Air Traffic Management Demonstration II (ATD-2)

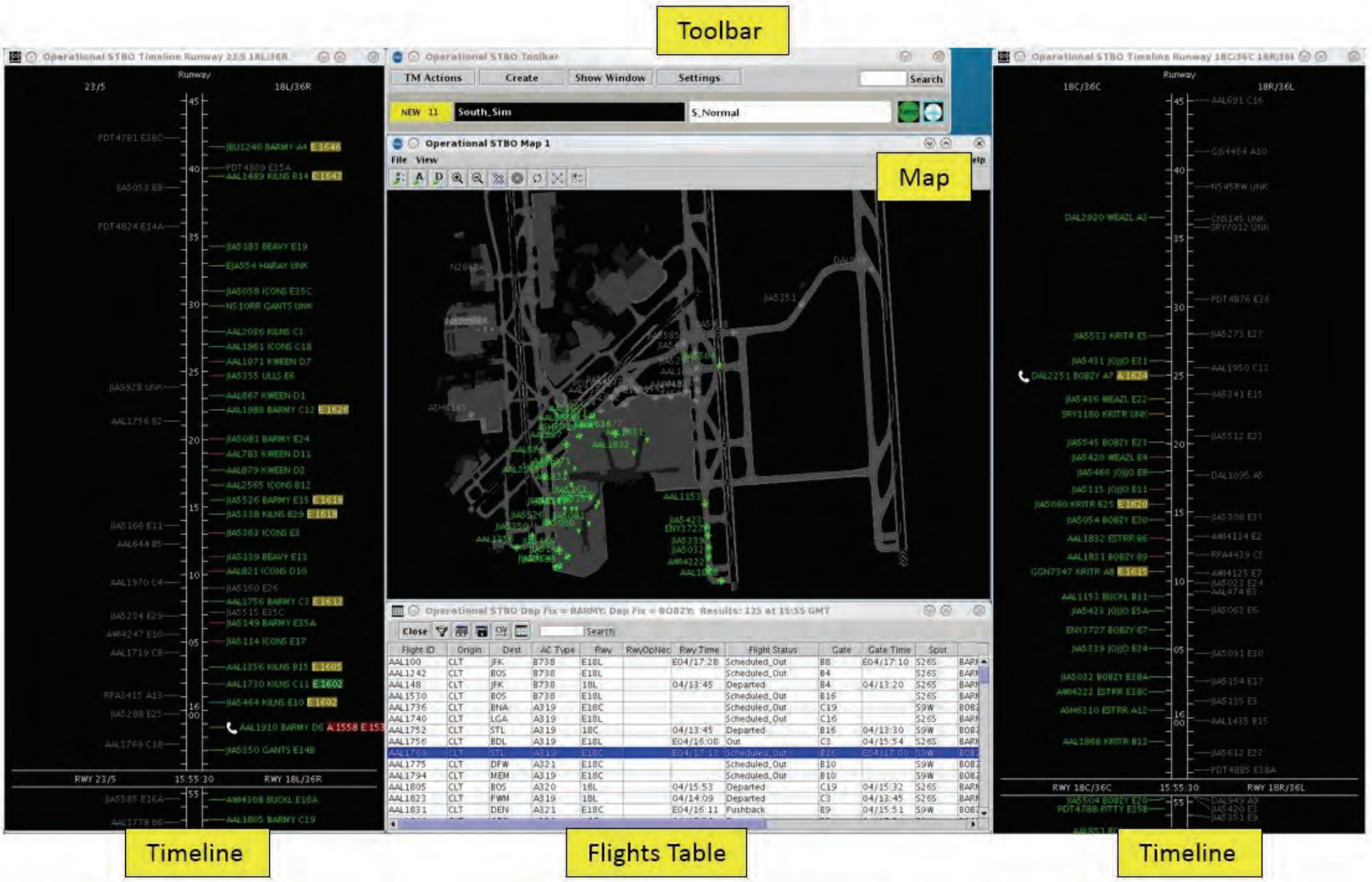
ATC Tower and TRACON Training

CLT
September 25-29, 2017

Agenda

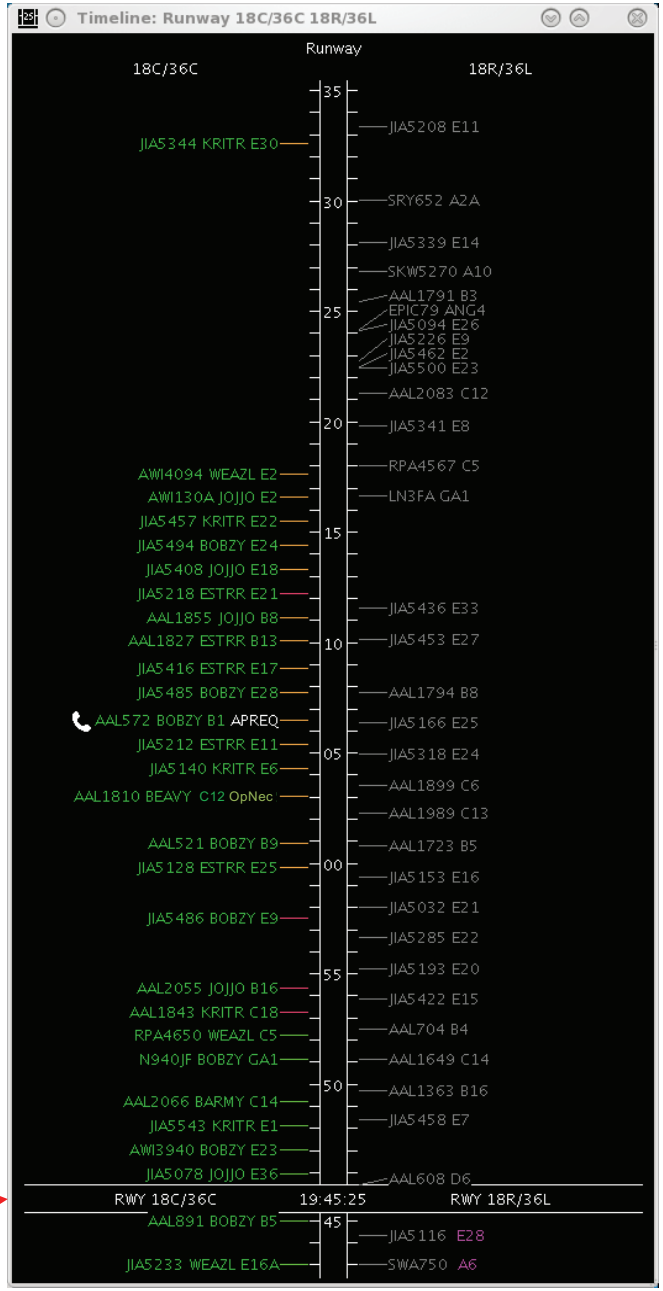
Time	Event	Presenter
0730	**Overview of STBO Client**	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	APREQ Procedures	Bob
0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	Hands-on Training	

Main Interface

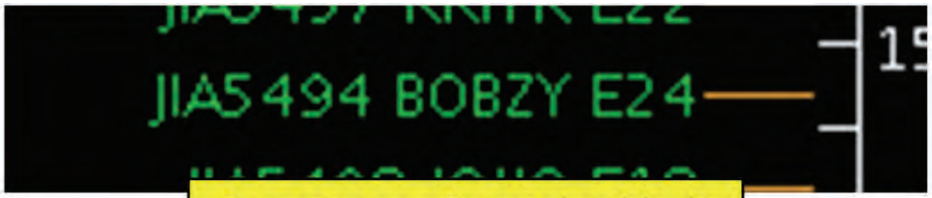


Timeline

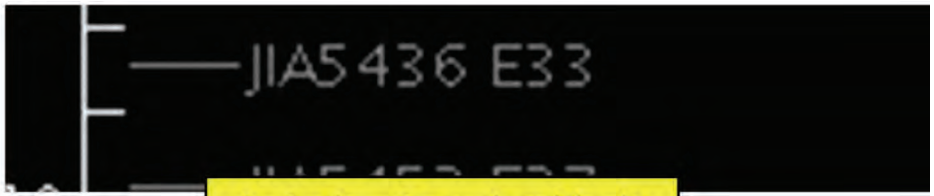
- Timeline shows information about:
  - Arrivals
  - Departures
  - TMIs
  - Runway change for operational necessity
  - Gate conflicts
  - Pushback/taxi status
- Location on Timeline represents predicted OFF time for departures and ON time for arrivals
- When datablock cross the runway line (Now time), aircraft has taken off/landed



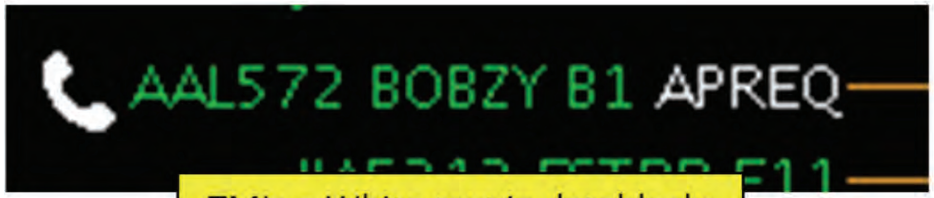
Timeline Elements



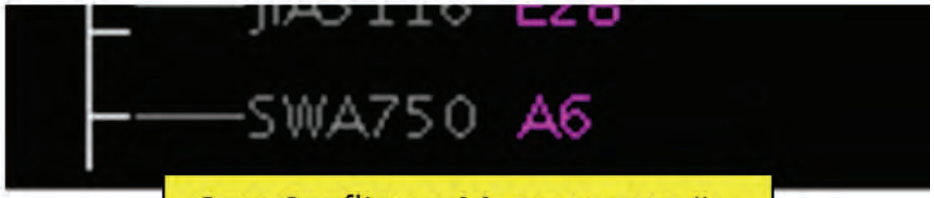
Departures = Green datablocks



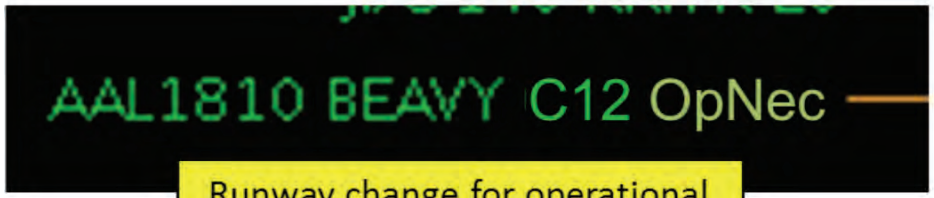
Arrivals = Grey datablocks



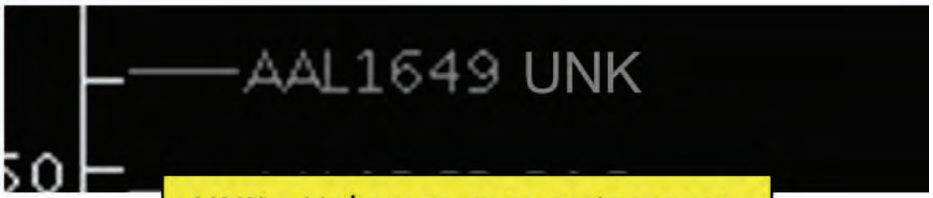
TMIs = White text in datablocks



Gate Conflicts = Magenta gate #s

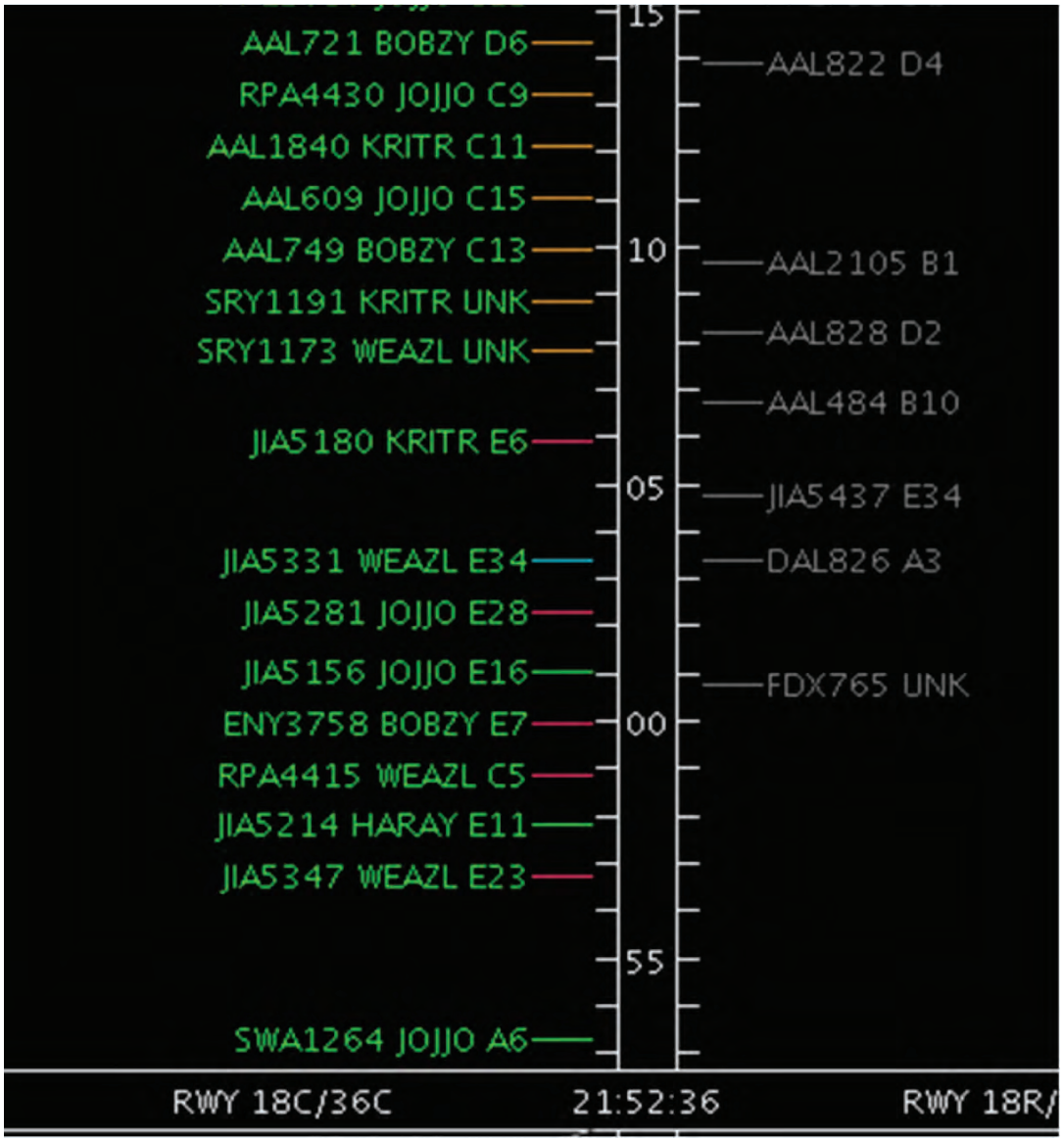


Runway change for operational necessity = Light green text in datablocks



UNK = Unknown gate assignment

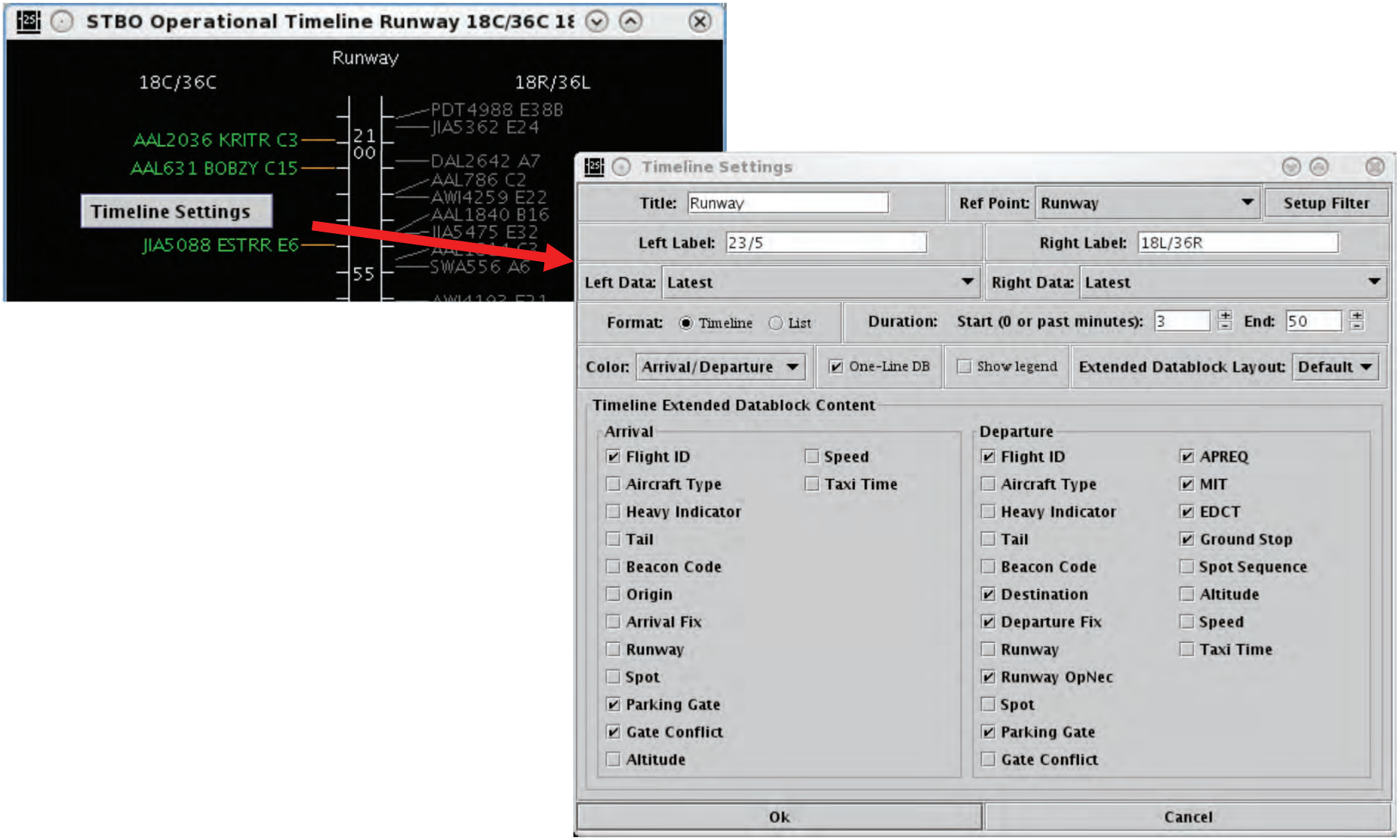
Timeline Elements



- Leader lines
  - Orange = Untracked
  - Dark Pink = Untracked with OUT time
  - Blue = Tracked in the Ramp
  - Green = Tracked in the AMA
  - Grey = Arrival flights

Timeline – Change Settings

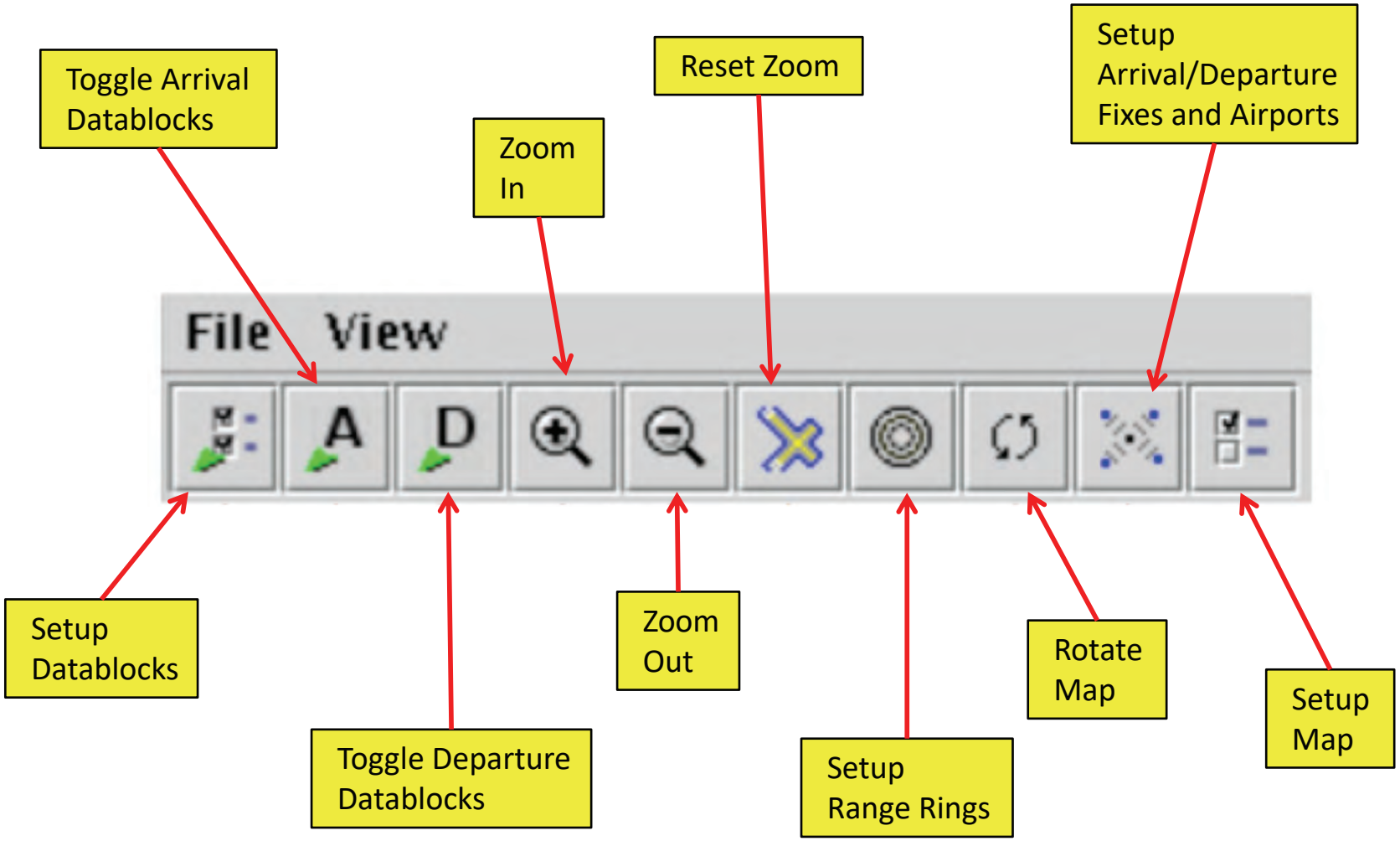
Right click on the Timeline and select “Timeline Settings” to open Timeline Settings window.



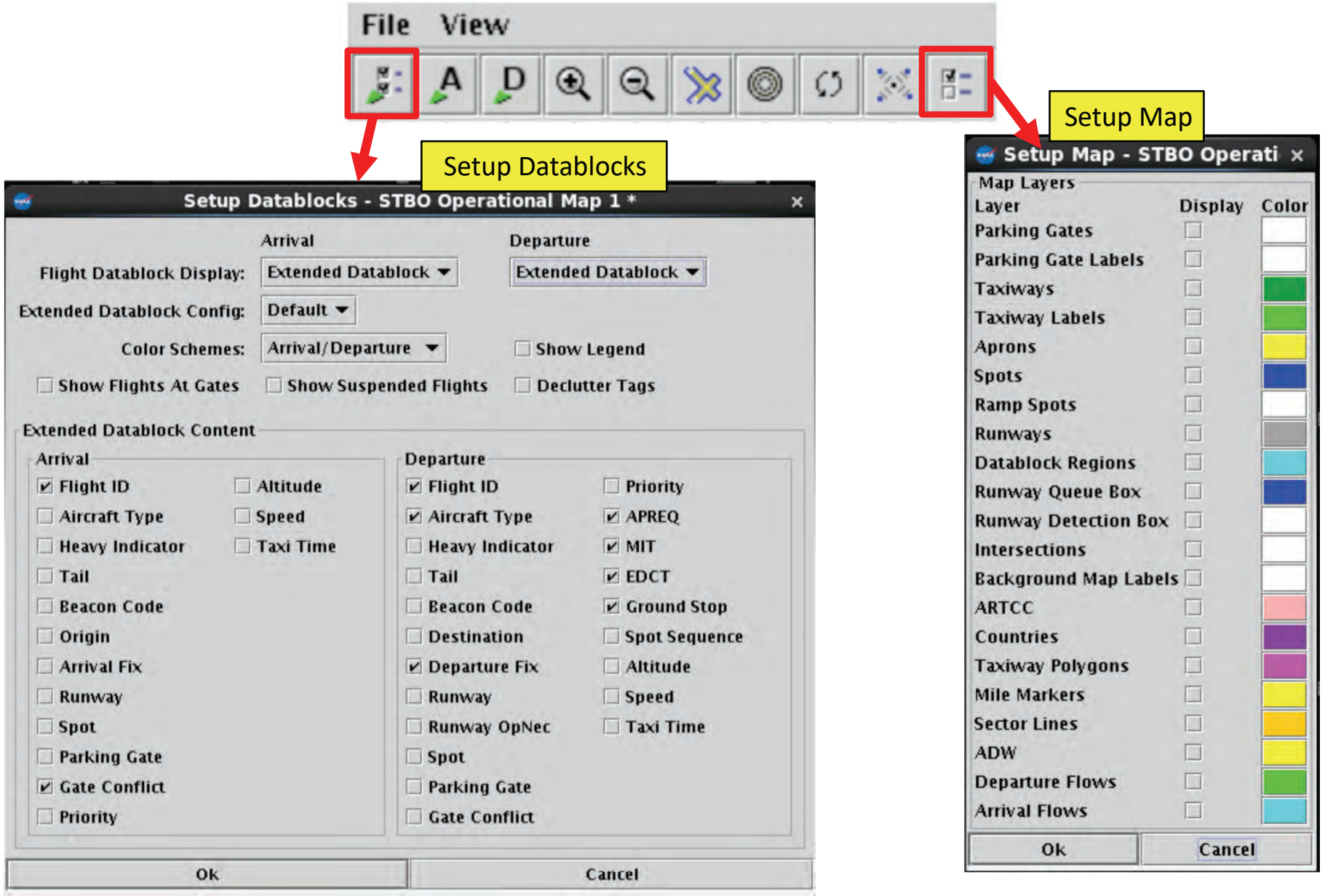
Map

Menus
STBO Operational Map 1
File
View
Help
Map Toolbar
STBO Client Help Menu
SKW5651
EDV4005
JIA5223
AAL705
AAL786
AAL2050
RPA3415
JIA5283
JIA5064
JIA5265
AWI4139
Arrivals = grey
Departures = green

Map Toolbar

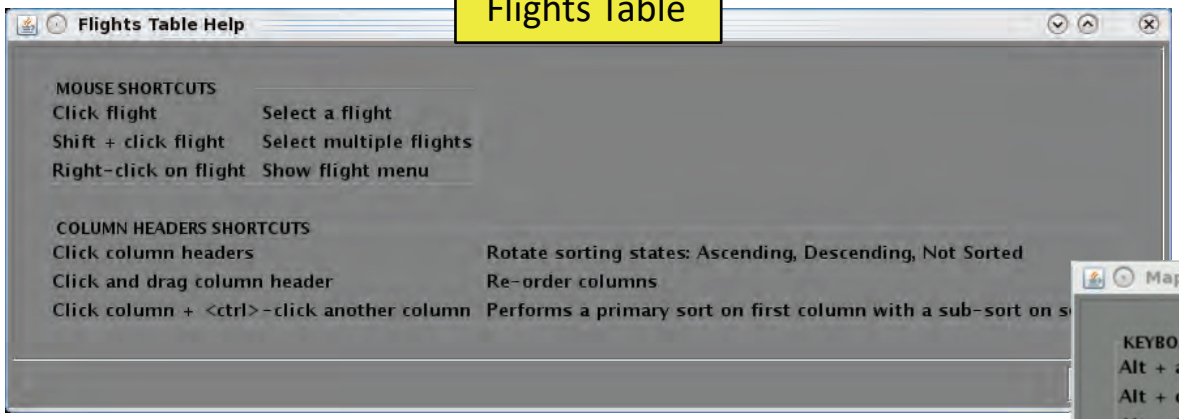

Toggle Arrival Datablocks
Zoom In
Reset Zoom
Setup Arrival/Departure Fixes and Airports
File View
A
D
Setup Datablocks
Toggle Departure Datablocks
Zoom Out
Setup Range Rings
Rotate Map
Setup Map

Map Settings

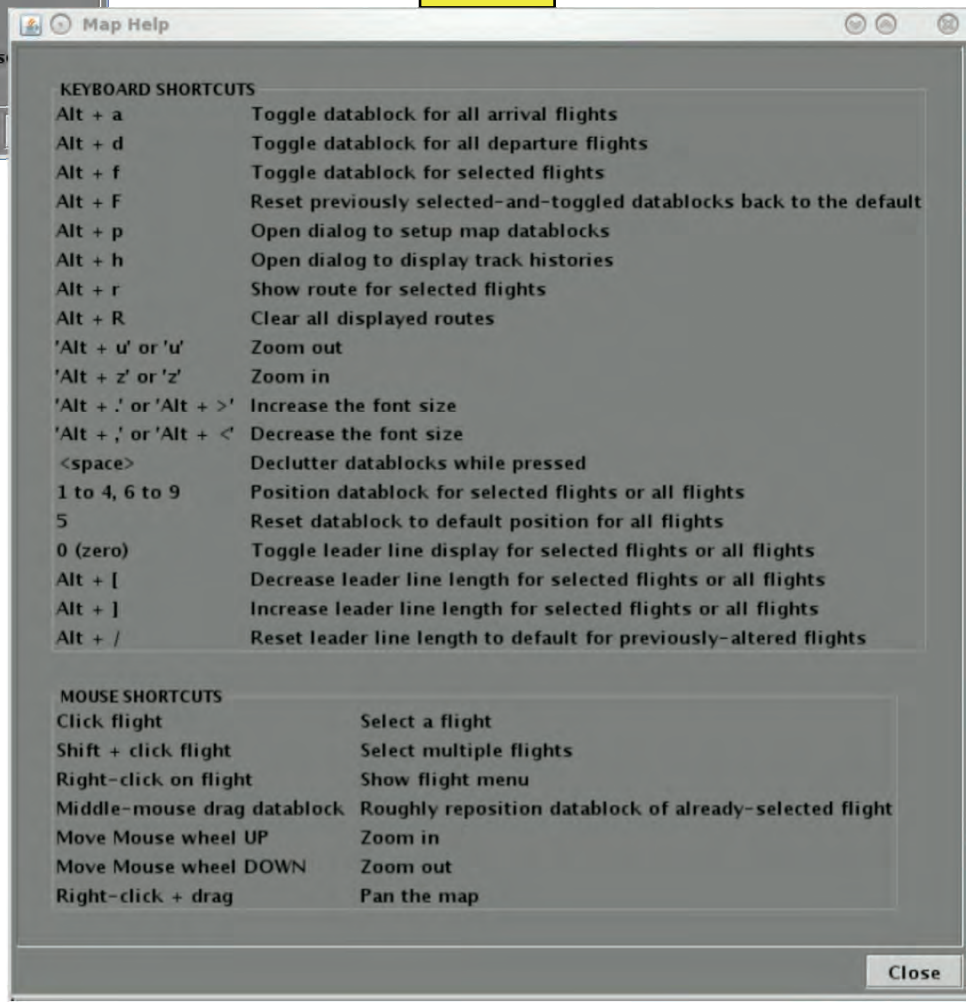


Quick Keys

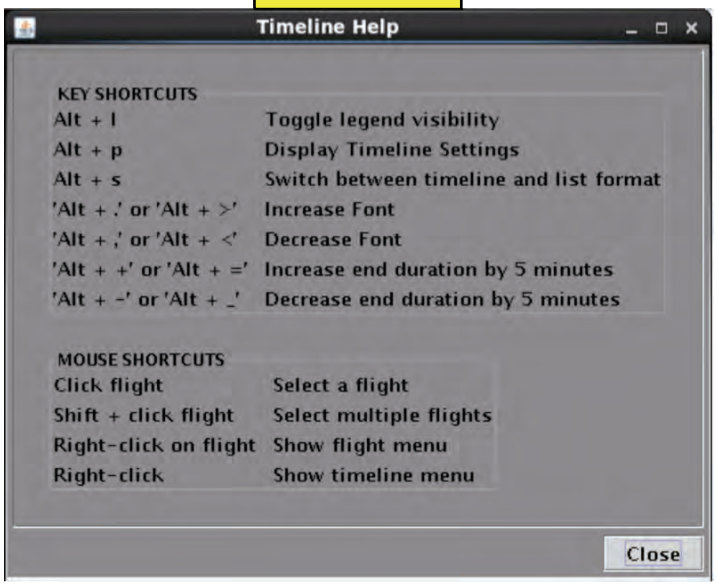
Flights Table



Map



Timeline



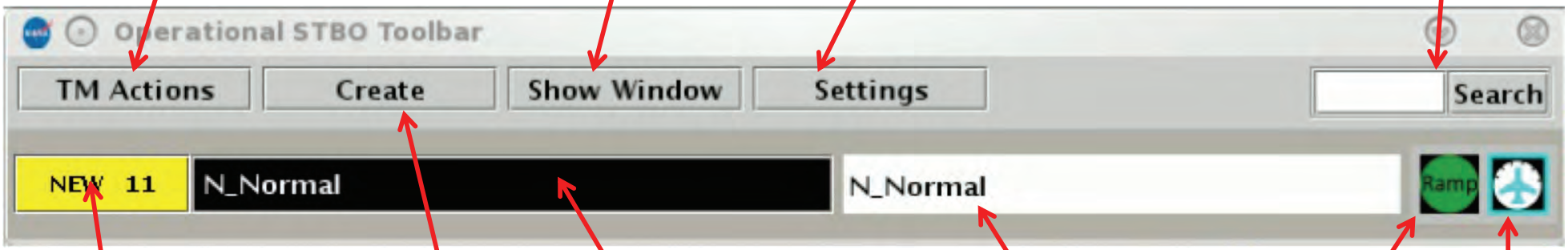
Toolbar

TM Actions: Drop down menu that allows user to schedule/make changes to TMIs and runway utilization

Show Window: Drop down menu that allows user to locate a window that is open but hidden from view

Settings: load/save user preferences, show/hide Map clock, adjust gate conflict settings

Search feature



New Notification icon/number

Create: Drop down menu that allows user to add new windows to the interface (i.e., Timelines, Tables, Maps)

Notification Banner

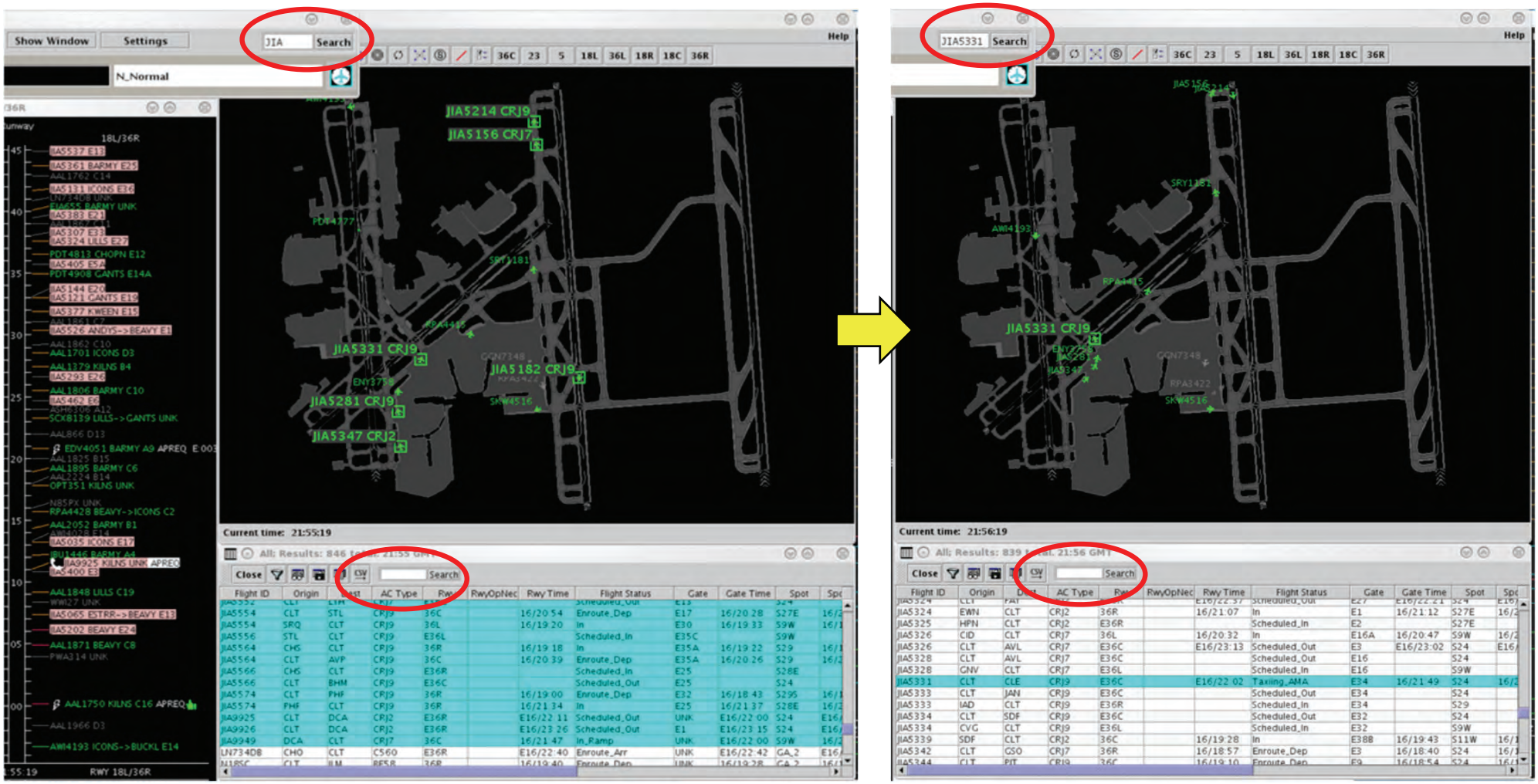
Runway Utilization icon

Ramp Status icon

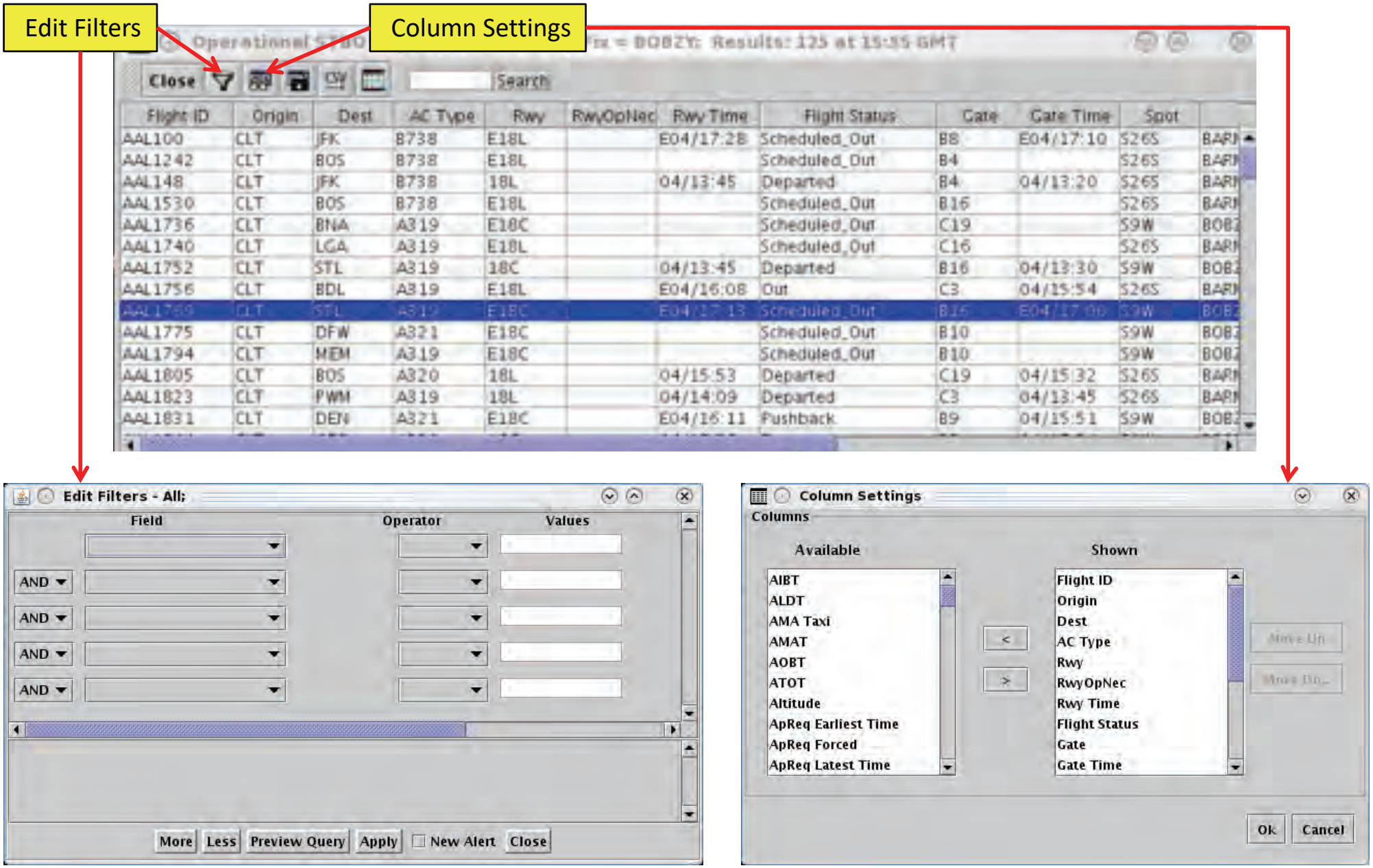
Metering icon

Search Feature

Use the search feature on the toolbar or in the Flights Table search for flight numbers, callsigns, destination airports, or departure fixes. All flights that match the search criteria are highlighted.

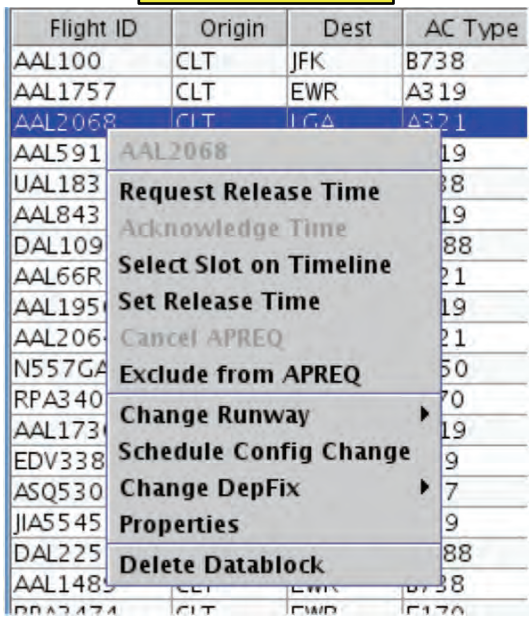


Flights Table



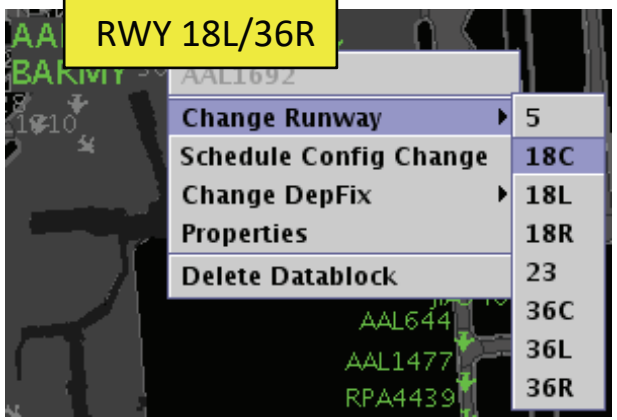
Changing a Runway for a Single Flight

Flights Table



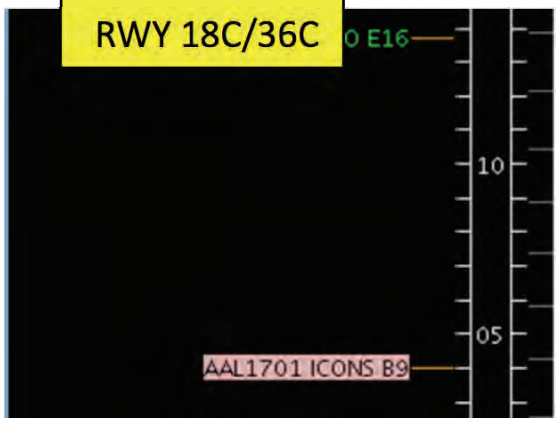
Right click on Timeline datablock, Map datablock, or the flight ID on the Flights Table and select the new runway.

Timeline: RWY 18L/36R



Step 1

Timeline: RWY 18C/36C

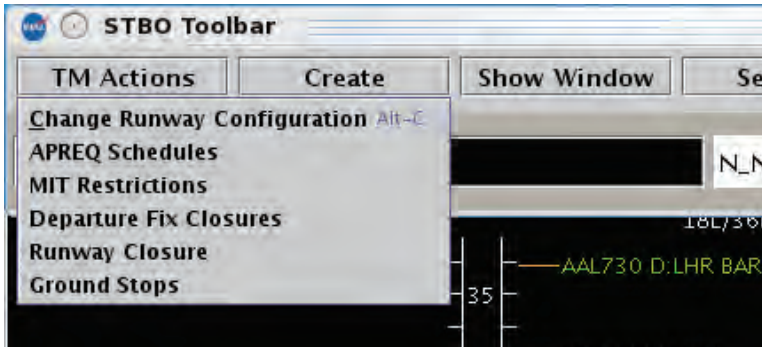


Step 2

TM Actions

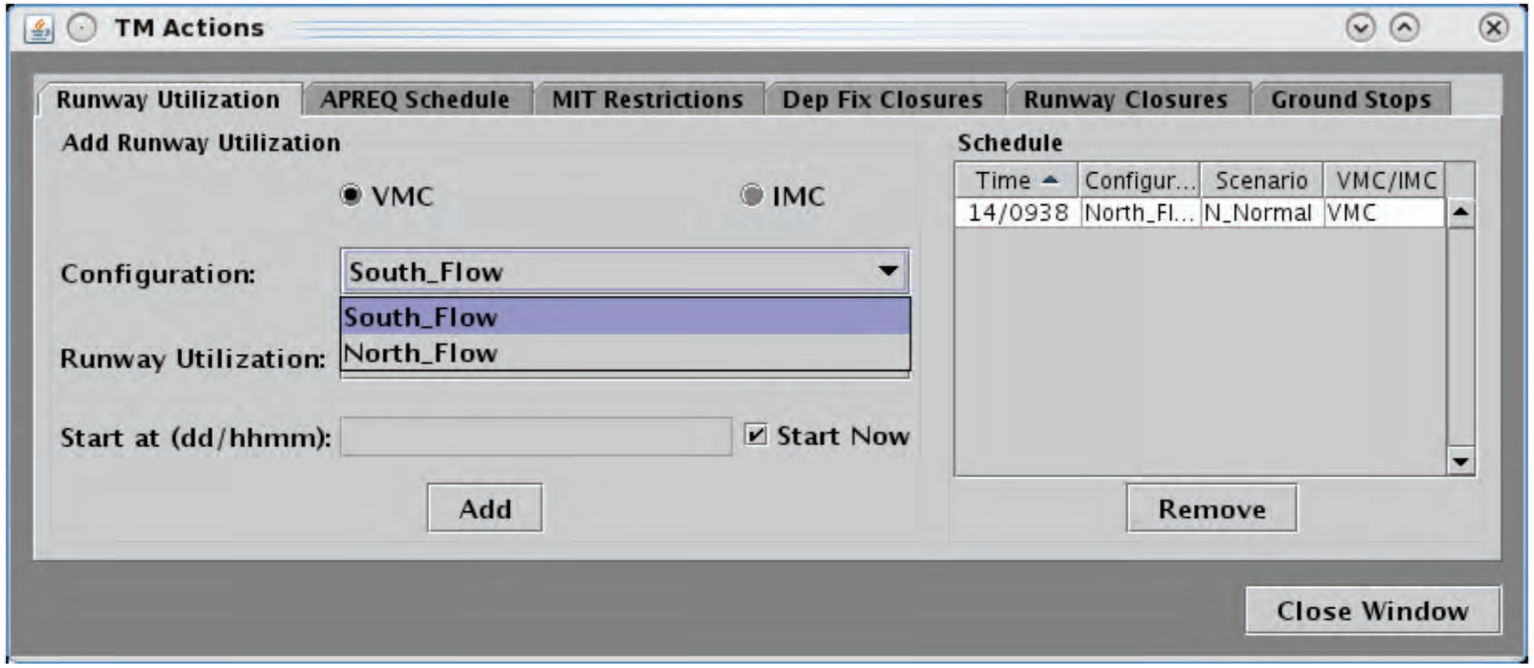
Changing Runway Utilization in STBO Client

- Click on TM Actions menu
  - select “Change Runway Configuration”



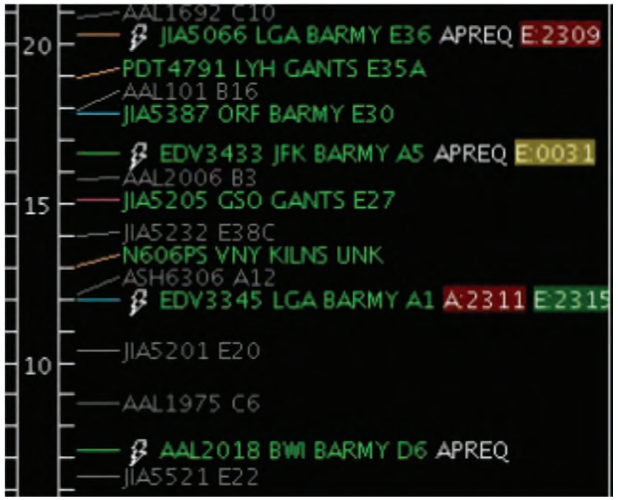
- “Runway Utilization” tab is pre-selected

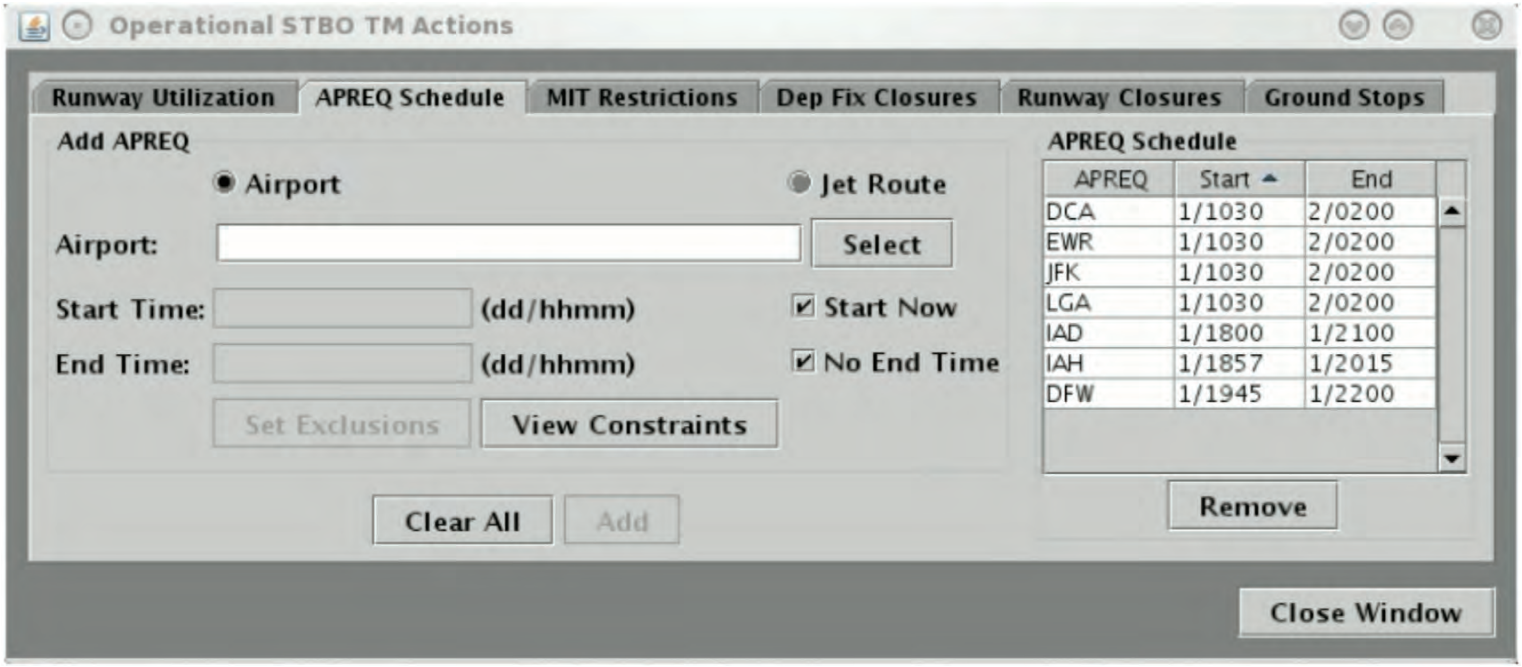
- Fill in information and “Add” to the schedule



Adding APREQs into STBO Client

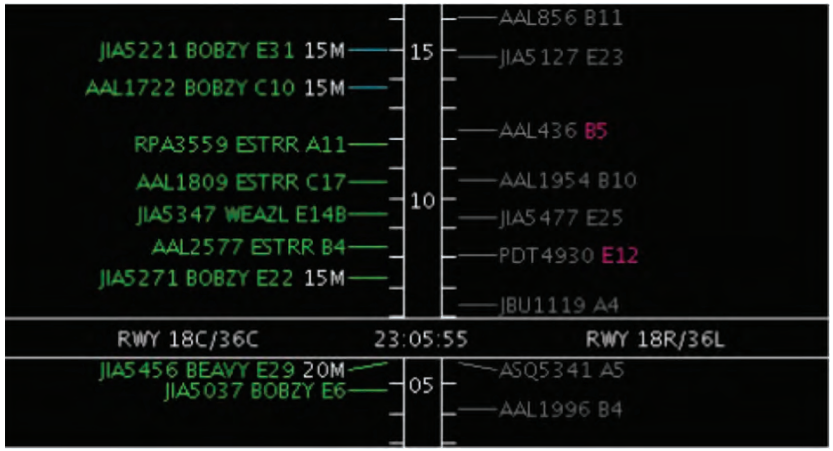
- Select “APREQ Schedules” tab
- Fill in information and “Add” to the schedule
- You can set and preview exclusions too

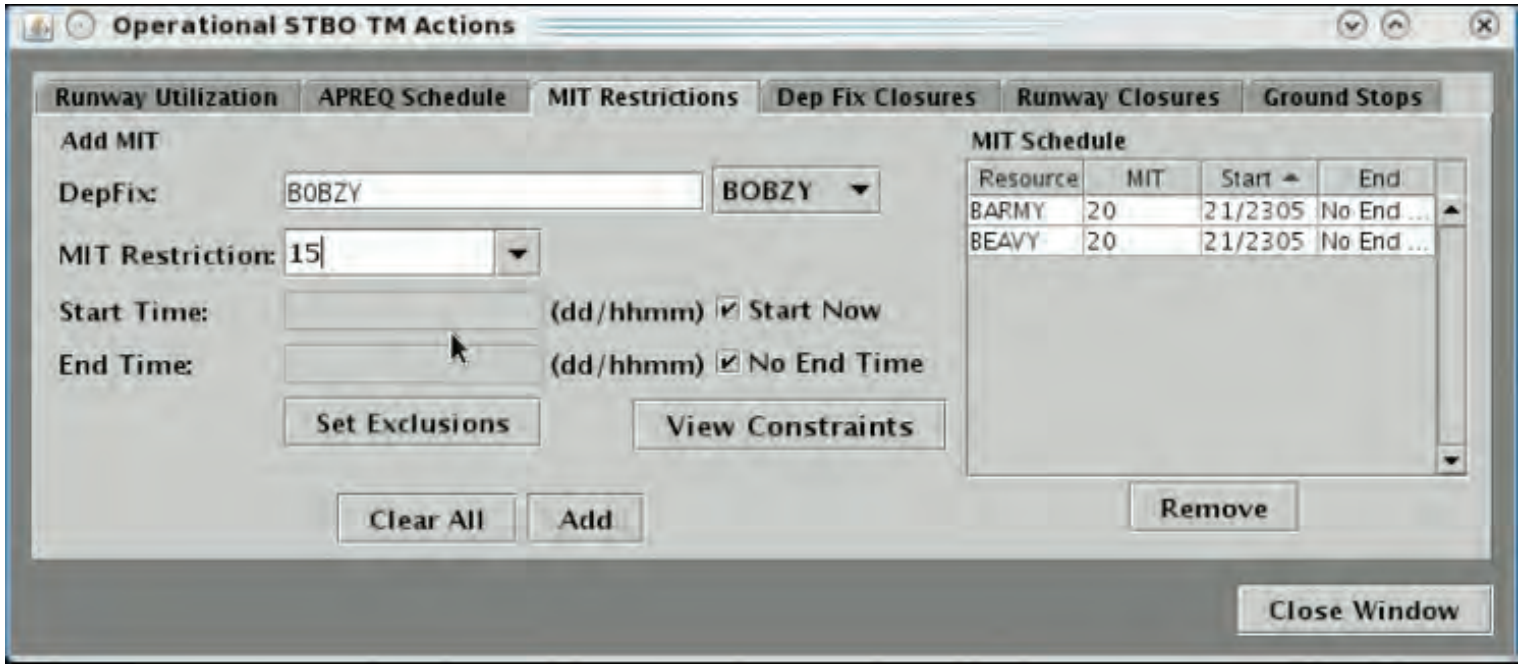




Adding MITs into STBO Client

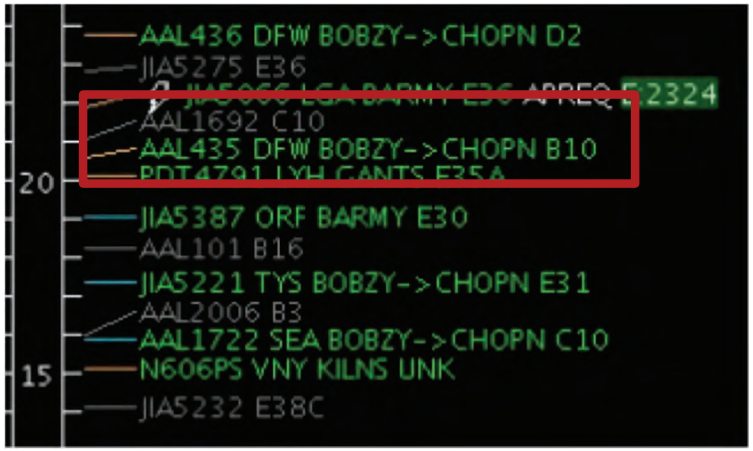
- Select “MIT Restrictions” tab
- Fill in information and “Add” to the schedule
- You can set and preview exclusions too

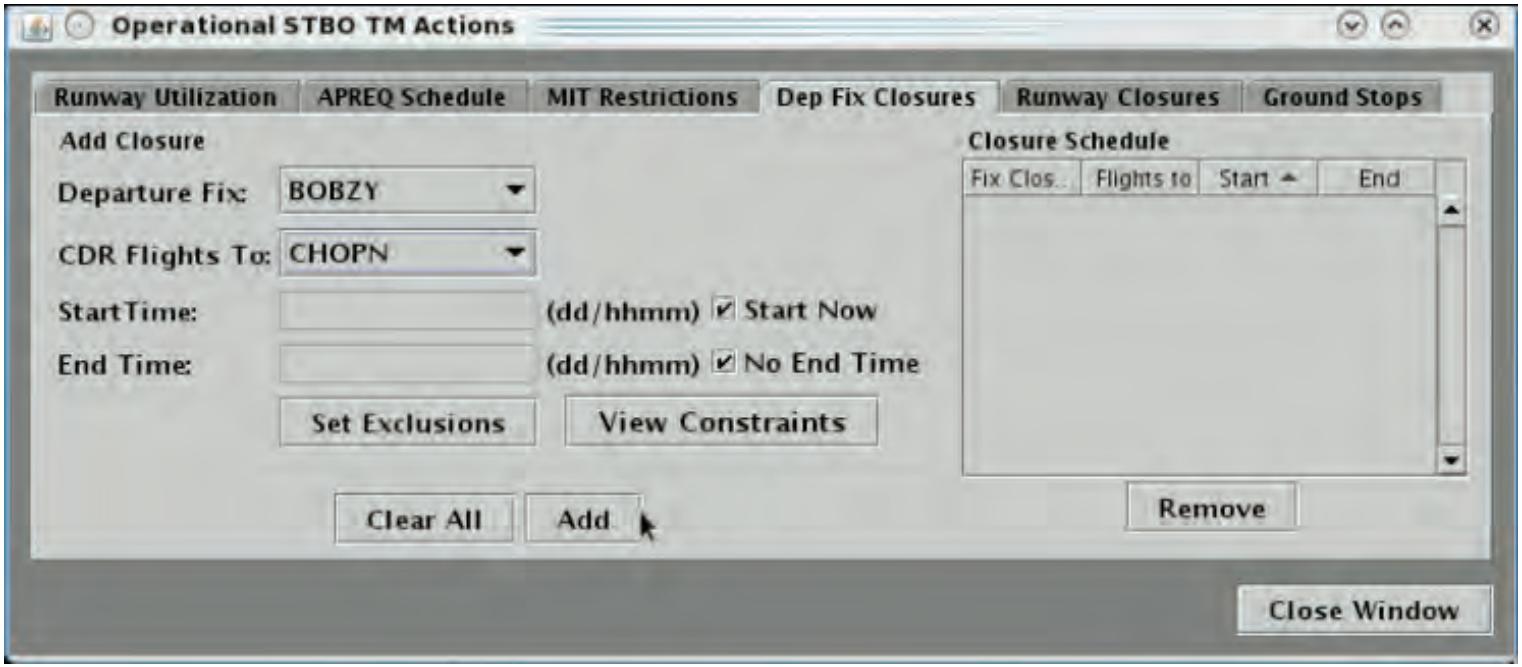




Adding DepFix Closures into STBO Client

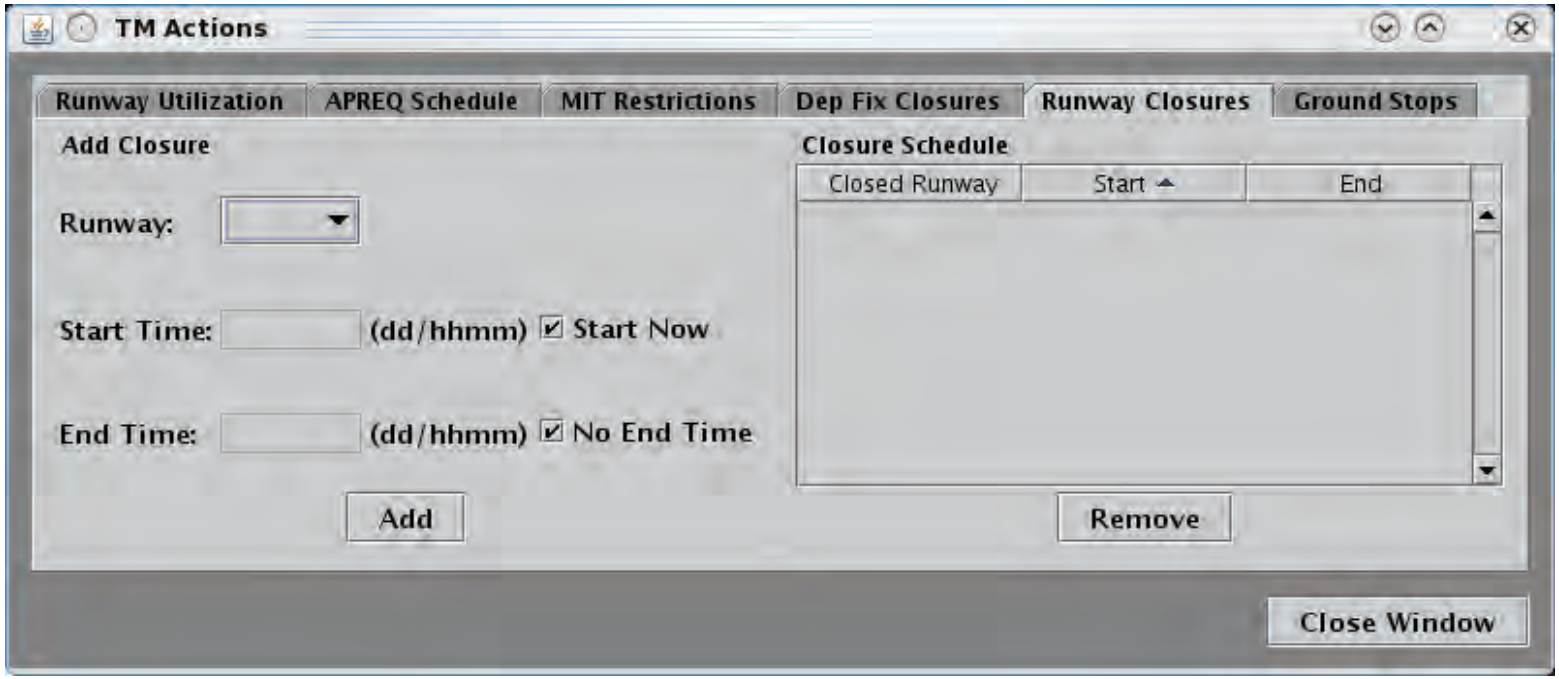
- Select “Dep Fix Closures” tab
- Fill in information and “Add” to the schedule
- You can set and preview exclusions too





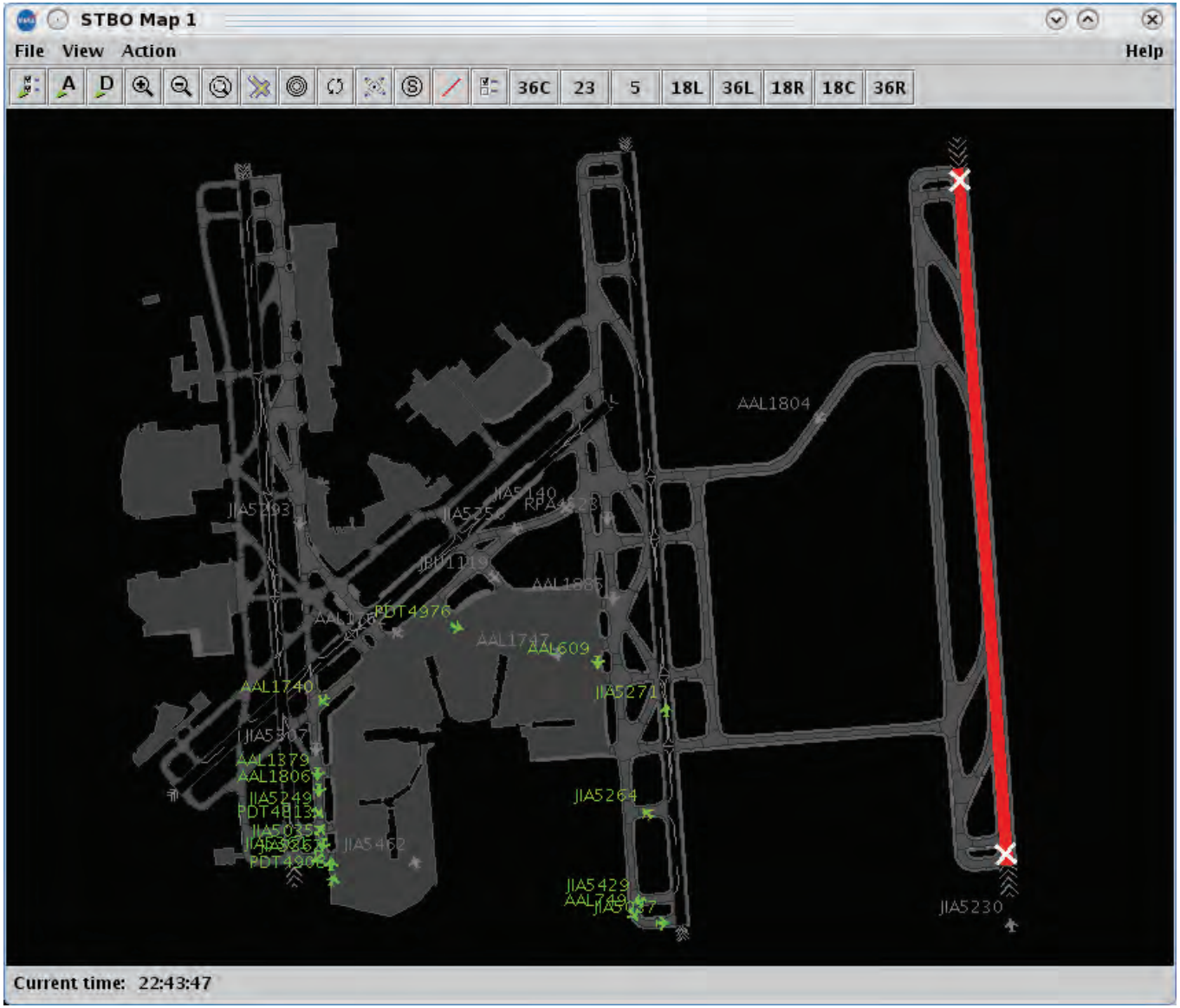
Adding Runway Closures into STBO Client

- Select “Runway Closures” tab
- Fill in information and “Add” to the schedule



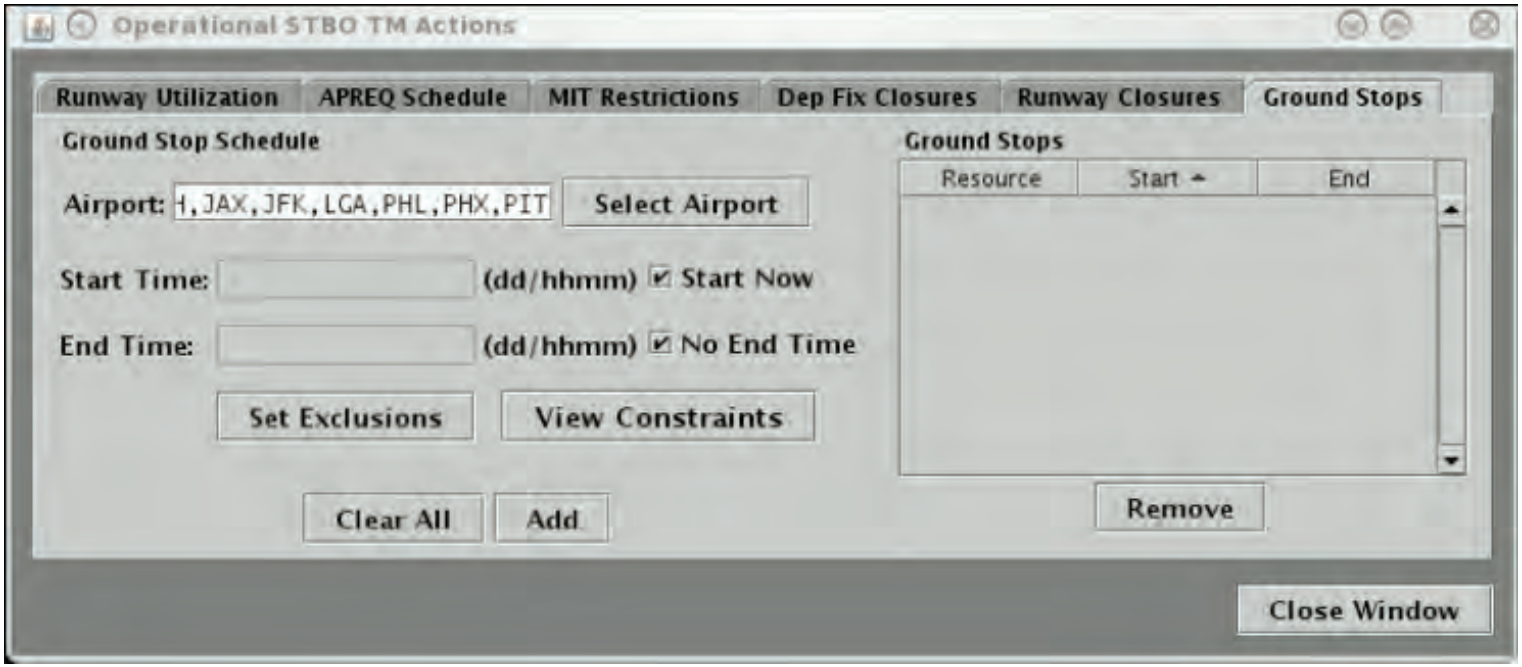
Adding Runway Closures into STBO Client

- Closed runway is marked red with white “X”s



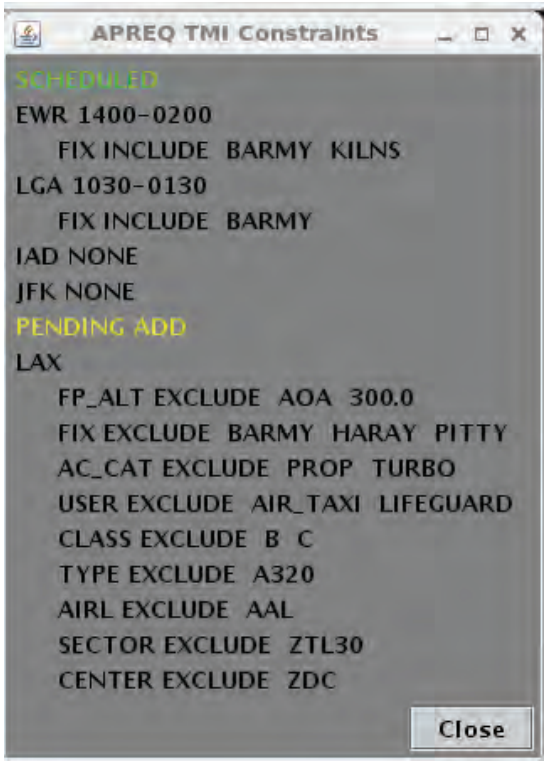
Adding Ground Stops into STBO Client

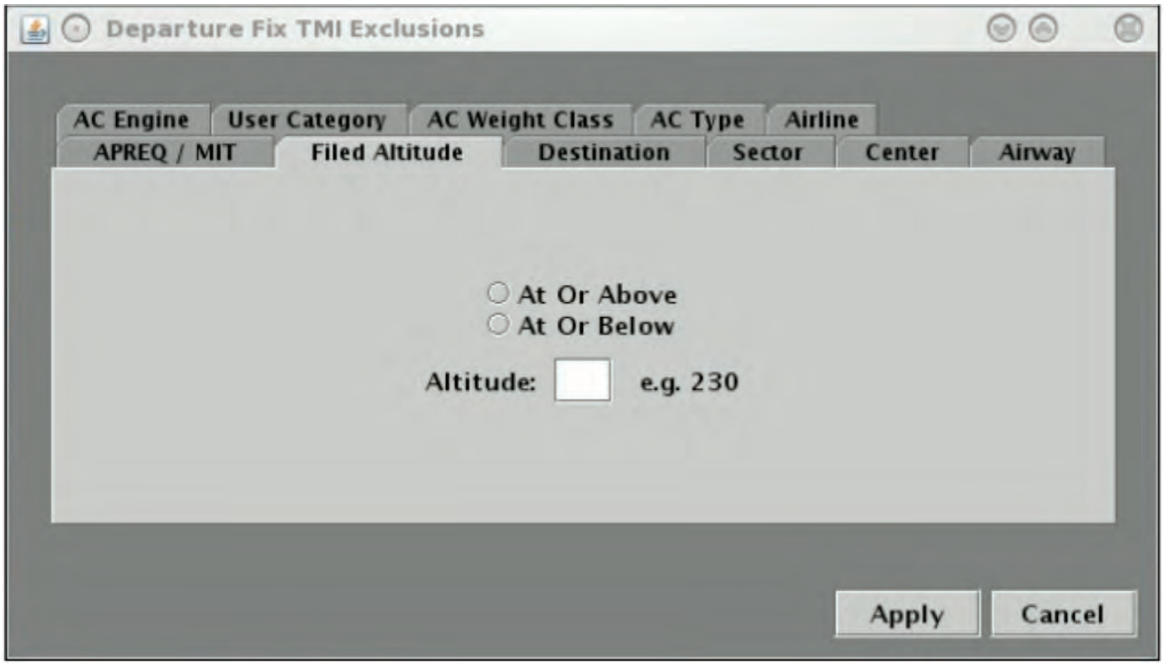
- Select “Ground Stops” tab
- Fill in information and “Add” to the schedule
- You can set and preview exclusions too



Exclusions

- Fill in any necessary information
- “Apply” to the restriction
- Preview exclusions





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Data Exchange

- Data Exchange and sharing between CLT Tower and AA Ramp is foundational to Scheduling and Metering
- Improves Situational Awareness among decision makers
- Allows automated exchange of information and less reliance on phone calls
- Allows for collaboration between different kind of users
- Seven ATD2 Shadow sessions at CLT lab have captured more than a dozen data exchange items between Tower and Ramp
- Data exchange generates a notification for the users in their respective system

Data Exchange Planned for Phase-1

- Metering – Time based metering
- Pushback and Surveillance information
- APREQ Scheduling
- MIT handling
- EDCT flights
- Airport configurations and runway utilization
- Runway assignments – operational necessity only
- Gate Conflicts
- Ground Stop
- Cancellations
- Departure fix close
- Long On Board
- Runway Closure
- Ramp Closure

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Ramp sets the Metering Mode from Tools Menu
(RMTC)

Ramp RTC/ RMTC

Metering Mode Icon
Displayed Top Right of Window

- **No Metering** :
  - No time-based advisories are displayed
  - Hold lists are available on RTC/RMTC

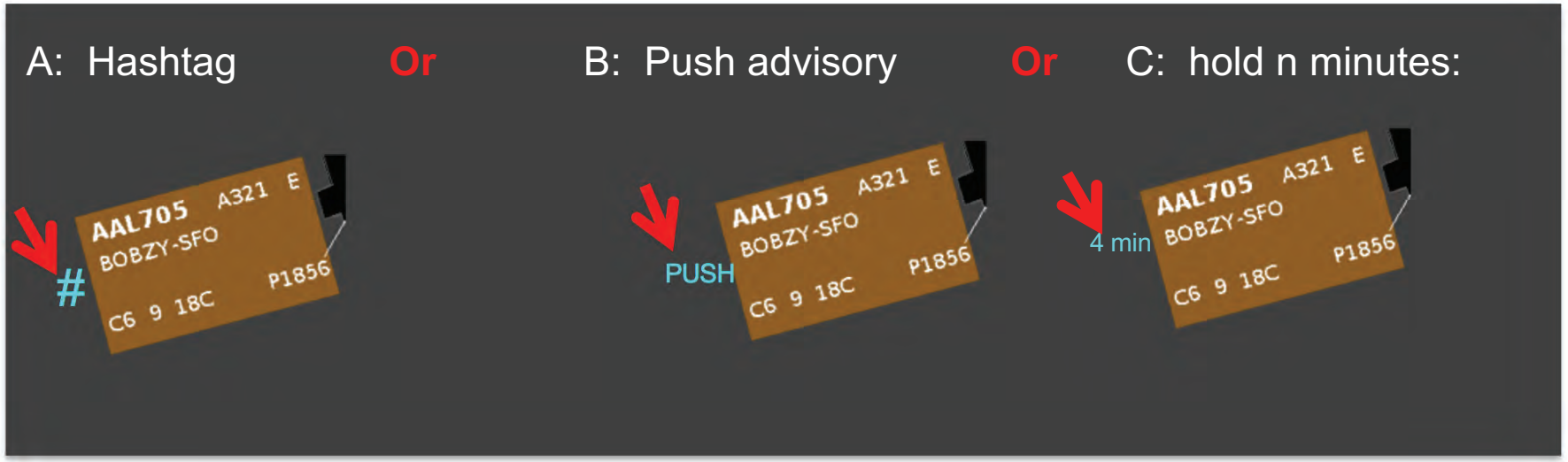
- **Sequence-based metering**:
  - This is provided primarily for legacy backward compatibility
  - This is how ATD-2 allows the count-based metering that CLT has previously called “departure sequencing”
  - Requires selection of a queue size on RMTC
  - Hold lists are available on RTC/RMTC

- **Time-based metering**:
  - This is the new tactical surface metering ATD-2 is adding which leverages time-based-metering & ration-by-schedule principles
  - The time-based pushback advisory is for individual aircraft using trajectory based predictions & scheduling algorithms
  - Both pushback and recommended hold times advisories are available on RTC/RMTC

Ramp RTC/ RMTC

Advisories
(After Pilot Calls for Pushback)

- Advisories are present only if Metering is on and there is sufficient demand
- **After** the pilot calls for pushback, the Advisory (in cyan) will recommend: A, B or C
- If a hashtag is displayed, click on hashtag to generate the advisory
- If a “PUSH” advisory is displayed, then pushback recommended by the scheduler, make pushback entry using right click menu
- If a recommended hold time, then use right click menu to hold for n minutes



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APREQ on RTC

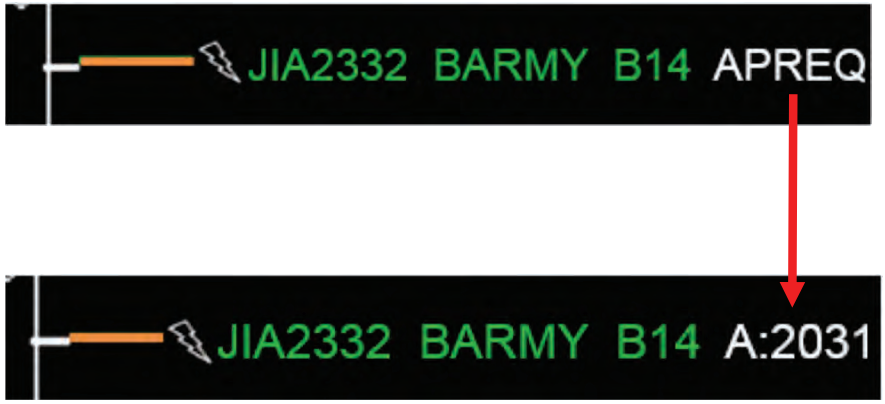
- Notification on RTC for the APREQ

Reported	Event Type	Description	Event Start	Event End
2/8/17 1808	AIRPORT	JFK APREQ	2/8/17 1800	2/9/17 ...
2/8/17 1701	FIX	LGA 15 MIT	2/8/17 1650	2/9/17 ...
2/8/17 1630	FIX	DCA OPEN	2/8/17 1515	2/8/17 ...
2/8/17 1624	AIRPORT	EWR APREQ	2/8/17 1615	2/9/17 ...
2/8/17 1600	FIX	ORD OPEN	2/8/17 1515	2/8/17 ...
2/8/17 1100	FIX	LGA APREQ	2/8/17 1115	2/8/17 ...

- APREQ showing on the strip

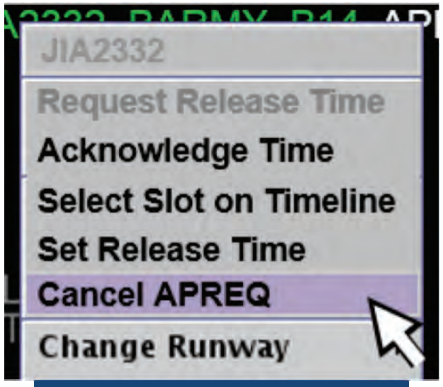
Scheduled APREQ on STBO Client

- APREQ Time shown on STBO Client Timeline after scheduled

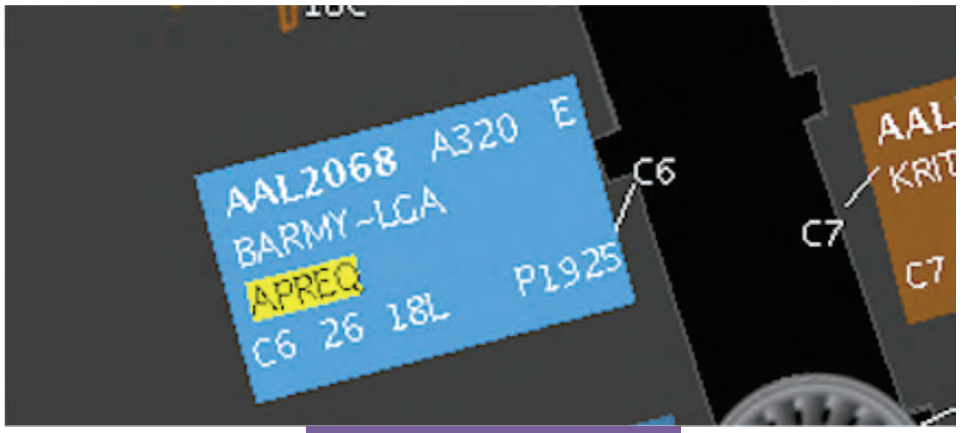


Cancel APREQ or Reschedule

- To cancel or reschedule an APREQ release time
  - Right click on Timeline datablock
  - Click “Cancel APREQ”
  - Begin the APREQ process again
- RTC will show APREQ on the flight strip when the time has been cancelled



Tower/STBO Client



Ramp RTC/ RMTC

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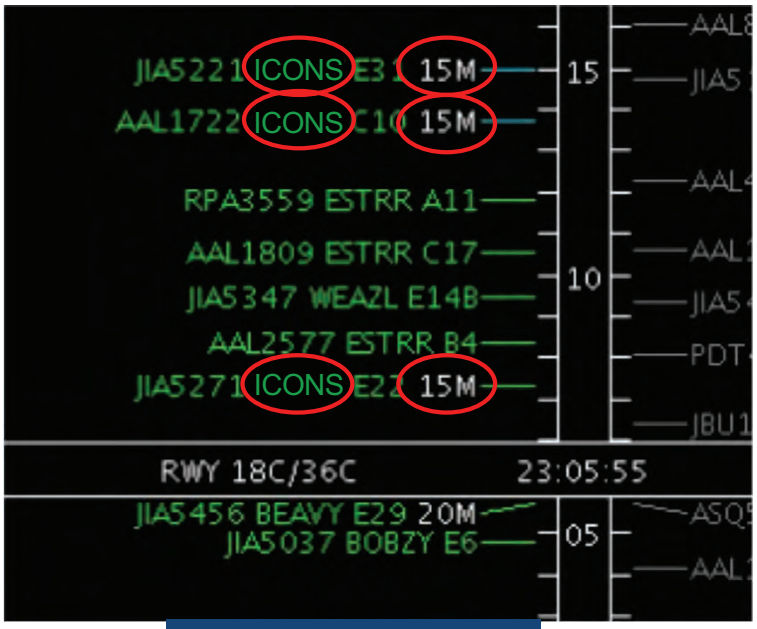
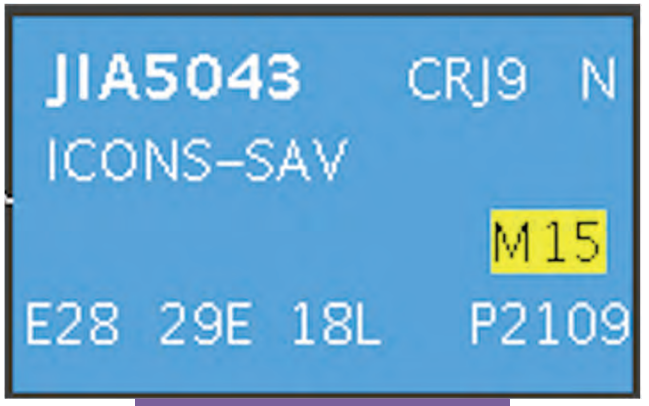
New “ICONS” Fix Miles-in-Trail of 15



Tower/STBO Client



Ramp RTC/ RMTC

Data Exchange Planned for Phase-1

- Metering – Time based metering
- Pushback and Surveillance information
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- MIT handling
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- Airport configurations and runway utilization
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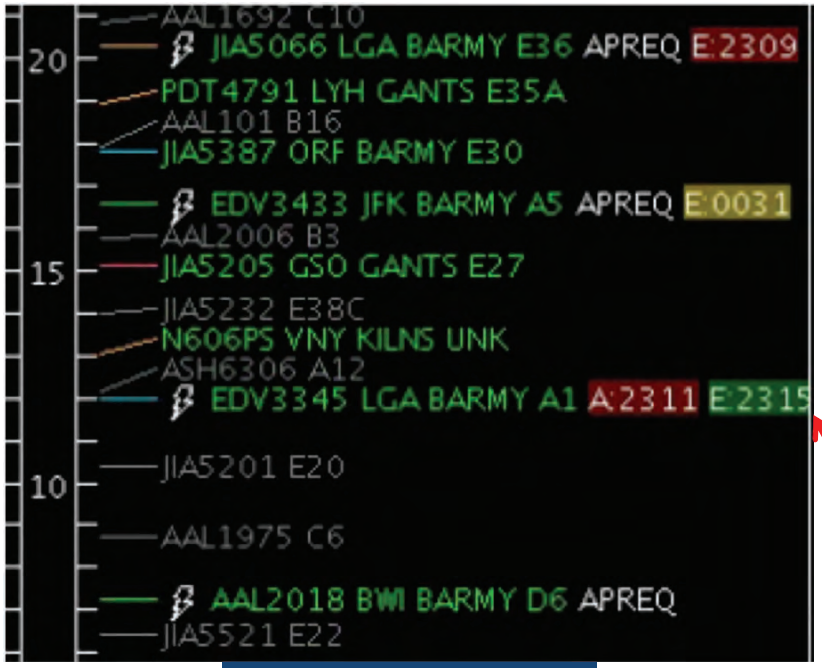
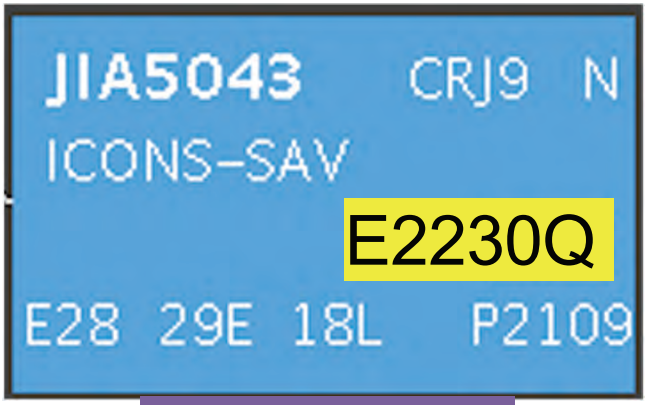
- Gate Conflicts
- Ground Stop
- Cancellations
- Departure fix closure
- Long On Board
- Runway Closure
- Ramp Closure

EDCT & APREQ Flights



Tower/STBO Client



Ramp RTC/ RMTC

EDCT aircraft that is currently within time window of ±5 min

Data Exchange Planned for Phase-1

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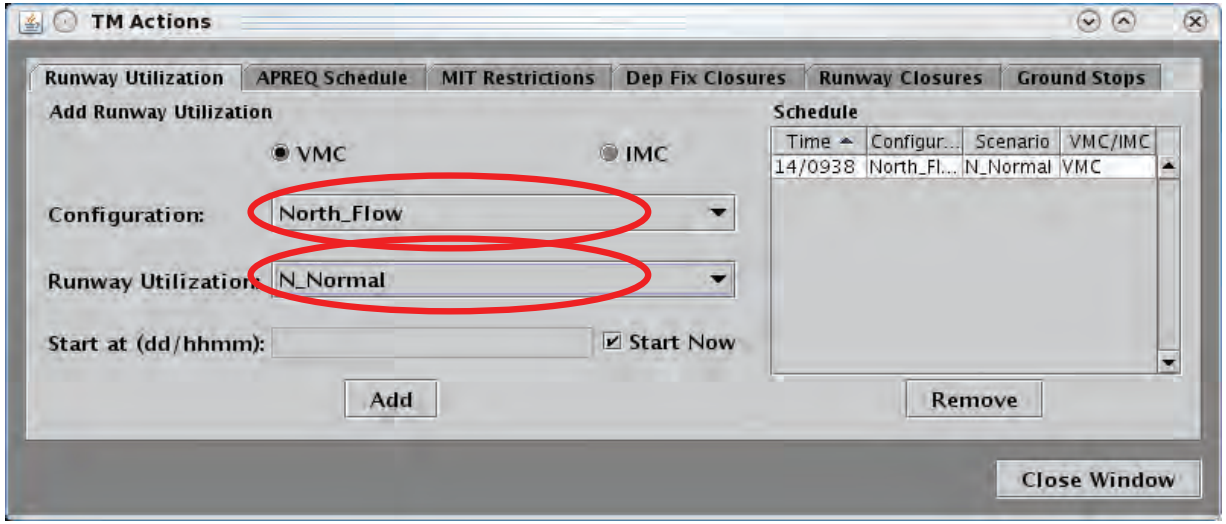
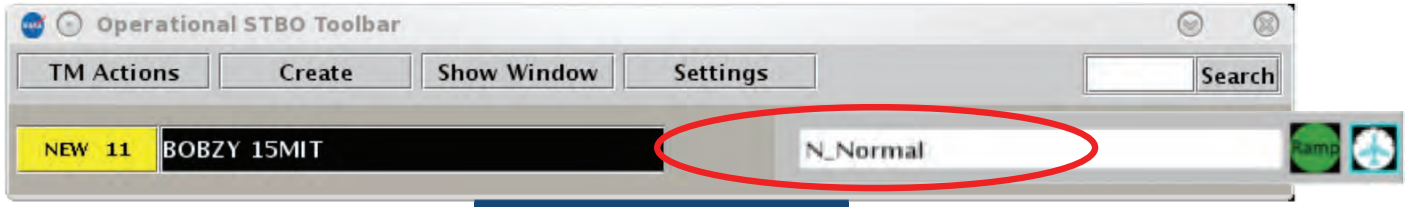
Runway Configuration and Utilization





Tower/STBO Client

Ramp RTC/ RMTC

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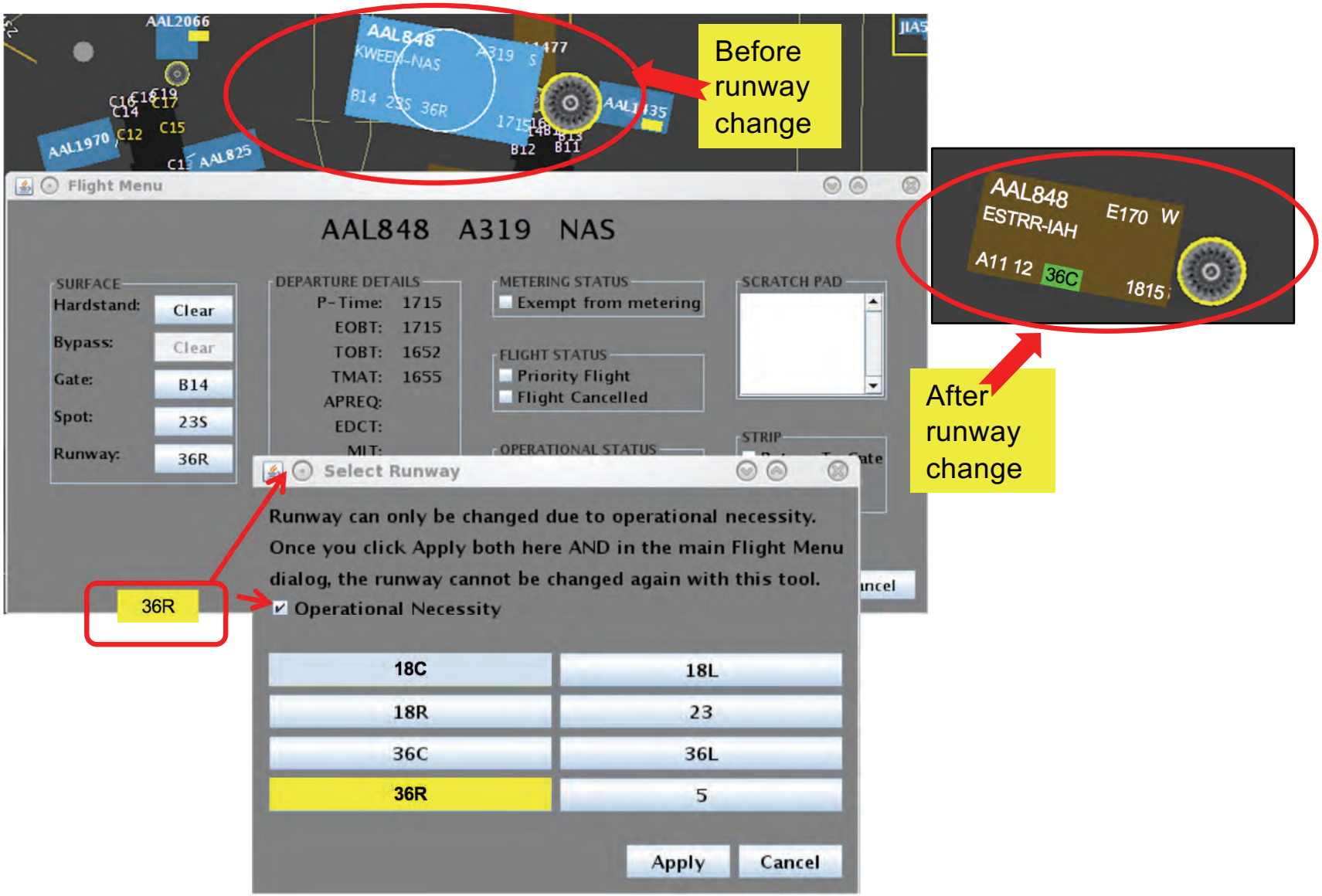
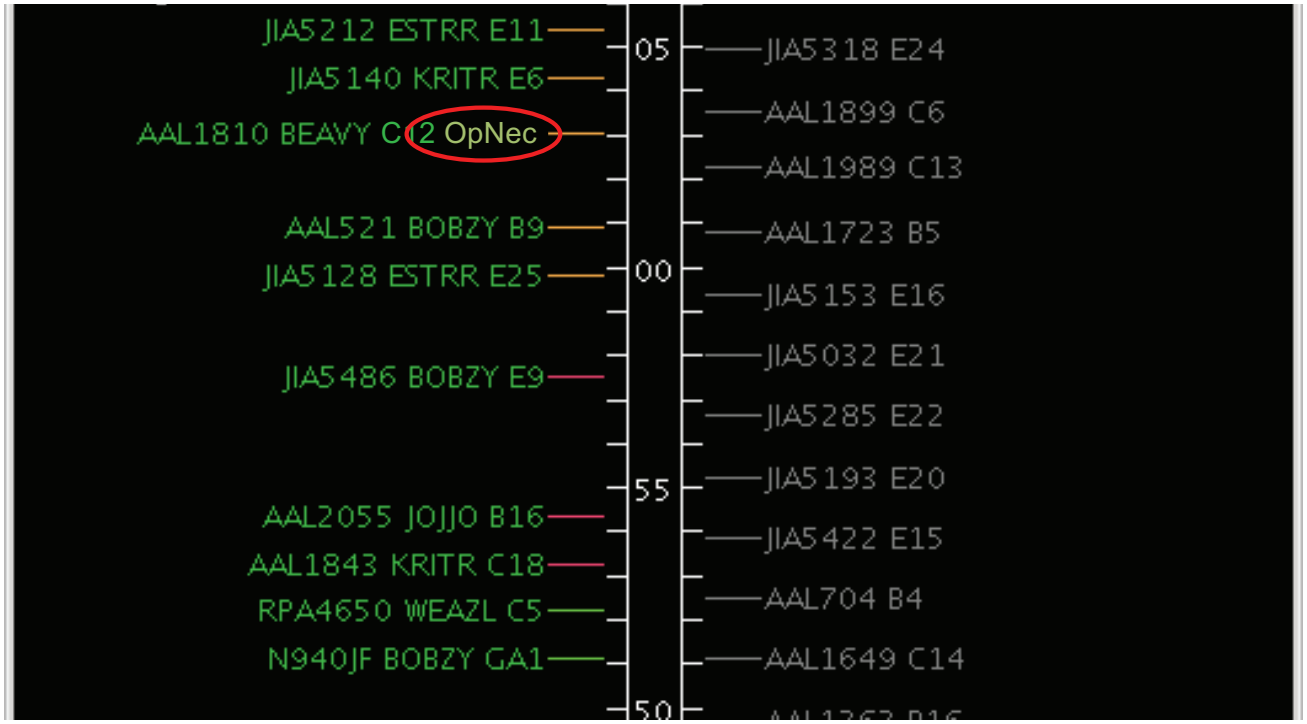
Taxi For Operational Necessity (TFON) on RTC



Ramp RTC/ RMTC

Taxi For Operational Necessity (TFON) on STBO Client



Tower/STBO Client

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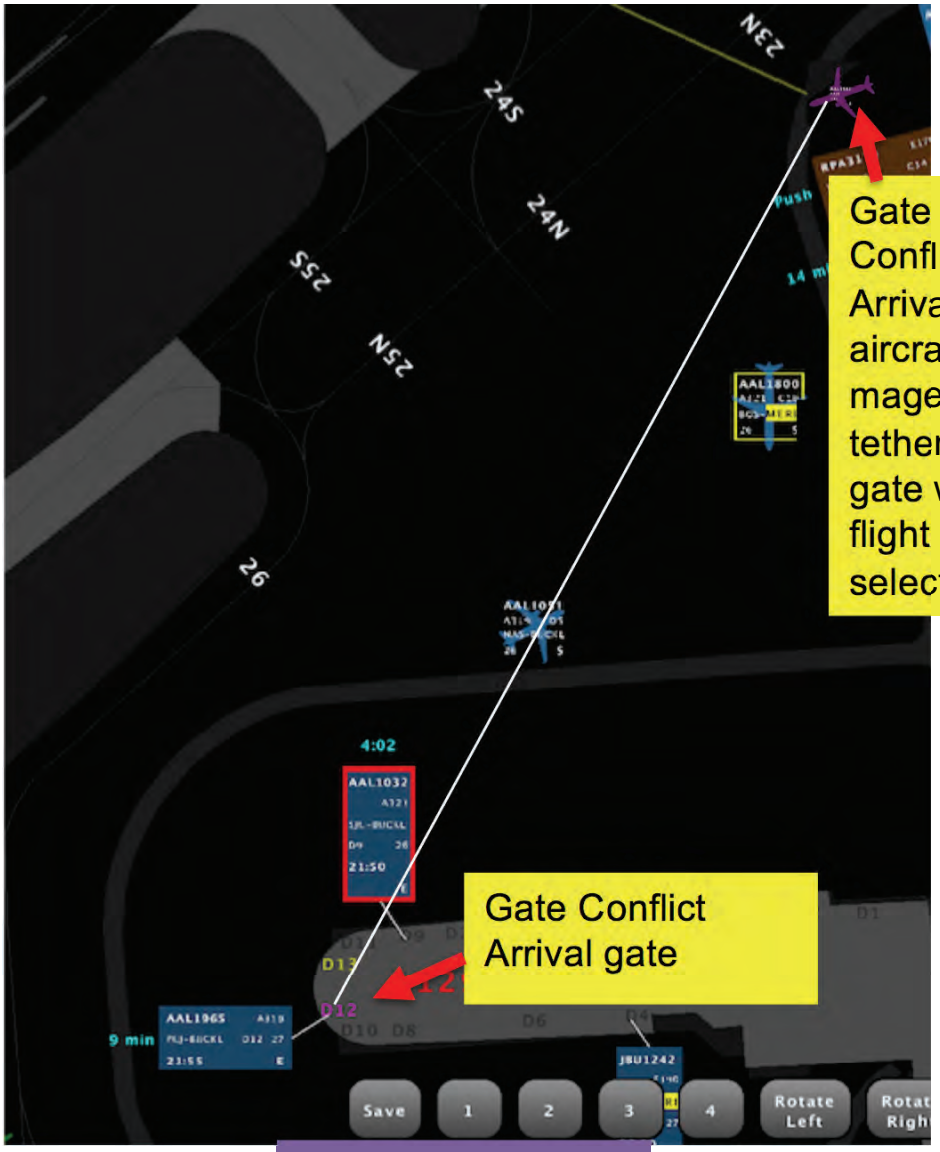
Gate Conflict



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Ground Stop BWI on RTC
with Notification

Reported	Event Type	Description	Event Start	Event End
3/14/17 1736	TMI	GROUND STOP at BWI	3/14/17 1736	
3/14/17 1730	TMI	GROUND STOP REMOVED BWI	3/14/17 1723	
3/14/17 1700	TMI	OPEN LGA	3/14/17 1659	
3/14/17 1700	TMI	OPEN BWI	3/14/17 1659	
3/14/17 1700	TMI	OPEN BOS	3/14/17 1659	
3/14/17 1601	TMI	GROUND STOP REMOVED SNA	3/14/17 1456	3/14/17...

Ramp RTC/ RMTC

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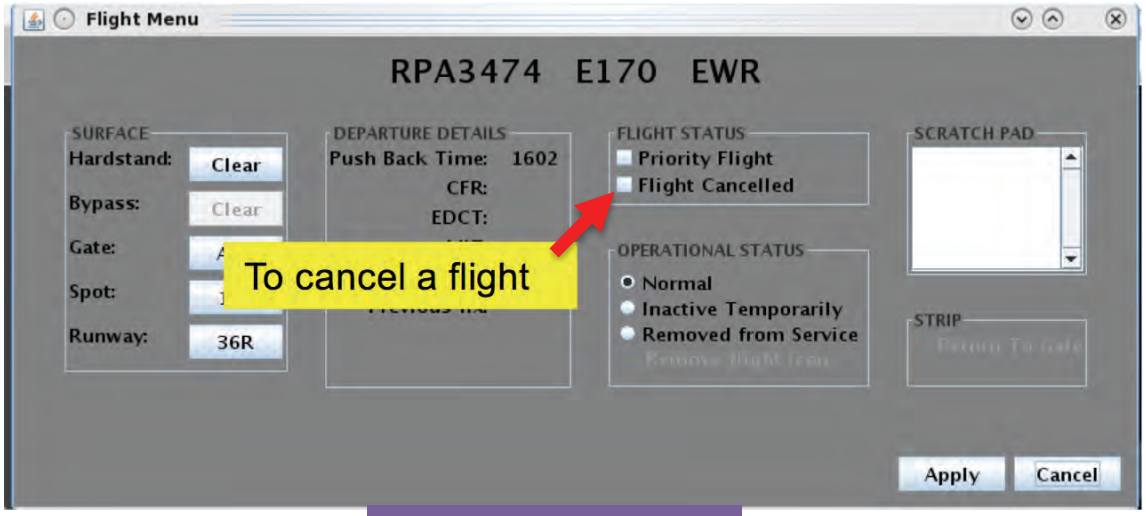
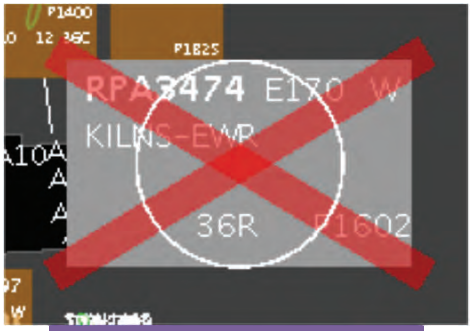
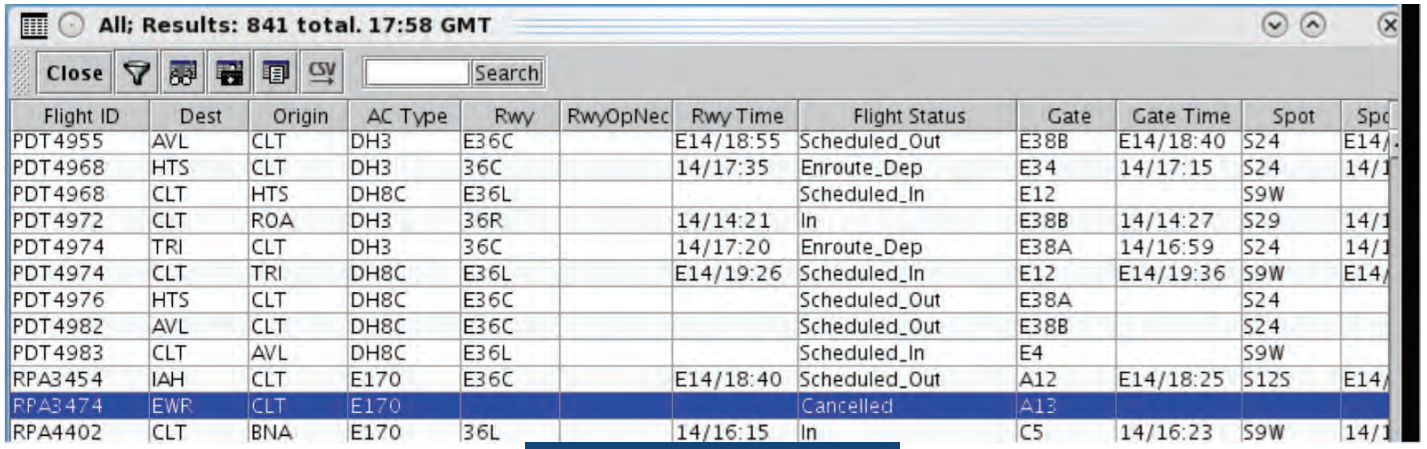
Cancellations
Initiated from RTC Flight Menu



Ramp RTC/ RMTC



Ramp RTC/ RMTC



Flight ID	Dest	Origin	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Spc
PDT4955	AVL	CLT	DH3	E36C		E14/18:55	Scheduled_Out	E38B	E14/18:40	S24	E14/
PDT4968	HTS	CLT	DH3	36C		14/17:35	Enroute_Dep	E34	14/17:15	S24	14/1
PDT4968	CLT	HTS	DH8C	E36L			Scheduled_In	E12		S9W	
PDT4972	CLT	ROA	DH3	36R		14/14:21	In	E38B	14/14:27	S29	14/1
PDT4974	TRI	CLT	DH3	36C		14/17:20	Enroute_Dep	E38A	14/16:59	S24	14/1
PDT4974	CLT	TRI	DH8C	E36L		E14/19:26	Scheduled_In	E12	E14/19:36	S9W	E14/
PDT4976	HTS	CLT	DH8C	E36C			Scheduled_Out	E38A		S24	
PDT4982	AVL	CLT	DH8C	E36C			Scheduled_Out	E38B		S24	
PDT4983	CLT	AVL	DH8C	E36L			Scheduled_In	E4		S9W	
RPA3454	IAH	CLT	E170	E36C		E14/18:40	Scheduled_Out	A12	E14/18:25	S12S	E14/
RPA3474	EWR	CLT	E170				Cancelled	A13			
RPA4402	CLT	BNA	E170	36L		14/16:15	In	C5	14/16:23	S9W	14/1

Tower/STBO Client

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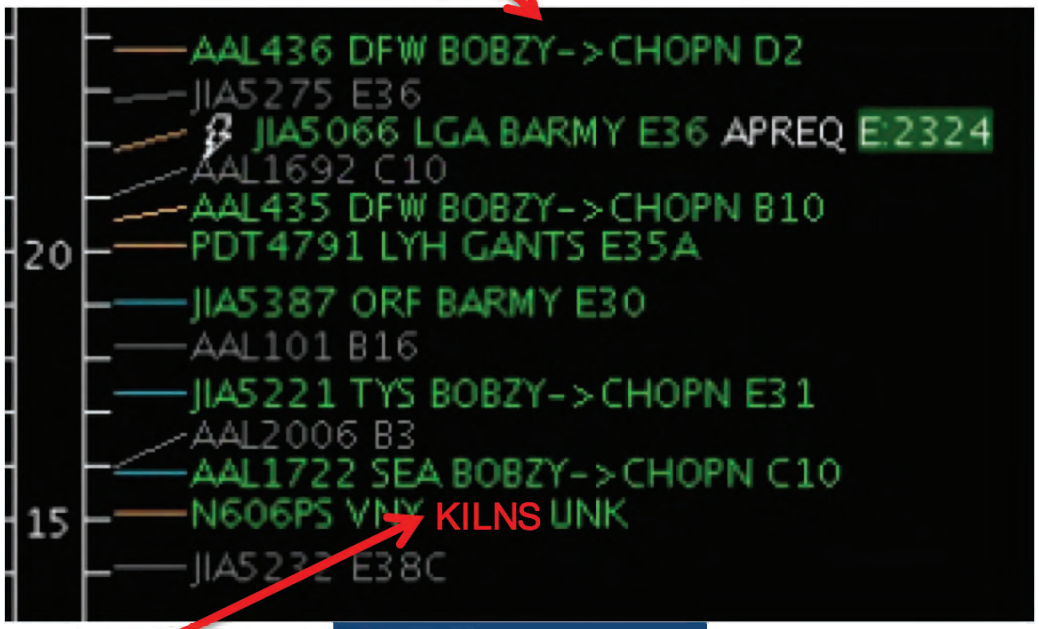
Departure Fix Closures

Closed Dep Fix with CDR Fix selected



Tower/STBO Client

Ramp RTC/ RMTC

Closed Dep Fix with no CDR Fix selected

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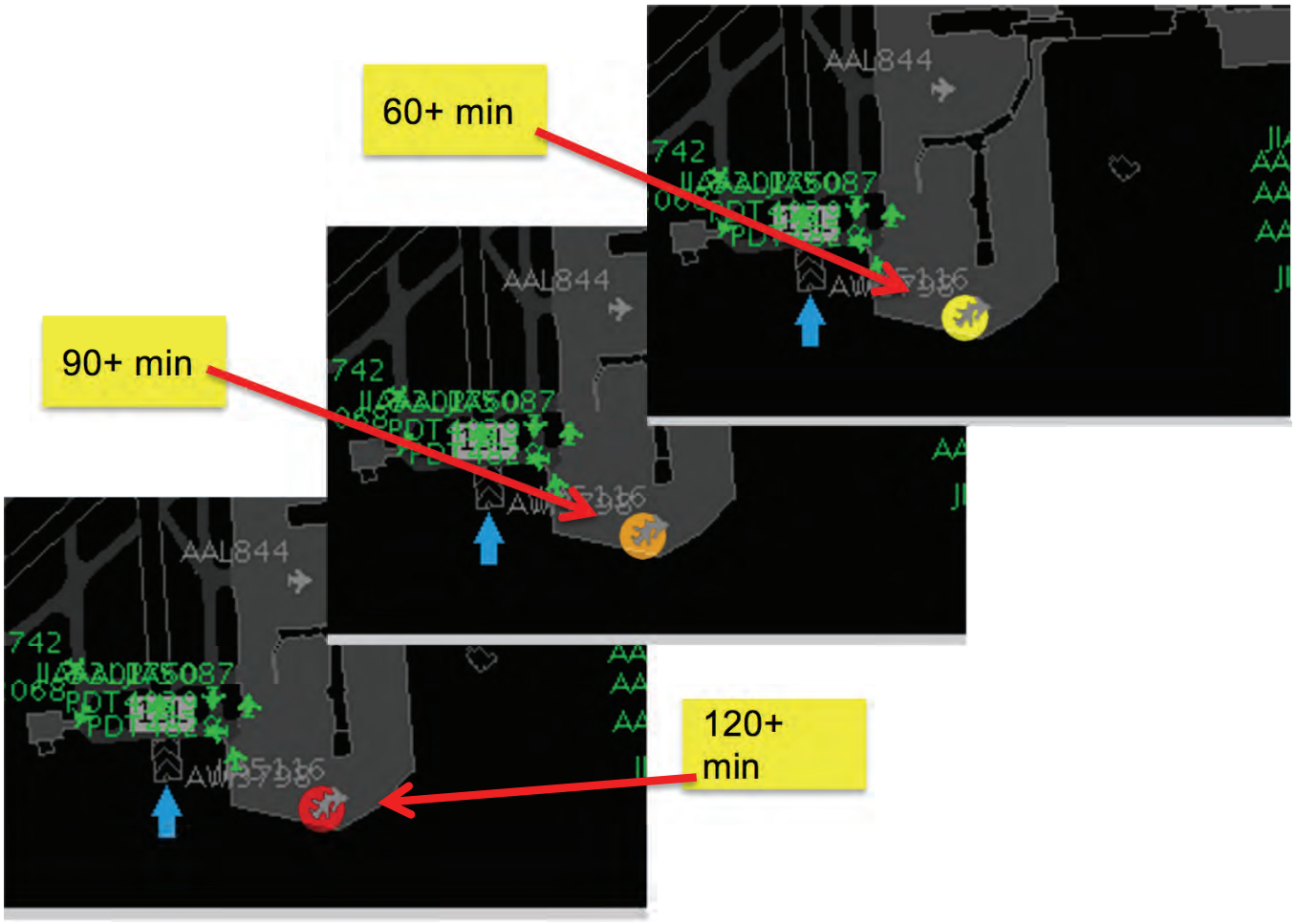
Long On Board/ Lengthy Taxi Delay



Tower/STBO Client

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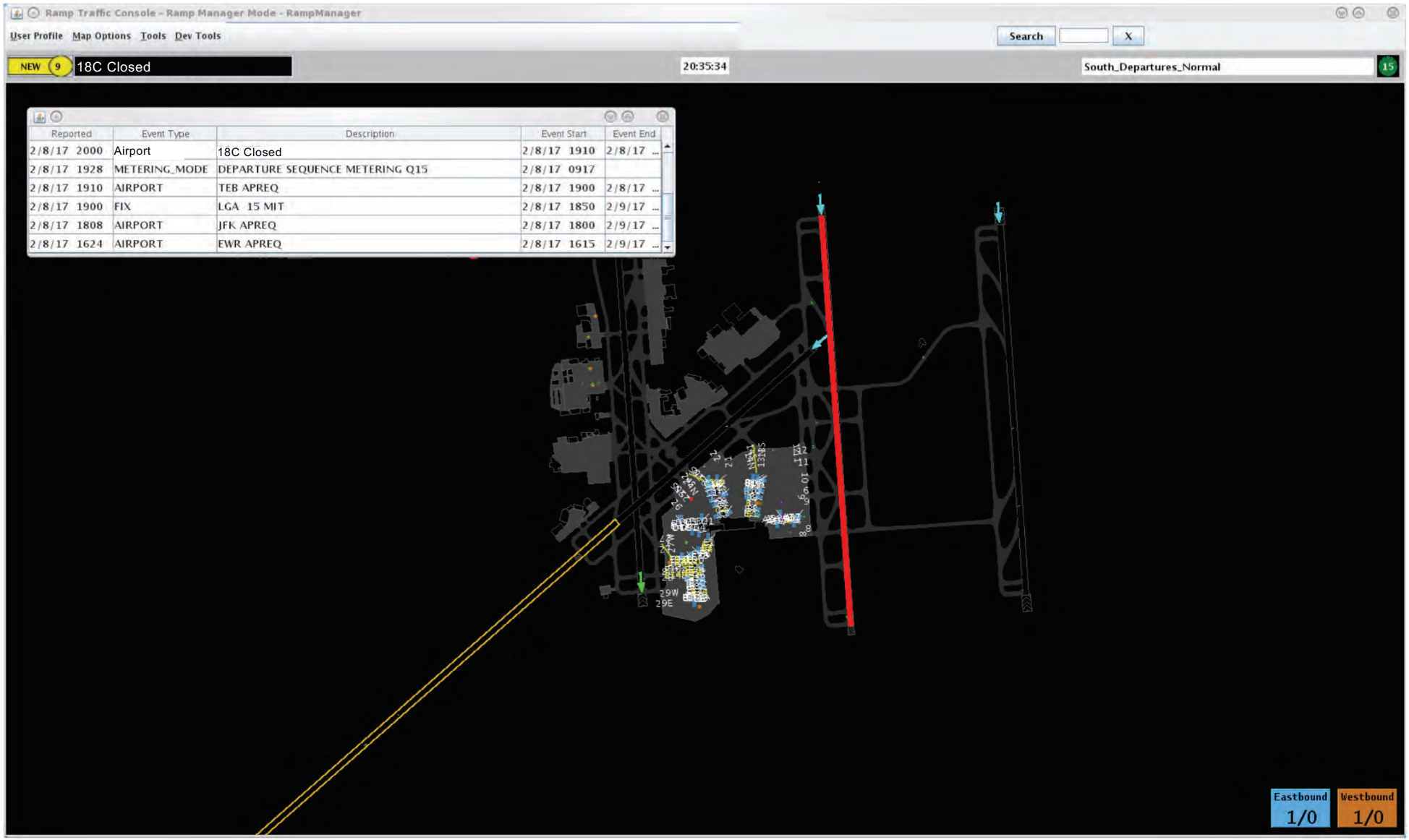
Runway Closure on RTC



Ramp RTC/ RMTC

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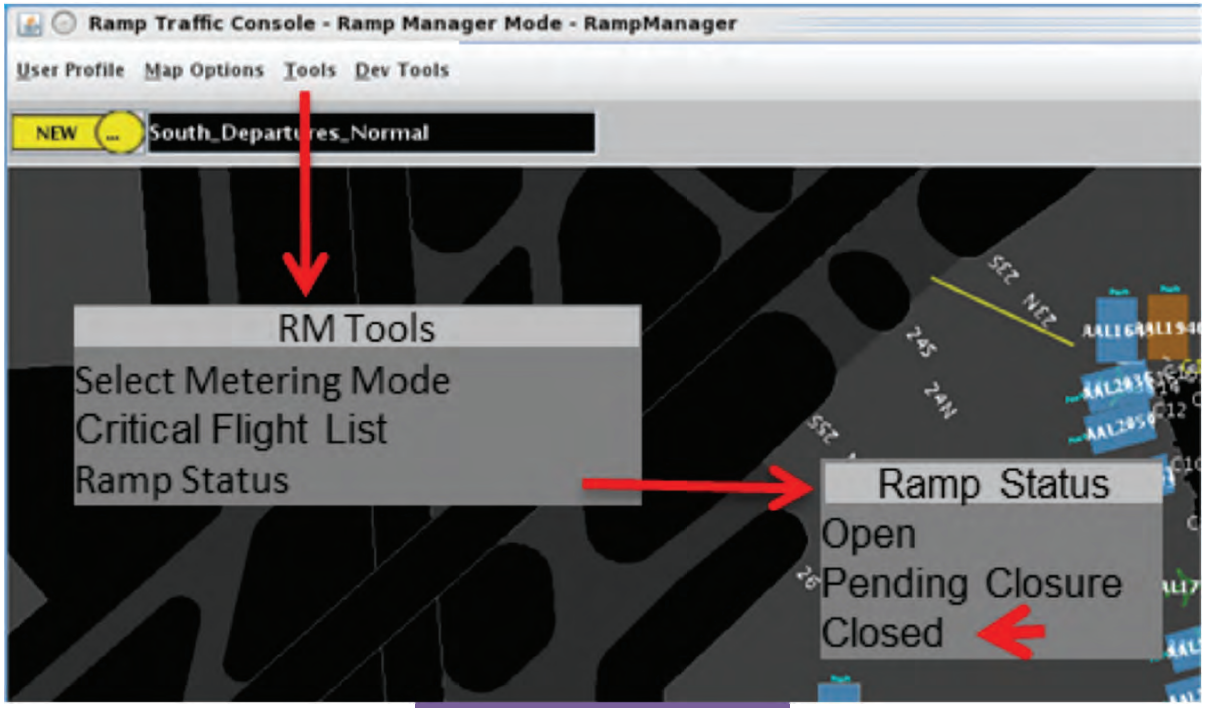
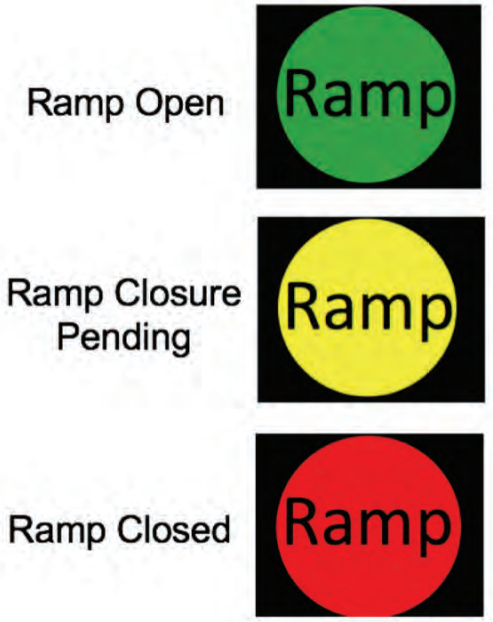
Ramp Closure

From RMTC: Update Ramp Status



Ramp RTC/ RMTC



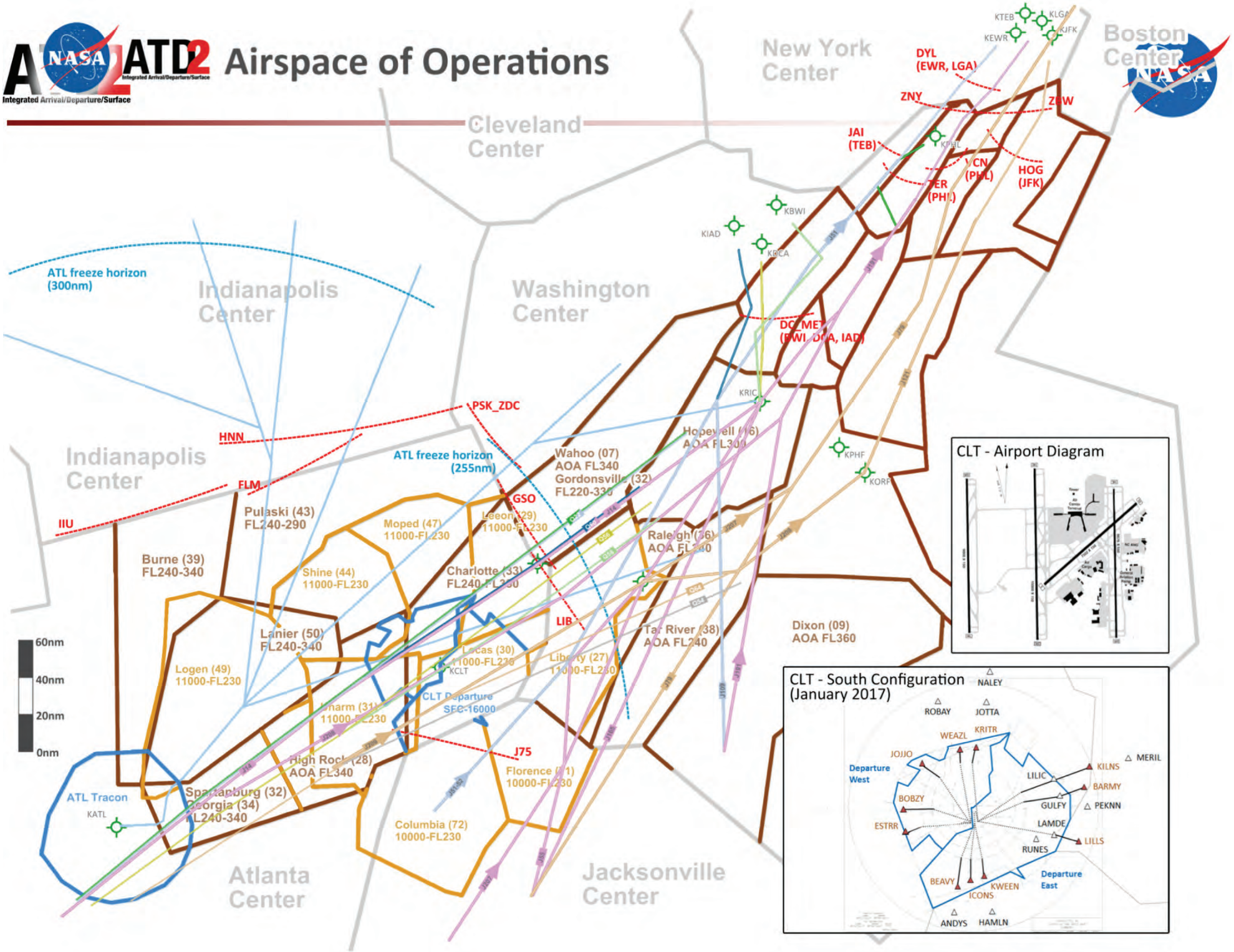
Tower/STBO Client

Ramp RTC/ RMTC

Agenda

Time	Event	Presenter
0730	Overview of STBO Client	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	**APREQ Procedures**	Bob
0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	Hands-on Training	

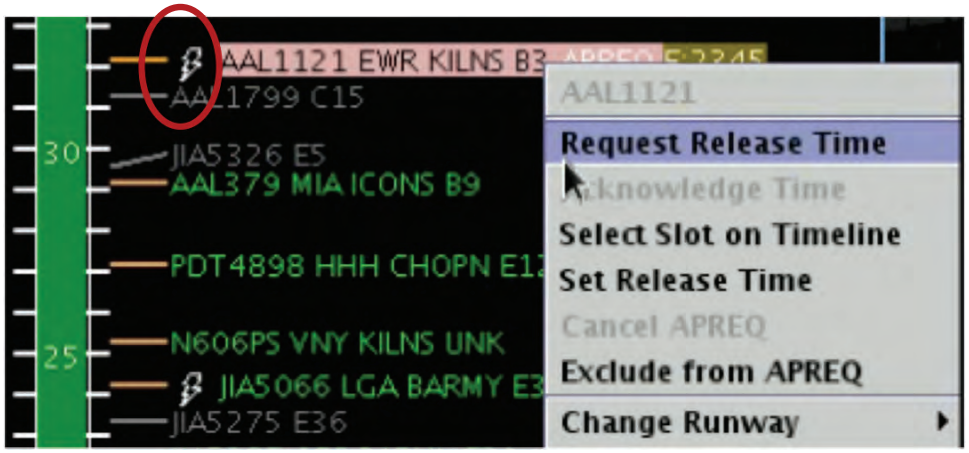
Airspace of Operations



Electronic APREQ Coordination STBO Client Timeline

Tower/STBO Client

- You can request time electronically: indicated by the lightning bolt symbol on Timeline datablock

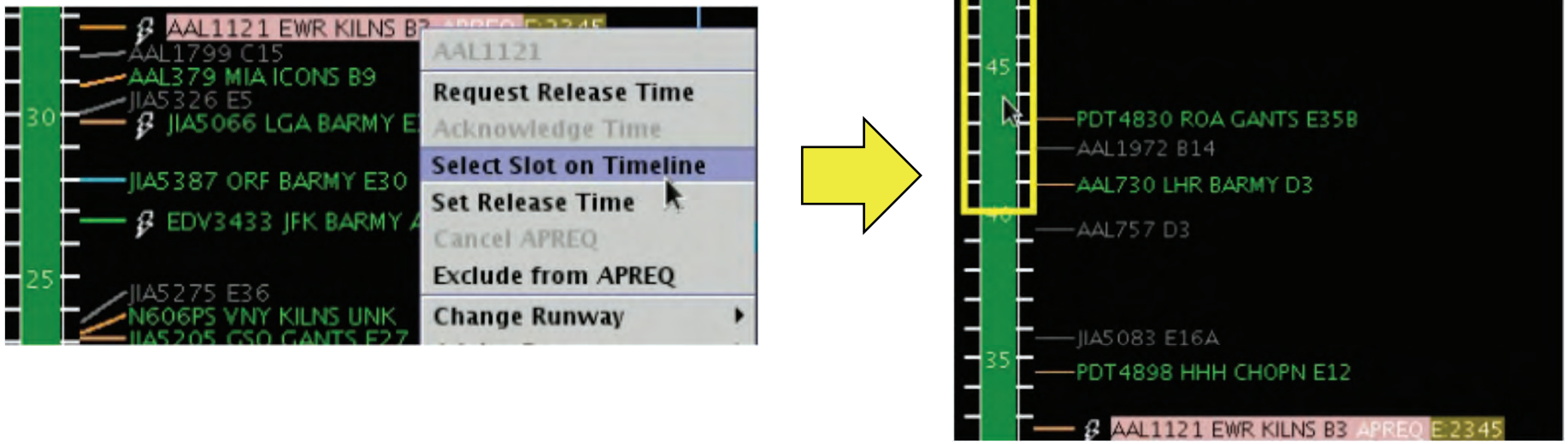


- To begin the APREQ process:
  - Right click on Timeline datablock
  - Click on "Request Release Time"
    - This action automatically picks earliest time aircraft is projected to meet
  - Yellow arrow appears to right of Timeline datablock—you sent it to Center

Electronic APREQ Coordination STBO Client Timeline

Tower/STBO Client

- Alternately, you can request time electronically by:
  - Right click on Timeline datablock
  - Click on “Select Slot on Timeline"
  - Click on the desired slot on the timeline
  - Yellow arrow appears to right of Timeline datablock

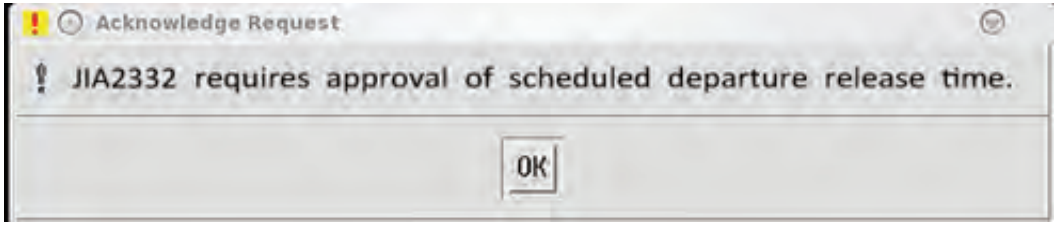


What Does the Center TMC See?

Center/TBFM TGUI

- On TBFM Meter Fix timeline an exclamation point in yellow appears

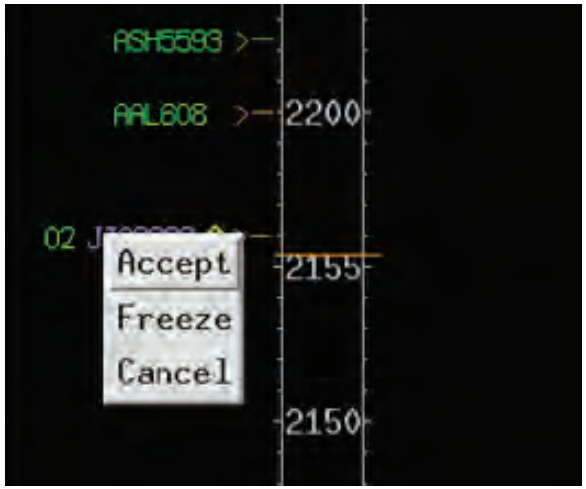
- If you forget, this reminder will appear in 2 minutes, accompanied by an audio alert (if audio is turned on)



4 Ways to Schedule

Center/TBFM TGUI

- #1:
  - Right click on exclamation point
  - Select Accept, Freeze, or Cancel

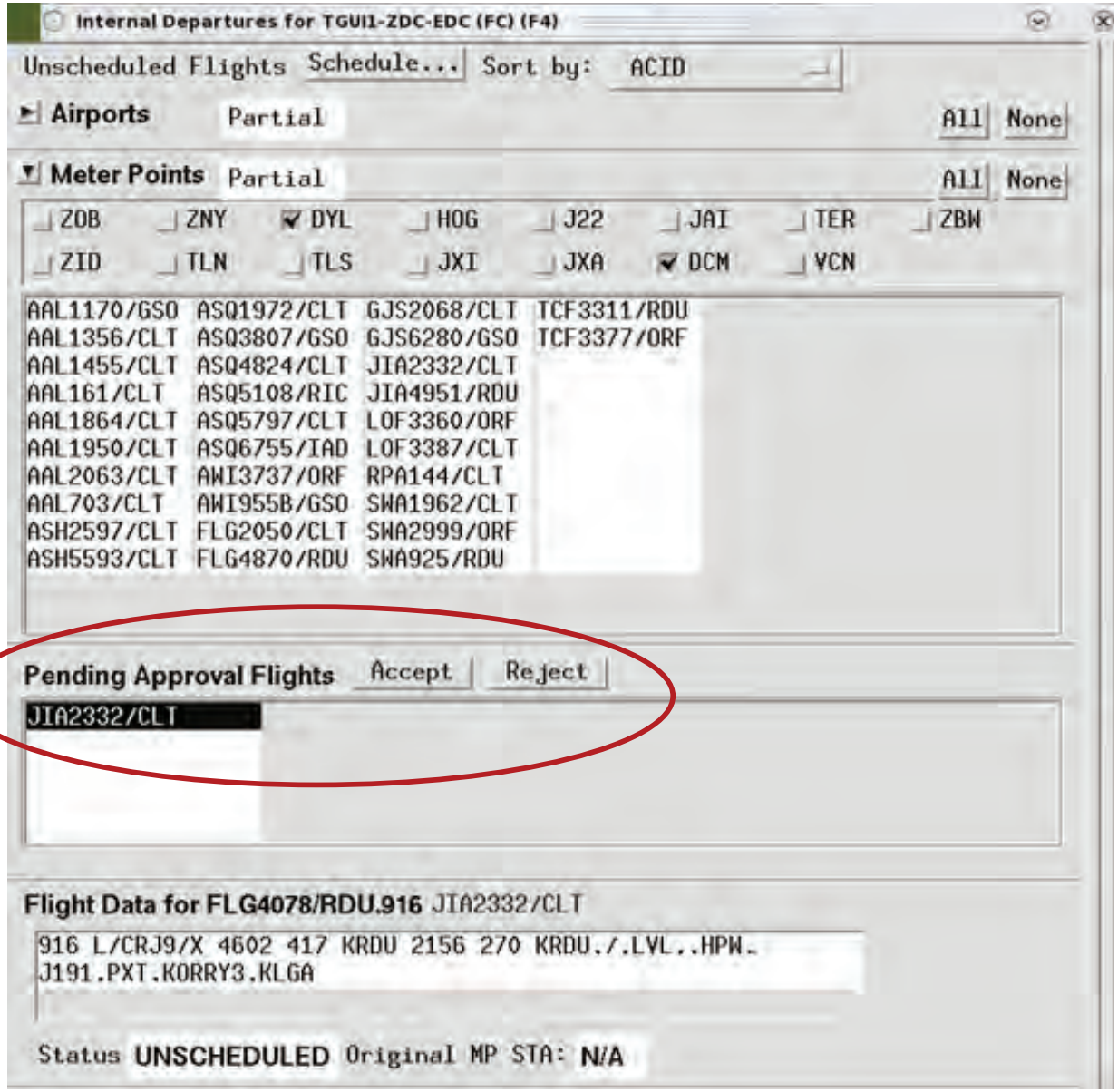


- #2:
  - Left click on the yellow diamond with the “!” to accept the requested time

4 Ways to Schedule

Center/TBFM TGUI

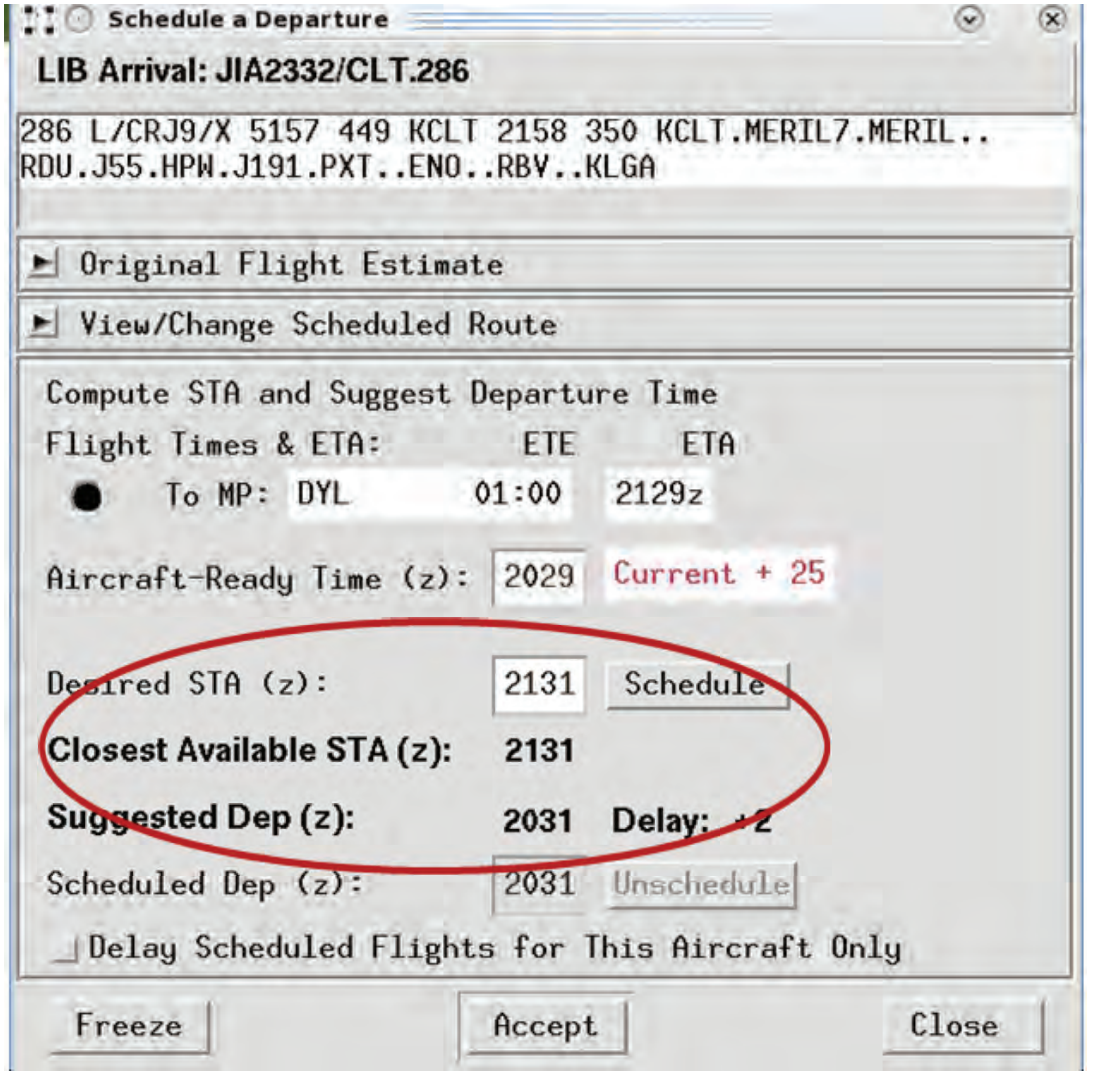
- #3:
  - Go to F4 window in TBFM
  - Accept or Reject



4 Ways to Schedule

Center/TBFM TGUI

- #4:
  - Go to "Schedule a Departure Window" in TBFM
  - Press "Schedule"



After Center Schedules Release Time

Center/TBFM TGUI

- STA will looks turn green and will display the delay in minutes after ACID (02)

What to do with Center's Response

Tower/STBO Client

- When Center sends back a release time, it will appear on the datablock ("A:2344") and be highlighted by a compliance indicator.

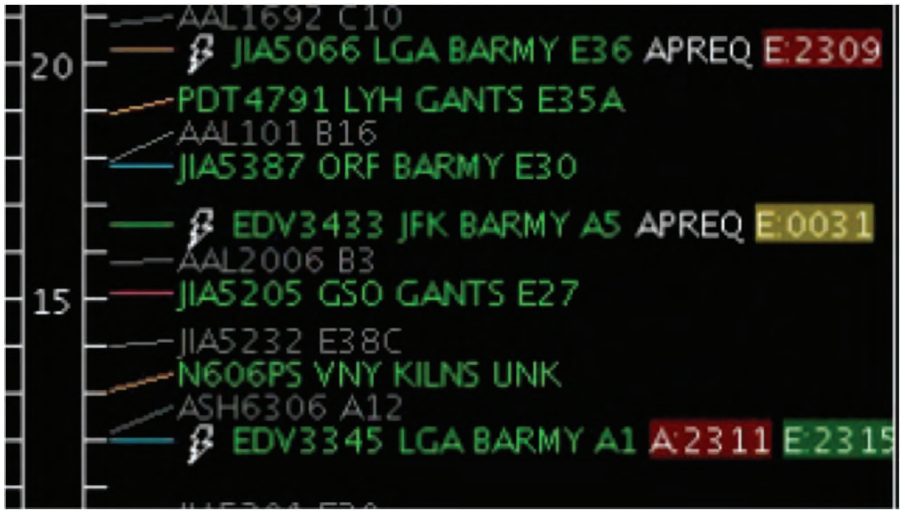
- If the time differs from what was requested, a yellow diamond with an "!" accompanies time.
  - Click on symbol to acknowledge new time.

- If the new time doesn't work, right click and select "Cancel APREQ", then renegotiate a new release time.

Status of APREQ Compliance

Tower/STBO Client

Once flight has a release time, compliance indicators highlight the APREQ release time.



- If indicator is green = on time

- If indicator is red = aircraft late
  - Right click on Timeline datablock
  - Cancel the APREQ first.
  - Restart process for requesting a release time.

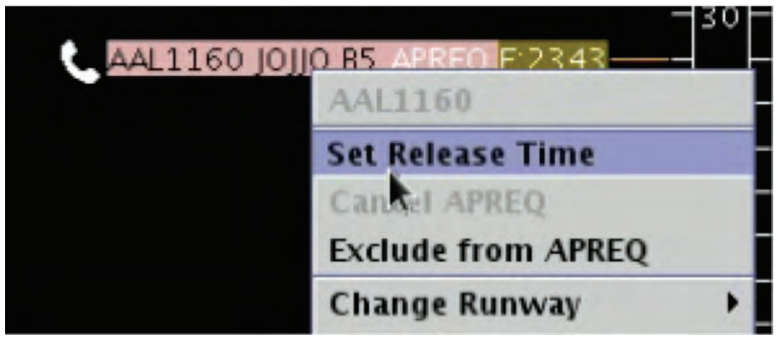
- If indicator is yellow = aircraft early
  - Option 1: Delay the aircraft until it can meet it's release time.
  - Option 2: Right click on Timeline datablock
  - Cancel the APREQ first.
  - Restart process for requesting a release time.

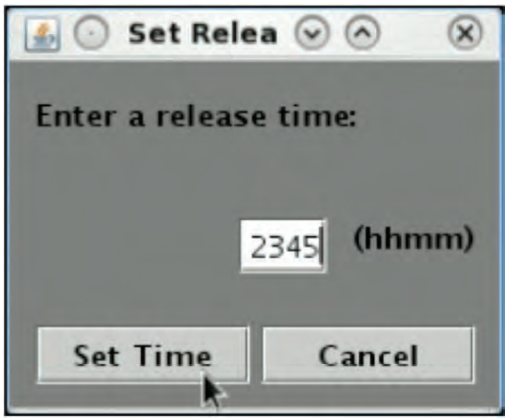
Manual APREQ Coordination on STBO Client Timeline

Tower/STBO Client

- Aircraft appears on timeline with white APREQ written to the right of the Timeline datablock

  - Telephone symbol means you have to call the Center to request a time
    - After receiving time, right click on Timeline datablock
    - Select "Set Release Time"
    - Set time
      - Compliance blocks appear on sides of Timeline datablock
    - You are done!





Cancel APREQ or Reschedule

Tower/STBO Client

- To cancel or reschedule an APREQ release time
  - Right click on Timeline datablock
  - Click “Cancel APREQ”
  - Begin the APREQ process again

- When the APREQ is cancelled, datablock will return to the original configuration with no time or compliance indicator.

Agenda

Time	Event	Presenter
0730	Overview of STBO Client	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	APREQ Procedures	Bob
0920	**Break**	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
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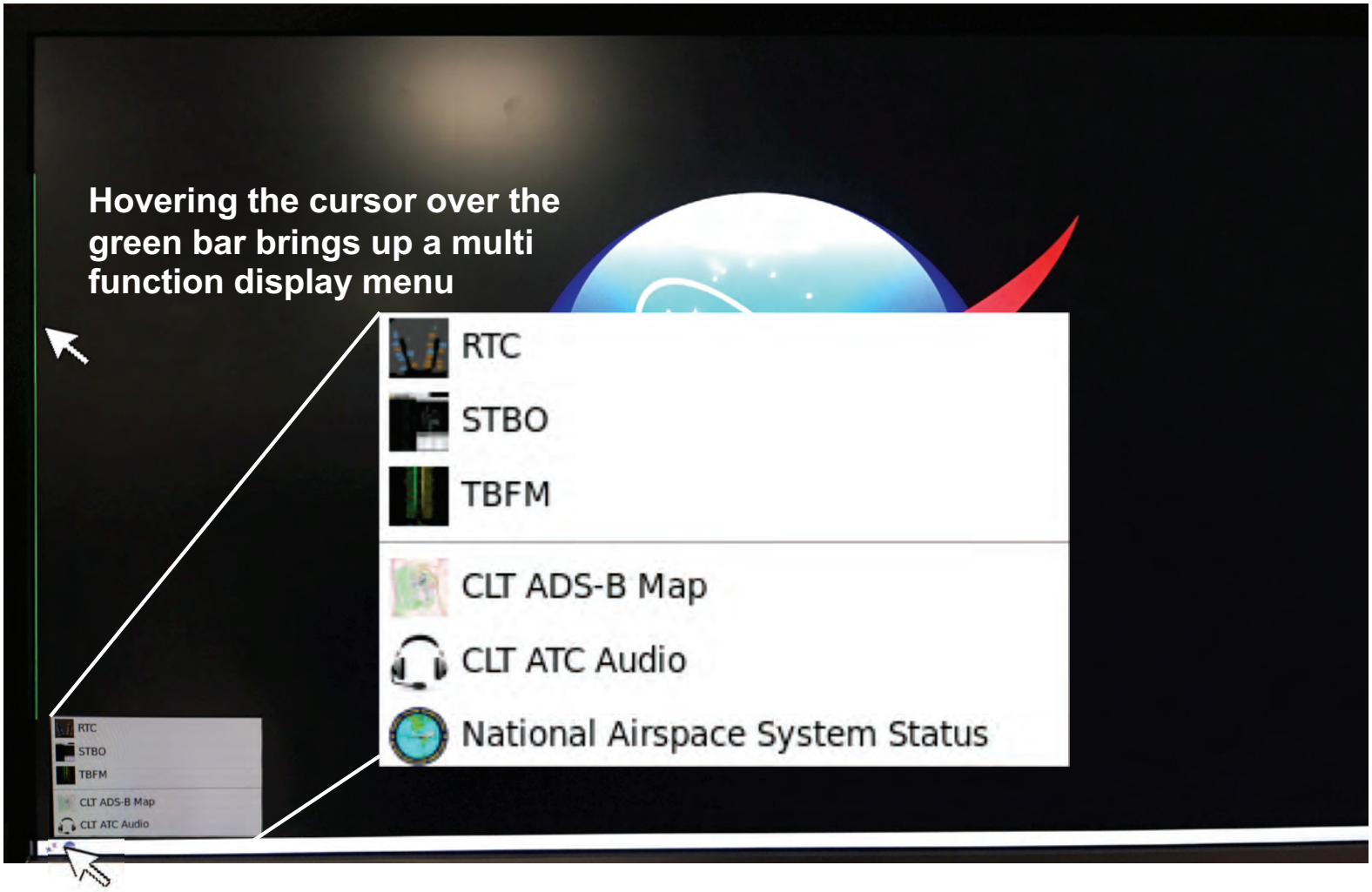
CLT Multi Functional Display (MFD)

Kiosk Type Display with "My Desktop" view



CLT Multi Functional Display (MFD)

Kiosk Type Display with "My Desktop" view

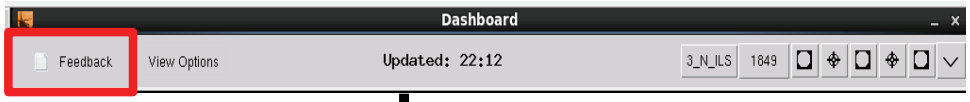
CLT Multi Functional Display (MFD)

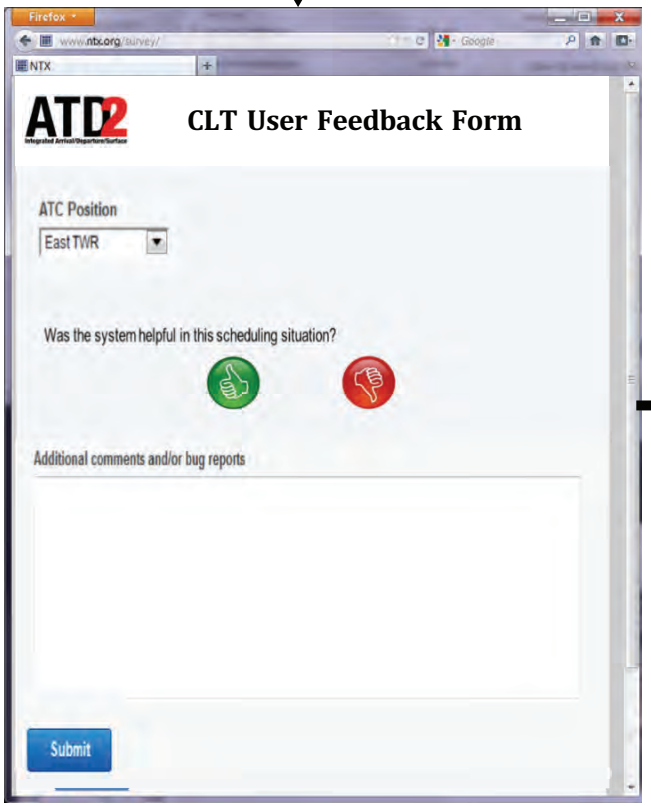
DASH

DASH Operational: localhost
Feedback
Updated: 20:52
S_Normal
Ramp
Monitors

CLT Electronic Support System

Operational user presses feedback button on real time dashboard





Resolve problem and report to originator

Retrieve operational user report and coordinate with team to determine if engineer on call can resolve and notify the software team concurrently

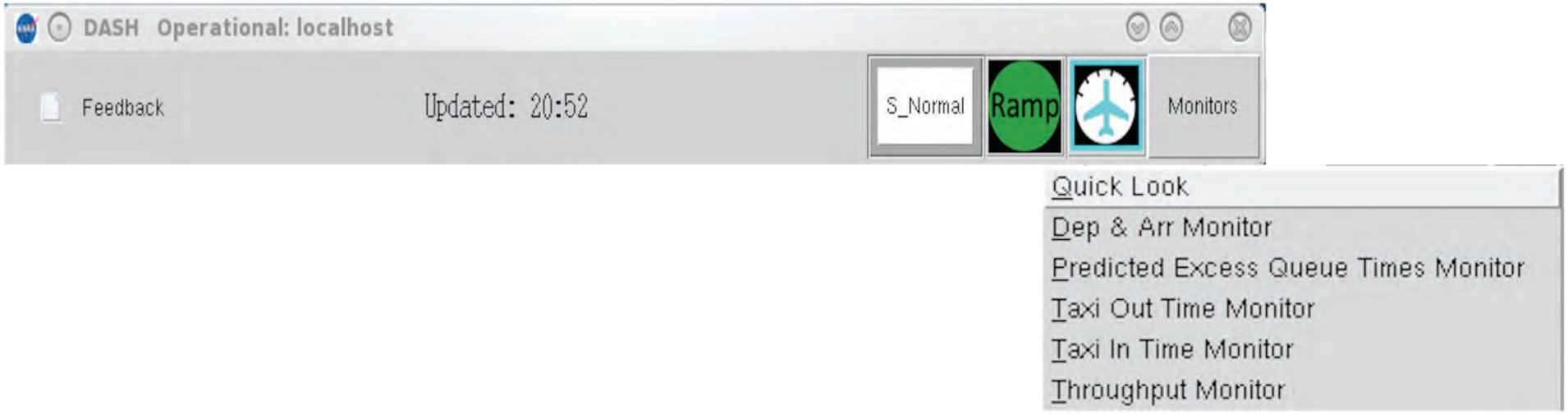
Bots

team emails

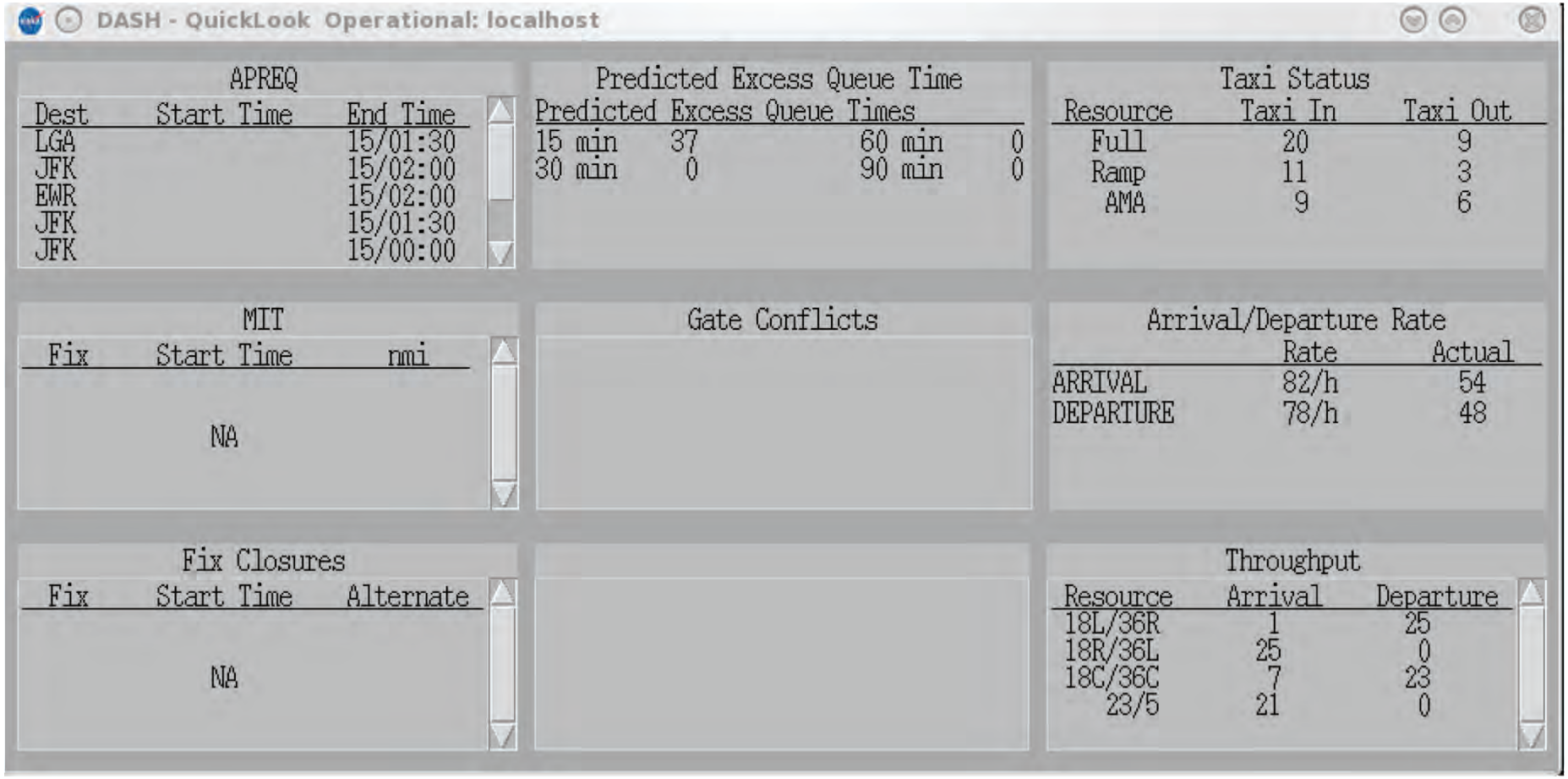
team texts

Software team

DASH Monitors

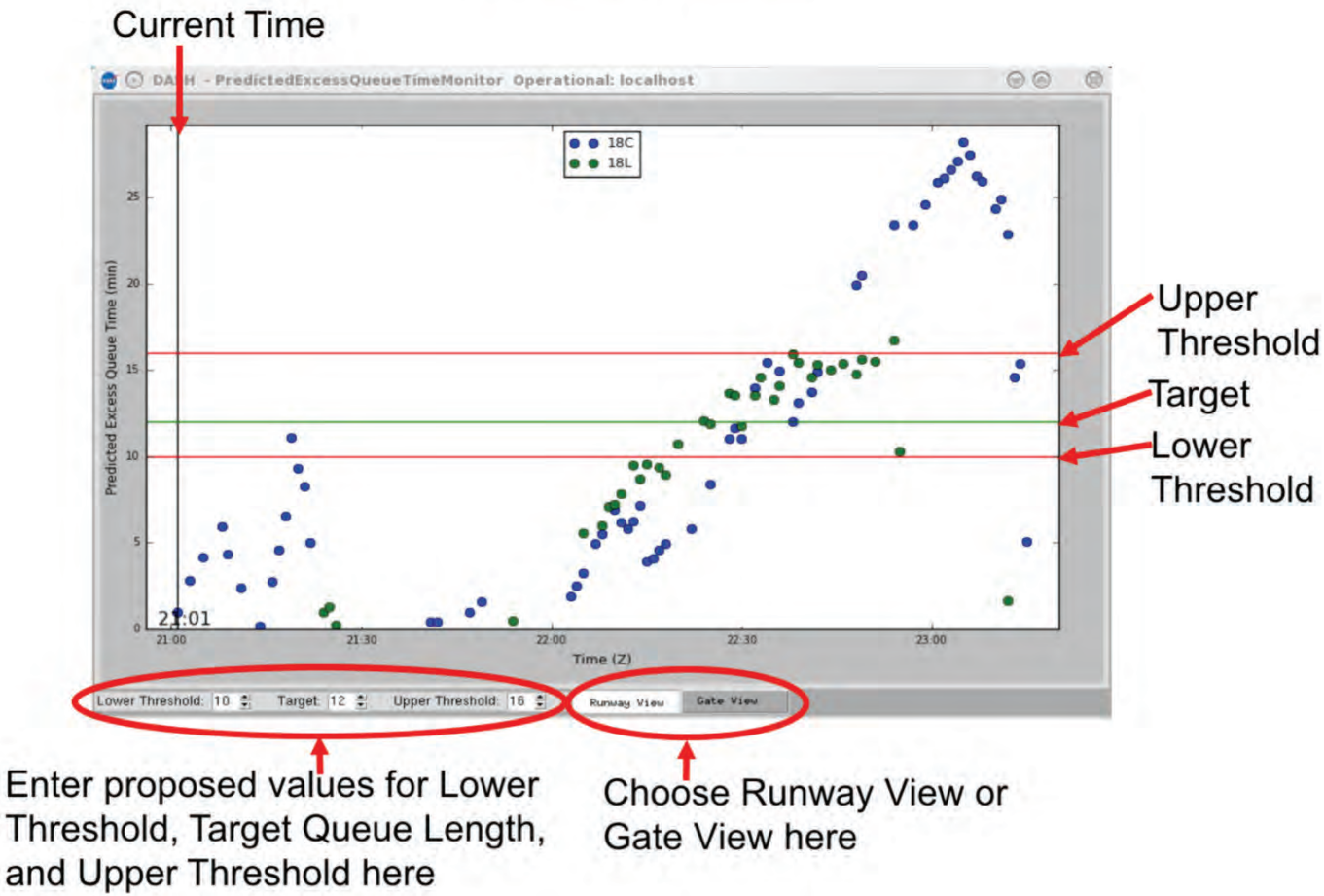


DASH Quick Look



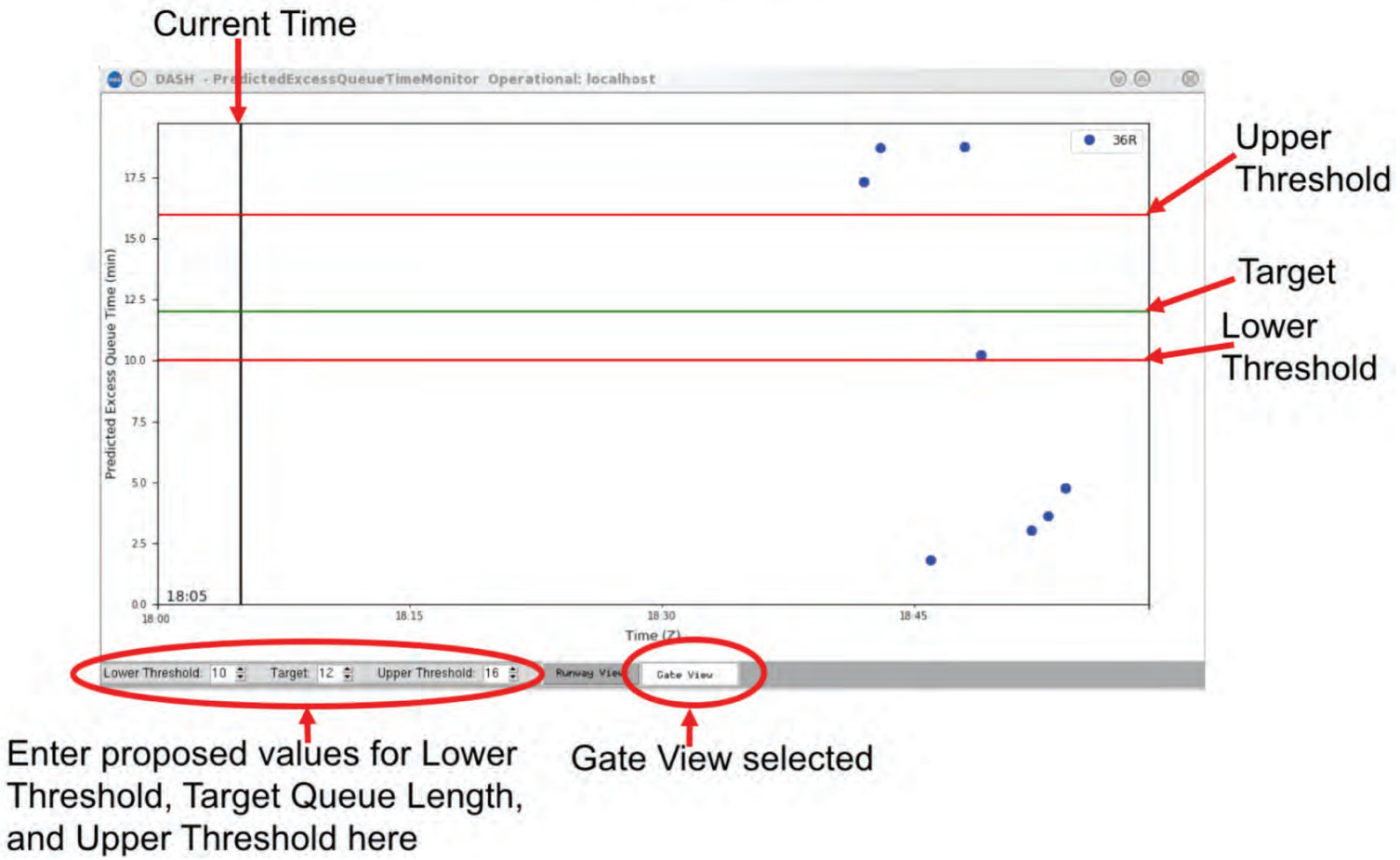
DASH – Predicted Excess Queue Time Monitor

Predicted Excess Queue Time Graph
Runway View



DASH – Predicted Excess Queue Time Monitor

Predicted Excess Queue Time Graph
Gate View



Agenda

Time	Event	Presenter
0730	Overview of STBO Client	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	APREQ Procedures	Bob
0920	Break	
0930	DASH	Shivanjli
0950	**What-If**	Shivanjli
1010	Hands-on Training	

What If System

- Select What If system from MFD (green bar)

What If Desktop Appearance

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0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	**Hands-on Training**	