

Air Traffic Management Demonstration II (ATD-2)

ATC Tower and TRACON Training

NEXTGEN

CLT

September 25-29, 2017

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	

Toolbar

Timeline

Operational STBO Timeline Runway 23/5 18L/36R

Runway 23/5 | 18L/36R

45
PDT4761 E3BC
IBU1246 BARMY A4 E1646
PDT4809 E35A
AAL1489 KILG B14 E1643
JAS053 EB
35
PDT4874 E14A
JAS183 BEAVY E19
EJAS54 HARAY UNK
JAS058 ICONG E35C
NS10RR GANTS UNK
30
AAL2096 KILG C3
AAL1961 ICONG C18
AAL1971 KWEEN D7
JAS335 ULLS E6
25
JAS928 UNK
AAL867 KWEEN D1
AAL1988 BARMY C12 E1671
20
JAS081 BARMY E24
AAL783 KWEEN D11
AAL879 KWEEN D2
AAL2565 ICONG B12
JAS526 BARMY E15 E1618
JAS338 KILNS E29 E1619
15
JAS166 E11
AAL644 B3
JAS139 BEAVY E13
AAL821 ICONG D10
10
JAS160 E26
AAL1756 BARMY C3 E1611
JAS234 E29
JAS515 E35C
JAS149 BARMY E35A
05
AW4247 E10
AAL1719 C8
16
RPA3415 A13
JAS288 E25
AAL1910 BARMY D6 A1558 E1533
AAL1769 C18
JAS350 GANTS E14B
RWY 23/5 | 15:55:30 | RWY 18L/36R
JAS585 E16A | AW4308 BUCKL E16A
AAL1778 B3 | AAL1805 BARMY C19

Map

Operational STBO Map 1

Operational STBO Dep Fix = BARMY; Dep Fix = BOBZY; Results: 125 at 15:55 GMT

Flight ID	Origin	Dest	AC Type	Rwy	Rw/OpNac	RwyTime	Flight Status	Gate	Gate Time	Spot
AAL100	CLT	JFK	B738	E18L		E04/17:28	Scheduled_Out	B8	E04/17:10	S265
AAL1242	CLT	BOS	B738	E18L			Scheduled_Out	B4		S265
AAL148	CLT	JFK	B738	18L		04/13:45	Departed	B4	04/13:20	S265
AAL1530	CLT	BOS	B738	E18L			Scheduled_Out	B16		S265
AAL1736	CLT	BNA	A319	E18C			Scheduled_Out	C19		S9W
AAL1740	CLT	LGA	A319	E18L			Scheduled_Out	C16		S265
AAL1752	CLT	STL	A319	18C		04/13:45	Departed	B16	04/13:30	S9W
AAL1756	CLT	BDL	A319	E18L		E04/16:08	Out	C3	04/15:54	S265
AAL1769	CLT	STL	A319	E18C		E04/17:13	Scheduled_Out	B10	E04/17:00	S9W
AAL1775	CLT	DFW	A321	E18C			Scheduled_Out	B10		S9W
AAL1794	CLT	MEM	A319	E18C			Scheduled_Out	B10		S9W
AAL1805	CLT	BOS	A320	18L		04/15:53	Departed	C19	04/15:32	S265
AAL1823	CLT	PWM	A319	18L		04/14:09	Departed	C3	04/13:45	S265
AAL1831	CLT	DFW	A321	E18C		E04/16:11	Pushback	B9	04/15:51	S9W

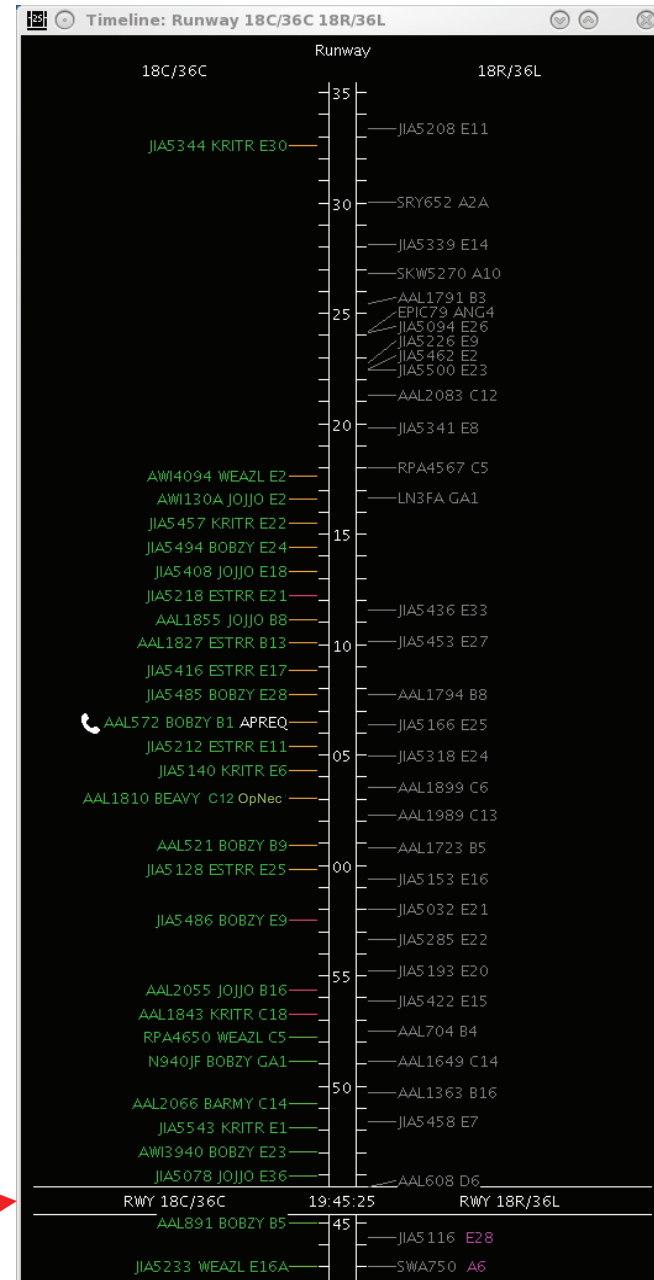
Timeline

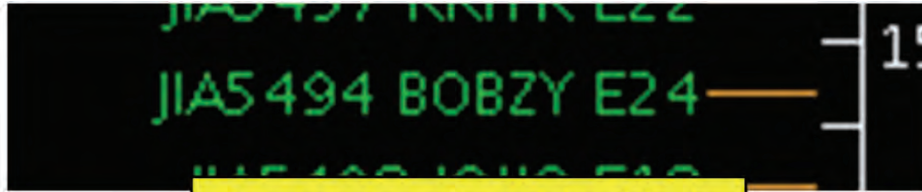
Operational STBO Timeline Runway 18C/36C 18R/36L

Runway 18C/36C | 18R/36L

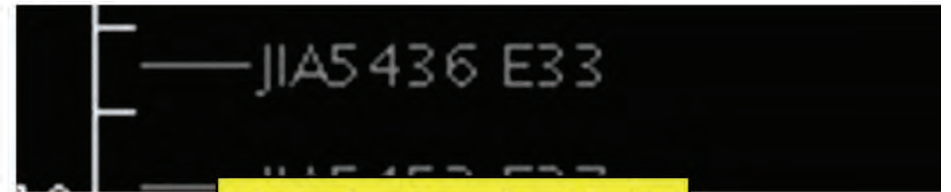
45
AAL691 C16
G54464 A10
NS45RW UNK
35
DAL2920 WEAZL A3
NS145 UNK
SRV7012 UNK
30
PDT4876 E36
JAS273 E27
25
JAS533 KRTR E5
JAS431 JOJO E31
DAL2251 BOBZY A7 A1624
JAS436 WEAZL E22
SRV1180 KRTR UNK
20
JAS545 BOBZY E23
JAS420 WEAZL E4
JAS466 JOJO E8
JAS115 JOJO E11
JAS080 KRTR E25 E1620
JAS054 BOBZY E30
AAL1832 ESTRR B6
AAL1831 BOBZY B9
GGN7347 KRTR A8 E1615
15
AAL1193 BUCKL B11
JAS423 JOJO E5A
ENY3727 BOBZY E7
JAS339 JOJO E34
05
JAS091 E38
16
JAS032 BOBZY E38A
AW4222 ESTRR E38C
AW48310 ESTRR A12
AAL1868 KRTR B13
RWY 18C/36C | 15:55:30 | RWY 18R/36L
JAS504 BOBZY E20
PDT4798 PTTY E38
AW4931 B3 | DAL942 A3
JAS420 E2
JAS551 E9

- Timeline shows information about:
 - Arrivals
 - Departures
 - TMI
 - 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

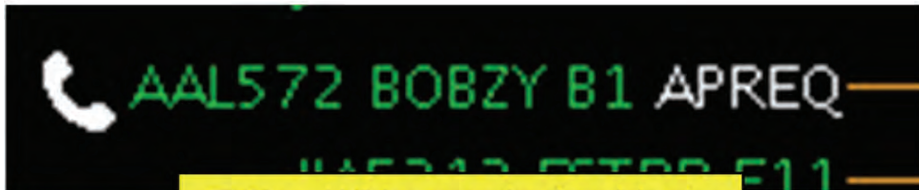




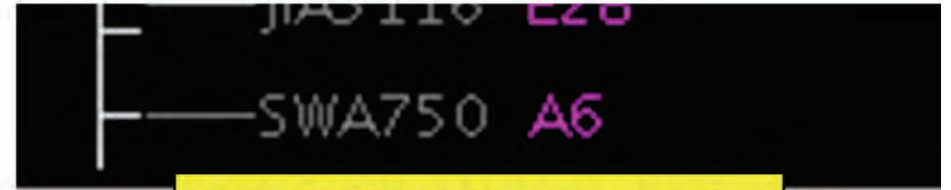
Departures = Green datablocks



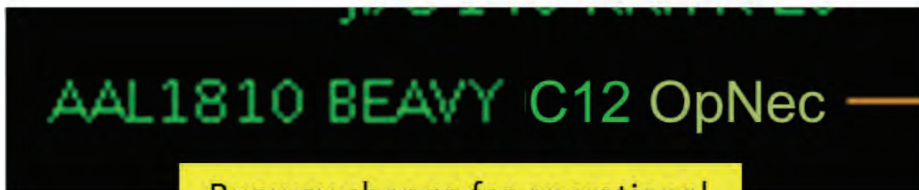
Arrivals = Grey datablocks



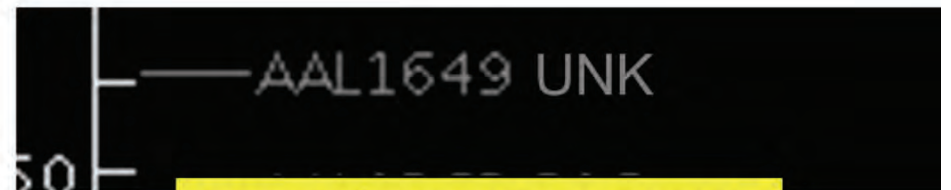
TMIs = White text in datablocks



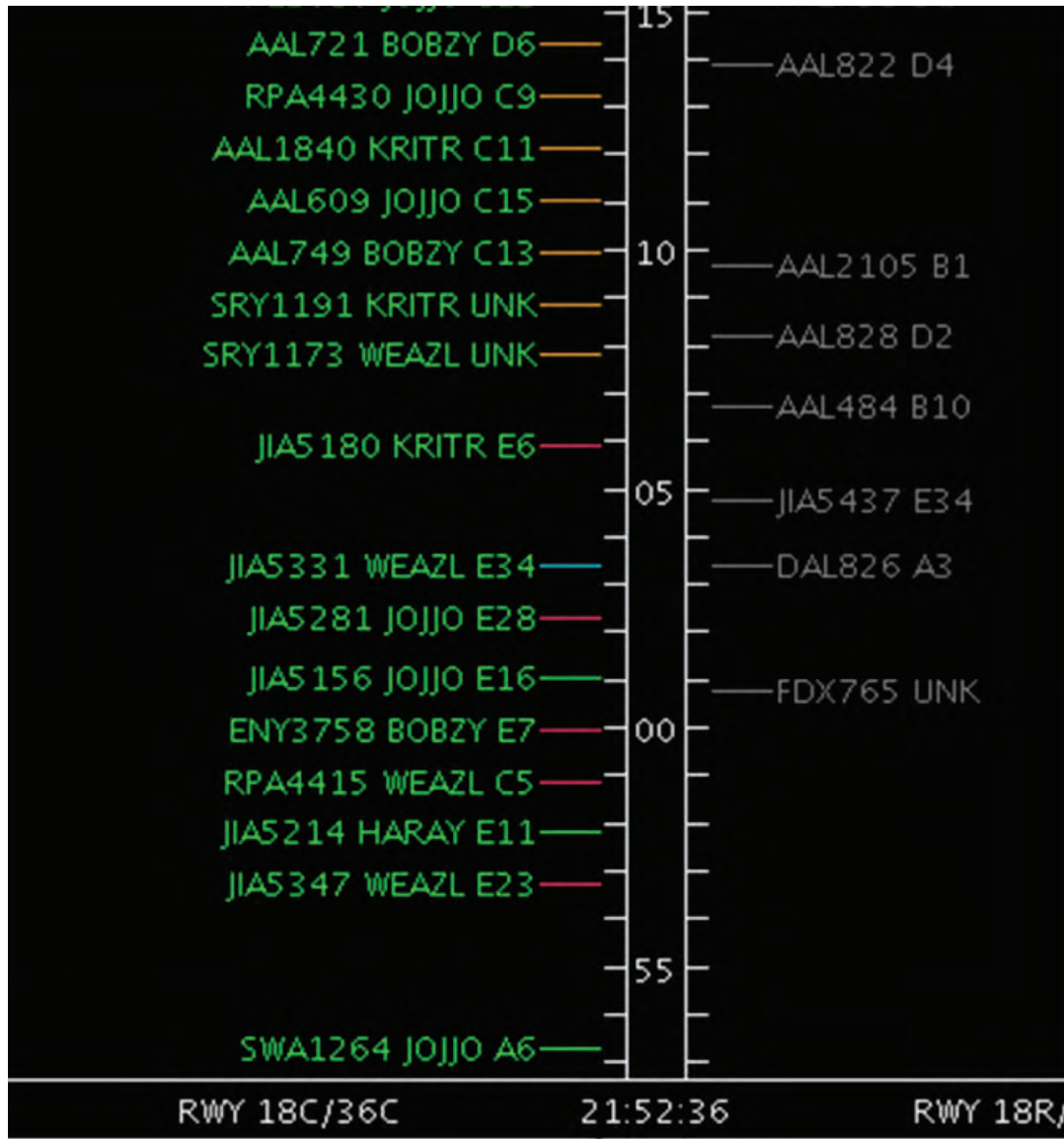
Gate Conflicts = Magenta gate #s



Runway change for operational necessity = Light green text in datablocks



UNK = Unknown gate assignment



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

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



Timeline Settings

Title: Runway Ref Point: Runway Setup Filter

Left Label: 23/5 Right Label: 18L/36R

Left Data: Latest Right Data: Latest

Format: Timeline List Duration: Start (0 or past minutes): 3 End: 50

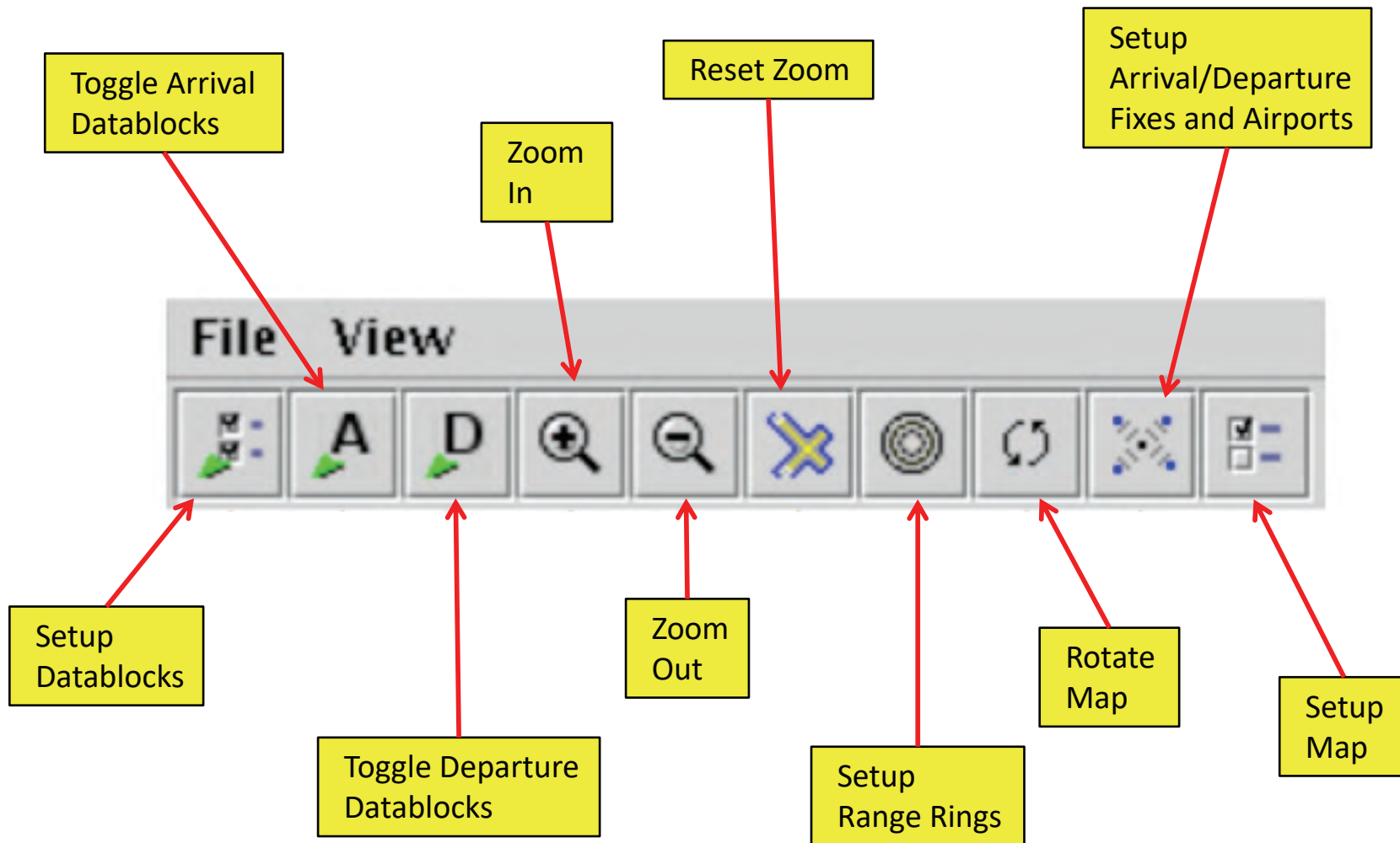
Color: Arrival/Departure One-Line DB Show legend Extended Datablock Layout: Default

Timeline Extended Datablock Content

Arrival		Departure	
<input checked="" type="checkbox"/> Flight ID	<input type="checkbox"/> Speed	<input checked="" type="checkbox"/> Flight ID	<input checked="" type="checkbox"/> APREQ
<input type="checkbox"/> Aircraft Type	<input type="checkbox"/> Taxi Time	<input type="checkbox"/> Aircraft Type	<input checked="" type="checkbox"/> MIT
<input type="checkbox"/> Heavy Indicator		<input type="checkbox"/> Heavy Indicator	<input checked="" type="checkbox"/> EDCT
<input type="checkbox"/> Tail		<input type="checkbox"/> Tail	<input checked="" type="checkbox"/> Ground Stop
<input type="checkbox"/> Beacon Code		<input type="checkbox"/> Beacon Code	<input type="checkbox"/> Spot Sequence
<input type="checkbox"/> Origin		<input checked="" type="checkbox"/> Destination	<input type="checkbox"/> Altitude
<input type="checkbox"/> Arrival Fix		<input checked="" type="checkbox"/> Departure Fix	<input type="checkbox"/> Speed
<input type="checkbox"/> Runway		<input type="checkbox"/> Runway	<input type="checkbox"/> Taxi Time
<input type="checkbox"/> Spot		<input checked="" type="checkbox"/> Runway OpNec	
<input checked="" type="checkbox"/> Parking Gate		<input type="checkbox"/> Spot	
<input checked="" type="checkbox"/> Gate Conflict		<input checked="" type="checkbox"/> Parking Gate	
<input type="checkbox"/> Altitude		<input type="checkbox"/> Gate Conflict	

Ok Cancel

The screenshot displays the 'STBO Operational Map 1' application window. The interface includes a menu bar with 'File', 'View', and 'Help'. Below the menu bar is a 'Map Toolbar' containing various navigation and display tools. The main map area shows a grey-scale airport layout with numerous flight paths. Aircraft are represented by small icons: grey icons indicate arrivals, and green icons indicate departures. Several aircraft call signs are visible on the map, including ATNS 293, EJA386, EJA4005, JJA5273, AAL705, AAL786, AAL2050, RPA3415, AAL3913, JJA5202, JJA5283, JJA5064, JJA5265, and AWI4139. A yellow callout box on the right side of the map states 'Arrivals = grey', and another yellow callout box at the bottom left states 'Departures = green'. A yellow callout box at the top left of the window is labeled 'Menus', and another yellow callout box at the top right is labeled 'STBO Client Help Menu'.





Setup Datablocks

Setup Map

Setup Datablocks - STBO Operational Map 1 *

Arrival: Flight Datablock Display: **Extended Datablock** | Departure: **Extended Datablock**

Extended Datablock Config: **Default**

Color Schemes: **Arrival/Departure** | Show Legend

Show Flights At Gates | Show Suspended Flights | Declutter Tags

Extended Datablock Content

Arrival		Departure	
<input checked="" type="checkbox"/> Flight ID	<input type="checkbox"/> Altitude	<input checked="" type="checkbox"/> Flight ID	<input type="checkbox"/> Priority
<input type="checkbox"/> Aircraft Type	<input type="checkbox"/> Speed	<input checked="" type="checkbox"/> Aircraft Type	<input checked="" type="checkbox"/> APREQ
<input type="checkbox"/> Heavy Indicator	<input type="checkbox"/> Taxi Time	<input type="checkbox"/> Heavy Indicator	<input checked="" type="checkbox"/> MIT
<input type="checkbox"/> Tail		<input type="checkbox"/> Tail	<input checked="" type="checkbox"/> EDCT
<input type="checkbox"/> Beacon Code		<input type="checkbox"/> Beacon Code	<input checked="" type="checkbox"/> Ground Stop
<input type="checkbox"/> Origin		<input type="checkbox"/> Destination	<input type="checkbox"/> Spot Sequence
<input type="checkbox"/> Arrival Fix		<input checked="" type="checkbox"/> Departure Fix	<input type="checkbox"/> Altitude
<input type="checkbox"/> Runway		<input type="checkbox"/> Runway	<input type="checkbox"/> Speed
<input type="checkbox"/> Spot		<input type="checkbox"/> Runway OpNec	<input type="checkbox"/> Taxi Time
<input type="checkbox"/> Parking Gate		<input type="checkbox"/> Spot	
<input checked="" type="checkbox"/> Gate Conflict		<input type="checkbox"/> Parking Gate	
<input type="checkbox"/> Priority		<input type="checkbox"/> Gate Conflict	

Ok | Cancel

Setup Map - STBO Operati x

Map Layers	Display	Color
Parking Gates	<input type="checkbox"/>	
Parking Gate Labels	<input type="checkbox"/>	
Taxiways	<input type="checkbox"/>	Green
Taxiway Labels	<input type="checkbox"/>	Light Green
Aprons	<input type="checkbox"/>	Yellow
Spots	<input type="checkbox"/>	Blue
Ramp Spots	<input type="checkbox"/>	
Runways	<input type="checkbox"/>	Grey
Datablock Regions	<input type="checkbox"/>	Cyan
Runway Queue Box	<input type="checkbox"/>	Dark Blue
Runway Detection Box	<input type="checkbox"/>	
Intersections	<input type="checkbox"/>	
Background Map Labels	<input type="checkbox"/>	
ARTCC	<input type="checkbox"/>	Light Red
Countries	<input type="checkbox"/>	Purple
Taxiway Polygons	<input type="checkbox"/>	Pink
Mile Markers	<input type="checkbox"/>	Yellow
Sector Lines	<input type="checkbox"/>	Orange
ADW	<input type="checkbox"/>	Yellow
Departure Flows	<input type="checkbox"/>	Green
Arrival Flows	<input type="checkbox"/>	Cyan

Ok | Cancel

Flights Table

Flights Table Help

MOUSE SHORTCUTS

Click flight	Select a flight
Shift + click flight	Select multiple flights
Right-click on flight	Show flight menu

COLUMN HEADERS SHORTCUTS

Click column headers	Rotate sorting states: Ascending, Descending, Not Sorted
Click and drag column header	Re-order columns
Click column + <ctrl>-click another column	Performs a primary sort on first column with a sub-sort on s

Map

Map Help

KEYBOARD SHORTCUTS

Alt + a	Toggle datablock for all arrival flights
Alt + d	Toggle datablock for all departure flights
Alt + f	Toggle datablock for selected flights
Alt + F	Reset previously selected-and-toggled datablocks back to the default
Alt + p	Open dialog to setup map datablocks
Alt + h	Open dialog to display track histories
Alt + r	Show route for selected flights
Alt + R	Clear all displayed routes
'Alt + u' or 'u'	Zoom out
'Alt + z' or 'z'	Zoom in
'Alt + .' or 'Alt + >'	Increase the font size
'Alt + ,' or 'Alt + <'	Decrease the font size
<space>	Declutter datablocks while pressed
1 to 4, 6 to 9	Position datablock for selected flights or all flights
5	Reset datablock to default position for all flights
0 (zero)	Toggle leader line display for selected flights or all flights
Alt + [Decrease leader line length for selected flights or all flights
Alt +]	Increase leader line length for selected flights or all flights
Alt + /	Reset leader line length to default for previously-altered flights

MOUSE SHORTCUTS

Click flight	Select a flight
Shift + click flight	Select multiple flights
Right-click on flight	Show flight menu
Middle-mouse drag datablock	Roughly reposition datablock of already-selected flight
Move Mouse wheel UP	Zoom in
Move Mouse wheel DOWN	Zoom out
Right-click + drag	Pan the map

Timeline

Timeline Help

KEY SHORTCUTS

Alt + l	Toggle legend visibility
Alt + p	Display Timeline Settings
Alt + s	Switch between timeline and list format
'Alt + .' or 'Alt + >'	Increase Font
'Alt + ,' or 'Alt + <'	Decrease Font
'Alt + +' or 'Alt + ='	Increase end duration by 5 minutes
'Alt + -' or 'Alt + _'	Decrease end duration by 5 minutes

MOUSE SHORTCUTS

Click flight	Select a flight
Shift + click flight	Select multiple flights
Right-click on flight	Show flight menu
Right-click	Show timeline menu

Close

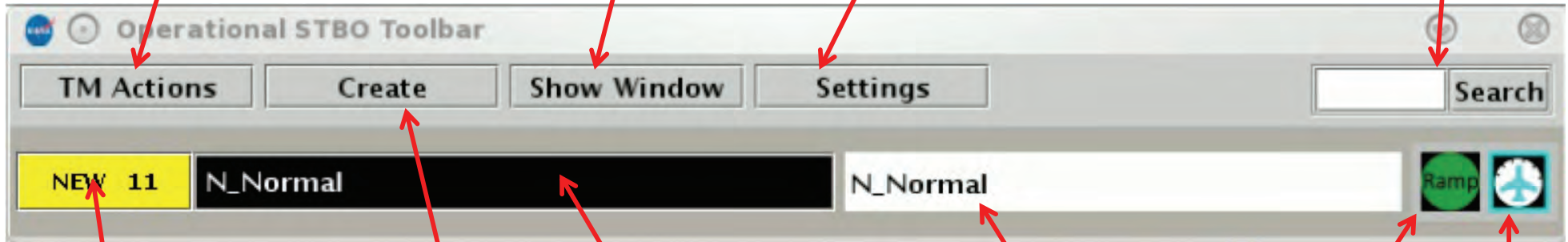


TM Actions: Drop down menu that allows user to schedule/make changes to TMIs and runway utilization

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

Notification Banner

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

Runway Utilization icon

Ramp Status icon

Metering icon

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.

The screenshot shows the ATD2 interface with a search for 'JIA' in the toolbar. The flight table below shows the following highlighted entries:

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Sp
JIA5214	CRJ9										
JIA5156	CRJ7										
JIA5331	CRJ9										
JIA5182	CRJ9										
JIA5281	CRJ9										
JIA5347	CRJ2										



The screenshot shows the ATD2 interface with a search for 'JIA5331' in the toolbar. The flight table below shows the following highlighted entries:

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Sp
JIA5331	CLT	JAN	CRJ9	E36C		16/22 02	Taxing_AHA	E4	16/21 49	S24	16/2

Edit Filters

Column Settings

Operational Status: Fix = BOBZY; Results: 125 at 15:35 GMT

Flight ID	Origin	Dest	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	
AAL100	CLT	JFK	B738	E18L		E04/17:28	Scheduled_Out	B8	E04/17:10	S26S	BARJ
AAL1242	CLT	BOS	B738	E18L			Scheduled_Out	B4		S26S	BARJ
AAL148	CLT	JFK	B738	18L		04/13:45	Departed	B4	04/13:20	S26S	BARJ
AAL1530	CLT	BOS	B738	E18L			Scheduled_Out	B16		S26S	BARJ
AAL1736	CLT	BNA	A319	E18C			Scheduled_Out	C19		S9W	BOBZ
AAL1740	CLT	LGA	A319	E18L			Scheduled_Out	C16		S26S	BARJ
AAL1752	CLT	STL	A319	18C		04/13:45	Departed	B16	04/13:30	S9W	BOBZ
AAL1756	CLT	BDL	A319	E18L		E04/16:08	Out	C3	04/15:54	S26S	BARJ
AAL1769	CLT	STL	A319	E18C		E04/17:13	Scheduled_Out	B15	E04/17:09	S9W	BOBZ
AAL1775	CLT	DFW	A321	E18C			Scheduled_Out	B10		S9W	BOBZ
AAL1794	CLT	MEM	A319	E18C			Scheduled_Out	B10		S9W	BOBZ
AAL1805	CLT	BOS	A320	18L		04/15:53	Departed	C19	04/15:32	S26S	BARJ
AAL1823	CLT	PWM	A319	18L		04/14:09	Departed	C3	04/13:45	S26S	BARJ
AAL1831	CLT	DEN	A321	E18C		E04/16:11	Pushback	B9	04/15:51	S9W	BOBZ

Edit Filters - All:

Field	Operator	Values
AND		
AND		
AND		
AND		

More Less Preview Query Apply New Alert Close

Column Settings

Available	Shown
AIBT	Flight ID
ALDT	Origin
AMA Taxi	Dest
AMAT	AC Type
AOBT	Rwy
ATOT	RwyOpNec
Altitude	Rwy Time
ApReq Earliest Time	Flight Status
ApReq Forced	Gate
ApReq Latest Time	Gate Time

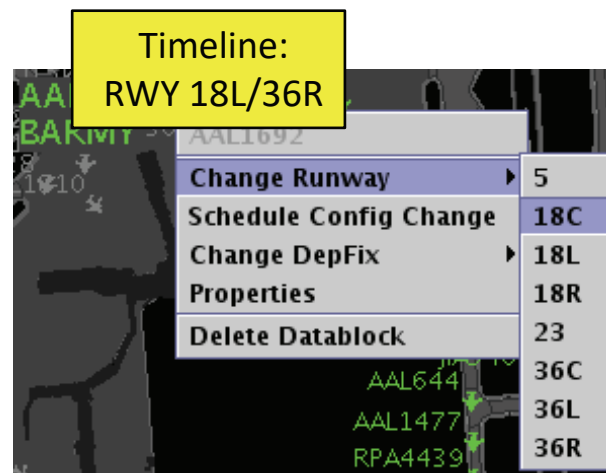
Move Up Move Down

OK Cancel

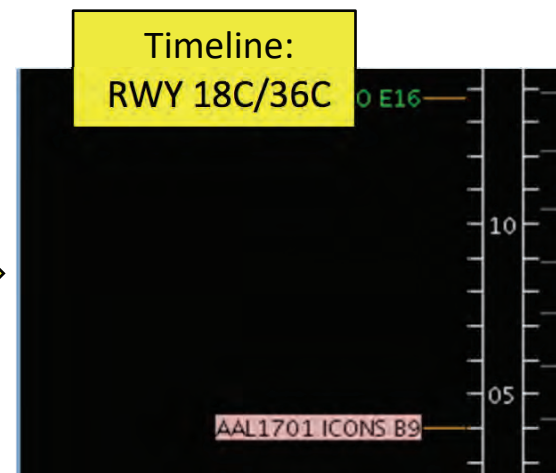
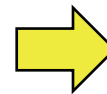
Flights Table

Flight ID	Origin	Dest	AC Type
AAL100	CLT	JFK	B738
AAL1757	CLT	EWB	A319
AAL2068	CLT	LGA	A321
AAL591			19
UAL183			8
AAL843			19
DAL109			88
AAL66R			21
AAL195			19
AAL206			21
N557GA			50
RPA340			70
AAL173			19
EDV338			9
ASQ530			7
JIA545			9
DAL225			88
AAL148			8
RPA434			70

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



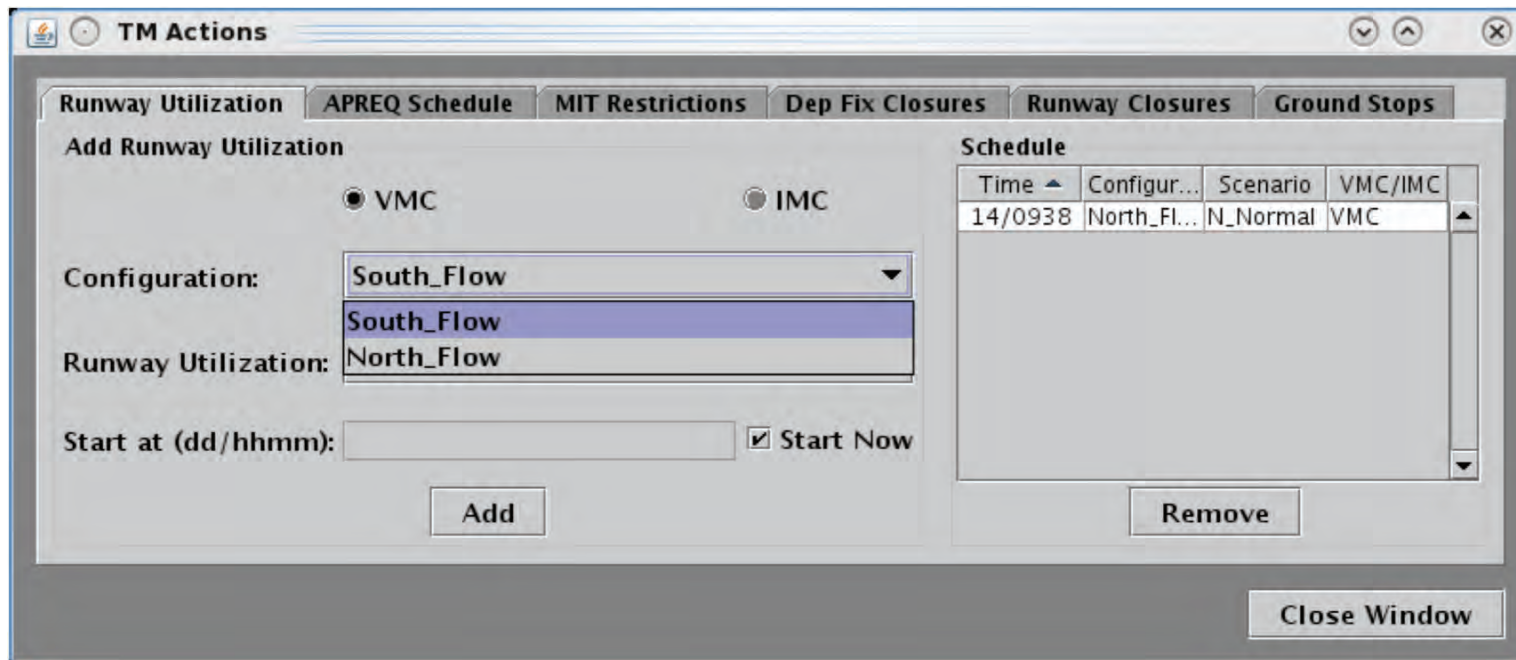
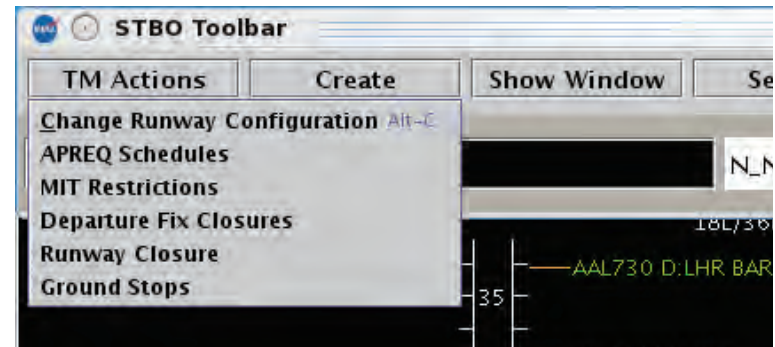
Step 1



Step 2

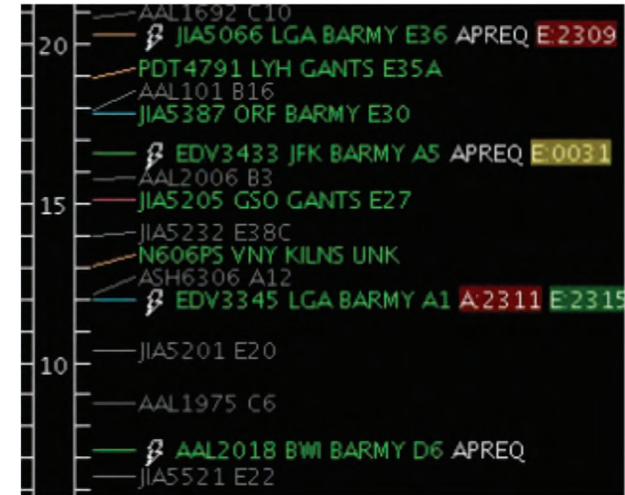
TM Actions

- Click on TM Actions menu
 - select “Change Runway Configuration”
- “Runway Utilization” tab is pre-selected
- Fill in information and “Add” to the schedule





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



Operational STBO TM Actions

Runway Utilization | **APREQ Schedule** | MIT Restrictions | Dep Fix Closures | Runway Closures | Ground Stops

Add APREQ

Airport Jet Route

Airport:

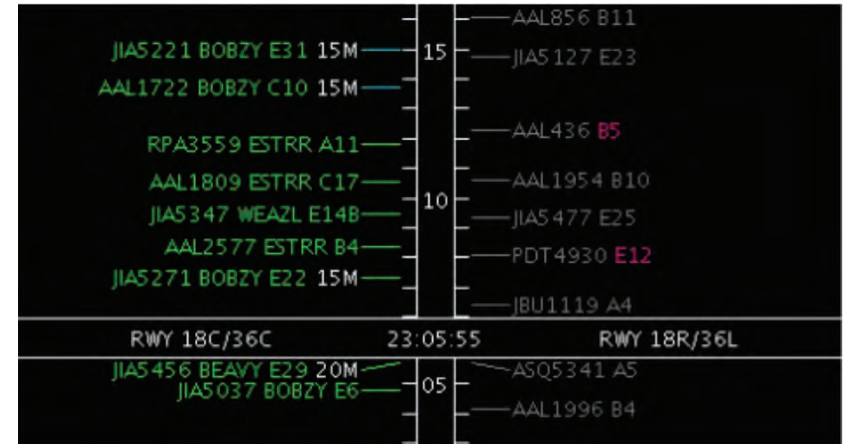
Start Time: (dd/hhmm) Start Now

End Time: (dd/hhmm) No End Time

APREQ Schedule

APREQ	Start ▲	End
DCA	1/1030	2/0200
EWR	1/1030	2/0200
JFK	1/1030	2/0200
LGA	1/1030	2/0200
IAD	1/1800	1/2100
IAH	1/1857	1/2015
DFW	1/1945	1/2200

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



The screenshot shows the 'Operational STBO TM Actions' window with the 'MIT Restrictions' tab selected. The window contains several input fields and buttons for configuring MIT restrictions.

Add MIT

DepFix: BOBZY (dropdown menu)

MIT Restriction: 15 (dropdown menu)

Start Time: (input field) (dd/hhmm) Start Now

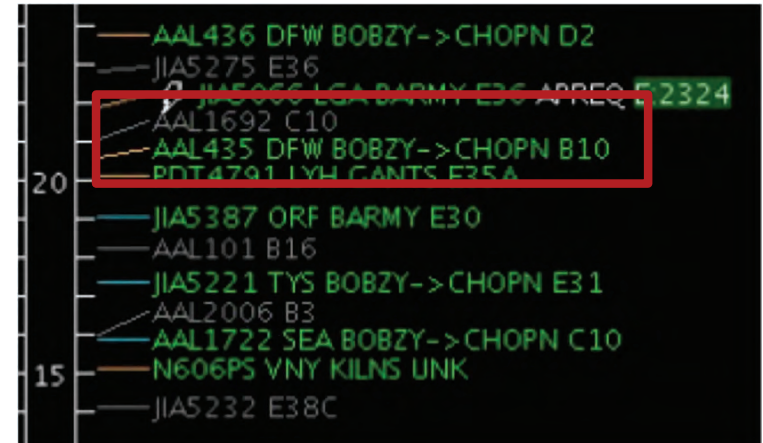
End Time: (input field) (dd/hhmm) No End Time

Buttons: Set Exclusions, View Constraints, Clear All, Add, Remove, Close Window

MIT Schedule

Resource	MIT	Start	End
BARMY	20	21/2305	No End ...
BEAVY	20	21/2305	No End ...

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

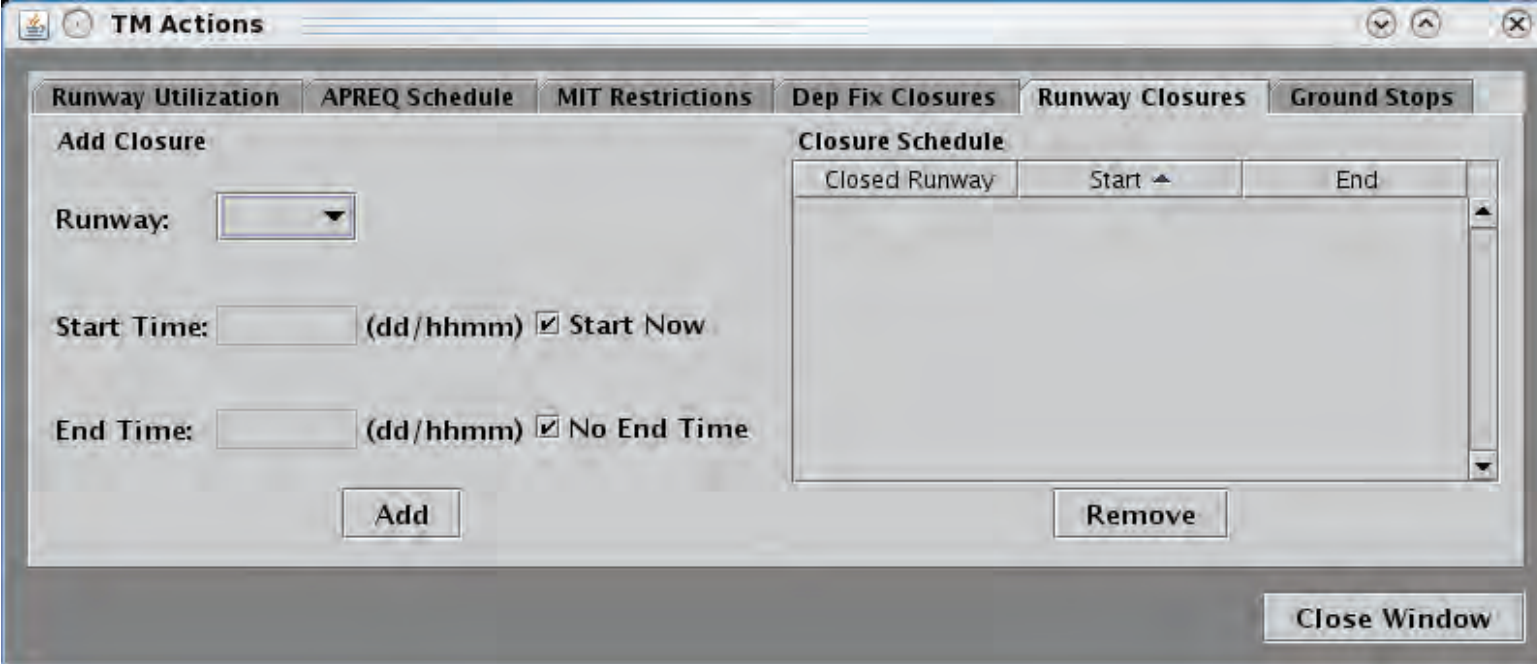


The screenshot shows the 'Operational STBO TM Actions' window with the 'Dep Fix Closures' tab selected. The 'Add Closure' section contains the following fields and options:

- Departure Fix: BOBZY
- CDR Flights To: CHOPN
- StartTime: (dd/hhmm) Start Now
- End Time: (dd/hhmm) No End Time

Buttons at the bottom include 'Set Exclusions', 'View Constraints', 'Clear All', 'Add', 'Remove', and 'Close Window'.

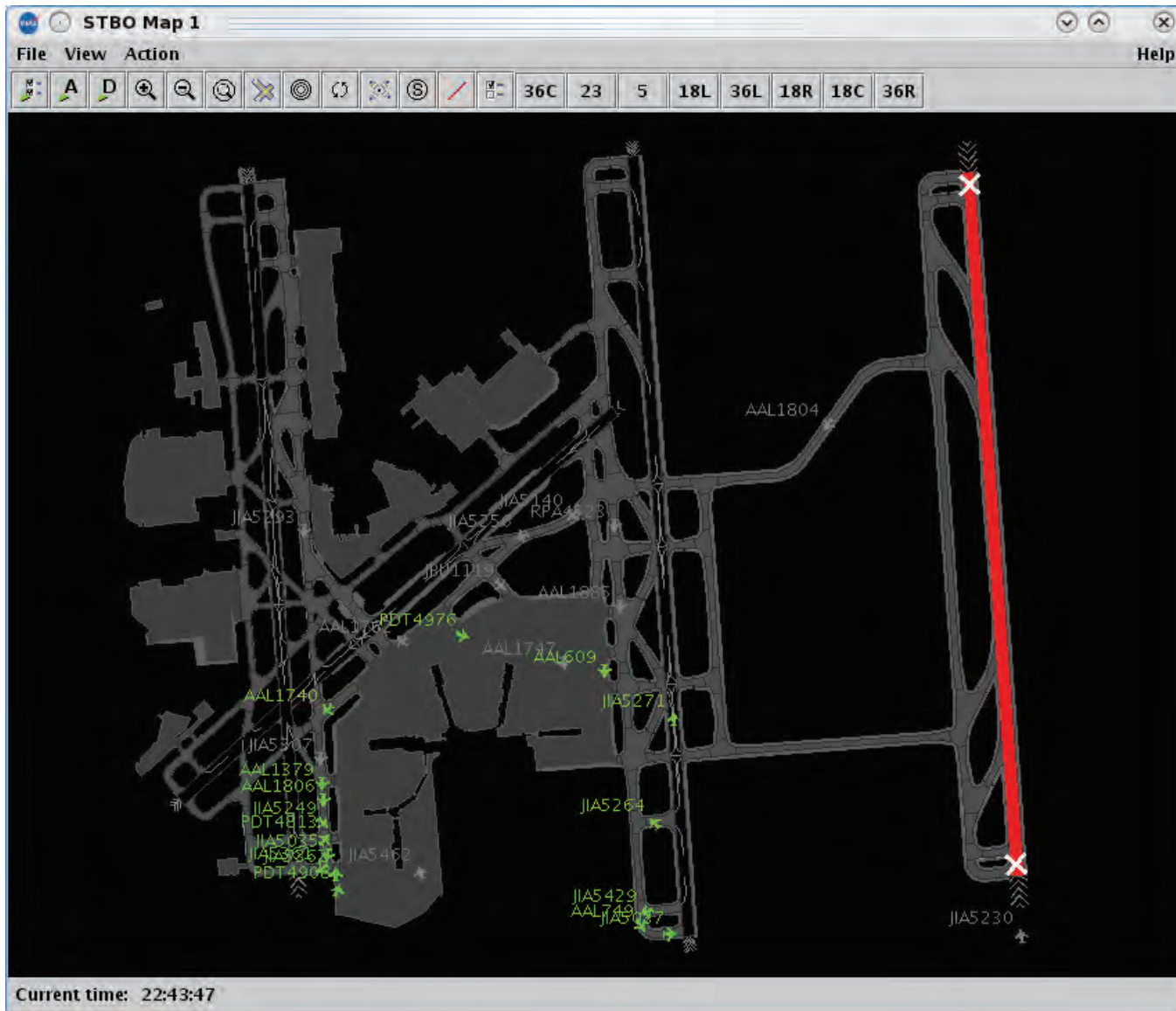
- Select “Runway Closures” tab
- Fill in information and “Add” to the schedule



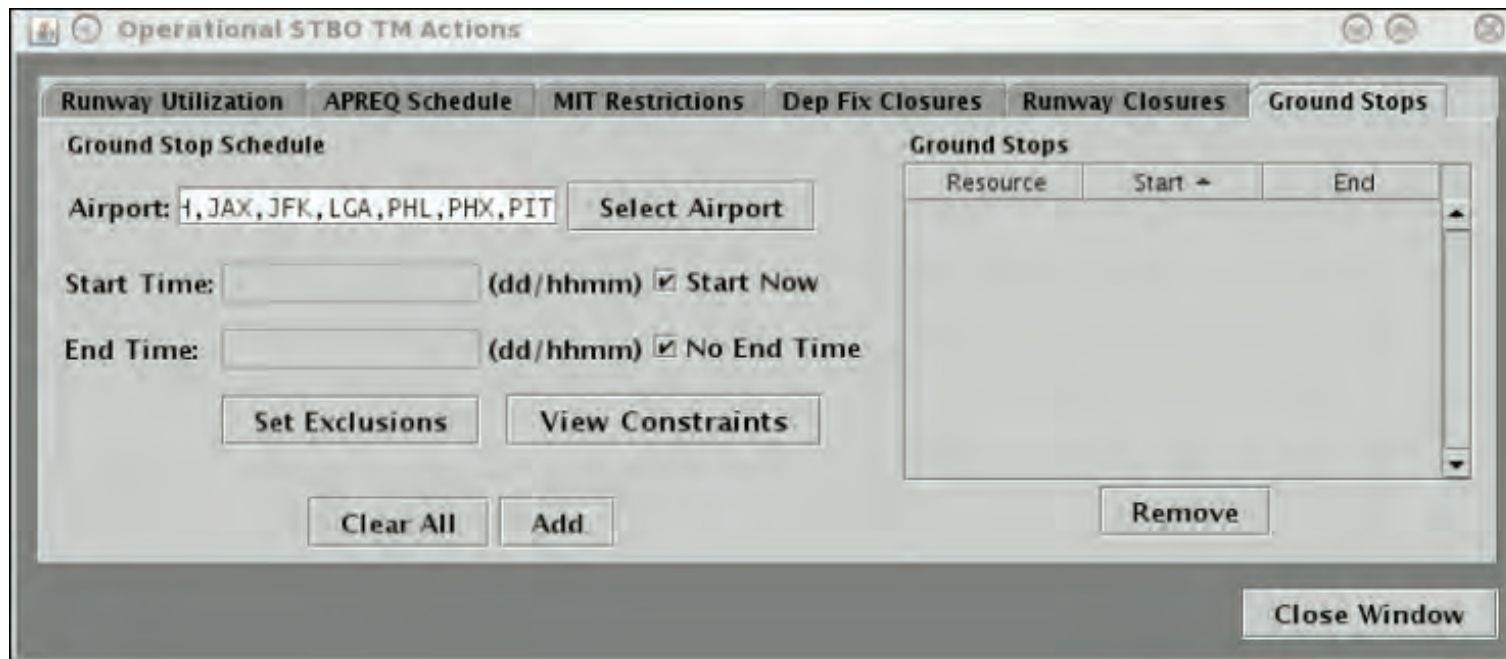
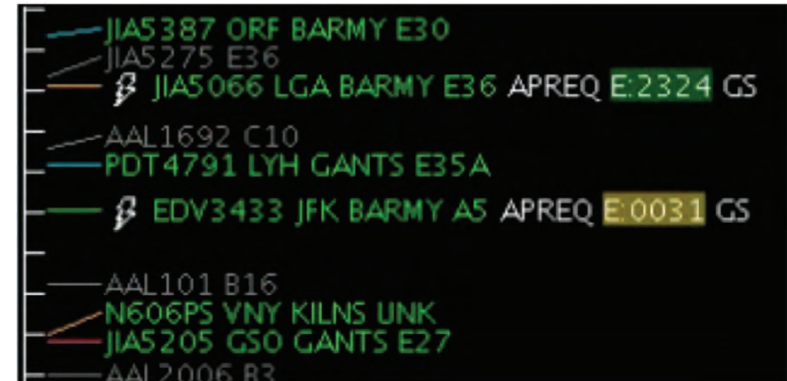
The screenshot shows a software window titled "TM Actions" with several tabs: Runway Utilization, APREQ Schedule, MIT Restrictions, Dep Fix Closures, Runway Closures, and Ground Stops. The "Runway Closures" tab is active. On the left, under "Add Closure", there is a "Runway:" dropdown menu, a "Start Time:" field with a "(dd/hhmm)" format and a checked "Start Now" checkbox, and an "End Time:" field with a "(dd/hhmm)" format and a checked "No End Time" checkbox. Below these fields is an "Add" button. On the right, under "Closure Schedule", there is a table with columns "Closed Runway", "Start", and "End". The table is currently empty. Below the table is a "Remove" button. At the bottom right of the window is a "Close Window" button.

Closed Runway	Start	End
---------------	-------	-----

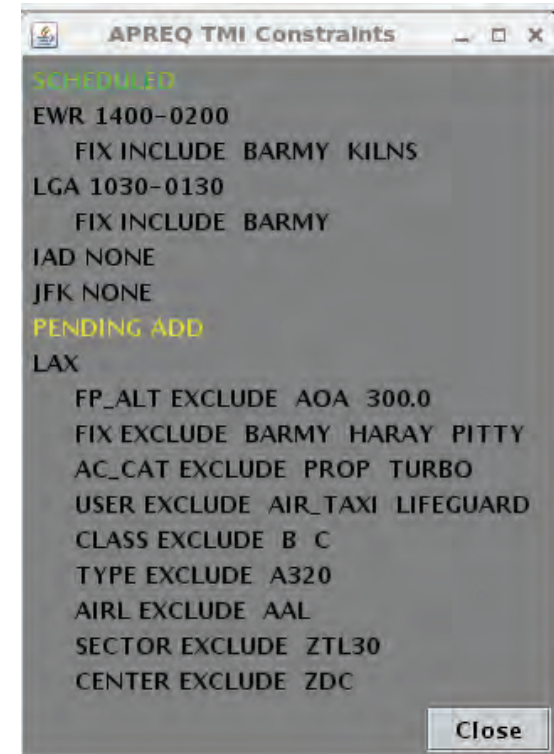
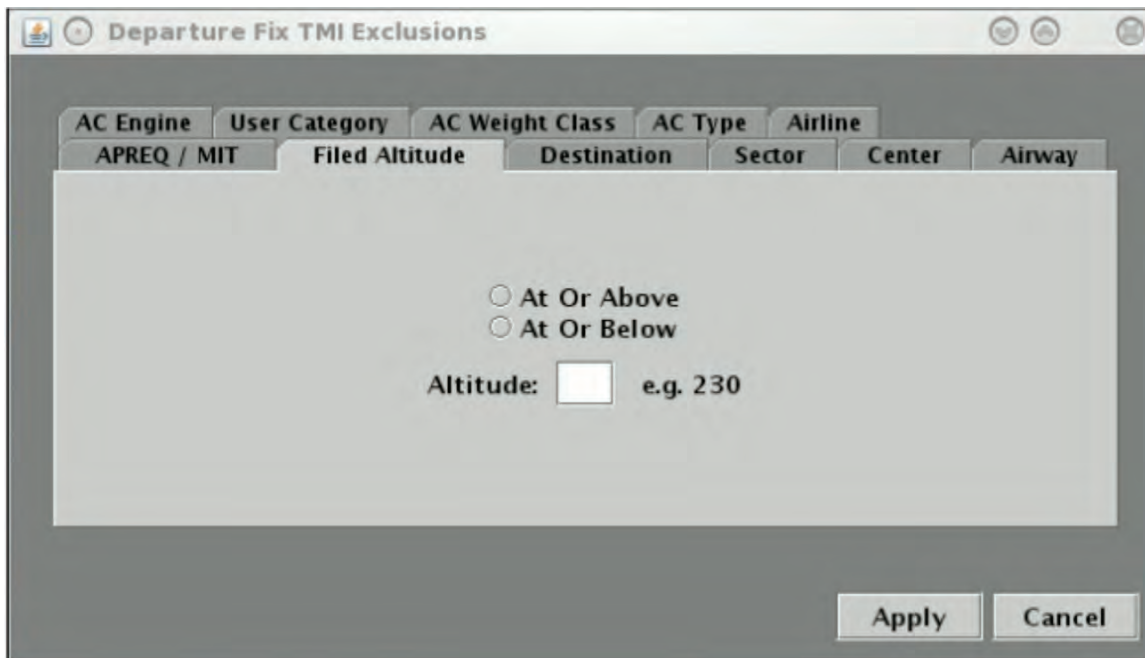
- Closed runway is marked red with white "X"s



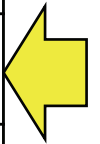
- Select “Ground Stops” tab
- Fill in information and “Add” to the schedule
- You can set and preview exclusions to



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



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	





- 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



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Ramp sets the Metering Mode from Tools Menu (RMTC)



The screenshot shows the 'Operational - Ramp Traffic Console - Ramp Manager Mode - RampManager' window. The 'Tools' menu is open, and 'Time-Based Metering' is selected. A dialog box titled 'Time-Based Metering' is displayed, allowing configuration of the target AMA Excess Queue Time and metering display thresholds.

Tools Menu:

- Metering Mode: **Time-Based Metering** (circled in red)
- Departure Sequence Metering
- Priority Flights...

Time-Based Metering Dialog:

Set Target AMA Excess Queue Time:

- 14 minutes
- 12 minutes
- 10 minutes
- Other: minutes.

Justification:

Metering Display Threshold:

Turn metering on when excess queue time rises to: 14 minutes.

Turn metering off when excess queue time drops to: 10 minutes.

Buttons: Apply, Cancel

Map Data:

Map labels include: A1-A13, B1-B13, C1-C11, D1-D13, E1-E11, F1-F11, G1-G11, H1-H11, I1-I11, J1-J11, K1-K11, L1-L11, M1-M11, N1-N11, O1-O11, P1-P11, Q1-Q11, R1-R11, S1-S11, T1-T11, U1-U11, V1-V11, W1-W11, X1-X11, Y1-Y11, Z1-Z11.

Arrivals/Departures:

Mode	Count
Arrivals	20
Eastbound	11/0
Westbound	11/0



- **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

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

A: Hashtag Or B: Push advisory Or C: hold n minutes:

Each advisory card contains the following information: AAL705 A321 E, BOBZY-SFO, C6 9 18C, P1856.

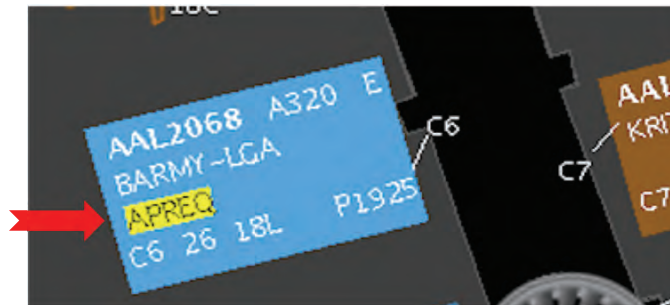


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- Notification on RTC for the APREQ

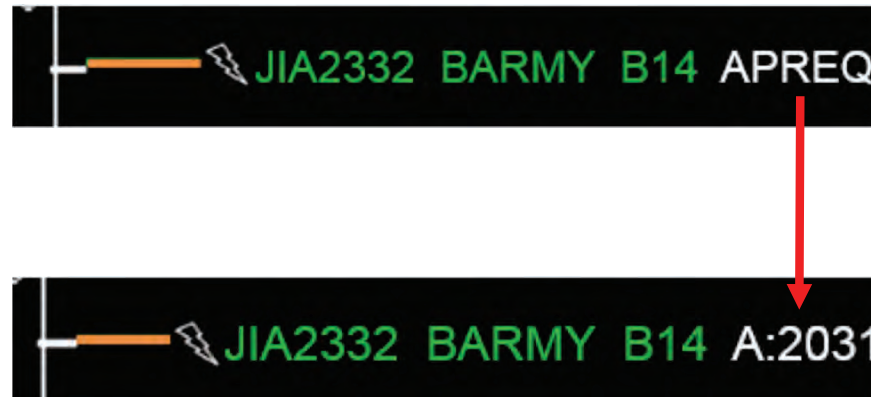
Reported	Event Type	Description	Event Start	Event End
2/8/17 1808	AIRPORT	JFK APREQ	2/8/17 1800	2/9/17 ...
2/8/17 1701	FIX	LGA 15 MIT	2/8/17 1650	2/9/17 ...
2/8/17 1630	FIX	DCA OPEN	2/8/17 1515	2/8/17 ...
2/8/17 1624	AIRPORT	EWR APREQ	2/8/17 1615	2/9/17 ...
2/8/17 1600	FIX	ORD OPEN	2/8/17 1515	2/8/17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

- APREQ showing on the strip

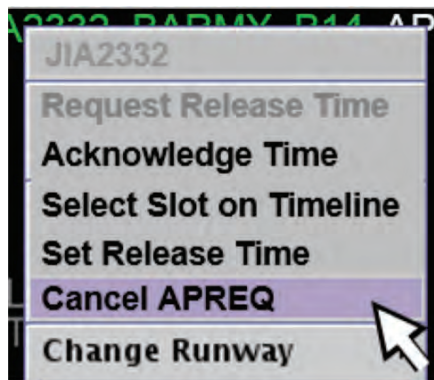




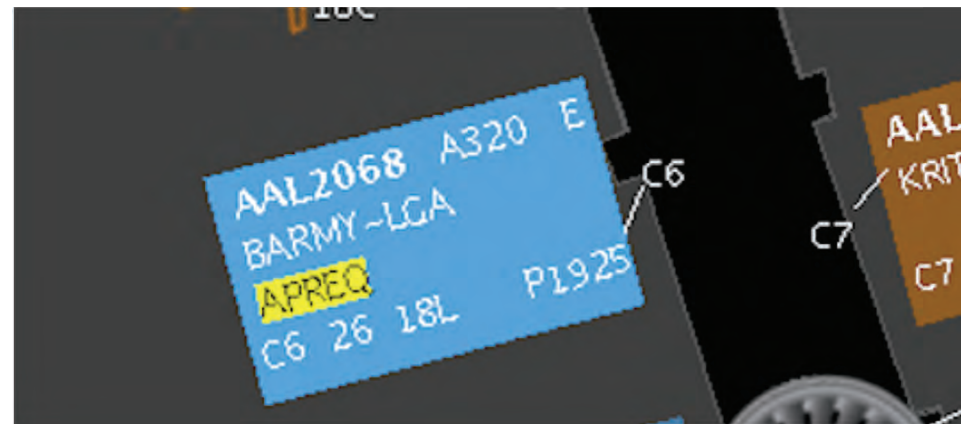
- APREQ Time shown on STBO Client Timeline after scheduled



- 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



NEW 8 15 MIT ICONS 2015-0712

JIA5221	ICONS	E3	15M	15	AAL8
AAL1722	ICONS	C10	15M		JIA5
RPA3559	ESTRR	A11			AAL4
AAL1809	ESTRR	C17		10	AAL3
JIA5347	WEAZL	E14B			JIA54
AAL2577	ESTRR	B4			PDT4
JIA5271	ICONS	E2	15M		JBU1
RWY 18C/36C		23:05:55			
JIA5456	BEAVY	E29	20M		ASQ5
JIA5037	BOBZY	E6		05	AAL1

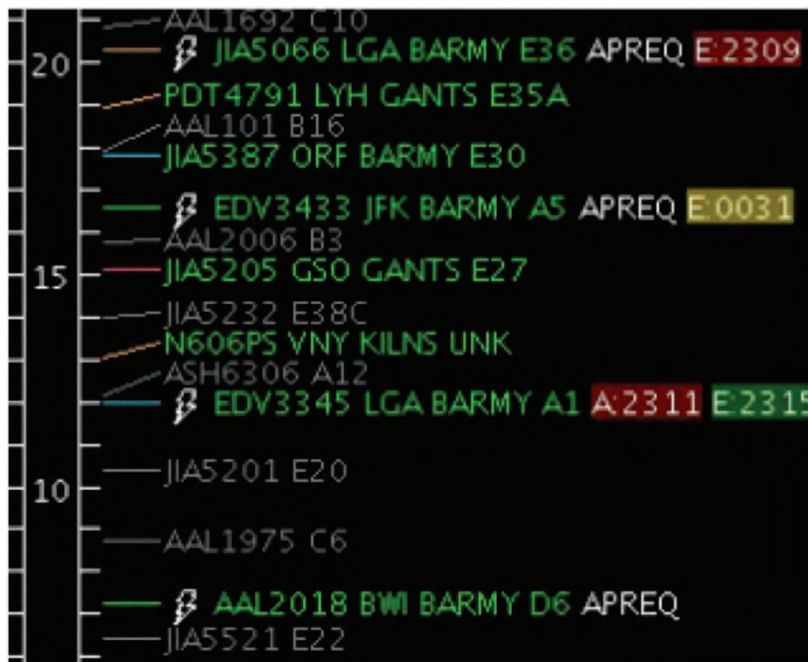
Tower/STBO Client

JIA5043	CRJ9	N
ICONS-SAV		
		M15
E28	29E	18L P2109

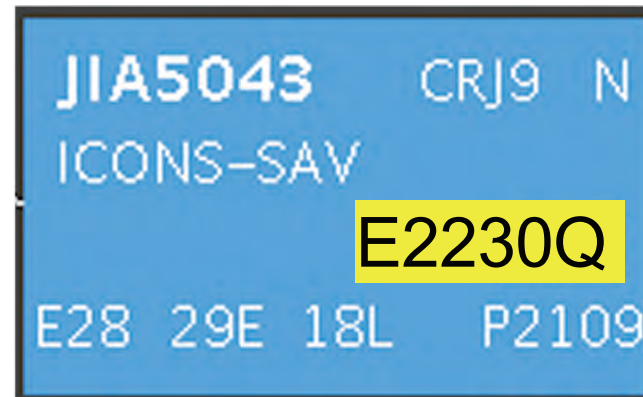
Ramp RTC/ RMTC



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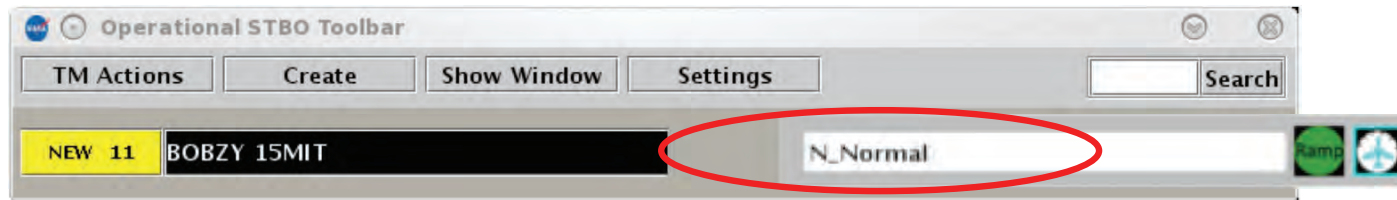
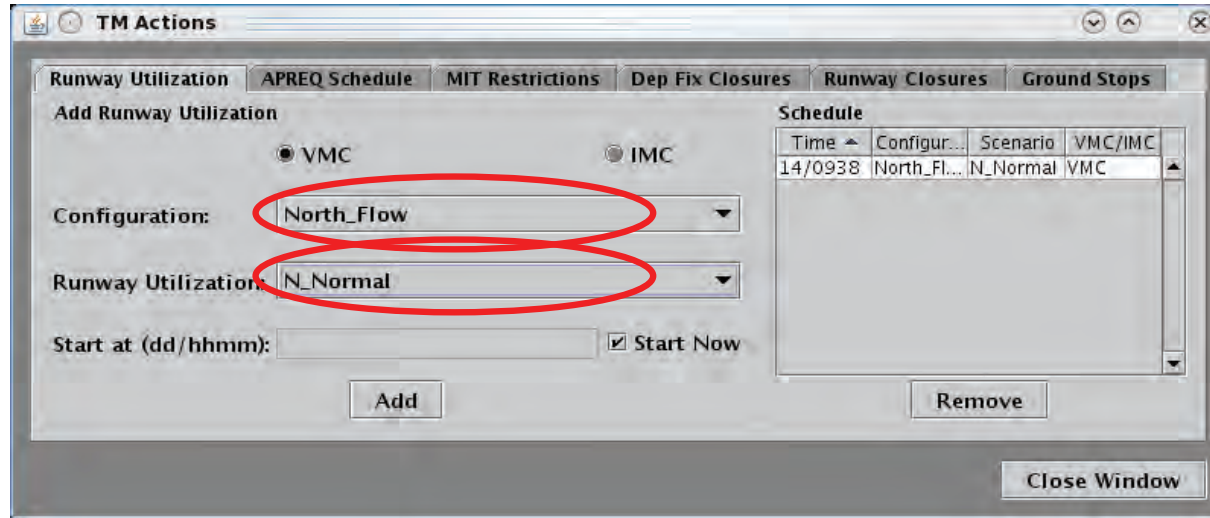
Tower/STBO Client



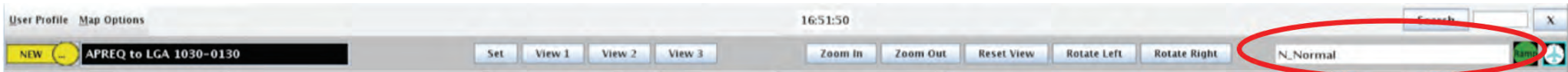
EDCT aircraft that is currently within time window of ± 5 min



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Tower/STBO Client



Ramp RTC/ RMTC



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The screenshot illustrates the process of changing a runway for flight AAL848. The main flight menu shows the current runway as 36R. A 'Select Runway' dialog box is open, displaying a list of available runways. The 'Operational Necessity' checkbox is checked, and runway 36R is highlighted in the list. A yellow callout box labeled 'Before runway change' points to the flight card in the main menu, and another yellow callout box labeled 'After runway change' points to the updated flight card showing runway 36C.

Before runway change

After runway change

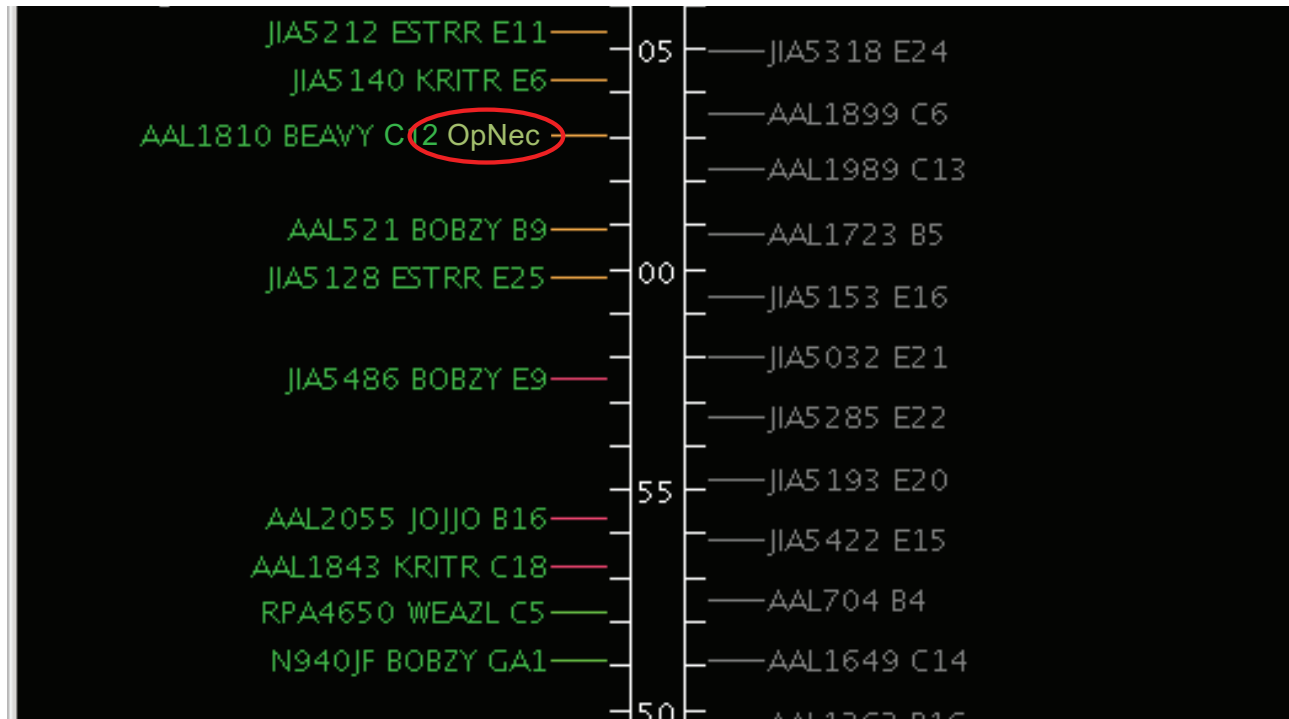
Select Runway Dialog:

Runway can only be changed due to operational necessity. Once you click Apply both here AND in the main Flight Menu dialog, the runway cannot be changed again with this tool.

Operational Necessity

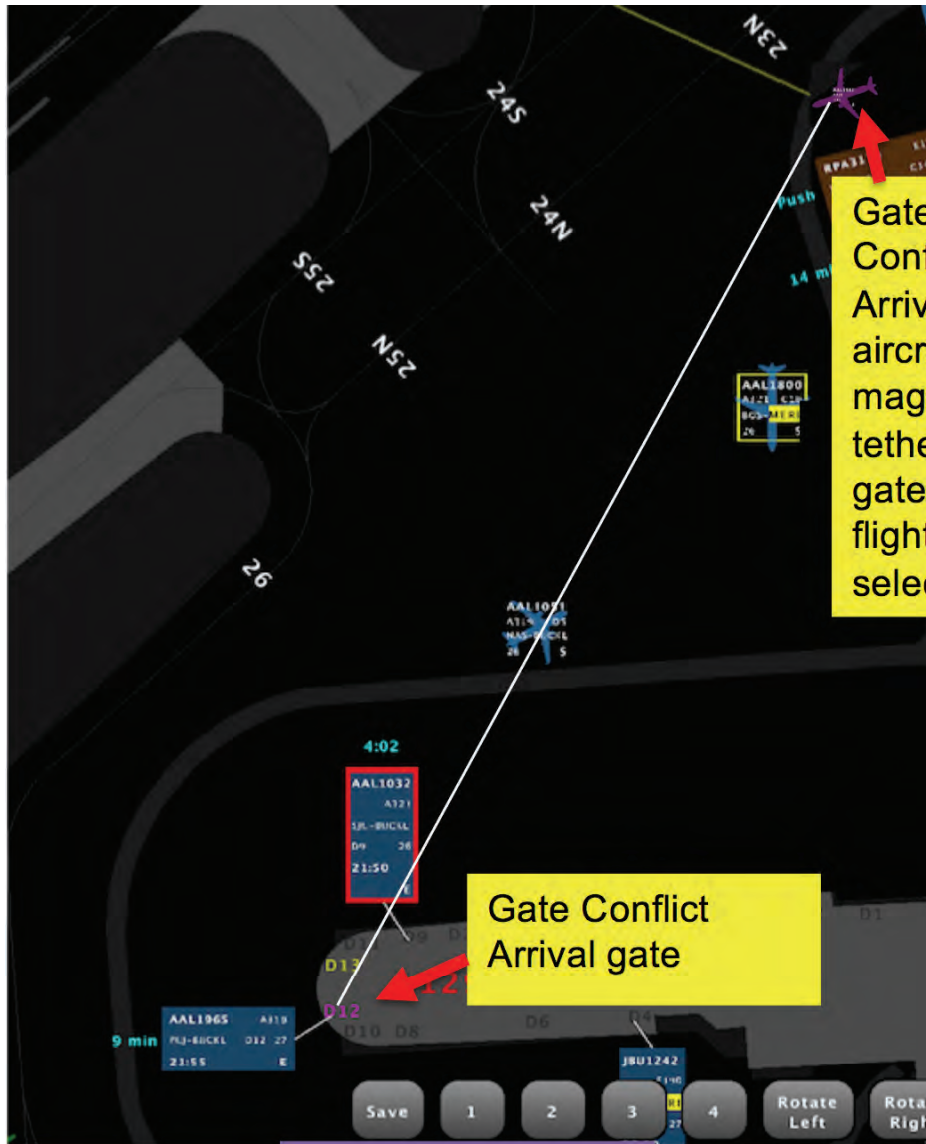
18C	18L
18R	23
36C	36L
36R	5

Buttons: Apply, Cancel





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Ramp RTC/ RMTC



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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...



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Cancellations

Initiated from RTC Flight Menu



Flight Menu

RPA3474 E170 EWR

SURFACE
 Hardstand:
 Bypass:
 Gate:
 Spot:
 Runway:

DEPARTURE DETAILS
 Push Back Time: 1602
 CFR:
 EDCT:

FLIGHT STATUS
 Priority Flight
 Flight Cancelled

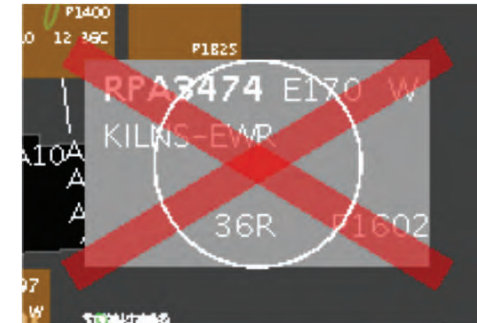
OPERATIONAL STATUS
 Normal
 Inactive Temporarily
 Removed from Service
Remove Flight Icon

SCRATCH PAD

STRIP
 Return To Gate

To cancel a flight

Ramp RTC/ RMTC



Ramp RTC/ RMTC

All; Results: 841 total. 17:58 GMT

Flight ID	Dest	Origin	AC Type	Rwy	RwyOpNec	Rwy Time	Flight Status	Gate	Gate Time	Spot	Spd
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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NEW 11 Closure KILNS 1755-0712

Closed Dep
Fix with CDR
Fix selected

```

— AAL436 DFW BOBZY->CHOPN D2
— JIA5275 E36
— JIA5066 LGA BARMY E36 APREQ E:2324
— AAL1692 C10
— AAL435 DFW BOBZY->CHOPN B10
20 — PDT4791 LYH GANTS E35A
— JIA5387 ORF BARMY E30
— AAL101 B16
— JIA5221 TYS BOBZY->CHOPN E31
— AAL2006 B3
— AAL1722 SEA BOBZY->CHOPN C10
15 — N606PS VNY KILNS UNK
— JIA5232 E38C
    
```

Tower/STBO Client

Closed Dep Fix
with no CDR Fix
selected

```

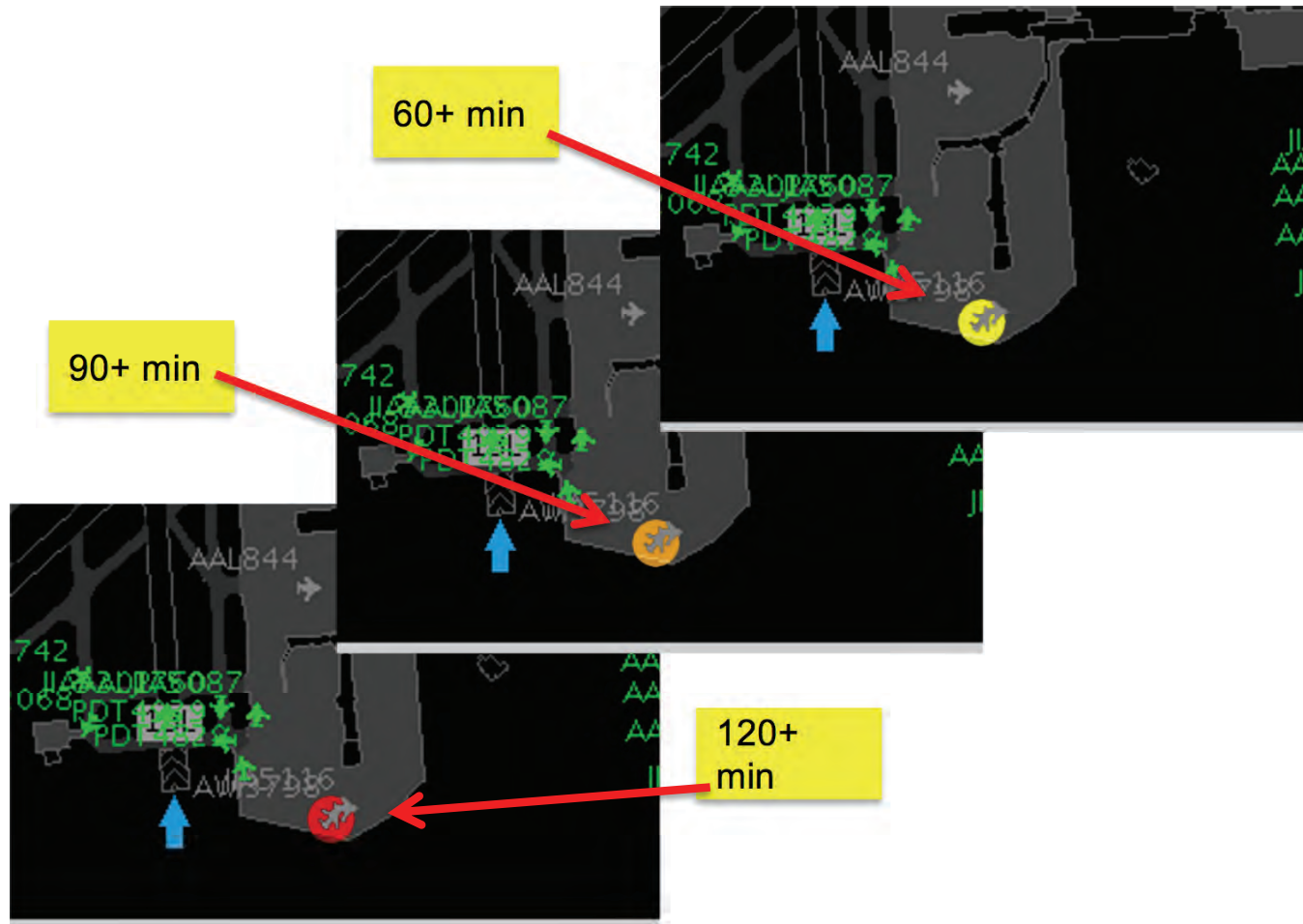
JIA5098
CRJ9 E
KILNS-MKE
P1830
E11 24536C
    
```

Ramp RTC/ RMTC



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Long On Board/ Lengthy Taxi Delay





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Ramp Traffic Console - Ramp Manager Mode - RampManager

User Profile Map Options Tools Dev Tools

NEW 9 18C Closed 20:35:34 South_Departures_Normal 15

Reported	Event Type	Description	Event Start	Event End
2/8/17 2000	Airport	18C Closed	2/8/17 1910	2/8/17 ...
2/8/17 1928	METERING_MODE	DEPARTURE SEQUENCE METERING Q15	2/8/17 0917	
2/8/17 1910	AIRPORT	TEB APREQ	2/8/17 1900	2/8/17 ...
2/8/17 1900	FIX	LGA 15 MIT	2/8/17 1850	2/9/17 ...
2/8/17 1808	AIRPORT	JFK APREQ	2/8/17 1800	2/9/17 ...
2/8/17 1624	AIRPORT	EWR APREQ	2/8/17 1615	2/9/17 ...

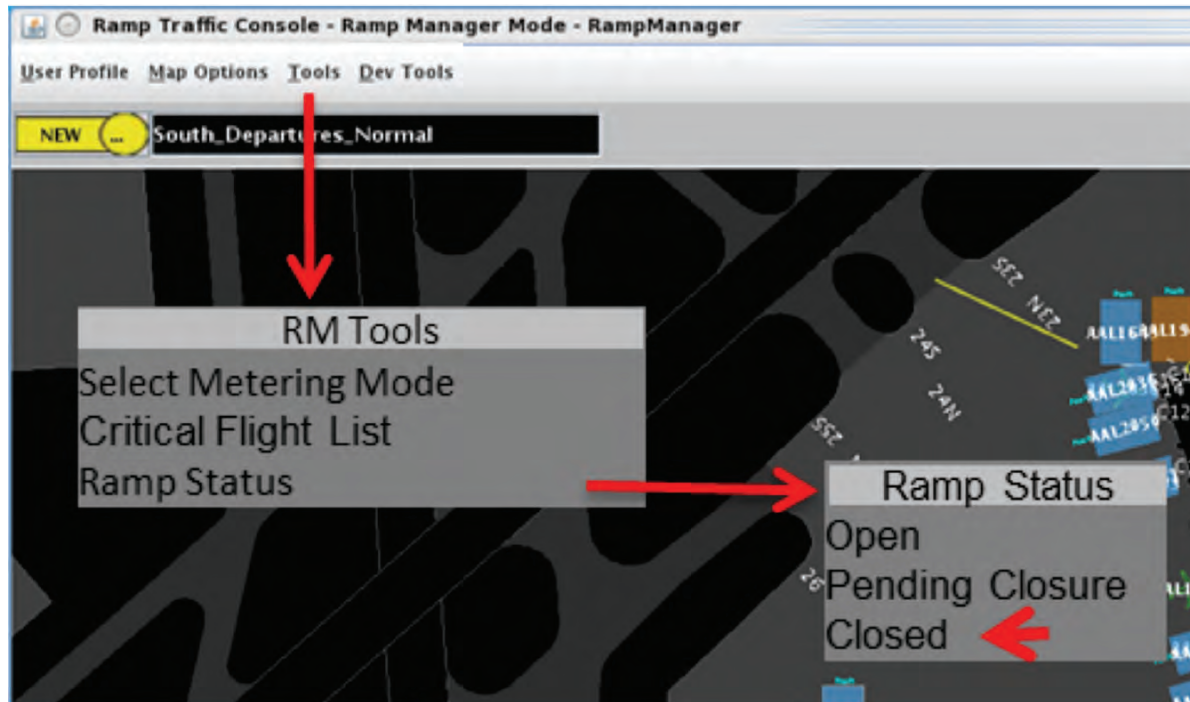
Eastbound 1/0 Westbound 1/0






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Ramp Closure

From RMTC: Update Ramp Status



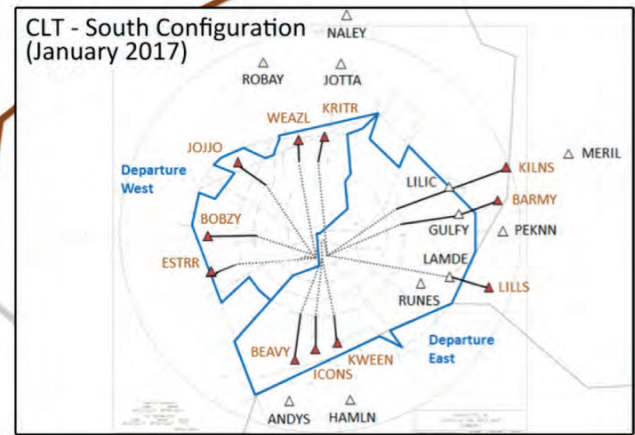
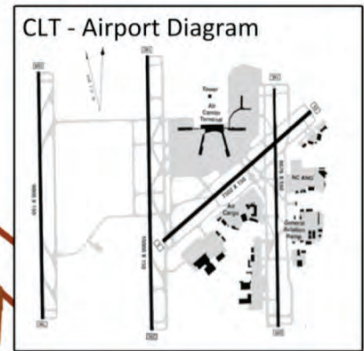
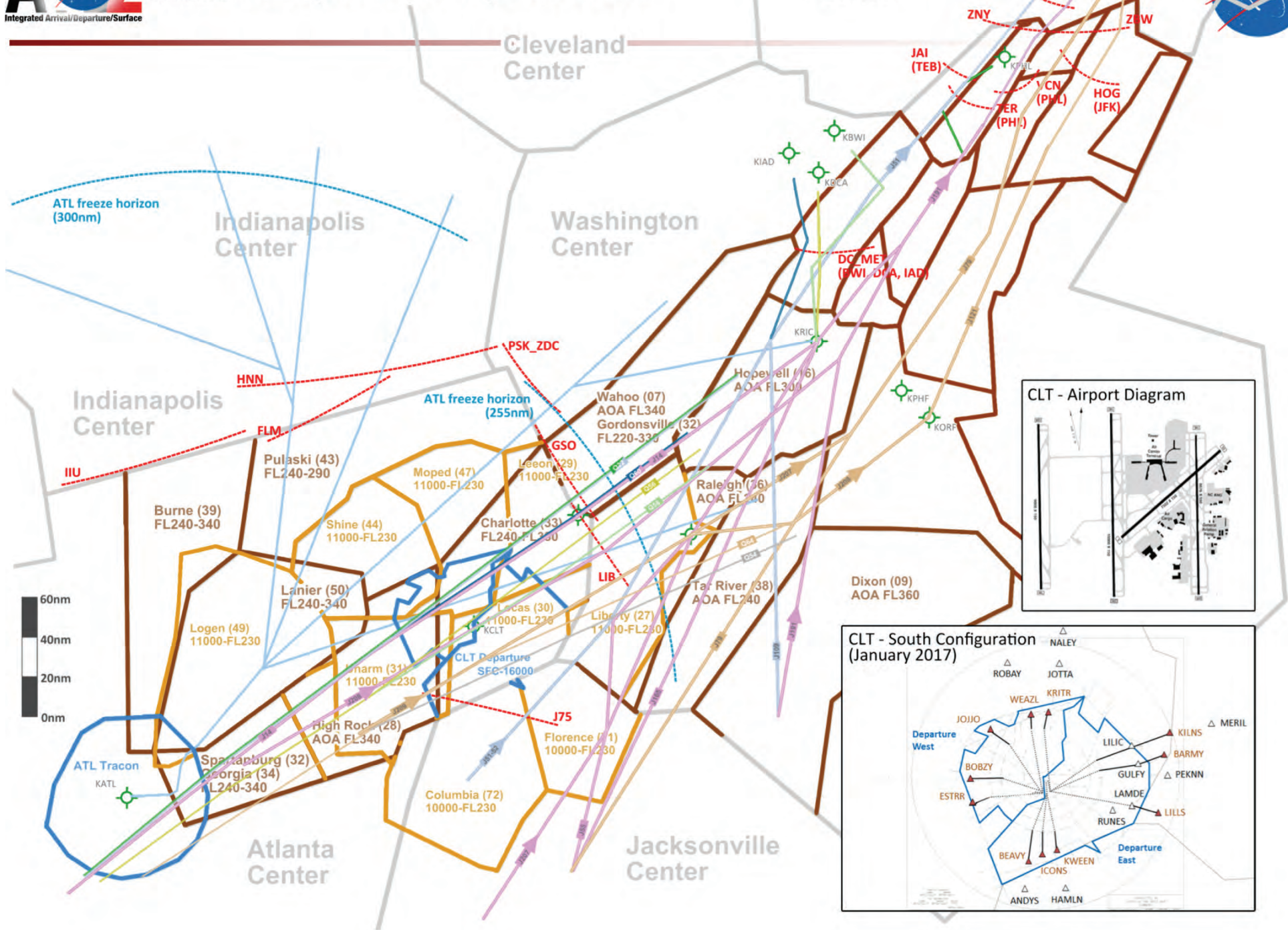
Ramp RTC/ RMTC

- Ramp Open 
- Ramp Closure Pending 
- Ramp Closed 

Tower/STBO Client
Ramp RTC/ RMTC

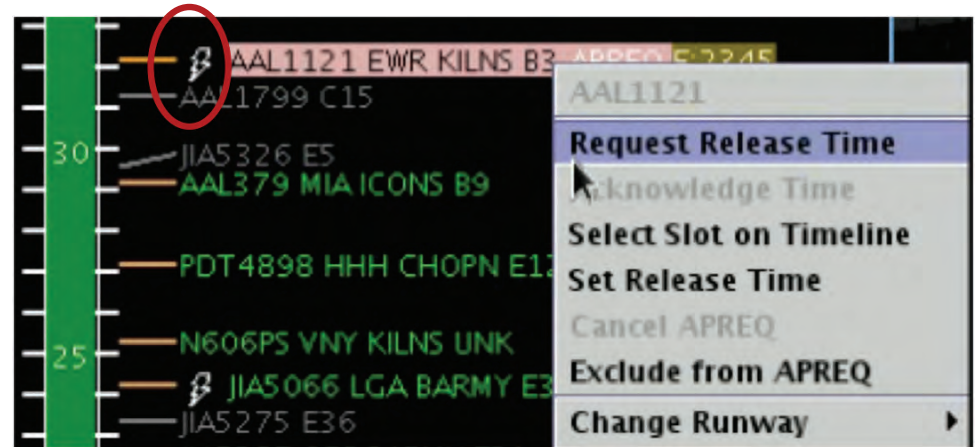
Time	Event	Presenter
0730	Overview of STBO Client	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	APREQ Procedures	Bob
0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	Hands-on Training	



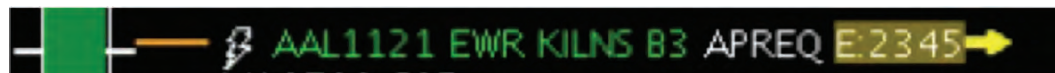


Tower/STBO Client

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

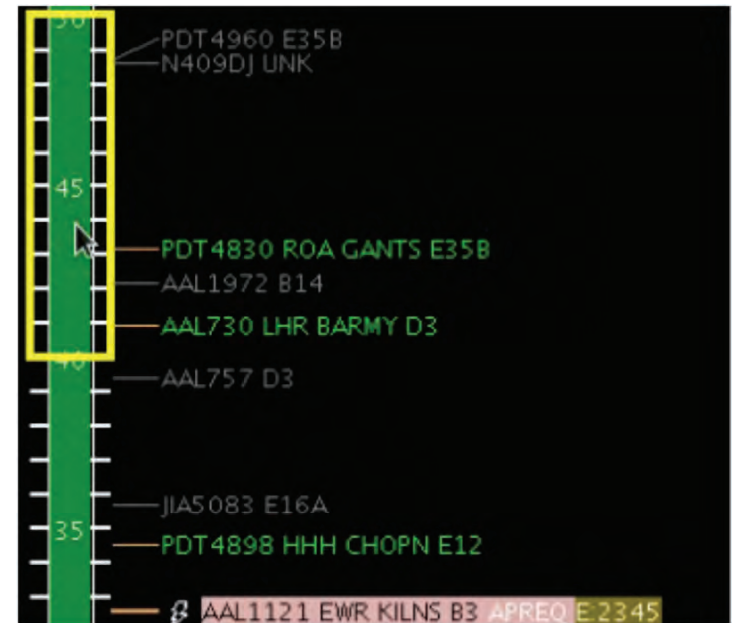
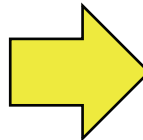
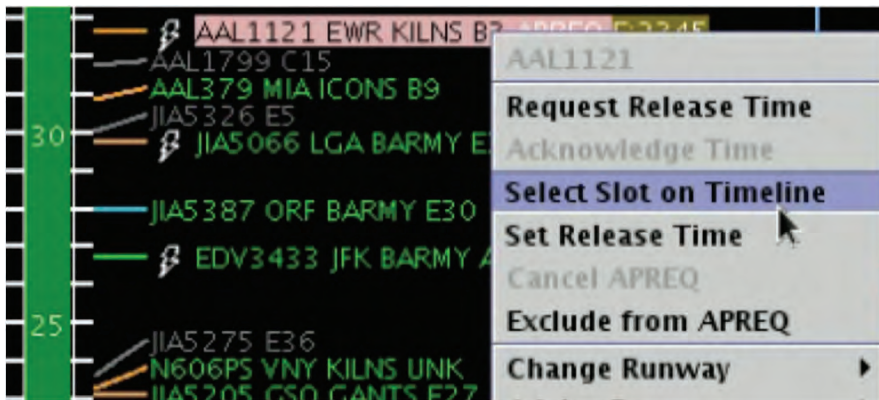


- To begin the APREQ process:
 - Right click on Timeline datablock
 - Click on "Request Release Time"
 - This action automatically picks earliest time aircraft is projected to meet
 - Yellow arrow appears to right of Timeline datablock—you sent it to Center



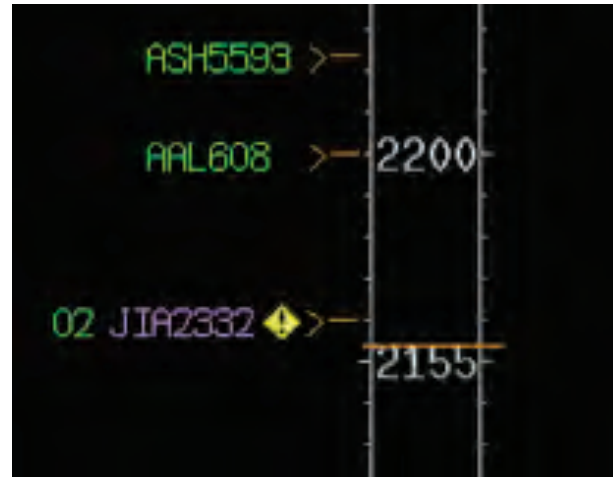
Tower/STBO Client

- 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

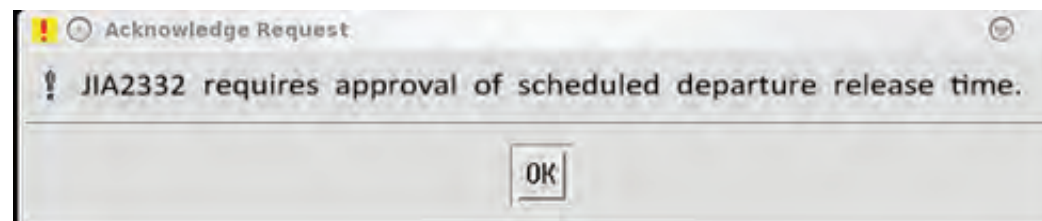


Center/TBFM TGUI

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

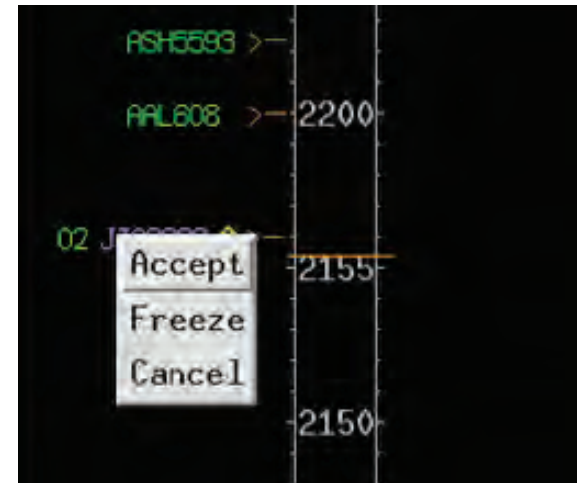


- If you forget, this reminder will appear in 2 minutes, accompanied by an audio alert (if audio is turned on)



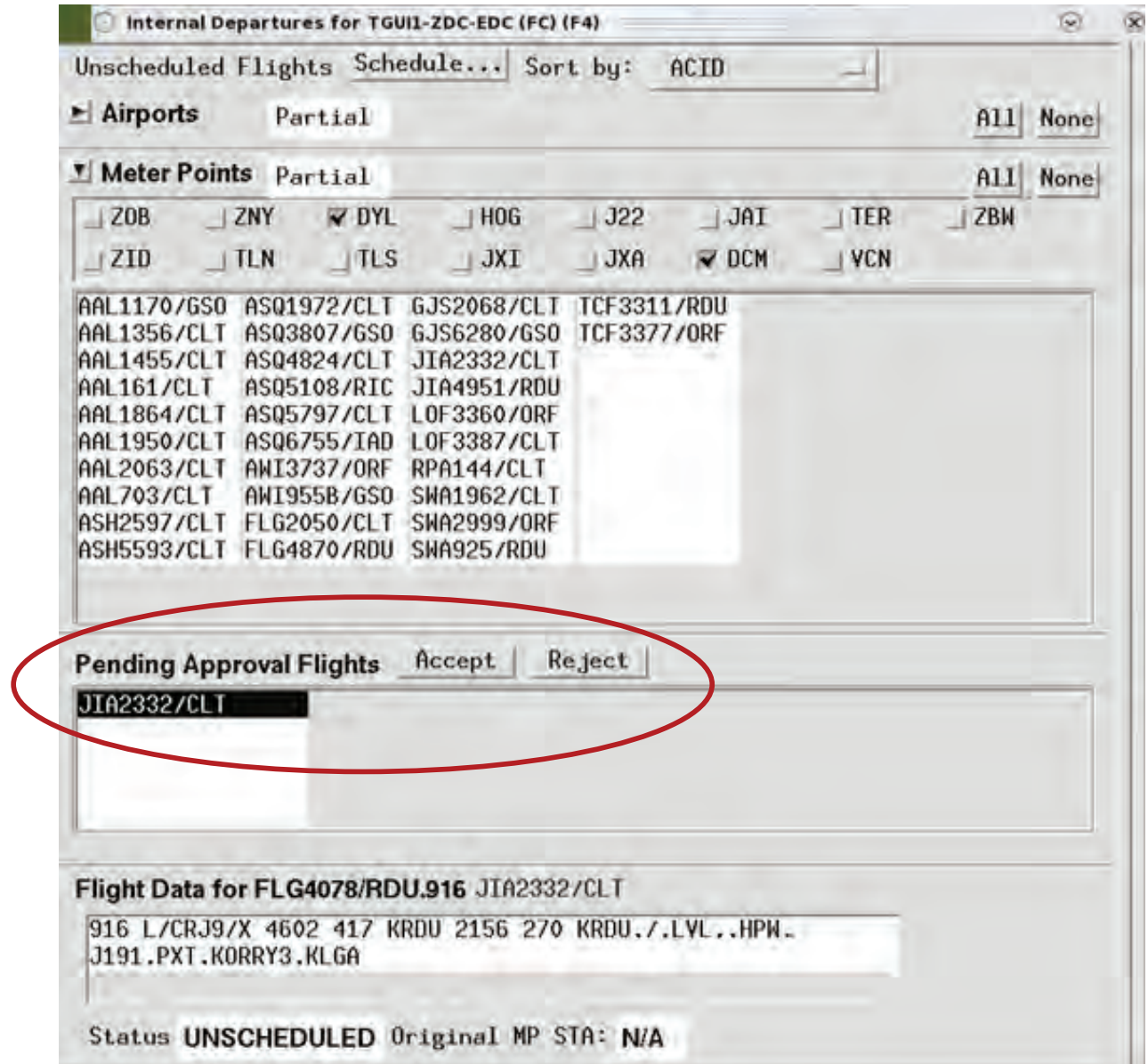
Center/TBFM TGUI

- #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



Center/TBFM TGUI

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



Internal Departures for TGUI1-ZDC-EDC (FC) (F4)

Unscheduled Flights Schedule... Sort by: ACID

Airports Partial ALL None

Meter Points Partial ALL None

ZOB ZNY DYL HOG J22 JAI TER ZBM
 ZID TLN TLS JXI JXA DCM VCN

AAL1170/GSO	ASQ1972/CLT	GJS2068/CLT	TCF3311/RDU
AAL1356/CLT	ASQ3807/GSO	GJS6280/GSO	TCF3377/ORF
AAL1455/CLT	ASQ4824/CLT	JIA2332/CLT	
AAL161/CLT	ASQ5108/RIC	JIA4951/RDU	
AAL1864/CLT	ASQ5797/CLT	LOF3360/ORF	
AAL1950/CLT	ASQ6755/IAD	LOF3387/CLT	
AAL2063/CLT	AWI3737/ORF	RPA144/CLT	
AAL703/CLT	AWI955B/GSO	SWA1962/CLT	
ASH2597/CLT	FLG2050/CLT	SWA2999/ORF	
ASH5593/CLT	FLG4870/RDU	SWA925/RDU	

Pending Approval Flights Accept Reject

JIA2332/CLT

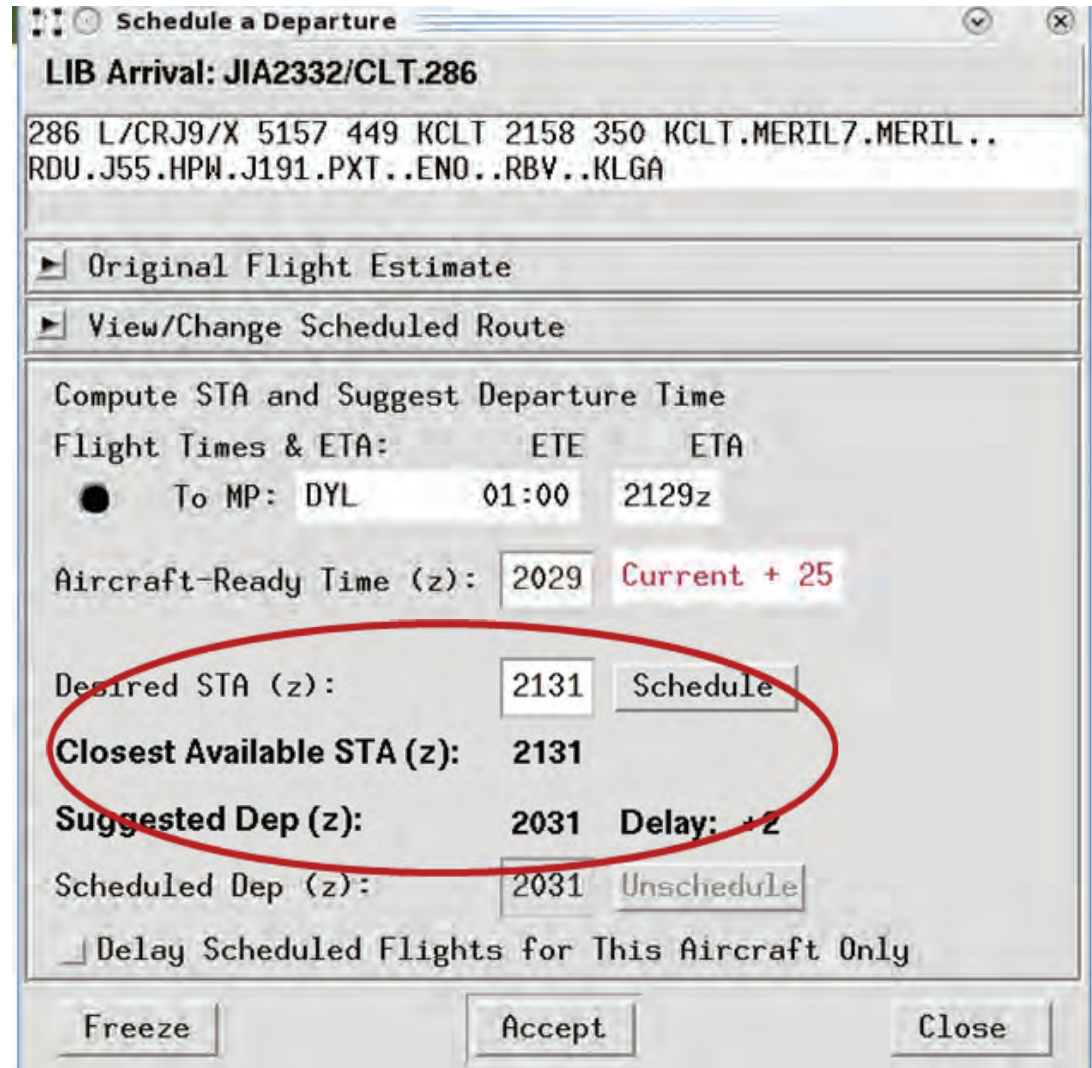
Flight Data for FLG4078/RDU.916 JIA2332/CLT

916 L/CRJ9/X 4602 417 KRDU 2156 270 KRDU../LVL..HPW..
J191.PXT.KORRY3.KLGA

Status **UNSCHEDULED** Original MP STA: N/A

Center/TBFM TGUI

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



Schedule a Departure

LIB Arrival: JIA2332/CLT.286

286 L/CRJ9/X 5157 449 KCLT 2158 350 KCLT.MERIL7.MERIL..RDU.J55.HPW.J191.PXT..ENO..RBV..KLG

▶ Original Flight Estimate

▶ View/Change Scheduled Route

Compute STA and Suggest Departure Time

Flight Times & ETA:	ETE	ETA
● To MP: DYL	01:00	2129z

Aircraft-Ready Time (z): 2029 Current + 25

Desired STA (z): 2131 Schedule

Closest Available STA (z): 2131

Suggested Dep (z): 2031 Delay: +2

Scheduled Dep (z): 2031 Unschedule

Delay Scheduled Flights for This Aircraft Only

Freeze Accept Close



Center/TBFM TGUI

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





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.

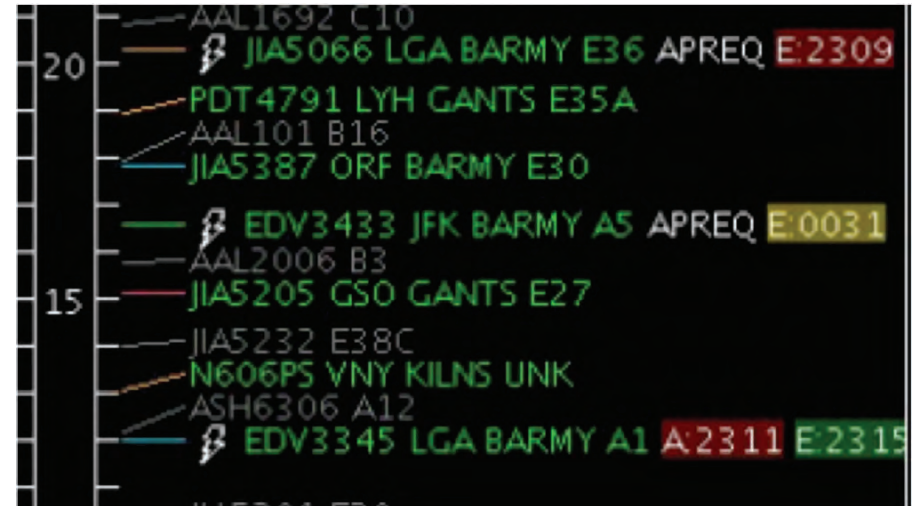


- If the new time doesn't work, right click and select "Cancel APREQ", then renegotiate a new release time.

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

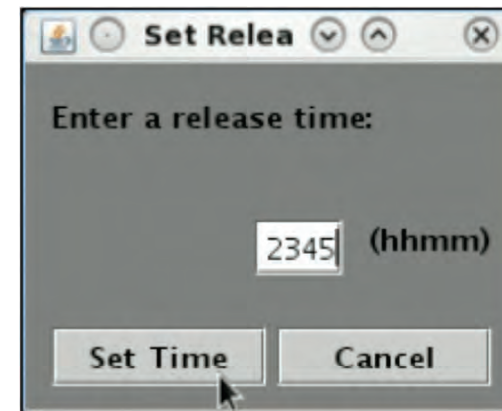
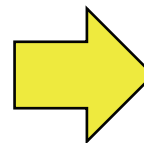
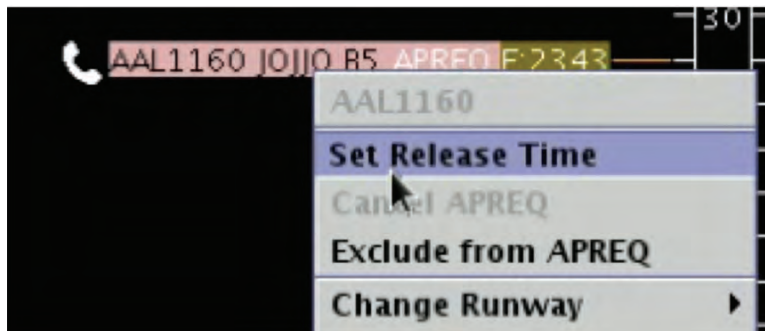


Tower/STBO Client

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

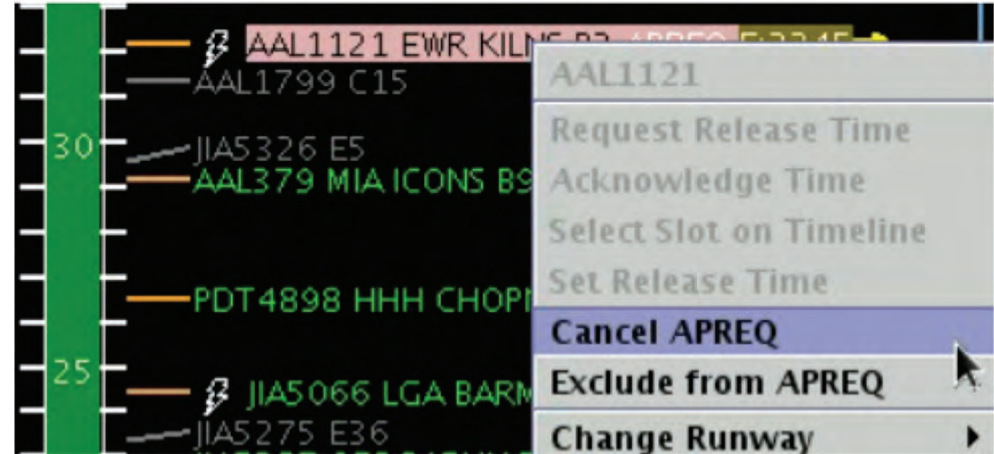


- **Telephone symbol** means you have to call the Center to request a time
 - After receiving time, right click on Timeline datablock
 - Select "Set Release Time"
 - Set time
 - Compliance blocks appear on sides of Timeline datablock
 - You are done!



Tower/STBO Client

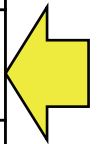
- To cancel or reschedule an APREQ release time
 - Right click on Timeline datablock
 - Click “Cancel APREQ”
 - Begin the APREQ process again



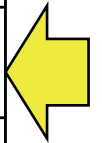
- When the APREQ is cancelled, datablock will return to the original configuration with no time or compliance indicator.



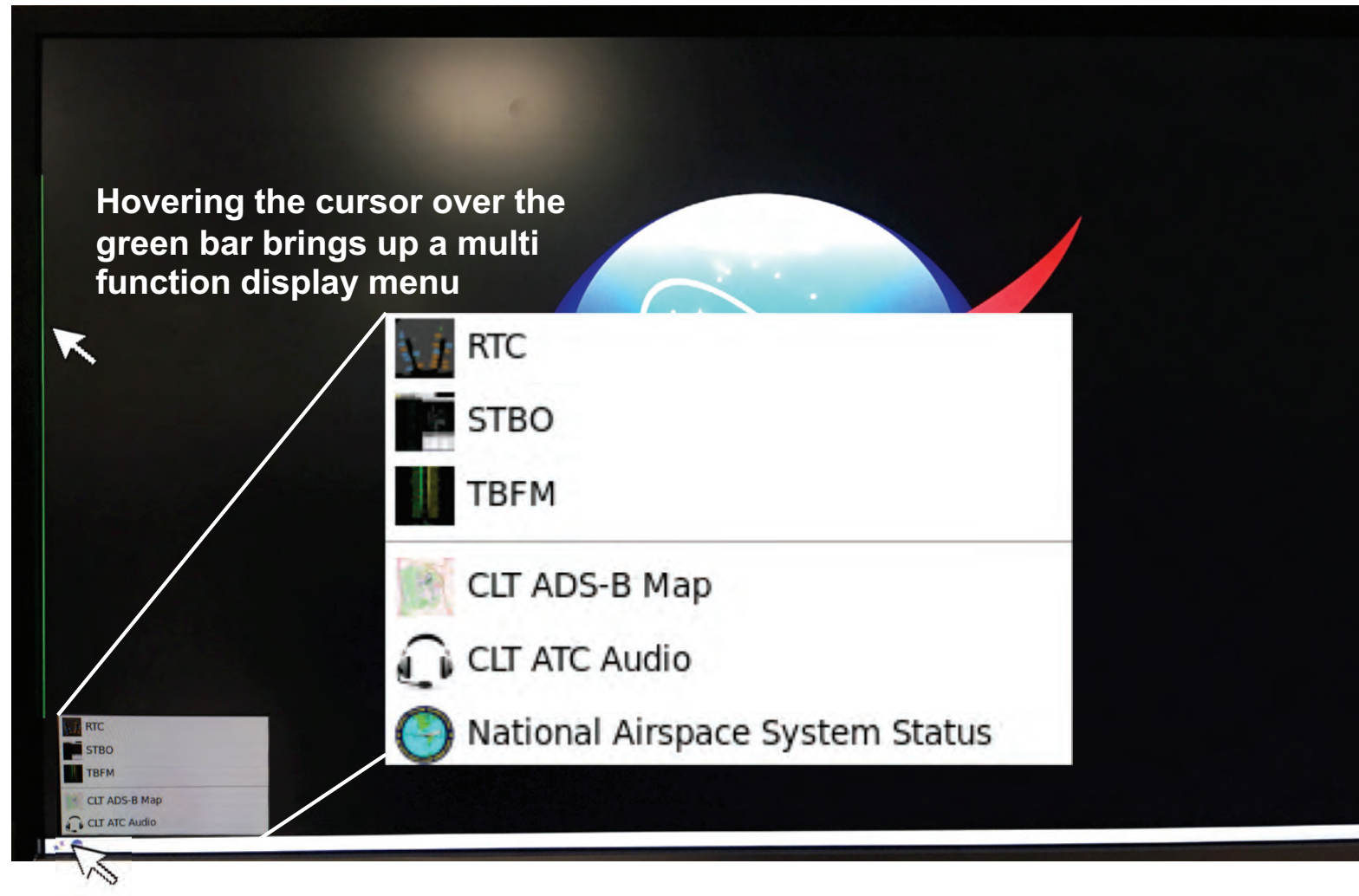
Time	Event	Presenter
0730	Overview of STBO Client	Lindsay
0800	Data Exchange and Integration	Lindsay
0835	APREQ Procedures	Bob
0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	Hands-on Training	



Time	Event	Presenter
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0920	Break	
0930	DASH	Shivanjli
0950	What-If	Shivanjli
1010	Hands-on Training	



Kiosk Type Display with “My Desktop” view



Kiosk Type Display with “My Desktop” view





My Desktop

- CLT Roof Camera 1
- CLT Roof Camera 2
- Remote desktop [cittlab1*]
- Remote desktop [cittlab1.]
- Remote desktop [cittlab2*]
- Remote desktop [cittlab2.]
- Remote desktop [cittlab3*]
- Remote desktop [cittlab3.]
- Remote desktop [cittlab4*]
- Remote desktop [cittlab4.]
- Remote desktop [cittlab5*]
- Remote desktop [cittlab5.]
- Remote desktop [cittlab6]
- Remote desktop [cittlab8*]
- Remote desktop [cittlab8.]
- Remote desktop [cittlab10]

ATD2

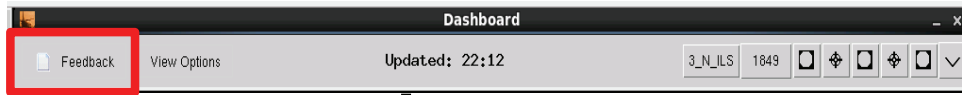
For help, call or text: 704.802.2589

Charlotte-Douglas[®]
INTERNATIONAL AIRPORT

American Airlines

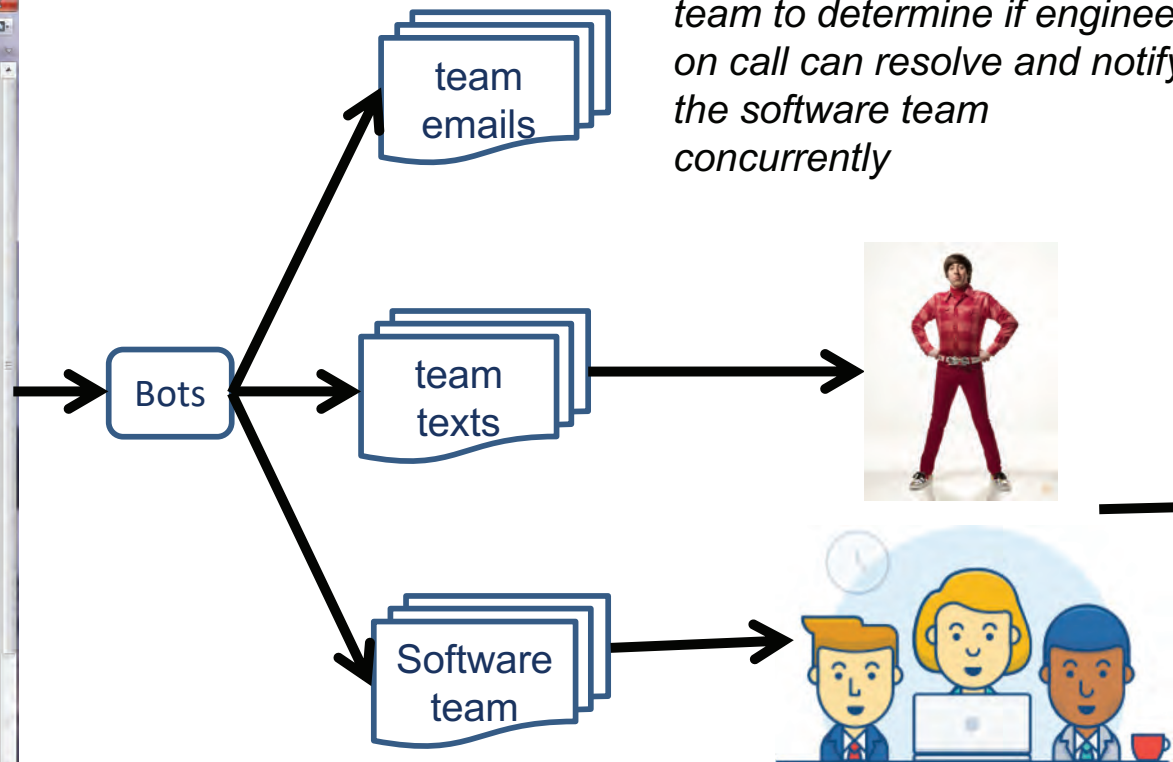


Operational user presses feedback button on real time dashboard




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





DASH Operational: localhost

Feedback Updated: 20:52

S_Normal Ramp Monitors

- Quick Look
- Dep & Arr Monitor
 - Predicted Excess Queue Times Monitor
 - Taxi Out Time Monitor
 - Taxi In Time Monitor
 - Throughput Monitor

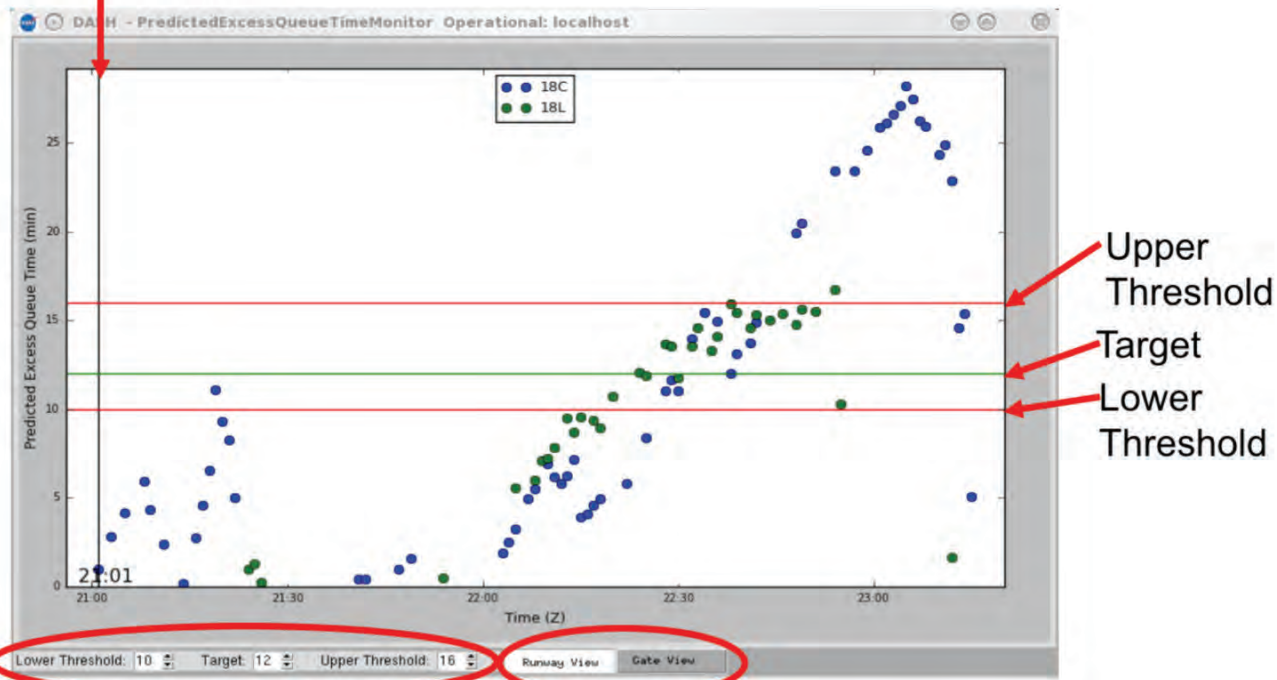
APREQ			Predicted Excess Queue Time				Taxi Status		
Dest	Start Time	End Time	Predicted Excess Queue Times				Resource	Taxi In	Taxi Out
LGA		15/01:30	15 min	37	60 min	0	Full	20	9
JFK		15/02:00	30 min	0	90 min	0	Ramp	11	3
EWR		15/02:00					AMA	9	6
JFK		15/01:30							
JFK		15/00:00							

MIT			Gate Conflicts		Arrival/Departure Rate		
Fix	Start Time	nmi				Rate	Actual
NA					ARRIVAL	82/h	54
					DEPARTURE	78/h	48

Fix Closures			Throughput		
Fix	Start Time	Alternate	Resource	Arrival	Departure
NA			18L/36R	1	25
			18R/36L	25	0
			18C/36C	7	23
			23/5	21	0

Predicted Excess Queue Time Graph Runway View

Current Time



Enter proposed values for Lower Threshold, Target Queue Length, and Upper Threshold here

Choose Runway View or Gate View here

Predicted Excess Queue Time Graph Gate View



Enter proposed values for Lower Threshold, Target Queue Length, and Upper Threshold here

Gate View selected

Time	Event	Presenter
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- Select What If system from MFD (green bar)



What If Desktop Appearance



Title bars of all windows labeled *What-If*



Desktop Background marked yellow *What-If*

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