

DENVER (DEN/KDEN)

Elevation 5431ft

CATEGORY B

No AV Brief available

GENERAL

Threats

CFIT

- Rocky Mountains to the west – but reasonably flat in the vicinity of the airport

Runway Excursion

- SESMA has highlighted Denver as prone to high-energy/rushed approaches and TCAS RAs. Crews should maintain a high level of situational awareness and be mindful of aircraft energy when accepting ATC short cuts to final approach.
- Summer temperatures are high and the airfield elevation is over 5,400ft amsl – refer to OM C North Atlantic and North America brief for guidance on operating into hot and high airfields. Data analysis shows that on many occasions while on the approach the selected MCP altitude is set to be below airfield elevation. Crews must ensure strict adherence to SOP of setting a minimum of 1,000' agl (6,500' QNH in the altitude window).
- ATC are aware of the operational difficulties and should grant requests for the aircraft to be slowed/configured early on the approach

Mid Air Collision

- TCAS RAs are prevalent with many local operators switching their TCAS to TA only particularly when using runways 16L and 16R. The distance between these two runways is only 2600ft and has caused several TCAS RAs whilst in the landing configuration.
- ATC may offer runway 17R for landing during busy periods to mitigate against a TCAS RA on final approach. Crew should be mindful of this and brief for a landing on either runway 16L/ 16R or runway 17R. ATC may switch the landing runway to 17R during intermediate vectoring.

Special Considerations

- The real airport is quite undulating in elevation but the P3D airfield is flat. This can lead to discrepancies when setting approach minima. Setting the charted Cat 1 minima for Rwy 26 will lead to the 'Decide' call at approximately 70ft aal.
- There have been reports from PMDG 747 v3 crews that setting the charted minima not only led to a very late 'Decide' auto callout, but also blanked the remaining radalt calls leading to a hard touchdown.

ARRIVAL

Diversion Airports

PHOENIX	PHX/KPHX	591 nm/223°T	CAT B
DALLAS	DFW/KDFW	620 nm/139°T	CAT A
LOS ANGELES	LAX/KLAX	786 nm/242°T	CAT B
LAS VEGAS	LAS/KLAS	546 nm/245°T	CAT B
TUCSON	TUS/KTUS	600 nm/213°T	CAT B

SALT LAKE CITY	SLC/KSLC	401 nm/280°T	CAT B
Colorado Springs (F)	COS/KCOS	117 nm/181°T	CAT A

Colorado Springs suitable as a fuel alternate only. No customs provision at KCOS so passengers and crew will not be able to disembark the aircraft. Limited ground support available at KCOS.

- From an ATC perspective, DEN typically use two separate controllers to feed into the two parallel approaches, and crews with high SA will be alert to apparent lack of vectoring coordination.
- This used to lead to many TCAS RAs being generated by two aircraft approaching the parallel ILS cones from opposing sides. This, coupled with habit of local carriers operating in contravention of ICAO/IATA TCAS policy by selecting TA-only, makes a review of the Traffic Avoidance recall items worthwhile.
- Local controlled airspace is split into an octagonal shape (N, NW, W, etc) centred around KDEN out to 120/150 nm. Holding fixes are located on arcs approximately 50 nm and 100 nm from KDEN and during delays traffic are held at the outer fixes if the inner ones are full.
- We generally arrive through the NE sector. If closed expect to join one of the outer holding fixes such as SNY then route to MBW in the NW sector over 100 nm away to make an approach through the West sectors.
- Traffic to the East of the airfield is far greater than that to the West. Traffic from the West therefore receive extra mileage in order to accommodate and not unduly delay traffic from the East.
- Weather related delays are dependent on whether they are due to orographic thunderstorms or snow. During the peak summer and winter months it is recommended that weather is reviewed as early as possible in order to make necessary plans to take into account how traffic is handled at KDEN.

Approach

- Expect 17R/35. Occasionally we land on 26.
- We rarely use 07/25, and 16R/L or 34R/L should only be used if no one else is on the parallel due to the high number TCAS RA events.
- A 17 approach combined with simultaneous 16 is not a problem, nor is a 17R/17L combo (same for northerlies).
- ATC are prone to offering tight vectoring for both base and final turns – tell them early what you want and they will do their best to accommodate it (particularly if you ask not to be paired).

BAV Crew Reports

- Setting charted minima for 26 resulted in 'Decide' auto-callout at approx 70ft RA and blanking of remaining radalt callouts in PMDG 747-400 v3

- **All KDEN runways in P3D have an elevation of 5440ft. Use 5640ft for Cat 1 barometric minima.**

Useful Review Items

- Monitor TAS as at any high-altitude airport (generally – keep one configuration step ahead of where you'd be for the progress of the approach: F1 when you'd normally be min clean; F5 when you'd normally be F1 etc.)
- Verbalise height above touchdown when monitoring approach energy.
- Set a sensible BARO gate for gear down. Using a trigger of 2000RA on the southerly runways can lead to embarrassment.
- Even if cleared visual approach, stick with the ILS profile – preferably automatic and coupled.
- If intercepting the GS from above (it happens here) be prepared to use maximum drag and don't set any lower than 6600ft in the MCP window (elevation +1000ft). If you capture that before the GS then the approach is most likely nonviable.

Missed Approach

- You are unlikely to fly the published missed approach, so be ready for ATC intervention during the missed approach.

Orographic TS

- These build up to the West of the airfield over the Rockies and move eastwards closing the NW, W and SW sectors. As the thunderstorms move East and grow in size you can expect the NE, E and SE sectors to close approximately 45 minutes to 1.5 hrs later and remain closed for some time. The NW, W and SW sectors then clear up and re-open so all traffic to the East of the airfield is routed to the West with considerable extra track mileage that can be in the region of a couple of hundred nms if the delay is substantial.

Snow

- Snow has a more limited impact on delays. Delays are generally due to snow clearance rather than airspace closure unless there are orographic snow thunderstorms. These are extremely rare. During snow clearance you can expect delays of approximately 20 to 30 mins and it is very rare to change the arrival sector as described above.

Whenever arrival delays exist ATC assume you have 45 minutes holding fuel when declaring a Minimum Fuel Advisory. Therefore if you have less than this then advise ATC how long you can hold for prior to diverting. Should a flight be committed to land at KDEN, an approach is not imminent and bearing in mind the guidance above, then as early as possible, crews must advise ATC how long it will be before a MAYDAY is declared. In addition, advise ATC that on declaring a MAYDAY an immediate straight in approach will be required. This will greatly assist ATC in their planning, how expeditiously the flight can be handled and greatly reduce exposure to a low fuel scenario.

GROUND

- Company gate is on Concourse A, Gate A37. Wide-bodied aircraft should use dotted line for A37W.
- The airport is quite hilly and it would be prudent to keep all engines running on the taxi in until you are familiar with the local topography.

- Stand marshaller (via signals to a board) will bring you uncomfortably close to the terminal building.
- Be aware that guidance is set up for the left hand seat.

DEPARTURE

- During push back they do not push you onto the taxi line (Alpha November), but on to a line (the “purple line”) that looks like a taxi line. You will need to taxi away from terminal building to get on to the taxi line (caution jetblast), as the purple line is only for short wingspan aircraft and is marked with red in LIDO.
- Turning out of the apron for runway 08/17R/17L you could well require unusually high EPRs just to keep moving.
- The usual departure runway is 08, but use of 34R is not uncommon.
- There are rarely any departure delays, so get cabin going once doors are closed as they will clear you to line up as you reach the holding point.
- The standard 250kt speed limit applies to 10000' i.e. 5000' above ground.

WEATHER

- Mild dry climate with an average of about 300 sunny days per year.
- Summer – warm with low humidity. Orographic TS can very rapidly develop with westerly winds as very moist Pacific air is pushed upwards by the Rockies and by convective activity. Particularly in peak summer months in the late afternoon.
- Winter – sunny and crisp with some snow Oct to May. Early morning fog possible throughout the year. During the winter fog may form in the afternoon or early evening.
- With strong westerly winds you can expect some turbulence below FL250' near the mountains.
- In the spring and summer, spectacular supercells (and tornadoes) are not uncommon, and can be unforecast
- In extreme weather, ATC have been known to vector crews all over the state of Colorado (sometimes even Wyoming), often with little idea of when you will land; you may also hold indefinitely ‘because the airfield is closed’.
- Exercise caution if the TAF contains VCTS. Initial holding EFC times are usually wildly pessimistic, as they issue landing slots at 5 min intervals.
- If the weather clears and approaches recommence they can dramatically improve your ETL.

OPERATIONAL INFORMATION

Handling Agent	Hallmark (above wing), Swissport (below wing)
Handling Agent VHF	130.375
Potable Water	Uplift permitted.

IF ONLY Electrical Power is required	Use ground power at all times
If BOTH electrical power and air conditioning is required:	Use both ground services at all times (if fixed airport equipment not available, use APU)