



**TERMINAL CONTROLLER
WORKSTATION
REFERENCE MANUAL**

STARS Scope command syntax and usage

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TERMINAL CONTROLLER WORKSTATION (TCW) OVERVIEW

In ATCpro the “radar scope” that is used to display aircraft under your control and the surrounding airspace is called the Terminal Controller Workstation (TCW). In this simulation we are modelling the major functions and capabilities of a Professional STARS scope in use today. We have not added or “made up” any features or capabilities that do not exist in real world equipment or even *future* equipment. This manual will give you an overview and detailed description of the features and how to use the TCW in the simulation.

The TCW controls are accessed by moving the mouse cursor and left or right clicking buttons or dials. The rotary knobs can be turned by rolling the mouse wheel. You will use the computer keyboard to enter keystroke combinations and certain command keys that simulates the keyboard of an actual TCW.

Once you have set up and customized the work station to your liking the primary settings can be saved as a preset file that can be loaded in at the start of the session. Note: *The background maps on the scope that are specific to each facility are not part of the preset and will be selected for each controlling session.*

In your controlling session you will be doing various tasks to keep the aircraft under your control safely separated and on course. Examples are giving spoken commands to aircraft based on radar position information, managing the appearance of displayed data, and transferring, accepting and initiating ATC control for flights entering and leaving a defined sector of airspace. You will be using various tools to supplement radar data such as on screen maps, flight plan lists and range line bearings.

On the Workstation there is a center display control bar (DCB) of buttons on the screen, and a right and left vertical control panel of knobs and buttons

called display control panels (DCP). Other important control panels you will use are the Communications Panel for selecting radio frequencies to transmit and receive between aircraft and other controllers, the Communications History panel which displays the text content of radio transmissions of currently selected frequencies, and the Data Reference Panel for reference information such flight plan data, airport data aircraft data, waypoint pronunciations, etc.

On the screen itself are the following elements:

System Status Area – The current simulation information such as time (UTC), Altimeter setting for multiple airports, Traffic flow direction, ATIS letter, wind direction and speed, runways in use for multiple airports, selected range, PTL value, etc. Each of these data fields can be turned on or off.

Flight Data Lists – Flight lists displayed could be *VFR* for Visual Flight Rules flight plans, *TOWER* for arriving and departing traffic from each airport, *FLIGHT PLANS* for filed departure flight plans, *CA ZONE STATUS* for collision alert sensor status, *SIGN ON* for a list of the controllers currently active in the sector, *LA/CA/MCI* for flights in emergency situations and *COAST/SUSPEND* for coasting and suspended tracks. The position and visibility of each list can be set with keystroke combinations.

Track – Identifies each aircraft’s current location with a position symbol and information about the aircraft in and attached data block. The position symbol is assigned a one or two digit letter or number to indicate who is in control of the aircraft (shown on the *SIGN ON* list). There can be an attached history trail of dots and a predicted track line.

Data Block – Connected to a position symbol by a leader line, the Data Block presents textual information about the aircraft including cleared and actual altitudes, speed, destination, aircraft type,

category, beacon code, exit fix code and aircraft ID (ACID).

Compass Rose – Degree markings around the outer edge of the radar window as a heading reference. Oriented to magnetic north.

*Note: **When drawn in red** means another window (such as the Radio Panel) has program “focus” so any keyboard commands will not be recognized. Click the mouse anywhere on the scope to restore focus and the compass lines will turn white.*

Display Control Bar – Selectable buttons on the screen to activate controller functions. The control bar can be moved to top, bottom, left or right of the

scope (or hidden). Many of the functions on the DCB (and sub control bar pages) can be activated using a keyboard shortcut.

Preview Area – Shows keyboard entry keystrokes and flight plan data. Can be moved or hidden with a keystroke combination.

The following sections explain all the functions of the TCW and provide a comprehensive reference for using the scope in the Simulation.

COMMANDS

You will interact with the “radar scope” or TCW using the keyboard or the mouse. Some commands can only be performed with the keyboard, some with only the mouse and many with both. In this manual each of the possible methods of interaction are described or shown as Not Applicable. The Display Control Panels (DCPs) can only be operated with the mouse since there are no external hardware consoles available in this simulation.

To perform commands, enter the key combination normally starting with a function key (such as <F10>), followed by the other letter or number keys and ending with identifying the aircraft track or scope feature. For example to perform the command to display an aircraft flight plan, press <F10>, then D, then the “tab number” which is the number on the left side of the flight list for the aircraft, then press ENTER. Another example: to move the Sign-on list position on the scope, press F10, then T, then S, then Slew (click) the new location on the scope.

Many Commands require identifying an aircraft track on which to perform the command. This can be done in several ways (including entering the Tab number) but the simplest method is to click on a track on the scope with the left button of the mouse. This is also known as “slewing” the track.(See section on Tracks and Datablocks on p.26)

Implied commands - Some commands can be entered without having to press the Function key first to begin the key sequence. An example of this is doing the handoff key sequence to a Center or Tower position: For Example, the sequence “C, Slew Target” hands a target off to an adjacent Center controller. The Function key that would normally be required at the beginning is <F8>.

Handoffs - ATCpro simulates multiple controllers in each facility of airspace. On the Duty Desk you can assign yourself as many or as few sectors to control

for a session. You can even let the virtual controllers do all the controlling so you can watch how the pros handle things. You will always have controllers handing off aircraft to you and you will be handing off to other controllers.

To receive a handoff from an adjacent controller it is as simple as clicking on the track when you see the track ID letter flash white on the scope. The aircraft will soon call you up on your frequency and announce his current clearance such as “American 123, with you out of five thousand for eight thousand “.

Now this aircraft is under your control and you “own” him. When the aircraft approaches a boundary of your controlling airspace you need to hand him off to the adjacent controller.

Handing off is usually a two step process. The first step is entering the Controller ID letter (C,N,S,D etc.) then click the target. The second step is giving the pilot the frequency of the controller you are handing him off to, such as, “American 123, contact Albuquerque Center on one thirty tree point six five”. Make sure he reads back the correct frequency then his target will turn green to indicate he is no longer under your control.

Note: once you give him the frequency change you will not be able to give him any commands. There may be local variations of procedure such as for arrivals at Miami there is no need to do the command keystroke to hand off to Tower. All you need to do is give the frequency change to Tower once the pilot has been cleared for an approach.

It is important to know the controller ID codes and radio frequencies for who you are handing off to. The Sign-on list on the scope will have the ID numbers and frequencies for all the controllers in the area with the exception of Local Control (Tower). The Tower frequencies can be found currently on Quick reference sheets (or other places TBD).

SCOPE CONTROLS AND KEYSTROKES

This section will show the currently implemented key commands that can be used in STARS while using **ATCpro**. The first table shows the function or primary keys used for commands. The second table references those keys and details each command.

STARS Function	QWERTY Keyboard	Function or Key Description
DCB	F1	Toggle Display Control Bar
MAPS	F2	Map#, ENTER toggles display of video map. Alternatively, map#, E, ENTER turns map on, and map#, I, ENTER turns map off.
WX	F3	Used to toggle display of weather layers
INIT CNTL	F4	Not implemented
TRK RPOS	F5	Not implemented
TRK SUSP	F6	Not implemented
TERM CNTL	F7	Not implemented
HND OFF	F8	Used to preface handoff commands
FLT DATA	F9	Press then SLEW to track to toggle display of aircraft type in a full datablock
MULTI FUNC	F10	Used for multi function commands
F8	F11	Not implemented
CNTR	<SHIFT> F1	Used to toggle center point of map
RR	<SHIFT> F2	Press then enter valid range value, then ENTER to set the range ring display frequency
RANGE	<SHIFT> F3	Used to change range of scope
F9	<SHIFT> F4	Not implemented
F10	<SHIFT> F5	Not implemented
CA	<SHIFT> F6	Not implemented
F12	<SHIFT> F7	Not implemented
F13	<SHIFT> F8	Not implemented
F14	<SHIFT> F9	Not implemented
TGT GEN	<SHIFT> F10	Not implemented
F16	<SHIFT> F11	Not implemented
BRITE	Insert	Access the BRITE sub menu on DCB
CHAR	Home	Access the CHAR sub menu on DCB
SHIFT	Page Up	Toggle between main and auxiliary DCB
LDR	Delete	Used to change leader length
SITE	End	Access the SITE sub menu of DCB
MODE	Page Down	Access the MODE sub menu of DCB

*	0 on the numpad	Used for TPA functions
Δ	ENTER on the numpad	Delta Key
MIN	TAB	Used for minimum separation
CLEAR	<SHIFT> Backspace	Clear the contents for the Preview Area

In the following table, keystrokes will be entered as the STARS function key described above. Anytime the word SLEW is used, this denotes left clicking on the scope where appropriate. Items within a square bracket [] are optional entries. Keys inside <> are key labels such as <F10> and <DELETE>.

Keystroke Combination	Command Description	Ref on Page
Handoff or accept control of aircraft		
C (sect#), SLEW	Initiate handoff to ARTCC (Implied Command)	
C, SLEW	Initiate handoff to ARTCC (Implied Command)	
Controller ID (N, S, D, etc), SLEW	Initiate handoff to facility controller	
SLEW	Accept handoff (Implied Command)	
SLEW (to associated track)	Toggle quick look for a single track (Implied Command)	
Show aircraft flight plan		
<F10>, D, (tab#), ENTER	Full flight plan in Preview area with SID/STAR and route of flight plotted.	
<F10>, D, (beacon code), ENTER	Same	
<F10>, D, (ACID), ENTER	Same	
System Status Area		
<F10>, S, SLEW	Move system status area	Not operational
Preview Area		
<F10>, P, SLEW	Move preview area	
Lists		
<F10>, T, (listID), SLEW List ID can be... S – Sign On List C – Coast/Suspend List V – VFR aircraft List M – LA/CA Alert List No ID – Flight Plan List (ie. F10, T, SLEW)	Move and show list	
<F10>, T, (list ID), ENTER	Hide/Show list	
F10, P, (tower list #), SLEW	Move and show specific tower list	
<F10>, P, (tower list #), ENTER	Hide/Show specific tower list	
<SHIFT F6>, Q, Q, SLEW	Move and show CA zone suppression list	
<SHIFT F6>, Q, Q, ENTER	Hide/Show CA zone suppression list	
Scope Centering		
<SHIFT F1>	Toggle between default and user-specified center	

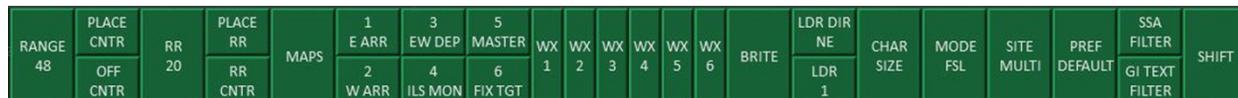
Keystroke Combination	Command Description	Ref on Page
Controller Sign on/off		
<SHIFT> + F12, (any 2 character Initials ex. "DL"), <SPACE>, (2 character position initials ex. "1N")	User sign on to control position	
<SHIFT> + F12, *, <SPACE>, (2 character position initials ex. "1N")	User sign off to control position	
Weather Display		
<F3>, 1 or 2 or 3 or 4 or 5 or 6, [E or I], ENTER	Display or remove specific weather map	
Altitude Filter Limits		
<F10>, F, ENTER	Display altitude filter limits	
<F10>, F, unassociated limits, [SPACE, associated limits] ENTER	Modify altitude filter limits for unassociated/associated tracks	
<F10>, F, C, associated limits, ENTER	Modify associated limits only	
Range Display		
RANGE, (6-256), ENTER	Change display range to entered value (6-256nm)	
Datablock Positioning		
Leader direction (1/2/3/4/5/6/7/8/9), SLEW	Specify datablock position for a single track	
<F10>, L, leader direction (1-9), ENTER	Specify datablock position for all owned tracks	
<F10>, L, leader direction (1-9), *, ENTER	Specify datablock position for unowned tracks	
<F10>, L, TCP, SPACE, leader direction (1-9), ENTER	Specify datablock position for a specific controller position	
<F10>, L, leader direction (1-9), U, ENTER	Specify datablock position for unassociated tracks	
Leader Line Length		
<DELETE>, line length (0-7), ENTER	Change leader line length	
Auto Datablock Offset		
<F10>, O, [E or I], ENTER	Enable or Disable datablock auto offset	
Terminal Proximity Alert		
*, J, radius (1.0-30.0nm), SLEW	Display/Modify TPA J-Ring for single track	
*, J, SLEW	Delete TPA J-Ring for single track	
*, *, J, ENTER	Delete TPA J-Ring for all tracks	
*, P, radius (1.0-30.0nm), SLEW	Display/Modify TPA Cone for single track	
*, P, SLEW	Delete TPA Cone for single track	
*, *, P, ENTER	Delete TPA Cone for all tracks	
*, D, SLEW	Toggle display of TPA size data for single track	
*, D, ENTER	Toggle display of TPA size data for all tracks	
Minimum Separation		
<TAB>, SLEW (first track), SLEW (second track)	Show minimum separation for two selected tracks	
<TAB>, ENTER	Remove minimum separation	
Predicted Track Line		
<F10>, R, SLEW	Toggle display of predicted track line for single track.	

Keystroke Combination	Command Description	Ref on Page
Low Altitude Alert warning buzzer		
F10, V, SLEW	Silence alarm/enable alarm toggle	
Converging Runway Display Aid (CRDA)		
F10, N, (number in CRDA line of System Status area ex."1"), ENTER	Turn on/off CRDA display on a runway	
F10, V, ("T" or "S" for Tied or Staggered mode), ENTER	Turn on/off tied or staggered mode for CRDA display on a runway	
Sim rate COMMANDS		
+ on the numpad	Increase sim speed. Displays 2x in Status area with successive presses.	
- on the numpad	Decrease sim speed.	
<PAUSE> (Function key lock must be off)	Pause simulation	

DISPLAY CONTROL PANELS (DCP)

Left Side Control Panel	Right Side Control Panel
<p>Adjusts brightness of control panel text (outer knob) →</p> <p>Adjusts brightness of control panel switches (inner knob) →</p> <p>Adjusts brightness of history trail (outer knob) →</p> <p>Adjusts number of history symbols (inner knob) →</p> <p>Adjusts brightness of Full data blocks, cursor, and Preview area (outer knob) →</p> <p>Adjusts brightness of list text (inner knob) →</p> <p>Adjusts brightness of Limited and Partial data blocks (outer knob) →</p> <p>Adjusts brightness of weather →</p> <p>Adjusts brightness of position symbols for FDBs (outer knob) →</p> <p>Adjusts brightness of Primary –only tracks (inner knob) →</p> <p>Adjusts brightness of position symbols for LDBs and PDBs (outer knob) →</p> <p>Adjusts brightness of range rings (inner knob) →</p> <p>Adjusts the brightness of group A maps (outer knob) →</p> <p>Adjusts the brightness of group B maps (inner knob) →</p>	 <p>Click icon for Window mode. Press X to end controlling Session.</p> <p>Press to display or remove maps one (1) thru six (6)</p> <p>Not used</p> <p>Not used</p> <p>Adjusts the leader line lengths for tracks (outer knob)</p> <p>Adjusts the leader line orientation for owned tracks (inner knob)</p> <p>Pans the radar picture North and South(outer knob)</p> <p>Pans the radar picture East and West (inner knob)</p> <p>Adjusts font size of data blocks and Prev. area (outer knob)</p> <p>Adjusts font size of position symbols (inner knob)</p> <p>Adjusts display range (outer knob)</p> <p>Adjusts range ring interval (inner knob)</p> <p>Opens Communications History and Flight Strip panels</p> <p>Opens Communications and data reference panels</p> <p>Click to Pause/Unpause simulation</p>
<p>PNL ILLUM</p> <p>SW ILLUM</p> <p>HIST</p> <p>HIST LNTH</p> <p>FDB</p> <p>LIST</p> <p>LDB</p> <p>WX</p> <p>POS</p> <p>PRIMARY</p> <p>OTHER</p> <p>RR</p> <p>MAP A</p> <p>MAP B</p>	<p>MAPS</p> <p>1 2</p> <p>3 4</p> <p>5 6</p> <p>SPARE 1</p> <p>SPARE 2</p> <p>LDR LNTH</p> <p>LDR DIR</p> <p>S-N</p> <p>E-W</p> <p>CHAR SIZE</p> <p>POS SIZE</p> <p>RANGE</p> <p>RR INT</p> <p>Icons: Window, History, Flight Strip, Comm, Data Ref, Pause</p>

DISPLAY CONTROL BAR (DCB) MAIN



- Keyboard <F1> to Hide/show DCB

RANGE	Adjustment button, Used to set the viewable range on the scope.
DCB	Left click, then uses mouse wheel to scroll values Up/Down
Keyboard	<SHIFT-F3>, type value, <ENTER>
DCP Knob	Rotate knob using mouse wheel
Errors	RANGE LIMIT - Value less than 6 or greater than 256 FORMAT - Value entered not a number
PLACE CNTR	Action button, Used to set an off default center for the scope
DCB	Left click, mouse will jump to center of screen and change to X shaped cursor, move mouse to move scope. Left click to SET the off center point
Keyboard	Not applicable
DCP	The S-N, E-W knobs can be used to move scope center, but it will NOT be saved as off center location
Errors	None
OFF CNTR	Toggle button, Used to switch between designated off center for scope and the default center.
DCB	Left click to toggle On/Off. Buttons looks pressed in when ON.
Keyboard	<Shift-F1> to toggle On/Off
DCP	Not applicable
Errors	None
RR	Adjustment button, Used to adjust distance between range rings (2, 5, 10, 20)
DCB	Left click on button, use mouse wheel to change values Up/Down
Keyboard	<SHIFT-F2>, enter value, <ENTER>
DCP	Rotate knob with mouse wheel
Errors	ILL VALUE - Value not 2, 5, 10, or 20 FORMAT - Value not a number
PLACE RR	Action button, Used to set an off default center for the range rings
DCB	Left click, mouse will jump to center of screen and change to X shaped cursor, move mouse to move range rings. Left click to SET the off center point
Keyboard	Not applicable
DCP	Not applicable
Errors	None

RR CNTR Toggle Button, Used to switch between designated off center for range rings and the default center.

DCB	Left click to toggle On/Off. Buttons looks pressed in when ON.
Keyboard	Not applicable
DCP	Not applicable
Errors	None

MAPS Sub DCB page button, access to the Maps SubMenu.
Maps SubMenu discussed below

DCB	Click to select the SubMenu
Keyboard	<F2> Map #, <E> or <I>, <ENTER>. "E" turns ON map number, "I" turns OFF map number. <F2>, <A>, <ENTER> turns off all maps.
DCP	Not applicable
Errors	None

Primary MAPS Toggle buttons, Six primary maps (most used) are displayed on the Main DCB. These are used to toggle maps on or off. Note: These cannot be defined by the user.

DCB	Click on map to toggle On/Off
Keyboard	Not applicable
DCP	Six buttons at top of right DCP. Click to toggle map On/Off.
Errors	None

WX 1-6 Toggle button, Used to toggle display of weather on the scope and show available of radar data.

DCB	Click to toggle On/Off
Keyboard	<F3>, WX number, <ENTER>
DCP	Not applicable
Errors	None

BRITE SubMenu button, Used to access the Brite SubMenu, discussed below

DCB	Click to select the SubMenu
Keyboard	<INSERT>
DCP	Not applicable
Errors	None

LDR DIR Adjustment button, Change the Data block position and leader line position for all owned/QL targets. Will display the currently selected value in the button.

DCB	Click to select button, use mouse wheel to scroll through available settings
Keyboard	<F10> L, Direction #, Left Click to set. (NW = 7, SE = 3, etc.)
DCP	Use mouse wheel on knob to adjust setting
Errors	None

LDR Adjustment button, Use to change the leader line length for all owned/Quick looked targets. Displays the current value in the button.

DCB Click to select button, scroll mouse wheel Up/Down

Keyboard <DELETE>, type value (0-7), <ENTER>.
<F10>,<O>, <E or I>, <ENTER> to enable or disable data block auto offset.

DCP Use mouse wheel on knob to adjust setting

Errors RANGE LIMIT - Displayed if entered value to large or small (0-7)
FORMAT - Value entered not a number

CHAR SIZE SubMenu button, Used to access the Character Size SubMenu, discussed below

DCB Click to access the SubMenu

Keyboard <HOME>

DCP Not applicable

Errors None

MODE FSL SubMenu button, Used to access the MODE FSL SubMenu, discussed below

DCB Click to access the SubMenu

Keyboard Not applicable

DCP Not applicable

Errors None

SITE MULTI SubMenu button, Used to access the SITE MULTI SubMenu, discussed below

DCB Click to access the SubMenu

Keyboard Not applicable

DCP Not applicable

Errors None

Pref Default SubMenu button, Used to access the Preference SubMenu. Allows the user to save the scope settings to preset names, and change to saved presets.

DCB Click to access the SubMenu

Keyboard Not applicable

DCP Not applicable

Errors None

SSA FILTER SubMenu button, Used to toggle on and off the System Status area fields, discussed below.

DCB Click to access the SubMenu

Keyboard Not applicable

DCP Not applicable

Errors None

GI TEXT FILTER SubMenu button, Used to toggle on and off the airport info fields in the System Status area, discussed below.

DCB Click to access the SubMenu
 Keyboard Not applicable
 DCP Not applicable
 Errors None

SHIFT Action button, Used to change DCB from Main Page to Auxiliary DCB Page

DCB Click to select the aux menu
 Keyboard <PAGE UP>
 DCP Non applicable
 Errors None

DCB AUXILIARY PAGE



VOL Adjustment button, Used to adjust volume for the aural warning from the TCW.

DCB Click to select, use mouse wheel to adjust values
 Keyboard Not applicable
 DCP Non applicable
 Errors None

HISTORY Adjustment button, Used to adjust the number of history trails visible on targets. Valid values are 0 to 5

DCB Click to select, use mouse wheel to adjust Up/Down
 Keyboard Not applicable
 DCP Use mouse wheel on knob to adjust value
 Errors None

H_RATE Adjustment button, Used to adjust the distance between history trails in seconds. Valid values are 1 to 5

DCB Click to select, use mouse wheel to adjust Up/Down
 Keyboard Not applicable
 DCP Use mouse wheel on knob to adjust value
 Errors None

CURSOR HOME	Toggle button, when selected the cursor will jump to center screen on PLACE commands.
DCB	Click to toggle On/Off
Keyboard	Not applicable
DCP	Not applicable
Errors	None
CSR SPD	Non functioning
MAP UNCOR	Non functioning
UNCOR	Non functioning
BEACON	Non functioning
RTQC	Non functioning
MCP	Non functioning
DCB TOP	Action button, Moves the DCB to the Top of the scope
DCB	Click the button to move DCB position
DCB RIGHT	Action button, Moves to right side of scope
DCB	Click the button to move DCB position
DCB LEFT	Action button, Moves to left side of scope
DCB	Click the button to move DCB position
DCB BOTTOM	Action button, Moves to bottom of scope
DCB	Click the button to move DCB position
PTL LNTH	Adjustment button, Changes the length of the predicted track line (PTL) on targets.
DCB	Click button to select, use mouse wheel to adjust value Up/Down (0.0 - 5.0) These correspond to times in minutes for predicted track line.
Keyboard	Not applicable
DCP	Not applicable
Errors	None
PTL OWN	Radio button, selecting will deselect the PTL ALL button. When selected, PTLs will only be displayed on owned or quick looked targets.

DCB	Click to select
Keyboard	Not applicable
DCP	Not applicable
Errors	None

PTL ALL Radio button, selecting will deselect the PTL OWN button. When selected, PTLs will be displayed for all targets on scope.

DCB	Click to select
Keyboard	Not applicable
DCP	Not applicable
Errors	None

DWELL Adjustment button, Used to turn Dwell feature on or off

DCB	Click to select, then mouse wheel Up/Down to change value
Keyboard	Not applicable
DCP	Not applicable
Errors	None

SHIFT Action button, Used to change from Auxiliary DCB Page to Main Page

DCB	Click to select the main page
Keyboard	<PAGE UP>
DCP	Non applicable
Errors	None

DCB MAPS

MAIN – example from MIA

DONE	1 E ARR	3 EW DEP	5 MASTER	7 RNV GPS	9 MVA	11 HOSP	13 FXE	15 HWO OPF	17 FLL E	19 AIRPORT									APPCH	MAIN
CLR ALL	2 W ARR	4 ILS MON	6 FIX TGT	8 NOISE	10 COAST	12 EMER	14 FLL D	16 ZMA SEC	18 FLL W										ARR DEP	AIR SPC

AIR SPC – example from MIA

DONE	500 W EAST	502 S EAST	504 A EAST	506 V EAST	508 N EAST	510 D EAST	512 Z EAST	514 Q EE	516 Q WE	518 L EE	520 L WE	522 G EAST	524 R EAST	526 F EAST	528 J EAST	530 H			APPCH	MAIN
CLR ALL	501 W WEST	503 S WEST	505 A WEST	507 V WEST	509 N WEST	511 D WEST	513 Z WEST	515 Q EW	517 Q WW	519 L EW	521 L WW	523 G WEST	525 R WEST	527 F WEST	529 J WEST				ARR DEP	AIR SPC

APPCH – example from MIA. Select airport first...

DONE	KBCT	KFXE	KHWO	KOPF	KTMB	KX51													APPCH	MAIN
CLR ALL	KFLL	KHST	KMIA	KPMP	KTNT														ARR DEP	AIR SPC

Then select approach

DONE	226 I08R	228 I12	230 I27	232 L08L	234 R08L	236 R08RZ	238 R12-Y	240 R26LY	242 R26R	244 R27-Z	246 R30-Z							APPCH	MAIN
CLR ALL	227 I09	229 I26L	231 I30	233 L26R	235 R08RY	237 R09	239 R12-Z	241 R26LZ	243 R27-Y	245 R30-Y								ARR DEP	AIR SPC

ARRDEP – example from MIA. Select airport first...

DONE	KBCT	KFXE	KHWO	KOPF	KTMB	KX51												APPCH	MAIN
CLR ALL	KFLL	KHST	KMIA	KPMP	KTNT													ARR DEP	AIR SPC

Then select Arrival or Departure route

DONE	438 ANNEY2	440 CURSO2	442 DVALL1	444 FOWEE6	446 SSCOT2	307 DEEEP1	309 HEDLY1	311 JONZ11	313 PADUS1	315 SKIP51	317 VALLY1							APPCH	MAIN
CLR ALL	439 BLUF12	441 CY6	443 FLIPR3	445 HILEY5	306 BSTER1	308 EONNS1	310 HITAG1	312 MNATE1	314 POTTR5	316 SOUBY4	318 WINCO1							ARR DEP	AIR SPC

DONE

Action button, Used to return to the main DCB page.

- DCB Click to switch to main DCB
- Keyboard Not applicable
- DCP Not applicable
- Errors None

CLR ALL

Action button, Used to clear all video maps from the scope

- DCB Click to clear any selected video map
- Keyboard <F2>, <A>, <ENTER>
- DCP Not applicable
- Errors None

MAP number/name

Toggle buttons, Used to toggle display of designated map on the scope.

- DCB Click to toggle display of map on or off
- Keyboard <F2>, enter map number, <ENTER>. Toggle the state of the designated map
<F2>, enter map number, <E> or <I>, <ENTER>
Map # and <E> Turns ON map, Map number and <I> Turns OFF map.
<F2>, <A>, <ENTER>. Turn off all maps
- DCP Not applicable
- Errors ILL MAP - Incorrect map number entered
FORMAT - Improper command format.

AIR SPC

Action button, Used to access the Airspace maps SubMenu

- DCB Click to access Airspace Maps SubMenu
- Keyboard Not applicable
- DCP Not applicable
- Errors None

APPCH Action button, Used to access the Approach maps SubMenu. First page allows selection of airport with approaches. Next page allows selection of maps of approaches for that airport.

DCB Click to access Approach Maps SubMenu
 Keyboard Not applicable
 DCP Not applicable
 Errors None

ARRDEP Action button, Used to access the Arrival/Departure maps SubMenu. First page allows selection of airport with routes. Next page allows selection of maps of Departure or Arrival routes for that airport.

DCB Click to access Arrival/Departure Maps SubMenu
 Keyboard Not applicable
 DCP Not applicable
 Errors None

MAIN Action button, Used to access the main maps SubMenu

DCB Click to access main maps SubMenu
 Keyboard Not applicable
 DCP Not applicable
 Errors None

DCB BRITE

DCB	MPA	FDB	POS	OTH	RR	BCN	HST	WXC
100	100	100	100	60	25	100	100	100
BKC	MPB	LST	LDB	TLS	CMP	PRI	WX	DONE
100	50	100	60	100	60	100	100	

Each button on the BRITE menu of the DCB is an adjustment button. These buttons are used to adjust the illumination value for different parts of the scope. Typically, values range between 0 and 100, though some will only adjust down to 25 or 5. All can be adjusted to 100.

DCB Select button and use mouse wheel to adjust value Up or Down
 Keyboard Select button with mouse, type value, <ENTER>
 DCP Rotate appropriate knob with mouse wheel Up or Down
 Errors ILL VALUE - Value is too high or low for selected setting
 FORMAT - Value entered is not a number

DCB - Brightness of the DCB panel

MPA - Map category A

BKC - Background contrast

MPB - Map category B

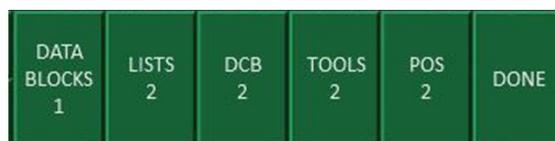
FDB - Full Datablocks and preview area
LST - Aircraft List and system status area
POS - FDB position symbols
LDB - Limited and partial data blocks
OTH - LDB and PDB position symbols
TLS - Tools such as TPA cones and rings
RR - Range rings

CMP - Compass Rose
BCN - Beacon targets
PRI - Primary targets
HST - History symbols
WX - Weather
WXC - Weather contrast

DONE Action button, Used to return to main DCB

DCB	Click to return to the main page of the DCB
Keyboard	Not applicable
DCP	Not applicable
Errors	None

DCB CHAR



Each button on the CHAR menu of the DCB is an adjustment button. These buttons are used to adjust the font size for different items displayed on the scope. Typically, values range between 0 and 5, though the DCB can only be adjusted as high as 2.

DCB	Select button and use mouse wheel to adjust value Up or Down
Keyboard	Select button with mouse, type value, <ENTER>
DCP	Rotate appropriate knob with mouse wheel Up or Down
Errors	ILL VALUE - Value is too high or low for selected setting FORMAT - Value entered is not a number

DATABLOCKS - Font size of all Data blocks

DCB - Font size of buttons in DCB

LISTS - Font size in all lists, status area, and preview area

TOOLS - Font size of text in TPA cones/rings, etc.

POS - Font size of the position symbol for a target

DONE Action button, Used to return to main DCB

DCB	Click to return to the main page of the DCB
Keyboard	Not applicable
DCP	Not applicable
Errors	None

DCB PREF



Example of preset preferences “MIA 1”



Example of default preference preset

Each of the Preference Set buttons are Action buttons that allow user to load a preset setup for the scope that has been saved. Many items are saved to a preference set, including BRITE, CHAR settings, range, range rings, flight list locations, etc. **Note: Presets are not dependent on the facility so map visibility is not saved in a preset. Maps will need to be selected for each session.**

DEFAULT Action button, Used to reset the scope defaults for the current facility

DCB	Left click to reload default settings.
Keyboard	Not applicable
DCP	Not applicable
Errors	None

RESTORE Action button, Used to reset the scope back to settings in selected preference set.

DCB	Left click to reload the selected preference set.
Keyboard	Not applicable
DCP	Not applicable
Errors	None

CURRENT Display button, Used to display the currently selected preference set

DCB	Not applicable
Keyboard	Not applicable
DCP	Not applicable
Errors	None

SAVE Action button, Used to save the current state of the scope to a preference file

DCB	Click the SAVE button to save file (after entering name). All current settings will be saved.
Keyboard	Enter name of the preference set (as you type it will appear in the Preview area), Click SAVE button
DCP	Not applicable
Errors	FORMAT - Name of preference entered too long or too short. Must be 1 to 7 characters.

CAPACITY - 32 Preference sets already exist. One or more must be deleted before any more can be created. Currently must be deleted (or can be renamed) in Profiles/User/PrefSet folder location.

DUPLICATE NAME - A preference set with this name already exists.

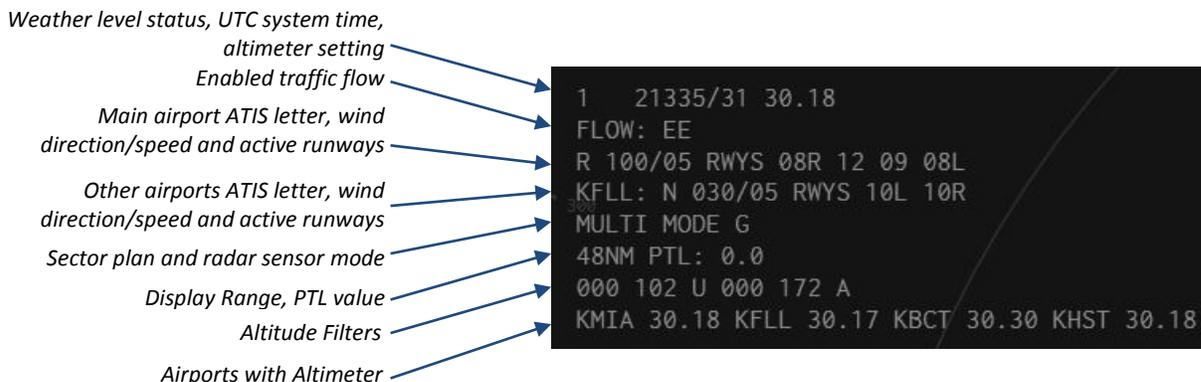
DISK ERR - Error writing the data for the set to the disk.

DONE

	Action button, Used to return to main DCB
DCB	Click to return to the main page of the DCB
Keyboard	Not applicable
DCP	Not applicable
Errors	None

SCOPE INFORMATION LISTS AND AREAS

System Status Area

<p><i>Weather level status, UTC system time, altimeter setting</i></p> <p><i>Enabled traffic flow</i></p> <p><i>Main airport ATIS letter, wind direction/speed and active runways</i></p> <p><i>Other airports ATIS letter, wind direction/speed and active runways</i></p> <p><i>Sector plan and radar sensor mode</i></p> <p><i>Display Range, PTL value</i></p> <p><i>Altitude Filters</i></p> <p><i>Airports with Altimeter</i></p>		<pre> 1 21335/31 30.18 FLOW: EE R 100/05 RWYS 08R 12 09 08L KFL: N 030/05 RWYS 10L 10R MULTI MODE G 48NM PTL: 0.0 000 102 U 000 172 A KMIA 30.18 KFL 30.17 KBCT 30.30 KHST 30.18 </pre>
---	--	---

To move System Status area: Type <F10>, <S>, then Left Click on new scope location. Currently cannot be moved.

Preview Area



Flight plan shows ACID, AC type, Beacon code, position controlling, departure procedure, Airport.

Display flight plan, text entry area or error messages.

- To display flight plan: Type <F10>, <D>, Left Click on target position symbol, or type tab# or type ACID or type beacon code.
- To Move Preview area: Type <F10>, <P>, Left Click on new scope location.

Flight Data Lists

Example lists from MIA, SIGN ON, TOWER Departure, TOWER Arrival.

Flight Data List #	Airport ID of List	Flight Data List Name
1	MIA	MIA TOWER DEP
2	MIA	MIA TOWER ARR

Position code	Frequency	Position Name	AI or User Control	Tab #	AC ID	Beacon code	Altitude
1H	125.25	TMB_APP AI	AI	48	AAL1970	6300	000
1W	125.5	MIA_DEP AI	AI	53	AAL299	6044	000
1D	119.45	MIA_DEP AI	AI	54	AAL431	6250	000
1S	120.5	MIA_APP UC	UC	58	AAL1836	6024	000
1A	133.05	MIA_APP UC	UC				
1N	125.75	MIA_APP UC	UC				
1V	124.85	MIA_APP UC	UC				
1Z	128.6	FLL_APP AI	AI				
1Q	126.85	FLL_APP AI	AI				
1L	126.05	MIA_DEP AI	AI				
1G	119.7	FXE_APP AI	AI				
1F	133.72	MIA_APP AI	AI				
1R	133.775	MIA_APP AI	AI				
1J	118.1	MIA_APP AI	AI				

TRACKS AND DATA BLOCKS

Selecting Tracks

In order to interact with aircraft targets on the scope you will need to select a specific target or “track”.

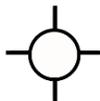
There are several ways to select tracks in ATCpro.

1. Left click with the cursor on top of the track’s position symbol (primary method).
2. Type the “tab” number, the number in the first column (on the left) shown in the flight list.
3. Type the aircraft ID (ACID), the number in the second column shown in the flight list.
4. Type the four digit beacon or “squawk” code in the third column of the flight list.
 - For example to display the flight plan for a track, press <F10>, then <D>, then type the tab line #, or Aircraft ID, or beacon code, then press ENTER.

Cursor graphics

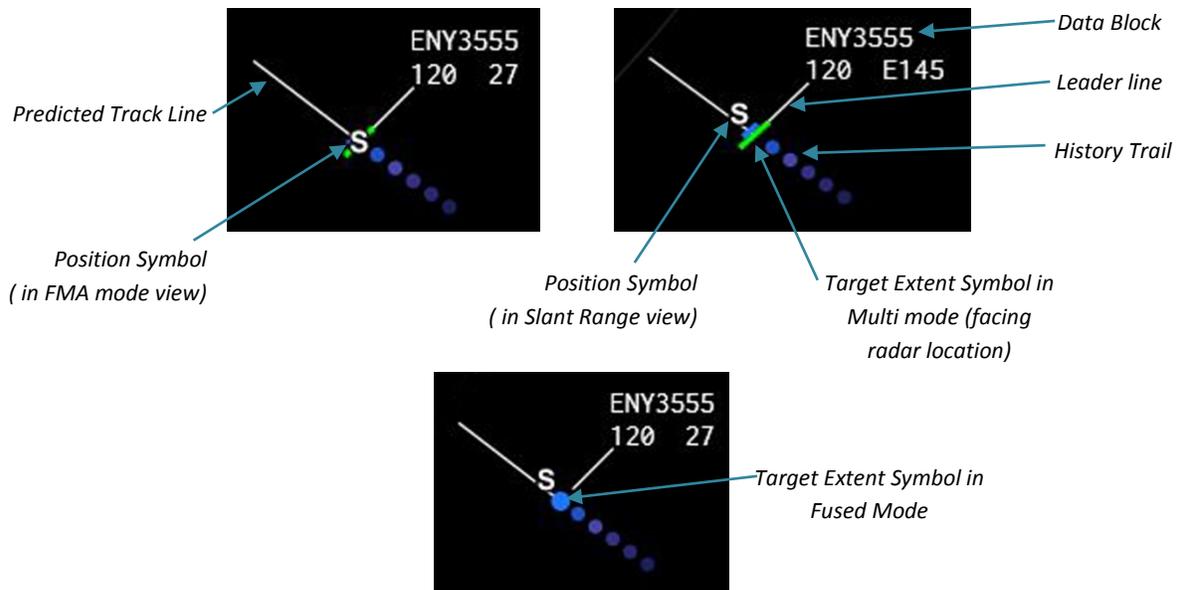


Normal cursor crosshair



Cursor when on top of selectable target

Track Graphics



Position Symbols - indicate the controlling position of the associated tracks (in these examples “S”). In FMA mode view it is centered on the target symbol. In Slant Range view it is offset from the Target Symbol.

Target Extent Symbols – Indicate a sensor detected object’s location. In Multi mode, it is a “top hat” symbol aligned toward the radar location. In Fused mode it is a filled circle.

History Trail – A series of dots that show the previous position of the target. The dots fade away to indicate direction and like the original scopes would have displayed.

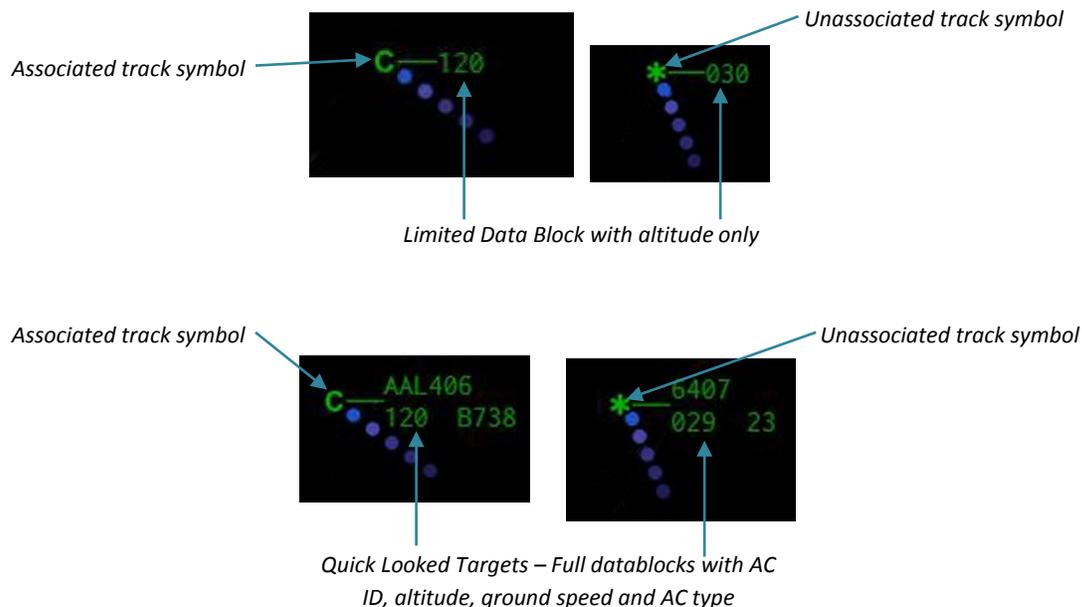
Predicted Track Line – A straight line that predicts the target’s future position based on speed and

heading. The prediction time in minutes can be set on the DCB. The PTL can be turned off when set to zero minutes. It shows on all owned targets by default.

Leader line – connects the Position Symbol to it’s Datablock. The line’s length and orientation can be set manually on the DCB or keyboard or will adjust automatically.

Data Block – A track’s datablock contains flight information such as AC ID, beacon code, ground speed, aircraft type and altitude. There are three different types of datablocks: Full, partial and limited. See below for more explanation of datablock

Other Target Symbols



Data blocks

A data block shows text data that pertains to the track. There are three types of data blocks described below:

Full Data Blocks are shown for tracks “owned” by a controller, tracks that have been “Quick Looked”, if they have been involved in a handoff, or if they are involved in a “Point out” with the controller. Owned tracks are shown in white. Unowned tracks are shown in green (see diagram.)

Partial Data Blocks are shown for associated tracks that are not “owned” by this controller and are within the altitude filter limits. Owned tracks are shown in white. Unowned tracks are shown in green (see diagram.)

Limited Data Blocks are shown for unassociated tracks (tracks without a flight plan). These tracks are shown in green.

Alternating Fields – The lines of a data block can display alternating text fields depending on the situation.

If there is an emergency condition then the data block may appear in flashing or steady red.

Datablock fields – below are descriptions of the data fields (slash / indicates alternating fields):

Line 1: Aircraft ID – The callsign of the aircraft.

/Beacon code.

Line 2: Altitude and flight level – Always entered and displayed in hundreds of feet. For example 14,500 feet is shown as **145**.

/ Scratchpad or exit gate or exit fix.

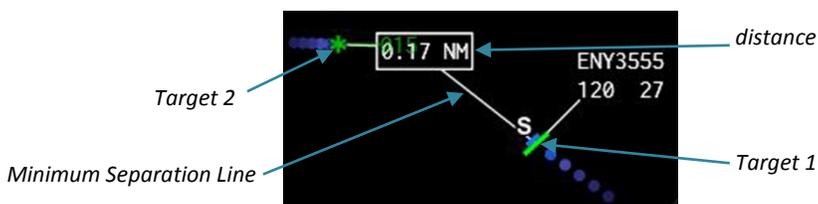
/ Ground speed and aircraft category – Always shown as tens of knots. For example 310 knots is shown as **31**. The aircraft category letter codes are: **F** = B757, **H** = Heavy, **J** = Jumbo.

/ Aircraft type code

/ Requested Altitude.

TOOLS

Minimum Separation Line



The minimum separation line displays the separation distance between two selected tracks.

- To enable a Minimum Separation Line, press <TAB>, then Left Click the target 1, then Left Click the target 2, then press <ENTER>. To turn off the line, press <TAB>, then Left Click the target 1, then press <ENTER>.

Range Bearing Line (not currently implemented)

To display up to three vectors (Range Bearing Lines) labeled with the vector's length and direction. The start and end points can be a fixed location (such as an airport) or a track. The length and direction will be updated as the tracks move.

- To enable a Range Bearing Line, press <*>, Press <T>, then Left click the first point, then Left click the second point, then press <ENTER>. To Turn off the line press <*>, Press <T>, then Left click the first point then press <ENTER>.

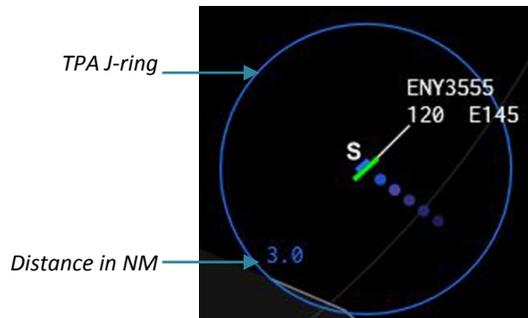
Terminal Proximity Alert Cone



The TPA cone is displayed at the specified length in nautical miles, indicating the separation of the track from tracks ahead. The TPA cone may display automatically in certain high traffic situations when this feature is turned on.

- To enable a TPA cone, press <*>, Press <P>, then type the number of whole miles, a period (.), then tenths of miles, then press <ENTER>. To Turn off the line press <*>, Press <P>, then press <ENTER>.

Terminal Proximity Alert J-ring



The TPA J-ring displays a circle at the specified distance as a guideline for separation.

- To enable a TPA J-ring, press <*>, Press <J>, then type the number of whole miles, a period (.), then tenths of miles, then press <ENTER>. To Turn off the line press <*>, Press <J>, then press <ENTER>.

WEATHER GRAPHICS

Weather graphics are generated from either downloaded live Nexrad weather data or from User Weather settings. These settings are made on the **Duty Desk Weather Settings area**. On the TCW the weather display is turned on by clicking on the WX 1-6 buttons on the DCB. Level 1 is lighter precipitation and Level 6 is the heaviest precip. Note only precipitation will show up on radar. Based on the level of weather the pilots will report turbulence and be affected by it.

Adjust brightness here,
or on BRITE menu on
DCB

WX Levels indicated
here as a number

WX buttons – if AVL, then weather
is available at that level. Button
must be clicked to display WX

Level 6 – Mustard, dense texture

Level 5 – Mustard, slight texture

Level 4 – Solid mustard

Level 3 – Blue, dense texture

Level 2 – Blue, slight texture

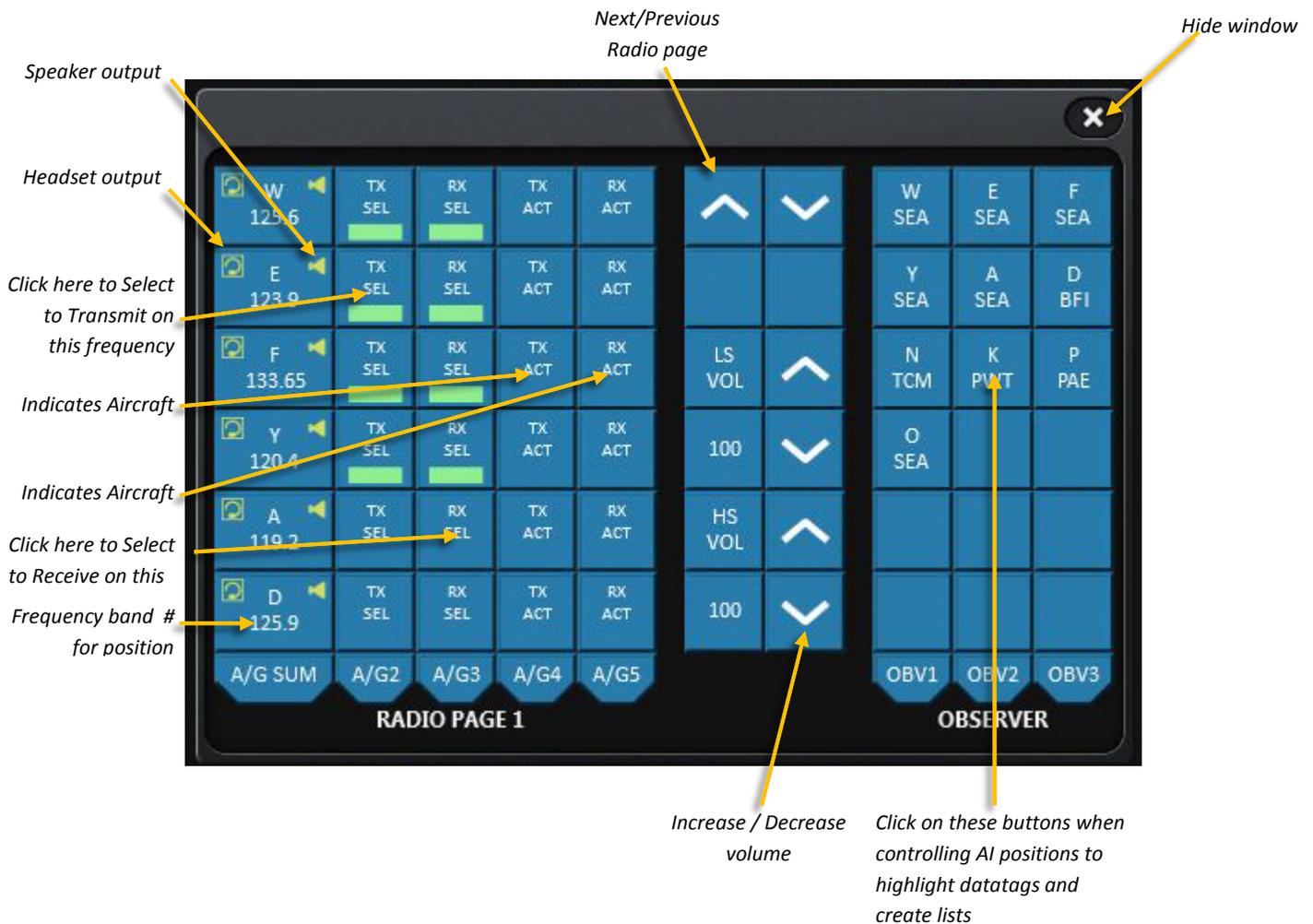
Level 1 solid blue

POP UP PANELS

Communications Panel

The Communications Panel provides control of the radio frequencies that you can hear over the headset or speakers.

To display the floating Panel window click on the icon in the lower Right DCP. You can move or resize the window as desired. To close the Panel click on the X in the upper Right corner.



Communications History Window

The Communication History Window shows a transcription of the most recent voice communications between controllers and pilots. Only the communications of the active radio frequencies are shown as enabled in the Communications Panel. The older lines are automatically deleted after a few seconds for clarity

To display the Comm History floating window click on the icon in the lower Right DCP. You can move or resize the window as desired. To close the Comm History click on the X in the upper Right corner.



Callsign of controller or aircraft

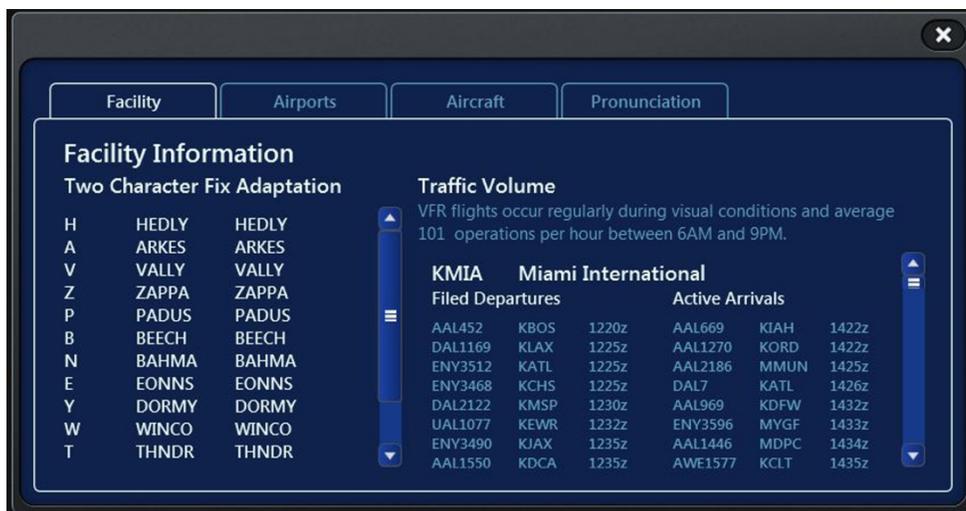
UTC time of transmission

Text transcription of voice transmission

Use Scroll bar or roll Mouse wheel to see more text

Information Reference Panel

The Information Reference Panel provides reference data during a controlling session. There are four tabs with useful information (see below). To display the floating Panel window click on the icon in the lower Right DCP. You can move or resize the window as desired. To close the Panel click on the X in the upper Right corner.



Facility Airports Aircraft Pronunciation

Airport Weather Information

KMIA: Miami International
 atis **V** report: METAR KMIA 221435Z 08805KT 18SM FEW050 03/05 A3029
 departing: 08R, 12, 09, 08L arriving: 08R, 12, 09, 08L

KFLL: Ft Lauderdale-Hollywood Intl
 atis **B** report: METAR KFLL 221435Z 07603KT 16SM FEW070 03/05 A3029
 departing: 10L, 10R arriving: 10L, 10R

KHST: Homestead ARB
 atis **R** report: METAR KHST 221435Z 10106KT 13SM FEW070 03/05 A3023
 departing: 06 arriving: 06

Facility Airports Aircraft Pronunciation

Aircraft Information

search: select:

		mach: 0.85 tas: 510 knots			
CLIMB		high		DESCENT	
		mid			
		initial			
	takeoff		land		
	mach: 0.75 fpm: 1500		mach: 0.85 fpm: 1000		
	ias: 300 fpm: 1500		ias: 300 fpm: 3000		
	ias: 300 fpm: 1500		ias: 250 fpm: 1500		
	ias: 185		ias: 160		

Code: B744
 Manufacturer: Boeing
 Type: 747-400
 Ceiling: 45000 ft
 Engines: 4 J
 Seating: 416
 RNAV: True
 Pronounced: Boeing 7 47

Facility Airports Aircraft Pronunciation

Pronunciation Guide

The ATCpro speech recognition software has been optimized to recognize phonetically spoken waypoint and fix pronunciations. Since vowels are frequently omitted or words abbreviated, a pronunciation guide for this facility is shown below.

ADKOQ	add cock
AGLER	ag lurr
AGOYA	eh goy ya
ANNEY	an nee
ANNEY2	an nee two
ARKES	arks
ARKES3	arks three

Flight Data Strip Panel

The **Flight Data Strip Panel** Window displays current important information about each aircraft under your control. There is a separate section for each arrival runway, departures and overflights.

The screenshot displays the Flight Data Strip Panel with the following sections and callouts:

- RWY 09 (Arrivals):**
 - Aircraft callsign and type:** Points to the first column (e.g., AAL1822 B738/D).
 - Transponder Squawk code:** Points to the second column (e.g., 6476).
 - Entry fix:** Points to the third column (e.g., FLIPR).
 - Arrival airport:** Points to the fourth column (e.g., KMIA).
 - Scheduled arrival time:** Points to the fifth column (e.g., 2356).
 - Given altitude clearances:** Points to the sixth column (e.g., 1040).
 - actual arrival time into airspace:** Points to the seventh column (e.g., 2337).
 - Notes, type of approach, etc.:** Points to the eighth column (e.g., B, 09, VIS, FS).
- RWY 08L (Arrivals):**
 - Scheduled arrival time:** Points to the fifth column (e.g., 2359).
- DEPARTURES:**
 - Cruise flight level altitude:** Points to the second column (e.g., P 2345).
 - Departure airport:** Points to the third column (e.g., MIA).
 - Exit fix:** Points to the fourth column (e.g., HITAG).
 - Flight plan with Departure Procedure (SID):** Points to the fifth column (e.g., MIA JONZILSKIPS SKIPS MBPV).
 - Destination airport:** Points to the sixth column (e.g., KLAX).

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