(No More) Danger in Denver

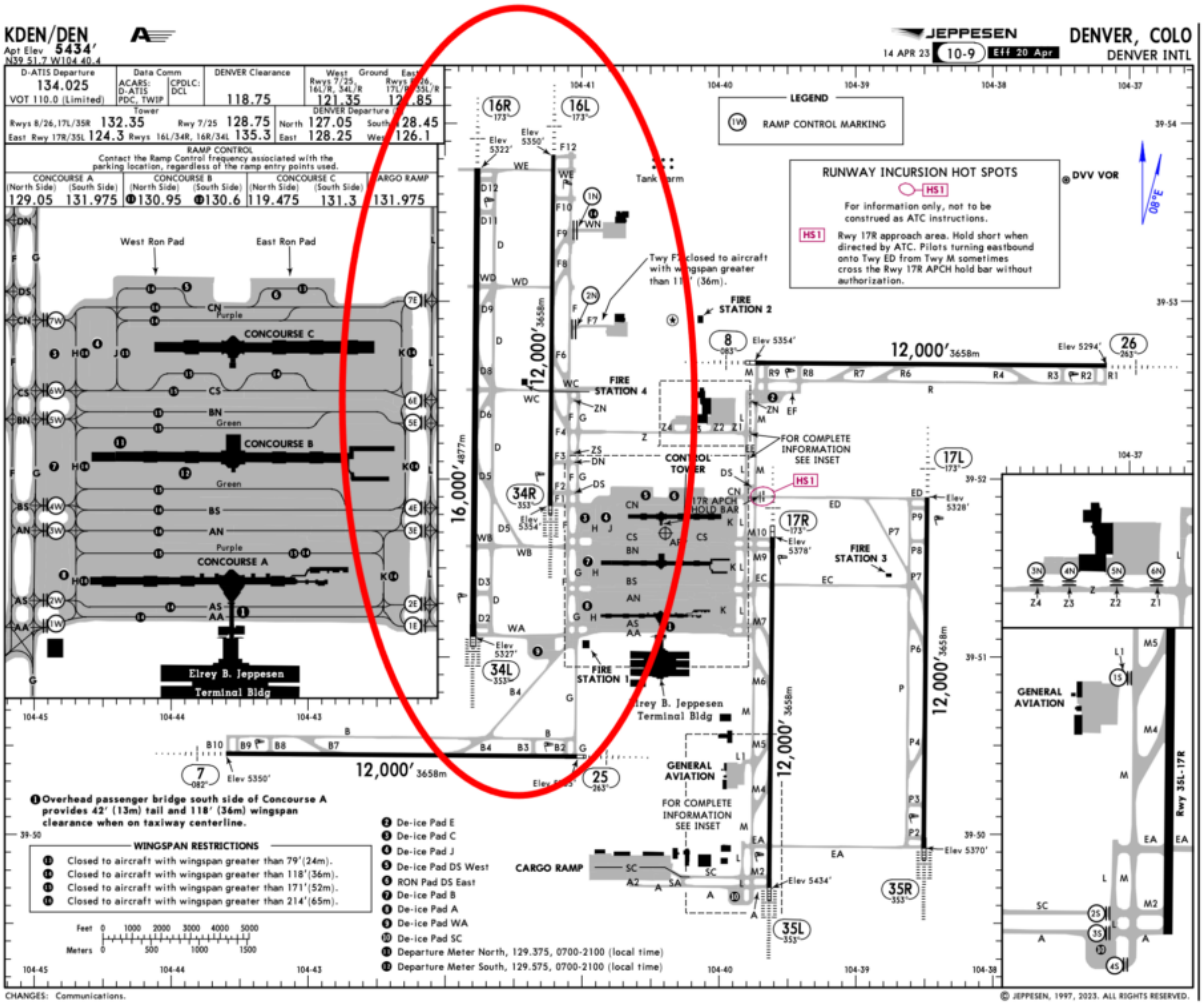
Chris Shieff
6 December, 2023

Back in 2022, the FAA issued a Safety Alert (SAFO) for KDEN/Denver, after a **high number of TCAS RA events** were recorded between aircraft landing on the parallel runways (16L/16R).

This was compounded by a number of factors:

- **High elevation**
- **Reduced separation**
- **Controller workload**
- **Possible complacency caused by regular nuisance TAs.**

It was a moody brew leading to the FAA becoming concerned about potential for a **midair collision.** If you're like to know more, here's an article we wrote at the time.

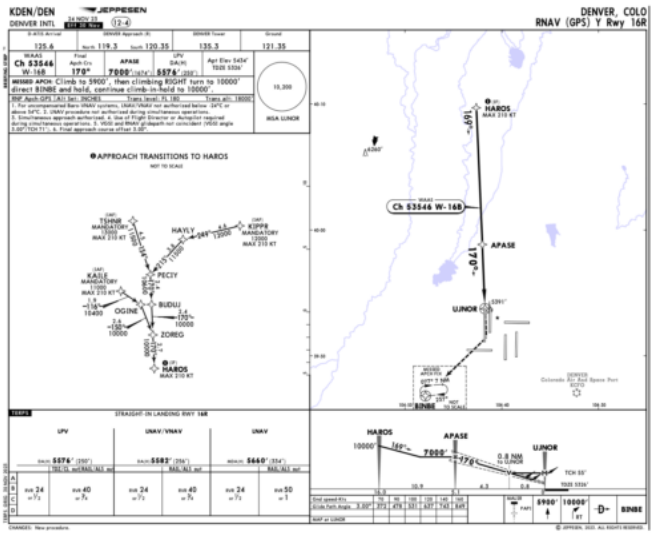


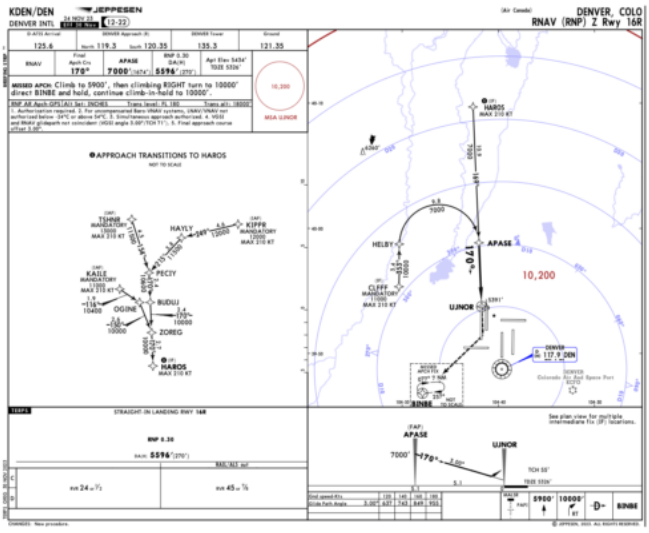
The trouble runways.

The good news is that last month, **new approaches** were introduced to alleviate the risk. Here's an update on what has changed.

Offset Approaches

On November 30, Runway 16R received two new approaches **(offset by 3 degrees)** – the RNAV (Y) and RNP (Z).





The two new offset approaches to Runway 16R

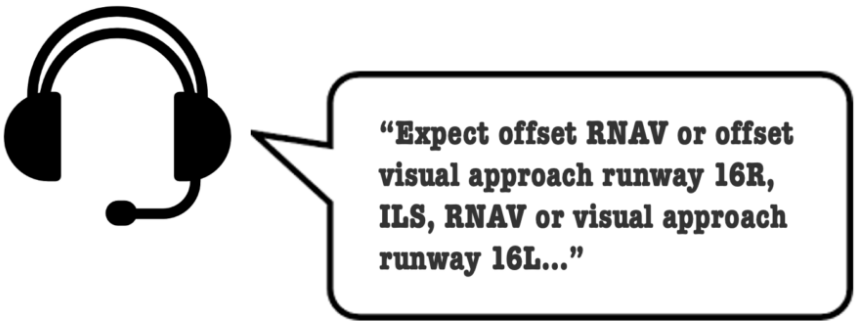
It was previously determined that 3-degrees would be enough to mitigate nuisance TCAS activations and allow operators to continue using full TA/RA mode throughout their approach and landing.

Along with these offset approaches, the FAA has published **new procedures** for their use found in this Information Note for Operators.

The procedures will be in use anytime Runways 16L and R are operating simultaneously, and **visual approaches are in use on at least one of the runways.**

New Procedures

Listen out for the following phrase on the ATIS:



If you're landing on 16R, there are effectively now two scenarios:

Instrument Approach – Follow the RNAV (Y) or RNP (Z) charted procedure. Easy.

or

Visual Approach – Here's where things get a little more complicated. Even though the FAA regs say that an aircraft on a visual approach does not need to follow a specific track or vertical profile, in the case of

KDEN, the FAA **strongly suggests** you do.

Aside from assuring you stay inside Class B airspace, it will also mitigate nuisance TCAS RA's that can lead to unstable approaches, go-arounds and level busts.

In their Info Note the FAA goes even further and says **don't fly a straight-in approach to 16R** (including via the existing ILS) unless **specifically cleared** to do so.

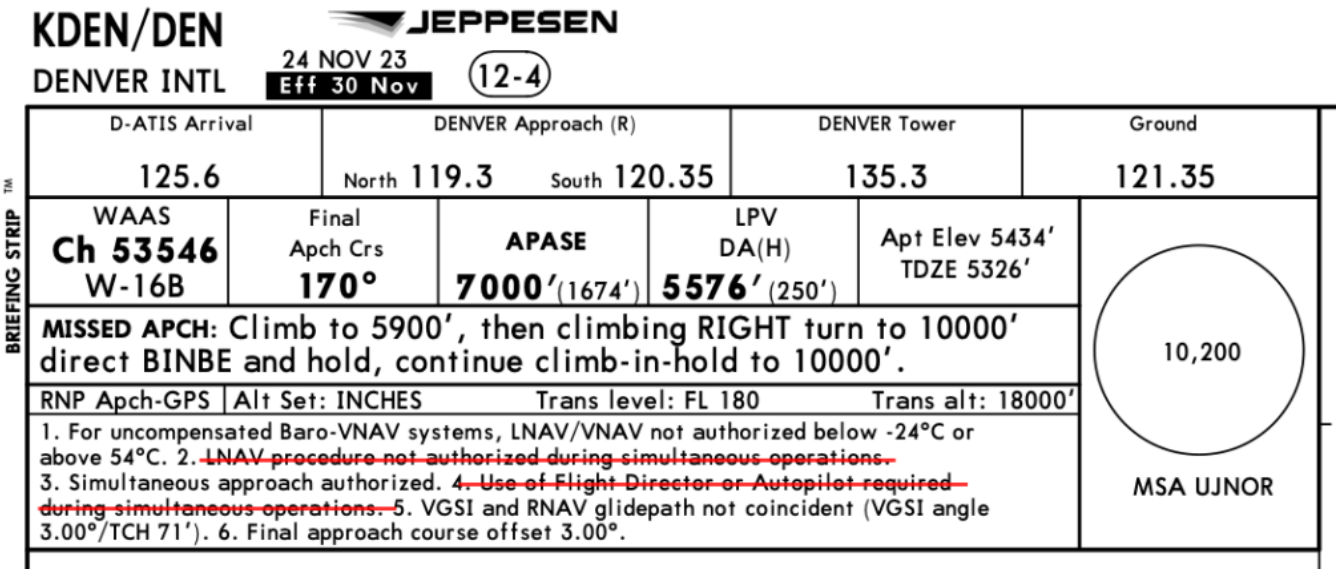
So when can we line up with the runway?

Whether you are on an instrument approach, or a visual, the FAA says don't break off the offset until you can see the runway and have **crossed the FAF.**

Look out for these chart notes...

Because the above procedure will only be used when conditions permit a visual approach on at least one of the two parallel runways, technically the whole deal doesn't fall within the realm of *'simultaneous IFR operations.'*

So, you can disregard the following two chart notes:


KDEN/DEN JEPPESEN
DENVER INTL 24 NOV 23 Eff 30 Nov (12-4)

D-ATIS Arrival	DENVER Approach (R)	DENVER Tower	Ground
125.6	North 119.3 South 120.35	135.3	121.35

BRIEFING STRIP™

WAAS	Final Apch Crs	APASE	LPV DA(H)	Apt Elev 5434' TDZE 5326'
Ch 53546 W-16B	170°	7000'(1674')	5576'(250')	

MISSED APCH: Climb to 5900', then climbing RIGHT turn to 10000' direct BINBE and hold, continue climb-in-hold to 10000'.

RNP Apch-GPS | Alt Set: INCHES | Trans level: FL 180 | Trans alt: 18000'

1. For uncompensated Baro-VNAV systems, LNAV/VNAV not authorized below -24°C or above 54°C. 2. ~~LNAV procedure not authorized during simultaneous operations.~~ 3. Simultaneous approach authorized. 4~~. Use of Flight Director or Autopilot required during simultaneous operations.~~ 5. VGSI and RNAV glidepath not coincident (VGSI angle 3.00°/TCH 71'). 6. Final approach course offset 3.00°.

10,200

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...although the last one is still recommended by the FAA.

Still have questions?

You can get in touch with the folk at the Flight Technologies and Procedures Division at 9-AWA-AVS-AFS-400-Flight-Technologies-Procedures@faa.gov (yes, that's the real address) or on the phone via (202) 267- 8790.

Or talk to us! team@ops.group. We'd love to hear from you.

Danger in Denver: Collision Risk

Chris Shieff
6 December, 2023

On August 3, the FAA put out a new Safety Alert (SAFO) for KDEN/Denver. Here it is if you want a read.

The issue is the high number of TCAS alerts being recorded when aircraft are shooting parallel approaches to Runways 16L/16R.

It turns out that TCAS, high elevation, and reduced separation aren't a great mix, and the FAA are worried there are chances of a collision.

Here's a breakdown of the situation.

Elbow to Elbow.

Since 2004, KDEN has been operating two parallel runways (16L and R). The two runways sit literally elbow to elbow, with only 2600' (709m) between them. For simultaneous close parallel approaches, 3600′ separation between runway centrelines is generally required. In Denver, typically two separate controllers are feeding traffic onto the approach cones for each runway, which means **coordination can be a challenge.**

From early on it became apparent that **nuisance TCAS alerts were a problem.** The FAA sought to fix the issue, and so in June 2019 Denver TRACON started separating aircraft vertically by 1000' in case someone busted through a localizer.

Trouble is, this didn't fix the issue. Instead, now the **majority of TCAS events are happening when aircraft are established on the final approach course.** The big threat here is the number of folk selecting TA only (a good 20%), and there is now a healthy dose of desensitisation thrown into the mix from so many nuisances warnings in the past.

Then there's the elevation.

Fun fact: TCAS becomes more sensitive with altitude. Or in other words, the trigger thresholds for

both TAs and RAs increase the higher you get.

Enter Denver – the '*Mile High City'* – called that because it sits exactly a mile above sea level. **That's around a 5,300' elevation.**

The next iteration of TCAS, (the romantically named ACAS XO), promises better tolerances for these conditions but it's not here yet, so right now users of **TCAS 7.1 get all the warnings when all the warnings are not necessary.**

What the FAA are concerned about.

Operate into Denver, and the threat of simultaneous parallel approaches isn't new, but awareness of the threats needs to be improved. The basic idea is folk should:

- Have an awareness of how the **close in approach setup** might increase the threat
- Brief how operating in **TA only mode** adds to this
- Know exactly where to be and what's around by **listening out on the radio** and monitoring TCAS carefully
- Think about to remember to **re-select TA/RA mode** in the event of a missed approach
- Be aware of how **nuisance TCAS** cautions and warnings may **desensitize** crew.

In fact, this could be useful guidance anywhere where there are similar operational and environmental conditions which might increase the risk of collision.