Surface Trajectory-Based Operations (STBO) Client User Manual

Airspace Technology Demonstration 2 (ATD-2) Team

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Abstract

This document serves as a user manual for the ATD-2 Surface Trajectory-Based Operations (STBO) Client (version 5.11) utilized by Air Traffic Control in the Tower. It describes the elements of the STBO Client interface and provides step-by-step instructions for using the tool. STBO Client functionality includes the display of live flight information, management of traffic restrictions, and prediction of expected traffic demand. The STBO Client is a component of the NASA Airspace Technology Demonstration 2 (ATD-2) sub-project.

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1 STBO Client: Getting Started

The thin green bar on the left side of the display provides access to several different system views (Figure 1.1). To get started, first make sure that "My Desktop" is displayed.

To access "My Desktop":

Step 1: Hover mouse over the green bar on the left side of the display to view the menu (Figure 1.1).

Step 2: Select "My Desktop" from the menu (Figure 1.1).

Figure 1.1. Use the green bar to navigate to "My Desktop."

The NASA icon in the lower left of the display provides access to ATD-2 tools, including the STBO Client (Figure 1.2).

To open the STBO Client:

Ensure that "My Desktop has been selected.

Step 1: Select the NASA icon in the lower left of the window to open the ATD-2 suite; menu options may vary (Figure 1.2).

Step 2: Select "STBO" from the menu (Figure 1.2).

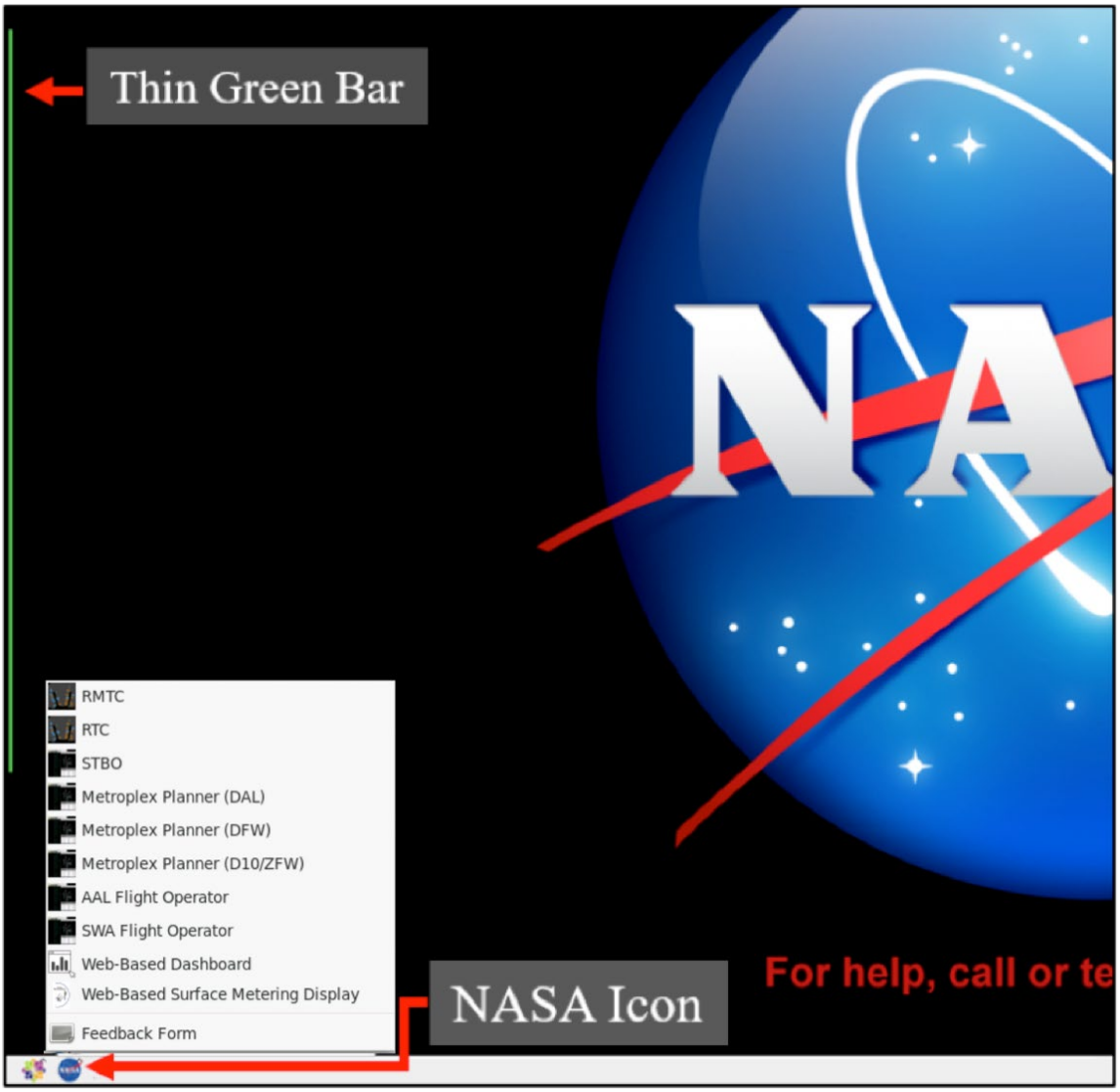


Figure 1.2. Select "STBO" from the ATD-2 Suite menu.

2 STBO Client: Overview

The STBO Client displays live flight information on the surface and in the terminal area, demand predictions, and allows the user to manage TMI and airport-specific restrictions. The interactive interface consists of the following primary elements, each displayed in their own windows: toolbar, maps, tables, and timelines (Figure 2.1).

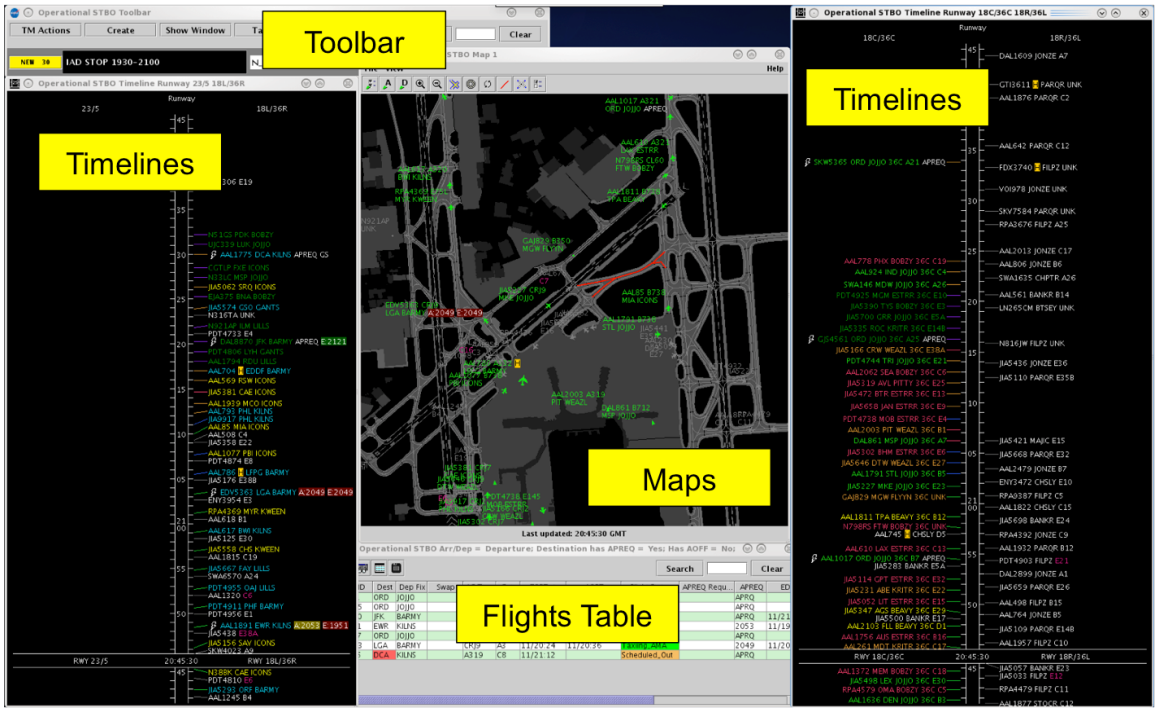


Figure 2.1. STBO Client interactive interface.

These elements are described in the following sections:

- Section 3: Toolbar
- Section 4: Maps
- Section 5: Tables
- Section 6: Timelines
- Section 7: Approval Requests (APREQs)

3 STBO Client: Toolbar

The Toolbar provides access to TMI restriction information and interface controls/settings. Status icons and notifications are also displayed on the Toolbar (Figure 3.1). A complete list of functions and displays on the Toolbar is shown in Table 3.1.

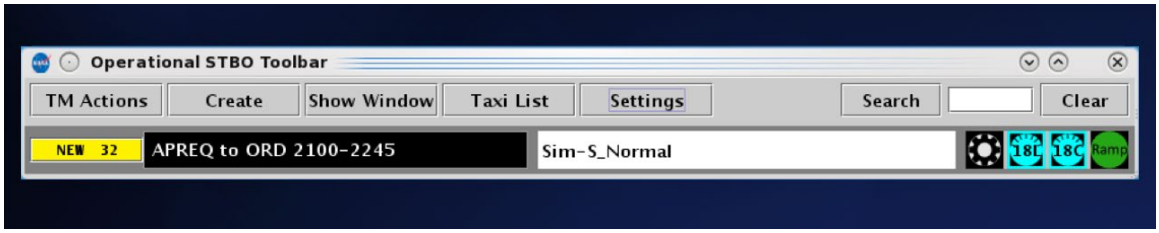


Figure 3.1. STBO Client: Toolbar.

Table 3.1. Functions and Displays on the Toolbar

Toolbar Feature	Description
Traffic Management (TM) Actions	**Section 3.1:** View, add, modify, or remove TMI and airport-specific restrictions.
Create	**Section 3.2:** Create new, or load previously saved, maps, tables, and timelines in new windows.
Show Window	**Section 3.3:** View list of open maps, tables, and timelines. Select a window to bring to the front of the display.
Taxi List	**Section 3.4:** View a list of departure flights by runway with delay information.
Settings	**Section 3.5:** Save or load a display configuration. Select display settings.
Search	**Section 3.6:** Search for flight number, a call sign, departure fix, destination airport, or General Aviation flight.
Notification Icon/Banner	**Section 3.7:** Displays new ATC and airport-related notifications.
Runway Utilization	**Section 3.8:** Displays current airport configuration and runway utilization.
Status Icons	**Section**

3.1 Toolbar: Traffic Management (TM) Actions

Use the TM Actions menu to view, add, modify, or remove TMI and airport-specific restrictions.

To access the TM Actions Panel from the Toolbar:

Step 1: Click on the "TM Actions" button and select from the dropdown menu (Figure 3.2).

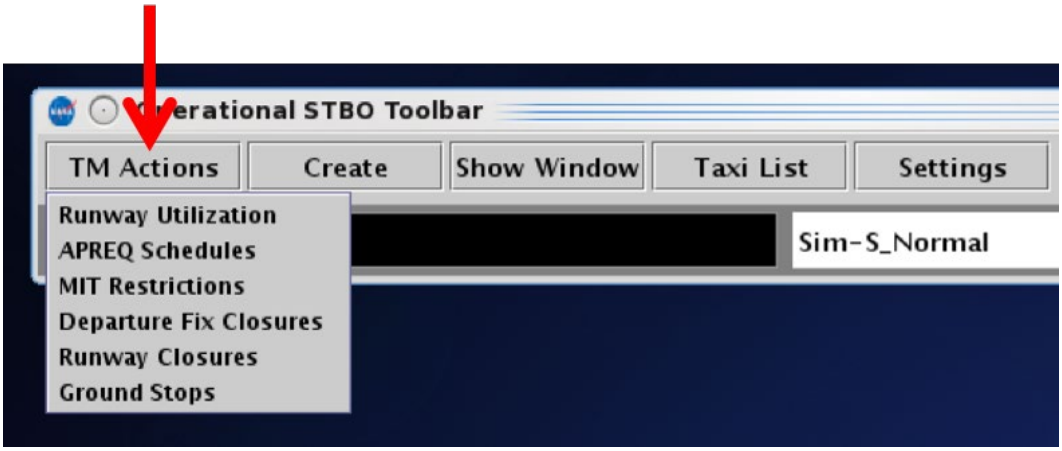


Figure 3.2. TM Actions dropdown menu.

In the STBO Client, four types of **TMI restrictions** can be viewed, added, modified, and removed on the TM Actions Panel:

- APREQ Restrictions (Section 3.1.1)
- Miles-in-Trail (MIT) Restrictions (Section 3.1.2)
- Departure Fix Closures (Section 3.1.3)
- Ground Stops (Section 3.1.4)

There are two sources from which the ATD-2 system can detect TMI restrictions: The **FAA Operational Information System (OIS)** and the **National Traffic Management Log (NTML)/Traffic Flow Management (TFM) system.**

- If a TMI restriction is detected from OIS, "**OIS**" is displayed in the "Source" column on the TM Actions Panel. OIS restrictions can be removed or modified by the ATD-2 user.
- If a TMI restriction is detected from NTML, "**TFM**" is displayed in the "Source" column. TFM restrictions can be removed, but *cannot be modified*, by the ATD-2 user.

Two types of ***airport-specific*** **restrictions** can be manually entered, modified, or removed:

- Runway Utilization Tab (Section 3.1.6)
- Runway Closures (Section 3.1.7).

3.1.1 TM Actions: APREQ Schedules Tab

An APREQ restriction can be applied to an airport, departure fix, departure gate, or jet route.

To add an APREQ Restriction:

Step 1: Select "APREQ Schedules" from the TM Actions dropdown menu (Figure 3.2) to open the APREQ Schedules tab (Figure 3.3).

Step 2: Select the resource to which the APREQ restriction will be applied (e.g., "Airport" in Figure 3.4):

- Airport
- Departure Fix
- Departure Gate
- Jet Route

Step 3: Click on the "Select" button or on the dropdown menu (depending on which resource has been selected) to select one or more Airports, Departure Fixes, or Departure Gates from their respective menus.

Alternatively: In the text field, type the:

- 3-digit Airport code(s), or
- Departure Fix name(s), or
- Departure Gate name(s), or
- Jet Route name(s)

Separate multiple entries with a comma, but no space (e.g., "DCA,LGA,PHL" in Figure 3.4).

Step 4: If the restriction begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "2300" in Figure 3.4).

Step 5: If an "End Time" is known, uncheck "No End Time" and enter a time in the "End Time" text box in "hhmm" format (e.g., "0100" in Figure 3.4).

Note: The End Time must be later than the Start Time.

Step 6: If necessary, constraints can be added to the APREQ restriction. See Section 3.1.5 for more information about constraints.

Step 7: Select the "Add" button (Figure 3.4).

Note: User-added APREQ restrictions are displayed in the APREQ Schedules table with "User" indicated the "Source" column (Figure 3.5).

Alternatively: Select the "Clear All" button to clear and cancel all entries.

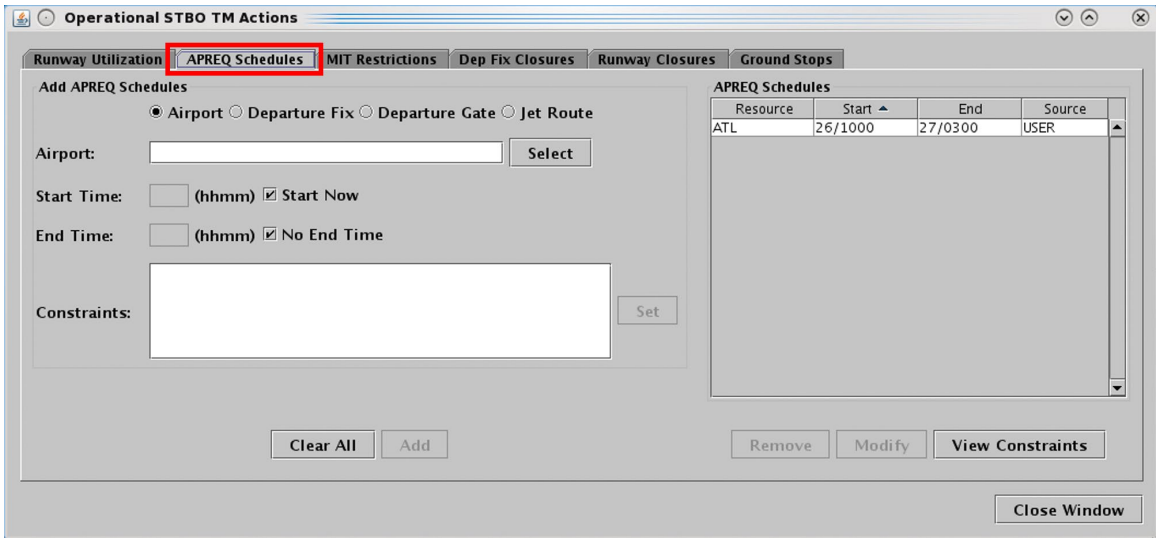


Figure 3.3. TM Actions panel: APREQ Schedules tab.

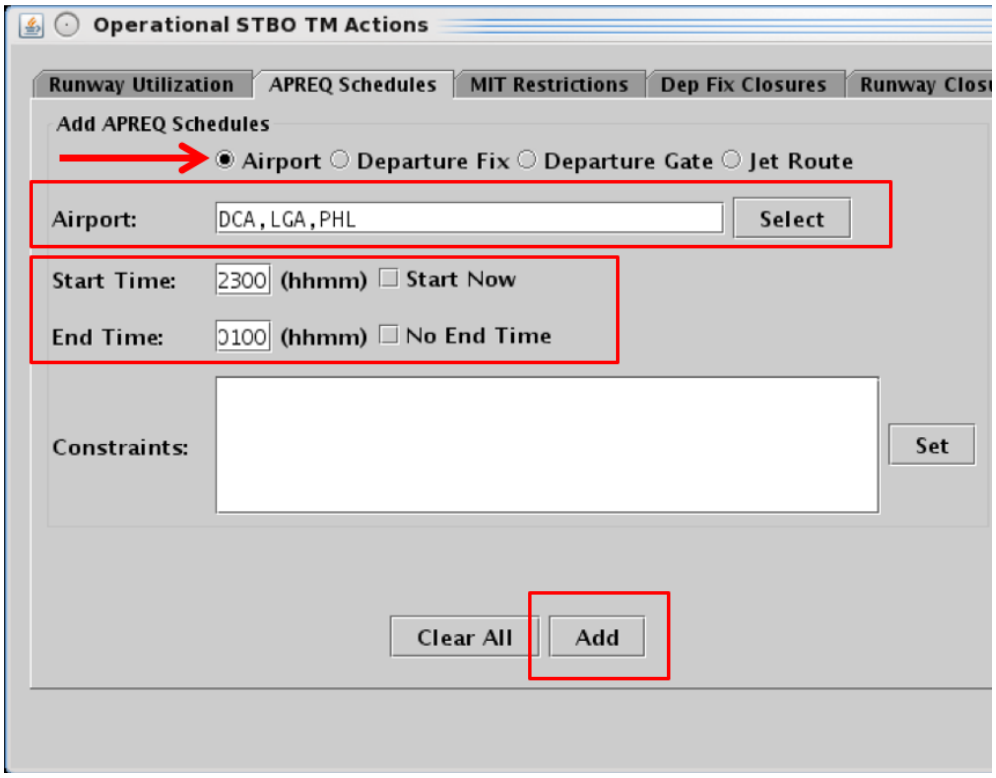


Figure 3.4. APREQ Schedules tab: Enter criteria for the APREQ restrictions.

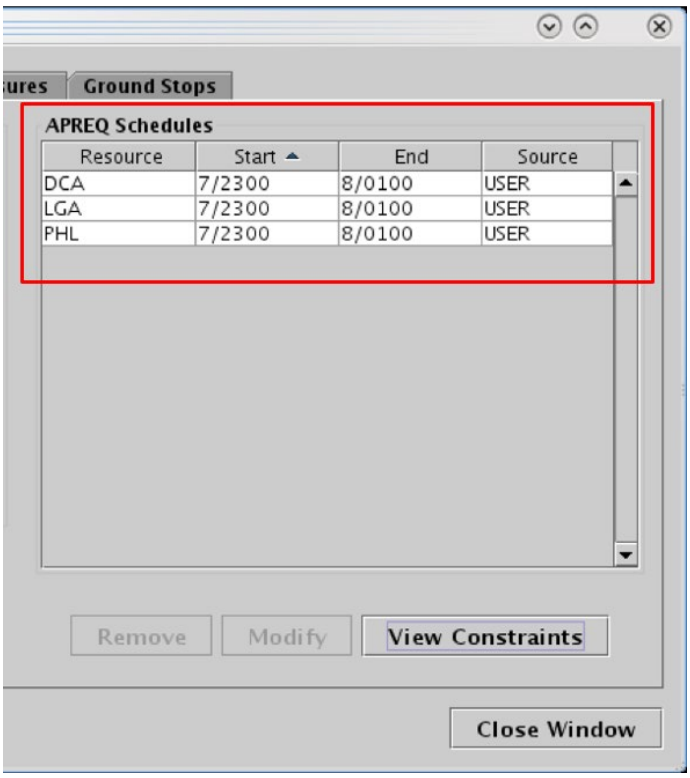


Figure 3.5. APREQ Schedules tab: APREQ Schedules table.

APREQ restrictions are indicated in Notification Banner (e.g., “APREQ to DCA”). A new notification is generated for each scheduled APREQ restriction.

APREQ restrictions are indicated on the map, timeline, and in the Flights Table. On maps and timelines, an APREQ restriction is shown in the flight’s datablock, with color-coding to indicate predicted compliance with the APREQ window.

To modify an APREQ Restriction:

Only APREQ restrictions received from OIS or entered by the User can be modified; those received from TFM cannot be modified.

Step 1: Select an APREQ restriction in the APREQ Schedules table (e.g., "LGA" in Figure 3.6).

Step 2: Select "Modify" (Figure 3.6) to change:

- Start Time*
- End Time
- Constraints

If the "Start Time" has already passed and the APREQ restriction is already in effect, the Start Time field is grayed-out and cannot be modified. In Figure 3.7, however, the Start Time is still in the future.

Step 3: When changes are complete, select "Update" (Figure 3.7).

Alternatively: Select "Clear All" to cancel the update and retain the original settings for that restriction.

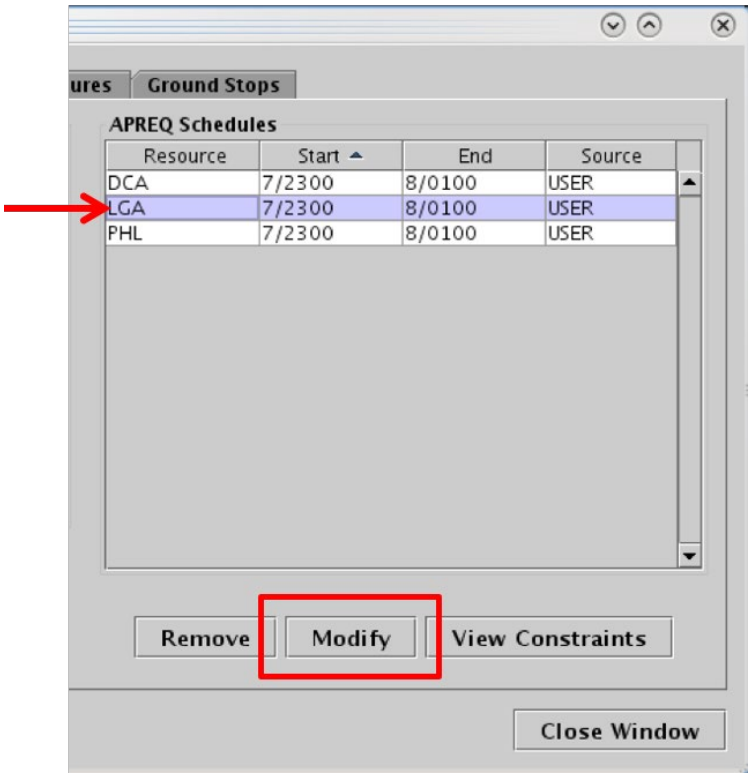


Figure 3.6. Modify an APREQ restriction.

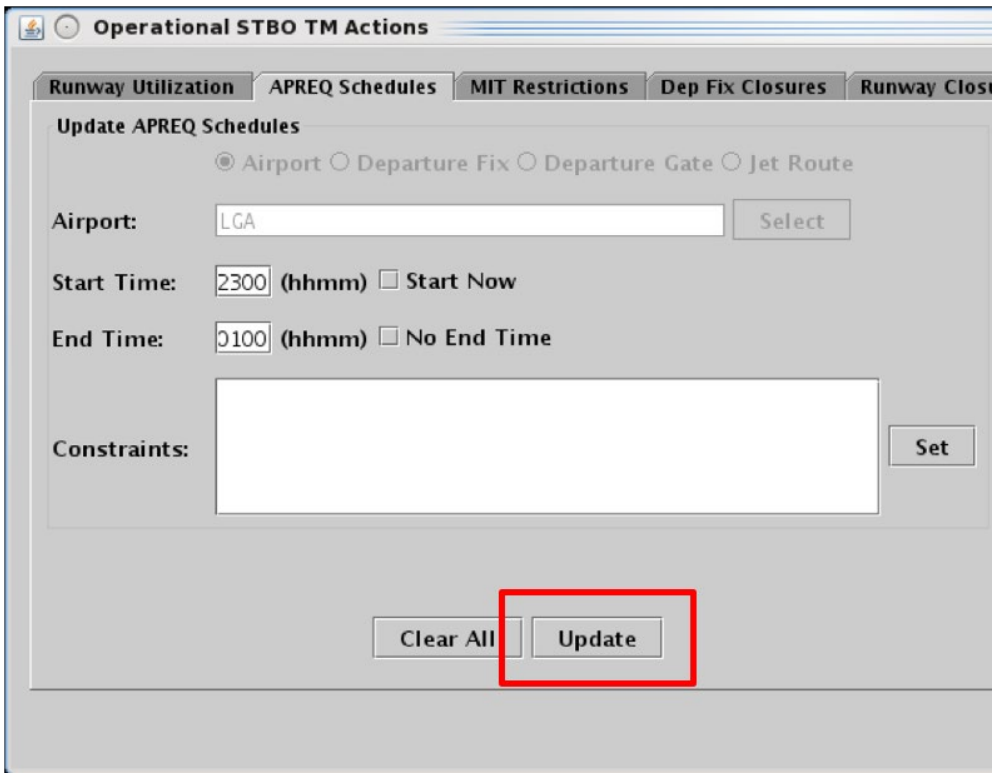


Figure 3.7. Select "Update" to apply changes. In this example, the Start Time (2300 UTC) is still in the future, so it can be modified.

To remove an APREQ Restriction:

An APREQ restriction from any source (User-entered, OIS, or TFM) can be removed.

Step 1: Select an APREQ restriction in the APREQ Schedules table (e.g., "PHL" in Figure 3.8).

Step 2: Select "Remove" (Figure 3.8).

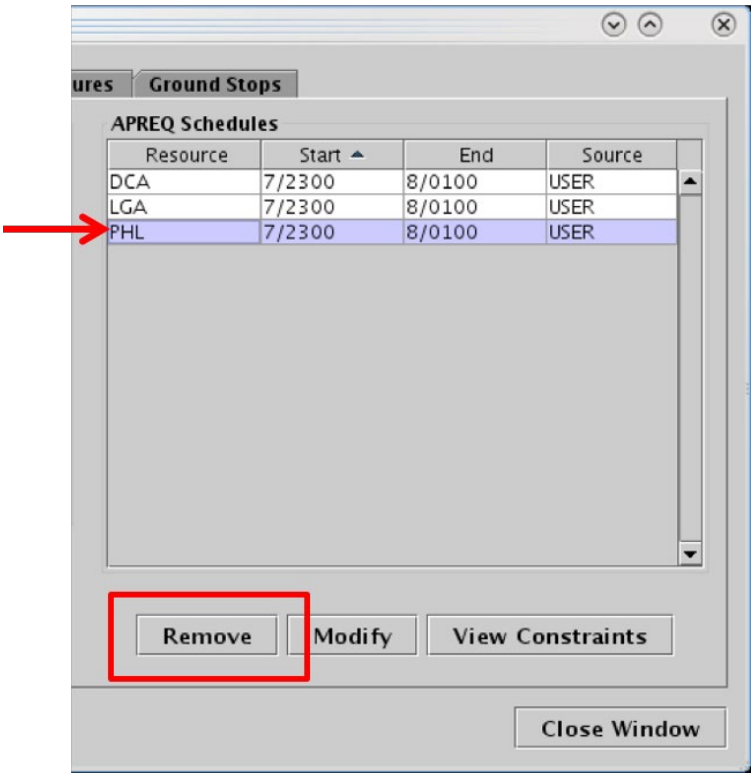


Figure 3.8. Remove an APREQ restriction.

APREQ expirations/cancellations are indicated in the "Details" column in the Notifications Panel.

3.1.2 TM Actions: MIT Restrictions Tab

A Miles-in-Trail (MIT) restriction can be applied to an airport, departure fix, departure gate, or jet route.

To add an MIT Restriction:

Step 1: Select "MIT Restrictions" from the TM Actions dropdown menu (Figure 3.2) to open the MIT Restrictions tab (Figure 3.9).

Step 2: Select the resource to which the MIT restriction will be applied (e.g., "Departure Fix" in Figure 3.10):

- Airport
- Departure Fix
- Departure Gate
- Jet Route

Step 3: Click on the "Select" button or on the dropdown menu (depending on which resource has been selected) to select one or more Airports, Departure Fixes, or Departure Gates from their respective menus.

Alternatively: In the text field, type the:

- 3-digit Airport code(s), or
- Departure Fix name(s), or
- Departure Gate name(s), or
- Jet Route name(s)

Separate multiple entries with a comma, but no space (e.g., "ICONS,BEAVY" in Figure 3.10).

Step 4: Select the miles-in-trail (MIT) distance (10, 15, 20, 25, 30, or 35 *nm*) from the dropdown menu (e.g., 15 *nm* in Figure 3.10).

Alternatively: Enter a distance by typing a number between 1 and 50 *nm* in the "MIT Restriction" field.

Step 5: If the restriction begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "2300" in Figure 3.10).

Step 6: If an "End Time" is known, uncheck "No End Time" and enter a time in the "End Time" text box in "*hhmm*" format (e.g., "0130" in Figure 3.10).

Note: The End Time must be later than the Start Time.

Step 7: If necessary, constraints can be added to the MIT restriction. See Section 3.1.5 for more information about constraints.

Step 8: Select the "Add" button (Figure 3.10).

Note: User-added MIT restrictions are displayed in the MIT Restrictions table with "User" indicated the "Source" column (Figure 3.11).

Alternatively: Select the "Clear All" button to clear and cancel all entries.

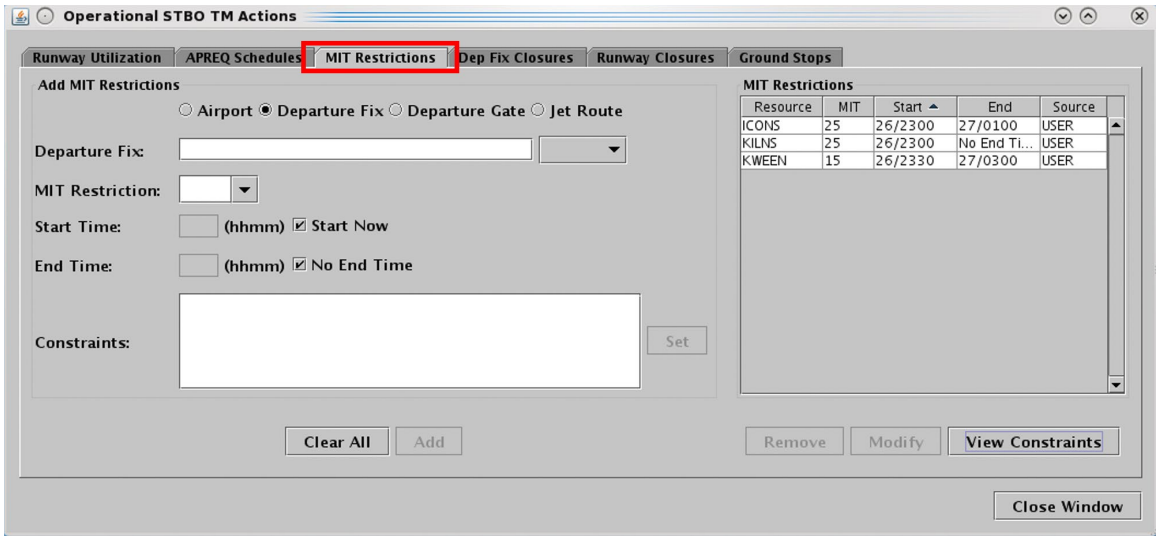


Figure 3.9. TM Actions panel: MIT Restrictions tab.

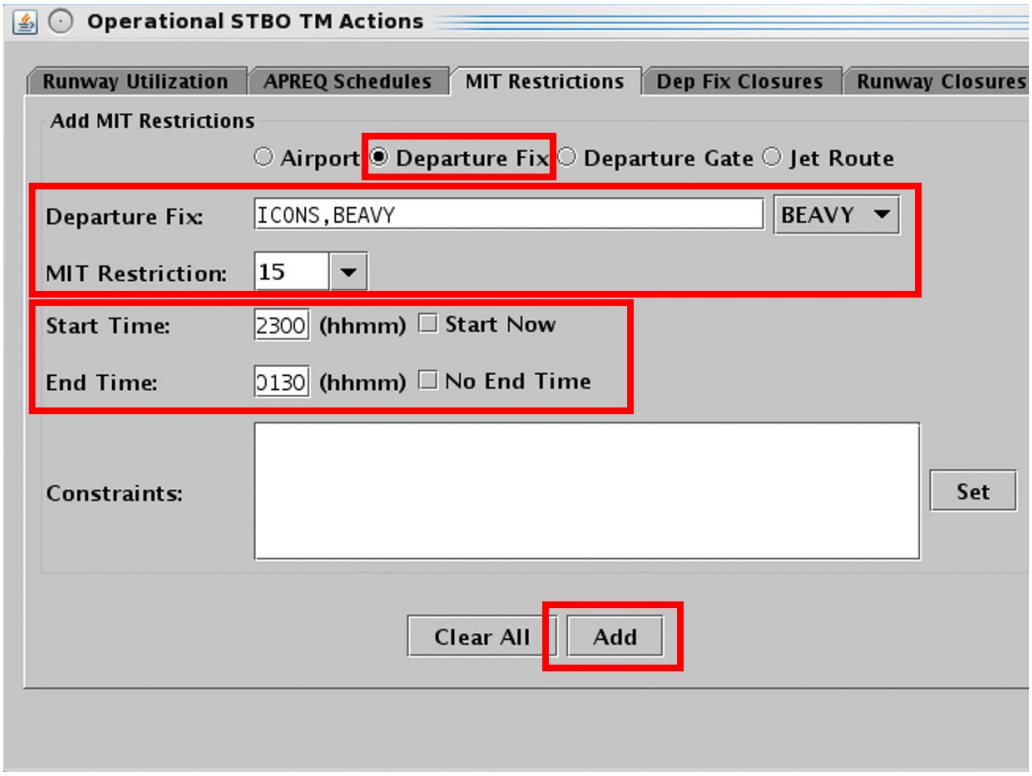


Figure 3.10. MIT Restrictions tab: Enter criteria for the MIT restrictions.

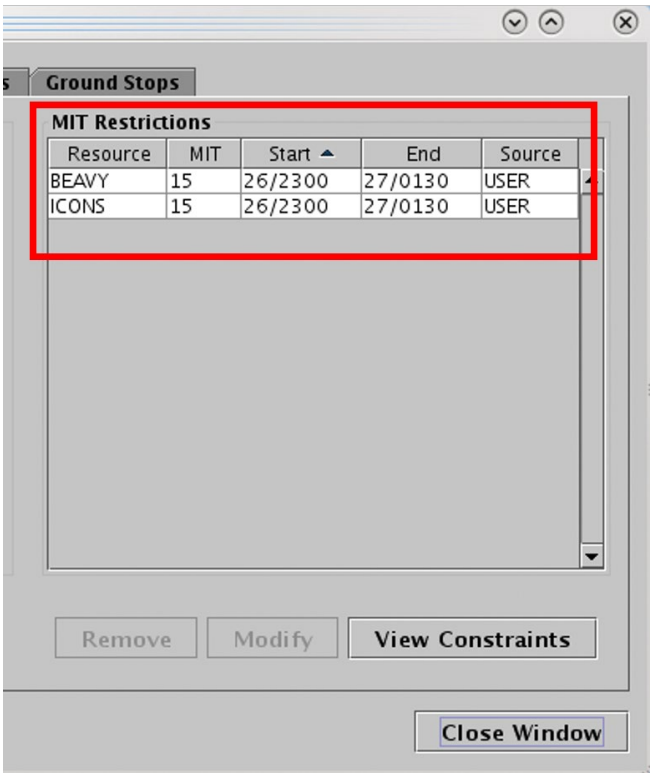


Figure 3.11. MIT Restrictions table.

MIT restrictions are indicated in the Notification Banner (e.g., “15 MIT BEAVY”). A new notification is generated for each scheduled MIT restriction.

MIT restrictions are indicated on the map, timeline, and in the Flights Table. On maps and timelines, an MIT restriction is shown in the flight’s datablock and next to the Departure Fix label.

To modify an MIT restriction:

Only MIT restrictions received from OIS or entered by the User can be modified; those received from TFM cannot be modified.

Step 1: Select an MIT restriction in the MIT Restrictions table (e.g., "BEAVY" in Figure 3.12).

Step 2: Select "Modify" (Figure 3.12) to change:

- MIT Restriction distance (*nm*)
- Start Time*
- End Time
- Constraints

****If the "Start Time" has already passed and the MIT restriction is already in effect, the Start Time field is grayed-out and cannot be modified. In Figure 3.13, however, the Start Time is still in the future.***

Step 3: When changes are complete, select "Update" (Figure 3.13).

Alternatively: Select "Clear All" to cancel the update and retain the original settings for that restriction.

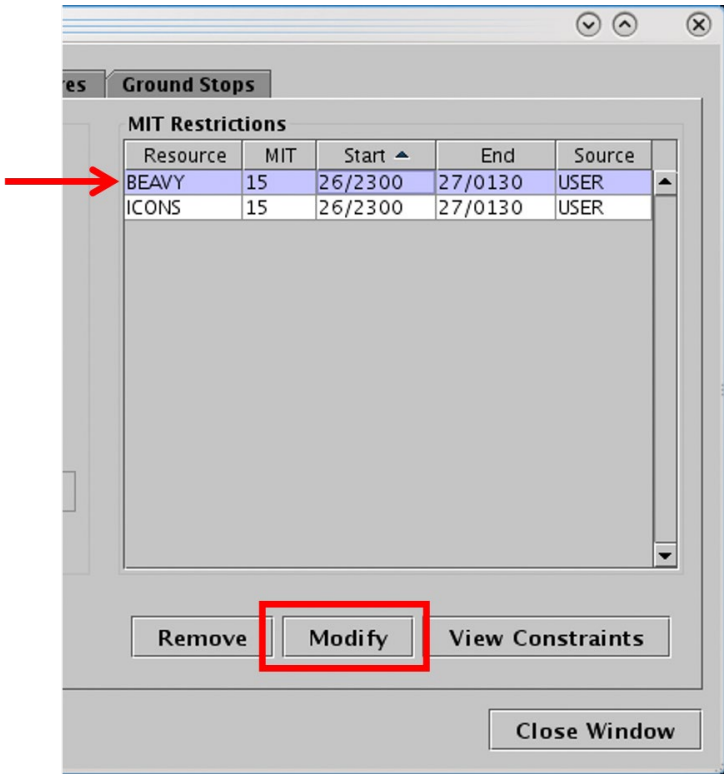


Figure 3.12. Modify an MIT restriction.

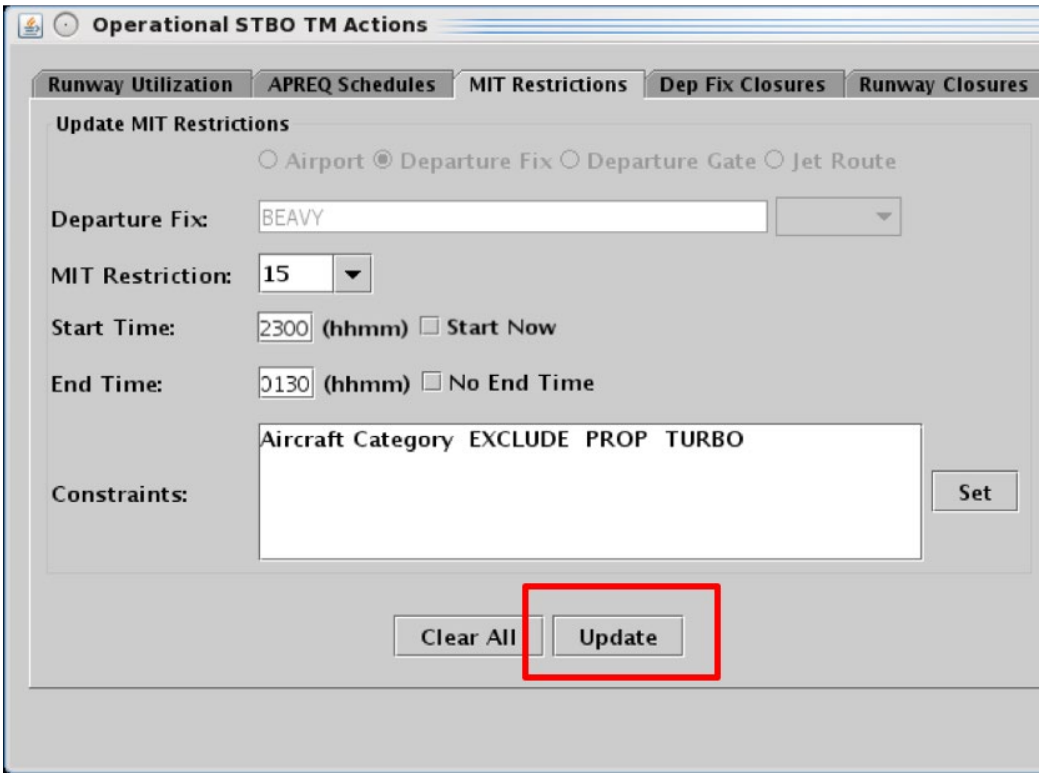


Figure 3.13. Select "Update" to apply changes. In this example, the Start Time (2300 UTC) is still in the future, so it can be modified.

To remove an MIT restriction:

An MIT restriction from any source (User-entered, OIS, or TFM) can be removed.

Step 1: Select an MIT restriction in the MIT Restrictions table (e.g., "ICONS" in Figure 3.14).

Step 2: Select "Remove" (Figure 3.14).

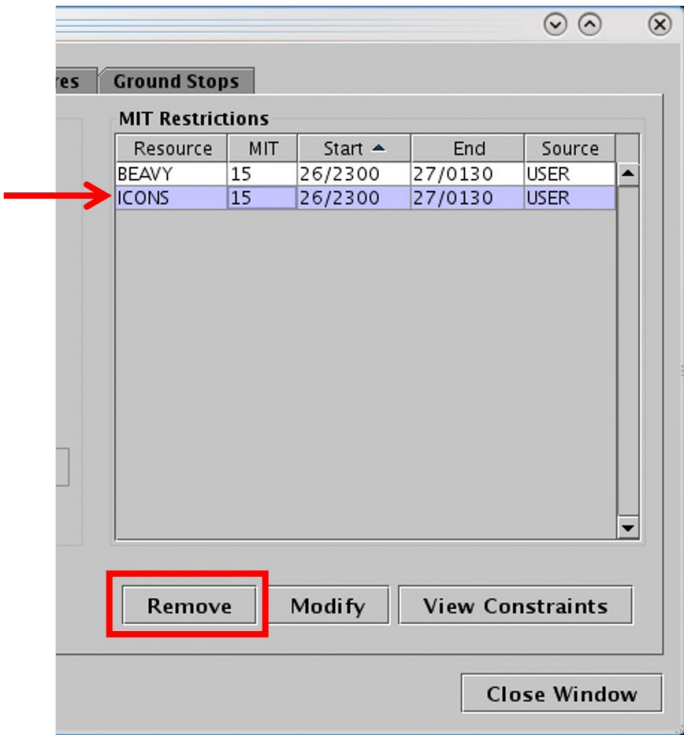


Figure 3.14. Remove an MIT restriction.

MIT restriction expirations/cancellations are indicated in the "Details" column in the Notifications Panel.

3.1.3 TM Actions: Departure Fix Closures Tab

A Departure Fix Closure restriction can be applied to a departure fix or departure gate.

To add a Departure Fix Closure:

Step 1: Select "Departure Fix Closures" from the TM Actions dropdown menu (Figure 3.2) to open the Dep Fix Closures tab (Figure 3.15).

Step 2: Select where to apply the closure (e.g., "Departure Fix" in Figure 3.16):

- Departure Fix
- Departure Gate

Note: When a Departure Gate is closed, all of the Departure Fixes associated with that gate are closed.

Step 3: Click on the dropdown menu to select one or more Departure Fixes or Departure Gates.

Alternatively: In the text field, type the:

- Departure Fix name(s), or
- Departure Gate name(s)

Separate multiple entries with a comma, but no space (e.g., "KRITR,WEAZL" in Figure 3.16).

Optional: Select an alternate fix to reassign flights to in the "CDR Flights To" field (e.g., "BOBZY" in Figure 3.16).

Step 4: If the restriction begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "2330" in Figure 3.16).

Step 5: If an "End Time" is known, uncheck "No End Time" and enter a time in the "End Time" text box in "*hhmm*" format (e.g., "0200" in Figure 3.16).

Note: The End Time must be later than the Start Time.

Step 6: If necessary, constraints can be added to the Departure Fix Closure. See Section 3.1.5 for more information about constraints.

Step 7: Select the "Add" button (Figure 3.16).

Note: User-added Departure Fix closures are displayed in the Dep Fix Closures table with "User" indicated the "Source" column (Figure 3.17).

Alternatively: Select the "Clear All" button to clear and cancel all entries.

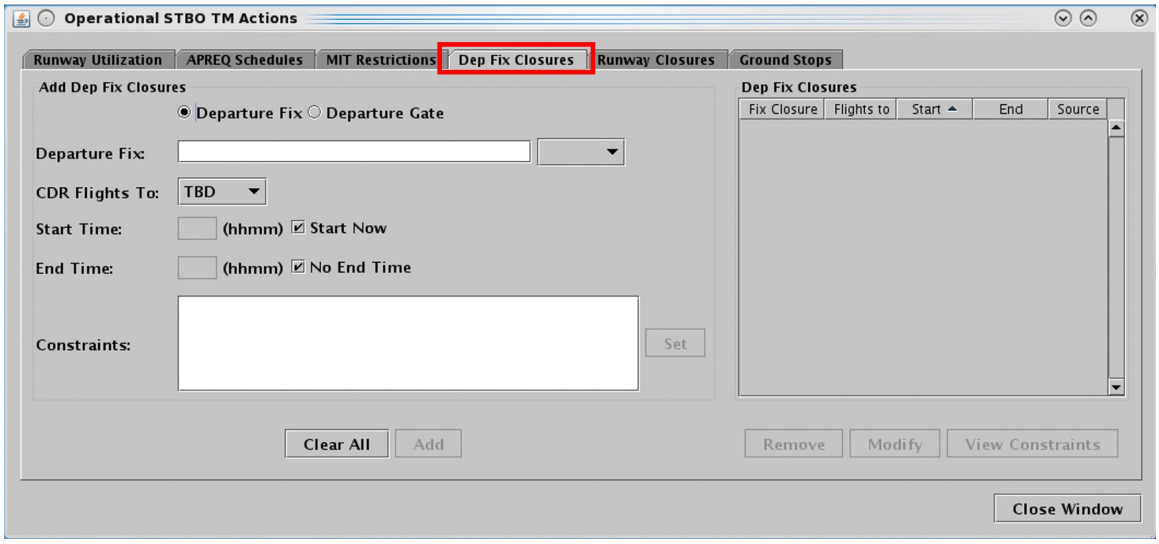


Figure 3.15. TM Actions panel: Dep Fix Closures tab.

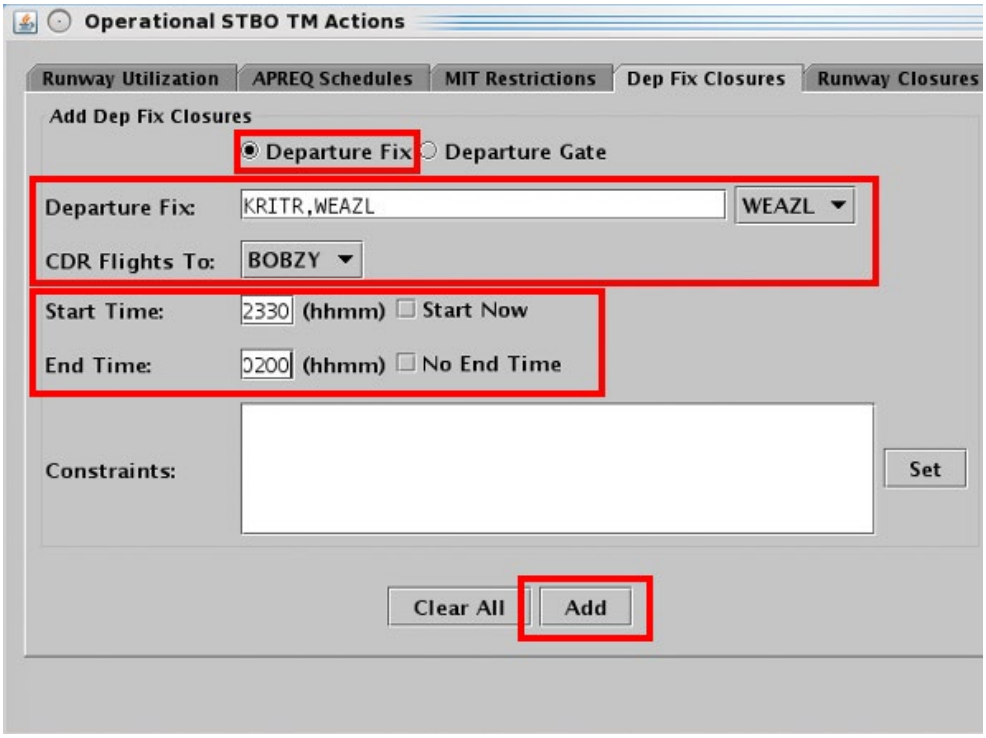


Figure 3.16. Dep Fix Closures tab: Enter criteria for the Departure Fix Closures.

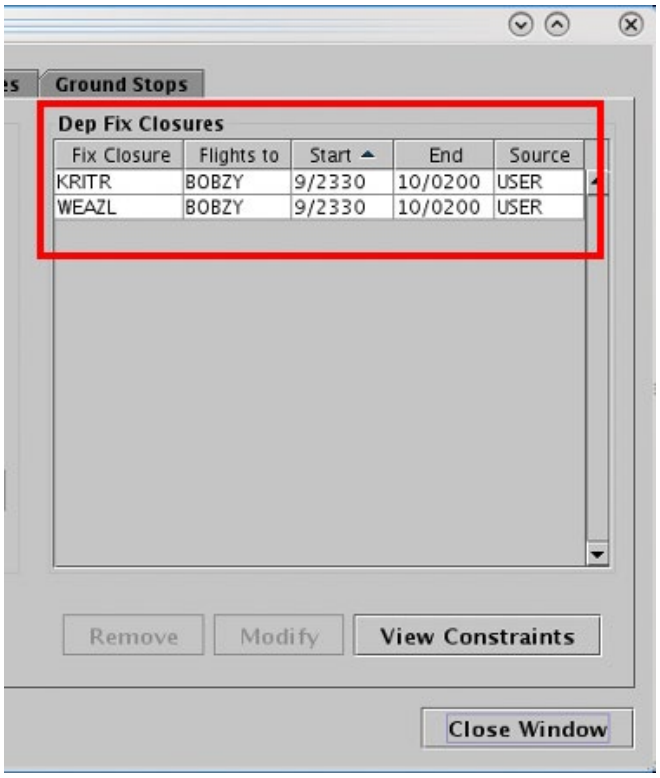


Figure 3.17. Dep Fix Closures table.

Departure Fix closures are indicated in Notification Banner (e.g., “KRITR CLOSED”). A new notification is generated for each scheduled Departure Fix closure.

Departure Fix closure information is indicated on maps, tables, and timelines. See “Departure Fix Display” settings in Section 3.5.1 for a description of displaying Departure Fix closure information on the timeline.

On a map, the Fix *label* is grayed-out when the Departure Fix is closed. If an alternate Departure Fix is selected in the “CDR Flight To” field, the names of the reassigned fixes (e.g., KRITR and WEAZL) are displayed next to the alternate fix (e.g., BOBZY).

To modify a Departure Fix Closure:

Only Departure Fix closures received from OIS or entered by the User can be modified; those received from TFM cannot be modified.

Step 1: Select a Departure Fix closure from the Dep Fix Closures table (e.g., "KRITR" in Figure 3.18).

Step 2: Select "Modify" (Figure 3.18) to change:

- Selection in the "CDR Flights To" field
- Start Time*
- End Time
- Constraints

If the "Start Time" has already passed and the Departure Fix closure is already in effect, the Start Time field is grayed-out and cannot be modified. In Figure 3.19, however, the Start Time is still in the future.

Step 3: When changes are complete, select "Update" (Figure 3.19).

Alternatively: Select "Clear All" to cancel the update and retain the original settings for that restriction.

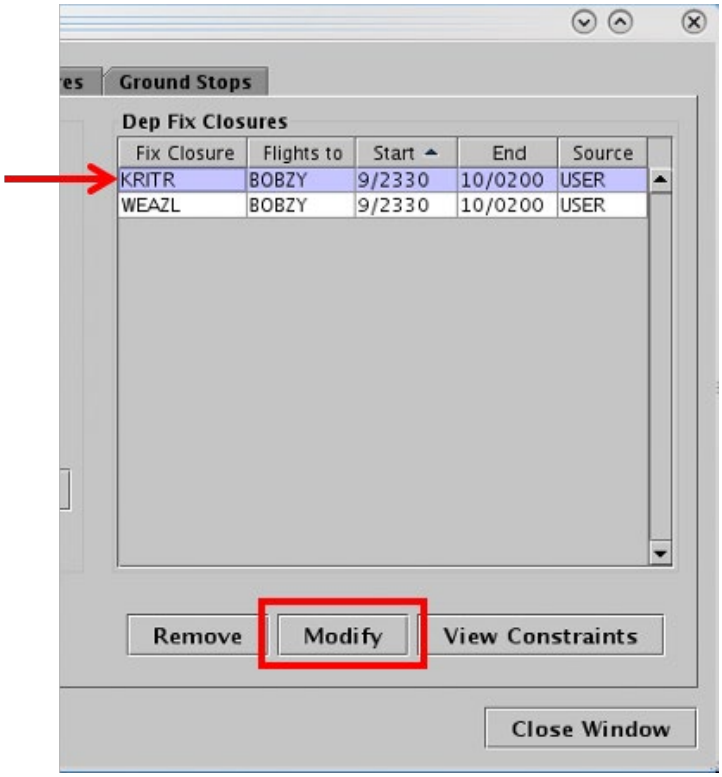


Figure 3.18. Modify a Departure Fix closure.

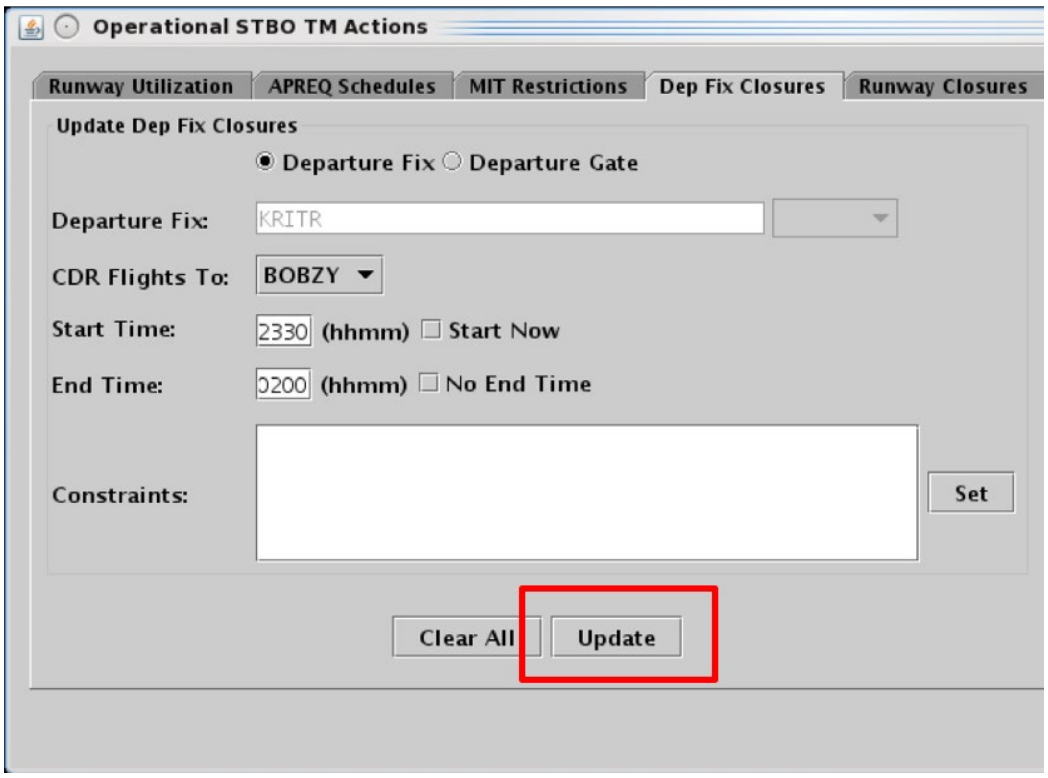


Figure 3.19. Select "Update" to apply changes. In this example, the Start Time (2330 UTC) is still in the future, so it can be modified.

To remove a Departure Fix Closure:

A Departure Fix Closure from any source (User-entered, OIS, or TFM) can be removed.

Step 1: Select a Departure Fix Closure in the "Dep Fix Closures" table (e.g., "WEAZL" in Figure 3.20).

***Step 2*:** Select "Remove" (Figure 3.20).

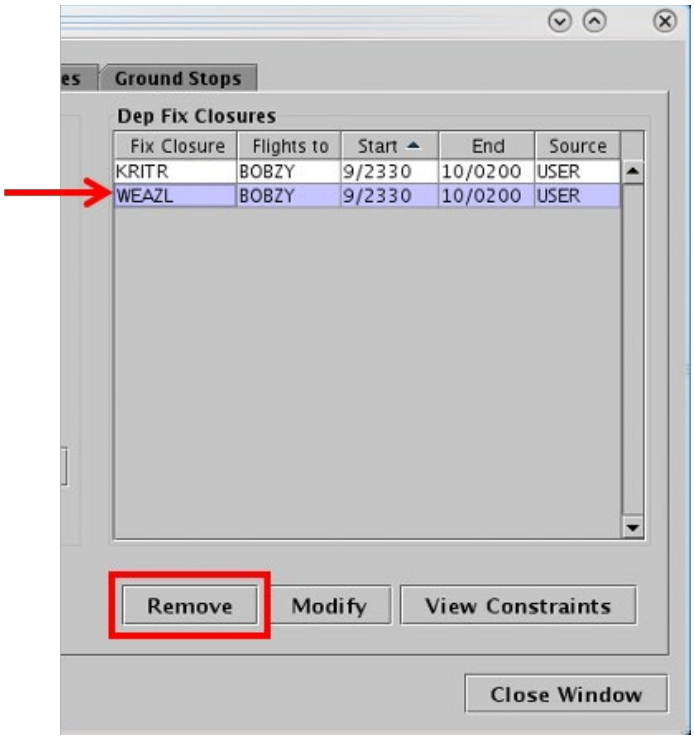


Figure 3.20. Remove a departure fix closure.

Fix closure expirations/cancellations are indicated in the Notification Banner (e.g., "WEAZL OPENED").

3.1.4 TM Actions: Ground Stops Tab

A Ground Stop restriction can be applied to a destination airport.

To add a Ground Stop Restriction:

Step 1: Select "Ground Stops" from the TM Actions dropdown menu (Figure 3.2) to open the Ground Stops tab (Figure 3.21).

Step 2: Click on the "Select" button to select one or more destination Airports.

Alternatively: In the text field, type the:

- 3-digit Airport code(s)

Separate multiple entries with a comma, but no space (e.g., "LGA,JFK" in Figure 3.22).

Step 3: If the Ground Stop begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "2300" in Figure 3.22).

Step 4: If an "End Time" is known, uncheck "No End Time" and enter a time in the "End Time" text box in "*hhmm*" format (e.g., "0100" in Figure 3.22).

Note: The End Time must be later than the Start Time.

Step 5: If necessary, constraints can be added to the Ground Stop restriction. See Section 3.1.5 for more information about constraints.

Step 6: Select the "Add" button (Figure 3.22).

Note: User-added Ground Stop restrictions are displayed in the Ground Stops table with "User" indicated the "Source" column (Figure 3.23).

Alternatively: Select the "Clear All" button to clear and cancel all entries.

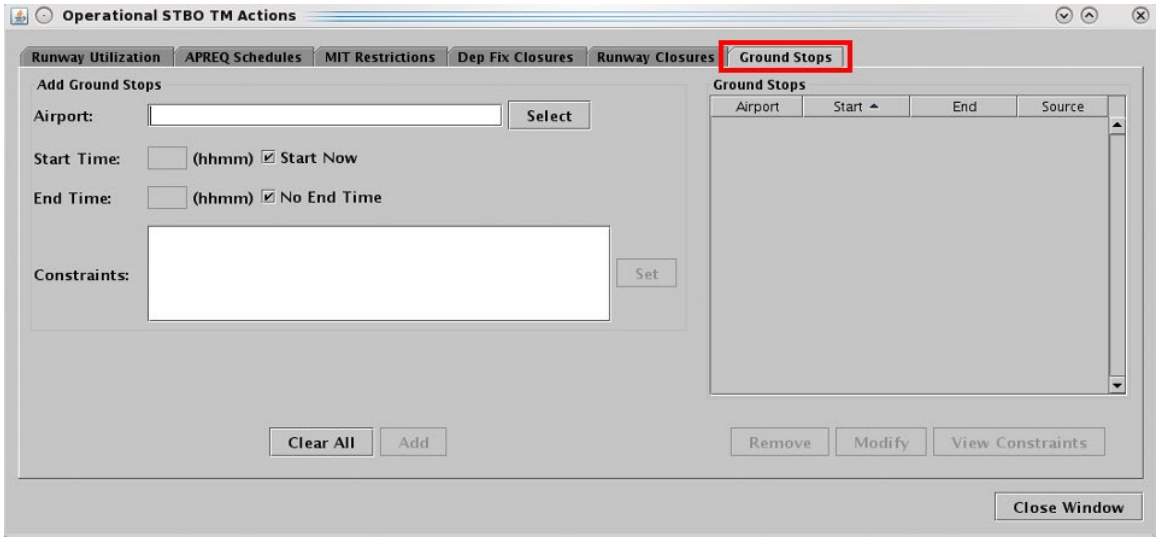


Figure 3.21. TM Actions panel: Ground Stops tab.

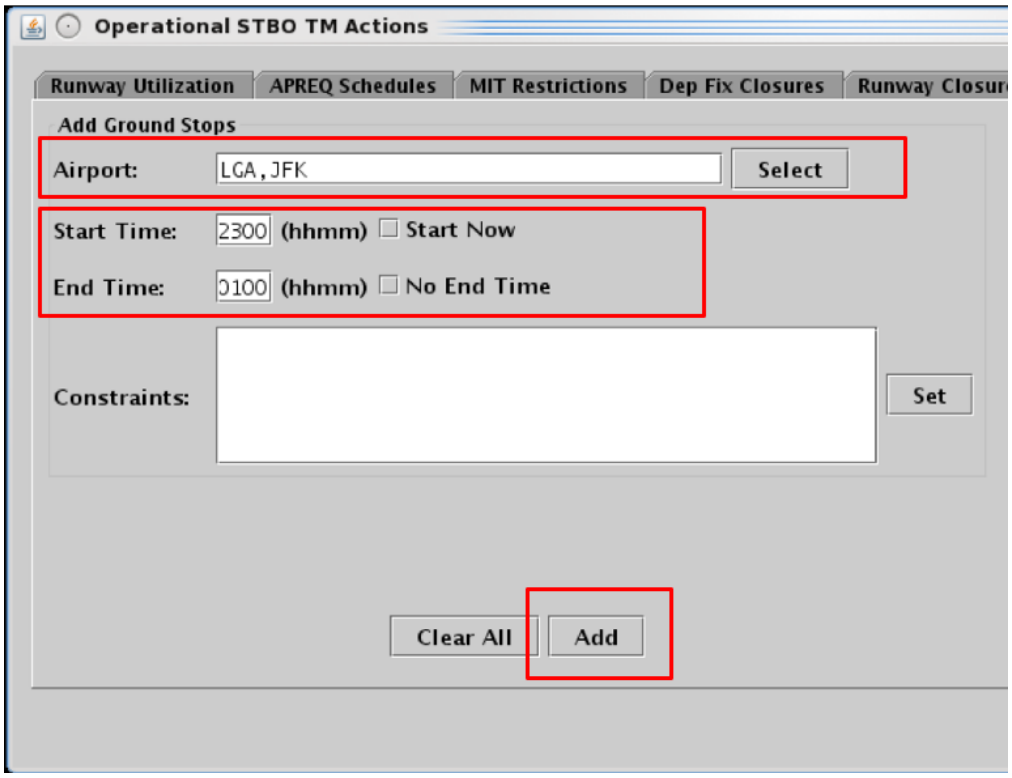


Figure 3.22. Ground Stops tab: Enter criteria for the Ground Stop restrictions.

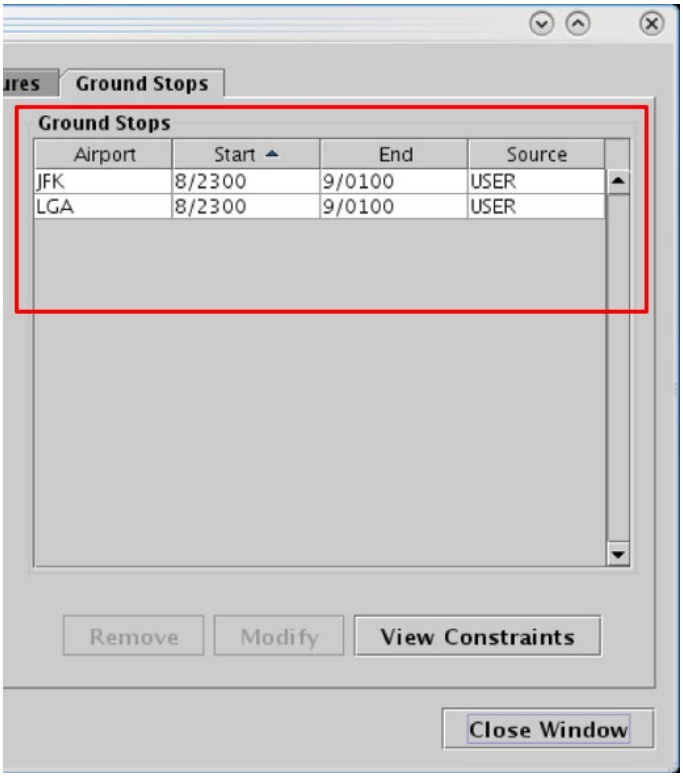


Figure 3.23. Ground Stops tab: Ground Stops table.

Ground Stop restrictions are indicated in Notification Banner (e.g., “JFK STOP”). A new notification is generated for each Ground Stop restriction.

Ground Stop restrictions are indicated on maps, tables, and timelines. On maps and timelines, a Ground Stop restriction is indicated in the flight’s datablock.

To modify a Ground Stop restriction:

Only Ground Stop restrictions received from OIS or entered by the User can be modified; those received from NTML cannot be modified.

Step 1: Select a Ground Stop restriction in the Ground Stops table (e.g., “JFK” in Figure 3.24).

Step 2: Select “Modify” (Figure 3.24) to change:

- Start Time*
- End Time
- Constraints

Note: *If the “Start Time” has already passed and the Ground Stop restriction is already in effect, the Start Time field is grayed-out and cannot be modified. In Figure 3.25, however, the Start Time is still in the future.

Step 3: When changes are complete, select “Update” (Figure 3.25).

Alternatively: Select “Clear All” to cancel the update and retain the original settings for that restriction.

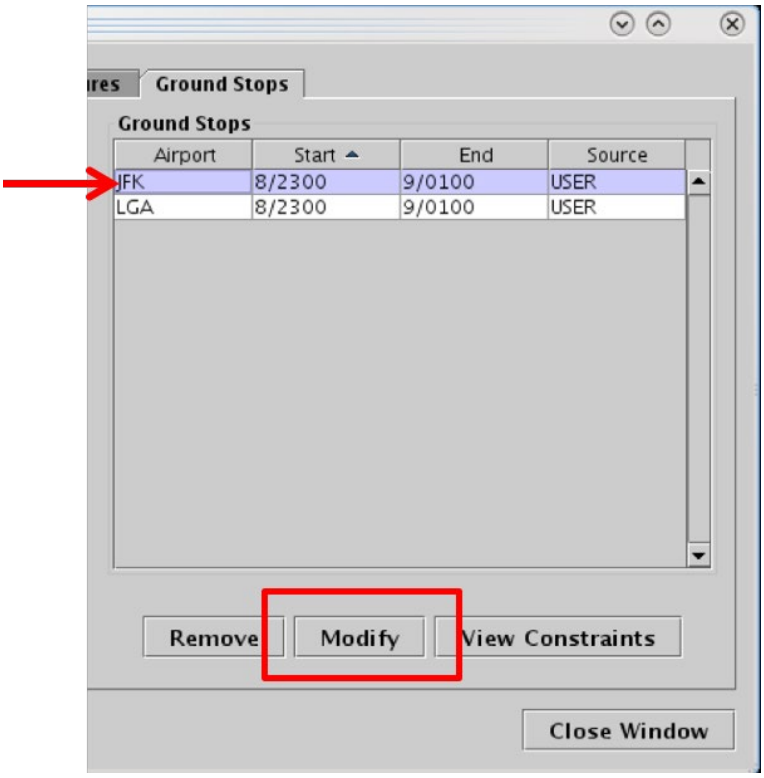


Figure 3.24. Ground Stops tab: Modify a Ground Stop restriction.

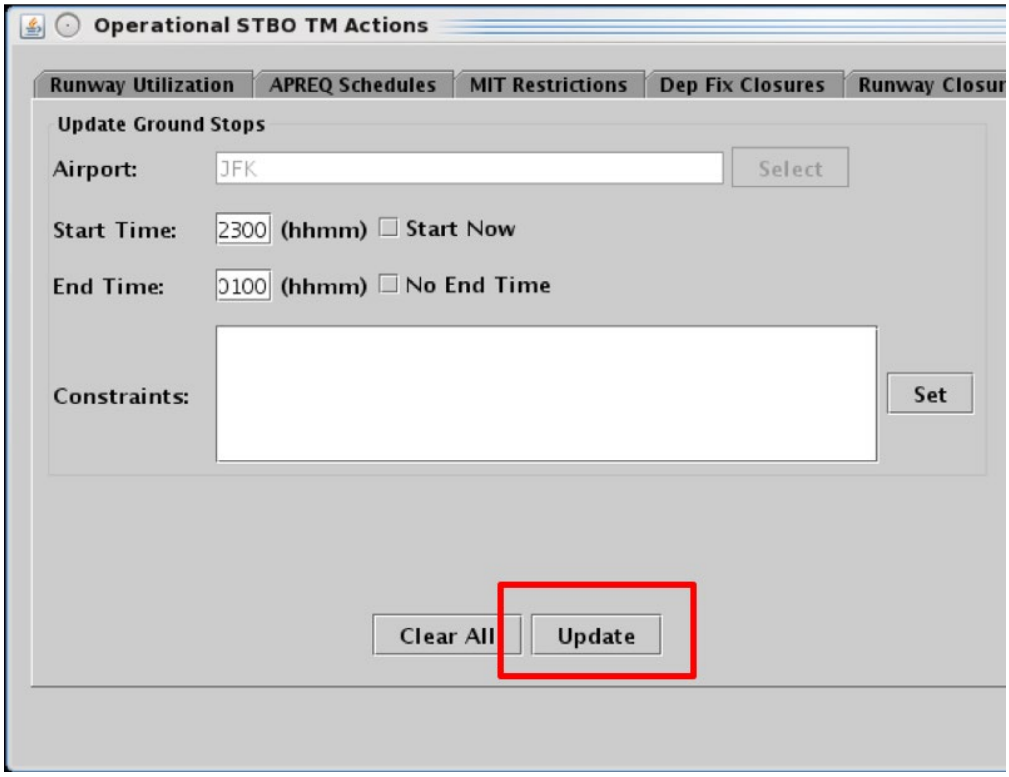


Figure 3.25. Select "Update" to apply changes. In this example, the Start Time (2300 UTC) is still in the future, so it can be modified.

To remove a Ground Stop restriction:

A Ground Stop restriction from any source (User-entered, OIS, or TFM) can be removed.

Step 1: Select a Ground Stop restriction in the Ground Stop table (e.g., "LGA" in Figure 3.26).

Step 2: Select "Remove" (Figure 3.26).

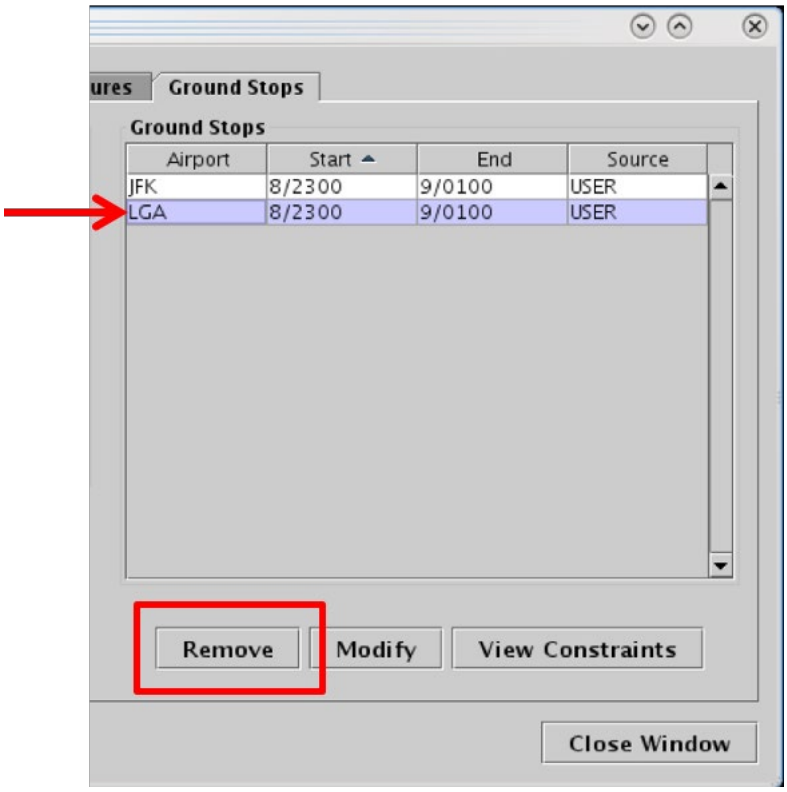


Figure 3.26. Remove a Ground Stop restriction.

When a Ground Stop restriction is removed, the cancellation is displayed in the "Details" column in the Notifications Panel.

3.1.5 Constraints Used in TMI Restrictions

A TMI restriction may also require additional constraint criteria. For example, a Miles-in-Trail (MIT) restriction may:

- Apply to all flights flying over a departure fix with the *exception* of APREQ flights, or

- Apply to all flights flying over a departure fix with the *exception* of a particular destination, or
- Only *include* flights above a particular flight level (e.g., FL 230).

In the STBO Client, constraints can be applied to APREQ Schedules, MIT Restrictions, Departure Fix Closures, and Ground Stops by accessing the TM Actions panel.

Table 3.2 shows the available options for constraining each of the four TMI restrictions (cells marked with an "x" indicate availability of the constraint).

Table 3.2. Available Options for Constraining TMI Restrictions

	Traffic Management Initiative (TMI) Restrictions			
Constraint	**APREQ Schedules**	**MIT Restrictions**	**Departure Fix Closures**	**Ground Stops**
Engine Type	x	x	x	x
Aircraft Type	x	x	x	x
User Category	x	x	x	x
Center	x	x	x	x
Sector	x	x	x	x
Airway	x	x	x	x
Airline	x	x	x	x
Airport	x	x	x	x
Filed Altitude	x	x	x	x
Weight Class	x	x	x	x
MIT	x		x	x
Departure Fix	x			x
Departure Gate	x			x
APREQ		x	x	x
Destination		x	x	

3.1.5.1 Add a Constraint

Use the "Constraint" field to add a constraint to a TMI restriction. In this example, an MIT restriction is constrained by flights that are subject to an APREQ. That is, the MIT

restriction will apply to all flights flying over a departure fix with the exception of APREQ flights.

To add Constraints to a TMI restriction:

Step 1: On a TMI-restriction tab (i.e., the APREQ Schedules, MIT Restrictions, Departure Fix Closures, or Ground Stops tab) select/enter restriction criteria. In Figure 3.27, for example, a 15-mile MIT restriction is applied to the BUCKL Departure Fix.

Step 2: Select the "Set" button next to the Constraints field (Figure 3.27).

Note: The "Set" button is grayed-out until TMI-restriction criteria has been entered.

Step 3: In the Constraint Settings window, available options for constraining the TMI restriction are displayed on individual tabs. Select a Constraint tab in the Constraint Settings window (in Figure 3.28, the "APREQ" tab is selected).

Step 4: Select/enter the criteria with which to constrain the TMI restriction and choose between:

- ***Inclusion:*** Select "Inclusion" to apply the restriction to only those flights that match the criteria.
- ***Exclusion:*** Select "Exclusion" when the restriction applies to all flights *except* those that match selected criteria.

In Figure 3.28, for example, "APREQ" and "Exclusion" are checked because the 15-mile MIT restriction applies to all flights flying over the departure fix *with the exception* of APREQ flights. In other words, APREQ flights are *excluded* from the restriction.

Step 5: Select a different tab to add more constraints or select the "Apply" button when finished adding constraints (Figure 3.28).

Note: Upon returning to the TMI-restriction window, the selected constraints are displayed in the Constraints field. In Figure 3.29, "APREQ EXCLUDE" is displayed in the Constraints field indicating that the 15-mile MIT restriction applies to all flights except those that are subject to an APREQ.

Step 6: Select the "Add" button to complete adding the TMI restriction (Figure 3.29).

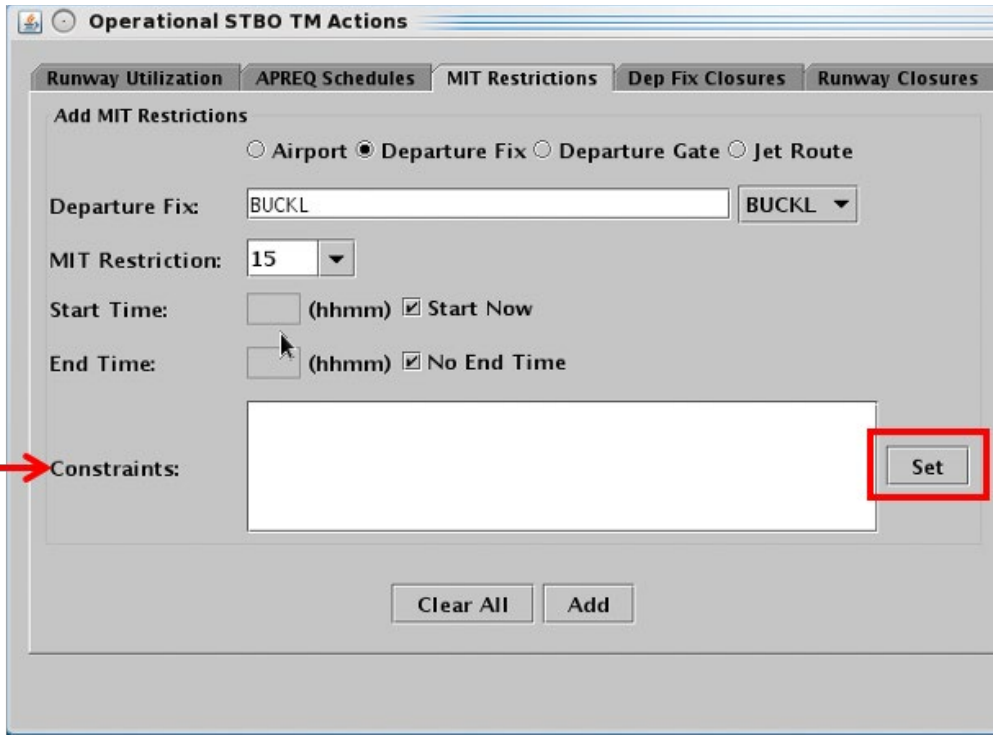


Figure 3.27. On a TMI-restriction tab, select the "Set" button to open the Constraint Settings window.

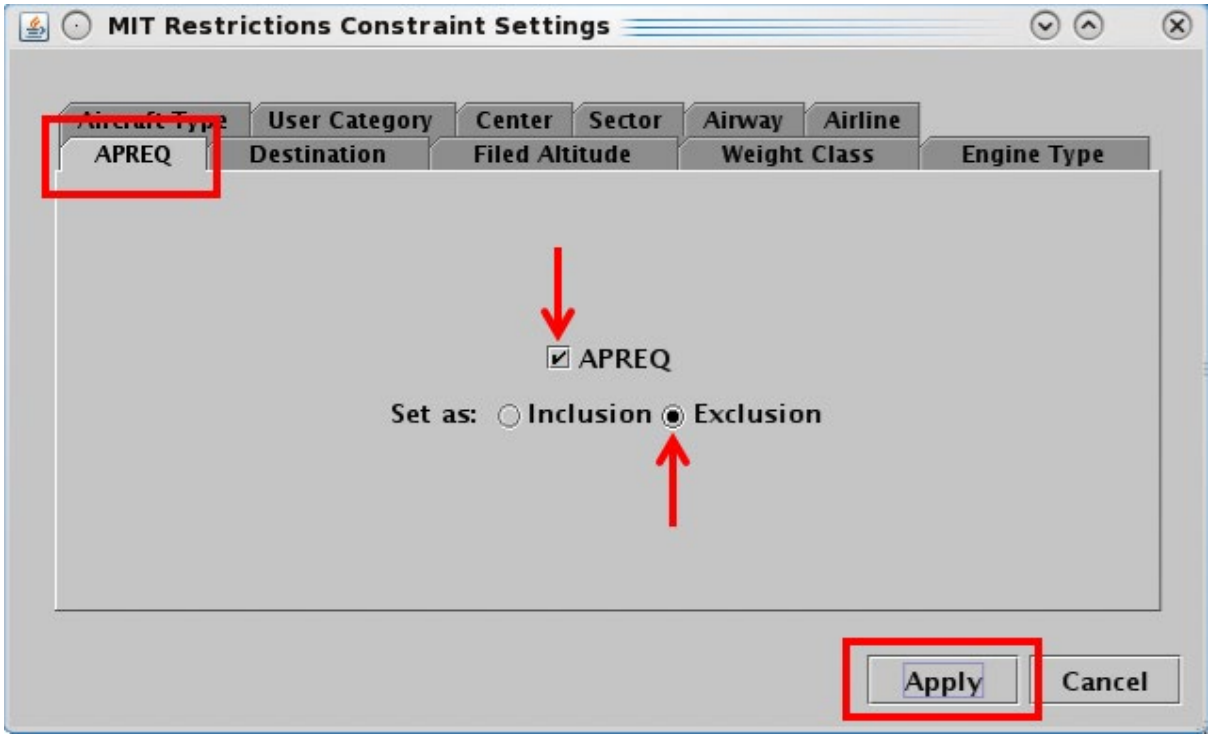


Figure 3.28. In the Constraint Setting window, select a constraint tab and enter critera. In this example, on the APREQ tab, "Exclusion" is selected to *exclude* APREQ flights from the MIT restriction.

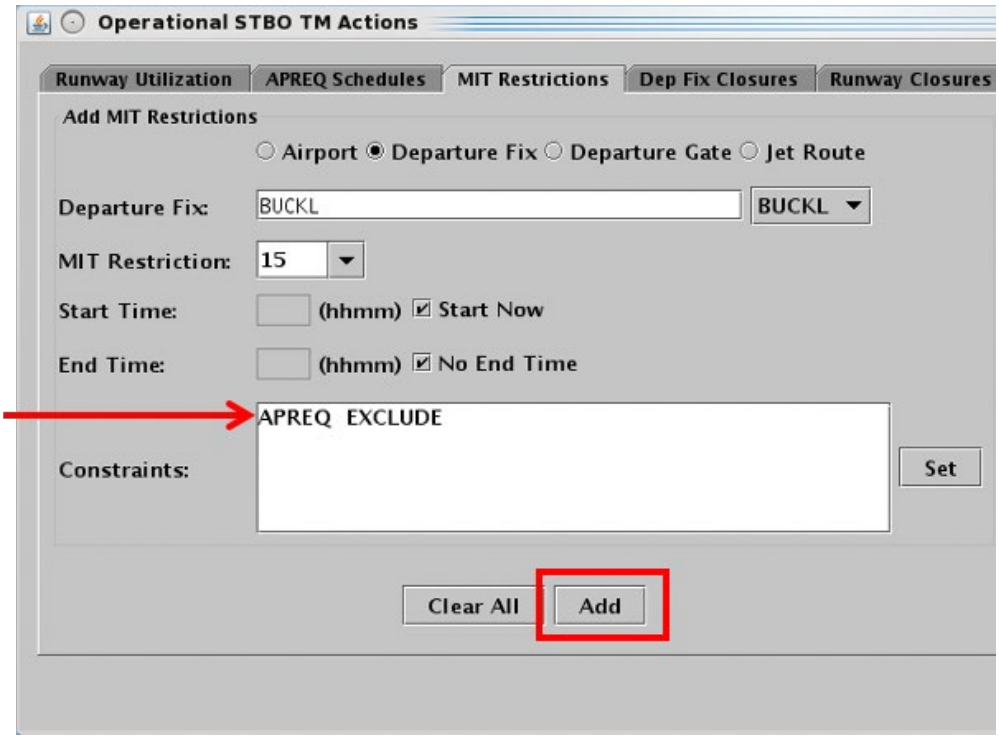


Figure 3.29. Criteria entered in the Constraint Settings window are displayed in the Constraints field. In this example, "APREQ EXCLUDE" is displayed in the Constraints field indicating that the 15-mile MIT restriction applies to all flights *except* those that are subject to an APREQ.

3.1.5.2 View Constraints

Constraints associated with TMI restrictions can be viewed in the TMI-restriction table.

To view Constraints associated with a TMI restriction:

Step 1: On a TMI-restriction tab (i.e., the APREQ Schedules, MIT Restrictions, Departure Fix Closures, or Ground Stops tab), select the "View Constraints" button below the restriction table (Figure 3.30).

Note: When there are multiple restrictions (i.e., multiple rows) in the table, all constraints associated with all restrictions in that table will be displayed.

Alternatively: Select a restriction (row) in the table before selecting the "View Constraints" button to view constraints associated with only that restriction. In Figure 3.30, for example, the "BUCKL 15 MIT" restriction (row) is selected.

Note: Constraints are displayed in a new window along with Start and End times. In Figure 3.31, "APREQ EXCLUDE" is displayed in the Constraints window.

Step 2: Select "Close" to close the Constraints window.

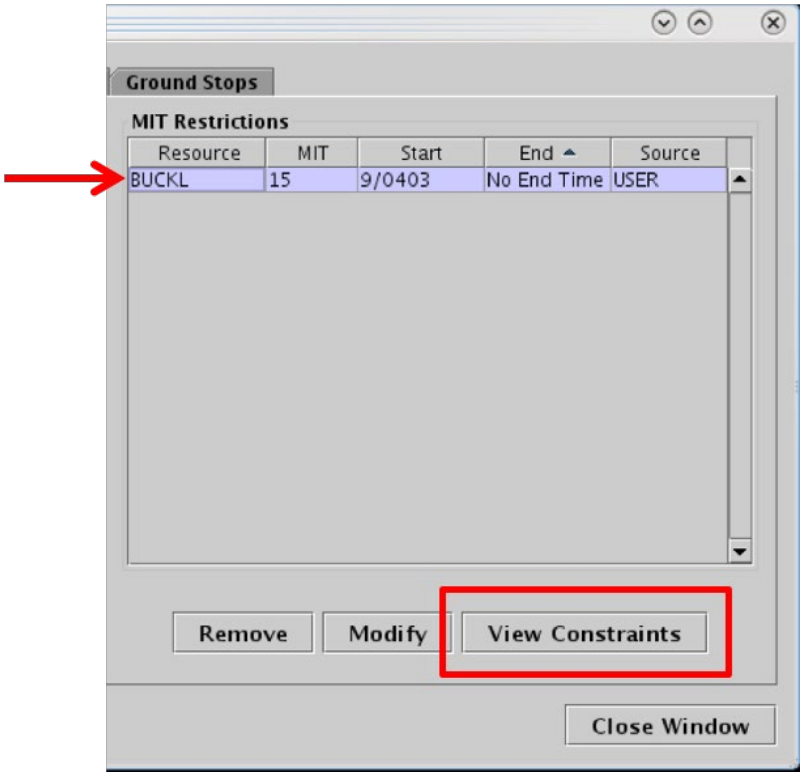


Figure 3.30. Use the "View Constraints" button to view the constraint criteria associated with a TMI restriction.

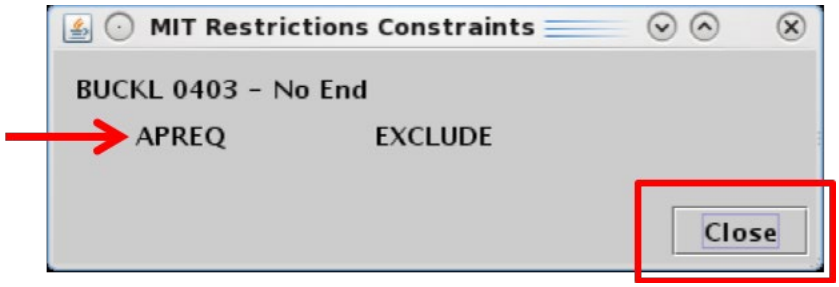


Figure 3.31. View Constraints window, in this example, "APREQ EXCLUDE" is displayed.

In addition to being displayed in the Constraints window, constraints associated with a TMI restriction are also displayed in the "Details" column in the Notifications Panel (see Section 3.7 for a description of Notifications).

3.1.5.3 Change a Constraint

Constraints associated with TMI restrictions can be modified.

To Modify a Constraint:

Step 1: On a TMI-restriction tab (i.e., the APREQ Schedules, MIT Restrictions, Departure Fix Closures, or Ground Stops tab), select a restriction in the table. In Figure 3.32, for example, the "BUCKL 15 MIT" restriction is selected.

Step 2: Select the "Modify" button below the table (Figure 3.32).

Step 3: Select the "Set" button in the Constraints field (Figure 3.33).

Step 4: In the Constraint Settings window, available options for constraining the TMI restriction are displayed on individual tabs. Select a Constraint tab to modify a current constraint or add an additional constraint. In Figure 3.34, the "Destination" tab is selected.

Step 5: Select/enter the criteria with which to constrain the TMI restriction and choose between:

- ***Inclusion:*** Select "Inclusion" to apply the restriction to only those flights that match the criteria.
- ***Exclusion:*** Select "Exclusion" when the restriction applies to all flights *except* those that match selected criteria.

In Figure 3.34, "Exclusion" is selected because the 15-mile MIT restriction will apply to all flights flying over the departure fix *with the exception* of flights going to LGA. In other words, LGA flights are *excluded* from the restriction.

Step 6: Select a different tab to modify/add more constraints or select the "Apply" button when finished modifying/adding constraints (Figure 3.34).

Note: Upon returning to the TMI-restriction window, the selected constraints are displayed in the Constraints field. In Figure 3.35, "APREQ Exclude" and "Destination EXCLUDE LGA" are displayed.

Step 7: Select the "Update" button to complete modifying the TMI restriction (Figure 3.35).

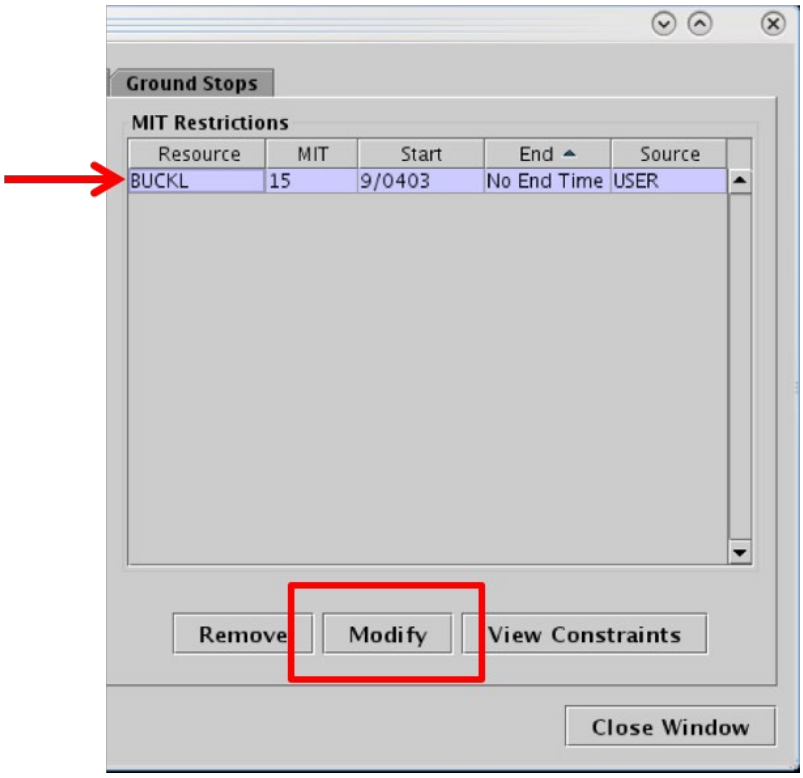


Figure 3.32. Select a TMI Restriction in the table (in this example, the BUCKL 15-mile MIT restriction is selected) and select "Modify" to modify constraints.

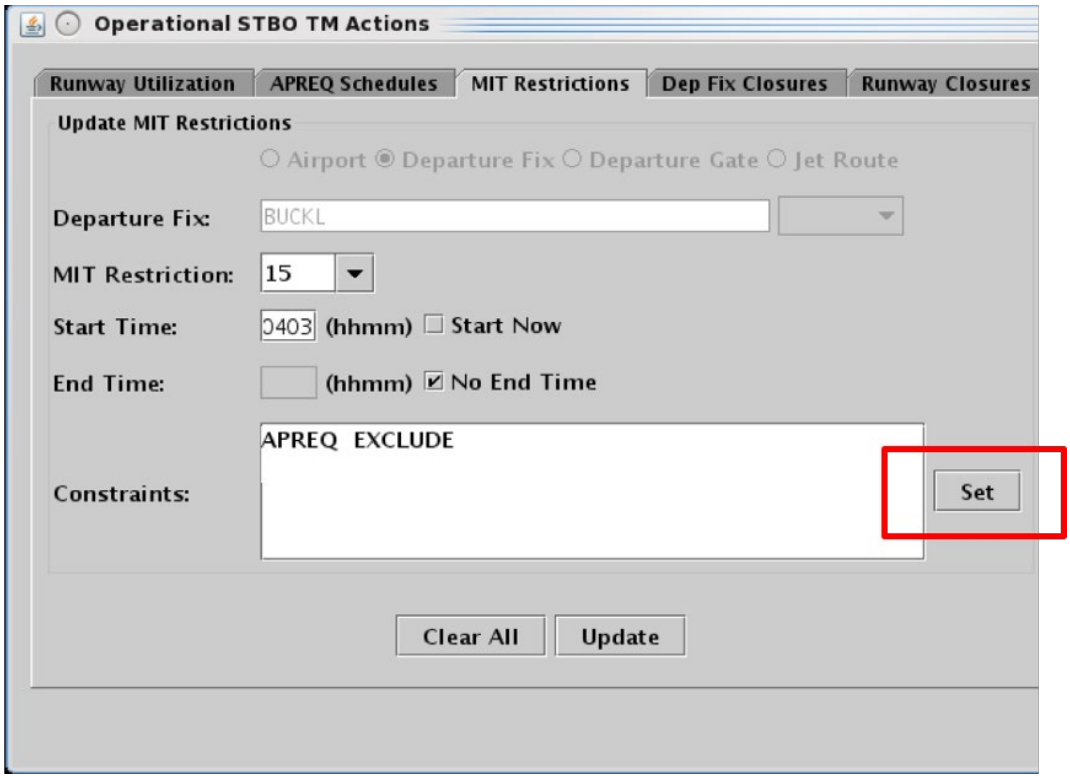


Figure 3.33. Select the "Set" button to open the Constraint Settings window.

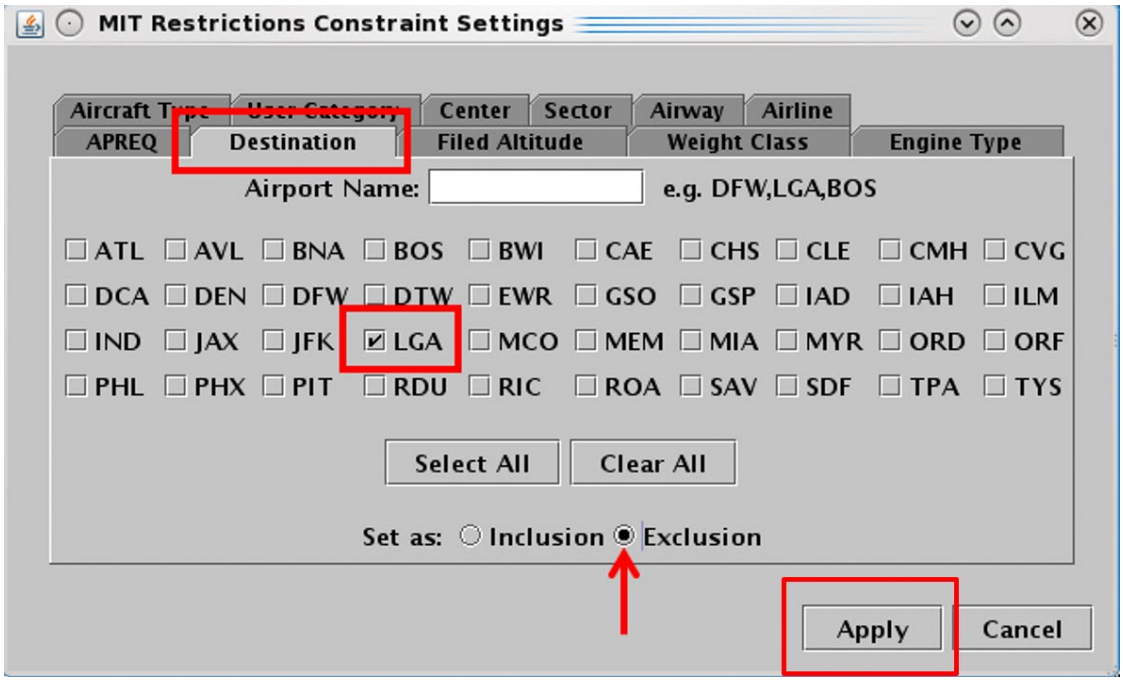


Figure 3.34. In the Constraint Settings window, modify/add constraints. In this example, an additional constraint is added on the "Destination" tab – flights going to LGA will also be *excluded* from the MIT restriction.

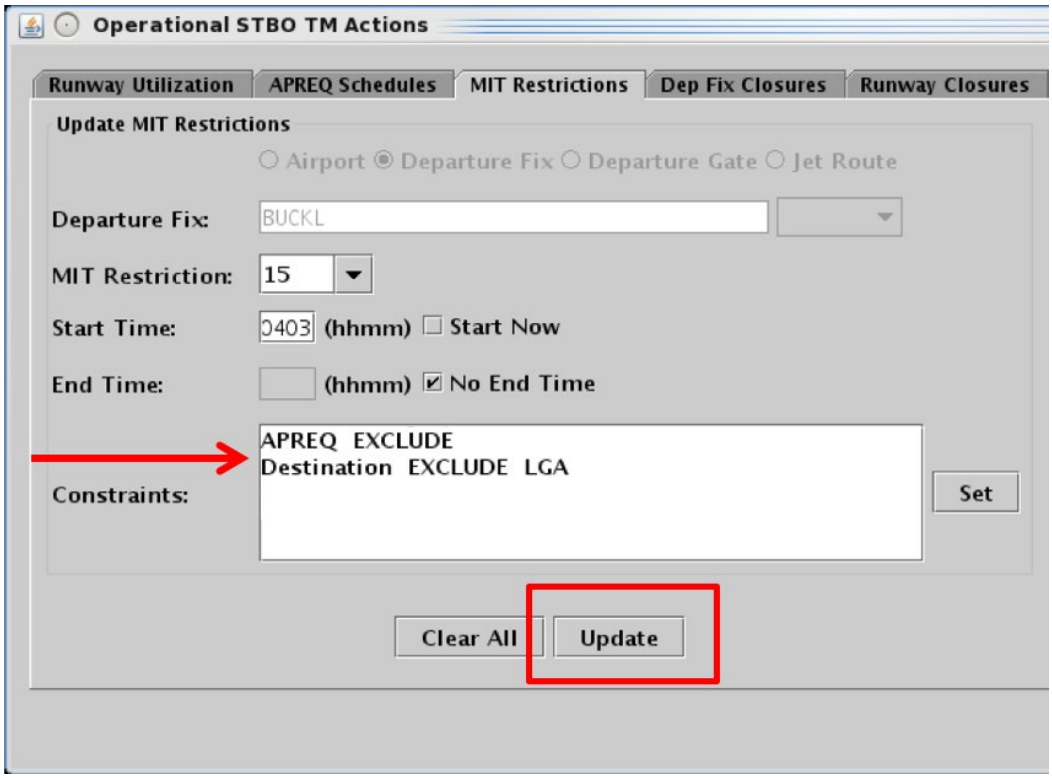


Figure 3.35. Criteria entered in the Constraint Settings window are displayed in the Constraints field. In this example, "APREQ EXCLUDE" and "Destination EXCLUDE LGA."

3.1.5.4 Remove a Constraint

Constraints associated with TMI restrictions can be removed.

To Remove a Constraint:

Step 1: On a TMI-restriction tab (i.e., the APREQ Schedules, MIT Restrictions, Departure Fix Closures, or Ground Stops tab), select a restriction in the table. In Figure 3.36, for example, the "BUCKL 15 MIT" restriction is selected.

Step 2: Select the "Modify" button below the table (Figure 3.36).

Step 3: Select the "Set" button in the Constraints field (Figure 3.37).

Step 4: In the Constraint Settings window, select a Constraint tab to remove a current constraint. Depending on the tab, uncheck a selection, delete text in a text field, or use the "Clear All" button to remove the constraint. In Figure 3.38, a constraint is removed from the "Destination" tab by deselecting "LGA."

Step 5: Select a different tab to remove more constraints or select the "Apply" button when finished removing constraints (Figure 3.38).

Note: Upon returning to the TMI-restriction window, constraints that have been removed are no longer displayed in the Constraints field. In Figure 3.39, "Destination EXCLUDE LGA" is no longer displayed in the Constraints field.

Step 6: Select the "Update" button to complete modifying the TMI restriction (Figure 3.39).

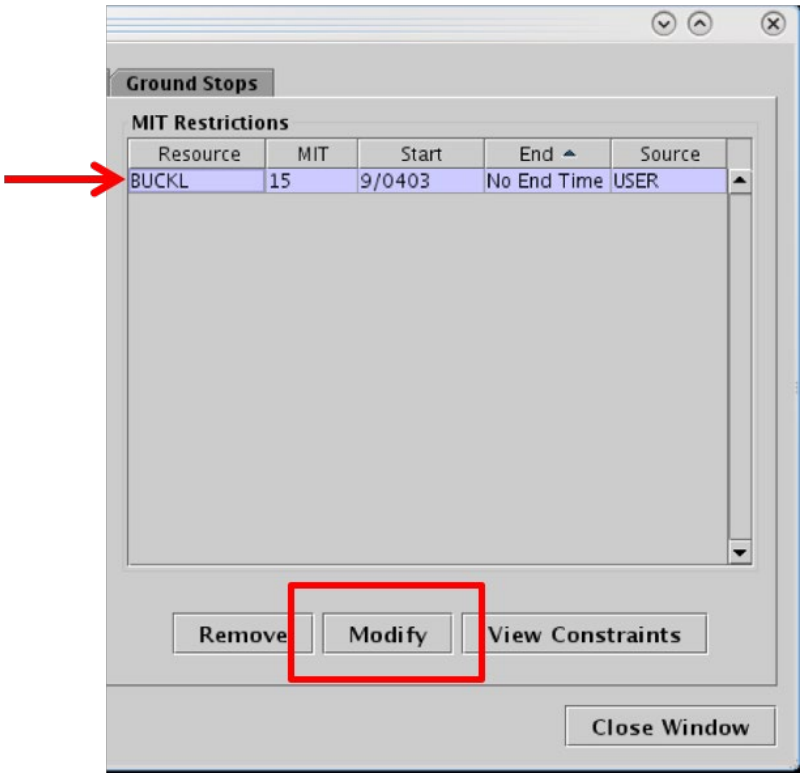


Figure 3.36. In this example, the BUCKL 15-mile MIT restriction is selected, select the "Modify" button to modify constraints.

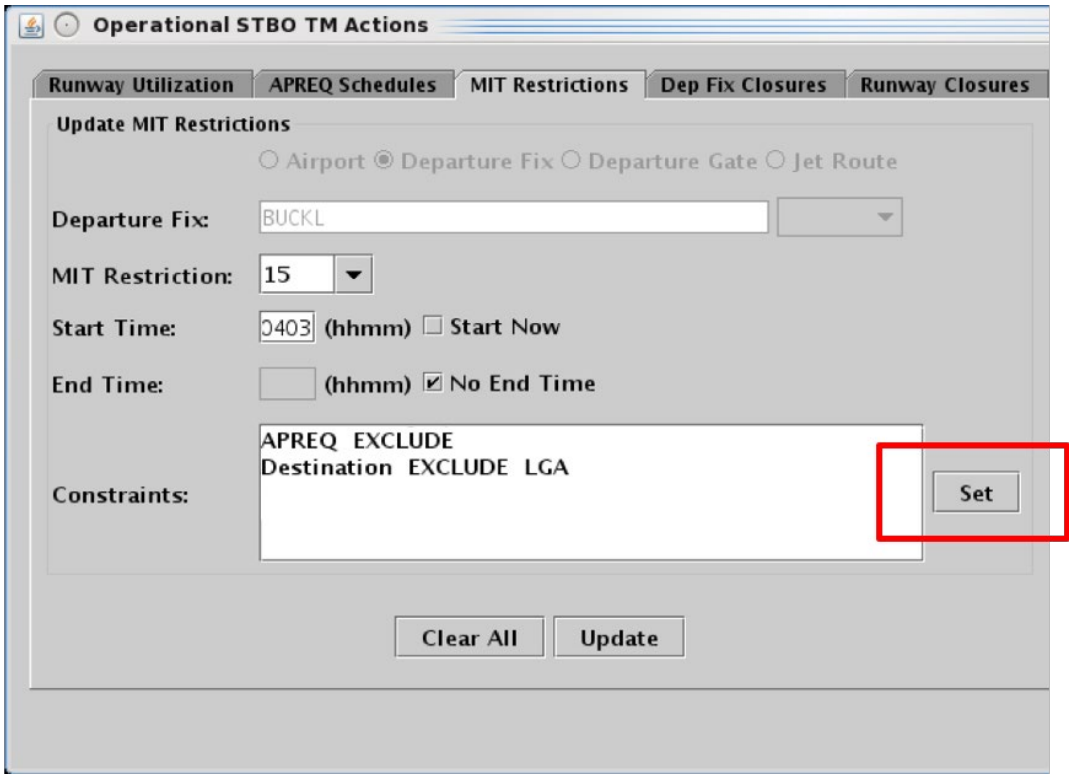


Figure 3.37. Select the "Set" button to open the Constraint Settings window.

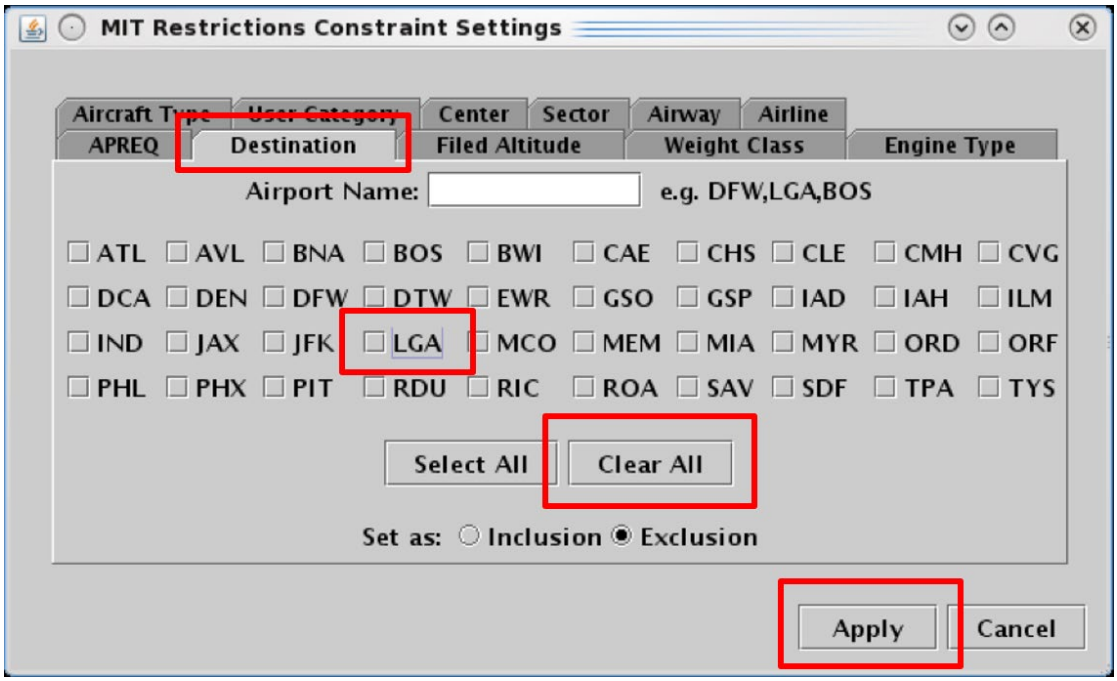


Figure 3.38. In the Constraint Settings window, uncheck or clear constraints. In this example, a constraint is removed from the "Destination" tab by deselecting "LGA."

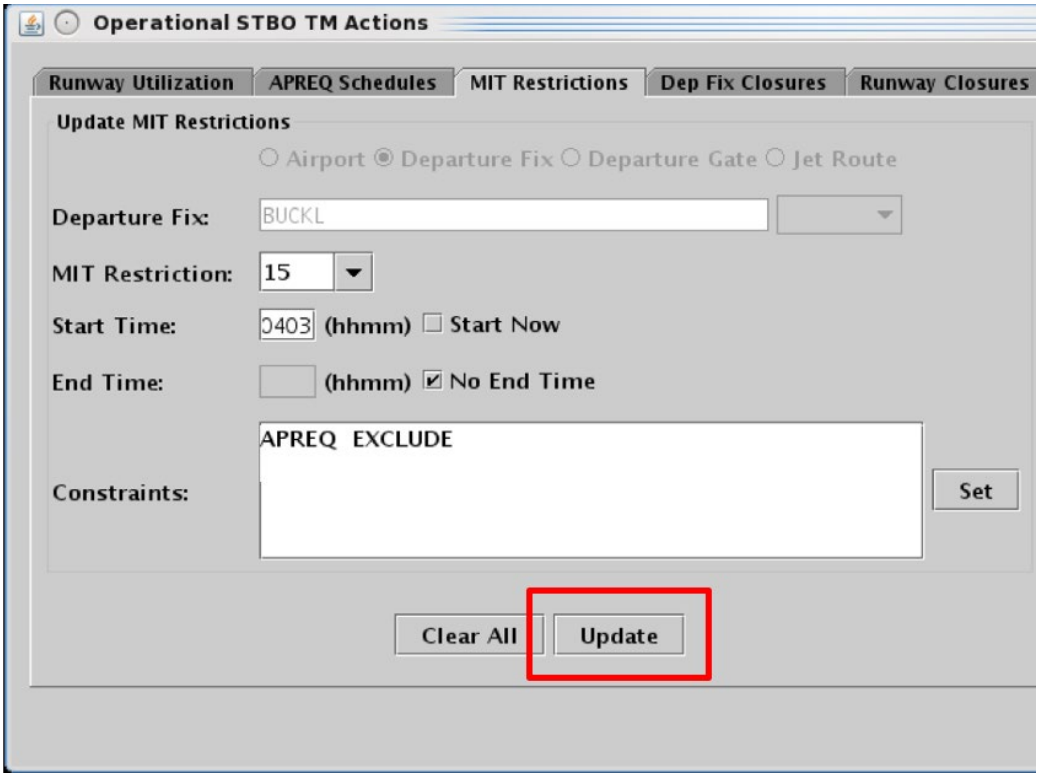


Figure 3.39. After removing a constraint in the Constraint Settings window, it is no longer displayed in the Constraints field on the TMI-restriction tab. In this example, "Destination EXCLUDE LGA" was removed.

3.1.5.5 TMI-Restriction Constraints

Each constraint tab is described in the following sub-sections: Engine Type, Aircraft Type, User Category, Center, Sector, Airway, Airline, Airport, Filed Altitude, Weight Class, Miles-in-Trail (MIT), Departure Fix, Departure Gate, APREQ, and Destination.

3.1.5.5.1 Constraint: Engine Type

The following TMI restrictions can be constrained by aircraft Engine Type:

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply an engine type constraint, select from three engine types (Figure 3.40):

- "P" for piston
- "T" for turboprop, or
- "J" for jet

More than one type can be selected at a time. See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

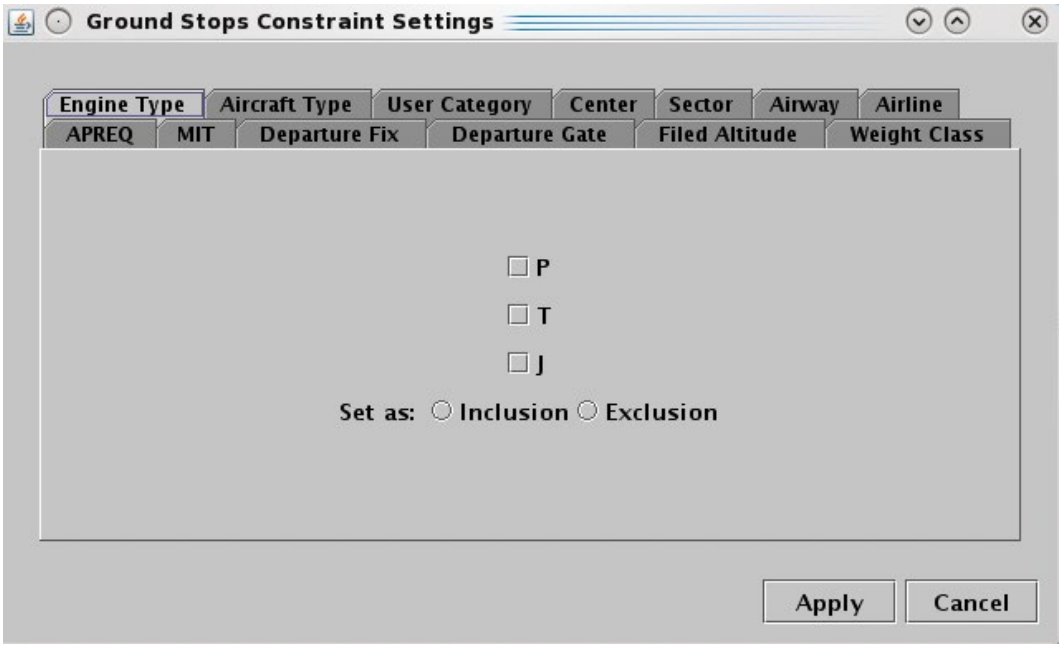


Figure 3.40. Constraint: Engine Type.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.2 Constraint: Aircraft Type

The following TMI restrictions can be constrained by Aircraft Type.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply an Aircraft Type constraint, enter the 4-character alphanumerical code for an aircraft type (e.g., A320) (Figure 3.41). To enter more than one aircraft type, separate aircraft codes with a comma, but no space (e.g., "A320,A319,E170"). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to specify a flight or flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI restriction window or select a different tab to add another constraint.

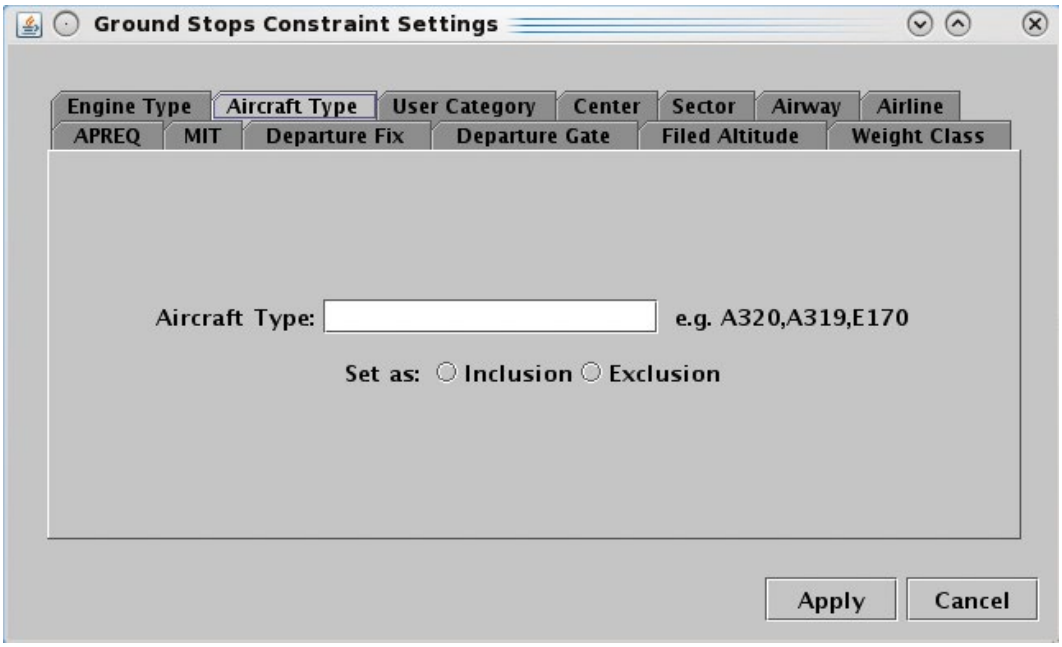


Figure 3.41. Constraint: Aircraft Type.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.3 Constraint: User Category

The following TMI restrictions can be constrained by User Category:

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply a User Category constraint, select from the following User Categories: Air Carrier, Freight Cargo Carrier, General Aviation, Military, Air Taxi, Lifeguard, Other, or Unknown (e.g., "Air Taxi" in Figure 3.42). More than one type can be selected at a time. See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI restriction window or select a different tab to add another constraint.

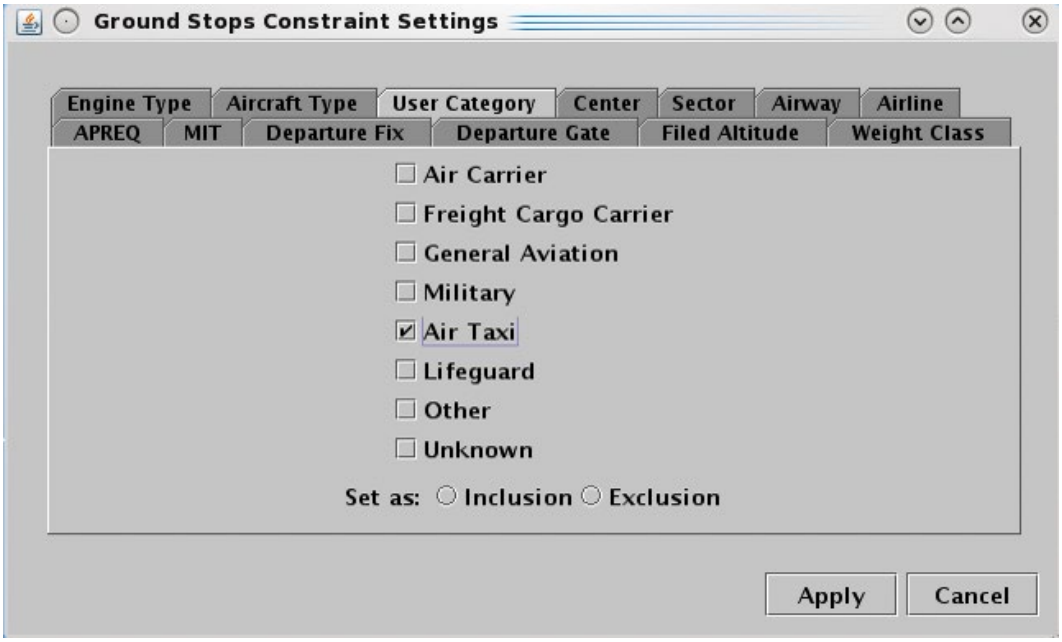


Figure 3.42. Constraint: User Category.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.4 Constraint: Center

The following TMI restrictions can be constrained by Air Route Traffic Control Center (ARTCC; Center).

- APREQ Schedule

- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply a Center constraint, enter the 3-letter code of the Center (e.g., ZDC) (Figure 3.43). To enter more than one Center, separate codes with a comma, but no space (e.g., "ZDC,ZTL"). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

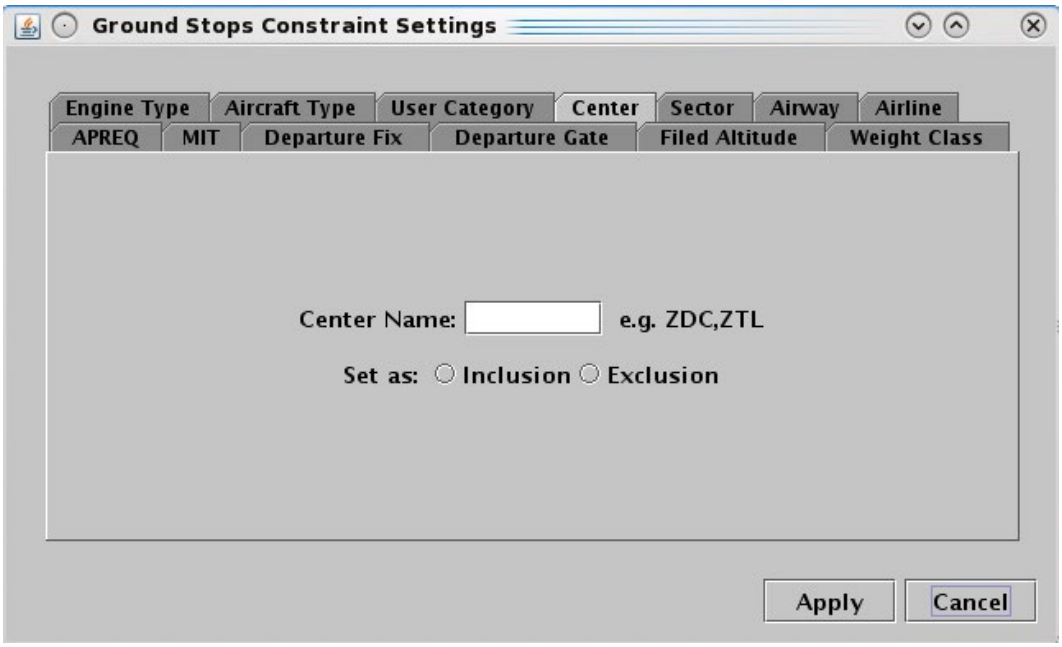


Figure 3.43. Constraint: Center.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.5 Constraint: Sector

The following TMI restrictions can be constrained by Sector.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply a Sector constraint, enter the Sector name in the form of the 3-letter code of the Center, plus the sector number (e.g., "ZTL30" for Sector 30 in Atlanta Center) (Figure

3.44). To enter more than one Sector, separate codes with a comma, but no space (e.g., "ZTL30,ZJX72"). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

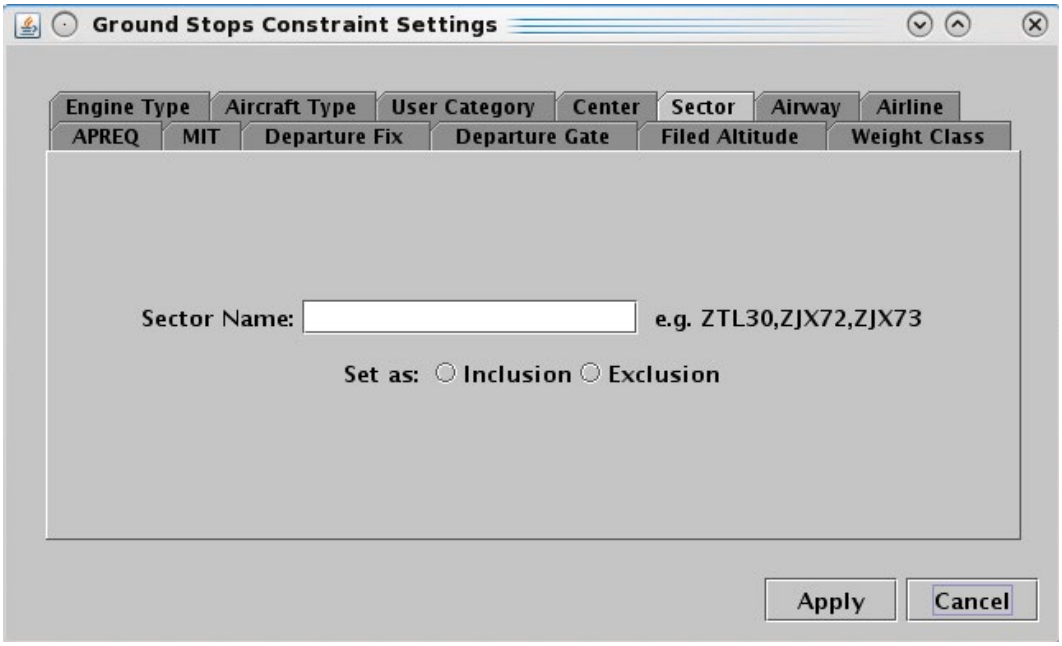


Figure 3.44. Constraint: Sector.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.6 Constraint: Airway

The following TMI restrictions can be constrained by Airway.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply an Airway constraint, enter the alphanumerical code of the airway (e.g., "J75) (Figure 3.45). To enter more than one airway, separate codes with a comma, but no space (e.g., "J75,J48"). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

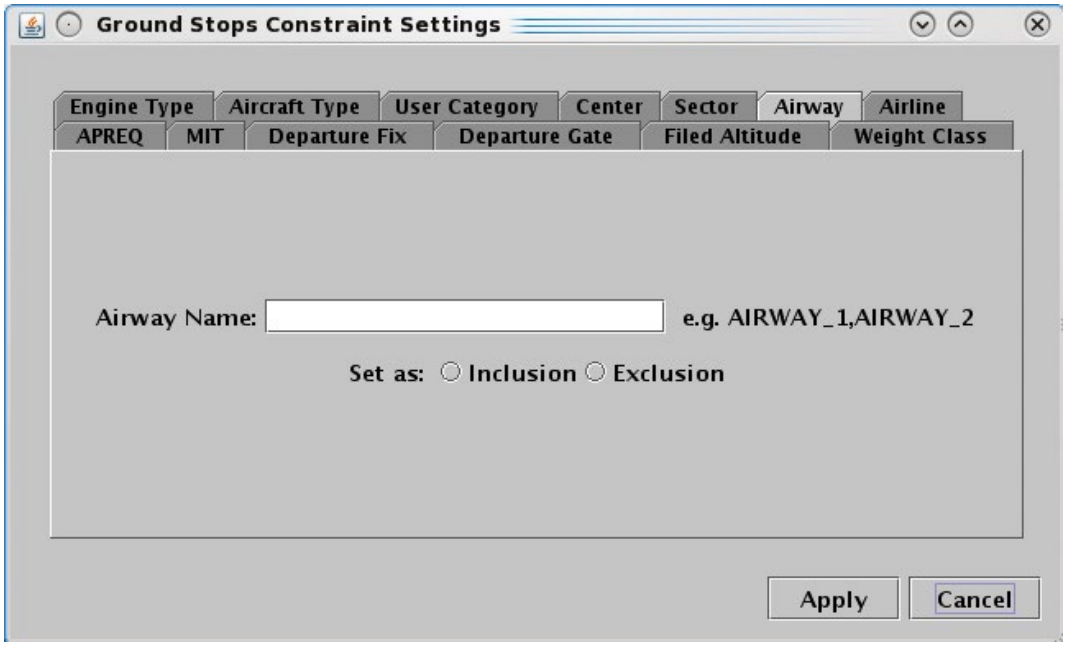


Figure 3.45. Constraint: Airway.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.7 Constraint: Airline

The following TMI restrictions can be constrained by Airline.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply an airline constraint, enter the 3-letter airline code (e.g., "AAL") (Figure 3.46). To enter more than one airline, separate codes with a comma, but no space (e.g., "AAL,UAL"). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

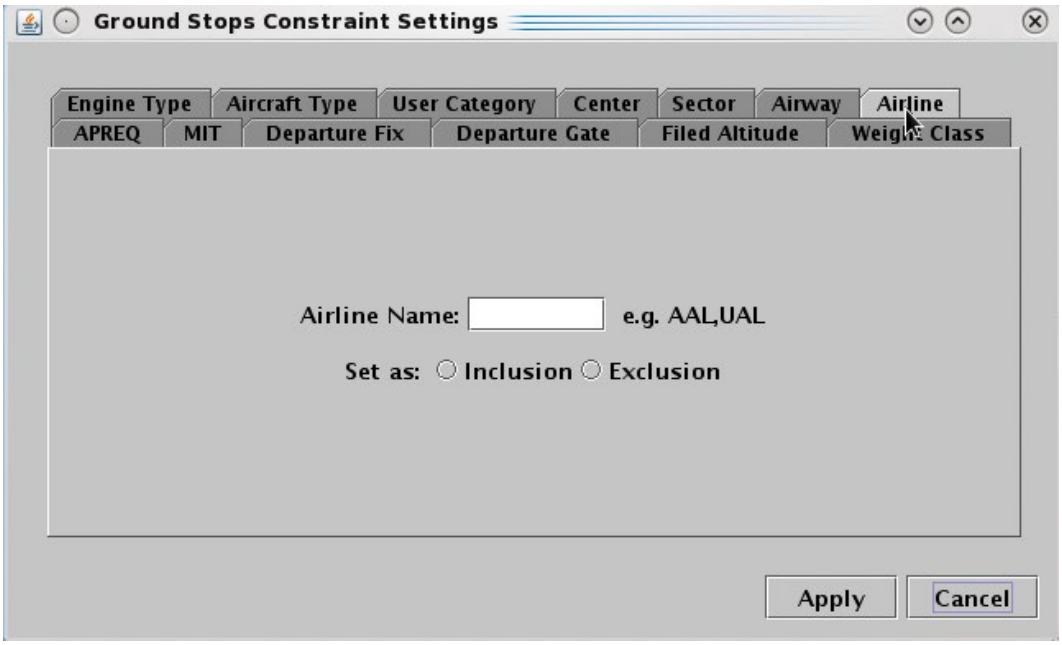


Figure 3.46. Constraint: Airline.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.8 Constraint: Filed Altitude

The following TMI restrictions can be constrained by Filed Altitude.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply a filed altitude constraint, select "At or Above" or "At or Below" to specify the range for the altitude constraint (Figure 3.47). Next, enter a 3-digit flight level altitude into the text box. The 3-digit format for altitudes is the abbreviated form of a 5-digit altitude (e.g., "230" is an abbreviation of "23,000 ft."). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

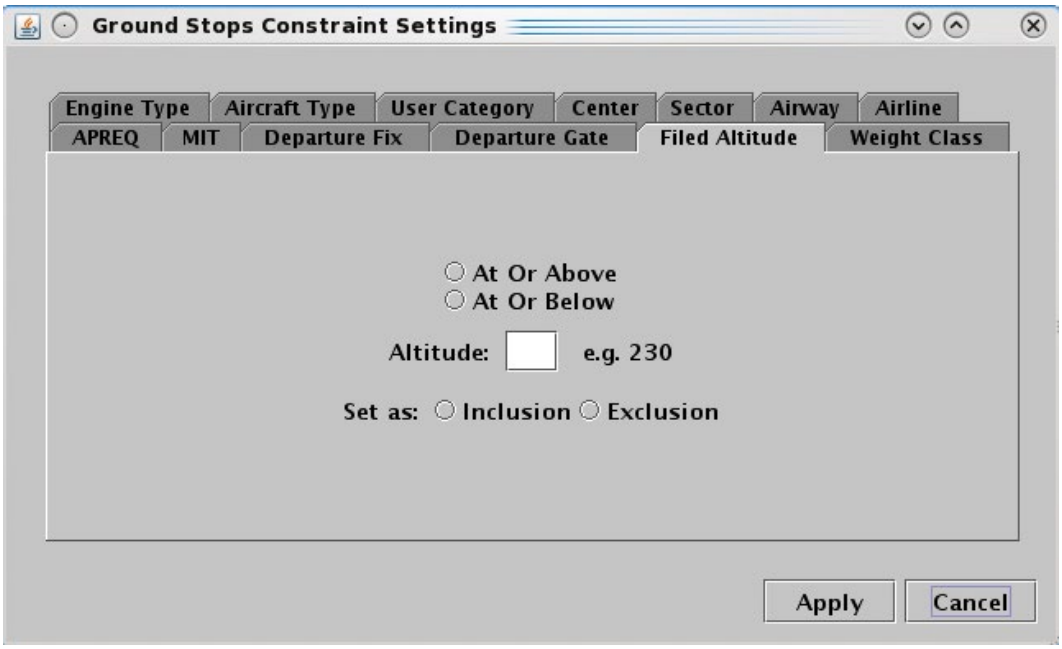


Figure 3.47. Constraint: Filed Altitude.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.9 Constraint: Weight Class

The following TMI restrictions can be constrained by aircraft Weight Class.

- APREQ Schedule
- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply a weight class constraint, select from the following aircraft weight classes: A, B, C, D, E, or F (Figure 3.48). More than one class can be selected at a time. See Section 3.1.5.1 for more information about adding constraints.

Select “Inclusion” to include flights matching these criteria in the TMI restriction or “Exclusion” to exclude flights from the TMI restriction. Then select “Apply” to return to the TMI-restriction window or select a different tab to add another constraint.

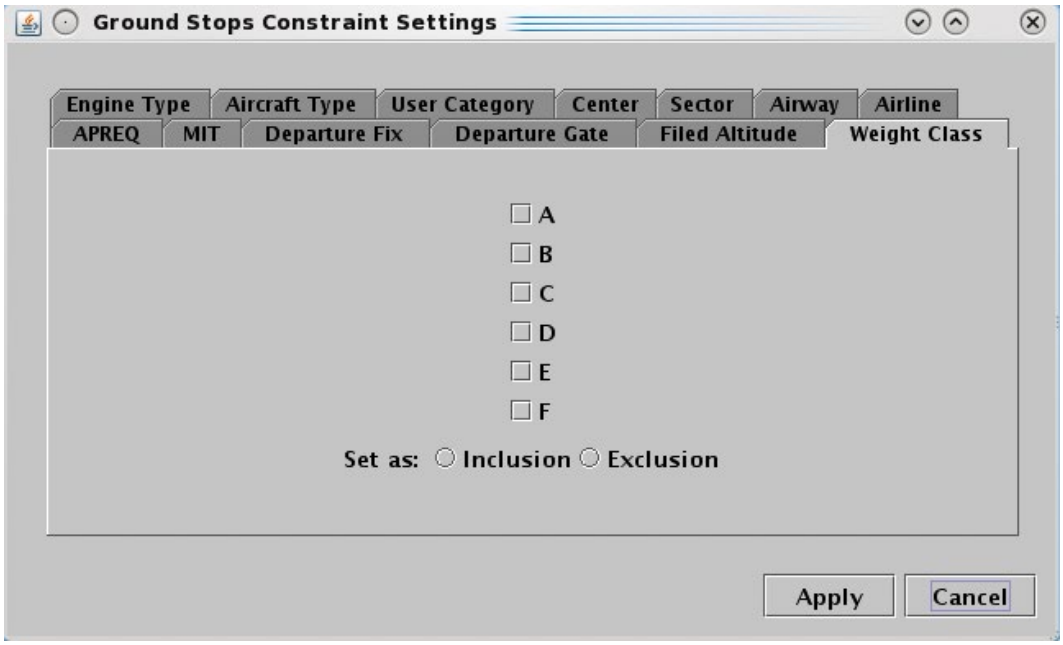


Figure 3.48. Constraint: Weight Class.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.10 Constraint: Miles-in-Trail (MIT)

The following TMI restrictions can be constrained by MIT restrictions.

- APREQ Schedule
- Departure Fix Closure
- Ground Stop

To apply an MIT constraint, select "MIT" (Figure 3.49). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

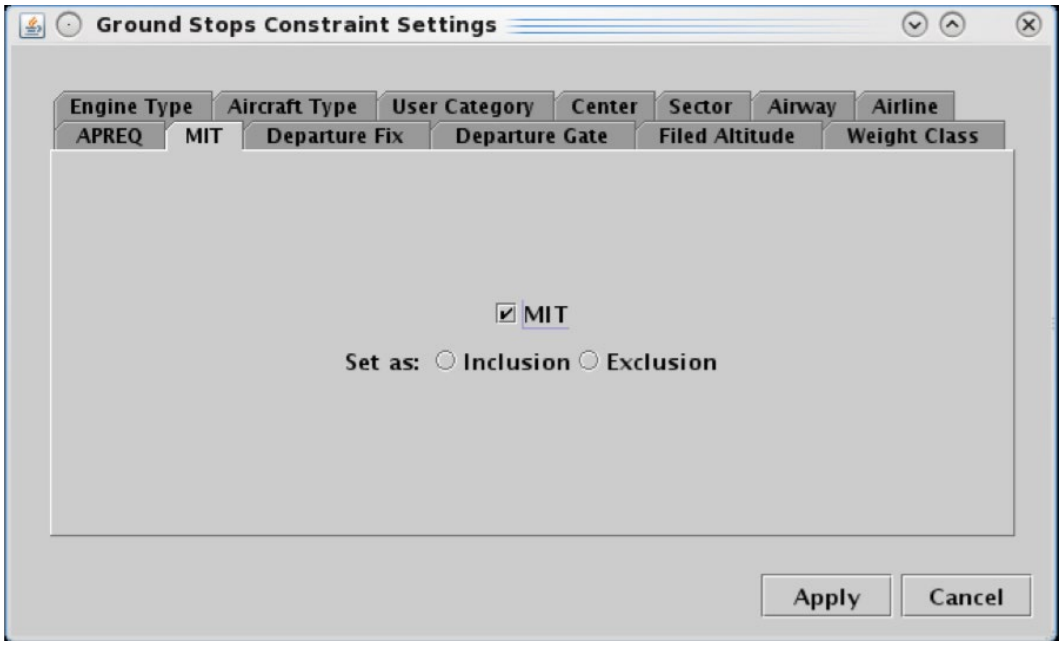


Figure 3.49. Constraint: Miles-in-Trail (MIT).

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.11 Constraint: Departure Fix

The following TMI restrictions can be constrained by Departure Fix.

- APREQ Schedule
- Ground Stop

To apply a Departure Fix constraint, enter the fix name (Figure 3.50). To enter more than one fix, separate names with a comma, but no space (e.g., JOJJO,ICONS). Alternatively, select from the list of departure fixes. More than one fix can be selected at a time. To select all fixes in the list, click on the "Select All" button. See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

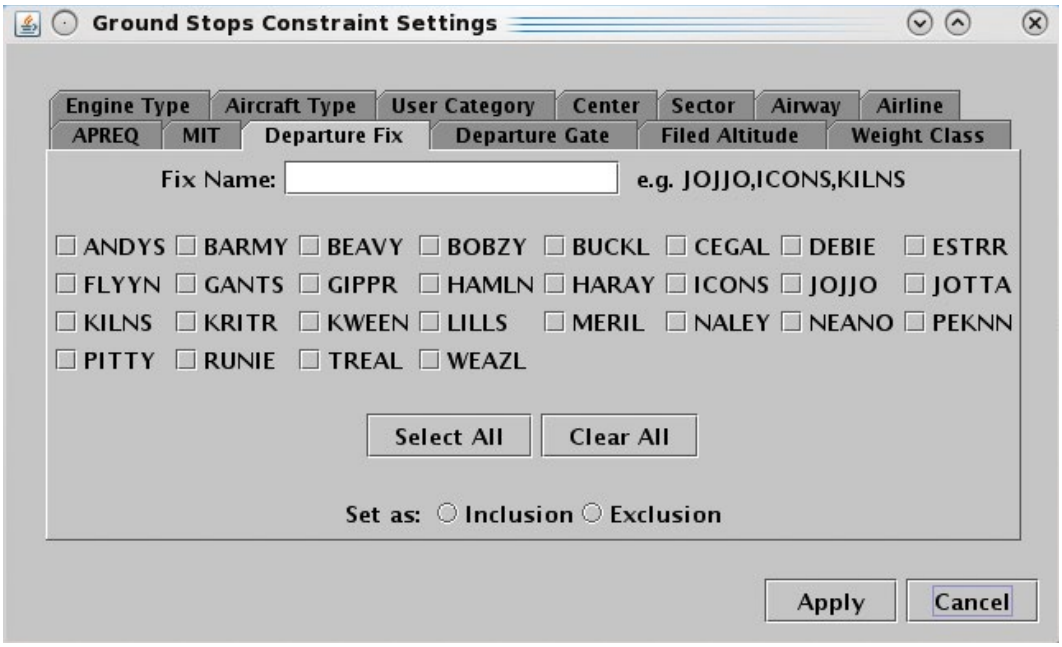


Figure 3.50. Constraint: Departure Fix.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.12 Constraint: Departure Gate

The following TMI restrictions can be constrained by Departure Gate.

- APREQ Schedule
- Ground Stop

To apply a Departure Gate constraint, select from the list of Departure Gates: East, North, South, or West (Figure 3.51). More than one gate can be selected at a time. To select all gates in the list, click on the "Select All" button. See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

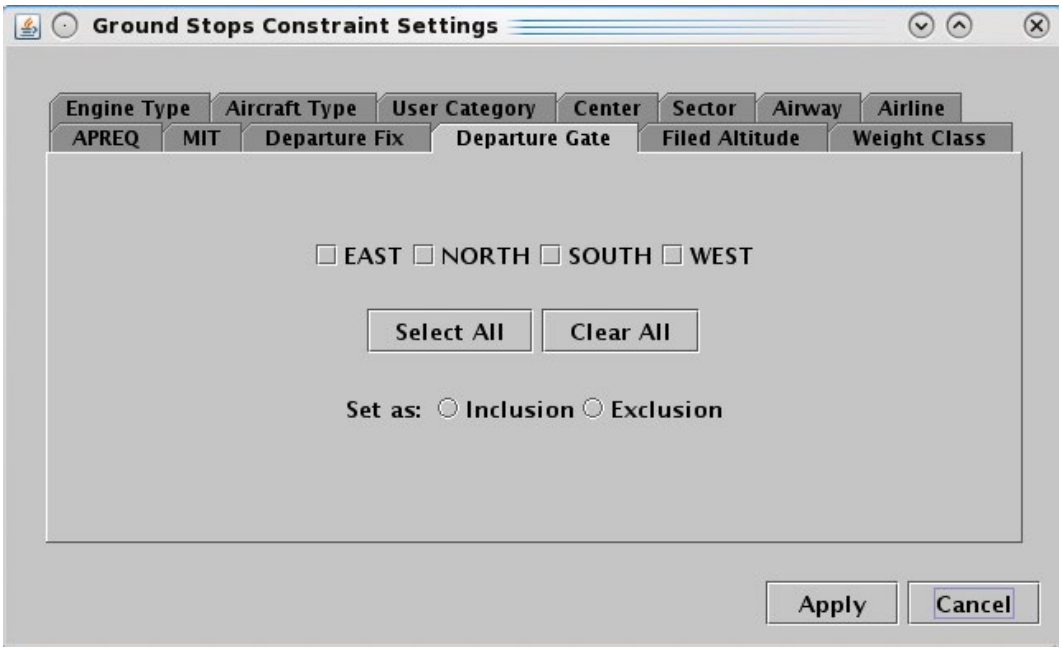


Figure 3.51. Constraint: Departure Gate.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.13 Constraint: APREQ

The following TMI restrictions can be constrained by APREQ.

- MIT Restriction
- Departure Fix Closure
- Ground Stop

To apply an APREQ constraint, select "APREQ" (Figure 3.52). See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

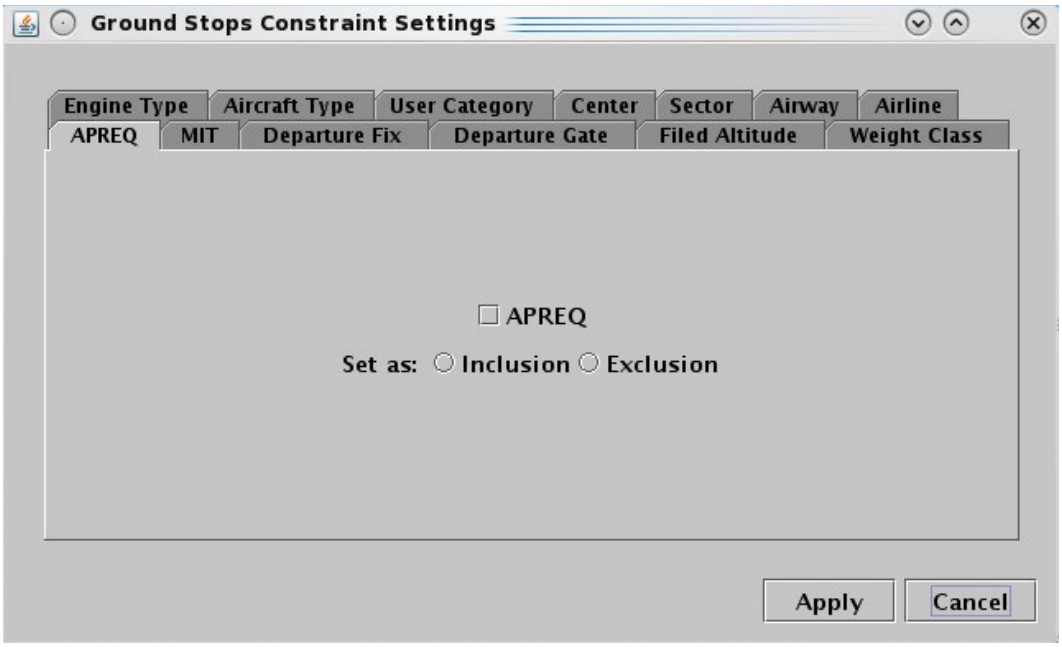


Figure 3.52. Constraint: APREQ.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.5.5.14 Constraint: Destination

The following TMI restrictions can be constrained by the Destination airport.

- MIT Restriction
- Departure Fix Closure

To apply a destination airport constraint, enter the 3-letter destination code (Figure 3.53). To enter more than one airport, separate airport codes with a comma, but no space (e.g., "DFW,LGA,BOS" in Figure 3.53). Alternatively, select from the list of destination airports. More than one airport can be selected at a time. To select all airports in the list, click on the "Select All" button. See Section 3.1.5.1 for more information about adding constraints.

Select "Inclusion" to include flights matching these criteria in the TMI restriction or "Exclusion" to exclude flights from the TMI restriction. Then select "Apply" to return to the TMI-restriction window or select a different tab to add another constraint.

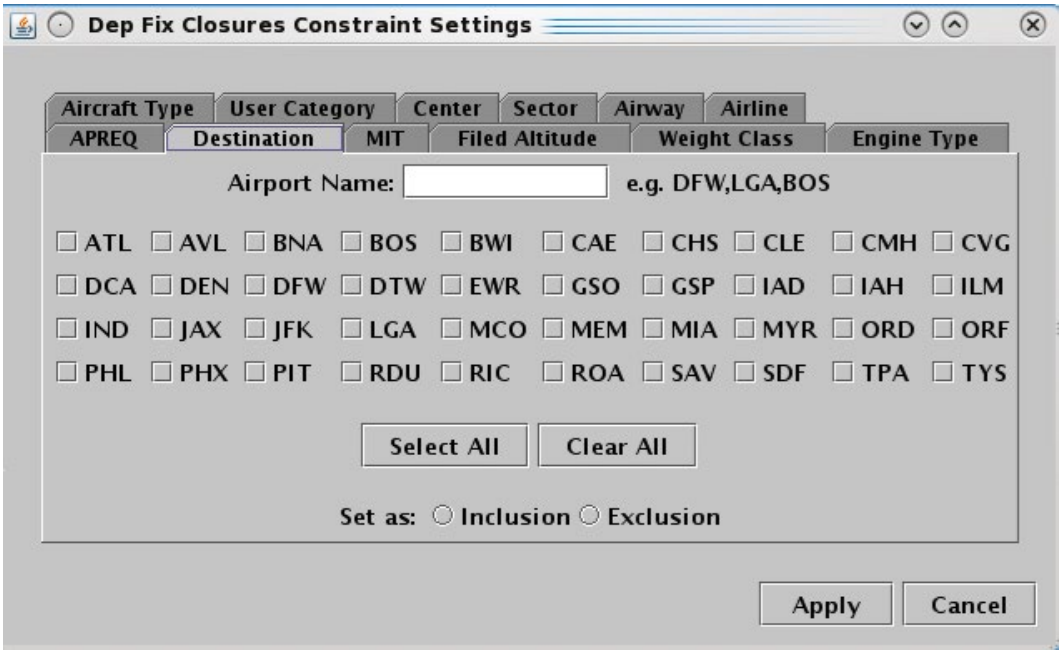


Figure 3.53. Constraint: Destination.

See Section 3.1.5.3 for a description of how to *modify* constraints and Section 3.1.5.4 for a description of how to *remove* constraints.

3.1.6 TM Actions: Runway Utilization Tab

Use the TM Actions panel to select an airport configuration and runway utilization.

To change the current Runway Utilization or schedule a future change:

Step 1: Select "Change Runway Utilization" from the TM Actions dropdown menu (Figure 3.2) to open the Runway Utilization tab (Figure 3.54).

Step 2: Select an airport configuration from the "Configuration" dropdown menu (e.g., "South_Conv" in Figure 3.55).

Step 3: Select a runway scenario from the "Runway Utilization" dropdown menu (e.g., "S_Normal" in Figure 3.55).

Step 4: Select a meteorological condition: VMC or IMC (e.g., "VMC" in Figure 3.55).

Step 5: If the restriction begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "0630" in Figure 3.55).

Step 6: Select the "Add" button (Figure 3.55).

Note: Airport configurations/scenarios are displayed in the Runway Utilization table with the Start time (Figure 3.56).

Note: If "Start Now" has been selected, the Runway Utilization scenario changes immediately.

Alternatively: Select the "Clear All" button to clear and cancel all entries.

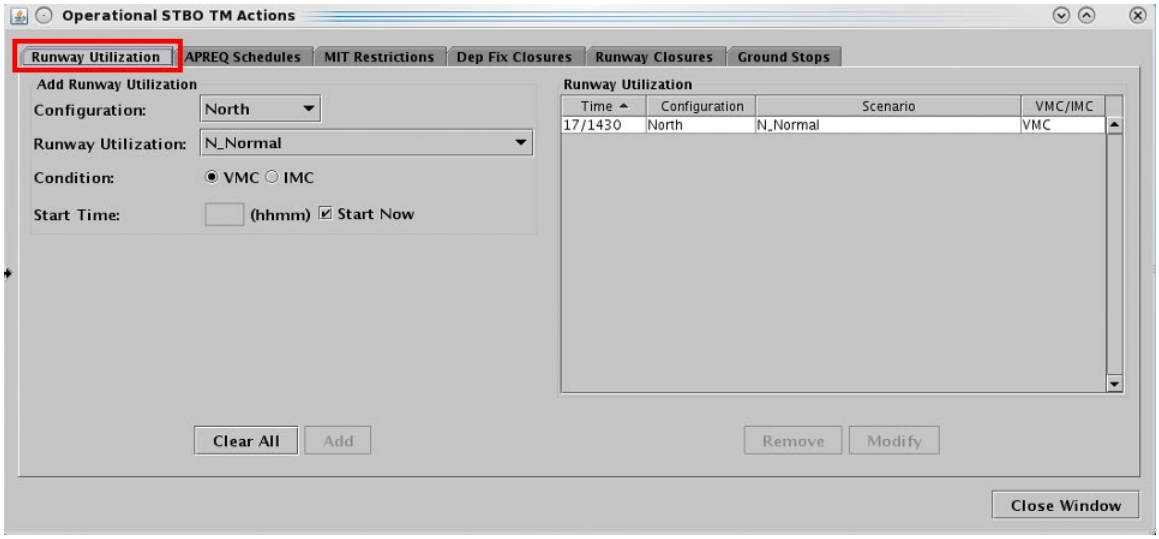


Figure 3.54. TM Actions panel: Runway Utilization tab.

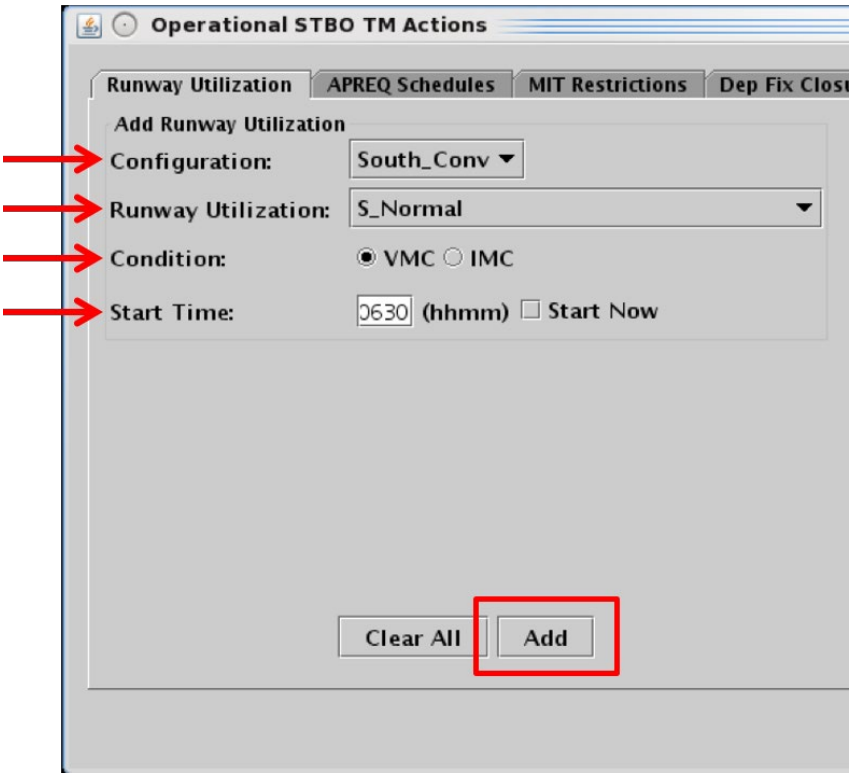


Figure 3.55. Runway Utilization tab: Enter criteria for a planned (future) Runway Utilization change.

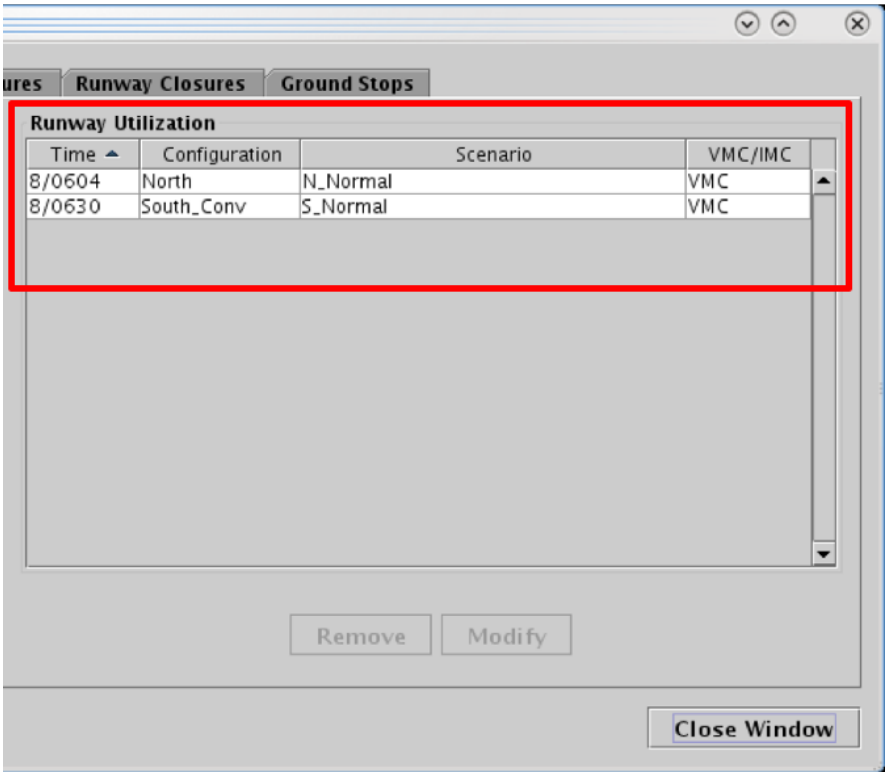


Figure 3.56. Runway Utilization table: Current and planned Runway Utilization scenarios.

If an airport configuration change is made, “CC,” for “Configuration Change,” is displayed, in red, at the scheduled start time along the Timeline (see Section 6.6).

Configuration and Runway changes are indicated in Notification Banner; a new notification is generated for each scheduled change. The current Runway Utilization is also displayed on the Toolbar (see example in Section 3.8).

To modify a Runway Utilization *scheduled to take effect in the future:*

The Runway Utilization currently in place cannot be modified. However, a scenario scheduled to take effect in the future can be modified using the following steps.

Step 1: Select the scheduled Runway Utilization from the Runway Utilization table (Figure 3.57).

Step 2: Select “Modify” (Figure 3.57) to change:

- Runway Utilization scenario
- Meteorological Condition (VMC/IMC)
- Start Time

Note: The selected Airport Configuration cannot be changed.

Step 3: When changes are complete, select “Update” (Figure 3.58).

Alternatively: Select “Clear All” to cancel the update and retain the original settings for that restriction.

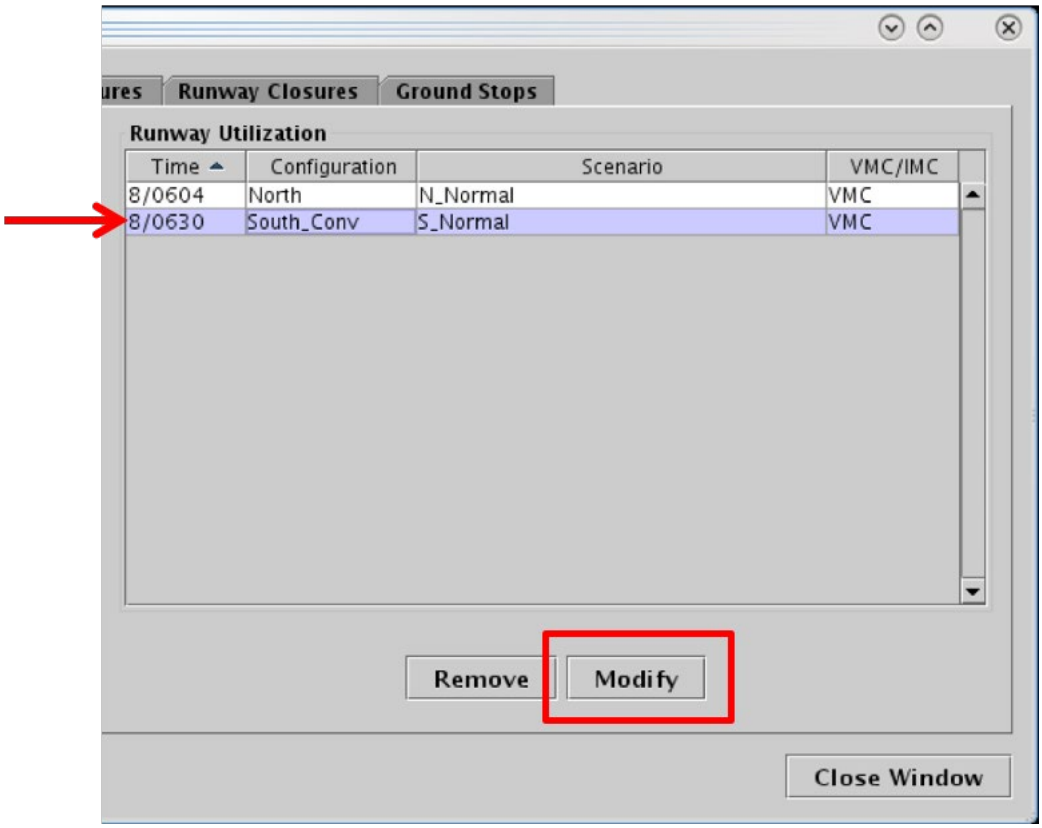


Figure 3.57. Modify a scheduled Runway Utilization.

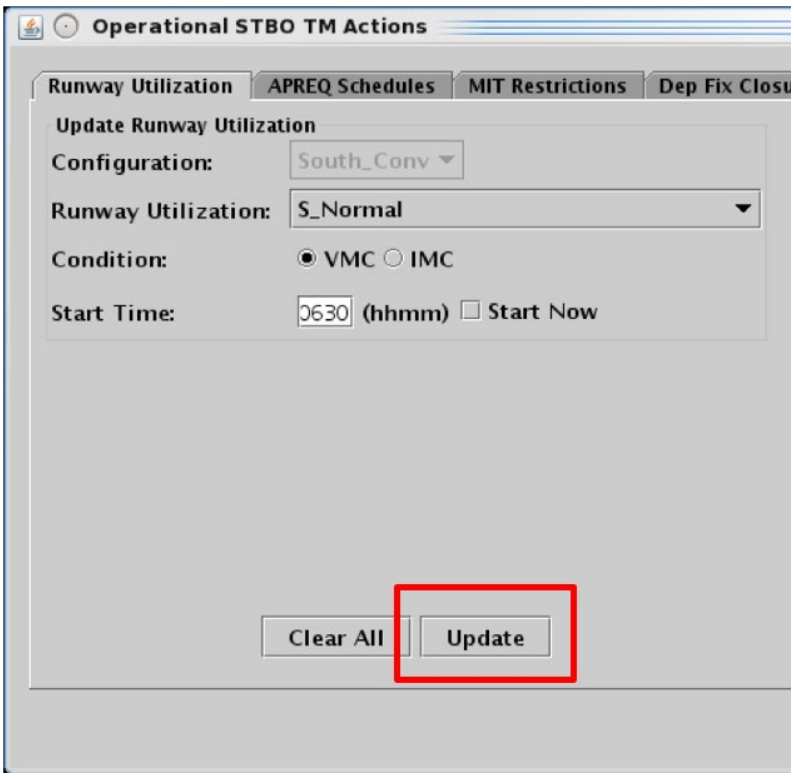


Figure 3.58. Select "Update" to apply changes.

To remove a Runway Utilization *scheduled to take effect in the future:*

The current Runway Utilization cannot be removed using the "Remove" button. However, a Runway Utilization scheduled to take effect in the future can be removed using the following steps.

Step 1: Select the Runway Utilization scenario from the Runway Utilization table (e.g., "South_Conv" in Figure 3.59).

Step 2: Select "Remove" (Figure 3.59).

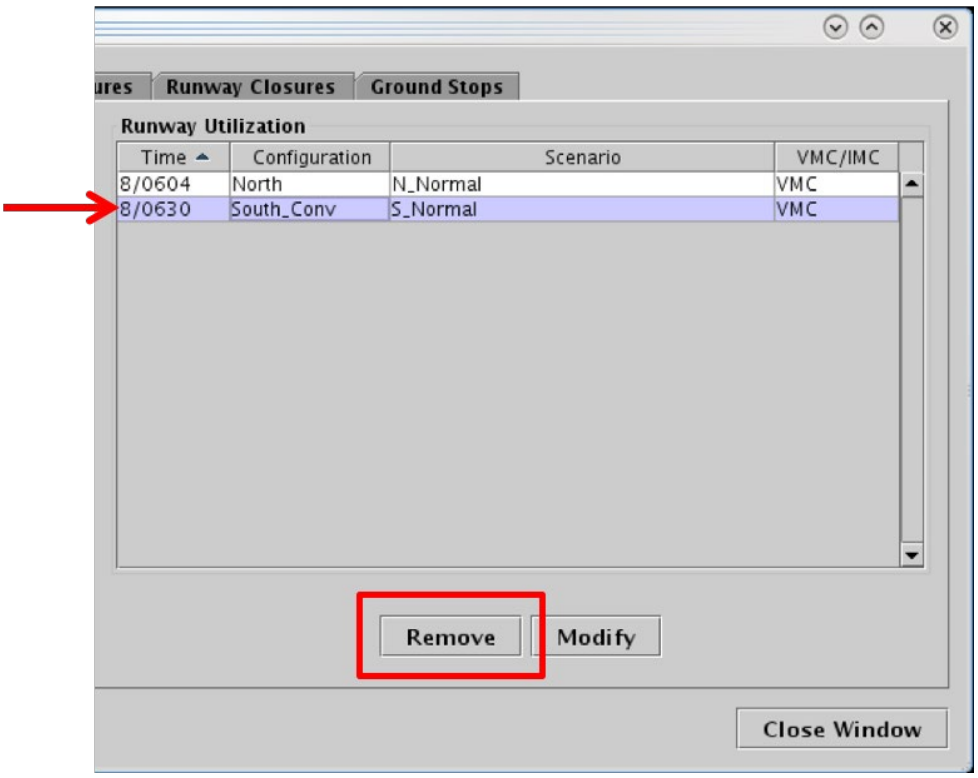


Figure 3.59. Remove a scheduled Runway Utilization scenario.

3.1.7 TM Actions: Runway Closures Tab

Use the TM Actions panel to enter a Runway Closure at an airport.

To add a Runway Closure:

Step 1: Select "Runway Closure" from the TM Actions dropdown menu (Figure 3.2) to open the Runway Closures tab (Figure 3.60).

Step 2: Select a Runway from the dropdown menu (e.g., "18L/36R" in Figure 3.61).

Step 3: If the restriction begins in the future, uncheck "Start Now" and enter a time in the "Start Time" text box in "*hhmm*" format (e.g., "0100" in Figure 3.61).

Step 4: If the "End Time" is within the next 24 hours, uncheck "No End Time" and enter a time in the "End Time" text box in "*hhmm*" format (e.g., "0300" in Figure 3.61).

Alternatively: If the runway closure is expected to last *more than* 24 hours, check "No End Time." The long-term runway closure will remain in place until removed by the user.

Step 5: Select the "Add" button (Figure 3.61).

Note: Runway Closures are displayed in the Runway Closures table with "User" indicated the "Source" column (Figure 3.62).

Alternatively: Select the "Clear All" button to clear and cancel all entries.

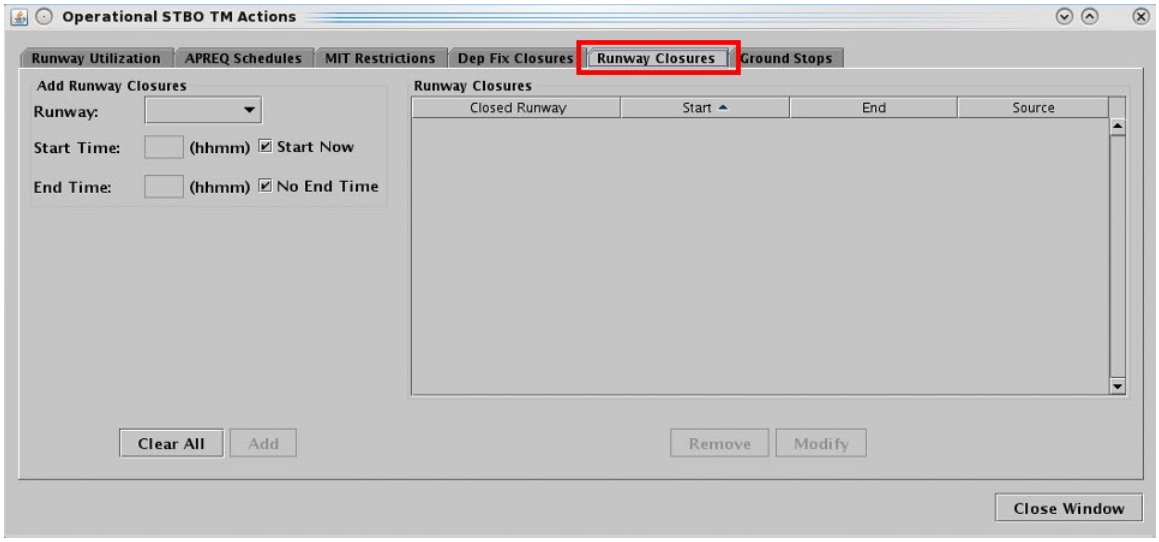


Figure 3.60. TM Actions panel: Runway Closures tab.

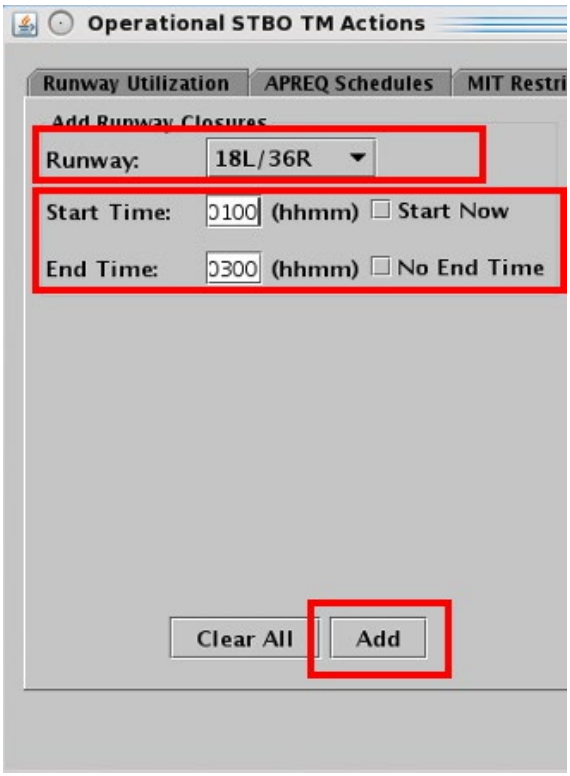


Figure 3.61. Runway Closures tab: Enter Closure information.

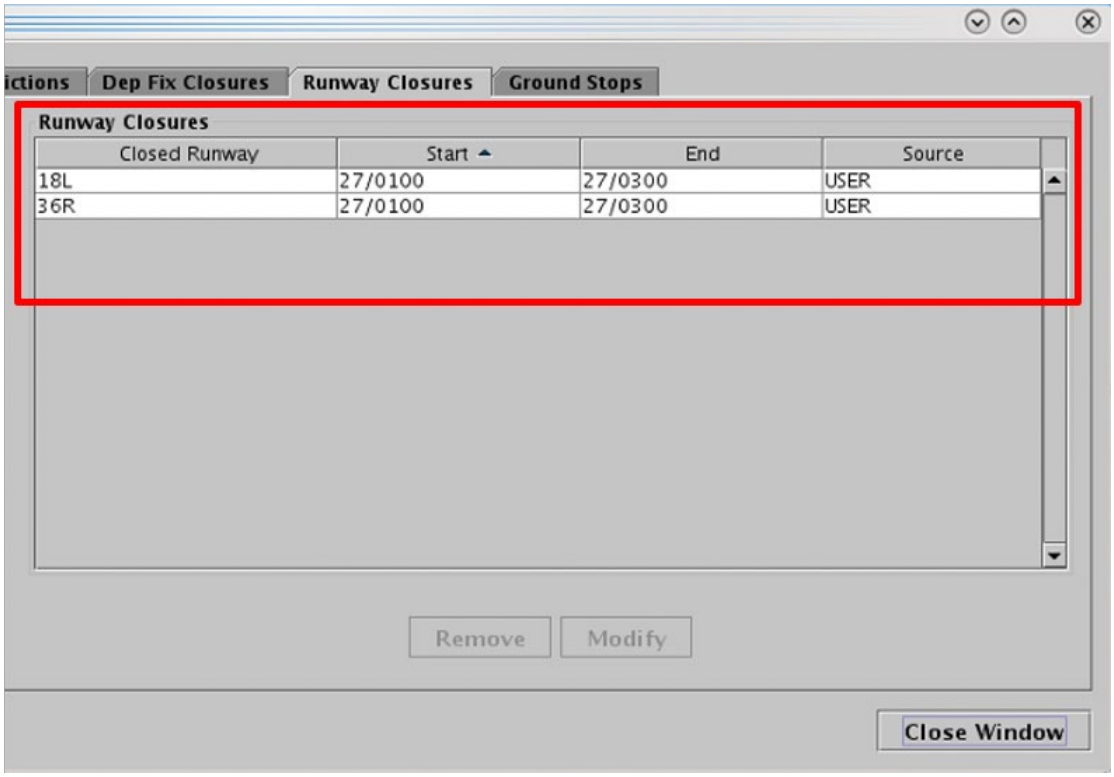


Figure 3.62. Runway Closures table.

Runway closures are indicated in Notification Banner (e.g., “18L CLOSED,” “36R CLOSED”). A new notification is generated for each runway closure.

To modify a Runway Closure:

Step 1: Select the Runway Closure from the Runway Closures table (e.g., “18L/36R” in Figure 3.63).

Step 2: Select “Modify” (Figure 3.63) to change:

- Start Time*
- End Time

Note: *If the Start Time has already passed, and the Runway Closure is already in effect, the Start Time field is grayed-out and cannot be modified. In Figure 3.64, however, the Start Time is still in the future.

Step 3: When changes are complete, select “Update.”

Note: Changes apply to both directions of a single runway.

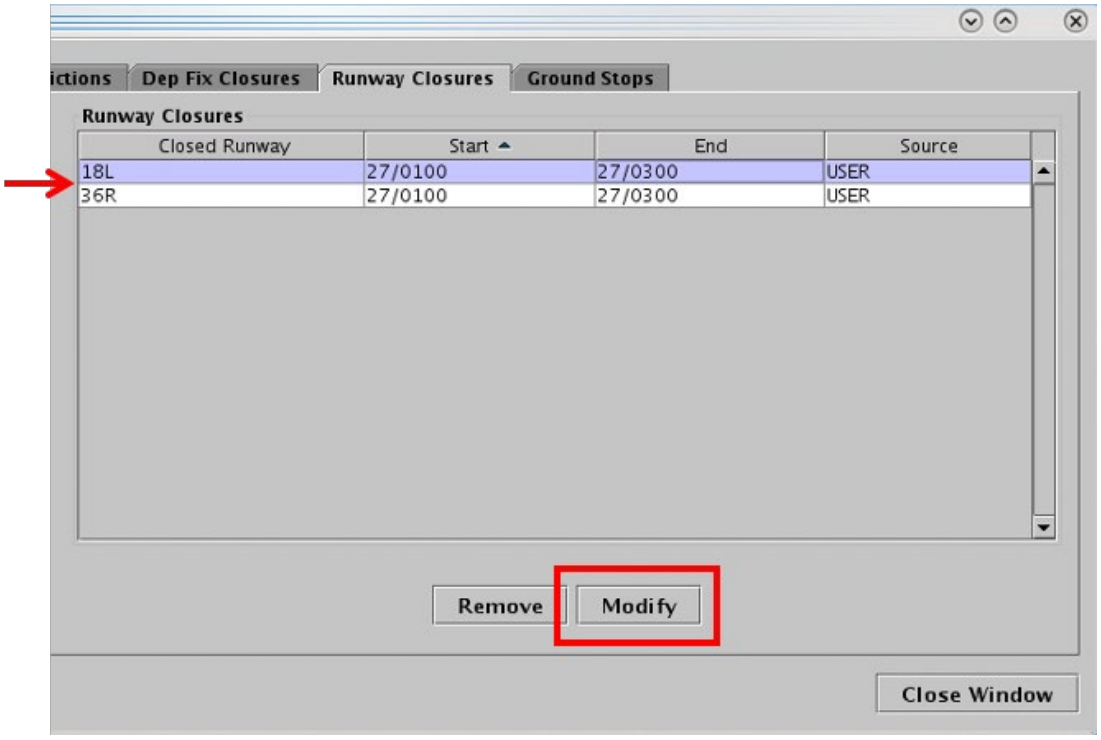


Figure 3.63. Modify a Runway Closure.

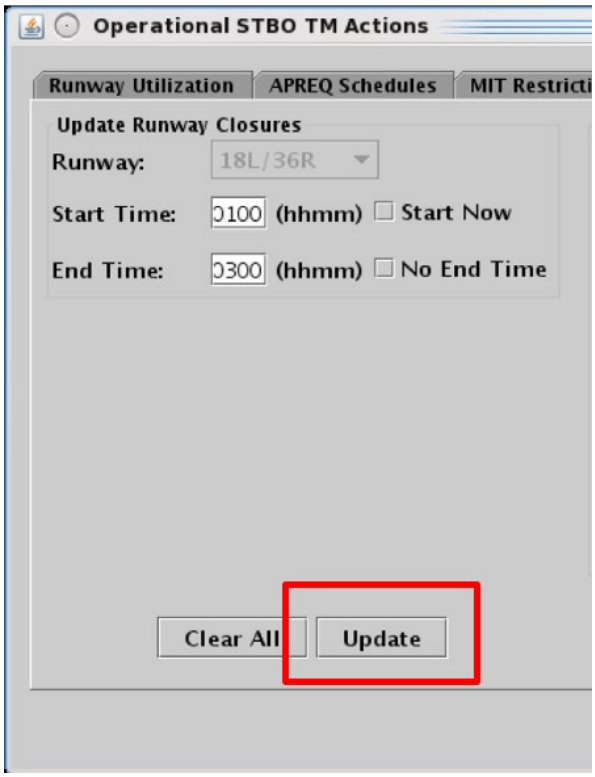


Figure 3.64. Select "Update" to apply changes. In this example, the Start Time (0100 UTC) is still in the future, so it can be modified.

To remove a Runway Closure:

Step 1: Select the Runway Closure from the Runway Closures table (e.g., "18L/36R" in Figure 3.65).

Step 2: Select "Remove" (Figure 3.65).

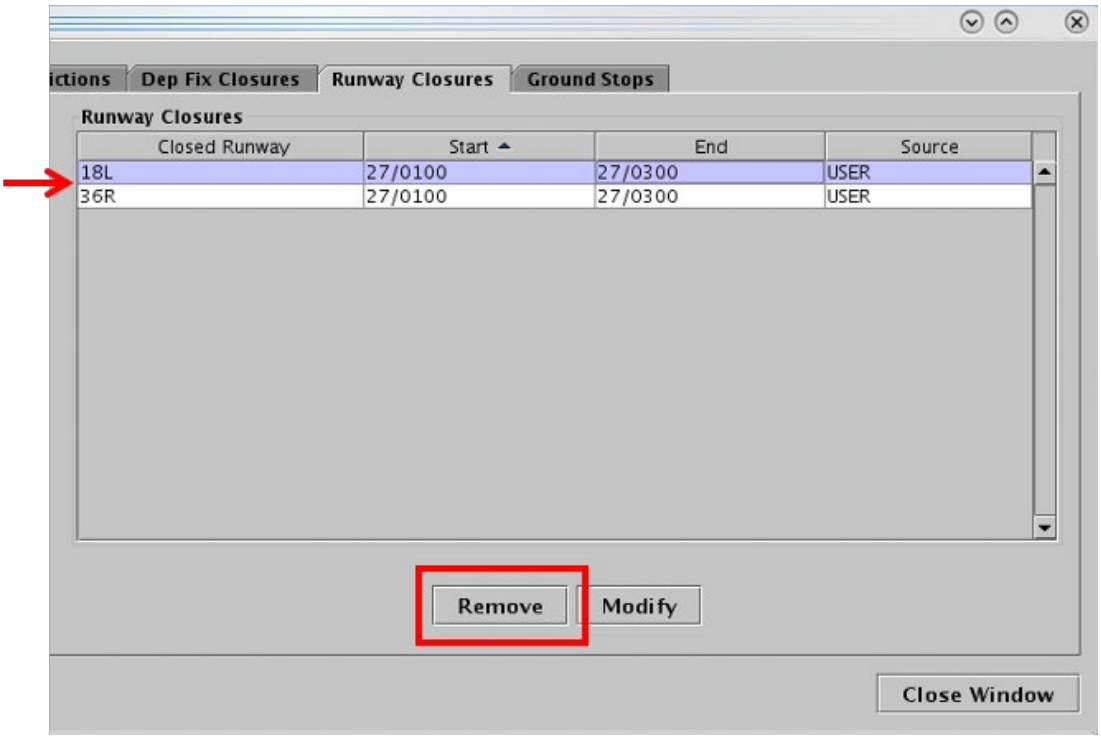


Figure 3.65. Remove a Runway Closure.

3.2 Toolbar: Create

Use the "Create" function on the Toolbar to open a new map, table, or timeline window (Figure 3.66). Each of these is described in detail later in the manual (see Section 4 for maps, Section 5 for tables, and Section 6 for timelines). An overview of the "Create" menu is provided here.

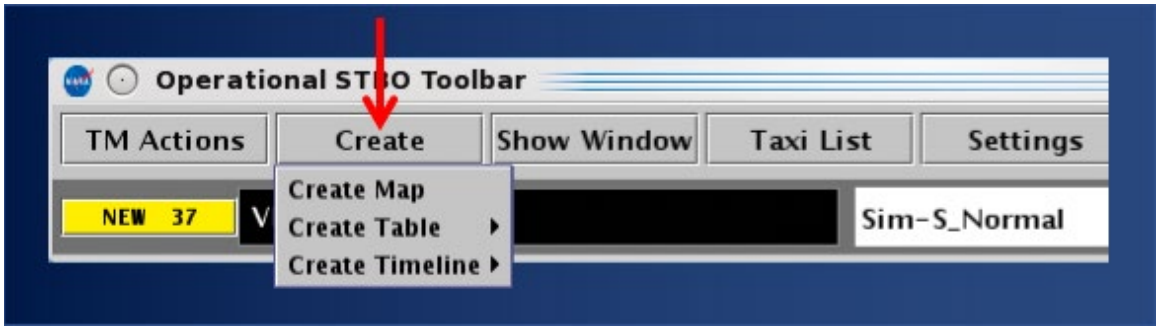


Figure 3.66. Create Menu: Map, Table, and Timeline.

3.2.1 Map

Select "Create Map" to open a new map window (Figure 3.67).

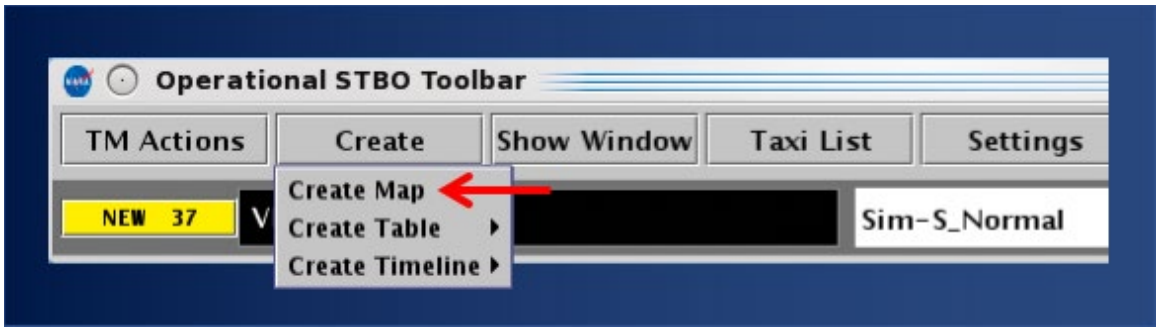


Figure 3.67. Create Map.

The newly created map opens centered on the airport configured for the STBO Client — in this case, CLT (Figure 3.68).

Figure 3.68. Select "Create Map" to open a new map window.

Use the map toolbar to configure the new map display (Section 4.3).

3.2.2 Table

Select “Create Table” to create a new: Flights Table, Aircraft Table, or Departure Fix Status Table. If a table configuration has been saved for quick-create (see Section 5.1.3.4), the saved configuration is listed in this menu under its respective table type (e.g., “APREQ_TABLE” under “Flight Tables” in Figure 3.69).

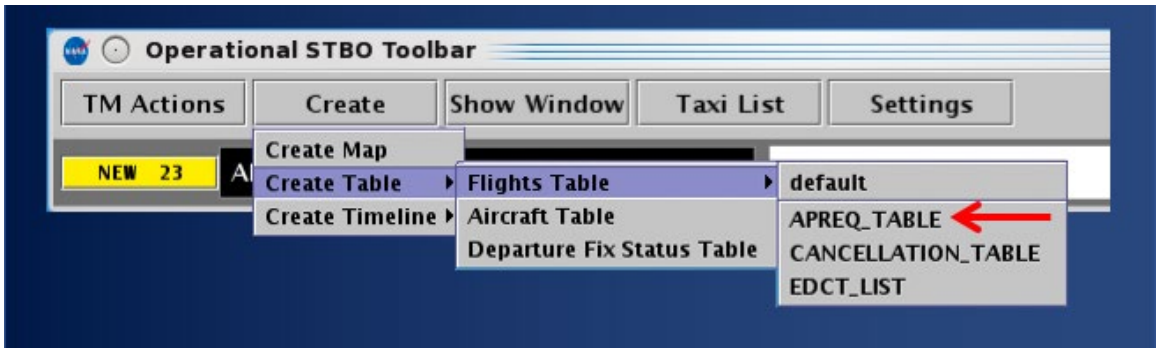


Figure 3.69. Create Table: Select table type and then select default or saved configuration.

To configure a new table, see the following sections: Flights Table (Section 5.1.3), Aircraft Table (Section 5.2.3), and Departure Fix Status Table (Section 5.3.1).

3.2.3 Timeline

Select “Create Timeline” and select the timeline’s reference point: Runway, Arr/Dep Fix, Parking Gate, or Spot to open a new timeline window. When a timeline configuration has been saved for quick-create (see Section 6.7.10), the saved configuration is accessed through this menu, under its respective reference point (e.g., “Timeline_1” under “Runway” in Figure 3.70).

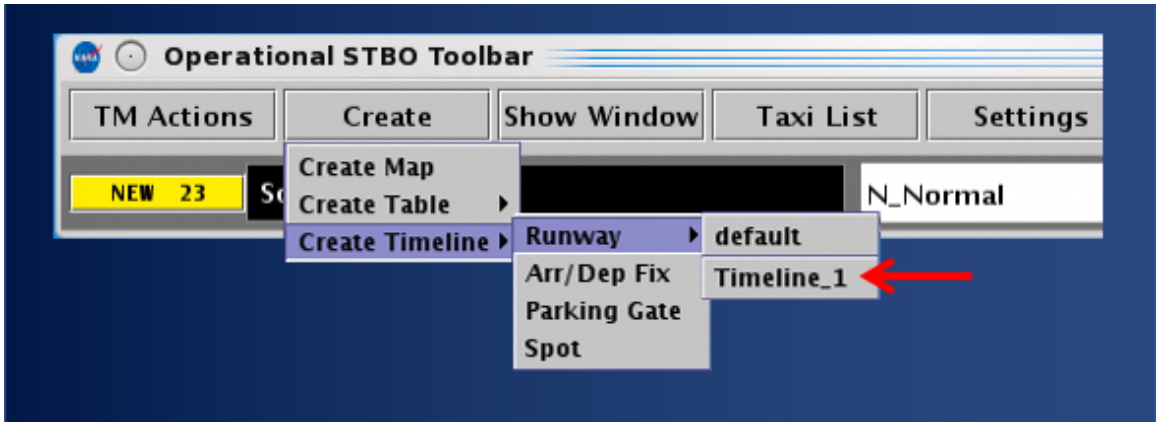


Figure 3.70. Create Timeline: Select Reference Point and then select default or saved configuration.

3.3 Toolbar: Show Window

Select “Show Window” to bring an already-open map, table, or timeline window to the front of the display, on top of the other open windows (Figure 3.71). If any of these respective windows are not currently open, they are grayed-out in the menu and not selectable.

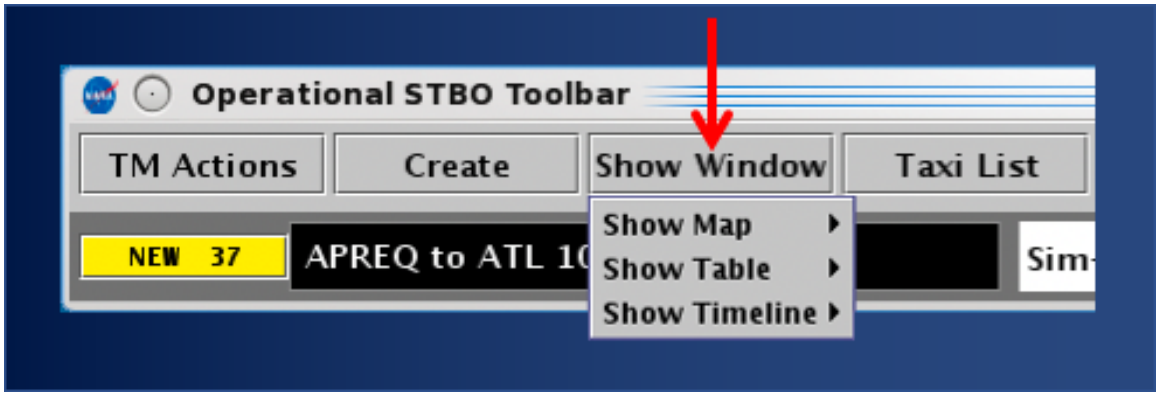


Figure 3.71. Show Window: Map, Table, or Timeline.

3.4 Toolbar: Taxi List

Select “Taxi List” (Figure 3.72) to view a list of departure flights and their AMA taxi time by runway. The Taxi List is designed to provide a view of departures and AMA delay similar to the display in the Airport Resource Management Tool (ARMT).

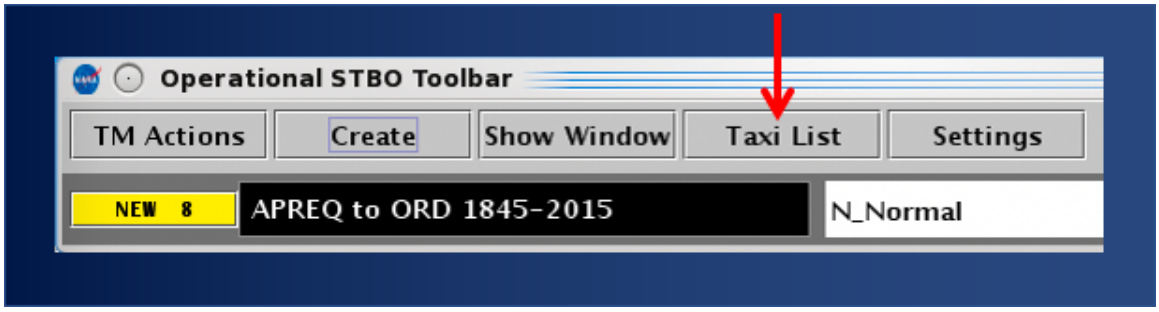


Figure 3.72. Toolbar: Taxi List.

The Taxi List includes four columns, described in Table 3.3. Select a column header *once* to sort the data alphabetically (A to Z) or numerically in ascending order; click *twice* to sort the data in the *opposite* order (Z to A) or numerically in descending order.

Table 3.3. Taxi List: Columns

Column Header	Description
Flight ID	Call sign
AMA Time	**AMA Time:** Is the ***actual duration*** of taxi time in the Airport Movement Area (AMA), in *hh:mm:ss* format. The AMA timer begins counting when a departure flight crosses the spot to enter the AMA and continues counting until the flight starts its takeoff roll on the runway. **Delay Color-Coding:** The color-coding applied in this column (see Figure 3.73) represents AMA delay (in minutes) and corresponds to the legend at the bottom of the window. In the Taxi List, delay is computed by subtracting a standard AMA taxi time (spot to runway) from a flight's current AMA Time. If the resulting *delay value* exceeds a threshold, the cell is color-coded for situational awareness. See Section 3.4.1 for more details about color-coding.
Dep Fix	Departure Fix When the filed Departure Fix is subject to a closure, the original or alternate fix, if applicable, is displayed and the cell is color-coded in **dark blue** (see "HANUH" in Figure 3.73).
Dest	Destination (3-letter airport code). When a destination is subject to a Ground Stop, the cell is color-coded in **dark blue** (see "ORD" in Figure 3.73).

Below the departure list, three flight counts are displayed (Figure 3.73):

- **Departure Count:** Number of flights displayed in the departure list (e.g., "25" in Figure 3.73).
- **Arrival Count:** Number of arrivals expected to land on the selected runway. Note that these flights are not displayed in the list (e.g., "0" in Figure 3.73).
- **Total Runway Demand:** Sum of the Departure and Arrival counts (e.g., "25" Figure 3.73).

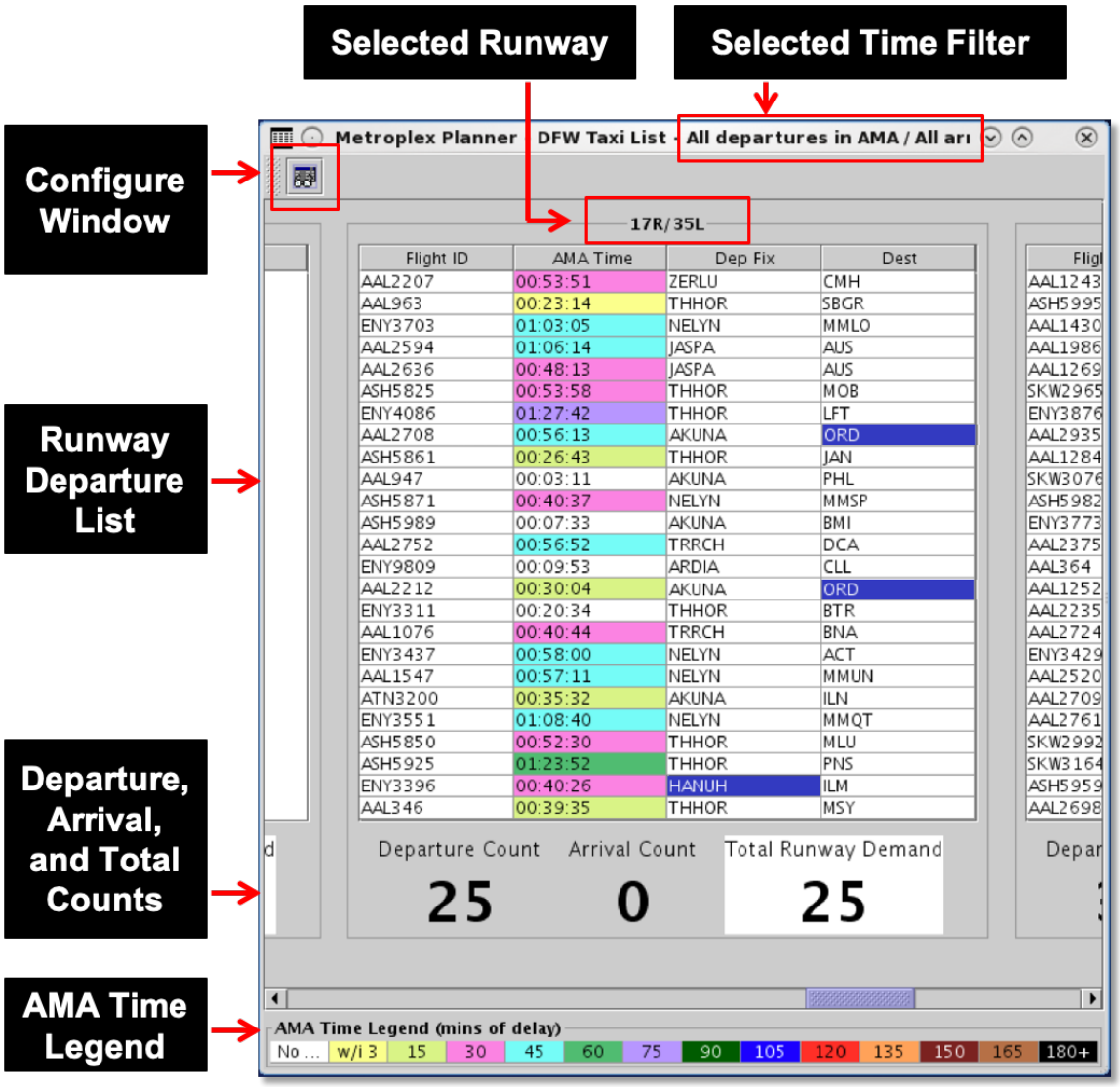


Figure 3.73. Taxi List. In the "AMA Time" column, color-coding represents AMA delay (see AMA Time Legend). Dark blue color-coding in the "Dep Fix" and "Dest" columns represent closed/alternate fixes and destinations subject to Ground Stops, respectively.

Note that the image in Figure 3.73 is an example taken from the ATD-2 Metroplex Planner used in the North Texas region.

3.4.1 AMA Time Legend (mins of delay)

The color-coding applied the "AMA Time" column represents AMA delay (in minutes) and corresponds to the AMA Time Legend at the bottom of the window (Figure 3.74). Like the delay scale used in the Airport Resource Management Tool (ARMT), this scale is color-coded to show departure delay in 15-minute increments, up to 180 minutes.

Figure 3.74. Taxi List: AMA Time Legend (minutes of delay).

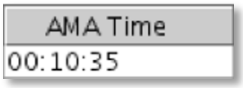
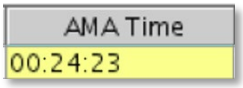
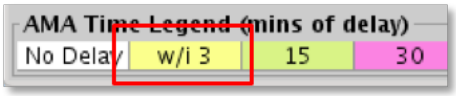
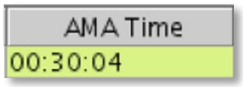
The 15-min bin includes delay between 15 and 29 minutes, the 30-min bin includes delay between 30 and 44 minutes, and so on. Prior to reaching the 15-minute departure delay threshold, an additional color-coding category is used, "within 3 minutes." A flight is "within 3 minutes" of reaching delay when its time value is between 12 and 14 minutes.

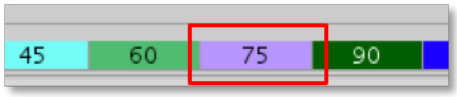
3.4.2 Calculating Delay in the Taxi List

In the Taxi List, delay is computed by subtracting a standard spot-to-runway taxi time from a flight's current AMA Time. When a flight reaches 15 minutes, or more, of departure delay in the AMA, the cell is color-coded for situational awareness of departure delay. Time values between 12 and 14 minutes (i.e., "within 3 minutes") are also highlighted.

Four examples are described in Table 3.4. In these examples, the standard allotted taxi time is 10 minutes, however this time may vary by airport.

Table 3.4. Taxi List Color-Coding Examples

Current AMA Time	Subtract Allotted Taxi Time	Delay Color Coding
	After subtracting the allotted 10-min taxi time, Delay = 35 sec.	Because the delay value is less than the 15-min delay threshold, the flight is not color-coded.
	After subtracting the allotted 10-min taxi time, Delay = 14 min and 23 sec.	Because the delay value is *within three minutes* of the 15-min delay threshold, the flight is color-coded yellow. 
	After subtracting the allotted 10-min taxi time, Delay = 20 min and 4 sec.	Because departure delay is between 15 – 29 min, the flight is color-coded light green.

	After subtracting the allotted 10-min taxi time, Delay = 79 min and 38 sec.	Because departure delay is between 75 – 89 min, the flight is color-coded purple. 

3.4.3 Configure Taxi List

Use the "Taxi List Configuration" window (Figure 3.75) to select time and runway settings for the Taxi List.

Start by selecting from one of two "Time" filters described in Table 3.5.

Table 3.5. Taxi List Configuration: Time Options

Time Filter	Description
All departures in AMA / All arrivals within the TRACON	**Departures:** Only those departure flights *currently taxiing in the AMA* are included in the list and the runway count. Departure flights at the gate, in the Ramp area, or after takeoff, are *not* included. **Arrivals:** The count of arrival flights displayed below the list includes *all arrivals in the TRACON,* expected to land on the selected runway.
All departures / arrivals within a time interval from Current Time + [15, 30, 45, or 60 minutes].	**Departures:** All departures within [15, 30, 45, or 60] minutes of their Target Takeoff Time (TTOT; "OFF" time) are included in the list and the runway count. The "AMA Time" column, however, is populated only for those departure flights *currently taxiing in the AMA*. **Arrivals:** The count of arrival flights displayed below the list includes all arrivals within [15, 30, 45, or 60] minutes of their predicted landing time, expected to land on the selected runway.

A departure flight is removed from the departure list and departure count when it starts its takeoff roll on the runway. An arrival flight is removed from the arrival count upon landing.

To Configure the Taxi List:

Step 1: Select "Taxi List" on the Toolbar (Figure 3.72).

Step 2: Select the "Configure Window" icon (shown Figure 3.73) in the Taxi List toolbar to open the Taxi List Configuration window (Figure 3.75).

Step 3: Select from one of two "Time" filters.

- All departures in AMA / All arrivals within the TRACON, or
- All departures / arrivals within time interval: Current Time + [15, 30, 45, or 60] minutes. Use the dropdown menu to make time selection (e.g., "15" minutes in Figure 3.75).

Note: The selected time filter is indicated in the title bar of the Taxi List (e.g., "All departures in AMA / All arrivals … " in Figure 3.73.

Step 4: Select runways/airports to include in the Taxi List (e.g., 18C/36C and 18L/36R in Figure 3.75).

Step 5: Select "Ok" to apply selections (Figure 3.75).

Alternatively: Select "Cancel" to close the Configuration window without applying changes.

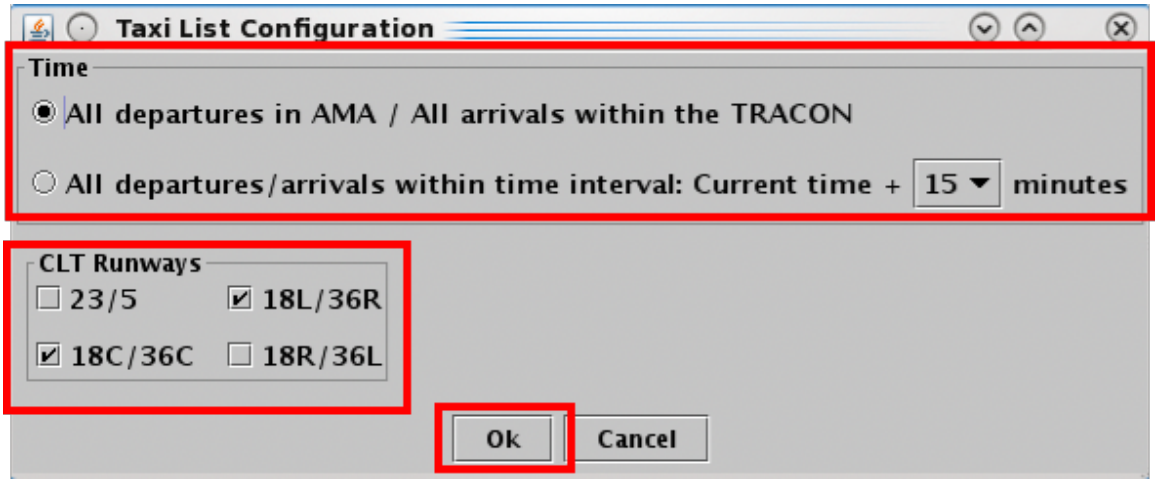


Figure 3.75. Taxi List Configuration window.

3.5 Toolbar: Settings

Select "Settings" on the Toolbar to load or save display configurations and change display settings (Figure 3.76).

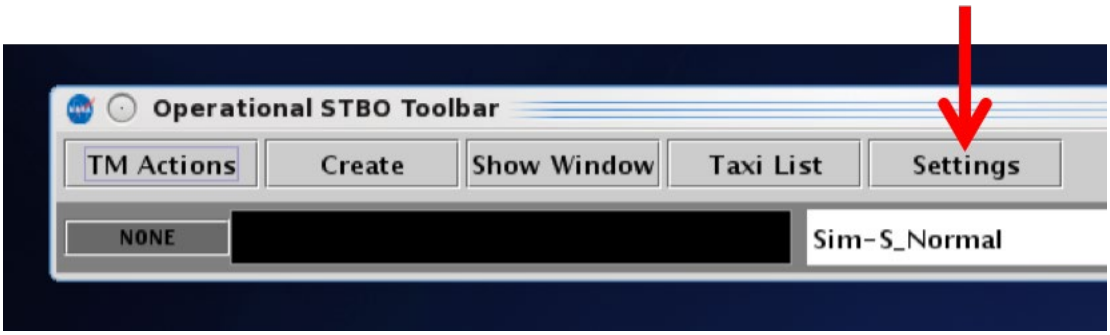


Figure 3.76. Toolbar: Settings.

3.5.1 Global Flights Settings

Use "Global Flights Settings" to change how information is displayed in datablocks on the Timeline and Map.

To change Fix Closure Format:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Global Flights Settings" tab (Figure 3.77).

Step 3: In the "Fix Closure Format" box, select:

- "**Closed Fix**" to display only the name of the Departure Fix that is closed. For example, if WEAZL is closed and being rerouted to BOBZY, only "WEAZL" is displayed (Figure 3.78, left).
- Or, "**Closed Fix → Alt Fix**" to display both the closed Departure Fix and the fix to which flights are being rerouted ("WEAZL → BOBZY" in Figure 3.78, right).

Note: This setting applies to datablocks on both the timeline and map.

Step 4: Select "Close" to close the Settings window (Figure 3.77).

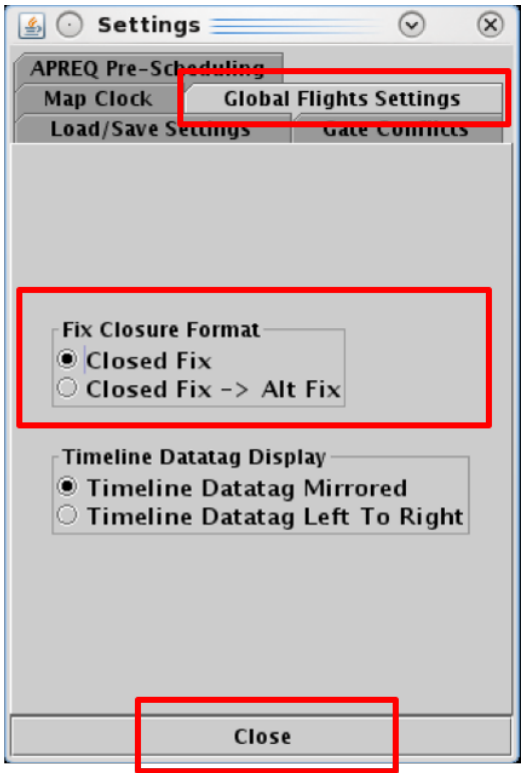


Figure 3.77. Global Flights Settings: Fix Closure Format.

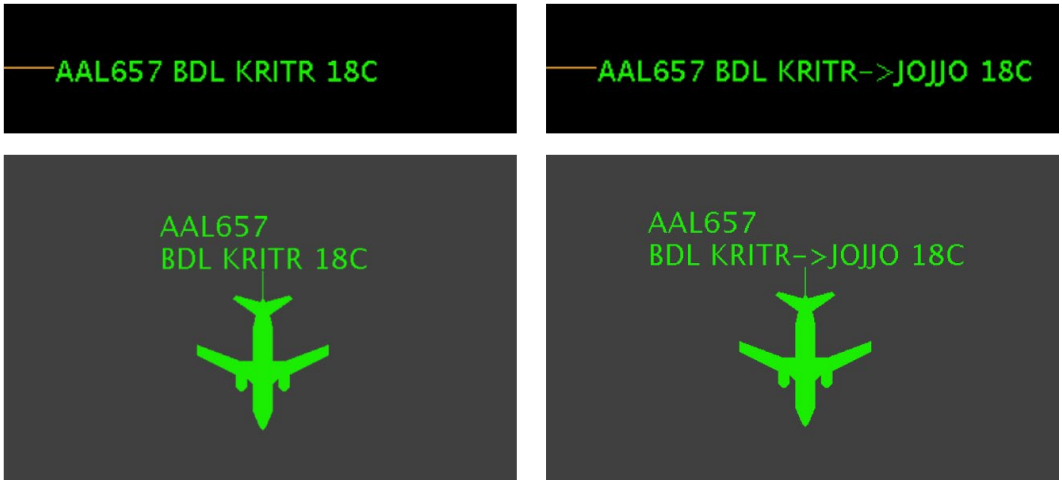


Figure 3.78. Fix Closure Format: Closed Fix (left) and Closed Fix → Alt Fix (right).

To change the Timeline Datatag Display:

Note: This setting impacts the display of flights on the left side of the timeline.

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Global Flights Settings" tab (Figure 3.79).

Step 3: In the "Timeline Datatag Display" box, select:

- "**Timeline Datatag Mirrored**" to mirror the order of data elements from the right side of the timeline (Figure 3.80, top).
- "**Timeline Datatag Left to Right**" to order data elements from left to right (Figure 3.80, bottom).

Step 4: Select "Close" to close the Settings window (Figure 3.79).

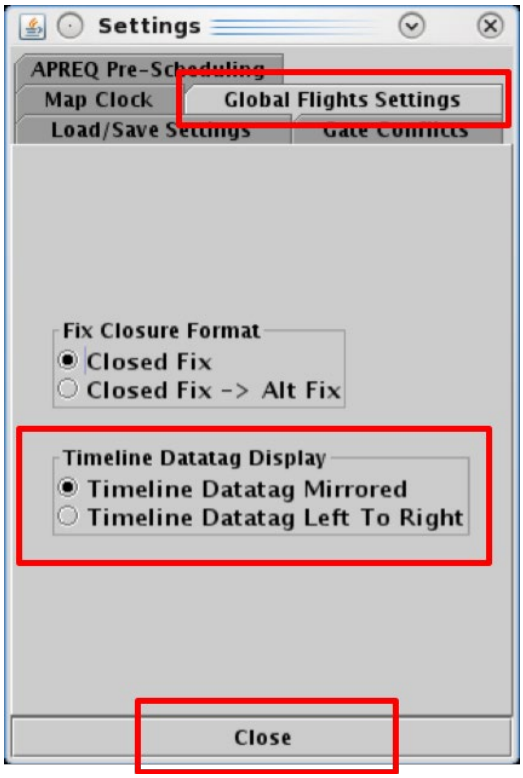


Figure 3.79. Global Flights Settings: Timeline Datatag Display.

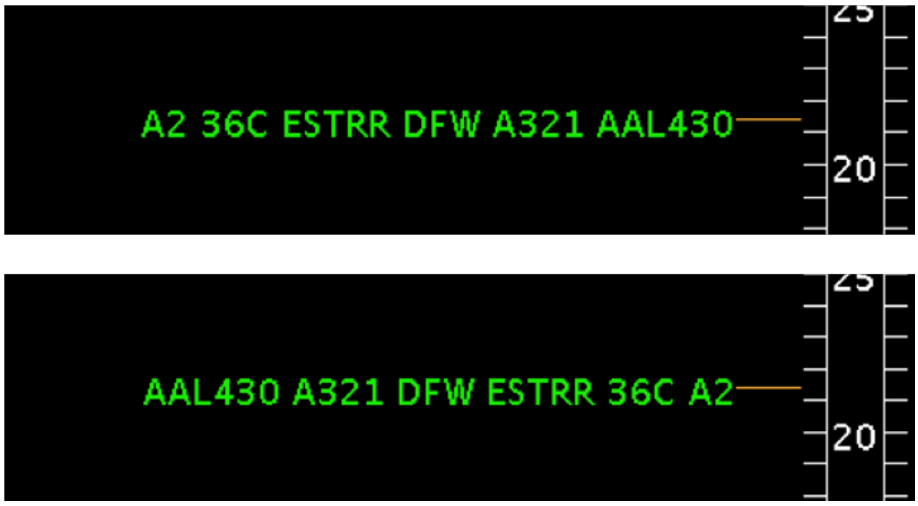


Figure 3.80. Timeline Datatag Display: Mirrored (top) and Left to Right (bottom).

3.5.2 Gate Conflicts

Select the "Gate Conflicts" tab to set the number of minutes prior to the inbound arrival's touchdown that a gate conflict is indicated on the timeline and map. The default setting is 10 minutes. That is, if a gate conflict is detected, it will not be indicated until 10 minutes prior to the predicted landing time. Alternatively, if the time is set to 0 (zero) minutes, a gate conflict is not indicated until the arrival flight lands.

At gates where space is limited, a gate conflict may also be indicated because of traffic at an *adjacent* gate. In some cases, a 'heavy' aircraft at an adjacent gate may restrict use of a flight's arrival gate and trigger a gate conflict alert. This only occurs at airports where there is limited spacing between gates.

To set the Gate Conflict display time:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Gate Conflicts" tab (Figure 3.81).

Step 3: Enter by typing, or using the up/down arrows to select, the number of minutes prior to landing that gate conflicts will be indicated on the timeline and map (e.g., "10" minutes in Figure 3.81).

Note: The minimum/maximum allowable values in this field are 0 and 120 minutes, respectively. Zero minutes represents landing time.

Step 4: Select "Apply."

Step 5: Select "Close" to close the Settings window (Figure 3.81).

Note: When a gate conflict is detected, the gate number is displayed in magenta in flight datablocks on the timeline and the map (for example, gate E17 in Figure 3.82).

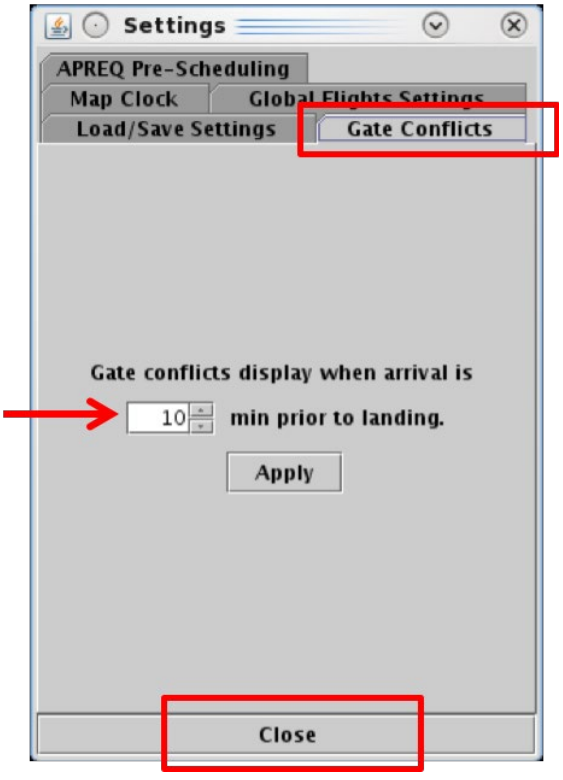


Figure 3.81. Settings: Gate Conflicts.

Figure 3.82. Gate Conflicts: In this example, Gate E17 is occupied, as indicated by the magenta gate number in the arrival flight's datablock on the timeline (top) and map (bottom).

3.5.3 Map Clock

Select the "Map Clock" tab to display local UTC time on the bottom of map windows. The selection will apply to all open map windows.

To show/hide the Map clock:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Map Clock" tab (Figure 3.83).

Step 3: Check "Show Map Clock" to display the clock (Figure 3.83). See example in Figure 3.84.

Alternatively: Uncheck "Show Map Clock" to hide the clock.

Step 4: Select "Apply" (Figure 3.83).

Step 5: Select "Close" to close the Settings window (Figure 3.83).

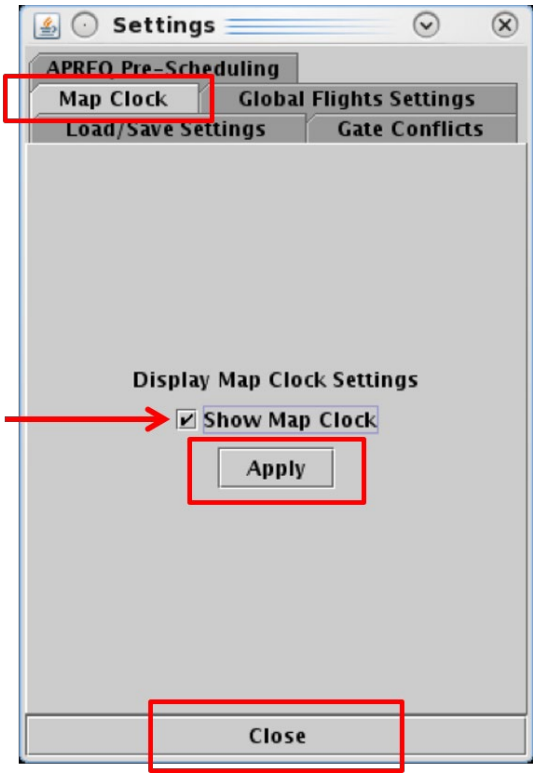


Figure 3.83. Settings: Map Clock.

Figure 3.84. Map Clock.

3.5.4 Load/Save Settings

Select the “Load/Save Settings” tab to save a display configuration or load/update a profile that has already been saved.

To Save a new display configuration:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Load/Save Settings" tab (Figure 3.85, left).

Step 3: Type a name for the display configuration in the "File Name" field (e.g., "Tower_CLT" in Figure 3.85, left).

Step 4: Select "Save" (Figure 3.85, left).

Step 5: At the prompt, select "OK" in the "Save Settings" window (Figure 3.85, right).

Step 6: Select "Close" to close the Settings window (Figure 3.85, left).

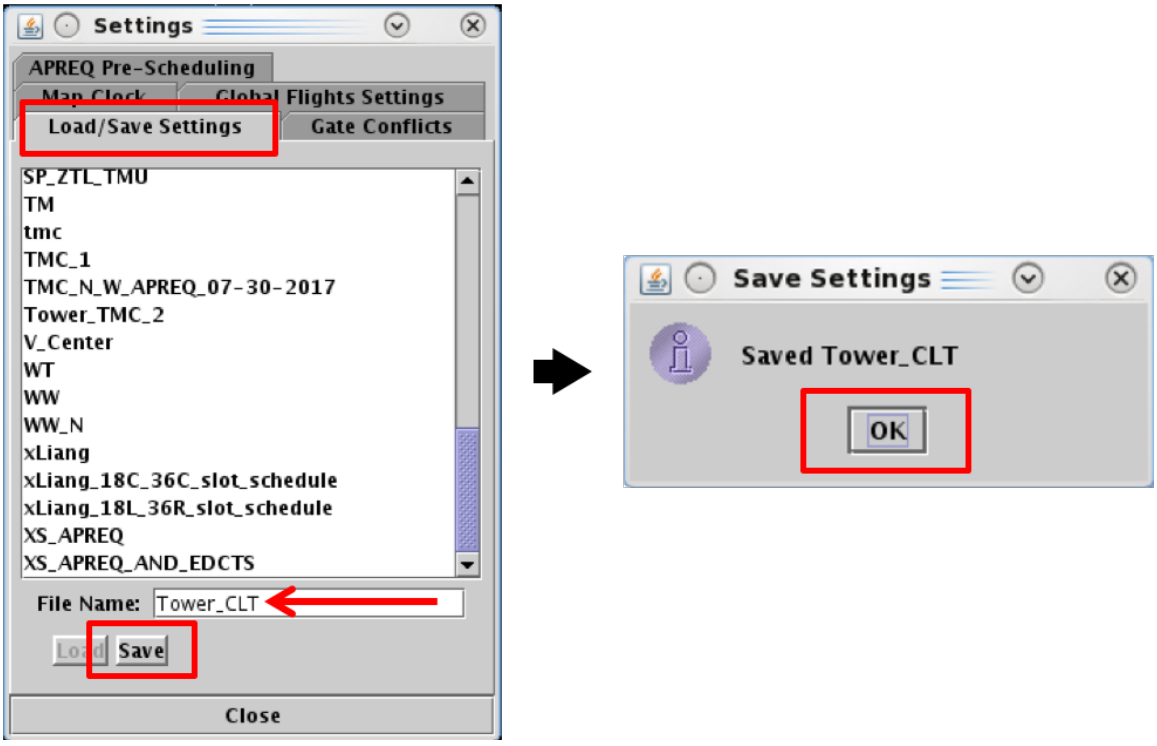


Figure 3.85. Settings: Save a new display configuration.

To Load a saved display configuration:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Load/Save Settings" tab (Figure 3.86).

Step 3: Select a file name from the list of saved configurations (e.g., "tmc" in Figure 3.86). If necessary, scroll to view the entire list.

Step 4: Select the "Load" button to load the selected display configuration (Figure 3.86).

Step 5: Select "Close" to close the Settings window (Figure 3.86).

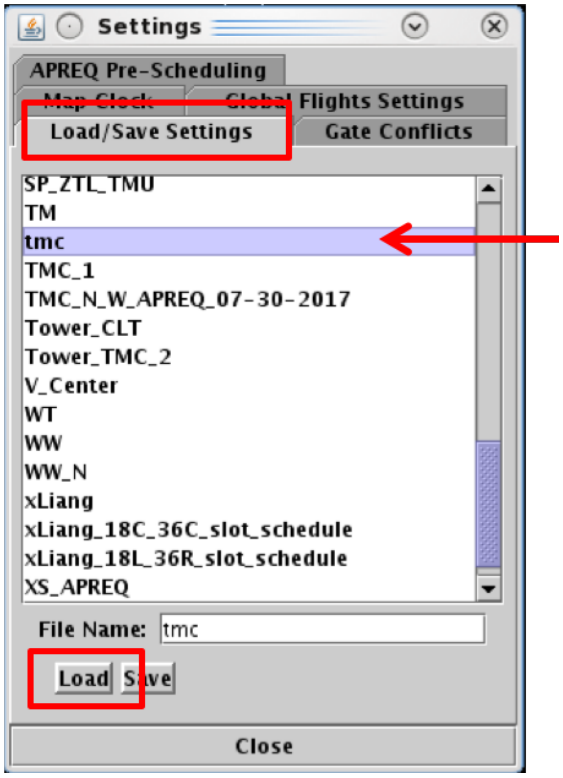


Figure 3.86. Settings: Load a saved display configuration.

To Update a Saved display configuration:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "Load/Save Settings" tab (Figure 3.87, left).

Step 3: Select a file name from the list of saved configurations (e.g., "Tower_TMC_2" in Figure 3.87, left). If necessary, scroll to view the entire list.

Step 4: Select "Save" (Figure 3.87, left).

Step 5: At the prompt, select "Yes" in the "Confirm Overwrite" window to overwrite the previous version of the file (Figure 3.87, right).

Step 6: At the prompt, select "OK" in the "Save Settings" window (Figure 3.87, right).

Step 7: Select "Close" to close the Settings window (Figure 3.87, left).

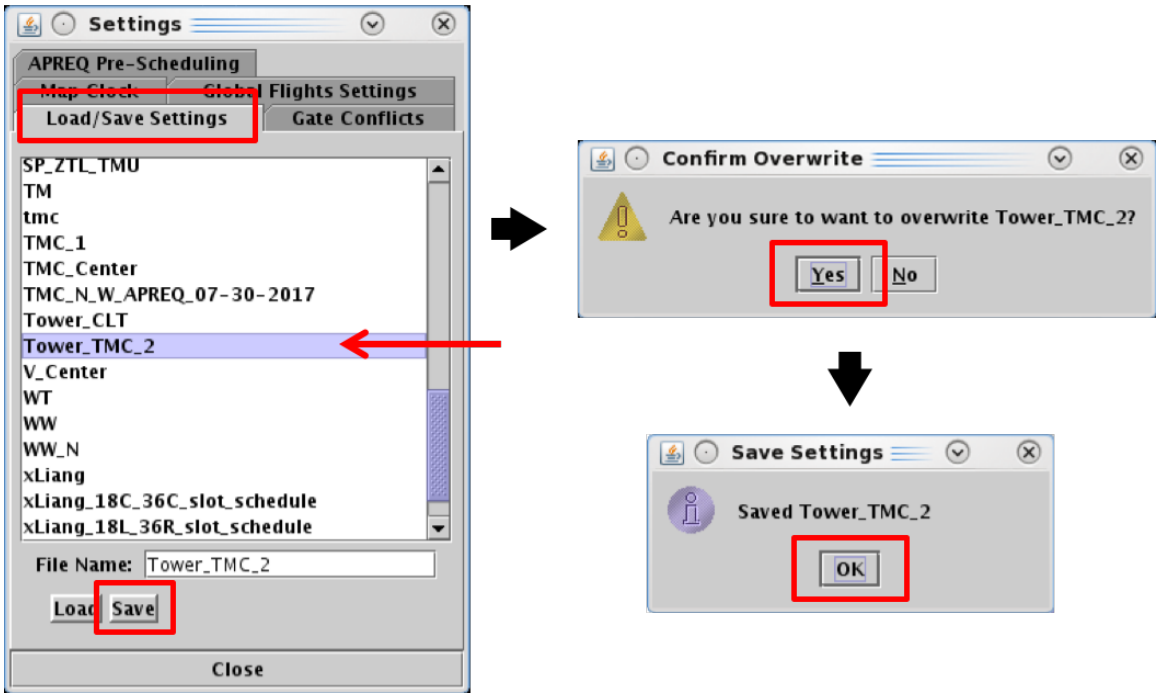


Figure 3.87. Settings: Updated a saved display configuration.

3.5.5 APREQ Pre-Scheduling

Use the "APREQ Pre-Scheduling" tab to enable/disable the pre-scheduling of APREQ flights.

How to Enable/Disable APREQ Pre-Scheduling:

Step 1: Select "Settings" on the Toolbar (Figure 3.76).

Step 2: Select the "APREQ Pre-Scheduling" tab (Figure 3.88).

Step 3: Select the radio button next to "Disable Pre-Scheduling" to prevent APREQ flights that would otherwise be automatically prescheduled from being scheduled (Figure 3.88).

Alternatively: Select the radio button next to "Enable Pre-Scheduling" to allow APREQ flights, to select destinations, to be automatically scheduled (Figure 3.88).

Step 4: Select "Close" to close the Settings window (Figure 3.88).

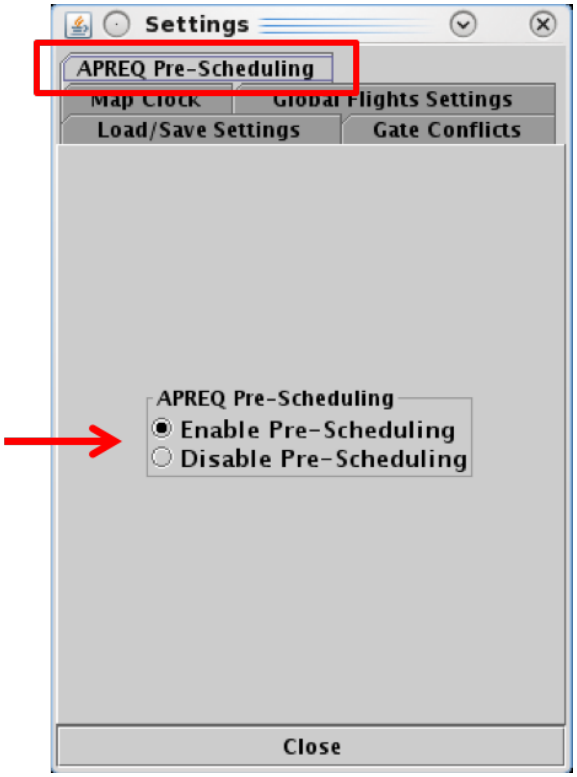


Figure 3.88. Settings: Enable/Disable APREQ Pre-Scheduling.

3.6 Toolbar: Search

Search for flights using the "Search" function on the Toolbar. For example, typing "FDX" will highlight all FedEx flights. Typing "LGA" will highlight all LGA-bound flights. Typing "53" will highlight all flights whose flight number contains "53," independent of airline. Search criteria are listed in Table 3.6.

Table 3.6. Toolbar: Search Criteria

Search Criteria	Example
Departure and Arrival Flights	
Flight number	1456
Air Carrier	AAL
Call Sign	AAL1456
Tail Number	N123AB
"GA" for General Avaiation flights	GA
Departure Flights	
3-letter Destination Airport	BOS
Departure Fix	ESTRR
Departure Gate	WEST
Arrival Flights	
Arrival Fix	CHSLY
3-letter Arrival Airport	CLT

To Search for Flights:

Step 1: Enter search criteria in the "Search" field on the Toolbar (e.g., "KILNS" in Figure 3.89). Flights matching the search criteria are highlighted on the:

- Timeline (Figure 3.90)
- Map (Figure 3.91)
- Flights Table (Figure 3.92)

Note: As text/digits are entered in the search field, flights matching that criteria (full or partial) will be highlighted.

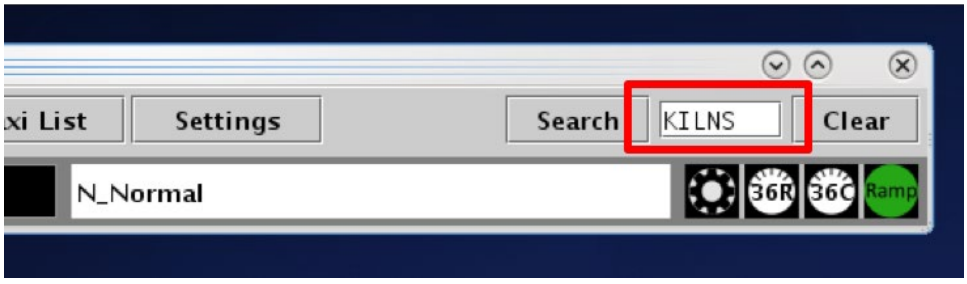


Figure 3.89. Toolbar: Search field (in this example, Departure Fix "KILNS" is entered).

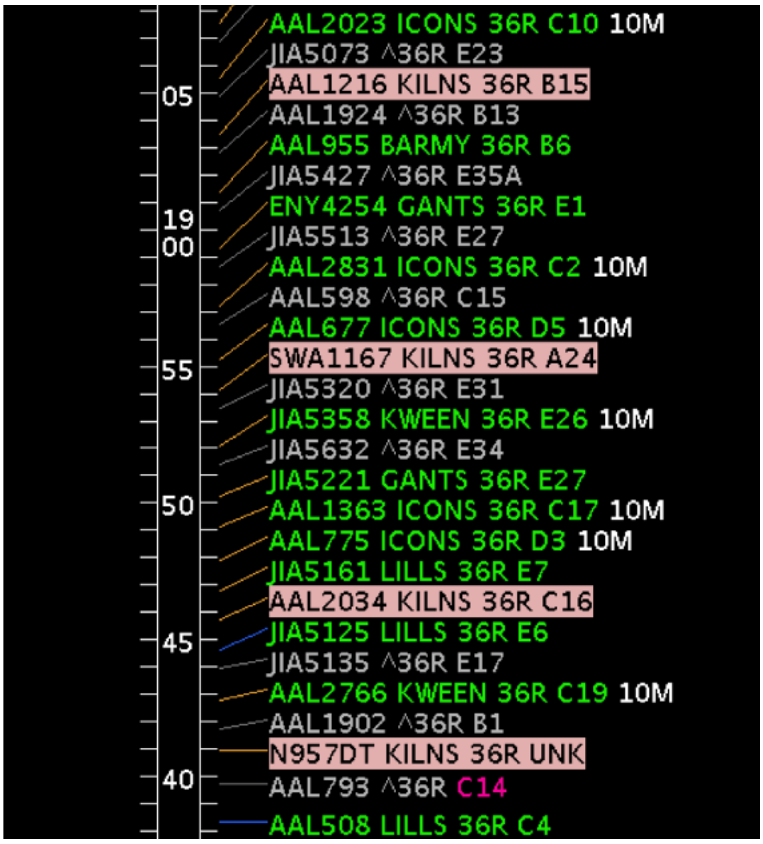
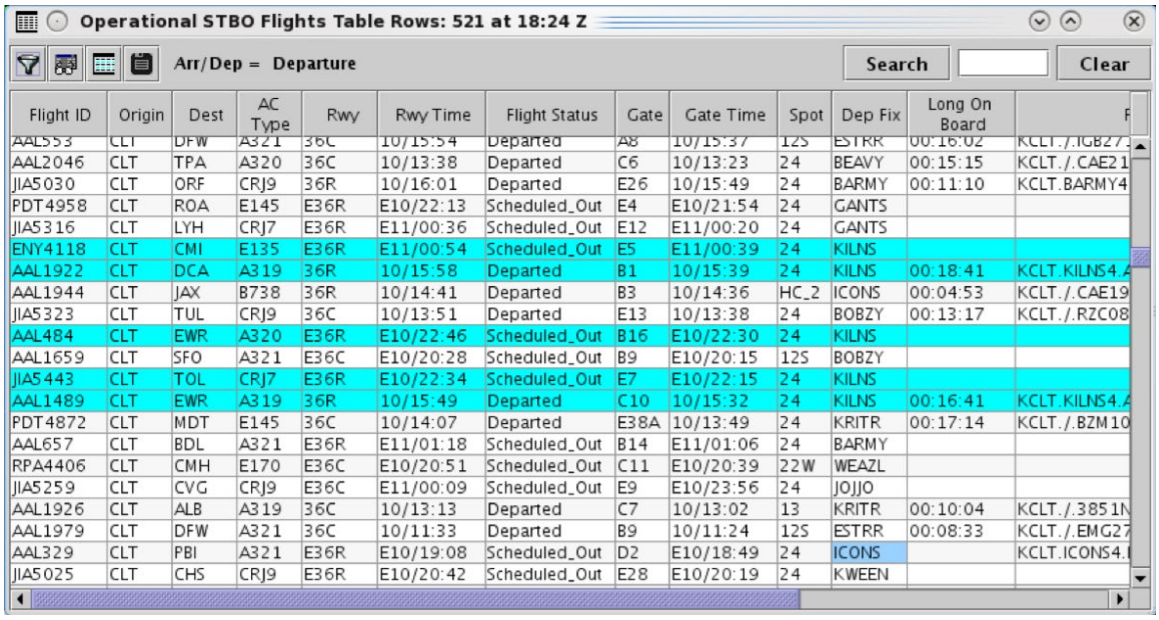


Figure 3.90. Matching search results (e.g., KILNS) are highlighted on the Timeline.

Figure 3.91. Matching search results (e.g., KILNS) are highlighted on the map.



Flight ID	Origin	Dest	AC Type	Rwy	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix	Long On Board	F
AAL553	CLT	DFW	A321	36C	10/15:54	Departed	A8	10/15:37	12S	ESTRR	00:16:02	KCLT./.IGB27
AAL2046	CLT	TPA	A320	36C	10/13:38	Departed	C6	10/13:23	24	BEAVY	00:15:15	KCLT./.CAE21
JIA5030	CLT	ORF	CRJ9	36R	10/16:01	Departed	E26	10/15:49	24	BARMY	00:11:10	KCLT.BARMY4
PDT4958	CLT	ROA	E145	E36R	E10/22:13	Scheduled_Out	E4	E10/21:54	24	GANTS		
JIA5316	CLT	LYH	CRJ7	E36R	E11/00:36	Scheduled_Out	E12	E11/00:20	24	GANTS		
ENY4118	CLT	CMI	E135	E36R	E11/00:54	Scheduled_Out	E5	E11/00:39	24	KILNS		
AAL1922	CLT	DCA	A319	36R	10/15:58	Departed	B1	10/15:39	24	KILNS	00:18:41	KCLT.KILNS4.A
AAL1944	CLT	JAX	B738	36R	10/14:41	Departed	B3	10/14:36	HC_2	ICONS	00:04:53	KCLT./.CAE19
JIA5323	CLT	TUL	CRJ9	36C	10/13:51	Departed	E13	10/13:38	24	BOBZY	00:13:17	KCLT./.RZC08
AAL484	CLT	EWR	A320	E36R	E10/22:46	Scheduled_Out	B16	E10/22:30	24	KILNS		
AAL1659	CLT	SFO	A321	E36C	E10/20:28	Scheduled_Out	B9	E10/20:15	12S	BOBZY		
JIA5443	CLT	TOL	CRJ7	E36R	E10/22:34	Scheduled_Out	E7	E10/22:15	24	KILNS		
AAL1489	CLT	EWR	A319	36R	10/15:49	Departed	C10	10/15:32	24	KILNS	00:16:41	KCLT.KILNS4.A
PDT4872	CLT	MDT	E145	36C	10/14:07	Departed	E38A	10/13:49	24	KRITR	00:17:14	KCLT./.BZM10
AAL657	CLT	BDL	A321	E36R	E11/01:18	Scheduled_Out	B14	E11/01:06	24	BARMY		
RPA4406	CLT	CMH	E170	E36C	E10/20:51	Scheduled_Out	C11	E10/20:39	22W	WEAZL		
JIA5259	CLT	CVG	CRJ9	E36C	E11/00:09	Scheduled_Out	E9	E10/23:56	24	JOJJO		
AAL1926	CLT	ALB	A319	36C	10/13:13	Departed	C7	10/13:02	13	KRITR	00:10:04	KCLT./.3851N
AAL1979	CLT	DFW	A321	36C	10/11:33	Departed	B9	10/11:24	12S	ESTRR	00:08:33	KCLT./.EMG27
AAL329	CLT	PBI	A321	E36R	E10/19:08	Scheduled_Out	D2	E10/18:49	24	ICONS		KCLT.ICONS4.I
JIA5025	CLT	CHS	CRJ9	E36R	E10/20:42	Scheduled_Out	E28	E10/20:19	24	KWEEN		

Figure 3.92. Matching search results (e.g., KILNS) are highlighted in the Flights Table.

3.7 Toolbar: Notifications

Notifications are displayed in the form of a:

- **Notification Icon** to indicate the number of *new* notifications (e.g., 32 new notifications in Figure 3.93),
- **Notification Banner** to cycle through new notifications (e.g., "APREQ to ORD 2100-2245" in Figure 3.93), and
- **Notification Panel** to display a full list of new (yellow), newly cancelled (blue), and previously acknowledged notifications (white) (Figure 3.94).

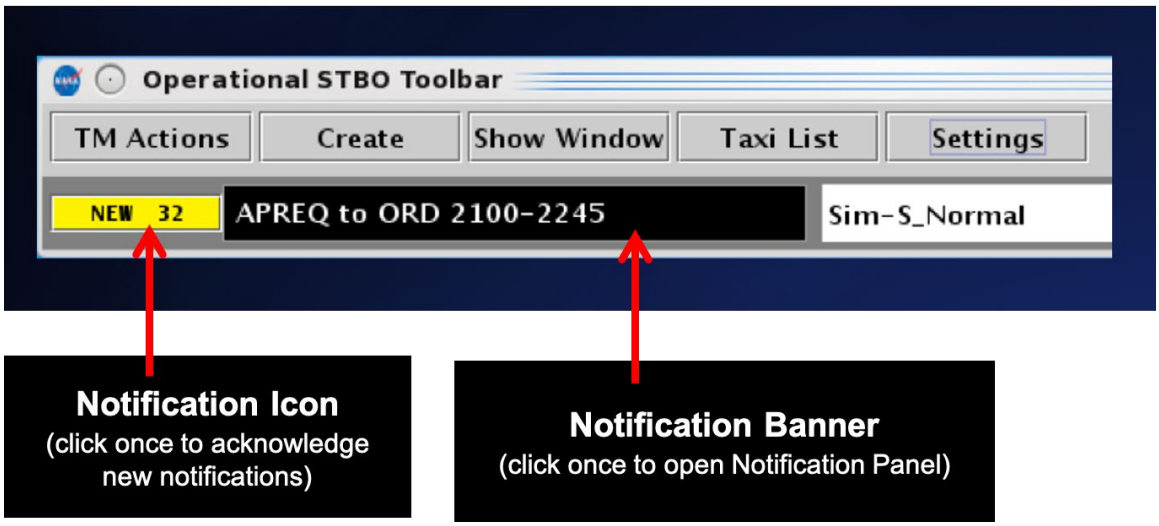


Figure 3.93. Notification Icon (yellow field) and Notification Banner (text field).

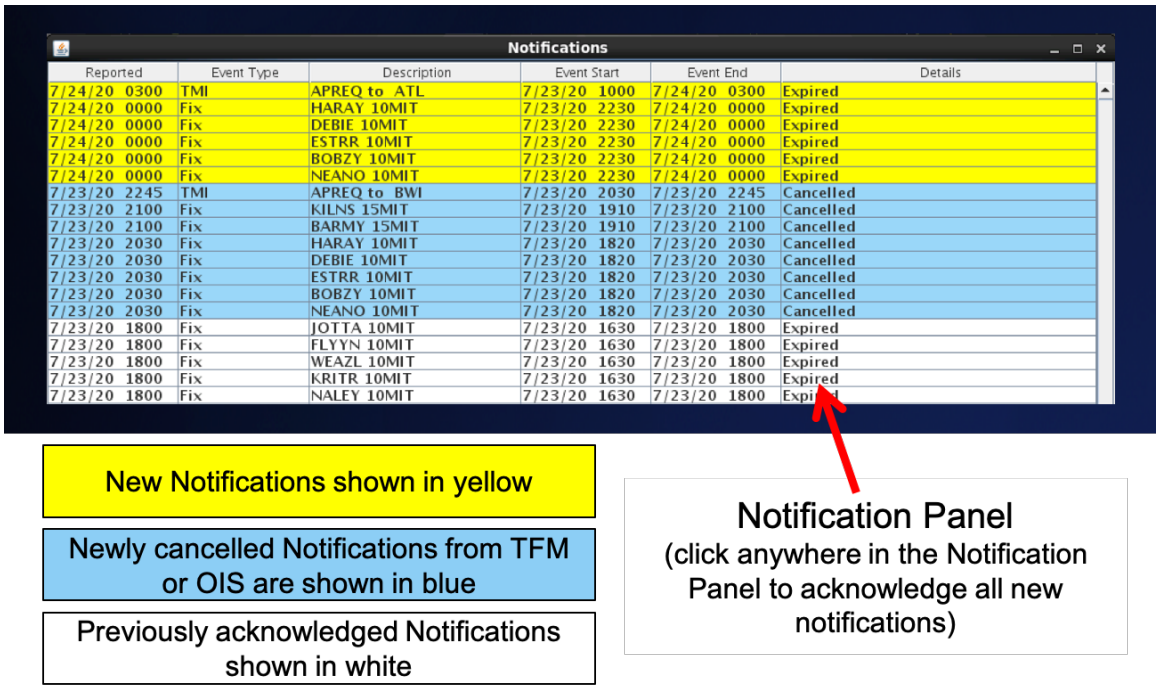


Figure 3.94. Notification Panel: New notifications (yellow), new cancellation notifications (blue), and previously acknowledged notifications (white).

Notifications may originate from information entered in the STBO Client by ATC or from an outside source, such as the System-Wide Information Management (SWIM), the FAA Operational Information System (OIS), or the Traffic Flow Management System (TFM). Notifications are always related to events that impact multiple flights or the airport (e.g., TMIs, airport configuration changes, and Surface Metering Program (SMP) status), and are never issued for single flights.

When new notifications are received, the **Notification Icon** turns yellow and displays the number of new notifications (e.g., "NEW 32" for eight new notifications in Figure 3.93).

The **Notification Banner** displays the subject of the notification and the time range of the event (e.g., "APREQ to ORD 2100-2245" in Figure 3.93). The Notification Banner cycles through all unacknowledged notifications.

The **Notification Panel** displays all notifications and the list is automatically cleared each day at 0800 UTC. New notifications are highlighted in yellow and notifications newly cancelled by TFM or OIS are highlighted in blue (Figure 3.94). For example, if a TMI is cancelled by TFM or OIS before its scheduled end time, the notification is highlighted in blue.

Examples of notifications include:

Examples of ATC-related Notifications:

- [EWR] GDP (Ground Delay Program: *in effect* / *cancelled (CXL)* / *expired*)
- [TPA] STOP (Ground Stop: *in effect* / *cancelled (CXL)* / *expired*)
- APREQ to [JFK] (APREQ: *in effect / cancelled (CXL) / expired / obsolete)*
- [JOJJO] CLOSED (Departure Fix Closure: *in effect* / *cancelled (CXL)* / *expired*)
- [JOJJO] OPENED (Departure Fix Opened)
- [KRITR] 20MIT (Miles-in-Trail restriction: *in effect / cancelled (CXL) / expired)*

Examples of Airport-related Notifications:

- VMC (example meteorological conditions)
- North (example of airport configuration)
- N_Normal (example of runway utilization)
- RWY 18L CLOSED (example of runway closure)

Examples of Ramp-related Notifications:

- RAMP OPENED (example of ramp status: *open*)
- C9 CLOSED (example of gate status: *closed*)
- C9 OPEN (example of gate status: *open*)

Examples of Surface Metering Program (SMP) Notifications:

- NO METERING [SMP Metering mode: *off*)
- TIME BASED METERING (SMP Metering mode: *Time-Based Metering*)
- 18L AFFIRMED (SMP *affirmed (enabled)*, but not *active* on Runway 18L)
- 18L ACTIVE (SMP on Runway 18L *active*)
- 18L COMPLETED (SMP on Runway 18L *completed)*
- 18L OBSOLETE (SMP on Runway 18L *obsolete*)
- 18L EXPIRED (SMP on Runway 18L *expired*)

Once acknowledged, the Notification Panel is shown in white (Figure 3.95), "NONE" is displayed on a gray Notification Icon, and the Notification Banner is blank (Figure 3.96).

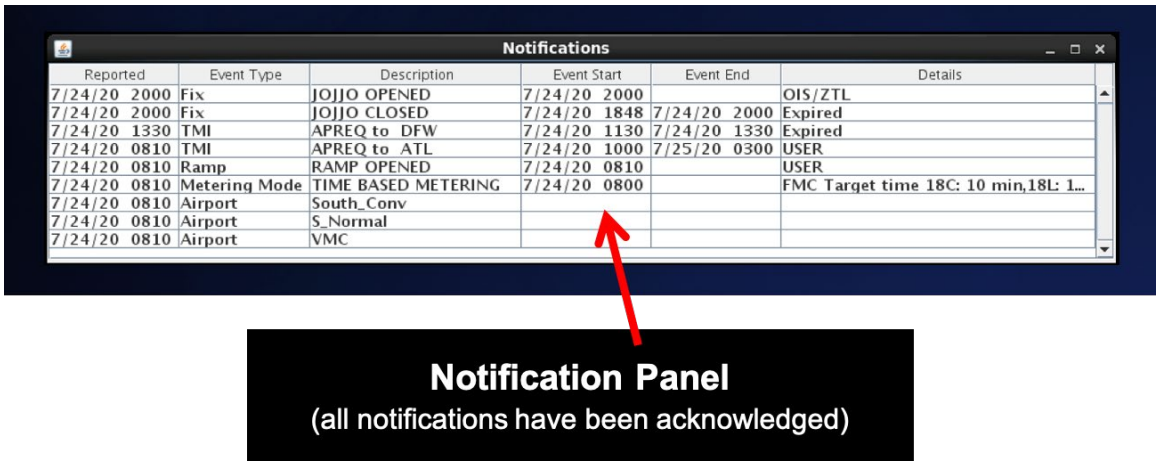


Figure 3.95. Notification Panel after notifications are acknowledged.

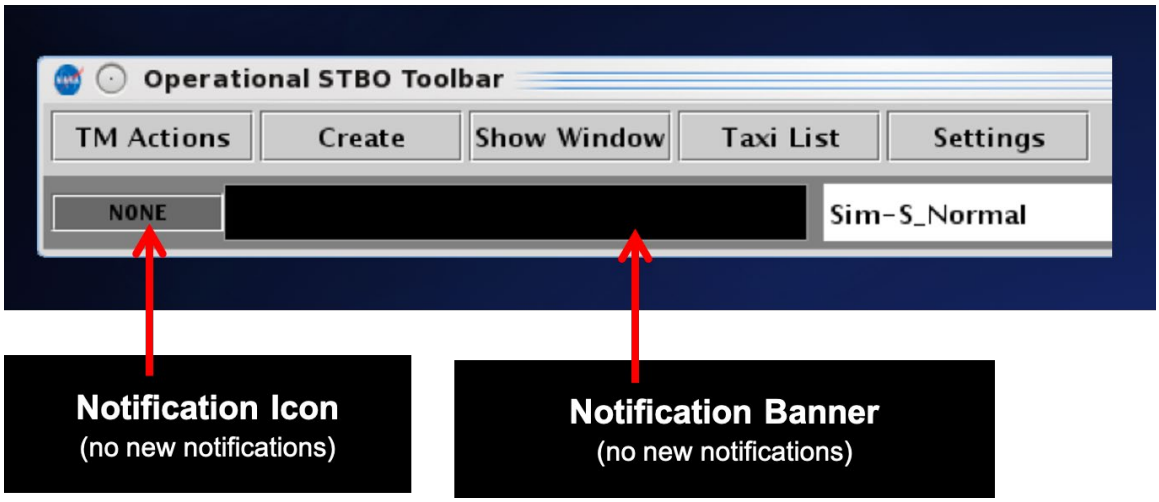


Figure 3.96. Notification Icon and Notification Banner after notifications are acknowledged.

3.8 Toolbar: Runway Utilization

The Runway Utilization field displays the current runway utilization (e.g., Sim-S_Normal in Figure 3.97). When the runway utilization and/or airport configuration changes, the text in the Runway Utilization icon updates to reflect this change.

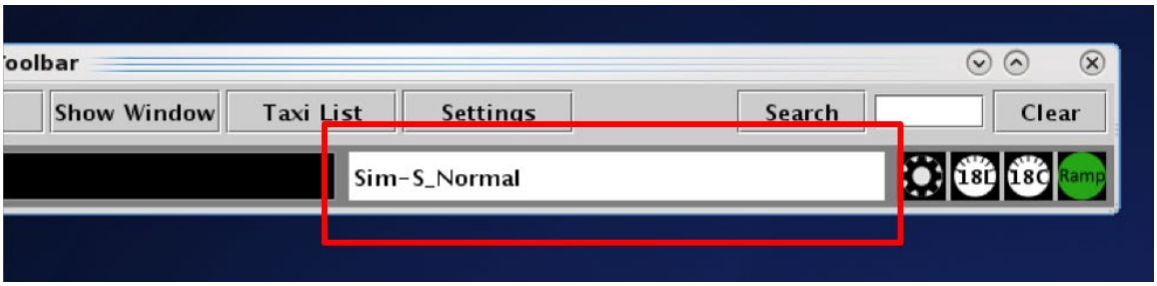


Figure 3.97. Toolbar: Runway Utilization field.

3.9 Toolbar: Icons

Surface Metering Program (SMP) icons and the Ramp Status icon are displayed on the Toolbar.

3.9.1 Surface Metering Program (SMP)

The gear icon indicates when a proposed Surface Metering Program (SMP) is available (Figure 3.98). The black gear icon turns yellow when a newly proposed SMP is available to view on the web-based Surface Metering Display (SMD).

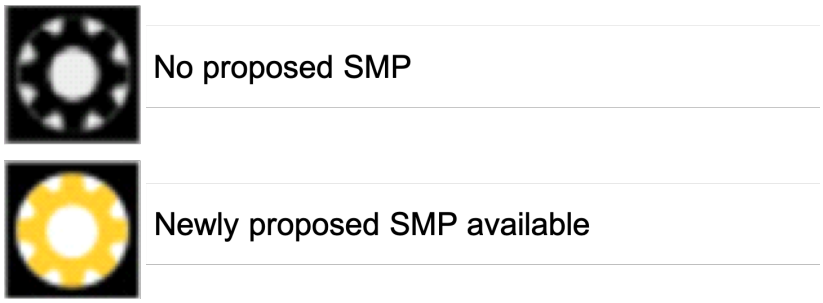


Figure 3.98. Toolbar: Proposed Surface Metering Program (SMP) icon.

Information about the status of the SMP at each departure runway is displayed in the form of runway metering status icons (Figure 3.99). The icon changes color from gray with a red slash when metering is off, to white when metering is on (i.e., affirmed/enabled) but not active, and to cyan when metering is on and active.

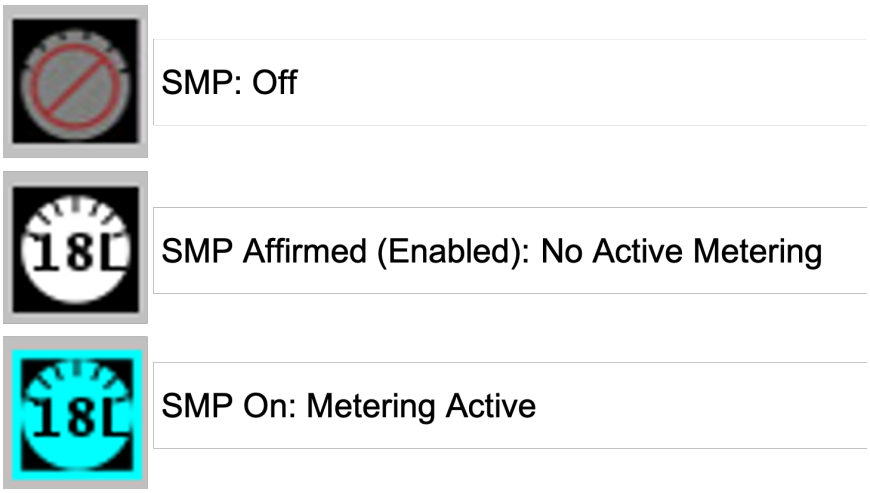


Figure 3.99. Toolbar: Runway Surface Metering Program (SMP) status icon.

3.9.2 Ramp Status

The ramp status icon indicates the current ramp status: ramp open (green), ramp closure pending (yellow), or ramp closed (red) (Figure 3.100). Ramp status is updated by the Ramp Manager in the Ramp Manager Traffic Console.

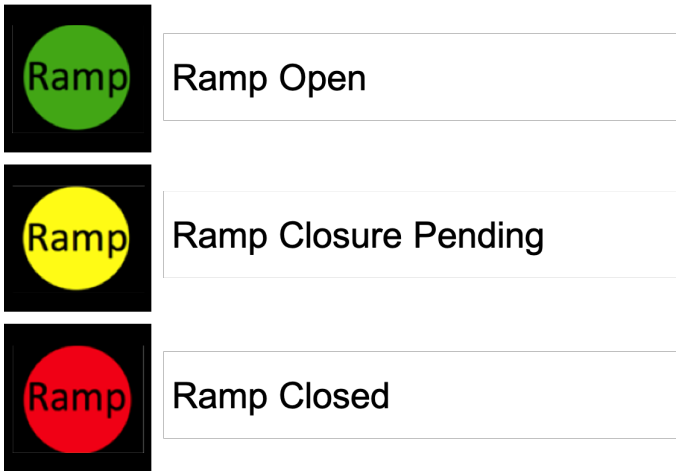


Figure 3.100. Toolbar: Ramp status icons.

4 STBO Client: Maps

Maps display live flight data on the airport surface and in the terminal area. Each flight on the map is accompanied by a datablock which can be configured with flight-specific information.

At closer zoom levels, the map can be used to view flights on the surface of the airport in the Ramp area and Airport Movement Area (AMA) (Figure 4.1).

Figure 4.1. Map: Airport Surface.

At higher zoom levels, the map can be used to view flights in the terminal area (Figure 4.2).

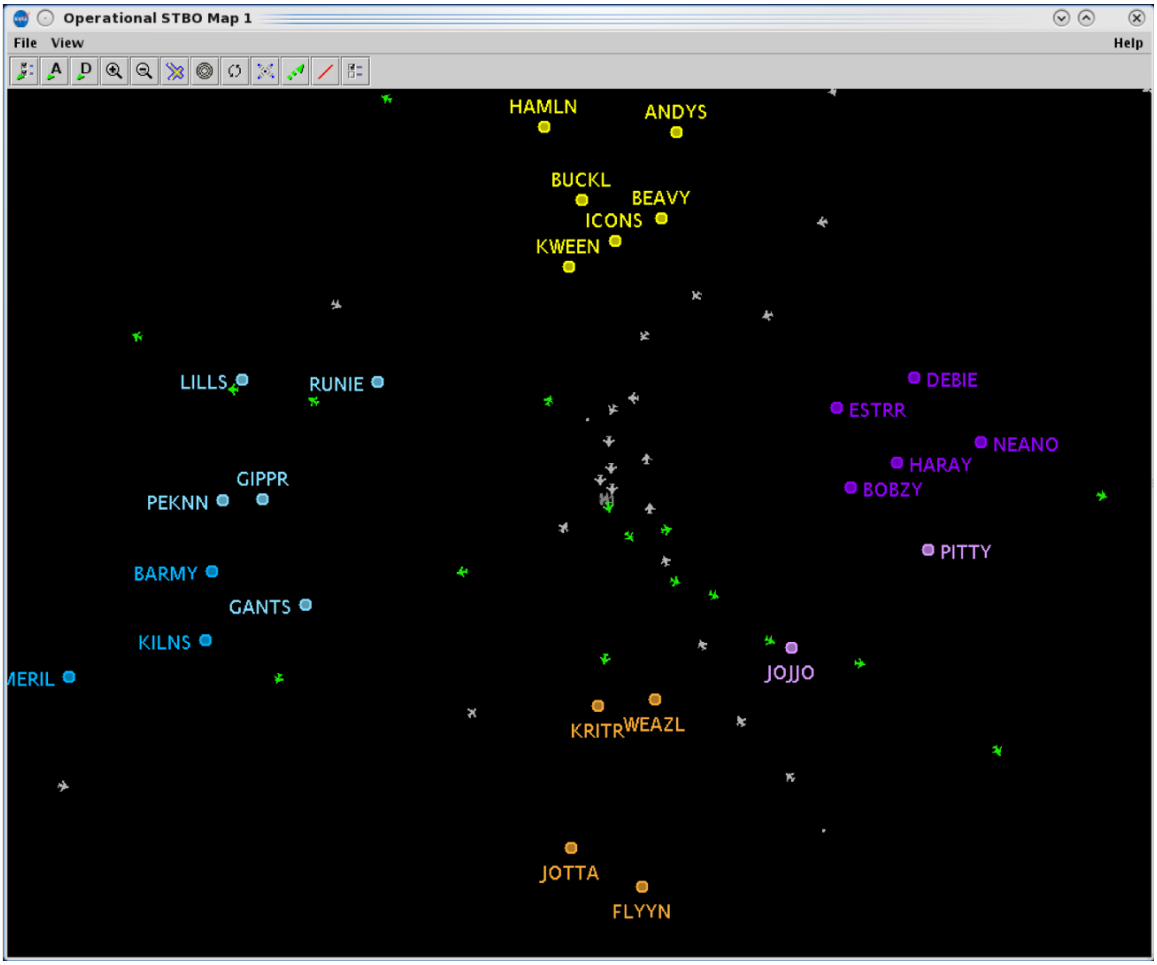


Figure 4.2. Map: Terminal Area.

More than one map can be open at the same time and each can be configured independently of the others. The Menu Bar and Toolbar can be used to configure the map (Figure 4.3).

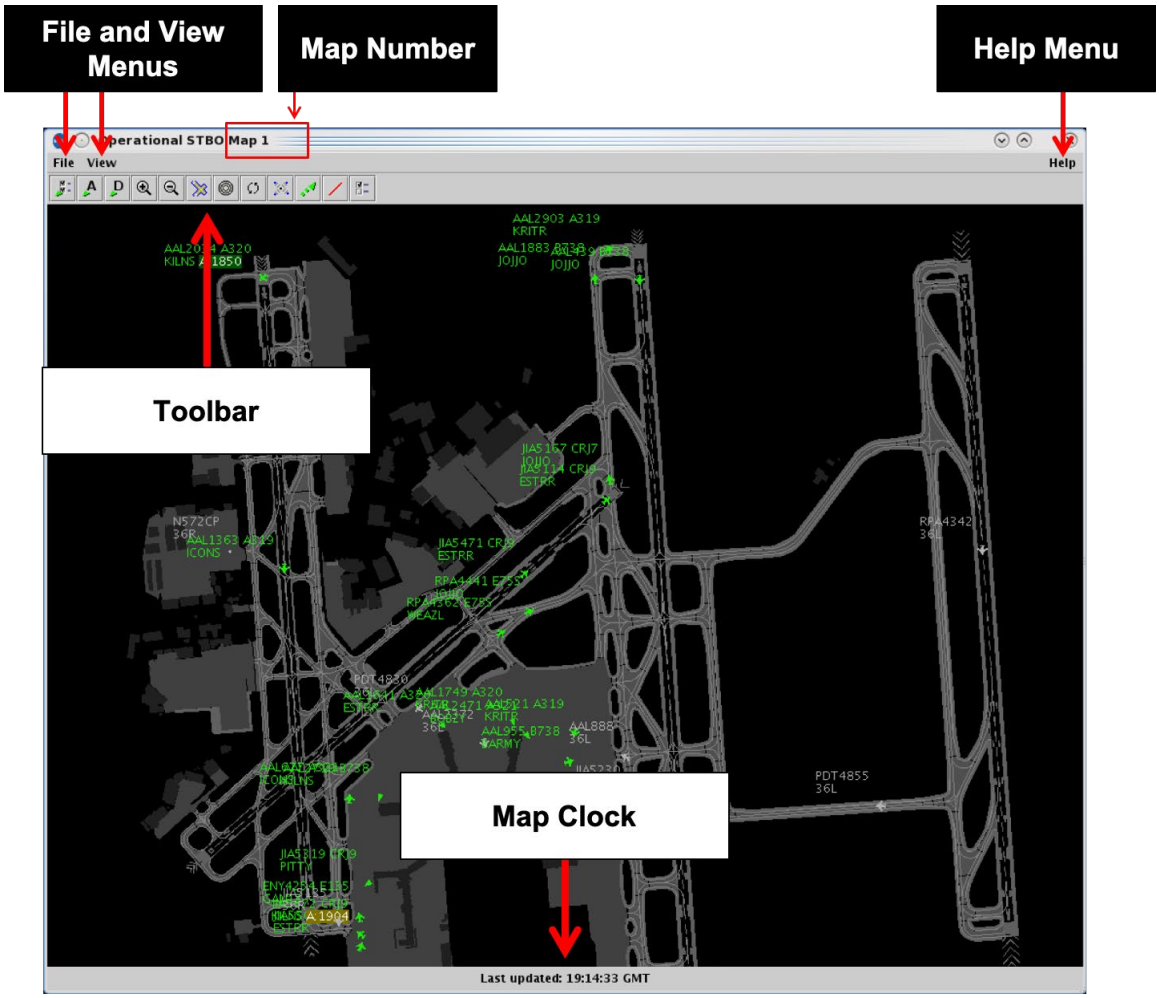


Figure 4.3. Map overview.

4.1 Map: Select a Flight

Select a flight on the map to highlight the flight throughout the STBO Client interface.

To select a flight on the Map:

Step 1: Click on a flight on the map. Once selected, the flight icon's datablock is highlighted and a border is drawn around the flight icon (Figure 4.4).

Note: When a flight is selected on the map, it is also highlighted on the:

- ***Timeline (Figure 4.5)***
- ***Flights Table (Figure 4.6)***

Alternatively: Click elsewhere on the map to deselect the flight.

Figure 4.4. Flight selected on the map (e.g., AAL1764).

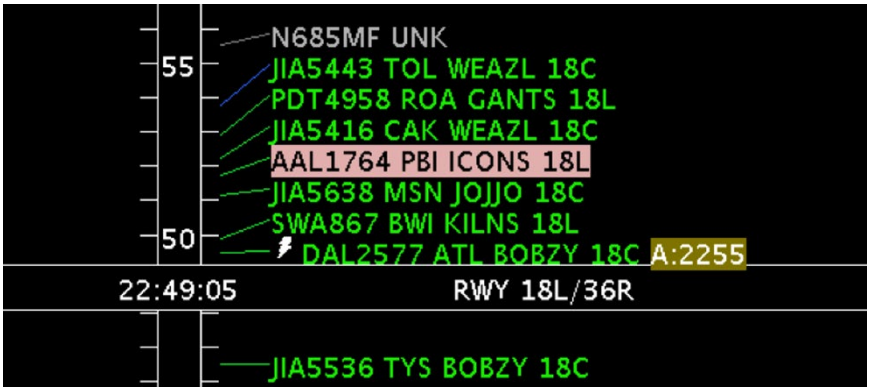
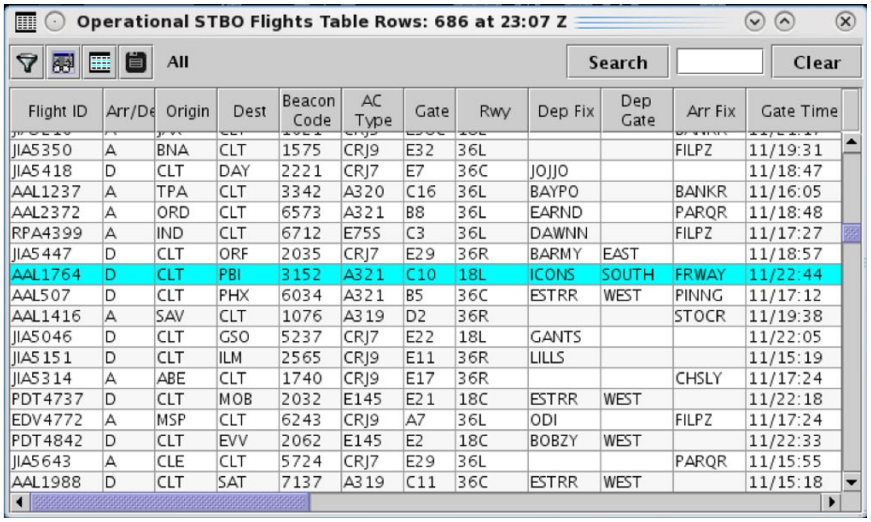


Figure 4.5. Selected flight highlighted on the Timeline (e.g., AAL1764).



Flight ID	Arr/De	Origin	Dest	Beacon Code	AC Type	Gate	Rwy	Dep Fix	Dep Gate	Arr Fix	Gate Time
JIA5350	A	BNA	CLT	1575	CRJ9	E32	36L			FILPZ	11/19:31
JIA5418	D	CLT	DAY	2221	CRJ7	E7	36C	JOJJO			11/18:47
AAL1237	A	TPA	CLT	3342	A320	C16	36L	BAYPO		BANKR	11/16:05
AAL2372	A	ORD	CLT	6573	A321	B8	36L	EARND		PARQR	11/18:48
RPA4399	A	IND	CLT	6712	E75S	C3	36L	DAWNN		FILPZ	11/17:27
JIA5447	D	CLT	ORF	2035	CRJ7	E29	36R	BARMY	EAST		11/18:57
AAL1764	D	CLT	PBI	3152	A321	C10	18L	ICONS	SOUTH	FRWAY	11/22:44
AAL507	D	CLT	PHX	6034	A321	B5	36C	ESTRR	WEST	PINNG	11/17:12
AAL1416	A	SAV	CLT	1076	A319	D2	36R			STOCR	11/19:38
JIA5046	D	CLT	GSO	5237	CRJ7	E22	18L	GANTS			11/22:05
JIA5151	D	CLT	ILM	2565	CRJ9	E11	36R	LILLS			11/15:19
JIA5314	A	ABE	CLT	1740	CRJ9	E17	36R			CHSLY	11/17:24
PDT4737	D	CLT	MOB	2032	E145	E21	18C	ESTRR	WEST		11/22:18
EDV4772	A	MSP	CLT	6243	CRJ9	A7	36L	ODI		FILPZ	11/17:24
PDT4842	D	CLT	EVV	2062	E145	E2	18C	BOBZY	WEST		11/22:33
JIA5643	A	CLE	CLT	5724	CRJ7	E29	36L			PARQR	11/15:55
AAL1988	D	CLT	SAT	7137	A319	C11	36C	ESTRR	WEST		11/15:18

Figure 4.6. Selected flight highlighted in the Flights Table (e.g., AAL1764).

More than one flight can be selected at the same time.

To select multiple flights on the Map:

Step 1: Select multiple flights on the map by holding the "Shift" key while left-clicking on each flight. For example, three flights are selected in Figure 4.7.

Alternatively: Click elsewhere on the map to deselect the flights.

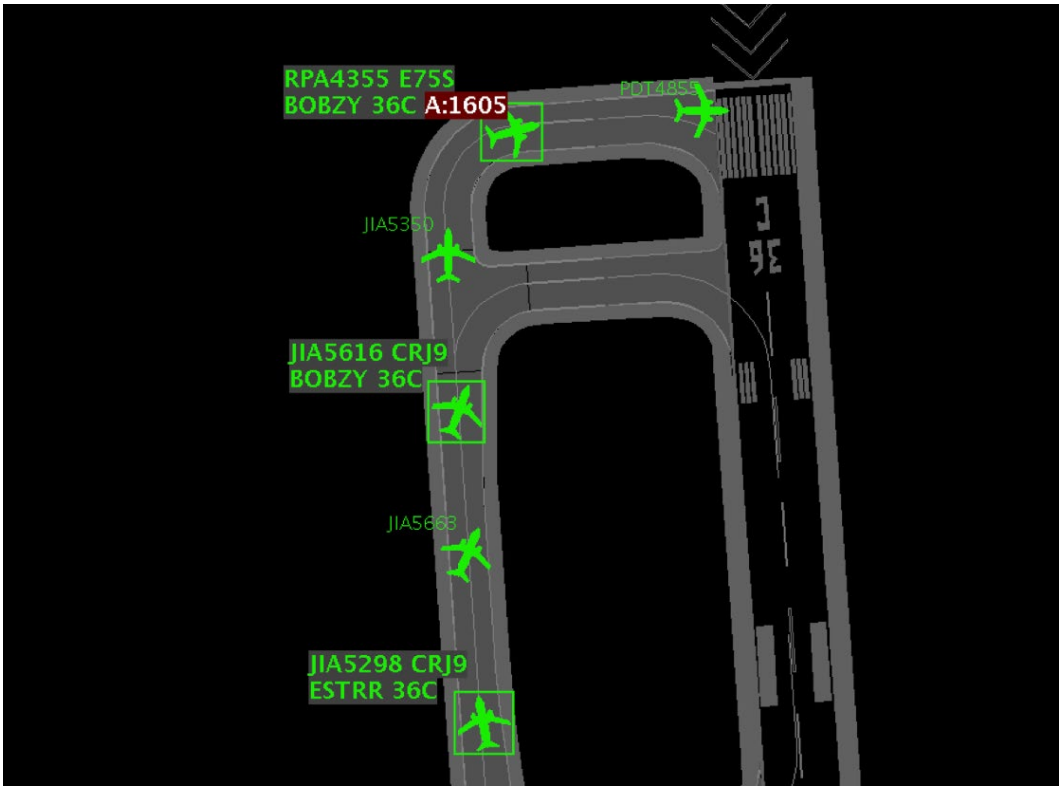


Figure 4.7. Multiple flights selected. In this example, three flights are selected.

Flight datablocks can be repositioned by clicking and dragging.

To reposition a flight datablock:

Step 1: Select a flight on the map.

Step 2: Click and drag the datablock to reposition it. See example in Figure 4.8.

Alternatively: Click elsewhere on the map to deselect the flight.

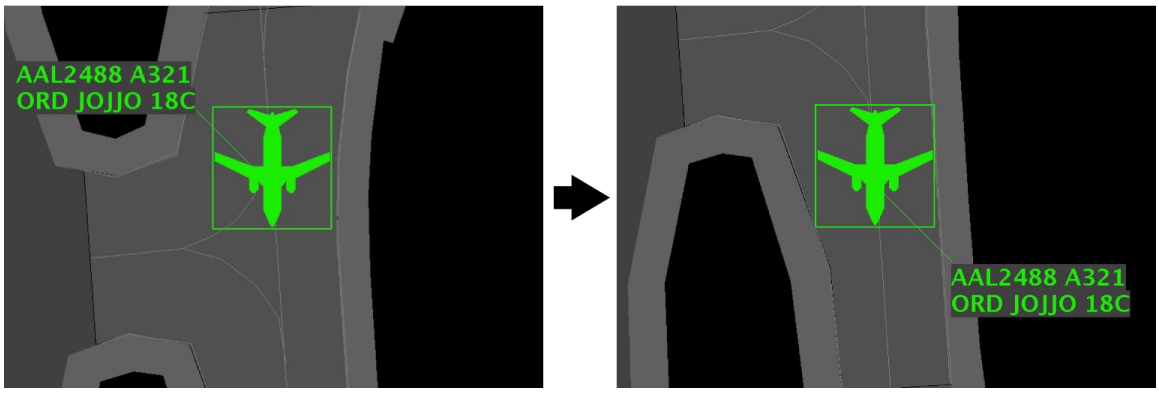


Figure 4.8. Map: Reposition flight datablock.

4.2 Map: Menu Bar

Three menus are available on the Menu Bar: File, View, and Help.

4.2.1 File Menu

Use “File” menu to refresh flight data and shut down the STBO Client (Figure 4.9).

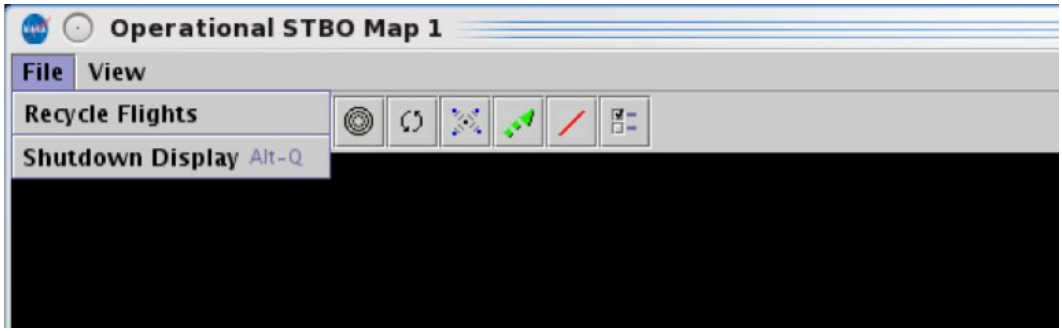


Figure 4.9. Map: File menu.

4.2.1.1 Recycle Flights

Select “Recycle Flights” to reinitialize flight data (Figure 4.10). This option refreshes the flights displayed on the map.

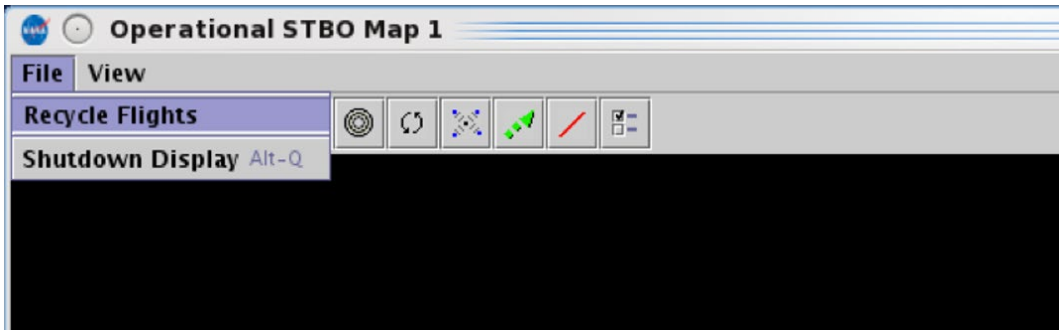


Figure 4.10. File Menu: Recycle Flights.

4.2.1.2 Shutdown Display

Select "Shutdown Display" to shut down the STBO Client.

To Shut down the STBO Client:

Step 1: Select "File" on the Menu Bar (Figure 4.11).

Step 2: Select "Shutdown Display" from the dropdown menu (Figure 4.11).

***Step 3*:** At the prompt, select "Yes" to shut down the STBO Client (Figure 4.12).

Alternatively: Select "No" to keep the STBO Client open.

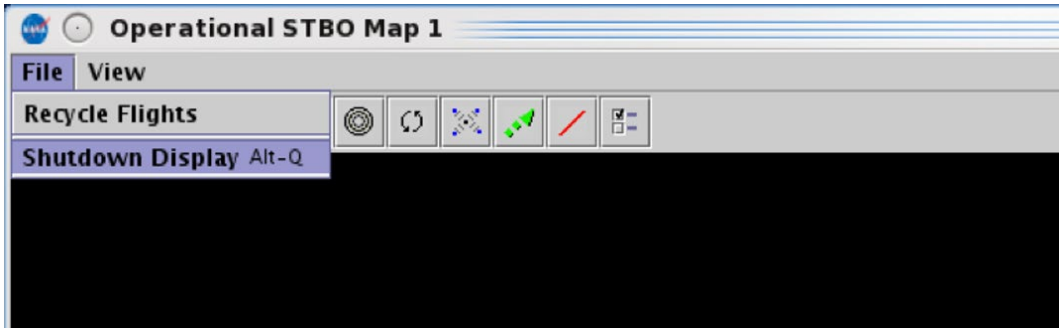


Figure 4.11. File Menu: Shutdown Display.

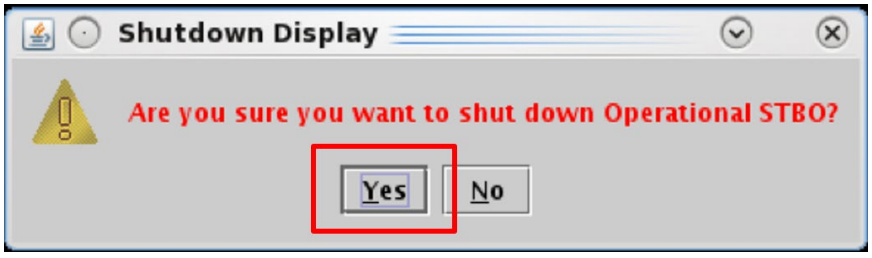


Figure 4.12. Shut down display confirmation prompt.

4.2.2 View Menu

Use the "View" menu to show the Toolbar and configure the map display (Figure 4.13).

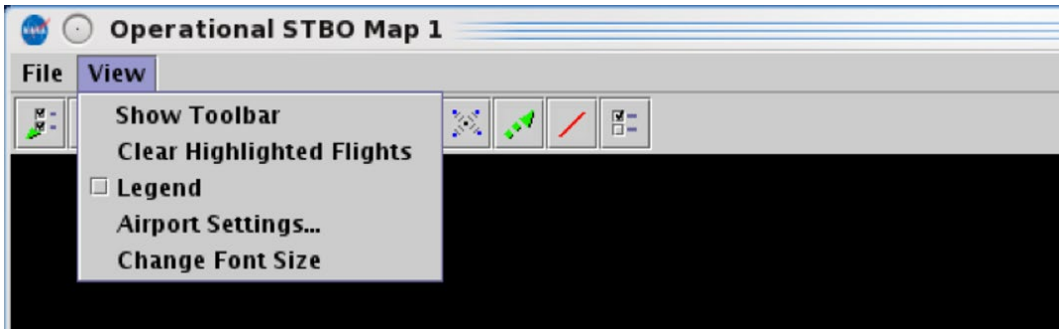


Figure 4.13. Map: View menu.

4.2.2.1 Show Toolbar

Use "Show Toolbar" to bring the STBO Client Toolbar window to the front of other windows.

To show the Toolbar:

Step 1: Select "View" on the Menu Bar (Figure 4.14).

Step 2: Select "Show Toolbar" (Figure 4.14).

Note: If the STBO Toolbar window is obscured by other windows (Figure 4.15 top), "Show Toolbar" brings the Toolbar window to the front (Figure 4.15, bottom).

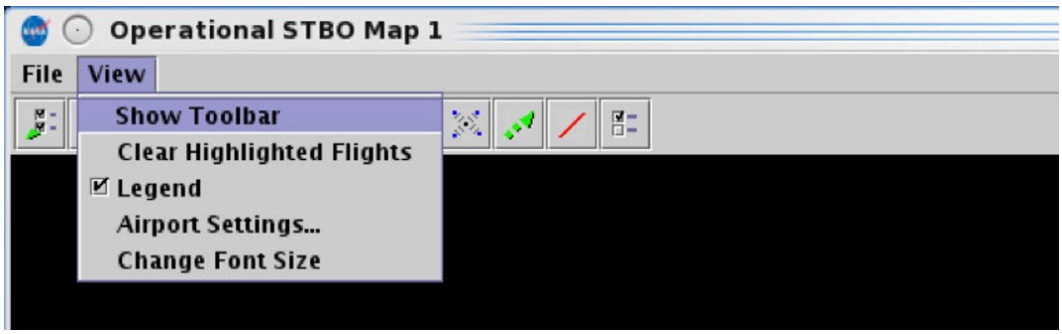


Figure 4.14. View Menu: Show Toolbar.

Figure 4.15. STBO Toolbar obscured by other windows (top) and displayed in front of other windows after selecting "Show Toolbar" (bottom).

4.2.2.2 Clear Highlighted Flights

Use "Clear Highlighted Flights" to deselect flights on the map.

To Clear Highlighted flights on the Map:

Step 1: Select "View" on the Menu Bar (Figure 4.16).

Step 2: When one or more flights are selected on the map (Figure 4.17, left), select "Clear Highlighted Flights" to deselect them (Figure 4.17, right).

Alternatively: Click elsewhere on the map background to deselect flights.

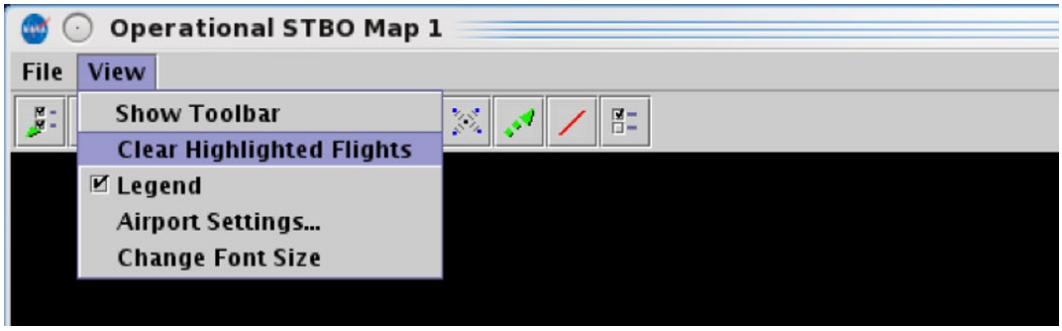


Figure 4.16. View Menu: Clear Highlighted Flights.

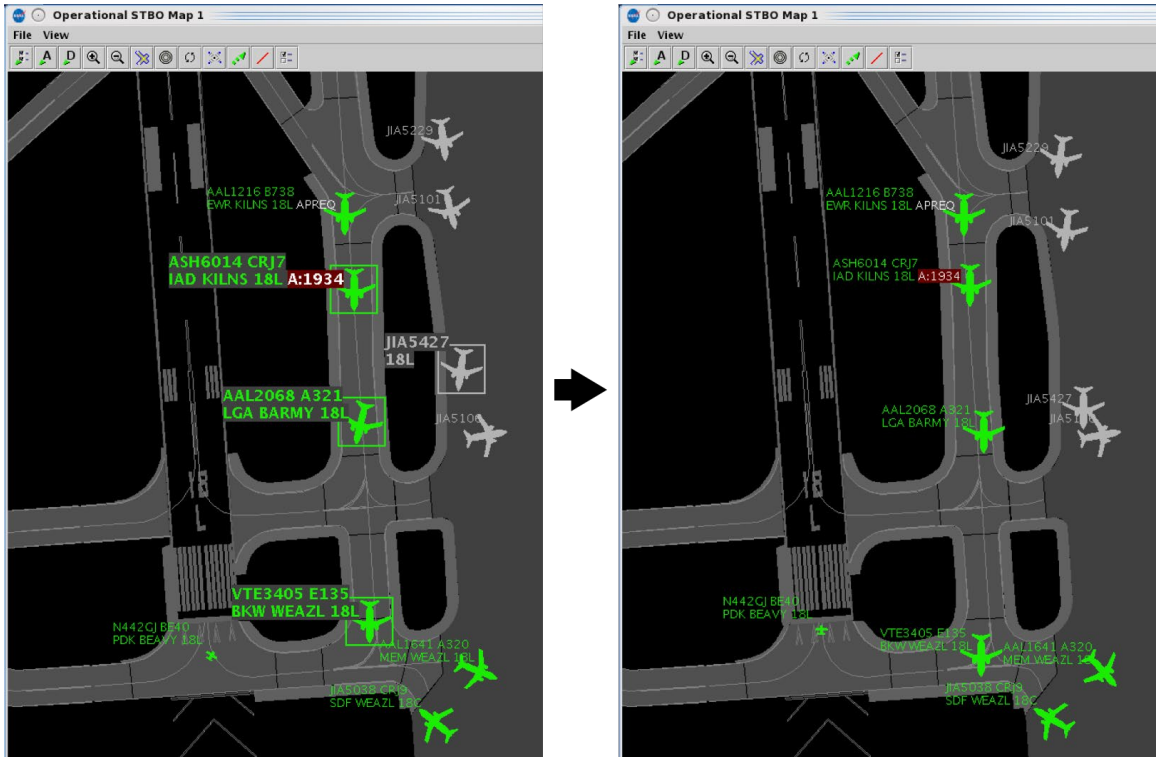


Figure 4.17. Clear Highlighted Flights: Any highlighted flights (left) are now deselected (right).

4.2.2.3 Legend

An explanation of the color-coding for the selected arrival/departure color schemes is displayed in the Legend. See Section 4.3.1.1 for a description of selecting arrival and departure color schemes.

To Show/Hide the Map Legend:

Step 1: Select "View" on the Menu Bar (Figure 4.18).

Step 2: Check the box next to "Legend" (Figure 4.18) to show the legend in the map window. See example in Figure 4.19.

Alternatively: Uncheck the box to hide the legend.

Note: The colors used in each color scheme are pre-assigned and are not configurable.

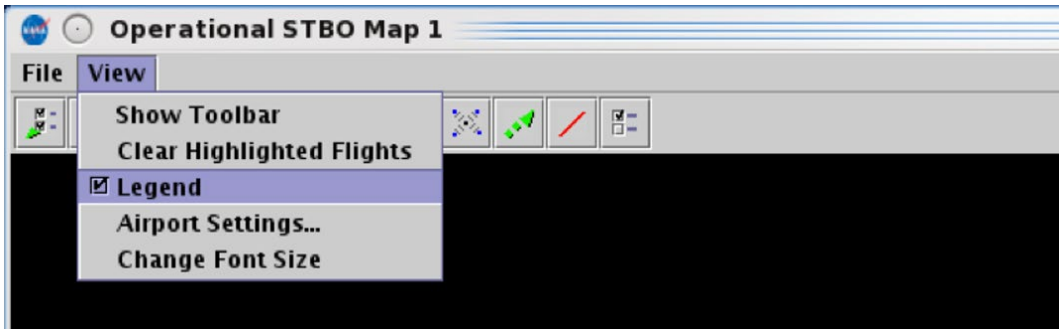


Figure 4.18. View Menu: Legend.

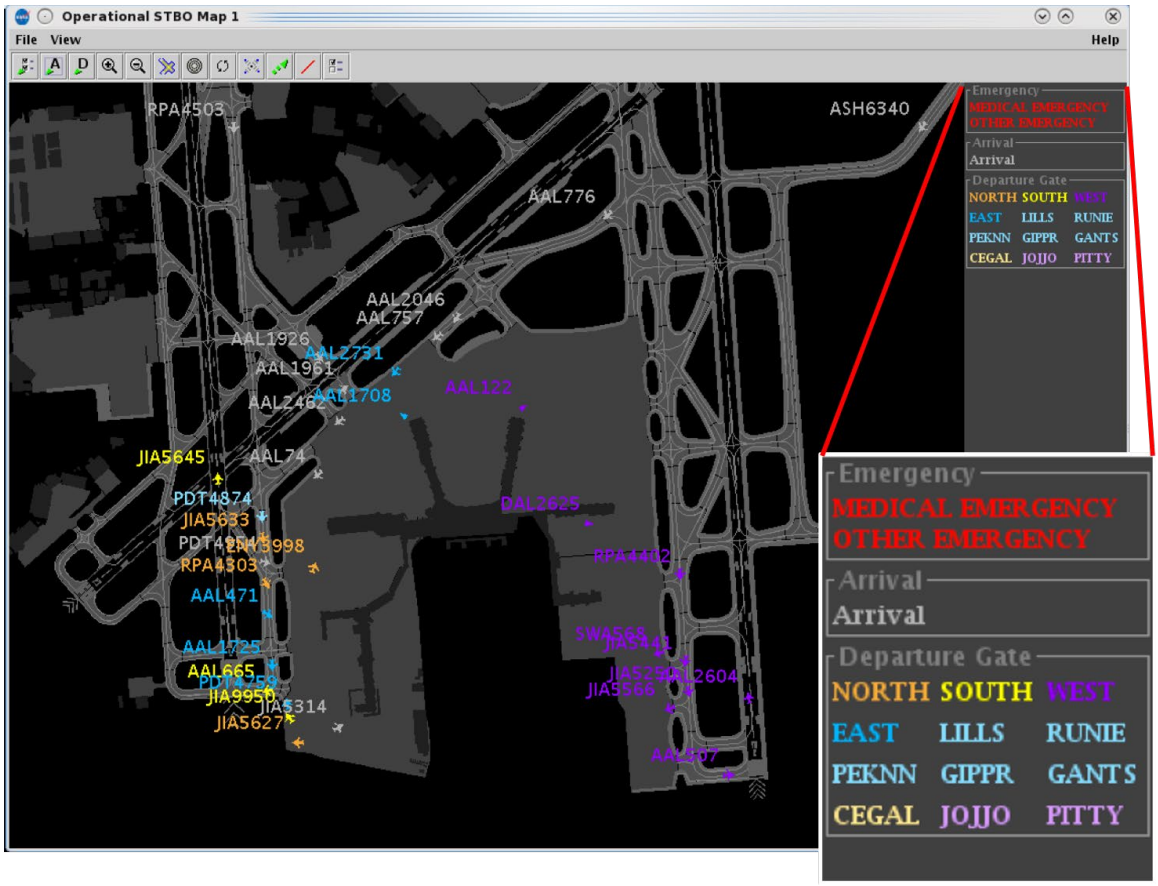


Figure 4.19. Map with legend. In this example, the "Arrival" and "Departure Gate" color schemes are selected.

4.2.2.4 Airport Settings

Use "Airport Settings" to select which flights are displayed on the map.

To configure map Airport Settings:

Step 1: Select "View" on the Menu Bar (Figure 4.20).

Step 2: Select "Airport Settings" from the dropdown menu (Figure 4.20).

Step 3: Each of the five options is explained below (Figure 4.21):

- Flights at Gates (Figure 4.22)
- Aircraft at Gates (Figure 4.23)
- Flights by Line-of-Flight (Figure 4.24)
- Suspended Flights (Figure 4.25)
- AMA Only Datablocks (Figure 4.26)

Step 4: Select "Apply" or "Preview" to view on the map before closing the Settings window (Figure 4.21).

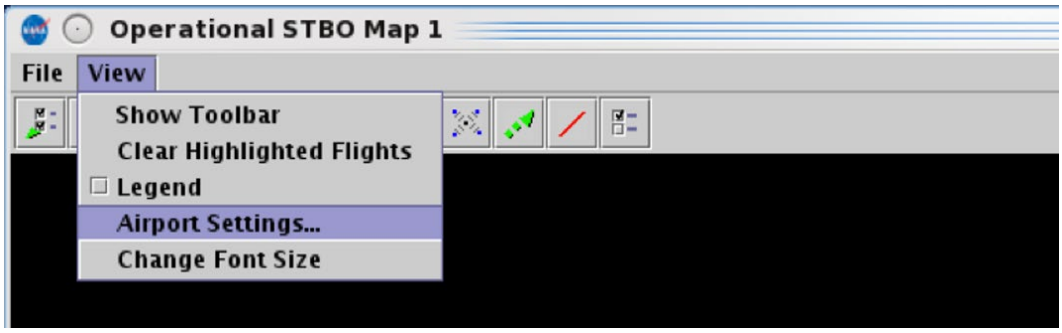


Figure 4.20. View Menu: Airport Settings.

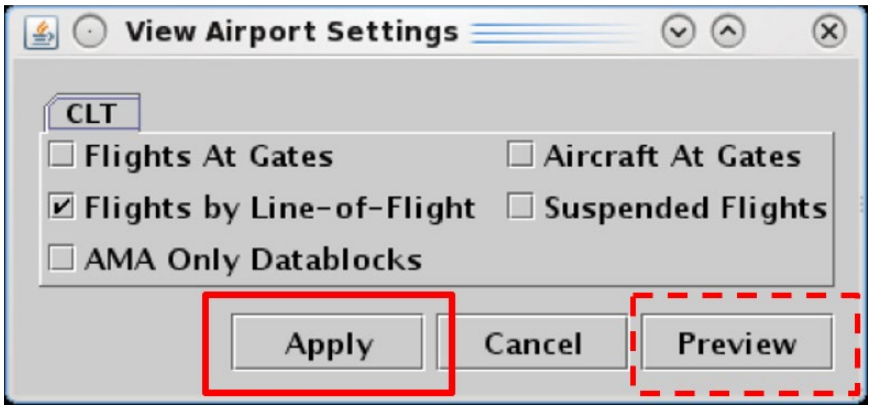


Figure 4.21. View Airport Settings Menu.

Flights at Gates: Check "Flights at Gates" to display departure and arrival flights currently parked at the gate (Figure 4.22).

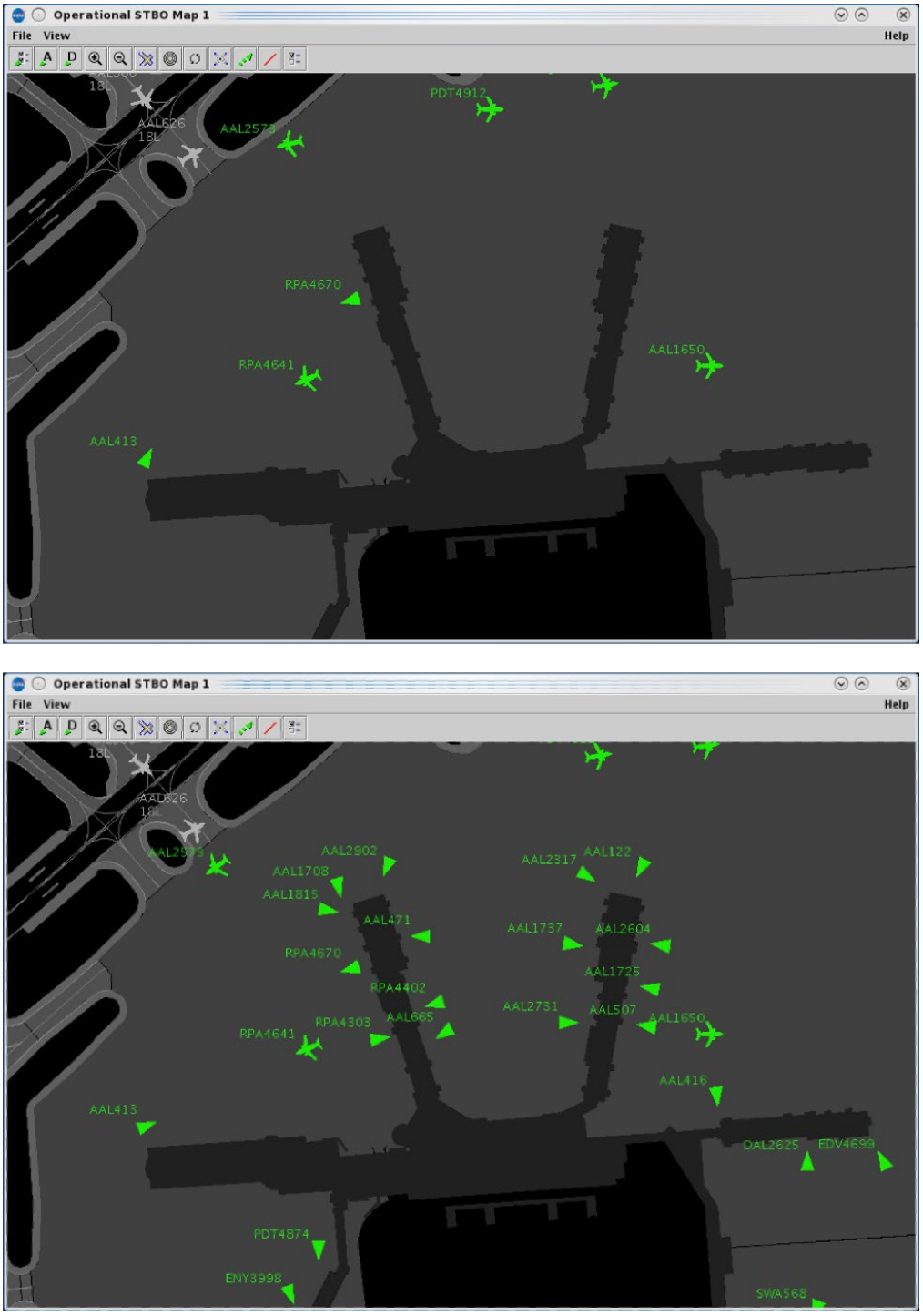


Figure 4.22. Airport Settings: Flights at Gates not selected (top) and selected (bottom).

Aircraft at Gates: Check "Aircraft at Gates" to display the tail number and aircraft type of aircraft parked at the gate – that is, those aircraft which do not have flight information associated with them (Figure 4.23).

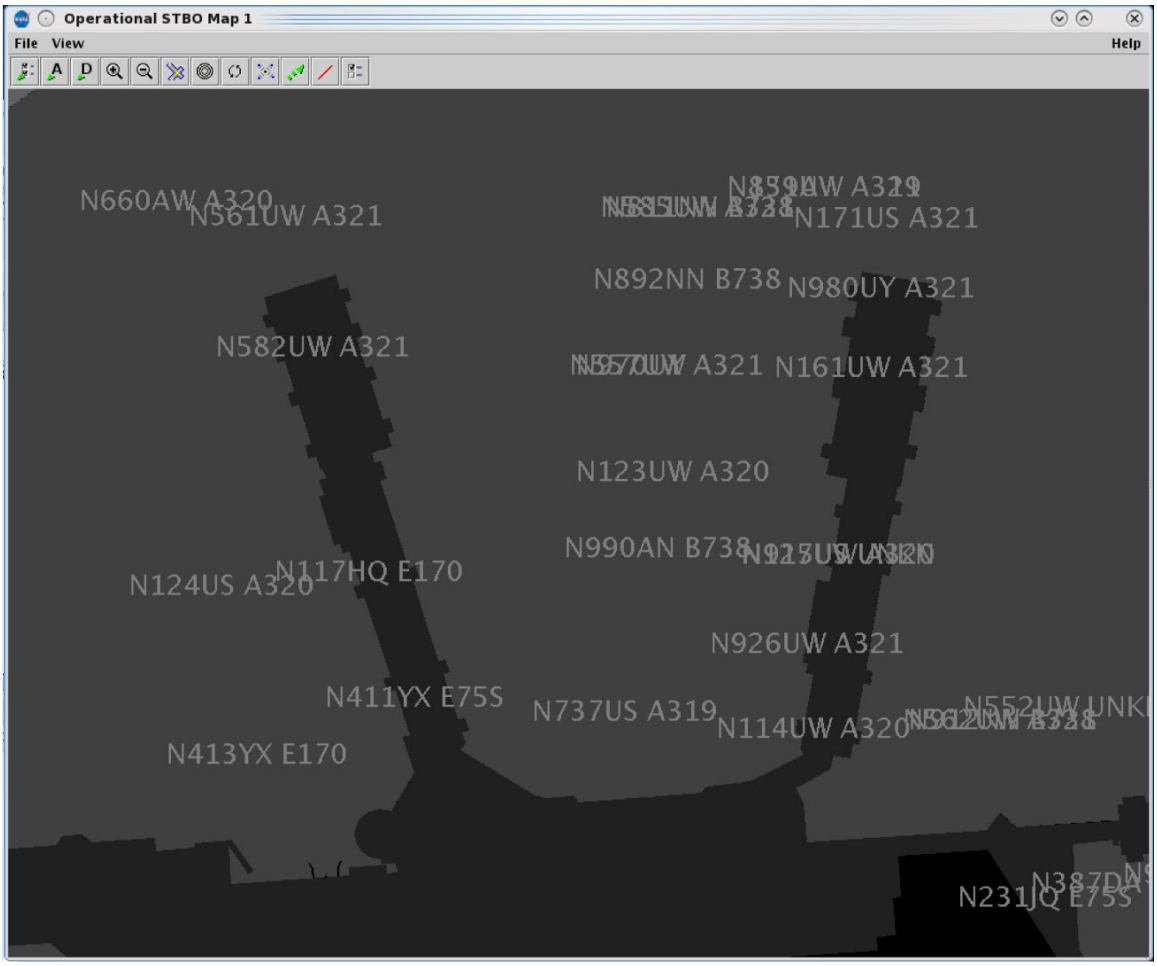


Figure 4.23. Airport Settings: Aircraft at Gates.

Flights by Line-of-Flight: A particular aircraft may currently be an arrival flight but will eventually become a turnaround departure flight later in the day.

- When the "Flights by Line-of-Flight" option is *unselected,* current and future flight information is displayed (Figure 4.24, left).
- When the "Flights by Line-of-Flight" option is *selected,* only current flight information is displayed (Figure 4.24, right).

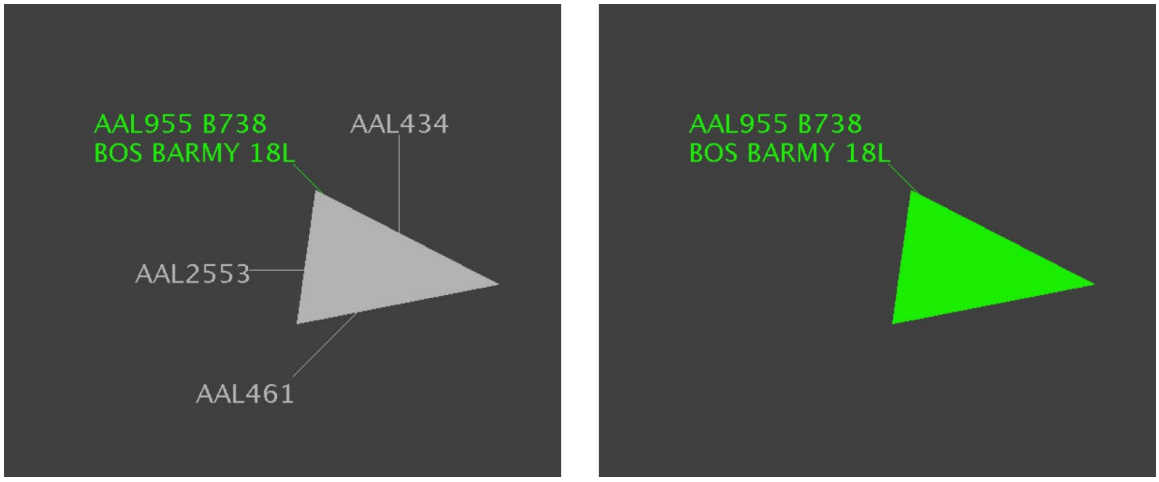


Figure 4.24. Airport Settings: Flights by Line-of-Flight. *Unselected* to show current and future flights (left) and *selected* to show only the current flight (right).

Suspended Flights: Check "Suspended Flights" to display departure flights that have been designated as "suspended" in the ATD-2 system (Figure 4.25). A flight is designated as "suspended" when it is temporarily delayed (e.g., mechanical issue), but not permanently cancelled.

Figure 4.25. Airport Settings: Suspended Flights. "Suspended" is indicated in the flight's datablock.

AMA Only Datablocks: Select "AMA Only Datablocks" to hide datablocks in the Ramp Area. In Figure 4.26 (top), datablocks are displayed for flights at the gate and in the Ramp Area. When "AMA Only Datablocks" is selected, datablocks at the gate and in the Ramp Area are hidden (Figure 4.26, bottom).

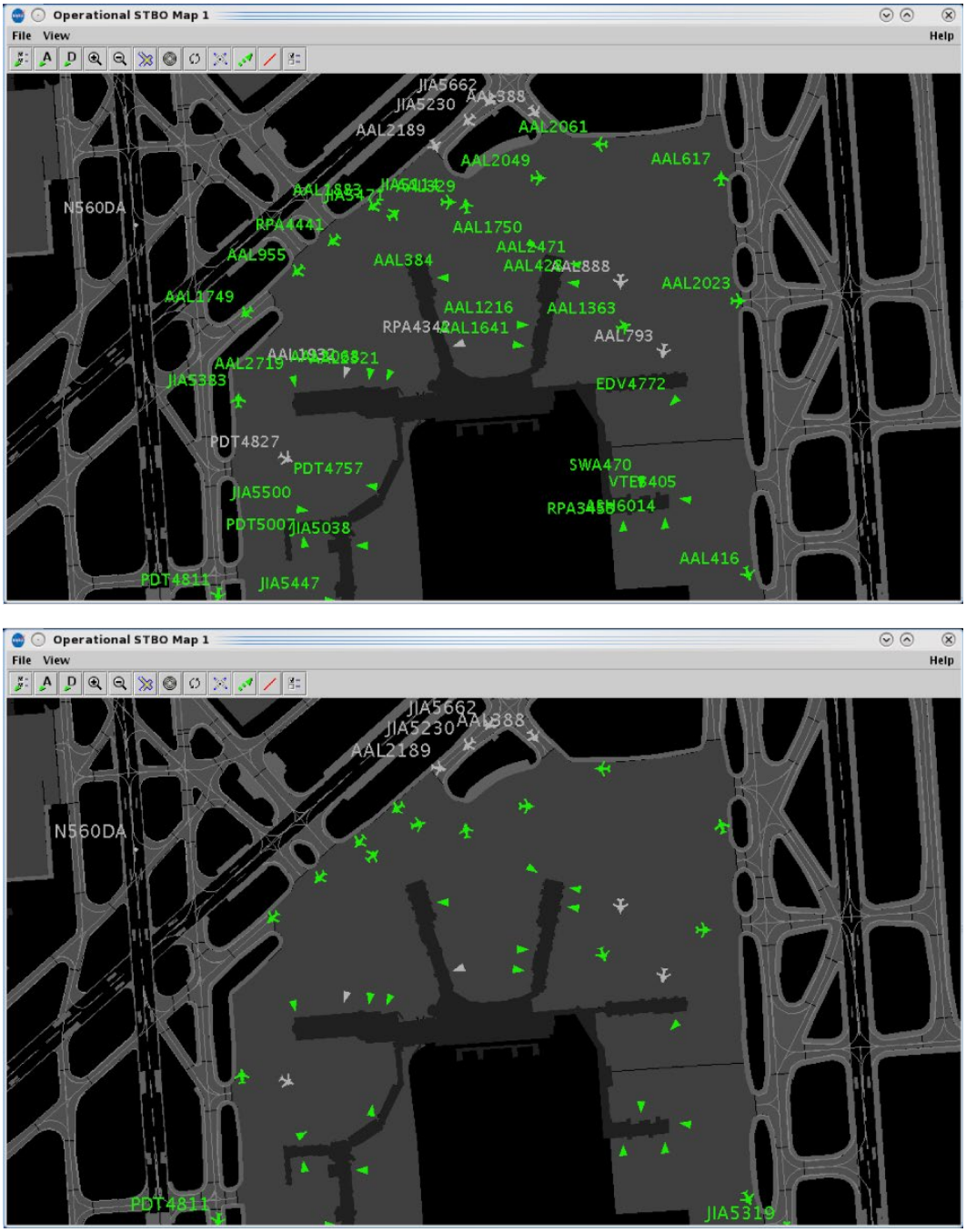


Figure 4.26. Airport Settings: Deselect "AMA Only Datablocks" to display datablocks in the Ramp Area (top) or select this option to hide datablocks while in the Ramp Area (bottom).

4.2.2.5 Change Font Size

Use “Change Font Size” to adjust the text size of datablocks and map labels.

To change text size on the Map:

Step 1: Select “View” on the Menu Bar (Figure 4.27).

Step 2: Select “Change Font Size” from the dropdown menu (Figure 4.27).

Step 3: Use the “Decrease,” “Increase,” and “Reset,” buttons (Figure 4.28) to adjust the text size of:

- **Data Tags/Datablocks** (see example in Figure 4.29), or
- **Map Labels**, such as Fix names and runway/spot labels (see examples in Figure 4.30 and Figure 4.31).

Step 4: Select “OK” (Figure 4.28).

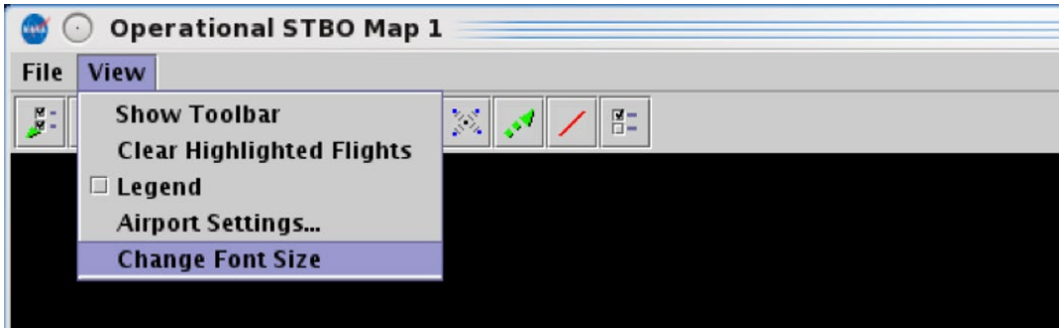


Figure 4.27. View Menu: Change Font Size.

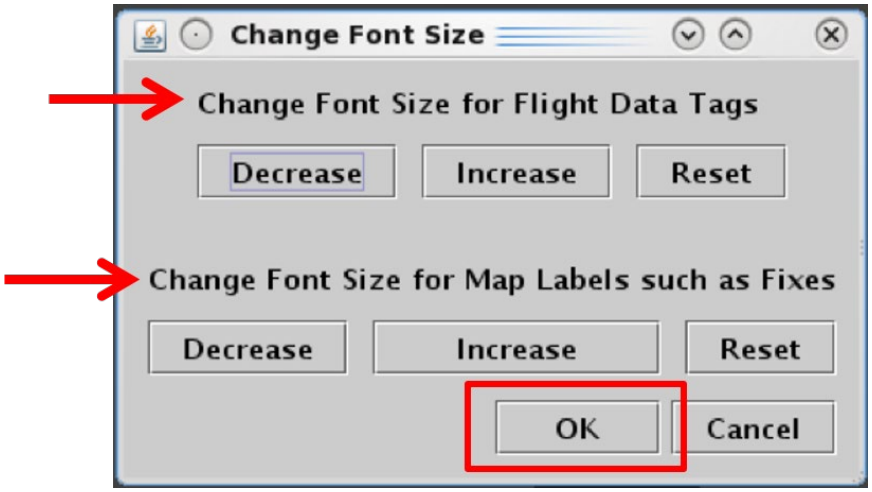


Figure 4.28. Change Font Size: Decrease, Increase, or Reset text size.

Figure 4.29. Datablock text (increase text size).

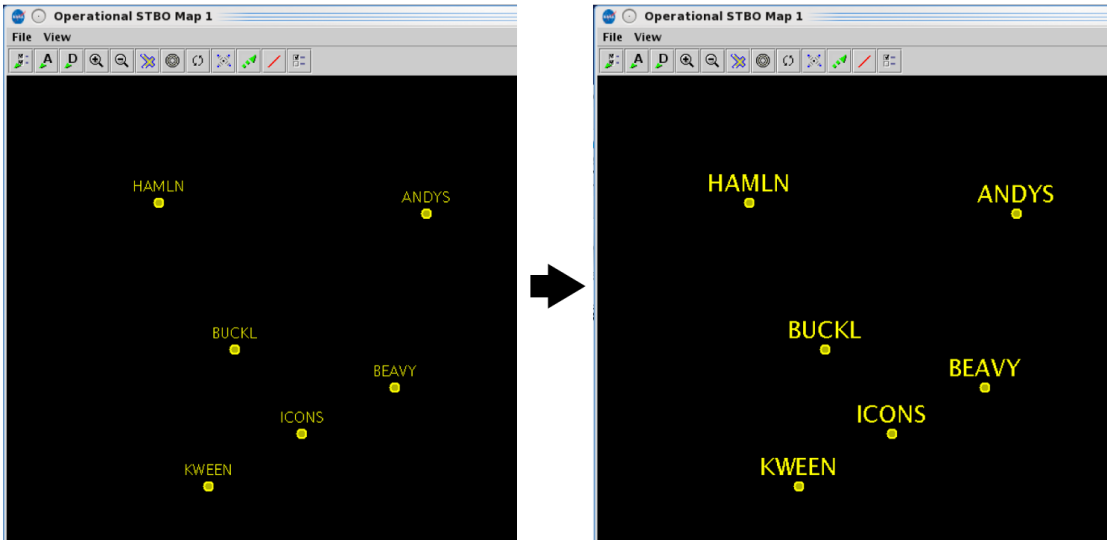


Figure 4.30. Departure Fix labels (increase text size).

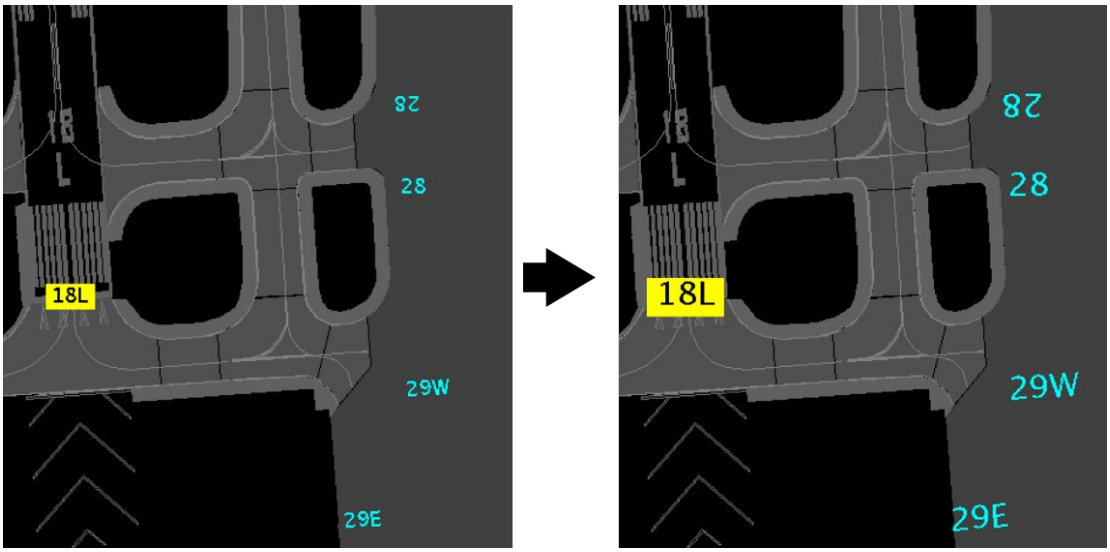


Figure 4.31. Runway and Spot labels (increase text size).

4.2.3 Help Menu

Use the “Help” menu to view the software version number and quick-key short cuts (Figure 4.32).

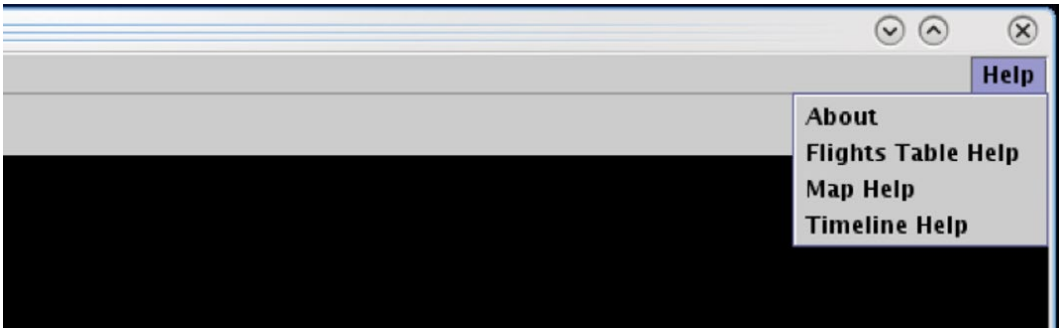


Figure 4.32. Map: Help menu.

4.2.3.1 About

Select “About” to view the STBO Client version number.

To view software Version number:

Step 1: Select “Help” on the Menu Bar (Figure 4.33).

Step 2: Select “About” to view the version number (Figure 4.33).

Step 3: Select “OK” to close the window (Figure 4.34).

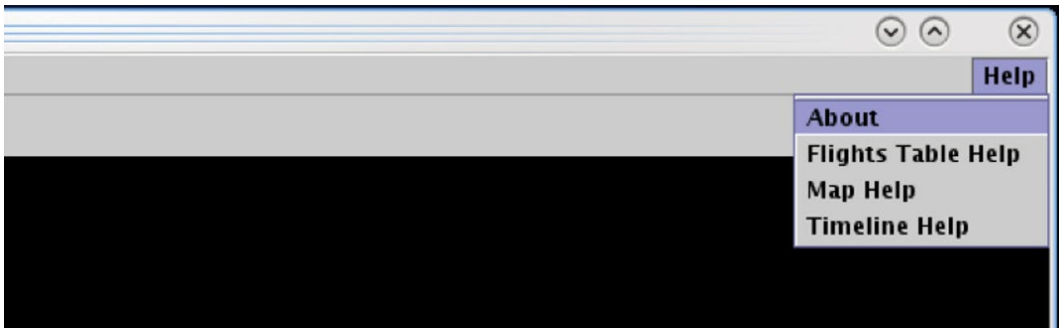


Figure 4.33. Help menu: About.

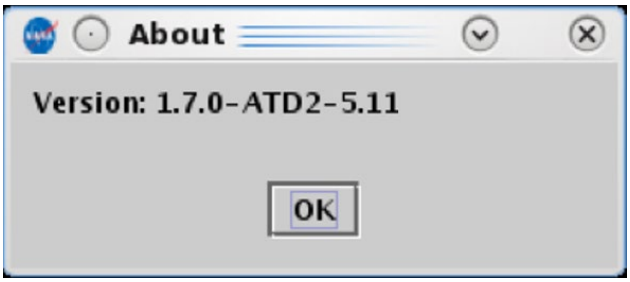


Figure 4.34. About: STBO Client version information.

4.2.3.2 Flights Table Help

Some users prefer to use "quick-key" functions, or keyboard shortcuts, to navigate and interact with the STBO Client. Quick-key functions are available for the Flights Table.

To open the list of Quick Keys for the Flights Table:

Step 1: Select "Help" on the Menu Bar (Figure 4.35).

Step 2: Select "Flights Table Help" (Figure 4.35) to view a list of quick keys (shortcuts) for the Flights Table Figure 4.36.

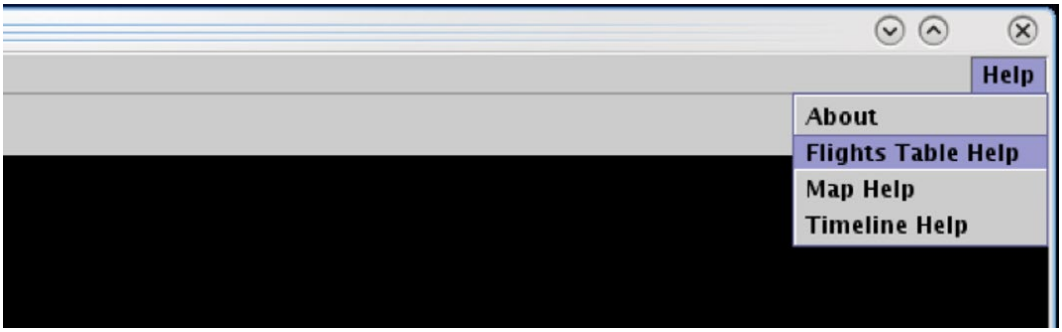


Figure 4.35. Help Menu: Flights Table Help.

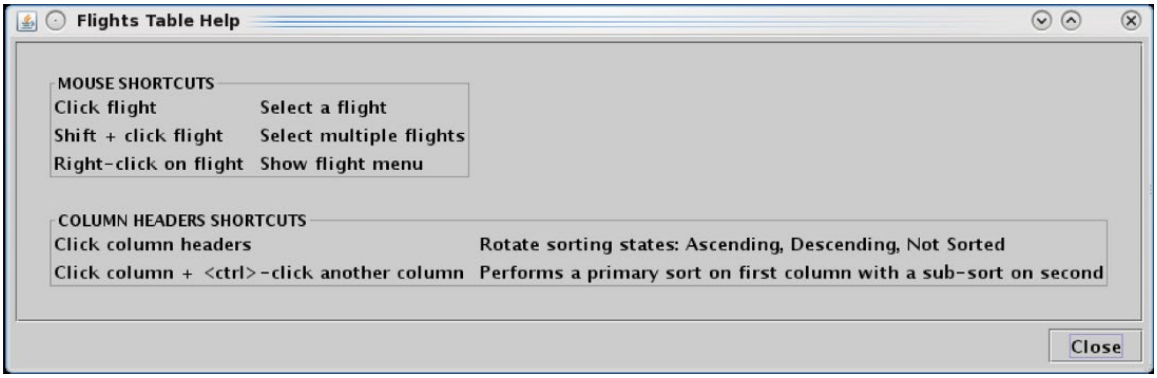


Figure 4.36. Flights Table Help.

4.2.3.3 Map Help

Quick-key functions are available for the map.

To open the list of Quick Keys for the Map:

Step 1: Select "Help" on the Menu Bar (Figure 4.37).

***Step 2*:** Select "Map Help" (Figure 4.37) to view a list of quick keys (shortcuts) for the map (Figure 4.38).

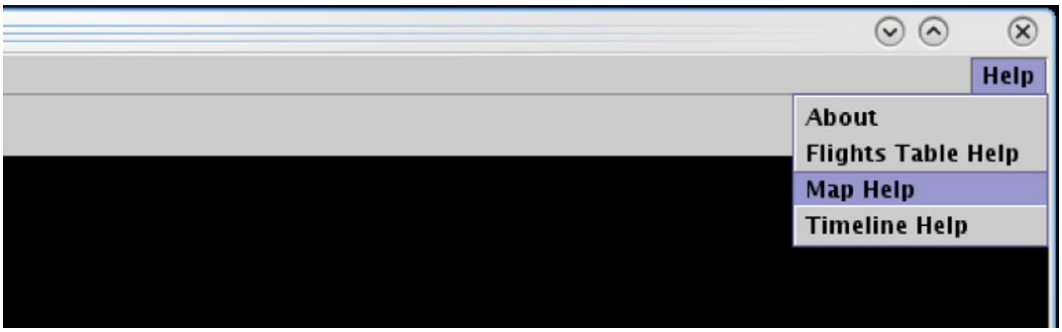


Figure 4.37. Help Menu: Map Help.

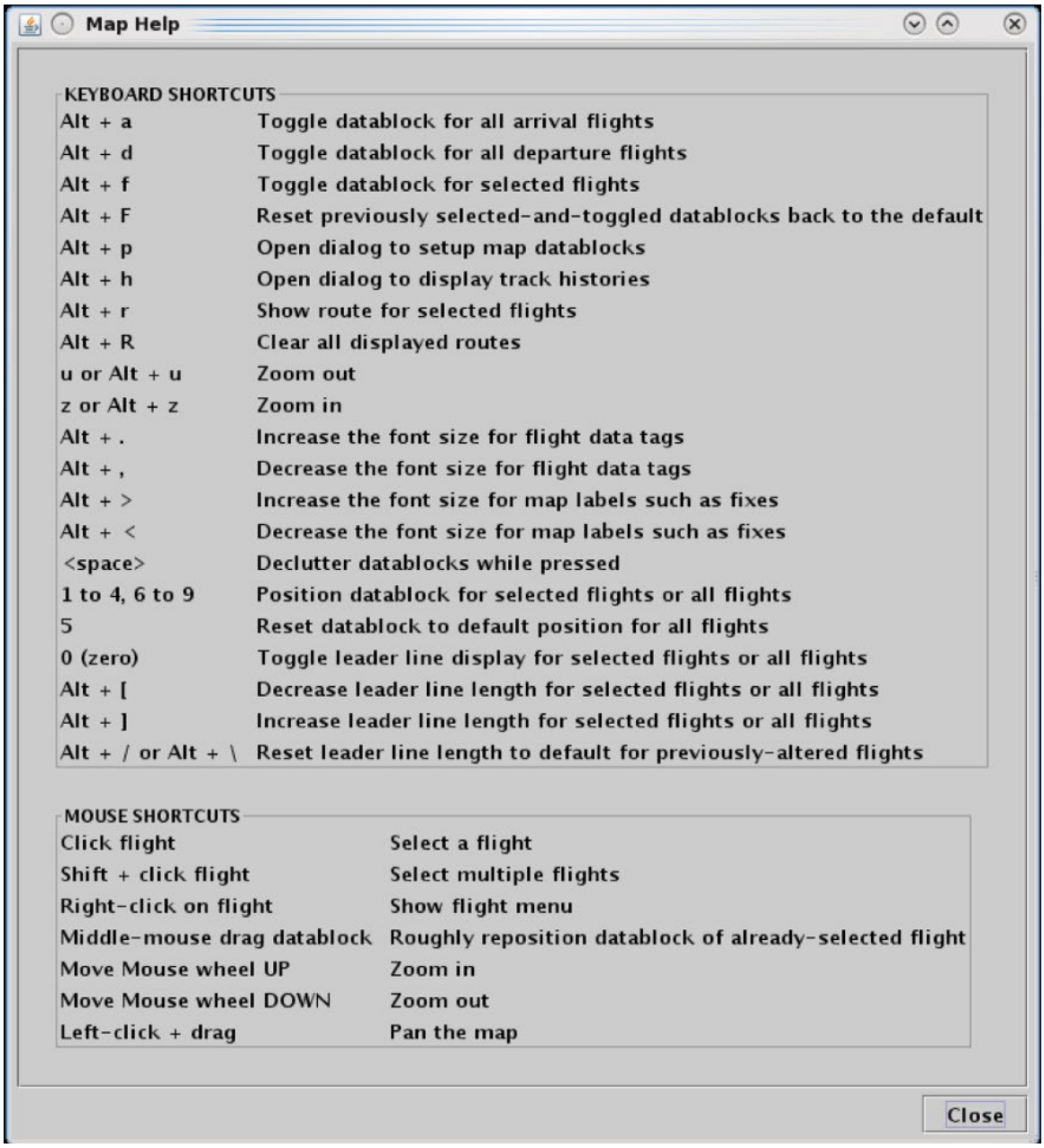


Figure 4.38. Map Help.

4.2.3.4 Timeline Help

Quick-key functions are available for the timeline.

To open the list of Quick Keys for the Timeline:

Step 1: Select "Help" on the Menu Bar (Figure 4.39).

Step 2: Select "Timeline Help" (Figure 4.39) to view a list of quick keys (shortcuts) for the timeline (Figure 4.40).

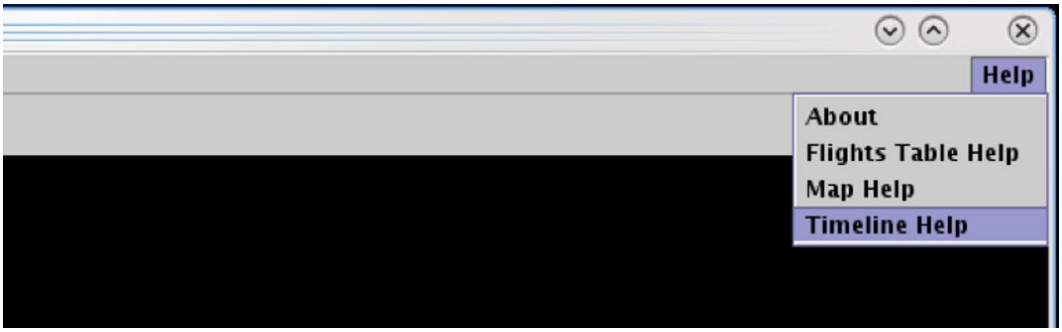


Figure 4.39. Help Menu: Timeline Help.

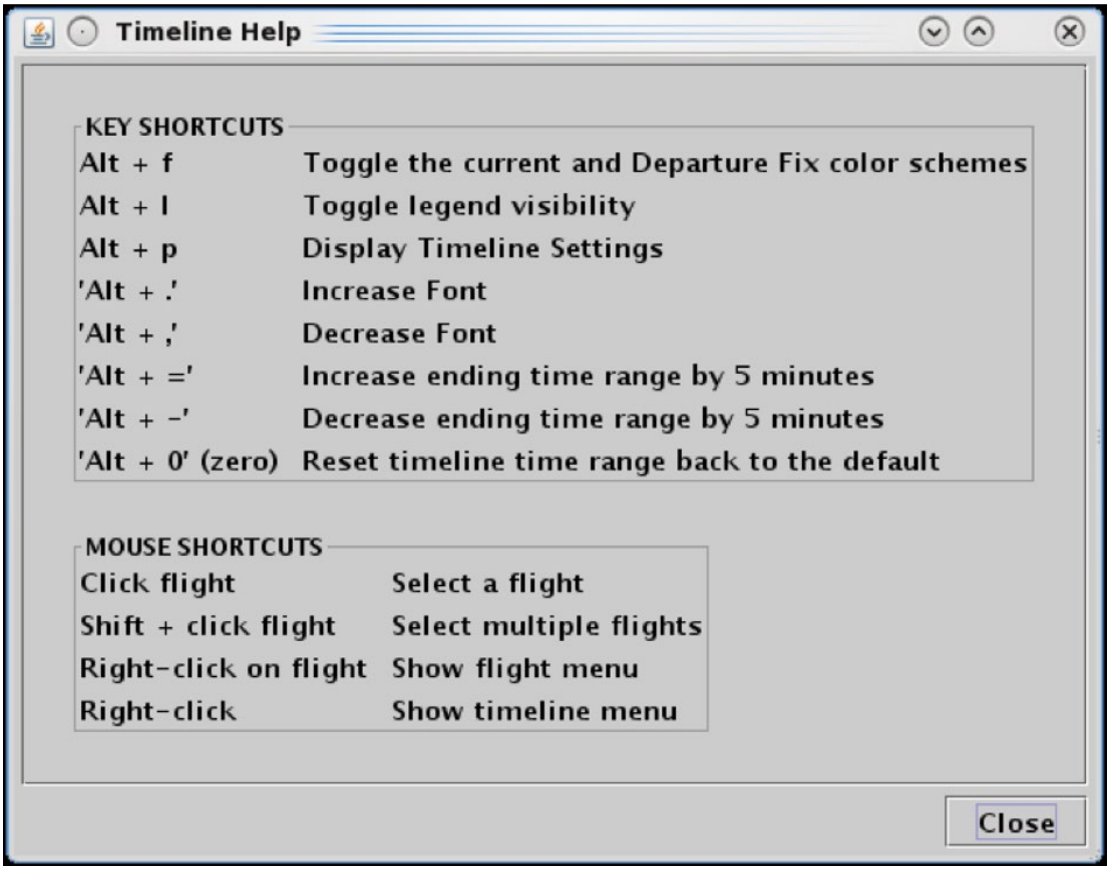


Figure 4.40. Timeline Help.

4.3 Map: Toolbar

Use the Toolbar to configure the map (Figure 4.41).

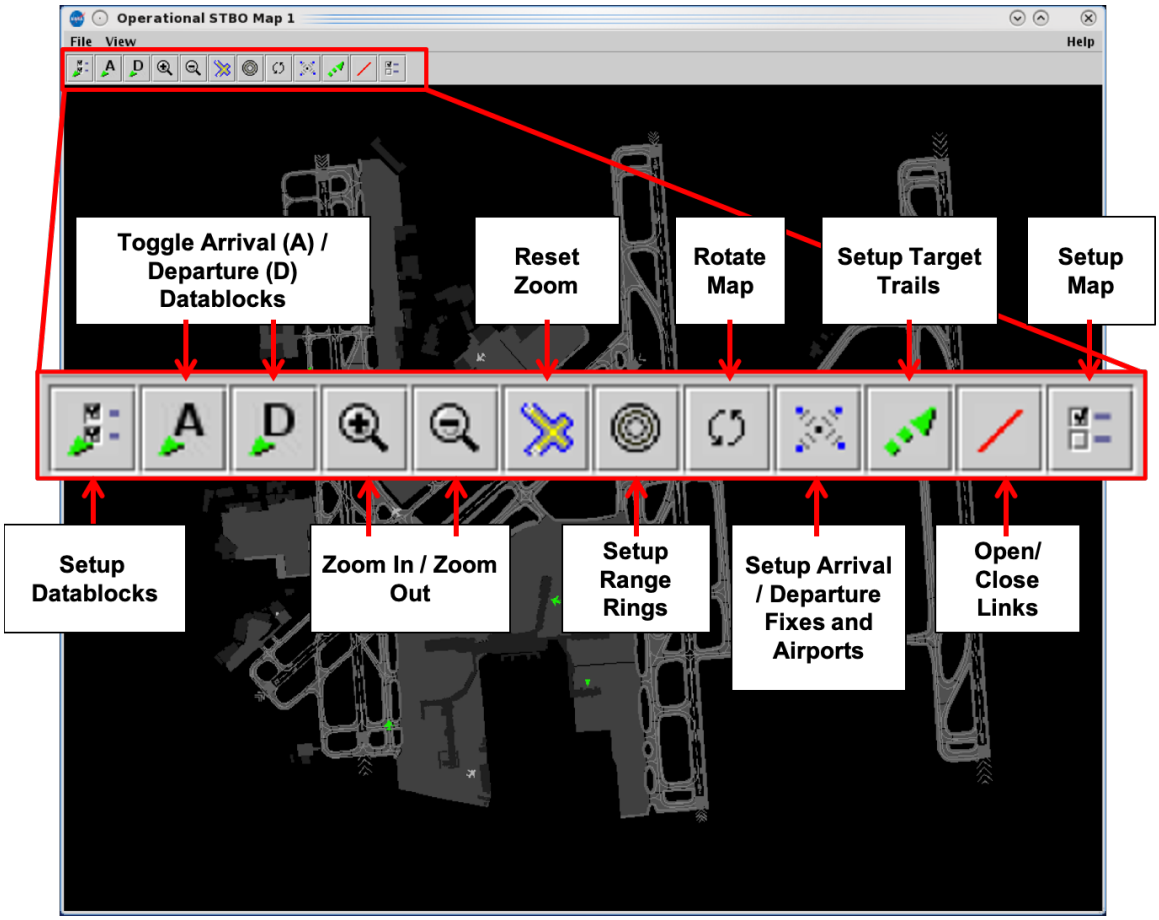


Figure 4.41. Map: Toolbar.

4.3.1 Setup Datablocks

Select the “Setup Datablocks” icon to configure flight datablocks (Figure 4.41). Both arrival and departure datablocks are configured in the Setup Datablocks window (Figure 4.42).

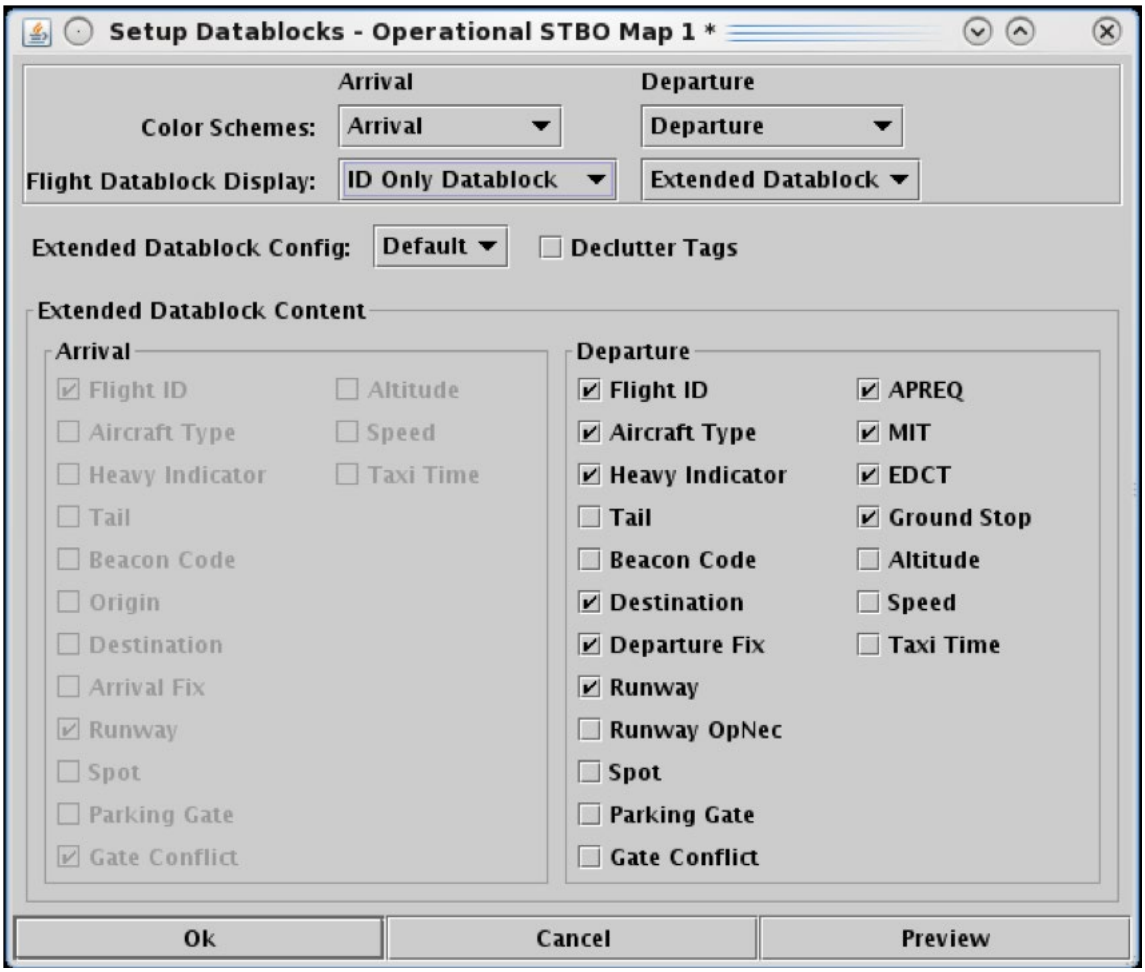


Figure 4.42. Map: Setup Datablocks.

4.3.1.1 Color Schemes

Use “Color Schemes” to format flight icons and datablock text. Arrival flights and departure flight use different color schemes.

To change Arrival/Departure flight Color Schemes on the Map:

Step 1: Select the "Setup Datablocks" icon from the Map Toolbar (Figure 4.41).

Step 2: Click on the Departure "Color Schemes" dropdown menu to select a color scheme for departure flights (for example, "Departure Gate" in Figure 4.43):

- Departure
- Departure Fix
- Departure Gate (selected in Figure 4.43)
- Departure Runway
- Weight

Step 3: Click on the Arrival "Color Schemes" dropdown menu to select a color scheme for arrival flights:

- Arrival (selected in Figure 4.43)
- Arrival Fix
- Arrival Runway
- Weight

Step 4: Select "Ok" to apply the changes or "Preview" to view the changes on the map without closing the Setup Datablocks window (Figure 4.43).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: Flights designated as an "emergency" are always shown in red, regardless of selected color scheme.

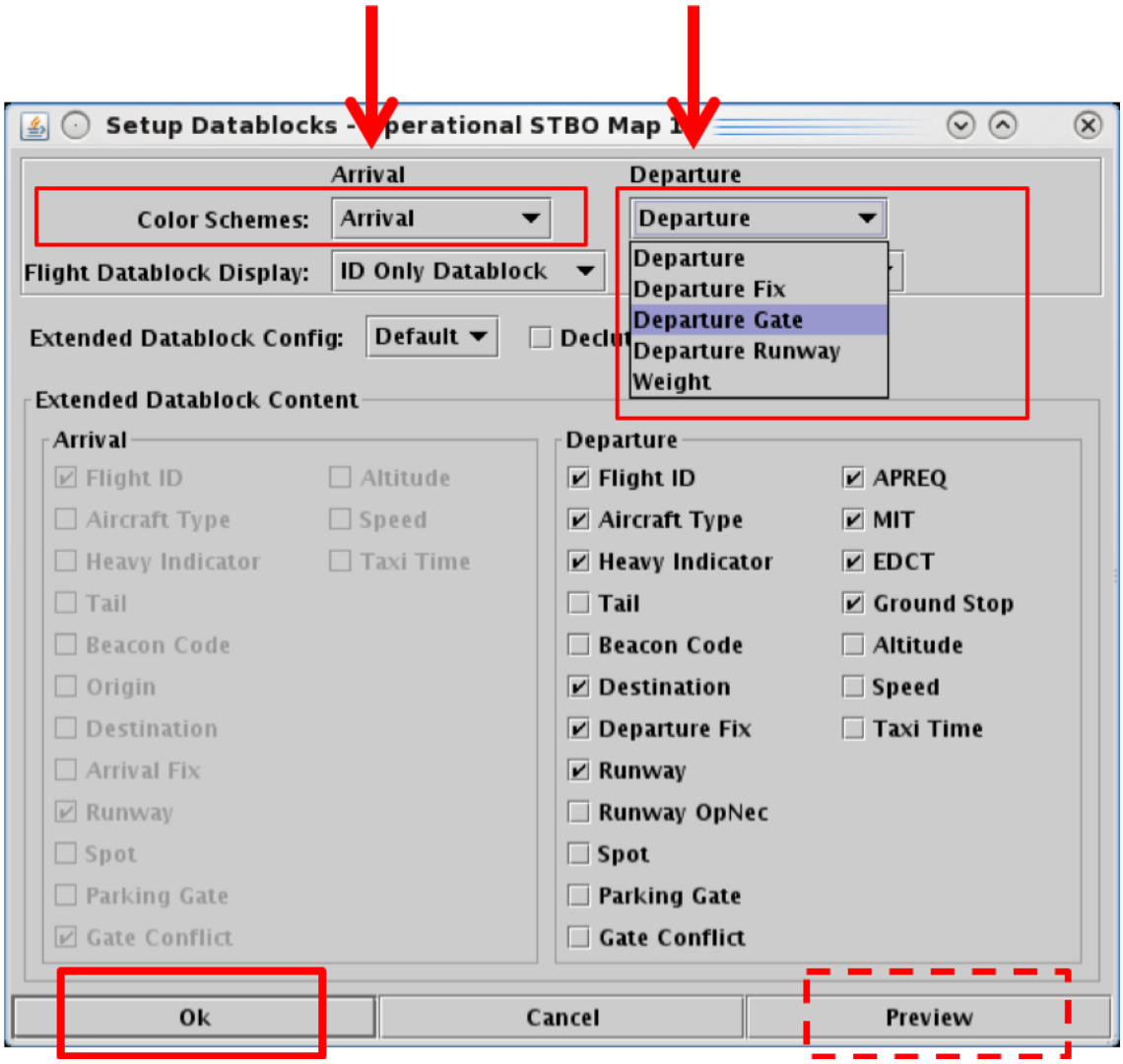


Figure 4.43. Setup Datablocks: Arrival/ Departure Color Schemes.

4.3.1.2 Flight Datablock Display

Use “Flight Datablock Display” to select how much information is shown in a datablock. Arrivals and departures can be configured differently.

To change the Datablock Display for Arrival/Departure flights:

Step 1: Select the "Setup Datablocks" icon from the Map Toolbar (Figure 4.41).

Step 2: Select the Arrival or Departure "Flight Datablock Display" dropdown menu to select a datablock configuration (for example, "ID Only Datablock" is selected for Departure flights in Figure 4.44):

- No Datablock (see example in Figure 4.45, left)
- ID Only Datablock (see example in Figure 4.45, middle)
- Extended Datablock (see example in Figure 4.45, right)

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the map without closing the Setup Datablocks window (Figure 4.44).

Alternatively: Select "Cancel" to close the window without applying changes.

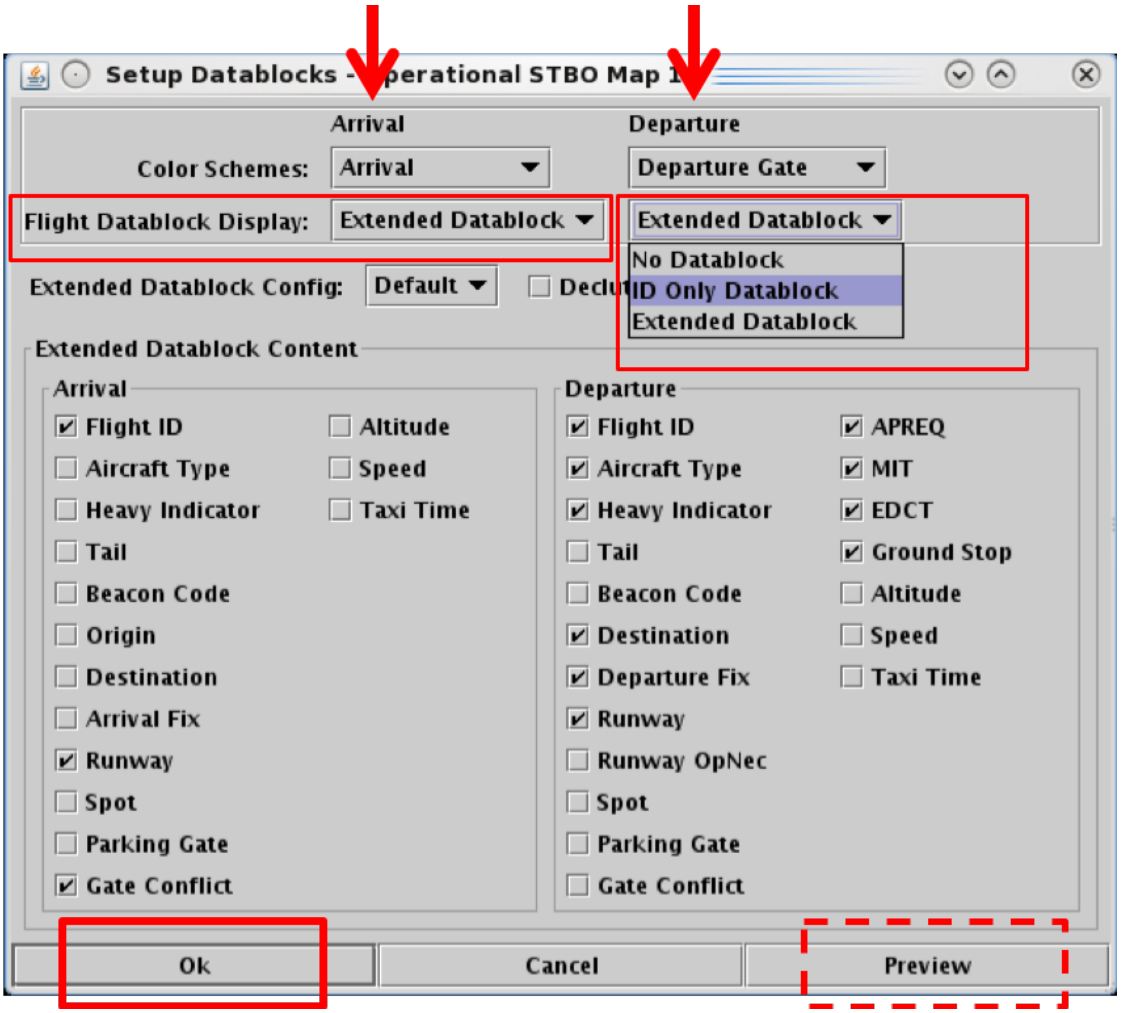


Figure 4.44. Setup Datablocks: Flight Datablock Display.

Figure 4.45. Flight Datablock Display: No Datablock (left), ID Only Datablock (middle), Extended Datablock (right).

4.3.1.3 Extended Datablock Config

Use "Extended Datablock Config" to format extended datablocks. Select from one of two options:

- **Default:** No background color in the datablock.
- **Ramp:** Datablock background color is:
  - Blue for flights assigned to the east runway
  - Brown for flights assigned to the west runway, and
  - Green for arrivals (with blue/brown runway).

To change the Extended Datablock Config:

Step 1: Select the "Setup Datablocks" icon from the Map Toolbar (Figure 4.41).

Step 2: Click on the "Extended Datablock Config" dropdown menu to select a datablock format (for example, "Default" is selected in Figure 4.46):

- **Default** (see example in Figure 4.47, left)
- **Ramp** (see example in Figure 4.47, right)

Note: This formatting applies only to "Extended Datablocks."

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the map without closing the Setup Datablocks window (Figure 4.46).

Alternatively: Select "Cancel" to close the window without applying changes.

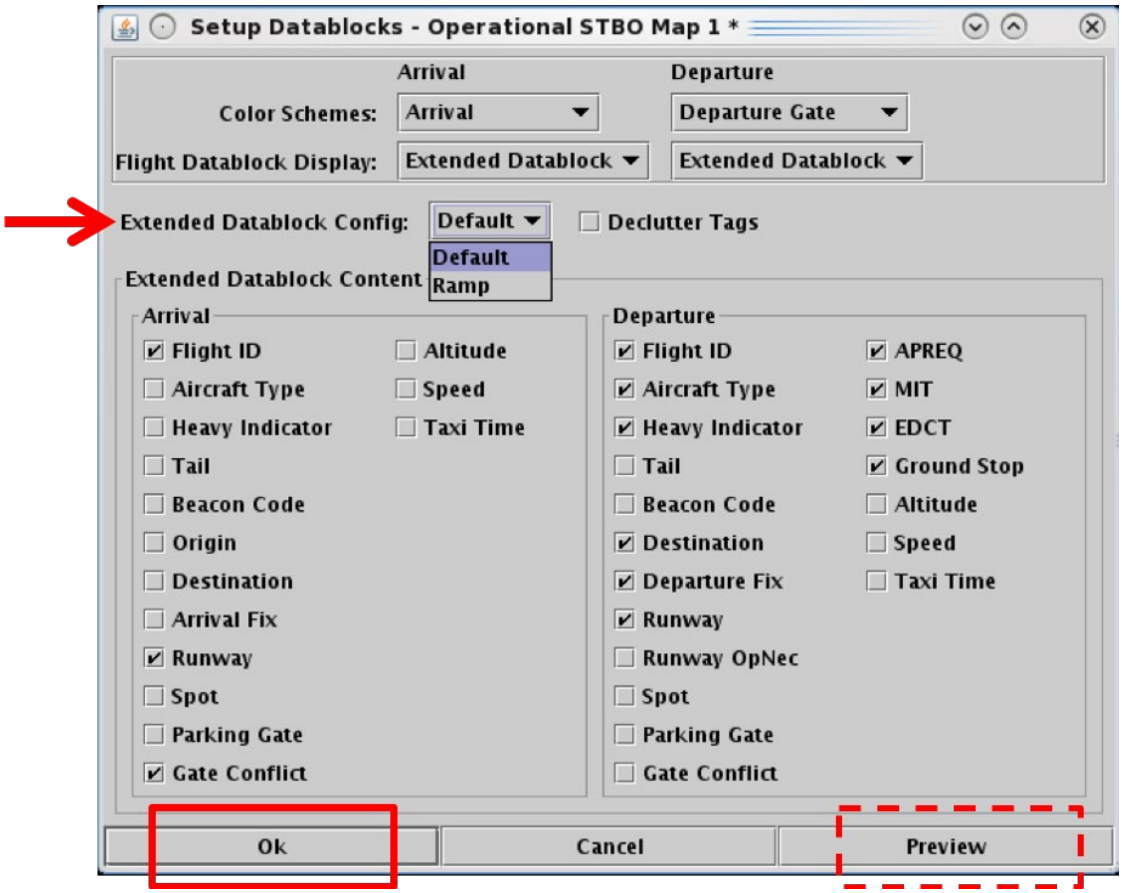


Figure 4.46. Setup Datablocks: Extended Datablock Config.

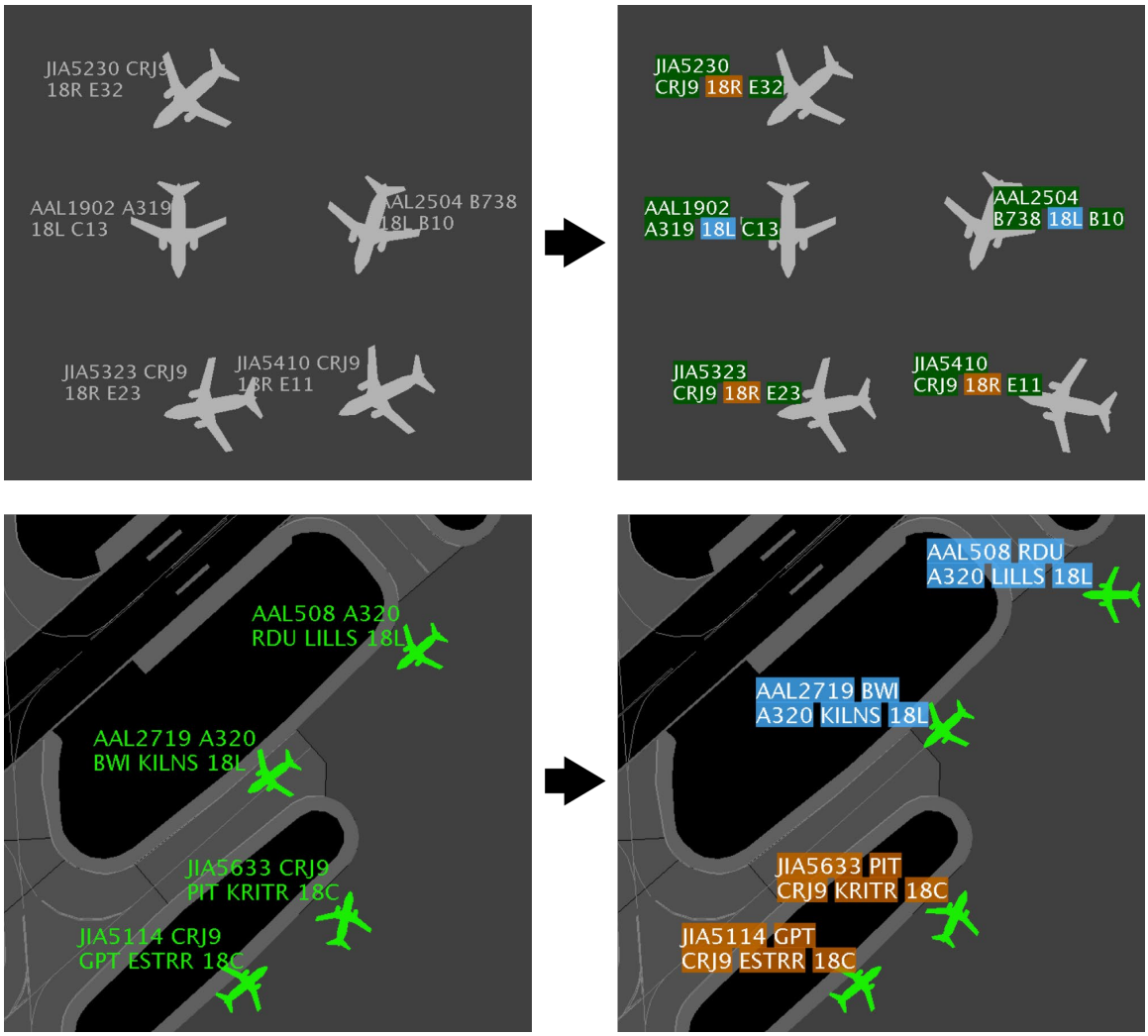


Figure 4.47. Extended Datablock Config: Default (left) and Ramp (right). In this example, arrival fights (top) and departure flights (bottom).

4.3.1.4 Declutter Tags

By default, the map allows flight datablocks in close proximity to overlap with one another. When "Declutter Tags" is selected, datablocks are re-positioned so that they do not overlap with one another.

To Declutter datablocks:

Step 1: Select the "Setup Datablocks" icon from the Map Toolbar (Figure 4.41).

Step 2: Select the "Declutter Tags" checkbox to prevent datablocks from overlapping (Figure 4.48).

Note: When "Declutter Tags" is selected, datablocks are repositioned (Figure 4.49, right). Flight icons themselves, however, are not repositioned.

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the map without closing the Setup Datablocks window (Figure 4.48).

Alternatively: Select "Cancel" to close the window without applying changes.

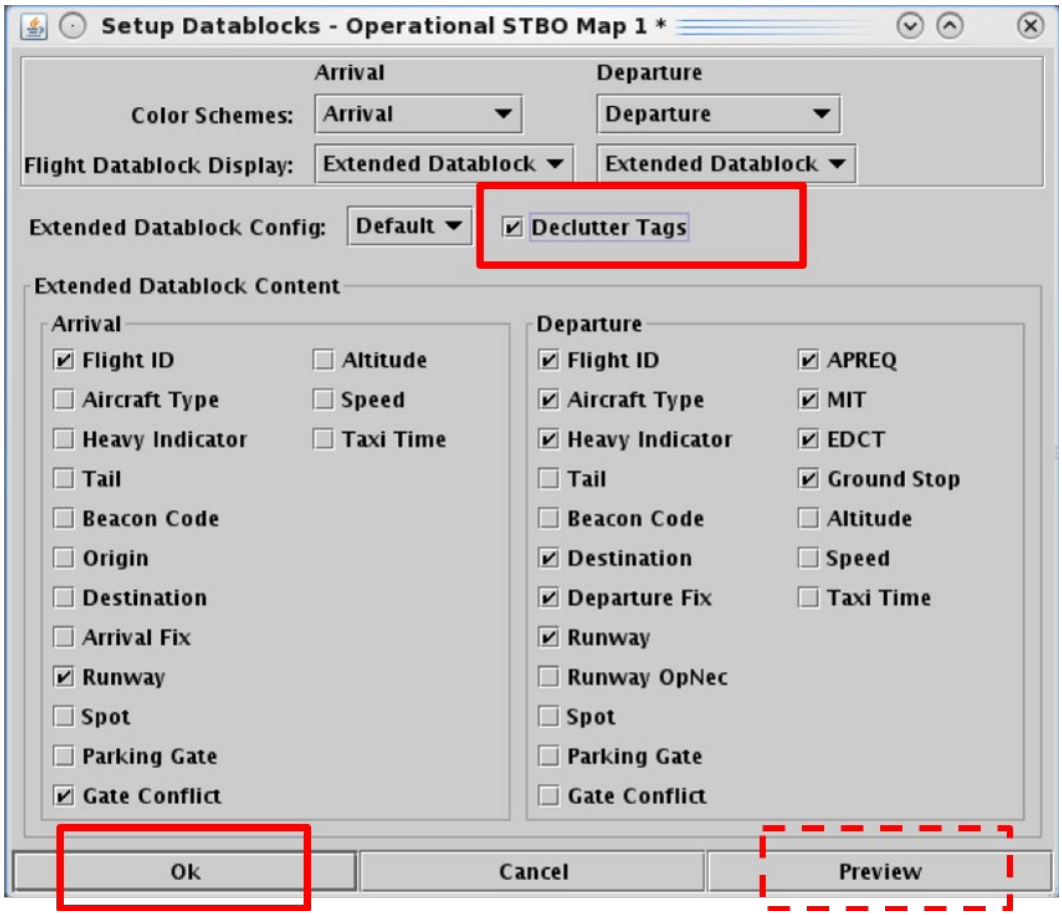


Figure 4.48. Setup Datablocks: Declutter Tags.

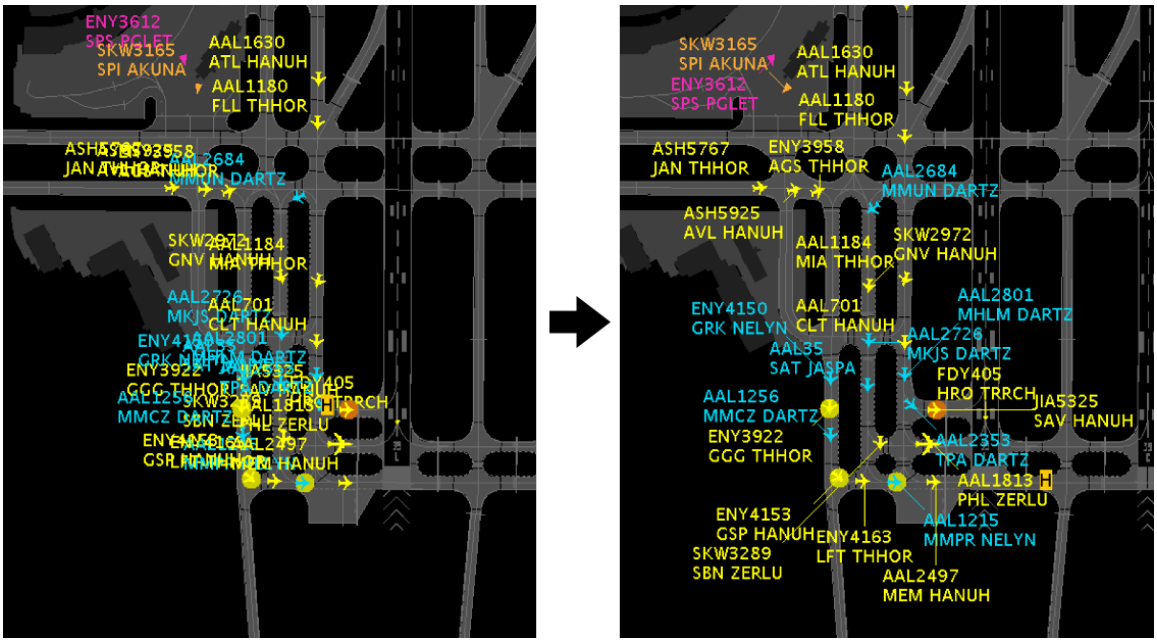


Figure 4.49. Declutter Tags: Unselected (left) and selected (right).

4.3.1.5 Map Datablock Content

Content displayed in extended datablocks can be configured for arrival and departure flights.

To change the content of Map Datablocks:

Step 1: Select the "Setup Datablocks" icon from the Map Toolbar (Figure 4.41).

Step 2: Select data elements to include in the Arrival or Departure flight datablocks (Figure 4.50).

Alternatively: Deselect items to exclude them from the Arrival or Departure flight datablocks.

Note: Selected content is only displayed when "Extended Datablock" is selected.

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the map without closing the Setup Datablocks window (Figure 4.50).

Alternatively: Select "Cancel" to close the window without applying changes.

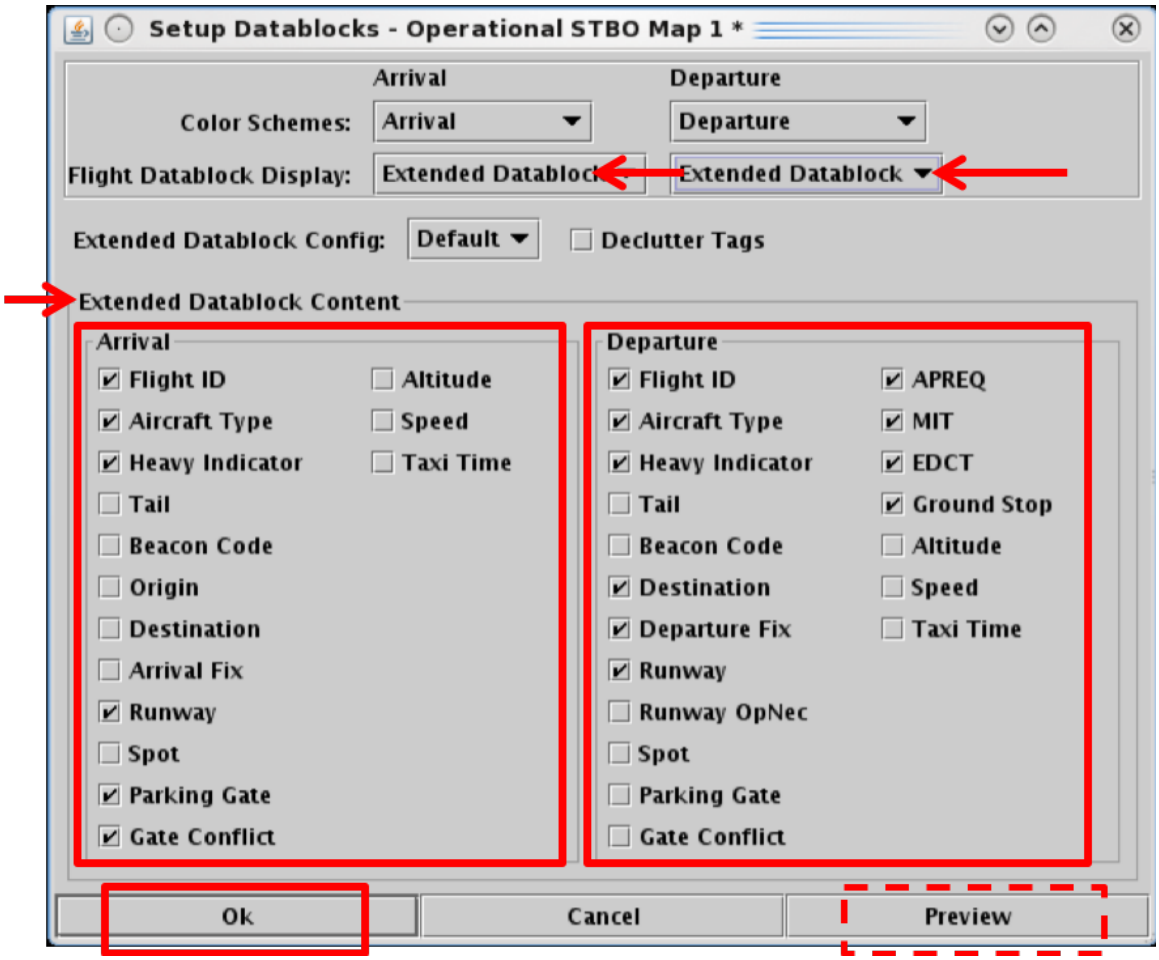


Figure 4.50. Datablock content for Arrival and Departure flights. "Extended Datablock" must be selected.

4.3.2 Toggle Arrival / Departure Datablocks

Use the "Toggle Arrival Datablocks" and "Toggle Departure Datablocks" icons on the Map Toolbar (Figure 4.41) to display no datablock, ID only datablock, or the extended datablock (Figure 4.51). The arrival datablock and departure datablock settings apply to all arrival/departure flights on the STBO Client map.

Figure 4.51. Toggle Datablocks: No Datablock (left), ID only Datablock (middle), or Extended Datablock (right).

4.3.3 Zoom In/Out

Use the "Zoom In" and "Zoom Out" buttons (Figure 4.41) to change the map zoom level.

4.3.4 Reset Zoom

Use "Reset Zoom" (Figure 4.41) to reset the map after changing the zoom level or panning the map.

4.3.5 Setup Range Rings

Use "Setup Range Rings" (Figure 4.41) to display distance markers on the map.

To display and modify Range Rings:

Step 1: Select the "Setup Range Rings" icon in the Map Toolbar (Figure 4.41).

Step 2: Select the "Show Range Rings" checkbox to view range rings on map (Figure 4.52).

Step 3 (Optional): Select the "Show Range Distance Labels" checkbox to display the distance (*nmi*) of each range ring (Figure 4.52).

Step 4: Click inside of the "Color of range rings" box to select the color of the range rings (for example, green in Figure 4.52).

Step 5: In the "Total Distance from Airport to Display Range Rings" field, enter the maximum distance, in *nmi,* to display range rings (for example, 90 *nmi* in Figure 4.52).

Step 6: In the "Distance Between Range Rings" field, enter distance (*nmi*) between the range rings (for example, 15 *nmi* in Figure 4.52).

Step 7: Select "Apply" (Figure 4.52).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: If needed, zoom out to view the range rings on the map (Figure 4.53).

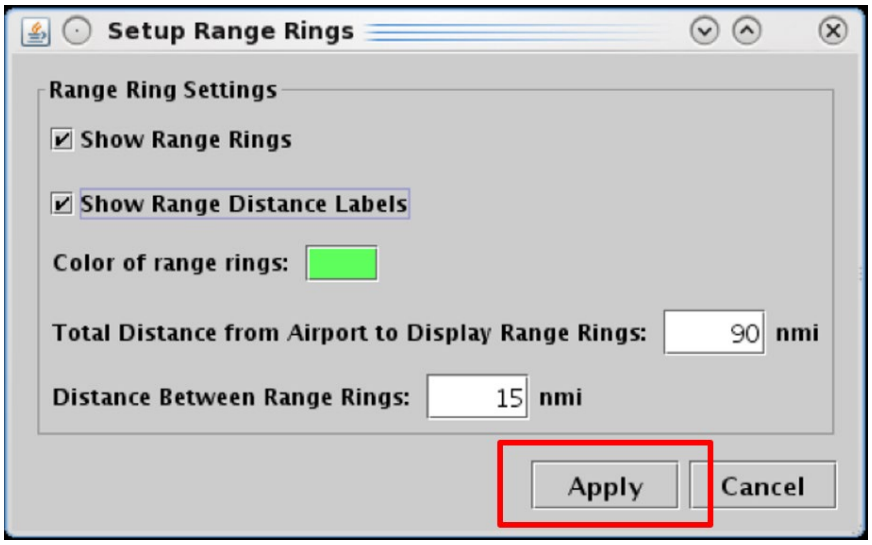


Figure 4.52. Map Toolbar: Setup Range Rings.

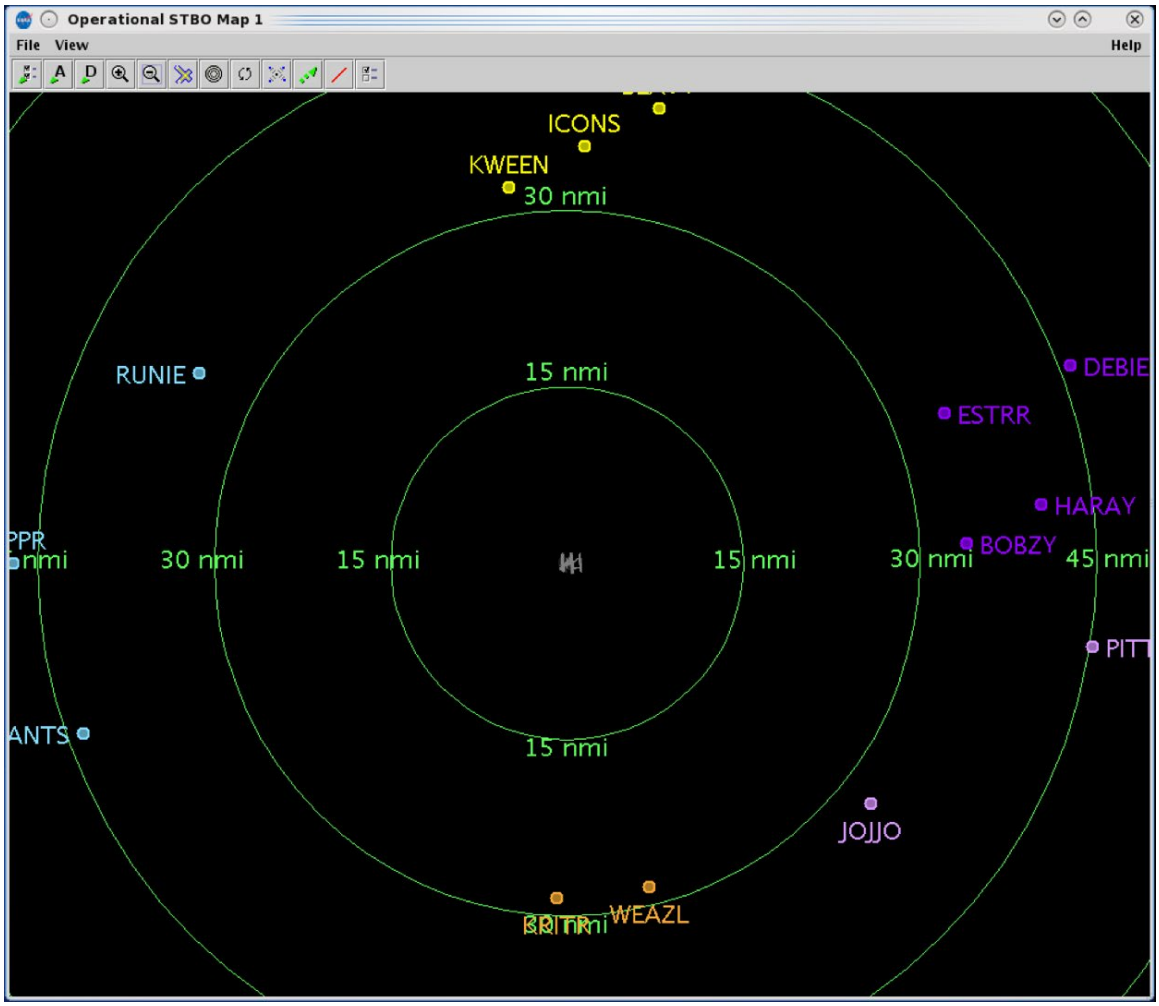


Figure 4.53. Map: Range Rings.

4.3.6 Rotate Map

Use the "Rotate Map" icon (Figure 4.41) to rotate the map clockwise 90, 180, or 270 degrees relative to the original orientation (Figure 4.54). Select 0 degrees to reset the map to its original position.

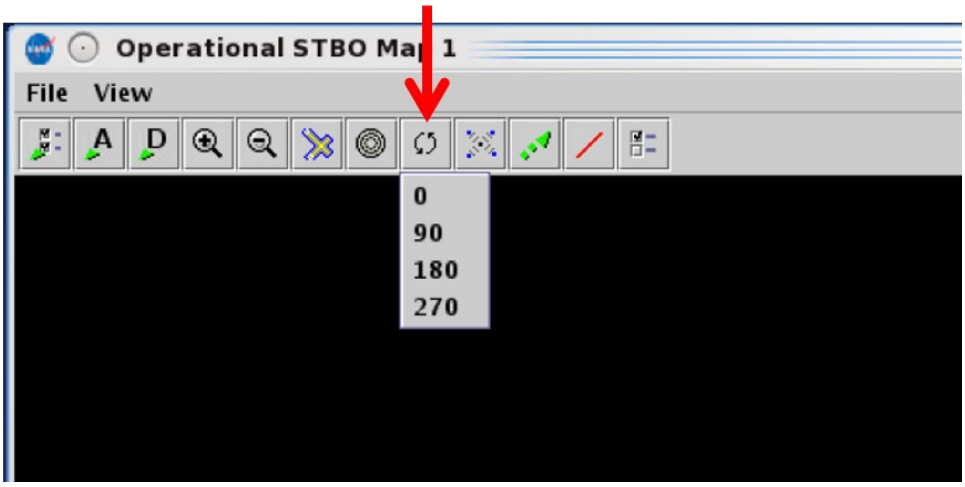


Figure 4.54. Map Toolbar: Rotate Map.

4.3.7 Setup Arrival/Departure Fixes and Airports

Select the "Setup Arrival/Departure Fixes and Airports" icon (Figure 4.41) to display Fixes, TRACON maps, and airport labels on the map.

4.3.7.1 Arrival Fix

Use the "Arrival Fix" tab to display Arrival Fixes and Procedures on the map.

To display Arrival Fix/Procedures on the map:

Step 1: Select the "Setup Arrival/Departure Fixes and Airports" icon in the Map Toolbar (Figure 4.41).

Step 2: Select the "Arrival Fix" tab (Figure 4.55).

Step 3: Check the "Show Arrival Fix/Procedures" box. The "Show Arrival Fixes" radio button populates automatically (Figure 4.55).

Step 4: In the "Spacing Between Distance Markers" field, enter distance (*nmi*) (for example, 10 *nmi* in Figure 4.55).

Step 5: In the "Number of Distance Markers Inside Arrival Fix" field, enter a number or use the up/down arrows to select a number (for example, 5 in Figure 4.55).

Step 6: In the "Number of Distance Markers Outside Arrival Fix" field, enter a number or use the up/down arrows to select a number (for example, 5 in Figure 4.55).

Step 7: Select "Apply" (Figure 4.55).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: If needed, zoom out to view on the map (Figure 4.56).

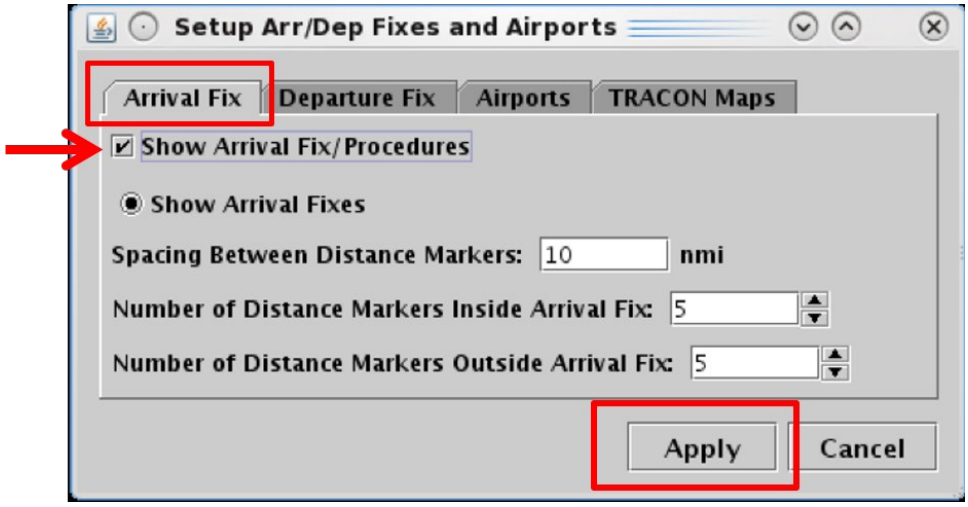


Figure 4.55. Map Setup Arrival/Departure Fixes and Airports: Arrival Fix tab.

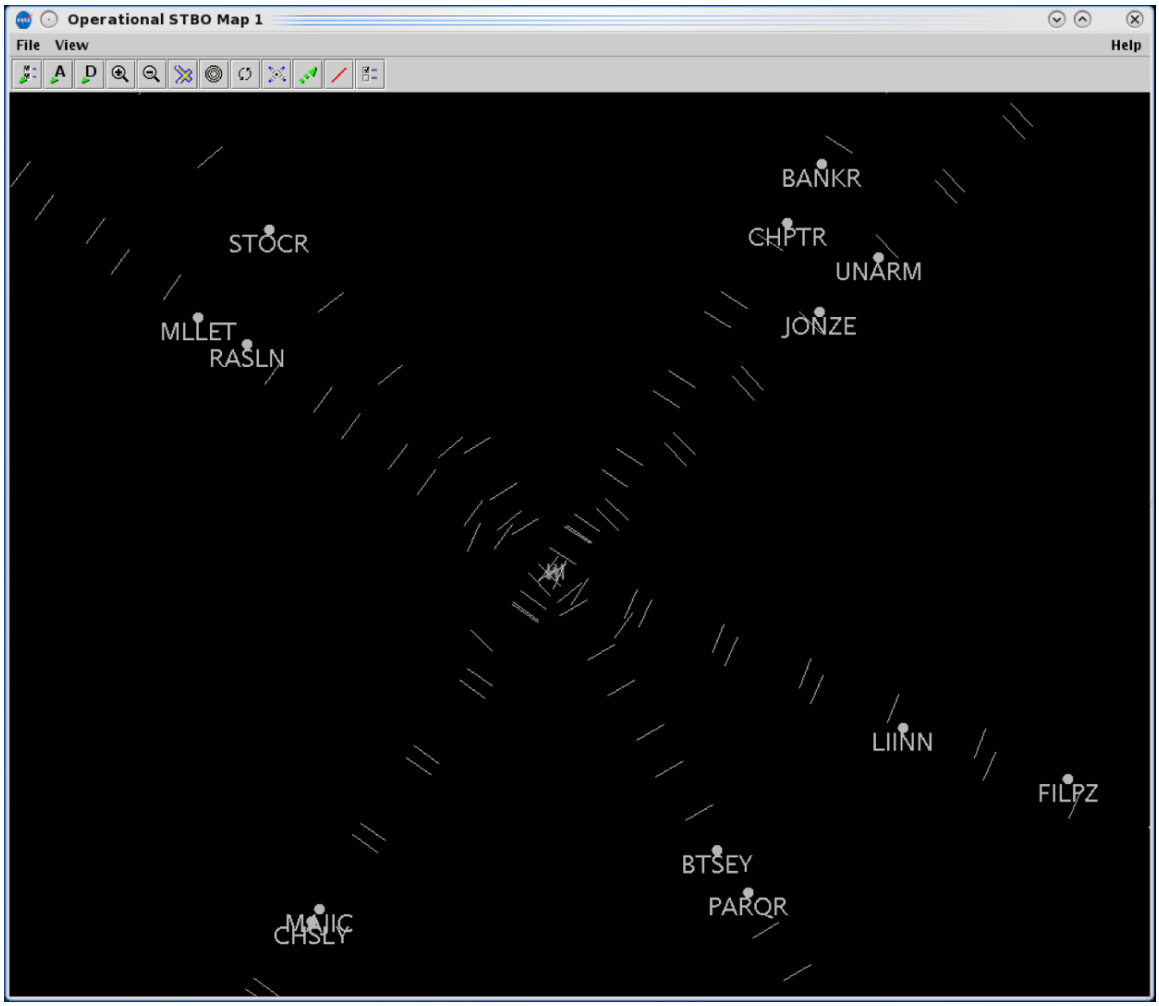


Figure 4.56. Map: Show Arrival Fix/Procedures.

4.3.7.2 Departure Fix

Use the “Departure Fix” tab to display Departure Fixes on the map.

To display Departure Fixes on the map:

Step 1: Select the "Setup Arrival/Departure Fixes and Airports" icon in the Map Toolbar (Figure 4.41).

Step 2: Select the "Departure Fix" tab (Figure 4.57).

Step 3: Check the "Show Departure Fixes" box (Figure 4.57).

Step 4: Select "Full Name" or "Abbreviation" (for example, "Full Name" in Figure 4.57).

Step 5: Select "Apply" (Figure 4.57).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: If needed, zoom out to view Departure Fixes on the map (Figure 4.58).

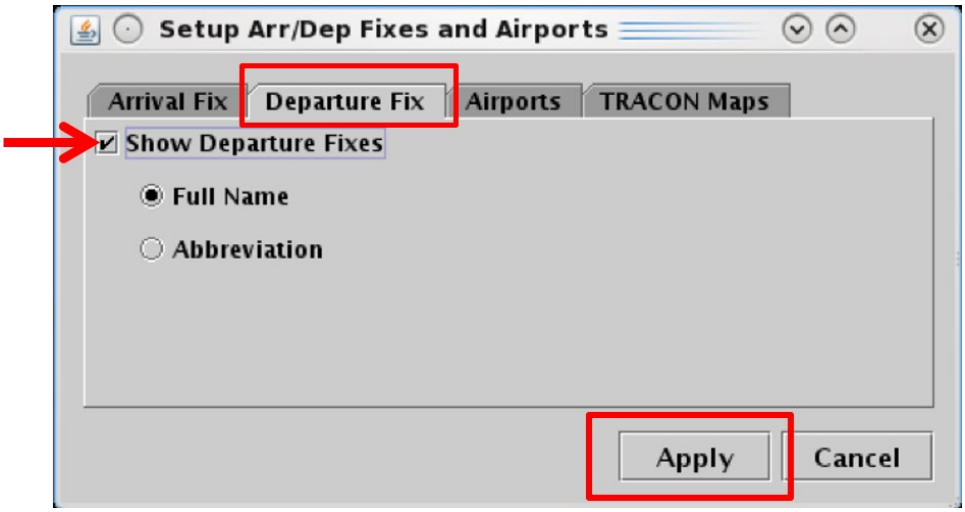


Figure 4.57. Map Setup Arrival/Departure Fixes and Airports: Departure Fix.

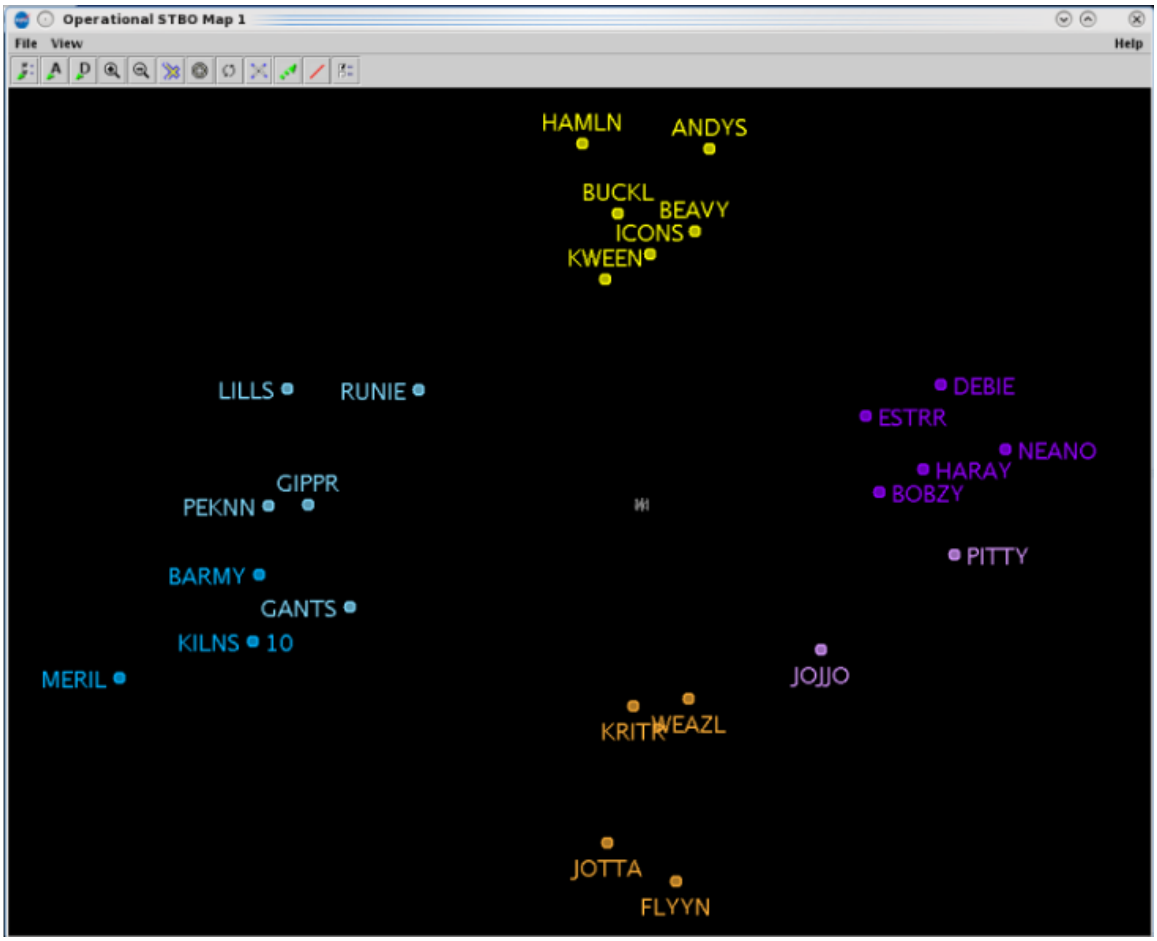


Figure 4.58. Map: Departure Fixes (full name).

4.3.7.3 Airports

Use the “Airports” tab to add airport labels to the map.

To display Airport labels on the map:

Step 1: Select the "Setup Arrival/Departure Fixes and Airports" icon in the Map Toolbar (Figure 4.41).

Step 2: Select the "Airports" tab (Figure 4.59).

Step 3: Check the "Show Airports" box (Figure 4.59).

Step 4: Select the "Add Airports" button (Figure 4.59).

Step 5: In the "Add Airport" window, select an airport by checking the box or by entering the 3-letter airport code in the text field. Separate multiple entries with a comma, but no space. In Figure 4.60, for example, CAE and GSP airports are selected and CLT is entered in the text field.

Step 6: Select "Ok" (Figure 4.60).

Step 7: Select "Apply" (Figure 4.61).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: If needed, zoom out to view other airports on the map (Figure 4.62).

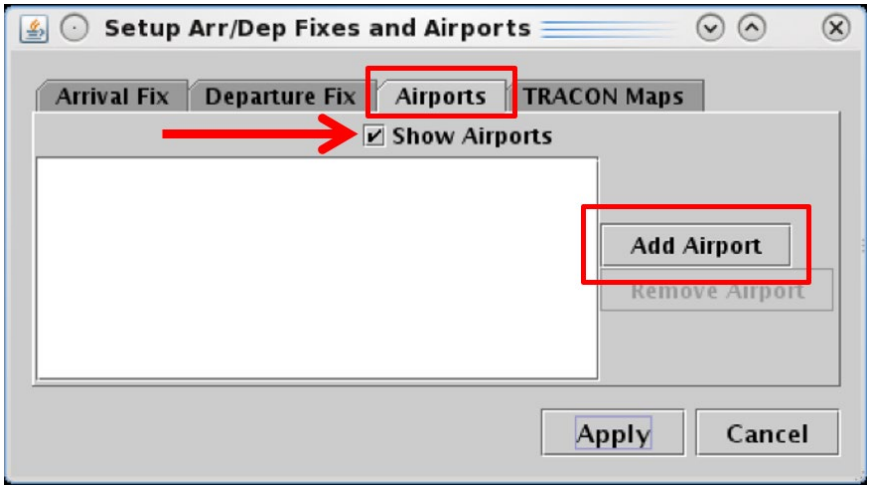


Figure 4.59. Map Setup Arrival/Departure Fixes and Airports: Airports tab.

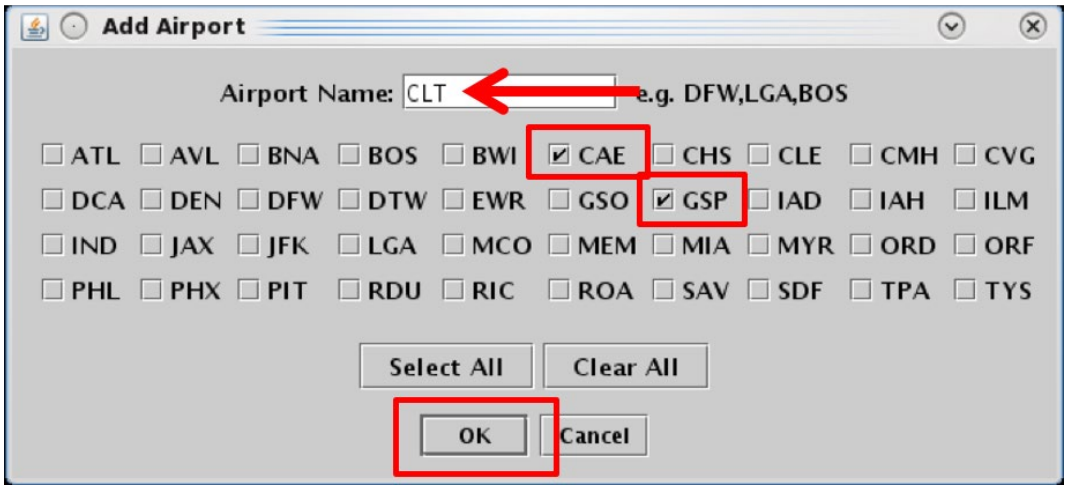


Figure 4.60. Add Airport. In this example, CAE and GSP are selected and CLT is entered in the text field.

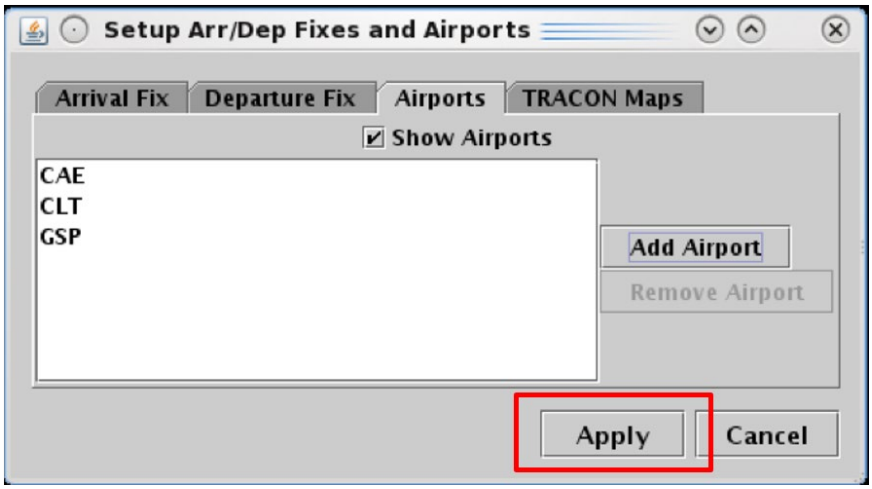


Figure 4.61. Airport Tab: Select "Apply" to view labels on the map.

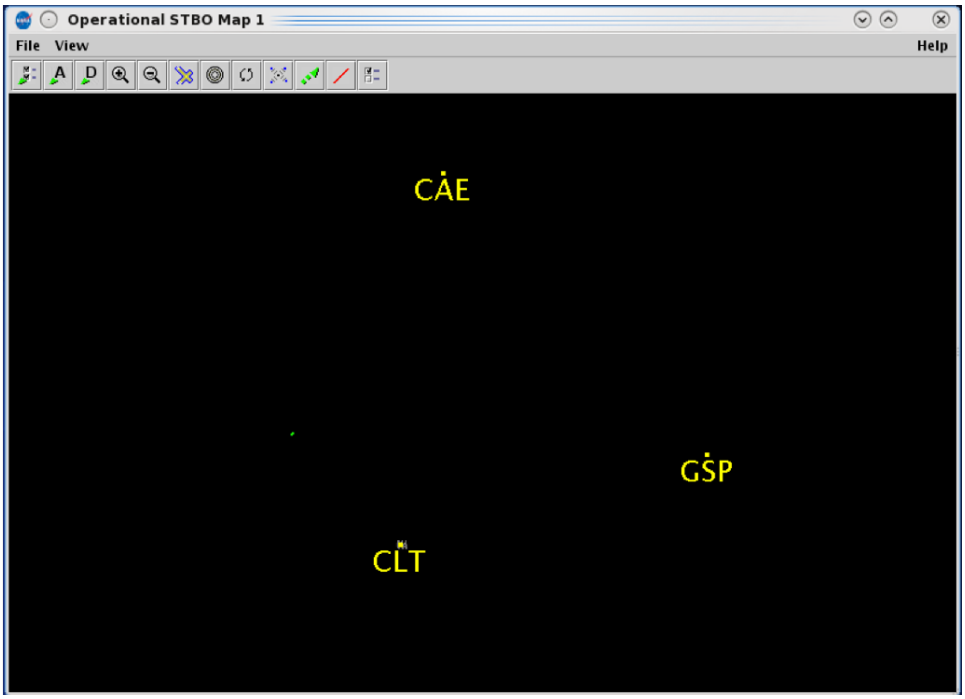


Figure 4.62. Map: Airport labels. In this example, CLT, CAE, and GSP airports are labeled.

4.3.7.4 TRACON Maps

Use the "TRACON Maps" tab to add TRACON maps to the STBO map display.

To display TRACON maps on the map:

Step 1: Select the "Setup Arrival/Departure Fixes and Airports" icon in the Map Toolbar (Figure 4.41).

Step 2: Select the "TRACON Maps" tab (Figure 4.63).

Step 3: Select the "Add TRACON Map" button (Figure 4.63).

Step 4: Select a map from the dropdown menu (for example, "CLT_S" in Figure 4.64).

Step 5: Click inside of the color box to select a color for the TRACON map (for example, yellow in Figure 4.64).

Note: More than one TRACON map can be displayed at a time. Add additional TRACON maps by repeating the above steps.

Step 6: Select "Apply" (Figure 4.64).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: If needed, zoom out to view the TRACON map (Figure 4.65).

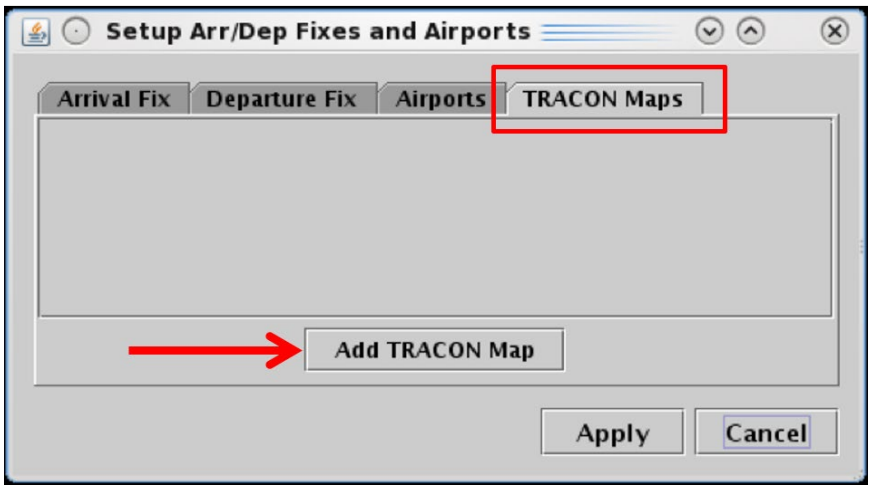


Figure 4.63. Map Setup Arrival/Departure Fixes and Airports: TRACON Maps tab.

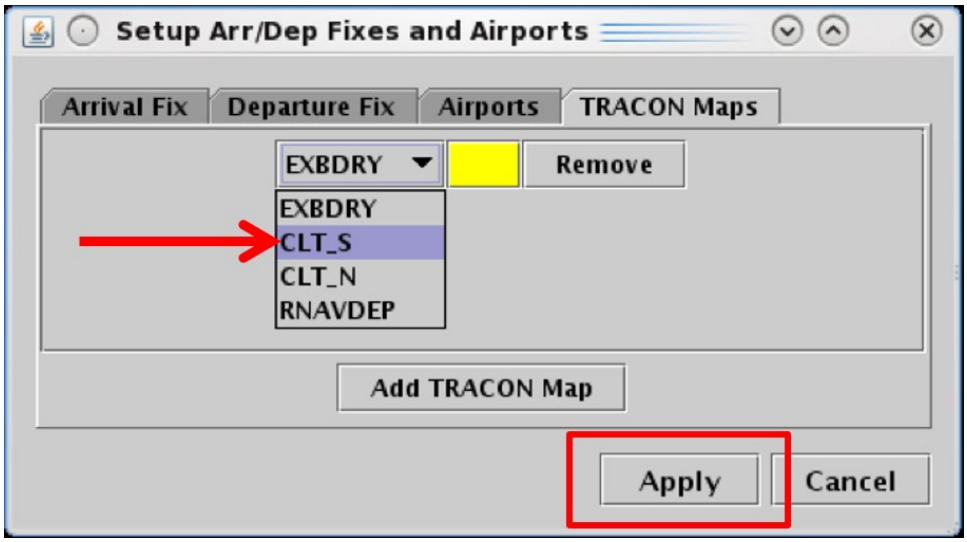


Figure 4.64. Select map from dropdown menu.

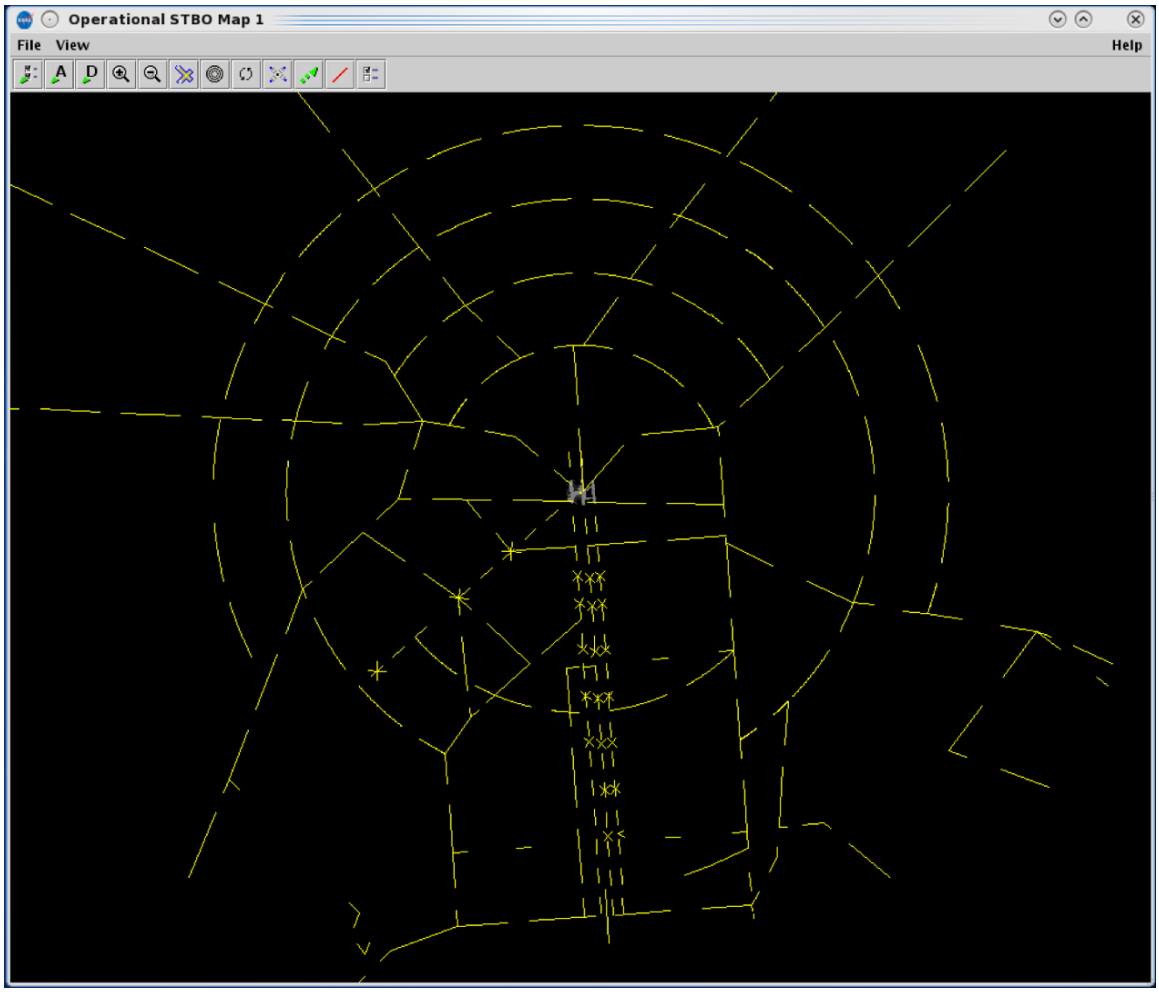


Figure 4.65. Map: TRACON map.

4.3.8 Setup Target Trails

Select the “Setup Target Trails” icon (Figure 4.41) to show/hide flight target trails. Target trails can help indicate the flight’s direction of movement on the surface or in the air.

To display Target Trails on the map:

Step 1: Select the "Setup Target Trails" icon in the Map Toolbar (Figure 4.41).

Step 2: Check the "Show Target Trails" box (Figure 4.66).

Step 3: In the "Maximum length of trails" field, enter a time, in seconds (for example, 30 seconds in Figure 4.66).

Step 4: In the "Time interval between trail positions" field, enter a time, in seconds (for example, 5 seconds in Figure 4.66).

Step 5: Select "Apply" (Figure 4.66).

Alternatively: Select "Cancel" to close the window without applying changes.

Note: Target trails are displayed for all flights on the STBO map, both on the surface and in the air (Figure 4.67).

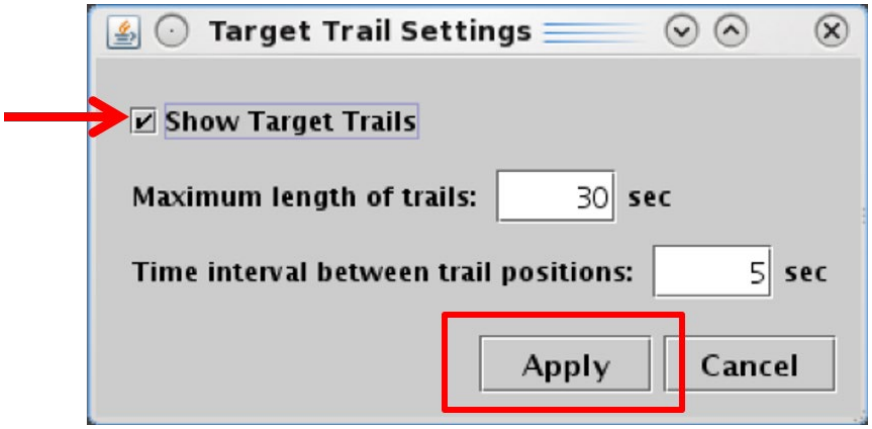


Figure 4.66. Map Toolbar: Setup Target Trails.

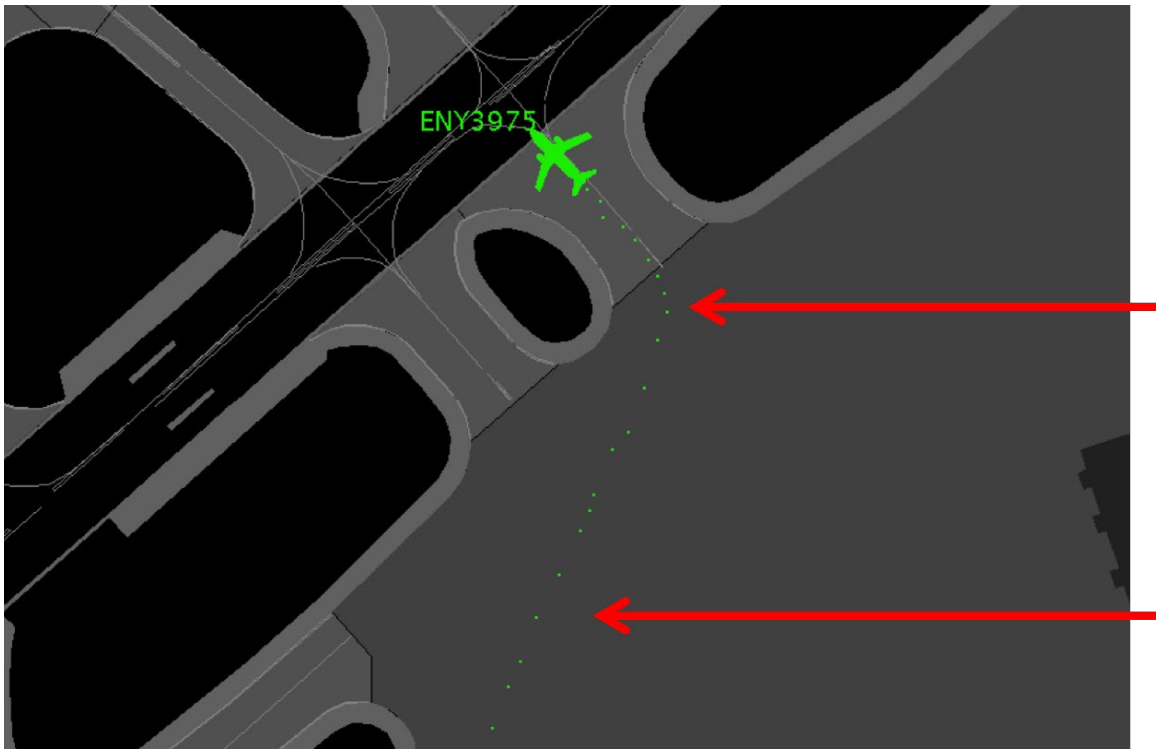


Figure 4.67. Target Trails.

4.3.9 Open/Close Taxiway Links

Select the "Open/Close Links" icon (Figure 4.41) to enter taxiway closure information into the STBO Client.

To Close Taxiways (links):

***Step 1*:** Select the "Open/Close Links" icon in the Map Toolbar (Figure 4.41). All selectable taxiway links are shown in magenta. The brown background indicates that the map is currently in Open/Close Links mode (Figure 4.68).

Step 2: Click and drag the mouse to select taxiways (links). Selected links are shown in yellow (Figure 4.69).

Step 3: At the prompt, "Close Links Highlighted in Yellow," select "Okay" to confirm the taxiway closure and exit Open/Close Links mode (Figure 4.70).

Note: Closed taxiways are displayed in red (Figure 4.71).

Alternatively: Select "Cancel" to undo the selection.

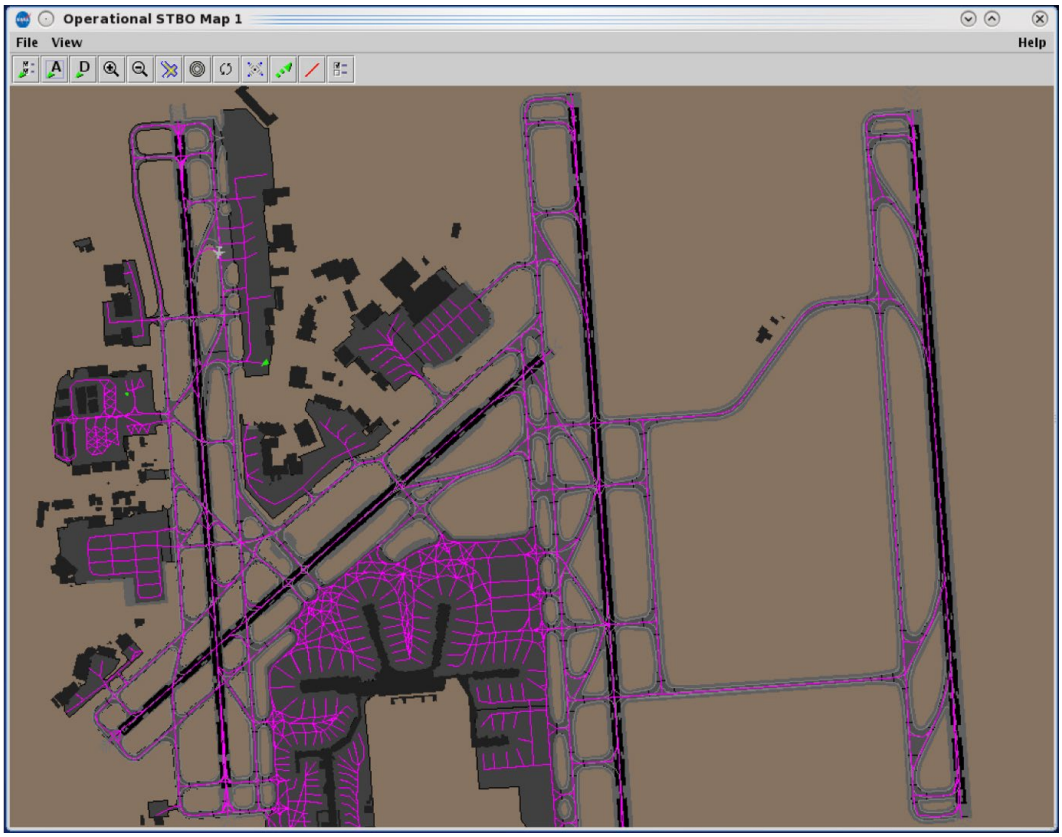


Figure 4.68. Open/Close Links: Selectable taxiways (links) are shown in magenta. The brown background indicates that the map is currently in Open/Close Links mode.

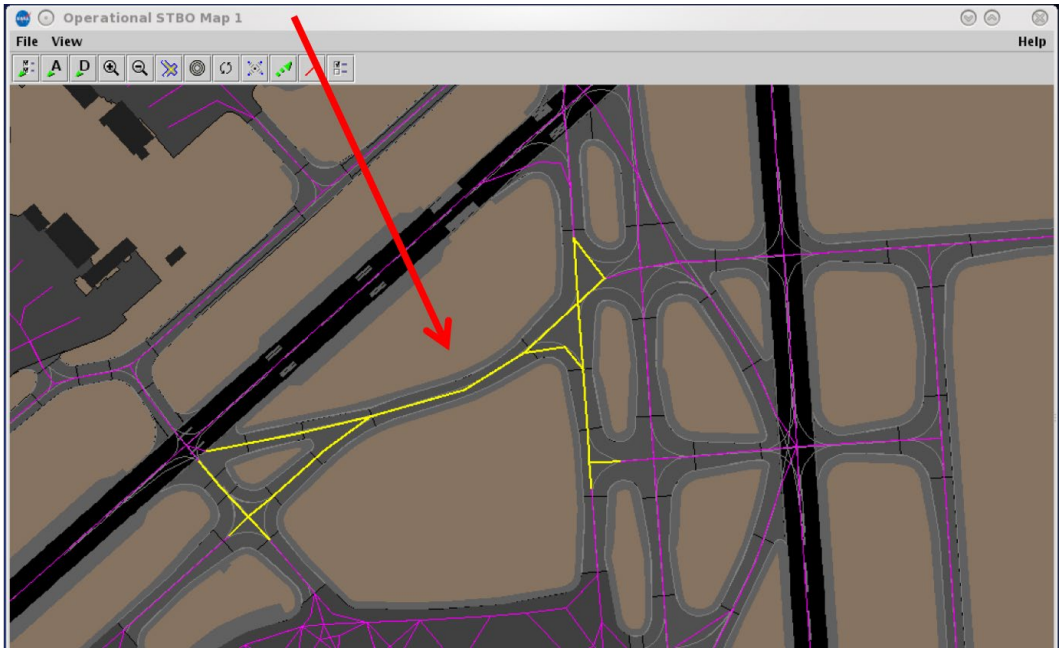


Figure 4.69. Open/Close Links: Selected taxiways are shown in yellow.

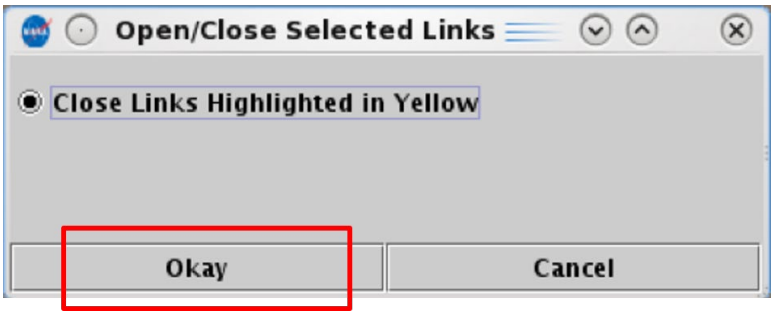


Figure 4.70. Open/Close Links: Confirm closed taxiways.

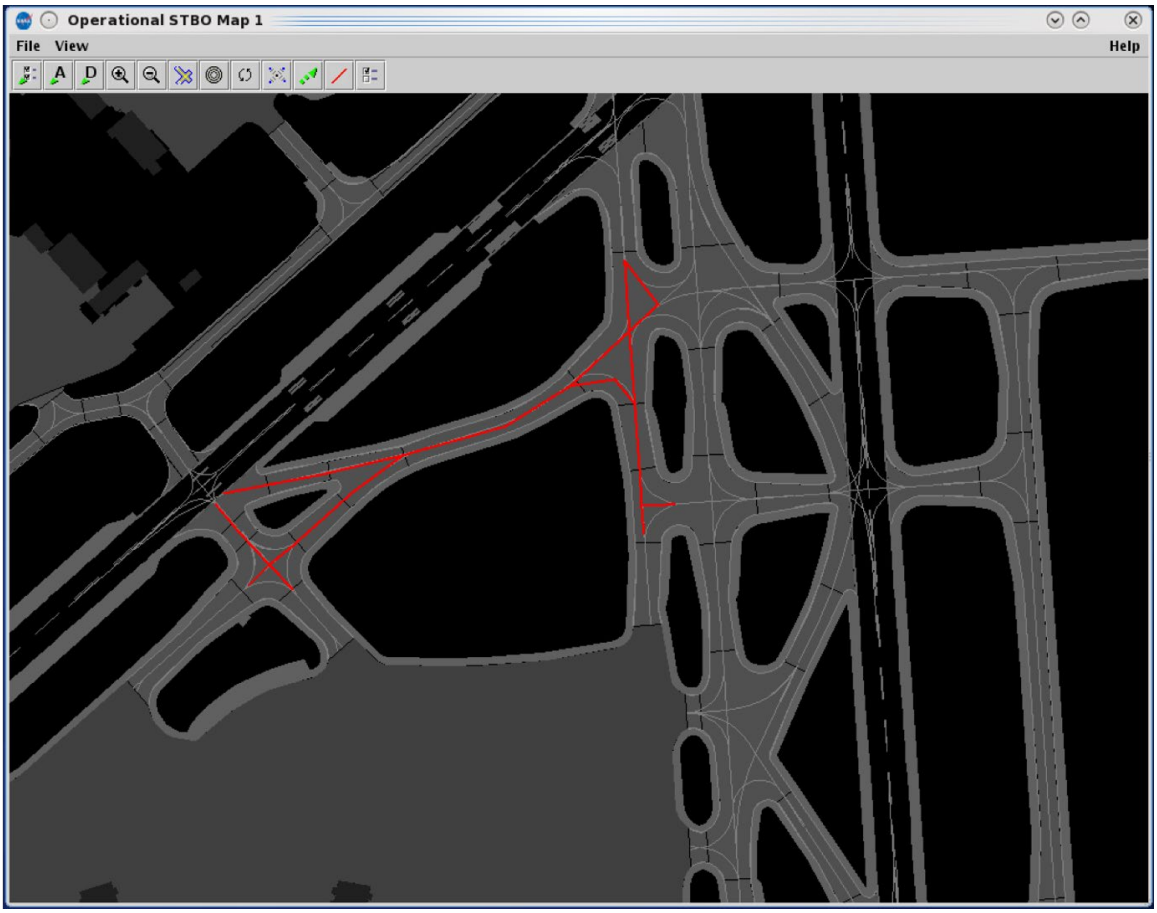


Figure 4.71. Open/Close Links: Closed taxiways shown in red.

To Open Taxiways (links):

***Step 1*:** Select the "Open/Close Links" icon in the Map Toolbar (Figure 4.41). Previously closed taxiways are shown in red (Figure 4.72). The brown background indicates that the map is currently in Open/Close Links mode (Figure 4.72).

Step 2: Click and drag the mouse over the closed taxiway links to select them. Selected taxiways are now shown in blue (Figure 4.73).

Step 3: At the prompt, "Open Links Highlighted in Blue," select "Okay" to confirm the taxiway opening and exit Open/Close Links mode (Figure 4.74).

Alternatively: Select "Cancel" to undo the selection.

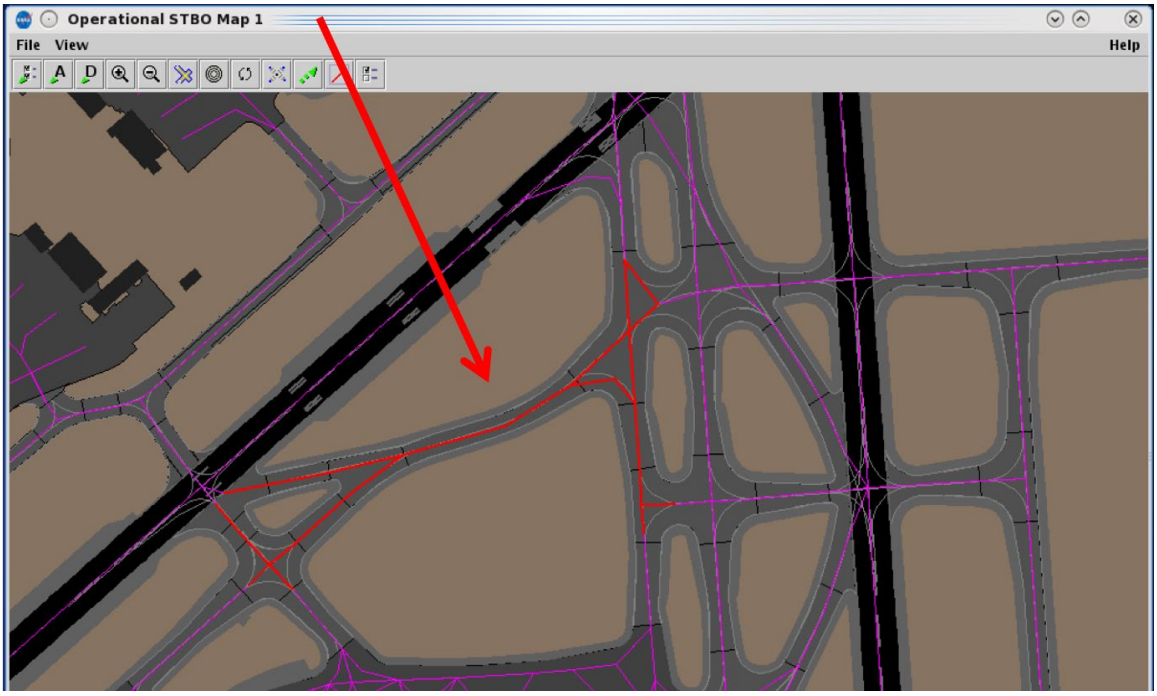


Figure 4.72. Open/Close Links: Previously closed taxiways are displayed in red. The brown background indicates that the map is currently in Open/Close Links mode.

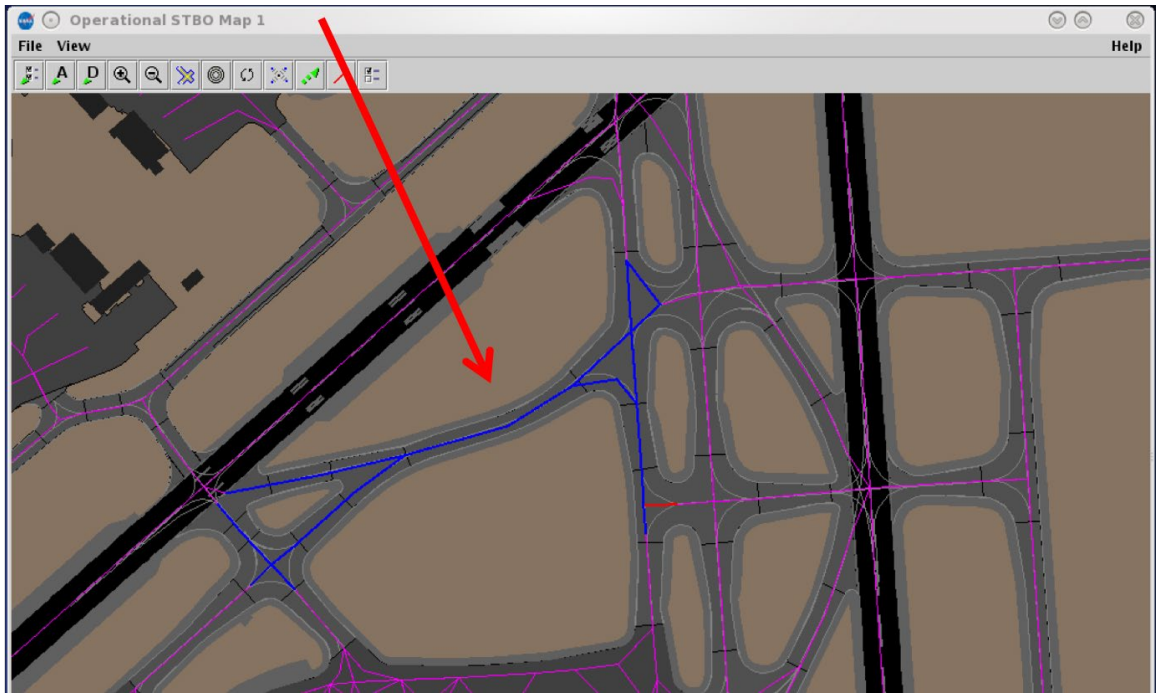


Figure 4.73. Open/Close Links: Selected taxiways are shown in blue. The brown background indicates that the map is currently in Open/Close Links mode.

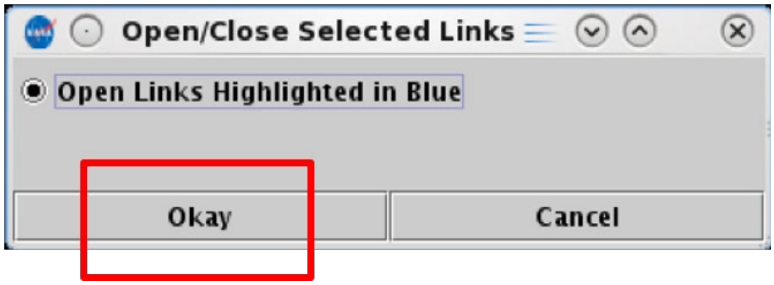


Figure 4.74. Open/Close Links: Confirm opened taxiways.

4.3.10 Setup Map

Select the “Setup Map” icon (Figure 4.41) to display labels and features on the map and assign colors to them.

To display labels and features on the Map (Setup Map):

***Step 1*:** Select the "Setup Map" icon in the Map Toolbar (Figure 4.41).

Step 2: Check the box next to the display element (for example, "Ramp Spots" is selected in Figure 4.75).

Step 3 (Optional): Click inside of the color box to open the color selection window for that data element (for example, cyan is selected in Figure 4.75). Or, use the default color for that element.

Step 4: Select "Ok" (Figure 4.75).

Alternatively: Select "Cancel" to close the Setup Map window without saving.

Note: If needed, zoom in/out or adjust the map to view the data element (for example, Ramp Spots are shown in Figure 4.76).

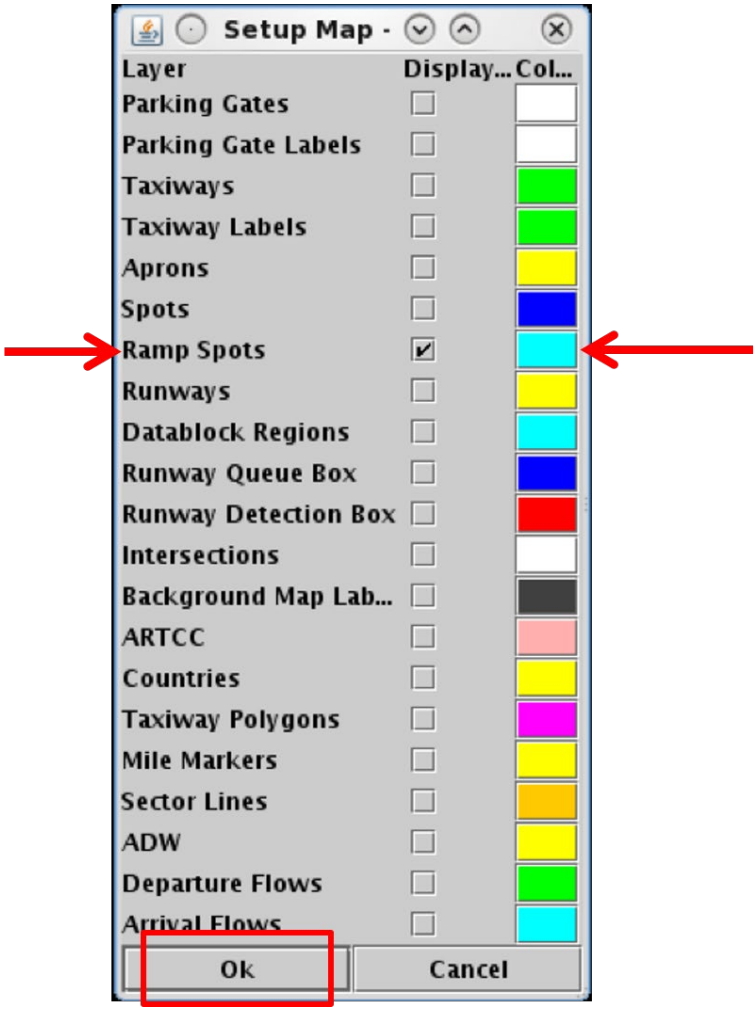


Figure 4.75. Setup Map menu. In this example, Ramp Spots is selected.

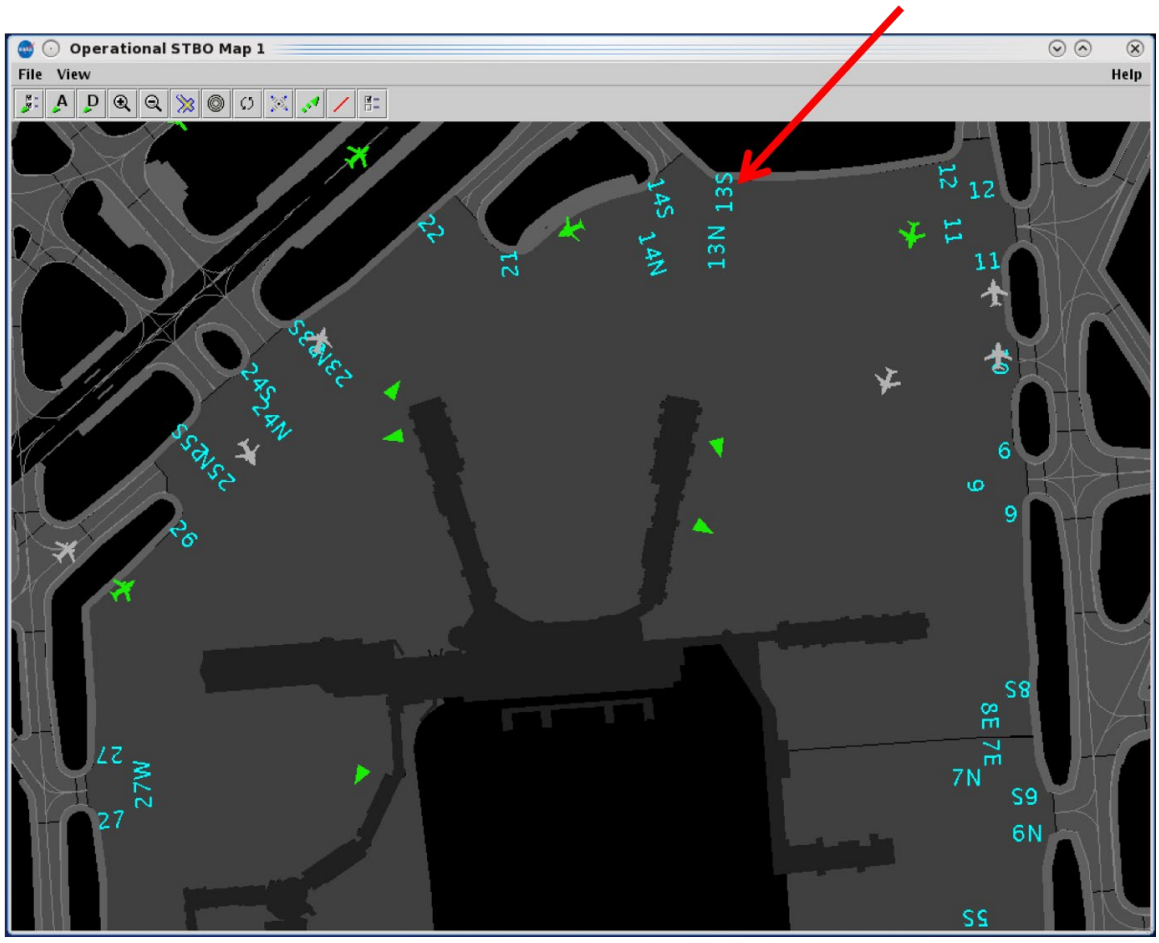


Figure 4.76. Ramp Spot numbers are displayed in cyan.

4.4 Map: Other Information

Other flight and airport information is also displayed on the map.

4.4.1 Tarmac Rule / Long On Board

Tarmac Rule / Long On Board (LOB) information is displayed on the map using a colored disc behind the flight icon.

- For **departures**, the LOB timer starts at pushback and is continuously computed as current time minus the Actual Off-Block Time (AOBT) until the departure takes off.
- For **arrivals**, the LOB timer starts at touchdown and is continuously computed as the current time minus the Actual Landing Time (ALDT) until the arrival is in the gate.

Three disc colors are used to indicate Long On Board time: yellow, orange, and red (Figure 4.77). Note, the color of the airplane symbol itself is determined by the selected color scheme and is *unrelated* to the LOB indicators. In the example below, the aircraft symbols are blue and yellow.

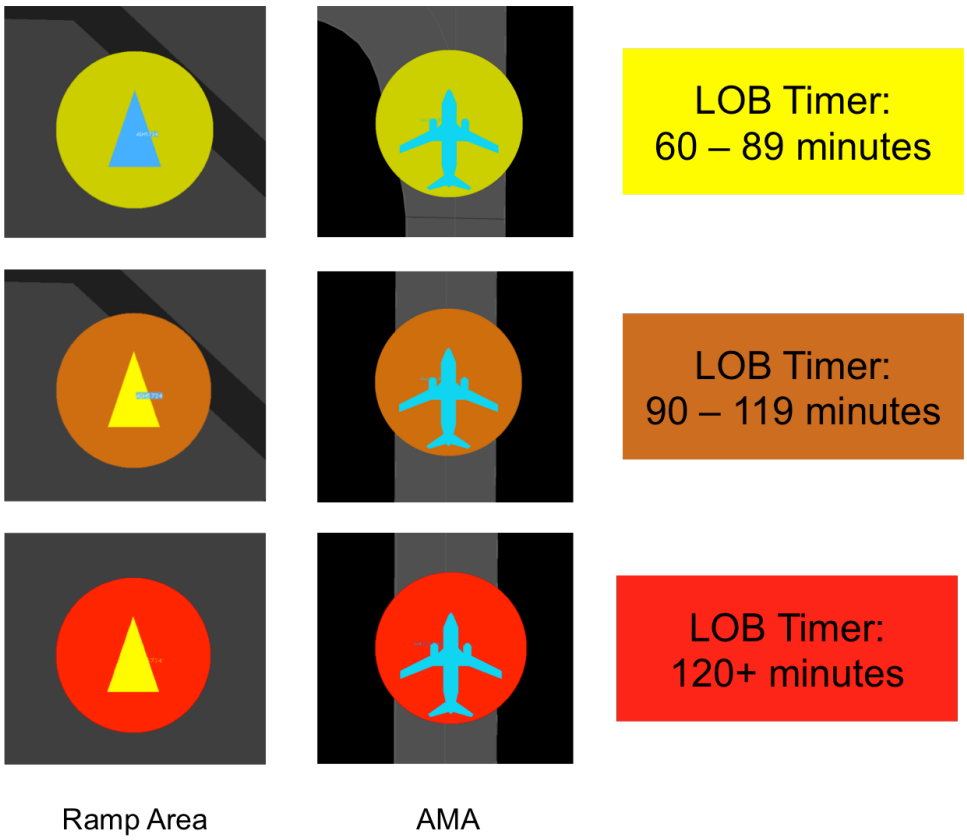


Figure 4.77. Map: Long On Board indicators (yellow, orange, and red discs).

4.4.2 Runway Closure

When a runway is closed, it is displayed in red with a white "X" at each end (Figure 4.78). See Section 3.1.7 for a description of entering runway closures in the STBO Client.

Figure 4.78. Closed runways are displayed in red with a white "X" at each end.

4.5 Map: Right-Click Menu

Right-click menu options are described in Section 6.9.

5 STBO Client: Tables

Tables are used to display information about individual flights, aircraft, and departure fixes. Three tables are described in this section:

- Flights Table (Section 5.1)
- Aircraft Table (Section 5.2)
- Departure Fix Status Table (Section 5.3)

5.1 Flights Table

All known departures and arrivals within the next 8 hours are displayed in the Flights Table (Figure 5.1). More than one Flights Table can be open at the same time and each can be configured independently of the others. The Flights Table is updated every minute.

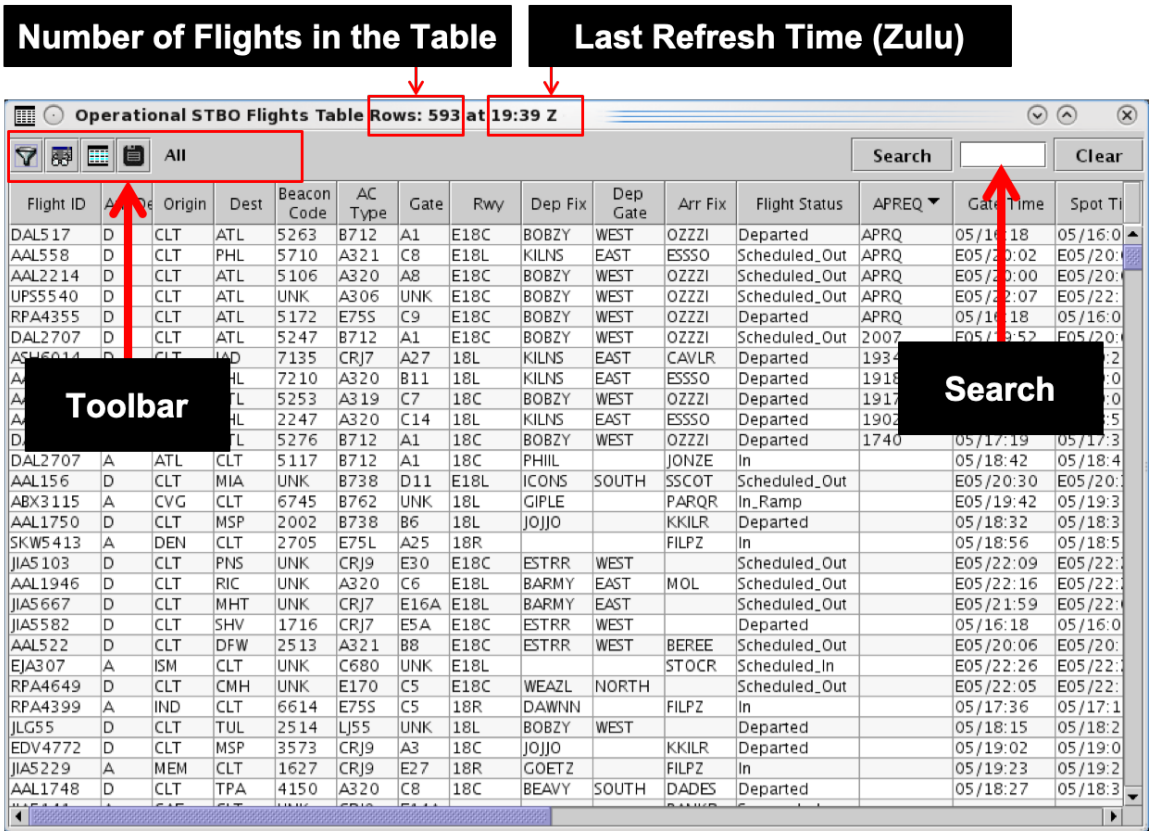


Figure 5.1. Flights Table.

Use the "Create" menu on the Toolbar to create a new Flights Table (see Section 3.2). Use the "Show Window" menu on the Toolbar to bring a Flights Table to the front of other windows (see Section 3.3).

5.1.1 Flights Table: Select a Flight

Select a flight in the Flights Table to highlight the flight throughout the STBO Client user interface.

To select a flight in the Flights Table:

Step 1: To select a flight, click on a row in the table. Once selected, the row is highlighted in cyan (e.g., JIA5286 in Figure 5.2).

Note: When a flight is selected in the Flights Table (e.g., JIA5286), it is also highlighted on the:

- ***Timeline (Figure 5.3)***
- ***Map (Figure 5.4)***

Alternatively: Click the same row again to deselect the flight.

Note: Hold the "Shift" key to select multiple flights at the same time.

Flight ID	Origin	Dest	AC Type	Rwy	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix
AAL127	SMF	CLT	A321	18R	05/18:57	In	C8	05/19:04	22W	RALEY
JIA5135	BWI	CLT	CRJ9	18L	05/18:49	In	E19	05/18:55	27E	GLANC
PDT4827	ROA	CLT	E145	18L	05/18:55	In	E2	05/19:07	27E	
PDT4737	CLT	MOB	E145	E18C	E05/22:27	Scheduled_Out	E38B	E05/22:03	9W	ESTRR
JIA5286	CLT	BWI	CRJ9	18L	E05/21:04	In_Queue	E16	05/20:40	26S	KILNS
JIA5079	CLT	CYYZ	CRJ9	18C	05/20:51	Departed	E11	05/20:40	9W	KRITR
AAL2902	CLT	LGA	A319	18L	05/17:32	Departed	C19	05/17:13	26S	BARMY
AAL1961	AUS	CLT	B738	18R	05/17:14	In	B6	05/17:30	22W	ILEXY
AAL1017	CLT	ORD	A321	E18C	05/20:40	Departed	B7	05/20:40	9W	JOJJO
AAL1087	CLT	STL	B738	18C	05/18:43	Departed	B12	05/18:33	9W	JOJJO
PDT4853	TYS	CLT	E145			Suspended	E10			
N902FH	FSM	CLT	C56X	18R	05/21:01	On	UNK	E05/21:13	GA_2	
AAL2619	CLT	JAX	B738	E18L	E05/23:13	Scheduled_Out	B11	E05/23:00	26S	ICONS
SWA5392	CLT	BWI	B737	E18L	E05/22:31	Scheduled_Out	A24	E05/22:10	26S	KILNS
AAL1925	LAX	CLT	A321	E18R	E05/21:20	Enroute_Arr	C10	E05/21:33	11W	
PDT4726	RIC	CLT	E145	18L	05/19:15	In	E10	05/19:25	28E	LYH
CNS1923	AVL	CLT	PC12	18R	05/19:25	In	UNK	05/19:34	GA_2	

Figure 5.2. Flights Table: Selected row is highlighted in cyan (e.g., JIA5286).

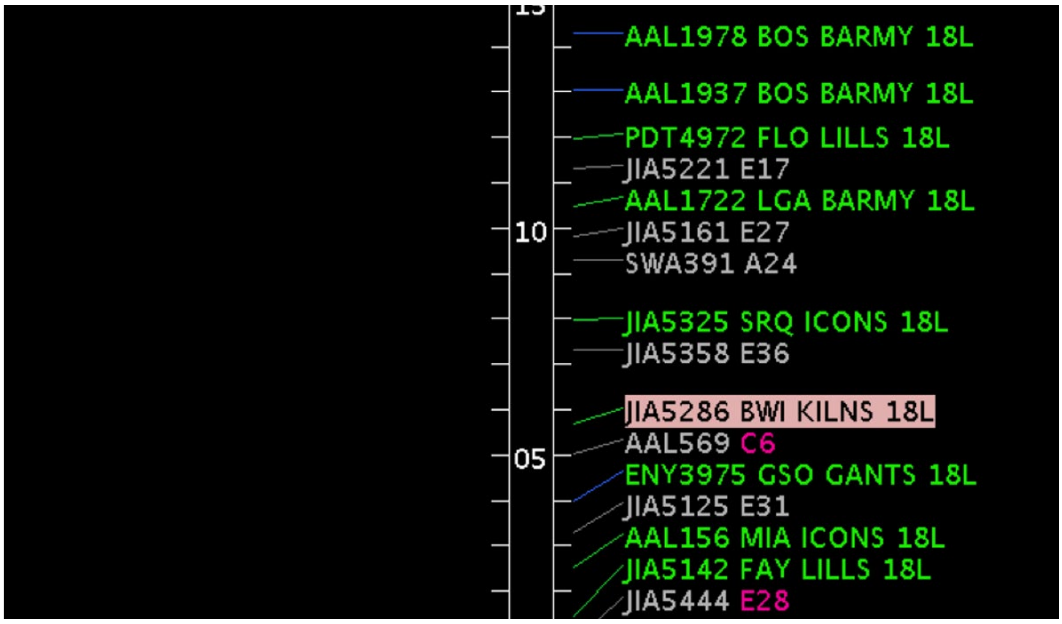


Figure 5.3. Selected flight highlighted on the Timeline (e.g., JIA5286).

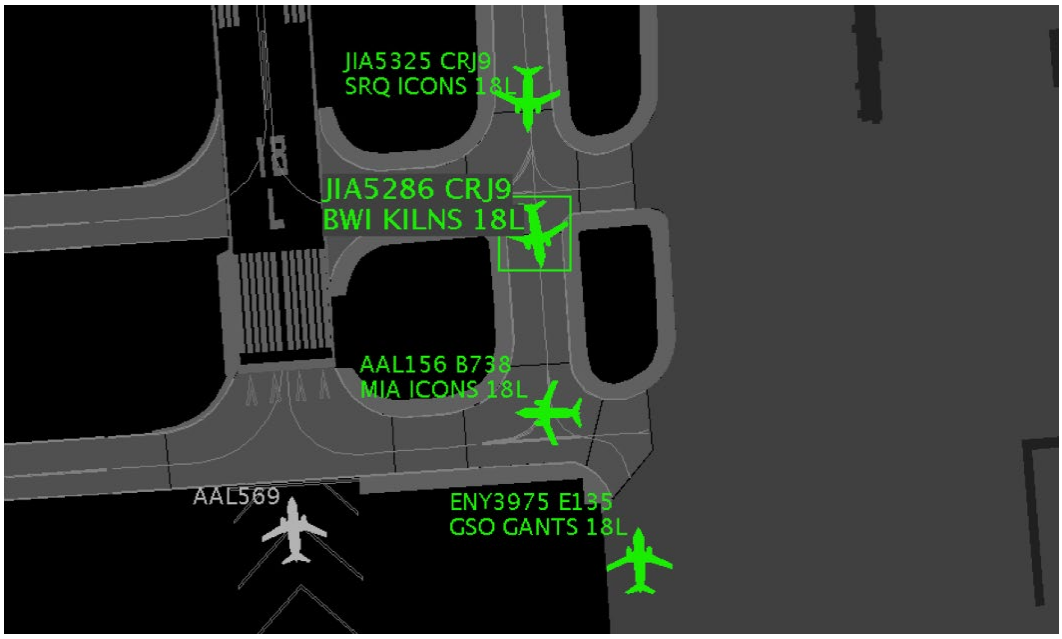


Figure 5.4. Selected flight highlighted on the Map (e.g., JIA5286).

5.1.2 Flights Table: Sort

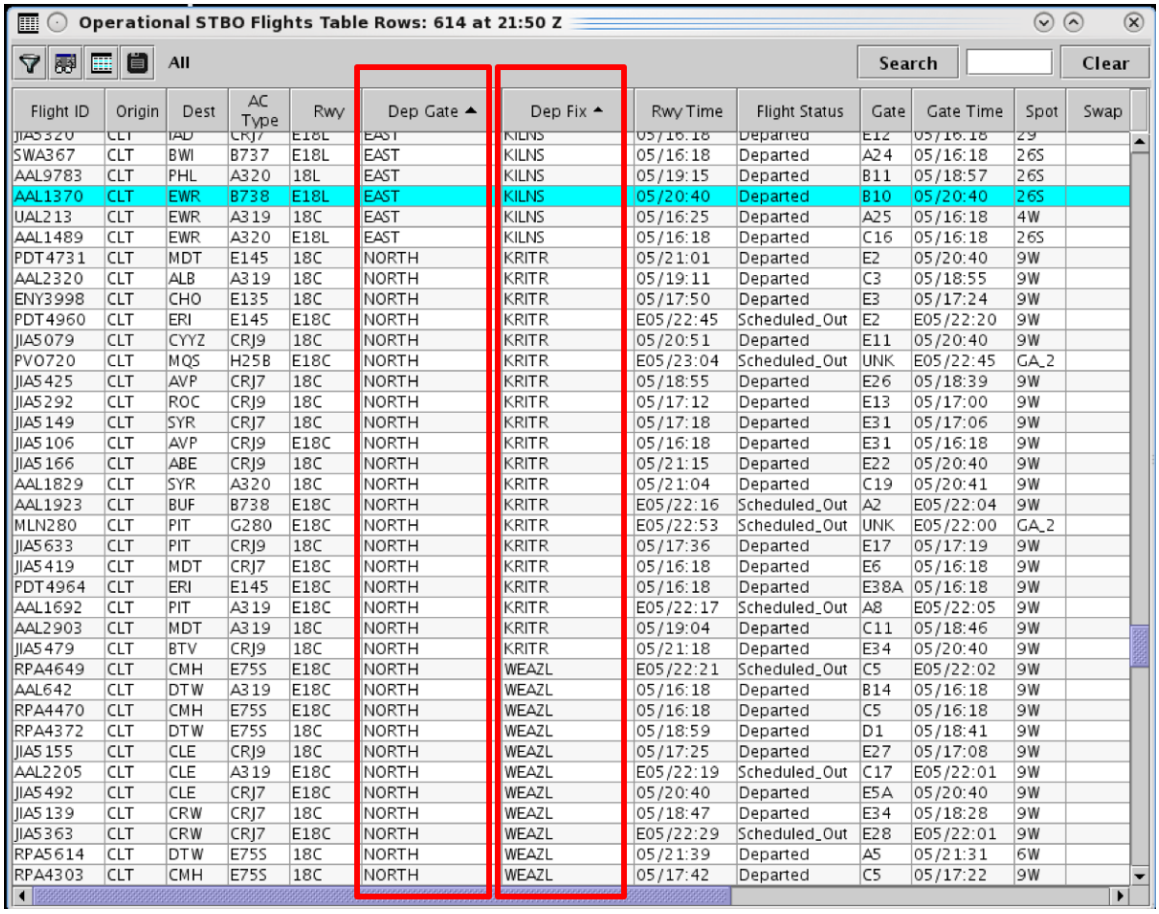
The Flights Table can be sorted by selecting column headers.

To Sort the Flights Table:

Step 1: Select a column header to sort by the data in that column.

- Click *once* in the column header to sort in *ascending* order. An up-arrow is displayed (e.g., "Dep Gate" in Figure 5.5).
- Click *twice* in the column header to sort in *descending* order. A down-arrow is displayed.
- Click a *third* time to cancel the sort.

Step 2 (Optional): Use the "Ctrl" key to add a secondary sort. While holding the "Ctrl" key, click on another column header. A *smaller* arrow is displayed in the second column (e.g., "Dep Fix" in Figure 5.5).



Flight ID	Origin	Dest	AC Type	Rwy	Dep Gate ▲	Dep Fix ▲	Rwy Time	Flight Status	Gate	Gate Time	Spot	Swap
JIA5320	CLT	IAD	CRJ7	E18L	EAST	KILNS	05/16:18	Departed	E12	05/16:18	29	
SWA367	CLT	BWI	B737	E18L	EAST	KILNS	05/16:18	Departed	A24	05/16:18	26S	
AAL9783	CLT	PHL	A320	18L	EAST	KILNS	05/19:15	Departed	B11	05/18:57	26S	
AAL1370	CLT	EWR	B738	E18L	EAST	KILNS	05/20:40	Departed	B10	05/20:40	26S	
UAL213	CLT	EWR	A319	18C	EAST	KILNS	05/16:25	Departed	A25	05/16:18	4W	
AAL1489	CLT	EWR	A320	E18L	EAST	KILNS	05/16:18	Departed	C16	05/16:18	26S	
PDT4731	CLT	MDT	E145	18C	NORTH	KRITR	05/21:01	Departed	E2	05/20:40	9W	
AAL2320	CLT	ALB	A319	18C	NORTH	KRITR	05/19:11	Departed	C3	05/18:55	9W	
ENY3998	CLT	CHO	E135	18C	NORTH	KRITR	05/17:50	Departed	E3	05/17:24	9W	
PDT4960	CLT	ERI	E145	E18C	NORTH	KRITR	E05/22:45	Scheduled_Out	E2	E05/22:20	9W	
JIA5079	CLT	CYYZ	CRJ9	18C	NORTH	KRITR	05/20:51	Departed	E11	05/20:40	9W	
PVO720	CLT	MQS	H25B	E18C	NORTH	KRITR	E05/23:04	Scheduled_Out	UNK	E05/22:45	GA_2	
JIA5425	CLT	AVP	CRJ7	18C	NORTH	KRITR	05/18:55	Departed	E26	05/18:39	9W	
JIA5292	CLT	ROC	CRJ9	18C	NORTH	KRITR	05/17:12	Departed	E13	05/17:00	9W	
JIA5149	CLT	SYR	CRJ7	18C	NORTH	KRITR	05/17:18	Departed	E31	05/17:06	9W	
JIA5106	CLT	AVP	CRJ9	E18C	NORTH	KRITR	05/16:18	Departed	E31	05/16:18	9W	
JIA5166	CLT	ABE	CRJ9	18C	NORTH	KRITR	05/21:15	Departed	E22	05/20:40	9W	
AAL1829	CLT	SYR	A320	18C	NORTH	KRITR	05/21:04	Departed	C19	05/20:41	9W	
AAL1923	CLT	BUF	B738	E18C	NORTH	KRITR	E05/22:16	Scheduled_Out	A2	E05/22:04	9W	
MLN280	CLT	PIT	G280	E18C	NORTH	KRITR	E05/22:53	Scheduled_Out	UNK	E05/22:00	GA_2	
JIA5633	CLT	PIT	CRJ9	18C	NORTH	KRITR	05/17:36	Departed	E17	05/17:19	9W	
JIA5419	CLT	MDT	CRJ7	E18C	NORTH	KRITR	05/16:18	Departed	E6	05/16:18	9W	
PDT4964	CLT	ERI	E145	E18C	NORTH	KRITR	05/16:18	Departed	E38A	05/16:18	9W	
AAL1692	CLT	PIT	A319	E18C	NORTH	KRITR	E05/22:17	Scheduled_Out	A8	E05/22:05	9W	
AAL2903	CLT	MDT	A319	18C	NORTH	KRITR	05/19:04	Departed	C11	05/18:46	9W	
JIA5479	CLT	BTV	CRJ9	18C	NORTH	KRITR	05/21:18	Departed	E34	05/20:40	9W	
RPA4649	CLT	CMH	E75S	E18C	NORTH	WEAZL	E05/22:21	Scheduled_Out	C5	E05/22:02	9W	
AAL642	CLT	DTW	A319	E18C	NORTH	WEAZL	05/16:18	Departed	B14	05/16:18	9W	
RPA4470	CLT	CMH	E75S	E18C	NORTH	WEAZL	05/16:18	Departed	C5	05/16:18	9W	
RPA4372	CLT	DTW	E75S	18C	NORTH	WEAZL	05/18:59	Departed	D1	05/18:41	9W	
JIA5155	CLT	CLE	CRJ9	18C	NORTH	WEAZL	05/17:25	Departed	E27	05/17:08	9W	
AAL2205	CLT	CLE	A319	E18C	NORTH	WEAZL	E05/22:19	Scheduled_Out	C17	E05/22:01	9W	
JIA5492	CLT	CLE	CRJ7	E18C	NORTH	WEAZL	05/20:40	Departed	E5A	05/20:40	9W	
JIA5139	CLT	CRW	CRJ7	18C	NORTH	WEAZL	05/18:47	Departed	E34	05/18:28	9W	
JIA5363	CLT	CRW	CRJ7	E18C	NORTH	WEAZL	E05/22:29	Scheduled_Out	E28	E05/22:01	9W	
RPA5614	CLT	DTW	E75S	18C	NORTH	WEAZL	05/21:39	Departed	A5	05/21:31	6W	
RPA4303	CLT	CMH	E75S	18C	NORTH	WEAZL	05/17:42	Departed	C5	05/17:22	9W	

Figure 5.5. Flights Table: Sort. In this example, the table is first sorted alphabetically by Departure Gate, and then sorted alphabetically by Departure Fix.

5.1.3 Flights Table: Toolbar

Four icons are displayed on the Flights Table toolbar:

- Edit Filters (Section 5.1.3.1)
- Show/Hide Columns (Section 5.1.3.2)
- Table Color Settings (Section 5.1.3.3)
- Save for Quick Create (Section 5.1.3.4)

When filters are applied to the Flights Table, the filter criteria are displayed on the toolbar next to the icons. When no filters are being applied, "All" is displayed (Figure 5.6).

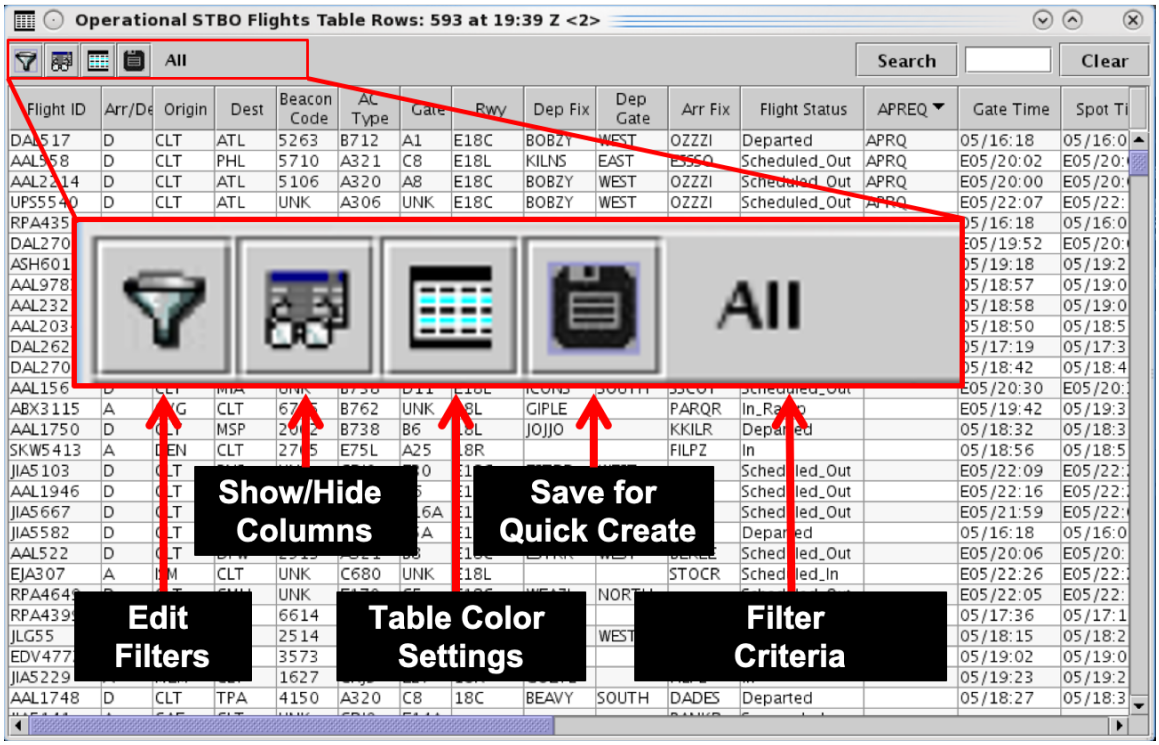


Figure 5.6. Flights Table: Toolbar.

5.1.3.1 Edit Filters

Use "Edit Filters" (Figure 5.6) to include/exclude flights in the Flights Table. Fields that can be used as filters are listed in (Table 5.1).

Fields are associated with an *operator*:

- equal "="
- not equal "!="
- less than "<"
- less than or equal to "<="

- greater than ">"
- greater than or equal to ">="
- "BETWEEN"

Multiple fields can be used in combination by selecting "AND" or "OR" as a *qualifier*.

Table 5.1. Flights Table: Filter Fields

Field	Description	Options
Actual Delay	Delay accrued by a flight in the AMA (in minutes). = Current Duration of AMA Time – Undelayed AMA Time.	[*mm*]
AIBT	Actual In-Block Time (AIBT)	[*mm*] Relative [*hhmm*] Zulu
ALDT	Actual Landing Time (ALDT)	[*mm*] Relative [*hhmm*] Zulu
AOBT	Actual Off-Block Time (AOBT)	[*mm*] Relative [*hhmm*] Zulu
ATOT	Actual Takeoff Time (ATOT)	[*mm*] Relative [*hhmm*] Zulu
Airline	Airline code	Enter: *3-digit airline code* or "*GA"*
Arr/Dep	Flight type	Enter or select: *Arrival* *Departure*
Arr Fix	Arrival Fix	Enter or select from dropdown list.
ArrFix Time	Predicted or actual Arrival Fix crossing time.	[*mm*] Relative [*hhmm*] Zulu
Dep Fix	Departure Fix	Enter or select from dropdown list.
DepFix Time	Predicted or actual Departure Fix crossing time. This field is populated based on the availability of data, in the following order: • Actual Departure Fix time, if available. • Or, Estimated Departure Fix Time (from TFMS). • Or, Target Departure Fix Time (from ATD-2 Scheduler) • Or, Estimated "OUT" time (from FlightStats) + 20 min.	[*mm*] Relative [*hhmm*] Zulu

Dep Gate	Terminal-area Departure Gate	Enter or select from dropdown list.
Dest	Destination airport for arrivals and departures.	Enter or select from dropdown list.
Destination has APREQ	Destination is subject to APREQ	Select: *Yes* *No*
Engine Type	Aircraft engine type	Enter or Select: *Prop* *Turbo* *Jet*
Flight Status	Flight Status	Enter or Select: *Scheduled_Out* *Pushback* *Out* *Taxiing_AMA* *In_Queue* *Departured* *Scheduled_In* *Enroute_Arr* *Term_Area_Arr* *On_Final* *On* *In_Ramp* *In* *Return_to_Gate* *Suspended* *Cancelled* *Unknown*
Gate	Parking gate	Enter or select from dropdown list.
Gate Time	Predicted or actual gate time for arrivals and departures.	[*mm*] Relative [*hhmm*] Zulu
Has Acknowledged APREQ	APREQ has been acknowledged in the ATD-2 system.	Select: *Yes* *No*
Has AIBT	Actual In-Block Time (AIBT)	Select: *Yes* *No*
Has ALDT	Actual Landing Time (ALDT)	Select: *Yes* *No*
Has AOFF	Actual Off Time (AOFF)	Select: *Yes* *No*
Has AOUT	Actual Out Time (AOUT)	Select:

		Yes *No*
Has Closed Dep Fix	Assigned Departure Fix is closed.	Select: *Yes* *No*
Has EDCT	Flight is subject to an Expect Departure Clearance Time (EDCT).	Select: *Yes* *No*
Has Ground Stop	Destination is subject to a Ground Stop.	Select: *Yes* *No*
Has Entered AMA	Flight is in the Airport Movement Area: • For **departures**, Flight Status = "Taxiing_AMA" or "In_Queue." • For **arrivals**, Flight Status = "On."	Select: *Yes* *No*
Has Entered Ramp	Flight is in the Ramp Area: • For **departures**, Flight Status = "Pushback" or "Out." • For **arrivals**, Flight Status = "In_Ramp."	Select: *Yes* *No*
Has Gate Conflict	Assigned parking gate has a conflict.	Select: *Yes* *No*
Has MIT	Flight is subject to a Miles-in-Trail restriction (Fix, Destination, or Jet Route).	Select: *Yes* *No*
Has Fix MIT	Departure Fix is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*
Has Destination MIT	Destination is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*
Has Jet Route MIT	Jet Route is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*
Is Active	Flight is active.	Select: *Yes* *No*
Is Hidden	Flight is hidden.	Select: *Yes* *No*
Is Cancelled	Flight Status = "Cancelled"	Select: *Yes* *No*
Is Suspended	Flight Status = "Suspended"	Select: *Yes*

		No
Major Carrier	Major Carrier includes mainline and subsidiaries (fleet).	Enter: *3-digit airline code*
OPSNET	User input for Operations Network (OPSNET) delay reporting.	Select: *Yes* *No*
Origin	Origin airport for arrivals and departures.	Enter or select from dropdown list.
Runway	Predicted or actual runway.	Enter or select from dropdown list.
Spot	Predicted or actual spot.	Enter or select from dropdown list.
Spot Time	Predicted or actual time: • An **arrival** flight crosses the Spot to enter the Ramp Area. • A **departure** flight crosses the Spot to enter the AMA.	[*mm*] Relative [*hhmm*] Zulu
SDT-TBFM	Scheduled Departure Time (SDT) as accepted in TBFM by the Center TMC. This is the scheduled wheels-up time.	[*mm*] Relative [*hhmm*] Zulu
STA-TBFM	Scheduled Time of Arrival (STA) assigned by TBFM.	[*mm*] Relative [*hhmm*] Zulu
Tail	Aircraft tail number.	Select: *Is Set* *Not Set*
TIBT	Target In-Block Time (TIBT). Predicted in-block time.	[*mm*] Relative [*hhmm*] Zulu
TOBT	Target Off-Block Time (TOBT). Advised pushback time for surface-metered departure flights.	[*mm*] Relative [*hhmm*] Zulu
TLDT	Target Landing Time (TLDT). Predicted landing time.	[*mm*] Relative [*hhmm*] Zulu
TMAT	Target Movement Area entry Time (TMAT). The time at which a surface-metered departure is expected to enter the AMA.	[*mm*] Relative [*hhmm*] Zulu
TTOT	Target Takeoff Time (TTOT). Predicted takeoff time, accounting for: 1. Undelayed taxi time, plus 2. Predicted delay from **surface traffic** competing for the runway.	[*mm*] Relative [*hhmm*] Zulu
Weight Class	Aircraft weight class.	Select: *A, B, C, D, E, F*

To Filter the Flights Table:

Step 1: Select the "Edit Filters" icon (Figure 5.6) in the toolbar to open the Filter window.

Step 2: Select a variable from the dropdown list in the "Field" column (e.g., "Runway" in Figure 5.7).

Step 3: Select a modifier from the dropdown list in the "Operator" column (e.g., "=" in Figure 5.7).

Step 4: Select an option(s) from the dropdown list or enter criteria in the text box to populate the "Values" field (e.g., "18C,18L" in Figure 5.7). Separate multiple entries with a comma.

Step 5 (Optional): Additional filters can be applied by making entries on a new row. Select "Add Fields" (Figure 5.7) if more rows are not visible. Begin additional rows by selecting a qualifier (i.e., "AND" or "OR").

Note: Select "Show Query" to view a list of selected criteria.

Step 6: When complete, select "OK" to apply the filter(s) and close the Filter window.

Alternatively: Select "Cancel" to cancel the pending change and close the Filter window.

Note: An existing filter can be modified by changing the selections in the Field, Operator, or Values columns. Select "Clear" (Figure 5.7) to clear entries from the "Values" field -- "Operator" and "Field" selections remain populated.

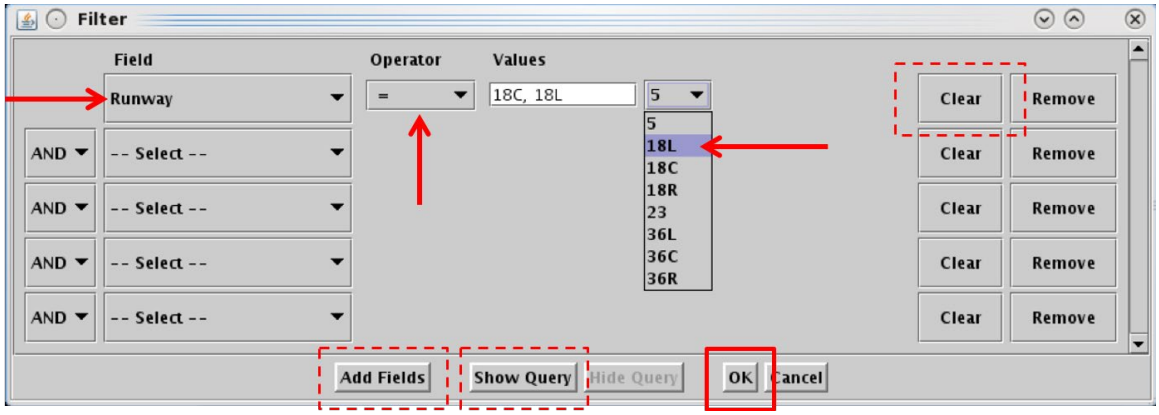
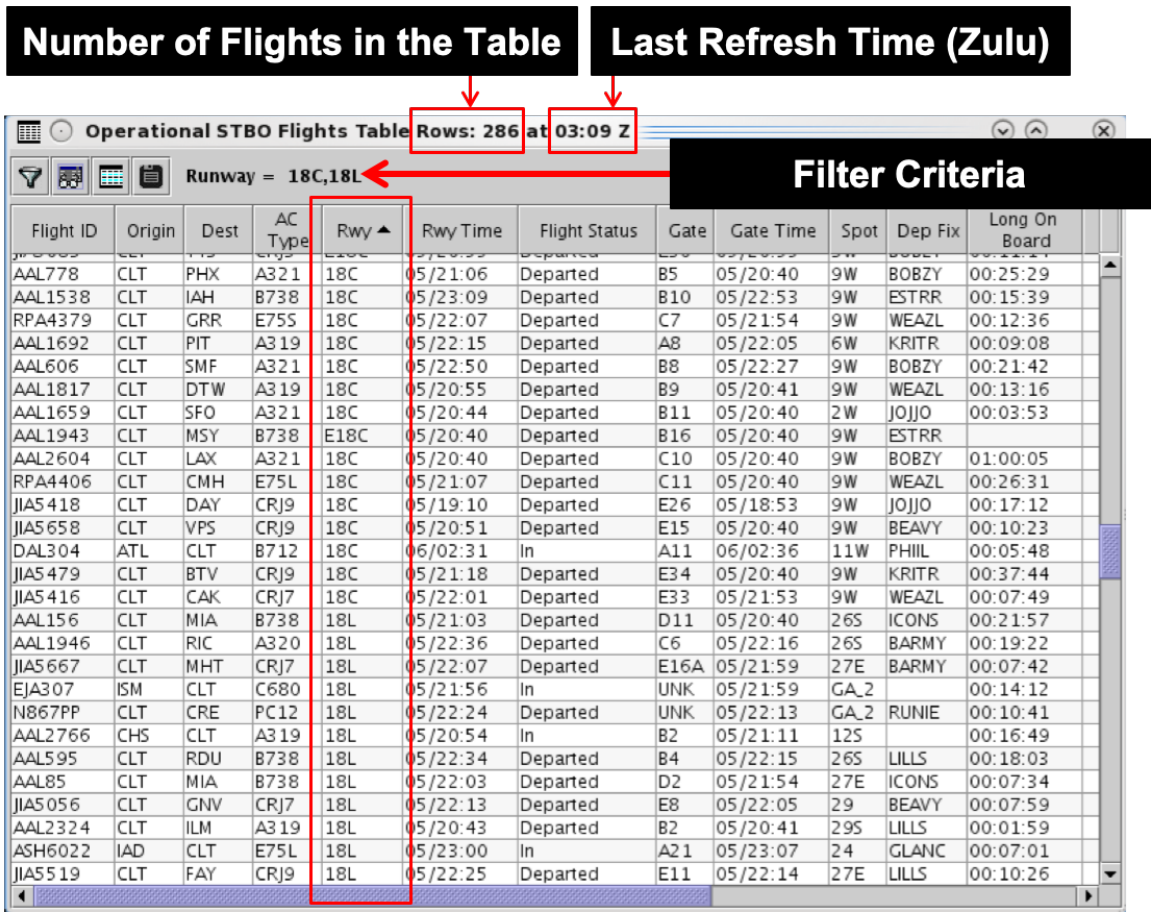


Figure 5.7. Flights Table: Filter.

Filter criteria are displayed in the toolbar (e.g., "Runway = 18C,18L" in Figure 5.8). The number of results and the last refresh time (*hh:mm Zulu)* are displayed in the title bar (e.g., 286 flights at 03:09 Z in Figure 5.8).



Flight ID	Origin	Dest	AC Type	Rwy	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix	Long On Board
AAL778	CLT	PHX	A321	18C	05/21:06	Departed	B5	05/20:40	9W	BOBZY	00:25:29
AAL1538	CLT	IAH	B738	18C	05/23:09	Departed	B10	05/22:53	9W	ESTRR	00:15:39
RPA4379	CLT	GRR	E75S	18C	05/22:07	Departed	C7	05/21:54	9W	WEAZL	00:12:36
AAL1692	CLT	PIT	A319	18C	05/22:15	Departed	A8	05/22:05	6W	KRITR	00:09:08
AAL606	CLT	SMF	A321	18C	05/22:50	Departed	B8	05/22:27	9W	BOBZY	00:21:42
AAL1817	CLT	DTW	A319	18C	05/20:55	Departed	B9	05/20:41	9W	WEAZL	00:13:16
AAL1659	CLT	SFO	A321	18C	05/20:44	Departed	B11	05/20:40	2W	JOJJO	00:03:53
AAL1943	CLT	MSY	B738	E18C	05/20:40	Departed	B16	05/20:40	9W	ESTRR	
AAL2604	CLT	LAX	A321	18C	05/20:40	Departed	C10	05/20:40	9W	BOBZY	01:00:05
RPA4406	CLT	CMH	E75L	18C	05/21:07	Departed	C11	05/20:40	9W	WEAZL	00:26:31
JIA5418	CLT	DAY	CRJ9	18C	05/19:10	Departed	E26	05/18:53	9W	JOJJO	00:17:12
JIA5658	CLT	VPS	CRJ9	18C	05/20:51	Departed	E15	05/20:40	9W	BEAVY	00:10:23
DAL304	ATL	CLT	B712	18C	06/02:31	In	A11	06/02:36	11W	PHIIL	00:05:48
JIA5479	CLT	BTV	CRJ9	18C	05/21:18	Departed	E34	05/20:40	9W	KRITR	00:37:44
JIA5416	CLT	CAK	CRJ7	18C	05/22:01	Departed	E33	05/21:53	9W	WEAZL	00:07:49
AAL156	CLT	MIA	B738	18L	05/21:03	Departed	D11	05/20:40	26S	ICONS	00:21:57
AAL1946	CLT	RIC	A320	18L	05/22:36	Departed	C6	05/22:16	26S	BARMY	00:19:22
JIA5667	CLT	MHT	CRJ7	18L	05/22:07	Departed	E16A	05/21:59	27E	BARMY	00:07:42
EJA307	ISM	CLT	C680	18L	05/21:56	In	UNK	05/21:59	GA_2		00:14:12
N867PP	CLT	CRE	PC12	18L	05/22:24	Departed	UNK	05/22:13	GA_2	RUNIE	00:10:41
AAL2766	CHS	CLT	A319	18L	05/20:54	In	B2	05/21:11	12S		00:16:49
AAL595	CLT	RDU	B738	18L	05/22:34	Departed	B4	05/22:15	26S	LILLS	00:18:03
AAL85	CLT	MIA	B738	18L	05/22:03	Departed	D2	05/21:54	27E	ICONS	00:07:34
JIA5056	CLT	GNV	CRJ7	18L	05/22:13	Departed	E8	05/22:05	29	BEAVY	00:07:59
AAL2324	CLT	ILM	A319	18L	05/20:43	Departed	B2	05/20:41	29S	LILLS	00:01:59
ASH6022	IAD	CLT	E75L	18L	05/23:00	In	A21	05/23:07	24	GLANC	00:07:01
JIA5519	CLT	FAY	CRJ9	18L	05/22:25	Departed	E11	05/22:14	27E	LILLS	00:10:26

Figure 5.8. Flights Table: Flights matching filter criteria are included in the table.

To remove or clear a filter from the Flights Table:

Step 1: Select the "Edit Filters" icon (Figure 5.6) in the toolbar to open the Filter window.

Step 2: In the dropdown menu in the "Field" column, select "-- Select --" to clear selections from that row (Figure 5.9).

Alternatively: Select "Remove" to delete that row entirely (Figure 5.9).

Step 3: When complete, select "OK" to close the Filter window.

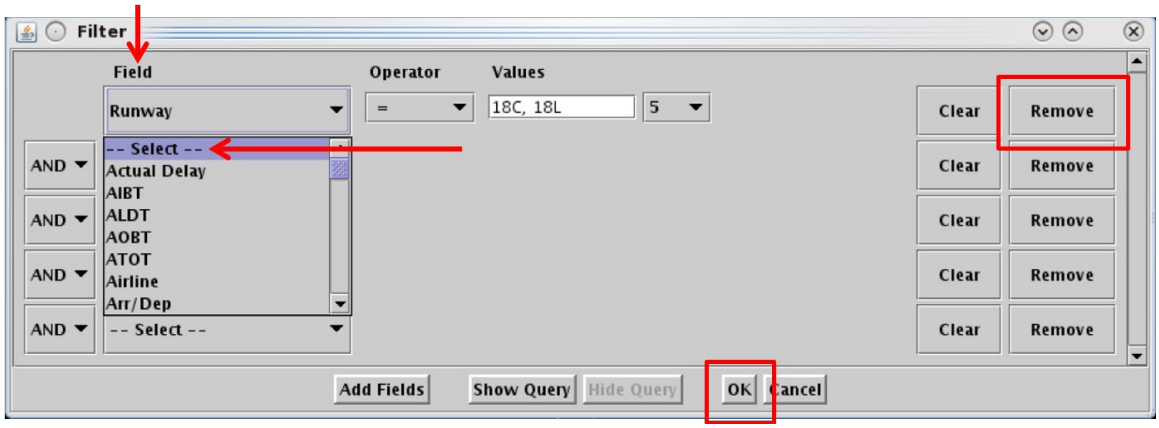


Figure 5.9. Flights Table: Remove filters.

5.1.3.2 Show/Hide Columns

Use "Show/Hide Columns" (Figure 5.6) to select which columns of information will be included, and the order in which they will be shown, in the Flights Table.

The information columns that can be included in the Flights Table are listed in Table 5.2.

Table 5.2. Flights Table: Show/Hide Columns

Column Header	Description
------ General ------	
Actual Delay	Delay accrued by a flight in the AMA (in minutes). = Current Duration of AMA Time – Undelayed AMA Time.
AC Type	International Civil Aviation Organization (ICAO) type of aircraft (i.e., B738: Boeing model 737-800).
Airline	Airline code
AIBT	Actual In-Block Time (AIBT) at the gate, recorded by the airline or the ATD-2 system.
ALDT	Actual Landing Time (ALDT) recorded by the airline or the ATD-2 system.
AMAT	Actual Movement Area entry Time (AMAT): Actual spot-crossing time.
AOBT	Actual Off-Block Time (AOBT) at the gate.
ATOT	Actual Takeoff Time (ATOT).
Altitude	Altitude in feet/100.
APREQ	Indicates APREQ Status: • **"APRQ"** is displayed prior to the release time being scheduled.

	• **"APRQ: REQUESTED"** indicates that negotiation is in progress.
	• **"APRQ:REJECTED"** indicates that the request time was not accepted. A new time may be negotiated.
	• **"FREE RELEASE"** indicates the flight has a floating release time.
	• ***"hhmm*: REQUESTED"** is displayed when the Tower electronically requests a specific release time using:
	  • Request Release Time,
	  • Select Slot on Timeline, or
	  • When the flight is Pre-Scheduled.
	• ***"hhmm"*** is the assigned release time (wheels-up time).

APREQ Mode	APREQ request mode used by the Center Traffic Management Coordinator (TMC) in TBFM: • **UNDETERMINED** – Mode has not been set. • **MANUAL (Call for Release)** – Requests from the Tower needs to be made over the phone. • **SEMI** – Requests are made via IDAC, but still require electronic approval by the Air Route Traffic Control Center (ARTCC) TMC. • **AUTO** – Requests are made via IDAC and are automatically approved by TBFM. • **OFF** – TBFM is not being used to schedule APREQ release times. Requests must be made by telephone.
APREQ Requested Roll	Requested APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll in *dd/hh:mm* format.
APREQ Scheduled Roll	Scheduled APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll in *dd/hh:mm* format.
APREQ Scheduled Wheels-Off	Scheduled APREQ release time at wheels-up (corresponds to the scheduled release time set in TBFM) in *dd/hh:mm* format.
APREQ State	Indicates the status of the APREQ negotiation: • **UNSCHEDULED** – The APREQ release time has not been requested yet. • **PENDING_SCHEDULE** – The APREQ release time has been requested by ATCT but not accepted yet by the ARTCC TMC.

	• **SCHEDULED** – The APREQ release time as scheduled by the ARTCC and sent to the ATCT. • **PENDING_ACCEPT** – ATCT start of negotiation for accepting the ARTCC scheduled release time. • **ACCEPTED** – The APREQ request time has been accepted by ATCT. • **PENDING_CANCEL** – The ATCT has issued a request to cancel APREQ negotiation. • **CANCELLED** – The APREQ negotiation has been cancelled by the ATCT or ARTCC.
APREQ PreSchedule	**"PreScheld"** is displayed when the flight is eligible for Pre-Scheduling. That is, the release time is automatically scheduled at a pre-determined time (x minutes) prior to EOBT. Pre-Scheduling is only used for select destinations. If the flight is not eligible for Pre-Scheduling, the field is blank.
Arr/Dep	Displays: • "A" for arrival • "D" for departure
Arr Fix	Arrival Fix
ArrFix Time	Predicted or actual Arrival Fix crossing time.
Beacon Code	Aircraft beacon code.
Dep Fix	Departure Fix
Swap	Alternate Departure Fix assignment.
DepFix Time	Predicted or actual Departure Fix crossing time. This field is populated based on the availability of data, in the following order: • Actual Departure Fix time, if available. • Or, Estimated Departure Fix Time (from TFMS). • Or, Target Departure Fix Time (from ATD-2 Tactical Scheduler). • Or, Estimated "OUT" time (from FlightStats) + 20 min.
Dep Gate	Terminal-area Departure Gate.
Dest	Destination airport for arrivals and departures.
EDCT	Expect Departure Clearance Time (EDCT) assigned to the flight as part of a Ground Delay Program (GDP), Airspace Flow Program (AFP), or Collaborative Trajectory Options Program (CTOP).
EOBT	Earliest Off-Block Time (EOBT) provided by the airline. Earliest predicted push back time.
ETA	Estimated Time of Arrival (ETA) provided by TBFM, TFMS, the airline, or other external sources.
ETD	Estimated Time of Departure (ETD) at wheels-up provided by TBFM, Traffic Flow Management System (TFMS), the airline, or other external sources.

Flight ID	Flight number (call sign). For General Aviation (GA) flights, tail number is used.
Flight Status	Flight Status: • **Scheduled Out:** A departure flight that has not yet pushed back from the gate. • **Pushback:** A departure flight that is pushing back. • **Out:** A departure flight that is taxiing in the Ramp Area. • **Taxiing AMA:** A departure flight that is taxiing in the Airport Movement Area (AMA). • **In Queue:** A departure flight inside the queue detection box of the assigned runway. • **Departed:** A departure flight that is airborne. • **Scheduled In:** An arrival flight that is not yet being tracked. • **Enroute Arr:** An arrival flight that is in the enroute airspace. • **Term Area Arr:** An arrival flight that is inside the terminal airspace. • **On Final:** An arrival flight that is on final approach. • **On:** An arrival flight that has landed. • **In Ramp:** An arrival flight that is taxiing in the Ramp. • **In:** An arrival flight that is parked at the gate. • **Return to Gate:** A departure that is returning to the gate, after pushing back. • **Suspended:** A departure flight that was scheduled to have already departed, but no updates have been received. • **Cancelled:** A flight that has been cancelled by the airline. • **Unknown:** A flight with an unknown status.
Gate	Parking gate.
Gate Time	• For **arrivals**, the TIBT prior to reaching the gate and the AIBT once the flight arrives at the gate. • For **departures**, the TOBT prior to pushing back from the gate (*where available*) and the AOBT after pushback. Prior to the *actual* time, the Gate Time is prefixed by an "E" to indicate estimated time.
Gate Conflict	Gate Conflict information: • Parking Gate • Start time • Duration in minutes
Ground Stop	Destination is subject to a Ground Stop.
IOBT	Initial Off-Block Time (IOBT) set by TFMS. The first EOBT received for the flight.
LIBT	Latest In-Block Time (LIBT). Predicted time the flight will arrive at the gate, sent by the airline either directly or through a Collaborative Decision Making (CDM) message to TFMS.

LOBT	Latest Off-Block Time (LOBT), "L-time." Predicted pushback time received from an airline either directly or through a CDM message to TFMS.
Long On Board	Long on Board indicator: • For **arrivals**, the LOB timer starts at touchdown and is continuously computed as the current time minus the Actual Landing Time (ALDT) until the arrival is in the gate. • For **departures**, the LOB timer starts at pushback and is continuously computed as the current time minus the Actual Off-Block Time (AOBT) until the flight takes off.
Major Carrier	Major Carrier includes mainline and subsidiaries (fleet).
MIT	Flight is subject to a Miles-in-Trail restriction (Fix, Destination, or Jet Route).
OPSNET	User input for Operations Network (OPSNET) delay reporting.
Origin	Origin airport for arrivals and departures.
Route of Flight	Planned route of flight.
Rwy	Predicted (e.g., "E18L") or actual runway (e.g., "18L") based on flight plan, departure fix, actual location of aircraft, or user input. Predicted runway is prefixed by an "E" to indicate estimate.
Rwy Time	**Departures**: • *Predicted*: Estimated Takeoff Time (ETOT) • *Actual*: Actual Takeoff Time (ATOT) **Arrivals**: • *Predicted*: Estimated Landing Time (TLDT) • *Actual*: Actual Landing Time (ALDT)
RwyOpNec	"OpNec" is indicated when the runway is changed for operational necessity.
SIBT	Scheduled In-Block Time (SIBT). Time the flight is scheduled by the airline to arrive at the gate.
SLDT	Scheduled Landing Time (SLDT). TFMS estimate of when the flight is scheduled to land based on the SIBT and future SOBT.
SOBT	Scheduled Off-Block Time (SOBT). Time the flight is scheduled by the airline to leave the departure gate.
STOT	Scheduled Takeoff Time (STOT). TFMS estimate of when the flight will take off based on the SOBT.
Spot	Predicted or actual spot.
Spot Time	Predicted or actual time: • A **departure** flight crosses the Spot to exit the Ramp Area. • An **arrival** flight crosses the Spot to enter the Ramp Area. Prior to the *actual* time, the Spot Time is prefixed by an "E" to indicate estimated time.
Tail	Aircraft tail number.
Taxi Route	Remaining route for taxiing in the AMA.
Taxi Time	Predicted or actual time spent taxiing on the airport surface, including the Ramp Area:

	• For **departures**, from pushback to takeoff. • For **arrivals**, from landing to parking at the gate. Prior to the *actual* time, the Taxi Time is prefixed by an "E" to indicate estimated time.
AMA Taxi Duration	Predicted or actual duration of time in the AMA: • For **departures,** from Spot time to takeoff. • For **arrivals,** from landing to Spot time.
TCLT	Terminal Controlled Landing Time (TCLT).
Time in Queue	Duration of time that a departure flight has spent in the runway queue detection box.
TIBT	Target In-Block Time (TIBT). Predicted in-block time.
TLDT	Target Landing Time (TLDT). Predicted landing time.
TMAT	Target Movement Area entry Time (TMAT). The time at which a surface-metered departure is expected to enter the AMA.
TOBT	Target Off-Block Time (TOBT). Advised pushback time for surface-metered departure flights.
TTOT	Target Takeoff Time (TTOT). Predicted takeoff time, accounting for: 1. Undelayed taxi time, plus 2. Predicted delay from **surface traffic** competing for the runway.
UIBT	Undelayed In-Block Time (UIBT). Predicted in-gate time for a single aircraft without consideration of other traffic on the surface.
ULDT	Undelayed Landing Time (ULDT). Predicted landing time.
UMAT	Undelayed Movement Area entry Time (UMAT). Predicted spot time for a single aircraft without consideration of other traffic on the surface.
UOBT	Undelayed Off-Block Time (UOBT). Predicted push back time in the absence of all external constraints (e.g., surface departure metering, EDCTs, Ground Stops, or APREQ release times).
UTOT	Undelayed Takeoff Time (UTOT). Predicted takeoff time for a single aircraft without consideration of surface delay caused by other traffic competing for the runway or terminal delay caused by terminal-area restrictions.
------ Less Common ------	
Actual Time In Queue	Actual Takeoff Time (ATOT) – Undelayed Takeoff Time (UTOT). This field populates once the flight takes off.
APREQ Changed Ack Status	**"Needs Ack"** is displayed when the TBFM/IDAC system at Center electronically returns a release time to the ATD-2 system that is <u>different</u> from the release time requested by the Tower. Equality is determined in minutes. A yellow diamond with exclamation point is displayed next to the flight's datablock on the STBO Client Timeline.
APREQ Release Req	Indicates whether an APREQ release request can be made electronically through the STBO Client.

Allowed	
APREQ Forced	Method by which the APREQ release time is received by the ATD-2 system: • **"FALSE"** when the APREQ release time is negotiated electronically through IDAC. • **"TRUE"** if the APREQ time is manually set by a user in the STBO Client or is received through System Wide Information Management (SWIM) apart from IDAC.
APREQ Source	Data source from which the APREQ release time originates: • **IDAC:** Integrated Departure and Arrival Control (IDAC) system. • **TMA.Z_ _.FAA.GOV-SWIM:** System-Wide Information Management (SWIM).
ArrFix Source	Data source of the Arrival Fix: • **SOURCE** – The arrival fix was received from an external source based on the flight plan. • **DECISION_TREE** – ATD-2 system is predicting the arrival fix based on the most commonly used arrival fix for flights flying between the origin and destination airports. • **MODEL** – ATD-2 system is predicting the arrival fix to be the one closest to straight line between the origin and departure airport; or the arrival fix is based on a fix closure and a set of alternate fixes. • **SURFACE** – The arrival fix was detected based on track data. • **UNKNOWN** – The arrival fix is unknown.
CID	ERAM generates a new computer ID (CID) for each flight plan. CIDs are unique and constant for each flight. However, each ARTCC has one ERAM, so a flight may have multiple CIDs when it is located at the borderline of multiple ARTCCs.
DepFix Source	Data source of the Departure Fix: • **SOURCE** – The departure fix was received from an external source based on the flight plan. • **DECISION_TREE** – The ATD-2 system is predicting the departure fix based on the most commonly used departure fix for flights flying between the origin and destination airports. • **MODEL** – The ATD-2 system is predicting the departure fix based on a fix closure and a set of alternate fixes. • **SURFACE** – The departure fix was detected based on track data. • **UNKNOWN** – the departure fix is unknown.
EstIBT	Estimated In-Block Time (EstIBT) provided by an external source other than the airline.

EstOBT	Estimated Off-Block Time (EstOBT) provided by an external source other than the airline.
Filed Route	Filed route for a flight.
Flight Key	Unique identifier for the flight that contains the call sign, the origin, destination, flight creation time, and flight creation source (e.g., Airline, TFM, Traffic Management Advisor (TMA; TBFM)).
Gate Source	Data source of the gate: • **AIRLINE** – Data comes from the airline. • **DECISION_TREE** – The default gate assignment from a decision tree. • **USER** – The gate was assigned by a user.
Gate Conflicting Key	Unique identifier of the aircraft that is in conflict with the given aircraft.
Hidden	The value is "Hidden" if the flight is removed from the display via "Delete Datablock" or via "Remove Flight Strip" on the Ramp Traffic Console (RTC); Otherwise, blank.
Latitude	Latitude of the aircraft's position in decimal degrees.
Longitude	Longitude of the aircraft's position in decimal degrees.
Local Route	Filed route adapted to the current ARTCC's airspace; used by TFMS.
Metering Group	Tactical scheduler group to which the departure flight is assigned based on its EOBT and flight status: • **UNCERTAIN** – The data for the departure is less certain (i.e., No EOBT is available, EOBT is more than 4 hours in the future, or EOBT is more than 13 minutes in the past and did not call ready). • **PLANNING** – The departure has an EOBT and it is within 4 hours. • **READY** – Flight put on Gate Hold. • **OUT** – The departure has started pushback but has not yet begun taxiing. • **TAXI** – The departure is taxiing in the Ramp area or AMA. • **QUEUE** – The flight is in the queue. • **OFF** – The departure has taken off. • **ARRIVAL** – The group for all arrival flights.
ModeS	International Civil Aviation Organization (ICAO) transponder code for Mode-S equipped aircraft.
Multiple CIDs	A flight may have multiple CIDs when it is located at the borderline of multiple ARTCCs.
Position Source	Data source of the aircraft position: • **TZ** – The track data was received from TFMS. • **SMA** – The track data was received from TMA. • **FUSION** – The track data was received from ASDE-X or surface surveillance data.
Ramp Area	Planned or actual Ramp area where the flight is expected to park or

	is currently located.
Repositioned	This flag will be set by a flight when it is repositioned, which will typically be repositioning the flight away from a gate.
Rwy Source	Data source of the runway: • **MODEL** – The runway is determined by the ATD-2 system. • **DECISION_TREE** – Runway is determined by a decision tree. • **STARS** – The runway is determined by scratch pad entries made in the Standard Terminal Automation Replacement System (STARS). • **UNKNOWN** – Source of the runway determination is unknown.
SDT:TBFM	Scheduled Departure Time as accepted in TBFM by the Center TMC. This is the scheduled wheels-up time.
STA:TBFM	Scheduled Time of Arrival by TBFM.
Sector List	List of all sectors that a flight has or will travel through from the data available to the ATD-2 system.
Spot Source	Data source of the spot: • **SURFACE** – The spot is determined by the actual spot the aircraft used based on surface surveillance. • **DECISION_TREE** – The spot is predicted based on flight's gate and runway.
Super Stream Artcc	ARTCC of the scheduling point from TBFM.
Super Stream Point	Scheduling point constraint satisfaction point from TBFM. Scheduling point is the CSP to which the flight can be scheduled by IDAC. This indicates to IDAC where dept. negotiation occurs.
Super Stream Tracon	TRACON of the scheduling point from TBFM.
Super Stream Class Name	Name of the super stream class from TBFM.
Sched Suspended	Display "SUSPENDED" if a flight has been suspended. A suspended flight is expected to proceed at problem resolution.
TCOT	Terminal Controlled Time (TCOT). Predicted **takeoff time**, accounting for: 1. Undelayed taxi time, plus 2. Predicted delay from **surface traffic** competing for the runway, and 3. Predicted delay from **terminal-area restrictions** being passed back to the surface.
TTOT-UTOT	The delay (in minutes) that the flight is predicted to encounter, **at the runway**, caused by predicted delay from **surface traffic** competing for the runway.

	= Target Takeoff Time (TTOT) – Undelayed Takeoff Time (UTOT).
Undlyd OFF at Queue Entry	Undelayed Takeoff Time (UTOT) at the time at which the flight enters the departure runway queue.

To Add Columns to the Flights Table:

Step 1: Select the "Show/Hide Columns" icon (Figure 5.6) in the toolbar to open the Column Settings window.

Note: Two lists are shown in the Column Settings window (Figure 5.10).

- ***Available: Columns not currently displayed in the Flights Table.***
- ***Shown: Columns currently displayed in the Flights Table.***

Step 2: Select a column name from the Available list (e.g., "EOBT" in Figure 5.10).

Step 3: Select the right arrow to move the column name to the Shown list (Figure 5.10).

Step 4: When complete, select "OK" to close the Column Settings window Figure 5.10).

Alternatively: Select "Cancel" to cancel the pending changes and close the Column Settings window.

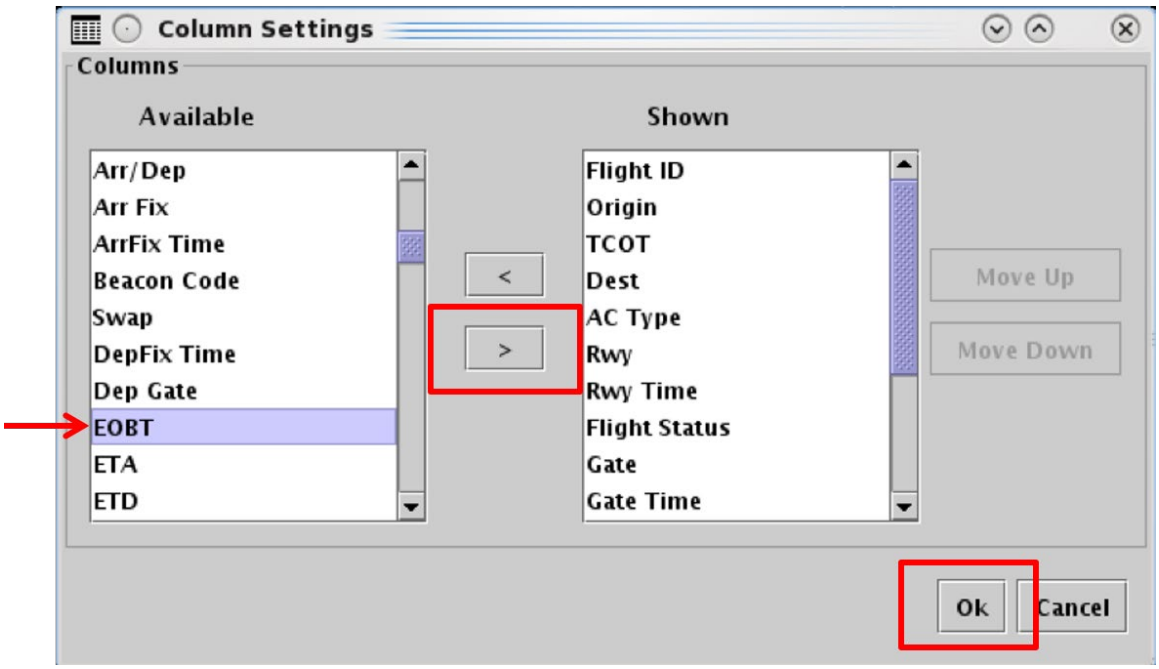


Figure 5.10. Flights Table: Column Settings. Select the right arrow to move a column name to the Shown list.

To reorder columns in the Flights Table:

Step 1: Select the "Show/Hide Columns" icon (Figure 5.6) in the toolbar to open the Column Settings window.

Step 2: Select the column name in the Shown list (e.g., "APREQ" in Figure 5.11).

Step 3: Use "Move Up" and "Move Down" to reorder columns (Figure 5.11).

Step 4: When complete, select "OK" to close the Column Settings window (Figure 5.11).

Alternatively: Select "Cancel" to cancel the pending changes and close the Column Settings window.

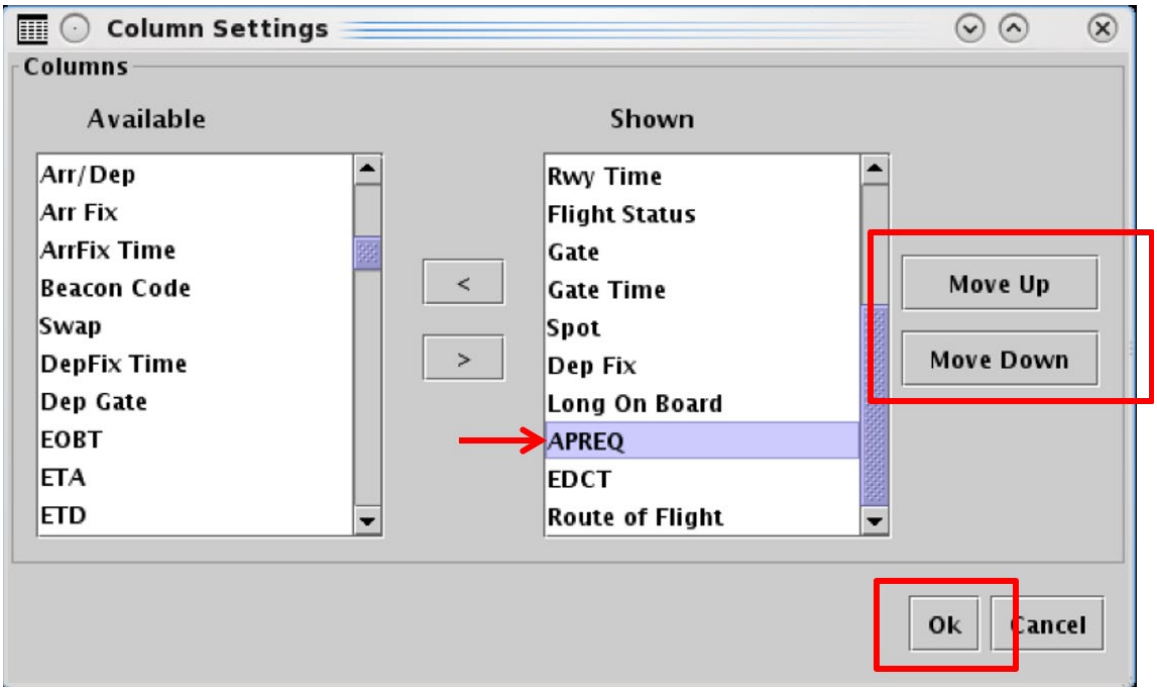


Figure 5.11. Flights Table: Column Settings. Use "Move Up" and "Move Down" to reorder columns.

To remove a column from the Flights Table:

Step 1: Select the "Show/Hide Columns" icon (Figure 5.6) in the toolbar to open the Column Settings window.

Step 2: Select a column name from the Shown list.

Step 3: Select the *left* arrow to move the column name to the Available list.

Step 4: When complete, select "OK" to close the Column Settings window.

Alternatively: Select "Cancel" to cancel the pending changes and close the Column Settings window.

5.1.3.3 Table Color Settings

Use "Table Color Settings" (Figure 5.6) to set an alternate row color and field color alerts for variables in the Flights Table.

5.1.3.3.1 Set Row Colors

Use the "Set Row Colors" tab in the Flights Table Color Settings window to set an alternate row color in the Flights Table.

To Set Row Colors in the Flights Table:

Step 1: Select the "Table Color Settings" icon (Figure 5.6) in the toolbar to open the Flights Table Color Settings window.

Step 2: Select the "Set Row Colors" tab (Figure 5.12).

Note: The default color for both odd and even rows in the Flights Table is white (Figure 5.12).

Step 3: Select either the "Odd Row" or "Even Row" color box to open the "Choose Row Color" window (e.g., "Odd Row Color" in Figure 5.12).

Step 4: On the "Swatches" tab, use the mouse to select a color (e.g., green in Figure 5.13).

Step 5 (Optional): If necessary, use the other four color-palette tabs (HSV, HSL, RGB, CMYK) to refine the color selection.

Note: In the "Preview" section below the color chart, the previous color (white in Figure 5.13) and a preview of the newly selected color (green in Figure 5.13) are displayed.

Step 6: Select "OK" to return to the "Set Row Colors" tab (Figure 5.13).

Note: If preferred, follow the same steps to select a second color for the alternating odd/even row.

Step 7: When finished modifying colors, select "OK" to close the Flights Table Color Settings window and apply the color change(s) (Figure 5.14).

Note: Updated color selections are shown in the Flights Table (Figure 5.15).

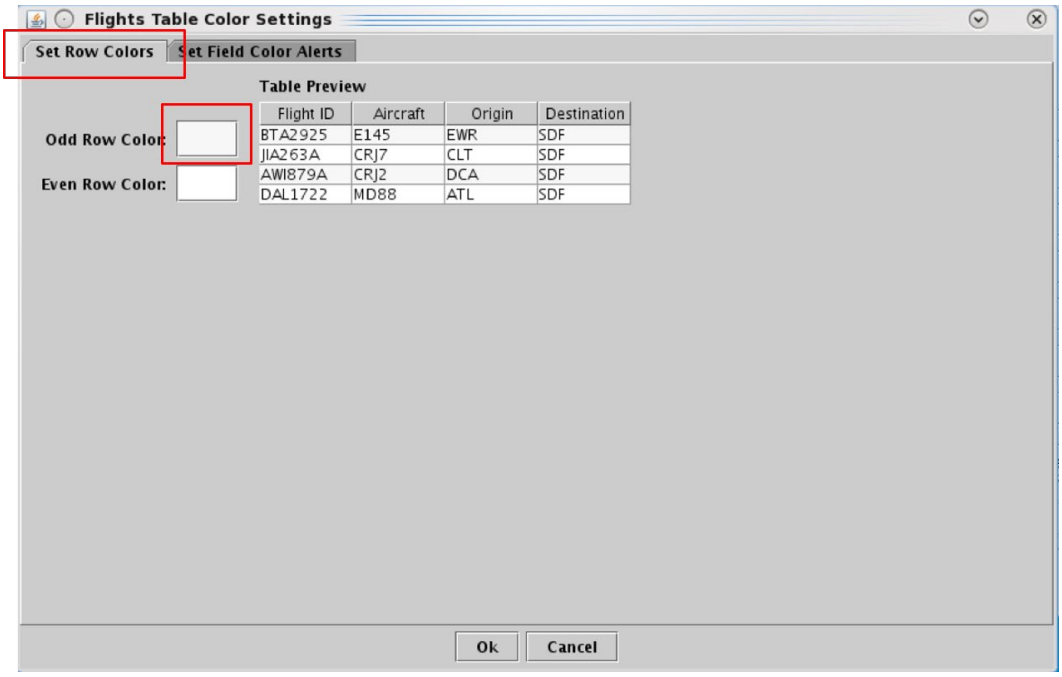


Figure 5.12. Flights Table Color Settings: Set Row Colors tab.

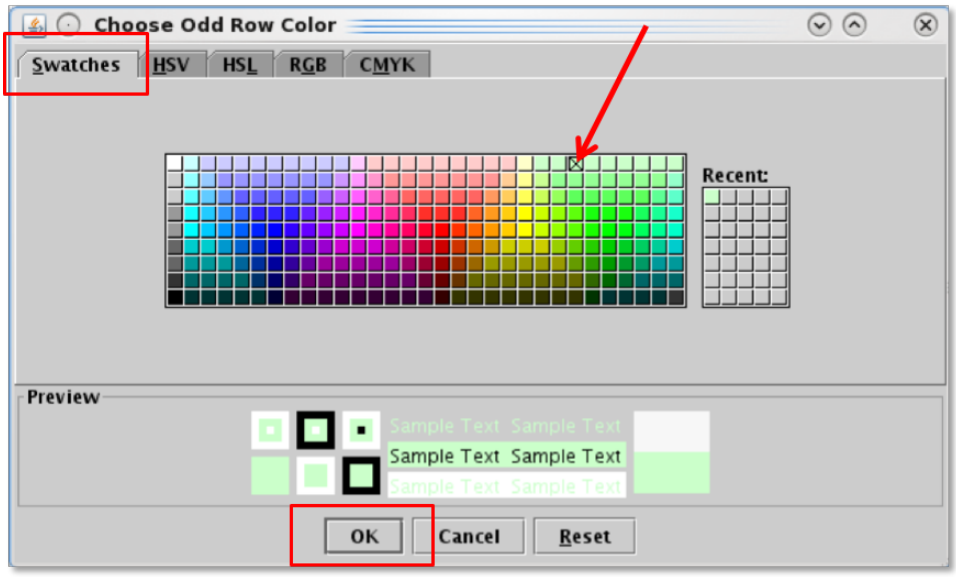


Figure 5.13. Use the "Swatches" tab to select a color. Use the HSV, HSL, RGB, or CMYK color palettes to refine the color selection.

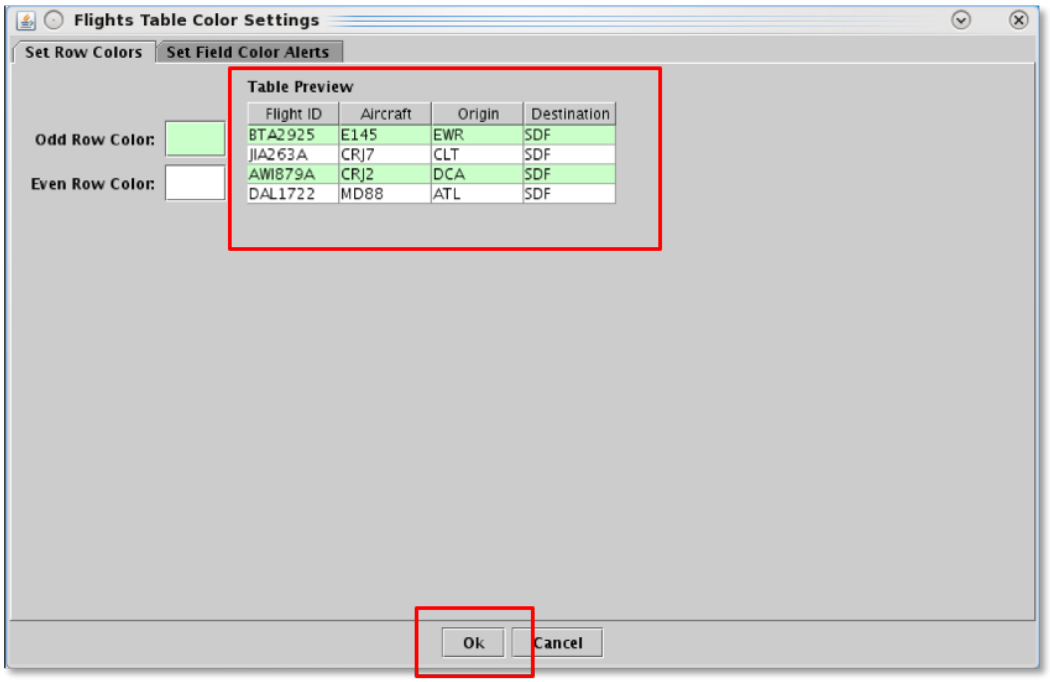


Figure 5.14. Set Row Colors: Alternating row color preview.

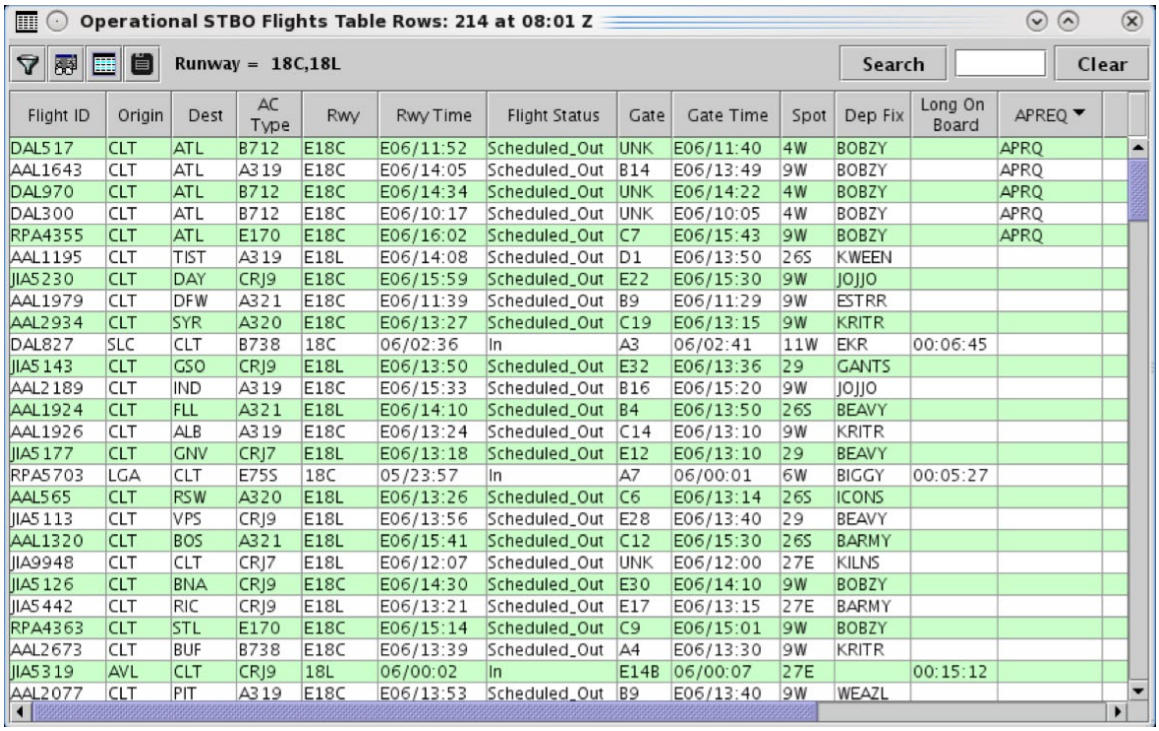


Figure 5.15. Flights Table: Alternating row colors.

5.1.3.3.2 Set Field Color Alerts

Use the "Set Field Color Alerts" tab in the Flights Table Color Settings window to set cell colors for selected fields.

Fields to which color alerts can be applied are listed in Table 5.3.

Table 5.3. Flights Table: Set Field Color Alerts

Field	Description	Options
Flight Status	Flight Status	Enter or Select: *Scheduled_Out* *Pushback* *Out* *Taxiing_AMA* *In_Queue* *Departured* *Scheduled_In* *Enroute_Arr* *Term_Area_Arr* *On_Final* *On* *In_Ramp* *In* *Return_to_Gate* *Suspended* *Cancelled* *Unknown*
Has Closed Dep Fix	Assigned Departure Fix is closed.	Select: *Yes* *No*
Has Gate Conflict	Assigned parking gate has a conflict.	Select: *Yes* *No*
Has Ground Stop	Destination is subject to a Ground Stop.	Select: *Yes* *No*
Is Hidden	Flight is hidden	Select: *Yes* *No*
Has MIT	Flight is subject to a Miles-in-Trail restriction (Fix, Destination, or Jet Route).	Select: *Yes* *No*
Has Fix MIT	Departure Fix is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*

Has Destination MIT	Destination is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*
Has Jet Route MIT	Jet Route is subject to a Miles-in-Trail restriction.	Select: *Yes* *No*

To Set Field Color Alerts in the Flights Table:

Step 1: Select the "Table Color Settings" icon (Figure 5.6) in the toolbar to open the "Flights Table Color Settings" window.

Step 2: Select the "Set Field Color Alerts" tab (Figure 5.16).

Note: Color selections for several fields may be preset but can be modified (Figure 5.16).

Step 3: On a new row, select a variable from the dropdown list in the "Field" column (e.g., "Flight Status" in Figure 5.16).

Note: If a new row is not available, select "Add Fields" (Figure 5.16).

Step 4: Select an operator from the dropdown list in the "Operator" column (e.g., "=" in Figure 5.17).

Step 5: Select a value from the dropdown list in the "Value" column (e.g., "Taxiing_AMA" in Figure 5.17).

Step 6: Select the color box to open the "Choose Color" window (Figure 5.17).

Step 7: On the "Swatches" tab in the "Choose Color" window, use the mouse to select a color (e.g., green in Figure 5.18).

Step 8 (Optional): If necessary, use the other four color-palette tabs (HSV, HSL, RGB, CMYK) to refine the color selection.

Note: In the "Preview" section below the color chart, the previous color (white in Figure 5.18) and a preview of the newly selected color (green in Figure 5.18) are displayed.

Step 9: Select "OK" to return to the "Set Field Color Alerts" tab (Figure 5.18).

Note: The selected color is shown on the Set Field Color Alerts tab (green in Figure 5.19).

Note: If preferred, follow the same steps to add/modify other field color alerts.

Step 10: Select "OK" to close the Flights Table Color Settings window and apply the color change(s) (Figure 5.19).

Note: Updated color selections are shown in the Flights Table (Figure 5.20).

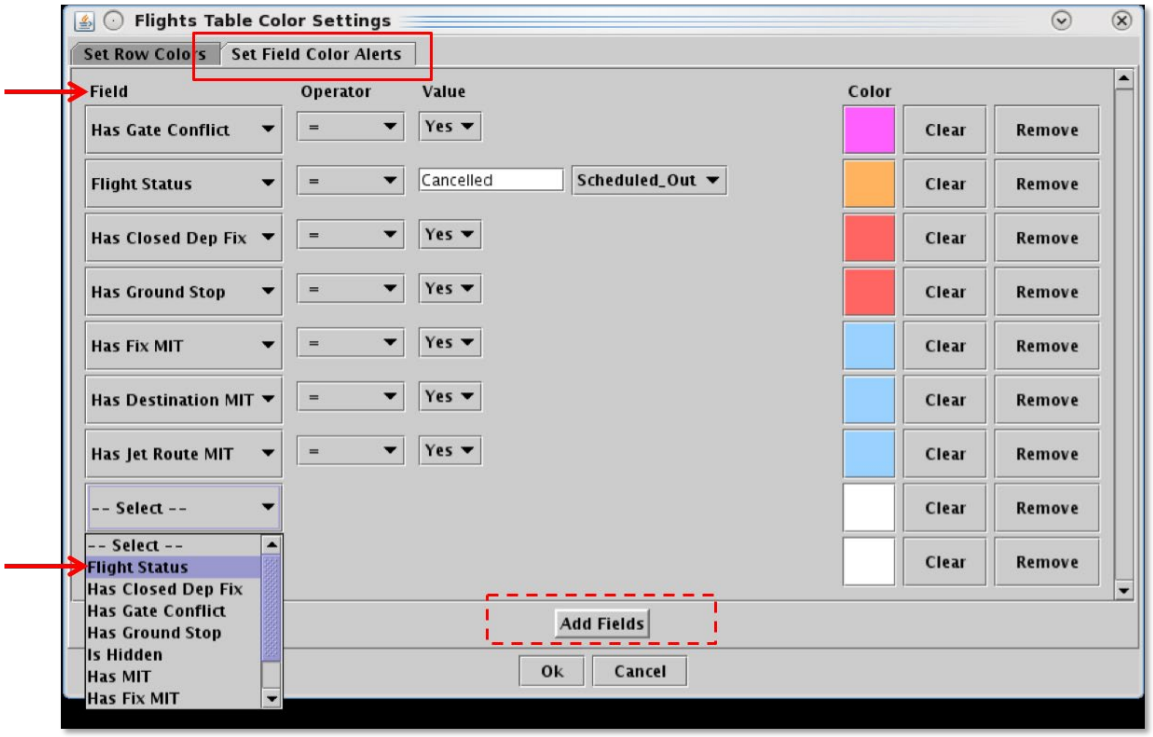


Figure 5.16. Flights Table Color Settings: Set Field Color Alerts tab.

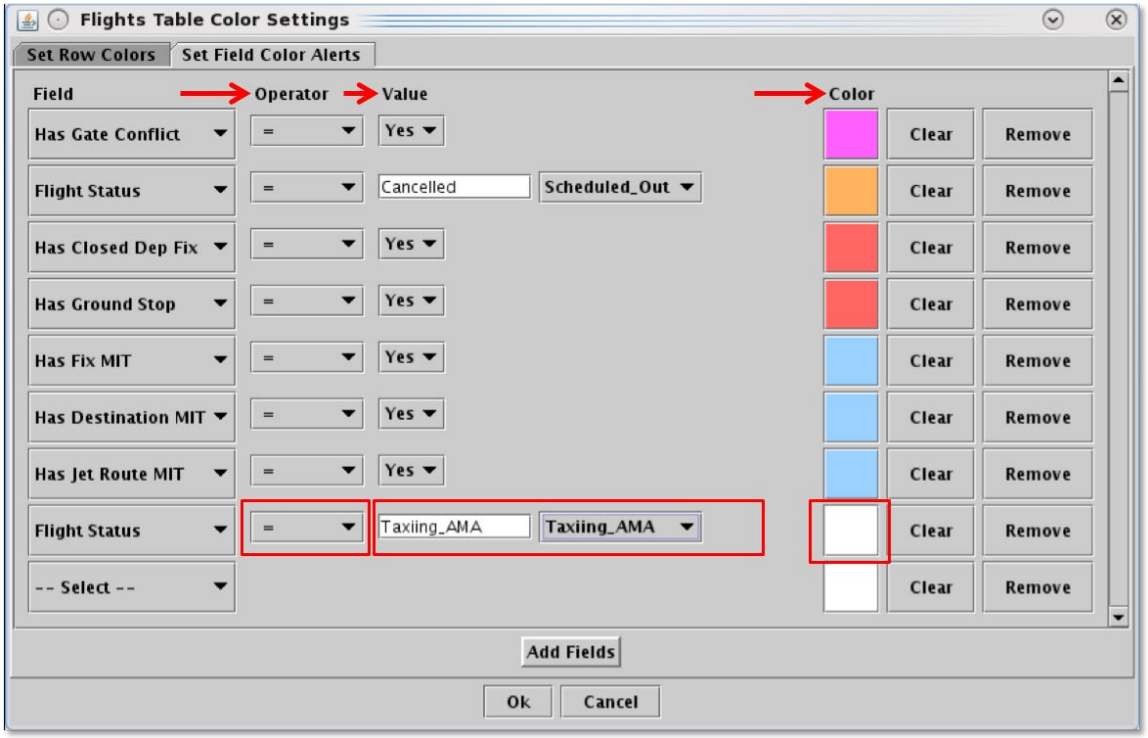


Figure 5.17. Set Field Color Alerts: Select Field, Operator, and Value.

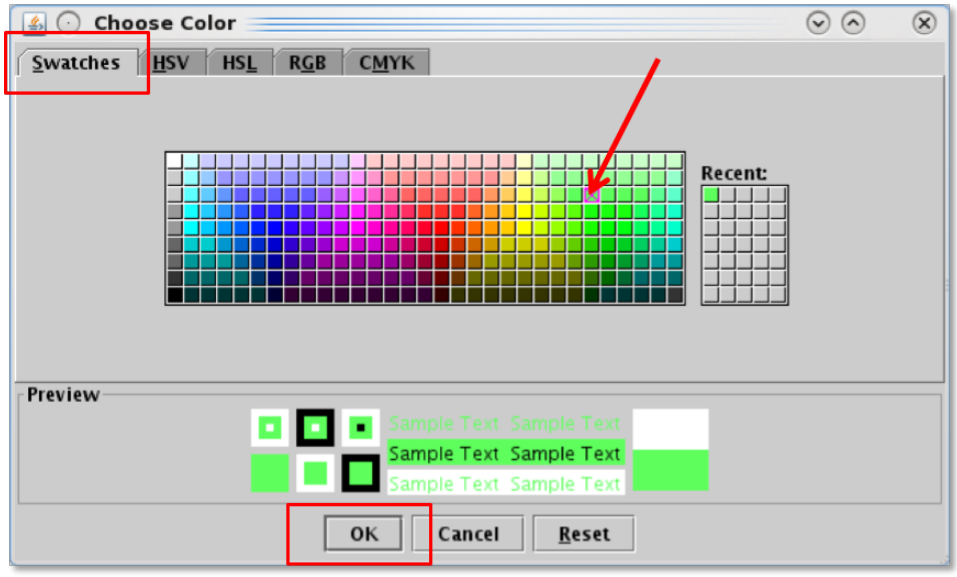


Figure 5.18. Use the "Swatches" tab to select a color. Use the HSV, HSL, RGB, or CMYK color palettes to refine the color selection.

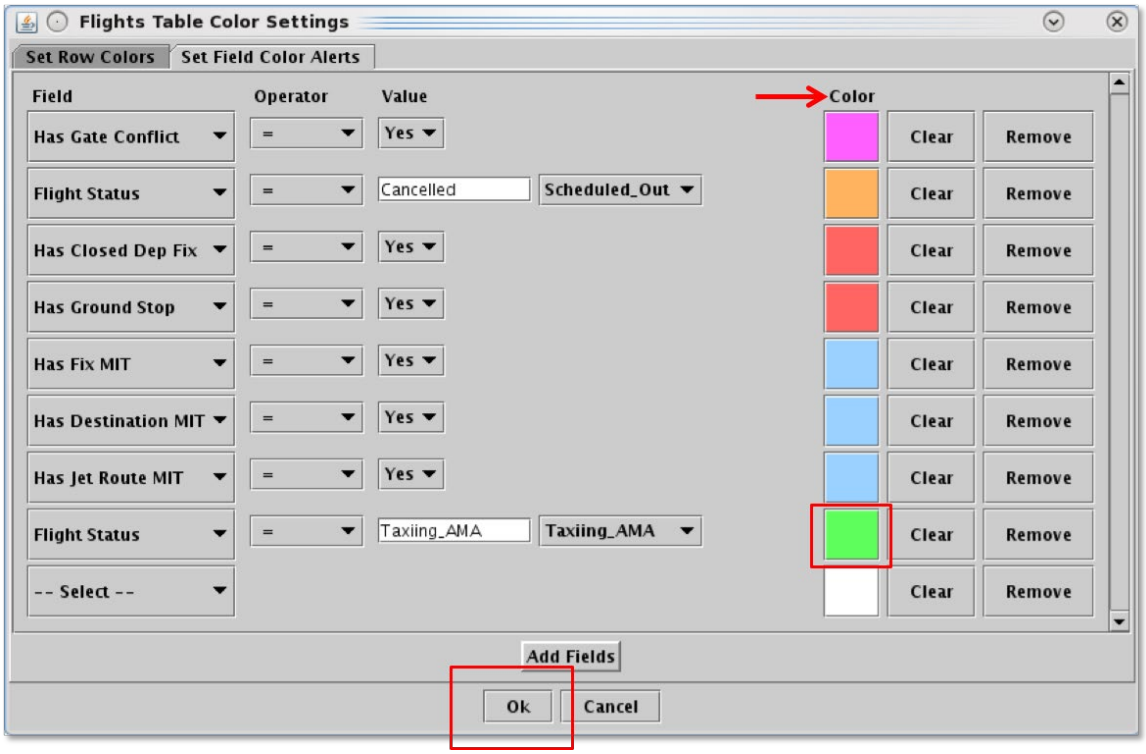
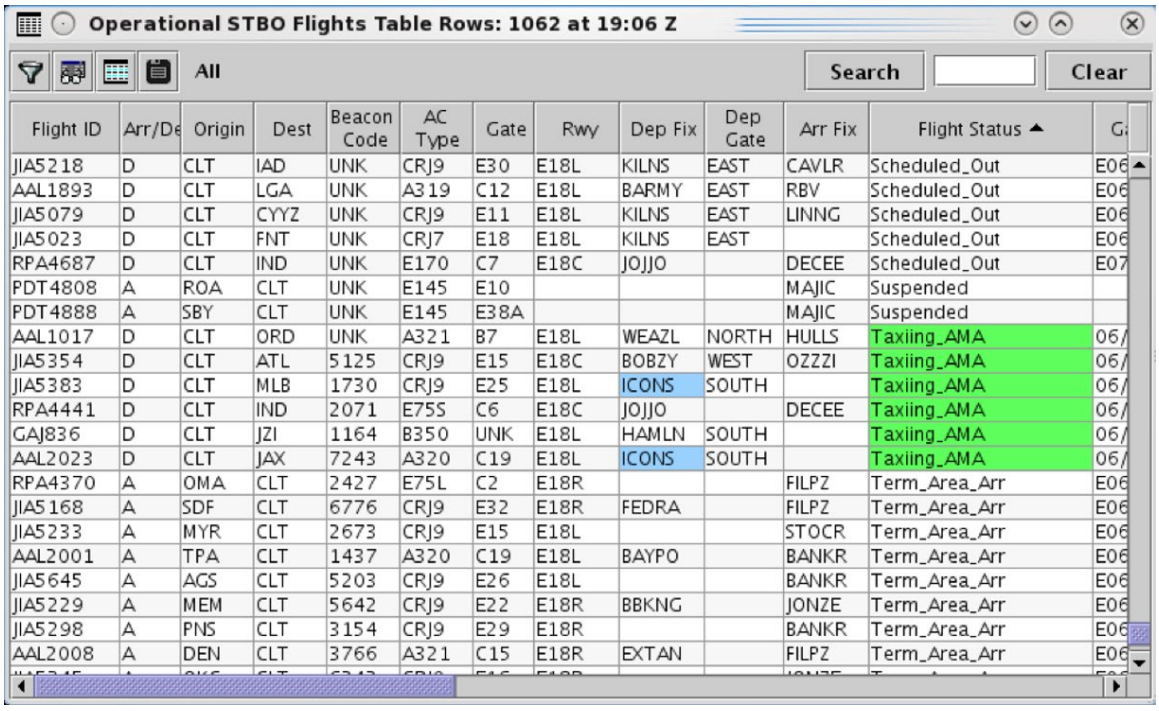


Figure 5.19. Set Field color Alerts: Newly selected color is displayed (in this example, green).



Flight ID	Arr/De	Origin	Dest	Beacon Code	AC Type	Gate	Rwy	Dep Fix	Dep Gate	Arr Fix	Flight Status ▲	Ga
JIA5218	D	CLT	IAD	UNK	CRJ9	E30	E18L	KILNS	EAST	CAVLR	Scheduled_Out	E06
AAL1893	D	CLT	LGA	UNK	A319	C12	E18L	BARMY	EAST	RBV	Scheduled_Out	E06
JIA5079	D	CLT	CYYZ	UNK	CRJ9	E11	E18L	KILNS	EAST	LINNG	Scheduled_Out	E06
JIA5023	D	CLT	FNT	UNK	CRJ7	E18	E18L	KILNS	EAST		Scheduled_Out	E06
RPA4687	D	CLT	IND	UNK	E170	C7	E18C	JOJJO		DECEE	Scheduled_Out	E07
PDT4808	A	ROA	CLT	UNK	E145	E10				MAJIC	Suspended	
PDT4888	A	SBY	CLT	UNK	E145	E38A				MAJIC	Suspended	
AAL1017	D	CLT	ORD	UNK	A321	B7	E18L	WEAZL	NORTH	HULLS	Taxiing_AMA	06/
JIA5354	D	CLT	ATL	5125	CRJ9	E15	E18C	BOBZY	WEST	OZZZI	Taxiing_AMA	06/
JIA5383	D	CLT	MLB	1730	CRJ9	E25	E18L	ICONS	SOUTH		Taxiing_AMA	06/
RPA4441	D	CLT	IND	2071	E75S	C6	E18C	JOJJO		DECEE	Taxiing_AMA	06/
GAJ836	D	CLT	JZI	1164	B350	UNK	E18L	HAMLN	SOUTH		Taxiing_AMA	06/
AAL2023	D	CLT	JAX	7243	A320	C19	E18L	ICONS	SOUTH		Taxiing_AMA	06/
RPA4370	A	OMA	CLT	2427	E75L	C2	E18R			FILPZ	Term_Area_Arr	E06
JIA5168	A	SDF	CLT	6776	CRJ9	E32	E18R	FEDRA		FILPZ	Term_Area_Arr	E06
JIA5233	A	MYR	CLT	2673	CRJ9	E15	E18L			STOCR	Term_Area_Arr	E06
AAL2001	A	TPA	CLT	1437	A320	C19	E18L	BAYPO		BANKR	Term_Area_Arr	E06
JIA5645	A	AGS	CLT	5203	CRJ9	E26	E18L			BANKR	Term_Area_Arr	E06
JIA5229	A	MEM	CLT	5642	CRJ9	E22	E18R	BBKNG		JONZE	Term_Area_Arr	E06
JIA5298	A	PNS	CLT	3154	CRJ9	E29	E18R			BANKR	Term_Area_Arr	E06
AAL2008	A	DEN	CLT	3766	A321	C15	E18R	EXTAN		FILPZ	Term_Area_Arr	E06

Figure 5.20. Flights Table: Field Color Alerts (in this example, Flight Status = Taxiing_AMA is highlighed green).

5.1.3.4 Flights Table: Save for Quick Create

Use "Save for Quick Create" (Figure 5.6) to save Flights Table configuration settings.

To save Flights Table settings:

Step 1: Select the "Save for Quick Create" icon (Figure 5.6) in the toolbar.

***Step 2*:** Enter a file name (e.g., "Tower" in Figure 5.21).

Step 3: Select "Save" (Figure 5.21).

Step 4: At the prompt, select "OK" (Figure 5.21).

Note: To open a saved configuration, use "Create" on the Toolbar (Figure 5.22).

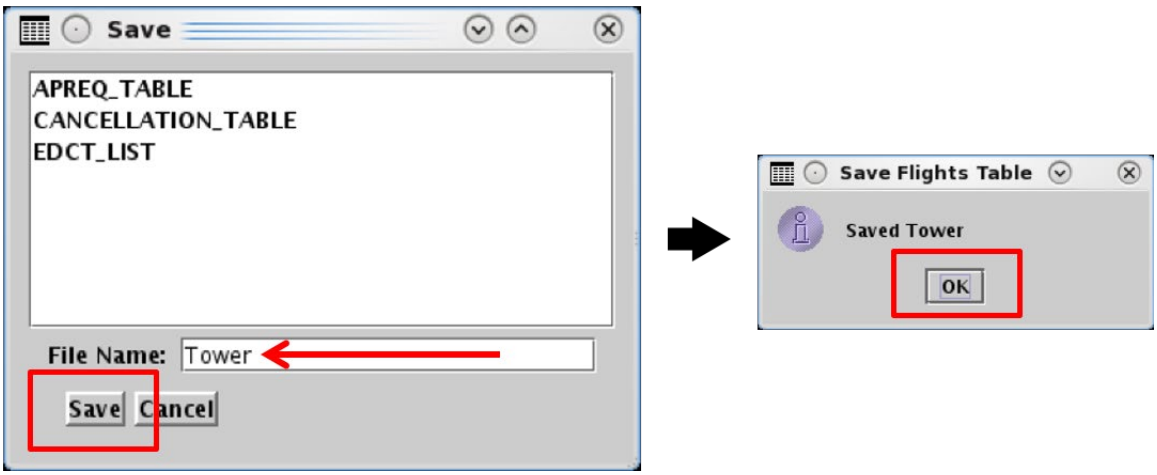


Figure 5.21. Flights Table: Save for Quick Create.

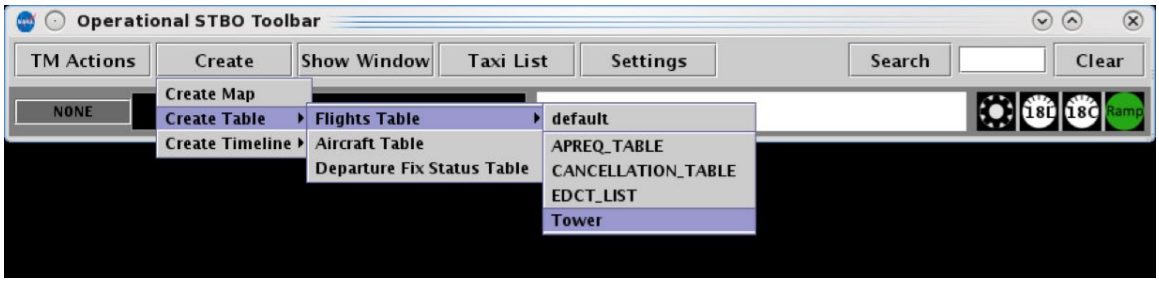


Figure 5.22. Create a Flights Table using a saved configuration (in this example, "Tower").

5.1.4 Flights Table: Search

Use the "Search" function to search for flights in the Flights Table. Search criteria are listed in Table 5.4.

Table 5.4. Flights Table: Search Criteria

Search Criteria	Example
Departure and Arrival Flights	
Flight number	1456
Air Carrier	AAL
Call Sign	AAL1456
Tail Number	N123AB
"GA" for General Avaiation flights	GA
Departure Flights	
3-letter Destination Airport	BOS
Departure Fix	WEAZL
Departure Gate	NORTH
Arrival Flights	
Arrival Fix	CHSLY
3-letter Arrival Airport	CLT

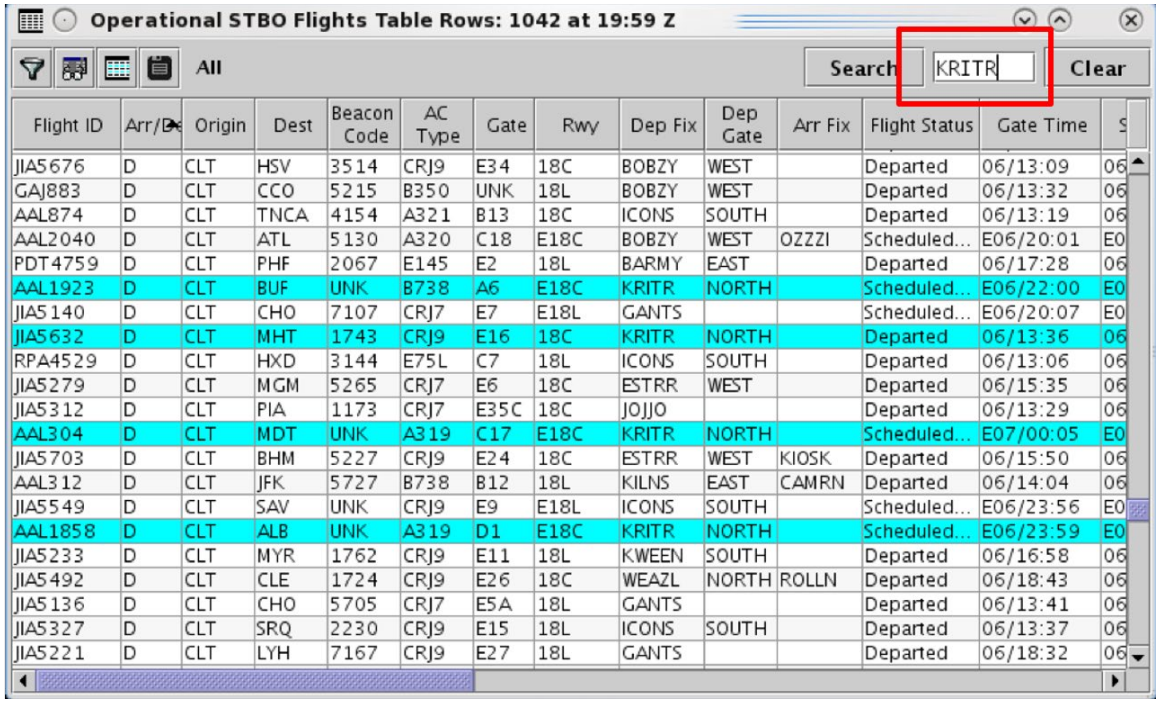
To Search for Flights in the Flights Table:

Step 1: Enter search criteria in the "Search" field on the toolbar (e.g., "KRITR" in Figure 5.23). Flights matching the search criteria are highlighted in the Flights Table, as well as, the:

- Timeline
- Map

Note: As text/digits are entered in the search field, flights matching that criteria (full or partial) will be highlighted.

Alternatively: Select "Clear" to clear the Search field.



Flight ID	Arr/D	Origin	Dest	Beacon Code	AC Type	Gate	Rwy	Dep Fix	Dep Gate	Arr Fix	Flight Status	Gate Time	S
JIA5676	D	CLT	HSV	3514	CRJ9	E34	18C	BOBZY	WEST		Departed	06/13:09	06
GAJ883	D	CLT	CCO	5215	B350	UNK	18L	BOBZY	WEST		Departed	06/13:32	06
AAL874	D	CLT	TNCA	4154	A321	B13	18C	ICONS	SOUTH		Departed	06/13:19	06
AAL2040	D	CLT	ATL	5130	A320	C18	E18C	BOBZY	WEST	OZZZI	Scheduled...	E06/20:01	E0
PDT4759	D	CLT	PHF	2067	E145	E2	18L	BARMY	EAST		Departed	06/17:28	06
AAL1923	D	CLT	BUF	UNK	B738	A6	E18C	KRITR	NORTH		Scheduled...	E06/22:00	E0
JIA5140	D	CLT	CHO	7107	CRJ7	E7	E18L	GANTS			Scheduled...	E06/20:07	E0
JIA5632	D	CLT	MHT	1743	CRJ9	E16	18C	KRITR	NORTH		Departed	06/13:36	06
RPA4529	D	CLT	HXD	3144	E75L	C7	18L	ICONS	SOUTH		Departed	06/13:06	06
JIA5279	D	CLT	MGM	5265	CRJ7	E6	18C	ESTRR	WEST		Departed	06/15:35	06
JIA5312	D	CLT	PIA	1173	CRJ7	E35C	18C	JOJJO			Departed	06/13:29	06
AAL304	D	CLT	MDT	UNK	A319	C17	E18C	KRITR	NORTH		Scheduled...	E07/00:05	E0
JIA5703	D	CLT	BHM	5227	CRJ9	E24	18C	ESTRR	WEST	KIOSK	Departed	06/15:50	06
AAL312	D	CLT	JFK	5727	B738	B12	18L	KILNS	EAST	CAMRN	Departed	06/14:04	06
JIA5549	D	CLT	SAV	UNK	CRJ9	E9	E18L	ICONS	SOUTH		Scheduled...	E06/23:56	E0
AAL1858	D	CLT	ALB	UNK	A319	D1	E18C	KRITR	NORTH		Scheduled...	E06/23:59	E0
JIA5233	D	CLT	MYR	1762	CRJ9	E11	18L	KWEEN	SOUTH		Departed	06/16:58	06
JIA5492	D	CLT	CLE	1724	CRJ9	E26	18C	WEAZL	NORTH	ROLLN	Departed	06/18:43	06
JIA5136	D	CLT	CHO	5705	CRJ7	E5A	18L	GANTS			Departed	06/13:41	06
JIA5327	D	CLT	SRQ	2230	CRJ9	E15	18L	ICONS	SOUTH		Departed	06/13:37	06
JIA5221	D	CLT	LYH	7167	CRJ9	E27	18L	GANTS			Departed	06/18:32	06

Figure 5.23. Flights Table: Search ressults highlighted in cyan (e.g., "KRITR" Departure Fix).

5.2 Aircraft Table

The Aircraft Table displays information about aircrafts, their current status, and current location (Figure 5.24). Only one Aircraft Table can be open at a time. Like the Flights Table, it is updated every minute.

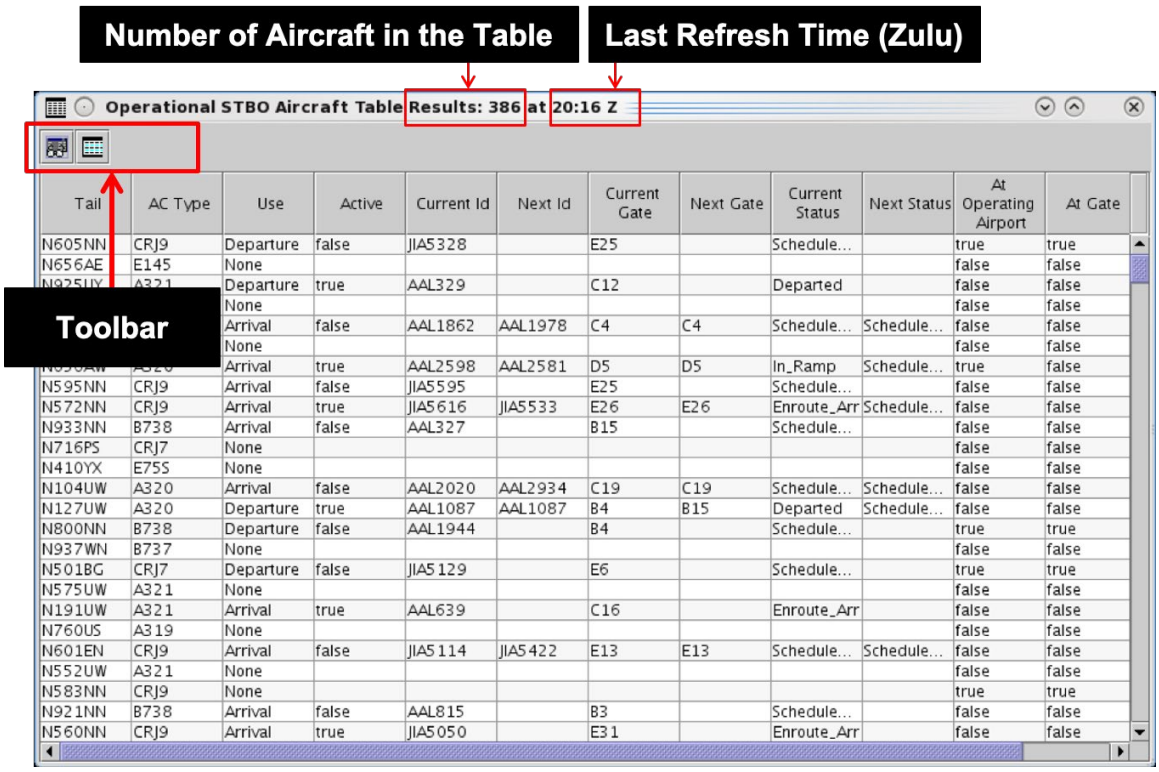


Figure 5.24. Aircraft Table.

Use the "Create" menu on the Toolbar to create a new Aircraft Table (see Section 3.2.2). Use the "Show Window" menu on the Toolbar to bring the Aircraft Table to the front of other windows (see Section 3.3).

5.2.1 Aircraft Table: Select an Aircraft

To select an aircraft, click on a row in the Aircraft Table. If the aircraft is associated with a current flight, the flight is highlighted throughout the STBO Client user interface, including the timeline, map, and Flights Table. See Section 5.1.1 for an example in the Flights Table.

5.2.2 Aircraft Table: Sort Data

Data in the Aircraft Table can be sorted using the same procedure described for the Flights Table (see Section 5.1.2).

5.2.3 Aircraft Table: Toolbar

Two icons are displayed on the Aircraft Table toolbar (Figure 5.25):

- Show/Hide Columns (Section 5.2.3.1)
- Table Color Settings (Section 5.2.3.2)

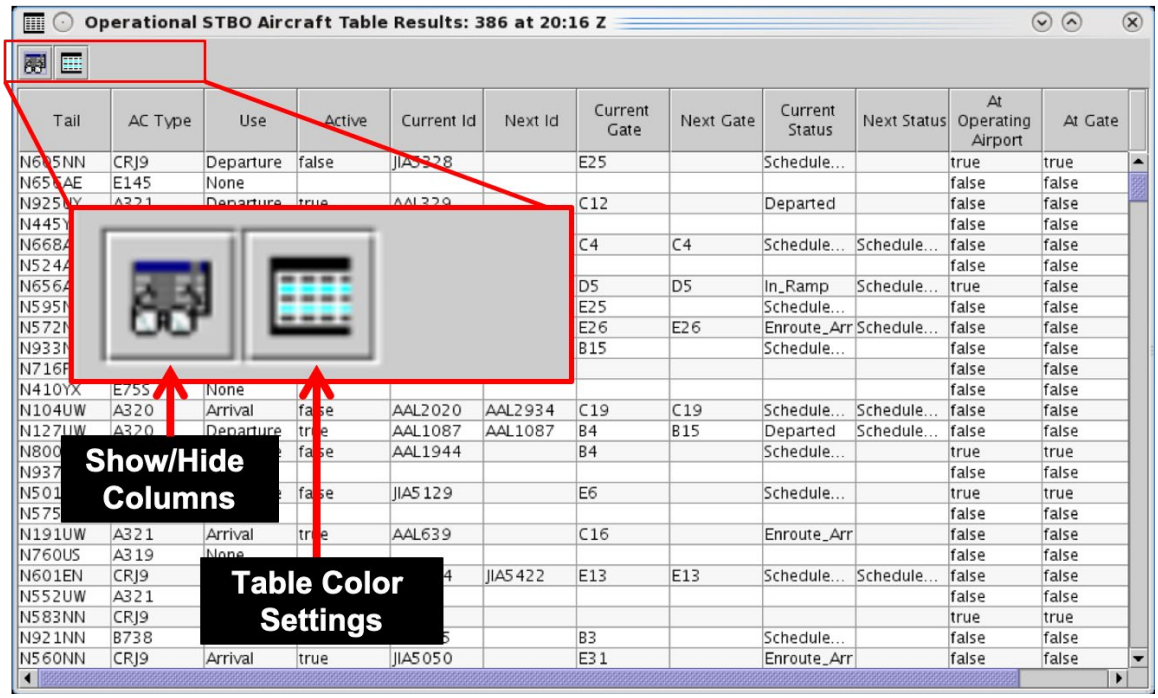


Figure 5.25. Aircraft Table: Toolbar.

5.2.3.1 Show/Hide Columns

Use "Show/Hide Columns" (Figure 5.25) to select which columns of information will be included, and in what order they will be shown, in the Aircraft Table. Columns can be added, removed, and reordered using the same procedure described for the Flights Table (see Section 5.1.3.2).

The information columns that can be included in the Aircraft Table are listed in Table 5.5.

Table 5.5. Aircraft Table: Show/Hide Columns

Column Header	Description
AC Type	International Civil Aviation Organization (ICAO) type of aircraft (i.e., B738: Boeing model 737-800).
Tail	Aircraft tail number.
Last Known Gufi	Last known Globally Unique Flight Identifier (GUFI).

Repositioned	"True" if the flight is repositioned to another part of the airport in the Ramp Traffic Console (RTC) interface. "False" if not.	
Reposition Destination	Location on the airport surface, if selected in the Ramp Traffic Console (RTC) interface.	
Last Known Gate	Last known parking gate.	
Last Known State	• Scheduled • Pushback • Ramp_Txi • Taxi_Out • In_Queue • Off • En_Route • Terminal_Airspace • On_Final • Taxi_In • In_Gate • Suspended	
At Operating Airport	"True" if current flight status is: • Scheduled_Out • Pushback • Taxiing_AMA • In_Queue • On • Out • Taxi_In • In • In_Ramp • Return to Gate	"False" if current flight status is: • Departed • Enroute_Arr • On_Final • Scheduled_In • Suspended • Term_Area_Arr • Cancelled • Unknown
At Gate	"True" if aircraft is at parking gate; otherwise "False."	
Last Known Lat	Aircraft's last known Latitude.	
Last Known Lon	Aircraft's last known Longitude.	
Use	Flight use: • Arrival • Departure • None	
Active	"True" if flight is Active: *Active Arrivals:* • Enroute_Arr • Term_Area_Arr • On_Final • Taxi_In	"False" if flight is Inactive: • Scheduled_Out • Scheduled_In • In • Suspended • Cancelled

	• In_Ramp *Active Departures:* • Pushback • Out • Taxiing_AMA • In_Queue • Departed • Return_to_Gate	• Unknown
Previous Id	Call sign of previous flight.	
Next Id	Call sign of future flight.	
Current Id	Call sign of current flight.	
Current Status	Flight Status: • **Scheduled Out:** A departure flight that has not yet pushed back from the gate. • **Pushback:** A departure flight that is pushing back. • **Out:** A departure flight that is taxiing in the Ramp Area. • **Taxiing AMA:** A departure flight that is taxiing in the Airport Movement Area (AMA). • **In Queue:** A departure flight inside the queue detection box of the assigned runway. • **Departed:** A departure flight that is airborne. • **Scheduled In:** An arrival flight that is not yet being tracked. • **Enroute Arr:** An arrival flight that is in the enroute airspace. • **Term Area Arr:** An arrival flight that is inside the terminal airspace. • **On Final:** An arrival flight that is on final approach. • **On:** An arrival flight that has landed. • **In Ramp:** An arrival flight that is taxiing in the Ramp. • **In:** An arrival flight that is parked at the gate. • **Return to Gate:** A departure that is returning to the gate, after pushing back. • **Suspended:** A departure flight that was scheduled to have already departed, but no updates have been received. • **Cancelled:** A flight that has been cancelled by the airline. • **Unknown:** A flight with an unknown status.	
Next Status	Flight Status of next flight.	
Previous Status	Flight Status of previous flight.	
Previous Gate	Previous parking gate.	
Next Gate	Future parking gate.	
Current Gate	Current parking gate.	

Current Key	Current Key: Call sign, origin airport, destination airport, date, departure time, arrival time.
Previous Key	Current Key: Call sign, origin airport, destination airport, date, departure time, arrival time.
Next Key	Current Key: Call sign, origin airport, destination airport, date, departure time, arrival time.
Hidden	The value is “Hidden” if the flight is removed from the display via “Delete Datablock” or via “Remove Flight Strip” on the Ramp Traffic Console (RTC). Otherwise, blank.

5.2.3.2 Table Color Settings

Use “Table Color Settings” (Figure 5.25) to set an alternate row color in the Aircraft Table. Unlike the Flights Table, Field Color Alerts are not available in the Aircraft Table.

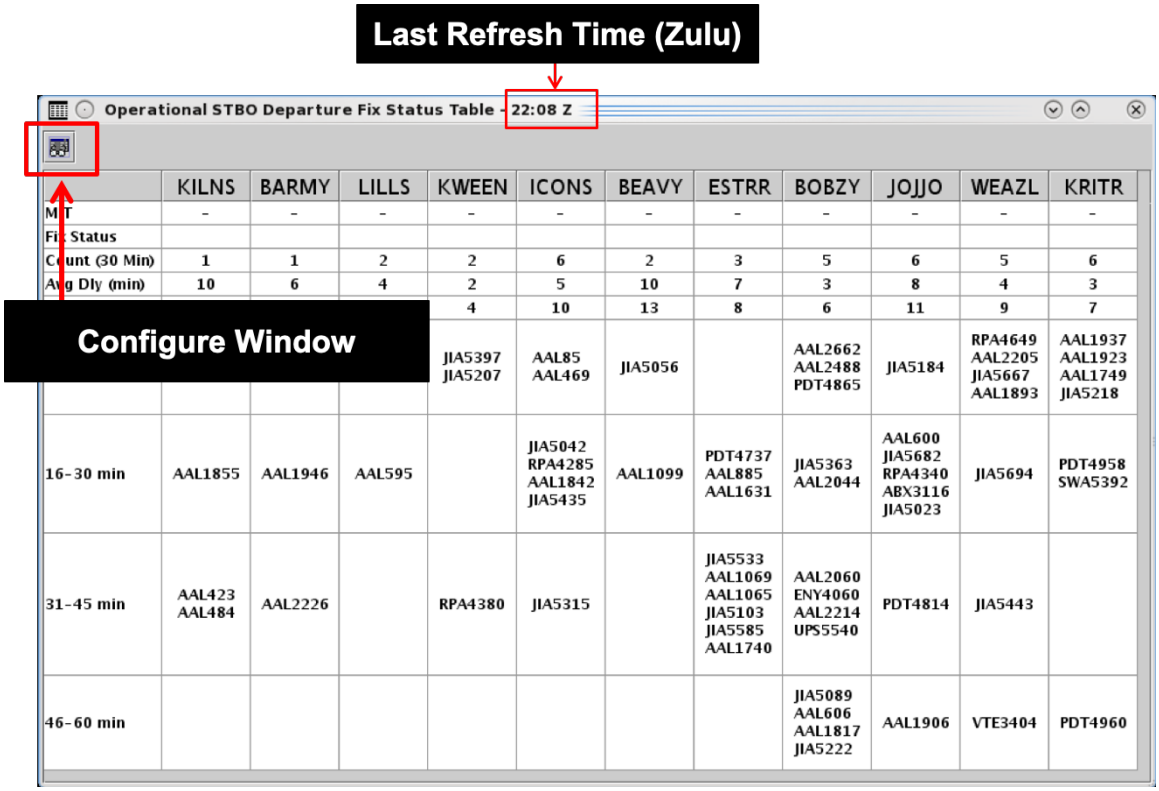
5.2.3.2.1 Set Row Colors

Use the “Set Row Colors” tab in the Aircraft Table Color Settings window to set an alternate row color in the Aircraft Table. Follow the same steps described for the Flights Table (see Section 5.1.3.3.1).

5.3 Departure Fix Status Table

The Departure Fix Status Table displays predicted demand at each Departure Fix in the terminal area. The number of flights expected at each Departure Fix, identified by their call sign, are displayed in 15-minute increments, for up to two hours (Figure 5.26).

Like the Flights and Aircraft Tables, the Departure Fix Table updates every minute. Only one Departure Fix Status Table can be opened at a time.



	KILNS	BARMY	LILLS	KWEEN	ICONS	BEAVY	ESTRR	BOBZY	JOJJO	WEAZL	KRITR
MIT	-	-	-	-	-	-	-	-	-	-	-
Fix Status											
Count (30 Min)	1	1	2	2	6	2	3	5	6	5	6
Avg Dly (min)	10	6	4	2	5	10	7	3	8	4	3
				4	10	13	8	6	11	9	7
				JIA5397 JIA5207	AAL85 AAL469	JIA5056		AAL2662 AAL2488 PDT4865	JIA5184	RPA4649 AAL2205 JIA5667 AAL1893	AAL1937 AAL1923 AAL1749 JIA5218
16-30 min	AAL1855	AAL1946	AAL595		JIA5042 RPA4285 AAL1842 JIA5435	AAL1099	PDT4737 AAL885 AAL1631	JIA5363 AAL2044	AAL600 JIA5682 RPA4340 ABX3116 JIA5023	JIA5694	PDT4958 SWA5392
31-45 min	AAL423 AAL484	AAL2226		RPA4380	JIA5315		JIA5533 AAL1069 AAL1065 JIA5103 JIA5585 AAL1740	AAL2060 ENY4060 AAL2214 UPS5540	PDT4814	JIA5443	
46-60 min								JIA5089 AAL606 AAL1817 JIA5222	AAL1906	VTE3404	PDT4960

Figure 5.26. Departure Fix Status Table.

5.3.1 Configure Window

Use “Configure Window” (Figure 5.26) to select Departure Fixes and set color alerts in the Departure Fix Status Table.

To Configure the Departure Fix Status Table:

Step 1: Select the "Configure Window" icon in the toolbar (Figure 5.26) to open the Departure Fix Configuration window.

Step 2: **Show/Hide Fixes:** Select Departure Fixes to include in the table (e.g., KILNS, BARMY, LILLS … in Figure 5.27).

Step 3: **Show/Hide Properties**: Select properties to display in table. Choose from (Figure 5.27):

- Departure Fix subject to a Miles-in-Trail (MIT) restriction
- Fix Status (closed/alternate) (automatically highlighted in red)
- Count of flights in the next 30 minutes
- Average Delay (in minutes)
- Maximum Delay (in minutes)

Step 4: **Time Interval:** Set the time interval (up to 120 minutes). In the table, time is displayed in 15-minute increments (Figure 5.27).

Step 5: Select "**Add Numeric Threshold**" to set the criteria for color-coding (Figure 5.27):

- Select to which Fix (or, all Fixes) to apply the color-coding.
- Select a Property (MIT, Count, Avg Delay, or Max Delay).
- Enter minimum and maximum values (in units of *nm*, count of flights, or minutes of delay)
- Click on the color box to select a color.

Step 6: Select "Ok" to close the Configuration window (Figure 5.27).

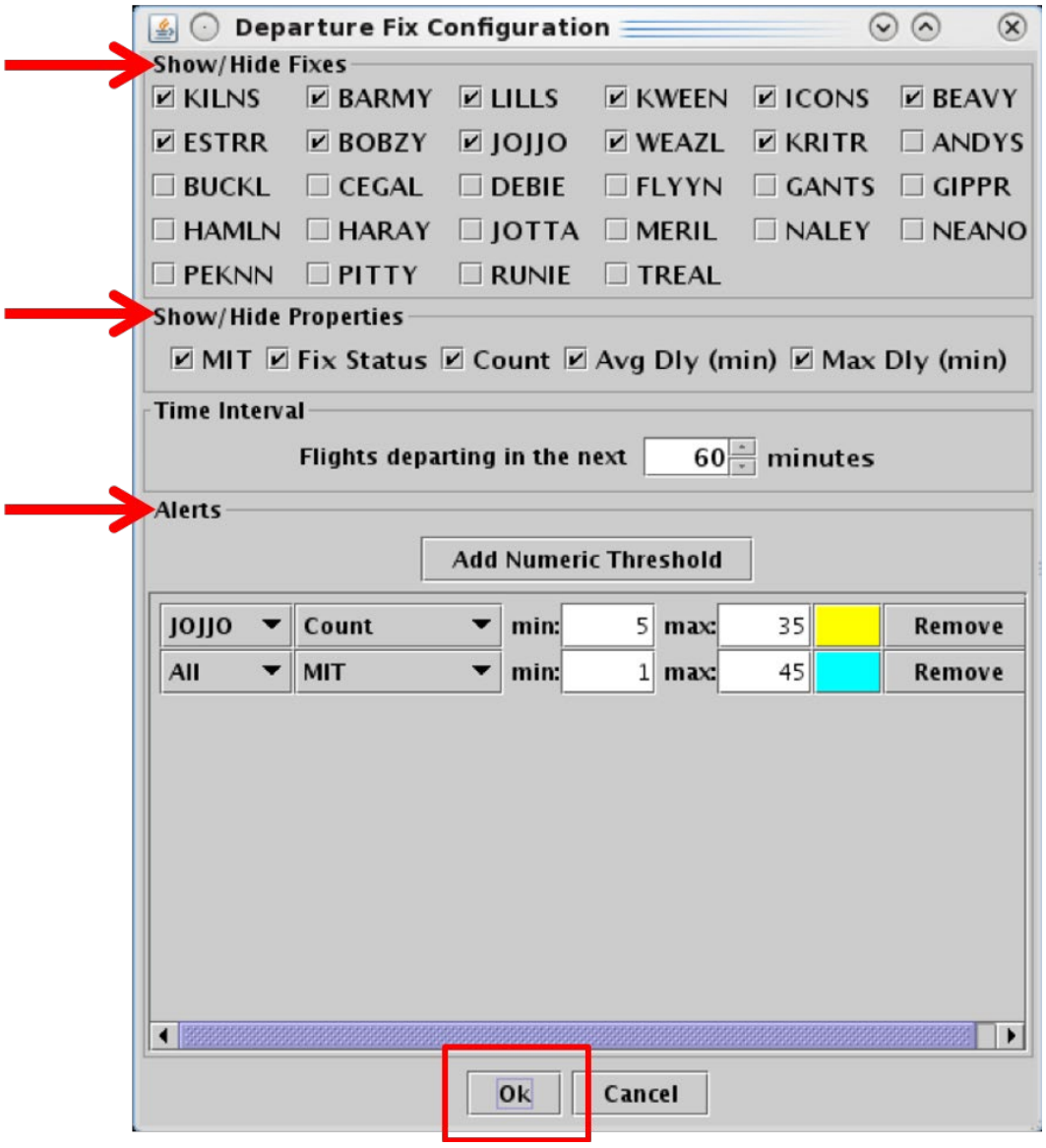
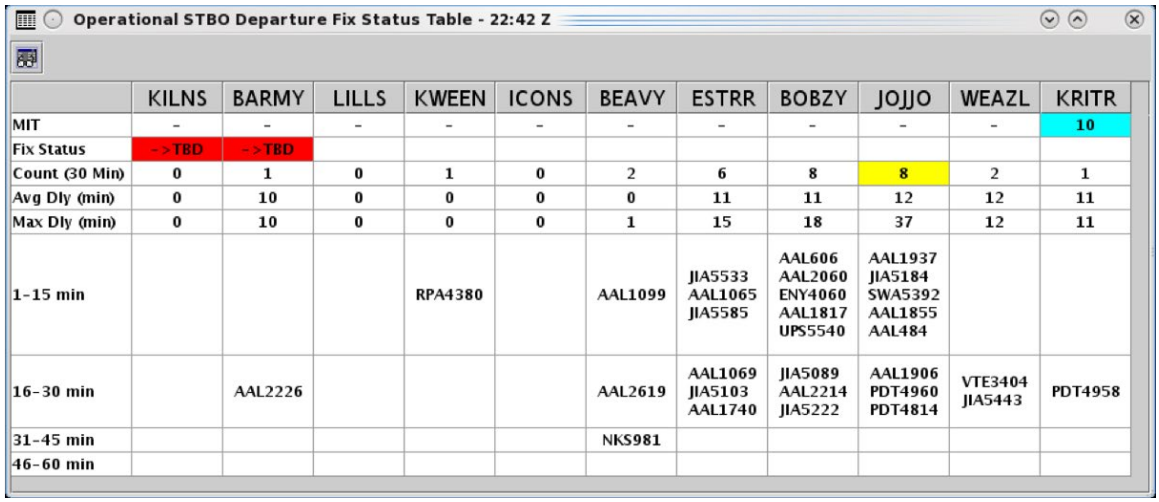


Figure 5.27. Departure Fix Status Table: Configuration Window.

For example, in the Departure Fix Status table in Figure 5.28, based on the color alerts selected in the Configuration window:

- Departure counts between 5 and 35 flights are highlighted in yellow (e.g., JOJJO), and
- Departure Fixes subject to MIT restrictions are highlighted in cyan (e.g., KRITR).

By default, Departure Fix closures are automatically highlighted in red (e.g., KILNS and BARMY).



	KILNS	BARMY	LILLS	KWEEN	ICONS	BEAVY	ESTRR	BOBZY	JOJJO	WEAZL	KRITR
MIT	-	-	-	-	-	-	-	-	-	-	10
Fix Status	->TBD	->TBD									
Count (30 Min)	0	1	0	1	0	2	6	8	8	2	1
Avg Dly (min)	0	10	0	0	0	0	11	11	12	12	11
Max Dly (min)	0	10	0	0	0	1	15	18	37	12	11
1-15 min				RPA4380		AAL1099	JIA5533 AAL1065 JIA5585	AAL606 AAL2060 ENY4060 AAL1817 UPS5540	AAL1937 JIA5184 SWA5392 AAL1855 AAL484		
16-30 min		AAL2226				AAL2619	AAL1069 JIA5103 AAL1740	JIA5089 AAL2214 JIA5222	AAL1906 PDT4960 PDT4814	VTE3404 JIA5443	PDT4958
31-45 min						NKS981					
46-60 min											

Figure 5.28. Departure Fix Status Table: Shown with color alerts for MIT restrictions (cyan), Departure Counts between 5 and 35 (yellow), and Departure Fix closures (red by default).

6 STBO Client: Timelines

A timeline displays information about individual departure and arrival flights to create a visual representation of traffic demand relative to time. Each flight is represented by a configurable datablock connected to the timeline by a leader line (Figure 6.1).

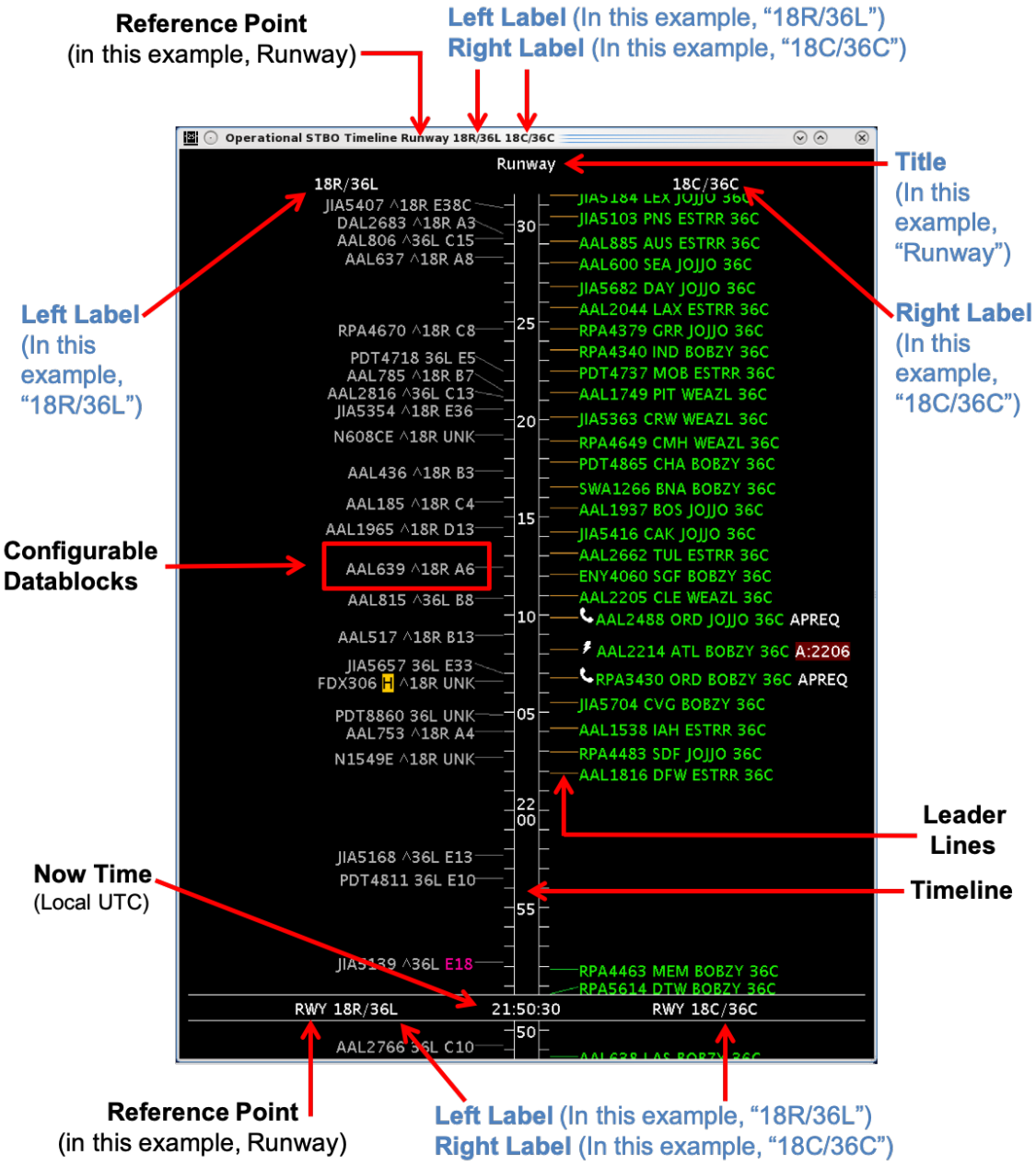


Figure 6.1. Timeline overview. *Labels in blue are configurable.

More than one timeline window can be open at the same time and each can be configured independently of the others.

6.1 Timeline: Reference Point

Flights are positioned along the timeline relative to the reference point. A timeline can be created using one of four reference points:

- Runway
- Arrival/Departure Fix
- Parking Gate, or
- Spot.

The selected reference point applies to both sides of a timeline and is automatically displayed on the title bar of the timeline window, as the title of the timeline, and next to the "Now" time (for example, see "Runway" in Figure 6.1).

"Now" time is displayed in local UTC time (e.g., 21:50:30 in Figure 6.2).

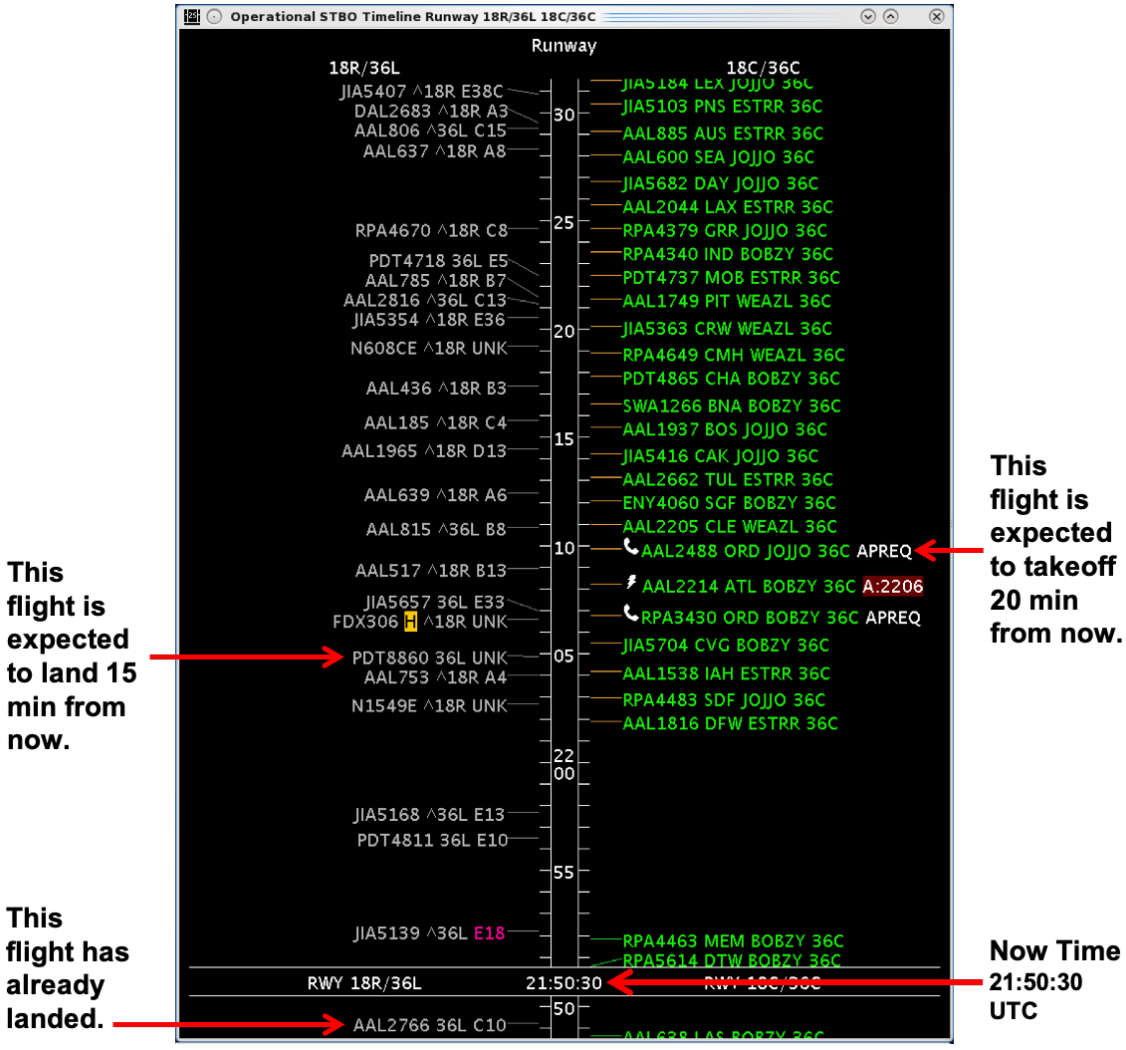


Figure 6.2. Timeline relative to Reference Point.

Flights are positioned along the timeline relative to their expected time at the reference point. For each of the four reference points, flights are positioned based on:

- **Runway:** When the flight is expected to takeoff off (touchdown).
- **Arrival/Departure Fix:** When the flight is expected to cross the fix.
- **Parking Gate:** When the flight is expected to push back from (arrive at) the gate.
- **Spot:** When the flight is expected to cross the spot to exit (enter) the ramp.

6.2 Timeline: Leader Lines

Leader lines connect the flight datablock to the timeline. The color-coding of the lines indicates status of the flight (Figure 6.3). Leader line colors are pre-defined and not configurable.

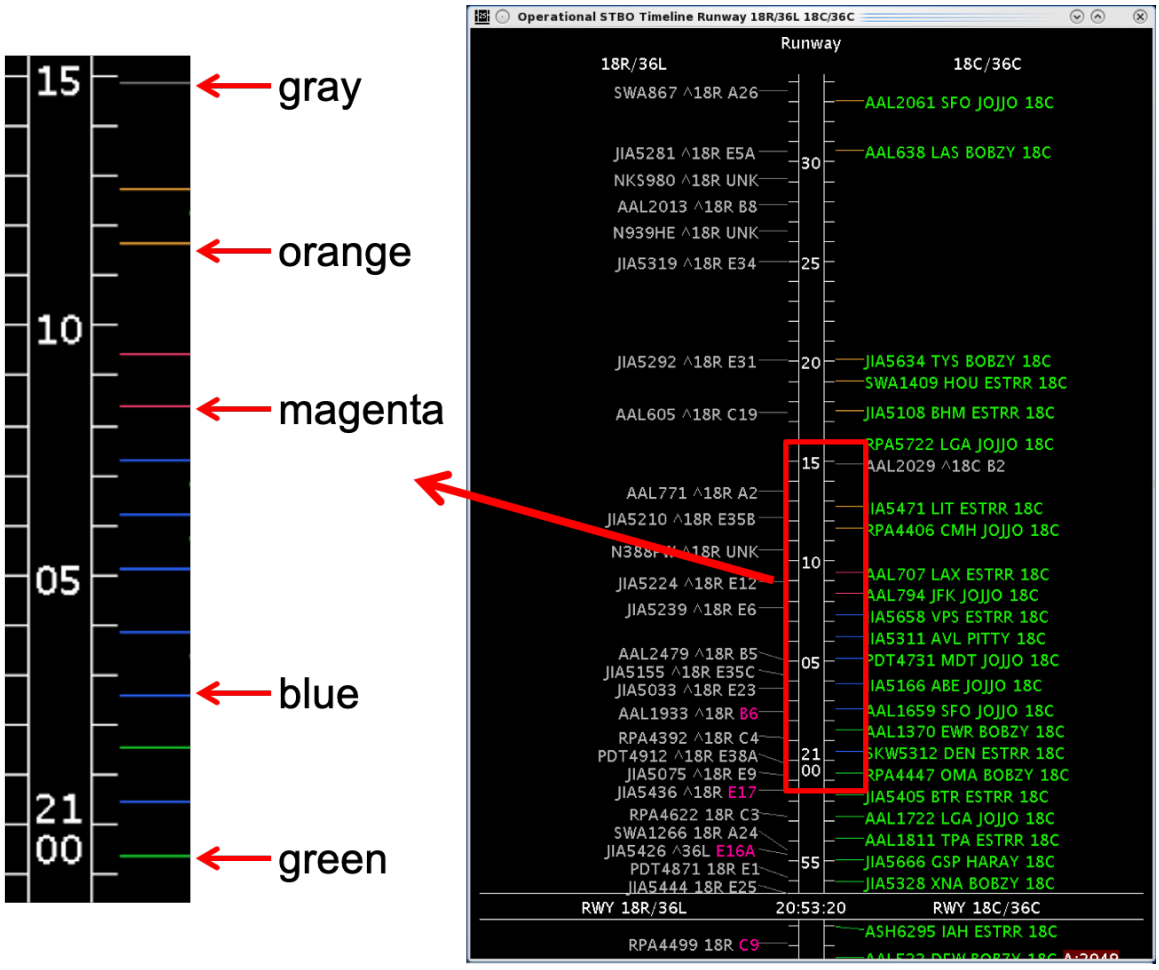


Figure 6.3. Timeline leader lines connecting datablocks to the timeline indicate flight status.

Table 6.1. Leader Line Colors

Leader Line Color	Description
Grey	Arrival flight.
Orange	Departure flight is scheduled but not yet active.
Magenta	Departure flight is in pushback/spool-up state.
Blue	Departure flight is in the Ramp taxi-out state.
Green	Departure flight is in the AMA or has already taken off.

6.3 Timeline: Select a Flight

Select a flight on the timeline to highlight the flight throughout the user interface.

To select a flight on the Timeline:

Step 1: Select a datablock on the timeline. Once selected, the datablock is highlighted (e.g., AAL2061 in Figure 6.4).

Note: When a flight is selected on the timeline, it is also highlighted on the:

- ***Map (Figure 6.5).***
- ***Flights Table (Figure 6.6)***

Alternatively: Click elsewhere on the timeline background to deselect the flight.

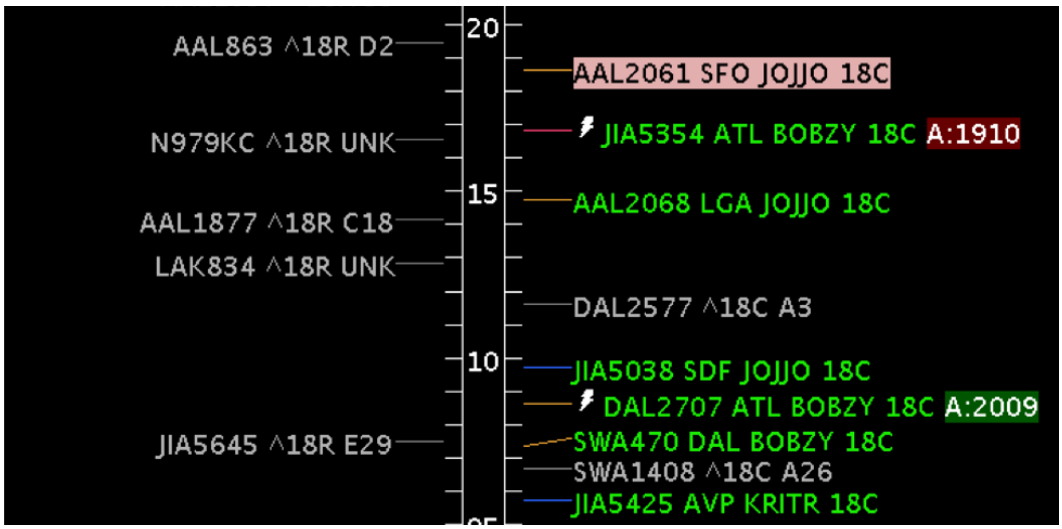


Figure 6.4. Selected flight is highlighted on the timeline (e.g., AAL2061).

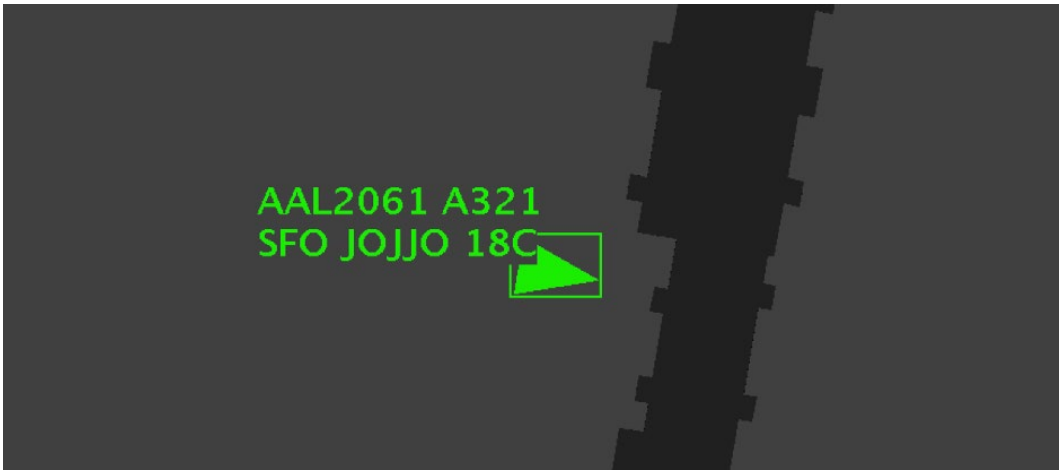
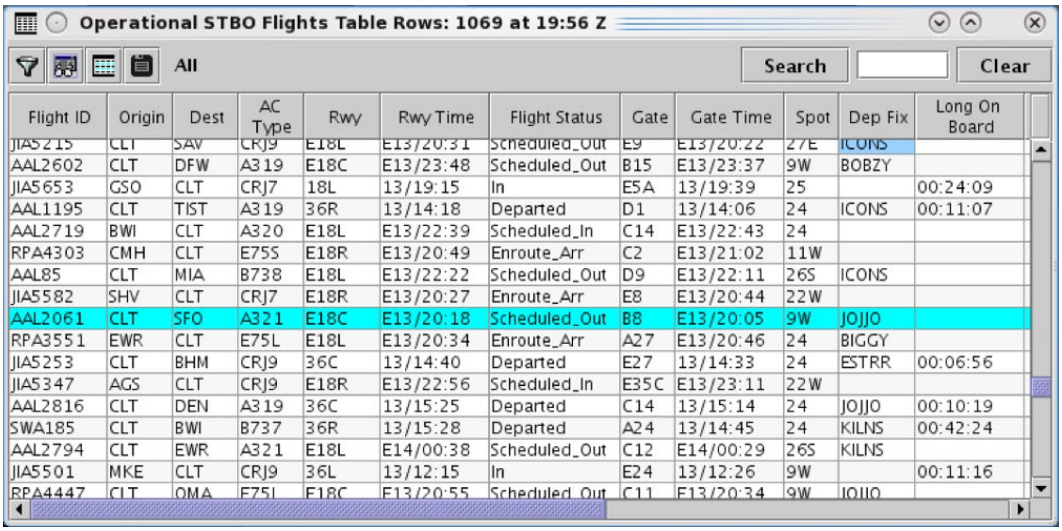


Figure 6.5. Selected flight is highlighted on the map (e.g., AAL2061).



Flight ID	Origin	Dest	AC Type	Rwy	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix	Long On Board
JIA5215	CLT	SAV	CRJ9	E18L	E13/20:31	Scheduled_Out	E9	E13/20:22	27E	ICONS	
AAL2602	CLT	DFW	A319	E18C	E13/23:48	Scheduled_Out	B15	E13/23:37	9W	BOBZY	
JIA5653	GSO	CLT	CRJ7	18L	13/19:15	In	E5A	13/19:39	25		00:24:09
AAL1195	CLT	TIST	A319	36R	13/14:18	Departed	D1	13/14:06	24	ICONS	00:11:07
AAL2719	BWI	CLT	A320	E18L	E13/22:39	Scheduled_In	C14	E13/22:43	24		
RPA4303	CMH	CLT	E75S	E18R	E13/20:49	Enroute_Arr	C2	E13/21:02	11W		
AAL85	CLT	MIA	B738	E18L	E13/22:22	Scheduled_Out	D9	E13/22:11	26S	ICONS	
JIA5582	SHV	CLT	CRJ7	E18R	E13/20:27	Enroute_Arr	E8	E13/20:44	22W		
AAL2061	CLT	SFO	A321	E18C	E13/20:18	Scheduled_Out	B8	E13/20:05	9W	JOJJO	
RPA3551	EWR	CLT	E75L	E18L	E13/20:34	Enroute_Arr	A27	E13/20:46	24	BIGGY	
JIA5253	CLT	BHM	CRJ9	36C	13/14:40	Departed	E27	13/14:33	24	ESTRR	00:06:56
JIA5347	AGS	CLT	CRJ9	E18R	E13/22:56	Scheduled_In	E35C	E13/23:11	22W		
AAL2816	CLT	DEN	A319	36C	13/15:25	Departed	C14	13/15:14	24	JOJJO	00:10:19
SWA185	CLT	BWI	B737	36R	13/15:28	Departed	A24	13/14:45	24	KILNS	00:42:24
AAL2794	CLT	EWR	A321	E18L	E14/00:38	Scheduled_Out	C12	E14/00:29	26S	KILNS	
JIA5501	MKE	CLT	CRJ9	36L	13/12:15	In	E24	13/12:26	9W		00:11:16
RPA4447	CLT	OMA	E75L	E18C	E13/20:55	Scheduled_Out	C11	E13/20:34	9W	JOJJO	

Figure 6.6. Selected flight is highlighted on the Flights Table (e.g., AAL2061).

6.4 Timeline: Reset Interval

The timeline can be moved, or dragged, forward and backward in time. To move the timeline, click and hold inside the center timeline column and drag the timeline:

- **Down** to view flights farther into future, or
- **Up** to view flights farther into the past.

When the timeline is moved, the start and end times at the top and bottom of the visible window change, but the duration of time in the window remains constant. The size of the visible time window is defined by the "Begin At" and "End At" fields in the Timeline Settings menu (see Section 6.7.5).

When the timeline is moved up or down, "Now" time also moves. If moved far enough, "Now" time may no longer be visible in the current window (Figure 6.7, right).

Figure 6.7. Click and drag the timeline to move forward and backward in time.

Once the timeline has been moved in either direction, the option to reset the timeline is available on the timeline's right-click menu.

To reset the Timeline interval:

> ***Note: The "Reset Interval" option is only available on the right-click menu once the timeline has been moved up or down.***
>
> ***Step 1:*** Right-click on the timeline and select "Reset Interval" (Figure 6.8).
>
> ***Note: The timeline resets to the "Begin At" and "End At" window as defined in the Timeline Settings window.***

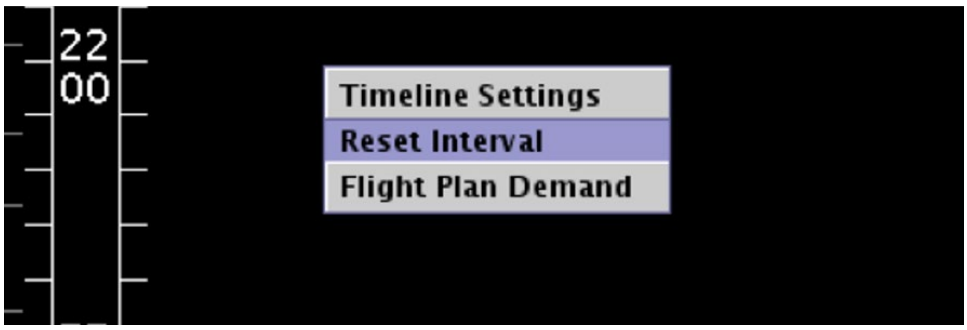


Figure 6.8. Timeline right-click menu: Reset Interval.

6.5 Timeline: Flight Plan Demand

Use the Flight Plan Demand option to draw a graphical indicator around a window of time on the timeline. Flight Plan Demand can be created using a **Rolling Time Period** by defining a duration of time or a **Fixed Time Period** by selecting a start and end time.

To open the Flight Plan Demand window:

Step 1: Right-click on the timeline and select "Flight Plan Demand" (Figure 6.9).

Step 2: Check the "Show Flight Plan Demand" box (Figure 6.10).

Note: If multiple timeline windows are open, a Flight Plan Demand created on one timeline will be shown on all timelines.

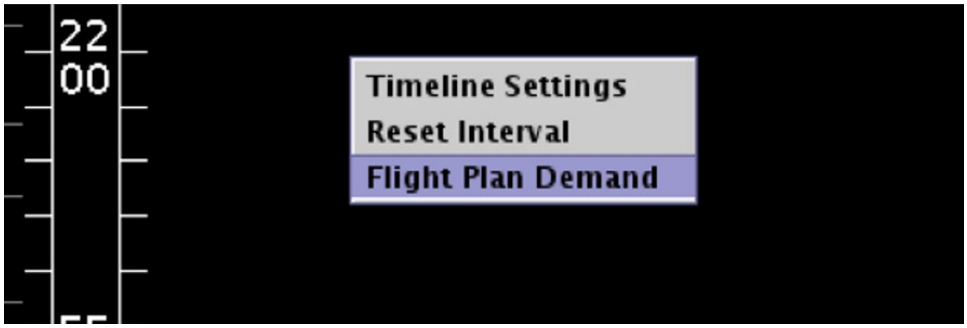


Figure 6.9. Timeline right-click menu: Flight Plan Demand.

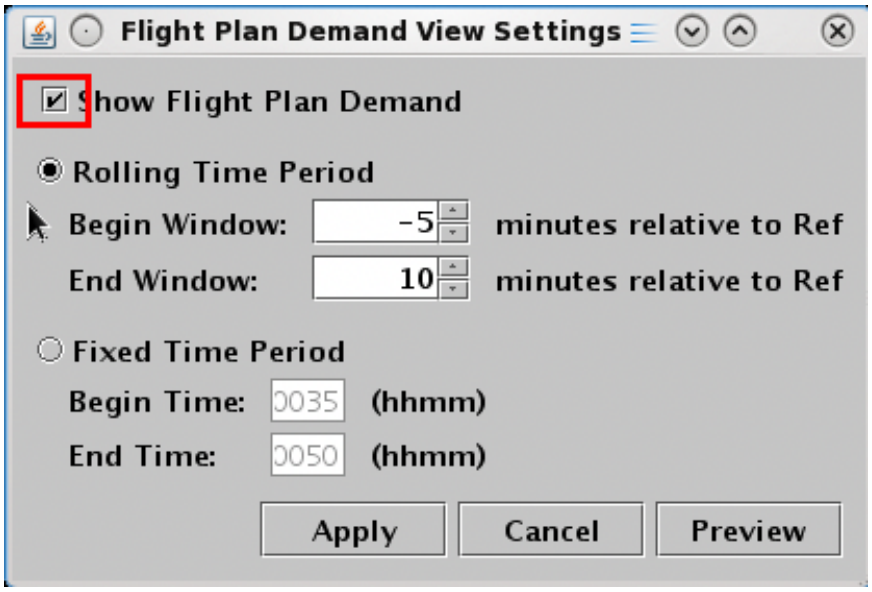


Figure 6.10. Flight Plan Demand View Settings.

To create a Flight Plan Demand with *Rolling Time Period* (cont'd from above):

Step 3: Select the radio button next to "Rolling Time Period" (Figure 6.11).

Step 4: Enter "Begin Window" and "End Window," expressed as minutes relative to the Reference Point. In Figure 6.11, the window begins 5 min *below* "Now" time (Reference Point) and ends 10 min *above* "Now" time. In other words, five minutes into the past and 10 into the future.

Note: The "End Window" value must be greater than the "Begin Window" value. Enter:

- ***A negative number for a time in the past (below "Now" time),***
- ***A positive number for a time in the future (above "Now" time),***
- ***0 (zero) minutes for "Now" time at the Reference Point.***

Step 5: Select "Apply" to display the Flight Plan Demand on the timeline or "Preview" to display it without closing the Settings window (Figure 6.11).

Note: As shown on the timeline in Figure 6.12, the window above "Now" time is outlined in white; the window below "Now" time is outlined in magenta.

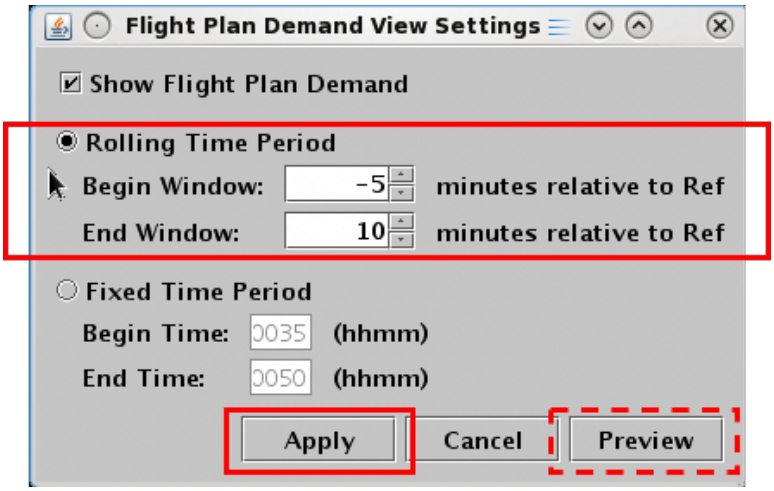


Figure 6.11. Flight Plan Demand View Settings: Rolling Time Period.

The numbers at the bottom of each column of the timeline show the ratio of arrival flights (white) to departure flights (green) in that period. Flights *above* "Now" time are counted separately from those *below* "Now" time (outlined in magenta).

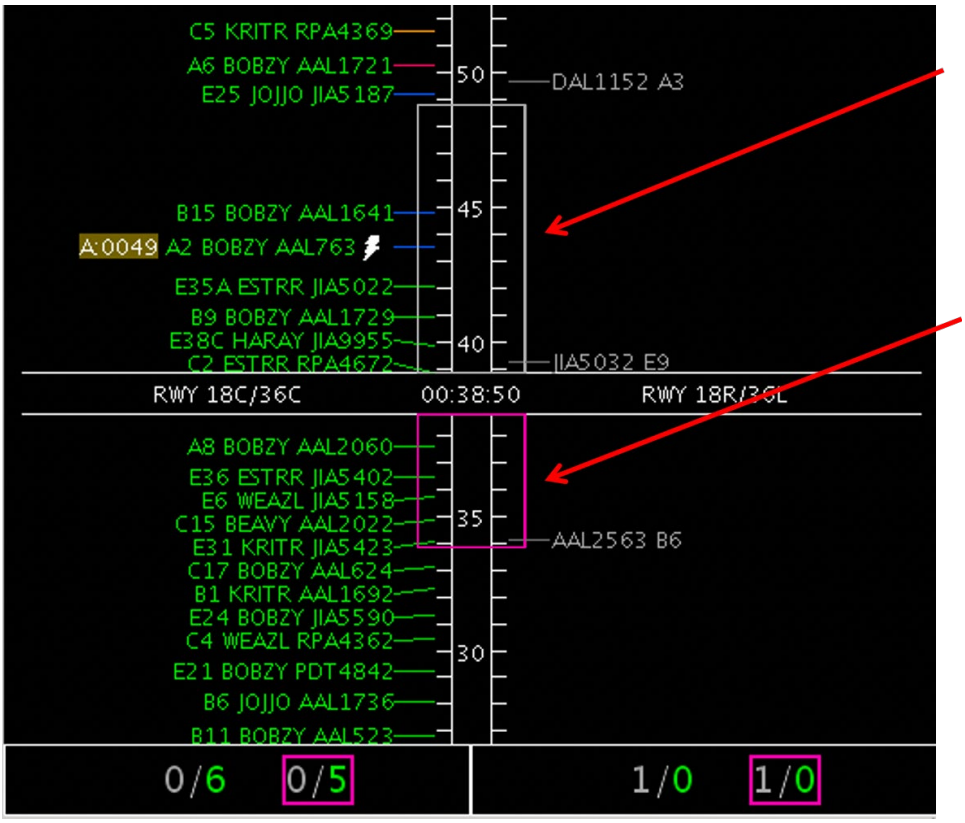


Figure 6.12. Flight Plan Demand with a Rolling Time Period (5 min below "Now" time and 10 above "Now" time, in this example). Above "Now" time, the window is outlined in white; below "Now" time, the window is outlined in magenta.

In Figure 6.12, in the left column, there are zero arrivals and 6 departures *above* "Now" time and zero arrivals and 5 departures *below* "Now" time (outlined in magenta). In the right column, there is 1 arrival and zero departures *above* "Now" time and 1 arrival and zero departures *below* "Now" time (outlined in magenta).

To create a Flight Plan Demand with *Fixed Time Period* (cont'd from above):

Step 3: Select the radio button next to "Fixed Time Period" (Figure 6.13).

Step 4: Enter "Begin Time" and "End Time," expressed in *hhmm UTC.* In Figure 6.13, the window begins at 0035 and ends at 0050 UTC.

Note: "End Time" must be later than "Begin Time."

Step 5: Select "Apply" to display the Flight Plan Demand on the timeline or "Preview" to display it without closing the Settings window (Figure 6.13).

Note: As shown on the timeline in Figure 6.14, the window above "Now" time is outlined in white; the window below "Now" time is outlined in magenta.

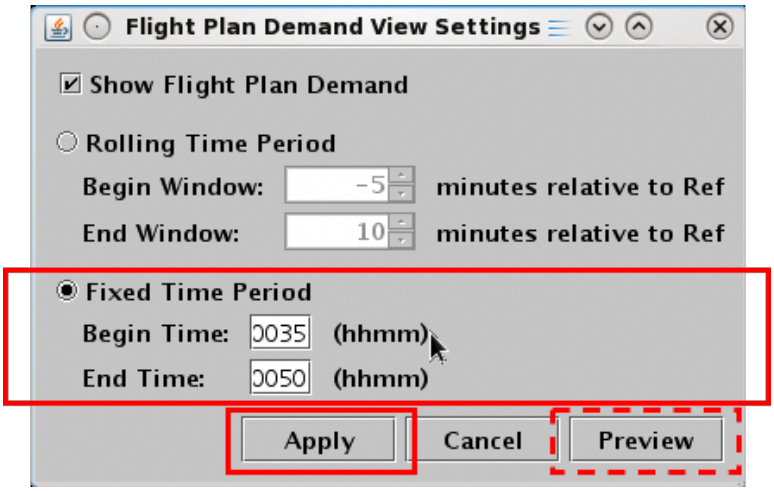


Figure 6.13. Flight Plan Demand View Settings: Fixed Time Period.

The numbers at the bottom of each column of the timeline show the ratio of arrival flights (white) to departure flights (green) in that period. Flights *above* "Now" time are counted separately from those *below* "Now" time (outlined in magenta).

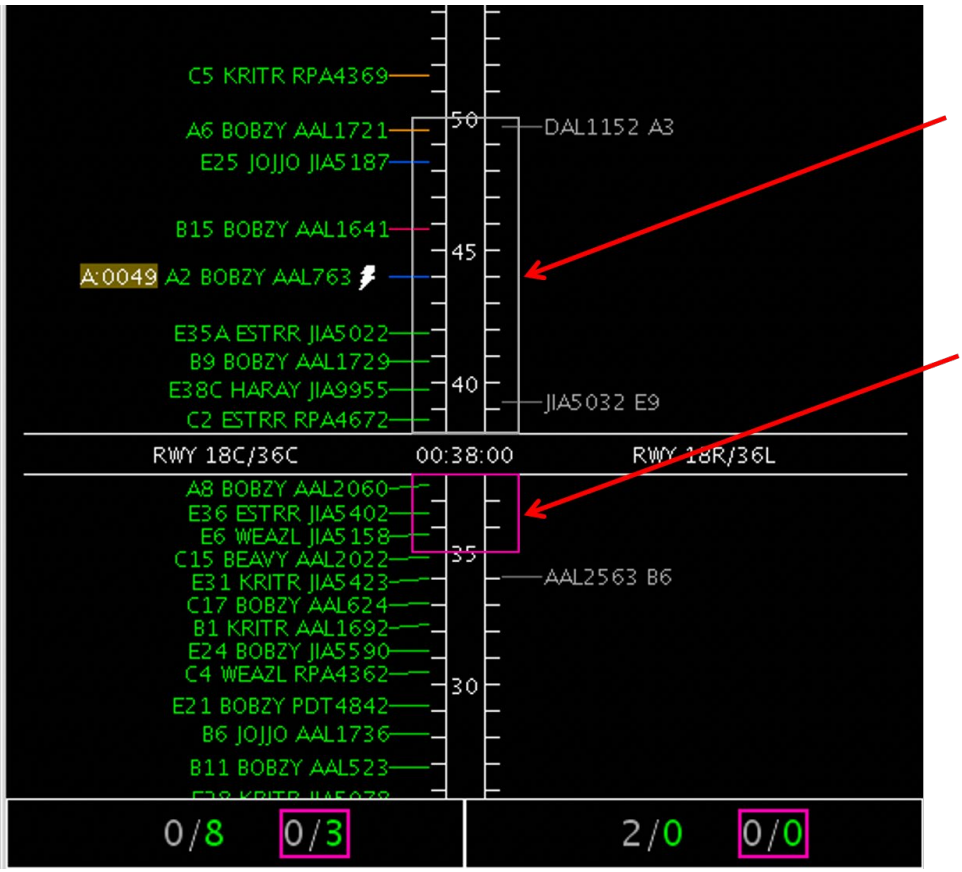


Figure 6.14. Flight Plan Demand with a Fixed Time Period (0035 to 0050 UTC, in this example). Above "Now" time, the window is outlined in white; below "Now" time, the window is outlined in magenta.

In Figure 6.14, in the left column, there are zero arrivals and 8 departures *above* "Now" time and zero arrivals and 3 departures *below* "Now" time (outlined in magenta). In the right column, there are 2 arrivals and zero departures *above* "Now" time and zero arrivals and zero departures *below* "Now" time (outlined in magenta).

To remove a Flight Plan Demand from the Timeline:

Step 1: Right-click on the timeline and select "Flight Plan Demand" (Figure 6.9).

Step 2: Uncheck "Show Flight Plan Demand" (Figure 6.15).

Note: If multiple Timeline windows are open, the Flight Plan Demand is removed from all timelines.

Step 3: Select "Apply" (Figure 6.15).

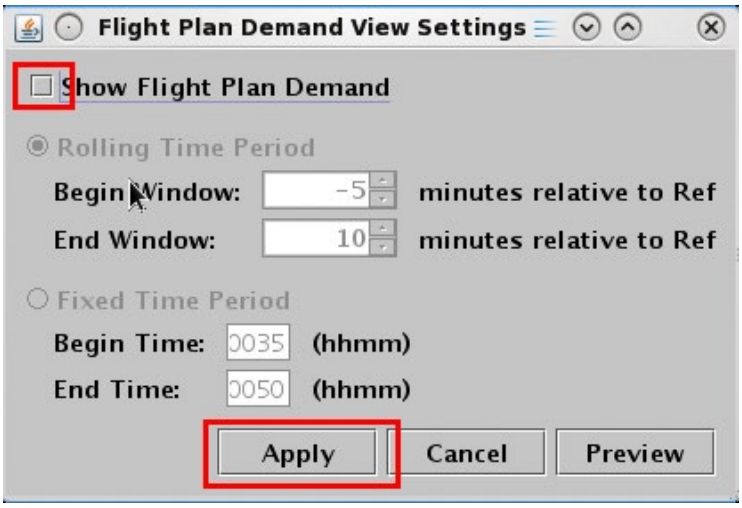


Figure 6.15. Flight Plan Demand View Settings: Uncheck to remove from Timeline(s).

6.6 Timeline: Schedule Configuration Change

Use the "Schedule Configuration Change" option to open the Runway Utilization tab on the TM Actions Panel (Figure 6.17). See Section 3.1.6 for a full description of the Runway Utilization tab.

"Schedule Configuration Change" is available by right-clicking within the center of the timeline (see red arrow in Figure 6.16). Configuration changes are indicated at their start time along the timeline by "CC," in red (Figure 6.18).

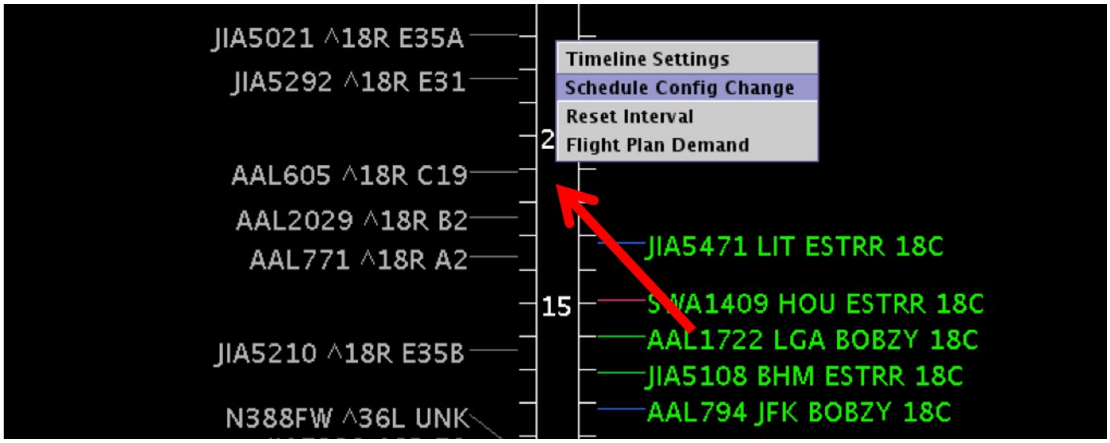


Figure 6.16. Timeline Right-Click Menu: Schedule Config Change (right-click in the timeline).

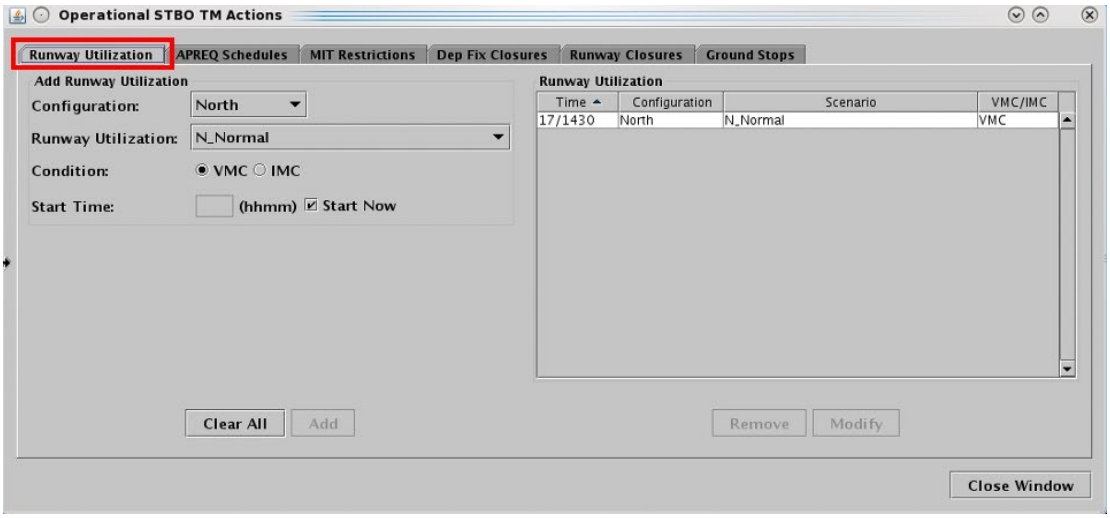


Figure 6.17. TM Actions Panel: Runway Utilization tab (see Section 3.1.6 for more information about the Runway Utilization tab).

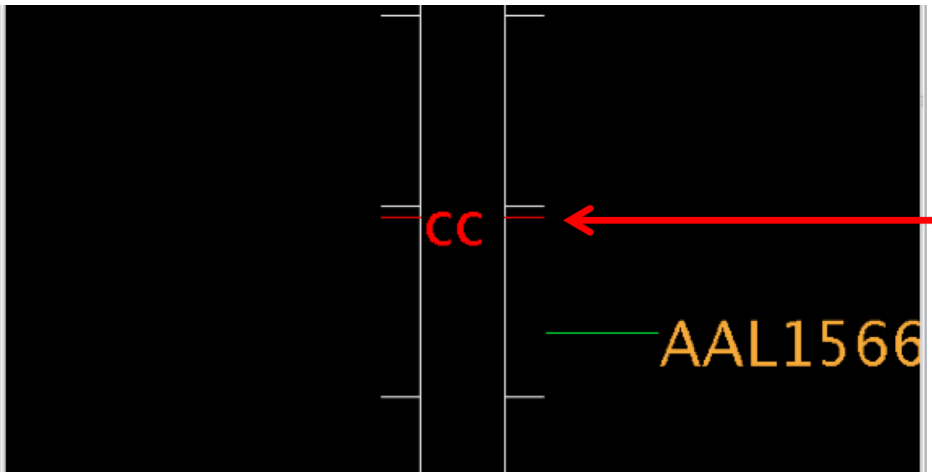


Figure 6.18. Timeline: Runway Utilization changes are indicated at their start time along the timeline by "CC" (in red) for Configuration Change.

6.7 Timeline: Settings

Use the "Timeline Settings" window to configure timeline parameters, reference point, labels, color schemes, datablock options, and filter criteria (Figure 6.20).

To open the Timeline Settings window:

Step 1: Right-click anywhere on the timeline background, that is, anywhere not on a flight datablock (Figure 6.19).

Step 2: Select "Timeline Settings" to open the Timeline Settings window (Figure 6.20).

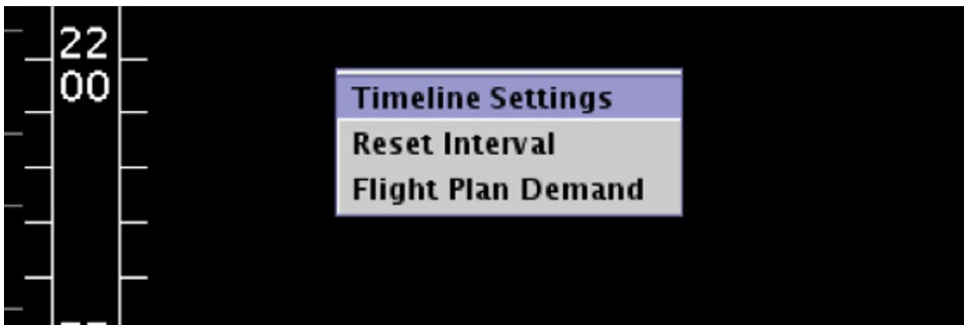


Figure 6.19. Timeline right-click menu: Timeline Settings

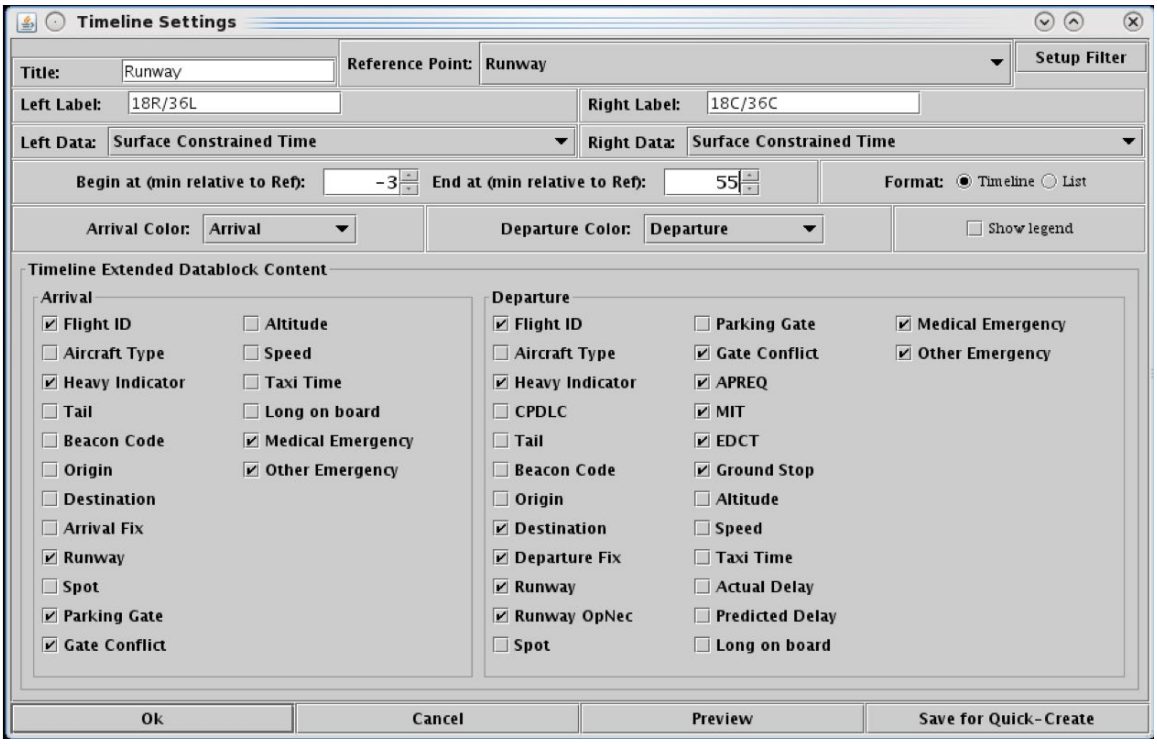


Figure 6.20. Timeline Settings window.

6.7.1 Reference Point

Flights are positioned along the timeline relative to their predicted arrival at the Reference Point. A timeline can be created using one of four reference points.

- Runway
- Arrival/Departure Fix
- Parking Gate, or
- Spot

Each reference point is described below.

6.7.1.1 Runway

When “Runway” is selected as the reference point, the position of flights on the timeline, relative to “Now” time, reflects the surface scheduler's prediction of ON time for arrivals and OFF time for departures and

For departure flights, OFF time is either the Target Takeoff Time (TTOT) or Earliest Feasible Takeoff Time (EFTT).

- **TTOT** of flights at the gate is a prediction of OFF time based on flight’s pushback ready time and predicted taxi times. For flights with a Controlled Takeoff Time (CTOT), because of either Expect Departure Clearance Times (EDCTs) or Approval Requests (APREQs)/Call for Releases (CFRs), the TTOT may equal the Controlled Takeoff Time (CTOT).
- **EFTT** is only provided for APREQs that have yet to be negotiated with Center.

6.7.1.2 Arrival/Departure Fix

When “Arrival/Departure Fix” is selected as the reference point, the position of flights on the timeline, relative to “Now” time, reflects the prediction of when departure flights will cross their assigned departure fix and when arrival flights will cross their assigned arrival fix.

6.7.1.3 Parking Gate

When “Parking Gate” is selected as the reference point, the position of flights on the timeline, relative to “Now” time, reflects the surface scheduler’s prediction of “IN” time for arrivals and “OUT” (pushback) time for departures.

6.7.1.4 Spot

When “Spot” is selected as the reference point, the position of flights on the timeline, relative to “Now” time, reflects the surface scheduler’s prediction of spot-crossing time. That is, exiting the Ramp area for departures and entering the Ramp area for arrivals.

To change the Reference Point of an existing Timeline:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the Timeline Settings window, click on the "Reference Point" dropdown menu and select a Reference Point (e.g., "Runway" in Figure 6.21):

- Runway
- Arr/Dep Fix
- Parking gate
- Spot

Step 3: Select "Ok" to apply the change or "Preview" to preview the changes on the timeline (Figure 6.21).

Note: The selected reference point applies to both sides of a timeline and is automatically updated on the title bar, in the title of the timeline, and on the reference line, next to the "Now" Time (Figure 6.22).

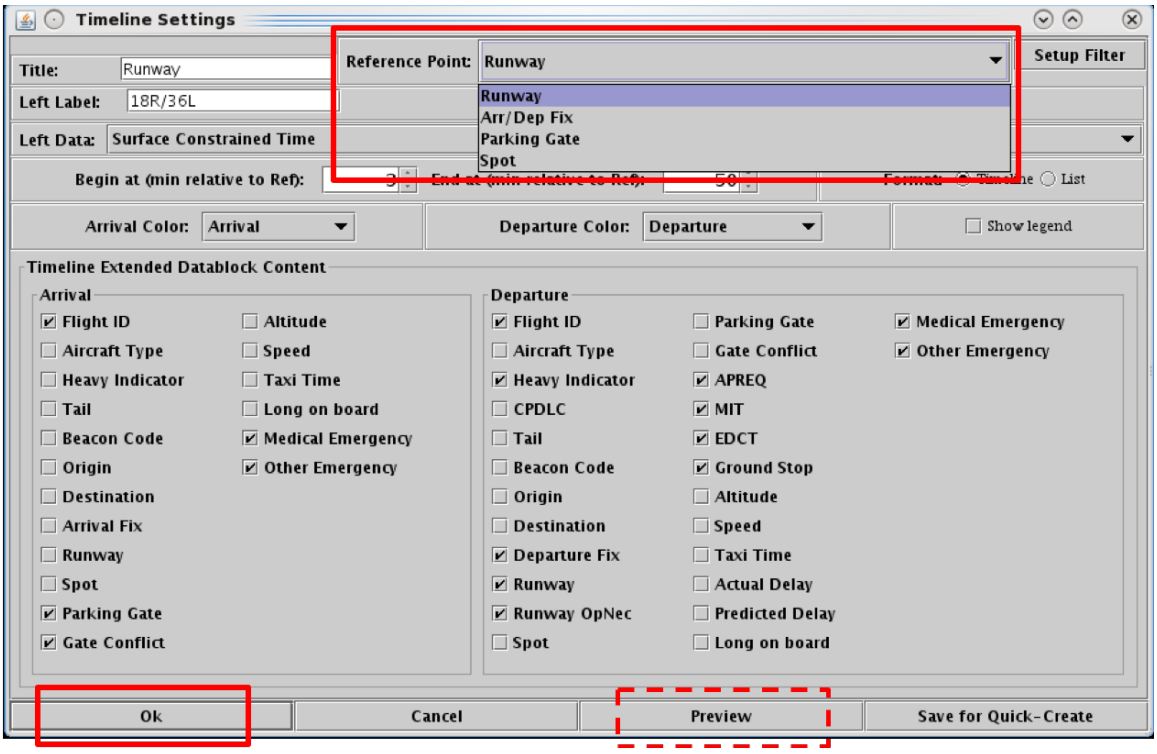


Figure 6.21. Timeline Settings window: Reference Point. In this example, Runway is selected.

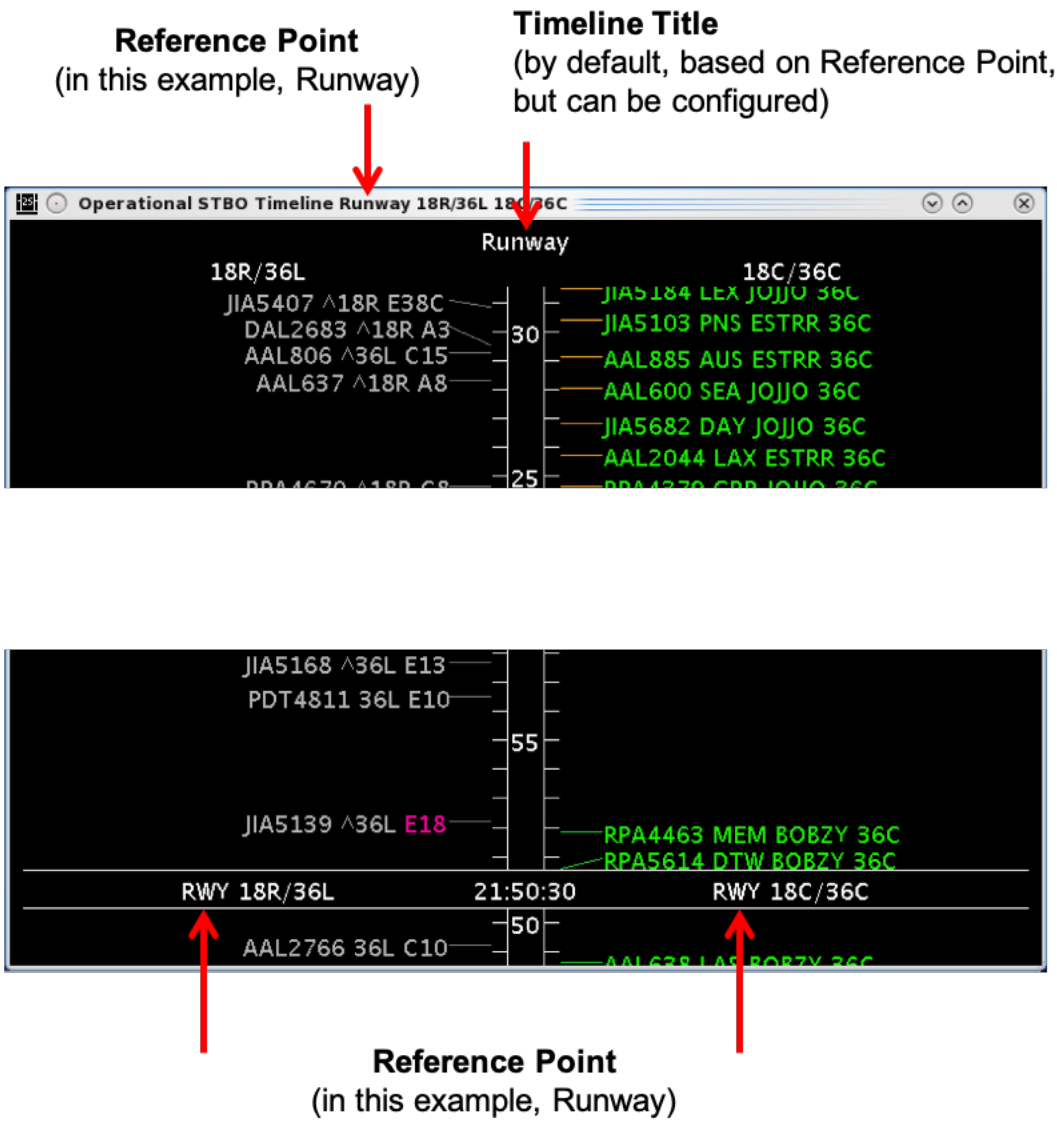


Figure 6.22. Timeline: In this example, "Runway" is the selected Reference Point.

6.7.2 Title and Labels

The timeline title and the left and right column labels (Figure 6.24) are customizable and can be changed in the Timeline Settings window. Note, the title and column labels do not affect the content of the timeline and are independent of any timeline filters.

To change the Timeline title:

Step 1: Right-click on the timeline and select “Timeline Settings” (Figure 6.19).

***Step 2*:** In the Timeline Settings window, edit the content of the "Title" text box (Figure 6.23).

***Step 3*:** Select “Ok” to apply the change or “Preview” to preview the changes on the timeline (Figure 6.23).

To change the left and right Labels:

Step 1: Right-click on the timeline and select “Timeline Settings” (Figure 6.19).

***Step 2*:** In the Timeline Settings window, edit the content of the "Left Label" and “Right Label” text boxes (Figure 6.23).

Step 3: Select “Ok” to apply the change or “Preview” to preview the changes on the timeline (Figure 6.23).

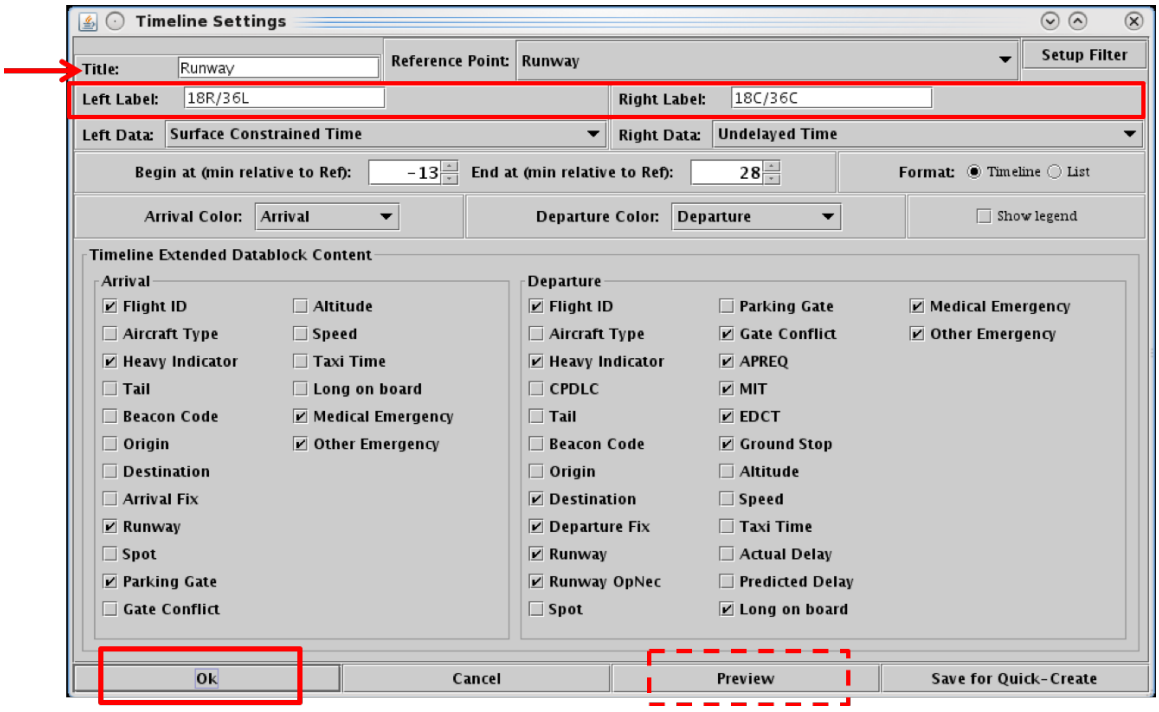


Figure 6.23. Timeline Settings window: Title and Left/Right Label fields.

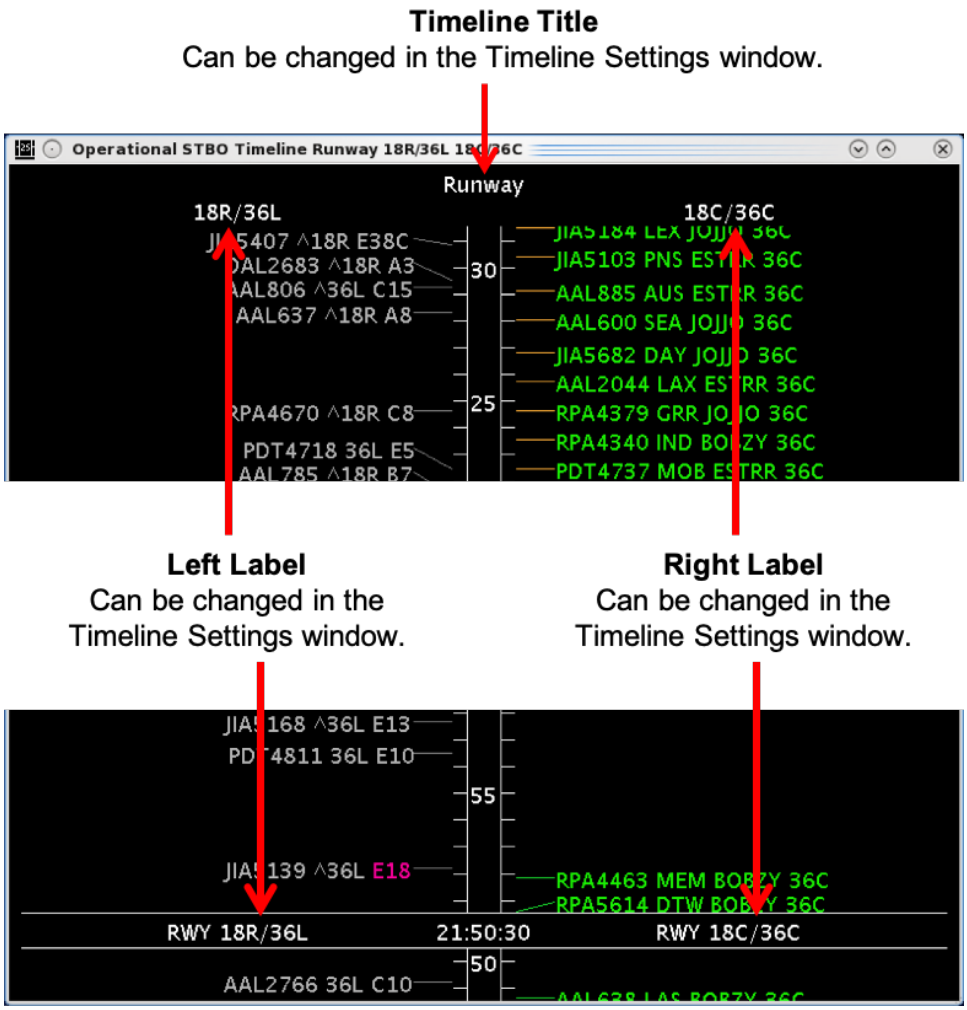


Figure 6.24. Timeline Settings window: Title and Left/Right Label fields.

6.7.3 Setup Filter

Filters are used for configuring the information displayed on a timeline. For example, the filter can be used to display flight information for one set of runways on the left side of the timeline and for another set on the right side.

Variables that can be used to filter the timeline are listed in Table 6.2. Variables are used in combination with a *modifier* ("=" equal to or "!" not equal to). Multiple variables can be used in combination by selecting "and" or "or" as a *qualifier*.

Table 6.2. Filter Field Options

Filter Field	Options
Airline	[enter text]
Arr/Dep	[Arrival/Departure]

Arr Fix	[dropdown list; varies by TRACON]
Dep Fix	[dropdown list; varies by TRACON]
Dep Gate	[dropdown list; varies by TRACON]
Dest	[3-digit airport code dropdown list]
Destination has APREQ	[Yes/No]
Engine Type	[Prop/Turbo/Jet]
Flight Status	• Scheduled_Out • Pushback • Out • Taxiing_AMA • In_Queue • Departed • Enroute_Arr • Term_Area_Arr • On_Final • On • In_Ramp • In • Return_to_Gate • Suspended • Cancelled • Unknown
Gate	[dropdown list; varies by Airport]
Has Acknowledged APREQ	[Yes/No]
Had EDCT	[Yes/No]
Has MIT	[Yes/No]
Has Fix MIT	[Yes/No]
Has Destination MIT	[Yes/No]
Has Jet Route MIT	[Yes/No]
Is Hidden	[Yes/No]
Origin	[3-digit airport code dropdown list]
Runway	[dropdown list; varies by Airport]
Spot	[dropdown list; varies by Airport]
Tail	[Is Set/Not Set]

Weight Class	[A, B, C, D, E, F]

To Add a New Filter to the Timeline:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the Timeline Settings window, select "Setup Filter" (Figure 6.25).

Step 3: Select the "Left" or "Right" tab to filter the left or right side of the timeline (for example, "Left" is selected in Figure 6.26).

Step 4: Select a variable from the dropdown menu in the "Field" column (e.g., "Runway" in Figure 6.26).

Step 5: Select a modifier from the dropdown list in the "Operator" column (e.g., "=" in Figure 6.26).

Step 6: Select an option from the dropdown list or enter text to populate the "Values" field (e.g., "18R,36C" in Figure 6.26).

Step 7 (Optional): More fields can be added to the filter by making entries on a new row. Select "Add Fields" if more rows are not visible (Figure 6.26). Begin new rows by selecting a qualifier (i.e., "and" or "or).

Note: Follow the same steps to apply filters to the other (left/right) timeline column.

Step 8: When complete, select "Ok" to close the Setup Filter window (Figure 6.26).

Step 9: Select "Ok" to apply the change or "Preview" to preview the changes on the timeline (Figure 6.25).

Note: An existing filter can be modified by changing the selections in the Field, Operator, or Values columns.

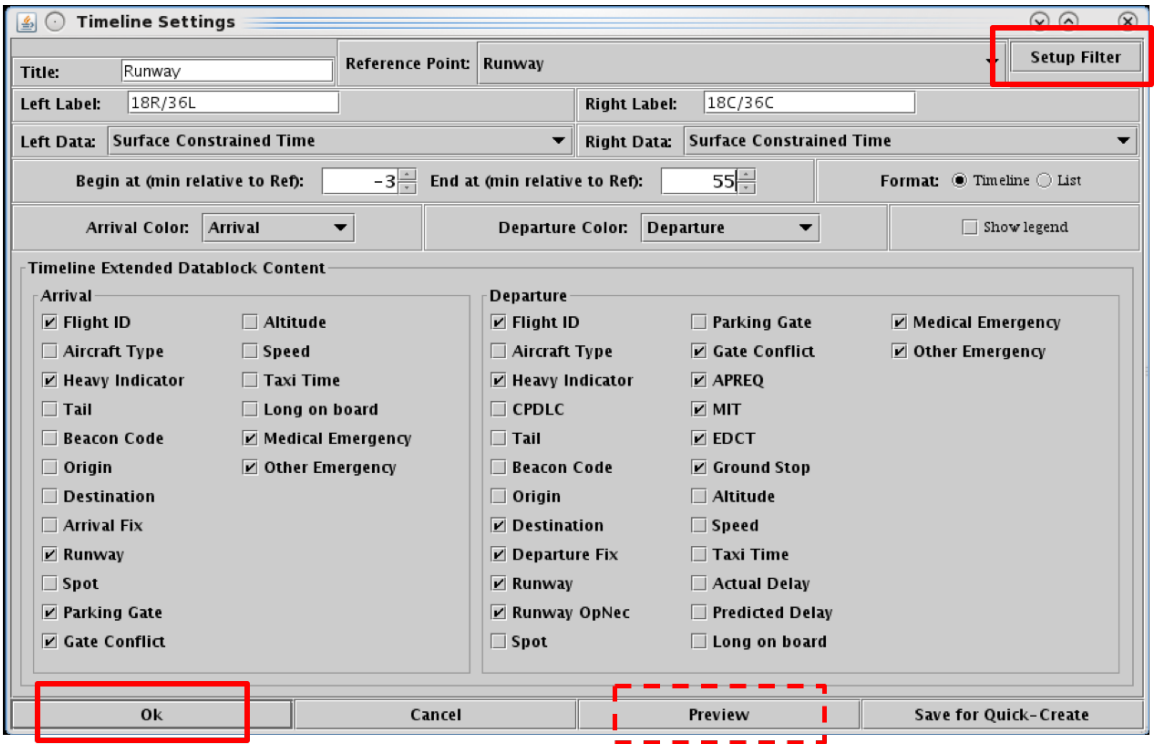


Figure 6.25. Timeline Settings: Setup Filter.

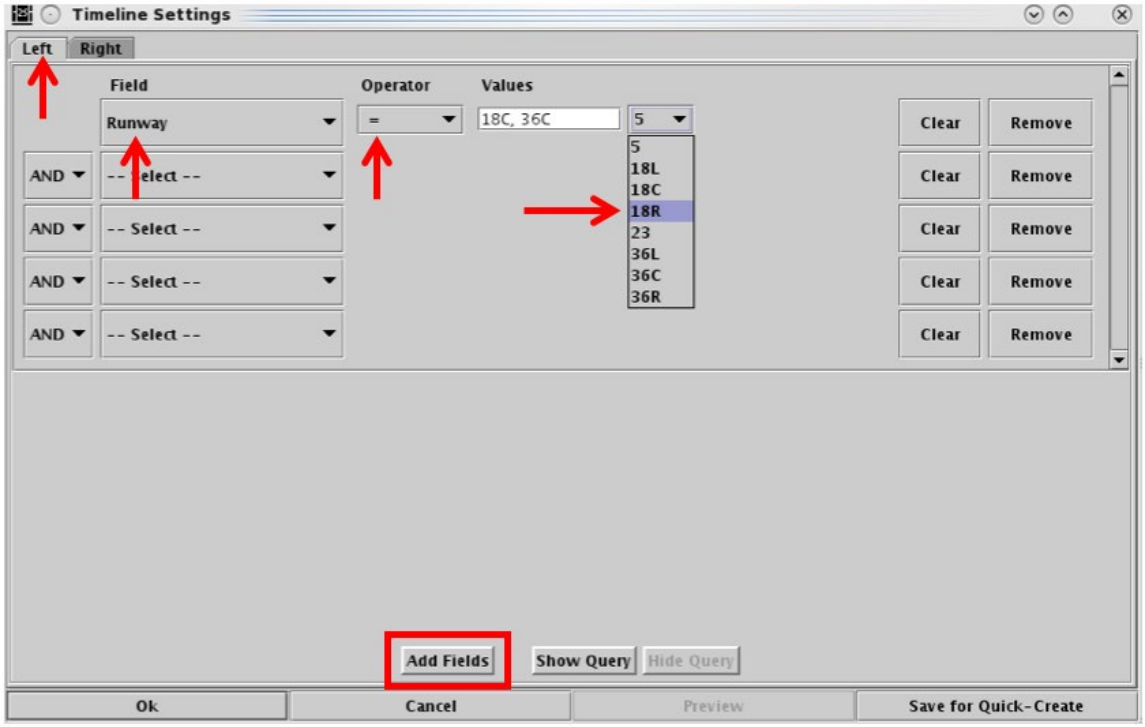


Figure 6.26. Filter Settings: Enter Filter critria.

Note that adding or modifying timeline filters does not change the title or the left/right labels. Labels must be edited manually.

To Remove or Clear a Filter from the Timeline:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the Timeline Settings window, select "Setup Filter" (Figure 6.25).

Step 3: Select "Remove" to delete the entire row in the Setup Filter window (Figure 6.27).

Alternatively: Select "Clear" to clear the "Value" field, but retain the "Field" and "Operator" selections in that row (Figure 6.27).

Step 4: When complete, select "Ok" to close the Setup Filter window (Figure 6.27).

Step 5: Select "Ok" in the Timeline Settings window to apply the change or "Preview" to preview the change on the timeline (Figure 6.25).

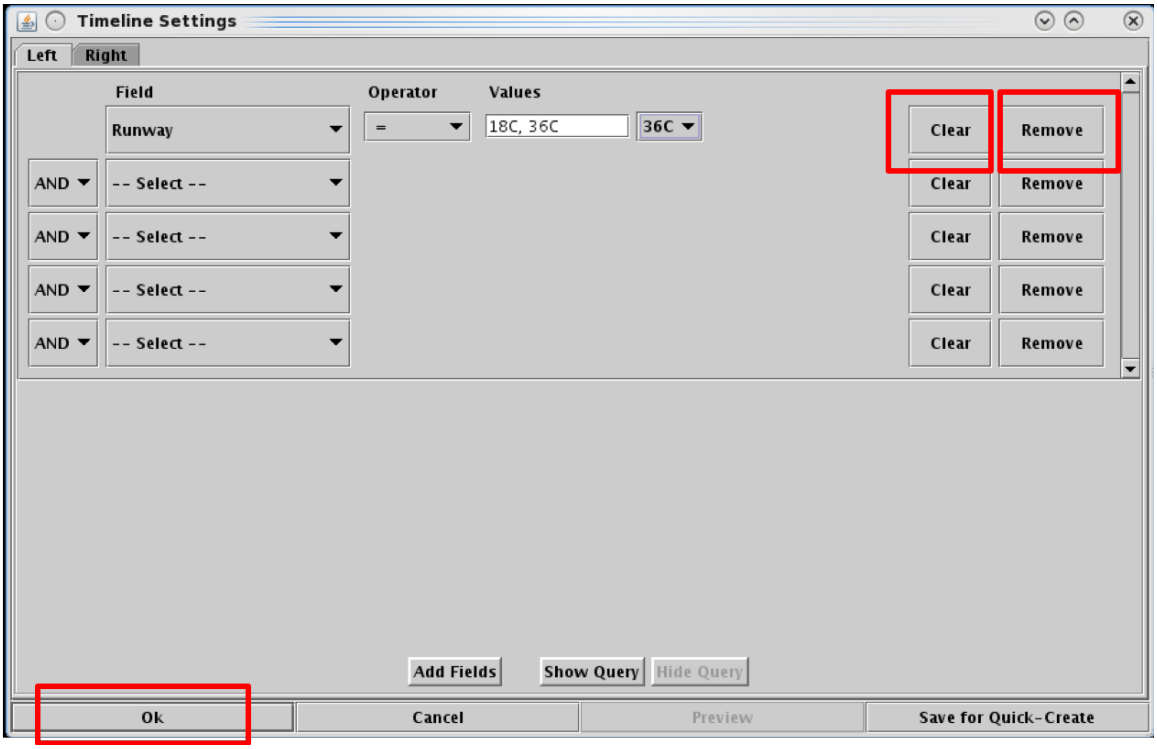


Figure 6.27. Filter Settings: Enter Filter critria.

6.7.4 Left Data/Right Data

A flight is positioned on the timeline based on a prediction of when that flight will reach the timeline's reference point. When Runway or Arr/Dep Fix is selected as the reference point, users can select one of three different prediction methods: **Undelayed Time**, **Surface Constrained Time**, or **Terminal Constrained Time** to predict when a flight is expected to reach the reference point. Surface Constrained Time and Terminal Constrained Time are available only when Runway or Dep/Arr Fix is selected as the reference point.

Each of the three methods predicts the earliest time at which a flight can reach the timeline's reference point, however, each method bases that calculation on different criteria.

- **Undelayed Time** is the earliest time at which a flight can reach the timeline's reference point as predicted by the ATD-2 scheduling systems, based on:
    - a flight's predicted trajectory,
    - a constant taxi speed in the Ramp, and
    - a constant taxi speed in the AMA.

    No other flights (i.e., traffic) are considered in this calculation. This time updates every 10 seconds.
- **Surface Constrained Time** is the earliest time at which a flight can reach the timeline's reference point as predicted by the ATD-2 scheduling systems, based on:
    - *Undelayed Time* + expected separation between flights.

    This time updates every 10 seconds and is available only when Runway or Dep/Arr Fix is selected as the reference point.
- **Terminal Constrained Time** is the earliest time at which a flight can reach the timeline's reference point as predicted by the ATD-2 scheduling systems, based on:
    - *Surface Constrained Time* + additional separation between flights based on the demand of multiple airports at departure fixes at the terminal boundary, as well as terminal restrictions applied to the departures.

    This time updates every 10 seconds and is available only when Runway or Dep/Arr Fix is selected as the reference point.

To change Left or Right Timeline data type:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the Timeline Settings window, click on the "Left Data" or "Right Data" dropdown menu to change the data used in the left/right columns of the timeline (for example, "Right Data" is selected in Figure 6.28).

Step 3: Select a data type from the dropdown menu (for example, "Surface Constrained Time" is selected in Figure 6.28):

- Surface Constrained Time
- Terminal Constrained Time
- Undelayed Time

Note: Because each of the three data types base their prediction on different factors, a flight's position on the timeline may change when the data type is changed.

Step 4: Select "Ok" to apply the change or "Preview" to preview the changes on the timeline (Figure 6.28).

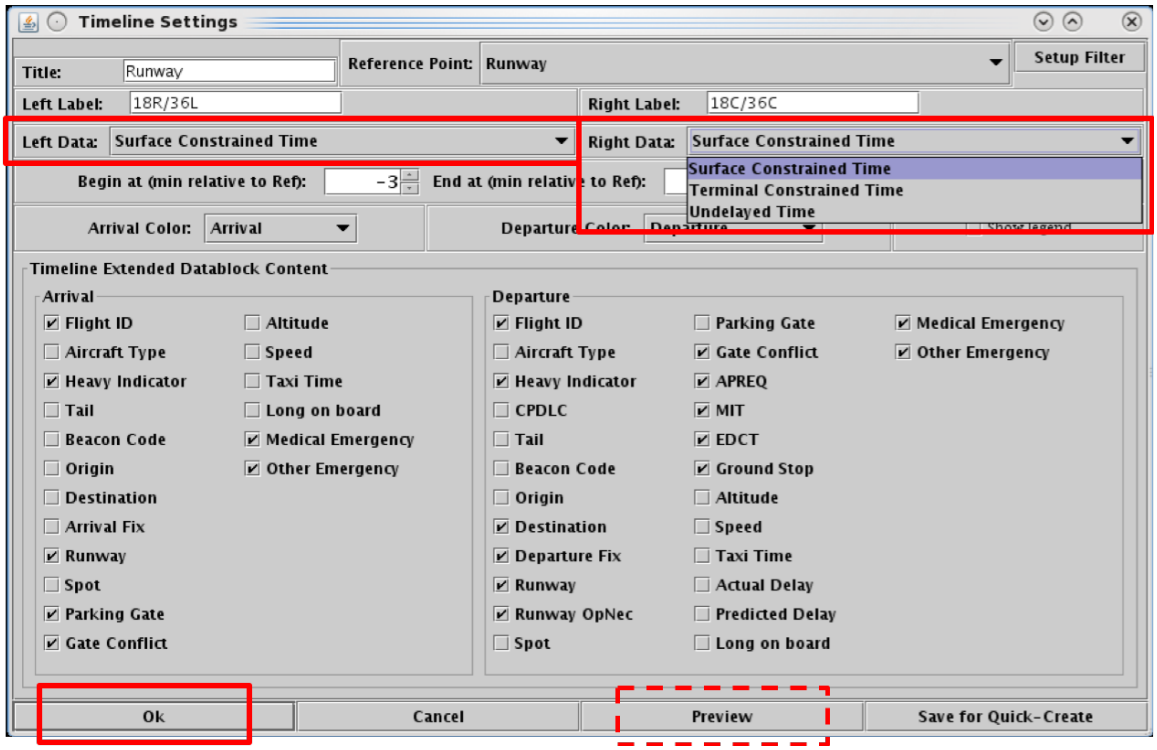


Figure 6.28. Timeline Settings window: Timeline data.

6.7.5 Duration

The size of the visible timeline window can be configured by adjusting the “Begin at” and “End at” times. The “Begin at” and “End at” times are relative to “Now” time. The difference between these two times is the size of the visible timeline window.

Use a negative number to indicate minutes prior to “Now” time (in the past) and a positive number to indicate minutes prior to “Now” time (in the future).

For example, if the “Begin at” time is –3 minutes, the timeline display starts 3 minutes prior to “Now” time. If the “End at” time is set at 55 minutes, the timeline display extends 55 minutes into the future. In this example, the timeline duration (window of time) is a total of 58 minutes.

To change the duration of the Timeline:

Step 1: Right-click on the timeline and select “Timeline Settings” (Figure 6.19).

Step 2: In the Timeline Settings window, enter the starting point for the timeline in the “Begin at” field (in minutes). For example, -3 minutes in Figure 6.29.

Step 3: Enter the ending point for the timeline in the “End at” field (in minutes). For example, 55 minutes in Figure 6.29.

Note: A positive number represents a time in the future (above the current time at the Reference Point). A negative number represents a time in the past (below the current time at the Reference Point).

Step 4: Select “Ok” to apply the change or “Preview” to preview the changes on the timeline Figure 6.29.

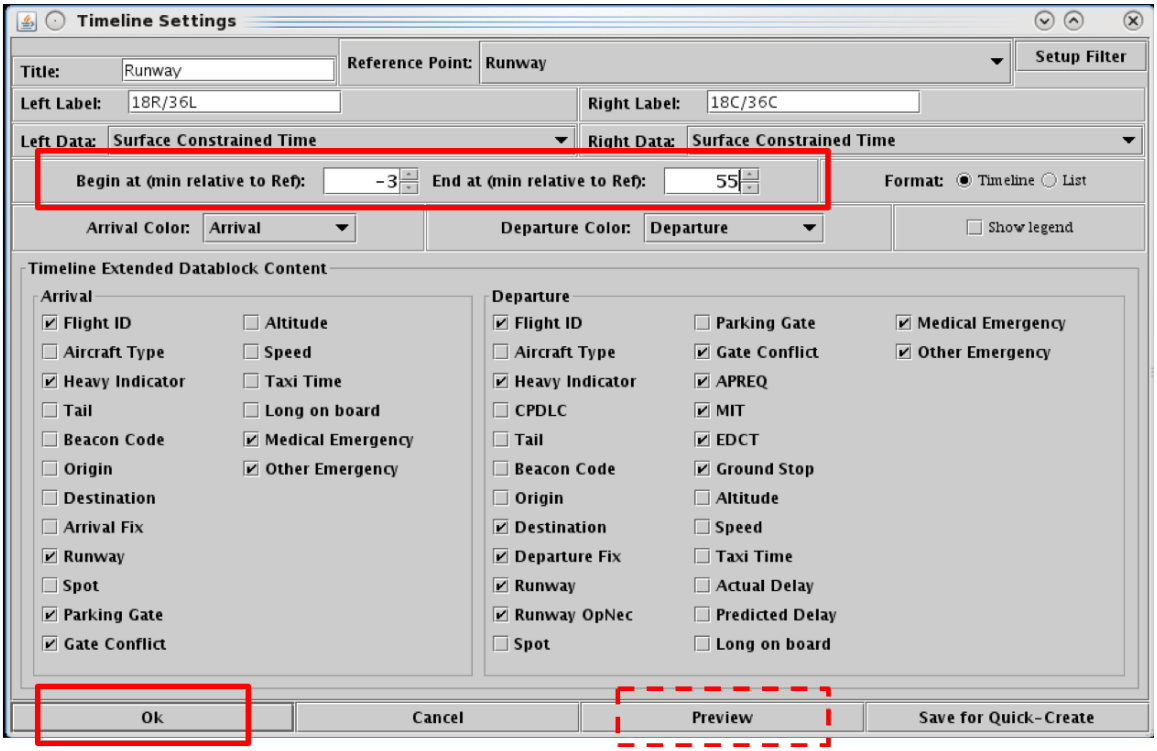


Figure 6.29. Timeline Settings window: Begin at and End at times (in minutes). In this example, -3 minutes and 55 minutes, respectively.

6.7.6 Color Scheme

In the Timeline Settings window, select the color scheme for arrival and departure flights.

To change the Color Scheme for Timeline datablocks:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the Timeline Settings window, click on the "**Arrival Color**" dropdown menu to select an arrival color scheme (for example, "Arrival" is selected in Figure 6.30)

- Arrival
- Arrival Fix
- Arrival Runway
- Weight (Aircraft)

Step 3: In the Timeline Settings window, click on the "**Departure Color**" dropdown menu to select a departure color scheme (for example, "Departure" is selected in Figure 6.31).

- Departure
- Departure Fix
- Departure Gate
- Departure Runway
- Weight (Aircraft)

Step 4: Select "Ok" to apply the change or "Preview" to preview the changes on the timeline (Figure 6.31).

Note: Color schemes on the timeline apply to datablocks only. The colors of leader lines are determined by flight status.

Note: Flights designated as an emergency are always shown in red.

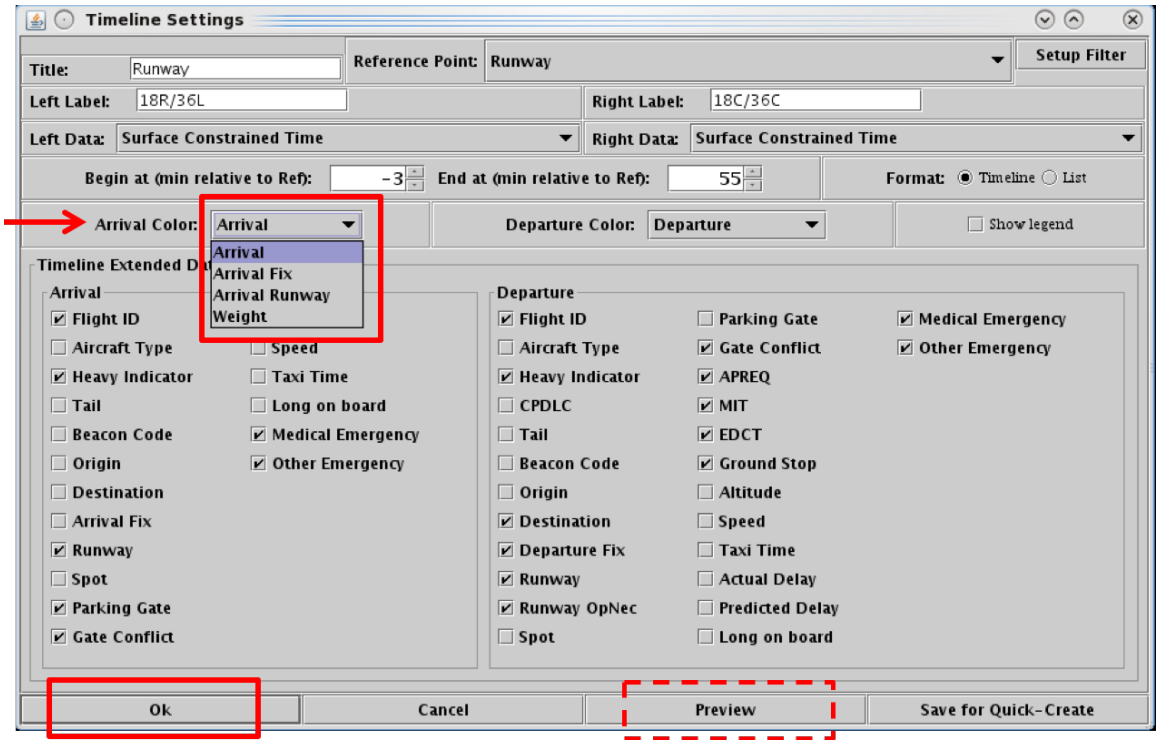


Figure 6.30. Timeline Settings: Arrival Color Schemes.

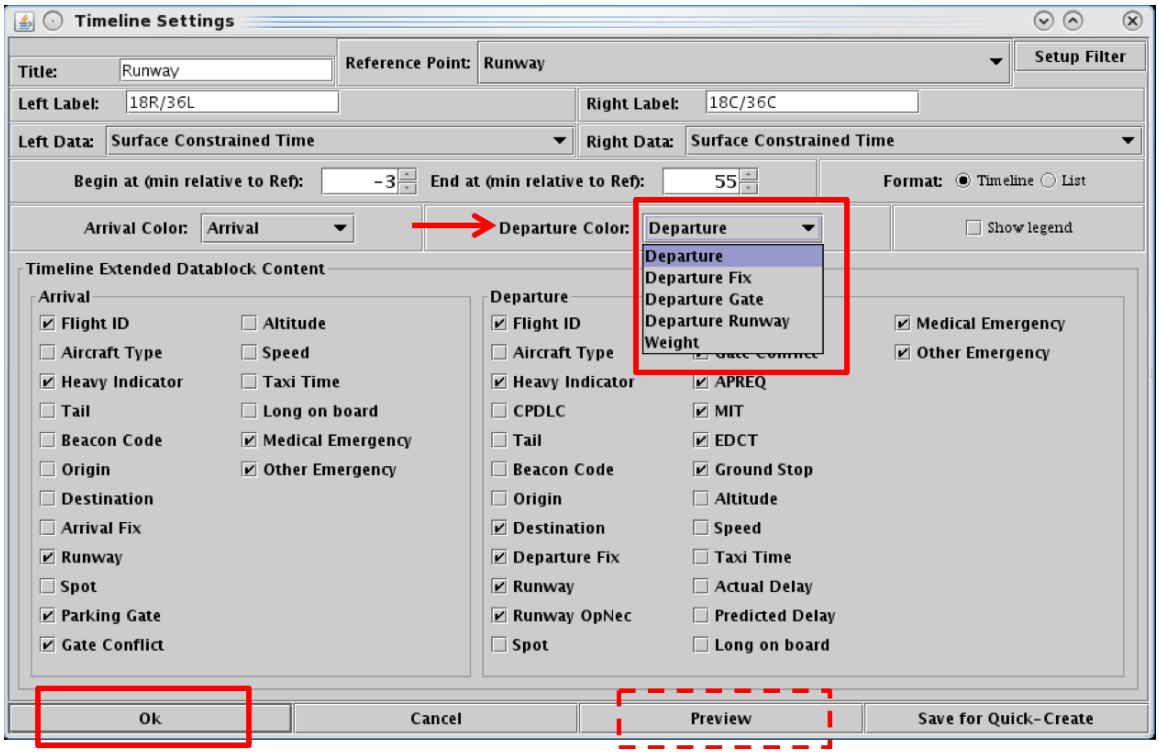


Figure 6.31. Timeline Settings: Departure Color Schemes.

6.7.7 Format

The Timeline can be displayed in either a **timeline** (Figure 6.33, left) or **list** (Figure 6.33, right) format. In the *timeline* format, flight datablocks are displayed on the timeline relative to their expected arrival time at the reference point (e.g., expected takeoff time at the runway).

In the *list* format, datablocks are not listed relative to a timeline (Figure 6.33, right). Instead, flights are displayed in the *order* in which they are expected to reach the reference point without consideration of the *time* they are expected to reach the reference point. The ordering of the list is bottom-up, with flights that will reach the reference point first closest to the bottom of the list.

To change the Timeline format:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the "Format" field, select the "Timeline" or "List" option (Figure 6.32).

Note: See examples of the Timeline and List formats in Figure 6.33.

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the timeline without closing the Timeline Settings window (Figure 6.32).

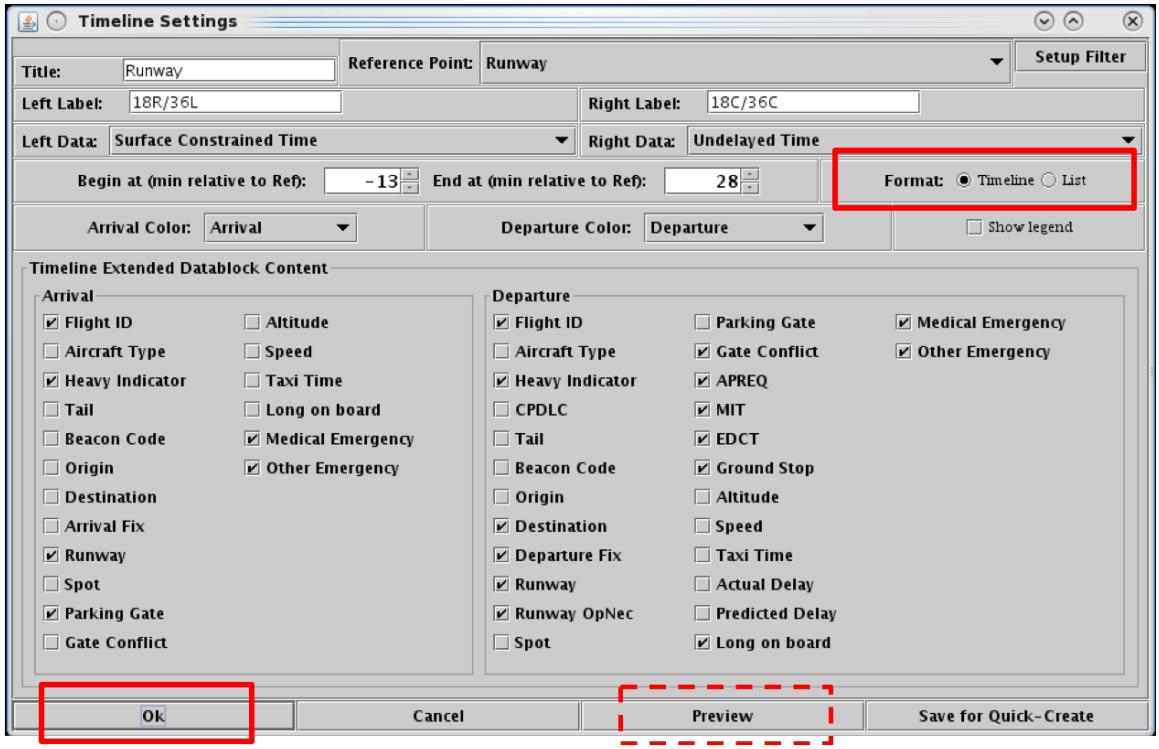


Figure 6.32. Timeline Settings window: Format.

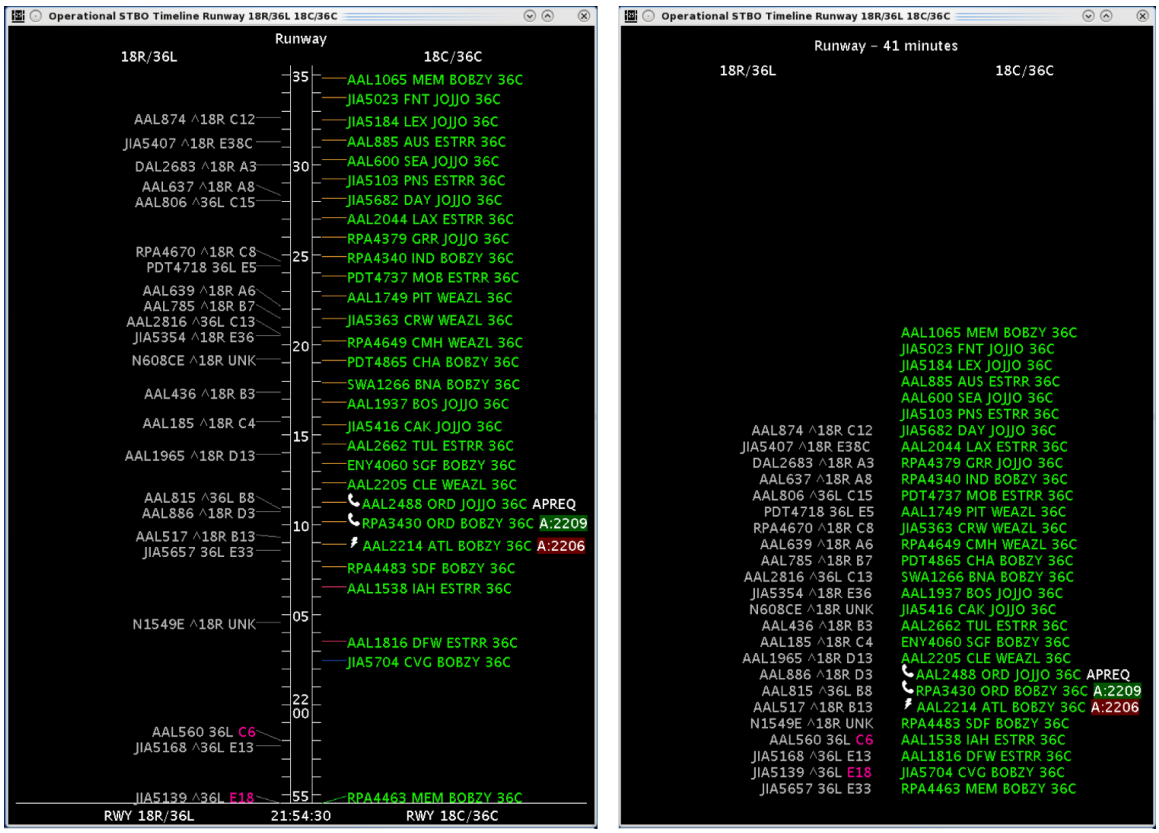


Figure 6.33. Format: Timeline (left) and List (right).

6.7.8 Legend

The interactive timeline legend displays an explanation of color-coding for the selected color scheme. The user can select which categories in the color scheme are displayed on the timeline.

To Show/Hide the Timeline Legend:

Step 1: Right-click on the timeline and select “Timeline Settings” (Figure 6.19).

Step 2: In the Timeline Settings window, check the box next to “Legend” (Figure 6.34).

Alternatively: Uncheck the box to hide the legend.

Step 3: Select “Ok” to apply the changes or “Preview” to view the changes on the timeline without closing the Timeline Settings window (Figure 6.34).

Note: Colors displayed in the legend are based on the selected arrival/departure color schemes.

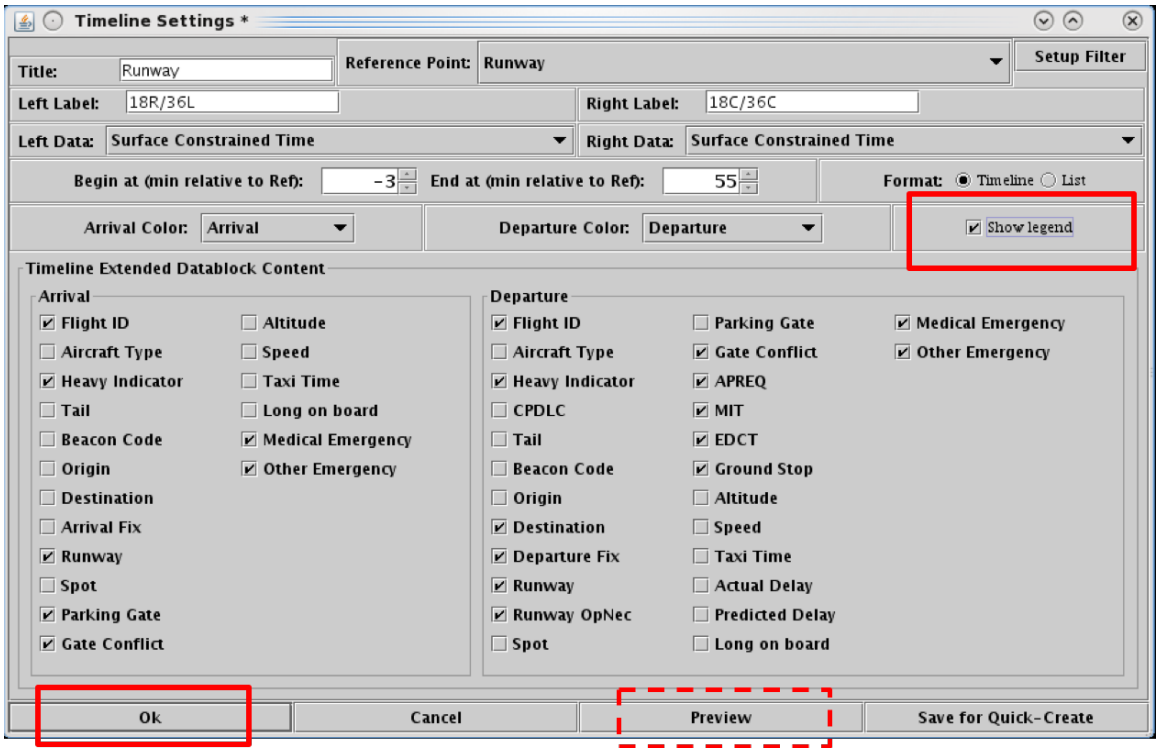


Figure 6.34. Timeline Settings window: Show legend.

Use the legend to select/deselect categories for display on the timeline. For example, in Figure 6.35, the "Departure Fix" color scheme is selected.

To Select/Deselect categories in the Legend:

Step 1: In the Timeline legend, uncheck a category to hide those flights on the timeline. For example, in Figure 6.35 (right), the "JOJJO" Departure Fix is deselected.

Note: Flights that are deselected in the legend are grayed-out in timeline (see example in Figure 6.35, right).

Alternatively: Select the check box again to show those datablocks in the timeline.

Note: To re-select all categories in the legend at once, select the "All" checkbox in the legend.

Note: "Emergency" flights cannot be deselected from the timeline.

Figure 6.35. Legend: Deselect a category in the legend. In this example, the JOJJO Departure Fix is deselected (right). As a result, flights assigned to the JOJJO Fix are grayed-out on the timeline.

6.7.9 Datablocks

The content of arrival and departure flight datablocks can be configured by selecting/deselecting options in the Timeline Settings window menu. Each data element is described in Table 6.3.

To change the content of Timeline datablocks:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: In the "Timeline Extended Datablock Content" section, select data elements to display in arrival/departure flight datablocks (Figure 6.36).

Alternatively: Deselect data elements to hide them from departure/arrival datablocks.

Step 3: Select "Ok" to apply the changes or "Preview" to view the changes on the timeline without closing the Timeline Settings window (Figure 6.36).

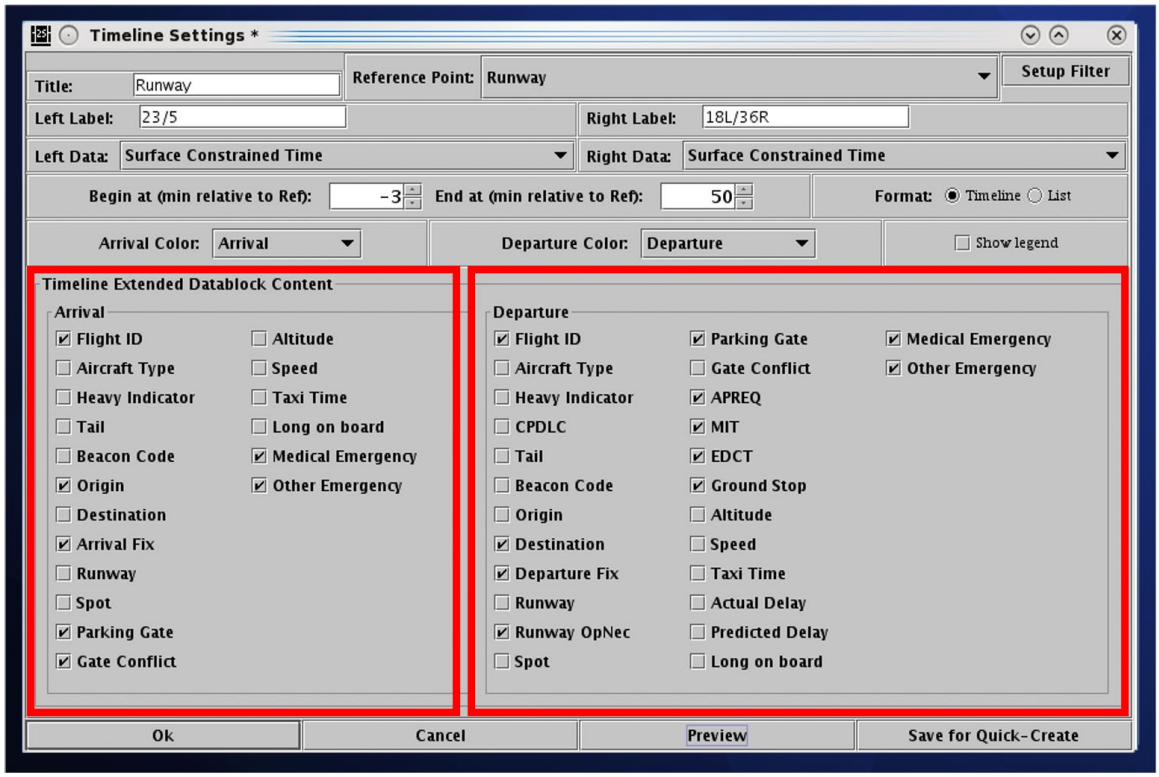
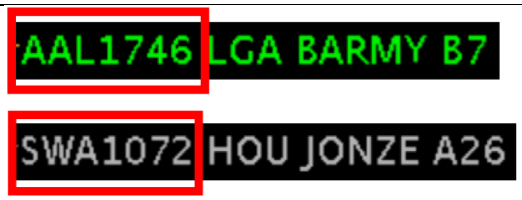
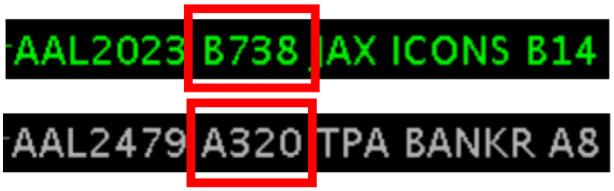
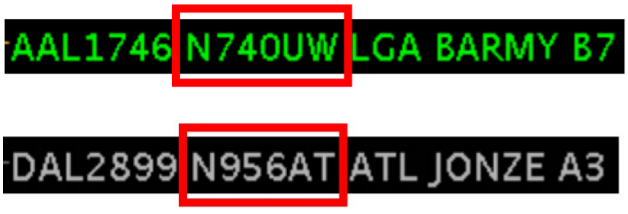
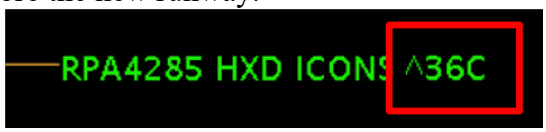


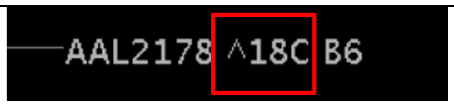
Figure 6.36. Timeline Settings window: Timeline Extended Datablock Content.

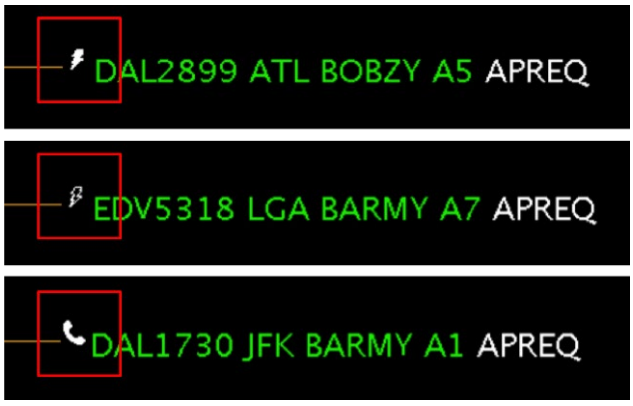
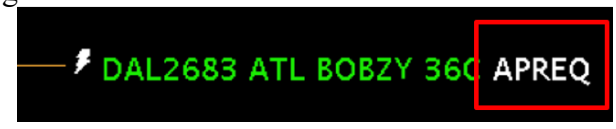
Table 6.3. Timeline Datablock Elements

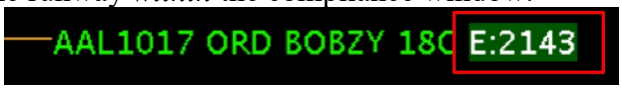
Datablock Data Element	Description of Display	Element Selectable for Arrivals, Departures, or Both
Flight ID	Flight ID/call sign.	Both

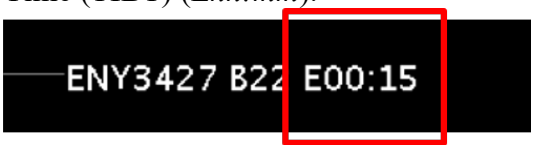
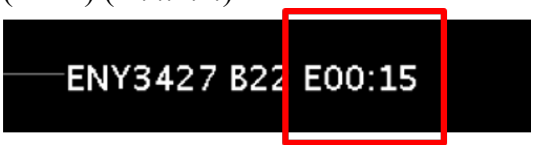
		
Aircraft Type	Aircraft type. 	Both
Heavy Indicator	Heavy aircraft (e.g., B767, B777, B787, A330, A340, A350) are indicated by a black “H” highlighted in yellow. Super Heavy aircraft (i.e., A380) are indicated by a black “S” highlighted in white. 	Both
Tail	Aircraft tail number. 	Both
Beacon Code	Aircraft beacon code. 	Both

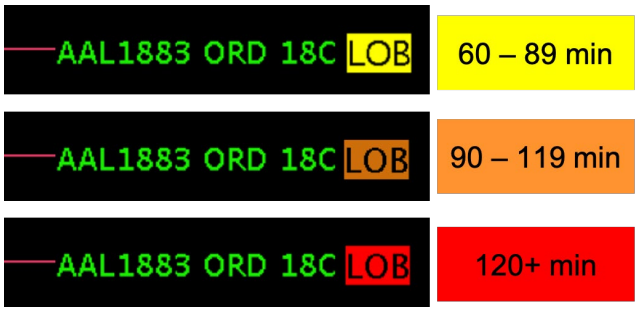
Origin	3-letter origin airport code. 	Arrival
Destination	3-letter destination airport code. 	Departure
Arrival Fix	Assigned arrival fix. 	Arrival
Departure Fix	Assigned departure fix. 	Departure
Runway	***Departure, Prior to Takeoff:*** The assigned/expected runway is displayed. If the STBO Client user changes the runway assignment, an up-arrow symbol "^" is displayed before the new runway.  ***Departure, After Takeoff:*** After takeoff (i.e., below the Runway reference point on the Timeline), the *actual* departure runway is displayed. ***Arrival, Prior to Landing:*** An up-arrow symbol "^" displayed next to the arrival runway indicates one of two things: • The runway prediction is supplied by TBFM. • Or, the runway prediction supplied by TBFM has been changed by the TRACON in the scratch pad.	Both

	 When no up-arrow is shown, the ATD-2 system is using actual flight track data to determine that the aircraft is lined up on final for a specific RWY (usually about 8-10 miles out). ***Arrival, After Landing:*** After landing (i.e., below the Runway reference point on the Timeline), the *actual* arrival runway is displayed. 	
Runway Operational Necessity	"OpNec" is displayed in light green when the runway has been changed for Operation Necessity. 	Departure
Spot	Assigned spot to leave (departures) or enter (arrivals) the Ramp area. 	Both
Actual Delay	Delay incurred by a flight in the AMA (in minutes). **Actual Delay** = Current Duration of AMA Time – Undelayed AMA Time. Actual Delay is displayed on the Timeline when greater than 0 minutes. Example: If a flight's current duration of AMA Time is **30 min** and its Undelayed AMA Time is **9 min**, then its Actual Delay (*at this moment*) is **21 min.** Actual Delay stops accruing at takeoff.	Departure

Parking Gate	Assigned gate. When the flight's gate is unknown, "UNK" is displayed. 	Both
Gate Conflict	The parking gate is displayed in magenta when the flight has a gate conflict. 	Both
APREQ	**Flights** subject to an APREQ restriction: • Symbology displayed next to an APREQ flight indicates the available scheduling capability for that flight: **Automatic mode** (solid lightning bolt), **Semi-Automatic mode** (hollow lightning bolt), or **Call for Release mode** (telephone handset).  • "APREQ" indicates the flight is subject to an APREQ, but the wheels-up time has not yet been negotiated.  • The APREQ release time is color-coded to indicate expected compliance with the -2/+1 minute compliance window.	Departure

	Red: The flight is predicted to be released from the runway *later* than the compliance window. **Green**: The flight is predicted to be released from the runway *within* the compliance window. **Yellow**: The flight is predicted to be released from the runway *earlier* than the compliance window. *Note: See Section 7 for a description of APREQs in the STBO Client.*	
MIT (Miles-In-Trail)	Flight is subject to a Miles-in-Trail restriction, in this example, 15 nmi. 	Departure
EDCT	For flights subject to an EDCT restriction, the EDCT wheels-up time is color-coded to indicate expected compliance with the -5/+5 minute compliance window. **Red:** The flight is predicted to be released from the runway *later* than the compliance window. **Green:** The flight is predicted to be released from the runway *within* the compliance window.  **Yellow:** The flight is predicted to be released from the runway *earlier* than the compliance window. 	Departure
Ground Stop	"GS" displayed when flight is subject to a Ground Stop.	Departure

Altitude	Altitude in feet/100. In this example, 7,100 ft. 	Both
Speed	Ground speed in kts/10. Displayed for both flights in air and flights on the surface during taxi. In this example, 410 kts. 	Both
Taxi Time	***Taxi Time display for Arrivals:*** • **Not yet landed:** Estimated (E) taxi time from: Target Landing Time (TLDT) to Target In-Block Time (TIBT) (E*hh:mm*).  • **Landed:** Estimated (E) taxi time from: Actual Landing Time (ALDT) to Target In-Block Time (TIBT) (E*hh:mm*).  • **Once at the gate:** Actual taxi time from: Actual Landing Time (ALDT) to Actual In-Block Time (AIBT) (*hh:mm*). ***Taxi Time display for Departures:*** • **At Pushback:** Estimated (E) taxi time from: Actual Off-Block Time (AOBT) to Target Takeoff Time (TTOT) (E*hh:mm*). • **After wheels-up (OFF):** Actual taxi time from: Actual Off-Block Time (AOBT) to Actual Takeoff Time (ATOT) (*hh:mm*).	Both

Predicted Delay	In general, the difference between predicted time, including constraints, and undelayed time (in minutes). **Predicted Delay is displayed on the Timeline when greater than 0 minutes.* ***When the Timeline Data Type is set to <u>Surface Constrained Time</u>:*** **Predicted Delay** = Target Takeoff Time (TTOT) – Undelayed Takeoff Time (UTOT). The delay (in minutes) that the flight is predicted to encounter, **at the runway**, caused by: • Predicted delay from **surface traffic** competing for the runway. *Example:* If a flight's TTOT is **20:10 UTC** and its UTOT is **20:00 UTC**, then Predicted Delay is **10 min**.	Departure
Long on Board (LOB)	LOB indicator (yellow, orange, or red): • For **arrivals**, the LOB timer starts at touchdown and is continuously computed as the current time minus the Actual Landing Time (ALDT) until the arrival is in the gate. • For **departures**, the LOB timer starts at pushback and is continuously computed as the current time minus the Actual Off-Block Time (AOBT) until the flight takes off. 	Both
Medical Emergency	A flight designated as a *medical* emergency is displayed in red with a red "+" symbol highlighted in white.	Both

General (non-medical) Emergency	A flight designated as a *general* emergency is displayed in red with a red "!" symbol highlighted in white. 	Both

6.7.10 Save for Quick Create

Use "Save for Quick Create" to save Timeline configuration settings.

To save Timeline settings:

Step 1: Right-click on the timeline and select "Timeline Settings" (Figure 6.19).

Step 2: Select the "Save for Quick-Create" button at the bottom of the Timeline Settings window (Figure 6.37).

***Step 3*:** Enter a file name (e.g., "Tower_2020" in Figure 6.38).

Step 4: Select "Save" (Figure 6.38).

Step 5: At the prompt, select "OK" (Figure 6.38).

Note: To open a saved configuration, use "Create" on the Toolbar (Figure 6.39).

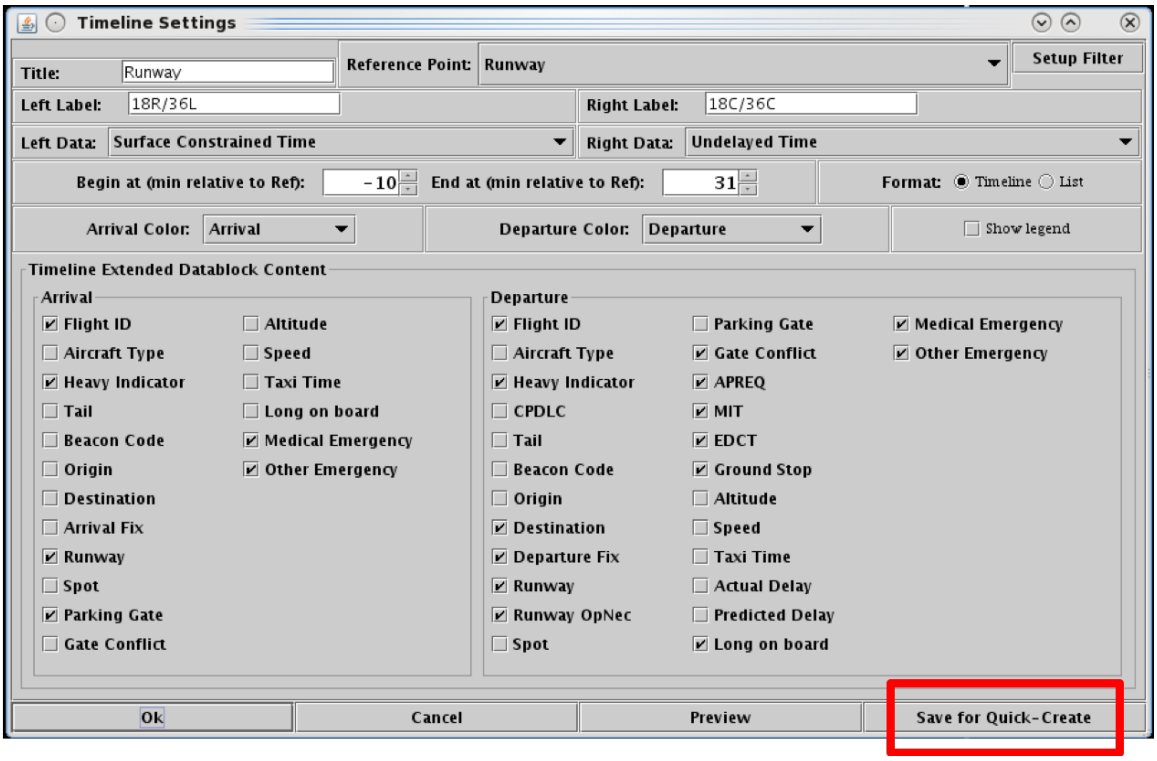


Figure 6.37. Timeline Settings window: Save for Quick-Create.

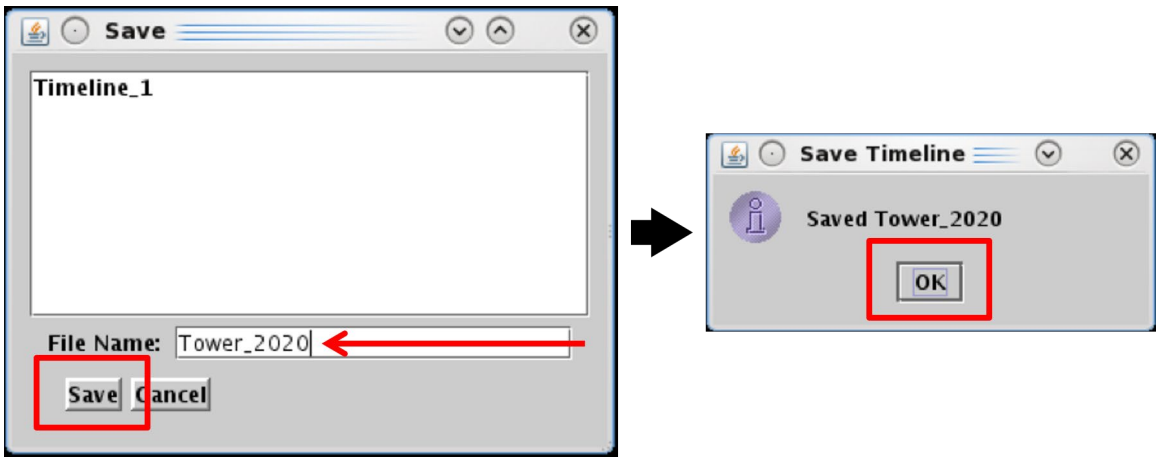


Figure 6.38. Timeline Settings: Save for Quick-Create.

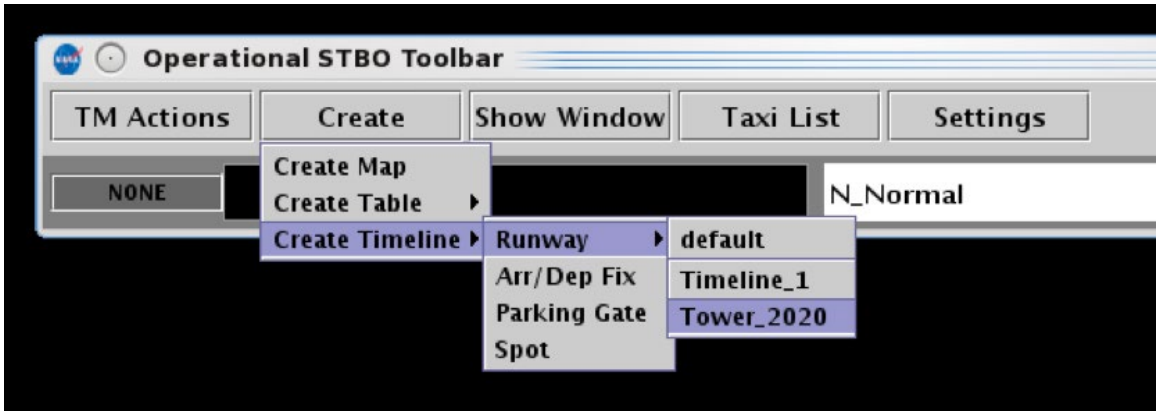


Figure 6.39. Create a Timeline using a saved configuration (e.g., Tower_2020).

6.8 Timeline: Expect Departure Clearance Time (EDCT)

The EDCT wheels-up time is color-coded to indicate expected compliance with the -5/+5 min compliance window (Table 6.4).

Table 6.4. Compliance Color-Coding

Compliance Indicator Color	Description
Red	Flight is projected to be released from the runway ***later*** than its -5/+5 min EDCT compliance window.
Green	Flight is projected to be released from the runway ***within*** its -5/+5 min EDCT compliance window.
Yellow	Flight is projected to be released from the runway ***earlier*** than its -5/+5 min EDCT compliance window.

Select an EDCT flight on the timeline to view the flight's predicted takeoff time relative to the EDCT's -5/+5 min compliance window outlined in yellow (Figure 6.40).

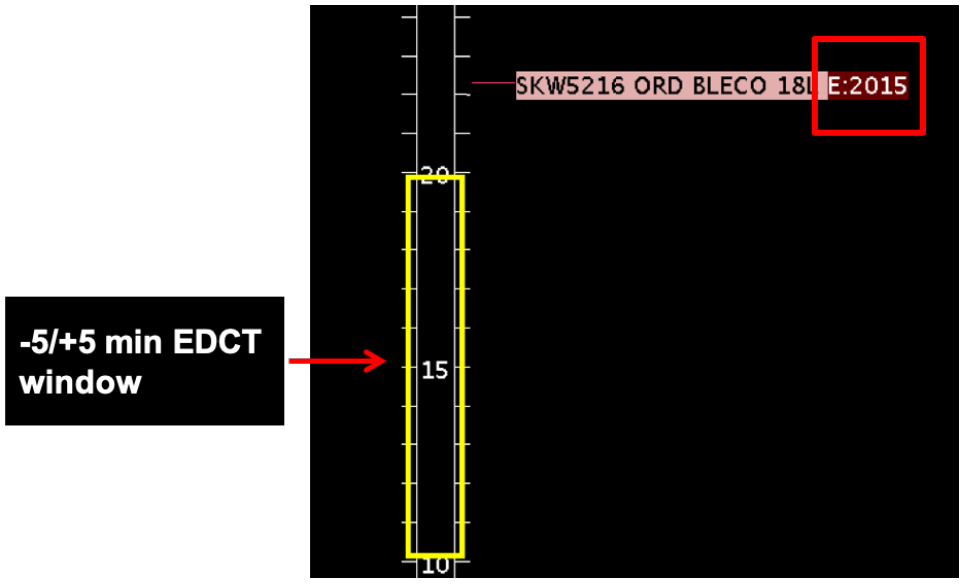


Figure 6.40. EDCT compliance on the Timeline: If the flight is projected to be released from the runway *later* than its -5/+5 min EDCT compliance window, the EDCT is highlighted in red.

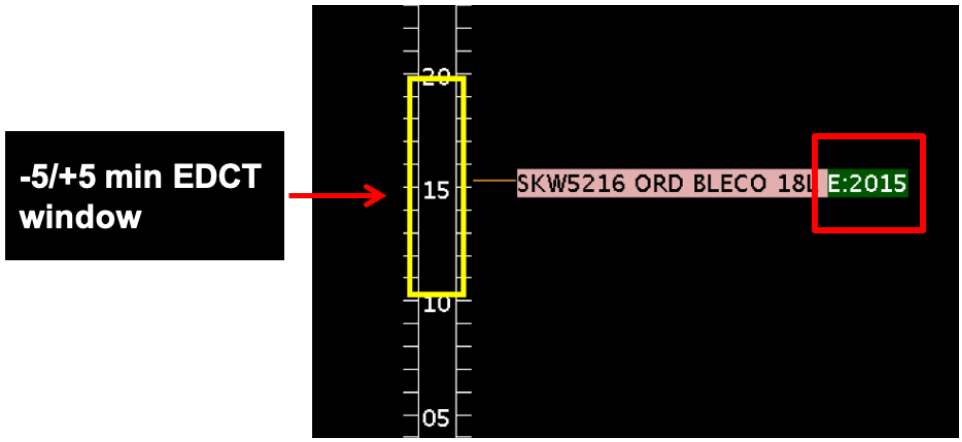


Figure 6.41. EDCT compliance on the Timeline: If the flight is projected to be released from the runway *within* its -5/+5 min EDCT compliance window, the EDCT is highlighted in green.

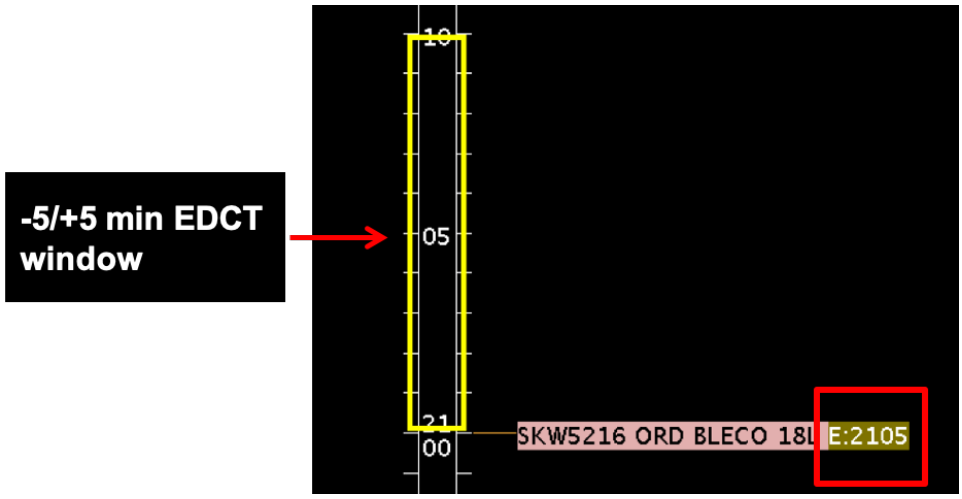


Figure 6.42. EDCT compliance on the Timeline: If the flight is projected to be released from the runway *earlier* than its -5/+5 min EDCT compliance window, the EDCT is highlighted in yellow.

6.9 Timeline: Right-Click Menu

Additional options available on the right-click menu on the Timeline can include:

- Exclude from APREQ (Section 6.9.1)
- Exclude from Fix Closure (Section 6.9.2)
- Exclude from Ground Stop (Section 6.9.3)
- Exclude from MIT (Section 6.9.4)
- Change Runway (Section 6.9.5)
- Change Departure Fix (Section 6.9.6)
- Change Parking Gate (Section 6.9.7)
- Emergency (Section 6.9.8)
- Suspend (Section 6.9.9)
- Return to Ramp (Section 6.9.10)
- Delete Datablock (Section 6.9.11)
- Properties (Section 6.9.12)

Options on a right-click menu vary by type of flight (arrival or departure) and current flight status (e.g., Scheduled Out, Taxiing in the AMA, or Departed).

6.9.1 Exclude from APREQ

ATC can use the right-click menu to exclude a flight from an APREQ restriction (Figure 6.43, left). Alternatively, select “Undo Exclude from APREQ” to restore the APREQ restriction (Figure 6.43, right).

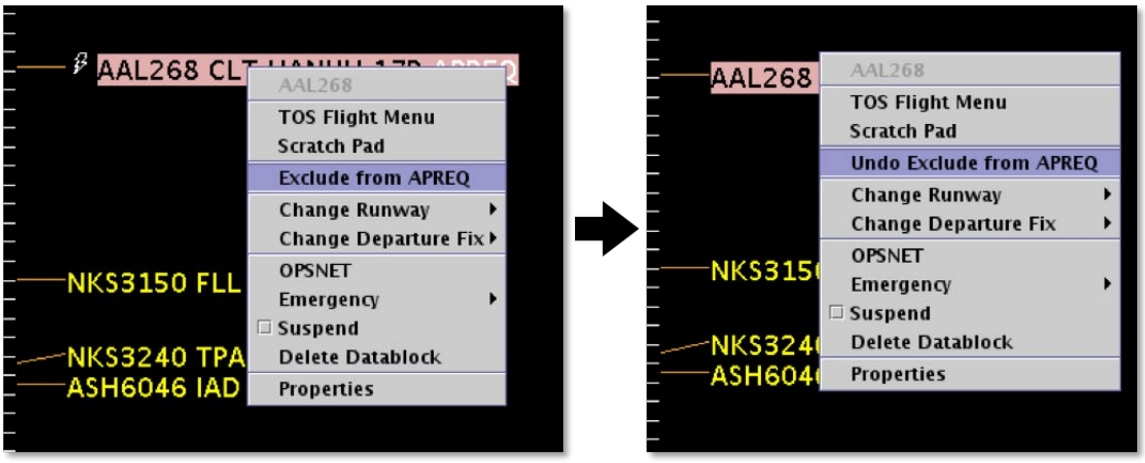


Figure 6.43. Right-click Menu: Exclude from APREQ (left), Undo Exclude from APREQ (right).

6.9.2 Exclude from Fix Closure

ATC can use the right-click menu to exclude a flight from a Departure Fix closure (Figure 6.44, left). Alternatively, select "Undo Exclude from Fix Closure" to restore the Fix closure (Figure 6.44, right).

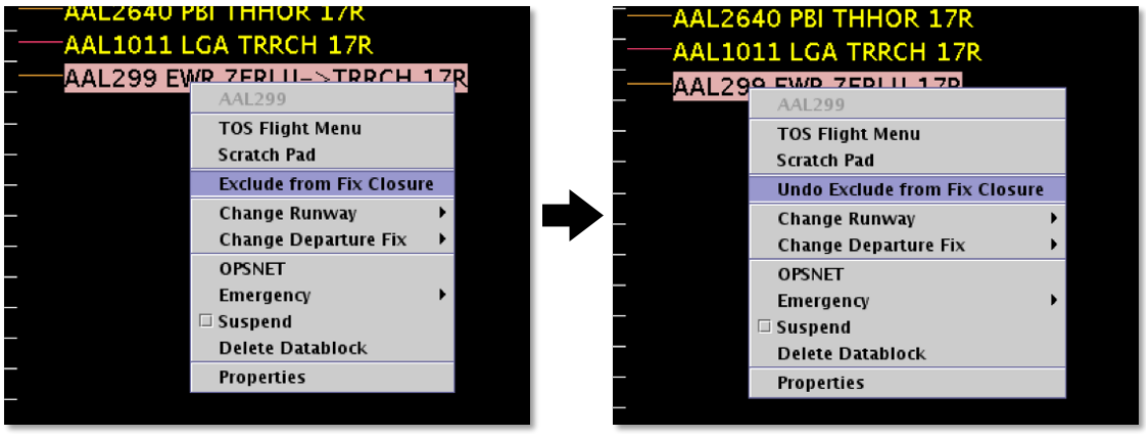


Figure 6.44. Right-click Menu: Exclude from Fix Closure (left), Undo Exclude from Fix Closure (right).

6.9.3 Exclude from Ground Stop

ATC can use the right-click menu to exclude a flight from a Ground Stop (Figure 6.45, left). Alternatively, select "Undo Exclude from Ground Stop" to restore the Ground Stop restriction (Figure 6.45, right).

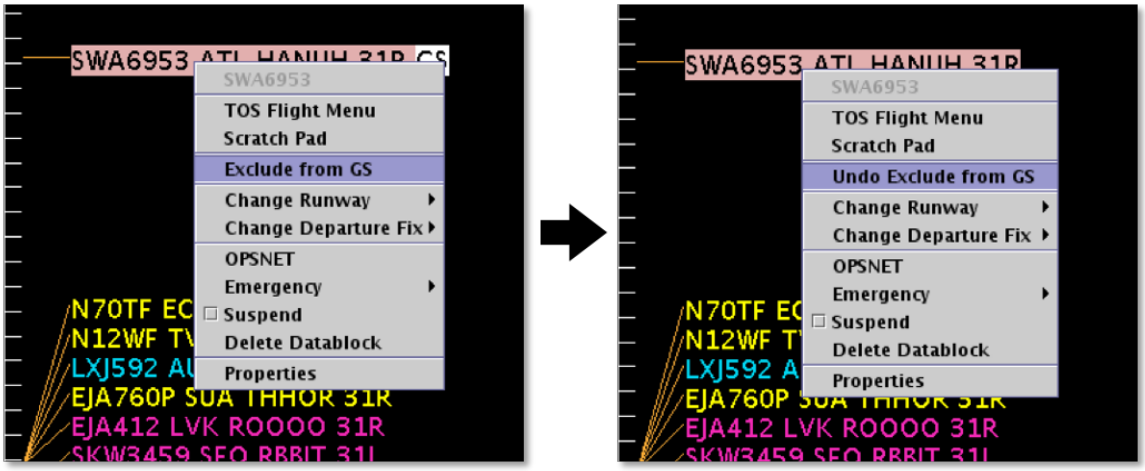


Figure 6.45. Right-click Menu: Exclude from Ground Stop (left), Undo Exclude from Ground Stop (right).

6.9.4 Exclude from MIT

ATC can use the right-click menu to exclude a flight from an MIT restriction (Figure 6.46, left). Alternatively, select "Undo Exclude from MIT" to restore the MIT restriction (Figure 6.46, right).

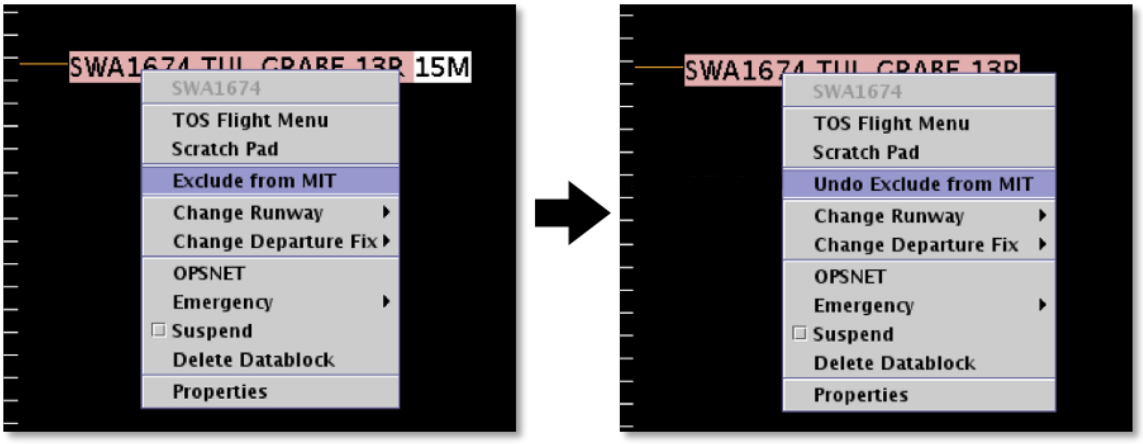


Figure 6.46. Right-click Menu: Exclude from MIT (left), Undo Exclude from MIT (right).

6.9.5 Change Runway

ATC can use the right-click menu to change a flight's runway (Figure 6.47).

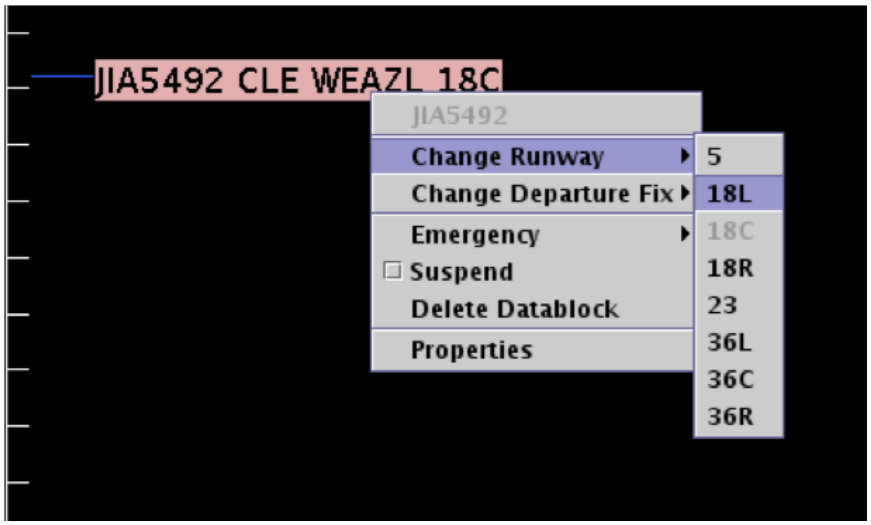


Figure 6.47. Right-click Menu: Change Runway.

The runway can also be changed for multiple flights. Hold the "Shift" key to select multiple flights. Use the Flight Action Confirmation Panel to confirm (Figure 6.48).

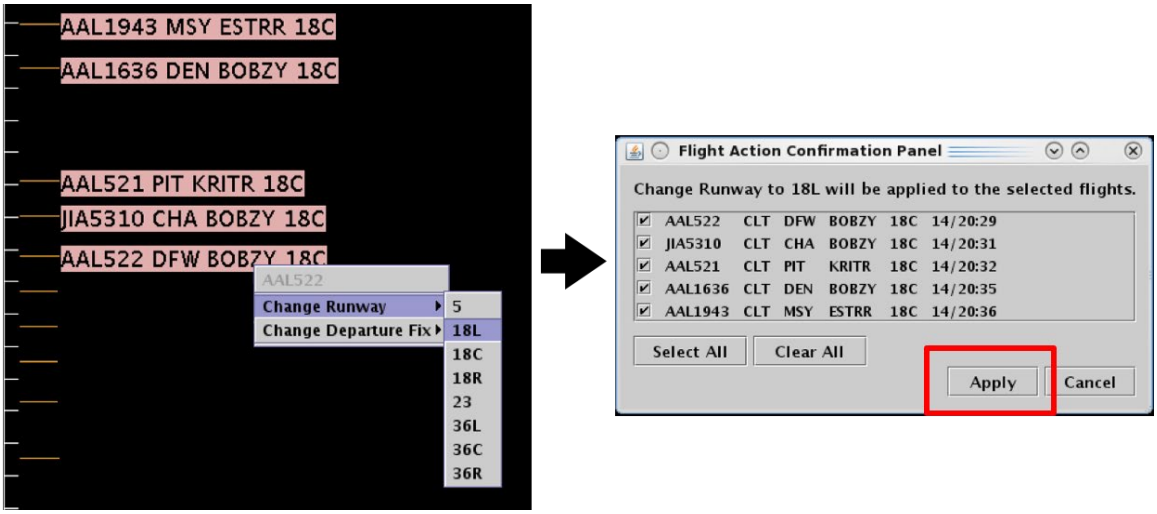


Figure 6.48. Right-Click Menu: Runway change for multiple flights. Use the Flight Action Confirmation Panel to apply the runway changes.

6.9.6 Change Departure Fix

ATC can use the right-click menu to change a flight's Departure Fix (Figure 6.49).

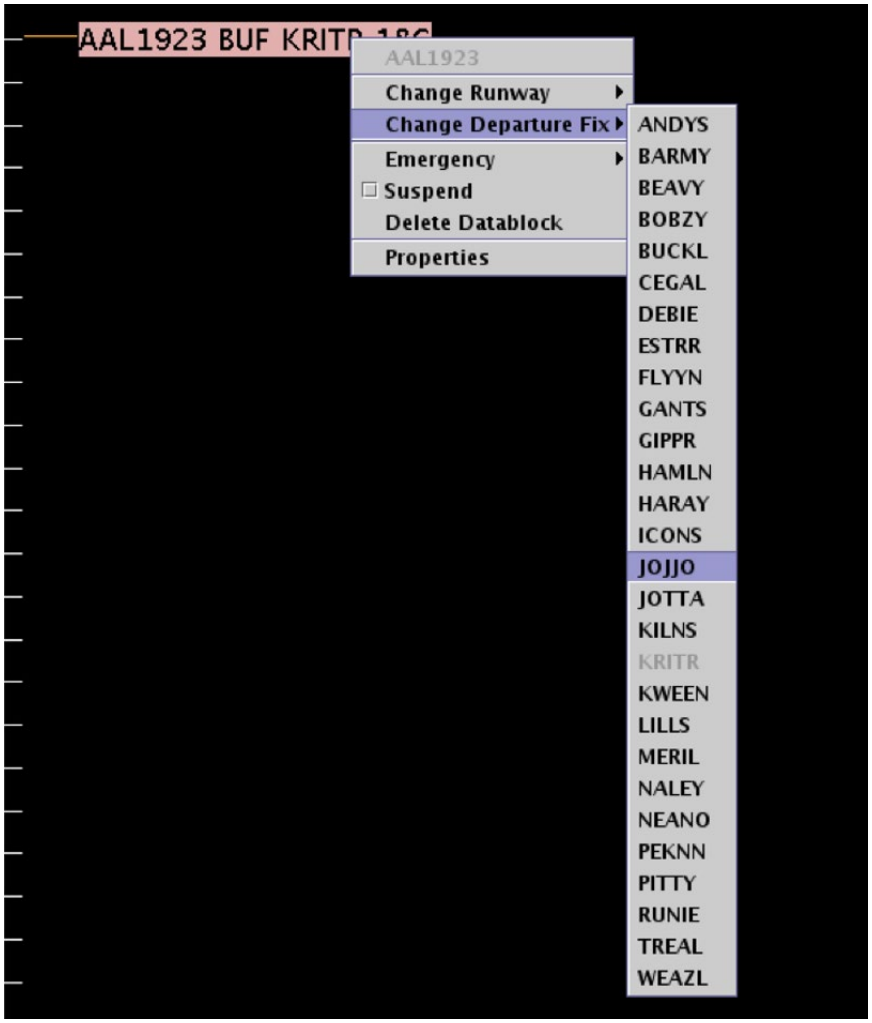


Figure 6.49. Right-Click Menu: Change Departure Fix.

The Departure Fix can also be changed for multiple flights. Hold the "Shift" key to select multiple flights. Use the Flight Action Confirmation Panel to confirm (Figure 6.50).

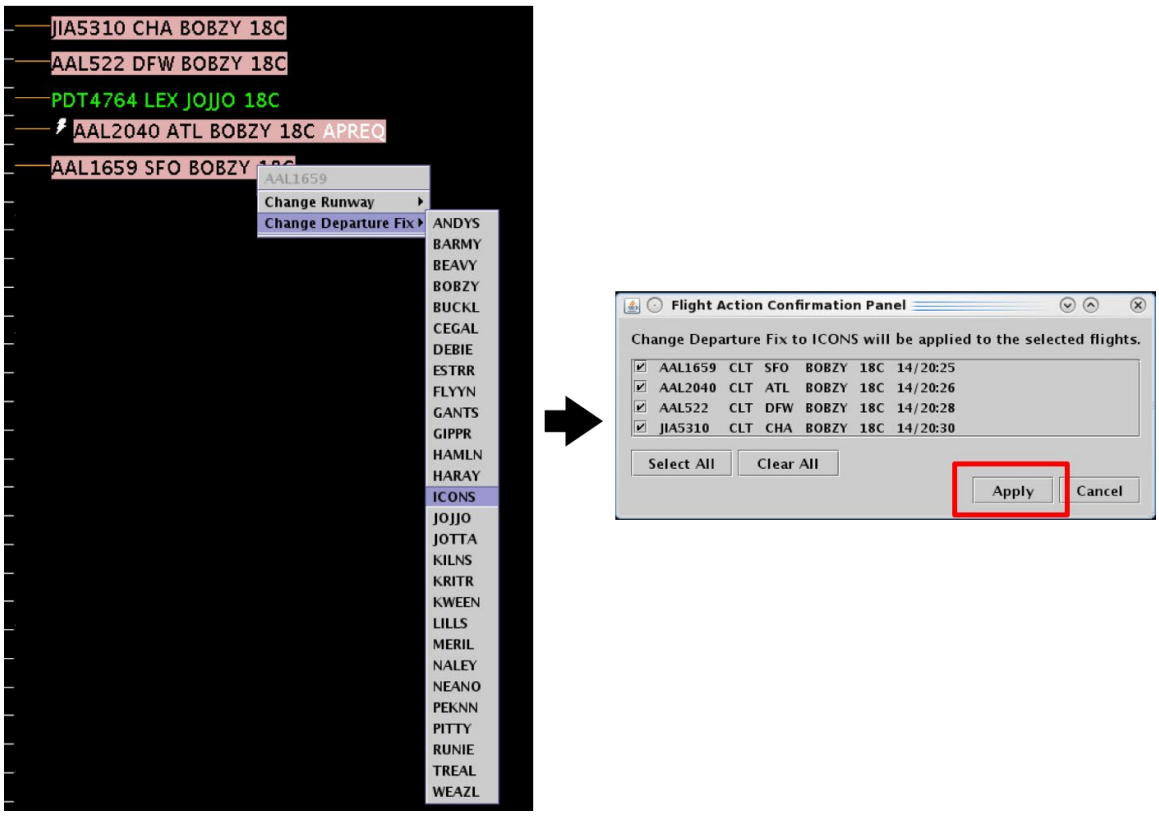


Figure 6.50. Right-Click Menu: Change Departure Fix for multiple flights. Use the Flight Action Confirmation Panel to apply the Fix changes.

6.9.7 Change Parking Gate

Use the right-click menu to change a flight's Parking Gate (Figure 6.51).

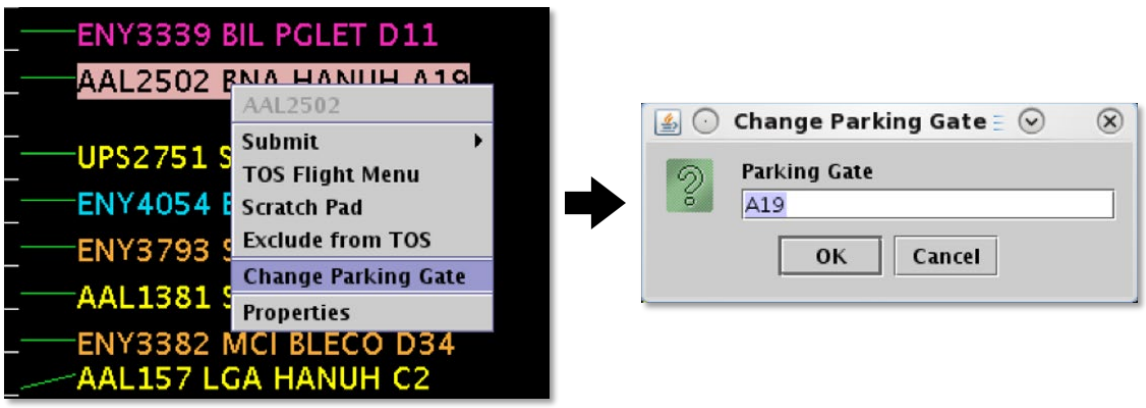


Figure 6.51. Right-Click Menu: Change Parking Gate.

6.9.8 Emergency

ATC can use the right-click menu to change the *medical* emergency status of a flight (Figure 6.52).

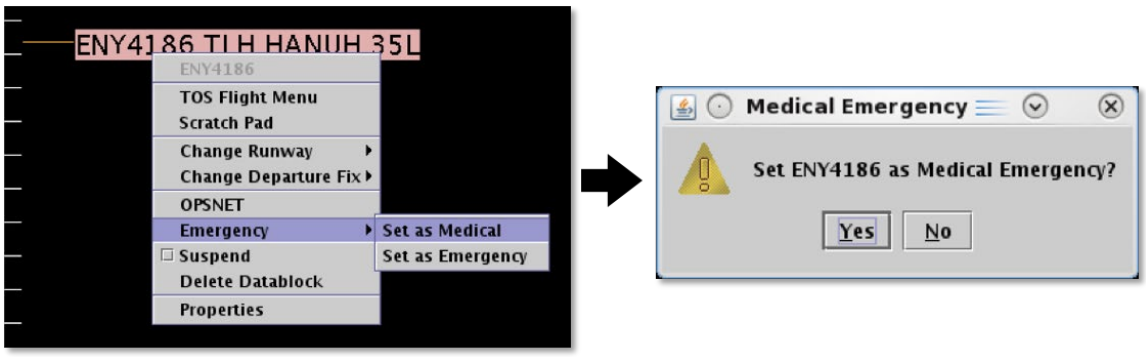


Figure 6.52. Right-Click Menu: Medical Emergency.

Alternatively, select “Remove Medical” to remove the medical emergency (Figure 6.53).

Figure 6.53. Emergency status: Remove Medical.

ATC can also use the right-click menu to change the *general* emergency status of a flight (Figure 6.54).

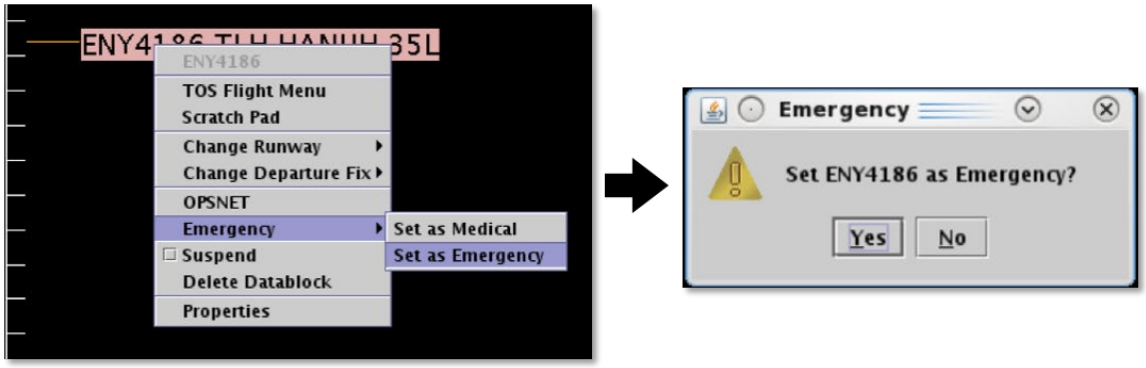


Figure 6.54. Right-Click Menu: General Emergency.

Alternatively, select "Remove Emergency" to remove the general emergency (Figure 6.55).

Figure 6.55. Emergency status: Remove Emergency.

6.9.9 Suspend

ATC can use the right-click menu to "Suspend" a departure flight. The "Suspend" option can be used when a departure flight is temporarily delayed (e.g., mechanical issue), but not permanently cancelled.

Suspending a flight provides a visual cue on the map and a reminder of a delay. It also informs the ATD-2 scheduling system that the flight should be removed from the scheduling cycle.

A suspended flight is removed from the Timeline, but continues to appear on the Map and in the Flights Table. "Suspended" is indicated on the flight icon datablock on map (Figure 6.56).

Ensure that "Suspended Flights" are selected in Map view settings (see Section 4.2.2.4).

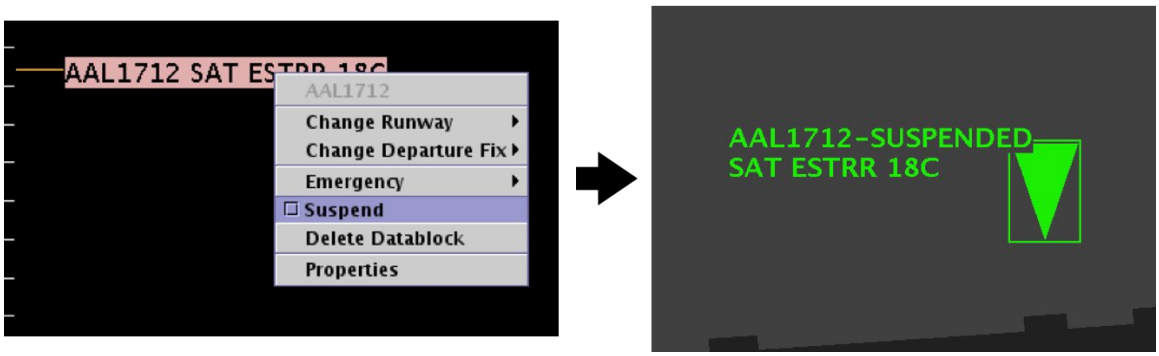


Figure 6.56. Right-Click Menu: Suspend.

Alternatively, select "Suspend" on the *map* right-click menu to undo the suspension (Figure 6.57). The flight is again displayed on the Timeline.

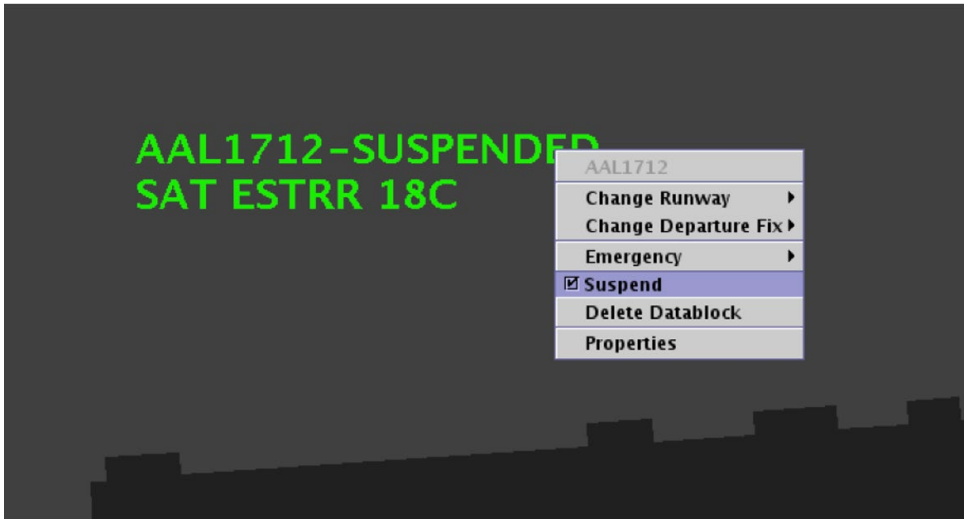


Figure 6.57. Map Right-Click Menu: Select "Suspend" to deselect and undo.

6.9.10 Return to Ramp

ATC can use the right-click menu to indicate that a departure flight is returning to the ramp (Figure 6.58). This option can be used when a departure flight needs to return to the ramp area because of a malfunction or some other problem with the flight. Information about the flight's status, predicted schedule, and advisories are cleared from the ATD-2 scheduler.

The flight is removed from the Timeline, but continues to appear on the Map and in the Flights Table.

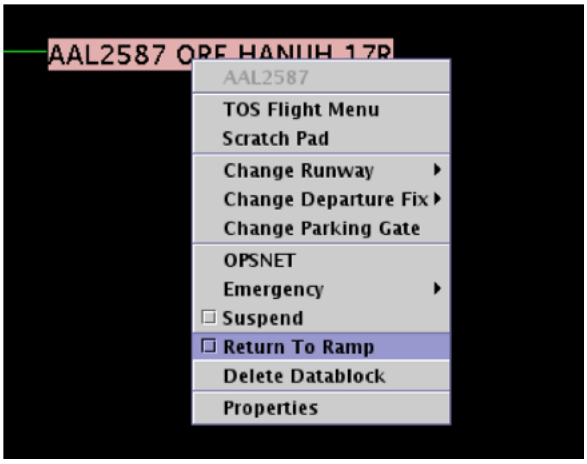


Figure 6.58. Right-Click Menu: Return to Ramp.

Alternatively, select "Return to Ramp" on the *map* right-click menu to undo (Figure 6.59). The flight is again displayed on the Timeline.

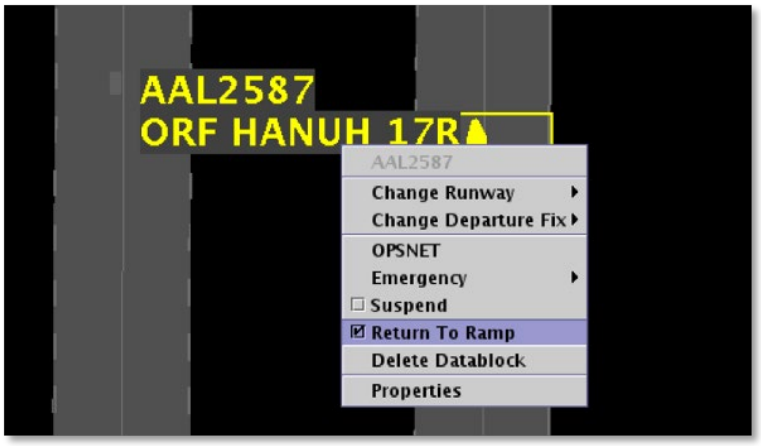


Figure 6.59. Map Right-Click Menu: Return to Ramp.

6.9.11 Delete Datablock

ATC can use the right-click menu to delete a flight's timeline datablock and flight icon on the map (Figure 6.60). The flight continues to appear in the Flights Table. "Delete Datablock" cannot be undone.

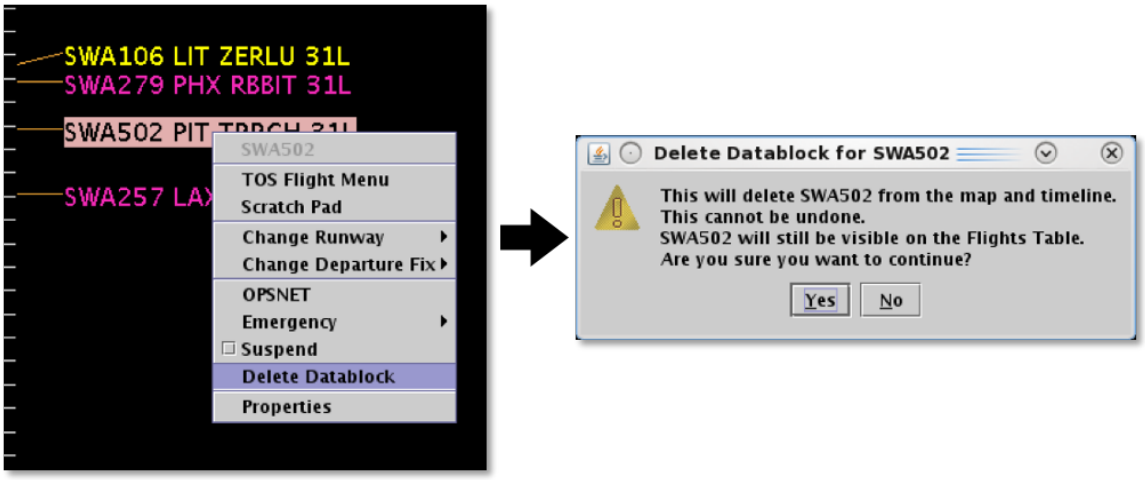


Figure 6.60. Right-click Menu: Delete Datablock.

6.9.12 Properties

Use the right-click menu to open the Flight Properties window menu (Figure 6.61). Each piece of information included in the Flight Properties window (Figure 6.62) is listed in Table 6.5.

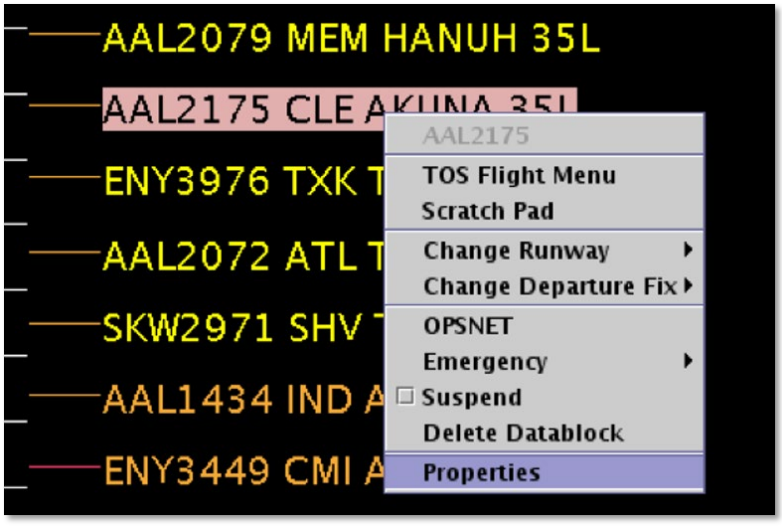


Figure 6.61. Right-Click Menu: Flight Properties.

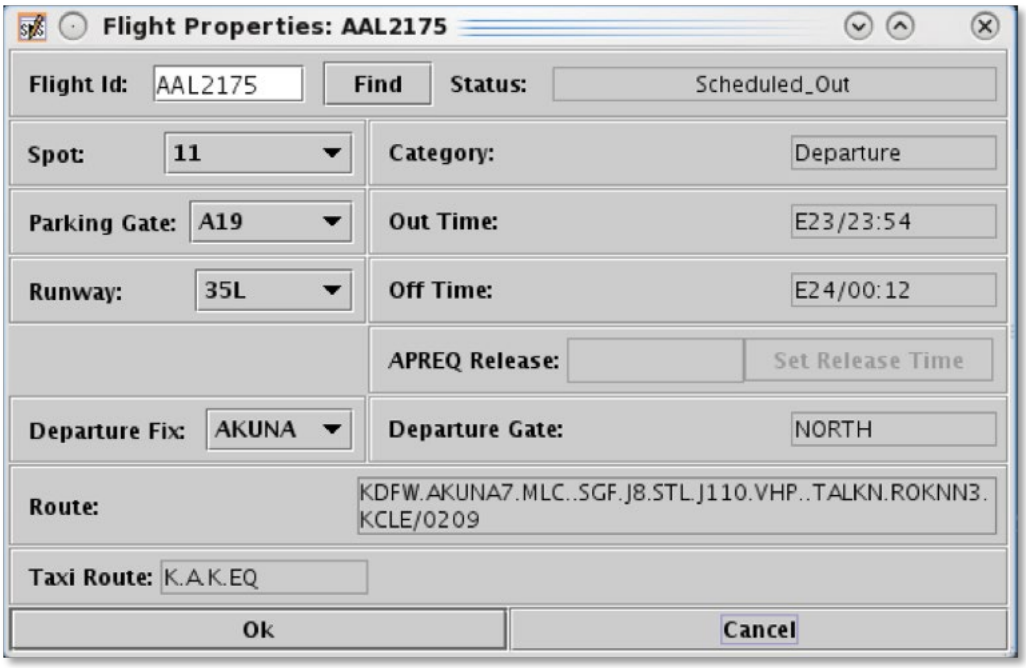


Figure 6.62. Flight Properties window (in this example, for a departure flight).

Table 6.5. Flight Property Information

Flight Property	Description
Flight ID	Flight number (call sign). For General Aviation (GA) flights, tail number is used. The "Find" function can be used to highlight a flight in the timeline, map, and Flight Table.
Flight Status	Flight Status: • **Scheduled Out:** A departure flight that has not yet pushed back from the gate. • **Pushback:** A departure flight that is pushing back. • **Out:** A departure flight that is taxiing in the Ramp Area. • **Taxiing AMA:** A departure flight that is taxiing in the Airport Movement Area (AMA). • **In Queue:** A departure flight inside the queue detection box of the assigned runway. • **Departed:** A departure flight that is airborne. • **Scheduled In:** An arrival flight that is not yet being tracked. • **Enroute Arr:** An arrival flight that is in the enroute airspace. • **Term Area Arr:** An arrival flight that is inside the terminal airspace. • **On Final:** An arrival flight that is on final approach.

	• **On:** An arrival flight that has landed. • **In Ramp:** An arrival flight that is taxiing in the Ramp. • **In:** An arrival flight that is parked at the gate. • **Return to Gate:** A departure that is returning to the gate, after pushing back. • **Suspended:** A departure flight that was scheduled to have already departed, but no updates have been received. • **Cancelled:** A flight that has been cancelled by the airline. • **Unknown:** A flight with an unknown status.
Spot	Predicted or actual spot. *Use dropdown menu to change.*
Parking Gate	Assigned or actual parking gate. *Use dropdown menu to change.*
Runway	Predicted or actual runway based on flight plan, departure fix, actual location of aircraft, or user input. *Use dropdown menu to change.*
Departure Fix	Assigned/actual departure fix for a flight (departures only). *Use dropdown menu to change.*
Category	Arrival or departure.
OUT Time	Predicted or actual pushback time. Predicted time is prefixed by an "E" to indicate estimate.
OFF Time	Predicted or actual takeoff time. Predicted time is prefixed by an "E" to indicate estimate.
ON Time	Predicted or actual landing time. Predicted time is prefixed by an "E" to indicate estimate.
IN Time	Predicted or actual gate arrival time. Predicted time is prefixed by an "E" to indicate estimate.
APREQ Release	For flights with APREQ restriction, the APREQ release time.
Departure Gate	Assigned/actual departure gate for a flight (departures only). *Use dropdown menu to change.*
Route	Filed route reported by FAA system.
Taxi Route	The remaining route for taxiing in the AMA.

7 STBO Client: Approval Requests (APREQs)

In this section, the display of Approval Request (APREQ) information and procedures for scheduling release time in the STBO Client interface are discussed.

7.1 Display of APREQ Information

APREQ information is received through SWIM or manually entered on the APREQ tab in the TM Actions panel (see Section 3.1.1). APREQ information can be displayed on the Timeline (Section 7.1.1), Map (Section 7.1.2), and in the Flights Table (Section 7.1.3).

7.1.1 APREQs on the Timeline

Prior to being scheduled, the word "APREQ" is displayed, in white text, in the flight's Timeline datablock (Figure 7.1).

Figure 7.1. Timeline Datablock: Prior to scheduling, the word "APREQ" is displayed.

After being scheduled, the release time is displayed in A:*hhmm* format (e.g., "A:2247" in Figure 7.2).

Figure 7.2. Timeline Datablock: After being scheduled, the release time (e.g., "A:2247") is displayed.

Other TMI information may also be displayed in the same datablock. For example, when a flight is also subject to an EDCT, the EDCT time is displayed in E:*hhmm* format (e.g., "E:1724" in Figure 7.3).

Figure 7.3. Timeline Datablock: Flight is subject to both an APREQ and an EDCT ("E:1724").

To display APREQ information on the Timeline, ensure that "APREQ" is selected in Timeline Settings (Figure 7.4). See Section 6.7 for a full description of Timeline Settings.

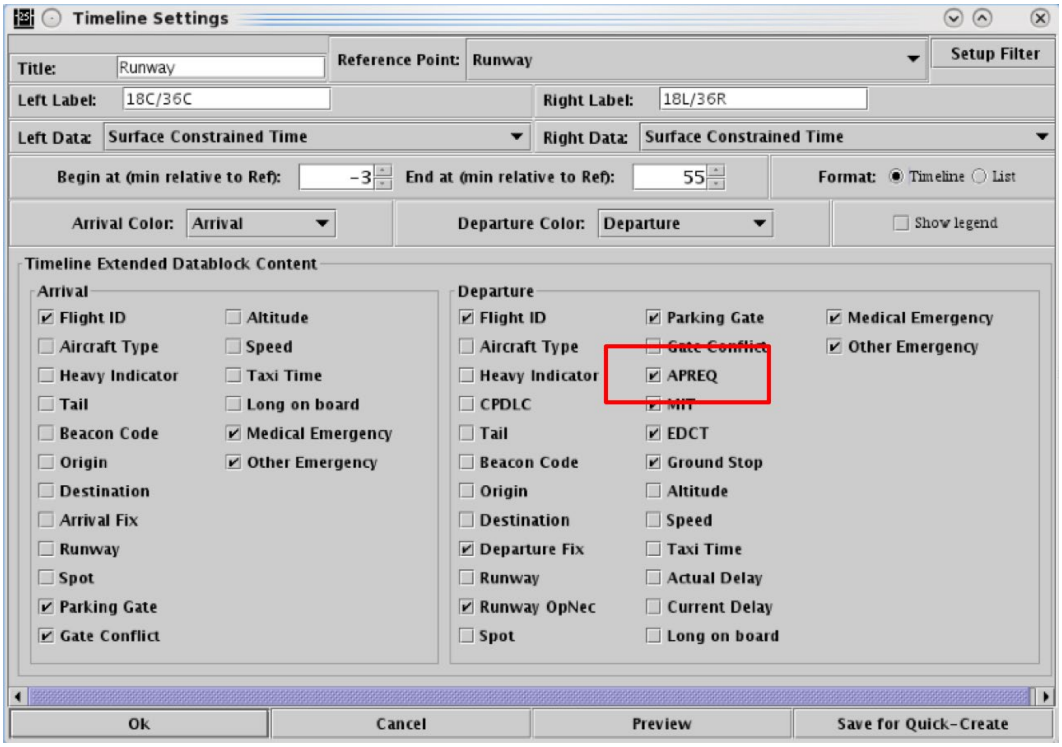


Figure 7.4. Timeline Settings: Select "APREQ" to display APREQ information on Timeline.

7.1.2 APREQs on the Map

Like the Timeline, APREQ information is displayed in the flight's datablock on the Map. Prior to being scheduled, the word "APREQ" is displayed, in white text, in the flight's datablock (Figure 7.5, left). After being scheduled, the release time is displayed in A:*hhmm* format (e.g., "A:2304" in Figure 7.5, right).

Figure 7.5. Map Datablock: Prior to being scheduled, the word "APREQ" is displayed (left). After being scheduled, the release time (e.g., "A:2025") is displayed (right).

To display APREQ information on the Map, ensure that "Extended Datablock" and "APREQ" are selected for Departures in the Setup Datablocks window (Figure 7.6). See Section 4.3.1 for a full description of map datablocks.

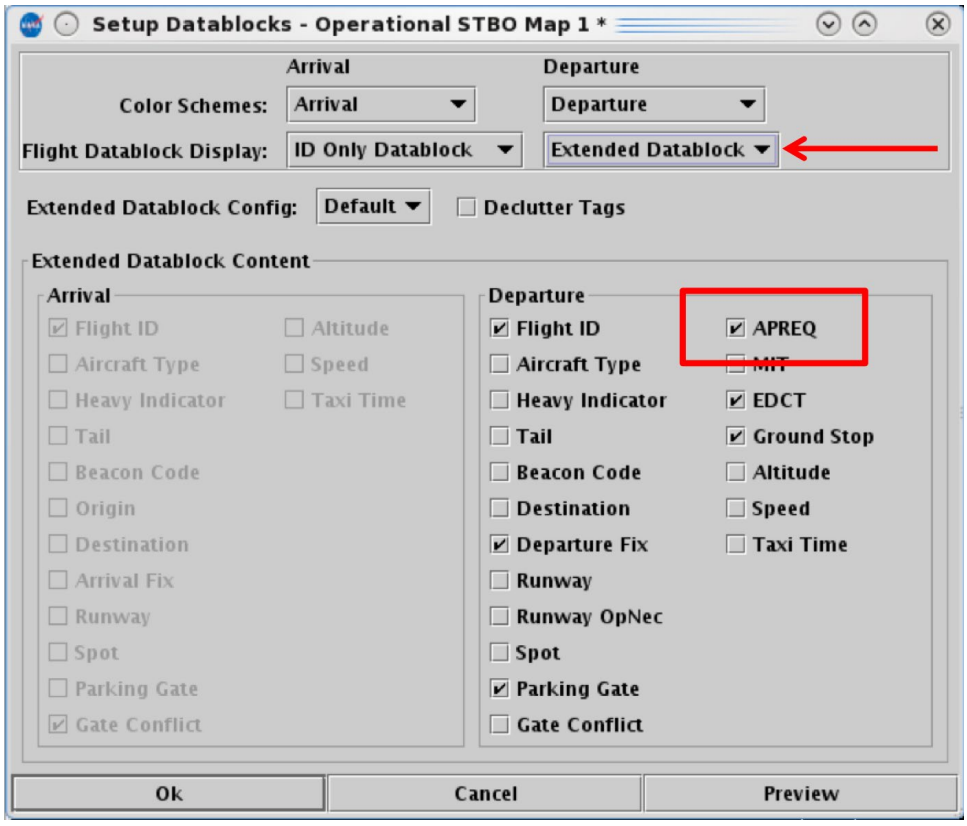
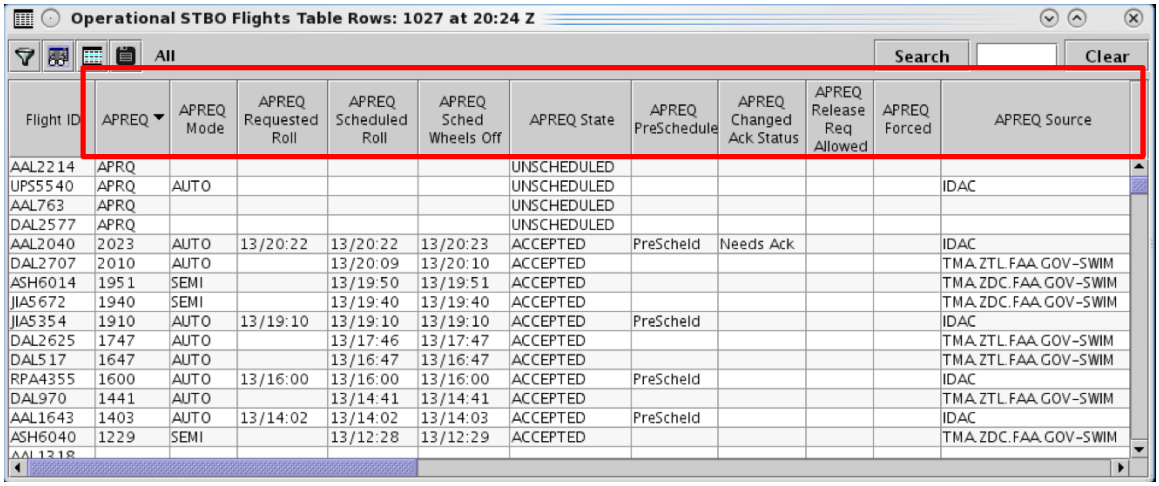


Figure 7.6. Setup Datablocks: Select "Extended Datablock" and "APREQ" to display information on Map.

7.1.3 APREQs in the Flights Table

In the Flights Table, several columns of information pertaining to APREQ flights are available (Figure 7.7). Each APREQ-related column is described in Table 7.1.



Flight ID	APREQ	APREQ Mode	APREQ Requested Roll	APREQ Scheduled Roll	APREQ Sched Wheels Off	APREQ State	APREQ PreSchedule	APREQ Changed Ack Status	APREQ Release Req Allowed	APREQ Forced	APREQ Source
AAL2214	APRQ					UNSCHEDULED					
UPS5540	APRQ	AUTO				UNSCHEDULED					IDAC
AAL763	APRQ					UNSCHEDULED					
DAL2577	APRQ					UNSCHEDULED					
AAL2040	2023	AUTO	13/20:22	13/20:22	13/20:23	ACCEPTED	PreScheld	Needs Ack			IDAC
DAL2707	2010	AUTO		13/20:09	13/20:10	ACCEPTED					TMA.ZTL.FAA.GOV-SWIM
ASH6014	1951	SEMI		13/19:50	13/19:51	ACCEPTED					TMA.ZDC.FAA.GOV-SWIM
JIA5672	1940	SEMI		13/19:40	13/19:40	ACCEPTED					TMA.ZDC.FAA.GOV-SWIM
JIA5354	1910	AUTO	13/19:10	13/19:10	13/19:10	ACCEPTED	PreScheld				IDAC
DAL2625	1747	AUTO		13/17:46	13/17:47	ACCEPTED					TMA.ZTL.FAA.GOV-SWIM
DAL517	1647	AUTO		13/16:47	13/16:47	ACCEPTED					TMA.ZTL.FAA.GOV-SWIM
RPA4355	1600	AUTO	13/16:00	13/16:00	13/16:00	ACCEPTED	PreScheld				IDAC
DAL970	1441	AUTO		13/14:41	13/14:41	ACCEPTED					TMA.ZTL.FAA.GOV-SWIM
AAL1643	1403	AUTO	13/14:02	13/14:02	13/14:03	ACCEPTED	PreScheld				IDAC
ASH6040	1229	SEMI		13/12:28	13/12:29	ACCEPTED					TMA.ZDC.FAA.GOV-SWIM
AAL1318											

Figure 7.7. Flights Table: APREQ-related information columns (described in Table 7.1).

Table 7.1. APREQ Information in the Flights Table

Column Name	Description

APREQ	Indicates APREQ Status:
	• **"APRQ"** is displayed prior to the release time being scheduled.
	• **"APRQ: REQUESTED"** indicates that negotiation is in progress.
	• **"APRQ:REJECTED"** indicates that the request time was not accepted. A new time may be negotiated.
	• **"FREE RELEASE"** indicates the flight has a floating release time.
	• ***"hhmm*: REQUESTED"** is displayed when the Tower electronically requests a specific release time using:
	  ◦ Request Release Time,
	  ◦ Select Slot on Timeline, or
	  ◦ When the flight is Pre-Scheduled.
	• ***"hhmm"*** is the assigned release time (wheels-up time).
	• **FREE RELEASE** is displayed with the flight has a floating release time.

APREQ Mode	APREQ request mode used by the Center Traffic Management Coordinator (TMC) in TBFM: • **UNDETERMINED** – Mode has not been set. • **MANUAL (Call for Release)** – Requests from the Tower needs to be made over the phone. • **SEMI** – Requests are made via IDAC, but still require electronic approval by the Air Route Traffic Control Center (ARTCC) TMC. • **AUTO** – Requests are made via IDAC and are automatically approved by TBFM. • **OFF** – TBFM is not being used to schedule APREQ release times. Requests must be made by telephone.
APREQ Requested Roll	Requested APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll in *dd/hh:mm* format.
APREQ Scheduled Roll	Scheduled APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll in *dd/hh:mm* format.
APREQ Sched Wheels-Off	Scheduled APREQ release time at wheels-up (corresponds to the scheduled release time set in TBFM) in *dd/hh:mm* format.
APREQ State	Indicates the status of the APREQ negotiation: • **UNSCHEDULED** – The APREQ release time has not been requested yet. • **PENDING_SCHEDULE** – The APREQ release time has been requested by ATCT but not accepted yet by the ARTCC TMC. • **SCHEDULED** – The APREQ release time as scheduled by the ARTCC and sent to the ATCT. • **PENDING_ACCEPT** – ATCT start of negotiation for accepting the ARTCC scheduled release time. • **ACCEPTED** – The APREQ request time has been accepted by ATCT. • **PENDING_CANCEL** – The ATCT has issued a request to cancel APREQ negotiation. • **CANCELLED** – The APREQ negotiation has been cancelled by the ATCT or ARTCC.
APREQ Pre-Schedule	**"PreScheld"** is displayed when the flight is eligible for Pre-Scheduling. That is, the release time is automatically scheduled at a pre-determined time (x minutes) prior to EOBT. Pre-Scheduling is only used for select destinations.

	If the flight is not eligible for Pre-Scheduling, the field is blank.
APREQ Changed Ack Status	**"Needs Ack"** is displayed when the TBFM/IDAC system at Center electronically returns a release time to the ATD-2 system that is different from the release time requested by the Tower. Equality is determined in minutes. A yellow diamond with exclamation point is displayed next to the flight's datablock on the STBO Client Timeline.
APREQ Release Req Allowed	Indicates whether an APREQ release request can be made electronically through the STBO Client.
APREQ Forced	Method by which the APREQ release time is received by the ATD-2 system: • **"FALSE"** when the APREQ release time is negotiated electronically through IDAC. • **"TRUE"** if the APREQ time is manually set by a user in the STBO Client or is received through System Wide Information Management (SWIM) apart from IDAC.
APREQ Source	Data source from which the APREQ release time originates: • **IDAC:** Integrated Departure and Arrival Control (IDAC) system. • **TMA.Z_ _.FAA.GOV-SWIM:** Time-Based Flow Management (TBFM) / System-Wide Information Management (SWIM).

To display APREQ information in the Flights Table, ensure that the column name is in the "Shown" list (for example, in Figure 7.8, the "APREQ" column is in the "Shown" list). See Section 5.1.3.2 for a full description of Column Settings.

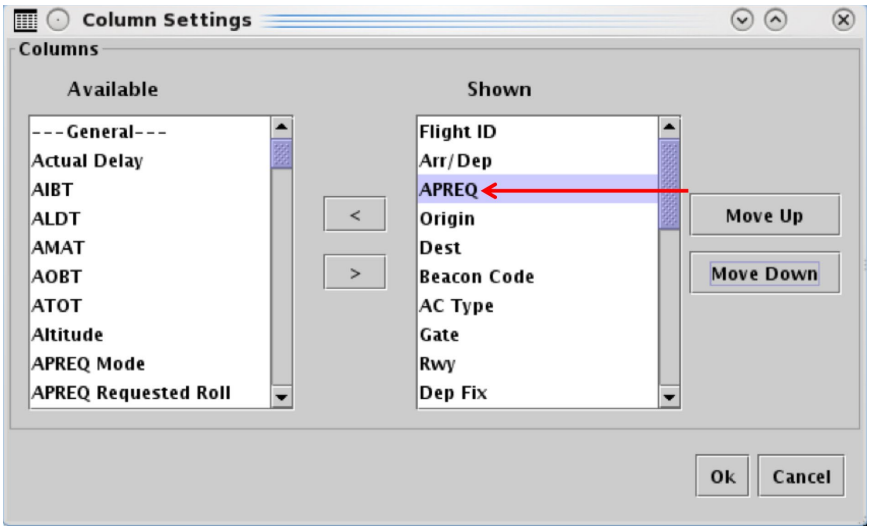


Figure 7.8. Flights Table Column Settings: Move column name to "Shown" to include it in the Table.

7.2 TBFM/IDAC APREQ Approval Modes

The Air Route Traffic Control Center (ARTCC; "Center") uses one of three Time-Based Flow Management (TBFM) / Integrated Departure Arrival Capability (IDAC) Approval Modes for managing APREQ release times (Table 7.2). These modes determine how the ATC Tower and Center communicate to schedule APREQ release times.

Table 7.2. TBFM/IDAC APREQ Approval Modes at Center

Approval Mode	Description
Automatic	In **Automatic** mode, the ARTCC TBFM/IDAC sends a release time back to the STBO Client in the Tower through automation without any interaction from the Traffic Management Coordinator (TMC) at Center.
Semi-Automatic	In **Semi-Automatic** mode, the TMC at Center is required to respond to the Tower's APREQ electronic request.
Call for Release	In **Call for Release** mode, the release time is verbally scheduled via a telephone call between Tower and the TMC at Center.

7.3 APREQ Scheduling Symbology in the STBO Client

In the STBO Client, one of three symbols is displayed next to each APREQ flight on the Timeline to indicate the available scheduling mode for that destination (Figure 7.9).

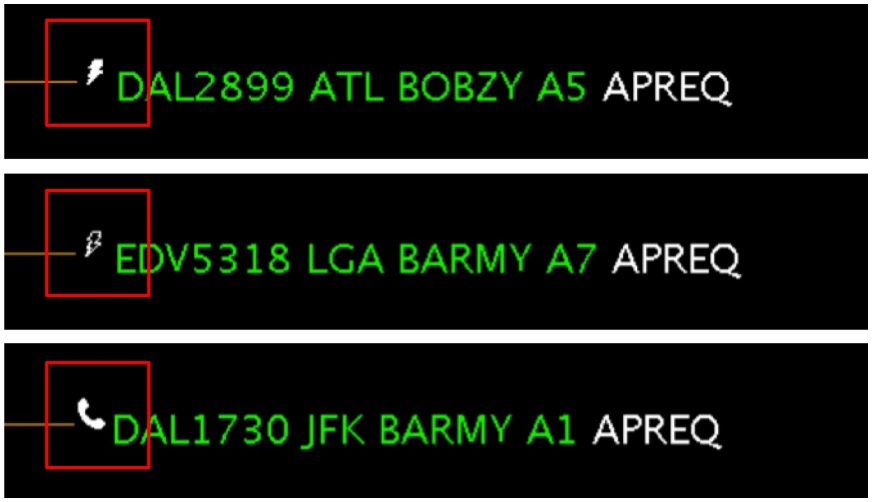


Figure 7.9. Timeline symbology indicates which TBFM/IDAC Approval Mode is being used by Center: Automatic (*solid lightning bolt*), Semi-Automatic (*hollow lightning bolt*), or Call for Release (*telephone handset*).

The TBFM/IDAC Approval Mode being used by the ARTCC TBFM determines how the APREQ release time can be scheduled via the STBO Client interface (Table 7.3).

Table 7.3. TBFM/IDAC Approval Modes and STBO Scheduling Capabilities

Timeline Symbol	TBFM/IDAC Approval Mode	STBO Client Scheduling Capability
Solid Lightning Bolt	A solid lightning bolt is displayed when the ARTCC TBFM is in **Automatic** mode (Figure 7.9, top).	When Center is using Automatic mode, the Tower can use the STBO Client interface to **electronically schedule** the APREQ release time.
Hollow Lightning Bolt	A hollow lightning bolt is displayed when the Center is in **Semi-Automatic** mode (Figure 7.9, middle).	When Center is using Semi-Automatic mode, the Tower can use the STBO Client interface to **electronically schedule** the APREQ release time.
Telephone	A telephone handset symbol is displayed when the Center is in	When Center is in Call for Release mode, the Tower must schedule the APREQ release time via a **phone call** to Center. The Tower

	Call for Release mode (Figure 7.9, bottom).	may also be required to manually enter the release time into the STBO Client.

Some destinations are automatically **pre-scheduled** at a predetermined time prior to a flight's EOBT (e.g., 10 minutes prior to the EOBT). Step-by-step procedures for each method of scheduling are described in Section 7.4.

7.4 APREQ Procedures in the STBO Client

Procedures for scheduling APREQ release times in the STBO Client are described in the following sections:

- Section 7.4.1: Electronically Schedule Release Time
- Section 7.4.2: Pre-Scheduling (used only for a subset of destinations)
- Section 7.4.3: Call for Release

7.4.1 Electronic Scheduling of APREQ Release Time

In the STBO Client, electronic scheduling can be used by the Tower to schedule APREQ release times when the TBFM/IDAC system at Center is in:

- **Automatic** Approval Mode (solid lightning bolt) (Figure 7.10, top), or
- **Semi-Automatic** Approval Mode (hollow lightning bolt) (Figure 7.10, bottom).

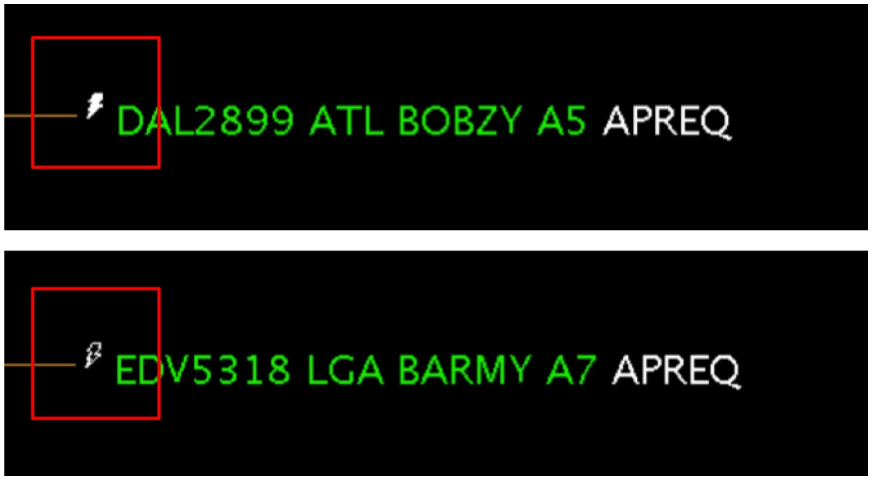


Figure 7.10. Electronic scheduling is available when the Center is in Automatic (*solid lightning bolt*) (top) or Semi-Automatic (*hollow lightning bolt*) (bottom) Approval Mode.

In the STBO Client, two methods are available for electronically scheduling APREQ release times: “Request Release Time” and “Select Slot on Timeline,” as described in Table 7.4.

Table 7.4. Methods for electronically scheduling APREQ time.

Method	Description
Request Release Time	Enables the Tower to electronically request the release time using the flight’s current timeline position. *See Section 7.4.1.1.*
Select Slot on Timeline	Allows the Tower to select the flight’s ready time on the STBO timeline, using the mouse to point and click. *See Section 7.4.1.2*.

7.4.1.1 Electronic Scheduling Method 1: Request Release Time

The “Request Release Time” option is the first method for electronically requesting a release time. Request Release Time is only available when the TBFM/IDAC system at the Center is in **Automatic** (solid lightning bolt) or **Semi-Automatic** (hollow lightning bolt) Approval Mode.

When “Request Release Time” is selected, Tower does not specify a specific time. Instead, ATD-2 Scheduler automation identifies a release time based on two criteria:

1) Current position on the runway Timeline, which is the earliest predicted departure time for that flight (also called the Earliest Feasible Takeoff Time (EFTT)), and

2) The availability of slots in the overhead stream.

ATD-2 automation then electronically sends a request for this release time to the TBFM/IDAC system at the Center.

To electronically schedule an APREQ release time using "Request Release Time":

Electronic scheduling of the release time is available when the TBFM/IDAC system at the Center is in ***Automatic*** *(solid lightning bolt) or* ***Semi-Automatic*** *(hollow lightning bolt) Approval Mode.*

Step 1: Right-click on the flight's Timeline datablock (Figure 7.11).

Step 2: Select "Request Release Time" from the menu (Figure 7.11). When using this method, the Tower does *not* manually enter a requested release time. Rather, ATD-2 automation identifies a release time and sends that time to the Center.

Note: Once "Request Release Time" is selected, a yellow arrow is displayed next to the flight's datablock to indicate that a release time request has been sent to the TBFM/IDAC system at Center (Figure 7.12.)

Note: When a release time is returned, it is displayed in the datablock (e.g., "A:hhmm") (Figure 7.13).

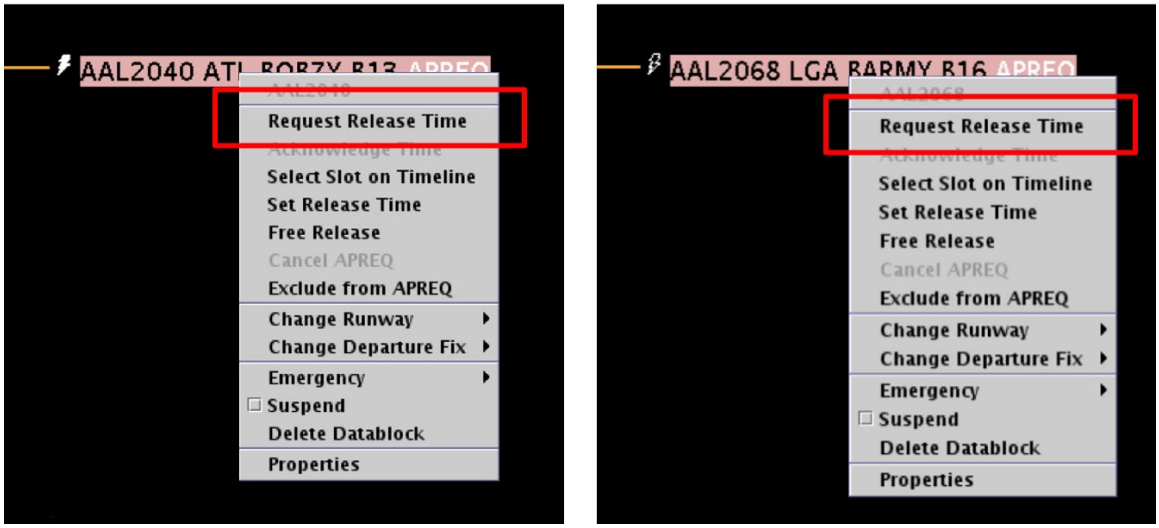


Figure 7.11. When Center is in Automatic (*solid lightning bolt*) (left) or Semi-Automatic (*hollow lightning bolt*) (right) Approval Mode, right-click on the flight's datablock to select "Request Release Time."

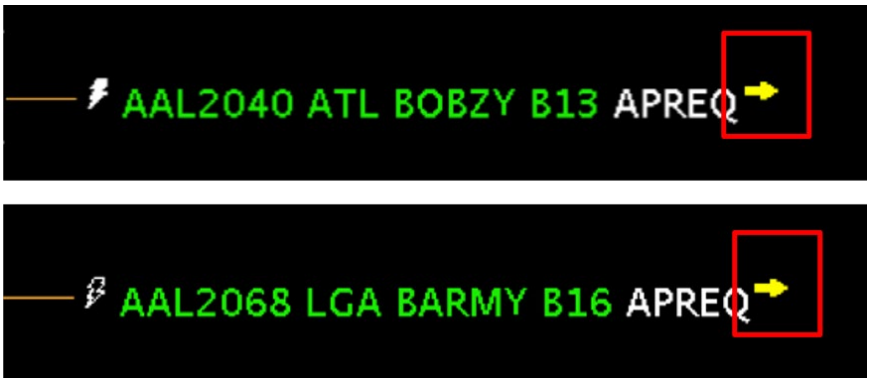


Figure 7.12. When Center is in Automatic (*solid lightning bolt*) (top) or Semi-Automatic (*hollow lightning bolt*) (bottom) Approval Mode and a request for a release time is sent electronically to Center, a yellow arrow is displayed next to the datablock on the timeline.

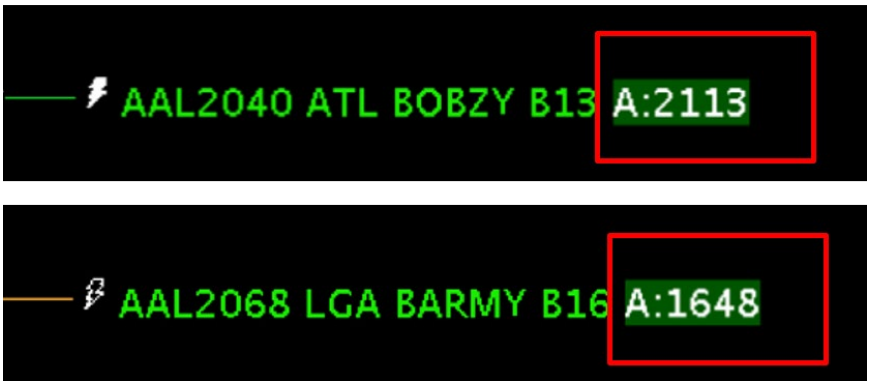


Figure 7.13. When Center is in Automatic (*solid lightning bolt*) (top) or Semi-Automatic (*hollow lightning bolt*) (bottom) Approval Mode and Center returns a release time, it is displayed in the datablock ("A:*hhmm*").

In Figure 7.13, the APREQ release time is highlighted in *green*, an indication that the predicted takeoff time falls within the -2/+1 minute APREQ compliance window. See Section 7.5 for a description of the color-coding used to show APREQ compliance window status.

7.4.1.2 Electronic Scheduling Method 2: Select Slot on Timeline

Using the mouse to point and click along the timeline is the second option for electronically scheduling release times via the STBO Client. "Select Slot on Timeline" is only available when the TBFM/IDAC system at the Center is in **Automatic** (solid lightning bolt) or **Semi-Automatic** (hollow lightning bolt) Approval Mode.

This functionality is similar to the FAA's Integrated Departure and Arrival Control (IDAC) capability, a component of the TBFM system that enables the Tower to electronically schedule into the overhead stream. In IDAC, Towers use the Integrated Departure Scheduling Tool (IDST) interface to identify available slots in the overhead stream and request a release time. In the STBO Client, electronic scheduling capability is

modeled after the IDAC/IDST interface. Available time slots are depicted with green blocks and unavailable slots are represented by a red line. These wheels-up release times correspond to available/unavailable slots in the overhead stream.

In the STBO Client, the user selects a time along the timeline that corresponds to the flight's position on the timeline, in other words, its ready time. In Figure 7.14, for example, to select a time for DAL2597, the STBO user would click on the timeline at the flight's predicted takeoff time (see mouse cursor in Figure 7.14). The STBO user selects the flight's predicted takeoff time *regardless* of whether it is in a green block or on a red line.

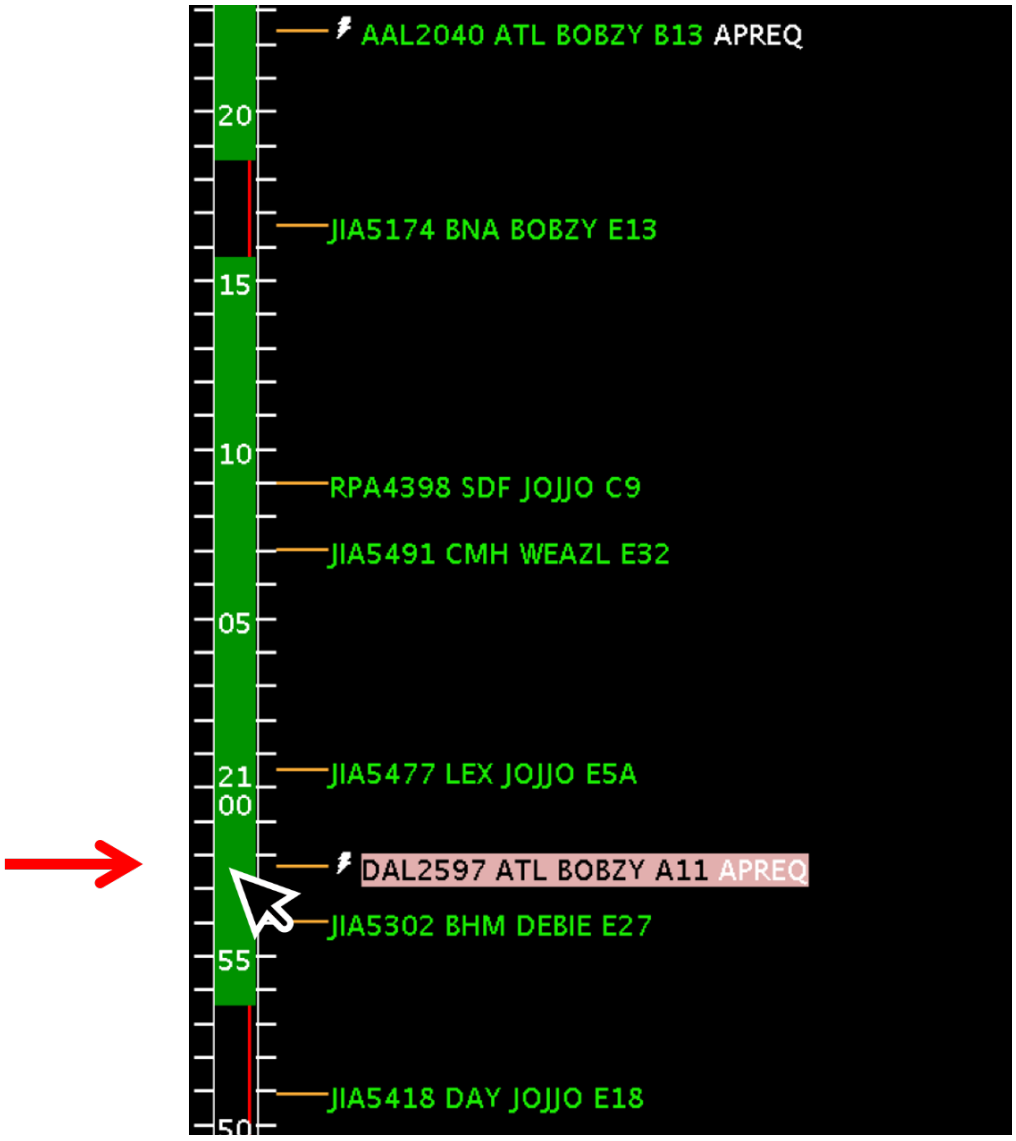


Figure 7.14. Select Slot on Timeline: Use the mouse to point and click along the timeline at the flight's predicted takeoff time.

If a flight is subject to both an APREQ and an EDCT, the -5/+5 minute EDCT window is also displayed, outlined in yellow (Figure 7.15).

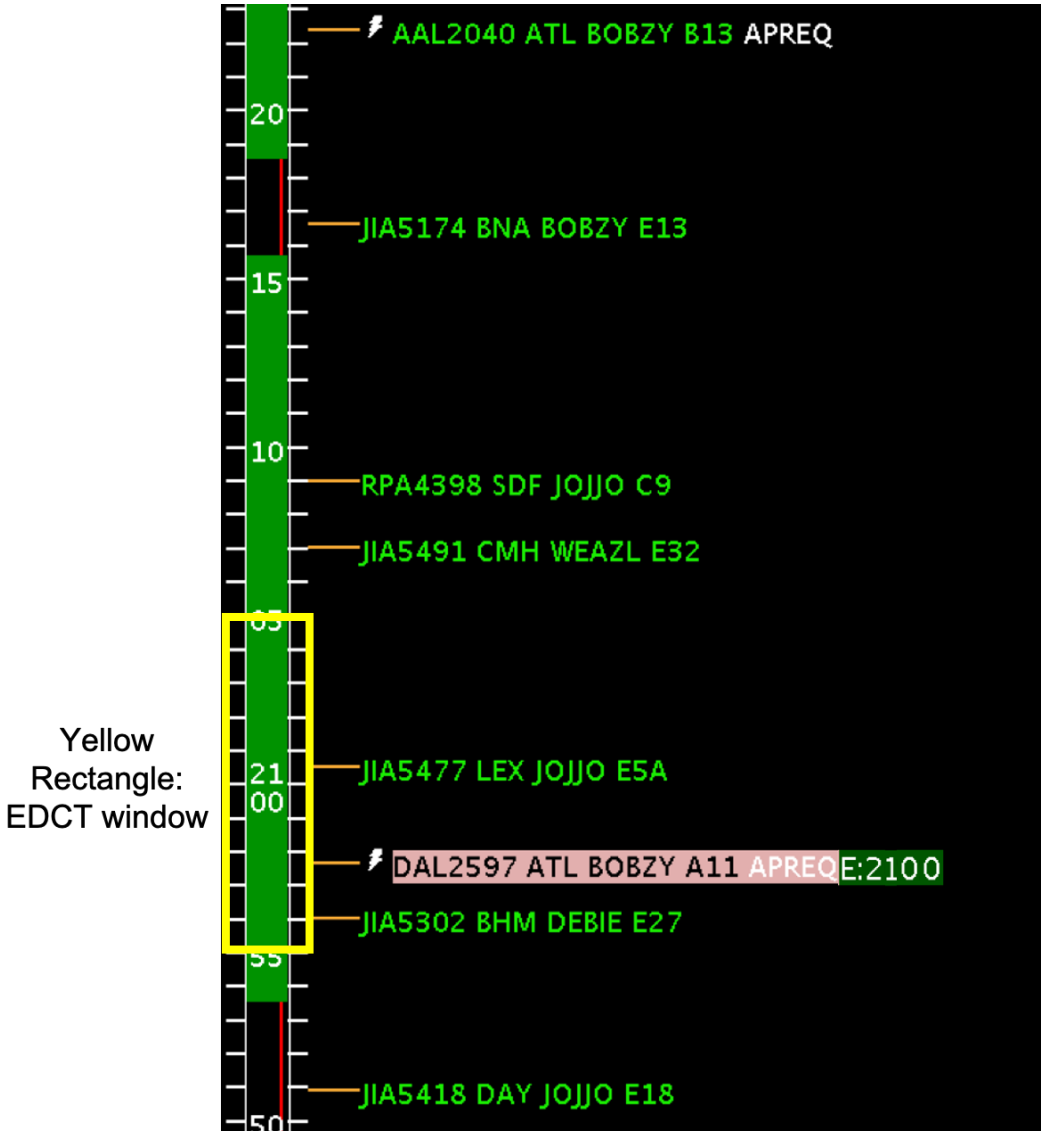


Figure 7.15. When an APREQ flight is also subject to an EDCT, the 10-min EDCT compliance window is outlined in yellow.

To electronically request a release time using the "Select Slot on Timeline" option:

Electronic scheduling of the release time is available when the TBFM/IDAC system at the Center is in ***Automatic*** *(solid lightning bolt) or* ***Semi-Automatic*** *(hollow lightning bolt) Approval Mode.*

Step 1: Right-click on the flight's Timeline datablock (Figure 7.16).

Step 2: Select "Select Slot on Timeline" from the menu (Figure 7.16).

Step 3: Use the mouse to point and click along the timeline at the flight's predicted takeoff time (Figure 7.17). The STBO user selects the flight's predicted takeoff time *regardless* of whether it is in a green block or on a red line.

Note: After clicking on the timeline, a yellow arrow is displayed next to the flight's datablock to indicate that a release time has been electronically requested from ARTCC (Figure 7.18).

Note: When a release time is returned, it is displayed in the datablock (e.g., "A:hhmm") (Figure 7.19).

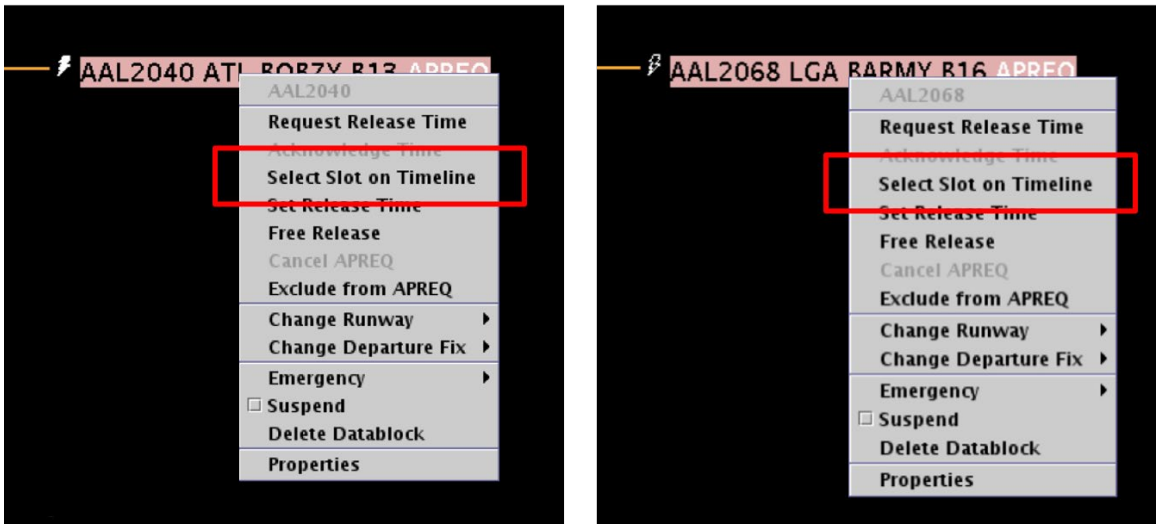


Figure 7.16. When Center is in Automatic (*solid lightning bolt*) (left) or Semi-Automatic (*hollow lightning bolt*) (right) Approval Mode, right-click on the flight's datablock to select "Select Slot on Timeline."

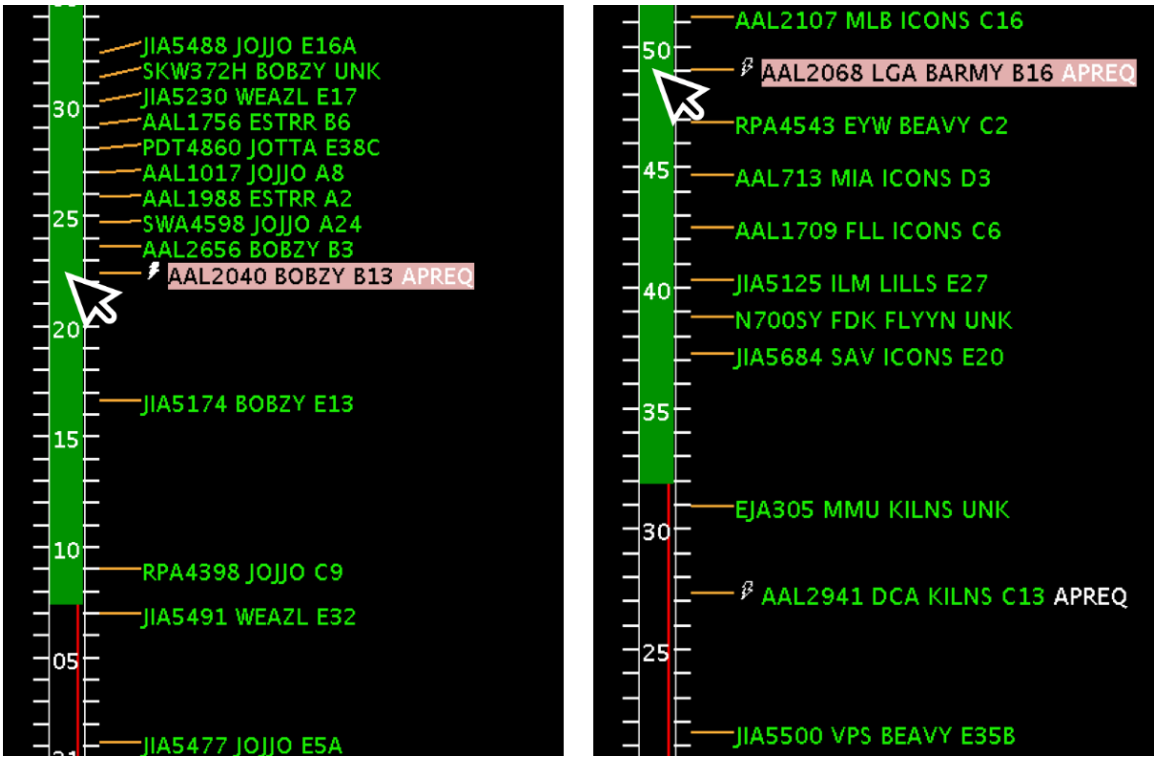


Figure 7.17. When Center is in Automatic (*solid lightning bolt*) (left) or Semi-Automatic (*hollow lightning bolt*) (right) Approval Mode, use the mouse to point and click along the timeline at the flight's predicted takeoff time, regardless of whether it is green or red.

If in Automatic Mode (*solid lightning bolt*), the ARTCC TBFM will return a time within the first available green space. If in Semi-Automatic Mode (*hollow lightning bolt*), the ARTCC TMC will return a time that works best for them, whether that time is within green block or not.

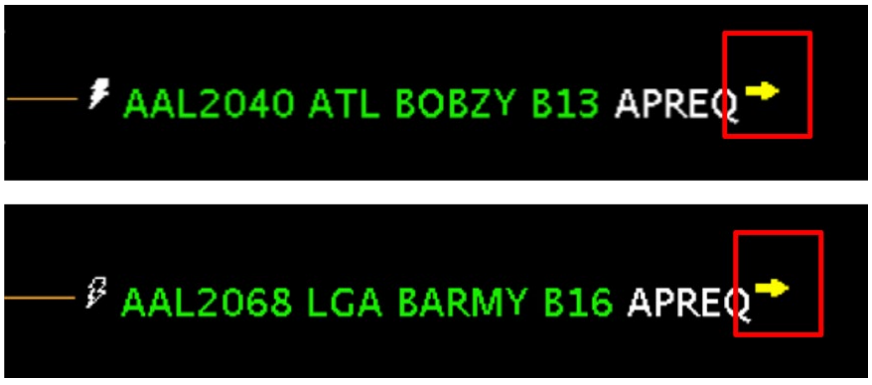


Figure 7.18. When Center is in Automatic (*solid lightning bolt*) (top) or Semi-Automatic (*hollow lightning bolt*) (bottom) Approval Mode and the STBO user selects a slot on the timeline, a yellow arrow is displayed next to the datablock on the timeline.

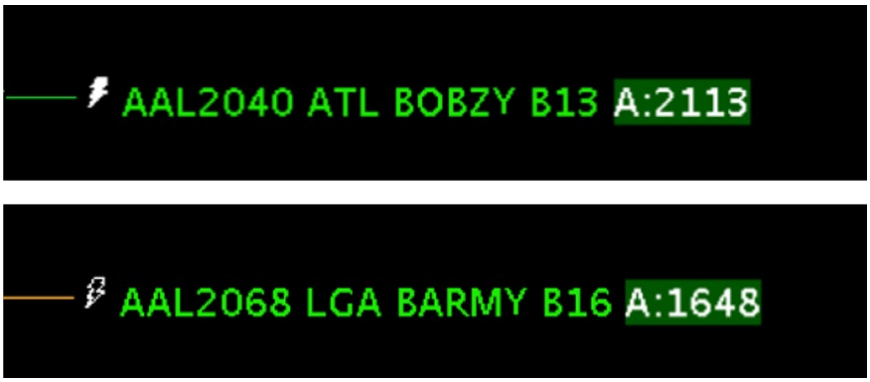


Figure 7.19. When Center is in Automatic (*solid lightning bolt*) (top) or Semi-Automatic (*hollow lightning bolt*) (bottom) Approval Mode and ARTCC returns a release time, it is displayed in the datablock ("A:*hhmm*").

In Figure 7.19, the APREQ release time is highlighted in *green*, an indication that the predicted takeoff time falls within the -2/+1 minute APREQ compliance window. See Section 7.5 for a description of the color-coding used to show APREQ compliance window status.

7.4.1.3 Electronic Scheduling: Acknowledge a Different Release Time

If ARTCC returns a release time that is <u>different</u> from the one requested via "Request Release Time" or "Select Slot on Timeline" in the STBO Client, a yellow diamond with an exclamation point is displayed next to the flight's datablock (Figure 7.20) and a box is drawn around the flight's datablock on the map (Figure 7.21).

To remove the yellow diamond:

Step 1: Right-click on the flight's Timeline datablock and select "Acknowledge Time" (Figure 7.22). Or, click directly on the yellow diamond itself.

Note: Once acknowledged, the yellow diamond is removed (Figure 7.23).

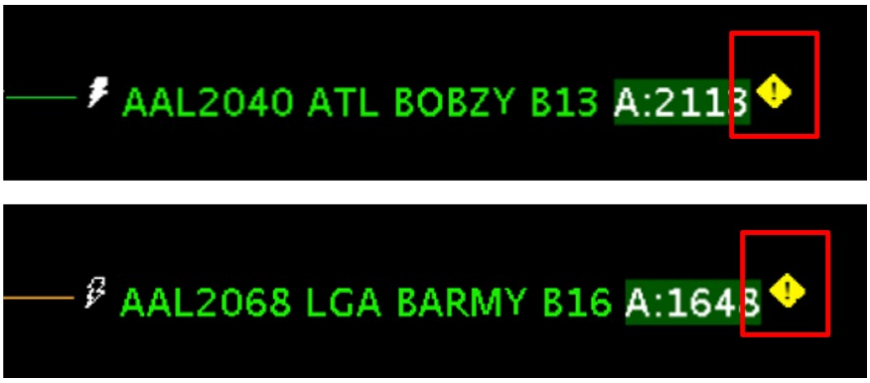


Figure 7.20. If ARTCC returns a release time that is different from the one requested via STBO, a yellow diamond with exclamation point is displayed.

Figure 7.21. When a yellow diamond is displayed on the timeline, a box is drawn around the flight's datablock on the map.

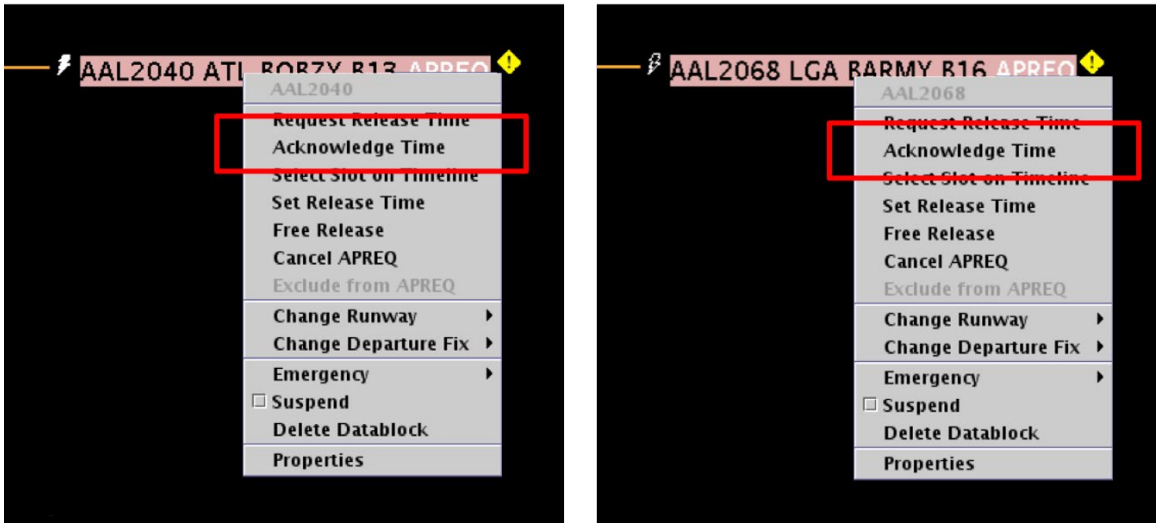


Figure 7.22. When Center is in Automatic (*solid lightning bolt*) (left) or Semi-Automatic (*hollow lightning bolt*) (right) Approval Mode, select "Acknowledge Time" from the right-click menu or click directly on the yellow diamond itself.

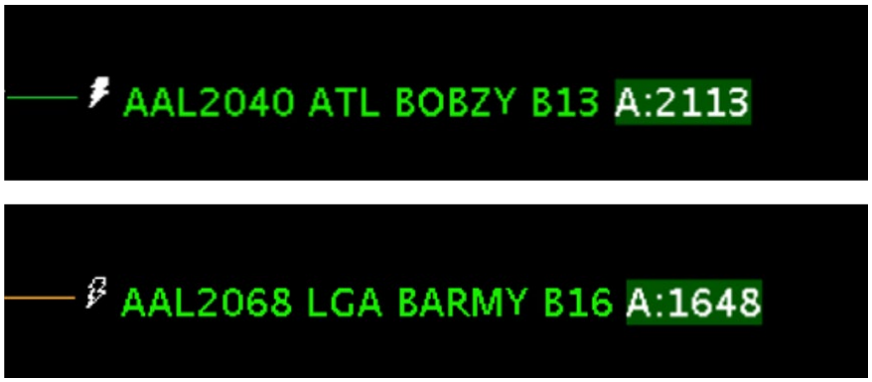
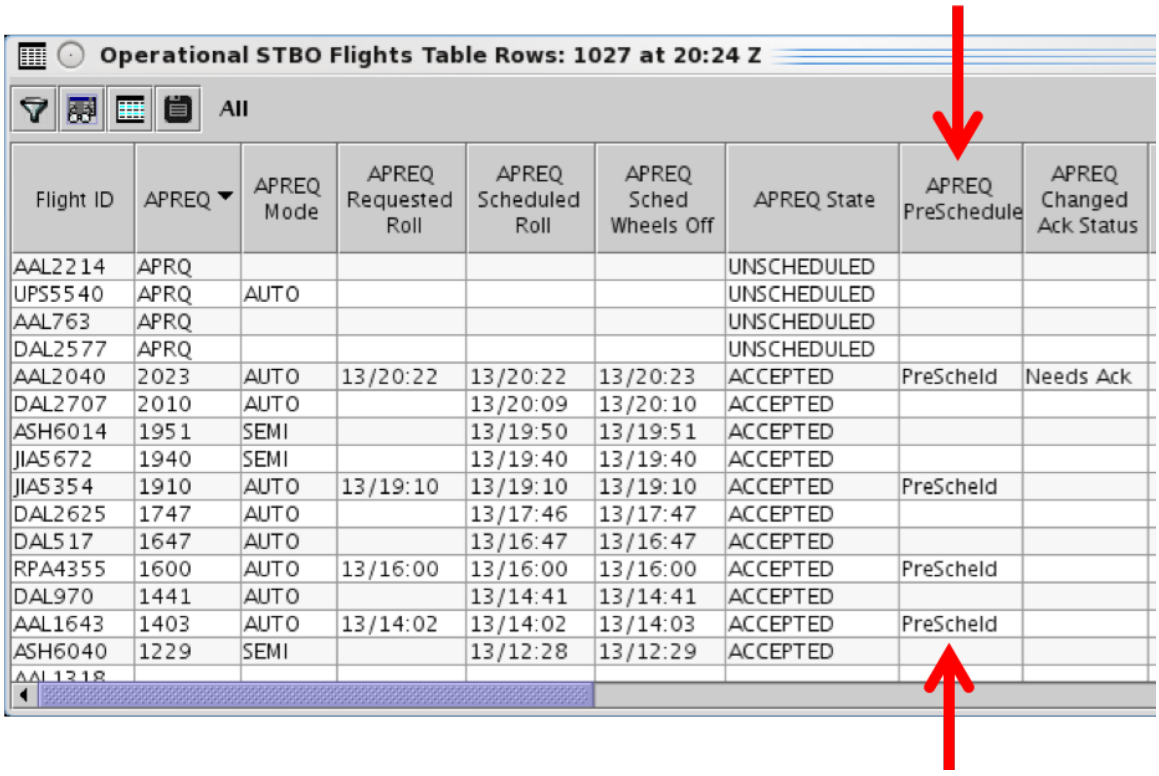


Figure 7.23. Once acknowledged, the yellow diamond is removed.

7.4.2 APREQ Pre-Scheduling

For some destinations, APREQ release times are “pre-scheduled.” For those selected destinations, pre-scheduling happens automatically when ARTCC TBFM is in Automatic or Semi-Automatic mode. No indication is shown on the STBO Client Timeline that a flight is designated for pre-scheduling. However, in a Flights Table, “PreScheld” is displayed in the “APREQ PreSchedule” column (Figure 7.24). See Section 5.1.3.2 for a description of adding and reordering columns in a Flights Table.

When a destination is pre-scheduled, the ATD-2 STBO system sends the APREQ request at a chosen time (e.g., 20 min) prior to the EOBT.



Flight ID	APREQ	APREQ Mode	APREQ Requested Roll	APREQ Scheduled Roll	APREQ Sched Wheels Off	APREQ State	APREQ PreSchedule	APREQ Changed Ack Status
AAL2214	APRQ					UNSCHEDULED		
UPS5540	APRQ	AUTO				UNSCHEDULED		
AAL763	APRQ					UNSCHEDULED		
DAL2577	APRQ					UNSCHEDULED		
AAL2040	2023	AUTO	13/20:22	13/20:22	13/20:23	ACCEPTED	PreScheld	Needs Ack
DAL2707	2010	AUTO		13/20:09	13/20:10	ACCEPTED		
ASH6014	1951	SEMI		13/19:50	13/19:51	ACCEPTED		
JIA5672	1940	SEMI		13/19:40	13/19:40	ACCEPTED		
JIA5354	1910	AUTO	13/19:10	13/19:10	13/19:10	ACCEPTED	PreScheld	
DAL2625	1747	AUTO		13/17:46	13/17:47	ACCEPTED		
DAL517	1647	AUTO		13/16:47	13/16:47	ACCEPTED		
RPA4355	1600	AUTO	13/16:00	13/16:00	13/16:00	ACCEPTED	PreScheld	
DAL970	1441	AUTO		13/14:41	13/14:41	ACCEPTED		
AAL1643	1403	AUTO	13/14:02	13/14:02	13/14:03	ACCEPTED	PreScheld	
ASH6040	1229	SEMI		13/12:28	13/12:29	ACCEPTED		
AAL1318								

Figure 7.24. When an APREQ flight is pre-scheduled, “PreScheld” is indicated in the Flights Table.

7.4.3 Call for Release and Manual Entry of Release Time

A telephone handset symbol next to an APREQ flight indicates that the release time for this flight must be negotiated via Call for Release, that is, a verbal call between Tower and Center (Figure 7.25). When the telephone handset symbol is displayed, electronic negotiation of the APREQ release time is not available.

Figure 7.25. *Telephone handset* symbol: APREQ release time for this flight must be scheduled via Call for Release and entered manually.

Once negotiated with Center via telephone, the Tower can manually enter the release time into the STBO Client.

To complete a manual entry of a Call for Release APREQ time:

After the release time is verbally scheduled via a telephone call between Tower and the TMC at Center:

Step 1: Right-click on the flight's Timeline datablock (Figure 7.26).

Step 2: Select "Set Release Time" from the menu (Figure 7.26).

Step 3: Enter the APREQ release time in the Set Release Time window in *hhmm* format (e.g., "2336" in Figure 7.27).

Step 4: Select the "Set Time" button to complete the entry (Figure 7.27).

Note: The newly entered release time is displayed in the Timeline datablock (e.g., "A:2336" in Figure 7.28), the Map datablock, and in the Flights Table.

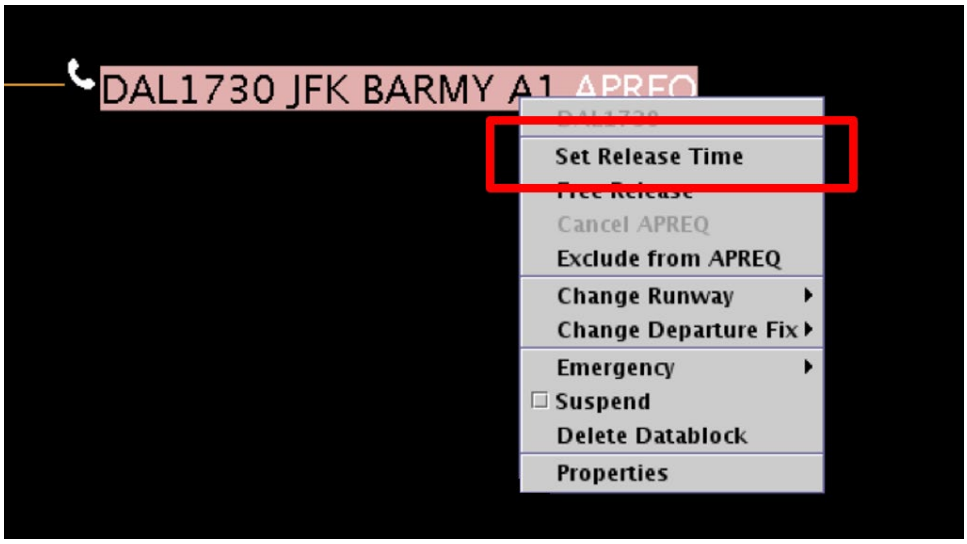


Figure 7.26. Right-click on an APREQ flight to select "Set Release Time" from the menu.

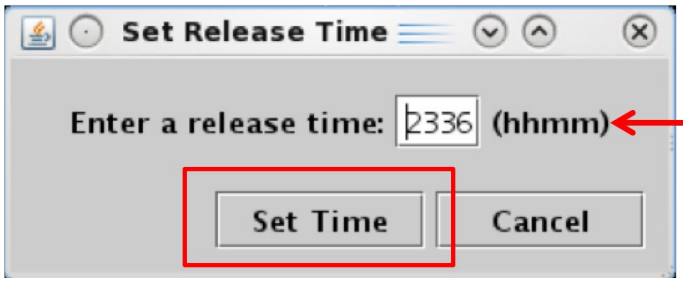


Figure 7.27. Set Release Time window: Enter the APREQ release time in *hhmm* format (e.g., "2336").

Figure 7.28. After being manually entered by the Tower, the APREQ release time is displayed in the Timeline datablock (e.g., "A:2336").

In Figure 7.28, the APREQ release time is highlighted in *green*, an indication that the predicted takeoff time falls within the -2/+1 minute APREQ compliance window. See Section 7.5 for a description of the color-coding used to show APREQ compliance window status.

7.4.3.1 Manual Entry of APREQ Time by Center

Alternatively, if the negotiated APREQ time is entered into TBFM/IDAC at ARTCC, SWIM publishes the time, it is received by the ATD-2 system, and it populates automatically in the STBO Client. When this happens, *no manual entry* of the release time is required in the STBO Client.

7.4.4 ARTCC Updates the Release Time

If the ARTCC Traffic Management Unit (TMU) changes a release time that has already been confirmed, a yellow diamond with exclamation point is displayed alongside the updated APREQ time in the Timeline datablock (Figure 7.29) and a box is drawn around the flight's datablock on the map (Figure 7.30).

This can happen when the ARTCC TBFM/IDAC is in Automatic or Semi-Automatic Mode.

Figure 7.29. If Center changes an APREQ release time, a yellow diamond with an exclamation point is displayed in the Timeline datablock.

Figure 7.30. When a yellow diamond is displayed on the timeline, a box is drawn around the flight's datablock on the map.

To remove the yellow diamond:

Step 1: Right-click on the flight's Timeline datablock and select "Acknowledge Time" (Figure 7.31). Or, click directly on the yellow diamond itself.

Note: Once acknowledged, the yellow diamond is removed (Figure 7.32).

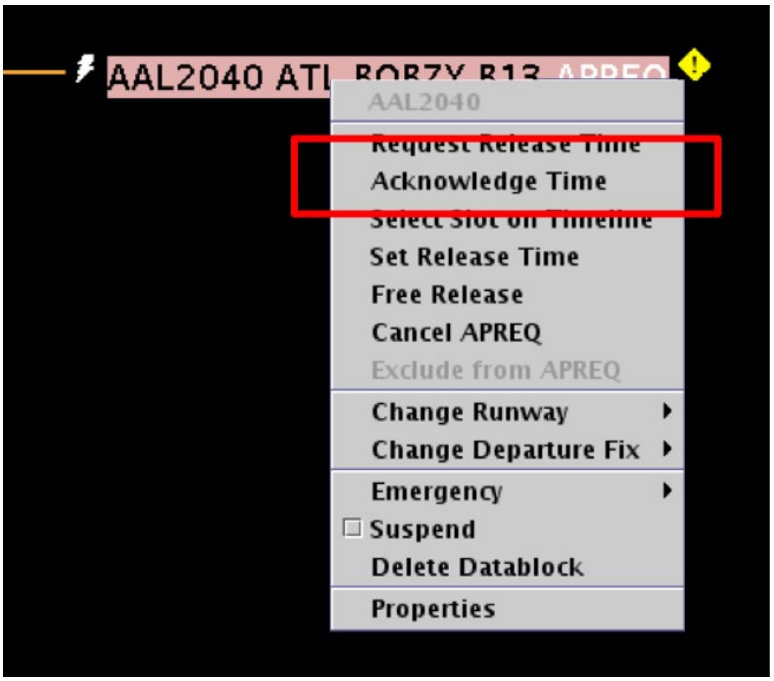


Figure 7.31. Select "Acknowledge Time" from the right-click menu if the release time is updated.

Figure 7.32. Once acknowledged, the yellow diamond is removed.

7.4.5 Cancel a Release Time

If the release time assigned by Center is not acceptable or a new time must be entered, the APREQ coordination process can be restarted by cancelling the APREQ. The "Cancel APREQ" option is available on the right-click menu when:

- The APREQ was scheduled electronically using "Request Release Time" or "Select Slot on Timeline," or
- The APREQ time was manually entered in the STBO Client using "Set Release Time."

When "Cancel APREQ" is not an option on the flight's right-click menu in STBO, a change to the release time requires electronically requesting a different release time or coordination with ARTCC via a phone call.

While "Cancel "APREQ" clears the release time in the STBO Client, it may not clear the time from ARTCC TBFM. Verbal coordination with the ARTCC TMC may be required.

To cancel the APREQ time:

Step 1: Right-click on the flight's Timeline datablock (Figure 7.33).

Step 2: Select "Cancel APREQ" from the menu (Figure 7.33).

Step 3: At the prompt, select "OK" (Figure 7.34).

Note: The scheduled time is removed from the Timeline datablock and the flight returns to its original state with the word "APREQ" in white text (Figure 7.35).

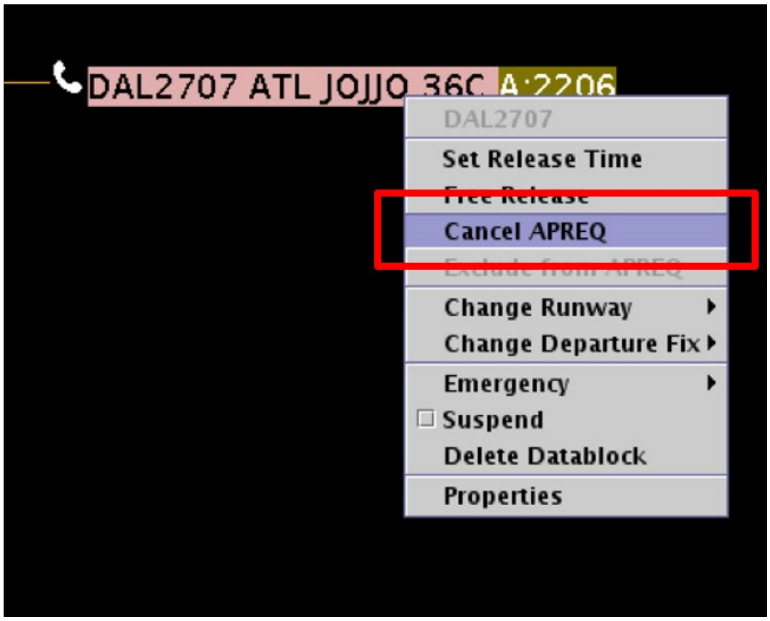


Figure 7.33. Select "Cancel APREQ" from the right-click menu if the time is not acceptable.

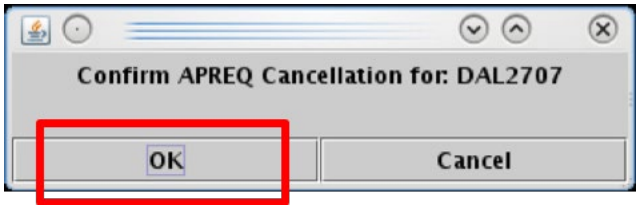


Figure 7.34. Confirm APREQ cancellation.

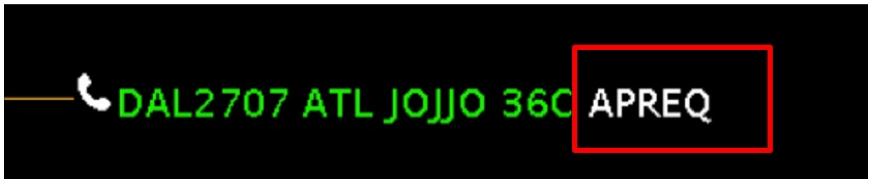


Figure 7.35. Once cancelled, the scheduled time is removed, the flight returns to its original state.

7.4.6 Free Release of an APREQ Flight

When an APREQ flight has a floating release time, it can be set as "Free Release" in the STBO Client. Free Release flights are not flagged for non-compliance by the ATD-2 Scheduler.

To set a flight with a floating release time:

Step 1: Right-click on the flight's Timeline datablock (Figure 7.36).

Step 2: Select "Free Release" from the menu (Figure 7.36).

Note: The word "APREQ" removed from the Timeline datablock and replaced with "A:RLSD" (Figure 7.37).

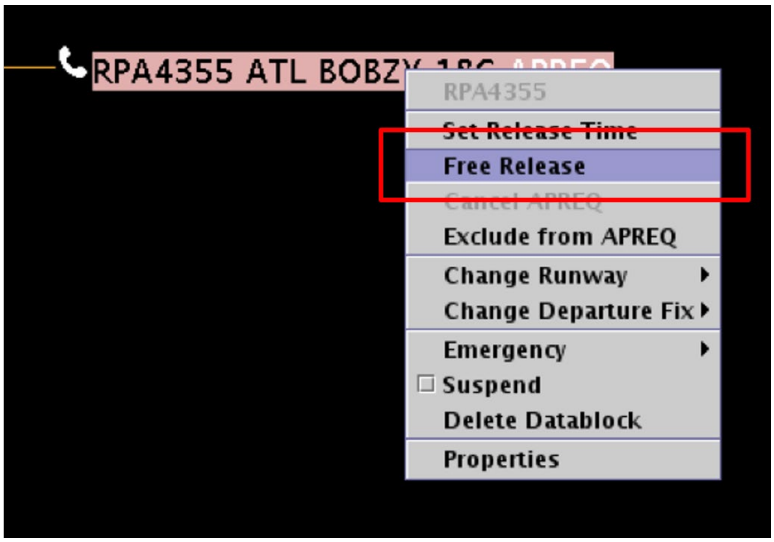


Figure 7.36. Select Free Release from the right-click menu.

Figure 7.37. Floating Release time for Free Release flights.

7.4.7 Swap APREQs

Use the "Swap" function to interchange the release times of two APREQ flights. In order for the "Swap" option to be available, there are a number of criteria which must be met. An example of some of these criteria are:

- Both flights are in Automatic or Semi-Automatic release mode,
- The flights' APREQ times are scheduled,
- The flights' APREQ times have not been set using Set Release Time, and
- Each flights' APREQ status came through IDAC.

In this example, the APREQ times of these two flights will be swapped (Figure 7.38).

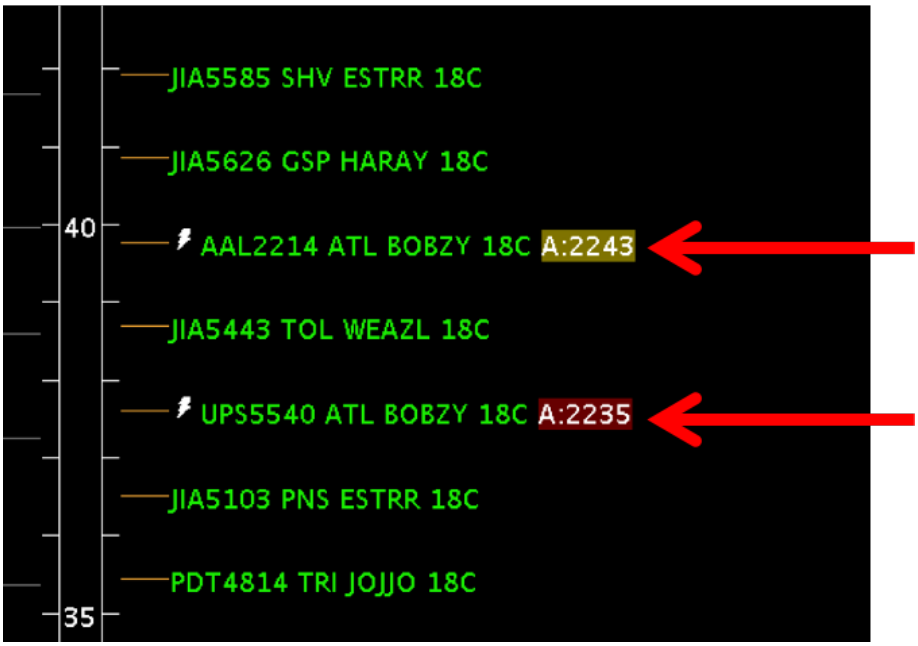


Figure 7.38. APREQ flights to be swapped.

To Swap APREQ Release Times:

Step 1: Right-click on the primary flight's datablock and select "Swap APREQ Release Time" from the menu (Figure 7.39).

Note: When "Swap APREQ Release Time" is selected:

- ***The primary flight, UPS5540 in this example, is highlighted, and***
- ***Any candidate flights are highlighted in blue (e.g., AAL2214 in Figure 7.40).***

Note: If needed, "Cancel APREQ Swaps" is available on the right-click menu to cancel the swap (Figure 7.41).

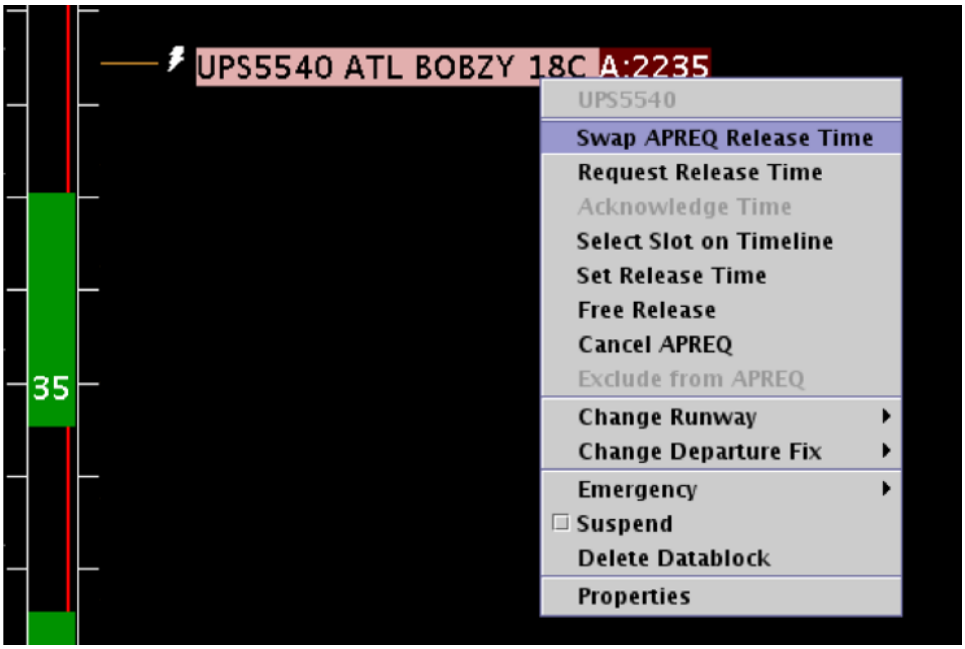


Figure 7.39. Select "Swap APREQ Release Time" from the right-click menu.

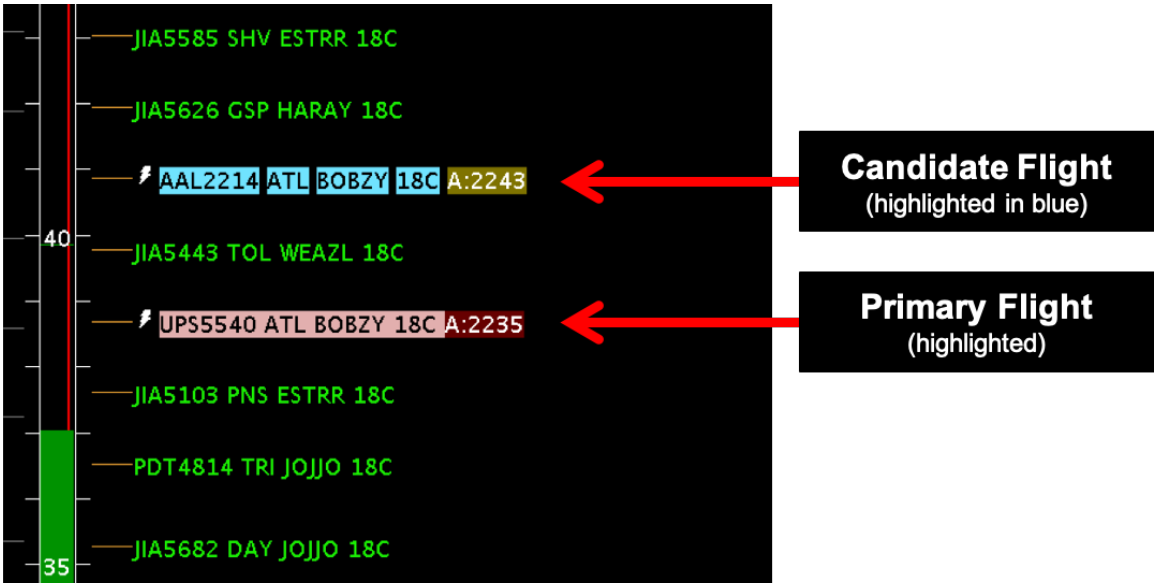


Figure 7.40. Candidate flights are highlighted in blue.

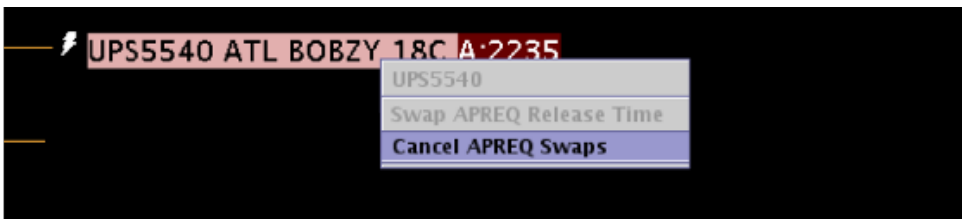


Figure 7.41. If needed, select "Cancel" on the right-click menu to cancel the swap.

Note: A flight that is a candidate for a swap with the primary flight is highlighted in blue (e.g., AAL2214 in Figure 7.42).

Step 2: Click on a candidate flight's datablock (e.g., AAL2214 in Figure 7.42).

Step 3: At the prompt, select "Swap" to interchange the two APREQ release times (Figure 7.42).

Alternatively: Select "Cancel" to retain the original release times.

Note: After the release times are swapped, a yellow diamond with exclamation point may be displayed next to one, or both, datablocks. In Figure 7.43, for example, the yellow diamond is displayed next to AAL2214.

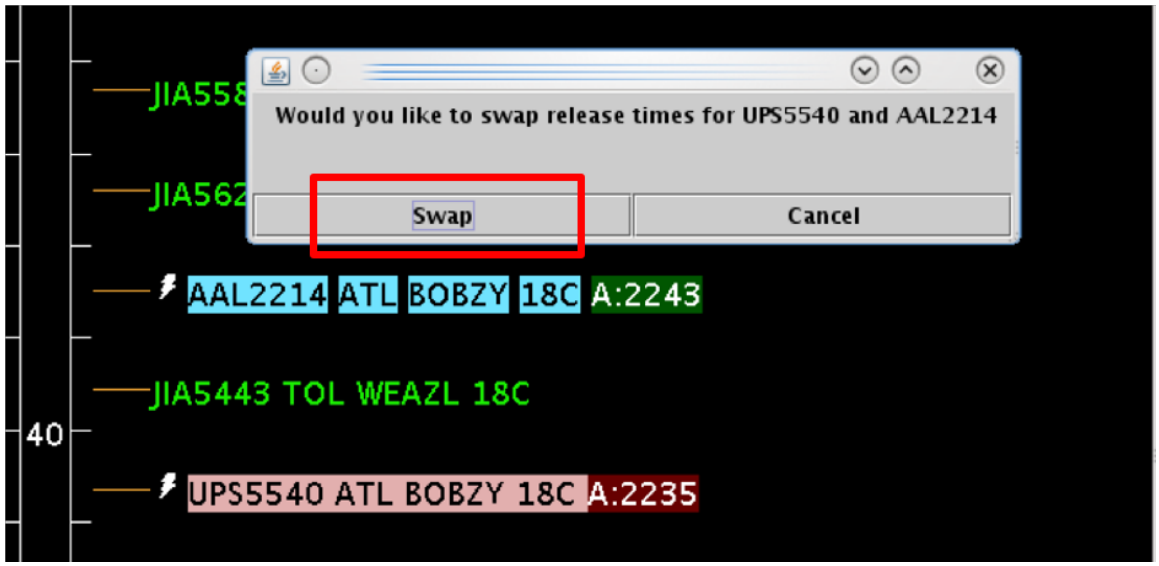


Figure 7.42. Select "Swap" to confirm.

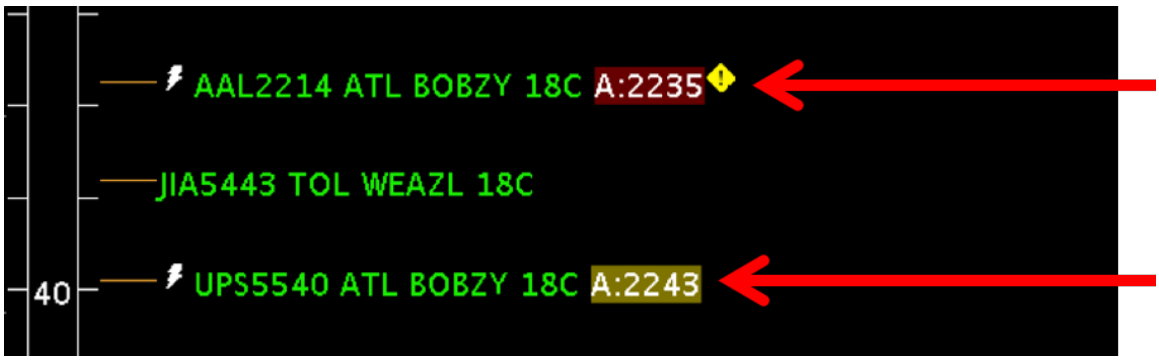


Figure 7.43. APREQ release times are swapped.

Note: This step applies when a yellow diamond with exclamation point is displayed next to the flight's datablock, as is the case with AAL2214 in Figure 7.44.

Step 4 (if applicable): To acknowledge the new release time, right-click on the flight's datablock and select "Acknowledge Time" (Figure 7.44). Or, click directly on the yellow diamond itself.

Note: Once acknowledged, the yellow diamond is removed (Figure 7.45).

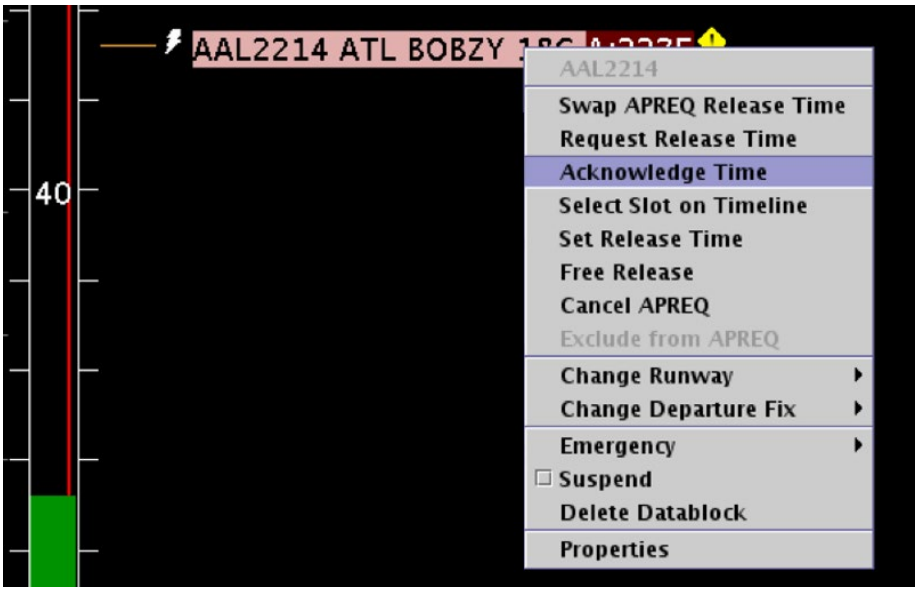


Figure 7.44. When a yellow diamond with exclamation point is displayed next to a flight, select "Acknowledge Time" from the right-click menu, or click directly on the yellow diamond.

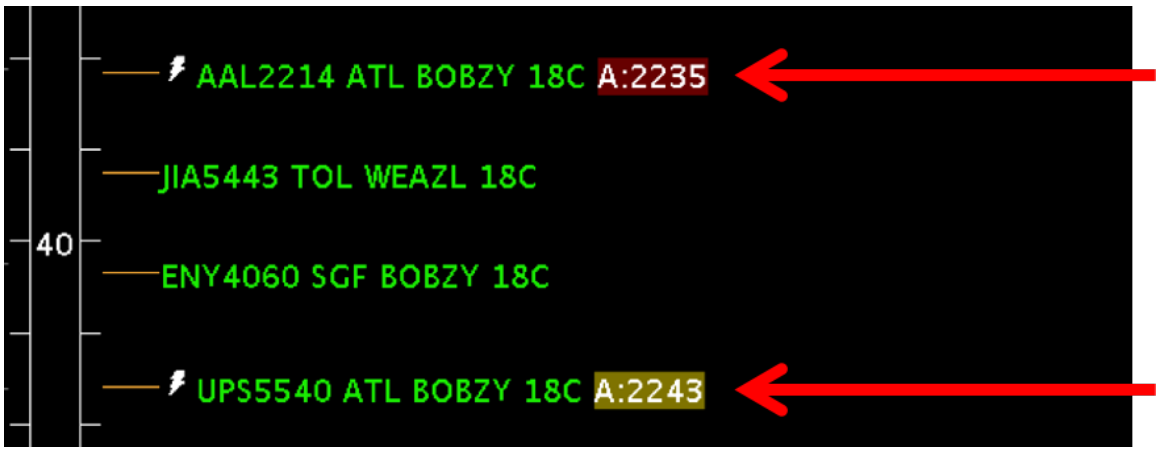


Figure 7.45. APREQ release times after being swapped and acknowledged.

7.5 APREQ Compliance Indicators

The APREQ wheels-up time is color-coded on the timeline to indicate expected compliance with the -2/+1 min compliance window (Figure 7.46). APREQ color-coding is described Table 7.5.

Table 7.5. Compliance Color-Coding

Compliance Indicator Color	Description
Red	Flight is projected to be released from the runway ***later*** than its -2/+1 min APREQ compliance window.
Green	Flight is projected to be released from the runway ***within*** its -2/+1 min APREQ compliance window.
Yellow	Flight is projected to be released from the runway ***earlier*** than its -2/+1 min APREQ compliance window.

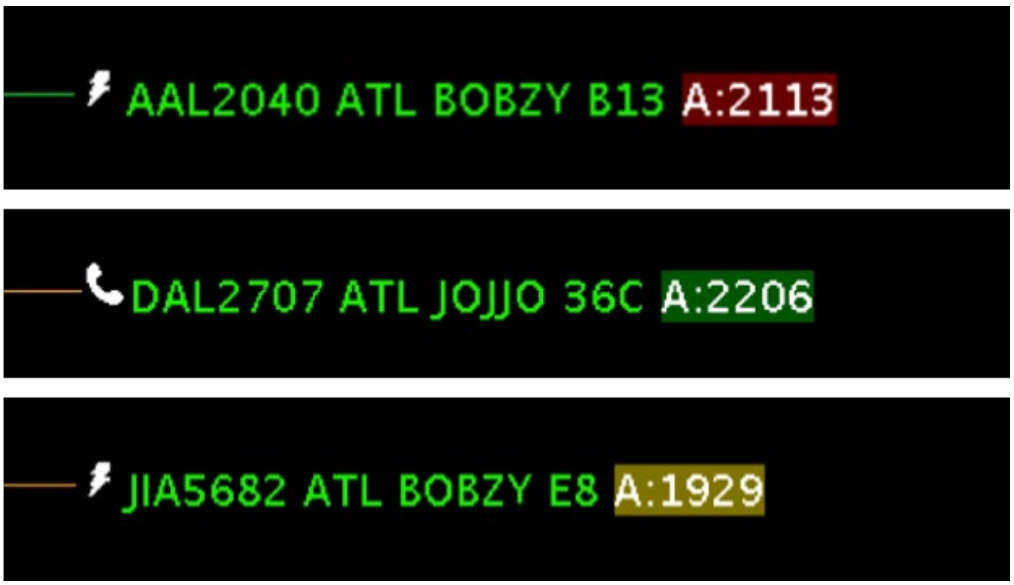


Figure 7.46. Expected APREQ compliance color-coding: red, green, and yellow.

7.6 APREQ Right-Click Menu

Other right-click menu options, not described in this section, are described in Section 6.9.

Appendix A: Acronyms

This appendix defines acronyms and terms that are used repeatedly throughout the ATD-2 STBO User Manual.

Acronym	Term
AAL	American Airlines
AC	Aircraft
ACID	Aircraft Identifier
ACK	Acknowledge
ADW	Arrival / Departure Window
AFP	Airspace Flow Program
AIBT	Actual In-Block Time
ALDT	Actual Landing Time
AMA	Airport Movement Area
AMAT	Actual Movement Area entry Time
AOBT	Actual Off-Block Time
APREQ / CFR	Approval Request / Call For Release
AOFF	Actual Takeoff Time
AOUT	Actual Out Time
ARR / DEP	Arrival / Departure
ARRFIX	Arrival Fix
ARTCC	Air Route Traffic Control Center
ASDE-X	Airport Surface Detection Equipment - Model X
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
ATD-2	Airspace Technology Demonstration 2
ATOT	Actual Takeoff Time
BOS	Boston Logan International Airport
CC	Configuration Change (Runway)
CDM	Collaborative Decision Making
CDR	Coded Departure Route
CID	Computer or Center Identifier

Acronym	Term
CLT	Charlotte Douglas International Airport
CSV	Comma-Separated Values (file type)
CTOP	Collaborative Trajectory Options Program
CTOT	Controlled Takeoff Time
DAL	Delta Air Lines
DAL	Dallas Love Field Airport
DEPFIX	Departure Fix
DEST	Destination
DFW	Dallas / Fort Worth International Airport
EDCT	Expected Departure Clearance Time
EDFT	Estimated Departure Fix Time
EFTT	Earliest Feasible Takeoff Time
EOBT	Earliest Off-Block Time
ESTIBT	Estimated In-Block Time
ESTOBT	Estimated Off-Block Time
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETOT	Estimated Takeoff Time
FAA	Federal Aviation Administration
FDX	FedEx
FUSION	Consolidates all available airport surveillance to simulate a single-sensor radar display system
GA	General Aviation
GDP	Ground Delay Program
GS	Ground Stop
HSV; HSL; RGB; CMYK	COLOR MODELS: Hue, Saturation, Value; Hue, Saturation, Lightness; Red, Green, Blue; Cyan, Magenta, Yellow, Key (Black)
ICAO	International Civil Aviation Organization
ID	Identification

Acronym	Term
IDAC	Integrated Departure Arrival Capability
IOBT	Initial Off-Block Time
LGA	LaGuardia International Airport
LIBT	Airline In-Block Time
LOB	Long On Board
LOBT	Latest Off-Block Time (provided by the airline)
MIT	Miles-In-Trail
NASA	The National Aeronautics and Space Administration
nmi / *nm*	Nautical miles
OIS	FAA Operational Information System
OPNEC	Operational Necessity
REQ	Request
RMTC	Ramp Manager Traffic Console
RTC	Ramp Traffic Console
RWY	Runway
SDT	Scheduled Departure Time
SIBT	Scheduled In-Block Time
SID	Standard Instrument Departure
SLDT	Scheduled Landing Time
SMA	Surface Movement Advisor
SMP	Surface Metering Program
SOBT	Scheduled Off-Block Time
STA	Scheduled Time of Arrival
STAR	Standard Terminal Arrival Route
STARS	Standard Automation Replacement System
STBM	Surface Time-Based Metering
STBO	Surface Trajectory-Based Operations
STOT	Scheduled Takeoff Time
SWIM	System-Wide Information Management
TBD	To Be Determined

Acronym	Term
TBFM	Time-Based Flow Management System
TCLT	Terminal Controlled Landing Time
TCOT	Terminal Controlled Off-Time
TFDM	Terminal Flight Data Manager
TFM	Traffic Flow Management
TFMS	Traffic Flow Management System
TIBT	Target In-Block Time
TLDT	Target Landing Time
TM	Traffic Management
TMA	Traffic Management Advisor
TMAT	Target Movement Area entry Time
TMI	Traffic Management Initiative(s)
TOBT	Target Off-Block Time
TRACON	Terminal RADAR Approach Control
TTOT	Target Takeoff Time
TZ	Track data from TFMS
UAL	United Airlines
UDFT	Undelayed Departure Fix Time
UIBT	Undelayed In-Block Time
ULDT	Undelayed Landing Time
UMAT	Undelayed Movement Area entry Time
UNK	Unknown
UOBT	Undelayed Off-Block Time
UTOT	Undelayed Takeoff Time