Automated Terminal Proximity Alert (ATPA)

Overview

Similar to the “TPA Ring” and “TPA Cone,” Automated TPAs are a variable length cone and distance readout associated with an eligible track inside of a defined airspace volume. Whereas the TPA Rings and Cones are fixed, ATPA graphics are automatically adjusted based on the distance and relative bearing of a leading target. A typical TPA Cone (“P” Cone) draws a vertex outward from a target based on its direction of flight to a specified distance. An ATPA Cone draws a vertex pointing towards the next eligible target the affected target is following up to the distance required by wake category or basic radar separation. Additionally, a distance readout is added to the datablock indicating the distance between the affected target and the target it is following.

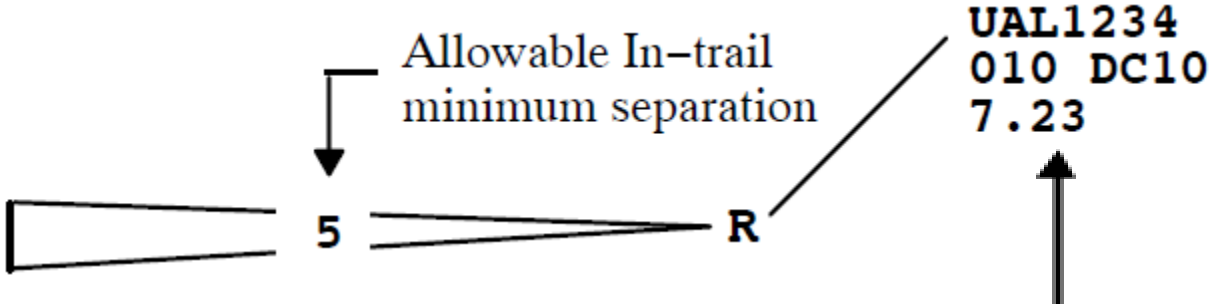
ATPA Graphics

Graphics for Automated TPA are wedge−shaped cones with the vertex coincident with the center of the track’s target location. The length of the cone is equal to the allowable In−trail minimum separation between the In−trail track pair. The cone is oriented from the trailing track to the leading track. For non−whole number distances, tenths of nautical miles are displayed.

Monitor Cone
The ATPA Monitor Cone is displayed in the TPA color (blue on the TCW and white on the TDW). The Monitor Cone is displayed at the trailing track's owner's position and any positions adapted to display ATPA Monitor Cones for tracks in the enabled ATPA Approach volume. An ATPA Warning or Alert Cone will supersede the display of the ATPA Monitor Cone. Not all positions have warning cones enabled, but they can be enabled per track using the commands referenced below.

Warning Cone
The ATPA Warning Cone and in-trail distance is displayed in the caution color (yellow) if the trailing track is predicted to violate the allowable In−trail minimum separation within 45 seconds. It will supersede any manual TPA Cone or Monitor Cone, but will not be displayed if an Alert Cone is displayed. The Warning Cone is displayed at the trailing track's owner's position and any positions adapted to display ATPA Alert and Warning Cones for tracks in the enabled ATPA Approach volume, if enabled for the TCW/TDW.

Alert Cone
The ATPA Alert Cone and in-trail distance is displayed in the ATPA alert color (orange) if the trailing track already has or is predicted to violate the allowable In−trail minimum separation within 24 seconds. It will supersede all other ATPA and TPA Cones. The Alert Cone is displayed at the trailing track's owner's position and any positions adapted to display ATPA Alert and Warning Cones for tracks in the enabled ATPA Approach volume, if enabled for the TCW/TDW.



Actual In−trail distance in nautical miles between this track and the track directly in front of this track. The ATPA Cone points toward the lead aircraft (not the direction of travel).
Notes:

1. ATPA Cone's length is shown as 5 nautical miles. This is the allowable In−trail minimum separation for the In−trail track pair. This value is based on size of aircraft and other factors.
2. ATPA Cone's vertex is centered on the trailing track's location and extends forward pointing toward the leading track.
3. Actual In−trail distance is displayed in the same color as the data block if no ATPA Warning or Alert exists. Actual In−trail distance is displayed in yellow if ATPA Warning exists and in orange if ATPA Alert exists.

Automatic Resizing of the TPA Cone

When a track with a TPA Cone enters an ATPA Approach volume and is part of an In−trail track pair, the TPA Cone is automatically resized to the allowable In−trail minimum separation if the length of the TPA Cone is less than the In−trail minimum separation. The TPA Cone is superseded by an ATPA Warning or ATPA Alert Cone.

System Overview

*When ATPA is enabled, “INTRAIL” is removed from the System off Indicators field and “INTRAIL ON” appears in the Approach Volume Status Field.

*Not yet implemented in CRC

Display of ATPA information on an individual display is optional. Even though a controller may not be displaying ATPA on their scope, runway assignment information must be kept and displayed in L30 arrival data blocks so that ATPA will function correctly on other positions. Taking runway assignment information out of your data blocks may have adverse effects on other controller’s displayed ATPA information. Commands to enable and disable various ATPA functions are available in the DCB under the “SHIFT” menu, or by using keyboard commands as described in the following figure and table:

If a DCB is not on−screen, press <**DCB**> on the keyboard.

If the Auxiliary DCB is not shown, select <**SHIFT**>.

Select <**TPA / ATPA**>. The TPA / ATPA submenu appears as shown in Figure 6−27 *(p. 6−152)*.

A/TPA MILEAGE ENABLE	INTRAIL DIST ENABLE	ALERT CONES ENABLE	MONITOR CONES INHIBIT	DONE

Note: Each submenu button indicates the current display status (ENABLE / INHIBIT) for the corresponding graphic or data field.

Select TPA / ATPA Submenu buttons to enable or inhibit corresponding graphics and data fields.

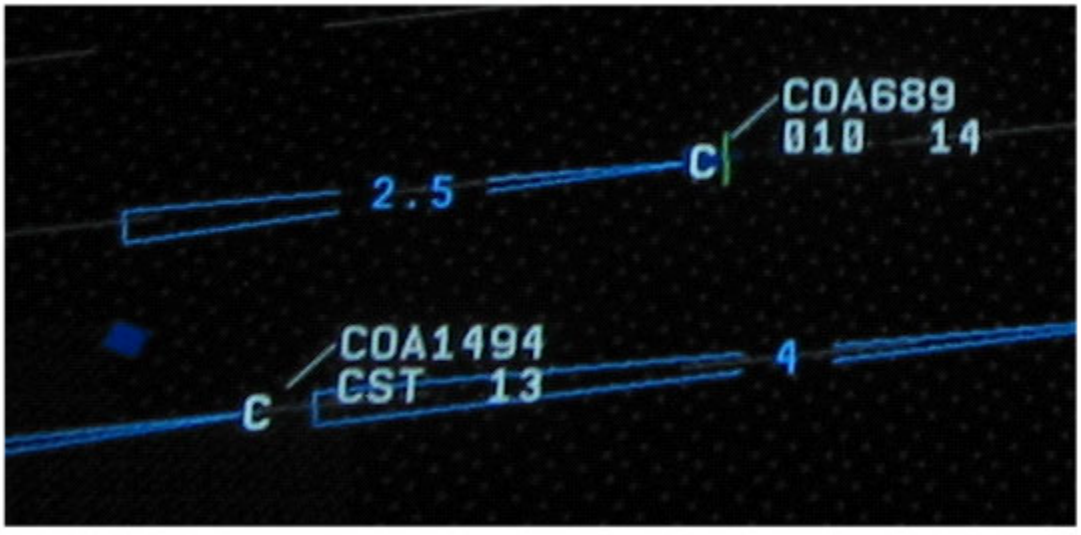
Select <**DONE**> to exit the command and remove the submenu.

Implied ATPA Commands

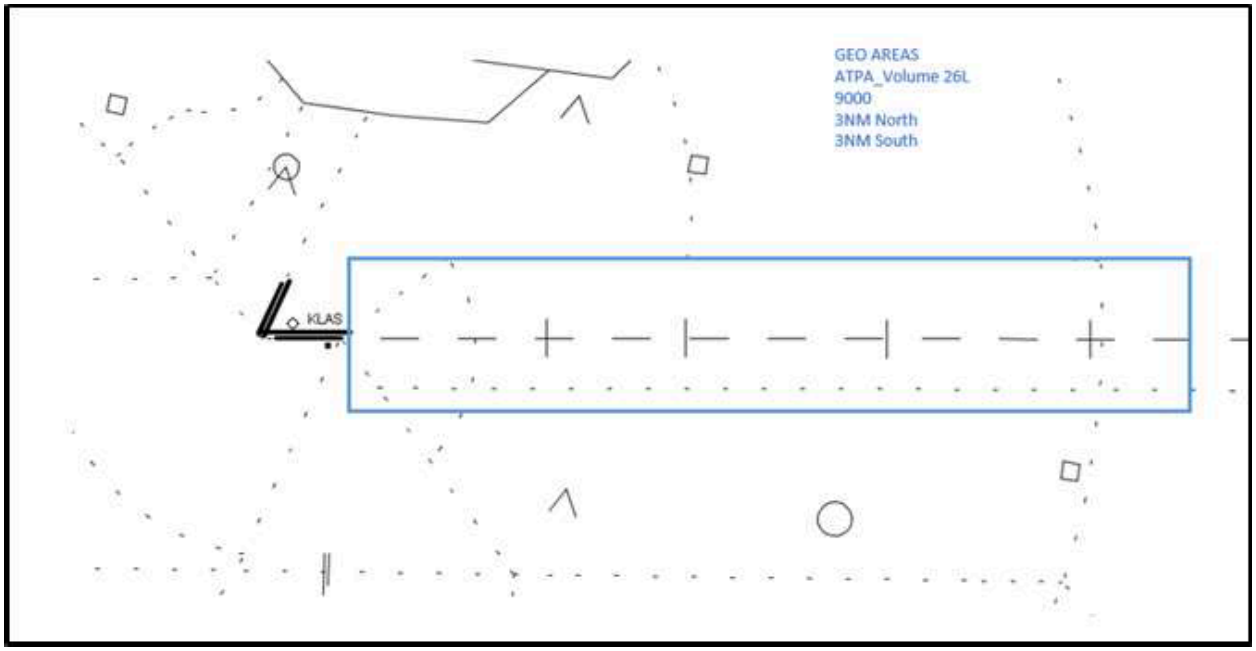
Enable/Inhibit Display of Warning & Alert Cones for:	
This TCW	*, A, E/I, Enter
Single Track	*, A, E/I, Slew
Enable/Inhibit Display of ATPA Monitor Cones for:	
This TCW	*, B, E/I, Enter
Single Track	*, B, E/I, Slew
Enable/Inhibit Display of In-Trail Distances for:	
This TCW	*, D, E/I, Enter
Single Track	*, D, E/I, Slew
Enable/Inhibit Display of ATPA size data for:	
This TCW	*, D, +, Enter
Single Track	*, D, +, Slew

Reduced Separation

At **LAX 25L/24R**, **SNA 20R**, and **LAS 26L/26R**, real world studies on runway dwell times enable these runways to qualify for a reduced 2.5nm separation standard within 10 (8 for SNA) nautical miles of the threshold. ATPA will adjust the Warning, Alert, and Monitor cones accordingly.



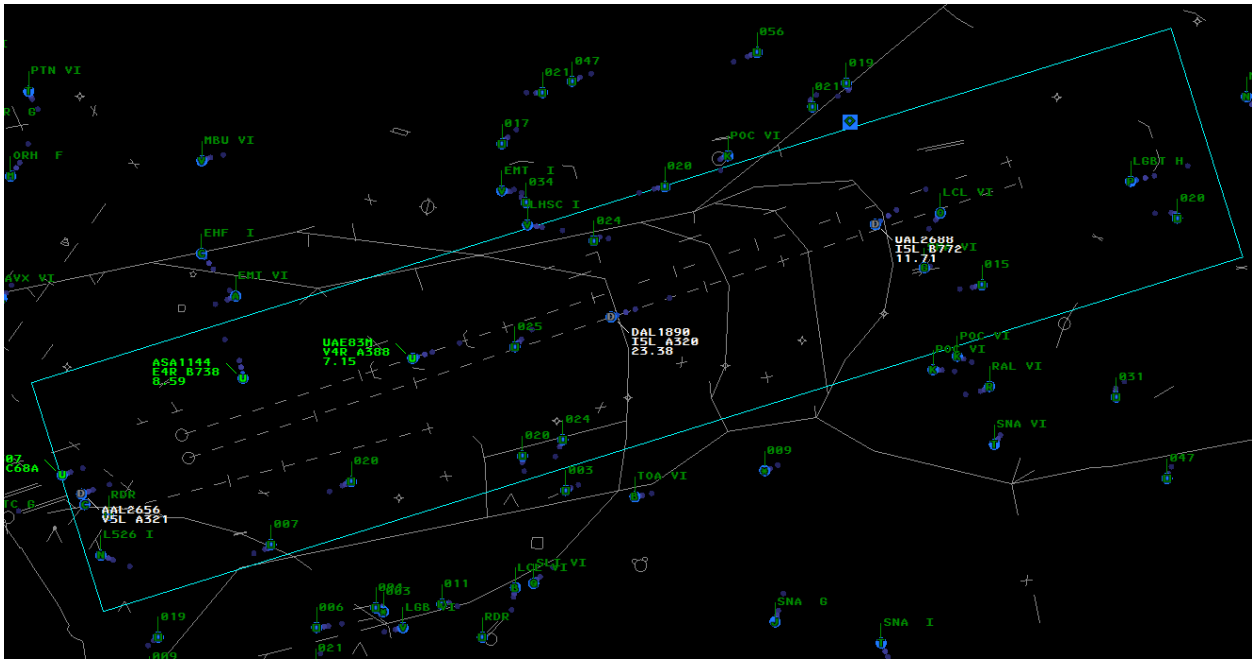
ATPA Examples - LAS 26L



The **LAS 26L** ATPA approach volume (blue area above) is adapted as a rectangle, 3 miles wide to the North and 3 miles wide to the South of the centerline, extending from the RWY 26L runway threshold out to 23 miles on final. The ceiling of the region is adapted to 8,000' MSL. The following are additional system state and flight plan criteria that must be met for tracks within the ATPA Approach Volume to generate warning/alert cones and in-trail distances. Note that while Las Vegas is being discussed, volumes and criteria are different depending on airport and runway configurations. It is essential that aircraft are properly scratched according to each facility's specific requirements.

1. **Ineligible Scratchpads:** If a flight's first scratchpad matches any of the following ineligible first scratchpad strings for this Approach Volume, the track will not be eligible to display an ATPA cone (e.g., visual approaches), but the track will remain eligible for the volume such that other aircraft in the volume will continue to reference the target.
    a. NAV, OUT, TRR, W19, AIS, TIS, VV
2. **Exclusion Scratchpads:** If a flight's first scratchpad matches any of the adapted exclusion first scratchpad strings for this ATPA Approach Volume, the track will not qualify for the volume. This is useful for situations where multiple runways and volumes are in use, preventing targets from qualifying for multiple regions.
    a. 26R, 8R, 8L, 19R, 19L, 1R, 1L, 2RV, 9RV, 9LV, 8RV, 8LV, 1RV, 1LV, W19, LSV, VGT, VG, HND, RMP

ATPA Examples - LAX 25L



The **LAX 25L** ATPA approach volume (blue area above) is adapted as a rectangle, 5 miles wide to the North and 5 miles wide to the South of the centerline, extending from the RWY 25L runway threshold out to 50 miles on final. The ceiling of the region is adapted to 12,000' MSL. The following are additional system state and flight plan criteria that must be met for tracks within the ATPA Approach Volume to generate warning/alert cones and in-trail distances. It is essential that aircraft are properly scratched according to each facility's specific requirements.

1. **Ineligible Scratchpads:** If a flight's first scratchpad matches any of the following ineligible first scratchpad strings for this Approach Volume, the track will not be eligible to display an ATPA cone (e.g., visual approaches), but the track will remain eligible for the volume such that other aircraft in the volume will continue to reference the target.
    a. V5L, V5R, VV (secondary)
2. **Exclusion Scratchpads:** If a flight's first scratchpad matches any of the adapted exclusion first scratchpad strings for this ATPA Approach Volume, the track will not qualify for the volume. This is useful for situations where multiple runways and volumes are in use, preventing targets from qualifying for multiple regions.
    a. 24L, 24R, E4L, E4R, E6L, E6R, E7L, E7R, I4L, I4R, I6L, I6R, I7L, I7R, V4L,V4R, V6L, V6R, V7L, V7R, Y4L, Y4R, Y6L, Y6R, Y7L, Y7R, Z4L, Z4R, Z6L, Z6R, Z7L, Z7R

List of ATPA Volumes

BFL - Bakersfield TRACON

Airport	Volume ID	Volume Name	Ceiling
BFL	12L	BFL 12L	5000
BFL	30R	BFL 30R	10000

L30 - Las Vegas TRACON

Airport	Volume ID	Volume Name	Ceiling
LAS	01L	RWY_01L_ATPA	9000
LAS	01R	RWY_01R_ATPA	9000
LAS	26L	RWY_26L_ATPA	9000
LAS	26R	RWY_26R_ATPA	9000

LSV - Nellis RAPCON

Airport	Volume ID	Volume Name	Ceiling
LSV	RWY21	RWY21	10000

SBA - Santa Barbara ATCT/TRACON

Airport	Volume ID	Volume Name	Ceiling
SBA	07	SBA_RWY_07	4000
SBA	25	SBA_RWY_25	4000

SCT - SoCal TRACON

Airport	Volume ID	Volume Name	Ceiling
BUR	B08	BUR_08	9000
CRQ	C24	CRQ_24	9000
LAX	L06	LAX_06	12000
LAX	L07	LAX_07	12000
LAX	L24	LAX_24	12000
LAX	L25	LAX_25	12000
LGB	G30	LGB_30	4000
MYF	M28	MYF_28	9000
NKX	X24	NKX_24	9000
ONT	O08	ONT_08	9000
ONT	O26	ONT_26	9000
PSP	P31	PSP_31	10000
SAN	S09	SAN_09	12000
SAN	S27	SAN_27	12000
SNA	N02	SNA_02	5000
SNA	N20	SNA_20	3800
VNY	V6R	VNY_16R	9000