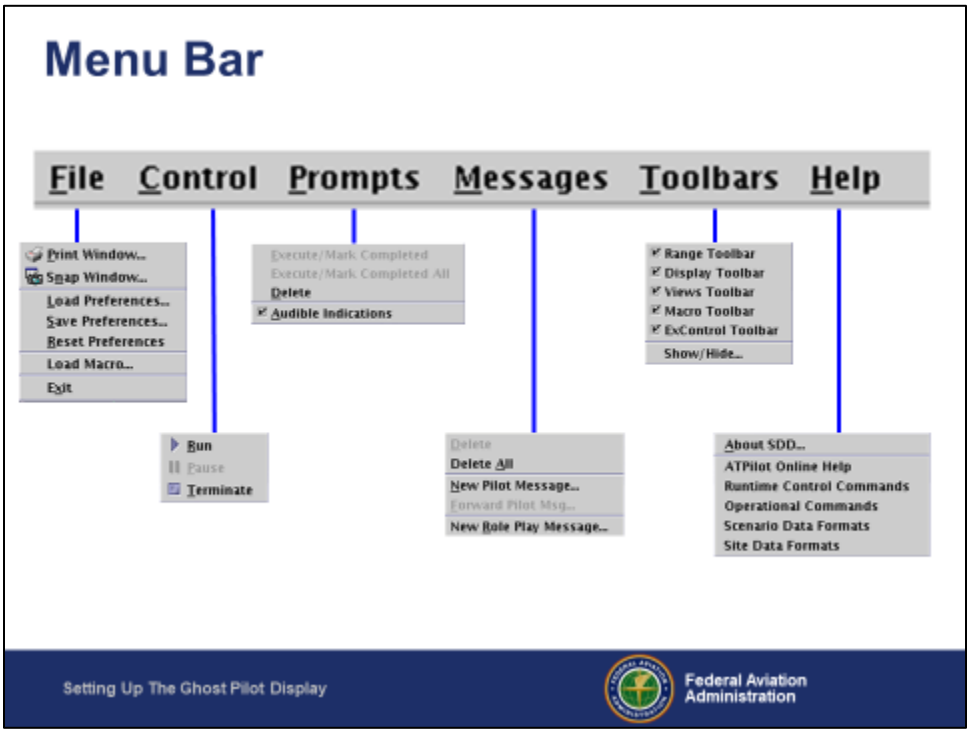
Targets currently in the exercise appear on the map display. The targets are very similar to the data blocks shown on the controller's display. The Ghost Pilot can customize default target characteristics that apply to all targets, as well as the characteristics of a single target.

There are nine views that provide scenario information. Many also provide access to target control menus. In this example, the Selected Aircraft Information Area is shown.

On the bottom of the display is the scenario Status Information Bar.

In the next few slides, we will look at some of these elements more closely.

Slide - 14.



The Menu Bar provides access to six drop-down menus.

The **File** menu provides:

- Printing and screen capture functions not typically used by Ghost Pilots.
- Preference Set management options.
- The ability to load macros. This will be covered in a later lesson.
- An Exit option not typically used by Ghost Pilots.

The **Control** menu provides controls to start, pause, or end an exercise. To start an exercise click on **Run**. This should only be done after coordination with all exercise participants.

The **Prompts** menu provides options for managing Ghost Pilot prompts. Prompts are special instructions from the scenario developer to the Ghost Pilot that appear at the time specified by the scenario developer. An example might be a prompt to declare an emergency. Ghost Pilot prompts will be covered in a later lesson.

The **Messages** menu provides options for managing various types of messages. An example is system error messages. These options will be covered in later lessons.

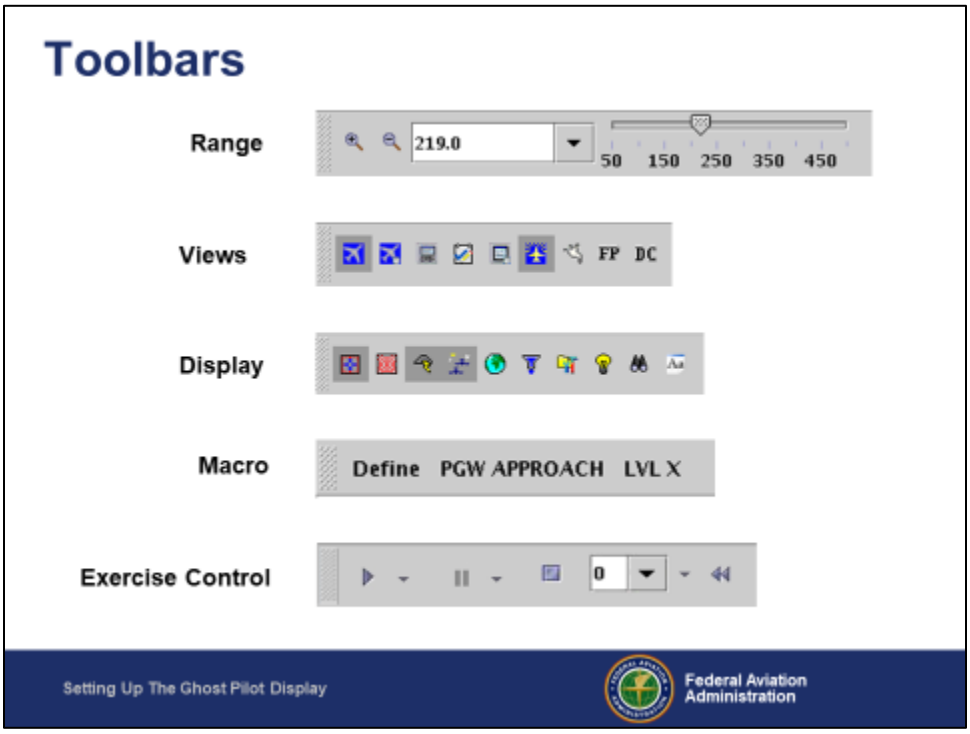
The **Toolbars** menu is used to display or hide the five toolbars.

The **Help** menu provides ATPilot software level information (*About SDD…*) and access to various ATPilot related user manuals. (SDD is Situation Data Display.) The manuals are:

- AT Pilot Online Help – Opens the ATPilot Manual Online Help Dialog.
- Control Commands – Opens a reference manual of ATPilot Runtime Control Commands.
- Operational Commands – Opens a reference manual of ATPilot Operational Commands.
- Scenario Data Formats – Opens a reference manual of scenario formats for scenario developers.
- Site Data Formats – Opens a reference manual of site data formats for scenario developers.

Many of the menu options are also accessed from toolbars or other context-sensitive menus.

Slide - 15.



There are five toolbars:

The Range toolbar is used to set the map range.

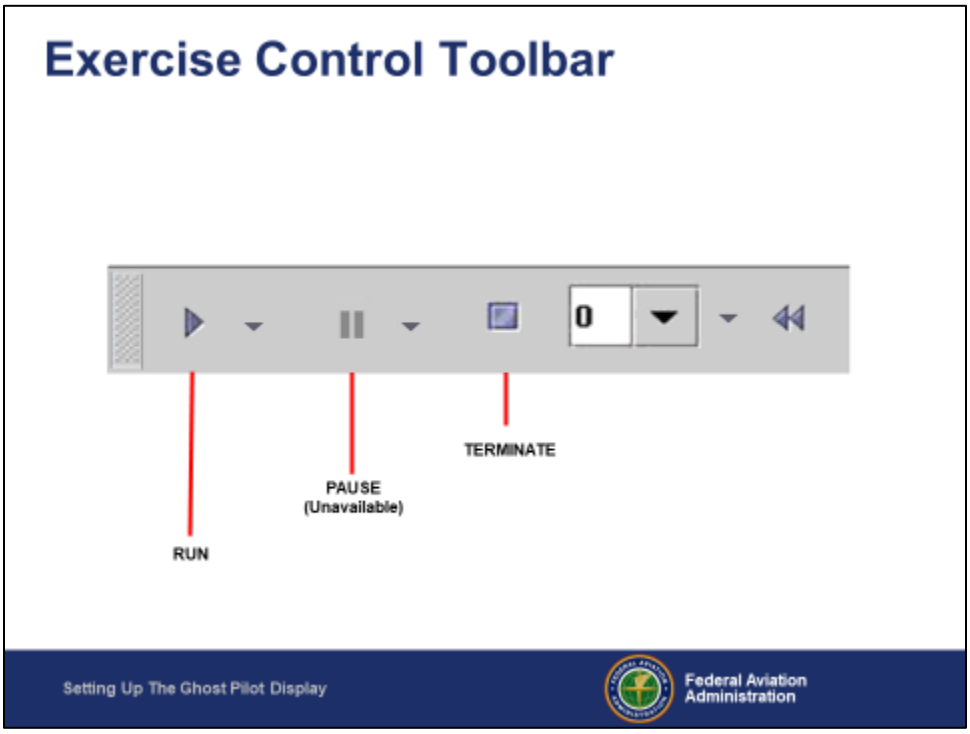
The Views toolbar is used to display or hide the nine Ghost Pilot views.

The Display toolbar provides options for customizing Ghost Pilot display characteristics.

The Macro toolbar is used to create and manage macros.

The Exercise Control toolbar is used to start, restart, pause or stop an exercise. It can also be used to change the exercise simulation speed.

Slide - 16.

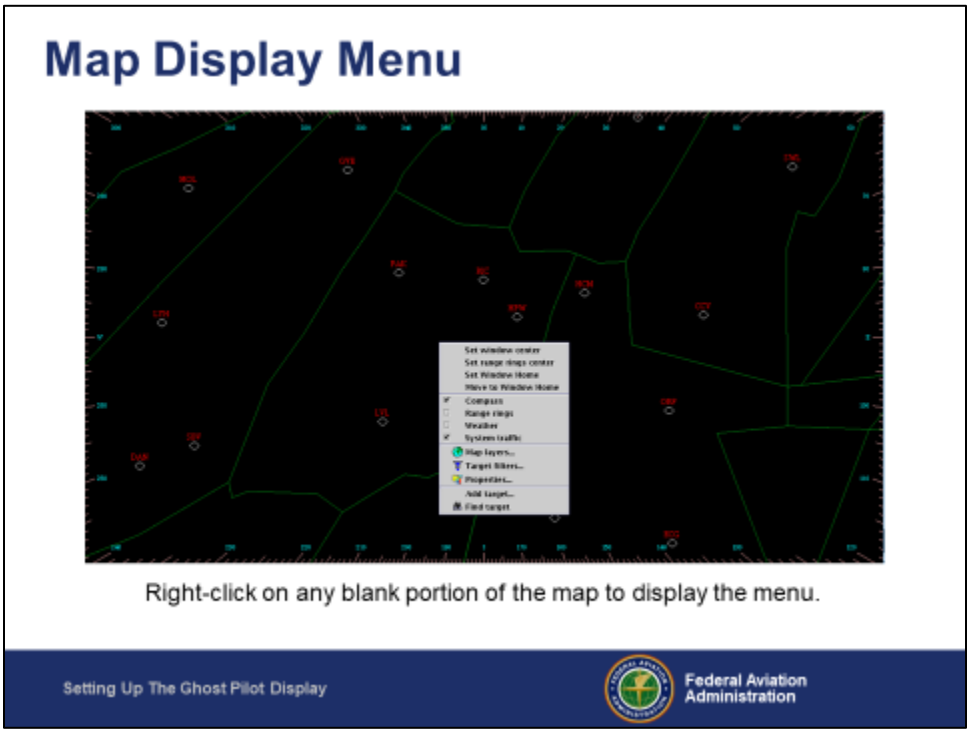


The three most frequently used buttons on the Exercise Control toolbar are Run, Terminate, and Pause. These are the same options available in the Control drop-down menu.

Grayed out options are unavailable.

The various other buttons provide more specialized controls that will be covered in a later lesson.

Slide - 17.

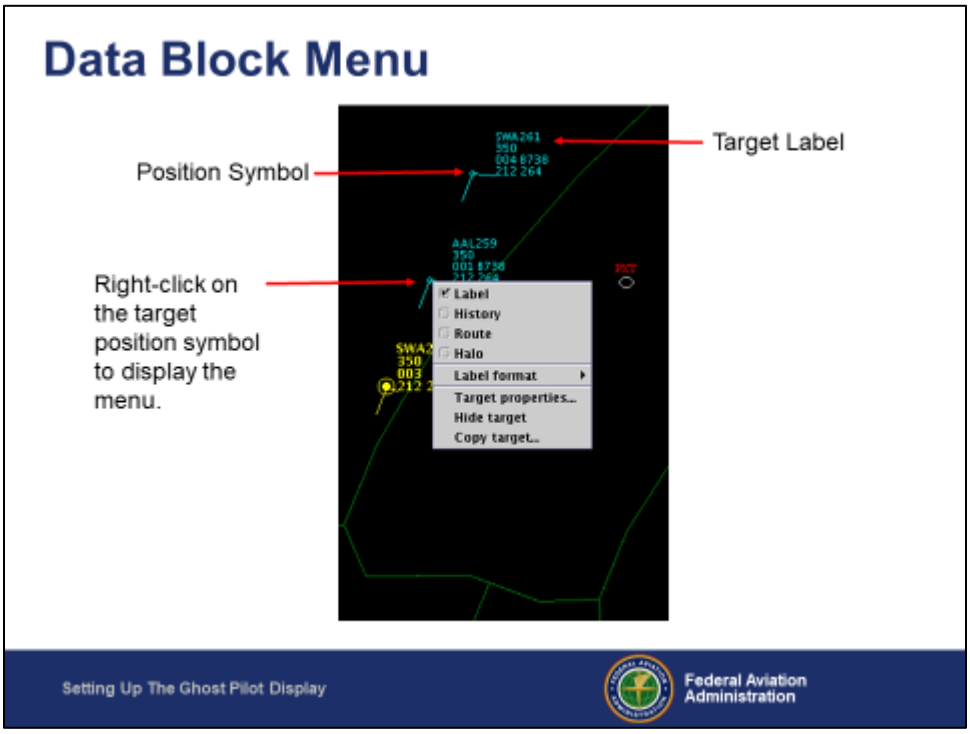


There are three context-sensitive menus that appear when the Ghost Pilot right-clicks on specific parts of the display.

- Map Display menu
- Data Block menu
- Target Control menu

Right-click on any blank portion of the map to display the Map Display menu. This menu provides options for customizing the map. We will cover these options later in this lesson.

Slide - 18.



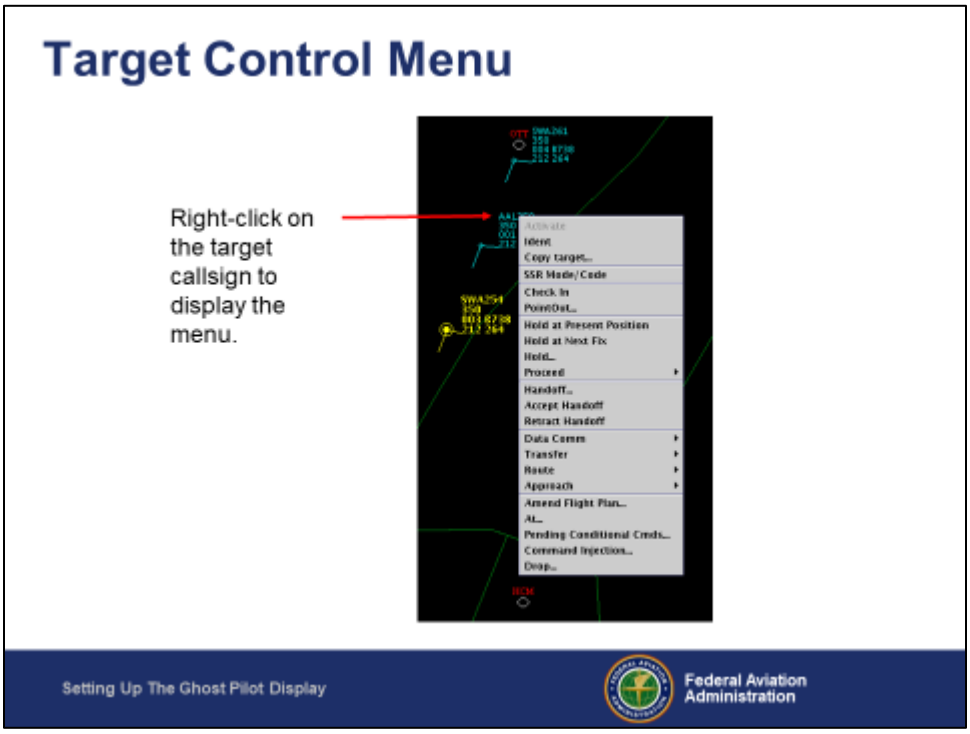
Each target has a position symbol that shows the current location of the target.

The target's location and altitude are used to generate the simulated surveillance data that is sent to the TTL ERAM channel for display at the controller positions.

Each target also has a target label that shows, among other things, the callsign, altitude, speed, and heading.

Right-click on the position symbol to display the Data Block context-sensitive menu. This menu provides options for customizing the characteristics for the selected target.

Slide - 19.

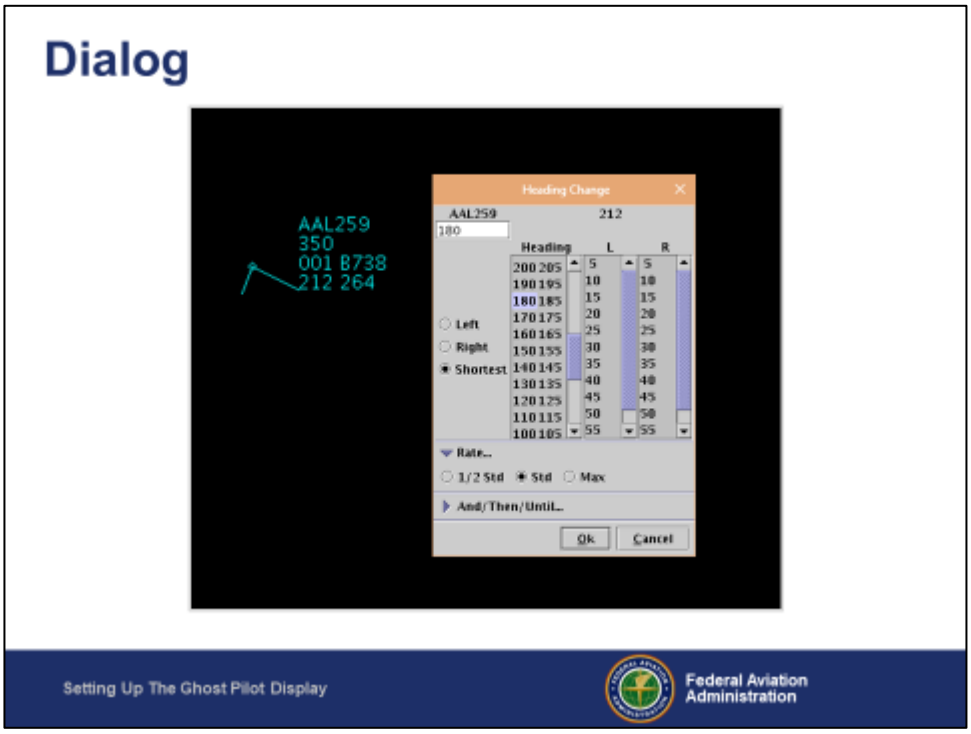


The third context-sensitive menu is the Target Control menu. Right-click on the callsign to open the menu.

This menu provides options for performing many target control tasks. Examples include changing the target route, placing the target in hold, and changing the beacon code being squawked by the target.

The menu also provides options for performing adjacent sector tasks. Examples include initiating or accepting handoffs, and making point outs.

Slide - 20.



Dialog boxes provide a Graphical User Interface (GUI) for making entries. From here on, we will refer to dialog boxes as dialogs.

In this example, we see the Heading Change dialog. The Ghost Pilot selects the desired heading, then clicks the **Ok** button. The software then converts that action into the ATCoach command needed to make the target turn to the selected heading.

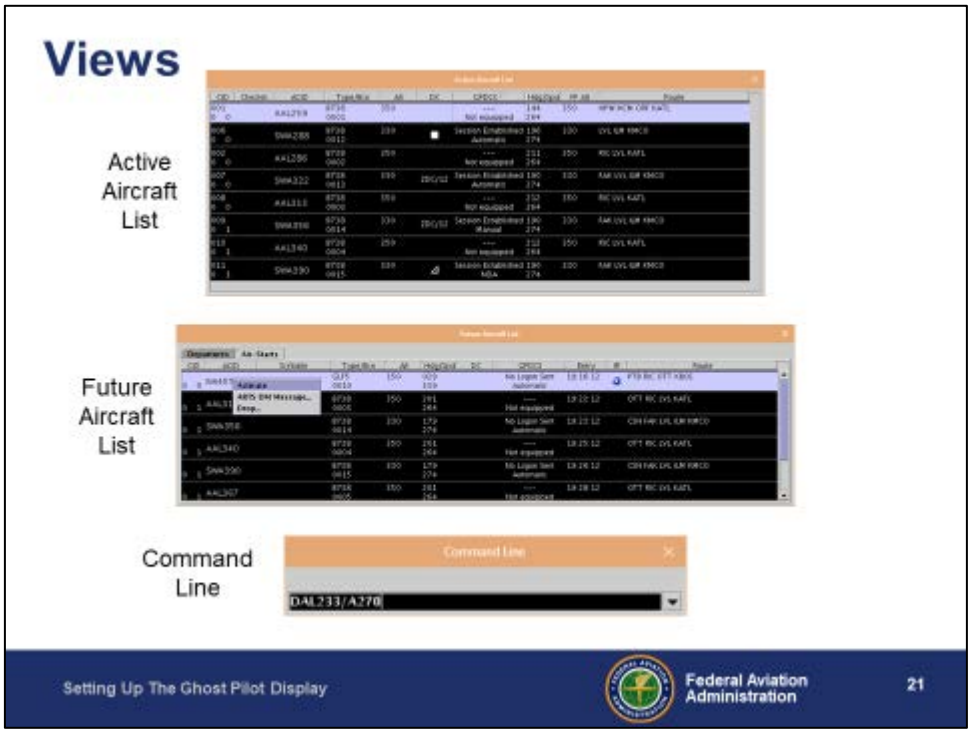
ATPilot contains a large number of dialogs and we will cover all of them throughout this course.

When making entries in a dialog, the user can move between fields by either using the Tab key or clicking on the desired field.

Click the **Ok** button or press the Enter key to execute the command.

Click the **Cancel** button to cancel the entry process and close the dialog.

Slide - 21.



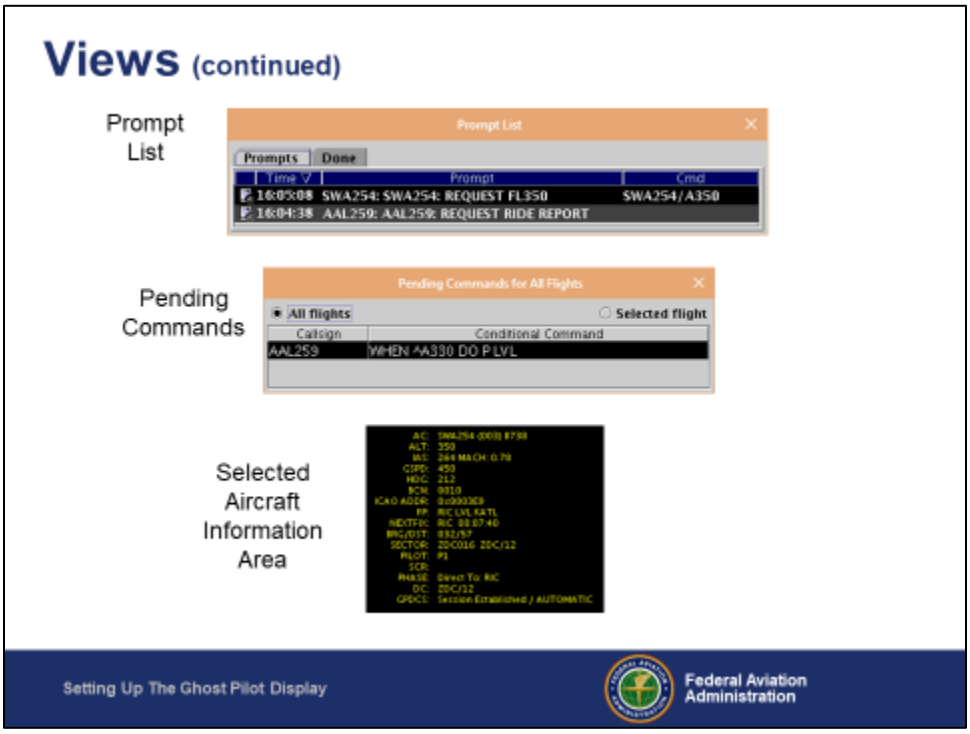
There are nine views (windows) that provide scenario information. Many are also used to perform Ghost Pilot tasks.

The Active Aircraft List, or AAL, provides information about all currently active targets in the scenario.

The Future Aircraft List, or FAL, provides information about targets that will become active later in the scenario, for example, departures or air-starts.

The Command Line is used to manually enter ATCoach commands. Most ATCoach commands are automatically generated using the ATPilot GUI. If a Ghost Pilot knows the syntax, the ATCoach commands can be manually entered. Remember that the Help drop-down menu provides ATCoach command documentation.

Slide - 22.

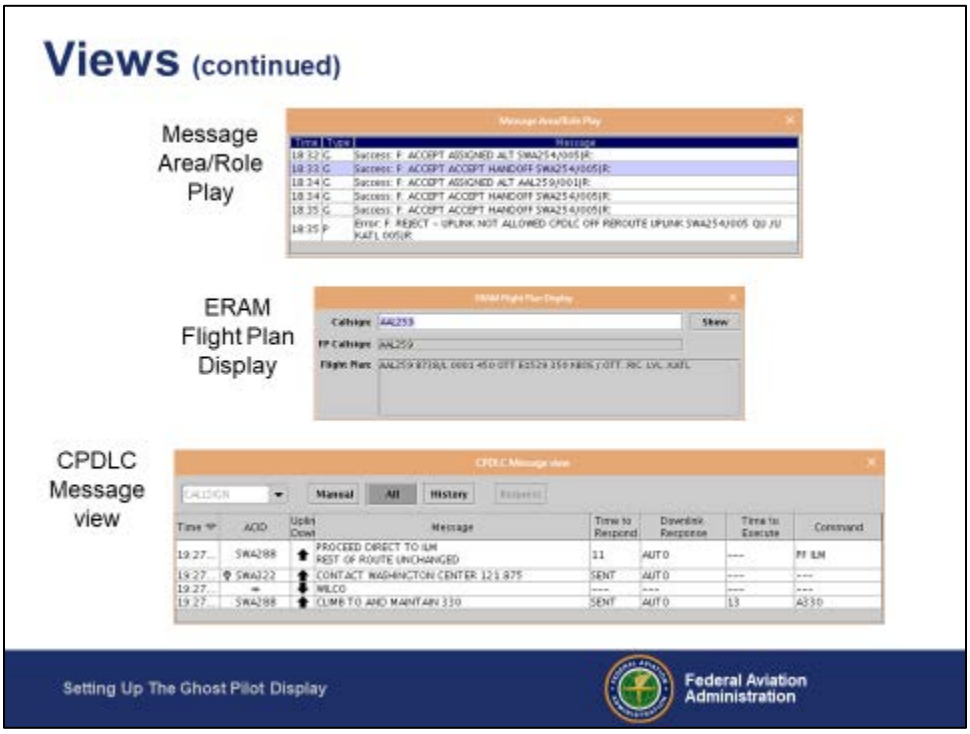


The Prompt List displays prompts created by the scenario developer that direct the Ghost Pilot to perform a certain action at a specified time. An example would be to contact the controller and request a new altitude. Prompts may include ATCoach commands to reduce Ghost Pilot workload.

The Pending Commands view displays commands that will be executed after a certain condition is satisfied. For example, the target will proceed direct to a fix after a certain altitude is reached.

The Selected Aircraft Information Area, or SAIA, provides information about the currently selected target. Click on a target callsign to select it.

Slide - 23.



The Message Area/Role Play view displays system messages, for example, error messages explaining why a command was rejected. The view is also used to access a dialog used for entering ERAM messages when a Ghost Pilot is performing adjacent sector tasks.

The ERAM Flight Plan Display view shows the ERAM flight plan (i.e., the flight plan seen by the controller) for the desired target.

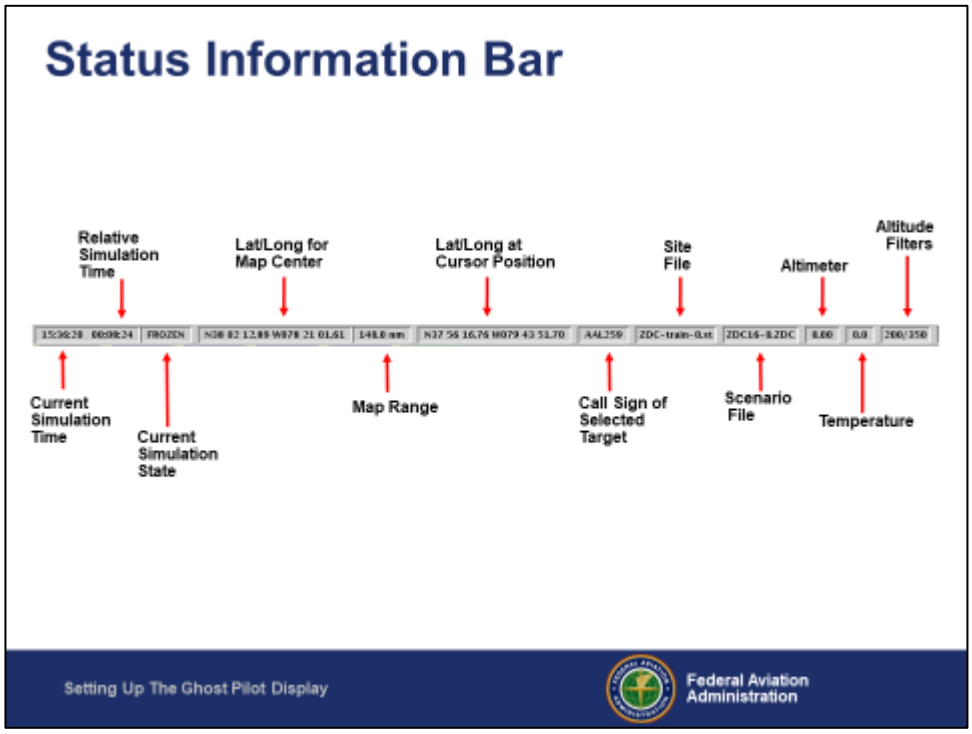
The CPDLC Message view is used to manage CPDLC communications.

- CPDLC is a digital text communication option that controllers may use instead of voice. Aircraft must be properly equipped to communicate via CPDLC. CPDLC must also be enabled at the facility.
- A CPDLC equipped aircraft must log on and establish a session (i.e., connection) with the US CPDLC ground system in order to use CPDLC. The entire US ground system is considered a single data authority, KUSA. There are two types of sessions:

  - A Current Data Authority (CDA) session means the aircraft can exchange the full set of CPDLC messages with KUSA.
  - A Next Data Authority (NDA) session means the aircraft has established a session in preparation for using CPDLC.
    - Example 1: Aircraft inbound from Canada will establish an NDA session with KUSA so when they enter US airspace they can seamlessly transition to a CDA session.
    - Example 2: Aircraft that logon to CPDLC while in flight will have an NDA session for a short period as part of the CDA session establishment process.

- Controllers can uplink (i.e., send the message from the ground system to the aircraft) a variety of clearances and instructions. The pilot sees the clearance on an electronic display and can accept or reject the clearance.
- Pilots can downlink (i.e., send the message from the aircraft to the ground system) responses to the controller uplinks and a limited number of requests. Controllers can accept or reject the request.

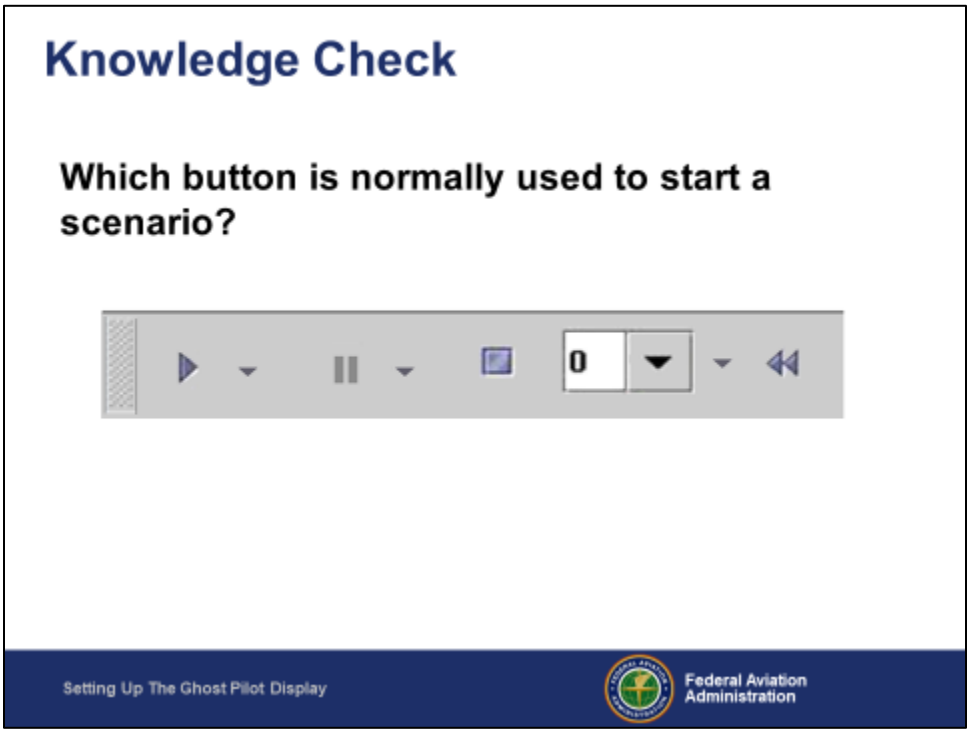
Slide - 24.



The Status bar, located at the bottom of the display, shows the following information from left to right:

- Current Simulation Time (time displayed at the controller positions)
- Relative Simulation Time (how long the scenario has been running)
- Current Simulation State (Running or Frozen)
- Map Center Coordinates
- Map Range
- Current Mouse Pointer Coordinates
- Selected Target
- Site File name
- Scenario File name
- Altimeter (if scripted in the scenario)
- Temperature (if scripted in the scenario)
- Altitude Filters (based on Ghost Pilot filter selections to be described later)

Slide - 25.


Knowledge Check
Which button is normally used to start a scenario?
0
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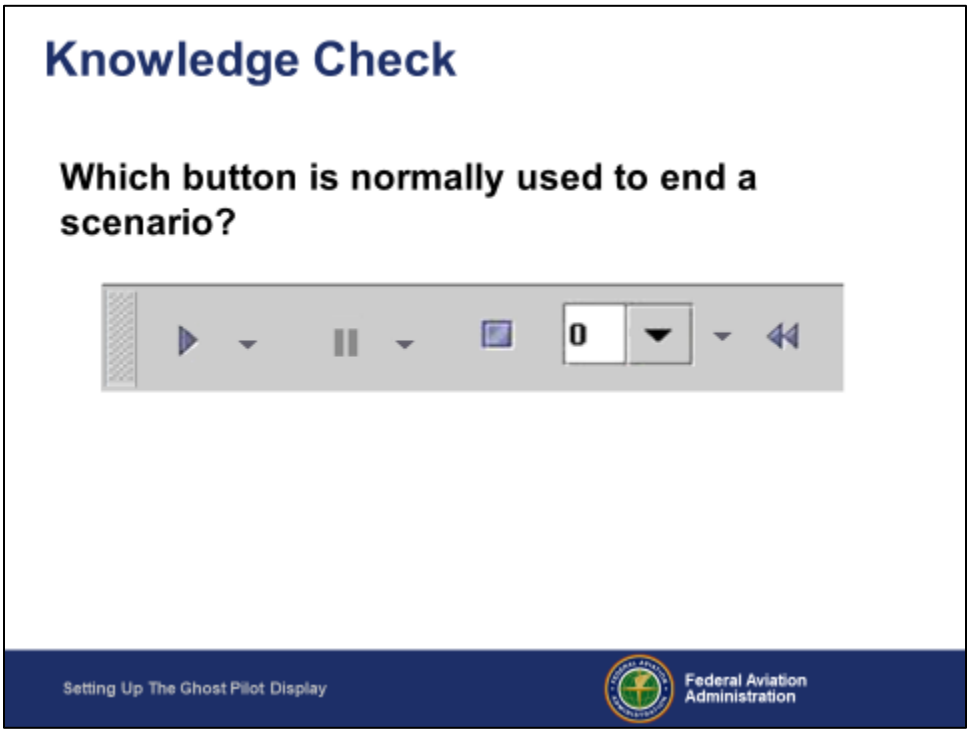
Slide - 26.


Knowledge Check
Which button is normally used to end a scenario?
0
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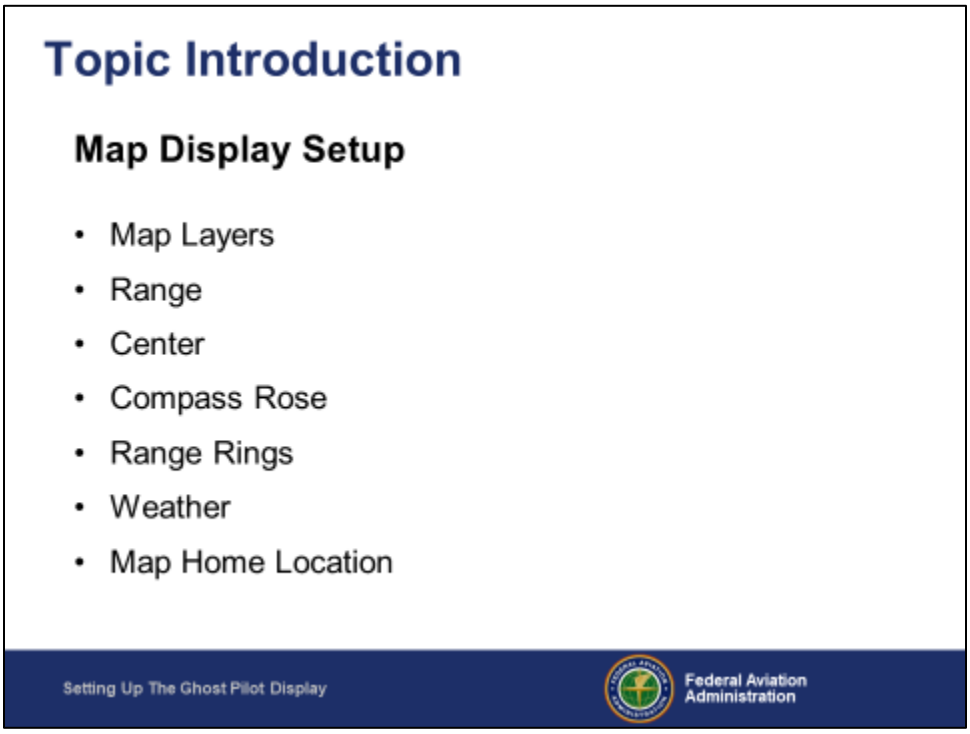
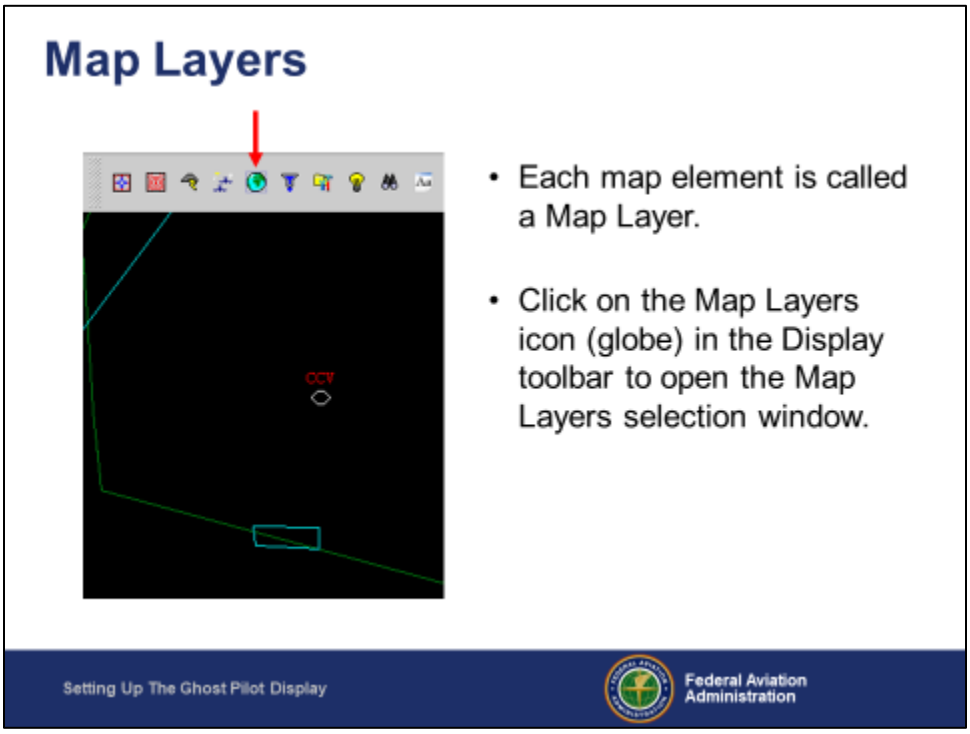
Slide - 27.



This section covers setting up the Map Display. The following map elements can be customized:

- Map Layers – Layers include such things as sector boundaries, navigation aids, and airways.
- Map Range
- Map Center
- Compass Rose – These are heading marks around the edge of the map.
- Range Rings
- Weather
- Map Home Location – The map center when the scenario starts.

Slide - 28.

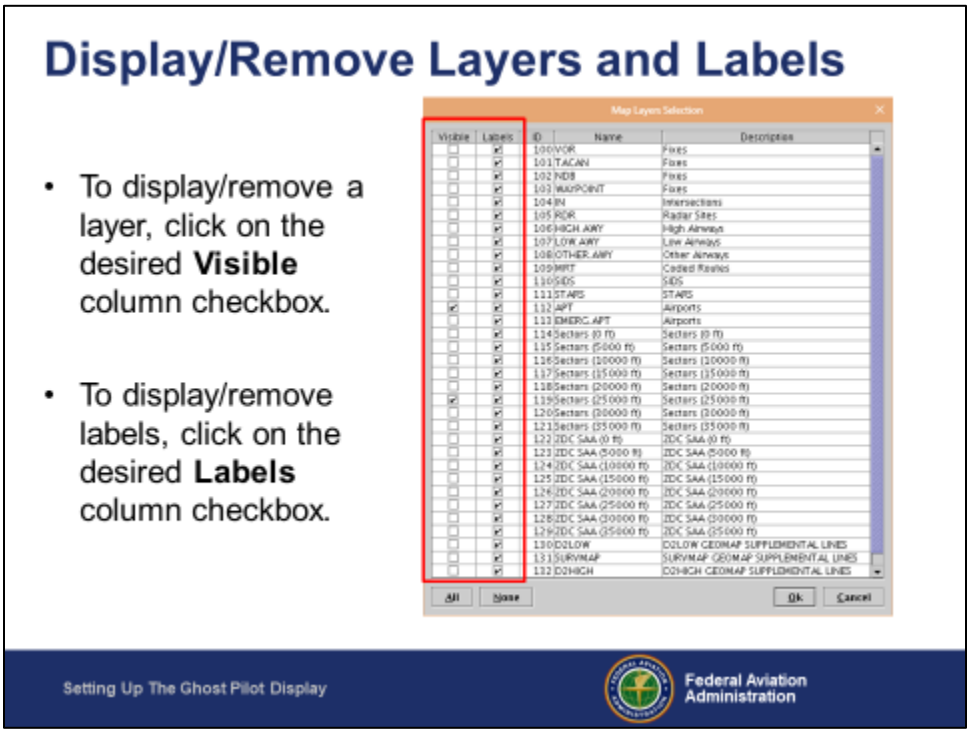


Map layers are graphic elements that can be added or removed from the map display. Examples include sector boundaries, navigational aids, and airports.

Map layer data is derived automatically from local adaptation.

Click on the Map Layers icon (i.e., the globe icon) on the Display toolbar to access the Map Layer Selection dialog used for displaying or hiding map layers. There is also an option on the Map Display menu.

Slide - 29.



To display a map layer, click on the **Visible** checkbox next to the desired layer. If the **Visible** checkbox is selected, click on it to remove the layer from the map. For example, click on the **Visible** checkbox next to APT to display airport icons.

Note: Local adaptation determines what is contained in a layer. Some layers may be empty.

An identifying label can also be displayed or removed in the same manner. The default setting for the **Labels** checkboxes is checked. Labels will only be displayed if the associated layer is being displayed.

The **All** button selects all Visible column checkboxes. Note that doing so can result in a cluttered display.

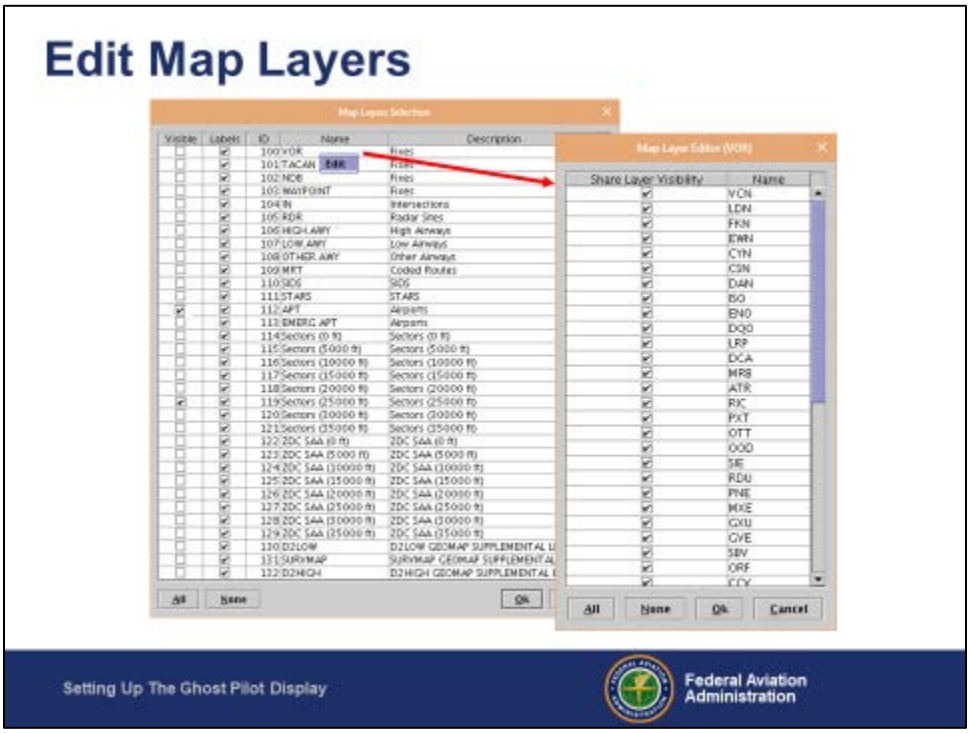
The **None** button de-selects all Visible column checkboxes.

Click the **Ok** button to implement all changes and close the dialog. Pressing the Enter key is equivalent to clicking the **Ok** button.

Click the **Cancel** button to close the dialog without making any changes. Note that closing the window (clicking the X in the upper-right corner) has the same result as Cancel.

The **All**, **None**, **Ok** and **Cancel** buttons behave the same in all dialogs and will not be described again.

Slide - 30.

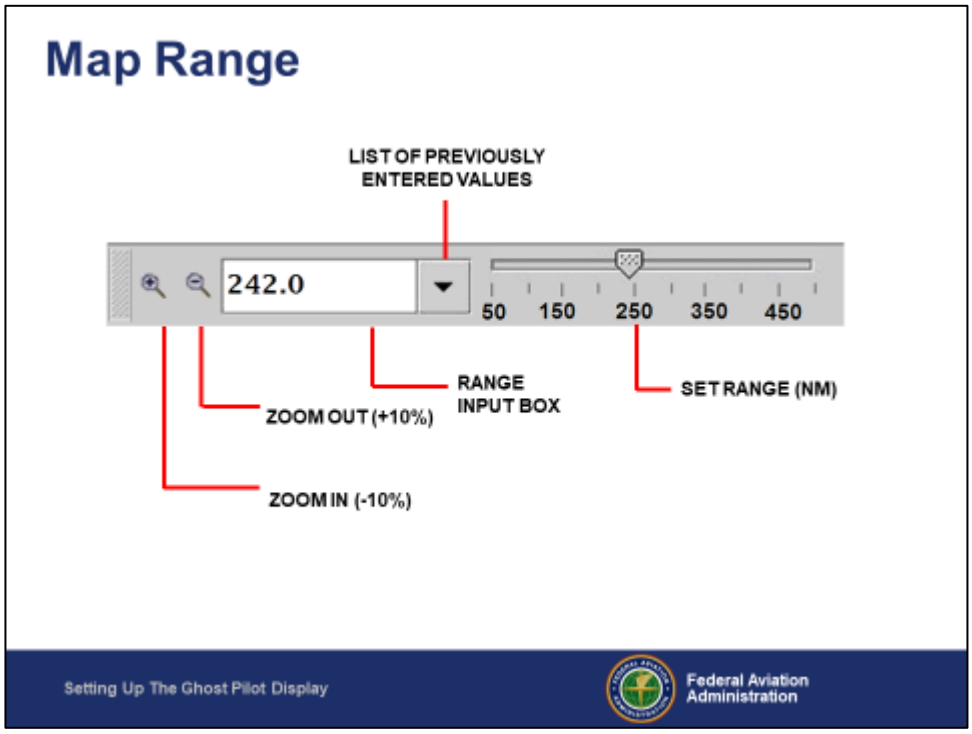


The individual items displayed when a layer is selected can be customized. To do so:

1. Right-click on the desired layer name. An **Edit** button will appear.
2. Click the **Edit** button. The desired Map Layer Editor will appear.
3. Select all desired checkboxes.
4. Click **Ok**.

Map items can also be hidden by right-clicking on a displayed map element and selecting **Hide**. To re-display, return to the Map Layer Editor and use the above procedure.

Slide - 31.

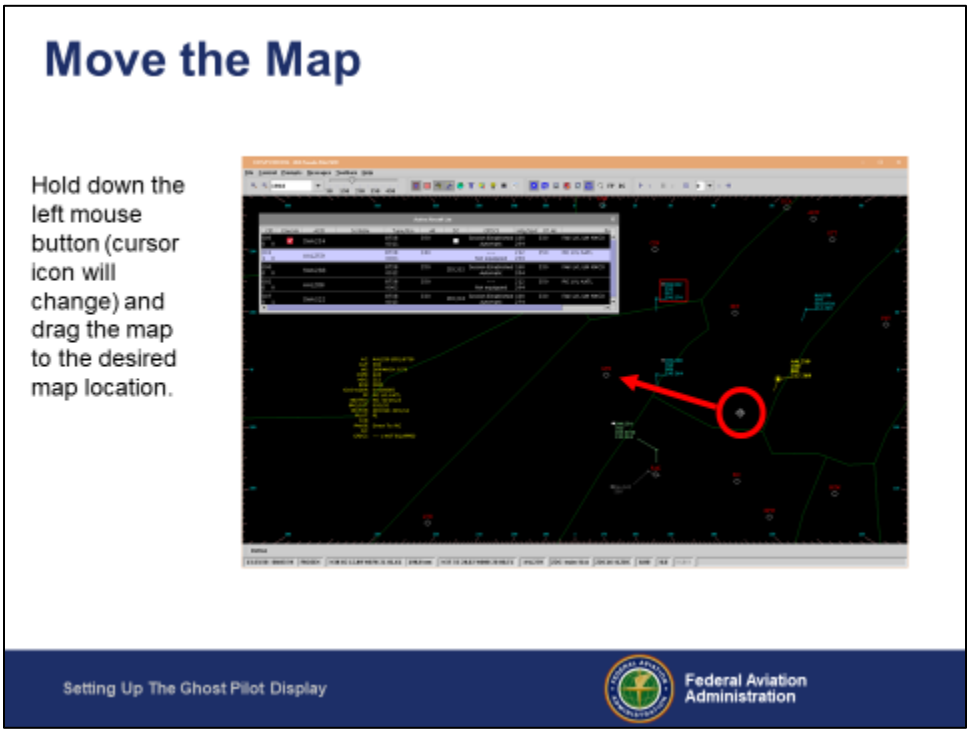


Use the Range toolbar to set the desired map range. There are multiple options:

- Click on the Zoom In or Zoom Out icons.
  - Each Zoom In click will result in a 10% decrease in the current range.
  - Each Zoom Out click will result in a 10% increase in the current range.
- Type the desired range into the range input box and press Enter.
  - You can also populate the range input box by clicking on the pull-down list button to the right of the input box, then clicking on a previously entered value.
- Slide the Range slider bar to the desired range.

Other options for changing the map range will be discussed later in this lesson.

Slide - 32.

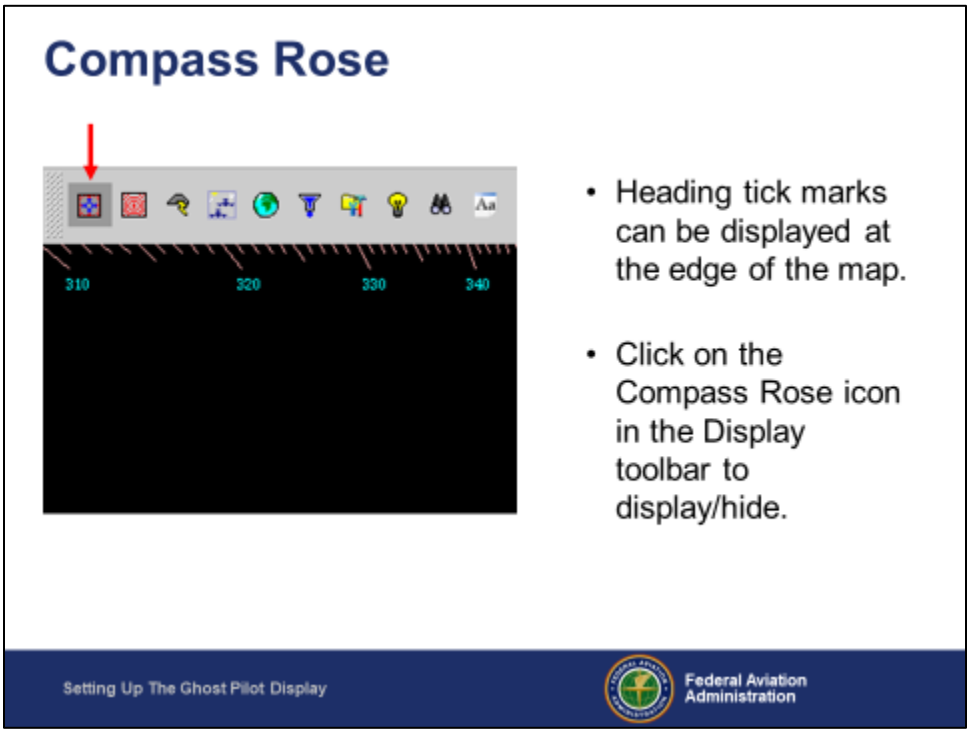


The easiest way to move the map is to click-and-drag. To do so:

1. Hold down the left mouse button on any blank part of the map. The cursor will change to indicate it is in “move” mode.
2. While continuing to hold down the left mouse button, move the cursor to the desired location.
3. Release the left mouse button.

Other options for moving the map will be discussed later in this lesson.

Slide - 33.



Heading tick marks can be displayed along the edges of the map. Every 10th mark is labelled.

Click on the Compass Rose icon on the Display toolbar to display/remove the heading marks.

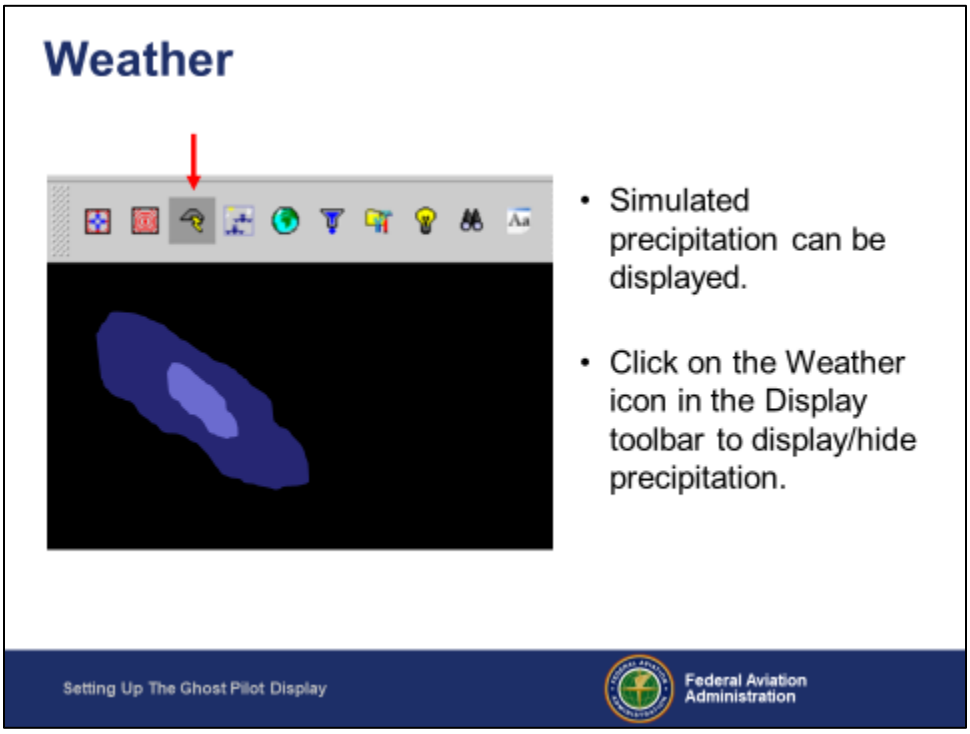
Other options to display/hide the Compass Rose will be described later in this lesson.

Slide - 34.

Range rings can be displayed. The distance between rings can be customized. We will describe options for doing so later in this lesson.

Click on the Range Ring icon on the Display toolbar to display/remove range rings.

Slide - 35.

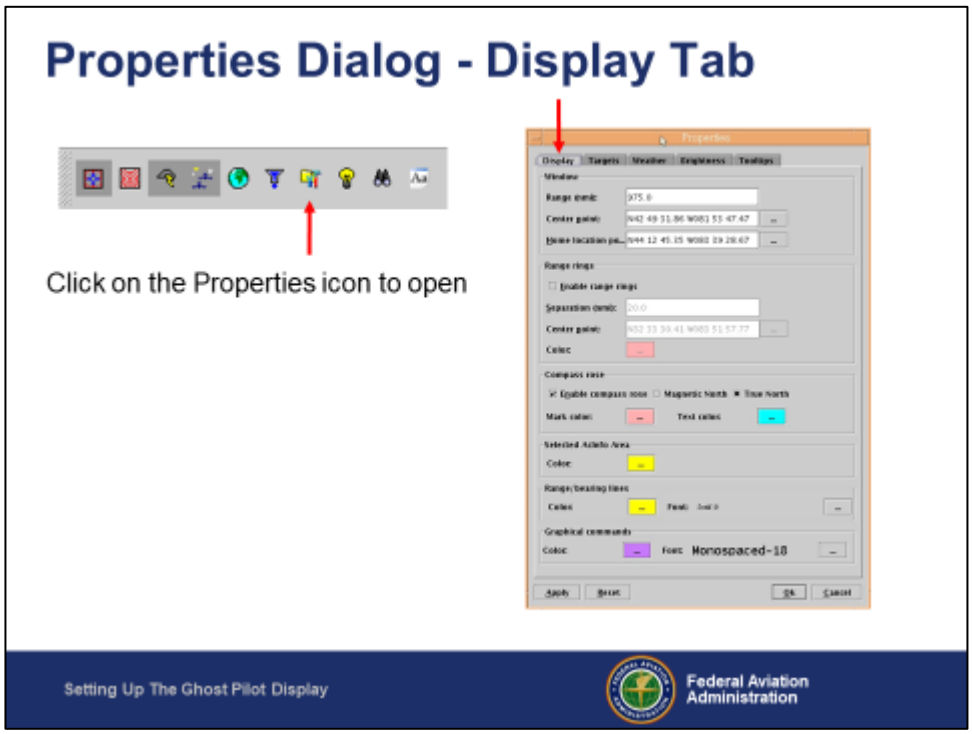


Scenario developers can create simulated weather data for the scenario. This includes altimeter data, winds, and precipitation at three intensities. Only the simulated precipitation data displays on the map.

Click on the Weather icon on the Display toolbar to display/remove precipitation.

Alternative methods to manage the display of weather are covered later in this lesson.

Slide - 36.



The Properties dialog has five tabs used to customize characteristics of the Ghost Pilot display. In this section, we will cover the Display tab.

Click on the Properties icon to open the Properties dialog. Click on the Display tab to access the map display options.

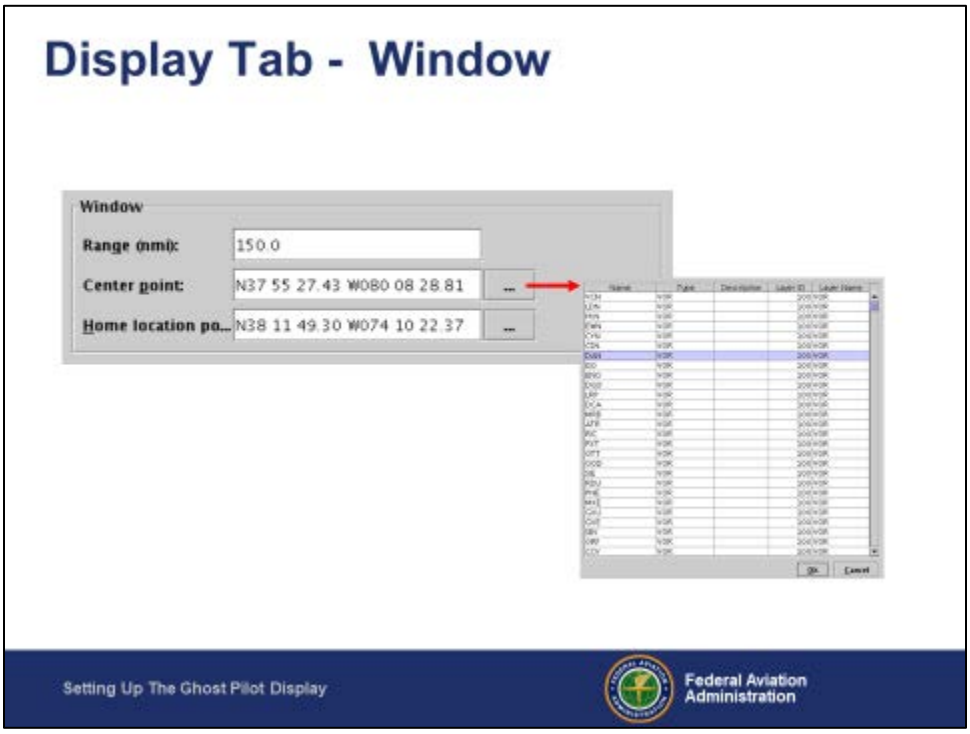
There are six sections:

- Window
- Range rings
- Compass rose
- Selected AcInfo Area
- Range/bearing lines
- Graphical Commands

The **Apply** button will apply any changes and leave the dialog box open.

The **Reset** button will restore the last set of applied settings and leave the dialog box open.

Slide - 37.



The Window panel provides options to set the map range, map center coordinates and map Home location coordinates.

To set the map range:

1. Enter the desired range in the **Range (nmi)** input box. The abbreviation “nmi” stands for nautical mile.

To set the map center point or Home location points:

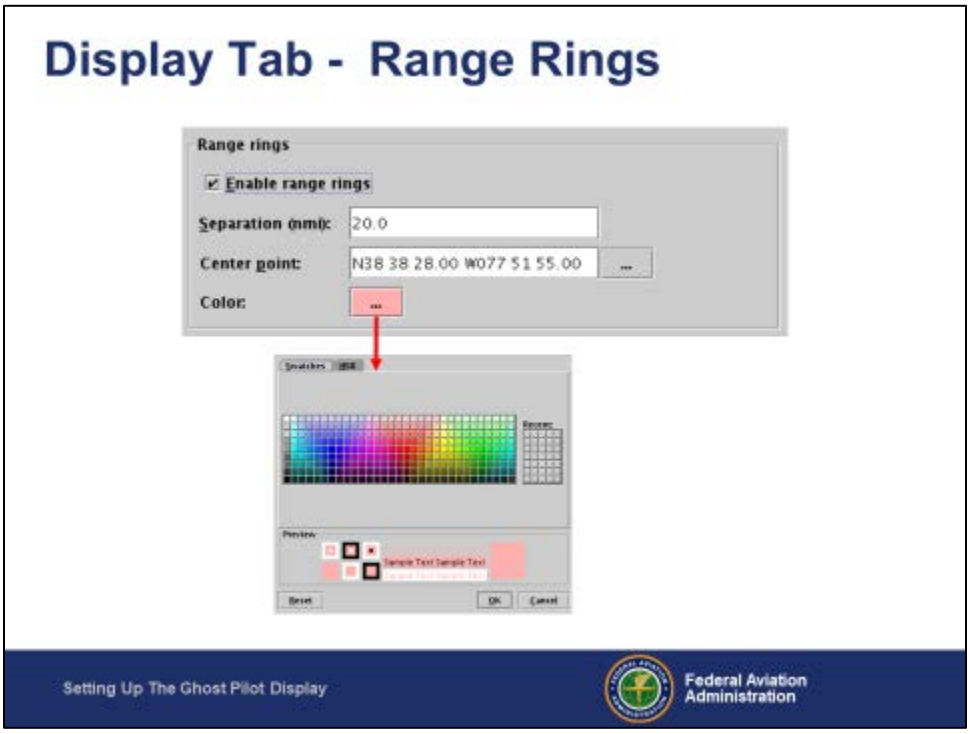
1. Enter the desired coordinates in the appropriate input box.

   or

1. Click on the [**…**] button next to the desired input box. A dialog containing a list of navigation points will be displayed.
2. Click on the desired navigation point to select it.
3. Click the **Ok** button on the dialog. This will place the navigation point coordinates in the input box and close the dialog.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 38.



The Range rings panel provides options for managing range ring characteristics. The steps to make a change are the same as in the Window panel.

The **Enable range rings** checkbox is used to display/remove range rings.

The **Separation (nmi)** input box is used to specify the distance between range rings.

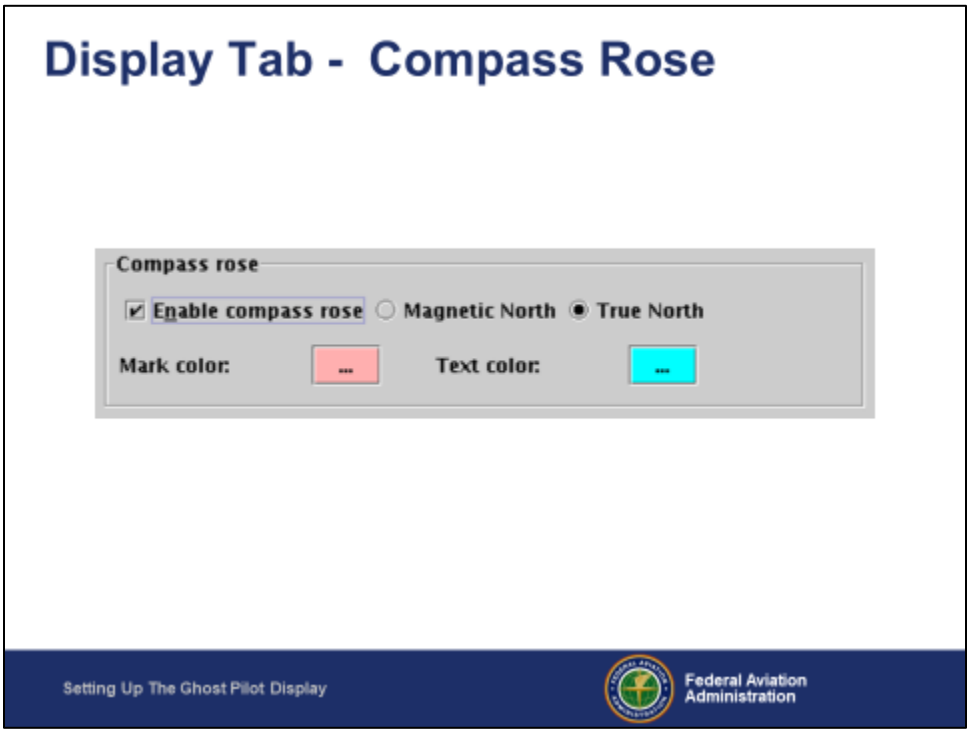
The **Center point** input box is used to specify the range ring center point. The button to the right of the input box behaves in the same manner as the center point of the map.

The **Color** button is used to specify the color of the range rings. The button color represents the current range ring color. To change the color:

1. Click the **Color** button. The Select Color dialog will appear.
2. Click on the desired color.
3. Click on the **Ok** button on the dialog.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 39.



The Compass Rose panel provides options for managing Compass Rose characteristics.

The **Enable compass rose** checkbox is used to display/remove heading tick marks and labels.

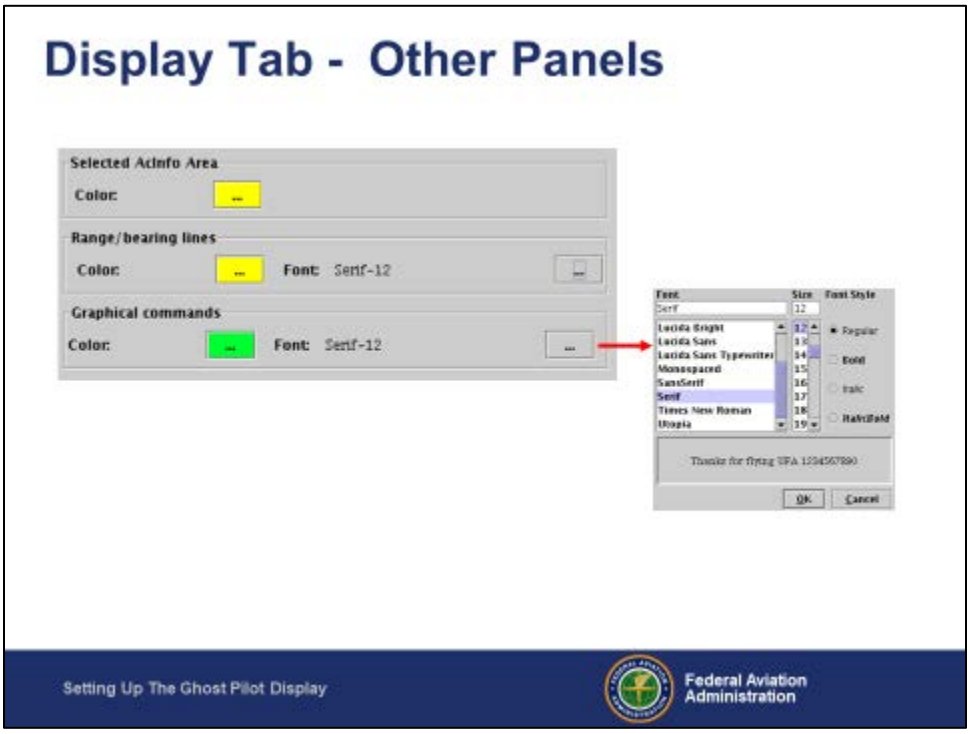
The **Mark color** button is used to specify the color of the tick marks. The button color represents the current color.

The **Text color** button is used to specify the color of the heading labels that appear every 10 tick marks. The button color represents the current color.

The **Magnetic North** and **True North** radio buttons are used to specify whether the tick marks should offset to reflect the magnetic effects at the facility. Only one button can be selected at a time.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 40.



There are three additional panels in the Display Tab of the Properties dialog.

The **Selected AcInfo Area** panel is used to select the Selected Aircraft Information Area (SAIA) view color.

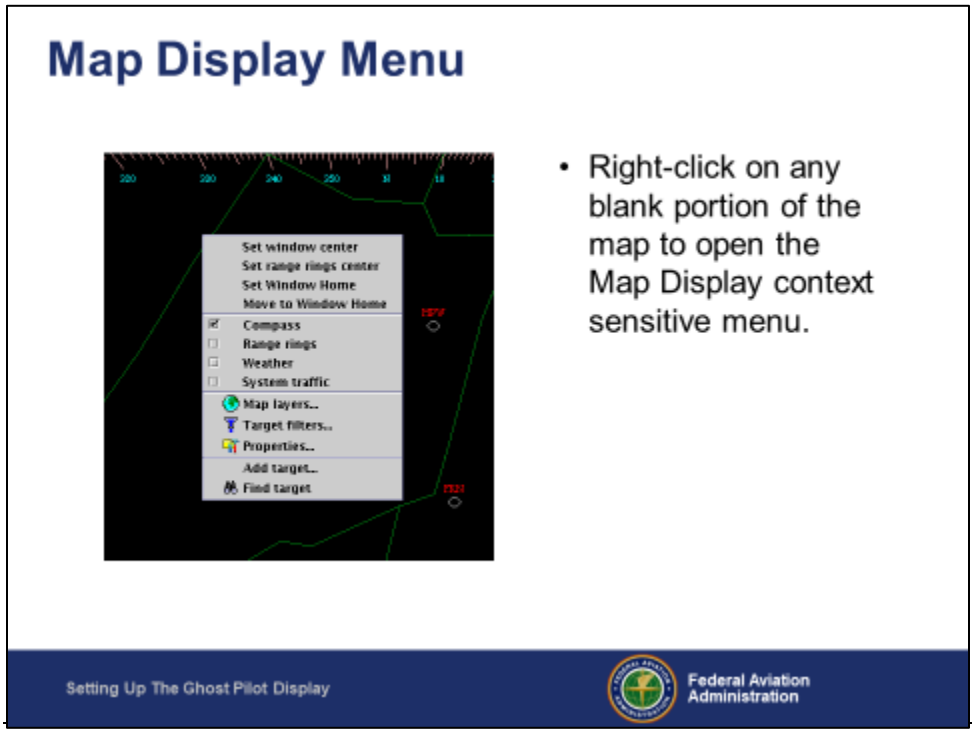
The **Range/bearing lines** panel is used to select the color and font used with range/bearing lines. To select font characteristics:

1. Click the appropriate **Font** selection button [**…**] . The Select Font dialog will appear.
2. Select the desired font.
3. Select the desired size.
4. Select the desired style.
5. Click the **Ok** button on the Select Font dialog.

The **Graphical commands** panel is used to select the color and font of a graphical reroute. The process is the same as above.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 41.



The Map Display menu is one of three context-sensitive menus introduced earlier. It provides options for managing the map display.

Right-click on any blank portion of the map to open the menu.

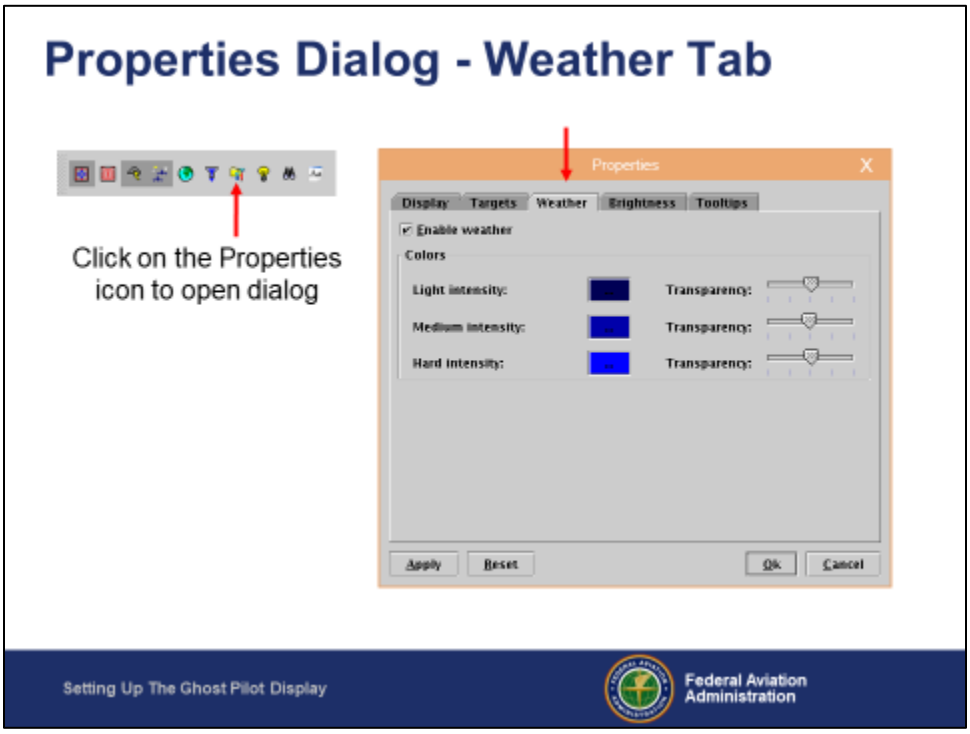
The options, and their functions, are as follows:

- Click on **Set window center** to center the map at the cursor coordinates of the right-click.
- Click on **Set range rings center** to center the range rings at the cursor coordinates of the right-click.
- Click on **Set Window Home** to set the map home at the cursor coordinates of the right-click. This saves the coordinates but does not move the map.
- Click on **Move to Window Home** to move the map center to the current Window Home coordinates.
- Check/uncheck the **Compass** checkbox to display/remove the Compass Rose (i.e., heading tick marks).

- Check/uncheck the **Range rings** checkbox to display/remove range rings.
- Check/uncheck the **Weather** checkbox to display/remove simulated precipitation.
- Check/uncheck the **System traffic** checkbox to display/remove targets that are not controlled by a Ghost Pilot. Typically, these are targets in adjacent sectors that are added by the scenario developer for realism but do not affect the problem.
- The **Map layers…** option opens the Map Layers Selection dialog.
- The **Target filters…** option opens the Target Filters dialog. We will describe this dialog later in this lesson.
- The **Properties…** option opens the Properties dialog.

The **Add Target…** and **Find Target** options will be covered in a later lesson.

Slide - 42.



The Weather tab in the Properties dialog is used to manage weather display characteristics. Use the Display toolbar to open the dialog.

Click on the Weather tab to display the available options.

The **Enable weather** checkbox is used to display/remove weather.

The **Light intensity** button is used to specify the color representing light precipitation. The button color is the currently selected color.

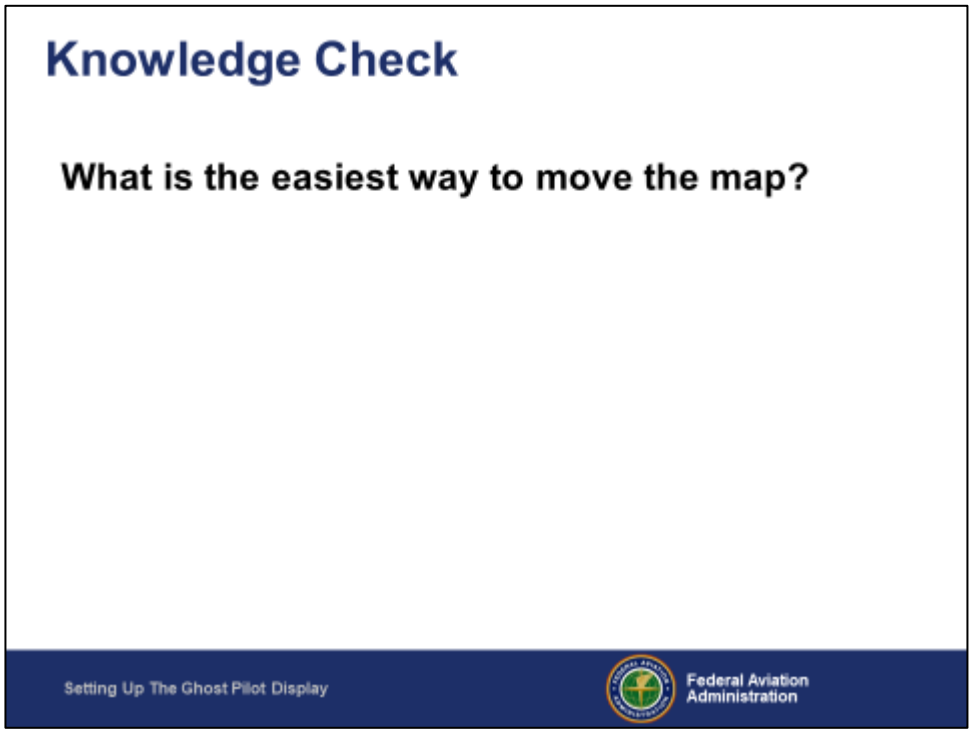
The **Medium intensity** button is used to specify the color representing medium precipitation. The button color is the currently selected color.

The **Hard intensity** button is used to specify the color representing heavy precipitation. The button color is the currently selected color.

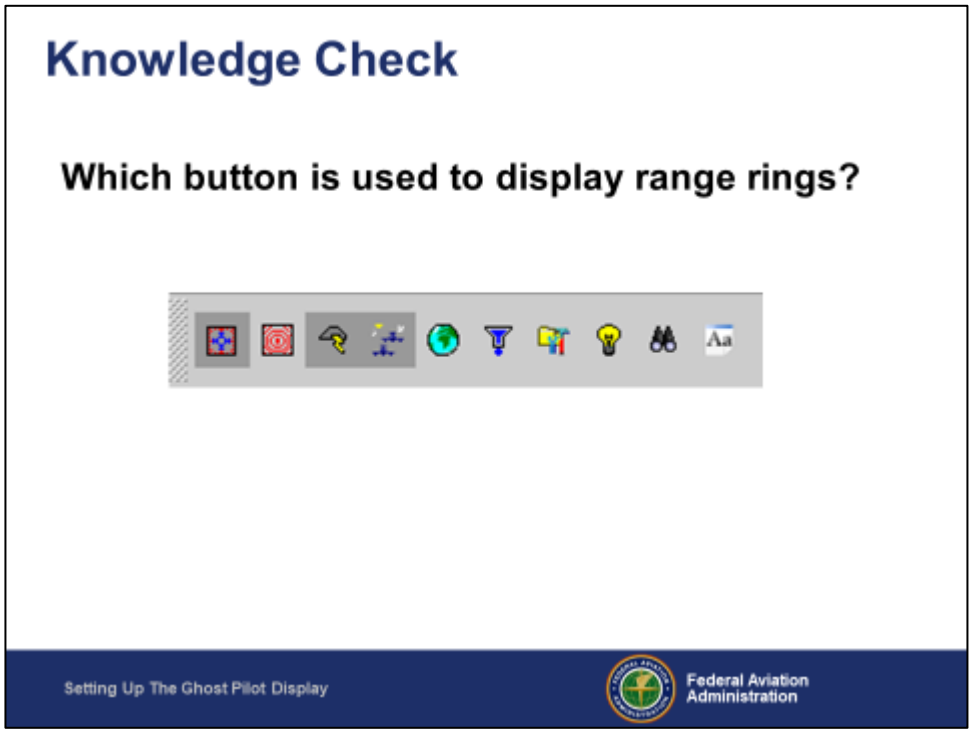
The **Transparency** slider bars are used to establish the transparency level for each type of precipitation.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

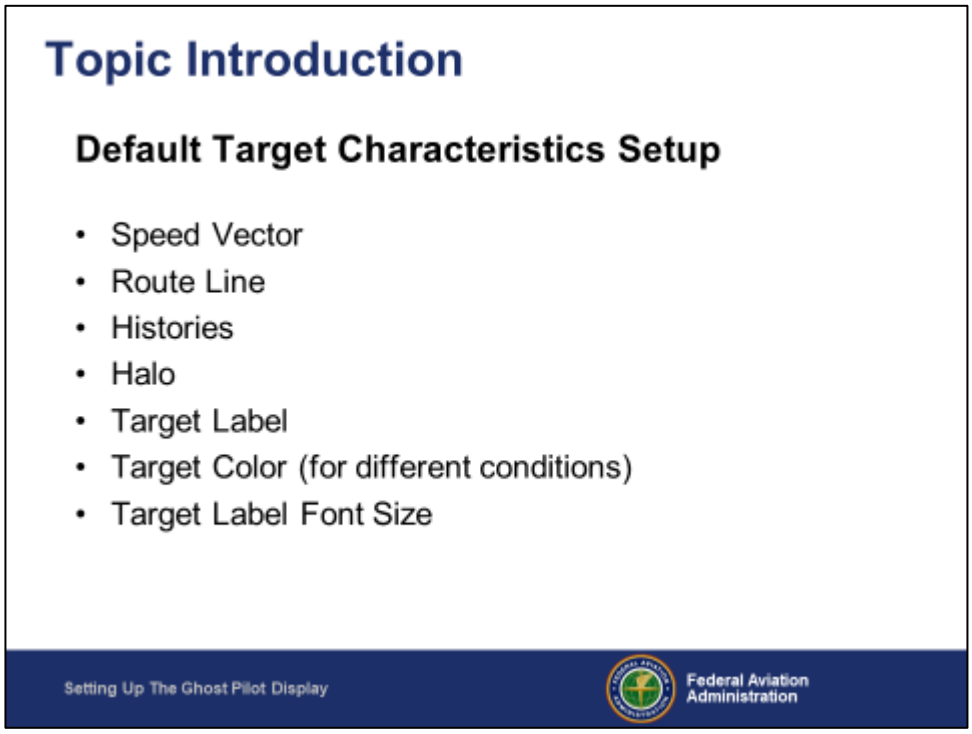
Slide - 43.


Knowledge Check
What is the easiest way to move the map?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 44.


Knowledge Check
Which button is used to display range rings?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 45.



Default target characteristics are the characteristics that apply to targets when they first appear. The following default target characteristics can be specified:

- Speed vectors depict the predicted target position at a future time
- Route lines depict the current target path
- Histories depict a number of the most recent target positions
- A Halo is a circle around the target position symbol
- The type of target label and label offset direction from the position symbol
- Target color can be set for different target conditions
- The target label font size

Slide - 46.

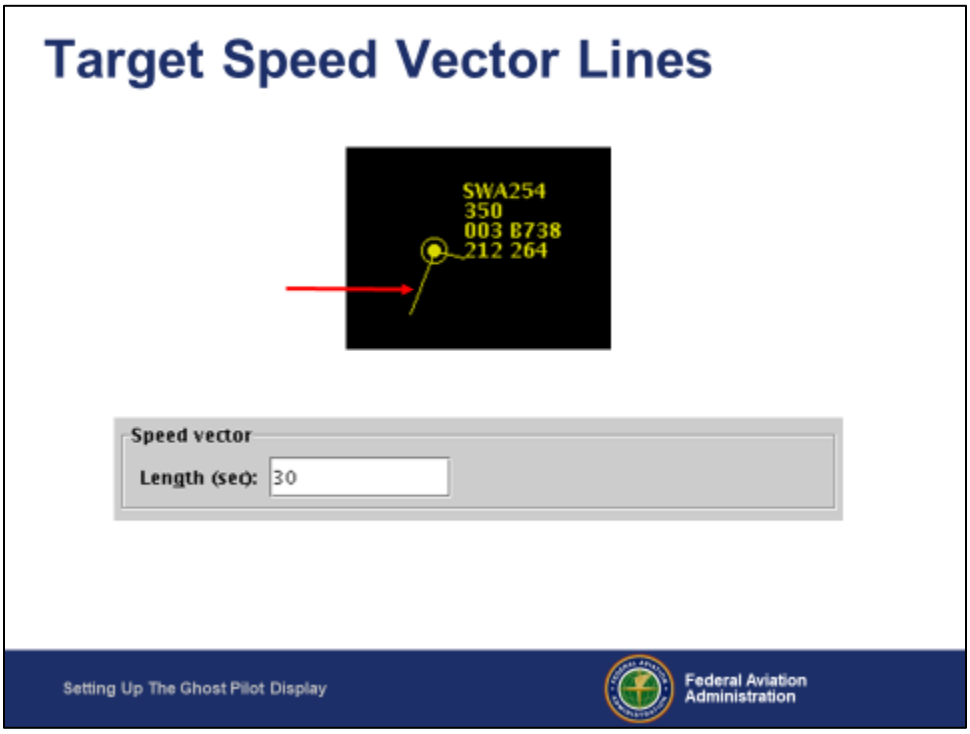
Default target characteristics are primarily set in the Targets tab of the Properties dialog. Use the Display toolbar or the Map Display menu to open the dialog.

Click on the Targets tab to display the target options.

There are six panels:

- Speed vector
- Route
- History
- Halo
- Label
- Colors

Slide - 47.



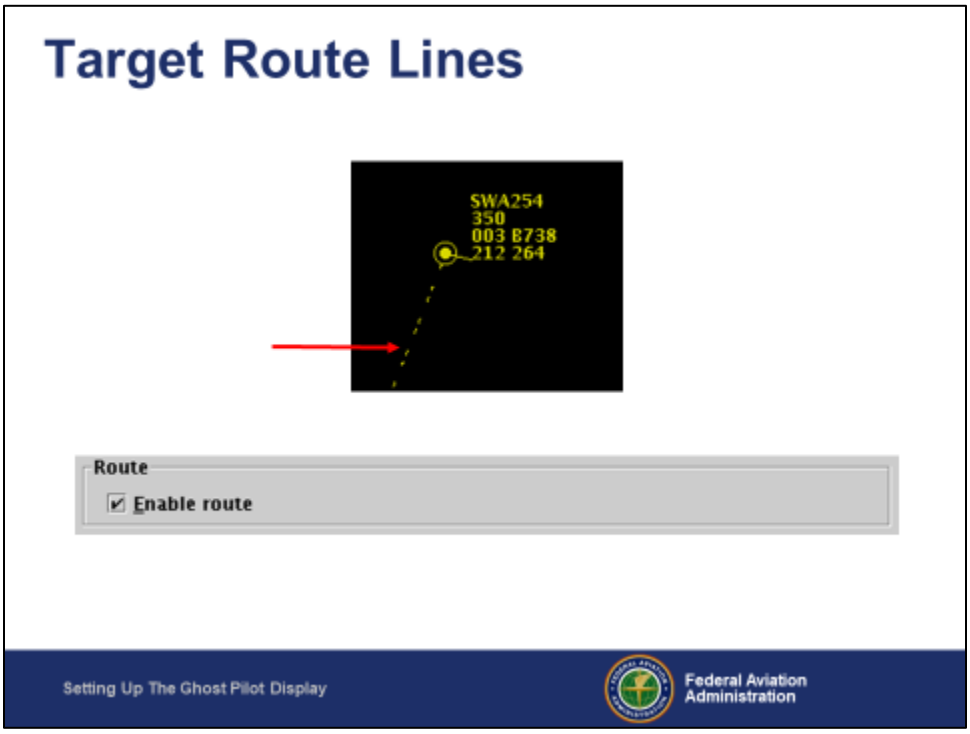
Speed vector lines show where a target will be if it continued on a straight path at its current speed.

To display speed vectors enter a number of seconds greater than zero in the **Length (sec)** input box. The system will calculate the target position in that number of seconds, and draw a line from the current target position to that point.

To remove speed vector lines, enter a value of zero seconds.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 48.



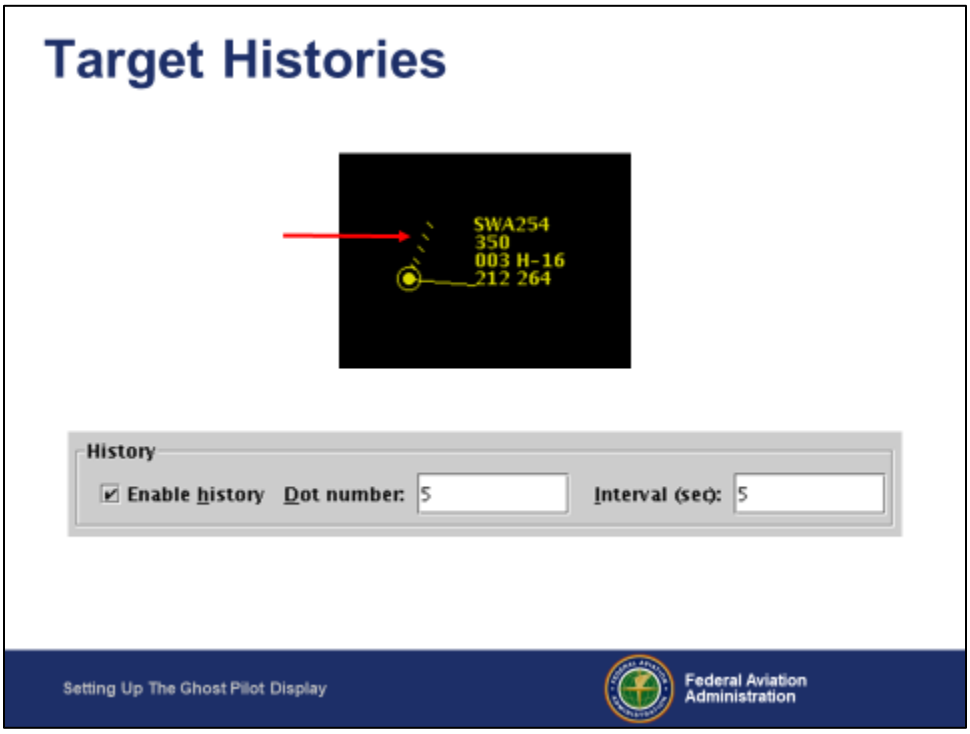
Route lines depict the remaining portion of the current ATCoach route. It is equivalent to the route currently on an aircraft's Flight Management System (FMS). It may or may not be the same as the ERAM flight plan route.

Use the **Enable route** checkbox to display or remove the route lines.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Selecting to display route lines as the default for all targets may result in a cluttered display.

Slide - 49.



Histories depict a specified number of previous target positions.

The History panel has three components:

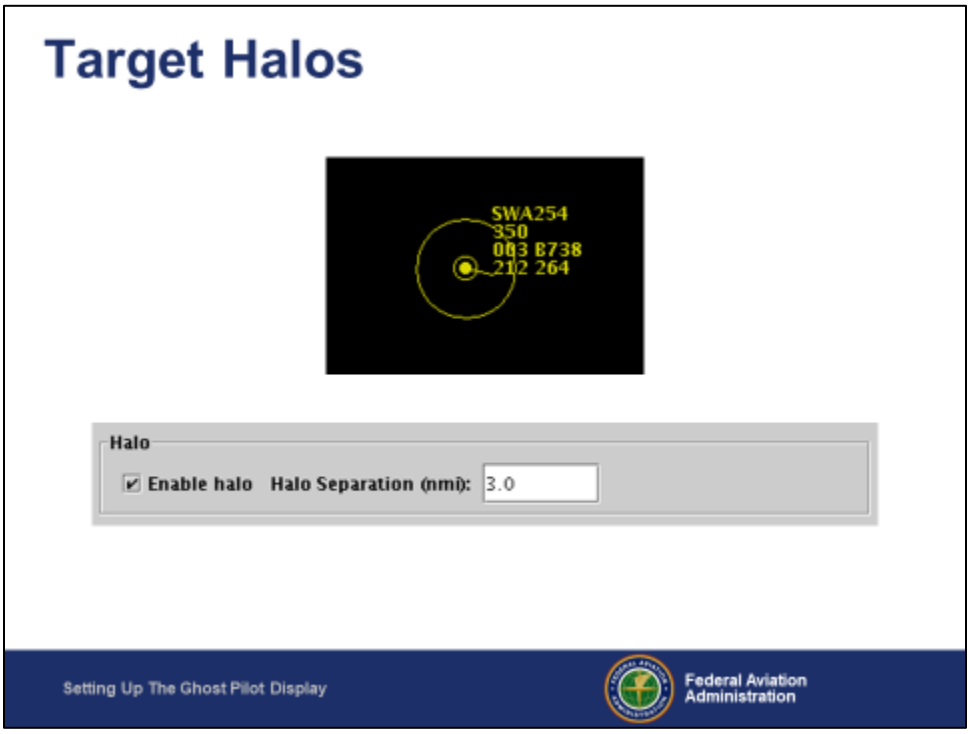
The **Enable history** checkbox is used to specify whether histories will be displayed as the default for all targets.

Enter a numeric value in the **Dot number** input box to specify the number of histories to display.

Enter a numeric value, in seconds, in the **Interval (sec)** input box to specify the time interval between history updates.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 50.



A halo is a circle around a target position symbol that serves as a distance reference.

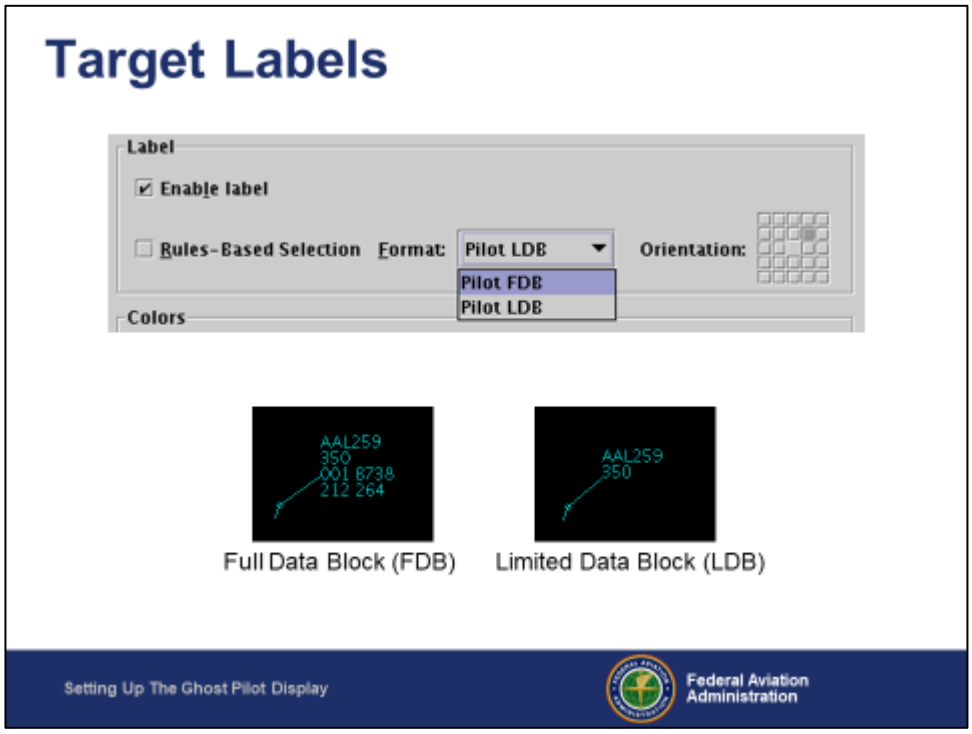
The Halo panel has two components:

The **Enable halo** checkbox is used to specify whether halos will be displayed as a default for all targets.

Enter a numeric value in the **Halo Separation (nmi)** input box to specify the halo radius (i.e., the distance from the target position symbol to the circle).

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 51.



A target label provides information about the target. There are two types:

- Full Data Block (FDB) always displays callsign, altitude, computer identification number (CID), aircraft type, heading and speed. It can also time-share with the aircraft type to indicate situations such as handoffs or emergencies.
- Limited Data Block (LDB) provides callsign and altitude only.

The Label panel has four components:

The **Enable label** checkbox is used to specify whether labels will be displayed as a default for all targets. This is the typical choice.

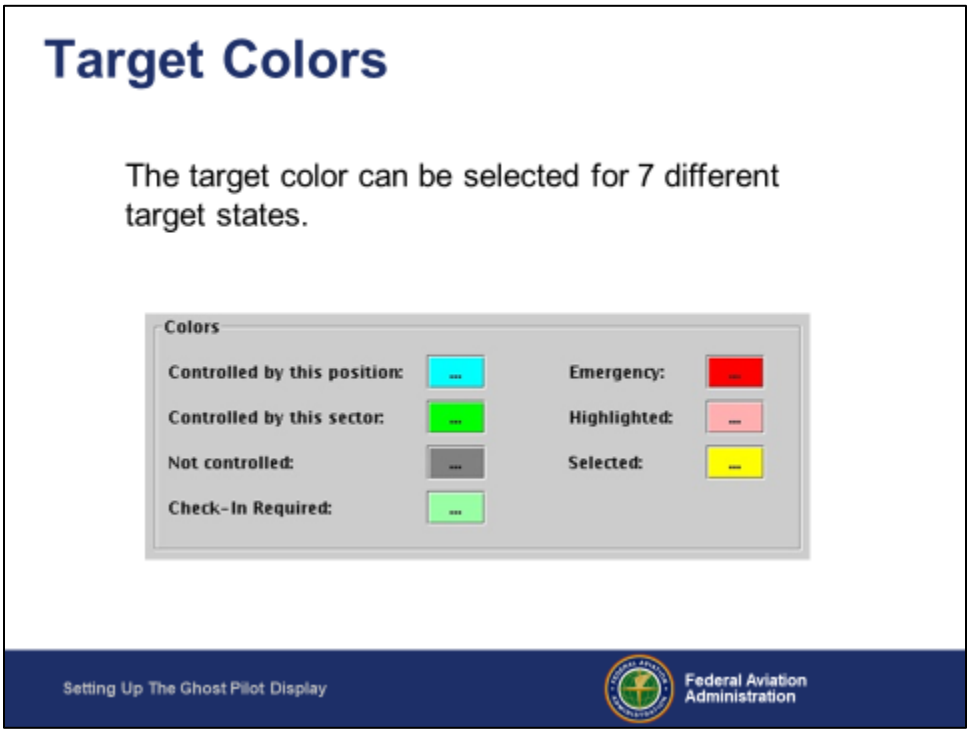
When the **Rules-Based Selection** checkbox is checked, all targets assigned to the Ghost Pilot will display an FDB and all other targets will display an LDB.

The **Format** drop-down menu is used to select which type of data block (Pilot FDB or Pilot LDB) is displayed for all targets when the Rules-Based Selection checkbox is not checked.

The **Orientation** checkbox is used to specify the location of the target label relative to the target position symbol.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 52.

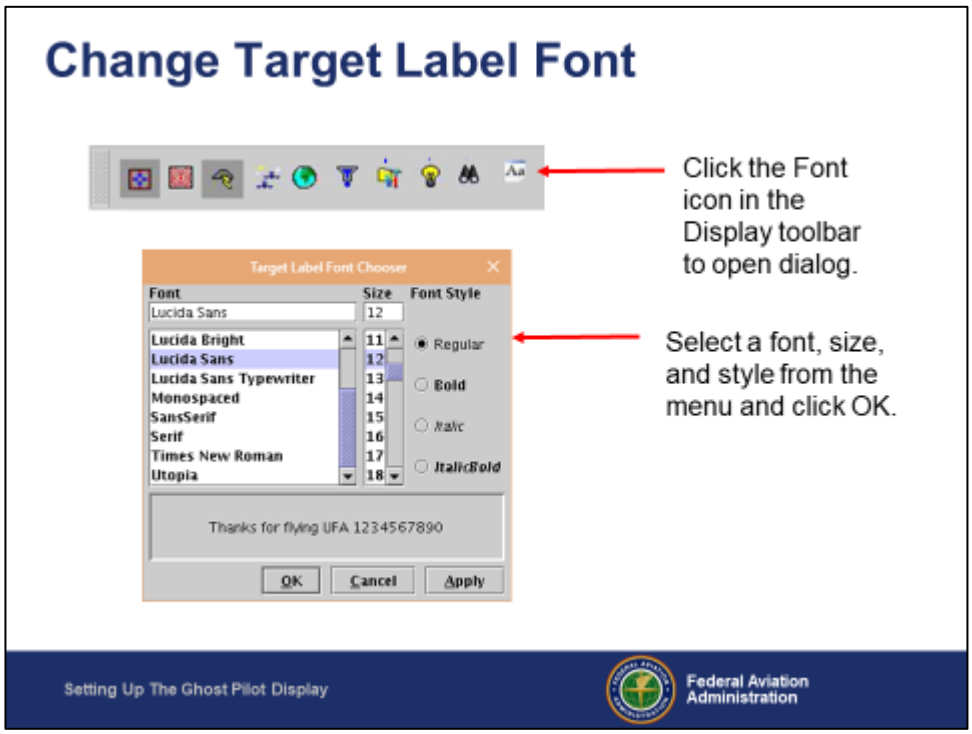


The target color can be selected for seven different target states using the previously described steps. The target states are:

- Controlled by this position – Targets assigned to your Ghost Pilot position.
- Controlled by this sector – For scenarios with multiple Ghost Pilots, targets assigned to other Ghost Pilot positions in your sector.
- Not controlled – Targets not controlled by your position or sector. Typically system traffic.
- Check-in Required – An indication that the Ghost Pilot must contact the controller via voice.
- Emergency – A special case when the target is squawking a special beacon code.
- Highlighted – When the Ghost Pilot holds down the left mouse button over a target.
- Selected – When the Ghost Pilot clicks on the target position symbol or label.

Click the **Apply** or **Ok** button on the Properties dialog once all desired changes have been made.

Slide - 53.



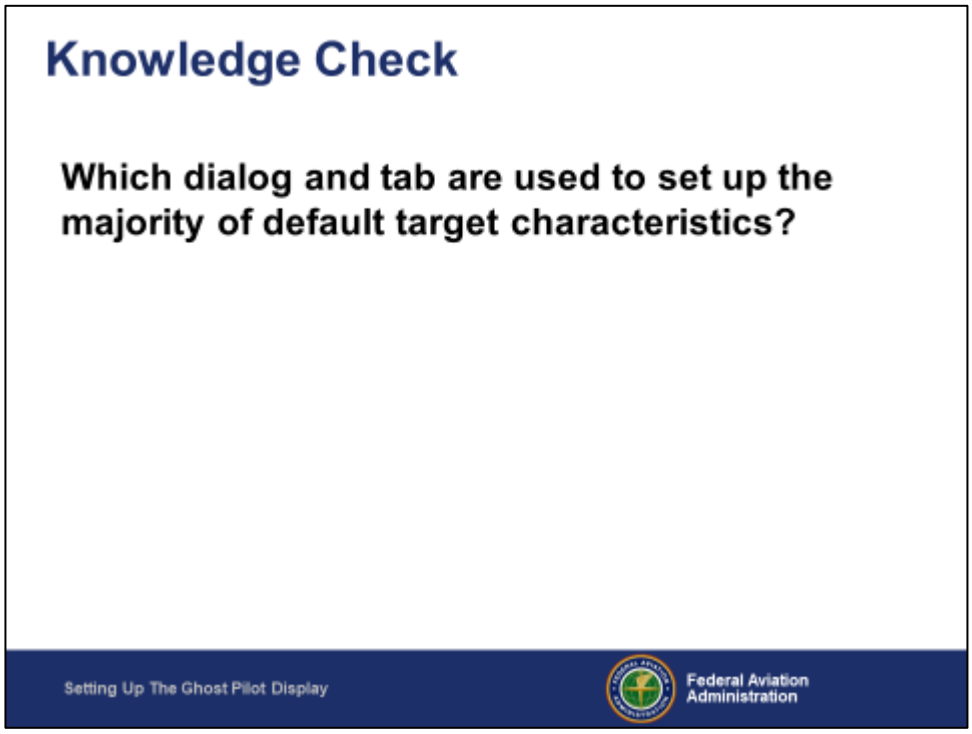
Most default target characteristics are set up using the Target tab on the Properties dialog. The one exception is the target font, which is set using the Target Label Font Chooser dialog. Select the Font icon in the Display toolbar to open the dialog.

The target label font for all targets can be set using the same steps as previously described.

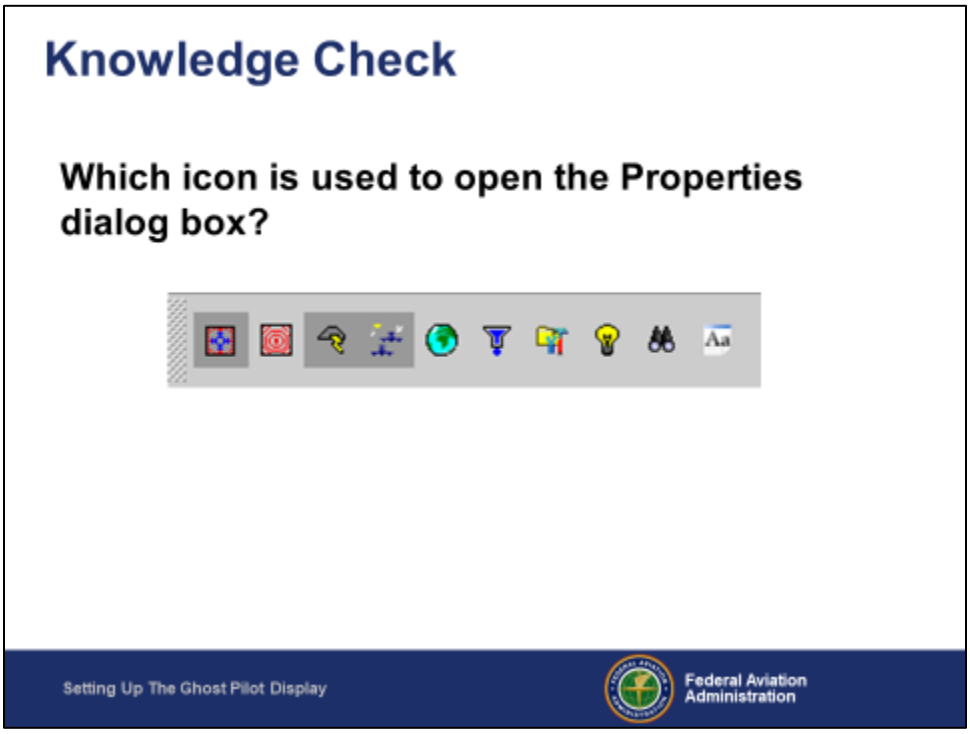
1. Select a font.
2. Select a size.
3. Select a font style.
4. Click on **Ok** or **Apply**.

Note that the font selection also affects the text of the Selected Aircraft Information Area (SAIA).

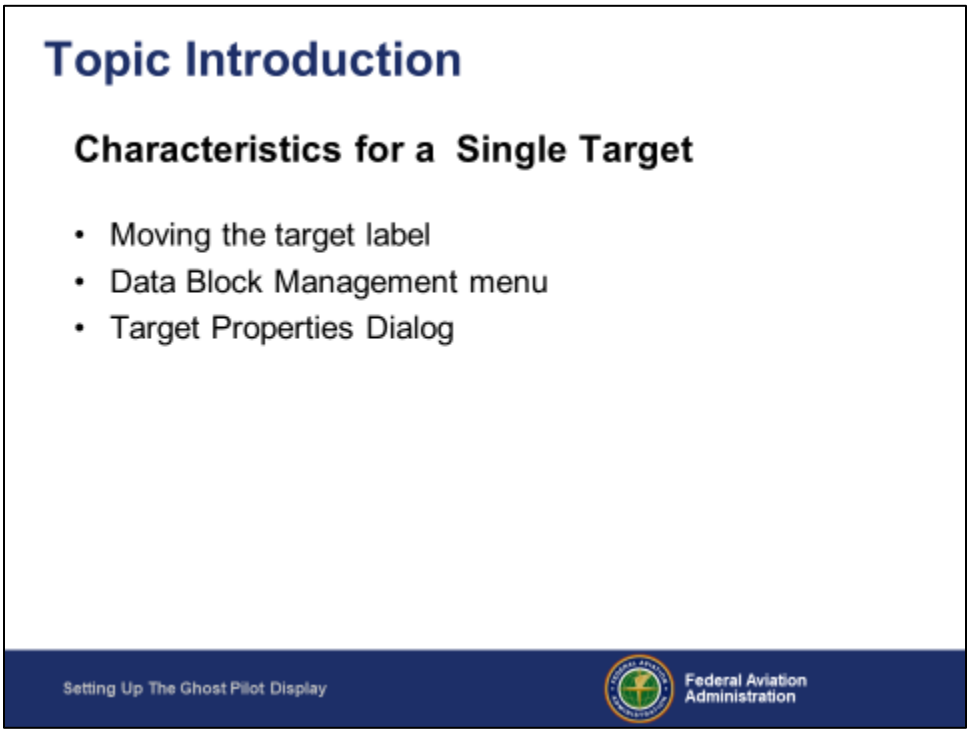
Slide - 54.


Knowledge Check
Which dialog and tab are used to set up the majority of default target characteristics?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 55.


Knowledge Check
Which icon is used to open the Properties dialog box?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 56.



Target characteristics can also be specified for a single target.

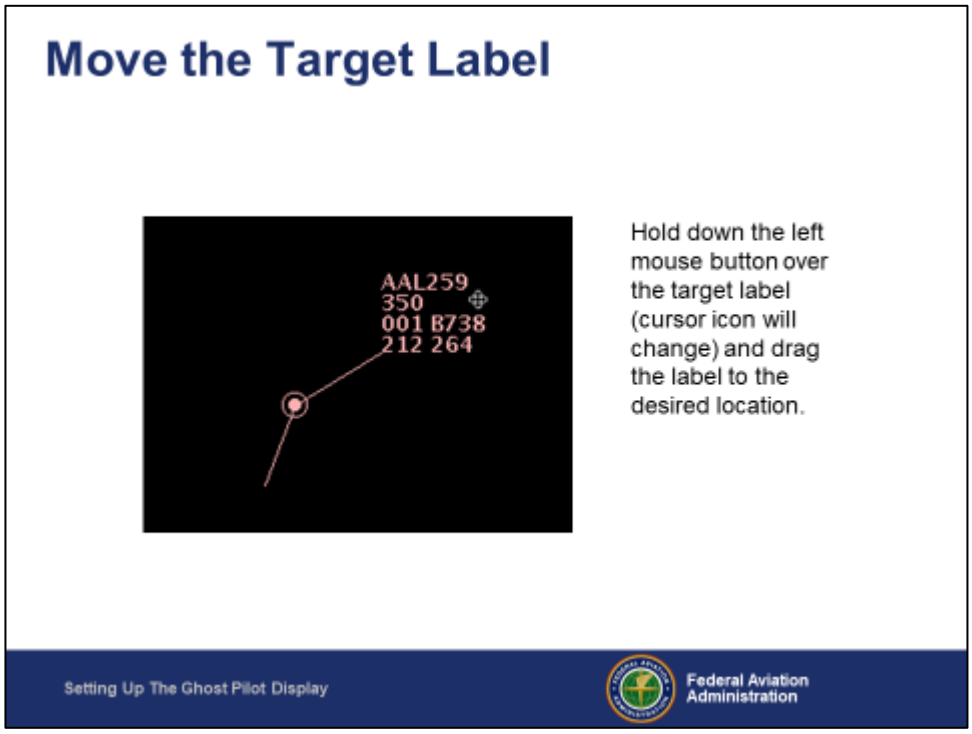
The target label can be repositioned.

The Data Block Management menu can be used to:

- Display/remove the target label
- Display/remove histories
- Display/remove the route line
- Display/remove the halo
- Change the target label format (FDB or LDB)
- Access a Target Properties dialog

The Target Properties dialog can be used to customize target characteristics for the selected target.

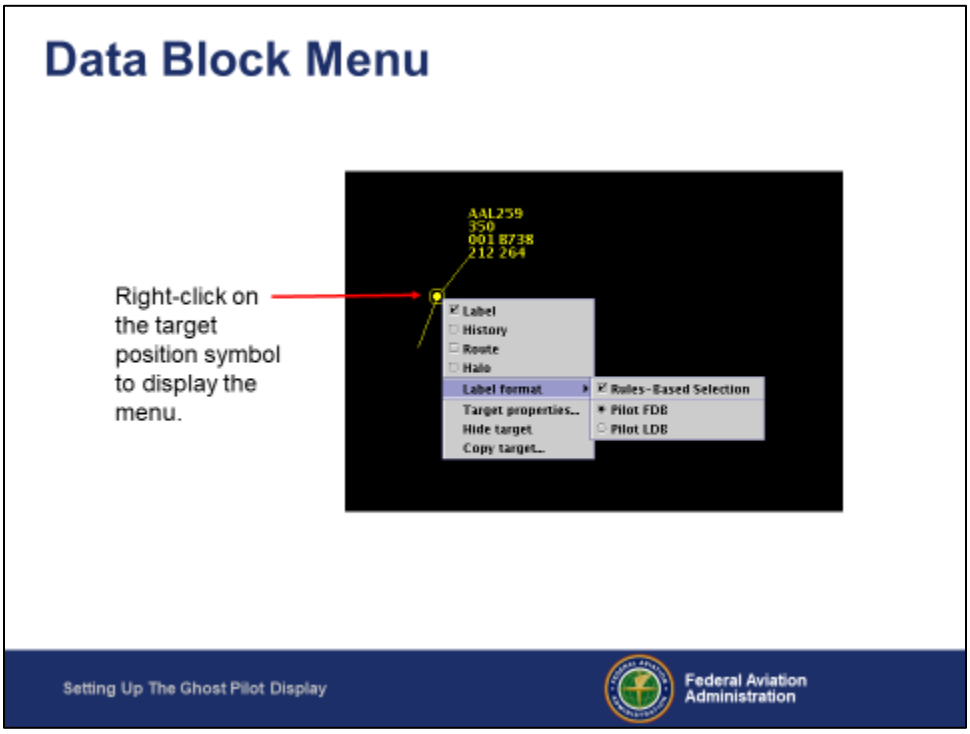
Slide - 57.



Click-and-drag to move the target label. To do so:

1. Hold down the left mouse button over the label. The cursor will change to indicate it is in “move” mode.
2. While continuing to hold down the left mouse button move the cursor to the desired location.
3. Release the left mouse button.

Slide - 58.



Right-click on the target position symbol of the desired target to open the Data Block menu.

There are checkboxes to display/remove the following:

- Label
- Histories
- Route
- Halo

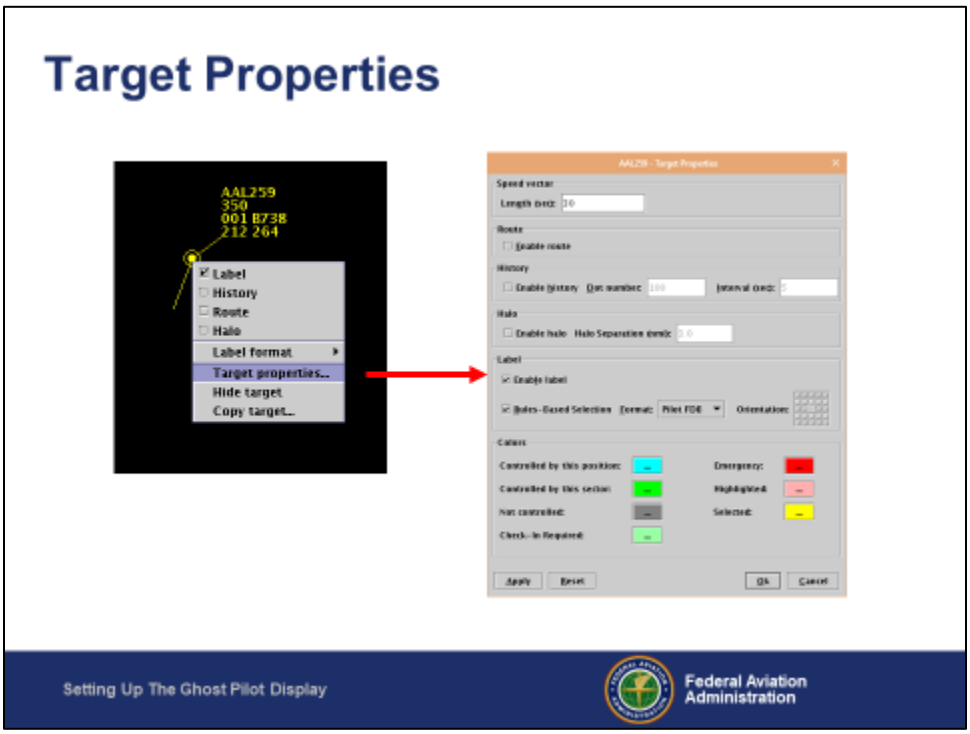
When a checkbox is checked/unchecked, the change will take immediate effect and the menu will close.

The **Label format** option is used to select the desired label format for that target.

The **Target properties…** options opens the Target Properties dialog for the selected target.

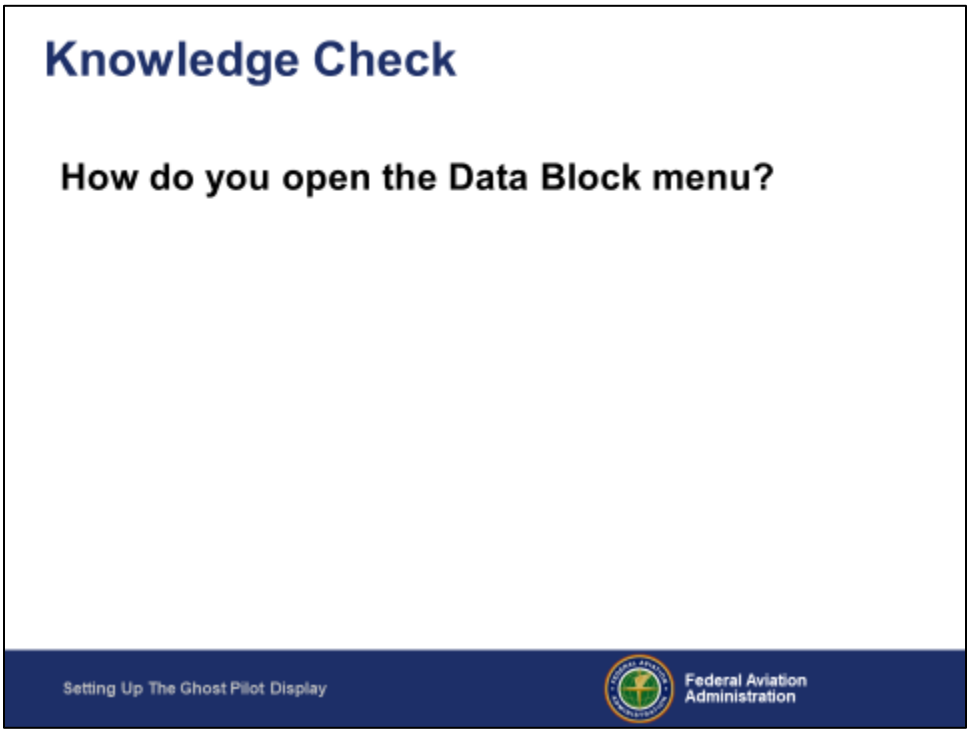
The **Hide target** and **Copy target…** options are covered in a later lesson.

Slide - 59.

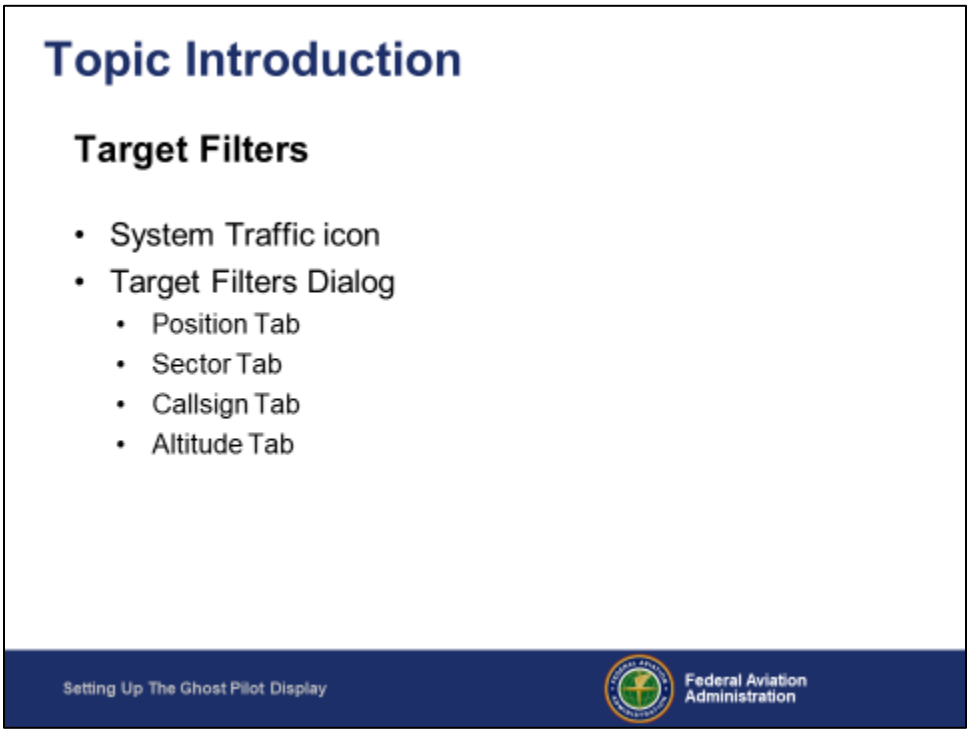


The Target Properties dialog behaves just like the Targets tab in the Properties dialog but only affects the selected target.

Slide - 60.


Knowledge Check
How do you open the Data Block menu?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 61.



In this section, we will cover various ways to filter which targets are displayed on the map.

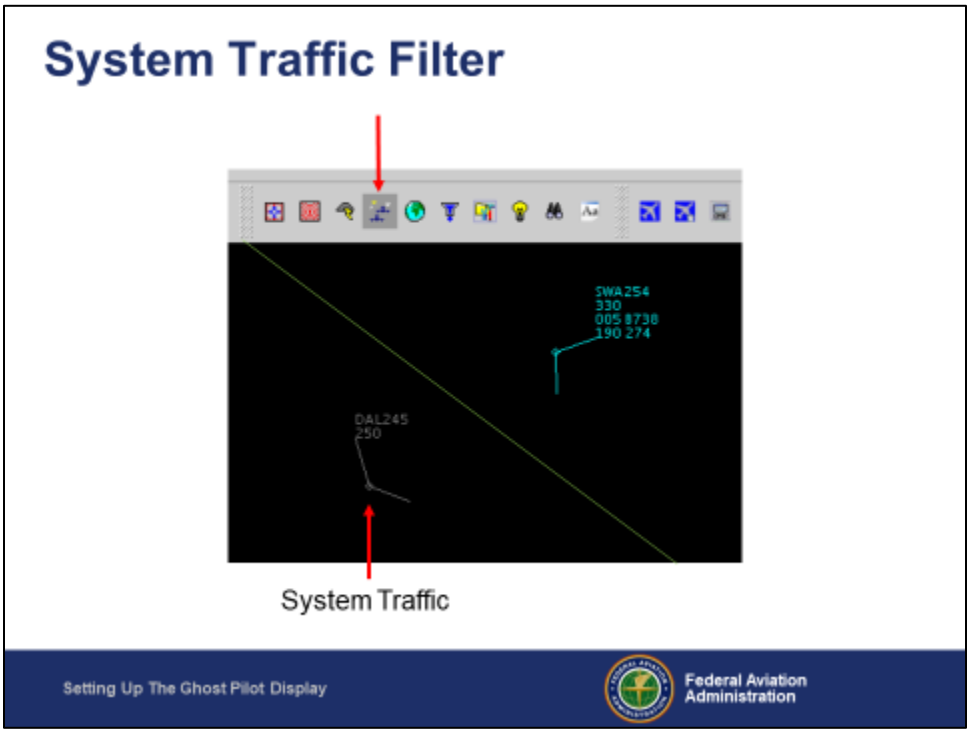
The System Traffic icon on the Display toolbar is used to include or exclude (i.e., filter) the display of targets with no assigned Ghost Pilot (i.e., system traffic).

The Target Filter dialog provides options to filter targets based on the following criteria:

- **Position** tab – Which Ghost Pilot has control of the target
- **Sector** tab – Which sector will be working the target
- **Callsign** tab – Target callsign
- **Altitude** tab – Target altitude

Filtered targets/data blocks are forced to the display when the target is in handoff status. Once the handoff indications clear, the filter will be re-applied.

Slide - 62.

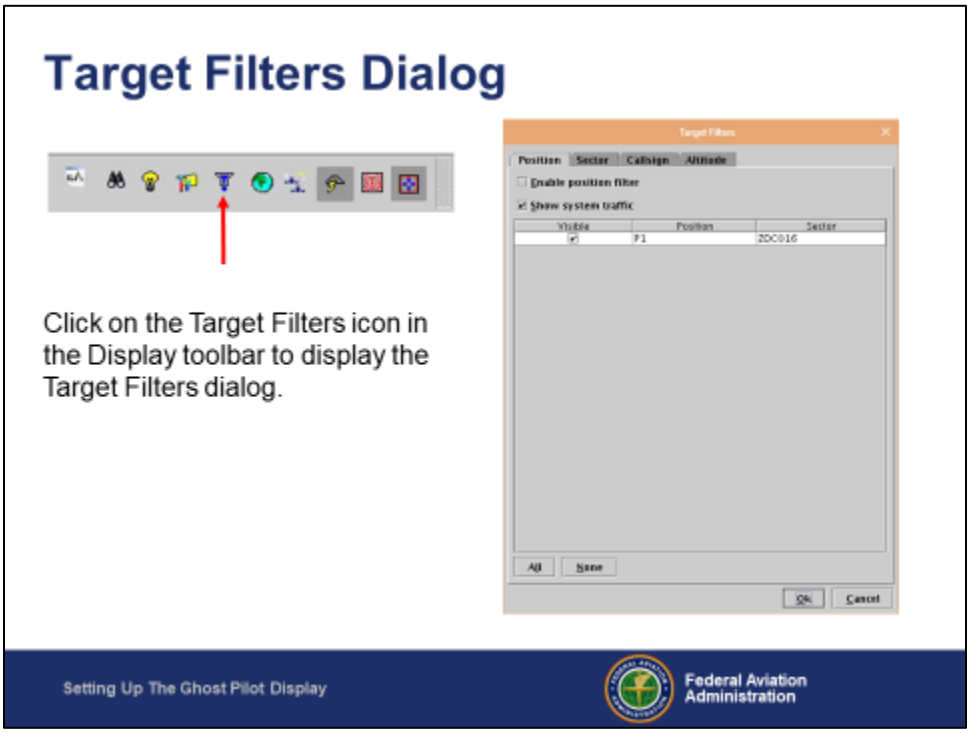


Many scenario developers include unassigned targets to add realism to the exercise by simulating adjacent sector or VFR traffic.

- Since the Ghost Pilot will never interact with these targets, the scenario developer does not assign a Ghost Pilot to them.
- Targets that do not have an assigned Ghost Pilot are called “system traffic.”
- The default target color for system traffic is gray.

A Ghost Pilot can filter system traffic by clicking on the System Traffic icon on the Display toolbar. When the icon is selected (i.e., gray outline), system traffic will be displayed.

Slide - 63.



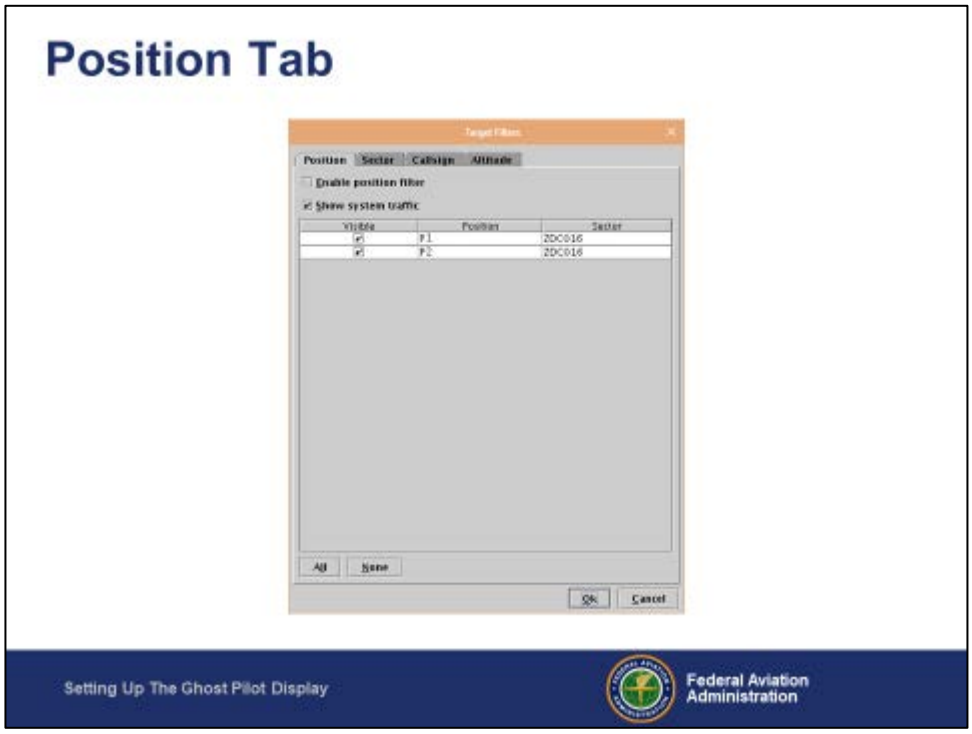
The Target Filters dialog is accessed by clicking on the Target Filters icon on the Display toolbar.

The dialog contains four tabs:

- Position
- Sector
- Callsign
- Altitude

Filters can be used individually or in any combination.

Slide - 64.



Scenario developers can assign each target to a Ghost Pilot position. In many cases, the scenario developer will determine that two or more Ghost Pilots are needed and will divide targets to balance the workload.

The Position Tab is used to filter targets based on which Ghost Pilot is assigned the target.

The **Enable position filter** checkbox is used to enable or disable the Position filter. This checkbox will be automatically checked if you check or uncheck any of the tab options. This is true of the Sector, Callsign, and Altitude tabs as well.

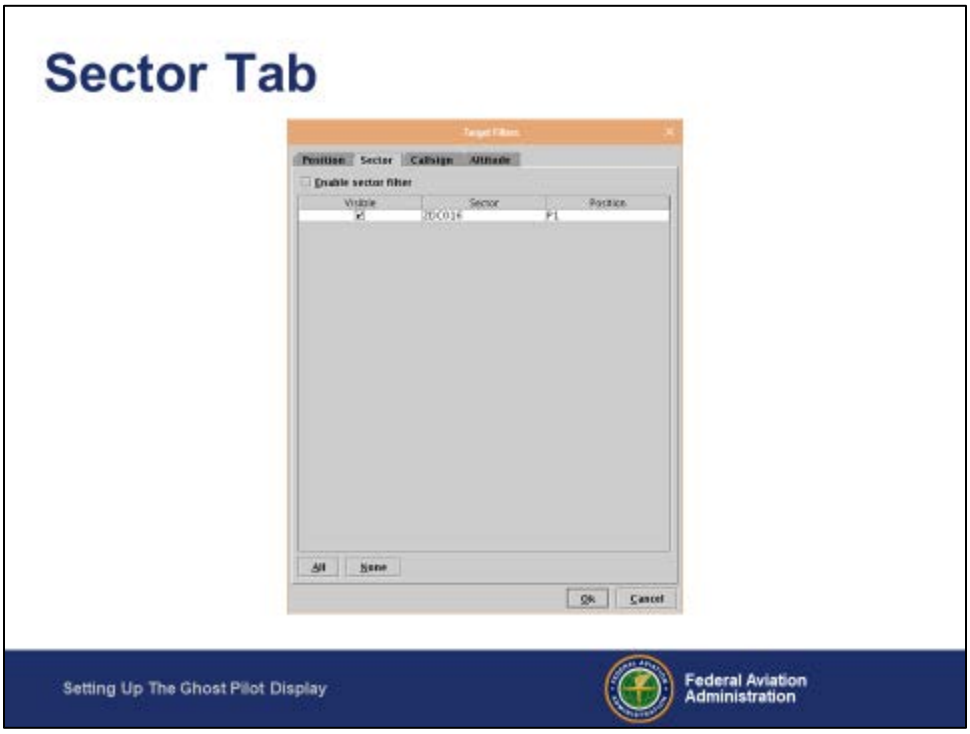
The **Show system traffic** checkbox is used to display or hide targets that are not assigned to a Ghost Pilot.

There will be a separate checkbox in the body of the tab for each Ghost Pilot position.

A check in the **Visible** checkbox next to a Ghost Pilot means the targets assigned to that Ghost Pilot will be displayed.

Click on **Ok** to implement the changes.

Slide - 65.



Although rare, scenario developers can create scenarios with multiple ERAM sectors.

The Sector Tab is used to filter targets based on which sector has track control of the flight (i.e., which controller is working the traffic).

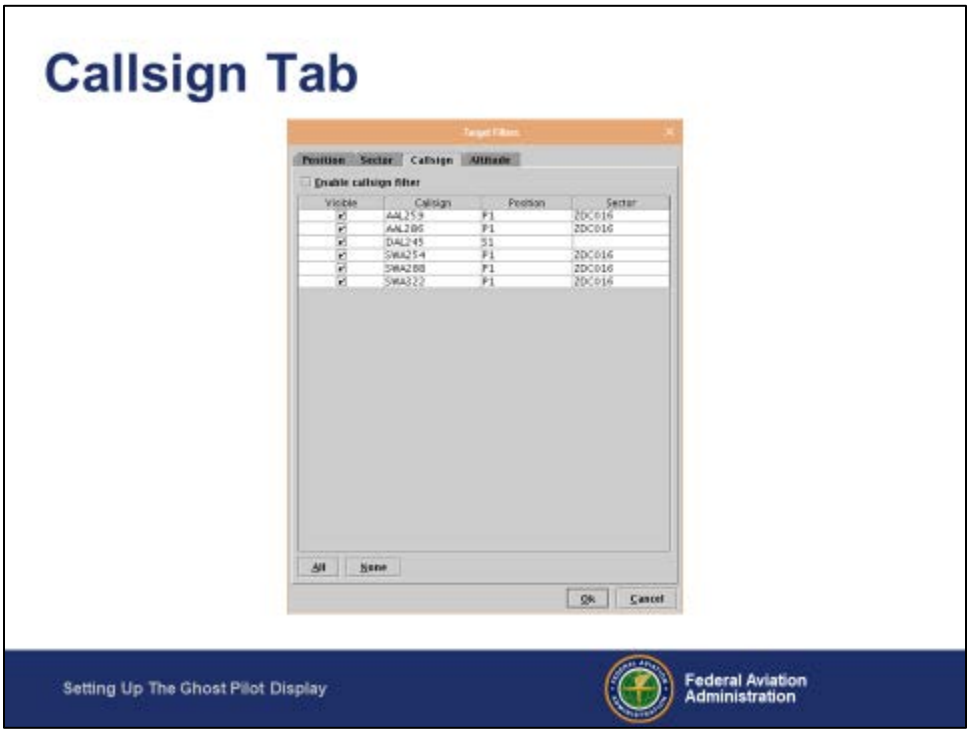
The **Enable sector filter** checkbox is used to enable or disable the Sector filter. Any changes on this tab will enable the checkbox.

In a multiple-sector scenario, there will be a separate entry in the body of the tab for each ERAM sector with assigned Ghost Pilots. This example shows a single sector, sector 16.

A check in the **Visible** checkbox next to a sector means the targets being controlled by that sector will be displayed.

Click on **Ok** to implement the changes.

Slide - 66.



The Callsign Tab is used to filter targets based on their callsign.

The **Enable callsign filter** checkbox is used to enable or disable the Callsign filter. Any changes on this tab will enable the checkbox.

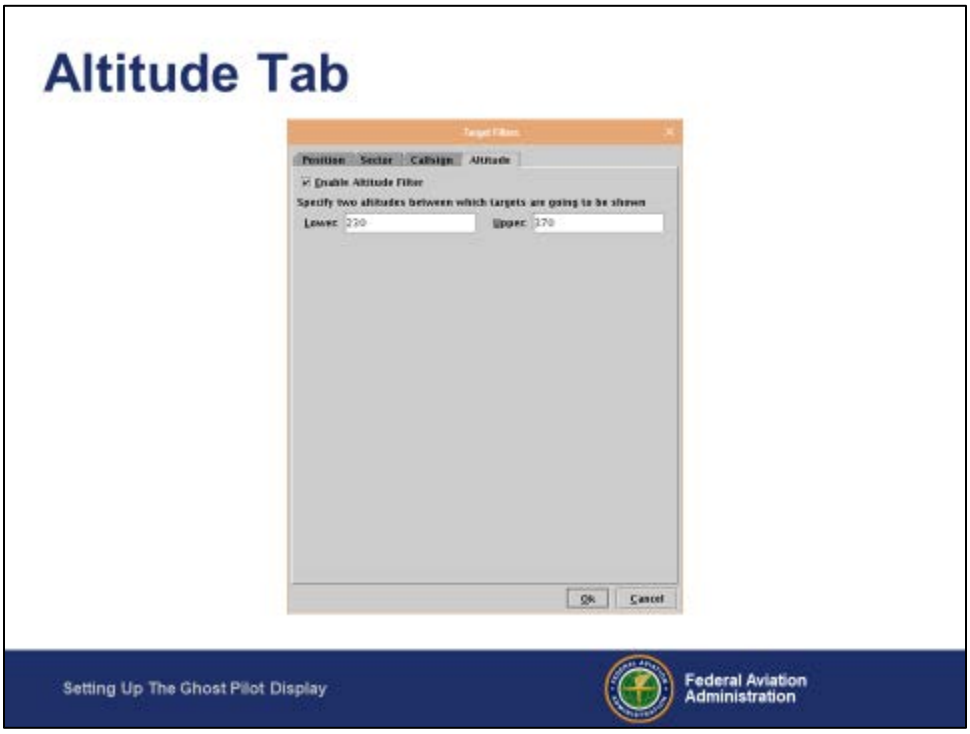
There will be a separate entry in the body of the tab for each target. This example shows six targets.

A check in the **Visible** checkbox next to a target callsign means that target will be displayed.

This is another method for restoring hidden targets, which we'll cover in a later lesson.

Click on **Ok** to implement the changes.

Slide - 67.



The Altitude Tab is used to filter targets based on their altitude.

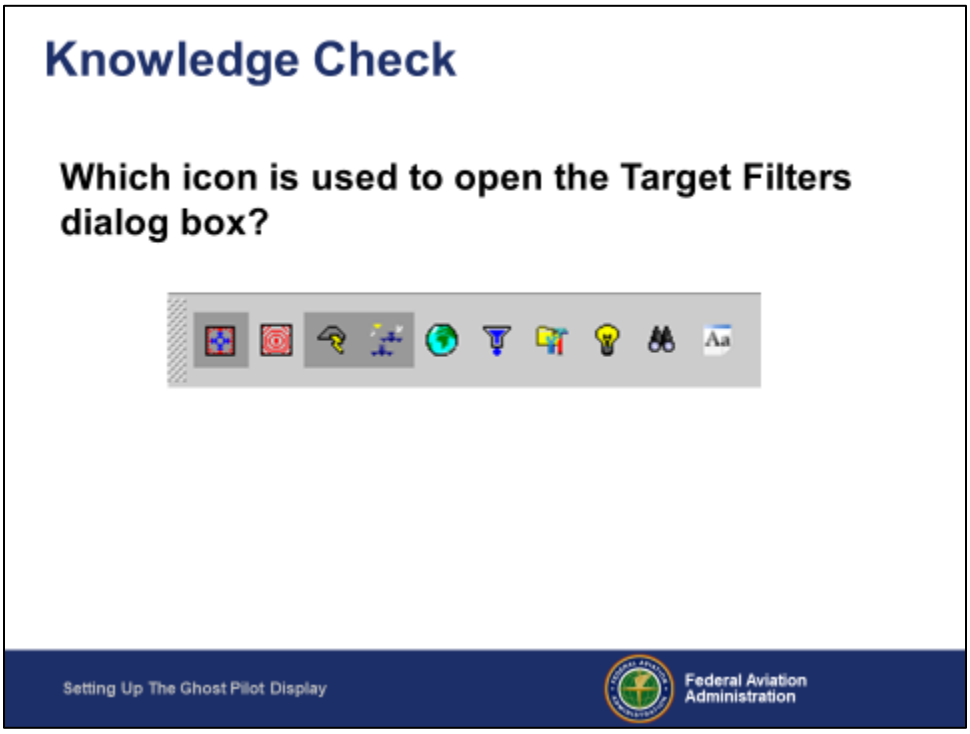
The **Enable Altitude Filter** checkbox is used to enable or disable the Altitude filter. Any changes on this tab will enable the checkbox.

To establish an altitude range, enter a lower altitude limit and an upper altitude limit. Only targets in that altitude range will be displayed. In this example, only targets at or above FL230 and at or below FL370 will be displayed. Altitude is always in hundreds of feet.

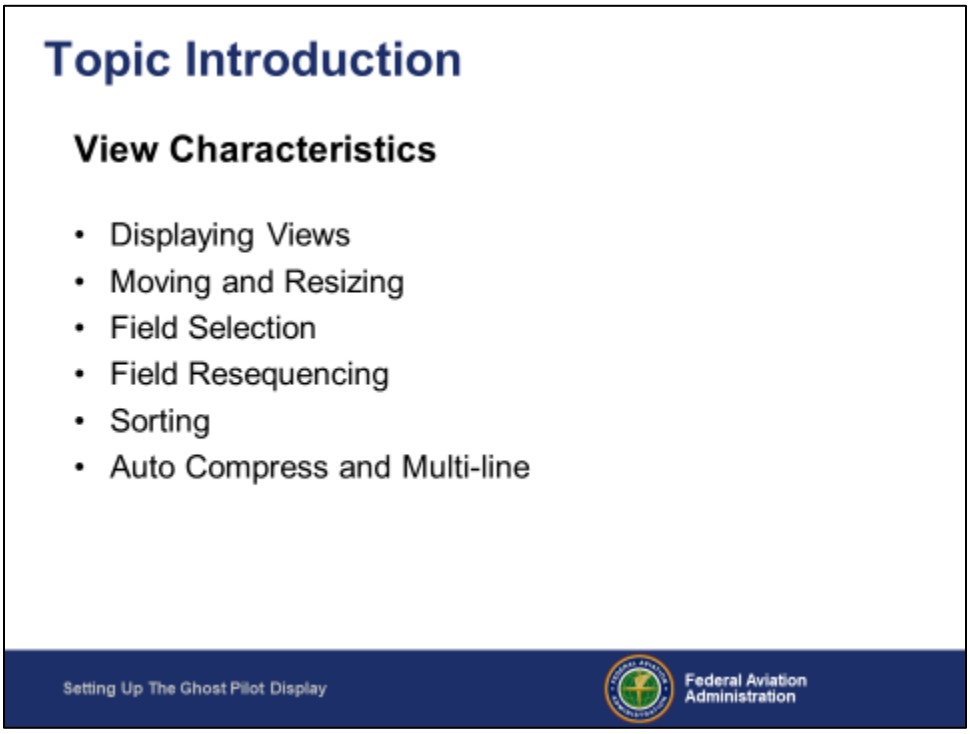
If altitude filters are in effect, the Status Information Bar will list the upper and lower limits.

Click on **Ok** to implement the changes.

Slide - 68.


Knowledge Check
Which icon is used to open the Target Filters dialog box?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 69.



As described earlier, ATPilot has nine views that provide scenario information, and can be used to perform various functions.

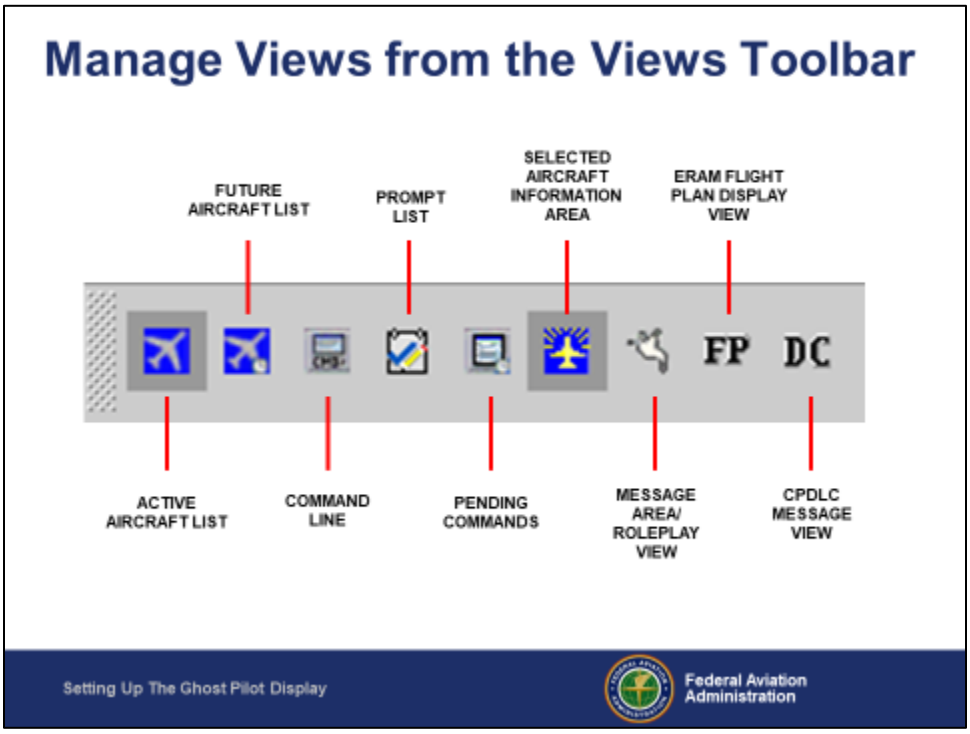
Most views can be customized in the following ways:

- Displayed or removed
- Moved or resized
- Selection of which view columns (i.e., fields) are displayed
- Sequence of the view columns (i.e., fields)
- Sorting the entries in the view

The Active Aircraft List and Future Aircraft Lists can also be customized as follows:

- Automatically deleting old entries from the view (i.e., Auto Compress)
- Selecting to display multiple lines for an entry

Slide - 70.

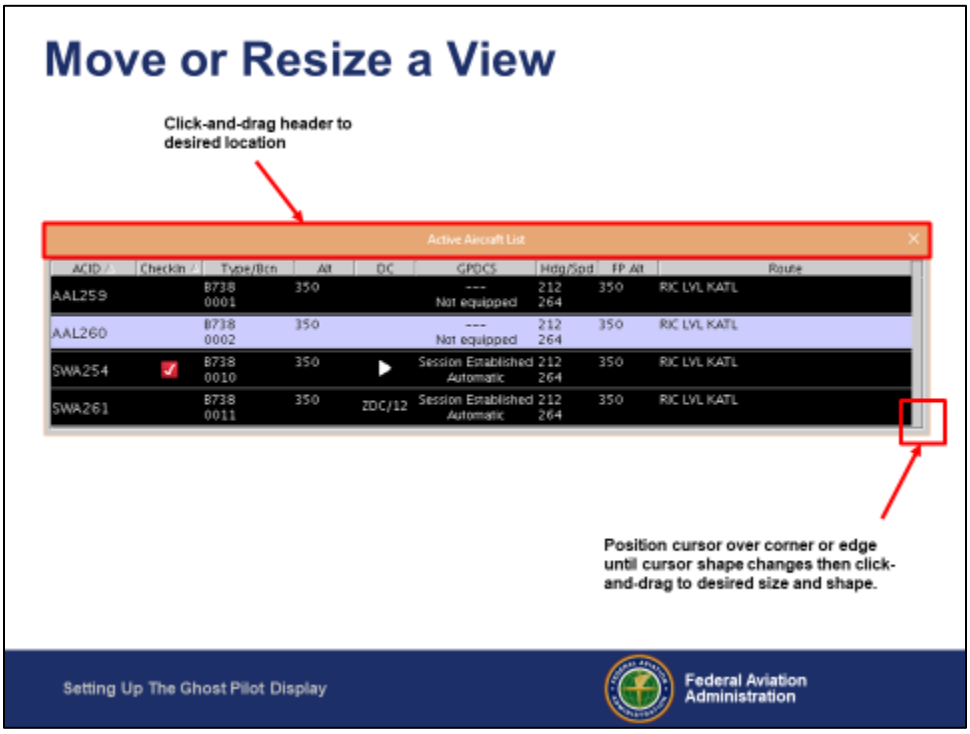


The Views toolbar is used to manage which views are displayed.

Click on the desired icon to display or remove the view.

When a view is being displayed the corresponding icon will have a gray outline. In this example, the Active Aircraft List and the Selected Aircraft Information Area views are being displayed.

Slide - 71.



Click-and-drag on the view header to move a view. Specifically:

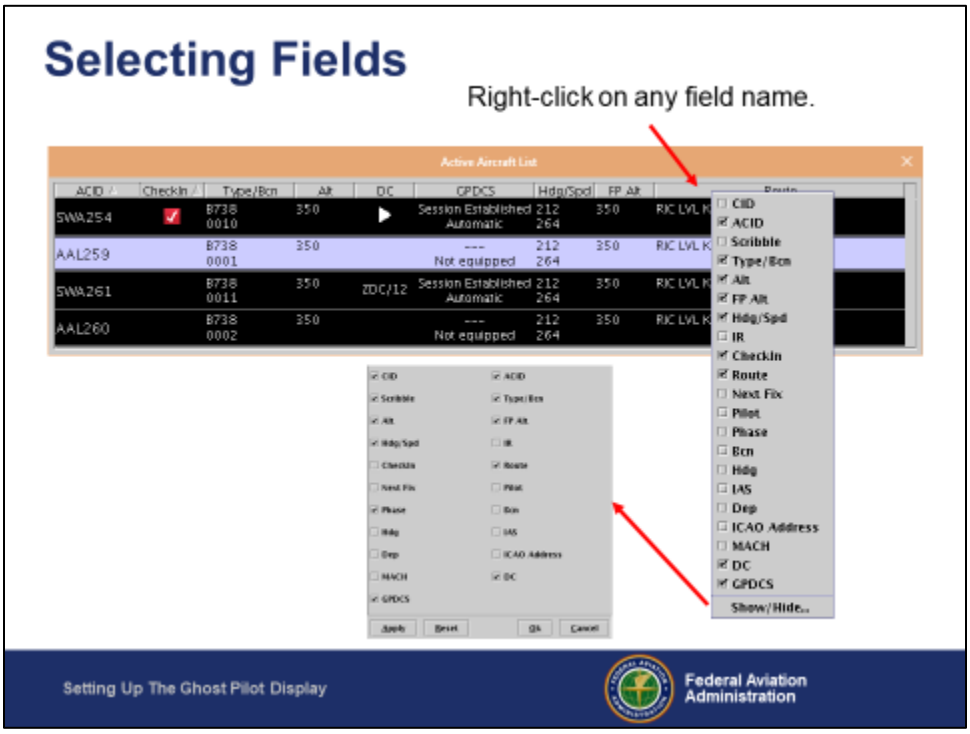
1. Move the cursor to the view header.
2. Hold down the left mouse button.
3. While continuing to hold down the left mouse button, move the view to the desired location.
4. Release the left mouse button.

To resize a view:

1. Move the cursor to a view corner or edge until it changes shape to indicate “resize” mode.
2. Hold down the left mouse button.
3. While continuing to hold down the left mouse button, move the cursor until the view is at the desired size and shape.
4. Release the left mouse button.

These are standard window move and resize methods.

Slide - 72.



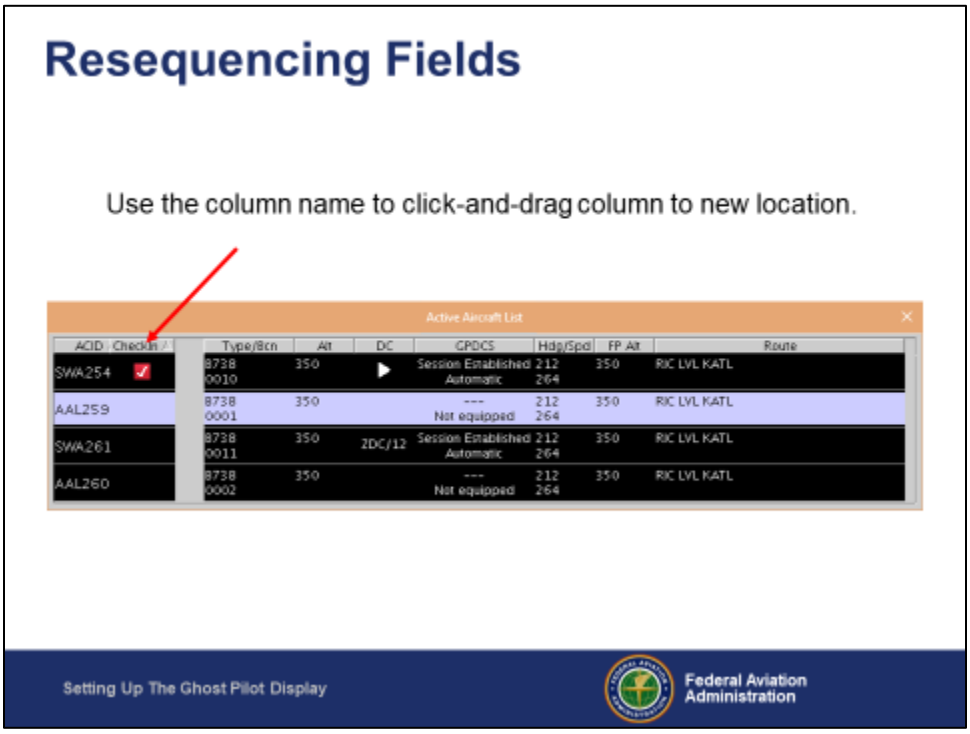
The Active Aircraft List, Future Aircraft List, and CPDLC Message view allow the Ghost Pilot to customize the displayed information.

To do so:

1. Right-click on any column name (i.e., field name). A pop-up menu listing all available fields will appear.
2. Check or uncheck the desired field. Note that the change is implemented immediately and the pop-up menu disappears. This means that, if this method is used, only one field at a time can be added or removed.

Click on the **Show/Hide…**option to open the Column Show/Hide dialog. Use this dialog to make multiple changes at once. Click on **Ok** or **Apply** once all desired changes are made.

Slide - 73.



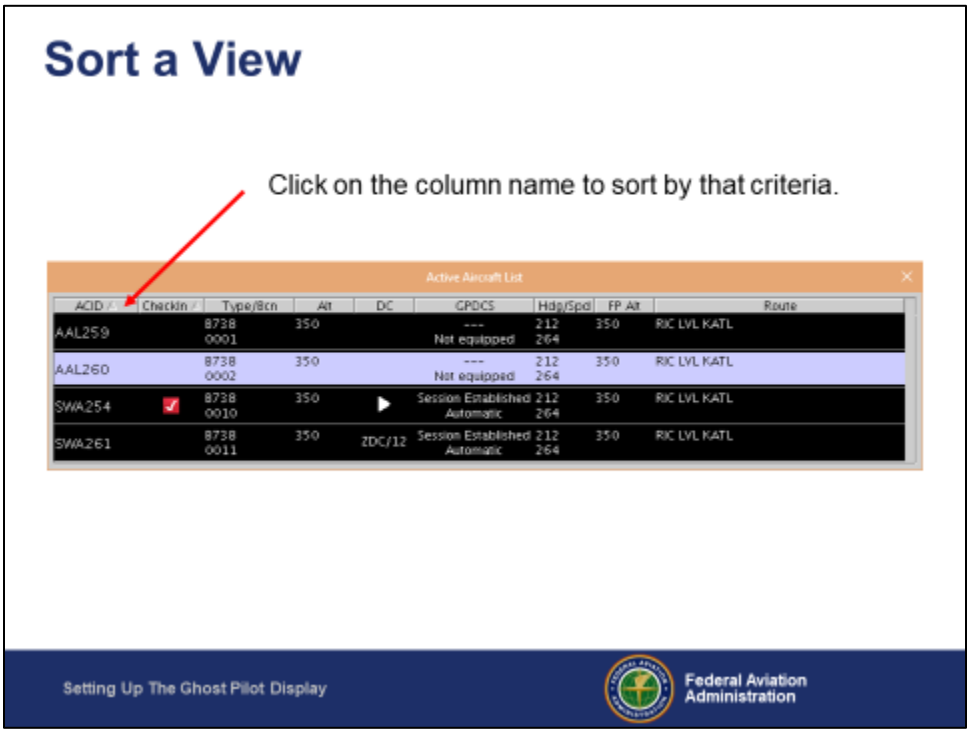
The sequence in which the columns are presented can be customized. To do so:

1. Position cursor over the desired column name.
2. Click-and-drag right or left to the desired location.

Note that the entire column will move.

In this example, the **CheckIn** column is being moved so it appears next to the **ACID** column.

Slide - 74.

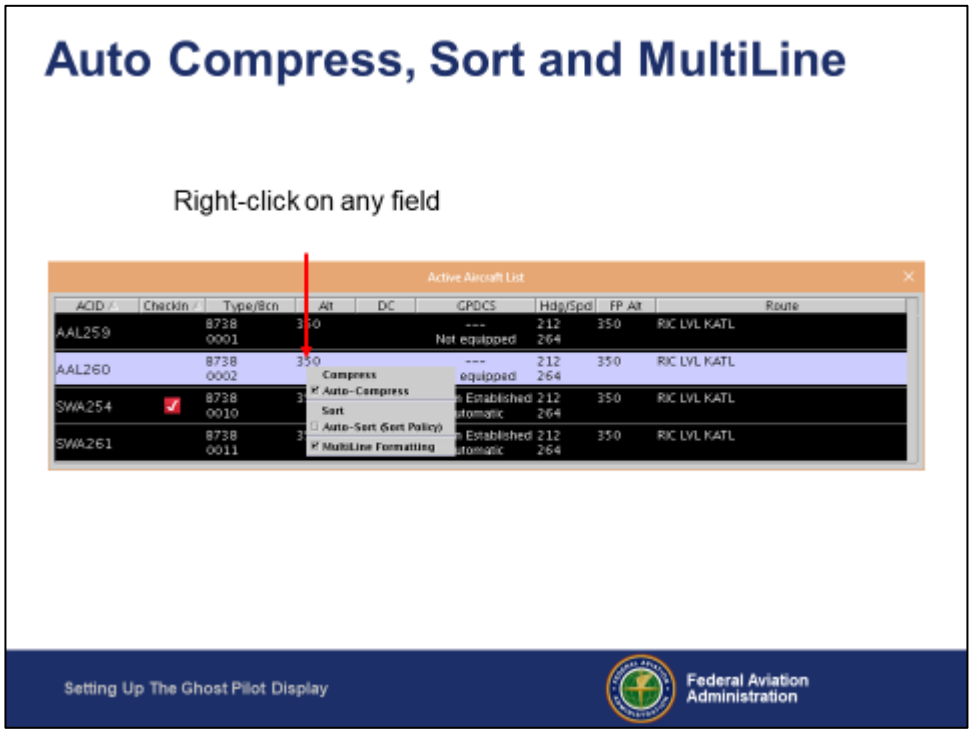


The default sort order is based on the time at which a target is activated in the exercise. The last target to be activated is the last entry in the list.

To sort entries by other criteria:

- Click on the column name to sort by that criterion.
- A triangle pointing up indicates the entries are being sorted alphanumerically in ascending order.
- Click the column name again to sort in descending order.
- Up to three levels of sorting can be selected. The arrows that appear in the column name change in size with the largest one being the first criteria, the second largest the second criteria and so on. Selecting a fourth sort column removes the first sorting that was selected.

Slide - 75.



When a target drops from an exercise, the data in that target's Active Aircraft List entry is erased and a blank row is left in its place. The same behavior will be seen in the Future Aircraft List when a target is moved to the AAL. The system can be set to automatically remove the blank space. This is called auto-compress. To enable auto-compress:

1. Right-click on any field.
2. Select **Auto-Compress** from the drop-down menu.

New entries in the Active and Future Aircraft Lists can be automatically sorted by the currently selected sort criteria. This is referred to as auto-sort. If Auto-Sort (Sort Policy) is not selected, new entries will appear at the bottom of the list.

To enable auto-sort:

1. Right-click on any field.
2. Select **Auto-Sort (Sort Policy)** from the drop-down menu. A check mark indicates that auto-sort is selected.

If Auto-Sort (Sort Policy) is selected, entries are automatically auto-compressed.

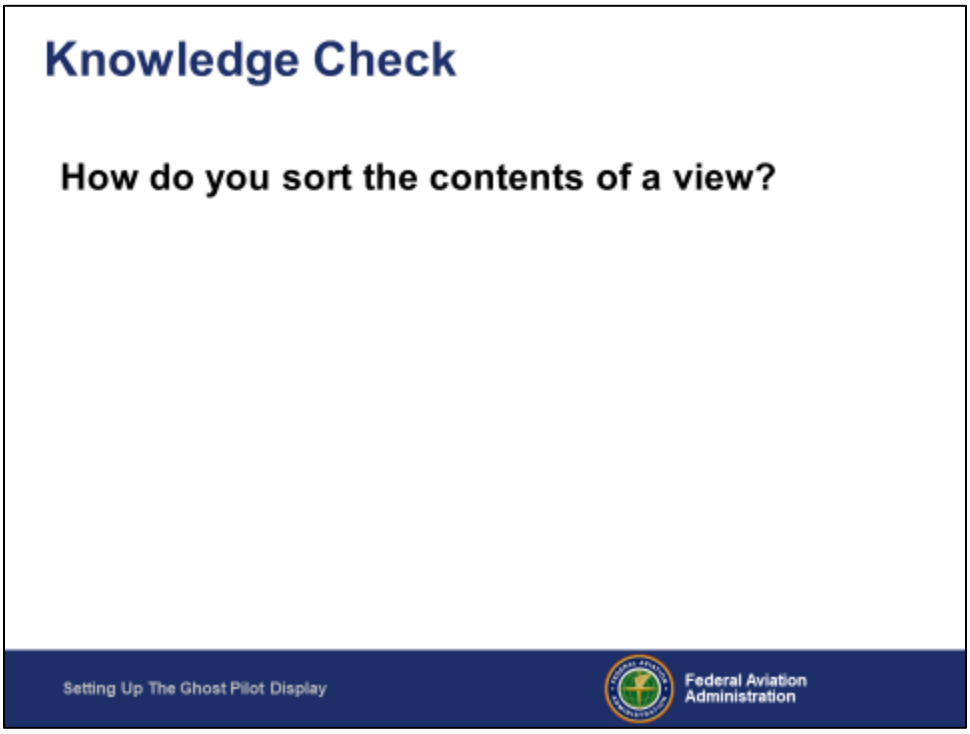
Entries in the Active and Future Aircraft List views can be toggled to display data on one or two lines. To change the number of lines displayed in entries:

1. Right-click anywhere in the view.
2. Select **MultiLine Formatting** to change the number of lines displayed. A check mark indicates two lines are being displayed.

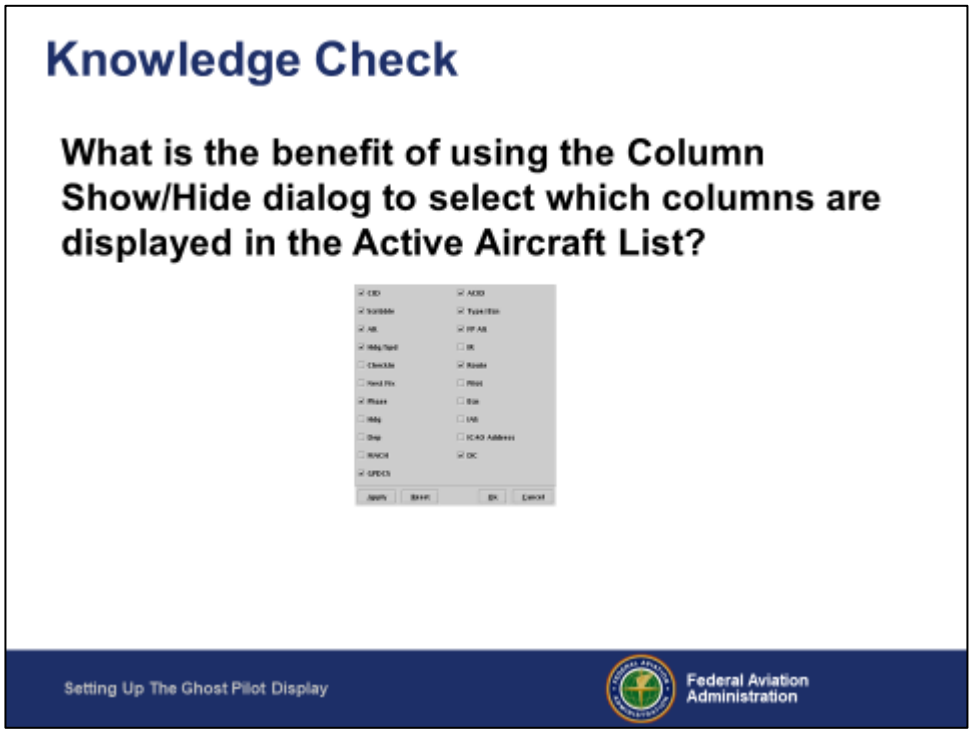
Selecting two lines provides all available information but fewer targets will therefore be listed. (The view does not expand or contract.) Selecting one line eliminates some information, but lists more targets.

In this example, two lines are being shown. If **MultiLine Formatting** is unchecked, the second row of each entry is eliminated.

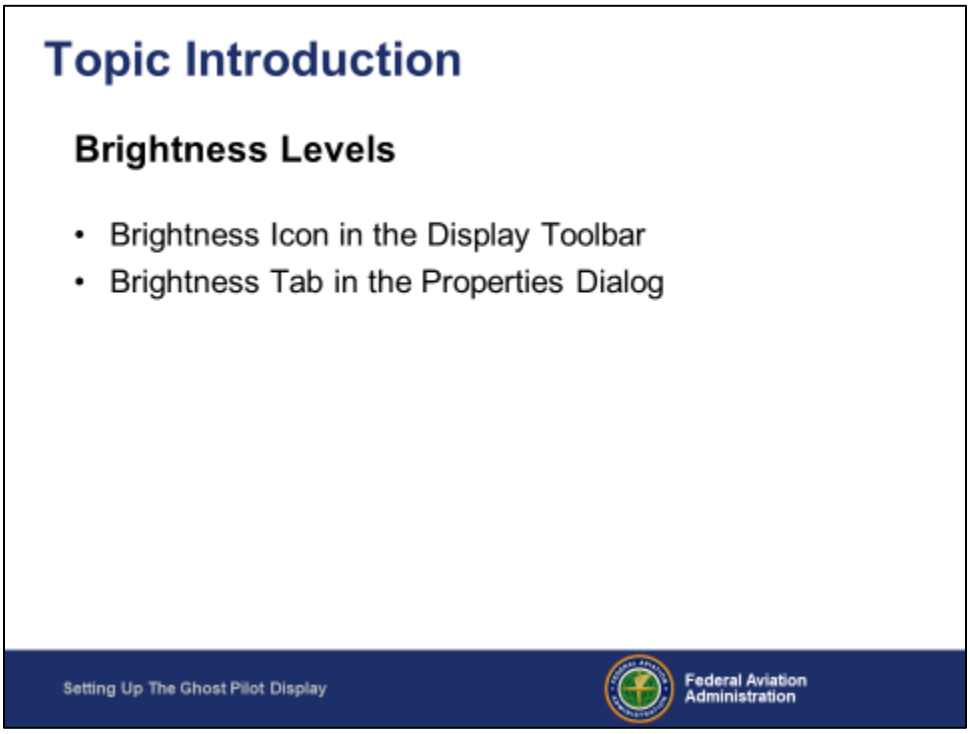
Slide - 76.


Knowledge Check
How do you sort the contents of a view?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 77.


Knowledge Check
What is the benefit of using the Column Show/Hide dialog to select which columns are displayed in the Active Aircraft List?
Setting Up The Ghost Pilot Display
Federal Aviation Administration

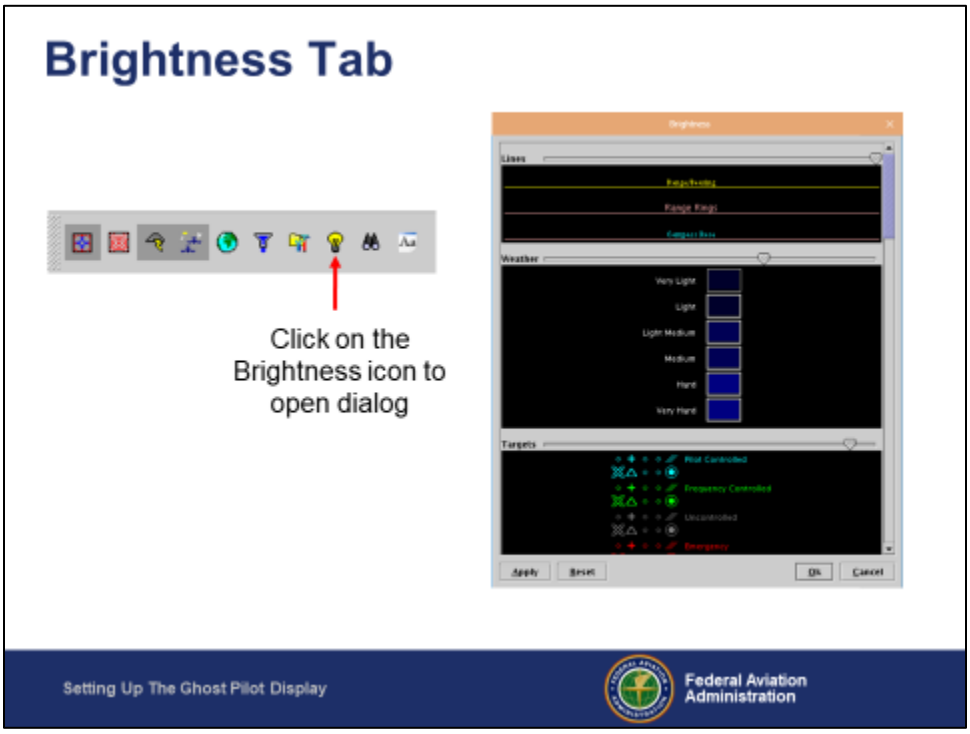
Slide - 78.



In this section, we will describe how to set display brightness levels.

Brightness levels are managed using the Brightness dialog.

Slide - 79.



The Brightness dialog is opened by clicking on the Brightness icon (i.e., light bulb) on the Display toolbar.

Another option is to open the Properties dialog, by clicking on the Properties icon on either the Display toolbar or the Map Display menu, and selecting the Brightness tab.

Slide - 80.

There are slider bars that control the brightness for the following panes:

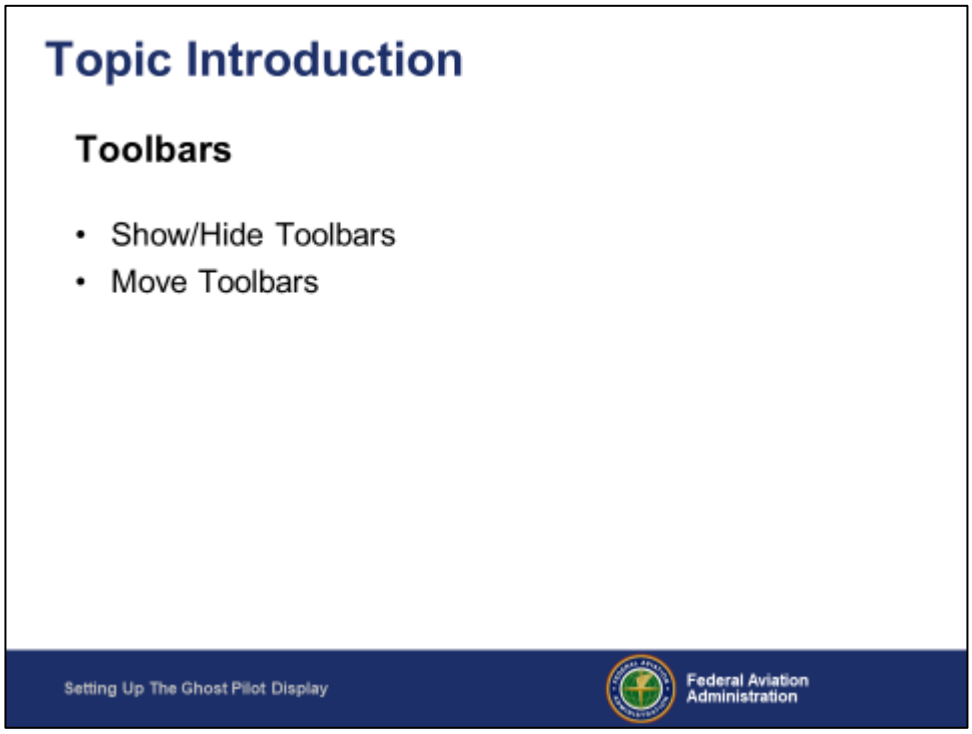
- Lines
- Weather
- Targets
- Map

The scroll bar must be used to access the slider bar on the Map brightness pane.

The specific elements affected by the brightness change are displayed in the panel below the slider bar. The elements in the panel will change brightness level as the slider bar is moved.

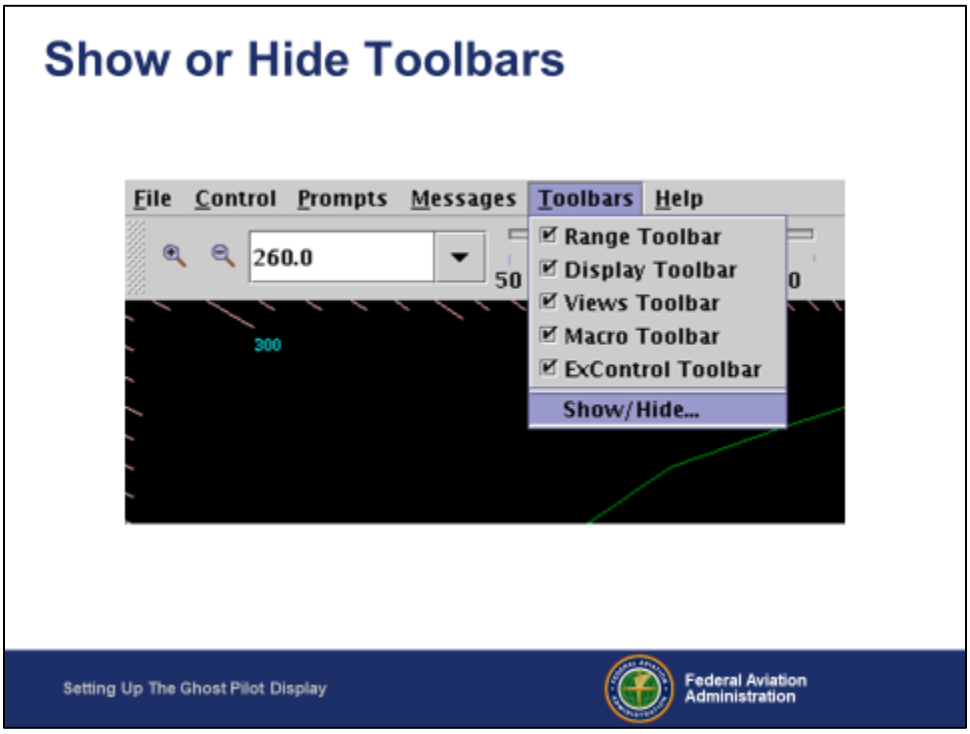
Click **Ok** or **Apply** once all brightness levels are set.

Slide - 81.



In this section, we will describe how to show or hide toolbars, and how to move them.

Slide - 82.

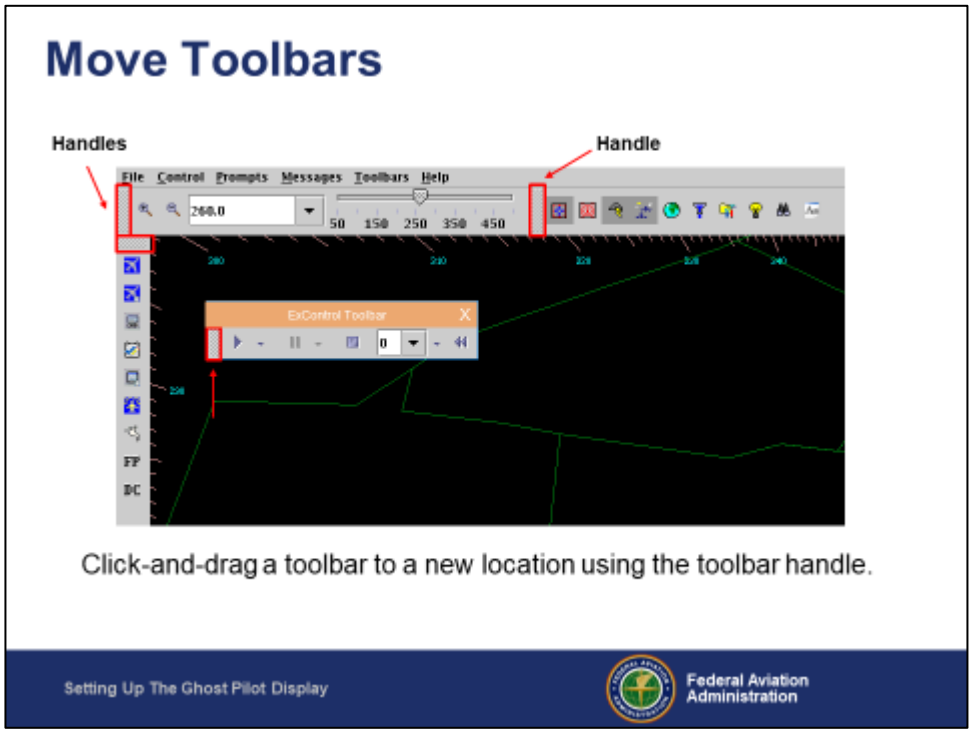


The **Toolbars** menu on the Menu Bar can be used to show or hide any of the five toolbars.

Check the toolbar to display it, or uncheck to remove it from the display. Using a checkbox implements the change immediately and removes the menu. This means that, using this method, only one toolbar can be displayed or removed at a time.

Select the **Show/Hide…** option to display a Show/Hide dialog used to make multiple changes at one time.

Slide - 83.

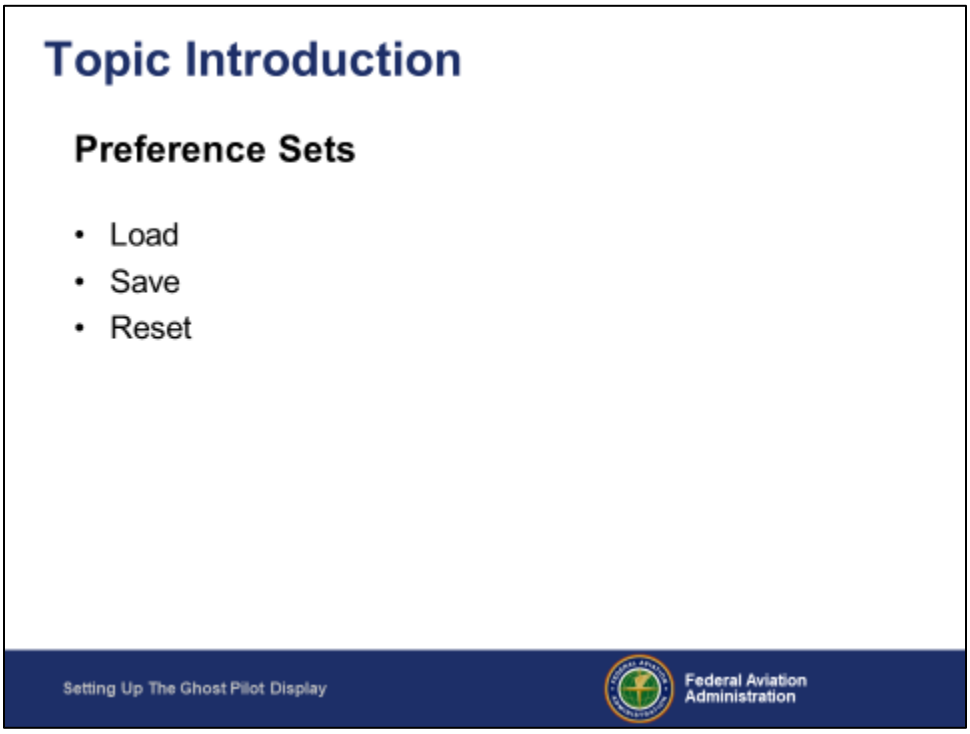


Toolbars can be positioned anywhere along the edge of the display or anywhere on the map. Note that there are slots (i.e., containers) for toolbars along the edges.

To move a toolbar:

1. Position the cursor over the toolbar handle.
2. Click-and-drag the toolbar to the desired location using the handle. As you move the mouse, the toolbar outline will move.
3. To move the toolbar to an edge, wait until the outline edges turn yellow, and then release the left-mouse button.
4. To move the toolbar to a location on the map, drag the toolbar outline to the desired location, then release the left-mouse button.

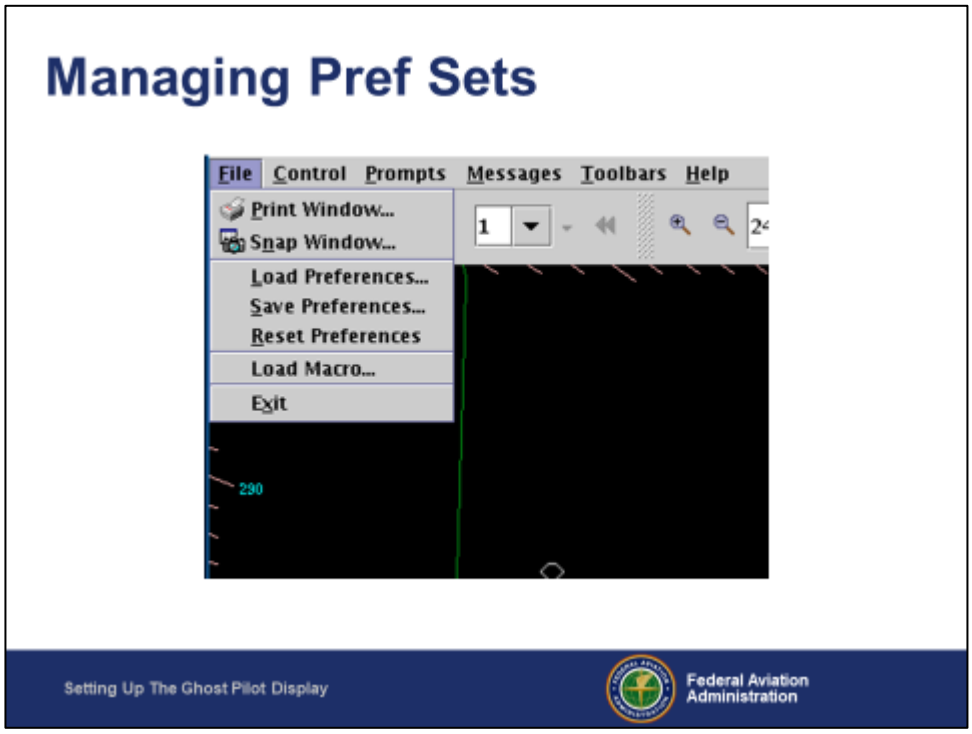
Slide - 84.



Once a Ghost Pilot has set up the display, they can save the settings in a Preference Set, or pref set. The pref set can be used with any exercise.

The display can also be reset to the default settings (i.e., the settings when an exercise first starts).

Slide - 85.



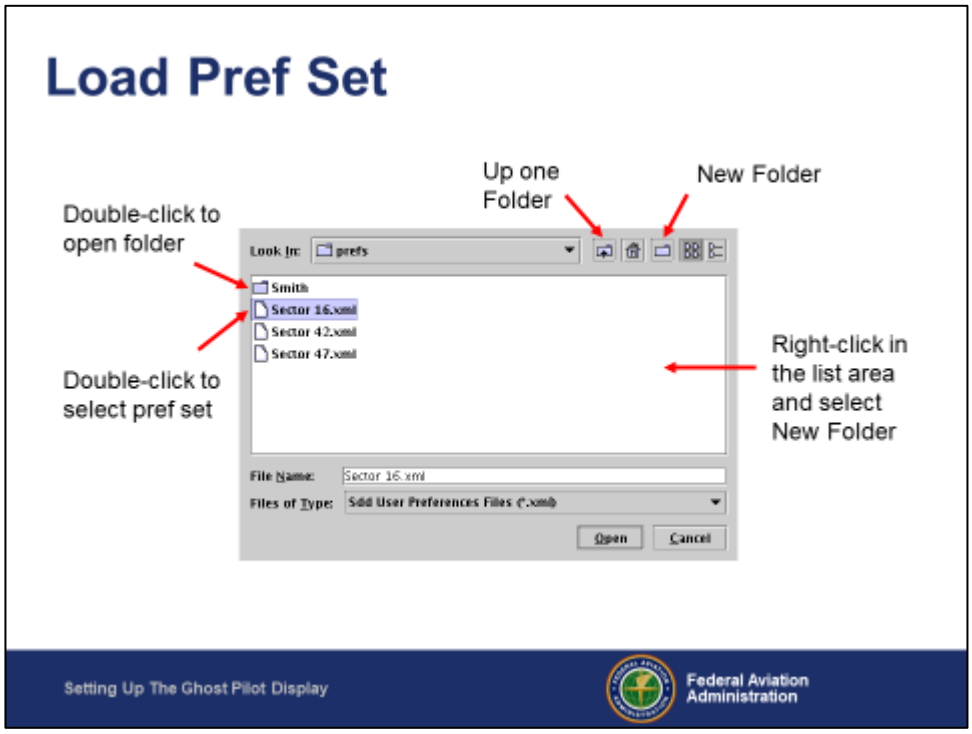
Pref sets are managed from the File menu on the Menu Bar.

The three options are:

- Load Preferences…
- Save Preferences…
- Reset Preferences…

As mentioned, the **Reset Preferences…** option will return all display settings to their default values. These are the values applied when an exercise starts.

Slide - 86.



To load a pref set:

1. Select the **Load Preferences…** option from the **File** menu. The Load Preferences dialog will open.
2. Double-click on the desired pref set name.

Since each facility has many Ghost Pilots, it can be useful to create an individual folder for each Ghost Pilot. To access a folder:

1. Double-click on the desired folder.

To create a new folder:

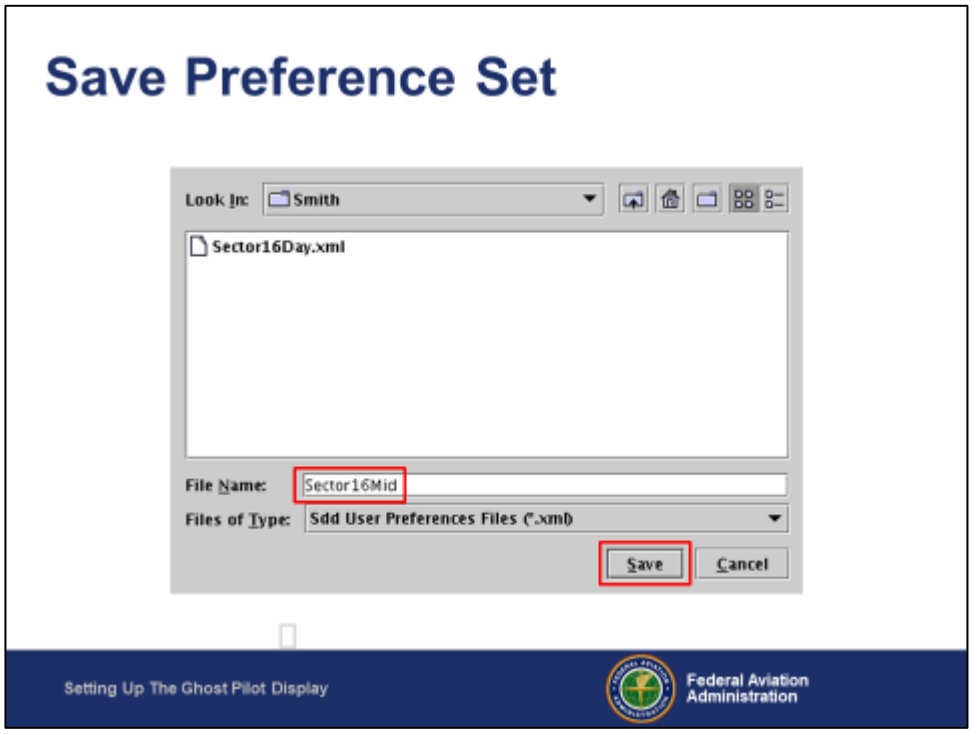
1. Click the New Folder icon.

   or

   Right-click in the list area and select New Folder.
2. Enter a folder name.

To exit a folder and return to the next level, use the Up One Folder icon.

Slide - 87.

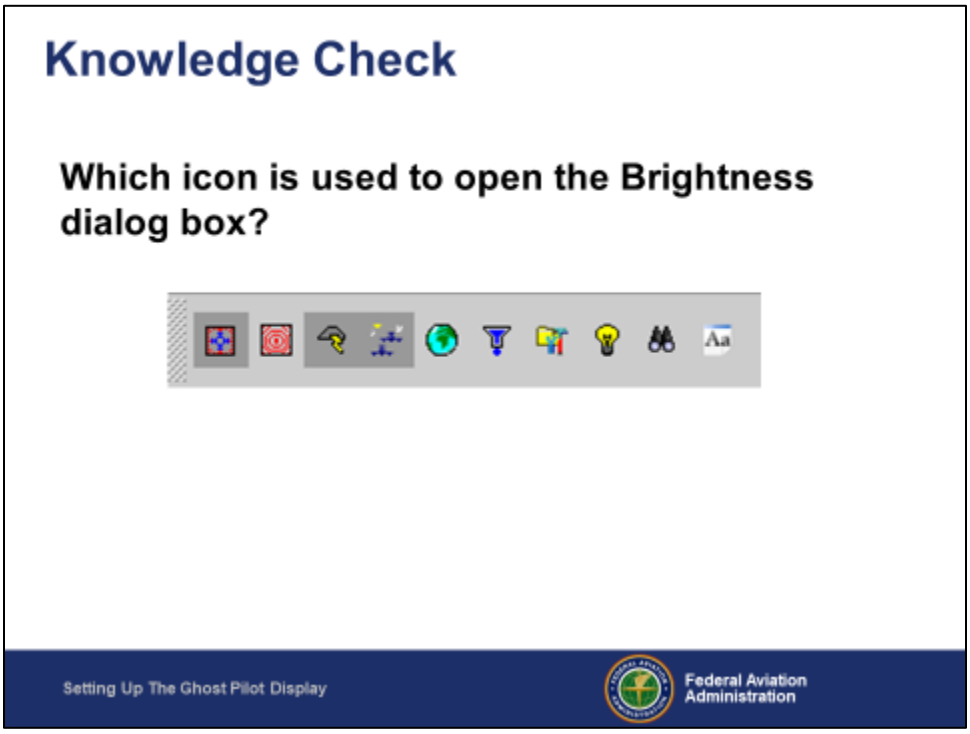


To save a pref set:

1. Select the **Save Preferences…** option from the **File** menu. The Save Preferences dialog will open.
2. Navigate to the desired folder.
3. Enter a pref set name.
4. Click on **Save**.

If a file exists with the same name, a warning will be displayed.

Slide - 88.


Knowledge Check
Which icon is used to open the Brightness dialog box?
Setting Up The Ghost Pilot Display
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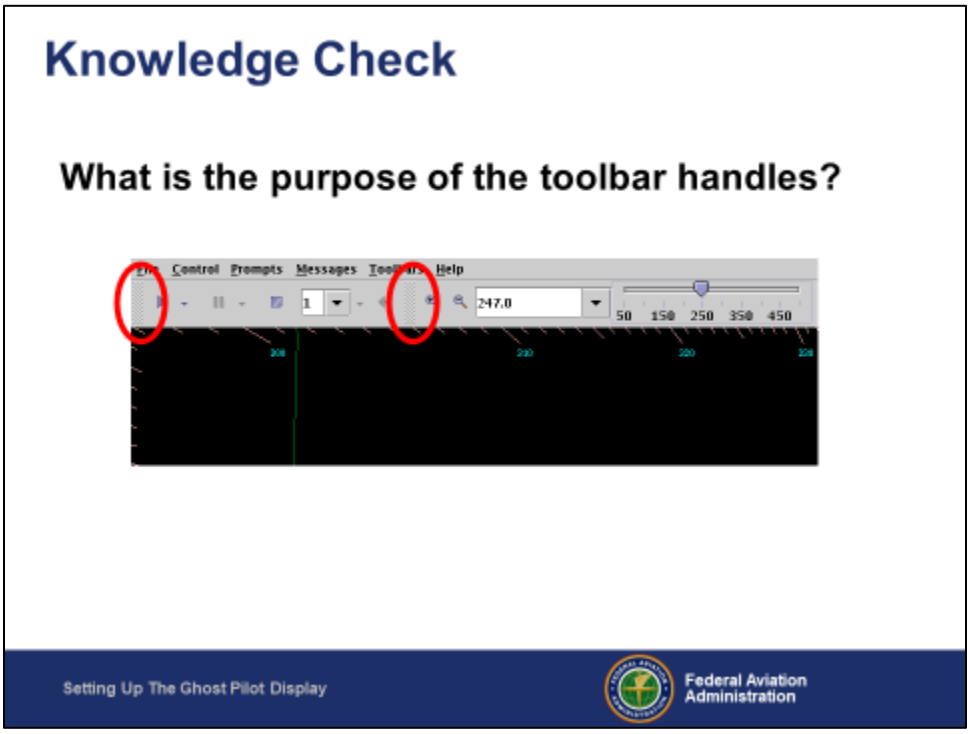
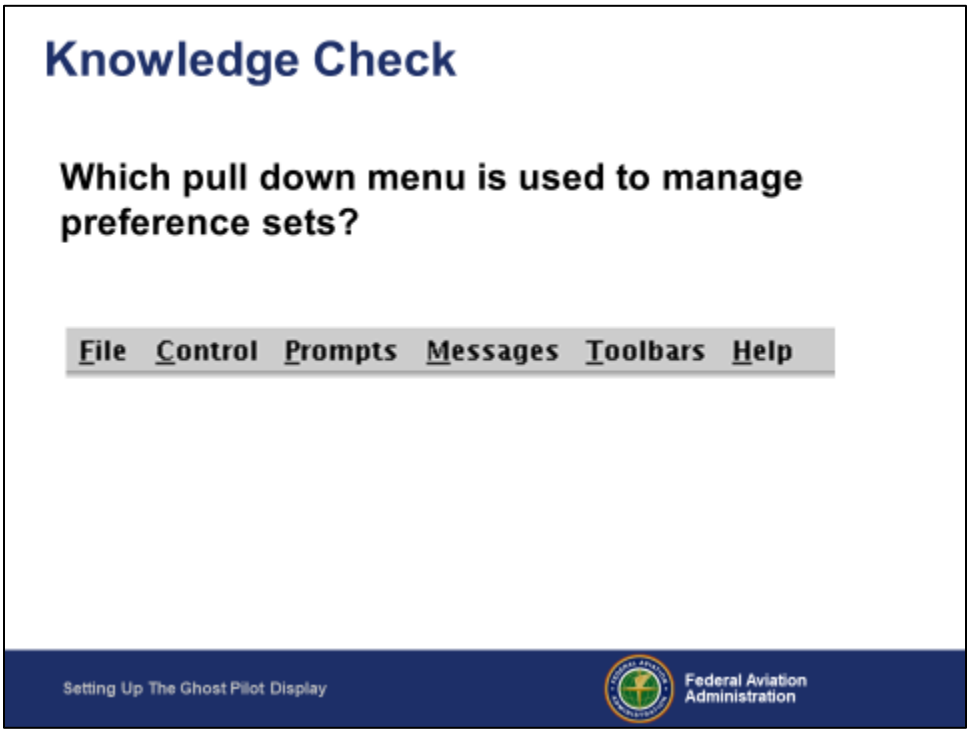
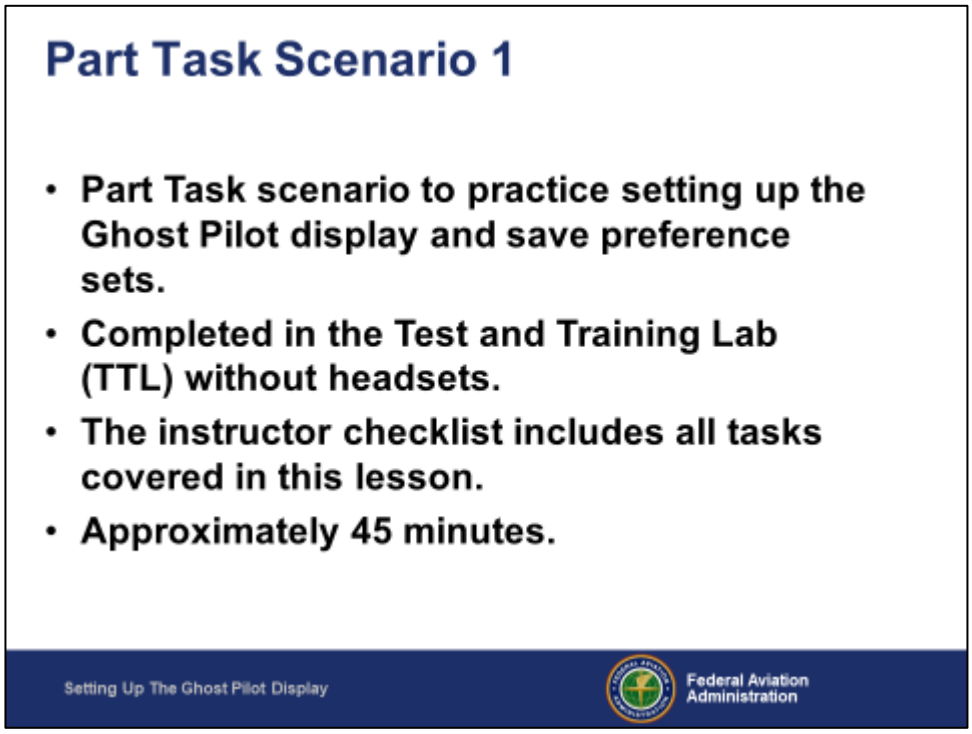
Slide - 89.


Knowledge Check
What is the purpose of the toolbar handles?
Control Prompts Messages Help
247.0
50 150 250 350 450
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 90.


Knowledge Check
Which pull down menu is used to manage preference sets?
File Control Prompts Messages Toolbars Help
Setting Up The Ghost Pilot Display
Federal Aviation Administration

Slide - 91.

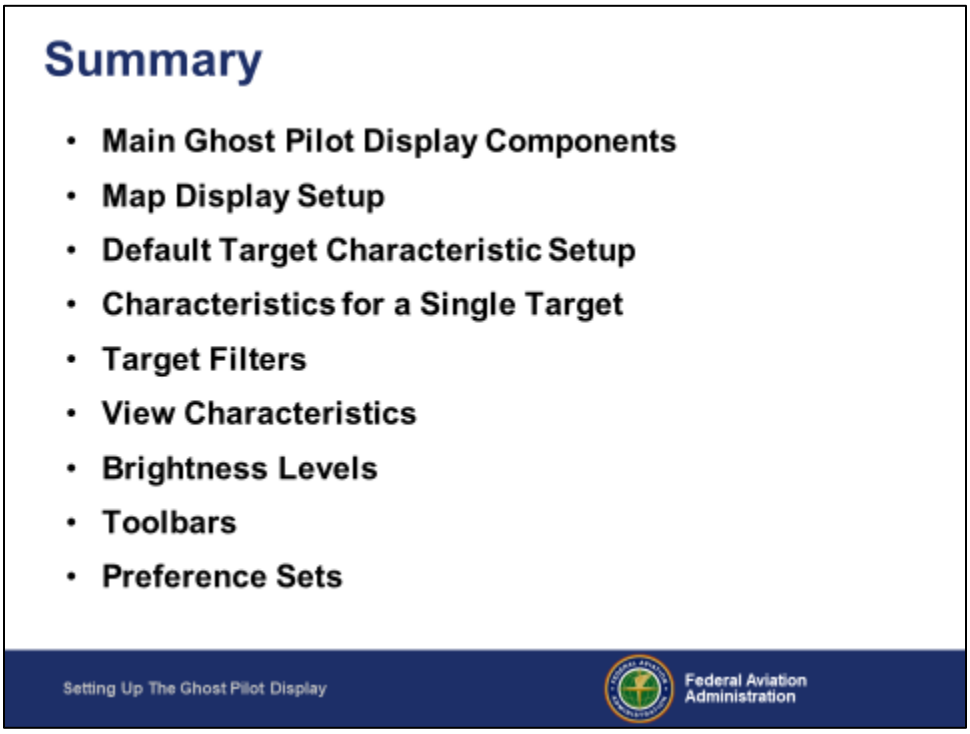


After completion of this exercise, this lesson will resume in the classroom. Your instructor will provide the details.

Part Task Scenario 1:

Purpose	To practice all tasks related to setting up the Ghost Pilot display and to save preference sets.
Materials	The instructor will use the Part Task Scenario1 checklist. No student handouts are required.
Directions	A locally developed scenario should be loaded and ready to start in the TTL. Requirements for the scenario have been provided to the facility. No controllers are needed. No headsets are needed. Instructors should use the checklist to step through all the functionality to be practiced. Instructors should assist students as necessary. Approximate duration of the exercise is 45 minutes.

Slide - 92.


Summary
• Main Ghost Pilot Display Components
• Map Display Setup
• Default Target Characteristic Setup
• Characteristics for a Single Target
• Target Filters
• View Characteristics
• Brightness Levels
• Toolbars
• Preference Sets
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Slide - 93.


THE END
Introduction to the Ghost Pilot Situation Display
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