

# Surface Trajectory Based Operations (STBO) Client User Manual

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## **Abstract**

This document serves as a user manual for the STBO Client in Charlotte Douglas International Airport and Dallas-Fort Worth International Airport Air Traffic Control Towers. It describes the elements of the full interface and provides explanations for how to interact with the interface. The document also provides instructions for entering Traffic Management Initiatives, scheduling runway utilization changes, and closing runways. There are also detailed instructions for how to negotiate Approval Request (APREQ) release times using the STBO Client.

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## 1 Getting Started

The one pixel wide green bar (Figure 1) provides access to a number of different system views. To get started, first make sure that the correct desktop is displayed (Figure 1).

To access the correct display:

**Step 1:** Hover over the green bar to populate the menu.

**Step 2:** Select “My Desktop” from the top of the menu to access the correct display.

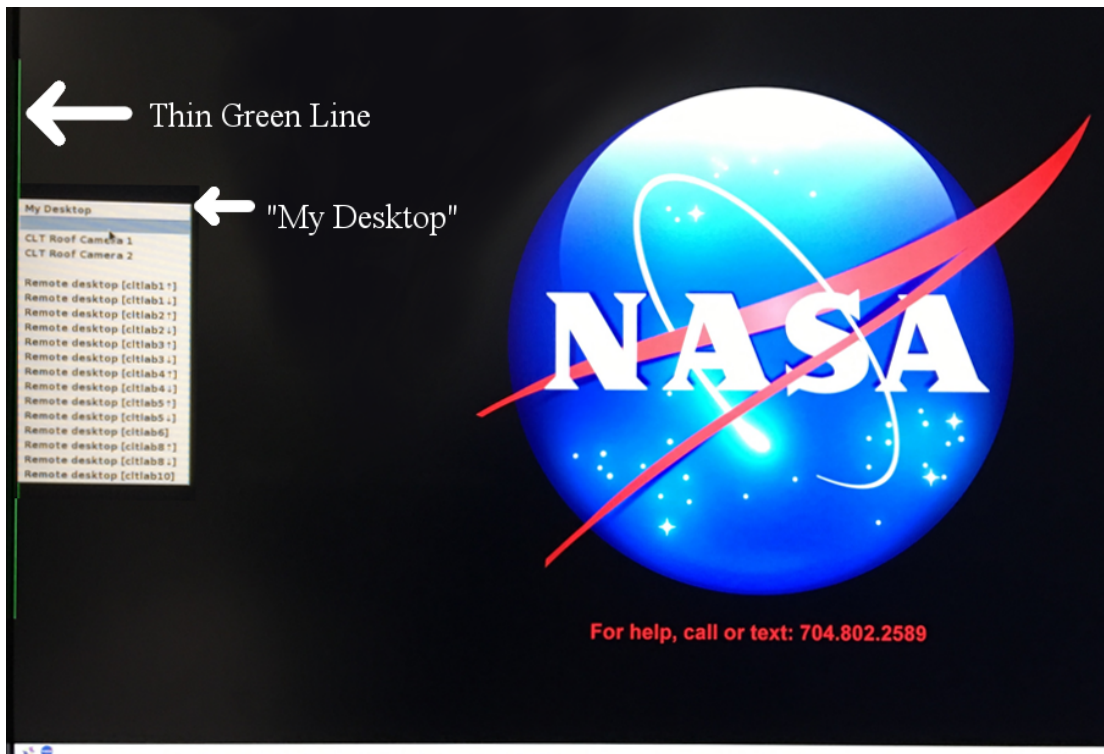


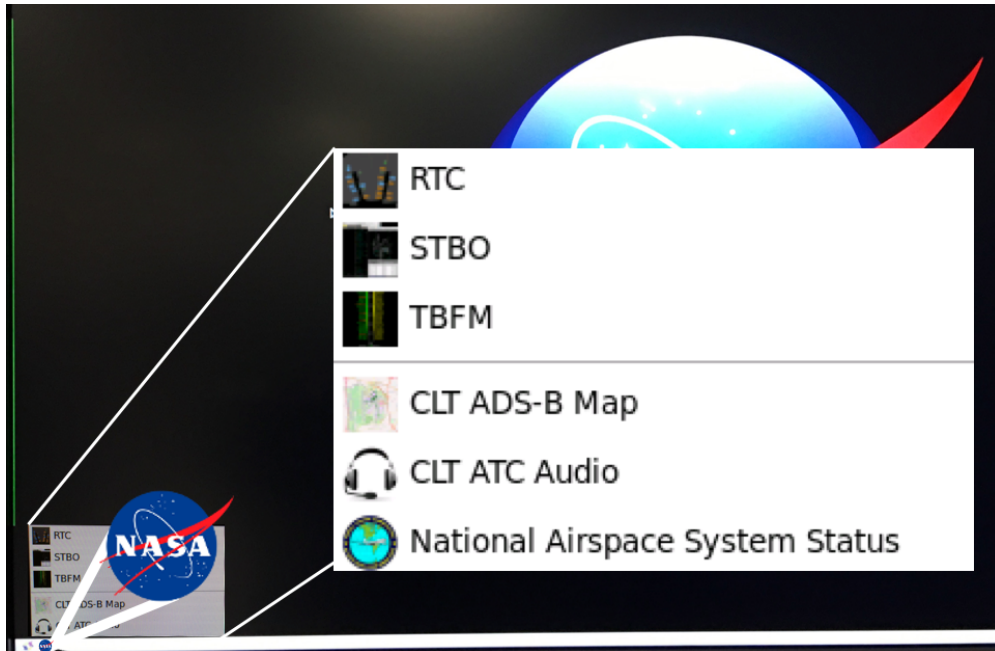
Figure 1. Use the green bar tool to navigate to “My Desktop”.

To launch the Surface Trajectory Based Operations (STBO) Client:

**Step 1:** Click on the NASA icon on the bottom left corner to launch the menu on the toolbar (Figure 2).

**Step 2:** Select the option for the STBO Client.

**Step 3:** Wait for the STBO Client to load. This may take a few minutes.



**Figure 2. Loading STBO Client.**

## 2 STBO Client Interface

This section describes the elements of the STBO Client main interface (Figure 3) and ways to interact with them.

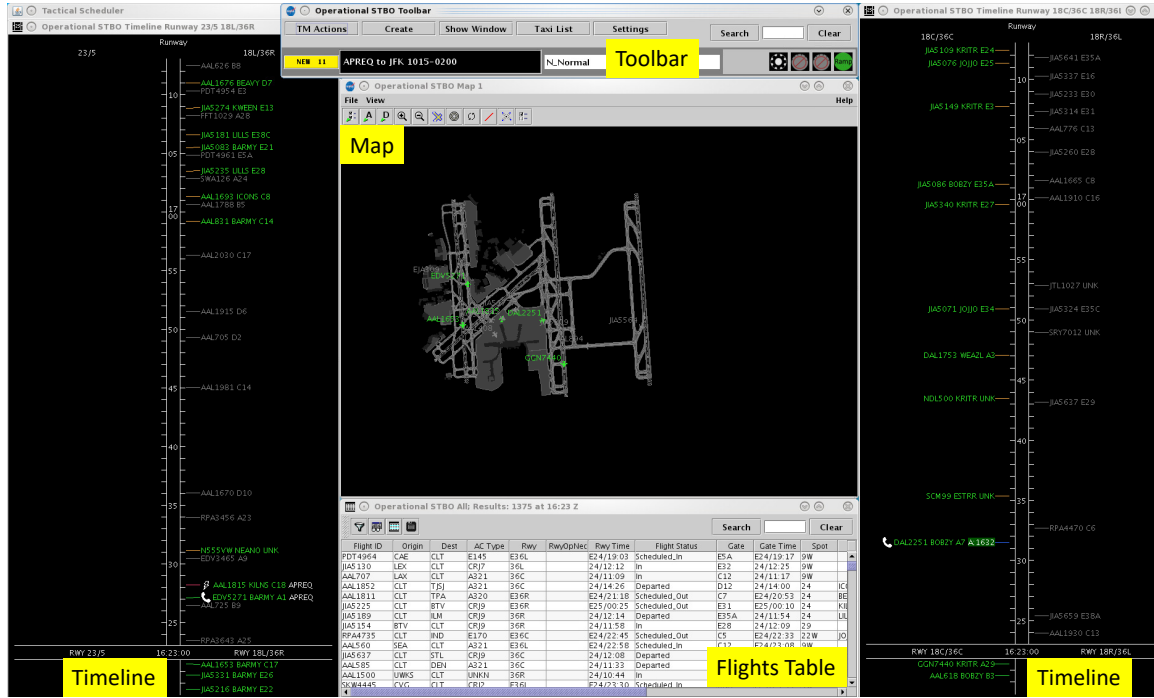


Figure 3. The elements of the STBO Client interface.

The full interface of the STBO Client is composed of multiple display windows that serve different purposes and can be arranged in any desired configuration.

The Toolbar allows the user to interact with the system by adding new display windows, managing current display windows, saving and loading user configuration preferences, searching for flights, scheduling Traffic Management Initiatives (TMIs) and airport events, and displaying new notifications to the user.

The Timelines provide information about the predicted OFF times for departures, predicted ON times for arrivals, gate conflicts, and aircraft that are subject to TMIs. Datablocks on the Timelines can be configured to show flight-specific information.

The Map displays surface surveillance data and provides a visual representation of aircraft current positions. The Map also displays runway closures. Datablocks on the Map can be configured to display flight-specific information.

The Flights Table is a list of all known arrivals and departures within the next 8 hours for the airport. The list can be sorted and filtered according to the user's preference, and information columns can be moved, added, and removed.

## 2.1 Timeline

The Timeline (Figure 4) is set up to display flight location, reference labels (e.g., “18C/36C”) at the top and bottom of the display, the reference point (e.g., “RWY” at the bottom), the title at the top of the Timeline, and the Now time. The Timeline also provides information about arrivals, departures, TMIs, runway assignments and changes for operational necessity, gate conflicts, and pushback and taxi status.

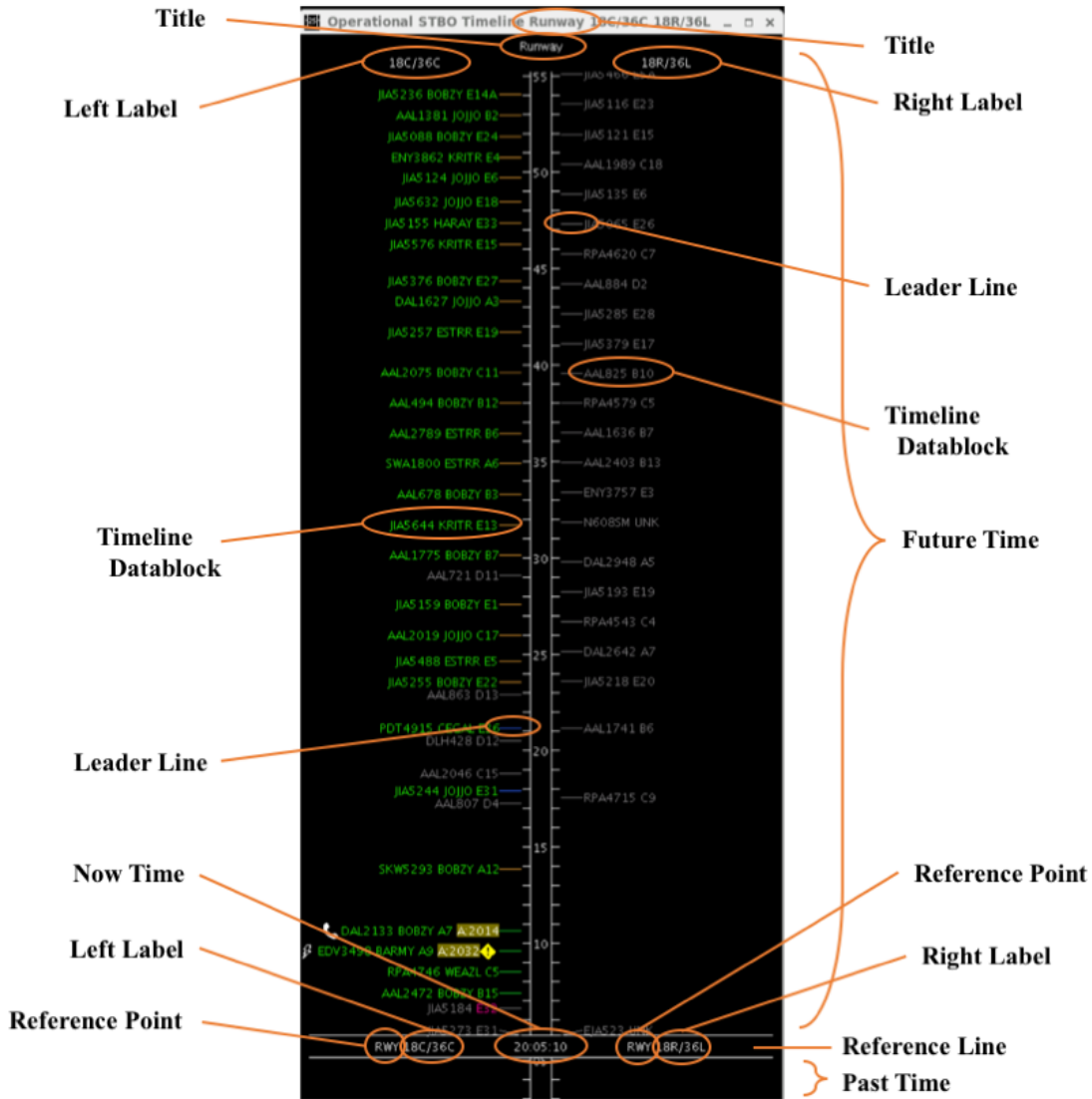


Figure 4. The STBO Client Timeline.

The location on the Timeline reflects the Surface Time Based Metering (STBM) algorithm prediction of OFF time for departures and ON time for arrivals. For departures, this is either the Target Take Off Time (TTOT) or Earliest Feasible Take Off Time (EFTT).



- EFTT is only provided for APREQs that have yet to be negotiated with Center.
- TTOT is a prediction of OFF based on Target Off-Block Time (TOBT) and predicted taxi times. For flights with Expect Departure Clearance Times (EDCTs) or Approval Requests (APREQs)/Call for Releases (CFRs), the TTOT may equal the Controlled TakeOff Time (CTOT).

When flight datablocks cross below the reference line with the Now time, arrivals have landed and departures have taken off.

To create additional Timelines:

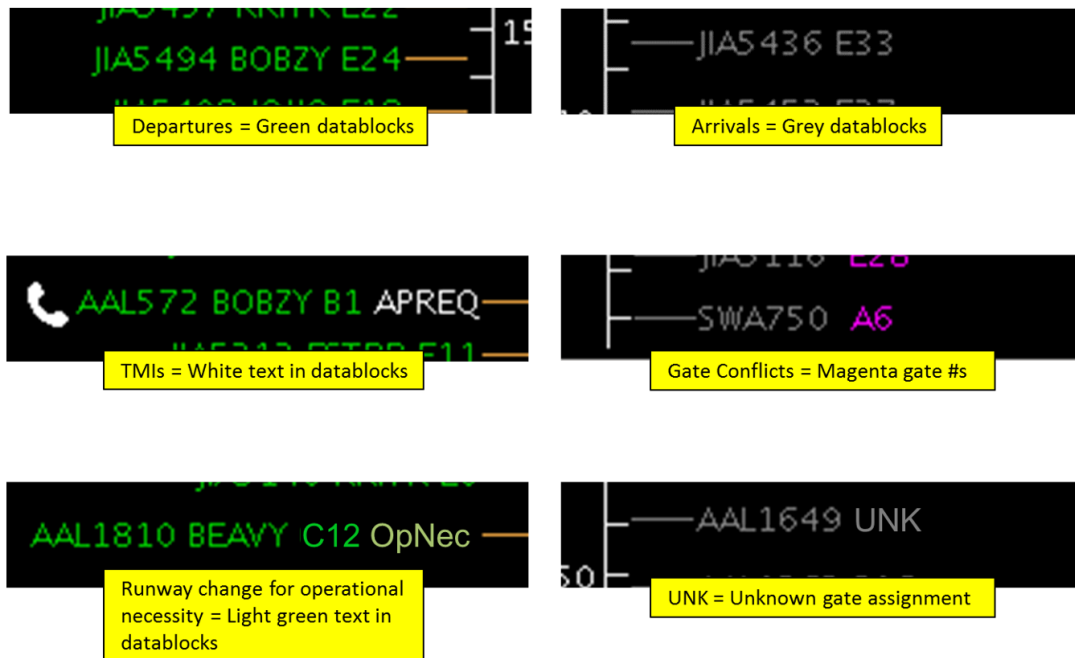
**Step 1:** Click on “Create” on the STBO Client Toolbar.

**Step 2:** Hover over “Create Timeline” and select the desired Timeline type: “Runway”, “Arr/Dep Fix”, “Parking Gate”, or “Spot”.

The new Timeline will appear with default Timeline datablocks. The overall layout of Timelines, Maps, and Flights Table can be saved via the Settings menu on the STBO Client Toolbar (see section 2.4).

### 2.1.1 Timeline Elements

When the Timeline is configured by arrivals and departures, arrival flights are displayed in grey (Figure 5), and departure flights are displayed in green.



**Figure 5. Various elements of the Timeline.**

All TMI information is displayed in white text. For APREQ/CFR flights, the word “APREQ” is initially displayed in white text. When the APREQ flight receives a release time in the system, APREQ/CFR times are displayed on the Timeline in white text (e.g.,

“A:2250”). APREQ/CFR flights have additional symbology (e.g., the telephone icon in Figure 5) that is described in section 4.

When parking gates are displayed on the Timeline, any unknown parking gate assignments are displayed as “UNK.” When gate conflicts are displayed on the Timeline, the parking gate number is colored magenta for flights with gate conflicts.

When Ramp inputs a requested change of runway assignment for operational necessity (see *RTC\_RMTC\_User\_Manual.pdf*), the flight datablock moves to the portion of the Timeline dedicated to the new runway assignment and “OpNec” (operational necessity) is written in light green text on the right side of the Timeline datablock (AAL1810 in Figure 5).

Additional flight information can be configured to display on the Timeline datablocks (see section 2.1.2).

### 2.1.1.1 Leader Lines

Leader lines (Figure 6) are useful for determining the status/position of the flight on the surface.

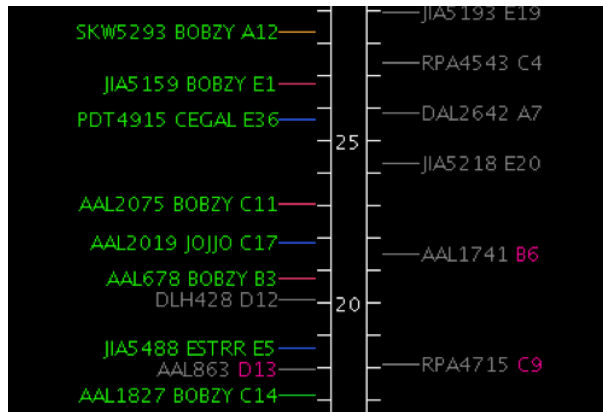


Figure 6. Timeline leader lines.

Leader Line Color	Description
Orange	Show untracked departure flights that are scheduled but have not yet pushed off the gate (no OUT time)
Dark Pink	Show untracked departure flights that have pushed back from the gate (have an OUT time)
Blue	Show tracked departure flights that are still in the Ramp area
Green	Show tracked departure flights that are in the Airport Movement Area (AMA)
Grey	For arrival flights (see right side of the Timeline in Figure 6)

## 2.1.2 Timeline Display Configuration

Timeline display windows are not limited to showing information about arrivals and departures to the runway. Timelines can be configured for other reference points, request or make changes for a flight, to have color coding beyond that of arrivals and departures, be filtered to display select information, and can be shown in list format rather than as a Timeline. Timelines can also be configured to show a variety of information in the datablocks about arrival and departure flights.

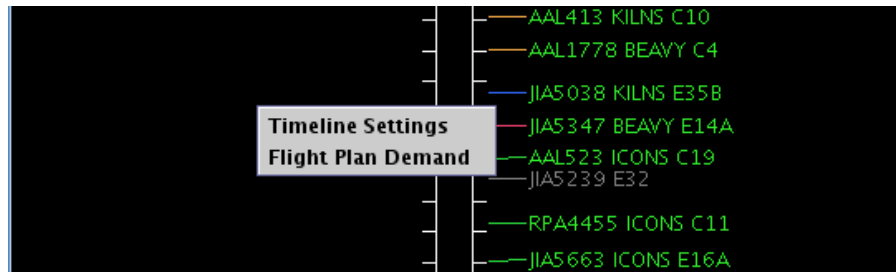


Figure 7. Right-click on the background of the Timeline to open timeline menu.

### 2.1.2.1 Timeline Settings

Using the right mouse click menu on the “Timeline Settings” options will open the Timeline Settings window (Figure 8). Use this window to alter the Timeline. Once the desired changes are input into the Timeline Settings window, click the “Ok” button at the bottom of the window to apply the changes and close the Timeline Settings window. To exit the window without applying changes, click the "Cancel" button at the bottom of the window; this must be done *without* clicking “Ok” in order to prevent changes to the current Timeline configuration. You may also save preferred Timeline settings, see section 2.1.2.11 to learn about “Save for Quick Create” instructions. This option will save the preferred timeline settings and can be accessed later by the saved file name.

To open the Timelines settings window:

**Step 1:** Right-click anywhere on the Timeline background (anywhere not on a flight datablock) (Figure 7).

**Step 2:** Select “Timeline Settings”.

### 2.1.2.2 Labels

Within the Timeline Settings window, the title of the Timeline window and the reference labels for the left and the right side of the Timeline can be changed.

To change the title:

**Step 1:** Edit the content of the "Title:" text box (Figure 8).

**Step 2:** Then click the “Ok” button. When the change is applied, the title on the top of the window will change (Figure 4).

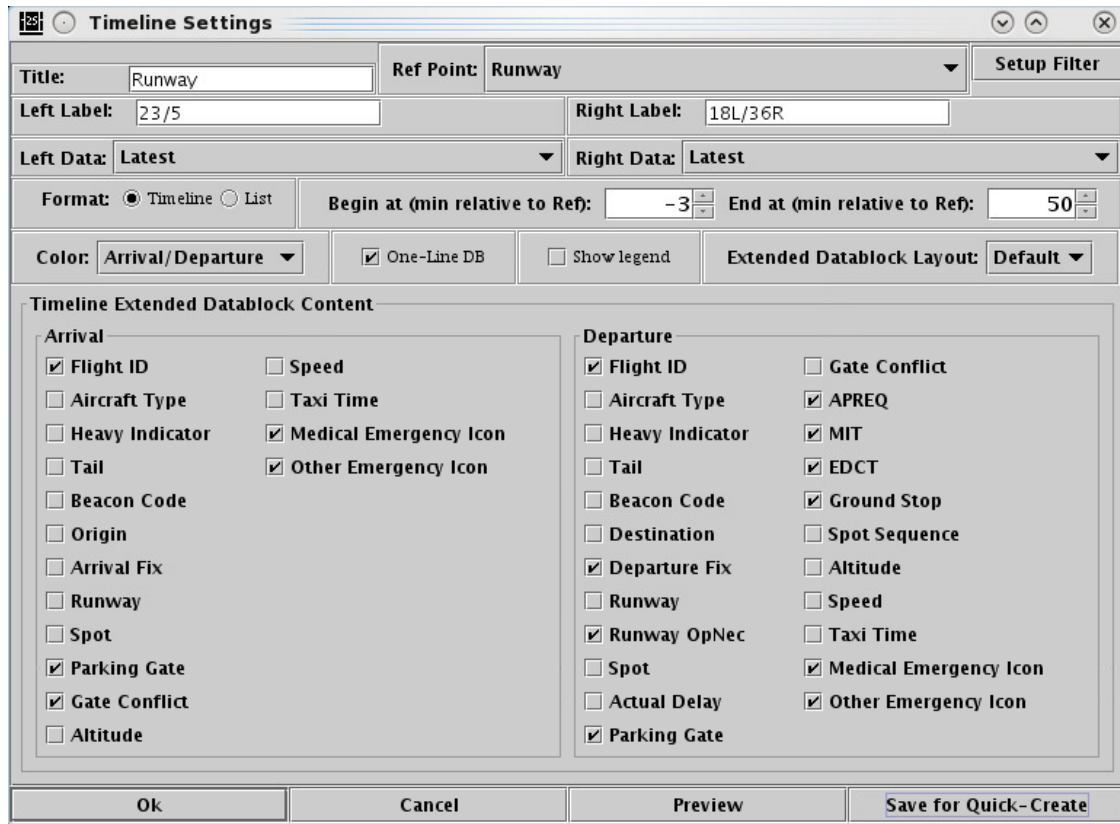


Figure 8. Timeline Settings window for the STBO Client Timeline.

To change the label for the left side of Timeline:

**Step 1:** Edit the content of the "Left Label:" text box (Figure 8).

**Step 2:** Then click the "Ok" button. When the change is applied, the left labels at the top of the Timeline (Figure 7) and at the bottom on the reference line will have changed.

To change the label for the right side of Timeline:

**Step 1:** Edit the content of the "Right Label:" text box (Figure 8).

**Step 2:** Then click the "Ok" button. When the change is applied, the right labels at the top of the Timeline (Figure 4) and at the bottom on the reference line will have changed.

### 2.1.2.3 Reference Point

The reference point is the point from which flights are scheduled or predicted on the Timeline. For example, if a flight is 10 minutes away from the Now time on the Timeline (Figure 4), then the flight is 10 minutes away from reaching the reference point. If the reference point is a runway, the flight is 10 minutes away from taking off on the runway; if the reference point is the spot, the flight is 10 minutes away from reaching the spot.

Changing the reference point in the Timeline Settings window changes the reference point for both sides of the Timeline.

To change the reference point:

**Step 1:** Click on the "Ref Point:" drop-down list arrow (Figure 9).

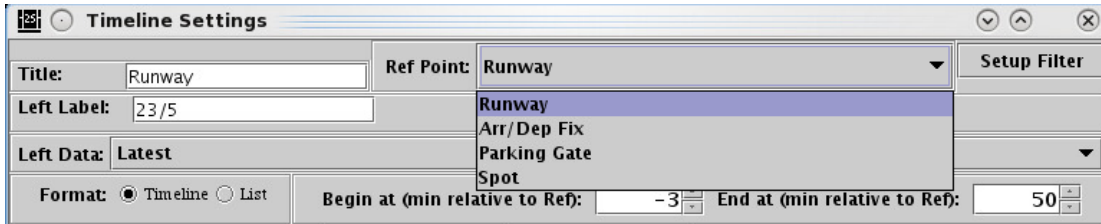


Figure 9. Timeline reference point.

**Step 2:** Select a new reference point from the drop-down list.

**Step 3:** Click the "Ok" button. When the change is applied, the reference point indicators on the bottom of the Timeline on the reference line will change (Figure 10). If no other title is specified, the title on the top of the Timeline will also change. Timeline datablocks will also have shifted up or down on the Timeline depending on where the new reference point is physically located relative to the old reference point.

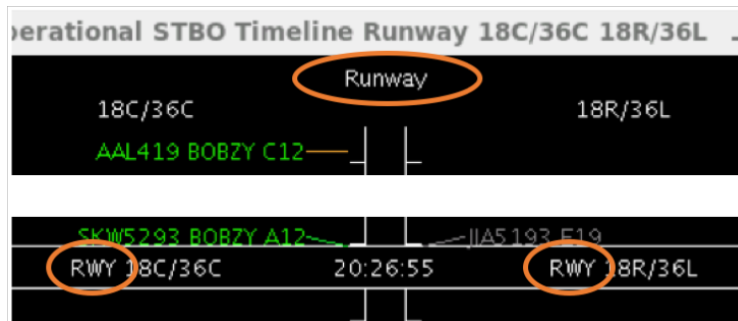


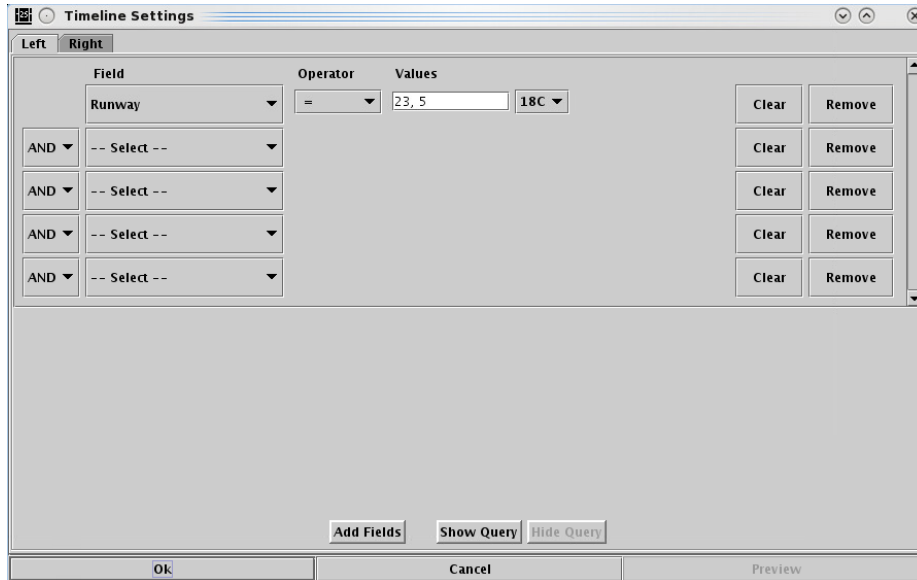
Figure 10. Timeline reference point and title labels.

#### 2.1.2.4 Setup Filter

Adjusting filters for the Timeline can help to refine the information displayed on the Timeline. The filters are how to set specific resource to display on each side of the Timeline. For example, the filter can be used to display runway 5/23 data on the left side of the Timeline and runway 18L/36R data on the right side of the Timeline. Filters can also be used to set up Timelines to show flights with only certain TMIs, like APREQs.

To add or modify existing Timeline filters:

**Step 1:** To add filters to the Timeline, click on the "Setup Filter" button (Figure 8). The Filters window will open (Figure 11).



**Figure 11. Timeline Filter.**

**Step 2:** The window will allow for applying filters to the left and right side of the Timeline separately. Choose either the "Left" or "Right" tab to set filters for the left or right side of the Timeline respectively.

**Step 3:** Select a resource from the "Field" drop-down list (e.g., "Runway").

**Step 4:** On the same row, select a modifier from the "Operator" drop-down list (e.g., "=").

**Step 5:** On the same row, select a more specific resource (e.g., "23, 5"). Multiple specific resources can be selected for a single resource category and modifier.

**Step 6:** If more resources need to be included in the filter, make entries on a new row. Begin these entries by selecting a qualifier from the qualifier drop-down list (e.g., "AND"). Complete the entries in the new row in the same manner as described in steps 3-5. If more rows are needed, use the "Add Fields" button at the bottom of the Filters window, then repeat steps 3-5 for the new row(s).

**Step 7:** Once all desired entries are complete, click the "OK" button at the bottom of the Filters window.

**Step 8:** Click the "Ok" button on the Timeline Settings window (Figure 8). The Timeline will now only display flights that match the filter.

Note that changing the filters does not automatically update the labels. To update labels to reflect the resource (e.g., "18L/36R"), see section 2.1.2.2.

To remove Timeline filters:

**Step 1:** To remove filters to the Timeline, click on the "Setup Filter" button (Figure 8). The Filters window will open (Figure 11).

**Step 2:** The window will allow for modifying filters to the left and right side of the Timeline separately. Choose either the "Left" or "Right" tab to set filters for the left or right side of the Timeline respectively.

**Step 3:** Locate the parameter for removal. On the same row as this parameter, click the "Remove" button on the right side of the Filters window.

**Step 4:** If more parameters need to be removed, repeat step 3 for each parameter.

**Step 5:** Once all desired removals are complete, click the "OK" button at the bottom of the Filters window.

**Step 6:** Click the "Ok" button on the Timeline Settings window (Figure 8). The Timeline will update to display flights that match the filter.

#### 2.1.2.5 *Left and Right Data*

Two types of data can be populated on the Timeline. Changing the type of data will result in different positions of Timeline data blocks (Figure 12).

- "Undelayed" data is the earliest time that the flight can reach the Timeline's reference point as computed by STBO based on predicted trajectory, a constant rate of speed in the Ramp, and a constant rate of speed in the AMA. No other flights are considered in this calculation. This time updates every 10 seconds.
- "Latest" data populates Timeline datablocks based on the most up to date information for a flight.
  - If the actual event (e.g., landing, pushing back, etc.) has occurred, this is the time the event occurred. The data source is from Airline, Terminal Flight Data Manager (TFDM), Traffic Flow Management (TFM), or computed by the Model.
  - If the actual event (e.g., landing, pushing back, etc.) has not occurred, this is the target time from the scheduler.

To change the data that's used to populate the Timeline (using "Right Data" as the example):

**Step 1:** Click on the "Right Data:" drop-down list arrow (Figure 12).

**Step 2:** Select an item from the drop-down list for what type of data to display on the right side of the Timeline.

**Step 3:** Click the "Ok" button.

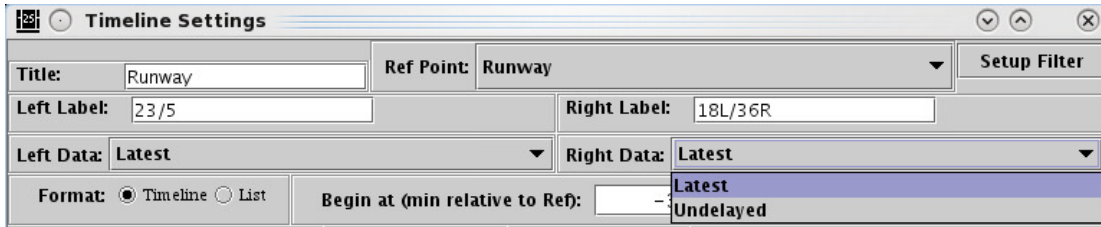


Figure 12. Timeline data.

### 2.1.2.6 Format

The Timeline can be setup to display as either a Timeline or as a list. The Timeline places the Timeline datablocks for flights at the point on the Timeline where each flight is expected to reach the reference point. The list format does not space the Timeline datablocks; it instead lists all of the flights in the order in which they are expected to reach the reference point without considering the specific time they are expected to reach the reference point. The ordering of the list is bottom-up, with the flights that will reach the reference point the soonest on the bottom of the list.

To change the format:

**Step 1:** Choose either the "Timeline" or the "List" radio button on the left side of the Timeline Settings window (Figure 13).

**Step 2:** Click the "Ok" button.



Figure 13. Timeline format.

### 2.1.2.7 Duration

By default, the duration of the Timeline is set to display from 3 minutes into the past to 50 minutes into the future for a total of 53 minutes. However, the duration of the Timeline display can be configured to any interval of the user's choice.

To change the duration of the Timeline:

**Step 1:** Choose the starting point for the Timeline. Use either the up and down buttons next to the "Begin at (min relative to Ref):" text box or manually enter a number of minutes into the text box (Figure 14).

**Step 2:** Choose the ending point for the Timeline. Use either the up and down buttons next to the "End at (min relative to Ref):" text box or manually enter a number of minutes into the text box.

**Step 3:** Click the "Ok" button. The amount of time displayed on the Timeline will change from the default duration to whatever duration matches the new entry. Additional adjustments can be made to the viewed Timeline duration (see section 2.1.3).



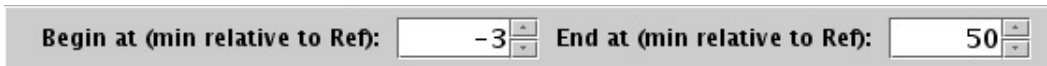


Figure 14. Timeline duration.

### 2.1.2.8 Color Scheme

Timeline datablock colors can be coded by six categories: arrivals/departures, departure fix, departure gate, departure runway, runway, and weight.

To change the Timeline datablock color scheme:

**Step 1:** Click on the "Color:" drop-down list arrow (Figure 15).

**Step 2:** Select an item from the drop-down list on which to base the Timeline color coding.

**Step 3:** Click the "Ok" button.

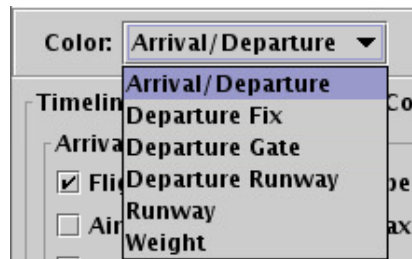


Figure 15. Timeline color scheme.

### 2.1.2.9 Legend

The Timeline legend allows for control of which types of aircraft are displayed on the Timeline. The legend on the Timeline is interactive. The legend is based on the Timeline's organization of flights by the selected color scheme (see section 2.1.2.8). When the legend is displayed, the title of the legend on the Timeline is the option selected for the color scheme. For the purpose of the following sections, "Departure Fix" is selected for the Timeline color scheme.

#### 2.1.2.9.1 Show/Hide the Legend

To show/hide the legend:

**Step 1:** Select the "Show Legend" checkbox to show the legend (Figure 16) or deselect the "Show Legend" checkbox to hide the legend.

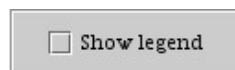


Figure 16. Show/hide the Timeline legend.

**Step 2:** Click the “Ok” button. The legend will display at the bottom of the Timeline (Figure 17).

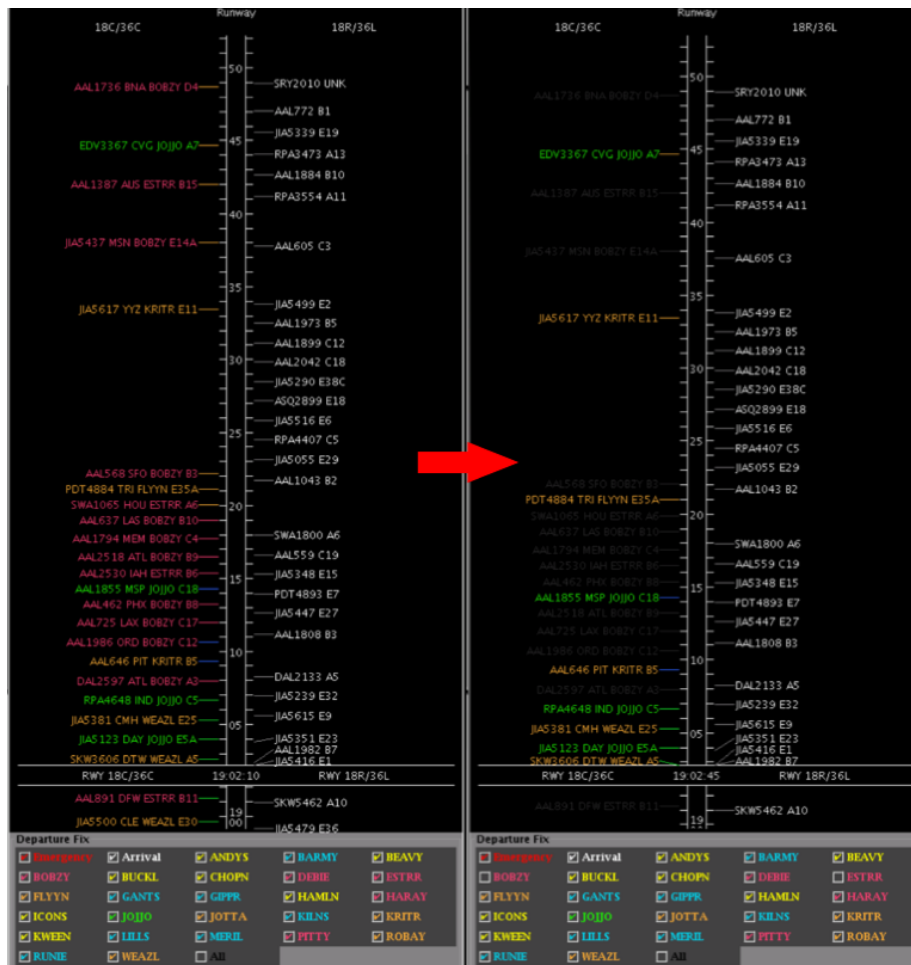


Figure 17. Deselecting items on the Timeline legend.

### 2.1.2.9.2 Interacting with the Legend

The items in the legend will be displayed in the same color scheme as they are displayed on the Timeline (Figure 17). For example, the “BOBZY” label is displayed in dark pink, like the BOBZY Timeline datablocks, while the “JOJJO” label is displayed in green, like JOJJO Timeline datablocks.

Deselecting checkboxes in the legend will turn the item deselected a dark grey color on the Timeline. Selecting checkboxes in the legend will return the selected item to its original coloring, as determined by the coloring selected in the Timeline Settings window (see section 2.1.2.8).

The “All” item at the end of the legend list is deselected whenever any other item in the legend is deselected. If the “All” checkbox is clicked on as the method to deselect the “All” item, no other legend items are impacted. When the “All” checkbox is selected, all other items in the legend are also selected.

### 2.1.2.10 Timeline Datablocks

In the Timeline Settings window, changes can be made to the configuration of the Timeline datablocks as well as to the content of the Timeline datablocks. These Timeline datablock settings options are described in the following sections.

#### 2.1.2.10.1 Timeline Datablock Configuration

Changes to the Timeline datablock configuration can be made to restrict the content of a single datablock to one line on the Timeline vs. allowing the content of a single datablock to be written across two lines on the Timeline.

To change the configuration of Timeline datablocks:

**Step 1:** Select the "One-Line DB" (datablock) checkbox to restrict the content of each datablock to one line (Figure 18) or deselect the "One-Line DB" checkbox allow the content of each datablock to be written on two lines (Figure 18).

**Step 2:** Click the "Ok" button.



Figure 18. Timeline datablock configuration.

Note that currently the only available option for the "Extended Datablock Layout:" feature in the Timeline Settings window is "Default".

#### 2.1.2.10.2 Timeline Datablock Content

Content of Timeline datablocks can be adjusted for arrival and departure datablocks independently.

To change the content of Timeline datablocks:

**Step 1:** Select the items to be displayed in the Timeline datablocks (Figure 19) and deselect items to be removed from the Timeline datablocks. Make changes separately for arrivals and departures.

**Step 2:** Click the "Ok" button.

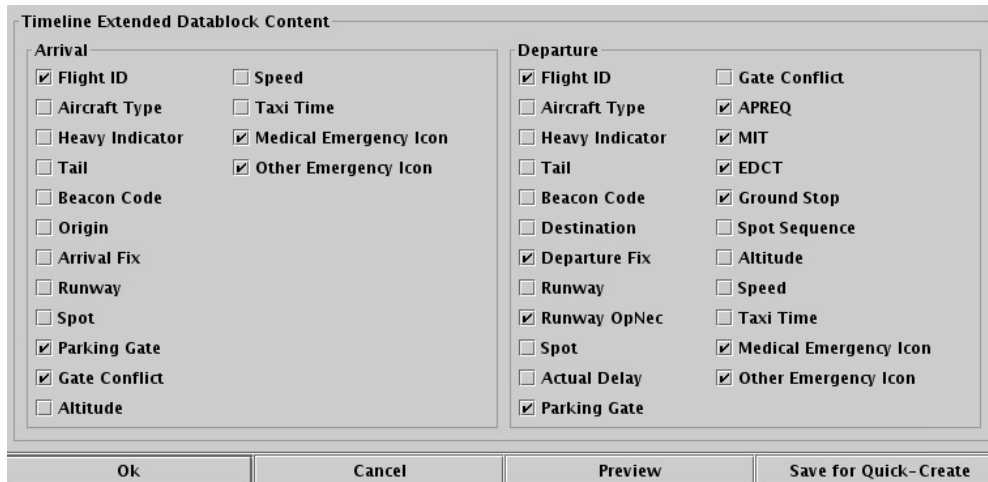


Figure 19. Timeline datablock content.

<b>Datablock Content Item</b>	<b>Description</b>	<b>Content available for arrivals, departures, or both</b>
Flight ID	Displays the flight ID/callsign.	Both
Aircraft Type	Displays the aircraft type.	Both
Heavy Indicator	Displays an orange H to indicate that the aircraft is a heavy weight class. For aircraft in super weight class, displays a black S on a white background.	Both
Tail	Displays the tail number of the aircraft.	Both
Beacon Code	Displays the flight's beacon code.	Both
Origin	Displays the arrival flight's origin airport.	Arrival
Destination	Displays the departure flight's destination airport.	Departure
Arrival Fix	Displays the assigned arrival fix for the arrival flight.	Arrival
Departure Fix	Displays the assigned departure fix for the departure flight.	Departure
Runway	Displays the flight's assigned runway.  For arrivals, a “^” symbol will appear in front of the runway when the runway assignment is populated from the Terminal RADAR Approach Control (TRACON) scratchpad entries.	Both

Runway OpNec	Displays a light green “OpNec” when the departure flight has been assigned to a runway for operational necessity.	Departure
Spot	Displays the assigned spot for the flight to enter or leave the Ramp.	Both
Actual Delay	Displays actual delay for flights taxiing in the AMA. The actual delay is the amount of time a flight is later than its first computed UTOT. Actual delay is formatted as “AD:x”, where x is the delay in minutes.	Departure
Parking Gate	Displays the assigned gate for the flight. When the flight’s gate is unknown, “UNK” is displayed.	Both
Gate Conflict	When the flight has a gate conflict, the parking gate will display as magenta.	Both
APREQ	Displays information for flights that have APREQ restrictions, including: <ul style="list-style-type: none"> <li>• symbol to indicate the availability of electronic negotiations</li> <li>• “APREQ” before flights have a negotiated release time</li> <li>• a release time once one is negotiated</li> <li>• symbology during the negotiation process (see section 3).</li> </ul>	Departure
MIT (Miles-In-Trail)	Displays an MIT restriction for a flight.	Departure
EDCT	Displays the EDCT release time for flights with an EDCT restriction.	Departure
Ground Stop	Displays “GS” for flights with a ground stop.	Departure
Spot Sequence	For departures exiting the Ramp at a certain spot, the flight’s sequence number to the spot is displayed. So if the flight is currently 3 <sup>rd</sup> in line to exit at the spot, a “3” will be displayed. This will update as aircraft cross into the AMA. Once an aircraft enters the AMA, it will no longer have a spot sequence number.	Departure
Altitude	Displays the aircraft’s altitude in units of feet / 100.	Both
Speed	Displays the aircraft’s speed in nautical miles ( <i>nmi</i> ).	Both
Taxi Time	For arrivals, taxi time displays once the arrival lands and has an Actual ON time. Taxi time displays for arrivals as follows: <ul style="list-style-type: none"> <li>• Arrival not yet landed: no value</li> </ul>	Both

	<ul style="list-style-type: none"> <li>• Arrival landed but not in the gate: elapsed time from Actual ON to "now"</li> <li>• Arrival in the gate: elapsed time from Actual ON to Actual IN</li> </ul> <p>For departures, taxi time displays as follows:</p> <ul style="list-style-type: none"> <li>• Departure still in the Ramp: no value</li> <li>• Departure in the AMA: elapsed time from Actual SPOT to "now"</li> </ul> <p>Departure taken off: elapsed time from Actual SPOT to Actual OFF</p>	
Medical Emergency Icon	For flights with emergencies, aircraft callsigns are displayed in red. Alongside is an emergency icon. Medical emergency icons are a cross “+” symbol in the red text with a white background.	Both
Other Emergency Icon	Other emergency icon are displayed as an exclamation “!” symbol in the red text with a white background.	Both

When all the options for the Timeline datablocks are selected, the resulting datablocks appear as shown in Figure 20.

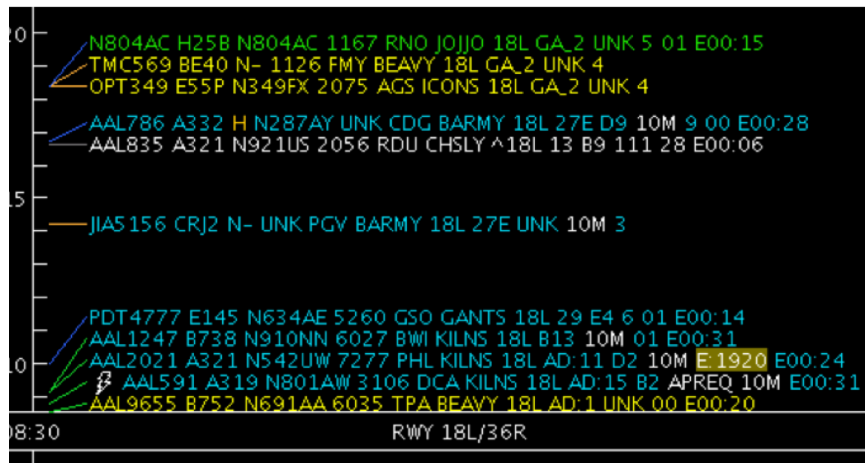


Figure 20. Timeline datablocks with all of the Timeline datablock options selected.

### 2.1.2.11 Save for Quick-Creat

Preferred settings for each Timeline may be saved for future access. It is possible to make multiple saved files for desired Timeline variations.

To save the preferred settings in the selected Timeline:

**Step 1:** Click the “Save for Quick-Crete” (Figure 8) on the bottom right side of the window.

**Step 2:** Enter the preferred file name for future access. (Figure 21)

**Step 3:** Click save.

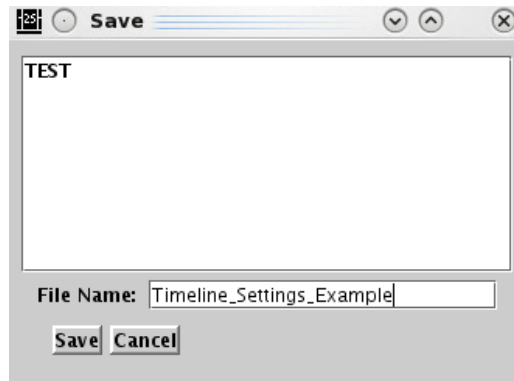


Figure 21. Save for Quick-Crete in Timeline settings.

To access saved Timelines:

**Step 1:** Click “Create” on the STBO Toolbar (Figure 77).

**Step 2:** Hover over “Create Timeline”, then hover over the type of Timeline that was saved (in the example below, “Runway”). (Figure 22)

**Step 3:** Hover over and click the saved Timeline file name. In the example for Figure 22: “Timeline\_Settings\_Example”.

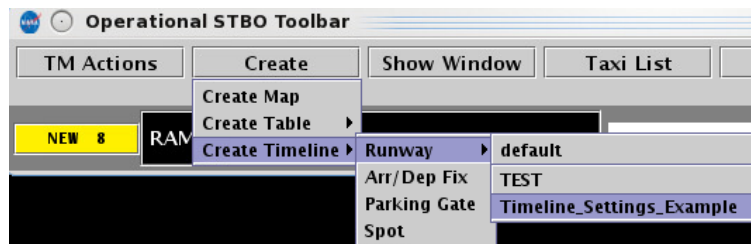


Figure 22. Load saved files in Timeline settings.

### 2.1.2.12 Flight Plan Demand

Flight Plan Demand option provides visual aid by painting a window of flight demand on the Timeline. Select a range of time in the future (e.g. 30 minutes from now for the next 2 hours) where flight demand can be emphasized on the Timeline.

To open the Flight Plan Demand window:

**Step 1:** Right click anywhere on the Timeline background (anywhere not on a flight datablock) (Figure 7) and select “Flight Plan Demand”.

**Step 2:** Select “Show Flight Plan Demand View” to enable flight plan demand function (Figure 23).

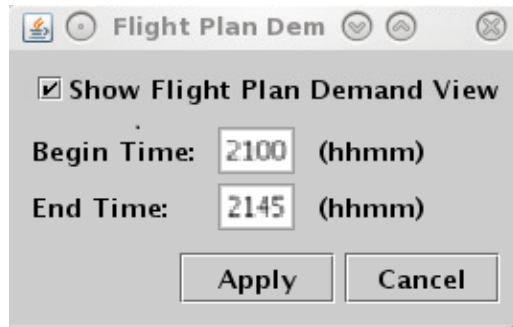


Figure 23. Flight Plan Demand settings.

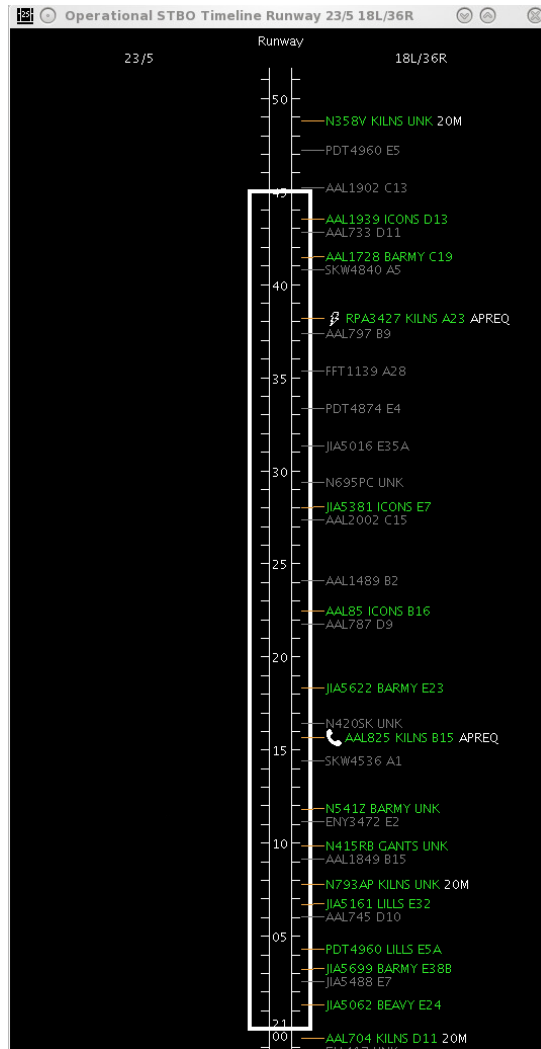


Figure 24. Flight Plan Demand depicted on Timeline.



**Step 3:** Set desired values for both “Begin Time: (hhmm)” and “End Time: (hhmm)”.

**Step 4:** Click “Apply”. Flight plan demand will be visible on the Timeline display (Figure 24). The Timeline should have a hollowed white border where time was set.

### 2.1.3 Dragging the Timeline Up or Down

The Timeline can also be dragged up and down by left or right-clicking in the center column of the Timeline and dragging the mouse up or down (Figure 25). The mouse’s scroll wheel can also be used as a button to click and drag the Timeline. When the Timeline is dragged, the duration remains constant, but the start and end times will differ. For example, if the Timeline is displaying 53 minutes of time from 3 minutes in the past to 50 minutes into the future, by clicking and dragging the Timeline up 20 minutes, the Timeline will keep displaying the 53-minute duration, but the start and end time for the Timeline display will now be from 23 minutes into the past to 30 minutes into the future.

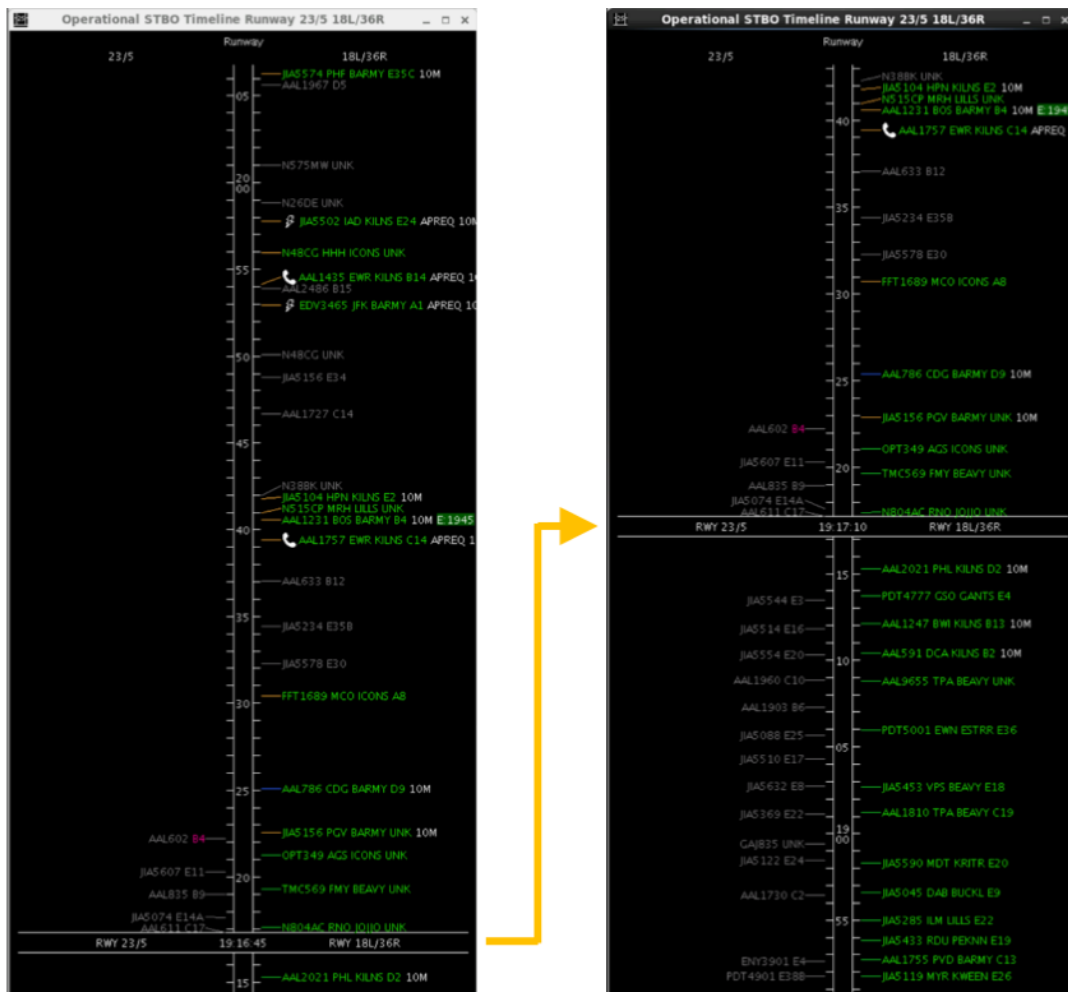


Figure 25. Dragging the Timeline up and down.

Once the Timeline has been dragged, the option to reset the Timeline to the default time interval will appear in the Timeline’s right-click menu. The default time interval is the “Duration” in the Timeline Settings panel (see Figure 8). For example, once the Timeline has been dragged to display from 23 minutes into the past to 30 minutes into the future, the Timeline can be reset to display from 3 minutes into the past to 50 minutes into the future.

To reset the Timeline interval:

**Step 1:** Right-click on the background of the Timeline.

**Step 2:** Select “Reset interval” (Figure 26). The Timeline now displays the default time interval.

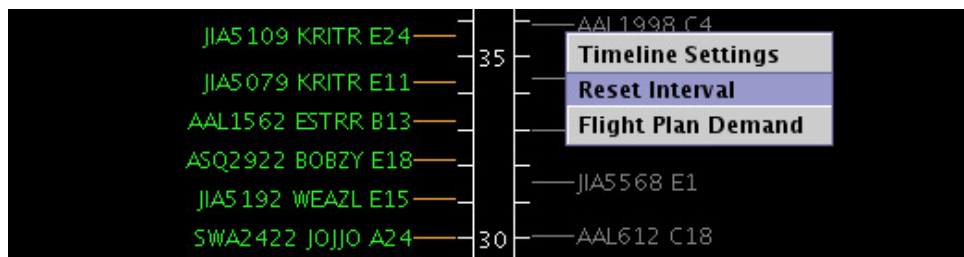


Figure 26. Right-click on the background of the Timeline to reset the Timeline interval.

## 2.2 Map

The STBO Client Map (Figure 27) is set up to display the layout of the AMA and Ramp of the airport, as well as flight positions and datablocks. The Map window consists of an aerial view of the airport surface, flight positions on the surface, drop-down menus (File, View, Help), and Map configuration toolbar. Flight positions are collected from surface surveillance.

To create additional Maps:

**Step 1:** Click on “Create” on the STBO Client Toolbar.

**Step 2:** Select “Create Map”.

The new Map will appear with default departure and arrival datablocks, zoom level, and location.



**Figure 27. STBO Client Map.**

## **2.2.1 Map Aerial View**

The aerial view is pre-set to show the layout of the airport, south facing up. Departure flights are displayed in green and arrival flights in grey. Gate conflicts appear as magenta parking gates. Flights with long on board (also known as the tarmac rule) are marked on the Map. Flight datablocks also provide additional information, such as TMI information.

The position of the flights comes from radar data.

### **2.2.1.1 Tarmac Rule / Long On Board**

The Map also displays Tarmac Rule / Long On Board (LOB) information for flights. LOB is displayed on the Map using a colored disc that surrounds the aircraft icon (Figure 28). The LOB timer starts from the flight's pushback from the gate (Actual Off-Block Time; AOBT) for departure flights or from the moment wheels touch down (Actual Landing Time; ALDT) for arrival flights. The following table defines what each LOB disc color represents.

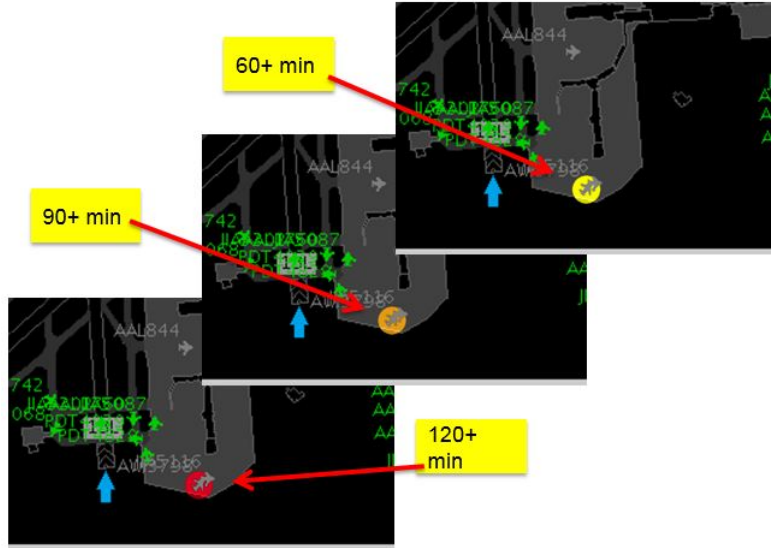


Figure 28. Map Long On Board.

Disc Color	LOB Timer
Yellow	60-89 minutes
Orange	90-119 minutes
Red	120+ minutes

### 2.2.2 Menus

Two menus are available on the top left of the Map: File and View.

The “File” menu (Figure 29) provides the ability to shut down the STBO Client. To shut down the STBO Client:

**Step 1:** Click on the “File” menu in the Map window.

**Step 2:** Click on “Shutdown STBO.”

**Step 3:** Confirm STBO Shutdown. Clicking “Yes” will shut down the whole STBO Client program.

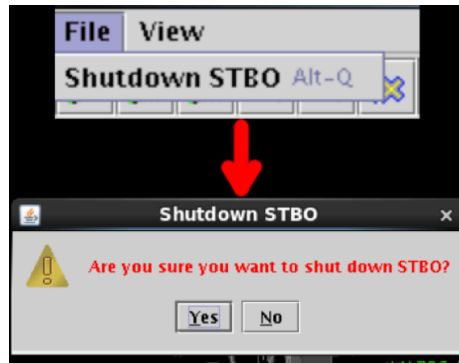


Figure 29. Map “File” drop-down menu.

The “View” menu (Figure 30) provides visual options: to show, or hide, the Map toolbar (section 2.2.2.1), flights at gates (section 2.2.2.2), flights by line of flight (section 2.2.2.3), or clear highlighted flights (section 2.2.2.4).



Figure 30. Map “View” drop-down menu.

### 2.2.2.1 *Toolbar*

To show the STBO Client Toolbar (see section 2.4):

**Step 1:** Click on the “View” menu in the Map window.

**Step 2:** Select on “Show Toolbar.” This will bring the STBO Client Toolbar to the forefront of the STBO Client windows.

### 2.2.2.2 *Flights at Gates*

The “Flights at Gates” function impacts all open Maps on the STBO Client interface. If this function is enabled on one Map, it’s automatically enabled on all Maps. When this function is enabled, it shows the physical aircraft at the gates with their tail numbers.

To show/hide aircraft at the gates:

**Step 1:** Click on the “View” menu in the Map window.

**Step 2:** Select the “Flights at Gates” checkbox to display all untracked aircraft parked at the gates and their tail numbers, OR deselect the “Flights at Gates” checkbox to hide all untracked aircraft parked at the gates and their tail numbers.

### 2.2.2.3 Flights by Line of Flight

The STBO Client displays information for all flights in the system for the day, even if multiple flights are using the same physical aircraft. “Line of Flight” refers to which flight is using a physical aircraft. For example, flight A (an arrival) and flight B (the turnaround departure for the arrival) can share a physical aircraft. If the “Flights by Line of Flight” checkbox is checked, only the current flight is displayed. If the “Flights by Line of Flight” checkbox is unchecked, both flight A and flight B are displayed, even though they occupy the same physical aircraft.

This checkbox also affects “expired” flights. The STBO Client has a timeout parameter; an arrival will display for  $N$  minutes after it arrives at the gate and receives an IN time. Values for  $N$  are listed in the table below. Once the timeout value is reached ( $N$  minutes after the IN time), the flight becomes “expired.” Expired flights are not displayed when the “Flights by Line of Flight” checkbox is checked. If the “Flights by Line of Flight” checkbox is unchecked, the flight continues to be displayed until it is deleted from the system. This  $N$  value is not configurable.

<b><math>N</math> value for “Flights by Line of Flight”</b>	<b>Description of when to use each <math>N</math> value</b>
10 minutes	Used for any arrival flights that will turnaround as departures.
30 minutes	Used for domestic arrival flights with no turnaround departures.
75 minutes	Used for international arrival flights with no turnaround departures.

To show/hide flights by line of flight:

**Step 1:** Click on the “View” menu in the Map window.

**Step 2:** Select the “Flights by Line of Flight” checkbox to hide expired flights, OR deselect the “Flights by Line of Flight” checkbox to show expired flights.

### 2.2.2.4 Clear Highlighting of Flights on the Map

There are two methods for clearing out the highlighting/selecting of flights on the STBO Client Map. The first is to click anywhere else on the Map background, and the second is to use the “View” menu in the Map window.

To clear all highlighted flights on the Map:

**Step 1:** Click on the “View” menu in the Map window.

**Step 2:** Click on “Clear Highlighted Flights.” This will unselect all flights that are highlighted.

### 2.2.3 Help Menu and Quick Keys

On the top right of the Map is the help menu (Figure 31). This menu provides access to the software version (About), or the quick keys for the Flights Table (Flights Table Help), Map (Map Help), or Timeline (Timeline Help).

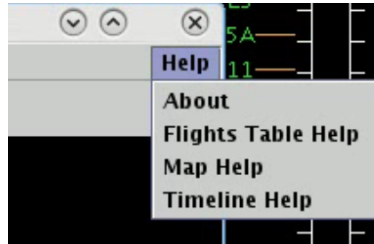


Figure 31. Map “Help” drop-down menu.

To find out about the software version currently in use:

**Step 1:** Click on the “Help” menu in the Map window.

**Step 2:** Click on “About.” A window appears with the version number and the build (Figure 32).

**Step 3:** Click on “OK” to close the window.

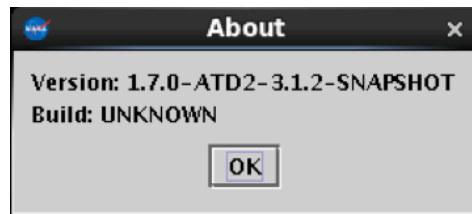


Figure 32. STBO Client version information.

Some users prefer to use quick key functions to navigate through the interface and interact with it. Quick key functions exist in the system today for the Flights Table, Map and Timeline. The Map “Help” menu can be used to view lists of these quick key functions.

To open the list of quick keys for the Flights Table:

**Step 1:** Click on the “Help” menu in the Map window.

**Step 2:** Click on “Flights Table Help.” A window appears with a list of keyboard and mouse shortcuts for various Flights Table functions (Figure 33).

**Step 3:** Click on “Close” to close the window.

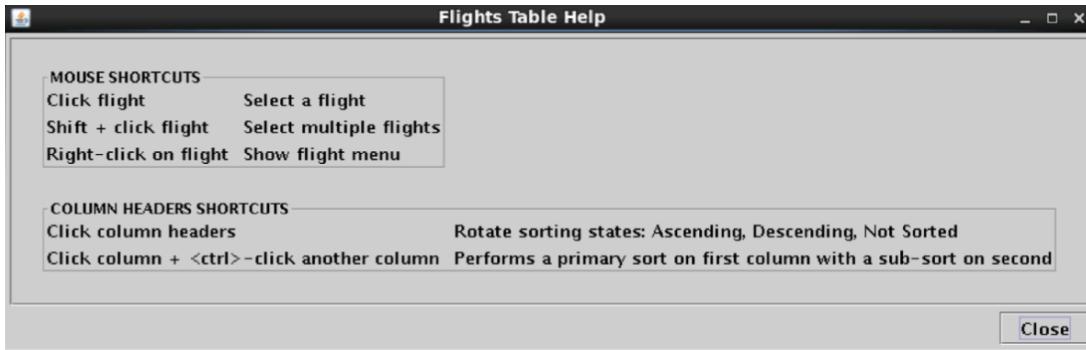


Figure 33. Flights Table Help window.

To open the list of quick keys for the Map:

**Step 1:** Click on the “Help” menu in the Map window.

**Step 2:** Click on “Map Help.” A window appears with a list of keyboard and mouse shortcuts for various Map functions (Figure 34).

**Step 3:** Click on “Close” to close the window.

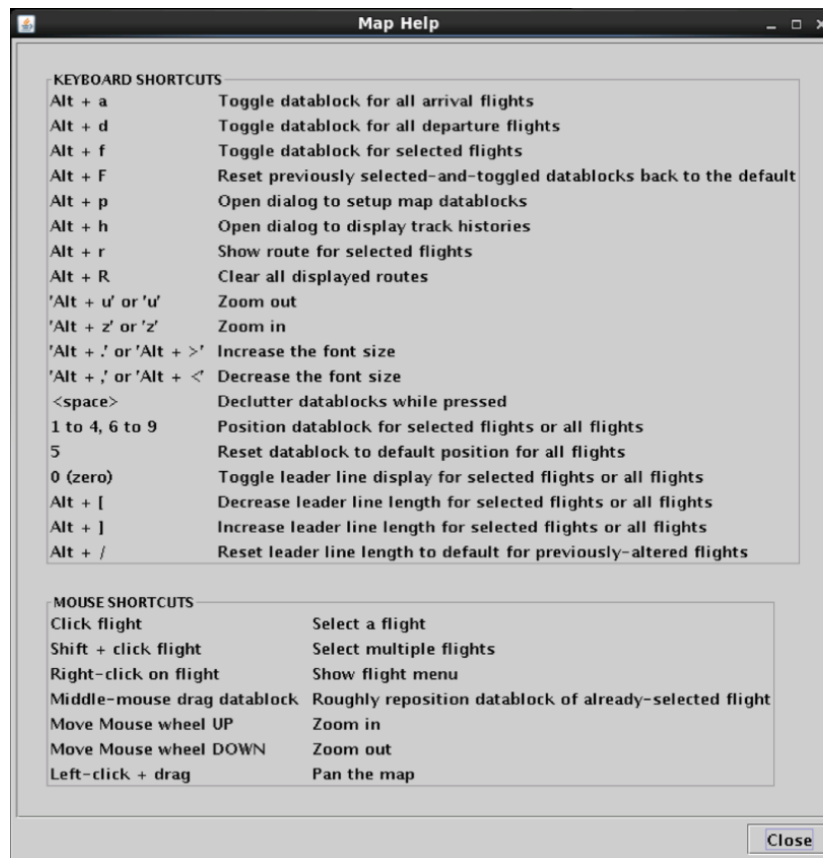


Figure 34. Map Help window.



To open the list of quick keys for the Timeline:

**Step 1:** Click on the “Help” menu in the Map window.

**Step 2:** Click on “Timeline Help.” A window appears with a list of keyboard and mouse shortcuts for various Timeline functions (Figure 35).

**Step 3:** Click on “Close” to close the window.

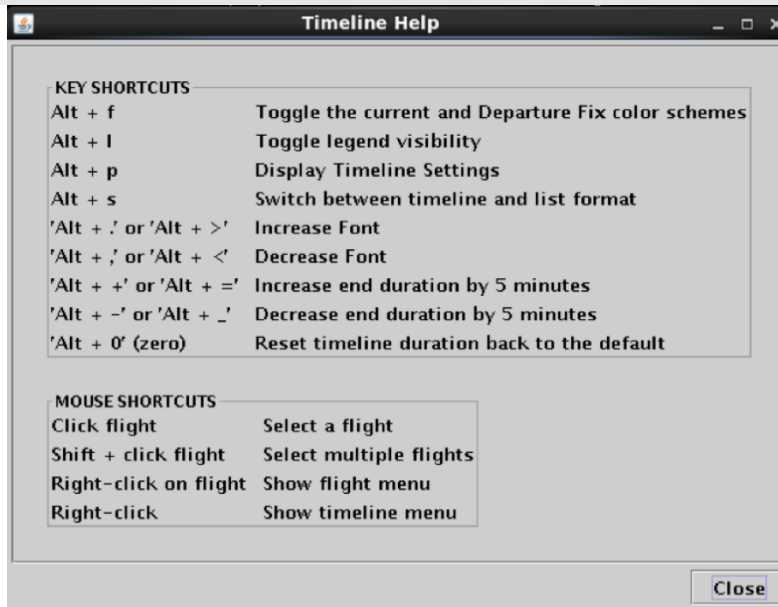


Figure 35. Timeline Help window.

## 2.2.4 Map Toolbar

There are several functions available to the user on the Map toolbar (Figure 36). The Map Toolbar has a tooltip feature (Figure 37) that displays the labels for button functions when hovering over each button. The tooltip displays for 5 seconds.

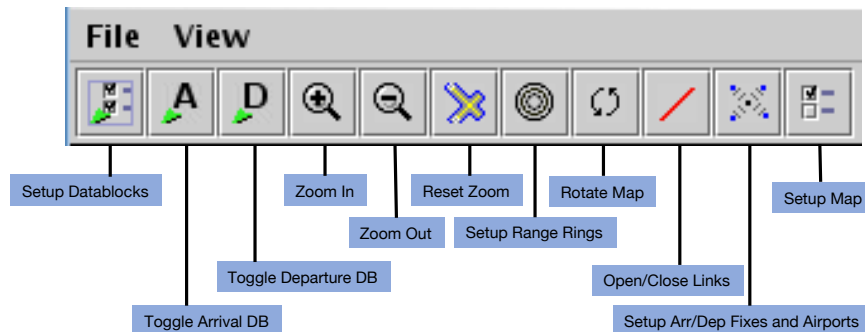


Figure 36. Map toolbar.



Figure 37. Tooltips on the Map toolbar.

The following table provides a description of the Map toolbar buttons from left to right. For those Map toolbar buttons that open windows to provide additional functionality, a more in-depth description of the windows is provided in sub-sections 1-4.

Map Toolbar Button	Description
Setup Datablocks	Opens a settings window for making adjustments to how all Map datablocks are displayed
Toggle Arrival DB	Toggle between “No DB”, “ID only DB”, and “Extended DB” for arrival flights.
Toggle Departure DB	Toggle between “No DB”, “ID only DB”, and “Extended DB” for departure flights.
Zoom In	Zoom in on the Map.
Zoom Out	Zoom out on the Map.
Reset Zoom	Return to the default Map zoom level.
Setup Range Rings	Opens settings window to set interval for range ring spacing, show range rings, set color for range rings, show distance labels for each range ring, and set the max distance to show range rings.
Rotate Map	Select one of four orientations for the Map (0°, 90°, 180°, 270°).  Note: Choosing the orientation the Map is currently on will result in no rotation.
Open/Close Links	Highlight and close selected areas of the Ramp, AMA, and/or Taxiways. In addition, previously closed link can be reopened using the same function.
Setup Arr/Dep Fixes and Airports	Add specific fixes and airports to the display, including the ability to overlay specific TRACON maps onto the display.
Setup Map	Opens a window to change settings for showing or hiding labels, shapes, and other items on the Map.

#### 2.2.4.1 Setup Datablocks

The Setup Datablocks button on the Map toolbar opens the Setup Datablocks window (Figure 38), which enables changing the Map datablock configurations, setting color

schemes, displaying the legend, showing (untracked) flights at the gate, editing Map datablock content, and other display filters. These Map datablock setting features are described in the following sections.



Figure 38. Setup Datablocks window for the STBO Client Map.

#### 2.2.4.1.1 Map Datablock Configuration

Map datablocks can be configured separately for arrivals and departures. Datablocks can be configured to display as no datablocks, ID (aircraft callsign) only datablocks, or extended datablocks (Figure 38). The following example will use the arrival datablocks to demonstrate the steps for changing the datablock displays.

To change the flight datablock display using the Setup Datablock window:

**Step 1:** Click on the "Arrival" drop-down menu next to "Flight Datablock Display:" (Figure 39).

**Step 2:** Select the desired option for displaying the flight datablock.

**Step 3:** Click the "Ok" button.

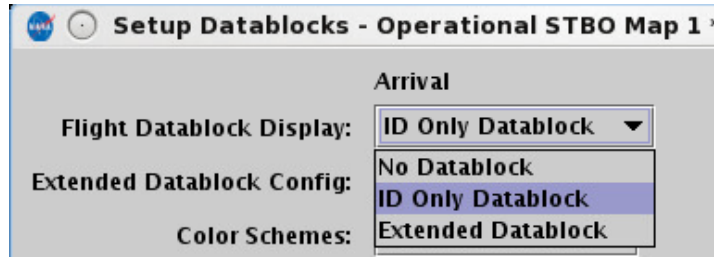


Figure 39. Flight Datablock Display.

The “Extended Datablock Config:” feature enables the changing of the standard color for the Map datablock backgrounds between “Default” and “ramp”. This feature is only applicable when using extended datablocks and does not impact the aircraft icon on the Map, only the flight’s datablock background. Aircraft icons will match the Map datablock color scheme, described in section 2.2.4.1.2. The following table describes the differences for these two options:

Extended Datablock Config: Options	Description of Datablock Background Changes
Default	All: No background color Datablock text: matches the color scheme selected as described in section 2.2.4.1.2
Ramp	Arrivals: green Departures: blue for eastbound flights, brown for westbound flights All datablock text: white

#### 2.2.4.1.2 Color Scheme

Map datablock colors can be organized by six categories: arrivals/departures, departure fix, departure gate, departure runway, runway, and weight. The color of the Map aircraft icons matches the map datablock color scheme as well.

To change the Map datablock color scheme:

**Step 1:** Click on the "Color:" drop-down list arrow (Figure 40).

**Step 2:** Select an item from the drop-down list on which to base the Timeline color coding.

**Step 3:** Click the “Ok” button.

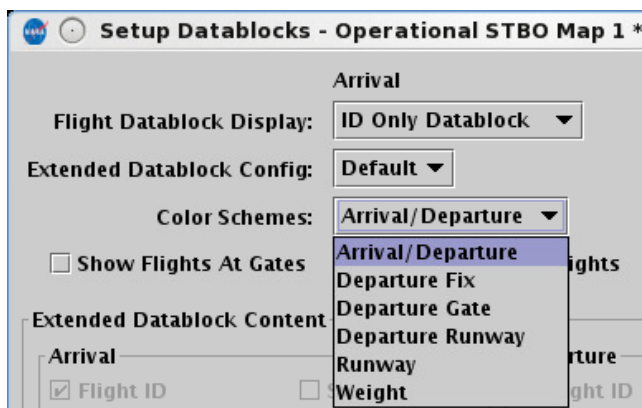


Figure 40. Map color scheme.

### 2.2.4.1.3 Legend

The Map legend provides information about categories of aircraft that are displayed on the Map. Unlike the Timeline legend, the Map legend is not interactive; there are no check boxes to select or unselect items from the legend. The legend is based on the Map's organization of flights by the selected color scheme (see section 2.1.2.8).

The displayed legend corresponds to the option selected for the color scheme. For the purpose of this example, "Departure Fix" was selected for the Map color scheme and the legend shown corresponds to "Departure Fix".

To show/hide the legend:

**Step 1:** Select the "Show Legend" checkbox to show the legend or deselect the "Show Legend" checkbox to hide the legend (Figure 41).

**Step 2:** Click the "Ok" button. The legend will display on the right side of the Map (Figure 42).

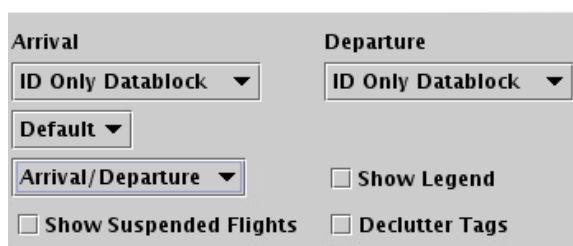


Figure 41. Show/hide the Map legend.

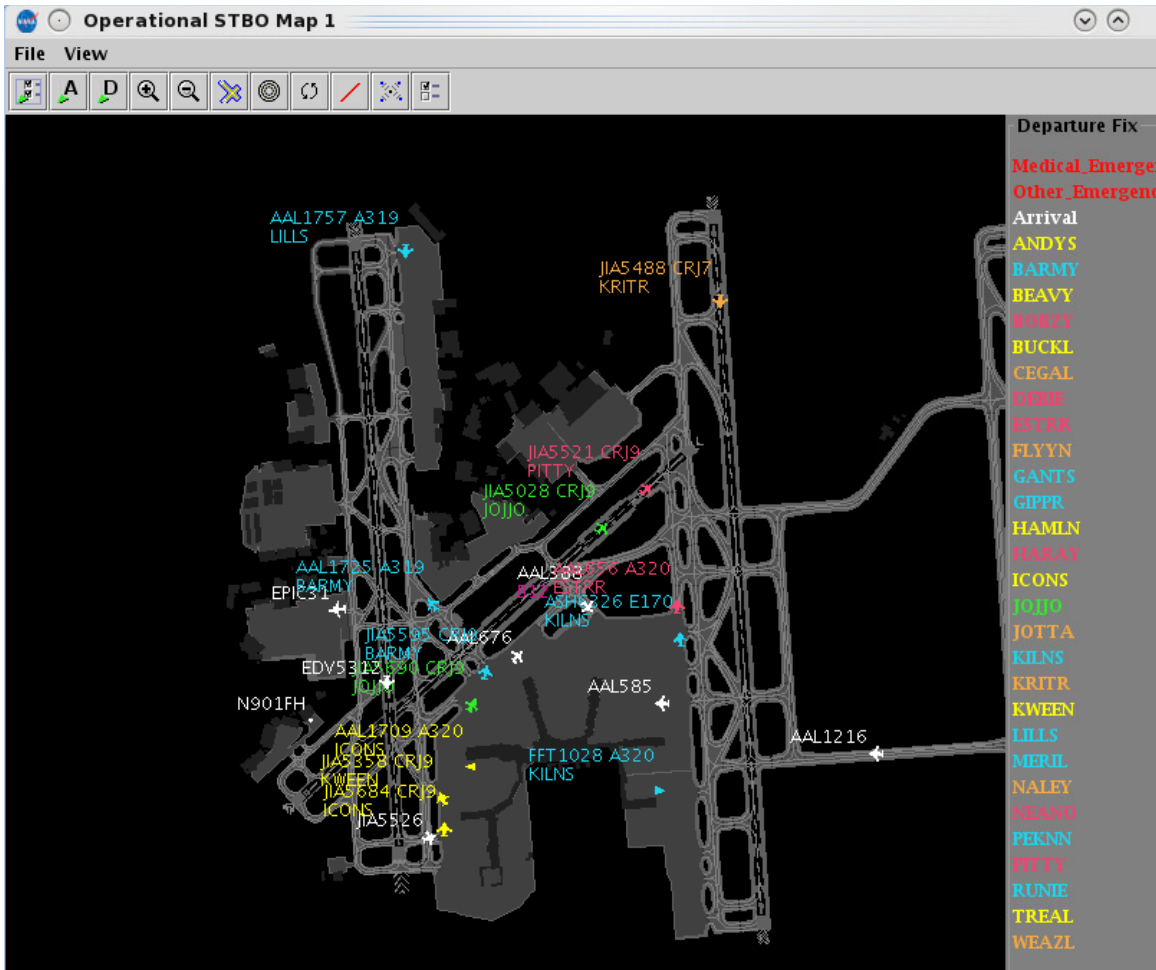


Figure 42. Map legend.

#### 2.2.4.1.4 Flights at Gates

The “Flights at Gates” function only applies to the current selected Map. When this function is enabled, it shows the flights at the gates with their callsigns / flight numbers.

To show or hide flights at gates:

**Step 1:** Select the “Show Flights at Gates” checkbox to display all untracked flights parked at the gates and their flight numbers, OR deselect the “Show Flights at Gates” checkbox to hide all untracked flights parked at the gates and their flight numbers (see Figure 38).

**Step 2:** Click the “Ok” button.

#### **2.2.4.1.5 Suspended Flights**

To show or hide suspended flights:

**Step 1:** Select the “Show Suspended Flights” checkbox to display all suspended flights, OR deselect the “Show Suspended Flights” checkbox to hide all suspended flights (see Figure 38).

**Step 2:** Click the “Ok” button.

#### **2.2.4.1.6 Declutter Tags**

By default, the “Declutter Tags” function is not enabled. The Map normally allows flight datablocks to overlap as the aircraft traverse the surface of the airport. When the “Declutter Tags” function is turned on, flight datablocks on the Map will move around the flights so that the flight datablocks do not overlap.

To declutter tags:

**Step 1:** Select the “Declutter Tags” checkbox to move flight datablocks so they do not overlap, OR deselect the “Declutter Tags” checkbox to view datablocks in the normal overlapped state (see Figure 38).

**Step 2:** Click the “Ok” button.

Flight datablocks can also be repositioned on the Map by clicking and dragging the datablock to a new position directly on the Map.

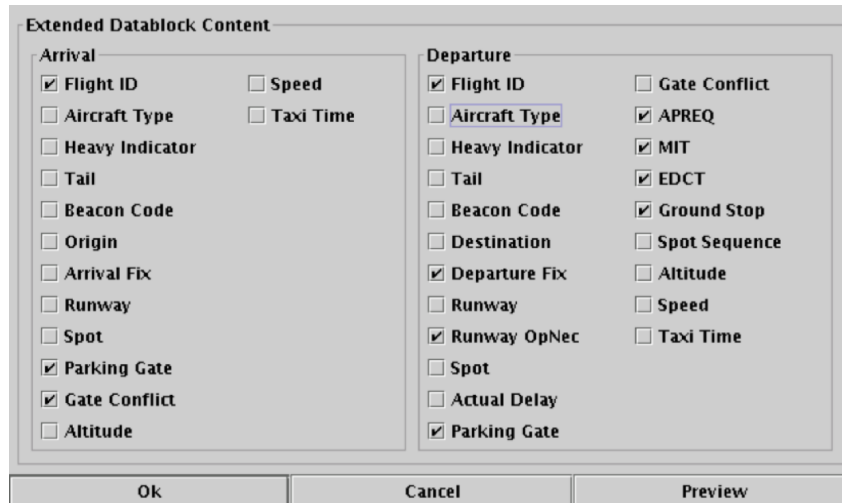
#### **2.2.4.1.7 Map Datablock Content**

Content of Map datablocks can be adjusted for arrival and departure datablocks independently. These controls are only available if “Extended Datablock” has been selected (see section 2.2.4.1.1).

To change the content of Map datablocks:

**Step 1:** Select the items to be displayed in the Map extended datablock content list (Figure 43) and deselect items to be removed in the Map extended datablock content list. Make changes separately for arrivals and departures.

**Step 2:** Click the “Ok” button.



**Figure 43. Map datablock content.**

### 2.2.4.2 Setup Range Rings

Range rings are a valuable tool in helping to judge distance on the STBO Client Map. The Setup Range Rings window allows the user to make changes to the range rings display.

To display and modify range rings:

**Step 1:** Click on the Range Ring button in the Map Toolbar (see Figure 36) to access the Setup Range Rings window (see Figure 44).

**Step 2:** Select the “Show Range Rings” checkbox in the Setup Range Rings window to show range rings.

**Step 3 (optional):** Select the “Show Range Distance Labels” checkbox to display the value of each range ring.

**Step 4 (optional):** Click on the colored box to select the color of the range rings. This will open the Choose Color window. For more information on how to interact with the Choose Color window, see section 2.2.4.5.

**Step 5:** Enter the value of the maximum distance in *nmi* to show range rings in the box next to “Total Distance from Airport to Display Range Rings:”

**Step 6:** Enter the value of the distance between the range ring in *nmi* in the box next to “Distance Between Range Rings:”.

**Step 7:** Click on the “Apply” button.







Figure 46. Select taxiway area to close (in yellow).

**Step 3:** A pop-up window will appear (Figure 47). Click “Okay” if the desired links to close are highlighted in yellow. Click “Cancel” if the links to close needs to be altered.

**Step 4:** Verify the closure is correct on the map. The closed area will show as red (Figure 48).

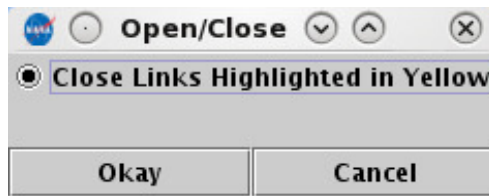


Figure 47. Pop-up window for link closure.



Figure 48. Link closure area.

To open/modify closed taxiways:

**Step 1:** If the closure area needs to be reopened, click on the “Open/Close Links” button (Figure 36). The areas that are currently closed will display in yellow (Figure 46).

**Step 2:** Select the area desired to be reopened from among the yellow links. The selected area highlighting will change from yellow to blue (see Figure 49). If new (purple) links are caught up in the selection, they will be highlighted in yellow.

**Step 3:** A pop-up box will appear to verify the selection. The links highlighted in blue will be re-opened, and the new links in that were caught (now yellow) will also remain open. Links that were already closed and that are highlighted in yellow will remain closed. If the desire is to close the yellow highlighted area, then select the line: “Close links highlighted in yellow”.

**Step 4:** Click “Okay” to keep the changes.

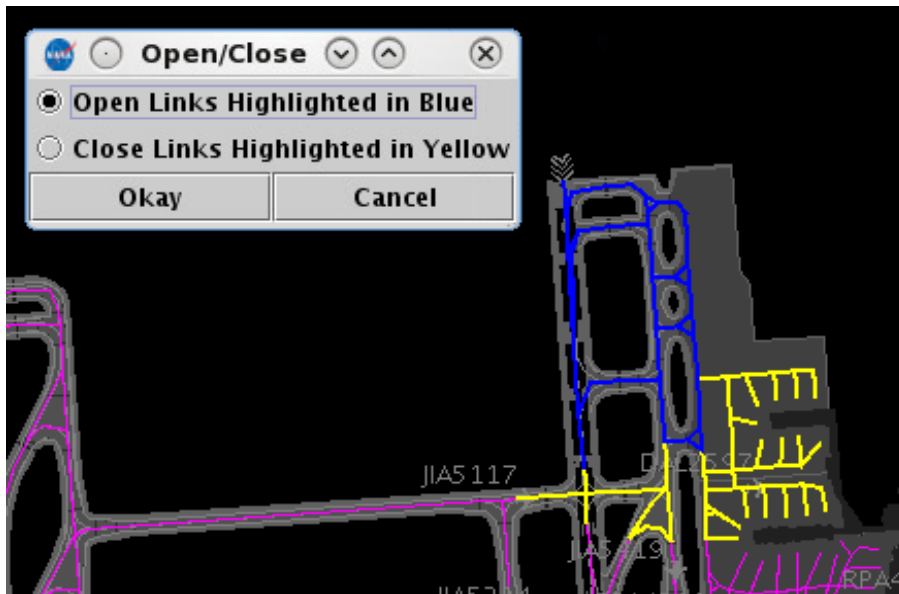


Figure 49. Link area to reopen (in blue).

#### 2.2.4.4 Setup Arrival and Departure Fixes, and Airport and Airspace Elements

The Setup Arr/Dep Fixes and Airports window provides the ability to display arrival and departure fixes, as well as other airports and video-maps of the TRACON (Figure 50). The following sections describe how to use the Setup Arr/Dep Fixes and Airports window.

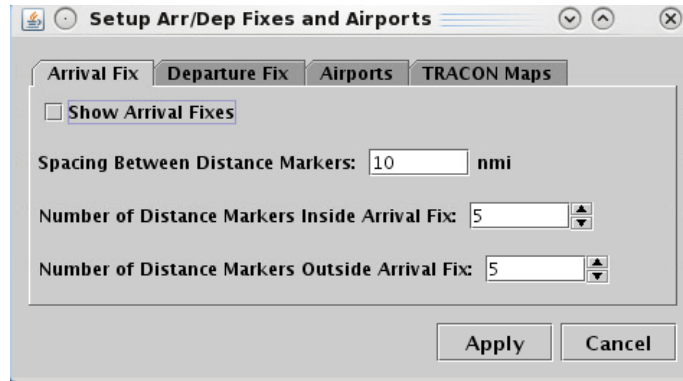


Figure 50. Setup Arrival Fixes.

#### 2.2.4.4.1 Arrival Fixes

When the Setup Arr/Dep Fixes and Airports window is opened, the default tab is the “Arrival Fix” tab.

To configure the arrival fix displays on the Map:

**Step 1:** Select the “Show Arrival Fixes” checkbox to display the arrival fixes.

**Step 2** (optional): Enter a value for the spacing between the distance markers for the arrival procedures in *nmi*.

**Step 3** (optional): Enter the total number of distance markers to display inside the arrival fix (or rather, between the arrival fix and your airport). Note: enter “0” (zero) if no spacing markers are desired.

**Step 4** (optional): Enter the total number of distance markers to display outside the arrival fix, away from your airport. Note: enter “0” (zero) if no spacing markers are desired.

**Step 5:** Click on the “Apply” button. The arrival fixes and procedures will now display in blue on the Map.

#### 2.2.4.4.2 Departure Fixes

To configure the departure fix displays on the Map:

**Step 1:** Click on the “Departure Fix” tab in the Setup Arr/Dep Fixes and Airports window (Figure 51).

**Step 2:** Select the “Show Departure Fixes” checkbox to display the departure fixes.

**Step 3:** Click on the “Apply” button. The departure fixes will now display in cyan on the Map (Figure 51).

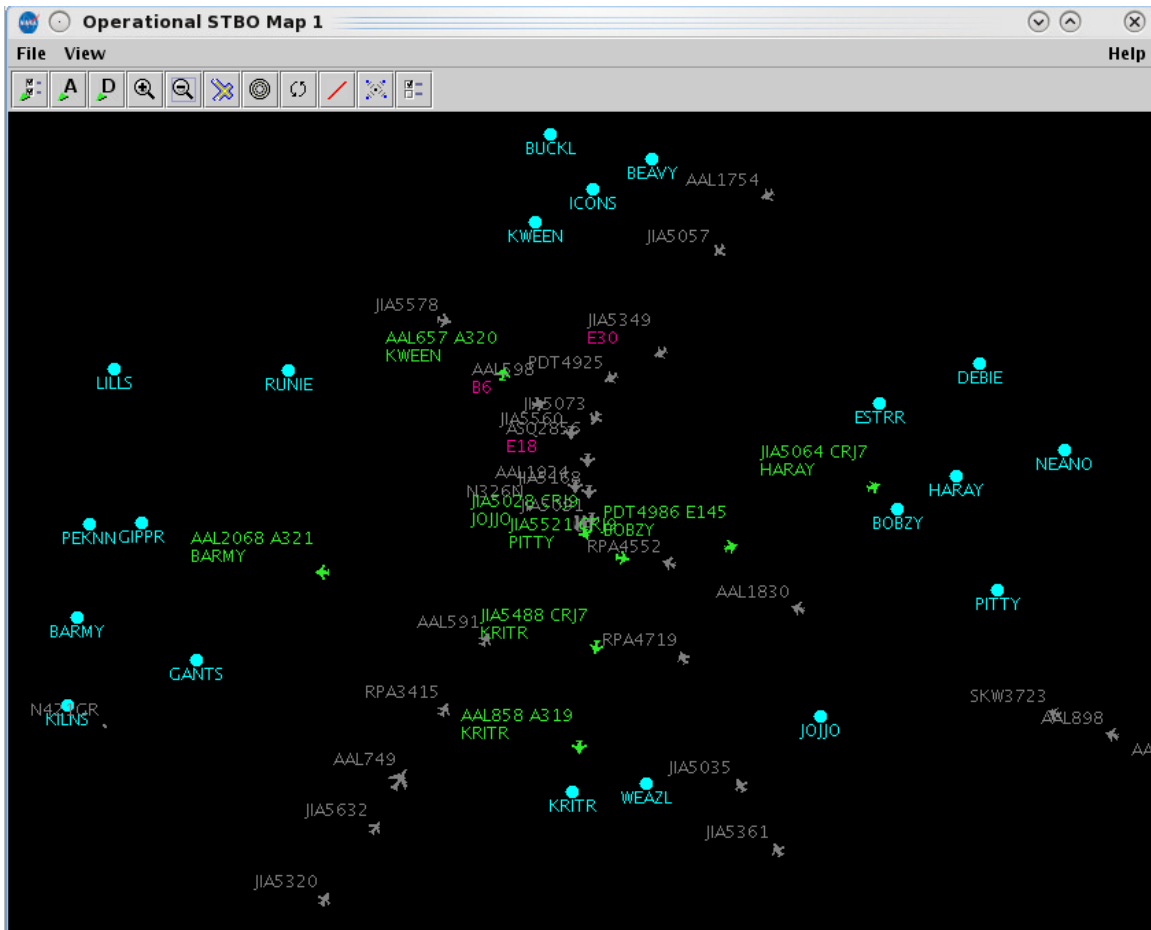
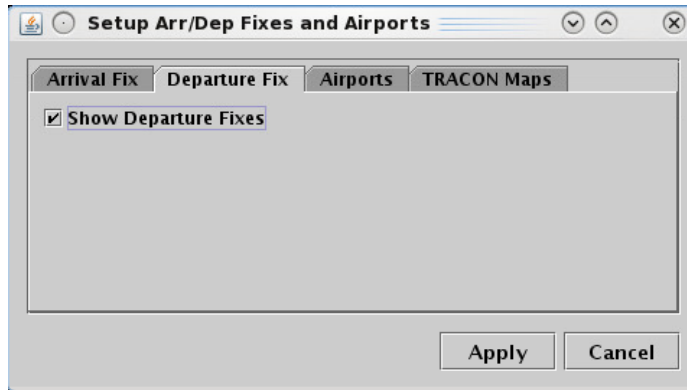


Figure 51. Setup Departure Fixes.

### 2.2.4.4.3 Airports

To configure the airport displays on the Map (Figure 52):

**Step 1:** Click on the “Airports” tab.

**Step 2:** Select the “Show Airports” checkbox.

**Step 3:** Click on the “Add Airport” button on the right side of the window. This will open the “Airport Input” window.

**Step 4:** Select the checkbox next to the desired airports or type the 3-letter airport code into the text box (e.g., “RDU”).

**Step 5:** Click on the “OK” button. If the airport code was typed incorrectly, an error message will appear. If the airport code was entered correctly, the airport now appears in the list on the “Airports” tab.

**Step 6:** Click on the “Apply” button. The listed airports will now display in yellow text on the Map.

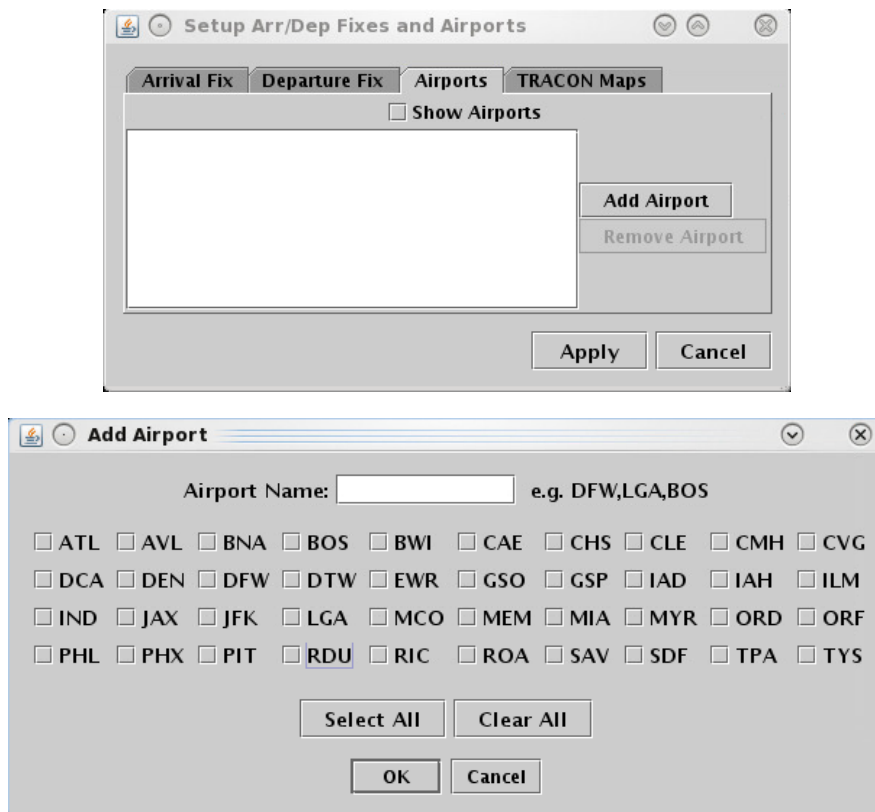


Figure 52. Airports window.

#### 2.2.4.4.4 TRACON Maps

To configure the airport displays on the Map (Figure 53):

**Step 1:** Click on the “TRACON Maps” tab.

**Step 2:** Click on the drop-down menu.

**Step 3:** Select a TRACON map to overlay onto the Map window. Multiple maps can be selected.

**Step 4:** (optional): Click on the “Choose Map Color” button. This opens the Choose TRACON Map Color window

**Step 5:** (optional): Select a color from one of the tabs. This color will be applied to the current map selected from the TRACON map drop-down list. (For more information on how to interact with the Choose Color window, see section 2.2.4.5.)

**Step 6:** Click on the “Apply” button. The TRACON map will now display in the selected color on the Map.

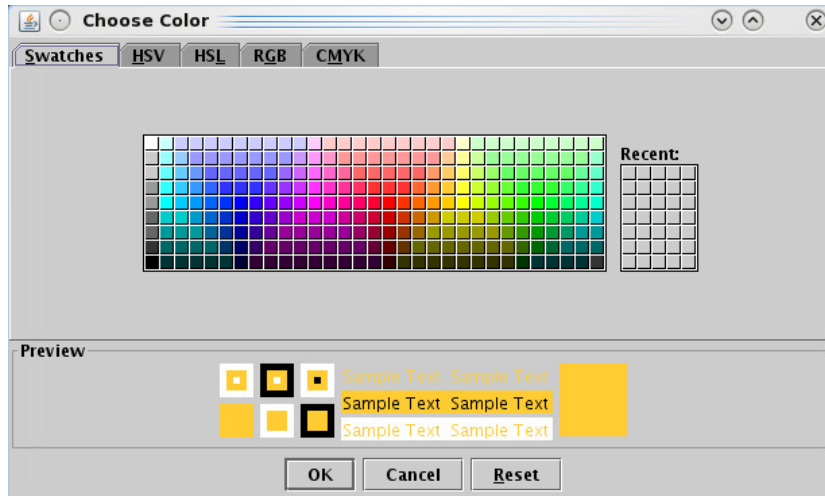
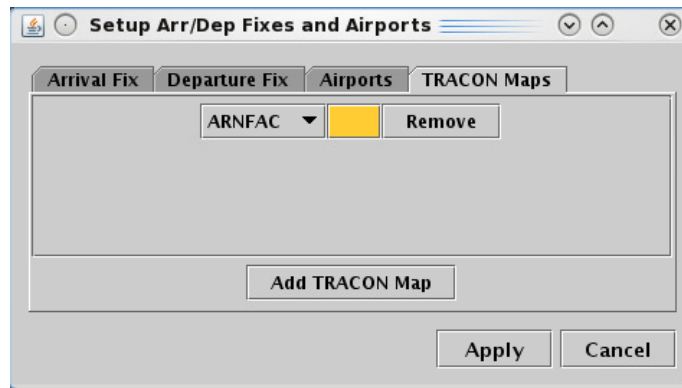


Figure 53. TRACON Maps.

### 2.2.4.5 Set up Map and Colors

The “Setup Map” button on the Map toolbar opens the Setup Map window (see Figure 54), which enables the display of, shapes, and other items on the Map (e.g., selecting the “ADW” checkbox displays the physical boundary for the Arrival/Departure Window (ADW) on the Map). The left column on the window (“Layer”) lists the different layer items that can be displayed on the Map. Selection of checkboxes from the middle column (“Display”) will populate the layer item on the Map. The right column (“Color”) allows for the selection of what color the Map uses to display each of the layer items.

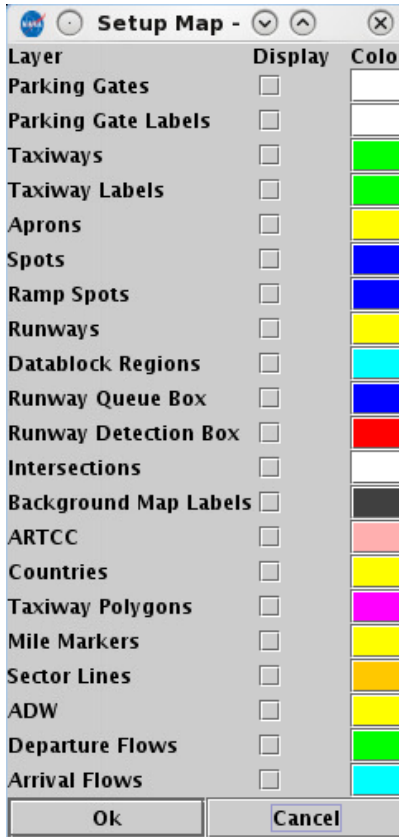


Figure 54. Setup Map window.

To choose items to display on the Map and select colors for displaying each item:

**Step 1:** Locate the item to be displayed from the “Layer”. Select the corresponding checkbox for that item under the “Display” column.

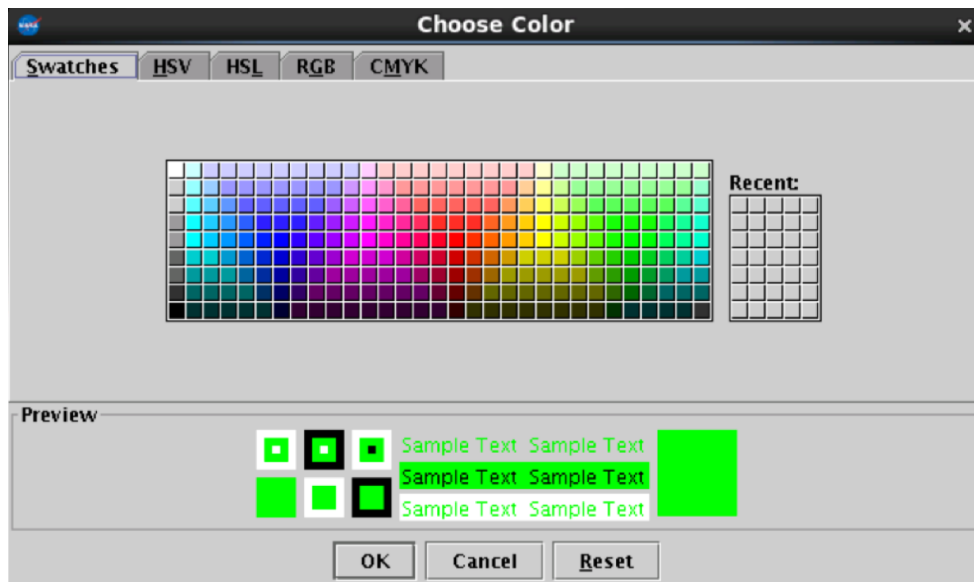
**Step 2 (optional):** Click on the colored square for that item under the “Color” column to change the color for displaying the layer item. A single click will open the Choose Color window (see Figure 55).



**Step 3:** On the “Swatches” tab, click on the desired colored squared. The color is now displayed at the bottom of the tab in the “Preview” section. Note that once a color is selected, the other tabs will provide information for that color and allow for refining the color selection (additional description on these other tabs is provided below).

**Step 4:** Click the “OK” button to close the Choose Color window. The colored square in the “Color” column has now changed to the selected color.

**Step 5:** Click the “Ok” button to apply the change and close the Color settings window. The layer item now appears on the Map.



**Figure 55. Flights Table Color Settings – choose a color.**

The other tabs on the Choose Color window are: Hue-Saturation-Value (HSV), Hue-Saturation-Lightness (HSL), Red-Green-Blue (RGB), and Cyan-Magenta-Yellow-Key (CMYK; “Key” is black). An example of the RGB tab is shown in Figure 56. In these windows, a color can be changed by dragging the various parameters, such as hue, saturation, lightness, or any of the main colors (blue, green, red, cyan, magenta, and yellow). A color can also be changed by clicking on a desired color inside the vertical gradient of colors and inside the axial gradient square.

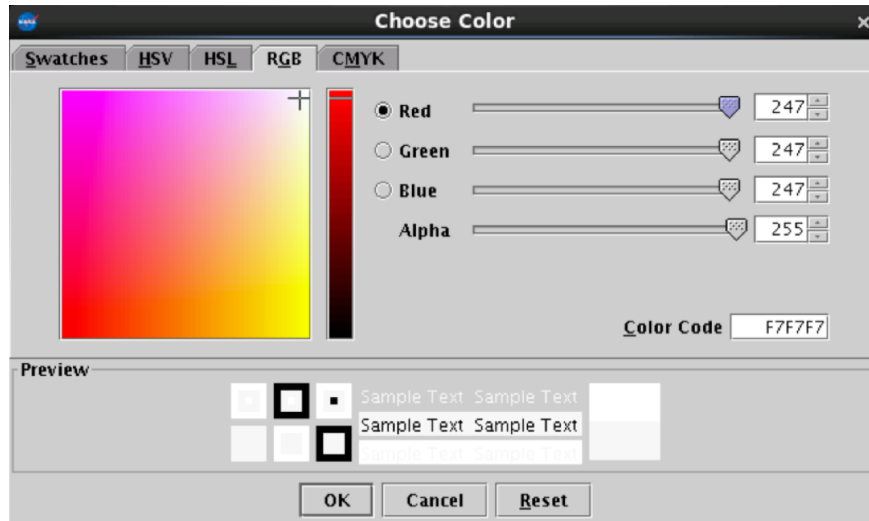


Figure 56. Flights Table Color Settings – choose an RGB value.

## 2.3 Flights Table

The Flights Table (Figure 57) provides a list of flights for the airport. Each flight selected in the table is highlighted in the Flights Table, on the Map, and on the Timeline.

Operational STBO All; Results: 1522 at 18:48 Z											
Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	
PDT4964	CAE	CLT	E145	E36L		E24/19:14	Enroute_Arr	E5A	E24/19:28	9W	
JIA5130	LEX	CLT	CRJ7	36L		24/12:12	In	E32	24/12:25	9W	
AAL707	LAX	CLT	A321	36C		24/11:09	In	C12	24/11:17	9W	
AAL1852	CLT	TJSJ	A321	36C		24/14:26	Departed	D12	24/14:00	24	IC
AAL1811	CLT	TPA	A320	E36R		E24/21:16	Scheduled_Out	C7	E24/20:51	24	BE
JIA5225	CLT	BTW	CRJ9	E36R		E25/00:26	Scheduled_Out	E31	E25/00:10	24	KIL
JIA5189	CLT	ILM	CRJ9	36R		24/12:14	Departed	E35A	24/11:54	24	LIL
JIA5154	BTW	CLT	CRJ9	36R		24/11:58	In	E28	24/12:09	29	
RPA4735	CLT	IND	E170	E36C		E24/22:45	Scheduled_Out	C5	E24/22:33	22W	JO
AAL595	RDU	CLT	A320	E36R		E25/01:07	Scheduled_In	B13	E25/01:12	25	
AAL1733	IAD	CLT	A319	E36R		E25/01:33	Scheduled_In	C6	E25/01:35	25	LY
AAL560	SEA	CLT	A321	E36L		E24/23:19	Enroute_Arr	C12	E24/23:29	9W	SU
JIA5637	CLT	STL	CRJ9	36C		24/12:08	Departed	E24	24/11:56	24	BO
AAL585	CLT	DFW	A321	36C		24/11:33	Departed	B6	24/11:24	22W	BO

Figure 57. STBO Client Flights Table.

### 2.3.1 Creating a New Flights Table

There are a few different types of tables that can be created in the STBO Client: Flights Table, Aircraft Table, and Departure Fix Status Table. Multiple Flights Tables can be created at one time to display and help organize different data. Only one Aircraft Table and one Departure Fix Status Table can be created at a time.

To create a new table:

**Step 1:** Click on “Create” on the STBO Client Toolbar.

**Step 2:** Click on “Create Table.”

**Step 3:** Select “Flights Table”. If a new table is desired, click “Default” (Figure 58). If a table was previously saved with preferred settings (see section 62), select the name of the saved Table file.

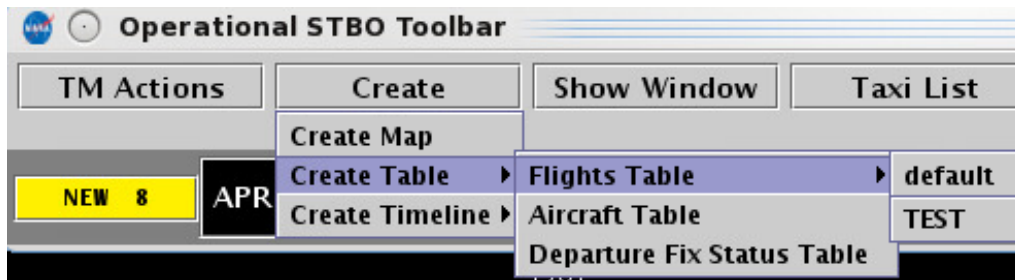


Figure 58. Create a new Flights Table.

To add or remove fields in the new table, see the Set Column function described below in the Flights Table Toolbar section 2.3.3.

### 2.3.2 Sorting Data

The data in the Flights Table can be sorted by selecting any header. For instance, selecting “Dest” will sort all flights alphabetically by destination airport. A secondary sort may be added by a “control-click” function. For example, if “Flight Status” was the primary sort, and “Scheduled Departure Time” for all taxiing flights was the secondary sort, all the taxiing flights would stay together, but now be sorted by the scheduled departure time. This way it would be clear to see which flights were scheduled to take off first.

To sort the data:

**Step 1:** Click on any header. This will list the flights from the lowest to the highest value.

**Step 2:** Click on the same header. This will list the flights from the highest value to the lowest value.

**Step 3:** Click on the same header to cancel the sorting feature.

To do a secondary sort:

**Step 1:** Click on any header. This will list the flights from the lowest to the highest value.

**Step 2:** Hold “CTRL” on the keyboard and click a new header. This will keep the first header sorted, and do a secondary sort by the 2<sup>nd</sup> header added.

### 2.3.3 Flights Table Toolbar

The Flights Table toolbar is located on the top left of the Flights Table. This toolbar provides the following functions for altering and interacting with the Flights Table (Figure 59):

- Filter data
- Set columns (data fields)
- Set colors in the Flights Table
- Save configuration for later access
- Search



Figure 59. Flights Table toolbar elements.

The following sub-sections describe the various Flights Table toolbar features and how to use them.

#### 2.3.3.1 Filter Function

The filter function down selects the data displayed to specified criteria.

To filter data:

**Step 1:** Click on the funnel icon. A Filter window appears with selectable fields (Figure 60).



Figure 60. Filter window for the Flights Table.

**Step 2:** Select the desired data field by clicking on the "-- Select --" drop-down button (Figure 61).

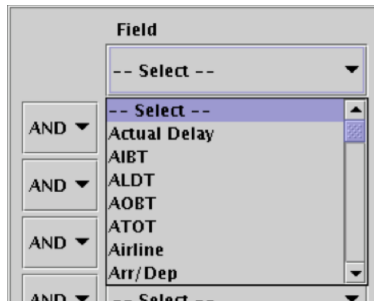


Figure 61. Select a field to filter by.

**Step 3:** Once the field is selected, select the operator by clicking on the “=” drop-down button (see Figure 62). Up to 5 options for the operator are possible for a single “Field”, depending on the “Field” selected (7 total possible operators):

- equal “=”
- not equal “!=
- less than “<”
- less than or equal to “<=
- greater than “>”
- greater than or equal to “>=
- or “BETWEEN”

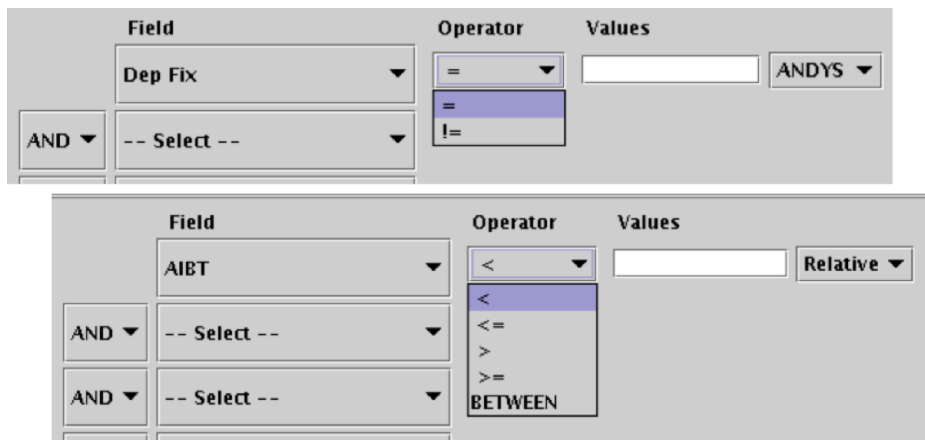


Figure 62. Select an operator to filter by.

**Step 4:** Next to the Operator, type in or select a value from the drop-down list (Figure 63). The Figure shows a drop-down list of all departure fixes for Charlotte Douglas International Airport (CLT).

Note that multiple items can be selected and/or added to the list in the “Value” text box. When desiring to add multiple values for the same “Field” under the same condition (“AND” vs. “OR”), enter all values in the same “Value” text box. STBO Client cannot process multiple lines of the same condition and the same field.

For example, “Dep Fix = BARMY,KILNS” and “Dep Fix = BARMY OR Dep Fix = KILNS” are okay, but “Dep Fix = BARMY AND Dep Fix = KILNS” will not work.

Field	Operator	Values
Dep Fix	=	
AND -- Select --		
AND -- Select --		
AND -- Select --		

**Figure 63. Select a value to filter by.**

**Step 5:** If another criterion is needed, repeat Step 2 by clicking on the Field drop-down list in the next row. The logical argument to the left of the Field drop-down list can be changed to “OR” via its drop-down list, if desired.

In the example in Figure 64, the destination field was added to filter flights to BARMY departure fix and to LaGuardia International Airport (LGA).

Field	Operator	Values
Dep Fix	=	BARMY
AND Dest	=	LGA

**Figure 64. Enter values to filter by.**

**Step 6:** Click “OK” to close the window. The Flights Table now only displays the flights that match the selected criteria.

In the example, the Flights Table only shows flights that are going to LGA via the BARMY departure.

To remove the filter:

- Step 1:** Click on the button with the funnel image.
- Step 2:** Click on “Clear” on the far right, next to each field argument.
- Step 3:** Click on “OK”.
- Step 4:** Confirm that the search field has no value (Figure 65).
- Step 5:** Click “OK” to close the window.

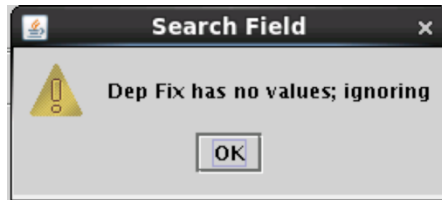


Figure 65. Cleared the filters from the Flights Table.

### 2.3.3.2 Setup of Columns in Flights Table

The fields and their order can be swapped out and moved around in the Column Settings window.

To access the Column setting:

- Step 1:** Click on the Set Columns in Flights Table button (the second button).

The window displays two lists (Figure 66). The one on the left shows fields that are available, but not displayed on the Flights Table. The one on the right are the fields that are currently displayed in the Flights Table.

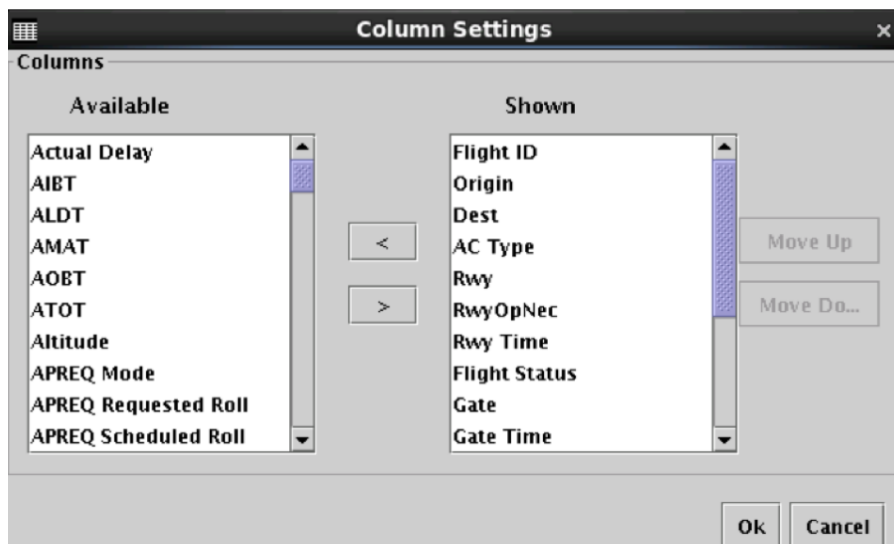


Figure 66. Column Settings window for Flights Table.

To move a field up or down on the list and reorder the way fields are displayed in the Flights Table:

**Step 1:** Inside of the Column Settings window, select the field in the right “Shown” list.

**Step 2:** Click on either “Move Up” or “Move Down” (Figure 67). A higher position in the “Shown” list results in moving that field to the left in the Flights Table.

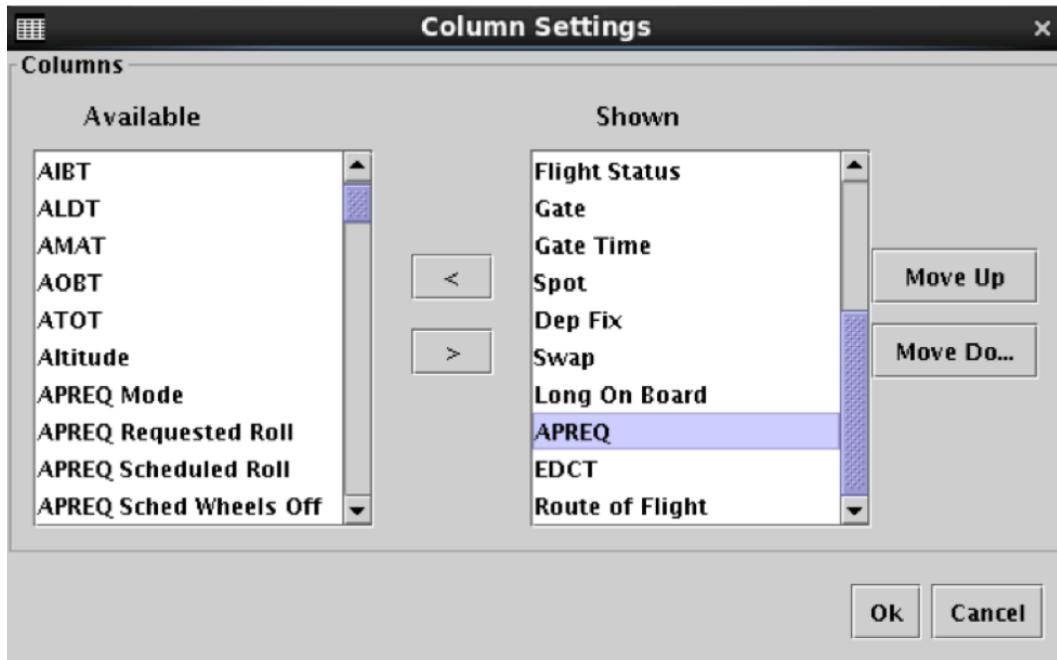


Figure 67. Moving column positions in the Column Settings window.

To add a field to the Flights Table:

**Step 1:** Select the field in the “Available” list to be added to the “Shown” list (the Flights Table).

**Step 2:** Select the field on the “Shown” list where the added field should be inserted (Figure 68).



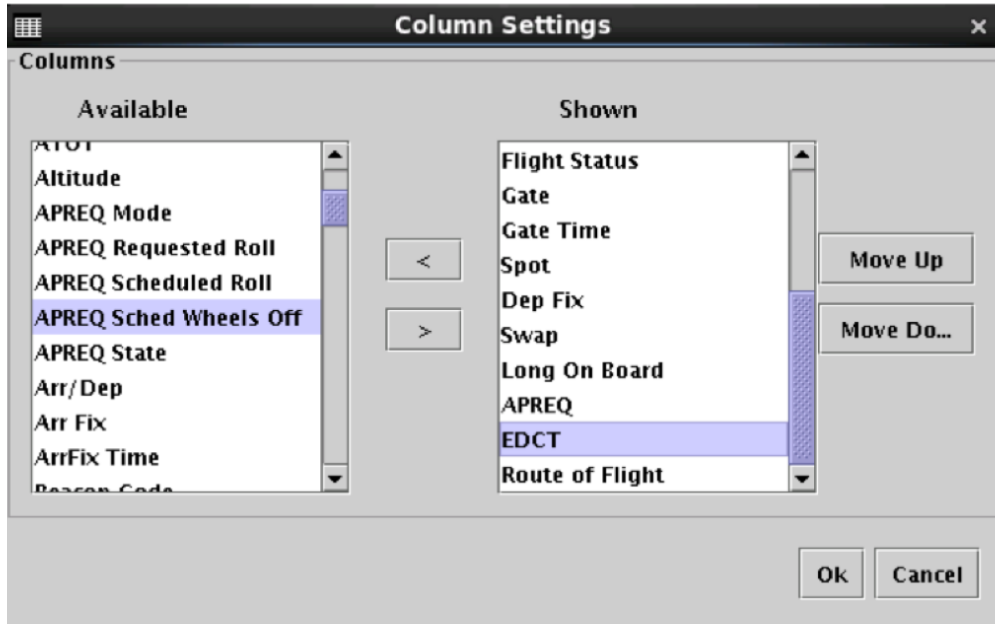


Figure 68. Add a column to the Flights Table – select a field.

**Step 3:** Click on the right arrow “>” in the middle of the lists. The new field should now be inserted above the selected field in the “Shown” list (Figure 69).

**Step 4:** Click “Ok” to close the window.

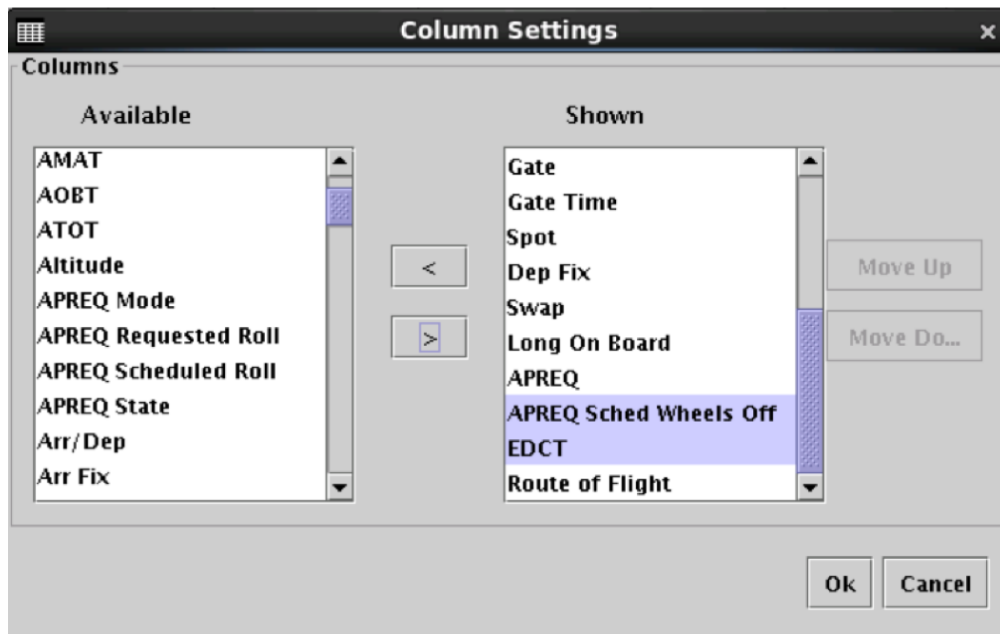


Figure 69. Add a column to the Flights Table – field added.

To remove a field from the Flights Table:

**Step 1:** Select the field in the “Shown” list to be removed.

**Step 2:** Click on the left arrow “<” in the middle of the lists. The field should move to the “Available” list on the left.

**Step 3:** Click “Ok” to close the window.

### 2.3.3.3 Color Settings

The color setting provides additional enhancements to the Flights Table for readability. When loading the “default” settings file from the settings menu, some fields are already preset with colors to alert the user of specific events. Otherwise, creating a new table will not display any preset colors.

To access the color settings:

**Step 1:** Click on the third button of the search field (Figure 59) to open the Flights Table Color Setting window (see Figure 70).

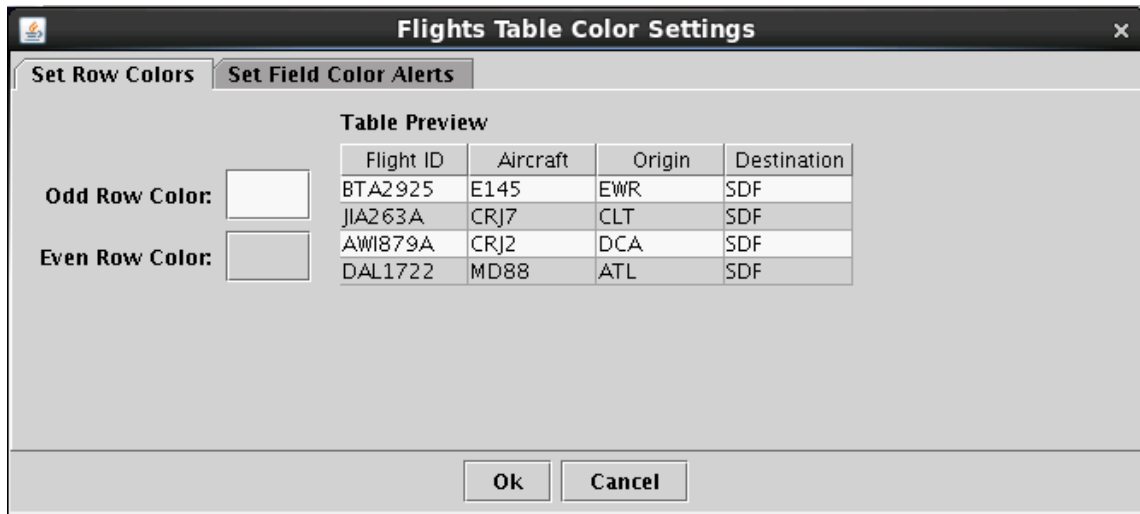


Figure 70. Flights Table Color Settings window – Set Row Colors.

#### 2.3.3.3.1 Set Row Colors

The “Set Row Colors” tab gives options to set different colors for the rows of the Flights Table. The row colors can be set to alternate for even and odd rows.

To change the colors of the rows:

**Step 1:** On the “Set Row Colors” tab (Figure 70), click on the colored square next to either the “Even Row Color” or “Odd Row Color” option to change the color for that set of rows. A single click will open the Choose Row Color window.

**Step 2:** On the “Swatches” tab in the Choose Row Color window (Figure 71), click on the desired colored squared. The color is now displayed at the bottom of the tab in the “Preview” section. Note that once a color is selected, the other tabs will provide information for that color and allow for refining the color selection (additional description on these other tabs is provided below).

**Step 3:** Click the “OK” button to close the Choose Row Color window. The colored square on the “Set Row Colors” tab has now changed to the selected color.

**Step 4:** Click the “Ok” button to apply the changes and close the Flights Table Color Settings window.

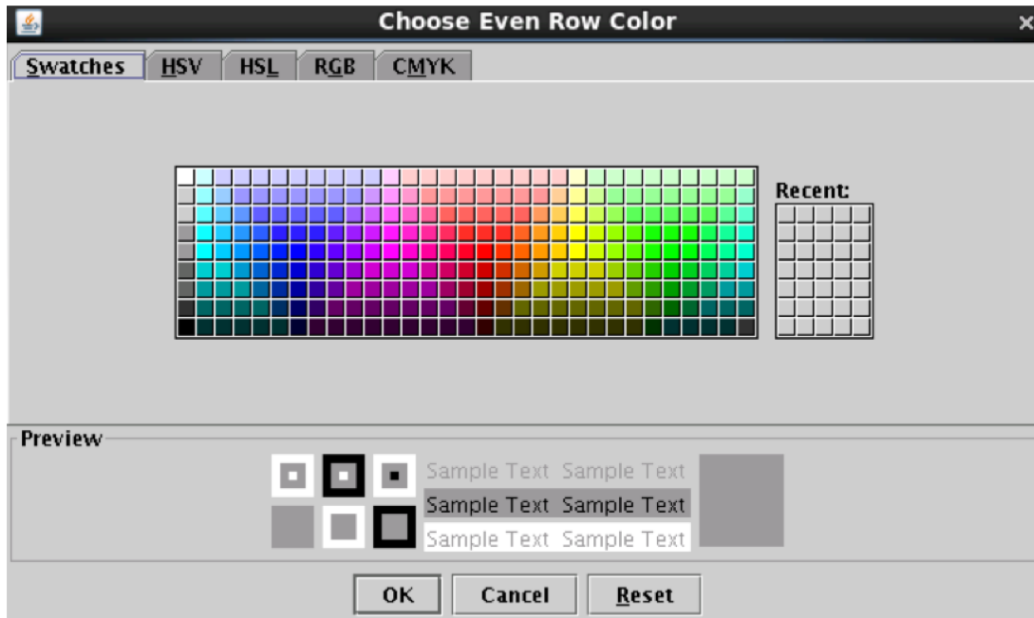
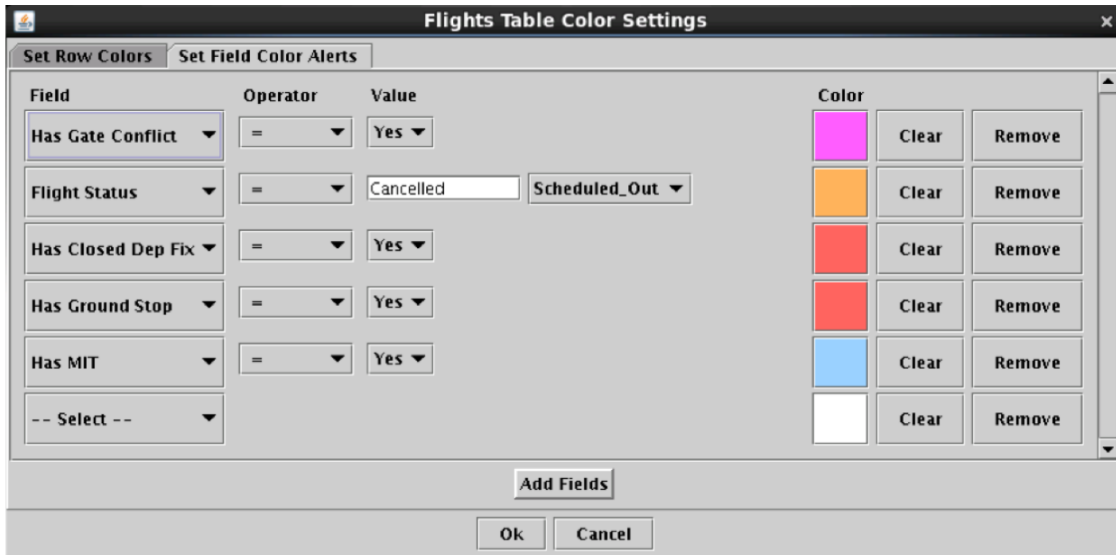


Figure 71. Flights Table Color Settings – Swatches.

#### 2.3.3.3.2 Set Field Color Alerts

The “Set Field Color Alerts” tab provides options to highlight particular events in the Flights Table (Figure 72).



**Figure 72. Flights Table Color Settings – Set Field Color Alerts.**

Different colors can be set for different Flight ID events such as flights with gate conflict, flights that are cancelled, flights with a closed departure fix, and flights with a Ground Stop. Each color can be changed by clicking on the color sample rectangle. Each instance of the value specified in the “Set Field Color Alerts” tab will be displayed with the given color in the Flights Table. The table below lists where each type of color alert is displayed. Figure 73 provides an example of displaying flight statuses for flights taxiing in the AMA in a green color.

<b>Field for Color Alerts</b>	<b>Column Where the Color Alert is Displayed</b>
Has Gate Conflict	Gate
Flight Status	Flight Status
Has Closed Departure Fix	Dep Fix
Has Ground Stop	Dest
Has MIT	Dest or Dep Fix (depending how MIT value is set)

To change the colors of the Flights Table alerts:

**Step 1:** On the “Set Field Color Alerts” tab, click on the colored square that corresponds the desired “Field”. A single click will open the Choose Color window.

**Step 2:** On the “Swatches” tab, click on the desired colored squared. The color is now displayed at the bottom of the tab in the “Preview” section. Note that once a color is selected, the other tabs will provide information for that color and allow for refining the color selection (additional description on these other tabs is provided below).

**Step 3:** Click the “OK” button to close the Choose Color window. The colored square on the “Set Field Colors Alerts” tab has now changed to the selected color.

**Step 4:** Click the “Ok” button to apply the changes and close the Flights Table Color Settings window.

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot
JIAS291	EWN	CLT	CRJ7	E36R		E25/00:26	Scheduled_In	E36	E25/00:29	29
RPA4529	HXD	CLT	E170	36R		24/15:46	In	C9	24/15:56	25
JIAS619	MYR	CLT	CRJ9	E36R		E25/00:35	Scheduled_In	E38C	E25/00:38	29
EDV5370	CLT	LGA	CRJ9	36R		24/11:53	Departed	A11	24/11:28	24
JIAS215	SAV	CLT	CRJ9	E36L		E24/23:27	Scheduled_In	E19	E24/23:40	9W
JIAS584	TLH	CLT	CRJ7	36L		24/12:04	In	E5A	24/12:18	9W
SWA2359	BWI	CLT	B737	36L		24/13:37	In	A24	24/13:45	9W
JIAS349	GSP	CLT	CRJ9	36L		24/18:48	In	E30	24/19:03	9W
JIAS544	CLT	CLE	CRJ9	E36C		E25/00:44	Scheduled_Out	E32	E25/00:25	24
AAL1960	SFO	CLT	A321	E36L		E24/20:03	Enroute_Arr	B5	E24/20:08	9W
AAL1706	CLT	STL	A319	36C		24/18:49	Departed	C19	24/18:38	22W
AAL1717	BWI	CLT	A320	E36R		E24/19:16	Term_Area_Arr	C17	E24/19:19	25
RPA4579	OMA	CLT	E170	E36L		E25/00:35	Scheduled_In	C7	E25/00:44	9W
JIAS337	CLT	MOB	CRJ	36C		24/13:44	Departed	E21	24/13:26	24

Figure 73. Color alerts on Flights Table.

### 2.3.3.4 Save for Quick-Crete

To save a specific table layout:

**Step 1:** Click on the “Save for Quick-Crete” button (Figure 72).

**Step 2:** Choose a file name to save the specified layout (Figure 73).

**Step 3:** Click “Save”

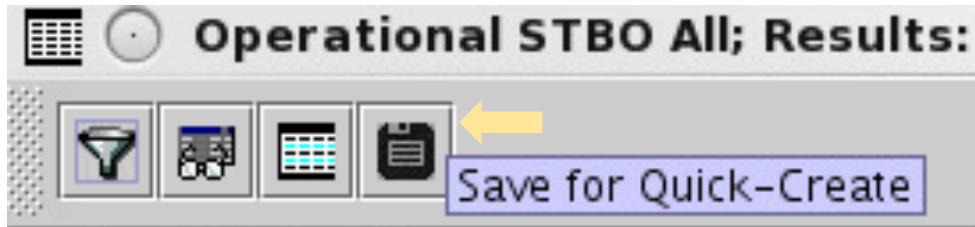
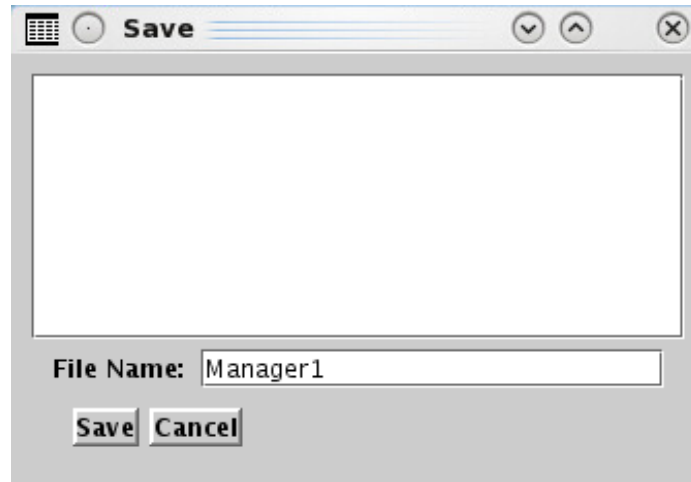


Figure 74. Save button for Flights Table.



**Figure 75. Save button for Flights Table.**

### **2.3.3.5 Search Field**

The search field provides the ability to search for flight numbers, callsigns, destination airports, or departure fixes in the Flights Table. The matching flights will be highlighted in the Flights Table, and also on the Timeline and on the Map.

To search for information in the Flights Table:

**Step 1:** Type in any string of letters or numbers for callsigns.

*or*

**Step 1:** Type GA for General Aviation.

*or*

**Step 1:** Type a 3 letter airport code for a *destination* airport.

*or*

**Step 1:** Type in a departure fix name in full letters.

There is no need to click on the Search button. As information is typed in, STBO Client searches for any flights that matches the query. For example, typing “FDX” will highlight all FedEx flights. Typing “LGA” will highlight all flights to LGA. Typing “KILNS” will highlight all flights departing over the KILNS departure fix (see Figure 76). Typing “53” will highlight all flights whose flight number contains “53”, independent of airline.

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix
AAL9612	TPA	CLT	A319	E36L		E25/00:24	Scheduled_In	UNK	E25/00:29	9W	
AAL9652	CLT	MIA	A319	E36R		E24/20:56	Scheduled_Out	B7	E24/20:28	24	ICONS
ABX3427	CVG	CLT	B762	E36R		E24/19:30	Term_Area_Arr	UNK	E24/19:33	SC_6	HYK
ABX3928	CLT	ONT	B762	36R		24/14:09	Departed	UNK	24/13:46	SC_1	BOBZY
ASH6011	IAD	CLT	E170	E36R		E24/22:18	Scheduled_In	UNK	E24/22:24	25	LYH
ASH6011	CLT	IAD	E170	E36R		E25/00:00	Scheduled_Out	UNK	E24/23:45	24	KILNS
ASH6065	CLT	IAH	E170	36C		24/13:08	Departed	A27	24/12:50	12S	ESTRR
ASH6079	CLT	IAD	CRJ7	36R		24/14:37	Departed	A23	24/14:19	24	KILNS
ASH6079	IAD	CLT	CRJ7	36L		24/13:30	In	A23	24/13:37	4W	LYH
ASH6144	IAH	CLT	E170	36L		24/14:55	In	A25	24/15:02	6W	LCH
ASH6212	CLT	IAH	E170	36C		24/16:07	Departed	A25	24/15:50	12S	ESTRR
ASH6245	IAH	CLT	E170	E36L		E25/02:08	Scheduled_In	UNK	E25/02:13	9W	
ASH6326	CLT	IAD	E170	36R		24/18:49	Departed	A27	24/18:24	24	KILNS
ASH6340	IAH	CLT	E170	36L		24/17:32	In	A27	24/17:40	6W	LCH

Figure 76. Search for flights departing over KILNS in the Flights Table.

### 2.3.3.6 Clear

The Clear button removes the search string from the Flights Table, as well as the highlighting of flights associated with that search string. The search field becomes blank again.

### 2.3.4 Data in the Flights Table

The data displayed in the Flights Table is described in the table below. The “Available” columns are listed in (mostly) alphabetical order by commonly used items, then in (mostly) alphabetical order by less commonly used items

Column Header	Description
AC Type	International Civil Aviation Organization (ICAO) type of aircraft, i.e. B738: Boeing model 737-800
Actual Time In Queue	Actual TakeOff Time (ATOT) – Undelayed TakeOff Time (UTOT). This field only displays once the flight takes off.
AIBT	Actual In Block Time of the aircraft at the gate recorded by the airline or STBO
ALDT	Actual Landing Time of the aircraft recorded by the airline or STBO
Altitude	Last recorded altitude in units of feet / 100
AMA Taxi Duration	Duration of time on the AMA <ul style="list-style-type: none"> <li>• Departures: OFF time – spot time</li> <li>• Arrivals: spot time – ON time</li> </ul> OFF time, ON time, and spot time are the actual time of the flight when it uses the runway or crossed the spot; otherwise these times are predicted by STBO.
AMAT	Actual Movement Area entry Time when the departure crossed the spot
AOBT	Actual Off Block Time of the aircraft at the gate recorded by the airline or STBO

APREQ	<p>Lists either</p> <ul style="list-style-type: none"> <li>• “APRQ” to indicate that the flight needs an APREQ time</li> <li>• “APRQ: REQUESTED” to indicate negotiation is in progress</li> <li>• “APRQ: REJECTED” to indicate the request time was not accepted. A new time may be negotiated.</li> <li>• “FREE RELEASE” to indicate the flight has a floating release time.</li> <li>• The assigned APREQ roll time, e.g. “2330”</li> </ul>
APREQ Forced	<p>Indicates whether or not the APREQ time was set using the Integrated Departure Arrival Capability (IDAC) negotiation process through the STBO Client.</p> <ul style="list-style-type: none"> <li>• FALSE if the APREQ time was negotiated through IDAC</li> <li>• TRUE if the APREQ time was manually set by a user or was received through System Wide Information Management (SWIM) apart from IDAC</li> </ul>
APREQ Mode	<p>Lists the modes of handling the APREQ requests in TBFM by the Center Traffic Management Coordinator (TMC):</p> <ul style="list-style-type: none"> <li>• UNDETERMINED – Mode has not been set</li> <li>• MANUAL - Requests from the Tower needs to be made over the phone</li> <li>• SEMI - Requests are made via IDAC, but still require electronic approval by the Air Route Traffic Control Center (ARTCC) TMC</li> <li>• AUTO - Requests are made via IDAC and are automatically approved by TBFM</li> <li>• OFF - TBFM is not being used to schedule APREQ release times. Requests must be made by telephone.</li> </ul>
APREQ Change Ack Status	<p>Displays “Needs ACK” when the requested APREQ release time sent by the Air Traffic Control Tower (ATCT) through the STBO Client is not equal to the scheduled APREQ release time received back from the ARTCC TBFM. Equality is determined in minutes.</p>
APREQ Release Req Allowed	<p>Indicates whether an APREQ release request can be made through the STBO Client. Currently, release requests are always allowed through the STBO Client for IDAC flights.</p>
APREQ Requested Roll	<p>Requested APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll</p>
APREQ Scheduled Roll	<p>Scheduled APREQ release time, minus 38 seconds to adjust to the start of the takeoff roll</p>
APREQ Scheduled Wheels Off	<p>Scheduled APREQ release time at wheels-up (corresponds to the scheduled release time set in TBFM)</p>
APREQ Source	<p>Data source from which the APREQ release time originates</p>



APREQ State	<p>Indicates the status of the APREQ negotiation:</p> <ul style="list-style-type: none"> <li>• UNSCHEDULED - The APREQ release time has not been requested yet</li> <li>• PENDING_SCHEDULE – The APREQ release time has been requested by ATCT but not accepted yet by ARTCC</li> <li>• SCHEDULED – The APREQ release time as scheduled by the ARTCC and sent to the ATCT</li> <li>• PENDING_ACCEPT – ATCT start of negotiation for accepting the ARTCC scheduled release time</li> <li>• ACCEPTED - The APREQ request time has been accepted by ATCT</li> <li>• PENDING_CANCEL – The ATCT has issued a request to cancel APREQ negotiation</li> <li>• CANCELLED – The APREQ negotiation has been cancelled by the ATCT or ARTCC</li> </ul>
Arr Fix	<p>Predicted (if aircraft has not yet crossed the fix) or actual (if aircraft has crossed the fix) arrival fix / Standard Terminal Arrival Route (STAR) the aircraft has or flown or will fly. If the originally-assigned fix is closed and an alternate has been specified, this will display “&lt;origFix&gt; -&gt; &lt;altFix&gt;”.</p>
Arr/Dep	<p>Lists either:</p> <ul style="list-style-type: none"> <li>• “A” for arrival</li> <li>• “D” for departure</li> </ul>
ArrFix Source	<p>Indicates the data source to determine the arrival fix:</p> <ul style="list-style-type: none"> <li>• SOURCE – The arrival fix was received from an external source based on the flight plan</li> <li>• DECISION_TREE – STBO is predicting the arrival fix based on the most commonly used arrival fix for flights flying between the origin and destination airports</li> <li>• MODEL – STBO 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</li> <li>• SURFACE – The arrival fix was detected based on track data</li> <li>• UNKNOWN – The arrival fix is unknown. This option should only occur for CLT departures.</li> </ul>
ArrFix Time	<p>Predicted (if the aircraft has not yet crossed the fix) or actual (if the aircraft has crossed the fix) crossing of aircraft at the arrival fix</p>
ATOT	<p>Actual TakeOff Time of aircraft recorded by the airline or STBO</p>
Beacon Code	<p>Beacon code of the flight</p>
Dep Fix	<p>Departure fix that aircraft is planned to fly to, or has flown to</p>

Dep Gate	Departure Gate that aircraft is planned to fly to, or has flown to. If departure fix is not mapped to a departure gate, then this column contains the departure fix.
DepFix AwaitCDR	Displays “Awaiting CDR” (Coded Departure Route) if the originally-assigned fix for a departure flight is closed and an alternate has not yet been specified
DepFix Source	Indicates the data source to determine the arrival fix: <ul style="list-style-type: none"> <li>• SOURCE – The departure fix was received from an external source based on the flight plan</li> <li>• DECISION_TREE – STBO is predicting the departure fix based on the most commonly used departure fix for flights flying between the origin and destination airports</li> <li>• MODEL – STBO is predicting the departure fix based on a fix closure and a set of alternate fixes</li> <li>• SURFACE: the departure fix was detected based on track data</li> <li>• UNKNOWN – the departure fix is unknown. This option should only occur for CLT arrivals</li> </ul>
DepFix Time	For departures, the actual (if aircraft has crossed the fix) or predicted (if aircraft has not yet crossed the fix) time the aircraft crossed or flew by the departure fix
Dest	Destination airport of the flight
EDCT	Expect Departure Clearance Time 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 provided by the airline. A new surface data element providing the best prediction of when a flight will be ready to push back.
EstIBT	Estimated In-Block Time provided by an external source other than the airline
EstOBT	Estimated Off-Block Time provided by an external source other than the airline
ETA	Estimated Time of Arrival provided by TBFM, TFMS, the airline, or other external sources
ETD	Estimated Time of Departure at wheels-up provided by TBFM, Traffic Flow Management System (TFMS), the airline, or other external sources
Flight ID	Callsign of the flight
Flight Key	Unique identifier for the flight that contains the callsign, the origin, destination, flight creation time, and flight creation source, e.g., Airline, TFM, Traffic Management Advisor (TMA; TBFM)

Flight Status	<p>Lists the aircraft state and location:</p> <ul style="list-style-type: none"> <li>• Cancelled – The flight has been cancelled by the airline</li> <li>• Departed – A departure aircraft is airborne</li> <li>• Enroute_Arr – An arrival aircraft is in the enroute airspace</li> <li>• In – An arrival aircraft is parked at the gate</li> <li>• In_Queue – A departure aircraft is inside the queue detection box of the assigned runway</li> <li>• In_Ramp – An arrival is taxiing in the Ramp</li> <li>• On – An arrival aircraft has landed</li> <li>• On_Final – An arrival aircraft is on final approach</li> <li>• Out – A departure has pushed back and/or released brakes and is taxiing in the Ramp</li> <li>• Pushback – A departure aircraft is pushing back</li> <li>• Return_to_Gate – A departure is returning to the gate</li> <li>• Scheduled_In – An arrival aircraft has not been tracked by STBO yet</li> <li>• Scheduled_Out – A departure aircraft has not pushed back yet</li> <li>• Suspended – The flight should have already departed and no flight updates have been received</li> <li>• Taxiing_AMA – A departure aircraft is taxiing on the airport movement area</li> <li>• Term_Area_Arr – An arrival aircraft is inside the terminal airspace</li> </ul>
Gate	Gate number assigned to the aircraft by the airline or user
Gate Conflict	<p>Gate and duration of a gate conflict. The values are:</p> <ul style="list-style-type: none"> <li>• Gate</li> <li>• Start time</li> <li>• Duration in minutes</li> </ul>
Gate Conflicting Key	Unique identifier of the other aircraft that is in conflict with the given aircraft
Gate Source	<p>Data source for gate information:</p> <ul style="list-style-type: none"> <li>• AIRLINE – Data comes from the airline</li> <li>• DECISION_TREE – The default gate assignment from STBO’s decision tree</li> <li>• USER – The gate was assigned from an STBO user interface</li> </ul>
Gate Time	<p>For arrivals, the TIBT prior to reaching the gate and the AIBT once the flight arrives at the gate.  For departures, this is the TOBT prior to a flight pushing back from the gate and the AOBT after pushback.  Prior to the actual time (AIBT or AOBT) the time is prefixed with “E” to represent that the time is estimated.</p>
Ground Stop	Displays “Ground Stop” when a flight is subject to a ground stop

IOBT	Initial Off Block Time set by TFMS. This time is the first off-block time received for this flight.
Is Hidden	This value is true if the flight's right-click option for "Delete
Latitude	Latitude of the position of the aircraft in decimal degrees
LIBT	Latest IN Block Time. The estimated 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. The estimated pushback time received from an airline either directly or through a CDM message to TFMS.
Long On Board	Elapsed time that an aircraft has been on the airport surface but not at a gate. For arrivals, the timer starts when the flight lands (ALDT) and stops once the flight arrives at the gate (AIBT). For departures, the timer starts when the flight pushes back from the gate (AOBT) and ends when the flight takes off (ATOT) or returns to the gate.
Longitude	Longitude of the position of the aircraft in decimal degrees
Metering Group	Tactical scheduler group assigned to the departure aircraft based on its EOBT and flight state: <ul style="list-style-type: none"> <li>• UNCERTAIN - The data for the departure is less certain (i.e. No EOBT, EOBT more than 4 hours in the future, and EOBT more than 13 minutes in the past and did not call ready)</li> <li>• PLANNING – The departure has and EOBT and EOBT is within 4 hours</li> <li>• READY – Flight put on Gate Hold, or EOBT is within the next 5 minutes</li> <li>• OUT – The departure has started pushback but has not yet begun taxiing</li> <li>• TAXI – The departure is taxiing in the Ramp area or AMA</li> <li>• QUEUE – The flight is in the queue</li> <li>• OFF – The departure has taken off</li> <li>• ARRIVAL – The group for all arrival flights</li> </ul>
ModeS	International Civil Aviation Organization (ICAO) transponder code for Mode-S equipped aircraft
Origin	Airport of origin for departure or arrival aircraft
Position Source	The source of the position data <ul style="list-style-type: none"> <li>• TZ – The track data was received from TFMS</li> <li>• SMA – The track data was received from TMA</li> <li>• FUSION – The track data was received from ASDE-X or AAL's surface surveillance at CLT</li> </ul>

Ramp Area	Indicates the planned or actual general area in the Ramp where the aircraft is or will be parked, i.e., B_EAST (B for concourse B and EAST for the East side of the concourse)
Route of Flight	Filed route reported by Federal Aviation Administration (FAA) system
Rwy	Estimated (e.g., “E18L”) or actual runway (e.g., “18L”) based on flight plan, departure fix, actual location of aircraft, or user input
Rwy Source	Lists the data source that determines the runway: <ul style="list-style-type: none"> <li>• MODEL – The runway is determined by STBO</li> <li>• DECISION_TREE – Runway is determined by the STBO decision tree</li> <li>• STARS – The runway is determined by scratch pad entries made in the Standard Terminal Automation Replacement System (STARS)</li> <li>• UNKNOWN – The source of the runway determination is unknown</li> </ul>
Rwy Time	The STBO predicted runway time or actual runway time for a flight. For arrivals, this is landing time. For departures, this is takeoff time.
RwyOpNec	Displays “OpNec” when the runway is changed for operational necessity
SDT:TBFM	Scheduled Departure Time as accepted in TBFM by the Center TMC. This is the scheduled wheels-up time.
Sector List	List of all sectors that a flight has or will travel through from the data available to STBO
SIBT	Scheduled In-Block Time. The time the flight is scheduled by the airline to arrive at the gate.
SLDT	Scheduled Landing Time. TFMS estimate of when the flight is scheduled to land based on the SIBT and future SOBT.
SOBT	Scheduled Off Block Time. The time the flight is scheduled by the airline to leave the departure gate.
Spot	Actual or predicted spot for a flight. E.g. For 11W: <ul style="list-style-type: none"> <li>• 11 = spot number</li> <li>• W = direction indicator</li> </ul>
Spot Source	Indicates the source of data to determine the spot: <ul style="list-style-type: none"> <li>• SURFACE – The spot is determined by the actual spot the aircraft used based on surface surveillance</li> <li>• DECISION_TREE – The spot is predicted based on flight’s gate and runway</li> </ul>
Spot Time	The predicted or actual time an arrival or departure will cross the spot. For departures, departure metering is assumed to always be on when the spot prediction is made. If this column contains the prediction, then the time is prefixed with “E” to represent that the time is estimated.

STA:TBFM	Scheduled Time of Arrival by TBFM
STOT	Scheduled Take Off Time. TFMS estimate of when the flight will take off based on the SOBT.
Tail	Tail number of aircraft
Taxi Time	The predicted or actual amount of time spent taxiing on the airport surface. For arrivals, this is the amount of time between landing and arriving at the gate. For departures, this is the amount of time from pushback to takeoff. If predicted, the time will be prefixed with an “E” to represent that the time is estimated.
TIBT	Target In Block Time. The best prediction of in-block time from the ATD-2 tactical scheduler.
Time in Queue	Amount of time that an aircraft has spent in the runway queue detection box
TLDT	Target Landing Time from the ATD-2 tactical scheduler. The best prediction of landing time.
TMAT	Target Movement Area entry Time from the ATD-2 tactical scheduler. The TMAT is the time that a surface-metered departure is expected to enter the AMA.
TOBT	Target Off-Block Time from the ATD-2 tactical scheduler. The TOBT is the time that a surface-metered flight should push back from the gate. Currently, the TOBT is populated for all flights whether or not metering is turned on.
TTOT	Target Take Off Time. The best prediction of takeoff time by the ATD-2 tactical scheduler.
TTOT-UTOT	Displays the value of TTOT-UTOT
UIBT	Undelayed In-Block Time. STBO’s predicted in-gate time for a single aircraft without consideration of other traffic on the surface.
ULDT	Undelayed Landing Time. STBO’s predicted landing time for a single aircraft without consideration of other traffic on the surface.
UMAT	Undelayed Movement Area entry Time. STBO’s predicted spot time for a single aircraft without consideration of other traffic on the surface.
Undlyd Off At Queue Entry	UTOT from when the flight enters the queue on the taxiway
UOBT	Undelayed Off-Block Time. STBO’s best estimate of when the flight would be ready to push back in the absence of all external constraints, e.g., surface departure metering, EDCTs, Ground Stops, APREQ release times. UOBT is based on EOBT, LOBT, SOBT, entries in the RTC, and other data elements.

UTOT	Undelayed Take-Off Time. STBO’s predicted takeoff time for a single aircraft without consideration of other traffic on the surface.
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## 2.4 Toolbar

There are several functions available to the user on the Toolbar (Figure 77). The following table describes the various Toolbar features from left to right. Toolbar features that need additional description are (unless otherwise noted) described in sections 2.4.1-2.4.5.

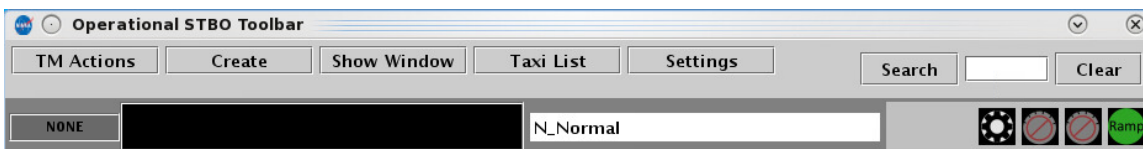


Figure 77. STBO Client Toolbar.

Toolbar Feature	Description
TM (Traffic Manager) Actions	Drop-down menu that allows user to schedule/make changes to TMIs and runway utilization (see section <b>Error! Reference source not found.</b> for details)
Create	Drop-down menu used to add new windows to the interface (i.e., Timelines, Tables, and Maps).
Show Window	Drop-down menu used to locate a window that is open but hidden from view beneath other windows.  The Show Window menu will list all of the currently open windows, organized by window type (i.e., Timelines, Tables, and Maps). The desired window can be selected from these lists and will bring the selected window to the forefront of the STBO Client display.
Taxi List	This button opens a window that shows departure flights by runway, with the current minutes of flight delay color-coded for easy status checks.
Settings	This button opens a window for saving the current display configuration for the whole STBO Client or to load a previously saved configuration.
Search Feature	Search for flight number, a flight’s callsign, departure fix, destination airport, or GA (General Aviation)
Clear Button	Clears search string
New Notification Icon/Number	Provides situational awareness about new notifications

Notification Banner	This banner cycles through the new notifications in the notification table. Once notifications are cleared/acknowledged, the banner is blank. Only new notifications are displayed. Clicking on the banner populates the notification window.
Runway Utilization Icon	Provides situational awareness for the airport runway configurations and runway utilization
Proposed SMP Icon	Provides TMC reminders when to navigate to the SMD (Surface Metering Display) whenever SMPs (Surface Meter Programs) are proposed <ul style="list-style-type: none"> <li>• Orange = Newly proposed SMP available</li> <li>• Black = No proposed SMPs</li> </ul>
Metering Mode Icon(s)	Provides situational awareness information about what metering mode the Ramp is using for each runway. TMC sets the metering mode in coordination with the Ramp.
Ramp Status Icon	Provides situational awareness information about Ramp status: <ul style="list-style-type: none"> <li>• Green = Ramp is open</li> <li>• Yellow = Ramp closure pending</li> <li>• Red = Ramp is closed</li> </ul>

#### 2.4.1 Taxi List

The Taxi List button opens a window that shows a list of departure flights for each selected runway, with each flight color-coded to show how many minutes of flight delay that flight currently has (see Figure 78). The user can elect to see all departures in the AMA or the departures within a specified time interval after the current time. The user can also select the runways of interest for which to view traffic.

Departure, arrival, and demand counts are tallied for each selected runway. The color-coded legend associated with various specified minutes of delay is displayed at the bottom of the window for reference.



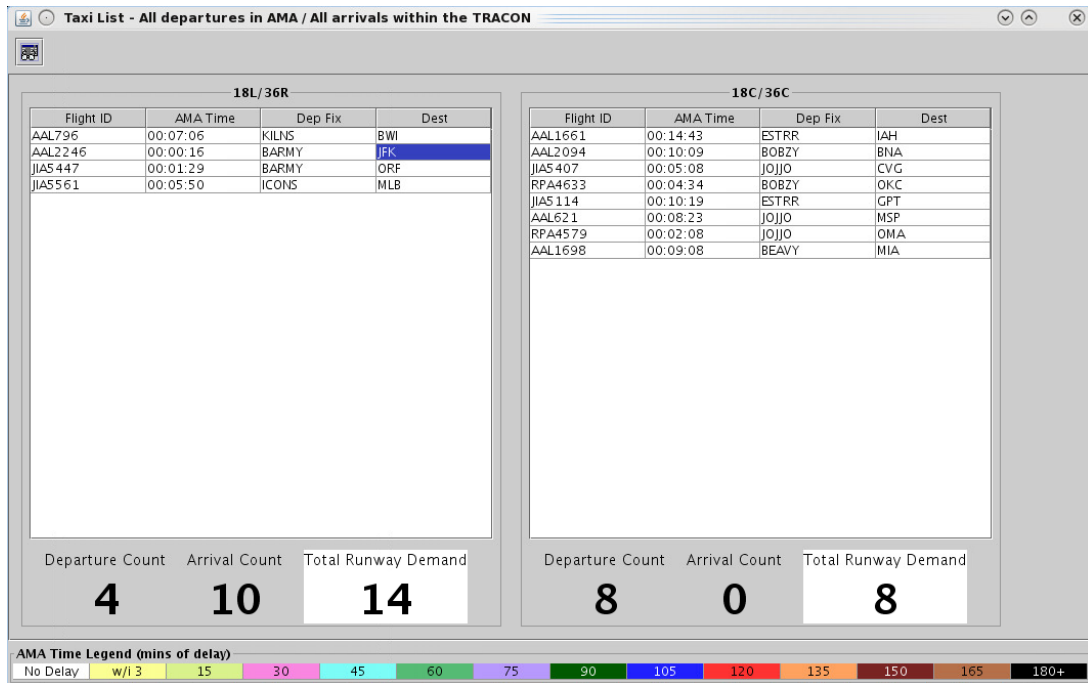


Figure 78. Taxi List window.

## 2.4.2 Settings

The “Settings” button on the STBO Client Toolbar can be used to save display configurations, load previously saved display configurations, adjust settings for displaying gate conflicts, and enable the clock (Now time) to be displayed on the Map. The following sections describe each of these settings features.

### 2.4.2.1 Save/Load Display

To save a user’s display configuration (Figure 79):

**Step 1:** In the “Load/Save Settings” tab, type a name for the display configuration in the “File Name:” text box.

**Step 2:** Click the “Save” button. This will populate a “Save Settings” confirmation window.

**Step 3:** Click “OK” to acknowledge that the display configuration has been saved. The display configuration file name will now appear in the list of “Available Configurations”.

**Step 4:** Click “Close” to exit the Settings window.

To load a saved display configuration (Figure 79):

**Step 1:** In the “Load/Save Settings” tab, find the file name under the “Available Configurations” list for the desired display configuration. If necessary, the list may be scrolled.

**Step 2:** Select the desired display configuration file name.

**Step 3:** Click the “Load” button. The STBO Client will reload the interface to match the selected display configuration file.

**Step 4:** Click “Close” to exit the Settings window.

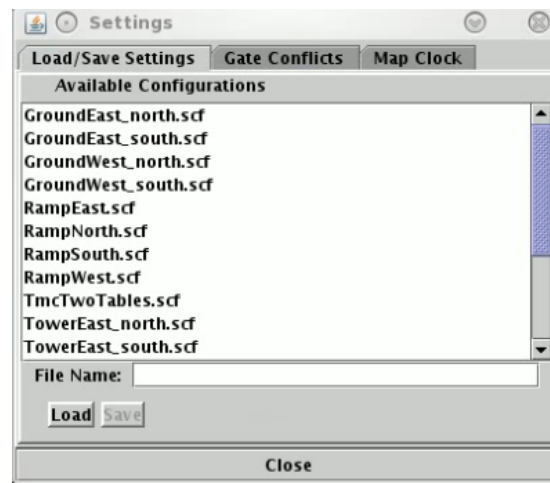


Figure 79. Toolbar Settings – Save/Load Display.

#### 2.4.2.2 Gate Conflicts

In the “Gate Conflicts” tab of the Settings panel, a value can be set for the number of minutes prior to landing to display gate conflicts for arrival flights.

To set the gate conflict display value (Figure 80):

**Step 1:** In the “Gate Conflicts” tab, type a value into the text box or use the up and down arrows to select a value for the number of minutes prior to landing that the system will display a gate conflict for an arrival flight.

**Step 2:** Click the “Apply” button.

**Step 4:** Click “Close” to exit the Settings window.



Figure 80. Toolbar Settings – Gate Conflicts.

### 2.4.2.3 Map Clock

The Map clock shows the Map's update time, which is the Now time. It is the only clock that can be hidden.

To show/hide the Map clock (Figure 81):

**Step 1:** In the “Map Clock” tab, select the “Show Map Clock” checkbox to show the Map clock or deselect the “Show Map Clock” checkbox to hide the Map clock.

**Step 2:** Click the “Apply” button.

**Step 4:** Click “Close” to exit the Settings window.



Figure 81. Toolbar Settings – Map Clock.

### 2.4.3 Search Feature

The search feature provides the ability to search for flight numbers, callsigns, destination airports, or departure fixes across the STBO Client interface. The matching flights will be highlighted on the Timeline, the Map, and in the Flights Table.

To search for information:

**Step 1:** Type in any string of letters or numbers for callsigns.

*or*

**Step 1:** Type GA for General Aviation

*or*

**Step 1:** Type a 3 letter airport code for a *destination* airport.

*or*

**Step 1:** Type in a departure fix name in full letters.

There is no need to click on the Search button. As information is typed in, STBO Client searches for any flights that matches the query. For example, typing “FDX” will highlight all FedEx flights. Typing “LGA” will highlight all flights to LGA (Figure 82). Typing “53” will highlight all flights whose flight number contains “53”, independent of airline.

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Dep Fix
AAL1757	CLT	ILM	A319	36R		24/19:02	Departed	C18	24/18:26	24	LILLS
AAL1757	ILM	CLT	A319	E36R		E24/21:09	Scheduled_In	C11	E24/21:13	25	
AAL1759	CLT	BUF	A320	36C		24/12:14	Departed	C11	24/12:03	22W	KRITR
AAL1759	BUF	CLT	A320	36L		24/16:06	In	C11	24/16:15	9W	
AAL1770	CLT	PHX	A321	E36C		E24/22:02	Scheduled_Out	B12	E24/21:50	13	ESTRR
AAL1773	CLT	TPA	A321	E36R		E25/02:35	Scheduled_Out	D6	E25/02:20	24	BEAVY
AAL1775	CLT	DCA	A319	E36R		E24/21:09	Scheduled_Out	B2	E24/20:42	24	KILNS
AAL1782	CLT	LGA	A321	36R		24/16:03	Departed	D9	24/15:42	24	BARMY
AAL1783	CLT	SFO	A321	E36C		E24/22:41	Scheduled_Out	B3	E24/22:29	12S	BOBZY
AAL1786	CLT	PBI	A320	36R		24/11:50	Departed	D3	24/11:42	24	ICONS
AAL1786	FBI	CLT	A320	36R		24/15:54	In	C7	24/16:03	25	
AAL1788	LGA	CLT	A321	36R		24/17:02	In	B5	24/17:09	13	BIGGY
AAL1788	CLT	LGA	A321	36R		24/13:08	Departed	C10	24/12:52	24	BARMY

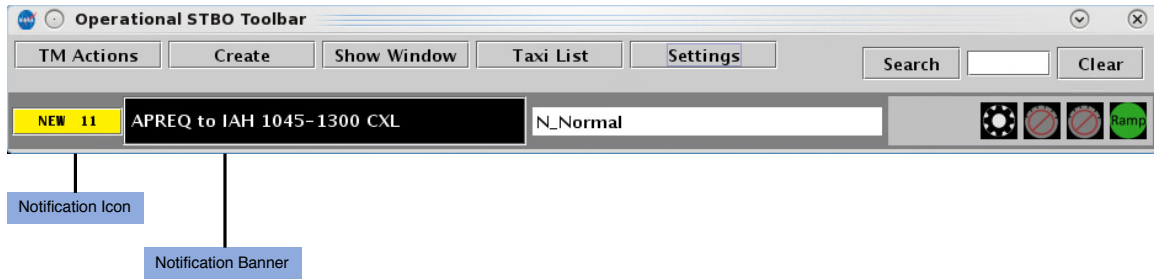
Figure 82. Search for LGA flights in the Flights Table.

### 2.4.4 Notifications

The STBO Client provides notifications in the form of a Notification icon and Notification banner in the toolbar (Figure 83), and a Notification window that’s accessible from the toolbar (Figure 84). These notifications are generated when new information is populated in the system. This new information may originate from the STBO Client or from an outside source, such as SWIM, the FAA’s Operational Information System (OIS), or other ATD-2 users.

Notifications are always related to events that impact multiple flights or the airport (e.g., Ground Stops, runway closures, metering events), and are never issued for single flights. For events or restrictions related to a single flight, the flight’s datablock, properties,

and/or entry in the Flights Table are modified in some way that's more prominent than the standard display of information (without events or restrictions).



**Figure 83. New Notifications.**

When new notifications are received, the Notification icon is yellow and displays the number of new notifications (Figure 83). The Notification banner will display the subject of the notification and the time range of the event. When there are multiple new notifications, the Notification banner will cycle through the unacknowledged notifications.

A list of all notifications for the day can be found in the Notification window. The notifications list is cleared out each day at 0400. New notifications are highlighted in yellow in the Notification window (Figure 84).

To access the Notification window:

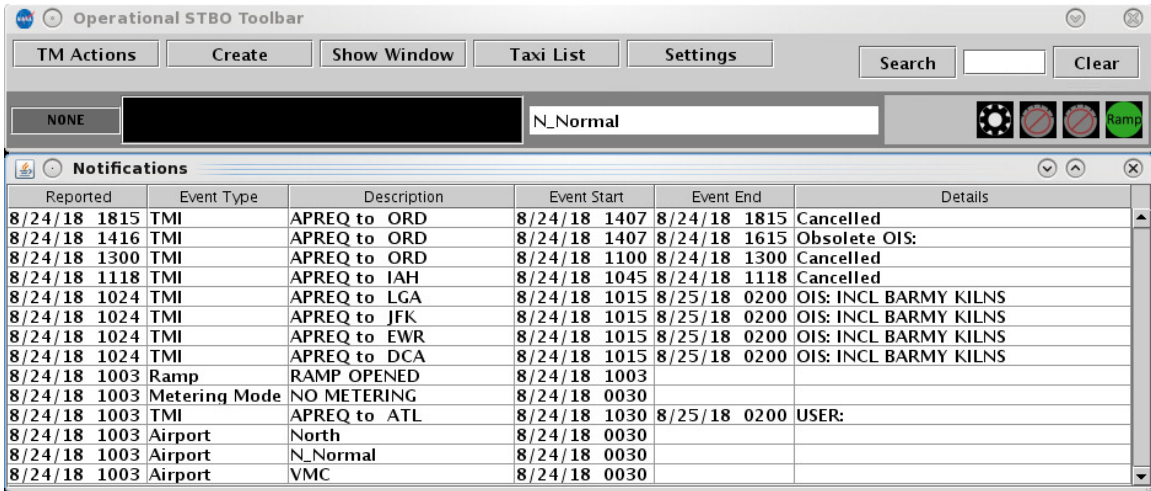
**Step 1:** Click on the Notification banner. The Notification window is now populated.

The screenshot shows the 'Notifications' window with a table of notification events. The table has columns for Reported, Event Type, Description, Event Start, Event End, and Details. Several rows are highlighted in yellow.

Reported	Event Type	Description	Event Start	Event End	Details
8/24/18 1815	TMI	APREQ to ORD	8/24/18 1407	8/24/18 1815	Cancelled
8/24/18 1416	TMI	APREQ to ORD	8/24/18 1407	8/24/18 1615	Obsolete OIS:
8/24/18 1300	TMI	APREQ to ORD	8/24/18 1100	8/24/18 1300	Cancelled
8/24/18 1118	TMI	APREQ to IAH	8/24/18 1045	8/24/18 1118	Cancelled
8/24/18 1024	TMI	APREQ to LGA	8/24/18 1015	8/25/18 0200	OIS: INCL BARMY KILNS
8/24/18 1024	TMI	APREQ to JFK	8/24/18 1015	8/25/18 0200	OIS: INCL BARMY KILNS
8/24/18 1024	TMI	APREQ to EWR	8/24/18 1015	8/25/18 0200	OIS: INCL BARMY KILNS
8/24/18 1024	TMI	APREQ to DCA	8/24/18 1015	8/25/18 0200	OIS: INCL BARMY KILNS
8/24/18 1003	Ramp	RAMP OPENED	8/24/18 1003		
8/24/18 1003	Metering Mode	NO METERING	8/24/18 0030		
8/24/18 1003	TMI	APREQ to ATL	8/24/18 1030	8/25/18 0200	USER:
8/24/18 1003	Airport	North	8/24/18 0030		
8/24/18 1003	Airport	N_Normal	8/24/18 0030		
8/24/18 1003	Airport	VMC	8/24/18 0030		

**Figure 84. Notification Window.**

When notifications are acknowledged, the Notification icon changes to grey and displays "0" (zero) to represent no new notifications. The Notification window will also remove all yellow highlighting (Figure 85). The Notification banner will not display anything until new notifications are entered into the system again.



**Figure 85. No New Notifications.**

To clear new notifications via the Notification icon:

**Step 1:** Click on the Notification icon. All new notifications will clear and the icon will change to grey and display “NONE”.

To clear new notifications via the Notification window:

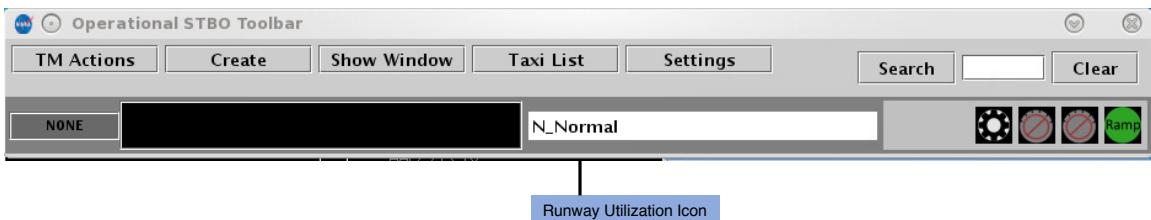
**Step 1:** Click on the Notification banner to populate the Notification window.

**Step 2:** Click anywhere inside the window to clear the new notifications. The yellow highlighting will disappear.

## 2.4.5 Icons

Three additional types of icons appear on the Toolbar in addition to the Notifications icon: the Runway Utilization icon, the Proposed SMP icon, the Metering Mode icons, and the Ramp Status icon. These icons provide a quick visual representation of important information for situational awareness.

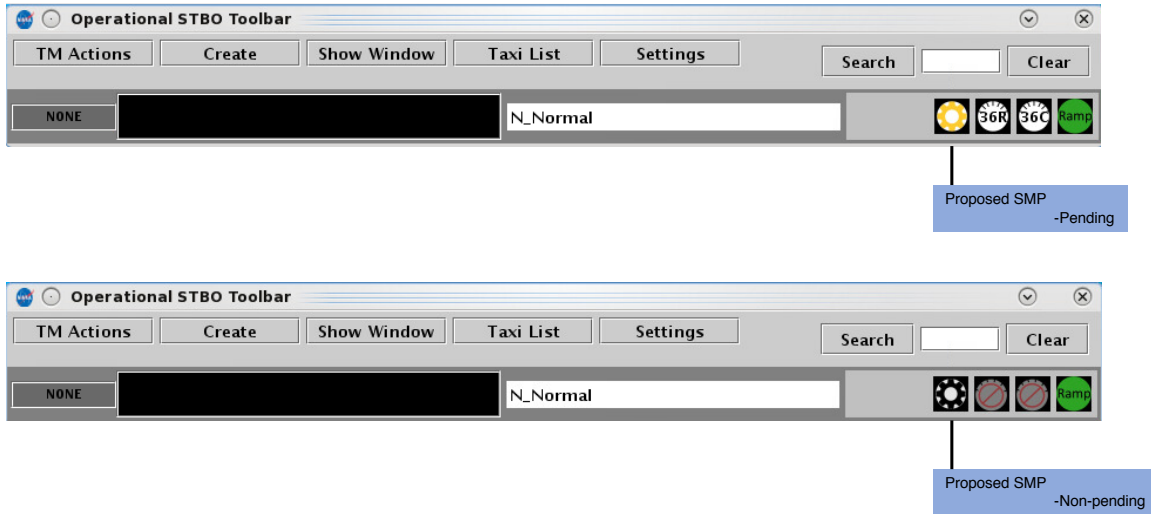
The Runway Utilization icon (Figure 86) states the current runway utilization in text format. When the runway utilization and/or configuration information for the airport changes, the text in the Runway Utilization icon updates to reflect this change.



**Figure 86. Runway Utilization.**

The Proposed SMP icon (Figure 87) has two modes. When Surface Metering Program (SMP) has pending request, the Proposed SMP icon lights up orange. TMC can then

bring up the SMD (Surface Metering Display) or accept or reject a proposed metering request. When there are no pending SMP, the icon remains black.



**Figure 87. Proposed SMP (Pending and Non-pending status).**

The Metering Mode icon (Figure 88) changes to different images to provide information about which metering mode the Ramp is currently using to aid in issuing pushback advisories for flights. In part A of Figure 88, the Ramp is using Time-Based Metering. Time-Based Metering uses the ATD-2 automation’s algorithm for metering at the flights in the Ramp. In part B, the Ramp is using Departure Sequence Metering. The value inside the icon represents the total number of flights that can be pushed back and anywhere on the airport surface before the Ramp Controllers will begin holding flights at the gate. In part C, the Ramp is not using metering.

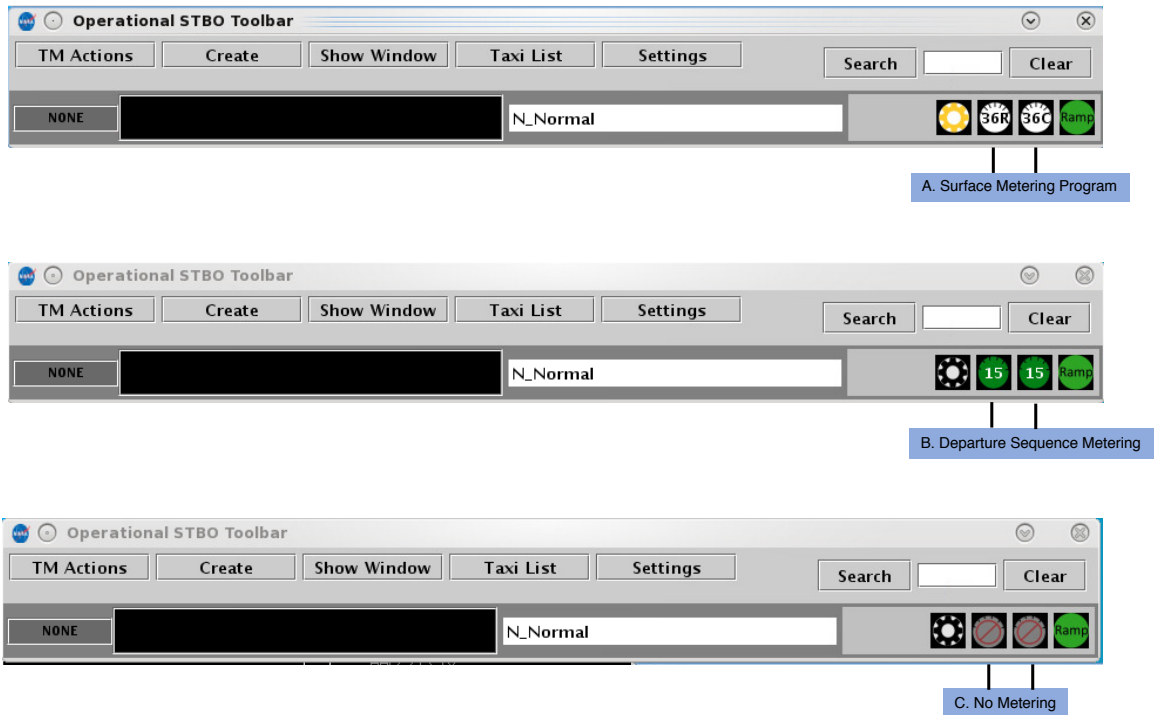


Figure 88. Metering Modes.

The Ramp Status icon (Figure 89) is color coded to provide information about the Ramp status. When the icon is green, the Ramp is open and operational. When the icon is yellow, the Ramp is pending closure and is using limited operations. When the icon is red, the Ramp is closed for operations.

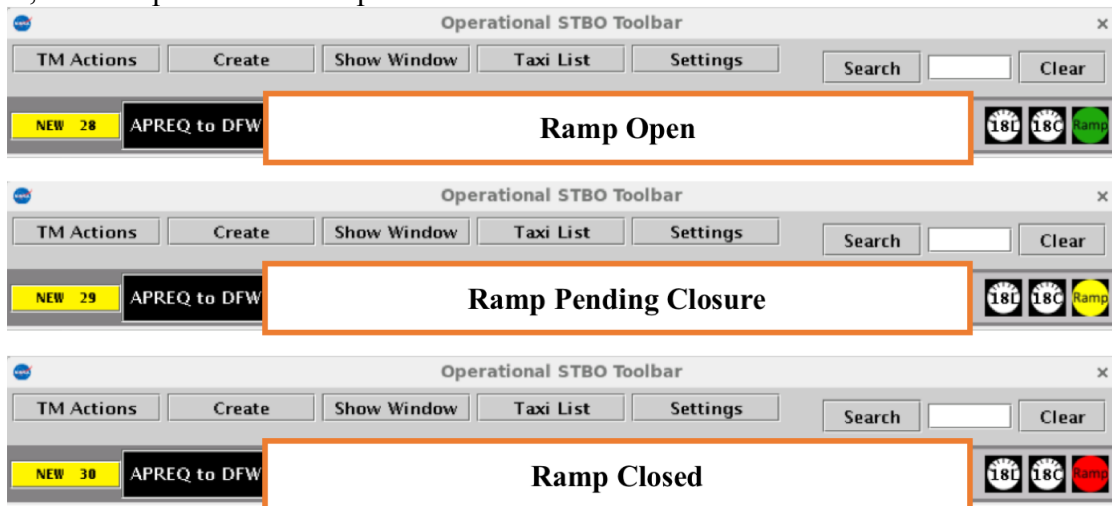


Figure 89. Ramp Status.



## 2.5 Right-click Menu for Flights

Several flight-specific actions can be made for individual flights from the Flights Table, Map, and Timeline. See Figure 90 for the list of actions that are currently available by right-clicking on a specific flight.

JIA5108	RDU	CLT	CRJ9	18L		30/21:24	In
<b>EDV5098</b>	<b>CLT</b>	<b>LGA</b>	<b>CRJ9</b>	<b>E18C</b>			
JIA5433	CLT	RDU	CRJ9	18L			
JIA5567	CLT	OAJ	CRJ7	E18L			
JIA5504	OMA	CLT	CRJ9	18R			
GAJ880	JWN	CLT	B350	18C			
AAL2597	CLT	STL	B738	18C			
AAL494	CLT	PHX	A321	E18C			
AAL780	CHS	CLT	A319	E18C			
DLH428	EDDM	CLT	A333	18C			
JIA5244	CLT	CVG	CRJ9	18C			
JIA5469	CLT	CHO	CRJ7	E18C			
JIA5500	CLE	CLT	CRJ9	18R			
AAL1967	MDPC	CLT	A319	18L			
N283BA	CLT	BED	G280	18L			
AAL748	CLT	LEMD	A332	E18L			
AAL1966	MDPC	CLT	A321	18L			
JIA5395	CLT	XNA	CRJ9	E18C			
AAL765	CLT	MYR	A319	E18L			
JIA5303	DSM	CLT	CRJ9	18R			
AAL7774	CLT	DFW	B738	E18C			

**EDV5098**

- Request Release Time
- Acknowledge Time
- Select Slot on Timeline
- Set Release Time
- Cancel APREQ
- Exclude from APREQ
- Change Runway ▶
- Change Departure Fix ▶
- Schedule Config Change
- Emergency ▶
- Properties
- Suspend
- Return To Ramp
- Delete Datablock

Figure 90. Right-click menu for a single flight.

For information on using the right-click menu to exclude a flight from a TMI, see section 3.7.15.

### 2.5.1 Flight-specific Actions

#### 2.5.1.1 Runway Change for a Flight

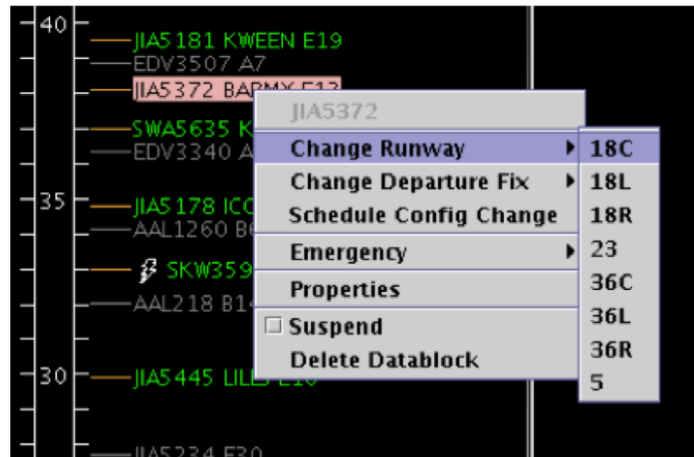
To change the runway for a single flight:

**Step 1:** Select the flight by left-clicking the flight target.

**Step 2:** Right-click on the flight datablock on the Timeline, Map, or Flights Table.

**Step 3:** Select “Change Runway”.

**Step 4:** Choose a runway from the drop-down menu. Once the new runway has been assigned, a confirmation appears on the top of the Map (Figure 91). The flight’s Timeline datablock will automatically move to the Timeline for the new runway assignment. Ramp is automatically notified of the change.



JIA5372 -> Rwy 18C

Figure 91. Right-click to change the runway assignment for a flight.

Runway changes for multiple flights can be completed at once. Multi-flight runway change can only be completed for groups of flights whose runway assignment is being changed to the same runway.

To change the runway for multiple flights:

**Step 1:** Select the flights by pressing the “Shift” key on the keyboard and then left-clicking the target flights.

**Step 2:** Right-click on a selected flight datablock on the Timeline, Map, or Flights Table.

**Step 3:** Select “Change Runway”.

**Step 4:** Choose a runway from the drop-down menu. Once the new runway has been assigned, a confirmation appears on the top of the Map (Figure 91). The flights’ Timeline datablocks will automatically move to the Timeline for the new runway assignment. Ramp is automatically notified of the change.

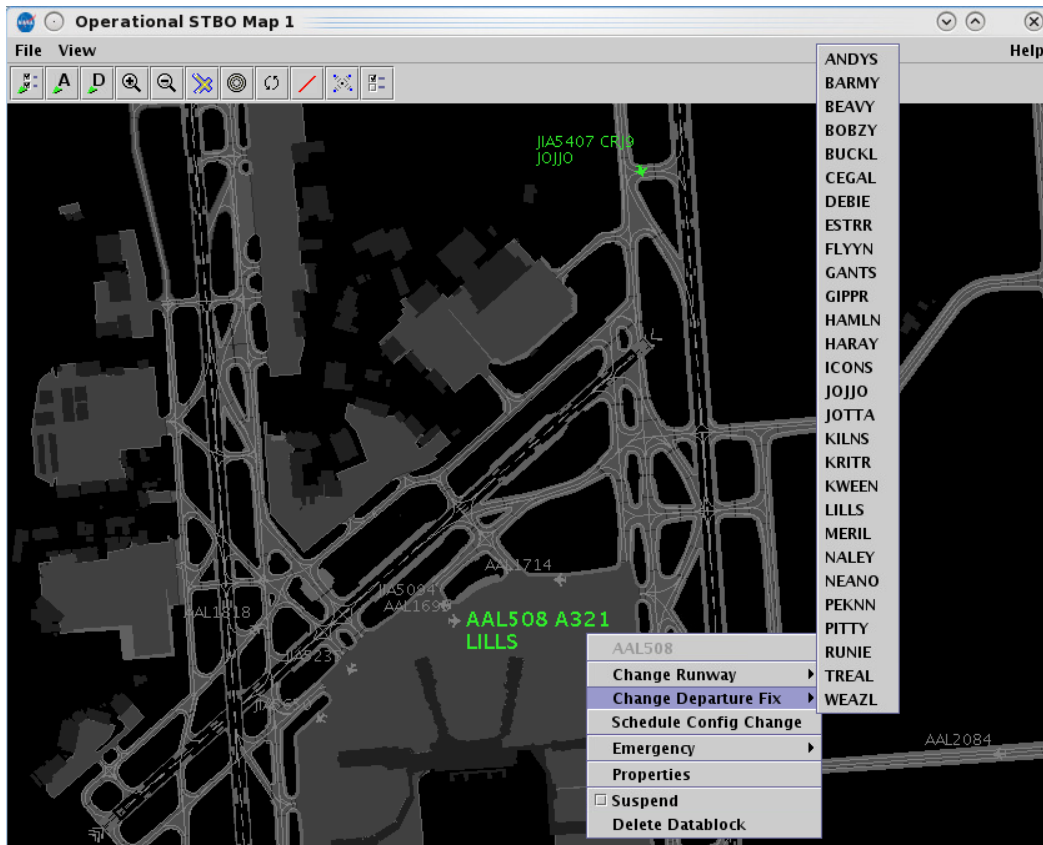
### 2.5.1.2 Departure Fix Change for a Flight

The same procedures described above in section 2.5.1.1 can be used to change the departure fix for a single flight:

**Step 1:** Right-click on the flight datablock on the Timeline, Map, or Flights Table (Figure 92).

**Step 2:** Choose “Change DepFix”.

**Step 3:** Choose a departure fix from the drop-down menu. The flight’s Timeline datablock and Flights Table will automatically update with the new departure fix assignment. Ramp is automatically notified of the change.



**Figure 92. Right-click to change the departure fix for a flight.**

Departure fix changes for multiple flights can be completed at once. Multi-flight departure fix change can only be completed for groups of flights whose departure fix assignment is being changed to the same departure fix.

To change the departure fix for multiple flights:

**Step 1:** Select the flights by pressing the “Shift” key on the keyboard and then left-clicking the target flights.

**Step 2:** Right-click on a selected flight datablock on the Timeline, Map, or Flights Table.

**Step 3:** Select “Change DepFix”.

**Step 4:** Choose a departure fix from the drop-down menu. The flights’ Timeline datablocks and Flights Table will automatically update with the new departure fix assignment. Ramp is automatically notified of the change.

### **2.5.1.3 Delete a Flight Datablock**

In the event that a flight datablock needs to be removed from the STBO Client interface, the right-click menu can be used to delete the flight datablock from the Timeline and the Map. Deleting the flight datablock will not remove the flight from STBO Client interface

completely – the flight will still be visible on the Flights Table. Deleting the datablock from the Timeline and Map cannot be undone.

To delete the flight datablock from the Timeline and Map:

**Step 1:** Right-click on the flight’s datablock on the Timeline or Map.

**Step 2:** Select “Delete Datablock” from the dropdown menu (Figure 93). A confirmation message will populate (Figure 94).

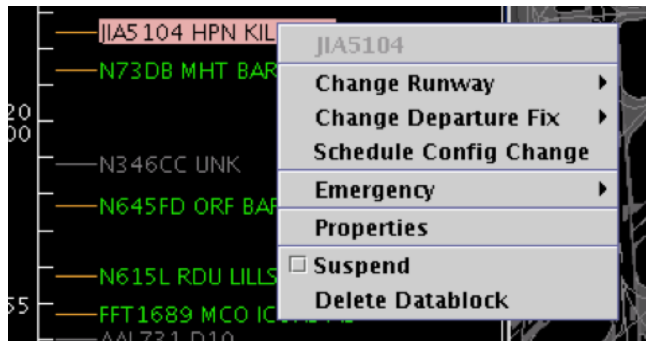


Figure 93. Right-click to delete a flight datablock.

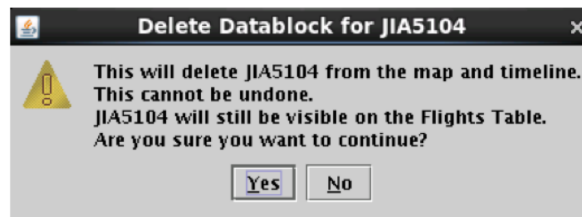


Figure 94. Confirmation message for deleting a flight’s datablock.

**Step 3:** Select “Yes” to complete the deletion of the flight datablock from the Timeline and Map. Once the flight datablock is deleted, the flight information will still be available in the Flights Table.

### 2.5.2 Schedule Configuration Change from the Right-Click Menu

Scheduling a configuration change (see also section 3.1) can be completed from a flight’s right-click menu. Using the right-click menu will pre-populate a “Start at” time for the configuration change based on the flight’s current location on the Timeline (TTOT). Other than using the flight’s TTOT to populating the time for the configuration change, no other information about the flight is relevant to scheduling a configuration change.

To schedule a configuration change (Figure 95):

**Step 1:** Select the flight by left-clicking the flight target.

**Step 2:** Right-click on the flight target to open the contextual menu.

**Step 3:** Select “Schedule Configuration Change.”

**Step 4:** Enter the information for the configuration change (see section **Error! Reference source not found.**).

**Step 5:** Click “Add” to complete scheduling the configuration change.

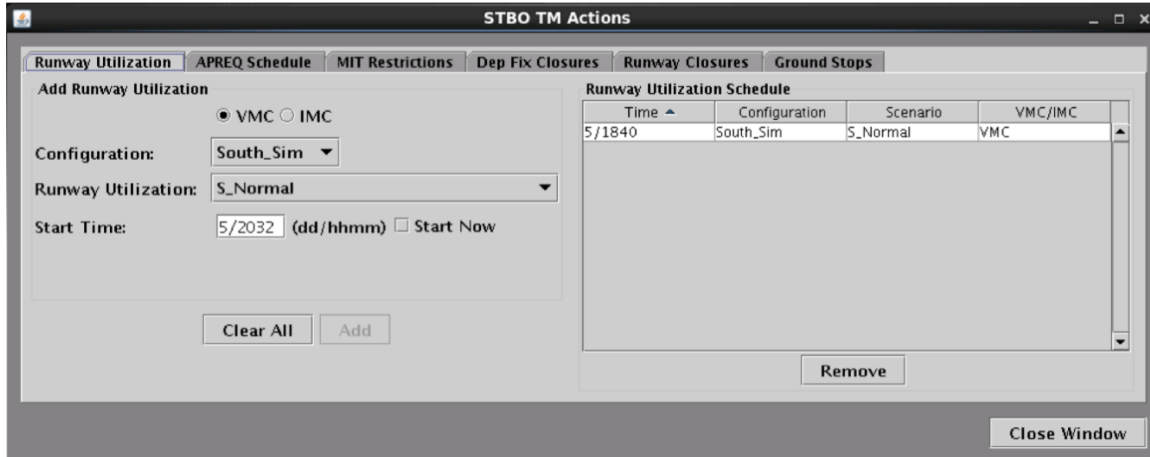


Figure 95. TM Actions window: Runway Utilization tab.

### 2.5.3 Flight Properties

The Flight Properties window can be accessed using the flight’s right-click menu as well (select “Properties” option shown in Figure 93). This window displays flight-specific information for individual flights (Figure 96). Once open, the Flight Properties window lists the flight’s callsign in the window’s title bar. The following table describes each of the items in the Flight Properties window.

Flight ID:	AAL838	Find	Status:	Pushback
Spot:	26S	Category:	Departure	
Parking Gate:	C14	Out Time:	16/19:05	
Runway:	18L	Off Time:	E16/19:25	
Operational Necessity:	<input type="checkbox"/>	APREQ Release:	16/19:23	Set Release Time
Departure Fix:	KILNS	Departure Gate:	EAST	
Route:	KCLT.KILNS3.AUDII..FAK.PHLB03.KEWR/0118			
Taxi Route:	M.C			
Ok		Cancel		

Figure 96. Flight Properties window.

Flight Property	Description
Flight ID	Callsign of the flight
Status	<p>Lists the aircraft state and location:</p> <ul style="list-style-type: none"> <li>Cancelled – The flight has been cancelled by the airline</li> <li>Departed – A departure aircraft is airborne</li> <li>Enroute_Arr – An arrival aircraft is in the enroute airspace</li> <li>In – An arrival aircraft is parked at the gate</li> <li>In_Queue – A departure aircraft is inside the queue detection box of the assigned runway</li> <li>In_Ramp – An arrival is taxiing in the Ramp</li> <li>On – An arrival aircraft has landed</li> <li>On_Final – An arrival aircraft is on final approach</li> <li>Out – A departure has pushed back and/or released brakes and is taxiing in the Ramp</li> <li>Pushback – A departure aircraft is pushing back</li> <li>Return_to_Gate – A departure is returning to the gate</li> <li>Scheduled_In – An arrival aircraft has not been tracked by STBO yet</li> <li>Scheduled_Out – A departure aircraft has not pushed back</li> <li>Suspended – The flight should have already departed and no flight updates have been received</li> <li>Taxiing_AMA – A departure aircraft is taxiing on the airport movement area</li> <li>Term_Area_Arr – An arrival aircraft is inside the terminal airspace</li> </ul>

Category	Arrival or departure
Runway	Runway assignment
Spot	Spot assignment
Parking Gate	Assigned/actual gate for the flight
Out Time	Time a departure flight will/did push off the gate
Off Time	Time a departure flight will/did takeoff from the runway
On Time	Time an arrival flight will/did land on the runway
In Time	Time an arrival flight will/did park at the gate
Departure Fix	Assigned/actual departure fix for a flight (departures only)
Departure Gate	Assigned/actual departure gate for a flight (departures only)
APREQ Release	For flights with APREQ restriction, the APREQ release time
Route	Filed route reported by FAA system
Taxi Route	The remaining route for taxiing across the AMA

The “Find” button is a way to locate the flight across the whole STBO Client interface. When the “Find” button is clicked, the flight’s datablock will highlight on the Timeline, the Map, and on the Flights Table (Figure 97).

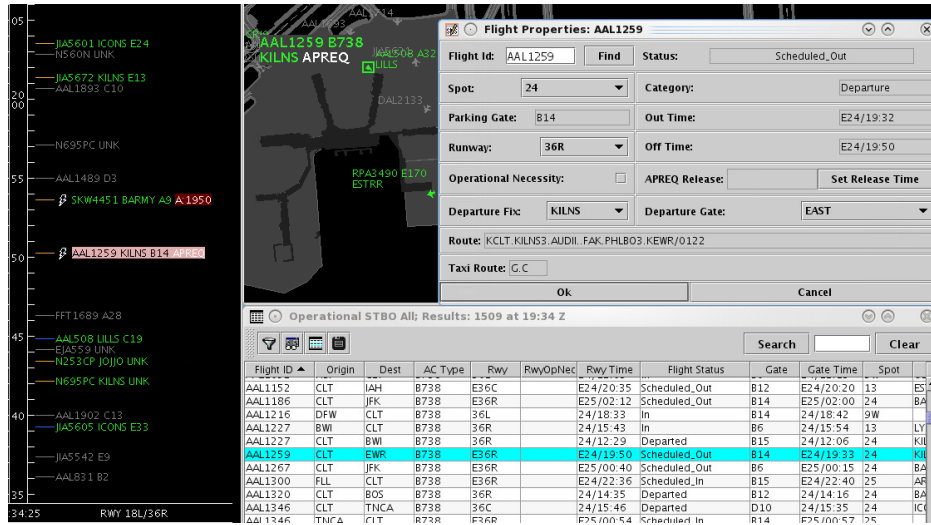


Figure 97. Find function in the Flight Properties window.

### 3 TM Actions

This section describes how to interact with the TM Actions drop-down menu and window.

#### 3.1 Runway Utilization

To change a runway utilization in the STBO Client:

**Step 1:** Click on the TM Actions menu and select “Change Runway Configuration” (Figure 98). This will open the TM Actions window with the “Runway Utilization” tab pre-selected.

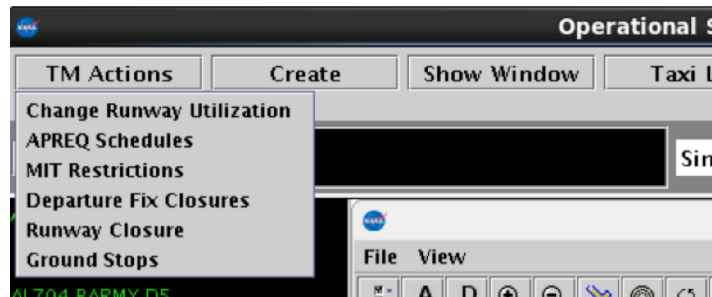


Figure 98. TM Actions drop-down menu.

**Step 2:** Choose the correct meteorological conditions radio button: VMC or IMC (Figure 99).

**Step 3:** Choose the configuration from the “Configuration:” drop-down menu. If no configuration is selected, the “Runway Utilization:” drop-down menu will be empty.

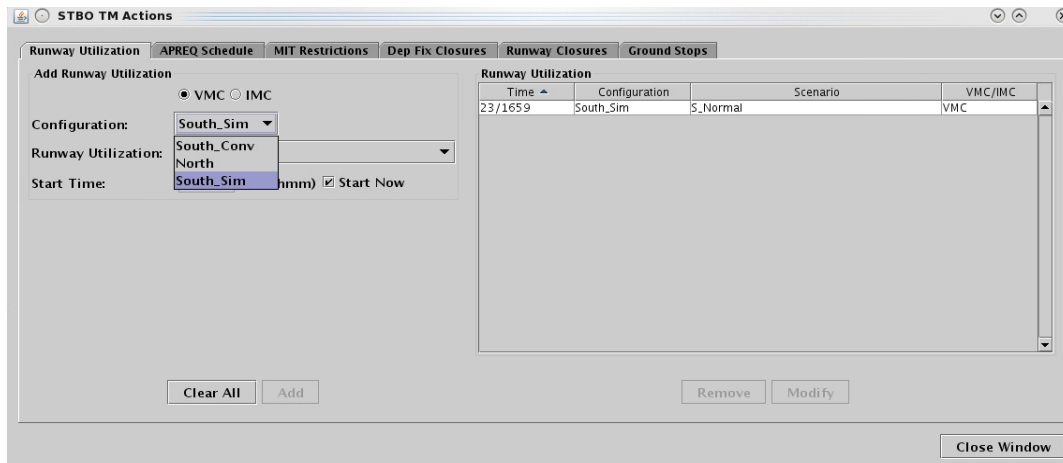
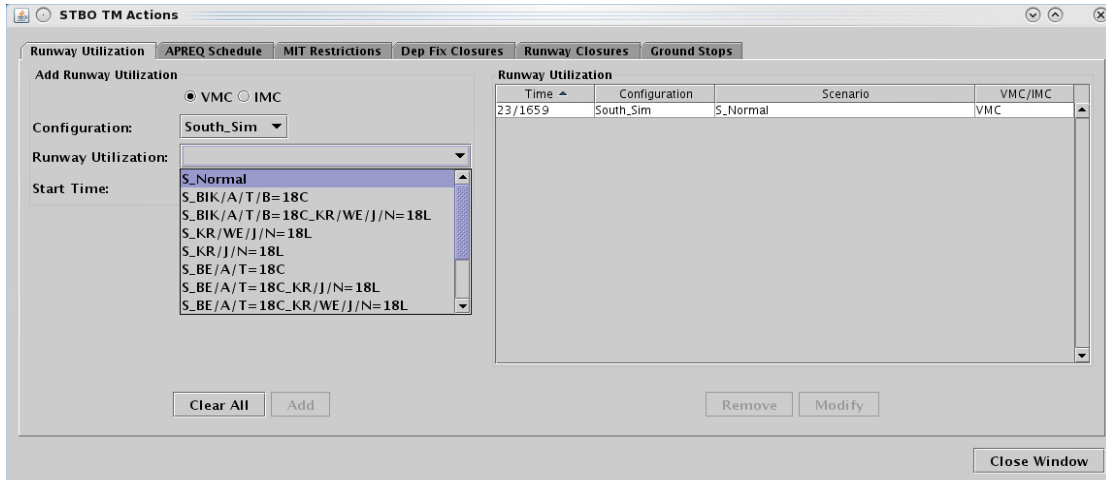


Figure 99. Choose a Configuration.

**Step 4:** Choose a runway utilization option from the “Runway Utilization:” drop-down menu (Figure 100).

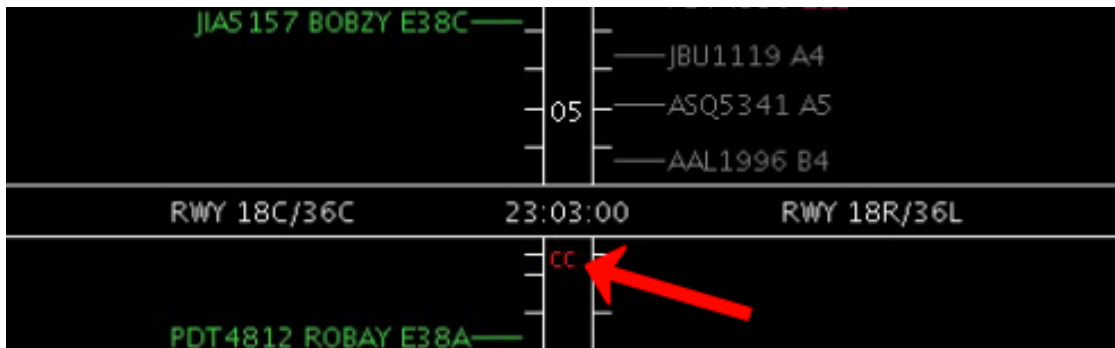




**Figure 100. Choose a Runway Utilization.**

**Step 5:** If the change is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box. Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month.

**Step 6:** Click the “Add” button. The changed runway utilization will appear in the schedule on the right side of the window under “Runway Utilization”. If a flow direction/configuration change is scheduled, “CC” will appear on the Timeline in red as a reminder for when the configuration change is scheduled to happen (Figure 101).



**Figure 101. “CC” on Timeline denoting Configuration Change.**

There will be a new notification for a runway utilization change (Figure 102). Once the new runway utilization begins, the flow icon will update to show the new runway utilization information. All ATD-2 users are automatically notified of the change.

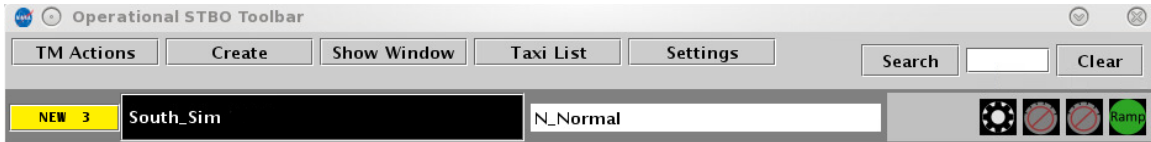


Figure 102. New notification for Configuration / Runway Utilization Change.

An alternate method of scheduling the configuration change is possible using a flight’s right-click menu on the Timeline, Map, or Flights Table. Using this method will pre-populate a time for the configuration change in the TM Actions window based on the flight’s current position on the Timeline. See section 2.5.2 for more details.

The current configuration cannot accept modifications. A future configuration can have its start time, runway utilization, and meteorological condition modified, but any change in the configuration itself will require a deletion of that configuration and a new one added.

### 3.2 APREQ Schedule

There is some lag in the OIS reader’s ability to populate restrictions. To prevent double entry of restrictions in STBO, you may want to give the system a little bit of time before entering new restrictions manually.

To add an APREQ into STBO Client:

**Step 1:** Click on the TM Actions menu and select “APREQ Schedules” (Figure 98). This will open the TM Actions window with the “APREQ Schedule” tab pre-selected (Figure 103).

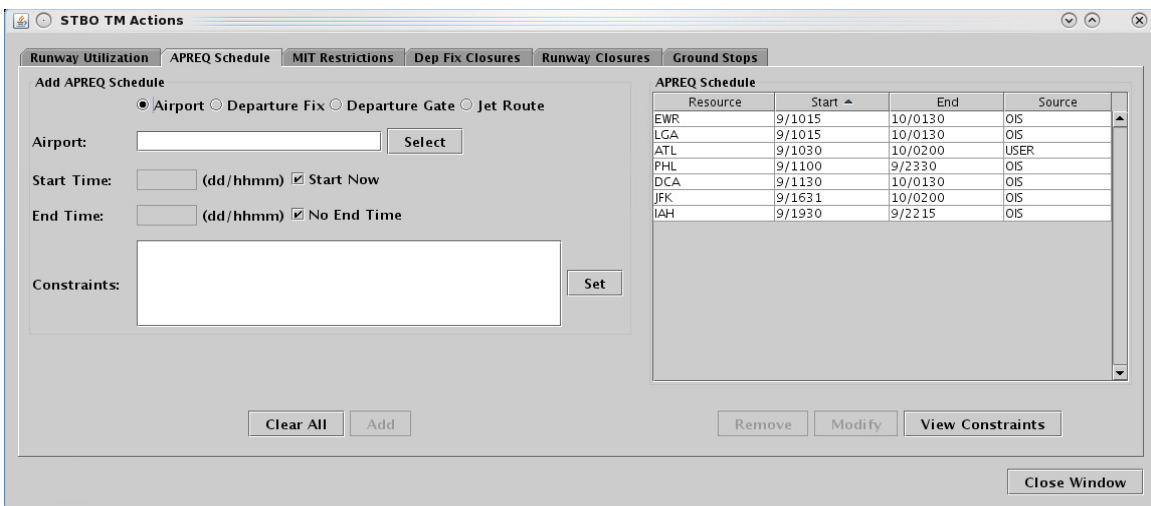
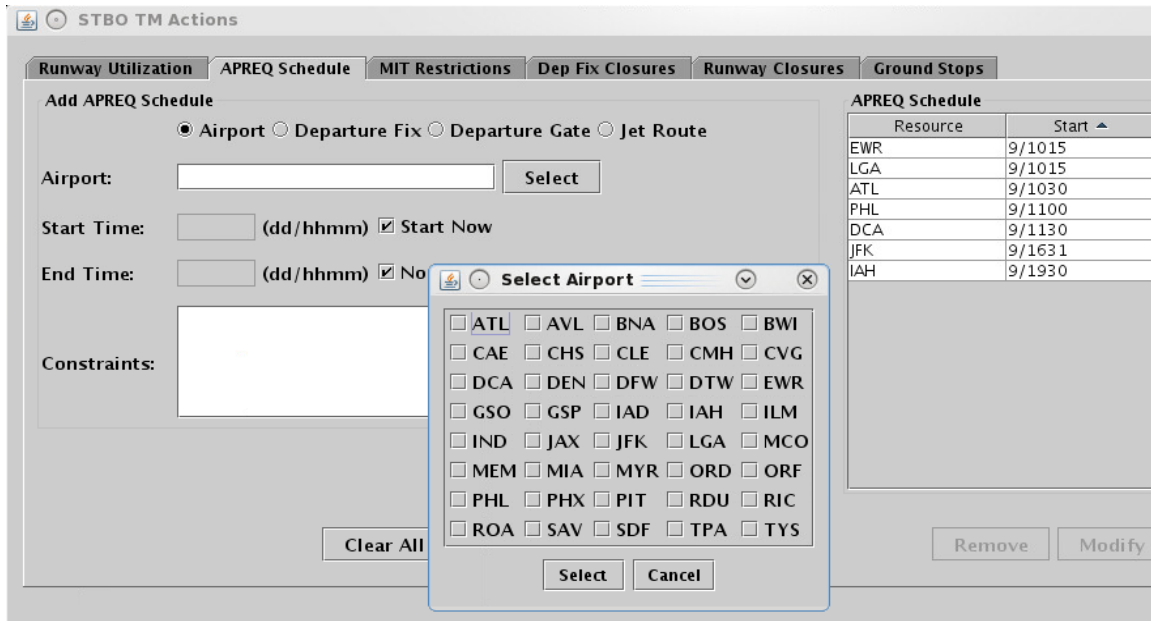


Figure 103. TM Actions window: APREQ Schedule tab.

**Step 2:** Click on “Select” button to choose an airport. (You may also manually enter text into the Airport text box. Multiple airports may be entered and separated with commas.)

**Step 3:** Choose an airport (Figure 104). Multiple airports may be selected.



**Figure 104. Select Airport window.**

**Step 4:** If the change is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box (Figure 105). Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month. An end time may be entered as well.

**Step 5:** To add constraints to the APREQ restriction, click on the “Set” button next to the Constraints box. Add the appropriate constraints (see section 3.7 for more detail).

**Step 6:** Click the “Add” button to execute the desired constraints. The APREQ restriction will appear in the schedule on the right side of the window. Each resource is listed on the schedule in its own line, even if multiple resources are added to the schedule at once. This allows the user to delete individual resources from the restriction schedule without impacting other resources on the schedule.

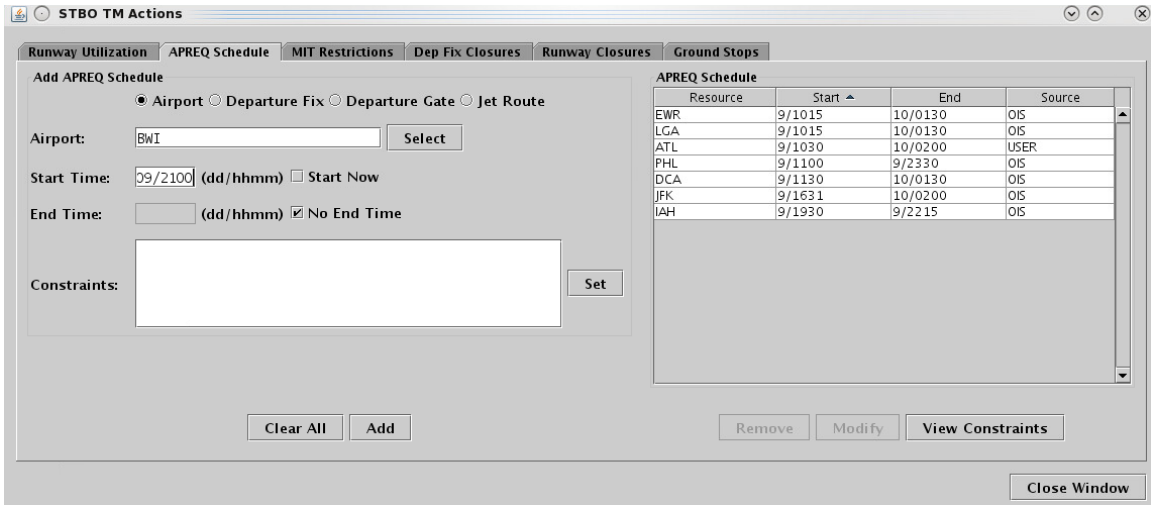


Figure 105. Select start and end times, constraints, and add the APREQ restriction.

The APREQ restriction is automatically added to the Timeline (e.g., the “lightning bolt” symbol to the left of the Timeline datablock and the word “APREQ” in white as shown in Figure 106). See section 4 for more details on APREQ procedures.

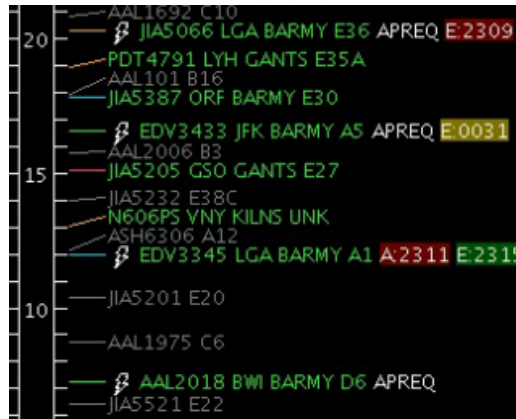


Figure 106. APREQ Restriction added to the Timeline.

There will be a new notification for the each of the scheduled APREQ restrictions (Figure 107). All ATD-2 users are automatically notified of the restrictions.

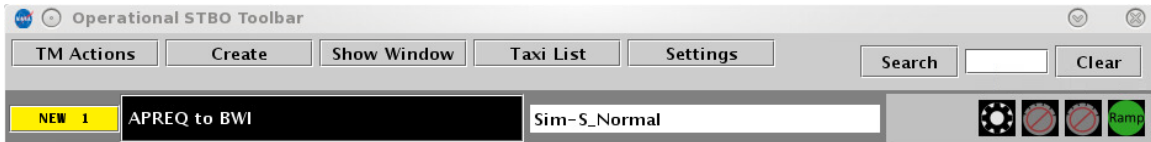


Figure 107. New notification for APREQ restriction.

A current APREQ restriction that has a start time in the past cannot accept new modifications. A future APREQ can have its start time, end time, and constraints modified as long as the source is USER or OIS. A future APREQ restrictions can be manually removed from the schedule.

To modify a future APREQ restriction:

**Step 1:** Click the desired restriction to modify in the “APREQ Schedule” table (Figure 103).

**Step 2:** Once the restriction is selected, click the “Modify” button below the table. The restriction’s current parameters will auto-fill in the fields on the left side of the TM Actions – APREQ Schedules window.

**Step 3:** Change the available parameters as desired.

**Step 4:** Click “Okay” to save the changes. The restriction’s parameters will now reflect the changes in the “APREQ Schedule” table.

To remove an APREQ restriction:

**Step 1:** Click the desired restriction to remove in the “APREQ Schedule” table (Figure 103).

**Step 2:** Once the restriction is selected, click the “Remove” button below the table. The will no longer be displayed in the “APREQ Schedule” table.

Click the View Constraints button to open a separate window containing the constraints (if any) of all APREQs in the system (see section 3.7 for more details on constraints with TMI’s).

Once the end time of the scheduled restriction is reached, the restriction will be removed from STBO. If at that time the restriction is still in effect, it may need to be entered again, unless the updated information is read in from OIS and auto-populates in STBO.

### 3.3 MIT Restrictions

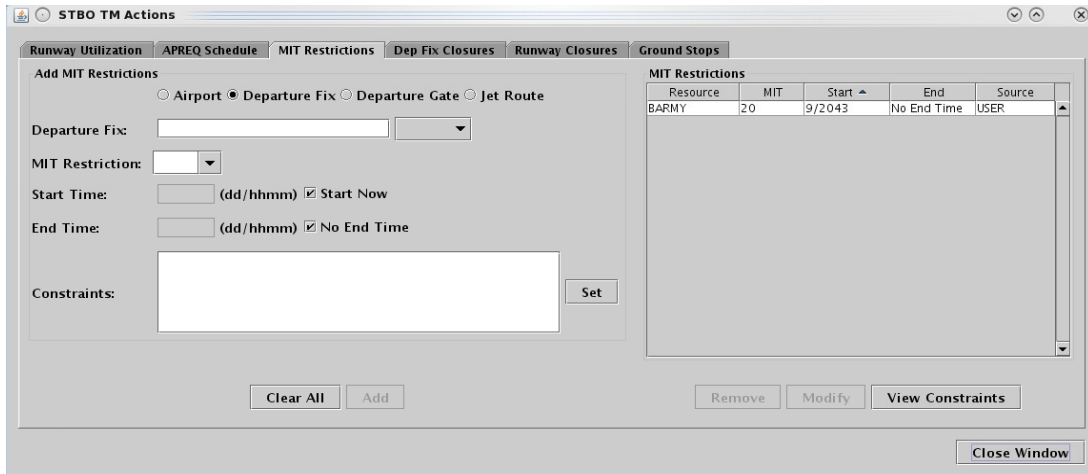
MIT restrictions may be added based on airport destination, departure fixes, departure gates, and jet routes. In the following example, a MIT restriction is set by departure fix.

To add an MIT restriction into STBO Client:

**Step 1:** Click on the TM Actions menu and select “MIT Restrictions” (Figure 98). This will open the TM Actions window with the “MIT Restrictions” tab pre-selected (Figure 108).

**Step 2:** Click on “DepFix” drop-down menu.

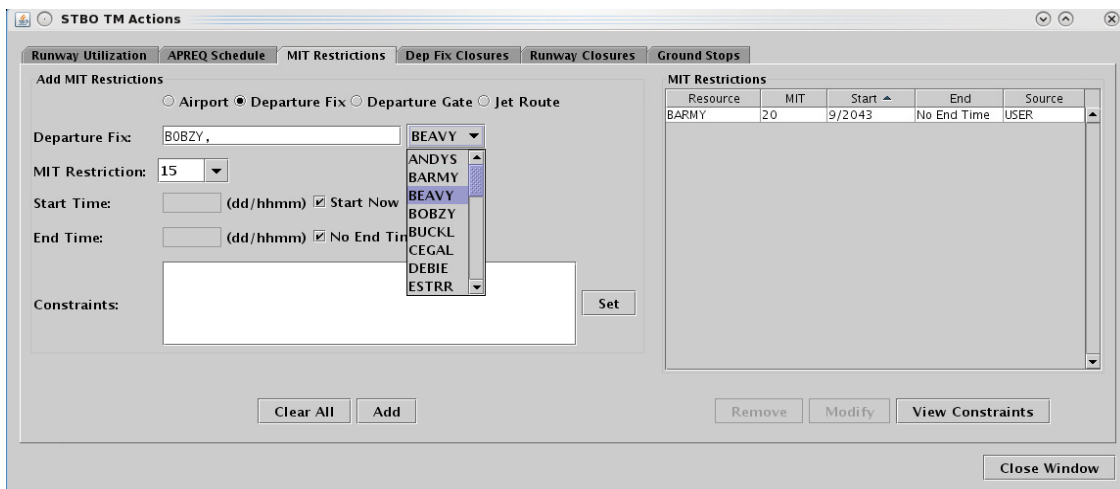
**Step 3:** Choose a fix. More than one fix may be selected. (Text can also be manually entered into the DepFix text box. Multiple fixes can be entered and separated with commas.)



**Figure 108. Enter or choose a departure fix.**

**Step 4:** Enter the MIT restrictions value (Figure 109). This can either be typed in the text box or selected from the drop-down list.

**Step 5:** If the change is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box. Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month. An end time may be entered as well.

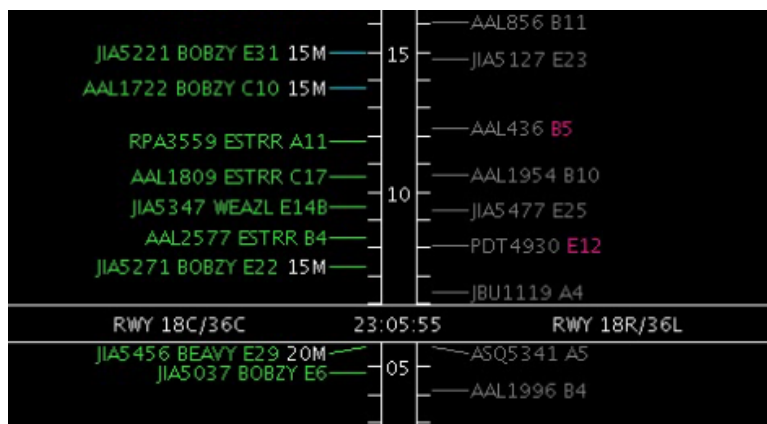


**Figure 109. Enter or choose an MIT Restriction value.**

**Step 6** To add constraints to the MIT restriction, click on the “Set” button next to the Constraints box. Add the appropriate constraints (see section 3.7 for more detail).

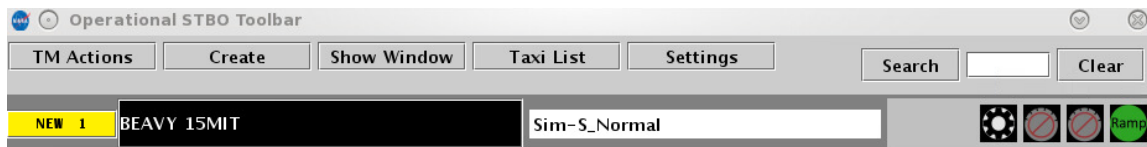
**Step 7:** Click the “Add” button. The MIT restriction will appear in the schedule on the right side of the window. Each resource entered will be displayed on the schedule in its own line, even if multiple resources are added to the schedule at once. This allows the user to delete individual resources from the restriction schedule without impacting other resources on the schedule.

The MIT restriction is automatically added to the Timeline (e.g., the “15M” in white text on the right side of the Timeline datablocks as shown in Figure 110).



**Figure 110. MIT Restriction added to the Timeline.**

There will be a new notification for the scheduled MIT restriction (Figure 111). All ATD-2 users are automatically notified of the change.



**Figure 111. New notification for MIT restriction.**

A current MIT restriction that has a start time in the past cannot accept modifications. A future MIT restriction can have its start time, end time, MIT value, and constraints modified as long as the Source is USER or OIS. A future MIT with a USER or OIS Source can be manually removed.

To modify a future MIT restriction:

**Step 1:** Click the desired restriction to modify in the “MIT Restrictions” table (Figure 108).

**Step 2:** Once the restriction is selected, click the “Modify” button below the table. The restriction’s current parameters will auto-fill in the fields on the left side of the TM Actions – MIT Restrictions window.

**Step 3:** Change the available parameters as desired.

**Step 4:** Click “Okay” to save the changes. The restriction’s parameters will now reflect the changes in the “MIT Restrictions” table.

To remove an MIT Restrictions:

**Step 1:** Click the desired restriction to remove in the “MIT Restrictions” table (Figure 108).

**Step 2:** Once the restriction is selected, click the “Remove” button below the table. The will no longer be displayed in the “MIT Restrictions” table.

Click the View Constraints button to open a separate window containing the constraints (if any) of all MITs in the system.

Once the end time of the scheduled restriction is reached, the restriction will be removed from STBO. If at that time the restriction is still in effect, it may need to be entered again, unless the updated information is read in from OIS and auto-populates in STBO.

### 3.4 Departure Fix Closures

Note that if a Departure Gate is selected within the Departure Fix Closure tab, it will close ALL departure fixes associated with that gate. If the desire is to only close 1 or 2 fixes, then keep “departure fix” selected.

To add a departure fix closure into STBO Client:

**Step 1:** Click on the TM Actions menu and select “Departure Fix Closure” (Figure 98. TM Actions drop-down menu.). This will open the TM Actions window with the “Dep Fix Closures” tab pre-selected.

**Step 2:** Click on the drop-down menu to choose a fix (Figure 112).

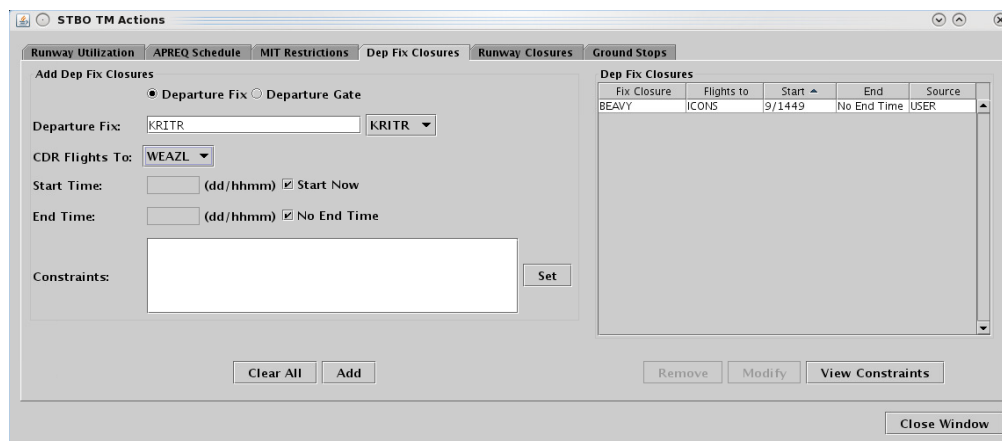
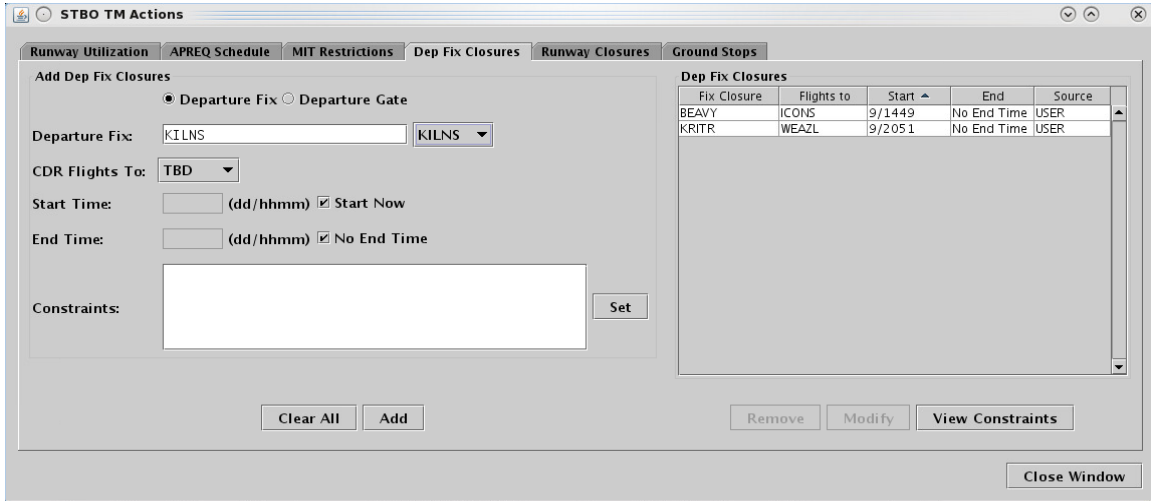


Figure 112. Choose a departure fix to close.



**Step 3:** When performing a CDR to a new departure fix, select the fix from the “CDR Flights To:” drop-down menu (Figure 112). If the CDR fix is “To Be Determined” (TBD), choose “TBD” (Figure 113).



**Figure 113.** Choose a departure fix to CDR flights to.

**Step 4:** If the closure is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box. Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month. An end time may be entered as well.

**Step 5:** To add constraints to the Departure Fix Closure, click on the “Set” button next to the Constraints box. Add the appropriate constraints (see section 3.7 for more detail).

**Step 6:** Click the “Add” button. The departure fix closure will appear in the schedule on the right side of the window.

There will not be a change to the Timeline datablock if there was no fix selected for “CDR Flights To”; however, Timeline datablocks with the departure fix closure restriction will all move to the end time of the departure fix closure event. If a fix was selected under “CDR Flights To,” the Timeline will add the CDR fix with an arrow to represent the change (e.g., “KRITR->WEAZL” in the middle of the Timeline datablocks. See Figure 114).

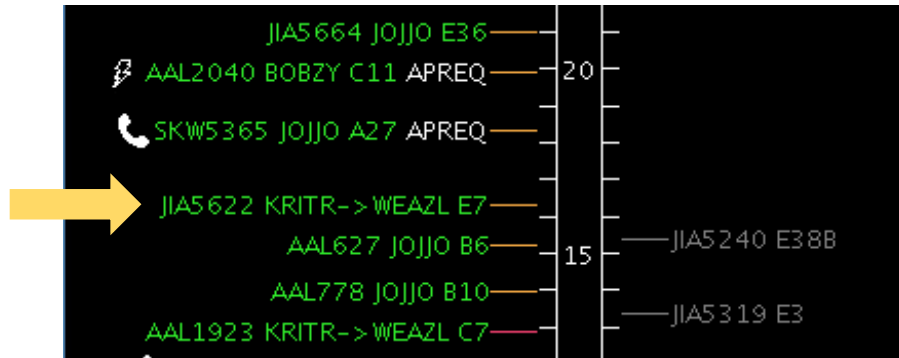


Figure 114. DepFix closure and CDR added to the Timeline.

There will be a new notification for the scheduled departure fix closure (Figure 115). All ATD-2 users are automatically notified of the closure. Note that the CDR fix does not appear in the notification.

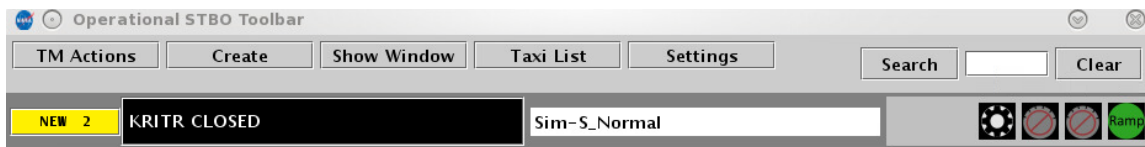


Figure 115. New notification for Departure Fix Closure.

A current Fix Closure cannot accept modifications. A future fix closure can have its start time, end time, Alternate Fix, and constraints modified as long as the Source is USER or OIS. To modify a fix closure, click the entry in the table and click Modify. A future fix closure that has a USER or OIS Source can also be deleted; click the entry in the table and click Remove. Click the View Constraints button to open a separate window containing the constraints (if any) of all fix closures in the system.

Once the end time of the scheduled restriction is reached, the restriction will be removed from STBO. If at that time the restriction is still in effect, it may need to be entered again, unless the updated information is read in from OIS and auto-populates in STBO.

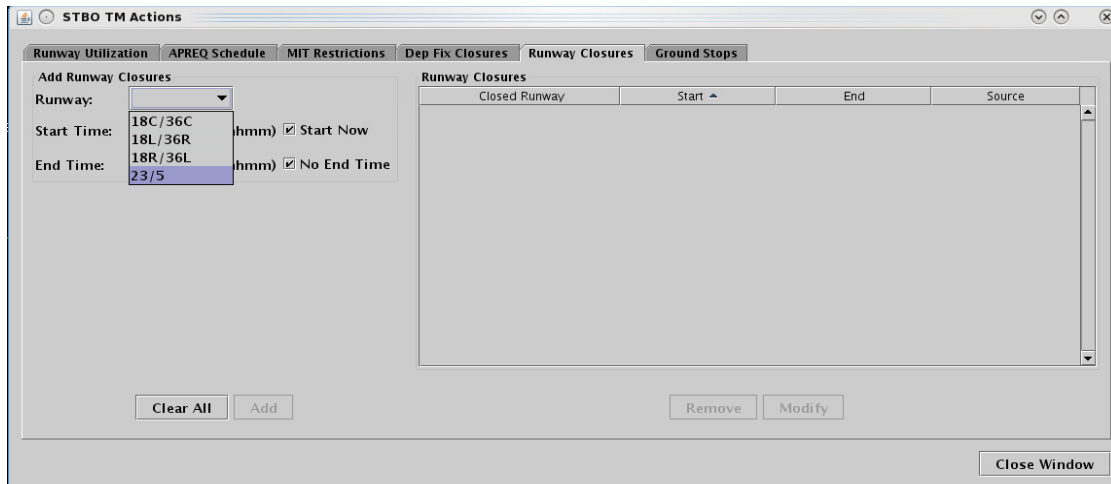
### 3.5 Runway Closures

To add a runway closure into STBO Client:

**Step 1:** Click on the TM Actions menu and select “Runway Closure” (Figure 98). This will open the TM Actions window with the “Runway Closures” tab pre-selected (Figure 116).

**Step 2:** Click on “Runway” drop-down menu (inset).

**Step 3:** Select the runway to close.



**Figure 116. Choose a runway to close.**

**Step 4:** If the closure is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box. Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month. An end time may be entered as well.

**Step 5:** Click the “Add” button. The runway closure will appear in the schedule on the right side of the window with a separate entry for each direction of the runway.

The runway closure is added to the Map, and the closed runway is marked red with a white X at either end (Figure 117). All departure Timeline datablocks for the closed runway will be moved to an available departure runway for the duration of the runway closure. Arrival Timeline datablock positions are dependent on TRACON scratchpad entries for runway assignments and will not move to a new runway in the ATD-2 systems until the change is made at TRACON.

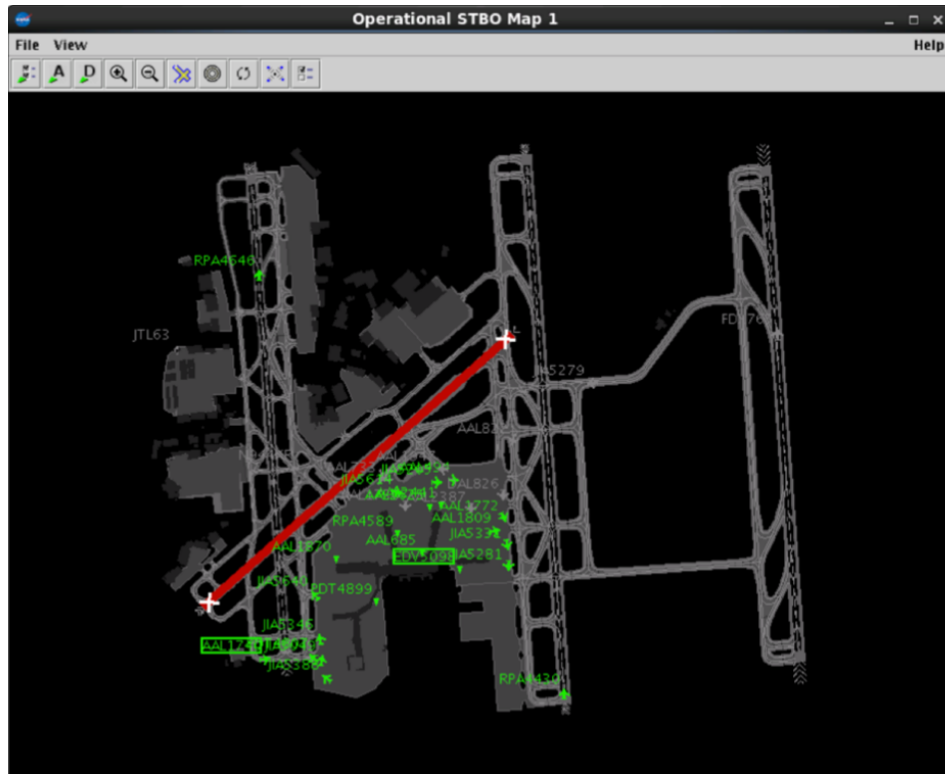


Figure 117. Runway closure added to the Map.

There will be a new notification for the scheduled runway closure (Figure 118). A separate notification is populated for each direction of the closed runway. All ATD-2 users are automatically notified of the closure.

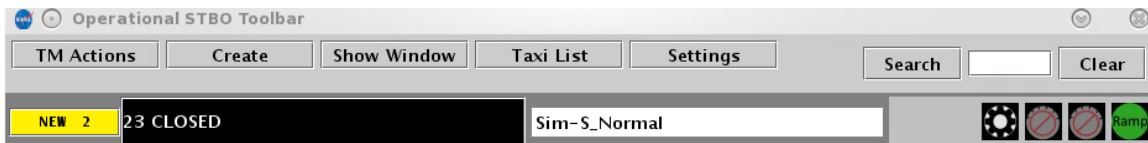


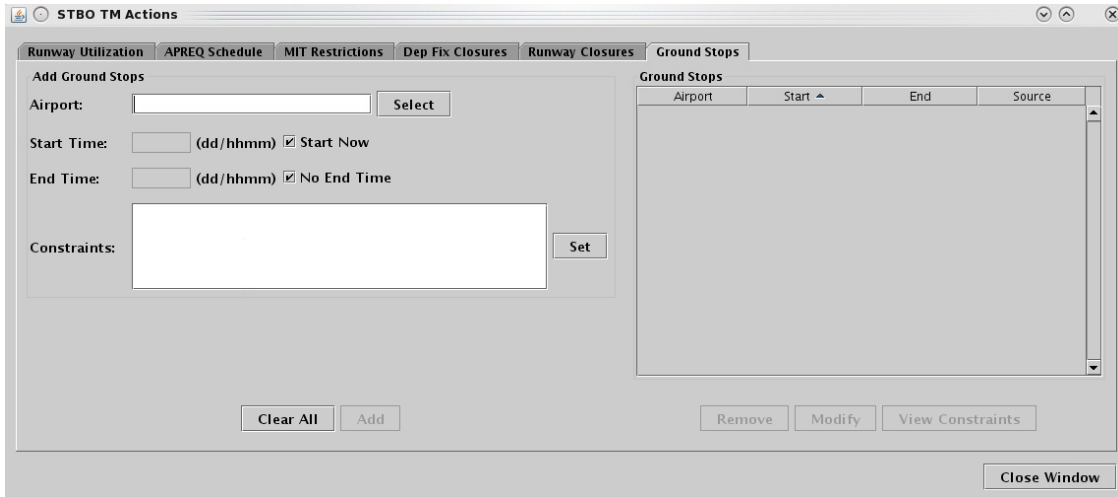
Figure 118. New notification for Runway Closure.

A runway closure cannot accept a modification. A future runway closure can have its start and end times modified, but any change in the runway will require a deletion of that closure and a new one added.

### 3.6 Ground Stops

To add a ground stop into STBO Client:

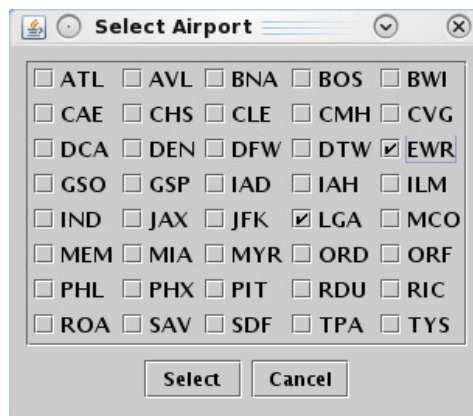
**Step 1:** Click on the TM Actions menu and select “Ground Stops” (Figure 98). This will open the TM Actions window with the “Ground Stops” tab pre-selected (Figure 119).



**Figure 119. TM Actions window: Ground Stops tab.**

**Step 2:** Click on “Select” button to choose an airport. (Text may also be manually entered into the Airport text box. Multiple airports may be entered and separated with commas.) This will open the Select Airport window (Figure 120), which lists checkboxes with commonly used airports.

**Step 3:** Choose an airport. More than one airport may be selected.

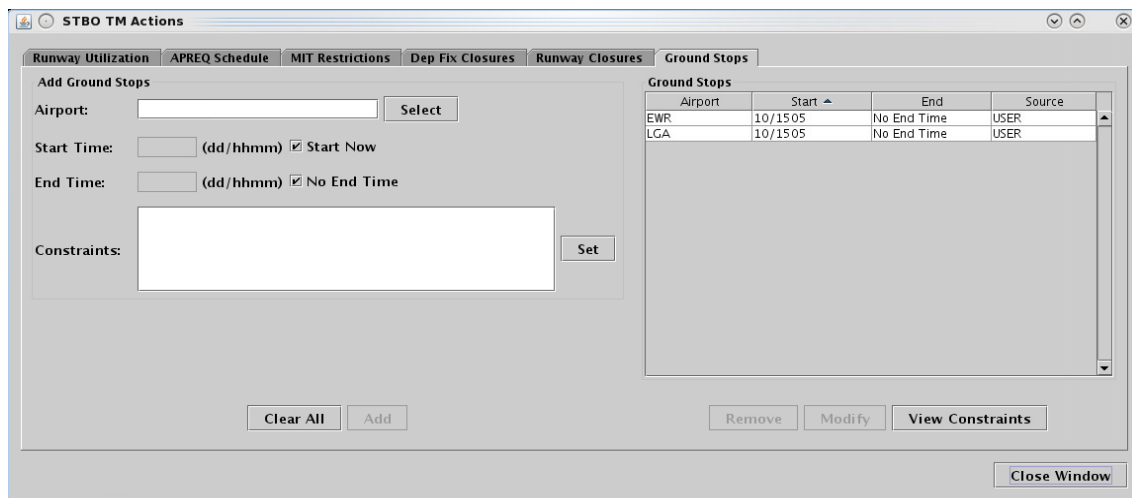


**Figure 120. Select Airport window.**

**Step 4:** If the ground stop is starting in the future, uncheck “Start Now” and enter a time in the “Start at” text box. Times must be entered in the (dd/hhmm) format. If the times crosses over 0000, the date must be changed. So, for example, if the current date is the 21<sup>st</sup> of the month and the Now time is 2330, when entering a start time of 0020, enter “22/0020” to input the new date as the 22<sup>nd</sup> of the month. An end time may be entered as well.

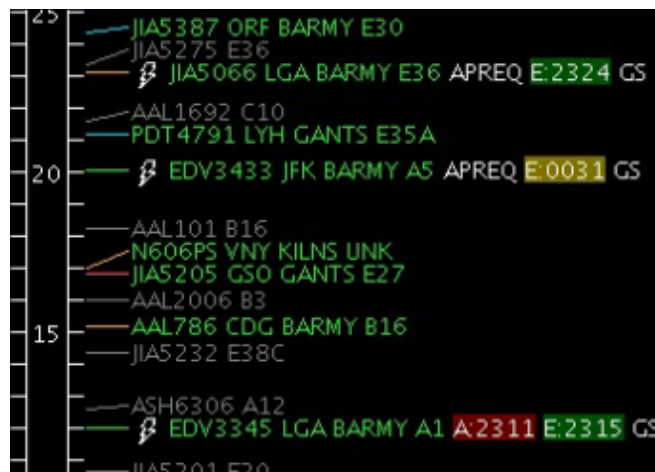
**Step 5:** If constraints need to be added to the Ground Stop restriction, click on the “Set” button next to the constraints box and add the appropriate constraints (see section 3.7 for more detail).

**Step 6:** Click the “Add” button. The ground stop will appear in the schedule on the right side of the window (Figure 121). Each resource entered will be displayed on the schedule in its own line, even if multiple resources are added to the schedule at once. This allows the user to delete individual resources from the restriction schedule without impacting other resources on the schedule.



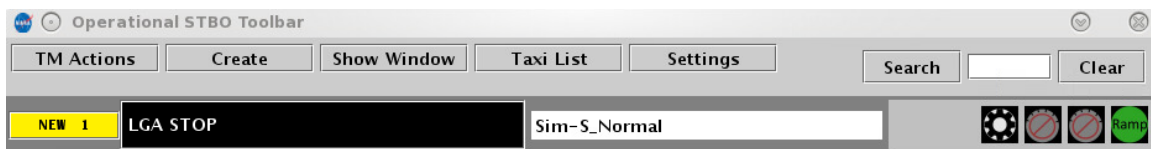
**Figure 121. Schedule the Ground Stop.**

The ground stops will be added to the Timeline. Flights with scheduled ground stops will show a “GS” label (i.e., the “GS” in white text on the right side of the Timeline datablocks, as shown in Figure 122). Timeline datablocks with the ground stop restriction will all move to the end time of the ground stop event.



**Figure 122. Ground Stops added to the Timeline.**

There will be a new notification for the scheduled ground stop (Figure 123). A notification will be scheduled for each ground stop entered when multiple airports are selected for ground stops. All ATD-2 users are automatically notified of the change.



**Figure 123. New notification for Ground Stop.**

Ground Stops cannot accept modifications. A future ground stop can have its start time, end time, and constraints modified as long as the Source is USER or OIS. To modify a ground stop, click the entry in the table and click Modify. A future ground stop that has a USER or OIS Source can be deleted; click the entry in the table and click Remove. Click the View Constraints button to open a separate window containing the constraints (if any) of all ground stops in the system.

Once the end time of the scheduled restriction is reached, the restriction will be removed from STBO. If at that time the restriction is still in effect, it may need to be entered again, unless the updated information is read in from OIS and auto-populates in STBO.

### **3.7 Constraints to a TMI**

At times, TMIs are issued with conditions, such as constraints. For instance, a Center may require MITs for all flights flying over a departure fix at the TRACON boundary, but, at the same time, exclude all APREQ/CFR flights going to the same departure fix.

The STBO Client will automatically detect TMI restrictions, as well as constraints, from the FAA OIS. The STBO Client will indicate both the restrictions and constraints in the TMI tabs and in the notification banner and table. However, in case the parsing of the restriction is not correct, it is then possible to add the restriction or constraint manually. This section describes the available options in the STBO Client to add constraints to TMI restrictions.

The constraints window is accessed from each of the following TMI tabs: APREQ (3.2), MIT Restrictions (3.3) Departure fix closures (3.4) and Ground Stops (3.6). Each type of TMI has a specific set of constraints.

The constraints window provides tabs for the following categories (Figure 125 & Figure 125).

- 3.7.1 APREQ
- 3.7.2 Destination
- 3.7.3 MIT
- 3.7.4 Departure Fix
- 3.7.5 Departure Gate
- 3.7.6 Filed Altitude
- 3.7.7 Weight Class
- 3.7.8 Engine Type

- 3.7.9 Aircraft Type
- 3.7.10 User Category
- 3.7.11 Center
- 3.7.12 Sector
- 3.7.13 Airway
- 3.7.14 Airline



Figure 124. Constraints window tabs (with APREQ TMI).

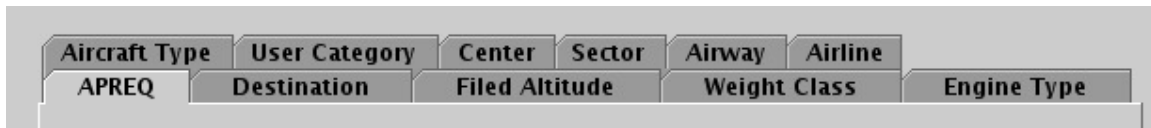


Figure 125. Constraints window tabs (with MIT TMI).

To add constraints to restrictions:

**Step 1:** Click on the “Set” button (Figure 126) next to the Constraints box.



Figure 126. Set Constraints button in TM Actions window.

**Step 2:** Click on the various tabs to select the relevant constraints (**Error! Reference source not found.**). It is possible to make multiple selections across tab categories.

**Step 3:** Select the parameters desired for the constraint. For example, In the MIT constraint tab (Figure 127), to include or exclude an APREQ, select the “APREQ” box, and either “inclusion” or “exclusion”. Click “Apply”.

**Step 4:** The constraint added will appear in the Constraints window. Click the “Add” button to apply the constraints (Figure 128).



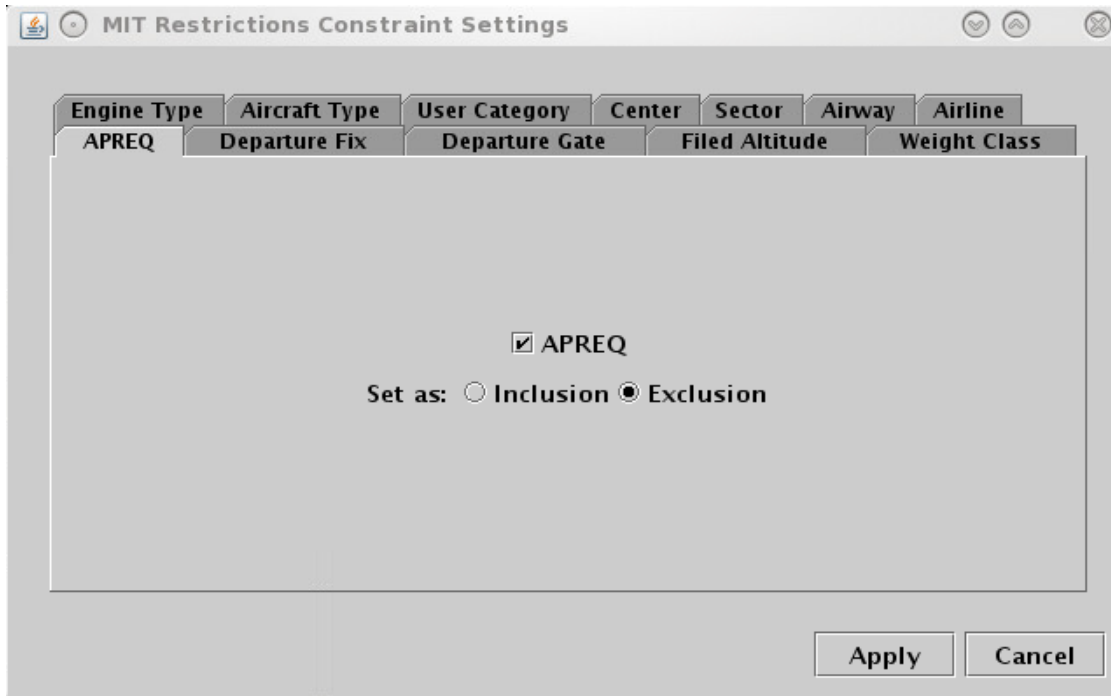


Figure 127. Set Inclusion/Exclusion in the APREQ constraint window.

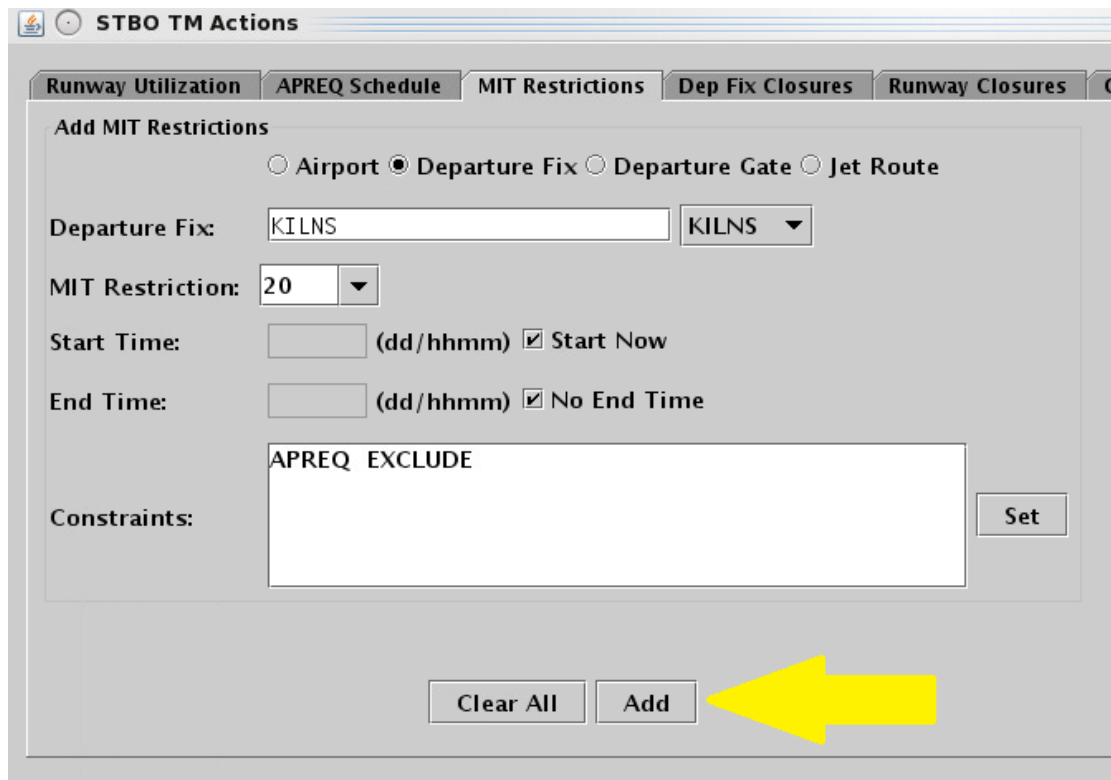
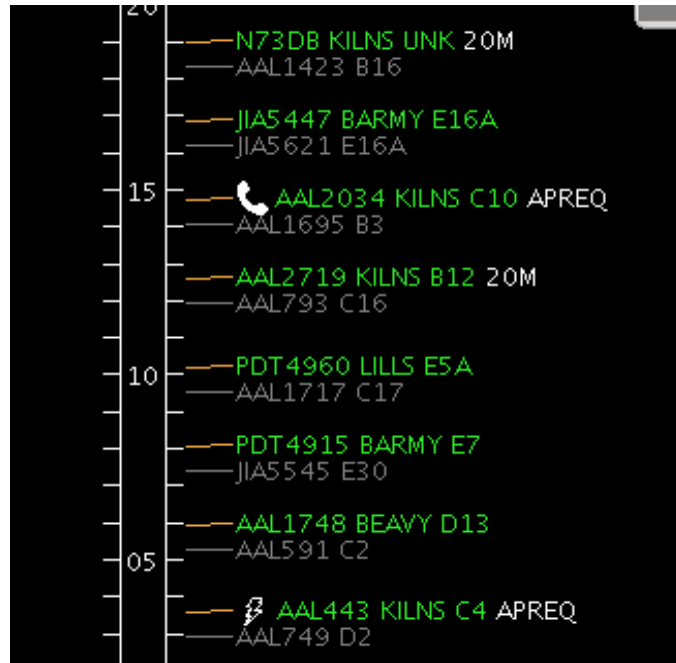


Figure 128. APREQ constraint added to a MIT TMI.

Once constraints are added, the STBO Client indicates the constraint on the TMI “Schedule” window, as well as on the Notification banner and window. The STBO Timeline will reflect the constraints specified. For example if a 20 MIT restriction were issued for KILNS, but excluded aircraft with an APREQ, the time line will reflect this distinction (Figure 129).



**Figure 129. Timeline reflects specified constraints.**

The following sub-sections describe each constraint tab as well as the right-click method for excluding a flight from a TMI.

### **3.7.1 APREQ Constraints Tab**

After selecting the TMI, APREQ may be set as a constraint (Figure 130). APREQ’s may be included or excluded in the TMI. Click “Apply” or open another tab to make another selection. Note that APREQ is not available as a constraint criterion when the restriction pertains to an APREQ.

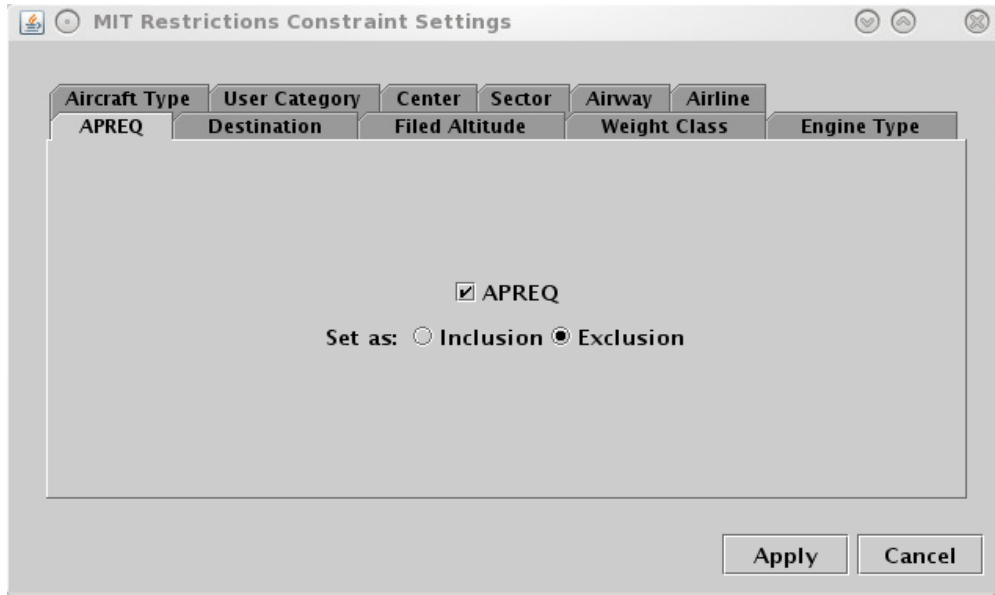


Figure 130. Constraints window: APREQ tab.

### 3.7.2 Destination

After selecting a TMI, a constraint may be set by Destination (Figure 131). To add one or more destinations as a constraint, either type in the destination or select it from the list. Multiple destinations can be added by separating with a comma and no spaces (e.g., ATL,ORD). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection. Note destination constraints are only available for MIT or Departure Fix Closure TMI’s.

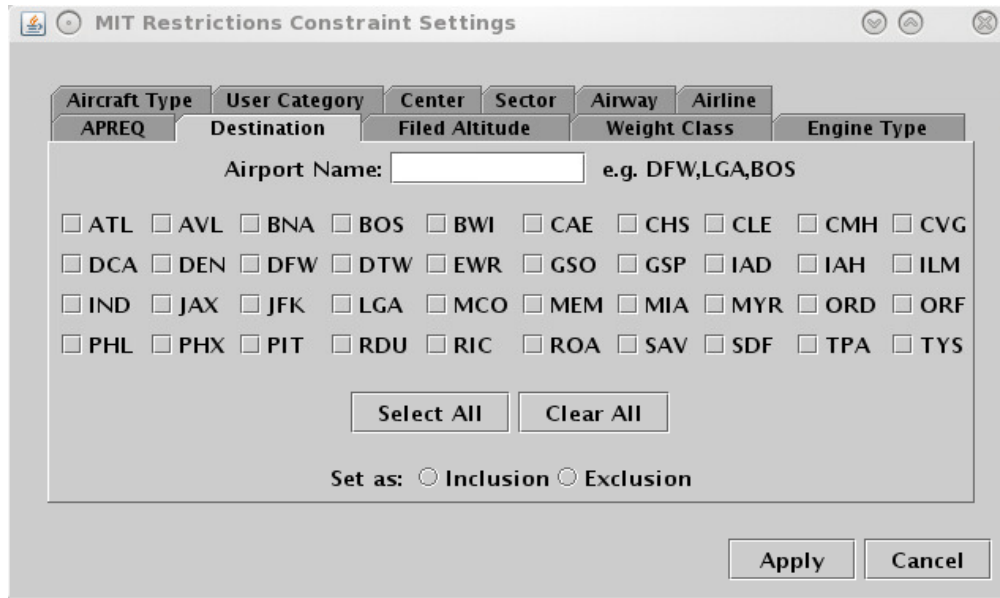


Figure 131. Constraints window: Destination tab.

### 3.7.3 MIT Constraints Tab

After selecting the TMI, a constraint may be set by MIT (Figure 132). Set the MIT constraint as an “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection. Note that MIT is not available as a constraint criterion when the restriction pertains to a MIT.

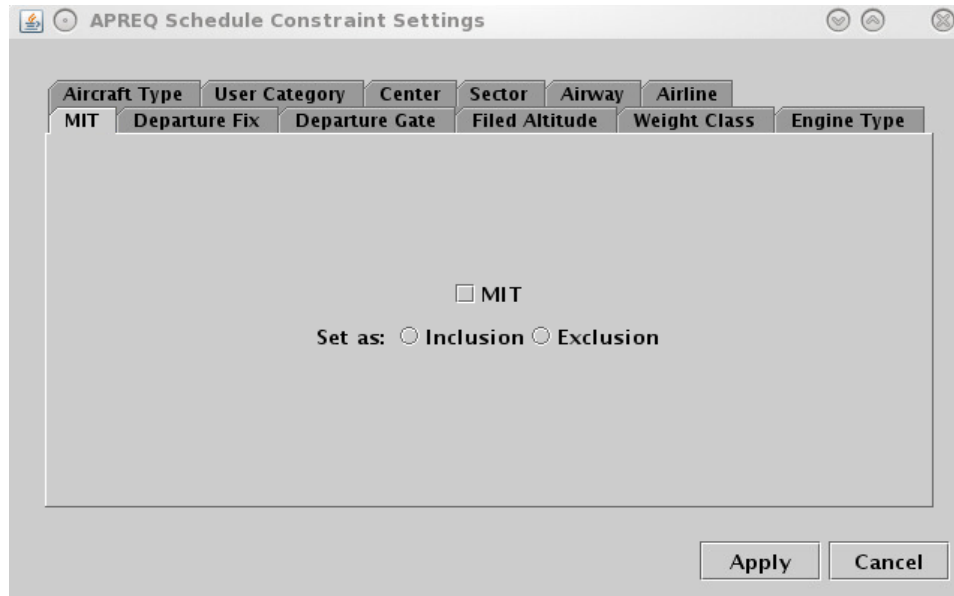


Figure 132. Constraints window: MIT tab.

### 3.7.4 Departure Fix Constraints Tab

To add one or more departure fixes, or Standard Instrument Departures (SIDs), as a constraint, either type in the fix or select it from the list (Figure 133). Multiple fixes can be added by separating fixes with a comma and no spaces (e.g., JOJJO,ICONS). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection. Note that departure fixes are not available as constraint criteria when the restriction pertains to a departure fix closure or to a MIT.

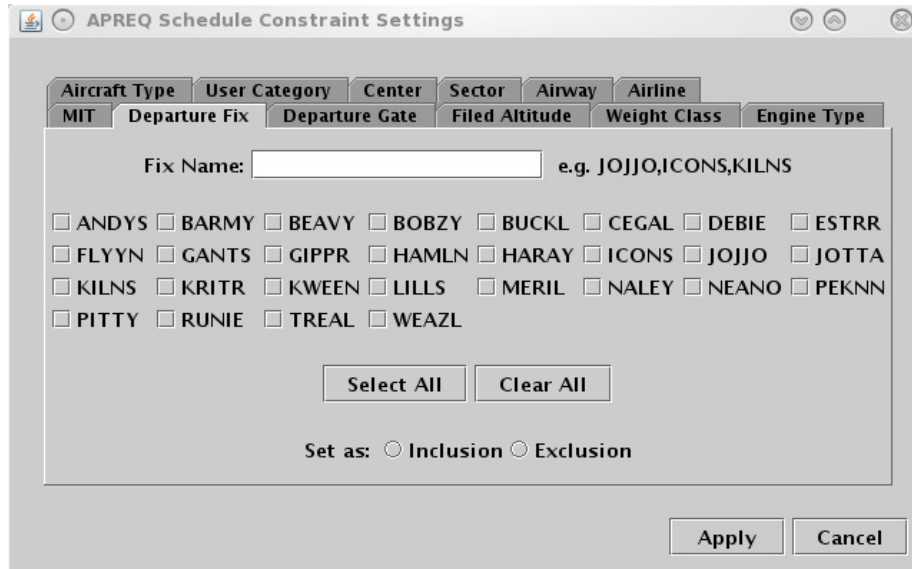


Figure 133. Constraints window: Departure Fix tab.

### 3.7.5 Departure Gate Constraints Tab

To add one or more departure gates as a constraint, select the desired gate(s) from the list (Figure 134). Click “Select All” if all gates are desired. Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

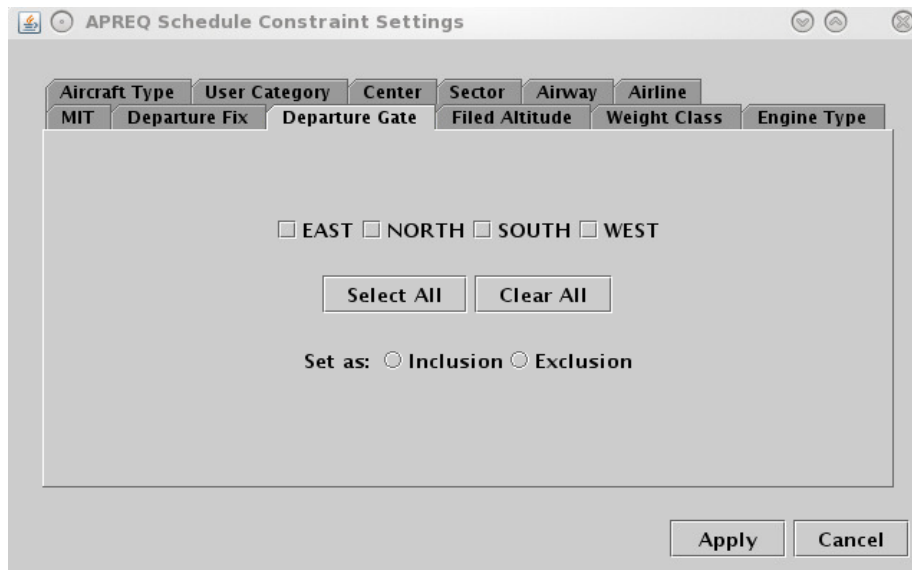


Figure 134. Constraints window: Departure Gate tab.

### 3.7.6 Filed Altitude Constraints Tab

For the “Filed Altitude” constraints tab (Figure 135), select whether the restriction is “At Or Above” or “At Or Below” to specify the range for the altitude constraint. Type a three-digit format altitude into the text box to complete the restriction. The three-digit

format for altitudes is the abbreviated form of a five-digit altitude; for example, “230” is an abbreviation of “23,000 ft.” Select to set as an “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

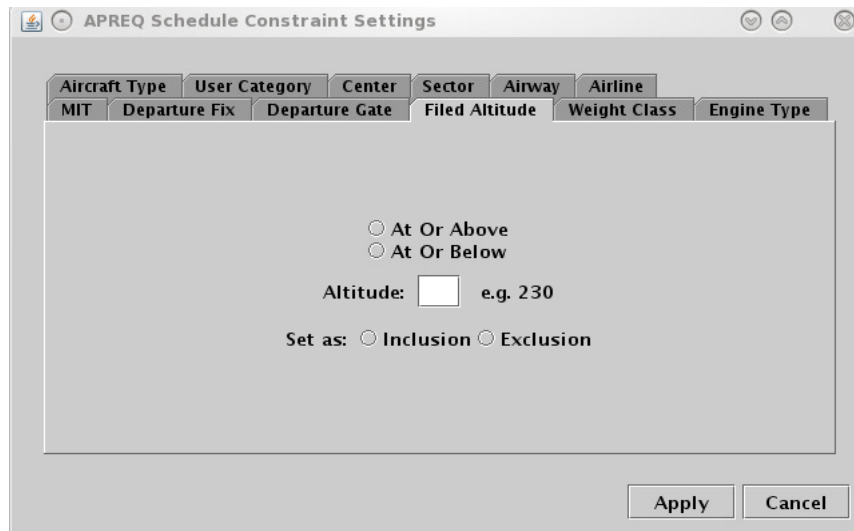


Figure 135. Constraints window: Filed Altitude tab.

### 3.7.7 Weight Class Constraints Tab

For aircraft weight class constraints (Figure 136), select from the A, B, C, D, E, and/or F checkbox option(s). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

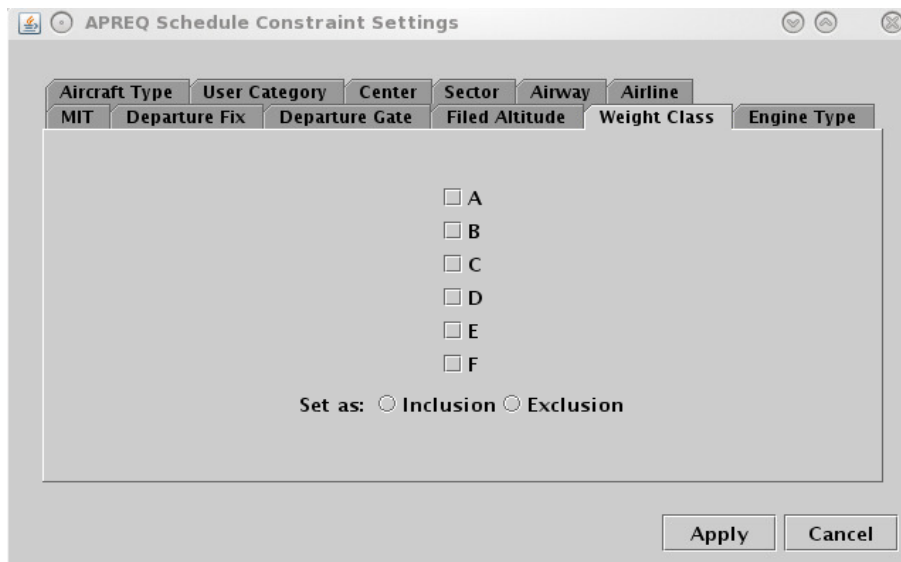


Figure 136. Constraints window: AC Weight Class tab.

### 3.7.8 Engine Type Constraints Tab

For aircraft engine type constraints (Figure 137), select the P, T and/or J checkbox(s). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

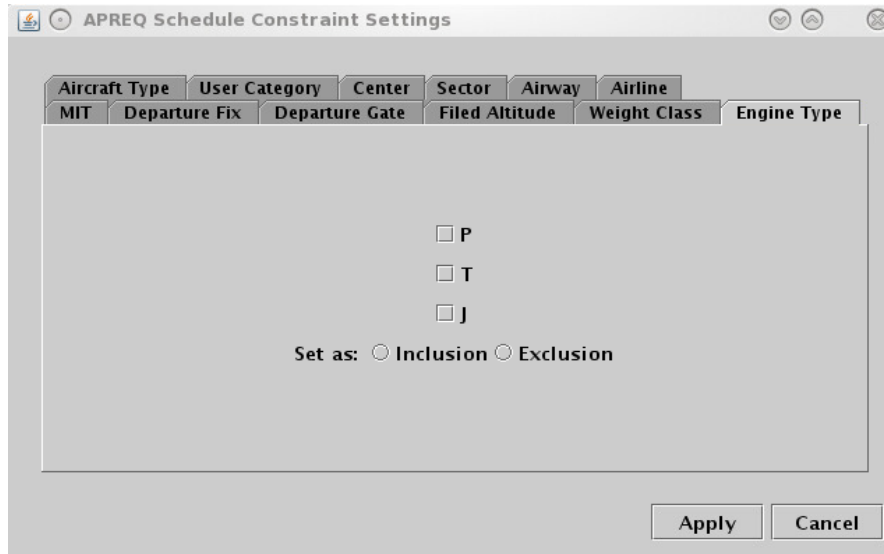


Figure 137. Constraints window: AC Engine Type tab.

### 3.7.9 Aircraft Type Constraints Tab

For aircraft type constraints (Figure 138), type in the 4-alphanumeric code (e.g., “A320”). To add multiple aircraft types, type all aircraft types separated by a comma and with no spaces (e.g., “CRJ2,CRJ7”). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

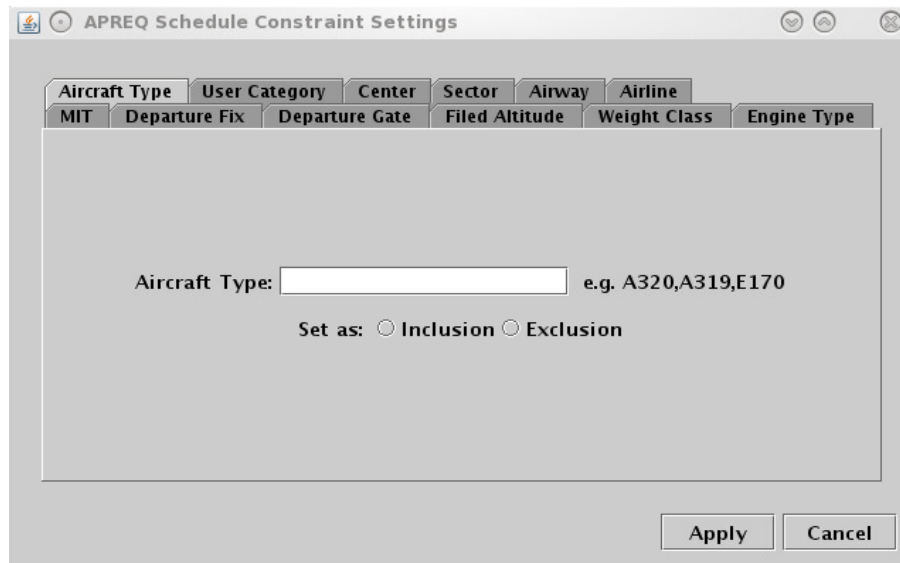


Figure 138. Constraints window: AC Type tab.

### 3.7.10 User Category Constraints Tab

For user category constraints, select from the checkbox options shown below (Figure 139). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

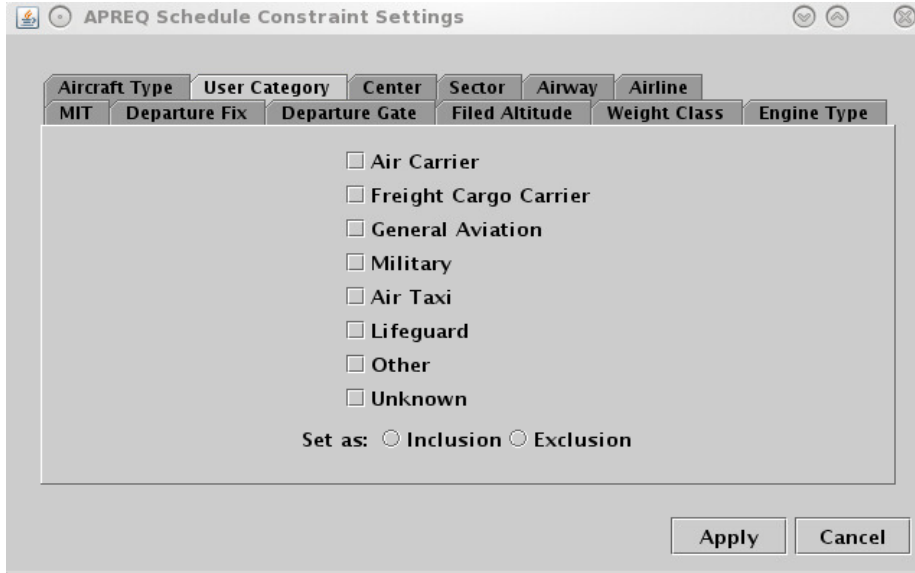


Figure 139. Constraints window: User Category tab.

### 3.7.11 Center Constraints Tab

For Center constraints (Figure 140), type in the 3-letter code of the Center (e.g., “ZTL”). To add multiple Centers, type all the Center codes separated by a comma and with no spaces (e.g., “ZTL,ZDC”). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

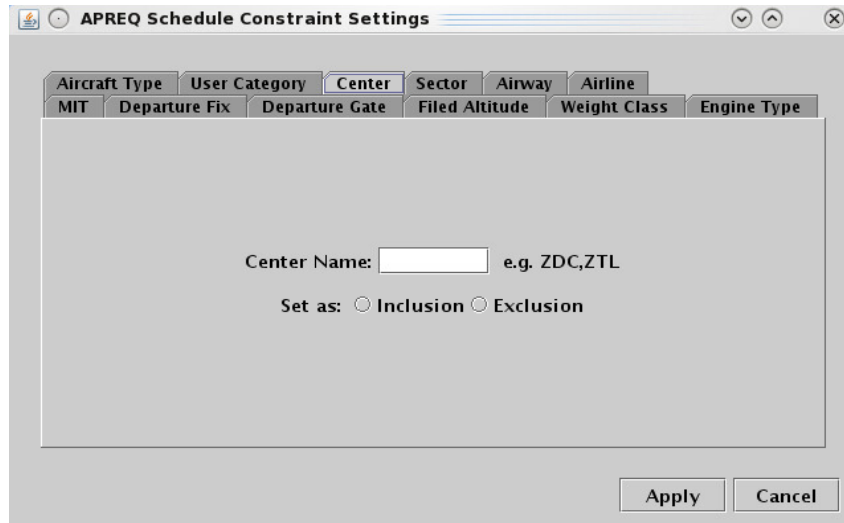


Figure 140. Constraints window: Center tab.



### 3.7.12 Sector Constraints Tab

For sector constraints, type in the sector name (Figure 141). The name needs to be composed of the 3-letter code of the center, plus the sector number (e.g., “ZTL30”). To add multiple sectors, type all the sectors separated by a comma and with no spaces (e.g., “ZDC36,ZDC160”). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

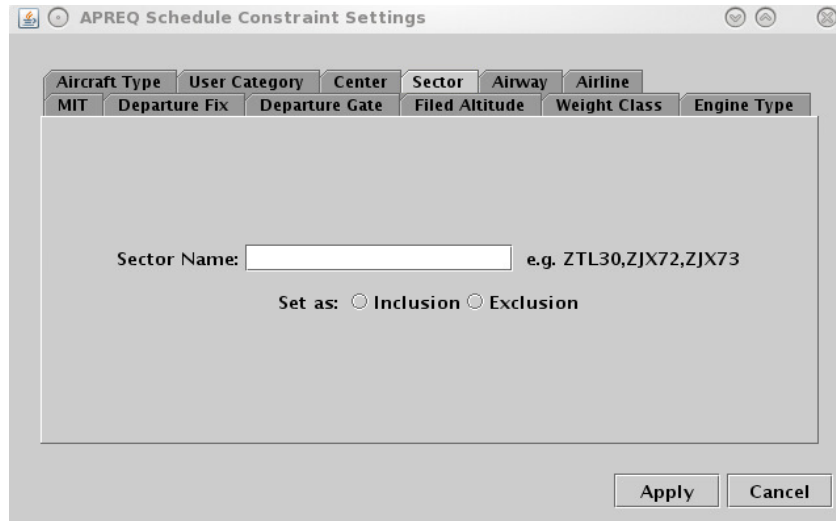


Figure 141. Constraints window: Sector tab.

### 3.7.13 Airway Constraints Tab

For airway constraints (Figure 142), type in the alphanumerical code of the airway (e.g., “J75”). To add multiple airways, type all the airway codes separated by a comma and with no spaces (e.g., “J75,J48”). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

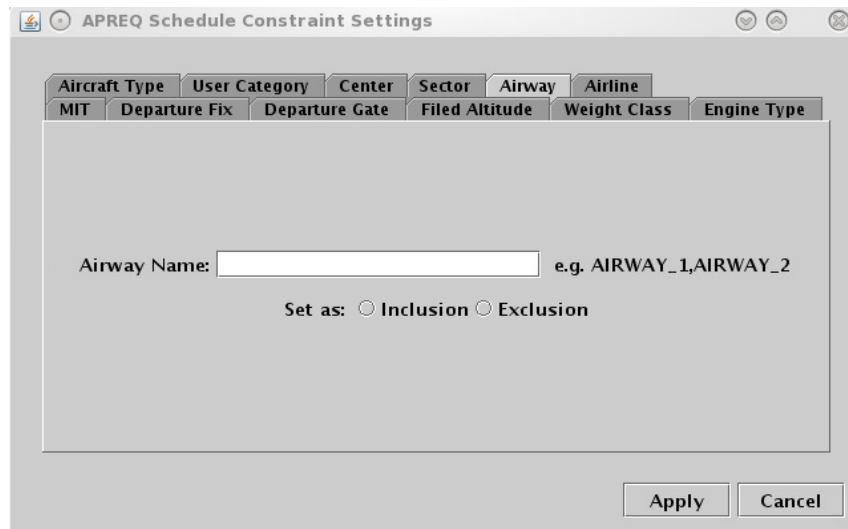


Figure 142. Constraints window: Airway tab.

### 3.7.14 Airline Constraints Tab

For airline constraints (Figure 143), type in the 3-letter code (e.g., “AAL”). To add multiple airlines, type all airlines codes separated by a comma and with no spaces (e.g., “UAL,DAL”). Set as “inclusion” or “exclusion”. Click “Apply” or open another tab to make another selection.

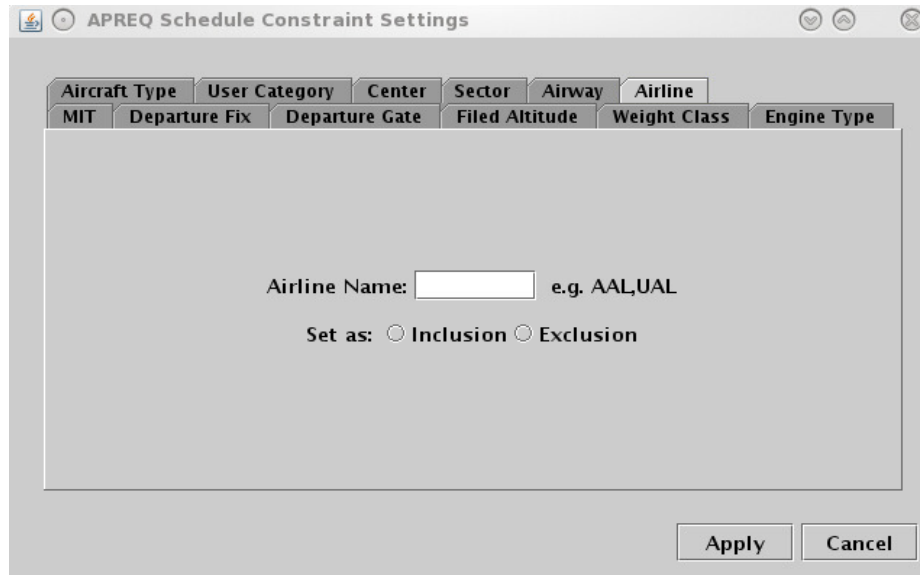


Figure 143. Constraints window: Airline tab.

### 3.7.15 Right-Click to Exclude a Flight from a TMI

A right-click option is available to exclude individual flights from TMIs.

To exclude a single flight from a TMI:

**Step 1:** Right-click on the flight somewhere on the STBO Client interface – either the flight’s Timeline datablock, the flight’s Map datablock, or the flight’s row in the Flights Table (Figure 144).

**Step 2:** Select “Exclude from [TMI].” In the example below, the flight can be excluded from an APREQ.

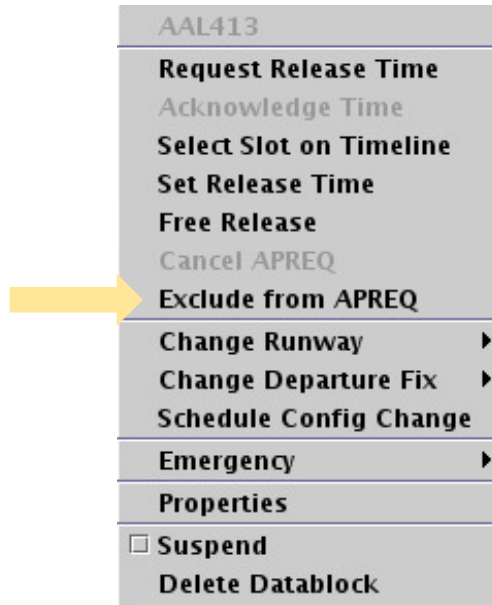


Figure 144. Right-click menu for a single flight.

Once the flight is excluded from the TMI, the flight's datablocks and row on the Flights Table will return to the state of a non-TMI flight for that particular TMI.

## 4 APREQ Procedures

This section describes procedures for APREQs in the STBO Client. It assumes that APREQs have been entered or read into STBO previously, either read in through SWIM or manually entered in the TM Actions window (see section **Error! Reference source not found.**). If an APREQ restriction is scheduled, e.g. APREQ for flights to EWR, then notification about the APREQ has already been published to all ATD-2 users, and the Timeline will have been updated to show “APREQ” on the Timeline datablocks for all flights with the APREQ restriction (Figure 145). APREQ aircraft will also be identifiable on the Flights Table (Figure 146) and the Map (Figure 147). All right-click actions for APREQ flights are available on the Timeline, Flights Table, and Map.

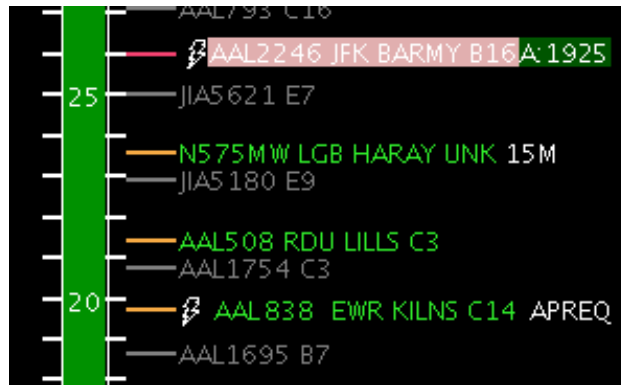


Figure 145. APREQ flight on STBO Client Timeline.

Flight ID	Dest	Dep Fix	APREQ
ENY3799	CHO	KRTR	
ENY3748	CLT		
AAL838	EWR	KILNS	APREQ
JJA5393	CLT		

Figure 146. APREQ flight on STBO Client Flights Table.



Figure 147. APREQ flight on STBO Client Map.

If an APREQ flight also has an EDCT, the STBO Client provides situational awareness information about the EDCT compliance window for the flight (Figure 148). A yellow rectangle is drawn on the Timeline that outlines the EDCT compliance window to offer decision support when requesting an APREQ release time. The yellow rectangle is only drawn on the Timeline when the flight’s datablock is selected.

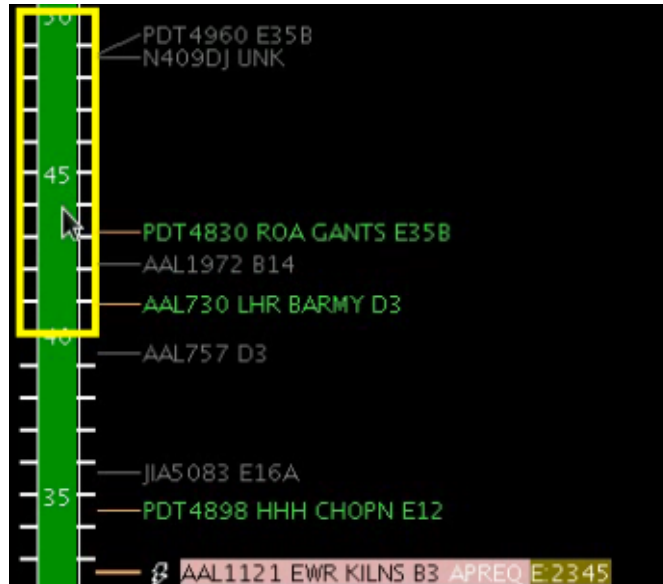


Figure 148. EDCT compliance window displayed for an APREQ flight that also has an EDCT.

#### 4.1 Electronic APREQ Coordination

If there is a "lightning bolt" symbol to the left of the call sign on the Timeline datablock (Figure 149), it means that electronic coordination of an APREQ release time is available for the flight.



Figure 149. APREQ flight capable of electronic coordination of release time.

For APREQ flights that are capable of electronic coordination, the slots in the overhead stream that are available for the flight are displayed on the Timeline (Figure 150). Available slots in the overhead stream are shown in green; occupied/unavailable slots are shown in red. The flight's Timeline datablock must be selected in order to display the slots. All available slots displayed are specific to the selected flight. The STBO Client will only read available slots from TBFM for a range of 15 minutes before to 30 minutes after the flight's current position on the Timeline. For example, if a flight's TTOT is 1933, the STBO Client will probe TBFM for slot availability from 1918 to 2003. Any available slots outside of that time range will not be displayed.

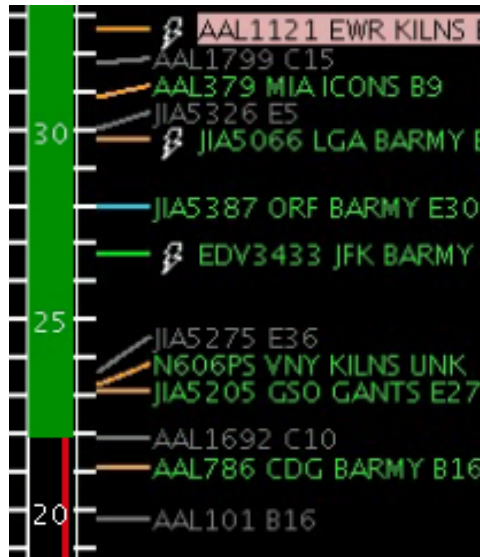


Figure 150. Slots in the overhead stream (in green) for a selected flight on the Timeline.

There are two methods for requesting APREQ release times electronically: “Request Release Time” and “Select Slot on Timeline.” Each of those methods are described in the following sections.

#### 4.1.1 Request Release Time

The “Request Release Time” option is a method of electronically requesting a release time without manually specifying a time to request. The STBO automation will choose a release time based on two criteria: 1) the predicted earliest possible departure time for that flight, and 2) on the availability of slots in the overhead stream.

To electronically request a release time using the “Request Release Time” option:

**Step 1:** Right-click on the APREQ flight’s Timeline datablock (Figure 151).

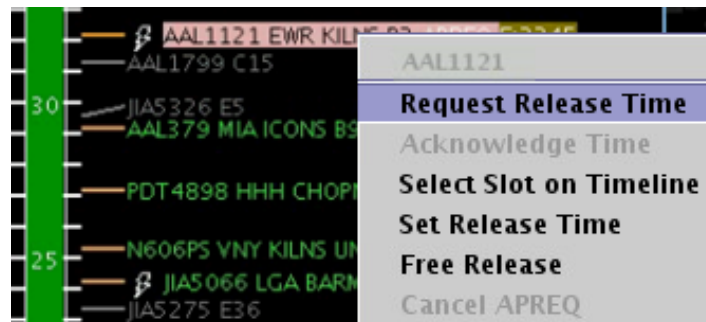


Figure 151. Right-click on APREQ flight to “Request Release Time.”

**Step 2:** Choose the “Request Release Time” option. Once the option is selected, a yellow arrow will appear to the right of the Timeline datablock to indicate that the requested release time has been sent to TBFM/IDAC at the Center (Figure 152).



Figure 152. Request for a release time has been sent to Center.

When Center accepts and returns the release time, the assigned release time is written on the Timeline datablock as “A:#####” (e.g., “A:2344”; see Figure 153). The release time is highlighted with a compliance indicator (see section 4.4 for more information on compliance indicators). The returned release time is accompanied by an audible alert. Once the release time coordination is complete, the release time is published to all ATD-2 users.



Figure 153. Release time returned by Center.

For information about what happens when Center does not accept the requested release time, see section 4.1.3.

#### 4.1.2 Select Slot on Timeline

The “Select Slot on Timeline” option is an alternative way of requesting an APREQ release time that allows the TMC to view available slots and make a manual selection of a release time to request from Center. When viewing slots on the Timeline, green blocks are available slots and slots depicted by the red line are unavailable (Figure 150).

To electronically request a release time using the “Select Slot on Timeline” option:

**Step 1:** Right-click on the APREQ flight’s Timeline datablock (Figure 154). When right-clicking on the flight’s Timeline datablock, the slots should automatically be drawn on the Timeline.

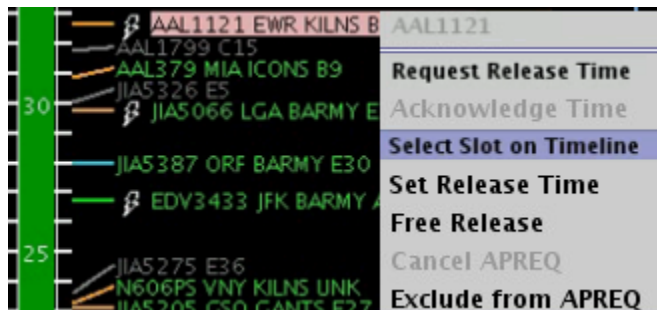


Figure 154. Right-click on APREQ flight to “Select Slot on Timeline.”

**Step 2:** Choose the “Select Slot on Timeline” option.

**Step 3:** Choose a desired release time for the flight and click on the center column of the Timeline on the desired release time (Figure 155). In the example below, 2344 is selected as the release time to request. Once the release time is selected, a yellow arrow will appear to the right of the Timeline datablock to indicate that the requested release time has been sent to TBFM/IDAC at the Center (Figure 156).

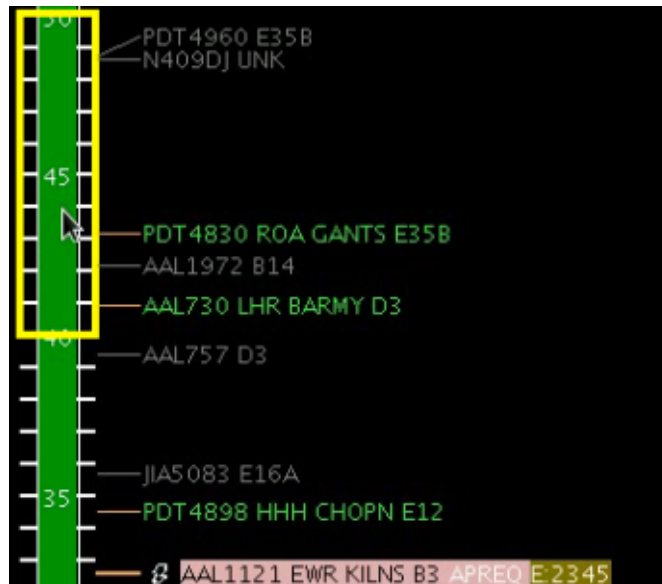


Figure 155. Select a slot on the Timeline to request as a release time.



Figure 156. Request for a release time has been sent to Center.

When Center accepts and returns the release time, the assigned release time is written on the Timeline datablock as “A:#####” (e.g., “A:2344”; see Figure 157). The release time is also highlighted by a compliance indicator (see section 4.4 for more information on compliance indicators). The returned release time will also be accompanied by an audible ding. Once the release time coordination is complete, the release time will be published to all ATD-2 users.



Figure 157. Release time has been returned by Center.

For information about what happens when Center does not accept the requested release time, see section 4.1.3.



### 4.1.3 If Center Does Not Accept the Requested Release Time

#### 4.1.3.1 Center Returns a Different Release Time

If the Center returns a time that differs from the requested release time, a yellow diamond with an exclamation point appears next to the flight's datablock on the Timeline (Figure 158). An audible alert (double ding) will also accompany the returned time. To clear out this yellow diamond alert, click on the yellow diamond.



Figure 158. Center returns a different release time then the time requested.

If the returned release time is not desired, the APREQ coordination process can be restarted by cancelling the APREQ (see section 4.5).

#### 4.1.3.2 Center Cancels the Release Time

If the Center cancels the requested APREQ release time or an APREQ release time that has already been negotiated and confirmed, a double-ding audio alert sounds.

### 4.2 Manual Entry of Call for Release Times

If there is a "telephone" symbol to the left of the call sign on the Timeline datablock (Figure 159), it means that electronic coordination of an APREQ release time is not available for the flight. In this case, coordination of the release time be completed via a verbal Call for Release and the release time can be manually entered into the system. If this time is entered into TBFM, this may be read in by ATD-2 automation and entries will not be required. In the event, these entries are not automatically read in, the steps for manual entries are discussed below.

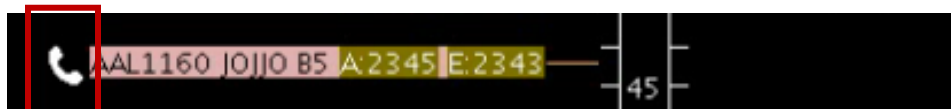


Figure 159. APREQ flight is not capable of electronic coordination of release time.

To complete a manual entry of a Call for Release time:

**Step 1:** Complete the Call for Release for the flight.

**Step 2:** Right-click on the flight's Timeline datablock and select "Set Release Time (Figure 160).



Figure 160. Right-click on APREQ flight to “Set Release Time.”

**Step 3:** Type the verbally coordinated release time into the Set Release Time window (Figure 161).

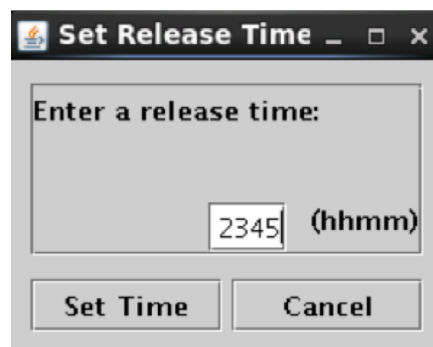


Figure 161. Enter the verbally coordinated release time into STBO Client.

**Step 4:** Click on “Set Time” to complete the entry of the release time into the STBO Client.

The release time now appears on the flight’s Timeline datablock as “A:#####”, or “A:2345” in the example shown (Figure 162). The release time is also highlighted by a compliance indicator (see section 4.4 for more information on compliance indicators). Once the release time coordination is complete, the release time is published to all ATD-2 users.

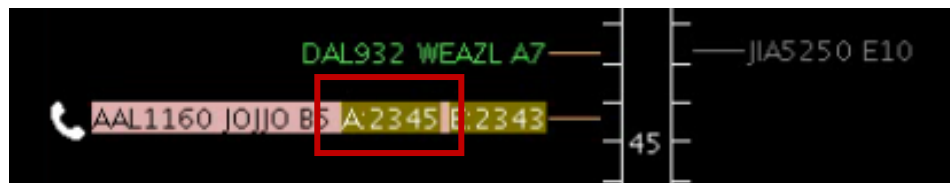


Figure 162. Release time is now set in the ATD-2 system.

It should be noted that Center often enters a Call for Release time into TBFM. In this case, SWIM publishes the release time to the STBO Client, and the release time auto-populates on the STBO Client without the user having to manually enter the time into the system.

### 4.3 Free Release

When a flight has a floating release time there is an option to set it for “Free Release” to avoid it being flagged as “non-compliant”.

To set a flight with a floating release time:

**Step 1:** On the STBO Timeline, right click on a flight that currently has a scheduled release time.

**Step 2:** Select “Free Release” from the menu options (Figure 163).

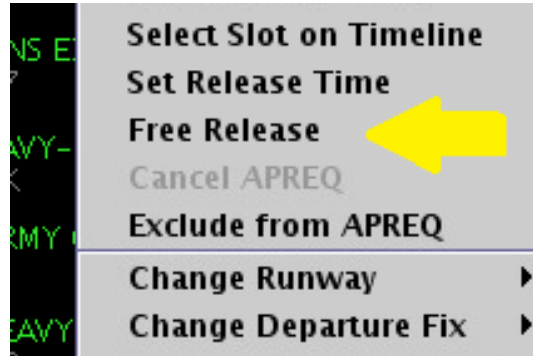


Figure 163. Select Free Release for a floating release time.

On the STBO Timeline, the flight will now display “A-RLSD” to indicate it has a floating release time (Figure 164).



Figure 164. Floating Release time for Free Release flights.

### 4.4 Compliance Indicators

Compliance indicators are used to show the status of a flight’s compliance with its release time. Flights can be assigned both APREQ and EDCT release times, and therefore each release time has its own compliance indicator (Figure 165).



Figure 165. Compliance indicators.

The following table outlines the different colors of the compliance indicators:

Compliance Indicator Color	Description
Green	The flight is projected to be released from the runway in compliance with its release time window.
Yellow	The flight is projected to <i>not</i> be released from the runway in compliance with its release time window and to be released <i>early</i> .
Red	The flight is projected to <i>not</i> be released from the runway in compliance with its release time window and to be released <i>late</i> .

#### 4.5 Cancel an APREQ

Cancelling an APREQ may be done in the event that: (1) Center returns a release time that differs from the originally requested release time and the new release time is not favorable, (2) the flight can no longer make its assigned release time and a new release time must be coordinated, or (3) a new release time has been coordinated and must be manually entered into the STBO Client.

Note that an APREQ release time cannot be edited. An existing APREQ release time must be cancelled before scheduling a new time.

To cancel an APREQ:

**Step 1:** Right-click on the flight's Timeline datablock.

**Step 2:** Select "Cancel APREQ" (Figure 166).

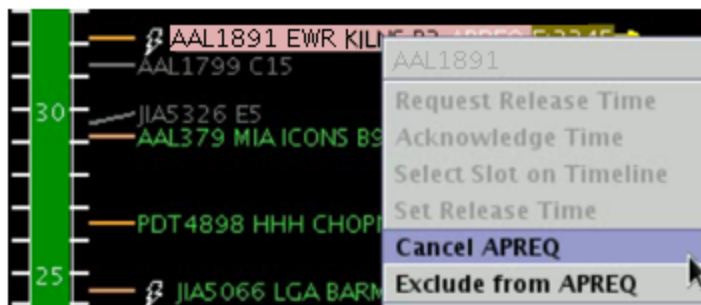


Figure 166. Cancel an APREQ.

**Step 3:** Click “OK” on the confirmation window (Figure 167. Pop-up Confirmation Window).

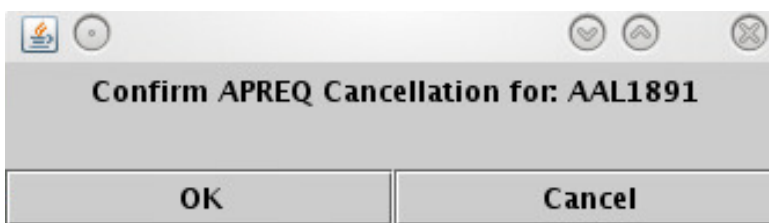


Figure 167. Pop-up Confirmation Window.

The flight’s datablock on the STBO Timeline will now return to its original state with no APREQ release time or compliance indicator for the APREQ release time (Figure 168). Once the APREQ release time is cancelled, the coordination process for a new release time can begin again.



Figure 168. Flight returned to original state after APREQ is cancelled.

## Appendix A: Acronyms

This appendix defines acronyms and terms that are used repeatedly throughout the ATD-2 STBO Client User Manual.

Acronym	Term
!=	Does not equal or not equal to
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
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
CLT	Charlotte Douglas International Airport

<b>Acronym</b>	<b>Term</b>
CSV	Comma-Separated Values (file type)
CTOP	Collaborative Trajectory Options Program
CTOT	Controlled TakeOff Time
DAL	Delta Air Lines
DB	DataBlock
DEPFIX	Departure Fix
DEST	Destination
DFW	Dallas / Fort Worth International Airport
EDCT	Expected Departure Clearance 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
FAA	Federal Aviation Administration
FDX	FedEx
FUSION	Consolidates all available airport surveillance to simulate a single-sensor radar display system
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
IDAC	Integrated Departure Arrival Capability
IOBT	Initial Off-Block Time
LGA	LaGuardia International Airport
LIBT	Airline In Block Time

<b>Acronym</b>	<b>Term</b>
LOB	Long On Board
LOBT	Airline Off Block Time
MIT	Miles-In-Trail
NASA	The National Aeronautics and Space Administration
<i>nmi</i>	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 Take Off Time
SWIM	System-Wide Information Management
TBD	To Be Determined
TBFM	Time-Based Flow Management System
TFDM	Terminal Flight Data Manager
TFM	Traffic Flow Management
TFMS	Traffic Flow Management System



<b>Acronym</b>	<b>Term</b>
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 Take Off Time
TZ	Track data from TFMS
UAL	United Airlines
UIBT	Undelayed In Block Time
ULDT	Undelayed Landing Time
UMAT	Undelayed Movement Area entry Time
UNK	Unknown
UOBT	Undelayed Off-Block Time
UTOT	Undelayed Take Off Time